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# Leveling the Retirement Income Playing Field

A Comprehensive Framework for Evaluating Diverse Lifetime Income Solutions

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# Contents

Executive Summary .....	1
Chapter 1 Participants Need Help Generating Lifetime Income .....	2
Chapter 2 The Income Dimension: Making Default Options More Powerful. . .	7
Chapter 3 Delivering Lifetime Income: There's More than One Approach. . .	11
Chapter 4 A Comprehensive Framework for Evaluating Solutions .....	23
Conclusion.....	37
Appendices.....	38



# Executive Summary

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Many defined contribution (DC) plan participants risk outliving their assets in retirement, despite the marked improvements in participation rates, savings rates and asset allocations since the passage of the Pension Protection Act (PPA) in 2006.

Because participants consistently want lifetime income security, DC plans have begun shifting their focus from growing wealth in the accumulation phase to ensuring income for life in their retirement years. The SECURE Act, passed in late 2019, and its successor, SECURE 2.0, passed in late 2022, have increased the momentum behind lifetime income solutions. However, wide-ranging features, such as fee structures, cash flows and investment exposures, make it challenging to assess and compare solutions.

To create a level playing field, we've developed a framework to help plan sponsors compare different methods for delivering sustainable income throughout retirement. It includes assessing the combination of income and remaining account balances throughout participants' lifetimes; quantifying the trade-offs between the total cost, value and risks of lifetime income solutions; and illustrating the best approach based on participants' diverse needs.

We've designed the framework to adhere to these core principles:

- Assess the **individual, not average, participant**, because potential market outcomes and life-spans for DC participants aren't smoothed over multiple people as they are in defined benefit (DB) plans, which could produce vastly different individual investment outcomes.
- Measure the **total costs** of lifetime income solutions, not just **explicit fees**, balancing these costs against the benefits each solution provides in order to accurately assess the impact on individual participants.
- Apply a **comprehensive** analysis encompassing income, account balances and major risks participants face—market risk, growth risk, inflation risk, and longevity and mortality risk. This approach enables a holistic comparison of solutions.

Applying our framework to several of the more common solutions for generating lifetime income in DC plans results in several key takeaways:

- Over one-third of participants may run out of money in retirement if they don't have explicit lifetime income insurance.\* That's because many individuals overestimate the withdrawal rates they can sustain, risk failure by applying "rule of thumb" withdrawal rules, and are unlikely to build enough wealth to "self-insure."<sup>1</sup>
- Incorporating insurance into a participant's asset allocation may improve sustainable withdrawal rates by 70% or more, based on our estimate of the median improvement in income rates versus self-insured sustainable-withdrawal rates.\*\* The most effective way to deliver insurance is as part of a qualified default investment alternative (QDIA), and doing so can reduce stress for plan participants and improve workforce management for plan sponsors.
- The type of income insurance a plan chooses will impact participants' outcomes. Lifetime income insurance such as guaranteed lifetime withdrawal benefits (GLWBs) can generate more total value with less risk for most participants, and plans can benefit from an integrated asset allocation as a way to offset fees. Participants also keep access to their assets.
- Using certain forms of insurance can result in significant "side effects" for participants, such as growth opportunity cost and mortality risk. It's critical that plan sponsors understand and avoid these unintended consequences.
- Longevity risk can be significantly reduced without an incremental cost, on average, versus a traditional target-date fund (TDF), because the presence of insurance enables higher exposure to growth assets within the fund's asset mix.

\*Based on a Monte Carlo simulation of 10,000 trials from ages 65 to 100 with AB's Capital Markets Engine as of 2Q:2022, using a weighted average withdrawal rate based on AB's 2023 Inside the Minds of Plan Participants survey results. As of May 31, 2023. Source: AB

\*\*Based on a Monte Carlo simulation of 10,000 trials from age 65 to 100, using the AB Capital Markets Engine 2Q:2022 forecast. The income rate improvement estimate is based on a 100% allocation to an income insurance contract and estimates will vary as market conditions change. Regardless of the changing market environment, incorporating income insurance may significantly improve the sustainable withdrawal rate. As of June 30, 2022. Source: AB

<sup>1</sup> As of 2022, to have a 99.5% or greater probability of not running out of money requires a withdrawal rate of only 2.3%.

# Participants Need Help Generating Lifetime Income

Everyone wants certainty when planning for financial security in retirement—it’s the big need for DC plan participants. They’re worried that they’ll outlive their assets (referred to as longevity risk), so they’re keenly interested in solutions that can improve retirement-income security and eliminate longevity risk. So it’s not surprising that in our survey of plan participants, when we asked what’s most important in retirement saving, the top response was a steady income stream in retirement. Unlike DB plans, most DC plans lack such a solution.

## Lifetime Income Is a Critical Need for DC Plan Participants

Above all else, DC plan participants have told us they’re not confident that they’ll have a comfortable retirement. We’ve surveyed them for nearly two decades,<sup>2</sup> and more than half of them have consistently

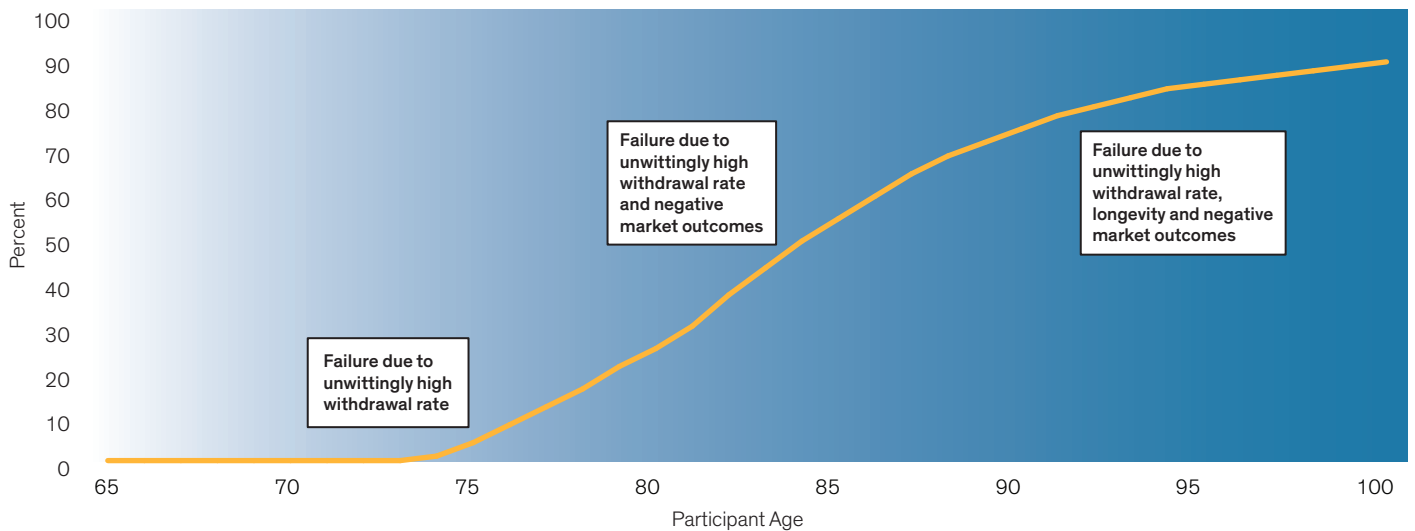
shared this doubt. In most years, less than one-third of respondents have felt confident or very confident.

Until the early 1980s, DB plans had been a powerful part of many employee benefits packages: just work hard, build a career, retire at 65 and realize a steady income for life—regardless of the market environment or how long you live. But these expensive plans have been dwindling for decades: a recent survey by the Society for Human Resource Management (SHRM) found that only 21% of firms offer a DB plan to all employees; another 10% have frozen their plans.<sup>3</sup> This shift will make it harder for the next generation to achieve lifetime income.

There are other hurdles to achieving lifetime income, including workers’ lack of financial literacy and misconceptions about what level of withdrawal rate can be sustained over time. Many participants

### DISPLAY 1: INDIVIDUAL PARTICIPANTS FACE RISK OF RUNNING OUT OF MONEY

Probability of Running Out of Money over Lifetime



**For illustrative purposes only**

Based on a Monte Carlo simulation of 10,000 trials from ages 65 to 100 with AB’s Capital Markets Engine as of 2Q:2022, using a weighted average withdrawal rate based on AB’s 2023 *Inside the Minds of Plan Participants* survey results. The annual withdrawal amount is the withdrawal rate multiplied by the initial balance at retirement (without adjustment for inflation) until account is depleted or participant reaches age 100. Probability of failure is the probability of retirement account depletion across all simulation trials at each age. As of May 31, 2023 | Source: AB

<sup>2</sup> AB has conducted DC plan participant surveys since 2005.  
<sup>3</sup> SHRM *Employee Benefits 2019: Investment and Retirement*, June 2019.

wonder where their retirement money will come from—and greatly overestimate how much of their nest egg they’ll be able to spend yearly without running out of money. In our latest plan participant survey, we asked the following question: “Imagine for a moment that you retired at age 65 and had \$500,000 in your retirement account. What percentage of that \$500,000 could you probably spend each year during retirement without running out of money for the rest of your life?” More than half (57%) of participants thought they could withdraw 7% or more annually (or didn’t know how much they could withdraw), with almost one-third responding that a withdrawal rate of 10% or more was sustainable.

These unwittingly high withdrawal rates may cause participants to run out of money early in retirement, even in good market conditions (*Display 1, page 2*). Even if participants have a prudent withdrawal rate, poor market outcomes can still cause those with an average life expectancy to run out of money. For individuals fortunate to live well into their 90s, their longevity could lead to failure even with prudent withdrawal rates and favorable markets. As a result, more than one-third of participants will likely fail to maintain their desired level of spending over time.

Even the traditional 4% withdrawal rule of thumb<sup>4</sup> may no longer be wise. Given today’s low expected real (or inflation-adjusted) returns, we estimate that the 4% rule would result in a one-in-five chance of failure. Some retirement researchers would set an appropriate withdrawal rate much lower—closer to 2.4%.<sup>5</sup> Similar to the

## DISPLAY 2: WHAT’S MOST IMPORTANT WHEN SAVING FOR RETIREMENT?



As of May 31, 2023 | **Source:** *Inside the Minds of Plan Participants*, AB Research, 2023.

conclusions of other analysts, our research finds that for participants to ensure a near-certainty of not outliving their savings without insurance, the withdrawal rate should be 2.3%.<sup>6</sup>

The bottom line: most American workers are hard put to understand how to save, how much to save and how much to spend, because humans have very little capacity to conceptualize their future selves more than five or 10 years into the future.<sup>7</sup> As a result, participants

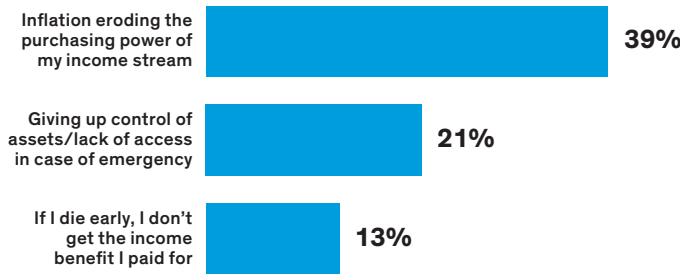
<sup>4</sup> This withdrawal amount is 4% of the initial savings at retirement, with that amount adjusted each year according to the full inflation rate.

<sup>5</sup> Steve Vernon, “Withdrawing from Retirement Savings: Is Four Percent a ‘Safe’ Rate?” *Forbes* (May 20, 2020).

<sup>6</sup> Estimated as of 2022. A withdrawal amount of 2.3% of initial savings at retirement with a standard of living adjustment each year has a 99.5% probability of success until age 100. See Appendix 2 for information on AB’s living-standard adjustment (LISA).

<sup>7</sup> Benjamin Hardy, “Who Will You Be in 10 Years? Not Who You Expect,” *Psychology Today* (May 24, 2022).

**DISPLAY 3: WHAT MAKES YOU MOST NERVOUS ABOUT BUYING A RETIREMENT INCOME PRODUCT THAT PROVIDES MONTHLY INCOME FOR AS LONG AS YOU LIVE? (SELECT ONE)**



As of May 31, 2023 | Source: *Inside the Minds of Plan Participants*, AB Research, 2023.

indicate that a steady income stream is the most important element in saving for their retirements (*Display 2*).

How to secure that steady income stream is another matter, and participants worry about some of the basic “strings” attached to many lifetime income products, specifically those that include insurance. Three responses in our survey (*Display 3*) mirror three of the major risks we’ll explore in this research:

- Inflation
- Control over assets
- Mortality risk—the risk of dying earlier than expected and missing out on benefits

Because of these concerns, as well as concerns about the cost of solutions, many participants are hesitant to consider a lifetime income solution. And in our view, too many retiring workers are adopting a do-it-yourself approach to budgeting their retirement spending.

**DC Participants Face Uncertainty That’s Unlike the DB Experience**

For many participants, managing their own financial destiny in retirement lets them keep ownership of their assets while also having flexibility and freedom. But there’s a flip side to this approach: the amount of assets required to maintain ownership *and* create a high certainty that those assets will last a lifetime is daunting.

When a DB plan sponsor manages its assets to meet participants’ income payments, the obligations to individuals who live longer than the average life-span are offset by those with shorter-than-average life-spans. The average death age for a large pool of individuals is relatively predictable,<sup>8</sup> and only changes slowly over time as healthcare and living standards evolve.<sup>9</sup> So individual age-of-death risk is mostly diversified away for DB plans, enabling them to focus on average longevity. And because active DB plans have investment horizons over multiple generations, outcomes are smoothed over a long period of time.

DC plan participants have control over their own assets, so the experience is very different. Because there’s no pooling as with DB plans, death ages (and, by definition, investment horizons) vary more widely, creating much individual uncertainty (*Display 4, page 5*). Unlike a DB plan, which can smooth different market outcomes and death ages over many individuals, DC plan participants experience only one path of outcomes—their own.

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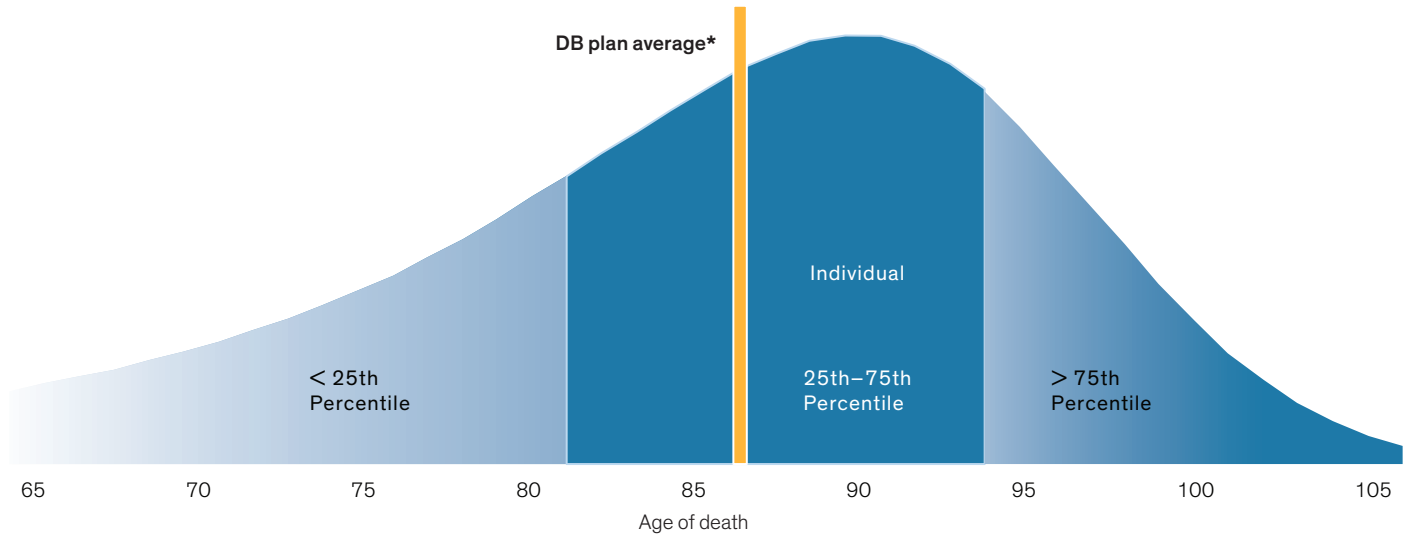
<sup>8</sup> Statistically, the estimation error of a plan’s average age of death declines with the square root of the number of plan participants.

<sup>9</sup> Based on actuarial mortality tables from 2009 to 2021, the average death age didn’t vary much: between 84 and 86.



## DISPLAY 4: INDIVIDUALS FACE GREATER DEATH-AGE UNCERTAINTY

Comparing Distribution of DC Individual Death Age with DB Plan Average



### For illustrative purposes only

Age-of-death probability is contingent on participants being alive at the start of age 65. Individual age-of-death probability is estimated from the Unisex Mortality Table for 2021 in the IRS Notice 2019-67, *Updated Mortality Improvement Rates and Static Mortality Tables for Defined Benefit Pension Plans for 2021*, with the mortality improvement scale specified by the *Mortality Improvement Scale MP-2019* report of the Retirement Plans Experience Committee of the Society of Actuaries, last updated November 25, 2019. This is available at <https://www.soa.org/resources/experience-studies/2019/mortality-improvement-scale-mp-2019/>. Based on actuarial mortality tables from 2009 to 2021, the average death age did not vary significantly and was between ages 84 and 86.

\*DB plan average is calculated from mortality table.

As of December 10, 2019 | **Source:** IRS, Society of Actuaries and AB

That leaves individual DC plan participants facing two age-related risks:

1. Living longer than the average death age and outliving their assets (also known as longevity risk)
2. Living shorter than the average death age and potentially realizing a poor return on their investment (mortality risk)

Even participants who are statistically very likely to live a long life can't discount the possibility of a sudden, unexpected death—a risk highlighted by the COVID-19 pandemic. Unfortunately, individuals can't hedge their own age-of-death risk without the benefit of pooling or insurance. Mortality risk isn't small: half of retirees will live less than 87 years, roughly one-quarter will die before 80 and 10% will likely die by 74.

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### Participants Can't Afford to Self-Insure Their Income for Life

So, individuals who seek to generate sustainable lifetime income without using insurance (an approach we define as “self-insuring”) face two challenges: poor inflation-adjusted investment outcomes and uncertainty about how long they'll live. To be certain of not running out of money in any scenario, retirees must withdraw assets at a low rate and keep an account balance to hedge against both bad markets and living longer than average. This is a very inefficient strategy.

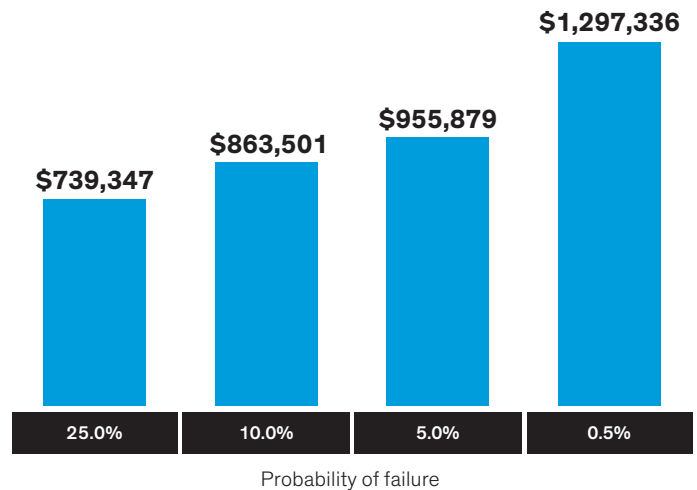
Based on extensive simulations to illustrate typical levels of sustainable income, a higher certainty of success requires a lower withdrawal rate and higher initial savings amounts (*Display 5*). For retirees who seek a 99.5% probability of not outliving their savings, the sustainable withdrawal rate is only 2.3%.<sup>10</sup> A retiree seeking to generate \$30,000 annually with a near certainty of not running out of money in their lifetime would have to start with nearly \$1.3 million in assets—a sizable nest egg that's out of reach for many participants. Clearly, self-insurance is a poor option for most retirees.

Individual participants who manage their own retirement income face a dilemma. On one hand, they might unwittingly overestimate their sustainable withdrawal rate and end up outliving their savings. On the other hand, if they decide to self-insure and underspend to avoid running out of money, they're not fully taking advantage of their savings.

The good news: incorporating insurance in a DC plan can help participants translate their savings into lifetime income more efficiently while eliminating longevity risk. In the following chapters, we'll explain how to achieve this goal—and how to compare the insurance-based lifetime income solutions designed to help.

### DISPLAY 5: GENERATING \$30,000 IN ANNUAL INCOME—HIGHER CERTAINTY, LOWER INCOME RATE, HIGHER REQUIRED SAVINGS

Required Savings at Retirement to Deliver \$30,000 in Annual Income



#### For illustrative purposes only

Based on a Monte Carlo simulation of 10,000 trials from age 65 to 100 using AB Capital Markets Engine 2Q:2022 forecast.

Required savings are the initial savings at retirement age 65 to deliver \$30,000 in annual income (living-standard adjusted) until age 100, given the required probability of failure.

As of June 30, 2022 | Source: AB

### Key Takeaways

- Steady retirement income is a top desire of DC plan participants, but many workers lack financial literacy and have misconceptions about sustainable withdrawal rates, which could lead them to fall short of their desired spending levels.
- Individual participants who seek to generate lifetime income without using insurance (self-insuring) face poor inflation-adjusted investment outcomes and uncertainty about how long they'll live.
- To be certain of not running out of money in any scenario, retirees must withdraw assets at a low rate and keep a balance to hedge against both bad markets and living longer than average—a very inefficient strategy.
- Incorporating insurance can help participants translate their savings into lifetime income more efficiently while eliminating longevity risk—but there are many approaches, and a fair way to compare them is needed.

<sup>10</sup> Estimated as of 2022, assuming that savings are invested in a TDF benchmark and that a living-standard-adjusted (LISA) withdrawal starts at age 65 and lasts until death or age 100. The annual withdrawal amount is determined as the withdrawal rate multiplied by the initial savings at retirement and living-standard adjusted each year. See Appendix 2 for more information.

## CHAPTER 2

# The Income Dimension: Making Default Options More Powerful

### Automated Plan Features Have Driven Better Outcomes

The passage of the Pension Protection Act (PPA) in 2006 was a critical step forward in helping workers save for retirement. Before the PPA, three main issues plagued DC plans and participants: meager participation rates, low saving rates and poor individual asset allocations.

A recent survey of plan sponsors by the Defined Contribution Institutional Investment Association (DCIIA) shows the progress fostered by automatic plan features and the use of QDIAs.<sup>11</sup> Two-thirds of plans reported “direct and attributable” benefits from using auto features—including higher participation, faster asset growth and improved participant behavior. The effect of automation is so powerful that SECURE 2.0 cemented both auto-enrollment and auto-escalation as requirements for any new DC plan.

Progress through automation doesn't surprise us. When we've surveyed participants to assess their own investment capabilities, over half of respondents typically say they feel ill-equipped.<sup>12</sup> Even confident participants may become less capable in retirement, because cognitive capabilities tend to decline with age. A group of people were asked, “If five people all have the winning numbers in the lottery and the prize is two million dollars, how much will each of them get?” At 53 years of age, 52% of respondents gave the correct answer of \$400,000, but by age 90 only 10% got it right (*Display 6*).

Of course, discretionary financial advisors, as well as friends or relatives that have financial power of attorney, can help alleviate decision-making issues stemming from cognitive decline. But professional advice comes with a fee, and the time and emotional drain on relatives can exact its own cost.

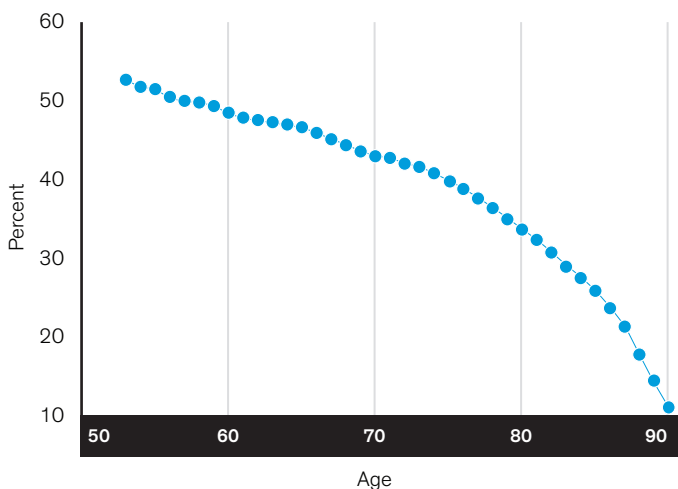
It seems clear to us that the fundamental driver behind the success of automatic features and QDIAs is that they delegate responsibility away from participants. As a result, workers don't need to be investment experts to save effectively for retirement. Essentially, they can do nothing and still enjoy the potential for better outcomes.

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### DISPLAY 6: COGNITIVE FUNCTION DECLINES WITH AGE

“If five people all have the winning numbers in the lottery and the prize is two million dollars, how much will each of them get?”

#### Percentage of people who answer “400,000”



As of October 2009 | **Source:** Sumit Agarwal et al., *The Age of Reason: Financial Decisions over the Life Cycle and Implications for Regulation*, Brookings Papers on Economic Activity, Fall 2009, <https://marginalrevolution.com/marginalrevolution/2012/02/the-age-of-reason.html>.

<sup>11</sup> *Plan Sponsor Survey: Implementation of Auto Features Continues to Rise as Plans Recognize Benefits*, DCIIA, April 2020.

<sup>12</sup> *Inside the Minds of Plan Participants*, AB Research, May 31, 2023.

## Lifetime Income: Making Retirement Plans About Retirement

But when it comes to the withdrawal and spending phase of their savings, most participants can't just "do nothing" and realize income for life—regardless of how long they live. Very few have the know-how to translate their savings into a lifetime income stream, and if they've never made an investment decision, it's highly unlikely they'll suddenly become experts in designing sustainable income.

Economist and Nobel laureate William Sharpe referred to decumulation—the process of drawing down wealth to fund retirement spending needs—as “the nastiest, hardest problem in finance.” Given that half of surveyed participants think they can withdraw an unrealistic 7% or more from their retirement savings annually without running out of money, individuals seem ill-equipped to go it alone.

A default path to sustainable income that doesn't require participants to make decisions or become portfolio managers will help make retirement plans about *retirement*. The Employee Retirement Income Security Act (ERISA) went into effect back in 1974, but the retirement industry's more recent focus on channeling participants' inertia has vastly improved outcomes.

**It's time to refocus automatic features and address the heart of what ERISA stands for: retirement income.**

If automation works so well that the government has embraced it, automating income benefits through a default path is the logical next step. So, it's time to refocus automatic features and address the heart of what ERISA stands for: retirement income. Without this help, participants face retirement insecurity and lower productivity from the related anxiety. Employees who want to retire will instead keep working, lacking confidence that their savings balances will support the income they need in retirement.

## Addressing Real Workforce-Management Challenges: The Cost of Doing Nothing

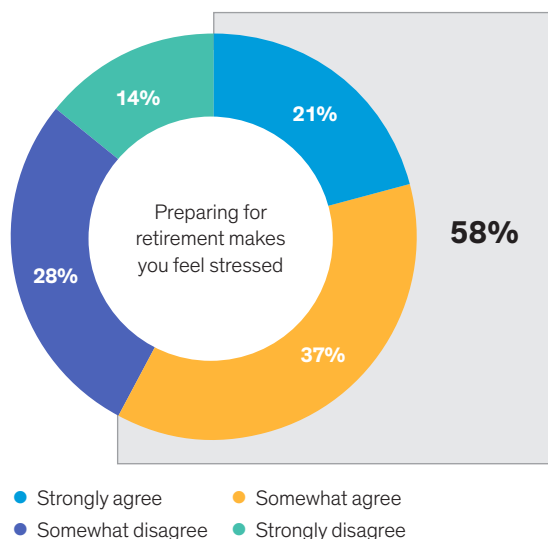
Plan sponsors have a lot of incentive to act on the income issue, because employees who worry about their lack of retirement readiness can have far-reaching effects on workforce management. And it's a looming problem, because the number of workers who are stressed about retirement isn't small. In fact, almost 60% of respondents in a recent survey said that the prospect of preparing for retirement makes them stressed (*Display 7*).

Employee retirement insecurity hobbles an organization's ability to offer advancement opportunities to newer workers. Employees nearing retirement age may no longer want to work but don't have the confidence to retire. This situation can create a roadblock to up-and-coming talent that often pushes the best and brightest to look for greener pastures.

Lost earnings and productivity are risks, too. One study calculated the annual incremental cost to an employer every year a worker delays his/her retirement at roughly \$50,000, a result of the cost differential between retirement-age and entry-level workers.<sup>13</sup> The higher the worker's skill level, the higher the cost. Another study found that employees average 13 hours of work time per month worrying about their finances.<sup>14</sup>

Financially stressed employees are twice as likely to look for new jobs somewhere else, six times more likely to say that financial stress has harmed their work productivity and seven times more likely to say that financial stress has impacted their attendance at work.<sup>15</sup>

### DISPLAY 7: NEARLY SIX IN 10 EMPLOYEES STRESS ABOUT RETIREMENT



For illustrative purposes only

As of April 27, 2023 | **Source:** 2022 Retirement Confidence Survey, Employee Benefit Research Institute and Greenwald & Associates.

<sup>13</sup> *Why Employers Should Care About the Cost of Delayed Retirements*, Prudential Financial, 2019.

<sup>14</sup> *Inside Employees' Minds: Financial Wellness*, Mercer, 2017.

<sup>15</sup> 2022 PwC Employee Financial Wellness Survey (base of 3,236 full-time employees).

## Reduce Stress and Costs with a Better Default DC Plan

We believe that employers can make a big difference in tackling these issues by leveraging their retirement-benefits packages. Congress appears to feel this way too—the provisions included in its SECURE 2.0 allow both penalty-free withdrawals for certain emergency expenses and the establishment of emergency-savings accounts within plans.

Adding an in-plan guaranteed lifetime income QDIA can help reduce stress on current employees—giving them more certainty that they can retire when they truly want to. It may also provide the leverage that can make a company more competitive in recruiting and retaining top talent. Plan sponsors may have had reservations about selecting an income/annuity provider, but the SECURE Act (see “SECURE Act Provides Safe Harbor for Selecting Lifetime Income Providers,” *below*) has gone a long way toward alleviating that hesitation.

In addition to relieving participants of their “portfolio management” responsibilities, incorporating lifetime income into a QDIA offers other benefits. For instance, it keeps assets in the plan. This might give

the plan more leverage to negotiate with providers than individual participants would have on their own, ultimately providing greater value for the money. Participants can also benefit from the expert analysis and oversight of an institutionally managed solution.

Offering a secure lifetime income strategy as the plan’s default investment—specifically one that doesn’t require a participant to opt in—is central to gaining traction. It enables a seamless continuation of the automatic, “do it for me” structure that has helped participants so much in their working years. Embedding a lifetime income solution within a QDIA will likely reach more participants than simply adding one as a stand-alone menu option.

What’s more, this automatic method of implementation resonates with most participants. A recent survey asked participants how they felt about their employer “automatically enrolling” them or about “being automatically transitioned” into a retirement-income option, assuming they could opt out with no penalty when they receive notification. An overwhelming majority of participants (approximately 80%) were in favor of this idea.<sup>16</sup>

# The SECURE Act provides safe harbor for selecting lifetime income providers

## On January 1, 2020, the Setting Every Community Up for Retirement Enhancement (SECURE) Act of 2019 took effect.

The act provides safe harbor for DC plan sponsors to select lifetime income/annuity providers without worrying about liability for losses if an insurer can’t satisfy its financial obligations. The SECURE Act shifted the fiduciary requirements from plan sponsors to insurers when choosing in-plan annuities, and it offered assurances that approved carriers are adequately capitalized.

The SECURE Act also explicitly provides safe harbor even if the selected contract isn’t the lowest-cost one, specifically stating that “a fiduciary may consider the value of a contract, including features and benefits of the contract and attributes of the insurer (including, without limitation, the insurer’s financial strength) in conjunction with the cost of the contract.”

SECURE 2.0, signed into law on December 29, 2022, continues to improve access to retirement-income features, building on the foundation of the SECURE Act’s safe harbor provision.

<sup>16</sup> *Show Me the Income*, Invesco and Greenwald & Associates, December 2022 (retirement income survey of 1,049 large DC plan participants).

### **Key Takeaways**

- By delegating responsibilities away from DC plan participants, automated features and QDIAs have driven great progress: higher participation, faster asset growth and improved participant outcomes.
- Automating income benefits through a default path is the logical next step, and plan sponsors have a lot of incentive to act—employees worried about their unreadiness for retirement can hinder productivity.
- Offering a secure lifetime income strategy as a default investment enables a seamless continuation of the automatic, “do it for me” structure that has helped participants so much in their working years.

## CHAPTER 3

# Delivering Lifetime Income: There's More than One Approach

In all our past participant surveys, the certainty of a lifetime income stream has consistently topped DC plan participants' most-wanted list, and the benefits are substantial for both participants and sponsors. But what approaches are available? How do they work? In this section, we'll introduce the typical income solutions in the marketplace, and in the following sections we'll describe our comprehensive framework to evaluate these diverse solutions on a level playing field.

### Four Basic Approaches to Lifetime Income

In the rest of this paper, we'll examine four representative approaches that DC plan sponsors can choose from as they consider lifetime income solutions:

1. Non-guaranteed drawdown solutions—a variety of “income solutions” that don't use insurance
2. Immediate fixed annuities, such as a single premium immediate annuity (SPIA)
3. Deferred fixed annuities, such as a qualified longevity annuity contract (QLAC)
4. Lifetime income insurance on a participant's portfolio, such as a guaranteed lifetime withdrawal benefit (GLWB)

#### Income Solution #1: Non-Guaranteed Drawdown Approach

This uninsured approach encompasses essentially any approach that doesn't use insurance, which is why it's referred to as “self-insurance.” Participants have a wide range of solutions to choose from; for our analysis, we've selected a TDF with various asset drawdown schemes.

Drawdown solutions enable participants to keep full ownership of their retirement savings, with full liquidity. When the participant dies, any remaining account balance is transferred to their beneficiaries. And if the assets are effectively invested with a prudent asset allocation, participants can also enjoy growth potential. All these features are highly valued by DC plan

**No explicit annual insurance premium or fees apply to a SPIA because participants no longer own any assets.**

participants. However, this solution doesn't guarantee steady income for life, so the risk of participants outliving their savings (or of a significant income decline) remains a key concern.

The rest of our solutions, which we'll describe next, incorporate various types of income insurance (see “Insurance Improves Sustainable Income,” *page 12*). Income insurance options fall under three major representative categories: immediate fixed annuities, deferred fixed annuities and guaranteed lifetime withdrawal benefits.

#### Income Solution #2: Single Premium Immediate Annuity (SPIA)

The SPIA, also referred to as an income annuity, is probably the most well-known fixed annuity product in the marketplace. Here's how it works: At retirement, participants surrender their assets to an insurance company (a decision that can't be revoked). In exchange, they receive guaranteed fixed-income payments from the insurer that start immediately and end at death (for a single-life contract).

No explicit annual insurance premium or fees apply to a SPIA, because participants no longer own any assets. The insurance company typically invests the surrendered assets, pooled together from many individuals, in a bond-heavy portfolio to hedge the liability of income payments. The insurance company benefits from risk pooling, but participants still face an individual experience, and roughly half of them will—by definition—die before the average expected age, leaving their surrendered assets on the table.

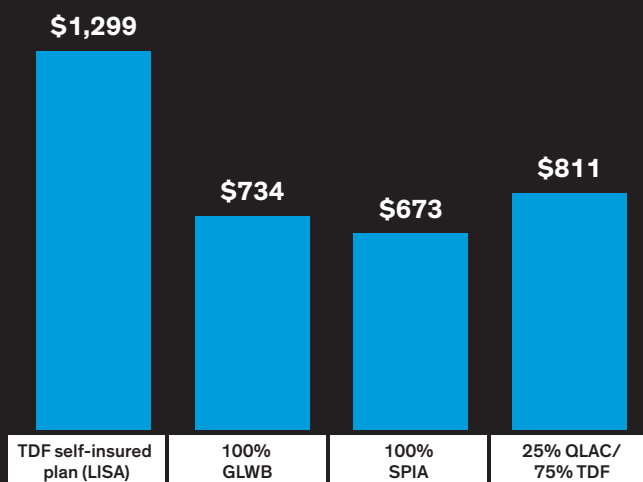
# Insurance Improves Sustainable Income

In contrast to representative insurance-based solutions, self-insurance approaches<sup>1</sup> seek to generate lifetime income without insurance—such as by investing in a TDF with a living-standard-adjusted withdrawal rate. But self-insurance requires staggeringly higher initial balances in order to deliver the same amount of annual income (*Display, below*). Therefore, they typically work best for people who can meet most of their income needs via other sources of lifetime income protection or through significant wealth (savings that are more than 40 times their annual income needs).

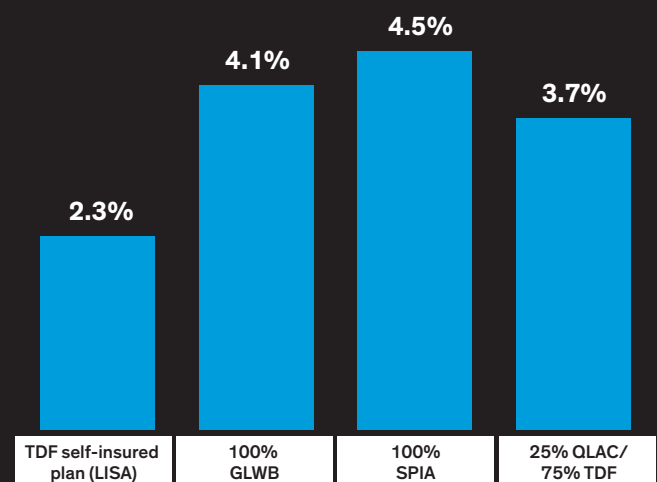
Incorporating insurance in income solutions may help individual participants eliminate the longevity risk they can't diversify, giving these solutions the potential to greatly improve sustainable withdrawal rates versus a self-insured approach. Based on our research, we've quantified that the median improvement is roughly 70% or more.<sup>2</sup>

## INSURANCE MAY IMPROVE SUSTAINABLE WITHDRAWAL RATES BY 70% OR MORE

**Initial Balances Needed to Deliver Average \$30,000 Annual Income over Lifetime (USD Thousands)**



**Median Income Rate (LISA) Average over Lifetime**



**For illustrative purposes only**

Based on a Monte Carlo simulation of 10,000 trials from age 65 to 100, using the AB Capital Markets Engine 2Q:2022 forecast.

The initial balances needed are calculated by dividing \$30,000 in annual income by the median income rate (LISA) average over lifetime. The median income rate (LISA) average over lifetime is the average of median withdrawal rates (living-standard adjusted) from age 65 to age 100.

The income rate estimates will vary as market conditions change. Regardless of the changing market environment, incorporating income insurance may significantly improve the sustainable withdrawal rate.

As of June 30, 2022 | **Source:** AB

**1 Self-insured plan:** A TDF with an average stock/bond mix and a living-standard-adjusted (LISA) sustainable drawdown rate of 2.3%, resulting in a 99.5% likelihood of participants not outliving their assets; **SPIA:** A single-premium immediate fixed annuity purchased at 65 years of age; **QLAC:** A deferred fixed annuity purchased at age 65 with income payouts deferred until age 80; **GLWB:** Portfolio income insurance (see "How Does a GLWB Work?," page 20, for more information).

**2** Income rate improvement is based on the estimated income rate of 100% allocation in a GLWB, SPIA, or QLAC contract versus an estimated self-insured sustainable-withdrawal rate as of 2022.



### A Metric for Evaluating Lifetime Income Approaches

Before describing the rest of our lifetime income solutions, it makes sense to introduce a metric that we'll use to quantify their investment return, using the SPIA as an example. Later, we'll use investment return to quantify the total cost of an income solution.

We can apply a traditional investment return measure, the internal rate of return (IRR), which is often used to gauge the annualized returns from a wide range of investments with distinct cash-flow patterns and time horizons. The higher the IRR, the better the annualized investment return. We can treat any lifetime income solution in a similar way, starting with the SPIA example (*Display 8*).

Put simply, when participants buy, or invest in, an income solution, we count that initial investment as a cash outflow (the blue bar in the display). Any income a participant receives, and any remaining balance (net of fees), are counted as cash inflows (the yellow bars). The IRR is the discount rate that makes the present value of all future cash inflows (net-of-fee income and remaining balances,

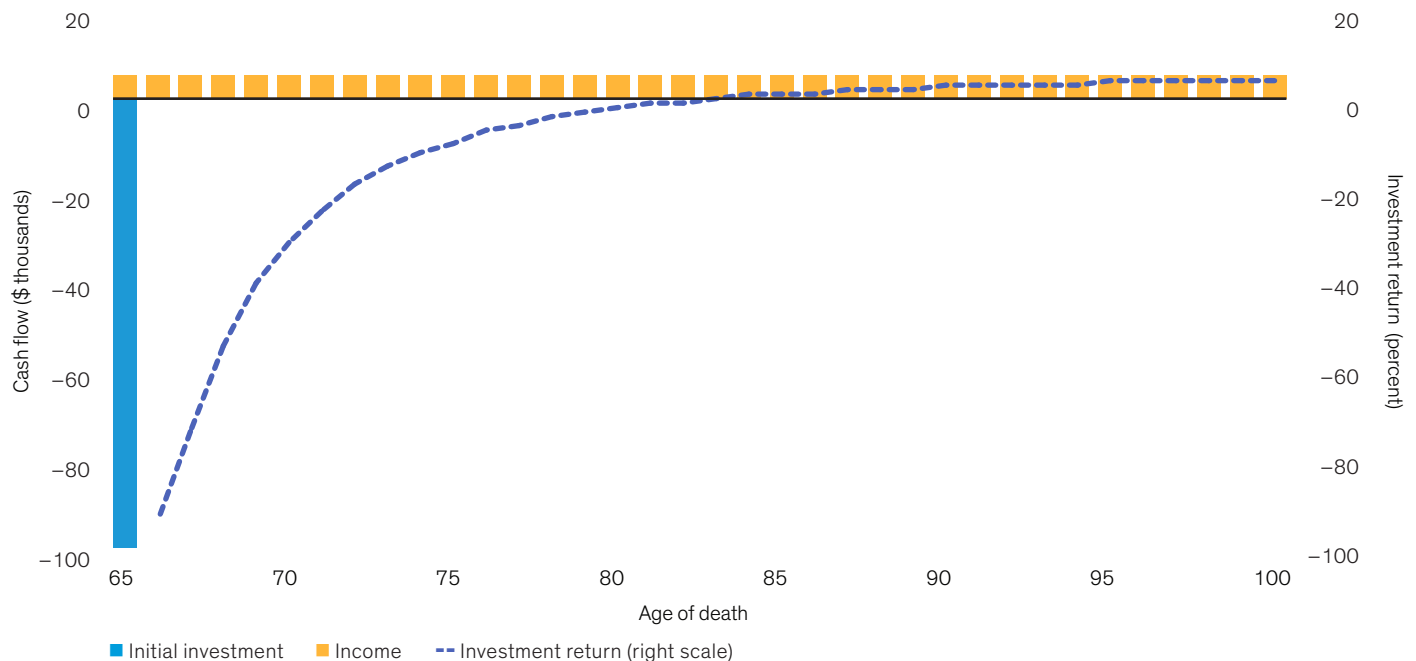
if applicable) equal to the cash outflow (the money used to buy the solution).

We can use this rate to represent the annualized investment return an individual would experience, which varies based on the potential age of death, ranging from 65 to 100 (the dotted line). This analysis enables us to translate different fee structures, diverse income-stream patterns and different remaining account balances into a common measure for each solution—the net-of-fee annualized returns individual participants experience.

In the SPIA, which is a fixed annuity, investment returns are very sensitive to the participant's death age. The SPIA provides steady, guaranteed income for life, but there's a risk to those participants who die at relatively early ages: they surrendered their lifetime savings to an insurance company at age 65 and didn't live long enough to fully recoup the income benefit. To connect this outcome to our investment-return metric, these participants suffer large investment losses.

## DISPLAY 8: AGE OF DEATH IMPACTS THE INVESTMENT RETURN OF A FIXED ANNUITY

Cash Flows and Investment Return of a SPIA



For illustrative purposes only

Indicative annualized investment return experienced by an individual participant, contingent on his/her age of death. The annualized return is calculated as the internal rate of return with the initial investment as cash outflow and subsequent annuity income as cash inflows that terminate at death.

As of June 30, 2022 | Source: AB

# Exploring Market Risk and Growth Opportunity Costs

DC plan participants may grasp the merits of including higher-growth assets, such as equities, in their portfolios during their saving years. However, they may not recognize that they need growth assets during their retirement years too. This consideration is often overlooked when valuing the total benefits of surrendering some or all of your assets in exchange for a fixed annuity.

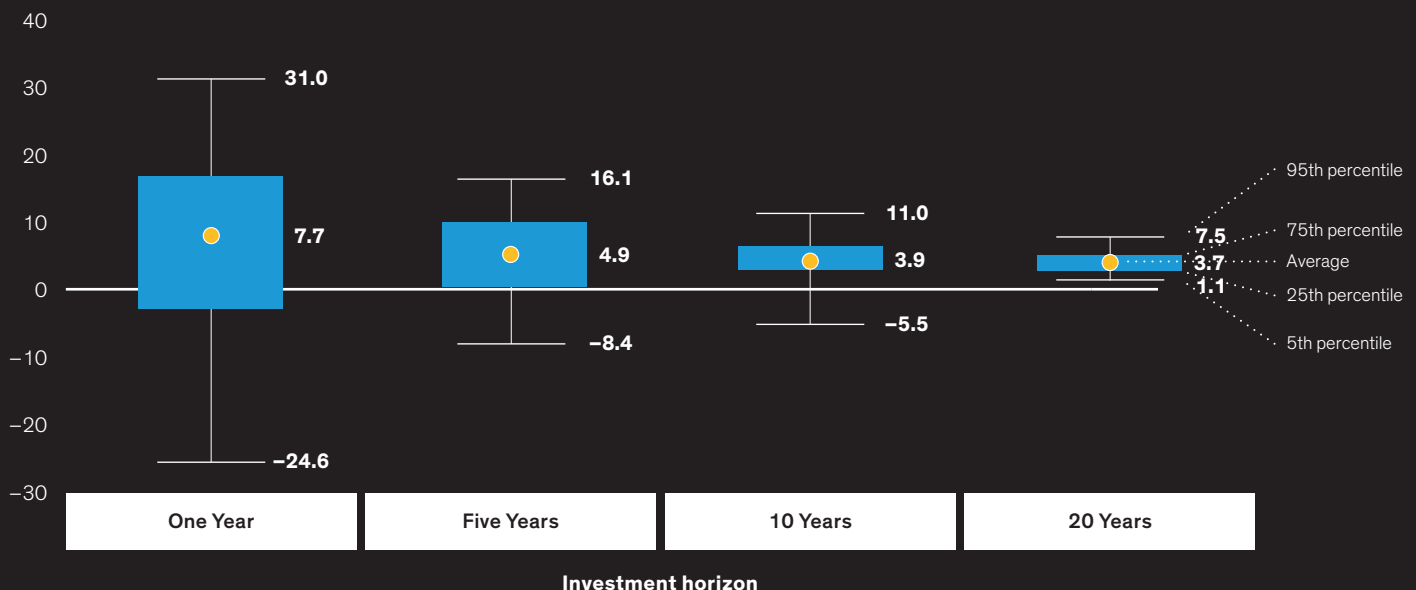
Gains from equity markets, over a time frame that might be as long as 35 years, can make a sizable difference in maintaining—and even growing—income later in retirement. It can also help offset inflation pressures that might otherwise whittle away a retiree’s spending power. Some participants may also want the opportunity to leave any remaining assets to their beneficiaries. Surrendering assets to an insurer in exchange for a fixed annuity eliminates the potential for decades of portfolio—and possibly income—growth, as well as the ability to pass on assets to beneficiaries.

We can see this effect in the range of returns for stocks in excess of US Treasury bonds over the past 50 years (*Display, below*). Over shorter time periods, such as one year, stocks beat bonds by 7.7% on average. But, as indicated by the size of the blue boxes, which represent the middle 50% of return outcomes, returns were wide-ranging. Stocks outperformed by a sizable margin, underperformed by a wide margin, or finished somewhere in between. In extreme cases, stocks outperformed bonds by 31% in the 95th percentile, or underperformed them by almost 25% in the fifth percentile.

Over longer time frames, however, stocks typically outperform bonds, with less downside risk. Over a 20-year time frame, for example, even a very poor showing from equities, in the fifth percentile of outcomes, beat bonds by 1.1%. When considering which time frame is most relevant, bear in mind that a majority of DC plan participants will live beyond 20 years in retirement.

## RETIREEES BENEFIT FROM LONG-TERM INVESTMENT IN STOCKS

Excess Annualized Returns of Stocks vs. Treasury Bonds (Percent)



**Past performance does not guarantee future results.**

Stock and Treasury bond market performance is represented by S&P 500 and Bloomberg US Treasury Index monthly total returns, respectively, from January 1973 to March 2022, with a rolling one-, five-, 10- and 20-year investment horizon.

As of June 30, 2022 | Source: AB

The example of participants who die at an early age illustrates the mortality risk of fixed annuities that require participants to surrender their assets—a decision that can't be undone. As can be seen in *Display 9*, it takes participants nearly 20 years after retirement to recoup the cost of their initial investment in the insurance and reach a point where they break even.

In practice, roughly 40% of plan participants don't make it to the break-even point. To minimize this mortality risk, they have the option to purchase a death-benefit rider, such as a return of premium. This amendment to an insurance contract enables an individual's beneficiaries to recover any assets surrendered minus any income already paid if they die earlier than expected. But these riders come at a cost in

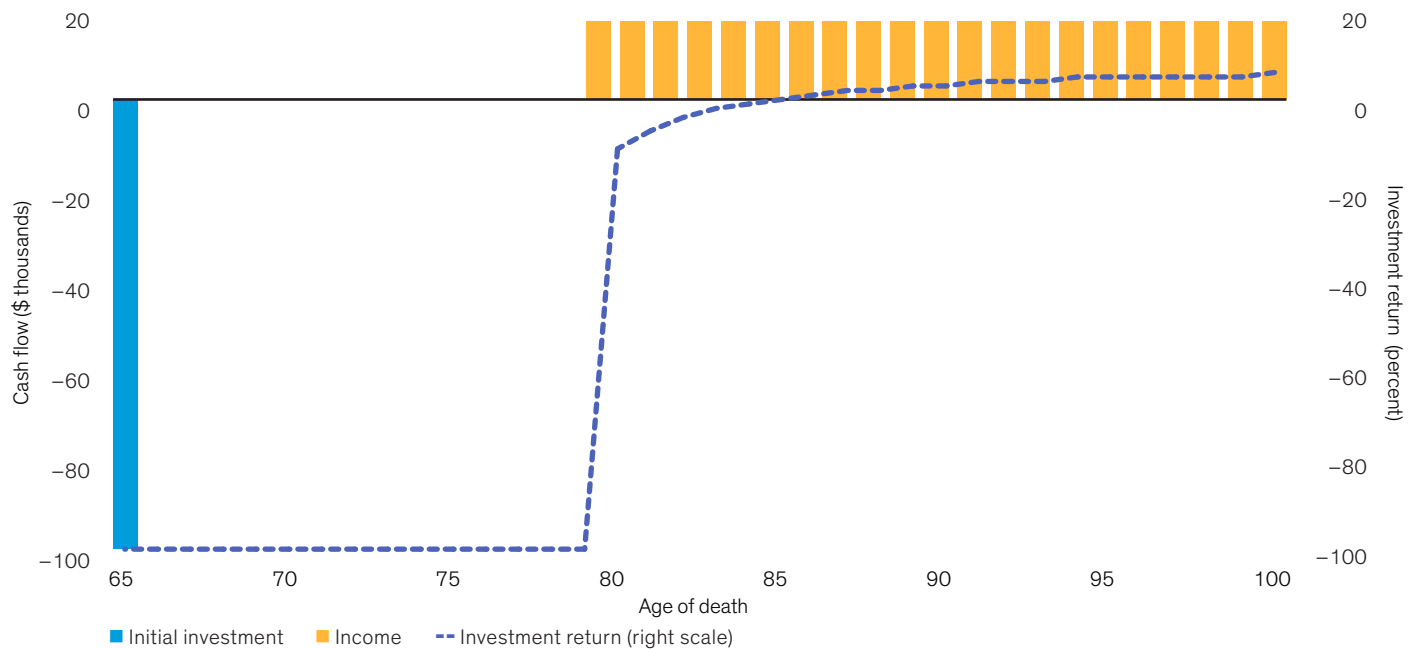
the form of lower income rates (see Appendix 1 for more information).

Participants who live beyond the median life expectancy will continue to receive income for as long as their lives last under this annuity contract, so they've eliminated their longevity risk—the risk of outliving their savings. But in exchange, they've invested for decades in an illiquid annuity that provides bond-like income; if they had instead stayed invested in a TDF with a mix of stocks and bonds, they would have had more opportunity to grow their account assets (see “Exploring Market Risk and Growth Opportunity Costs,” page 14). So, fixed annuities like a SPIA subject participants to a growth opportunity cost—and there are no rider options to address this risk (see Appendix 1 for more information).

**It takes nearly 20 years for an individual to recoup the cost of the initial investment in a fixed annuity and reach a break-even point. In practice, roughly 40% of participants don't make it to that point.**

## DISPLAY 9: A DEFERRED FIXED ANNUITY EXACERBATES MORTALITY RISK

Cash Flows and Investment Return of a QLAC



### For illustrative purposes only

Indicative annualized investment return experienced by an individual participant, contingent on his/her age of death. The annualized return is calculated as the internal rate of return with the initial investment as cash outflow and subsequent annuity income as cash inflows that terminate at each age of death from 80 to 100.

Investment returns before the age of 80 are -100%.

As of June 30, 2022 | Source: AB

# Inflation Can Erode the Spending Power of Income

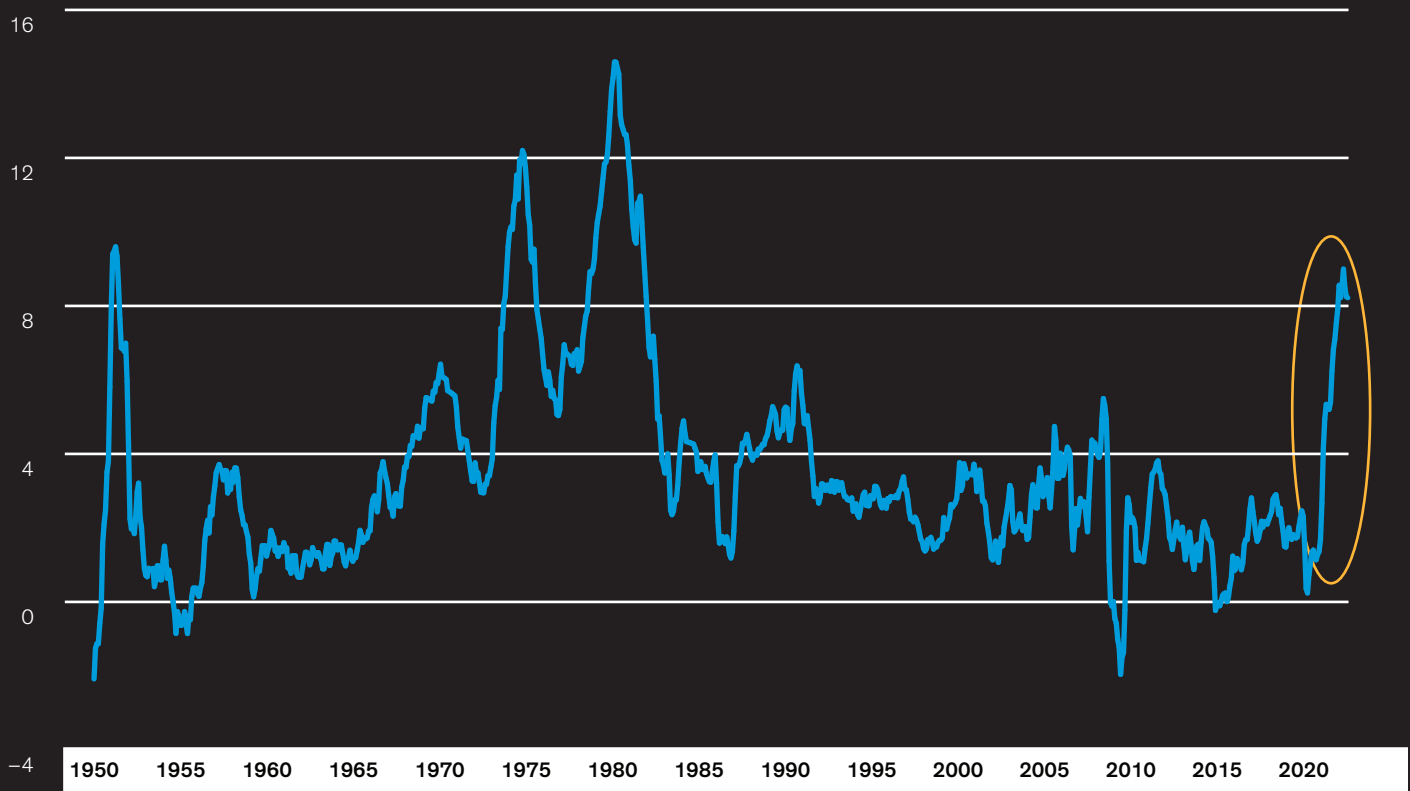
Inflation is a key risk with retirement income. For retirees and DC plan participants nearing retirement, rising price levels erode the purchasing power of money that's saved today to spend tomorrow. Even a modest level of inflation over time can severely damage almost anyone's lifetime income plans.

Inflation has varied quite a bit over the past 70 years, but it was relatively tame for roughly three decades before 2021 (*Display, below*). Consistently low inflation rates were a boon for retirees, especially those living on a fixed monthly income that wasn't adjusted for inflation—such as a DB pension without a cost of living adjustment (COLA) rider or a typical fixed annuity.

But inflation roared back in 2021, and while it's receded to some extent, even a 2% rate of inflation can eat away at buying power over time. At 2% inflation, \$100 of income today would be able to buy only \$82 worth of goods and services after 10 years—and only

## INFLATION—STEADY FOR MANY YEARS—SPIKED IN 2021 AND 2022

Trailing 12-Month US Inflation Rate (Percent)



Past performance does not guarantee future results.

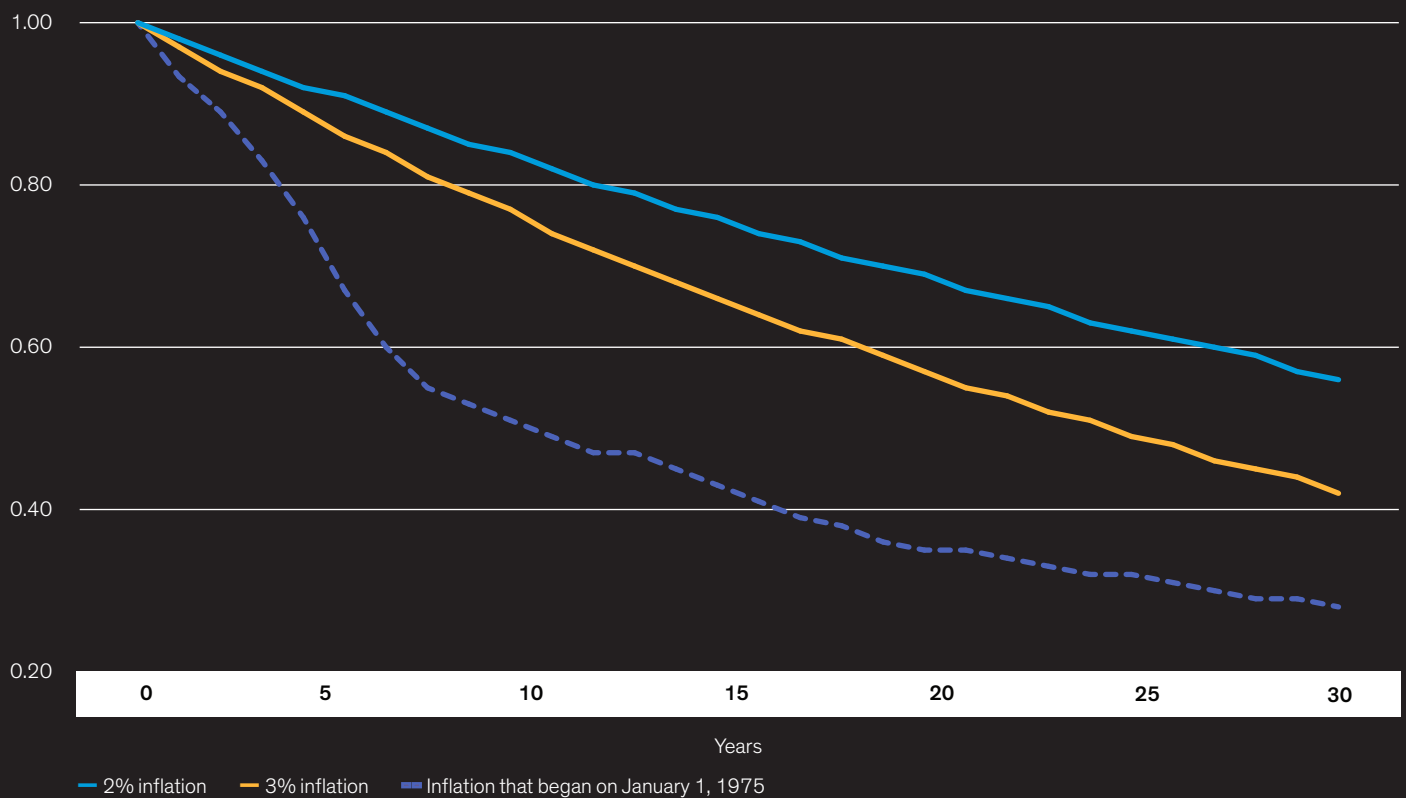
Through September 30, 2022 | Source: Bloomberg, Consumer Price Index and AB

\$55 worth of goods and services after 30 years. With modestly higher inflation of 3% per year, \$100 of buying power would fall to \$75 after 10 years and to just \$41 after 30 years. That inflation rate pales in comparison with the inflation spike that started in the mid-1970s, when purchasing power was cut in half after only 10 years and \$100 plunged to the equivalent of only \$28 after 30 years (*Display, below*).

If participants' retirement income payments don't grow over time—or even if they don't grow enough to offset inflation—their spending power will be severely impaired. So when projecting how much income is needed, it's important to adjust for the impact of inflation. We, and others in the industry, don't believe that retirement spending is constant. To provide a more refined way to assess retirees' likely withdrawals over time, we've developed a "living standard adjustment," or LISA (see Appendix 2 for more information).

## INFLATION ERODES REAL PURCHASING POWER OVER TIME

Inflation-Adjusted Value of One Dollar



**Past performance does not guarantee future results.**

As of June 30, 2022 | **Source:** Federal Reserve Bank of St. Louis, US Bureau of Labor Statistics and AB

Inflation is another concern when considering fixed annuities such as a SPIA. Annuity payments are typically set in nominal terms, so they don't increase along with rising prices. Therefore, rising prices can erode the purchasing power of that nominal income stream over time. The lack of an underlying link to inflation rates makes fixed annuities sensitive to inflation risk.

Participants can choose to add a cost of living adjustment (COLA) rider to the annuity. To offset a rising cost of living, this amendment to the insurance contract increases the income each year at a constant rate (2%, for example). However, the COLA rider isn't linked to the inflation rate, so it doesn't help with unexpected inflation increases. And it comes at the cost of lower initial income rates (see Appendix 1 for more information).

Someone who surrenders their savings up front for a fixed income payment—not inflation-adjusted—could regret the decision later in life, as market conditions or individual circumstances change. That's because the guaranteed income level paid by a fixed annuity is sensitive to the prevailing level of interest rates when it's purchased. So, buying fixed annuities at retirement poses a significant market-timing risk—the chance of locking in income payments when prevailing rates are low. Because the transaction is irrevocable, there's a significant risk of buyer's regret.

### **Income Solution #3: Qualified Longevity Annuity Contract (QLAC)**

A QLAC is a type of deferred fixed annuity. As with an immediate fixed annuity, deferred fixed annuities require individuals to surrender their assets up front, while income payments start years later. For example, if a person surrenders their account assets at age 65, income payments might start at age 80. In exchange for putting off those income payments until later years, participants receive significantly higher payment rates than they would get from an immediate fixed annuity.

**Someone who surrenders their savings up front for a fixed income payment—not inflation-adjusted—could regret the decision later in life.**

QLACs are funded from the assets within a qualified retirement plan or individual retirement account (IRA).<sup>17</sup> In this paper, we'll use QLACs to represent deferred fixed annuities.<sup>18</sup> Participants buy a QLAC by surrendering their assets, without the ability to revoke that decision. With QLAC-based solutions, participants must manage to avoid running out of money until the QLAC starts paying them income.

As with an immediate fixed annuity such as a SPIA, a QLAC imposes substantial costs with regard to the forgone asset-growth opportunity. And because income payments are deferred, the returns from a QLAC are more sensitive than a SPIA to the participant's death age: for example, any participant who dies before age 80 incurs a 100% loss (see Display 9, page 15), a severe mortality risk. Rider options, such as death benefits, are available, but they reduce the income rate (see Appendix 1 for more information).

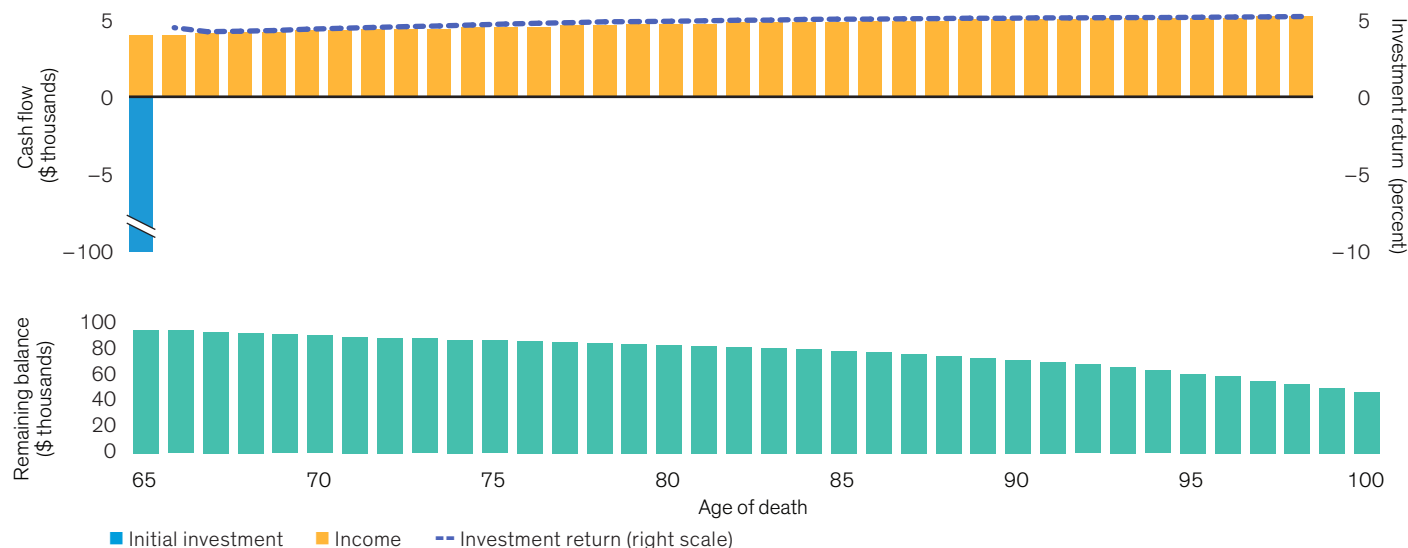
QLACs also face greater inflation risk. Fixed income payments are purchased many years before they actually start, and participants who survive to receive payments will see their income eroded by over a decade of inflation (see "Inflation Can Erode the Spending Power of Income," page 16, for more information).

<sup>17</sup> QLAC assets aren't subject to IRS RMD rules until income payouts start (current IRS rules require RMDs to begin by March 31 of the year after you turn 73). However, there's a limit of \$200,000 that can be put into a QLAC.

<sup>18</sup> For our analysis, we'll use a QLAC purchased at 65 with a payout start date of age 80.

## DISPLAY 10: A GLWB'S INVESTMENT RETURN ISN'T DRIVEN BY DEATH AGE

Cash Flows, Investment Return and Remaining Balance of GLWB



### For illustrative purposes only

Indicative annualized investment return experienced by an individual participant, contingent on his/her age of death. The annualized return is calculated as the internal rate of return with the initial investment as cash outflow and subsequent income and remaining balance at death as cash inflows. Remaining balance is net of income withdrawal and all fees. Guarantees are based on the financial strength and claims-paying ability of each insurance company.

As of June 30, 2022 | Source: AB

A QLAC's income level is also more sensitive to prevailing interest rates at purchase than a SPIA's, exposing it to even higher market-timing risk and buyers' regret. Recent market patterns provide a ready example. The 10-year US Treasury bond yield rose from less than 1% in autumn 2020 to about 4% in autumn 2022. Given the sharp increase in prevailing market interest rates, we estimate that the QLAC's guaranteed income rate almost doubled. So participants could buy the same level of income in 2022 by surrendering only half the amount of assets as in 2020.

The risks we've discussed for fixed annuity contracts are significant, and their costs are implicit. In other words, participants can't see these costs in clear detail when they buy a fixed annuity, which sets up the potential for an unwelcome surprise down the road.

### Income Solution #4: Guaranteed Lifetime Withdrawal Benefit (GLWB)

A GLWB is a lifetime income insurance rider incorporated into a contract on a participant's investment portfolio. With a GLWB, participants keep ownership of their insured portfolio, which is typically invested in a well-diversified mix of stocks, bonds and inflation-sensitive assets like Treasury Inflation-Protected Securities (TIPS).<sup>19</sup> Guaranteed income is withdrawn from the insured portfolio,

**Participants can't see implicit costs in clear detail when they buy a fixed annuity, which sets up the potential for an unwelcome surprise down the road.**

and if that portfolio runs out of funds, an insurance company steps in to pay the guaranteed income for the rest of the participant's life (see "How Does a GLWB Work?," page 20, for more information). If the portfolio has a remaining balance when the participant dies, it can be transferred to their beneficiaries.

The annual insurance premium for a GLWB is typically 1% of the portion of the portfolio covered by the insurance. Participants can buy the insurance before or at retirement, and the purchase is revocable—participants can cancel some or all of the insurance at any time with no restrictions. A GLWB's liquidity and flexibility can adapt to participants' evolving needs and help them avoid buyers' remorse.

<sup>19</sup> The asset allocation of the underlying insured portfolio can range from all growth assets (stocks) to all defensive assets (bonds and/or fixed index annuities (see Appendix 7 for more information).

# How Does a GLWB Work?

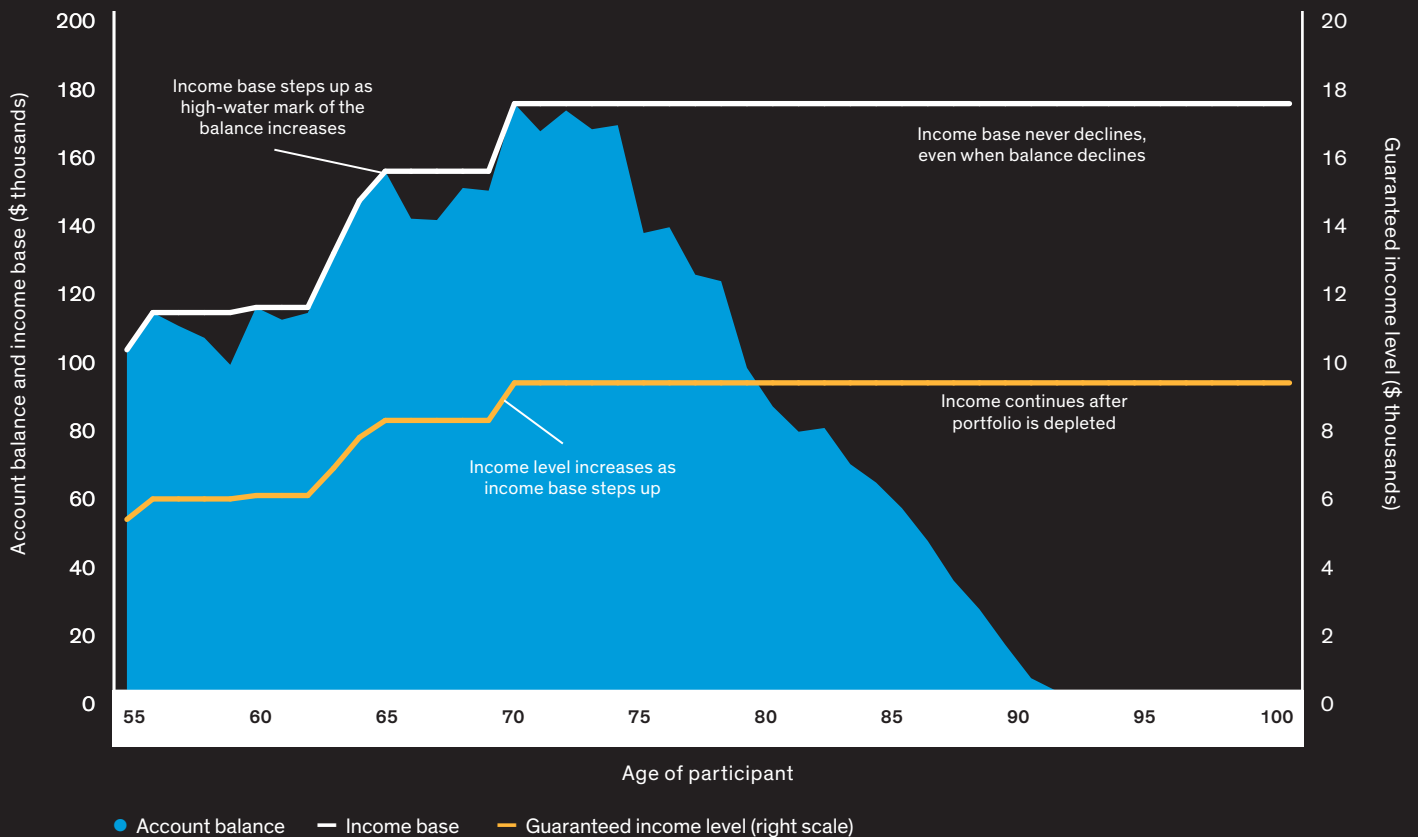
To understand the mechanics of a GLWB and how its design influences outcomes, opportunities and risks, it helps to look at a basic example of a participant with a GLWB, showing the participant’s experience leading up to retirement and what would happen if the participant’s investment portfolio were depleted to zero in retirement (*Display, below*).

We’ll assume the participant makes a one-time investment of \$100,000 at age 55 into a GLWB with an initial guaranteed annual income rate of 5%. The GLWB includes an income base that’s used to calculate the amount of guaranteed income. This base acts as a high-water mark—it can rise if the portfolio’s value, which is assessed annually,<sup>1</sup> exceeds the income base. However, it doesn’t decline if the portfolio’s value falls (see Appendix 4 for more information).

In this example, the income base is stepped up several times in the years leading up to the participant’s retirement at age 65, and even into his/her early retirement, raising the guaranteed income base. The account value fluctuates over time, but the income base and corresponding guaranteed income never decline—even in later years, as withdrawals start to reduce the account value.

Whenever the account value runs out, the lifetime annual income payments continue at the same level, because the underwriting insurer or insurers step in to fulfill the income guarantee.

## EXAMPLE OF HOW A GLWB WORKS



For illustrative purposes only

As of June 30, 2022 | Source: AB

<sup>1</sup> Some GLWB products may have a less beneficial step-up feature that is assessed less frequently. Guarantees are based on the financial strength and claims-paying ability of each insurance company.



Participants don't surrender their assets with a GLWB, so their age of death has little impact on the investment return (*Display 10, page 19*). Also, the GLWB's underlying assets should be invested prudently in a mix of growth and defensive assets, providing long-term growth potential for asset balances and income—an improvement over the bond-like nature of the return from a fixed annuity (a SPIA or QLAC). Given their design, GLWBs eliminate participants' longevity risk without introducing side effects such as mortality risk or growth opportunity cost. Income growth may also help offset the impact of inflation.

Because a GLWB's income rate is less sensitive to the prevailing market interest rate than a SPIA or QLAC, buying GLWB insurance imposes less market-timing risk. If participants use a dollar-cost-averaging approach to buying the GLWB before retirement, it may further reduce market-timing risk (see Appendix 3 for more information).

### Incorporating Insurance in a Lifetime Income Solution

We've described several approaches to insuring lifetime income within a DC plan: SPIAs, QLACs and GLWBs. Each approach comes with its own unique design and features, which influence the related cash flows, risks to participants and the magnitudes of those risks, and the costs—both explicit and implicit. We've summarized these aspects in *Display 11*.

In order to see how these solutions stack up against one another, which we'll do in the next chapter, it's necessary to determine the specific approach for deploying each solution—a determination that's influenced by the factors we've reviewed so far.

Because fixed annuities, like a SPIA and QLAC, require participants to irrevocably surrender their assets, it's not prudent for them to

## DISPLAY 11: HOW RETIREMENT INCOME INSURANCE SOLUTIONS STACK UP

		SPIA	QLAC	GLWB
Participant risks	Longevity risk	None	None	None
	Mortality risk	High	Highest	None
	Short-term market risk	None	None	Income never declines Balance subject to market risk
	Market timing risk	High	Highest	Moderate
	Buyer's regret risk	High*	Highest*	Lowest
	Growth opportunity cost (growth risk)	High	Highest	Negative (growth benefit)†
	Inflation risk	High	Highest	Low allocation to equity and TIPS within GLWB
Metrics	Income	Highest at retirement	Highest at deferred senior age	Highest growth potential
	Asset ownership liquidity/flexibility	None*	None*	Full ownership and control
Cost	Explicit insurance premium	None	None	Yes
	Total cost	High	Highest	Least, and less than explicit premium due to growth benefit

\* Fixed annuities (SPIA or QLAC) require irrevocable surrendering of assets at purchase.

† Our analysis assumes GLWBs have higher growth exposure than TDFs in retirement.

As of June 2023 | Source: AB

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surrender the full amount of their retirement savings. Partial annuitization is a more typical approach: the non-annuitized part of the account offers liquidity, growth potential and the possibility of having an ending asset balance to pass on to beneficiaries. The annuitized part offers a stable lifetime income floor.

For our analysis, we'll assume that 30% of a participant's account assets are used to buy a SPIA at retirement and the other 70% are invested in a TDF. Together, they represent a solution where allocations within the TDF aren't influenced by the presence of insurance.

Similarly, partial annuitization with a QLAC is a common solution, because the maximum allocation to a QLAC is regulated by the IRS and newly limited to \$200,000,

indexed for inflation. For our analysis, we'll model a solution in which 25% of assets are used to buy a QLAC at retirement, with payments starting at age 80; the other 75% is invested in a TDF.

The allocation to a GLWB is fully liquid and reversible. The target or default allocation to a GLWB is a plan-design decision, based on sponsors' specific goals and participant demographics. Still, these solutions typically allocate more to the GLWB than is the case with fixed annuities, since assets and liquidity aren't surrendered. As a result, GLWB-based solutions could deliver a higher level of guaranteed income than partially annuitized solutions, despite the fact that SPIA and QLAC contracts offer higher initial income rates.

For our analysis, we'll model solutions that allocate 100%, 75% and 50% to a GLWB<sup>20</sup> at retirement, with the rest of the assets invested in a balanced portfolio of stocks and bonds that represents an integrated, in-plan solution. The presence of income insurance in an integrated solution enables participants to benefit from greater growth exposure, since including insurance minimizes the potentially higher risk of running out of money that's typically associated with higher equity exposure.<sup>21</sup>

In each solution that includes a partial insurance allocation, we assume that the non-insured portion<sup>22</sup> uses a sustainable, self-insured withdrawal rate that's living-standard adjusted (LISA).<sup>23</sup>

### Key Takeaways

- We examined four representative lifetime income solutions: a non-guaranteed or self-insured solution and three insurance solutions—an immediate fixed annuity (SPIA), a deferred fixed annuity (QLAC) and income insurance on an underlying portfolio (GLWB).
- A traditional investment measure, the internal rate of return (IRR), can be used to calculate the annualized investment return of an individual portfolio, translating these different fee structures, income patterns and account balances into a common comparison.
- The SPIA provides steady, guaranteed income for life, but participants surrender their assets, creating mortality risk, and forgo growth potential on those assets. Fixed payments are vulnerable to inflation, and participants face time-of-purchase risk when locking in their payment rates.
- The QLAC also requires up-front asset surrender and a deferral of income in exchange for higher payments. Participants must avoid running out of money until income payments begin. Like SPIAs, QLACs impose growth opportunity costs, even more inflation risk, and much more time-of-purchase risk.
- Fixed annuity risks are significant—some can be reduced with contract riders, but at the cost of lower income rates. The costs of fixed annuities are implicit—participants can't see them at purchase, setting up a potential unwelcome surprise down the road.
- With a GLWB, participants keep their insured asset portfolio, typically invested in a diversified strategy. If it runs out, insurers pay the guaranteed lifetime income—for a premium. GLWB design eliminates longevity risk without introducing side effects like mortality risk or growth opportunity cost, and income growth may help offset inflation.

<sup>20</sup> We assume a GLWB containing a 50/50, well-diversified stock and bond portfolio.

<sup>21</sup> The indicative stock/bond balanced portfolio allocation starts with a mix of 80% stocks and 20% bonds at age 65, with stock exposure gradually reduced to 65% at age 80. For a GLWB-insured 50/50 stock and bond portfolio, the 75% GLWB +25% balanced solution has an average stock allocation of 55% (from age 65 to 85); the 50% GLWB + 50% balanced solution has an average stock allocation of 60% (from age 65 to 85).

<sup>22</sup> The self-insured sustainable withdrawal rate (LISA) depends on the asset allocation of the solution and the target ending age. For the representative TDF benchmark, it's 4.93% to age 79 (for the QLAC case) and 2.31% to age 100, with a 99.5% success probability. For the balanced stock/bond portfolio in the indicative GLWB-based solutions, it's 2.46% until age 100, with a 99.5% success probability. These withdrawal rates are estimated from a Monte Carlo simulation of 10,000 trials, using the AB Capital Markets Engine 2Q:2022 forecast.

<sup>23</sup> Refer to the living standard adjustment (LISA) in Appendix 2 for more information.

CHAPTER 4

# A Comprehensive Framework for Evaluating Solutions

It's a sizable challenge to evaluate and compare lifetime income solutions given their distinctive cash-flow patterns, underlying investment exposures, and balances of costs and benefits. Using a limited number of metrics in this process runs the risk of making an incomplete assessment—and reaching an incorrect conclusion. A comprehensive framework for comparing solutions must consider all factors that impact participants (*Display 12*), and should adhere to the following principles:

- **Focus on the individual—not the average.** Individual DC plan participants can't diversify their own age-of-death uncertainty by pooling large numbers of people as DB plans do. Participants can't smooth their investment outcomes over an indefinite time

horizon, either. Everyone's individual time horizon is unknown, but finite. Incorporating insurance can address these risks, but the specific type of insurance chosen can produce vastly different investment outcomes, depending on an individual's age of death.

- **Take a comprehensive look at participant risks.** All forms of lifetime income insurance eliminate longevity risk—the risk of living longer than the average life-span and outliving retirement savings. Income insurance can help, but any assets surrendered to an insurer create an undesirable side effect in the form of mortality risk—the risk of dying earlier than the average age, leaving income on the table. Ultimately, both risks matter.

## DISPLAY 12: EVALUATING INCOME SOLUTIONS FOR INDIVIDUALS

Key Issues Impacting Individual Participants Must Be Addressed

Consideration	Comprehensive Framework	
	Key Factors	Key Measures of Outcomes
Evaluation perspective	<b>Individual participant</b>	Individual's needs and experiences
Participant risks	Longevity risk Market risk <b>Mortality risk</b> <b>Growth risk</b> (Growth opportunity cost) <b>Inflation risk</b>	Total risk
Metric(s) for evaluation	Income <b>Balances and liquidity</b>	Total value
Cost of insurance	Explicit fees <b>Implicit costs</b>	Total cost

Factors in bold are crucial yet often omitted factors in DC income solution evaluation.

Source: AB

It's important to consider the effects of short-term investment losses when equity markets fall, which can reduce account assets and income potential. But using insurance to tackle this issue can also create an opportunity cost—insufficient equity exposure, which hurts the potential for the long-term growth of both account assets and income. Those trade-offs must also be assessed when evaluating lifetime income solutions. Inflation plays a role too: rising prices can eat away at the purchasing power of income over time, making it challenging for participants to maintain their standard of living throughout retirement.

- **Income isn't the only metric to evaluate.** Participants want lifetime income, but they also value access to their savings (or money) to handle emergencies or unplanned healthcare expenses—or

to leave a legacy. These twin needs mean that a comprehensive framework should also consider liquidity and access to any remaining account balances for participants or their beneficiaries.

- **Measuring the total insurance cost is critical.** It's important to assess the stated insurance premiums, charges and commissions when evaluating insurance solutions. But those aren't the only costs of income insurance. To fully measure the cost to a participant, a framework must also consider the impact of lost growth potential and the potential loss of any remaining assets when the participant dies.

Using this comprehensive framework as a guide, we'll further evaluate and compare our representative lifetime income solutions from a variety of angles. But because the total cost of lifetime income solutions

isn't always apparent from surface-level comparisons, and given that this is a critical input in determining the value of a solution, we first need to take a closer look at what "cost" really means.

### What's Under the Surface? A Deeper Dive into Total Insurance Cost

From the individual participant's perspective, the total cost of a lifetime income solution actually has two parts: the explicitly disclosed fees (annual insurance premiums, management and administrative fees) and the implicit costs imposed on participants (*Display 13*). Some fiduciaries only consider explicit fees when comparing solutions, overlooking the implicit costs of a fixed annuity–based solution, including a SPIA or QLAC. Let's examine both cost components more closely.

## DISPLAY 13: EXPLICIT FEES DON'T ACCOUNT FOR ALL LIFETIME INCOME COSTS

It's Critical to Take a Total-Cost Approach That Looks at All Aspects of the "Iceberg"

### Explicit Fees

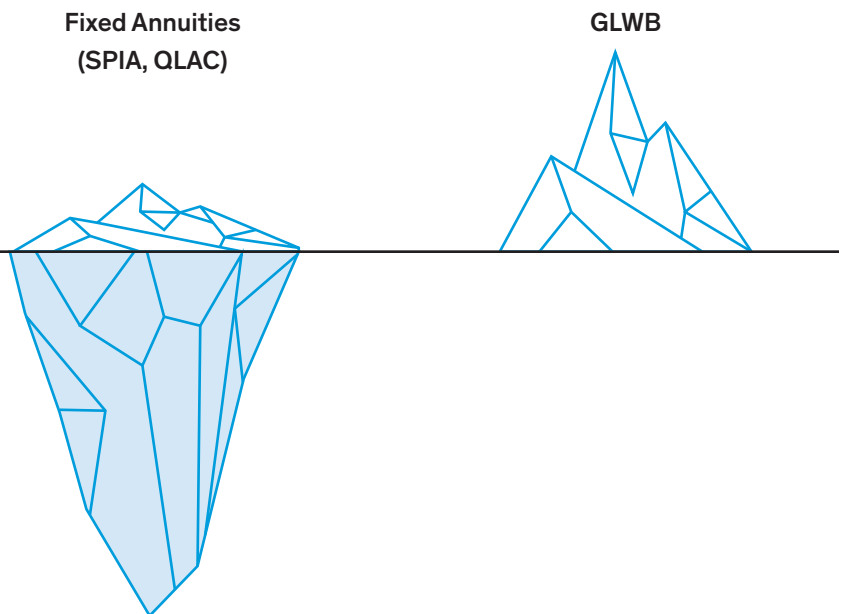
- Insurance premium
- Disclosed charges
- Sales commission/distribution cost

### Fixed Annuities (SPIA, QLAC)

### GLWB

### Implicit Costs

- Forgone growth potential from assets
- Mortality risk
- Fiduciary risk from lack of transparency and irrevocability of transactions



For illustrative purposes only

Source: AB

## Explicit Costs

Most people are familiar with explicit annual insurance premiums, whether the insurance covers their home, automobile or health. A GLWB contract works in a similar way, ensuring a lifetime income payment based on an individual's assets—even if those assets eventually run out. For that guarantee, the GLWB-based solution charges explicit and transparent annual insurance premiums and management fees. Participants can cancel the policy partially or completely at any time with no further penalty, just like any other type of insurance policy.

## Implicit Costs Embedded in Fixed Annuities

The costs of buying a fixed annuity (a SPIA or QLAC) are harder to determine at the surface level. Participants surrender their assets in exchange for the lifetime income contract—essentially a 100% up-front payment of an insurance premium that can't be revoked. Because the participant has no assets left that can be charged fees, the fixed annuity gives the appearance of having “no annual fee.”

In our view, fixed annuities actually impose three significant implicit costs on participants:

**1. Lost growth potential from assets.** The money participants use to buy an annuity is taken out of their DC plan assets (such as a TDF). If the insurance has less return potential than the plan assets, that's an opportunity cost—the participant won't benefit from the additional growth potential of those assets. Opportunity costs don't show up as explicit “fees,” so they're often overlooked when assessing costs. Buying annuities can also lead to other

**Opportunity costs don't show up as explicit “fees,” so they're often overlooked when assessing costs.**

asset-allocation challenges (see “Eliminating Longevity Risk Shouldn't Mean Abandoning Prudent Asset Allocation,” *page 26*).

- 2. Mortality risk from dying too soon.** When participants surrender their assets to buy a fixed annuity, they face the significant risk of dying before the average life-span, in which case they receive less income than expected. And they have nothing to leave behind for beneficiaries. The fixed annuity can be adapted to include protection against this risk, but again, it carries an additional hidden cost (see Appendix 1 for more information).
- 3. Fiduciary risks.** Implicit costs can also stem from a fixed annuity's lack of cost transparency, its irrevocable nature for participants and the risk that group insurance contracts are mispriced (see “Surrendering Assets May Help Some Participants at the Expense of Others,” *page 27*). Because these characteristics will almost certainly preclude fiduciaries from fully including annuities in their default strategies, participants may not make much use of them—negating the workforce-management benefits. Because these costs are hard to estimate, we'll exclude them from our quantitative assessments.

# Eliminating Longevity Risk Shouldn't Mean Abandoning Prudent Asset Allocation

Participants who seek to eliminate their risk of running out of money are long-term investors. Those who surrender all or some of their assets in exchange for a fixed annuity contract will face what we view as a mismatch with asset-allocation best practices (*Display, below*).

The core tenets of asset allocation are built on the need for liquidity, growth and risk control relative to an investor's time horizon. For example, a long-term investor with little need for liquidity will seek growth above other needs, making substantial allocations to investments like public equities, alternatives and private equities. An investor with a short time horizon and substantial need for liquidity, in contrast, will focus on risk control over asset growth, investing mostly in bonds or cash.

When a partial fixed annuity contract is combined with a stock/bond portfolio like a balanced strategy or TDF, the implementation reverses the core tenets. The insurance company invests the long-time-horizon, illiquid assets within the fixed annuity contract conservatively—essentially a proxy for a long-term, illiquid bond. The shorter-term, liquid assets the individual keeps then become the only option to achieve the desired growth exposure. So, these assets will likely have higher stock exposure and more downside risk than the long-term assets invested in the fixed annuity.

## FIXED ANNUITY–BASED SOLUTIONS CREATE A MISMATCHED ASSET ALLOCATION

Consideration	Long Time Horizon	Short Time Horizon
Liquidity need	Low	High
Growth need	High	Low
Required risk management	Low	High
Prudent asset allocation	Equities, balanced, private equity	Bonds, cash
Fixed annuity–based solution	Bonds	Equities, balanced

Source: AB

But because these liquid assets are also the only way to manage short-term risk, they typically don't focus enough on the needed growth-oriented investments, and neither does the illiquid part of the participant's allocation, which is already invested conservatively through the annuity. This reduces the participant's overall equity exposure, imposing a growth opportunity cost. Annuities play a necessary role when a participant's portfolio goal is income for life, but overall portfolio design should still align with asset-allocation best practices.

Depending on the design of insurance solutions, their implicit costs can be sizable, which could make the solution's total cost quite a bit higher than its explicit fee. In the following section, we'll explain how we quantify the total benefit (or cost) of insurance to participants' investment returns.

### **Evaluating the Total Cost of Lifetime Income for a Participant**

In Chapter 3, we introduced our approach to calculating individual investment returns from lifetime income solutions using the IRR measure. These returns vary by the type of solution and the participant's age of death (ranging from 65 to 100).

In this chapter, we'll apply this same approach to evaluate the total cost of lifetime income solutions, expressed as the returns an individual participant experiences relative to a TDF benchmark. To capture the impacts of market risk and uncertainty around age of death, we used a Monte Carlo simulation to produce 10,000 market outcome trials (see Appendix 5 for more information). For each market trial, we simulated the participant's age of death according to actuarial mortality tables, and calculated the annualized investment return for each market trial and age of death. The simulation captures both the market risk—from asset-class returns and inflation—and the age-of-death uncertainty experienced by each individual participant.

Comparing these individual annualized investment returns with those of a TDF benchmark with self-insured withdrawals (see *footnote 10, page 6*, for more information) produces a *relative investment return* (*Display 14, page 28*). Negative numbers represent a cost of insurance, while positive numbers represent a benefit. The distribution of the relative investment returns represents the annualized insurance cost (or benefit) for individual participants. This enables us to quantify the total cost or benefit of any lifetime income solution from the individual's perspective, regardless of the solution's fee structure, cash-flow pattern or underlying investments.

For example, with a 100% SPIA, an individual participant who experiences an outcome in the uppermost extreme (the 95th percentile) would see a positive annualized relative return, or benefit, of 0.9%. A participant who experiences an outcome in the lowermost extreme (the fifth percentile) would see a  $-38.7\%$  relative return, or cost. A participant is expected to experience a cost of  $-8.6\%$  a year on average.

## **Surrendering assets may help some participants at the expense of others**

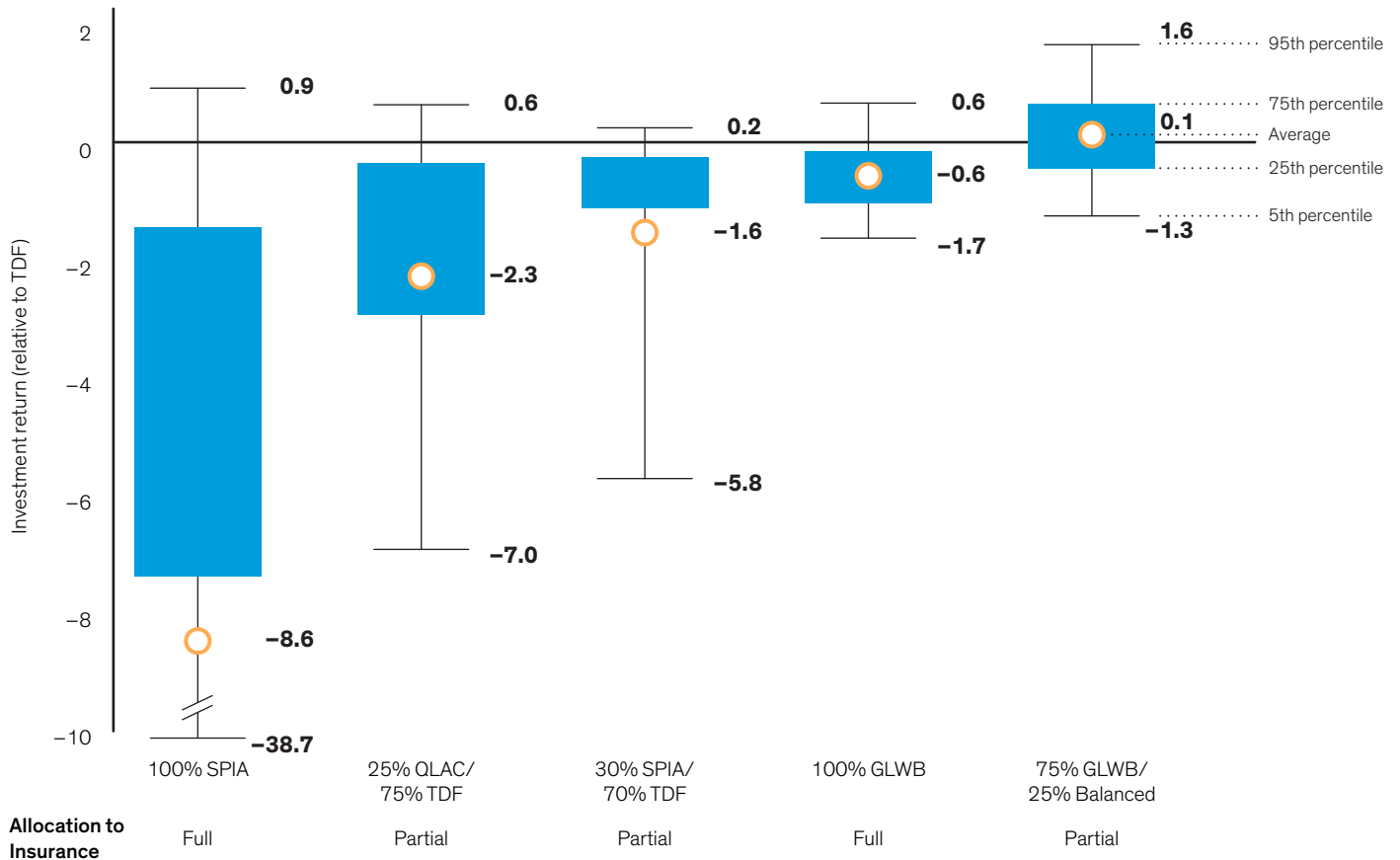
In all fixed annuity-based solutions, assets surrendered up front by participants who end up with shorter-than-average life-spans help insurance companies offset the liability of paying income to participants who live longer than average. But people's life-spans are correlated with socioeconomic status—a higher socioeconomic status is associated with higher life expectancy.<sup>1</sup> If there's a significant disparity in socioeconomic status among a DC plan's participants, adopting a fixed annuity-based income solution may unintentionally transfer wealth from those with a lower socioeconomic status to those with a higher one.

How does that happen? If participants with a lower socioeconomic status tend to die sooner, and they have no assets to leave to their beneficiaries—assets were surrendered up front for the annuity—the remaining participants with annuities benefit from the relatively early death of other participants. Group fixed annuities that are priced without considering longevity differences across socioeconomic cohorts can worsen existing wealth inequity, perhaps creating more fiduciary risk. This wealth transfer can be alleviated by a death benefit or by using an annuity that doesn't require participants to surrender their assets.

<sup>1</sup> Raj Chetty et al., "The Association Between Income and Life Expectancy in the United States, 2001–2014," *JAMA* 315, no. 16 (April 26, 2016):1750–1766, doi:10.1001/jama.2016.4226.

## DISPLAY 14: REMARKABLE COST DIFFERENCES AMONG INSURANCE SOLUTIONS

Distribution of Individual Participant IRRs: Net of Fees and Insurance Premiums vs. TDF with Self-Insured LISA Withdrawal (Percent)



### For illustrative purposes only

Based on a Monte Carlo simulation of 10,000 trials from age 65 to 100, using the AB Capital Markets Engine 2Q:2022 forecast. Relative investment return distribution is the distribution of each solution's investment return relative to that of the TDF with self-insured withdrawal, taking into consideration both future market risk and age-of-death uncertainty experienced by individual participants retiring at age 65. The investment return of each solution is calculated as the internal rate of return, with the initial investment at age 65 as cash outflow, and subsequent income and remaining balances if applicable as cash inflow that terminate at each age from 65 to 100. For partial annuitization solutions, the non-insured portion is withdrawn with the self-insured LISA withdrawal rates.

As of June 30, 2022 | Source: AB

Our analysis reveals remarkable differences among the annualized investment returns for each approach relative to the self-insured TDF—in other words, the cost of insurance.

### Fixed annuities carry sizable average costs relative to a GLWB.

It may be surprising to learn that SPIAs, insurance solutions with no explicit annual fees and often thought of as “free” or “no annual fee,” have the worst average “cost” of more than –8%. Even with

solutions that are only partially annuitized, fixed annuity–based solutions (both the 25% QLAC and 30% SPIA solutions) still have significant annual costs of –1.6% or more, on average. In contrast, a GLWB carrying an explicit 1% annual insurance premium has the lowest average cost at –0.6%; a partial allocation to a GLWB (75% GLWB, 25% balanced) actually produces a slightly positive average investment return (a benefit) relative to the self-insured TDF benchmark.



**Individual outcomes with fixed annuities are wide-ranging.**

As we mentioned earlier, lifetime income solutions need to solve for the individual participant, not just the average one, so the dispersion of returns represents the range of potential investment costs to individual participants. The mortality risk of the irrevocable fixed annuity contracts (SPIA and QLAC) certainly plays a major role in their extremely wide-ranging outcomes. The 100% SPIA solution's relative returns, as discussed earlier, range from a cost of -38.7% to a benefit of 0.9%. Plan sponsors shouldn't underestimate the impact of these extreme outcomes, because a significant number of participants will experience them—which could increase fiduciary risk. Fixed annuities (SPIAs and QLACs) also lack any growth exposure, which weighs down their investment-return potential versus the self-insured target-date benchmark, contributing to the broader return dispersion as well.

Collectively, these implicit costs hurt the 100% SPIA solution's return. By solving only for longevity risk, the fixed annuity introduces sizable investment-return costs due to mortality risk and lack of market growth potential. Given the average cost of -8.6% per year and the significant risk of more extreme costs, it's understandable that retirees

**Fixed annuities lack any growth exposure, which weighs down their investment-return potential versus the self-insured target-date benchmark.**

are typically reluctant to annuitize their assets and that the adoption rate of fixed annuities is low, even though they offer high guaranteed-income levels (the "annuitization puzzle" that plan sponsors face).

Mortality risk and opportunity costs also impact partial-annuity solutions that use fixed annuities (such as a SPIA or QLAC), though to a lesser degree. However, these partial-annuity solutions still produce significantly lower average returns (higher costs) as well as wider return dispersions, with a worse upside and downside than GLWB-based solutions. The cost of a 25% QLAC solution, for example, ranges from -7.0% (fifth percentile) to 0.6% (95th percentile).

**GLWB solutions have a much tighter and more reliable relative return range.** This characteristic could help plan sponsors and participants be more comfortable with GLWBs, despite the explicit annual insurance premium. A GLWB's average relative investment return of -0.6% per year is actually less than the 1% explicit annual insurance premium, in our analysis. That's because a GLWB has greater growth exposure than the benchmark TDF in retirement, which helps offset the insurance premium. The 75% GLWB/25% balanced-account solution has a positive average return versus the self-insured benchmark, with a better upside and downside than any other solution in our comparison.

The key takeaway: plan sponsors can hedge longevity risk by using a partial-GLWB approach without adding incremental average costs.

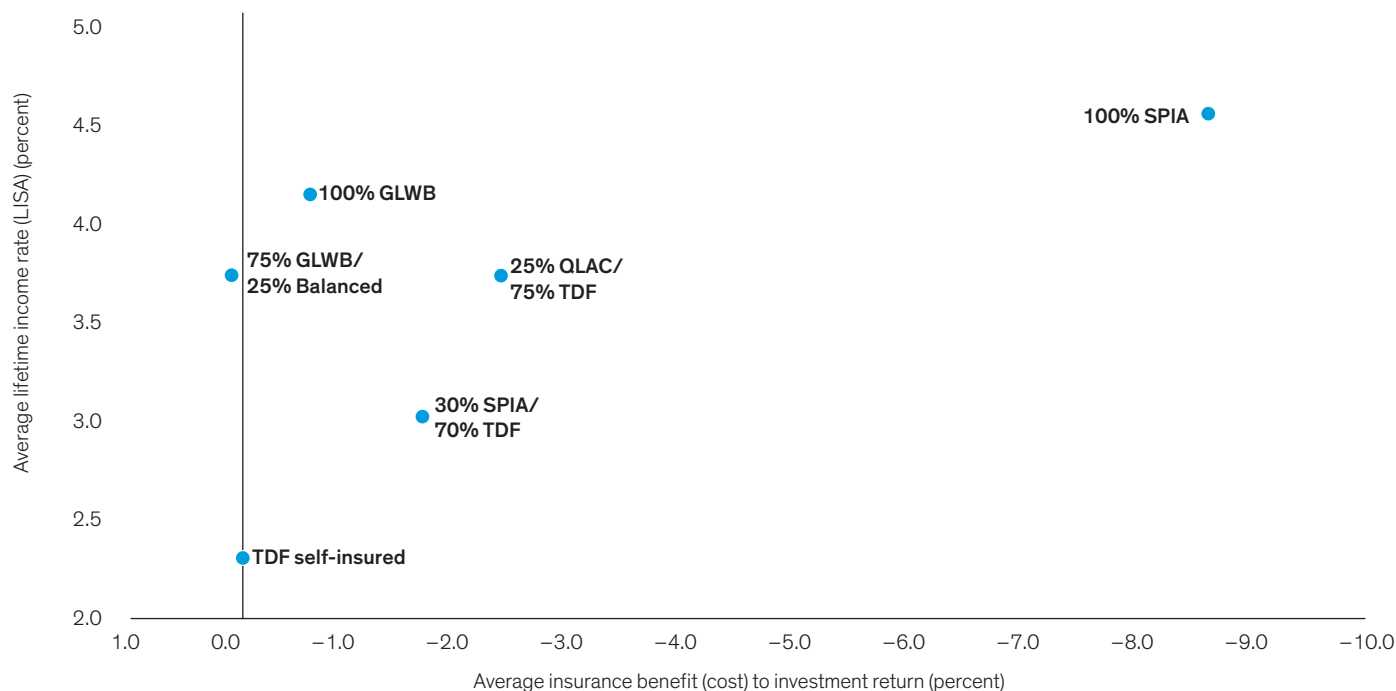
### The Income/Cost Trade-Off Favors GLWB-Based Solutions for Most Participants

Our investment-return-based metric provides an effective way to measure the total cost of insurance solutions versus a self-insured

**Plan sponsors can hedge longevity risk by using a partial-GLWB approach without adding incremental average costs.**

TDF approach, but lifetime income is still the primary objective. To change the lens, we can take our framework further, using it to assess the trade-off between the insurance cost (which we discussed in the previous section) and the income benefit of any lifetime income solution. This puts all solutions on a level playing field, no matter what fee structure or features they offer. Specifically, we'll compare the average total insurance cost to the median inflation-adjusted (LISA) lifetime income benefit (*Display 15*).

## DISPLAY 15: INCOME/COST TRADE-OFF FAVORS GLWB-BASED SOLUTIONS FOR TYPICAL PARTICIPANTS



#### Analysis provided for illustrative purposes only

The average insurance benefit (cost) is the average of individual participants' internal rate of return relative to a TDF self-insured benchmark, estimated in a Monte Carlo simulation of 10,000 trials, with age-of-death uncertainty from age 65 to 100, using the AB Capital Markets Engine 2Q:2022 forecast. The average lifetime income rate (LISA) is the median living-standard-adjusted income rate, averaged from age 65 to 100.

As of June 30, 2022 | Source: AB

As a reminder, we're comparing insurance solutions to our benchmark TDF with a self-insured withdrawal. That benchmark solution has no insurance cost and provides the lowest sustainable withdrawal rate that nearly matches the certain lifetime income of insurance.

The 100% SPIA solution produces the highest income at 4.5% but also the highest cost of -8.6%, a result of the implicit costs from the risks noted earlier: mortality risk and sacrificed growth potential due to the up-front asset surrender. A partial-annuity solution using either the 30% SPIA or 25% QLAC significantly reduces cost, but also the income rate.

A 100% GLWB solution has a lower cost and higher income than the two partial-annuity solutions because it hedges longevity risk without introducing other risks, such as mortality risk and growth opportunity cost. The solution with a 75% GLWB allocation delivers, on average, guaranteed income for life with no incremental insurance cost. In our income/total-cost comparison, GLWB-based solutions seem more "efficient." They have either a

higher income rate than other solutions at the same total cost or a lower total cost than other solutions at the same income rate.

Comparing income rates and insurance cost, averaged across individual experiences, provides a summary snapshot of how different lifetime income solutions fare. But it doesn't:

- Explicitly capture remaining account balances as a benefit to participants, so it doesn't reflect different participant needs for income and balances. Instead, the impact of mortality risk and growth opportunity cost on the account balance is implicitly captured in the total cost.
- Capture the tail risks (extreme negative outcomes) experienced by individual participants. So the extreme negative outcomes from fixed annuity-based solutions (such as the SPIA and QLAC) that we discussed earlier aren't shown through this lens.

In the next section, we'll compare total value to total risk as a way to assess the optimal lifetime income solutions for individual participants who have different needs.

# Participants express a clear need to retain growth and liquidity

Planning for retirement is hard, given the uncertainties around life-span and market conditions. As participants move through retirement, they gain more information about their health, market performance and spending needs.

Armed with this information, they may want to change or adjust their plans to account for greater income or a shift to a heavier focus on liquidity, growth and/or their legacy. For assets that participants have already surrendered in exchange for a fixed annuity contract, that flexibility no longer exists.

Surrendering assets and dying early creates a significant investment loss that may damage the financial prospects of the participant's spouse, partner, children or others who may rely on them for support. Not surprisingly, our 2023 *Inside the Minds of Plan Participants* survey strikingly illustrates this asset-ownership desire. We gave participants a choice of two options:

- \$50,000 in guaranteed annual income, but your money wouldn't grow with the stock market, and you would not have access to the principal in your account; or
- \$40,000 in guaranteed annual income, but your money could grow with the stock market and you would be able to access the money in your account.

Two-thirds (68%) of respondents chose the lower amount in order to keep ownership of their assets and maintain the potential for asset growth in rising markets. Participants may need to improve their financial and investing acumen, but they certainly grasp the benefits of market growth and access to their funds.

**Two-thirds of survey respondents chose a lower income amount in order to keep ownership of their assets and maintain the potential for asset growth in rising markets.**

## Which Is the Best Lifetime Income Solution? It Depends on a Participant's Needs

As we measure the impact of all the factors participants face, we also must capture the uncertain outcomes from lifetime income solutions, whether from market risk, inflation risk, the uncertainty of how long each participant will live or some other source.

We also have to account for participants' diverse needs when it comes to their relative preferences for steady income and access to remaining account balances. So we'll look at not just a typical participant, but also one focused only on income and one with a strong preference for a remaining asset balance (see "Participants Express a Clear Need to Retain Growth and Liquidity").

To determine the most effective solution, we can quantify the trade-off participants would have to make between the expected (average) total value of each lifetime income solution and its total risk. The total value measure incorporates both income and remaining account balances, while total risk measures the risk that actual outcomes are less than the expected total value. This shortfall can happen due to any number of risks, including mortality, longevity, market and inflation risk (see Appendix 6 for more information). We'll also include a self-insured target-date benchmark<sup>24</sup> in our analysis.

Our DC plan participant survey suggests that the majority of participants want both income *and* access to their remaining account balances, with lifetime income being their primary concern. To incorporate those preferences into our quantitative analysis, we can apply weightings to

<sup>24</sup> Our benchmark TDF with a target 4.0% LISA withdrawal rate represents an approach without insurance. The average total value and total risk of all other solutions are presented as relative changes from this benchmark: a basic TDF self-insured approach with a constant 2.3% LISA withdrawal rate to represent a self-insured case, with a 99.5% or higher probability of not running out of money; a 100% immediate fixed annuity (SPIA); a 30% immediate fixed annuity (SPIA)/70% TDF; a 25% deferred fixed annuity (QLAC)/75% TDF; a 100% GLWB; a 75% GLWB/25% balanced solution; and a 50% GLWB/50% balanced solution.

both—essentially a “needs allocation.” In the case of the typical participant, we assume 70% of the emphasis is on income and 30% is on remaining asset balances (from a total of 100%).

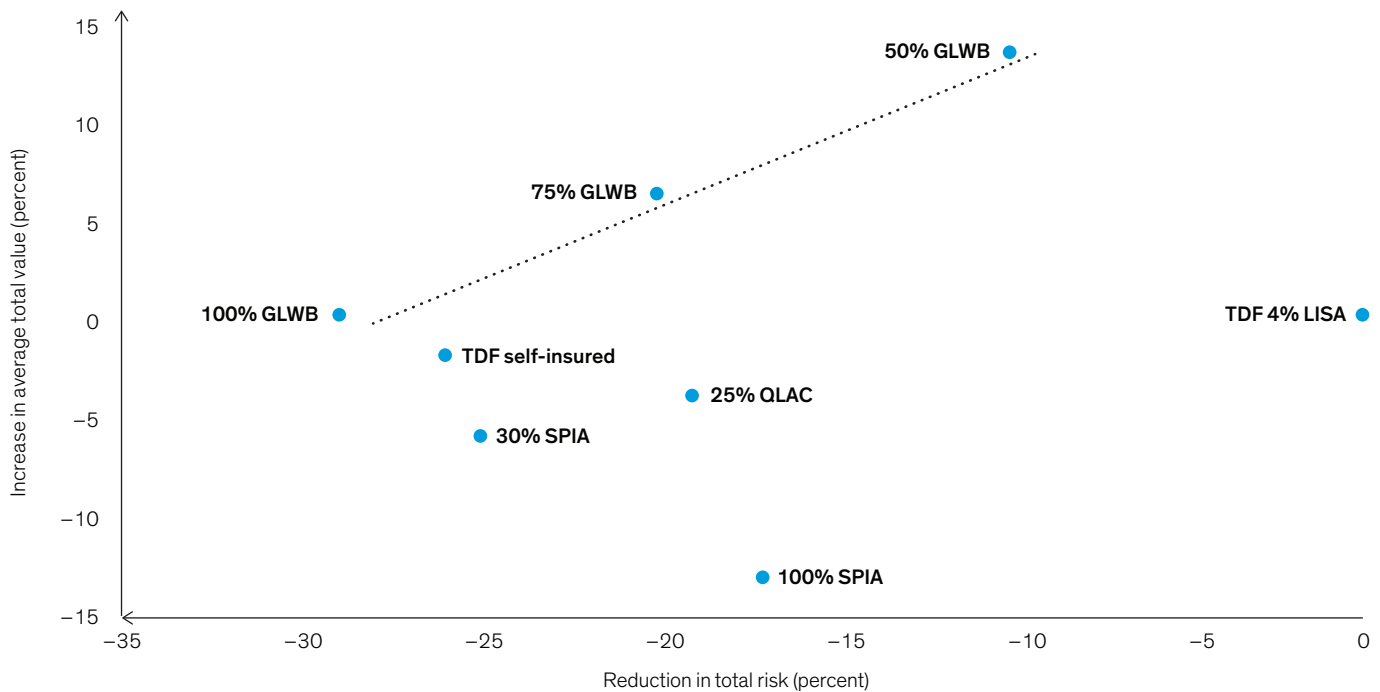
In *Display 16*, we show the various lifetime income solutions, including the self-insured target-date benchmark. For reference, we’ve also plotted a TDF with no attempt at income insurance—not even a self-insured approach. For each solution, we show the change in total value and the risk reduction relative to the uninsured TDF.

**Our DC plan participant survey suggests that the majority of participants want both income and access to remaining account balances, but lifetime income is their primary concern.**

For typical participants, the GLWB-based solutions are more efficient than any other, including the self-insured target-date benchmark. They either deliver a higher

average total value (including income and balance) for the same total risk level as other solutions, or have less total risk given the same level of average total value.

**DISPLAY 16: A GLWB-BASED, INTEGRATED SOLUTION DELIVERS THE BEST TOTAL VALUE/TOTAL RISK TRADE-OFF FOR TYPICAL PARTICIPANTS**



**For illustrative purposes only**

Based on a Monte Carlo simulation of 10,000 trials from age 65 to 100, using the AB Capital Markets Engine 2Q:2022 forecast. For each trial, individual participant is exposed to market risk, inflation risk, and age-of-death uncertainty (mortality and longevity risk). The total value experienced by an individual in each trial is the preference-weighted sum of the value of income received (LISA and risk adjusted for any income decline along each simulation trial) and the value of remaining balances (LISA) upon death. Total risk captures the impact of market risk, inflation risk, mortality risk and longevity risk, and is measured by the semi-standard deviation (downside from the average) of the total value across trials. The average total value and total risk are presented as the change from those of the TDF 4% LISA benchmark. For typical participants, we assume preference weights of 0.7 on income and 0.3 on balances.

As of June 30, 2022 | Source: AB

Why is this? GLWB insurance eliminates an individual's longevity risk (the risk of outliving income payments), boosting average total value and decreasing total risk. And it does so without introducing other side effects, such as mortality risk or growth opportunity cost. Plan sponsors and participants can choose the level of GLWB insurance (ranging from 50% to 100% in our graph) that fits their value/risk preferences.

Unlike GLWB-based solutions, fixed annuity-based solutions (the SPIA or QLAC) eliminate longevity risk with their guaranteed payments, but they introduce both mortality risk (dying earlier than expected and leaving income payments on the table) and growth opportunity cost. Both of these result in less average total value than GLWB-based solutions—and higher total risk.

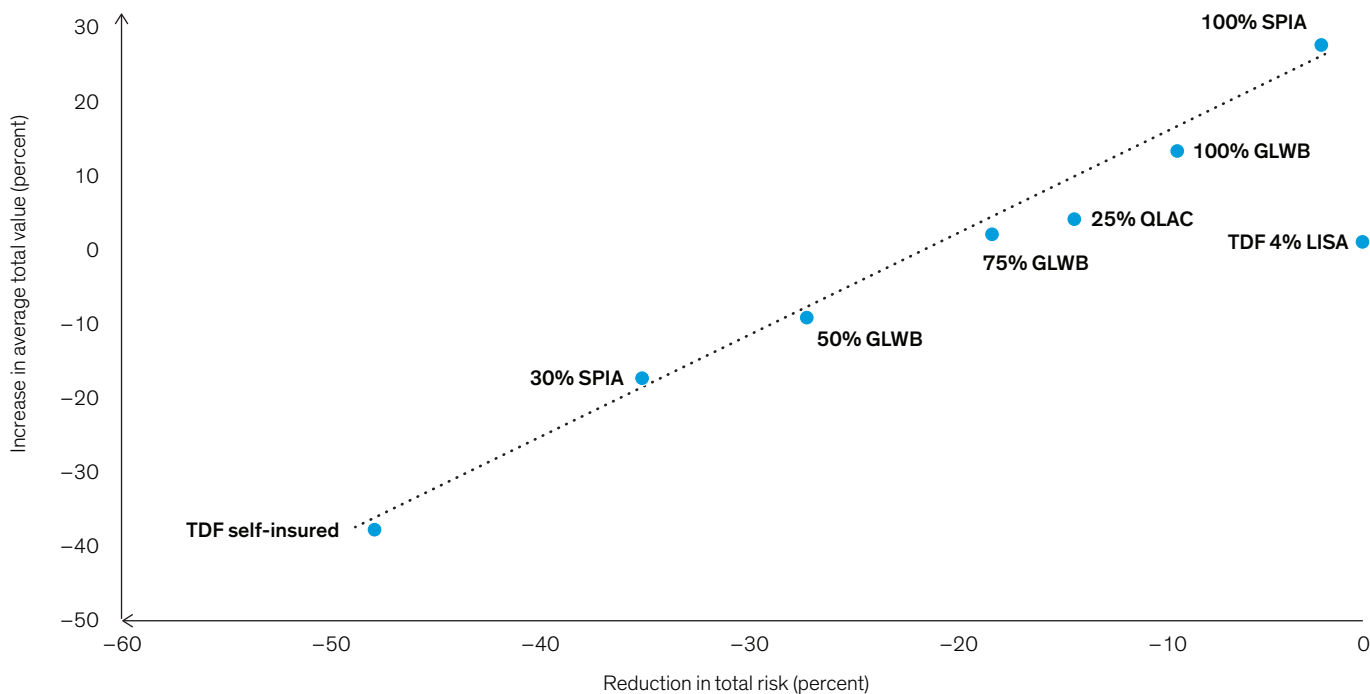
TDFs aren't good lifetime income choices for typical participants. Participants either spend too much and face significant longevity risk

(as in the non-insured TDF with a 4% LISA), or they underspend (as in the self-insured TDF with a lower withdrawal rate). Both results are less efficient than those of the GLWB-based solutions.

**For Immediate Income Maximizers, a Full Immediate Fixed Annuity Delivers the Most Value**

Some participants care only about maximizing their immediate income at all costs. To do that, they're willing to sacrifice flexibility, liquidity and the ability to leave a legacy to their beneficiaries. They're also willing to bear higher total risk (in this case, mortality, lack of future income growth and inflation risk). In our analysis, we assume that these participants would place a 100% weighting on income and no weighting on remaining account balances. For these immediate income-focused participants, a 100% immediate fixed annuity (using a SPIA) has the highest total value (*Display 17*).

**DISPLAY 17: FULL IMMEDIATE ANNUITIZATION DELIVERS THE HIGHEST VALUE FOR PARTICIPANTS WHO CARE ONLY ABOUT INCOME**



**Analysis provided for illustrative purposes only**

Based on a Monte Carlo simulation of 10,000 trials from age 65 to 100, using the AB Capital Markets Engine 2Q:2022 forecast. For each trial, the individual participant is exposed to market risk, inflation risk and age-of-death uncertainty (mortality and longevity risk). The total value experienced by an individual in each trial is the preference-weighted sum of the value of income received (LISA and risk adjusted for any income decline along each simulation trial) and the value of remaining balances (LISA) upon death. Total risk captures the impact of market risk, inflation risk, mortality risk and longevity risk, and is measured by the semi-standard deviation (downside from the average) of the total value across trials. The average total value and total risk are presented as the change from those of the TDF 4% LISA benchmark. For income-only participants, we assume preference weights of 1.0 on income and 0 on balances.

As of June 30, 2022 | Source: AB

That makes sense, because the 100% SPIA solution has the highest initial guaranteed income level, and its high total risk doesn't matter to this type of participant. A partial 30% SPIA, with the other 70% in a TDF, delivers much less total value for income seekers. The solutions with 100% and 75% allocations to a GLWB deliver the second- and third-highest average total income value. QLAC-based solutions provide less value and are riskier, because participants must withdraw at a low rate to keep from running out of money before the QLAC income payments start.

So, for participants looking to maximize initial income, annuitizing fully in a SPIA or allocating more than 75% to a GLWB offer more total value at lower total risk than the non-insured target-date benchmark.

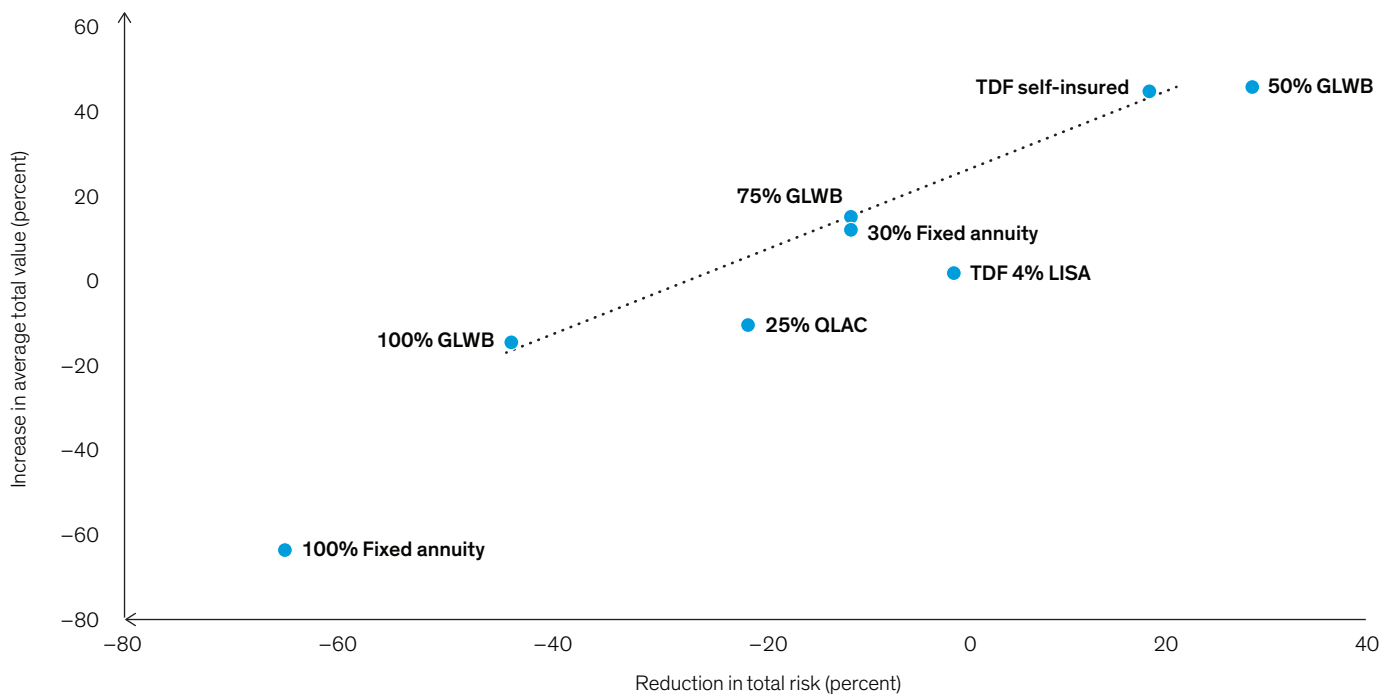
**Self-Insurance May Work—for Participants Who Can Afford It**

Some participants may be able to tap into a substantial amount of guaranteed retirement income from other sources: perhaps Social Security or a DB plan. Or they may be top executives with enough wealth that they can self-insure. Given these resources, they don't need their DC plans to generate substantial lifetime income. For them, the best solution

is to avoid the cost of insurance, withdraw minimal income, and keep the remaining assets in growth investments. For this cohort of participants, we place only a 30% weighting on income and 70% on remaining balances.

Based on our results, fixed annuity-based solutions (the SPIA and QLAC) are clearly not desirable (*Display 18*) for these participants. They introduce significant mortality risk and growth opportunity cost, because assets are surrendered up front. Both risks will reduce remaining asset balances and, as a result, total value. Solutions with a high level of GLWB insurance (100% or 75%) also deliver less total value than the self-insured

**DISPLAY 18: TDFs MAY WORK FOR PARTICIPANTS WHO DON'T NEED INCOME INSURANCE**



**Analysis provided for illustrative purposes only**

Based on a Monte Carlo simulation of 10,000 trials from age 65 to 100, using the AB Capital Markets Engine 2Q:2022 forecast. For each trial, the individual participant is exposed to market risk, inflation risk and age-of-death uncertainty (mortality and longevity risk). The total value experienced by an individual in each trial is the preference-weighted sum of the value of income received (LISA and risk adjusted for any income decline along each simulation trial) and the value of remaining balances (LISA) upon death. Total risk captures the impact of market risk, inflation risk, mortality risk and longevity risk, and is measured by the semi-standard deviation (downside from the average) of the total value across trials. The average total value and total risk are presented as the change from those of the TDF 4% LISA benchmark. For income-only participants, we assume preference weights of 0.3 on income and 0.7 on balances.

As of June 30, 2022 | Source: AB

target-date option, because GLWB insurance is designed to convert balances in order to increase lifetime income. That's the opposite of what these participants need.

However, a 50% GLWB solution can deliver the same total value as the self-insured TDF, because the GLWB's higher exposure to growth investments offsets the drag of its higher income withdrawals on the growth of the account balance. Yet it does so at a higher total risk. This result suggests that, even for participants who don't need income insurance, a partial-GLWB solution can still deliver reasonable outcomes.

To sum all this up, different income solutions fit different participants' needs. Annuitizing fully maximizes the value for those who only

care about maximizing initial income, and self-insured target-date solutions may work well for participants who don't need lifetime income. However, across the wide spectrum of plan participants, the GLWB-based solutions consistently meet the needs of participants nearly as well as, or better than, other income solutions.

For plan sponsors seeking a lifetime income solution that can benefit a wide spectrum of workers, we believe that a GLWB-based solution deserves serious consideration. Its compelling overall value gives it a better chance of attracting a majority of plan participants, and it offers them a seamless continuum along the retirement-saving path they're already traveling. And because a GLWB can be deployed as a plan's QDIA, plan sponsors can harness the power of automation to drive better adoption.

### Key Takeaways

- Our comprehensive framework for comparing lifetime income solutions considers all factors that impact participants, and encompasses both explicitly disclosed fees and implicit costs imposed on participants.
- Implicit costs hurt fixed annuity solutions, creating wide-ranging outcomes—some of them significantly

negative. GLWB solutions have a much tighter and more reliable range with limited implicit costs, enabling plan sponsors to hedge longevity risk using a partial-GLWB approach without adding incremental costs on average.

- Different income solutions fit different participants' needs. Annuitizing fully maximizes the value for those who only care about maximizing initial income, and self-insured target-date solutions

may work well for participants who don't need lifetime income or are wealthy enough to self-insure.

- Across the wide spectrum of participants, GLWB-based solutions consistently meet needs nearly as well as, or better than, other income solutions. For plan sponsors seeking a lifetime income solution that can benefit a wide spectrum of workers, we believe that GLWB-based solutions deserve serious consideration.



# Conclusion

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DC plan participants are looking for secure income that lasts for their lifetimes, but many are unwilling or unable to create this income stream on their own. The good news is that plan sponsors are well positioned to help. And they can use a ready conduit—QDIAs—just as they've done in the past to address low plan participation, inadequate savings rates and poor asset allocation.

As plan sponsors evaluate different methods of delivering secure lifetime income, we believe they must consider the potential outcomes of each individual rather than just the average participant. It's also vital to assess the overall impact not only to a participant's income, but also to account balances. And the key lens for evaluation should encompass the total costs of lifetime income solutions, not just explicit fees.

Plan sponsors should be wary of the potential side effects of eliminating longevity risk through fixed annuities, including growth opportunity cost, mortality risk and inflation risk. Annuity contract riders can eliminate the mortality risk of fixed annuities such as SPIAs and QLACs, but are costly in terms of reduced income. They

only lessen the impact of inflation, and they don't alleviate the opportunity cost of insufficient exposure to growth assets.

## **Which Solution Works Best in Meeting the Lifetime Income Needs of a DC Plan?**

The answer ultimately depends on the needs of both plan sponsor and participants. Flexibility, even within a default strategy, is paramount, because circumstances change over time. Finally, as we've illustrated, using a lifetime income solution can both eliminate longevity risk and improve sustainable withdrawal rates by 70% or more versus self-insuring.

We've used several common lifetime income solutions to explain our framework and illustrate the results of our quantitative analysis. However, the landscape of solutions is diverse, and this framework can be used to assess other instruments and solutions not included in this paper. While some of our quantitative results will surely change as markets evolve, the key conclusions aren't driven by specific market conditions. Instead, they're based on the tenets of prudent asset allocation to address the needs of DC participants, given the intrinsic features and risks of income solutions.

# Appendices

## Appendix 1: Fixed Annuity Riders Can Lessen Some Participant Risks—at a Cost

An individual who buys a basic immediate or deferred fixed annuity from an insurance company pays up front—in full—for a contract that guarantees a lifetime income stream. The insurance company determines the annual percentage of income (income rate); that income rate multiplied by the amount of the buyer’s (annuitant’s) assets surrendered to the insurer determines the dollar amount of annual income.

This income solution provides income certainty but raises two very important issues that worry many DC plan participants:

- What if I die early and realize a bad return on my investment?
- How can I protect my guaranteed income against inflation?

Death-benefit and cost of living adjustment (COLA) riders can help address these concerns. For example, a return-of-premium

death-benefit rider would pay an annuitant’s beneficiaries any remaining premium (the amount of assets surrendered minus the cumulative income received) if the annuitant dies early. A COLA rider can increase the annual income by a fixed percentage each year.

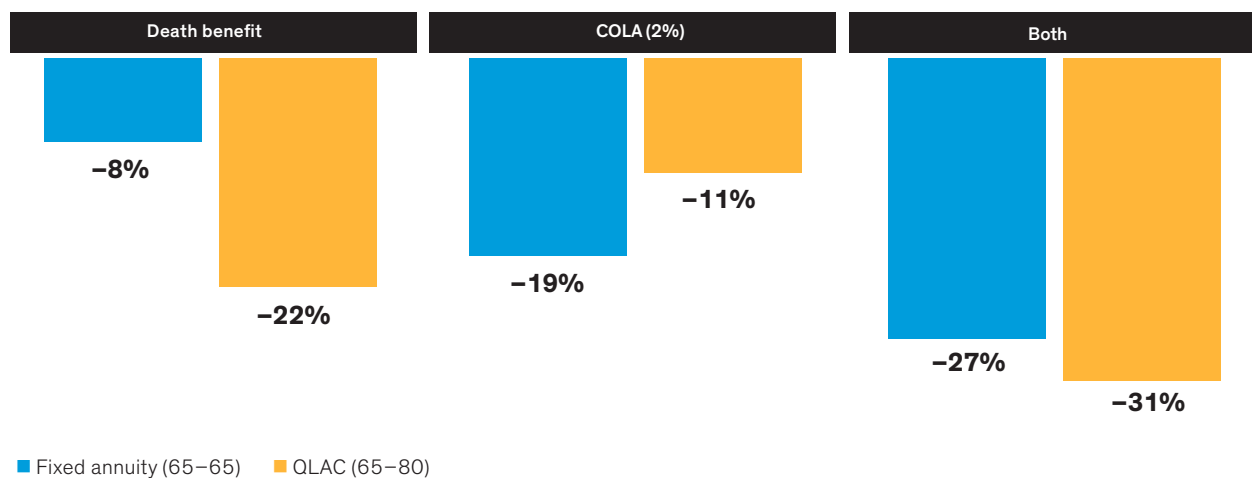
Of course, riders aren’t free—they’re typically structured so that the trade-off to the individual is a substantial reduction in the initial income rate offered for the basic annuity (*Display 19*).

### Fixed Annuities (SPIA or QLAC) with a Death-Benefit Rider Have a Growth Opportunity Cost

The death-benefit rider eliminates the drastically negative investment return of basic fixed annuities if an individual dies earlier than expected (mortality risk). However, participants still face about two decades during which they will receive zero investment return, as can be seen in the indicated areas in *Displays 20 and 21, pages 39 and 40*. This significant growth opportunity cost is inherent in fixed annuities.

## DISPLAY 19: DEATH BENEFIT AND COLA REDUCE FIXED ANNUITY INCOME RATE

Reduction in Income



**Current estimates do not guarantee future results.** Numbers may not sum due to rounding.

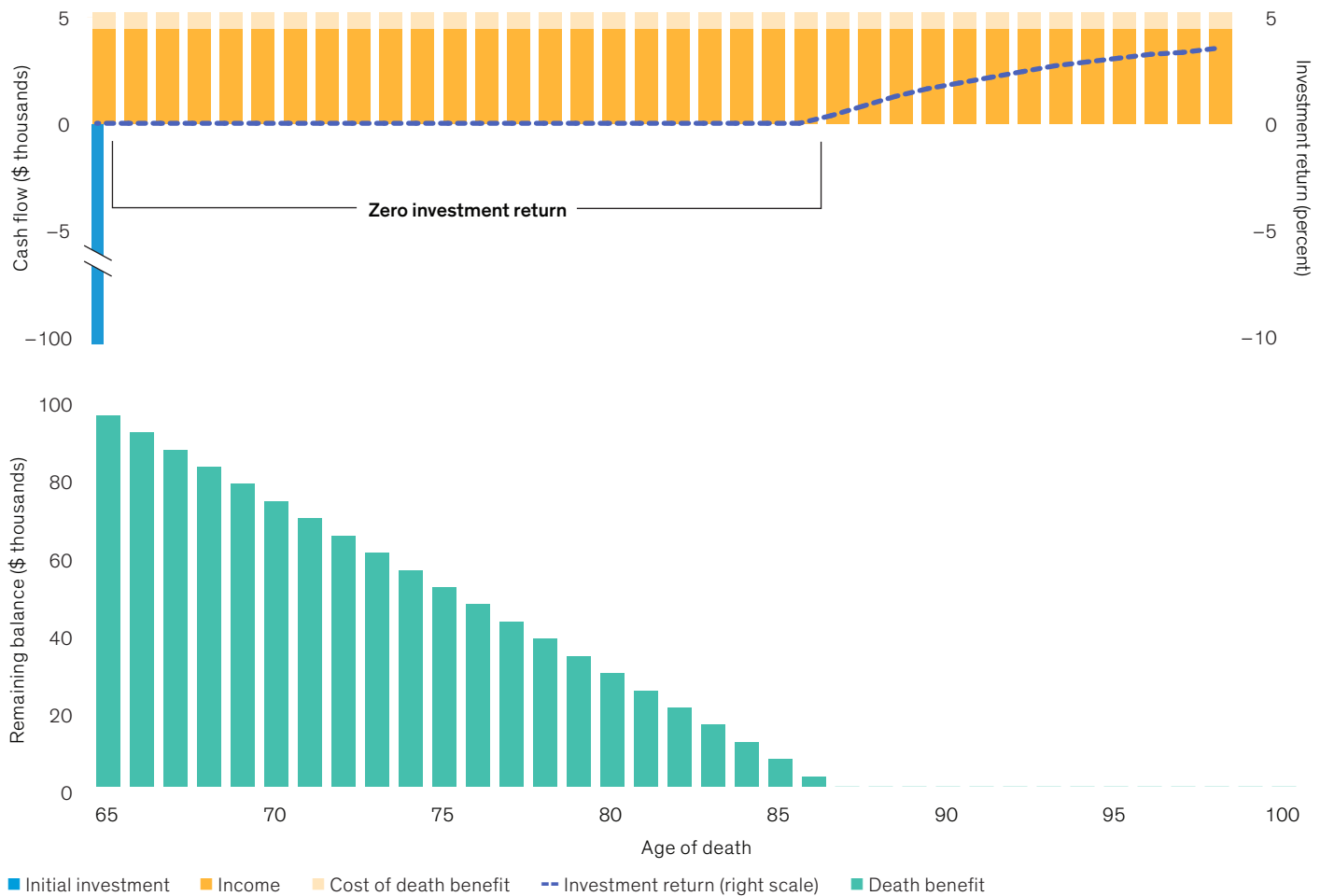
Fixed annuity (65-65) represents an immediate fixed annuity purchased at age 65 with income payments starting at age 65. QLAC (65-80) represents a deferred fixed annuity purchased at age 65 with income payments starting at age 80.

As of June 30, 2022 | Source: AB

Incorporating a COLA rider may seem especially useful, considering the bite inflation can take from nominal income over a long period. However, typical COLA riders grow income only at a constant annual rate (e.g., 2%) that's set at purchase and is unrelated to

actual inflation. With the COLA option, the buyer essentially reduces immediate income and defers the payment to the future, with inflation as an unknown. This calls into question the value of a COLA rider in a high-inflation period.

## DISPLAY 20: FIXED ANNUITY WITH DEATH BENEFIT

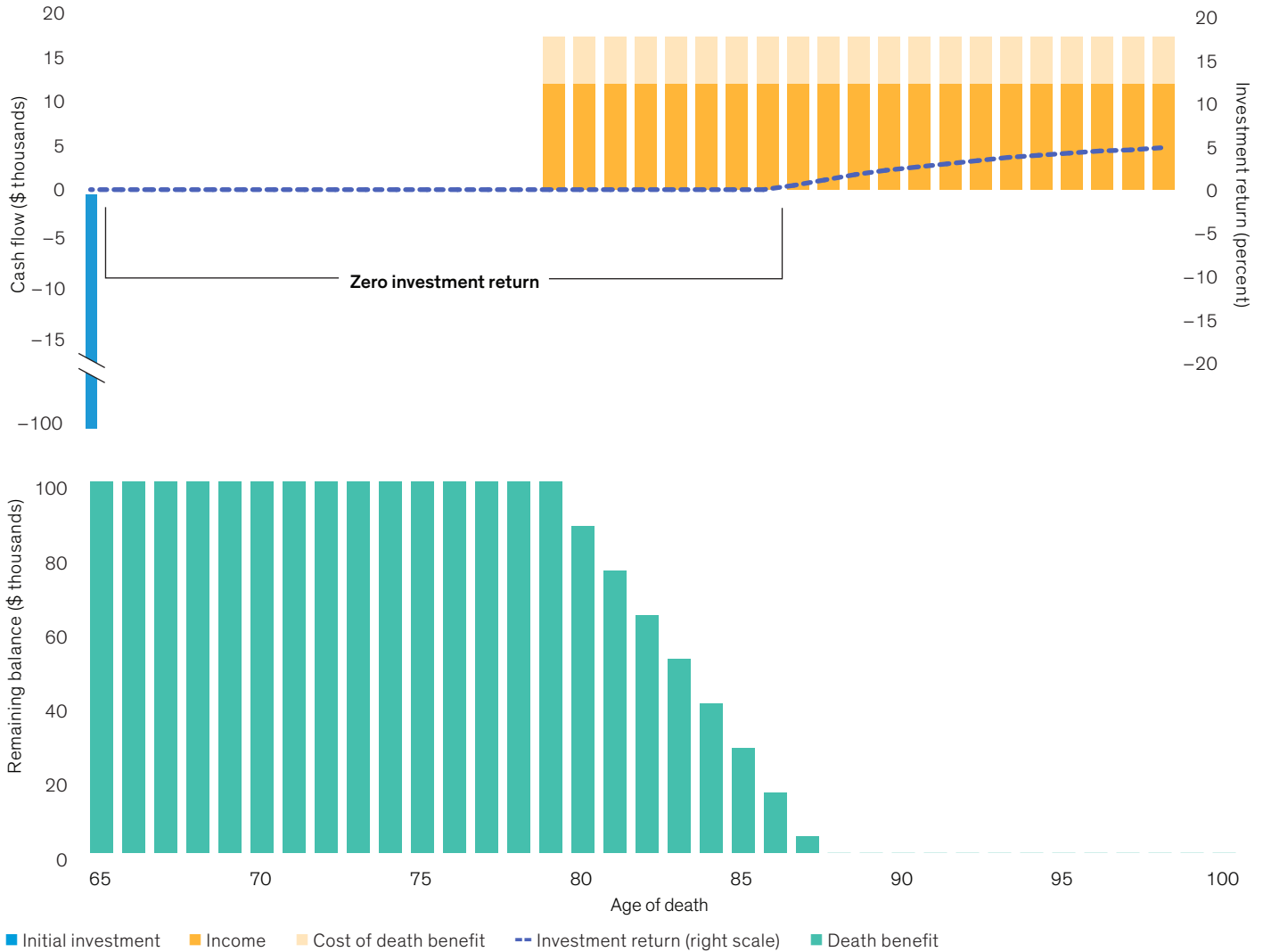


### For illustrative purposes only

Indicative annualized investment return experienced by an individual participant, contingent on his/her age of death. The annualized return is calculated as the internal rate of return with the initial investment as cash outflow and subsequent annuity income as cash inflows that terminate at death. Cost of death benefit is the income reduction due to the presence of a death-benefit rider relative to a contract without the rider.

As of June 30, 2022 | Source: AB

## DISPLAY 21: QLAC WITH DEATH BENEFIT



### For illustrative purposes only

Indicative annualized investment return experienced by an individual participant, contingent on his/her age of death. The annualized return is calculated as the internal rate of return with the initial investment as cash outflow and subsequent annuity income as cash inflows that terminate at death. Cost of death benefit is the income reduction due to the presence of a death-benefit rider relative to a contract without the rider.

As of June 30, 2022 | Source: AB

## Appendix 2: Realistic Living-Standard Adjustments for Retirement Spending

Real (inflation-adjusted) income doesn't quite reflect the typical spending habits—and spending risks—of retirees. Industry studies and our own research find that spending, on average, grows at a rate slightly less than inflation.

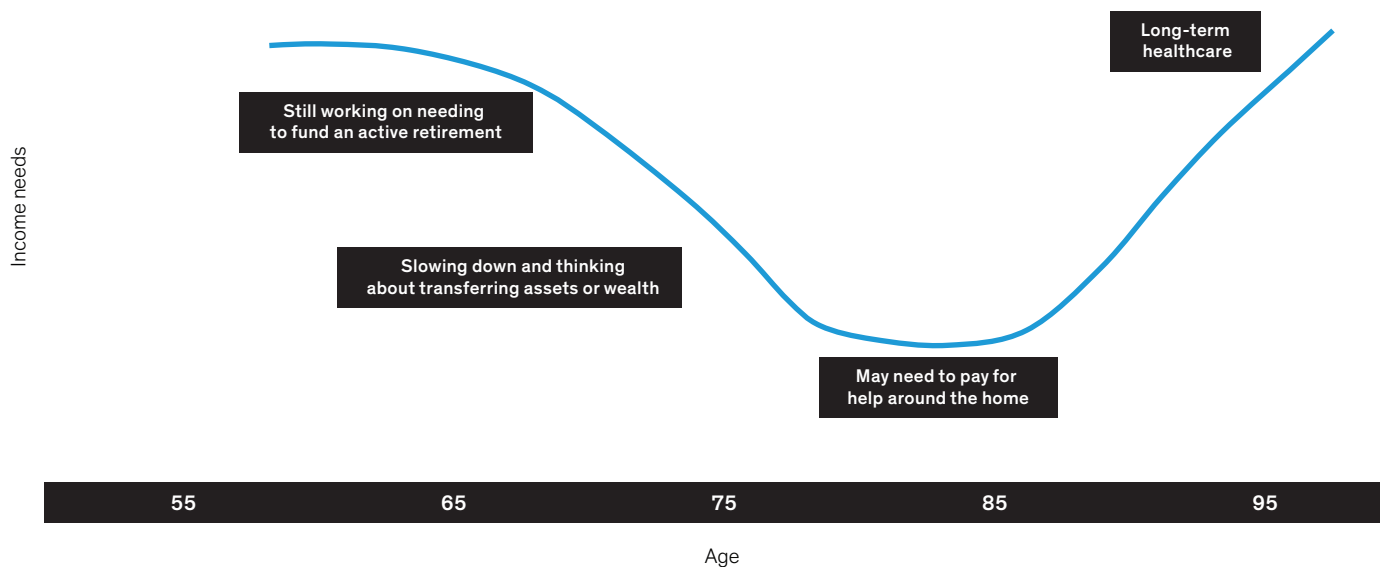
A Morningstar study<sup>25</sup> finds that “there appears to be a ‘retirement spending smile,’” with expenditures actually decreasing in real terms throughout much of retirement, then increasing toward the end of life (*Display 22*). Healthier, younger retirees tend to spend more on travel, hobbies and home improvements. This spending tends to lessen over time, but then tends to increase later in life due to the high costs of

healthcare and/or assisted living. Overall, however, the real change in annual spending through retirement is negative.

With that experience in mind, we've revised our baseline retiree-spending parameters to reflect a more “real world” pattern of retirement spending. We modeled participant withdrawals as real income, but with the inflation calculation trimmed by an average of 2% over time to reflect the gradual decrease in real spending during retirement, as suggested by the “retirement smile” concept and various studies.<sup>26</sup> For example, if inflation were at 6%, we would revise retirees' spending needs up by 4% versus the prior year. We call this income proxy for average spending habits the living-standard adjustment (LISA).

### DISPLAY 22: PARTICIPANTS MAY NEED ADDITIONAL LIQUIDITY LATER IN LIFE

The Retirement Smile



For illustrative purposes only

Source: David Blanchett, “Exploring the Retirement Consumption Puzzle,” *Journal of Financial Planning* 27, no. 5 (2014): 34–42.

<sup>25</sup> David Blanchett, “Estimating the True Cost of Retirement” (working paper, Morningstar Investment Management, November 5, 2013).

<sup>26</sup> A recent study that assessed data from the University of Michigan’s Health and Retirement Study found that spending adjusted for inflation declined for single and coupled households by annual rates of around 1.7% and 2.4%, respectively. Michael D. Hurd and Susann Rohwedder, *Spending Trajectories After Age 65: Variation by Initial Wealth*, RAND Corporation, 2022, [https://www.rand.org/pubs/research\\_reports/RRA2355-1.html](https://www.rand.org/pubs/research_reports/RRA2355-1.html).

### Appendix 3: Acquiring Secure Retirement Income—All at Once or over Time?

DC plan participants who secure guaranteed retirement income gradually over time—much like dollar-cost averaging—rather than all at once at retirement tend to be better protected from the impact of market and interest-rate volatility on their income.

Steadily buying guaranteed income, ideally starting 10 to 15 years before retirement, does three important things. First, it gradually ensures an income level by locking it in, eliminating exposure to a one-time set of market conditions, such as high equity market volatility or unfavorable interest rates. Second, including insurance enables higher overall equity exposure—and growth potential—closer to and in retirement, given that the risk of running out of money has been eliminated. And third, it delivers real-time feedback to participants—well before retirement—on how their balance will translate into income. This gives participants time to plan and adjust—including raising their savings rate while it can still have an impact.

Point-in-time risk hurts investors most amid more dramatic market downturns—like the global financial crisis, the early months of the COVID-19 pandemic and, most recently, the 2022 inflation spike and equity bear market. In many cases, buying insurance at a single

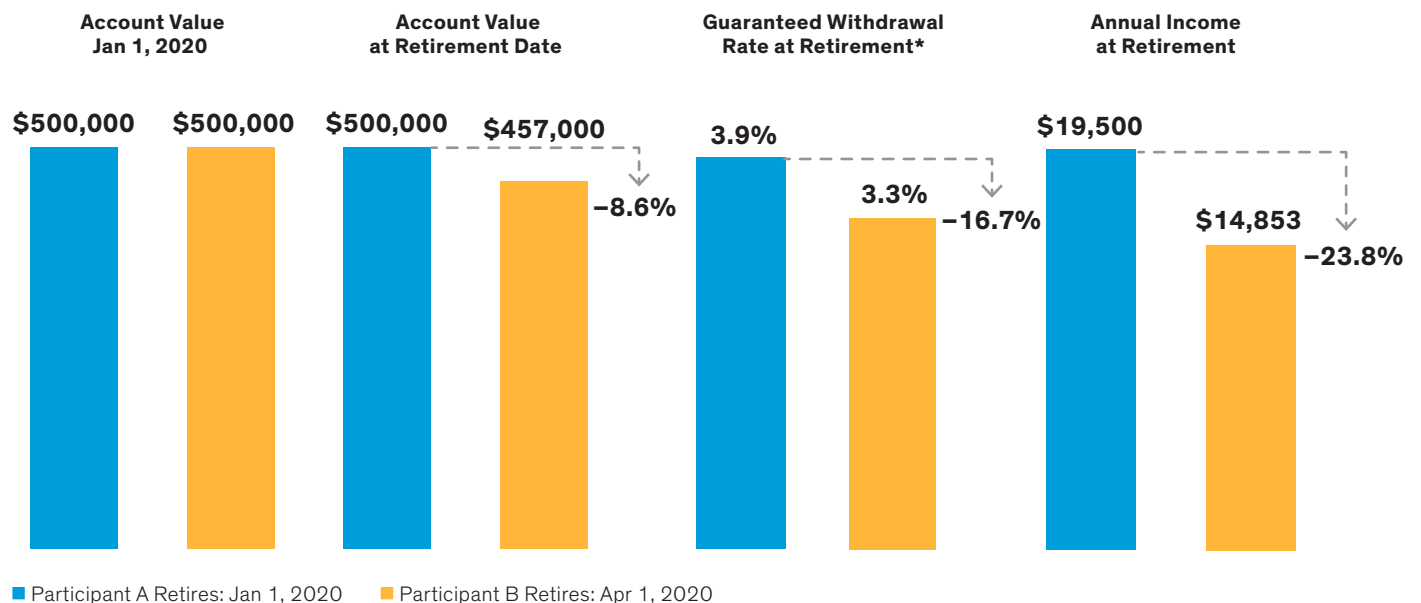
point in time reduced participants' buying power and the guaranteed income rates they could obtain for their long retirements.

For instance, let's compare the experience of two hypothetical participants, both retiring in 2020: one on January 1 and the other on April 1 (*Display 23*). Both participants start the year with \$500,000 in their retirement accounts. Participant A retires on the first day in January, receiving a guaranteed withdrawal rate of 3.9% on that \$500,000, netting \$19,500 in income annually. Participant B doesn't retire until April 1, by which time markets have dropped and reduced account assets to \$457,000 on April 1—about 8.6% below the start of the year.

Furthermore, an increase in equity market volatility and a decline in interest rates dropped the guaranteed withdrawal rate to 3.3%, paring annual income down to \$14,853, 23.8% less than it would have been just three months earlier.

Buying guaranteed income systematically—across different rate and market environments—helps participants avoid the risk of buying lower sustainable income at an unfavorable time. For Participant B, waiting three months to buy insurance might also have resulted in a higher income level, given the combination of potentially higher market returns and/or higher interest rates.

#### DISPLAY 23: OUT-OF-FAVOR MARKETS CAN ALTER RETIREMENT INCOME PATHS



\* Based on the average of multiple insurer-backed guaranteed lifetime income withdrawal rates, a portfolio of 50/50 stocks and bonds, and the full account value used to purchase a guaranteed benefit at retirement.

As of June 30, 2022 | Source: MSCI and AB

## Appendix 4: Growth Exposure in Insurance May Grow Participants' Income

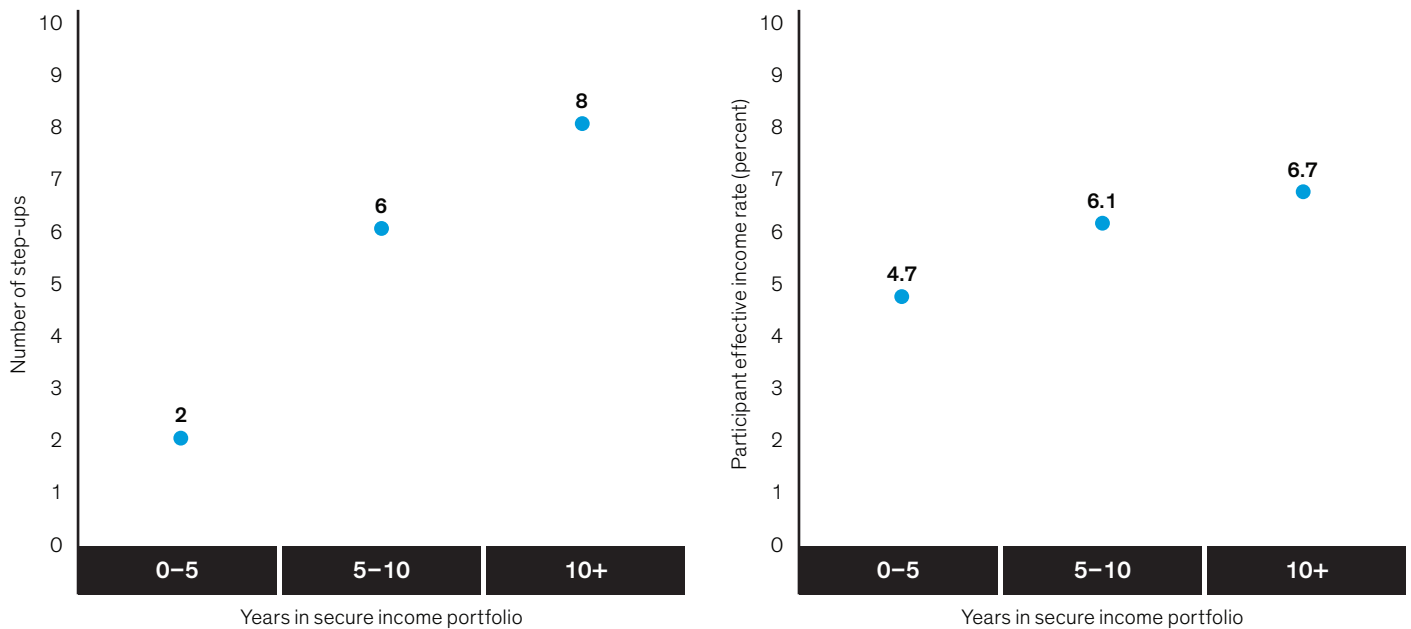
For certain forms of income, such as GLWB-based solutions, the phasing in of coverage, combined with a higher level of equity exposure, improves the likelihood of a “ratchet”—a step-up in the amount of income participants receive. Since mid-2012, actual participants who have used a GLWB-based solution have received a

number of step-ups and the resulting higher effective income rates per dollar invested (*Display 24*).

The longer the phase-in period, the greater number of income step-ups those participants would have received. For those who phased in over 10 years, the step-ups resulted in an average effective income rate of 6.7%, well above the guaranteed rate at the time of purchase.

### DISPLAY 24: A LONGER TIME IN A SECURE INCOME PORTFOLIO HAS LED TO HIGHER BENEFITS

Realized Historical Performance of Participants in a Secure Income Portfolio



#### Analysis provided for illustrative purposes only

Based on experiences of individual participants who are invested in a secure income portfolio with a 60/40 stock/bond allocation and a GLWB rider, since inception on May 30, 2012. Each individual participant's effective income rate is calculated as guaranteed income accumulated/total contribution in the secure income portfolio.

As of June 30, 2022 | Source: AB

## Appendix 5: AB’s Capital Markets Engine—a Proprietary Forecasting Tool

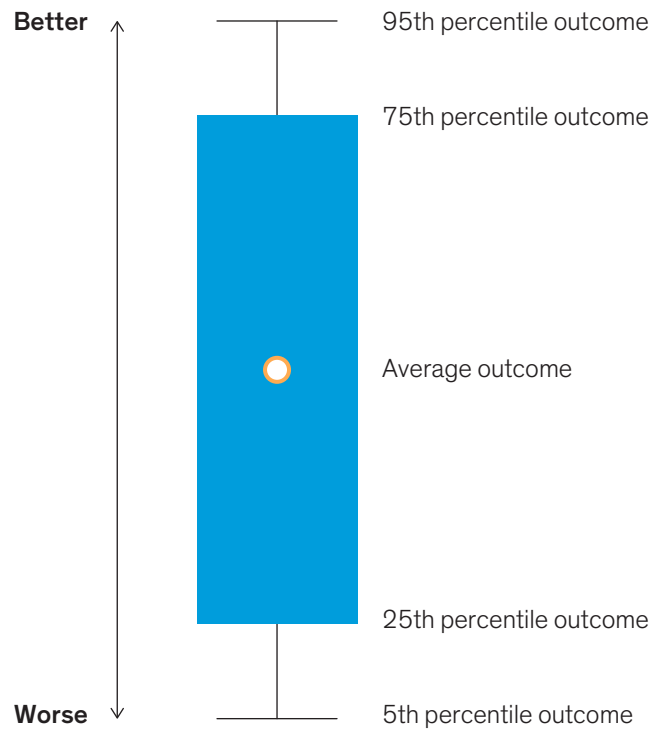
The proprietary AllianceBernstein Capital Markets Engine uses our research and historical data to forecast a vast range of possible outcomes for asset-class returns, interest rates, annuity-income rates and inflation in 10,000 simulated trials at annual intervals out to 50 years. Statistics are computed based on the ranges of outcomes across these paths.

These forecasts take into account the linkages among capital markets and the underlying fundamental and macroeconomic drivers, as well as their unpredictability. An important assumption is that growth assets (stocks) will, over time, outperform defensive assets (cash, stable-value investments, fixed-index annuities and long-term bonds) by a reasonable amount, although this is in no way certain.

They also account for a probability distribution of outcomes based on the assets invested pursuant to the stated asset allocation. We then chart 90% of the estimated ranges of returns and asset values the client could expect to experience—using the range of outcomes established by the fifth and 95th percentiles on “box and whiskers” graphs (*Display 25*).

However, outcomes outside this range are still expected to occur 10% of the time, so the range doesn’t establish the boundaries for all outcomes. Moreover, actual future results may not meet AB’s estimates of the range of market returns, as these results are subject to a variety of economic, market and other variables. Accordingly, the analysis should not be construed as a promise of actual future results, the actual range of future results or the actual probability that these results will be realized.

### DISPLAY 25: UNDERSTANDING OUTCOME DISTRIBUTIONS



For illustrative purposes only

Source: AB



## Appendix 6: Extending the Risk-Return Evaluation for Income Solutions

For a traditional investment strategy, net-of-fee investment return is the primary value of the outcome. Solutions are evaluated by their average (or expected) net-of-fee returns across all risk scenarios and assessed against the uncertainty (risk) that an actual return deviates from those expectations. The uncertainty of the investment outcome is driven only by market risk, typically measured by the variance or standard deviation of return outcomes. This is often referred to as a “mean variance” framework in financial literature.

In the context of income solutions and participants’ ultimate needs for income and balances—not returns—we can extend the traditional mean-variance framework as follows:

- Drivers of uncertainty in outcomes are expanded beyond market risk to include inflation risk and individual age-of-death uncertainty (mortality and longevity risks). We use Monte Carlo simulation

trials to assess outcome distributions across all risk scenarios experienced by individual participants.

- The value derived from an investment is broadened from net-of-fee investment return to total value. This is a combination of the value from a cumulative income stream and remaining balances, if applicable, weighted by participants’ needs. Both are expressed net of all fees and are living-standard adjusted to account for the effect of inflation. The value assigned to income also penalizes a decline in income, reflecting the typical participant’s risk aversion.
- Expected (or average) return is extended to the expected (average) total value across all trials. The uncertainty of outcomes is extended from return variance and standard deviation to the semi-variance and semi-standard deviation of total-value distributions across all trial scenarios, representing the risk of potential outcomes falling below the average.

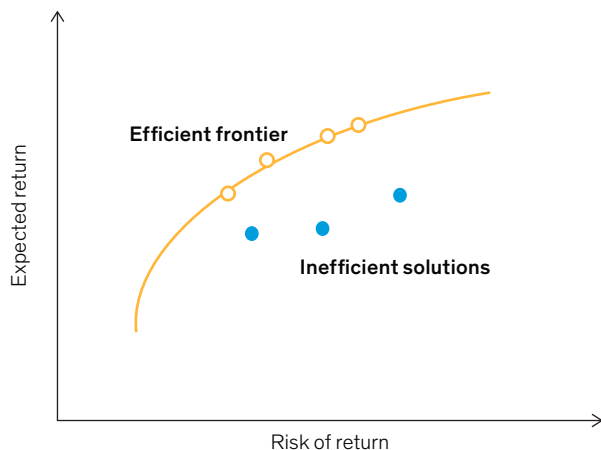
In our framework, we also adopted the classic concept of an efficient portfolio (*Display 26*). Given the same level of risk, solutions with higher average returns (or total value) are more “efficient.” Likewise, given the same level of average returns (total value), solutions with lower risk (higher certainty) are more “efficient.” Efficient solutions deliver higher value per unit of risk taken by investors than “inefficient” solutions.

Specifically, solutions at the top left edge of a comparison of total value and total risk form the “efficient frontier.” Participants would prefer these “efficient” solutions to any inefficient solutions that lie beneath the frontier.

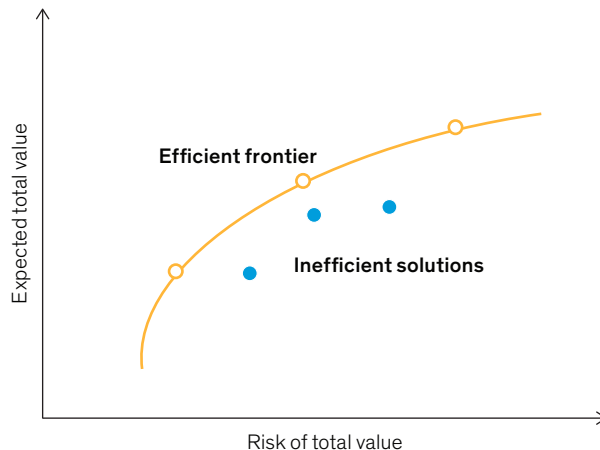
There are a range of solutions along the efficient frontier, offering different levels of total risk and total value. Participants (or plan sponsors as fiduciaries) choose the one that best fits participants’ needs. This approach also allows us to apply the classic mean-variance utility function to quantitatively rank lifetime income solutions for optimal lifetime income portfolio construction, with both traditional asset classes and insurance.

### DISPLAY 26: EXTENDING A MEAN-VARIANCE EVALUATION FRAMEWORK TO LIFETIME INCOME

#### Traditional Investment Strategies



#### Lifetime Income Strategies



#### Analysis provided for illustrative purposes only

Expected total value and risk of total value are estimated by a Monte Carlo simulation of 10,000 trials from age 65 to 100, incorporating market risk, inflation risk and age-of-death uncertainty. The total value of each trial is the preference-weighted cumulative income value and remaining balance (if applicable) value at death experienced by each individual participant subject to the realized instances of market risk, inflation risk and age-of-death uncertainty for that trial. The income value and remaining balance value are living-standard adjusted, and the cumulative income value is also risk adjusted for any income decline along each simulation trial. For trials with depleted income before death (longevity risk), the total value for that trial is set to zero. The expected total value is the mean of the total value distribution from the Monte Carlo simulation of individual participants’ experiences, and the risk of total value is the semi-standard deviation of the total value distribution. | As of June 30, 2022 | Source: AB

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## **Appendix 7: The Fixed Index Annuity Explained**

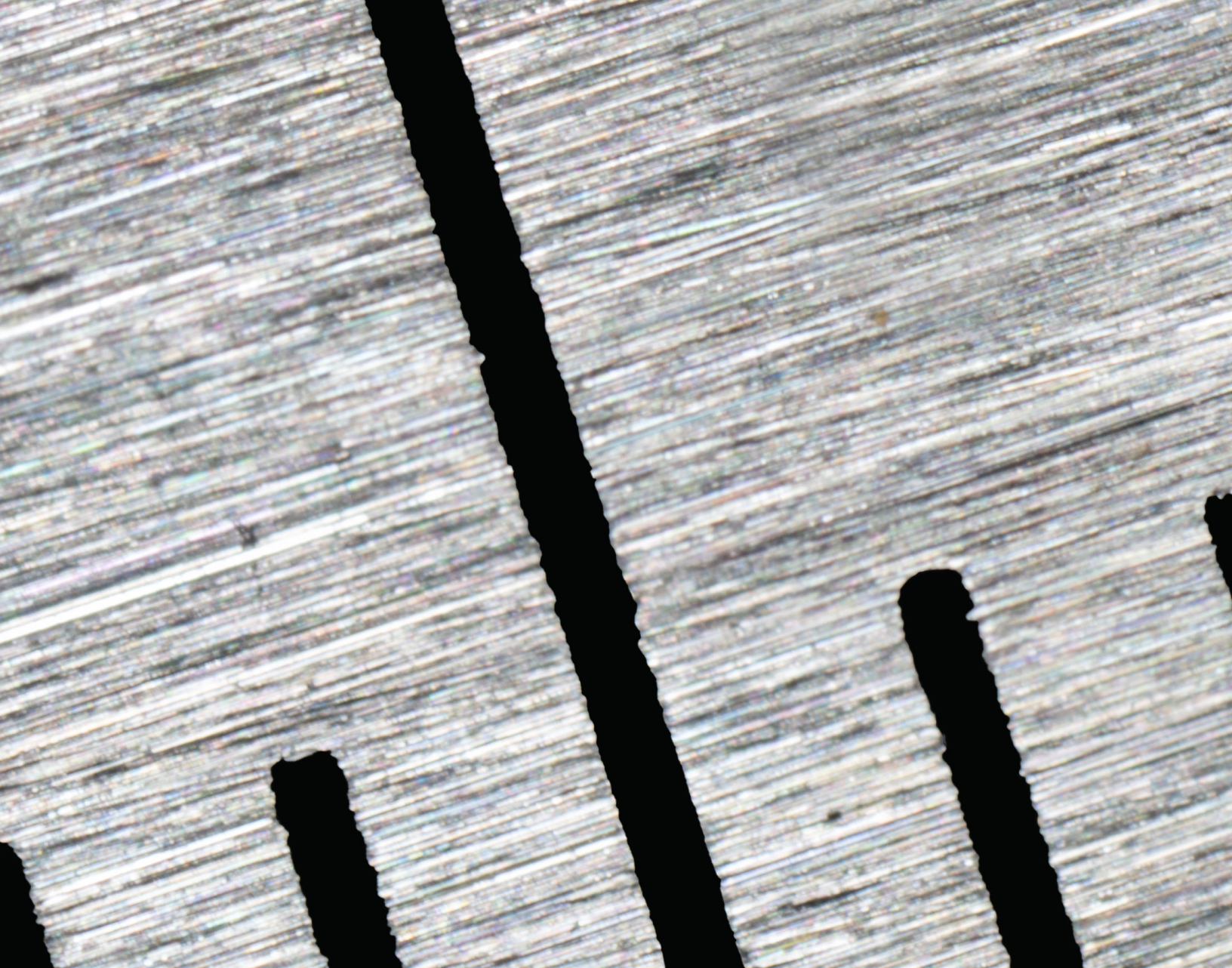
A fixed index annuity is an insurance product offering downside principal protection and potential upside performance linked to the price return of an index (e.g., the S&P 500) for a guaranteed period (e.g., seven years). Investors have limited liquidity during the protection period. The fixed index annuity could be considered a substitute for a certificate of deposit (CD) or stable-value fund, but with tax-deferred returns that could be higher.

A fixed index annuity helps participants accumulate savings without the risk of loss, but by itself it doesn't provide guaranteed income for life. It often comes with the option to convert to a fixed annuity or to add a GLWB rider for additional cost. The cost of the insurance can be explicit, implicit or a combination of the two. An explicit fee can be charged as a spread on the index return; implicit costs can be structured as a maximum return cap or a participation ratio on the index return.

The fixed index annuity insurance premium is mostly (typically >95%) invested in bonds within an insurer's general account in order to guarantee the principal. The remaining amount covers the cost of overhead as well as call and put options on the underlying index that the fixed index annuity tracks. These options synthetically capture the upside of the index's price return, excluding dividend returns. Given the presence of the fee spread, max return cap, participation ratio and the index dividend returns not captured by options, the fixed index annuity return is typically a fraction of the underlying index's total return (both price and dividend return).

In any case, plan sponsors should note the lack of cost transparency and the total cost of fixed index annuities—both the spread embedded in the product and the growth opportunity cost associated with a fixed index annuity's bond-like risk/return profile. For most DC participants who are near or at retirement, principal protection isn't the primary concern; giving up growth for it isn't consistent with the goals of most DC participants.





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Guaranteed Lifetime Withdrawal Benefit (GLWB) is a type of annuity that sets a withdrawal amount that will last throughout a participant's retirement, even if the market falls or the account's assets run out. The insurers will continue the withdrawal payments, if needed. Guarantees are based on the financial strength and claims-paying ability of each insurance company.

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