THE CASE FOR LIFETIME INCOME

GAI Global Aging Institute

Prudential

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FOREWORD

Retirement planning is entering a new era — one shaped by longer lives, changing workforce patterns, and a steady shift away from pensions that paid a lifetime benefit to savings-oriented plans that place more responsibility on individuals. While people in many countries are saving more for retirement, new research conducted by the Global Aging Institute (GAI) makes clear that accumulating a retirement balance alone is not enough. What ultimately matters is how those savings can be turned into dependable decumulation, creating income that people cannot outlive.

That is the central insight of *The Case for Lifetime Income*, a 2026 GAI study sponsored by Prudential. Drawing on perspectives and real-world experience across five developed economies (Australia, Japan, the Netherlands, the United Kingdom, and the United States), this study highlights a common challenge: Too many retirement systems still leave individuals on their own to manage longevity risk. The result is uncertainty for retirees and system inefficiency for society.

The countries studied were selected for their distinct approaches to decumulation strategies and a commitment to policy innovation. Advancing decumulation solutions through better defaults, clearer communication, and innovative income approaches, will be essential to translating research into real world impact in emerging and developing economies around the world.

Prudential is proud to partner on research with GAI, a leading nonprofit dedicated to constructive policy responses to the challenges of global aging. For more than a century, our work has been rooted in helping individuals and institutions manage risk and plan for secure retirements. As a company that makes and backs decades-long promises across multiple retirement systems, we see firsthand what works and what opportunities for improvement remain.

The report does not argue for a single model or a one-size-fits-all answer. Instead, it offers clear principles and policy-relevant guidelines to help ingrain lifetime income as a core default feature of modern retirement systems, while preserving choice, flexibility, and fairness. It reinforces a simple but powerful idea: Making lifetime income easier, more transparent, and more accessible can help individuals protect their life's work and strengthen retirement systems overall.

The call to action is collective, and we need industry support. Policymakers, employers, plan sponsors, financial institutions, and advisors each have a role to play. Progress will require collaboration, thoughtful design, and a shared commitment to moving from awareness to implementation.

We hope this research helps advance that conversation and, more importantly, helps turn insight into action. The opportunity is real, and the stakes are high. By working together, we can deliver more secure, efficient, and resilient lifetime income, fueling rewarding retirements for generations to come.

Phil Waldeck
Head of U.S. Businesses
Prudential Financial, Inc.

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REPORT OVERVIEW

The purpose of this report is to call attention to the importance of guaranteed lifetime income in a world increasingly dominated by defined contribution (DC) retirement savings plans. Although DC plans can provide lifetime income if account balances are annuitized, in practice relatively few DC systems require even partial annuitization, while many make no provision for lifetime income at all. Although the report is global in scope, it focuses on today's developed countries. To better understand the challenges they face, it takes a close look at developments in five of them: Australia, Japan, the Netherlands, the United Kingdom, and the United States.

Chapter 1 explains how lifetime income can provide enormous benefits to both individuals and society by pooling longevity risk. At the individual level, longevity pooling means that retirees do not need to worry about outliving their savings and can safely increase how much they spend. At the societal level, it greatly increases the efficiency of retirement systems. By paying benefits in the form of lifetime income rather than a lump sum, a country can provide the same level of retirement security for less money, potentially saving 20 percent or more of the cost of benefits. There may also be other benefits for society, including the faster economic growth that could be spurred by allowing retirees to spend more freely and confidently.

Lifetime income can provide enormous benefits to both individuals and society.

Chapter 2 discusses the biases and barriers that have impeded the wider adoption of lifetime income in DC systems and explains how they can be overcome. Despite the considerable benefits of lifetime income, retirees are often reluctant to annuitize their retirement savings—a paradox sometimes called the "annuity puzzle." After watching their savings grow for a lifetime some develop a strong emotional attachment to it, while others fail to appreciate the insurance value of lifetime income, worrying that they will be "losers" if they purchase an annuity but do not live a long life. Many are concerned that converting their retirement savings into lifetime income would mean sacrificing liquidity and spending flexibility or the ability to leave a bequest. Annuities may also fail to protect retirees against inflation, and when interest rates are low they can seem expensive.

There are also factors that can reduce the efficiency or equity of lifetime income, making it less attractive. When annuities are voluntary, individuals who expect to live long lives are more likely to purchase them, driving up their price for everyone—a dynamic known as adverse selection. The cost of delivering annuities, including everything from sales and administration to the profit earned by the annuity provider, can also increase prices, while differences in life expectancy between diverse groups in a longevity pool can advantage some at the expense of others.

The good news is that there are ways to address all of these issues, allowing retirees to enjoy the benefits of lifetime income without the drawbacks. Different countries will no doubt choose to take different approaches depending on the overall structure of their retirement systems and the relative importance they assign to longevity protection and income adequacy versus choice and flexibility. Even within the same country, solutions that are appropriate for one tier of the retirement system may not be appropriate for another. For these reasons, it would be pointless to attempt to develop a one-size-fits-all set of

recommendations. Instead, the report offers some broad guidelines that we hope will help clarify the choices policymakers face:

- Ensure that the different tiers of the retirement system in combination provide sufficient guaranteed income for life. While there is no universally accepted benchmark, many retirement policy experts would consider a replacement rate of 75 percent a sensible target for average-earning workers.
- If a DC retirement savings system is mandatory, make annuitization mandatory. If the system is voluntary, make annuitization the default, at least for employee contributions. Even in a voluntary system, annuitization of employer contributions can be required.
- Provided that a minimum level of lifetime income is assured, require partial rather than full annuitization to allow for spending flexibility. While there are many ways to do this, dedicating a portion of retirement savings to the purchase of a deferred annuity is a widely recommended option.
- Protect against inflation risk by providing for variable annuities that, unlike fixed annuities, allow higher returns and exposure to inflation-sensitive assets.
- Protect against interest rate risk by allowing retirees to spread the purchase of lifetime income over more than one year or by requiring that a portion of savings be allocated to the purchase of a deferred annuity during the accumulation phase.
- To the extent feasible and cost-effective, provide for different risk classifications to ensure equity among diverse groups of retirees in the longevity pool.
- To minimize costs, standardize annuity products and increase the scale of annuity purchasing pools by centralizing the delivery of lifetime income, potentially using exchanges to connect employers with providers.
- Ensure that participants in DC systems receive adequate financial advice. Translate account balances into equivalent lifetime income payments when communicating with participants during the accumulation phase and guarantee them access to a qualified and objective adviser as they approach retirement.

Chapter 3 surveys the current state of lifetime income provision in Australia, Japan, the Netherlands, the United Kingdom, and the United States. Four of these five countries have large funded retirement savings systems and share a pressing need to ensure that these systems provide adequate lifetime income. The exception is Japan, which has a relatively small funded retirement system but needs to greatly expand it in coming decades.

Few developed countries would benefit more from increasing guaranteed lifetime income than Australia. The only state pension consists of a means-tested flat benefit that provides no more than a modest floor of protection against poverty in old age. The income replacement function of the retirement system is instead handled by a large mandatory employer pension system known as Superannuation, or Super for short. Yet despite Super's central role in retirement security, many superannuation funds do not even include a lifetime income option. Although the government has recently taken modest steps to encourage the expansion of lifetime income in Super, more is needed. Australia should consider making the partial annuitization of Super account balances mandatory. At the very least, it should make partial annuitization the default option. While Australia has done a better job than most developed countries at ensuring that people save sufficiently for old age during their working years, it has yet to ensure that they have adequate guaranteed income during their retirement years.

Japan

When it comes to retirement policy, Japan finds itself at a crossroads. The rapid aging of its population has already forced the government to reduce the generosity of its state pension system over the past few decades and additional reductions will almost certainly be necessary. The country's voluntary employer pension system only covers about one-third of the workforce and participation in its personal pension system, though growing, is even more restricted. Moreover, apart from state pensions, most retirement benefits are paid as lump sums or phased withdrawals. To shore up future retirement security, Japan will need to substantially boost retirement savings. To do so, it should greatly increase the current low limits on contributions to both employer DC plans and personal pensions. At the same time, Japan will need to expand the provision of lifetime income. To do so, it could begin by requiring that all DC plans include a lifetime income default. Ideally, it would require that all employees be auto-enrolled in such a plan.

Netherlands

The Dutch retirement system, which combines a modest but universal government flat benefit with a large and quasi-mandatory employer pension system, is widely considered to be among the most successful in the world at ensuring a high degree of retirement security at an affordable cost. Until recently, employer pensions in the Netherlands were mostly defined benefit (DB) plans that, almost by definition, provide lifetime income. In a major reform, employers are now being required to transform their DB plans into collective defined contribution (CDC) plans. Like other DC plans, CDC plans shift investment risk from employers to workers and retirees, but unlike ordinary DC plans they are expressly designed to provide lifetime income. The reform is thus unlikely to reduce retirement security, and may in the long run increase it by making the retirement system more sustainable. Yet despite its many positive features, the Dutch approach to delivering lifetime income may not be easy to replicate in other countries.

United Kingdom

Like Australia and the Netherlands, the United Kingdom has a retirement system that combines a modest floor of government old-age poverty protection with a large funded employer pension system. The difference is that, until recently, its employer pension system was voluntary, leaving large gaps in coverage. Over the past decade or so, the United Kingdom has made remarkable progress in broadening and deepening retirement savings by mandating that all employers auto-enroll employees in a pension plan. Policy momentum is also building toward making lifetime income the default in DC plans, with Nest, a government-sponsored plan that is the country's largest by membership, leading the way. The United Kingdom still faces serious retirement security challenges. Yet its economical state pension system, its vast expansion of funded retirement savings, and its growing attention to the provision of lifetime income suggest that it is on course to overcome them.

United States

The United States possesses by far the largest retirement savings system in the world. Together with Social Security, its earnings-related state pension, this system historically delivered a high level of lifetime income to a substantial share of retirees. Over the past several decades, however, the shift from DB pensions to DC plans has dramatically reduced that level. U.S. policymakers have recently begun to take steps to address the problem, including by facilitating annuitization in 401(k)s, the main type of DC plan, and by providing legal protection for employers when they act as fiduciaries in selecting annuity providers. Yet despite these steps, only about one in ten DC plans even offers the option of a lifetime annuity.

In the end, achieving anything close to universal provision of lifetime income in DC plans may require some degree of government compulsion. Although the U.S. political economy is allergic to mandates, nothing would preclude the government from requiring that all DC plans include a lifetime income default. It might even be possible to go a step further and mandate annuitization of employer contributions, while leaving annuitization of employee contributions voluntary.

In much of the world, rapid population aging, ongoing reductions in the generosity of state pensions, and the shift from DB pensions to DC retirement savings plans are leading to growing retirement insecurity. Until recently, efforts to address the problem have mostly focused on increasing retirement savings during the working years, rather than on how to make the most efficient use of that savings during the retirement years. Thankfully, that is beginning to change. In a growing number of countries, policymakers are waking up to the fact that more retirement savings will not yield a commensurate improvement in retirement security unless DC plans make adequate provision for lifetime income. We have written this report to underscore the importance of the issue and to urge that expanding lifetime income be made a policy priority.

INTRODUCTION

Perhaps the most consequential retirement policy development of the past half century has been the shift from defined benefit (DB) pensions, which provide retirees guaranteed income for life, to defined contribution (DC) retirement savings plans, which typically do not. Although DC plans can provide lifetime income if account balances are annuitized, in practice relatively few DC systems require even partial annuitization, while many make no provision for lifetime income at all.

This is unfortunate, since lifetime income has enormous benefits. When DC account balances are converted into lifetime income, the risk that retirees will live a long life is shared or pooled with others, ensuring that everyone only needs to have enough savings to finance a retirement of average length. At the individual level, longevity pooling means that retirees do not need to worry about outliving their savings and can safely increase how much they spend. At the societal level, it greatly increases the efficiency of retirement systems. By paying benefits in the form of lifetime income rather than a lump sum, a country can provide the same level of retirement security at a lower cost—or alternatively, more retirement security at the same cost. There may also be other benefits for society, including the faster economic growth that could be spurred by allowing retirees to spend more freely and confidently.

At the societal level, lifetime income greatly increases the efficiency of retirement systems.

The need to provide for lifetime income in DC plans, already urgent, will only grow in the future. The shift from DB pensions to DC plans among employers shows no signs of abating. With government budgets under mounting pressure from population aging, most developed countries are at the same time being compelled to reduce the level of guaranteed lifetime income provided by state pension systems. Many have raised full-benefit retirement ages, trimmed initial benefit formulas, and/or reduced the indexation of benefits in current payment status. A few, including Italy and Sweden, have transformed their traditional DB state pension systems into notional DC systems, in which benefits are automatically adjusted to offset the declining ratio of workers to retirees. These changes mean that state pension replacement rates in most developed countries are due to decline in coming decades. Meanwhile, even as public and private promises of guaranteed lifetime income are eroded, life expectancy continues to rise, putting ever more retirees at risk of outliving their savings. (See figure 1.)

That retirement insecurity is growing is hardly news. Until recently, however, efforts to address the problem have mostly focused on increasing retirement savings during the working years rather than on how to make the most efficient use of it during the retirement years. Some countries that have long relied almost exclusively on pay-as-you-go state pension systems in which current workers pay for current retirees have jump-started new retirement savings systems, as Italy and Germany have done. Others, leveraging the lessons of behavioral economics, have broadened and deepened existing retirement savings systems by requiring autoenrollment, as New Zealand and the United Kingdom have done. Many countries have also tried to improve investment outcomes for workers during the accumulation phase of the DC lifecycle by encouraging the use of target date funds

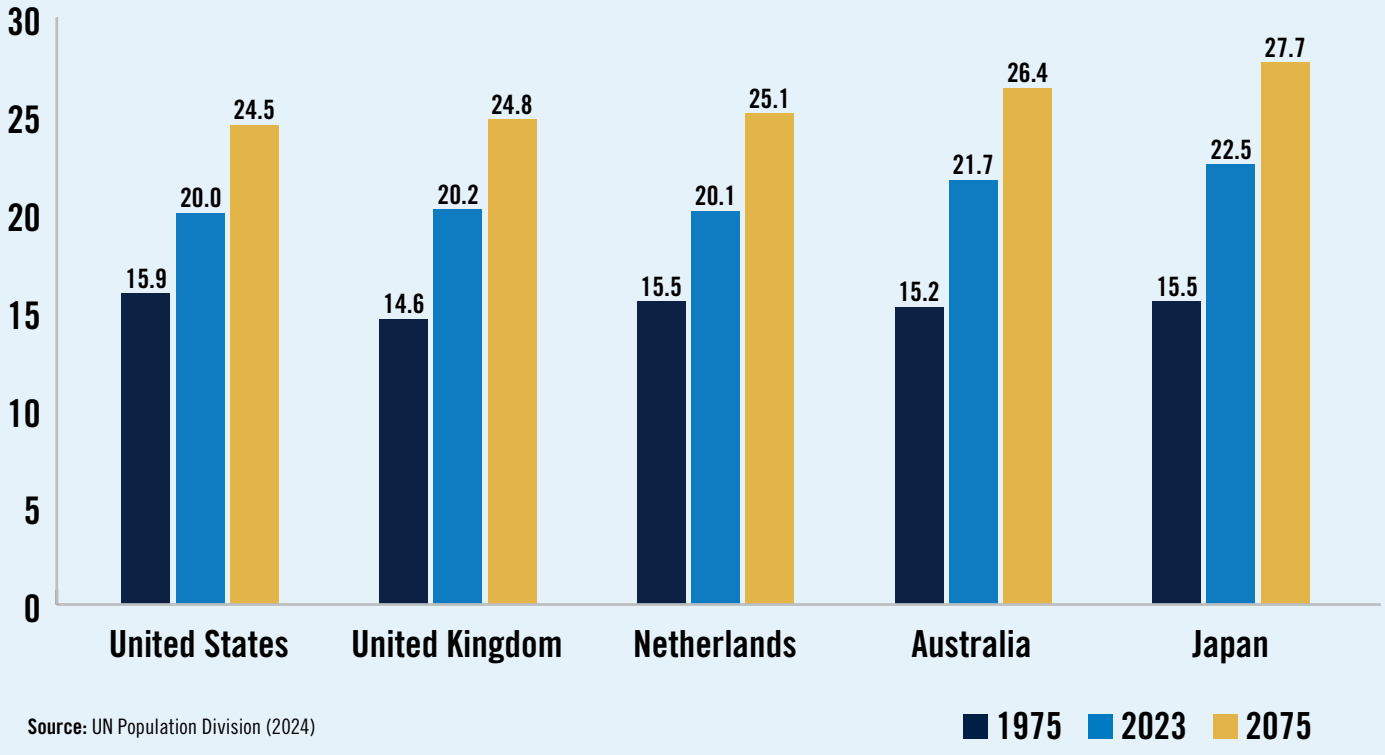
that adjust asset allocation with age. Comparatively little attention, however, has been paid to reducing longevity risk in the decumulation phase, during which retirees have been largely left to fend for themselves.

Thankfully, that is beginning to change. In a growing number of countries, policymakers are waking up to the fact that more retirement savings will not yield a commensurate improvement in retirement security unless DC plans make adequate provision for lifetime income. The United States recently removed regulatory barriers that made it difficult for employers to offer annuity options in 401(k)s, the country's main type of DC plan. The United Kingdom, going a step further, plans to make lifetime income the default option in Nest, its government-sponsored DC plan, and policy momentum is building toward making it the default in all DC plans. Singapore, which once allowed full lump sum withdrawals from its Central Provident Fund, now only allows lump sum withdrawals to the extent that account balances exceed what is required to purchase a basic level of lifetime income.

More retirement savings will not yield a commensurate improvement in retirement security unless DC plans make adequate provision for lifetime income.

Figure 1

UNISEX LIFE EXPECTANCY AT AGE 65, BY COUNTRY, IN 1975, 2023, AND 2075



Source: UN Population Division (2024)

Yet efforts to expand lifetime income continue to face many obstacles. Despite the considerable benefits of lifetime income, retirees are often reluctant to annuitize their retirement savings—a paradox sometimes called the "annuity puzzle." After watching their savings grow for a lifetime some develop a strong emotional attachment to it, while others fail to appreciate the insurance value of lifetime income, worrying that they will be "losers" if they purchase an annuity but do not live a long life. Many retirees are concerned that converting their retirement savings into lifetime income would mean sacrificing liquidity and spending flexibility or the ability to leave a bequest. Annuities may also fail to protect retirees against inflation, and when interest rates are low they can seem expensive.

There are also factors that can reduce the efficiency or equity of lifetime income, making it less attractive. When annuities are voluntary, individuals who expect to live long lives are more likely to purchase them, driving up their price for everyone—a dynamic known as adverse selection. The cost of delivering annuities, including everything from sales and administration to the profit earned by the annuity provider, can also increase prices, while differences in life expectancy between diverse groups in a longevity pool can advantage some at the expense of others.

While these obstacles are real, they can be overcome. Ensuring that all retirees receive sound financial advice about the trade-offs inherent in different decumulation strategies can help correct the behavioral biases that make them reluctant to purchase lifetime income products. Many common perceptions about lifetime income, moreover, are outdated. Commercial insurers have designed innovative products that address retirees' concerns about sacrificing liquidity and spending flexibility or lacking protection against inflation risk and interest rate risk. With the right policies in place, it is also possible to minimize or even eliminate adverse selection, limit delivery costs, and align price with risk for all participants in a longevity pool.

The key for policymakers will be to strike a reasonable balance between protection and flexibility.

Expanding the provision of lifetime income in DC retirement savings plans can and should be done in ways that reflect the overall design of a country's retirement system, and especially the level of lifetime income that is already provided by other tiers of the system. While some countries may decide to mandate annuitization of DC account balances, others may conclude it is sufficient to make annuitization the default option. Similarly, some countries may require or encourage the full annuitization of account balances, while others may conclude that partial annuitization is enough. Nor need provisions for lifetime income be one-size-fits-all. Since different retirees will have different preferences and needs, a variety of products could be offered. The key for policymakers will be to strike a reasonable balance between protection and flexibility. (See figure 2.)

The purpose of this report is to call to the attention of policymakers and the public the advantages of ensuring the adequate provision of lifetime income in a retirement landscape increasingly dominated by DC plans. The report focuses on employer pension systems, sometimes referred to as second-tier systems, whether they are mandatory, quasi-mandatory, or voluntary. Much of the analysis, however, equally applies to funded first-tier state pension systems that are structured as DC plans. Such systems include government provident funds, like those in India, Indonesia, Malaysia, and

Singapore, as well as personal account systems, like those in Chile and a number of other Latin American countries.

There are a variety of ways that lifetime income can be provided in DC systems. The most common is for participants to use their savings to purchase annuity products offered by commercial insurers. Another possibility is for lifetime income to be provided through uninsured longevity pools, such as those in collective defined contribution (CDC) plans. In some countries, it may even be government that converts DC account balances into lifetime income streams. Annuities themselves are complex products and come in a bewildering variety of types, many with special riders and guarantees. Given the broad public policy purpose of the report, it ignores much of this complexity and focuses on the three most basic and relevant types of annuities: fixed, variable, and deferred.

Figure 2

BALANCING PROTECTION AND FLEXIBILITY

While the scope of the report is global, its focus is on fully developed countries. To better understand the challenges they face, it takes a close look at developments in five of them: Australia, Japan, the Netherlands, the United Kingdom, and the United States. Four of the five have large funded retirement systems and share a pressing need to ensure that these systems provide adequate lifetime income. The exception is Japan, which has a relatively small funded retirement system but needs to greatly expand it in coming decades.

The remainder of the report is structured as follows. The first chapter takes a closer look at the benefits of lifetime income at both the individual and societal levels, and especially the greater financial security and financial efficiency that come with pooling longevity risk. The second chapter turns to the biases and barriers that have impeded the wider adoption of lifetime income in DC systems and explains how they can be overcome. The third chapter surveys the current state of lifetime income provision in Australia, Japan, the Netherlands, the United Kingdom, and the United States. A conclusion then summarizes the report's main findings.

LIFETIME INCOME 101

TYPES OF LONGEVITY POOLS

Insured Longevity Pools. Insured longevity pools are the financial arrangements that underlie commercial annuities. Individual longevity risk—that is, the risk that an individual will have a longer-than-average life—is shared among members of the pool. Insurers assume population longevity risk—that is, the risk that population-wide life expectancy will be higher than currently projected. Depending on the type of annuity product offered, insurers may also assume investment risk.

Uninsured Longevity Pools. In uninsured longevity pools, such as those used in CDC plans, individual longevity risk is also shared among members of the pool. Rather than insurers, however, it is the members of the pool who assume population longevity risk and investment risk.

BASIC TYPES OF ANNUITIES

Fixed Annuities. Payments are guaranteed and fixed in advance for the entire period of the annuity until the end of life. Insurance companies invest the assets backing these annuities in fixed-income securities (bonds).

Variable Annuities. Payments are guaranteed until the end of life but vary with the returns on an underlying investment portfolio. For variable annuities provided by commercial insurers, the portfolio is usually a selection of investment funds elected by the customer. These annuities sometimes allow the purchase (for an additional premium payment) of guarantees which reduce the likelihood that the income provided will drop below a certain level.

Immediate Annuities. Payments begin immediately upon payment of the premium. Immediate annuities can be fixed or variable.

Deferred Annuities. Payments do not start until a date later than the time the premium is paid. For example, a deferred annuity making payments starting at age 65 could be purchased with annual premium payments beginning at age 45. A deferred annuity can also be purchased with a single premium payment—for example, at age 65 for an annuity making payments starting at age 85. Like immediate annuities, deferred annuities can be fixed or variable.

Chapter 1:

THE ADVANTAGES OF LIFETIME INCOME

Governments establish state pension systems and encourage the development of private-sector ones because society has a collective interest in providing for financial security in old age. Some tiers in a country's overall retirement system may focus on providing a floor of poverty protection, others may focus on income replacement and maintaining preretirement living standards, and some may serve both purposes. Retirement programs may sometimes have additional purposes, such as managing the labor force or promoting economic growth. But poverty protection and income replacement are always their core objectives.

The governments of developed countries now dedicate substantial funds to direct benefits and tax subsidies in support of these objectives. In fact, the cost of supporting retirement programs has become the largest item in the government budgets of many countries and may be the single most important factor contributing to fiscal deficits globally. It is therefore important that countries make the most efficient use of the funds that they allocate to retirement security.

The cost of supporting retirement programs has become the largest item in the government budgets of many countries.

The most efficient way to pay retirement benefits is as lifetime income. Lifetime income, which is another way of saying annuity income, can be delivered by all types of retirement systems, however they are structured or financed. The benefits paid by most state pension systems are of course lifetime annuities, as are the benefits paid by traditional employer DB pensions. Most DC retirement savings systems do not currently pay benefits as lifetime income, though all could. As DC systems have grown in importance, increasing the amount of lifetime income they provide has become one of the greatest policy challenges facing retirement systems worldwide.

In this chapter, we discuss the advantages of lifetime income from two perspectives: the savings that retirement systems can achieve by paying benefits as lifetime income rather than lump sums and the higher levels of spending that individuals can enjoy by receiving benefits as lifetime income. The first perspective is important for governments and employers, who have an interest in delivering the most retirement security at the lowest cost. The second perspective is important for individuals, who want to enjoy the highest possible standard of living in retirement.

THE MAGIC OF LONGEVITY POOLING

The place to begin is with longevity pooling, which is what underpins the efficiency of lifetime income. In the context of this report, longevity pooling refers to sharing the financial "risk" of living a long life among the members of a retirement system. When this risk is shared, retirement savings in the aggregate need only cover an average lifetime but will provide income for everyone's lifetime no matter how long. Society benefits from the pooling of longevity risk because it allows the same level of retirement security to be delivered at a lower cost in direct benefits or tax subsidies—or alternatively, a higher level to be delivered at the same cost. Individuals benefit from the pooling of longevity risk because they no longer need to worry about outliving their savings and can thus safely enjoy a higher level of spending in retirement. While this may seem like magic, the economic benefits are both real and tangible.

Longevity pooling allows individuals to safely enjoy a higher level of spending in retirement.

When DC retirement savings is pooled, it is converted into lifetime income using actuarial factors that are based on the life expectancy of participants in the pool. The longevity pooling and payment of annuities can be done by commercial insurers or through uninsured longevity pools, such as those in CDC

plans. In some cases, the pooling and payment of annuities might even be handled by government, as is the case with Singapore's Central Provident Fund. Lifetime income payments can be fixed amounts or amounts that vary with investment returns or inflation. They can also start immediately upon retirement or be deferred to a later age. What all types of lifetime income have in common is that they benefit from the efficiencies of longevity pooling and are guaranteed for life.

Lump sum payouts and phased withdrawals, the typical ways in which most DC systems distribute retirement savings, do not have these advantages. When retirees receive lump sum payouts, those payouts will need to finance their entire retirement, no matter how long they live. Given individuals' uncertainty about their own life expectancy, some will overspend their savings, running the risk that they exhaust it before they die, while others will underspend their savings, compromising their living standard throughout their retirement. Moreover, some portion of lump sum payouts will inevitably be passed on to heirs or otherwise diverted from providing retirement security. Although phased withdrawals, in which a set percentage of account balances is typically paid out each year, can mitigate some of the pitfalls associated with lump sum payouts, they are poor substitutes for lifetime income. They cannot eliminate longevity risk, they do not provide guaranteed income, and they may need to be progressively reduced at older ages as account balances dwindle. For all of these reasons, a retirement system that pays at least some of its benefits as lifetime income is more financially efficient than one that doesn't.

Phased withdrawals cannot eliminate longevity risk, do not provide guaranteed income, and may need to be reduced as account balances dwindle.

The potential efficiency gains from converting DC account balances into lifetime income can be estimated using a standard economic tool called a lifecycle utility model.[1] The magnitude of the gains naturally depends on the values selected for the model's key parameters. In the illustrative calculations summarized in table 1, we consider how the magnitude of potential efficiency gains, here measured as cost reductions, is affected by varying the following three parameters: the discount rate, which translates future income into present value terms; a risk aversion factor, which reflects how concerned people are about the possibility of having less money to spend; and the amount of lifetime income that is already provided by other tiers of the retirement system. Assumptions about mortality rates would also have affected the results, but these were not varied in our calculations.

[1]Lifecycle utility models measure economic utility—that is, the satisfaction, welfare, or value that individuals gain from the consumption of products, services, or experiences over their lifetime. In this report retirement security is measured in terms of economic utility, which is calculated in present value terms. For a description of the lifecycle utility model used in our calculations, see the Technical Appendix.

The first row of table 1, which assumes a relatively low discount rate of 3.0 percent, a relatively high risk aversion factor of 5.0, and no lifetime income from other sources, shows a cost reduction of 35 percent from paying benefits as lifetime income rather than a lump sum. Each subsequent row in the table shows the impact of changing one of these parameters. Comparing the first and second rows, we can see that when individuals have lifetime income from other sources the efficiency gain from annuitizing DC savings is smaller than when they do not. Comparing the first and third rows, we can see that when the discount rate is higher, meaning that the value individuals attach to future income is lower, the efficiency gain from annuitizing DC savings is also smaller. Comparing the first and fourth rows, we can see that when individuals are less risk averse—that is, less concerned about the risk of having less money to spend—the efficiency gain from annuitizing DC savings is once again smaller. But what is most instructive is that, no matter what plausible assumptions are made, paying retirement benefits as lifetime income is always significantly more efficient than paying them as a lump sum.

Paying retirement benefits as lifetime income is always significantly more efficient than paying them as a lump sum.

Table 1

ILLUSTRATION OF POTENTIAL GAINS IN FINANCIAL EFFICIENCY FROM PAYING RETIREMENT BENEFITS AS LIFETIME INCOME RATHER THAN A LUMP SUM

PARAMETERS			COST REDUCTION DUE TO LONGEVITY POOLING
Replacement Rate from Other Lifetime Income	Discount Rate	Risk Aversion Factor	
0%	3.0%	5.0	35%
40%	3.0%	5.0	21%
0%	**4.0%**	5.0	31%
0%	3.0%	**2.0**	28%

Note: The 40 percent replacement rate in row two is roughly the replacement rate for average earners in U.S. Social Security. Calculations assume 2023 unisex mortality rates for the U.S. population; retirement at age 65; inflation of 2 percent; and no additional value to longevity pooling above a 90 percent replacement rate. Mortality data are from *World Population Prospects: The 2024 Revision* (New York: UN Population Division, July 2024).

THE SOCIETAL PERSPECTIVE

As of the end of 2024, there was roughly $60 trillion in total savings in employer and personal pension systems in OECD countries.[2] If, based on the estimates of potential efficiency gains summarized in table 1, we conservatively assume that these systems could, on average, provide the same level of retirement security for 20 percent less cost with longevity pooling than without it, then longevity pooling is a $12 trillion issue. In other words, paying benefits as lifetime income to all participants in these systems would provide the same retirement security for $12 trillion less in total savings than giving them all lump sums at retirement.

In the United States alone, there is currently more than $30 trillion in savings in 401(k)s, Individual Retirement Accounts (IRAs), and other types of DC plans that do not typically deliver benefits as lifetime income.[3] If we again assume cost savings of 20 percent from paying benefits as lifetime income, this means that roughly $6 trillion in savings is being "wasted." To be sure, waste is in the eye of the beholder. Much of the efficiency loss from paying retirement benefits as lump sums or phased withdrawals stems from unspent retirement savings that will be passed on to heirs. But while individuals may place great value on leaving bequests, from a retirement policy perspective they have none. The purpose of the preferential tax treatment accorded to retirement savings, which now costs the U.S. federal budget nearly $500 billion annually in forgone revenue, is to promote retirement security, not to facilitate the transfer of wealth between generations.

In the United States, there is currently more than $30 trillion in DC plans that do not typically deliver benefits as lifetime income.

The potential efficiency gains from converting retirement savings into lifetime income of course differ from country to country. As noted above, the magnitude of the gains depends on how much guaranteed lifetime income is already provided by other tiers of the retirement system. It also depends on the amount of retirement savings there is in a country that could potentially be annuitized.

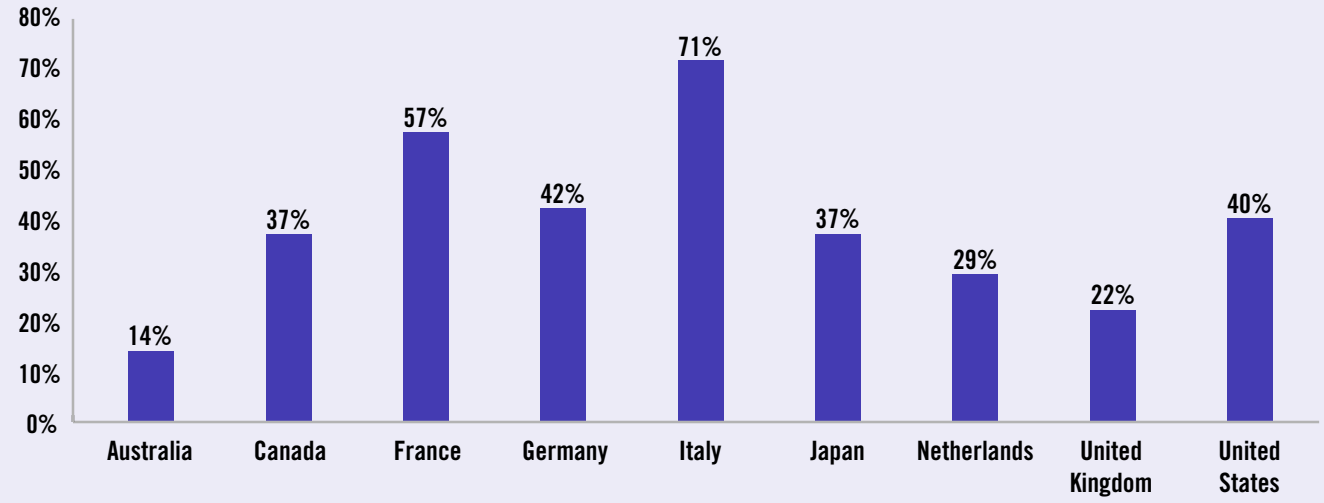
The two accompanying figures give a sense of how wide the range is on both counts across today's developed countries. Figure 3 shows projected state pension replacement rates for average-earning workers entering the labor force today in nine developed countries. Figure 4 shows the current level of pension assets as a share of GDP in the same nine countries. When countries have both a relatively modest state pension system and a large funded retirement system, the potential efficiency gains are the greatest. Australia, Canada, the Netherlands, the United Kingdom, and the United States are all obvious examples. When countries have both a relatively generous state pension system and a small funded retirement system, the potential efficiency gains are the smallest. Here France and Italy are obvious examples. The potential efficiency gains for Germany and Japan, which have relatively modest state pension systems but small funded retirement systems, would lie somewhere in between.

[2] *Pensions at a Glance 2025: OECD and G20 Indicators* (Paris: OECD, 2025). The OECD figure cited here includes both DB and DC pension systems, but excludes government reserve funds for pay-as-you-go state pension systems.

[3] ***The U.S. Retirement Market, Fourth Quarter 2025*** (Washington, DC: Investment Company Institute, March 2026).

Figure 3

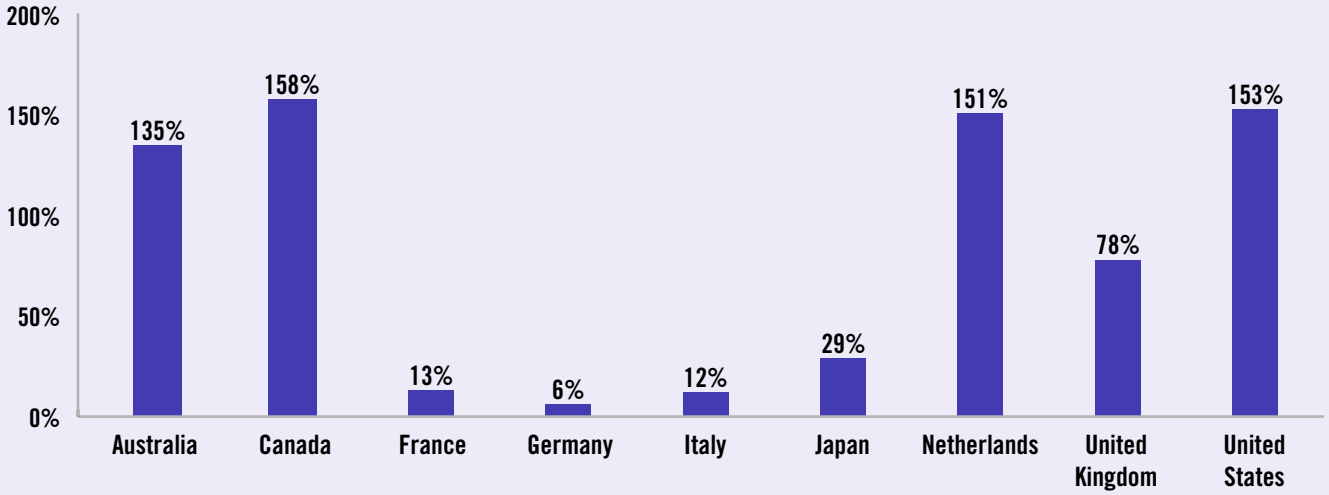
GROSS STATE PENSION REPLACEMENT RATES FOR AVERAGE-EARNING FULL-CAREER WORKERS ENTERING THE LABOR FORCE TODAY, BY COUNTRY



Source: OECD (2025)

Figure 4

PENSION ASSETS AS A SHARE OF GDP, BY COUNTRY, AT THE END OF 2024*



Source: OECD (2025)

*Excludes reserve funds for pay-as-you-go state pensions.

THE INDIVIDUAL PERSPECTIVE

A critically important issue for most individuals is understanding how much savings they will need to confidently meet their retirement income goals or, conversely, what a "safe spending level" in retirement would be given how much savings they have. Whatever that amount is, retirees can increase their spending without increasing their likelihood of running out of money by using some of their savings to buy lifetime income. More spendable funds in turn means more retirement security. Just as lifetime income creates financial efficiencies at the societal level, so it also creates them at the individual level.

An example will help to illustrate how lifetime income allows individuals to increase their retirement spending and retirement security. In our example, a U.S. woman is retiring at age 65 with $1 million in retirement savings and wishes to spend $80,000 per year. Of that, $25,000 will be provided by Social Security, leaving $55,000 to be provided by her savings. The individual, perhaps with the help of a financial adviser, has determined that it would be prudent to limit her spending to 4 percent of her portfolio each year, a typical safe spending level.[4] But this would only allow spending of $40,000 per year, $15,000 short of what she needs. Meeting her spending goal from her savings would require spending 5.5 percent of her portfolio each year, increasing the risk that she will exhaust her savings before she dies.

[4]The "4 percent rule" is a common rule of thumb for spending retirement savings. Using the rule, retirees would spend 4 percent of their savings in the first year of retirement and increase that amount with inflation each year thereafter.

Table 2

ILLUSTRATION OF THE POTENTIAL INCREASE IN "SAFE SPENDING LEVELS" FROM CONVERTING A PORTION OF RETIREMENT SAVINGS INTO LIFETIME INCOME

	SAFE SPENDING WITHOUT LIFETIME INCOME		SAFE SPENDING WITH LIFETIME INCOME	
Annuity		$0	$500,000 x 7.0% =	$35,000
Savings	$1,000,000 x 4.0% =	$40,000	$500,000 x 4.0% =	$20,000
Social Security		$25,000		$25,000
TOTAL		**$65,000**		**$80,000**

This individual could easily cover the $15,000 income shortfall if she uses half of her savings, or $500,000, to purchase a lifetime annuity. If we assume that 7 percent of this premium will be paid out annually—currently a conservative assumption for fixed insured lifetime annuities in the United States—the individual would have guaranteed income of $35,000 each year for life.[5] If she then withdraws the planned 4 percent of her remaining $500,000 in retirement savings each year, she will have an additional $20,000 in income, or the desired total of $80,000, including Social Security. (See table 2.) Purchasing lifetime income has thus allowed her to meet her retirement spending goal without increasing the risk that she will run out of money. In fact, she has decreased that risk.

It is true that annuity prices are sensitive to interest rates, and that if interest rates were to fall beneath today's levels the 7 percent annuity income rate assumed in our example would need to be lowered. However, the safe spending level for non-annuitized retirement savings would also be lower. This is because the price of all types of assets rises when interest rates fall, though some types like equities and real estate may only do so with a lag. Higher asset prices mean lower future returns, and this in turn reduces safe spending levels. Even in an extremely low interest rate environment like that experienced in the United States during 2020-21, using a portion of a retirement portfolio to purchase lifetime income would still increase safe spending levels.[6]

Even in an extremely low interest rate environment like that in the United States during 2020-21, purchasing lifetime income would still increase safe spending levels.

There is no one answer to how much of their retirement savings individuals should annuitize. Nor is there one answer to whether a fixed or variable or deferred annuity is preferable. Some people continue to work after beginning to collect state pension benefits, while others retire before qualifying for them. Some people are less risk averse than others, some value flexibility more than others, and for some leaving a bequest is more important than for others. Individual circumstances will always require individual solutions. However, the basic principle that converting savings into lifetime income enables individuals to safely spend more in retirement will always apply.

It is difficult to overstate the benefits for individuals of having sufficient lifetime income. Maximizing spending from a retirement portfolio while minimizing the risk of depleting one's assets is challenging. Once a portfolio begins to be drawn down, accurately determining safe spending levels becomes a highly technical actuarial exercise that is beyond not only the ability of most retirees, but also of most financial advisers. In the face of all this complexity and uncertainty, many retirees become overly cautious and spend less than they safely could, enduring unnecessary hardship during their golden years.[7] From both a societal and individual perspective this is hardly optimal. Yet all of the uncertainly, financial austerity, and emotional stress could be avoided if retirees had sufficient guaranteed lifetime income.

[5]In March 2026, typical income rates for fixed insured lifetime annuities purchased at age 65 in the United States were close to 8.0 percent for males and 7.5 percent for females.

[6]An interesting sidelight is that, when the 4 percent rule was developed in 1993-94, U.S. 10-year Treasury rates ranged from about 5.5 to 7.5 percent. Since 10-year Treasury rates in early 2026 are approximately 4.0 to 4.3 percent, if the same method used to develop the rule were applied today the results would show that the safe spending level is now lower.

[7]For an excellent discussion of this dynamic, see David Blanchett and Michael S. Finke, ***Retirees Spend Lifetime Income, Not Savings*** (December 30, 2024).

Chapter 2:

REAL WORLD CONCERNS AND SOLUTIONS

Despite the significant financial advantages that lifetime income can provide for both individuals and society, many retirement systems continue to pay benefits in the form of lump sums and phased withdrawals, and many retirees show a preference for receiving them that way. One reason that efforts to expand lifetime income have failed to gain more traction is that the efficiency gains it promises in theory are not always achieved in practice. Another is that any workable plan to expand lifetime income requires difficult policy trade-offs between the spending flexibility that retirees desire and the lifetime income protection that they need. In this chapter, we begin with a brief review of potential impediments to and concerns about lifetime income. We then explain how the right policies and practices can overcome them.

CONCERNS ABOUT LIFETIME INCOME

A good place for policymakers to start is to recognize that the large potential efficiency gains from converting retirement savings into lifetime income identified in the previous chapter can be substantially reduced by two factors. The first is adverse selection. Whenever lifetime income is voluntary, people who expect to live long lives will be more likely to purchase annuities than people who do not, driving up their price and reducing their efficiency. The second factor is the cost of delivering lifetime income, including sales, administration, actuarial analysis, investment management, and the profit earned by the annuity provider. For a hypothetical individual with average life expectancy, the impact of these two factors together has been estimated at 20 percent of the premium that individual would pay for a retail annuity in the United States, with each factor accounting for about half of the total.[8] The impact of adverse selection and delivery costs is typically smaller in retirement systems than it is in retail markets. But it can still be significant, and thoughtful policy design will be required to minimize it.

Along with concerns about the efficiency of lifetime income, there may also be concerns about its equity. When longevity risk is pooled, individuals who die earlier end up subsidizing individuals who live longer and receive payments for more years. Far from being inequitable, this is precisely what gives longevity

The efficiency gains that lifetime income promises in theory are not always achieved in practice.

pooling its value. However, equity concerns can arise when some groups of participants in a longevity pool have a shorter life expectancy than others. These concerns become especially salient when the groups with shorter-than-average life expectancy are less privileged than the ones with longer-than-average life expectancy. In some developed countries, there are large differences in life expectancy by race and ethnicity, which means that a less privileged minority population may end up subsidizing the more privileged majority population. In all developed countries, there are large differences in life expectancy by income and educational attainment, which means that lower-income individuals may end up subsidizing higher-income ones.

[8]This does not mean that retail annuities are unfairly priced. Insurers take adverse selection into account and price annuities based on the life expectancy of the population that actually purchases them. For the estimates, see Gal Wettstein, Alicia H. Munnell, Wenliang Hou, and Nilufer Gok, *What Is the Value of Annuities?* (Chestnut Hill, MA: Center for Retirement Research at Boston College, March 2021); and Jan Walliser, "Adverse Selection in the Annuities Market and the Impact of Privatizing Social Security," *Scandinavian Journal of Economics* 102, no. 3 (2000).

Beyond addressing these issues of efficiency and equity, successful efforts to expand the provision of lifetime income will need to address the concerns of retirees. Although no research has conclusively explained why retirees frequently favor lump sum payouts or phased withdrawals over lifetime income, there are a number of biases, preferences, and preconceptions that clearly play a role. Some of these are driven more by emotion than rational analysis, while others reflect entirely rational, if sometimes misguided, concerns:

- **Attachment to Savings.** When people spend their working lives setting aside savings in a retirement account and watching it grow, they can develop a strong emotional attachment to their savings. Their goal may become to preserve it, rather than to maximize the retirement security it can provide. They would rather be a person with $1 million in savings than a person with $70,000 a year in annuity income.

- **Fear of "Losing Out."** Purchasing lifetime income may seem like placing a bet that you will live a long life. If you die early and fail to receive back at least the value of your premiums in annuity payments, you will have lost the bet. Few people think that they have wasted money on home insurance if their house doesn't burn down. Yet when it comes to protecting against longevity risk, many people fail to appreciate the insurance value of lifetime income.

- **Need for Liquidity.** Purchasing lifetime income can reduce liquidity and limit spending flexibility. Yet there may be occasions during the course of retirement, anticipated or unanticipated, that require larger expenditures than can be financed by annuity income over a short period of time. Placing a downpayment on a home is one example, while paying for long-term care is another.

- **Desire to Leave a Bequest.** Many retirees also wish to pass on money to their heirs, charities, or other beneficiaries. Using retirement savings to purchase lifetime income might compromise their ability to leave a bequest.

- **Inflation Risk.** Retirees may worry that lifetime income will fail to protect them against inflation risk. Although spending needs tend to be highest in the early years of retirement when people are more active and spend more on leisure activities and travel, preserving purchasing power is nonetheless a serious concern for most retirees.

- **Interest Rate Risk.** When interest rates are low, annuities seem expensive. Not surprisingly, their popularity tends to rise and fall along with interest rates.

There are other factors that can impede efforts to expand the provision of lifetime income. Unnecessarily burdensome regulation or punitive tax treatment can stunt the development of annuity markets. In some developing countries, capital markets lack breadth and depth and the long-dated securities needed to match annuity liabilities may not be available. But since issues of regulation and tax policy are best treated in the context of reform efforts in particular countries, and since supply-side constraints are largely irrelevant in the fully developed economies on which this report focuses, we do not discuss them here.

POLICY GUIDELINES FOR LIFETIME INCOME

While there are many potential obstacles to expanding lifetime income, there are also policy and market solutions that can address all of them. Different countries will no doubt choose to take different approaches depending on the overall structure of their retirement systems and the relative importance they assign to longevity protection and income adequacy versus choice and flexibility. Even within the same country, solutions that are appropriate for one tier of the retirement system may not be

appropriate for another. For these reasons, it would be pointless to attempt to develop a one-size-fits-all set of recommendations. Instead, we offer some broad guidelines that we hope will help clarify the choices policymakers face. We have grouped these guidelines under four main headings: "expanding lifetime income," "balancing protection and flexibility," "maximizing value and minimizing cost," and "ensuring adequate financial advice."

Different countries will take different approaches to expanding lifetime income depending on the overall structure of their retirement systems.

Expanding Lifetime Income. The surest way to expand the provision of lifetime income is to mandate it. While mandates are unpopular, they have two great advantages. The first, of course, is that they ensure that all participants in a retirement system enjoy the additional retirement security that comes with lifetime income. The second is that they entirely eliminate the problem of adverse selection that plagues voluntary annuities. A retirement system with an annuitization mandate could still allow participants to choose among a variety of lifetime income products designed to meet different individual preferences and priorities, as Singapore's Central Provident Fund does. As long as there is no option to take benefits as lump sums or phased withdrawals, there will be no adverse selection and no reduction in the financial efficiency of lifetime income.

The case for mandating lifetime income is strongest when three conditions apply. (See figure 5.) The first is that the state pension system only provides a modest level of guaranteed lifetime income. The second is that the DC system in which the mandate is being imposed is itself mandatory. The third is that the DC system is largely employer funded. When a retirement savings system is voluntary and/or largely employee funded, a balance must be struck between maximizing financial efficiency in the decumulation phase of the DC lifecycle by reducing choice and encouraging savings in the accumulation phase by increasing choice. The mandatory annuitization of employee contributions in voluntary systems might seriously reduce both the number of participants in the system and their level of savings. It is therefore appropriate to allow for choice in how retirees withdraw their own savings, even if those savings are tax-advantaged. That said, policymakers should still consider requiring the annuitization of contributions made by employers in voluntary retirement savings systems.

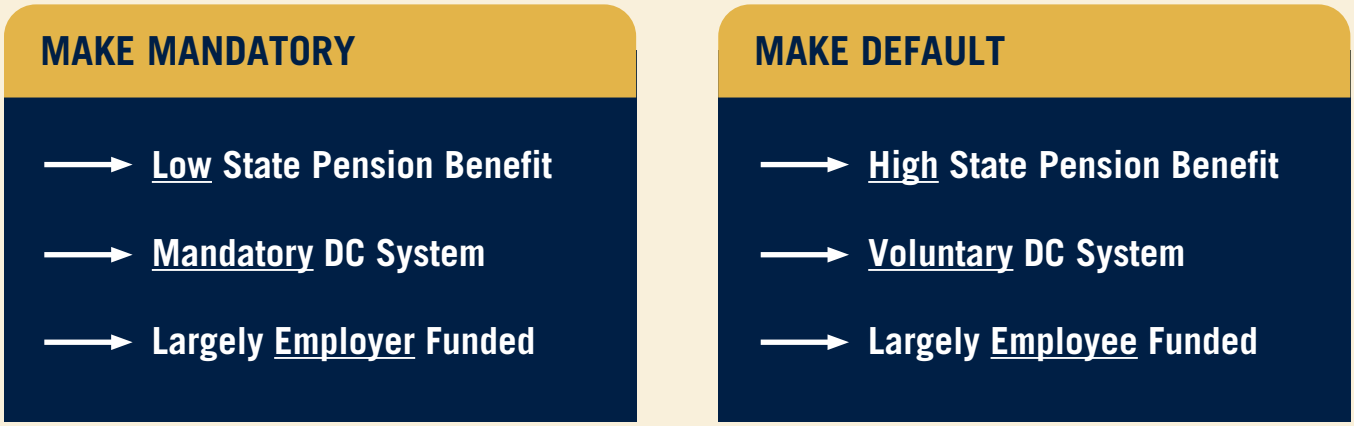
While under-annuitization is a major problem, over-annuitization can be a problem too. When considering mandating lifetime income in a DC system, policymakers need to be attentive to its impact on retirees at different income levels. Some state pension systems, such as U.S. Social Security, have progressive benefit formulas. While replacement rates for average earners are a modest 40 percent, suggesting that mandating additional lifetime income would be beneficial, those for low earners can be as high as 80 percent, suggesting that they may already be sufficiently annuitized and that the efficiency and welfare gains from additional annuitization would be minimal. Needless to say, a mandate might also compel some high earners with lower income replacement needs and multiple retirement income sources to over-annuitize. One possible solution would be to limit the annuitization mandate to some base level of retirement income.

When lifetime income is not made mandatory in DC systems, policymakers can and should make it the default option.

When lifetime income is not made mandatory in DC systems, policymakers can and should make it the default option. Many countries have enjoyed considerable success in boosting participation and savings rates in DC systems during the accumulation phase by instituting autoenrollment provisions that require workers to make an active decision to opt out of the system rather than an active decision to opt in, as well as autoescalation provisions that increase their contribution rate over time. Behavioral inertia being what it is, making lifetime income the default during the decumulation phase might enjoy similar success, especially if accompanied by objective financial advice that explains the pros and cons of different decumulation strategies. Requiring that plans translate account balances into actuarially equivalent lifetime income payments when communicating with participants during the accumulation phase might also help increase acceptance of an annuitization default by accustoming people to thinking in terms of lifetime income.

Figure 5

MANDATE OR DEFAULT?



Balancing Protection and Flexibility. For efforts to expand lifetime income to succeed, they will need to address retirees' legitimate concerns about sacrificing flexibility and liquidity. While this is especially true in voluntary DC systems, it can also be an important policy consideration in mandatory ones. The obvious solution is to require partial annuitization of DC account balances, while allowing the remainder of savings to be withdrawn as phased withdrawals or, less preferably, lump sum payouts. A partial annuitization requirement could be specified in many ways. For example, it could be required that a percentage of total savings be received as lifetime income or, alternatively, that only a limited percentage be taken as phased withdrawals or lump sum payouts. It could also be required that some minimum level of lifetime income be assured before phased withdrawals or lump sum payouts are permitted. Ideally, that minimum level would take into account lifetime income received from all sources, including state pensions and employer DB plans.

For efforts to expand lifetime income to succeed, they will need to address retirees' concerns about flexibility and liquidity.

Rather than require that participants in DC plans receive an immediate annuity upon retirement, they could instead be required to use a portion of their savings to purchase a deferred annuity. The OECD has long argued that the optimal way to balance protection and flexibility in the decumulation phase of the DC lifecycle is to combine phased withdrawals with a deferred annuity starting at perhaps age 80 or 85.[9] The advantage of deferred annuities of this kind is that they provide a backstop against longevity risk at only a fraction of the cost of an immediate annuity. However, they tend to be unpopular with retirees, presumably because they must hand over savings today in exchange for a potential "payoff" that could still be decades in the future. One way around this might be to delay the purchase of a deferred annuity until later in retirement when the payoff date does not seem so distant—an approach that the United Kingdom now plans to make the default option in Nest, its government-sponsored DC plan. Another way is to allocate a portion of savings to the purchase of a deferred annuity during the accumulation phase, thus spreading out the cost over many years. In this case, the deferred annuity would normally be payable upon retirement.

Maximizing Value and Minimizing Cost. In addition to balancing protection and flexibility, successful efforts to expand the provision of lifetime income may need to address a variety of other important design issues, from how to protect against inflation risk and interest rate risk to how to ensure the equitable treatment of different groups in a longevity pool. In addressing these issues, policymakers should seek to maximize the value of lifetime income for retirees while minimizing the cost of delivering it. In some cases, the two goals may be well aligned. In others they may be in conflict, posing difficult policy trade-offs.

Inflation Risk. The most obvious way to ensure that lifetime income does not lose its value over time is to require that annuity payments be inflation-indexed. A few DC systems, notably Chile's personal accounts system, do just that. Unfortunately, the obvious way to protect against inflation risk may also be the most expensive way.

An attractive alternative is to pay lifetime income in the form of variable annuities. Premiums in variable annuities are invested in diversified portfolios that include higher-risk/higher-return assets like equities and real estate whose returns reflect the level of inflation. Variable annuities may also be less expensive than fixed annuities. In fixed annuities, insurers take on investment risk and must charge for doing so, while in variable annuities investment risk is normally borne by retirees. It is true that in many countries the variable annuities purchased in retail markets often come with riders that guarantee a minimum income floor or withdrawal level. Although these products are popular, the additional risk taken on by the insurer, as well as the complicated derivative investments that often back the guarantees, can make them less efficient and more costly than variable annuities without market protection guarantees.

Variable annuities are an attractive way to protect against inflation risk.

[9]Pablo Antolin, "Policy Options for the Payout Phase," OECD Working Papers on Insurance and Private Pensions 25 (Paris: OECD, September 2008); and *The OECD Roadmap for the Good Design of Defined Contribution Pension Plans* (Paris: OECD, June 2012).

Interest Rate Risk. When interest rates happen to be low at the time people reach retirement age, purchasing lifetime income may seem unattractive. As noted in the previous chapter, the concern that premiums purchase less annuity income when interest rates are low may be misguided, since returns to all types of assets also fall when interest rates are low. But misguided or not, the concern can be a major deterrent to the purchase of lifetime income and, unless annuitization is mandatory, needs to be addressed.

Since interest rates vary over time, the obvious solution is to provide for purchasing lifetime income in installments over time. One possibility is to allocate a portion of savings to the purchase of a deferred annuity during the accumulation phase, an approach which (as noted above) may be attractive for other reasons as well. Most DC plans offer target date or other lifecycle funds that adjust asset allocation as participants age and near retirement. Investment in a deferred lifetime income product could be encouraged or required as part of the asset allocation, an approach that has been introduced in some U.S. 401(k) plans. Another possibility is to give retirees a window of several years following retirement during which lifetime income would be purchased in installments. Spreading annuity purchases over time would also have the further benefit of mitigating "asset risk"—that is, the risk that one's date of retirement coincides with a sharp market downturn.

Allocating savings to the purchase of a deferred annuity during the accumulation phase can protect against interest rate risk.

Fear of "Losing Out." Another concern that may need to be addressed when annuitization is voluntary is the fear that many retirees have of "losing out" if they purchase lifetime income but fail to live a long life. There are several existing annuity products that address this concern. For example, return-of-premium annuities include a provision that the full value of the premium paid to purchase the annuity will still be paid out to heirs in the event of the retiree's premature death. Other annuity products include a provision that payments will be made for a specified number of years, often ten, even if the retiree dies sooner. These options necessarily increase the cost of each annuity dollar, but can make retirees more comfortable with purchasing lifetime income.

It is possible to minimize the risk that groups with shorter-than-average life expectancy will subsidize those with longer-than-average life expectancy.

Differential Life Expectancy. While policymakers may need to pay more attention to concerns about interest rate risk or the fear of losing out when lifetime income is voluntary, concerns about differences in life expectancy between diverse groups in the population become more important to address when it is mandatory. In principle, the risk that less privileged groups might end up subsidizing more privileged ones could be minimized by adjusting the mortality tables used in calculating annuity payments based on some proxy for each group's life expectancy. One approach, which is already being used in DB plan valuations and group insurance pricing in the United States, might be to use postal codes, which are a reasonably good indicator of income and wealth and hence of life expectancy.

It is true that satisfactorily addressing this equity issue is fraught with difficulties. No proxy will be perfectly correlated with life expectancy. The creation of multiple risk classes in a longevity pool might increase delivery costs, reducing the financial efficiency of lifetime income. In some countries, moreover, segmenting longevity pools in this fashion might require changes in existing law or regulation. Some might conclude that all of this is a good argument against mandatory annuitization. Yet it is worth noting that the same equity issue arises in contributory state pension systems, and governments have not hesitated to mandate annuitization in these.

Centralizing administration creates economies of scale that can reduce the cost of delivering lifetime income.

Delivery Costs. Delivering lifetime income inevitably has a cost. The impact of that cost on the financial efficiency of lifetime income will depend in part on the size of the retirement system, since some costs are fixed and the larger the system the larger the number of participants they can be spread across. Although the potential for economies of scale is greatest in national systems, there is considerable potential in almost any system. Small employers, for instance, could be encouraged to join with each other to establish larger groups, enabling larger-scale purchases of annuity products. Exchanges, perhaps run by quasi-governmental agencies, could also handle many administrative functions, including communication with retirees, and serve as liaisons to commercial annuity providers. Naturally, the more standardization there is in the annuity products offered, the greater will be the value of centralizing administration.

Unless it is government itself that provides lifetime income, the entities providing it must earn a profit. The amount of profit earned will depend on how the uncertainties underlying longevity and investment risk play out. Commercial insurers pool (and therefore eliminate) individual longevity risk but are exposed to population longevity risk. The former is the risk that individuals will live longer than the currently projected life expectancy. The latter is the risk that the entire population will live longer than what is currently projected. If cancer is cured, a commercial insurer's profit from an annuity line of business will be lower. On the other hand, if deaths from cardiovascular disease rise, it will be higher. The exposure of insurers to investment risk depends on the type of annuity product. With fixed annuities, they are exposed to all of it (though they are highly skilled at constructing bond portfolios that minimize the risk). With variable annuities (assuming no riders), they are exposed to none of it.

Delivering lifetime income through uninsured longevity pools instead of commercial insurance, as CDC plans do, might reduce delivery costs, though at the expense of sacrificing some of the protection offered by insured longevity pools. CDC plans, which are now being mandated in the Netherlands and are gaining traction in a number of other countries, including Canada and the United Kingdom, bring retirees together to share individual longevity risk in the same way that it is shared by purchasers of an annuity product from a commercial insurer. Retirees, however, are subject to both population longevity risk and investment risk. While it may be possible for uninsured longevity pools to operate with lower profit requirements because there is no need to insure against these risks, most of the costs inherent in insured longevity pools, such as actuarial analysis, recordkeeping, and communication with participants, are also inherent in uninsured longevity pools.

Adequate financial advice is the bedrock on which any successful plan to expand lifetime income rests.

Ensuring Adequate Financial Advice. Whenever DC plans are an important part of a country's retirement system, participants should be ensured access to adequate financial advice about their decumulation options. While general informational materials designed to promote financial literacy can be helpful, personalized advice that takes into account individual financial circumstances is critical. Helping participants plan for the decumulation phase should begin during the accumulation phase by, as suggested above, requiring that DC plan statements translate account balances into actuarially equivalent lifetime income payments. Ideally, these statements would also include estimates of the lifetime income that retirees can expect to receive from other sources, especially state pension systems. As retirement approaches, participants should be guaranteed access to a qualified and objective adviser. While ensuring adequate financial advice may seem less important than other design choices policymakers face, it is in fact the bedrock on which any successful plan to expand lifetime income rests.

SUMMARY OF POLICY GUIDELINES

- Ensure that the different tiers of the retirement system in combination provide sufficient guaranteed income for life. While there is no universally accepted benchmark, many retirement policy experts would consider a replacement rate of 75 percent a sensible target for average-earning workers.
- If a DC retirement savings system is mandatory, make annuitization mandatory. If the system is voluntary, make annuitization the default, at least for employee contributions. Even in a voluntary system, annuitization of employer contributions can be required.
- Provided that a minimum level of lifetime income is assured, require partial rather than full annuitization to allow for spending flexibility. While there are many ways to do this, dedicating a portion of retirement savings to the purchase of a deferred annuity is a widely recommended option.
- Protect against inflation risk by providing for variable annuities that, unlike fixed annuities, allow higher returns and exposure to inflation-sensitive assets.
- Protect against interest rate risk by allowing retirees to spread the purchase of lifetime income over more than one year or by requiring that a portion of savings be allocated to the purchase of a deferred annuity during the accumulation phase.
- To the extent feasible and cost-effective, provide for different risk classifications to ensure equity among diverse groups of retirees in the longevity pool.
- To minimize costs, standardize annuity products and increase the scale of annuity purchasing pools by centralizing the delivery of lifetime income, potentially using exchanges to connect employers with providers.
- Ensure that participants in DC systems receive adequate financial advice. Translate account balances into equivalent lifetime income payments when communicating with participants during the accumulation phase and guarantee them access to a qualified and objective adviser as they approach retirement.

Chapter 3:

A CLOSER LOOK AT FIVE COUNTRIES

This chapter surveys the current state of lifetime income provision in five developed countries: Australia, Japan, the Netherlands, the United Kingdom, and the United States. Four of the five countries have modest state pension systems and large funded retirement systems. The exception is Japan, which has a relatively small funded retirement system but needs to greatly expand it in coming decades. Most of the countries have recently taken steps to increase the amount of lifetime income that their funded retirement systems deliver. But with the possible exception of the Netherlands, all will clearly need to do more.

Australia

Few developed countries would benefit more from increasing guaranteed lifetime income than Australia. The first tier of its retirement system consists of a means-tested government benefit known as the Age Pension that is designed to provide a basic floor of protection against poverty in old age, rather than to replace a substantial share of preretirement earnings. The income replacement function of the retirement system is instead handled by a large mandatory employer pension system known as Superannuation, or Super for short. The modest cost of Australia's state pension system gives it an enviable fiscal advantage over most aging developed countries. In theory, its large funded employer pension system should mean that this fiscal advantage does not come at the expense of income adequacy. The problem is that Super has no annuitization requirement, and many superannuation funds do not even include a lifetime income option.

Few developed countries would benefit more from increasing lifetime income than Australia.

The Age Pension, established in 1908, currently pays benefits to Australians starting at age 67, provided they have been residents for at least ten years and meet the required income and asset tests. The full-rate Age Pension for a single individual is equal to roughly 30 percent of the average wage. This amount is reduced if beneficiaries have significant income or assets, including Super assets, and falls to zero for individuals with incomes equal to roughly 60 percent of the average wage. Couples collect a benefit that is about 150 percent of the individual benefit.

Super dates to 1992, when the government imposed the Superannuation Guarantee, which requires all Australian employers to contribute to a "superannuation" fund on behalf of their employees, superannuation being the Australian term for pension. Although the Super system includes some legacy DB pension funds, the vast majority of participants have DC accounts. The government has gradually increased mandatory contributions to Super, which are paid entirely by employers, from 3 percent of wages in 1992 to 12 percent in 2025. Workers can make additional voluntary contributions to their accounts, and low- and middle-income workers who do so are eligible for government matching contributions called co-contributions.

Coverage under Super is now nearly universal and superannuation assets are growing rapidly. As of the end of 2024, they totaled $2.4 trillion in U.S. dollars, or 135 percent of GDP. As a share of GDP, this makes Super the seventh largest funded pension system in the world. In dollar terms, it ranks fourth, after only the United States, Canada, and the United Kingdom.[10]

[10] *Pensions at a Glance 2025: OECD and G20 Indicators* (Paris: OECD, 2025).

While Super has drawn much praise from pension experts for its success in boosting retirement savings, it has also drawn criticism for its failure to make adequate provision for lifetime income. In the year ending June 2025, 55 percent of benefits were paid as lump sums, while the remaining 45 percent were paid in the form of "account-based pension" benefits. Although some account-based pensions include a "wrap around" lifetime income component, most are simply vehicles for phased withdrawals that provide no protection against longevity risk. Only a trivial 3.5 percent of total superannuation assets are held in annuities.[11]

The lack of an annuitization requirement raises several serious concerns. It may create incentives for people to game the system by disposing of lump sum withdrawals from Super in ways that help them qualify for the Age Pension. More importantly, it leaves retirees at risk of outliving their savings—a risk that is compounded by the early age at which account balances can be tapped. Even though Australians cannot collect the Age Pension until they turn 67, they can start to withdraw funds from their Super accounts at age 60—or even sooner if they were born before July 1, 1964. While many retirees do exhaust their savings, to avoid that outcome others end up underspending in retirement.[12]

The lack of an annuitization requirement in Super raises several serious concerns.

Given that the Age Pension is means-tested, the lack of adequate provision for lifetime income in Super will become a growing problem over time. As Super matures and account balances grow, a smaller share of the population that would otherwise be eligible for the Age Pension will qualify for one. The share that qualifies has already declined from nearly 80 percent in the late 1970s to 64 percent in 2022-23. The government projects that it will continue to decline, falling to around 50 percent by 2062-63. Meanwhile, of those qualifying for the Age Pension, the share receiving a full-rate pension will drop from three-fifths to two-fifths.[13]

As awareness of these threats to retirement security has grown, Australian policymakers have become increasingly supportive of promoting lifetime income solutions. In 2017 regulatory barriers to variable annuity solutions were removed, allowing the creation of a new class of superannuation products called Innovative Retirement Income Streams (IRIS) which workers can begin contributing to during the accumulation phase. To encourage the uptake of lifetime income products, new legislation in 2019 gave favorable treatment to assets used to purchase annuities in the means-testing formula that determines eligibility for the Age Pension. While many lifetime income products may benefit from the new rules, the treatment of IRIS products is especially favorable.

[11] *Annual Superannuation Bulletin, 2024-25 Highlights* (Sydney: Australian Prudential Regulation Authority, December 2025); and *Retirement Phase of Superannuation: Discussion Paper* (Canberra: Department of the Treasury, December 2023).

[12] *Retirement Income Review, Final Report* (Canberra: Commonwealth of Australia, June 2020); and Ross Clare, *Superannuation Balances Prior to Death* (Sydney: Association of Superannuation Funds of Australia, March 2021).

[13] *Intergenerational Report 2023: Australia's Future to 2063* (Canberra: Commonwealth of Australia, 2023).

It may be the 2022 Retirement Income Covenant (RIC), however, that most clearly reflects the sea change in policy thinking about lifetime income. For the first time, the RIC requires superannuation fund trustees to develop a retirement income strategy designed to maximize members' expected retirement income and ensure its sustainability and stability, while still allowing them flexibility to access capital during retirement. The RIC did not require that superannuation funds offer lifetime income products, much less make them the default. Nonetheless, it has spurred some funds to introduce them, and as of August 2025 ten of the thirty largest had launched or announced lifetime income offerings. Building on this momentum, a 2025 government consultation paper proposed best practice principles for Super that would effectively require all funds to offer lifetime income options.[14]

At the same time, the government is making efforts to ensure that retirees receive adequate financial advice. Most notably, the Delivering Better Financial Outcomes Act (DBFO) of 2024 simplifies the regulations governing financial advice, reduces compliance costs, and expands the types of advice that retirees can directly access through their superannuation fund. Although it is too soon to assess its impact, it should leave retirees better informed.

While these are all positive steps, they fall well short of a complete solution. Given the modest and receding role of the government in providing guaranteed lifetime income, Australia should seriously consider making the partial annuitization of Super account balances mandatory. At the very least, partial annuitization should be made the default option. The Australian retirement system is well designed—indeed, perhaps ideally designed—to provide a high level of retirement security at minimal fiscal cost as society ages. But to realize its promise, it is not enough to ensure that people save sufficiently during their working years. It will also be essential to ensure that they have adequate guaranteed income during their retirement years.

Australia should consider making the partial annuitization of Super account balances mandatory.

[14] *Guidance on Best Practice Principles for Superannuation Retirement Income Solutions* (Canberra: Department of the Treasury, August 2025).

Japan

When it comes to retirement policy, Japan finds itself at a crossroads. Its state pension system still provides a solid floor of old-age income support, but rapid population aging has already forced the government to reduce its generosity over the past few decades and additional reductions will almost certainly be necessary. The country's voluntary employer pension system, which could potentially fill the emerging retirement income gap, covers just a fraction of the workforce. Participation in its personal pension system, though growing, is even more restricted. All of this suggests that Japan will need to substantially boost retirement savings to provide a decent standard of living to future retirees. As it does so, it will also need to ensure that the retirement savings system delivers adequate lifetime income.

Additional reductions in the generosity of Japan's state pension system will almost certainly be necessary.

Japan's state pension system has two components. The first is the National Pension (NP/Kokumin Nenkin), which pāys a flat benefit to all Japanese residents. The second is Employees' Pension Insurance (EPI/Kosei Nenkin), which is an earnings-related pension system that covers most private- and public-sector employees. The combined NP and EPI replacement rate for average-earning workers was as high as 70 to 80 percent during the 1980s but now ranges between roughly 40 percent for single earners and 60 percent for one-earner couples. Although a 2004 law requires the government to keep the replacement rate for one-earner couples (considered "model households") from falling below 50 percent, it is doubtful that this will be fiscally feasible as Japan's working-age population contracts. Although the NP is a contributory program, half of its cost is now financed by a general revenue subsidy. Current EPI contributions also fall well short of paying for current EPI benefits, with the difference covered by the Government Pension Investment Fund (GPIF). Although this reserve fund is very large, it is not inexhaustible.

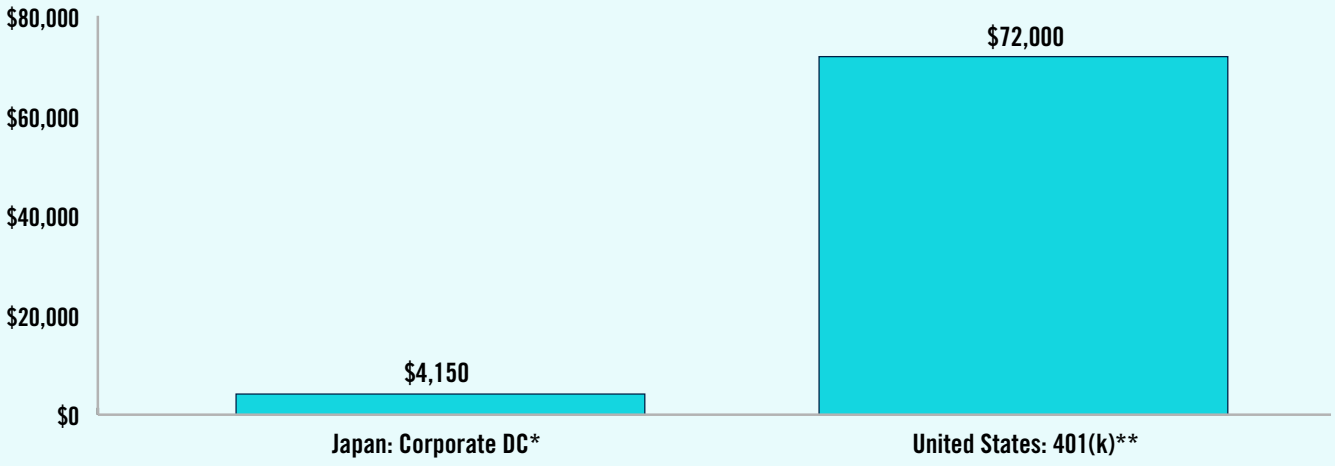
The uncertain prospects for Japan's state pension system would be of less concern if the country had a universal employer pension system. While most Japanese companies do offer some sort of "retirement" benefit, it is often just lump sum severance pay. Only about one-third of the private-sector workforce is now covered by an employer pension plan, whether DB or DC. Nor is this low coverage rate the only concern. Even for workers who have an employer pension, benefits are often quite modest. This is particularly true of DC plans, which were first authorized by the Defined Contribution Pension Act of 2001. The problem is not that they are replacing DB pensions, as they also are in most developed countries. Rather, it is that the low limit on contributions, which is less than one-fifteenth of the 401(k) contribution limit in the United States, means that the accumulated savings cannot generate significant retirement income. (See figure 6.)

The contribution limit in Japan's DC plans is less than one-fifteenth of the limit in U.S. 401(k)s.

The same 2001 act that authorized employer DC plans also authorized a tax-advantaged personal pension plan called the Individual Type Defined Contribution Pension (iDeCo). Participation was originally restricted to individuals without employer coverage but has since been expanded to almost all adults. Contribution limits are similar to those in employer DC plans. While participation in iDeCo has been growing rapidly, as of 2023 it was still just 3 million, or about 5 percent of those eligible. Individuals can also save for retirement in a Nippon Individual Savings Account (NISA). Launched in 2014, NISA is a tax-advantaged investment plan with no restrictions on withdrawals, rather than a pension plan, but some households use it for retirement savings.

Figure 6

CONTRIBUTION LIMITS IN DC PLANS IN JAPAN AND THE UNITED STATES IN 2026



Source: Ministry of Health, Labor, and Welfare (Japan) and IRS (United States)

*Calculated at March 24, 2026 exchange rates and rounded to the nearest $50.
**Excludes catch-up contributions for participants aged 50 and over.

Whether they are corporate or personal, Japan's DC retirement savings plans make little provision for lifetime income. Balances in both employer DC plans and iDeCo are typically withdrawn as lump sum payouts, phased withdrawals, or some combination of the two. Lump sum payouts are most popular, accounting for roughly 70 percent of benefit payments from employer DC plans and roughly 60 percent from iDeCo in 2025.[15] While the commercial annuity market in Japan is well developed, lifetime income has not been integrated into the DC pension system.

[15] *Defined Contribution Pension Statistical Data* (Tokyo: Ministry of Health, Labor, and Welfare, March 2025) [in Japanese].

The Pension System Revision Act of 2025 includes some measures that should improve retirement security. On the state pension front, it phases in an expansion of EPI coverage to part-time workers and workers at small firms, who had previously been excluded. It also raises the amount retirees can earn without having their pensions reduced, removes gender disparities in survivor benefits, and raises the wage cap used in calculating contributions and benefits. On the retirement savings front, it eases restrictions on employee contributions to employer DC plans and modestly increases the overall contribution limit. It also raises the upper age limit for contributing to iDeCo from 65 to 70.

Japan should greatly increase the contribution limits in DC plans and require that all plans include a lifetime income default.

While this is a start, much more is needed to ensure that today's workers can look forward to a secure retirement. In many ways, Japan's retirement system is still structured to meet the needs of a vanishing world in which state pensions were generous, lifetime employment was guaranteed, and the extended family served as a reliable backstop against poverty in old age. Revamping it for the new demographic, economic, and social realities will require more than marginal adjustments. Given Japan's rapidly deteriorating demographics and enormous national debt, increasing the generosity of government retirement provision is not an option. Indeed, keeping it from further eroding will be a challenge. Instead, Japan will need to build a more robust retirement savings system. At a minimum, it should greatly increase the current limits on contributions to both employer DC plans and personal pensions and require that all plans include a lifetime income default. Ideally, it would require that all employees be auto-enrolled in such a plan.

Japan has a reputation for reluctance to make bold policy changes. However, this reputation is undeserved. From the Meiji Restoration, when Japan catapulted itself into the ranks of industrial powers, to the aftermath of World War II, when it reinvented itself as "Japan Inc.," it has shown a remarkable capacity to adapt and change. Now is the time to apply that capacity to retirement policy.

Netherlands

The Dutch retirement system, which combines a modest but universal government flat benefit with a large and quasi-mandatory employer pension system, is widely considered to be among the most successful in the world at ensuring a high degree of retirement security at an affordable cost. Until recently, employer pensions in the Netherlands were mostly DB plans that, almost by definition, provide lifetime income. In a major reform, employers are now being required to transform their DB plans into CDC plans. Like other DC plans, CDC plans shift investment risk from employers to workers and retirees, but unlike ordinary DC plans they are expressly designed to provide lifetime income. The reform is thus unlikely to reduce retirement security, and may in the long run increase it by making the retirement system more sustainable.

The Dutch retirement system is widely considered to be among the most successful in the world.

The Netherlands' state pension, known as the General Old-Age Pension (AOW/Algemene Ouderdomswet), provides a flat benefit to all residents that is equal to about 30 percent of average earnings for retirees with the maximum fifty years of contributions. The AOW eligibility age is currently 67 but is indexed to life expectancy and so is expected to gradually rise in the future.

While the AOW provides a floor of protection against poverty in old age, the income replacement function of the Netherlands' retirement system, like Australia's, is handled by employer pensions. These plans, which cover roughly 90 percent of the workforce, are mainly established through collective bargaining agreements, though the government mandates participation for certain industries and professions. Contribution rates range between about 15 and 25 percent depending on the sector and plan, with employers usually contributing around two-thirds of the total.[16] Together with AOW benefits, the employer system ensures a high level of income adequacy. Although replacement rates vary, the combined rate from the first two tiers of the retirement system is around 75 percent for a typical average-earning, full-career worker.[17] Workers, whether or not they have employer coverage, can also save for retirement in personal pension plans called "lijfrente" that pay out benefits as lifetime income.

Although the Dutch retirement system has long been held up as a model by retirement policy experts, the DB design of its employer tier began to pose serious problems beginning in the early 2000s. On the one hand, rapid population aging, together with the impact of falling interest rates on plan liabilities, made DB pensions increasingly burdensome to fund. On the other, lack of transparency in how contributions were linked to benefits and the limitations on portability inherent in traditional DB pensions seemed ill-suited to the needs of the Netherlands' mobile workforce. After nearly fifteen years of reform discussions, in 2023 the Netherlands passed the Future of Pensions Act (Wtp/Wet Toekomst Pensioenen) to address these issues. The reform mandates that all occupational pensions in the Netherlands transition to a CDC model by 2028 or face steep tax penalties. It thus effectively brings an end to DB pensions in the Netherlands.

[16] Bas Dieleman and Eric Bergamin, **Q & A: Occupational Pension Schemes in Netherlands** (London: Eversheds Sutherland, March 9, 2024).

[17] *Pensions at a Glance 2025: OECD and G20 Indicators* (Paris: OECD, 2025).

There are two CDC options that pension funds can choose between, the first being the Solidarity Contribution Scheme (Solidaire Premieovereenkomst). In this scheme, which aims to provide a targeted pension benefit amount, there is a single collective investment fund for both active and retired members and a "solidarity reserve" to protect against market downturns. At retirement, participants receive a pension that may vary with investment returns, but the variation will be minimized and smoothed by the solidarity reserve. The second option is the Flexible Contribution Scheme (Flexibele Premieovereenkomst). In this scheme, which allows for potentially higher returns in exchange for less protection against investment risk, there are individual investment accounts. Asset allocation generally follows lifecycle investing principles, but in some plans members may be able to select their investment portfolios. At retirement, participants have a choice between converting their account balance into a variable pension paid by the fund or purchasing a fixed annuity from a commercial insurer. Although the rule has not been finalized, both schemes currently allow members to take up to 10 percent of the total value of their retirement savings as a lump sum payment at retirement.

The Netherlands' new CDC plans, like the DB plans they replace, fully protect retirees against individual longevity risk.

Both CDC options, like the DB plans they replace, fully protect retirees against individual longevity risk. As explained in chapter 2, however, CDC plans do not provide the protection against population longevity risk that insured annuities do. If this additional protection is deemed important, it could be provided by including an external insurance or reinsurance component in the plans. Doing so, however, might work against one of the central goals of the reform, which is to make the employer pension system more sustainable by shifting certain risks, including investment risk and population longevity risk, from employers to employees.

The Netherlands not only does an excellent job of providing lifetime income, but also of ensuring that workers and retirees have access to comprehensive information about their retirement income. In 2011, the government launched an online "pension tracking system" that allows individuals to view their pension benefits earned to date from all tiers of the retirement system. Pension funds themselves increasingly offer digital planning tools that let individuals model how choices such as early or delayed retirement might affect their retirement income. As part of the 2023 reform, pension funds will also be required to provide "choice guidance" to retirees, including guidance about payout options. This guidance, however, is limited to the arrangements within the specific pension fund and does not take into account members' broader financial situation.

The Dutch retirement system has much to recommend it. Its economical state pension, combined with its large funded employer system, ensures that it can continue to deliver high replacement rates at a relatively low fiscal cost as the country's population ages. Moreover, the decision to adopt a CDC model for employer pensions means that the system will also continue to deliver adequate lifetime income. While the shift from DB to DC in most countries has led to an erosion in lifetime income, this will not be the case in the Netherlands.

Yet despite its many positive features, the Dutch approach to delivering lifetime income may not be easy to replicate. The Netherlands has the advantage of transitioning directly from a near-universal DB employer pension system to a near-universal CDC system, while other countries might need to build entirely new systems from the ground up. It also has the advantage of a political economy that has long stressed social solidarity and social welfare over individual equity and personal ownership of retirement assets. Countries that have more fragmented, voluntary employer systems or that rely more heavily on individual contributions to finance DC retirement savings may need to take a more flexible approach to providing lifetime income that stresses defaults or partial annuitization mandates.

Despite its many positive features, the Dutch approach to delivering lifetime income may not be easy for other countries to replicate.

United Kingdom

Like Australia and the Netherlands, the United Kingdom has a retirement system that combines a modest floor of government old-age income support with a large funded employer pension system. The critical difference is that, until recently, the employer pension tier of the U.K. system was voluntary, leaving large gaps in coverage. While the main retirement policy concern in many developed countries in recent decades has been how to improve the sustainability of the retirement system as the population ages, in the United Kingdom it has been how to improve its adequacy. The good news is that the United Kingdom has made remarkable progress in broadening and deepening retirement savings, and though provisions for lifetime income need to be strengthened policy momentum is now building on that front as well.

The main concern of retirement policy in the United Kingdom has been how to improve the adequacy of the retirement system.

It will be helpful to begin by taking a step back in time. By the early 2000s, there was widespread agreement across the political spectrum that the United Kingdom was in the midst of a serious "pensions crisis." The share of income replaced by the state pension system, which consisted of a flat benefit called the Basic State Pension (BSP) and an additional earnings-related benefit called the State Second Pension (S2P), was both low and, because the BSP was indexed to prices rather than wages, falling. The voluntary employer pension system was

transitioning from a traditional DB model to a DC model and coverage had plunged from one-half to barely one-third of the private-sector workforce.[18] Workers without employer pension coverage had access to a variety of personal pension retirement savings options. But these were costly, and their reputation had been tainted by a massive pensions mis-selling scandal in the early 1990s.

Over the past two decades, U.K. retirement policy has had two main goals, the first being to simplify and strengthen the state pension system. Based on the recommendations of the Turner Commission, which met from 2002-06, the BSP and S2P were replaced with a New State Pension (nSP) that pays a single flat benefit to workers reaching the state pension age (currently 66) on or after April 6, 2016. Since even the full nSP benefit, which requires thirty-five years of contributions, only amounts to about 30 percent of median earnings for full-time workers, the U.K. state pension system is still quite modest by developed-country standards. Lower-income retirees, however, are eligible for a means-tested Pension Credit that tops up their nSP if they fail to qualify for the full benefit. Moreover, nSP benefits are indexed by the *higher* of inflation, wage growth, or 2.5 percent, an arrangement known as the "triple lock."

[18]Stephen McKay, *Employers' Pension Provision Survey 2005* (London: Department for Work and Pensions, 2005).

The second goal was to achieve as close to universal employer pension coverage as feasible. In the end, policymakers determined that an asymmetrical form of "soft compulsion" was the most politically attractive approach. Employers are now required to auto-enroll their employees in a pension plan, but employees retain the right to opt out. The minimum contribution rate is 8 percent of wages, of which the employer must pay at least 3 percent. The employer mandate was phased in for larger employers starting in 2012 and gradually extended to all employers, effectively making second-tier pensions mandatory for employers but voluntary for employees. Since the inception of autoenrollment, participation in a workplace pension has surged, from 42 percent of eligible private-sector employees in 2012 to 89 percent in 2024.[19]

To reduce the administrative burden of the employer mandate and facilitate its implementation the government established the National Employment Savings Trust (Nest), which operates as a "master trust" or multi-employer pension fund. Employers who do not already have a pension plan and do not wish to set one up can enroll their employees in Nest, which is now the largest DC plan by membership in the United Kingdom. Contributions to Nest are directed to a default target date fund, in which the overwhelming majority of members choose to remain.

While the United Kingdom has made steady progress in increasing retirement savings, progress in ensuring adequate lifetime income has been rockier.

While progress in broadening and deepening retirement savings has been steady, progress in ensuring adequate lifetime income has been rockier. Indeed, the government initially took a step backwards. Prior to 2015, most retirees were effectively required to annuitize 75 percent of their DC savings sometime between the ages of 55 and 75, or else to enter a "capped drawdown" arrangement, which had strict limits on withdrawals. Since the passage of the Pensions Freedom Act in 2015, retirees have been allowed to access all of their DC savings as lump sum payouts or flexible phased withdrawals starting at age 55 (rising to 57 in 2028). The change was a response to widespread public demand for greater flexibility in the use of retirement savings. It also came at a time when low interest rates made annuities seem expensive.

[19]Eligible employees are those aged 22-66 making at least £10,000 a year. For the participation data, see *Workplace Pension Participation and Savings Trends of Eligible Employees: 2009 to 2024* (London: Department for Work and Pensions, August 2025).

Annuitization of DC account balances is now the exception rather than the rule. In 2023-24, 53 percent of plan participants making a retirement benefit withdrawal from their DC account for the first time fully cashed out the account, 38 percent made a partial lump sum or phased withdrawal, and just 9 percent purchased an annuity.[20] (See figure 7.) Most DC account balances are still quite small, meaning that the efficiency gain from converting them to lifetime income would also be quite small. But as the retirement savings system grows and a larger share of the retired population comes to rely more heavily on DC savings, the shift away from lifetime income will become a growing threat to retirement security.

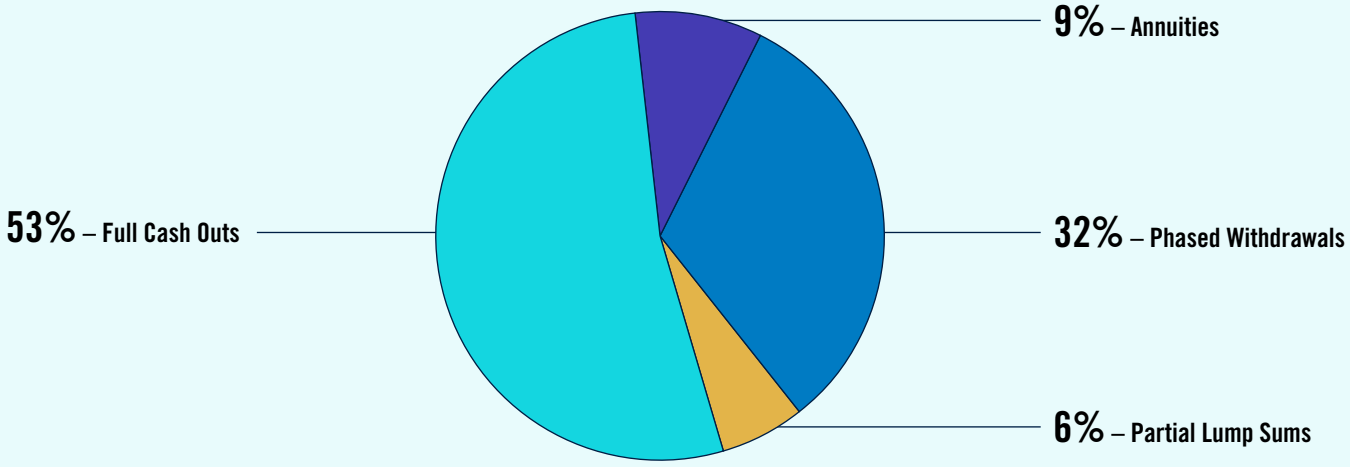
The government is aware of the threat and is taking steps to address it. One promising development is that it is laying the groundwork for CDC plans. The Pension Schemes Act of 2021 authorized CDCs in which employers and employees contribute to a collective fund and retirees receive guaranteed income for life that varies depending on the fund's performance. In 2024, the government published draft regulations that would allow multi-employer CDC schemes. It is also working with industry stakeholders to develop decumulation CDCs that workers in traditional DC plans could buy into at retirement.

The U.K. government is aware that inadequate provision for lifetime income is a growing threat to retirement security and is taking steps to address it.

[20]Bee Boileau, Jonathan Cribb, and Carl Emmerson, *The Pensions Review: Individuals' Challenges Managing Pensions through Retirement* (London: The Institute for Fiscal Studies, April 2025).

Figure 7

FIRST-TIME RETIREMENT BENEFIT WITHDRAWALS FROM DC ACCOUNTS IN THE UNITED KINGDOM, BY TYPE, IN 2023-24



Source: The Institute for Fiscal Studies (April 2025)

Even more significant is that Nest is designing a lifetime income solution that would become the default for members with more than a minimal level of retirement savings. At age 75, a portion of members' savings would be used to purchase a deferred annuity that begins paying benefits at age 85. This approach has the advantage of providing critical late-in-life protection against longevity risk while also allowing considerable spending flexibility throughout retirement, something that the old U.K. annuitization mandate did not. Since Nest is a bellwether for the industry, other pension plans may follow suit and offer similar defaults. The U.K. Parliament is also considering legislation that would require all DC plans to include a lifetime income default.

At the same time, the United Kingdom is paying greater attention to educating DC participants about their decumulation options. In conjunction with the Pensions Freedom Act, the government launched Pension Wise, which provides free independent guidance to anyone aged 50 and over with DC assets. In 2019 Pension Wise merged with two other guidance providers, The Pensions Advisory Service (TPAS) and the Money Advice Service (MAS), to form a single guidance body, the Money and Pensions Service (MaPS). In addition, the Financial Conduct Authority (FCA) has developed off-the-shelf decumulation strategies called Investment Pathways, while Helping Savers Understand Decumulation Choices, a Department for Work and Pensions (DWP) initiative, provides general guidance to DC participants on how to draw down their savings in retirement.

Few countries have managed to achieve as dramatic a turnaround in the outlook for retirement security as the United Kingdom has over the past two decades. The country still faces serious retirement security challenges, as do most developed countries. Yet its economical state pension system, its vast expansion of funded retirement savings, and its growing attention to the provision of lifetime income suggest that it is on course to overcome them.

United States

The United States possesses by far the largest retirement savings system in the world. Together with Social Security, its earnings-related state pension, this system historically delivered a high level of lifetime income to a substantial share of retirees. Over the past several decades, however, the shift from DB pensions to DC plans among employers has dramatically reduced that level. Although policymakers have recently taken steps to facilitate the inclusion of lifetime income in DC plans, progress in expanding its provision remains slow.

While the U.S. retirement system historically delivered a high level of lifetime income, the shift from DB pensions to DC plans has dramatically reduced it.

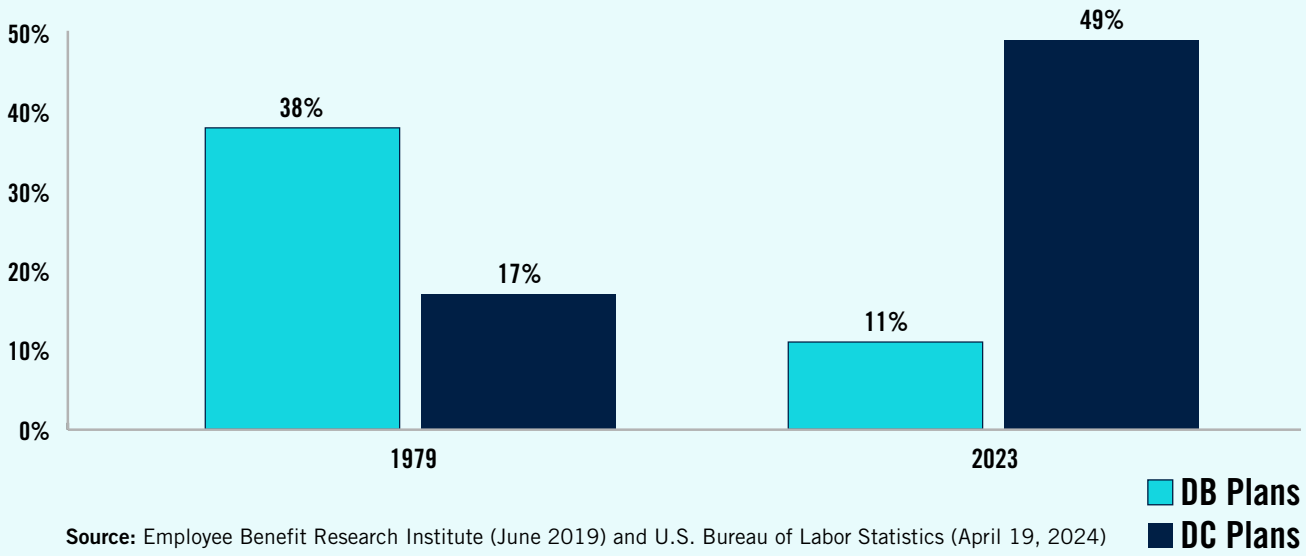
Social Security, which was established in 1935, covers nearly all U.S. workers. While Social Security provides an important base of guaranteed lifetime income, it was never intended to serve as more than a foundation on which employer pensions and individual retirement savings would build. The system's benefit formula is progressive, replacing as much as 80 percent of preretirement earnings for lower-earning workers. But for an average-earning worker retiring at the full-benefit retirement age of 67, the Social Security replacement rate is just 40 percent.

In the decades following World War II, the voluntary employer pillar of the U.S. retirement system was dominated by DB pension plans that promised workers a predictable stream of lifetime income in retirement, typically based on years of service and final salary. In 1974, the Employee Retirement Income Security Act (ERISA) established a regulatory framework for the system designed to make employer DB promises more secure. Shortly after ERISA was passed, however, employers began to replace DB plans with DC plans. In 1979, 38 percent of private-sector workers participated in a DB plan and only 17 percent participated in a DC plan. By 2023, DB participation had dropped to 11 percent while DC participation had grown to 49 percent.[21] (See figure 8.)

[21] *Tracking the Shift in Private-Sector, Employment-Based Retirement Plan Participation from Defined Benefit to Defined Contribution Plans, 1979–2017* (Washington, DC: Employee Benefit Research Institute, June 2019); and **The Economics Daily** (Washington, DC: U.S. Bureau of Labor Statistics, April 19, 2024).

Figure 8

PARTICIPATION OF U.S. PRIVATE-SECTOR WORKERS IN EMPLOYER RETIREMENT PLANS, BY TYPE, IN 1979 AND 2023



Source: Employee Benefit Research Institute (June 2019) and U.S. Bureau of Labor Statistics (April 19, 2024)

As in other countries, the shift to DC plans was driven by the growing reluctance of employers to assume the costs and risks inherent in DB plans. But it was also given a boost by employers' "discovery" in the early 1980s of a hitherto obscure provision in section 401(k) of the U.S. tax code that allows employee income tax deferrals in retirement savings accounts. These 401(k) plans are the most common type of DC plan, but similar tax code provisions exist for public education and nonprofit employees (403(b) plans) and state and local government employees (457(b) plans). Since 1986, there has also been a similar Thrift Savings Plan (TSP) for federal government employees. Generally, employers match employee contributions up to some level in these plans. Meanwhile IRAs, a personal retirement savings plan created by ERISA in 1974, allow for income tax deferrals by individuals. In Roth IRAs, which became available in 1998, contributions are taxed but withdrawals are not.

U.S. retirement policy remains mostly focused on increasing participation in retirement savings plans and on improving asset allocation strategies during the accumulation phase. Autoenrollment in employer plans has become increasingly common as evidence of its efficacy in boosting participation has grown. As of 2024, 64 percent of 401(k) plans had implemented autoenrollment provisions, and of these 78 percent also had autoescalation provisions. Progress is also being made in extending coverage to workers whose employers do not offer a retirement plan by establishing state-sponsored "Auto IRAs." The first such plan, OregonSaves, was launched in 2017. As of early 2026, seventeen states had passed legislation creating Auto IRAs.[22] Meanwhile, default investment strategies have become the rule. In 2024, 77 percent of 401(k) plans had default strategies, of which 87 percent were target date funds.[23]

[22] State Programs 2026: Partnerships Expand, More Programs Launch, and the Focus Will Be the Enactment of More New State Programs and Initiatives (Washington, DC: Georgetown University Center for Retirement Initiatives, 2026).

[23] 403(b) Participation Rate at Record High, Still Lags Behind 401(k)s (Chicago: Plan Sponsor Council of America, January 2026).

U.S. retirement assets totaled $49 trillion as of the end of 2025, or more than 150 percent of GDP. Of this amount, $14 trillion in assets were in employer DC plans, while an additional $19 trillion were in IRAs.[24] (See figure 9.) Yet only a small fraction of this massive pool of DC savings is currently being converted into lifetime income. Most retirees rely on ad hoc lump sum withdrawals from their retirement accounts, or to a lesser extent phased withdrawals. Only about one in ten DC plans even offers the option of a lifetime annuity.[25] Starting in the 1990s, some corporate DB plans also began to allow participants to elect optional lump sum payouts, even though an annuity was the default. This is now the standard practice in cash balance plans, a popular type of plan in recent years that is technically DB in design but expresses benefit amounts as an account balance.

Only a small fraction of the massive pool of DC savings in the United States is currently being converted into lifetime income.

It is only over the past ten to fifteen years that U.S. policymakers have finally begun to focus on integrating lifetime income into DC plans. In 2010, the Department of Labor (DOL) launched an initiative soliciting industry input on possible approaches to lifetime income delivery. In 2014, regulations were issued facilitating the purchase of Qualified Life Annuity Contracts (QLACs), a kind of deferred annuity. In 2019, the Setting Every Community Up for Retirement Enhancement Act, or SECURE Act, provided legal protection for employers when they act as fiduciaries in selecting annuity providers and introduced a lifetime income disclosure requirement for DC plans. In 2021, DOL updated and finalized its rule on lifetime income disclosure, and in 2022 the SECURE Act 2.0 removed some remaining regulatory obstacles to annuitization.

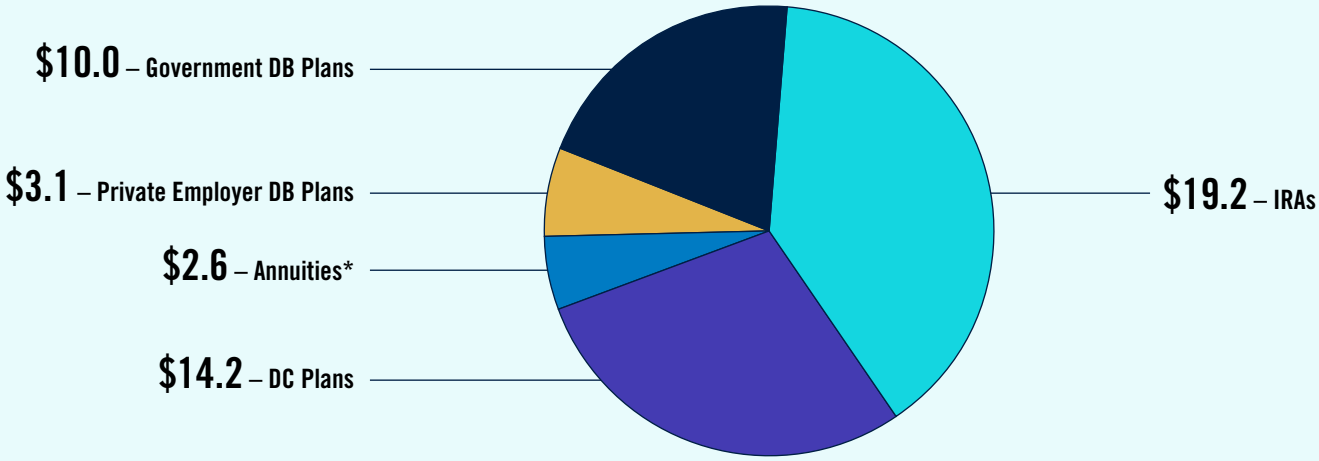
While these measures have not significantly increased the provision of lifetime income, they have at least cleared away some obstacles. It is possible that as awareness of the benefits of lifetime income grows among plan sponsors, they will take steps to integrate it into the decumulation phase of DC plans just as they have integrated autoenrollment and target date funds into the accumulation phase. There is nothing that would prevent employers from exceeding the DOL disclosure requirements by taking a retirement income perspective, rather than an account balance savings perspective, in all of their communications with participants. Nor is there anything that would prevent them from including a deferred annuity option in target date funds, something which some 401(k)s are already doing.

[24] *The U.S. Retirement Market, Fourth Quarter 2025* (Washington, DC: Investment Company Institute, March 2026).

[25] Are In-Plan Annuities at a Tipping Point? (Windsor, CT: Life Insurance Marketing and Research Association, November 2023).

Figure 9

U.S. RETIREMENT ASSETS BY TYPE, IN TRILLIONS, AT THE END OF 2025



Source: Investment Company Institute (March 2026)

*Annuities held outside of retirement plans.

Additional progress could be made by simplifying and standardizing the design of DC plans, whose complexity creates confusion for plan participants and the need for burdensome disclosures by plan sponsors. Encouraging greater standardization of lifetime income products would also help by enabling savings invested in deferred annuities to be more easily transferred between plans when workers change jobs. So would improving the access of retirees to objective financial guidance and advice. At the same time, providing for ways to centralize the provision of lifetime income, such as exchanges that smaller employers could join, would help to facilitate its delivery while also creating economies of scale that reduce its cost.

Yet in the end, achieving anything close to universal provision of lifetime income in DC plans may require some degree of government compulsion. It is true that the U.S. political economy is allergic to mandates. It is also true that in the United States, unlike most developed countries, DC plans are mainly financed by employee contributions, and restrictions on how individuals use their own savings are likely to meet more resistance than restrictions on how employers make use of what they save on their behalf. Still, none of this would preclude the government from requiring that all DC plans include a lifetime income default in the decumulation phase. After all, SECURE 2.0 now requires that new DC plans auto-enroll employees in a target date fund or other qualified default in the accumulation phase. It might even be possible to go a step further and mandate annuitization of employer contributions, while leaving annuitization of employee contributions voluntary.

In the end, achieving anything close to universal provision of lifetime income in U.S. DC plans may require some degree of government compulsion.

As matters stand, the U.S. retirement system remains far more effective at helping workers accumulate retirement assets than at helping them convert those assets into guaranteed lifetime income. If the United States is to ensure broad-based retirement security, that will have to change. Unfortunately, significant progress, at least in the near term, is far from assured.

CONCLUSION

Two major developments are combining to threaten retirement security around the world. The first is rapid population aging, which is compelling governments in many countries to reduce the generosity of state pension systems. The second is the shift among employers from DB pensions to DC retirement savings plans. Together, these developments are reducing the amount of guaranteed lifetime income that the typical worker can count on in retirement.

Policymakers cannot do much to slow the pace of population aging. While many countries have recently enacted pronatal measures aimed at reversing the decline in birthrates, few if any of them have proven effective. As for rising life expectancy, the other driver of population aging, it is a tremendous boon that no one wants to see reversed. Nor can policymakers easily undo the shift from DB pensions to DC retirement savings plans, which in any case are in many ways better suited to the needs of modern economies with mobile workforces. What they can and should do is ensure that DC plans deliver adequate lifetime income.

Policymakers cannot do much to slow the pace of population aging. What they can and should do is ensure that DC plans deliver adequate lifetime income.

As this report has explained, delivering retirement benefits as lifetime income has enormous benefits for both individuals and society. At the individual level, the longevity pooling that underlies lifetime income means that retirees do not need to worry about outliving their savings and can safely increase how much they spend. At the societal level, longevity pooling greatly increases the efficiency of retirement systems. By paying benefits in the form of lifetime income rather than a lump sum, a country can provide the same level of retirement security for less money, potentially saving 20 percent or more of the cost of benefits. There may also be other benefits for society, including the faster economic growth that could be spurred by allowing retirees to spend more freely and confidently.

There are many obstacles to the wider adoption of lifetime income in DC plans. Despite the considerable benefits of lifetime income, retirees are often reluctant to annuitize their retirement savings. After watching their savings grow for a lifetime some develop a strong emotional attachment to it, while others fail to appreciate the insurance value of lifetime income. Many worry about sacrificing liquidity and spending flexibility or the ability to leave a bequest. Annuities may also fail to protect retirees against inflation, and when interest rates are low they can seem expensive. Then there are the factors that can reduce the efficiency or equity of lifetime income, from adverse selection and high delivery costs to differences in life expectancy between diverse groups in a longevity pool that can advantage some at the expense of others.

Yet as this report has shown, it is possible to overcome these obstacles. With the right policies in place, it is possible to integrate lifetime income into DC systems in ways that balance longevity protection and spending flexibility while protecting against inflation risk and interest rate risk. With the right policies in place, it is also possible to minimize or even eliminate adverse selection, limit delivery costs, and redress potential inequities.

The good news is that policymakers around the world are waking up to the challenge and in many countries are taking steps to meet it. By underscoring the enormous benefits of lifetime income and by providing a workable framework for reform, we hope that this report will spur further action. It is no exaggeration to say that the retirement security of future generations depends on the outcome.

The good news is that policymakers around the world are waking up to the challenge.

TECHNICAL APPENDIX

The financial efficiency results presented in chapter 1 of the report were derived using the economic utility model shown below. Economic utility is the satisfaction, welfare, or value that individuals gain from the consumption of products, services, or experiences over their lifetime as measured by its ability to meet their needs or wants. We use the model to measure the increase in utility from paying benefits as lifetime income rather than a lump sum over the course of retirement.

$$max_{c_t} E\left[\sum_{t=0}^{K} e^{-\rho t} u(c_t)\right] \; s.t. \, w_{t+1} = (w_t - c_t)e^r$$

C = consumption
W = wealth
ρ = discount rate
r = investment return

The model sums up utility over the remaining lifetime of an individual, from time 0 to time K. The factor $u(c_t)$ represents the utility that the individual experiences from consumption during the period from time t to t+1, e.g. one year. The factor $e^{-\rho t}$ discounts that utility with an interest rate such that it is expressed as a present value. The term $s.t.\ w_{t+1}=(w_t - c_t)e^r$ defines the individual's wealth at any point in time to be equal to his/her wealth at the prior point in time, e.g. one year ago, minus consumption during that period plus interest earned during the period.

The factor $u(c_t)$ includes a risk aversion parameter. The more an individual is averse to the risk of not having enough money, the higher will be the utility value of the money he or she has to spend. In this model, a constant relative risk aversion parameter is used (as is standard in these analyses), meaning that a person spending $50,000 has the same aversion to reducing spending by $5,000 as a person spending $100,000 has to reducing spending by $10,000.

The model allows utility to be assigned to bequests. In this report, it is assumed that the exclusive objective of retirement systems is to deliver retirement security and that bequests therefore have no value.

The model was first used to show the value of lifetime income in retirement by the economist Menahem Yaari in 1965. For a good overview of the literature establishing the financial efficiency of longevity pooling, as well as a more detailed explanation of the lifecycle utility model, see Moshe Milevsky and Huaxiong Huang, "The Utility Value of Longevity Risk Pooling: Analytic Insights," *North American Actuarial Journal* 22, no.4 (October 2018).

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