PGIM

DC SOLUTIONS

RETIREMENT INCOME BELIEFS

A Roadmap to Optimal Solutions

NOVEMBER 2021

INTRODUCTION

The Defined Contribution (DC) industry is about to see a major secular shift toward the delivery of income as participants start approaching retirement in greater numbers. This shift will be transformative for the DC landscape over the longer term.

At PGIM, we believe a comprehensive approach to income requires new thinking and new solutions, deployed in a personalized and flexible way.

THE TIME IS NOW

One of the greatest financial challenges facing American workers today is transforming accumulated wealth and savings into an adequate income stream that will last throughout their retirement. As the shift from a primarily Defined Benefit (DB) system to a DC system continues, we see an increasing reliance on the DC plan as the primary source of income for retirees.

While DC plans have evolved significantly over the last four decades, the enhancements have generally been geared toward accumulating wealth for participants prior to their retirement — improving access, increasing savings rates, and implementing more professional management. As we look to the future, it is time to turn our attention and efforts to transforming DC plans from savings plans to true retirement plans that help individuals manage the various risks they face, both during their working years and in retirement, while also providing solutions for generating income.

While a majority of plan sponsors indicate that they would like to keep retirees in their plans, recognizing the scale, fiduciary oversight, and professional management that can be delivered in such plans, few have added products and services to support these participants. When asked what type of retirement income products they offer participants, the two most common answers were a stable value fund (54%) and the income vintage of a target date series (50%).[1] While both of those are important and can play a role, they typically have not been purposely built to solve for income.

We believe it will take a collective effort from the retirement community to address this challenge. An important step was the passing of the SECURE Act in 2019, which included provisions supporting the evolution of DC plans to better assist participants with generating income in retirement. One aspect of the Act we believe will be a catalyst for transforming how DC plans are viewed is the requirement that each participant receive an annual lifetime income disclosure. This disclosure will go a long way in reframing the goal of a DC plan from a savings vehicle to one that generates future retirement income for life.

PGIM's 5 Key Retirement Income Beliefs

As this secular shift toward income progresses, bringing lifetime income solutions to American workers and retirees will require a thoughtful, outcomes-based framework. Specifically, we believe a solution must go beyond just an investment product. It must also help participants prepare for retirement and help retirees implement a sustainable spending plan in retirement. **This brings us to our key retirement income beliefs:**

01	INVESTMENT METHODOLOGY	An **investment methodology** is needed that specifically solves for individuals' unique spend down goals in retirement.
02	ASSET CLASSES	Additional **asset classes** should be incorporated in the asset allocation strategy to help retirees manage spend-down risks.
03	GUARANTEED INCOME	Available **guaranteed income** sources should be considered as part of the asset allocation process and optimized to help retirees manage the core risk of outliving their savings.
04	INSTITUTIONAL INVESTMENT APPROACH	An **institutional investment approach** that leverages the scale and fiduciary oversight offered by DC plans is critical to efficiently building wealth and delivering income.
05	TECHNOLOGY	**Technology** is central to delivering personalized advice and solutions by combining our first four retirement income beliefs to address each individual's particular situation.

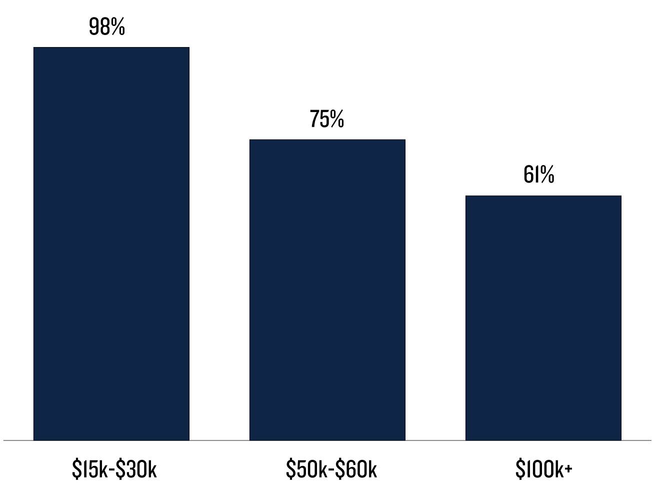
I. INVESTMENT METHODOLOGY

Designing solutions that can effectively provide a stream of income in retirement demands a liability-oriented mindset. Just as institutional investors, such as pension fund managers, attempt to meet some form of a liability, participants in a DC plan are tasked with doing the same, although their "liabilities" are the expenses they will face throughout retirement. Based on our research, approximately 60% of DC plan participants indicated they need help on spending down their savings during retirement.[2] To help participants meet their future liabilities, it is necessary to have both an investment methodology and solutions that are specifically designed to provide the income necessary to meet each retiree's liabilities.

Defining the Liability

The first step in any strategy should be to define the goal or liability. Understanding a retiree's liability is knowing how much income they will need in retirement. A common approach to defining the liability is utilizing an income replacement rate, which is the proportion of a participant's after-tax and after-savings income needed in retirement relative to their gross income pre-retirement. Using this approach allows for retirees' retirement income goals to align with their pre-retirement take home pay.

Exhibit 1: Income Replacement Goals Vary by Income Level



Source: University of Michigan Health and Retirement Study (HRS). After-tax spending in retirement as a percentage of pre-retirement gross income across the 2008-2016 HRS waves.

Applying a one-size-fits-all approach to a replacement rate goal can fall short for many reasons, but one main drawback is that it doesn't address the different spending needs of individuals across the various income cohorts. Exhibit 1 reflects our research, which indicates that lower-income earners tend to spend a greater percentage of their pre-retirement income in retirement compared to higher-income earners. These differences must be reflected in participants' income replacement rate goals.

Further, decomposing the income replacement rate is an important step in defining the retirement liability, yet it's a step that is often overlooked by most DC solutions providers. We find an effective and practical approach to accomplishing this is to divide expenses between "Needs" and "Wants" (Exhibit 2).

Needs expenses are less flexible and tend to be recurring in nature, and retirees generally have less discretion over the level or frequency of these types of expenses.

Wants expenses are more flexible and irregular in nature, and retirees have more discretion in both the level and frequency of these expenses.

Consistent with how replacement rates differ by income level, we find that the split between Needs and Wants expenses also differs based on income level as shown in Exhibit 3. For retirees with lower pre-retirement income, a greater percentage of overall spending goes toward Needs during retirement. For individuals with higher pre-retirement income, we find that their Needs expenses become a smaller portion of overall spending during retirement.

Exhibit 2: Needs vs. Wants Expenses

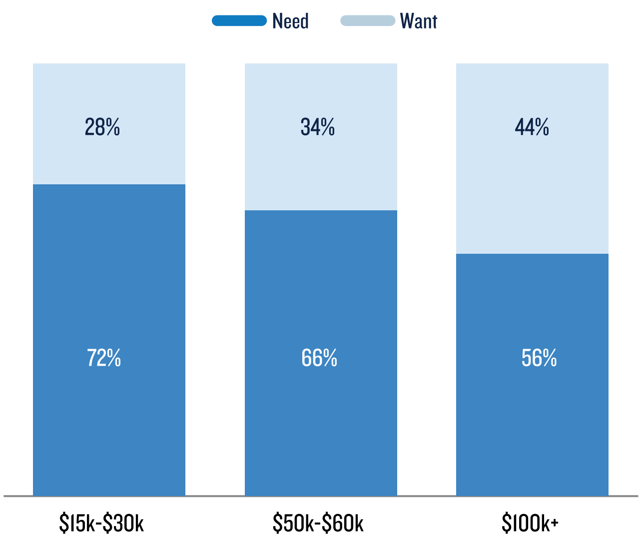
"NEEDS" EXPENSES	- Fixed Food - Housing - Fixed Transportation - Healthcare - Insurance
"WANTS" EXPENSES	- Discretionary Food - Clothing - Entertainment - Discretionary Transportation - Education - Gifts / Misc.

Source: PGIM, Bureau of Labor Statistics (BLS) Consumer Expenditure Surveys. For illustrative purposes only.

A result of decomposing the retirement liability is a recognition of the differing relative importance between Needs and Wants spending. As one would expect, retirees find much more comfort in being able to cover their Needs expenses than their Wants expenses. In other words, the pain associated with a shortfall in a retiree's Needs is going to be higher than the same shortfall for Wants.

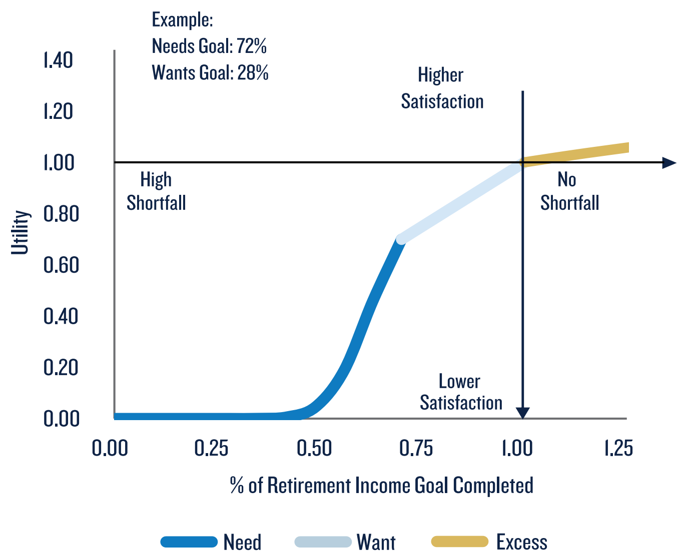
Quantifying satisfaction of different outcomes can be measured using a utility framework. As illustrated in Exhibit 4, the slope and magnitude of the utility number associated with achieving an individual's Needs goal is vastly different than meeting the Wants goal. While utility theory is widely used in research, it has rarely been used as an input into determining a retirement liability and constructing optimal portfolios. We believe using this utility framework is a highly additive overlay to delivering an outcomes-focused retirement solution that recognizes the reality of people's lives.

Exhibit 3: "Needs" Expenses Decrease as Income Increases

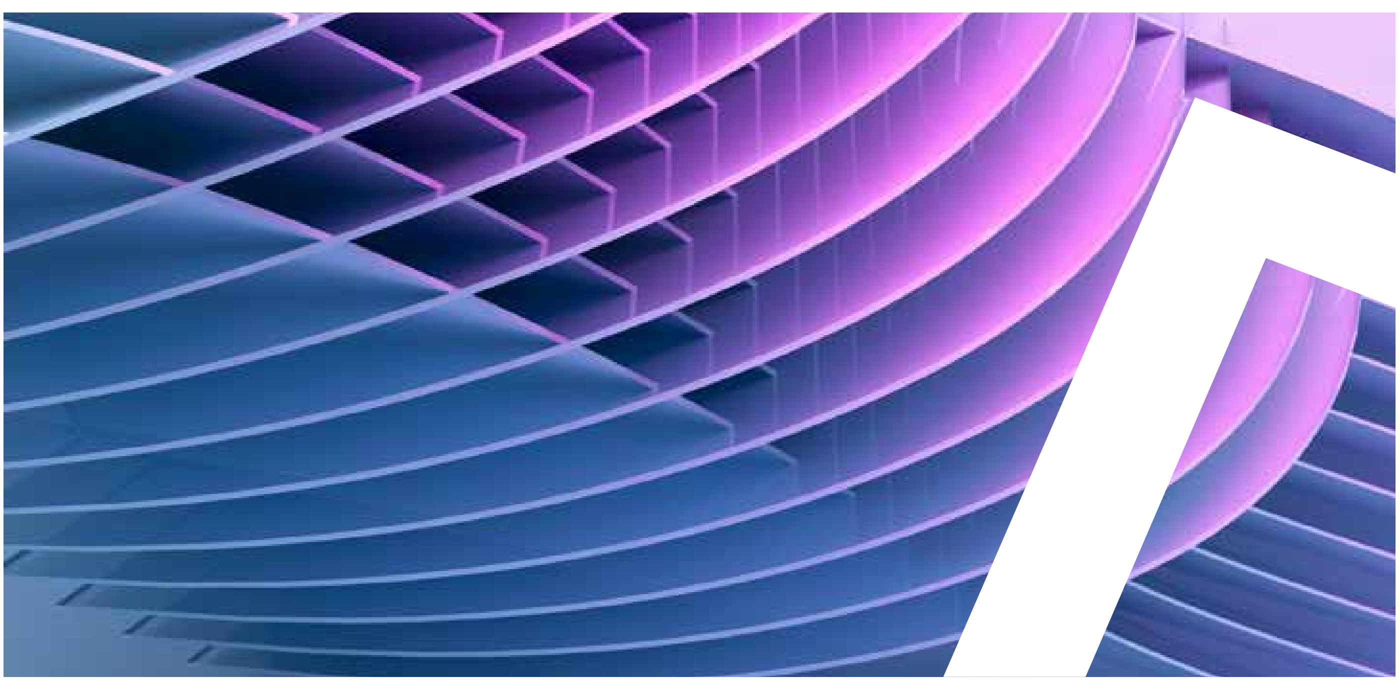


Source: Bureau of Labor Statistics (BLS) Consumer Expenditure Surveys. Needs and Wants expenses in retirement as a percentage of total retirement spending by gross income.

Exhibit 4: Utility Framework



Source: PGIM. For illustrative purposes only.



Building an Investment Framework to Solve for the Retirement Liability

To effectively fund the retirement liability, we believe a solution must account for the specific characteristics of both Needs and Wants spending and consider all sources of income—within and outside of the DC plan.

Exhibit 5 shows a snapshot of three sample participant profiles, each with varying sources of expected income in retirement (Assets). It also shows how participants' income sources align with their Needs and Wants spending goals (Liability) and sample portfolio assignments. These three profiles illustrate that it's imperative to take a more holistic view, as the DC plan may serve different purposes depending on an individual's income level and sources of expected income in retirement.

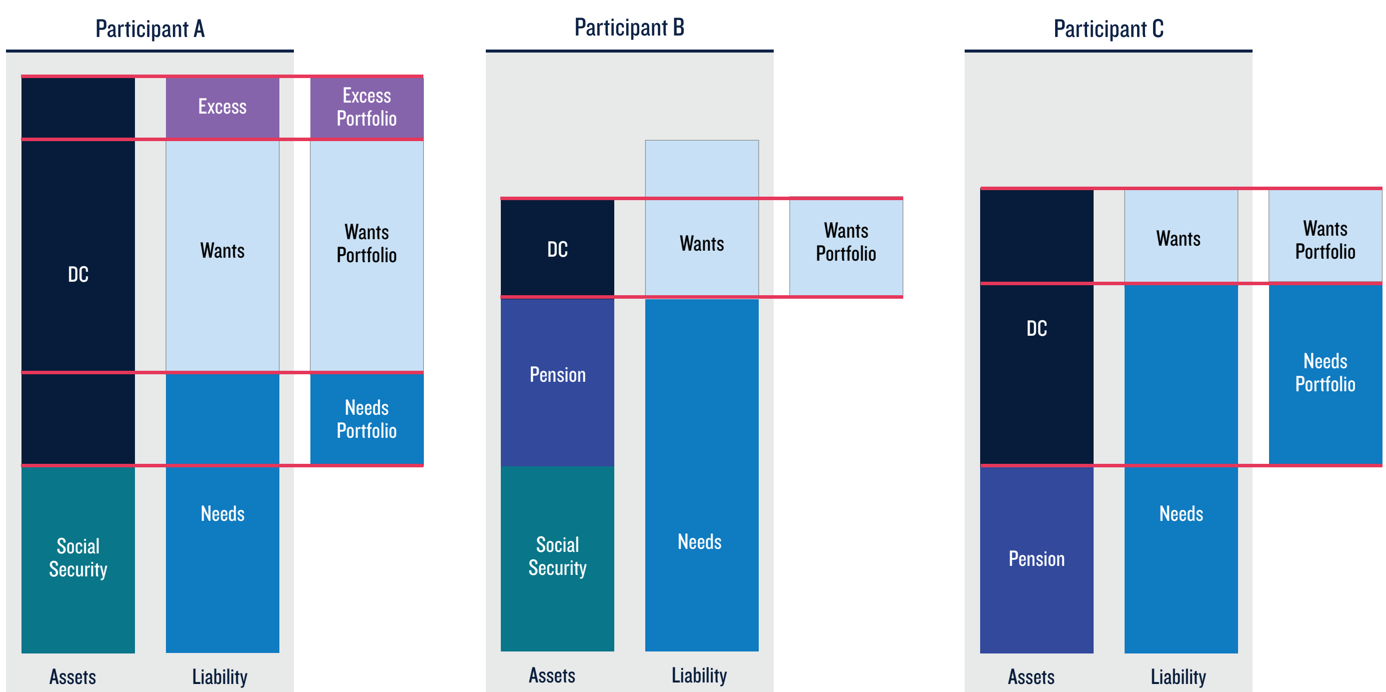
Assets with greater investment return predictability and consistency will be more appropriate for funding Needs expenses. These characteristics are often found in guaranteed income solutions, and generally include Social Security payments, DB payments, and any annuities an individual may own. For many retirees, particularly for those with higher pre-retirement income, sources of guaranteed income outside of the DC plan will likely fall short of funding their Needs spending, in which case the DC plan must fill the Needs income gap.

This suggests that DC plans will likely need to re-evaluate their investment offerings—whether that includes additional non-guaranteed investments (belief #2) or additional guaranteed income solutions (belief #3) that can provide sufficient and predicable returns to cover any gaps in retirees' Needs spending.

In the case of funding retirees' Wants spending, which is more variable and discretionary in nature, the investment strategy can assume more risk. Here, a more traditional diversified growth portfolio often already available in DC plans can provide a source of income over the long term, with the potential for upside returns.

Finally, when it comes to saving for both Needs and Wants spending in retirement, more people are underfunded than overfunded. But for those fortunate enough to have more than adequate savings to provide for all their spending in retirement, there is no commonly accepted approach to allocate this additional savings excess. We found that merely 13% of surveyed participants would prefer to increase risk for their overfunded assets.[2] The vast majority prefer to either stay on the same investment path or decrease risk with this excess money.

Exhibit 5: Sample Personalized Portfolio Assignments



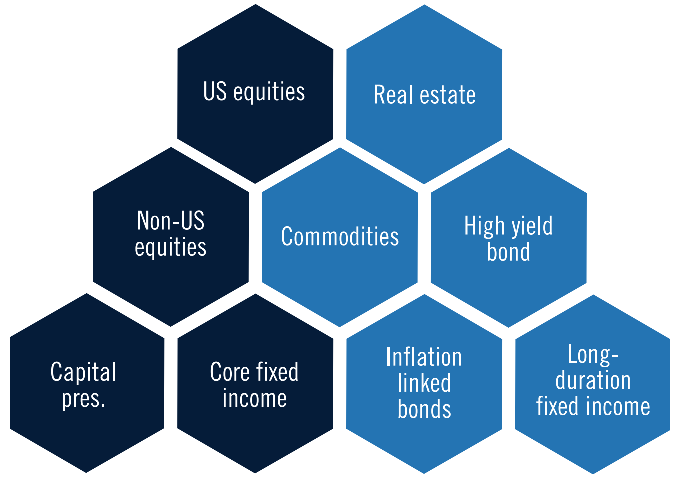
Source: PGIM. For illustrative purposes only.

2. ADDITIONAL ASSET CLASSES

If a retiree's guaranteed income sources fall short of their Needs spending levels, they will have to create additional sources of income using non-guaranteed investments. DC menus today often fail to provide participants the options necessary to achieve this additional income primarily because they do not offer access to asset classes that collectively can provide a more predictable source of returns for a time horizon, or duration, on par with the years of drawing down during retirement. Whether this non-guaranteed income is used until such time as sources of guaranteed income begin or throughout retirement, an individual's retirement outcomes could be enhanced by incorporating additional asset classes that will allow a retiree's overall asset allocation to create a more sustainable withdrawal rate.

For many DC plans, investments such as (but not limited to) inflation-linked bonds, high-yield bonds, commodities, real estate (public and/or private), and long-term bonds are not typically available on core menus (Exhibit 6). There are several reasons for this, but undoubtedly, we believe it is due in large part to concerns that many of these investments are less familiar to plan sponsors and participants and often are more complex than traditional plan investments. Plan sponsors may be concerned that these investments will be misused by participants and potentially do more harm than good. While some plan sponsors have included these asset classes within the DC plan's target date fund offering, we find that most retirees (64%) who might benefit from these investments use the core menu as opposed to using professional management, such as target date funds.[3]

Exhibit 6: Core Menu Gaps



Source: PGIM. For illustrative purposes only.

Beyond expanding the fixed income opportunity set, is evaluating the duration characteristics of the fixed income offerings typically available in DC plans. In many cases, DC plans offer as few as two fixed income options: a core or core plus bond fund that generally aligns with the characteristics of the Bloomberg Aggregate Index and a conservative option such as a stable value or money market fund. Investing across these two fixed income options may result in a portfolio duration of approximately three to five years. However, for participants nearing retirement (e.g., ages 55 to 65), the duration of their expected liability stream (i.e., spending in retirement) is likely to be somewhere between 10 to 20 years. This mismatch results in significant risk if something as simple as interest rates change by 1%. For decades, pension plans have strived to align their portfolio duration with the duration of the future benefits to be paid. DC plan sponsors should consider learning from these proven practices and leveraging tools that consider duration mismatch risks along with other risks associated with spending down portfolios during retirement.

We believe the best way for plan sponsors to offer these additional exposures to participants is through a multi-asset class solution that is designed specifically for decumulation, including the years leading up to retirement. Having an approach with strategic allocations to diversified asset classes will alleviate many plan sponsor concerns regarding participants doing more harm than good, as this allows for better risk control and clear fund objectives that can be communicated to participants. Alternatively, a plan sponsor can limit some or all of these investments and keep them off the core menu (i.e., individual participants can't access them directly), and instead offer them through a professional investment service, such as a retirement managed account program in which the asset allocation is set by an investment expert. Both paths address the most important issue, which is that participants and retirees require assistance in effectively allocating to extended asset classes and building efficient retirement portfolios.

3. GUARANTEED INCOME

Guaranteed income helps retirees address longevity risk, which is the risk of living longer than expected. Since no one can predict their longevity, this is a conundrum for developing an optimal spending plan in retirement. With the continued transition away from pension plans to DC plans, many retirees have accumulated a sum of money at retirement and are increasingly faced with the decision of "how much can I spend each year in retirement?"

In our opinion, the best way for participants to mitigate longevity risk is to transfer that risk to another institution, such as a pension plan, insurance company or government program (i.e., Social Security) in return for a guaranteed income stream in retirement. Offering guaranteed income within DC plans has been discussed for many years and is currently offered by some plans, but most plan sponsors do not yet offer access to a guaranteed income solution. This is a substantial mismatch from what participants have indicated as their preference. When asked, 41% of respondents choose a guaranteed lifetime income product over stocks or bonds.[2]

Today, most DC participants pay into Social Security, which will become a source of guaranteed, inflation-adjusted income in retirement. We believe a retirement income solution must provide guidance on when participants should consider claiming Social Security based on their unique financial situations. For many retirees, this may be their only source of guaranteed income, and it will be the main source for covering their Needs expenses.

As DC plans transform from savings plans to retirement plans, the addition of guaranteed income solutions is a natural evolution. But it shouldn't be one-size-fits-all. Participants will need help determining if guaranteed income is right for them, what type of guaranteed income product to utilize, and how much guaranteed income should be purchased. We believe a retirement income solution should have the flexibility to include additional sources of guaranteed income (outside of optimizing Social Security), and allocate to these sources based on the varying needs and desires of a participant, availability of products in or outside the DC plan, and the current interest rate/market environment. One option could be to incorporate a guaranteed income solution in a sophisticated fashion as part of the plan default, or qualified default investment alternative (QDIA). Participants have also voiced their support for this type of solution, particularly as part of the default investment, with only 6% of respondents viewing this as a negative.[2]

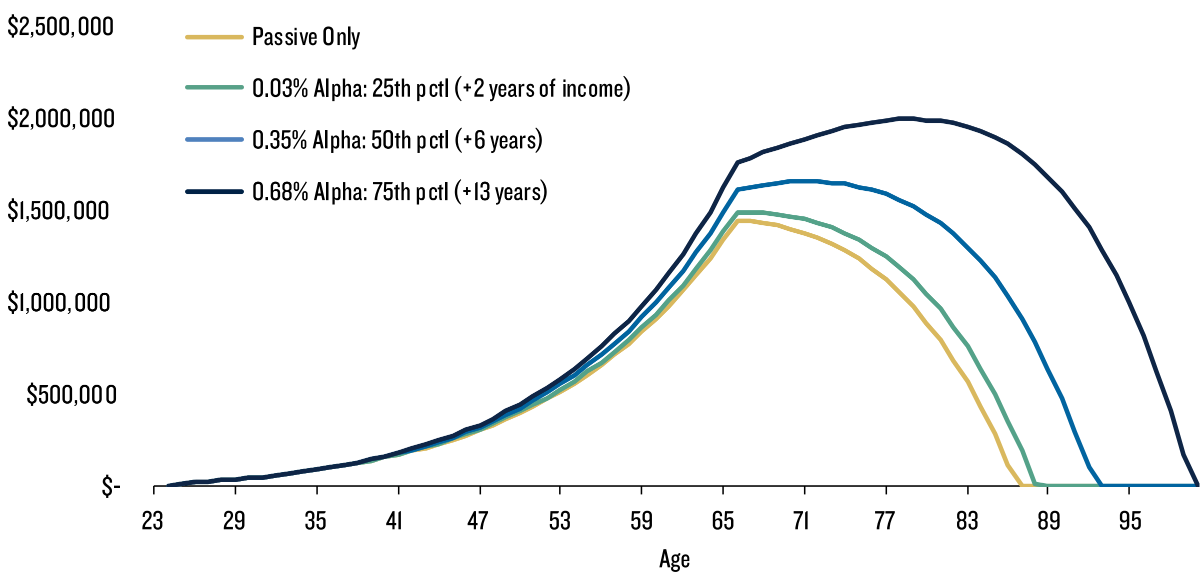
4. INSTITUTIONAL INVESTMENT APPROACH

Central to efficiently building wealth over time and generating income in retirement is access to institutional investments, and in our view, the most efficient way to gain access to institutional capabilities (outside of a pension) is through a DC plan. As DC plans continue to grow in importance and size, plan sponsors have an opportunity to bring outcomes-based institutional investing approaches to individual retirees by offering:

1. Broad and extended asset classes, including alternative investments to build more "retirement-ready" strategies
2. Multi-manager structures and a thoughtful mix of active and passive management
3. Complementary, skilled, and "best-of-breed" investment managers
4. Reduced fees by leveraging relationships and scale, and using institutional investment vehicles

An institutional approach implemented in DC plans can lead to better outcomes for participants. As Exhibit 7 shows, we find that generating 0.35% of net-of-fees alpha, whether through higher gross returns or lower fees, over a lifetime of saving and spending can translate into an additional six years of income in retirement for an individual—a meaningful increase in additional income. Given changes in capital markets, interest rate cycles, and inflation over time, taking a thoughtful and dynamic approach to investing, while incorporating diversifying, inflation-sensitive, and alternative asset classes that can contribute to more predicable sources of returns in retirement can improve outcomes for retirees as well.

Exhibit 7: Hypothetical Effects of Alpha on Retirement Income



Source: PGIM. Total retirement savings over an individual's lifetime. Participant assumptions: initial age of 23, initial salary of $40,000 with 3% annual salary growth, 10% savings rate, and withdrawal rate of 71% of final salary with subsequent 3% annual cost-of-living adjustments beginning at age 66. Investment assumptions (arithmetic): annual portfolio return of 7%, passive investment fee of 0.10%, active investment fee of 0.60%, and 1.0% gross of fee alpha assumption with a tracking error of 3% normally distributed. Alpha percentiles net of fees (geometric): 0.03% at 25th percentile, 0.35% at 50th percentile, and 0.68% at 75th percentile. Hypothetical example for illustrative purposes only.

5. TECHNOLOGY

We believe technology will play a central role in bringing personalized retirement advice and customized solutions to individual retirees within DC plans. The most efficient way to incorporate individuals' unique liabilities, differing sources of income, and spending needs in a personalized manner is to leverage tomorrow's best thinking about behavioral finance and technology. Specifically, we believe that advancements in technology, data, and analytics will allow the creation of more personal experiences at scale across channels and buying stages based on the participant's needs and aspirations. As such, we believe technology will:

- Expand access to retirement advice services and holistic income solutions for American workers and retirees.

- Efficiently deliver outcomes-based investment solutions.
- Enable customized portfolios and advice targeting participants' Needs and Wants.
- Provide real-time updates on progress toward meeting one's retirement goals and a holistic picture of expected spending needs and income sources in retirement.
- Help bring relevant and personalized information and education to individuals.
- Provide analytics to power next-generation engagement and micro-targeting.
- Improve cost efficiency, a theme we believe will continue within the retirement space.

We recognize that engaging with participants in DC plans is an ongoing challenge, which is why a retirement income solution must leverage available information and data from the plan sponsor and recordkeeper. Certain inputs are more impactful than others, and those should be prioritized, if not required. For additional data points that are either less commonly tracked or require active participant engagement, these should be encouraged, but shouldn't be critical to the success of delivering a customized income solution.

CONCLUSION

One of the most difficult financial challenges facing Americans is the need to transform accumulated wealth into an income stream that will last throughout their retirement. To help them address this challenge, DC plans—the primary source of retirement income for many Americans—must broaden their focus on savings accumulation by offering workers the tools and solutions necessary to convert DC plan savings into lifetime retirement income.

Achieving that goal will not be easy. It will require a transformation of the DC industry, one in which DC plans evolve from savings plans to true retirement plans that help individuals generate income by managing the risks they face both during their working years and in retirement. This evolution will require outcomes-based retirement programs that deliver reliable, long-term income for retirees. To achieve this, we believe:

1. An **investment methodology** is needed that specifically solves for individuals' unique spend down goals in retirement.
2. Additional **asset classes** should be incorporated in the asset allocation strategy to help retirees manage spend-down risks.
3. Available **guaranteed income** sources should be considered as part of the asset allocation process and optimized to help retirees manage the core risk of outliving their savings.
4. An **institutional investment approach** that leverages the scale and fiduciary oversight offered by DC plans is critical to efficiently building wealth and delivering income.
5. **Technology** is central to delivering personalized advice and solutions by combining our first four retirement income beliefs to address each individual's particular situation.

Combining these tools in a comprehensive retirement income solution can transform DC plans from savings plans to retirement plans that are positioned to deliver the lifetime income retirees seek and increasingly are asking of the DC community.

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THE PURSUIT OF OUTPERFORMANCE™

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ABOUT PGIM DC SOLUTIONS[4]

As the retirement solutions providers of PGIM, we plan to deliver innovative defined contribution solutions founded on market-leading research and capabilities.

Our highly-experienced team will partner with our clients on customized solutions to solve for lifetime income. As of 6/30/2021, PGIM has $213 billion[5] DC assets under management and are the top manager[6] of stable value assets and provider of in-plan guaranteed lifetime income.

FOR MORE INFORMATION

To learn more about our capabilities, visit pgim.com/dc or contact PGIM DC Solutions at dc@pgim.com.

1. PGIM, "Part 3: The Evolving Defined Contribution Landscape: The Holy Grail of DC: Income in Retirement", April 2021

2. Based on the results of an online quantitative survey conducted by Marketing Analytics & Insights from September 20-27, 2021 of 1,500 individuals from the ages of 50-70 working full-time and participating in an employer sponsored retirement plan.

3. PGIM, "401(k) Core Menus Aren't Ready for Retirement", Q4 2021

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6. PGIM is the investment management business of PFI; PFI is the 9th largest defined contribution record keeper (out of 34 firms surveyed) in terms of U.S. defined contribution assets under management based on Pensions & Investments' Top DC Record Keepers list published 2/2021. This ranking represents U.S. defined contribution assets under management by PFI as of 9/30/2020.