



PGIM DC SOLUTIONS

GUIDED SPENDING RATES: RETHINKING “SAFE” INITIAL WITHDRAWAL RATES

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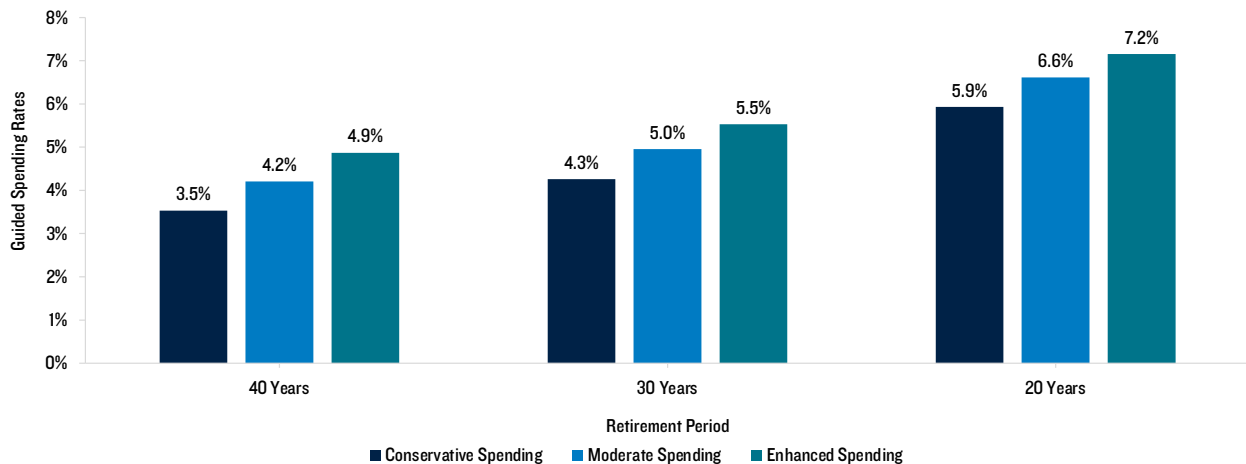
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INTRODUCTION

Are “safe” initial withdrawal rates, such as the “4% rule,” still the best guide for retirement spending? We believe it’s time for a change. Our research offers a fresh perspective on portfolio withdrawal rates by integrating spending flexibility (i.e., dynamic withdrawals) and an outcomes metric that better captures the anticipated retiree sentiment regarding various potential outcomes. Our model goes beyond the basic metrics, which often only measure success or failure, to introduce a series of portfolio withdrawal rates that we believe are a better starting place for retirees – what we call PGIM DC Solutions’ “guided spending rates.”

The following exhibit includes our guided spending rates for varying levels of spending flexibility – conservative, moderate, and enhanced – for three distinct retirement horizons: 40 years, 30 years, and 20 years. A conservative spending rate would be more appropriate for a retiree who is depending on savings (e.g., the DC plan balance) to fund essential spending in retirement (e.g., food, housing, healthcare). An enhanced spending rate would be more appropriate for a retiree who is less dependent on their retirement plan savings and has a reasonable amount of flexibility around the potential to adjust. A moderate spending rate would be a blend of the two. We provide guided spending rates for more granular periods in a table later in the paper.

Guided Spending Rates



Source: Author's Calculations. PGIM Quantitative Solutions CMAs as of Q4 2023.

By more accurately incorporating retiree decisions and preferences, our guided spending rates are notably higher than the conventional 4% rule, providing a more fitting and responsive withdrawal rate for today’s retiree. With this approach, a retiree with a moderate spending level and a 30-year retirement period (with a 5% withdrawal rate) would experience an initial withdrawal rate that is 25% higher than the 4% rule, without compromising the longevity of their nest egg. While safety, generally defined as not depleting a retiree’s portfolio, is a consideration when determining a spending rate, it is important to also balance out the benefits of underspending during retirement (i.e., spending too little, especially early in retirement, if it means cutting back on activities or things the retiree would enjoy). Our approach seeks to balance this trade off more effectively.

Overall, the optimal spending rate is going to vary by retiree and should be determined based on their own unique situation and preferences. We believe our guided spending rates can serve as a good starting place for today’s retiree.

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WITHDRAWAL RATES

There is over 30 years of research exploring how much a retiree can withdraw annually from a portfolio upon retirement with estimates ranging from 2%¹ to 8%², depending on the research paper or media pundit. The industry has largely coalesced around 4%, though, based on the original research by Bengen (1994)³, 4% is a withdrawal rate that is covered prominently by the financial press.

The 4% rule is not without its limitations, though. It assumes a retiree can safely withdraw 4% of the initial portfolio balance at retirement, where that amount can safely increase with inflation for 30 years. For instance, a \$500,000 portfolio would allow for a \$20,000 withdrawal in the first year of retirement, with this amount incrementally increasing with inflation for 30 years. However, this rule and many modeling tools today use assumptions that do not accurately capture retiree preferences and decisions.

There are three common gaps in these models:

- 1. Ignoring other income streams:** Many Americans receive some type of guaranteed lifetime pension benefit, such as Social Security, which provides a minimum standard of living. This means a retiree's portfolio is generating income in addition to these guaranteed sources, thereby providing a safety net that might allow for a different portfolio withdrawal rate.
- 2. Lack of spending flexibility:** Traditional models commonly don't include the desire or ability to adjust spending during retirement, since withdrawals are assumed to change only by the rate of inflation. Retirees have an ability to adjust spending based on real-life needs and circumstances, which can significantly affect spending rates.
- 3. Inadequate evaluation of outcomes:** Bengen's research and most financial planning tools today determine safe withdrawal rates by focusing on whether the goal is accomplished in its entirety and ignore the magnitude of failure using a metric commonly referred to as the "probability of success." A better approach is to consider the total amount of the goal accomplished each year, and, if there is a shortfall, to try to better gauge the potential implications of the shortfall on a retiree.

PGIM DC Solutions' "guided spending rates" address these shortcomings, offering recommendations that not only tend to be higher than the traditional 4% rule, but also incorporate a more realistic depiction of retiree decision making. The concepts are more fully discussed later in this piece, as well as some recently released research published by Blanchett (2022)⁴.

¹ Anarkulova, Aizhan, Scott Cederburg, Michael S. O'Doherty, and Richard W. Sias. 2023. "The Safe Withdrawal Rate: Evidence from a Broad Sample of Developed Markets." Available here: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4227132.

² Rekenhaller, John. 2023. "An 8% Retirement Withdrawal Rate? A Radio Host Advocates No Small Plans." Available here: <https://www.morningstar.com/retirement/an-8-retirement-withdrawal-rate>.

³ Bengen, William. 1994. "Determining Withdrawal Rates Using Historical Data." *Journal of Financial Planning*, vol. 7, no. 4: 171-180

⁴ Blanchett, David. 2022. "Redefining the Optimal Retirement Income Strategy." *Financial Analysts Journal*, vol. 79, no. 1: 5-16. Available here: <https://www.tandfonline.com/doi/full/10.1080/0015198X.2022.2129947>

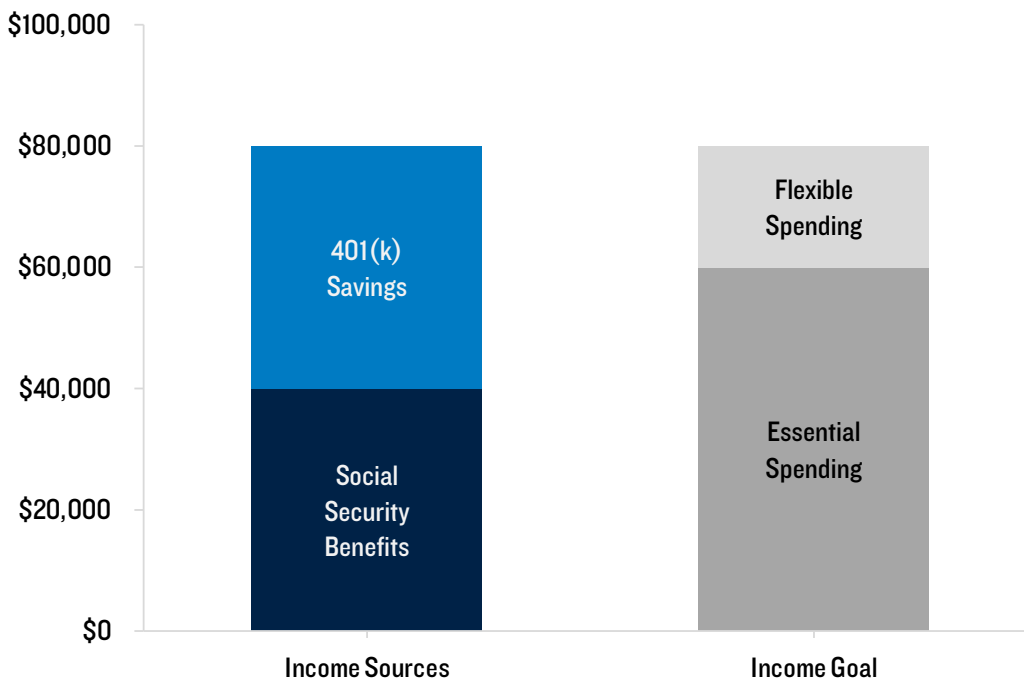
DEFINING THE OPTIMAL RETIREMENT INCOME STRATEGY

It is important to take a holistic perspective when making decisions about retirement. For most retirees, there are two predominant assets (or income sources) used to fund spending in retirement (i.e., the liability): guaranteed lifetime income benefits, such as Social Security benefits or some type of pension (e.g., a defined benefit plan), and savings, which could be a 401(k), IRA, taxable account, etc.

Understanding each income source's role is critical, but it's equally important to grasp the flexibility around the retirement income goal. While the retirement income goal is commonly assumed to be a static number in models, the reality is that retirees encounter diverse spending patterns throughout their retirement years. We group spending into two general types of expenses: essential and flexible.

The exhibit below provides context around how these assets (income sources) are matched against the liability (spending goals), where the income sources to fund the retirement goal (\$80,000) are a combination of Social Security retirement benefits and 401(k) savings and the goal itself is a combination of essential and flexible spending.

A Total Wealth Perspective on Retirement



Source: For illustrative purposes only.

While the above exhibit serves as a mere example, a deeper dive into the structure of the household balance sheet allows for a more complete understanding of how available income sources can be used to fund the retirement goal.

MORE REALISTIC SPENDING PROJECTIONS: THE IMPACT OF A CUTBACK

Most models traditionally assume limited spending flexibility among retirees (i.e., the entire goal represents essential spending). However, this view is inconsistent with both observed retiree spending behaviors (e.g., looking at spending changes over time using data from the Health and Retirement Study) and responses from surveys. As detailed in the exhibit below, PGIM surveyed DC plan participants about the perceived impact of a hypothetical 20% reduction in spending on their retirement lifestyle.

Impact of a 20% Spending Drop on Retirement Lifestyle

Little or no effect	9%
Few changes, nothing dramatic	31%
Some changes, but can be accommodated	45%
Substantial changes and considerable sacrifices	13%
Devastating, would fundamentally change lifestyle	2%

Source: PGIM survey of 1,500 respondents sourced via a Toluna consumer panel from September 20-27, 2021, of individuals between the ages of 50-70 currently working full-time and participating in an employer sponsored retirement plan.

The results of our survey, as well as other research, suggest that retirees typically have an ability to cut back on spending and that spending reductions would not materially affect retirement satisfaction. These insights challenge the notion that spending cuts significantly diminish retirement satisfaction. In fact, only a fraction, 15%, of respondents described a 20% reduction in spending as either devastating or substantial. This suggests that retirees might be more financially agile than previously assumed, indicating a need for more dynamic retirement spending modeling.

QUANTIFYING OUTCOMES: IT DOESN'T NEED TO BE PASS OR FAIL

Retirement planning requires an ability to project spending sufficiency over time. Traditional models often use Monte Carlo simulations where the retiree is assumed to accomplish the goal only if the spending amount is accomplished in its entirety, also known as the “probability of success” metric. The biggest issue with this metric is that it ignores the magnitude of failure, or the percentage of the goal that was completed.

This effect is demonstrated in the exhibit below, which includes a hypothetical scenario where the income goal is \$100 a year and lasts for 10 years.

Success Rates vs. Goal Completion

		Year										Pass or Fail?	% of Goal	
		1	2	3	4	5	6	7	8	9	10			
Run#	1	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$90	0	99%
	2	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$80	\$80	0	96%
	3	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$70	\$70	0	94%
	4	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$60	\$60	\$60	0	88%
	5	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$50	\$50	\$50	0	85%
	6	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	1	100%
	7	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	1	100%
	8	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	1	100%
	9	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	1	100%
	10	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	1	100%
Average												50%	96%	

Source: For illustrative purposes only.

The “Pass or Fail” column indicates if the goal is fully met. We can see that in half of the runs, the goal is not accomplished, resulting in a 50% success rate, which is traditionally seen as unfavorable. However, a closer examination reveals that on average, 96% of the goal is accomplished across runs. This discrepancy presents two distinct interpretations of the same data: a binary success rate versus a goal completion.

Presenting a retiree with a 50% success rate paints a grim picture and would likely be incredibly uncomfortable. In contrast, if you told them they are likely to achieve 96% of their retirement goal, on average, it would instill much greater confidence.

The fact that success rates ignore the magnitude of failure becomes especially important as retirement planning periods can easily last 30+ years. With metrics like the probability of success, relatively minor shortfalls late in retirement have the same effect as a relatively large shortfall early in retirement, which could lead to excessively conservative guidance and suboptimal asset allocation (that is also too conservative). Metrics that consider the proportion of the goal achieved offer a more balanced perspective, informing more tailored and potentially less restrictive investment guidance.

INTRODUCING PGIM'S GUIDED SPENDING RATES

Navigating retirement requires a more thoughtful approach to managing withdrawals from one's portfolio. This is where the concept of "guided spending rates" comes into play. Leveraged from the insights introduced in a paper published in the Financial Analysts Journal titled "Redefining the Optimal Retirement Income Strategy,"⁵ our model breaks down the retirement goal by perceived flexibility, incorporates adaptive (or dynamic) spending through retirement, and relies on a more realistic outcomes metric.

We estimate the safe spending level for a variety of scenarios to capture how differences in retiree situations can result in different guidance around spending levels, with a particular focus on spending flexibility. We assume three generic flexibility levels: conservative, moderate, and enhanced, which correspond to essential spending levels of 100%, 70%, and 40%, respectively, of the overall spending target for the specific portfolio. We also consider retirement periods from 10 to 40 years in five-year increments.

Returns are based on PGIM Quantitative Solutions' Capital Market Assumptions (CMAs), leveraging both the 10-year assumptions (for the first 10 years of the projection) and the steady state assumptions (for years 11 until the end of the scenario). We assume varying equity allocations that correspond to the target level of essential spending, where the fixed income portion is invested in 20% cash and 80% bonds and the equity portion is invested in 70% US large cap equities, 10% US small cap equities, and 20% international equities. We assume higher equity allocations for higher levels of spending flexibility, consistent with the research of Blanchett and Stempien (2023)⁶, where the equity allocations for the conservative, moderate, and enhanced spending levels are 30%, 50%, and 70%, respectively.

Returns for the asset classes are included in Appendix 1 and are reduced by an assumed 40 basis point investment management fee. The analysis includes a 1,000 run Monte Carlo simulation and ignores taxes. Additional assumptions for each scenario are included in Appendix 2. The graphic below includes the guided spending rates by flexibility level and retirement period based on the analysis.

Guided Spending Rates

Flexibility Level	Retirement Period (Years)						
	40	35	30	25	20	15	10
Conservative	3.5%	3.9%	4.3%	5.0%	5.9%	7.7%	11.0%
Moderate	4.2%	4.5%	5.0%	5.6%	6.6%	8.3%	11.9%
Enhanced	4.9%	5.1%	5.5%	6.1%	7.2%	9.0%	12.8%

Source: Author's Calculations. PGIM Quantitative Solutions CMAs as of Q4 2023.

⁵ Blanchett, David. 2023. "Redefining the Optimal Retirement Income Strategy." Financial Analysts Journal, vol. 79, no. 1: 5-16.

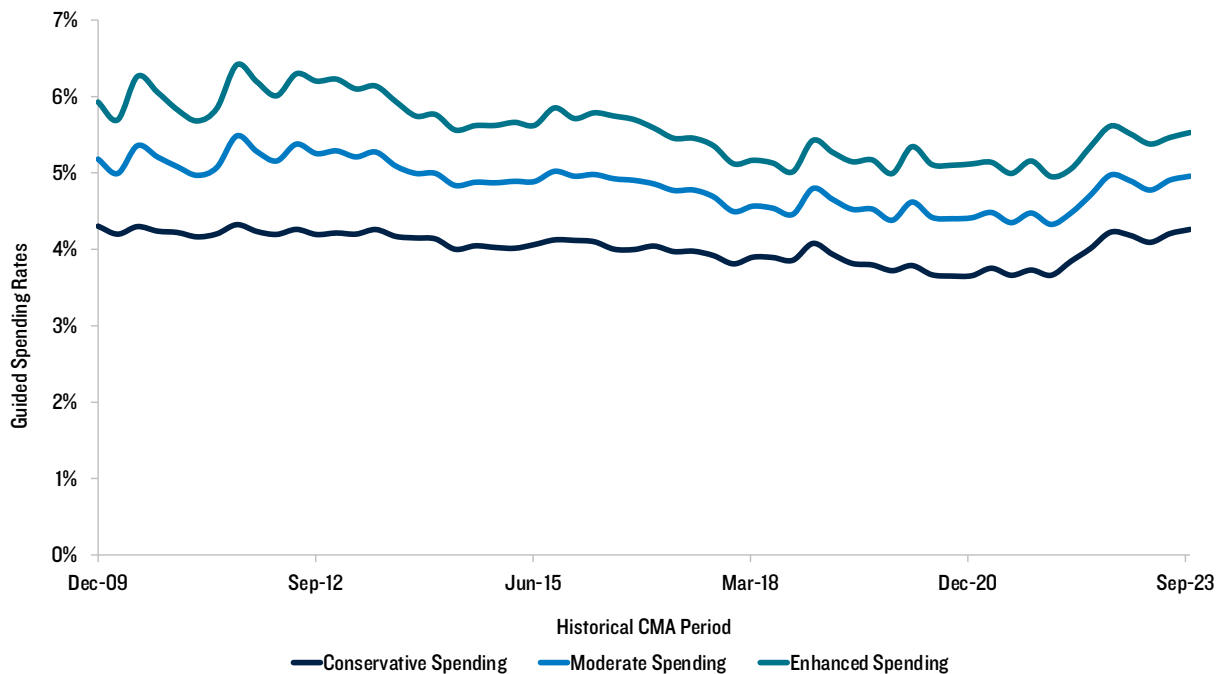
⁶ Blanchett, David and Jeremy Stempien. 2023 "Retiree Spending Flexibility and Optimal Portfolio Risk Levels." Investments & Wealth Monitor. (November/December). Available here: https://publications.investmentsandwealth.org/iwmonitor/november_december_2023/MobilePagedArticle.action?articleId=1940617

These guided spending rates vary materially by retirement period and by perceived spending flexibility level. Retirees who have more flexibility around spending (i.e., enhanced) have spending rates that are approximately 25% higher than those who are less flexible (i.e., conservative), on average.

These estimates are notably higher than other estimates around “safe” withdrawal rates, such as the traditional 4% rule. For example, if we focus on the 30-year period, the guided spending rate would be 5.0% for a retiree with a moderate level of spending flexibility.

It is important to note that the guided spending rates would have changed considerably over time. We demonstrate this by leveraging PGIM Quantitative Solutions’ historical CMAs created since Q4 2009 (i.e., the forward-looking estimates at that point in time). Historical inflation assumptions are based on the 30-year forecast from the Cleveland Federal Reserve⁷. The results are included in the exhibit below.

Guided Spending Rates for Scenarios: Q4 2009 to Q3 2023, Assuming a 30 Year Retirement Period



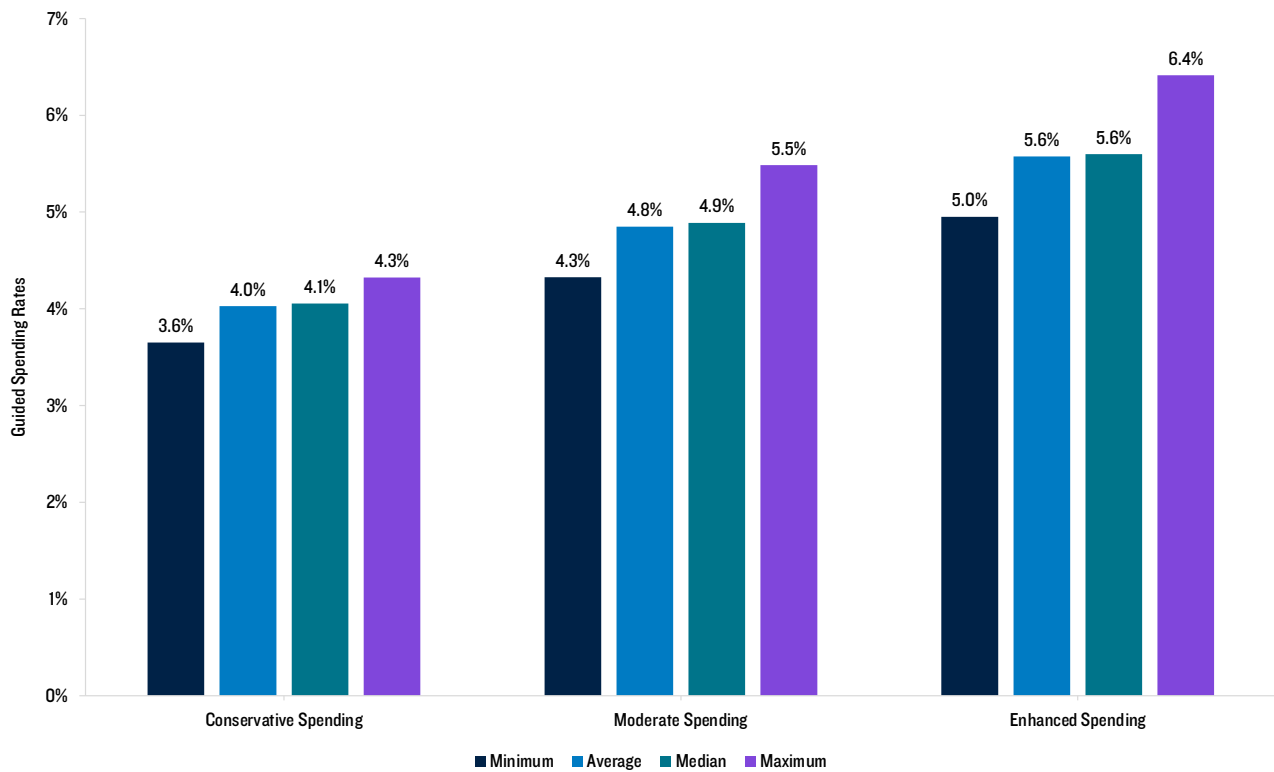
Source: Author’s Calculations. PGIM Quantitative Solutions’ CMAs.

There is notable variation in the guided spending rates historically. For example, when interest rates were low in 2021, the corresponding spending rates declined. This suggests retirees should regularly revisit portfolio withdrawal rates as market situations evolve over time.

The next exhibit provides some perspective on the minimum, average, median, and maximum values for the three spending flexibility levels over the historical period.

⁷ Federal Reserve Bank of Cleveland Inflation Expectations. Available here: <https://www.clevelandfed.org/indicators-and-data/inflation-expectations>.

Guided Spending Rates for Scenarios: Q4 2009 to Q3 2023, Assuming a 30 Year Retirement Period



Source: Author's Calculations. PGIM Quantitative Solutions CMAs.

There have been notable variations over time, however the Conservative, Moderate, and Enhanced guided spending rates tend to be approximately 4.0%, 5.0%, and 5.5%, respectively, on average.



CONCLUSION

The way the retirement industry approaches spending in retirement needs to evolve. Too many models today rely on outdated assumptions that result in spending recommendations that are too conservative. In this piece, we've introduced an updated approach: PGIM DC Solutions' "Guided Spending Rates", which are calculated using a more realistic retirement income model that we believe more accurately captures the adaptive nature of retiree spending and considers the potential impacts of changes in spending in retirement. By using our guided spending rates, retirees may find they can safely increase their withdrawal rates, potentially resulting in a more enjoyable retirement for many Americans today.

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* PGIM DC Solutions does not establish or operate pension plans.

** Reported data reflects the assets under management by PGIM and its investment adviser affiliates for defined contribution investment purposes only.

REFERENCES

Bengen, William. 1994. "Determining Withdrawal Rates Using Historical Data." *Journal of Financial Planning*, vol. 7, no. 4: 171-180.

Blanchett, David. 2023. "Redefining the Optimal Retirement Income Strategy." *Financial Analysts Journal*, vol. 79, no. 1: 5-16.

APPENDICES

Appendix 1: Return Assumptions

#	Asset Class	10 Yr	Steady	Std	#	Correlation				
		Return	Return	Dev		1	2	3	4	5
1	Cash	3.63	3.00	2.00	1	1.00	0.20	0.00	0.00	0.00
2	Bonds	5.45	5.00	6.00	2	0.20	1.00	0.20	0.10	0.15
3	US Large Cap Equities	8.80	10.00	18.00	3	0.00	0.20	1.00	0.85	0.75
4	US Small Cap Equities	10.10	12.00	22.00	4	0.00	0.10	0.85	1.00	0.70
5	International Equities	10.49	10.00	18.00	5	0.00	0.15	0.75	0.70	1.00

Source: Author's Calculations. PGIM Quantitative Solutions CMAs.

Appendix 2: Key Parameters for Scenarios

Flexibility Level	Period (Years)	Social Security	Balance	Equity%	Essential Spending%	Flexible Spending%
Conservative	40	\$20,000	500,000	30%	100%	0%
Moderate	40	\$30,000	500,000	50%	70%	30%
Enhanced	40	\$40,000	500,000	70%	40%	60%
Conservative	35	\$20,000	500,000	30%	100%	0%
Moderate	35	\$30,000	500,000	50%	70%	30%
Enhanced	35	\$40,000	500,000	70%	40%	60%
Conservative	30	\$20,000	500,000	30%	100%	0%
Moderate	30	\$30,000	500,000	50%	70%	30%
Enhanced	30	\$40,000	500,000	70%	40%	60%
Conservative	25	\$20,000	500,000	30%	100%	0%
Moderate	25	\$30,000	500,000	50%	70%	30%
Enhanced	25	\$40,000	500,000	70%	40%	60%
Conservative	20	\$20,000	400,000	30%	100%	0%
Moderate	20	\$30,000	400,000	50%	70%	30%
Enhanced	20	\$40,000	400,000	70%	40%	60%
Conservative	15	\$20,000	300,000	30%	100%	0%
Moderate	15	\$30,000	300,000	50%	70%	30%
Enhanced	15	\$40,000	300,000	70%	40%	60%
Conservative	10	\$20,000	200,000	30%	100%	0%
Moderate	10	\$30,000	200,000	50%	70%	30%
Enhanced	10	\$40,000	200,000	70%	40%	60%

Source: Author's Calculations.

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