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Selecting a Personalized Retirement Income Strategy

By Alejandro Murguía, PhD, and Wade D. Pfau, PhD, CFA®, RICP®

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FEATURE

Selecting a Personalized Retirement Income Strategy

A MODEL APPROACH

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ABSTRACT

The objective of this paper is to develop a richer, more comprehensive process for measuring individual preferences that is better suited to the complexities of retirement income planning. The alternative we define is the Retirement Income Style Awareness® (RISA®) profile that is based on six factors that identify distinct retiree preferences: probability-based versus safety-first, optionality versus commitment, time-based versus perpetuity income floors, accumulation versus distribution, front-loading versus back-loading retirement income, and true versus technical liquidity. Our results identify probability-based versus safety first and optionality versus commitment as the two main factors to structure a matrix with four quadrants that delineate four retirement income approaches. We further use the other secondary factors to strengthen the case for matching retirement income strategies for individuals falling within each of these four quadrants. This investigation creates a workable model for retirement income planning by showing how the factors connect to four main retirement income strategies: systematic withdrawals with total return investing, risk wrap with deferred annuities, protected income with immediate annuities, and time segmentation or bucketing. Approaching retirement income agnostically and matching retirement income strategies based on an individual's personal retirement income style may lead to improved outcomes that achieve greater buy-in and comfort from clients.

INTRODUCTION

Retirement income planning is a relatively new field within the financial advisory profession. Financial advisors continue to work through the process of understanding the distinct set of approaches and strategies available for retirement distributions and how they differ from traditional wealth accumulation and investment management. Wealth management traditionally focused on accumulating assets without applying further thought regarding the differences that may happen after retiring (Gadenne 2011). It is possible that individuals may approach investing during retirement rather differently from investing for retirement; retirees may worry less about maximizing risk-adjusted returns and worry more about ensuring that their assets can support their spending goals for the remainder of their lives (Merton 2012). After retiring, the fundamental objective for asset management is to sustain a living standard while spending down assets over a finite but unknown length of time, while also supporting goals related to legacy planning and providing liquidity to assist with unexpected expenses.

Retirees must find a way to convert their financial resources into a stream of income that will support them for the remainder of their lives. They must meet spending goals in the face of increasing longevity, with longer planning horizons and less reliance on traditional risk-pooling tools such as defined-benefit company pensions (Cobb 2015). Furthermore, they must deal with sequence of returns risk, which amplifies the impact of financial market volatility on the sustainability of an investment portfolio supporting distributions by increasing the importance of the order of investment returns in retirement (Bengen 1994; Milevsky and Abaimova 2009; Pfau 2014). Retirees also may deal with a broader range of spending shocks related to health care and long-term care that can increase liquidity needs for their assets, especially when there is no longer an income stream from employment.

Markowitz (1991) surmised that his modern portfolio theory (MPT) was not fully equipped to handle the household investing problem. In MPT, cash flows are ignored, and the investment horizon is limited to a single, lengthy period. This simplification guides investing theory for wealth accumulation; investors build portfolios to seek the highest expected returns for an accepted level of volatility. The advisory profession has developed risk questionnaires to determine the level of short-term volatility an investor can stomach and accept within an asset allocation decision.

But MPT is an assets-only model. For retirees, the focus shifts to asset-liability matching to sustain distributions over an unknown time horizon. For individuals focused on long-term retirement-spending goals, defining risk as short-term market fluctuations may be only tangentially related to the concerns of a retiree. Risk tolerance measures have been popularized even though there is a disconnect from a retirement income point of

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view. The profession must seek a broader approach for understanding the psychological preferences of retirees for how to position their assets to achieve retirement satisfaction.

Psychological preferences can impact retirement behavior. For instance, Shu et al. (2018) find that the personal attitude of perceived product fairness is more indicative of liking annuities for retirement income over demographic variables and loss aversion. As well, Asebedo and Browning (2020) provide a study that links psychological characteristics for individuals to the aggressiveness of the withdrawal rate used for retirement distributions. After estimating withdrawal rates used by households in the Health and Retirement Study[1] and controlling for other sociodemographic and financial characteristics, they find evidence that lower withdrawal rates are used by individuals exhibiting greater conscientiousness, extraversion, positive affect, and financial self-efficacy. Their results demonstrate how psychological characteristics can help explain financial decisions regarding portfolio spending among retirees.

The objective of this study is to develop a richer, more comprehensive process for measuring individual preferences that is better suited to the complexities of retirement income planning. The alternative we define is the Retirement Income Style Awareness (RISA) profile. We use questionnaires to first identify these preferences. These factors are described more completely in the next section. They include probability-based versus safety-first, optionality versus commitment, time-based versus perpetuity income floors, accumulation versus distribution, front-loading versus back-loading retirement income, and true versus technical liquidity.

We also provide a framework for linking the personal preferences defined from these factor dimensions to specific retirement income strategies. Indeed, many options for retirement income are found in the literature. As just a sampling, Pfau (2017) identified 36 distinct and viable retirement income strategies. However, from among available options, advisors tend to offer the approach they feel most comfortable with or are otherwise licensed or incentivized to provide, with little consideration for whether it matches a client's style. Defining a style and matching strategies to it provides an important step forward in making sure individuals and their retirement income strategies are aligned. Constructing an appropriate strategy is a process, and there is no single right answer. No one approach or retirement income product works best for everyone.

We use our foundation of distinct factors to identify retiree preferences to define the RISA matrix. This tool allows for matching RISA factor scores to appropriate retirement income strategies. This process translates retirement income preferences or styles into viable retirement income strategies. Our results identify probability-based versus safety first and optionality versus commitment as the two main RISA factors to structure a matrix with four quadrants that delineate four retirement income approaches. We further use the other secondary factors to strengthen the case for matching retirement income strategies for individuals falling within each of these four quadrants.

From the available retirement income strategies, we identify four broad strategies that match the four quadrants in the RISA matrix. These are total return, risk wrap, income protection, and time segmentation, which is also called bucketing. These strategies align closely with the common framework of systematic withdrawals (total return), time segmentation, and essential versus discretionary (income protection and risk wrap). A total return approach sources retirement income from a diversified investment portfolio. Investors rely on portfolio growth to sustainably support their spending. A time-segmentation or bucketing strategy usually sources short-term retirement income needs with a rolling bond ladder. Conceptually, some also may lump time segmentation together with the idea of holding cash reserves to manage market volatility. As for essential versus discretionary, this speaks to positioning assets differently to match the risk characteristics of a spending goal. There is a preference for contractual lifetime income for essential or core retirement expenses, while a more diversified total return portfolio is used for discretionary expenses. We split this category into two. First, a risk wrap strategy provides a blend of investment growth potential with lifetime-income guarantees through a deferred annuity offering living benefits. A protected-income approach allows for immediate annuitization to support greater downside spending protection with a lifetime commitment.

This research provides a way for individuals to better understand their retirement income style and to align it with a strategy that will resonate with them throughout retirement. This investigation will attempt to create a workable model for retirement income planning by identifying retirement income styles and matching those styles to the quadrants of the RISA matrix and their related retirement income strategies. For those individuals working with advisors, this study can aid advisor understanding about an agnostic approach to retirement income and the applicability of various strategies. It can help advisors get to the point, for instance, by spending less time describing an annuity to a client who will have very little interest in it. Recognizing the presence of different styles means acknowledging that different retirement income strategies can be linked to specific individual preferences. Failing to match strategy characteristics with individual preferences can lead to a strategy that is poorly implemented and not adhered to throughout retirement. As a result, frequently resetting a retirement plan is potentially a costly exercise that is prone to failure in retirement. Retirees need to be comfortable and to have buy-in with their strategy. Forcing the wrong strategy on someone is not appropriate. There are

dangers to filtering strategies initially based on a financial professional's or an investment media pundit's world view rather than seeking to better understand which strategies resonate with an individual's retirement income style.

We conclude the paper with an additional check for the usefulness of this framework. We ask participants if they own or intend to use a lifetime-income annuity in retirement. We use the model as a predictive measure to this question. The RISA matrix provides a way for advisors and individuals to understand how a range of preferences exist and how those preferences can be identified and linked to the appropriate retirement income strategies for an individual in ways that can help to make sense of the plethora of competing views about retirement.

Probability-based income sources depend on the potential for market growth to provide a sustainable retirement income stream ... [and] safety-first income sources incorporate contractual obligations.

RETIREMENT INCOME STYLES

We start by identifying dimensions of preferences that may help explain how individuals think about their retirement finances. We reviewed a wide range of advisor- and consumer-focused books and articles about retirement income written from different perspectives to identify factors representing a range of choices, either in terms of trade-offs to be weighed or as different thought perspectives for making retirement decisions. Particularly useful to this search were Bengen (2006), Bodie and Taqqu (2012), Branning and Grubbs (2010), Evensky and Katz (2006), Huxley and Burns (2005), Milevsky and Macqueen (2015), Milevsky and Huang (2011), Pfau (2017), Pfau (2019), and Zwecher (2010).

From this review, we identify six different dimensions to test for individual preferences in sourcing retirement income. Previewing the results, we find that two of these dimensions are best able to capture an individual's retirement income style. These are probability-based versus safety-first (PS) and an optionality versus commitment orientation (OC). The other four factors provide validity to the PS and OC scales and help to further identify retirement income strategies. These secondary factors include a time-based versus perpetuity (TP) income floor, accumulation versus distribution (AD), front-loading versus back-loading income (FB), and true versus technical liquidity (TT).

PROBABILITY-BASED VERSUS SAFETY-FIRST

The PS dimension details how individuals prefer to source their retirement income from assets. Probability-based income sources depend on the potential for market growth to provide a sustainable retirement income stream. This includes a traditional diversified investment portfolio or other assets that have the expectation of growth with realized capital gains supporting retirement income. Meanwhile, safety-first income sources incorporate contractual obligations. The spending provided through these sources is less exposed to market swings. A safety-first approach may include protected sources of income common with defined benefit pensions, annuities with lifetime-income protections, and holding individual government bonds to maturity. The safety-first approach does not depend on an expectation of market growth to provide capital gains as a source of spending, because the income is contractually driven. Though no strategy is completely safe, the inclusion of contractual protections implies a relative degree of safety compared to unknown market outcomes. With pensions and annuities, income is further supported through the mortality credits, or subsidies from the short-lived to the long-lived, provided through risk pooling.

OPTIONALITY VERSUS COMMITMENT

The OC dimension details the degree of flexibility sought with income strategies. Optionality reflects a preference for keeping options open for retirement income. Those with an optionality preference want to maintain flexibility with their strategies to respond to more favorable economic developments or to a changing personal situation. This preference aligns with retirement solutions that do not have pre-determined holding periods and are amenable to making changes. Conversely, commitment reflects a preference for committing to a retirement income solution. This may describe a specific component of risk aversion. Individuals with a strong preference for commitment prefer the lower risk of contractual retirement solutions over the greater expected returns and flexibility of investing in equity, fixed income, and other market-based assets. One is less concerned with potentially unfavorable economic developments or a worsening personal situation because the solution solves for a lifetime retirement income need. The security of having a dedicated retirement income solution and eliminating retirement investment and income decisions from one's perpetual to-do list outweighs missing out on potentially more positive future outcomes. There also can be satisfaction with planning in advance to manage potential cognitive decline and not leaving difficult decisions for a time when such decision-making may be hampered.

TIME-BASED VERSUS PERPETUITY (TP)

Retirees can choose between two broad strategies for building income floors. They may either fund an income floor for a fixed horizon or for perpetuity. Longevity is an important risk for

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retirees. These are two extreme approaches to the problem. In the timed-based approach, the retiree chooses a specific horizon for investment and consumption decisions. Time-based funding strategies are used to fund fixed windows of time in retirement. Building floors in perpetuity involves using lifetime income protections through risk pooling.

ACCUMULATION VERSUS DISTRIBUTION (AD)

The distinction for accumulation and distribution details whether one prefers to focus on portfolio growth while retired even though it will entail a more uncertain and lumpier retirement income stream (accumulation), or whether one prefers a more predictable retirement income path to maintain a standard of living at the potential cost of not seeking the highest potential investment account value at death (distribution). Said differently, those with an accumulation mindset will be more comfortable building a retirement portfolio using the tools of MPT, and those with a distribution mindset will be optimizing a different objective function related to portfolio distributions and income.

FRONT- VERSUS BACK-LOADING INCOME (FB)

The FB retirement income factor relates to the amount and pace of income to be received throughout retirement. This factor can be directly linked to the trade-offs identified by Milevsky and Huang (2011) related to an individual's subjective longevity risk aversion. Does an individual feel more comfortable front-loading portfolio distributions to better ensure that savings can be enjoyed during the early stages of retirement when one is more assured to be alive and healthy? Or does an individual prefer to back-load by spending at a lower rate in early retirement to better ensure that a particular lifestyle can be maintained without cuts during the later stages of a potentially long retirement horizon (back-loading)? Longevity risk aversion represents a fear of outliving assets and therefore leads to a preference for back-loading income and being more conservative with distributions in early retirement.

TRUE VERSUS TECHNICAL LIQUIDITY (TT)

The TT factor reflects differences between two ways that liquidity can be defined in financial planning. Although these concepts are both ultimately reflected in a household asset allocation decision, an earmark is mentally accounted for with true liquidity. Those who prefer true liquidity would like to have assets earmarked as reserves specifically for future unknown events that can derail a retirement income plan. To be truly liquid, assets must not already be matched to other financial goals such as planned retirement expenses or a specific legacy goal. True liquidity can involve the use of cash set-asides, buffer assets, and life, property, and casualty insurance. Those who prefer technical liquidity would rather raise cash from investments or assets already earmarked for other goals when necessary to fund unexpected expenses, with an understanding that cuts may then need to be made elsewhere. With a comfort around technical liquidity, fewer assets may be needed to feel comfortable with a retirement income plan because it is not necessary to have as much in additional reserve assets to cushion the plan. Another important element relates to income annuities, in which a retiree earmarks some assets to support lifetime spending. Those assets do not have liquidity because annuitizing assets is an irreversible decision. A true liquidity mindset would focus on how this decision could increase the level of true liquidity for non-annuity assets that no longer must be earmarked for spending covered by the annuity. A technical liquidity mindset would focus on how the income annuity has reduced the overall liquidity of retirement assets.

Those who prefer technical liquidity would rather raise cash from investments or assets already earmarked for other goals when necessary to fund unexpected expenses, with an understanding that cuts may then need to be made elsewhere.

METHODS

The steps of this study involve measuring the potential dimensions of retirement preferences through the factors as outlined. Then we shift to the construction of a RISA matrix with four quadrants to be used with positioning retirement income strategies to match the identified individual preferences. This analysis will be conducted using ordinary least squares regressions to identify the presence of characteristics between the main and secondary factors that match what retirement income strategies can offer. Then as a further check for robustness, a logistic regression is used to determine whether the RISA factors can be used to predict whether one owns or intends to purchase an income annuity, which is a binary dependent variable. All results are computed using SAS®. SurveyMonkey® was used for feedback reporting.

CONSTRUCTING THE RETIREMENT INCOME STYLE AWARENESS PROFILE

To measure retirement income beliefs, the items are presented via a semantic differential method. For each entry, we present opposing statements based on the proposed factor. One statement is on the left-hand side and the other is on the right-hand side. Participants are asked to identify from a six-point scale which statement they relate with the most. We use this method because it is in line with a variety of other psychological scales measuring personal attitudes. For example, the entry style resembles the following:

A) My investment strategy is primarily about portfolio growth.

B) My investment strategy is primarily about ensuring a sustainable income stream.

A) Statement 0 0 0 0 0 0 B) Statement

In this example, picking the first circle would generate a score of 1 and indicate a greater identification with accumulating wealth. Picking the last circle reflects a score of 6 and indicates a strong identification with distributing income.

Although not part of this paper, a detailed review of the RISA scale development including exploratory factor analysis, Cronbach's alpha,[2] and other psychometric test results are available upon request.

RETIREMENT INCOME CONCERNS

We analyze how retirement income beliefs are associated with retirement income concerns. The degree of concern regarding retirement income goals also is presented via the semantic differential method. These are classified into four distinct concerns.

Longevity. Longevity concerns are directly related to the main risk of retirement income: outliving your money. Most examples center on financial independence and knowing that you can pay your basic expenses and not be a burden to others. These include but are not limited to daily living expenses, housing, and health care.

Lifestyle. Lifestyle concerns focus on maintaining your desired standard of living and enjoying your retirement with adequate discretionary spending. Unless you are very wealthy, these goals usually necessitate increasing your level of spending. This aspect of retirement planning includes maintaining or improving your current lifestyle, rather than behaving more frugally than you would like to throughout retirement. This also includes being able to spend on loved ones without impeding your retirement success. Typical lifestyle goals include travel and leisure, self-improvement, and social engagement.

Liquidity. Liquidity concerns involve maintaining enough reserves for unexpected contingencies. Maintaining enough liquidity is especially important for dealing with family emergencies, home repairs, and an unexpected death or illness. Liquidity also can be a resource to fill in gaps when there is an unexpected market downturn.

Legacy. Legacy concerns are about leaving assets for subsequent generations or to charities, as well as contributing to impactful activities with your time and talent. Typical goals include philanthropy, political activities, and supporting loved ones.

PORTFOLIO LOSS AVERSION

We also measure portfolio loss aversion because this construct is the basis for common risk assessment tools used with portfolio selection, and we also measured income loss aversion. The results were very similar to portfolio loss aversion. In the interest of parsimony, we include only portfolio loss aversion because it is more popular, among financial professionals, as a measure of retirement investment risk and also should provide a reasonable measure of construct validity and overall comparison to the RISA factors.

To measure a general sense of portfolio loss aversion, we present respondents with an equal-probability gamble between a positive and negative portfolio outcome. After directions were presented, the first question reads as follows:

> *Please state whether you would accept the following options: A 50-50 gamble of your portfolio losing 11 percent or gaining 35 percent. As an example, if you had a $1-million portfolio, would you take a 50-50 gamble of your investment portfolio losing $110,000 or gaining $350,000?*

Questions with a decreasing gain to loss ratio are presented until the respondent responds "no." The first question presented here represents a 3.18 gain to loss ratio (35 percent gain versus 11 percent loss), and each subsequent question reduces the spread between the gain to loss ratio by roughly 20 percent. Respondents willing to accept gambles with a low ratio have lower loss aversion.

RESULTS

DESCRIPTIVE STATISTICS

Participants were recruited as a convenience sample from the RetirementResearcher.com readership. Participants were asked to complete an online questionnaire. They were given 14 days to complete the survey. As an incentive for participation, we offered them a retake of the final questionnaire once the analysis was completed. We also provided reports of their results. Although total participants peaked at 1,478, the number of completed factors varied because participants could drop out at any point, and some had left before all the potential factors had been introduced. As well, answering a question about net worth was optional and reduced the number of respondents available to use in the regression analysis. For retest purposes, the finalized survey was administered on March 27, 2020, and again on September 10, 2020, roughly six months apart. It should be noted that due to the coronavirus pandemic, this period experienced pronounced market volatility and most likely great personal uncertainty for the respondents.

With 1,478 total participants, a statistical power analysis indicates that the sample size is well above the number of participants needed to test our hypotheses with the exploratory factor

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analysis even though some participants did not complete every iteration of the study. In addition, we provide other information such as age and net worth to control for these additional variables during the subsequent regression analysis.

Descriptive participant data is provided in table 1. Retirement is a relevant life milestone for virtually all participants. For example, 61 percent (n=845) of participants were between 59 and 70 years old. Men represented 77 percent of responses (n=1,143) and women 23 percent (n=335). Eighty-six percent of the respondents were married (n=1,270) and 14 percent (n=208) were single. Although presented as an optional question, 50 percent (n=372) of the 740 who responded reported a net worth of $1 million–$3 million.

Descriptive information for each scale is presented in table 2. These scales reflect values between one and six, with a middle value of 3.5. For the retirement income factors, we find that probability-based versus safety-first, time-based versus perpetuity, and front-load versus back-load factor scores all fall relatively close to the middle on average. Respondents lean more strongly toward optionality, a distribution mindset, and having a true liquidity frame provided the largest deviation from the mid-point.

As a group, respondents are particularly concerned with lifestyle and liquidity and less concerned with longevity and legacy. For portfolio loss aversion, scores were computed by dividing the number of questions completed by the total number of available questions. As an example, a score of 0.17 would indicate that only the most conservative question was answered "yes" (0.17 = 1/6). A low score indicates greater loss aversion. The average score was 0.38 indicating that the average gain to loss multiplier was 2.34.

Table 1

DEMOGRAPHIC INFORMATION

		Respondents	
		n	%
Total Participants	Men	1,143	77%
	Women	335	23%
Age Classes	Younger than 40	64	4%
	40–46	64	4%
	47–52	97	7%
	53–58	267	18%
	59–64	460	31%
	65–70	385	26%
	71–76	131	9%
	Above 76	8	1%
Marital Status	Spouse/Partner	1,270	86%
	Single	208	14%
Net Worth Range	Less than $500k	46	6%
	$500k–$1M	91	12%
	$1M–$2M	210	28%
	$2M–$3M	162	22%
	$3M–$4M	85	11%
	$4M–$5M	48	6%
	Greater than $5M	98	13%

Table 2

DESCRIPTION INFORMATION FOR ALL SCALES

				Score Interpretation	
	N	Mean	SD	Low	High
Main Retirement Income Factors					
Probability-Based vs. Safety-First	1,158	3.4	1.4	Probability-Based	Safety-First
Optionality vs. Commitment	1,095	2.91	1.18	Optionality	Commitment
Secondary Retirement Income Factors					
Time-Based vs. Perpetuity	1,157	3.46	1.23	Time-Based	Perpetuity
Accumulation vs. Distribution	1,209	4.06	1.14	Accumulation	Distribution
Front-Load vs. Back-Load	1,095	3.33	1.21	Front-Load	Back-Load
Technical vs. True Liquidity	1,175	4.52	1.18	Technical Liquidity	True Liquidity
Retirement Goals-Concerns					
Longevity	1,175	2.63	1.30	High score indicates greater concern	
Lifestyle	1,209	3.90	0.94	High score indicates greater concern	
Liquidity	1,174	3.91	1.03	High score indicates greater concern	
Legacy	1,281	2.49	1.60	High score indicates greater concern	
Psychological Factors					
Portfolio Loss Aversion	1,020	0.38	0.26	Lower score = greater loss aversion. Range 0–1.	

Table 3

CORRELATION TABLE

	Probability vs. Safety First	Optionality vs. Commitment-Oriented	Portfolio Loss Aversion
Main Retirement Income Factors			
Probability vs. Safety First	—		−0.09*
Optionality vs. Commitment-Oriented	0.63****	—	−0.05
Other Retirement Income Factors			
Time-Based vs. Perpetuity	0.52****	0.51****	−0.09*
Accumulation vs. Distribution	0.46****	0.37****	−0.22****
Front-Loading vs. Back-Loading	0.24****	0.38****	−0.11***
Technical vs. True Liquidity	0.13****	0.03	−0.06
Retirement Goals-Concerns			
Longevity	0.26****	0.36****	−0.06
Lifestyle	−0.26****	−0.32****	0.18****
Liquidity	0.18****	0.15****	−0.08**
Legacy	−0.02	0.10***	0.00

* p = < 0.05 | ** p = < 0.01 | *** p = < 0.001 | **** p = < 0.0001

CORRELATION ANALYSIS

Next, we assess bivariate correlations between the two main RISA factors and the secondary RISA factors, retirement concerns, and portfolio loss aversion. The correlations are presented in table 3.

Following conventional presentation of data in the social sciences, throughout the rest of this paper, we will provide a statement of interpretation. Proceeding this statement, we will include the main statistical results and the probability of significance within parentheses. As an example, a positive correlation coefficient of 0.75 between the use of an umbrella and rain and a probability of 99 percent statistical significance will be presented as: The use of umbrellas and rainy weather is significantly positive ($r=0.75$, $p<0.01$).

The main RISA factors (i.e., PS and OC) present a significant positive correlation with each other ($r=0.63$, $p<0.0001$). A safety-first individual also tends to be commitment oriented, and probability-based correlates with optionality. In addition, a higher safety-first and commitment-oriented outlook was significantly related to all but one of the other retirement income styles in the expected direction. For example, both safety-first and commitment factors were positively related to a preference for perpetual retirement income flooring (PS: $r=0.52$, $p<0.0001$; OC: $r=0.51$, $p<0.0001$, respectively). Both factors also were positively related to having a distribution mindset for predictable retirement income (PS: $r=0.46$, $p<0.0001$; OC: $r=0.37$, $p<0.0001$), and back-loaded spending (PS: $r=0.24$, $p<0.0001$; OC: $r=0.38$, $p<0.0001$). Determining a preference for true liquidity was not significantly related to OC ($r=0.03$, n.s.), but it had a significant though smaller correlation with safety-first ($r=0.13$, $p<0.0001$).

As well, both RISA factors were significantly related to all but one of the retirement income concerns in the expected direction. For example, a high safety-first and commitment-orientation is associated with a concern for outliving your assets (i.e., longevity) in retirement (PS: $r=0.26$, $p<0.0001$; OC: $r=0.36$; $p<0.0001$) and true liquidity (PS: $r=0.18$, $p<0.0001$; OC: $r=0.15$; $p<0.0001$). Safety-first and commitment have a negative correlation with concern about enjoying and maximizing lifestyle (PS: $r=-0.26$, $p<0.0001$; OC: $r=-0.32$, $p<0.0001$). The legacy concern was not significantly related to the PS factor, though it had a positive but weaker link with a commitment orientation (OC: $r=0.10$, $p<0.001$).

Portfolio loss aversion further indicates directional concordance with some RISA factors. A higher score implies a higher loss tolerance. Those with low scores are more loss averse. For the RISA factors, we find a modestly negative relationship with a safety-first outlook ($r=-0.09$, $p<0.05$), a negative relationship with having a distribution mindset ($r=-0.22$, $p<0.0001$), a negative relationship with back-loading spending ($r=-0.11$, $p<0.001$), and a negative relationship with perpetuity-based flooring ($r=-0.09$, $p<0.05$). This suggests that individuals with greater concern about short-term market losses tend to identify more as safety-first, have a distribution mindset, desire to back-load spending, and seek a perpetuity income floor. Loss aversion is also significantly related to lifestyle concerns ($r=0.18$, $p<0.0001$) and liquidity ($r=-0.08$, $p<0.001$), but not to other retirement income concerns. This suggests that those with greater concern about market losses are less focused on lifestyle concerns and more focused on having true liquidity. Overall, portfolio loss aversion exhibited weaker relationships across all factors when compared to the two main RISA factors. Although portfolio loss aversion signals an association with investment

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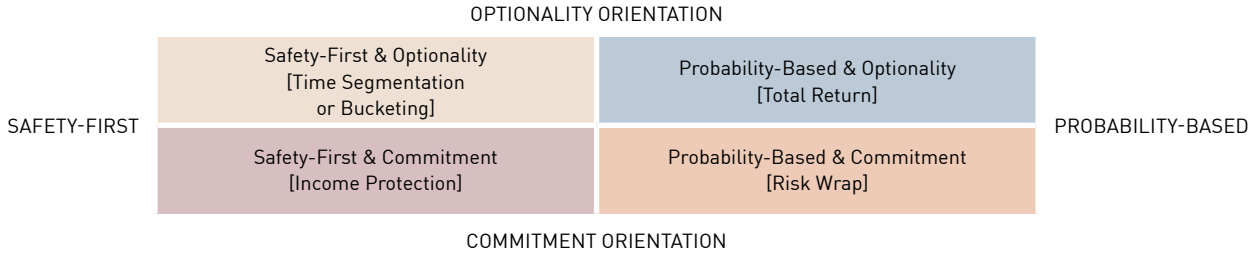
Figure 1

THE RISA MATRIX



and lifestyle-focused retirement income dimensions, the data does not support that portfolio loss aversion captures the multi-dimensional aspects of retirement income planning.

The RISA factors exhibit strong relationships in the expected direction between the retirement income styles and retirement concerns. This provides further construct and criterion validity for the RISA scales. The RISA factors have been shown to identify which retirement concerns individuals may want to address, and which retirement income style they identify with the most. In addition, the RISA factors can better capture the multi-dimensional aspects of a retirement income plan beyond a more accumulation-focused portfolio loss aversion scale.

IDENTIFYING AND CONSTRUCTING THE RISA MATRIX

The RISA factors provide a multidimensional tool that can identify one's retirement income style. In addition, we can classify retirement income strategies and match them to the RISA preferences. The RISA matrix presented in figure 1 illustrates where we are heading now. By aligning the PS scale horizontally and the OC scale vertically, we can separate and identify the four distinct retirement income strategy quadrants. Each is based on an individual's scores for these two main RISA factors.

With its higher safety-first and commitment scores, the bottom-left quadrant signifies more traditional protected-income approaches using tools such as immediate annuities. The top-right quadrant reflects a total return approach that is indicative of higher levels of the probability-based and optionality factor scores. The bottom-right quadrant is indicative of a risk wrap strategy because although there is a high probability-based preference, the high commitment scores are suggestive of a desire for more structured retirement income guardrails. Finally, the top-left quadrant is depicted with a bucketing or time-segmentation strategy due to a desire to maintain high levels of optionality along with safety-first contractual commitments. In this section, we further justify this strategy layout by identifying secondary retirement income factors that correlate to the main factors in ways that enhance how each quadrant is associated with a specific income strategy.

The supporting ordinary least squares regression analysis is provided in table 4. Each of the secondary factors serves as a dependent variable that we relate to the two main RISA factors while also controlling for net worth, gender, marital status, and age. Including net worth in the regressions reduces the sample size, because not all respondents answered this question, but the variable is important because net worth conceivably could impact how one forms preferences about retirement. Poterba et al. (2011; 2015) find evidence of greater net worth leading to a lower distribution rate in retirement. Excluding this variable does not dramatically impact the results even with the larger sample size; the direction and significance for the two main RISA factors is the same if net worth is excluded and the broader sample is used. Full randomized split test samples were conducted as a check for robustness, and they revealed results consistent with those displayed in table 4.

BOTTOM-LEFT QUADRANT OF THE RISA MATRIX

The bottom-left quadrant reflects strong safety-first and commitment preferences. In table 4, we demonstrate how these main RISA factors are linked with the TP secondary retirement income style factor to further provide a link toward income protection as a guiding strategy for this quadrant. The TP style factor attempts to identify a retirement income preference for either a time-based strategy or a perpetual income floor.

The regression shows that both the PS (high safety-first; estimate=0.31, $p<0.0001$) and OC (high commitment orientation; estimate =0.34, $p<0.0001$) factors are significant in the expected direction of explaining a preference for perpetuity-based strategies. Vice versa, probability-based and optionality-oriented individuals correlate with the time-based preference. The TP factor is working along this diagonal of the matrix. As such, this provides further strength for the idea that building a lifetime floor with income annuities is a desirable strategy for those falling in the bottom-left quadrant. Among the control variables, only marital status exhibits significance, with single individuals exhibiting a relative preference toward perpetuity strategies.

TOP-RIGHT QUADRANT OF THE RISA MATRIX

On average, participants with probability-based and optionality preferences identify with drawing income from an investment portfolio rather than using contractual sources to fund

Table 4

REGRESSION ANALYSIS FOR THE SECONDARY RISA FACTORS

	Retirement-Income Style Factor			
	Time-Based vs. Perpetuity	Accumulation vs. Distribution	Front Loading vs. Back Loading	Technical vs. True Liquidity
Sample	**737**	**737**	**738**	**737**
F Value	72.66	46.76	30.27	7.41
Global F Pr > F	****	****	****	****
R square	0.37	0.28	0.20	0.06
Intercept				
Estimate	–0.05	0.19	–0.06	0.15
Standard Error	0.07	0.08	0.08	0.09
Prob	0.44	*	0.44	0.10
PS Scale				
Estimate	0.31	0.36	–0.05	0.26
Standard Error	0.04	0.04	0.05	0.05
Prob	****	****	0.30	****
OC Scale				
Estimate	0.34	0.19	0.44	–0.08
Standard Error	0.04	0.04	0.04	0.05
Prob	****	****	****	0.12
Net Worth				
Estimate	–0.01	–0.02	–0.07	0.08
Standard Error	0.03	0.03	0.04	0.04
Prob	0.63	0.57	0.06	0.05
Gender				
Estimate	–0.01	0.23	0.00	0.20
Standard Error	0.08	0.08	0.09	0.10
Prob	0.90	**	1.00	*
Marital Status				
Estimate	0.22	–0.30	0.45	–0.03
Standard Error	0.09	0.10	0.11	0.12
Prob	*	**	****	0.79
Age				
Estimate	0.02	0.11	0.01	–0.10
Standard Error	0.03	0.03	0.04	0.04
Prob	0.47	**	0.73	*

GENDER: Male is the reference variable | **MARITAL STATUS**: Married is the reference variable.

* p = < 0.05 | ** p = < 0.01 | *** p = < 0.001 | **** p = < 0.0001

their retirement expenses. We also saw that this quadrant is associated with a time-based flooring preference over perpetuity. Those who value optionality wish to maintain the ability to consider retirement income withdrawal options on an ongoing basis. They are also more comfortable with seeking market growth despite the volatility. At face value, these participants would be more likely to subscribe to a systematic withdrawal strategy based on a total return investing approach for retirement income.

Again, we introduce a secondary retirement income style factor to further support these relationships. Because a total return approach assumes taking sustainable distributions from a volatile asset base, the individual is likely to consider a preference for a more variable income stream with the potential for investment growth rather than a stable retirement income stream with more muted potential investment growth. We refer to this retirement income factor as AD. A high score for the AD factor indicates a preference for distribution thinking and a lower score

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indicates an accumulation focus. The accumulation dimension is more reflective of a total return strategy and the distribution-focused preference is indicative of a more protected income approach.

The second regression in table 4 is for the AD factor. It indicates a strong linear relationship with the main RISA factors. The PS (high safety-first; estimate=0.36, p< 0.0001) and OC (high commitment orientation; estimate=0.19, p< 0.0001) factors contributed to the model in the expected direction of supporting a distribution mindset because these are the characteristics matching a high score. Conversely, the positive coefficients for each suggest that probability-based and optionality attributes both correlate with an accumulation mindset in this top-right quadrant where each of these factors associates with a low score. With other explanatory variables, we note significance for gender (men show more accumulation focus), marital status (married individuals show more accumulation focus), and age (younger people show more accumulation focus).

A strong positive relationship with an accumulation preference is found both for a probability-based mindset and an optionality orientation. This preference further supports a total return retirement income strategy for participants whose RISA profile puts them at the top right. There may not be an "annuity puzzle" for those in this quadrant because not everyone is optimizing for stable retirement income. There is an overlay of three distinct factors in which individuals can maintain preferences for an investment growth perspective, a willingness to accept volatile income with an accumulation mindset, and a desire for optionality. They do not perceive a need for annuities as part of their planning.

BOTTOM-RIGHT QUADRANT OF THE RISA MATRIX

Participants with a probability-based and commitment orientation are placed in the bottom-right quadrant of the RISA matrix. Although individuals here maintain a probability-based outlook with a desire for market participation, they also have more desire to commit to a solution that provides an opportunity for a structured income stream. Participants in this quadrant identify with a risk wrap retirement income strategy that can be implemented with deferred annuities offering living benefits for lifetime income.

To this quadrant we can add the discussion of the secondary FB factor that speaks to longevity risk aversion, or the fear of outliving assets and not being able to spend in retirement. This factor indicates the degree to which retirees prefer to front-load their income stream based on their probability of being alive versus a desire to back-load their income by keeping distributions lower early in retirement to reduce anxiety about outliving their assets. Those with a high score favor back-loading distributions, which suggests a higher degree of longevity risk aversion.

Results in table 4 indicate that a high level of longevity risk aversion (a high FB score) is directly related to a high commitment preference (OC: estimate=0.44, p< 0.0001), though the PS factor is not significant for longevity risk aversion. This is reflected across the bottom quadrants. For explanatory variables, only the relationship status is significant, with single individuals exhibiting more back-loading preference and thus greater levels of longevity risk aversion.

Results show that a higher commitment orientation within the bottom-right quadrant is significantly related to a higher degree of longevity risk aversion. This further supports a risk wrap strategy as a viable solution for these individuals, because variable and indexed annuities have characteristics that include a blend of market or market-proxy returns with a secured lifetime income stream. Although the associated market exposure satisfies the probability-based dimension, purchasing a more structured and secured retirement income guardrail addresses the commitment dimension and the longevity risk aversion dimension at work within this quadrant.

TOP-LEFT QUADRANT OF THE RISA MATRIX

The top-left quadrant in the RISA matrix is characterized by high safety-first and optionality preferences. Those whose factor scores place them in this quadrant reflect a desire for retirement income solutions that are characterized by contractually driven income while still maintaining a high level of flexibility to change strategies or accommodate ongoing changes in one's life. These desires are reflected in bucketing or time-segmentation approaches. Bond ladders are frequently implemented with contractually protected instruments (e.g., cash equivalents or government-issued securities) that can be used for shorter to intermediate income needs, with a diversified portfolio earmarked to replenish a rolling time-segmentation approach or cover future spending needs beyond the protected time segments. A bucket also could simply reflect cash reserves held as a type of contingency fund to manage unexpected expenses or to cover expected spending needs during a difficult market environment.

The final regression in table 4 tests whether aspects of liquidity may speak to this quadrant. We have identified two types of liquidity, technical and true liquidity, with the TT factor. Liquidity is the ability to convert assets into cash for needed expenses. True liquidity seeks to set aside specific reserve assets outside of what has been earmarked for other goals as a resource when all is not going well with the plan. Technical liquidity just seeks liquid assets without a specific concern about whether these assets already are earmarked for planned spending or legacy goals. A high TT scale score indicates a preference for true liquidity and a lower score indicates a preference for technical liquidity.

Table 5

LOGISTIC REGRESSION ANALYSIS OF THE RISA MODEL AND LIFETIME INCOME ANNUITY

	Income Annuity Ownership		
Sample	736		
Wald Test (χ^2)	116.96		
Pr > χ^2	****		
c statistic	0.79		
Intercept			
Estimate	−1.31		
Standard Error	0.16		
Pr > χ^2	****		
	Income Annuity Ownership	**Wald 95% Confidence Interval Limits**	
PS Scale			
Odds Ratio	1.843	1.44	2.37
Estimate	0.61		
Standard Error	0.13		
Pr > χ^2	****		
OC Scale			
Odds Ratio	1.90	1.51	2.40
Estimate	0.64		
Standard Error	0.12		
Pr > χ^2	****		
Net Worth			
Odds Ratio	1.107	0.91	1.34
Estimate	0.10		
Standard Error	0.10		
Pr > χ^2	0.30		
Gender			
Odds Ratio	1.19	0.75	1.90
Estimate	0.09		
Standard Error	0.12		
Pr > χ^2	0.92		
Marital Status**			
Odds Ratio	0.820	0.46	1.50
Estimate	−0.10		
Standard Error	0.15		
Pr > χ^2	0.52		
Age			
Odds Ratio	0.868	0.71	1.06
Estimate	−0.14		
Standard Error	0.10		
Pr > χ^2	0.16		

GENDER: Male is the reference variable.
MARITAL STATUS: Married is the reference variable.

**** p=<0.0001

We find a significant relationship between the desire for true liquidity and a preference for safety-first (estimate=0.26, p<0.0001), though the OC factor does not show a significant relationship. Directional results indicate that a stronger preference for true liquidity is present with safety-first thinking along the left side of the RISA matrix, including this quadrant. Because this quadrant also requires optionality, this further speaks to the idea of bucketing as an income strategy, either as a cash bucket earmarked for distributions, or as a time-segmented bond ladder. As for other explanatory variables, net worth is almost significant in this regression, with a *p*-value rounding to 0.05, suggesting that those with greater net worth prefer having true liquidity available. True liquidity may be viewed as a luxury that is not always achievable. Gender suggests that men lean toward technical liquidity, and increasing age is also associated with technical liquidity. Stated another way, women and younger individuals show a preference for true liquidity.

Overall, the results provide support for a cash bucket or time-segmentation strategy within the top-left quadrant of the RISA matrix. This approach addresses the need for asset safety with contractual protections and high optionality. In addition, the strategy addresses the desire for effectively maintaining true liquidity. Because true liquidity was present across the left side of the RISA matrix, the results also indicate that insurance solutions for spending shocks (e.g., long-term care insurance) and solutions for reliable income (e.g., multi-year guaranteed annuities) also may be viable considerations as one moves down from optionality to commitment along the left side of the RISA matrix.

APPLYING THE RISA PROFILE TO PREDICT ANNUITY PURCHASE DECISIONS

To provide more context about the applicability of the RISA matrix to help guide individuals toward appropriate retirement income strategies, we provide an example regarding predictions for current ownership or intended use of an income annuity. We consider an annuity because, unlike an investment portfolio, it is not a financial tool that almost everyone will have; and it is clear whether one owns an annuity or not, unlike with a bond ladder or a cash reserve. We find that the RISA factors are predictive in determining who owns or intends to purchase lifetime income annuities. Thus, there is significant support indicating that retirement income preferences within the bottom-left quadrant are strongly related to protected income solutions.

To assess if the RISA factors can predictably model the use of lifetime income annuities, participants also were asked, excluding Social Security, if they have or are expecting to have a contractual guarantee for retirement income in the form of a lifetime income annuity. A logistic regression is used to account for the binary nature of this dependent variable. Results in table 5 indicate that the RISA model, with

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the same explanatory variables used in the previous section to define the RISA matrix retirement income strategies, provides significant explanatory power for the use, or intended use, of a lifetime income annuity (Wald χ^2=118.41, p<0.0001).

Both main RISA factors, PS (estimate=0.61; OR=1.84; p<0.0001) and OC (estimate=0.64; OR=1.90; p<0.0001) were significant predictors. Higher safety-first and commitment scores were both predictive of using lifetime income annuities. This score is descriptive of the bottom-left quadrant. Holding all variables constant, the Odds Ratio scores indicate that for every unit increase in the PS score, there is a 1.84-times increase in the use or intended use of an income annuity. Likewise, for every unit increase in the OC score, there is a 1.90-times increase in the use or intended use of an immediate income annuity. Interestingly, none of the other explanatory variables provided predictive power after controlling for the main RISA factors. A c-statistic of 78.6 percent indicates that for all possible pairs (n=105,148) of participant scores, one with an income annuity and the other not, the RISA model correctly assigned a higher probability to those who own or intend to purchase a lifetime income annuity.

DISCUSSION AND CONCLUSION

For those who have been saving and accumulating in anticipation of future retirement, the question remains about what to do with accumulated assets upon reaching retirement. Retirees are becoming more responsible for figuring out how to save, invest, and then convert these savings into sustainable income for an ever-lengthening number of retirement years.

At present, the guidance and strategies provided to retirees still largely depend on the viewpoints of the pundit, whether that person works in the media, the financial services profession, or as a personal-finance blogger. That there are multiple appropriate ways to approach retirement can be overlooked. Each pundit will have a personal style that may be different from the style of the individual receiving that message, which creates a misalignment. Individuals optimize for different outcomes based on personal styles. They have characteristics that can be ascertained to better position a strategy that is right for them, rather than hoping for an alignment achieved through random matching. Financial advisors can serve a broader range of potential clients by approaching retirement income tools and strategies with an agnostic view and recognizing the need to fit different strategies based on the preferences of the recipient. Self-directed retirees can quickly identify and assemble a retirement strategy without the costly effects of trial and error.

This study identifies a set of scorable retirement income factors to define preferences working toward an overall retirement income style, which in turn point toward appropriate retirement income strategies. Our analysis of the retirement income literature leads us to identify six factors that were shown to provide a validated measure of one's retirement income style as represented through the Retirement Income Style Awareness matrix. Furthermore, the correlations between the factors helped to strengthen the ability to create a taxonomy of strategy preferences based on individual RISA profiles.

Although this investigation significantly enhances our understanding of retirement income preferences and strategies, no research is without limitations. Our convenience sample largely consists of individuals who are interested and well-read in retirement income and possess greater levels of net worth than the larger population. Further testing should be considered with a more diverse population. In addition, the degree to which these beliefs represent steady traits or more evolving states should be examined in conjunction with chosen strategies. Future studies also should assess how to identify optimal financial implementation approaches based on individual preferences.

Nonetheless, the current results indicate significant support for construct and criterion validity for the RISA factor scales and retirement income strategy alignment. By obtaining one's RISA factor scores, one has the empirical basis for a retirement income plan based on one's individual preferences. The RISA factors present a step forward in retirement income planning. Matching retirement income strategies with one's personal retirement income style may lead to more effective approaches to achieve buy-in and comfort from retirees. Ultimately, this lays a foundation for achieving better retirement outcomes.

Although one should conduct a financial plan to assess the economic viability of any approach, understanding an individual's RISA profile provides a validated starting point for analysis. Once an individual's RISA profile is identified, the individual can quickly and manageably have a range of strategies presented to them that will feel right. The RISA factors provide an effective framework for determining individual retirement income styles and retirement solutions.

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ENDNOTES

1. The Health and Retirement Study is a longitudinal survey of a representative sample of Americans older than age 50 conducted by the Survey Research Center at the Institute for Social Research at the University of Michigan in Ann Arbor and supported by the National Institute on Aging. The study interviews approximately 20,000 respondents every two years about subjects such as health care, housing, assets, pensions, employment, and disability (https://en. wikipedia.org/wiki/Health_and_Retirement_Study). Learn more at https://hrsparticipants.isr.umich.edu/.
2. Cronbach's alpha is a measure used to assess the reliability, or internal consistency, of a set of scale or test items. In other words, the reliability of any given measurement refers to the extent to which it is a consistent measure of a concept, and Cronbach's alpha is one way of measuring the strength of that consistency.

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