

Making guaranteed income target-date funds work in the real world: Annuitization benefits and product design

- Defined contribution retirement plans helped address accumulation challenges with target-date funds (TDFs). With this strong foundation, TDF managers have now set their sights on improving the decumulation process, seeking to enable participants to convert a part of their 401(k) balance into a paycheck without forcing retirees to become their own actuaries.
- This paper evaluates one practical design: hybrid annuity TDFs, which have a traditional TDF glide path along with a modest sleeve earmarked for guaranteed lifetime income, typically via a deferred annuity structure.
- The benefit is straightforward: The sleeve is designed to create a late-in-life income floor for the financial circumstances retirees fear most (outliving their assets and/or experiencing weak markets). The cost is equally straightforward: Annuitization reduces liquidity and can reduce expected bequest value.

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Hybrid annuity target-date funds combine a conventional target-date glide path with a modest sleeve earmarked for guaranteed lifetime income. This design can improve retirement outcomes (Dave et al., 2024) by converting a portion of uncertain portfolio wealth into a late-in-life income floor—but its value is not uniform across heterogeneous workforces.

Using the Vanguard Life-Cycle Investing Model (VLCM), we compared traditional index-based TDFs with hybrid annuity TDFs that incorporate immediate and deferred annuity structures. We calibrated cohort-specific assumptions for mortality, retirement timing, and Social Security income based on gender, income, education, and health proxies, and evaluated outcomes primarily through the changes in retirement consumption and bequest metrics, with certainty-equivalent utility results provided in “Certainty-Equivalent Metrics Reported in Percentage Terms” in the Appendix.

We found that deferred-income designs were generally the most robust option, improving late-in-life consumption security for longer-lived cohorts, while some shorter-lived or liquidity-constrained cohorts were closer to indifferent to its effects and could be worse off under blanket defaults.

These findings prompted a practical implementation approach: a hybrid annuity TDF with a modest sleeve and considerations for participants who do not elect to annuitize. Together, these guardrails preserve population-level gains while limiting predictable downside cases.

Key takeaways

- The value proposition is late-in-life consumption security. A deferred-income annuity (DIA) sleeve is intended to help improve outcomes by raising the income/consumption floor at advanced ages (and in bad market sequences).
- Heterogeneity is crucial in considering hybrid annuity TDFs at the outset—plan sponsors need to accept that it won't be a silver bullet for every participant, reinforcing the need to make a prudent decision.
- DIA-style designs are consistently effective in our analysis. Results for designs in the qualified longevity annuity contracts (QLACs) category are more sensitive to spending-rule assumptions and the timing of income onset.
- Designing a product that does not adversely affect those who don't use the annuitization option is necessary. We advocate for an “opt-in” implementation to help capture many of the potential benefits while seeking to reduce possible harm.
- Plan sponsors should communicate to participants in real-world terms. For this paper, leveraging our suite of models, we communicate the benefit of the hybrid annuity TDFs in terms of improvement in retirement consumption and impact on bequest. These are based on robust economic measures such as certainty equivalents. A detailed explanation can be found in “Certainty-Equivalent Metrics Reported in Percentage Terms” in the Appendix.

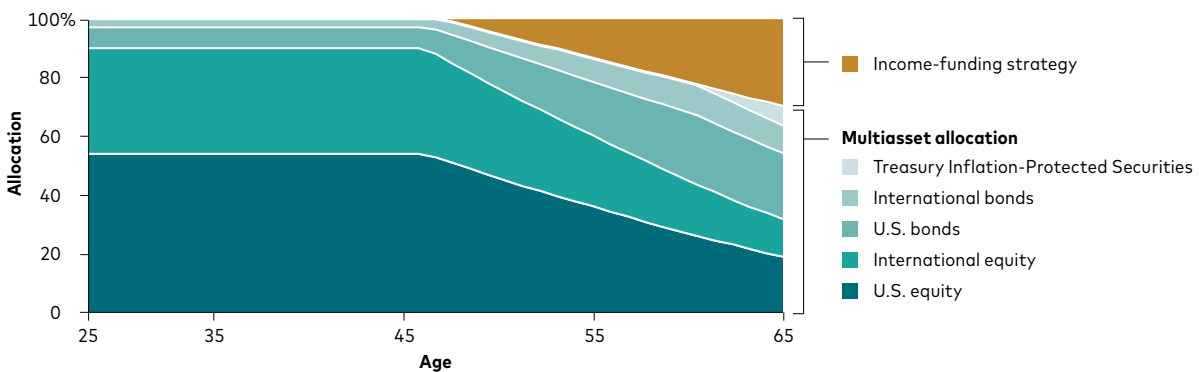
What are hybrid annuity TDFs?

Hybrid annuity TDFs¹ combine the asset accumulation offered by a traditional TDF with an annuity that provides guaranteed lifetime income. Hybrid annuity TDFs are a class of packaged products intended to stabilize assets as the participant approaches retirement and then provide guaranteed income during retirement. Most hybrid annuity TDFs have three components:

- A multiasset allocation to support asset growth.
- An income-funding strategy that effectively serves as a bridge to guaranteed income in retirement.
- An annuity for guaranteed income.

A hypothetical hybrid annuity TDF with these components is illustrated in **Figure 1**. The allocation to the multiasset component decreases while the allocation to the income-funding strategy increases along the life-cycle glide path. This is done to gradually reduce exposure to risky assets and increase assets dedicated to the income-funding strategy for annuity liability management.

FIGURE 1
Components of a hypothetical hybrid annuity TDF



Source: Vanguard.

¹ Throughout this paper, we will use the terms “guaranteed income TDF” and “hybrid annuity TDF” interchangeably.

Objective

Prior works, including Dave et al. (2024) and the academic literature (Horneff, Maurer, and Mitchell, 2025), demonstrate benefits from default annuitization for the average investor, but also highlight a practical challenge: Workforces are heterogeneous. Therefore, products incorporating annuities should be designed to support as many participants as possible—without disadvantaging those who do not use the optional guaranteed income.

Our objective is practical: quantify how and whether different cohorts benefit from annuitization and give plan sponsors a framework for evaluating hybrid annuity TDFs informed by this analysis.

This paper contributes three things:

- 1. Cohort-aware inputs.** Mortality, retirement timing, and Social Security assumptions vary systematically with gender, income, education, and health proxies.
- 2. Outcomes framed for decision-makers.** We emphasize retirement consumption paths (expected and downside), with certainty-equivalent utility detailed in "Certainty-Equivalent Metrics Reported in Percentage Terms" in the Appendix.
- 3. Considerations for plan sponsors.** These include trade-off minimization, flexibility for participants, emphasis on participant education and engagement regarding annuitization, and "no worse off if you don't annuitize" considerations.

Clustering the hybrid annuity TDF product landscape

Hybrid annuity TDFs are not one product; they are a family of designs. For clarity, it is useful to group them into four clusters:

- 1. Immediate income at retirement.** A portion of the retirement savings is converted into lifetime income at (or near) retirement using a single premium immediate annuity (SPIA), with payments starting right away. This is conceptually simple and creates an immediate paycheck, but it generally requires a more deliberate annuitization decision and is often irreversible for participants.
- 2. Deferred-income funding sleeve.** Part of the glide path is earmarked to fund deferred lifetime income, or a deferred-income annuity. This is the cluster most consistent with an "income-funding sleeve" approach and is the focus of this paper.
- 3. Longevity-only/late-start income.** A smaller allocation purchases income that begins late in retirement (e.g., age 80 and older). This is essentially a specific type of deferred-income annuity called a QLAC and is allowable in tax-qualified plans, with IRS-imposed limits.
- 4. Guarantees tied to market exposure, or guaranteed lifetime withdrawal benefits.** Income guarantees depend more heavily on equity risk premium and product features/fees and are less dependent on "pure longevity insurance." We mention this cluster for completeness but did not analyze these products. While beneficial, they can hurt investors who pay the fees but do not use the income feature efficiently. By contrast, DIAs and SPIAs provide "pure" longevity insurance, decoupling the income guarantee from market performance.

Where this paper fits: This paper's purpose is not to defend a single implementation. Instead, we evaluate the DIA-style cluster and use SPIA- and QLAC-style designs as comparators to clarify trade-offs and extract design principles that translate into sponsor-ready guardrails.

Methodology

We used the VLCM to simulate retirement outcomes under a traditional index-based TDF and a hybrid annuity TDF that incorporates lifetime income. We used data from the Vanguard Capital Markets Model in our VLCM simulations. The VLCM model generates many economic paths and lifespans and evaluates outcomes across participant cohorts.

What we compare

- **Baseline.** Index-based TDFs (accumulation plus decumulation).
- **Hybrid annuity TDFs.** TDF plus a modest lifetime-income sleeve implemented using:
 - **SPIA-style.** Income that begins at retirement and is created using 25% of the account balance at retirement.
 - **DIA-style.** Income that is funded ahead of retirement and begins at retirement. The allocation is 25% of the balance at retirement.
 - **QLAC-style longevity income.** Income that begins later in retirement (e.g., age 80 and beyond) and is created using 10% of the balance at retirement.

Cohorts and inputs

To reflect real heterogeneity, we vary three inputs across cohorts:

- 1. Mortality (longevity).** Gender-based mortality assumptions modified with multiplicative adjustments for income, education, and health proxies (see "Mortality and Retirement Assumptions" in the Appendix for more details).
- 2. Retirement timing.** Cohort-specific retirement-age assumptions (see "Mortality and Retirement Assumptions" in the Appendix for more details).
- 3. Social Security.** Cohort-specific Social Security assumptions consistent with the income profile (see "Mortality and Retirement Assumptions" and "Vanguard Life-Cycle Investing Model Assumptions" in the Appendix for more details).

IMPORTANT: The projections and other information generated by the Vanguard Capital Markets Model® (VCMM) regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not guarantees of future results. Distribution of return outcomes from the VCMM are derived from 10,000 simulations for each modeled asset class. Simulations are as of December 31, 2023. Results from the model may vary with each use and over time. For more information, please see page 21.

Spending policy

Retirement outcomes depend critically on how portfolio wealth and income are translated into spending. In our base case without annuities, we assumed that retirees spend a maximum of 4% of their retirement balance annually—which reflects a simple and commonly used withdrawal heuristic—or the required minimum distribution (RMD) in each year. We assumed that Social Security benefits are consumed in full each year.

For strategies that include annuities, annual spending was determined by adding guaranteed income streams (annuity payments) to portfolio withdrawals, while continuing to respect the RMD constraint on remaining portfolio assets. This ensured that comparisons across strategies reflected realistic withdrawal behavior and did not mechanically favor designs that defer income to later ages.

Because spending rules can materially affect product comparisons, especially QLAC-style designs that "turn on" later, we increased the spending to 5% annually to equate it to an investor using an SPIA. See "Vanguard Life-Cycle Investing Model Assumptions" in the Appendix for more details.

How we reported results

Communicating results in comparable terms

We reported the benefits and costs of hybrid annuity strategies in percentage terms, rather than dollar amounts. Specifically, we expressed outcomes as percentage improvements in certainty-equivalent retirement consumption and percentage changes in certainty-equivalent remaining assets (bequest) relative to a baseline index-based TDF.

This framing keeps results comparable across cohorts with different demographic assumptions, income levels, and account balances and avoids anchoring conclusions to any single dollar amount. In this paper, we have therefore emphasized:

- Improvements in retirement consumption as the percentage improvement in certainty-equivalent retirement consumption compared with a baseline index-based TDF, and
- Impact on bequest as the percentage change in certainty-equivalent bequest compared with a baseline index-based TDF, reflecting expected remaining assets at the end of the participant's life.

Both measures are derived from certainty-equivalent calculations that translate expected-utility differences, which incorporate investor preferences, into intuitive outcome metrics. Full definitions and interpretation are provided in "Certainty-Equivalent Metrics Reported in Percentage Terms" in the Appendix.

Annuity pricing

We priced annuity income using market-informed quotes from Cannex, and adjusted for the prevailing rate environment in the calibration period (see "Hybrid Annuity TDF Assumptions" in the Appendix for more details). We used unisex

annuity pricing as an average of quotes for males and females and outlined riders/features that were included, because these choices affect cohort comparisons and sponsor interpretation.

Who benefits, who is at risk, and what that implies for defaults

Results at a glance. The largest determinants of who benefits from a deferred-income sleeve are longevity and health. Income, education, and gender matter primarily because they correlate with life expectancy and how much retirement spending is already covered by Social Security. The takeaway for plan sponsors is not that they should default everyone into a guaranteed income product; it's that they should implement a modest default to such a product with guardrails, so the predictable downside cases may be protected.

How to interpret figures and heat maps

All figures report percentage changes relative to the baseline TDF and are represented by a heat map:

- Green indicates highest improvement in outcomes.
- Yellow indicates median improvement in outcomes.
- Amber indicates lowest improvement in outcomes.

This relative framing highlights who benefits, who is indifferent, and who may require protection, without tying conclusions to any single retirement balance or dollar amount.

Health and longevity are the primary determinants

Deferred-income annuitization is most valuable when a participant is likely to live long enough to benefit from longevity pooling. As shown in **Figure 2**, cohorts calibrated to longer expected lifetimes experience the most meaningful improvement in late-in-life consumption security from adding a deferred-income sleeve. Cohorts calibrated to shorter expected lifetimes are closer to indifferent—and can be worse off in utility terms—because the annuity sleeve trades away liquidity for income they are less likely to receive for long.

Implication for plan sponsors. Health is not directly observable in plan data. A sponsor cannot (and should not) attempt to medically underwrite participants. But a sponsor can protect the likely downside cases using observable levers:

- Keep the annuity sleeve modest.
- Make opt-in frictionless with clear disclosure of the trade-off.

FIGURE 2
Impact on consumption and bequest by health state

a. Change in certainty-equivalent bequest (vs. TDF)

Gender	Hybrid annuity TDF with:	Health state		
		Poor	Average	Good
Male	SPIA	-5.78%	-5.61%	-5.65%
	DIA	-5.78%	-5.61%	-5.65%
	QLAC	-5.34%	-4.90%	-4.69%
Female	SPIA	-5.93%	-5.84%	-5.90%
	DIA	-5.93%	-5.84%	-5.90%
	QLAC	-5.43%	-5.08%	-4.90%

b. Change in certainty-equivalent retirement consumption (vs. TDF)

Gender	Hybrid annuity TDF with:	Health state		
		Poor	Average	Good
Male	SPIA	0.94%	1.19%	1.70%
	DIA	3.05%	3.70%	4.62%
	QLAC	-0.06%	0.45%	1.28%
Female	SPIA	0.92%	1.29%	1.95%
	DIA	3.07%	3.85%	4.95%
	QLAC	0.12%	0.79%	1.81%

Source: Vanguard.

Gender differences affect longevity—and interact with retirement decisions

Women tend to benefit more from lifetime income designs because they face greater longevity risk. Under unisex pricing, longer-lived cohorts receive income for more years on average, making the late-in-life income floor more valuable.

However, gender results should not be presented as a one-factor story. Social Security already provides an inflation-linked lifetime income stream, and the value of additional guaranteed income depends on how much of a participant's desired spending is already covered. In practice,

the same annuity sleeve can look more valuable when it fills a clear income gap and less valuable when Social Security already covers most essential spending.

For example, consider an "average" man and woman, both healthy, each retiring at age 65. As shown in **Figure 3**, if they each use a hybrid annuity TDF with an allocation to a DIA, the woman's certainty-equivalent retirement income increases more than the man's. In our base case, the annuity raised a woman's certainty-equivalent income by roughly 5.2%, whereas the man's

increased by just shy of 5% when compared with a TDF without annuities. All else equal, men, having higher mortality, get fewer expected payments, so the insurance value is lower.

Interestingly, when we incorporate the median age at which women tend to retire and claim Social Security, based on data from the Health and Retirement Study (HRS), a study conducted by the University of Michigan and sponsored by the National Institute on Aging, the benefits tilt

in favor of men. This is shown in Figure 3b. For more details, see "Mortality and Retirement Assumptions" in the Appendix.

Implication for plan sponsors. Treat gender results as supportive evidence of longevity risk mitigation, not as a key consideration. Sponsors should focus messaging on longevity protection and consumption stability, not on gender segmentation. Plan sponsors should also understand whether potential products use unisex or gender-based pricing.

FIGURE 3
Impact on consumption and bequest by gender

a. Change in certainty-equivalent bequest (vs. TDF)

Assumption	Hybrid annuity TDF with:	Gender		
		Average	Male	Female
Same retirement decisions	SPIA	-5.56%	-5.44%	-5.61%
	DIA	-5.56%	-5.44%	-5.61%
	QLAC	-4.22%	-4.14%	-4.26%
Cohort-specific retirement decisions	SPIA	-5.56%	-5.61%	-5.89%
	DIA	-5.56%	-5.61%	-5.89%
	QLAC	-4.22%	-4.90%	-5.34%

Source: Vanguard.

b. Change in certainty-equivalent retirement consumption (vs. TDF)

Assumption	Hybrid annuity TDF with:	Gender		
		Average	Male	Female
Same retirement decisions	SPIA	1.56%	1.45%	1.65%
	DIA	5.11%	4.97%	5.23%
	QLAC	1.11%	0.89%	1.31%
Cohort-specific retirement decisions	SPIA	1.56%	1.19%	1.09%
	DIA	5.11%	3.70%	3.27%
	QLAC	1.11%	0.45%	0.61%

Differences in retirement outcomes by educational attainment

Education correlates with longevity, income trajectory, and retirement timing—and likely is a proxy for occupation, environment, and health maintenance. In our cohort calibration, education-level differences showed up primarily through life-expectancy horizon and the size of the retirement income gap relative to Social Security. While we didn't change the risk preferences based on a participant's education, it's worth noting that Blanchett (2016) suggests optimal annuitization varies by individual preferences. One might surmise that educated

participants could be more financially savvy or have different risk tolerances, but our analysis holds risk aversion constant across groups. The key factors remain mortality, retirement age, and income profile.

Implication for plan sponsors. As shown in **Figure 4**, participants with longer expected horizons and larger income gaps relative to Social Security value longevity insurance more. But education and health are not cleanly observable at the plan level.

FIGURE 4
Impact on consumption and bequest by educational attainment

a. Change in certainty-equivalent bequest (vs. TDF)

Gender	Educational attainment	Hybrid annuity TDF with:		
		SPIA	DIA	QLAC
Male	Less than high school	-5.67%	-5.67%	-5.00%
	High school	-5.73%	-5.73%	-5.21%
	Some college	-5.64%	-5.64%	-4.91%
	Bachelors	-5.82%	-5.82%	-5.05%
	Postgraduate	-5.80%	-5.80%	-4.81%
Female	Less than high school	-5.86%	-5.86%	-5.38%
	High school	-5.89%	-5.89%	-5.34%
	Some college	-5.91%	-5.91%	-5.35%
	Bachelors	-6.07%	-6.07%	-5.48%
	Postgraduate	-6.06%	-6.06%	-5.46%

Source: Vanguard.

(Continued on page 10)

FIGURE 4 (CONTINUED)

Impact on consumption and bequest by educational attainment

b. Change in certainty-equivalent retirement consumption (vs. TDF)

Gender	Educational attainment	Hybrid annuity TDF with:		
		SPIA	DIA	QLAC
Male	Less than high school	1.08%	3.57%	0.13%
	High school	1.00%	3.16%	0.29%
	Some college	1.25%	3.78%	0.59%
	Bachelors	1.62%	4.22%	1.32%
	Postgraduate	2.18%	5.18%	2.08%
Female	Less than high school	0.93%	3.06%	0.10%
	High school	1.09%	3.27%	0.61%
	Some college	1.21%	3.41%	0.85%
	Bachelors	1.51%	3.76%	1.44%
	Postgraduate	1.62%	3.88%	1.63%

Source: Vanguard.

Income matters: High earners benefit more than low earners

Higher earners tend to have larger balances that allow for partial annuitization while preserving liquidity and lower Social Security replacement rates relative to desired spending. Lower earners often have higher Social Security coverage of essentials and smaller balances, making liquidity more valuable. See “Vanguard Life-Cycle Investing Model Assumptions” in the Appendix for details on income brackets.

As shown in **Figure 5**, a deferred-income annuity could still improve outcomes across the income spectrum, but the implementation risk was concentrated among participants with small

balances: A forced reduction in liquid assets can create real downside in the presence of spending shocks. Recognizing this, researchers (including Horneff, Maurer, and Mitchell, 2025) have suggested a *threshold approach* that is based on a participant’s 401(k) account balance. This avoids forcing annuities on lower-wealth (often lower-income) participants who gain little. While being directionally aligned with this research, after accommodating differences in retirement age and Social Security entitlement, our quantitative analysis found that a DIA offers value for most income brackets with a relatively small impact on bequest.

FIGURE 5
Impact on consumption and bequest by income brackets

a. Change in certainty-equivalent bequest (vs. TDF)

Gender	Hybrid annuity TDF with:	Income bracket		
		Bottom	Middle	Top
Male	SPIA	-5.47%	-5.56%	-5.94%
	DIA	-5.47%	-5.56%	-5.94%
	QLAC	-4.79%	-4.64%	-5.17%
Female	SPIA	-5.55%	-5.79%	-6.14%
	DIA	-5.55%	-5.79%	-6.14%
	QLAC	-4.83%	-4.82%	-5.34%

b. Change in certainty-equivalent retirement consumption (vs. TDF)

Gender	Hybrid annuity TDF with:	Income bracket		
		Bottom	Middle	Top
Male	SPIA	0.70%	1.34%	2.13%
	DIA	2.82%	4.20%	5.00%
	QLAC	0.17%	0.60%	1.56%
Female	SPIA	0.69%	1.45%	2.52%
	DIA	2.84%	4.37%	5.46%
	QLAC	0.30%	0.96%	2.32%

Source: Vanguard.

Implication for plan sponsors. Our results and the academic literature would imply that a balance threshold/liquidity floor could be a way to protect participants for whom liquidity risk is greater than the need for longevity insurance. Plan sponsors can focus on identifying annuity products that provide positive expected benefits to the most participants and don't disadvantage those who don't annuitize. They should also assess the education about and any advice or guidance provided to participants on annuitization. Given that annuitization could compromise liquidity for lower earners, framing the pros and cons of annuitization in "plain talk" for participants of varying financial means will be especially critical.

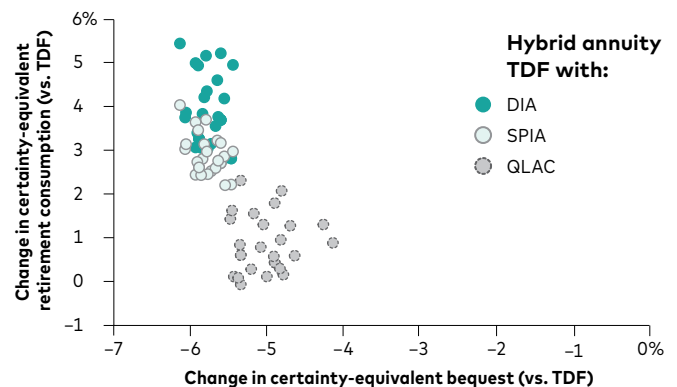
The core trade-off: Late-in-life consumption security versus liquid wealth

An annuity sleeve is not a free lunch. As shown in Figure 6, it is a deliberate trade-off:

- **Benefit.** A higher late-in-life consumption floor and a lower risk of having to make large spending cuts in adverse scenarios.
- **Cost.** Lower liquid wealth and reduced upside bequest potential in scenarios where markets do well and/or the participant dies early.

For sponsors, this trade-off is a feature, not a bug. Therefore, sponsors should focus on a product that is flexible for all the cohorts in their plan population. The goal is not to maximize the account balance in every conceivable situation; it is to improve retirement outcomes by reducing the risk of severe late-in-life shortfalls.

FIGURE 6
Trade-offs in hybrid annuity TDFs



Source: Vanguard.

A framework for evaluating hybrid annuity TDFs for plan sponsors

Because participants differ meaningfully in how much value they derive from annuitization, plan sponsors evaluating hybrid annuity TDFs should focus on the practical trade-offs these designs introduce. In particular, a well-designed hybrid annuity TDF should aim to ensure that participants are not meaningfully worse off than they would be in a traditional TDF if they choose not to annuitize. Minimizing the downside for participants who don't annuitize is therefore as important as improving outcomes for those who do annuitize. With this objective in mind, we present a simple evaluation framework to help plan sponsors assess hybrid annuity TDFs and illustrate its application using Vanguard Target Retirement Lifetime Income Trusts.² The trusts are a new hybrid annuity TDF offering that adds an income annuity component to the target-date structure.

² For more information about the trusts, see <https://workplace.vanguard.com/insights-and-research/perspective/introducing-vanguard-target-retirement-lifetime-income-trusts.html>.

1. Type of guarantee

Our analysis—consistent with Dave et al. (2024)—suggests that deferred-income funding strategies provide the most robust benefits for participants. Typically, these strategies allocate to a “prefunding” strategy ahead of retirement that links participants to optional guaranteed income, effectively creating a DIA-like experience as discussed above.

Plan sponsors should understand the type of guaranteed income available to participants through annuitization. Is the annuitization in-plan or out-of-plan? Is pricing unisex or gender-based (only if out-of-plan)? Who provides the guarantee (and what is the claims-paying source)? What features are available in participant annuities? What fees are involved in annuitization? Is the income-funding strategy “explicit-fee” (like a mutual fund with an expense ratio) or “implicit-fee” (spread-based, typically not disclosed)? For further discussion, refer to Tufano, Chen, and Stockton (2025), *Retirement Income Strategies: Best Practices for Plan Sponsors*.

SPIA- and QLAC-style approaches are important comparators and are featured in several products currently available. They can be effective, but they tend to be more sensitive to assumptions about the spending policy and/or the timing of when income begins.

The Target Retirement Lifetime Income Trusts use TIAA Secure Income Account, a group fixed deferred annuity allocated in the glide path that gives participants the option to annuitize in retirement. It effectively combines the advantages of DIAs (namely, the benefit of prefunding of crediting and payout rates) with the flexibility of SPIAs (participants do not need to precommit to annuitizing—and transferring assets irrevocably—years in advance of receiving income).

The results from modeling TIAA Secure Income Account were consistent with results for DIAs shown in this paper. TIAA Secure Income Account and participant annuities are implicit-fee; costs are embedded rather than charged as a separate fee, and there are no additional annuity fees assessed at the point of annuitization.

2. Glide path allocation

Hybrid annuity TDFs typically use glide paths that are close analogs of the asset manager’s “core” or “standard” TDF. They usually allocate to an income-funding strategy ahead of the assumed retirement date. Plan sponsors should understand hybrid annuity TDFs’ glide path construction and their potential impact on investment performance relative to standard TDFs. We highlight the three aspects of glide path design that deserve the most attention:

Income-funding strategy. Hybrid annuity TDFs use different strategies within the “income-funding strategy” to create a bridge from accumulation to optional guaranteed income. Some products use accumulation annuities, while others use existing sub-asset classes to build annuity exposure (such as long-duration fixed income). Each strategy has its own set of considerations, risks, and potential effects on investors, so it is critical that plan sponsors “look under the hood” (with help from key partners such as investment consultants and ERISA counsel) and understand how these components work.

The TIAA Secure Income Account used in Vanguard Target Retirement Lifetime Income Trusts is a group fixed deferred annuity. It provides guaranteed crediting rates that, over the long term, are expected to be similar to the yield of core fixed income, but with lower expected volatility than a broad fixed income fund.

Allocations to TIAA Secure Income Account give participants the option to annuitize individually with TIAA for guaranteed income in retirement; participants contributing to the Target Retirement Lifetime Income Trusts in advance of retirement could be eligible for a higher annuity payout rate (what TIAA calls a Loyalty Bonus®). The guaranteed crediting rates and individual annuity payout rates are backed by TIAA's general account.

Funding source. Asset managers will typically choose between equity and fixed income to build an allocation to an income-funding strategy. Our prior research shown in Dave et al. (2024) found that sourcing this allocation from fixed income has less impact on growth potential than sourcing from equities.

In allocating to the TIAA Secure Income Account, the Target Retirement Lifetime Income Trusts sources this allocation from the fixed income exposure in the traditional Vanguard Target Retirement Fund glide path. We did not alter the equity glide path during accumulation. We felt that substituting TIAA Secure Income Account for

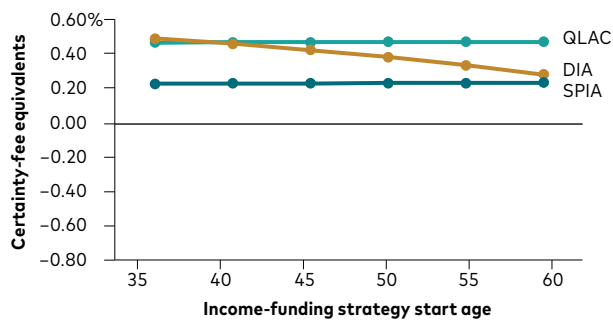
some of our existing fixed income exposure was appropriate given TIAA Secure Income Account's resemblance to core fixed income. Maintaining some allocation to U.S. fixed income, international fixed income, and Short-Term TIPS enables participants to harness more of fixed income's diversification potential with equities.

Size and timing of income-funding strategy.

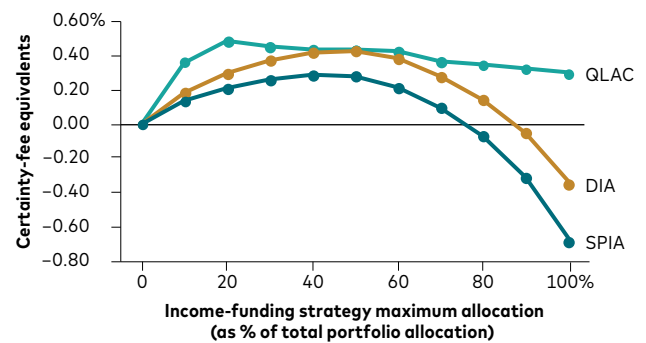
In Dave et al. (2024)—which informed the research for the Target Retirement Lifetime Income Trusts—we found that the value of hybrid designs involves a trade-off: Increasing the size of the sleeve can improve longevity protection for those who annuitize, but allocating beyond a reasonable level begins to reduce value because participants can give up too much growth potential. Also, varying the timing of the income-funding strategy start age has a marginal impact on expected participant outcomes (Dave et al., 2024). This is shown in **Figure 7**. Taken together, these findings suggest that “more is not always better” in how the income-funding strategy is introduced into the glide path.

FIGURE 7
Impact of size and timing of income-funding strategy on participant outcomes

a. Impact of income-funding strategy start age on participant welfare



b. Impact of income-funding strategy maximum allocation on participant welfare



Note: See Dave et al. (2024) for more information.

Source: Vanguard.

A related point for QLAC-style designs: Because income starts much later, allocating too much to the annuity too early can increase the risk of portfolio depletion *before* the QLAC income begins. Dave et al. (2024) notes that optimal allocation for QLAC-based hybrid annuity TDFs tends to peak earlier than SPIA/DIA approaches, and regulatory caps on QLAC allocation limit the incremental effects at greater sleeve sizes.

The Target Retirement Lifetime Income Trusts introduce TIAA Secure Income Account at age 55, build to a maximum allocation of 25%, and maintain this allocation through retirement. As discussed earlier, TIAA Secure Income Account is funded from our fixed income exposure. Prior to age 55, the glide path is virtually identical to the traditional Vanguard Target Retirement Fund glide path.

3. Focus on participants who do not annuitize

While it is important to understand how different cohorts benefit from annuitization (as presented in previous sections of this paper), plan sponsors must pay extra attention to one group when evaluating hybrid annuity TDFs: participants who *do not* annuitize. The Federal Reserve's *Survey of Consumer Finances, 2019 (2020)* indicates that the percentage of households with an annuity hovers between 4% and 6%. Epperson (2025) argues that plan sponsors are most comfortable adopting lifetime-income solutions when product design "preserves optionality"—i.e., participant control, reversibility, and the ability to change course later. Consistent with that, Epperson's June 2025 survey for the Defined Contribution Institutional Investment Association Retirement Research Center shows very low in-plan annuity adoption among plan sponsors (e.g., 9% offer at least one in-plan annuity; 7% each offer SPIAs, QLACs, or DIAs; and 5% offer guaranteed lifetime withdrawal benefits). It would be reasonable for plan sponsors to assume that many participants will not annuitize even if they implement a hybrid annuity TDF to facilitate guaranteed income access.

As discussed previously, many plan sponsors and consultants will evaluate hybrid annuity TDFs relative to their standard analogs, effectively treating them as benchmarks. They will want to understand whether there are disadvantages to the hybrid annuity TDF, whether the hybrid annuity TDF provides clear and justifiable benefits, and how the hybrid annuity TDF affects participants who do not elect the guaranteed income option. Applying this perspective to the framework presented here has several implications for sponsors regarding product design. They should:

Consider evaluating several outcome metrics for hybrid annuity TDFs: expected income, wealth, return, and utility-based measures. We do not believe hybrid annuity TDFs are intended solely to maximize wealth or retirement income; they are designed to provide participants with more structured options for integrating guaranteed income into their retirement income plan.

Limit trade-offs through glide path design.

Modifying the glide path will introduce potential investment performance differentials compared with the analogous standard TDF. Hybrid annuity TDFs must balance creating a robust bridge to optional guaranteed income while being different from standard TDFs. Plan sponsors should understand the rationale for glide path construction and assess their comfort with looking different from tried-and-true standard TDFs.

Preserve liquidity and portability of the nonannuitized portion.

Participants who decide that the annuity option is not a fit for their circumstances should be able to exit the investment without restriction. Given the product and regulatory structures governing insurance, plan sponsors may face restrictions upon exit for the income-funding strategy. Weighing these restrictions will be important for plan sponsors as they evaluate hybrid annuity TDFs.

Provide flexibility on annuitization. This will enable participants to personalize guaranteed income based on their needs and preferences. Because of the irrevocable nature of many annuitizations, flexibility will be essential so participants can find a comfortable approach.

The Target Retirement Lifetime Income Trusts were designed to balance optimized outcomes for all participants, including those who do not annuitize. We aligned the glide path of the trusts with our existing Target Retirement products prior to age 55 to maintain consistency with our approach to investing through accumulation. We assessed the impact of starting TIAA Secure Income Account at different ages and the size of the allocation, as shown in Figure 7. Introducing TIAA Secure Income Account at age 55 and building to a maximum allocation of 25% gives participants a robust bridge to guaranteed income without compromising the outcomes they would have expected through our Target Retirement Funds and Trusts.

We also considered investor persona for participants who do/do not annuitize in our modeling. These exercises helped us settle on a single landing point of a 40% equity allocation (which is higher than our standard series, at 30%). This choice accommodates participants who annuitize and could have more capacity to handle equity risk while not exposing participants

who do not annuitize to unnecessary volatility through retirement. Our analysis shows that expected outcomes for participants who do not annuitize are generally similar to those for Vanguard's standard TDFs. While the higher equity landing point contributes to higher late-retirement balances, as discussed earlier, maximizing wealth is not the objective of hybrid annuity TDFs.

Participants in the Target Retirement Lifetime Income Trusts can choose whether, when, how much, and how often to annuitize. Participants' investment in the Target Retirement Lifetime Income Trusts is fully liquid; they can transact nonannuitized assets without penalty. (Any assets that are annuitized are irrevocable, however.) We believe this flexibility is critical for participants to personalize guaranteed income based on their needs and preferences.

We believe the Target Retirement Lifetime Income Trusts give participants a robust pathway to guaranteed income in retirement with investment outcomes (before fees) similar to Vanguard's existing Target Retirement products for participants who do not take advantage of the guaranteed income option.

Conclusion

Hybrid annuity target-date funds can improve retirement outcomes by converting a modest portion of portfolio wealth into a late-in-life income floor. In our analysis, deferred-income designs appeared to be the most robust approach across heterogeneous cohorts, primarily because they strengthen consumption security in the financial scenarios retirees fear most: long lifespans and weak market sequences.

For plan sponsors, the key is not just whether a product can deliver improvements for participants, but whether it is a defensible default in practice. This framework highlights three evaluation priorities: (1) the type of guarantee (in-plan versus out-of-plan structure, pricing basis, features, and how costs are assessed); (2) the glide path implications (funding strategy, funding source, and sleeve size/timing); and (3) the experience of participants who do not annuitize (benchmark-relative outcomes, liquidity/portability, and flexibility on annuitization). A sponsor-defensible approach pairs a modest deferred-income sleeve with clear guardrails and straightforward participant choice.

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Appendix

Mortality and retirement assumptions

This Appendix section documents the cohort-specific mortality and retirement-age inputs used in the Vanguard Life-Cycle Investing Model. Baseline mortality was drawn from the U.S. Social Security life tables (Arias and Xu, 2020) for males and females. We then applied multiplicative adjustments for education, income, and health percentile using prior research studies.

How mortality adjustments are applied. For cohort (c) at age (x), the annual mortality probability is:

$$q_{x,c} = \min \{1, q_x \times m_c\}$$

where q_x is the gender-specific baseline and the (m)s are the cohort multipliers shown in **Figure 8**. Multipliers greater than 1 increase

mortality (shorter expected horizon); multipliers less than 1 decrease mortality (longer expected horizon).

Retirement timing. Each cohort's retirement age is set to the median retirement age shown in **Figure 8** and is used to determine the transition from accumulation to decumulation and the start of retirement spending. Retirement-age assumptions are set to cohort medians using the retirement timing observed in the Health and Retirement Study, a longitudinal survey of U.S. adults over age 50 conducted by the University of Michigan and sponsored by the National Institute on Aging. We used the RAND HRS Longitudinal File and then cleaned and harmonized the variables across waves.

FIGURE 8
Mortality adjustment multiple and median retirement age by cohorts

Cohort	Categories	Median retirement age		Mortality adjustment multiple	
		Men	Women	Men	Women
Gender	N/A	65	62	1.0	1.0
Educational attainment	Less than high school	62	62	1.23	1.32
	High school	62	62	1.0	1.0
	Some college	65	65	0.94	0.92
	Bachelors	65	65	0.75	0.78
	Postgrad	65	65	0.67	0.67
Income brackets	Bottom	62	62	1.2	1.2
	Middle	65	65	1.0	1.0
	Top	66	66	0.8	0.8
Health states	Poor	62	62	1.3	1.3
	Average	65	65	1.0	1.0
	Good	67	67	0.8	0.8

Sources: Baseline mortality is drawn from the U.S. Social Security life tables (Arias and Xu, 2020) for males and females. We then applied multiplicative adjustments for education, income, and health percentile based on the following studies: Baseline gender-specific mortality rates are taken from U.S. life tables published by the Social Security Administration/National Center for Health Statistics (Arias and Xu, 2020). Cohort multipliers for mortality differentials were informed by published evidence: Education-based adjustments drew on Krueger et al. (2015), income-based adjustments draw on Chetty et al. (2016), and health-state adjustments were calibrated using the HRS and related literature.

Asset returns: Vanguard Capital Markets Model

IMPORTANT: The projections and other information generated by the Vanguard Capital Markets Model regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not guarantees of future results. VCMM results will vary with each use and over time.

The VCMM projections are based on a statistical analysis of historical data. Future returns may behave differently from the historical patterns captured in the VCMM. More important, the VCMM may be underestimating extreme negative scenarios unobserved in the historical period on which the model estimation is based.

The VCMM is a proprietary financial simulation tool developed and maintained by Vanguard's Investment Strategy Group. The model forecasts distributions of future returns for a wide array of broad asset classes. Those asset classes include U.S. and international equity markets, several maturities of the U.S. Treasury and corporate fixed income markets, international fixed income markets, U.S. money markets, commodities, and certain alternative investment strategies. The theoretical and empirical foundation for the Vanguard Capital Markets Model is that the returns of various asset classes reflect the compensation investors require for bearing different types of systematic risk (beta).

At the core of the model are estimates of the dynamic statistical relationship between risk factors and asset returns, obtained from statistical analysis based on available monthly financial and economic data. Using a system of

estimated equations, the model then applies a Monte Carlo simulation method to project the estimated interrelationships among risk factors and asset classes as well as uncertainty and randomness over time. The model generates a large set of simulated outcomes for each asset class over several time horizons. Forecasts are obtained by computing measures of central tendency in these simulations. Results produced by the tool will vary with each use and over time. The asset-return distributions shown in this paper are drawn from 10,000 VCMM simulations based on market data and other information available as of December 31, 2023.

The model uses index returns, without any fees or expenses, to represent asset classes. Taxes are not factored into the analysis. See the research paper *Vanguard Global Capital Markets Model* (Davis et al., 2014) for further details.

Figure 9 shows the long-run return expectations.

FIGURE 9
Annualized forward-looking long-run return expectations

	Median return	Standard deviation
Domestic equity	6.2%	17.9%
U.S. nominal bonds	4.6	6.0
International equity	8.4	18.8
International bonds	4.2	4.6
Short-term TIPS	3.7	5.5

Note: TIPS = Treasury Inflation-Protected Securities.

Source: Vanguard.

Vanguard Life-Cycle Investing Model

assumptions

Figure 10 displays a set of assumptions used in the VLCM.

FIGURE 10
Inputs to the Vanguard Life-Cycle Investing Model

Input	Assumption	Notes
Starting age	25	—
Horizon age	111	—
Retirement age	65	—
Social Security withdrawal age	65	—
Savings rate (as % of salary)	8.8%–12.0%	Saving rate increases over time because of the expectation of savings escalation for retirement plan enrollees as the investor approaches the retirement date.
Starting real salary	\$52,000	For an investor in the workforce at age 25.
Ending real salary	\$75,000	For an investor starting at age 25 and retiring at age 65. We add productivity growth and inflation to this over time.
Wage scale	Social Security Administration Average Wage Index	—
Social Security replacement ratio	37%	Based on real monthly Social Security benefit estimates for ending salary of about \$75,000 and savings rate of 15%.* Single earner—SS RR = 37%.
DB replacement ratio	None (0%)	—
TDF replacement ratio	42%	Total replacement ratio—Social Security replacement ratio—DB replacement ratio.
Spending rule**	Required minimum distribution (RMD)	Withdrawal amounts bounded on the higher end by replacement ratio and on the lower end by determining sustainable withdrawal amount given years of spending that the portfolio is expected to support.

*Lobel, Jaconetti, and Cuff (2019).

**In Figure 6, we used a hybrid spending rule where withdrawal amounts target a specified replacement ratio aimed at maintaining lifestyle in retirement. See Dave et al. (2024) for more information.

Source: Vanguard.

Wage scale

Participant salary growth was modeled after the U.S. Social Security Administration's Average Wage Index. The index is based on reported wages across a spectrum of workers' ages from 25 to 65 for low-, medium-, and high-income earners. This allowed us to trace the earnings progression of an average earner over a 40-year working career, accounting for factors such as career development. As modeled, the average participant reaches a peak salary at age 55 (in real terms) and experiences a decline in real salary through age 65. In our life-cycle simulations, we also allowed for a 1.1% annual growth in salary, on a real basis, in addition to the cross-sectional increase in the wage scale, which reflects the historical average productivity growth of the U.S. economy.

Contribution rates

Age-specific contribution rates were derived from *How America Saves 2022* (Vanguard, 2022), a report based on a survey of approximately 5 million participants served by Vanguard's recordkeeping business. Contribution patterns account for the likelihood that investors will start with a lower saving rate in their early working years and increase their contributions as retirement approaches. Contributions start at approximately 8% at age 25 and increase to approximately 12% at age 65.

Spending rule

We assumed investors would spend 4% of their portfolio's value annually, increasing their spending in line with the IRS's required minimum distribution (RMD) tables. For hybrid annuity TDFs using QLAC, we increased the spending floor to 5% to ensure the spending level is close to the ones using the SPIA.

Social Security benefits

Social Security benefits were adjusted for claiming age relative to full retirement age (which is assumed to be 66). Benefits were increased by 8% per year for claims made after full retirement age and decreased by 8% per year for claims made before full retirement age. This symmetric adjustment was used for modeling simplicity and to ensure consistent interaction among Social Security income, portfolio withdrawals, and annuity payments.

Additionally, using HRS data, we defined equally weighted (by number of respondents) buckets based on income and then computed replacement ratio based on Lobel, Jaconetti, and Cuff (2019) for participants across the income spectrum (Figure 11). It draws on the work of Aon Consulting (2008) (with data taken from the U.S. Bureau of Labor Statistics 2021 *Consumer Expenditure Survey*) to assign appropriate replacement ratios based on retirees' age-65 income.

FIGURE 11
Proportion of replacement income covered by Social Security

Income brackets	Median income	Replacement income covered by Social Security
Bottom	\$30,000	42%
Middle	\$80,000	32
Top	\$160,000	23

Source: Vanguard.

Certainty-equivalent metrics reported in percentage terms

What certainty equivalents provide

Hybrid annuity TDFs involve a trade-off: Greater lifetime consumption security, at the cost of reduced liquid wealth and bequest potential. Our model evaluated this trade-off using expected lifetime utility under uncertainty in markets, longevity, and retirement spending needs.

Certainty equivalents allow us to express these utility differences in transparent, comparable percentage terms, without requiring readers to interpret abstract utility values.

Certainty-equivalent retirement consumption

Definition. Certainty-equivalent retirement consumption is the certain annual real retirement consumption that would make a participant as well off as they were under the uncertain markets, longevity, and retirement spending needs. We evaluated hybrid annuity TDFs by showing percentage change in certainty-equivalent retirement consumption for hybrid annuity TDFs compared with a traditional TDF.

Interpretation for percentage change in certainty-equivalent retirement consumption

Positive: Compared with a traditional TDF, the hybrid annuity TDF delivers increased financial welfare, equivalent to higher sustainable retirement consumption.

Zero: The participant welfare is similar between strategies.

Negative: The baseline traditional TDF delivers greater financial welfare for that cohort.

Certainty-equivalent bequest, expressed as a percentage

Definition. Certainty-equivalent bequest is the certain bequest that would make a participant as well off as they were under the uncertain markets, longevity, and retirement spending needs. We evaluated hybrid annuity TDFs by showing percentage change in certainty-equivalent bequest for hybrid annuity TDFs compared with a traditional TDF.

Interpretation for percentage change in certainty-equivalent bequest

Negative: The hybrid annuity TDF reduces expected bequest value, reflecting the cost of converting assets into guaranteed lifetime income.

Zero: The participant welfare is similar between strategies.

Positive: The hybrid strategy increases expected remaining assets (less common in annuitization contexts).

Why we report both metrics

Reporting only consumption or only bequest would obscure the core trade-off. Together:

Certainty-equivalent retirement consumption captures the *benefit* of annuitization—the higher the value, the more secure the lifetime consumption.

Certainty-equivalent bequest captures the cost—lower expected remaining assets and reduced liquidity or legacy potential.

Expressed in percentage terms, these metrics make the income/wealth trade-off transparent, comparable across cohorts, and directly usable for plan-design decisions.

Hybrid annuity TDF assumptions

For our analysis, we used the following inputs for each of the hybrid annuity TDF's building blocks. We used these assumptions to create hypothetical hybrid annuity TDFs that reflect some of the products available in the market. While the actual products would be different, these assumptions allow us to compare the value offered by different types of hybrid annuity TDFs.

Multiasset allocation

The multiasset allocation is represented by a fixed equity/bond glide path.

Income-funding strategy

There are a range of income-funding strategies used in the marketplace, with value-added features and risks. In our analysis, the income-funding strategy was represented by a stable value fund (SVF) that wraps U.S. nominal bonds. We acknowledge that an SVF is an approximation of the income-funding strategy and that there could be other, more nuanced ways to represent this strategy. An SVF is an insurance product that uses accounting techniques to amortize an underlying portfolio's returns over a long time, resulting in a reduced volatility exposure for an investor. In an SVF, the crediting rate is used to determine the returns experienced by the participant.

For each of the 10,000 market scenarios, we computed crediting rate using this formula:

$$\text{Crediting Rate}_{t(i)} = \left(\frac{\text{Market Value}_{t(i)}}{\text{Book Value}_{t(i)}} \right)^{1/\text{Duration}_{t(i)}} * (1 + \text{Yield}_{t(i)}) - 1$$

$$\text{Market Value}_{t(i)} = \text{Market Value}_{t-1(i)} * (1 + \text{Portfolio Return}_{t(i)})$$

$$\text{Book Value}_{t(i)} = \text{Book Value}_{t-1(i)} * (1 + \text{Crediting Rate}_{t-1(i)})$$

- where i is the market scenario
- t is the participant age
- Crediting Rate $_{t(i)}$ is the return from SVF for age t and market scenario i
- Market Value $_{t(i)}$ and Book Value $_{t(i)}$ are the market value and the book value of SVF for age t and market scenario i
- Portfolio Return $t(i)$ is the return on the wrapped portfolio in SVF for age t and market scenario i
- Duration $_{t(i)}$ and Yield $_{t(i)}$ are the duration and the yield of wrapped portfolio in SVF for age t and market scenario i

Annuity pricing data

We used annuity prices from Cannex to calibrate our annuity pricing model. Assumptions used for different annuity types are shown in **Figure 12**.

Annuities are priced considering various factors like interest rates, mortality rates, market risks, and administrative costs. For our analysis, we have used an annuity pricing model that adjusts the annuity prices for underlying interest rate

changes in each of the 10,000 market scenarios with different interest rates and market risks. While we have taken a simplified approach, more sophisticated modifications in annuity pricing, such as the use of life expectancy based on mortality tables, additional product features, or the use of hedging tools, have limited bearing on our analytical conclusion.

FIGURE 12
Annuity assumptions for hybrid annuity TDFs

	SPIA	DIA	QLAC
Annuity purchase age	At retirement (age 62 to 65)	10 years prior to retirement	At retirement (age 62 to 65)
Annuity income start age	At retirement (age 62 to 65)	At retirement (age 62 to 65)	80
Cost of living adjustment (COLA)	2%	2%	2%
Annuity type	Single, cash refund	Single, cash refund	Single, cash refund
Gender	Unisex—average between male and female	Unisex—average between male and female	Unisex—average between male and female
Maximum allocation	N/A	N/A	\$200,000*

*The IRS limit for a QLAC allocation; maximum allocation is adjusted for inflation.

Source: Vanguard.

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The Vanguard Life-Cycle Investing Model (VLCM) is designed to identify the product design that represents the best investment solution for a theoretical, representative investor who uses the target-date funds to accumulate wealth for retirement. The VLCM generates an optimal custom glide path for a participant population by assessing the trade-offs between the expected (median) wealth accumulation and the uncertainty about that wealth outcome, for thousands of potential glide paths. The VLCM does this by combining two sets of inputs: the asset class return projections from the VCMM and the average characteristics of the participant population. Along with the optimal custom glide path, the VLCM generates a wide range of portfolio metrics such as a distribution of potential wealth accumulation outcomes, risk and return distributions for the asset allocation, and probability of ruin, such as the odds of participants depleting their wealth by age 95.

The VLCM inherits the distributional forecasting framework of the VCMM and applies to it the calculation of wealth outcomes from any given portfolio.

The most impactful drivers of glide path changes within the VLCM tend to be risk aversion, the presence of a defined benefit plan, retirement age, savings rate and starting compensation. The VLCM chooses among glide paths by scoring them according to the utility function described and choosing the one with the highest score. The VLCM does not optimize the levels of spending and contribution rates. Rather, the VLCM optimizes the glide path for a given customizable level of spending, growth rate of contributions and other plan sponsor characteristics.

A full dynamic stochastic life-cycle model, including optimization of a savings strategy and dynamic spending in retirement is beyond the scope of this framework.

All investing is subject to risk, including the possible loss of the money you invest.

Diversification does not ensure a profit or protect against a loss.

There is no guarantee that any particular asset allocation or mix of funds will meet your investment objectives or provide you with a given level of income.

Investments in bond portfolios are subject to interest rate, credit, and inflation risk.

Guarantees are subject to the claims-paying ability of the issuing insurance company.

The underwriting risks, financial obligations, and support functions associated with the products are the responsibility of the issuing insurance company. The issuing insurance company is responsible for its own financial condition and contractual obligations.

Deferred annuities are long-term vehicles designed for retirement purposes and contain underlying investment portfolios that are subject to market fluctuation, investment risk, and possible loss of principal. If you take withdrawals from a variable annuity prior to age 59-1/2, you may have to pay ordinary income tax plus a 10% federal penalty tax.

Immediate variable annuities contain underlying investment portfolios that are subject to investment risk, including possible loss of principal.

Investments in Target Retirement Funds and Trusts are subject to the risks of their underlying funds. The year in the fund or trust name refers to the approximate year (the target date) when an investor in the fund or trust would retire and leave the workforce. The fund/trust will gradually shift its emphasis from more aggressive investments to more conservative ones based on its target date. The Income Trust/Fund and Income and Growth Trust have fixed investment allocations and are designed for investors who are already retired. An investment in a Target Retirement Fund or Trust is not guaranteed at any time, including on or after the target date.

The Vanguard collective trusts are not mutual funds. They are collective trusts available only to tax-qualified plans and their eligible participants. The collective trust mandates are managed by Vanguard Fiduciary Trust Company, a wholly owned subsidiary of The Vanguard Group, Inc. Investment objectives, risks, charges, expenses, and other important information should be considered carefully before investing.

The TIAA Secure Income Account is a group annuity contract issued by Teachers Insurance and Annuity Association of America (TIAA), New York, NY. TIAA Secure Income Account interest and income benefits include guaranteed amounts plus additional amounts as may be established on a year-by-year basis by the TIAA Board of Trustees. The additional amounts, when declared, remain in effect through the "declaration year," which begins each March 1 for accumulating annuities and January 1 for payout annuities. Any guarantees under annuities issued by TIAA are subject to TIAA's claims-paying ability. The TIAA Secure Income Account is a guaranteed insurance contract and not an investment for federal securities law purposes. Past performance is no guarantee of future performance. Form series including but not limited to: TIAA-UQDIA-002-K, TIAA-STDFA-001-NUV and related state-specific versions. Not all contracts are available in all states or currently issued.

Converting some or all of their savings to income benefits (referred to as annuitization") is a permanent decision. Once income benefit payments have begun, the investor is unable to change to another option.

Lifetime income payments from the TIAA Secure Income Account may include a TIAA Loyalty Bonus® which is discretionary and determined annually.

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