

# Vanguard Target Retirement Funds and Trusts

Quarterly Review | September 30, 2023



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## Quarterly perspective

# Always investor focused



**We're celebrating 20 years of partnering with plan sponsors to provide access to low-cost, diversified options that help provide value for their participants through Vanguard Target Retirement Funds.**

**Watch our video**

While we normally take this time to discuss a specific topic, this October marks the 20th anniversary of Vanguard Target Retirement Funds! That's 20 years of focusing on one thing and one thing only: delivering strong retirement savings outcomes for investors to help ensure they can enjoy the fruits of their labor in retirement.

In the article "[A Look Back on 20 Years of Vanguard Target Retirement Funds](#)", we reflect on the history of target-date funds (TDFs) and their impact on the retirement savings landscape, and celebrate how, together with our plan sponsors, we have prioritized financial well-being for our investors. We are proud to be an industry leader in this space and thank all our partners who have helped make us the largest provider of TDFs in the world.\* We value the partnership and look forward to the next 20 years!

While looking back is fun, we always focus on both the present and what's next for Vanguard Target Retirement Funds. Year to date, our Target Retirement Funds have produced strong returns, with all vintages sitting at or above peer median and the majority falling within the top quartile. These types of results are what Vanguard strives for and how we have delivered value over time.

As always, we remain committed to improving investor outcomes through thoughtful design and purposeful evolution of the Vanguard Target Retirement Funds, and we look forward to continuing to do so for the years and decades to come.

**Once again, thank you for the partnership!**

## Performance of key Vanguard index funds

Fund name (inception date)	4Q 2022	1Q 2023	2Q 2023	3Q 2023	1-year
Vanguard Total Bond Market Index Fund (09/18/1995)	1.67%	3.16%	-0.90%	-3.08%	0.74%
Vanguard Total International Bond Index Fund (05/31/2013)	-0.02%	3.54%	0.18%	-1.50%	2.16%
Vanguard Total Stock Market Index Fund (07/07/1997)	7.16%	7.15%	8.42%	-3.30%	20.38%
Vanguard Total International Stock Index Fund (11/29/2010)	14.72%	6.65%	2.61%	-4.01%	20.50%
Vanguard Short-Term Inflation-Protected Securities Index Fund (10/17/2012)	1.27%	2.28%	-0.69%	0.43%	3.31%

Source of performance figures: Vanguard, Institutional share class, as of September 30, 2023.

The performance data shown represent past performance, which is not a guarantee of future results. Investment returns and principal value will fluctuate, so investors' shares, when sold, may be worth more or less than their original cost. Current performance may be lower or higher than the performance data cited. For performance data current to the most recent month-end, visit our website at [institutional.vanguard.com](https://www.institutional.vanguard.com). Standard performance of the funds can be located on page 31 of this Quarterly Review.

\*See page 5.



# A look back on 20 years of Vanguard Target Retirement Funds

Saving for retirement isn't about reacting to what happens in the market day to day. It's about setting goals and putting a long-term plan in place that will carry investors throughout the multiple phases of their wealth journeys. Vanguard Target Retirement Funds were designed to help investors navigate all types of market conditions to ultimately help achieve a successful retirement.



To commemorate the 20th anniversary of Vanguard Target Retirement Funds, we created an animated video that examines the contribution that TDFs have made to retirement savings outcomes.

*Let's ask the question:*

**What if TDFs never existed?**





As we mark the 20th anniversary of the Vanguard Target Retirement Funds' inception, our overarching goal has remained constant: to help provide investors with a world-class target-date fund (TDF) solution that is low cost, straightforward, highly diversified, and durable. Over the past decade, TDFs have become a cornerstone of U.S. retirement plans, and the percentage of investors using these funds in the defined contribution (DC) space continues to grow.<sup>1</sup> The increased availability of TDFs, combined with managed account advice within retirement plans, demonstrates how plan sponsors have prioritized helping investors take a more comprehensive approach to financial well-being. While the increasing popularity of these funds is more understood today, that wasn't always the case. In this article, we'll look at the history of TDFs, their impact on the retirement landscape, and how, together with our plan sponsors, we've meaningfully improved retirement outcomes for our investors.

We're extremely proud that Vanguard Target Retirement Funds are trusted by more plans and participants than any other TDF provider, with more than \$1 trillion in assets under management representing more than 15 million investors.<sup>2</sup> Because saving for retirement is one of the most important financial goals for many Americans—if not *the* most important—we're committed to providing the best retirement products and solutions as we continually strive to return value to our investors.

## Have TDFs earned their keep?

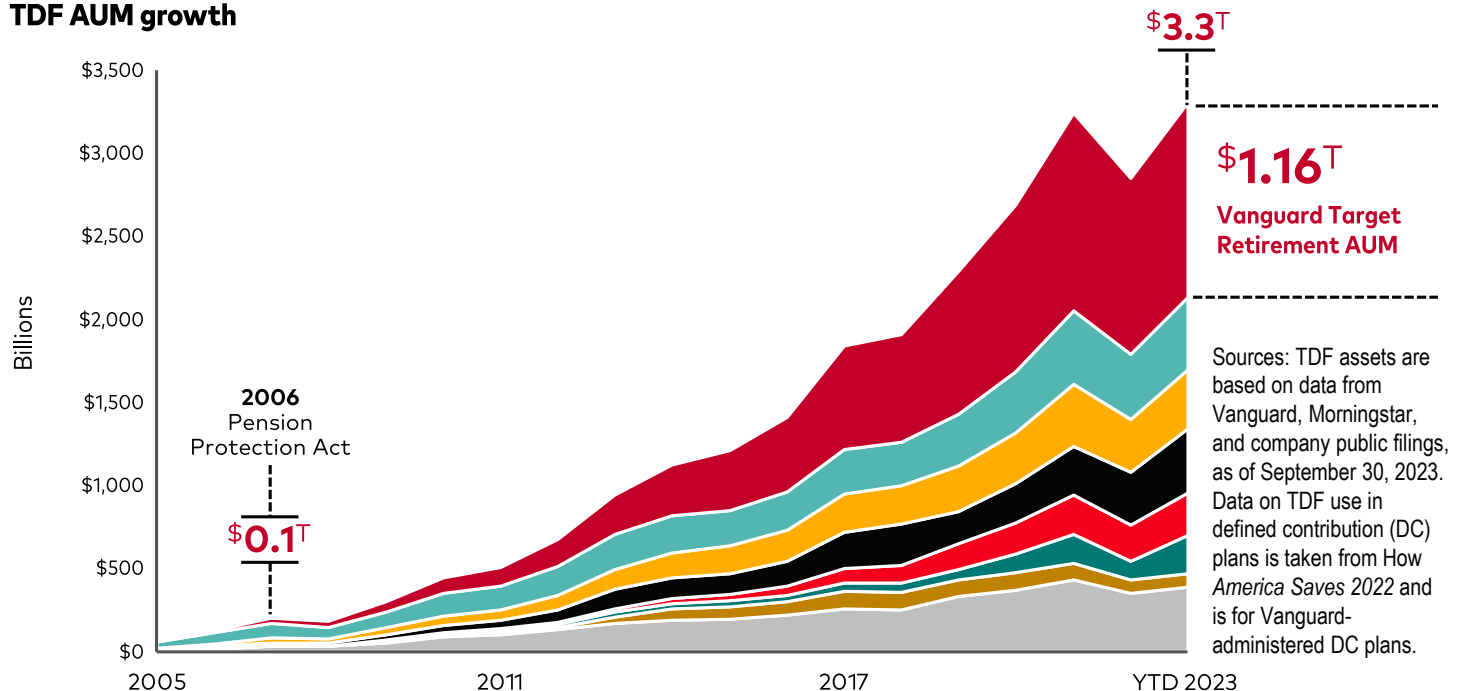
TDFs have become the primary choice for a DC plan's qualified default investment alternative (QDIA) since the passage of the Pension Protection Act of 2006 (PPA). The percentage of plans using a TDF as their default fund grew from 71% in 2013 to 90% in 2022.<sup>1</sup> TDFs now account for 40% of all plan assets (compared to only 19% in 2013) and 63% of all contributions were directed to TDFs (compared with 34% in 2013).<sup>1</sup> Additionally, the space continues to grow regardless of the market environment. For example, despite the market volatility of 2022, TDFs saw more than \$153 billion in new net cash flow.<sup>3</sup> These statistics make it hard to deny that TDFs have already left their mark on the retirement savings landscape. But their ubiquity raises an important question: Have they delivered for investors?

From the start, TDFs were designed to simplify the investment process and appeal to investors who felt overwhelmed by the task of funding their own retirement. These were individuals who, prior to the PPA, assumed all responsibility (and risk) for managing the assets within their DC plans—despite having little to no knowledge about investing. In addition, the retirement savings strategies at that time did not account for the fact that many people live years beyond retirement and could potentially face the risk of running out of money later. There was a substantial need to combine the benefits of broad diversification across asset classes with professional management that was based on solid investment practices. TDFs helped fill that void.

**FIGURE 1.**  
**Vanguard's share of all TDF assets**

■ Vanguard ■ Fidelity ■ T. Rowe Price ■ BlackRock ■ American Funds ■ State Street ■ JP Morgan ■ Other

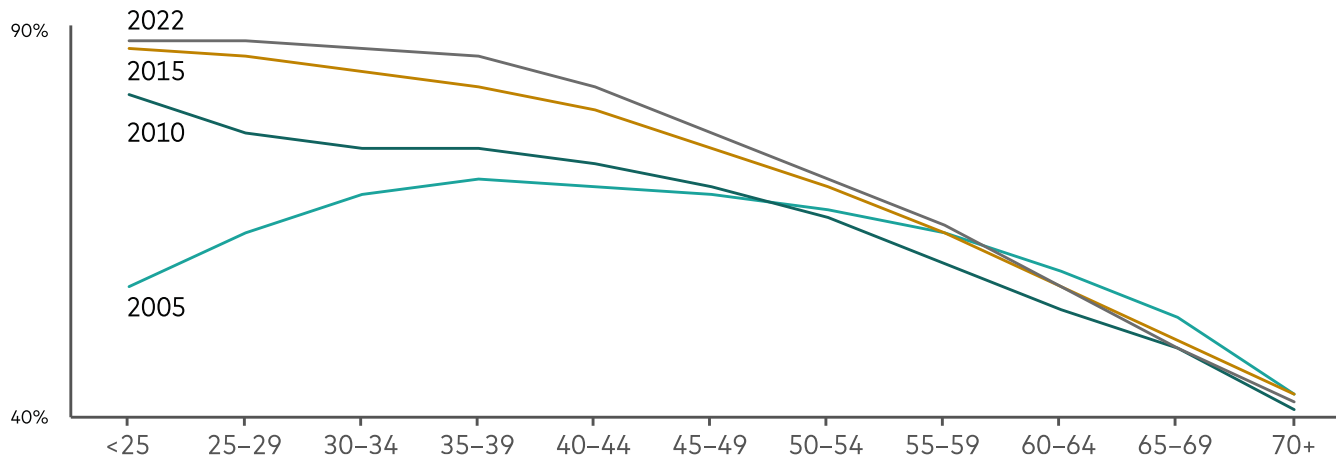
### TDF AUM growth





**FIGURE 2.**  
**Trend in asset allocation by participant age; average equity allocation participant weighted**

**Percentage allocated to equities**



Source: Vanguard, 2023.

The role of TDFs is to help deliver reasonable returns for investors without subjecting them to undue risk relative to the broad financial markets. Consequently, one of the primary challenges many retirement savers face is constructing a portfolio with the appropriate mix of higher- and lower-risk assets that matches the investor’s time horizon, retirement goals, and other considerations. Because retirement savings decisions are so important for so many people, designing a glide path that represents age-appropriate levels of risk is a primary goal. Once the individual invests or is defaulted into a TDF, the fund’s portfolio manager oversees all decisions about portfolio construction and ongoing rebalancing. As a testament to the increasing value that TDFs bring to retirement portfolios, investors turned to professionally managed allocations in record numbers in 2022, according to Vanguard research.

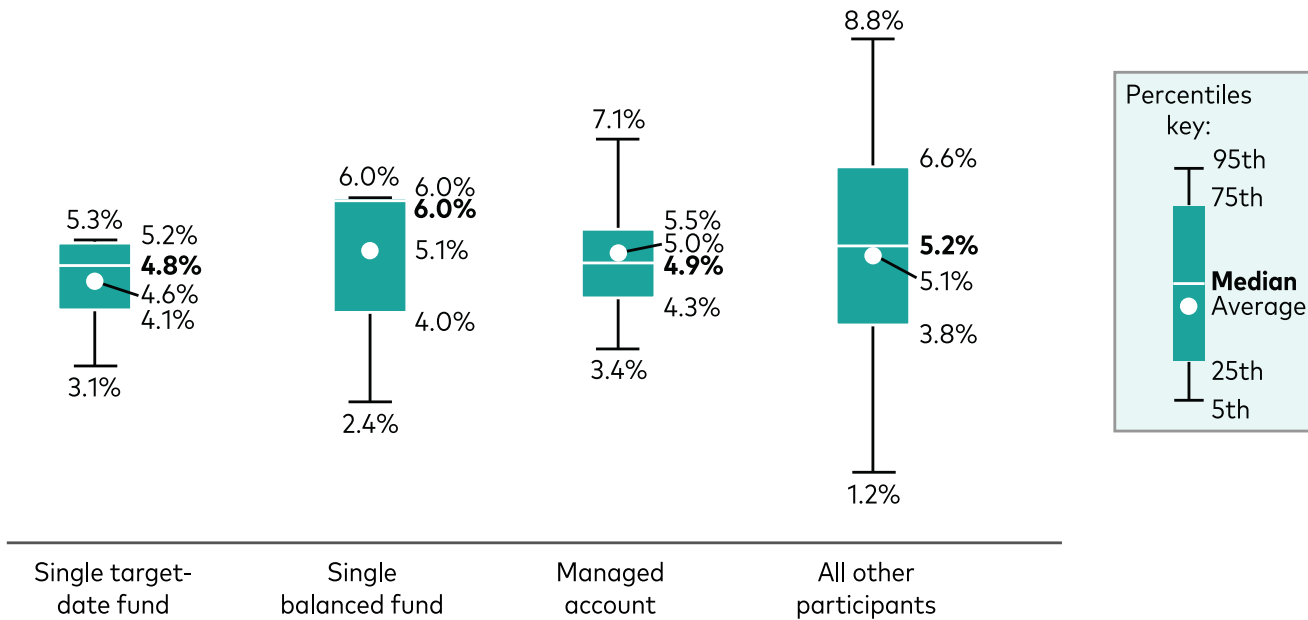
Two trends in particular offer encouraging evidence that TDFs, coupled with plan features, such as autoenrollment and autoescalation, have benefited investors. The first trend is a reduction in extreme equity allocations—participants with either 100% or 0% in equities—and, with it, an increase in investors making more age-appropriate asset allocations. The percentage of investors with no allocation to equities has fallen from 13% when the PPA was passed in 2006 to 3% in 2022.<sup>4</sup> The percentage of investors with a 100% allocation to equities has declined from 19% to 4% over the same period.<sup>4</sup>

“When it comes to investing, straightforward and low costs have always been a tough combination to beat, and Vanguard’s target-date series sets the standard in both features. ... This series is emblematic of Vanguard. It features low-cost, broadly diversified index funds to gain efficient exposure to global stocks and bonds. It’s devoid of any tactical shifts, and any changes to the glide path or asset allocation are well vetted with a long-term mindset by the committee of senior Vanguard investors.”

—Morningstar, 2023<sup>5</sup>



**FIGURE 3.**  
**Consistent risk-return balance**  
**Five-year (annualized) rates of return**



Source: Vanguard, 2022.

Note: Includes 1,000 random samples of participant accounts drawn from respective samples. Excludes ½% top and ½% bottom outliers for both risk and return, for a net sample of 980 observations.

When determining which index to use, we selected the index we deemed a fair representation of the characteristics of the referenced market.

For U.S. stock market returns, we use the MSCI US Broad Market Index. For non-U.S. stock market returns, we use the MSCI All Country World Index ex USA Net Return Index. And for U.S. bond market returns, we use the Spliced Bloomberg Barclays U.S. Aggregate Float Adjusted Index (reflects the Barclays U.S. Aggregate Bond Index through December 31, 2009; and the Bloomberg Barclays U.S. Aggregate Float Adjusted Index thereafter).

**Past performance is no guarantee of future returns. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.**

The second trend is the positive impact on investor outcomes. Compared with do-it-yourself investors who make their own investment choices, TDF investors tend to have significantly less dispersion in outcomes and a more consistent risk-return experience with their retirement savings. When viewing annualized returns over a five-year period, professionally managed portfolios—specifically those that include TDFs and managed account advisory services—are less likely to see variability in returns.<sup>4</sup> At the same time, investors who create their own asset allocations are more likely to hold extreme portfolios. Finally, Vanguard research has found that as TDF use increases, portfolio trading decreases.<sup>1</sup>

**The heart of our TDF design:  
 The end investor**

At Vanguard, the end investor has always been at the heart of our TDF design. We believe the most successful investors are those who have a retirement portfolio that reflects their own circumstances and risk tolerances.

We started by asking how we could best help investors save enough for retirement while ensuring that they could keep more of their hard-earned money by continually lowering the cost of investing over time. Based on Vanguard research, retirement account balances among TDF users have steadily increased over the last 10 years.<sup>1</sup>

We've always taken a proactive approach to navigating the complexities that result from the ongoing evolution of retirement programs. We supported regulators as they made decisions related to the PPA and target-date adoption within QDIAs. When many plan sponsors were shifting from defined benefit to DC plans, we were there to communicate those complex scenarios: advocating for automatic solutions, such as default enrollment, automatic savings features, and the introduction of managed account advisory services to help reduce fiduciary concerns. **Rather than trying to change the investor's behavior, we focused on partnering with plan sponsors to enhance retirement plan design.**



We started the Vanguard Target Retirement Funds series because we believed they best captured market risk and returns at the lowest possible cost, helping to give investors the best chance of generating lasting retirement income. In partnership with our plan sponsors, we've made great progress in changing how people invest for retirement. The low-cost index funds used in Vanguard Target Retirement Funds can be easier for sponsors and participants to understand than those that combine active funds or other financial instruments, and they may typically provide reduced exposure to market volatility and more consistent returns. As more plan sponsors have added TDFs, the index fund approach has grown in usage and adoption, which is a win for all investors. In part, federal laws like the PPA and other regulations have helped pave the way for greater usage of TDFs. Plan sponsors continue to display a strong preference for lower-cost target-date strategies<sup>4</sup>, which benefit all parties since they result in higher account balances for participants who invest with us. This is just one of the ways we help investors build enough wealth to increase the likelihood of their retirement success.

### Aligned interests for continued success

At Vanguard, we never stand still and always look for ways to improve outcomes, increase personalization, improve ease of use, and lower costs for our investors. As a QDIA, TDFs have simplified asset allocation and have shown the ability to meaningfully improve retirement outcomes for millions of investors. While we can all take pride in the strides that have

been made over the past two decades with respect to broad TDF adoption and plan enhancements, there is still more work to be done. Investors are looking for a more integrated approach to financial well-being—one that accounts for their different needs and wants while *in retirement*—and an increasing number of investors are looking for help converting their savings into retirement income. The right retirement income solution can also mean participants keep their assets in plans longer. Just as we were there to help plan sponsors navigate the complexities of finding the right plan design before and after the PPA, we look forward to the challenges and opportunities that will arise from the evolving retirement landscape.

### Notes

<sup>1</sup>How America Saves 2023, Vanguard, June 2023.

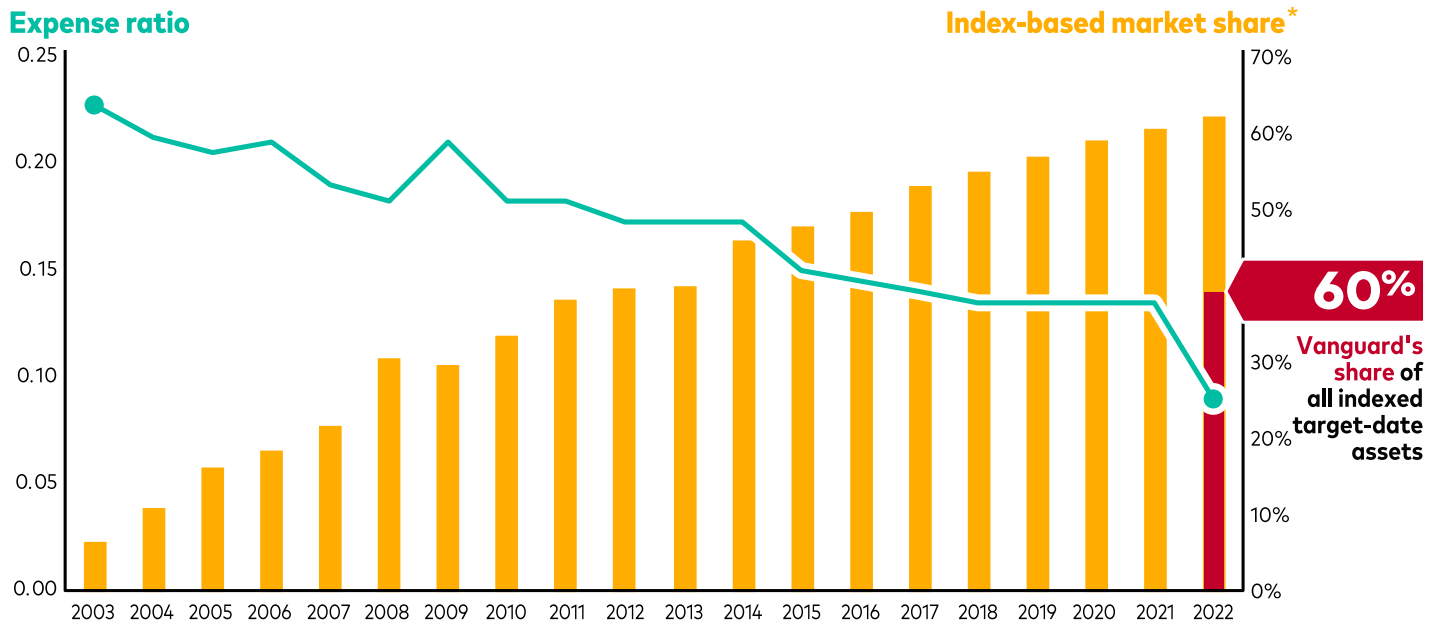
<sup>2</sup>DC assets are based on AUM in both Vanguard-administered plans and those administered by others. Other figures are based on AUM market share of the TDF industry. Sources: Vanguard and Morningstar, Inc., as of December 31, 2022.

<sup>3</sup>Target-Date Strategy Landscape Report, 2023. Morningstar, Inc., as of March 28, 2023.

<sup>4</sup>Highlighting the Value of Managed Portfolios. Vanguard, September 2023.

<sup>5</sup>Morningstar analysis, as of March 2023.

FIGURE 4. Vanguard versus industry TDF expense ratio over time



Sources: Vanguard and Morningstar, Inc., as of December 31, 2022. The assets include both 1940 Act mutual funds and commingled investment trusts. \*Relative to the broad TDF industry.





# About the SAAC

The Vanguard Strategic Asset Allocation Committee (SAAC) is a multiasset oversight committee composed of global investment leaders from across the firm.

The members of the SAAC are responsible for the investment methodology behind our single-fund solutions, including Vanguard LifeStrategy® Funds, Target Retirement Funds, 529 plans, and model portfolios.

The SAAC meets regularly to review its investment methodology, debate investment strategies, and coordinate any changes with Vanguard Advice Policy Committee, thereby ensuring a consistent approach in our single-fund solutions and advice offers.



*From left to right:*

**Greg Davis, CFA**, Global Chief Investment Officer

**Joseph Davis, Ph.D.**, Global Chief Economist and Global Head of Investment Strategy Group (Committee Chair)

**Roger Aliaga-Diaz, Ph.D.**, Chief Economist, Americas, Head of Portfolio Construction (Committee Vice-chair)

**Matthew Brancato, CFA, CPA**, Chief Client Officer, Institutional Investor Group

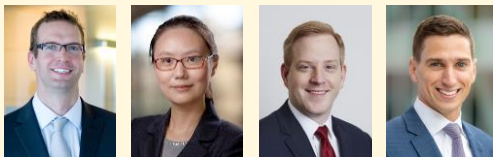


**Dan Reyes, CFA**, Head of Portfolio Review Department

**Joel Dickson, Ph.D.**, Head of Enterprise Advice Methodology

**Ryan Ludt**, European Regional Head of Investment Management Group

**Kaitlyn Caughlin, CFA, CFP®**, Global Head of IMG Risk Management



**Duncan Burns**, Head of Investments, Asia-Pacific, and of Investment Strategy Group, Asia-Pacific

**Qian Wang, Ph.D.**, Chief Economist, Asia-Pacific, Investment Strategy Group

**Brian Wimmer, CFA**, Head of Multi-Asset Solutions (nonvoting member)

**Ian Kresnak, CFA**, Chief of Staff for SAAC, Investment Strategy Group (nonvoting member)

## Additional perspectives from the SAAC

A primary responsibility of the SAAC is to oversee the policy allocation of Vanguard's suite of multiasset portfolios, including a formal annual review. The SAAC has also been tasked with establishing the investment methodology and portfolio construction approaches that are most appropriate for various objectives. Since its founding in 2013, the SAAC has held research meetings to discuss investment topics, seeking the best outcomes for our clients through constant debate. These meetings, often showcasing the latest research by Vanguard Investment Strategy Group, have centered on a wide range of subjects. A summary of past topics is provided below.

- 2013**
  - Hedging currency exposure in a multiasset portfolio
  - Role of commodity futures
  - Minimum-volatility equity strategies
- 2014**
  - Equity home bias by country
  - Glide-path construction methodology
  - Inflation protection
- 2015**
  - Approaches to retirement income
  - Factors and strategic asset allocation
  - Fixed income glide-path allocations
- 2016**
  - Time-varying risk premia and asset allocation
  - Expansion of the Vanguard Capital Markets Model®
  - Inflation-hedging strategies over multiyear horizons
- 2017**
  - Long-run equilibrium risk-free rates and the equity risk premia
  - Diversified versus concentrated active equity portfolios
  - Global methodology for non-market-cap-weighted ETF model portfolios
- 2018**
  - Role of private real estate in portfolios
  - Vanguard Life-Cycle Model (VLCM) and glide-path outcomes
  - Inflation protection in a 529 college savings plan
- 2019**
  - Vanguard Asset Allocation Model (VAAM) and optimal allocations to active and passive strategies
  - VAAM-based investment methodology for ETF-model portfolios
  - Return-targeting and time-varying asset allocation
- 2020**
  - VLCM-derived glide paths for 529 college savings plans
  - Role of private equity in multiasset portfolios
- 2021**
  - A systematic framework for validating TDF glide paths
- 2022**
  - *Vanguard's Approach to Target-Date Funds*
  - *Revalidating the Case for International Bonds*
- 2023**
  - Coming soon: Hybrid Target-Date funds

Source: Vanguard.



# TDF industry and market overview

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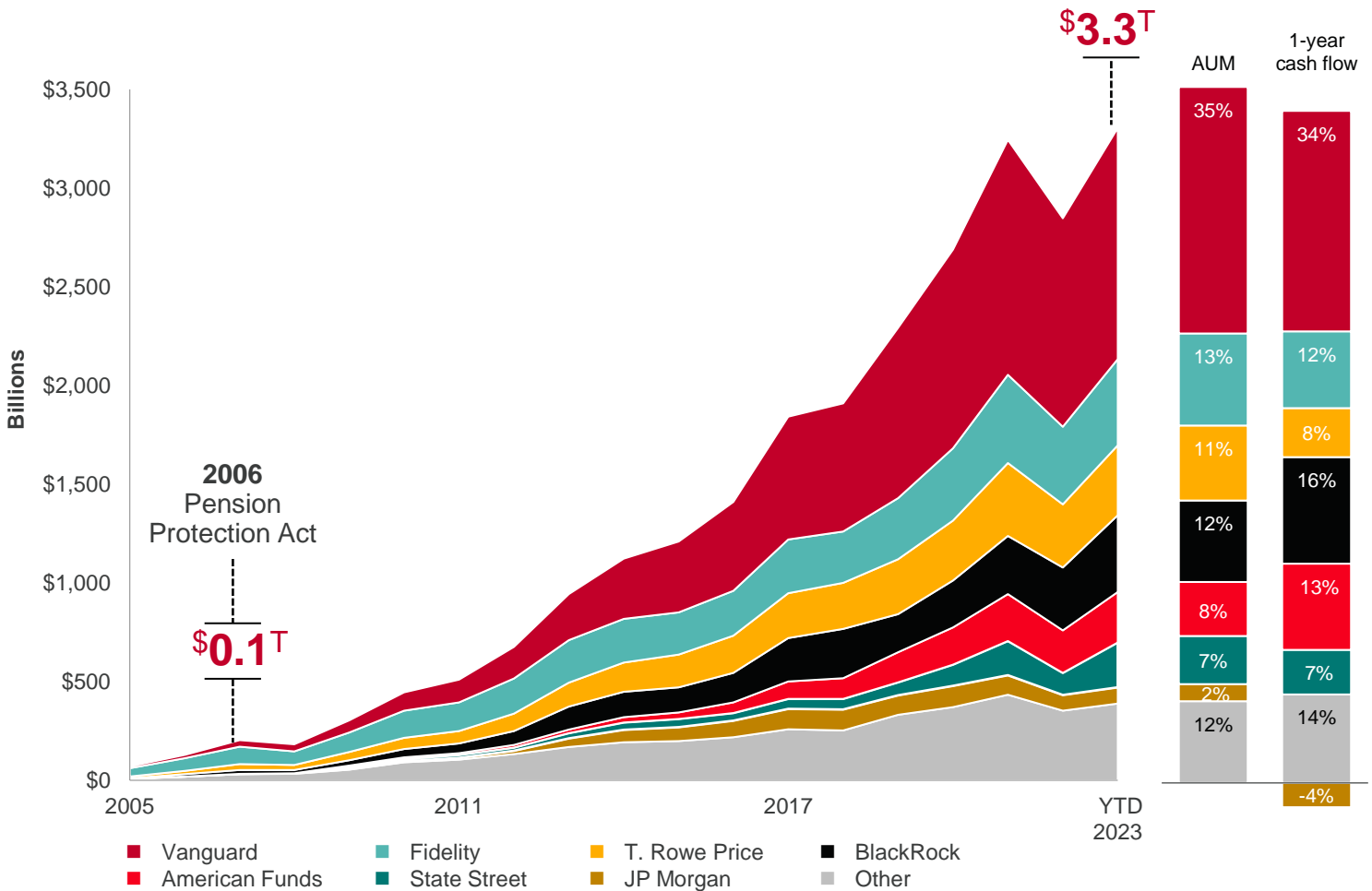
Industry growth and market share

Market environment



# Industry growth and market share

Figure 11.1 Growth of target-date fund industry assets and market share



According to data from Morningstar combined with Vanguard’s funds and trusts data, TDF industry assets exceeded \$3.30 trillion as of the end of Q3 2023. Vanguard continued to lead the industry in cash flow and assets under management, receiving more than one-third of every dollar invested in a TDF.

The industry’s top providers, Vanguard, Fidelity, BlackRock, T. Rowe Price, JPMorgan, American Funds, and State Street, hold a cumulative 88% share of all industry assets, or more than \$2.91 trillion, as of September 30, 2023.

We estimate that as of the end of September, the target-date fund industry experienced a 4.9% organic growth rate over the last 12 months.\*

Sources: Vanguard, Morningstar, as of September 30, 2023. Industry estimates are based on mutual fund and CIT data reported in Morningstar. CIT data is self-reported and is updated in Morningstar as it is received. Public company data also used prior to 2020.

\* Organic growth measured as current period’s net new flows divided by prior period’s ending assets.



# Market environment

Figure 12.1 Index returns ranked by performance

2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	4Q 2022	1Q 2023	2Q 2023	3Q 2023
CRSP 33.6	REIT 30.4	REIT 2.5	HYB 17.1	FTSE 27.4	IAGG 3.2	CRSP 30.8	CRSP 21.0	REIT 43.1	COM 16.1	FTSE 14.1	CRSP 7.2	CRSP 8.4	COM 4.7
FTSE 15.6	CRSP 12.6	IAGG 1.3	CRSP 12.7	CRSP 21.2	CASH 1.9	REIT 25.8	FTSE 11.2	COM 27.1	CASH 1.5	EMB 8.0	FTSE 6.4	REIT 2.7	CASH 1.4
HYB 7.4	IAGG 9.1	EMB 1.3	COM 11.4	EMB 9.2	STPS 0.6	FTSE 21.8	AGG 7.5	CRSP 25.7	STPS -2.7	CRSP 7.2	HYB 3.6	FTSE 2.5	HYB 0.5
REIT 2.5	EMB 7.1	AGG 0.5	EMB 9.2	HYB 7.5	AGG 0.0	HYB 14.3	HYB 7.1	FTSE 8.8	HYB -11.2	REIT 5.2	IAGG 3.2	HYB 1.8	STPS 0.4
IAGG 1.3	AGG 6.0	CRSP 0.4	REIT 8.6	REIT 5.1	HYB -2.1	EMB 14.1	EMB 5.6	STPS 5.3	IAGG -12.7	HYB 4.2	AGG 3.0	EMB 1.4	IAGG -1.3
CASH 0.1	HYB 2.5	CASH 0.0	IAGG 4.9	AGG 3.5	EMB -3.9	AGG 8.7	STPS 5.1	HYB 5.3	AGG -13.0	COM 2.2	REIT 2.7	CASH 1.3	EMB -2.9
STPS -1.6	CASH 0.0	STPS 0.0	FTSE 4.7	IAGG 2.6	REIT -4.6	IAGG 8.1	IAGG 4.7	CASH 0.1	FTSE -16.1	AGG 1.9	STPS 2.2	IAGG 0.4	AGG -3.2
AGG -2.0	STPS -1.1	FTSE -4.3	STPS 2.8	STPS 0.9	CRSP -5.2	COM 5.4	CASH 0.6	AGG -1.5	EMB -17.1	STPS 1.3	EMB 2.1	STPS -0.7	CRSP -3.3
EMB -6.3	FTSE -3.4	HYB -4.5	AGG 2.6	CASH 0.8	COM -13.0	STPS 4.9	COM -3.5	EMB -1.8	CRSP -19.5	CASH 0.9	CASH 1.1	AGG -0.8	FTSE -3.3
COM -9.5	COM -17.0	COM -24.7	CASH 0.3	COM 0.7	FTSE -14.6	CASH 2.3	REIT -7.6	IAGG -2.1	REIT -24.5	IAGG 0.1	COM -5.4	COM -2.6	REIT -7.0

Index returns	Average annualized returns						
	3 months	1 year	3 years	5 years	10 years		
Target Retirement Fund building blocks	CRSP	CRSP U.S. Total Market Index	-3.30	20.37	9.26	9.07	11.24
	FTSE	FTSE Global All Cap ex U.S. Index	-3.33	20.40	4.13	2.86	3.72
	AGG	Bloomberg U.S. Aggregate Bond Index	-3.23	0.64	-5.21	0.10	1.13
	IAGG	Bloomberg Global Agg ex U.S. Float Adj RIC Cap Index (Hedged)	-1.29	2.31	-4.06	0.14	2.01
	STPS	Bloomberg U.S. 0-5 Year TIPS Index	0.43	3.24	1.90	2.80	1.71
Other indexes	CASH	3-Month T-Bill	1.38	4.71	1.78	1.74	1.11
	HYB	Bloomberg U.S. Corporate High Yield Index	0.46	10.28	1.76	2.96	4.24
	EMB	Bloomberg USD Emerging Market Gov RIC Cap Index	-2.87	8.70	-4.66	-0.28	2.16
	REIT	MSCI U.S. REIT Index	-7.02	3.18	5.70	2.82	5.94
	COM	Bloomberg Commodity Index	4.71	-1.30	16.23	6.13	-0.75

Past performance is no guarantee of future returns. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.

Sources: Vanguard, Bloomberg Live, and Morningstar, as of September 30, 2023.

Note: Beginning 3Q 2021, the benchmark shown for the EMB category changed from Bloomberg Emerging Markets Sovereign Index USD to Bloomberg USD Emerging Market Gov RIC Cap Index.



# Vanguard fund construction and performance

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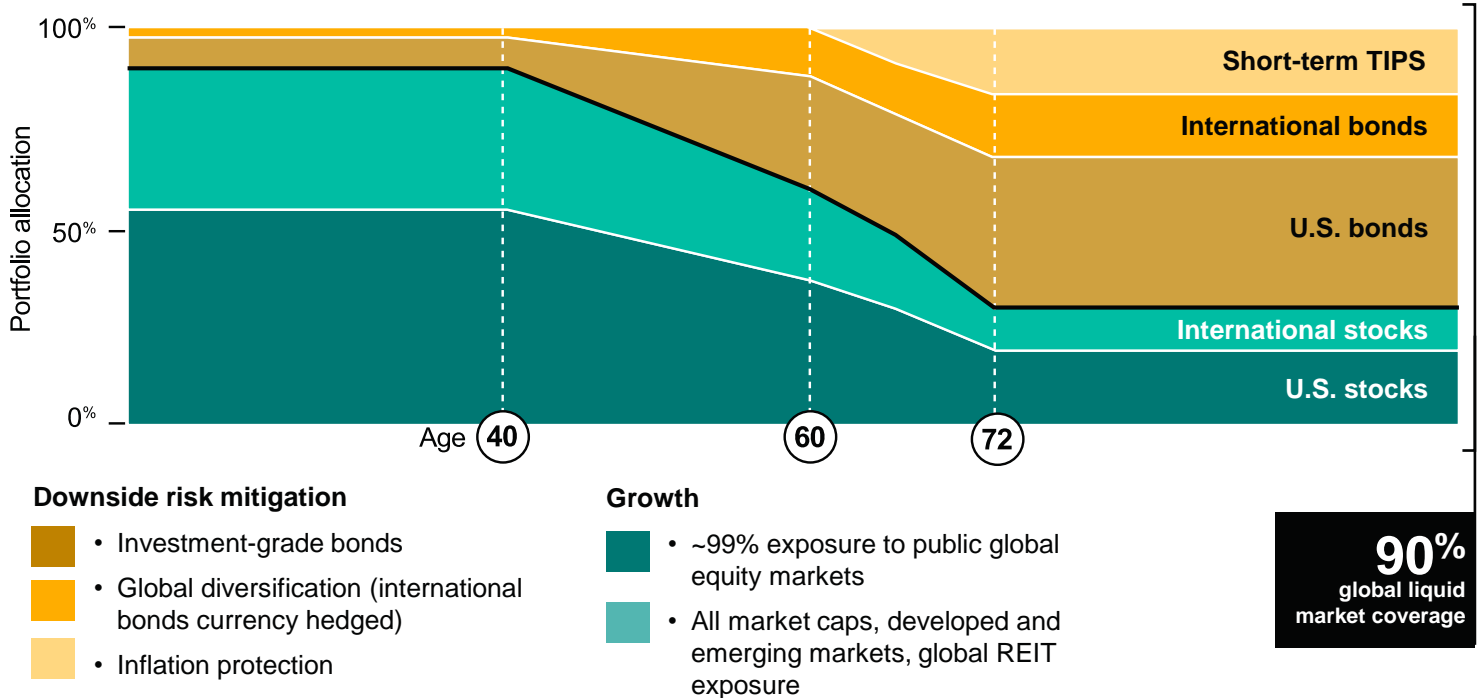
Evolution of Vanguard's glide-path design

Vanguard fund performance and attribution

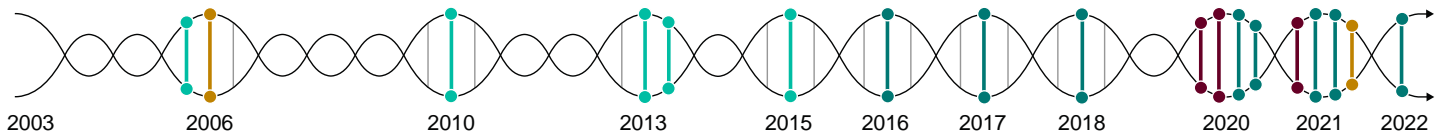


# Purposeful design and evolution

## Strategic asset allocation using high-quality building blocks



## Meaningfully improving investor outcomes since inception



### Enhanced asset allocation

- Increased equity weight in Income fund (2006)
- Added emerging markets stocks (2006)
- Added Canada and more international equity exposure (including small-caps) through Total International Stock Index replacing three regional funds (2010)
- Added international bonds (2013)
- Replaced broad TIPS fund with short-term TIPS for better responsiveness to inflation and removed money market fund (2013)
- Increased international allocations for both stocks and bonds (2015)

### Lowered fees, increased access

- Lowered expense ratios (2016, 2017, 2018, 2020, and 2021)
- Reduced minimum for Institutional Target Retirement Funds (2020)
- Reduced minimum for Target Retirement Trusts (2021)
- Merging Institutional Target Retirement Funds into Target Retirement Funds (2022)

### Reduced implementation costs and tax drag

- Moved from quarterly to monthly glide path roll down (2020)
- Widened rebalancing bands (2020)
- Across trust vintages, replaced underlying international fund with an international trust, minimizing foreign tax withholdings (2021)

### Improved fund/trust lineup

- Launched five-year vintage increments (2006)
- Added optional trust with a 50/50 allocation landing point and added enhanced retirement income services (2021)

Sources: FactSet, Fidelity, BlackRock. Stock market measured by FactSet data derived from MSCI US Broad Market Free Float and MSCI ACWI ex USA IMI Indexes. Bond market measured by FactSet data derived from Bloomberg Global Aggregate ex-USD, U.S. Aggregate Float Adjusted, Global High Yield, and EM Hard Currency Aggregate indexes. Commodities market measured by FactSet data. Data as of December 31, 2022.



# Fund performance through September 30, 2023

## Vanguard Target Retirement Fund and Trust performance

Portfolio/Benchmark	Average annualized return as of September 30, 2023						Inception date
	3 months	1 year	3 years	5 years	10 years	Since inception	
<b>Vanguard Target Retirement Income Vintage</b>							
Fund	-2.35	7.02	-0.13	2.69	3.60	4.56	10/27/2003
Trust II	-2.41	7.05	-0.12	2.72	3.64	4.17	2/29/2008
<i>Target Retirement Income Composite Index</i>	-2.26	7.31	0.10	2.97	3.84	—	—
<b>Vanguard Target Retirement 2020 Vintage</b>							
Fund	-2.65	9.36	1.43	3.58	5.24	5.53	6/7/2006
Trust II	-2.63	9.39	1.46	3.62	5.30	5.35	2/29/2008
<i>Target Retirement 2020 Composite Index</i>	-2.47	9.68	1.73	3.95	5.54	—	—
<b>Vanguard Target Retirement 2025 Vintage</b>							
Fund	-2.99	11.56	2.17	4.06	5.79	6.16	10/27/2003
Trust II	-2.99	11.57	2.26	4.14	5.88	5.72	2/29/2008
<i>Target Retirement 2025 Composite Index</i>	-2.77	11.91	2.58	4.50	6.13	—	—
<b>Vanguard Target Retirement 2030 Vintage</b>							
Fund	-3.20	13.14	2.97	4.46	6.28	6.11	6/7/2006
Trust II	-3.24	13.12	3.05	4.55	6.36	6.02	2/29/2008
<i>Target Retirement 2030 Composite Index</i>	-2.98	13.51	3.39	4.91	6.62	—	—
<b>Vanguard Target Retirement 2035 Vintage</b>							
Fund	-3.28	14.61	3.89	4.93	6.79	6.91	10/27/2003
Trust II	-3.30	14.65	3.98	5.01	6.87	6.40	2/29/2008
<i>Target Retirement 2035 Composite Index</i>	-3.04	14.99	4.31	5.37	7.14	—	—
<b>Vanguard Target Retirement 2040 Vintage</b>							
Fund	-3.34	16.15	4.81	5.37	7.26	6.73	6/7/2006
Trust II	-3.36	16.18	4.87	5.45	7.34	6.78	2/29/2008
<i>Target Retirement 2040 Composite Index</i>	-3.10	16.48	5.23	5.82	7.62	—	—

The performance data shown represent past performance. Past performance is no guarantee of future results. Investment returns and principal value will fluctuate, so investors' shares, when sold, may be worth more or less than their original cost. Current performance may be lower or higher than the performance data cited. For performance data current to the most recent month-end, visit our website at [vanguard.com/performance](http://vanguard.com/performance). Some funds assess purchase, redemption, and/or account maintenance fees. The performance data shown do not reflect deduction of these fees. If they did, performance would be lower. Details on these fees and adjusted performance figures can be found in the fund detail section.

Sources: Vanguard and Morningstar, as of September 30, 2023.



# Fund performance through September 30, 2023

## Vanguard Target Retirement Fund and Trust performance (continued)

Portfolio/Benchmark	Average annualized return as of September 30, 2023						Inception date
	3 months	1 year	3 years	5 years	10 years	Since inception	
<b>Vanguard Target Retirement 2045 Vintage</b>							
Fund	-3.45	17.67	5.72	5.87	7.61	7.53	10/27/2003
Trust II	-3.42	17.73	5.79	5.93	7.68	6.98	2/29/2008
<i>Target Retirement 2045 Composite Index</i>	-3.15	17.97	6.14	6.30	7.96	—	—
<b>Vanguard Target Retirement 2050 Vintage</b>							
Fund	-3.46	18.48	5.92	5.99	7.67	6.99	6/7/2006
Trust II	-3.48	18.52	5.98	6.05	7.74	7.03	2/29/2008
<i>Target Retirement 2050 Composite Index</i>	-3.20	18.74	6.34	6.43	8.03	—	—
<b>Vanguard Target Retirement 2055 Vintage</b>							
Fund	-3.46	18.48	5.91	5.99	7.65	9.11	8/18/2010
Trust II	-3.48	18.54	5.98	6.05	7.72	9.49	8/31/2010
<i>Target Retirement 2055 Composite Index</i>	-3.20	18.74	6.34	6.43	8.03	—	—
<b>Vanguard Target Retirement 2060 Vintage</b>							
Fund	-3.48	18.49	5.91	5.98	7.65	8.77	1/19/2012
Trust II	-3.48	18.54	5.99	6.07	7.74	8.47	3/1/2012
<i>Target Retirement 2060 Composite Index</i>	-3.20	18.74	6.34	6.43	8.03	—	—
<b>Vanguard Target Retirement 2065 Vintage</b>							
Fund	-3.46	18.47	5.93	5.97	—	7.02	7/12/2017
Trust II	-3.49	18.51	5.97	6.08	—	7.63	7/17/2017
<i>Target Retirement 2065 Composite Index</i>	-3.20	18.74	6.34	6.43	—	—	—
<b>Vanguard Target Retirement 2070 Vintage</b>							
Fund	-3.47	18.49	—	—	—	7.56	6/8/2022
Trust II	-3.46	18.60	—	—	—	-2.51	4/7/2022
<i>Target Retirement 2070 Composite Index</i>	-3.20	18.74	6.34	6.43	7.86	—	—

The performance data shown represent past performance. Past performance is no guarantee of future results. Investment returns and principal value will fluctuate, so investors' shares, when sold, may be worth more or less than their original cost. Current performance may be lower or higher than the performance data cited. For performance data current to the most recent month-end, visit our website at [vanguard.com/performance](http://vanguard.com/performance). Some funds assess purchase, redemption, and/or account maintenance fees. The performance data shown do not reflect deduction of these fees. If they did, performance would be lower. Details on these fees and adjusted performance figures can be found in the fund detail section.

Sources: Vanguard and Morningstar, as of September 30, 2023.





# Underlying fund performance contribution

Figure 17.1 3-month return contribution by underlying funds

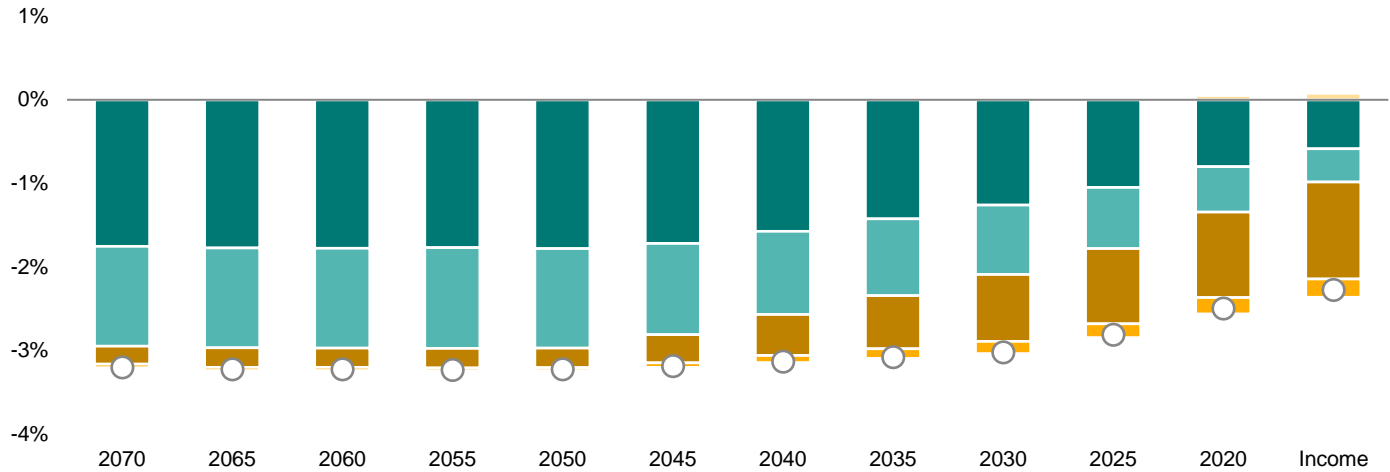
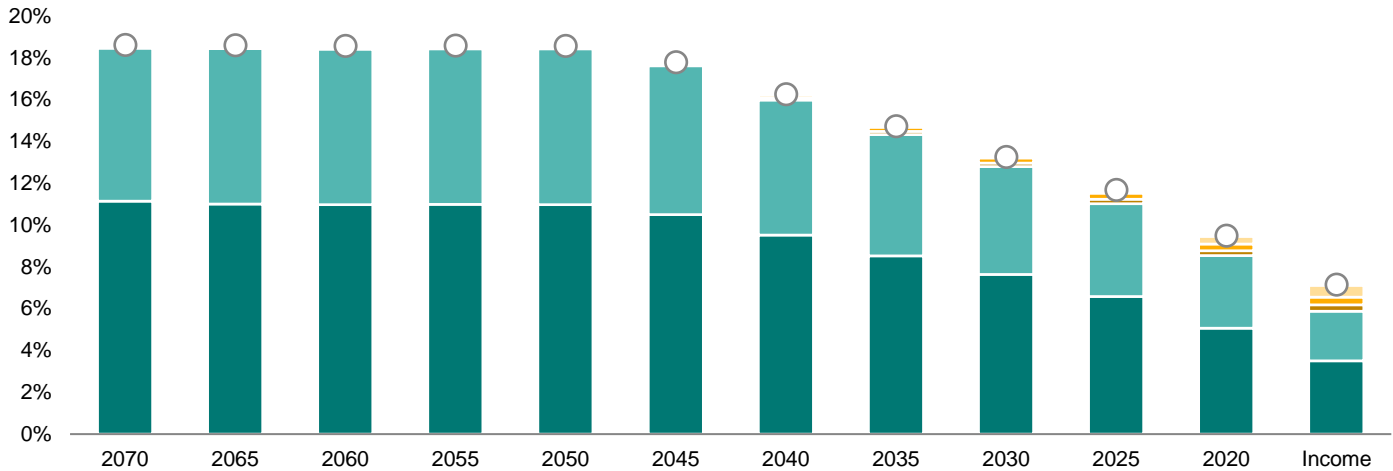


Figure 17.2 1-year return contribution by underlying funds



- Total Stock Market Index
- Total International Stock Index
- Total return
- Total Bond Market II Index
- Total International Bond Index
- Short-Term Inflation-Protected Securities Index
- Cash

Past performance is not a guarantee of future results.

Sources: Vanguard and Morningstar, as of September 30, 2023.



# Excess return attribution

Figure 18.1 3-month return attribution

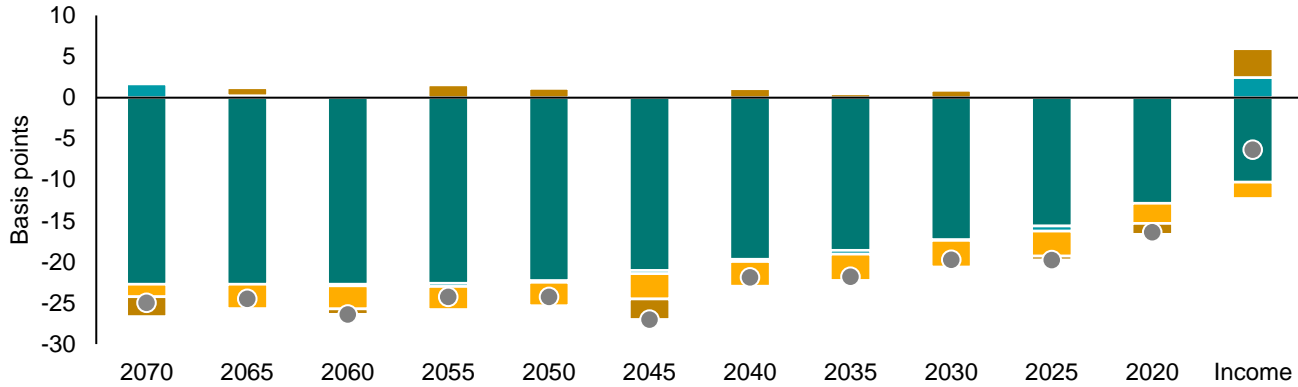
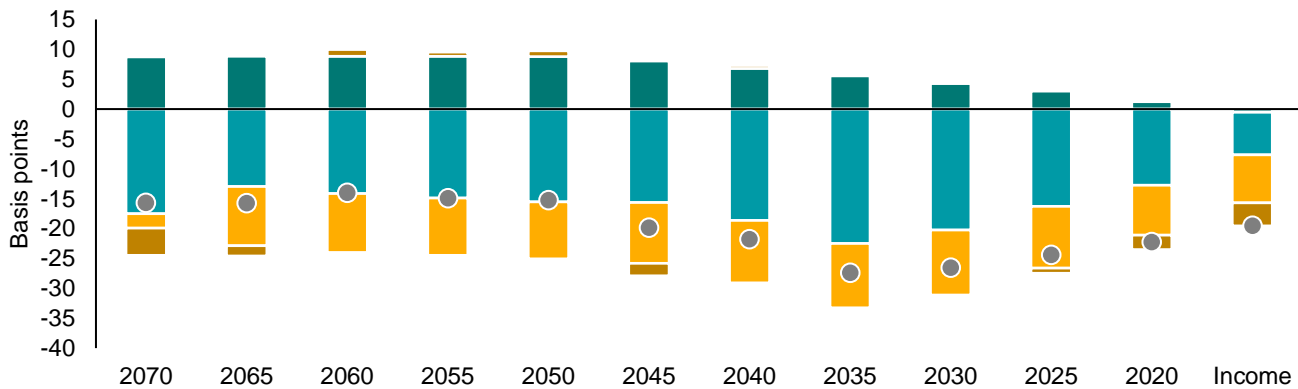


Figure 18.2 1-year return attribution



<span style="color: #008080;">■</span> Allocation impact	Out/Underperformance due to differences in the strategic asset allocation of the funds versus their benchmarks. These differences can be particularly notable at times of significant market volatility as portfolio managers work to balance transaction costs against a daily rebalanced benchmark.
<span style="color: #008080;">■</span> Fair-value pricing	Out/Underperformance due to the adjustment of the prices of non-U.S. equities for changes in their fair value that occur after the close of their local market but before the net asset value is calculated for each U.S. mutual fund as of 4 p.m., Eastern time. This impact is attributed to accounting and pricing policies that are outside of portfolio management control and is generally artificial and temporary.
<span style="color: #FFA500;">■</span> Underlying fund tracking differences ex-FV	Out/Underperformance of the underlying portfolios versus their relative benchmarks. Figure is shown after controlling for fair-value pricing but is inclusive of the securities lending impact, transaction costs associated with rebalancing the fund-of-funds portfolio, and pricing difference driven by Bloomberg (BB) indexes pricing at 4 p.m., Eastern time.*
<span style="color: #000080;">■</span> Residual	Out/Underperformance due to factors outside of those captured above.
<span style="color: #808080;">●</span> Total excess return	Indicates the total amount of fund returns that were higher or lower than benchmark returns. Calculated as the sum of the individual impacts of each of the five above drivers of benchmark-related excess return. Effect of expense ratios not included.

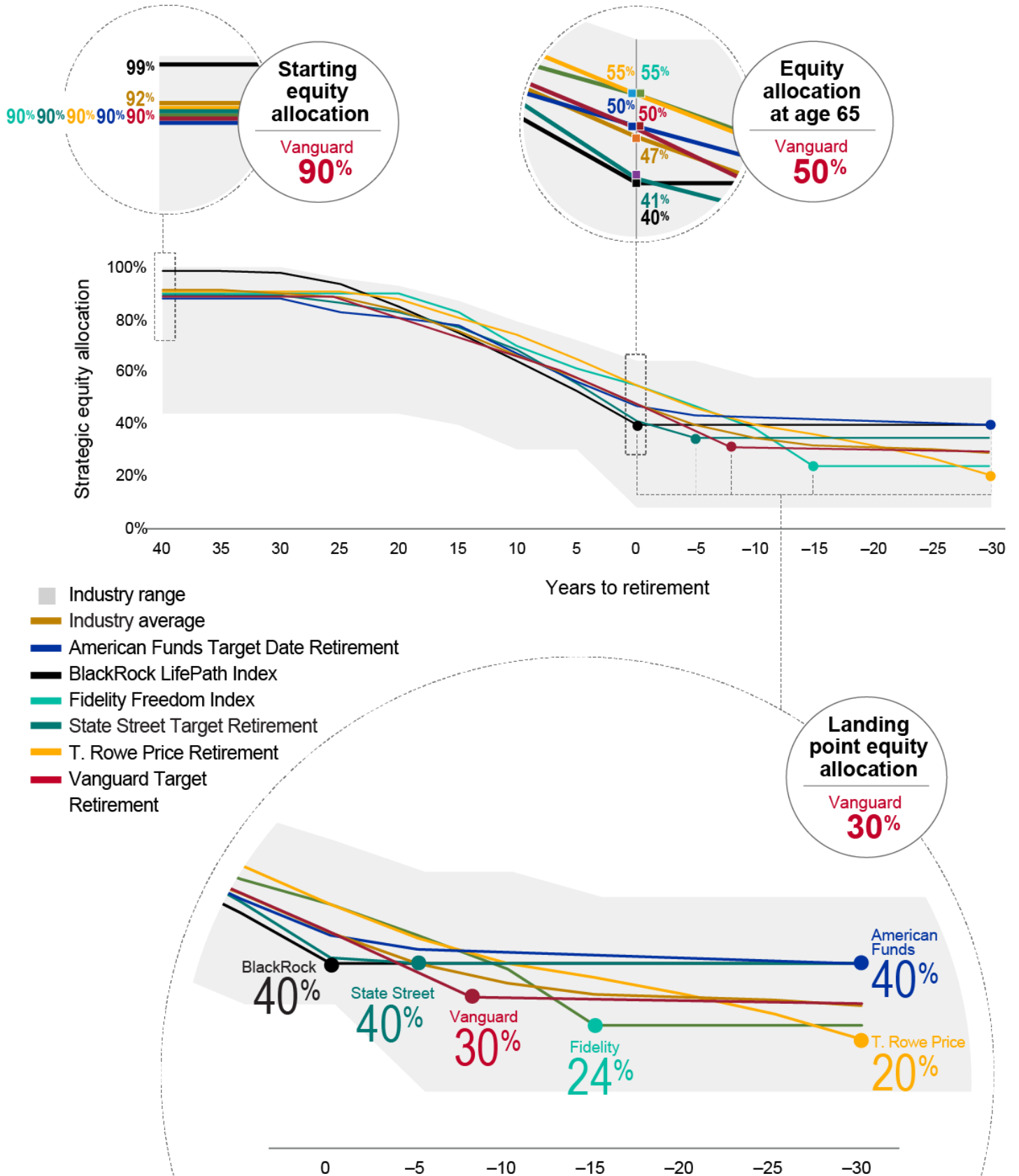
**Past performance is not a guarantee of future results.**

Sources: Vanguard and Morningstar, as of September 30, 2023.

\* On January 14, 2021, Bloomberg changed its index pricing time from 3 p.m., Eastern time, to 4 p.m., Eastern time. The time change affects the 1- and 3-year figures.



# Glide path comparison



Sources: Morningstar; data as of September 30, 2023; Vanguard calculation for industry average.



# Competitor fund construction and performance

IN THIS SECTION:

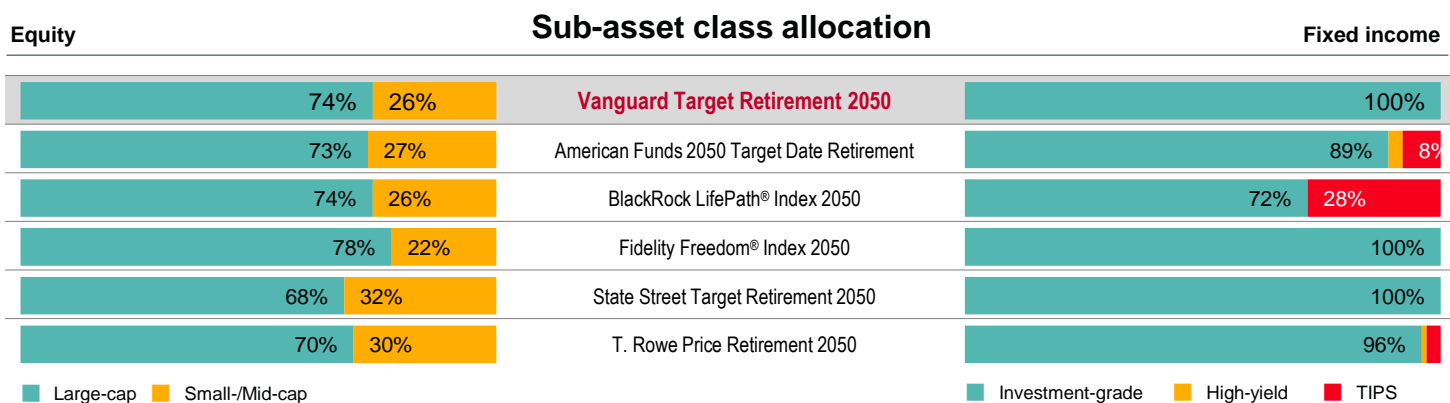
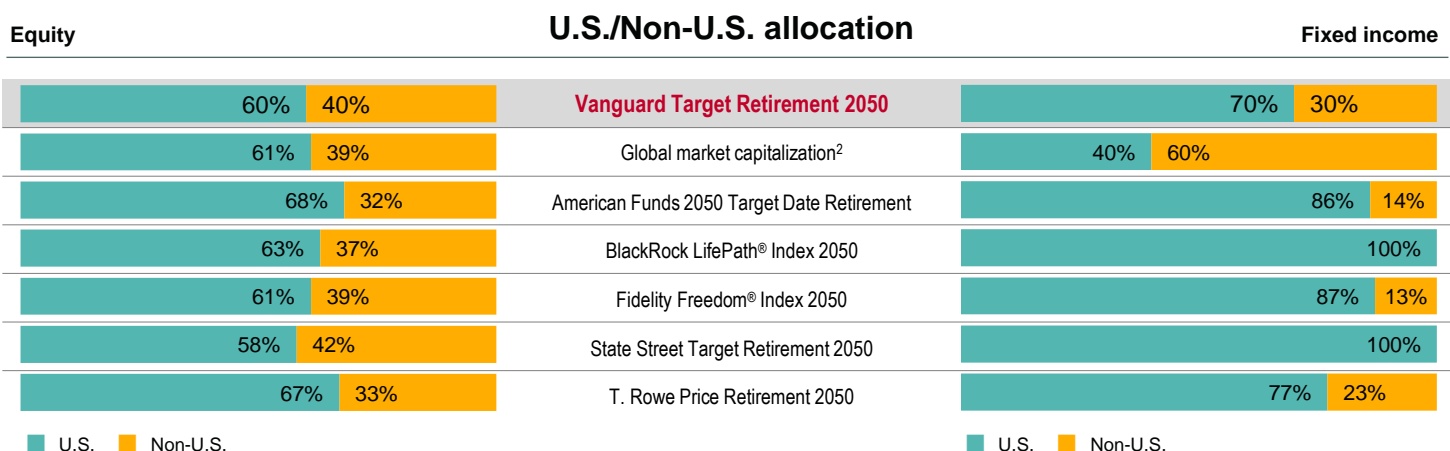
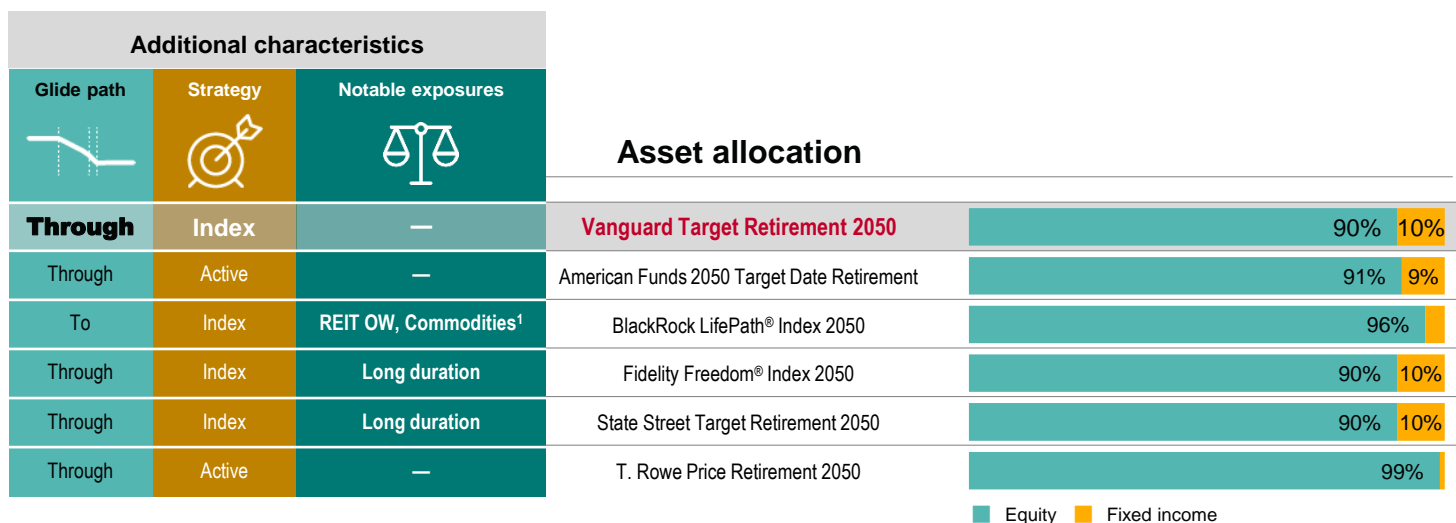
Beyond the glide path

12-month return attribution



# 2050 vintage: Beyond the glide path

Figure 21.1 Industry peer group asset allocation comparison



Sources: Morningstar data, based on most recent holdings disclosure for each fund included in the calculation. As-of dates may vary depending on the timing and frequency of data made available to Morningstar. Data as of September 30, 2023.

<sup>1</sup>Commodity exposure is present in CIT product only. Mutual fund product does not include commodity exposure.

<sup>2</sup>Global market capitalization calculated using FTSE All Country Equity Index and Bloomberg Barclays Global Aggregate Bond Index.

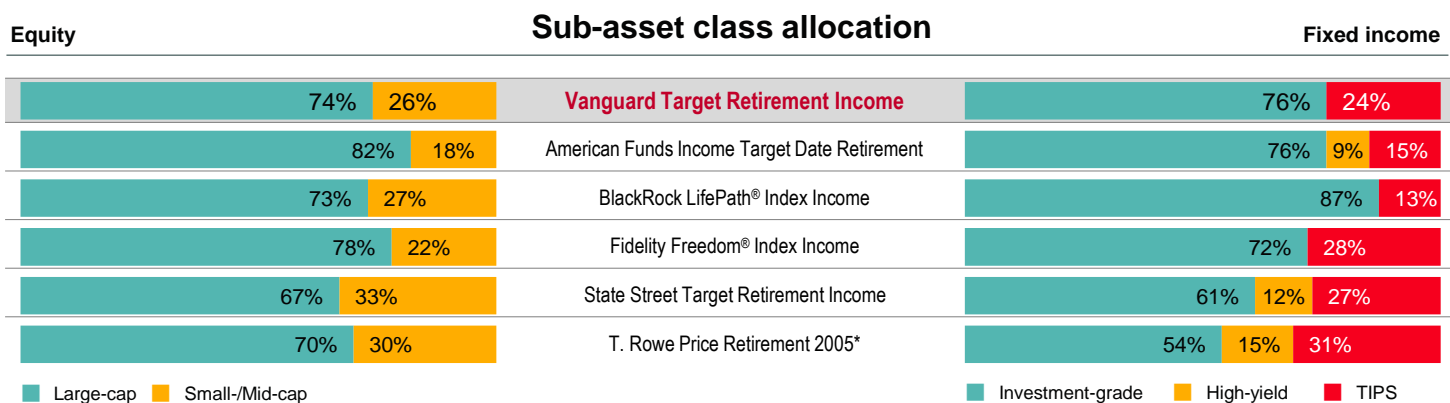
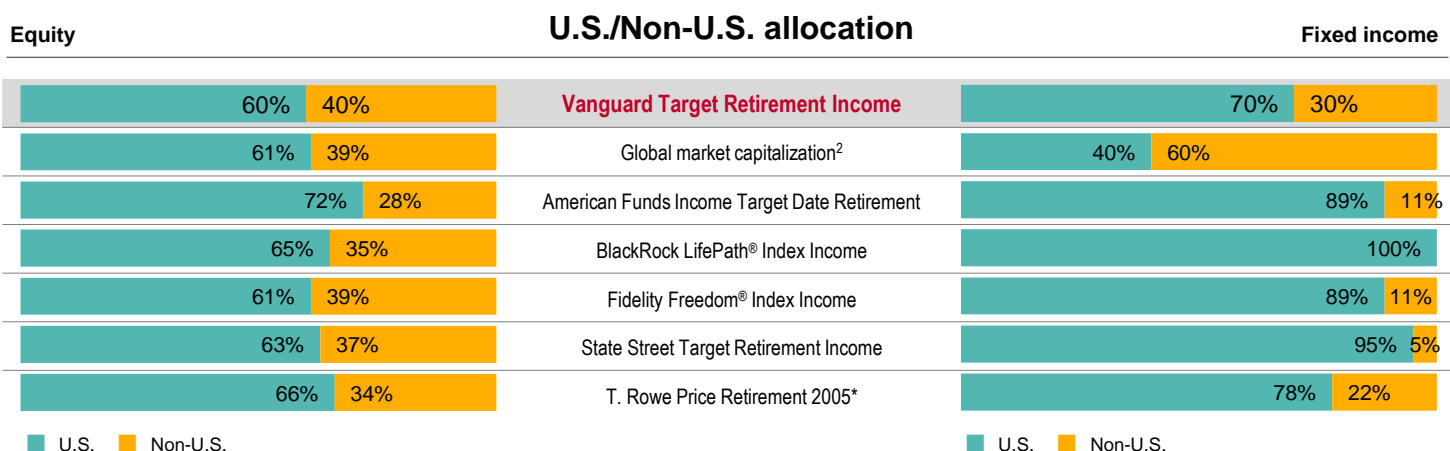
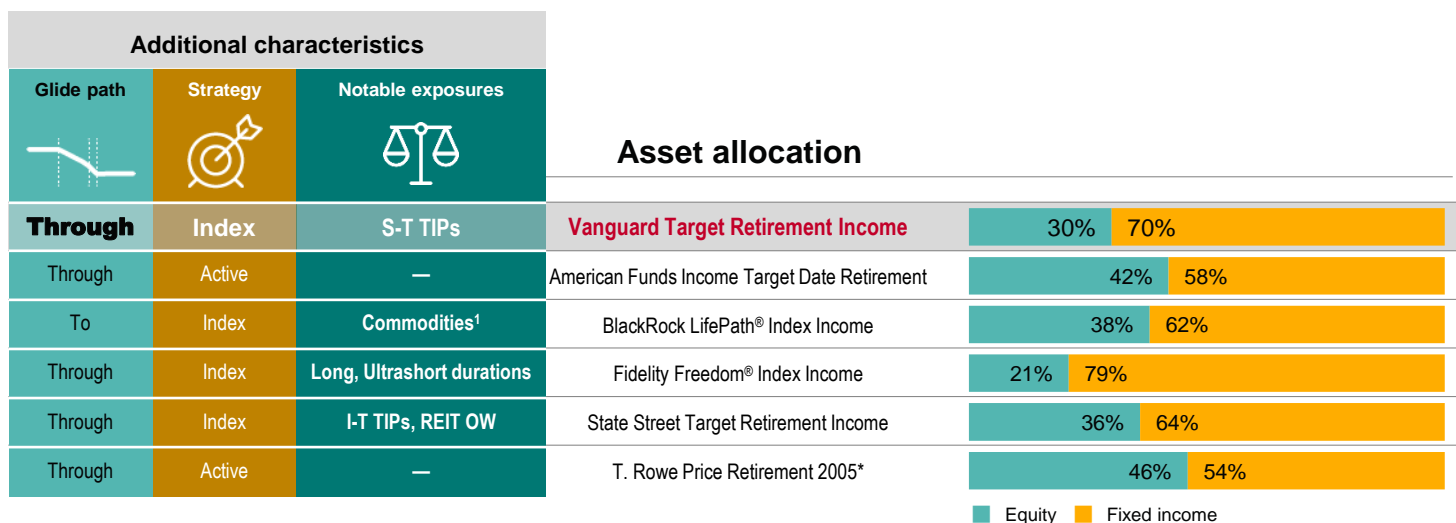
Note: Due to spacing issues, data labels below 7% are not displayed. Due to rounding, may not total to 100%.

There may be other material differences between products that must be considered prior to investing.



# Income vintage: Beyond the glide path

Figure 22.1 Industry peer group asset allocation comparison



Sources: Morningstar data, based on most recent holdings disclosure for each fund included in the calculation. As-of dates may vary depending on the timing and frequency of data made available to Morningstar. Data as of September 30, 2023.

<sup>1</sup>Commodity exposure is present in CIT product only. Mutual fund product does not include commodity exposure.

<sup>2</sup>Global market capitalization calculated using FTSE All Country Equity Index and Bloomberg Barclays Global Aggregate Bond Index.

\* No explicit income vintage in lineup. 2005 represents the most conservative asset allocation, as a proxy.

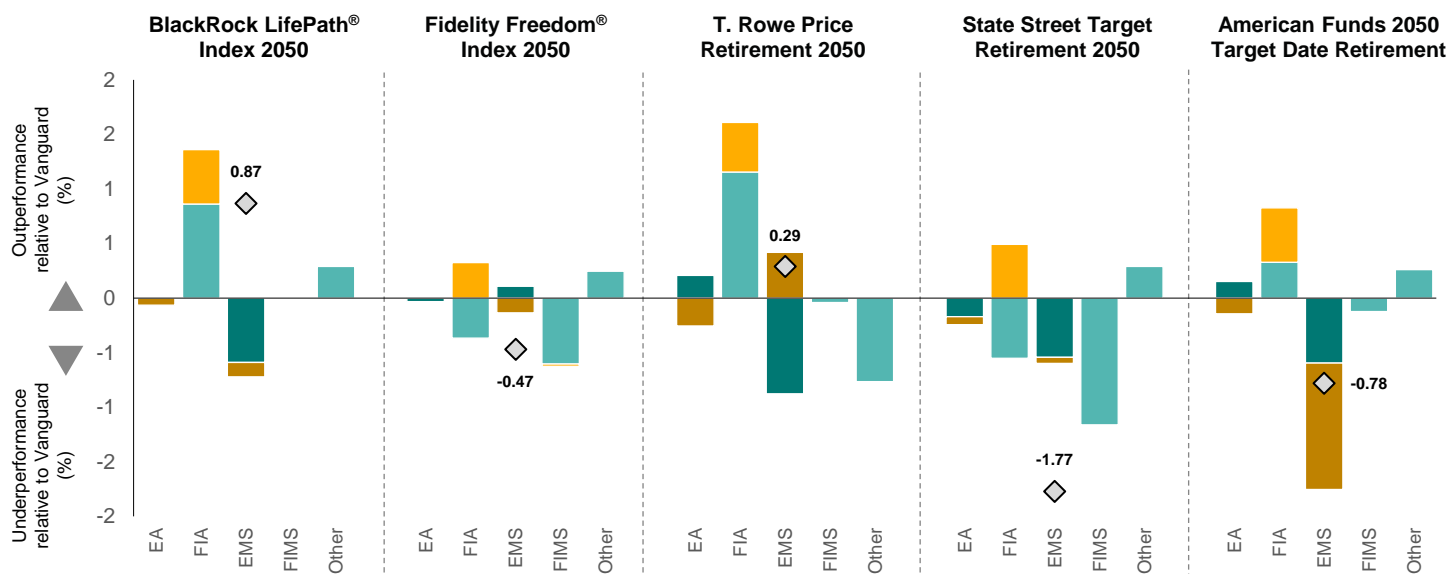
Note: Due to spacing issues, data labels below 7% are not displayed. Due to rounding, may not total to 100%.

There may be other material differences between products that must be considered prior to investing.



# 12-month return attribution

Figure 23.1 Relative to top five industry 2050 funds



Element	Description
Equity allocation (EA)	Vintage allocation to asset classes and sub-asset allocation to U.S. vs. non-U.S.
Fixed income allocation (FIA)	
Equity manager selection (EMS)	Benchmark construction differences (cap and/or style tilts), securities lending, fair-value pricing, building block expense ratios
Fixed income manager selection (FIMS)	
Other	Compounding effect (residual) due to nondaily holdings availability
Total excess return	The sum of the above relative performance differences between Vanguard Target Retirement Fund and competitors' similar vintage

- U.S. equity
- Foreign equity
- U.S. fixed income
- Foreign fixed income
- ◇ Total relative return

- **BlackRock's** outperformance relative to Vanguard was driven by a lower allocation to U.S. and international fixed income.
- **Fidelity's** underperformance was primarily driven by an overweight to long-duration Treasury securities within the U.S. fixed income portion of the portfolio.
- **T. Rowe Price's** outperformance relative to Vanguard was driven by a lower allocation to U.S. and international fixed income.
- **State Street's** underperformance was driven by overweight to long-duration fixed income in relation to Vanguard.
- **American Funds'** underperformance was primarily driven by poor security selection in the U.S. and international equity portions of the portfolio.

Past performance is not a guarantee of future results.

Sources: Vanguard and Morningstar, as of September 30, 2023.





# 12-month return attribution (continued)

Figure 24.1 Relative to top five industry income (or equivalent) funds\*



- **BlackRock's** outperformance over the period was driven by a higher allocation to U.S. equity
- **Fidelity's** underperformance was driven by a significant underweight to equity securities relative to Vanguard and a large exposure to cash equivalents.
- **T. Rowe Price's** outperformance was driven by a higher allocation to and strong security selection within the international equity and fixed income portions of the portfolio.
- **State Street's** outperformance was driven primarily by an overweight to U.S. equity relative to Vanguard and an overweight to U.S short-term fixed income.
- **American Funds'** outperformance was driven by an overweight to U.S. equity, despite poor security selection in this portion of the portfolio.

Past performance is not a guarantee of future results.

Sources: Morningstar and Vanguard calculations; data as of September 30, 2023.

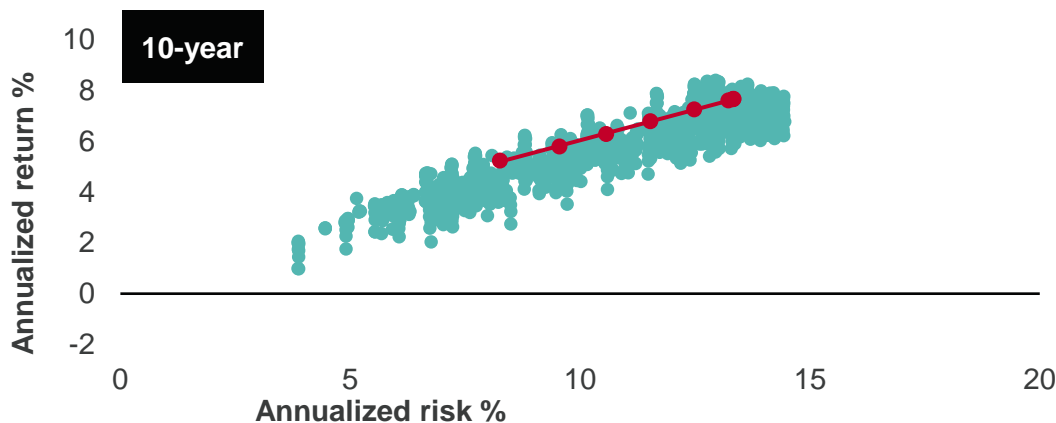
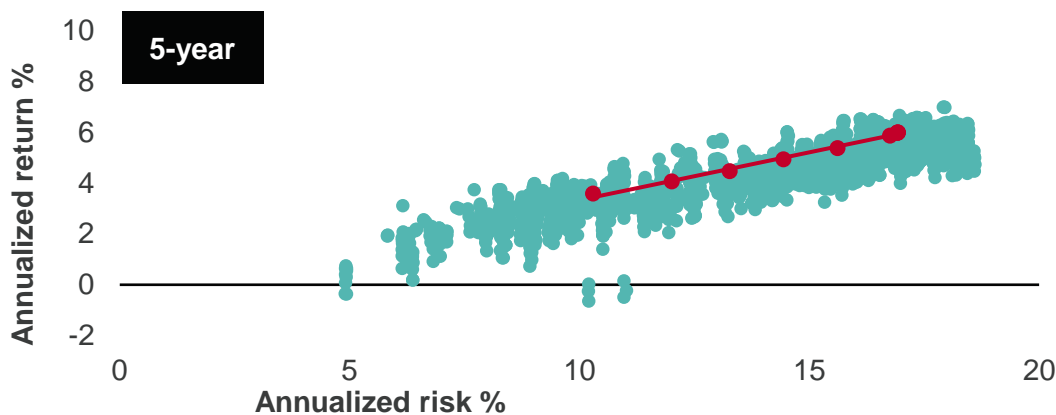
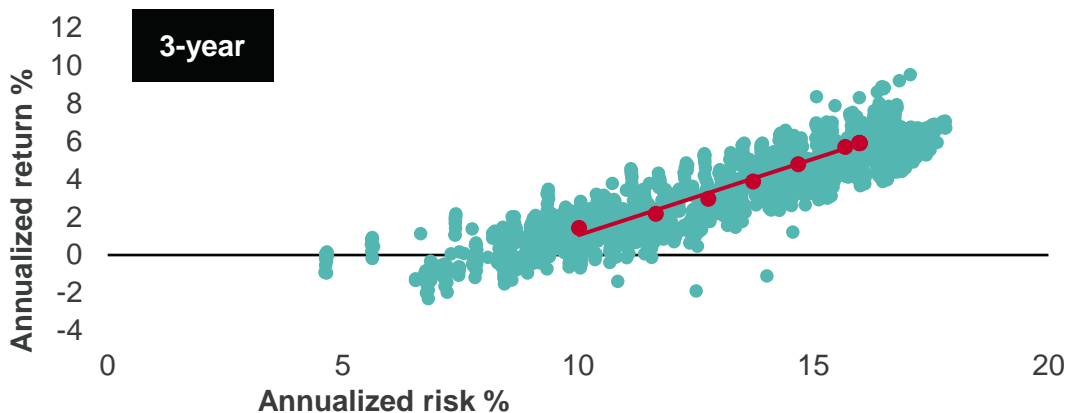
\* The 2005 fund is used as a proxy for T. Rowe Price and the 2010 fund is used as a proxy for American Funds, as there is no terminal Income fund currently.





# A history of consistently strong risk-adjusted performance

● TDF peers in Morningstar universe      ● Vanguard Target Retirement Funds



Investors may be in TDFs for decades.

Consistent performance across all market environments is critical.

*Standard deviation was used for annualized risk. Results will vary for other time periods. All funds in the Morningstar peer group with a minimum 3-, 5-, or 10-year history, respectively, were included in the comparison. There may be other material differences between products that must be considered before investing. **Note that the competitive performance data shown represent past performance, which is not a guarantee of future results, and that all investments are subject to risks. Investment returns and principal value will fluctuate, so investors' shares, when sold, may be worth more or less than their original cost. Current performance may be lower or higher than the performance data cited. For the most recent performance, visit our website at [vanguard.com/performance](http://vanguard.com/performance).***

Sources: Vanguard and Morningstar, Inc., as of September 30, 2023. Vanguard Target Retirement Funds highlighted.



# Appendix

IN THIS SECTION:

Absolute performance results



# Appendix: Absolute performance results

Average annualized return as of September 30, 2023

Fund	3 months	Year-to-date	1 year	3 years	5 years	10 years	Since inception	Inception date
<b>Vanguard Target Retirement Income Fund</b>	-2.35	3.16	7.02	-0.13	2.69	3.60	4.56	10/27/2003
Target Retirement Income Composite Index	-2.26	3.23	7.31	0.10	2.97	3.84	—	—
Lipper Target Target Consvr Funds Average	-2.68	2.33	6.63	0.03	2.19	3.04	—	—
Fidelity Freedom Income	-2.34	1.67	5.04	-0.95	1.89	2.82	4.21	10/17/1996
Fidelity Freedom Index Income Investor	-2.37	1.82	4.86	-1.35	1.91	2.56	3.04	10/2/2009
T. Rowe Price Retirement 2005	-2.19	4.10	8.97	1.42	3.48	4.35	5.12	2/27/2004
American Funds 2010 Trgt Date Retire R5	-2.49	0.92	7.32	1.97	3.69	4.71	4.49	2/1/2007
BlackRock LifePath Index Retire K	-3.53	2.74	7.62	-0.19	2.89	4.04	4.34	5/31/2011
State Street Target Retirement K	-1.97	3.37	8.02	1.37	3.42	—	3.65	9/30/2014
JPMorgan SmartRetirement® Income R5	-2.88	3.74	8.28	0.43	2.44	3.62	4.36	5/15/2006
JPMorgan SmartRetirement® Blend IncomeR5	-2.82	3.50	8.24	0.37	2.43	3.61	3.94	7/2/2012
TIAA-CREF Lifecycle Retire Income Instl	-2.35	3.45	8.23	1.10	3.26	4.44	4.46	11/30/2007
<b>Vanguard Target Retirement 2020 Fund</b>	-2.65	4.18	9.36	1.43	3.58	5.24	5.53	6/7/2006
Target Retirement 2020 Composite Index	-2.47	4.34	9.68	1.73	3.95	5.54	—	—
Lipper Target 2020 Funds Average	-3.02	3.16	8.77	1.17	2.90	4.05	—	—
Fidelity Freedom 2020	-3.57	3.76	10.20	1.35	3.40	5.11	6.18	10/17/1996
Fidelity Freedom Index 2020 Investor	-3.75	3.68	9.58	0.67	3.27	4.88	5.98	10/2/2009
T. Rowe Price Retirement 2020	-2.44	4.96	10.71	2.76	4.37	5.83	7.57	9/30/2002
American Funds 2020 Trgt Date Retire R5	-2.80	1.71	8.73	2.25	4.05	5.47	5.04	2/1/2007
State Street Target Retirement 2020 K	-2.25	3.67	8.88	2.04	3.93	—	4.69	9/30/2014
JPMorgan SmartRetirement 2020 R5	-2.86	3.69	8.21	0.57	2.54	4.39	5.00	5/15/2006
JPMorgan SmartRetirement® Blend 2020 R5	-2.73	3.64	8.45	0.57	2.57	4.40	5.12	7/2/2012
TIAA-CREF Lifecycle 2020 Institutional	-2.56	4.03	9.46	1.80	3.62	5.35	4.99	1/17/2007
<b>Vanguard Target Retirement 2025 Fund</b>	-2.99	5.22	11.56	2.17	4.06	5.79	6.16	10/27/2003
Target Retirement 2025 Composite Index	-2.77	5.41	11.91	2.58	4.50	6.13	—	—
Lipper Target 2025 Funds Average	-3.13	3.29	9.05	1.37	3.13	4.66	—	—
Fidelity Freedom 2025	-3.78	4.34	11.49	1.97	3.77	5.59	5.86	11/6/2003
Fidelity Freedom Index 2025 Investor	-4.00	4.16	10.67	1.24	3.63	5.40	6.63	10/2/2009
T. Rowe Price Retirement 2025	-2.59	5.54	11.87	3.40	4.82	6.40	6.63	2/27/2004
American Funds 2025 Trgt Date Retire R5	-2.92	2.72	10.05	2.58	4.59	6.19	5.67	2/1/2007
JPMorgan SmartRetirement 2025 R5	-3.17	4.45	10.01	1.64	3.19	5.13	5.05	7/31/2007
JPMorgan SmartRetirement® Blend 2025 R5	-3.09	4.33	10.28	1.69	3.22	5.12	5.96	7/2/2012
TIAA-CREF Lifecycle 2025 Institutional	-2.77	4.59	10.76	2.45	3.98	5.86	5.22	1/17/2007
BlackRock Lifepath Index 2025 K	-3.71	3.28	8.72	0.87	3.35	5.03	5.31	5/31/2011
State Street Target Retirement 2025 K	-2.84	4.63	11.04	2.50	4.59	—	5.53	9/30/2014

The performance data shown represent past performance. Past performance is no guarantee of future results. Investment returns and principal value will fluctuate, so investors' shares, when sold, may be worth more or less than their original cost. Current performance may be lower or higher than the performance data cited. For performance data current to the most recent month-end, visit our website at [vanguard.com/performance](http://vanguard.com/performance). Some funds assess purchase, redemption, and/or account maintenance fees. The performance data shown do not reflect deduction of these fees. If they did, performance would be lower. Details on these fees and adjusted performance figures can be found in the fund detail section.

Data from Vanguard and Morningstar.





# Appendix: Absolute performance results *(continued)*

Average annualized return as of September 30, 2023

Fund	3 months	Year-to-date	1 year	3 years	5 years	10 years	Since inception	Inception date
<b>Vanguard Target Retirement 2030 Fund</b>	-3.20	5.93	13.14	2.97	4.46	6.28	6.11	6/7/2006
Target Retirement 2030 Composite Index	-2.98	6.16	13.51	3.39	4.91	6.62	—	—
Lipper Target 2030 Funds Average	-3.36	4.15	10.82	2.50	3.76	5.31	—	—
Fidelity Freedom 2030	-3.75	5.19	12.93	2.96	4.32	6.35	6.54	10/17/1996
Fidelity Freedom Index 2030 Investor	-3.98	4.97	12.10	2.18	4.16	6.18	7.29	10/2/2009
T. Rowe Price Retirement 2030	-2.88	6.40	13.62	4.06	5.23	6.92	8.41	9/30/2002
American Funds 2030 Trgt Date Retire R5	-3.10	4.29	12.18	3.42	5.10	7.00	6.28	2/1/2007
JPMorgan SmartRetirement 2030 R5	-3.43	5.53	12.29	2.80	3.79	5.79	5.88	5/15/2006
JPMorgan SmartRetirement® Blend 2030 R5	-3.36	5.33	12.48	2.87	3.86	5.80	6.74	7/2/2012
TIAA-CREF Lifecycle 2030 Institutional	-2.94	5.47	12.55	3.23	4.40	6.39	5.44	1/17/2007
BlackRock Lifepath Index 2030 K	-3.76	4.59	11.35	2.30	4.11	5.75	5.96	5/31/2011
State Street Target Retirement 2030 K	-3.57	5.42	13.05	2.67	4.98	—	5.99	9/30/2014
<b>Vanguard Target Retirement 2035 Fund</b>	-3.28	6.67	14.61	3.89	4.93	6.79	6.91	10/27/2003
Target Retirement 2035 Composite Index	-3.04	6.89	14.99	4.31	5.37	7.14	—	—
Lipper Target 2035 Funds Average	-3.54	5.49	13.25	3.74	4.53	6.12	—	—
Fidelity Freedom 2035	-3.67	6.70	15.91	4.77	5.22	7.18	6.67	11/6/2003
Fidelity Freedom Index 2035 Investor	-3.96	6.35	14.82	3.86	5.00	7.03	8.09	10/2/2009
T. Rowe Price Retirement 2035	-3.06	7.44	15.65	4.78	5.67	7.36	7.22	2/27/2004
American Funds 2035 Trgt Date Retire R5	-3.28	5.83	14.54	4.58	5.97	7.83	6.77	2/1/2007
JPMorgan SmartRetirement 2035 R5	-3.53	6.63	14.48	4.44	4.77	6.50	5.91	7/31/2007
JPMorgan SmartRetirement® Blend 2035 R5	-3.53	6.38	14.65	4.31	4.59	6.43	7.46	7/2/2012
TIAA-CREF Lifecycle 2035 Institutional	-3.08	6.55	14.64	4.07	4.83	6.90	5.78	1/17/2007
BlackRock Lifepath Index 2035 K	-3.82	5.82	13.73	3.68	4.83	6.45	6.57	5/31/2011
State Street Target Retirement 2035 K	-4.16	5.79	13.98	3.02	5.09	—	6.28	9/30/2014
<b>Vanguard Target Retirement 2040 Fund</b>	-3.34	7.35	16.15	4.81	5.37	7.26	6.73	6/7/2006
Target Retirement 2040 Composite Index	-3.10	7.62	16.48	5.23	5.82	7.62	—	—
Lipper Target 2040 Funds Average	-3.62	6.63	15.37	4.71	4.97	6.44	—	—
Fidelity Freedom 2040	-3.71	8.27	18.80	6.10	5.93	7.59	4.69	9/6/2000
Fidelity Freedom Index 2040 Investor	-4.04	7.68	17.56	5.13	5.71	7.45	8.43	10/2/2009
T. Rowe Price Retirement 2040	-3.11	8.35	17.37	5.43	6.08	7.73	8.87	9/30/2002
American Funds 2040 Trgt Date Retire R5	-3.53	7.21	16.64	5.24	6.41	8.20	7.02	2/1/2007
JPMorgan SmartRetirement 2040 R5	-3.65	7.50	16.29	5.46	5.31	6.99	6.67	5/15/2006
JPMorgan SmartRetirement® Blend 2040 R5	-3.65	7.18	16.42	5.31	5.08	6.91	7.95	7/2/2012
TIAA-CREF Lifecycle 2040 Institutional	-3.36	7.60	16.57	5.01	5.27	7.40	6.16	1/17/2007
BlackRock Lifepath Index 2040 K	-3.92	6.98	15.98	4.93	5.45	7.05	7.12	5/31/2011
State Street Target Retirement 2040 K	-4.25	6.31	15.07	3.56	5.33	—	6.53	9/30/2014

The performance data shown represent past performance. Past performance is no guarantee of future results. Investment returns and principal value will fluctuate, so investors' shares, when sold, may be worth more or less than their original cost. Current performance may be lower or higher than the performance data cited. For performance data current to the most recent month-end, visit our website at [vanguard.com/performance](http://vanguard.com/performance). Some funds assess purchase, redemption, and/or account maintenance fees. The performance data shown do not reflect deduction of these fees. If they did, performance would be lower. Details on these fees and adjusted performance figures can be found in the fund detail section.

Data from Vanguard and Morningstar.



# Appendix: Absolute performance results *(continued)*

Average annualized return as of September 30, 2023

Fund	3 months	Year-to-date	1 year	3 years	5 years	10 years	Since inception	Inception date
<b>Vanguard Target Retirement 2045 Fund</b>	-3.45	8.06	17.67	5.72	5.87	7.61	7.53	10/27/2003
Target Retirement 2045 Composite Index	-3.15	8.35	17.97	6.14	6.30	7.96	—	—
Lipper Target 2045 Funds Average	-3.72	7.14	16.46	5.37	5.34	6.87	—	—
Fidelity Freedom 2045	-3.76	8.46	19.35	6.18	5.97	7.62	6.22	6/1/2006
Fidelity Freedom Index 2045 Investor	-4.06	7.99	18.06	5.22	5.77	7.49	8.50	10/2/2009
T. Rowe Price Retirement 2045	-3.14	8.98	18.41	5.99	6.42	7.96	7.61	5/31/2005
American Funds 2045 Trgt Date Retire R5	-3.61	7.63	17.26	5.31	6.46	8.32	7.08	2/1/2007
JPMorgan SmartRetirement 2045 R5	-3.78	8.00	17.51	6.30	5.75	7.24	6.48	7/31/2007
JPMorgan SmartRetirement® Blend 2045 R5	-3.76	7.83	17.78	6.17	5.48	7.15	8.15	7/2/2012
TIAA-CREF Lifecycle 2045 Institutional	-3.41	8.38	18.07	5.82	5.68	7.74	6.01	11/30/2007
BlackRock Lifepath Index 2045 K	-3.84	8.11	18.10	6.01	6.03	7.56	7.55	5/31/2011
State Street Target Retirement 2045 K	-4.28	6.66	15.87	4.07	5.47	—	6.76	9/30/2014
<b>Vanguard Target Retirement 2050 Fund</b>	-3.46	8.47	18.48	5.92	5.99	7.67	6.99	6/7/2006
Target Retirement 2050 Composite Index	-3.20	8.75	18.74	6.34	6.43	8.03	—	—
Lipper Target 2050 Funds Average	-3.77	7.45	17.07	5.60	5.42	6.89	—	—
Fidelity Freedom 2050	-3.71	8.48	19.36	6.17	5.98	7.63	6.11	6/1/2006
Fidelity Freedom Index 2050 Investor	-4.10	7.97	18.01	5.21	5.76	7.49	8.53	10/2/2009
T. Rowe Price Retirement 2050	-3.10	9.17	18.77	6.08	6.45	7.98	6.82	12/29/2006
American Funds 2050 Trgt Date Retire R5	-3.62	8.06	17.70	5.23	6.44	8.35	7.10	2/1/2007
JPMorgan SmartRetirement 2050 R5	-3.78	8.27	17.81	6.33	5.75	7.24	6.49	7/31/2007
JPMorgan SmartRetirement® Blend 2050 R5	-3.87	7.89	17.96	6.19	5.55	7.17	8.19	7/2/2012
TIAA-CREF Lifecycle 2050 Institutional	-3.48	8.64	18.65	5.97	5.77	7.83	6.05	11/30/2007
BlackRock Lifepath Index 2050 K	-3.76	8.84	19.35	6.59	6.34	7.82	7.80	5/31/2011
State Street Target Retirement 2050 K	-4.29	7.12	16.71	4.39	5.66	—	6.83	9/30/2014
<b>Vanguard Target Retirement 2055 Fund</b>	-3.46	8.47	18.48	5.91	5.99	7.65	9.11	8/18/2010
Target Retirement 2055 Composite Index	-3.20	8.75	18.74	6.34	6.43	8.03	—	—
Lipper Target 2055+ Funds Average	-3.80	7.61	17.34	5.72	5.50	7.12	—	—
Fidelity Freedom 2055	-3.73	8.49	19.31	6.17	5.98	7.64	7.65	6/1/2011
Fidelity Freedom Index 2055 Investor	-4.11	7.97	17.97	5.22	5.76	7.50	7.49	6/1/2011
T. Rowe Price Retirement 2055	-3.09	9.19	18.82	6.07	6.41	7.96	6.79	12/29/2006
American Funds 2055 Trgt Date Retire R5	-3.65	8.47	18.05	5.10	6.35	8.29	9.45	2/1/2010
JPMorgan SmartRetirement 2055 R5	-3.83	8.18	17.77	6.32	5.77	7.26	8.44	1/31/2012
JPMorgan SmartRetirement® Blend 2055 R5	-3.86	7.90	18.02	6.25	5.54	7.17	8.15	7/2/2012
TIAA-CREF Lifecycle 2055 Institutional	-3.47	8.81	18.90	6.10	5.82	7.90	7.96	4/29/2011
BlackRock Lifepath Index 2055 K	-3.72	9.05	19.73	6.71	6.41	7.92	7.93	5/31/2011
State Street Target Retirement 2055 K	-4.26	7.20	16.86	4.39	5.66	—	6.84	9/30/2014

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Data from Vanguard and Morningstar.





# Appendix: Absolute performance results *(continued)*

Average annualized return as of September 30, 2023

Fund	3 months	Year-to-date	1 year	3 years	5 years	10 years	Since inception	Inception date
<b>Vanguard Target Retirement 2060 Fund</b>	-3.48	8.47	18.49	5.91	5.98	7.65	8.77	1/19/2012
Target Retirement 2060 Composite Index	-3.20	8.75	18.74	6.34	6.43	8.03	—	—
Lipper Target 2055+ Funds Average	-3.82	7.87	17.73	5.99	—	—	—	—
Fidelity Freedom 2060	-3.74	8.43	19.31	6.19	5.98	—	7.26	8/5/2014
Fidelity Freedom Index 2060 Investor	-4.07	8.01	18.05	5.24	5.77	—	6.99	8/5/2014
T. Rowe Price Retirement 2060	-3.16	9.18	18.80	6.06	6.40	—	7.04	6/23/2014
American Funds 2060 Trgt Date Retire R5	-3.62	8.61	18.14	5.05	6.31	—	7.67	3/27/2015
JPMorgan SmartRetirement 2060 R5	-3.82	8.14	17.75	6.33	5.76	—	7.62	8/31/2016
JPMorgan SmartRetirement® Blend 2060 R5	-3.85	7.86	17.98	6.27	5.55	—	7.38	8/31/2016
TIAA-CREF Lifecycle 2060 Institutional	-3.48	8.91	19.04	6.22	5.89	—	7.52	9/26/2014
BlackRock Lifepath Index 2060 K	-3.64	9.12	19.83	6.72	6.43	—	9.57	2/29/2016
State Street Target Retirement 2060 K	-4.36	7.13	16.77	4.39	5.66	—	6.82	9/30/2014
<b>Vanguard Target Retirement 2065 Fund</b>	-3.46	8.45	18.47	5.93	5.97	—	7.02	7/12/2017
Target Retirement 2065 Composite Index	-3.20	8.75	18.74	6.34	6.43	—	—	—
Lipper Target 2055+ Funds Average	-3.82	7.87	17.73	5.99	—	—	—	—
Fidelity Freedom 2065	-3.73	8.47	19.29	6.20	—	—	6.91	6/28/2019
Fidelity Freedom Index 2065 Investor	-4.08	7.94	18.02	5.22	—	—	6.23	6/28/2019
T. Rowe Price Retirement 2065	-3.09	9.22	18.77	—	—	—	5.05	10/14/2020
American Funds 2065 Trgt Date Retire R5	-3.66	7.74	—	—	—	—	11.12	3/27/2020
JPMorgan SmartRetirement® Blend 2065 R5	-3.68	8.60	18.11	5.07	—	—	12.31	11/1/2022
TIAA-CREF Lifecycle 2065 Institutional	-3.50	9.03	19.15	6.44	—	—	6.45	9/30/2020
BlackRock Lifepath Index 2065 K	-3.76	9.05	19.74	6.68	—	—	6.77	10/30/2019
State Street Target Retirement 2065 K	-4.33	7.19	16.75	4.30	—	—	10.63	3/30/2020
<b>Vanguard Target Retirement 2070 Fund</b>	-3.47	8.49	18.49	—	—	—	7.56	6/28/2022
Target Retirement 2070 Composite Index	-3.20	8.75	18.74	6.34	6.43	7.86	—	—
Lipper Target 2060+ Funds Average	-3.82	7.87	17.73	5.99	—	—	—	—

The performance data shown represent past performance. Past performance is no guarantee of future results. Investment returns and principal value will fluctuate, so investors' shares, when sold, may be worth more or less than their original cost. Current performance may be lower or higher than the performance data cited. For performance data current to the most recent month-end, visit our website at [vanguard.com/performance](http://vanguard.com/performance). Some funds assess purchase, redemption, and/or account maintenance fees. The performance data shown do not reflect deduction of these fees. If they did, performance would be lower. Details on these fees and adjusted performance figures can be found in the fund detail section.

Data from Vanguard and Morningstar.



# Appendix: Standardized returns

Average annualized return as of September 30, 2023

Fund	Average annualized return as of September 30, 2023						Since inception	Inception date
	3 months	Year-to-date	1 year	3 years	5 years	10 years		
Vanguard Total Bond Market Index Fund Institutional Shares	-3.08	-0.91	0.74	-5.20	0.15	1.12	4.08	09/18/1995
Vanguard Total International Bond Index Fund Institutional Shares	-1.50	2.18	2.16	-4.19	0.01	1.84	1.74	05/31/2013
Vanguard Total Stock Market Index Fund Institutional Shares	-3.30	12.34	20.38	9.25	9.06	11.23	8.21	07/07/1997
Vanguard Total International Stock Index Fund Institutional Shares	-4.01	5.04	20.50	3.89	2.76	3.63	4.21	11/29/2010
Vanguard Short-Term Inflation-Protected Securities Index Fund Institutional Shares	0.43	2.01	3.31	1.89	2.77	1.67	1.45	10/17/2012

*The performance data shown represent past performance. Past performance is no guarantee of future results. Investment returns and principal value will fluctuate, so investors' shares, when sold, may be worth more or less than their original cost. Current performance may be lower or higher than the performance data cited. For performance data current to the most recent month-end, visit our website at [vanguard.com/performance](http://vanguard.com/performance). Some funds assess purchase, redemption, and/or account maintenance fees. The performance data shown do not reflect deduction of these fees. If they did, performance would be lower. Details on these fees and adjusted performance figures can be found in the fund detail section.*

Data from Vanguard and Morningstar.



# Notes

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# Important information

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**Target 2015 Composite Index:** An index derived by applying the fund's target asset allocation to the results of the following benchmarks: for international stocks of developed markets, the MSCI EAFE Index through December 15, 2010, the MSCI ACWI ex USA IMI Index through June 2, 2013, and the FTSE Global All Cap ex U.S. Index thereafter; for emerging-market stocks, the Select Emerging Markets Index through August 23, 2006, the MSCI Emerging Markets Index through December 15, 2010, the MSCI ACWI ex USA IMI Index through June 2, 2013, and the FTSE Global All Cap ex U.S. Index thereafter; for U.S. bonds, the Bloomberg U.S. Aggregate Bond Index through December 31, 2009, and the Bloomberg U.S. Aggregate Float Adjusted Index thereafter, as well as the Bloomberg U.S. Treasury Inflation-Protected Securities Index through June 2, 2013, and the Bloomberg U.S. Treasury Inflation-Protected Securities (TIPS) 0-5 Year Index thereafter; for international bonds, the Bloomberg Global Aggregate ex-USD Float Adjusted RIC Capped Index; and for U.S. stocks, the Dow Jones U.S. Total Stock Market Index (formerly known as the Dow Jones Wilshire 5000 Index) through April 22, 2005, the MSCI U.S. Broad Market Index through June 2, 2013, and the CRSP U.S. Total Market Index thereafter.

**Target 2020, 2030, 2040, and 2050 Composite Indexes:** Indexes derived by applying the fund's target asset allocation to the results of the following benchmarks: for international stocks of developed markets, the MSCI EAFE Index through December 15, 2010, the MSCI ACWI ex USA IMI Index through June 2, 2013, and the FTSE Global All Cap ex U.S. Index thereafter; for emerging-market stocks, the Select Emerging Markets Index through August 23, 2006, the MSCI Emerging Markets Index through December 15, 2010, the MSCI ACWI ex USA IMI Index through June 2, 2013, and the FTSE Global All Cap ex U.S. Index thereafter; for U.S. bonds, the Bloomberg U.S. Aggregate Bond Index through December 31, 2009, and the Bloomberg U.S. Aggregate Float Adjusted Index thereafter; for international bonds, the Bloomberg Global Aggregate ex-USD Float Adjusted RIC Capped Index; and for U.S. stocks, the MSCI U.S. Broad Market Index through June 2, 2013, and the CRSP U.S. Total Market Index thereafter. International stock benchmark returns are adjusted for withholding taxes.

**Target 2025, 2035, and 2045 Composite Indexes:** Indexes derived by applying the fund's target asset allocation to the results of the following benchmarks: for international stocks of developed markets, the MSCI EAFE Index through December 15, 2010, the MSCI ACWI ex USA IMI Index through June 2, 2013, and the FTSE Global All Cap ex U.S. Index thereafter; for emerging-market stocks, the Select Emerging Markets Index through August 23, 2006, the MSCI Emerging Markets Index through December 15, 2010, the MSCI ACWI ex USA IMI Index through June 2, 2013, and the FTSE Global All Cap ex U.S. Index thereafter; for U.S. bonds, the Bloomberg U.S. Aggregate Bond Index through December 31, 2009, and the Bloomberg U.S. Aggregate Float Adjusted Index thereafter; for international bonds, the Bloomberg Global Aggregate ex-USD Float Adjusted RIC Capped Index; and for U.S. stocks, the Dow Jones U.S. Total Stock Market Index (formerly known as the Dow Jones Wilshire 5000 Index) through April 22, 2005, the MSCI U.S. Broad Market Index through June 2, 2013, and the CRSP U.S. Total Market Index thereafter. International stock benchmark returns are adjusted for withholding taxes.

# Important information

Target 2055 Composite Index: An index derived by applying the fund's target asset allocation to the results of the following benchmarks: for international stocks of developed markets, the MSCI EAFE Index through December 15, 2010, the MSCI ACWI ex USA IMI Index through June 2, 2013, and the FTSE Global All Cap ex U.S. Index thereafter; for emerging-market stocks, the MSCI Emerging Markets Index through December 15, 2010, the MSCI ACWI ex USA IMI Index through June 2, 2013, and the FTSE Global All Cap ex U.S. Index thereafter; for U.S. bonds, the Bloomberg U.S. Aggregate Float Adjusted Index; for international bonds, the Bloomberg Global Aggregate ex-USD Float Adjusted RIC Capped Index beginning June 3, 2013; and for U.S. stocks, the MSCI U.S. Broad Market Index through June 2, 2013, and the CRSP U.S. Total Market Index thereafter. International stock benchmark returns are adjusted for withholding taxes.

Target 2060 Composite Index: An index derived by applying the fund's target asset allocation to the results of the following benchmarks: for international stocks of developed markets, the MSCI ACWI ex USA IMI Index through June 2, 2013, and the FTSE Global All Cap ex U.S. Index thereafter; for emerging market stocks, the MSCI ACWI ex USA IMI Index through June 2, 2013, and the FTSE Global All Cap ex U.S. Index thereafter; for U.S. bonds, the Bloomberg U.S. Aggregate Float Adjusted Index; for international bonds, the Bloomberg Global Aggregate ex-USD Float Adjusted RIC Capped Index beginning June 3, 2013; and for U.S. stocks, the MSCI U.S. Broad Market Index through June 2, 2013, and the CRSP U.S. Total Market Index thereafter. International stock benchmark returns are adjusted for withholding taxes.

Target 2065 Composite Index: An index derived by applying the fund's target asset allocation to the results of the following benchmarks: the FTSE Global All Cap ex U.S. Index for international stocks, the Bloomberg U.S. Aggregate Float Adjusted Index for U.S. bonds, the Bloomberg Global Aggregate ex-USD Float Adjusted RIC Capped Index for international bonds, and the CRSP U.S. Total Market Index for U.S. stocks. International stock benchmark returns are adjusted for withholding taxes.

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

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.

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