Enhancing the T. Rowe Price Glide Paths

Higher equity allocations reflect changes in retirement investing

March 2021

KEY INSIGHTS

- We believe that retirement outcomes can be improved by modestly increasing equity allocations at the front and back ends of the T. Rowe Price glide paths.
- Our research suggests plan sponsors and participants can and will accept modest risk increases at certain points of the glide path to seek better outcomes.
- We are not changing equity allocations in the years immediately before and at retirement, when investors appear to be most sensitive to market volatility.

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The T. Rowe Price approach to target date investing has long reflected our view that retirement investors need adequate exposure to growth-oriented assets. Trends in target date investing—and our continued focus on improving our methodology since we launched our first target date strategies in 2002—have only strengthened this belief.

Accordingly, T. Rowe Price is moving to increase equity exposure modestly at the front and back ends of our glide paths, while leaving equity allocations unchanged in the years immediately before and at retirement. These changes began in April 2020, are being phased in over a two-year period, and currently are expected to be completed in the second quarter of 2022, depending on market conditions.

The modifications to our glide paths reflect T. Rowe Price's ongoing analysis of the behavior and preferences of both retirement investors and defined contribution (DC) plan sponsors, as well as recent enhancements to our glide path modeling process, which have given us increased confidence that participants are willing and able to accept modest increases in short-term market risk at points before and after retirement in an effort to achieve better outcomes during retirement.

Over the past two decades, T. Rowe Price has made a substantial investment in the design and assessment of our target date glide paths. Our process seeks a deep understanding of both markets and investor behavior and how those elements potentially may interact over a wide range of market and economic cycles.

Defining the objective is the first step of our process. The objective is informed by the relative focus that a DC plan sponsor places on the trade-offs between key preferences, such as consumption versus wealth sustainability and a lifetime planning horizon versus a primary focus on the few years around retirement.

T. Rowe Price currently offers two different glide paths because we recognize

56%

Share of DC participant balances at retirement still invested in plan accounts one year after retirement, as of 2019.

that different plan sponsors may have different objectives for their target date offerings. The primary objective of the Retirement Glide Path is to help support lifetime income over a lengthy retirement. The primary objective of the Target Glide Path is to seek to limit balance variability around retirement, with a secondary focus on supporting income during retirement.

Although the two glide paths take slightly different approaches, both are built with the view that an adequate retirement strategy must have some focus on income replacement. For example, while the Target Glide Path places a somewhat greater relative emphasis on seeking to mitigate market risk around retirement, it still maintains a substantial allocation to equities and other growth-oriented assets in an effort to help support income needs during retirement.

An Increased Focus on Longevity Risk

The changes we are making to our glide paths are supported by an evolution in plan sponsor and participant preferences. We continue to see both groups increase their focus on long-term income sustainability and place a higher priority on seeking strategies to manage longevity risk.

The reality is many investors face powerful head winds to achieving a comfortable retirement. As the retirement landscape shifts away from defined benefit pensions, future retirees will need to rely more on other income sources, such as their defined contribution plans.

In addition, life expectancies have risen over the past 20 years, meaning today's retirement investors are likely to need an income stream that lasts longer than their currently anticipated time horizons.

- According to the Centers for Disease Control and Prevention (CDC), the conditional average life expectancy of U.S. individuals age 65 increased by two years between 2000 and 2018, from 82.5 years to 84.5 years.[1]
- CDC data also indicate that there is a relatively high probability of individuals living into their 90s, meaning they'll need their retirement savings to support consumption for multiple decades.[2]

Moreover, it is widely understood that many retirement investors are chronically underfunded—they simply aren't saving enough to meet their expected income needs in retirement.

Reflecting these sobering realities, our work with DC plan sponsors shows that many are now overwhelmingly focused on longevity risk as their top priority. Many plans also now prefer that their qualified default investment alternatives be designed to meet the needs of their full, active participant populations.

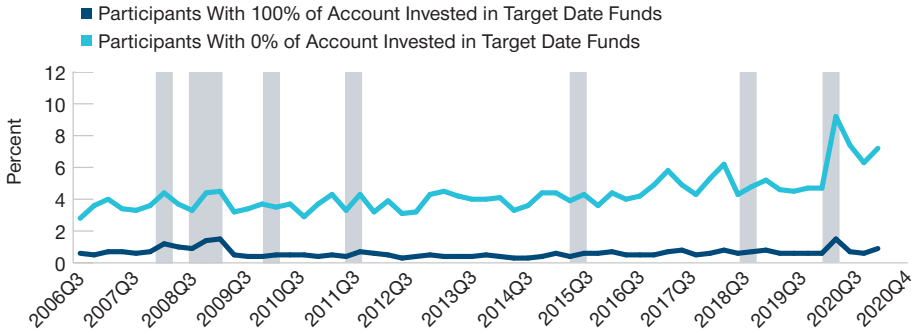
Behavioral changes in the DC space have further strengthened the case for higher long-term equity exposure, in our view. Until fairly recently, many DC plan sponsors assumed that participants would exit their plans at or soon after retirement, rolling their balances over into individual retirement accounts (IRAs). However, data show that retirees now are increasingly more likely to retain assets in their DC plans, while plan sponsors have grown more interested in keeping them there:

- T. Rowe Price's recordkeeping data show that in 2019 over 56% of DC participant balances at time of retirement were still invested in plan accounts one year after retirement, up from 55.2% in 2018 and only 48.4% in 2016.[3]
- A 2020 T. Rowe Price survey found that 55% of larger plan sponsors either preferred to keep retiring

[1] Averaged across both men and women. CDC, *National Vital Statistics Reports*, Vol. 69, No. 12, November 2020. On the Web at: https://www.cdc.gov/nchs/data/nvsr/nvsr69/nvsr69-12-508.pdf.
[2] CDC, *National Vital Statistics Reports*, November 2020.
[3] Among those age 65 or older after 1 calendar year following separation from service.

(Fig. 1) Target Date Participants Less Likely to React to Short-Term Volatility

Percentage of investors who made an allocation change during quarter[1]
Third quarter 2006 through fourth quarter 2020



Source: T. Rowe Price.
[1] Shading represents quarters in which the S&P 500 Index dropped by more than 5%. Based on quarterly data for all DC plan participants in retirement plans administered by T. Rowe Price.

participants in their plan or were currently reconsidering their position on the matter; only 7% reported having an explicit preference that retiring participants roll their balances over to IRAs.[4]

Our insights into participant behavior, as well as improvements in our modeling framework, also give us confidence that most target date participants are less sensitive to market volatility than may be commonly believed. Historically, target date investors have been much less likely than other investors to make allocation changes during market downturns (Figure 1). Importantly, this trend holds for young investors as well as for those approaching and in retirement.

As a recent example, 2020 saw a significant amount of market volatility, both upside and downside, related to the coronavirus and its economic impacts. Equity markets went through a swift and short bear market, followed by a speedy rebound and then a rally at the end of the year. Importantly, our data show that the vast majority of target date investors stayed the course with their investments and thus were likely to end the year with higher account balances than when they began.

Indeed, the target date investors in our data were eight times more likely to keep their investment allocations intact compared with non-target date investors. In our view, this comparison confirms that target date investors are using these investments appropriately for the long haul. To us, the data suggest that modestly higher exposure to market volatility is an acceptable trade-off for participants as they seek to achieve better long-term outcomes in retirement.

Addressing Today's Retirement Challenges

The demographic and behavioral trends described above have only reinforced our view that achieving adequate portfolio growth is critical for most retirement investors. We also believe that the potential benefits of a growth-oriented strategy are likely to outweigh the potential negative impacts of large market declines close to or soon after retirement.[5]

[4] Among sponsors of plans with assets of USD 500 million or more.
[5] The potential benefits of a growth-oriented glide path were examined in a previous T. Rowe Price study. See Jerome A. Clark, Kimberly E. DeDominicis, and Wyatt A. Lee, A Different Perspective on Sequence-of-Returns Risk Around Retirement, T. Rowe Price, April 2020.

> We believe our structural model allows us to apply our insights consistently across the range of glide path problems that we seek to solve.

Historically, the compounding of the equity risk premium—the additional return on stocks relative to bonds—has led to meaningful differences in investment outcomes. Although equities have been more volatile than bond and other fixed income assets over shorter periods, the higher long-term returns associated with equities have facilitated wealth accumulation over the long term.

T. Rowe Price's Glide Path Approach

We believe an effective approach to life-cycle investing must rely upon a deep understanding of both markets and investors, reflecting how those elements potentially can evolve and interact over time horizons spanning several decades and a wide range of market and economic cycles.

In order to properly assess the impact and interaction of these elements, we employ a structural model to help us evaluate and design glide paths. The primary benefit of this model is that it is intended to ensure consistency of our approach.

We recognize that individuals are skillful at using intuition and judgment to solve complex problems, but they are not as effective applying these skills consistently or at scale. We believe our structural model allows us to apply our insights consistently across the range of glide path problems that we seek to solve.

Our evaluation framework is a utility satisfaction model that incorporates key variables that influence glide path design. Accounting for utility gives us the capability to assess and score the level of satisfaction different outcomes provide relative to plan sponsor and participant preferences and objectives.

The first step in understanding how we apply our framework is to understand the primary factors that can influence glide path design:

Capital Markets: These are the assumptions about potential asset class returns that are informed by variables such as economic growth, inflation, and interest rates. The capital markets factor is incorporated through an economic model of the economy and capital markets.

Demographics: These assumptions represent how we model the cash flows—savings and spending needs—that impact glide path design. They include variables such as earnings, savings rates, employer matching contributions, projected Social Security benefits, and assumptions about life expectancy. These inputs are captured using a behavioral model of participant demographic factors. For our proprietary solutions, demographic assumptions are seeded with information from the T. Rowe Price DC recordkeeping platform.

Behavioral Preferences: Our model also incorporates a range of behavioral preferences that allow the model to account for participant and plan sponsor attitudes toward risk, balance depletion, planning horizons, and investment goals. These inputs can be divided into two categories: innate preferences and objectives. Innate preferences are ingrained in individual investors—for example, how do they feel about risk? Objectives are determined by plan sponsors on behalf of participants and are related to investment goals and planning horizons in retirement.

Through the use of Monte Carlo simulation, we use our economic and behavioral models to generate thousands of different potential economic and demographic scenarios.

As discussed previously, defining the objective is the first step in our process. Once the objective is set, we calibrate the behavioral preferences, investment goal, and planning horizon to reflect the objective we are solving. The economic and behavioral models generate thousands of different scenarios. We then use our utility satisfaction model to identify the glide path that robustly maximizes potential utility satisfaction as defined by the behavioral preferences, the plan sponsor objective, and the demographic inputs.

The final step of our process incorporates the judgment of our target date team. While our models are effective at applying the themes and insights of the team consistently across a population of investors, our depth and experience as an investment manager and recordkeeper provide critical balance to our process as we seek to ensure that our model is capturing the potential benefits of our insights in the manner intended and in a way that reflects the needs of our clients. We believe this feedback loop is essential to building and maintaining a robust glide path construction process.

More Robust Glide Path Inputs

Enhancements to our modeling framework make it possible for us to analyze demographic factors and behavioral preferences in more granular detail across participant populations, which, in turn, allows us to better capture the heterogeneity of characteristics and preferences within a given investor population. We have made multiple improvements to our framework, and these improvements collectively have led us to pursue enhancements to our glide paths.

1. **Use of Probability Distributions Instead of Discrete Point Estimates**

   Our perception is that many target date providers currently use simple averages to represent key participant characteristics and behavioral preferences in their glide path models. These averages may be derived from a broad universe of DC plan participants or, in customized solutions, from the participant population of a specific plan.

   Our research suggests that using probability distributions of the key characteristics within a participant population, instead of simple averages, as glide path inputs potentially can do a better job of capturing participant heterogeneity, resulting in more realistic models.

   We believe a distributions-based analysis can better reflect real-world uncertainty in the parameters, where the exact preferences of DC plan sponsors may be difficult or impossible to define for each input.

2. **Solving for a Planning Horizon**

   We now assume everyone lives to a certain age (the median life expectancy) and then apply standard mortality probability after that. Previously, we had assumed some percentage of the population died before the median life expectancy.

   We believe our previous assumption was appropriate from an actuarial standpoint, where mortality risk is pooled. However, we are not addressing an actuarial problem. We are seeking to solve for an individual's planning horizon. This change reflects our perception that participants tend to be more comfortable planning and making sure their expenses are covered up to a certain minimum age.

3. **Wealth Depletion Aversion as an Innate Preference**

   Wealth depletion aversion is an innate preference in the sense that it is ingrained for a chosen individual, is not easy to change, and is not an objective that can be set. Depletion aversion captures an individual's willingness to trade consumption to maintain their level of wealth. Without a depletion aversion, investors could consume all their wealth over their lifetimes.

   Intuitively, we are attempting to capture how much an individual prefers having a positive balance, irrespective of future consumption. The parameter is designed to capture the observed inclination of current retirees toward a preference for avoiding wealth depletion.

4. **Impact of Nondiscretionary Spending in Retirement**

   We recognize that spending needs in retirement are dependent on an individual's salary. Lower-salaried

individuals tend to have larger amounts of consumption tied to nondiscretionary items and thus may have less flexibility to reduce spending in retirement. Therefore, they will need to replace a larger percentage of their preretirement income in order to maintain their standard of living in retirement.

5. Enhanced Capital Markets Modeling

Widening the distribution of possible scenarios has allowed us to simulate a wider variety of economic and financial environments, even relatively unlikely ones. We believe this provides an important stress test for our designs.

In our view, the aggregate impact of the enhancements we have made to our glide path model has been to better capture the complexity of the problem we are seeking to solve and to create a modeling framework that we believe better represents reality.

We believe that more realistic modeling reduces the sensitivity of results to the assumptions for each input; limits more extreme scenarios; and, in general, gives us greater confidence in our model's outputs. Specifically, it provides even stronger reasons for us to believe that DC plan sponsors and participants have the ability to accept additional short-term market risk at certain points along a glide path in order to seek better retirement outcomes.

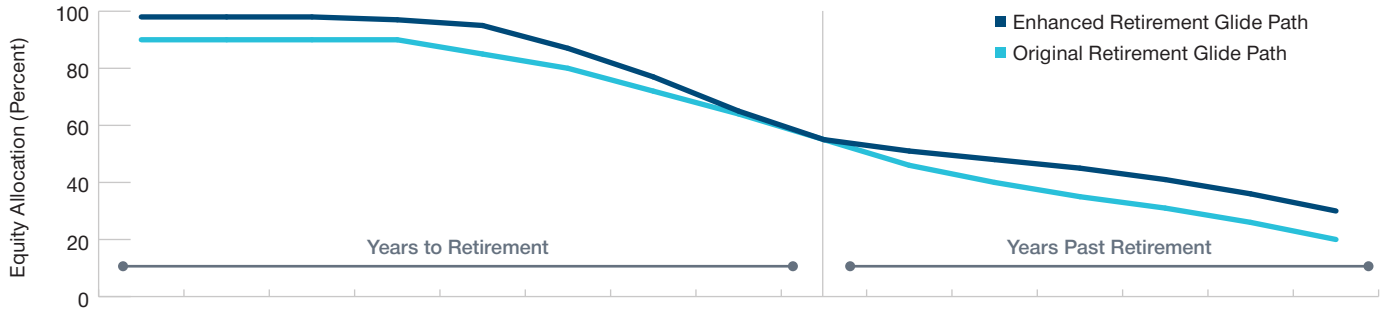
Changes to the T. Rowe Price Glide Paths

Based on the behavioral trends we are seeing and our increased confidence in our model, we have been increasing equity exposure at some points along both our Target Glide Path and our Retirement Glide Path.

- The changes to the Retirement Glide Path will raise the equity allocation at the front end of the glide path to 98% from the current 90%, will hold the allocation at 98% equity until 30 years from retirement (rather than the current 25 years), and will raise the equity allocation at the back end of the glide path to 30% from the current 20%. The equity allocation at retirement will remain at the current 55% (Figure 2).
- The initial equity allocation in the Target Glide Path will be raised to 98% from the current 90% and will remain at 98% until 35 years from retirement rather than immediately starting to roll

(Fig. 2) Increased Exposure to Growth Potential in the Retirement Glide Path

Equity allocations before and after full implementation of enhancements

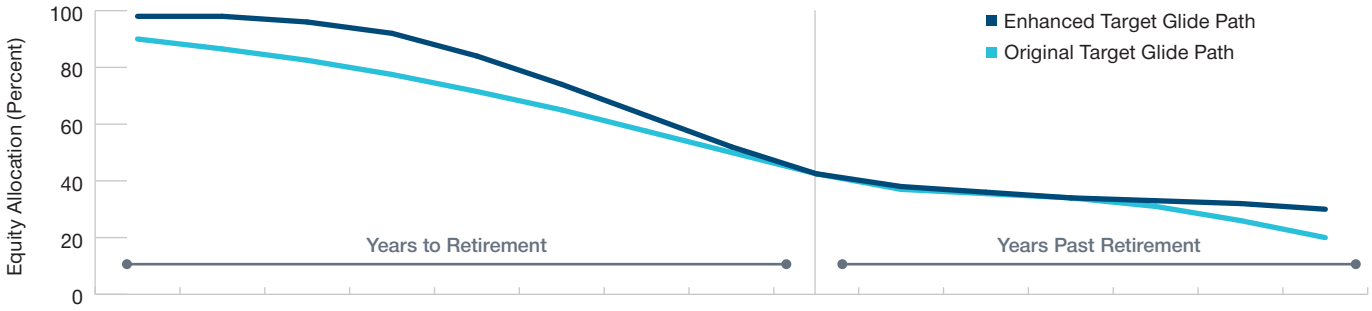


Years	40	35	30	25	20	15	10	5	0	5	10	15	20	25	30
Enhanced	98%	98%	98%	97%	95%	87%	77%	65%	55%	51%	48%	45%	41%	36%	30%
Original	90%	90%	90%	90%	85%	80%	72%	64%	55%	46%	40%	35%	31%	26%	20%
Difference (% Points)	+8.0	+8.0	+8.0	+7.0	+10.0	+7.0	+5.0	+1.0	0.0	+5.0	+8.0	+10.0	+10.0	+10.0	+10.0

Source: T. Rowe Price.

(Fig. 3) Increased Exposure to Growth Potential in the Target Glide Path

Equity allocations before and after full implementation of enhancements



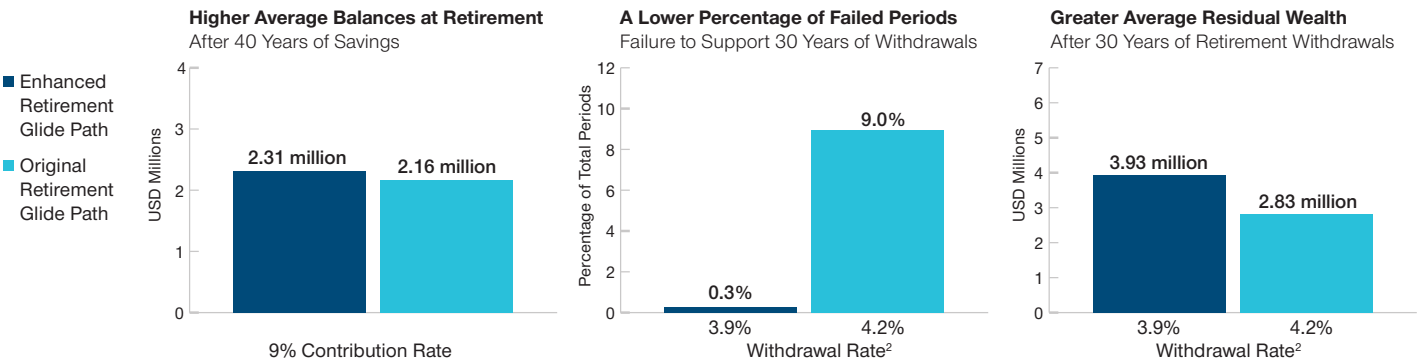
Years	40	35	30	25	20	15	10	5	0	5	10	15	20	25	30
Enhanced	98.0%	98.0%	96.0%	92.0%	84.0%	74.0%	63.0%	52.0%	42.5%	38.0%	36.0%	34.0%	33.0%	32.0%	30.0%
Original	90.0%	86.5%	82.5%	77.5%	71.5%	65.0%	57.5%	50.0%	42.5%	37.0%	35.5%	34.0%	31.0%	26.0%	20.0%
Difference (% Points)	+8.0	+11.5	+13.5	+14.5	+12.5	+9.0	+5.5	+2.0	0.0	+1.0	+0.5	0.0	+2.0	+6.0	+10.0

Source: T. Rowe Price.

(Fig. 4) Higher Equity Exposure Could Have Improved Outcomes

Hypothetical results over rolling historical accumulation and withdrawal periods (rolled monthly)[1]

January 1, 1926, through December 31, 2020



Source: T. Rowe Price.

The results shown above are hypothetical, do not reflect actual investment results, and are not a guarantee of future results. Actual investment results may differ materially.

[1] See Appendix for a description of our historical analysis methodology and assumptions.

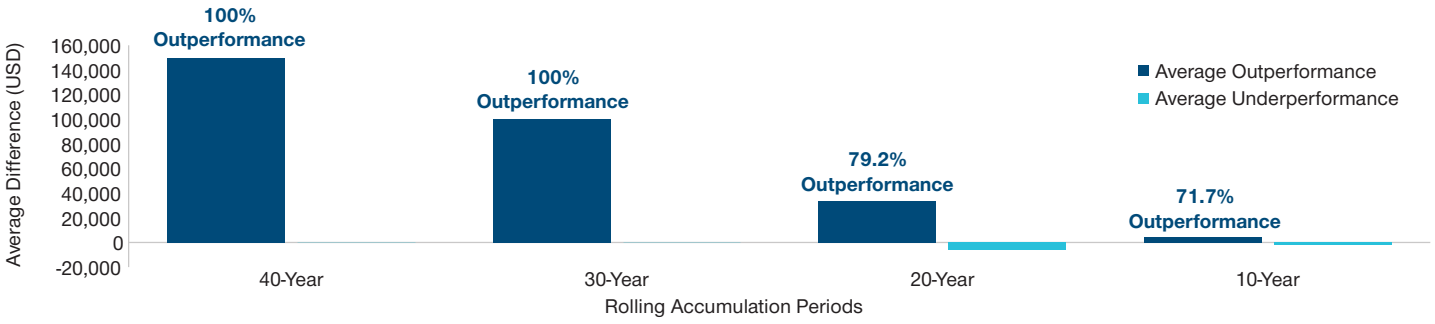
[2] Initial annual withdrawal is the necessary percentage of the balance at retirement in order to generate an approximately USD 90,000 initial withdrawal. Subsequent withdrawals are adjusted for inflation annually.

down as it does currently. The equity allocation at the back end will rise to 30% from the current 20%. The equity allocation at retirement will remain at its current 42.5% (Figure 3).

- We have been implementing these glide path enhancements gradually in a manner that limits the magnitude of equity increases across our differently dated portfolios. Equity levels in portfolios that are currently close to their target dates—and thus most sensitive to market risk—will not be increased. These include the 2020, 2025, and 2030 vintages of the Retirement Glide Path portfolios and the 2005 through 2030 vintages of the Target Glide Path portfolios.

(Fig. 5) Relatively Consistent Potential for Outperformance

Average difference in hypothetical participant balances at retirement, enhanced versus original Retirement Glide Path[1]
Rolling accumulation periods (rolled monthly), January 1, 1926, through December 31, 2020



	40-Year	30-Year	20-Year	10-Year
Minimum (USD)	33,228	8,838	-12,503	-5,741
25th Percentile (USD)	95,693	30,402	2,874	-415
Median (USD)	135,094	73,389	15,093	2,214
75th Percentile (USD)	194,139	156,609	40,722	4,837
Maximum (USD)	330,702	419,840	138,364	16,156

Source: T. Rowe Price.
The results shown above are hypothetical, do not reflect actual investment results, and are not a guarantee of future results. Actual investment results may differ materially.
[1] See Appendix for a description of our historical analysis methodology and assumptions.

Our research and modeling work suggest that the modest increases in equity exposure that we are making in our glide paths potentially can improve postretirement consumption replacement without materially affecting balance variability around retirement, which is when participants typically are most sensitive to such fluctuations. However, there is no assurance that the results of these analyses will be repeated or that they indicate future outcomes of the enhanced glide paths.

We worked with our research and development team to analyze the possible impact on retirement outcomes to illustrate the potential benefits of our enhancements. We looked at historical time periods as well as modeled broader sets of potential scenarios with Monte Carlo analysis.

In both our Monte Carlo and historical analyses, we found that glide paths with higher levels of exposure to growth-oriented assets consistently demonstrated opportunities to improve income replacement metrics with only moderate increases to volatility. For illustrative purposes, we focus here on the results of our historical analysis.

Results of Our Historical Analysis

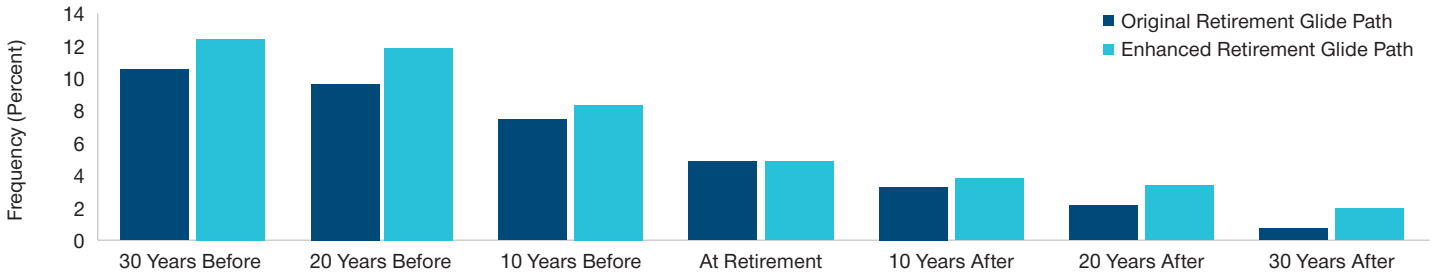
We found that over the period stretching from January 1, 1926, through December 31, 2020, glide paths with higher levels of equity could have improved hypothetical retirement outcomes across longer time horizons.[6] Raising equity exposure at different points along an investor's preretirement and postretirement time horizon could have produced higher balances at retirement, more sustainable withdrawal levels after retirement, and greater residual wealth (Figure 4). The potential for outperformance was relatively consistent across a range of accumulation periods (Figure 5).

[6] See Appendix for a description of our historical analysis methodology.

(Fig. 6) Relatively Small Increases in Potential Short-Term Risk

Hypothetical frequency of a 10% loss over a one-year period[1]

Rolling accumulation periods (rolled monthly), January 1, 1926, through December 31, 2020



	30 Years Before	20 Years Before	10 Years Before	At Retirement	10 Years After	20 Years After	30 Years After
Original Retirement Glide Path	10.5%	9.7%	7.4%	4.9%	3.3%	2.1%	0.7%
Enhanced Retirement Glide Path	12.4	11.9	8.3	4.9	3.8	3.4	2.0
Frequency Increase (% Points)	1.9	2.2	0.9	0.0	0.5	1.2[2]	1.2[2]

Source: T. Rowe Price.

The results shown above are hypothetical, do not reflect actual investment results, and are not a guarantee of future results. Actual investment results may differ materially.

[1] See Appendix for a description of our historical analysis methodology and assumptions.

[2] Does not total due to rounding.

Our analysis also found that the historical benefits of higher equity exposure typically could have outweighed the potential risks. For example, we examined the historical frequency of incurring an annual loss of more than 10% at various points before and after retirement, based on both the original and the enhanced Retirement Glide Paths.

Predictably, we found that higher equity levels could have increased the frequency of short-term loss, but only by relatively small amounts (Figure 6). In addition, the most significant potential risk increases were indicated at the points furthest from retirement—when most retirement investors typically would have extended periods to recover from episodes of market volatility.

In addition to frequency of loss, we examined the magnitude of declines that could have occurred within the equity allocations at each 10-year increment along both the original and the enhanced Retirement Glide Paths. As equity levels increased, so too did the magnitude of potential peak-to-trough declines along the glide path (Figure 7).

While the analysis showed some potential increase in volatility risk, those changes were relatively modest, with most occurring at the points furthest from retirement (30 years and 20 years before retirement), when most retirement investors typically would have a long time to recover from periods of volatility. For investors around retirement, our historical analysis did not suggest an increase in risk. And for those well into retirement, the fact that their overall equity levels were much lower at that stage of the glide path tended to mitigate the impact of market volatility on balances.

It is significant to note that because equity allocations in our glide paths are not being changed at point of retirement, our historical analysis did not indicate a potential increase in risk for investors at that point in their investing life cycles.

Although the historical results discussed previously were based on the application of the enhanced and original allocations in

(Fig. 7) Only Modestly Higher Potential Exposure to Extreme Market Events

Hypothetical 90th percentile of peak-to-trough declines within equity allocations[1]

Five-year rolling periods (rolled monthly), January 1, 1926, through December 31, 2020

	30 Years Before	20 Years Before	10 Years Before	At Retirement	10 Years After	20 Years After	30 Years After
Original Retirement Glide Path	-38.8%	-36.5%	-29.2%	-15.0%	-6.4%	-4.6%	-3.1%
Enhanced Retirement Glide Path	-43.2	-41.7	-32.1	-15.0	-9.3	-6.6	-4.5
Amount of Increase (% Points)	-4.4	-5.2	-2.9	0.0	-2.9	-2.0	-1.5

Source: T. Rowe Price.

The results shown above are hypothetical, do not reflect actual investment results, and are not a guarantee of future results. Actual investment results may differ materially.

[1] See Appendix for a description of our historical analysis methodology and assumptions.

our Retirement Glide Path, similar results were found for the Target Glide Path.

Conclusions

T. Rowe Price has long believed that retirement investors need adequate exposure to equities and other growth-seeking assets as they seek to support their anticipated income needs over what could be a lengthy retirement.

Recent changes in the behavior and preferences of investors and plan sponsors, as well as multiple improvements in our modeling framework, have given us greater confidence that retirement investors can and will accept modest increases in short-term market risk at points outside of retirement in an effort to achieve better outcomes during retirement.

Reflecting these findings, we are raising equity allocations at the front and back ends of our Retirement Glide Path and our Target Glide Path, while leaving equity exposure unchanged in the years immediately before and after retirement.

Our analysis suggests that the enhancements to our glide paths could have improved hypothetical retirement outcomes across rolling accumulation and withdrawal periods spanning more than 70 years of market history. Raising equity levels before retirement could have produced higher balances at retirement, while raising equity levels after retirement could have led to more sustainable withdrawals and greater residual wealth.

Over the long term, we believe higher equity glide path exposure could be beneficial for most retirement investors. Younger investors will have multiple decades to benefit from potential compounding of the equity risk premium and to recover from episodes of market volatility. For investors already into retirement, the modest nature of changes we are making in absolute terms may help mitigate the impact of any short-term market downturns.

Appendix: Historical Analysis Methodology

Our analysis was based on the historical returns that could have been achieved by allocation mixes that mirrored the allocations in the T. Rowe Price Retirement Glide Path. This performance analysis was tracked over rolling 40-, 30-, 20-, and 10-year preretirement accumulation periods (rolled monthly) from January 1, 1926, through December 31, 2020.

Equity returns for the original glide path and the enhanced version both were assumed to track returns on the nominal (i.e., before inflation) returns for the S&P 500 Index during the historical periods analyzed; fixed income returns were assumed to track the nominal returns for the U.S. Intermediate Government Index from 1926 through 1972, the Lehman Brothers (now Bloomberg Barclays) Government/Corporate Index from 1973 through 1975, and the Bloomberg Barclays (formerly Lehman Brothers) U.S. Aggregate Bond Index from 1976 through 2020. These returns were gross of any management fees or other costs that might have been incurred by investors.

Because the historical analysis was intended to reflect the results that potentially could have been achieved by retirement investors, portfolio values were based on assumed contributions by a hypothetical target date participant over the 40-, 30-, 20-, and 10-year accumulation periods. The following starting balances were assumed:

- USD 0 for 40-year accumulation periods;
- USD 40,000 for 30-year accumulation periods;
- USD 65,000 for 20-year accumulation periods;
- USD 110,000 for 10-year accumulation periods.

The assumed starting salary was USD 30,000, and the assumed starting contribution rate was 9% of salary, deposited in 12 equal monthly installments. Salary and contribution amounts were adjusted annually by the percentage change in the Consumer Price Index for All Urban Consumers (CPI-U), not seasonally adjusted.

Based on these assumptions, we calculated the historical performance results that might have been achieved by the allocation mix in the Retirement Glide Path as of December 31, 2020, and by the allocation mix in the Retirement Glide Path once the enhancements have been fully implemented.

Hypothetical retirement outcomes for the enhanced Retirement Glide Path were measured using these metrics:

- **Balances:** Portfolio values at retirement, averaged across all the historical rolling accumulation periods covered by our analysis.
- **Percentage of failed periods:** The share of all rolling 30-year historical withdrawal periods in which a glide path was unable to support 30 years of postretirement spending under various assumed spending policies. Initial annual withdrawal was the necessary percentage of the balance at retirement in order to generate an approximately USD 90,000 initial withdrawal. Subsequent withdrawals were adjusted for inflation annually.
- **Residual wealth:** The remaining portfolio balance after 30 years of withdrawals under various assumed annual spending policies, averaged across the historical rolling 30-year withdrawal periods covered by the study.
- **Probability of loss:** The historical probability of suffering a loss of 10% or more over a one-year period measured in 10-year intervals along the glide path.
- **Peak-to-trough declines:** The 90th percentile peak-to-trough reductions in asset balances measured in 10-year intervals along the glide path.

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