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A TIAA Company

## TIAA-CREF LIFECYCLE FUNDS:

# Methodology and design

## INTRODUCTION

*Target-date funds have rapidly become an essential tool to help plan sponsors prepare their employees for retirement. These funds – representing a category of asset allocation funds – are designed to meet a range of needs: Broad investment diversification, risk management, and asset allocation that become more conservative as employees approach retirement. The simplicity of target-date funds offers a solution for many employees seeking professional management of their investments, and others who may be overwhelmed by investment choices or unengaged. Available to serve as a plan's default option, these funds offer fiduciaries reassurance that even employees who avoid any decision can still receive the benefits of their retirement plan.*

But target-date funds are not all the same – their design and impact on retirement readiness can vary significantly. With rapid adoption and widespread usage, particularly among younger employees, plan sponsors have a vital interest in understanding key differences and choosing the product best suited to their employees.

Nuveen's TIAA-CREF Lifecycle series includes a total of 12 funds: 11 target retirement date funds at five-year intervals for retirement dates 2010 through 2060, and a retirement income fund for those in retirement. These funds invest in a carefully constructed selection of equity, fixed income and direct real estate funds, providing a diversified, professionally managed portfolio. The overall asset allocation of each Lifecycle Fund evolves as each fund approaches and continues through its target retirement date, reaching a final "landing" allocation 10 years after retirement.

One of the key differentiators of the Lifecycle Funds is the firm's long history of managing retirement savings and providing for retirement income. Nuveen's TIAA Investments has been managing asset allocation strategies for multiple decades and providing for retirement income to over five million retirement participants, allowing the Lifecycle Investments team to leverage much of the expertise, modeling, analysis, and actuarial and mortality guidance in the development and refinement of the Lifecycle Funds.

## RETIREMENT INVESTMENT SOLUTIONS

Today, the Retirement Investment Solutions team, which houses our Lifecycle portfolio management team members, is able to harness our legacy in the retirement space to bring about industry leading retirement solutions. The Retirement Investment Solutions Portfolio Management team includes:

### Portfolio Management

**Hans Erickson**
Senior Managing Director,
Head of Solutions Portfolio Management

**Investment experience:** 31
**Location:** San Francisco, CA

**John Cunniff**
Managing Director, Head Portfolio Manager,
Retirement Investment Solutions

**Investment experience:** 27
**Location:** New York, NY

**Steve Sedmak**
Vice President, Portfolio Manager, Retirement Investment Solutions

**Investment experience:** 18
**Location:** New York, NY

The Retirement Investment Solutions team sits within Nuveen Solutions, a group spanning over thirty individuals, responsible for delivering outcome-oriented insights, all-in-one products and custom mandates. The team benefits from the exchange of ideas with the broader Solutions Portfolio Management team and leverages the Solutions Research Analysts across Equities, Credit, Interest Rates & Currencies, Alternatives, Capital Market Assumptions and Underlying Fund Allocation. Additionally, the Nuveen Solutions Analytics and Quantitative Research Group offers the Retirement Solutions team support with quantitative research and investment strategy development as well as risk monitoring, including portfolio construction, risk modeling, manager research and data analytics.

### Asset Allocation Committee

While members of the Retirement Investment Solutions Team are the primary decision-makers for the Lifecycle Funds, all changes affecting strategy, asset allocation or product design are vetted through an approval process with the Lifecycle & Lifecycle Index Asset Allocation Committee. In addition, the Funds' Board of Trustees is apprised of all key decisions.

Specifically, with respect to the Asset Allocation Committee, the committee oversees strategic enhancements and tactical asset allocation decisions for the Lifecycle Funds. The members of the committee, along with those individuals providing input to the committee, discuss the recommendations put forth by the portfolio management team and make ultimate decisions on strategic glidepath changes, underlying fund allocation changes as well as tactical decisions.

### Lifecycle & Lifecycle Index Asset Allocation Committee

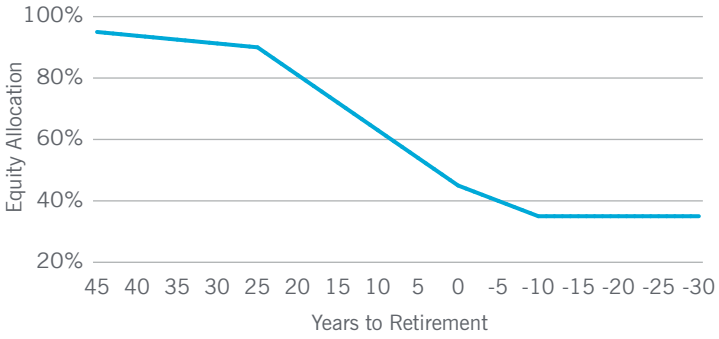
| | |
|---|---|
| **Chair** | Hans Erickson, Head of Solutions Portfolio Management |
| **Members** | • John Cunniff, Portfolio Manager, Head of Retirement Solutions<br>• Steve Sedmak, Portfolio Manager, Retirement Solutions<br>• Jyh-Huei Lee, Research Analyst<br>• Tom Salopek, Research Analyst<br>• Brian Nick, Chief Investment Strategist |
| **Oversight of** | • Strategic allocation enhancement recommendations<br>• Tactical asset allocation program (active Lifecycle) |
| **Input from** | • Senior leaders from Global Investments platform<br>• Head of Public Market Risk<br>• Underlying Portfolio Managers |

## GLIDEPATH DESIGN

Congruent with our Firm's legacy, the Lifecycle investment philosophy emphasizes how best to equip investors to achieve favorable retirement outcomes. Reflecting this outcome-based perspective, we seek to balance market risk (depreciation of asset value due to declines in the market), inflation risk (erosion of purchasing power of assets due to inflation) and longevity risk (the risk of running out of money in retirement). To do this, our methodology aims to optimize results under a wide range of possible market scenarios, including both "normal" (high-probability) and extreme (tail risk) events that are statistically less likely to occur. Moreover, our modeling assumptions consider not only average or expected investment returns, but also the distribution of anticipated returns at different points over the course of an investor's time horizon as well as the likelihood of maintaining various income amounts in different stages of retirement. In our view, this approach to portfolio construction makes it more likely that individuals will be able to "stay the course" in pursuing their retirement investment strategy.

An important feature of any target-date investment is the structure of the glidepath, or planned progression of asset allocation changes over time. As with most target date funds, the Lifecycle Funds' start with a relatively high allocation to riskier assets (e.g. equities) for young individuals, and shift their asset mix to become more conservative by increasing their allocation to lower volatility assets (e.g. bonds) as the funds move closer to their target retirement date. In addition to equities and fixed income, Lifecycle Funds also include exposure to direct commercial real estate.

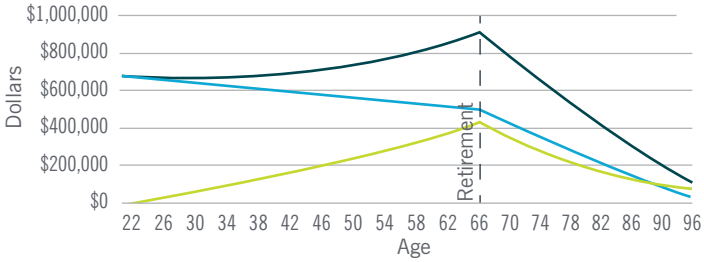
### Exhibit 1: Equity glidepath




This declining equity exposure along the Lifecycle Funds' glidepath is based on a Human Capital and Financial Capital (HC/FC) framework. Human Capital, defined as the net present value of all expected future earnings, inclusive of social security, is highest for young investors. As a person's career progresses, the time available to earn income declines, resulting in a gradual reduction of human capital. In contrast, financial capital (an individual's accumulated wealth in stocks, bonds and other investment assets) is generally lower for younger people and grows over time.

Exhibit 2 below demonstrates how human capital and financial capital contribute in different proportional amounts to an individual's total capital over the course of one's lifetime.

### Exhibit 2: Sample Human capital/Financial capital chart




Nuveen, December 2017.

For the purposes of saving for retirement, the value of human capital can be estimated throughout an individual's lifetime based on the expected number of remaining working years, salary, contribution rates, the percent of salary replaced by Social Security, and mortality rates. Compared to human capital, financial capital levels respond rapidly to news and market information. Given human capital's lower sensitivity to market-related events, its risk characteristics are considered to be closer to that of fixed income assets than to equity assets. Since younger investors—those with target retirement dates further into the future— have relatively high levels of human capital, they are able to take on greater investment risk (i.e., higher equity allocations). However, as they age and move closer to retirement, investors require a more conservative portfolio (i.e., higher fixed income allocations) to offset their declining

human capital. As a result, the glidepath's key characteristic is its downward sloping equity exposure over time. The HC/FC framework helps determine the shape and slope of the glidepath.

Another feature of the Lifecycle Funds is its "through retirement" glidepath, in which its asset allocation mix evolves both during the working years, when an individual is accumulating assets (the accumulation phase), and during the retirement years, when an individual is withdrawing assets (the drawdown income phase). We believe this post-retirement glidepath is well-suited for those that may not make an active investment decision at retirement and also can be appropriate for those that may consider other investment options at retirement but choose to remain invested in the Lifecycle Funds. We encourage all participants to review their savings goals and investment options as they approach retirement. For those that continue to invest in the Lifecycle Funds during retirement years, we have designed the post-retirement glidepath to allow for an extended period of systematic withdrawals while reducing the likelihood of depleting resources over the course of retirement. We believe that this "through retirement" glidepath is more appropriate than a "to retirement" glidepath that may not represent an effective strategy for those remaining invested in target date funds during their retirement years.

## GLIDEPATH METHODOLOGY

The Lifecycle Funds glidepath has been structured with the goal of replacing an investor's income in retirement after having consistently saved during their working years.

As noted above, the HC/FC framework informs the overall asset allocation mix along the glidepath. In order to select the strategic asset allocation along the glidepath, the Retirement Investment Solutions team models out savings assumption (Human Capital) and long-term expected returns for various asset classes (Financial Capital). As part of their research effort, the Retirement Investment Solutions team:

- Evaluates optimization tests based on the HC/FC investment framework, leveraging a mean-variance optimization model
- Conducts Monte Carlo simulations of individuals saving during their working years in the Lifecycle Funds and generating income through systematic withdrawals in retirement

The selected glidepath is believed to be appropriate for a large majority of our investors.

### Savings assumptions

The ideal glidepath incorporates the changing human capital of an individual over their working years and in retirement, taking into account reasonable assumptions for starting salary, raises, contributions and retirement age (among other inputs), as shown in Exhibit 3.

### Exhibit 3: Assumptions

| Variable | Assumptions |
|---|---|
| Starting age/Retirement age | 22 yrs / 66 yrs old |
| Starting salary | Census Bureau median by age |
| Salary increase | 2.2% (based on inflation) |
| Contribution rate | Median by Age Cohort ranging from 9.3 to 13.7% (inclusive of employee contributions and employer match) |
| Mortality rates | Society of Actuaries |
| Social Security Replacement Rate | approximately 40% |

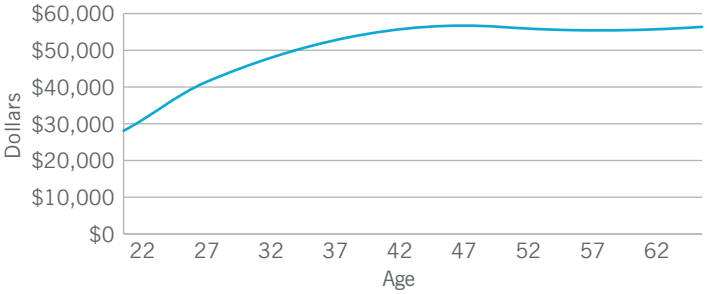
**Start working:** The Retirement Investment Solutions team considers a person who begins saving for retirement at age 22.

**Retirement age:** The Retirement Investment Solutions team's modeling assumes age at retirement is 66 years old. This is consistent with the age at which individuals can receive full Social Security benefits. The team updates this annually based on Social Security Administration data.

**Salary:** The Retirement Investment Solutions team's modeling utilizes the median personal income by age cohort according to annually updated data from the U.S. Census Bureau. Currently, the median salary at age 22 is $28,111, and at age 66 it is $57,208. In the simulations,

salary is assumed to follow this path over a participant's working life. We assume the dollar amounts grow with inflation, but the shape of the curve remains the same (parallel shift in the curve) until new data is reported.

### Exhibit 4: Salary (Current $)




Source: US Census Bureau, Current Population Survey, Personal Income in the United States:2017, Released September 2018

**Inflation rate:** Our long-run inflation assumption is based on the latest forecast provided by the Society of Professional Forecasters, which is administered by the Philadelphia Federal Reserve Bank. The current consensus forecast for the average inflation rate expected over the next 10 years is 2.2%.

**Contribution rate:** The Retirement Investment Solutions team's modeling uses median total contribution rates (inclusive of employee contribution and employer match). The employee contributions are modeled by age cohort. Research has shown that savings rates tend to gradually increase over the working years. The current savings rate ranges from 9.3% for young individuals (under 25) to 13.7% for individuals closest to retirement (over 65). These total contribution rates combine the average individual savings rates by age cohort (based on Vanguard's annual survey "How America Saves") with the average employer contribution match (based on data from the Plan Sponsor Council of America Annual Survey of Profit Sharing and 401(k) Plans). Model inputs are updated regularly as new data is published.

**Life expectancy:** Our modeling uses mortality tables from the Society of Actuaries. The data reflects the probability of death for an individual at specified ages. We average male and female mortality data. We consider retirement drawdown scenarios spanning 30 years or longer during retirement.

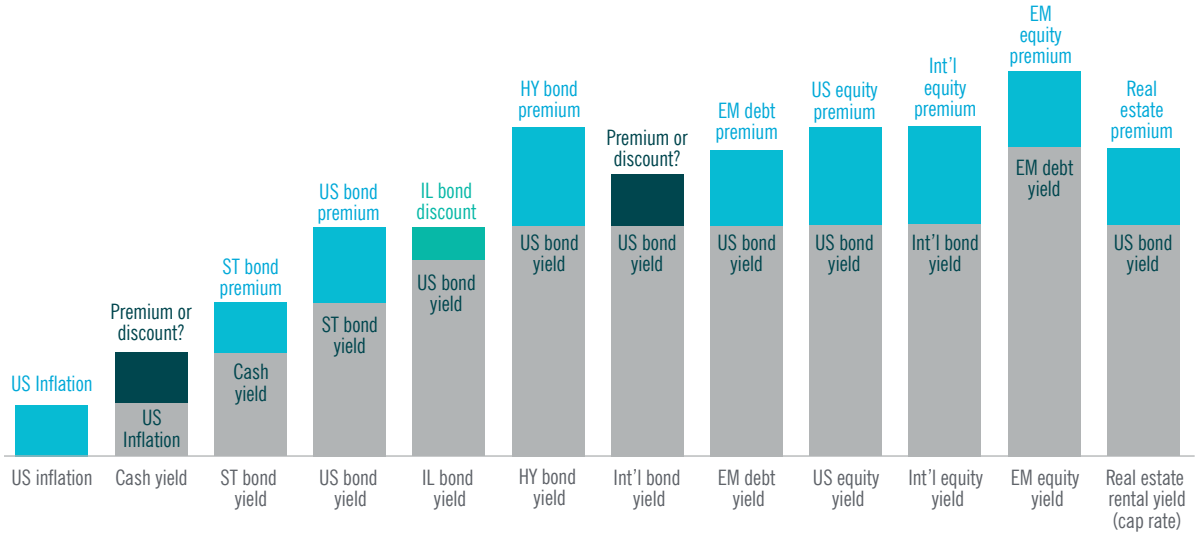
**Social Security replacement rate:** Replacement Rates for Hypothetical Retired Workers (updated annually in June/July), scaled for medium earnings. The social security replacement rate, reflecting the percentage of preretirement income that Social Security benefits replace, is added to withdrawal rate to illustrate the total percentage of working income received in retirement.

## Proprietary asset class expected returns

On a quarterly basis, Solutions research analysts, working in concert with the Solutions Investment Committee and the Retirement Investment Solutions team, generates a series of capital market assumptions across relevant asset and sub-asset classes using our analysis of premia, defined as asset yields in excess of a risk-free rate (or less riskier assets). The forecasted expected returns are utilized in our investor simulation models, which are integral to the design of the strategic asset allocations for the Lifecycle Funds' glidepath. These long-term expected returns are also important inputs into our tactical asset allocation process discussed on page 15.

The capital market premia process follows a building block approach that considers current market information such as inflation, bond yield, earnings yield, risk premia, earnings payout, and earnings growth. The analysis generates return estimates for various time horizons, one-year, 10-years, up to 75 years, reflecting our long term approach to helping investors achieve their retirement goals.

**Exhibit 5: Relationship between Premia and Yields**




The fundamental elements in the process are the premia (or discounts) of assets, defined as the "excess yield" needed to compensate an investor for taking on the additional perceived risk of that asset class. The graph above shows the relationship between premia and yields.

The premium of each asset follows a mean-reversion process. It moves from the current premium toward our long-run view. Yields are derived from premia. We start with estimates of how inflation may evolve over time, which is sourced from the Survey of Professional Forecasters (published by the Federal Reserve Bank of Philadelphia). This is followed by our estimation for cash premium (or discount) over time. Cash yield is then calculated as the sum of inflation and cash premium. We repeat this exercise for other assets, e.g., estimating short-term bond (ST Bond) premium and deriving short-term bond yield as the sum of the short-term bond premium and cash yield; then next estimating US bond premium and deriving US bond yield as the sum of the bond premium and short-term bond yield.

For riskier assets, such as inflation linked bond (IL Bond), high yield bond (HY Bond), international bond (Intl Bond), emerging market debt (EM Debt), US equity, and real estate, their premia are defined as the differentials between corresponding yields and the US bond yield. Building on this approach, the premium of international equity (Intl Equity) is measured as the difference between the international equity forward earnings yield and the international bond yield. Similarly, the premium of emerging market equity (EM Equity) is defined as the difference between the emerging market equity forward earnings yield and the emerging market debt yield. For any period, fixed income asset returns are computed based off yield data. Equity and real estate returns are computed based off earnings yield and earnings growth rates.

## Glidepath design metrics – analysis of simulated outcomes

To achieve the desired goal of balancing market risk, inflation risk and longevity risk, the Retirement Investment Solutions team performs Monte Carlo simulation analyses of the Lifecycle Fund glidepath. The purpose of the Monte Carlo analysis is to consider a range of possible outcomes for the selected glidepath under a variety of market conditions. The analysis accomplishes this by simulating an individual investor in his or her age-appropriate target-date glidepath during the accumulation years and then making systematic withdrawals during the retirement years. In total, the model generates 20,000 sequences of returns over a 74-year period – covering the complete savings and retirement time horizons (from age 22 through age 96).

As part of this analysis, the Retirement Investment Solutions team examines outcomes at and in retirement to assess an individual's ability to meet retirement income objectives. The following three metrics are measured:

1. **Range of potential savings outcomes on the date of retirement**

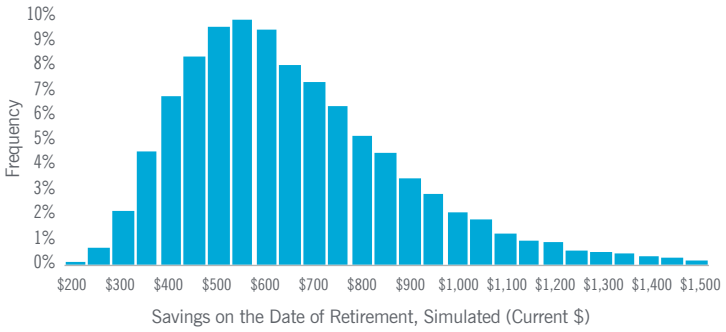
   This measure of retirement wealth is used to estimate the likelihood that a Lifecycle Fund investor's projected savings accumulation on the retirement date (i.e. nest egg) is of sufficient size to support an extended period of regular withdrawals over the course of retirement without depleting savings. For these simulations, the team examines not only the median outcome, but also a full range of potential nest egg outcomes inclusive of both positive and negative events. Tail risk, the likelihood of unusual market events (more than 3 standard deviations), is also a consideration. Throughout the analysis, return outcomes are measured in relation to the level of an investor's projected accumulated savings relative to projected ending salary. The bar chart below portrays the distribution of potential savings accumulations on the retirement date. The table provides the median outcome, as well as the top (positive event) and bottom (negative event) decile outcomes in terms of both total dollars accumulated and as a percentage of the assumed ending salary on the retirement date.

2. **Potential volatility of the portfolio under short-term market movements on the date of retirement**

   After the dramatic volatility during the Credit Crisis in 2008, the Retirement Investment Solutions team decided to further refine its investment process to better assess the potential riskiness of the portfolio under short-term market movements on the date of retirement. We recognize the need to balance the long-term goal of remaining properly invested in a diversified portfolio that can generate sufficient income during the drawdown phase in retirement, with the short-term goal of having a portfolio that can withstand the volatility of a market crisis without causing investors to exit their Lifecycle Funds portfolio in a panic if such an event were to occur. While we offer a through retirement glidepath, we recognize that some of our investors may sell their Lifecycle Fund on the date of retirement and invest in other vehicles. These exiting investors will be exposed to the particular value of the market on their retirement date. For these reasons, we chose to add the additional metric of estimating the worst possible 12-month

## Exhibit 6: Nest egg at retirement

*(Monte Carlo simulation Outcomes in $,000)*



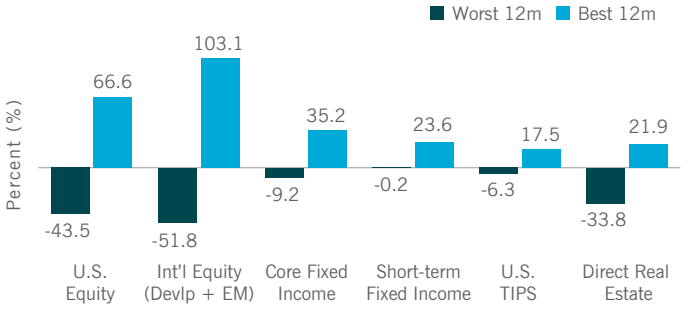

For illustrative purposes. The projections or other information generated by Monte Carlo Simulation regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results and are not guarantees of future results. Please see the disclosures at the end of this whitepaper for additional important information.

| | Accumulated savings at retirement | Multiple of ending salary |
|---|---|---|
| Top decile outcome | $1,035,587 | 18.1x |
| Median outcome | $626,309 | 10.9x |
| Bottom decile outcome | $385,011 | 6.7x |

This hypothetical illustration does not represent any particular investment. Numbers in this chart represent potential accumulated savings (in today's dollars), and as multiples of an investor's ending salary at retirement. For example, an investor on the TIAA-CREF Lifecycle glide path would accumulate assets equal to 10.9 times his or her ending salary over a 45 year investment period.

performance of the Lifecycle Funds on the date of retirement. We measure this by considering the historically worst 12-month performance for each of our asset classes together with our forward-looking estimates of asset class volatility. The chart below shows the historical range of one-year returns for each of the six major asset classes used in the Lifecycle Funds.

### Exhibit 7: Range of One-Year Returns by Asset Class




Source: Factset and Bloomberg, with REA/RPF compiled from internal data. Data as of 30 Sep 2018. Asset classes measured beginning 1/31/1970 for US Equity, Int'l Equity and Core Fixed Income; 2/29/1976 start date for Short-term Fixed Income; 2/28/1999 for U.S. TIPs; 11/30/1995 for Direct Real Estate.

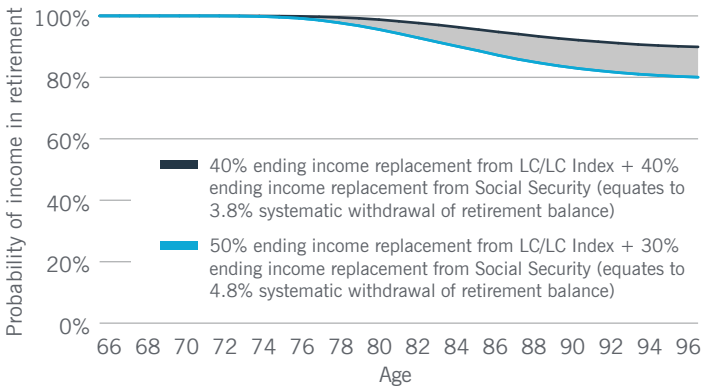
### 3. Probability of having income for one's lifetime in retirement if one pursues a systematic withdrawal program

The third key metric we measure is the probability of the Lifecycle Funds glidepath to be able to generate income for an individual's lifetime in retirement via a systematic withdrawal program. We acknowledge that our participants may have other sources of income in retirement, the most likely of which would be Social Security benefits. Additional simulations are run looking at income replacement ratios for each hypothetical investor's lifetime, measuring the probability of being able to meet certain income thresholds across various stages of retirement. In these cases, we not only simulate market returns, but also factor in the growing life expectancy of the U.S. population.

The chart to the right reflects the likelihood (probability) that an investor will be able to replace from 40% to 50% of their ending salary with a systematic withdrawal program from the Lifecycle Fund. An additional 40% (in the case of the 40% systematic withdrawal scenario from Lifecycle) or 30% (in the case of the 50% systematic withdrawal scenario from Lifecycle) is added from social security payments, making the total income replacement rate 80% of one's ending salary. This equates to a roughly 4% systematic withdrawal rate of an individual's nest egg.

Initially, all scenarios show success in the early years after retirement as there is sufficient nest egg savings to meet withdrawal requirements irrespective of market conditions. But as an individual approaches retirement, in several of the more stressed scenarios, some of the instances start to "fail" showing an inability to meet the 80% replacement goal. By age 96, our scenarios show that we still have an 80%-90% likelihood of being able to replace 80% of an individual's ending salary across the various market scenarios.

### Exhibit 8: Probability of Income in Retirement*



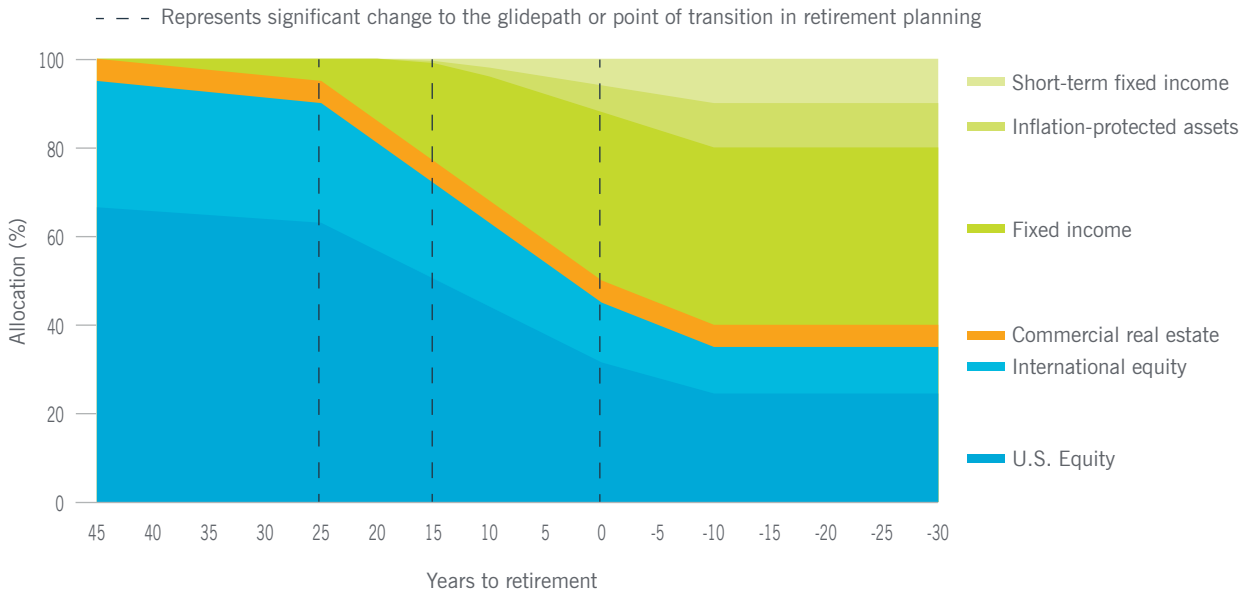

*Assumes 40% income replacement from Lifecycle plus prevailing Social Security replacement rate. 81.1% reflects the percent of ending pre-retirement salary that would be replaced, which also equals a 3.8% annual withdrawal rate from the median retirement accumulation balance.

When considering a change to the glidepath, such as adding a new asset class or altering the shape of the glidepath, the Retirement Investment Solutions team examines its impact on all three measures described above: the distribution of outcomes, the worst 12-month analysis, and the probability of sustaining income objectives throughout retirement.

## PLANNED PROGRESSION OF ASSET ALLOCATION CHANGES

The glidepath for the Lifecycle Funds (active series), both in graphical and tabular format, is shown below.

### Exhibit 9: TIAA-CREF Lifecycle Funds glidepath




| Years to retirement | U.S. Equity | Int'l Equity | Direct Real Estate | Fixed Income | Short-Term Fixed Income | Inflation Protected Assets |
|---|---|---|---|---|---|---|
| 45 | 66.5% | 28.5% | 5.0% | 0.0% | 0.0% | 0.0% |
| 40 | 65.6% | 28.1% | 5.0% | 1.3% | 0.0% | 0.0% |
| 35 | 64.8% | 27.8% | 5.0% | 2.5% | 0.0% | 0.0% |
| 30 | 63.9% | 27.4% | 5.0% | 3.8% | 0.0% | 0.0% |
| 25 | 63.0% | 27.0% | 5.0% | 5.0% | 0.0% | 0.0% |
| 20 | 56.7% | 24.3% | 5.0% | 14.0% | 0.0% | 0.0% |
| 15 | 50.4% | 21.6% | 5.0% | 23.0% | 0.0% | 0.0% |
| 10 | 44.1% | 18.9% | 5.0% | 28.0% | 2.0% | 2.0% |
| 5 | 37.8% | 16.2% | 5.0% | 33.0% | 4.0% | 4.0% |
| 0 | 31.5% | 13.5% | 5.0% | 38.0% | 6.0% | 6.0% |
| -5 | 28.0% | 12.0% | 5.0% | 39.0% | 8.0% | 8.0% |
| -10 to -30 | 24.5% | 10.5% | 5.0% | 40.0% | 10.0% | 10.0% |

At 45 years to the target retirement date, a Lifecycle Fund begins with a 95% allocation to equity, and a 5% allocation to direct real estate. From a HC/FC framework perspective, this beginning asset allocation reflects the greater human capital and longer time horizon of investors in their 20's and 30's. The allocation to direct real estate is held steady at 5% throughout the glidepath as the unique attributes of the asset class benefit the portfolio throughout the investment horizon.

Over the first 20 years of the glidepath, the equity allocation is very gradually reduced by 0.25% per year, and replaced by an offsetting fixed-income allocation. Our research shows, at about 25 years from retirement, the decline in human capital requires the portfolio of financial capital to become increasingly more conservative, thus the rate of reallocation of assets from equity to fixed-income accelerates to 1.8% per year. This continues until the target retirement date, as which point the allocation to equity, fixed income and direct real estate is 45%, 50% and 5%, respectively.

The Lifecycle Funds have what is known as a "through retirement" glidepath. The asset allocation mix continues to evolve 10-years post the target retirement date as the individual begins to withdraw assets (the drawdown income phase). This portion of the glidepath was determined to reflect consideration of the need for capital appreciation as well as income in the retirement years. The allocation of the Lifecycle Funds during this stage of the glidepath is particularly important given the growing life expectancy of the U.S. population, and the need to balance market, inflation and longevity risk.

During the initial years of retirement (first 10 years), equity exposure is further reduced by 1% per year and fixed income exposure is increased by an offsetting amount, while direct real estate exposure is maintained, until a final allocation of 35% equities, 60% fixed income and 5% direct real estate is reached 10 years after the target retirement date. The steepness of the post-retirement glidepath is reduced from 1.8% per year to 1% per year, to continue to maintain sufficient investment in equities to address continued longevity risk in the early years of retirement. A steep decline in the equity allocation, particularly during a time when savings contributions are no longer expected, could result in locking in large losses if a market volatility event were to occur as the portfolio may not have enough equity to take advantage of a rebound in the markets.

To reduce trading costs and to limit potential exposure to large single-day market movements, the transition from one target asset allocation to the next is carried out over a long time period, making use of available daily fund cash flows to the extent possible to realize the desired change in allocation.

## COMPOSITION OF PORTFOLIO OF UNDERLYING INVESTMENTS

The asset allocation strategy and selection of underlying investments for the Lifecycle Funds has been determined on the basis of their contribution to return outcomes and volatility management during periods of savings and over the course of an individual's retirement. When considering the composition of funds to ultimately include within the equity, fixed-income and direct real estate asset classes, we categorize funds into one of six market sectors:

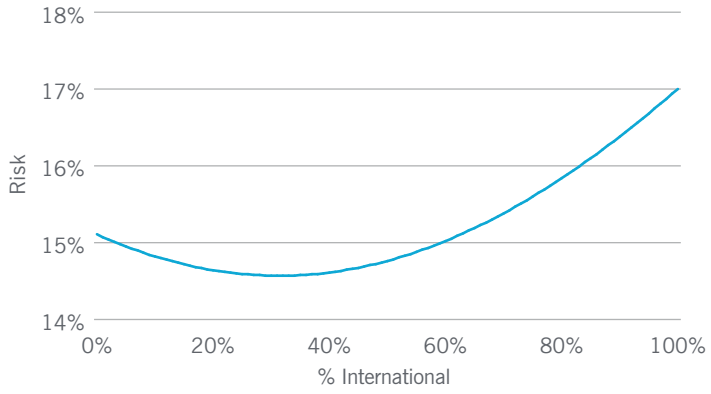
- Domestic equity
- International equity (including both developed and emerging markets)
- Fixed income (including core, core plus, international bond, high yield and emerging-markets debt)
- Short-term fixed income
- Inflation-protected assets
- Direct real estate

## Equity portfolio composition

The allocation to equities within each Lifecycle Fund is divided among domestic and international equities, with a split of 70% domestic and 30% international as a percentage of total equity assets. The international equity component is inclusive of both developed- and emerging-markets equities across market capitalization ranges. While equity markets around the globe have become more correlated, opportunities to benefit from international diversification continue to exist. Based on studies covering a range of time periods, the Lifecycle Funds selected a level of international diversification associated with minimizing the volatility of an equity portfolio. Exhibit 10 below shows the overall risk of an equity portfolio is particularly low when international exposure is in the 25% to 35% range, based on monthly returns from 1979 through December 2017. As such, we believe that 30% is an appropriate level of international exposure.

### Exhibit 10: Portfolio risk as function of % International equity (1979-2017)

*Russell 3000® for U.S., MSCI ACWI ex-USA IMI for international*

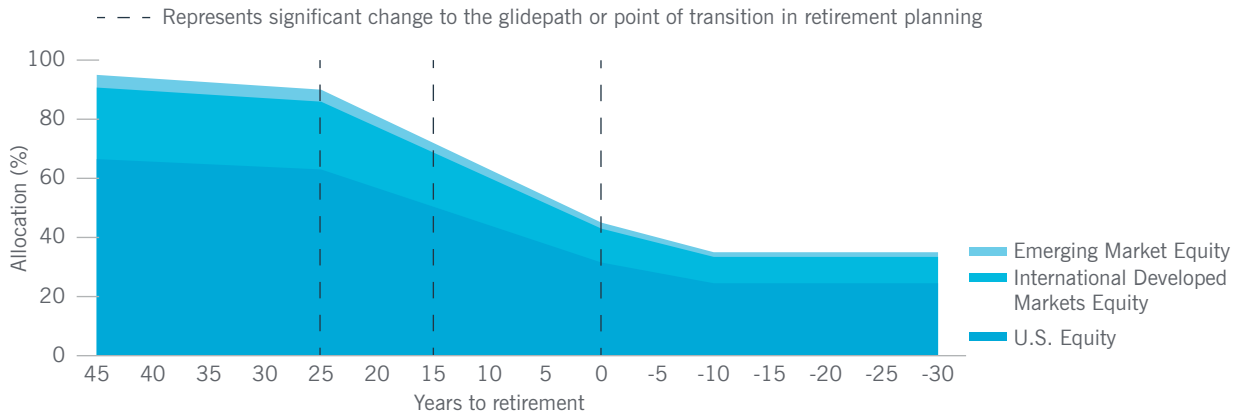



Within the two equity market sectors (domestic and international), the Lifecycle Funds seek to maintain diversified, style-consistent exposure across the glidepath. While the overall equity allocation is reduced as the investor moves towards retirement, the proportion of the total equity exposure invested in each of the sub-asset classes remains constant. In our experience, the risk and return profiles of the various size and style segments of the equity markets are not consistent over time. For instance, certain segments of the equity market that have "historically" been touted as lower volatility have been shown to experience large rises in valuations and then extended periods of underperformance. The markets have not consistently favored one investment style versus another during periods of volatility. As such, the Lifecycle Funds strategically maintain broad exposure to all segments across the glidepath preferring to remain diversified and participate regardless of which style the market may be favoring at any given point in time. The Lifecycle Funds may, however, tactically overweight or underweight certain segments of the market for short periods of time if significant market dislocations are detected. Further details on our tactical asset allocation program are provided on page 15.

The selection and relative weightings of the mutual funds in the domestic equity market sector are designed to represent an overall exposure similar in market capitalization (large-, mid- and small-cap stocks), style (growth- and value-oriented stocks), and risk characteristics of the broader domestic equity market, as represented by the Russell 3000 Index. Similarly, the international equity portion provides exposure to developed and emerging-markets foreign equities, and is designed to provide overall regional and market capitalization exposure similar to stocks

contained in the MSCI ACWI ex-USA Investable Market Index (IMI). The Lifecycle Funds Equity glidepath is shown below:

## Exhibit 11: Equity sub-asset class glidepath




### EQUITY PORTFOLIO CONSTRUCTION — ALPHA DIVERSIFICATION

The Lifecycle Funds invest in a range of domestic and international equity funds, encompassing a variety of approaches to active management, including both fundamental and quantitative stock selection techniques. Fundamentally-managed funds assess a company's health based on expectations of revenue, earnings, cash flow, and other financial and economic indicators. In contrast, quantitatively-managed funds use mathematical models that examine factors such as valuation, growth, quality, price momentum, and market sentiment.

These two approaches to investing tend to provide independent, uncorrelated sources of excess return relative to each other and their respective benchmark indexes (please see Exhibit 12 below for the correlations of excess returns across the investment approaches). Stated differently, historically the fundamentally-managed and quantitatively-managed funds have tended to not outperform/underperform their benchmark indexes at the same time. As a result, by investing in both types of underlying funds, the Lifecycle Funds have been able to enhance the risk-adjusted returns (Sharpe ratios) of the equity allocation. This benefit provides Lifecycle Funds investors with smoother relative performance over time.

## Exhibit 12: Correlation of excess returns

| | Fundamental U.S. Equity Funds | Quantitative U.S. Equity Funds | Fundamental International Equity Funds | Quantitative International Equity Funds | Fixed-Income Funds | Short-Term Funds |
|---|---|---|---|---|---|---|
| Quantitative U.S. Equity Funds | 0.05 | | | | | |
| Fundamental Internat'l Equity Funds | 0.56 | 0.10 | | | | |
| Quantitative Internat'l Equity Funds | 0.04 | 0.00 | 0.24 | | | |
| Fixed-Income Funds | 0.27 | 0.01 | (0.02) | (0.29) | | |
| Short-Term Funds | 0.15 | 0.11 | 0.03 | (0.08) | 0.56 | |
| Inflation Protected Funds | (0.14) | (0.02) | (0.32) | 0.18 | 0.01 | 0.42 |

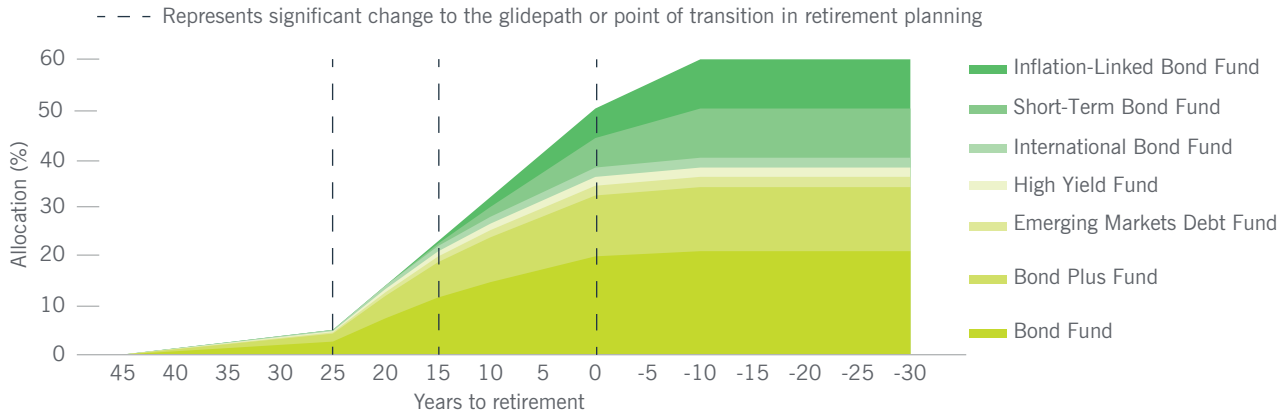
## Fixed-income portfolio composition

Unlike the equity sleeves, the fixed-income portion of the Lifecycle Funds is initially allocated to funds with higher risk characteristics (e.g. credit risk and interest rate risk) and gradually transitions as one approaches retirement to a more conservative mix of funds. For young individuals, the Fixed-Income market sector includes investments in Core (Bond Fund), Core Plus (Bond Plus Fund), International Developed (International Bond Fund), High-Yield (High-Yield Fund), and Emerging-Markets Debt (Emerging-Markets Debt Fund) strategies. The size of the allocations to each of these underlying funds is based on their respective contribution to the active risk relative to the Bloomberg Barclays US Aggregate Bond Index (AGG). For instance, the High Yield Fund tends not to track the AGG very closely (higher active risk), thus its weight within the Fixed Income market sector is smaller than that of the Bond Fund which tends to track the AGG more closely (lower active risk).

When an investor reaches age 50, the portfolio begins to pare back exposure to credit, interest rate and inflation risks by purchasing investments in the Short-Term Bond Fund (categorized in a market sector of a similar name) and the Inflation-Linked Bond Fund (categorized in a market sector called Inflation-Protected Assets).

The changing composition of fixed-income investments from early periods of saving through retirement reflects investors' greater need for interest-rate and inflation protection and seeks to provide stability of returns for investors as they approach retirement and during their retirement years. The Lifecycle Funds fixed-income glidepath is shown below:

### Exhibit 13: Fixed-income sub-asset class glidepath




## Direct real estate portfolio composition

The Lifecycle Funds maintain a strategic target allocation of 5% to direct real estate throughout the glidepath. The position was sized to reflect liquidity considerations along with stress test scenarios. A 5% allocation was found to provide meaningful benefits while still offering sufficient nimbleness to respond to any potential market events given the liquidity considerations of the asset class.

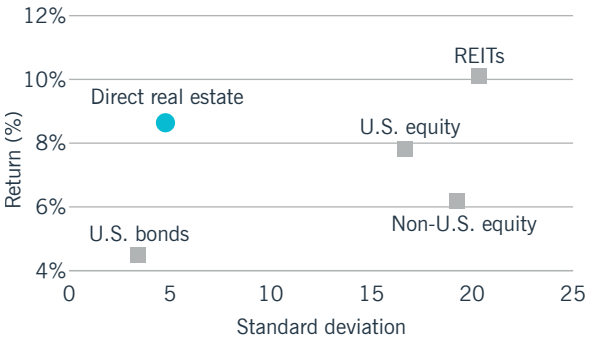
The allocation to direct real estate consists of exposure to directly held U.S. "core" commercial real estate properties that are well-located in select targeted cities/markets. "Core" real estate assets are typically well-occupied with high-quality tenants and are typically located in high-barrier-to-entry markets (e.g., New York, Washington, D.C., San Francisco). This direct real estate exposure is obtained via the Real Property Fund, LP, a purpose-built vehicle for the Lifecycle series. The Real Property Fund seeks to provide broad diversification by property type (i.e., office, industrial, retail and multi-family/apartment properties) and geographic region. The Fund uses minimum leverage (maximum of 10%) and its portfolio composition is almost entirely comprised of properties. The Real Property Fund portfolio maintains only 2% - 5% of its portfolio in liquid assets in order to maximize the diversification benefits directly held real estate can provide.

Direct real estate has exhibited noticeably low performance correlations to equities and fixed income (please see 20-year correlation chart below), and has provided relatively stable and high cash yields (stemming from the cash flows generated by long-term leases) and attractive risk-adjusted returns (i.e., attractive absolute returns, with much lower volatility relative to equities; please see 20-year asset class risk-return chart below).

## Exhibit 14: Asset class risk and return (past 20-years)

### Low correction to major asset classes

| 20-year period ending 9/30/18 | Direct Real Estate | REITs |
|---|---|---|
| US Equities | 0.20 | 0.60 |
| Non-U.S. Equities | 0.15 | 0.54 |
| U.S. Bonds | -0.11 | 0.06 |
| REITs | 0.27 | 1.00 |
| Direct Real Estate | 1.00 | 0.27 |




Source: Morningstar Direct, NCREIF as of 30 Sep 2018. Asset classes reflect returns for the following indexes: Russell 3000 (U.S. equity); MSCI ACWI-ex USA IMI (non-U.S. equity); Bloomberg Barclays U.S. Aggregate Bond (U.S. Bonds); NCREIF Property Index-Open End Funds (NPI-OE) (Direct Real Estate); NAREIT All Equity REITs (REITs). It is not possible to invest in an index. Performance for indexes does not reflect investment fees or transaction costs. Results may be significantly different for other time periods.

By including direct real estate we seek to benefit from its potential to improve risk-adjusted returns, as well as its potential to be a particularly effective diversifier. The anticipated diversification benefits further promote consistency of returns and increased downside risk management (this is of particular importance in the portion of the glidepath approaching retirement and in retirement). Additionally, direct real estate can be a natural hedge against inflation, with commercial rents and property values historically highly correlated to rising prices. While we believe our real estate allocation provides positive benefits to the glidepath, it is important to note real estate portfolio holdings are subject to sector concentration risk and the volatility of real estate markets.

## COMPOSITION OF BENCHMARK

The performance of the Lifecycle Funds is evaluated in relation to a series of composite benchmarks that consist of five indexes that represent the five equity and fixed-income market sectors in which each of the Funds invests. While the Lifecycle Funds allocate to a sixth market sector, direct real estate, the lack of a daily valued real estate index that could adequately serve as a proxy for that asset class prevents its inclusion in the composite benchmark. From a monitoring perspective, the exclusion of a direct real estate index from the Lifecycle composite benchmark allows the Retirement Investment Solutions team to quickly assess the impact that the real estate allocation has on the performance of the funds.

As a result, the composite benchmark is created by applying the performance of the five indexes in proportion to each Fund's target allocations to those market sectors. The weights of each market sector within the composite benchmarks evolve over time, moving in tandem with the changing allocations of each Lifecycle Fund as it moves along glidepath. The five market sectors and the related benchmark indexes for the Lifecycle Funds are as follows:

- U.S. Equity (Russell 3000® Index)*
- International Equity (MSCI ACWI ex-US IMI Index)*
- Fixed Income (Bloomberg Barclays U.S. Aggregate Bond Index)*
- Short-Term Fixed Income (Bloomberg Barclays 1-3 Year U.S. Government/ Credit Index)*
- Inflation-Protected Assets (Bloomberg Barclays U.S. Treasury Inflation Protected Securities 1-10 Year Index)*

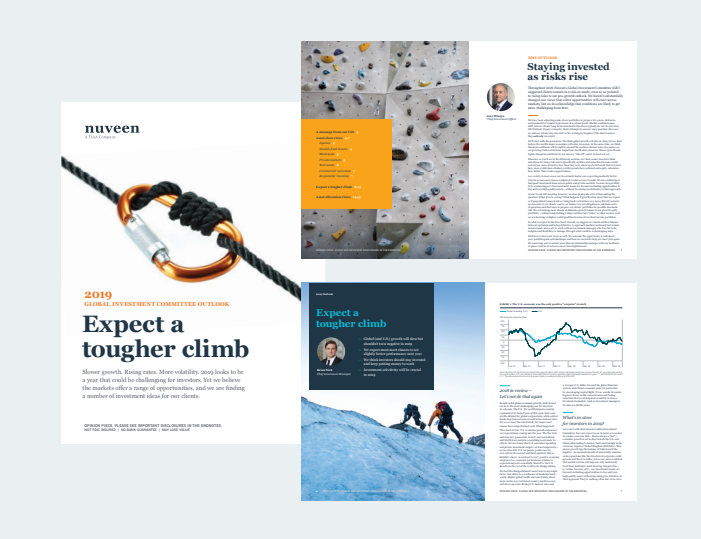
*You cannot invest directly in these indexes.

The Team evaluates and monitors the performance of all of the underlying funds, including the Real Property Fund (RPF), and their impact on the performance of the Lifecycle Funds. The RPF Fund has its own benchmark, the NCREIF Property Index-Open End Funds (NPI-OE). The NPI-OE is priced quarterly, with a lag of approximately two months. The Retirement Investment Solutions team measures the contribution of the RPF through (a) the quarterly supplemental relative performance attribution, and (b) the overall absolute performance of the Lifecycle Funds (which include RPF) relative to their composite benchmarks (which do not include commercial real estate).

## TACTICAL ASSET ALLOCATION

The overall asset allocation of the strategic glidepath, along with the performance of the underlying funds, should be the primary driver of performance for the Lifecycle Funds. However, from time-to-time, short-term market dislocations occur that present the opportunity to add value to the Lifecycle Funds by tactically shifting allocations.

Nuveen Solutions holds a quarterly Solutions Investment Committee meeting which offers an open forum for discussion amongst senior investment, economics and research professionals across Nuveen's affiliates, as well as external experts, to help formulate viewpoints and enhance discussion on various market and investment related topics which can benefit the Retirement Investment Solutions (Lifecycle portfolio management) team, along with input and analysis from the Solutions research analysts, in managing the tactical asset allocation



program. The group also publishes and contributes to publications of its views (please see examples below).

Input from the Solutions Investment Committee, along with the Solutions research analysts, is shared with the TIAA Investments Asset Allocation Committee, the committee which oversees strategic enhancements and tactical asset allocation decisions for the Lifecycle Funds. The Lifecycle Asset Allocation Committee meets monthly to consider potential tactical shifts in the allocations of the various asset classes used in the Lifecycle Funds. While the long-term expected return models discussed earlier are used in the construction of the glidepath, the Asset Allocation Committee also reviews and monitors key tactical metrics where time horizons are much shorter, often confined to weeks or months. These key tactical metrics support views on the economy, market valuation and investor sentiment. Examples include valuation, earnings revisions, technical measures (e.g., moving averages, VIX), sentiment (e.g., short-term bulls vs. bears), and economic growth (e.g., ISM, PMI, company surveys, consumer spending).

The degree of tactical asset allocation implemented is modest relative to the impact of the strategic glidepath and the relative performance of the underlying portfolio managers. Our goal is to introduce a degree of nimbleness to the Lifecycle portfolios to respond to market events or opportunities, but not to overwhelm the strategic asset allocation work or the investment decisions of the underlying fund portfolio managers. At most, we anticipate tactical asset allocation to account for about 10% to 20% of the relative performance of the Lifecycle Funds versus their composite benchmark in any given year. In context of the Active Risk Budget discussed below, the expected impact from the tactical asset allocation program would be no more than that of a single underlying mutual fund (roughly 10% - 20% of the alpha risk budget, and no more than a quarter). The remaining 80% to 90% of relative performance of the Lifecycle Funds would be attributed to the relative performance of the underlying funds, as well as the strategic glidepath decision.

## Key characteristics

The following are guidelines and expected impacts of the Lifecycle Funds' tactical asset allocation practices:

- **Holding period for tactical asset allocation trades in portfolio:** We plan to hold most tactical positions for 6 to 12 months.
- **Market sector limits:** We do not expect tactical decisions to exceed +/-5% of target market-sector allocations.
- **Customization of tactical decision per Lifecycle Fund:** When appropriate, we adjust the tactical decisions based on the overall investment goal of each Lifecycle Fund. For example, our tactical decisions could be more aggressive in the Lifecycle Funds for people early in their working careers and thus with the longest investment time horizons, but less aggressive for people closer to retirement.
- **Estimated turnover:** Tactical asset allocation decisions add approximately 5% to 10% to the annual turnover of the funds. This is based on the planned holding period of tactical portfolio decisions, current cash flows, and implementation speed.

Note that due to the illiquid/long-term nature of commercial real estate, the real estate market sector is not within the scope of the tactical asset allocation program.

## RISK MANAGEMENT

### Active risk

Several features may cause the performance of the Lifecycle Funds to deviate from their composite benchmarks (which follow the glidepath) including the performance of the actively-managed underlying funds, strategic allocation differences relative to the composite benchmark (e.g. direct real estate, high yield bonds, etc.) and tactical asset allocation decisions. These would all be considered contributors to active risk.

Annual tracking error is a measure of the targeted, expected, or realized variation (+/- 1 standard deviation) of a fund's performance relative to its benchmark (active risk). The Lifecycle Funds target an active risk level of between approximately 1% and 3% annual tracking error. The lowest tracking errors (approximately 1%) are found in the funds closest to retirement and in the Lifecycle Retirement Income Fund, while the highest tracking errors (approximately 3%) are found in the funds with the highest exposure to equities (e.g., the Lifecycle 2060 Fund). Tracking errors of actively managed funds can vary significantly depending on current financial market conditions. During periods of economic and market stress, realized tracking errors can double or even triple in reaction to volatile markets.

The overall tracking errors of the Lifecycle Funds relative to their respective benchmarks are a function of the tracking errors of each underlying fund relative to their respective benchmarks, as well as the degree to which each Lifecycle Fund asset allocation differ from target allocations. At the aggregate Lifecycle Fund level, the combined tracking error of the underlying mutual funds is less than a linear combination of the tracking errors of each individual fund because of a degree of independence of each underlying manager. In other words, the relative performance of the Lifecycle Fund can benefit from asset allocation to a portfolio of underlying managers who exhibit a degree of independence in their relative performance.

### Alpha risk budget

The Retirement Investment Solutions team oversees an alpha risk budget, as a way to monitor how much each individual underlying portfolio manager can influence the relative performance of each Lifecycle Fund, to ensure no one underlying fund can have an outsized effect on the total diversified portfolio.

The alpha risk budget provides a framework for determining allocations among funds within each asset class, taking into consideration the impact that variations in the relative performance of any individual underlying fund may have on a Lifecycle Fund's performance. The Lifecycle Funds' alpha risk budget helps determine the broader weightings across each of the underlying funds in each sub-asset class. This includes determining the relative weightings of the fundamental and quantitative strategies within U.S. and international equity market sectors. In specifying our alpha risk budget, we seek to limit the contribution of any single strategy to one-quarter or less of the overall risk budget.

Typically, the larger a position in a single strategy/underlying fund, the larger its percentage contribution to the overall risk budget of a Lifecycle Fund. Also, the larger the tracking error of a single strategy/underlying fund, the larger its percentage contribution to the overall risk budget of a Lifecycle Fund.

The following table provides an example of how our risk budgeting framework may be used to help determine relative weightings in underlying funds:

## Exhibit 15: Sample alpha risk budget for the Lifecycle 2020 Fund

| Market sector | Weight | Annualized tracking error | Marginal contribution to tracking error | Risk budget |
|---|---|---|---|---|
| **U.S. Equity Funds** | | | | |
| Large-Cap Growth | 6.4% | 3.0% | 0.19% | 11% |
| Large-Cap Value | 6.4% | 2.9% | 0.19% | 11% |
| Quant Large-Cap Growth | 5.6% | 1.0% | 0.05% | 3% |
| Quant Large-Cap Value | 5.6% | 1.2% | 0.07% | 4% |
| Growth & Income | 7.2% | 2.4% | 0.17% | 10% |
| Quant Small/Mid Cap Equity | 1.5% | 1.3% | 0.02% | 1% |
| Quant Small Cap Equity | 2.1% | 2.1% | 0.04% | 3% |
| **Subtotal** | **34.9%** | | | |
| **International Equity Funds** | | | | |
| International Opportunities | 3.2% | 3.7% | 0.12% | 7% |
| International Equity | 3.3% | 3.8% | 0.12% | 7% |
| Enhanced International Equity | 4.3% | 1.2% | 0.05% | 3% |
| Emerging Markets Equity | 2.6% | 4.2% | 0.11% | 6% |
| International Small Cap Equity | 2.1% | 2.4% | 0.05% | 3% |
| **Subtotal** | **15.5%** | | | |
| **Direct Real Estate Funds** | | | | |
| Real Property Fund | 3.9% | 5.0% | 0.19% | 11% |
| **Subtotal** | **3.9%** | | | |
| **Fixed-Income Funds** | | | | |
| Bond | 18.2% | 0.7% | 0.13% | 7% |
| Bond Plus | 11.7% | 0.8% | 0.10% | 6% |
| International Bond | 1.5% | 1.5% | 0.02% | 1% |
| High Yield | 1.5% | 0.7% | 0.01% | 1% |
| Emerging Markets Debt | 2.0% | 1.3% | 0.03% | 2% |
| **Subtotal** | **34.9%** | | | |
| **Short-Term Fixed-Income Funds** | | | | |
| Short Term | 5.7% | 0.4% | 0.02% | 1% |
| **Subtotal** | **5.7%** | | | |
| **Inflation-Protected Assets Fund** | | | | |
| Inflation-Linked Bond | 5.2% | 0.4% | 0.02% | 1% |
| **Subtotal** | **5.2%** | | | |
| **Grand total** | **100.0%** | | | |

## MONITORING OF UNDERLYING FUNDS

The Retirement Investment Solutions team closely monitors the portfolios, relative performance, and portfolio compositions of the underlying funds. In addition, the team reviews the effects of combining the underlying strategies by analyzing correlations across managers, overlap in holdings, and exposures to unintended biases. One of the roles of our Asset Allocation Committee is to conduct thorough due diligence on underlying funds.

Underlying funds are monitored against a number of parameters including conformance to stated investment objectives, investment process, and risk parameters. Any changes to management teams are also closely analyzed. The performance of each underlying fund is analyzed both relative to the Lifecycle Funds' composite benchmarks, the individual fund's specific benchmark and also relative to each underlying fund's Morningstar target date peers, along with drivers of relative performance. Each quarter, the Retirement Solutions Investment Team meets with at least two of the underlying funds' investment teams to stay updated on the strategies, as well as address any outstanding questions (e.g. cash position, holdings outside of benchmark, etc.).

The Retirement Solutions team will replace an underlying fund if it has serious concerns about that fund's portfolio management team, their investment process, or performance record, and Nuveen senior management does not have plans to remedy the situation.

## MONTHLY REBALANCING

Consistent management of portfolio allocations in relation to strategic target allocations helps reduce the funds' vulnerability to market bubbles and avoids significant drift of the funds' risk profiles from their targeted levels. On a monthly basis, the Retirement Investment Solutions team rebalances the relative weights of each Lifecycle Fund's holdings to within approximately 1% to 2% (depending on market volatility) of its target allocation as appropriate per the planned glidepath. For example, at the end of each month, the Lifecycle Retirement Income Fund is rebalanced to an allocation near its 35% equities, 60% fixed-income and 5% direct real estate target. Monthly rebalancing is achieved using cash flows to the extent possible, in order to minimize portfolio turnover.

If sufficient rebalancing cannot be achieved using daily contributions and redemptions, the Retirement Investment Solutions team will, on approximately a monthly basis, implement trades to bring each fund back toward its target allocation. These trades leverage the use of a daily mean-variance optimization process that assists in allocating cash inflows each day. To the largest extent possible, the optimization algorithm lowers the tracking error of the portfolio relative to its target benchmark using available cash inflows. For instance, rather than simply filling the positions that are furthest from their target allocations first, the optimizer takes into account the relative risk of various positions. Each Lifecycle Fund is considered on an individual basis in the optimizer relative to fund-specific risk characteristics. Over time, the daily optimization process helps minimize trading as well. Use of this daily optimizer allows for more consistent performance within the Lifecycle Funds through effective allocation of available cash flows.

## CASH MANAGEMENT

On days when the Lifecycle Funds receive large cash inflows, the Retirement Investment Solutions team invests the cash to be allocated to the U.S. and foreign-developed equity markets in ETFs that follow these markets. At the market close, the ETFs are sold and the proceeds are invested in our underlying mutual funds as appropriate. This ensures that the Lifecycle Funds remain as fully invested as possible.

## CONCLUSION

The TIAA-CREF Lifecycle Funds are designed to accommodate the needs of a broad range of investors seeking an effective and convenient tool with which to pursue retirement savings objectives. Depending on an investor's personal situation and risk profile, the Lifecycle Funds can be appropriately used as a standalone investment that serves as an exclusive means of retirement savings, or as a component within a broader retirement plan that includes retirement income from additional sources. All elements incorporated in the Lifecycle Funds' design, including the glidepath and mix of underlying investments, are structured to seek high returns while maintaining targeted, risk-managed exposure across a wide range of asset classes and market segments. These qualities may make the Lifecycle Funds an excellent solution for investors at all stages of retirement planning to pursue favorable investment outcomes over a range of investment time horizons.

Lifecycle Funds reflect the vast resources of the firm across Nuveen's investment areas, as well as the experienced portfolio management of our award winning team. Nuveen's TIAA Investments was named Best Mixed Assets Large Fund Company for four consecutive years primarily in recognition of our target date series. This singular achievement demonstrates consistent risk-adjusted returns compared with peers.

The Lifecycle Funds are not a static offering. We continually strive to ensure that the funds reflect our best thinking. Accordingly, the funds may well continue to evolve over time.

As with all mutual funds, the principal value of your investment is not guaranteed at any time, including at the target date. Also, please note that the target date is an approximate date when investors are expected to begin withdrawing from the fund. In addition to the fees and expenses associated with the Lifecycle Funds, there is exposure to fees and expenses associated with the underlying funds.

**LIPPER FUND AWARDS FROM REFINITIV**

**2016–2019**

**Best Mixed Assets Large Fund Company**

*4 consecutive years*

The Mixed Assets Large Fund award from Refinitiv is based on a review of 39 companies 2015, 36 companies 2016, 35 companies 2017 and 35 companies 2018 risk-adjusted performance.

The Lipper Mixed-Assets Large Fund Award is given to the group with the lowest average decile ranking of three years' Consistent Return for eligible funds over the three-year period. Note this award pertains to mixed-assets mutual funds within the TIAA-CREF group of mutual funds; other funds distributed by Nuveen Securities were not included. From Thomson Reuters Lipper Awards, © 2019 Thomson Reuters. All rights reserved. Used by permission and protected by the Copyright Laws of the United States. The printing, copying, redistribution, or retransmission of this Content without express written permission is prohibited. Certain funds have fee waivers in effect. Without such waivers ratings could be lower. Past performance does not guarantee future results. For current performance, rankings and prospectuses, please visit nuveen.com.

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Mutual fund investing involves risk; principal loss is possible. There is no guarantee the Fund's investment objectives will be achieved and the **target date** is an approximate date when investors may begin withdrawing from the Fund. However, you are not required to withdraw the funds at that target date.

Target-date mutual funds are actively managed, so the **asset allocation** is subject to change and may vary from that shown and after the target date has been reached, the Fund may be merged into another with a more stable asset allocation. The Fund is a fund of funds subject to the risks of its **underlying funds** in proportion to each Fund's allocation. These risks include those of **fixed-income** underlying funds risks which may be susceptible to general movements in the bond market and are subject to credit and interest rate risks as well as those of **equity** underlying funds risks, such as foreign investment and issuer risks. **Credit risk** arises from an issuer's ability to make interest and principal payments when due, as well as the prices of bonds declining when an issuer's credit quality is expected to deteriorate. **Interest rate risk** occurs when interest rates rise causing bond prices to fall. The Fund's **income** could decline during periods of falling interest rates. **Non-U.S. investments** involve risks such as currency fluctuation, political and economic instability, lack of liquidity and differing legal and accounting standards. These fixed-income underlying funds risks, such as call, extension, and income volatility risks as well as other risk considerations, such as active management risk, equity underlying funds risks and direct real estate risks, are described in detail in the Fund's prospectus.

**Before investing, please advise your clients to carefully consider fund investment objectives, risks, charges and expenses. For this and other information that should be read carefully, please request a prospectus or summary prospectus from your Nuveen Advisor Consultant at 800.688.3365 or visit nuveen.com.**

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