Lifecycle Fund Asset Allocation – Board Summary

# Thrift Savings Plan

March 23, 2020

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# Executive Summary

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# TSP Goals for Lifecycle Fund Development

To construct customized Lifecycle Funds that are:

- Composed of the TSP Core Funds
- A series of evolving targeted maturity funds that become more conservative as the set "maturity date"[1] approaches
- Able to accommodate daily cash flows and minimize transaction costs
- Easily communicated and understood by participants
- A convenient and automatic way for participants to diversify their investment account

1 The target maturity date may not align with an individual participants' retirement date or the date the participant begins withdrawing money from his or her account.

# Overview

The purpose of this study is to review the asset allocation of the Lifecycle Funds with a focus on projected participant outcomes.

**Key Objectives and Metrics:**

- Provide opportunity for participants to achieve sufficient retirement income
  - **Metrics: Range of account balances and income replacement ratios**
- Provide capital preservation for participants as they approach retirement
  - **Metric: Likelihood of loss in final two years before withdrawal**
- Limit likelihood of running out of assets in retirement
  - **Metric: Expected account drawdown age**

# Executive Summary

The 2020 Lifecycle Funds review combines the asset allocation decision amongst the funds as well as the risk profile of equity exposure throughout the glide path.

**Review of the Asset Allocation Analysis:**

- **G Fund vs F Fund**: The current L Funds utilize a large allocation to the G Fund due to its lower risk profile. Increasing the F Fund allocation is beneficial to long-term returns in an equilibrium interest rate environment but provides less benefit with current and near-term expected interest rate levels.
  - A simplified linear trend vs the current trend has a minimal impact on outcomes.

- **Small/Mid Cap Weight Within US Equity**: Currently, the Small/Mid Cap weight within US equity trends from 25% to 20% for the L Funds, an overweight position relative to current market cap weights.* Utilizing a flat 25%, 20%, or 16% weight has a small impact over a 20-year horizon.

- **International Equity Weight**: Increased allocations to international equity were assessed, but the review found no significant improvement in participant outcomes on a risk-adjusted basis.

*Market weight of Small/Mid Cap is ~16% based upon the market capitalization of the S&P 500 index vs. the sum of S&P 500 and Dow Jones US Completion Total Stock Market Index at 12/31/2019.

# Executive Summary

The review of the glide path shape focuses on the total equity exposure throughout the glide path and the pace of de-risking before and after withdrawal age.

- The L Fund allocations are transitioning to a new Base Glide Path, with full transition to be completed over the next 12 years (July 2032).

- Alternatives reviewed include de-risking earlier vs later and an extended rolldown design:
  - **De-Risking Earlier vs Later**: The current L Funds glide path begins de-risking at age 35 (28 years prior to withdrawal). The alternative scenarios modeled begin de-risking 5 years earlier (age 30) and 5 years later (age 40).
  - We also modeled a **Move to Base Over 5 Years** scenario that increases the growth allocation from current over the first 5 years until it is merged with the Base Glide Path. For the L 2055 and L 2060 vintages, the allocation is 100% equity until they begin de-risking in accordance with the Base Glide Path at age 35.
  - **“Through” Design**: The current L Funds reach their terminal allocation at their namesake year. The modeling done in this study shows additional scenarios of a 10-year “Through” design with the current de-risking scenario, de-risking earlier, and de-risking later.

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# Mean-Variance and Efficient Frontier Analysis

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# Mercer Capital Market Assumptions

- We conducted our efficient frontier analysis using capital market assumptions over a 20-year time horizon:
  - Real economic growth is 2.0%
  - Inflation is 2.2%
  - For equities, the table below breaks down the components of our assumptions:

| | C Fund | S Fund | I Fund |
|---|---|---|---|
| **Inflation** | 2.2% | 2.2% | 2.1% |
| **Real Earnings Growth** | 1.9% | 3.1% | 1.6% |
| **Dividend/Income** | 2.4% | 1.6% | 2.7% |
| **P/E Expansion (Contraction)** | (0.4%) | (0.2%) | (0.0%) |
| **Currency Impact** | 0.0% | 0.0% | 0.8% |
| **Total** | 6.1% | 6.8% | 7.3% |

# Capital Market Projections
## 20-Year Mean-Variance Assumptions

| | Fund | Geometric Return | Arithmetic Return | Standard Deviation | LTE Return |
|---|---|---|---|---|---|
| **2017 Study** | **C-Fund** | 6.1% | 7.6% | 18.1% | 6.8% |
| | **S-Fund** | 6.5% | 8.7% | 22.1% | 7.3% |
| | **I-Fund** | 7.1% | 9.0% | 20.3% | 6.9% |
| | **F-Fund** | 3.5% | 3.6% | 5.3% | 4.4% |
| | **G-Fund** | 3.5% | 3.5% | 1.2% | 4.0% |
| | **Inflation** | 2.2% | 2.2% | 1.7% | 2.2% |
| **2018 Study** | **C-Fund** | 6.2% | | 17.0% | |
| | **S-Fund** | 6.3% | | 23.0% | |
| | **I-Fund** | 7.7% | | 20.5% | |
| | **F-Fund** | 3.3% | | 4.0% | |
| | **G-Fund** | 3.0% | | 1.0% | |
| | **Inflation** | 2.3% | | 1.5% | |
| **2020 Study** | **C-Fund** | 6.1% | 7.6% | 18.0% | 6.6% |
| | **S-Fund** | 6.7% | 8.6% | 20.6% | 6.9% |
| | **I-Fund** | 7.3% | 9.2% | 20.8% | 6.8% |
| | **F-Fund** | 2.9% | 3.0% | 5.3% | 4.0% |
| | **G-Fund** | 3.1% | 3.1% | 1.2% | 3.6% |
| | **Inflation** | 2.2% | 2.2% | 1.7% | 2.2% |

- Return expectations for domestic large cap equities are consistent with 2017, and slightly below the 2018 Study (per Aon Hewitt report noted below).
- Both the F Fund and G Fund expected returns decreased due to decreasing interest rates and a lower long-term view on rates.
- The G Fund is expected to out-earn the F Fund as rates return to an equilibrium state.
  - Over the next 10 years, the expected rise in rates limits the returns for the F Fund.
  - Starting yields are higher for the F Fund: Yield on Bloomberg Barclays US Aggregate FI (F Fund) of 2.26% on 9/30/19 compares to 10-year Treasury yield of 1.68%.

- The I Fund, as of 2020, is changed from the Non-US Developed Equity index to the All Country World ex-US All Cap Equity index.
- The 2018 Study assumptions are based on the Aon Hewitt Investment Consulting, Inc. report "Thrift Savings Plan – Full Work Product, Lifecycle Fund Asset Allocation" dated September 17, 2018.
- The January 31, 2020 yield on the Barclays Aggregate fund and the 10-year Treasury yield are 2.02% and 1.57% respectively.

# Asset Class Correlations

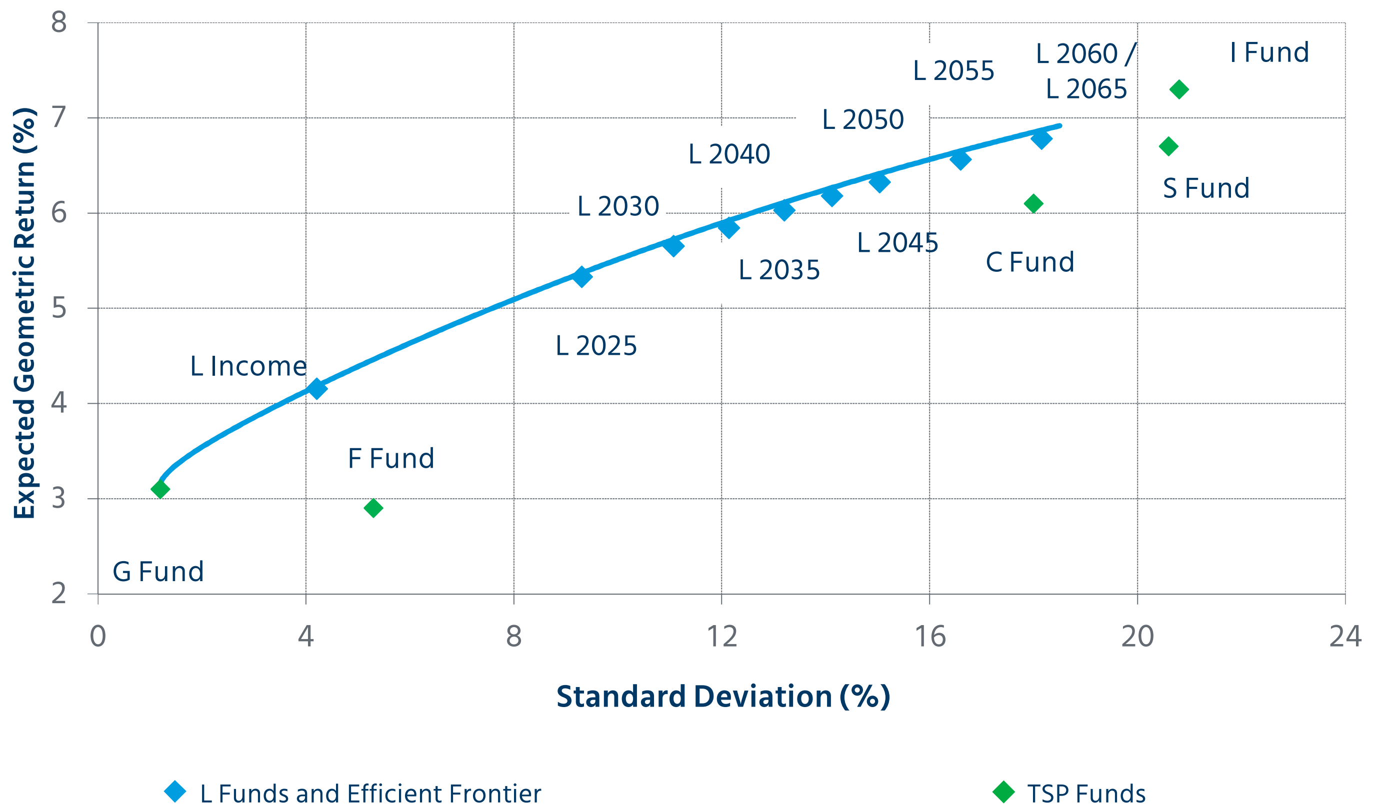
| | Fund | C-Fund | S-Fund | I-Fund | F-Fund | G-Fund |
|---|---|---|---|---|---|---|
| **2017 Study** | **C-Fund** | 1.00 | | | | |
| | **S-Fund** | 0.91 | 1.00 | | | |
| | **I-Fund** | 0.77 | 0.70 | 1.00 | | |
| | **F-Fund** | 0.11 | 0.10 | 0.03 | 1.00 | |
| | **G-Fund** | 0.00 | 0.00 | 0.00 | -0.10 | 1.00 |
| **2018 Study** | **C-Fund** | 1.00 | | | | |
| | **S-Fund** | 0.92 | 1.00 | | | |
| | **I-Fund** | 0.81 | 0.75 | 1.00 | | |
| | **F-Fund** | 0.03 | 0.02 | 0.03 | 1.00 | |
| | **G-Fund** | 0.13 | 0.11 | 0.10 | 0.05 | 1.00 |
| **2020 Study** | **C-Fund** | 1.00 | | | | |
| | **S-Fund** | 0.95 | 1.00 | | | |
| | **I-Fund** | 0.80 | 0.77 | 1.00 | | |
| | **F-Fund** | 0.11 | 0.10 | 0.02 | 1.00 | |
| | **G-Fund** | 0.05 | 0.02 | 0.08 | -0.02 | 1.00 |

- The I Fund index has changed from the MSCI EAFE to the MSCI ACWI ex-US IMI, and therefore the correlations have changed.
- The G Fund correlations have changed to align with Mercer's current capital market simulations (stochastic modeling extract).
- All other correlations are unchanged compared to the 2017 Study, which was the latest performed by Mercer.
  - The 2018 Study correlations are similar (per Aon Hewitt report noted below).

- The I Fund, as of 2020, is changed from the Non-US Developed Equity index to the All Country World ex-US All Cap Equity index.
- The 2018 Study assumptions are based on the Aon Hewitt Investment Consulting, Inc. report "Thrift Savings Plan – Full Work Product, Lifecycle Fund Asset Allocation" dated September 17, 2018.

# Position of L Funds on the Efficient Frontier

## 20-Year Expected Returns



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# Glide Paths Modeled

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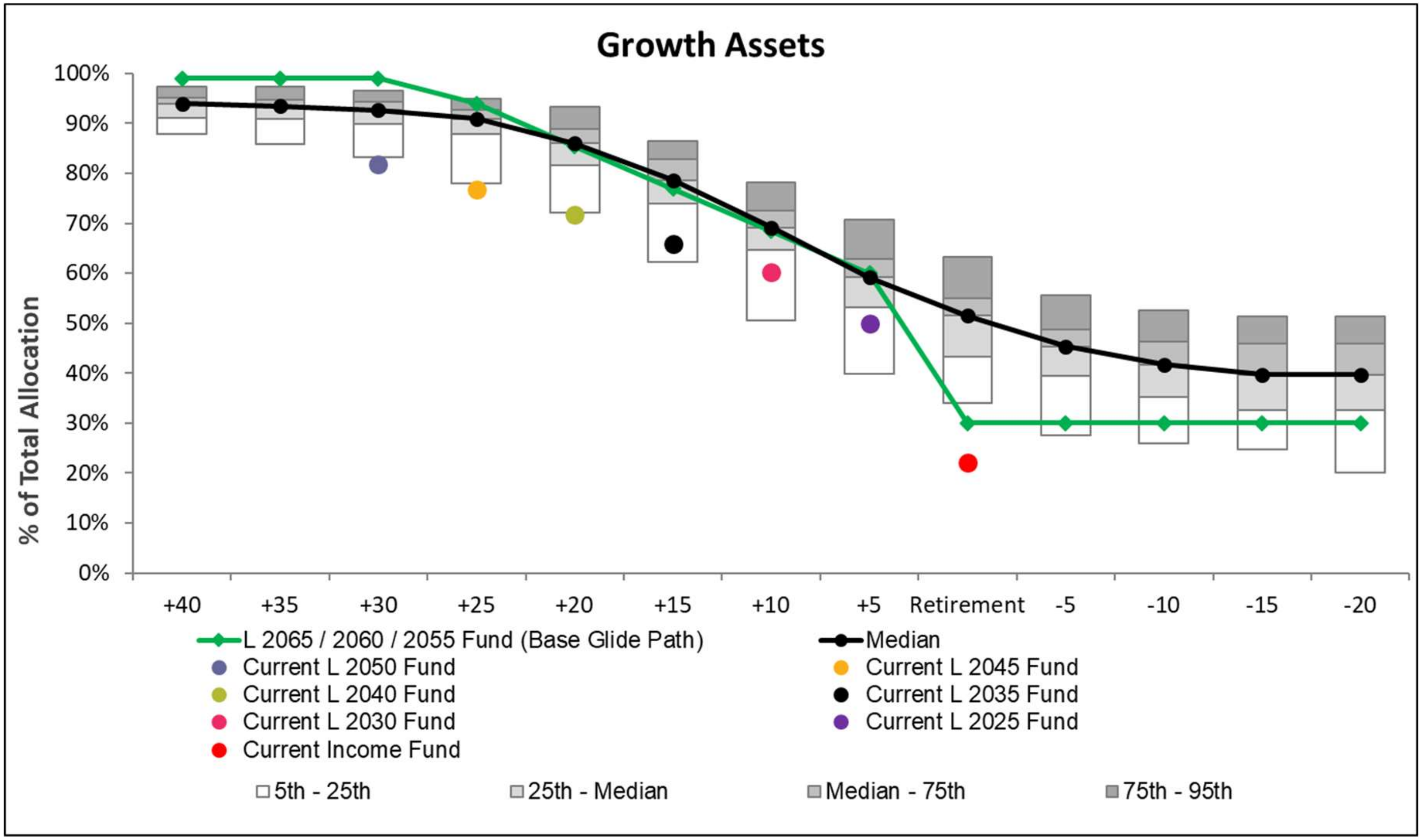
# Comparison to Mercer Survey
## Growth Allocation




Source: Mercer Quarterly Target Date Fund Survey (Q2 2019 including 39 TDFs with different asset allocations from among the 67 TDFs in the survey). Growth assets include equities, high yield, EMD, and commodities.

# Glide Paths Considered: 2020 Study

## Current Glide Path (Allocations as of July 2020)

| Allocations | 2060 Portfolio | 2055 Portfolio | 2050 Portfolio | 2045 Portfolio | 2040 Portfolio | 2035 Portfolio | 2030 Portfolio | 2025 Portfolio | Income Portfolio |
|---|---|---|---|---|---|---|---|---|---|
| **C-Fund** | 48.5 | 48.5 | 40.1 | 37.9 | 35.9 | 33.3 | 30.5 | 25.6 | 11.4 |
| **S-Fund** | 15.9 | 15.9 | 13.0 | 12.0 | 10.7 | 9.6 | 8.5 | 6.9 | 2.9 |
| **I-Fund** | 34.7 | 34.7 | 28.6 | 26.9 | 25.1 | 23.1 | 21.0 | 17.5 | 7.7 |
| **F-Fund** | 0.4 | 0.4 | 8.2 | 8.4 | 7.8 | 7.6 | 6.9 | 6.2 | 5.9 |
| **G-Fund** | 0.6 | 0.6 | 10.1 | 14.9 | 20.5 | 26.4 | 33.0 | 43.8 | 72.2 |
| **Total** | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Asset Class Ratios | | | | | | | | | |
| **Percent Fixed Income** | 1.0 | 1.0 | 18.3 | 23.3 | 28.3 | 34.1 | 39.9 | 50.0 | 78.0 |
| **Percent Equity** | 99.0 | 99.0 | 81.8 | 76.8 | 71.8 | 65.9 | 60.1 | 50.0 | 22.0 |
| **Int Eq / Tot Eq** | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 |
| **S-Fund / Domestic Eq** | 24.6 | 24.6 | 24.5 | 24.0 | 23.0 | 22.4 | 21.9 | 21.2 | 20.0 |
| **F-Fund / Total FI** | 39.0 | 39.0 | 44.8 | 36.0 | 27.5 | 22.4 | 17.4 | 12.3 | 7.5 |

## Alternative glide paths reviewed in five groups

| **Summary of Alternative Glidepaths** | | | | |
|---|---|---|---|---|
| Group 1: Test Fixed Income allocation | Group 2: Test SMID Cap equity allocation | Group 3: Test Int'l equity allocation | Group 4: Test equity allocation | Group 5: Test equity allocation, "Through" designs |
| Increase F-weight across glide path | 16% SMID Cap equity weight over 5 years | 40% Int'l equity weight | Move to base over 5 years | 10-year "Through" design |
| Linear trend of G-fund weight | 20% SMID Cap equity weight over 5 years | 45% Int'l equity weight | De-Risk earlier (e.g. age 30) | 10-year "Through" design and de-risk earlier |
| | 25% SMID Cap equity weight over 5 years | | De-Risk later (e.g. age 40) | 10-year "Through" design and de-risk later |

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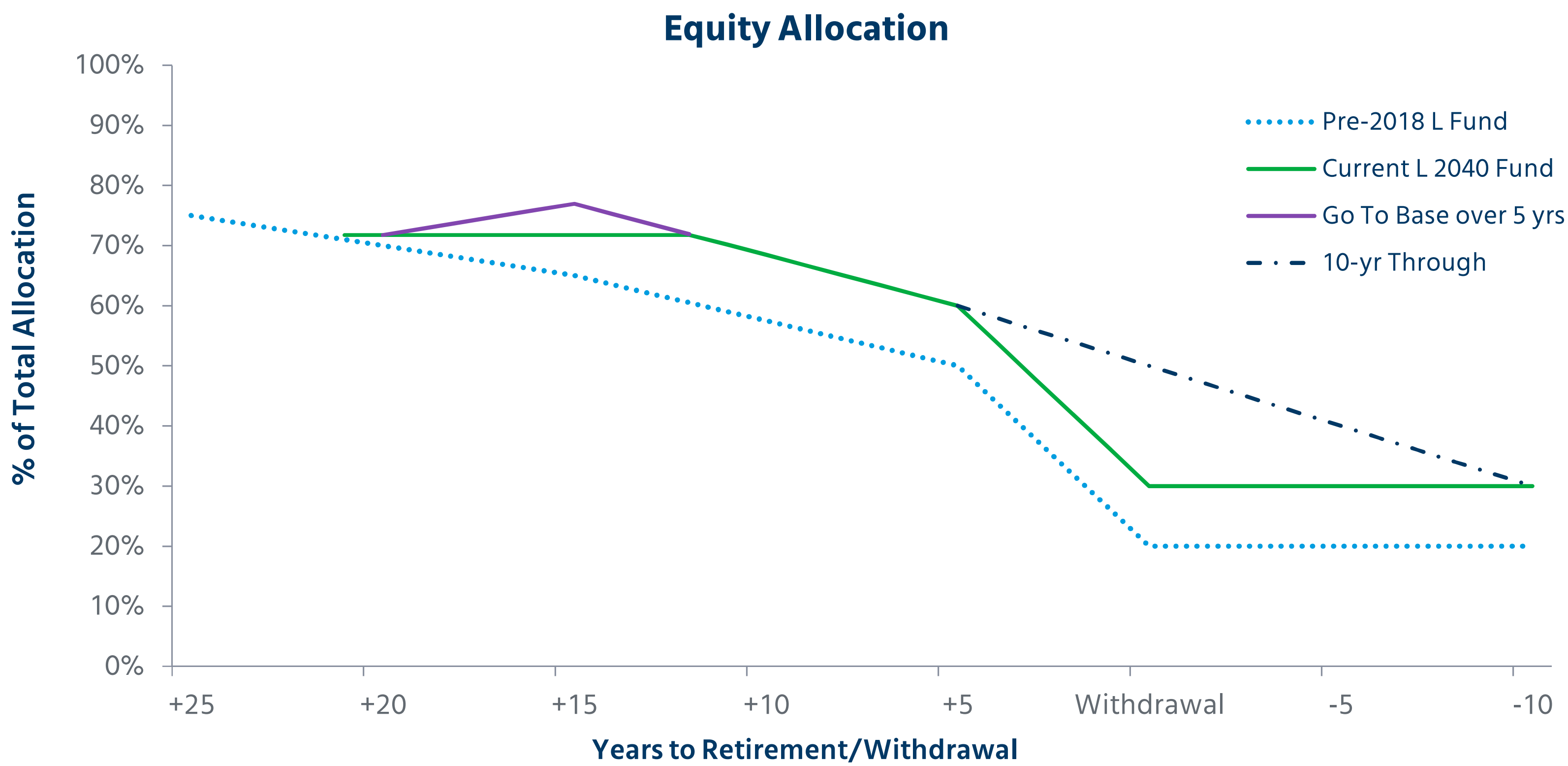
# L Fund Allocation Alternatives
## L 2040 Fund




We highlighted the Move to Base Over 5 Years and the 10-Year “Through” design as viable equity weight alternatives.

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# Summary Results: L 2040 Fund

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# Stochastic Modeling

We projected inflation, economic growth, salary growth, corporate profits, P/E ratios, interest rates, and exchange rates. We used these results to compute capital market returns.

We also had special states of the world to accommodate these regimes:

- Normal Growth: Above average growth, modest inflation
- Recession: Negative economic growth, low inflation
- Stagflation: Low economic growth, high inflation
- Inflationary Growth: Above average growth, high inflation
- Ideal Growth: Very high growth, very low inflation
- Credit Crunch: Severely negative growth, deflation
- High Inflation: Growth slumps, inflation moves significantly higher

# Demographic Assumptions

The Mercer study utilizes data provided by TSP officials as summarized in the table to the right.

The data provided is based upon actual October 31, 2019 data and rolled forward to July 1, 2020 by TSP officials.

TSP officials also provided the OPM report which details the wage increases by age and service.

| | Current | Prior Study |
|---|---|---|
| **Participant Information** | | |
| **Age on July 1, 2020** | 43 | 41 |
| **Retirement Age** | 62 | 62 |
| **Age at First Withdrawal** | 63 | 63 |
| **Salary on July 1, 2020** | 86,800 | 82.713 |
| **DC Balance on July 1, 2020** | 111,717 | 109,553 |
| **Assumed DB Benefit as % of Salary** | 30.0% | n/a |
| **Assumed Salary Deferral[1]** | | |
| **Age 43 – 47** | 7.04% | 7.24% |
| **Age 48 - 52** | 7.38% | 7.9% |
| **Age 53 – 57** | 8.88% | 8.66% |
| **Age 58 - 62** | 9.91% | 9.80% |
| **Employer Contribution** | 5.0% | 5.0% |
| **Median Drawdown Age** | 86 | 86 |
| **5th Percentile Drawdown Age** | 78 | 78 |

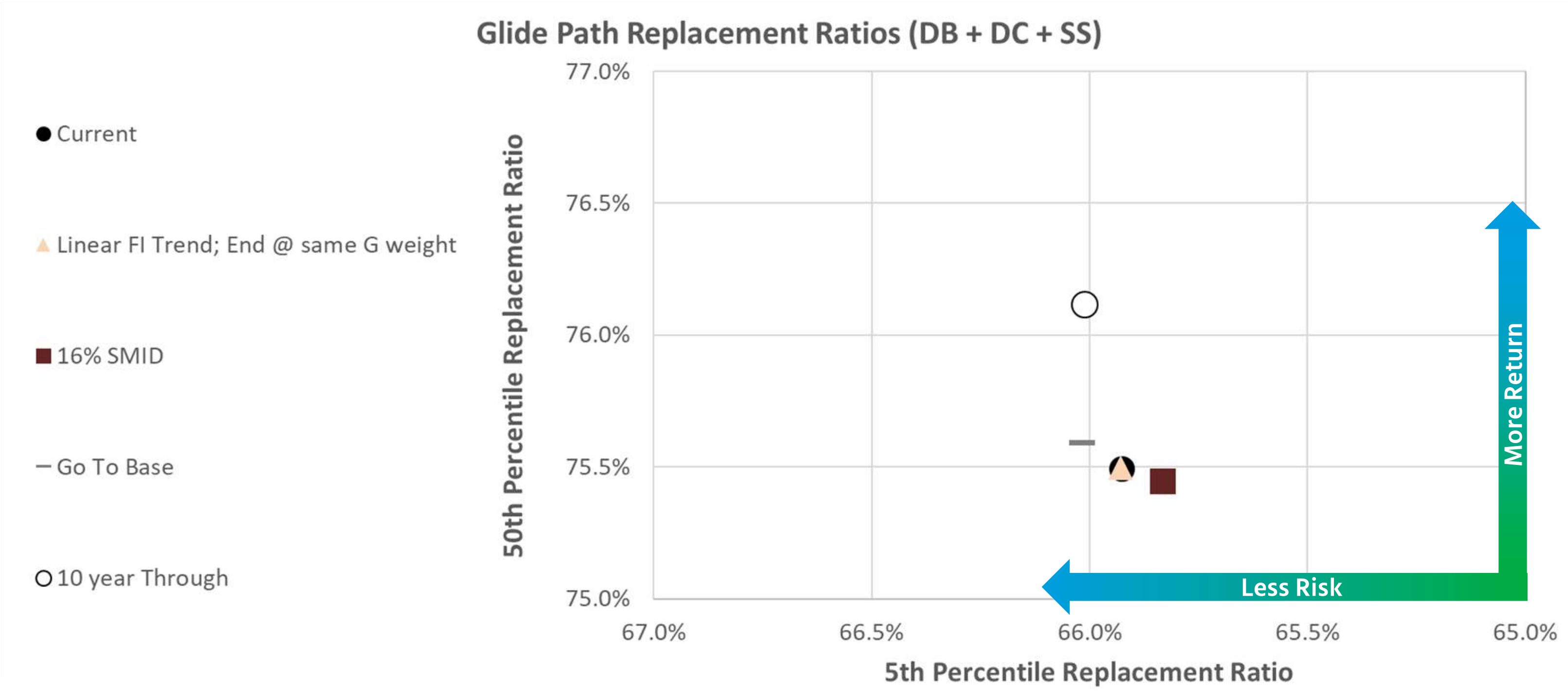
1 Prior study deferrals are weighted based on AH board summary report

# Summary Results
## L 2040 Fund

| | Current | Linear Trend of F Weight | 16% Small/Mid Weight | Go To Base | 10-yr Through |
|---|---|---|---|---|---|
| **Account Balance & Replacement Ratio at Drawdown (in Thousand of Dollars & % of Age 62 Earnings)** | | | | | |
| **Median Account Balance** (2040 in Real Dollars) | $619.7 | $619.9 | $617.9 | $619.3 | $628.4 |
| **5th Percentile Account Balance** (2040 in Real Dollars) | $478.3 | $478.6 | $478.2 | $478.5 | $468.3 |
| **Median Replacement Ratio – DB+DC+SS** | 75.5% | 75.5% | 75.4% | 75.6% | 76.1% |
| **5th Percentile Replacement Ratio – DB+DC+SS** | 65.9% | 65.9% | 65.8% | 66.0% | 66.0% |
| **Median TSP Replacement Ratio** | 26.2% | 26.2% | 26.1% | 26.3% | 26.8% |
| **5th Percentile TSP Replacement Ratio** | 18.4% | 18.4% | 18.3% | 18.4% | 18.5% |
| **Loss Likelihood** | | | | | |
| **Probability of Account Balance Decline 2 years Leading to Withdrawal** (2037 – 2039) | 9.9% | 9.9% | 9.9% | 10.0% | 12.4% |
| **Likelihood of 5% or Larger Investment Loss 2 years Leading to Withdrawal** (2037 – 2039) | 8.2% | 8.2% | 8.2% | 8.2% | 11.5% |
| **Post-Retirement Drawdown** | | | | | |
| **Probability Account Depleted at Age 80** | 15.2% | 15.2% | 15.3% | 15.5% | 11.9% |
| **Probability Account Depleted at Age 90** | 71.0% | 70.9% | 71.3% | 71.6% | 66.5% |
| **Probability Account Depleted at Median LE* Age** | 63.9% | 63.9% | 64.2% | 63.5% | 57.2% |
| **Median Drawdown Age** | 86 | 86 | 86 | 86 | 87 |
| **5th Percentile Drawdown Age** | 78 | 78 | 78 | 78 | 79 |

* Median LE is the median life expectancy utilizing the RP-2014 unisex table projected back to 2006 using MP-2014 projection scale and forward generationally with the MP-2018 projection scale.

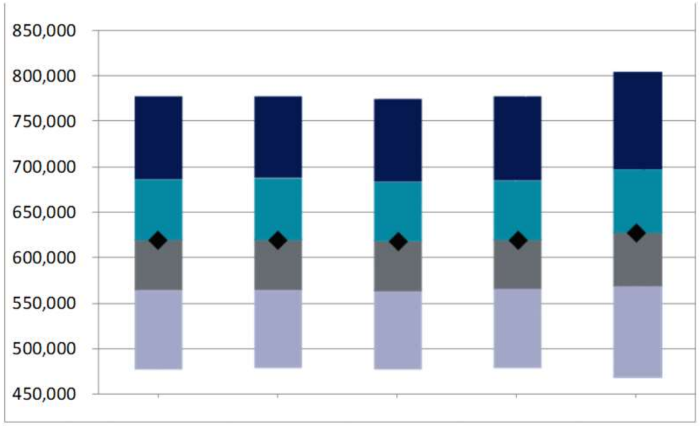
# Summary Results
## L 2040 Fund – Replacement Ratios




- Over the long time horizon, more equity risk has higher replacement ratios at both the 5$^{th}$ and 50$^{th}$ percentiles.
  - The improvement in the 5$^{th}$ percentile replacement ratio can be matched by moving to the Base Glide Path over 5 years.

# Summary Results

## L 2040 Fund – Real Account Balance

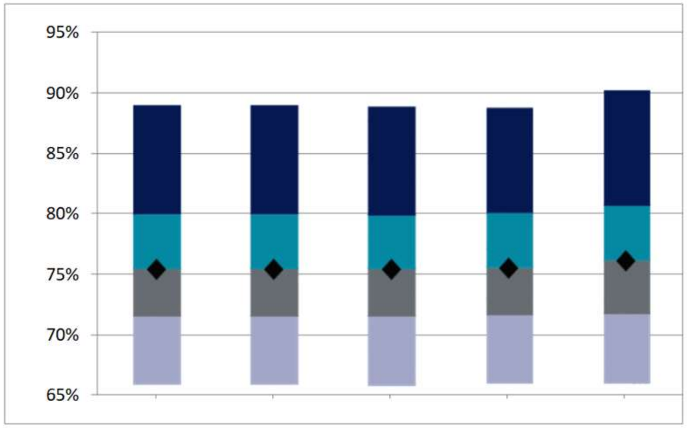



| | | Current | Linear FI Trend; End @ same G weight | 16% SMID | Move to Base | 10 year Through |
|---|---|---|---|---|---|---|
| 95th | | 778 | 778 | 775 | 778 | 805 |
| 75th | | 687 | 688 | 685 | 686 | 698 |
| 50th | | 620 | 620 | 618 | 619 | 628 |
| 25th | | 564 | 564 | 564 | 566 | 569 |
| 5th | | 478 | 479 | 478 | 479 | 468 |

| Participant Profile | L 2040 |
|---|---|
| Age | 43 |
| DC Account Balance | $111,717 |
| Salary | $86,800 |
| DB Annuity per Year* | 30.0% |

* Assumed percentage of final salary provided by annual DB benefit at retirement.

# Summary Results
## L 2040 Fund – Replacement Ratios

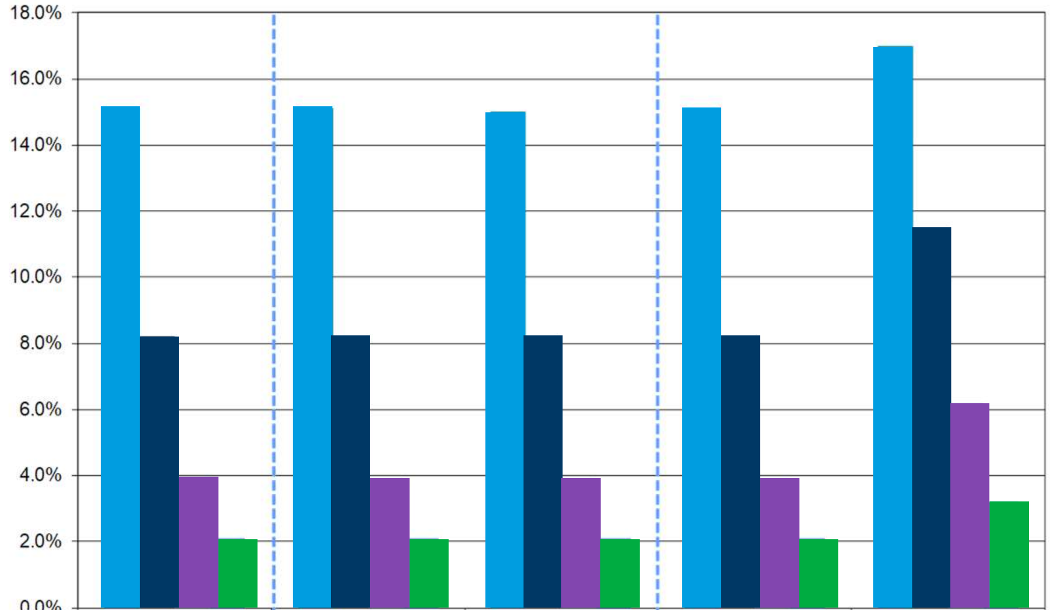



| | | Current | Linear FI Trend; End @ same G weight | 16% SMID | Move to Base | 10 year Through |
|---|---|---|---|---|---|---|
| 95th | | 89% | 89% | 89% | 89% | 90% |
| 75th | | 80% | 80% | 80% | 80% | 81% |
| 50th | | 75% | 75% | 75% | 76% | 76% |
| 25th | | 72% | 72% | 71% | 72% | 72% |
| 5th | | 66% | 66% | 66% | 66% | 66% |

| Participant Profile | L 2040 |
|---|---|
| Age | 43 |
| DC Account Balance | $111,717 |
| Salary | $86,800 |
| DB Annuity per Year* | 30.0% |

* Assumed percentage of final salary provided by annual DB benefit at retirement.

# Summary Results
## L 2040 Fund – Investment Risk




| | Current | Linear FI Trend; End @ same G weight | 16% SMID | Move to Base | 10 year Through |
|---|---|---|---|---|---|
| Return < 0% | 15.1% | 15.1% | 15.0% | 15.1% | 17.0% |
| Return < -5% | 8.2% | 8.2% | 8.2% | 8.2% | 11.5% |
| Return < -10% | 3.9% | 3.9% | 3.9% | 3.9% | 6.2% |
| Return < -15% | 2.1% | 2.1% | 2.1% | 2.1% | 3.2% |

**Probability of Investment Loss Final 2 Years Pre-Retirement**

- This measure is not influenced by the size of the account balance or the size of the contributions.

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# Findings of the Study

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# Findings of the Study
## Asset Allocation

Mercer analyzed various investment profiles in relation to asset allocation, including:

- Increasing F Fund weight relative to total fixed income
- Linear trend of G Fund weight transition
- Increasing or decreasing Small/Mid Cap weight relative to US equities
- Increasing International weight relative to total equities

Mercer's findings are:

- Increasing the F Fund weight is beneficial in a long-term equilibrium environment but less so in the current interest rate environment.
- The linear trend of the G Fund weight has minimal impact and simplifies the portfolio structure over time.
- Increasing or decreasing the Small/Mid Cap weight has a minimal impact, even over a 20+ year time horizon.
- Increasing international equity has a small benefit over the short-term, according to Mercer's current market outlook, but has limited impact over the long-term.

# Findings of the Study
## "To" vs "Through"

Mercer explored various "Through" designs utilizing the following asset allocations:

- Market weight of 16% Small/Mid Cap equity relative to US equities
- Maintaining international equity weight at 35% of total equities
- Linear trend of G Fund weight transition

Mercer reviewed de-risking earlier and later as well as a 10-year "Through" design.

Mercer's findings are:

- De-risking earlier has lower expected account balances with less risk nearing withdrawal, while de-risking later improves long-term outcomes with additional risk around withdrawal.
- Moving to the Base Glide Path over 5 years has similar results to the current allocation.
- A 10-year "Through" design improves participant outcomes for both pre- and post-withdrawal metrics with additional risk around withdrawal.

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# Appendix

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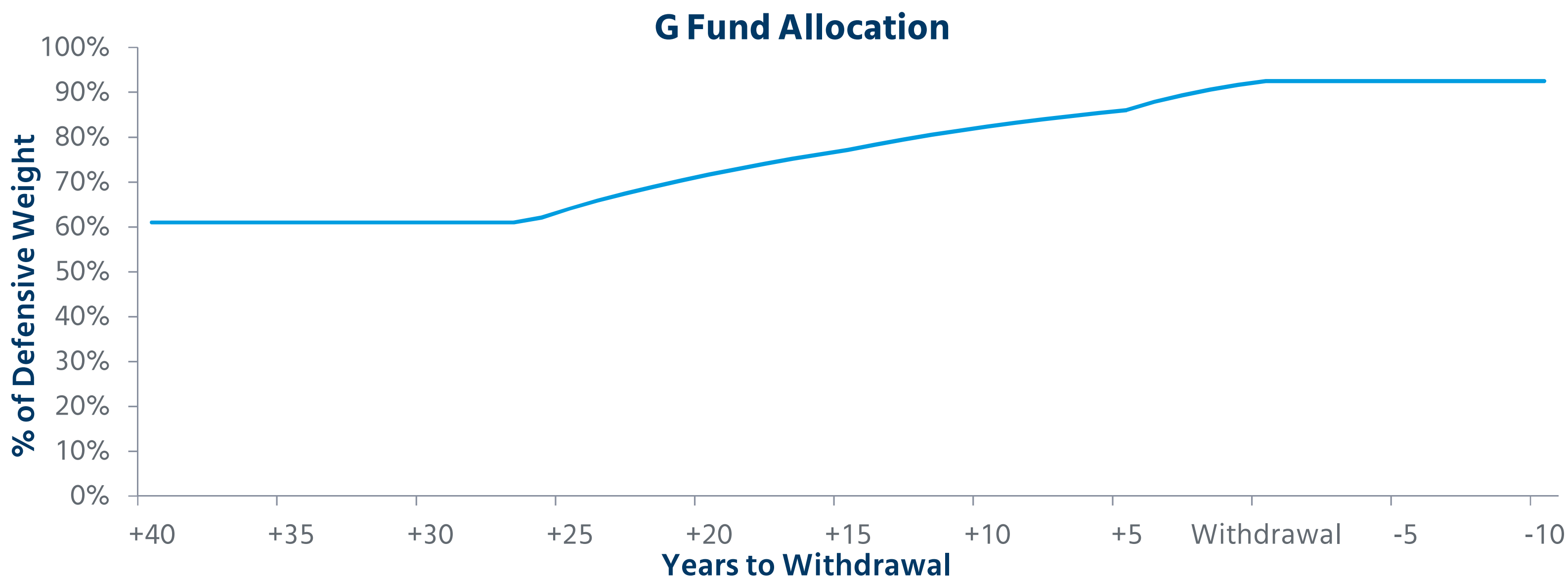
# Alternative Investments Modeled

| | Detail of Alternative Modelling |
|---|---|
| **Current State** | Current investment allocation and glide path design of the L Funds |
| **Group 1: Adjust Fixed Income Allocation (e.g. G Fund Weight)** | |
| **Increase F-Weight** | Start G Fund weight 40 years pre-withdrawal at 10% of fixed income and trend to a final weight of 75% at withdrawal |
| **Linear Trend of G-Weight** | Start G Fund weight at today's value and linearly trend to the same final weight of 92.5% at withdrawal |
| **Group 2: Adjust Small / Mid Cap Equity Weight** | |
| **16% Small / Mid Cap Weight** | Over 5 years trend the Small/Mid cap weight to 16% - this represents current market weight |
| **20% Small / Mid Cap Weight** | Over 5 years trend the Small/Mid cap weight to 20% - this aligns with the current weight of the L Income Fund |
| **25% Small / Mid Cap Weight** | Over 5 years trend the Small/Mid cap weight to 25% - this aligns approx. with the current weight of the L 2050 Fund |
| **Group 3: Adjust International Equity Weight** | |
| **40% International Weight** | Utilize a 40% weight for international equities – this represents an increase from current but still below market weight |
| **45% International Weight** | Utilize a 45% weight for international equities – this represents current market weight |
| **Group 4: Adjust Equity Allocation** | |
| **Move to Base Over 5 Years** | Linear trend of equity weight to the Base Glide Path over 5 years* |
| **De-Risk Earlier** | Begin rate of de-risking 5 years earlier – at age 30 |
| **De-Risk Later** | Begin rate of de-risking 5 years later – at age 40 |
| **Group 5: Adjust Equity Allocation** | |
| **10-yr "Through" Design** | Slow rate of de-risking 5 years prior to withdrawal to reach a 30% equity portfolio 10 years post-withdrawal |
| **10-yr "Through" & De-Risk Earlier** | A combination of the De-Risk Earlier and 10-year extended rolldown design |
| **10-yr "Through" & De-Risk Later** | A combination of the De-Risk Later and 10-year extended rolldown design |

* For the L 2055 and L 2060 Fund an alternative of starting at 100% equity was modeled in lieu of moving to the Base Glide Path since their glide path begins at the Base Glide Path.

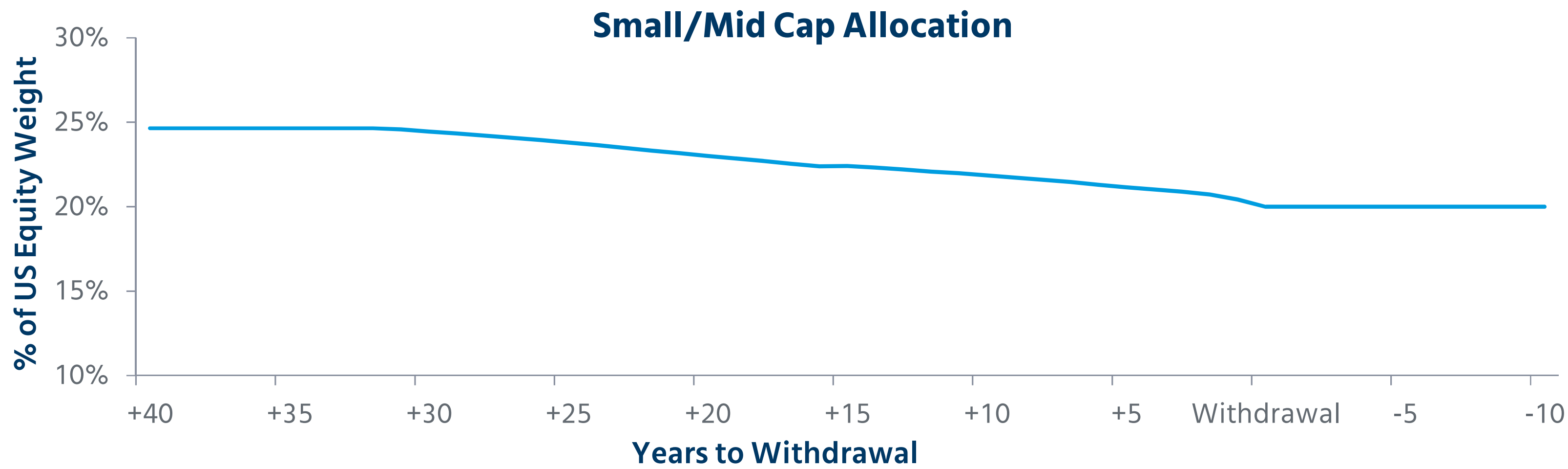
# Group 1: Adjust Fixed Income Allocation




Current G Fund weight starts at ~60% of the defensive allocation and trends up to 92.5% at withdrawal (Ratio: G / (G + F)).

- **Alternative 1**: Linear trend of G Fund weight from 10% of the defensive allocation to a final weight of 75% at withdrawal
- **Alternative 2:** Linear trend of G Fund weight from current weight as of July 2020 to the final weight of 92.5% at withdrawal

# Group 2: Adjust Small/Mid Cap Allocation




Small/Mid Cap weight trends from 25% to 20% of total US equity (Ratio: S / (C + S)).

- **Alternative 1**: Linear trend of S Fund weight from current to 16% over 5 years
- **Alternative 2**: Linear trend of S Fund weight from current to 20% over 5 years
- **Alternative 3**: Linear trend of S Fund weight from current to 25% over 5 years

Current market cap weight of US Small/Mid Cap stocks relative to US equities is ~16% as of December 31, 2019.*

* Market weight of Small/Mid Cap is based upon the market capitalization of the S&P 500 index vs. the sum of S&P 500 and Dow Jones US Completion Total Stock Market Index

# Group 3: Adjust International Equity Allocation

International equity weight remains at 35% throughout the glide path (Ratio: I / (C+S+I)).

- **Alternative 1:** Move to 40% international weight for entire glide path
- **Alternative 2:** Move to 45% international weight for entire glide path

* Market weight of international stocks based upon MSCI ACWI Investable Market Index (IMI)

# Group 4 & 5: Adjust Equity Allocation

The current TSP design reaches its terminal equity allocation of 30% at the assumed drawdown commencement age of 63.

- The de-risking of the glide path is on a 2-phase approach – de-risking begins at 99% equity 28 years prior to withdrawal and de-risks at a pace of 1.7% per year until 5 years prior to withdrawal, at which point the pace quickens to 6.0% per year.

We modeled three equity design alternatives.

- **Move to Base Over 5 Years**: In lieu of having the current equity allocation stay constant until merging with the Base Glide Path, this design increases the equity allocation over the first 5 years to merge with the Base Glide Path in July 2025.
- **De-Risk Earlier**: Start de-risking 33 years prior to withdrawal, same 2-phase approach
- **De-Risk Later**: Start de-risking 23 years prior to withdrawal, same 2-phase approach

We modeled three “Through” design alternatives.

- **10-Year “Through”**: Slow rate of de-risking 5 years prior to withdrawal to attain 30% equity allocation 10 years post-withdrawal
- **10-Year “Through” & De-Risk Earlier**: Start de-risking 33 years prior to withdrawal and reach 30% equity allocation 10 years post-withdrawal
- **10-Year “Through” & De-Risk Later**: Start de-risking 23 years prior to withdrawal and reach 30% equity allocation 10 years post-withdrawal

# Summary of Quarterly Market Survey

Mercer performs a quarterly survey of Target Date Fund providers.
- The survey covers 67 target date fund families.

The Thrift Savings Plan now targets a median risk profile relative to the universe of glide paths.

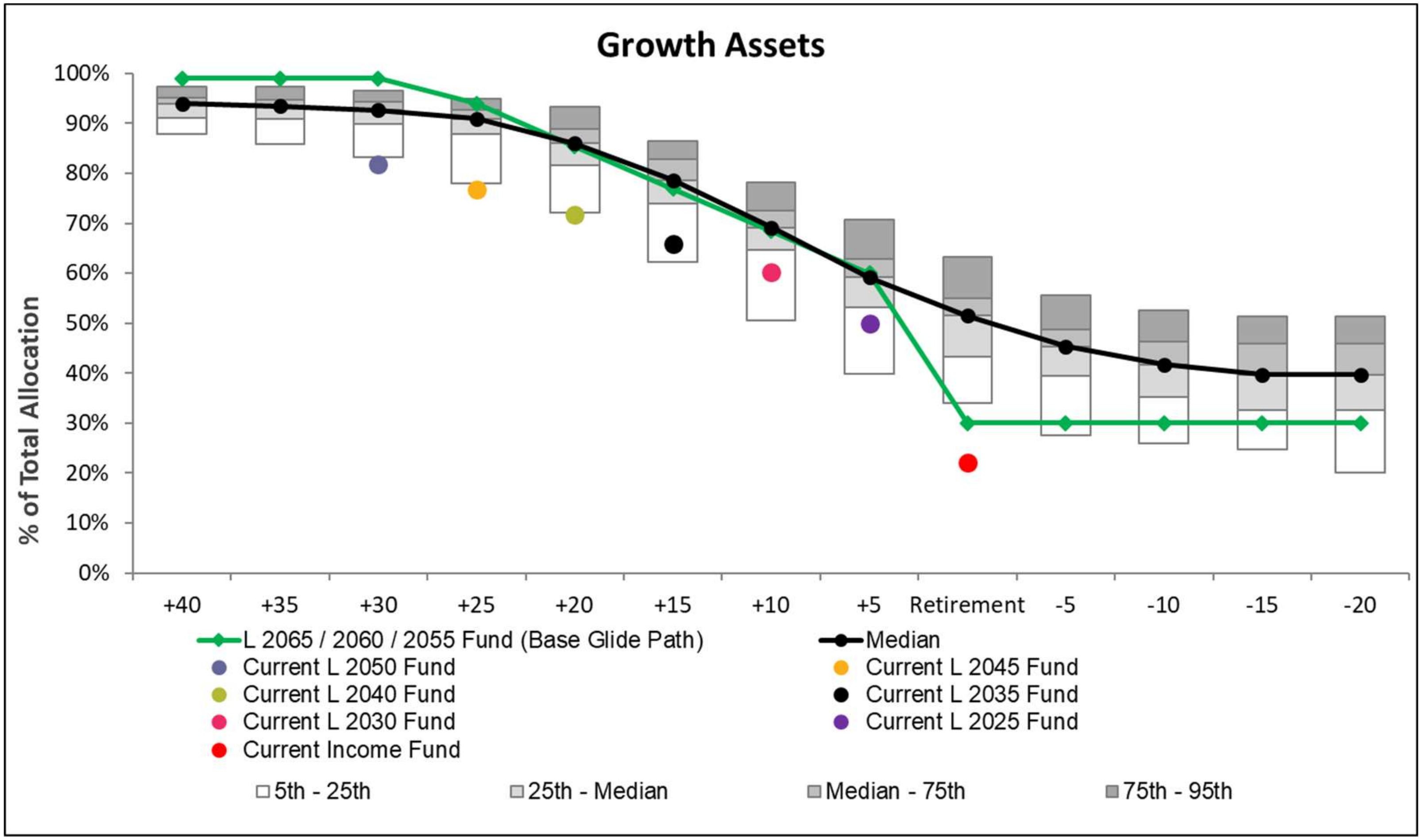
- The L funds' de-risking in the 5 years leading to withdrawal is steeper than most off-the-shelf providers.

The split of international equity vs. total equity is approximately at the survey median.

- Survey median trends from 35% to 30% over the glide path.

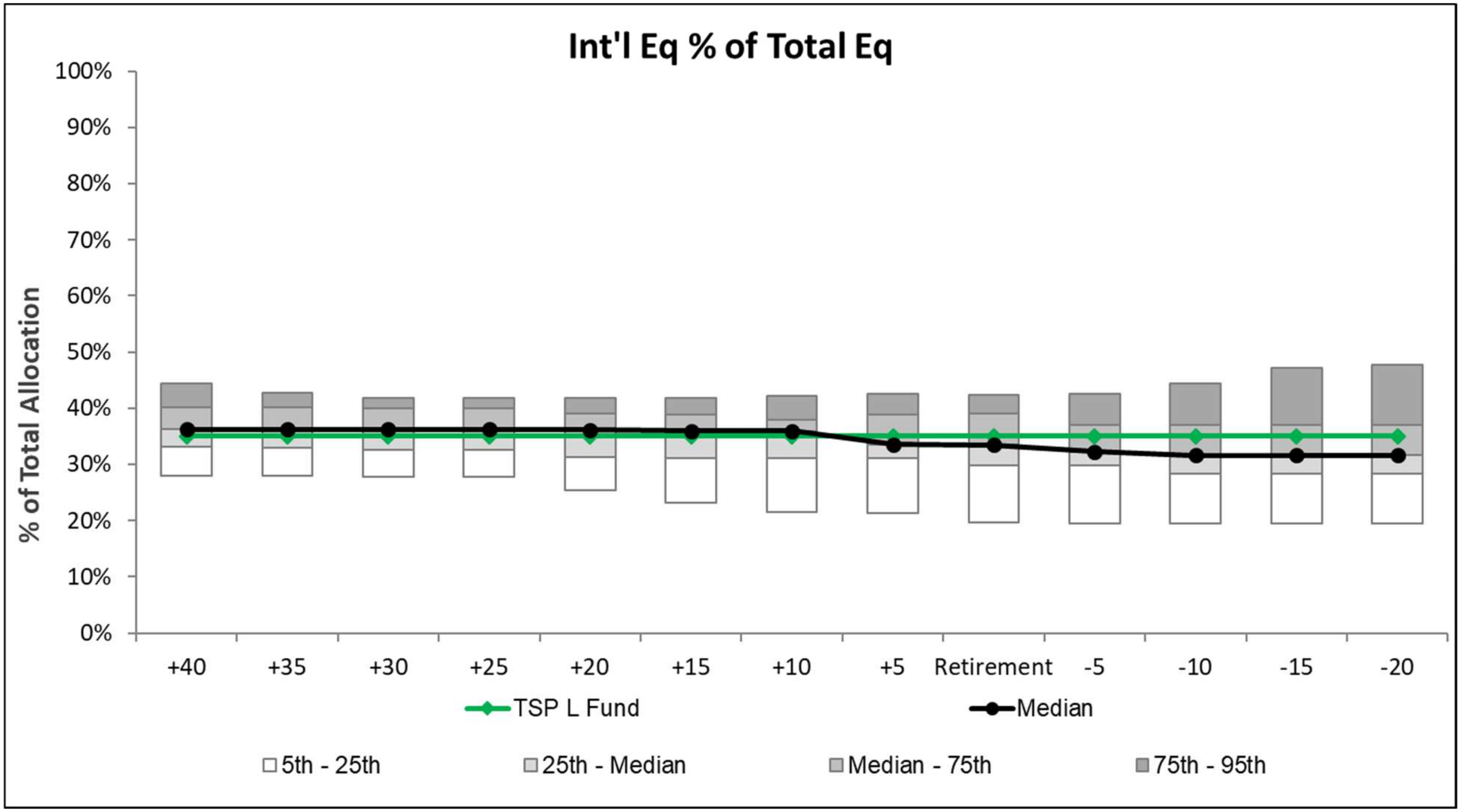
- Recently, many Target Date Fund advisors have increased their international equity allocation including:
    - Vanguard targets 40% at each vintage across the glide path as of 2015
    - Blackrock increased international equity exposure in 2019
    - Fidelity targets ~40% across the glide path as of 2019
    - SSgA targets ~40% across the glide path as of 2017

# Comparison to Mercer Survey
## Growth Allocation




Source: Mercer Quarterly Target Date Fund Survey (Q2 2019 including 39 TDFs with different asset allocations from among the 67 TDFs in the survey). Growth assets include equities, high yield, EMD, and commodities.

# Comparison to Mercer Survey
## International Equity Allocation




Source: Mercer Quarterly Target Date Fund Survey (Q2 2019 including 39 TDFs with different asset allocations from among the 67 TDFs in the survey).

# Comparison to Mercer Survey
## “To” vs “Through”

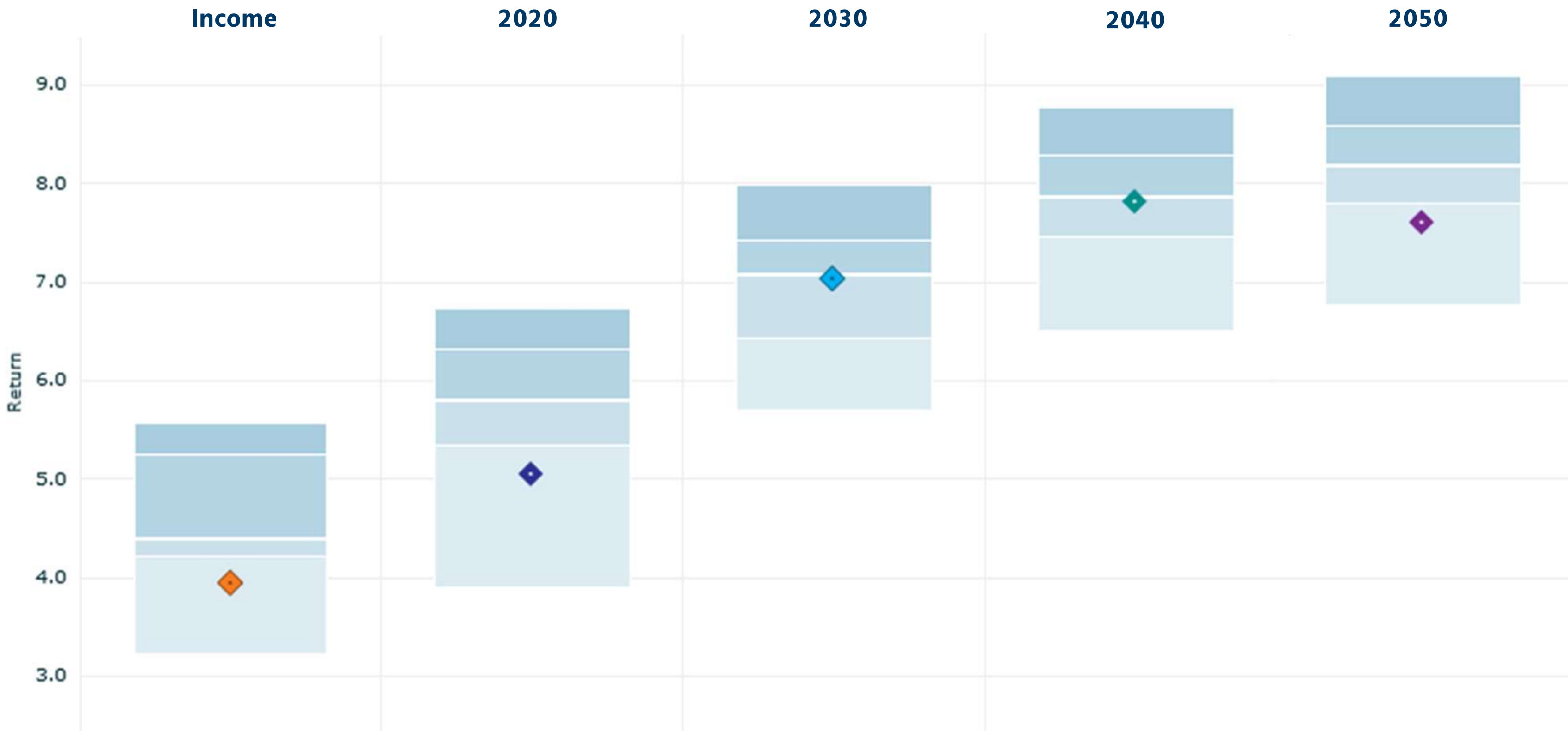
Mercer’s Target Date Fund approach supports a “whole of life” approach to investing.

- In addition to short-term volatility as a measure of risk, the importance of longevity risk post-retirement is considered.
- Additional equity in the years around retirement adds to short-term risk, but reduces the risk of outliving assets over the long-term in the majority of scenarios.

There are currently 39 unique glide paths in the off-the-shelf TDF landscape:

- 13 designs that do not extend the rolldown past retirement
- 3 designs that extend the rolldown less than 10 years past retirement
- 8 designs that extend the rolldown exactly 10 years past retirement
- 15 designs that extend the rolldown greater than 10 years past retirement

# 5-Year Performance: Ending Dec-2019




| | 5 yrs (%pa) | 5 yrs (%pa) | 5 yrs (%pa) | 5 yrs (%pa) | 5 yrs (%pa) |
|---|---|---|---|---|---|
| **L Fund Return** | 3.9 *(85)* | 5.1 *(83)* | 7.0 *(55)* | 7.8 *(51)* | 7.6 *(86)* |
| 5th Percentile | 5.6 | 6.7 | 8.0 | 8.8 | 9.1 |
| Upper Quartile | 5.2 | 6.3 | 7.4 | 8.3 | 8.6 |
| Median | 4.4 | 5.8 | 7.1 | 7.9 | 8.2 |
| Lower Quartile | 4.2 | 5.3 | 6.4 | 7.5 | 7.8 |
| 95th Percentile | 3.2 | 3.9 | 5.7 | 6.5 | 6.8 |
| Number | 23 | 36 | 41 | 39 | 39 |

# Biographies

**Kelly Henson**
Partner

Kelly consults with corporate defined benefit plans, defined contribution plans and other institutional pools on projects relating to asset allocation studies, investment manager selection, investment policy reviews, due diligence reports and fund operations and governance.

Kelly is a member of Mercer's Strategic Research Team for Stable Value and the National DC Investment Committee responsible for developing Mercer's best thinking for defined contribution plans nationally.

Kelly holds a BA in Finance from Terry College of Business at the University of Georgia.

**Andrew Scheufele, FSA, CFA**
Principal

Andrew Scheufele is Head of the Investment Strategy Team for Mercer's Delegated Solutions business in the US and works with plan sponsors to understand and quantify risk exposures in their retirement programs applicable to both defined benefit pension plans and defined contribution target date funds.

Andrew holds a BS in mathematics and economics from Georgetown University in Washington, DC.

**Jacob Goldberg, FSA, CFA**
Senior Associate

Jacob works within Mercer's Delegated Solutions business with plan sponsors to develop and monitor a strategic asset allocation for both defined benefit and defined contribution pension plans using plan- and plan sponsor-specific information to select an optimal strategy for long-term financial success.

Jacob holds a BS in Mathematical Sciences and a MS in Quantitative Finance from Bentley College in Waltham, MA.

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