

February 26, 2026



**The North Carolina  
Supplemental Retirement Plans  
(NCSRP)**

Glidepath Consolidation and  
Optimization

---

**Jason Ellement, CFA, FSA**  
Capital Markets Research

**Elizabeth Hood, CFA**  
Investment Consulting

**Julia Moriarty, CFA**  
Capital Markets Research

**Weston Lewis, CFA, CAIA**  
Investment Consulting

**Gary Chang, CFA**  
Capital Markets Research

---

# Project Overview

## NCSRP Glidepath Design

At the August 2025 meeting, the Supplemental Retirement Board of Trustees authorized NCIA Staff and Callan to work toward an optimal glidepath for participants that utilize the GoalMaker service.

Importantly, the Board has responsibility with respect to asset allocation underlying GoalMaker for the default glidepath.

Upon evaluation of participant demographics, capital market assumptions, and considering the four primary risks across participants' lifecycle—longevity risk, drawdown risk, shortfall risk, and inflation risk—Callan and Staff recommend the glidepath incorporate the following major changes:

1. Consolidate to a single glidepath that will become the default for all GoalMaker participants
2. Increase equity exposure across all nodes relative to current “Moderate GoalMaker” allocations
3. Change equity structures (e.g. reduce small/mid cap equity bias; change US/non-US equity split)
4. Eliminate Inflation Responsive Fund exposure, while maintaining short duration TIPS exposure
5. Incorporate passive implementation in SMID cap equity and international equity

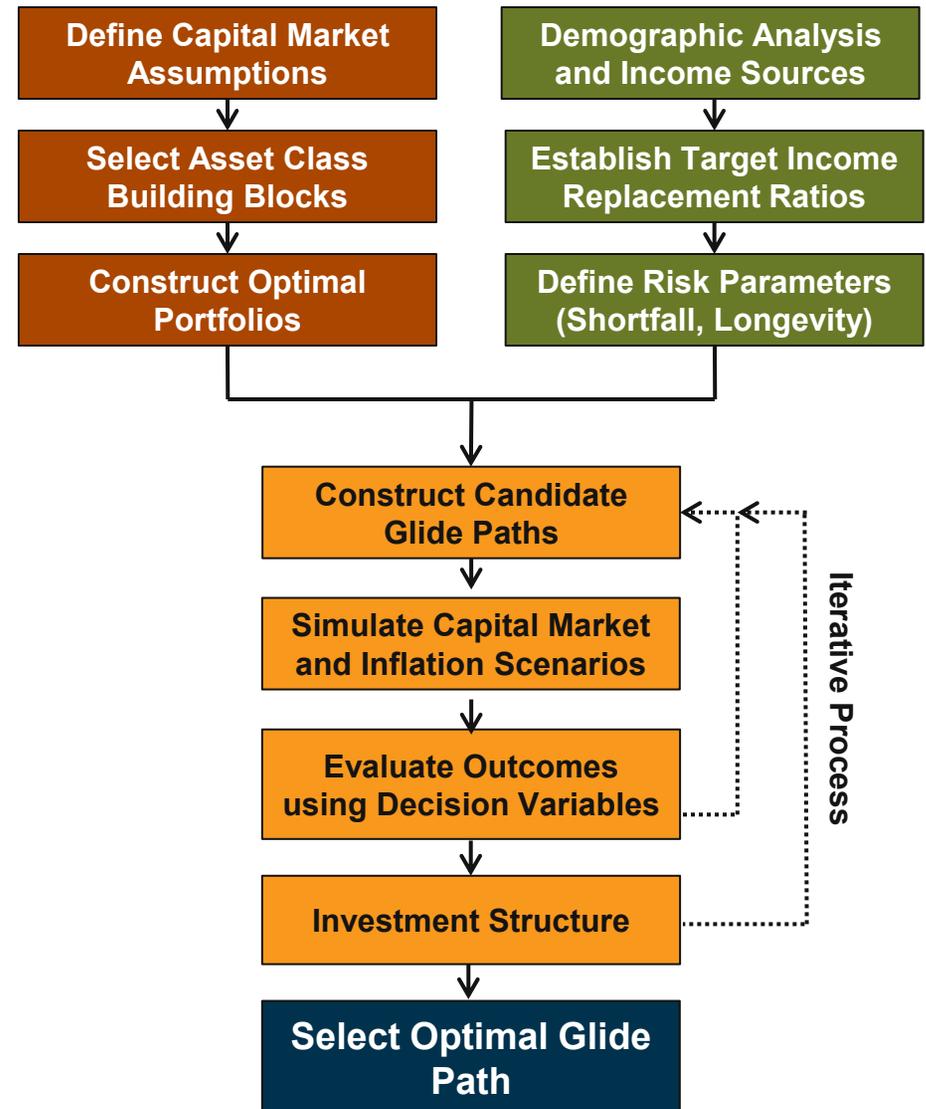
Callan and Staff reviewed several candidate glidepaths and considered incorporation of various diversifying asset classes, including private markets. Ultimately, private markets were not added due to higher cost, operational complexity and requirement to include all core investment options of Target Date Fund series on 401(k) menu

# Callan Custom Glide Path Design Process

## A Robust and Proven Fiduciary Process

- Callan's glide path design process is comprehensive, collaborative and well-documented
- Employs a proprietary simulation model developed and operated by our experienced team of actuaries and capital market specialists
- Can take into account plan demographics, account balances, outside wealth, company match, salary and growth, risk tolerance, etc.
- Generates a number of decision variables which are analyzed and compared across a full spectrum of glide paths:
  - Income replacement ratios
  - Worse-case decline in assets
  - Probability of outliving assets
- Evaluates full spectrum of investment alternatives for a given operational platform
- Documents goals, objectives, and process for selecting optimal glide path for employee population
- Process is iterative and converges to an optimal glidepath after vetting multiple candidates

## Monte Carlo Simulation Analysis

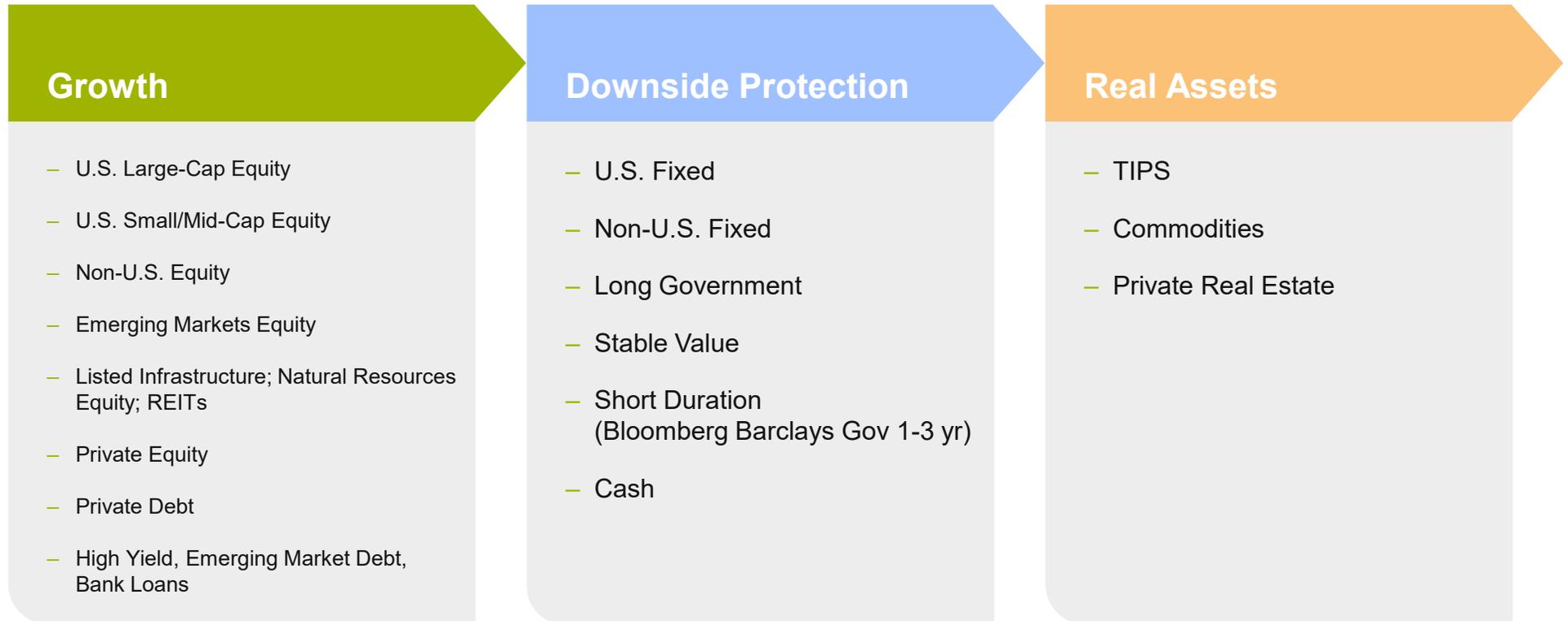


# Callan Capital Market Assumptions

		10-Year	40-Year	80-Year	Standard Deviation
<b>Equities</b>					
Large Cap U.S. Equity	S&P 500	7.25%	7.70%	7.85%	17.00%
Small/Mid Cap U.S. Equity	Russell 2500	7.45%	7.95%	8.05%	22.00%
Global ex-U.S. Equity	MSCI ACWI ex USA	7.45%	7.90%	8.05%	21.27%
Developed ex-U.S. Equity	MSCI World ex USA	7.25%	7.75%	7.85%	20.15%
Emerging Market Equity	MSCI Emerging Markets	7.45%	7.90%	8.05%	25.65%
US REITS	NAREIT All Equity	6.95%	7.40%	7.50%	20.90%
<b>Fixed Income</b>					
Stable Value	n/a	3.80%	3.80%	3.75%	1.50%
Short Duration Govt/Credit	Bloomberg 1-3 Yr G/C	4.00%	4.15%	4.20%	2.40%
Core U.S. Fixed	Bloomberg Aggregate	4.75%	4.90%	4.95%	4.40%
High Yield	Bloomberg High Yield	6.00%	6.50%	6.60%	11.75%
Bank Loans	S&P/LSTA Leveraged Loan Index	6.10%	6.15%	6.20%	9.90%
Emerging Market Sovereign Debt	EMBI Global Diversified	5.35%	5.75%	5.85%	10.65%
<b>Real Assets</b>					
Broad TIPS	Bloomberg TIPS	4.55%	4.55%	4.55%	5.40%
Intermediate TIPS	Bloomberg TIPS 1-10 Year	4.15%	4.15%	4.15%	3.50%
Commodities	Bloomberg Commodity	3.90%	3.80%	3.75%	18.05%
Direct Real Estate	NCREIF ODCE	6.25%	6.75%	6.85%	14.00%
<b>Cash Equivalents</b>	90-Day T-Bill	3.00%	3.00%	3.00%	0.90%
<b>Inflation</b>	CPI-U	2.50%	2.35%	2.30%	1.60%

- Callan's capital market assumptions (CMAs) are a key input into constructing and evaluating candidate Glide Paths
  - Capital market assumptions represent passive exposure to the market (beta only)
  - Thus, fee reduction in Proposed Path is not factored into forecasting

# Role of Each Asset Class



- Asset classes can be categorized as Growth Assets, Downside Protection Assets and Real Assets
- Asset classes are categorized by their primary role but can have secondary roles
  - E.g. #1 - Private Real Estate is listed under inflation protection but is also an effective diversifier with a return expectation between stocks and bonds
  - E.g. #2 - Inflation-Sensitive equities (Listed Infrastructure, Natural Resources Equity, REITs) are listed under growth due to return-risk profile

# Consolidate to a Single Glidepath

## Summary of Findings:

- NCSRP is unique in offering a choice between three glidepaths rather than a single glidepaths
- Glidepath analysis indicates the conservative glidepath has a low probability of getting participants retirement-ready, especially low savers
- Utilization data indicates a number of participants are not properly utilizing the options

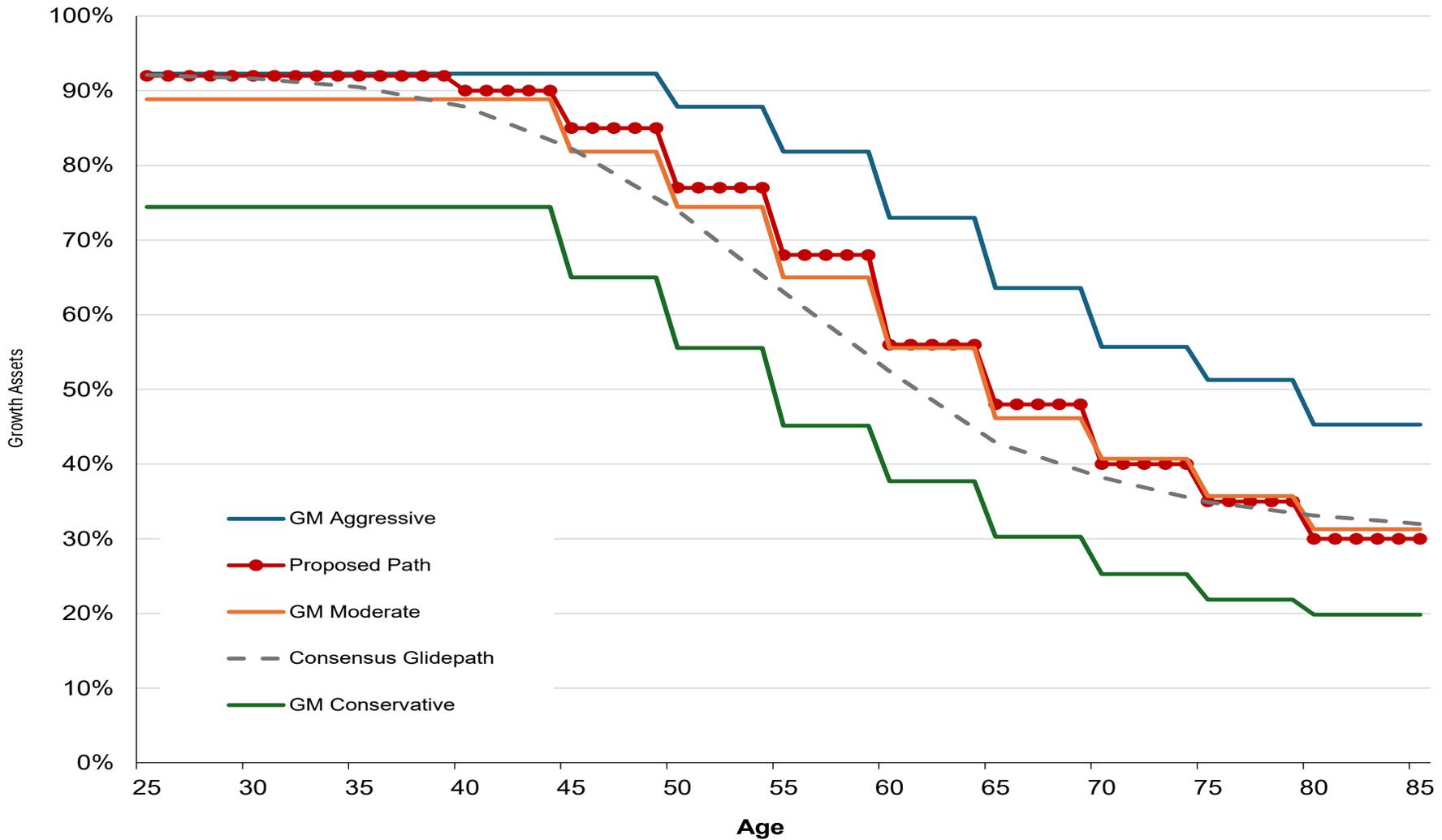
## Objective:

Unify the current conservative, moderate, and aggressive into a single glidepath that better aligns with participant needs, plan simplicity, and fiduciary alignment.

## Rationale:

- **Participant Clarity:** Minimizes potential confusion and choice overload, facilitating better decision making
- **Behavioral Advantage:** Anchors disengaged participants to a more thoughtfully constructed default investment option
- **Fiduciary Alignment:** Multiple glidepaths are very rare in defined contribution plans. A single, robust glidepath enables efficient ongoing monitoring and optimization
- **Operational Simplicity:** Reduces administrative burden, oversight requirements, and communication

# Growth Assets



- The Proposed Glidepath would replace the three current Paths – GM Aggressive, GM Moderate and GM Conservative
- The Proposed Path was based on the GM Moderate but has more Growth Assets up to age 60

## GM Moderate

Goalmaker Moderate Path Age	2070 20	2065 25	2060 30	2055 35	2050 40	2045 45	2040 50	2035 55	2030 60	2025 65	2020 70	2015 75	2010 80	2005 85
NC Large Cap Index Fund	33.0%	33.0%	33.0%	33.0%	33.0%	30.0%	27.0%	24.0%	21.0%	19.0%	18.0%	16.0%	14.0%	14.0%
NC Small/Mid Cap Core Fund	14.0%	14.0%	14.0%	14.0%	14.0%	12.0%	12.0%	10.0%	8.0%	6.0%	6.0%	4.0%	4.0%	4.0%
NC International Fund	38.0%	38.0%	38.0%	38.0%	38.0%	36.0%	32.0%	28.0%	24.0%	19.0%	15.0%	14.0%	12.0%	12.0%
NC Fixed Income Fund	6.0%	6.0%	6.0%	6.0%	6.0%	13.0%	21.0%	28.0%	33.0%	36.0%	34.0%	27.0%	23.0%	23.0%
NC Stable Value Fund	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.0%	6.0%	10.0%	14.0%	19.0%	22.0%	22.0%
NC Inflation Responsive Fund	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	8.0%	7.0%	6.0%	5.0%	4.0%	4.0%	3.0%	3.0%
NC TIPS Fund	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	5.0%	9.0%	16.0%	22.0%	22.0%
<b>Growth Assets</b>	<b>89%</b>	<b>89%</b>	<b>89%</b>	<b>89%</b>	<b>89%</b>	<b>82%</b>	<b>74%</b>	<b>65%</b>	<b>56%</b>	<b>46%</b>	<b>41%</b>	<b>36%</b>	<b>31%</b>	<b>31%</b>
<b>Downside Protection Assets</b>	<b>6%</b>	<b>6%</b>	<b>6%</b>	<b>6%</b>	<b>6%</b>	<b>13%</b>	<b>21%</b>	<b>31%</b>	<b>39%</b>	<b>46%</b>	<b>48%</b>	<b>46%</b>	<b>45%</b>	<b>45%</b>
<b>Real Assets</b>	<b>5%</b>	<b>4%</b>	<b>5%</b>	<b>8%</b>	<b>11%</b>	<b>18%</b>	<b>24%</b>	<b>24%</b>						
<b>10-Year Expected Return</b>	7.4%	7.4%	7.4%	7.4%	7.4%	7.3%	7.2%	6.9%	6.6%	6.3%	6.1%	5.8%	5.6%	5.6%
<b>Standard Deviation</b>	16.5%	16.5%	16.5%	16.5%	16.5%	15.2%	13.9%	12.2%	10.5%	8.7%	7.6%	6.7%	5.9%	5.9%
<b>Total Estimated Expense (%)</b>	0.23%	0.23%	0.23%	0.23%	0.23%	0.23%	0.22%	0.21%	0.20%	0.18%	0.18%	0.17%	0.16%	0.16%

- The above table depicts the asset class weights for each Target Date Fund of the Moderate Glide Path
- The GM Moderate utilizes 7 core menu investment options
- Fees range from 16-23 bps across all Funds

## Proposed Path

Proposed Path	2070 20	2065 25	2060 30	2055 35	2050 40	2045 45	2040 50	2035 55	2030 60	2025 65	2020 70	2015 75	2010 80	2005 85
NC Large Cap Index Fund	47.0%	47.0%	47.0%	47.0%	46.0%	43.0%	42.0%	37.0%	33.0%	29.0%	24.0%	20.0%	18.0%	18.0%
NC Small/Mid Cap Core Fund	8.0%	8.0%	8.0%	8.0%	8.0%	7.2%	6.4%	4.9%	3.6%	2.5%	2.0%	2.0%	1.5%	1.5%
NC Small/Mid Cap Index Fund	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	1.6%	2.1%	2.4%	2.5%	2.0%	2.0%	1.5%	1.5%
NC International Fund	37.0%	37.0%	37.0%	37.0%	36.0%	32.3%	24.3%	20.4%	13.6%	10.5%	9.0%	8.3%	6.8%	6.8%
NC International Index Fund	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	2.7%	3.6%	3.4%	3.5%	3.0%	2.8%	2.3%	2.3%
NC Fixed Income Fund	8.0%	8.0%	8.0%	8.0%	10.0%	15.0%	23.0%	26.0%	32.0%	34.0%	37.0%	37.0%	35.0%	35.0%
NC Stable Value Fund	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.0%	6.0%	9.0%	12.0%	15.0%	20.0%	20.0%
NC TIPS Fund	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.0%	6.0%	9.0%	11.0%	13.0%	15.0%	15.0%
<b>Growth Assets</b>	<b>92%</b>	<b>92%</b>	<b>92%</b>	<b>92%</b>	<b>90%</b>	<b>85%</b>	<b>77%</b>	<b>68%</b>	<b>56%</b>	<b>48%</b>	<b>40%</b>	<b>35%</b>	<b>30%</b>	<b>30%</b>
<b>Downside Protection Assets</b>	<b>8%</b>	<b>8%</b>	<b>8%</b>	<b>8%</b>	<b>10%</b>	<b>15%</b>	<b>23%</b>	<b>29%</b>	<b>38%</b>	<b>43%</b>	<b>49%</b>	<b>52%</b>	<b>55%</b>	<b>55%</b>
<b>Real Assets</b>	<b>0%</b>	<b>3%</b>	<b>6%</b>	<b>9%</b>	<b>11%</b>	<b>13%</b>	<b>15%</b>	<b>15%</b>						
<b>10-Year Expected Return</b>	7.5%	7.5%	7.5%	7.5%	7.4%	7.3%	7.2%	6.9%	6.6%	6.3%	6.0%	5.8%	5.6%	5.6%
<b>Standard Deviation</b>	16.4%	16.4%	16.4%	16.4%	16.0%	15.2%	13.7%	12.1%	10.0%	8.6%	7.3%	6.5%	5.6%	5.6%
<b>Total Estimated Expense (%)</b>	0.20%	0.20%	0.20%	0.20%	0.20%	0.19%	0.16%	0.15%	0.14%	0.13%	0.13%	0.14%	0.14%	0.14%

- The above table depicts the asset class weights for each Target Date Fund of the Proposed Glide Path
- Fees range from 14-20 bps across all Funds
  - The Proposed Path is less expensive
  - The NC Small/Mid Cap Index Fund and NC International Index Fund are introduced to build exposures in passive management
- The Proposed Path utilizes 8 core menu investment options
  - The Inflation Responsive Fund is removed
  - No new asset classes are added

## Change (Proposed Less GM Moderate)

Proposed Less Moderate Age	2070 20	2065 25	2060 30	2055 35	2050 40	2045 45	2040 50	2035 55	2030 60	2025 65	2020 70	2015 75	2010 80	2005 85		
NC Large Cap Index Fund	14.0%	14.0%	14.0%	14.0%	13.0%	13.0%	15.0%	13.0%	12.0%	10.0%	6.0%	4.0%	4.0%	4.0%	Less than	-1.0%
NC Small/Mid Cap Core Fund	-6.0%	-6.0%	-6.0%	-6.0%	-6.0%	-4.8%	-5.6%	-5.1%	-4.4%	-3.5%	-4.0%	-2.0%	-2.5%	-2.5%	More than	1.0%
NC Small/Mid Cap Index Fund	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	1.6%	2.1%	2.4%	2.5%	2.0%	2.0%	1.5%	1.5%		
NC International Fund	-1.0%	-1.0%	-1.0%	-1.0%	-2.0%	-3.7%	-7.7%	-7.6%	-10.4%	-8.5%	-6.0%	-5.8%	-5.3%	-5.3%		
NC International Index Fund	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	2.7%	3.6%	3.4%	3.5%	3.0%	2.8%	2.3%	2.3%		
NC Fixed Income Fund	2.0%	2.0%	2.0%	2.0%	4.0%	2.0%	2.0%	-2.0%	-1.0%	-2.0%	3.0%	10.0%	12.0%	12.0%		
NC Stable Value Fund	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-1.0%	-2.0%	-4.0%	-2.0%	-2.0%		
NC Inflation Responsive Fund	-9.0%	-9.0%	-9.0%	-9.0%	-9.0%	-9.0%	-8.0%	-7.0%	-6.0%	-5.0%	-4.0%	-4.0%	-3.0%	-3.0%		
NC TIPS Fund	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.0%	4.0%	4.0%	2.0%	-3.0%	-7.0%	-7.0%		
Growth Assets	3.1%	3.1%	3.1%	3.1%	1.1%	3.1%	2.6%	3.0%	0.4%	1.9%	-0.7%	-0.7%	-1.3%	-1.3%		
Downside Protection Assets	2.0%	2.0%	2.0%	2.0%	4.0%	2.0%	2.0%	-2.0%	-1.0%	-3.0%	1.0%	6.0%	10.0%	10.0%		
Real Assets	-5.1%	-5.1%	-5.1%	-5.1%	-5.1%	-5.1%	-4.6%	-1.0%	0.6%	1.2%	-0.3%	-5.3%	-8.7%	-8.7%		
10-Year Expected Return	0.02%	0.02%	0.02%	0.02%	-0.01%	0.03%	0.00%	0.00%	-0.08%	-0.02%	-0.06%	0.00%	-0.02%	-0.02%	Less than	0.00%
Standard Deviation	-0.1%	-0.1%	-0.1%	-0.1%	-0.4%	0.0%	-0.2%	0.0%	-0.4%	-0.1%	-0.3%	-0.2%	-0.3%	-0.3%	More than	0.00%
Total Estimated Expense (%)	-0.03%	-0.03%	-0.03%	-0.03%	-0.04%	-0.04%	-0.06%	-0.06%	-0.06%	-0.05%	-0.04%	-0.03%	-0.02%	-0.02%		

- The top table show the change in asset class weights for a participant moving from the GM Moderate to the Proposed Path
  - Changes larger than +/-1% are highlighted
  - Growth Assets (equity exposure) increases up to age 65
  - The equity structure has less Small/Mid Cap bias and more home bias (US equity exposure)
  - Stable Value and TIPS are tapered near the end of the Path (age70+) and re-allocated to Fixed Income
- The bottom table show the change in return, risk and expense for a participant moving from the GM Moderate to the Proposed Path
  - Return is similar up to age 60 and slightly lower thereafter
  - Risk and fees are lowered

# Change in Fund Assets and Implementation Timeline

Fund	GoalMaker Assets		Change
	Current Paths	Proposed Path	
NC Large Cap Index Fund	2,796,634,635	4,112,314,672	1,315,680,037
NC Small/Mid Cap Core Fund	1,133,501,676	742,393,033	(391,108,642)
NC International Fund	3,204,751,018	2,783,179,841	(421,571,177)
NC Fixed Income Fund	2,080,709,176	2,266,638,424	185,929,248
NC Stable Value Fund	324,532,355	288,282,941	(36,249,413)
NC Inflation Responsive Fund	790,714,774	0	(790,714,774)
NC TIPS Fund	150,248,206	288,282,929	138,034,723
	10,481,091,840	10,481,091,840	0

- The above table illustrates the approximate change in Fund assets that will occur over time.
- Represents GoalMaker assets as of 12/31/2025 for both Plans - 401(k) and 457 Plan

## Transition timing\*:

- Empower will require 60-90 days from date that Board approves changes to prepare/distribute participant communications and make system adjustments on the recordkeeping platform → ***Earliest implementation would begin mid-to-late Q2.***
- Flows will initially help reweight portfolios → ***All future participant allocation instructions (future contributions) will immediately update to align with the new GoalMaker portfolios.***
- Existing balances will not rebalance on day one → ***Rebalances occur during each participant's regularly scheduled quarterly GoalMaker rebalance, which is based on their date of birth.***

\*Source: Empower

## Change Equity Structures

	2070	2065	2060	2055	2050	2045	2040	2035	2030	2025	2020	2015	2010
GM Moderate	20	25	30	35	40	45	50	55	60	65	70	75	80
NC Large Cap Index Fund	33%	33%	33%	33%	33%	30%	27%	24%	21%	19%	18%	16%	14%
NC Small/Mid Cap Core Fund	14%	14%	14%	14%	14%	12%	12%	10%	8%	6%	6%	4%	4%
NC International Fund	<u>38%</u>	<u>38%</u>	<u>38%</u>	<u>38%</u>	<u>38%</u>	<u>36%</u>	<u>32%</u>	<u>28%</u>	<u>24%</u>	<u>19%</u>	<u>15%</u>	<u>14%</u>	<u>12%</u>
Total Equity Exposure	85%	85%	85%	85%	85%	78%	71%	62%	53%	44%	39%	34%	30%
SMID Ratio	30%	30%	30%	30%	30%	29%	31%	29%	28%	24%	25%	20%	22%
Non-US Ratio	45%	45%	45%	45%	45%	46%	45%	45%	45%	43%	38%	41%	40%

### Proposed Path

NC Large Cap Index Fund	47%	47%	47%	47%	46%	43%	42%	37%	33%	29%	24%	20%	18%
NC Small/Mid Cap Core Fund	8%	8%	8%	8%	8%	8%	8%	7%	6%	5%	4%	4%	3%
NC International Fund	<u>37%</u>	<u>37%</u>	<u>37%</u>	<u>37%</u>	<u>36%</u>	<u>34%</u>	<u>27%</u>	<u>24%</u>	<u>17%</u>	<u>14%</u>	<u>12%</u>	<u>11%</u>	<u>9%</u>
Total Equity Exposure	92%	92%	92%	92%	90%	85%	77%	68%	56%	48%	40%	35%	30%
SMID Ratio	15%	15%	15%	15%	15%	16%	16%	16%	15%	15%	14%	17%	14%
Non-US Ratio	40%	40%	40%	40%	40%	40%	35%	35%	30%	29%	30%	31%	30%

- Reduce bias to Small/Mid Cap US Equity
  - SMID ratio = Small/Mid Cap US Equity / US Equity
  - Eliminating the SMID bias reduces risk AND return due to Callan having a small cap premium of 20-25 bps (over large cap)
  - Fees would be reduced – active SMID Cap core (38 bps) to passive Large Cap (1 bp)
  - Less tracking error relative to peers and broad US equity market
- Tilt towards more home bias in equity structure (Lower Non-US Ratio)
  - Non-US Ratio = Non-US Equity / Total Equity
  - Fees would be reduced – active International Equity (41 bps) to passive Large Cap (1 bp)
  - Less currency risk in retirement

# Real Assets & Inflation Risk

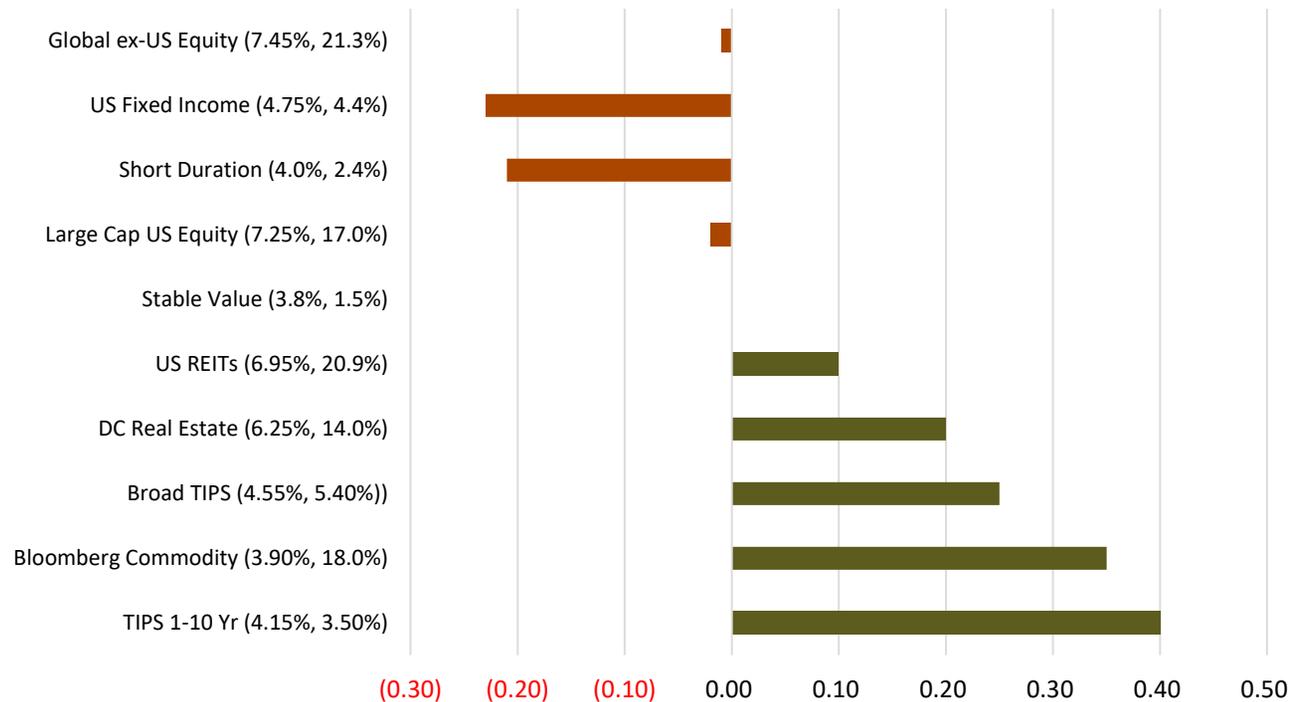
	2070	2065	2060	2055	2050	2045	2040	2035	2030	2025	2020	2015	2010
<b>GM Moderate</b>	<b>20</b>	<b>25</b>	<b>30</b>	<b>35</b>	<b>40</b>	<b>45</b>	<b>50</b>	<b>55</b>	<b>60</b>	<b>65</b>	<b>70</b>	<b>75</b>	<b>80</b>
NC Inflation Responsive Fund	9%	9%	9%	9%	9%	9%	8%	7%	6%	5%	4%	4%	3%
NC TIPS Fund	<u>0%</u>	<u>2%</u>	<u>5%</u>	<u>9%</u>	<u>16%</u>	<u>22%</u>							
Real Assets	9%	9%	9%	9%	9%	9%	8%	7%	8%	10%	13%	20%	25%

## Proposed Path

NC TIPS Fund	0%	0%	0%	0%	0%	0%	0%	3%	6%	9%	11%	13%	15%
--------------	----	----	----	----	----	----	----	----	----	----	-----	-----	-----

- NC Goalmaker currently allocates to two real asset classes
  - NC Inflation Responsive Fund (IRF) – currently implemented as 43% Global REITs, 23% Commodities, and 34% Broad TIPS
  - NC TIPS Fund – Benchmarked to TIPS 1-10 Year
- Inflation risk is a key risk for participants near retirement and, especially in retirement
  - During a participant’s working career, wages typically adjust for inflation over the long run – may be a lag
  - Over the long run (10+ years), asset classes typically deliver a positive real return
  - Consequently, the need for inflation protection begins around age 55 and gradually increases well into retirement
- The Proposed Path removes the IRF and relies on the NC TIPS Fund from age 55 to provide protection against inflation

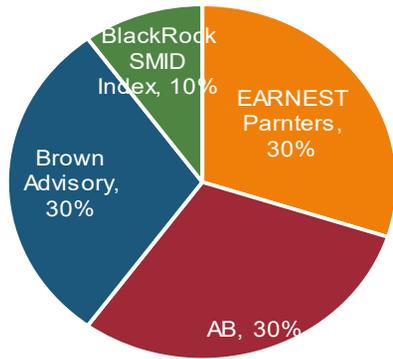
## Real Assets & Inflation Risk (cont'd)



- The above table shows Callan assumed correlation between various asset classes and CPI-U. The labels show the 10-year annualized return and risk (standard deviation) of each asset class.
  - Nominal Bonds and equities are negatively correlated with inflation
  - REITs have weak correlation with inflation
  - TIPS and Commodities are positively correlated with inflation (but not more than 40% of the time) but are low returning
- A Fund with high sensitivity to inflation can be difficult to achieve without sacrificing expected returns
- Inflation-sensitive equities (e.g. REITs) are more highly correlated with equities than inflation and are volatile

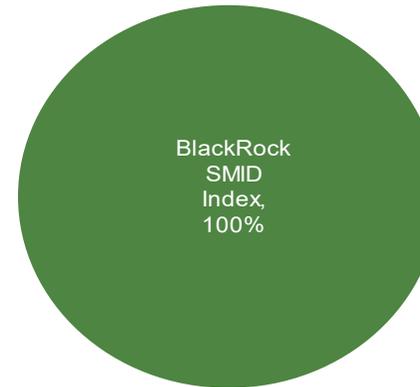
# Introduce Passive to Small/Mid Cap Equity

NC Small/Mid Cap Core Fund (Active)

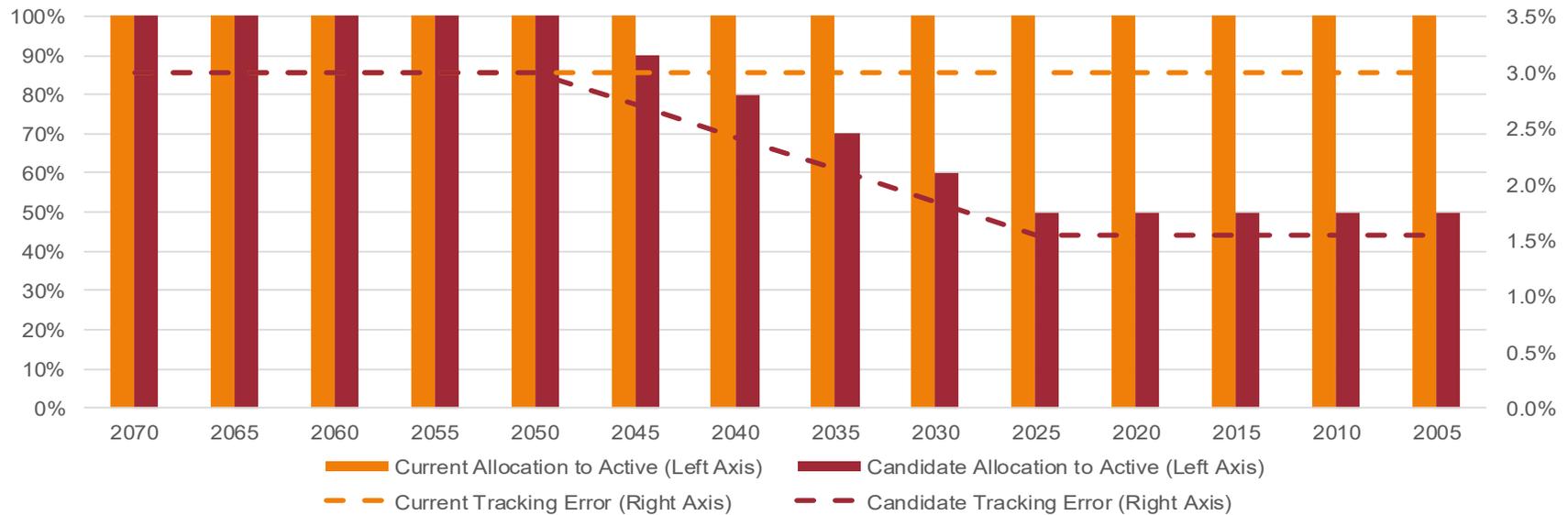


**Fee:** 0.39%  
**Tracking Error:** 3.0%

NC Small/Mid Cap Index (Passive)



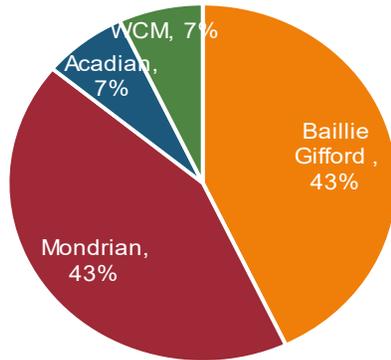
**Fee:** 0.02%  
**Tracking Error:** 0.1%



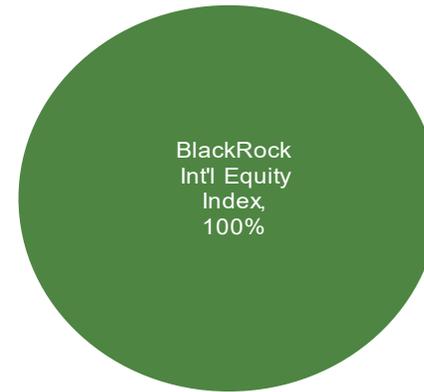
\*Tracking Error is calculated using 10 years of manager history at target weights relative to the Russell 2500 Index evaluated at September 30, 2025

# Introduce Passive to International Equity

NC International Fund (Active)

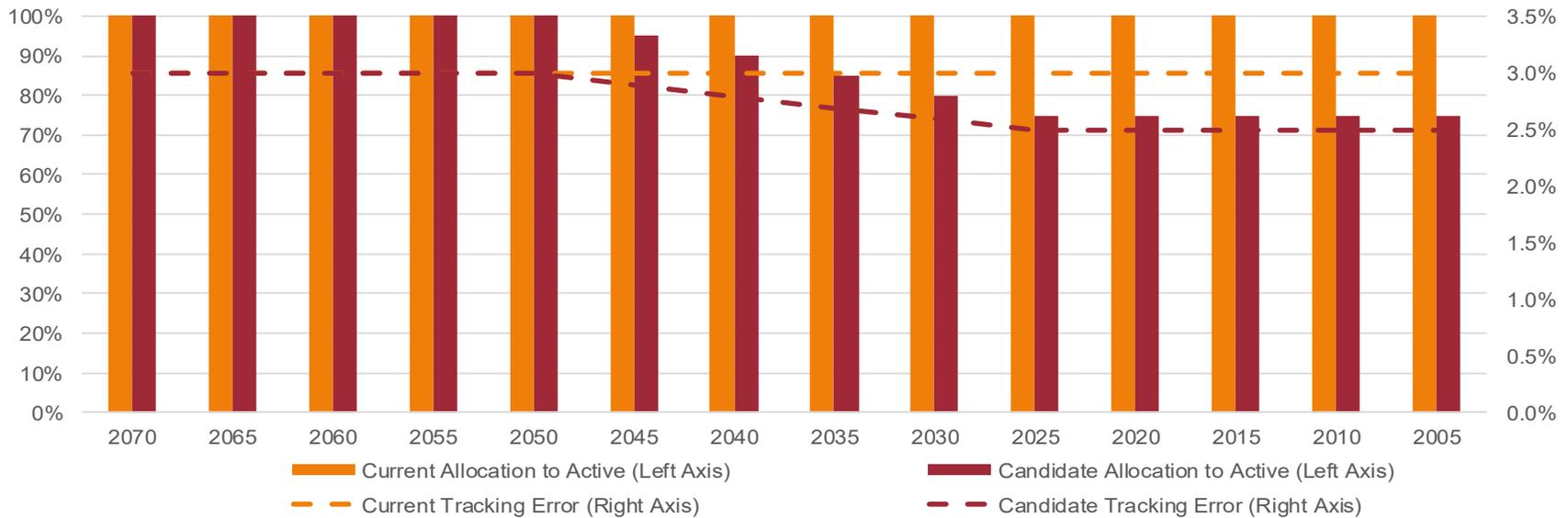


NC International Index (Passive)



**Fee:** 0.40%  
**Tracking Error:** 3.0%

**Fee:** 0.05%  
**Tracking Error:** 1.0%



\*Tracking Error is calculated using 10 years of manager history at target weights relative to the Russell 2500 Index evaluated at September 30, 2025

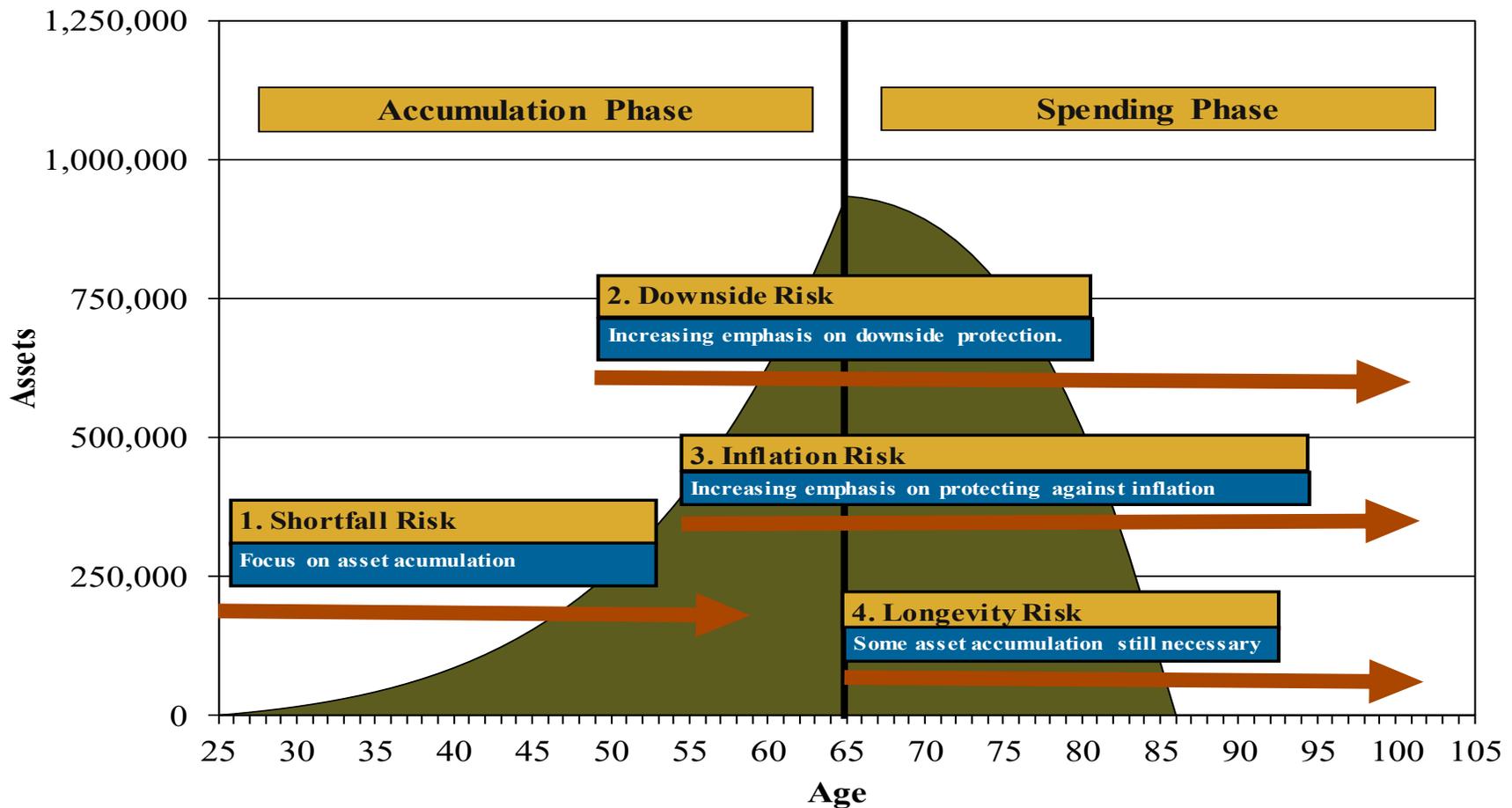
---

## Private Markets in DC Plans

- No private markets are included in the Proposed Path primarily due to higher cost, operational complexity and requirement to include all core investment options of Target Date Fund series on 401(k) menu
- Recently, several asset managers have launched or announced plans to launch “DC-friendly” investment vehicles offering access to private equity or private credit
  - In most situations, vehicles would reside within the Target Date Fund series and not as a stand-alone investment option
  - A multi-asset framework is employed to handle liquidity
- Private Real Estate has been successfully implemented in some custom Glide Paths over the last 10-15 years
- Interest of late, has focused on adding exposure to Private Equity or Private Debt
- There are many issues to consider when adding private markets to a Target Date Fund Series
  - Litigious nature of the DC landscape
  - High Fees
  - Meeting daily liquidity needs
  - Lack of track records
  - Communication challenges with participants
  - Manager selection risk – particularly high in private markets
  - Lower likelihood that DC plans will be able to access top tier funds
  - Operational complexity (daily valuation required)

# Risk is Multi-Faceted

**Optimal Glidepath: Maximizes probability of achieving Retirement Objective while balancing exposures to four key risks.**



# Summary

	Moderate	Proposed	Consensus	Vanguard	Capital Group	BlackRock	Fidelity
<b>Shortfall Risk</b>							
Expected Income Replacement	38.2%	38.3%	37.2%	37.5%	37.2%	35.3%	38.1%
<b>Downside Risk</b>							
Worse Case Return at age 60 *	-14.3%	-13.5%	-13.2%	-15.2%	-13.9%	-9.2%	-14.5%
Worse Case Return at age 65 *	-11.0%	-11.0%	-10.5%	-12.1%	-11.1%	-8.6%	-12.6%
Worse Case Return at age 70 *	-9.2%	-8.6%	-9.2%	-8.1%	-10.7%	-8.6%	-10.1%
<b>Longevity &amp; Inflation Risk</b>							
Probability Outlive Assets at age 95 **	31.5%	29.7%	30.2%	31.1%	30.7%	32.9%	29.9%
Average TIPS Exposure (60-75)	7.7%	8.9%	8.7%	10.1%	7.6%	5.8%	10.8%

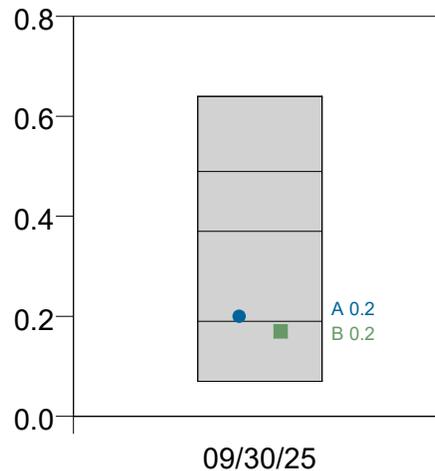
\* - Two standard deviation event. 2.5% chance of occurrence or worse.

\*\* - Spending rate = 30% of final salary with simulated inflation starting at age 65

- The above table compares the GM Moderate to the Proposed alongside the Callan Consensus and four off-the-shelf providers
  - Each metric (row) is color coded to highlight relative strengths (green) and weakness (red) across the glidepaths
- The GM Moderate and Proposed have a similar expected replacement ratio – they minimize shortfall risk across the sample of paths
- Downside risk is quantified by examining a worse case return (97.5<sup>th</sup> percentile) at ages near and at retirement (age 60, 65 and 70)
  - The Proposed Path has less risk than the GM Moderate
  - Relative to all Paths, the Proposed Path has moderate risk at 60, 65 and minimizes risk at age 70
- Minimizing the probability of outliving assets assesses the post-retirement construction of the glidepath
  - Higher inflation results in higher spending
  - The Proposed Path minimizes the probability of outliving assets at age 95

# GoalMaker Expense Ratios\*

Fee Type: Institutional Net  
Group: Passive & Non-Passive Target Date Funds

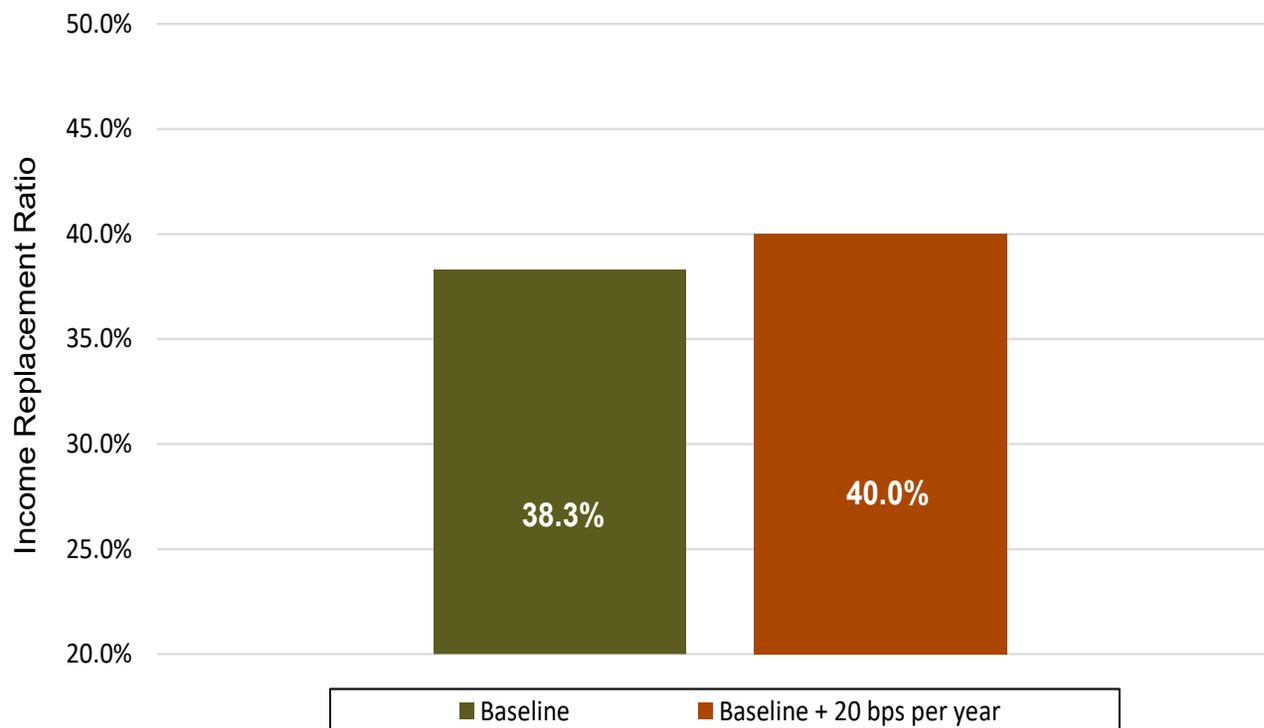


10th Percentile	0.64
25th Percentile	0.49
Median	0.37
75th Percentile	0.19
90th Percentile	0.07
Moderate (Equal Weighted) ● A	0.20
Proposed (EW) ■ B	0.17

- The table shows the fee distribution across an off-the-shelf target date peer group comprised of actively, blended, and passively implemented mutual funds and collective investment trusts.
  - Constituent mutual funds may contain revenue sharing embedded within their fees.
  - Peer group fees are inclusive of management fees and administrative fees.
- GoalMaker does not charge an explicit fee for the service. Each portfolio’s expense ratio is the weighted expense of the underlying investment options.
- The proposed weighted expense ratios range from 0.13% to 0.23%, and all fall below the median expense ratio of the broad target date peer group (0.37%).
- The model portfolio fees shown in the chart represent GoalMaker’s equal weighted expense ratio (i.e., the average expense ratio across the Proposed path is 17 basis points).

\*Fee data as of Sept. 30, 2025.

## Impact Of Value Added



- The above chart illustrates the income replacement ratio at age 65 based on NCSRP demographic assumptions and the Proposed Glide Path
- Callan's modeling assumptions represent passive exposures to the various asset classes and do not incorporate any assumption for value added (alpha)
- A 20 bp increase per year increases the projected replacement ratio almost 2.0%
- This illustrates the important role that active management can play—if managers can obtain 20 basis points of excess return, net of fees, it can have a material effect on participant outcomes



Appendix

# NCSRP Investment Structure

Tier I: Asset Allocation	Tier II: Passive Core	Tier II: Active Core	Tier III: Specialty
Model Portfolios  GoalMaker		<b>Capital Preservation</b>	
		Stable Value Fund (13%)	
	<b>Core Fixed Income</b>	<b>Core Plus Fixed Income</b>	
	Fixed Income Passive (1%)	Fixed Income Fund (13%)	
	<b>Inflation Sensitive</b>		
	Treasury Inflation Protected (2%)		
	Inflation Responsive Fund (4%)		
	<b>U.S. Large-Cap Equity</b>	<b>U.S. Large-Cap Equity</b>	
	Large Cap Passive (27%)	Large Cap Core Equity Fund (14%)	
	<b>Non-U.S. Equity</b>	<b>Non-U.S. Equity</b>	
	International Passive (1%)	International Equity Fund (16%)	
	<b>U.S. Small/Mid-Cap Equity</b>	<b>U.S. Small/Mid-Cap Equity</b>	
SMID Cap Passive (3%)	Small/Mid Cap Equity Fund (7%)		

Text in **yellow** represents building block asset classes and investment options utilized by GoalMaker.

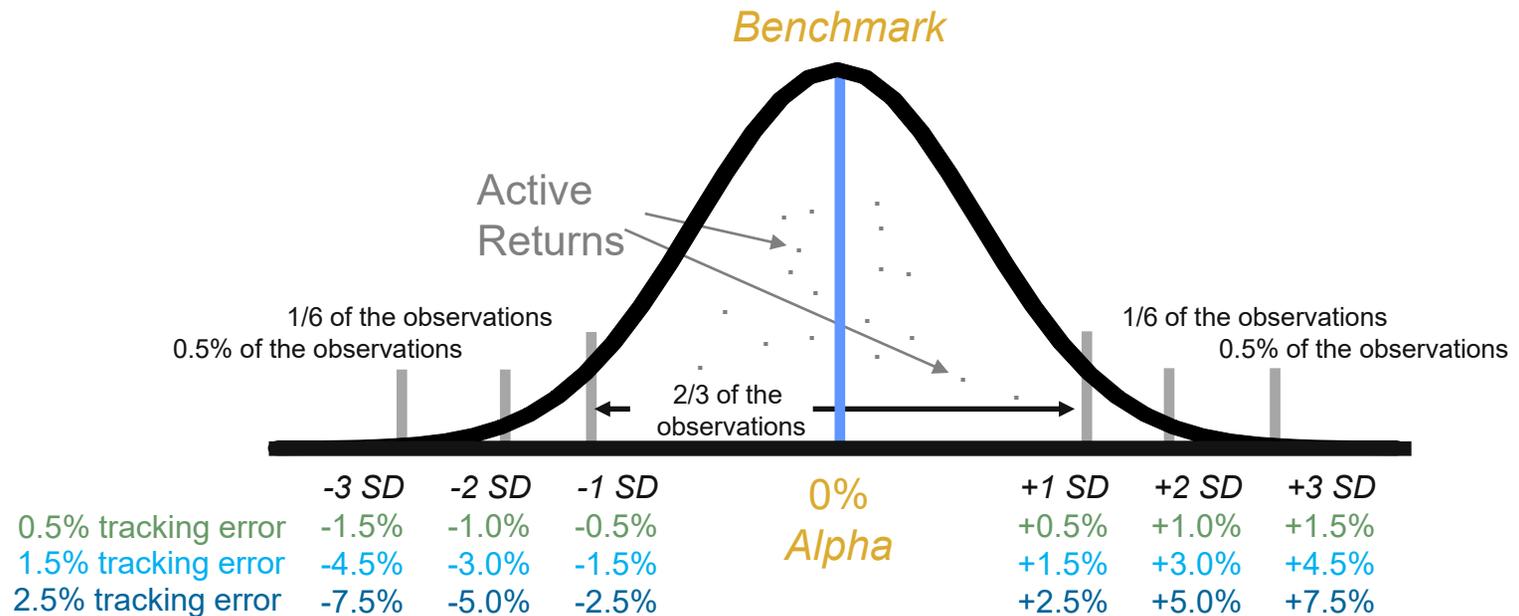
Percentage allocations rounded to the nearest whole percent and as of Dec. 31, 2024. Percentage allocations for core tier options include GoalMaker assets. Data source: Empower.

---

# Active vs. Passive Management

- Definitions:
  - Active management: any investment strategy designed to systematically outperform (after expenses) a benchmark portfolio on a risk-adjusted basis
  - Passive management: investment strategies designed to match (before expenses) the performance of a specified benchmark portfolio
- Empirical evidence regarding the effectiveness of active management is difficult to interpret
  - Large amounts of “noise” in the data
  - Long-term impact of styles on performance
- We believe superior active managers do exist. At issue is:
  - Their number and ability to identify them
  - Level and consistency of their skill
  - Tolerance of extended periods of underperformance and patience to retain them
- Passive management is the base case
  - Active management should be employed only to the extent that expected value-added managers can be identified and appropriately structured
  - The passive/active allocation is a continuum, not an all-or-nothing choice
- Active/passive allocation may shift over time
  - New expected value-added managers are identified
  - Confidence is gained/lost in existing managers
- **Passive management results in lower fees and tracking error but foregoes the potential for outperforming the benchmark**
- **Active management should be considered when the investor believes there will be compensation on a net-of-fee basis**

# Thinking About the Appropriate Level of Tracking Error



- Higher tracking error budgets increase the potential for outperformance or underperformance of the structure relative to its benchmark as well as peers
- Aversion to underperformance is often a key driver when choosing the structure's tracking error
  - Less tracking error may be suitable for participants eligible for retirement or in retirement

# Active vs. Passive Management

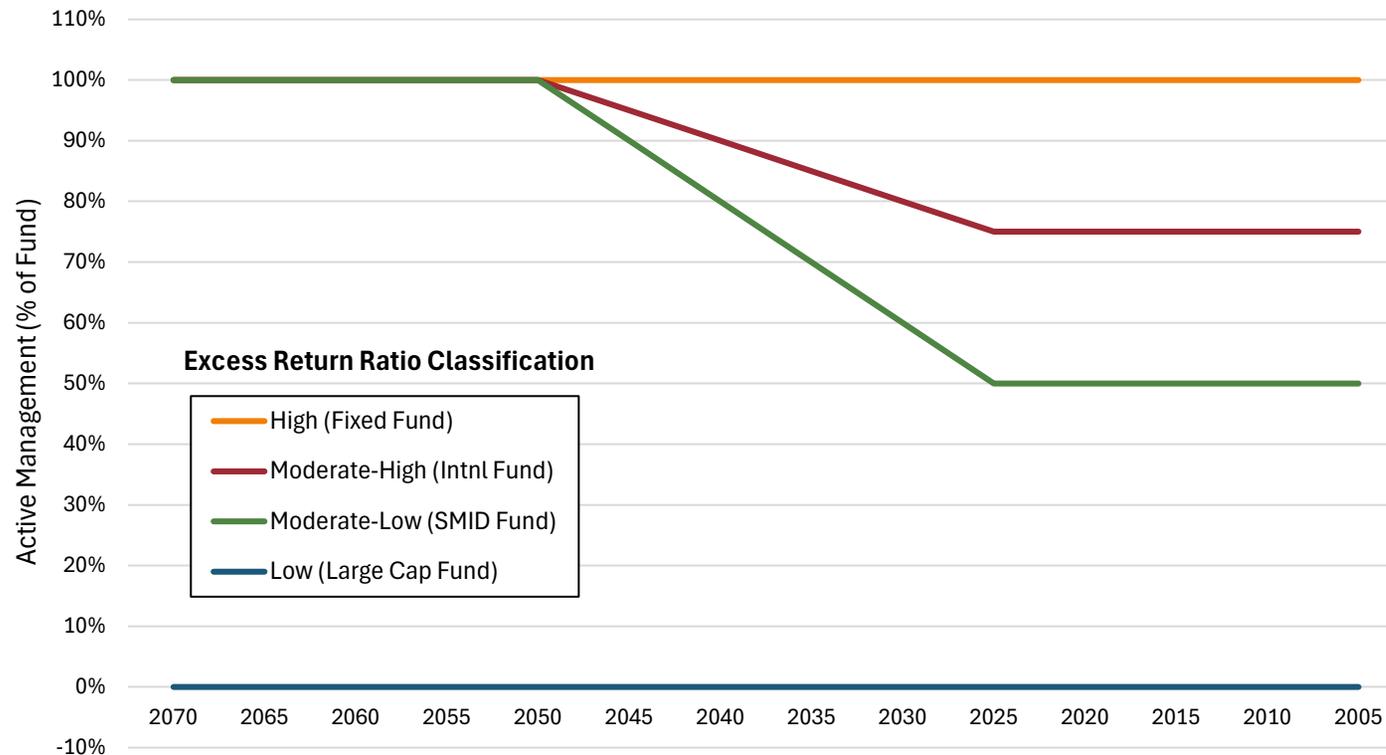
## Historical Results Based on Manager Peer Groups

Asset Class	Benchmark	Gross Excess Return
Large Cap Core	Russell 1000	0.10%
Small/Mid Cap	Russell 2500	0.54%
International Equity	MSCI ACWI ex-US	1.31%
Core Fixed Income	Bloomberg Aggregate	0.47%
Core Plus Fixed Income	Bloomberg Aggregate	0.97%

- The above table illustrates the 3-year average annualized gross returns for the median manager of a peer group with the associated benchmark
  - Based on data for 20 years ending Q32025 (see appendix for more detail)
- Large Cap strategies have been challenged to beat passive strategies
- Empirically defensible to pursue full or partial active management in SMID Cap, International Equity and Core Fixed Income

Source: Callan Active vs. Passive Data.

## Active-Passive Split by Age (Target Date Fund)



- A primary determinant of the optimal active-passive split based on age is the excess return ratio
  - Excess Return Ratio (ERR) =  $\text{Net Excess Return Relative to the Benchmark} / \text{Tracking Error}$
  - A higher ratio justifies more active management or even 100% actively managed
  - The ERR should be assessed based on actual manager performance, peer group data and over different time periods

# Active vs. Passive Management

## NCSRP Historical Results

	10 Years Ended 9/30/2025			Excess Return Ratio Classification
	Net Excess Return	Tracking Error	Excess Return Ratio	
NC Large Cap Core Fund (Active)	-0.20%	3.27%	(0.06)	Low
NC SMID Core Fund (Active) *	0.36%	2.95%	0.12	Moderate-Low
NC International Fund (Active) *	1.40%	2.99%	0.47	Moderate-High
NC Fixed Income Fund	1.01%	1.61%	0.63	High

\* Over last 5 years, the Funds had a negative excess return. Classification is based on a longer period of time (10 years)

- Active management should be considered when the investor believes there will be compensation on a net-of-fee basis
- Recommend keeping Large Cap Equity 100% passive
  - Large Cap strategies have been challenged to beat passive strategies, even gross-of-fees
- Empirically defensible to pursue full or partial active management in SMID Cap, International Equity and Core Fixed Income

# Summary

Asset Class	Recommendation	Cost (bps)		Active Risk (Tracking Error)		Alpha Potential (bps) *	
		Current	Recommended	Current	Recommended	Current	Recommended
US Large Cap	No Change - Stay 100% Passive	1	no change	0.0%	no change	None	no change
US SMID Cap	Active/Passive	39	39 => 21	3.0%	3.0% => 1.6%	54	54 => 27
International Equity	Active/Passive	40	40 => 31	3.0%	3.0% => 2.5%	131	131 => 98
US Fixed Income	No Change - Stay 100% Active	13	no change	1.61%	no change	97	no change
TIPS 1-10	No Change - Stay 100% Passive	3	no change	0.30%	no change	None	no change
Stable Value	No Change - Stay 100% Active	26	no change	0.90%	no change	N/A	no change

\* Based on 20 years of rolling 3-year average annualized returns (Q3 2005 to Q3 2025)

- Recommend an active/passive blend for US SMID Cap and International Equity
- No changes are recommended to other Glide Path Asset Classes

# A Guide to Our Active vs. Passive Data

This publication contains two charts for each category of active managers. The top table shows the percentage of rolling 3-year periods in which managers in various percentiles beat their benchmark by more than a certain fee hurdle. Percentages 50% and above are shaded in green.

The bottom chart displays the gross excess return for all the managers in Callan's database for specific asset class categories across the distribution spectrum, from the 10th percentile to the 90th percentile.

## Large Cap Core Equity Style vs. S&P 500

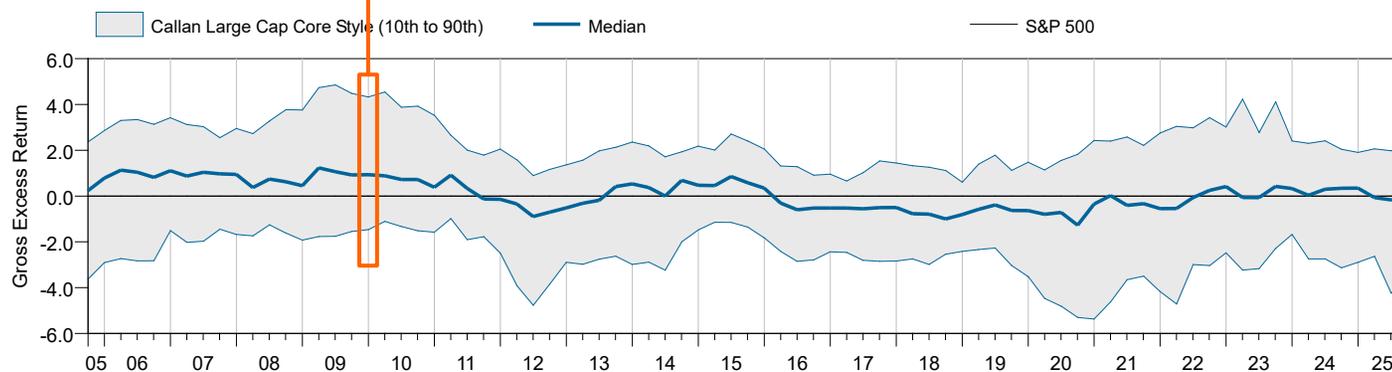
How often Manager Beat Benchmark by more than Fee Hurdle in Rolling 3-Year Periods over last 20 Years

Fee Hurdle	0.25%	0.30%	0.35%	0.40%	0.45%	0.50%	0.55%	0.60%	0.65%	0.70%
Median	48%	46%	40%	36%	33%	29%	28%	26%	25%	24%
45th Percentile	51%	50%	50%	48%	46%	44%	41%	36%	29%	29%
40th Percentile	59%	58%	56%	55%	55%	51%	51%	48%	45%	44%
35th Percentile	71%	68%	66%	66%	63%	61%	60%	60%	54%	53%
30th Percentile	79%	76%	75%	73%	71%	71%	69%	69%	65%	64%
25th Percentile	91%	90%	90%	86%	84%	79%	76%	76%	75%	71%

Average Annualized 3-Year Excess Return (gross) – Median Manager: 0.10%

This data point indicates that managers in the 40th percentile beat the benchmark by at least 0.35% in 56% of the rolling 3-year periods over the last 20 years.

Rolling 3-Year Gross Excess Return relative to S&P 500 for 20 Years ended September 30, 2025



This data range shows that in the 1st quarter of 2009, the median manager in Callan's database reported gross excess returns over the benchmark of 1.23%, with returns ranging from 4.74% for managers in the 10th percentile to -1.77% for those in the 90th percentile.

# Large Cap Core Equity Style vs. S&P 500

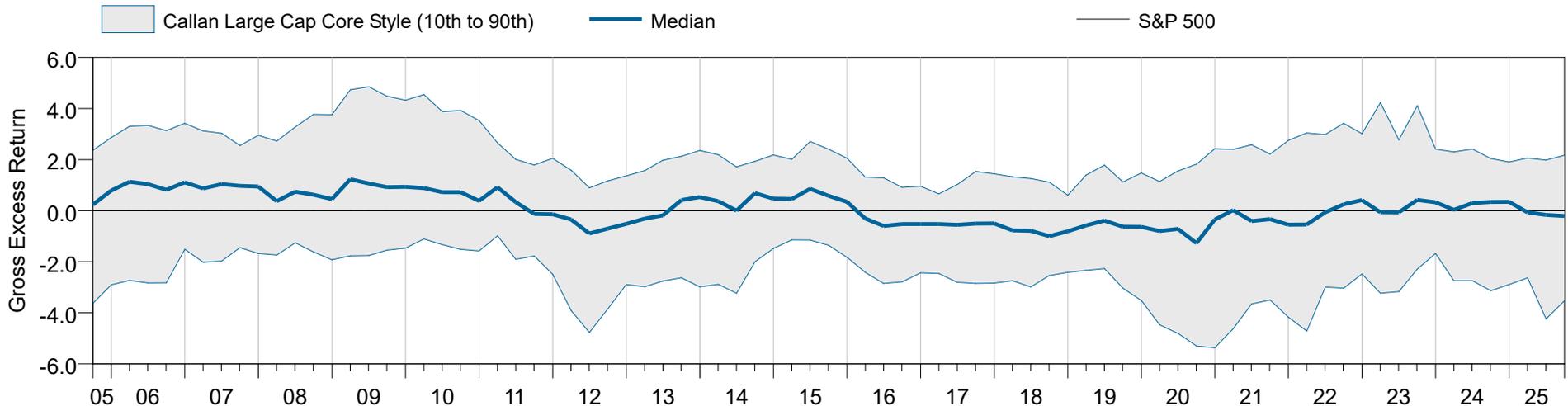
## How Often Manager Beat Benchmark by More Than Fee Hurdle in Rolling 3-Year Periods Over Last 20 Years

Fee Hurdle	0.25%	0.30%	0.35%	0.40%	0.45%	0.50%	0.55%	0.60%	0.65%	0.70%
Median	48%	46%	40%	36%	33%	29%	28%	26%	25%	24%
45th Percentile	51%	50%	50%	48%	46%	44%	41%	36%	29%	29%
40th Percentile	59%	58%	56%	55%	55%	51%	51%	48%	45%	44%
35th Percentile	71%	68%	66%	66%	63%	61%	60%	60%	54%	53%
30th Percentile	79%	76%	75%	73%	71%	71%	69%	69%	65%	64%
25th Percentile	91%	90%	90%	86%	84%	79%	76%	76%	75%	71%

Average Annualized 3-Year Excess Return (gross) – Median Manager:

**0.10%**

## Rolling 3-Year Gross Excess Return relative to S&P 500 for 20 Years ended September 30, 2025



# Smid Cap Equity Style vs. Russell 2500

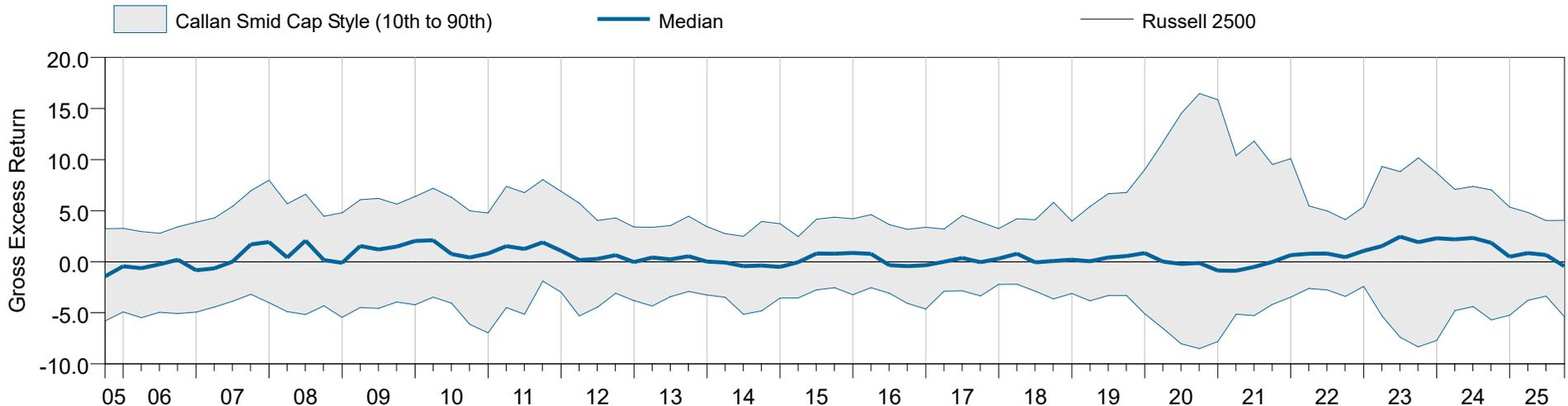
## How Often Manager Beat Benchmark by More Than Fee Hurdle in Rolling 3-Year Periods Over Last 20 Years

Fee Hurdle	0.35%	0.40%	0.45%	0.50%	0.55%	0.60%	0.65%	0.70%	0.75%	0.80%
Median	54%	53%	46%	45%	43%	43%	40%	39%	39%	31%
45th Percentile	75%	71%	68%	66%	64%	59%	58%	58%	56%	53%
40th Percentile	90%	90%	89%	89%	89%	85%	83%	80%	79%	76%
35th Percentile	94%	94%	94%	94%	93%	90%	89%	89%	89%	88%
30th Percentile	100%	100%	100%	100%	100%	100%	98%	98%	96%	95%
25th Percentile	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Average Annualized 3-Year Excess Return (gross) – Median Manager:

**0.54%**

## Rolling 3-Year Gross Excess Return relative to Russell 2500 for 20 Years ended September 30, 2025



# Global ex-U.S. Equity Broad Style vs. MSCI ACWI ex USA

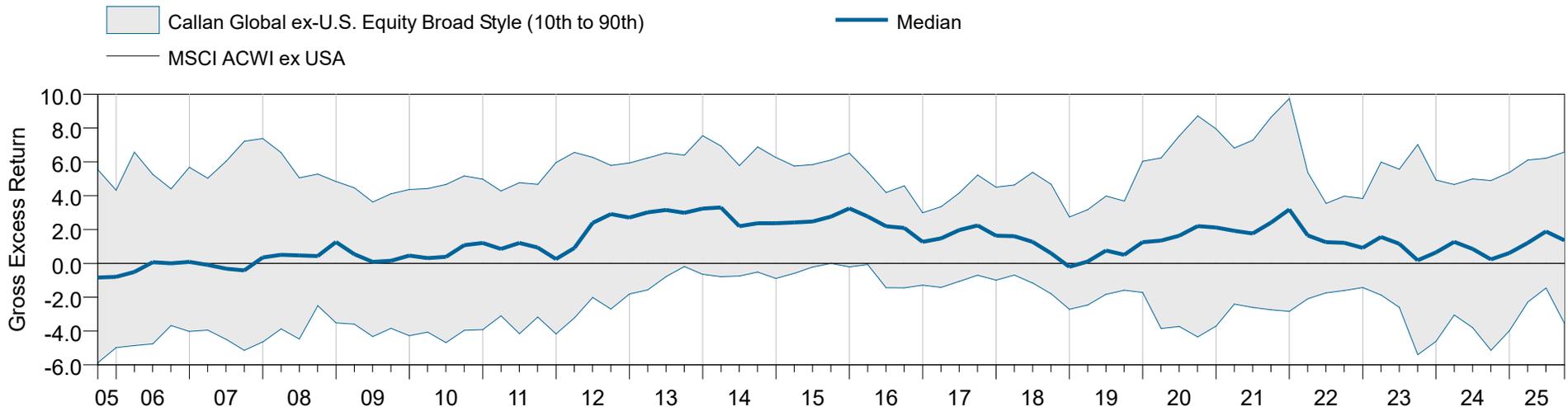
## How Often Manager Beat Benchmark by More Than Fee Hurdle in Rolling 3-Year Periods Over Last 20 Years

Fee Hurdle	0.45%	0.50%	0.55%	0.60%	0.65%	0.70%	0.75%	0.80%	0.85%	0.90%
Median	76%	74%	70%	69%	68%	66%	66%	65%	64%	63%
45th Percentile	88%	86%	85%	84%	83%	81%	80%	79%	78%	71%
40th Percentile	96%	95%	94%	93%	93%	90%	90%	88%	88%	86%
35th Percentile	100%	100%	100%	100%	99%	99%	99%	99%	98%	96%
30th Percentile	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
25th Percentile	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Average Annualized 3-Year Excess Return (gross) – Median Manager:

1.31%

## Rolling 3-Year Gross Excess Return relative to MSCI ACWI ex USA for 20 Years ended September 30, 2025



# Core Bond Style vs. Bloomberg Aggregate

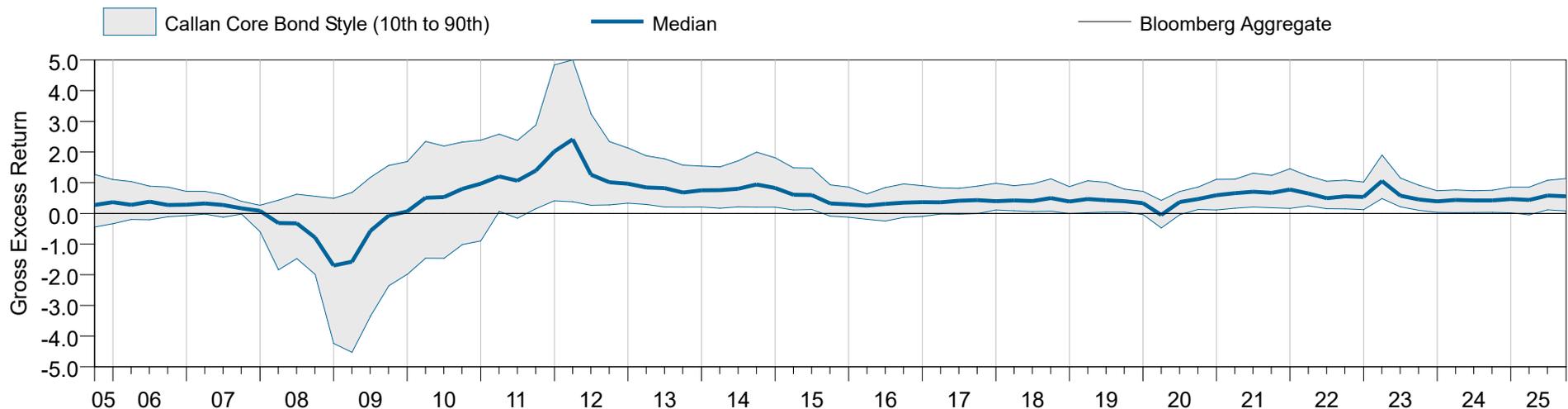
## How Often Manager Beat Benchmark by More Than Fee Hurdle in Rolling 3-Year Periods Over Last 20 Years

Fee Hurdle	0.20%	0.25%	0.30%	0.35%	0.40%	0.45%	0.50%	0.55%	0.60%	0.65%
Median	86%	86%	79%	74%	60%	50%	44%	39%	31%	29%
45th Percentile	89%	88%	84%	78%	71%	55%	48%	44%	39%	33%
40th Percentile	90%	89%	89%	84%	81%	70%	56%	48%	44%	38%
35th Percentile	91%	90%	89%	86%	84%	80%	70%	59%	49%	45%
30th Percentile	93%	93%	91%	90%	89%	85%	81%	71%	60%	55%
25th Percentile	95%	93%	93%	91%	91%	90%	89%	83%	74%	68%

Average Annualized 3-Year Excess Return (gross) – Median Manager:

**0.47%**

## Rolling 3-Year Gross Excess Return relative to Bloomberg Aggregate for 20 Years ended September 30, 2025



# Core Plus Bond Style vs. Bloomberg Aggregate

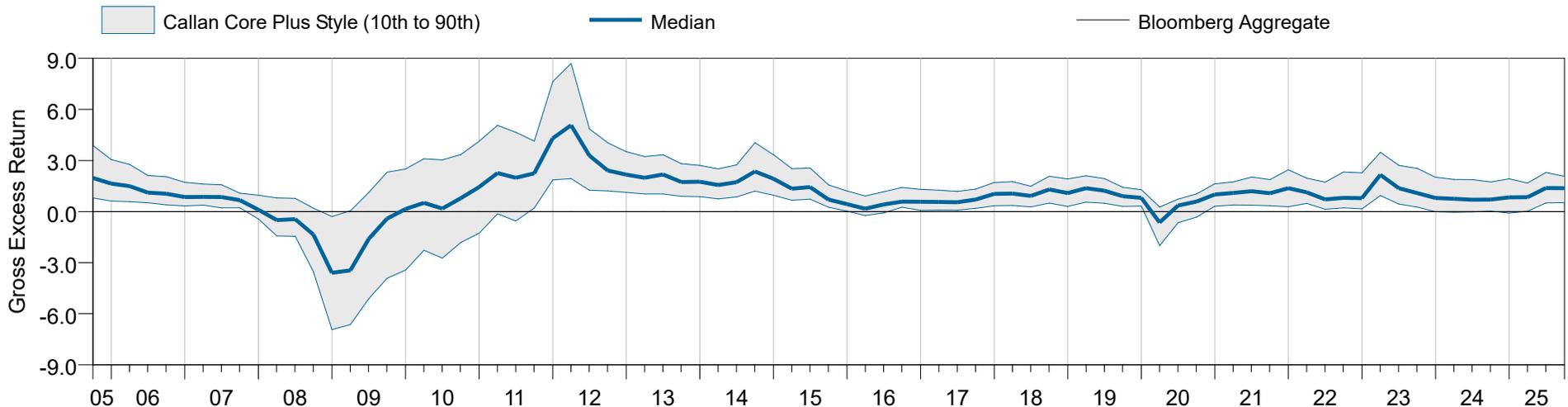
## How Often Manager Beat Benchmark by More Than Fee Hurdle in Rolling 3-Year Periods Over Last 20 Years

Fee Hurdle	0.20%	0.25%	0.30%	0.35%	0.40%	0.45%	0.50%	0.55%	0.60%	0.65%
Median	85%	85%	85%	84%	84%	81%	81%	79%	74%	74%
45th Percentile	89%	88%	86%	86%	85%	83%	81%	81%	80%	75%
40th Percentile	90%	89%	89%	88%	88%	86%	85%	85%	84%	81%
35th Percentile	91%	90%	90%	89%	89%	89%	88%	88%	86%	84%
30th Percentile	91%	91%	91%	90%	90%	89%	89%	88%	88%	86%
25th Percentile	93%	93%	93%	93%	93%	90%	89%	89%	88%	88%

Average Annualized 3-Year Excess Return (gross) – Median Manager:

**0.97%**

## Rolling 3-Year Gross Excess Return relative to Bloomberg Aggregate for 20 Years ended September 30, 2025



# Demographic Assumptions

	High Saver
401(k) Participation Age	25
Initial Salary (age 25)	\$60,000
Salary Growth Rate	CPI + Merit Age-based Merit 4.0% => 0%
Percent Female	53%
Total Contribution Rate	Age-based 5.0% - 8.75%
	<u>At Age 65</u>
Total Replacement Target	83%
Expected Social Security Replacement	(35)%
Defined Benefit Plan	(18)%
Net 401(k) Replacement Target	30%
Post-Retirement spending rate	30% of final salary in first year Simulated inflation thereafter
Annuity	Interest Rate: Simulated 30-year Treasury yield Mortality: 85 / 15% Pri-2012 White/Blue Collar Retiree Amount with IRS-Adj MP-2021 Generational improvement 2.25% COLA Rider

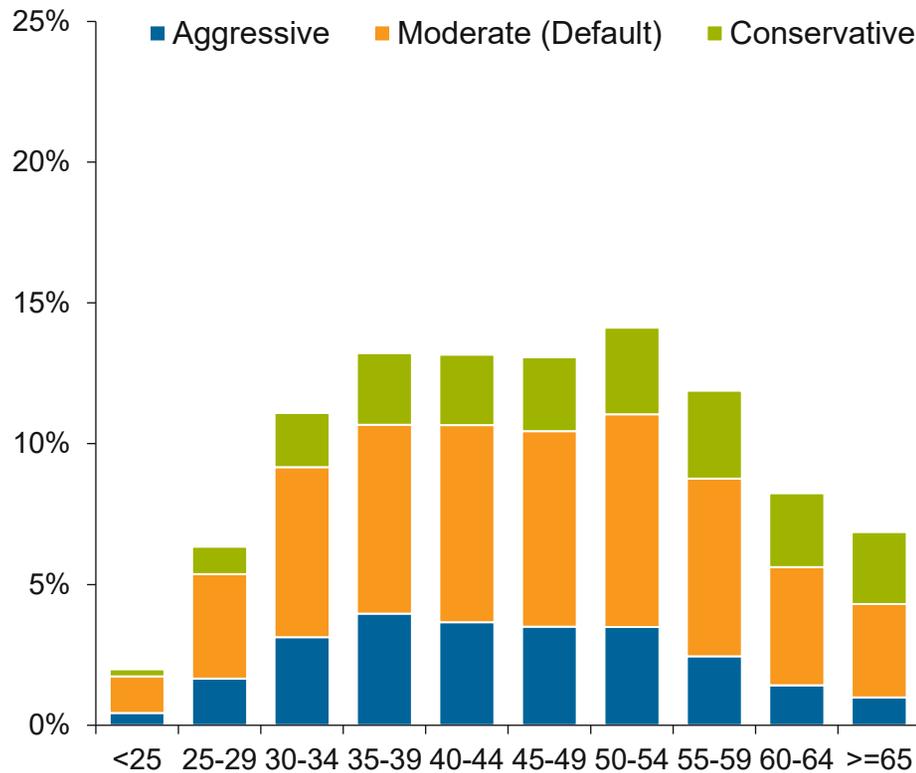
- Suitability study was conducted Spring 2025
  - Demographics were analyzed and multiple hypothetical participant profiles were developed (low, medium and high saver)
- Phase I parameters based on High Saver profile with some modifications for testing purposes
  - High Saver starts at age 25 – a 40-year career of saving
  - Defined Benefit based on 10 years of service (1.8% x 10)
  - Changes are tailored to participant relying mainly on 401(k)
  - Career NCSRP employee would be far less reliant on 401(k) income replacement
  - Total Replacement Ratio Target = 100% - age 64 employee deferral (8.75%) – FICA (7.65%) ~ 84%

# NC 457 Plan GoalMaker Participants and Assets by Age & GoalMaker Path

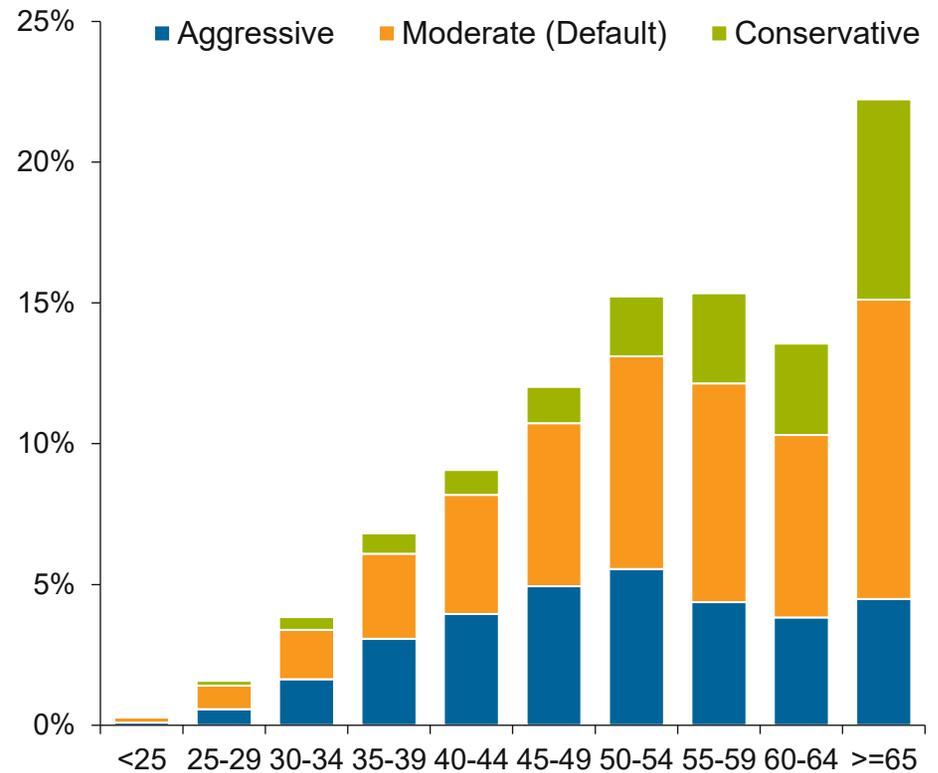
	Participants	Assets
Aggressive	10,443 (25%)	\$245,764,985 (32%)
Moderate (Default)	22,454 (53%)	\$365,146,114 (48%)
Conservative	9,391 (22%)	\$145,474,692 (19%)
<b>TOTALS</b>	<b>42,288</b>	<b>\$756,385,791</b>

Of those enrolled in GoalMaker in the NC 401(k) Plan, nearly 6 in 10 are on the Moderate Path, with the remaining 4 in 10 roughly evenly split between the Aggressive and Conservative Paths. Those on the Aggressive Path tend to have higher balances.

**Distribution of Participants by Age & GoalMaker Path**

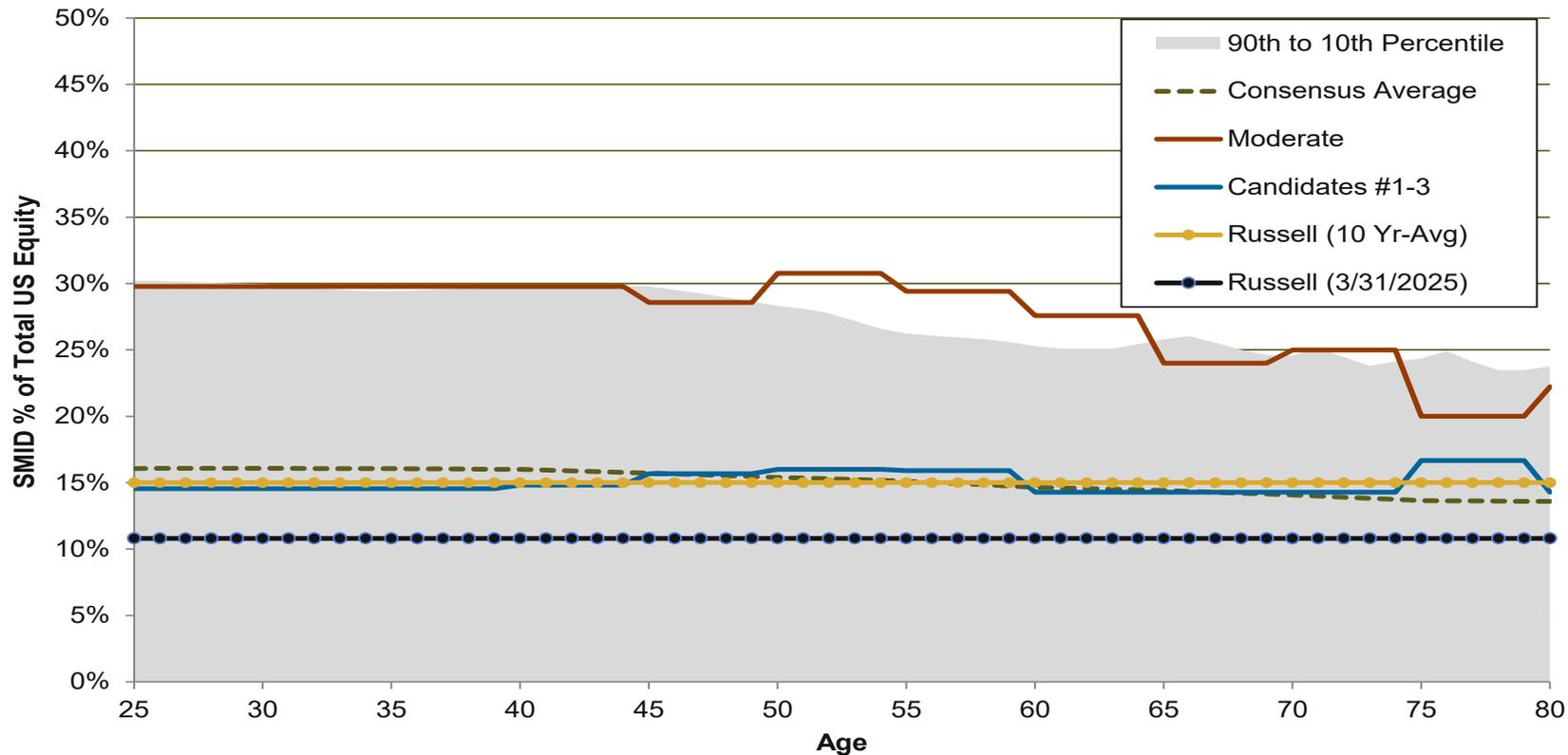


**Distribution of Plan Assets by Age & GoalMaker Path**



Data as of Aug. 31, 2024. Data source: Empower.

## SMID Ratio (Small/Mid Cap US Equity / U.S. Equity)



- SMID bias ranges widely across glide paths
- The Moderate Path has a large bias to Small/Mid Cap US Equity relative to peers and the Russell benchmark (RU2500 / RU3000)
- The Candidate Paths are in line with the 10-Year average Russell benchmark and the average Consensus Path
- Callan has reduced the small/mid cap bias in other custom Glide Paths over the last year

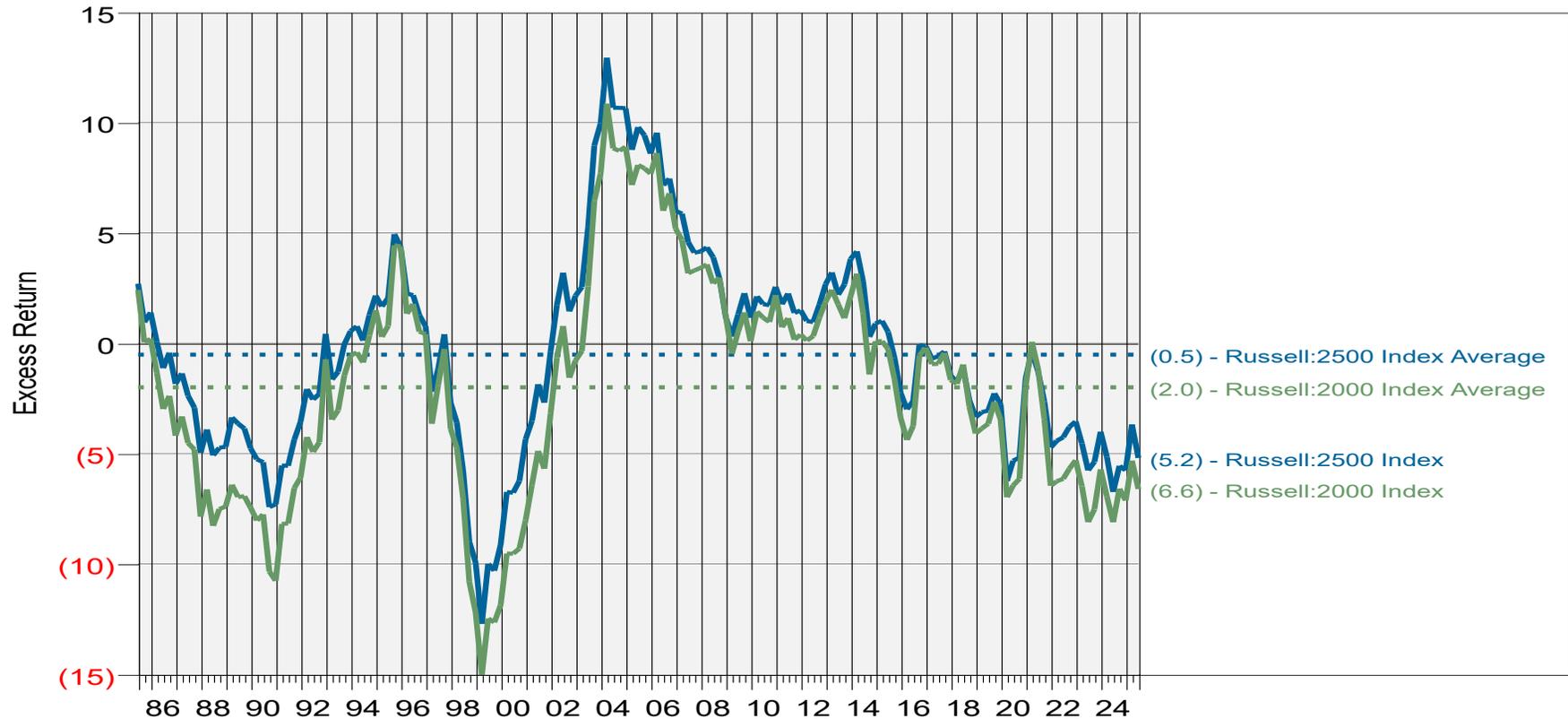
## Small/Mid Cap Excess Return

Equity Style	Benchmark	Average Annualized 3-Year Excess Gross Return – Median Manager
Large Cap Broad	Russell 1000	-0.08%
Large Cap Growth	Russell 1000 Growth	-0.68%
Large Cap Value	Russell 1000 Value	0.58%
Mid Cap Broad	Russell Midcap	-0.20%
Mid Cap Growth	Russell Midcap Growth	-0.24%
Mid Cap Value	Russell Midcap Value	0.28%
Small Cap Broad	Russell 2000	1.14%
Small Cap Growth	Russell 2000 Growth	1.41%
Small Cap Value	Russell 2000 Value	1.43%

- A small/mid cap bias is typically added due to the potential for active management premium (Excess return)
- Historical data can help indicate attractive market segments (shown on the left)
  - Large and mid cap strategies have been challenged to beat passive strategies, even gross-of-fees
  - Small cap strategies have had greater historical success

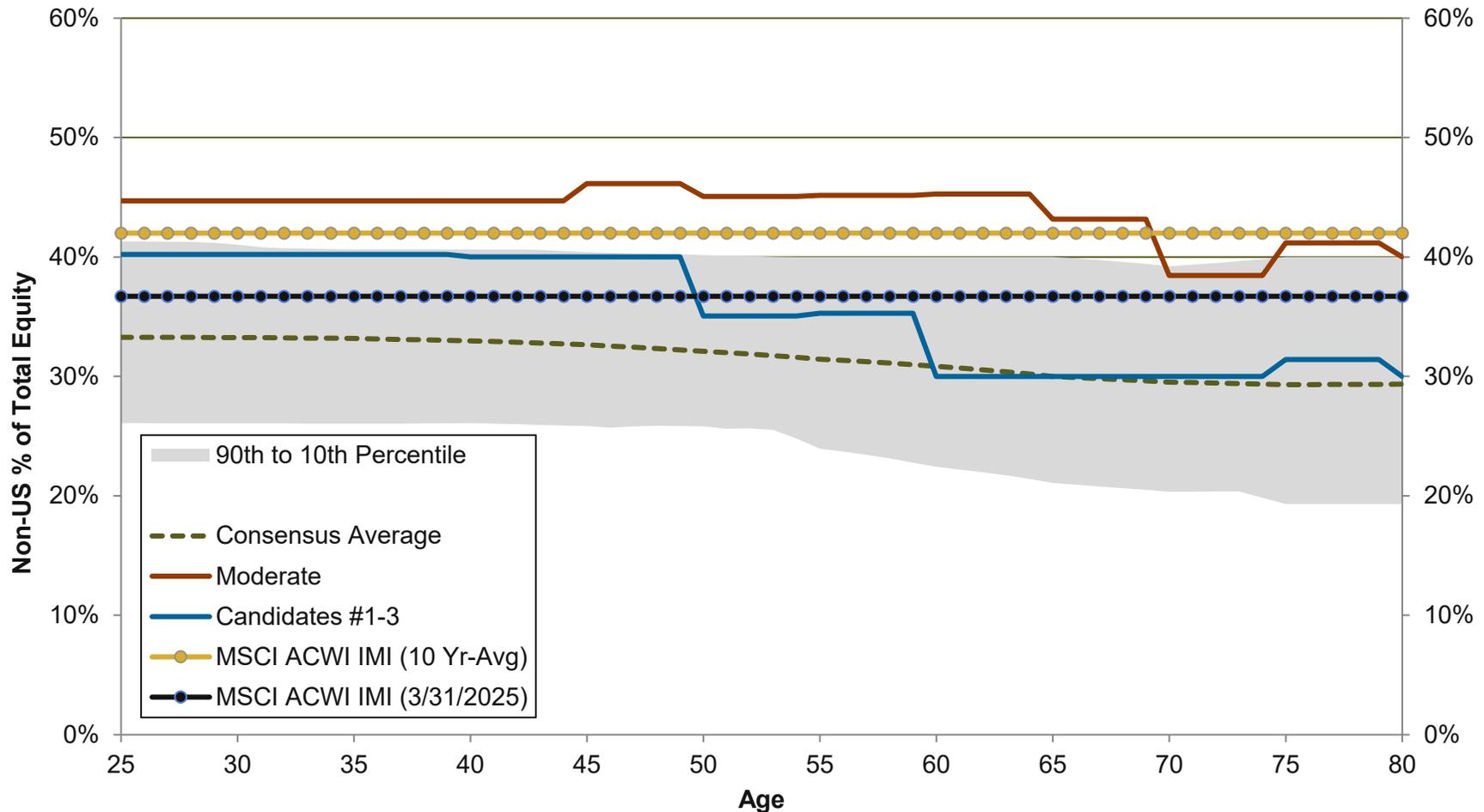
## Small/Mid Cap Beta

Rolling 20 Quarter Excess Return Relative To S&P:500 for 40 Years Ended June 30, 2025



- The above chart depicts the excess benchmark return of small and small/mid cap relative to large cap
- Historically, small/mid cap stocks have gone in and out of favor over cycles
- The most recent prolonged cycle of underperformance in small/mid caps has led some investors to believe that the small cap premium no longer exists
  - The 2025 Callan capital market assumptions still expect a small cap premium of 20-25 bps over the long run

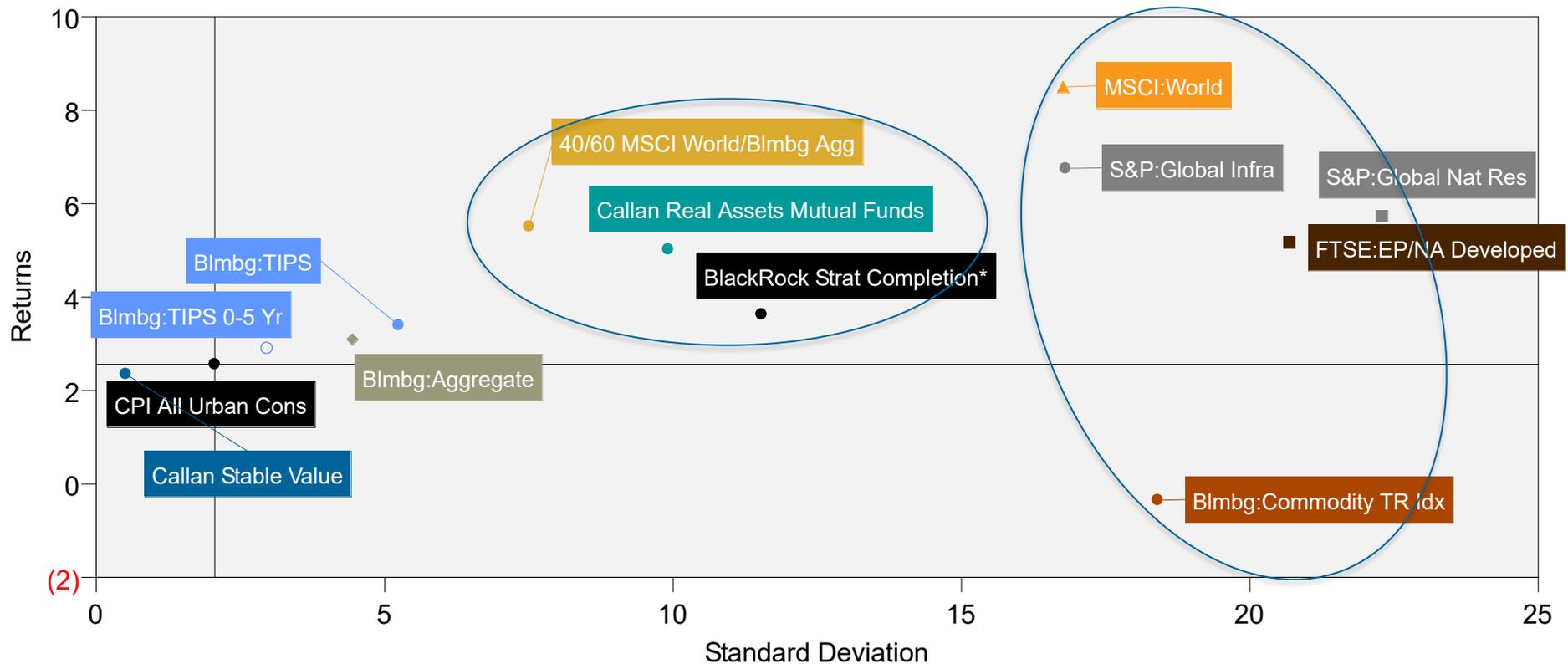
## Non-U.S. Ratio (Non-US Equity / Equity)



- A home country bias is prevalent among off-the-shelf glide paths (10-Year Average MSCI ACWI IMI is 42%)
- Callan optimizer is calibrated to a 40% Non-US ratio
- Candidate Paths roll down to 30% to reduce currency risk (participant spending is dollar denominated)
  - A 30% ratio is in line with the average Consensus from age 60

# Real Assets—Long Term Return and Volatility

Scatter Chart  
for 20 Years Ended June 30, 2025



- Inflation Sensitive Equities (REIT's, Commodities, Listed Infrastructure, Global Natural Resources), have been challenged to keep pace with Global Equity Returns over the past 20 years
- Exposure to these asset classes have caused the average diversified real asset manager to underperform a 40/60 World Stock/Aggregate Bond portfolio on a risk-adjusted basis

\*BlackRock Strategic Completion prior to fund inception (9/2011) modeled as a passive blend of Bloomberg TIPS Index (35.6%), Bloomberg Commodity Index (26.8%), and FTSE EPRA NAREIT Developed Index (37.6%)

## Fixed Income Assumptions

		2025 Capital Market Assumptions					
		10-Year	40-Year	80-Year	Standard Deviation	Duration	Correlation to Inflation
Stable Value	n/a	3.80%	3.80%	3.75%	1.50%	0.00	0.00
Core U.S. Fixed	Bloomberg Aggregate	4.75%	4.90%	4.95%	4.40%	6.10	(0.23)
Broad TIPS	Bloomberg TIPS	4.55%	4.55%	4.55%	5.40%	4.10	0.25
Short-Term TIPS	Bloomberg TIPS 1-10 Year	4.15%	4.15%	4.15%	3.50%	2.80	0.40
<i>Core less Stable Value</i>		0.95%	1.10%	1.20%	2.90%	6.10	(0.23)
<i>Broad TIPS less Short-Term TIPS</i>		0.40%	0.40%	0.40%	1.90%	1.30	(0.15)

- In retirement, a fixed income portfolio should gradually evolve to lower risk (duration) and higher quality as the participant grows older
  - The return premium of Core Fixed over Stable Value is large. About 1-1.2% per year
  - Core Fixed benchmarked to the Aggregate is not that risky with a standard deviation of 4.1%
  - Note that TIPS 1-10 also functions as a low volatility asset since its risk is only 3.5%
  - Stable Value is curtailed due to seeking higher return from Core Fixed and acknowledging TIPS 1-10 as a low risk asset
- Many Glide paths implement TIPS with a short-intermediate mandate (TIPS 0-5, TIPS 1-10) due to higher correlation with inflation and lower volatility (duration)
  - TIPS 1-10 is expected to return ~40bps per year less than Broad TIPS exposure

---

## Important Disclosures

Information contained in this document may include confidential, trade secret and/or proprietary information of Callan and the client. It is incumbent upon the user to maintain such information in strict confidence. Neither this document nor any specific information contained herein is to be used other than by the intended recipient for its intended purpose.

The content of this document is particular to the client and should not be relied upon by any other individual or entity. There can be no assurance that the performance of any account or investment will be comparable to the performance information presented in this document.

Certain information herein has been compiled by Callan from a variety of sources believed to be reliable but for which Callan has not necessarily verified for accuracy or completeness. Information contained herein may not be current. Callan has no obligation to bring current the information contained herein.

Callan's performance, market value, and, if applicable, liability calculations are inherently estimates based on data available at the time each calculation is performed and may later be determined to be incorrect or require subsequent material adjustment due to many variables including, but not limited to, reliance on third party data, differences in calculation methodology, presence of illiquid assets, the timing and magnitude of unrecognized cash flows, and other data/assumptions needed to prepare such estimated calculations. In no event should the performance measurement and reporting services provided by Callan be used in the calculation, deliberation, policy determination, or any other action of the client as it pertains to determining amounts, timing or activity of contribution levels or funding amounts, rebalancing activity, benefit payments, distribution amounts, and/or performance-based fee amounts, unless the client understands and accepts the inherent limitations of Callan's estimated performance, market value, and liability calculations.

Callan's performance measurement service reports estimated returns for a portfolio and compares them against relevant benchmarks and peer groups, as appropriate; such service may also report on historical portfolio holdings, comparing them to holdings of relevant benchmarks and peer groups, as appropriate ("portfolio holdings analysis"). To the extent that Callan's reports include a portfolio holdings analysis, Callan relies entirely on holdings, pricing, characteristics, and risk data provided by third parties including custodian banks, record keepers, pricing services, index providers, and investment managers. Callan reports the performance and holdings data as received and does not attempt to audit or verify the holdings data. Callan is not responsible for the accuracy or completeness of the performance or holdings data received from third parties and such data may not have been verified for accuracy or completeness.

Callan's performance measurement service may report on illiquid asset classes, including, but not limited to, private real estate, private equity, private credit, hedge funds and infrastructure. The final valuation reports, which Callan receives from third parties, for of these types of asset classes may not be available at the time a Callan performance report is issued. As a result, the estimated returns and market values reported for these illiquid asset classes, as well as for any composites including these illiquid asset classes, including any total fund composite prepared, may not reflect final data, and therefore may be subject to revision in future quarters.

The content of this document may consist of statements of opinion, which are made as of the date they are expressed and are not statements of fact. The opinions expressed herein may change based upon changes in economic, market, financial and political conditions and other factors. Callan has no obligation to bring current the opinions expressed herein.

The information contained herein may include forward-looking statements regarding future results. The forward-looking statements herein: (i) are best estimations consistent with the information available as of the date hereof and (ii) involve known and unknown risks and uncertainties. Actual results may vary, perhaps materially, from the future results projected in this document. Undue reliance should not be placed on forward-looking statements.

Callan is not responsible for reviewing the risks of individual securities or the compliance/non-compliance of individual security holdings with a client's investment policy guidelines.

This document should not be construed as legal or tax advice on any matter. You should consult with legal and tax advisers before applying any of this information to your particular situation.

Reference to, or inclusion in this document of, any product, service or entity should not necessarily be construed as recommendation, approval, or endorsement or such product, service or entity by Callan. This document is provided in connection with Callan's consulting services and should not be viewed as an advertisement of Callan, or of the strategies or products discussed or referenced herein.

---

## Important Disclosures (continued)

The issues considered and risks highlighted herein are not comprehensive and other risks may exist that the user of this document may deem material regarding the enclosed information. Please see any applicable full performance report or annual communication for other important disclosures.

Unless Callan has been specifically engaged to do so, Callan does not conduct background checks or in-depth due diligence of the operations of any investment manager search candidate or investment vehicle, as may be typically performed in an operational due diligence evaluation assignment and in no event does Callan conduct due diligence beyond what is described in its report to the client.

Any decision made on the basis of this document is sole responsibility of the client, as the intended recipient, and it is incumbent upon the client to make an independent determination of the suitability and consequences of such a decision.

Callan undertakes no obligation to update the information contained herein except as specifically requested by the client.

Past performance is no guarantee of future results.

---

## About Callan

Callan was founded as an employee-owned investment consulting firm in 1973. Ever since, we have empowered institutional investor with creative, customized investment solutions backed by proprietary research, exclusive data, and ongoing education. Today, Callan provides advisory services to institutional investor clients with more than \$3 trillion in total assets, which makes it among the largest independently owned investment consulting firms in the U.S. Callan uses a client-focused consulting model to serve pension and defined contribution plan sponsors, endowments, foundations, independent investment advisers, investment managers, and other asset owners. Callan has six offices throughout the U.S. For more information, please visit [www.callan.com](http://www.callan.com).

## Callan

---

### Corporate Headquarters

One Bush Street  
Suite 800  
San Francisco, CA 94104

[www.callan.com](http://www.callan.com)

### Regional Offices

Atlanta  
Chicago  
Denver  
New Jersey  
Portland



Callan