

# 2024 L Funds

# Asset Allocation Review

Presented By  
Mike Jerue, Office of Investments  
May 21, 2024



**Thrift Savings Plan**

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# L Funds Asset Allocation Review

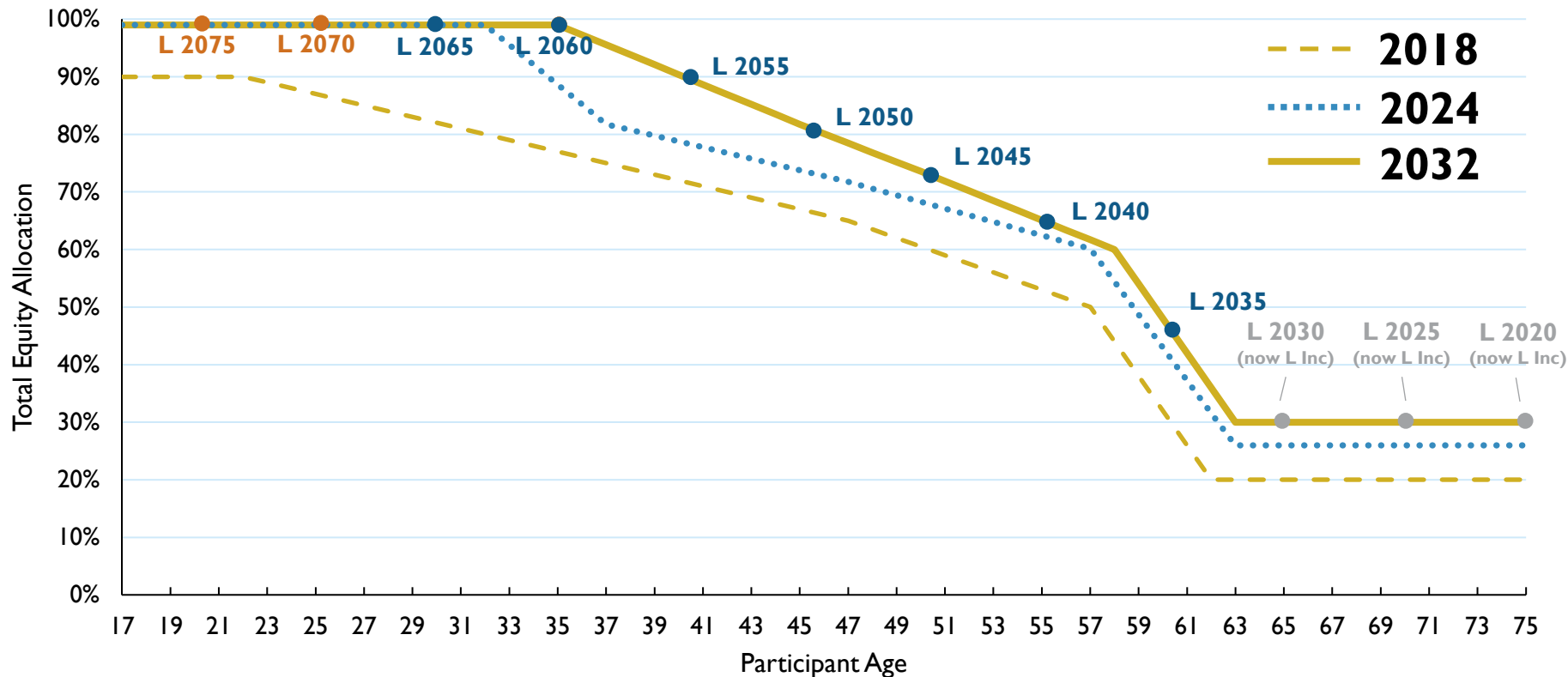
- Conducted in collaboration with investment consultant
- Explored ways to improve outcomes without unreasonably increasing risk
- Recommended no changes to current designs; Executive Director concurred



# L Funds Asset Allocation Review

- Participant demographics
- Capital market assumptions
- Potential changes to design

# Glide Path Transition (2018-2032)





# L Funds Asset Allocation Review

May 2024

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# Executive Summary





# Executive Summary

<b>Scope of Study</b>	<ul style="list-style-type: none"><li>• The FRTIB hired Aon to complete the 2024 L Funds glide path asset allocation study.</li></ul>
<b>Objective</b>	<ul style="list-style-type: none"><li>• The objective is for the FRTIB to provide a series of L Funds such that an “average participant” in those L Funds, in combination with the FERS defined benefit plan and Social Security, will be projected to have sufficient assets to maintain a reasonable standard of living throughout retirement.</li></ul>
<b>Glide Path Risk Level</b>	<ul style="list-style-type: none"><li>• The TSP’s participant demographics suggest the current risk level of the L Funds’ glide path and the projected path forward are reasonable to accomplish the FRTIB investment objectives.</li></ul>
<b>Investment Structure</b>	<ul style="list-style-type: none"><li>• Aon evaluated several possible L Fund structure changes.</li><li>• At the completion of this 2024 study, Aon believes there is not a clear alternative investment structure that would meaningfully improve retirement adequacy for TSP participants invested in the L Funds.</li><li>• Aon’s opinion is that it is prudent for the TSP to continue down the current path for the L Funds.</li></ul>



# Glide Paths Modeled





# Glide Paths Modeled

## Current Glide Path Asset Allocations as of July 2024

Asset Allocation	L 2065	L 2060	L 2055	L 2050	L 2045	L 2040	L 2035	L 2030	L 2025	L Income
C Fund	51.01%	51.01%	51.01%	42.14%	39.62%	37.12%	34.17%	31.20%	16.39%	13.55%
S Fund	13.34%	13.34%	13.34%	11.00%	10.27%	9.52%	8.69%	7.88%	4.11%	3.35%
I Fund	34.65%	34.65%	34.65%	28.61%	26.86%	25.11%	23.08%	21.04%	11.04%	9.10%
F Fund	0.60%	0.52%	0.46%	7.26%	7.44%	7.05%	6.68%	5.77%	5.79%	5.55%
G Fund	0.40%	0.48%	0.54%	10.99%	15.81%	21.20%	27.38%	34.11%	62.67%	68.45%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Key Characteristics	L 2065	L 2060	L 2055	L 2050	L 2045	L 2040	L 2035	L 2030	L 2025	L Income
Years to Maturity	41	36	31	26	21	16	11	6	1	0
Total Equity	99.00%	99.00%	99.00%	81.75%	76.75%	71.75%	65.94%	60.12%	31.54%	26.00%
Total Fixed Income	1.00%	1.00%	1.00%	18.25%	23.25%	28.25%	34.06%	39.88%	68.46%	74.00%
Non-U.S. / Total Equity	35.00%	35.00%	35.00%	35.00%	35.00%	35.00%	35.00%	35.00%	35.00%	35.00%
SMID / Total U.S. Equity	20.73%	20.73%	20.73%	20.70%	20.59%	20.41%	20.28%	20.16%	20.05%	19.82%
G Fund / Total Fixed Income	40.00%	48.00%	54.00%	60.22%	68.00%	75.04%	80.39%	85.53%	91.54%	92.50%

# Glide Paths Modeled

## Alternate Glide Path Scenarios

Scenario	Description	Equity Percentage	G Fund / Total Fixed Income	SMID / Total U.S. Equity	Int'l / Total Equity
1	Current Glide Path	Transitional glide path with targets of: <ul style="list-style-type: none"> <li>99% equity at age 35</li> <li>60% equity at age 58</li> <li>30% equity at age 63</li> </ul>	Upward trajectory to 92.5% by target year	Transition to 20% by 2025	35%
2	Move to Ultimate Glide Path	Move immediately to target equity allocation	Upward trajectory to 92.5% by target year	Transition to 20% by 2025	35%
3	Fixed Income 100% G	Same as current	Immediately move all fixed income to G Fund	Transition to 20% by 2025	35%
4	Fixed Income 100% F	Same as current	Immediately move all fixed income to F Fund	Transition to 20% by 2025	35%
5	Decrease to 15% SMID/U.S.	Same as current	Upward trajectory to 92.5% by target year	Decrease to 15% by 2025	35%
6	Increase to 25% SMID/U.S.	Same as current	Upward trajectory to 92.5% by target year	Increase to 25% by 2025	35%
7	Decrease I to 30% of Equity	Same as current	Upward trajectory to 92.5% by target year	Transition to 20% by 2025	Decrease to 30% by 2025
8	Increase I to 40% of Equity	Same as current	Upward trajectory to 92.5% by target year	Transition to 20% by 2025	Increase to 40% by 2025
9	De-risk 5 Years Sooner	Transitional glide path with targets of: <ul style="list-style-type: none"> <li><b>99% equity at age 30</b></li> <li>60% equity at age 58</li> <li>30% equity at age 63</li> </ul>	Upward trajectory to 92.5% by target year	Transition to 20% by 2025	35%
10	De-risk 5 Years Later	Transitional glide path with targets of: <ul style="list-style-type: none"> <li><b>99% equity at age 40</b></li> <li>60% equity at age 58</li> <li>30% equity at age 63</li> </ul>	Upward trajectory to 92.5% by target year	Transition to 20% by 2025	35%
11	10-year Through Glide Path	Transitional glide path with targets of: <ul style="list-style-type: none"> <li>99% equity at age 35</li> <li>60% equity at age 58</li> <li><b>50% equity at age 63</b></li> <li><b>30% equity at age 73</b></li> </ul>	Upward trajectory to 92.5% by target year	Transition to 20% by 2025	35%



# Summary Analysis





# Capital Market Assumptions

## Expected Risk and Return Assumptions (10-Year)

Geometric Return	2024 Analysis	2023 Analysis <sup>1</sup>	2022 Analysis <sup>2</sup>
C Fund: Large Cap U.S. Equity	6.2%	6.6%	5.9%
S Fund: Small/Mid Cap U.S. Equity	6.4%	6.8%	6.1%
I Fund: Non-U.S. Equity <sup>3</sup>	6.5%	7.1%	7.0%
F Fund: Core Fixed Income	4.9%	4.3%	2.6%
G Fund: Government Yield	4.6%	3.7%	2.3%
Inflation	2.2%	2.3%	2.4%
Standard Deviation	2024 Analysis	2023 Analysis <sup>1</sup>	2022 Analysis <sup>2</sup>
C Fund: Large Cap U.S. Equity	18.0%	17.0%	17.0%
S Fund: Small/Mid Cap U.S. Equity	24.0%	23.0%	23.0%
I Fund: Non-U.S. Equity <sup>3</sup>	18.9%	20.5%	20.0%
F Fund: Core Fixed Income	4.9%	5.0%	4.0%
G Fund: Government Yield	1.0%	1.0%	0.8%
Inflation	1.7%	1.5%	1.0%
Yield History	2/29/2024	3/31/2023	2/28/2022
Bloomberg U.S. Aggregate	4.92%	4.40%	2.33%
10-year Treasury	4.24%	3.49%	1.83%

- Based on Aon 2024 Q1 10-year capital market assumptions (as of December 31, 2023), adjusted for changes in yields through February 29, 2024
- The G Fund is assumed to earn the yield on 9-year duration Treasury bonds

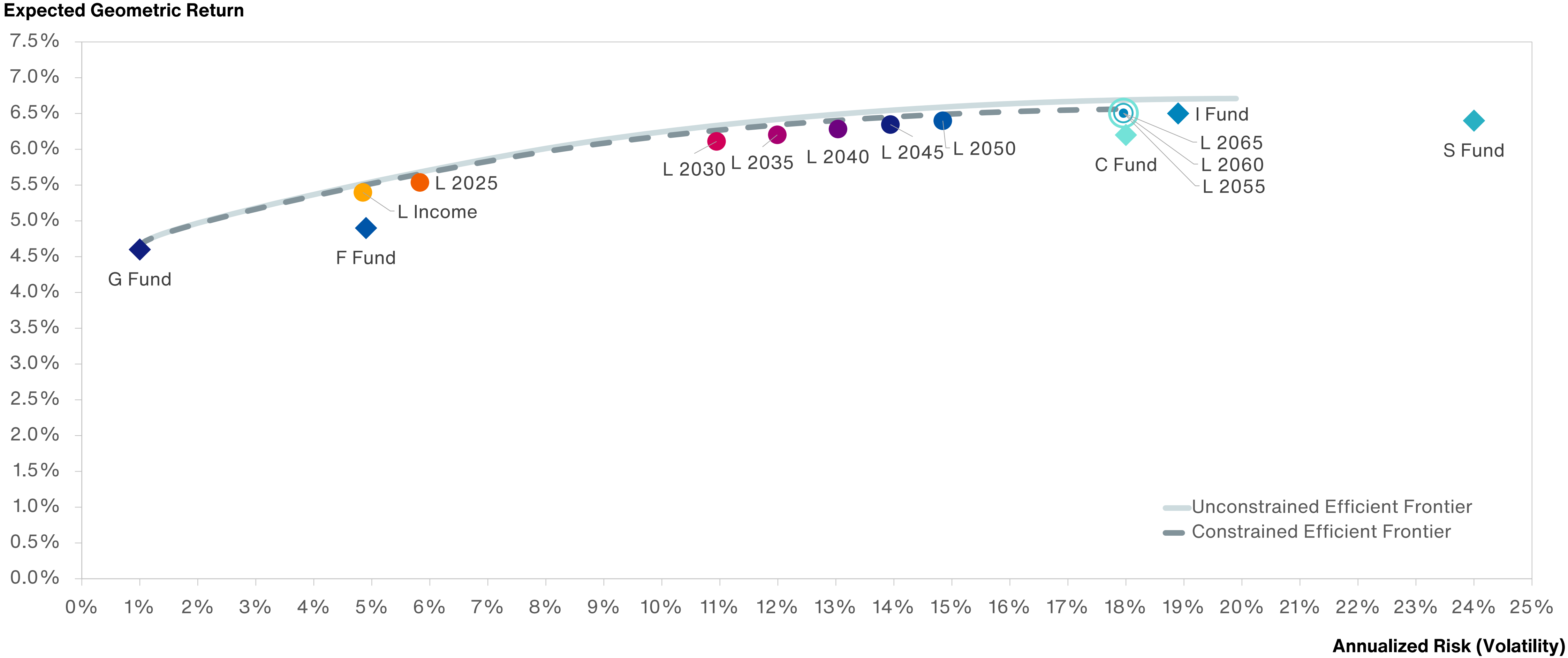
<sup>1</sup> 2023 analysis assumptions are based on the Aon report “TSP L Funds Efficient Frontier Analysis” dated July 28, 2023. Assumptions are based on a 10-year horizon.

<sup>2</sup> 2022 analysis assumptions are based on the Aon report “Thrift Savings Plan – Full Report, Lifecycle Fund Asset Allocation” dated May 11, 2022. Assumptions are based on a 10-year horizon.

<sup>3</sup> The assumed benchmark for the I Fund in the 2024 analysis is the MSCI ACWI ex USA ex China ex Hong Kong Index. Analysis in 2023 and 2022 assumed a benchmark of MSCI EAFE Index.

# Efficient Frontier

Based on 10-Year Forward-Looking Assumptions





# Demographic Profile for L 2040 Fund

- FRTIB created demographic profiles as of July 1, 2024 by rolling forward actual TSP participant data as of December 31, 2023
- Employee deferral rates are extrapolated from the characteristics provided by cohort
- Employer contributions are assumed to be 5% of pay
- Salary merit scale assumptions are based on schedules from the Civil Service Retirement and Disability Fund Annual Report for the fiscal year ending September 30, 2022
  - Assumed blend of 80% non-postal, 20% postal workforce
  - Select and ultimate table based on age and service
  - Net of inflation

Model Participant Characteristics	L 2040
Birth Year	1977
Assumed Hire Age	36
Current Age as of 7/1/2024	47
Retirement Age	62
Age at First Withdrawal	63
Annual Salary as of 7/1/2024	\$104,314
DC Balance as of 7/1/2024	\$153,552
Deferral Rate as of 7/1/2024	7.96%

- All participants are assumed to earn a Social Security benefit based on pay projected to retirement and regressed to date of hire using the salary merit scale assumptions
- All participants are assumed to earn a defined benefit pension equivalent to 30% of final pay

Model Participant Age	Employee Deferral	Employer Contrib.	Salary Merit Scale
47	7.96%	5.00%	1.83%
48	8.15%	5.00%	1.71%
49	8.34%	5.00%	1.58%
50	8.54%	5.00%	1.52%
51	8.73%	5.00%	1.47%
52	8.92%	5.00%	1.46%
53	9.13%	5.00%	1.43%
54	9.34%	5.00%	1.36%
55	9.55%	5.00%	0.98%
56	9.76%	5.00%	0.91%
57	9.97%	5.00%	0.91%
58	10.13%	5.00%	0.91%
59	10.28%	5.00%	0.91%
60	10.44%	5.00%	0.91%
61	10.60%	5.00%	0.75%
62+	0.00%	0.00%	0.00%

# Summary Results: L 2040 Fund

Account Balance <sup>1</sup> & Replacement Ratio <sup>2</sup> at First Withdrawal	Current Glide Path	Move to Ultimate GP	Fixed Income 100% G	Fixed Income 100% F	Decrease to 15% SMID/US	Increase to 25% SMID/US	Decrease I to 30% of Equity	Increase I to 40% of Equity	De-risk 5 Years Sooner	De-risk 5 Years Later	10-year Through GP
Account Balance - Median (50th Percentile)	\$620.6	\$621.9	\$619.1	\$633.8	\$619.7	\$622.9	\$620.4	\$622.1	\$620.4	\$620.6	\$626.5
Account Balance - Downside (5th Percentile)	\$354.4	\$354.1	\$351.9	\$365.8	\$354.7	\$354.6	\$353.0	\$355.7	\$355.7	\$353.1	\$348.9
Replacement Ratio - DB+DC+SS - Median (50th Percentile)	75.0%	75.0%	74.9%	75.4%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.2%
Replacement Ratio - DB+DC+SS - Downside (5th Percentile)	67.1%	67.1%	67.0%	67.5%	67.1%	67.1%	67.0%	67.1%	67.1%	67.0%	66.9%
Replacement Ratio - TSP Only - Median (50th Percentile)	18.4%	18.4%	18.3%	18.8%	18.4%	18.4%	18.4%	18.4%	18.4%	18.4%	18.6%
Replacement Ratio - TSP Only - Downside (5th Percentile)	10.5%	10.4%	10.4%	10.8%	10.5%	10.5%	10.4%	10.5%	10.5%	10.4%	10.3%
Likelihood of Negative Real Return <sup>3</sup>	Current Glide Path	Move to Ultimate GP	Fixed Income 100% G	Fixed Income 100% F	Decrease to 15% SMID/US	Increase to 25% SMID/US	Decrease I to 30% of Equity	Increase I to 40% of Equity	De-risk 5 Years Sooner	De-risk 5 Years Later	10-year Through GP
Likelihood of < 0% Real Return During 2 Years Before Withdrawal	24.4%	24.4%	24.8%	21.8%	24.2%	24.3%	24.4%	24.1%	24.4%	24.4%	27.4%
Likelihood of < -5% Real Return During 2 Years Before Withdrawal	11.4%	11.4%	11.7%	11.2%	11.2%	11.5%	11.5%	11.5%	11.4%	11.4%	16.5%
Post-Retirement Account Exhaustion <sup>4</sup>	Current Glide Path	Move to Ultimate GP	Fixed Income 100% G	Fixed Income 100% F	Decrease to 15% SMID/US	Increase to 25% SMID/US	Decrease I to 30% of Equity	Increase I to 40% of Equity	De-risk 5 Years Sooner	De-risk 5 Years Later	10-year Through GP
Likelihood of Account Exhaustion by Age 80	11.1%	11.0%	11.6%	7.0%	11.1%	11.0%	11.2%	10.8%	10.9%	11.2%	10.5%
Likelihood of Account Exhaustion by Age 90	35.6%	35.8%	36.8%	27.4%	35.9%	35.4%	35.6%	35.7%	35.8%	35.7%	33.0%
Likelihood of Account Exhaustion by Median Life Expectancy Age	29.7%	29.6%	30.7%	21.4%	29.9%	29.5%	29.9%	29.4%	29.6%	29.7%	27.2%
Exhaustion Age - Median (50th Percentile)	97.9	98.0	97.3	107.3	97.7	98.2	97.7	98.1	97.9	98.0	101.1
Exhaustion Age - Downside (5th Percentile)	77.1	77.1	77.0	78.8	77.2	77.1	77.1	77.2	77.2	77.1	77.0

<sup>1</sup> Account balance represents the projected account balance at first withdrawal age, discounted back to 2024 with projected inflation. Account balances shown are in thousands.

<sup>2</sup> Replacement ratio is the ratio of income in the first year of withdrawal to final earnings prior to withdrawal under a conservative hypothetical spending policy. Spending policy is based on converting the DC account balance into an inflation-indexed period-certain annuity based on an interest rate of 3.50%, an inflation rate of 2.30%, and a horizon of 35 years (90th percentile life expectancy for the average participant according to the mortality table and improvement scale from the 2023 OASDI Trustees Report, rounded to the nearest year). DB+DC+SS replacement ratio measures pay replacement from TSP, Social Security, and defined benefit sources combined.

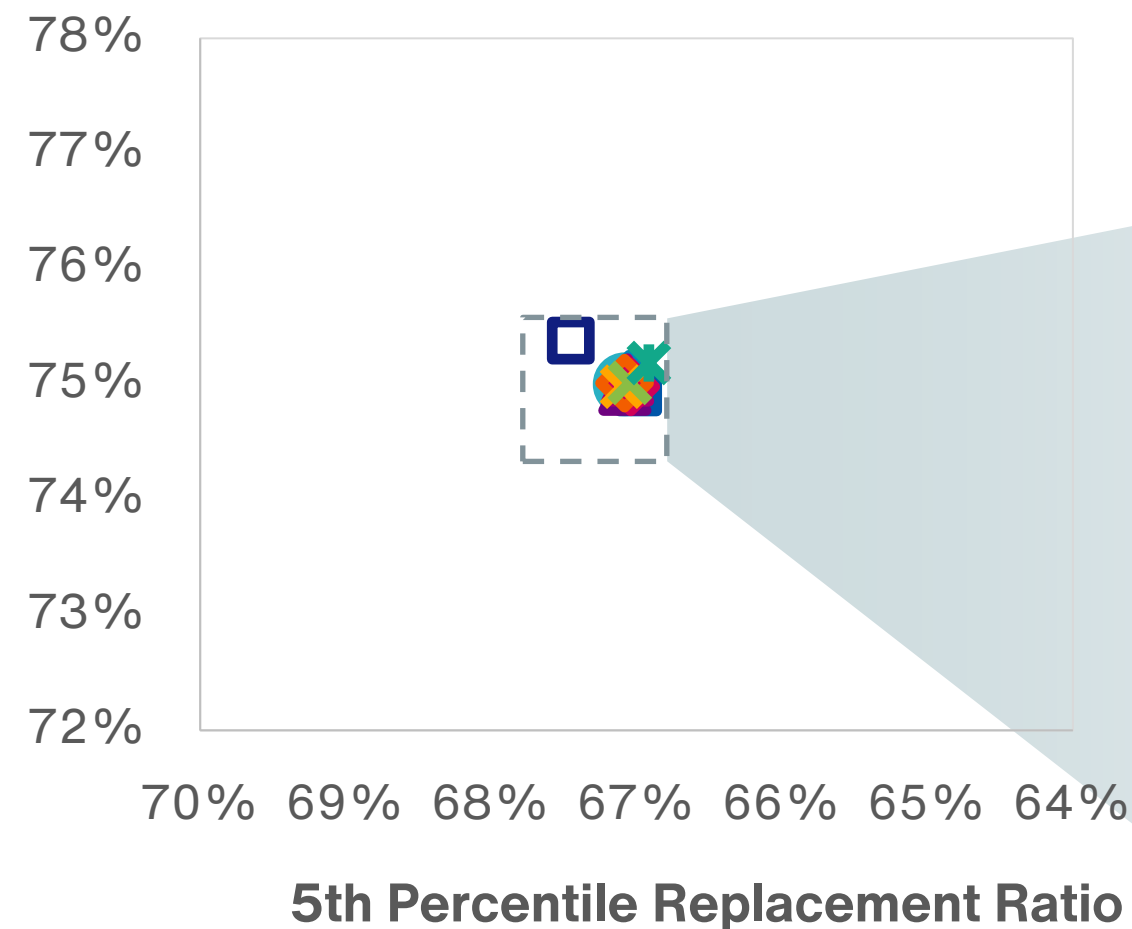
<sup>3</sup> Measures the likelihood of < 0% (or < -5%) compounded real return over the 2-year period prior to withdrawal (between age 61 and 63).

<sup>4</sup> Account exhaustion is based on a target retirement spending policy of 80% of final earnings, indexed for projected inflation, minus annual income from guaranteed sources (DB and Social Security), not less than \$0 in any given year.

# Summary Results: L 2040 Fund

## Expected vs. Downside Replacement Ratio<sup>1</sup>

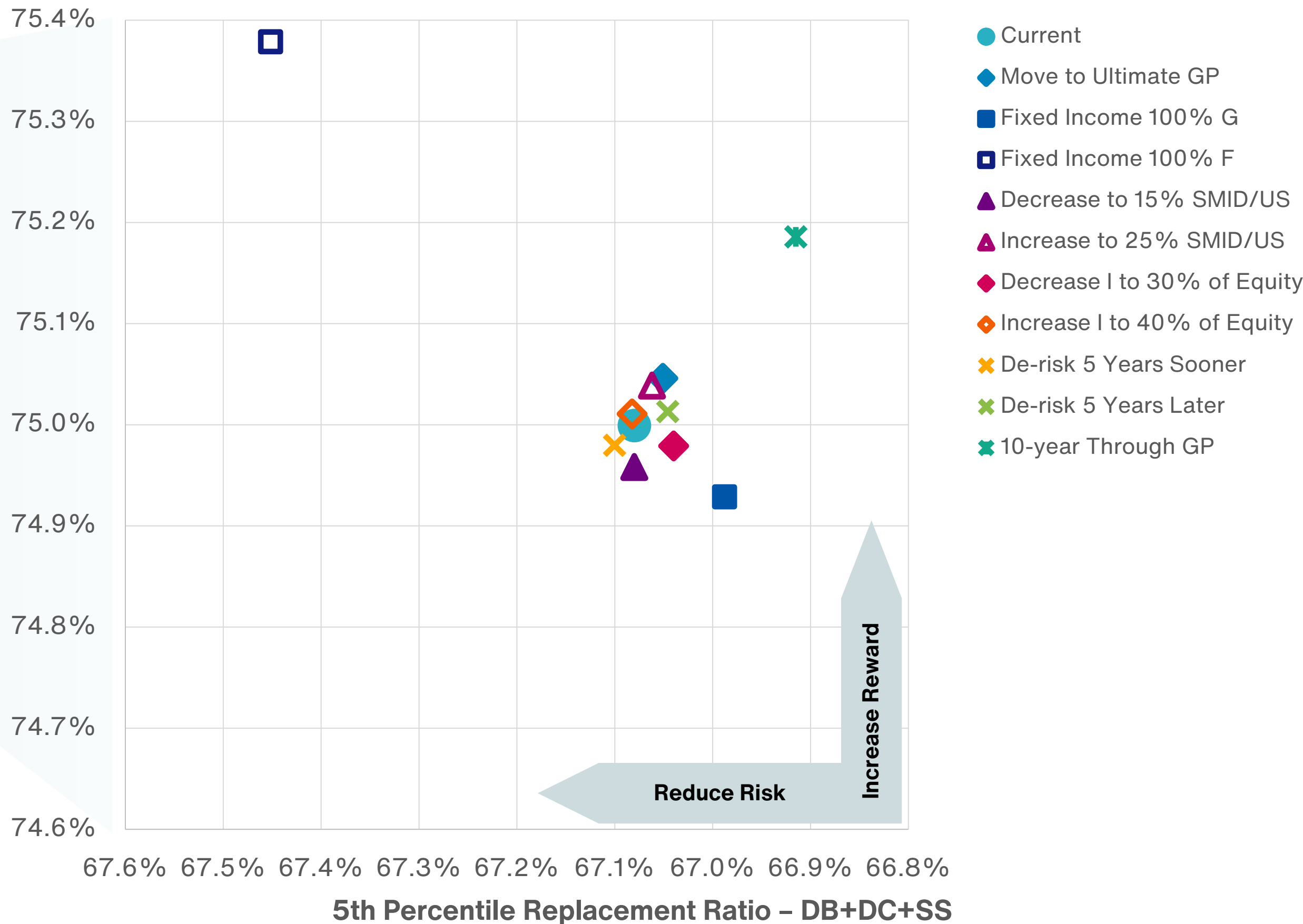
50th Percentile Replacement Ratio



- Results for the various scenarios lead to relatively similar outcomes in absolute terms
- Over long horizons, policies with higher equity allocations have higher expected outcomes, but lower downside outcomes (i.e., higher risk)

<sup>1</sup> Replacement ratio is the ratio of income in the first year of withdrawal to final earnings prior to withdrawal under a conservative hypothetical spending policy. Spending policy is based on converting the DC account balance into an inflation-indexed period-certain annuity based on an interest rate of 3.50%, an inflation rate of 2.30%, and a horizon of 35 years (90th percentile life expectancy for the average participant according to the mortality table and improvement scale from the 2023 OASDI Trustees Report, rounded to the nearest year). DB+DC+SS replacement ratio measures pay replacement from TSP, Social Security, and defined benefit sources combined.

50th Percentile Replacement Ratio – DB+DC+SS

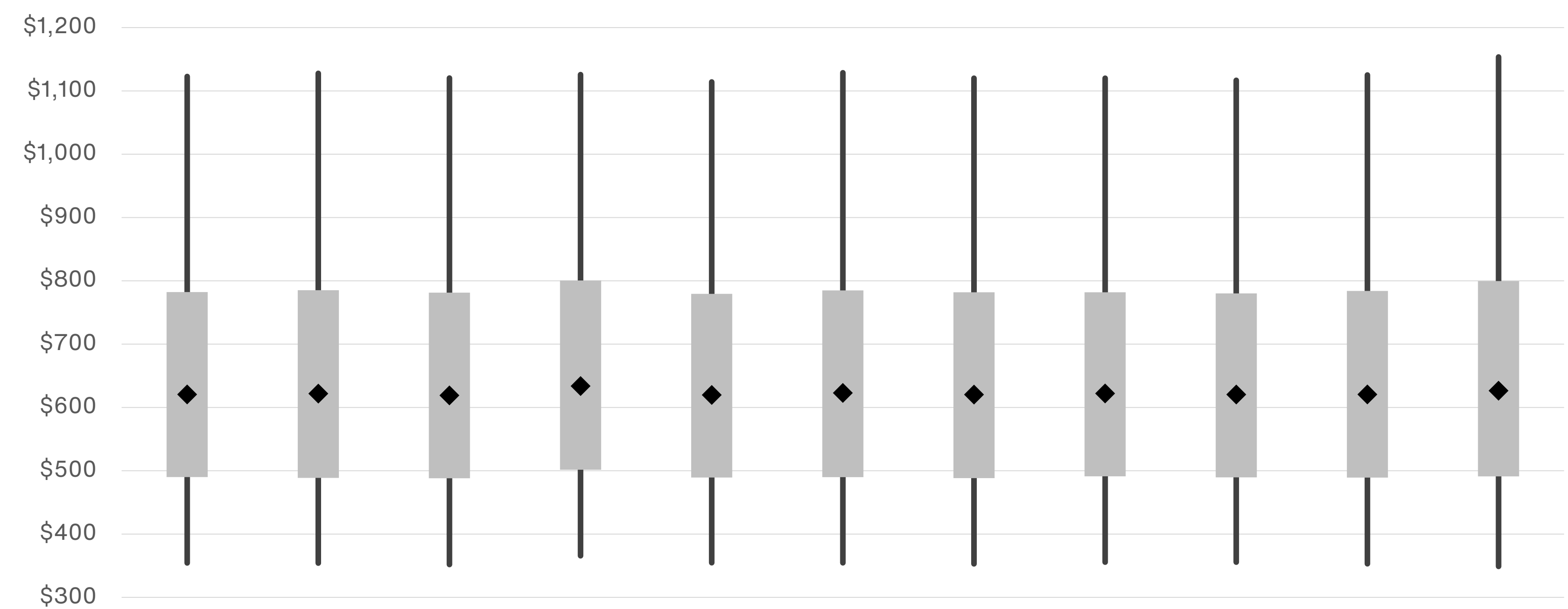




# Summary Results: L 2040 Fund

## Distribution of Real Account Balance<sup>1</sup> at First Withdrawal (Thousands)

Participant Characteristics	Value
Birth Year	1977
Hire Age	36
Current Age	47
Retirement Age	62
First Withdrawal Age	63
Current Pay	\$104,314
Current Balance	\$153,552
Current Deferral Rate	7.96%



Pctile of Outcome	Current Glide Path	Move to Ultimate GP	Fixed Income 100% G	Fixed Income 100% F	Decrease to 15% SMID/US	Increase to 25% SMID/US	Decrease I to 30% of Equity	Increase I to 40% of Equity	De-risk 5 Years Sooner	De-risk 5 Years Later	10-year Through GP
95 <sup>th</sup>	\$1,122.7	\$1,127.7	\$1,120.3	\$1,125.8	\$1,114.1	\$1,128.7	\$1,120.1	\$1,120.1	\$1,116.7	\$1,125.1	\$1,153.6
75 <sup>th</sup>	\$782.3	\$785.2	\$781.3	\$800.6	\$779.5	\$784.8	\$781.9	\$781.9	\$780.1	\$784.0	\$799.6
50 <sup>th</sup>	\$620.6	\$621.9	\$619.1	\$633.8	\$619.7	\$622.9	\$620.4	\$622.1	\$620.4	\$620.6	\$626.5
25 <sup>th</sup>	\$490.0	\$488.7	\$488.1	\$501.6	\$489.4	\$490.0	\$488.4	\$491.3	\$489.6	\$489.3	\$491.1
5 <sup>th</sup>	\$354.4	\$354.1	\$351.9	\$365.8	\$354.7	\$354.6	\$353.0	\$355.7	\$355.7	\$353.1	\$348.9

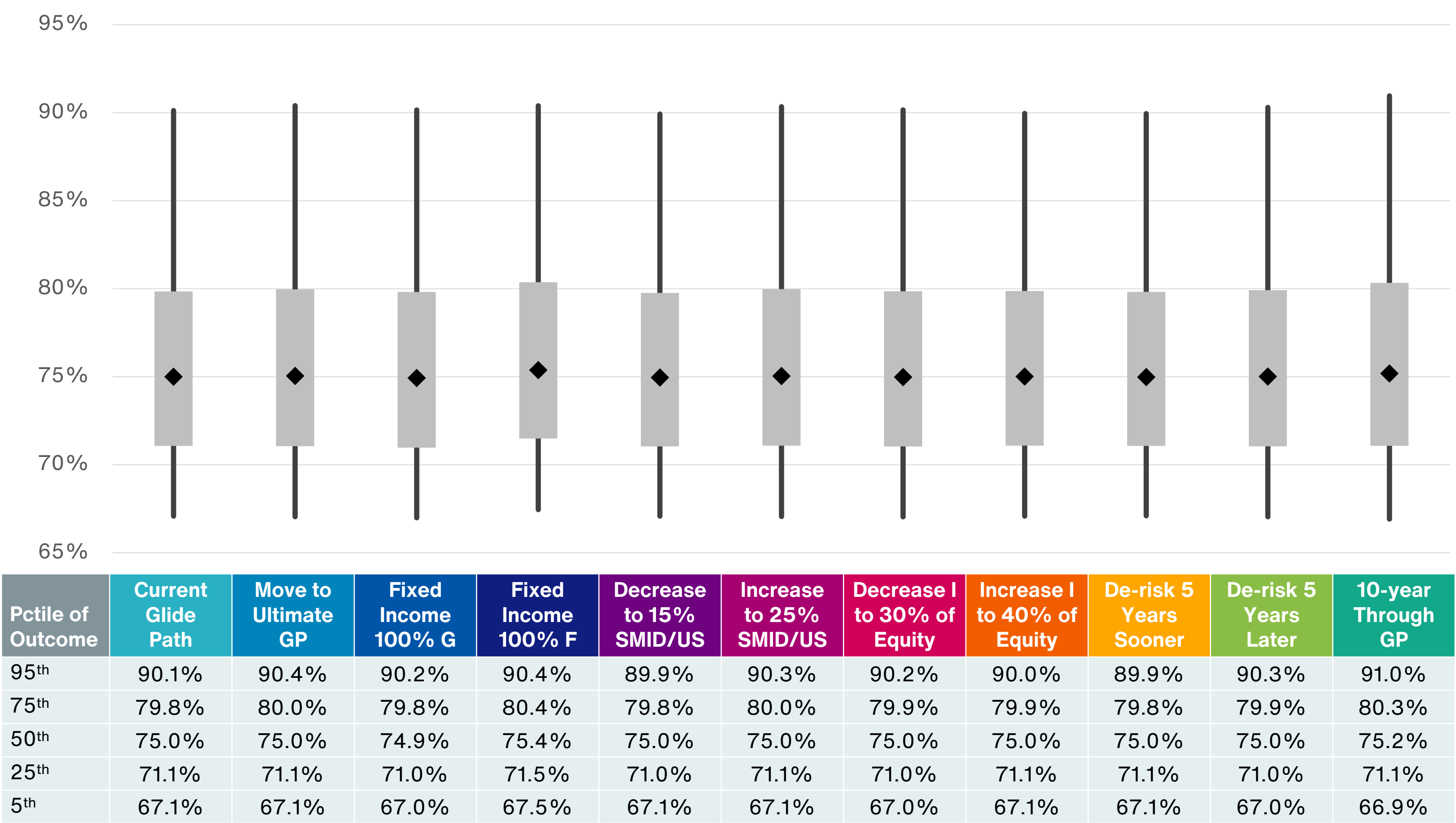
<sup>1</sup> Account balance represents the projected account balance at first withdrawal age, discounted back to 2024 with projected inflation.

# Summary Results: L 2040 Fund

## Distribution of Replacement Ratio<sup>1</sup>

Participant Characteristics	Value
Birth Year	1977
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# Summary Results: L 2040 Fund

## Likelihood of Negative Real Return Prior to First Withdrawal<sup>1</sup>

Participant Characteristics	Value		Real Return < 0%	Real Return < -5%	Real Return < -10%	Real Return < -20%
Birth Year	1977	Current	24.4%	11.4%	4.9%	0.5%
Hire Age	36	Move to Ultimate GP	24.4%	11.4%	4.9%	0.5%
Current Age	47	Fixed Income 100% G	24.8%	11.7%	5.0%	0.5%
Retirement Age	62	Fixed Income 100% F	21.8%	11.2%	4.8%	0.5%
First Withdrawal Age	63	Decrease to 15% SMID/US	24.2%	11.2%	4.8%	0.4%
Current Pay	\$104,314	Increase to 25% SMID/US	24.3%	11.5%	5.0%	0.5%
Current Balance	\$153,552	Decrease I to 30% of Equity	24.4%	11.5%	4.9%	0.4%
Current Deferral Rate	7.96%	Increase I to 40% of Equity	24.1%	11.5%	4.8%	0.5%
		De-risk 5 Years Sooner	24.4%	11.4%	4.9%	0.5%
		De-risk 5 Years Later	24.4%	11.4%	4.9%	0.5%
		10-year Through GP	27.4%	16.5%	9.0%	1.8%

<sup>1</sup> Measures the likelihood of < 0, < -5%, < -10%, or < -20% compounded real return over the 2-year period prior to withdrawal (between age 61 and 63).



# Conclusions and Next Steps





# Commentary on Analysis

<b>“To” versus “Through”</b>	<ul style="list-style-type: none"><li>• The L Funds' current and transitional glide paths provide participants a reasonable and age-appropriate risk level.</li><li>• Aon believes risk level is a more important evaluation factor for each participant’s long-term outcomes than the tactical decision of “to” vs. “through.”</li><li>• In other words, the absolute risk level is a more important driver of results than the specific shape of the glide path.</li></ul>
<b>Equity Level</b>	<ul style="list-style-type: none"><li>• The glide paths Aon tested with higher equity allocations have better expected outcomes for participants, which supports the FRTIB’s long-term transitional glide path implementation strategy.</li></ul>
<b>Equity Structure</b>	<ul style="list-style-type: none"><li>• The allocations with a higher proportion of equity coming from non-U.S. equities perform better over a full career for all percentiles shown.</li><li>• However, this is not a guarantee of uniformly better performance, as there are economic scenarios and horizons during which non-U.S. equity is expected to underperform U.S. equity.</li></ul>
<b>Fixed Income Structure</b>	<ul style="list-style-type: none"><li>• Shifting some of the G Fund allocation to the F Fund has incremental impacts in most of the quantitative results.</li><li>• However, Aon has less conviction in this change because the results are highly sensitive to capital market assumptions.</li></ul>
<b>Timing of Changes</b>	<ul style="list-style-type: none"><li>• Any meaningful glide path changes are subject to a risk of poor timing, which is why Aon continues to support the FRTIB’s long-term transitional glide path approach.</li><li>• This strategy provides incremental changes that allow the TSP to try to mitigate any point-in-time risks in market timing.</li></ul>



# Appendix: Disclosures and Disclaimers





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# Conclusion and Next Steps

- Executive Director concurred with recommendation to make no changes
- L 2070 Fund to be launched in July 2024 with same glide path used by L 2055, L 2060, and L 2065 Funds
- L 2025 Fund to be retired and L 2075 Fund to be introduced in 2025

# Questions?





Federal Retirement Thrift Investment Board

May 9, 2024

MEMORANDUM FOR EXECUTIVE DIRECTOR RAVINDRA DEO

FROM: MIKE JERUE, DEPUTY CHIEF INVESTMENT OFFICER  
THROUGH: SEAN MCCAFFREY, CHIEF INVESTMENT OFFICER  
SUBJECT: 2024 LIFECYCLE FUNDS ASSET ALLOCATION REVIEW

SUMMARY

The Office of Investments (OI), with assistance from Aon, recently concluded its periodic review of the asset allocations of the Lifecycle Funds (L Funds). This memorandum describes OI's approach, findings, and recommendations.

BACKGROUND

OI Lifecycle Fund Policy and Lifecycle Fund Asset Allocation Procedures direct that "the Agency will conduct a comprehensive review of the Lifecycle Fund asset allocations at least once every three years, unless exception is given." The procedures also note that "the TSP Lifecycle Funds are designed to provide participants with long-term, risk-efficient strategies, and the risk and return objectives of the Funds are intended to be consistent with an overall replacement rate (including defined benefit and Social Security) of a substantial portion of pre-retirement income."

The 2018 review resulted in several significant changes to the L Funds' asset allocations. First, the I Fund's weight in the overall equity allocation was increased from 30% to 35%. Second, the overall equity allocation in the L Income Fund began a ten-year climb from 20% to 30%. Third, even though the introduction of the L 2055, L 2060 and L 2065 Funds was still almost two years away, the 2018 review established a glide path for such longer-dated L Funds. This glide path began with an overall equity allocation of 99% and maintained that allocation until the average participant in the L Fund reaches age 35. Finally, the 2018 review led to the adoption of a "level off" strategy that froze the overall equity allocations of L 2030, L 2040, and L 2050 until those Funds' glide paths intercepted the proposed glide path for the longer-dated L Funds (L 2055, L 2060, and L 2065). This means that L 2030, L 2040, and L 2050 will maintain their current overall equity allocations until 2025, 2028, and 2032,



respectively, instead of reducing their equity allocations as they were scheduled to do prior to the 2018 study.

The reviews conducted since 2018 generated relatively minor changes that were intended to bring the L Funds' asset allocations in line with broad market capitalizations but were not expected to result in materially different outcomes for participants. For example, the 2020 and 2021 reviews resulted in slight adjustments to the split of the U.S. equity allocation between the C and S Funds.

## DATA, ASSUMPTIONS, AND APPROACH

Consistent with previous reviews, OI developed profiles of representative participants for each L Fund.<sup>1</sup> These profiles included average values for current age, hire age, salary, deferral rate, and account balance as of December 31, 2023. The data set used to generate these profiles included all Federal Employees' Retirement System (FERS)<sup>2</sup> participants who were actively employed for all of 2023 and who held at least some assets in the L Funds. The average salaries and account balances were rolled forward to July 1, 2024.

OI also reviewed its demographic and behavioral assumptions for validity. One of these assumptions, the age of first withdrawal, is particularly important, as it not only marks the beginning of the decumulation phase but also serves as the basis for assigning new participants to an age-appropriate L Fund. Analysis of withdrawal data from 2023 showed that the age of first withdrawal was approximately 63, continuing a trend that has persisted over the past several years. Therefore, OI elected to leave the assumption unchanged at 63. Recent legislative changes related to required minimum distributions could drive significant changes in participant behavior, so OI will continue to closely monitor withdrawal data.

Aon also reviewed its demographic and behavioral assumptions. The only noteworthy change was the adoption of a new mortality assumption. Whereas prior reviews used a mortality table developed by the Society of Actuaries (SOA), the 2024 review relied on a table produced by the Federal Old-Age and Survivors Disability Insurance (OASDI) Trustees. The SOA table captures mortality rates for pension-eligible American workers, while the OASDI table reflects the experiences of the entire U.S. workforce. Aon believes this broader exposure makes the

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<sup>1</sup> The L 2070 Fund is scheduled to be launched in July 2024. As of December 31, 2023, there were very few FERS participants in the L 2070 target cohort. Rather than rely on this small population to create a profile for L 2070, OI elected to view L 2065 as a reasonable proxy for L 2070. That is, modifications that improve expected outcomes for the average L 2065 investor are assumed to do the same for the average L 2070 investor, and vice versa.

<sup>2</sup> Although the Uniformed Services Blended Retirement System (BRS) participants represent a fast-growing group of L Funds investors, their relatively brief careers and their unique defined benefit plan make it challenging to incorporate their expected outcomes in the analysis. Furthermore, BRS is still relatively new; its short history prevents us from drawing conclusions about participant behavior. Future studies may have the benefit of extensive data sets that would support separate analysis for FERS and BRS participants. In the meantime, however, OI is confident that BRS participants, most of whom are young and will not spend their full careers in the Uniformed Services, are well-served by the L Funds even though this analysis uses only FERS demographic data.

OASDI table more appropriate for the TSP. Although moving from the SOA table to the OASDI table resulted in shorter life expectancies, the 2024 review continued to assume a 35-year period when annuitizing TSP account balances for the purpose of calculating retirement income.

In addition to the demographic and behavioral assumptions, the review also required capital market assumptions. Using its own projections for economic growth, inflation, interest rates, and other factors, Aon generated expected returns, volatilities, and correlations for the F, C, S, and I Funds.<sup>3</sup> These assumptions enabled Aon to examine the L Funds' current placement relative to the efficient frontier. The L Funds' proximity to the efficient frontier suggested that significant improvements in expected return would only be achieved by a corresponding increase in expected volatility.

To search for potential improvements in outcomes among investors in the L Funds, OI and Aon collaboratively created the following set of scenarios. Aon tested these scenarios via simulations that incorporated the aforementioned demographic, behavioral, and capital market assumptions, thereby simulating the growth of TSP account balances and the generation of retirement income.

<b>Name</b>	<b>Description</b>	<b>Purpose</b>
Scenario 1: Current Glide Path	Use glide paths currently in place	Test the status quo and serve as baseline for comparison
Scenario 2: Move to Ultimate Glide Path	Immediately move L 2030, L 2035, L 2040, and L 2050 to the overall equity allocation called for by the glide path established for L 2055/2060/2065	Determine the pros and cons of the transitional (also known as "level off") strategy enacted in 2018
Scenario 3: Fixed Income 100% G	Assume the G Fund makes up the entire fixed income allocation	Test an extreme case in which the L Funds do not invest in the F Fund
Scenario 4: Fixed Income 100% F	Assume the F Fund makes up the entire fixed income allocation	Test an extreme case in which the L Funds do not invest in the G Fund
Scenario 5: Decrease S to 15% of U.S. Equity	Place all L Funds on a path such that the S Fund's share of U.S. equity will be 15% in 2025 rather than 20%	Determine the pros and cons of decreasing the L Funds' exposure to small- and mid-cap equity
Scenario 6: Increase S to 25% of U.S. Equity	Place all L Funds on a path such that the S Fund's share of U.S. equity will be 25% in 2025 rather than 20%	Determine the pros and cons of increasing the L Funds' exposure to small- and mid-cap equity

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<sup>3</sup> Aon was aware of the Board's mandate to change the I Fund's benchmark from the MSCI EAFE Index to the MSCI ACWI IMI ex USA ex China ex Hong Kong Index in 2024. Its expected returns, volatilities, and correlations reflect the new benchmark.

Scenario 7: Decrease I to 30% of Equity	Place all L Funds on a path such that the I Fund's share of total equity will be 30% in 2025 rather than 35%	Determine the pros and cons of decreasing the L Funds' exposure to international equity
Scenario 8: Increase I to 40% of Equity	Place all L Funds on a path such that the I Fund's share of total equity will be 40% in 2025 rather than 35%	Determine the pros and cons of increasing the L Funds' exposure to international equity
Scenario 9: De-Risk 5 Years Sooner	Start decreasing the overall equity allocation at age 30 rather than age 35	Determine the pros and cons of moving away from equity at an earlier age
Scenario 10: De-Risk 5 Years Later	Start decreasing the overall equity allocation at age 40 rather than age 35	Determine the pros and cons of moving away from equity at a later age
Scenario 11: 10-Year Through Glide Path	Slow the rate of de-risking at age 58 so that each L Fund rolls into L Income at age 73 rather than 63	Determine the pros and cons of maintaining a higher allocation to equity in the early years of retirement

## ANALYSIS OF OUTCOMES

First, we note that the outcomes of Aon's simulations pass the standard checks for reasonableness. As expected, glide paths with higher equity allocations show greater dispersion of replacement ratios and account balances as well as higher probabilities of negative real returns in the two years before withdrawal. Similarly, the dispersion of outcomes increases with time to maturity. For example, the L 2025 Fund's simulated outcomes are more tightly bunched than those of L 2065.

We caution against comparisons across L Funds. As in previous reviews, the outcomes do not account for any retirement savings outside of the three-legged stool of the TSP, the FERS defined benefit, and Social Security. This equates to an assumption that participants will have spent their entire careers in the federal workforce, an unrealistic assumption given that the median hire age for new federal employees was 36 in 2023. Some participants in the L 2025 cohort have only been federal employees for a few years and therefore have small TSP balances but presumably have non-TSP retirement savings not captured by this review. It is the presence of these mid- and late-career federal new hires that brings down the average TSP balance for the L 2025 cohort, not any shortcoming in L 2025's asset allocation. By contrast, the L 2065 cohort is represented by a participant who joined the federal workforce at a very young age and is assumed to stay until retirement. Thanks to a full career of contributions and market returns, this cohort enjoys a significantly larger account balance at retirement.

Comparisons within one L Fund's simulated outcomes, on the other hand, are valid. These comparisons reveal very few opportunities for unequivocal gains (i.e., increases in return without increases in risk or decreases in risk while maintaining the same return). Furthermore, the scale of the risk/return trade-offs is relatively small. This is demonstrated in the L 2040 Fund, whose cohort corresponds to the median FERS participant in terms of age. Among



potential L 2040 glide paths, the maximum and minimum values in the 5<sup>th</sup> percentile replacement ratio (one measure of risk) are separated by less than 50 basis points. The maximum and minimum values of the median replacement ratio (one measure of return) are also separated by less than 50 basis points. Such small differences suggest that the current glide paths leave little room for enhancing outcomes.

With that in mind, we offer the following observations:

- *F Fund's Share of Fixed Income*: Scenario 4 moved 100% of the fixed income allocation to the F Fund. For all but the L 2025 Fund, this modification resulted in higher replacement ratios at the 50<sup>th</sup> and 5<sup>th</sup> percentiles. However, these improvements were very slight. As an example, the move to 100% F increased the L 2040 Fund's 50<sup>th</sup> percentile replacement ratio from 75.0% to 75.4%. The improvements are also very sensitive to capital market assumptions, a fact that led Aon to note that it has "less conviction" in this design change. The L Funds hold approximately \$60 billion in the G Fund, all of which would need to move to the F Fund to implement this change. Such a move would run the risk of incurring material trading costs. Furthermore, OI observes that participant-facing communications have always noted that the L Funds are made up of all five individual Funds, and that many participants value the safety of the G Fund. The L Funds' divestment from the G Fund would therefore require a significant communications campaign. After considering these factors, OI does not believe that the very slight improvements shown by Scenario 4 justify such a drastic change in design.
- *S Fund's Share of U.S Equity*: OI maintains its faith in the benefits of asset allocation based on market capitalization, a philosophy that inspired the current glide path designs, which will bring the S Fund to 20% of the U.S. equity allocation in 2025. However, OI understands that market capitalizations are moving targets. By moving that weight to 15% and 25%, respectively, Scenarios 5 and 6 were designed to address the potential for this target to change. Both scenarios resulted in immaterial changes to participants' financial outcomes, leading OI to believe that maintaining the current course is prudent.
- *To vs. Through*: Moving to a 10-year "through" approach like the one modeled by Scenario 11 is not universally beneficial. Scenario 11 showed very small improvements in the median replacement ratio for all of the L Funds. For L 2030, L 2035, and L 2040, however, this approach also resulted in slightly worse outcomes in terms of the 5<sup>th</sup> percentile replacement ratios. Furthermore, under the "through" design, all of the L Funds experienced a higher probability of a negative real return in the two years leading up to first withdrawal. Participants experiencing such a loss during this critical period might be tempted to make rash decisions that are not in their long-term interest, such as fleeing to the safety of the G Fund or withdrawing their retirement savings entirely.
- *Other Potential Changes*: As with the "through" approach, the other scenarios considered in this review have risk/return impacts that are either unequivocally detrimental or, at best, marginally helpful for some L Funds but not for others. Scenario 2's immediate move to a higher equity allocation would be especially challenging, both in terms of participant communications and in terms of trading costs.

## RECOMMENDATIONS

OI submits the following recommendations to the Executive Director:

1. Make no changes to the L Funds' current glide paths.
2. Use the same glide path currently used by the L 2055, L 2060, and L 2065 Funds for the L 2070 Fund, which is scheduled to be launched in July 2024.

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Other

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