



Wealth and Asset Management Platform Development with MATLAB Web App Server

Martin Tarlie, Product Lead

Who is Nebo Wealth?

Our advanced portfolio optimization empowers financial advisors to deliver an enhanced, goals-based investment experience for every client.

Our pioneering approach to asset allocation and portfolio design delivers the personalization that clients expect, with the scale and efficiency that advisors demand.

The result?
“Perfect-Fit” Portfolios for Every Stage of Life.

GMO Launches Nebo, an Innovative Asset Management Platform for RIAs¹

“**Industry Disruptor**” Award in 2022¹

Best “**Goals-Based Investment Platform**” in 2023, 2024¹

Finalist for “**U.S. WealthTech of the Year**” in 2023²

“... **biggest splash** at the [2023 T3] conference, was **something called Nebo**”³

Nebo Launches “Nebo Wealth” – A Turnkey Asset Allocation and Portfolio Design Platform⁴

1. Business Wire, “GMO Launches Nebo, an Innovative Asset Management Platform for RIAs,” September 8, 2022. 2. Nebo was honored to receive the “Industry Disruptor” award in 2022 and was named the best “Goals-Based Investment Platform” in 2023 by WealthManagement.com Industry Awards. 3. [bobveres.com](https://www.bobveres.com), “T3: A Theme and Three Splashes,” April 2023. 4. Business Wire, “Nebo Launches “Nebo Wealth” – A Turnkey Asset Allocation and Portfolio Design Platform” January 22, 2024.

The origin story

GMO

WHITE PAPER

April 2014

**Investing for Retirement:
The Defined Contribution Challenge**

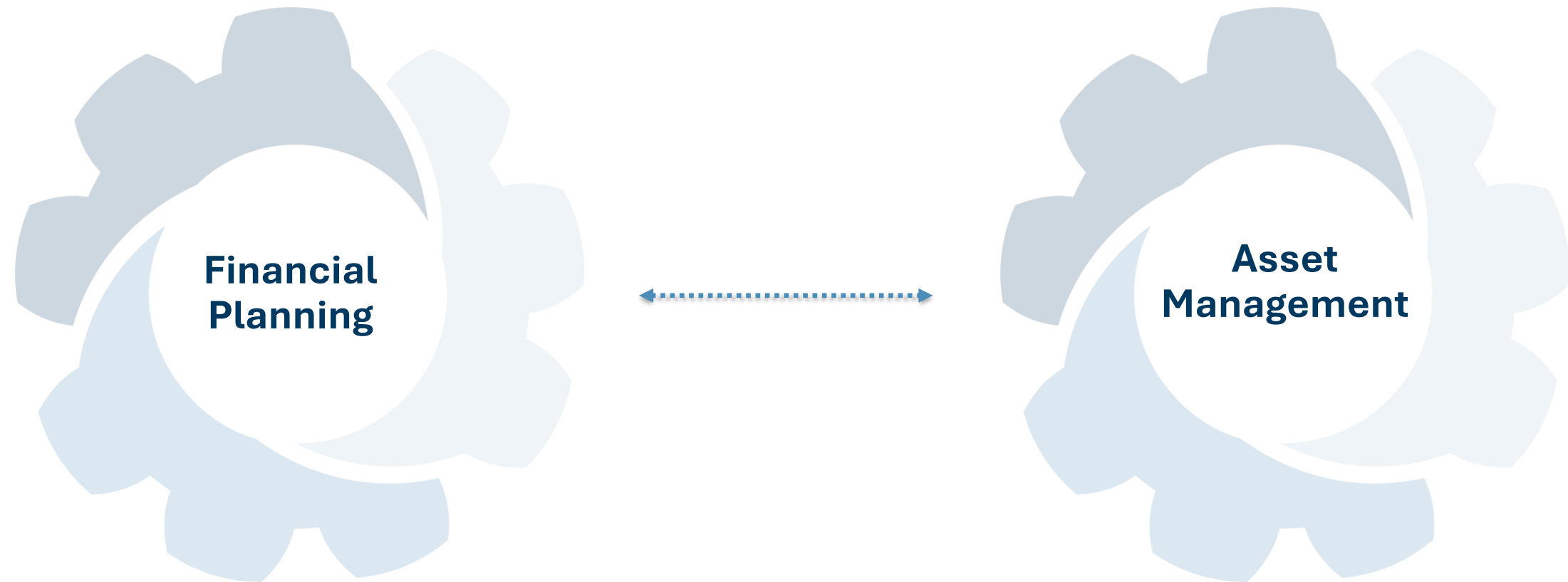
Ben Inker and Martin Tarlie

The retirement landscape has changed. Defined benefit plans, the historical workhorse of the retirement system, had the advantage of access to corporate profitability. In the event that financial asset returns fell short of design expectations, this access mitigated the impact on workers' retirement. But, as defined benefit plans have given way to defined contribution (DC) plans, the burden being placed on financial returns in satisfying retirement needs has increased.

The Big Idea

Risk is not having what you need, when you need it

There's a gap between plan and portfolio



The industry recognizes the problem

“As an industry, we need to focus on solving investor problems and move beyond focusing so much on the investment problem.”

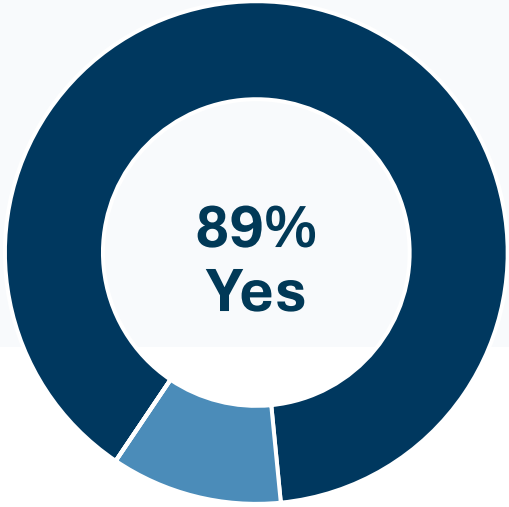
— Eric Clarke, (former) CEO, Orion, 2021

Source: Investment News, “Turning on a dime to solve the ‘investor problem,’” August 30, 2021, by Eric Clarke.

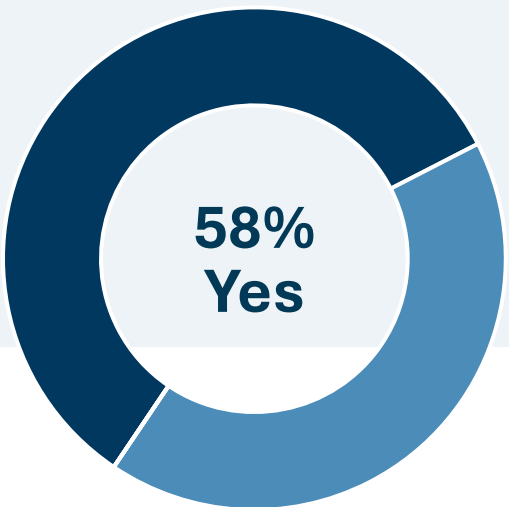
We also know this is a problem

Advisors are telling us the same thing

Do you **observe** a gap between financial planning and asset management?



Do you **struggle** aligning your client's financial plans with their investment portfolio?



Source: Nebo Wealth poll of roughly 400 advisors who indicated some form of yes response.

The industry has known about this problem for **decades**

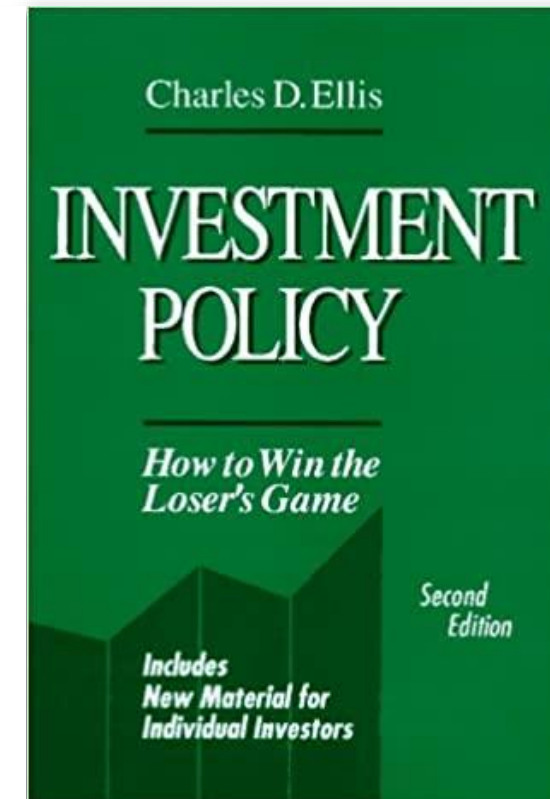
Looking back through the time machine ... 1985

CHAPTER 4

THE PARADOX

A paradox is haunting investment management.

The paradox is that funds with very long-term purposes are being managed to meet short-term objectives that may be neither feasible nor important. And they are *not* being managed to achieve long-term objectives that are both feasible and worthwhile.



Why is this such a hard problem to solve?

This is more than a portfolio problem,
it's also a **people** problem...



Clients can be
Complicated

Markets can
be Chaotic







... and a **theory** problem.





Modern Portfolio Theory
is not up to the task.

The current paradigm is **one-dimensional**

Risk = Volatility

Asset Allocation is often determined by a **single input**

Retirement Plan Client		
		
	Participant 1	Participant 2
Current Age	55	55
Retirement Age	64	64
Income	\$75,000	\$160,000
Savings Rate	5%	8%
Account Balance	\$40,000	\$2,400,000
Risk Tolerance Score	30	80
		
Equity	60%	60%
Fixed Income	40%	40%

Advisory Client		
		
	Client 1	Client 2
Current Age	30	60
Retirement Age	64	64
Income	\$75,000	\$160,000
Savings Rate	5%	8%
Account Balance	\$40,000	\$2,400,000
Risk Tolerance Score	60	60
		
Equity	60%	60%
Fixed Income	40%	40%

For illustration purposes only.

The result? A disconnect between client and their Asset Allocation

**“90% of our clients are in our moderate model,
and we know that’s not the right answer.”**

— Anonymous Advisor Conversation(s)

Source: Nebo Wealth conversation with an advisor who asked to remain anonymous.

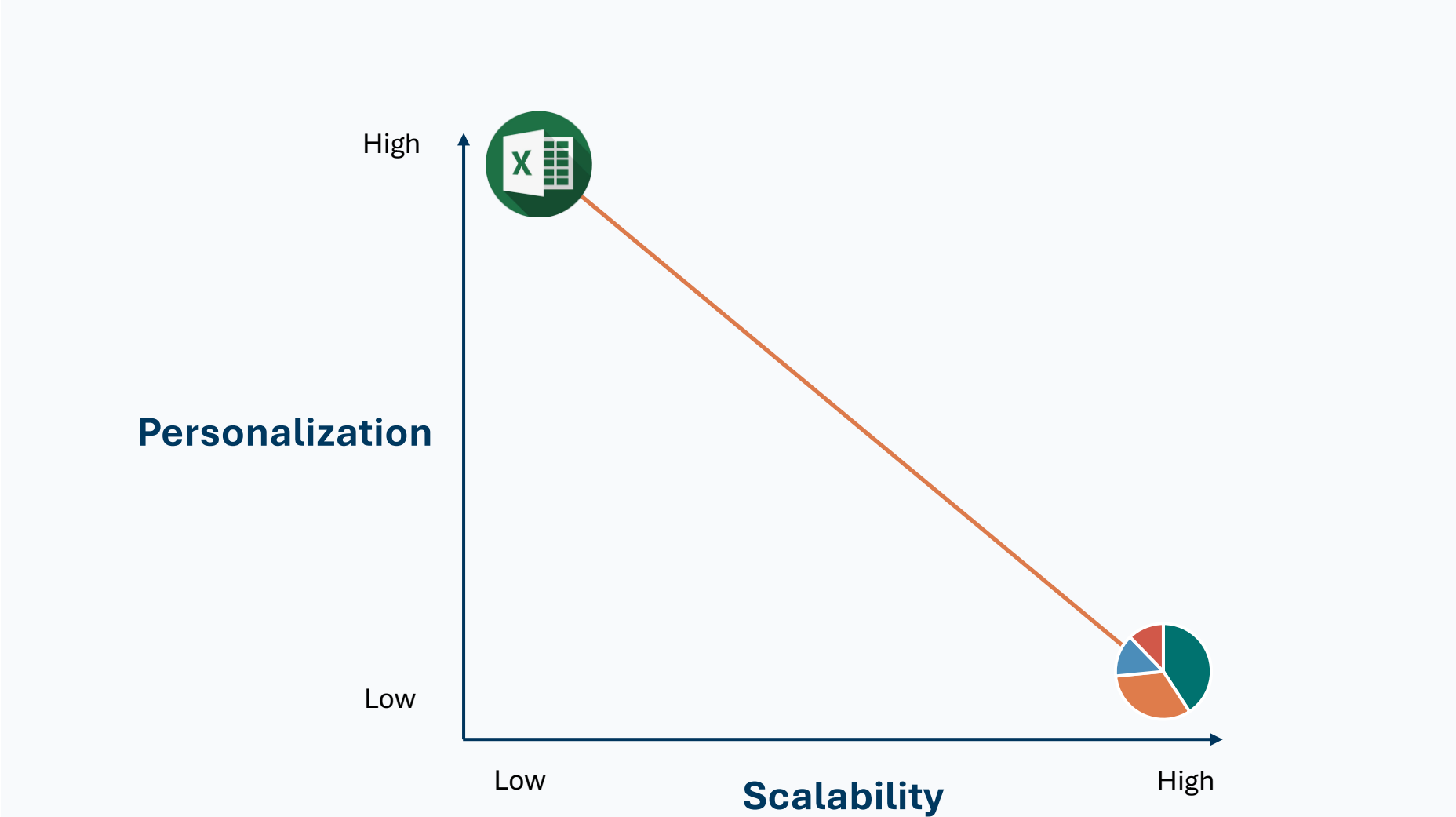
Redefining risk based on ‘what you need, when you need it’ is the **key** to bridging the gap



The tradeoff between **two industry megatrends**

Clients expect **personalization**

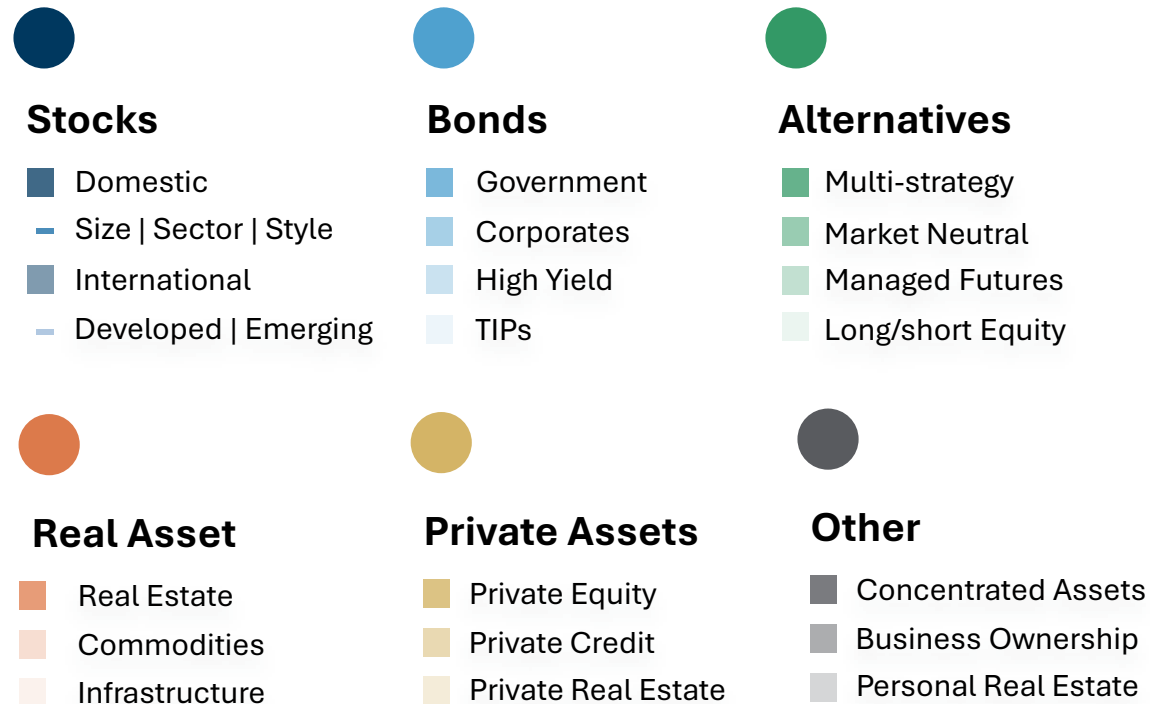
Advisors demand **scalability**



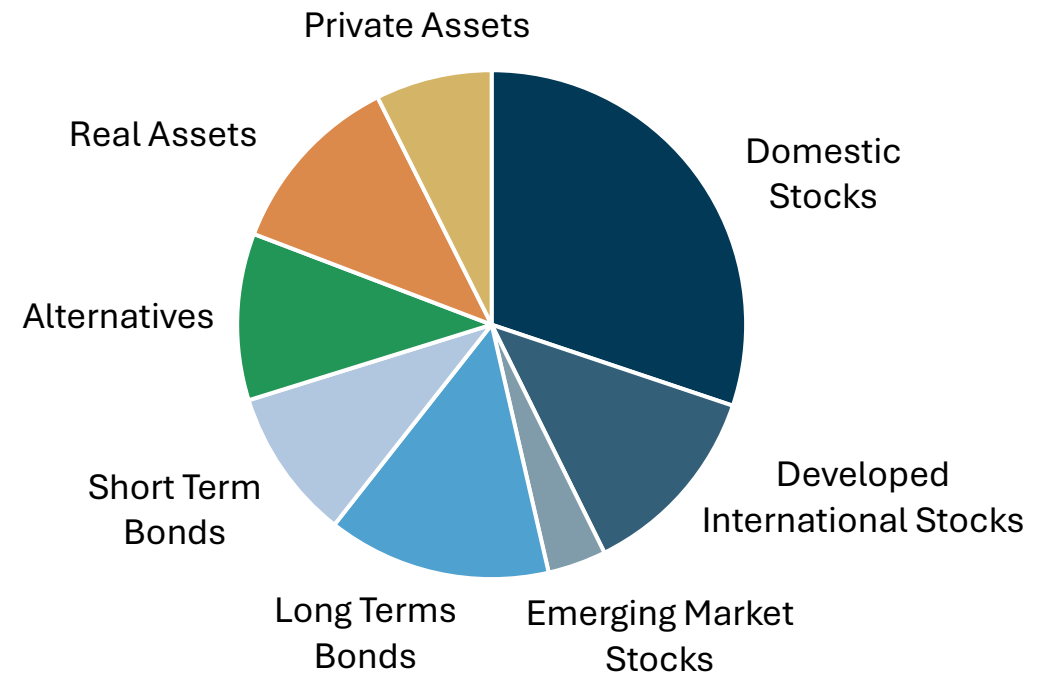
For illustration purposes only.

Customized implementation aligned to your preferences

Our open architecture platform supports your investment philosophy

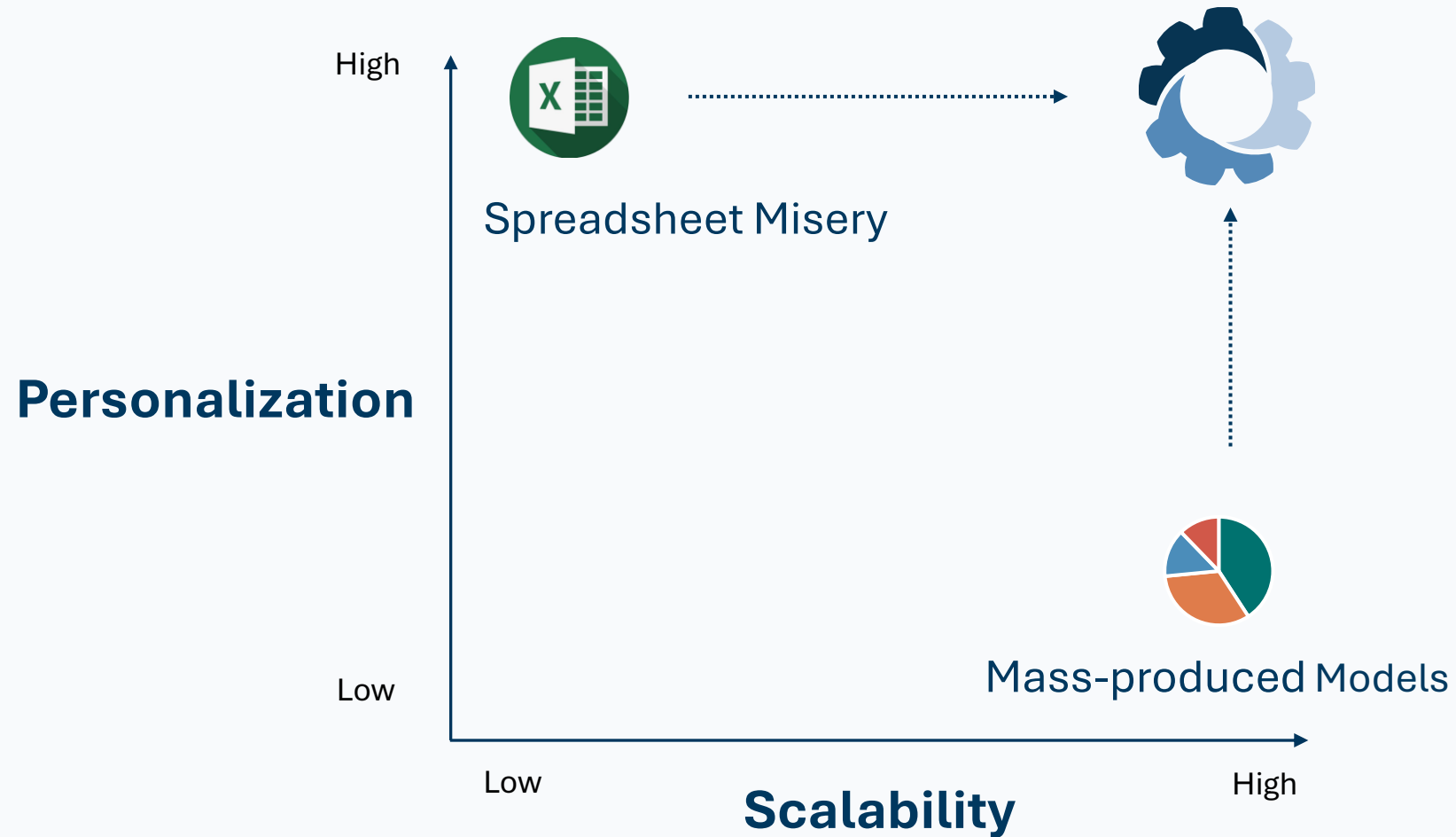


Sample Optimal Portfolio Allocation



For illustration purposes only.

Redefining risk + open architecture leads to the Promised Land



For illustration purposes only.

What advisors are saying about Nebo Wealth's model design



“Before Nebo, we customized client portfolios around five proprietary model allocations. **Now, Nebo can deliver over 100 unique, personalized client model portfolios**, truly elevating our clients’ experience, without taking any more of our team’s time or resources.”

Heximer Investment Management

The above endorsement is from a registered investment adviser (“RIA”) that is not a current advisory client of or investor in any private fund sponsored by GMO but is a contracted user of the NEBO platform and uses the platform to make allocation decisions for its underlying clients. Although the RIA may from time to time allocate client capital to GMO-managed funds, the RIA has not been compensated directly or indirectly by GMO to provide the statements made herein. The RIA’s experience may not be representative of clients’ or other users’ experiences with GMO or Nebo, which may differ.

Appendix



Prospect, Client

Save Parameters

60
Current Age

63
Retirement

96
Longevity

10,000,000
Current Wealth

Generate report



Client Cash Flows Target Return Allocation Viability Testing Portfolio

Nebo's **Investment Policy Process** has five steps

1. **Time Horizon** -- when do you start caring about shortfall, and how long is the plan?
2. **Risk Tolerance** -- what is the max loss you can tolerate in a bad bear market?
3. **Cash flows** -- what are your saving and spending objectives?
4. **Legacy** -- what are your legacy goals?
5. **Target Return** -- what return do you need to achieve your objectives?

Time Horizon

In Nebo there are **two horizons**:

1. When you start caring about shortfall. This is typically the start of the w/drawal phase, e.g. retirement.
2. Total length of the plan, typically Longevity but can be longer if considering future generations.

Type	Age
Current Age	60
Retirement Age/When you start caring about shortfall	63
Longevity/Length of the plan	96

Edit...

Risk Tolerance

The table below illustrates potential losses for various allocations to stocks, both for typical "Bear Markets" and for bad "Bear Markets", such as the Global Financial Crisis.

Specify either Max Stock or Max Portfolio Volatility

This table can be used as a guide to set either the maximum tolerable weight in stocks, or the maximum portfolio volatility.

Max stock 100%

What is the max loss you could tolerate?

Typical "Bear Market" 12 months	Bad "Bear Market" 10/07-2/09	Max Stock Weight	Max Portfolio Volatility
-4%	-5%	10%	5.7%
-7%	-10%	20%	5.9%
-11%	-15%	30%	6.7%
-14%	-20%	40%	7.9%
-18%	-25%	50%	9.3%
-21%	-31%	60%	10.8%
-25%	-36%	70%	12.4%
-28%	-41%	80%	14.1%
-32%	-46%	90%	15.8%
-35%	-51%	100%	17.5%



Prospect, Client Save Parameters 60 63 96 10,000,000 Generate report

Current Age Retirement Longevity Current Wealth

Client **Cash Flows** Target Return Allocation Viability Testing Portfolio

Nominal Real

Three Options for Specifying Cash Flows

- Simple** -- specify savings and withdrawals -- only two inputs
- Enhanced** -- More granularity on cash inflows and outflows
- Import** -- Copy and paste from standard financial planning tools

Simple ?

Starting savings (current \$) growing (nominally) at Ending at Inflation

Net withdrawal at retirement (current \$) growing (nominally) at Starting at Reset

Cash Flow						
Age	Year	Savings	Withdrawals	Other	Total Cash Flow	
60	2024	0	0	0	0	
61	2025	0	0	0	0	
62	2026	0	0	0	0	
63	2027	0	-497,327	0	-497,327	
64	2028	0	-509,917	0	-509,917	
65	2029	0	-522,825	0	-522,825	
66	2030	0	-536,061	0	-536,061	
67	2031	0	-549,631	0	-549,631	
68	2032	0	-563,545	0	-563,545	
69	2033	0	-577,811	0	-577,811	
70	2034	0	-592,439	0	-592,439	
71	2035	0	-607,436	0	-607,436	
72	2036	0	-622,814	0	-622,814	
73	2037	0	-638,580	0	-638,580	
74	2038	0	-654,746	0	-654,746	
75	2039	0	-671,321	0	-671,321	
76	2040	0	-688,316	0	-688,316	
77	2041	0	-705,740	0	-705,740	
78	2042	0	-723,606	0	-723,606	
79	2043	0	-741,925	0	-741,925	
80	2044	0	-760,706	0	-760,706	
81	2045	0	-779,964	0	-779,964	
82	2046	0	-799,709	0	-799,709	
83	2047	0	-819,953	0	-819,953	
84	2048	0	-840,711	0	-840,711	
85	2049	0	-861,993	0	-861,993	
86	2050	0	-883,815	0	-883,815	
87	2051	0	-906,189	0	-906,189	
88	2052	0	-929,129	0	-929,129	
89	2053	0	-952,650	0	-952,650	



Prospect, Client

Save Parameters

60 Current Age

63 Retirement

96 Longevity

10,000,000 Current Wealth

Generate report



Client Cash Flows **Target Return** Allocation Viability Testing Portfolio

Minimum

The **minimum** Target Return leads to exactly zero wealth at Longevity, but not less.

Based on the input **cash flows**, the minimum Target Return is: **2.1%**

Feasibility

Show Cash Flow Controls

A **feasible** return: (i) achieves the client's objectives, and (ii) is obtainable over the long run.

Goals - Specify wealth

One TR

Nominal

Real

0

d



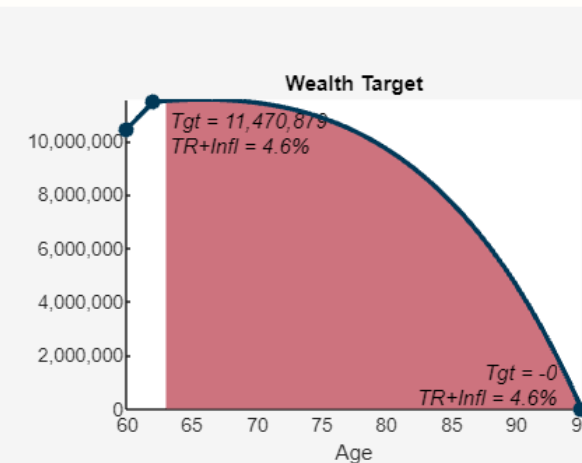
Tgt Ret

2.1%

View Allocation

Terminal Wealth

Nominal Real



Target Return (TR)

The Target Return defines your future path of wealth over your investment horizon.

It is the internal rate of return that connects initial wealth, final wealth, and intervening cash flows.

Wealth targets represent future levels of wealth that you want or need.

TR is triple net: after inflation, taxes, and fees.

Cash Flow

Age	Year	Savings	Withdrawals	Other	Total Cash Flow	TR+Infl	Wealth	W/draw rate
60	2024	0	0	0	0	4.6%	10,468,045	
61	2025	0	0	0	0	4.6%	10,957,996	
62	2026	0	0	0	0	4.6%	11,470,879	
63	2027	0	-497,327	0	-497,327	4.6%	11,510,440	-4.2%
64	2028	0	-509,917	0	-509,917	4.6%	11,539,263	-4.3%
65	2029	0	-522,825	0	-522,825	4.6%	11,556,527	-4.4%
66	2030	0	-536,061	0	-536,061	4.6%	11,561,363	-4.5%
67	2031	0	-549,631	0	-549,631	4.6%	11,552,855	-4.6%
68	2032	0	-563,545	0	-563,545	4.6%	11,530,036	-4.8%
69	2033	0	-577,811	0	-577,811	4.6%	11,491,882	-4.9%
70	2034	0	-592,439	0	-592,439	4.6%	11,437,314	-5.0%
71	2035	0	-607,436	0	-607,436	4.6%	11,365,195	-5.2%
72	2036	0	-622,814	0	-622,814	4.6%	11,274,323	-5.3%
73	2037	0	-638,580	0	-638,580	4.6%	11,163,432	-5.5%
74	2038	0	-654,746	0	-654,746	4.6%	11,031,184	-5.7%
75	2039	0	-671,321	0	-671,321	4.6%	10,876,172	-5.9%
76	2040	0	-688,316	0	-688,316	4.6%	10,698,856	-6.2%



Prospect, Client

Save Parameters

60 Current Age 63 Retirement 96 Longevity 10,000,000 Current Wealth

Generate report



Client Cash Flows Target Return Allocation Viability Testing Portfolio

Minimum

The minimum Target Return leads to exactly zero wealth at Longevity, but not less. Based on the input cash flows, the minimum Target Return is: 2.1%

Feasibility

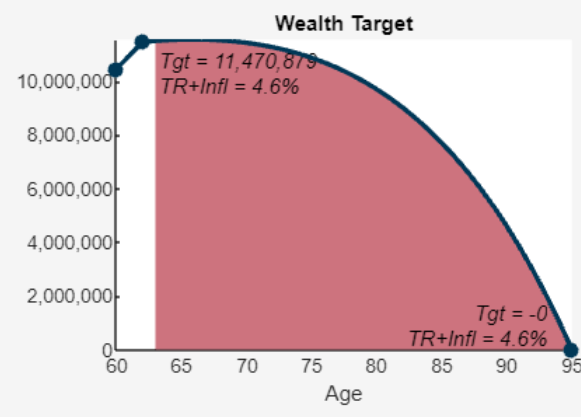
Show Cash Flow Controls

A feasible return: (i) achieves the client's objectives, and (ii) is obtainable over the long run.

Goals - Specify wealth One TR

Nominal Real Tgt Ret View Allocation

Nominal Real



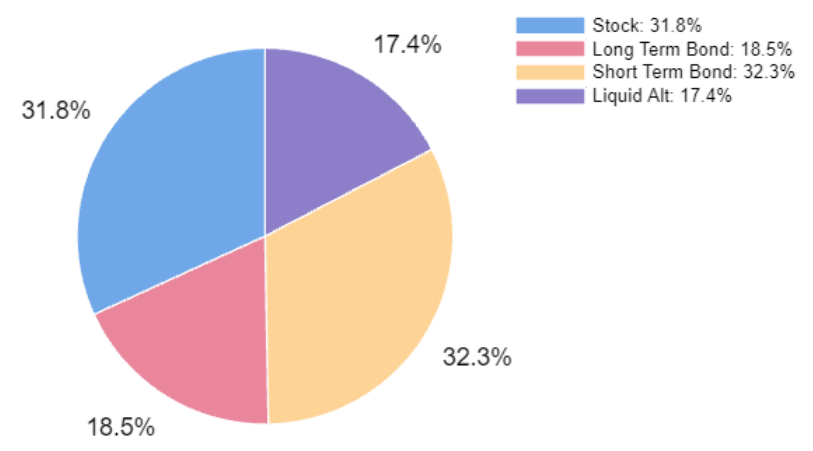
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Cash Flow Allocation

E[Ret] = 3.1%, Vol = 6.8% Equity Beta = 0.35, Bond Beta = 0.29

Export



Rounding None

Prospect, Client

Save Parameters

60

Current Age

63

Retirement

96

Longevity

10,000,000

Current Wealth

Generate report



Client Cash Flows **Target Return** Allocation Viability Testing Portfolio

Minimum

The **minimum** Target Return leads to exactly zero wealth at Longevity, but not less.

Based on the input **cash flows**, the minimum Target Return is: **2.1%**

Feasibility

Show Cash Flow Controls

A **feasible** return: (i) achieves the client's objectives, and (ii) is obtainable over the long run.

Goals - Specify wealth

One TR

Nominal

Real

0

0



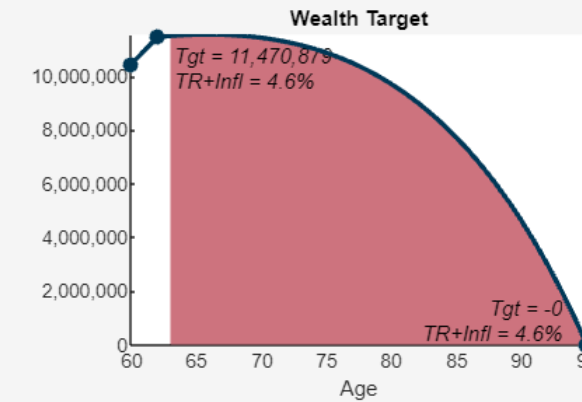
Tgt Ret

2.1%

View Allocation

Terminal Wealth

Nominal Real



Target Return (TR)

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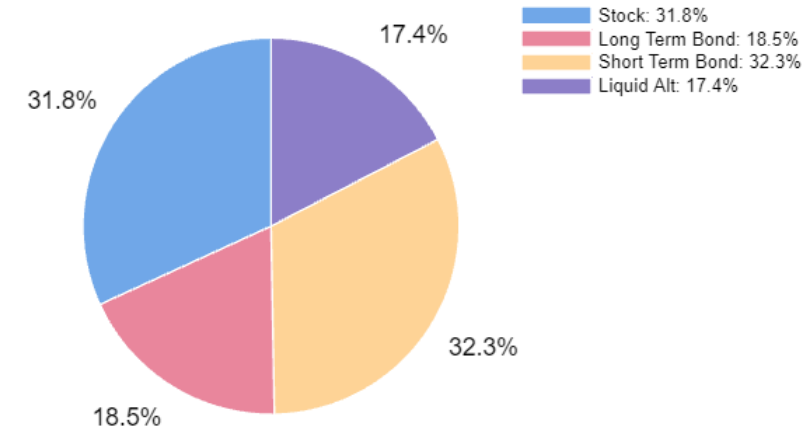
TR is triple net: after inflation, taxes, and fees.

Cash Flow

Allocation

E[Ret] = 3.1%, Vol = 6.8%
Equity Beta = 0.35, Bond Beta = 0.29

Export



Rounding

None



Prospect, Client

Save Parameters

60

Current Age

63

Retirement

96

Longevity

10,000,000

Current Wealth

Generate report



Client Cash Flows **Target Return** Allocation Viability Testing Portfolio

Minimum

The **minimum** Target Return leads to exactly zero wealth at Longevity, but not less.

Based on the input **cash flows**, the minimum Target Return is: **2.1%**

Feasibility

Show Cash Flow Controls

A **feasible** return: (i) achieves the client's objectives, and (ii) is obtainable over the long run.

Goals - Specify wealth

One TR

Nominal

24,596,031

Real

10,000,000



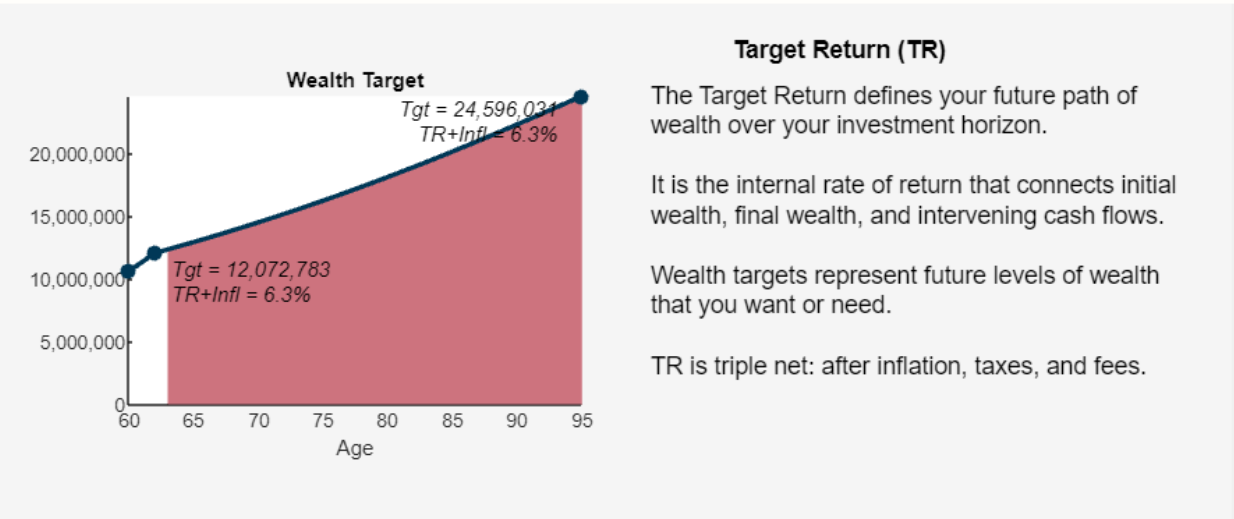
Tgt Ret

3.8%

View Allocation

Terminal Wealth

Nominal Real

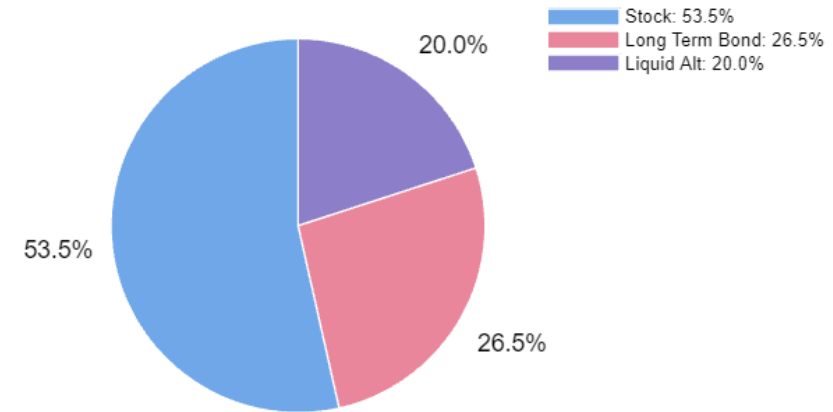


Cash Flow

Allocation

E[Ret] = 3.8%, Vol = 10.7%
Equity Beta = 0.58, Bond Beta = 0.33

Export



Rounding

None

Prospect, Client

Save Parameters

60
Current Age

63
Retirement

96
Longevity

10,000,000
Current Wealth

Generate report



Client Cash Flows Target Return Allocation **Viability Testing** Portfolio

Glidepath **GP Sims** Tgt Ret Sims W/draw Sims Savings Sims Ret Age Sims Tax Sims

Test the viability of the **Investment Policy (IP)** using next-gen Monte Carlo simulations.

The **Personalized Glidepath** is a device to assess the viability of the plan, as defined by the IP. It defines the portfolios you would own based on information known today. It is NOT a prescription for the future.

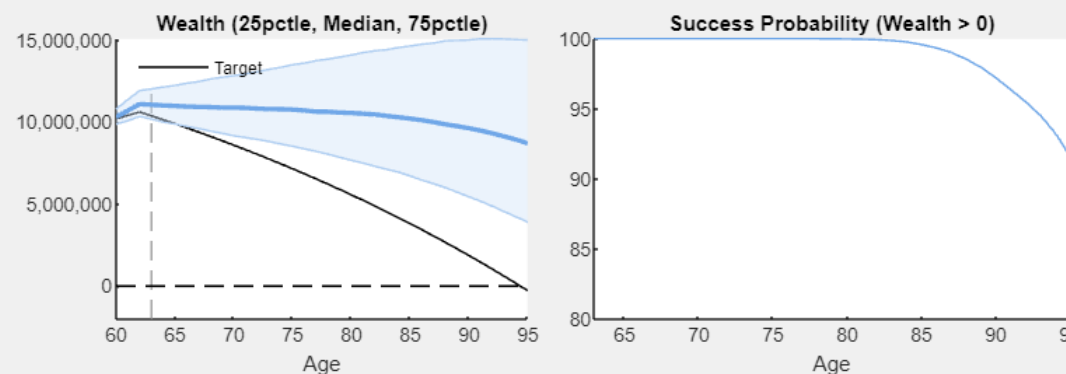
As time passes and new information becomes available, the Investment Policy will need to be updated.

Summary Details Returns

Long Term	My Glidepath
Prob of success (Wealth > 0) at age 96	92%
Median Wealth at age 96 (current dollars)	8,711,276
75th percentile at age 96 (current dollars)	15,005,335
5th percentile at age 96 (current dollars)	-1,148,394
Median Annual Withdrawal in Retirement	4.3%

Short Term	My Glidepath
1-Year Investment Drawdown (Bottom 5th percentile)	-1,038,026
1-Year Investment Drawdown (Bottom 1st percentile)	-1,449,658
Max Investment Drawdown* (Duration in years: 3)	-10.5%
1-Year Wealth Volatility	7%

* Median of max investment drawdown simulations



Glidepath Simulations Taxes & Fees

Minimal Shortfall Glidepath GP Returns (Firm)

Target Return TR 2.0%

Time Horizon Shrinking

Constraints

Max stock 100%

Max Liquid... 20%

Build Glidepath Run Sims

Tax & Fee Mean reversion

Prospect, Client

Save Parameters

60
Current Age

63
Retirement

96
Longevity

10,000,000
Current Wealth

Generate report



Client Cash Flows Target Return Allocation **Viability Testing** Portfolio

Glidepath GP Sims **Tgt Ret Sims** W/draw Sims Savings Sims Ret Age Sims Tax Sims

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As time passes and new information becomes available, the Investment Policy will need to be updated.

Glidepath
Simulations
Taxes & Fees

Sims Returns (Firm)
Glidepath
TCRs
W/d Sims
Savings
Ret Ages

Min & Max TR

Min TR **2.1%**

Max TR **100%**

Max stock 100%

Calc

TR

2.0%

3.0%

4.0%

Sims 10,000

Run Sims

1: 2.0%

2: 3.0%

3: 4.0%

TCRs

Long Term	1: 2.0%	2: 3.0%	3: 4.0%
Prob of success (Wealth > 0) at age 96	92%	93%	93%
Median Wealth at age 96 (current dollars)	8,749,562	15,144,572	18,441,238
75th pctile at age 96 (current dollars)	15,000,612	26,525,089	33,121,430
5th pctile at age 96 (current dollars)	-1,276,299	-974,854	-984,587
Median Annual W/d in Ret.	4.2%	3.3%	3.1%

Short Term	1: 2.0%	2: 3.0%	3: 4.0%
1-Year Investment Drawdown (Bottom 5th percentile)	-1,031,859	-1,473,301	-1,760,438
1-Year Investment Drawdown (Bottom 1st percentile)	-1,448,273	-2,029,544	-2,414,690
Max Investment Drawdown* (Duration in years: 3,4,10)	-10.5%	-15.6%	-19.5%
1-Year Wealth Volatility	7%	10%	12%

* Median of max investment drawdown simulations

