State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to the Empower Managed Account Service: "My Total Retirement"
for Defined Contribution Plans, Deferred Compensation Plan,
and the Supplemental Annuity Plan

Resolution 2023-18

WHEREAS, the Alaska Retirement Management Board ("ARMB") was established under AS 37.10.210(a) to serve as trustee of the assets of the State's retirement systems; and

WHEREAS, under AS 37.10.220, the ARMB is to establish and determine the investment objectives and policy for each of the funds entrusted to it; and

WHEREAS, AS 37.10.071(c) and AS 37.10.210(a) require the ARMB to apply the prudent investor rule and exercise its fiduciary duty in the sole financial best interest of the funds entrusted to it and treat beneficiaries thereof with impartiality; and

WHEREAS, under AS 37.10.220(a)(5) the ARMB is to provide a range of investment options and establish the rules by which participants can direct their investments among those options with respect to accounts established under the Defined Contribution plans, the Supplemental Annuity Plan ("SBS-AP"), and the public employees' Deferred Compensation Plan; and

WHEREAS, the Alaska Department of Administration has contracted with Empower to be the recordkeeper for the Defined Contribution, Deferred Compensation, and Supplemental Annuity Plans and has included a Managed Account Service ("My Total Retirement," formerly "Reality Investing") that takes discretionary control of a participant's account and implements investment advice for a fee that is based on a percentage of assets under management; and

WHEREAS, in a 2023 analysis of defined contribution providers, the ARMB's investment consultant, Callan, found that fee-based managed account services were common and present in 67% of defined contribution plans with assets greater than $5 billion (Exhibit 1, page 4); and

WHEREAS, at the September 14, 2022, ARMB Defined Contribution Plan Committee meeting, Empower provided an overview of its Managed Account Service. During that meeting the Committee asked Empower for more information related to the performance of the service; and

WHEREAS, during the November 2022 and March 2023 Defined Contribution Plan Committee meetings, Empower presented additional information regarding the performance of its Managed Account Service that was incorrect; and

WHEREAS, on March 16, 2023, the ARMB directed staff to engage with Callan to conduct a thorough analysis of the Empower Managed Account Service, including the performance of the service; and

WHEREAS, the Callan ARMB Managed Account Analysis (Exhibit 2) provides an analysis of the Empower Manage Account Service and focuses on the level of participant engagement, asset allocation, account performance, and fund selection. The report uses information and data provided by Empower and their Independent Financial Expert, Morningstar; and

WHEREAS, the Callan ARMB Managed Account Analysis focused on unique participants enrolled in the Managed Account service. As of March 31, 2023, there were 10,337 unique ARMB participants enrolled in the Managed Account Service and these accounts had nearly $1.6 billion in assets. Of these, 7,347 (71%) had 100% of their Alaska plans enrolled in the Empower Managed Account Service (page 3); and

WHEREAS, the Callan ARMB Managed Account Analysis showed that the majority of Managed Accounts had low levels of participant engagement (pages 6-7), a significant underweight to equity investments compared to 70 target date fund peers (pages 8-9 and 13-14), and average fees that were over five times higher than the Alaska Target Date Funds (page 18) – the current default option for participants; and

WHEREAS, the Callan ARMB Managed Account Analysis found that across the unique participants enrolled in the Managed Account service, 2,851 (28%) had the level of portfolio equity exposure reduced due to the Managed Account Service Funding Ratio methodology (pages 15-17), even though most participants did not provide meaningful additional account information or personalization. This resulted in the median Managed Account participant having materially lower equity exposure in their portfolio when compared to the Alaska Target Date Glidepath (pages 10-14), or to the Morningstar Moderate Glide Path, which is similar; and

WHEREAS, in the Callan ARMB Managed Account Analysis the dollar-weighted returns for Managed Accounts were calculated and compared to Alaska's corresponding Target Date Funds. The median Managed Account Service account underperformed the median Target Date Fund across almost all age groups and time periods (pages 22-34). The underperformance of the median participant in the Managed Account Service was the result of a combination of factors including a higher level of fees and lower level of average equity exposure.

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD, that

1. The ARMB expects the current Managed Account structure to continue to have lower investment performance due to the combined effect of its asset allocation, higher fees, and low participant engagement.
2. The ARMB recommends that the Department of Administration close Managed Accounts to all new participants in any Alaska retirement plan.
3. The ARMB directs staff to work with the Department of Administration and others to provide the board with additional recommendations with respect to Managed Accounts.

Exhibits:

1. Callan Best Practices for Evaluating Managed Accounts
2. Callan ARMB Managed Account Analysis

DATED at Anchorage, Alaska this 12th day of October, 2023

Chair

ATTEST:

Michael Williams

Secretary

Best Practices for Evaluating Managed Accounts

National Conference
Scottsdale, Arizona
April 2–4, 2023

Craig Chaikin, CFA
Investment Consulting

Jamie McAllister
Defined Contribution Consulting

Ben Taylor
Defined Contribution Consulting

Presenters

Craig Chaikin, CFA

Jamie McAllister

Ben Taylor

Overview

Advice and managed accounts

Multiple solutions are available to provide personalized advice, guidance, and/or management for DC participants.

These products range from offering basic information and guidance to those that will actually implement advice on the participant's behalf.

- Basic information and guidance offer general information, typically not personalized.
- Online advice providers offer specific investment advice tailored to the DC participant's needs. They are suitable for "hands-on" participants who want additional guidance.
- Managed accounts are geared for do-it-for-me investors, as the 3(38) provider implements the advice by taking discretionary control of the participant's account (typically for a fee).

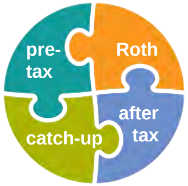
Plan sponsors can offer both advice and managed accounts or treat them as separate standalone features.

Target date funds and managed accounts may compete to act as the plan's QDIA but can also be offered side-by-side.

Range of Inputs and Features Available

Both advice and managed accounts generally have:

- Retirement income forecasting
- Phone support
- Communications Support
- Reporting
- Integration with DC recordkeeper
- Incorporate Social Security and outside assets
- Incorporate pretax, after tax, Roth, catch-up



- Data updates

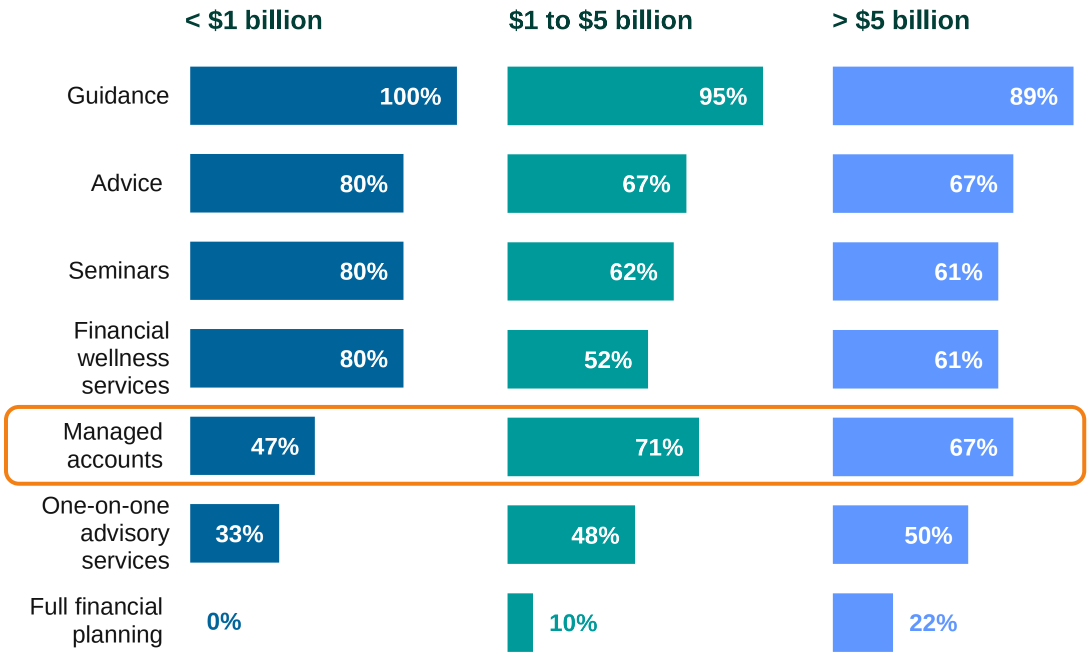
Managed accounts also have:

- Discretionary implementation of solutions
- Ongoing asset-based fees

DC Trends: Managed Accounts and Advice

Types of services offered by size

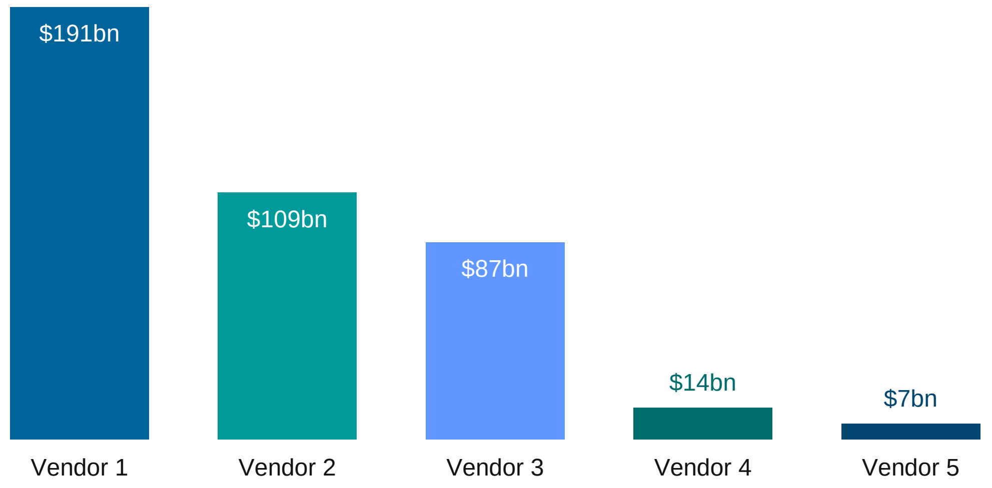
- Smaller plans are more likely to offer guidance, advice, seminars, and financial wellness services than plans with more than $1 billion in assets.
- Larger plans were more likely to offer a managed account service.



Managed Account Marketplace is Highly Concentrated

- There are a handful of major vendors in the managed account marketplace, dominated by three large players.
- Of these, only two are available on more than one recordkeeping platform.
- This means that when plans change recordkeepers, or evaluate a solution, platform methodology differences can have significant impacts on the recordkeeper search process and participants.

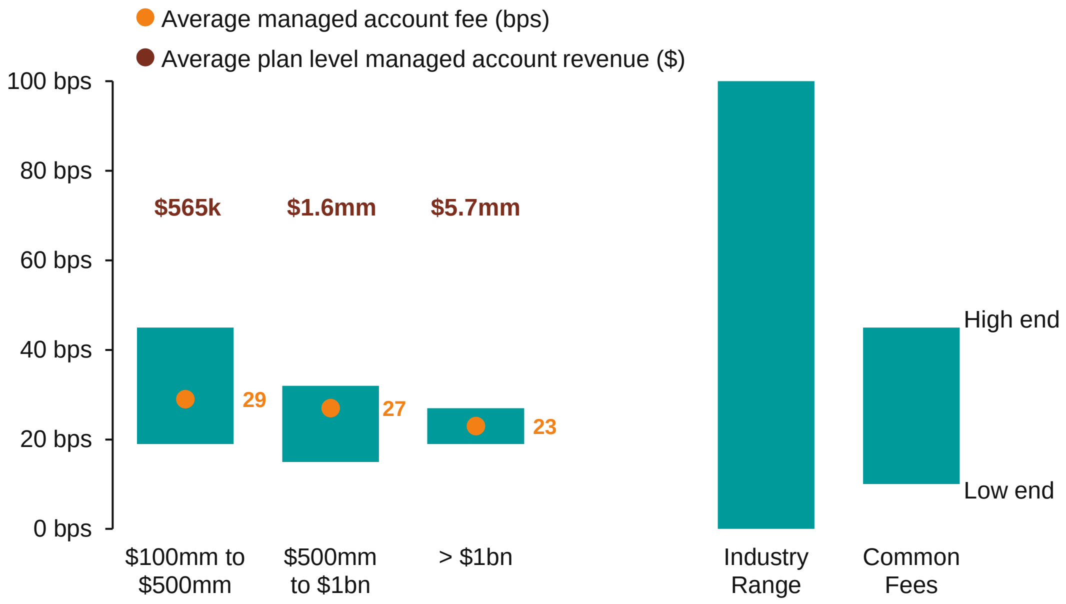
Market Share



Managed Account Fees

- Managed account asset-based fees tend to decrease when a plan has more assets invested in managed accounts.
- Managed accounts can be a significant source of revenue.

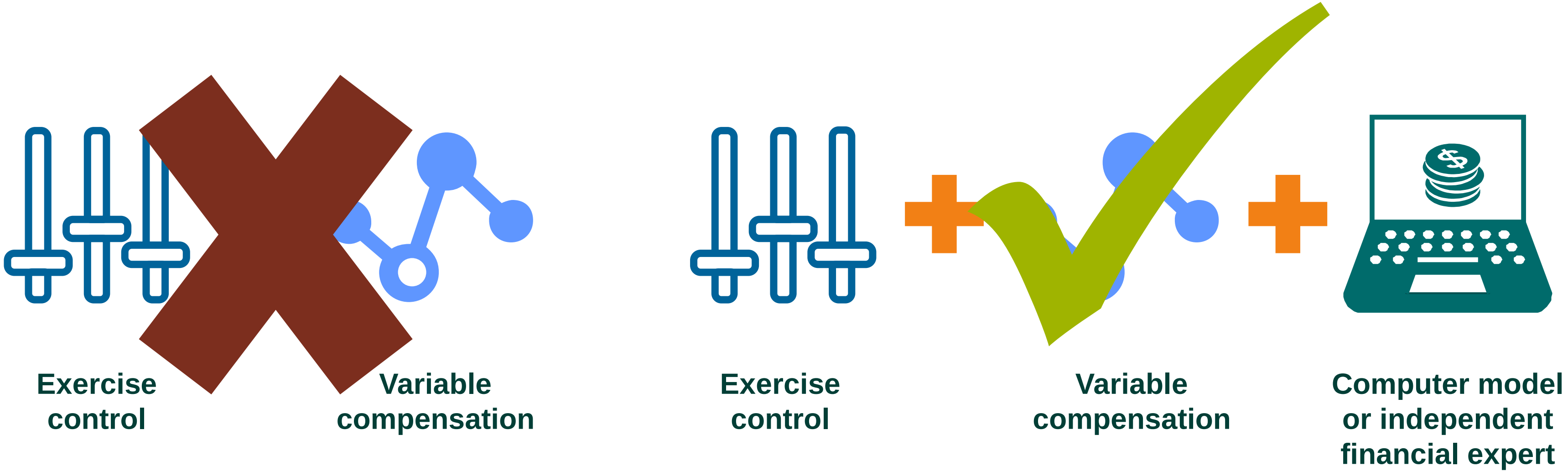
Fees by Plan Size



Source: Callan DC client data

Frames of Due Diligence for Managed Accounts

Prohibited transaction exemption



Frames of Due Diligence for Managed Accounts

TCW / model prohibited transaction exemption

Effective August 1, 1997, Department of Labor issued **Prohibited Transaction Exemption (PTE 97-60)**

TCW needed to engage a financial expert

TCW cannot receive compensation for asset allocation or investment advice, only for proprietary funds

TCW disclosures

Exemptive relief for:

1. Receipt of variable fees resulting from providing investment advice to plan participants
2. The purchase and sale of proprietary investments

Frames of Due Diligence for Managed Accounts

IFE / SunAmerica prohibited transaction exemption

December 14, 2001 letter provided exemption for prohibited transaction restrictions

Inferred independence between the fiduciary and expert

Outlined similar disclosures to TCW exemption

Ultimately developed into similar exemptions in Pension Protection Act ERISA §408(g) and IRC §4975(f)(8)

1. Allows model developer and fiduciary to be affiliated or the same entity; requires model be certified by an independent financial expert
2. Exemption allows the fiduciary advisor to recommend, through the computer model, proprietary products and products that pay the fiduciary advisor a commission.

Due Diligence for Managed Accounts

Information we collect

- Costs
- Service delivery model
- Implementation fit
- Contingent fee impacts
- Fee benchmarking
- Fiduciary responsibility(ies)
- Non-discretionary services

What Data Are Used to Create Allocations?

- Among the top two providers, there is great uniformity among what data are used to create allocations.
- For other providers, the amount of data used diminishes quickly and is derived from other variables.
- Many allocations are similar to aligning participants along one of several risk-based glidepaths, requiring relatively simple selection criteria.
- Most variables change little over time.

Recordkeeper Platform

Age
Salary
Pretax, Roth, post-tax contribution
Pretax, Roth, post-tax balance
SMART / auto-increase
Employer match
Profit sharing
State of residence (tax)
Retirement need
Gender
Defined benefit plans (if provided)
Cash balance plans (if provided)
Company stock allocation
Employee incentive stock options
Current investment allocation

Derived from Platform

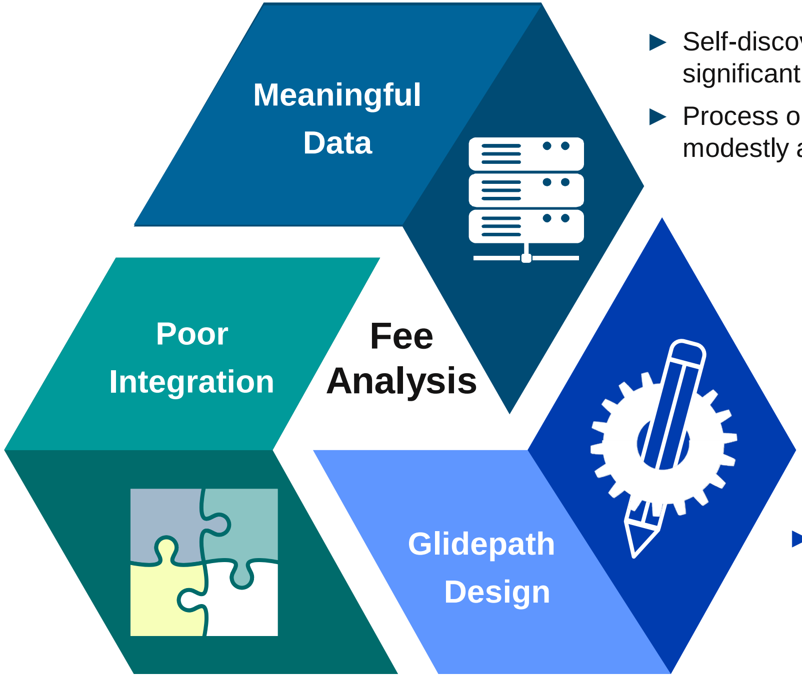
Mortality (age + gender)
Retirement age (age)
Social security (age + earnings)
Income tax (salary + state)

Participant Provides

Spouse age
Spouse gender
Spouse retire age
Spouse social security
Spouse life expectancy
Spouse defined benefit
Household cash flows
Spousal accounts
Outside accounts
Risk preference
Bequest

Common Implementation Pitfalls

- Mandatory employee contributions, a pension, etc. are not correctly, if at all, accounted for in income replacement projections and resulting asset allocations.



- Self-discovery often does not provide significant participant information.
- Process only shifts some participants modestly along various glidepaths.

- Glidepath easily replicated with a tool for participants to self-assess risk, a custom recordkeeping solution.

Case Study

Large public defined contribution plan

Overview

- $5 billion in assets across multiple plans and over 200,000 accounts
- Managed account usage was approximately 9,800 participants
- Recordkeeper had a contingent fee that incentivized pushing managed account
- Callan examined direct implementation of managed accounts across the plans and found:
  - Glidepath was not very responsive (only at certain points of the path) to the presence of the defined benefit plan.
  - Glidepaths remained highly consistent over time–the service was not routinely altering asset allocation.

Recordkeeper RFP Questions

- What do we do with the large existing managed account user population?
- Retaining the existing methodology cuts out several providers who don't have the platform.
- Changing methodology will change participant outcomes and pricing substantially.

Recordkeepers claim managed accounts promote "engagement" and higher savings rates.
Is this true, or, are engaged users more prone to use services **because** they are engaged?

Scenario Testing: Examples of Participant Profiles

We tested scenarios that varied inputs such as age, balance, defined benefit pension tenure (5-year increments), outside assets, salary, gender, and risk tolerance to test which variables would shift asset allocations, and to what extent.

Participant A

Current annual salary: $40,000

Used contribution rate: 6.2%

Balance $90,000

External assets: 0%

External asset investment: $0

DB pension deferral: 10.5%

Other: DB pension: $48,600

Assumed retirement age: 65

Participant B

Current annual salary: $55,000

Used contribution rate: 6.2%

Balance $90,000

External assets: 0%

External asset investment: $0

DB pension deferral: 10.5%

Other: DB pension: $48,600

Assumed retirement age: 65

Participant C

Current annual salary: $75,000

Used contribution rate: 6.2%

Balance $90,000

External assets: 0%

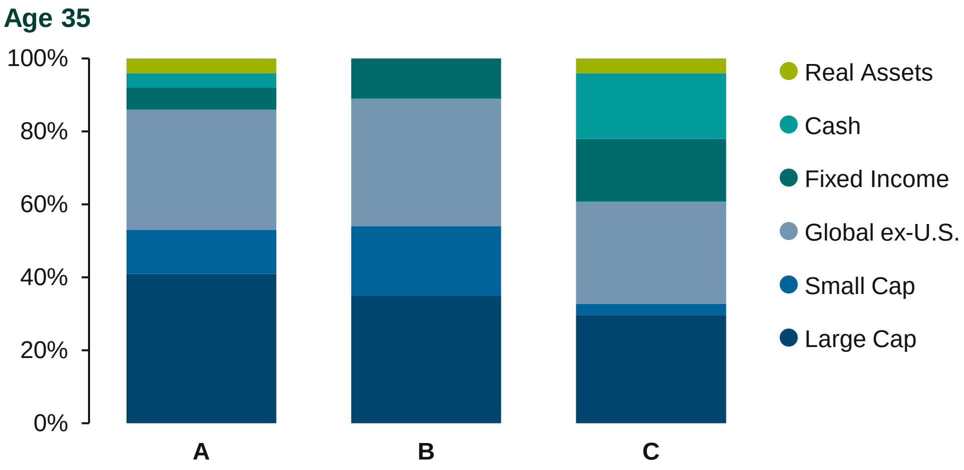
External asset investment: $0

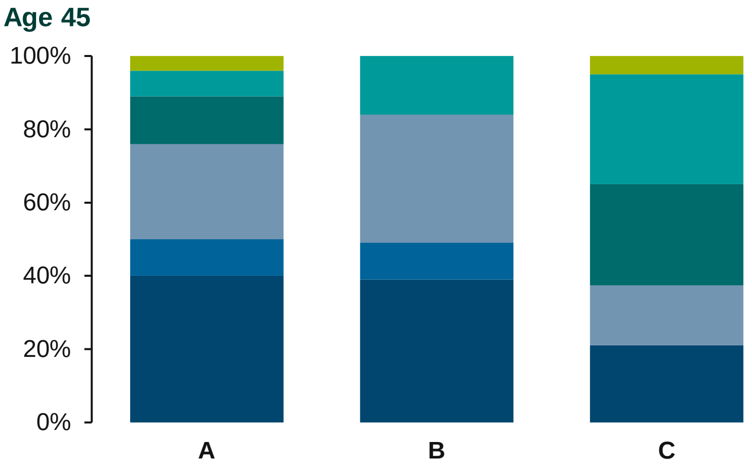
DB pension deferral: 10.5%

Other: DB pension: $48,600

Assumed retirement age: 65

Participant A 35 and 45 Years Old Moderate Risk

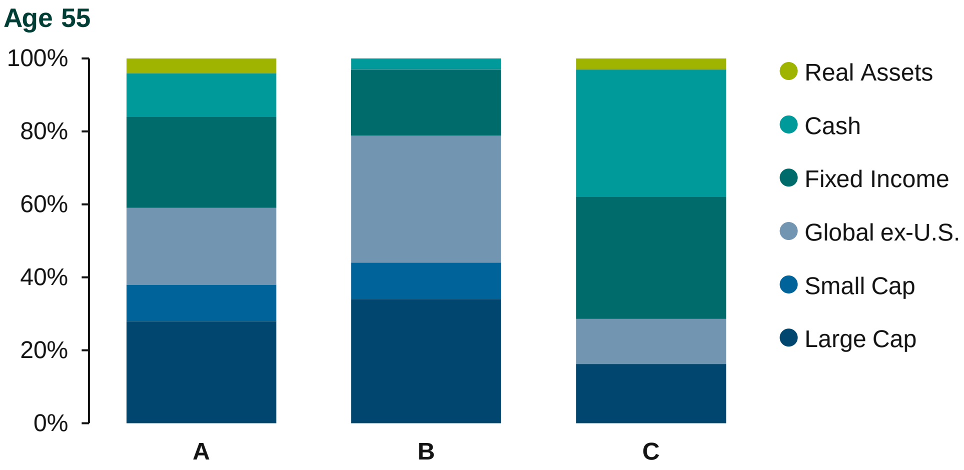


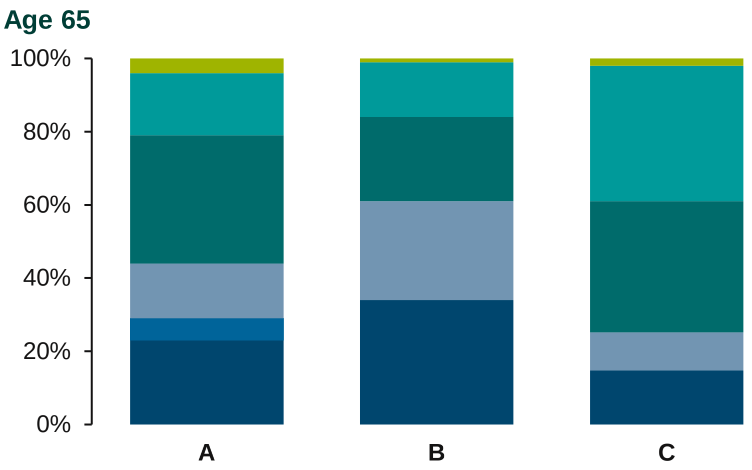


- Total equity ranges from 61% for an alternative to 89% for the incumbent.
- Only two of the three use real assets.

- Total equity diverges further as age progresses, now ranging from 84% for the incumbent, down to 37% for an alternative.
- Total fixed income varies from 16% to 58% for the same participant, at the same age.

Participant A at 55 and 65 Years Old Moderate Risk





- As age extends, the divergences grow, partially due to the assumption of total assets being held constant at a later stage in the career, thus requiring more savings.
- Total equity ranges from to 29% for an alternative to 79% for the incumbent, while fixed income ranges from 21% to 68%.

- For this near-retiree, recommended equity ranges between 25% and 61%
- Dispersion declines for fixed income also, down to a range of 38% to 73%.

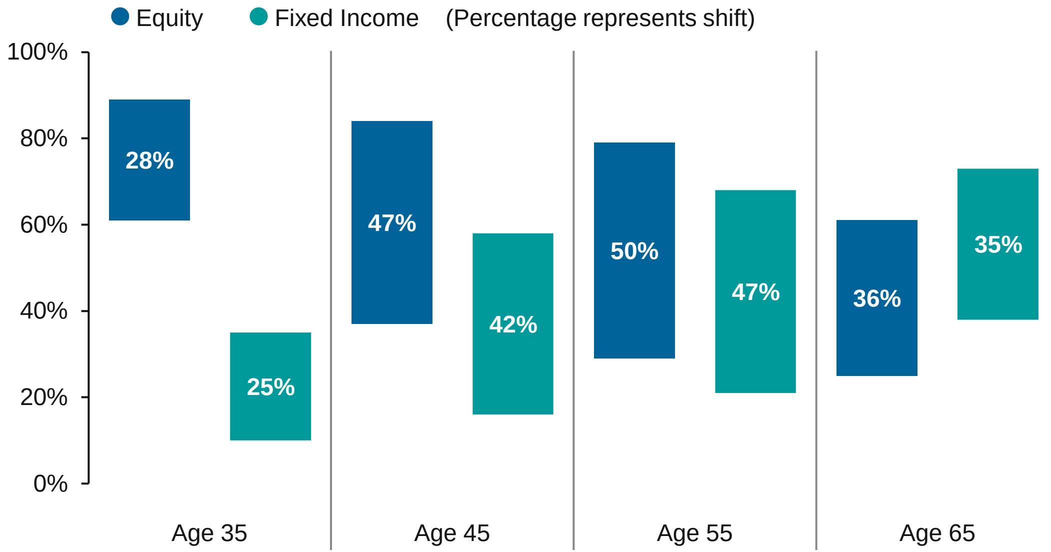
Scenario Testing Results

Participant A, ages 35, 45, 55, 65, moderate risk

- The scenario tests reveal substantial differences in portfolio construction for the same profiles.
- For one vendor, the presence of a pension **has almost no effect on outcomes.**
- For another vendor, the presence of a pension only affected outcomes for some participants, and modestly.
- For the third vendor, the presence of a pension affected outcomes significantly.

Result: Any methodology transition would have radically shifted participant portfolios.

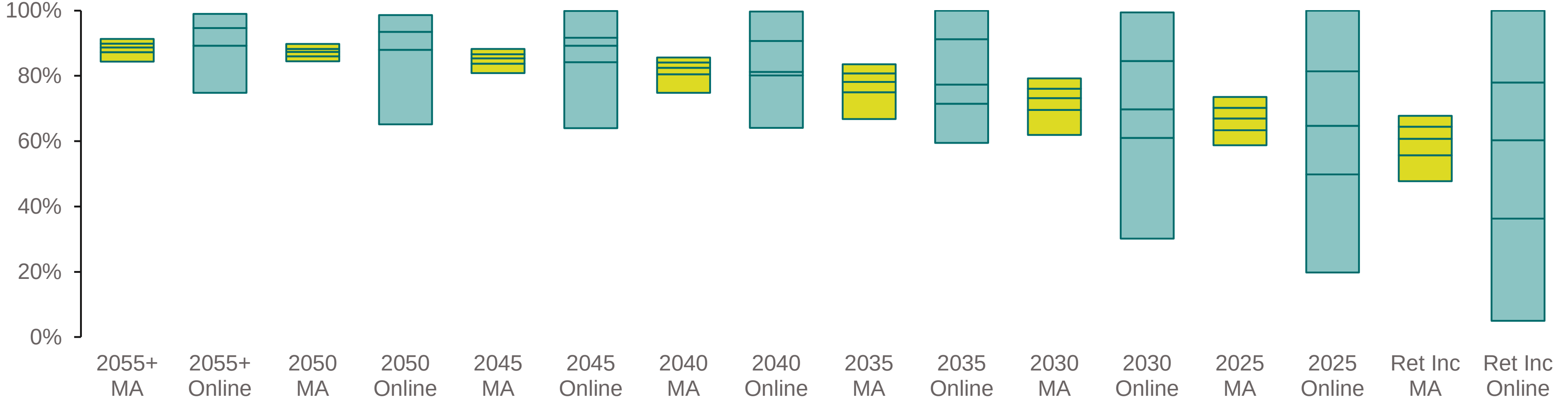
Equity and Fixed Income Asset Allocation Ranges



Case Study

Managed accounts vs. advice

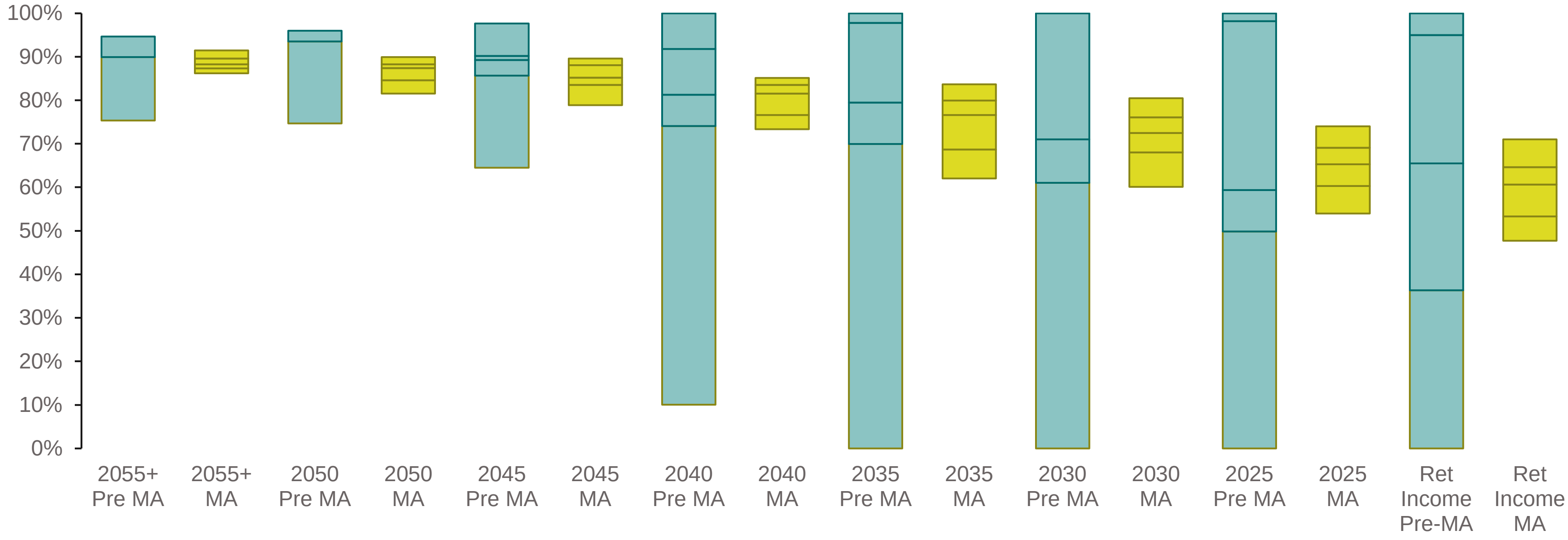
Participant Equity Ranges by Target Date Fund



- Advice users had wider dispersion of equity allocation than managed account users
- Both showed a tighter equity dispersion in longer dated funds
  - Largest band in lowest quartile, which is likely the result of those users turning on/using the service

Case Study

Pre and Post Managed Account Adoption Equity Ranges by Target Date Fund



Service Platform Impacts Participant Behavior in Crises

Change in equity allocations 1/1/20–6/30/20

No Advice

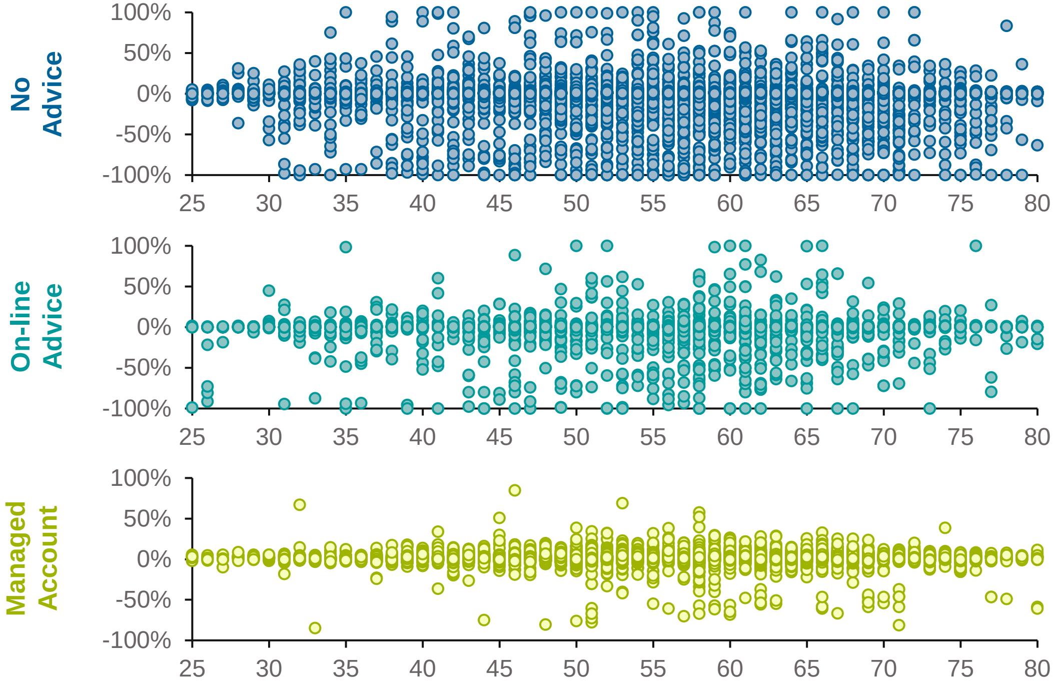
% Up >5%	3.9%	(210)
% Down >5%	8.6%	(458)
Average Up	25.7%	
Average Down	-35.6%	

On-line Advice

% Up >5%	1.6%	(703)
% Down >5%	3.3%	(1,474)
Average Up	25.4%	
Average Down	-40.6%	

Managed Account

% Up >5%	15.5%	(1,735)
% Down >5%	2.4%	(266)
Average Up	8.2%	
Average Down	-21.3%	



Change measured relative to each participant's starting asset allocation (12/31/19) and doing nothing through 6/30/20.

What Did the Plan Do and Conclusions

Plan Actions

- The plan retained the current model provider.
- Due to a recordkeeper transition, the plan required the incoming recordkeeper to have participants **opt back in** to use the managed account service.
- If participants did not opt back into the service after a communications campaign, the service was turned off.
- **70% of participants did not opt back in and were unenrolled.**

Conclusions

- Participants engagement with managed accounts is often due to them seeking tools to manage their assets, rather than the service itself causing improvements in engagement.
- Managed accounts offer something close to a glidepath, unless the participants significantly customize the data utilized, and have unusual circumstances or risk preferences.
- Managed accounts do show signs of value-add by inhibiting bad trading habits for a minority of participants.
- The asset allocation results vary widely, and determining model fit to each plan population is of utmost importance.

TAKEAWAYS

Managed accounts are not a commodity.

- For existing managed accounts: review the implementation on a regular basis to ensure participants are receiving value for the fees paid.
- When considering adding managed accounts: conduct a due diligence process, including scenario testing, to assess the value-add for participants.


Q…
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Callan Institute

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Biographies

Craig Chaikin, CFA, is a senior vice president and consultant in Callan's Denver consulting office. His responsibilities include client education, strategic planning and implementation, portfolio and fee reviews, investment policy development, and fulfilling client requests. He is a member of Callan's Defined Contribution Committee. Craig is a holder of the right to use the Chartered Financial Analyst® designation.

Jamie McAllister is a senior vice president and defined contribution (DC) consultant in Callan's Chicago consulting office. Jamie is responsible for providing support to Callan's DC clients and consultants, including DC provider searches, structure reviews, fee analyses, as well as maintaining the recordkeeping database and developing DC research. She is a member of Callan's Editorial Committee and a shareholder of the firm.

Ben Taylor is a senior vice president and head of tax-exempt defined contribution (DC) research. Ben leads research into public sector and nonprofit DC plans for the firm. He is a member of the Callan Institute Advisory Committee and a shareholder of the firm.

Frames of Due Diligence for Managed Accounts

TCW / model prohibited transaction exemption

- Effective August 1, 1997, Department of Labor issued **prohibited transaction exemption (PTE 97-60)**
  - Allowed TCW to provide investment allocation and investment advice to participants in individual account plans under §401(a)
  - Included TCW recommendations to invest in group trusts managed by TCW containing mutual funds for a sister company
- TCW needed to engage a Financial Expert
  - Sole discretion over construction and implementation of asset allocation models
  - Independent from, no pre-existing relationship with nor under the control of TCW or affiliates
- TCW disclosures
  - Program terms and conditions
  - A reference guide
  - Mathematical formulas for asset allocation modeling, if requested
- TCW cannot receive compensation for asset allocation or investment advice, only for proprietary funds
  - Allowed TCW to pay direct expenses (e.g., Financial Expert, legal, audit, etc.) and be reimbursed by the Trusts

Exemptive relief for: 1) receipt of variable fees resulting from providing investment advice to plan participants 2) the purchase and sale of proprietary investments

Frames of Due Diligence for Managed Accounts

IFE / SunAmerica prohibited transaction exemption

- December 14, 2001 letter, provided exemption for prohibited transaction restrictions
  - Fiduciary advisor can use a computer model developed by an independent financial expert to implement model asset allocation portfolios, both on a discretionary and non-discretionary basis
  - Increased compensation to SunAmerica resulting from the model would not be a prohibited transaction under ERISA §406(b)(1) or (3)
  - SunAmerica would still be acting as a fiduciary under ERISA §404
- Inferred independence between the fiduciary and expert:
  - Control and discretion of expert
  - Lack of any affiliation between fiduciary advisor and expert
  - Financial arrangements between the fiduciary advisor and expert
  - Proportion of expert's revenue derived from fiduciary advisor
- Outlined similar disclosures to TCW exemption
- Ultimately developed into similar exemptions in Pension Protection Act ERISA §408(g) and IRC §4975(f)(8)
  - Allows model developer and fiduciary to be affiliated or the same entity; requires model be certified by an independent financial expert
  - Exemption allows the fiduciary advisor to recommend, through the computer model, proprietary products and products that pay the fiduciary advisor a commission

Callan

Oct. 12, 2023

Alaska Retirement Management Board Defined Contribution Plans

Managed Accounts Analysis

Ben Taylor
Senior Vice President, Head of Tax-Exempt DC Research

Butch Cliff, CFA
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Patrick Wisdom
Vice President

Important Disclosures regarding the use of this document are included at the end of this document. These disclosures are an integral part of this document and should be considered by the user.

Project Overview & Summary Findings

Project Overview

- The Alaska Retirement Managed Board (ARMB) engaged Callan to conduct a managed account review for the Alaska Defined Contribution (DC) Plans. Callan's process reviews the Plans' current managed account solution provided through Empower and powered by Morningstar.
- This report evaluates unique participants enrolled in the managed account service, returns, and the service's fund selection process. This report utilizes participant-level data provided by Empower and Morningstar.

Summary Findings

- As of March 31, 2023, there are 10,337 unique ARMB participants enrolled in the managed account service, and these accounts have nearly $1.6 billion in assets. Of these, 7,347 (71%) have 100% of their Alaska DC Plan(s) enrolled in the service. Moreover, 6,312 (61%) have 100% of their Alaska DC Plan(s) enrolled in the service and have not provided information on outside accounts.
  - Morningstar's asset allocation methodology considers assets in both advisable accounts (i.e., ARMB DC Plan(s)) and, if provided, non-advisable (i.e., outside) accounts. In some cases, assets administered by Empower for a participant in another plan are also considered.
- Across the unique participants enrolled in the managed account service, 2,851 (28%) have had their equity constrained as a result of Morningstar's funded ratio methodology.
- Across 5-year age bands and over various trailing periods, returns for "Managed Account / Advice" participants have significantly and materially trailed those of "Target Date / Risk-Based" participants.
  - Refer to p. 22 of this report for additional detail on Callan's methodology for the returns analysis.
- The key finding is that (1) the Morningstar methodology effectively generates a forecast as to what other financial capital a participant would ordinarily have from other employment prior to joining the Plan(s), and (2) that if those assets are not provided to the model, it will characterize the participant as underfunded for retirement, which can (3) result in constraining their equity position lower, causing (4) significant performance shortfalls relative to either a target date fund, or an allocation that would have been chosen if the information missing from the model had been provided.

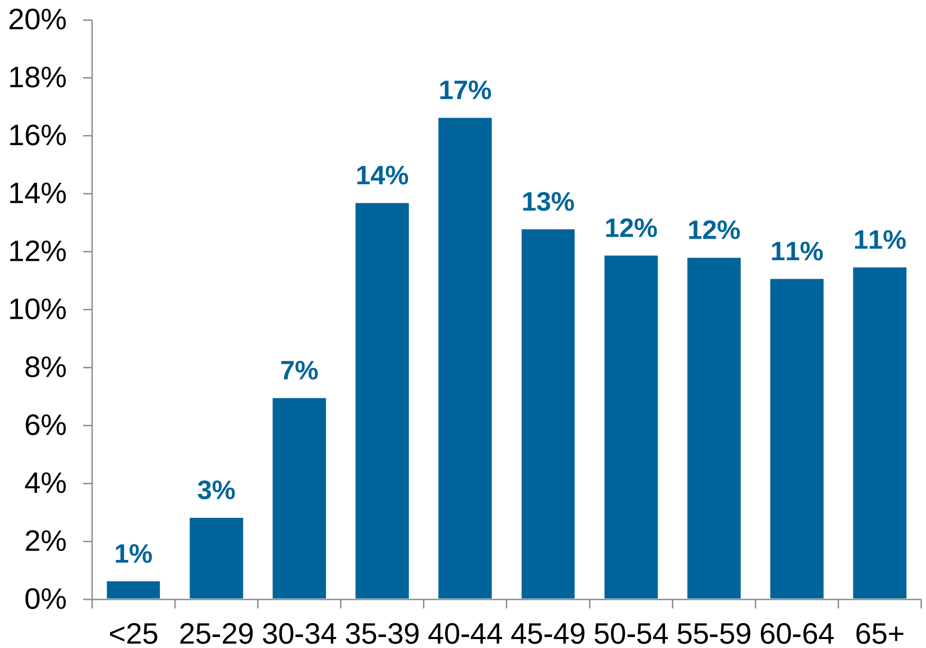
Callan

Unique Participant Analysis

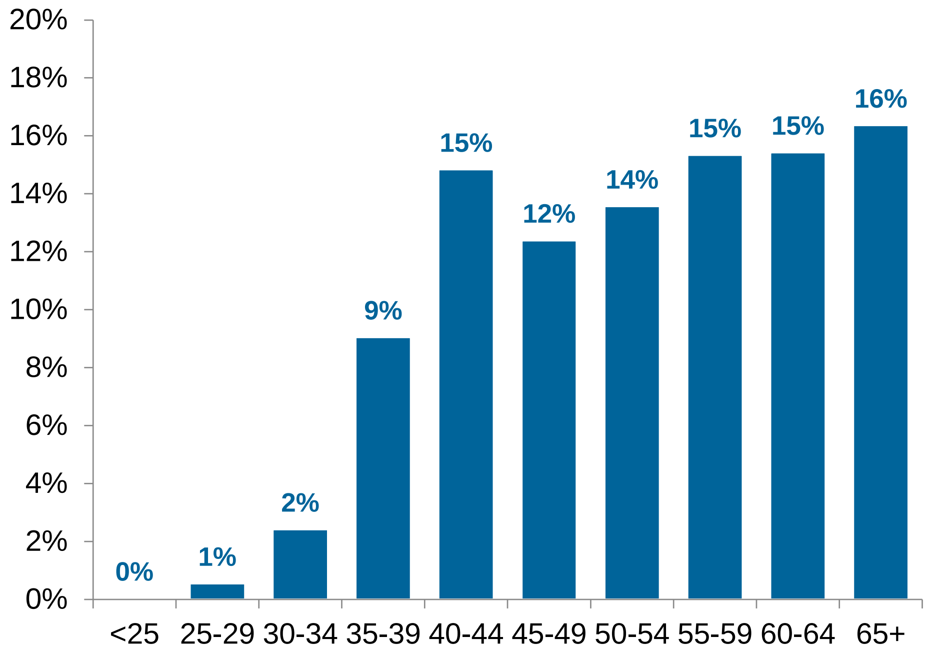
Who's Using Managed Accounts?

As of March 31, 2023, there are **10,337 unique ARMB participants** enrolled in the managed account service, and these participants have nearly **$1.6 billion** in assets. More than half (55%) of enrolled participants are between the ages of 35 and 55.

Age Distribution of ARMB Managed Account Participants (#)



Asset Distribution of ARMB Managed Account Participants ($)



Age Range	<25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+	TOTALS
Participants (#)	68	295	722	1,418	1,722	1,324	1,230	1,223	1,147	1,188	10,337
Participant Assets ($M)	$0.6	$8.6	$37.8	$141.3	$231.6	$193.5	$211.8	$239.5	$240.8	$255.4	$1,560.9
Average Participant Balance	$8,582	$29,082	$52,302	$99,644	$134,509	$146,124	$172,202	$195,793	$210,003	$215,004	$150,999
Median Participant Balance	$3,550	$12,412	$24,101	$53,146	$97,030	$110,908	$121,225	$128,390	$143,362	$131,940	$91,974

Data as of March 31, 2023. Sources: Empower and Morningstar.

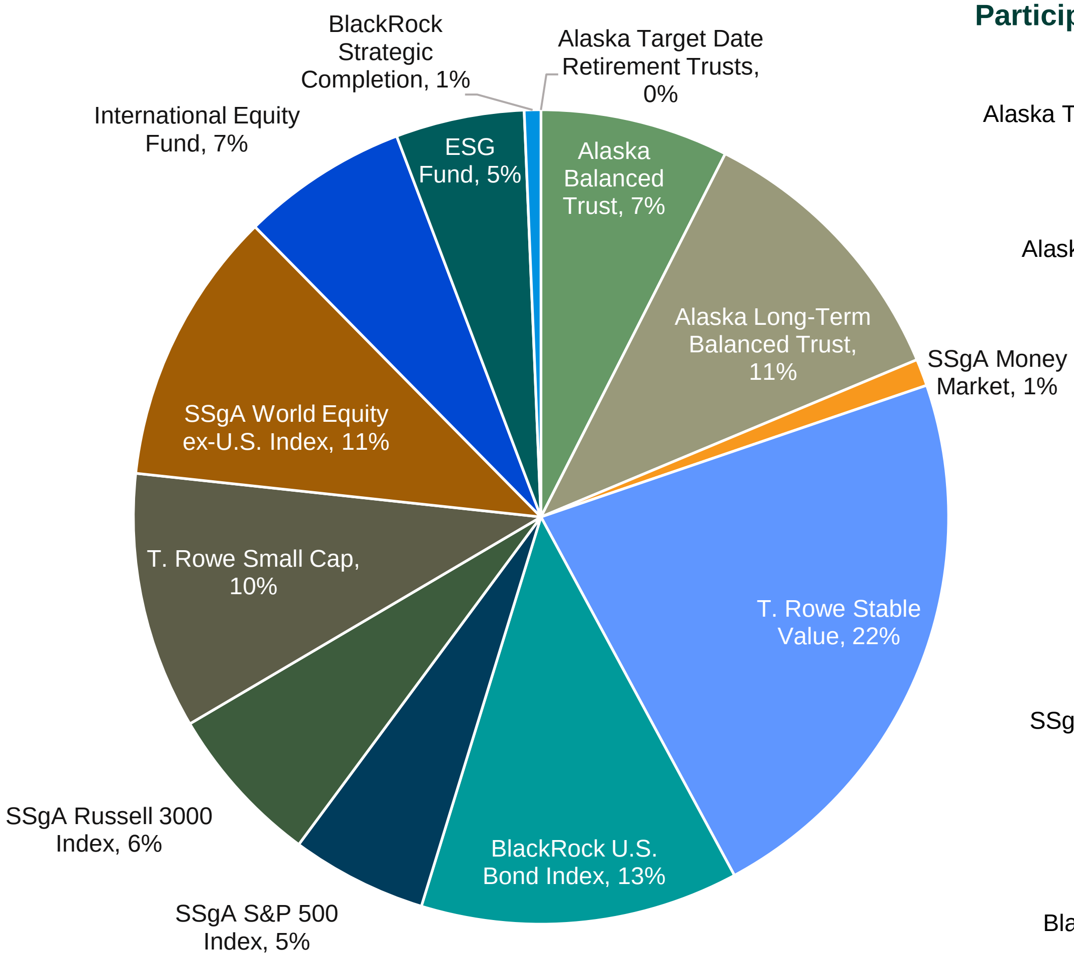
Takeaways:

1. Roughly 75% of users of the managed account service in the ARMB DC Plans are over 40, and nearly 90% of managed account assets managed in the Plans are held by participants over 40.
2. The average balance is materially higher than the median balance, indicating a bifurcated participant experience.

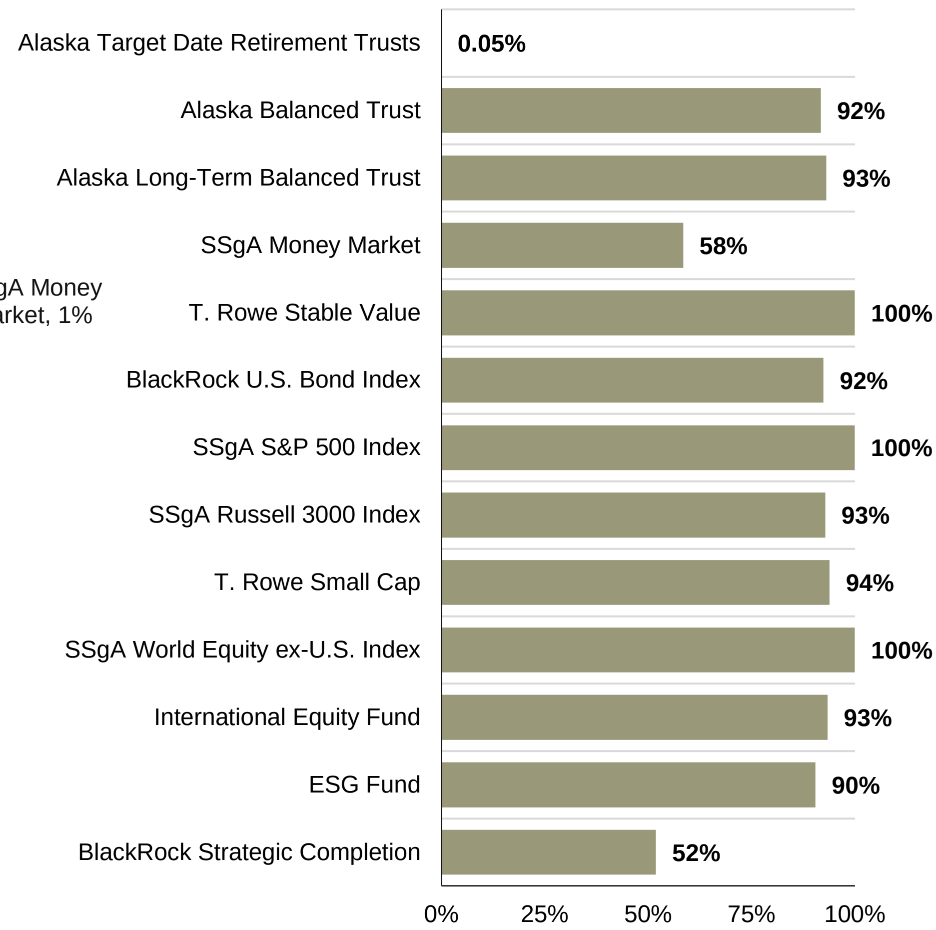
Where do Managed Account Assets Reside?

Among managed account users, the stable value option has the highest share of assets (22%), followed by the U.S. Bond Index (13%). Of the Plans' investment options, 10 have at least 90% of managed accounts users with a balance.

Distribution of Managed Account Assets



Percentage of Managed Account Participant Accounts With a Balance



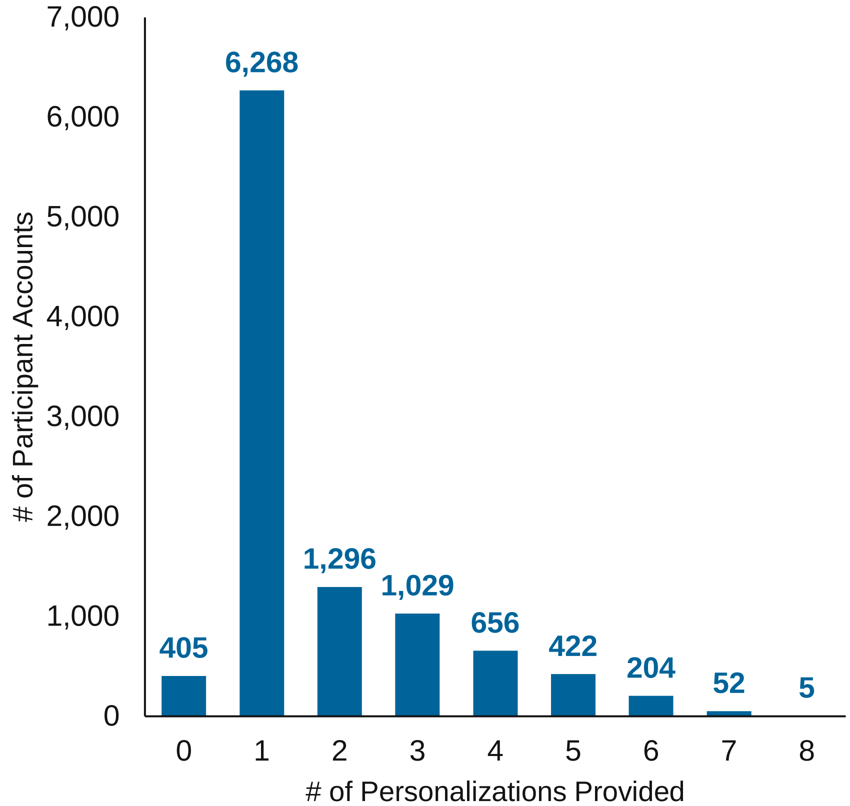
Data as of March 31, 2023. Sources: Empower and Morningstar.

Personalization

The most common personalization provided by ARMB managed account participants is “**adjusted” retirement age**, which includes those who confirmed the default retirement age of 65. Specifically, **31%** of all ARMB managed account participants have adjusted their retirement age to an age other the service’s default of 65.

	ARMB Managed Account Participants	
Personalization Options	**# Provided**	**% Provided**
“Adjusted” Retirement Age	9,808	95%
Pensions	1,872	18%
Retirement Need	1,870	18%
Social Security	1,533	15%
Spouse	1,277	12%
Outside Account	1,180	11%
Constrained	449	4%
Life Expectancy	320	3%
TOTAL	**10,337**	

ARMB Managed Account Participants
By # of Personalizations Provided



Data as of March 31, 2023. Sources: Empower and Morningstar.

Takeaways:

1. The most common customization provided is retirement age. However, merely interacting with this variable in the model counts as customizing it, even if it is left at 65. In reality, only 31% of participants have adjusted it to a different age.

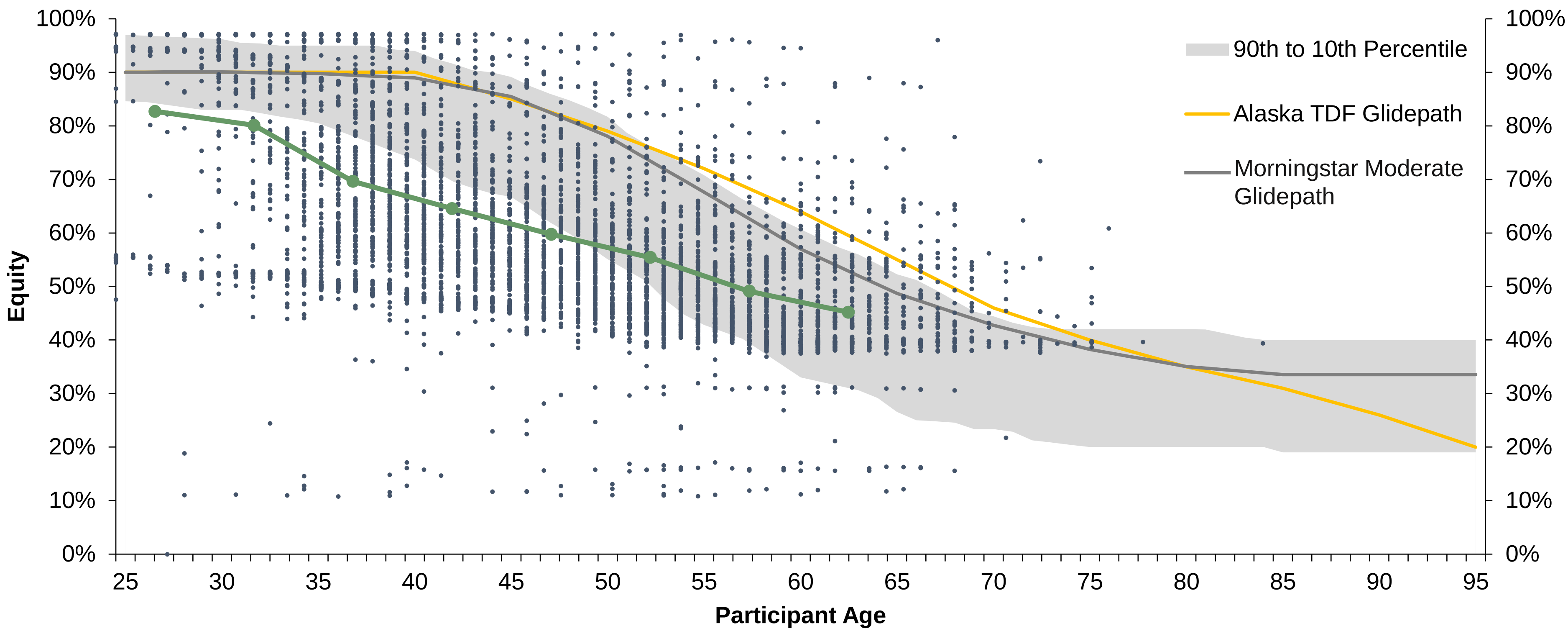
2. Relatively few other customizations are provided by participants.

3. Adding back Social Security is a common personalization for participants over the age of 50, whereby for those over 50, 26% of participants have customized to add back in Social Security, with an average benefit per year added of $16,584.

Equity Analysis

Note: **Yellow** line represents **Alaska TDF glidepath**. **Green** line represents **average total equity** for ARMB participants with 100% of their Alaska DC Plan(s) enrolled in the managed account service and with no outside accounts provided (6,312) by 5-year age cohorts. **Gray shaded area** represents 90th to 10th percentile equity for **off-the-shelf TDF glidepaths**.

Equity by Age



Age Range	<25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Average Equity, ARMB 100% Managed Account Participants With No Outside Accounts Provided	**81%**	**83%**	**80%**	**70%**	**66%**	**61%**	**57%**	**51%**	**47%**	**45%**
% ARMB Managed Account Participants With No Outside Accounts Within +/- 10% Equity of Age-Aligning AK TDF	25%	36%	34%	21%	16%	8%	8%	10%	13%	39%
% ARMB Managed Account Participants With No Outside Accounts Within +/- 20% Equity of Age-Aligning AK TDF	26%	36%	38%	29%	26%	25%	31%	33%	50%	59%

Data as of March 31, 2023. Sources: Empower, Morningstar, and Callan.

Takeaways:

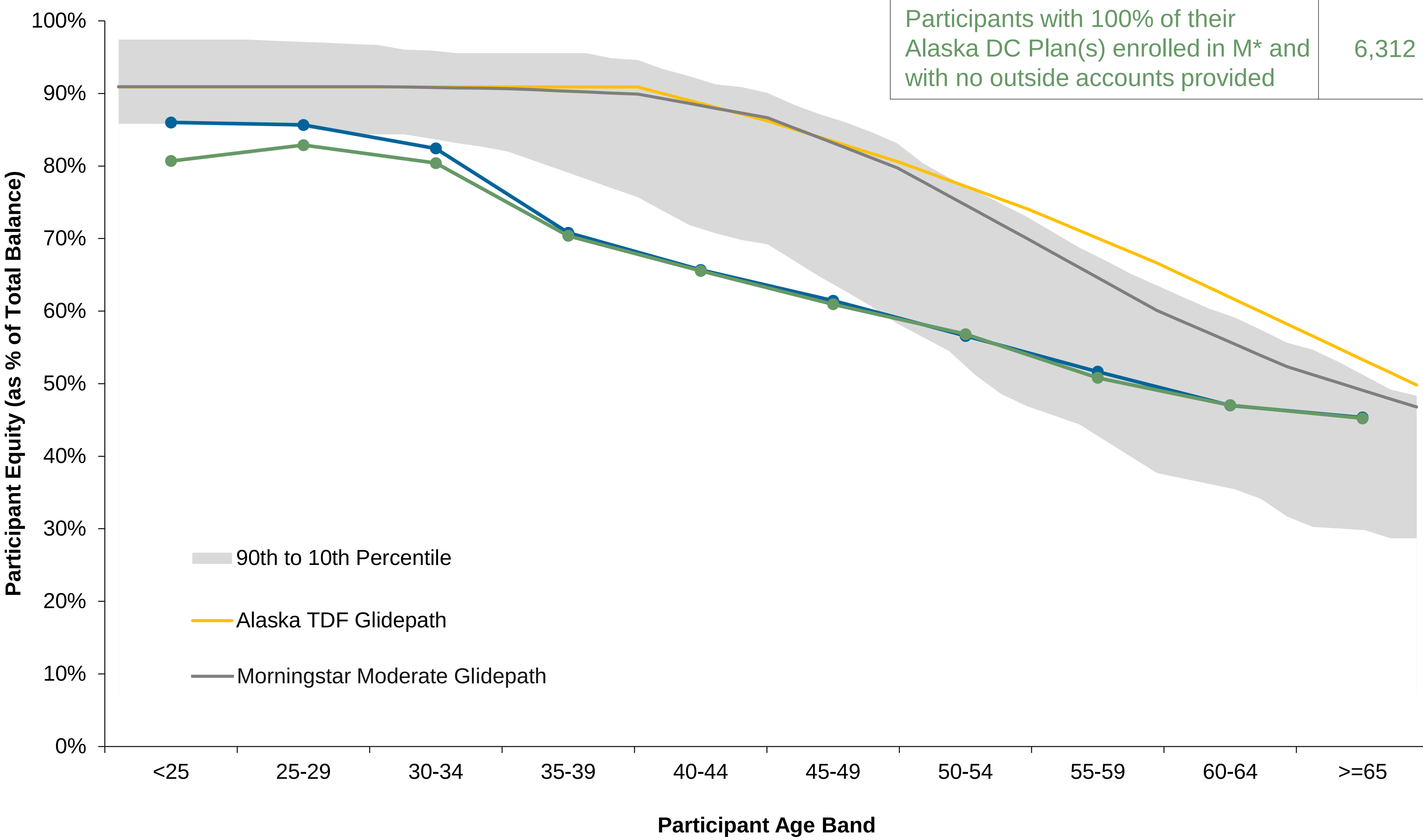
1. The average equity of portfolios constructed by the Morningstar managed account service is materially lower than either the average target date fund, the Plans' custom target date fund, or the Morningstar moderate glidepath.

2. Prior to age 60, the equity gap between the average managed account portfolio and an age-equivalent target date fund is so large that at all ages, more than half of managed account users have portfolios that are more than 20% lower in equity exposure than they would be had they invested in the Plans' age-equivalent custom target date fund.

Equity Analysis (Cont.)

Participant Group	#
All managed account participants	10,337
Participants with 100% of their Alaska DC Plan(s) enrolled in M* and with no outside accounts provided	6,312

Average Equity (as % of Total Balance) by 5-Year Age Cohorts



Data as of March 31, 2023. Sources: Empower, Morningstar, and Callan.

Equity Analysis (Cont.)

Participant Age Band	Average Participant Equity in Advisable & Non-Advisable (Outside) Accounts (Morningstar-Provided Data)	Average Participant Equity in Advisable Accounts (Empower-Provided Data)
<25	84%	86%
25-29	87%	86%
30-34	82%	82%
35-39	70%	71%
40-44	65%	66%
45-49	60%	61%
50-54	55%	57%
55-59	51%	52%
60-64	46%	47%
>=65	44%	45%

Data as of March 31, 2023. Sources: Empower, Morningstar, and Callan.

Takeaways:

1. It is possible that lower equity positions result from the managed account creating a “completion portfolio” that adopts lower-risk portfolios to pair with higher equity positions held elsewhere.

2. To test this hypothesis, Callan compared two groups. The first group on p. 10 is a representation of all managed account participants in the ARMB DC Plans, in blue. In green, we represent the experience of participants who had (1) 100% of their assets invested in the ARMB DC Plans controlled by the managed account service, and (2) did not add outside account balances into the model.

3. As is clearly apparent from the graphic, the two lines are nearly overlapping, and both diverge materially from the target date funds. The same is shown in the data table that follows the graphic.

4. The principal explanation for the divergence in equity is found in the practice of constraining the equity exposure of participants who are determined to fall short of a “funding ratio” threshold within the model. This itself is likely triggered more commonly due to the demographics of the Plans.

Equity Analysis (Cont.)

- Callan ran two multiple linear regressions:
  - **Dependent variable = Managed Account Actual Equity – Age-Aligning Alaska Target Date Fund Equity**
  - Independent variables (categorical, not directional) = Retirement Age (RA), Retirement Need (RN), Pension (P), Social Security (SS), Spouse (S), Outside Account(s) (OA), Constrained (C), Life Expectancy (LE)

- Interpreting the regression results:
  - Intercepts of -15% / -17% indicate managed account actual equity is 15% / 17% lower, on average, than age-aligning Alaska target date fund equity when no personalizations are provided
  - When retirement age is "adjusted", managed account actual equity is 4% / 2% lower, on average, than age-aligning Alaska target date fund equity

The below table displays the intercepts and coefficients for each independent variable in the regressions.

Participant Group	**All managed account participants (10,337)**	**Participants with 100% of their Alaska DC Plan(s) enrolled in M* and with no outside accounts provided (6,312)**
Variable	**Coefficients**	
Intercept	-15%	-17%
"Adjusted" Retirement Age	-4%	-2%
Retirement Need	5%	4%
Pensions	3%	4%
Social Security	6%	8%
Spouse	3%	6%
Outside Account	-2%	0%
Constrained	5%	5%
Life Expectancy	-1%	-1%

Data as of March 31, 2023. Sources: Empower, Morningstar, and Callan.

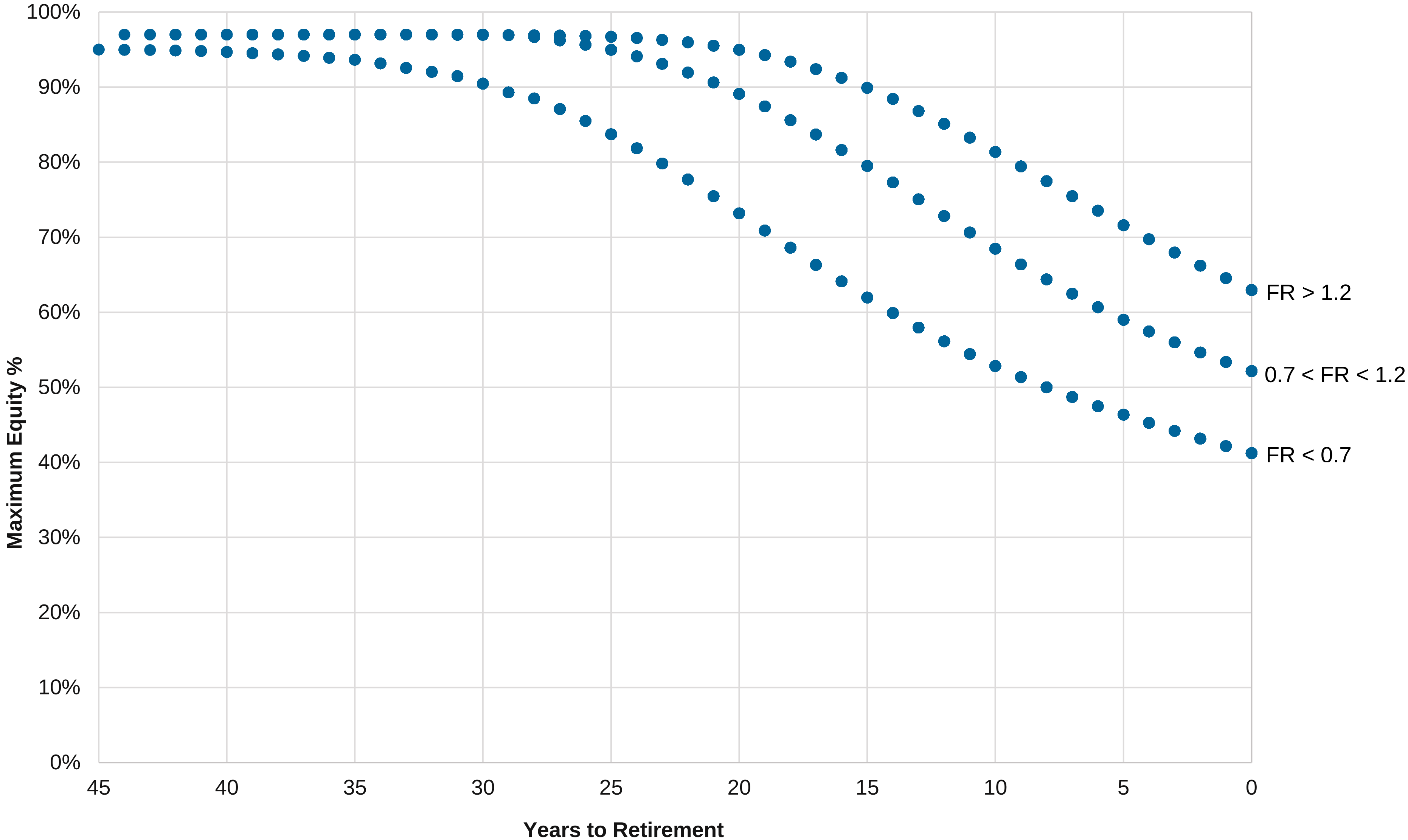
Takeaways:

1. Depending upon the comparison point used (all managed account users, or just those over whose assets the model has 100% control), the intercept estimate can be interpreted to mean that in the absence of any other customization, equity is either 15% lower, or 17% lower, on average, when compared to the Plans' age-aligning target date fund.

2. Contrary to intuition, when items such as a Social Security benefit, or the presence of a defined benefit pension are added, the model **adds equity**, rather than reducing it.

3. Callan's findings are that this is primarily explained by the funding ratio methodology. Under this methodology, if a participant in the ARMB DC Plans is assessed to have a funding ratio below 70%, the participant is constrained to a lower equity position, as shown on the graphic on the subsequent page. The funding ratio thresholds and equity constraints are the actual constraints in place for the Plans.

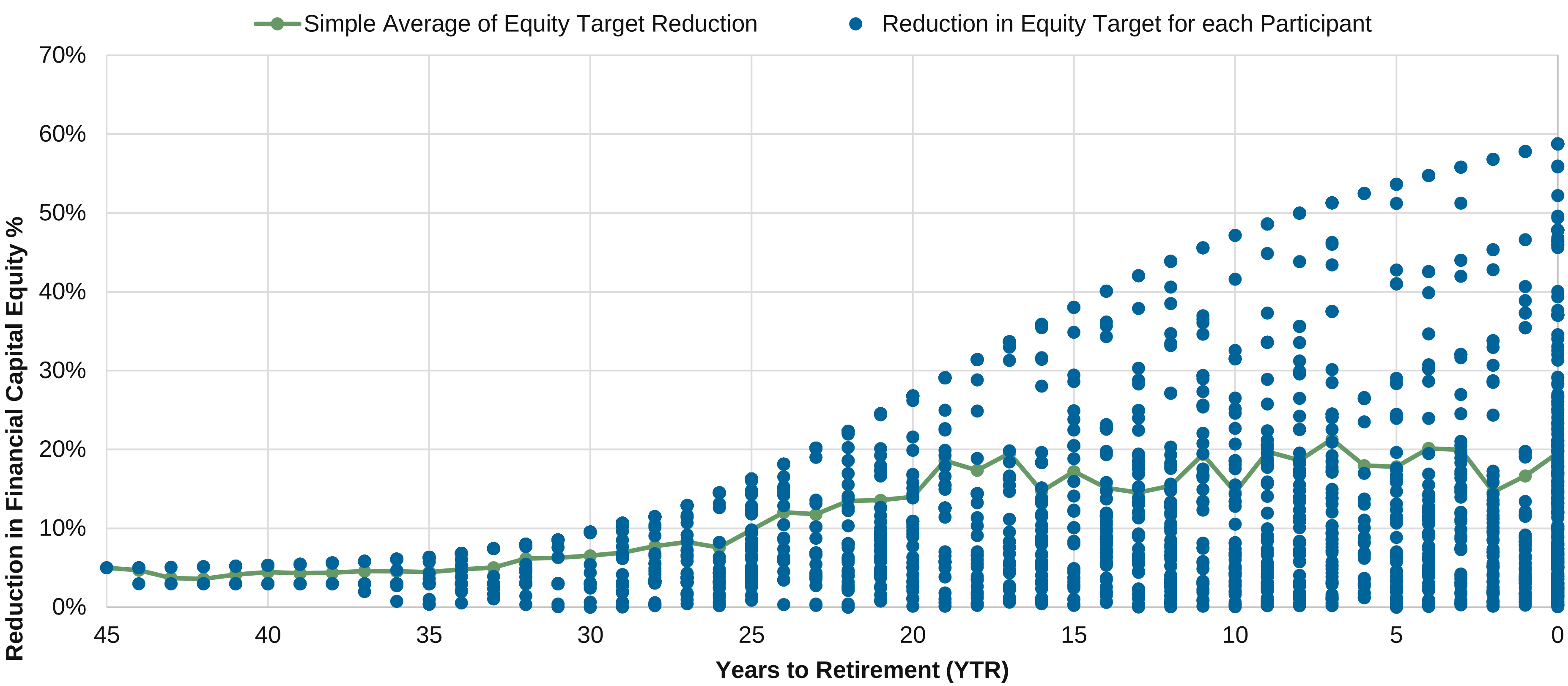
Funding Ratio Equity Constraints



Data as of March 31, 2023. Source: Morningstar.

Financial Capital Equity Reduction for Constrained Participants

The below chart plots the extent of equity reduction for the 2,851 ARMB managed account participants whose equity has been constrained by their funded ratio.



YTR Range	45-41	40-36	35-31	30-26	25-21	20-16	15-11	10-6	5-0
# Total Participants	62	232	623	1,304	1,676	1,321	1,221	1,210	2,582
% Constrained	76%	69%	53%	30%	24%	22%	23%	26%	24%

Data as of March 31, 2023. Source: Morningstar.

Takeaways:

1. The blue dots on the prior page represent the magnitude of the equity constraint applied to an individual participant.

2. The X-Axis of this graphic uses Morningstar's nomenclature, which is years to retirement. As an example, someone with a target retirement age of 65, who is 65, would show as a zero on this chart. Callan's slides normally use age.

3. The green line shows the simple average (not asset-weighted) level of equity constraint in place for each age cohort.

4. Notably, while the magnitude is smaller, the **majority** of participants 30+ years away from retirement are constrained.

5. The average level of constraint in the 20 years leading up to retirement hovers near 20%, consistent with Callan's statistical analysis, and the degree of difference shown in the constraint graphic on p. 15.

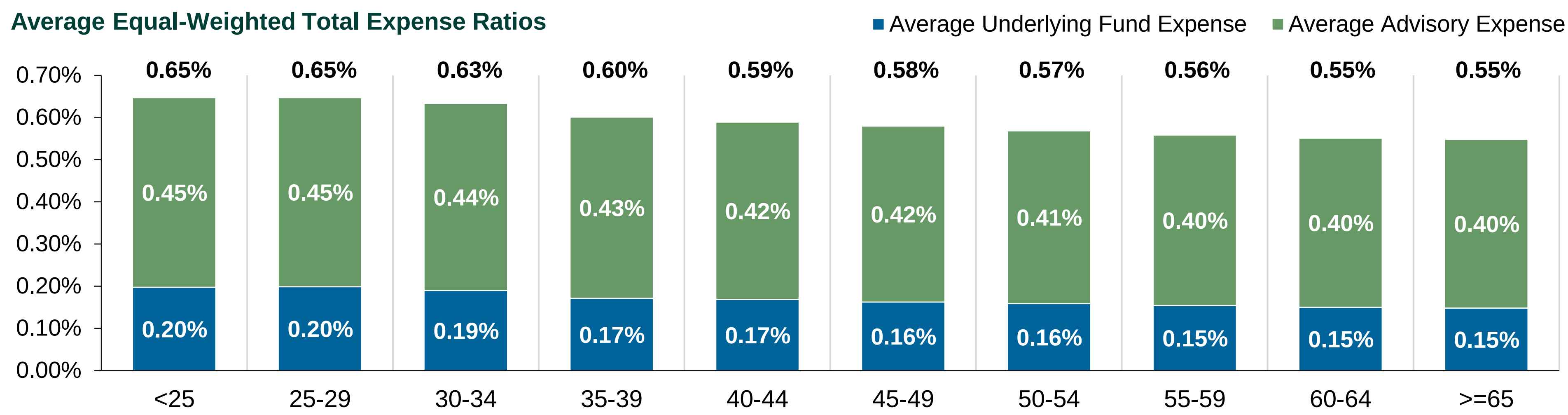
Estimated Expense

- The managed account service has the below fee schedule shown in the left table.
- Based on participant balances as of March 31, 2023, the total estimated advisory fee for the service is $5,562,612.

Asset Range	Advisory Fee	# ARMB Participants	% ARMB Participants
Up to $100,000	0.45%	5,382	52%
Next $150,000	0.35%	2,899	28%
Next $150,000	0.25%	1,216	12%
> $400,000	0.15%	840	8%

Estimated Expense Type*	%
Estimated Asset-Weighted Advisory Expense	0.36%
Estimated Equal-Weighted Advisory Expense	0.42%
Estimated Asset-Weighted Total Expense	0.52%
Estimated Equal-Weighted Total Expense	0.58%

Average Equal-Weighted Total Expense Ratios

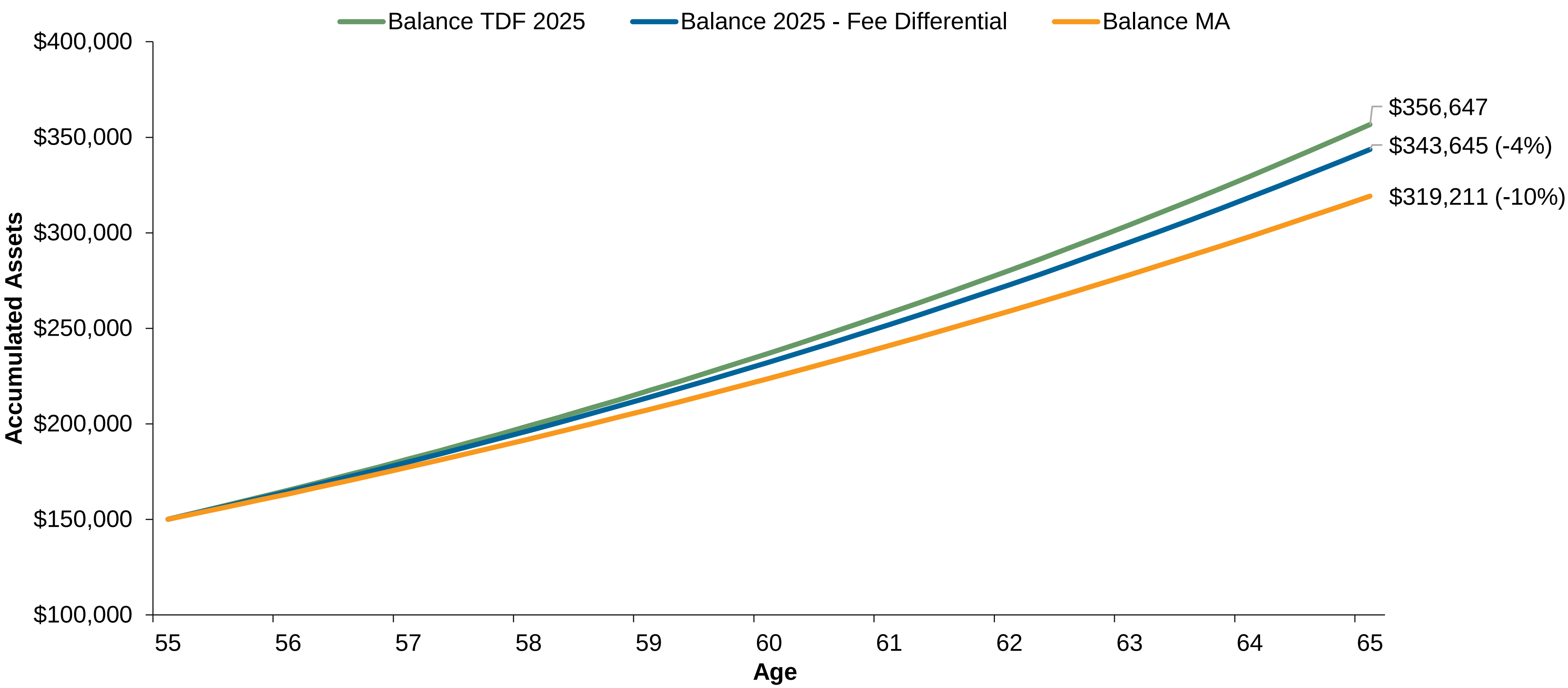


Alaska TDF	2065	2060	2055	2050	2045	2040	2035	2030	2025	2020	2015	2010
Expense Ratio	0.11%	0.11%	0.11%	0.11%	0.11%	0.11%	0.11%	0.10%	0.10%	0.10%	0.10%	0.10%

*Estimated expense types represent estimated annual expenses based on participant balances as of March 31, 2023. Sources: Empower and Morningstar.

Effect of Returns & Fees on Accumulated Assets

The chart displays projected asset accumulation over a 10-year period assuming a starting balance of about $150,000 and a quarterly participant contribution of $1,300. The **green line** assumes an annualized return equal to the median 10-year return for Target Date / Risk-Based participants between the ages of 61 and 65 (6.6%). The **blue line** assumes the same annualized return, less the fee differential between the total expense for the managed account service and the age-aligning Alaska Target Date Fund. The total expense for the managed account service includes both estimated advisory expenses, based on the assumed balance at each age, and observed average underlying fund expenses by 5-year participant age bands. The **orange line** assumes an annualized return equal to the median 10-year return for Managed Account / Advice participants between the ages of 61 and 65 with 100% of their Alaska DC Plan(s) enrolled in the managed account service and no outside accounts provided (5.3%).



Note: Historical returns information in this analysis is not indicative of future results. Data as of March 31, 2023. Source: Callan.

Takeaways:

1. The chart on p. 19 is a stylized illustration. As such, it is not a representation of any individual participant account, or an average experience. It is also time-period dependent and uses the longest time period for which Callan was provided performance data.

2. The purpose of the chart is to illustrate the difference in impact of different features of a managed account vis a vis a target date fund. These features are as follows:

- There is an additional fee burden associated with paying for the managed account service. There is also a fee difference between the portfolios composed of options within the lineup and those offered by the target date funds.
- There is a performance difference, which comes from the underlying funds utilized by the service as compared to the target date funds.

3. Because the illustration used the observed annualized median return for managed account participants aged 61-65 over the 10-year period for which Callan was supplied performance data, the differences between the accumulated values can be interpreted to illustrate the following:

- A fee impact over the 10-year period of approximately 4% of the theoretical total balance.
- A combined effect of fees and fund selection/asset allocation of 10%.
- An approximate effect of fund selection/asset allocation, irrespective of fees, of ~7%.

Returns Analysis

Returns Analysis Methodology

- The following section examines historical returns for 2 subsets of ARMB participants:
  1. Managed Accounts / Advice – Participants who have had 100% of their Alaska DC Plan(s) enrolled in the managed account service for the entirety of a trailing period and who did not provide information on outside accounts.
  2. Target Date / Risk-Based – Participants who were 100% invested in one or more Alaska Target Date Funds in all of their Alaska DC Plans as of March 31, 2023. Notably, participants may be invested in an Alaska Target Date Fund other than the one they would be defaulted into provided their date of birth.
- All returns shown are money weighted, net of fees (e.g., quoted recordkeeping fee, investment management fees, advisory fees), and only include participants with account balances greater than $2,500.
- For participants in multiple ARMB DC Plans, plan returns are weighted based on plan account balances as of March 31, 2023, to generate a total aggregated return for each participant.
- All plan-level return and balance data was provided by Empower.

Annualized Returns – Ages <=25

Distribution returns for Managed Accounts / Advice and Target Date / Risk-Based represent money-weighted returns. Refer to p. 22 for additional details on methodology.

Returns for Managed Accounts / Advice, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90th Percentile	-1.7%	13.4%			
75th Percentile	-3.8%	12.2%			
Median	**-6.9%**	**6.3%**			
25th Percentile	-10.2%	2.3%			
10th Percentile	-12.0%	0.5%			

Returns for Target Date / Risk-Based, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90th Percentile	2.4%	15.7%	7.5%	8.4%	
75th Percentile	-0.1%	14.8%	7.0%	8.1%	
Median	**-3.6%**	**9.9%**	**6.5%**	**7.1%**	
25th Percentile	-6.9%	6.6%	6.0%	6.6%	
10th Percentile	-7.4%	4.4%	4.6%	5.2%	

Note: All returns are money weighted, net of fees, and only include participants with account balances greater than $2,500. For participants with multiple ARMB DC Plan accounts, returns are weighted based on plan account balances as of March 31, 2023. Historical returns information in this analysis is not indicative of future results. Data source: Empower.

Annualized Returns – Ages 26-30

Distribution returns for Managed Accounts / Advice and Target Date / Risk-Based represent money-weighted returns. Refer to p. 22 for additional details on methodology.

Returns for Managed Accounts / Advice, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90th Percentile	-3.5%	13.6%	5.8%		
75th Percentile	-5.2%	12.1%	5.5%		
Median	**-6.4%**	**9.6%**	**5.1%**		
25th Percentile	-8.1%	6.6%	4.8%		
10th Percentile	-11.0%	4.5%	4.1%		

Returns for Target Date / Risk-Based, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90th Percentile	0.3%	16.1%	7.5%	9.0%	8.3%
75th Percentile	-3.2%	15.5%	7.2%	8.7%	8.1%
Median	**-5.4%**	**12.4%**	**6.8%**	**8.2%**	**7.7%**
25th Percentile	-6.9%	9.0%	6.4%	7.6%	7.2%
10th Percentile	-7.3%	5.9%	5.9%	6.4%	5.6%

Note: All returns are money weighted, net of fees, and only include participants with account balances greater than $2,500. For participants with multiple ARMB DC Plan accounts, returns are weighted based on plan account balances as of March 31, 2023. Historical returns information in this analysis is not indicative of future results. Data source: Empower.

Annualized Returns – Ages 31-35

Distribution returns for Managed Accounts / Advice and Target Date / Risk-Based represent money-weighted returns. Refer to p. 22 for additional details on methodology.

Returns for Managed Accounts / Advice, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90th Percentile	-4.2%	14.3%	6.0%	7.8%	6.7%
75th Percentile	-5.3%	13.0%	5.6%	7.5%	6.7%
Median	**-6.3%**	**11.6%**	**5.2%**	**7.1%**	**6.7%**
25th Percentile	-7.6%	8.9%	4.6%	6.7%	6.7%
10th Percentile	-10.8%	6.4%	3.9%	6.5%	6.7%

Returns for Target Date / Risk-Based, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90th Percentile	-1.5%	16.2%	7.5%	9.2%	8.7%
75th Percentile	-4.7%	16.0%	7.3%	9.0%	8.4%
Median	**-6.0%**	**14.1%**	**7.1%**	**8.5%**	**8.2%**
25th Percentile	-6.8%	11.2%	6.7%	8.0%	7.9%
10th Percentile	-7.1%	7.7%	6.3%	7.6%	7.6%

Note: All returns are money weighted, net of fees, and only include participants with account balances greater than $2,500. For participants with multiple ARMB DC Plan accounts, returns are weighted based on plan account balances as of March 31, 2023. Historical returns information in this analysis is not indicative of future results. Data source: Empower.

Annualized Returns – Ages 36-40

Distribution returns for Managed Accounts / Advice and Target Date / Risk-Based represent money-weighted returns. Refer to p. 22 for additional details on methodology.

Returns for Managed Accounts / Advice, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90^{th} Percentile	-4.5%	15.3%	6.0%	8.0%	7.5%
75^{th} Percentile	-5.4%	13.8%	5.8%	7.6%	7.2%
Median	**-6.5%**	**12.1%**	**5.3%**	**7.2%**	**6.9%**
25^{th} Percentile	-8.0%	10.5%	4.8%	6.8%	6.6%
10^{th} Percentile	-10.4%	7.6%	4.2%	5.8%	5.8%

Returns for Target Date / Risk-Based, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90^{th} Percentile	-2.6%	16.3%	7.5%	9.3%	8.8%
75^{th} Percentile	-5.2%	16.1%	7.4%	9.1%	8.6%
Median	**-6.2%**	**14.6%**	**7.2%**	**8.7%**	**8.3%**
25^{th} Percentile	-6.8%	12.1%	6.9%	8.2%	8.1%
10^{th} Percentile	-7.1%	8.7%	6.5%	7.8%	7.8%

Note: All returns are money weighted, net of fees, and only include participants with account balances greater than $2,500. For participants with multiple ARMB DC Plan accounts, returns are weighted based on plan account balances as of March 31, 2023. Historical returns information in this analysis is not indicative of future results. Data source: Empower.

Annualized Returns – Ages 41-45

Distribution returns for Managed Accounts / Advice and Target Date / Risk-Based represent money-weighted returns. Refer to p. 22 for additional details on methodology.

Returns for Managed Accounts / Advice, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90th Percentile	-4.3%	14.5%	6.0%	7.8%	7.4%
75th Percentile	-5.1%	13.3%	5.7%	7.4%	7.0%
Median	**-6.1%**	**11.5%**	**5.2%**	**7.1%**	**6.7%**
25th Percentile	-7.6%	10.0%	4.8%	6.5%	6.4%
10th Percentile	-9.7%	8.1%	4.4%	5.8%	5.6%

Returns for Target Date / Risk-Based, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90th Percentile	-2.3%	16.3%	7.5%	9.3%	8.8%
75th Percentile	-5.0%	16.0%	7.3%	9.1%	8.6%
Median	**-6.0%**	**14.2%**	**7.1%**	**8.6%**	**8.3%**
25th Percentile	-6.7%	11.6%	6.8%	8.2%	8.0%
10th Percentile	-7.0%	8.2%	6.4%	7.7%	7.8%

Note: All returns are money weighted, net of fees, and only include participants with account balances greater than $2,500. For participants with multiple ARMB DC Plan accounts, returns are weighted based on plan account balances as of March 31, 2023. Historical returns information in this analysis is not indicative of future results. Data source: Empower.

Annualized Returns – Ages 46-50

Distribution returns for Managed Accounts / Advice and Target Date / Risk-Based represent money-weighted returns. Refer to p. 22 for additional details on methodology.

Returns for Managed Accounts / Advice, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90th Percentile	-4.3%	13.6%	5.9%	7.4%	7.1%
75th Percentile	-5.0%	12.0%	5.5%	7.0%	6.8%
Median	**-5.9%**	**10.6%**	**5.1%**	**6.7%**	**6.5%**
25th Percentile	-7.2%	9.4%	4.8%	6.3%	6.2%
10th Percentile	-8.6%	7.5%	4.3%	5.7%	5.4%

Returns for Target Date / Risk-Based, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90th Percentile	-2.4%	15.3%	7.2%	9.0%	8.6%
75th Percentile	-4.7%	14.9%	7.0%	8.7%	8.3%
Median	**-5.7%**	**13.2%**	**6.8%**	**8.3%**	**8.1%**
25th Percentile	-6.4%	10.7%	6.5%	7.9%	7.8%
10th Percentile	-6.7%	7.3%	6.1%	7.3%	7.5%

Note: All returns are money weighted, net of fees, and only include participants with account balances greater than $2,500. For participants with multiple ARMB DC Plan accounts, returns are weighted based on plan account balances as of March 31, 2023. Historical returns information in this analysis is not indicative of future results. Data source: Empower.

Annualized Returns – Ages 51-55

Distribution returns for Managed Accounts / Advice and Target Date / Risk-Based represent money-weighted returns. Refer to p. 22 for additional details on methodology.

Returns for Managed Accounts / Advice, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90th Percentile	-3.9%	12.9%	5.9%	7.4%	7.2%
75th Percentile	-4.7%	11.3%	5.4%	6.7%	6.5%
Median	**-5.5%**	**9.9%**	**5.0%**	**6.3%**	**6.2%**
25th Percentile	-6.8%	8.8%	4.7%	6.0%	5.9%
10th Percentile	-7.9%	7.3%	4.3%	5.5%	5.5%

Returns for Target Date / Risk-Based, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90th Percentile	-2.1%	14.1%	6.8%	8.5%	8.2%
75th Percentile	-4.4%	13.7%	6.7%	8.2%	7.9%
Median	**-5.4%**	**12.3%**	**6.4%**	**7.8%**	**7.6%**
25th Percentile	-6.0%	10.1%	6.1%	7.4%	7.4%
10th Percentile	-6.3%	6.9%	5.7%	6.8%	7.1%

Note: All returns are money weighted, net of fees, and only include participants with account balances greater than $2,500. For participants with multiple ARMB DC Plan accounts, returns are weighted based on plan account balances as of March 31, 2023. Historical returns information in this analysis is not indicative of future results. Data source: Empower.

Annualized Returns – Ages 56-60

Distribution returns for Managed Accounts / Advice and Target Date / Risk-Based represent money-weighted returns. Refer to p. 22 for additional details on methodology.

Returns for Managed Accounts / Advice, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90th Percentile	-3.6%	11.5%	5.5%	7.0%	6.6%
75th Percentile	-4.3%	10.0%	5.0%	6.4%	6.1%
Median	**-5.1%**	**8.9%**	**4.7%**	**5.8%**	**5.6%**
25th Percentile	-6.3%	7.8%	4.4%	5.4%	5.2%
10th Percentile	-7.3%	6.2%	4.0%	4.9%	4.8%

Returns for Target Date / Risk-Based, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90th Percentile	-2.3%	12.8%	6.4%	7.9%	7.7%
75th Percentile	-4.2%	12.4%	6.2%	7.6%	7.4%
Median	**-4.9%**	**11.1%**	**6.0%**	**7.3%**	**7.2%**
25th Percentile	-5.5%	9.1%	5.6%	6.8%	6.9%
10th Percentile	-5.8%	6.6%	5.3%	6.3%	6.5%

Note: All returns are money weighted, net of fees, and only include participants with account balances greater than $2,500. For participants with multiple ARMB DC Plan accounts, returns are weighted based on plan account balances as of March 31, 2023. Historical returns information in this analysis is not indicative of future results. Data source: Empower.

Annualized Returns – Ages 61-65

Distribution returns for Managed Accounts / Advice and Target Date / Risk-Based represent money-weighted returns. Refer to p. 22 for additional details on methodology.

Returns for Managed Accounts / Advice, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90th Percentile	-3.7%	10.6%	5.3%	6.3%	6.1%
75th Percentile	-4.1%	9.2%	4.8%	5.8%	5.6%
Median	**-4.9%**	**8.1%**	**4.5%**	**5.4%**	**5.3%**
25th Percentile	-5.8%	7.3%	4.2%	5.1%	5.0%
10th Percentile	-6.8%	6.4%	3.9%	4.7%	4.7%

Returns for Target Date / Risk-Based, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90th Percentile	-2.3%	11.3%	5.9%	7.3%	7.2%
75th Percentile	-3.8%	11.0%	5.7%	7.1%	6.9%
Median	**-4.5%**	**9.8%**	**5.5%**	**6.6%**	**6.6%**
25th Percentile	-5.0%	8.3%	5.2%	6.3%	6.3%
10th Percentile	-5.3%	5.7%	4.8%	5.8%	6.0%

Note: All returns are money weighted, net of fees, and only include participants with account balances greater than $2,500. For participants with multiple ARMB DC Plan accounts, returns are weighted based on plan account balances as of March 31, 2023. Historical returns information in this analysis is not indicative of future results. Data source: Empower.

Annualized Returns – Ages 66-70

Distribution returns for Managed Accounts / Advice and Target Date / Risk-Based represent money-weighted returns. Refer to p. 22 for additional details on methodology.

Returns for Managed Accounts / Advice, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90^{th} Percentile	-3.5%	10.4%	5.3%	6.0%	5.7%
75^{th} Percentile	-4.1%	9.0%	4.8%	5.5%	5.3%
Median	**-4.9%**	**7.9%**	**4.3%**	**5.0%**	**4.7%**
25^{th} Percentile	-6.0%	6.7%	4.1%	4.6%	4.4%
10^{th} Percentile	-6.9%	5.6%	3.5%	4.1%	4.1%

Returns for Target Date / Risk-Based, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90^{th} Percentile	-2.7%	9.6%	5.3%	6.7%	6.6%
75^{th} Percentile	-3.7%	9.5%	5.2%	6.4%	6.4%
Median	**-4.3%**	**8.7%**	**5.0%**	**6.0%**	**6.0%**
25^{th} Percentile	-4.5%	7.5%	4.7%	5.7%	5.7%
10^{th} Percentile	-4.9%	5.6%	4.2%	5.3%	5.5%

Note: All returns are money weighted, net of fees, and only include participants with account balances greater than $2,500. For participants with multiple ARMB DC Plan accounts, returns are weighted based on plan account balances as of March 31, 2023. Historical returns information in this analysis is not indicative of future results. Data source: Empower.

Annualized Returns – Ages 71-75

Distribution returns for Managed Accounts / Advice and Target Date / Risk-Based represent money-weighted returns. Refer to p. 22 for additional details on methodology.

Returns for Managed Accounts / Advice, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90^{th} Percentile	-3.7%	10.9%	5.4%	7.3%	5.6%
75^{th} Percentile	-4.3%	9.7%	5.0%	6.6%	5.4%
Median	**-5.3%**	**8.4%**	**4.6%**	**5.5%**	**4.6%**
25^{th} Percentile	-6.5%	7.1%	4.2%	4.9%	4.4%
10^{th} Percentile	-7.6%	6.2%	3.9%	4.5%	4.2%

Returns for Target Date / Risk-Based, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90^{th} Percentile	-2.5%	8.6%	5.0%	6.1%	6.2%
75^{th} Percentile	-3.3%	7.8%	4.7%	5.6%	5.7%
Median	**-3.8%**	**7.6%**	**4.5%**	**5.4%**	**5.4%**
25^{th} Percentile	-4.0%	6.7%	4.2%	5.1%	5.1%
10^{th} Percentile	-4.5%	4.4%	3.8%	4.7%	4.7%

Note: All returns are money weighted, net of fees, and only include participants with account balances greater than $2,500. For participants with multiple ARMB DC Plan accounts, returns are weighted based on plan account balances as of March 31, 2023. Historical returns information in this analysis is not indicative of future results. Data source: Empower.

Annualized Returns – Ages >=76

Distribution returns for Managed Accounts / Advice and Target Date / Risk-Based represent money-weighted returns. Refer to p. 22 for additional details on methodology.

Returns for Managed Accounts / Advice, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90th Percentile	-4.0%	11.2%	5.5%	6.6%	5.7%
75th Percentile	-4.5%	10.3%	5.1%	5.8%	5.3%
Median	**-5.6%**	**8.7%**	**4.6%**	**5.5%**	**5.0%**
25th Percentile	-6.4%	7.4%	4.3%	5.3%	4.9%
10th Percentile	-8.7%	6.5%	4.0%	4.7%	4.8%

Returns for Target Date / Risk-Based, Money Weighted & Net of Fees

	1 Year	3 Years	5 Years	7 Years	10 Years
90th Percentile	-2.4%	8.4%	4.8%	6.3%	6.0%
75th Percentile	-3.0%	7.1%	4.3%	5.6%	5.5%
Median	**-3.6%**	**6.4%**	**3.9%**	**5.0%**	**4.9%**
25th Percentile	-3.9%	5.7%	3.7%	4.6%	4.6%
10th Percentile	-4.3%	4.8%	3.3%	4.4%	4.4%

Note: All returns are money weighted, net of fees, and only include participants with account balances greater than $2,500. For participants with multiple ARMB DC Plan accounts, returns are weighted based on plan account balances as of March 31, 2023. Historical returns information in this analysis is not indicative of future results. Data source: Empower.

Callan

Fund Selection

Forward-Looking Alpha Forecasts and Fund Selection

While asset allocation is determined via a separate process, Morningstar does also utilize a methodology for determining which funds to utilize in order achieve the desired asset allocation for a given participant.

An evaluation of these techniques as applied to the Alaska Plans yielded several observations, including:

- There is room for improvement with respect to quality control. Initial investigations revealed that one fund (BlackRock Strategic Completion NL F) was incorrectly benchmarked in a clearly noticeable fashion, and incorrectly utilized until this was pointed about by Callan. A subsequent re-evaluation resulted in increased usage of this fund.
- There is no clear theoretical basis for the use of blended 12- and 36-month trailing performance deviations to forecast future performance deviations. Additionally, doing so would run contrary to expected mean reversion.
- The calculation methodology utilizes standard Morningstar peer group benchmarks for each asset class to calculate outperformance for the calculation, irrespective of whether there are clear and known benchmark mismatches that will cause errors. For example, the S&P 500 index is measured against a composite benchmark that uses the Russell 1000 Total Return and Russell 2500 Total Return indexes to represent US Large Cap and US Mid Cap. As a result, a composite benchmark created from a returns-based style analysis reflected significant persistent “alpha” for this index fund, when the result of that was caused by index construction rather than any actual “alpha”.
- The realized impact of these differences is likely to be small in a lineup from an institutional plan sponsor such as ARMB, due to the relatively small number of options for each asset class.

Forward-Looking Alpha Calculation Steps

The steps undertaken to calculate the forward-looking alpha and tracking error used for fund selection by Morningstar for each fund are as follows:

1. Run a returns-based style analysis (essentially a regression of returns vs. returns of selected indexes), which results in “style weights” for the fund in question, relative to each index.

2. Use the weights derived in step 1 to create a custom benchmark for the fund, using the weights derived from the regression.

3. Determine the “excess return” for the fund vs. the custom benchmark for the fund.

4. Calculate the 12 month “alpha” and “tracking error” for the fund. Note that for the “alpha” calculation, this involves adding back in the fee to the net of fees returns used in steps 1-3. It is not risk-adjusted.

5. Perform the same calculation in #4, but for 36 months instead of 12.

6. A pooled calculation using weights for the two time periods is conducted, creating a blended calculated forward-looking “alpha” and “tracking error” calculation vis a vis the custom benchmark produced in step 2.

7. The calculation is readjusted to account for fees to convert expectations back into a net of fees calculation. This final result is the calculated forward-looking “alpha” and “tracking error”.

Portfolio Construction and use of Forward-Looking Alpha and Tracking Error

- While the Morningstar white paper (chapter 4) that covers fund selection refers to calculations that incorporate Morningstar analyst ratings in the fund selection process, the actual calculations reviewed by Callan for the ARMB DC Plans do not include this step.
- Additional optimization constraints are applied, consistent with the asset allocation process more broadly. However, ultimately the key inputs for fund selection are the forward-looking alpha (net of fees) and tracking error, and funds are selected for each portfolio consistent with the highest forward-looking alpha for a given level of acceptable tracking error.

Summary: The forward-looking alpha and tracking error estimation process lacks a clear theoretical underpinning, is inconsistently applied, ignores benchmark mismatches in the returns-based style analysis by design, creates spurious forecasts (such as persistent forward-looking alpha for an index fund of 43 basis points, in the Alaska Plans), and can misclassify funds (e.g., BlackRock Strategic Completion). However, for a lineup with relatively few investment choices within each asset class, it is unlikely to cause significant changes to target portfolios, as there are relatively few options from which to select for a given exposure.

Summary Commentary

1. The Morningstar methodology offered by Empower employs an overall lifecycle investing approach, in which a combination of financial and human capital exist for any participant using the service.

2. This methodology inherently generates a hypothesis as to what other financial capital a participant has accumulated during their working life.

3. The methodology also includes a practice of constraining the equity allocation of participants that are assessed to have funding ratios below 70%.

4. It is possible to chronically trigger this equity constraint in plans where many components of a participant's out-of-plan assets are not visible to the model, and when a participant doesn't fully customize to reflect these assets.

5. The performance record of the managed account service over nearly all measured periods over the past decade, ending March 31, 2023, shows investors utilizing the managed account service for all their assets within the ARMB DC Plans materially trail the performance of investors in an age-equivalent target date fund.

6. The principal explanatory variable for this performance differential is the presence of the equity constraint, which is itself associated with the funding ratio threshold of 70%. The application of the funding ratio constraint is influenced by the degree of customization (or lack thereof) provided by ARMB participants using the service, which is observed to be low, as well as the demographics of these participants.

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