



## Defined Contribution Plans Advisory Committee (DCPAC) Meeting

1111 East Main Street, Pavilion Building

Thursday, 11/30/2023

1:00 - 3:00 PM ET

### 1. Welcome & Introductions

### 2. Meeting Minutes

*DCPAC Minutes 09-07-2023 - Page 2*

### 3. Administration

#### a. Administrative Reports & Communications

*2023Q3 Administrative Summary - Page 6*

##### i. DC Plans and Hybrid Plan Update

##### ii. ORPHE

*Report on the ORPHE Annual Employer Update 9.19.2023 - Page 29*

##### iii. DC Plans Recordkeeper Transition Update

#### b. Annual Administrative Expense Reports

*DCPAC Meeting Annual Cost Update November 2023 - Page 31*

### 4. Investments

*Investments slide deck\_DCPAC 11-30-23 - Page 35*

#### a. Performance Reports

#### b. CEM Defined Contributions Plans Survey

### 5. Other Business

#### a. Code of Ethics

#### b. Discussion of New Ideas

### 6. 2024 Meetings

#### a. ORPHE Annual Employer Update (not a meeting of the DCPAC)

#### b. 2024 Meetings

i. March 14, 2024 at 1:00 pm

ii. May 23, 2024 at 1:00 pm

iii. September 12, 2024 at 1:00 pm

iv. December 5, 2024 at 1:00 pm

### 7. Appendix

*2023Q3 VRS Quarterly Review - Page 60*

*VRS 457 Plan \_ CEM DC Results 2022 - Page 67*

*VRS TIAA ORPHE \_ CEM DC Results 2022 - Page 88*

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## Minutes

The Defined Contribution Plans Advisory Committee (DCPAC) of the VRS Board of Trustees met on September 7, 2023, with the following members present:

**Committee Members:**

Hon. J. Brandon Bell, II, Chair  
Dr. Susan T. Gooden, Vice Chair  
Ravindra Deo  
C. Matt Harris  
Shannon T. Irvin  
Rick Larson  
Brenda O. Madden  
Arun S. Muralidhar  
David A. Winter\* (in accordance with § 2.2-3708.3(B)(4))

**Members of the Board of Trustees:**

John M. Bennett\*

**VRS staff members in attendance:**

Jessica Budd\*, Steve Cerreto\*, Jeanne Chenault, Josh Fox\*, Kelley Harlow\*, Kelly Hiers, KC Howell, Robert Irving, Ryan LaRochelle, Joyce Monroe\*, Teresa Nguyen\*, Laura Pugliese, Andrew Ringle\*, Kristy Scott\*, Michael Scott, Jennifer Schreck, Shashi Sharma\*, Ashley Spradley\*, Bridgette Watkins, Scott Weaver, Rachel Webb\*, and Cindy Wilkinson.

Also in attendance were Jamie Bitz, JLARC, and Laura Albanese\*, FIN-news.

*\*Attended remotely*

The meeting convened at 1:00 p.m.

Chairman Bell welcomed Committee members, board members, VRS staff, representatives from other stakeholder groups and members of the public.

### Approval of Minutes

Upon a motion by Dr. Gooden, with a second by Mr. Larson, the minutes of the June 1, 2023, meeting were approved by voice vote.

### Administrative Reports and Communications Update

Kelly Hiers, DC Plans Administrator, provided an update on the VRS Defined Contribution Plans for the second quarter ending June 30, 2023.

*DC Plans and Hybrid Plan Update*

Ms. Hiers started with an overview of total assets and accounts across all VRS managed plans. She noted that total assets are just over \$7.8 billion and there are almost 600,000 total accounts.

Ms. Hiers noted that the Internal Revenue Service (IRS) has granted a delayed effective date for the federal SECURE 2.0 provision requiring that catch-up contributions be made as Roth contributions for participants who earned \$145,000 or more in the previous year. This provision will now be implemented in 2025.

Ms. Hiers then provided an overview of optional provisions under the SECURE 2.0 legislation that VRS is evaluating for potential future implementation. Discussion followed regarding these provisions. Ms. Hiers then provided an overview of optional SECURE 2.0 provisions dealing specifically with in-service distributions, which create opportunities for participants to access their funds while still employed. These provisions include options for participants that may be victims of domestic violence, impacted by a federally declared disasters or impacted by some other emergency. Discussion followed regarding these provisions. Ms. Bishop added that VRS is currently studying these components of the legislation, but certain provisions may require plan document changes or legislation in order to implement.

Ms. Hiers provided a final update on the Self-Directed Brokerage Account Transition from TD Ameritrade to Charles Schwab. The transition was successfully completed on September 4, 2023.

Ms. Hiers provided an overview of communications sent to members.

Ms. Hiers provided an update on total assets and accounts in the COV 457 and Virginia Cash Match plans through June 30, 2023. She also provided an overview of total assets and accounts in the VRS Hybrid Retirement Plan.

Ms. Hiers provided an update of the auto-escalation that occurred in January for Hybrid Retirement Plan members not currently making voluntary contributions or not contributing the maximum 4%. Discussion followed regarding communications to members who were auto-escalated, and the adequacy of the maximum 4% for voluntary contributions in meeting members' future retirement needs. However, some participating employers, but not all, provide supplemental plans including 457 and 403(b) plans.

#### ORPHE Update

Ms. Hiers provided an overview by provider of total ORPHE assets, participants and average balances for the second quarter of 2023. Currently, 67% of new hires choose to participate in the TIAA plan and 33% choose to participate in the DCP plan record kept by MissionSquare. She also provided an overview of planned ORPHE events for the fall.

#### Unbundled Record Keeper Contract Update

Ms. Hiers outlined the ongoing discovery process with Voya, and noted that a project plan is expected to be ready by the next DCPAC meeting.

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### **DC Plans Investments Update**

Laura Pugliese, Portfolio Manager, Defined Contribution Plans, provided an overview to the DCPAC of the Annual Investments Review as of June 30, 2023.

#### Annual Investments Review

Ms. Pugliese provided an overview of the DCPAC duties and responsibilities as required by the Charter, including the duty to review trends and best practices, assist staff with identifying potential asset classes and investment strategies, review the VRS Defined Contribution Plans Investment Belief Statements and DC Plans Investment Policy Statements, and provide recommendations to the Board as needed.

Ms. Pugliese next provided an overview of the Annual Investments Review as of June 30, 2023. Total DC Plan assets in the unbundled DC Plans structure and bundled ORPHE structure was \$7.2 billion for the fiscal year ending June 30, 2023. There were fee reductions in the target date funds, the Small-Mid Cap Fund and the BlackRock Russell 2500 Index Fund. She shared that staff is currently reviewing the DC Investment Belief Statements and policy documents with changes expected to come before the Committee in the near future. She informed the Committee that no changes were made to either the unbundled DC plans investment platform or the bundled TIAA ORPHE Retirement Choice (RC) contract investment platform.

Ms. Pugliese finished her presentation with DC investment trends and developments. Staff continues to monitor developments in the areas of retirement income, default investment options, investment menu offerings, behavioral finance, and investment advice and managed accounts.

Ms. Pugliese shared with the Committee that the complete annual investment review package was included in the appendix.

### **Other Business**

#### Discussion of New Ideas

Dr. Gooden inquired about next steps based on the discussions about the SECURE 2.0 provisions. Ms. Hiers answered that there would be outreach to employers, internal research and deliberation, and discussions with third-party administrators. She noted that there would be preliminary recommendations to bring before the Committee at the next meeting, but implementation of any provisions would happen with the transition to Voya in 2025. Mr. Winter inquired about the behavioral finance components of withdrawal flexibility and increased plan participation. Ms. Hiers and Mr. Howell stated that the issue could be further researched and data could be shared about emergency withdrawals during the COVID-19 pandemic. Mr. Muralidhar offered to present on his retirement bonds concept to the Committee at a future meeting.

### **Upcoming Defined Contribution Plans Advisory Committee Meetings**

Mr. Bell confirmed the next meeting of the DCPAC will take place on November 30<sup>th</sup> at 1:00 p.m.

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The ORPHE Annual Employer Update is scheduled for September 19<sup>th</sup>, as required by the DCPAC Charter. This is not a DCPAC meeting; however, members may attend if interested.

**Adjournment**

Ms. Madden made a motion to adjourn the meeting. Mr. Deo seconded the motion and it passed unanimously.

There being no further business, Mr. Bell adjourned the meeting at 2:54 p.m.

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J. Brandon Bell, Chair  
Defined Contribution Plans Advisory Committee

**VRS Defined  
Contribution Plans  
3rd Quarter 2023  
(July through September)  
Administrative Summary  
November 30, 2023**

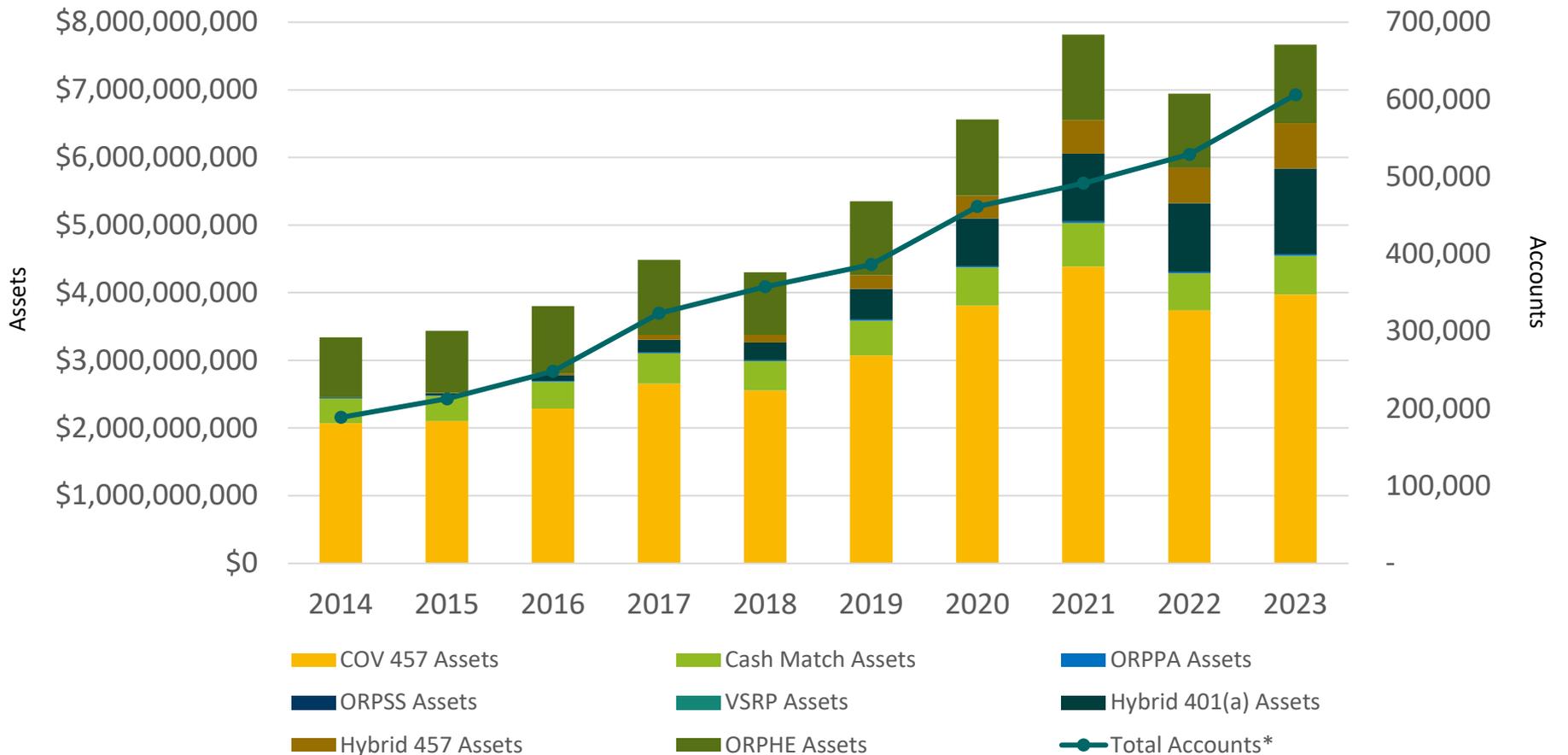


Topic	Slide Number(s)
General Updates	3-12
COV 457 & Cash Match Plans	13
Hybrid Retirement Plan	14-17
ORPHE	18-19
Upcoming Events	20
DC Plans Unbundled Record Keeper Transition Update	21-22

# Total Assets and Accounts Over Time



Totals as of 09/30/2023	Assets	Accounts	Assets ↓ -2% Accounts ↑ 3% Since June 30, 2023
	\$7,667,048,504	606,162	



Note: All data except 2023 reflects totals as of calendar year end and includes ORPHE selected providers and MissionSquare participant, beneficiary, forfeiture & reserve accounts. 2023 is as of 9/30/2023.

\*Does not indicate unique participants.

Meeting held September 13, 2023



- All performance standards met related to:
  - Reporting (investments, administrative, etc.).
  - Participant engagement (call center, group and individual meetings).
  - Participant statements.
  - Administrative (corporate, security, financial, etc.).
- One standard was not met:
  - Employer engagement.
    - Field staff is required to meet with 100% of employers each year.
    - Due to staff turnover, the team ended 2022 at 77% of goal.
    - No financial penalty associated with this standard.

# 2022 Plan Adoptions

## PLAN ADOPTIONS

Northern Neck Soil and Water Conservation District (55853)

- Effective 2/1/2022 ●●●

Greene County Public Schools (40139/55539)

- Effective 2/1/2022 ●

Town of Marion (55323)

- Effective 5/1/2022 ●

Blue Ridge Juvenile Detention Center (55992)

- Effective 6/1/2022 ●

Town of Glade Spring (55267)

- Effective 7/1/2022 ●

Fredericksburg City Schools (40206/55806)

- Effective 9/1/2022 ●●

Charlottesville-Albemarle Technical Education Center (CATEC) (40412)

- Effective 6/1/2022 ●

Albemarle County (55101)

- Effective 6/1/2022 ●

Albemarle County Public Schools (40101/55501)

- Effective 6/1/2022 ●

- ADOPTED THE COV 457 PLAN
- ADOPTED THE VA CASH MATCH PLAN
- NEW VRS-COVERED EMPLOYER (HYBRID PLAN ONLY)

8  
COV 457 Plan  
Adoptions in  
2022!

## NEW STATE AGENCIES

Behavioral Health Commission (30882)

- Effective 7/1/2022

Virginia Cannabis Control Authority (30977/70977)

- Effective 7/1/2022

Virginia Housing Commission (30840)

- Effective 9/1/2022

Puller Veterans Care Center (30902)

- Effective 8/1/2022

Jones & Cabacoy Veterans Care Center (30903)

- Effective 8/1/2022

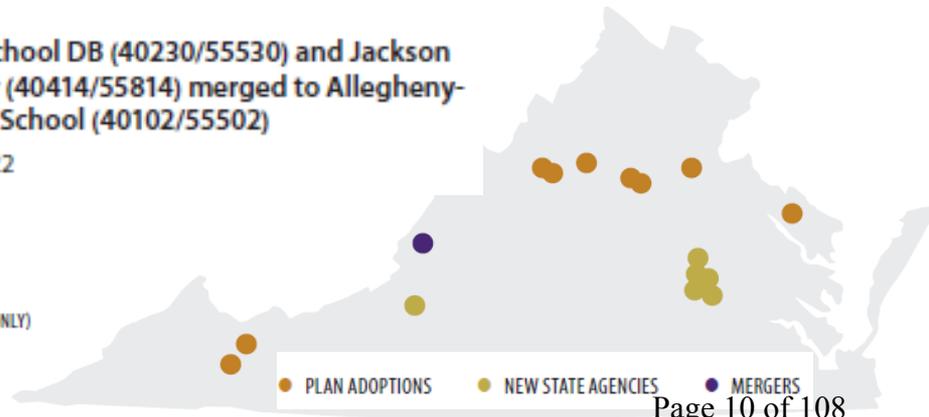
Virginia Opioid Abatement Authority (30856)

- Effective 7/1/2021 (established in 2022)

## NEW MERGER

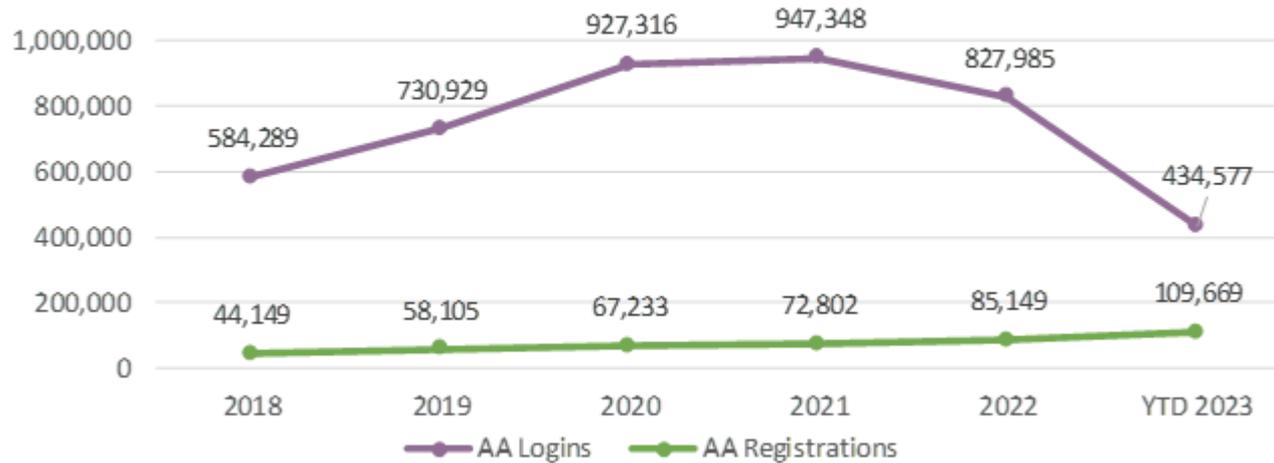
Covington City School DB (40230/55530) and Jackson River Tech Center (40414/55814) merged to Allegheny-Highlands Public School (40102/55502)

- Effective 7/1/2022



# 2023 Participant Engagement

## Account Access Registrations & Logins



**32%**

of unique participants have registered for Account Access.

**29%**

increase in Account Access users since the end of last year.

Group Meetings

2022  
**78% in person**

2023  
**93% in person**

Trending towards more in-person engagement.

Individual Meetings

2022  
**24% in person**

2023  
**37% in person**

Meeting held October 27, 2023



- All performance standards met related to:
  - Reporting (Investments, Administrative, etc.).
  - Participant engagement (Call center, participant satisfaction scores).
  - Participant statements.
  - Processing (Transfers, distributions, etc.).
- One standard was not met:
  - Field Consulting Campus Visits
    - Field staff is required to visit at least 50% of campuses employers annually and 100% biannually.
    - TIAA was unable to provide data for the year and will incur an \$800 penalty.



The 2022 Hybrid Retirement Plan auto-escalation campaign received **honorable mention.**

The campaign resulted in an opt-out rate of less than 1%!

### Keep Your Savings Rolling With Auto-Escalation

On **January 1, 2023**, the Hybrid Retirement Plan's auto-escalation feature will boost your retirement savings. Automatic increases and matching employer contributions can help keep your savings rolling.



### Your Savings is Rolling!

Starting January 1, 2023, your voluntary contributions will increase by 0.5% — even if you're not currently making contributions to the Hybrid 457 plan.

**Save Even More**

Get your full employer match now by maximizing your contribution, or by using SmartStep to gradually reach the full match. When you contribute 4%, your employer contributes 2.5%.

For example: If you earn \$47,299 a year, you can save \$1,892 and your employer will match this with a \$1,182 contribution to your plan.

**It's Easy**

No action required! You only need to take action if you choose to opt out of saving more for your future.

Visit [varetire.org/auto-escalation](http://varetire.org/auto-escalation) to learn more.



MissionSquare Retirement  
777 North Capitol Street, NE  
Washington, DC 20002-4240



### STAFF RESEARCH

- Other plans sponsors
- Trade organizations
- Record keepers
- Benefits counsel

- Actions related to these provisions are mixed with many taking no action.
- Other plan features (e.g., loans, 59½ withdrawals) vary significantly across plans.
- Little information available regarding usage and impact to plans.

### Record-Keeper Transition = Opportunity

- Efficient implementation of new plan provisions.
- 

# Federal Legislation Update

## SECURE 2.0

Options Approved	Plan(s)
Sec. 109: Higher catch-up contribution limit to apply at ages 60, 61, 62 and 63	COV 457 Plan
Sec. 306: Eliminate the “first day of the month” requirement for governmental Section 457(b) plans	Hybrid 457 Plan

Implementation of the various in-service distribution options may impact employers and separate plans they may sponsor.

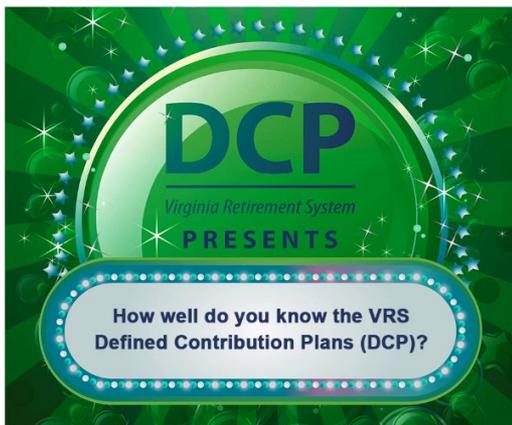
Further discussion regarding these provisions is needed.

Options Under Consideration	Plan(s)
Sec. 115: Withdrawals for certain emergency expenses	Hybrid 457 Plan COV 457 Plan
Sec. 314: Penalty-free withdrawal from retirement plans for individual in case of domestic abuse	All allowable plans
Section 331: Qualified Federally Declared Disaster Distribution	All allowable plans
Sec. 311: Repayment of Qualified Birth and Adoption Distributions Limited to 3 years	All allowable plans
Sec. 334: Qualified Long-Term Care Distribution	All allowable plans

# Communications Highlights

## New Game-Show Style Presentation

- Email invitations to webinars
- Available for employers to offer directly



Join us for some fun!

Register Today

## Email Campaign Targeting Hybrid Plan Members With Lower Incomes

Save more with small changes.



What you save for retirement may not cost as much as you think.

With everyday expenses on the rise, it can be hard to find extra money to save for retirement. You may think that cutting out little things, like your regular cup of coffee from your local donut shop, won't make a difference. Small changes like that may seem insignificant at first but can add up over time.

Use the [Small Change, Big Savings calculator](#) to learn how cutting back on extra expenses can save you thousands of dollars and help you free up some of your income to contribute towards your retirement savings account.

Identify where you can save a bit of money and start contributing to your defined contribution plan. Once you are saving in your plan, you may be eligible for the Saver's Credit and earn some of that money back as a tax credit. The Saver's Credit is a federal tax credit for moderate- to low-income people who are making contributions to a retirement account.

Learn more about the Saver's Credit



Contact your [VRS DC Plans Specialist](#) to discuss how you can start saving for retirement and learn more about the Saver's Credit.

Highlighting:

- Potential eligibility for the Tax Saver's Credit.
- The impact of small savings over time.

DCP

Virginia Retirement System

Save More with the Saver's Credit

If you're eligible, what you save may not cost as much as you think.

### What's the Saver's Credit?

The Saver's Credit may give you money back on your taxes for making eligible contributions to your employer sponsored retirement plan.<sup>1</sup>

The amount of the credit is 50%, 20%, or 10% of your retirement plan or IRA contributions up to \$2,000 (\$4,000 if married filing jointly). The lower your income, the larger the tax credit you'll receive.

### Who's Eligible?\*

- Your IRS Adjusted Gross Income (AGI) is below certain limits (see chart below)
- You save to your employer's retirement plan or an IRA
- You're at least 18 years old by the end of the tax year
- You're not a full-time student and aren't claimed as a dependent on another taxpayer's return

Note: The credit may be reduced if you or your spouse take any taxable distributions.<sup>2</sup>

### Take Action

Enroll in, or save more to, your Deferred Compensation Plan – visit [varetre.org/457](#).

Check to see if you're eligible for the Saver's Credit:

- If a professional tax preparer does your taxes, ask about the credit.
- If you prepare your taxes using software, be sure it runs calculations based on specific amounts saved.
- If you prepare your taxes by hand, consult IRS Form 8880.

Whether you are eligible for the Saver's Credit or not, be sure to maximize your retirement savings strategy by using the educational resources and calculators on [varetre.org/457](#) or by contacting your VRS DC Plans Specialist.

	Credit Rate <sup>5</sup>	Married Filing Jointly	Head of Household	All Other Filers
<b>2023 Saver's Credit<sup>4</sup></b>	<b>50%</b>	AGI not more than \$43,500	AGI not more than \$32,625	AGI not more than \$21,750
	<b>20%</b>	\$43,501 – \$47,500	\$32,626 – \$35,625	\$21,751 – \$23,750
	<b>10%</b>	\$47,501 – \$73,000	\$35,626 – \$54,750	\$23,751 – \$36,500
	<b>0%</b>	more than \$73,000	more than \$54,750	more than \$36,750

<sup>1</sup>Mandatory contributions made to a 401(k) plan may not be eligible.  
<sup>2</sup>Visit [irs.gov](#) for more information on the eligibility requirements for the Saver's Credit.  
<sup>3</sup>Applies to taxable distributions out of your employer retirement plans during the year in which you claim the credit; by the period between the end of that year and before the due date for that year's tax return, or on the two taxable years preceding that year.  
<sup>4</sup>Current tax year contributions to an IRA may be made until next year's due date. For more information, visit [irs.gov](#).  
<sup>5</sup>The credit rate is up to a maximum tax credit of \$2,000, or \$4,000 for married couples filing jointly.

# Communications Highlights

## National Retirement Security Month Email Campaign

VRS is here to help you focus on your retirement savings strategy.



Dear Participant,

October is **National Retirement Security Month**. This is a great time to look at some ways you can reduce your spending and boost your retirement savings. Explore actions you can easily [start](#), [stop](#), and [continue](#) to improve the financial picture for you and your family.

Whether you are just beginning to save or already enjoying retirement, you have access to our many services, tools, and materials to guide you along the way.

[Save More Today](#)

**DCP** Virginia Retirement System  
 If you do not wish to receive any emails from MissionSquare Retirement on behalf of VRS DCP, please [unsubscribe](#). Unsubscribing will not affect email communications that you have specifically requested, such as e-delivery of official statements and confirmations.

Virginia Retirement System, P.O. Box 2500, Richmond, VA 23218-2500. VRS-DC-PLAN1, website: [vareire.org/dcp](http://vareire.org/dcp).

54% open rate  
 27% is industry average



Start Stop Continue

As 2023 winds down and the holidays approach, keep your spending down — and your retirement savings up! Social media posts can be fun to follow, but sometimes they nudge us toward impulse spending. Explore three actions you can start, stop and continue to keep your saving priorities in check.

What best describes you?

6%	23%	16%	16%

Percentage of participants selecting each option.



Over a 600% increase in traffic to the NRSM website from last year!

**I'm already saving.**  
 Keep it going! Build up your savings.

**Start**  
 Increase your retirement savings. Consider boosting the amount you're already contributing through your employer's plan. Even small increases can make an impact over time.  
[See the Difference](#)

**Stop**  
 What you save for retirement may not cost as much as you think.  
[Think Twice](#)

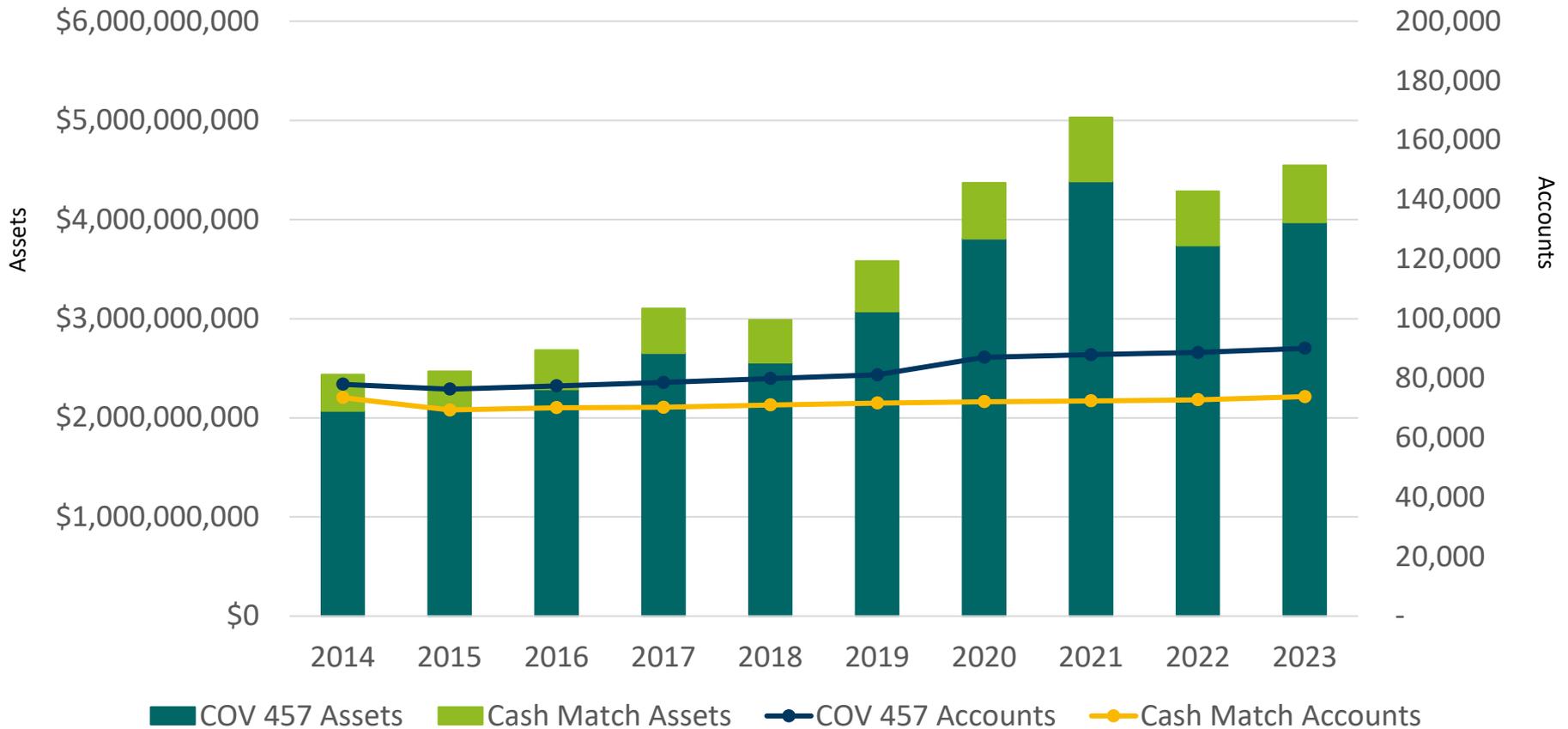
**Continue**  
 Your plan offers financial planning webinars on topics like investing and tax planning — all led by DC Plans Retirement Specialists.  
[Sign Up for a Webinar](#)

# COV 457/Cash Match Plan Assets and Accounts



Totals as of 09/30/2023	Assets	Accounts
<b>COV 457</b>	\$3,971,580,392	90,051
<b>Cash Match</b>	\$574,076,542	73,776

Assets ↓ 3% since June 30, 2023



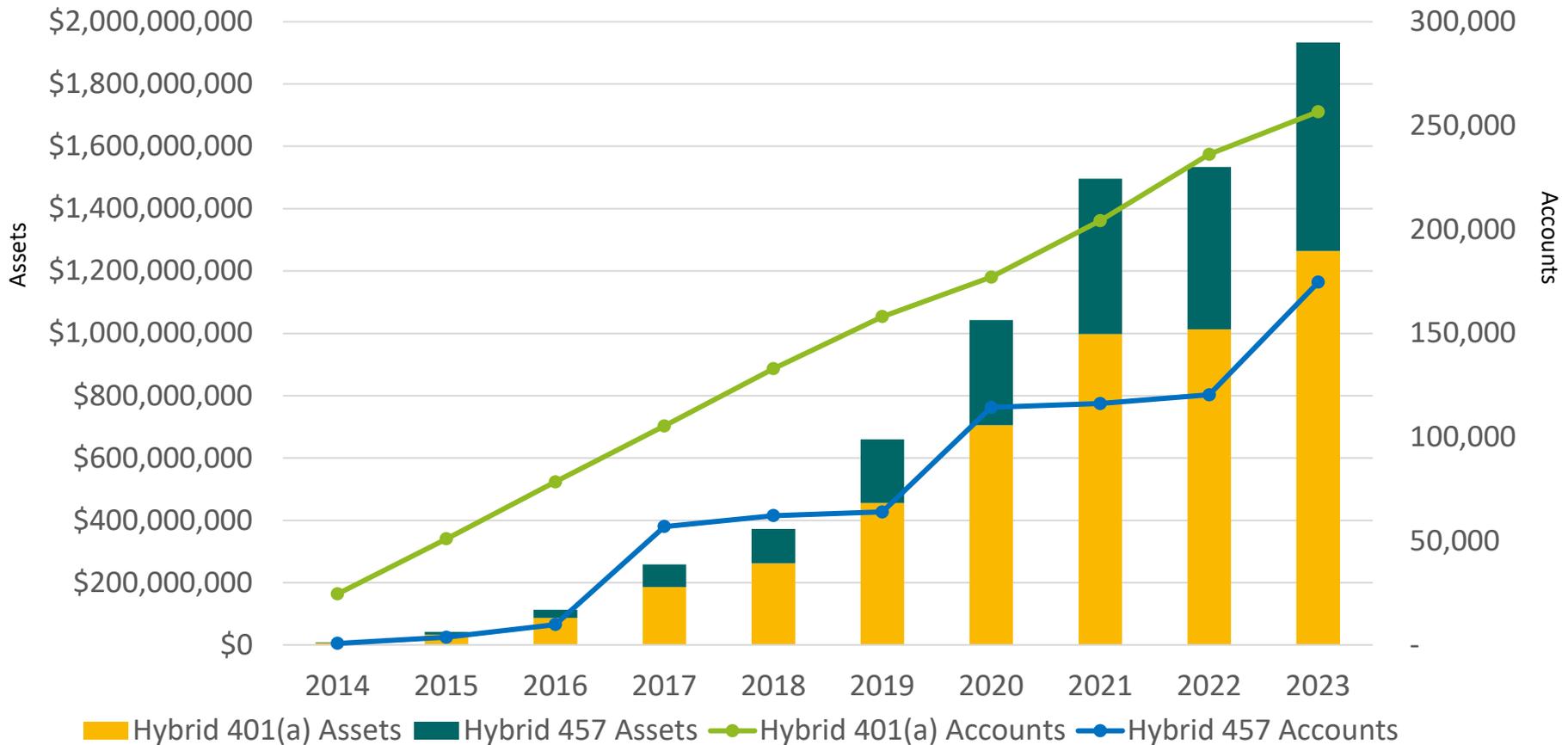
Note: All data except 2023 reflects totals as of calendar year end and includes MissionSquare participant, beneficiary & reserve accounts. 2023 data is as of 9/30/2023.

# Hybrid Retirement Plan Assets and Accounts (DC only)



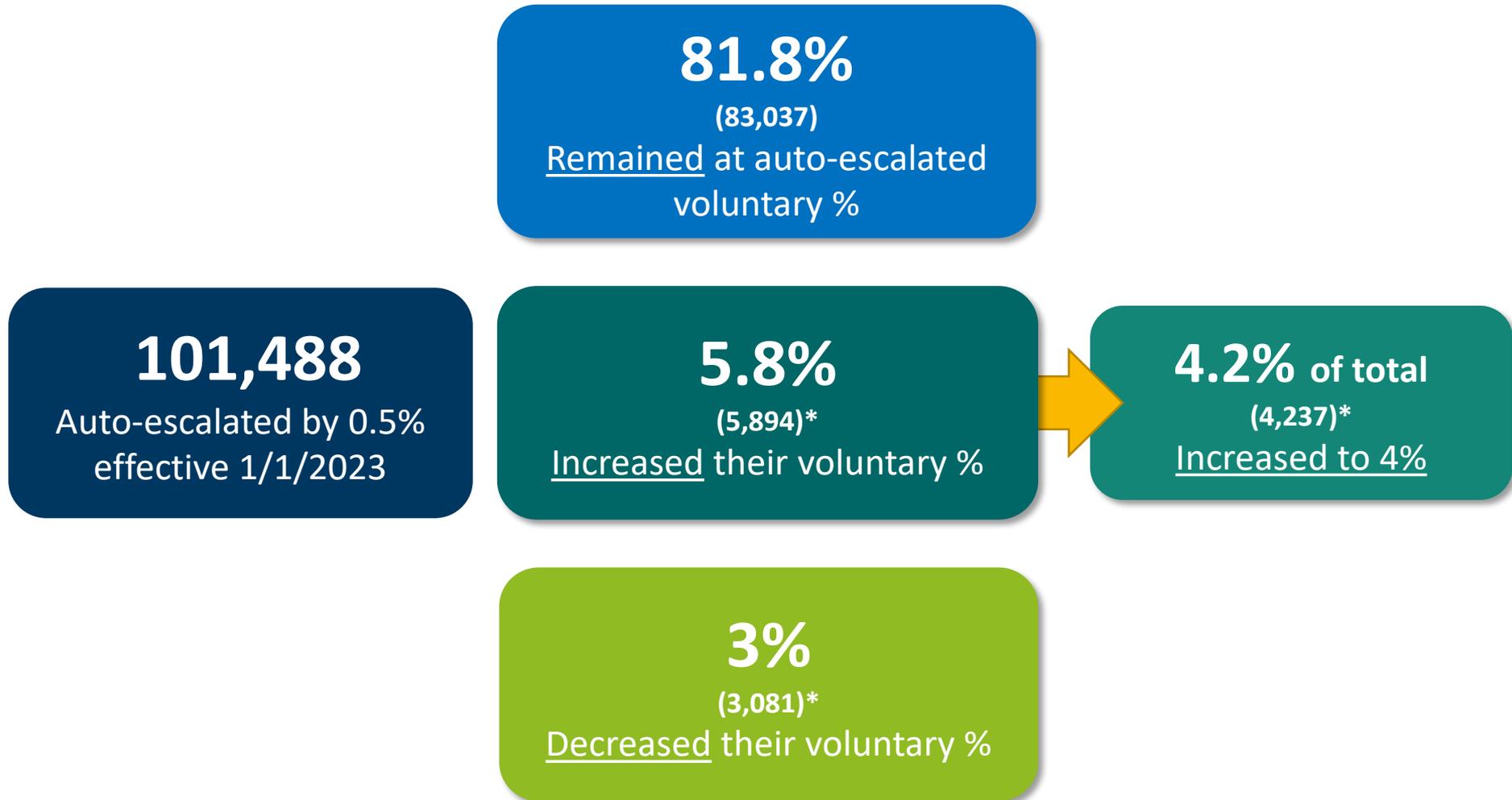
Totals as of 09/30/2023	Assets	Accounts
Hybrid 401(a)	\$1,263,869,701	256,643
Hybrid 457	\$669,360,101	174,603

Accounts ↑ 2.5% since June 30, 2023



Note: All data except 2023 reflects totals as of calendar year end and includes MissionSquare participant, beneficiary & forfeiture accounts. 2023 data is as of 9/30/2023.

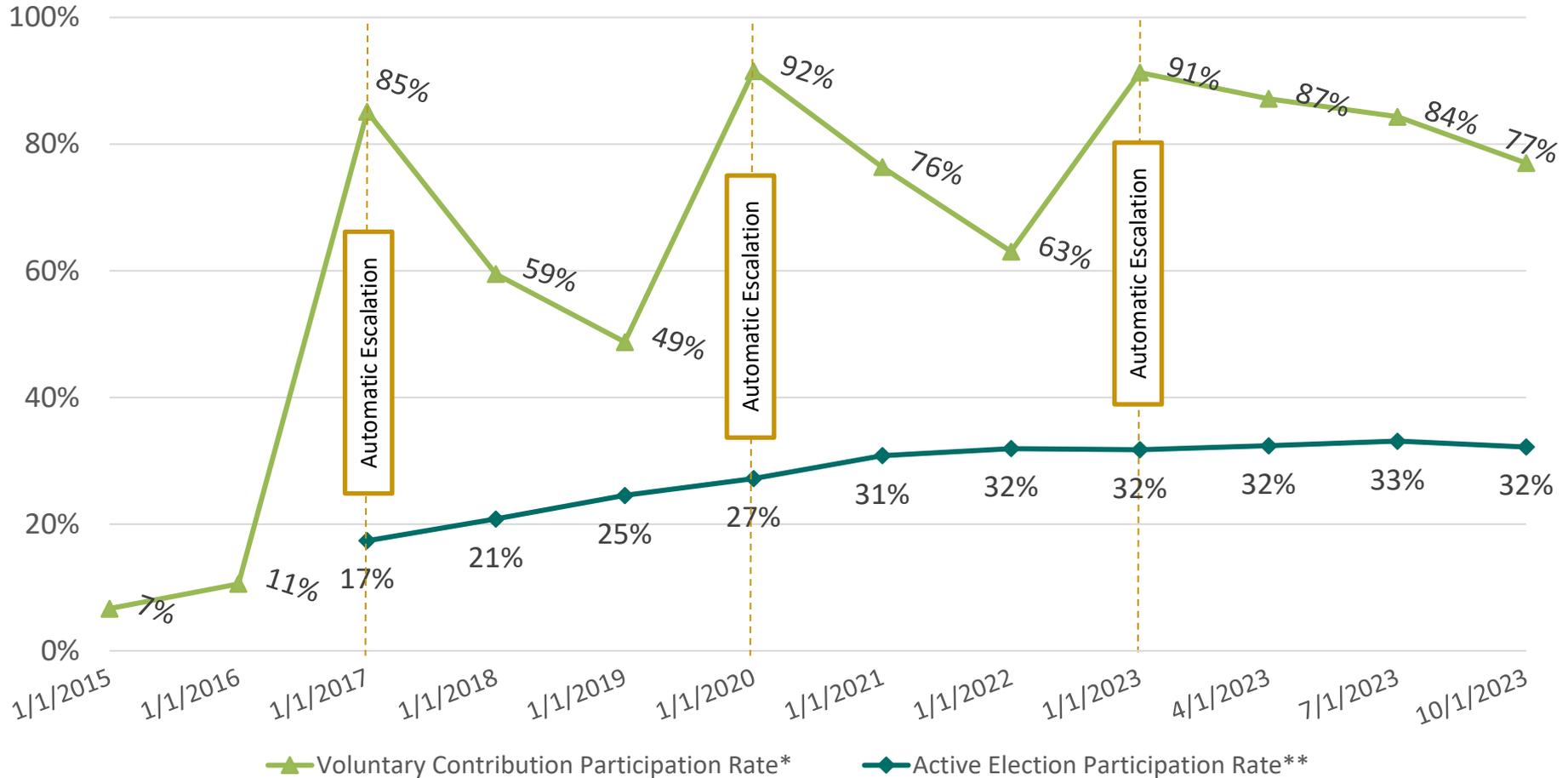
# 2023 Auto-Escalation Status



Note: Data as of 10/1/23. Percentages do not equal 100% due to employee separations and job changes.  
\* Counts are cumulative since 12/15/2022.

# Hybrid 457 Plan – Voluntary Participation Rate\*

As of 10/1/2023, 77% of hybrid plan members (129,453 out of 168,116) have a voluntary contribution percentage with MissionSquare Retirement. 32% made an Active Election\*\*.

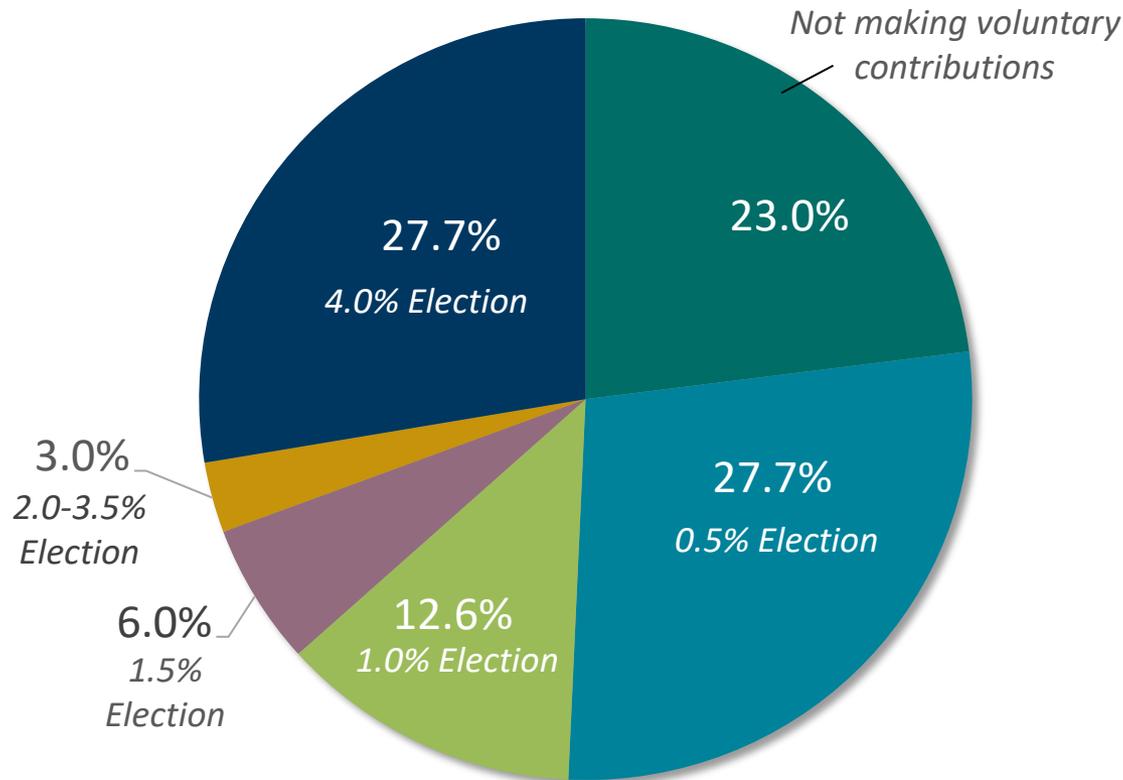


\*All data except for current year is as of 1/1 and represents elections made during Q4 of the prior year.

\*\*Includes members who had a self-selected voluntary election on file prior to the automatic escalation that occurred on 12/15/2022.

# Hybrid 457 Plan – Voluntary Participation

Voluntary contribution percentages for all current hybrid plan members, effective October 1, 2023



**Voluntary Contribution Percentages**

■ 0.0% ■ 0.5% ■ 1.0% ■ 1.5% ■ 2.0-3.5% ■ 4.0%

# Administrative Summary

## ORPHE

ORPHE Totals*			
	6/30/2023	9/30/2023	% Change
Assets	\$1,192,447,624	<b>\$1,162,042,327</b>	-2.5%
Participants	10,528	<b>10,604</b>	0.7%
Average Balance	\$113,264	<b>\$109,585</b>	-3.2%



DCP	
	9/30/2023
Assets	<b>\$149,857,880</b>
Participants	<b>2,320</b>
Average Balance	<b>\$64,594</b>

30% of new hires Q3 2023 elected DCP as their provider.

TIAA**	
	9/30/2023
Assets	<b>\$1,012,184,447</b>
Participants	<b>8,284</b>
Average Balance	<b>\$122,185</b>

70% of new hires Q3 2023 elected TIAA as their provider.

\*Excludes deselected providers.

\*\*Includes assets in GRA/RA and RC contracts.

## 2023 Open Enrollment: October

11 provider changes made and were split between providers.



## Annual Employer Update

**Report provided by Rick Larson.**

27 unique employers were represented, including all four-year universities.

### Topics covered

- Overview of plan assets, accounts, provider elections, annual fee disclosure.
- Administrative updates on open enrollment, compensation limits, employer and participant resources.

100% of survey respondents either agreed or strongly agreed that:

- **The information presented was important and useful.**
- **The webinar improved their knowledge of the topics presented.**

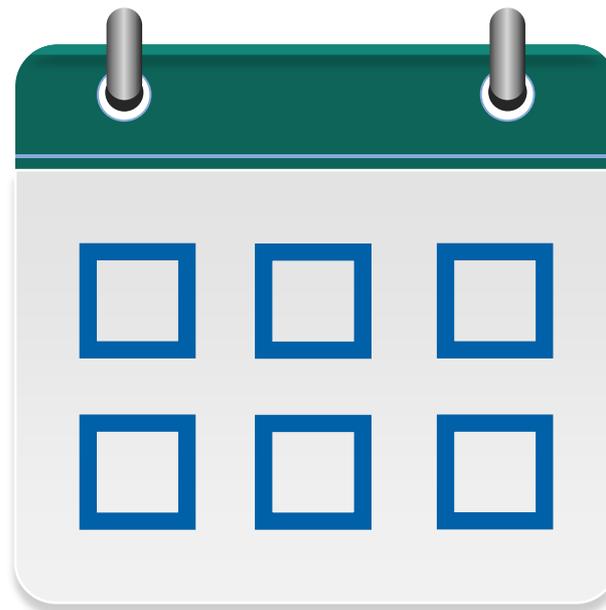
## Upcoming Events

### Ongoing

- Voya discovery meetings.

### December 2023

- Required minimum distributions paid, where applicable.
- Small balance distributions paid, where applicable.



## Participant Reminders and Notifications

- RMD notifications, including special messaging for participants with Roth assets.
- Targeted messaging regarding keeping personal information up to date.
- Education and counseling reminders.
- Qualified default investment alternative (QDIA) notifications.
- Asset allocation messaging for participants in a single fund (not including target date portfolios).

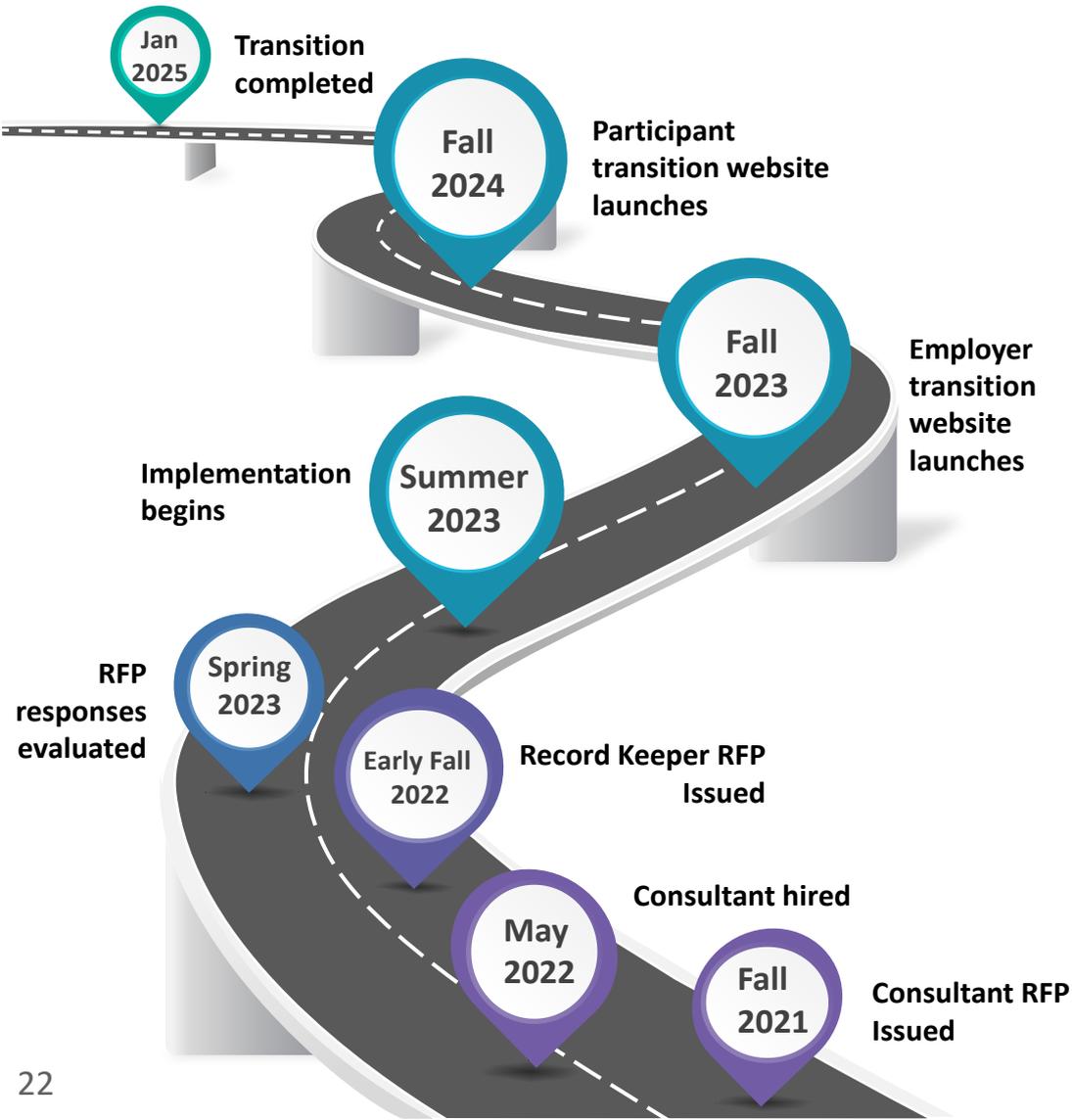


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# DC Plans Unbundled Record Keeper Project Status



# Unbundled Record Keeper Contract



## Project Status

- ✓ **Implementation Kickoff:** Meeting held on July 26, 2023
- ✓ **Discovery:** In progress

## Milestones

- **Contract** – In progress
- **Employer transition website** – In progress, expected launch December 2023
- **Finalize project plan** – In progress
- **Initial requirements completed** – In progress
- **Finalize conversion timeline** – January 2, 2025

**Thank you!**

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The VRS Defined Contribution Plans team hosted the Optional Retirement Plan for Higher Education (ORPHE) Annual Employer Update on Tuesday, September 19, 2023.

The following agenda items were covered:

- Kelly Hiers, DC Plans Administrator, served as moderator for this year's meeting.
- Trish Bishop, VRS Director, welcomed participants and offered opening remarks.
- Brian Lackey, DC Plans Administration and Services Supervisor provided an overview of assets and accounts under management in the ORPHE in comparison to total plan assets and accounts across all of the unbundled plans. He also shared total assets and number of participants for the period ending June 30, 2023, including an overview of changes in asset size and number of participant accounts for the period 2014 through June 30, 2023. Mr. Lackey provided an update of ORPHE election data for DCP and TIAA, including the percentage of elections across all VRS ORPHE participating employers, current participants and recent new hires for the second quarter of 2023.

Mr. Lackey shared with employers an update on the distribution of the annual fee disclosure for ORPHE participants. He also provided an update related to the ORPHE correction policy and an overview of the upcoming record keeper transition impacting the Plan.

- Steve Cerreto, ORPHE Plan Officer for the VRS Defined Contribution Plans, presented an administrative update, including an overview of the open enrollment process in myVRS for participants, the application of the 401(a)(17) compensation limits, and various resources available to employers and participants.
- Rick Larson, Defined Contribution Plans Advisory Committee Member, provided closing remarks and adjourned the session.

**Attendance**

Representatives from 27 unique institutions from across the Commonwealth participated via webinar. A survey sent to participants following the webinar indicated that 100% of respondents either agreed or strongly agreed that the information presented was important and useful. Those who attended also received plan-related information via email following the webinar.

That concludes my report on the ORPHE Annual Employer Update.

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Rick Larson, SPHR, SHRM-SCP  
Member, VRS Defined Contribution Plans Advisory  
Committee

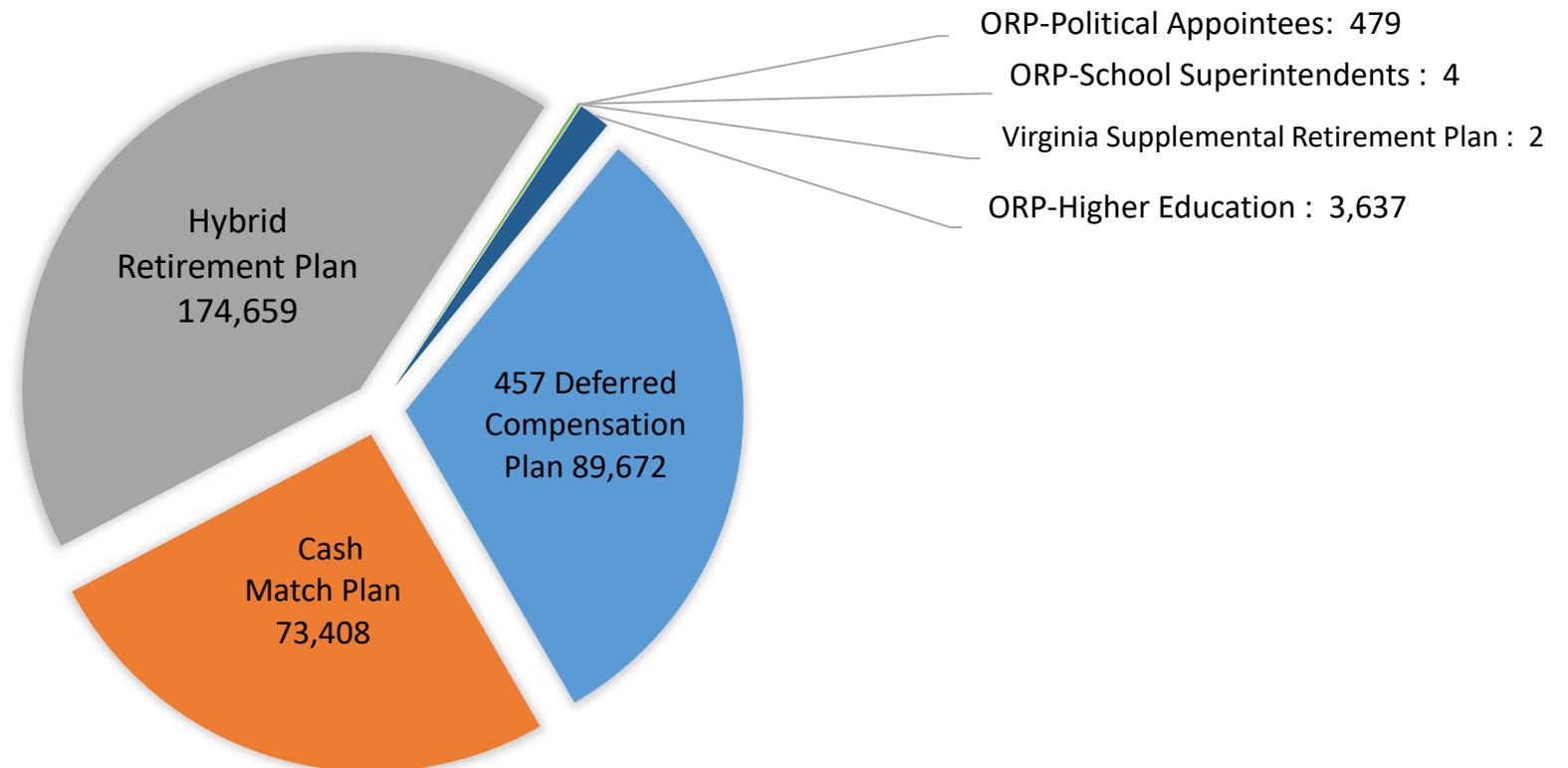
# Defined Contribution Plans Annual Cost Update

Defined Contribution Plans Advisory Committee (DCPAC)  
November 30, 2023

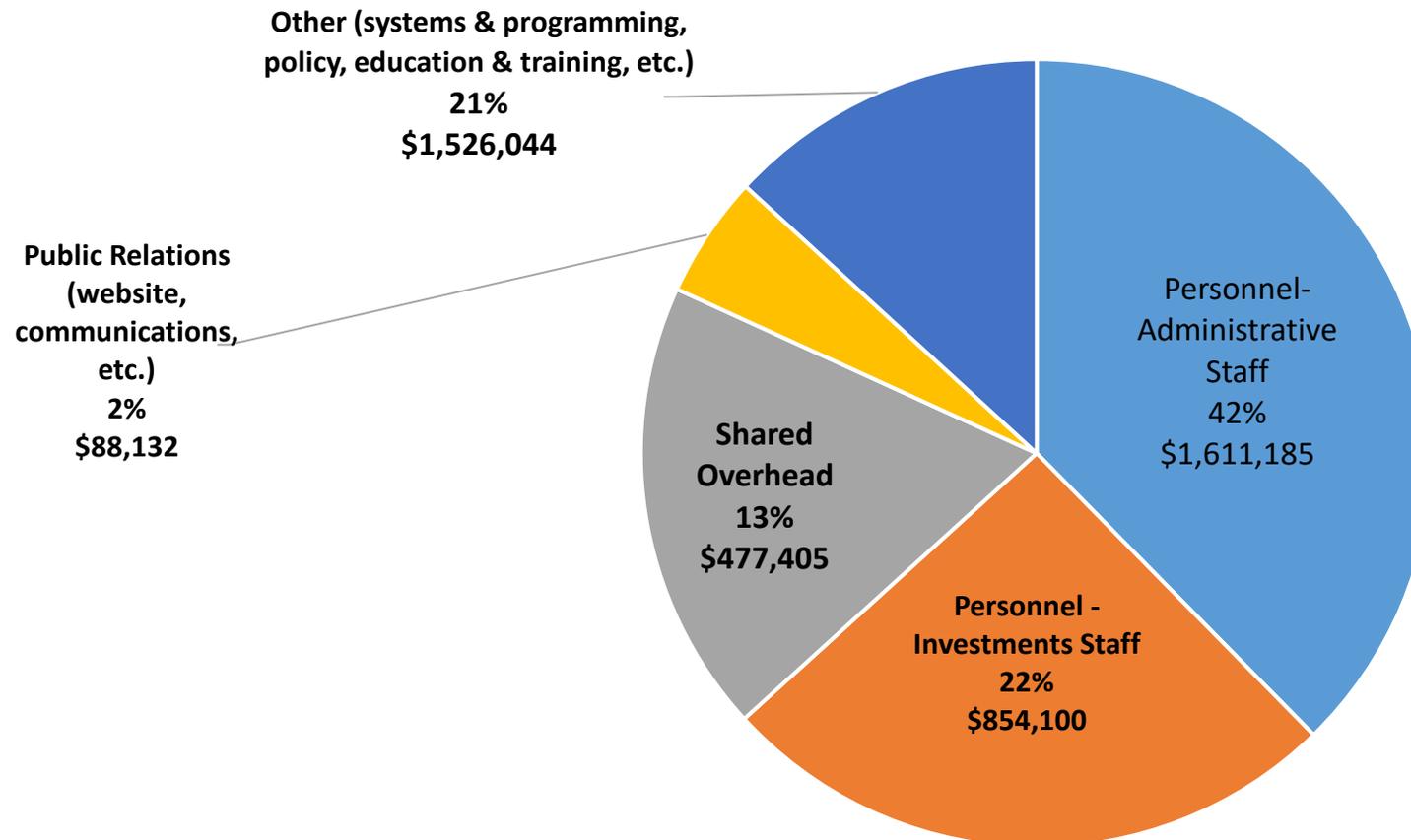


# FY 2023 DC Plan Participant Counts

## Summary of Participant Plan Counts: 341,861



Total administrative expenses of \$3.85 million; detailed as follows:



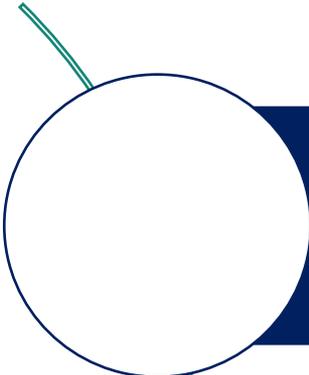
# Cost Trends: FY 2019 - FY 2023

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
<b>COV 457</b>	\$881,610	\$834,892	\$697,822	\$626,698	\$970,936
Participants	80,189	87,033	87,570	88,146	89,672
Annual Cost per Participant	\$10.99	\$9.59	\$7.97	\$7.11	\$10.83
<b>Cash Match</b>	\$432,190	\$472,760	\$569,290	\$569,271	\$907,116
Participants	71,089	72,351	72,512	72,110	73,408
Annual Cost per Participant	\$6.08	\$6.53	\$7.85	\$7.89	\$12.36
<b>Hybrid</b>	\$1,045,544	\$1,320,393	\$1,574,048	\$1,450,372	\$1,470,372
Participants	102,845	118,279	126,518	142,651	174,659
Annual Cost per Participant	\$10.17	\$11.16	\$12.44	\$10.17	\$8.42
<b>VSRP</b>	\$6,163	\$0	\$0	\$0	\$4,898
Participants	2	2	2	2	2
Annual Cost per Participant	-	-	-	-	-
<b>ORPSS</b>	\$58	\$14,332	\$8,598	\$7,624	\$3,426
Participants	2	2	2	2	4
Annual Cost per Participant	-	-	-	-	-
<b>ORPPA</b>	\$58,777	\$38,364	\$30,825	\$33,009	\$122,088
Participants	372	383	381	457	479
Annual Cost per Participant	\$158.00	\$100.17	\$80.90	\$72.23	\$254.88
<b>ORPHE</b>	\$450,527	\$435,678	\$449,629	\$428,119	\$371,348
Participants	4,218	4,273	3,904	3,725	3,637
Annual Cost per Participant	\$106.81	\$101.96	\$115.17	\$114.93	\$102.10
<b>Summary:</b>					
<b>Total Costs</b>	<b>\$2,874,869</b>	<b>\$3,116,419</b>	<b>\$3,330,212</b>	<b>\$3,115,093</b>	<b>\$3,850,185</b>
<b>Total Participants</b>	<b>258,717</b>	<b>282,323</b>	<b>290,889</b>	<b>307,093</b>	<b>341,861</b>

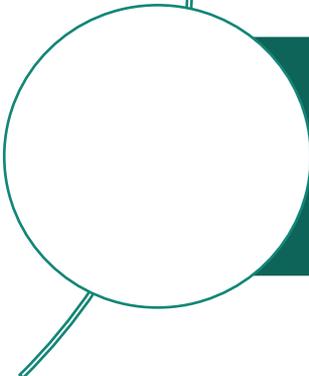
# DC Plans Investments

November 30, 2023





**Performance**



**CEM 2022 DC Survey Highlights**

# Performance



**Defined Contribution Plans Advisory Committee Report**  
**Unbundled Plans Investment Performance**

Below are the totals for the period ending October 31, 2023. Returns greater than one year are annualized.

Investment Options	1 Month	3 Months	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs / Since Inception <sup>1</sup>	Fund Expense Ratio <sup>2</sup>	Inception Date	Market Value	% of Market Value <sup>25</sup>	% of Participants Selecting an Option <sup>26</sup>
	%	%	%	%	%	%	%	%		\$	%	%
<b>Do-It-For-Me: Target Date Portfolios<sup>3,4</sup></b>												
Retirement Portfolio	-2.14	-6.81	0.42	3.30	-0.36	3.23	3.47	0.06	8/1/05	344,001,577	5.3	4.3
Custom Benchmark	-2.24	-6.87	0.23	3.20	-0.36	3.20	3.43					
Target Date 2025 Portfolio	-2.28	-7.23	0.73	3.79	0.72	3.84	4.30	0.06	7/5/06	328,830,061	5.0	5.5
Custom Benchmark	-2.37	-7.28	0.53	3.66	0.70	3.79	4.24					
Target Date 2030 Portfolio	-2.52	-8.00	1.75	5.07	2.13	4.68	4.97	0.06	8/1/05	374,499,949	5.7	7.6
Custom Benchmark	-2.66	-8.09	1.54	4.91	2.10	4.62	4.89					
Target Date 2035 Portfolio	-2.70	-8.60	2.79	6.31	3.51	5.49	5.60	0.06	7/5/06	401,718,858 <sup>22</sup>	6.2	9.0
Custom Benchmark	-2.87	-8.72	2.57	6.10	3.45	5.41	5.50					
Target Date 2040 Portfolio	-2.87	-9.17	3.81	7.51	4.77	6.21	6.15	0.06	8/1/05	355,506,989	5.5	9.2
Custom Benchmark	-3.07	-9.30	3.57	7.26	4.67	6.10	6.03					
Target Date 2045 Portfolio	-3.01	-9.64	4.74	8.58	5.80	6.82	6.58	0.06	7/5/06	349,312,393	5.4	10.5
Custom Benchmark	-3.24	-9.79	4.50	8.32	5.69	6.70	6.44					
Target Date 2050 Portfolio	-3.06	-9.83	5.43	9.29	6.41	7.18	6.81	0.06	9/30/07	355,902,095	5.5	12.0
Custom Benchmark	-3.30	-9.97	5.20	8.98	6.27	7.04	6.67					
Target Date 2055 Portfolio	-3.04	-9.82	5.73	9.55	6.56	7.28	6.87	0.06	5/19/10	419,646,710	6.4	15.5
Custom Benchmark	-3.30	-9.98	5.49	9.23	6.43	7.14	6.73					
Target Date 2060 Portfolio	-3.05	-9.83	5.73	9.55	6.55	7.27	6.63	0.06	11/17/14	230,467,715	3.5	13.6
Custom Benchmark	-3.30	-9.99	5.49	9.23	6.42	7.14	6.47					
Target Date 2065 Portfolio	-3.05	-9.85	5.75	9.59	6.53	n/a	6.10	0.06	9/23/19	36,827,818	0.6	5.7
Custom Benchmark	-3.30	-10.00	5.49	9.24	6.41	n/a	6.04					
<b>Help-Me-Do-It: Individual Options</b>												
Money Market Fund <sup>5,6</sup>	0.47	1.41	4.41	5.14	2.14	1.98	1.33	0.08	11/1/99	133,072,532	2.0	1.7
FTSE 3 Month Treasury Bill Index	0.47	1.39	4.29	4.94	1.94	1.80	1.16					
Yield as of 10/31/23: 5.58% <sup>7</sup>												
Stable Value Fund <sup>8,9</sup>	0.25	0.77	2.32	2.60	1.91	2.10	1.90	0.23	2/1/95	636,199,416	9.8	5.6
Custom Benchmark <sup>10</sup>	0.43	1.26	3.89	4.66	2.60	2.22	1.97					
Yield as of 10/31/23: 3.09% <sup>11</sup>												
Bond Fund <sup>12</sup>	-1.58	-4.67	-2.55	0.39	-5.53	-0.01	0.94	0.03	11/1/99	143,873,057	2.2	2.7
Bloomberg U.S. Aggregate Bond Index	-1.58	-4.69	-2.77	0.36	-5.57	-0.06	0.88					
Inflation-Protected Bond Fund <sup>13</sup>	-0.72	-3.40	-1.26	-0.65	-1.97	2.34	1.70	0.03	7/30/02	50,819,509	0.8	1.2
Bloomberg U.S. TIPS Index	-0.72	-3.43	-1.50	-0.72	-2.00	2.27	1.61					
High-Yield Bond Fund <sup>14</sup>	-0.99	-1.62	3.59	4.12	2.02	3.30	4.08	0.39	5/31/04	47,793,797	0.7	1.5
ICE BofA U.S. High-Yield BB-B Constrained Index	-0.97	-2.01	4.08	5.43	0.80	3.05	3.80					
Stock Fund <sup>15</sup>	-2.10	-8.25	10.69	10.14	10.37	11.04	11.21	0.01	11/1/99	1,516,402,460	23.3	8.4
S&P 500 Index	-2.10	-8.25	10.69	10.14	10.36	11.01	11.18					
Small/Mid-Cap Stock Fund <sup>16</sup>	-6.05	-14.77	-2.56	-4.50	5.60	5.54	6.98	0.02	11/1/99	373,234,888	5.7	4.7
Russell 2500 Index	-6.07	-14.80	-2.70	-4.63	5.51	5.48	6.89					
International Stock Fund <sup>17</sup>	-3.61	-10.94	1.28	12.40	3.38	3.78	2.95	0.06	11/1/99	193,299,523	3.0	3.8
MSCI ACWI ex-U.S. IMI Index <sup>18</sup>	-4.33	-11.39	0.74	11.61	3.02	3.46	2.65					
Global Real Estate Fund <sup>19</sup>	-4.46	-13.21	-8.54	-4.80	1.00	-0.59	2.11	0.08	10/1/02	77,995,707	1.2	2.5
FTSE EPRA/NAREIT Developed Index	-4.79	-13.60	-9.43	-6.03	0.08	-1.46	1.26					
VRSIP <sup>20</sup>	-0.62	-0.23	5.07	9.27	8.86	7.46	7.68	0.59	7/1/08	59,530,237 <sup>23</sup>	0.9	0.4
VRS Custom Benchmark <sup>21</sup>	-0.94	-0.46	7.78	11.58	5.58	5.71	6.60					
<b>Do-It-Myself: Self-Directed Brokerage Account</b>												
Schwab PCRA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	94,025,308	1.4	0.2
<b>Total</b>										<b>\$6,522,960,599<sup>24</sup></b>		

VRSIP and benchmark returns are reported with a one month lag. [Return information shown is as of September 30, 2023.] [Market value as of September 30, 2023 was \$62,400,831.]

Excess over benchmark return by 10 bps or more.

Results within reasonable expectations due to rising interest rate environment and nature of book value accounting treatment.

Underperformance

- 1 If the fund was not in existence for 10 years, fund and corresponding benchmark returns shown represent performance from the since inception date.
- 2 Fund investment advisers may voluntarily agree to waive expenses. Expense waivers may be terminated at any time.
- 3 Effective February 2023, the Target Date Portfolios invest in units of BlackRock's LifePath Index Funds N. The LifePath Index Funds N invest in the master LifePath Index Funds F. The inception dates shown reflect that of the master LifePath Index Funds F. Prior to February 2023, the Target Date Portfolios invested in BlackRock's LifePath Index Funds O which also invested in the master LifePath Index Funds F. All performance returns are linked.
- 4 Benchmarks are calculated using blended returns of third-party indices that proportionately reflect the respective weightings of the Portfolios' asset classes. Weightings are adjusted quarterly to reflect the Portfolios' asset allocation shifts over time. Indices currently used to calculate the custom benchmarks are: Russell 1000 Index, Russell 2000 Index, MSCI ACWI ex-U.S. IMI Net Dividend Return Index, Bloomberg U.S. Long Credit Bond Index, Bloomberg U.S. Intermediate Credit Bond Index, Bloomberg U.S. Long Government Bond Index, Bloomberg U.S. Intermediate Government Bond Index, Bloomberg U.S. Securitized: MBS, ABS, and CMBS Index, Bloomberg U.S. TIPS Index, FTSE EPRA/NAREIT Developed Index and the Bloomberg Commodity Index Total Return.
- 5 The Money Market Fund invests in units of BlackRock's Short-Term Investment Fund W. The inception data shown reflects the VRS Defined Contribution Plan's investment strategy inception date. Returns of the Fund from July 2012 through July 2016 represent performance of other BlackRock funds. Performance returns are linked.
- 6 An investment in a money market fund is not insured or guaranteed by the Federal Deposit Insurance Corporation or any other government agency. Although the Fund seeks to preserve the value of your investment it is possible to lose money by investing in the Fund.
- 7 The current yield more closely reflects the earnings of the Fund than the total net return information. There is no guarantee that the Fund will earn the current yield in the future.
- 8 The inception date shown reflects the VRS Defined Contribution Plans investment strategy inception date.
- 9 Direct transfers from the Stable Value Fund to the Money Market Fund (considered a "competing fund") are not permitted. Before transferring to the Money Market Fund, participants must first transfer to a "non-competing" fund for 90 days. Optional Retirement Plan for Higher Education (ORPHE) participants who want to make a direct exchange to another ORPHE provider, must first exchange to a "non-competing" fund on the MissionSquare Retirement investment platform for 90 days.
- 10 Effective August 2016, the benchmark represents a hypothetical return generated by the monthly yields of actively traded U.S. Treasuries based on [50% 2- year maturity + 50% 3- year maturity] plus an annualized spread of 0.25% and is representative of the Fund's expected return profile, given how the Fund is managed and book value accounting treatment. Prior to August 2016 the custom benchmark was based on the monthly yield of actively traded U.S Treasuries with a 3-year maturity plus an annualized spread of 0.50%. The benchmark returns are linked.
- 11 The current yield more closely reflects the earnings of the Fund than the total net return information. There is no guarantee that the Fund will earn the current yield in the future.
- 12 The Bond Fund invests in units of BlackRock's U.S. Debt Index Fund M. The U.S. Debt Index Fund M invests in the master Fund F. The inception date shown reflects the VRS Defined Contribution Plans strategy inception date.
- 13 The Inflation-Protected Bond Fund invests in units of BlackRock's U.S. Treasury-Inflation Protected Securities Fund M. The U.S. Treasury Inflation-Protected Securities Fund M invests in the master Fund F. The inception date shown reflects the inception date of the master Fund F.
- 14 The High-Yield Bond Fund invests in units of JPMorgan's Corporate High-Yield Fund-Investment Class. The inception date shown reflects the date the current investment team at JPMorgan commenced management responsibility of the Fund.
- 15 The Stock Fund invests in units of BlackRock's Equity Index Fund F. Performance represents BlackRock's returns for the master Fund F with deductions taken for management fees negotiated by VRS and fund administrative expenses. The inception date shown reflects the VRS Defined Contribution Plans investment strategy inception date.
- 16 The Small/Mid-Cap Stock Fund invests in units of BlackRock's Russell 2500 Index Fund F. Performance represents BlackRock's returns for the master Fund F with deductions taken for investment management fees negotiated by VRS and fund administrative expenses. The inception date shown reflects the VRS Defined Contribution Plans investment strategy date.
- 17 The International Stock Fund invests in units of BlackRock's MSCI ACWI ex-U.S. IMI Index Fund F. Performance represents BlackRock's returns for the master Fund F with deductions taken for investment management fees negotiated by VRS and fund administrative expenses. The inception date shown reflects the VRS Defined Contribution Plan's investment strategy inception date. Returns from July 2012 through July 2016 represent performance of another BlackRock Fund. Performance returns are linked.
- 18 Effective August 2016, the performance benchmark is the MSCI ACWI ex.-U.S. IMI Index. It was the MSCI World ex-U.S Index from July 2012 through July 2016. The benchmark returns are linked.
- 19 The Global Real Estate Fund invests in units of BlackRock's Developed Real Estate Index Fund F. Performance represents BlackRock's returns for the master Fund F with deductions taken for investment management fees negotiated by VRS and fund administrative expenses. The inception date shown reflects the VRS Defined Contribution Plans investment strategy inception date.
- 20 The inception date shown reflects the date the VRS Investment Portfolio (VRSIP) was unitized.
- 21 The VRS Custom Benchmark is a blend of the asset class benchmarks at policy weights.
- 22 Includes Pending Account VRSIP amount of \$146,519.
- 23 Includes Preliminary Investment Portfolio Account - PIP amount of \$0.
- 24 Includes \$8,563,453 held in the administrative Special Accounts.
- 25 May not equal 100% due to rounding.
- 26 The data reflects the percentage of participants who selected a particular investment option as of September 30, 2023. There were 597,888 participant accounts as of September 30, 2023 across all unbundled DC plans.

**All fund performance returns shown reflect all fund management fees and expenses, but do not reflect the Plan administrative fee charged by MissionSquare Retirement which would further reduce the returns shown.**

All calculations assume reinvestment of dividends and capital gains. All returns are calculated in U.S. dollars. Performance returns are provided by BlackRock, Galliard Capital Management, JPMorgan, Bank of New York Mellon, and MissionSquare Retirement. Benchmark returns are provided by BlackRock, Russell/Mellon Analytical Services, Galliard, and MissionSquare Retirement. Although data is gathered from sources believed to be reliable, we cannot guarantee completeness or accuracy.

**Plan Administrative Fee:** An annual record keeping and communication services fee of \$30.50 is deducted from participant accounts on a monthly basis (approximately \$2.54 per month). Only one annual fee of \$30.50 is deducted from participant accounts for those participants participating in more than one Commonwealth of Virginia defined contribution plan.

**Defined Contribution Plans Advisory Committee Report**  
**TIAA RC Contract Investment Performance**

Below are the totals for the period ending October 31, 2023. Returns greater than one year are annualized.

Investment Options	1 Month	3 Months	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs / Since Inception <sup>1</sup>	Fund Expense Ratio <sup>2</sup>	Inception Date	Market Value	% of Market Value <sup>19</sup>	% of Participants Selecting an Option <sup>20</sup>
	%	%	%	%	%	%	%	%		\$	%	%
<b>Target Date Portfolios<sup>3,4</sup></b>												
BlackRock LifePath Index Retirement Fund N	-2.14	-6.81	0.42	3.30	-0.35	3.25	3.48	0.06	8/1/05	21,136,599	5.9	7.3
Custom Benchmark	-2.24	-6.87	0.23	3.20	-0.36	3.20	3.43					
BlackRock LifePath Index 2025 Fund N	-2.28	-7.23	0.73	3.80	0.73	3.86	4.32	0.06	7/5/06	18,823,027	5.3	6.7
Custom Benchmark	-2.37	-7.28	0.53	3.66	0.70	3.79	4.24					
BlackRock LifePath Index 2030 Fund N	-2.52	-8.00	1.75	5.08	2.14	4.70	4.99	0.06	8/1/05	29,990,266	8.4	8.6
Custom Benchmark	-2.66	-8.09	1.54	4.91	2.10	4.62	4.89					
BlackRock LifePath Index 2035 Fund N	-2.70	-8.60	2.79	6.32	3.52	5.51	5.62	0.06	7/5/06	24,457,764	6.8	8.9
Custom Benchmark	-2.87	-8.72	2.57	6.10	3.45	5.41	5.50					
BlackRock LifePath Index 2040 Fund N	-2.87	-9.17	3.81	7.52	4.78	6.22	6.17	0.06	8/1/05	27,715,603	7.7	9.8
Custom Benchmark	-3.07	-9.30	3.57	7.26	4.67	6.10	6.03					
BlackRock LifePath Index 2045 Fund N	-3.01	-9.64	4.74	8.59	5.82	6.84	6.60	0.06	7/5/06	23,793,009	6.6	10.3
Custom Benchmark	-3.24	-9.79	4.50	8.32	5.69	6.70	6.44					
BlackRock LifePath Index 2050 Fund N	-3.06	-9.83	5.44	9.29	6.43	7.20	6.83	0.06	9/30/07	15,083,183	4.2	8.3
Custom Benchmark	-3.30	-9.97	5.20	8.98	6.27	7.04	6.67					
BlackRock LifePath Index 2055 Fund N	-3.04	-9.82	5.73	9.55	6.58	7.30	6.89	0.06	5/19/10	7,918,292	2.2	6.7
Custom Benchmark	-3.30	-9.98	5.49	9.23	6.43	7.14	6.73					
BlackRock LifePath Index 2060 Fund N	-3.05	-9.83	5.73	9.56	6.57	7.29	6.63	0.06	11/17/14	2,135,321	0.6	3.5
Custom Benchmark	-3.30	-9.99	5.49	9.23	6.42	7.14	6.47					
BlackRock LifePath Index 2065 Fund N	-3.05	-9.85	5.75	9.60	6.54	n/a	6.12	0.06	9/23/19	4,468,951	1.3	2.1
Custom Benchmark	-3.30	-10.00	5.49	9.24	6.41	n/a	6.04					
<b>Individual Options</b>												
BlackRock Short-Term Investment Fund W <sup>5</sup>	0.47	1.41	4.41	5.14	2.14	1.98	1.37	0.08	7/1/03	6,265,370	1.8	7.4
FTSE 3 Month Treasury Bill Index	0.47	1.39	4.29	4.94	1.94	1.80	1.16					
Yield as of 10/31/23: 5.58% <sup>6</sup>												
BlackRock U.S. Debt Index Fund M <sup>7</sup>	-1.58	-4.67	-2.55	0.39	-5.53	-0.01	0.94	0.03	6/6/96	9,537,414	2.7	17.4
Bloomberg U.S. Aggregate Bond Index	-1.58	-4.69	-2.77	0.36	-5.57	-0.06	0.88					
BlackRock U.S. TIPS Fund M <sup>8</sup>	-0.72	-3.40	-1.26	-0.65	-1.97	2.34	1.70	0.03	7/30/02	5,174,239	1.4	11.9
Bloomberg U.S. TIPS Index	-0.72	-3.43	-1.50	-0.72	-2.00	2.27	1.61					
BlackRock Equity Index Fund J <sup>9</sup>	-2.10	-8.25	10.69	10.14	10.37	11.04	11.21	0.02	3/5/97	42,352,926	11.8	24.0
S&P 500 Index	-2.10	-8.25	10.69	10.14	10.36	11.01	11.18					
BlackRock Russell 2500 Index Fund J <sup>10</sup>	-6.05	-14.77	-2.56	-4.50	5.60	5.54	6.99	0.02	9/30/08	7,730,725	2.2	4.9
Russell 2500 Index	-6.07	-14.80	-2.70	-4.63	5.51	5.48	6.89					
BlackRock MSCI ACWI ex-U.S. IMI Index Fund M <sup>11</sup>	-3.62	-10.96	1.24	12.35	3.33	3.73	2.90	0.11	2/28/11	15,103,459	4.2	17.1
MSCI ACWI ex-U.S. IMI Index	-4.33	-11.39	0.74	11.61	3.02	3.46	2.66					
BlackRock MSCI ACWI IMI Index Non-Lendable Fund M <sup>12</sup>	-3.03	-9.81	6.11	9.90	6.77	7.42	6.97	0.05	4/12/13	47,250,777	13.2	30.3
MSCI ACWI IMI Index	-3.33	-10.06	5.75	9.43	6.45	7.11	6.61					
TIAA Real Estate Account <sup>13</sup>	-1.06	-2.61	-10.16	-13.11	4.86	3.85	5.39	0.87	10/2/95	11,230,647	3.1	25.8
Custom Composite Benchmark <sup>14</sup>	n/a	n/a	n/a	n/a	n/a	n/a	n/a					
TIAA Traditional Annuity RC <sup>15,16,17,18</sup>	0.41	1.21	3.95	4.70	4.11	4.08	4.17	--- <sup>21</sup>	8/1/05	33,557,285	9.4	27.7
<b>Self-Directed Brokerage Account</b>												
TIAA - Self-Directed Account	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	4,800,567	1.3	0.9
<b>Total</b>										<b>\$358,525,424</b>		

Excess over benchmark return by 10 bps or more.

Footnotes >

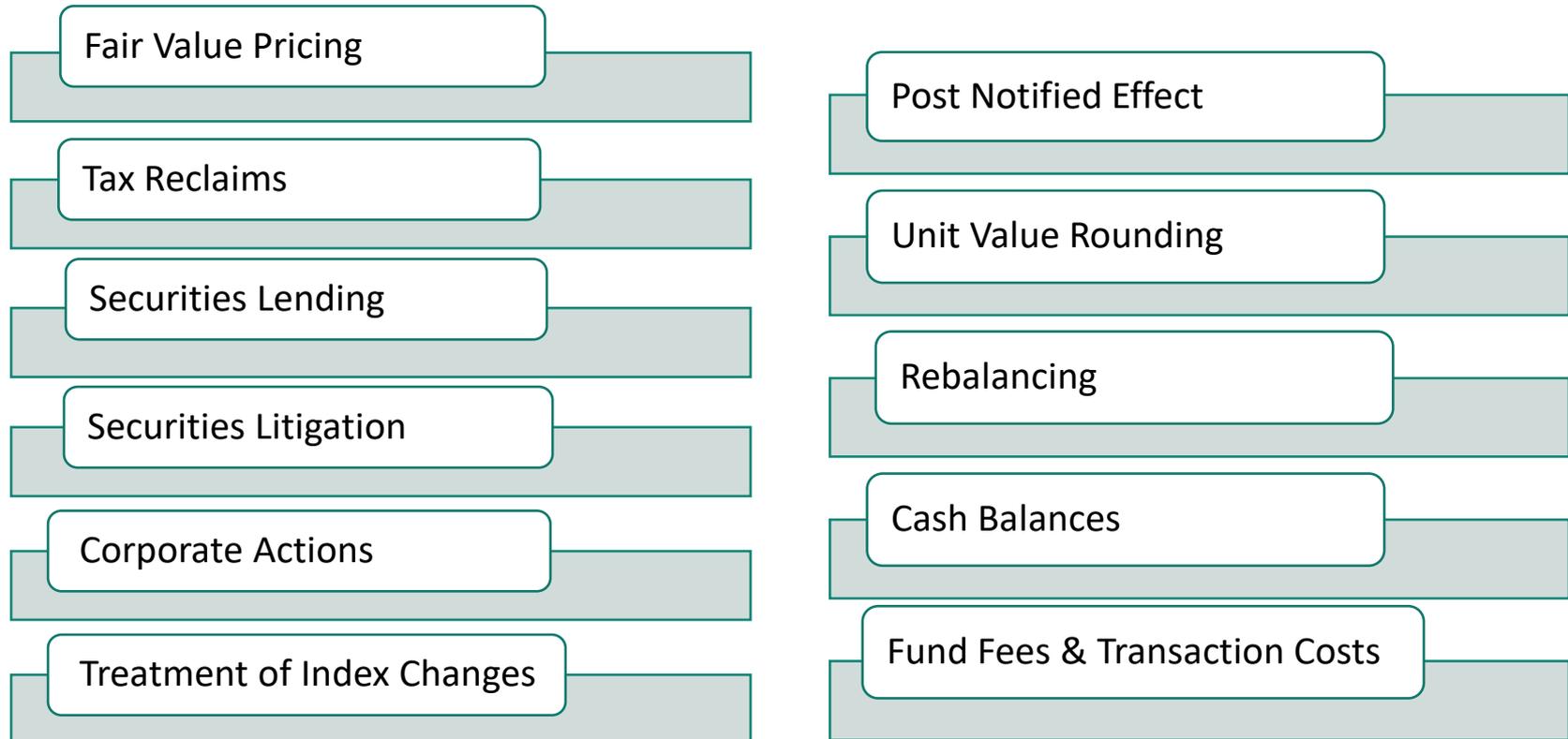
- 1 If the fund was not in existence for 10 years, fund and corresponding benchmark returns shown represent performance from the since inception date.
- 2 Fund investment advisers may voluntarily agree to waive expenses. Expense waivers may be terminated at any time.
- 3 The BlackRock LifePath Index Funds N invest in the master LifePath Index Funds F. The inception dates shown reflect the inception date of the master LifePath Funds F. The inception dates for most LifePath Funds N were 8/15/17. The 2065 Fund's N inception date was 11/15/19. Returns prior to Funds' N inception dates are those of Funds F with deductions taken for Funds N investment management fees.
- 4 Benchmarks are calculated using blended returns of third-party indices that proportionately reflect the respective weightings of the Portfolios' asset classes. Weightings are adjusted quarterly to reflect the Portfolios' asset allocation shifts over time. Indices currently used to calculate the custom benchmarks are: Russell 1000 Index, Russell 2000 Index, MSCI ACWI Ex-U.S. IMI Net Dividend Return Index, Bloomberg U.S. Long Credit Bond Index, Bloomberg U.S. Intermediate Credit Bond Index, Bloomberg U.S. Long Government Bond Index, Bloomberg U.S. Intermediate Government Bond Index, Bloomberg U.S. Securitized: MBS, ABS, and CMBS Index, Bloomberg U.S. TIPS Index, FTSE EPRA/NAREIT Developed Index and the Bloomberg Commodity Index Total Return.
- 5 An investment in a money market fund is not insured or guaranteed by the Federal Deposit Insurance Corporation or any other government agency. Although the Fund seeks to preserve the value of your investment it is possible to lose money by investing in the Fund.
- 6 The current yield more closely reflects the earnings of the Fund than the total net return information.
- 7 The BlackRock U.S. Debt Fund M invests in the master Fund F. The inception date shown reflects the inception of the master Fund F. The inception date of Fund M was 7/20/12. Returns prior to Fund M's inception date are those of Fund F with deductions taken for Fund M's investment management fees.
- 8 The BlackRock U.S. Treasury Inflation-Protected Securities Fund M invests in the master Fund F. The inception date shown reflects the inception of the master Fund F. The inception date of Fund M was 7/20/12. Returns prior to Fund M's inception date are those of Fund F with deductions taken for Fund M' investment management fees.
- 9 The BlackRock Equity Index Fund J invests in the master Fund F. The inception date shown reflects the inception of the master Fund F. The inception date of Fund J was 3/20/17. Returns prior to Fund J's inception date are those of Fund F with deductions taken for Fund J's investment management fees.
- 10 The BlackRock Russell 2500 Fund J invests in the master Fund F. The inception date shown reflects the inception of the master Fund F. The inception date of Fund J was 10/15/21. Returns prior to Fund J's inception date are those of Fund F with deductions taken for Fund J's investment management fees.
- 11 The BlackRock MSCI ACWI ex-U.S. IMI Index Fund M invests in the master Fund F. The inception date shown reflects the inception of the master Fund F. The inception date of Fund M was 12/31/12. Returns prior to Fund M's inception date are those of Fund F with deductions taken for Fund M's investment management fees.
- 12 The BlackRock MSCI ACWI IMI Index Non-Lendable Fund M invests in the master Fund F. Inception dates for the master Fund F and Fund M are both 4/12/13.
- 13 Transfers out of the TIAA Real Estate Account (REA) are limited to one per quarter. Currently, these transfers do not require a minimum transaction amount; however, in the future TIAA reserves the right, in its sole discretion, to impose minimum transaction levels, which levels will generally be at least \$1,000 (except for systematic transfers, which must be at least \$100) or your entire accumulation, if less. Participants may not make a lump-sum transfer into the REA if their aggregated balances across all contracts is greater than \$150,000. Systematic transfers and recurring contributions are not subject to this limitation.
- 14 Effective January 2014, the Custom Composite Index is 70% NCREIF Open End Diversified Core Equity (ODCE) Net Index, 20% Bloomberg 3-Month Treasury Bill Index, and 10% Dow Jones U.S. Select REIT Index. Prior periods include other representative indices. TIAA's investment management team does not manage its real estate portfolio to a specific published index benchmark. The Custom Composite Index represents a reasonable proxy of how TIAA allocates assets among real property, short-term investments, and REITs over time. The Virginia Retirement System anticipates that Fund returns may vary greatly from those of the Custom Composite Index. Benchmark returns are not available for months that do not end on a calendar quarter due to the fact that NCREIF ODCE Index returns are only published each calendar quarter.
- 15 Upon separation from service or retirement participants can convert their TIAA Traditional accumulation dollars amount to a lifetime income option or withdraw funds through a fixed period annuity ranging from five to 30 years or a Transfer Payout Annuity, which enables participants to move funds out of the TIAA Traditional Annuity in 7 annual installments for the Retirement Choice (RC) contract. Each installment includes a portion of principal and interest, based on the rate in effect when transfer or withdrawal funds are made. However, there are two exceptions to the payout installment. First, if the TIAA Traditional account balance is less than \$5,000, participants can transfer the total amount at any time following termination of employment, but only once during the life of the contract. Second, TIAA Traditional can be withdrawn or transferred to another company up to the full balance within 120 days following termination of employment, subject to 2.5% surrender charge. After the 120-day period, participants can withdraw funds only through a fixed period annuity ranging from five to 30 years or the Transfer Payout Annuity.
- 16 The TIAA Traditional Annuity RC contract has minimum guaranteed rate during the accumulation phase of 1% to 3% . The current minimum rate for the RC contract is 1%. Further, the TIAA Traditional Annuity RC contract applies to premiums deposited during the applicable calendar year and is guaranteed for 10 years, at which point the minimum rate for these premiums will be reset.
- 17 TIAA's annual credited rate on new money for the RC contract for the month of October was 6.75%.
- 18 The TIAA Traditional Annuity is not an investment for purposes of federal securities laws; it is a guaranteed insurance contract. Therefore, unlike a variable annuity or mutual fund, the TIAA Traditional Annuity does not include an identifiable expense ratio. Each premium allocated to the TIAA Traditional Annuity buys a definite amount of lifetime income for participants based on the rate schedule in effect at the time the premium is paid. In addition, the TIAA Traditional Annuity provides a guarantee of principle, a guaranteed minimum rate of interest and the potential for additional amounts of interest when declared by TIAA's Board of Trustees. Additional amounts, when declared, remain in effect for the "declaration year" that begins each March for the accumulating annuities and January for lifetime payout annuities. Additional amounts are not guaranteed for future years.
- 19 May not equal 100% due to rounding
- 20 The data reflects the percentage of participants who selected a particular investment option as of September 30, 2023. There were 5,393 (RC contract) participants as of September 30, 2023.
- 21 Effective July 2022, TIAA no longer provides an estimated expense ratio for its TIAA Traditional Annuity product.

**Performance returns shown reflect all fund management fees and other investment related expenses, but do not reflect the TIAA annual administrative fee of \$28 (deducted at \$7.00 per quarter) which would further reduce the returns shown. Performance returns do not reflect redemption fees and/or surrender charges, if applicable.**

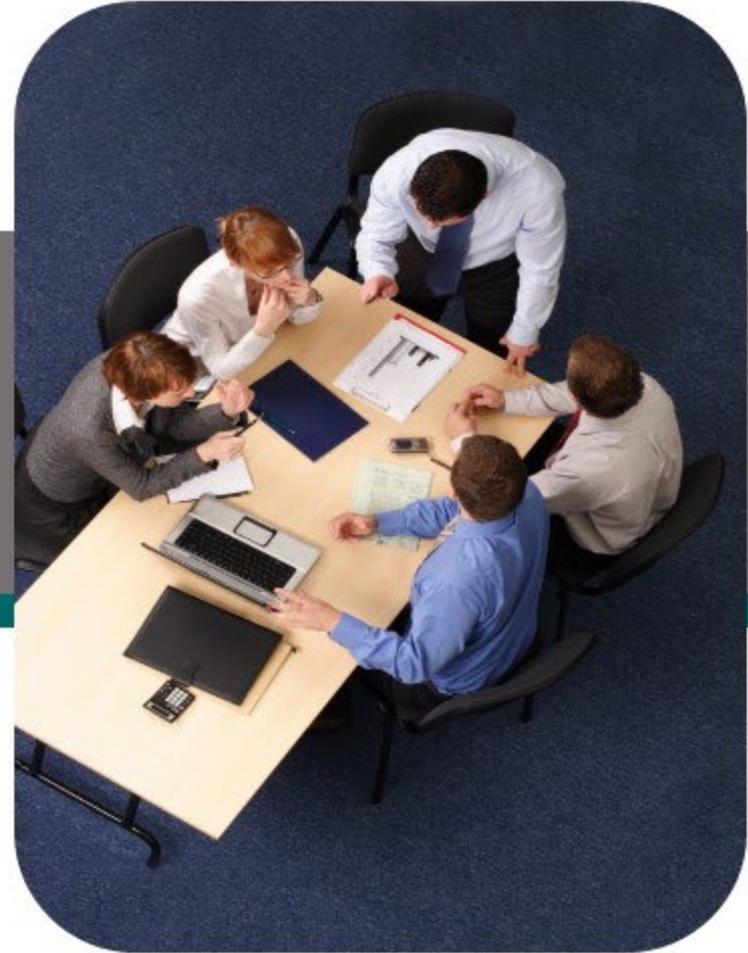
All calculations assume reinvestment of dividends and capital gains. All returns are calculated in U.S dollars. Fund and benchmark returns are provided by TIAA and BlackRock. Although data is gathered from sources to be reliable, the Virginia Retirement System cannot guarantee completeness or accuracy.

# Major Sources of Differences Between Fund and Benchmark Index Performance

## Performance Headwinds and Tailwinds



# CEM 2022 DC Survey Highlights



# CEM 2022 DC Survey Highlights

- CEM has benchmarked performance of DC plans since 1997
- 2022 survey comprised of 99 corporate plans and 23 public plans for a total of 122 plans representing \$1.2 trillion in assets
- VRS participated in CEM's complimentary DC cost and performance report survey and subscribes to CEM's Dashboard
  - 457 Deferred Compensation Plan: supplemental plan (unbundled)
  - TIAA ORPHE\*: primary plan (bundled)
- CEM's DC complimentary survey reports are included in the Appendix
  - CEM figures may not foot due to rounding

\*Information based solely on TIAA's RC contract investment options

- Differences in plan size and participant account balances due to many factors including:
  - Whether a plan is a primary or a supplemental plan, contribution & matching rates, participant demographics, and plan design
- Comparing a plan's total plan costs to other plans provides limited insight because of differences in economies of scale and types of investments offered

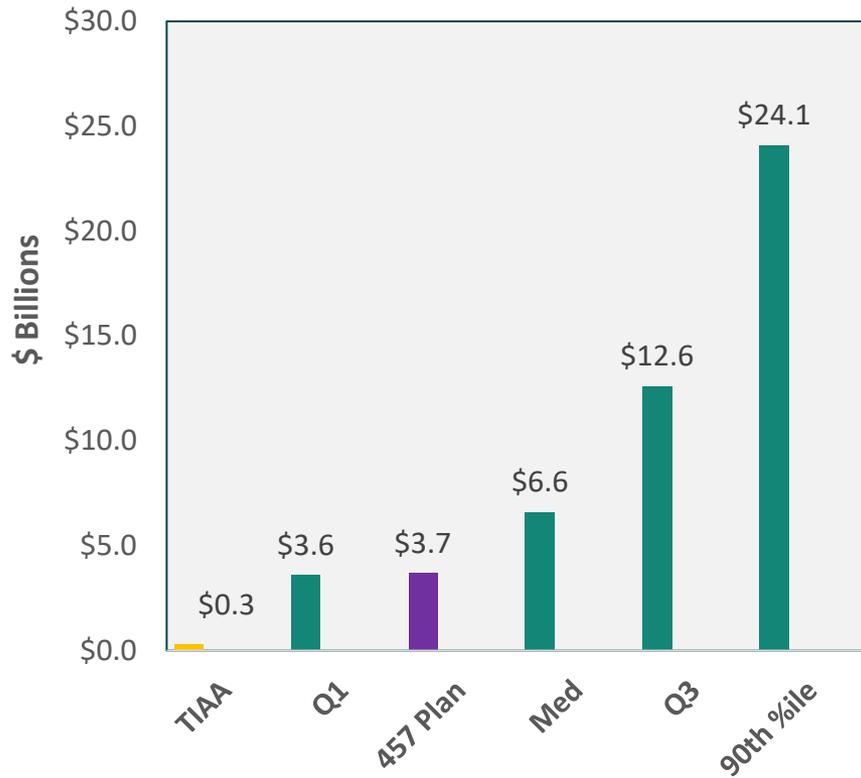
# VRS DC Plans – Comparison



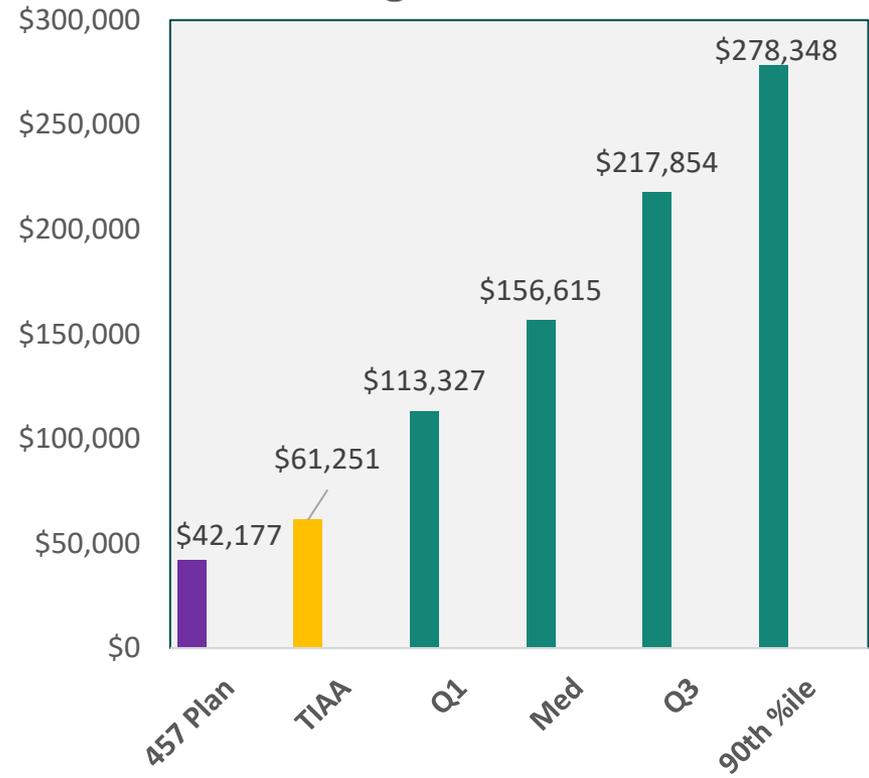
As of 12-31-2022	457 Plan Supplemental	TIAA ORPHE 1 & 2 (RC contract) Primary
Plan Assets	\$3.7 billion	\$327 million
Participants	88,647	5,340
Contribution Type	Minimum - \$10/pay. Maximum - 100% of includible compensation subject to annual limit of \$20,500. 50+ Catch-up of \$6,500. Standard Catch- up.	<b>Plan 1:</b> 10.4% employer contribution.  <b>Plan 2:</b> 5% pretax employee contribution plus 8.5% employer contribution. Employer may increase its max amount to 8.9%.
Average Account Balance	\$42,177	\$61,251 (excludes legacy contracts)

# CEM 2022 DC Survey Highlights

### Plan Size

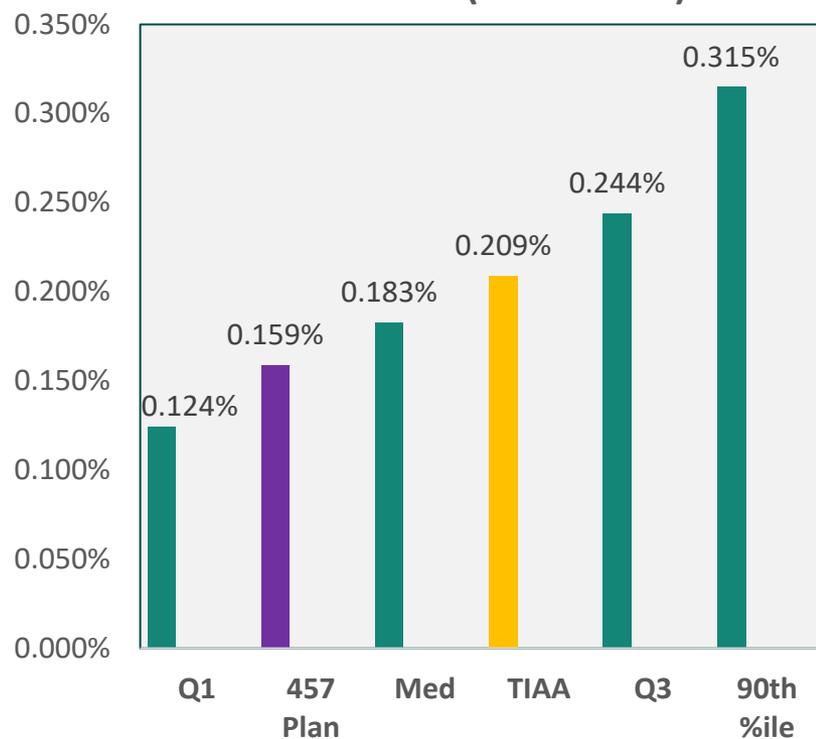


### Average Account Balance

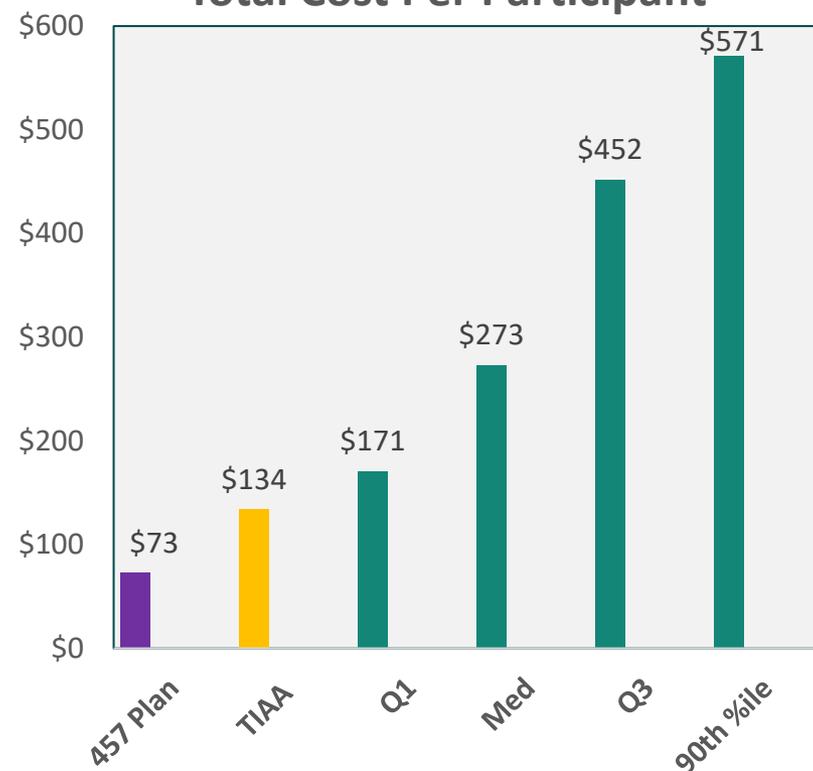


# CEM 2022 DC Survey Highlights

### Total Plan Cost (% of assets)



### Total Cost Per Participant



# CEM 2022 DC Survey Highlights



Costs	457 Plan	TIAA ORPHE RC contract
Investment	7.6 bps or \$3.1 M	7.4 bps or \$254,000
Recordkeeping & Administration	5.9 bps or \$2.4 M	6.2 bps or \$214,000
Internal Oversight & Consulting (if applicable)	2.4 bps or \$1.0 M	9.2 bps or \$313,000
Less Recordkeeping Rebates to Participants	n/a	-1.9 bps or -\$67,000
Total Recordkeeping; Administration; Oversight After Rebates	8.3 bps or \$3.4 M	13.4 bps or \$460,000
<b>Total Plan Costs Based on Assets</b>	<b>15.9 bps or \$6.5 M</b>	<b>20.9 bps or \$714,000</b>
<b>Cost Per Participant</b>	<b>\$73</b>	<b>\$134</b>

Figures may not foot due to rounding.

- CEM universe median investment options offered: 13
  - VRS 457 Plan: 12
  - TIAA ORPHE: 11

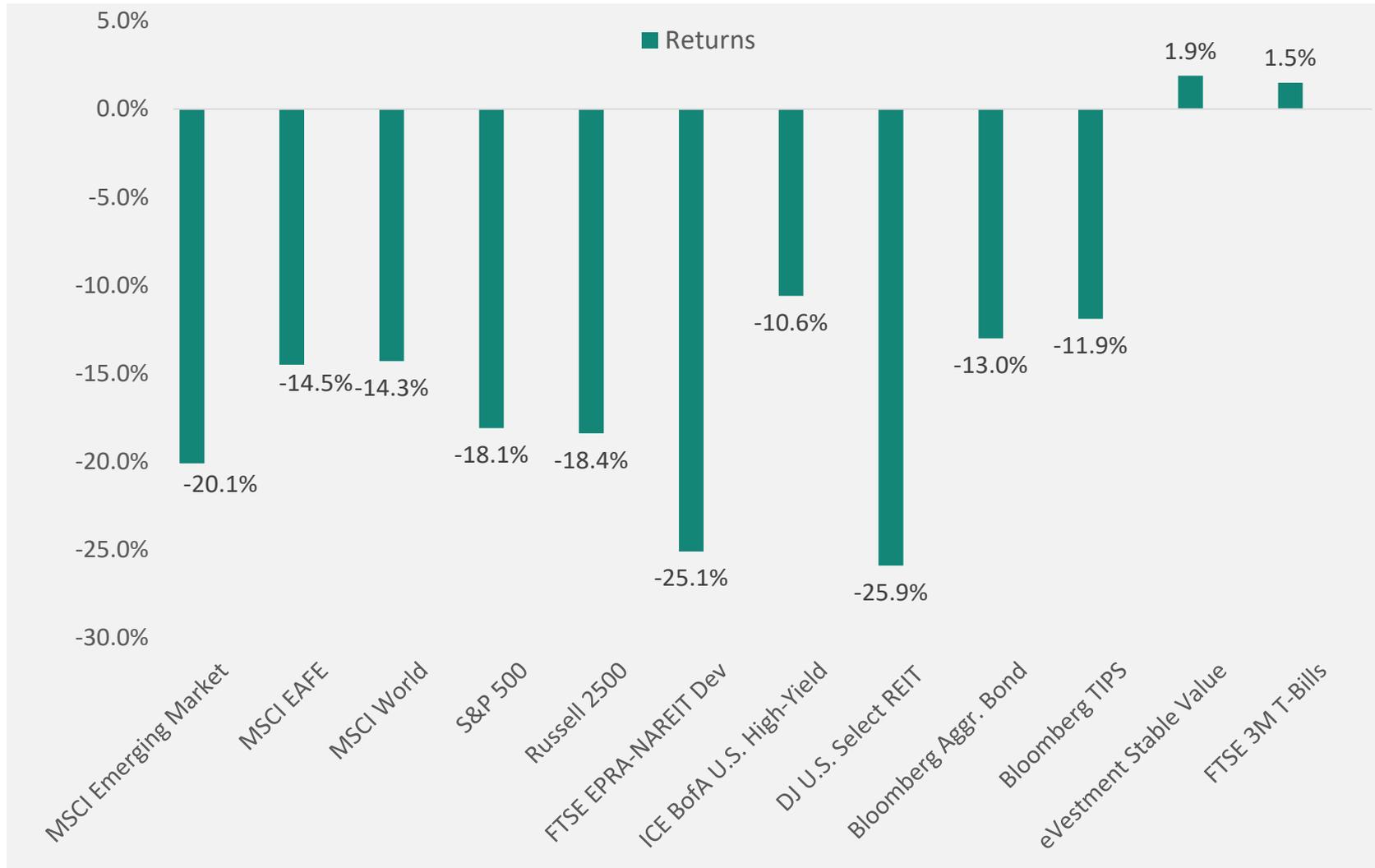
(Self-Directed Brokerage Accounts and target date series counted as one option)
- A plan's asset mix is a function of investments offered and participants' investment option choices
- A plan's asset mix is often the biggest reason for differences in total returns of plan participants

# CEM 2022 DC Survey Highlights



Asset Mix Category	457 Plan	TIAA ORPHE (RC)	Univ Average	Univ Median
Stock Employer	0%	0%	8%	2%
Stock U.S.	39%	13%	31%	32%
Stock Non-U.S. & Global	4%	17%	6%	6%
Bonds	6%	4%	6%	6%
Target Date & Balanced	28%	50%	33%	32%
Stable Value & GIC	15%	0%	10%	7%
Cash, Money Market	2%	2%	2%	0%
MF & Brokerage Windows	2%	1%	2%	0%
Real, Hedge, Other	3%	12%	1%	1%

# Asset Class Returns 1-Year Ending December 31, 2022



# CEM 2022 DC Survey Highlights

## Average Total Return of Plan Participants



Average total return measures the change in the average participant's account balance as a result of net investment returns earned by their investments weighted by their holdings

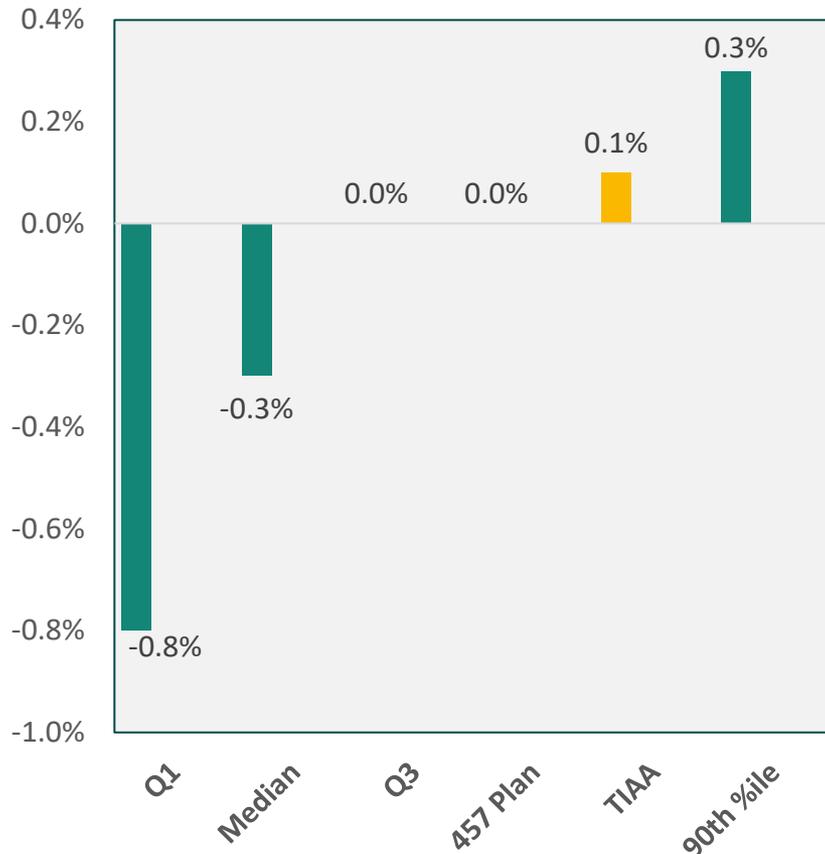
Primary causes of differences in plan participants' average net total return:

- Participants' selected asset mixes
- Value added performance (amount investment options outperformed their benchmark indices)

- CEM's research has shown consistently there is no relationship between what plans spend and what they received
  - The more you pay (cost) does not necessarily translate into the more you get (value added)
- Low value added = on average, a plan's investment options are underperforming their benchmark indices (net of costs)
  - Note that where indexed investment options are offered, net value added is not expected to be significant since the goal of an indexed option is to track the return of the underlying index
- High value added = on average, a plan's investment options are outperforming their benchmark indices (net of costs)

# CEM 2022 DC Survey Highlights

## Average Total Plan Value Added



Average total plan value added =  
weighted net investment returns minus  
administration costs (after rebates)  
minus weighted benchmark returns

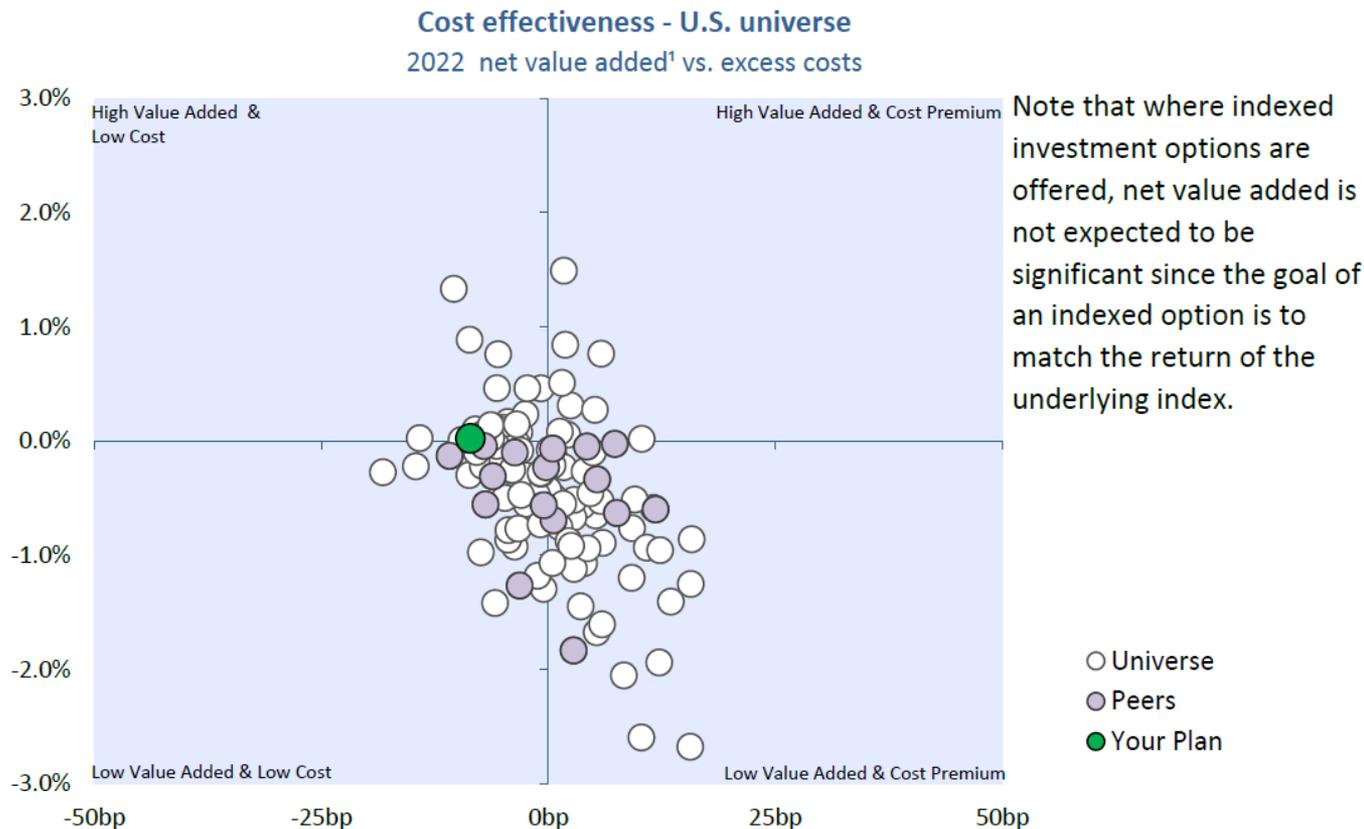
A positive figure indicates, on average,  
investments are outperforming  
benchmarks and a negative figure  
indicates underperformance

Net value added for funds that are  
indexed investment options (track  
benchmarks) typically are low value  
added (benchmark returns – fund  
expense ratios)

# CEM DC Survey Highlights

457 Plan	2022	2021	2020
Plan Assets	\$3.7 billion	\$4.4 billion	\$3.8 billion
Investment Costs	7.6 bps	7.6 bps	8 bps
Administrative Costs	8.3 bps	7.6 bps (revised from 8.9)	9.3 bps
Total Plan Costs	15.9 bps	15.2 bps (revised from 16.5)	17.3 bps
Cost Per Participant	\$73	\$77	\$69
Average Total Return of Plan Participants	-14.5%	15.2%	12.4%
Average Total Plan Value Added	0.0%	0.0%	0.2%
CEM Cost Effectiveness Ranking	No value added, low lost	Not Available	Not Available

# CEM Cost Effectiveness – 457 Plan

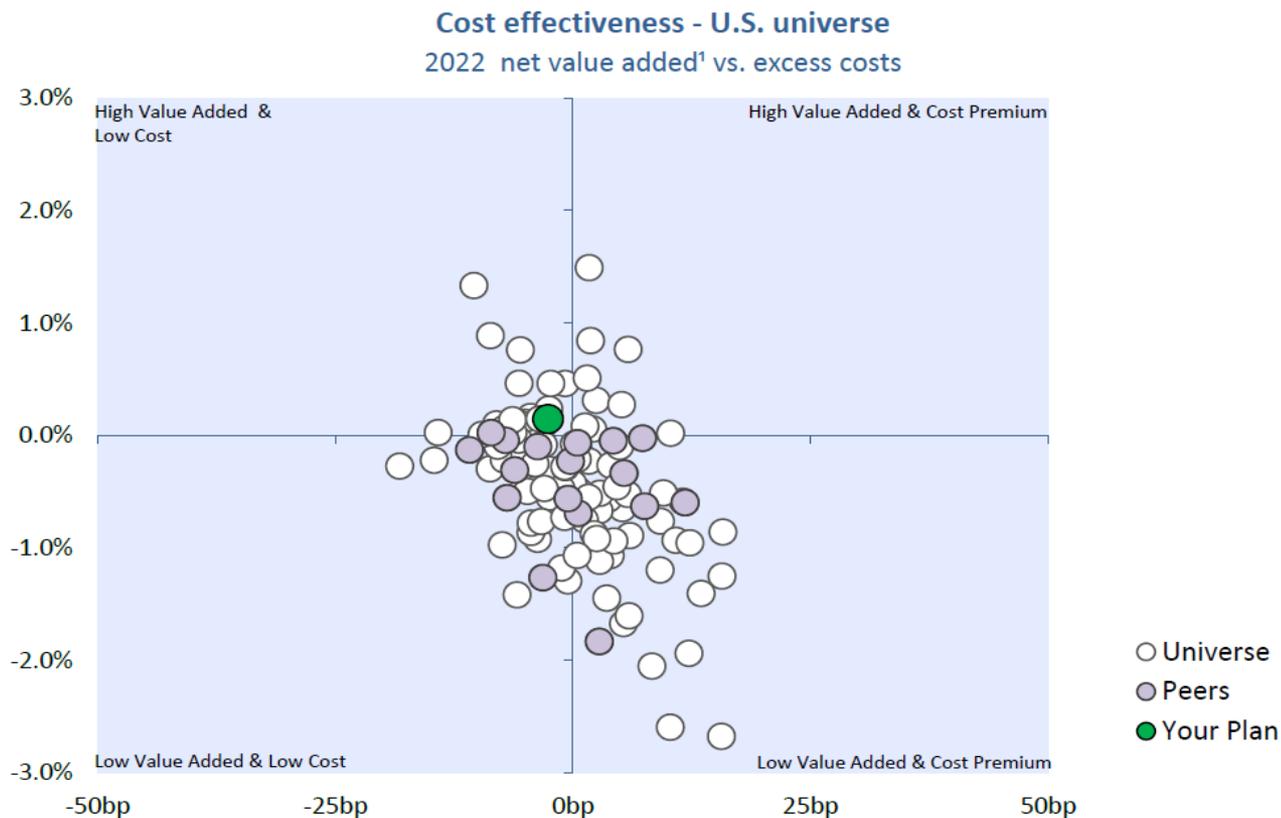


1. Value added = net return - benchmark return. In this chart the value added from employer stock is neutralized by setting its benchmark return equal to its actual return. It is neutralized in this report so we can show the value added from diversified plan options. Similarly, value added for stable value options is neutralized because of concerns over the benchmarks used for these options.

# CEM DC Survey Highlights

TIAA ORPHE RC contract	2022	2021	2020
Plan Assets	\$327 million	\$357 million	\$294 million
Investment Costs	7.4 bps	9.5 bps	9.9 bps
Administrative Costs (after any rebates)	13.4 bps	15.0 bps	23.7 bps
Total Plan Costs	20.9 bps	24.6 bps	33.7 bps
Cost Per Participant	\$134	\$153	\$157 (revised from \$98)
Average Total Return of Plan Participants	-15.8%	14.2%	12.2%
Average Total Plan Value Added	0.1%	-0.2%	-0.1%
CEM Cost Effectiveness Ranking	High value added, low cost	Not Available	Not Available

# CEM Cost Effectiveness – TIAA ORPHE



1. Value added = net return - benchmark return. In this chart the value added from employer stock is neutralized by setting its benchmark return equal to its actual return. It is neutralized in this report so we can show the value added from diversified plan options. Similarly, value added for stable value options is neutralized because of concerns over the benchmarks used for these options.

# Quarterly Review

## VRS Defined Contribution Plans

*July 1, 2023 – September 30, 2023*

# DCP

Virginia Retirement System

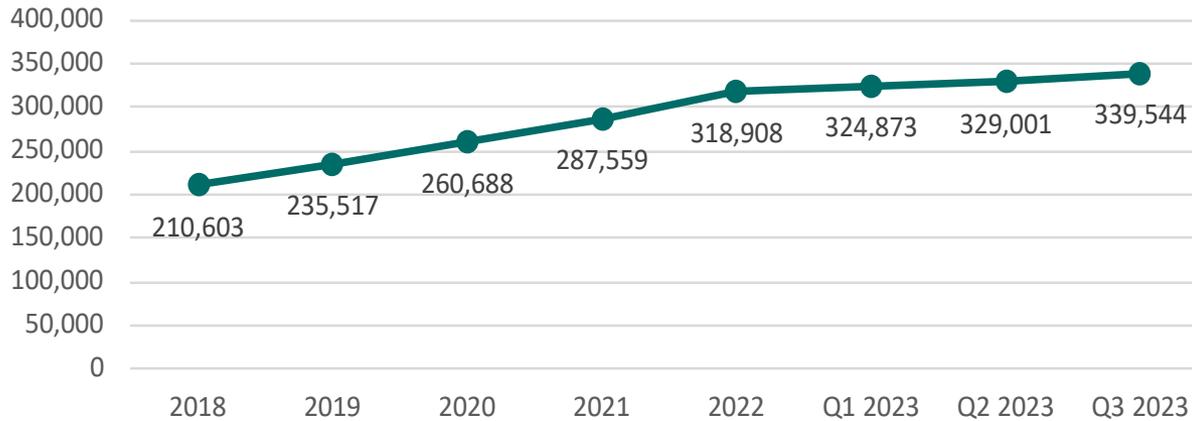


# VRS Defined Contribution Plans<sup>1</sup>

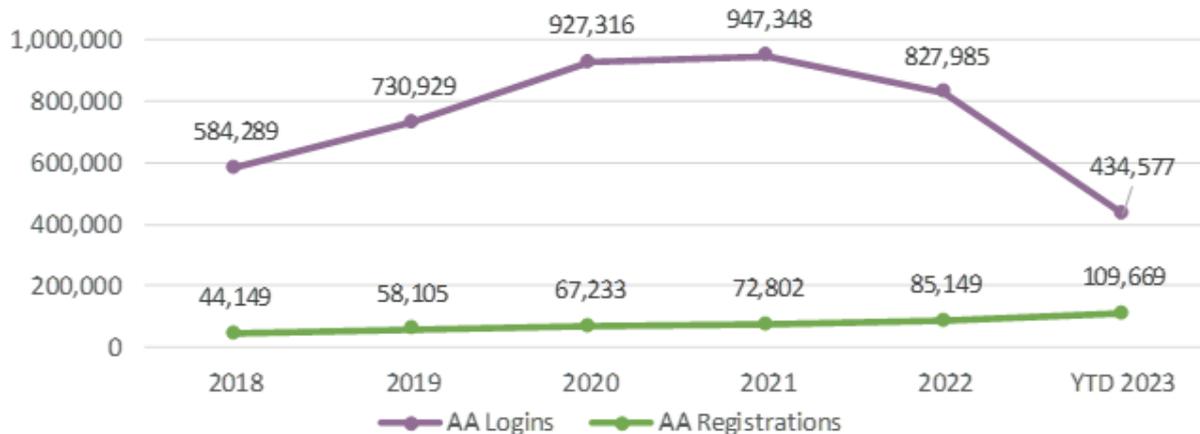
3<sup>rd</sup> Quarter 2023 – DC Plans Metrics

Total Assets<sup>2</sup>: \$6,646,857,615.33    Total Accounts<sup>2</sup>: 597,059

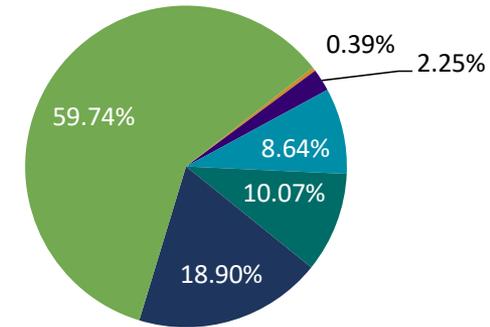
## Unique Participants



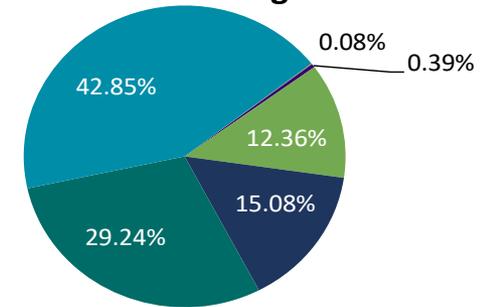
## Account Access Registrations & Logins



## Assets Under Management



## Accounts Under Management



- ORPPA/ORPSS/VRSP
- ORP Higher Ed
- 401(a) Cash Match
- COV 457 Plan
- Hybrid 457 Plan
- Hybrid 401(a) Plan

## Top 10 Visited Pages<sup>3</sup>

1. Hybrid Retirement Plan Landing Page
2. COV 457 Retirement Plan Landing Page
3. Hybrid 457 Voluntary Contributions
4. Hybrid Plan Group Life Insurance
5. Hybrid Plan Education
6. Virginia Cash Match Landing Page
7. COV 457 Overview
8. COV 457 Contributions
9. COV 457 Plan Info
10. VRS Hybrid Plan Learning Channel

# VRS Defined Contribution Plans

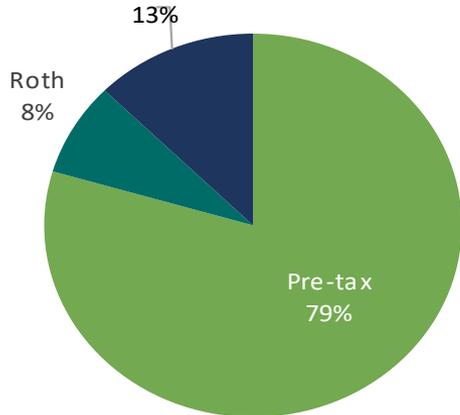
3<sup>rd</sup> Quarter 2023 – COV 457 Plan, Virginia Cash Match Plan

## COV 457 Participation Rates

- State<sup>4</sup> 33.89%
- Non-state 9.08%

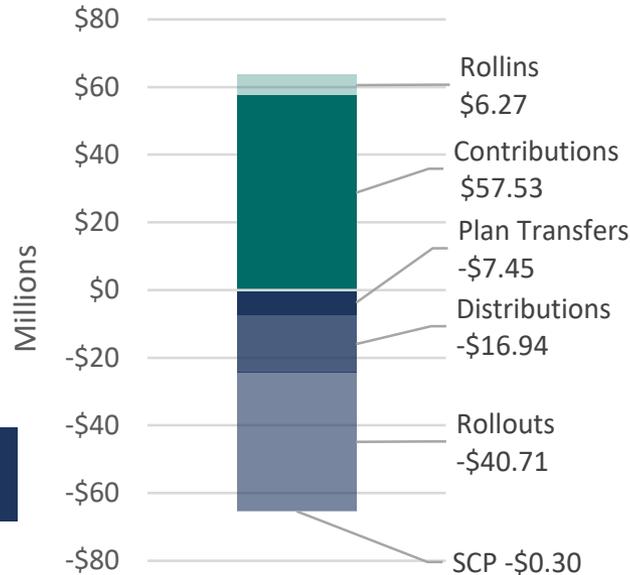
## Deferral Type

Pre-tax & Roth



Average pre-tax deferral per pay = \$183.14  
Average Roth deferral per pay = \$175.08

## Contributions/Distributions<sup>5</sup>



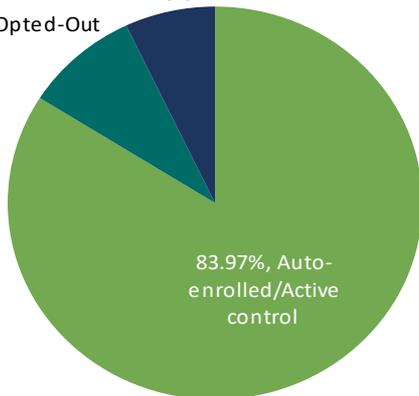
## Top 10 Fund Holdings

1. Stock \$1,438,003,201
2. Target Date Portfolios \$1,331,610,533
3. Stable Value \$615,317,521
4. Small/Mid-Cap Stock \$366,718,076
5. International Stock \$185,637,633
6. Bond \$139,499,622
7. Money Market \$107,045,063
8. Schwab PCRA \$90,157,100
9. Global Real Estate \$76,032,816
10. VRS Investment Portfolio \$60,652,569

## Auto Enrollment

7.05%,  
403(b)

8.97%, Opted-Out



8.97% Opt-Out rate for quarter  
8.80% opt-out rate since inception<sup>9</sup>

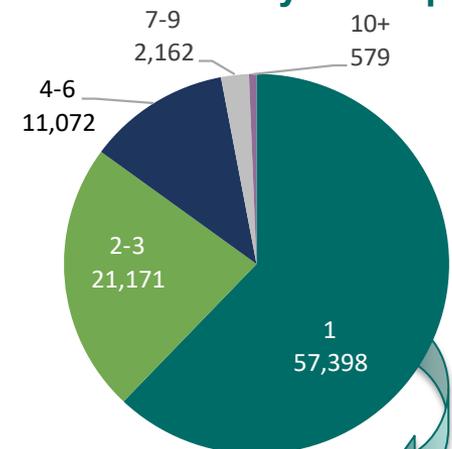
## Participant Status Overview<sup>6</sup>

163,083 total accounts

56% Active  
44% Separated

\$2,030m assets at-risk

## # of Funds Held by Participants



82.4% of this population is invested in a single TDP

# VRS Defined Contribution Plans

## 3<sup>rd</sup> Quarter 2023 – DC Plans Participant Engagement

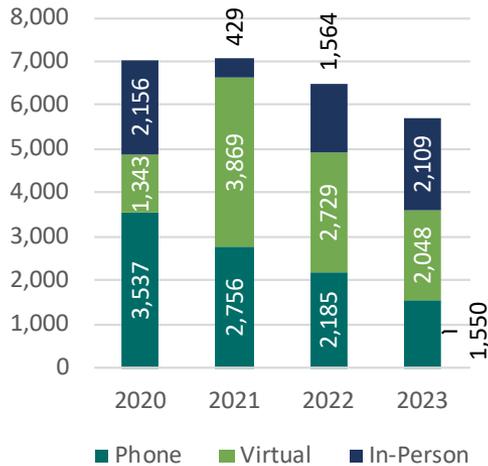
### Call Center – Participant Services

- 45,270 calls received YTD in 2023
- 55,471 calls received in 2022
- 55,311 calls received in 2021
- 63,953 calls received in 2020

#### Current call trends:

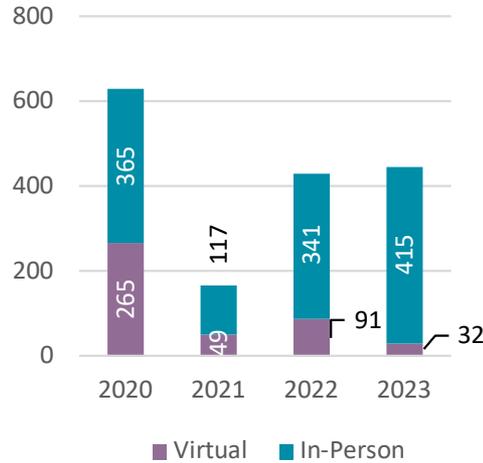
1. Withdrawals
2. General inquiries
3. Internet assistance
4. Deferrals
5. Indicative data

### Individual Account Reviews

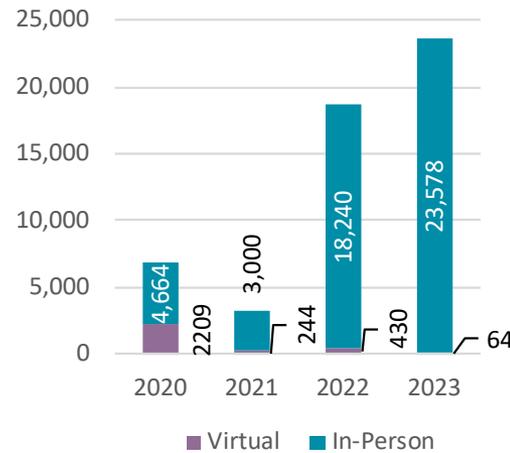


### Participant Sessions

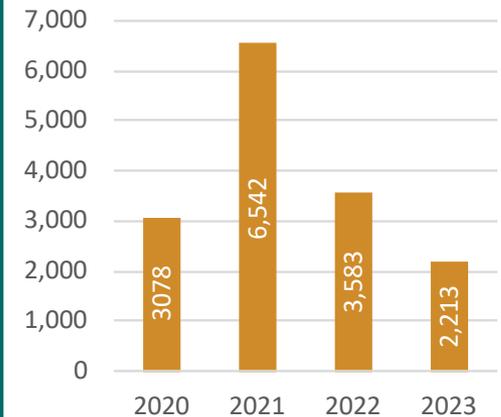
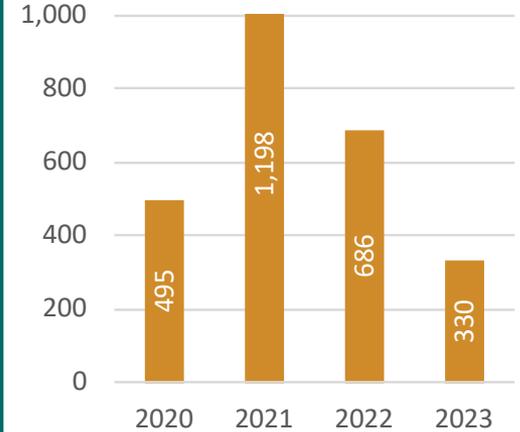
#### Group Meetings



### Participant Attendance



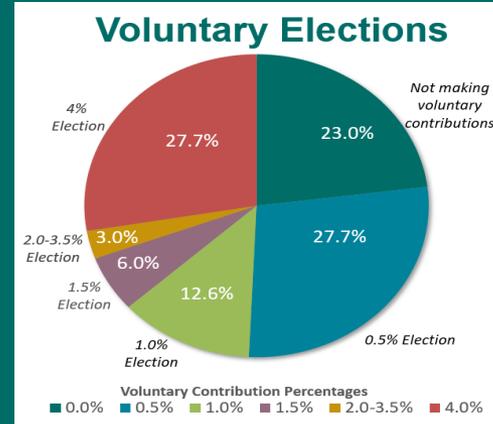
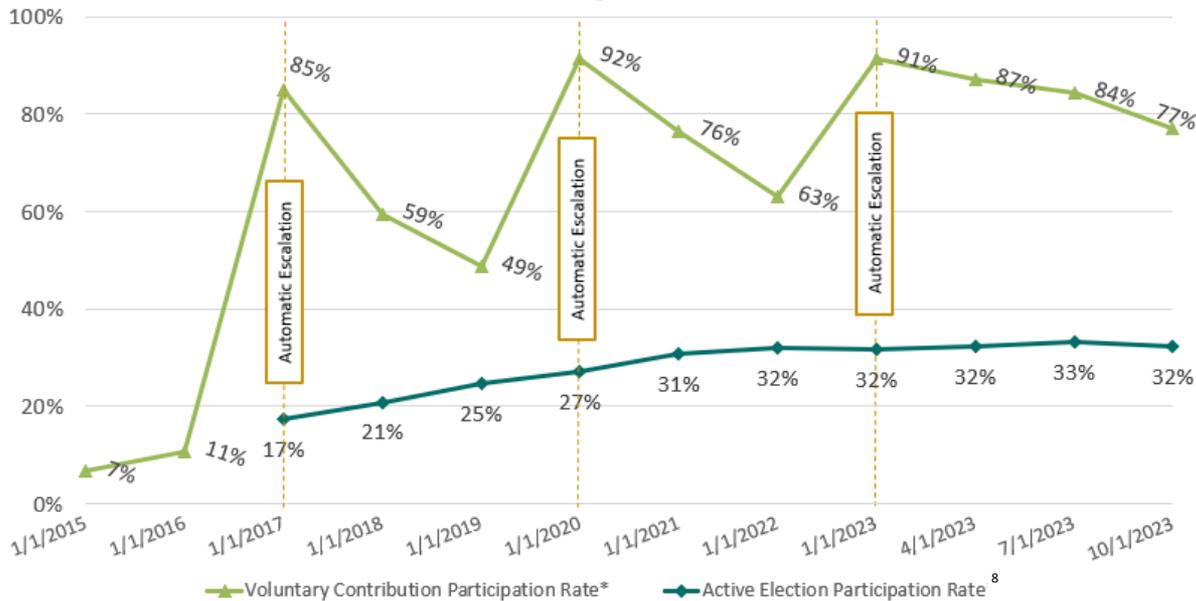
#### Webinars



# VRS Defined Contribution Plans

3<sup>rd</sup> Quarter 2023 – Hybrid Retirement Plan – 401(a) & 457(b)

## Participation Rates<sup>7</sup>



## Top 10 Fund Holdings

1. Target Date Portfolios	\$1,791,053,231
2. Stock	\$70,341,244
3. Small/Mid-Cap Stock	\$19,298,061
4. Money Market	\$13,382,232
5. Stable Value	\$10,168,496
6. International Stock	\$9,905,691
7. High-Yield Bond	\$4,390,779
8. Global Real Estate	\$4,182,461
9. Bond	\$3,575,615
10. Schwab PCRA	\$3,425,422

## Participant Status Overview<sup>3</sup>

430,368 total accounts

71% Active

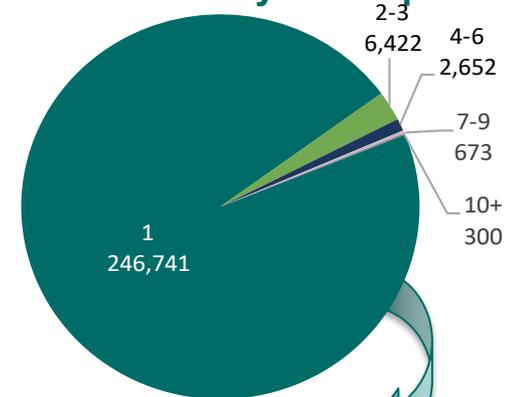
29% Separated

\$377m assets at-risk

## Contributions/Distributions



## # of Funds Held by Participants



99.5% of this population is invested in a single TDP

# VRS Defined Contribution Plans

3<sup>rd</sup> Quarter 2023 – ORPHE\* and ORPPA

## ORPPA Participation

Participant Accounts: 489  
Assets: \$25,599,387  
Provider: MissionSquare

### ORPPA-Eligible Plan Coverage



Plan ● ORPPA\_Plan2 ● VRS-HYBRID

## ORPHE Participation

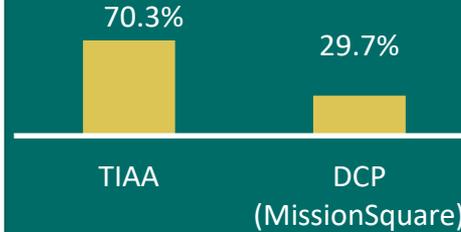
Participant Accounts: 10,604  
Assets: \$1,162,042,327  
Providers: MissionSquare, TIAA

### ORPHE-Eligible Plan Coverage

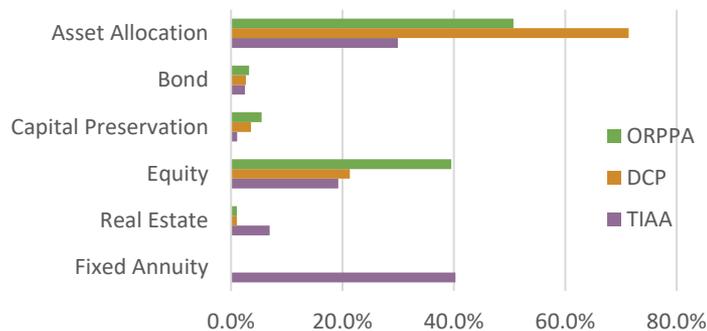


Plan ● VRS-HYBRID ● ORPHE\_Plan2

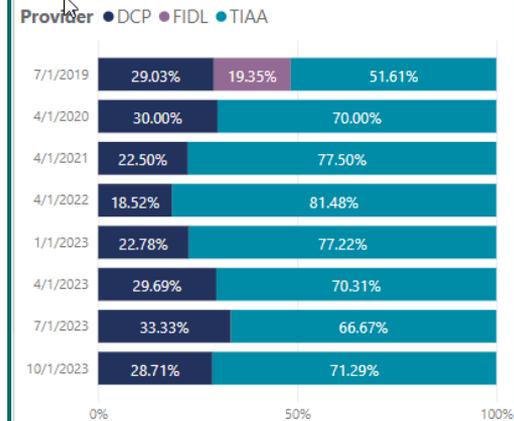
## ORPHE Current Provider Election



## Participant Holdings^ by Plan and Asset Class



## ORPHE Provider Election Rates Over Time



**ORPHE Deselected Providers:**  
Fidelity, T. Rowe Price, Empower, AIG-VALIC, MetLife  
Participants: 1,312  
Assets: \$134,345,270.32

\*Excludes opt-out higher ed institutions. ^Excludes deselected investments. Some currently selected funds on the TIAA platform may include assets across the RC, RA, and GRA contracts. †Includes both international and domestic equity.

# VRS Defined Contribution Plans

## 3<sup>rd</sup> Quarter 2023 – DC Plans Metrics

### Source Information/Additional Footnotes

All data unless noted otherwise was provided by MissionSquare Retirement and is as of 9/30/2023.

1. Includes DC plans record kept by MissionSquare Retirement.
2. Total assets and accounts include beneficiaries and excludes forfeiture and reserve accounts.
3. Web statistics provided by Google Analytics.
4. Includes employees at higher education institutions who are also eligible for a 403(b).
5. Cash Flow Definitions
  - Rollins – Contributions into a participant’s account from a retirement plan or IRA.
  - Contributions – Payroll contributions from a participant’s paycheck.
  - Plan Transfers – Transfer of funds between VRS retirement plans.
  - Distributions – Consists of auto enrollment refunds, required minimum distributions (RMDs) unforeseen emergency withdrawals and full, partial, installment and de minimis requests
  - Rollouts – Withdrawal request sent to another retirement plan or IRA
  - SCP – A request to transfer employee contribution funds from the plan to VRS to purchase service credit. Please note, SCP is not permitted from the H401 plan.
6. Active Participants do not have a termination date on file and may not have made a contribution during the quarter. Terminated Participants have a termination date on file.
7. Source: 10/1/23 Active Hybrid Member Demographics Report.
8. Active Election participation rate includes members who had a self-selected voluntary election on file prior to the automatic escalation that occurred on 12/16/22.
9. Chart shows current status of active participants set up as auto-enroll eligible after plan conversion, January 6, 2014; excludes terminated participants.

# CEM Defined Contribution Survey Results

## 2022 Investment Benchmarking Analysis for Virginia Retirement System

Thank you for participating in CEM's annual Defined Contribution survey. Your results are only provided to you. Confidentiality of your data is strictly maintained.



## CEM presents your 2022 benchmarking results!

We are pleased to present the 26th edition of the annual CEM Benchmarking results for defined contribution plans. In this complimentary PDF report, you will find a comparison of your plan's 2022 investment option returns and costs to the U.S. universe.

In 2021 we introduced an improved benchmark cost calculation through the CEM Dashboard, our interactive online benchmarking service. The Dashboard includes your benchmark cost, calculated based on a custom selected group of similar-sized peers, adjusted for factors that impact fees.

The CEM Dashboard contains our highest standard of fee and performance benchmarking analysis provided through a cost-effective, self-service channel. In addition, the Dashboard provides multi-year views and deeper insights into the cost and performance of your options, administrative and participant expenses, target date funds, and the line up. Please refer to page 4 for more details on your peer group and this dashboard.

Feel free to contact us if you have any questions, comments, or want to discuss your results. Our team is here to help you get the most out of benchmarking.

Thank you for your participation. We look forward to working with you again next year.

CEM Investment Benchmarking Team.

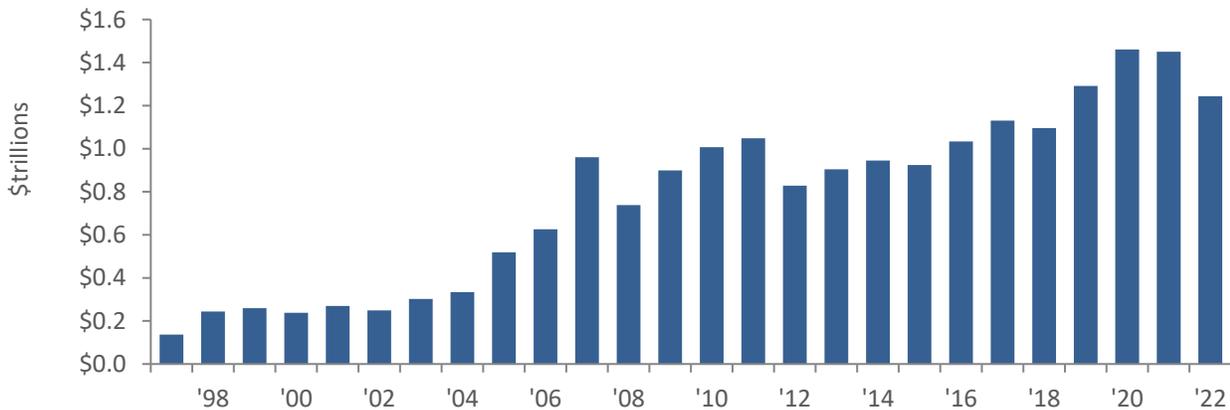
Copyright ©2023 by CEM Benchmarking Inc. (CEM). Although the information in this report has been based upon and obtained from sources we believe to be reliable, CEM does not guarantee its accuracy or completeness. The information contained herein is proprietary and confidential and may not be disclosed to third parties without the express written mutual consent of both CEM and Virginia Retirement System.

# CEM U.S. defined contribution database

CEM has been benchmarking the costs and performance of U.S. defined contribution plans since 1997. In this report, your plan is compared to the 2022 CEM universe, which consists of 122 defined contribution plans, of which 99 are corporate and 23 are public, with a total AUM of \$1.2 trillion. The graph below shows a lower AUM for 2022 than for previous years, this is explained by two factors:

- (i) Market conditions: Investment returns were negative for most plans. See page 10 for details.
- (ii) Timing: We have improved the timeliness of your report.

**Total AUM of U.S. DC plans in the 2022 CEM universe**

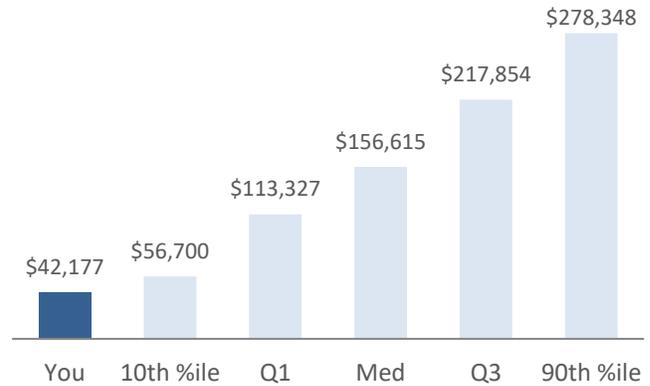
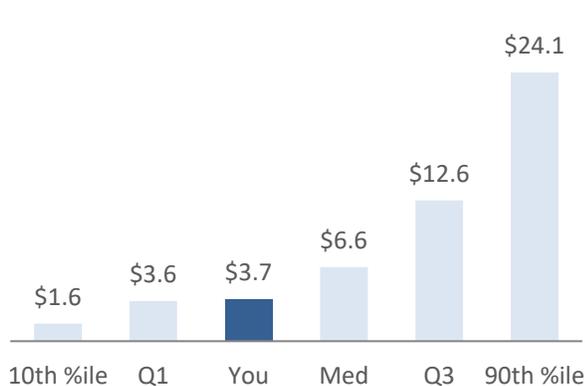


**Plan size**

Your plan had \$3.7 billion in total assets (measured as the sum of option holdings) at the end of 2022. This was below the U.S. universe median of \$6.6 billion.

**Average account balance**

The average account balance of your plan participants was \$42,177 in 2022. This compares to the U.S. universe median of \$156,615.



# Would you like a custom peer group?

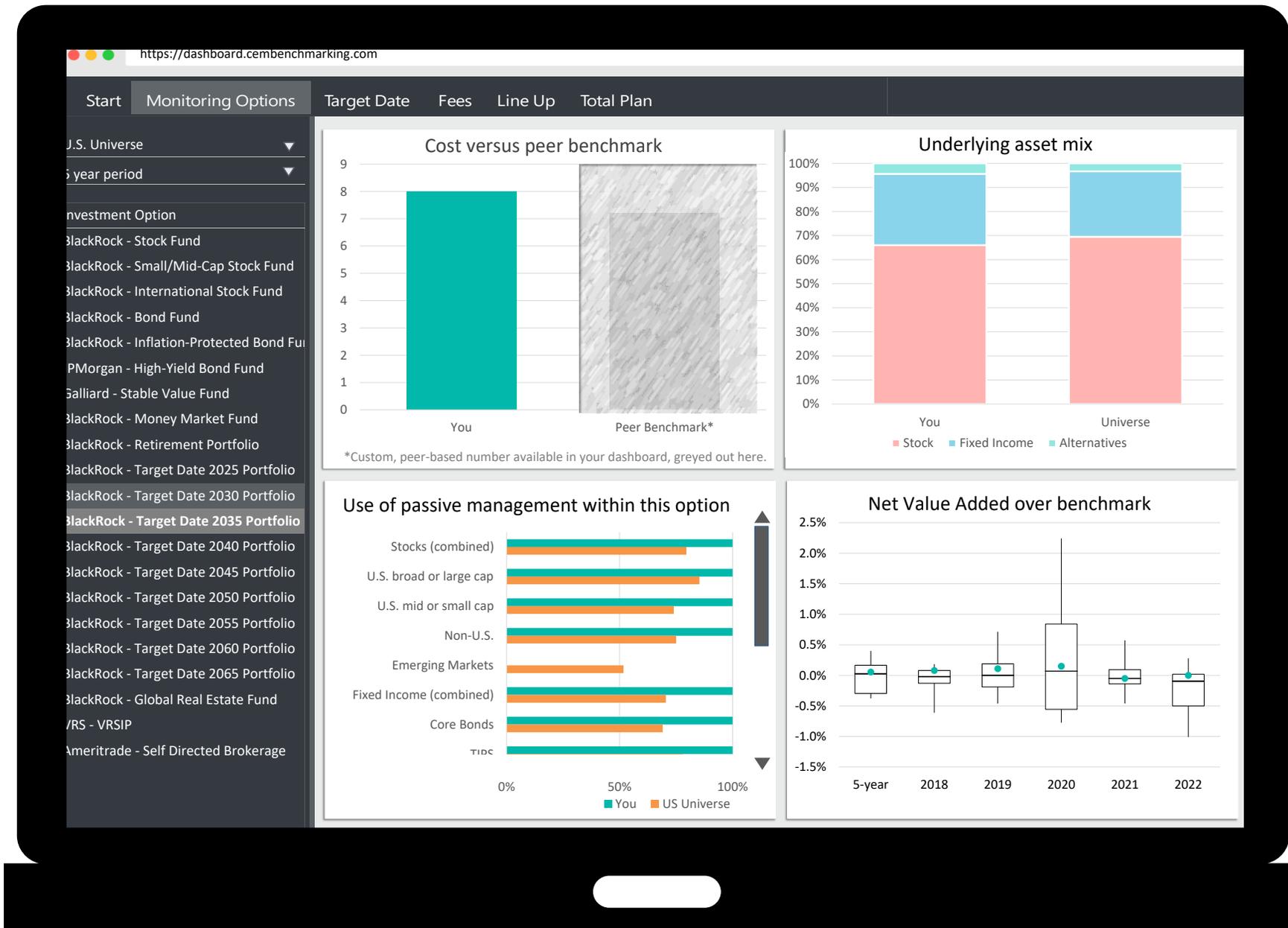
The complimentary report you're holding compares your plan versus all other plans that respond to the CEM survey, regardless of their size: It includes 122 plans from \$114 million to \$63 billion. As size impacts your fee negotiations, in an ideal world you would compare your plan to a custom peer group that is close to you in size. This comparison is available through CEM's dashboard, here is how you compare:

	This report	Peer-based dashboard	Your Proposed Custom Peer Group
# of plans	122	17	
Type of plan	99 corporate, 23 public/other plans	Subset of all plans	
Median plan size	\$6.6Bn (vs. your \$3.7Bn)	\$3.7Bn (vs. your \$3.7Bn)	
Size band	\$114 million - \$63 Bn	\$2.9Bn - \$4.5 Bn	
<b>Insights in:</b>			
1-year net returns	✓	✓	
5-year returns and net value added	Sample*	✓	
Active vs passive management	Sample*	✓	
Target Date suite deep dive	X	✓	
Line-up details	X	✓	
<b>Benchmarking of:</b>			
Your options (passive, active, and a combination of both)	X	✓	
Mixed active/passive options	X	✓	
Target date options	X	✓	
Recordkeeping fees	X	✓	
Internal (sponsor) costs	X	✓	
			Altria Corporate Services, Inc. Corning Incorporated County of Los Angeles (401k) Cummins Inc. DTE Energy Company General Mills Hackensack Meridian Health LANS & LLNS DB Group Trust Michelin North America Inc. Northwestern Mutual Life Insurance PPG Industries, Inc. Sony Corporation of America State of Oregon State Universities Retirement System of Thomson-Reuters Virginia Retirement System Xerox Corporation
			Contact Chris Doll for more details: <a href="mailto:chrisd@cembenchmarking.com">chrisd@cembenchmarking.com</a>

\*The next page shows you a sample of the analyses available in the dashboard.

The names of the above fund sponsors in your proposed peer group are confidential and may not be disclosed to third parties.

# Example of the analyses available in the dashboard for your 2035 target date option



# Your 2022 total plan costs

## Calculating your costs

Your plan's total cost in 2022, excluding individual participant expenses, was \$6.5 million which equals 15.9 bps on total assets or \$73 per participant.

1. Costs in dollars were estimated as 'basis point cost provided' x 'option average holdings', where [ average holdings=(beginning of year + end of year)/2 ]. If beginning of year holdings were not available (you did not participate last year), then we estimated it as [ beginning of year holdings=end of year holdings / (1 + return on holdings) ].

2. Total expense ratio (7.6 bps) = average of option expense ratios weighted by option assets avg. Total \$ expense ratio (3,082) = plan total avg. assets (4,061) x expense ratio (7.6 bps). Plan total average assets (4,061) = (total assets eoy 2022 (3,739) + total assets eoy 2021 (4,383)) / 2.

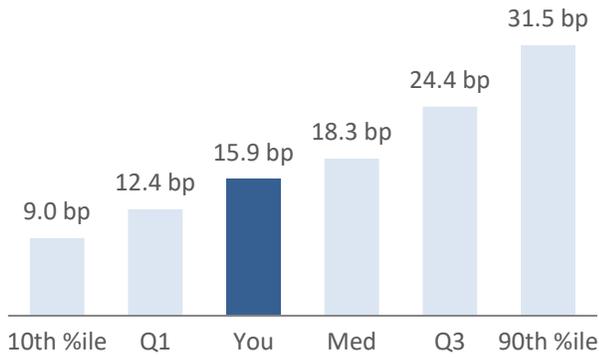
3. Defaults were applied if you were unable to provide cost for recordkeeping or internal oversight.

Investment options	Expense ratio in bp	Assets Avg	Inv. Costs \$000s <sup>1</sup>
BlackRock - Stock Fund	1.0 bp	1,302	
BlackRock - Small/Mid-Cap Stock Fund	2.0 bp	365	
BlackRock - International Stock Fund	6.0 bp	179	
BlackRock - Bond Fund	3.0 bp	141	
BlackRock - Inflation-Protected Bond Fund	3.0 bp	48	
JPMorgan - High-Yield Bond Fund	39.0 bp	41	
Galliard - Stable Value Fund	23.0 bp	534	
BlackRock - Money Market Fund	8.0 bp	82	
BlackRock - Retirement Portfolio	8.0 bp	284	
BlackRock - Target Date 2025 Portfolio	8.0 bp	213	
BlackRock - Target Date 2030 Portfolio	8.0 bp	180	
BlackRock - Target Date 2035 Portfolio	8.0 bp	161	
BlackRock - Target Date 2040 Portfolio	8.0 bp	116	
BlackRock - Target Date 2045 Portfolio	8.0 bp	87	
BlackRock - Target Date 2050 Portfolio	8.0 bp	62	
BlackRock - Target Date 2055 Portfolio	8.0 bp	36	
BlackRock - Target Date 2060 Portfolio	8.0 bp	11	
BlackRock - Target Date 2065 Portfolio	8.0 bp	3	
BlackRock - Global Real Estate Fund	8.0 bp	86	
VRS - VRSIP	59.0 bp	46	
Ameritrade - Self Directed Brokerage	n/a	n/a	
<b>Total expense ratio, investment manager (A)<sup>2</sup></b>	<b>7.6 bp</b>	<b>\$4,061</b>	<b>\$3,082</b>
<b>Administrative expenses<sup>3</sup></b>			
Recordkeeping and administration	5.9 bp		\$2,385
Custodial and trustee	0.0 bp		\$0
Internal oversight	2.4 bp		\$984
Consulting	0.0 bp		\$16
Other plan costs (legal, audit, etc)	0.0 bp		\$0
<b>Administrative costs (B)</b>	<b>8.3 bp</b>		<b>\$3,385</b>
<b>Total plan costs (A + B)</b>	<b>15.9 bp</b>		<b>\$6,467</b>
<b>Individual participant expenses</b>			
Participant advice	0.0 bp		\$0
Managed account fees	0.0 bp		\$0
Other participant expenses (for loans, etc.)	0.0 bp		\$16
<b>Individual participant expenses</b>	<b>0.0 bp</b>		<b>\$16</b>

# Total plan cost comparisons

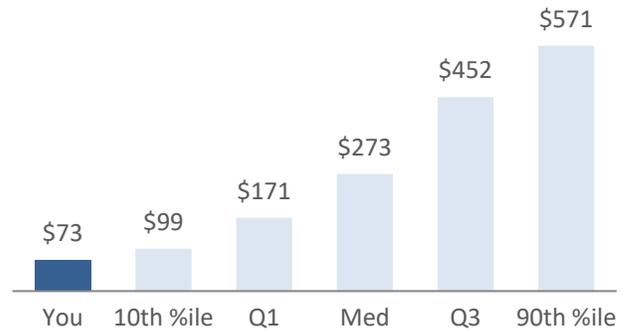
## Total plan cost as a percentage of assets

Your total plan cost, excluding individual expenses, of 15.9 bps was below the U.S. universe median of 18.3 bps.



## Total plan cost per participant

On a per participant basis, your total cost of \$73 was lower than the U.S. universe median of \$273.



As a fiduciary, it is very important that you assess whether your costs are reasonable. Comparing total plan cost, however, provides limited insight because differences in total cost often reflect differences in the type of investment options offered.

On the next few pages we compare costs and performance of each of the options your plan offers your participants against that of the total U.S. universe.

# Option monitoring - Cost

In the table below, investment costs of your options are shown side by side with the median costs reported by the U.S. universe for similar options, e.g. your indexed Stock U.S. SMID Cap option (Small/Mid-Cap Stock Fund) is compared to indexed Stock U.S. SMID Cap options reported by others.

Though the universe comparison is provided, it is inferior to peer-based analysis. Please refer to page 4 for more information.

## Costs by investment option - 2022

Provider	Investment option Option name	Cost Invest. Mgr. <sup>1</sup>		Option type	
		You	Univ med	Category	Indexed <sup>2</sup>
BlackRock	Stock Fund	1.0 bp	1.2 bp	Stock U.S. Broad or Large Cap	✓
BlackRock	Small/Mid-Cap Stock Fund	2.0 bp	2.0 bp	Stock U.S. SMID Cap	✓
BlackRock	International Stock Fund	6.0 bp	5.1 bp	Stock Non U.S.	✓
BlackRock	Bond Fund	3.0 bp	3.0 bp	Bonds Broad	✓
BlackRock	Inflation-Protected Bond Fund	3.0 bp	3.0 bp	Bonds TIPS	✓
JPMorgan	High-Yield Bond Fund	39.0 bp	43.2 bp	Bonds High Yield	
Galliard	Stable Value Fund	23.0 bp	26.0 bp	Stable Value	
BlackRock	Money Market Fund	8.0 bp	9.0 bp	Cash, Money Market	
BlackRock	Retirement Portfolio	8.0 bp	6.0 bp	Target Date	✓
BlackRock	Target Date 2025 Portfolio	8.0 bp	6.0 bp	Target Date	✓
BlackRock	Target Date 2030 Portfolio	8.0 bp	6.0 bp	Target Date	✓
BlackRock	Target Date 2035 Portfolio	8.0 bp	6.0 bp	Target Date	✓
BlackRock	Target Date 2040 Portfolio	8.0 bp	6.0 bp	Target Date	✓
BlackRock	Target Date 2045 Portfolio	8.0 bp	6.0 bp	Target Date	✓
BlackRock	Target Date 2050 Portfolio	8.0 bp	6.0 bp	Target Date	✓
BlackRock	Target Date 2055 Portfolio	8.0 bp	6.0 bp	Target Date	✓
BlackRock	Target Date 2060 Portfolio	8.0 bp	6.0 bp	Target Date	✓
BlackRock	Target Date 2065 Portfolio	8.0 bp	6.0 bp	Target Date	✓
BlackRock	Global Real Estate Fund	8.0 bp	8.0 bp	REIT	✓
VRS	VRSIP	59.0 bp	48.0 bp	Other	

1. Cost is the investment manager expense ratio of each investment option.

2. An option is indexed when the percent of passive management is greater than or equal to 80%.

# Option monitoring - Performance

In the table below, similar to costs on the previous page, your performance is compared to the performance reported for similar options by the U.S. universe.

## Returns and value added by investment option - 2022

Investment option		Net total return <sup>1</sup>		Net value added		Option type	
Provider	Option name	You	Univ med	You	Univ med	Category	Indexed
BlackRock	Stock Fund	-18.1%	-18.1%	0.0%	0.0%	Stock U.S. Broad or Large Cap	✓
BlackRock	Small/Mid-Cap Stock Fund	-18.3%	-25.5%	0.0%	0.1%	Stock U.S. SMID Cap	✓
BlackRock	International Stock Fund	-16.3%	-15.9%	0.3%	0.3%	Stock Non U.S.	✓
BlackRock	Bond Fund	-13.1%	-13.1%	0.0%	-0.1%	Bonds Broad	✓
BlackRock	Inflation-Protected Bond Fund	-11.9%	-11.9%	-0.1%	-0.1%	Bonds TIPS	✓
JPMorgan	High-Yield Bond Fund	-9.6%	-10.8%	1.0%	0.2%	Bonds High Yield	
Galliard	Stable Value Fund	1.5%	1.8%	-1.8%	0.3%	Stable Value	
BlackRock	Money Market Fund	1.9%	1.6%	0.4%	0.1%	Cash, Money Market	
BlackRock	Retirement Portfolio	-14.6%	-14.6%	-0.1%	-0.1%	Target Date	✓
BlackRock	Target Date 2025 Portfolio	-15.2%	-14.6%	-0.1%	-0.1%	Target Date	✓
BlackRock	Target Date 2030 Portfolio	-16.0%	-16.5%	-0.1%	-0.1%	Target Date	✓
BlackRock	Target Date 2035 Portfolio	-16.7%	-16.5%	0.0%	-0.1%	Target Date	✓
BlackRock	Target Date 2040 Portfolio	-17.4%	-17.4%	0.0%	0.0%	Target Date	✓
BlackRock	Target Date 2045 Portfolio	-17.9%	-17.4%	0.1%	0.0%	Target Date	✓
BlackRock	Target Date 2050 Portfolio	-18.2%	-18.2%	0.1%	0.0%	Target Date	✓
BlackRock	Target Date 2055 Portfolio	-18.3%	-18.2%	0.1%	0.0%	Target Date	✓
BlackRock	Target Date 2060 Portfolio	-18.3%	-18.2%	0.1%	0.0%	Target Date	✓
BlackRock	Target Date 2065 Portfolio	-18.3%	-18.2%	0.1%	0.0%	Target Date	✓
BlackRock	Global Real Estate Fund	-24.3%	-26.1%	0.8%	0.0%	REIT	✓
VRS	VRSIP	-5.3%	-5.3%	6.0%	-0.1%	Other	

1. Option net return = option provided return [returns provided are: net of investment and admin fees].

2. An option is indexed when the percent of passive management is greater than or equal to 80%.

# Investment options and average total return

## Number of investment options

Your plan offered 12 investment options in 2022. This was below the universe median of 13.

Offering more investment options to participants is not necessarily better - if there are too many choices, the process can be overwhelming to participants.

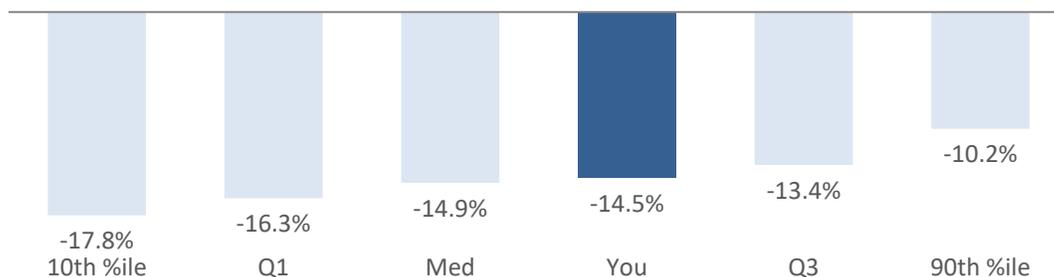
Option category	You	Universe	
		Average	Median
Stock Employer Discretionary	0	0.5	0
Stock U.S.	2	4.8	4
Stock Non U.S. & Global	1	2.4	2
Bonds	3	2.6	2
Balanced	0	0.4	0
Target Date <sup>1</sup>	1	0.9	1
Stable Value & GIC	1	0.7	1
Cash, Money Market	1	0.6	1
Mutual Fund Window	0	0.1	0
Participant Brokerage Account	1	0.4	0
Real, Hedge, Other ex. Loans	2	0.8	0
<b>Total (excl. Loans)</b>	<b>12</b>	<b>14.3</b>	<b>13</b>

1. Target Date funds in one family are counted as one option.

## Average total return of plan participants - 2022

Average net total return measures the change in the average participant's account balance as a result of the net returns earned by their investment options weighted by their holdings. Your plan participants' average net total return was -14.5% in 2022. This was above the U.S. universe median of -14.9%.

There are two primary causes of differences in participants' average net total return: asset mix differences and value added performance. These are shown on the next page.



# Asset mix and value added

## Asset mix

As fiduciaries, you should monitor asset mix because it is often the biggest reason for differences in the total returns of plan participants. Asset mix red-flags include high holdings of employer stock, cash, and stable value.

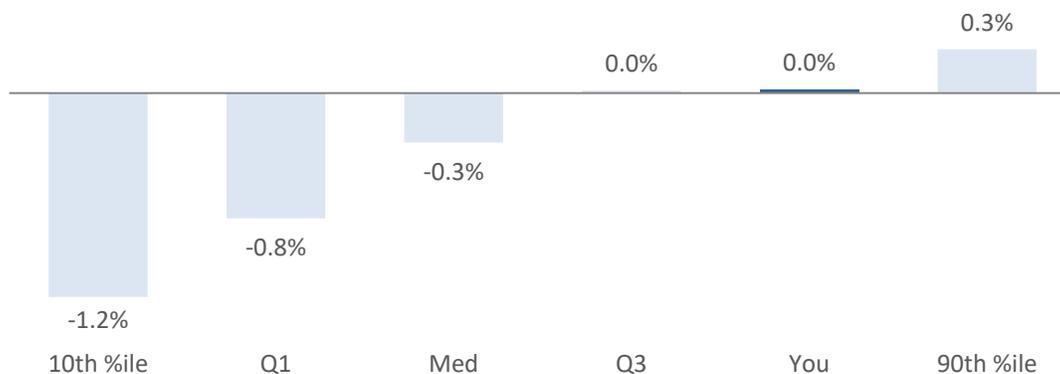
Asset mix is a function of the investment options offered and members' choices.

Option category	Your plan	Univ Average	Univ Median
Stock Employer	0%	8%	2%
Stock U.S.	39%	31%	32%
Stock Non U.S. & Global	4%	6%	6%
Bonds	6%	6%	6%
Target Date & Balanced	28%	33%	32%
Stable Value & GIC	15%	10%	7%
Cash, Money Market	2%	2%	0%
MF & Brokerage Windows	2%	2%	0%
Real, Hedge, Other	3%	1%	1%
Total	100%	100%	

## Average total plan value added

The weighted average net value added<sup>1</sup> earned across all of your plan's options was 0.0% in 2022. This was above the U.S. universe median of -0.3%.

Positive value added indicates that, on average, your plan's investment options are outperforming their benchmark indices, whereas negative value added indicates that they are underperforming.

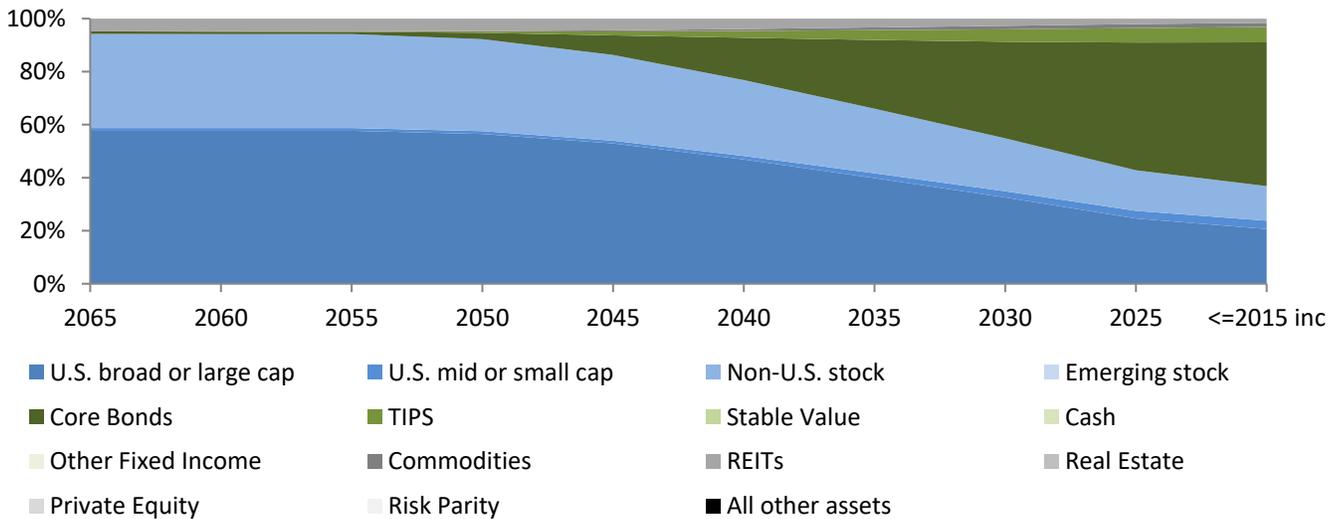


1. Value added = net return - benchmark return. In this chart the value added from employer stock is neutralized by setting its benchmark return equal to its actual return. It is neutralized in this report so we can show the value added from diversified plan options. Similarly, value added for stable value options is neutralized because of concerns over the benchmarks used for these options.

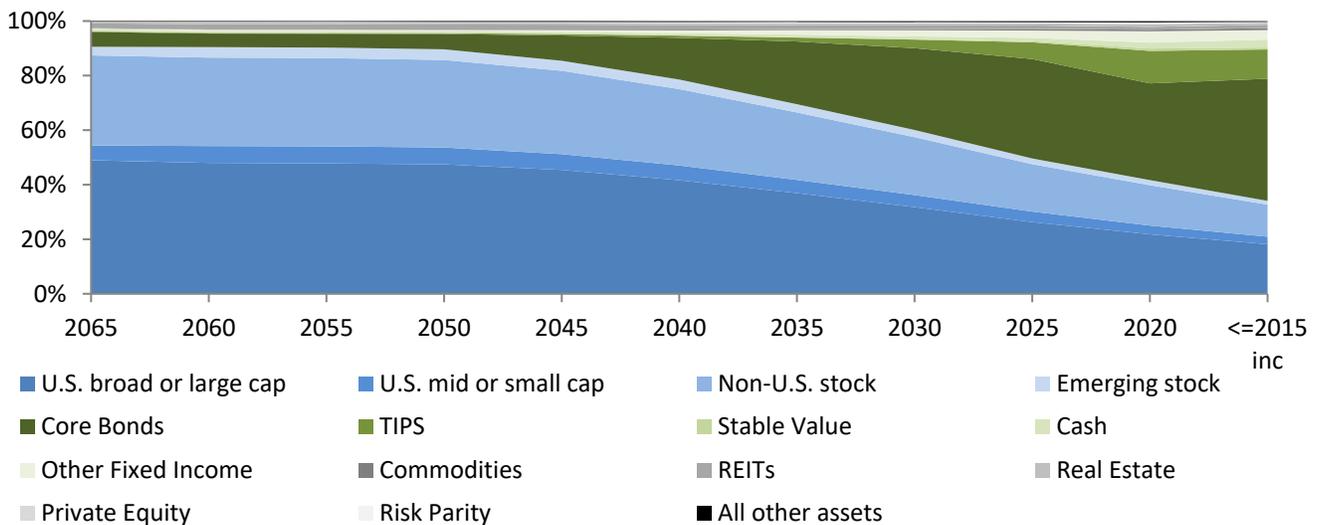
# Asset mix of target date funds

The first graph is your target date asset allocation glide path. The one below is the average U.S. plan's glide path. On the next page, this data is shown in percentages. Your plan offers a target date family and it is your default option.

**Your Plan**  
Target date asset mix - 2022



**U.S. Universe**  
Target date asset mix - 2022



# Asset mix of target date funds

## Your Plan Target date asset mix - 2022

Asset class	2065	2060	2055	2050	2045	2040	2035	2030	2025	2020	<=2015 inc
U.S. broad or large cap	58%	58%	58%	57%	53%	47%	40%	33%	25%	--	21%
U.S. mid or small cap	1%	1%	1%	1%	1%	1%	2%	2%	3%	--	3%
Non-U.S. stock	35%	35%	35%	35%	32%	29%	24%	20%	15%	--	13%
Emerging stock	0%	0%	0%	0%	0%	0%	0%	0%	0%	--	0%
Core Bonds	1%	1%	1%	2%	7%	16%	26%	36%	48%	--	54%
TIPS	0%	0%	0%	1%	2%	3%	4%	5%	6%	--	6%
Stable Value	0%	0%	0%	0%	0%	0%	0%	0%	0%	--	0%
Cash	0%	0%	0%	0%	0%	0%	0%	0%	0%	--	0%
Other Fixed Income	0%	0%	0%	0%	0%	0%	0%	0%	0%	--	0%
Commodities	0%	0%	0%	0%	0%	1%	1%	1%	1%	--	2%
REITs	5%	5%	5%	5%	4%	4%	3%	3%	2%	--	2%
Real Estate	0%	0%	0%	0%	0%	0%	0%	0%	0%	--	0%
Private Equity	0%	0%	0%	0%	0%	0%	0%	0%	0%	--	0%
Risk Parity	0%	0%	0%	0%	0%	0%	0%	0%	0%	--	0%
All other assets	0%	0%	0%	0%	0%	0%	0%	0%	0%	--	0%

## U.S. Universe Target date asset mix - 2022

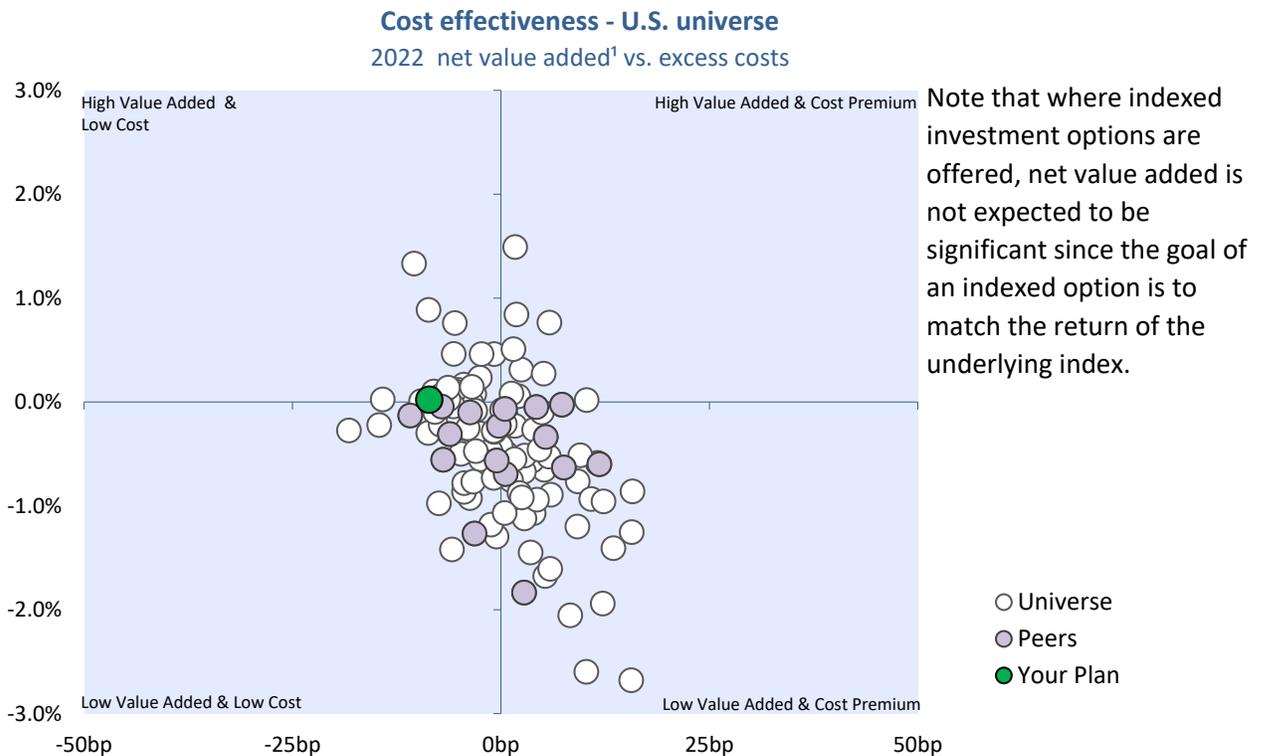
Asset class	2065	2060	2055	2050	2045	2040	2035	2030	2025	2020	<=2015 inc
U.S. broad or large cap	49%	48%	48%	47%	45%	42%	37%	32%	26%	22%	18%
U.S. mid or small cap	5%	6%	6%	6%	6%	5%	5%	4%	4%	3%	3%
Non-U.S. stock	33%	32%	32%	32%	31%	28%	25%	21%	17%	15%	12%
Emerging stock	3%	4%	4%	4%	4%	4%	3%	3%	2%	2%	1%
Core Bonds	5%	5%	5%	6%	9%	15%	23%	30%	36%	35%	45%
TIPS	0%	0%	0%	0%	1%	1%	1%	3%	6%	12%	11%
Stable Value	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%
Cash	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	3%
Other Fixed Income	0%	1%	1%	1%	1%	1%	2%	2%	3%	4%	3%
Commodities	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%
REITs	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%
Real Estate	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Private Equity	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Risk Parity	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
All other assets	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

# Cost effectiveness

In an ideal world, the more you pay (i.e., the larger your excess cost) the more you would get (i.e., the higher your value added). If that was the case, you would see an upward sloping relationship in the graph below. Clearly, that is not the case. CEM's research has shown consistently that there is no relationship between what plans spend and what they receive.

It is, however, good to know where your plan places on the graph and, even more important, to understand the reasons why.

This report provides you with high-level insights of how your plan compared to the U.S. universe in 2022. CEM's interactive online Dashboard provides much more insight, through a cost-effective, self-service channel. Please reach out if you like to learn more, or book a live demo with our team. See page 4 for more details.



1. Value added = net return - benchmark return. In this chart the value added from employer stock is neutralized by setting its benchmark return equal to its actual return. It is neutralized in this report so we can show the value added from diversified plan options. Similarly, value added for stable value options is neutralized because of concerns over the benchmarks used for these options.

# Appendix: Your survey responses

## Data quality

We recognize that the value of information contained in our reports is only as good as the quality of data we receive. Therefore, we have procedures in place for checking and improving the data that include:

- Automatic validation - all survey responses are compared to the plan sponsor's prior year responses and universe norms to ensure consistency.
- Manual verification - our analysts review each survey individually and follow-up with the survey responder with any questions regarding their data.
- Improving survey clarity - we have 26 years of feedback from participants incorporated into the survey that has led to improved definitions and clarity around data.

## Your survey responses

Your data is summarized on the following pages. Note that if your original survey responses appear slightly different, it may be for any of the following reasons:

- 1. Gross versus Net Returns** - We ask participants to report returns on either a net or gross basis but in order to ensure 'apples-to-apples' comparisons, we compare returns net of all costs, including administration costs.
- 2. Returns not available** - We request that you leave the return blank if a full year return was unavailable for an investment option. The default for an unavailable return is to exclude this investment option from the net value added calculations.
- 3. Costs not provided** - As important as it is to report accurate costs, we recognize that some, such as fiduciary oversight costs, can be difficult to obtain. Therefore, if you were unable to provide us with your costs, we applied a default figure using industry data.

## Your survey responses

Virginia Retirement System

General	2022	2021	2020	2019	2018
Contact	Laura Pugliese				
Data provided by:	Michael Scott				
Corporate, public, other?	Public	Public	Public	Public	Public
Market value of plan assets (\$ millions)	\$3,739	\$4,383	\$3,807	\$3,074	\$2,558
Number of plan participants	88,647	87,898	86,683	80,954	79,906
% of eligible employees participating	26%	28%	28%	27%	32%
Are some DC participants covered by a DB plan?	Yes Some	Yes Some	Yes Some	Yes Some	Yes Some
Administrative costs, plan expenses (\$000s)	2022	2021	2020	2019	2018
Recordkeeping <sup>1</sup>					
paid from expense ratio of invest. options					
charged to individuals or participant accounts	2,385	2,395	2,433	2,291	2,298
paid by plan sponsor					
Custodial & trustee					
paid from expense ratio of invest. options					
charged to individuals or participant accounts					
paid by plan sponsor					
Oversight internal <sup>2</sup>					
paid from expense ratio of invest. options					
charged to individuals or participant accounts					
paid by plan sponsor	984	701	781	835	878
Consulting					
paid from expense ratio of invest. options					
charged to individuals or participant accounts					
paid by plan sponsor	16				
Other					
paid from expense ratio of invest. options					
charged to individuals or participant accounts					
paid by plan sponsor					
less rebates to participants from reimburse. accounts					
Total Plan Expenses	3,385	3,096	3,214	3,126	3,176
Participant Expenses (\$000s)	2022	2021	2020	2019	2018
Participant advice					
paid from expense ratio of invest. options					
charged to individuals or participant accounts					
paid by plan sponsor					
Managed account fees					
paid from expense ratio of invest. options					
charged to individuals or participant accounts					
paid by plan sponsor					
Other participant expenses (for loans, QDROs, etc.)					
paid from expense ratio of invest. options					
charged to individuals or participant accounts	16	1	12	7	3
paid by plan sponsor					
Total Participant Expenses	16	1	12	7	3

1. If you were unable to provide a breakdown of your administrative & fiduciary costs, the total was included in recordkeeping because it usually represents the bulk of administrative & fiduciary costs.

2. If you were unable to provide costs for Fiduciary oversight internal, we applied a default value. If the number of internal FTEs is available, default equals \$100,000 x FTE. Otherwise, it is 0.0001 x Market value of plan assets.

## Your survey responses

Virginia Retirement System

<b>About your options</b>	2022	2021	2020	2019	2018
Do you have a default investment option?	Yes	Yes	Yes	Yes	Yes
If yes, what is the default option?	Target / lifecycle				
Option returns are:	Net mgmt & admin fees	Net mgmt & admin fees	Net mgmt fees	Net mgmt fees	Net mgmt fees
<b>Cost drivers and allocation</b>	2022	2021	2020	2019	2018
FTE fulfilling fiduciary/oversight functions	7.0	7.0	7.0	7.0	7.0
Does the plan offer a managed account service?	No	No	No	No	No
Number with managed accounts					
Market value in managed accounts					
Do you receive revenue sharing from your providers?	No	No	No	No	No
Is it used to reduce management fee?					
Is it used to reduce admin. or fiduciary costs?					
How are the recordkeeping or admin costs allocated to participants (asset based, flat fee, both, or other)?	flat fee				
If other, describe					
<b>Contributions</b>	2022	2021	2020	2019	2018
Employer contributions (\$ millions)	0		0	0	0
Participant contributions (\$ millions)	185	177	167	150	144
% of participants making voluntary contributions?	100%		100%	100%	
<b>Stable Value Funds</b>	2022	2021	2020	2019	2018
What percentage of stable value assets are wrapped?					
What are your total wrap fees (in bps over wrapped amount)					
<b>Loan features</b>	2022	2021	2020	2019	2018
Does your plan allow loans?	No	No	No	No	No
Total number of outstanding loans					
Average loan balance, (\$)					
Does your plan allow for hardship withdrawals?	Yes	Yes	Yes	Yes	Yes
Who pays the loan initiation fee?					
Is the fee a flat dollar amount or % of assets?					
<b>Participant transaction rules and restrictions</b>	2022	2021	2020	2019	2018
Limits on the number of transactions?	No	No	No	No	No
Limits on international funds?	No	No	No	No	No
Limits on any other funds (excl. international)?					
Excessive trading penalties?					
Describe other limits if any	90 day equity wash for				
Assumed retirement age for your target date funds	65	65	65	65	65
Do you customize or use an off shelf target date fund?	Off shelf				
Age at which target date retirement funds stop de-risking	65	65	65	65	65

## Your survey responses

Virginia Retirement System

<b>Services Offered to Separated Employees</b>	<b>2022</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>
Lump sum payouts	Yes	Yes	Yes	Yes	Yes
Required Minimum Distribution (RMD) payouts	Yes	Yes	Yes	Yes	Yes
Partial payouts	Yes	Yes	Yes	Yes	Yes
Installment payouts (e.g., monthly, quarterly, etc.)	Yes	Yes	Yes	Yes	Yes
Loan initiation	No	No	No	No	No
Loan maintenance (for loans made prior to separation)	No	No	No	No	No
Online advice service	No	No	No	No	No
Managed account advice service	No	No	No	No	No
One-on-one advice service with an advisor	No	No	No	No	No
Annuity platform (whether in-plan or out-of-plan)	Yes	Yes	Yes	Yes	Yes
<b>Employee contributions (DC is primary, no DB)</b>	<b>2022</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>
Can participants make:					
a. After-tax Roth 401(k) contributions?	Yes	Yes	Yes	Yes	Yes
b. After-tax non-Roth 401(k) contributions?	No	No	No	No	No
Is investment in employer stock required to some extent?	No	No	No		
Is there a mandatory fixed or minimum contribution rate for full-time employees?	No	No	No	No	No
If yes, what is the mandatory contribution rate as a % of salary ?					
Does the plan have automatic enrolment?	Yes	Yes	Yes	Yes	Yes
If yes:					
a. Initial automatic contribution as a % of salary					
b. What (if any) is the automatic annual increase in the contribution rate?					
c. Maximum rate achieved via automatic increases?					
Applied to all/new employees only when introduced?	Yes	Yes	Yes	Yes	Yes
<b>Employee contributions (DC is suppl. to DB)</b>	<b>2022</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>
Can participants make:					
a. After-tax Roth 401(k) contributions?	Yes	Yes	Yes	Yes	Yes
b. After-tax non-Roth 401(k) contributions?	No	No	No	No	No
Is investment in employer stock required to some extent?	No	No	No		
Is there a mandatory fixed or minimum contribution rate for full-time employees?	No	No	No	No	No
If yes, what is the mandatory contribution rate as a % of salary ?					
Does the plan have automatic enrolment?	Yes	Yes	Yes	Yes	Yes
If yes:					
a. Initial automatic contribution as a % of salary					
b. What (if any) is the automatic annual increase in the contribution rate?					
c. Maximum rate achieved via automatic increases?					
Applied to all employees or new only when introduced?	Yes	Yes	Yes	Yes	Yes

## Your survey responses

Virginia Retirement System

<b>Employer contributions (if DC is primary, no DB)</b>	<b>2022</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>
Are employer contributions made in employer stock, cash or both?	Cash				
Is there a profit sharing component to employer contributions?	No	No	No	No	
Is there an automatic fixed employer contribution rate? If yes, what is the automatic fixed employer contribution rate?	No	No	No	No	
Is there an after-tax employer match?	No				
Is there a before-tax employer match?	Yes				
% of participants earning the maximum match Indicate the match terms below: Percentage match on the first: Percentage of salary contributed: Percentage on the next: Percentage of salary contributed: Or describe:	50% of the participant's contribution amount or \$2				

<b>Employer contributions (if DC is suppl. to DB)</b>	<b>2022</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>
Are employer contributions made in employer stock, cash or both?	Cash				
Is there a profit sharing component to employer contributions?	No	No	No	No	
Is there an automatic fixed employer contribution rate? If yes, what is the automatic fixed employer contribution rate?	No	No	No	No	
Is there an after-tax employer match?	No				
Is there a before-tax employer match?	Yes				
% of participants earning the maximum match Indicate the match terms below: Percentage match on the first: Percentage of salary contributed: Percentage on the next: Percentage of salary contributed: Or describe:	50% of the participant's contribution amount or \$20 per pay period, whichever is less				

## Your survey responses

Virginia Retirement System

<b>Fiduciary</b>	<b>2022</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>
Named fiduciary?	Board	Board	Board	Board	Board
If named fiduciary is a committee:					
Number of committee members?					
Number of meetings in the past year?					
Are the meeting minutes documented?					
Are the named fiduciaries:					
Provided formal training?	Yes	Yes	Yes	Yes	Yes
Required to sign an acknowledgement form?	Yes	Yes	Yes	Yes	Yes
Have third parties been appointed as:					
• Investment manager with full discretionary powers for selecting, monitoring, replacing investment options	No	No	No	No	No
• Investment advisor to provide advice regarding the selection and retention of investment options?	No	No	No	No	No
• Plan administrator responsible for regulatory filings, disclosures to participants and hiring plan service providers if no other fiduciary has that responsibility?	Yes	Yes	Yes	Yes	No
Is there documentation that identifies the process for:					
• Selection and monitoring of third-party fiduciaries and other plan service providers?	Yes	Yes	Yes	Yes	Yes
• Investment policy	Yes	Yes	Yes	Yes	Yes
• Oversight of internal employees involved in operating the plan (i.e., internal fiduciaries, HR staff enrolling employees in the plan, posting deferrals, etc)	Yes	Yes	Yes	Yes	Yes
• Fulfilling administration responsibilities (regulatory filings, disclosures to participants)	Yes	Yes	Yes	Yes	Yes
<b>Education and other</b>	<b>2022</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>
Is individual investment counseling/advice offered to plan participants?	No	No	No	No	No
• Is it provided by advisor, computer, both?					
Does your plan offer financial education via:					
• Group meetings?	Yes	Yes	Yes	Yes	Yes
• One-on-one meetings?	Yes	Yes	Yes	Yes	Yes
Do plan participants receive projections of annual income in retirement:					
• In their participant statements?	Yes	Yes	Yes	Yes	Yes
• Online?	Yes	Yes	Yes	Yes	Yes
• Via separate communication?	No	No	No	No	No
Does your plan have marketing campaigns to:					
• Increase employee contribution/deferral rates?	Yes	Yes	Yes	Yes	Yes
• Increase participation by eligible non-participants?	Yes	Yes	Yes	Yes	Yes
• Educate on the savers tax credit for lower income participants?	Yes	Yes	Yes		Yes
• Improve diversification from Employer Stock?	No	No	No	No	No
Does your plan offer:					
• Out-of-plan guaranteed lifetime income product?	Yes	Yes	Yes	Yes	Yes
• In-plan guaranteed lifetime income product?	No	No	No	No	No
Does your plan offer automatic rebalancing?	Yes	Yes	Yes	Yes	Yes

## Your survey responses

Virginia Retirement System

### Your plan's 2022 investment options

Provider & Option name	Type	% Indxd	\$ mils at 12/31/22	Annual Return	Description	Benchmark	Return	Cost		
								Invest	Admin	Total
BlackRock - Stock Fund	Stk U.S. Broad or LC	100%	1,149	-18.1%	S&P 500	-18.1%	1.0 bp	0.0 bp	1.0 bp	
BlackRock - Small/Mid-Cap Stock Fund	Stk U.S. SMID Cap	100%	323	-18.3%	Russell 2500	-18.4%	2.0 bp	0.0 bp	2.0 bp	
BlackRock - International Stock Fund	Stk Non U.S.	100%	163	-16.3%	MSCI ACWI ex-U.S Index IMI Index Linked	-16.6%	6.0 bp	0.0 bp	6.0 bp	
BlackRock - Bond Fund	Bonds Broad	100%	129	-13.1%	Bloomberg U.S. Aggregate Bond Index	-13.0%	3.0 bp	0.0 bp	3.0 bp	
BlackRock - Inflation-Protected Bond Fund	Bonds TIPS	100%	45	-11.9%	Bloomberg U.S. Treasury Inflation-Protec	-11.9%	3.0 bp	0.0 bp	3.0 bp	
JPMorgan - High-Yield Bond Fund	Bonds High Yield	0%	38	-9.6%	ICE BofA Merrill Lynch U.S. High-Yield B	-10.6%	39.0 bp	0.0 bp	39.0 bp	
Galliard - Stable Value Fund	Stable Value	0%	544	1.5%	[50% 2-Year CMT/50% 3-Year CMT] + 0.25%*	3.3%	23.0 bp	0.0 bp	23.0 bp	
BlackRock - Money Market Fund	Cash, Money Mrkt	0%	88	1.9%	Your Cash, Money Market benchmark	1.5%	8.0 bp	0.0 bp	8.0 bp	
BlackRock - Retirement Portfolio	Target Date Short	100%	253	-14.6%	Custom	-14.5%	8.0 bp	0.0 bp	8.0 bp	
BlackRock - Target Date 2025 Portfolio	Target Date Short	100%	192	-15.2%	Custom	-15.2%	8.0 bp	0.0 bp	8.0 bp	
BlackRock - Target Date 2030 Portfolio	Target Date Medium	100%	168	-16.0%	Custom	-15.9%	8.0 bp	0.0 bp	8.0 bp	
BlackRock - Target Date 2035 Portfolio	Target Date Medium	100%	152	-16.7%	Custom	-16.7%	8.0 bp	0.0 bp	8.0 bp	
BlackRock - Target Date 2040 Portfolio	Target Date Long	100%	109	-17.4%	Custom	-17.4%	8.0 bp	0.0 bp	8.0 bp	
BlackRock - Target Date 2045 Portfolio	Target Date Long	100%	83	-17.9%	Custom	-18.0%	8.0 bp	0.0 bp	8.0 bp	
BlackRock - Target Date 2050 Portfolio	Target Date Very Long	100%	59	-18.2%	Custom	-18.3%	8.0 bp	0.0 bp	8.0 bp	
BlackRock - Target Date 2055 Portfolio	Target Date Very Long	100%	34	-18.3%	Custom	-18.4%	8.0 bp	0.0 bp	8.0 bp	
BlackRock - Target Date 2060 Portfolio	Target Date Very Long	100%	10	-18.3%	Custom	-18.4%	8.0 bp	0.0 bp	8.0 bp	
BlackRock - Target Date 2065 Portfolio	Target Date Very Long	100%	3	-18.3%	Custom	-18.4%	8.0 bp	0.0 bp	8.0 bp	
BlackRock - Global Real Estate Fund	REIT	100%	73	-24.3%	Your REIT benchmark	-25.1%	8.0 bp	0.0 bp	8.0 bp	
VRS - VRSIP	Other	1%	46	-5.3%	CUSTOM	-11.2%	59.0 bp	0.0 bp	59.0 bp	
Ameritrade - Self Directed Brokerage	Participant Broker Account	0%	76				0.0 bp	0.0 bp	0.0 bp	
<b>Total</b>			<b>3,739</b>				<b>7.6 bp</b>	<b>0.0 bp</b>	<b>7.6 bp</b>	

# CEM Defined Contribution Survey Results

2022 Investment Benchmarking Analysis for  
VA ORPHE – TIAA

Thank you for participating in CEM's annual Defined Contribution survey. Your results are only provided to you. Confidentiality of your data is strictly maintained.



## CEM presents your 2022 benchmarking results!

We are pleased to present the 26th edition of the annual CEM Benchmarking results for defined contribution plans. In this complimentary PDF report, you will find a comparison of your plan's 2022 investment option returns and costs to the U.S. universe.

In 2021 we introduced an improved benchmark cost calculation through the CEM Dashboard, our interactive online benchmarking service. The Dashboard includes your benchmark cost, calculated based on a custom selected group of similar-sized peers, adjusted for factors that impact fees.

The CEM Dashboard contains our highest standard of fee and performance benchmarking analysis provided through a cost-effective, self-service channel. In addition, the Dashboard provides multi-year views and deeper insights into the cost and performance of your options, administrative and participant expenses, target date funds, and the line up. Please refer to page 4 for more details on your peer group and this dashboard.

Feel free to contact us if you have any questions, comments, or want to discuss your results. Our team is here to help you get the most out of benchmarking.

Thank you for your participation. We look forward to working with you again next year.

CEM Investment Benchmarking Team.

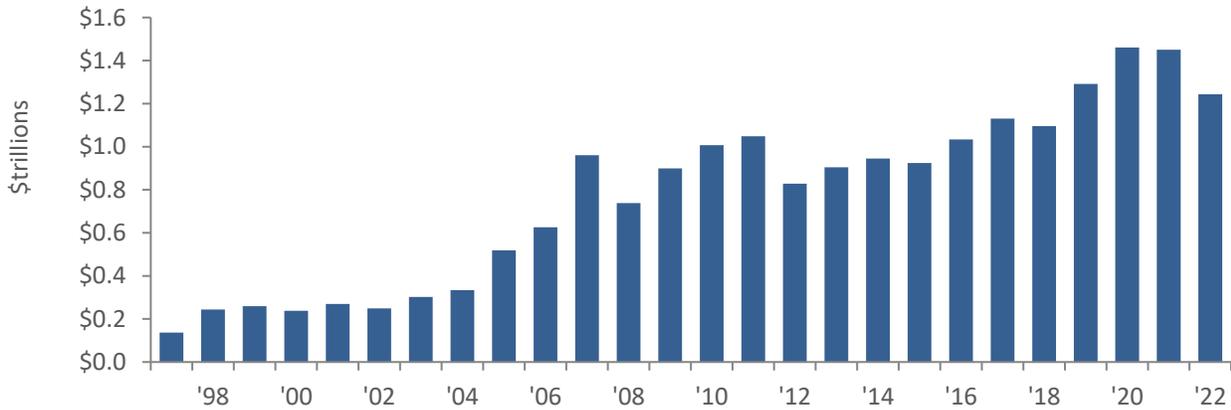
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# CEM U.S. defined contribution database

CEM has been benchmarking the costs and performance of U.S. defined contribution plans since 1997. In this report, your plan is compared to the 2022 CEM universe, which consists of 122 defined contribution plans, of which 99 are corporate and 23 are public, with a total AUM of \$1.2 trillion. The graph below shows a lower AUM for 2022 than for previous years, this is explained by two factors:

- (i) Market conditions: Investment returns were negative for most plans. See page 10 for details.
- (ii) Timing: We have improved the timeliness of your report.

**Total AUM of U.S. DC plans in the 2022 CEM universe**

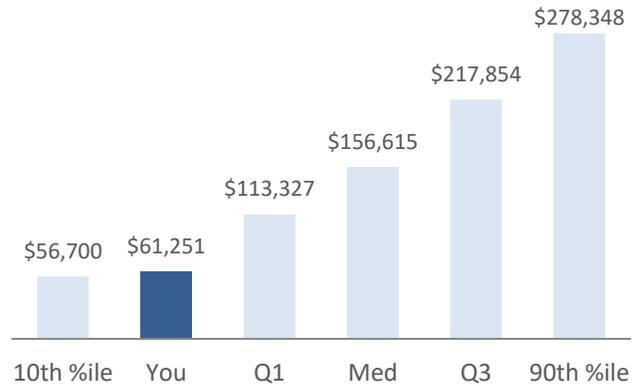
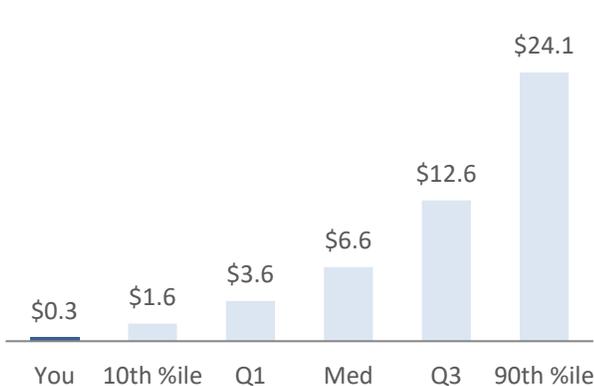


**Plan size**

Your plan had \$0.3 billion in total assets (measured as the sum of option holdings) at the end of 2022. This was below the U.S. universe median of \$6.6 billion.

**Average account balance**

The average account balance of your plan participants was \$61,251 in 2022. This compares to the U.S. universe median of \$156,615.



# Would you like a custom peer group?

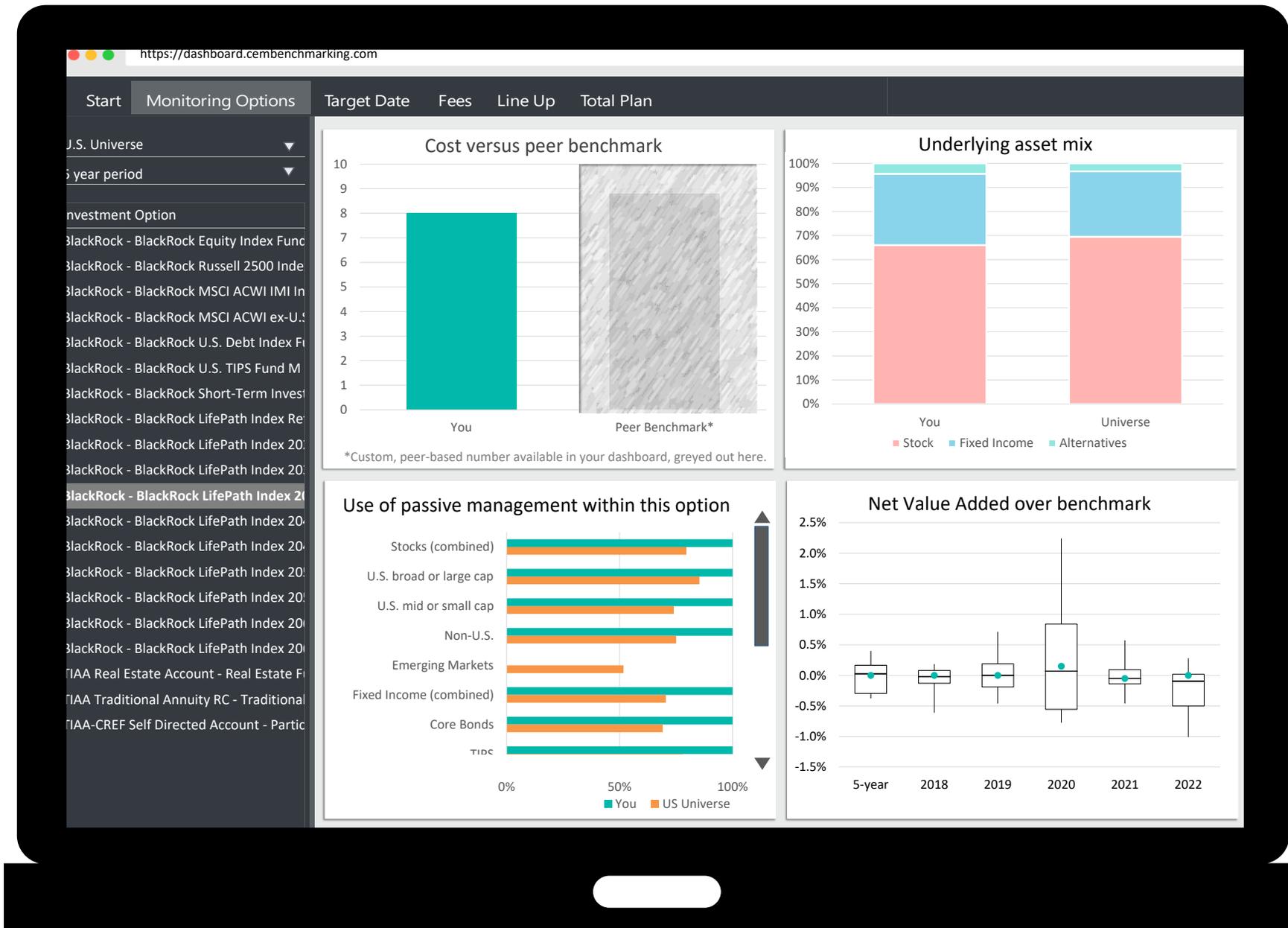
The complimentary report you're holding compares your plan versus all other plans that respond to the CEM survey, regardless of their size: It includes 122 plans from \$114 million to \$63 billion. As size impacts your fee negotiations, in an ideal world you would compare your plan to a custom peer group that is close to you in size. This comparison is available through CEM's dashboard, here is how you compare:

	This report	Peer-based dashboard	Your Proposed Custom Peer Group
# of plans	122	17	AAM
Type of plan	99 corporate, 23 public/other plans	Subset of all plans	Alcoa Corp.
Median plan size	\$6.6Bn (vs. your \$0.3Bn)	\$1.1Bn (vs. your \$0.3Bn)	AT&T - Savings and Security Plan
Size band	\$114 million - \$63 Bn	\$0.1Bn - \$1.9 Bn	BMW of North America
<b>Insights in:</b>			Campbell Soup Company
1-year net returns	✓	✓	CIEBA #006
5-year returns and net value added	Sample*	✓	CSAA Inc (AAA)
Active vs passive management	Sample*	✓	FM Global
Target Date suite deep dive	X	✓	Gartner, Inc
Line-up details	X	✓	Missouri State Employees' Retirement
<b>Benchmarking of:</b>			NiSource Inc.
Your options (passive, active, and a combination of both)	X	✓	SABIC Corporation
Mixed active/passive options	X	✓	Strategic Investment Group
Target date options	X	✓	The Hershey Company
Recordkeeping fees	X	✓	United States Steel and Carnegie Pension
Internal (sponsor) costs	X	✓	VA Hybrid Cash Match Plan
			VA ORPHE – TIAA
			Contact Chris Doll for more details: <a href="mailto:chrisd@cembenchmarking.com">chrisd@cembenchmarking.com</a>

\*The next page shows you a sample of the analyses available in the dashboard.

The names of the above fund sponsors in your proposed peer group are confidential and may not be disclosed to third parties.

# Example of the analyses available in the dashboard for your 2035 target date option



# Your 2022 total plan costs

## Calculating your costs

Your plan's total cost in 2022, excluding individual participant expenses, was \$0.7 million which equals 20.9 bps on total assets or \$134 per participant.

1. Costs in dollars were estimated as 'basis point cost provided' x 'option average holdings', where [ average holdings=(beginning of year + end of year)/2 ]. If beginning of year holdings were not available (you did not participate last year), then we estimated it as [ beginning of year holdings=end of year holdings / (1 + return on holdings) ].

2. Total expense ratio (7.4 bps) = average of option expense ratios weighted by option assets avg. Total \$ expense ratio (254) = plan total avg. assets (342) x expense ratio (7.4 bps). Plan total average assets (342) = (total assets eoy 2022 (327) + total assets eoy 2021 (357)) / 2.

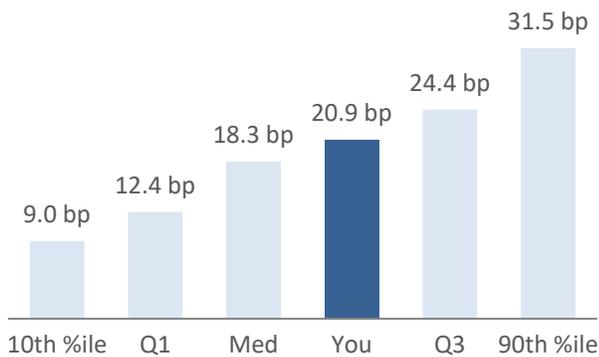
3. Defaults were applied if you were unable to provide cost for recordkeeping or internal oversight.

Investment options	Expense ratio in bp	Assets Avg	Inv. Costs \$000s <sup>1</sup>
BlackRock - BlackRock Equity Index Fund J	1.0 bp	38	
BlackRock - BlackRock Russell 2500 Index Fund M	3.0 bp	9	
BlackRock - BlackRock MSCI ACWI IMI Index Non-Lendable Fund M	5.0 bp	45	
BlackRock - BlackRock MSCI ACWI ex-U.S. IMI Index Fund M	11.0 bp	16	
BlackRock - BlackRock U.S. Debt Index Fund M	3.0 bp	9	
BlackRock - BlackRock U.S. TIPS Fund M	3.0 bp	5	
BlackRock - BlackRock Short-Term Investment Fund W	8.0 bp	6	
BlackRock - BlackRock LifePath Index Retirement O	8.0 bp	26	
BlackRock - BlackRock LifePath Index 2025 Fund O	8.0 bp	21	
BlackRock - BlackRock LifePath Index 2030 Fund O	8.0 bp	30	
BlackRock - BlackRock LifePath Index 2035	8.0 bp	24	
BlackRock - BlackRock LifePath Index 2040 Fund O	8.0 bp	26	
BlackRock - BlackRock LifePath Index 2045 Fund O	8.0 bp	23	
BlackRock - BlackRock LifePath Index 2050 Fund O	8.0 bp	14	
BlackRock - BlackRock LifePath Index 2055 Index Fund O	8.0 bp	6	
BlackRock - BlackRock LifePath Index 2060 Index Fund O	8.0 bp	1	
BlackRock - BlackRock LifePath Index 2065 Fund O	8.0 bp	2	
TIAA Real Estate Account - Real Estate Fund	53.0 bp	11	
TIAA Traditional Annuity RC - Traditional Annuity Fund	0.0 bp	25	
TIAA-CREF Self Directed Account - Participant Brokerage Account	n/a	n/a	
<b>Total expense ratio, investment manager (A)<sup>2</sup></b>	<b>7.4 bp</b>	<b>\$342</b>	<b>\$254</b>
<b>Administrative expenses<sup>3</sup></b>			
Recordkeeping and administration	6.2 bp		\$214
Custodial and trustee	0.0 bp		\$0
Internal oversight	9.2 bp		\$313
Consulting	0.0 bp		\$0
Other plan costs (legal, audit, etc)	0.0 bp		\$0
less rebates to participants	1.9 bp		\$67
<b>Administrative costs after rebates (B)</b>	<b>13.4 bp</b>		<b>\$460</b>
<b>Total plan costs (A + B)</b>	<b>20.9 bp</b>		<b>\$714</b>
<b>Individual participant expenses</b>			
Participant advice	0.0 bp		\$0
Managed account fees	0.0 bp		\$0
Other participant expenses (for loans, etc.)	0.0 bp		\$0
<b>Individual participant expenses</b>	<b>0.0 bp</b>		<b>\$0</b>

# Total plan cost comparisons

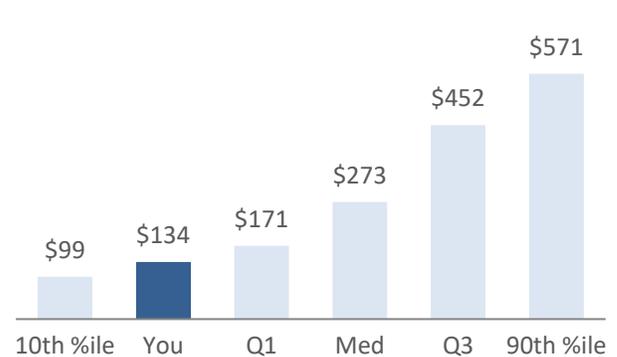
## Total plan cost as a percentage of assets

Your total plan cost, excluding individual expenses, of 20.9 bps was above the U.S. universe median of 18.3 bps.



## Total plan cost per participant

On a per participant basis, your total cost of \$134 was lower than the U.S. universe median of \$273.



As a fiduciary, it is very important that you assess whether your costs are reasonable. Comparing total plan cost, however, provides limited insight because differences in total cost often reflect differences in the type of investment options offered.

On the next few pages we compare costs and performance of each of the options your plan offers your participants against that of the total U.S. universe.

# Option monitoring - Cost

In the table below, investment costs of your options are shown side by side with the median costs reported by the U.S. universe for similar options, e.g. your indexed Stock U.S. SMID Cap option (BlackRock Russell 2500 Index Fund M) is compared to indexed Stock U.S. SMID Cap options reported by others.

Though the universe comparison is provided, it is inferior to peer-based analysis. Please refer to page 4 for more information.

## Costs by investment option - 2022

Provider	Investment option Option name	Cost Invest. Mgr. <sup>1</sup>		Option type	
		You	Univ med	Category	Indexed <sup>2</sup>
BlackRock	BlackRock Equity Index Fund J	1.0 bp	1.2 bp	Stock U.S. Broad or Large Cap	✓
BlackRock	BlackRock Russell 2500 Index Fund M	3.0 bp	2.0 bp	Stock U.S. SMID Cap	✓
BlackRock	BlackRock MSCI ACWI IMI Index Non-Lendable Fund M	5.0 bp	4.5 bp	Stock Global	✓
BlackRock	BlackRock MSCI ACWI ex-U.S. IMI Index Fund M	11.0 bp	5.1 bp	Stock Non U.S.	✓
BlackRock	BlackRock U.S. Debt Index Fund M	3.0 bp	3.0 bp	Bonds Broad	✓
BlackRock	BlackRock U.S. TIPS Fund M	3.0 bp	3.0 bp	Bonds TIPS	✓
BlackRock	BlackRock Short-Term Investment Fund W	8.0 bp	9.0 bp	Cash, Money Market	
BlackRock	BlackRock LifePath Index Retirement O	8.0 bp	6.0 bp	Target Date	✓
BlackRock	BlackRock LifePath Index 2025 Fund O	8.0 bp	6.0 bp	Target Date	✓
BlackRock	BlackRock LifePath Index 2030 Fund O	8.0 bp	6.0 bp	Target Date	✓
BlackRock	BlackRock LifePath Index 2035	8.0 bp	6.0 bp	Target Date	✓
BlackRock	BlackRock LifePath Index 2040 Fund O	8.0 bp	6.0 bp	Target Date	✓
BlackRock	BlackRock LifePath Index 2045 Fund O	8.0 bp	6.0 bp	Target Date	✓
BlackRock	BlackRock LifePath Index 2050 Fund O	8.0 bp	6.0 bp	Target Date	✓
BlackRock	BlackRock LifePath Index 2055 Index Fund O	8.0 bp	6.0 bp	Target Date	✓
BlackRock	BlackRock LifePath Index 2060 Index Fund O	8.0 bp	6.0 bp	Target Date	✓
BlackRock	BlackRock LifePath Index 2065 Fund O	8.0 bp	6.0 bp	Target Date	✓
TIAA Real Estate Account	Real Estate Fund	53.0 bp	59.0 bp	Real Estate	
TIAA Traditional Annuity RC	Traditional Annuity Fund	0.0 bp	0.0 bp	Annuity	

1. Cost is the investment manager expense ratio of each investment option.

2. An option is indexed when the percent of passive management is greater than or equal to 80%.

# Option monitoring - Performance

In the table below, similar to costs on the previous page, your performance is compared to the performance reported for similar options by the U.S. universe.

## Returns and value added by investment option - 2022

Provider	Investment option Option name	Net total return <sup>1</sup>		Net value added		Option type	
		You	Univ med	You	Univ med	Category	Indexed
BlackRock	BlackRock Equity Index Fund J	-18.1%	-18.1%	0.0%	0.0%	Stock U.S. Broad or Large Cap	✓
BlackRock	BlackRock Russell 2500 Index Fund M	-18.4%	-25.5%	0.0%	0.1%	Stock U.S. SMID Cap	✓
BlackRock	BlackRock MSCI ACWI IMI Index Non-Lendable Fund M	-18.1%	-17.3%	0.3%	0.3%	Stock Global	✓
BlackRock	BlackRock MSCI ACWI ex-U.S. IMI Index Fund M	-16.3%	-15.9%	0.3%	0.3%	Stock Non U.S.	✓
BlackRock	BlackRock U.S. Debt Index Fund M	-13.1%	-13.1%	0.0%	-0.1%	Bonds Broad	✓
BlackRock	BlackRock U.S. TIPS Fund M	-11.9%	-11.9%	-0.1%	-0.1%	Bonds TIPS	✓
BlackRock	BlackRock Short-Term Investment Fund W	1.9%	1.6%	0.4%	0.1%	Cash, Money Market	
BlackRock	BlackRock LifePath Index Retirement O	-14.6%	-14.6%	-0.1%	-0.1%	Target Date	✓
BlackRock	BlackRock LifePath Index 2025 Fund O	-15.2%	-14.6%	-0.1%	-0.1%	Target Date	✓
BlackRock	BlackRock LifePath Index 2030 Fund O	-16.0%	-16.5%	-0.1%	-0.1%	Target Date	✓
BlackRock	BlackRock LifePath Index 2035	-16.7%	-16.5%	0.0%	-0.1%	Target Date	✓
BlackRock	BlackRock LifePath Index 2040 Fund O	-17.4%	-17.4%	0.0%	0.0%	Target Date	✓
BlackRock	BlackRock LifePath Index 2045 Fund O	-17.9%	-17.4%	0.1%	0.0%	Target Date	✓
BlackRock	BlackRock LifePath Index 2050 Fund O	-18.2%	-18.2%	0.1%	0.0%	Target Date	✓
BlackRock	BlackRock LifePath Index 2055 Index Fund O	-18.3%	-18.2%	0.1%	0.0%	Target Date	✓
BlackRock	BlackRock LifePath Index 2060 Index Fund O	-18.3%	-18.2%	0.1%	0.0%	Target Date	✓
BlackRock	BlackRock LifePath Index 2065 Fund O	-18.3%	-18.2%	0.1%	0.0%	Target Date	✓
TIAA Real Estate Account	Real Estate Fund	8.2%	-2.3%	6.1%	-0.7%	Real Estate	
TIAA Traditional Annuity RC	Traditional Annuity Fund	n/a	0.0%	n/a	-0.1%	Annuity	

1. Option net return = option provided return [returns provided are: net of investment and admin fees].

2. An option is indexed when the percent of passive management is greater than or equal to 80%.

# Investment options and average total return

## Number of investment options

Your plan offered 11 investment options in 2022. This was below the universe median of 13.

Offering more investment options to participants is not necessarily better - if there are too many choices, the process can be overwhelming to participants.

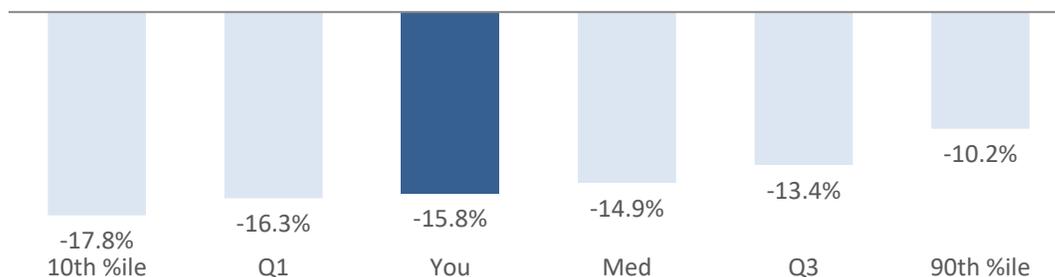
Option category	You	Universe	
		Average	Median
Stock Employer Discretionary	0	0.5	0
Stock U.S.	2	4.8	4
Stock Non U.S. & Global	2	2.4	2
Bonds	2	2.6	2
Balanced	0	0.4	0
Target Date <sup>1</sup>	1	0.9	1
Stable Value & GIC	0	0.7	1
Cash, Money Market	1	0.6	1
Mutual Fund Window	0	0.1	0
Participant Brokerage Account	1	0.4	0
Real, Hedge, Other ex. Loans	2	0.8	0
<b>Total (excl. Loans)</b>	<b>11</b>	<b>14.3</b>	<b>13</b>

1. Target Date funds in one family are counted as one option.

## Average total return of plan participants - 2022

Average net total return measures the change in the average participant's account balance as a result of the net returns earned by their investment options weighted by their holdings. Your plan participants' average net total return was -15.8% in 2022. This was below the U.S. universe median of -14.9%.

There are two primary causes of differences in participants' average net total return: asset mix differences and value added performance. These are shown on the next page.



# Asset mix and value added

## Asset mix

As fiduciaries, you should monitor asset mix because it is often the biggest reason for differences in the total returns of plan participants. Asset mix red-flags include high holdings of employer stock, cash, and stable value.

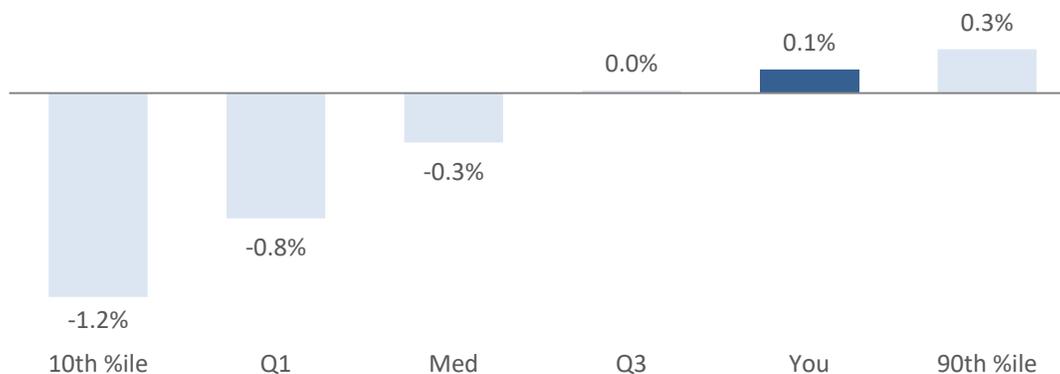
Asset mix is a function of the investment options offered and members' choices.

Option category	Your plan	Univ Average	Univ Median
Stock Employer	0%	8%	2%
Stock U.S.	13%	31%	32%
Stock Non U.S. & Global	17%	6%	6%
Bonds	4%	6%	6%
Target Date & Balanced	50%	33%	32%
Stable Value & GIC	0%	10%	7%
Cash, Money Market	2%	2%	0%
MF & Brokerage Windows	1%	2%	0%
Real, Hedge, Other	12%	1%	1%
Total	100%	100%	

## Average total plan value added

The weighted average net value added<sup>1</sup> earned across all of your plan's options was 0.1% in 2022. This was above the U.S. universe median of -0.3%.

Positive value added indicates that, on average, your plan's investment options are outperforming their benchmark indices, whereas negative value added indicates that they are underperforming.

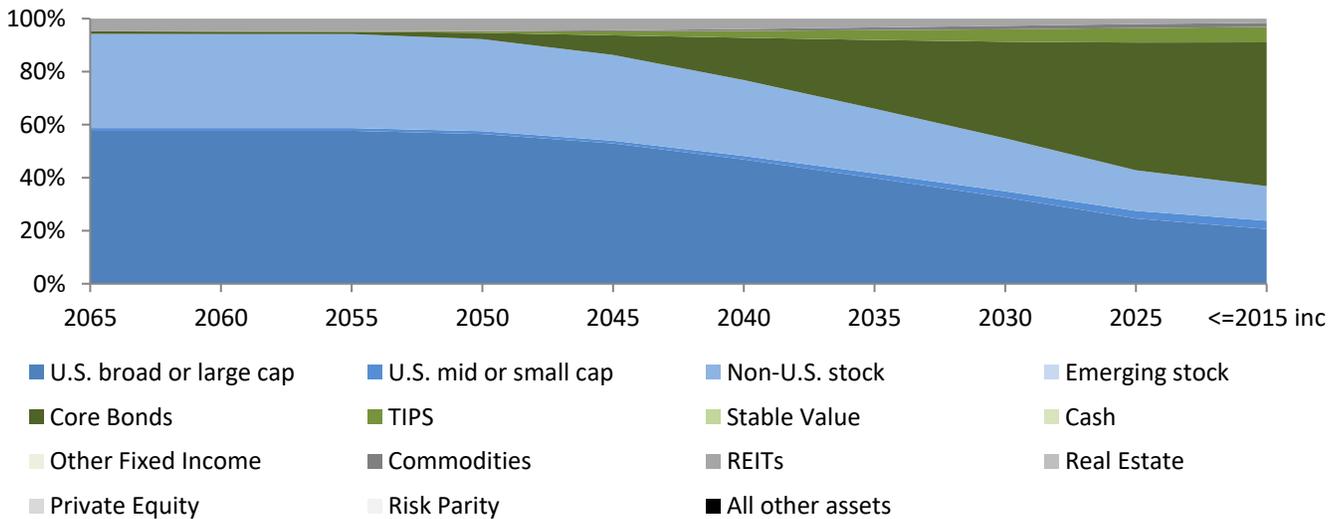


1. Value added = net return - benchmark return. In this chart the value added from employer stock is neutralized by setting its benchmark return equal to its actual return. It is neutralized in this report so we can show the value added from diversified plan options. Similarly, value added for stable value options is neutralized because of concerns over the benchmarks used for these options.

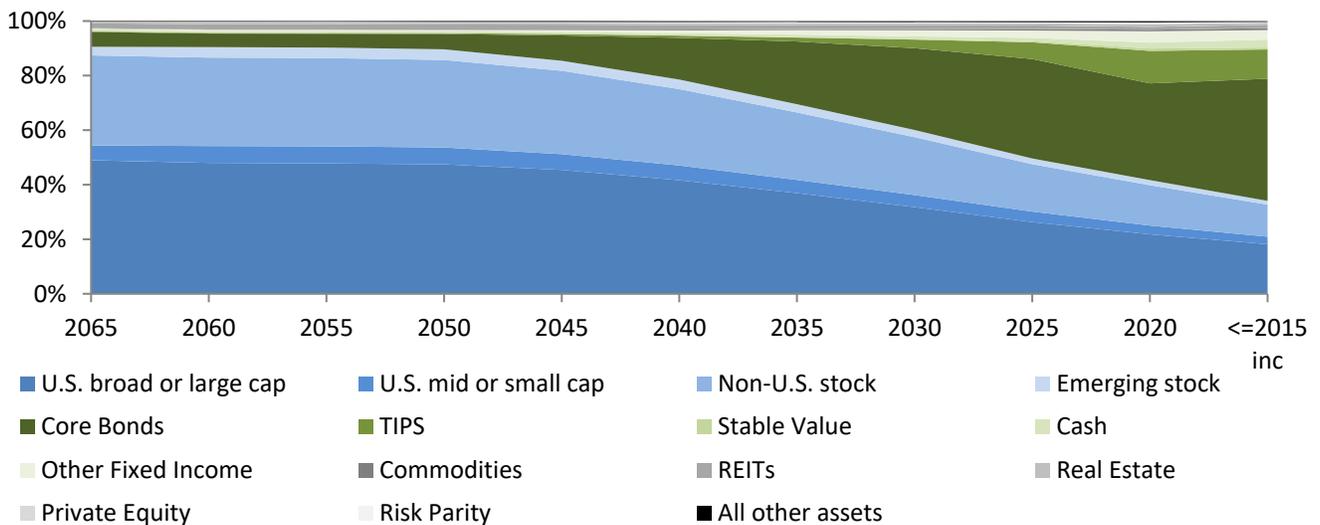
# Asset mix of target date funds

The first graph is your target date asset allocation glide path. The one below is the average U.S. plan's glide path. On the next page, this data is shown in percentages. Your plan offers a target date family and it is your default option.

**Your Plan**  
Target date asset mix - 2022



**U.S. Universe**  
Target date asset mix - 2022



# Asset mix of target date funds

## Your Plan Target date asset mix - 2022

Asset class	2065	2060	2055	2050	2045	2040	2035	2030	2025	2020	<=2015 inc
U.S. broad or large cap	58%	58%	58%	57%	53%	47%	40%	33%	25%	--	21%
U.S. mid or small cap	1%	1%	1%	1%	1%	1%	2%	2%	3%	--	3%
Non-U.S. stock	35%	35%	35%	35%	32%	29%	24%	20%	15%	--	13%
Emerging stock	0%	0%	0%	0%	0%	0%	0%	0%	0%	--	0%
Core Bonds	1%	1%	1%	2%	7%	16%	26%	36%	48%	--	54%
TIPS	0%	0%	0%	1%	2%	3%	4%	5%	6%	--	6%
Stable Value	0%	0%	0%	0%	0%	0%	0%	0%	0%	--	0%
Cash	0%	0%	0%	0%	0%	0%	0%	0%	0%	--	0%
Other Fixed Income	0%	0%	0%	0%	0%	0%	0%	0%	0%	--	0%
Commodities	0%	0%	0%	0%	0%	1%	1%	1%	1%	--	2%
REITs	5%	5%	5%	5%	4%	4%	3%	3%	2%	--	2%
Real Estate	0%	0%	0%	0%	0%	0%	0%	0%	0%	--	0%
Private Equity	0%	0%	0%	0%	0%	0%	0%	0%	0%	--	0%
Risk Parity	0%	0%	0%	0%	0%	0%	0%	0%	0%	--	0%
All other assets	0%	0%	0%	0%	0%	0%	0%	0%	0%	--	0%

## U.S. Universe Target date asset mix - 2022

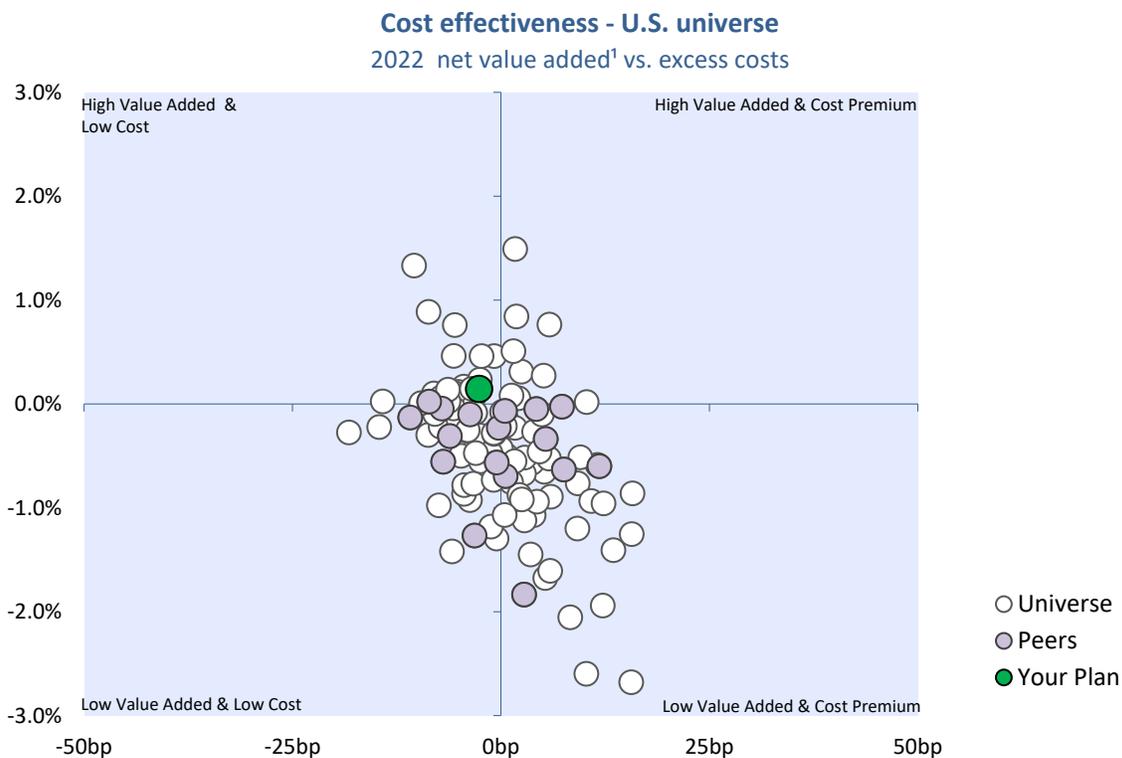
Asset class	2065	2060	2055	2050	2045	2040	2035	2030	2025	2020	<=2015 inc
U.S. broad or large cap	49%	48%	48%	47%	45%	42%	37%	32%	26%	22%	18%
U.S. mid or small cap	5%	6%	6%	6%	6%	5%	5%	4%	4%	3%	3%
Non-U.S. stock	33%	32%	32%	32%	31%	28%	25%	21%	17%	15%	12%
Emerging stock	3%	4%	4%	4%	4%	4%	3%	3%	2%	2%	1%
Core Bonds	5%	5%	5%	6%	9%	15%	23%	30%	36%	35%	45%
TIPS	0%	0%	0%	0%	1%	1%	1%	3%	6%	12%	11%
Stable Value	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%
Cash	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	3%
Other Fixed Income	0%	1%	1%	1%	1%	1%	2%	2%	3%	4%	3%
Commodities	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%
REITs	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%
Real Estate	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Private Equity	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Risk Parity	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
All other assets	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

# Cost effectiveness

In an ideal world, the more you pay (i.e., the larger your excess cost) the more you would get (i.e., the higher your value added). If that was the case, you would see an upward sloping relationship in the graph below. Clearly, that is not the case. CEM's research has shown consistently that there is no relationship between what plans spend and what they receive.

It is, however, good to know where your plan places on the graph and, even more important, to understand the reasons why.

This report provides you with high-level insights of how your plan compared to the U.S. universe in 2022. CEM's interactive online Dashboard provides much more insight, through a cost-effective, self-service channel. Please reach out if you like to learn more, or book a live demo with our team. See page 4 for more details.



1. Value added = net return - benchmark return. In this chart the value added from employer stock is neutralized by setting its benchmark return equal to its actual return. It is neutralized in this report so we can show the value added from diversified plan options. Similarly, value added for stable value options is neutralized because of concerns over the benchmarks used for these options.

# Appendix: Your survey responses

## Data quality

We recognize that the value of information contained in our reports is only as good as the quality of data we receive. Therefore, we have procedures in place for checking and improving the data that include:

- Automatic validation - all survey responses are compared to the plan sponsor's prior year responses and universe norms to ensure consistency.
- Manual verification - our analysts review each survey individually and follow-up with the survey responder with any questions regarding their data.
- Improving survey clarity - we have 26 years of feedback from participants incorporated into the survey that has led to improved definitions and clarity around data.

## Your survey responses

Your data is summarized on the following pages. Note that if your original survey responses appear slightly different, it may be for any of the following reasons:

- 1. Gross versus Net Returns** - We ask participants to report returns on either a net or gross basis but in order to ensure 'apples-to-apples' comparisons, we compare returns net of all costs, including administration costs.
- 2. Returns not available** - We request that you leave the return blank if a full year return was unavailable for an investment option. The default for an unavailable return is to exclude this investment option from the net value added calculations.
- 3. Costs not provided** - As important as it is to report accurate costs, we recognize that some, such as fiduciary oversight costs, can be difficult to obtain. Therefore, if you were unable to provide us with your costs, we applied a default figure using industry data.

## Your survey responses

VA ORPHE – TIAA

General	2022	2021	2020	2019	2018
Contact	Laura Pugliese	Laura Pugliese	Laura Pugliese		
Data provided by:	Michael Scott	Michael Scott	Michael Scott		
Corporate, public, other?	Public	Public	Public		
Market value of plan assets (\$ millions)	\$327	\$357	\$294		
Number of plan participants	5,340	5,215	5,147		
% of eligible employees participating	76%	75%	75%		
Are some DC participants covered by a DB plan?	No	No	No		
	None	None	None		

Administrative costs, plan expenses (\$000s)	2022	2021	2020	2019	2018
Recordkeeping <sup>1</sup>					
paid from expense ratio of invest. options	65				
charged to individuals or participant accounts	149	363	378		
paid by plan sponsor					
Custodial & trustee					
paid from expense ratio of invest. options					
charged to individuals or participant accounts					
paid by plan sponsor					
Oversight internal <sup>2</sup>					
paid from expense ratio of invest. options					
charged to individuals or participant accounts		180			
paid by plan sponsor	313		235		
Consulting					
paid from expense ratio of invest. options					
charged to individuals or participant accounts					
paid by plan sponsor					
Other					
paid from expense ratio of invest. options					
charged to individuals or participant accounts					
paid by plan sponsor					
less rebates to participants from reimburse. accounts	67	53	42		
Total Plan Expenses	460	490	571		

Participant Expenses (\$000s)	2022	2021	2020	2019	2018
Participant advice					
paid from expense ratio of invest. options					
charged to individuals or participant accounts					
paid by plan sponsor					
Managed account fees					
paid from expense ratio of invest. options					
charged to individuals or participant accounts					
paid by plan sponsor					
Other participant expenses (for loans, QDROs, etc.)					
paid from expense ratio of invest. options					
charged to individuals or participant accounts					
paid by plan sponsor					
Total Participant Expenses					

1. If you were unable to provide a breakdown of your administrative & fiduciary costs, the total was included in recordkeeping because it usually represents the bulk of administrative & fiduciary costs.

2. If you were unable to provide costs for Fiduciary oversight internal, we applied a default value. If the number of internal FTEs is available, default equals \$100,000 x FTE. Otherwise, it is 0.0001 x Market value of plan assets.

## Your survey responses

VA ORPHE – TIAA

About your options	2022	2021	2020	2019	2018
Do you have a default investment option?	Yes	Yes	Yes		
If yes, what is the default option?	Target / lifecycle	Target / lifecycle	Target / lifecycle		
Option returns are:	Net mgmt & admin fees	Net mgmt & admin fees	Net mgmt & admin fees		
Cost drivers and allocation	2022	2021	2020	2019	2018
FTE fulfilling fiduciary/oversight functions		2.0	2.0		
Does the plan offer a managed account service?	No	No	No		
Number with managed accounts					
Market value in managed accounts					
Do you receive revenue sharing from your providers?	Yes	No	No		
Is it used to reduce management fee?	No				
Is it used to reduce admin. or fiduciary costs?					
How are the recordkeeping or admin costs allocated to participants (asset based, flat fee, both, or other)?	flat fee	flat fee	flat fee		
If other, describe					
Contributions	2022	2021	2020	2019	2018
Employer contributions (\$ millions)	27	26	27		
Participant contributions (\$ millions)	6	6	6		
% of participants making voluntary contributions?			0%		
Stable Value Funds	2022	2021	2020	2019	2018
What percentage of stable value assets are wrapped?					
What are your total wrap fees (in bps over wrapped amount)					
Loan features	2022	2021	2020	2019	2018
Does your plan allow loans?	No	No	No		
Total number of outstanding loans					
Average loan balance, (\$)					
Does your plan allow for hardship withdrawals?	No	No	No		
Who pays the loan initiation fee?					
Is the fee a flat dollar amount or % of assets?					
Participant transaction rules and restrictions	2022	2021	2020	2019	2018
Limits on the number of transactions?	No	No	No		
Limits on international funds?	No	No	No		
Limits on any other funds (excl. international)?			Yes		
Excessive trading penalties?			No		
Describe other limits if any	1) Transfers out the TIAA	1) Transfers out the TIAA	1) Transfers out the TIAA		
Assumed retirement age for your target date funds	65	65	65		
Do you customize or use an off shelf target date fund?	Off shelf	Off shelf	Off shelf		
Age at which target date retirement funds stop de-risking	65	65	65		

## Your survey responses

VA ORPHE – TIAA

<b>Services Offered to Separated Employees</b>	<b>2022</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>
Lump sum payouts	Yes	Yes	Yes		
Required Minimum Distribution (RMD) payouts	Yes	Yes	Yes		
Partial payouts	Yes	Yes	Yes		
Installment payouts (e.g., monthly, quarterly, etc.)	Yes	Yes	Yes		
Loan initiation	No	No	No		
Loan maintenance (for loans made prior to separation)	No	No	No		
Online advice service	No	No	No		
Managed account advice service	No	No	No		
One-on-one advice service with an advisor	No	No	No		
Annuity platform (whether in-plan or out-of-plan)	Yes	Yes	Yes		

<b>Employee contributions (DC is primary, no DB)</b>	<b>2022</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>
Can participants make:					
a. After-tax Roth 401(k) contributions?	No	No	No		
b. After-tax non-Roth 401(k) contributions?	No	No	No		
Is investment in employer stock required to some extent?	No	No	No		
Is there a mandatory fixed or minimum contribution rate for full-time employees?	Yes	Yes	Yes		
If yes, what is the mandatory contribution rate as a % of salary ?	5.0%	5.0%	5.0%		
Does the plan have automatic enrolment?	No	No	No		
If yes:					
a. Initial automatic contribution as a % of salary					
b. What (if any) is the automatic annual increase in the contribution rate?					
c. Maximum rate achieved via automatic increases?					
Applied to all/new employees only when introduced?	No	No	No		

<b>Employee contributions (DC is suppl. to DB)</b>	<b>2022</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>
Can participants make:					
a. After-tax Roth 401(k) contributions?					
b. After-tax non-Roth 401(k) contributions?					
Is investment in employer stock required to some extent?					
Is there a mandatory fixed or minimum contribution rate for full-time employees?					
If yes, what is the mandatory contribution rate as a % of salary ?					
Does the plan have automatic enrolment?					
If yes:					
a. Initial automatic contribution as a % of salary					
b. What (if any) is the automatic annual increase in the contribution rate?					
c. Maximum rate achieved via automatic increases?					
Applied to all employees or new only when introduced?					

## Your survey responses

VA ORPHE – TIAA

<b>Employer contributions (if DC is primary, no DB)</b>	<b>2022</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>
Are employer contributions made in employer stock, cash or both?	Cash	Cash	Cash		
Is there a profit sharing component to employer contributions?	No	No	No		
Is there an automatic fixed employer contribution rate?	Yes	Yes	Yes		
If yes, what is the automatic fixed employer contribution rate?	8.5%	8.5%	8.5%		
Is there an after-tax employer match?	No	No	No		
Is there a before-tax employer match?	No	No	No		
% of participants earning the maximum match					
Indicate the match terms below:					
Percentage match on the first:					
Percentage of salary contributed:					
Percentage on the next:					
Percentage of salary contributed:					
Or describe:					

<b>Employer contributions (if DC is suppl. to DB)</b>	<b>2022</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>
Are employer contributions made in employer stock, cash or both?					
Is there a profit sharing component to employer contributions?					
Is there an automatic fixed employer contribution rate?					
If yes, what is the automatic fixed employer contribution rate?					
Is there an after-tax employer match?					
Is there a before-tax employer match?					
% of participants earning the maximum match					
Indicate the match terms below:					
Percentage match on the first:					
Percentage of salary contributed:					
Percentage on the next:					
Percentage of salary contributed:					
Or describe:					

## Your survey responses

VA ORPHE – TIAA

Fiduciary	2022	2021	2020	2019	2018
Named fiduciary?	Board	Board	Board		
If named fiduciary is a committee:					
Number of committee members?					
Number of meetings in the past year?					
Are the meeting minutes documented?					
Are the named fiduciaries:					
Provided formal training?	Yes	Yes	Yes		
Required to sign an acknowledgement form?	Yes	Yes	Yes		
Have third parties been appointed as:					
• Investment manager with full discretionary powers for selecting, monitoring, replacing investment options	No	No	No		
• Investment advisor to provide advice regarding the selection and retention of investment options?	No	No	No		
• Plan administrator responsible for regulatory filings, disclosures to participants and hiring plan service providers if no other fiduciary has that responsibility?	Yes	Yes	Yes		
Is there documentation that identifies the process for:					
• Selection and monitoring of third-party fiduciaries and other plan service providers?	Yes	Yes	Yes		
• Investment policy	Yes	Yes	Yes		
• Oversight of internal employees involved in operating the plan (i.e., internal fiduciaries, HR staff enrolling employees in the plan, posting deferrals, etc)	Yes	Yes	Yes		
• Fulfilling administration responsibilities (regulatory filings, disclosures to participants)	Yes	Yes	Yes		
Education and other	2022	2021	2020	2019	2018
Is individual investment counseling/advice offered to plan participants?	No	No	No		
• Is it provided by advisor, computer, both?					
Does your plan offer financial education via:					
• Group meetings?	Yes	Yes	Yes		
• One-on-one meetings?	Yes	Yes	Yes		
Do plan participants receive projections of annual income in retirement:					
• In their participant statements?	Yes	Yes	Yes		
• Online?	Yes	Yes	Yes		
• Via separate communication?	No	No	No		
Does your plan have marketing campaigns to:					
• Increase employee contribution/deferral rates?	No	Yes	No		
• Increase participation by eligible non-participants?	No	Yes	No		
• Educate on the savers tax credit for lower income participants?	No	Yes	No		
• Improve diversification from Employer Stock?	No	No	No		
Does your plan offer:					
• Out-of-plan guaranteed lifetime income product?	No	No	No		
• In-plan guaranteed lifetime income product?	Yes	Yes	Yes		
Does your plan offer automatic rebalancing?	Yes	Yes	Yes		

# Your survey responses

VA ORPHE – TIAA

## Your plan's 2022 investment options

Provider & Option name	Type	% Indxd	\$ mils at 12/31/22	Annual Return	Description	Benchmark	Return	Cost		
								Invest	Admin	Total
BlackRock - BlackRock Equity Index Fund J	Stk U.S. Broad or LC	100%	36	-18.1%	S&P 500		-18.1%	1.0 bp	0.0 bp	1.0 bp
BlackRock - BlackRock Russell 2500 Index Fund M	Stk U.S. SMID Cap	100%	8	-18.4%	Russell 2500		-18.4%	3.0 bp	0.0 bp	3.0 bp
BlackRock - BlackRock MSCI ACWI IMI Index Non-Lendable Fund M	Stk Global	100%	42	-18.1%	MSCI ACWI IMI Index		-18.4%	5.0 bp	0.0 bp	5.0 bp
BlackRock - BlackRock MSCI ACWI ex-U.S. IMI Index Fund M	Stk Non U.S.	100%	15	-16.3%	MSCI ACWI ex-U.S. IMI Index		-16.6%	11.0 bp	0.0 bp	11.0 bp
BlackRock - BlackRock U.S. Debt Index Fund M	Bonds Broad	100%	9	-13.1%	Bloomberg Barclays U.S. Aggregate Bond I		-13.0%	3.0 bp	0.0 bp	3.0 bp
BlackRock - BlackRock U.S. TIPS Fund M	Bonds TIPS	100%	5	-11.9%	Bloomberg Barclays U.S. TIPS Index		-11.9%	3.0 bp	0.0 bp	3.0 bp
BlackRock - BlackRock Short-Term Investment Fund W	Cash, Money Mrkt	0%	6	1.9%	Your Cash, Money Market benchmark		1.5%	8.0 bp	0.0 bp	8.0 bp
BlackRock - BlackRock LifePath Index Retirement O	Target Date Short	100%	23	-14.6%	Custom Benchmark		-14.5%	8.0 bp	0.0 bp	8.0 bp
BlackRock - BlackRock LifePath Index 2025 Fund O	Target Date Short	100%	19	-15.2%	Custom Benchmark		-15.2%	8.0 bp	0.0 bp	8.0 bp
BlackRock - BlackRock LifePath Index 2030 Fund O	Target Date Medium	100%	29	-16.0%	Custom Benchmark		-15.9%	8.0 bp	0.0 bp	8.0 bp
BlackRock - BlackRock LifePath Index 2035	Target Date Medium	100%	23	-16.7%	Custom Benchmark		-16.7%	8.0 bp	0.0 bp	8.0 bp
BlackRock - BlackRock LifePath Index 2040 Fund O	Target Date Long	100%	25	-17.4%	Custom Benchmark		-17.4%	8.0 bp	0.0 bp	8.0 bp
BlackRock - BlackRock LifePath Index 2045 Fund O	Target Date Long	100%	21	-17.9%	Custom Benchmark		-18.0%	8.0 bp	0.0 bp	8.0 bp
BlackRock - BlackRock LifePath Index 2050 Fund O	Target Date Very Long	100%	13	-18.2%	Custom Benchmark		-18.3%	8.0 bp	0.0 bp	8.0 bp
BlackRock - BlackRock LifePath Index 2055 Index Fund O	Target Date Very Long	100%	6	-18.3%	Custom Benchmark		-18.4%	8.0 bp	0.0 bp	8.0 bp
BlackRock - BlackRock LifePath Index 2060 Index Fund O	Target Date Very Long	100%	2	-18.3%	Custom Benchmark		-18.4%	8.0 bp	0.0 bp	8.0 bp
BlackRock - BlackRock LifePath Index 2065 Fund O	Target Date Very Long	100%	3	-18.3%	Custom Benchmark		-18.4%	8.0 bp	0.0 bp	8.0 bp
TIAA Real Estate Account - Real Estate Fund	Real Estate	0%	12	8.2%	Custom Composite Index		2.1%	53.0 bp	24.0 bp	77.0 bp
TIAA Traditional Annuity RC - Traditional Annuity Fund	Annuity	0%	27		Neutralized			0.0 bp	15.0 bp	15.0 bp
TIAA-CREF Self Directed Account - Participant Brokerage Account	Participant Broker Account	0%	4					0.0 bp	0.0 bp	0.0 bp
<b>Total</b>			<b>327</b>					<b>7.4 bp</b>	<b>1.9 bp</b>	<b>9.3 bp</b>