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Response to RFP for Investment Performance Evaluation Services

Ohio Retirement Study Council

June 27, 2023

Presented by:

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Table of Contents

	Page
Transmittal Letter	3
Tab 1: RVK Proposal Summary	5
Tab 2: RVK Capabilities and Experience	11
Tab 3: Staff Qualifications	14
Tab 4: References	17
Tab 5: Proposed Methodology	20
Tab 6: Cost Information – Pricing Summary	25
Tab 7: 2022Q4 RVK Investment Performance Analysis - ORSC.....	26
Tab 8: RVK Sample Investment Performance Report	82
Tab 9: RVK Public Fund Universe Analysis – SACRS	163
Tab 10: RVK Annual System Comparison Presentation – SACRS	230
Tab 11: RVK Quarterly Commentary	240
Tab 12: Glossary.....	246

June 27, 2023



Bethany Rhodes, Director/General Counsel
Ohio Retirement Study Council
Bethany.Rhodes@orsc.org
30 East Broad Street, 2nd Floor, Columbus, Ohio 43215

Regarding: Request for Proposals for Investment Performance Evaluation Services

Dear Bethany,

RVK, Inc. (RVK) is pleased to submit our response to the RFP for Investment Performance Evaluation Services for the Ohio Retirement Study Council (ORSC). As an investment consulting firm with considerable expertise in analyzing and evaluating similarly situated public retirement systems—coupled with our near decade-long tenure with the ORSC—we are uniquely qualified to continue serving as your trusted investment consultant. Our firm is responsible for performance reporting for virtually all of our full-retainer clients, including 47 public fund clients across the US at both the state and local level. Our experience extends to public clients whose trustees are responsible for the investment of multiple pension and other funds, such as the *Montana Board of Investment* and the *Vermont Pension Investment Commission*. In addition, several major state pension funds have awarded our firm a special mandate focused specifically on performance reporting and analytics, including funds based in New York and Missouri.

Beyond our extensive industry fund experience in this area, we have specific insight into the history of each of Ohio's five state retirement systems (in addition to the OPERS health care fund, which is not a pension plan and therefore has significantly different characteristics), as well as the intricacies of the data collection and reporting processes required to provide a truly "apples-to-apples" comparison of the systems' relative investment performance. RVK creates Investment Performance Analysis reports on a semiannual basis and attends two ORSC meetings per year to review the results and provide active monitoring of underlying fund performance and asset allocation.

RVK currently produces two custom reports, an executive summary memo, and a comprehensive investment performance analysis for the ORSC. The executive summary is a written memo that highlights the current capital markets environment, asset allocation, and investment performance of the five state retirement systems, including performance versus relevant policy and peer benchmarks, as well as broad asset class performance versus benchmarks. The comprehensive investment performance analysis is an in-depth review of the five retirement systems, including an expanded review of each of the systems' asset allocation and relevant risk-return metrics. In addition to the semiannual reports, some recent highlights of RVK's relationship with and responsiveness to the ORSC includes:

- An expanded review of the capital markets environment, highlighting the volatile return environment in 2022, Federal Reserve monetary policy, inflation trends, and historical asset class performance.
- An educational overview of actuarial assumed rate of return versus long-term expected returns, including various considerations for public fund board members, highlights from RVK's annual public fund survey, and forward-looking return drivers.

The team currently serving the ORSC will continue to be led by President and Senior Consultant, Jim Voytko, along with Associate Consultant, Jake Derrah, providing continuity of service. Our team will be directly supported by Associate Consultant, Eric Painting, CFA, and Investment Analyst, Tanner Ono, as well as RVK subject matter experts representing our firm's Capital Markets Research and Performance Measurement/Analytics teams as needed.



The undersigned has authority to submit this proposal, including this cover letter, on behalf of RVK and to bind our firm contractually. Please contact Jim Voytko via phone at 503.802.6144 or via email at James.Voytko@RVKInc.com should you have any questions regarding our proposal. We thank you for your consideration of RVK and look forward to the opportunity of continuing our successful partnership with the ORSC.

Sincerely,

Jim Voytko, MPA, MPP

President, Senior Consultant, Principal

James.Voytko@RVKInc.com

4.1 PROPOSAL SUMMARY

Each proposal shall provide a narrative summary of the proposal being submitted. This summary should identify all of the services and work products that are being offered in the proposal and should demonstrate the firm's understanding of the project.

We understand that the ORSC is seeking a qualified firm to assist in its duties specified in *Section (R.C. 171.04(D))* of the Ohio Revised Code. Such duties include the provision of a semi-annual comparative evaluation of the investment performance of Ohio's five state retirement systems—PERS, STRS, OP&F, SERS, and HPRS. We also understand that PERS has two funds with widely divergent investment objectives; thus, the hired firm will perform ongoing evaluations for six total funds. Successful execution of this mandate will require a breadth of experience in the evaluation of comparable public funds, clear and straightforward presentations, and freedom from any potential conflicts of interest. In addition, and based on our experience with presenting to the ORSC, RVK is prepared to add customized elements to the required reports and associated presentations to address special areas of interest or concern.

Having served the ORSC in this capacity since 2014, we are acutely aware of (and have summarized) each of the following specific services to be provided under this mandate:

1. Overview of Broad Market Analysis and Relationship to Performance Results
2. Review and Compare Median Public Fund Peer Performance
3. Review of Comparative Asset Allocations
4. Compare Total Fund Performance Against Each System's Policy Benchmark/Peer Group
5. Compare Broad Asset Classes Against Each System's Policy Benchmark/Peer Group
6. Review Risk-Return Performance for Each System's Total Fund and Asset Class
7. Compare Actual Versus Approved Asset Allocation
8. Compare Total Fund Performance Versus Assumed Rate of Return
9. Provide Commentary on Areas Needing Further Review
10. Review Each System's Net of Fees Performance and External Versus Internal Management

In addition to the summary, please provide all of the following general information:

- **The firm's primary contact for ORSC staff use including the contact's address, telephone and e-mail address;**

Located in our Portland Headquarters, Jim Voytko, will continue to serve as the primary contact for ORSC Staff. Please see the following page for the address of RVK's Headquarters, as well as Jim's contact information.



RVK Headquarters:
1211 SW 5th Avenue, Suite 900
Portland, Oregon 97204

Jim Voytko, MPA, MPP
President, Senior Consultant, Principal
Phone: 503.802.6144
Email: James.Voytko@RVKInc.com

In serving the ORSC, Jim will continue to be supported by a dedicated team, which includes the following individuals:

- Jake Derrah, Associate Consultant – **Co-Lead Consultant**
- Eric Painting, CFA, Associate Consultant – **Primary Support**
- Tanner Ono, Investment Analyst – **Performance Measurement & Analytics**
- Jessica Goodall, Senior Executive Assistant – **Administrative Specialist**

The entire team will continue to be available via our team email address:
Team.ORSC@RVKInc.com.

- **General ownership structure of the organization, including subsidiary and affiliated companies, and joint venture relationships;**

Since inception, RVK has steadfastly remained an independent firm, owned and operated by a broadening base of dedicated professionals. We are 100% employee owned by 34 active shareholders and are privately held with no subsidiaries, affiliated companies, joint venture relationships, nor a parent company whose interests may conflict with our duty to the ORSC. We are led by CEO, Becky Gratsinger, and President and Director of Research, Jim Voytko. A seven-member Board of Directors, comprised of senior investment consulting professionals and elected by our 34 shareholders, oversees the firm's operating policies.

- **Information regarding any material change in the firm's structure or ownership within the last eighteen months, or any material change in ownership, staff, or structure currently under review or being contemplated by the firm;**

RVK has not experienced any material changes in structure or ownership within the last eighteen months. Indeed, our last significant change was in 2009, when RVK shifted from a sole-proprietor model with a single majority shareholder, to our current model. In an industry of frequent consolidation, our firm has been considerably stable as we have not sold to a larger entity, acquired another firm, nor acquired asset management/ discretionary OCIO businesses.

As an employee-owned firm with all owners playing an active role in the business, we do not anticipate any major structural or financial changes to our ownership, Board, or senior leadership. The only anticipated change is to continue expanding our ownership base to employees who significantly contribute to the firm's success. To this end, it is noteworthy to mention that RVK announced eleven new shareholders in 2021, bringing the total count to over 30, the largest in our firm's 37-year history.



- **If available, a third-party assessment or report concerning client satisfaction and measures of the firm’s strengths and weaknesses;**

As evidence of our high level of client service, RVK is one of only three firms in the large US investment consultant category to recently receive a *Coalition Greenwich Quality Leader* award. Of special note is that RVK is the only major US investment consulting firm to win this award for a sixth consecutive year. This award was issued on April 25, 2023, based on Coalition Greenwich’s February through November 2022 study. No direct or indirect compensation has been paid by RVK in connection with obtaining or using this award.

Coalition Greenwich is an industry-recognized third-party firm which asks plan sponsors to rank their consultants on the following key metrics. Relative to our 14 peers in the large US consultant category, RVK ranked **highest** in the criteria denoted in bold.

- Advice on DC Plan Structure and Design
 - Advice on Long-Term Asset Allocation and Liability Issues
 - Capability of Consultants Assigned to Clients
 - **Client Satisfaction with Manager Recommendations**
 - **Communication of Philosophy and Investment Beliefs**
 - Credibility with Investment Committee or Trustees
 - Proactive Advice and Innovative Ideas
 - **Reasonable Fees Relative to Value Delivered**
 - **Responsiveness and Prompt Follow-up on Client Requests**
 - Sufficient Professional Resources
 - **Timeliness in Providing Written Reports**
 - Understanding of Client Goals and Objectives
 - Usefulness of Personal Meetings
 - Usefulness of Written Investment Performance Reviews
- **Any material litigation which has been threatened against the firm or to which the firm is currently a party;**

In December 2017, our firm—along with 31 other organizations and individuals—was named in a complaint filed, not by a client, but by eight individuals described as pension plan participants and taxpayers in Kentucky (Case 1348). The claims made against RVK are completely without merit. In RVK’s 37-year history, to our knowledge, we have never been named in a complaint or involved in litigation initiated by a client. Details of the proceedings are provided below.

After the Kentucky Supreme Court sent Case 1348 back to the trial court in July 2020 (with orders that the complaint be dismissed because the individual plaintiffs lacked standing to sue), the original plaintiffs attempted to revive their lawsuit in the trial court, and the newly-elected Attorney General (AG) sought to intervene in Case 1348 to represent the state.

The AG also filed a duplicate standalone lawsuit (Case 590) but did not require responses from any defendants. The AG alleged no new claims against RVK in the Intervening Complaint or the duplicate suit.

On December 28, 2020, the trial court ruled that the private plaintiffs' complaint should be dismissed, but the AG should be permitted to intervene in Case 1348.

A group of the original private plaintiffs, along with a group of "Tier 3" plaintiffs who participate in Kentucky Retirement Systems' (KRS) hybrid cash balance plan, have made multiple efforts since December 2020 to re-enter the case, but each has been opposed and rejected by the court. These private plaintiffs appealed the various orders on October 19, 2021. Those appeals were withdrawn.

The Tier 3 plaintiffs also filed a standalone suit that was materially identical to one of their proposed intervening complaints (Case 20) and, insofar as RVK is concerned, materially identical to Case 1348. After their intervention motion was denied, they amended this complaint to assert putative class action allegations.

There were no new claims against RVK. The defendants removed Case 20 to federal court on July 19, 2021 (Federal Case 29). The plaintiffs moved to remand the suit to state court, but the court denied the motion on March 1, 2022, and stayed all proceedings pending resolution of the state cases (including Case 1348).

The AG filed an amended intervening complaint in Case 1348 on May 24, 2021, which was almost identical to the original intervening complaint. RVK and all defendants filed motions to dismiss this complaint on July 30, 2021. The court has not ruled as of this date. KRS (now known as KPPA) retained an outside law firm to conduct an investigation and issue a report.

After receipt of the report (which was provided to the AG but not released to the public), KPPA's Board voted on May 26, 2021, not to "intervene as a plaintiff in the Attorney General's amended complaint in the Mayberry (1348) action" or "file any litigation against any party in the Mayberry claims at this time."

The Tier 3 individuals, including one new plan member, filed yet another lawsuit in Franklin Circuit Court on August 19, 2021 (Case 645). Case 645 purports to assert direct (not derivative) breach of trust claims for recovery on behalf of each of the KRS pension plan trusts, with no recovery to the Tier 3 individuals. The allegations are essentially the same as Case 20 (with the exception that the suit is not a putative class action) and quite similar to Case 1348. Neither RVK's individual principals Rebecca Gratsinger nor James Voytko are named defendants in Case 645. RVK and all of the defendants filed motions to dismiss Case 645 on December 1, 2021.

The Franklin Circuit Judge who has presided over each of the state lawsuits recused himself from further service as judge in both Case 1348 and Case 645 on May 27, 2022. The suits were reassigned to another Circuit Judge in Franklin Circuit Court. The motions to dismiss remain pending for decision before that Circuit Judge.

In addition to the information provided above, two events merit mention:

1. In the years since the filing of the original Mayberry complaint, RVK's client—the Kentucky Retirement Systems (KRS), now known as KPPA—has opted not to make any claims against our firm. In November 2020, the KPPA Board commissioned an independent investigation of the claims made by various plaintiffs.

2. The Board retained the New York-based law firm of Calcaterra Pollack LLP, and the Commonwealth approved up to \$1.2 million to finance the work. That report—entitled the “KRS Investigation Report”—was completed and submitted to KRS/KPPA in May 2021 but was withheld from the public. On August 26, 2022, a Kentucky court ordered its release. In short, the investigation which examined over 192,000 documents, including Board minutes and numerous interviews, concluded that RVK’s work throughout its service to KRS/KPPA was thoroughly consistent with its contractual obligations and fiduciary standards. Indeed, the report went further by noting that RVK had been fully transparent in all respects and was a valuable resource to KRS/KPPA. The full report can be accessed at <https://kyret.ky.gov/About/Documents/Calcaterra%20Pollack%20Investigation%20Report.pdf>, allowing readers to make their own judgments.

Several key excerpts from the KRS Investigation Report summarize the findings with respect to RVK:

- *“R.V. Kuhns met their contractual and fiduciary duties to KRS by honestly disclosing the investment challenges KRS faced, and consistently and thoroughly identifying the aggressive to conservative investment options for KRS to consider.... Further, R.V. Kuhns also served as a valuable consultant to the Investment Staff leading up to the FoHF selection. No evidence available to us reveals any indicia of collusions, cover up, or fiduciary duty failure, etc. The mere fact that the daunting presentation R.V. Kuhns gave to the Investment Committee and Investment Staff in May 2010 was later provided at a packed legislative hearing that was publicly televised in July 2010 shows full disclosure of what KRS was facing and the genesis of the challenges...”* (Report at 40.)
- *“Based upon the Firm’s expertise..., the Documents Reviewed, Interviews held and the Limitations of the Investigation (all described below), the Firm did not find any violations of fiduciary duty or illegal activity by [three fund manager defendants], or the investment staff and trustees related to the fund of funds due diligence processes and retention; and the investing of KRS pension funds...in absolute return strategies. The Firm reached the same conclusion related to the Consultants [which includes RVK] during the 2008-2011 period and thereafter.”* (Report at 2.)
- *“Beyond what is identified above [not involving RVK], the Firm did not find any violations of fiduciary duty or illegal activity by [two fund manager defendants], the Consultants [including RVK], or investment staff and trustees related to the continued investing of KRS pension funds in absolute return strategies and the transition to direct hedge fund investments.”* (Report at 2.)

The KRS Investigation Report also concluded it could not find evidence of fiduciary failures on the part of nearly all of the many other defendants. From the outset of this complaint in December 2017, RVK has maintained that our firm’s years of service to KRS were thoroughly professional, highly transparent and always consistent with our contractual and fiduciary obligations.



- **A list and brief description of litigation brought against the firm by existing or former clients over the last five years; and**

Please see our response to *question 15* above. To our knowledge, our firm has never been the subject of any litigation brought on by a client for any reason in its 37-year history.

- **A list of any professional relationships involving the ORSC, the five Ohio public retirement systems, the State of Ohio, or its political subdivisions for the past five years, together with a statement explaining why such relationships do not constitute a conflict of interest relative to performing the proposed review, and, if necessary, an explanation of the actions that will be taken to ensure an independent review. Note that any media or social media comments opining on the state’s retirement systems as an organization, whether positive or negative, may be viewed as pre-judgement of the system and result in disqualification. The firm must also disclose any staff relationships with other entities that evaluate pension systems and include a statement explaining why such relationships do not prevent an independent analysis or, if necessary, an explanation of the actions that will be taken to ensure an independent review.**

RVK is currently under contract with the ORSC to provide Investment Performance Evaluation Services, with a signed extension agreement set to expire on August 14, 2023. We are not aware of any conflicts of interest. Given our business model and commitment to our no-conflicts-of-interest policy, we do not anticipate any conflicts going forward. Further, we do not have any active contractual agreements or professional relationships with any of the five state retirement systems.

4.2 CAPABILITIES AND EXPERIENCE

The proposal shall describe the firm’s capabilities and recent experience (at least during the last five years) in performing investment performance evaluations, analyses, or studies of public employee retirement systems. The firm should include information on the types and sizes of public employee retirement systems for which past work has been performed, including whether the systems were defined benefit or defined contribution plans, the types and number of participating employers, number of participants, and other relevant indicators of plan type, size, and comparability to Ohio’s systems. The firm must provide one or more examples of this work. Examples should be incorporated in the proposal as an appendix or attachment rather than a web citation. The firm should include other information believed relevant in demonstrating capabilities in performing the review, including other professional experience and data processing capabilities.

Having provided investment performance evaluation services to the ORSC since 2014, RVK is uniquely positioned to leverage our past experience and productive interaction with each of the Ohio Retirement Systems. Utilizing our advanced performance evaluation system, we are able to customize performance evaluation reports and exhibits based on our clients’ preferences, and have done so for the ORSC over the course of our relationship. Please see page 26 for the most recent Investment Performance Analysis we have conducted for the ORSC.

In addition to our work with the ORSC, RVK’s general consulting work on many public fund relationships—including nearly 50 public pension plans under full-retainer advisement (as of 12/31/22) and our longstanding semi-annual Public Fund Report—has equipped us with substantial first-hand experience in the public fund space. Provided below are two examples of similar services that we provide to other public fund clients, which we believe are relevant to the Scope of Work outlined in this RFP:

1. RVK conducts a comprehensive analysis for one of our large public fund clients on a quarterly basis. We provide analysis of the client’s current roster of investment managers in order to assess “fit” within their desired asset class structure. Additionally, we conduct asset class structure studies for their US and non-US portfolios. We meet with the Staff on a regular basis to discuss the portfolio, manager updates, and other key topics of interest. The Defined Benefit Plan has assets exceeding \$273 billion and includes over 685,000 employee accounts and 507,000 retired members, as of March 31, 2022.
2. RVK provides performance reporting for one of our large public fund clients on a quarterly basis. We provide total fund performance, performance relative to the policy benchmark and peers, and identify the drivers of relative out/underperformance for each of the ten (10) underlying plans. We also provide detailed asset class attribution and review performance of the investment managers. The Defined Benefit Plans have assets exceeding \$13 billion and include over 60,000 employee accounts and 45,000 retired members, as of December 31, 2022. A sample report is provided on page 82.



Jim Voytko, the proposed Primary Contact, works with some of the firm's largest public fund clients and serves in various capacities, including Co-Lead Consultant, Backup Consultant, and Senior Advisor. A representative list of Jim's public fund clients include:

- Los Angeles Fire and Police Pension System
- Montana Board of Investments
- New Jersey Division of Investment
- New York State Common Retirement Fund
- Ohio Bureau of Worker's Compensation

Jake Derrah, the proposed Co-Lead Consultant, has worked with some of the firm's largest public fund plans during his 10-year tenure at RVK. He has served these clients in various roles, from Primary Support to Associate Consultant to Co-Lead Consultant. A representative list of Jake's public fund clients include:

- The City of Plano, Texas
- Wyoming State Treasurer's Office

As it relates to studies performed for other public employee retirement systems, RVK is often retained by boards of trustees and investment committees (and at times, oversight bodies, including state legislative committees and their supporting staff) to conduct a review of the investment programs responsible for investing public pension plan, endowment/foundation, and sovereign wealth fund assets. Officially launched in 2019, our Investment Program Review (IPR) practice is led by two of RVK's longest-tenured Senior Consultants, Marcia Beard, and Jim Voytko, the latter of which serves as the primary consultant on the ORSC team.

Our IPRs may be comprehensive in nature and cover governance, process, resources, compliance, implementation, staff organization, resource deployment, and more. Conversely, the scope of work may focus on several of these elements of specific concern to the fiduciaries. Provided below are examples of studies we have completed for other public retirement systems over the past five years, which we believe to be indicative of our vast experience in the public fund arena.

1. RVK conducted a governance and IPR for the **Vermont Pension Investment Commission (VPIC)**. The project was mandated and enacted following the passage of a Vermont statute granting the Commission substantial independence in its management and oversight of the state's retirement assets. The Vermont State Legislature and VPIC sought RVK's advice on the legislation and we testified before the drafting committee. The report entailed RVK's perspectives and recommendations on effective implementation of governance policies, with a focus on the importance and implementation of autonomy in the budgetary process and decisions related to investment programs, staff and operations, and peer analysis to highlight best practices.
2. RVK conducted an IPR for the **Wyoming Investment Funds Committee**. The purpose of the review, as mandated by state legislation, was to conduct research and make recommendations on alternative governance and organizational structures for the management of Wyoming's state sovereign wealth funds and other permanent and nonpermanent funds.

RVK conducted an extensive survey of structures in the US and several selected international funds, and provided a broad landscape of perspectives for improving the investment operations, decision-making structure/hierarchy, and delegation of responsibilities and oversight process for the Investment Committee's consideration. RVK concluded this assignment with testimony before the Wyoming State Legislature.

3. RVK conducted IPRs for **several multi-billion dollar public pension plans**. These reviews, as mandated and enacted by state legislature, were conducted in an independent, objective fashion. The reviews were comprehensive and included board/staff organization; investment decision-making policies; operational and investment procedures and actions; investment policy and compliance; portfolio structure and performance; and investment monitoring.

Of additional relevance to the ORSC is RVK's semi-annual Public Fund Report. For this Report, RVK conducts a semi-annual survey of approximately 60 public funds across the US, inclusive of RVK clients, that can then be drawn upon to create peer comparisons at the Total Fund level across different client sizes.

For many years, as a member of the State Association of County Retirement Systems (SACRS), we have conducted a SACRS performance survey against the backdrop of our nationwide RVK Public Fund report. Similarly situated to the ORSC, SACRS is comprised of 20 systems with assets exceeding \$110 billion, representing contributions from 500,000+ current and future plan beneficiaries throughout California. We review the asset allocation and asset class structure for the underlying SACRS funds so that members may have a broad understanding of their structure relative to other plans. We also evaluate performance and risk at the Total Fund level in addition to major asset class performance. We compare actuarial assumed investment return, real return goals, as well as member salary inflation factors. We provide a copy of our most recent SACRS performance survey on page 163, and a copy of an Annual System Comparison presentation we provided to SACRS on page 230.

RVK affirms that it meets each of the following minimum criteria:

- Have provided an investment performance evaluation comparable to that requested under this RFP in the past three years; and
- As of January 1, 2023, and for at least the five most recent continuous years, the firm must have a verifiable operating history with at least three institutional fund clients with similar size, complexity and asset mix to Ohio's systems; and
- As of January 1, 2023, the primary contact dedicated to the ORSC contract must have at least ten years of experience in providing investing consulting services to institutional fund clients; and
- The firm must be registered as an investment adviser under the Investment Advisers Act of 1940. The firm will promptly advise the ORSC if it, at any time, is not so registered.

4.3 STAFF QUALIFICATIONS

Describe the qualifications of all management and lead professional personnel who will participate in the investment performance evaluation. Include: (1) a resume; (2) a summary of experience each has had in performing investment evaluations, investment analyses, or studies of public employee retirement systems; and (3) a management plan identifying the responsibilities each will have on the evaluation. Each proposal shall also include a description of the firm's procedures in the event that a key person assigned to this engagement leaves the firm during the engagement.

The resumes should include information on the current and past positions held with the firm, educational background, relevant credentials, and other relevant information to demonstrate the personnel's qualifications.

The experience summaries should include information on the types and sizes of public employee retirement systems for which the designated staff have completed investment performance evaluations, including whether the systems were defined benefit or defined contribution plans, the types and number of participating employers, number of participants, and other relevant indicators of plan type, size, and comparability to Ohio's systems. It is permissible to reference, rather than repeat, duplicative information provided elsewhere in the proposal. The experience summaries should describe the work performed and detail the roles and responsibilities that the individual staff had on the projects.

The management plan should provide an estimated portion of each individual staff member's time that will be spent on the evaluation and the staff member's roles and responsibilities.

Please see the following pages for resumes of each lead professional assigned to the ORSC team, including a summary of relevant experience as well as a management plan identifying respective responsibilities.

As it relates to the replacement of key personnel, RVK has a succession plan for every client service team. As part of the plan, we have multiple consultant leaders that serve on a client team, facilitating continuity of service. In addition to this team-based approach to client service, RVK uses the methods shown below to facilitate continuity of service.

- Members of a client team are available via a dedicated email address (i.e., Team.ORSC@RVKInc.com), which includes every member of the RVK team. Clients are encouraged to use these email addresses as a quick and efficient way to reach their team.
- We maintain a client "Master File" that each member of the RVK team updates as they interact with clients. This file contains a historical narrative of meeting summaries, asset allocation decisions, and all relevant action items executed by RVK since the inception of our relationship.

In the unlikely event that a key member of the assigned team leaves the firm or is unable to serve, our senior management will assign an experienced professional within the firm to the team to help it remain at full strength, pending approval from the ORSC.



James M. Voytko, BA, MPA, MPP
President, COO, Director of Research, Senior Consultant, Principal

Current Responsibilities:

Jim is President and an active Senior Consultant at RVK. He joined the firm in 2004 and consults to a wide array of large complex clients with a special emphasis on RVK's major public fund and insurance clients. Among the major clients that Jim serves on a full-retainer basis are four other large state public plans with assets of \$242 billion, \$28 billion, \$22 billion, and \$20 billion (as of 12/31/22). Each of these clients have multiple fund structures and complex asset allocations. Jim also serves three large state public plans on a project or project pool retainer basis, with assets of \$443 billion, \$311 billion, and \$9 billion.

Additionally, Jim oversees RVK's multiple research efforts and more directly the firm's notable Asset/Liability Team. He serves on *Institutional Investor's Conference Board of Advisors* and is frequently asked to speak on a wide variety of topics at conferences throughout the year.

Summary of Experience:

Jim is a veteran of institutional investing and has an unblemished 40+ year record as a fiduciary. His experience spans virtually all major roles associated with institutional investing, including service as:

1. Public Board Investment Trustee for a multiple fund public board of investment directing more than \$45 billion in assets
2. CEO of a major state public DB plan with assets exceeding \$40 billion
3. Trustee for a major corporate pension and DC plan based in NYC
4. Director of Research for a major Wall Street firm (PaineWebber)
5. Deputy Director of Investment Banking and Chair of the Underwriting Committee for a major investment bank
6. Chief Investment Officer for a private bank asset management company with more than \$50 billion in assets

Management Plan:

The estimated portion of time that Jim would spend on ORSC's semi-annual evaluations is 5-8%. Jim would continue to serve as the Primary Contact and would lead the formulation and presentation of RVK's analysis and conclusions as well as any special topics the ORSC would like addressed.

Education:

Harvard University, Masters of Public Policy, 1978
University of Washington, Masters of Public Administration, 1976
Carnegie Mellon University, Bachelor of Arts, History & Social Science, 1973

Professional Qualifications, Accreditations, Certifications:

NYSE Supervisory Analyst, 1989
Series 7 Securities License, 1986



Jake Derrah
Associate Consultant

Current Responsibilities:

Jake currently serves a variety of the firm's public and corporate pensions, endowments, foundations, health organizations and defined contribution plans. Aside from Jake's role on the ORSC team, he is currently a team member on two other public funds. He holds the roles and responsibility of Co-Lead on one \$300 million Public DB Plan and Primary Support for a \$24 billion Sovereign Wealth Fund client.

Summary of Experience:

Associate Consultant, 2020 – Current (RVK)

Jake is responsible for managing and leading client relationships across assigned accounts, as well as planning and developing education and recommendation presentations. He attends quarterly committee meetings, reviewing the capital markets environment and investment performance results, provides education, and makes recommendations. Jake leads projects such as an annual sovereign wealth fund survey, fee benchmarking reviews, asset allocation studies, and spending policy analyses.

Investment Associate, 2017 – 2020 (RVK)

Jake provided internal team support, assisted with internal research projects, and managed multiple client relationships as well as deliverables. Special projects included thematic investing and risk budgeting portfolio reviews, asset allocation studies, investment policy reviews, and asset class structure studies.

Senior Investment Analyst, Team Leader, 2015 – 2017 (RVK)

As a team leader, Jake mentored and trained his fellow analysts. Jake also created performance reports and wrote, prepared, and reviewed monthly Global Markets pages for clients.

Management Plan:

The estimated portion of time that Jake would spend on ORSC's semi-annual evaluations is 5-8%. Jake is responsible for reviewing and overseeing the semi-annual performance report process, including coordinating with the retirement Systems on data collection to verify RVK is accurately representing asset allocation and performance information.

Education:

Oregon State University, Bachelor of Science; Finance and Marketing, 2013



4.4 REFERENCES

Each proposal must include a list of at least three organizations, but no more than five, that may be used as references for the firm’s work on investment performance evaluations or studies. Selected organizations will be contacted to determine the quality of the work performed, personnel assigned to the project, and contract adherence. Firms should ensure the accuracy of contact information and prior work from references cited. The following should be included for the references listed:

- Date of the investment review or study;
- Name, email address, and address of client;
- Name, email address, and telephone number of individual in the client organization who is familiar with the work; and
- Description of the work performed.

New York State Common Retirement Fund

Anastasia Titarchuk, Chief Investment Officer
633 Third Avenue, 31st Floor
New York, NY 10017
212-383-1379
atitarchuk@osc.ny.gov

Total Assets Under Advisement: \$242.3 billion, as of December 31, 2022

Date of Performance Review or Study:

Ongoing service

Description of Work Performed:

A comprehensive analysis is conducted on a quarterly basis to analyze our client’s current roster of investment managers in order to assess “fit” within their desired asset class structure. Additionally, we conduct asset class structure studies for their US and non-US portfolios. We meet with our client’s Staff on a regular basis to discuss the portfolio, manager updates, and other key topics of interest.

Montana Board of Investments

Jon Putnam, Director of Fixed Income
2401 Colonial Drive, 3rd Floor
Helena, MT 59601
406-444-0058
JPutnam@mt.gov

Total Assets Under Advisement: \$22.3 billion, as of December 31, 2022

Date of Performance Review or Study:

Ongoing service



Description of Work Performed:

Since 2005, RVK has provided MBOI—and its ten (10) underlying funds—with performance reporting on a quarterly basis, including: total fund performance, performance relative to the policy benchmark and peers, and identification of the drivers of relative out/underperformance. We also provide detailed asset class attribution and review performance for the investment managers.

Los Angeles Department of Water and Power

Carlo Manjikian, Senior Investment Officer
111 North Hope Street, Room 357
Los Angeles, CA 90012
213-367-2324

Carlo.Manjikian@ladwp.com

Total Assets Under Advisement: \$18.5 billion, as of December 31, 2022

Date of Performance Review or Study:

Ongoing service

Description of Work Performed:

RVK was hired as LADWP's full-retainer investment consultant in December 2014. Since that time, we have provided general consulting services across the broad spectrum of plan sponsor needs including: performance reporting, portfolio monitoring and analytics, asset allocation studies, asset class structure reviews, manager due diligence, project work, and investment policy guidance. Additionally, we have completed work on an asset/liability study and have assisted with multiple Trustee educational sessions.

Wyoming State Treasurer's Office

Patrick Fleming, Chief Investment Officer
122 West 25th St., Suite E300
Cheyenne, WY 82002
307-777-7779

patrick.fleming@wyo.gov

Total Assets Under Advisement: \$24.5 billion, as of December 31, 2022

Date of Performance Review or Study:

Ongoing service

Description of Work Performed:

RVK has been serving as WYSTO's full-retainer investment consultant for over 25 years, dating back to 1997. Since that time, we have provided a broad array of general consulting services for each of their ten (10) underlying funds, including: performance reporting, portfolio monitoring and analytics, asset allocation studies, asset class structure reviews, manager due diligence, project work, and investment policy guidance. Additionally, we completed an IPR for this client in 2021 in which RVK conducted an extensive survey of structures in the US and several selected international funds, and provided a broad landscape of perspectives for improving the investment operations, decision-making structure/hierarchy, and delegation of responsibilities and oversight process for the Investment Committee's consideration. RVK concluded this assignment with testimony before the Wyoming State Legislature.



Vermont Pension Investment Commission

Eric Henry, Chief Investment Officer

6 Baldwin Street #311

Montpelier, VT 05633-7970

802-828-3668

Eric.Henry@vermont.gov

Total Assets Under Advisement: \$5.5 billion, as of December 31, 2022

Date of Performance Review or Study:

Ongoing service

Description of Work Performed:

RVK currently provides full-retainer consulting services to the VPIC, including: performance reporting, portfolio monitoring and analytics, asset allocation studies, asset class structure reviews, manager due diligence, project work, and investment policy guidance. Similar to the ORSC, VPIC is responsible for managing the combined investments of several large public retirements systems within the state. We have completed an IPR of the underlying systems, which concluded in a report entailing RVK's perspectives and recommendations on effective implementation of governance policies, with a focus on the importance and implementation of autonomy in the budgetary process and decisions related to investment programs, staff and operations, and peer analysis to highlight best practices.



4.5 PROPOSED METHODOLOGY

Describe the proposed methodology for each element of the components listed under the *Scope of Investment Performance Evaluations Section of this RFP*. The description should include specific techniques that will be used, including proposed sources of data and information. It is permissible to propose alternative ways of addressing the elements of the evaluation's scope.

In describing the proposed methodology, also identify the type and level of assistance that the firm anticipates will be needed from the staff of Ohio's five retirement systems and staff of the ORSC, including assistance to understand the operations and records needed for the review. Identify meetings, calls, time commitments, etc., anticipated from each retirement system.

Please see below for RVK's proposed methodology for each element of the components listed under the *Scope of Investment Performance Evaluation*.

(1) An overview analysis of the broad market environment of the preceding 6-month period and its general effect on investment performance;

For all of RVK's full-retainer clients, we routinely provide a capital markets overview that precisely targets this aspect of ORSC's scope of work. In the past, we have included a capital markets overview within the analyses provided to the ORSC twice annually. RVK also produces a broader quarterly capital markets commentary that directly addresses this aspect of your scope of work. An example of our most recent commentary is provided on page 240.

Our firm and proposed consulting team have considerable experience in communicating the impact of significant trends in the capital markets and broader economy on institutional investment portfolios.

(2) A review of the median performance of similarly situated public funds during the preceding 6-month, one-year, three-year, five-year, and ten-year periods compared to each fund's performance in the same period;

RVK has broad and deep experience in comparing and analyzing fund performance against similarly situated peer funds. Our public fund performance reports contain peer comparisons at the total fund, asset class, and manager level. We utilize a wide variety of peer groups to facilitate an apples-to-apples comparison when ranking a total fund portfolio.

At the total fund level, we use two peer group universes: *Mellon Analytical Solutions Trust Universe* and *Confluence Plan Sponsor Universe*. The combined universes use actual client returns compiled from consultant and custodial data and are used to compare total fund composite results. The Master Trust Plan Sponsor Peer Group database includes performance and other quantitative data for over 4,121 plans which include 1,069 public, 1,467 corporate, 863 endowment, 1,465 foundation, 536 healthcare, and 1,236 Taft-Hartley plans.



We also have the capability to create customized peer universes to better align with the fund whose performance we are evaluating. The factors underlying the selection of a customized peer universe vary by client—such as fund size, expected access to a similar investment universe, expected access to similar asset allocation options, similar types of liabilities, and client type.

An additional universe, unique to RVK, is our proprietary Public Fund Report. For three decades, we have been conducting research on major public funds across the US and believe our database of public fund performance and attributes will continue to be a powerful tool in successfully executing this component of ORSC’s scope of work. RVK conducts the research on a semi-annual basis (on the same schedule as noted in the ORSC scope of work) and provides a complimentary report to all participants.

The report helps public fund entities see how their fund(s) compare to others of similar size in the areas of:

- Asset Allocation
- Active/Passive Mix
- Internal/External Management
- Total Fund and Asset Class Performance
- Funded Status
- Actuarial Statistics

Approximately 60 public pension funds currently participate in the semi-annual report. Periodically, our report also includes aggregated participant responses to 4-5 survey questions that focus on topics such as market trends, actuarial rates of return, rebalancing, active versus passive management, the use of a risk management software system, and fees.

(3) A review of the asset allocation of the systems’ funds compared to other similarly situated funds;

RVK has multiple tools available to compare and review the asset allocation of each Ohio public retirement system versus their respective peers. These tools include the Master Trust Plan Sponsor Peer Group (and customizable subsets) available in our performance reporting system and our proprietary semi-annual RVK Public Fund Survey (both discussed above). In addition, RVK serves as the consultant to multiple large public DB plans and has intimate knowledge of their asset allocations. We are confident of our ability to review and analyze the asset allocations of the Ohio Systems and provide value-added insights to the ORSC.



(4) A comparison of the total performance of each of the system’s funds against each fund’s own policy benchmark; additionally, compare that total performance against their peer groups;

The far majority of RVK’s 463 non-DC plans under advisement utilize policy benchmarks, with a very small number utilizing actual allocation benchmarks. Thus, our standard performance reports and analytics contain comparisons of total fund performance against the policy portfolio benchmark. As specified in this component of the scope, as well as component (3) above, we will be able to compare total fund performance against a general and customized peer universe.

(5) A comparison of each broad asset class in each of the system’s funds against the fund’s own policy benchmark; additionally, compare that performance against their peer groups;

We would propose to address this more complex task in several ways. First, we would review the asset class performance for each Ohio System and compare it against their chosen asset class benchmarks.

Secondly, we would compare the absolute performance of the Ohio Systems against absolute performance of customized asset class peer groups in our performance measurement system as well as the asset classes reported in our Public Fund Report. Peer comparisons can be challenging as asset class definition, construction, and composition can vary significantly across funds. We would also compare absolute and relative performance at the asset class level among the Ohio Systems with due consideration of differences in asset class composition.

(6) A review of the risk-return performance of each system’s total funds and of each asset class;

RVK routinely reviews risk-return performance for our general consulting clients over multiple time periods. We prefer to report risk/return performance graphically as the visual presentation offers, in our judgment, a much clearer and more intuitive appreciation of the risk taken to produce an associated return stream. This graphical presentation also facilitates a comparison against peers, providing further insight into the performance of each System’s total fund and respective asset classes.

(7) A comparison of each fund’s actual asset allocation to the allocations approved by the respective Board to determine adherence to those Board guidelines;

Asset allocation “drift” is a critical area for the introduction of unintended risk in a fund. Our standard performance reporting platform includes a display of actual versus policy allocations. In many cases, RVK is tasked by our clients to report compliance checks on actual allocations versus approved ranges as well as comparisons to specific targets.



(8) A comparison of each fund's total fund performance with its assumed rate of return for the 6-month, 1-year, 3-year, 5-year, and 10-year period;

RVK's performance reporting platform, PARis, is capable of addressing this task. We can, and have done this for each of the requested time periods, addressing any changes in the assumed rate of return in a variety of ways.

(9) A brief commentary on areas of special interest or concern to the ORSC or areas we feel need further review or that are of note (either positive or negative) that would assist the ORSC in its duties;

We believe this is a critical component in your scope of work. In our experience, risk (and sometimes inadequately addressed capital markets opportunities), often emerges in areas that are best examined with metrics other than those noted in scope items 2 through 8 above. This is a task that calls for significant experience in the public fund arena, which is among our firm's strong attributes. Examples of metrics we might apply include:

- **Liquidity Rating** – A qualitative method for determining the relative amount of liquidity in a portfolio. Developed by RVK and includes characteristics such as trading volume, leverage, and pricing mechanisms.
- **Downside Risk** – The volatility of negative movements of a return series.
- **Equity Beta Risk** – A measure of the sensitivity of a portfolio to the movements in the equity market.
- **Up Market Capture** – The ratio in percentage terms of a portfolio's average return versus the benchmark during the benchmark's positive returns.
- **Historical Total Fund Volatility** – A statistical measure of the range of a portfolio's performance around its average return over a specified time period.

(10) A review of each fund's total return net of fees. Additionally, note the percentage of assets managed by external managers for each fund and the total fees associated with its management.

Net of fees returns are a critically important metric, thus we will require continued access to net of fees performance for each Ohio System. Many of our clients ask us to calculate total fund returns net of fees while using gross of fee performance to execute peer comparisons (generally, all peer returns are provided to third-party vendors on a gross of fees basis). In addition to noting the percentage of assets managed externally and respective fees for each of the Ohio Systems, we are also in an excellent position to provide a thorough and comprehensive analysis due to our proprietary semi-annual Public Fund Report. We can compare the external/internal mix for each Ohio System against the robust peer group of more than 60 public funds across the US.

Written Evaluation – Analysis and Interpretation

RVK is exceptionally well-versed in all of the analytics outlined in the ORSC scope of work. To be comprehensive and truly informative, analytics need to be accompanied by thoughtful and clearly articulated interpretation, context, and takeaways. This can only be provided by a skilled investment consulting team that is fully engaged with the performance data of the Ohio Systems.

We believe we can provide this interpretation and analysis with unique clarity, utilizing language clearly understood by lay readers. Where terms of art are required, we will make great effort to articulate their meaning, use, and purpose.

When reporting performance, or providing performance evaluations, our objective is to present data and analyses that can fully inform oversight and provide a rich context for conclusions and decisions. In this regard, we believe that the depth of analysis is equally important to the simplicity of a presentation. This commitment to insightful interpretation, based on experience and delivery in clear language, will be particularly important in supplying the following three key summary statements required for the executive summary:

1. An overall opinion as to the validity, completeness, and appropriateness of the investment performance data provided by the retirement systems.
2. Comments on the appropriateness of performance benchmarks used by the Systems.
 - We are prepared to call out observed instances where current benchmarks depart from standard norms, are potentially mismatched against the investment exposures, and/or are inconsistently applied.
3. Comments on each fund's performance versus the board universe of other similarly situated public retirement systems.
 - We strongly believe that as we execute each component of the scope enumerated above, we will be in an excellent position to utilize our experience and technical knowledge to provide useful insights as we monitor and analyze the performance of these Systems over time.

Type and Level of Anticipated Assistance

In order to fully execute each of the components in the scope of work, RVK would need continued access to the following data for each of the five Ohio Systems for the term of the contract:

- Monthly performance data (market values, net cash flows, and performance)
 - The custodian bank, or the entity serving as the book of record, for each System will be expected to provide RVK with this data to be used in our performance analysis. RVK understands that it is not an expectation of the ORSC for the vendor to calculate or reconcile performance.
- Performance report, as reviewed by the Board, for each System

Having provided these services to the ORSC for nearly a decade, we are deeply familiar with the data collection and reporting processes in place for each of the Systems. No additional assistance from the ORSC is anticipated beyond the level currently provided.



4.8 COST INFORMATION

The pricing summary should include a breakdown of costs per element, including personnel costs (including hourly rates and estimated hours for professional and clerical staff assigned to the evaluation); travel and lodging; data processing costs; materials, and any other potential costs. The cost estimates in the pricing summary must include all necessary charges to complete the evaluations and must be a “not to exceed” figure.

RVK is pleased to propose Investment Performance Evaluation Services for the ORSC for an annual retainer fee as follows:

- **Year 1:** \$150,000
- **Year 2:** \$150,000
- **Year 3:** \$152,500
- **Year 4:** \$155,000
- **Year 5:** \$157,500

Our proposed fee reflects all travel, labor, production, and incidental costs. Please see the chart below for discounted hourly rates for the ORSC and the number of hours that we estimate to conduct services, as outlined in the RFP, on an annual basis.

Name	Role	Hourly Rate	Estimated Hours (Annual)
Jim Voytko, MPA, MPP	Primary Consultant	\$595	90
Jake Derrah	Co-Lead Consultant		
Eric Painting, CFA	Primary Support	\$395	144
Tanner Ono	Investment Analyst	\$225	163
Jessica Goodall	Administrative Specialist	\$115	25

For no additional fee, we would be pleased to add to the services requested in this RFP—as outlined in our response to the scope of work—a customized RVK Public Fund Survey Report for each of the five Ohio Systems (contingent upon surveys being completed for each System). Note that Ohio PERS is a current participant in our survey; thus, we would need completed surveys from the remaining Systems. Our public fund clients and participants have found these customized reports to be extremely valuable in seeing how their state’s systems compare to one another in terms of:

- Asset Allocation
- Active/Passive Mix
- Internal/External Management
- Total Fund and Asset Class Performance
- Funded Status
- Actuarial Statistics

We look forward to the opportunity of continuing our successful partnership with the ORSC.



Investment Performance Analysis

Ohio Retirement Study Council

Period Ended: December 31, 2022



INDEX GLOSSARY

S&P 500: The **S&P 500 Index (Cap Wtd)** is a commonly recognized, market-capitalization weighted index of 500 widely held equity securities designed to measure broad US equity performance.

R 3000: The **Russell 3000 Index** is a market-capitalization weighted index of 3,000 widely held equity securities designed to measure performance of the entire U.S. stock market.

Wilshire 5000: The **Wilshire 5000 Index** is a market-capitalization weighted index of more than 6,700 widely held equity securities designed to measure performance of the entire U.S. stock market.

MSCI ACW Ex US: The **MSCI ACW (All Country World) Ex US Index** is designed to measure equity market performance in global developed and emerging markets, excluding the US. The 22 underlying developed countries are: *Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, and the United Kingdom*. The 23 emerging market countries are: *Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Russia, Qatar, South Africa, Taiwan, Thailand, Turkey, and United Arab Emirates*.

MSCI ACW Ex US Investable Mkt: The **MSCI ACW Ex US Investable Mkt Index** is designed to measure equity performance across 22 of 23 Developed Markets (DM) countries (excluding the United States) and 24 Emerging Markets (EM) countries. With 6,174 constituents, the index covers approximately 99% of the global equity opportunity set outside the US.

MSCI EAFE: The **MSCI EAFE (Europe, Australasia, Far East) Index** is designed to measure equity market performance of 21 developed countries, excluding the US & Canada: *Australia, Austria, Belgium, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, and the United Kingdom*.

MSCI World Ex US: The **MSCI World Index Ex US Index** is designed to measure the equity market performance of developed markets. The MSCI World Index consists of the following 22 developed market country indexes: *Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, and the United Kingdom*.

MSCI Emerging Markets: The **MSCI Emerging Markets Index** is designed to measure equity market performance of emerging markets. The MSCI Emerging Markets Index consists of the following 24 emerging market country indexes: *Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Qatar, Russia, South Africa, Taiwan, Thailand, Turkey* and United Arab Emirates*.

Bloomberg US Agg Bond: The **Bloomberg US Aggregate Bond Index** covers the US dollar-denominated, investment-grade, fixed-rate, taxable bond market of SEC-registered securities: US Treasury and agency bonds, domestic corporate debt, and mortgage-backed securities.

Bloomberg US Universal: The **Bloomberg US Universal Index** covers US dollar-denominated, taxable bonds that are rated either investment grade or high-yield.

Bloomberg US Trsy: The **Bloomberg US Treasury Index** measures US dollar-denominated, fixed-rate, nominal debt issued by the US Treasury.

Bloomberg US Trsy: US TIPS: The **Bloomberg US Treasury: US TIPS Index** is an unmanaged index that consists of inflation-protected securities issued by the U.S. Treasury.

Bloomberg Mortgage: The **Bloomberg US Mortgage Backed Securities (MBS) Index** tracks agency mortgage backed pass-through securities (both fixed-rate and hybrid ARM) guaranteed by Ginnie Mae (GNMA), Fannie Mae (FNMA), and Freddie Mac (FHLMC).

Bloomberg CMBS: The **U.S. Bloomberg CMBS Investment Grade Index** measures the market of conduit and fusion CMBS deals with a minimum current deal size of \$300mn.

Bloomberg US High Yield: The **Bloomberg US Corporate High Yield Bond Index** measures the USD-denominated, high yield, fixed-rate corporate bond market. Securities are classified as high yield if the middle rating of Moody's, Fitch and S&P is Ba1/BB+/BB+ or below.

Bloomberg Global High Yield: The **Bloomberg Global High-Yield Index** provides a broad-based measure of the global high-yield fixed income markets.

CS High Yield Dev Countries Only: The **Credit Suisse High Yield Dev Countries Only Index** tracks the performance of noninvestment-grade corporate bonds from developed countries.

CS Leveraged Loan: The **Credit Suisse Leveraged Loan Index** is an index designed to mirror the investable universe of the \$US-denominated leveraged loan market.

JPMorgan GBI-EM Gbl Dvf'd: The **JPMorgan GBI-EM Global Diversified Total Return Index (Unhedged)** is a global emerging markets index that consists of regularly traded, liquid fixed-rate, domestic currency government bonds.

JPMorgan Emerging Markets Bond Global: The **JPMorgan Emerging Markets Bond Global Index** is a global emerging markets index that consists of regularly traded, liquid fixed-rate, US dollar-denominated government bonds.

NCREIF ODCE: The **NCREIF ODCE (Open End Diversified Core) Index** is an index of investment returns reporting on both a historical and current basis the results of 16 open-end commingled funds pursuing a core investment strategy, some of which have performance histories dating back to the 1970s. The NCREIF ODCE Index is capitalization-weighted and performance is time-weighted.

NCREIF Property: The **NCREIF Property Index** prepared by the National Council of Real Estate Investment Fiduciaries is a quarterly time series composite return measure for over 6,000 individual commercial real estate properties acquired in the private market for investment purposes. Total performance represents returns from appreciation and income, and includes multi-family, office, retail, and industrial properties.

NCREIF Timberland: The **NCREIF Timberland Index** is a quarterly time series composite return measure of investment performance of a large pool of individual U.S. timber properties acquired in the private market for investment purposes only.

NCREIF Farmland: The **NCREIF Farmland Index** is a quarterly time series composite return measure of investment performance of a large pool of individual farmland properties acquired in the private market for investment purposes only.

HFRI FOF Composite: The **HFRI FOF (Fund of Funds) Composite Index** is an equal-weighted index that contains over 400 constituent hedge fund of funds, both domestic and offshore.

Burgiss All Private Equity: The **Burgiss All Private Equity Benchmark** is a composite of nearly 1400 private equity funds derived from the holdings of over 200 institutional investors.

Alerian MLP: The **Alerian MLP Index** is a market-capitalization weighted index of the 50 most prominent energy Master Limited Partnerships.

S&P Goldman Sachs Commodity: The **S&P Goldman Sachs Commodity Index** is a composite index of commodity sector returns representing an unleveraged, long-only investment in commodity futures that is broadly diversified across the spectrum of commodities. Components are weighted by their respective world production quantities.

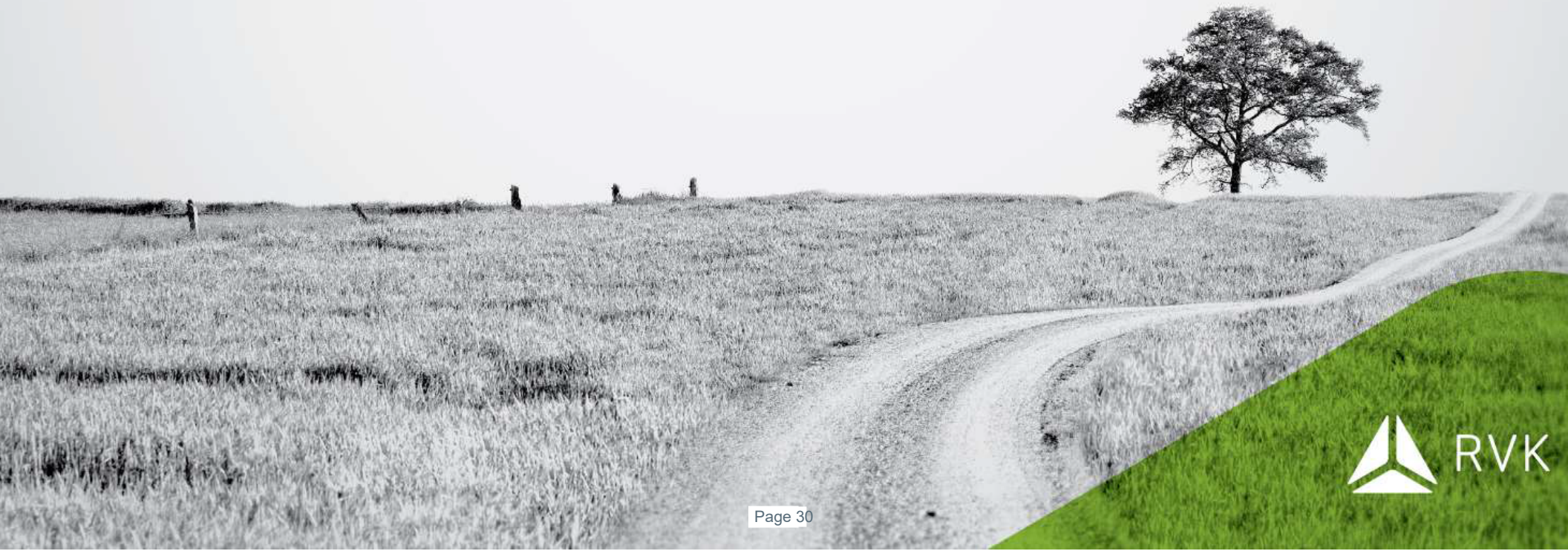
3 Month LIBOR Rate: The **3 Month LIBOR Rate Index** is the rate of interest at which banks offer to lend money to one another in the wholesale money markets in London.

S&P Risk Parity Index – 8% Target Volatility: The **S&P Risk Parity Index – 8% Target Volatility Index** seeks to measure the performance of a multi-asset risk parity strategy that allocates risk equally among U.S. dollar-denominated equity, fixed income, and commodities futures contracts, while targeting a volatility level of 8%.

S&P GSCI Gold: The **S&P GSCI Gold Index** provides investors with a reliable and publicly available benchmark tracking the COMEX gold future.

FTSE Dev Core 50/50 Infrastructure: The **FTSE Dev Core 50/50 Infrastructure Index** is a market-capitalization-weighted index of worldwide infrastructure and infrastructure-related securities.

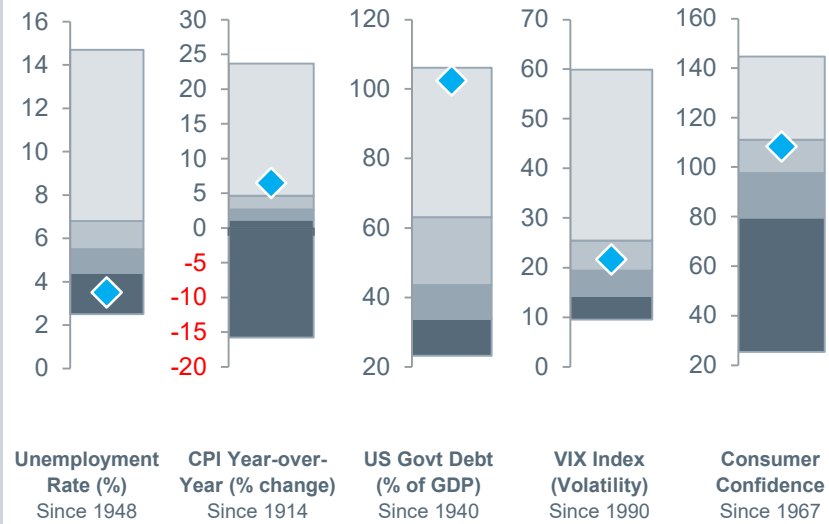
Capital Markets Review



Fourth Quarter Economic Environment

In Q4, equity and fixed income markets delivered improved results while continuing to experience elevated volatility. However, positive quarterly returns came on the tail of a significantly negative year for many investors. Regarding economic conditions, the impact of tightening monetary policy and persistent inflation, combined with supply shocks and an energy crisis in Europe, are leading to increasing odds of a global recession in 2023. On a relatively positive note, recent data indicates that the inflationary environment is showing signs of abating. Notably, the US Consumer Price Index declined for a sixth straight month in December with a reading of 6.5%, the lowest level since October 2021. In December, the FOMC did slow the pace of policy rate hikes with a 50 basis point increase, following a series of four straight 75 basis point increases. Internationally, the war in Ukraine caused an energy price shock and trade tensions continue to test economic and political relationships across multiple regions. Within emerging markets, investor attention is focused on China with some pointing to signs of a softening stance toward pandemic restrictions as reason to be optimistic regarding the country's outlook. However, these views are countered with concerns over indications of social unrest and the consolidation of power around President Xi Jinping. With all this considered, global GDP growth forecasts continue to moderate with the OECD forecasting growth of 3.1% in 2022 with an expected decline to 2.2% global GDP growth in 2023.

Key Economic Indicators



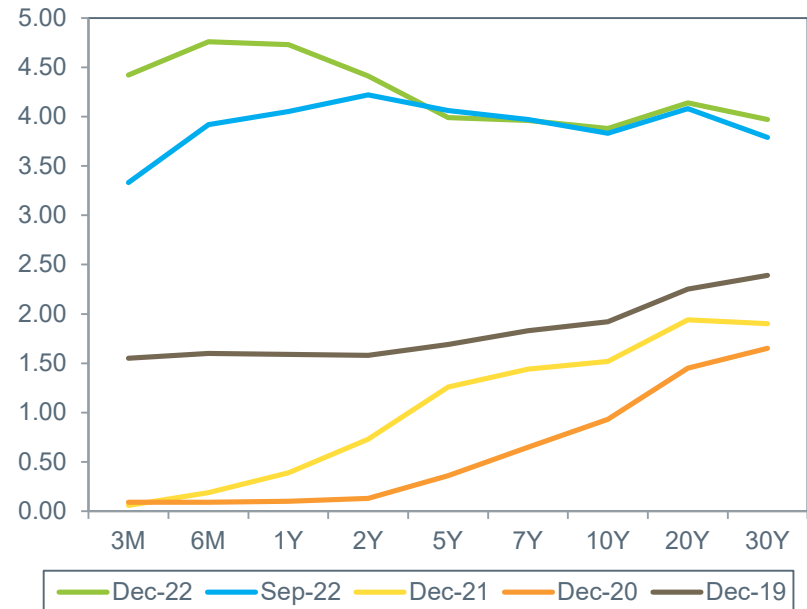
Economic Indicators

	Dec-22	Sep-22	Dec-21	Dec-19	20 Yr
Federal Funds Rate (%)	4.33 ▲	3.08	0.07	1.55	1.30
Breakeven Infl. - 5 Yr (%)	2.38 ▲	2.16	2.91	1.70	1.92
Breakeven Infl. - 10 Yr (%)	2.30 ▲	2.15	2.59	1.79	2.08
CPI YoY (Headline) (%)	6.5 ▼	8.2	7.0	2.3	2.5
Unemployment Rate (%)	3.5 —	3.5	3.9	3.6	6.0
Real GDP YoY (%)	1.0 ▼	1.8	5.7	2.6	2.0
PMI - Manufacturing	48.4 ▼	50.9	58.8	47.9	53.7
USD Total Wtd Idx	121.51 ▼	127.64	115.37	114.67	103.33
WTI Crude Oil per Barrel (\$)	80.3 ▲	79.5	75.2	61.1	67.9
Gold Spot per Oz (\$)	1,824 ▲	1,661	1,829	1,517	1,160

Market Performance (%)

	QTD	CYTD	1 Yr	5 Yr	10 Yr
S&P 500 (Cap Wtd)	7.56	-18.11	-18.11	9.42	12.56
Russell 2000	6.23	-20.44	-20.44	4.13	9.01
MSCI EAFE (Net)	17.34	-14.45	-14.45	1.54	4.67
MSCI EAFE SC (Net)	15.79	-21.39	-21.39	-0.05	6.21
MSCI Emg Mkts (Net)	9.70	-20.09	-20.09	-1.40	1.44
Bloomberg US Agg Bond	1.87	-13.01	-13.01	0.02	1.06
ICE BofAML 3 Mo US T-Bill	0.84	1.46	1.46	1.26	0.76
NCREIF ODCE (Gross)	-4.96	7.47	7.47	8.68	10.10
FTSE NAREIT Eq REIT (TR)	5.24	-24.37	-24.37	3.68	6.53
HFRI FOF Comp	1.79	-5.25	-5.25	3.02	3.51
Bloomberg Cmdty (TR)	2.22	16.09	16.09	6.44	-1.29

Treasury Yield Curve (%)



Fourth Quarter Review

Broad Market

US equity markets experienced a decrease in volatility in Q4 with short term spikes around CPI release dates and Fed meetings. Returns were positive across market cap and style groups in Q4. The reversal to growth seen in Q3 was short-lived, as value stocks led growth by a wide margin in Q4. Energy had its best year on record with the S&P 500 Energy Index gaining 65.72%.

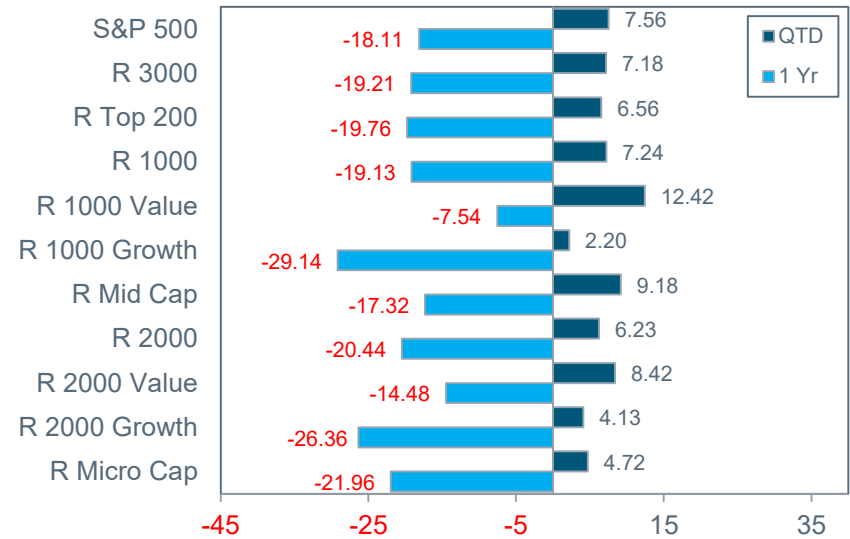
Market Cap

This year marks the worst performance of US equities across market cap groups since the GFC, and only the third time in the last 15 years that the Russell 3000 Index has generated negative returns.

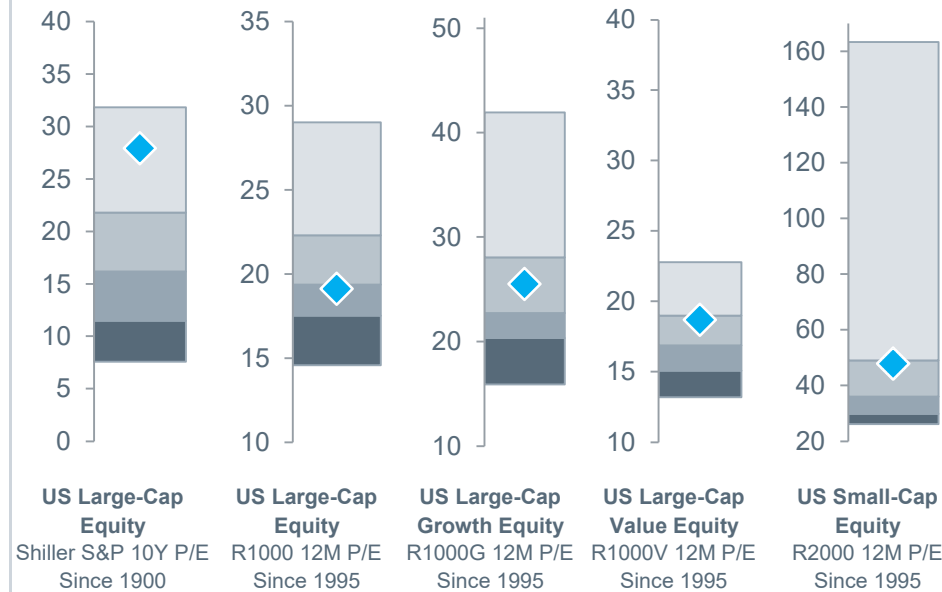
Style and Sector

Value-oriented managers had a higher success rate than core or growth managers in the small- and mid-cap spaces, while large-cap core and growth managers fared better than value managers. Growth managers across the market cap spectrum struggled to provide downside protection in 2022, while value and core managers were broadly successful.

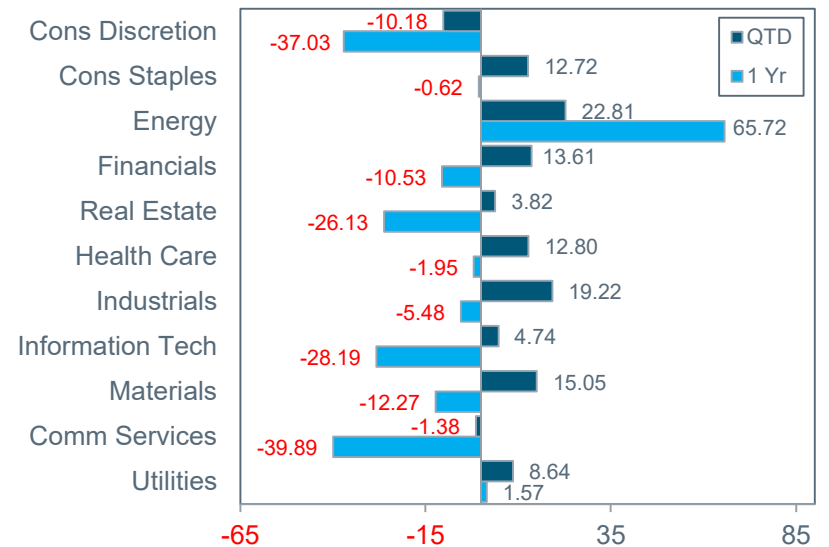
Style and Capitalization Market Performance (%)



Valuations



S&P 500 Index Sector Performance (%)



Valuation data courtesy of Bloomberg Professional Service and Robert J. Shiller, Irrational Exuberance, Second Edition (2000). P/E metrics shown represent the 5th through 95th percentiles to minimize the effect of outliers.

Fourth Quarter Review

Developed Markets

International developed markets meaningfully outperformed their domestic counterparts in Q4 with the MSCI EAFE Index realizing a 17.3% return for the period. Value stocks rebounded back into favor, outperforming growth in a reversal from the prior quarter, while large-cap continued its outperformance over small-cap stocks. Overall, market trends pointed to investors anticipating moderating inflation and easing of rate hikes despite the ongoing uncertainty led by the conflict in Ukraine and near-term recession fears.

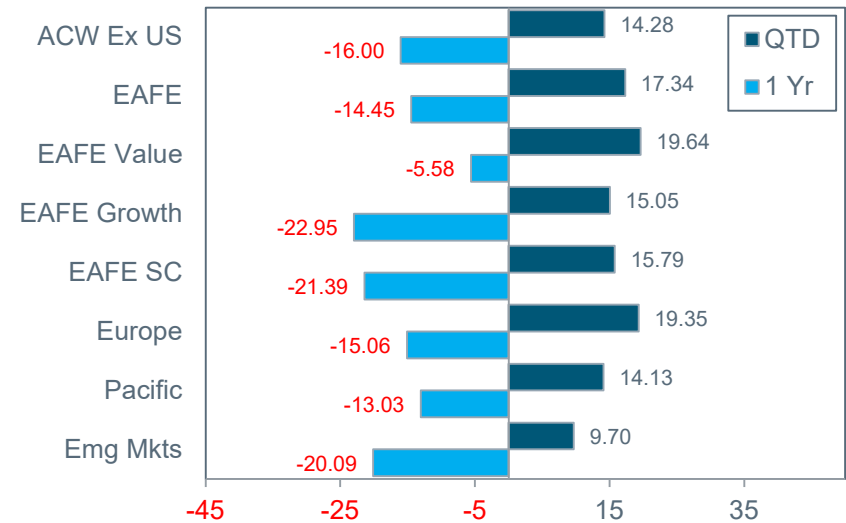
Emerging Markets

Emerging markets lagged behind developed during the quarter with the MSCI Emerging Markets Index finishing with a 9.7% return. Value stocks narrowly outperformed growth and large-cap beat small-cap.

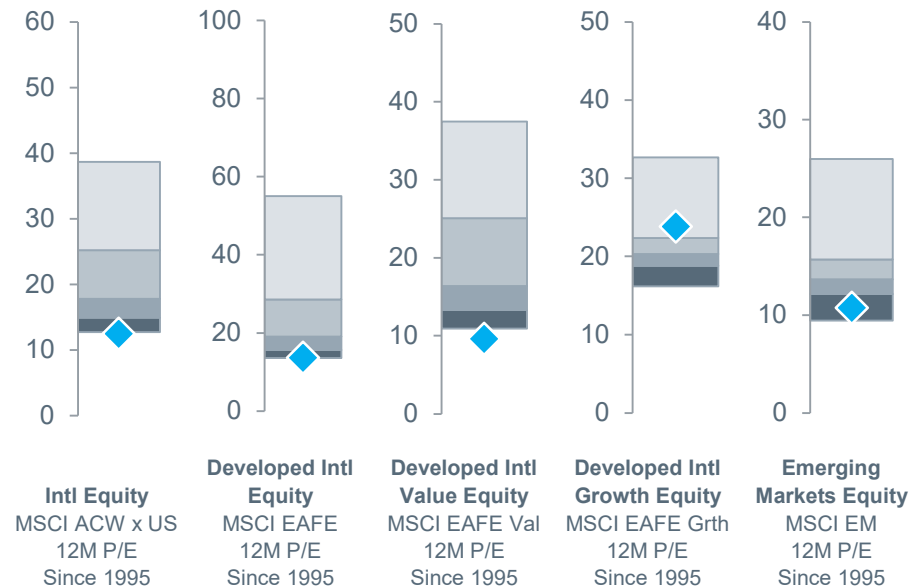
Market Cap & Style

The majority of active managers in emerging markets outperformed the index in Q4; however, active managers in international developed mostly underperformed.

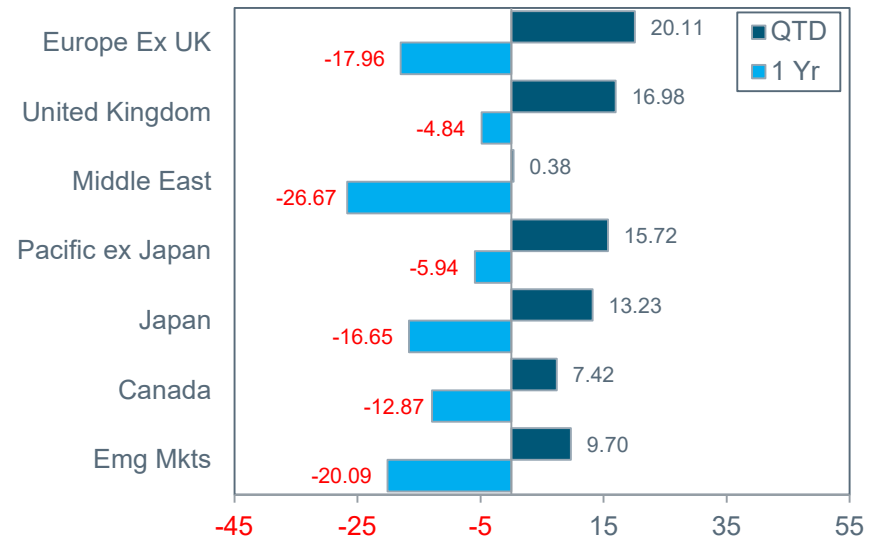
MSCI Style and Capitalization Market Performance (%)



Valuations



MSCI Region Performance (%)



Valuation data courtesy of Bloomberg Professional Service.

P/E metrics shown represent the 5th through 95th percentiles to minimize the effect of outliers.

All returns are shown net of foreign taxes on dividends.

Fourth Quarter Review

Broad Market

The Bloomberg US Aggregate Index finished Q4 with a return of 1.9%, capping off a decline of -13.0% in 2022, the most negative calendar year on record for the index. The year was defined by rising interest rates, as treasury yields rose 236 basis points from 1.5% to 3.9% as measured by the 10-year US Treasury yield. The Federal Reserve aggressively hiked the Federal Funds rate in response to persistent inflation over the course of the year.

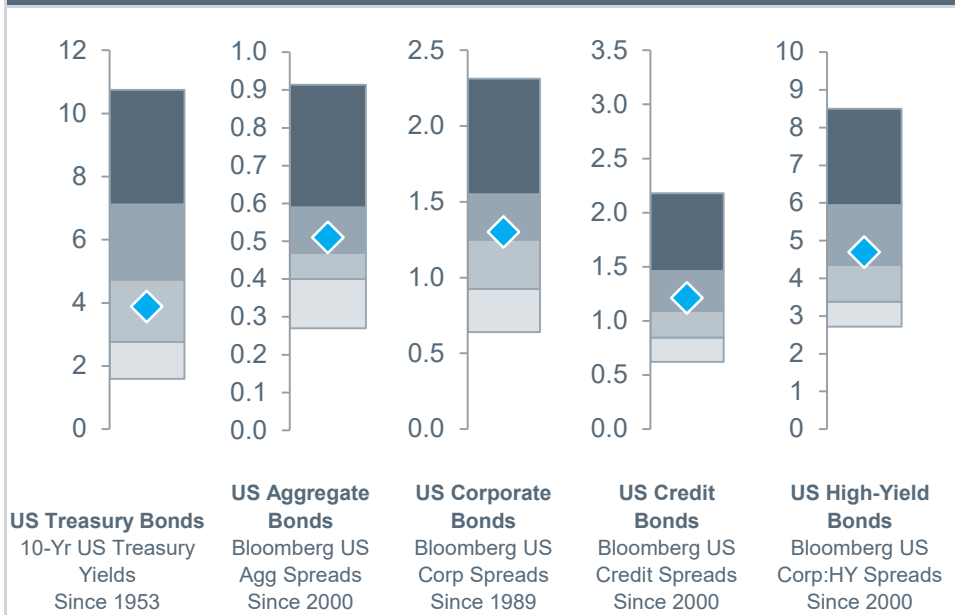
Credit Market

US investment grade corporate bonds rebounded in Q4 as low supply and softer Federal Reserve rhetoric bolstered credit markets. Non-investment grade corporate credit relatively outperformed investment grade over the year.

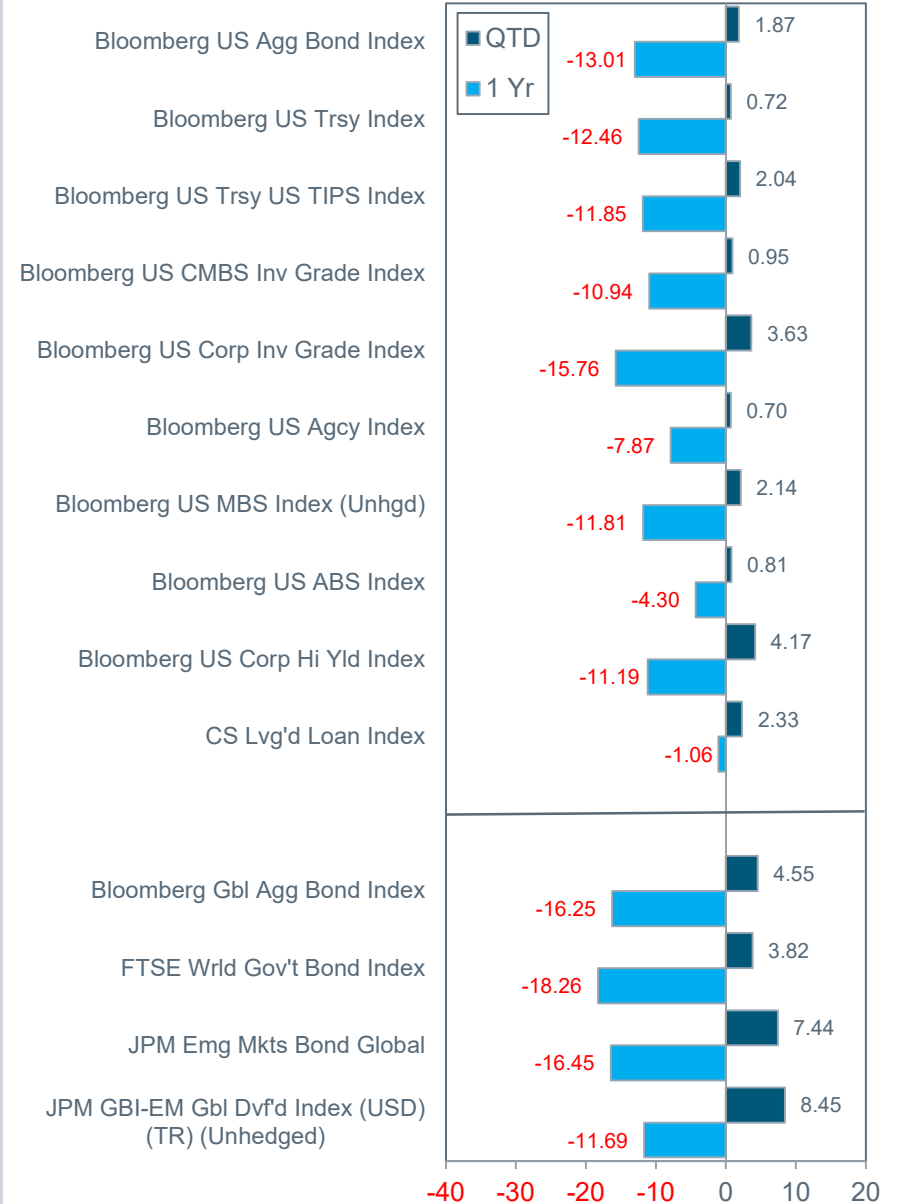
Emerging Market Debt

Conditions in global fixed income markets were defined by concerns over low growth, persistent inflation, rising interest rates, a strong US Dollar, and geopolitical conflict. The Bloomberg Global Aggregate Index returned 1.0% in Q4 and -11.2% in 2022, while the JPM EMBI Global Diversified returned 8.1% and -17.8% over these respective periods.

Valuations



Fixed Income Performance (%)



Valuation data courtesy of Bloomberg Professional Service. Valuations shown represent the 5th through 95th percentiles to minimize the effect of outliers.

Fourth Quarter Review - Absolute Return

General Market - Hedge Funds

Despite a highly challenging market backdrop, hedge funds broadly delivered much-needed capital preservation to institutional investors. The year also ended on a strong note given most managers were reducing leverage and overall market exposure going into Q4. The HFRI Fund-Asset-Weighted Composite Index delivered an annual return of 1.0% while its Asset-Weighted counterpart ended the year at -4.0%.

General Market - Global Tactical Asset Allocation (GTAA)

Global Tactical Asset Allocation (GTAA) strategies that RVK follows closely posted significant gains with moderate dispersion to close an otherwise challenging year. Given a strong quarter for non-US equity, as well as value-oriented equity within the US, nearly all active managers with significant diversification outperformed a US centric blend of 60% equity and 40% fixed income. The top performing long-biased GTAA strategies were those who have included meaningful market neutral idiosyncratic relative valuation exposures. While those who moderately underperformed peers benefitted from a value bias despite maintaining US equity and fixed income exposures.

Fourth Quarter Review - Real Assets

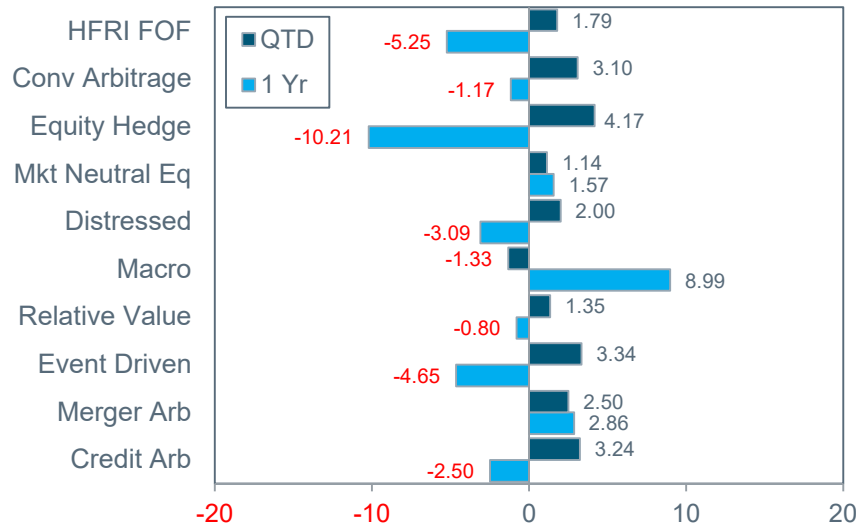
General Market - Diversified Inflation Strategies (DIS)

DIS managers tracked closely by RVK have outperformed a US-centric blend of 60% equity and 40% fixed income both year to date, and over the quarter. After responding positively to record inflationary pressures in Q1 of 2022, DIS posted losses in the second and third quarters that followed. Strong Q4 performance has materialized across the peer group, with those who rely on income-oriented investment processes and those who hold larger TIPS allocation lagging the group to a moderate degree.

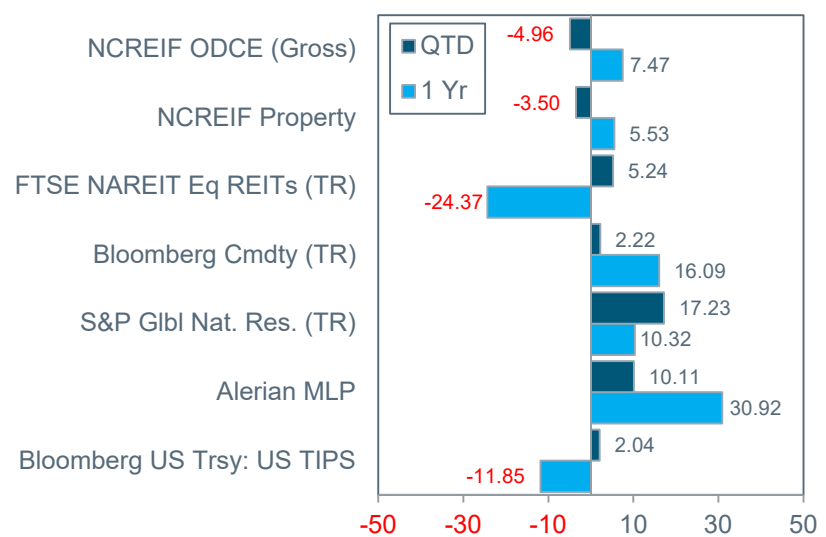
General Market - Real Estate

Core private real estate generated a negative return of -5.0% in Q4 (on a preliminary and gross of fee basis), as reported by the NFI-ODCE Index, with the total return comprising of 0.8% income and -5.8% price appreciation. Investors of publicly traded real estate significantly outperformed their private market counterparts by a meaningful margin. Publicly traded real estate delivered a fourth quarter total return of 4.5%, as measured by FTSE/NAREIT All REITs Index.

HFRI Hedge Fund Performance (%)



Real Asset Performance (%)



Annual Asset Class Performance

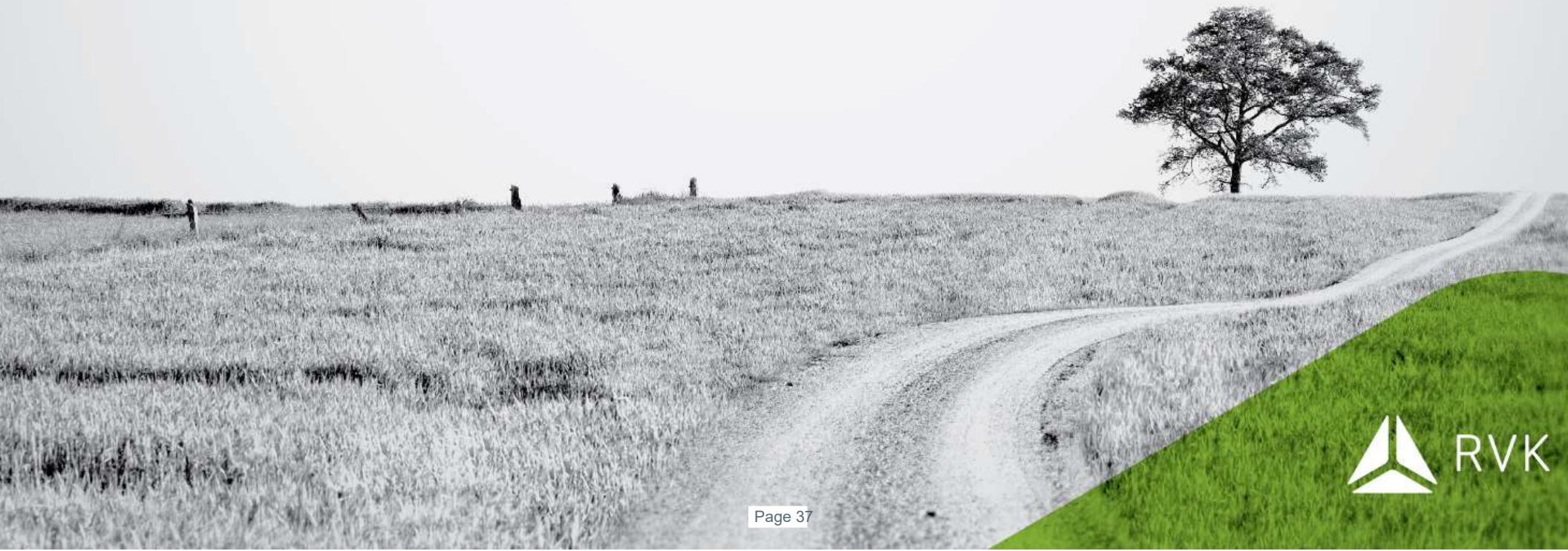
As of December 31, 2022

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	CYTD
Best	8.44	78.51	27.94	22.49	20.00	38.82	30.14	15.02	21.31	37.28	8.35	31.49	19.96	43.24	16.09
	5.24	58.21	26.85	15.99	18.23	32.39	19.31	9.59	17.13	33.01	1.87	26.00	18.40	28.71	7.47
	2.06	46.78	22.04	13.56	18.06	29.30	13.69	3.20	11.96	25.03	0.01	25.53	18.31	27.11	1.46
	-2.35	31.78	18.88	8.29	17.32	22.78	12.50	1.38	11.77	21.83	-1.26	24.96	16.12	22.17	-5.25
	-10.01	28.01	16.83	7.84	16.35	13.94	5.97	0.55	11.19	14.65	-2.08	22.01	12.34	14.82	-11.19
	-21.37	27.17	16.36	4.98	16.00	8.96	4.89	0.05	8.77	10.71	-4.02	19.59	10.99	11.26	-11.85
	-26.16	26.46	15.12	2.11	15.81	7.44	3.64	-0.27	8.52	7.77	-4.38	18.42	10.88	10.10	-13.01
	-33.79	18.91	15.06	0.10	10.94	2.47	3.37	-0.81	6.67	7.62	-4.62	14.32	7.82	6.17	-14.45
	-35.65	11.47	10.16	-4.18	8.78	0.07	2.45	-1.44	4.68	7.50	-4.68	8.72	7.51	5.96	-18.11
	-37.00	11.41	7.75	-5.72	6.98	-2.02	0.04	-3.30	2.65	5.23	-11.01	8.43	7.11	5.28	-20.09
	-37.74	5.93	6.54	-12.14	4.79	-2.60	-2.19	-4.41	2.18	3.54	-11.25	8.39	1.19	0.05	-20.44
	-43.33	1.92	6.31	-13.32	4.21	-8.61	-4.90	-4.47	1.00	3.01	-13.73	7.69	0.67	-1.55	-21.39
	-47.01	0.21	5.70	-15.94	0.11	-8.83	-4.95	-14.92	0.51	1.70	-14.57	5.34	-3.12	-2.52	-24.37
Worst	-53.33	-29.76	0.13	-18.42	-1.06	-9.52	-17.01	-24.66	0.33	0.86	-17.89	2.28	-8.00	-2.54	-27.09
	S&P 500 - US Large Cap	R 2000 - US Small Cap	MSCI EAFE (Net) - Int'l Dev.	MSCI EAFE SC (Net) - Int'l SC	MSCI EM (Net) - Int'l Emg Mkts	Bloombrg US Agg Bond - FI	Bloombrg US Corp Hi Yield - FI	Bloombrg US Trsy US TIPS - FI	Bloombrg US Gov Credit Lng - FI	NCREIF ODCE (Gross) - Real Estate	FTSE NAREIT Eq REITs Index (TR)	HFRI FOF Comp Index - ARS	Bloombrg Comdty (TR) - Commod.	ICE BofAML 3 Mo T-Bill - Cash Equiv	

NCREIF ODCE (Gross) performance is reported quarterly; performance is shown N/A in interim-quarter months.



Performance Report - All Systems



Asset Allocation & Performance - Gross of Fees											
	Market Value (\$000)	Trailing Performance (%)					Calendar Year Performance (%)				
		2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018
PERS (DB)	92,544,959	0.83	-11.95	4.45	5.35	7.40	7.38	15.43	12.11	17.31	-2.90
PERS (DB) Total Fund Benchmark		0.37	-11.44	4.46	5.28	7.12	6.97	15.28	11.65	17.06	-3.08
Difference		0.46	-0.51	-0.01	0.07	0.28	0.41	0.15	0.46	0.25	0.18
Rank		58	65	66	63	54	53	52	49	49	44
PERS (HC 115)	11,686,665	0.17	-15.51	2.34	3.85	5.95	5.61	14.34	10.96	19.59	-5.76
PERS (HC 115) Total Fund Benchmark		0.12	-15.56	1.89	3.47	5.56	5.23	13.76	10.13	19.20	-5.97
Difference		0.05	0.05	0.45	0.38	0.39	0.38	0.58	0.83	0.39	0.21
Rank		79	95	93	95	93	94	64	64	16	91
STRS	85,942,103	0.51	-8.52	6.63	7.11	8.48	8.66	19.36	12.26	18.39	-1.75
STRS Total Fund Benchmark		0.07	-10.90	5.38	6.28	7.78	8.18	17.36	11.92	18.27	-2.04
Difference		0.44	1.38	1.25	0.83	0.70	0.48	2.00	0.34	0.12	0.29
Rank		70	37	16	12	9	6	12	46	28	27
OP&F	16,755,445	0.12	-8.73	6.25	6.76	8.39	8.24	20.48	9.09	17.39	-1.52
OP&F Total Fund Benchmark		-0.24	-10.78	4.46	5.25	7.03	6.78	16.28	9.86	16.85	-2.99
Difference		0.36	2.05	1.79	1.51	1.36	1.46	4.20	-0.77	0.54	1.47
Rank		81	30	25	17	13	18	10	85	47	22
SERS	17,149,132	1.96	-4.89	8.20	8.04	9.33	9.15	17.88	12.99	17.69	-1.28
SERS Total Fund Benchmark		0.55	-7.91	5.61	6.01	7.31	7.42	14.66	11.55	16.04	-2.03
Difference		1.41	3.02	2.59	2.03	2.02	1.73	3.22	1.44	1.65	0.75
Rank		15	9	5	3	2	3	23	36	41	19
HPRS	981,897	1.84	-9.59	7.30	6.98	8.15	8.26	16.92	16.86	18.85	-4.57
HPRS Total Fund Benchmark		1.83	-9.61	6.06	6.32	7.61	7.67	16.63	13.16	17.85	-3.38
Difference		0.01	0.02	1.24	0.66	0.54	0.59	0.29	3.70	1.00	-1.19
Rank		18	38	12	14	26	17	36	3	23	75
<i>All Public Plans > \$1B-Total Fund Median</i>		<i>0.97</i>	<i>-10.84</i>	<i>5.16</i>	<i>5.84</i>	<i>7.60</i>	<i>7.43</i>	<i>15.51</i>	<i>12.05</i>	<i>17.29</i>	<i>-3.14</i>

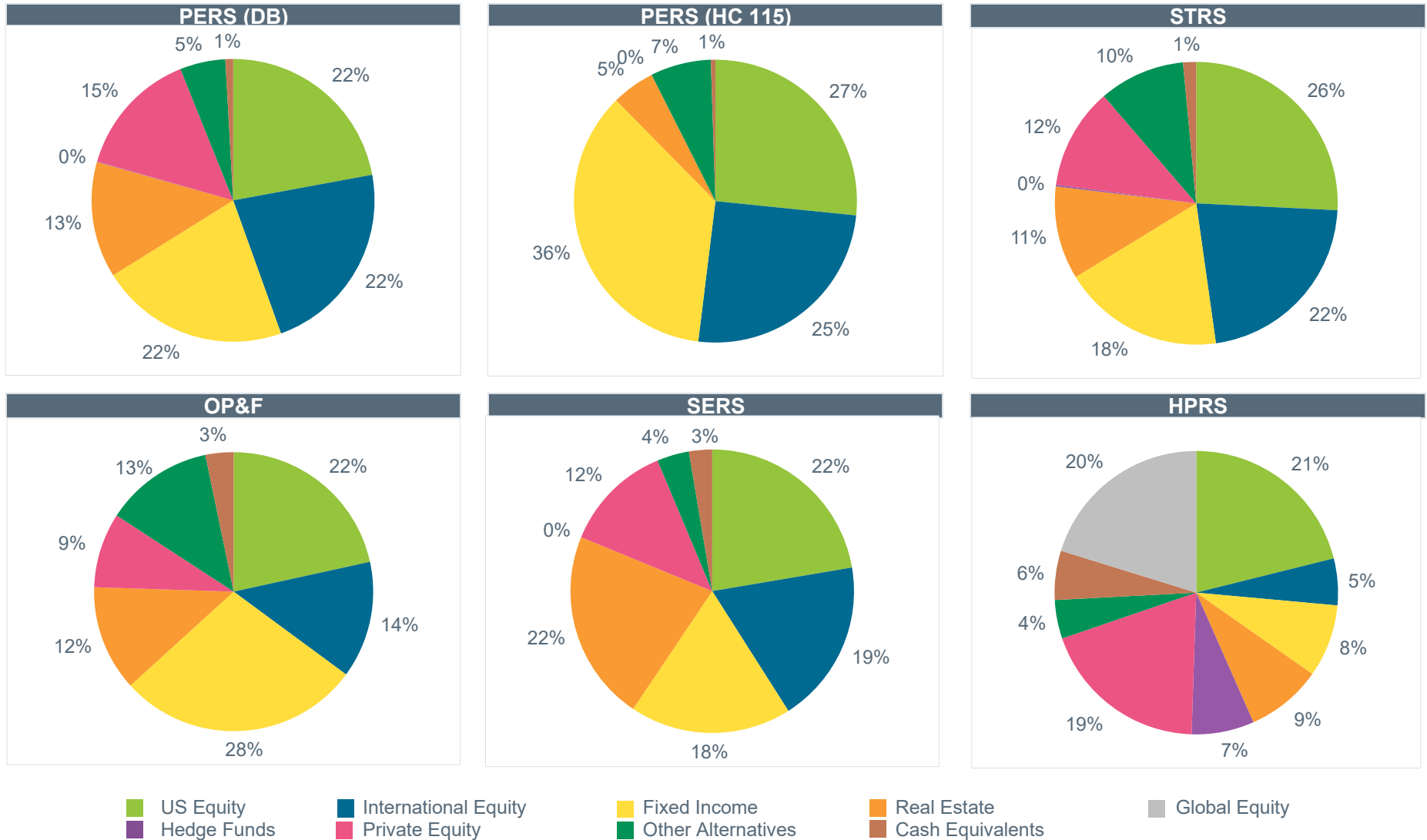
OPERS health care plan is not a pension plan and therefore has significantly different characteristics including a shorter focus asset allocation with more liquidity than the pension plans. For purposes of this study, the OPERS health care plan has been included in the results. The results for OPERS health care plan is reflected in the PERS 115 trust subsequent to October 2014 and in the PERS HC results prior to October 2014.

Performance shown is gross of fees but is net of embedded fees on externally managed real estate and alternative investments. Ranks are shown against All Public Plans >\$1B-Total Fund. PERS DB: 1 year performance was reduced by 0.94% due to change in distribution methodology used in private equity and real estate portfolios. PERS DB: 3 year performance was reduced by 0.37% due to change in distribution methodology used in private equity and real estate portfolios. PERS DB: 5 year performance was reduced by 0.22% due to change in distribution methodology used in private equity and real estate portfolios. PERS DB: 7 year performance was reduced by 0.16% due to change in distribution methodology used in private equity and real estate portfolios. PERS DB: 10 year performance was reduced by 0.11% due to change in distribution methodology used in private equity and real estate portfolios.

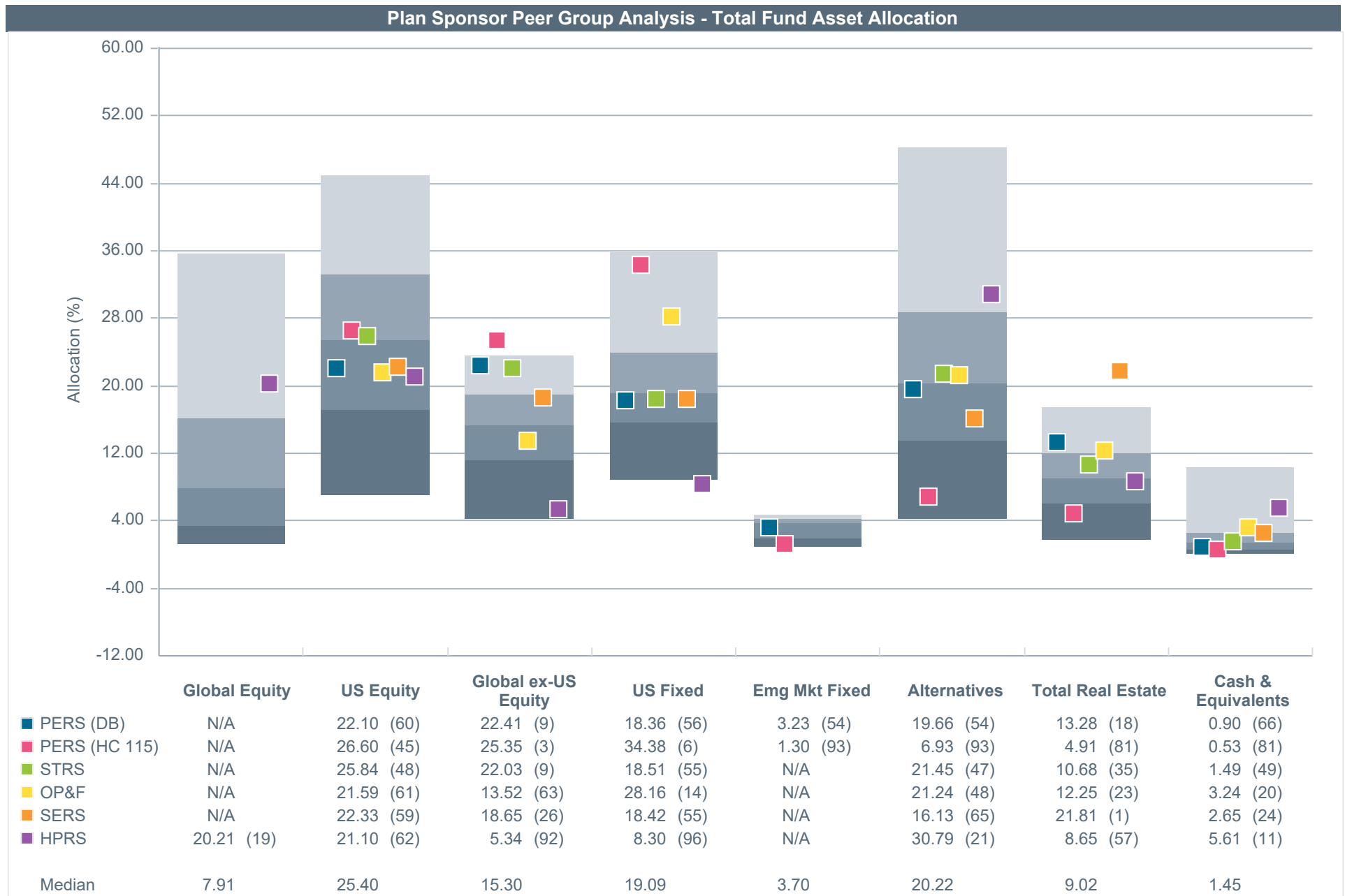
Asset Allocation & Performance - Net of Fees											
	Market Value (\$000)	Trailing Performance (%)						Calendar Year Performance (%)			
		2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018
PERS (DB)	92,544,959	0.77	-12.03	4.36	5.27	7.28	7.22	15.34	12.02	17.23	-2.99
PERS (DB) Total Fund Benchmark		0.37	-11.44	4.46	5.28	7.12	6.97	15.28	11.65	17.06	-3.08
Difference		0.40	-0.59	-0.10	-0.01	0.16	0.25	0.06	0.37	0.17	0.09
PERS (HC 115)	11,686,665	0.17	-15.51	2.34	3.85	5.94	5.55	14.34	10.96	19.59	-5.76
PERS (HC 115) Total Fund Benchmark		0.12	-15.56	1.89	3.47	5.56	5.23	13.76	10.13	19.20	-5.97
Difference		0.05	0.05	0.45	0.38	0.38	0.32	0.58	0.83	0.39	0.21
STRS	85,942,103	0.44	-9.64	6.51	6.99	8.35	8.53	19.24	12.14	18.27	-1.89
STRS Total Fund Benchmark		0.07	-10.90	5.38	6.28	7.78	8.18	17.36	11.92	18.27	-2.04
Difference		0.37	1.26	1.13	0.71	0.57	0.35	1.88	0.22	0.00	0.15
OP&F	16,755,445	-0.17	-9.38	5.56	6.08	7.73	7.62	19.63	8.51	16.71	-2.14
OP&F Total Fund Benchmark		-0.24	-10.78	4.46	5.25	7.03	6.78	16.28	9.86	16.85	-2.99
Difference		0.07	1.40	1.10	0.83	0.70	0.84	3.35	-1.35	-0.14	0.85
SERS	17,149,132	1.57	-5.60	7.52	7.35	8.63	8.46	17.13	12.40	16.96	-1.94
SERS Total Fund Benchmark		0.55	-7.91	5.61	6.01	7.31	7.42	14.66	11.55	16.04	-2.03
Difference		1.02	2.31	1.91	1.34	1.32	1.04	2.47	0.85	0.92	0.09
HPRS	981,897	1.67	-9.96	6.82	6.51	7.66	7.79	16.31	16.38	18.43	-5.02
HPRS Total Fund Benchmark		1.83	-9.61	6.06	6.32	7.61	7.67	16.63	13.16	17.85	-3.38
Difference		-0.16	-0.35	0.76	0.19	0.05	0.12	-0.32	3.22	0.58	-1.64

Performance shown is net of all investment management costs. PERS DB: 1 year performance was reduced by 0.94% due to change in distribution methodology used in private equity and real estate portfolios. PERS DB: 3 year performance was reduced by 0.37% due to change in distribution methodology used in private equity and real estate portfolios. PERS DB: 5 year performance was reduced by 0.22% due to change in distribution methodology used in private equity and real estate portfolios. PERS DB: 7 year performance was reduced by 0.16% due to change in distribution methodology used in private equity and real estate portfolios. PERS DB: 10 year performance was reduced by 0.11% due to change in distribution methodology used in private equity and real estate portfolios.

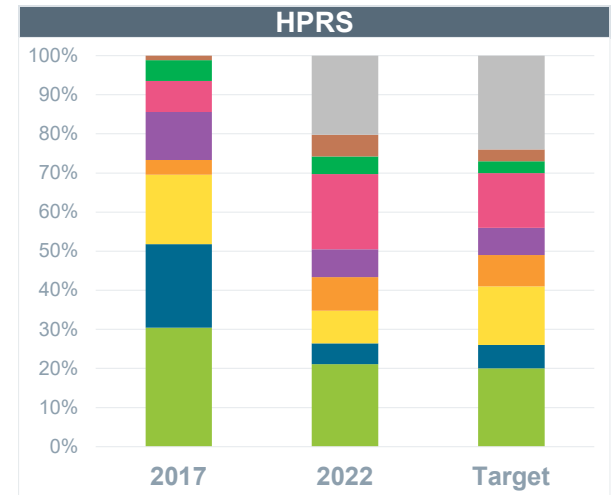
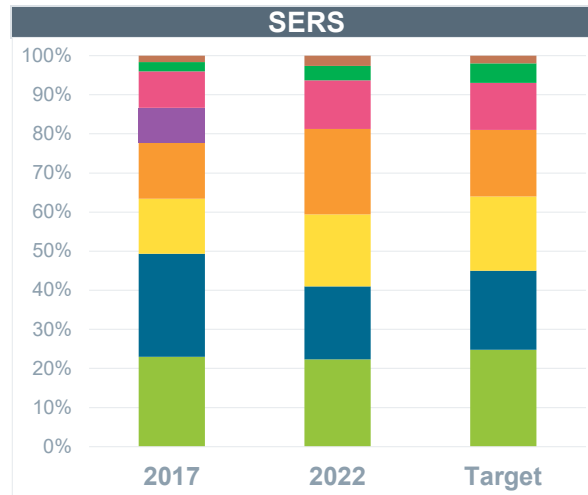
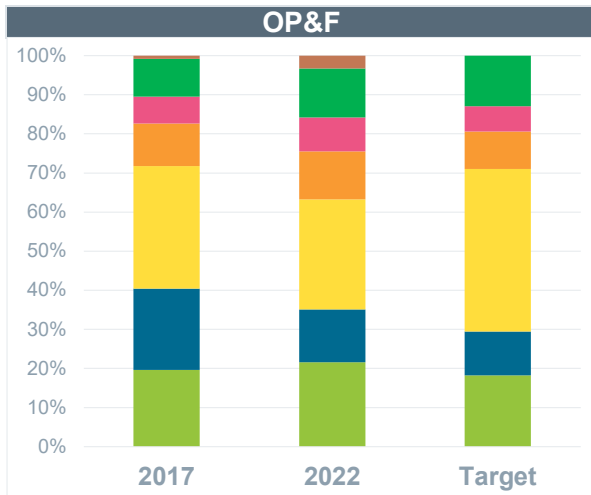
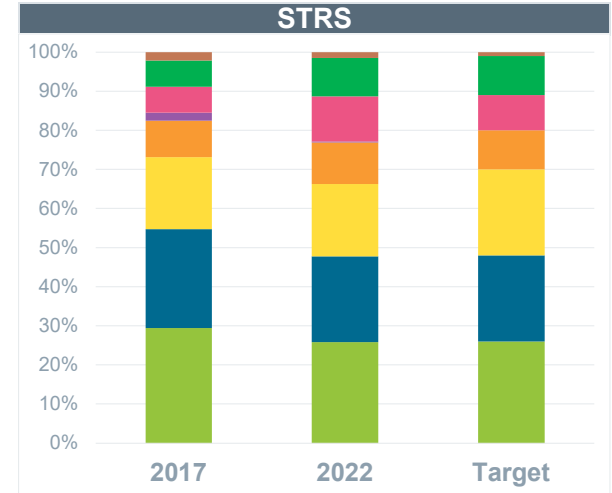
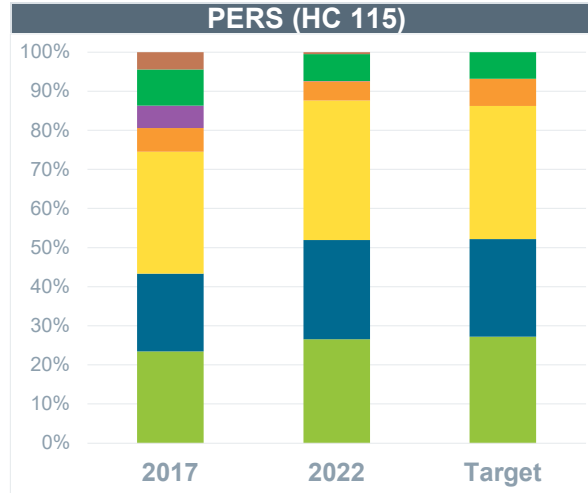
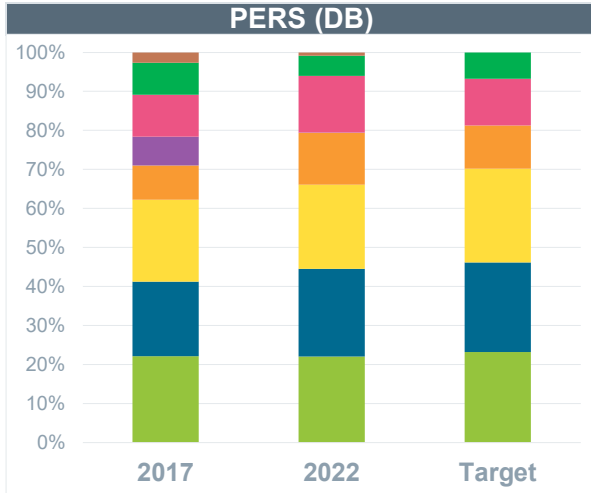
Ohio Retirement Study Council
Current Asset Allocation by Asset Class



Allocations shown may not sum up to 100% exactly due to rounding. Cash Equivalents for PERS (DB) and PERS (HC 115) consists of cash, rebalancing, and additional annuity.

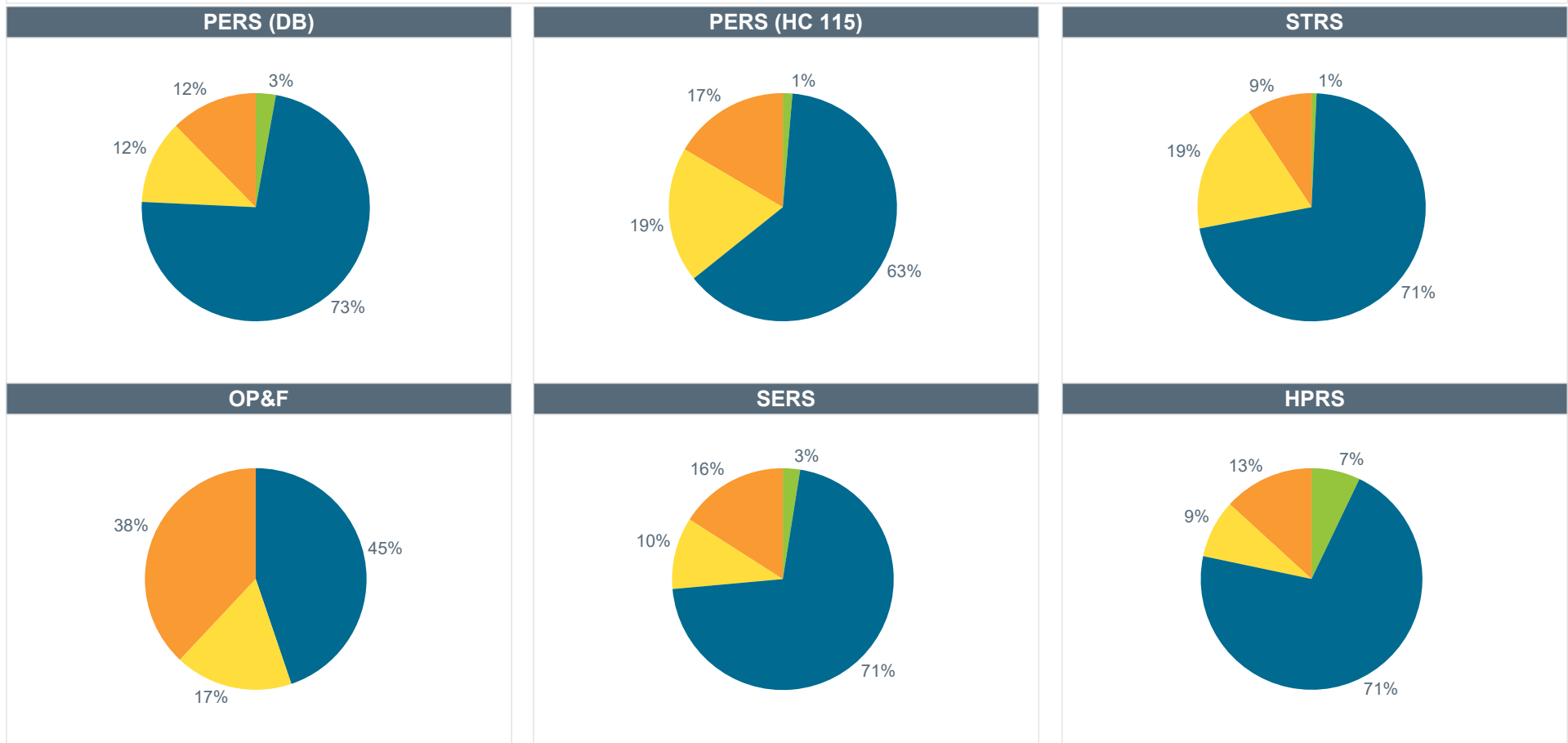


Allocations shown may not add up to 100% due to rounding. US Fixed Income may include allocations to Intl. Fixed Income not explicitly broken out by the plans. Parentheses contain percentile ranks. Cash Equivalents for PERS (DB) consists of cash, rebalancing, and additional annuity. Cash Equivalents for PERS (HC 115) consists of cash and rebalancing.



Summary

- **Alpha:** Aims to continually provide a return in excess of the portfolio benchmark return for a given level of risk and are intended to provide diversification (primarily with the Capital Appreciation and Capital Preservation components).
(Includes: Hedge Funds, Global Tactical Asset Allocation (GTAA), and Risk Parity)
- **Capital Appreciation:** Seeks high level of capital gains through increased risk-return trade-off.
(Includes: Public & Private Equities, High Yield, Emerging Markets Debt, MLPs, Timber, Non-Core Real Estate, Opportunistic Investments, and Securitized Debt)
- **Capital Preservation:** Conservative strategy designed to avoid risk of loss of principal.
(Includes: Core Fixed Income and Cash Equivalents)
- **Inflation:** Provide returns that will keep pace with normal inflationary movements in the long-term market. Designed not to lose value in an inflationary environment.
(Includes: TIPS, Commodities, Real Return, Floating Rate Debt, REITs, and Core Real Estate)



Asset Allocation by Thematic Category percentages are provided by the Plans. Allocations are based on dedicated composite allocations and not underlying investment manager exposures; as such, thematic allocations are approximations. OP&F does not have any dedicated exposure to Alpha strategies, but does have alpha exposure embedded within other asset class buckets. Allocations shown may not sum up to exactly 100% due to rounding. Please see the Glossary for additional information regarding thematic descriptions.

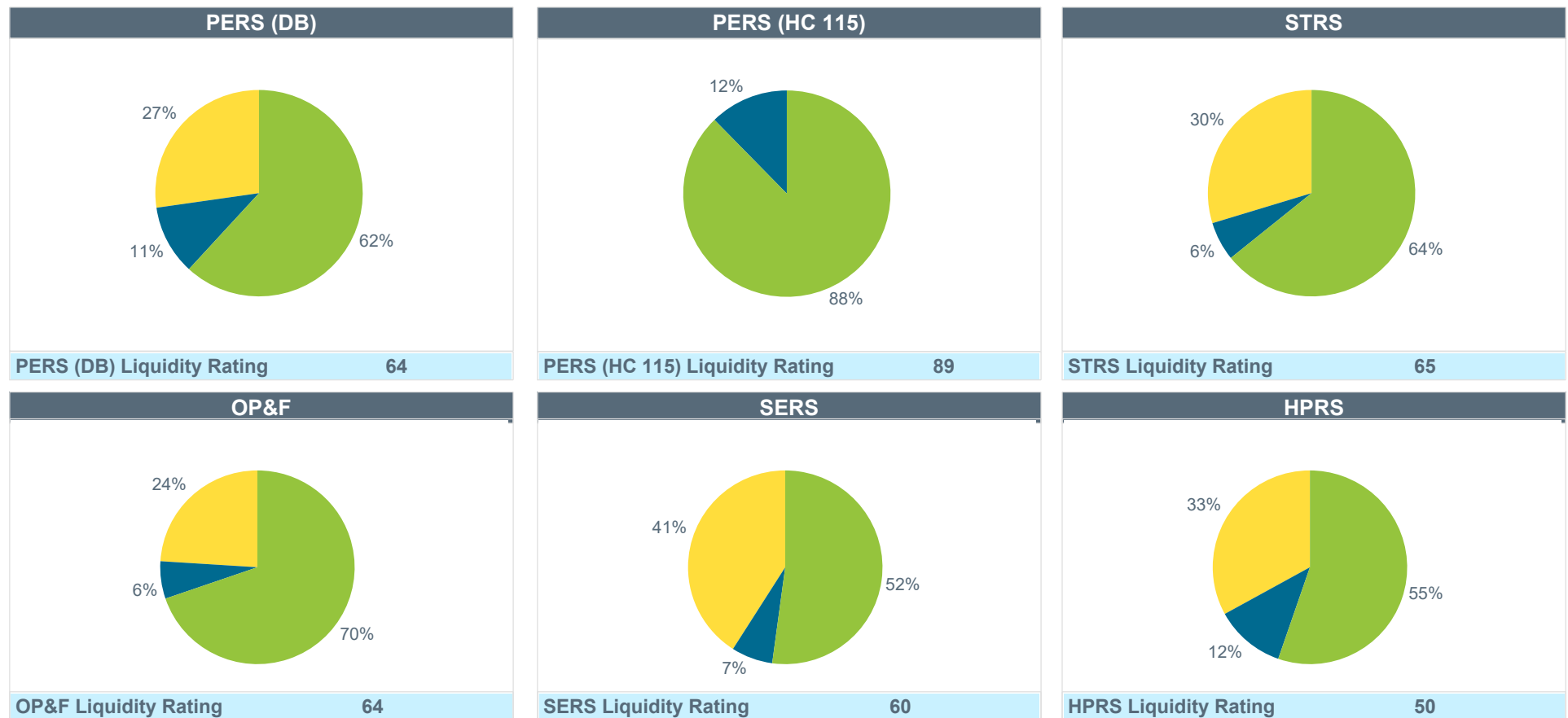
Summary

RVK Liquidity Rating - A qualitative method developed and calculated by RVK for determining the relative amount of liquidity in a portfolio.

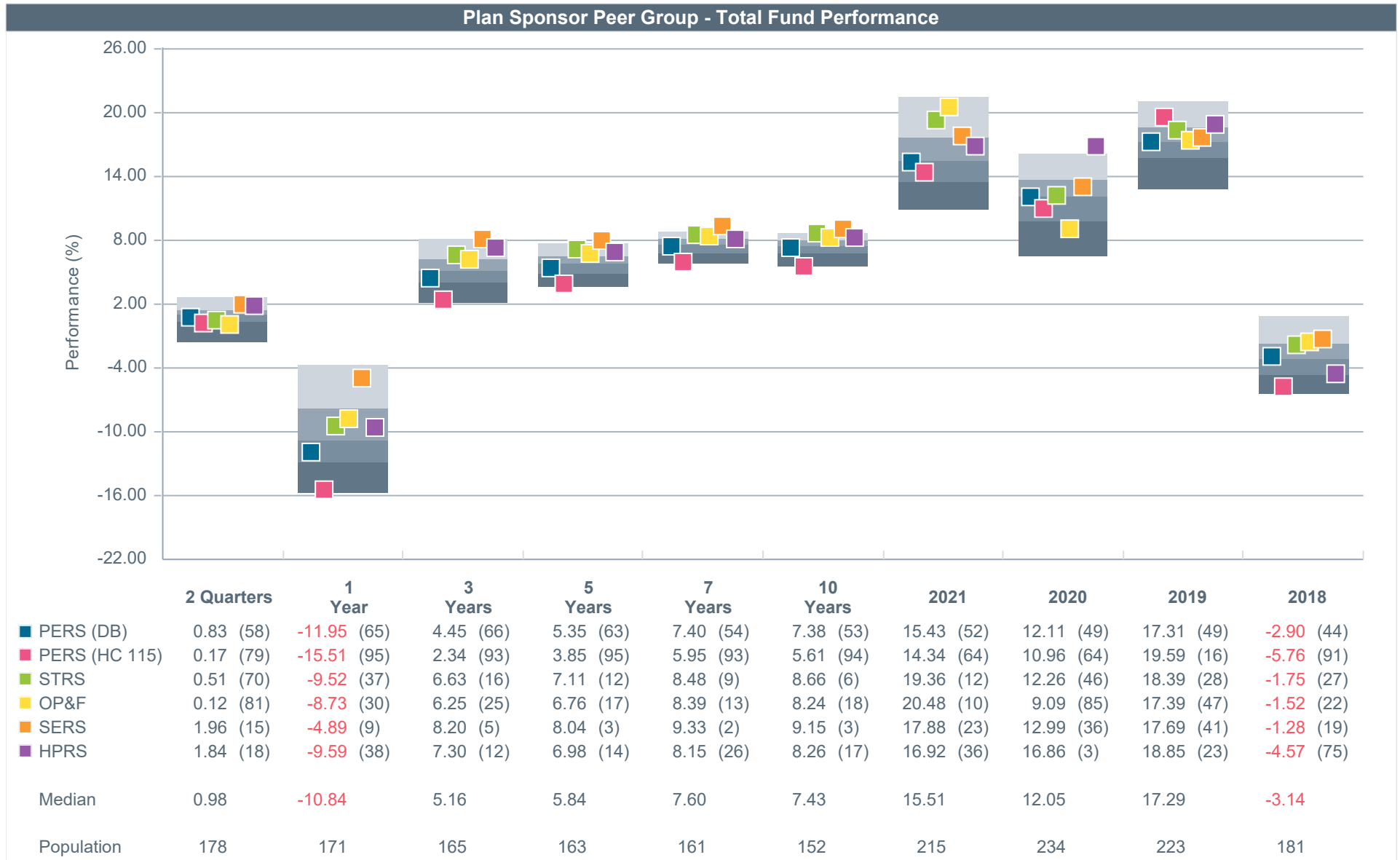
Liquid Investments: Publicly traded assets, largely exchanged traded with significant trading volume for the overall asset classes. Takes a relatively small discount or time required to raise cash, but generally expected to clear at quoted bid prices within several trading days.

Less Liquid Investments: Smaller trading volume, non-exchange traded, or vehicle-based liquidity constraints. Moderate to significant discount to raise cash, expected to see fewer purchase-oriented bids, or time required to receive cash is significantly greater than several trading days.

Not Liquid Investments: Private appraisal-based transactions, vehicle-based liquidity constraints, or privately held assets. Extreme discount to raise cash or 6-12+ months required to receive cash.

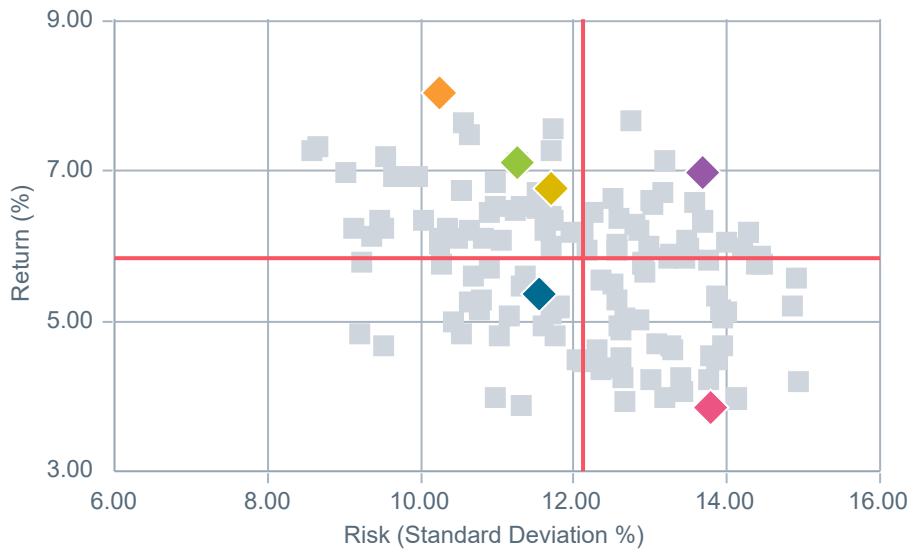


Asset Allocation by Liquidity percentages are provided by the Plans. Allocations are based on dedicated composite allocations and not underlying investment manager exposures; as such, liquidity allocations are approximations. Allocations shown may not sum up to exactly 100% due to rounding. The RVK Liquidity Rating is calculated by RVK using beginning of quarter investment weights applied to each corresponding asset class liquidity rating. Please see the glossary for additional information regarding liquidity and custom index descriptions.



Performance shown is gross of fees. Parentheses contain percentile ranks. PERS DB: 1 year performance was reduced by 0.94% due to change in distribution methodology used in private equity and real estate portfolios. PERS DB: 3 year performance was reduced by 0.37% due to change in distribution methodology used in private equity and real estate portfolios. PERS DB: 5 year performance was reduced by 0.22% due to change in distribution methodology used in private equity and real estate portfolios. PERS DB: 7 year performance was reduced by 0.16% due to change in distribution methodology used in private equity and real estate portfolios. PERS DB: 10 year performance was reduced by 0.11% due to change in distribution methodology used in private equity and real estate portfolios.

Plan Sponsor Peer Group Scattergram - 5 Years

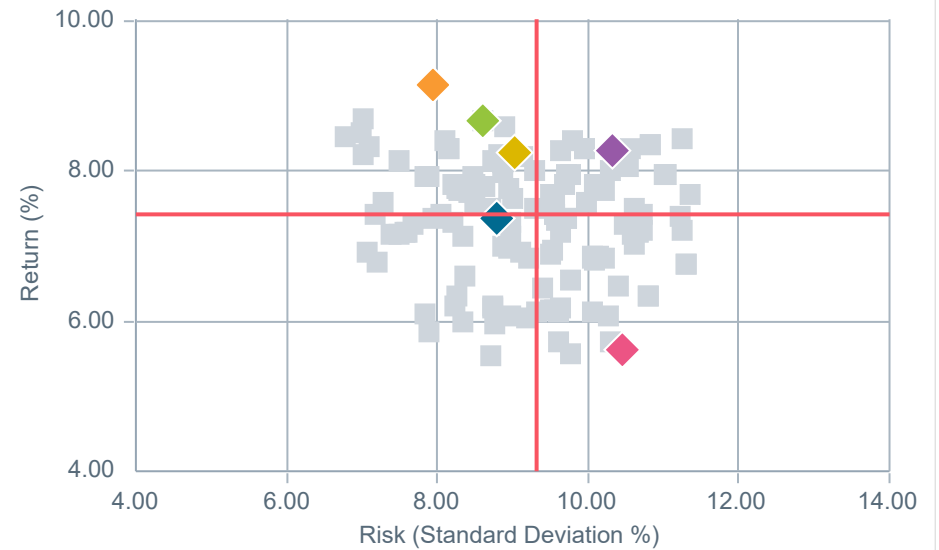


	Return	Standard Deviation
◆ PERS (DB)	5.35	11.54
◆ PERS (HC 115)	3.85	13.79
◆ STRS	7.11	11.26
◆ OP&F	6.76	11.69
◆ SERS	8.04	10.24
◆ HPRS	6.98	13.69
— Median	5.84	12.12

Sharpe Ratio - 5 Year

PERS (DB)	0.40
PERS (HC 115)	0.25
STRS	0.55
OP&F	0.51
SERS	0.68
HPRS	0.47
<i>All Public Plans > \$1B-Total Fund Median</i>	0.40

Plan Sponsor Peer Group Scattergram - 10 Years



	Return	Standard Deviation
◆ PERS (DB)	7.38	8.79
◆ PERS (HC 115)	5.61	10.45
◆ STRS	8.66	8.59
◆ OP&F	8.24	9.02
◆ SERS	9.15	7.94
◆ HPRS	8.26	10.32
— Median	7.43	9.31

Sharpe Ratio - 10 Year

PERS (DB)	0.77
PERS (HC 115)	0.50
STRS	0.92
OP&F	0.84
SERS	1.04
HPRS	0.75
<i>All Public Plans > \$1B-Total Fund Median</i>	0.72

Performance shown is gross of fees.

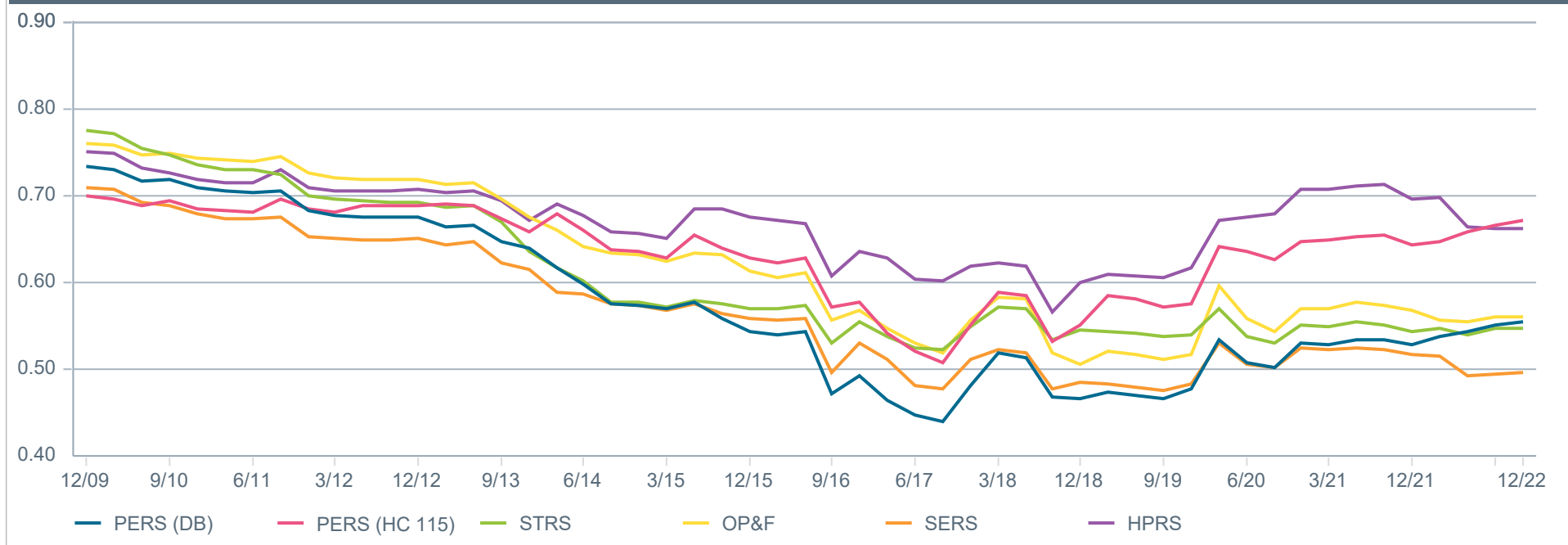
Summary

Beta is a measure of the sensitivity of a portfolio to the movements of the U.S. equity market as represented by the S&P 500 Index (Cap Wtd). Beta measures a portfolio's non-diversifiable or systematic risk. As an example, a Beta of 0.70 indicates that a portfolio captures roughly 70% of the S&P 500 Index return. If the S&P 500 Index returns 10%, the portfolio would be expected to return 7%.

Equity Beta

	3 Years	5 Years	7 Years	10 Years
PERS (DB)	0.58	0.55	0.56	0.55
PERS (HC 115)	0.70	0.67	0.67	0.66
STRS	0.56	0.55	0.55	0.55
OP&F	0.58	0.56	0.56	0.56
SERS	0.51	0.50	0.50	0.50
HPRS	0.68	0.66	0.66	0.66
S&P 500 Index (Cap Wtd)	1.00	1.00	1.00	1.00

5 Year Rolling Equity Beta



Performance shown is gross of fees and is calculated using quarterly periodicity.

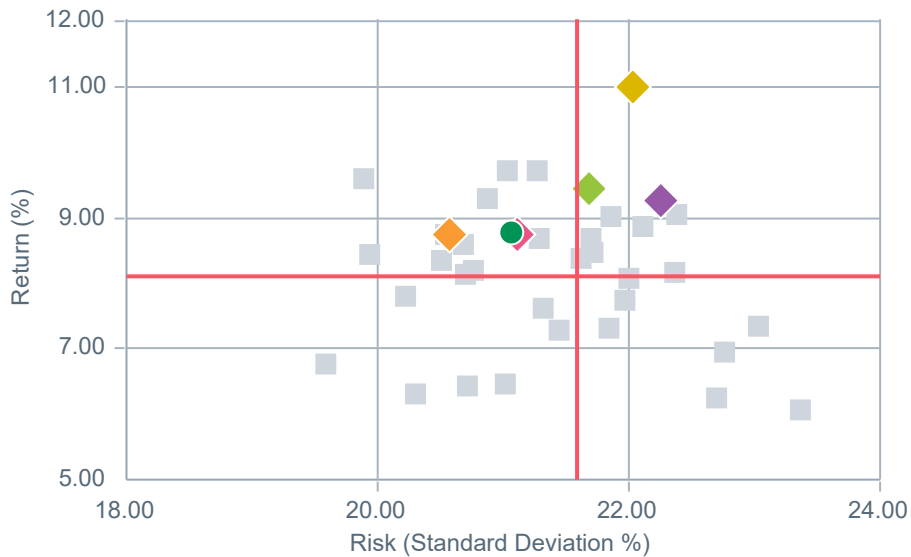
Performance										
	Trailing Performance (%)						Calendar Year Performance (%)			
	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018
US Equity										
PERS (DB)	2.50	-18.97	7.00	8.76	10.94	11.99	26.30	19.69	30.76	-5.00
Russell 3000 Index	2.40	-19.21	7.07	8.79	11.04	12.13	25.66	20.89	31.02	-5.24
Difference	0.10	0.24	-0.07	-0.03	-0.10	-0.14	0.64	-1.20	-0.26	0.24
Rank	49	61	39	23	27	23	34	43	33	25
PERS (HC 115)	2.50	-18.97	7.00	8.76	10.94	11.98	26.30	19.69	30.76	-5.00
Russell 3000 Index	2.40	-19.21	7.07	8.79	11.04	12.13	25.66	20.89	31.02	-5.24
Difference	0.10	0.24	-0.07	-0.03	-0.10	-0.15	0.64	-1.20	-0.26	0.24
Rank	49	61	39	23	27	24	34	43	33	25
STRS	3.05	-19.50	7.80	9.45	11.43	12.25	26.53	23.00	32.43	-5.33
Russell 3000 Index	2.40	-19.21	7.07	8.79	11.04	12.13	25.66	20.89	31.02	-5.24
Difference	0.65	-0.29	0.73	0.66	0.39	0.12	0.87	2.11	1.41	-0.09
Rank	33	75	22	13	12	17	32	16	4	39
OP&F	2.07	-17.23	9.77	11.00	13.21	13.72	30.14	22.79	31.77	-3.30
Wilshire 5000 Index	2.34	-19.04	7.41	8.99	11.26	12.28	26.70	20.82	31.02	-5.27
Difference	-0.27	1.81	2.36	2.01	1.95	1.44	3.44	1.97	0.75	1.97
Rank	72	38	3	2	1	2	5	17	16	7
SERS	2.79	-18.51	7.45	8.74	10.94	12.18	24.90	21.87	30.60	-6.15
Russell 3000 Index	2.40	-19.21	7.07	8.79	11.04	12.13	25.66	20.89	31.02	-5.24
Difference	0.39	0.70	0.38	-0.05	-0.10	0.05	-0.76	0.98	-0.42	-0.91
Rank	41	59	27	24	27	17	43	22	35	64
HPRS	3.36	-17.30	9.10	9.27	11.58	12.59	27.38	23.28	30.36	-7.97
Russell 3000 Index	2.40	-19.21	7.07	8.79	11.04	12.13	25.66	20.89	31.02	-5.24
Difference	0.96	1.91	2.03	0.48	0.54	0.46	1.72	2.39	-0.66	-2.73
Rank	23	38	4	15	9	6	26	11	39	88
<i>All Public Plans > \$1B-US Equity Segment Median</i>	<i>2.34</i>	<i>-17.92</i>	<i>6.42</i>	<i>8.10</i>	<i>10.40</i>	<i>11.39</i>	<i>24.35</i>	<i>18.92</i>	<i>30.06</i>	<i>-5.86</i>

Performance shown is gross of fees. Ranks are shown against All Public Plans >\$1B-US Equity Segment.

Risk & Return - US Equity

All Public Plans > \$1B-US Equity Segment

Plan Sponsor Peer Group Scattergram - 5 Years

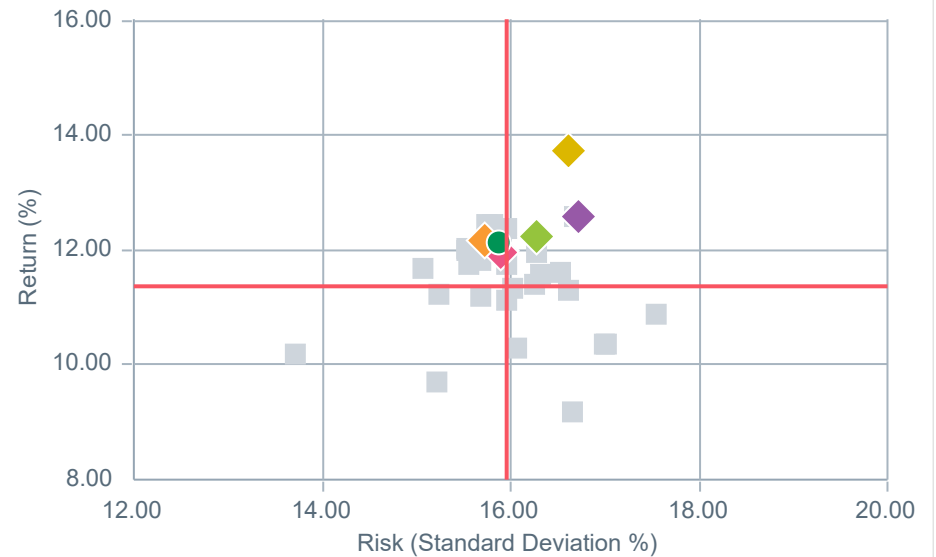


	Return	Standard Deviation
◆ PERS (DB)	8.76	21.12
◆ PERS (HC 115)	8.76	21.12
◆ STRS	9.45	21.68
◆ OP&F	11.00	22.04
◆ SERS	8.74	20.57
◆ HPRS	9.27	22.26
● Russell 3000 Index	8.79	21.06
— Median	8.10	21.59

Sharpe Ratio - 5 Years

PERS (DB)	0.45
PERS (HC 115)	0.45
STRS	0.47
OP&F	0.53
SERS	0.45
HPRS	0.46
Russell 3000 Index	0.45
All Public Plans > \$1B-US Equity Segment Median	0.42

Plan Sponsor Peer Group Scattergram - 10 Years



	Return	Standard Deviation
◆ PERS (DB)	11.99	15.89
◆ PERS (HC 115)	11.98	15.89
◆ STRS	12.25	16.27
◆ OP&F	13.72	16.62
◆ SERS	12.18	15.72
◆ HPRS	12.59	16.71
● Russell 3000 Index	12.13	15.87
— Median	11.39	15.96

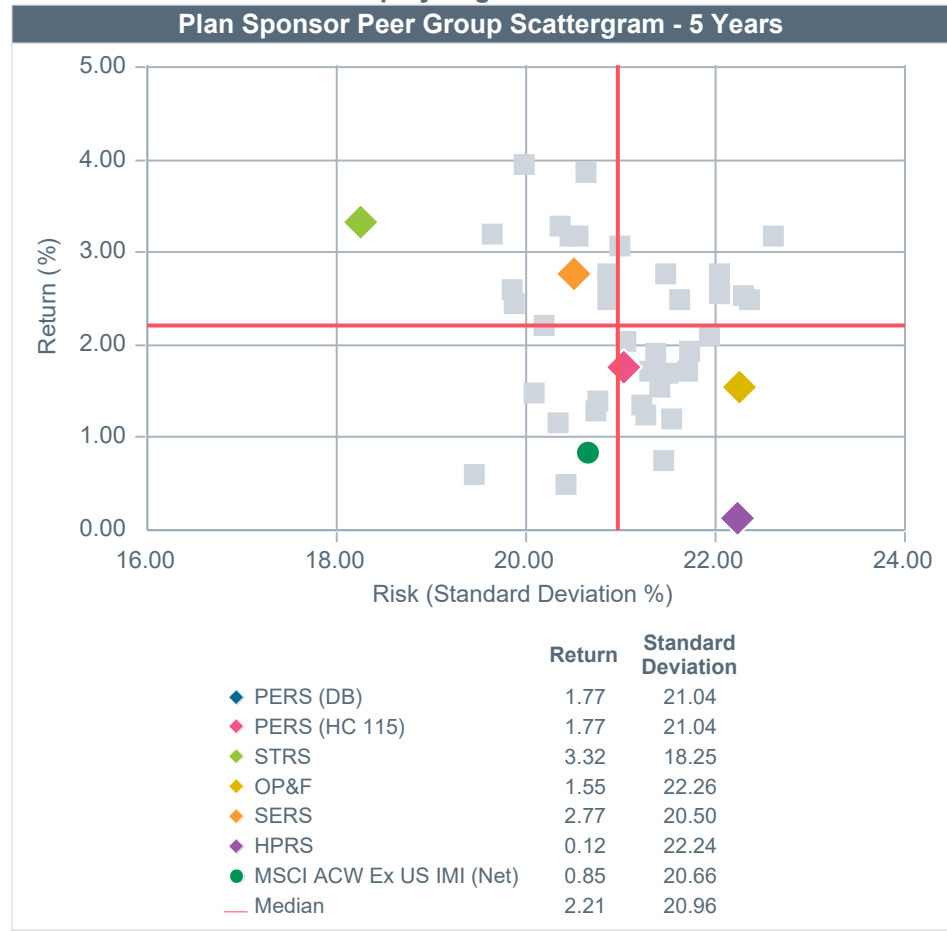
Sharpe Ratio - 10 Years

PERS (DB)	0.75
PERS (HC 115)	0.75
STRS	0.75
OP&F	0.82
SERS	0.77
HPRS	0.76
Russell 3000 Index	0.76
All Public Plans > \$1B-US Equity Segment Median	0.71

Performance shown is gross of fees.

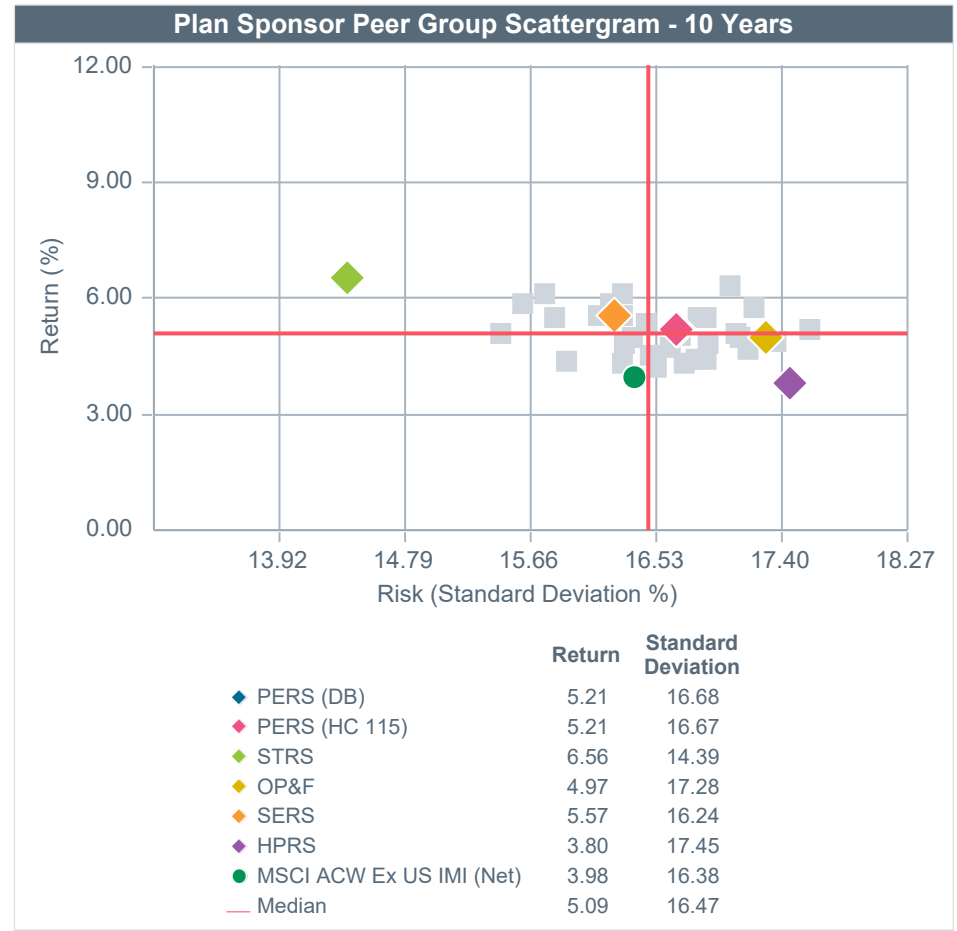
Performance										
	Trailing Performance (%)						Calendar Year Performance (%)			
	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018
International Equity										
PERS (DB)	3.34	-17.51	1.07	1.77	6.16	5.21	9.00	14.81	23.21	-14.17
PERS (DB) International Equity Custom Benchmark	2.62	-16.85	0.13	0.72	5.07	3.77	7.89	11.90	21.09	-14.74
Difference	0.72	-0.66	0.94	1.05	1.09	1.44	1.11	2.91	2.12	0.57
Rank	57	53	48	62	34	43	62	39	61	66
PERS (HC 115)	3.34	-17.51	1.07	1.77	6.16	5.21	9.00	14.81	23.21	-14.17
PERS (HC 115) International Equity Custom Benchmark	2.62	-16.85	0.13	0.72	5.07	3.77	7.89	11.90	21.09	-14.74
Difference	0.72	-0.66	0.94	1.05	1.09	1.44	1.11	2.91	2.12	0.57
Rank	57	53	48	62	34	43	62	39	61	66
STRS	4.72	-9.11	3.18	3.32	6.62	6.56	13.20	6.78	21.54	-11.80
STRS International Equity Custom Benchmark	4.26	-11.64	2.32	2.90	6.11	5.67	12.36	7.88	22.51	-12.08
Difference	0.46	2.53	0.86	0.42	0.51	0.89	0.84	-1.10	-0.97	0.28
Rank	18	1	6	11	15	4	19	97	85	9
OP&F	4.76	-15.75	1.92	1.55	5.27	4.97	11.79	12.43	23.37	-17.32
MSCI ACW Ex US IM Index (USD) (Net)	3.09	-16.58	0.20	0.85	4.84	3.98	8.53	11.12	21.63	-14.76
Difference	1.67	0.83	1.72	0.70	0.43	0.99	3.26	1.31	1.74	-2.56
Rank	17	35	35	69	80	64	31	54	59	100
SERS	2.85	-16.03	2.35	2.77	6.62	5.57	10.76	15.29	24.36	-14.03
SERS International Equity Custom Benchmark	3.04	-15.87	0.01	0.84	4.77	3.95	7.46	10.65	21.51	-14.20
Difference	-0.19	-0.16	2.34	1.93	1.85	1.62	3.30	4.64	2.85	0.17
Rank	70	37	27	32	15	28	45	34	42	61
HPRS International Equity	2.80	-22.31	-1.97	0.12	4.01	3.80	1.89	19.02	25.47	-14.88
HPRS International Equity Custom Benchmark	-0.45	-20.33	-3.47	-1.39	3.17	2.80	1.59	11.12	21.63	-14.76
Difference	3.25	-1.98	1.50	1.51	0.84	1.00	0.30	7.90	3.84	-0.12
Rank	70	96	99	94	100	100	100	12	26	83
HPRS Global Equity	1.57	-22.67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
HPRS Global Equity Custom Benchmark	2.28	-18.36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Difference	-0.71	-4.31	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<i>All Public Plans > \$1B-Intl. Equity Segment Median</i>	<i>3.54</i>	<i>-17.26</i>	<i>0.99</i>	<i>2.21</i>	<i>5.82</i>	<i>5.09</i>	<i>9.61</i>	<i>12.76</i>	<i>23.71</i>	<i>-13.59</i>

Performance shown is gross of fees. Ranks are shown against All Public Plans >\$1B-Intl. Equity Segment. In Q1 2021 HPRS added an allocation to Global Equity. HPRS International Equity Portfolio consists of emerging markets and international small cap holdings. HPRS Global Equity consists of domestic equity and broad international equity holdings.



Sharpe Ratio - 5 Years

PERS (DB)	0.13
PERS (HC 115)	0.13
STRS	0.20
OP&F	0.13
SERS	0.18
HPRS	0.06
MSCI ACW Ex US IMI (Net)	0.09
All Public Plans > \$1B-Intl. Equity Segment Median	0.15



Sharpe Ratio - 10 Years

PERS (DB)	0.35
PERS (HC 115)	0.35
STRS	0.46
OP&F	0.33
SERS	0.37
HPRS	0.26
MSCI ACW Ex US IMI (Net)	0.28
All Public Plans > \$1B-Intl. Equity Segment Median	0.34

Performance shown is gross of fees.

Performance										
	Trailing Performance (%)						Calendar Year Performance (%)			
	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018
Fixed Income										
PERS (DB) Core Fixed Income	-3.17	-12.93	-2.02	0.44	1.22	1.48	-0.98	9.09	8.72	-0.06
PERS (DB) Core Fixed Income Custom Benchmark	-2.97	-13.01	-2.71	0.02	0.89	1.06	-1.54	7.51	8.72	0.01
Difference	-0.20	0.08	0.69	0.42	0.33	0.42	0.56	1.58	0.00	-0.07
Rank	73	66	69	74	90	68	85	41	68	39
PERS (HC 115) Core Fixed Income	-3.17	-12.93	-2.02	0.44	1.22	1.47	-0.98	9.09	8.72	-0.06
PERS (HC 115) Core Fixed Income Custom Benchmark	-2.97	-13.01	-2.71	0.02	0.89	1.08	-1.54	7.51	8.72	0.01
Difference	-0.20	0.08	0.69	0.42	0.33	0.39	0.56	1.58	0.00	-0.07
Rank	73	66	69	74	90	68	85	41	68	39
STRS Core Fixed Income	-1.82	-12.51	-2.08	0.48	1.61	1.58	-0.76	8.12	9.28	-0.17
Bloomberg US Universal index	-2.31	-12.99	-2.54	0.18	1.26	1.33	-1.10	7.58	9.29	-0.26
Difference	0.49	0.48	0.46	0.30	0.35	0.25	0.34	0.54	-0.01	0.09
Rank	41	57	71	73	66	64	82	63	52	43
OP&F Core Fixed Income	-8.40	-28.89	-8.68	-3.57	-1.41	-0.54	-2.97	7.35	8.13	1.24
Bloomberg US Agg Bond Index + Leverage Factor	-9.63	-28.36	-9.26	-4.07	-2.08	-1.03	-3.40	7.96	8.71	0.02
Difference	1.23	1.47	0.58	0.50	0.67	0.49	0.43	-0.61	-0.58	1.22
Rank	95	100	100	99	99	98	97	80	78	9
SERS	-1.98	-12.21	-1.16	1.12	2.18	2.05	-0.56	10.59	9.95	-0.38
Bloomberg US Agg Bond Index	-2.97	-13.01	-2.71	0.02	0.89	1.06	-1.55	7.51	8.72	0.01
Difference	0.99	0.80	1.55	1.10	1.29	0.99	0.99	3.08	1.23	-0.39
Rank	43	50	40	34	32	25	75	18	29	57
HPRS	1.22	-4.86	2.20	3.66	4.27	3.35	3.59	8.30	9.33	2.56
HPRS Fixed Income Custom Benchmark	0.90	-8.46	-0.52	1.36	1.93	1.78	1.51	5.95	7.94	0.68
Difference	0.32	3.60	2.72	2.30	2.34	1.57	2.08	2.35	1.39	1.88
Rank	2	5	1	1	1	3	4	59	48	4
<i>All Public Plans > \$1B-US Fixed Income Segment Median</i>	<i>-2.26</i>	<i>-12.28</i>	<i>-1.37</i>	<i>0.90</i>	<i>1.92</i>	<i>1.71</i>	<i>0.15</i>	<i>8.58</i>	<i>9.30</i>	<i>-0.27</i>

Performance shown is gross of fees. Ranks are shown against All Public Plans >\$1B-US Fixed Income Segment. PERS (DB), PERS (HC), and OP&F performance for Total Fixed Income is unavailable, so Core Fixed Income is shown for illustrative purposes.

Risk & Return - Fixed Income

All Public Plans > \$1B-US Fixed Income Segment



Sharpe Ratio - 5 Years

PERS (DB) Core Fixed Income	-0.13
PERS (HC 115) Core Fixed Income	-0.13
STRS Core Fixed Income	-0.11
OP&F Core Fixed Income	-0.48
SERS	0.00
HPRS	0.50
Bloomberg US Agg Bond Index	-0.21
All Public Plans > \$1B-US Fixed Income Segment Median	-0.04



Sharpe Ratio - 10 Years

PERS (DB) Core Fixed Income	0.19
PERS (HC 115) Core Fixed Income	0.19
STRS Core Fixed Income	0.21
OP&F Core Fixed Income	-0.15
SERS	0.30
HPRS	0.69
Bloomberg US Agg Bond Index	0.09
All Public Plans > \$1B-US Fixed Income Segment Median	0.23

Performance shown is gross of fees.

Performance										
	Trailing Performance (%)						Calendar Year Performance (%)			
	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018
Additional Fixed Income										
PERS (DB) US Treasury	-3.78	-12.47	-2.58	-0.08	0.42	N/A	-2.27	8.08	6.84	0.84
Bloomberg US Trsy Index	-3.66	-12.46	-2.62	-0.10	0.41	N/A	-2.32	8.00	6.86	0.86
Difference	-0.12	-0.01	0.04	0.02	0.01	N/A	0.05	0.08	-0.02	-0.02
PERS (DB) EMD	5.17	-13.50	-4.57	-1.42	2.30	0.06	-4.65	5.36	13.55	-5.63
PERS (DB) EMD Custom Benchmark	3.15	-14.07	-5.27	-1.71	1.82	-0.30	-5.18	4.32	14.01	-5.33
Difference	2.02	0.57	0.70	0.29	0.48	0.36	0.53	1.04	-0.46	-0.30
PERS (DB) High Yield	3.64	-10.41	0.40	2.61	4.88	4.18	5.16	7.42	14.76	-2.06
Bloomberg U.S. High Yield Index	3.50	-11.19	0.05	2.31	5.05	4.03	5.28	7.11	14.32	-2.08
Difference	0.14	0.78	0.35	0.30	-0.17	0.15	-0.12	0.31	0.44	0.02
PERS (DB) Securitized Debt	-3.98	-13.23	-0.66	2.48	2.71	6.11	5.20	7.40	11.70	3.21
Bloomberg CMBS Index + 2%	-4.38	-13.17	-2.81	0.88	2.26	2.64	4.50	1.18	10.70	2.79
Difference	0.40	-0.06	2.15	1.60	0.45	3.47	0.70	6.22	1.00	0.42
PERS (DB) TIPS	-3.20	-11.82	1.19	2.09	2.57	N/A	5.96	10.89	8.42	-1.26
Bloomberg U.S. TIPS Index	-3.21	-11.85	1.21	2.11	2.60	N/A	5.96	10.99	8.43	-1.26
Difference	0.01	0.03	-0.02	-0.02	-0.03	N/A	0.00	-0.10	-0.01	0.00
PERS (HC 115) EMD	5.17	-13.50	-4.57	-1.42	2.30	0.07	-4.65	5.36	13.55	-5.63
PERS (HC 115) EMD Custom Benchmark	3.15	-14.07	-5.27	-1.71	1.82	-0.30	-5.18	4.32	14.01	-5.33
Difference	2.02	0.57	0.70	0.29	0.48	0.37	0.53	1.04	-0.46	-0.30

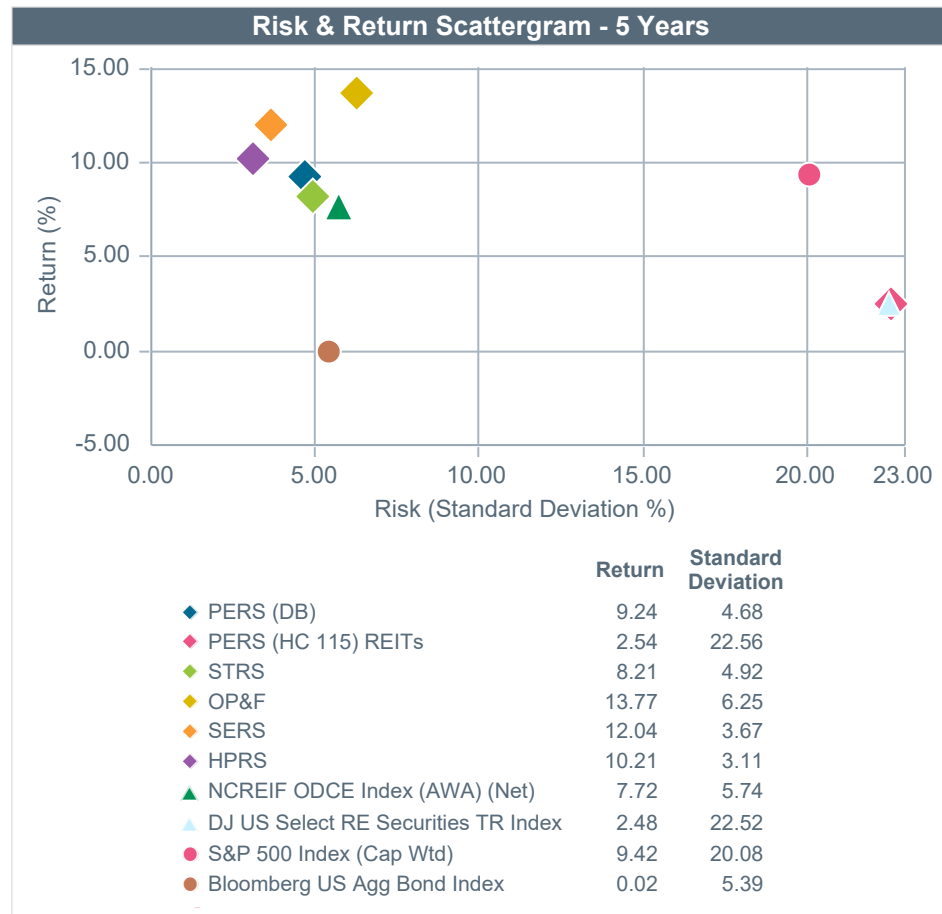
Performance shown is gross of fees.

	Trailing Performance (%)						Calendar Year Performance (%)			
	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018
Additional Fixed Income										
PERS (HC 115) High Yield	3.64	-10.41	0.40	2.61	4.88	4.18	5.16	7.42	14.76	-2.06
Bloomberg Barclays U.S. High Yield Index	3.50	-11.19	0.05	2.31	5.05	4.03	5.28	7.11	14.32	-2.08
Difference	0.14	0.78	0.35	0.30	-0.17	0.15	-0.12	0.31	0.44	0.02
PERS (HC 115) Securitized Debt	-3.98	-13.23	-0.66	2.48	2.71	6.11	5.20	7.40	11.70	3.21
Bloomberg CMBS Index + 2%	-4.38	-13.17	-2.81	0.88	2.26	2.64	4.50	1.18	10.70	2.79
Difference	0.40	-0.06	2.15	1.60	0.45	3.47	0.70	6.22	1.00	0.42
PERS (HC 115) TIPS	-3.20	-11.82	1.19	2.09	2.57	1.11	5.96	10.89	8.42	-1.26
Bloomberg U.S. Tips Index	-3.21	-11.85	1.21	2.11	2.60	1.12	5.96	10.99	8.43	-1.26
Difference	0.01	0.03	-0.02	-0.02	-0.03	-0.01	0.00	-0.10	-0.01	0.00
STRS Liquid Treasury Portfolio	-2.04	-7.71	-1.33	0.52	N/A	N/A	-1.67	5.90	5.24	1.47
Bloomberg US Intermediate Treasury Index	-2.09	-7.77	-1.39	0.46	N/A	N/A	-1.72	5.78	5.22	1.41
Difference	0.05	0.06	0.07	0.06	N/A	N/A	0.05	0.12	0.02	0.06
OP&F High Yield	3.85	-9.57	0.56	2.81	4.78	4.13	5.39	6.71	13.49	-0.48
CS Developed Countries High Yield	3.25	-11.25	-0.28	2.09	4.99	3.89	5.34	6.08	14.41	-2.26
Difference	0.60	1.68	0.84	0.72	-0.21	0.24	0.05	0.63	-0.92	1.78
OP&F Private Credit Fixed Income	-0.09	4.87	6.14	7.27	7.11	N/A	15.80	-1.54	10.47	7.51
S&P LTSA Levered Loan Index + 2%	-2.24	-0.63	4.24	5.05	N/A	N/A	10.58	3.09	5.26	7.30
Difference	2.15	5.50	1.90	2.22	N/A	N/A	5.22	-4.63	5.21	0.21
OP&F US TIPS	-12.43	-21.16	3.02	4.76	6.38	5.14	15.47	20.11	15.70	-0.26
Bridgewater Custom US TIPS Index	-8.60	-25.71	0.78	2.27	4.18	2.98	11.81	23.25	15.12	-5.04
Difference	-3.83	4.55	2.24	2.49	2.20	2.16	3.66	-3.14	0.58	4.78
SERS Private Credit	1.85	6.80	N/A	N/A	N/A	N/A	16.30	N/A	N/A	N/A
3 Month LIBOR Rate + 4.5%	3.52	6.00	N/A	N/A	N/A	N/A	4.67	N/A	N/A	N/A
Difference	-1.67	0.80	N/A	N/A	N/A	N/A	11.63	N/A	N/A	N/A

Performance shown is gross of fees. The STRS Liquid Treasury Portfolio was inceptioned June 2017.

Performance										
	Trailing Performance (%)						Calendar Year Performance (%)			
	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018
Real Estate										
PERS (DB)	4.22	15.07	11.38	9.24	9.69	11.89	17.08	2.55	7.86	4.37
PERS (DB) Real Estate Custom Benchmark	5.23	21.81	12.23	10.12	9.72	10.76	14.49	1.37	5.49	8.56
Difference	-1.01	-6.74	-0.85	-0.88	-0.03	1.13	2.59	1.18	2.37	-4.19
PERS (DB) REITs	-5.96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PERS (DB) REITs Benchmark	-6.20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Difference	0.24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PERS (HC 115) REITs	-5.96	-25.86	-1.38	2.54	3.31	5.75	46.02	-11.40	23.23	-4.10
DJ US Select Real Estate Securities TR Index	-6.20	-26.03	-1.41	2.48	3.25	5.73	45.91	-11.20	23.10	-4.22
Difference	0.24	0.17	0.03	0.06	0.06	0.02	0.11	-0.20	0.13	0.12
STRS	-2.36	5.56	7.93	8.21	8.12	9.58	20.64	-1.27	10.65	6.65
STRS Real Estate Custom Benchmark	-3.17	0.85	7.29	7.24	7.29	8.69	21.38	0.89	9.31	5.09
Difference	0.81	4.71	0.64	0.97	0.83	0.89	-0.74	-2.16	1.34	1.56
OP&F	3.56	23.99	15.53	13.77	13.18	14.26	24.21	0.11	8.76	13.69
NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag)	4.87	20.96	11.38	9.26	8.87	9.91	13.64	0.52	4.64	7.71
Difference	-1.31	3.03	4.15	4.51	4.31	4.35	10.57	-0.41	4.12	5.98
SERS	5.19	17.90	13.00	12.04	11.53	12.07	18.47	3.30	9.84	11.41
SERS Global Real Assets Custom Benchmark	3.82	16.08	9.91	8.62	8.46	9.48	12.15	2.00	6.24	7.16
Difference	1.37	1.82	3.09	3.42	3.07	2.59	6.32	1.30	3.60	4.25
HPRS	0.62	7.64	8.32	10.21	9.87	11.05	14.28	3.32	10.52	15.75
HPRS Real Estate Custom Benchmark (Net)	-0.12	5.90	6.88	8.80	8.59	9.57	12.91	2.11	9.55	14.00
Difference	0.74	1.74	1.44	1.41	1.28	1.48	1.37	1.21	0.97	1.75
NCREIF ODCE Index (AWA) (Net)	-4.87	6.55	8.97	7.72	7.57	9.11	21.02	0.34	4.39	7.36

Performance shown may be net or gross of fees depending on underlying investments. Prior to 2008, HPRS's real estate portfolio consisted of two buildings. Since then, HPRS has shifted its focus to externally managed funds. PERS DB: 1 year performance was reduced by 3.94% due to change in distribution methodology in real estate portfolios. PERS DB: 3 year performance was reduced by 1.26% due to change in distribution methodology in real estate portfolios. PERS DB: 5 year performance was reduced by 0.74% due to change in distribution methodology in real estate portfolios. PERS DB: 7 year performance was reduced by 0.53% due to change in distribution methodology in real estate portfolios. PERS DB: 10 year performance was reduced by 0.38% due to change in distribution methodology in real estate portfolios.



Sharpe Ratio - 5 Years

PERS (DB)	1.61
PERS (HC 115) REITs	0.18
STRS	1.31
OP&F	1.87
SERS	2.67
HPRS	2.62
NCREIF ODCE Index (AWA) (Net)	1.06
S&P 500 Index (Cap Wtd)	0.49
Bloomberg US Agg Bond Index	-0.21



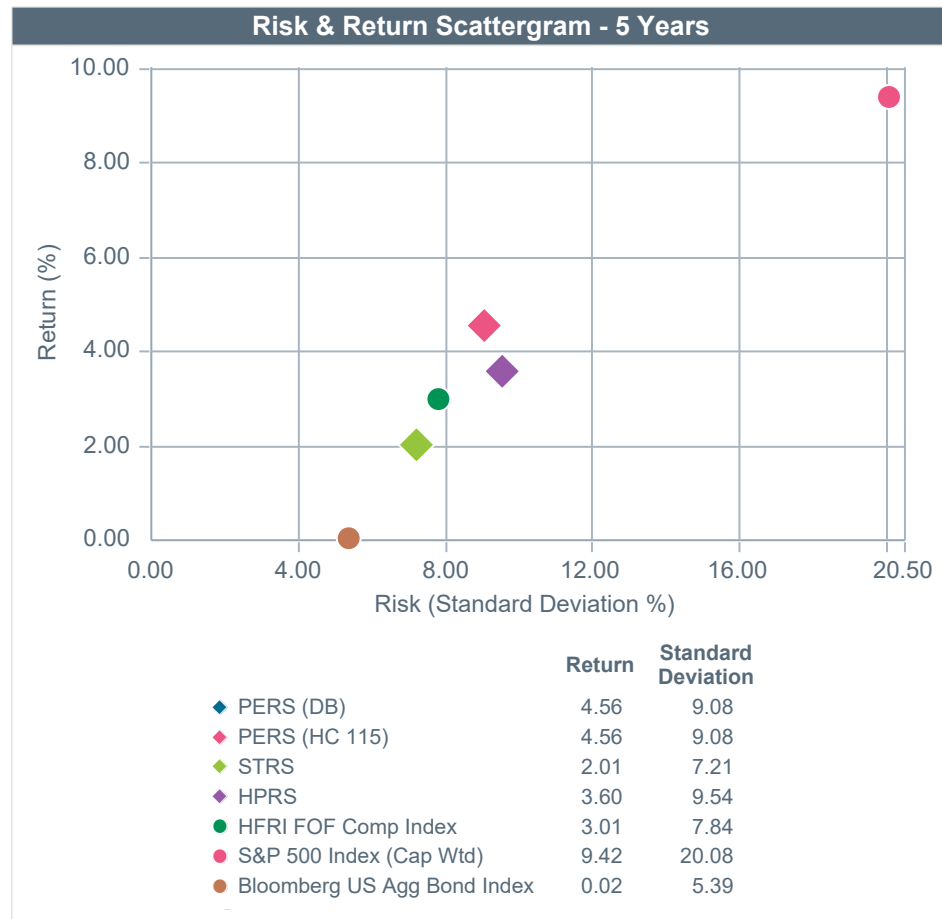
Sharpe Ratio - 10 Years

PERS (DB)	2.50
PERS (HC 115) REITs	0.37
STRS	2.05
OP&F	2.69
SERS	3.63
HPRS	2.95
NCREIF ODCE Index (AWA) (Net)	1.80
S&P 500 Index (Cap Wtd)	0.82
Bloomberg US Agg Bond Index	0.09

Performance shown may be net or gross of fees depending on underlying investments.

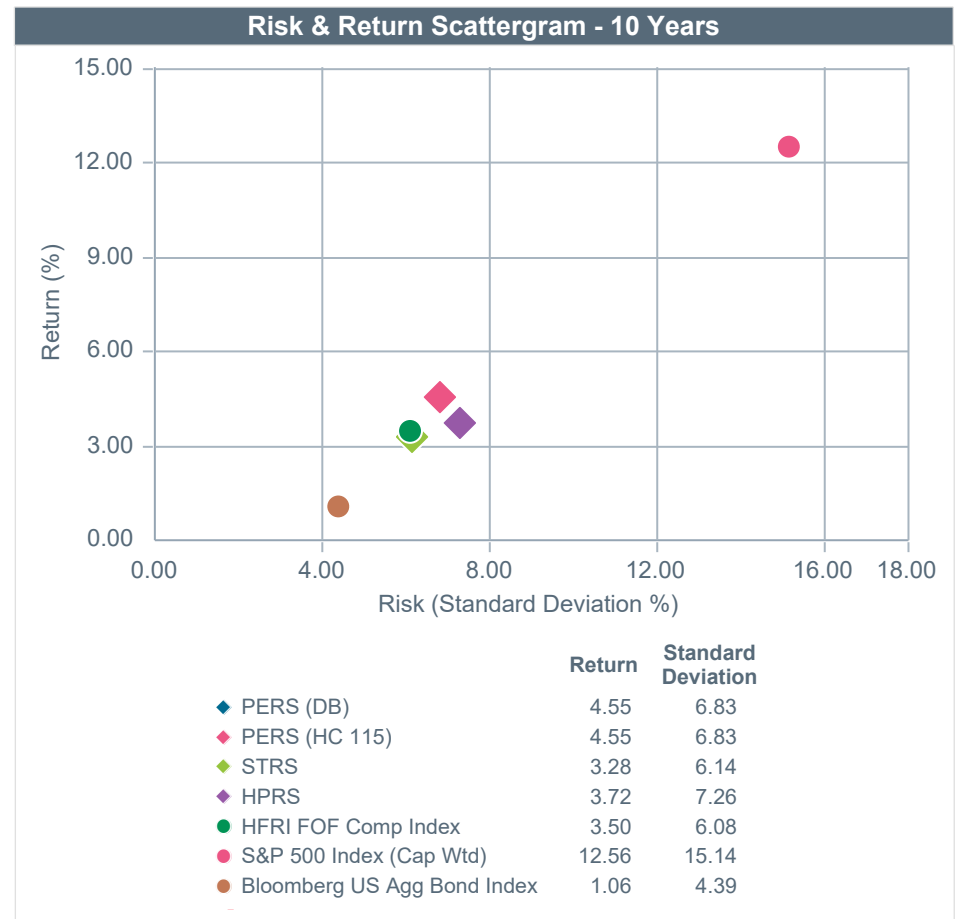
Performance										
	Trailing Performance (%)						Calendar Year Performance (%)			
	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018
Hedge Funds										
PERS (DB)	1.18	3.63	5.64	4.56	4.77	4.55	9.78	3.63	7.66	-1.51
PERS (DB) Hedge Funds Custom Benchmark	2.30	-3.38	4.29	3.56	4.51	3.92	10.71	6.04	8.49	-3.19
Difference	-1.12	7.01	1.35	1.00	0.26	0.63	-0.93	-2.41	-0.83	1.68
PERS (HC 115)	1.18	3.63	5.64	4.56	4.77	4.55	9.78	3.63	7.66	-1.51
PERS (HC 115) Hedge Funds Custom Benchmark	2.30	-3.38	4.29	3.56	4.51	3.92	10.71	6.04	8.49	-3.19
Difference	-1.12	7.01	1.35	1.00	0.26	0.63	-0.93	-2.41	-0.83	1.68
STRS	1.01	6.05	1.85	2.01	2.71	3.28	2.14	-2.47	3.91	0.64
HFRI FOF Comp Index	1.37	-5.31	3.69	3.01	3.31	3.50	6.17	10.88	8.39	-4.02
Difference	-0.36	11.36	-1.84	-1.00	-0.60	-0.22	-4.03	-13.35	-4.48	4.66
HPRS	1.62	-6.68	4.16	3.60	3.33	3.72	8.09	12.02	12.31	-5.96
HFRI FOF Comp Index	1.37	-5.31	3.69	3.01	3.31	3.50	6.17	10.88	8.39	-4.02
Difference	0.25	-1.37	0.47	0.59	0.02	0.22	1.92	1.14	3.92	-1.94

Performance shown is net of fees. SERS Hedge Funds strategy was closed during Q3 2021. PERS (DB) has no Hedge Fund target allocation and remaining assets are liquidating.



Sharpe Ratio - 5 Years

PERS (DB)	0.39
PERS (HC 115)	0.39
STRS	0.14
HPRS	0.28
HFRI FOF Comp Index	0.25
S&P 500 Index (Cap Wtd)	0.49
Bloomberg US Agg Bond Index	-0.21



Sharpe Ratio - 10 Years

PERS (DB)	0.57
PERS (HC 115)	0.57
STRS	0.43
HPRS	0.43
HFRI FOF Comp Index	0.46
S&P 500 Index (Cap Wtd)	0.82
Bloomberg US Agg Bond Index	0.09

Performance shown is net of fees. PERS (DB) has no Hedge Fund target allocation and remaining assets are liquidating.

Performance										
	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018
Private Equity										
PERS (DB)	-2.67	-4.79	17.08	15.39	14.70	14.28	44.84	16.38	10.39	15.48
PERS (DB) Private Equity Custom Benchmark	-6.01	-1.25	18.80	15.80	14.63	14.61	49.22	13.78	8.02	15.00
Difference	3.34	-3.54	-1.72	-0.41	0.07	-0.33	-4.38	2.60	2.37	0.48
STRS	-8.89	-6.49	21.67	19.73	17.73	17.26	53.50	25.49	13.97	19.85
STRS Private Equity Benchmark	-8.12	-5.40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Difference	-0.77	-1.09	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OP&F	-5.68	-9.91	19.40	18.31	16.87	15.93	54.51	22.30	13.65	19.82
OP&F Private Equity Custom Benchmark	-5.68	-9.91	19.40	18.31	16.87	15.93	54.51	22.30	13.65	19.82
Difference	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SERS	-1.75	7.57	22.62	19.72	18.90	18.60	48.06	15.77	12.76	18.27
Burgiss All Private Equity Benchmark	-8.77	-0.81	17.11	15.04	13.75	14.12	44.38	12.16	8.08	16.05
Difference	7.02	8.38	5.51	4.68	5.15	4.48	3.68	3.61	4.68	2.22
HPRS	-0.47	2.65	18.96	14.97	13.80	12.46	36.53	20.12	9.66	8.80
HPRS Private Equity Custom Benchmark	-0.47	2.65	18.96	14.97	14.38	15.63	36.53	20.12	9.66	8.80
Difference	0.00	0.00	0.00	0.00	-0.58	-3.17	0.00	0.00	0.00	0.00

Performance shown is net of fees. HPRS's private equity portfolio did not begin in earnest until after 2008. Therefore longer period trailing returns relative to the benchmark may not be relevant. The STRS Private Equity Benchmark is the quarterly Cambridge Associates Private Equity and Venture Capital Index, one quarter lagged to be consistent with external fund reporting, effective July 1, 2021. PERS DB: 1 year performance was reduced by 5.86% due to change in distribution methodology in private equity portfolios. PERS DB: 3 year performance was reduced by 2.35% due to change in distribution methodology in private equity portfolios. PERS DB: 5 year performance was reduced by 1.39% due to change in distribution methodology in private equity portfolios. PERS DB: 7 year performance was reduced by 0.98% due to change in distribution methodology in private equity portfolios. PERS DB: 10 year performance was reduced by 0.68% due to change in distribution methodology used in private equity portfolios.

Private Equity as of June 30, 2021

	2 Quarters	1 Year	3 Year	5 Year	7 Year	10 Year	2020	2019	2018	2017
STRS	27.86	64.49	25.96	22.47	18.28	17.30	25.49	13.97	19.85	19.35
STRS Private Equity Custom Benchmark *	15.67	45.56	19.90	19.05	15.08	16.06	22.08	32.30	-4.29	22.32
Difference	12.19	18.93	6.06	3.42	3.20	1.24	3.41	-18.33	24.14	-2.97

* Through June 30, 2021, the STRS Private Equity Custom Benchmark is calculated monthly and is the Russell 3000 Index +100 basis points. Prior to July 1, 2012, the STRS Private Equity Custom Benchmark was 300 basis points above the Russell 3000 Index.

Performance										
	Trailing Performance (%)						Calendar Year Performance (%)			
	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018
Other Alternatives										
PERS (DB) Commodities	-2.09	15.88	7.40	4.70	5.95	N/A	36.99	-21.96	17.54	-13.59
S&P Goldman Sachs Commodity Index (TR)	-1.98	16.09	6.25	3.99	5.27	N/A	35.46	-23.72	17.63	-13.82
Difference	-0.11	-0.21	1.15	0.71	0.68	N/A	1.53	1.76	-0.09	0.23
PERS (DB) Risk Parity	-7.75	-29.78	-5.91	-0.45	4.25	N/A	11.94	5.96	30.30	-9.93
PERS (DB) Risk Parity Custom Benchmark	-7.77	-30.25	-6.44	-0.88	1.91	N/A	11.56	5.25	29.93	-10.07
Difference	0.02	0.47	0.53	0.43	2.34	N/A	0.38	0.71	0.37	0.14
PERS (DB) Opportunistic	-2.92	-14.38	N/A	N/A	N/A	N/A	11.59	N/A	N/A	N/A
PERS (DB) Opportunistic Benchmark	-2.07	-15.14	N/A	N/A	N/A	N/A	12.63	N/A	N/A	N/A
Difference	-0.85	0.76	N/A	N/A	N/A	N/A	-1.04	N/A	N/A	N/A
PERS (HC 115) Commodities	-2.09	15.88	7.40	4.70	5.95	-3.68	36.99	-21.96	17.54	-13.59
S&P Goldman Sachs Commodity Index (TR)	-1.98	16.09	6.25	3.99	5.27	-4.43	35.46	-23.72	17.63	-13.82
Difference	-0.11	-0.21	1.15	0.71	0.68	0.75	1.53	1.76	-0.09	0.23
PERS (HC 115) Risk Parity	-7.75	-29.78	-5.91	-0.45	4.25	N/A	11.94	5.96	30.30	-9.93
PERS (HC 115) Risk Parity Custom Benchmark	-7.77	-30.25	-6.44	-0.88	1.91	N/A	11.56	5.25	29.93	-10.07
Difference	0.02	0.47	0.53	0.43	2.34	N/A	0.38	0.71	0.37	0.14
PERS (HC 115) Opportunistic	-2.92	-14.38	N/A	N/A	N/A	N/A	11.59	N/A	N/A	N/A
PERS (HC 115) Opportunistic Benchmark	-2.07	-15.14	N/A	N/A	N/A	N/A	12.63	N/A	N/A	N/A
Difference	-0.85	0.76	N/A	N/A	N/A	N/A	-1.04	N/A	N/A	N/A

Performance shown may be net or gross of fees depending on underlying investments. PERS (DB) and PERS (HC115) funded new opportunistic investment portfolios in the fourth quarter of 2020.

	Trailing Performance (%)						Calendar Year Performance (%)			
	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018
Other Alternatives										
STRS Opportunistic/Diversified Investments	2.35	4.55	8.36	7.14	6.52	6.69	23.68	-1.80	5.93	4.74
STRS Opportunistic/Diversified Blended Benchmark	-1.44	0.40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Difference	3.79	4.15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OP&F Real Assets	3.24	10.03	5.77	6.70	5.52	4.84	7.85	-0.28	5.80	10.45
OP&F Real Assets Custom Benchmark	-5.53	3.34	3.52	4.61	5.71	7.21	9.84	-2.27	9.46	3.17
Difference	8.77	6.69	2.25	2.09	-0.19	-2.37	-1.99	1.99	-3.66	7.28
OP&F MLPs	15.38	30.50	10.80	6.06	6.46	4.73	41.02	-26.09	13.46	-13.05
Alerian MLP Index	7.32	21.53	8.84	5.76	5.59	2.81	38.43	-23.37	17.21	-12.42
Difference	8.06	8.97	1.96	0.30	0.87	1.92	2.59	-2.72	-3.75	-0.63
OP&F Gold	-0.76	-2.45	N/A	N/A	N/A	N/A	-3.62	N/A	N/A	N/A
S&P GSCI Gold Index Minus the Cost of Financing	-0.96	-2.97	N/A	N/A	N/A	N/A	-4.41	N/A	N/A	N/A
Difference	0.20	0.52	N/A	N/A	N/A	N/A	0.79	N/A	N/A	N/A
SERS Opportunistic & Tactical Portfolio	-1.07	-1.12	6.80	6.24	8.09	N/A	22.04	0.96	5.47	5.33
SERS Opportunistic Custom Benchmark	-2.14	-11.01	-3.55	0.40	3.22	N/A	0.46	0.36	16.04	-2.03
Difference	1.07	9.89	10.35	5.84	4.87	N/A	21.58	0.60	-10.57	7.36
HPRS Real Assets	9.38	23.79	16.44	10.72	7.52	N/A	29.85	-1.80	12.89	-6.64
HPRS Real Assets Custom Benchmark (Net)	9.25	23.47	16.13	11.88	9.65	N/A	29.17	-1.80	12.54	-0.53
Difference	0.13	0.32	0.31	-1.16	-2.13	N/A	0.68	0.00	0.35	-6.11

Performance shown may be net or gross of fees depending on underlying investments. The OP&F Gold composite was inceptioned during the second half of 2020. Beginning with the Dec. 2021 report, STRS will report Opportunistic/Diversified Investments (which includes Hedge Funds). Effective July 1, 2021, the STRS Opportunistic/diversified blended benchmark consists of the actual Opportunistic Investments Portfolio weight multiplied by the Cambridge Associates Private Credit Index one quarter lagged to be consistent with external fund reporting plus the actual weight of the Diversified Investments Portfolio multiplied by the HFRI Fund of Funds Composite Index, which is a monthly index where subsequent revisions will be reflected in the following period.

STRS Other Alternatives as of June 30, 2021

	2 Quarters	1 Year	3 Year	5 Year	7 Year	10 Year	2020	2019	2018	2017
STRS Opportunistic Investments ex HF	13.78	25.54	6.28	7.37	5.94	7.35	-1.58	6.39	6.25	6.07
STRS Opportunistic Custom Benchmark *	14.55	42.78	17.57	16.73	12.83	13.57	19.70	29.75	-6.18	19.95
Difference	-0.77	-17.24	-11.29	-9.36	-6.89	-6.22	-21.28	-23.36	12.43	-13.88

* Through June 30, 2021, the STRS Opportunistic Custom Benchmark is calculated monthly and is the Russell 3000 Index -100 basis points.

Plan Specific Pages



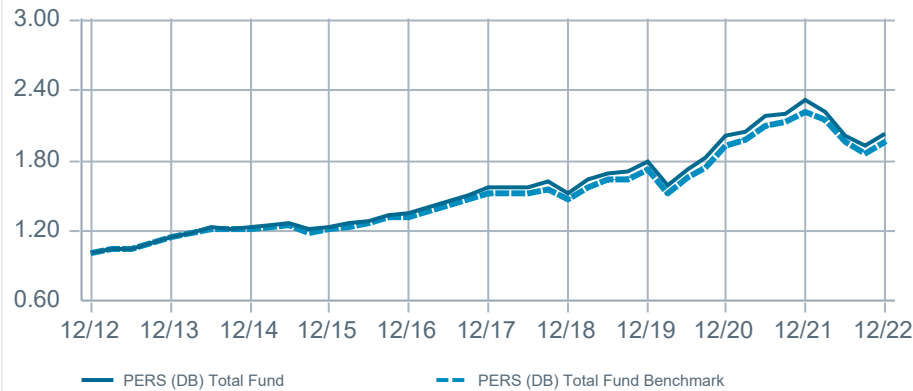
Ohio Retirement Study Council
Public Employees Employment Retirement System (DB)
Total Fund Characteristics

As of December 31, 2022

Summary

- PERS (DB) has generated an annualized 0.07% of alpha over the trailing 5-year period and 0.41% over the trailing 10-year period.
- Relative to a 60 Equity/40 Bond portfolio, the plan has exhibited larger up-market capture and smaller down-market capture characteristics over the past 10 years.

Growth of \$1 - 10 Years



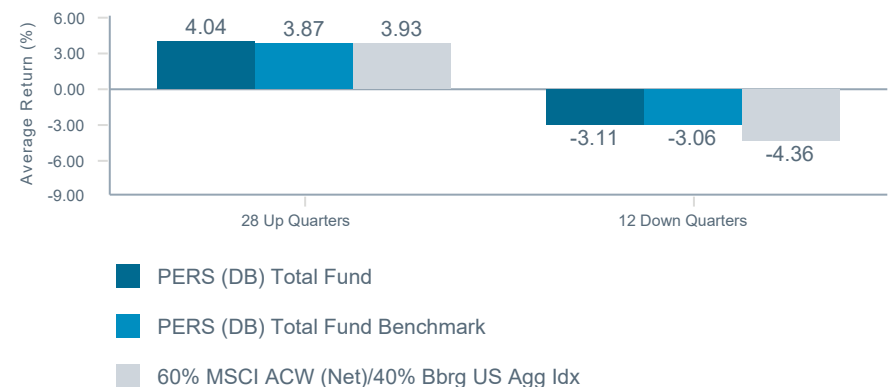
MPT Stats

	5 Years	10 Years
Maximum Return	10.35	10.35
Minimum Return	-11.66	-11.66
Standard Deviation	11.54	8.79
vs. PERS (DB) Total Fund Benchmark		
Info Ratio	0.09	0.47
Tracking Error	1.01	0.86
Alpha	0.03	0.32
vs. S&P 500 Index (Cap Wtd)		
Beta	0.55	0.55
vs. ICE BofAML 3 Mo US T-Bill Index		
Sharpe Ratio	0.40	0.77

Asset Allocation vs. Targets

	Market Value (\$)	Allocation (%)	Target (%)
US Equity	20,454,302,892	22.10	23.20
International Equity	20,737,769,799	22.41	23.00
Core Fixed Income	9,067,727,908	9.80	11.00
U.S. Treasury	1,563,361,355	1.69	3.00
High Yield	2,401,642,962	2.60	2.00
Global High Yield	6,215	0.00	0.00
EMD	2,992,423,534	3.23	4.00
Securitized Debt	1,184,983,853	1.28	1.00
TIPS	2,771,606,518	2.99	3.00
Real Estate	11,829,738,173	12.78	10.00
REITs	462,575,603	0.50	1.00
Hedge Funds	55,756,401	0.06	0.00
Opportunistic	896,991,110	0.97	0.80
Commodities	1,283,373,540	1.39	1.00
Private Equity	13,399,432,803	14.48	12.00
Risk Parity	2,559,845,281	2.77	5.00
Cash Equivalents	813,376,746	0.88	0.00
Additional Annuity	15,539,158	0.02	0.00
Other Pension Assets	46,164	0.00	0.00
Rebalancing	-	0.00	0.00
TAA	54,458,954	0.06	0.00
Total Fund	92,544,958,969	100.00	100.00

Up/Down Markets - 10 Years



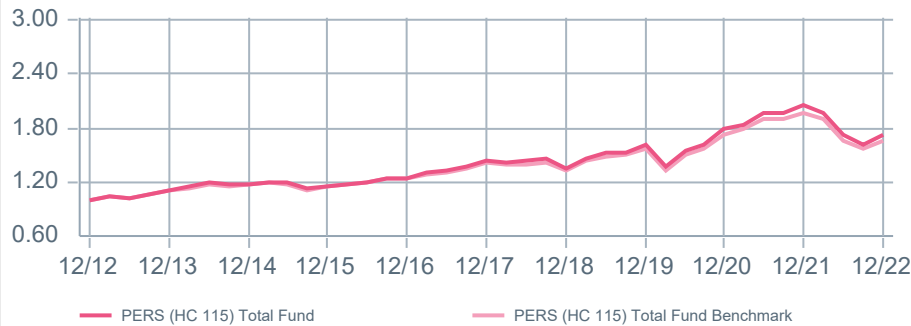
Performance shown is gross of fees. Calculations are based on quarterly periodicity. Allocations shown may not sum up to 100% exactly due to rounding.



Summary

- PERS HC was formed in 2005, segregating HC from the DB assets. PERS HC 115 was formed October 2014 to hold all HC assets of PERS, and has a performance inception date of January 2015.
- OPERS health care plan is not a pension plan and therefore has significantly different characteristics including a shorter focus asset allocation with more liquidity than the pension plans. For purposes of this study, the OPERS health care plan has been included in the results. The results for OPERS HC plan were reflected in the PERS HC since 2005 through October 2014, and then transferred to and renamed PERS HC 115 at that time.

Growth of \$1 - 10 Years



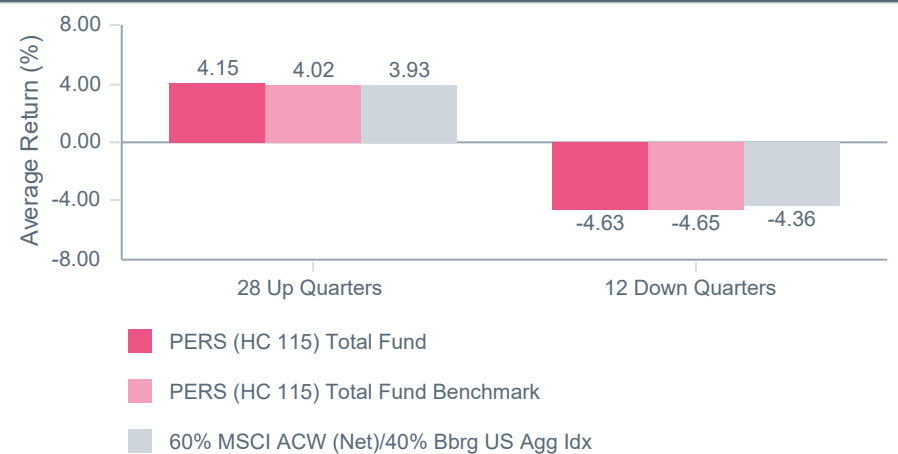
Asset Allocation vs. Targets

	Market Value (\$)	Allocation (%)	Target (%)
US Equity	3,108,848,300	26.60	27.20
International Equity	2,962,648,120	25.35	25.00
Core Fixed Income	1,962,007,524	16.79	17.00
EMD	152,332,878	1.30	2.00
High Yield	687,611,376	5.88	4.00
Securitized Debt	318,963,211	2.73	2.00
TIPS	826,090,841	7.07	7.00
Global High Yield	31,176	0.00	0.00
REITs	574,327,820	4.91	7.00
Hedge Funds	2,615,432	0.02	0.00
Opportunistic	123,372,564	1.06	0.80
Commodities	529,961,646	4.53	4.00
Risk Parity	153,434,288	1.31	2.00
Cash Equivalents	61,726,432	0.53	0.00
U.S. Treasury	222,693,733	1.91	2.00
Rebalancing	-	0.00	0.00
Total Fund	11,686,665,342	100.00	100.00

MPT Stats

	10 Years
Maximum Return	12.24
Standard Deviation	10.45
Minimum Return	-14.63
vs. PERS (HC 115) Total Fund Benchmark	
Info Ratio	0.90
Tracking Error	0.40
Alpha	0.37
vs. S&P 500 Index (Cap Wtd)	
Beta	0.79
vs. ICE BofAML 3 Mo US T-Bill Index	
Sharpe Ratio	-1.32

Up/Down Markets - 10 Years

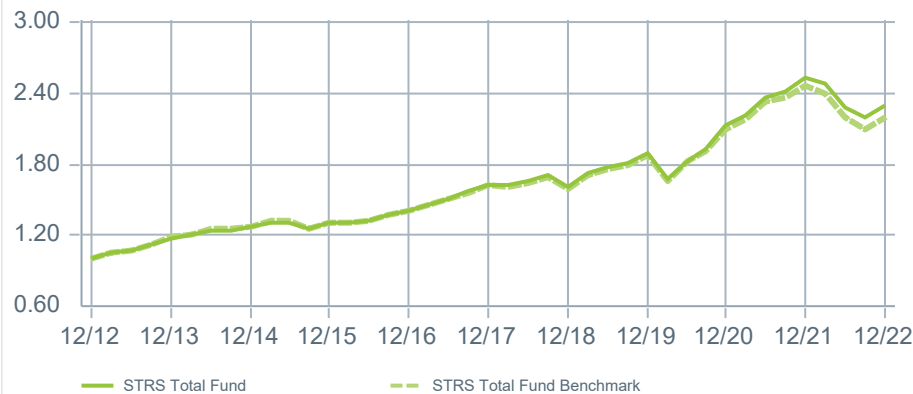


Performance shown is gross of fees. Calculations are based on quarterly periodicity. Allocations shown may not sum up to 100% exactly due to rounding.

Summary

- STRS has generated 0.83% of alpha over the trailing 5-year period and 0.48% of alpha over the trailing 10-year period.
- Relative to a 60 Equity/40 Bond portfolio, the plan has exhibited larger up-market capture and smaller down-market capture characteristics over the past 10 years.

Growth of \$1 - 10 Years



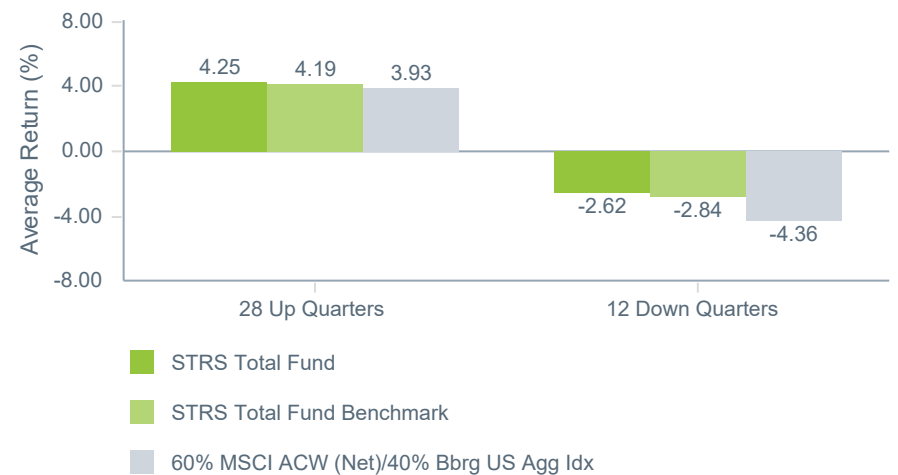
MPT Stats

	5 Years	10 Years
Maximum Return	10.00	10.00
Minimum Return	-11.51	-11.51
Standard Deviation	11.26	8.59
vs. STRS Total Fund Benchmark		
Info Ratio	1.50	0.92
Tracking Error	0.53	0.49
Alpha	0.80	0.50
vs. S&P 500 Index (Cap Wtd)		
Beta	0.55	0.55
vs. ICE BofAML 3 Mo US T-Bill Index		
Sharpe Ratio	0.55	0.92

Asset Allocation vs. Targets

	Market Value (\$)	Allocation (%)	Target (%)
US Equity	22,209,351,043	25.84	26.00
International Equity	18,935,319,488	22.03	22.00
Fixed Income	15,904,357,986	18.51	22.00
Real Estate	9,176,179,137	10.68	10.00
Opportunistic (Incl. Hedge Funds)	8,485,267,506	9.87	10.00
Private Equity	9,949,734,070	11.58	9.00
Cash Equivalents	1,281,893,835	1.49	1.00
Total Fund	85,942,103,065	100.00	100.00

Up/Down Markets - 10 Years

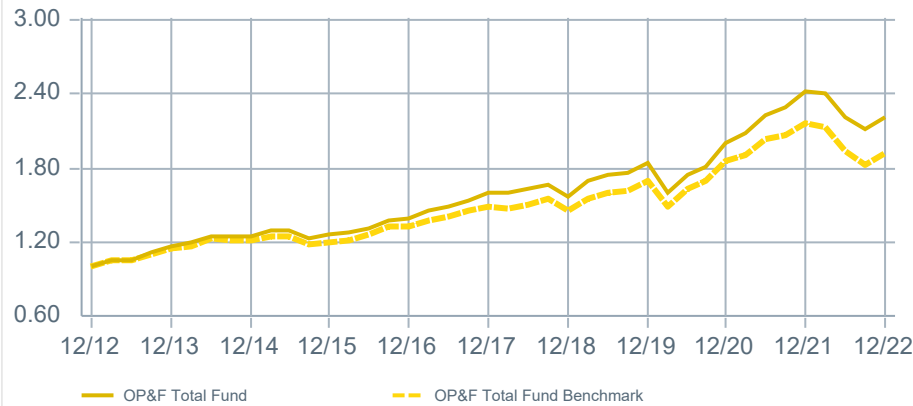


Performance shown is gross of fees. Calculations are based on quarterly periodicity. Allocations shown may not sum up to 100% exactly due to rounding.

Summary

- OP&F has generated 1.56% of alpha over the trailing 5-year period and 1.48% of alpha over the trailing 10-year period.
- Relative to a 60 Equity/40 Bond portfolio, the plan has exhibited larger up-market and smaller down-market capture characteristics over the past 10 years.

Growth of \$1 - 10 Years



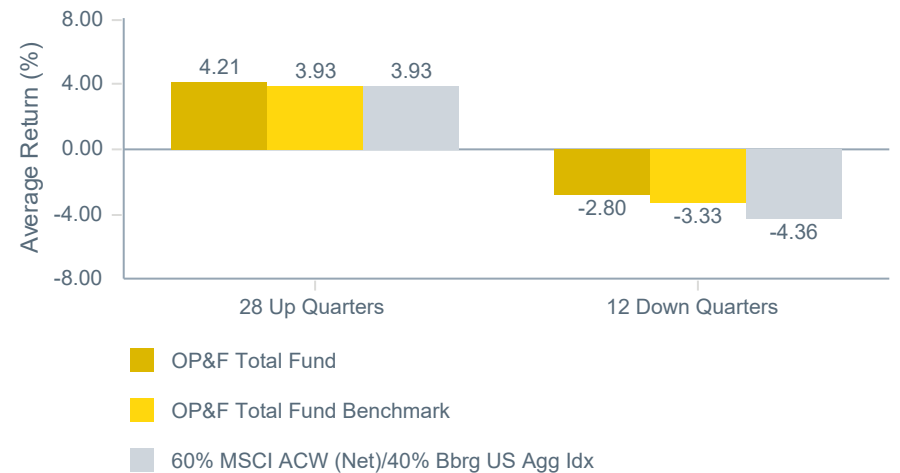
MPT Stats

	5 Years	10 Years
Maximum Return	10.66	10.66
Minimum Return	-13.55	-13.55
Standard Deviation	11.69	9.02
vs. OP&F Total Fund Benchmark		
Info Ratio	0.93	1.07
Tracking Error	1.58	1.31
Alpha	1.41	1.35
vs. S&P 500 Index (Cap Wtd)		
Beta	0.56	0.56
vs. ICE BofAML 3 Mo US T-Bill Index		
Sharpe Ratio	0.51	0.84

Asset Allocation vs. Targets

	Market Value (\$)	Allocation (%)	Target (%)
US Equity	3,616,922,784	21.59	18.24
International Equity	2,265,186,175	13.52	11.20
High Yield Fixed Income	1,271,093,693	7.59	6.80
US TIPS	1,399,818,782	8.35	13.60
Core Fixed Income	1,563,779,516	9.33	18.40
Private Credit	483,320,836	2.88	2.80
Real Estate	2,052,660,980	12.25	9.60
Private Markets	1,452,353,505	8.67	6.40
MLPs	1,094,214,204	6.53	4.00
Real Assets	872,934,506	5.21	4.00
Gold	139,858,889	0.83	4.96
Cash Equivalents	543,300,823	3.24	0.00
Total Fund	16,755,444,692	100.00	100.00

Up/Down Markets - 10 Years

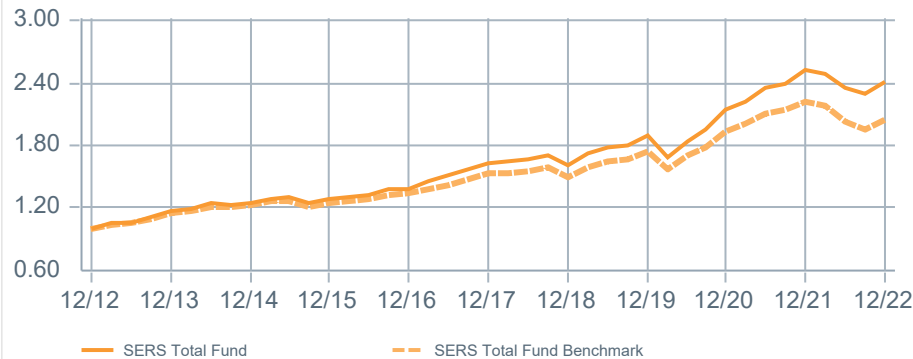


Performance shown is gross of fees. Calculations are based on quarterly periodicity. Allocations shown may not sum up to 100% exactly due to rounding. OP&F's target allocations are based on notional value, and have been scaled to 100% for this report.

Summary

- SERS has generated 2.03% of alpha over the trailing 5-year period and 1.73% of alpha over the trailing 10-year period.
- Relative to a 60 Equity/40 Bond portfolio, SERS has exhibited larger up-market capture and smaller down-market capture characteristics over the past 10 years.

Growth of \$1 - 10 Years



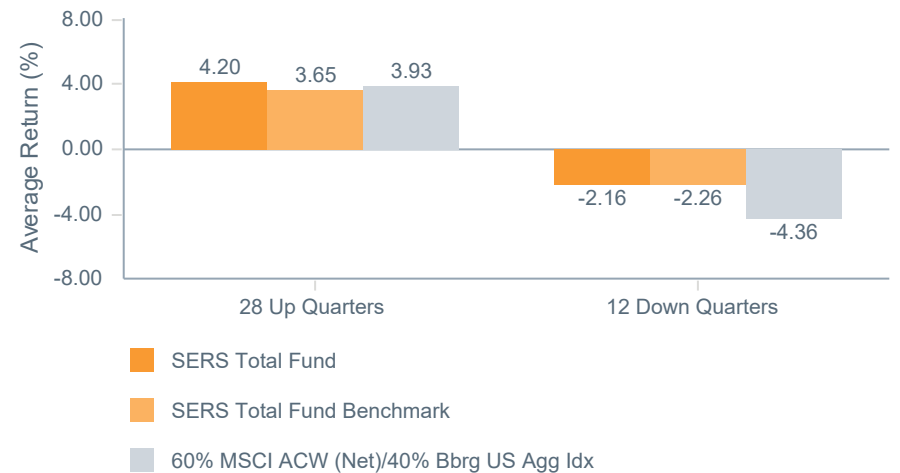
MPT Stats

	5 Years	10 Years
Maximum Return	9.94	9.94
Minimum Return	-11.00	-11.00
Standard Deviation	10.24	7.94
vs. SERS Total Fund Benchmark		
Info Ratio	1.58	1.49
Tracking Error	1.25	1.12
Alpha	1.67	1.22
vs. S&P 500 Index (Cap Wtd)		
Beta	0.50	0.50
vs. ICE BofAML 3 Mo US T-Bill Index		
Sharpe Ratio	0.68	1.04

Asset Allocation vs. Targets

	Market Value (\$)	Allocation (%)	Target (%)
US Equity	3,829,217,664	22.33	24.75
International Equity	3,199,072,776	18.65	20.25
Fixed Income	2,169,731,212	12.65	19.00
Private Credit	989,481,094	5.77	5.00
Real Estate	3,740,977,094	21.81	17.00
Opportunistic Investments	627,832,574	3.66	0.00
Private Equity	2,138,981,918	12.47	12.00
Cash Equivalents	453,837,356	2.65	2.00
Total Fund	17,149,131,687	100.00	100.00

Up/Down Markets - 10 Years

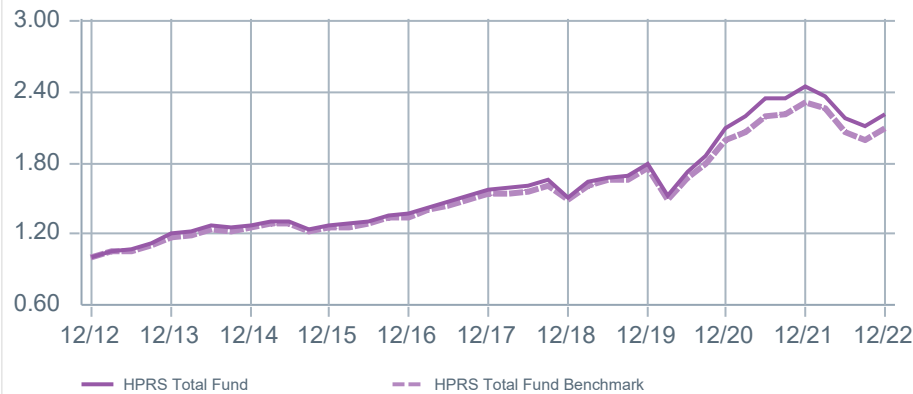


Performance shown is gross of fees. Calculations are based on quarterly periodicity. Allocations shown may not sum up to 100% exactly due to rounding.

Summary

- HPRS has generated .66% of alpha over the trailing 5-year period and .59% of alpha over the trailing 10-year period.
- Relative to a 60 Equity/40 Bond portfolio, the total portfolio has exhibited larger up-market and smaller down-market capture characteristics over the past 10 years.

Growth of \$1 - 10 Years



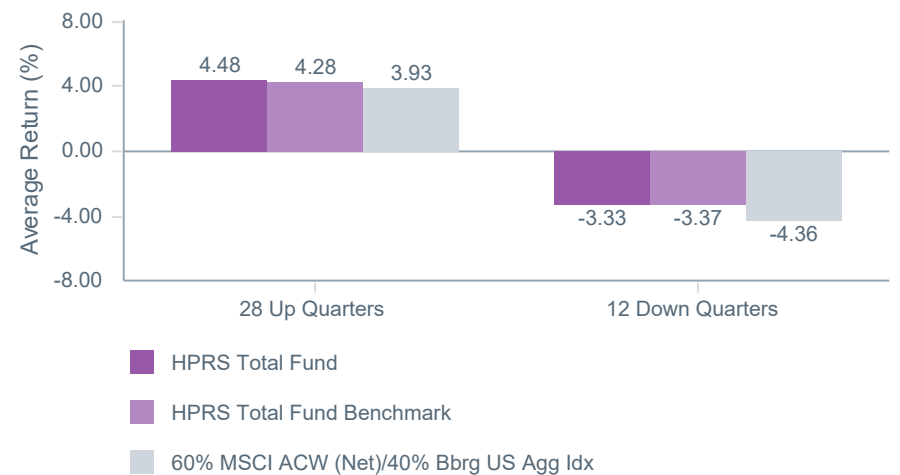
MPT Stats

	5 Years	10 Years
Maximum Return	13.60	13.60
Minimum Return	-14.84	-14.84
Standard Deviation	13.69	10.32
vs. HPRS Total Fund Benchmark		
Info Ratio	0.51	0.53
Tracking Error	1.39	1.15
Alpha	0.40	0.24
vs. S&P 500 Index (Cap Wtd)		
Beta	0.66	0.66
vs. ICE BofAML 3 Mo US T-Bill Index		
Sharpe Ratio	0.47	0.75

Asset Allocation vs. Targets

	Market Value (\$)	Allocation (%)	Target (%)
US Equity	207,227,529	21.10	20.00
International Equity	52,394,945	5.34	6.00
Global Equity	198,408,784	20.21	24.00
Fixed Income	81,459,590	8.30	15.00
Real Estate	84,970,659	8.65	8.00
Hedge Funds	69,942,188	7.12	7.00
Private Equity	188,930,993	19.24	14.00
Real Assets	43,451,255	4.43	3.00
Cash Equivalents	55,111,125	5.61	3.00
Total Fund	981,897,068	100.00	100.00

Up/Down Markets - 10 Years



Performance shown is gross of fees. Calculations are based on quarterly periodicity. Allocations shown may not sum up to 100% exactly due to rounding.

Ohio Retirement Study Council
HPRS Total Fund Performance vs. Peers

As of December 31, 2022

	Market Value (\$000)	Trailing Performance (%)						Calendar Year Performance (%)			
		2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018
HPRS	981,897	1.84	-9.59	7.30	6.98	8.15	8.26	16.92	16.86	18.85	-4.57
HPRS Total Fund Benchmark		1.83	-9.61	6.06	6.32	7.61	7.67	16.63	13.16	17.85	-3.38
Difference		0.01	0.02	1.24	0.66	0.54	0.59	0.29	3.70	1.00	-1.19
<i>All Public Plans > \$1B-TF Median</i>		0.98	-10.84	5.16	5.84	7.60	7.43	15.51	12.05	17.29	-3.14
Rank		18	38	12	14	26	17	36	3	23	75
Population		178	171	165	163	161	152	215	234	223	181
<i>All Public Plans \$250M to \$1B-TF Median</i>		1.07	-13.04	3.98	5.11	7.04	7.23	14.11	13.05	18.71	-4.45
Rank		20	10	1	3	7	9	15	10	45	55
Population		110	108	105	103	101	96	132	145	151	108

Performance shown is gross of fees but is net of embedded fees on externally managed real estate and alternative investments.



Appendix

Performance Related Comments

- Performance shown is gross of fees unless otherwise noted and is annualized for periods greater than one year.
- Peer group ranks are measured in percentiles.
- Total Fund performance shown is net of embedded fees on externally managed real estate and alternative investments.
- All quarterly market value and performance data, including custom benchmark performance, is provided by the individual Plans.
- In 2005, the 401(h) Health Care Trust portfolio assets were segregated from the pension portfolio and invested with a more conservative asset-allocation. In 2014, the 115 Health Care Trust portfolio was created as another funding vehicle for post-employment health care for members in the Traditional Pension Plan and Combined Plan. Assets were segregated into the 115 Health Care Trust beginning September 2014, with the initial health care disbursements from the trust commencing late 2015 for January 2016 premium reimbursements. Favorable rulings from the Internal Revenue Service received March 2016 allowed OPERS to consolidate health care assets from the VEBA Trust and the 401(h) Health Care Trust into the 115 Health Care Trust.

Asset Class Fee Comparison – as of 12/31/2022

	(annualized fees shown in basis points)							
	Domestic Equity	Global Equity	International Equity	Fixed Income	Real Estate	Private Equity	Hedge Funds	Other Alternatives
PERS (DB)	2	-	23	6	105	50	-	44
PERS (HC 115)	0	-	3	1	-	-	-	2
STRS	12	-	20	5	44	82	56	60
OP&F	46	-	39	50	59	86	-	87
SERS	9	26	44	57	81	105	-	108
HPRS	14	49	85	72	130	127	91	123

- Fees for Private Equity are based on committed capital, with the exception of SERS and OP&F, which is based on AUM.
- PERS (DB) and PERS (HC 115) Other Alternatives include Risk Parity, Opportunistic, and Commodities.
- PERS (DB) and PERS (HC 115) expenses for Real Estate, and Private Equity include net management fees and partnership expenses. Fees are estimated and are for externally managed accounts or portfolios.
- PERS (DB) and PERS (HC 115) are in the process of liquidating all Hedge Funds
- PERS (HC 115) Domestic Equity fee is 0.3 bps.
- STRS Other Alternatives fees include Opportunistic/Diversified Investments excluding Hedge Fund exposure.
- OP&F Fixed income fee is the weighted average of Core Fixed Income, High Yield, Private Credit Fixed Income, and US TIPS. Core Fixed income and US TIPS fees are on the notional value of the portfolio.
- OP&F Other Alternatives fees include Real Assets, MLPs, and Gold.
- SERS Other Alternatives fees include Opportunistic and Tactical Portfolio.
- HPRS Other Alternatives fees include Real Assets.

Appendix

Percentage of Assets Managed by External Managers – as of 12/31/2022

Percentage of Assets Managed by External Managers - As of 12/31/2022								
	Total Fund	Domestic Equity	International Equity	Fixed Income	Real Estate	Private Equity	Hedge Funds	Other Alternatives
■ PERS (DB)	53%	4%	75%	24%	96%	100%	100%	62%
■ PERS (HC 115)	27%	4%	75%	16%	-	-	100%	26%
■ STRS	35%	6%	48%	10%	14%	100%	100%	83%
■ OP&F	100%	100%	100%	100%	100%	100%	-	100%
■ SERS	97%	100%	100%	100%	100%	100%	100%	100%
■ HPRS	100%	100%	100%	100%	100%	100%	100%	100%

- PERS (DB) and PERS (HC 115) Other Alternatives include Risk Parity, Opportunistic, and Commodities.
- STRS Other Alternatives include Opportunistic/Diversified Investments (includes Hedge Fund exposure).
- OP&F Other Alternatives include Real Assets, MLPs, and Gold.
- OP&F's Cash is 100% externally managed.
- SERS Other Alternatives include Opportunistic Investments and Tactical Portfolio.
- SERS has one internally-managed Cash mandate.
- HPRS Other Alternatives include Real Assets.

Percentage of Actively Managed Assets – as of 12/31/2022

Percentage of Assets Actively Managed - As of 12/31/2022								
	Total Fund	Domestic Equity	International Equity	Fixed Income	Real Estate	Private Equity	Hedge Funds	Other Alternatives
■ PERS (DB)	72%	14%	83%	86%	96%	100%	100%	73%
■ PERS (HC 115)	56%	14%	83%	80%	-	-	100%	34%
■ STRS	89%	65%	100%	100%	92%	100%	100%	100%
■ OP&F	81%	71%	100%	80%	100%	100%	-	100%
■ SERS	81%	28%	86%	100%	99%	100%	100%	100%
■ HPRS	79%	21%	100%	100%	100%	100%	100%	100%

- PERS (DB) and PERS (HC 115) Other Alternatives include Risk Parity, Opportunistic, and Commodities.
- STRS Other Alternatives include Opportunistic/Diversified Investments (includes Hedge Fund exposure).
- OP&F Other Alternatives include Real Assets, MLPs, and Gold.
- SERS Other Alternatives include Opportunistic Investments and Tactical Portfolio.
- SERS has one internally-managed Cash mandate.
- HPRS Other Alternatives include Real Assets.

Custom Benchmark Glossary

PERS (DB) Total Fund Custom Benchmark:

- 23.2% Russell 3000 Index
- 23.0% PERS (DB) International Equity Custom Benchmark
- 11.0% PERS (DB) Core Fixed Income Custom Benchmark
- 3.0% Bloomberg U.S. Treasury Index
- 2.0% Bloomberg U.S. High Yield Index
- 4.0% PERS (DB) EMD Custom Benchmark
- 1.0% PERS (DB) Securitized Debt Custom Benchmark
- 3.0% Bloomberg U.S. TIPS Index
- 10.0% PERS (DB) Real Estate Custom Benchmark
- 1.0% Dow Jones U.S. Select Real Estate Securities TR Index
- 12.0% PERS (DB) Private Equity Custom Benchmark
- 0.8% PERS (DB) Opportunistic Custom Benchmark
- 1.0% Commodities Custom Benchmark
- 5.0% PERS (DB) Risk Parity Custom Benchmark

PERS (HC 115) Total Fund Custom Benchmark:

- 27.2% Russell 3000 Index
- 25.0% PERS (HC 115) International Equity Custom Benchmark
- 17.0% PERS (HC 115) Core Fixed Income Custom Benchmark
- 2.0% PERS (HC 115) EMD Custom Benchmark
- 4.0% Bloomberg U.S. High Yield Index
- 2.0% PERS (HC 115) Securitized Debt Custom Benchmark
- 7.0% Bloomberg U.S. TIPS Index
- 7.0% Dow Jones U.S. Select Real Estate Securities TR Index
- 0.8% PERS (HC 115) Opportunistic Custom Benchmark
- 4.0% Commodities Custom Benchmark
- 2.0% PERS (HC 115) Risk Parity Custom Benchmark
- 2.0% Bloomberg U.S. Treasury Index

STRS Total Fund Custom Benchmark:

- 26.0% Russell 3000 Index
- 22.0% MSCI World Ex US Index (50% Hedged)/ MSCI Emg Mkts Index
- 22.0% STRS Fixed Income Blended Benchmark
- 10.0% STRS Real Estate Custom Benchmark
- 19.0% Alternative Investment Blended Benchmark
- 1.0% ICE BofA US 3-Month Treasury Bill Index

OP&F Total Fund Custom Benchmark:

- 18.24% Wilshire 5000 Index
- 11.2% MSCI ACW Ex US IMI Index (Net)
- 18.4% Bloomberg US Aggregate Bond Index + Leverage Factor
- 6.8% CS High Yield Dev. Countries Only Index
- 13.6% Bridgewater Custom US TIPS Index
- 2.8% S&P LTSA Levered Loan Index + 2%
- 9.6% NCREIF ODCE (Net) (1 Quarter Lag)
- 4.0% OP&F Real Assets Custom Index
- 4.0% Alerian MLP Index
- 6.4% OP&F Private Equity Custom Benchmark
- 4.96% S&P GSCI Gold Index Minus the Cost of Financing

*OP&F's target allocations are based on notional value, and have been scaled to 100% for this report.

SERS Total Fund Custom Benchmark:

- 24.75% Russell 3000 Index
- 20.25% SERS International Equity Custom Benchmark
- 19.0% Bloomberg US Aggregate Bond Index
- 17.0% NCREIF Property Index (1 Quarter Lag)
- 5.0% 3 Month LIBOR Rate + 4.5%
- 12.0% Burgiss All Private Equity (1 Quarter Lag)
- 2.0% Citigroup 30 Day T-Bill Index

HPRS Total Fund Custom Benchmark:

- 20.0% Russell 3000 Index
- 6.0% HPRS International Equity Custom Benchmark
- 24.0% HPRS Global Equity Custom Benchmark
- 15.0% HPRS Fixed Income Custom Benchmark
- 8.0% HPRS Total Real Estate Composite (Net)
- 7.0% HFRI FOF Composite Index
- 14.0% HPRS Total Private Equity Custom Composite
- 3.0% HPRS Real Assets Composite (Net)
- 3.0% BofA Merrill Lynch 91-Day T-Bill

Custom Benchmark Glossary

PERS (DB) International Equity Custom Benchmark:

- 55% MSCI World Ex US Standard Index
- 10% MSCI World Ex US Small Cap Index
- 31% MSCI Emerging Markets Standard Index
- 4% MSCI Emerging Markets Small Cap Index

PERS (DB) Core Fixed Income Custom Benchmark:

- Bloomberg US Aggregate Bond Index

PERS (DB) EMD Custom Benchmark:

- 50% JP Morgan Emerging Markets Bond Index Global
- 50% JP Morgan Government Bond Index-Emerging Markets Global Diversified

PERS (DB) Securitized Debt Custom Benchmark:

- 50% Bloomberg Non-Agency Investment Grade CMBS: BBB Total Return Index (Unhedged) (USD)
- 50% Bloomberg Non-Agency CMBS Agg Eligible Total Return Index Value (Unhedged) (USD)

PERS (DB) Real Estate Custom Benchmark:

- NFI-ODCE Index (Net) + 0.85% (1 Quarter Lag)
- Prior to 2013: NCREIF Property Index (1 Quarter Lag)

PERS (DB) Private Equity Custom Benchmark:

- State Street Private Equity Index (1 Quarter Lag)
- Prior to 2015: 60% Russell 3000 Index, 40% MSCI ACWI Ex US IMI plus 300 basis points (1 Quarter Lag)
- Prior to 2013: Russell 3000 Index + 300 bps (1 Quarter Lag)

PERS (DB) Hedge Funds Custom Benchmark:

- 65% HFRI Event Driven (Total) Index
- 35% HFRI Relative (Total) Index

PERS (DB) Opportunistic Custom Benchmark:

- The market weight of underlying portfolio benchmarks

PERS (DB) Risk Parity Custom Benchmark:

- HFR Risk Parity Institutional Custom Index

PERS (HC 115) International Equity Custom Benchmark:

- 55% MSCI World Ex US Standard Index
- 10% MSCI World Ex US Small Cap Index
- 31% MSCI Emerging Markets Standard Index
- 4% MSCI Emerging Markets Small Cap Index

PERS (HC 115) Core Fixed Income Custom Benchmark:

- Bloomberg US Aggregate Bond Index

PERS (HC 115) EMD Custom Benchmark:

- 50% JP Morgan Emerging Markets Bond Global Index
- 50% JP Morgan Government Bond Index-Emerging Markets Global Diversified

PERS (HC 115) Securitized Debt Custom Benchmark:

- 50% Bloomberg Non-Agency Investment Grade CMBS: BBB Total Return Index (Unhedged) (USD)
- 50% Bloomberg Non-Agency CMBS Agg Eligible Total Return Index Value (Unhedged) (USD)

PERS (HC 115) Hedge Funds Custom Benchmark:

- 65% HFRI Event Driven (Total) Index
- 35% HFRI Relative (Total) Index

PERS (HC 115) Opportunistic Custom Benchmark:

- The market weight of underlying portfolio benchmarks

PERS (HC 115) Risk Parity Custom Benchmark:

- HFR Risk Parity Institutional Custom Index

STRS International Equity Custom Benchmark:

- 80% MSCI EAFE Index
- 20% MSCI Emerging Markets Index

STRS Real Estate Custom Benchmark:

- 85% NCREIF Property Index
- 15% FTSE NAREIT Equity REITs Index

STRS Private Equity Benchmark:

- The Private Equity Benchmark is the quarterly Cambridge Associates Private Equity and Venture Capital Index, one quarter lagged to be consistent with external fund reporting, effective July 1, 2021.

Custom Benchmark Glossary

STRS Opportunistic/Diversified Blended Benchmark:

- Effective July 1, 2021, the Opportunistic/diversified blended benchmark consists of the actual Opportunistic Investments Portfolio weight multiplied by the Cambridge Associates Private Credit Index one quarter lagged to be consistent with external fund reporting plus the actual weight of the Diversified Investments Portfolio multiplied by the HFRI Fund of Funds Composite Index, which is a monthly index where subsequent revisions will be reflected in the following period.

OP&F Real Assets Custom Benchmark:

- 45% FTSE Dev Core 50/50 Infrastructure Index
- 35% NCREIF Timberland Index
- 20% NCREIF Farmland Index (1 Quarter Lag)

OP&F Private Equity Custom Benchmark:

- Actual net of fee return of the Private Equity Composite

SERS International Equity Custom Benchmark:

- MSCI ACW Ex US Index (USD) (Net)
- Prior to 2014Q1: MSCI ACWI ex-US (Net) Index (dev. markets 50% hedged)
- Prior to 2013Q3: MSCI ACWI ex-US (Gross) Index (dev. markets 50% hedged)

SERS Opportunistic Custom Benchmark:

- Bloomberg US Aggregate Bond Index + 2%
- Prior to 2020Q1: SERS Total Fund Custom Benchmark

HPRS International Equity Custom Benchmark:

- 67% MSCI Emerging Markets
- 33% MSCI EAFE Small Cap

HPRS Fixed Income Custom Benchmark:

- 40% Bloomberg Aggregate Bond Index
- 45% Credit Suisse Leveraged Loans
- 15% JP Morgan EMBI Global Diversified

HPRS Total Private Equity Custom Benchmark:

- Private Equity Composite Performance
- Prior to 2017Q1: Wilshire 5000 + 3% (1 Quarter Lag)
- Prior to 2010Q3: CPI + 5%

Glossary

Alpha - A measure of the difference between a portfolio's actual returns and its expected performance, given its level of risk as measured by beta. It is a measure of the portfolio's historical performance not explained by movements of the market.

Benchmark - A standard against which the performance of a fund or investment manager can be measured.

Beta - A measure of the sensitivity of a portfolio to the movements in the market. A beta of 1.0 indicates the same level of stock market risk as the S&P 500 Index (Cap Wtd), unless otherwise noted. Lower betas indicate lower stock market risk. Beta is a measure of a portfolio's non-diversifiable or systematic risk.

Capital Markets Review -

Breakeven Inflation - Measures the expected inflation rate at each stated maturity by taking the difference between the real yield of the inflation-linked maturity curve and the yield of the closest nominal Treasury maturity.

Consumer Confidence - Measures domestic consumer confidence as defined by the degree of optimism on the state of the economy that consumers express through saving and spending.

Consumer Price Index (CPI) - Measures the change in the price level of consumer goods and services.

Option-Adjusted Spread - Measures the flat spread of an index or bond to the Treasury yield curve after removing the effect of any embedded options.

Purchasing Managers Index (PMI) - Measures economic activity by surveying purchasing managers on a monthly basis as to whether business conditions have improved, worsened, or stayed the same.

US Dollar Total Weighted Index - Measures the value of the US Dollar relative to a basket of other world currencies. It is calculated as the weighted geometric mean of the dollar's value versus the EUR, GBP, CAD, SEK, CHF, and JPY.

VIX - Measures the implied volatility of S&P 500 Index options by looking at the market's expectation of the S&P 500 Index volatility over the next 30 day period. Commonly referred to as the "fear index" or the "fear gauge."

Downside Risk - A measure similar to standard deviation, but focuses only on the negative returns of the fund or investment. The higher the factor, the riskier the fund or investment.

Correlation - A statistical measure of the relationship between asset class returns. A value of 1.00 is a perfect correlation; that is, the asset classes always move in the same direction. A value of -1.00 indicates a perfect negative correlation, in which the asset classes always move in opposite directions of each other. A value of 0 indicates there is no relationship between the direction of returns of the two asset classes. Correlation calculations only consider the direction of changes relative to two variables and not the magnitude of those changes.

Down Market Capture - Down market by definition is negative benchmark return and down market capture represents the ratio in % terms of the average portfolios return over the benchmark during the down market period. The lower the value of the down market capture the better the product's performance.

Excess Return - Arithmetic difference between the fund or investment return and the risk-free return (or other specified market index) over a specified time period, shown on an annualized basis.

Indices - All indices and related information are considered intellectual property and are licensed by each index provider. The indices may not be copied, used or distributed without the index provider's prior written approval. Index providers make no warranties and bear no liability with respect to the indices, any related data, their quality, accuracy, suitability and/or completeness.

Information Ratio - Measured by dividing the active rate of return by the tracking error. The higher the information ratio, the more value-added contribution relative to the market benchmark.

Maximum Return - The maximum quarterly return earned over the specified time period.

Minimum Return - The minimum quarterly return earned over the specified time period.

Glossary

Peer Groups -

Plan Sponsor Peer Groups - RVK utilizes the Mellon Analytical Solutions Trust Universe along with the Investment Metrics Plan Sponsor Universe. The combined Mellon Analytical Solutions Trust Universe and Investment Metrics Plan Sponsor Universe is used for comparison of total fund composite results and utilizes actual client returns compiled from consultant and custodial data. The Plan Sponsor Peer Group database includes performance and other quantitative data for over 2,100 plans which include corporate, endowment, foundation, public, and Taft Hartley plans. Plan Sponsor Peer Groups are gross of fees.

Percentile Rankings - Percentile rank compares an individual fund's performance with those of other funds within a defined peer group of managers possessing a similar investment style. Percentile rank identifies the percentage of a fund's peer group that has a higher return (or other comparative measurement) than the fund being ranked. Conversely, 100 minus the individual fund's ranking will identify the percentage of funds within the peer group that have a lower return than the fund being ranked.

1 - Highest Statistical Value 100 - Lowest Statistical Value

Example: American Funds AMCP;R-4 (RAFEX) is ranked in the 4th percentile within the IM US Equity Large-Cap Growth Funds (MF) Peer Group for the Sharpe Ratio. Within the IM US Equity Large-Cap Growth Funds peer group, 4% of the other funds performed better than American Funds AMCP;R-4 (RAFEX), while 96% of the funds performed worse.

Performance Methodology - RVK calculates performance beginning with the first full month following inception. Since inception performance may vary from manager reported performance due to RVK using the first full month of returns as the inception date. Performance for both managers and composites is annualized for periods greater than one year.

Return - Compounded rate of return for the period.

%Return - The time-weighted rate of return of a portfolio for a given period.

RVK Liquidity Rating - A qualitative method for determining the relative amount of liquidity in a portfolio. The characteristics considered when determining relative liquidity include trading volume, gates for redemption, leverage, nature of transactions, and pricing mechanisms. The RVK Liquidity Rating is calculated using beginning of month investment weights applied to each corresponding asset class liquidity rating.

<u>Asset Class</u>	<u>RVK Liquidity Rating</u>	<u>Asset Class</u>	<u>RVK Liquidity Rating</u>
<u>Liquid Investments</u>		<u>Less Liquid Investments</u>	
T-Bills and Treasurys	100	Fixed Income Plus Sector	50
Cash Equivalents	98	Bank Loans	50
TIPS	95	Emerging Markets Debt	50
US Large Cap Equity	95	Hedge Funds	35
Diversified Real Return	93	Hedge Funds of Funds	35
Non-US Large Cap Equity	90	<u>Not Liquid Investments</u>	
Global Tactical Asset Allocation	88	Core Real Estate	25
US Small Cap Equity	85	Core Plus Real Estate	15
REITs	85	Plus Only Real Estate	5
Non-US Small Cap Equity	85	Private Equity	5
Emerging Markets Equity	85		
Core Fixed Income	85		
Core Plus Fixed Income	80		

Sharpe Ratio - Represents the excess rate of return over the risk-free return (i.e., BofA ML 3 Mo US T-Bill Index unless specified otherwise), divided by the standard deviation of the excess return. The result is the absolute rate of return per unit of risk. The higher the value, the better the portfolio's historical risk-adjusted performance.

Standard Deviation - A statistical measure of the range of a portfolio's performance and is a commonly used proxy for overall investment risk. The variability of a return around its average return over a specified time period.

Glossary

Thematic Classification - Represents dedicated manager allocations; as such, thematic allocations are approximations. RVK categorizes the following asset classes as Alpha, Capital Appreciation, Capital Preservation, and Inflation:

Alpha

Absolute Return Strategies
Currency Overlay
GTAA (Global Tactical Asset Allocation)

Capital Appreciation

Public Equity
Private Equity
Preferred Securities
High Yield
Convertible Fixed Income
TALF Funds
Distressed Debt
Emerging Market Fixed Income
MLPs
Value Added Real Estate
Opportunistic Real Estate

Capital Preservation

Core Fixed Income
CMBS Fixed Income
Asset Backed Fixed Income
Domestic Core Plus Fixed Income
Mortgage Backed Fixed Income
International Developed Fixed Income
Cash Equivalents
Stable Value

Inflation

TIPS
Bank Loans
Core Real Estate
Real Return
Inflation Hedges
REITs
Commodities

Tracking Error - A measure of the standard deviation of a portfolio's performance relative to the performance of an appropriate market benchmark.

Unit Value - The dollar value of a portfolio, assuming an initial nominal investment of \$1.00, growing at the compounded rate of %Return for a given period.

Up Market Capture - Up market by definition is positive benchmark return and up market capture represents the ratio in % terms of the average portfolios return over the benchmark during the up market period. The higher the value of the up market capture the better the product's performance.

PORTLAND

BOISE

CHICAGO

NEW YORK

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Quarterly Investment Performance Analysis

Sample Client

Period Ended: March 31, 2023



2022 Greenwich Quality Leader Award

RVK is 1 of 3 firms in the Overall U.S. Investment Consulting “large consultants” category to receive a 2022 *Coalition Greenwich Quality Leader* award. We are proud to be the only firm in this category to receive recognition for a 6th consecutive year. Coalition Greenwich issued the award on April 25, 2023, based on their February through November 2022 study. No direct or indirect compensation has been paid by RVK in connection with obtaining or using this award.



***We are deeply grateful for your continued confidence and support.
From all of us here at RVK, thank you for the opportunity to serve you!***

Award Criteria

- Understanding of Client Goals and Objectives
- Advice on Long-Term Asset Allocation and Liability Issues
- Advice on DC Plan Structure and Design
- Communication of Philosophy and Investment Beliefs
- Proactive Advice and Innovative Ideas
- Client Satisfaction with Manager Recommendations
- Usefulness of Written Investment Performance Reviews
- Sufficient Professional Resources
- Credibility with Investment Committee or Trustees
- Capability of Consultants Assigned to Clients
- Responsiveness and Prompt Follow-up on Client Requests
- Timeliness in Providing Written Reports
- Usefulness of Personal Meetings
- Reasonable Fees Relative to Value Delivered

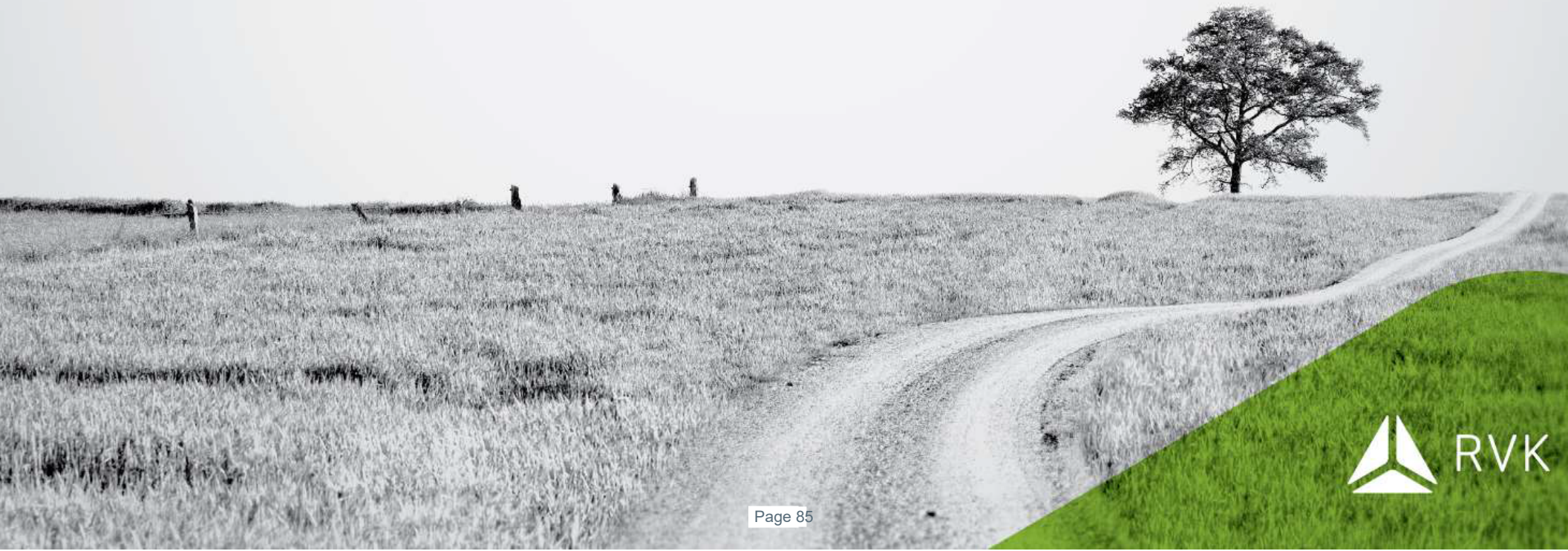
Please refer to the following URL to learn more:

<https://www.greenwich.com/asset-management/investment-consultants-support-us-asset-owners-volatile-markets>

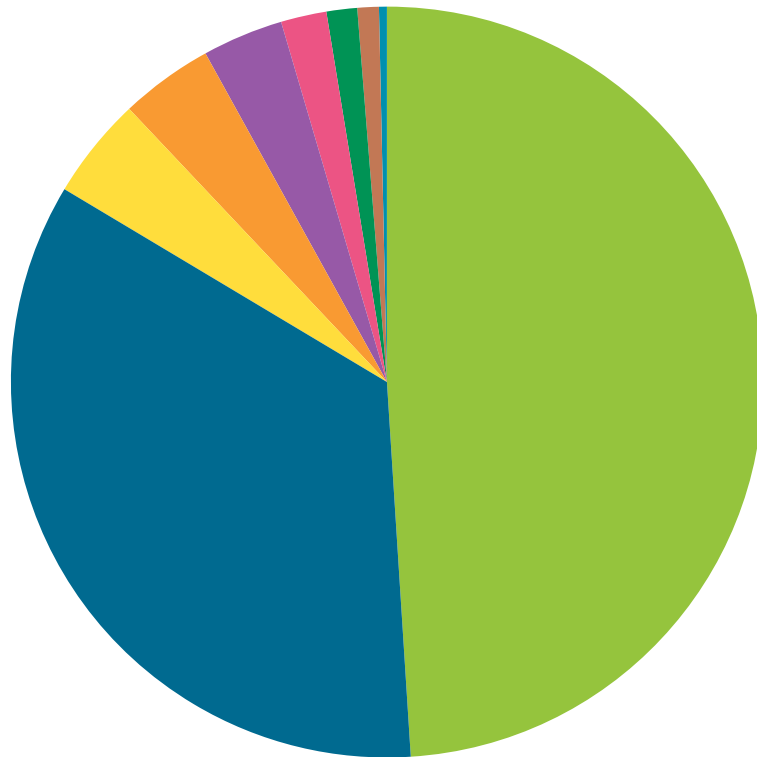
Table Of Contents

1	Retirement Plans, Investment Pools, and Trust Accounts
2	Retirement Plans - CAPP Breakdown
3	Equity Composites
4	Investment Managers
5	Investment Manager Profiles
6	Addendum & Glossary

Retirement Plans, Investment Pools, and Trust Accounts



March 31, 2023 : \$13,833,833,123



	Market Value (\$)	Allocation (%)
Public Employees' Retirement	6,777,300,638	48.99
Teachers' Retirement	4,786,227,309	34.60
Firefighters' Retirement	606,956,818	4.39
Police Retirement	553,611,736	4.00
Sheriffs' Retirement	480,655,141	3.47
Game Wardens' Retirement	272,477,780	1.97
Highway Patrol Retirement	181,974,027	1.32
Judges' Retirement	127,690,474	0.92
Volunteer Firefighters' Retirement	46,939,200	0.34

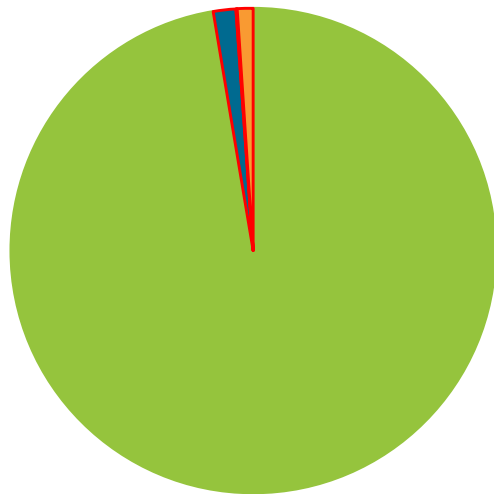
Allocations shown may not sum up to 100% exactly due to rounding. Retirement Plan market values may differ from State Street due to uninvested amounts not included in segment totals.

**Asset Allocation by Segment
Retirement Plans**

As of March 31, 2023

	Consolidated Asset Pension Pool (CAPP)		Short Term Investment Pool (STIP)		Total Fund	
	(\$)	%	(\$)	%	(\$)	%
Public Employees' Retirement	6,704,440,172	48.98	72,860,465	50.11	6,777,300,638	48.99
Teachers' Retirement	4,737,332,622	34.61	48,894,687	33.63	4,786,227,309	34.60
Firefighters' Retirement	600,827,170	4.39	6,129,648	4.22	606,956,818	4.39
Police Retirement	548,019,546	4.00	5,592,189	3.85	553,611,735	4.00
Sheriffs' Retirement	475,637,265	3.47	5,017,876	3.45	480,655,141	3.47
Game Wardens' Retirement	269,363,332	1.97	3,114,448	2.14	272,477,780	1.97
Highway Patrol Retirement	179,928,201	1.31	2,045,826	1.41	181,974,027	1.32
Judges' Retirement	126,410,552	0.92	1,279,922	0.88	127,690,474	0.92
Volunteer Firefighters' Retirement	46,476,953	0.34	462,248	0.32	46,939,200	0.34
Retirement Plans Total Fund Composite	13,688,435,813	98.95	145,397,310	1.05	13,833,833,123	100.00

March 31, 2023 : \$13,833,833,123



Segments	Market Value (\$)	Allocation (%)
CAPP Ex Cash	13,469,635,313	97.37
CAPP Cash Pension	207,578,292	1.50
CAPP Asset Class Cash	11,222,208	0.08
Short Term Investment Pool (STIP)	145,397,310	1.05
Total Cash	364,197,810	2.63

Allocations shown may not sum up to 100% exactly due to rounding. Retirement Plan market values may differ from State Street due to uninvested amounts not included in segment totals.

**Comparative Performance
Retirement Plans**

As of March 31, 2023

	QTD/ CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	20 Years	2022	2021	2020	2019	2018	Since Incep.	Inception Date
Public Employees' Retirement - Net	3.69	5.26	-2.18	12.06	7.25	8.13	7.95	7.79	-8.48	17.61	11.94	16.77	-2.63	7.67	07/01/1994
Public Employees' Benchmark	3.88	6.99	-4.30	12.99	6.36	7.45	7.76	N/A	-10.81	13.79	12.22	20.26	-5.47	N/A	
Difference	-0.19	-1.73	2.12	-0.93	0.89	0.68	0.19	N/A	2.33	3.82	-0.28	-3.49	2.84	N/A	
Public Employees' Retirement - Gross	3.85	5.75	-1.55	12.72	7.89	8.74	8.53	8.28	-7.89	18.32	12.53	17.44	-2.03	8.01	07/01/1994
All Public Plans (>\$5B) Total Fund Median	3.91	4.78	-3.86	11.79	6.99	8.23	7.54	8.14	-10.24	16.85	12.12	17.23	-2.52	7.90	
Rank	58	25	20	19	18	23	3	35	35	32	41	42	44	42	
Teachers' Retirement - Net	3.69	5.23	-2.21	12.04	7.24	8.12	7.95	7.79	-8.52	17.61	11.93	16.78	-2.64	7.68	07/01/1994
Teachers' Benchmark	3.88	6.94	-4.34	12.97	6.35	7.44	7.75	N/A	-10.86	13.78	12.21	20.27	-5.47	N/A	
Difference	-0.19	-1.71	2.13	-0.93	0.89	0.68	0.20	N/A	2.34	3.83	-0.28	-3.49	2.83	N/A	
Teachers' Retirement - Gross	3.84	5.72	-1.59	12.70	7.88	8.73	8.52	8.28	-7.93	18.32	12.52	17.45	-2.03	8.02	07/01/1994
All Public Plans (>\$5B) Total Fund Median	3.91	4.78	-3.86	11.79	6.99	8.23	7.54	8.14	-10.24	16.85	12.12	17.23	-2.52	7.90	
Rank	58	25	20	20	18	28	4	34	35	32	41	42	44	41	
Police Retirement - Net	3.69	5.27	-2.17	12.05	7.25	8.13	7.95	7.74	-8.48	17.58	11.95	16.80	-2.63	7.55	07/01/1994
Police Benchmark	3.88	7.02	-4.28	12.99	6.37	7.45	7.75	N/A	-10.80	13.73	12.23	20.30	-5.46	N/A	
Difference	-0.19	-1.75	2.11	-0.94	0.88	0.68	0.20	N/A	2.32	3.85	-0.28	-3.50	2.83	N/A	
Police Retirement - Gross	3.85	5.75	-1.55	12.71	7.89	8.74	8.53	8.23	-7.89	18.28	12.54	17.47	-2.02	7.89	07/01/1994
All Public Plans (>\$5B) Total Fund Median	3.91	4.78	-3.86	11.79	6.99	8.23	7.54	8.14	-10.24	16.85	12.12	17.23	-2.52	7.90	
Rank	58	24	20	20	18	25	3	39	35	32	41	42	44	51	

Net performance shown is net of all manager fees and expenses (Net-All). All Public Plans > \$5B Total Fund Median is reported gross of fees. Benchmark returns reflect unmanaged indices which are not impacted by management fees. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. Retirement plan benchmarks' inception dates were updated to 1/1/2011.



**Comparative Performance
Retirement Plans**

As of March 31, 2023

	QTD/ CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	20 Years	2022	2021	2020	2019	2018	Since Incep.	Inception Date
Firefighters' Retirement - Net	3.69	5.27	-2.17	12.05	7.25	8.13	7.96	7.76	-8.47	17.58	11.95	16.79	-2.62	7.54	07/01/1994
Firefighters' Benchmark	3.88	7.02	-4.28	12.99	6.36	7.45	7.76	N/A	-10.80	13.73	12.23	20.29	-5.46	N/A	
Difference	-0.19	-1.75	2.11	-0.94	0.89	0.68	0.20	N/A	2.33	3.85	-0.28	-3.50	2.84	N/A	
Firefighters' Retirement - Gross	3.85	5.76	-1.55	12.71	7.89	8.74	8.53	8.25	-7.88	18.28	12.53	17.46	-2.01	7.89	07/01/1994
All Public Plans (>\$5B) Total Fund Median	3.91	4.78	-3.86	11.79	6.99	8.23	7.54	8.14	-10.24	16.85	12.12	17.23	-2.52	7.90	
Rank	58	24	20	20	18	24	3	38	35	32	41	42	44	51	
Sheriffs' Retirement - Net	3.69	5.26	-2.17	12.06	7.25	8.14	7.95	7.77	-8.47	17.61	11.94	16.75	-2.62	7.57	07/01/1994
Sheriffs' Benchmark	3.87	6.99	-4.30	12.99	6.36	7.45	7.75	N/A	-10.81	13.79	12.22	20.23	-5.45	N/A	
Difference	-0.18	-1.73	2.13	-0.93	0.89	0.69	0.20	N/A	2.34	3.82	-0.28	-3.48	2.83	N/A	
Sheriffs' Retirement - Gross	3.84	5.75	-1.55	12.73	7.89	8.74	8.53	8.27	-7.87	18.32	12.53	17.42	-2.02	7.92	07/01/1994
All Public Plans (>\$5B) Total Fund Median	3.91	4.78	-3.86	11.79	6.99	8.23	7.54	8.14	-10.24	16.85	12.12	17.23	-2.52	7.90	
Rank	58	25	20	19	18	22	4	36	35	32	41	42	44	49	
Highway Patrol Retirement - Net	3.69	5.26	-2.17	12.06	7.26	8.14	7.96	7.79	-8.46	17.62	11.94	16.78	-2.62	7.57	07/01/1994
Highway Patrol Benchmark	3.87	6.99	-4.29	13.00	6.37	7.46	7.76	N/A	-10.79	13.80	12.24	20.26	-5.45	N/A	
Difference	-0.18	-1.73	2.12	-0.94	0.89	0.68	0.20	N/A	2.33	3.82	-0.30	-3.48	2.83	N/A	
Highway Patrol Retirement - Gross	3.84	5.75	-1.55	12.72	7.89	8.74	8.53	8.29	-7.87	18.33	12.53	17.45	-2.01	7.92	07/01/1994
All Public Plans (>\$5B) Total Fund Median	3.91	4.78	-3.86	11.79	6.99	8.23	7.54	8.14	-10.24	16.85	12.12	17.23	-2.52	7.90	
Rank	58	25	20	19	18	21	3	32	35	32	41	42	44	50	

Net performance shown is net of all manager fees and expenses (Net-All). All Public Plans > \$5B Total Fund Median is reported gross of fees. Benchmark returns reflect unmanaged indices which are not impacted by management fees. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. Retirement plan benchmarks' inception dates were updated to 1/1/2011.



**Comparative Performance
Retirement Plans**

As of March 31, 2023

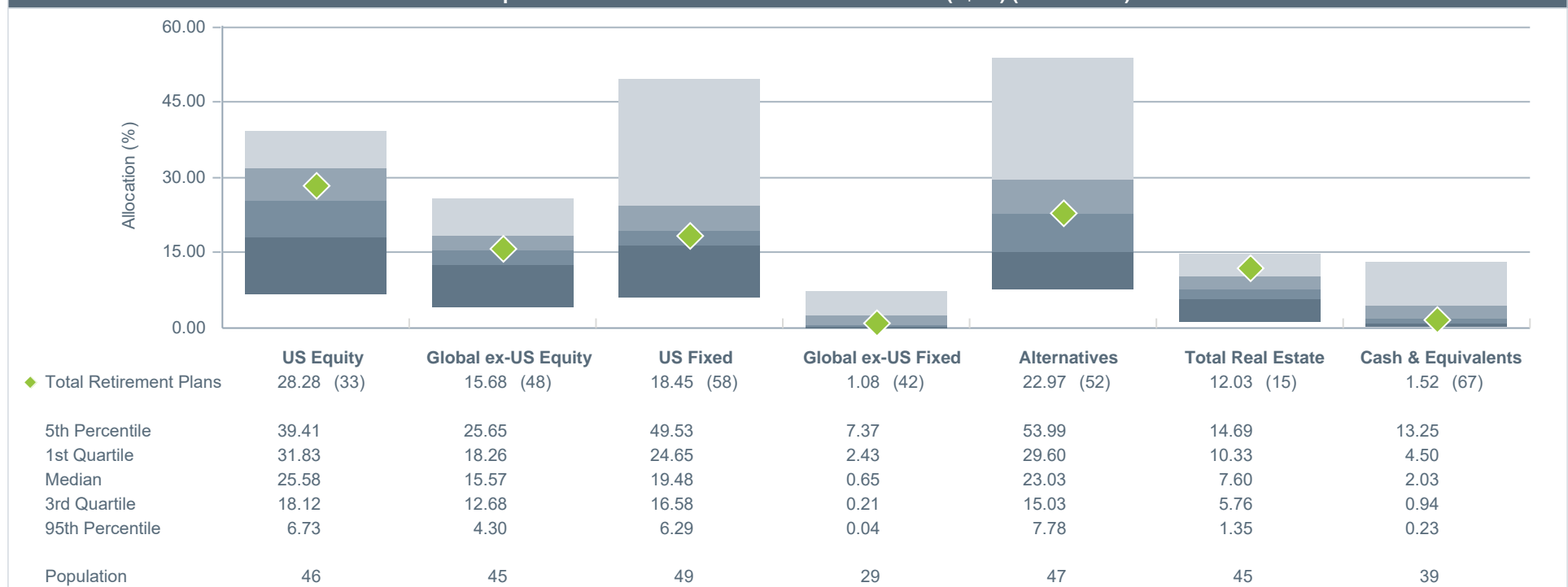
	QTD/ CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	20 Years	2022	2021	2020	2019	2018	Since Incep.	Inception Date
Game Wardens' Retirement - Net	3.69	5.26	-2.17	12.05	7.25	8.13	7.95	7.74	-8.48	17.62	11.91	16.77	-2.62	7.58	07/01/1994
Game Wardens' Benchmark	3.88	6.99	-4.30	12.98	6.35	7.45	7.75	N/A	-10.82	13.79	12.18	20.25	-5.46	N/A	
Difference	-0.19	-1.73	2.13	-0.93	0.90	0.68	0.20	N/A	2.34	3.83	-0.27	-3.48	2.84	N/A	
Game Wardens' Retirement - Gross	3.85	5.75	-1.55	12.72	7.88	8.74	8.52	8.23	-7.88	18.32	12.50	17.44	-2.01	7.93	07/01/1994
All Public Plans (>\$5B) Total Fund Median	3.91	4.78	-3.86	11.79	6.99	8.23	7.54	8.14	-10.24	16.85	12.12	17.23	-2.52	7.90	
Rank	58	25	20	20	18	23	4	39	35	32	42	42	44	49	
Judges' Retirement - Net	3.69	5.25	-2.19	12.06	7.25	8.14	7.95	7.78	-8.50	17.63	11.94	16.78	-2.64	7.58	07/01/1994
Judges' Benchmark	3.88	6.98	-4.32	12.99	6.36	7.45	7.76	N/A	-10.84	13.80	12.22	20.27	-5.48	N/A	
Difference	-0.19	-1.73	2.13	-0.93	0.89	0.69	0.19	N/A	2.34	3.83	-0.28	-3.49	2.84	N/A	
Judges' Retirement - Gross	3.85	5.74	-1.57	12.72	7.89	8.74	8.53	8.28	-7.91	18.34	12.53	17.45	-2.03	7.92	07/01/1994
All Public Plans (>\$5B) Total Fund Median	3.91	4.78	-3.86	11.79	6.99	8.23	7.54	8.14	-10.24	16.85	12.12	17.23	-2.52	7.90	
Rank	58	25	20	19	18	21	3	35	35	32	41	42	44	49	
Volunteer Firefighters' Retirement - Net	3.69	5.23	-2.19	12.05	7.25	8.11	7.95	7.76	-8.50	17.61	11.94	16.79	-2.64	7.40	07/01/1994
Volunteer Firefighters' Benchmark	3.88	6.96	-4.35	12.99	6.36	7.45	7.76	N/A	-10.86	13.85	12.18	20.31	-5.50	N/A	
Difference	-0.19	-1.73	2.16	-0.94	0.89	0.66	0.19	N/A	2.36	3.76	-0.24	-3.52	2.86	N/A	
Volunteer Firefighters' Retirement - Gross	3.84	5.72	-1.58	12.71	7.88	8.71	8.52	8.25	-7.91	18.31	12.53	17.46	-2.04	7.74	07/01/1994
All Public Plans (>\$5B) Total Fund Median	3.91	4.78	-3.86	11.79	6.99	8.23	7.54	8.14	-10.24	16.85	12.12	17.23	-2.52	7.90	
Rank	58	25	20	20	18	29	4	38	35	32	41	42	45	62	

Net performance shown is net of all manager fees and expenses (Net-All). All Public Plans > \$5B Total Fund Median is reported gross of fees. Benchmark returns reflect unmanaged indices which are not impacted by management fees. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. Retirement plan benchmarks' inception dates were updated to 1/1/2011.



Comparative Performance - Retirement Plans															
	QTD/ CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	20 Years	2022	2021	2020	2019	2018	Since Incep.	Inception Date
Public Employees' Retirement - Net	3.69	5.26	-2.18	12.06	7.25	8.13	7.95	7.79	-8.48	17.61	11.94	16.77	-2.63	7.67	07/01/1994
Public Employees' Benchmark	3.88	6.99	-4.30	12.99	6.36	7.45	7.76	N/A	-10.81	13.79	12.22	20.26	-5.47	N/A	
Difference	-0.19	-1.73	2.12	-0.93	0.89	0.68	0.19	N/A	2.33	3.82	-0.28	-3.49	2.84	N/A	
Public Employees' Retirement - Gross	3.85	5.75	-1.55	12.72	7.89	8.74	8.53	8.28	-7.89	18.32	12.53	17.44	-2.03	8.01	07/01/1994
All Public Plans (>\$5B) Total Fund Median	3.91	4.78	-3.86	11.79	6.99	8.23	7.54	8.14	-10.24	16.85	12.12	17.23	-2.52	7.90	
Rank	58	25	20	19	18	23	3	35	35	32	41	42	44	42	
Teachers' Retirement - Net	3.69	5.23	-2.21	12.04	7.24	8.12	7.95	7.79	-8.52	17.61	11.93	16.78	-2.64	7.68	07/01/1994
Teachers' Benchmark	3.88	6.94	-4.34	12.97	6.35	7.44	7.75	N/A	-10.86	13.78	12.21	20.27	-5.47	N/A	
Difference	-0.19	-1.71	2.13	-0.93	0.89	0.68	0.20	N/A	2.34	3.83	-0.28	-3.49	2.83	N/A	
Teachers' Retirement - Gross	3.84	5.72	-1.59	12.70	7.88	8.73	8.52	8.28	-7.93	18.32	12.52	17.45	-2.03	8.02	07/01/1994
All Public Plans (>\$5B) Total Fund Median	3.91	4.78	-3.86	11.79	6.99	8.23	7.54	8.14	-10.24	16.85	12.12	17.23	-2.52	7.90	
Rank	58	25	20	20	18	28	4	34	35	32	41	42	44	41	

Plan Sponsor TF Asset Allocation vs. All Public Plans (>\$5B) (Custom PG)

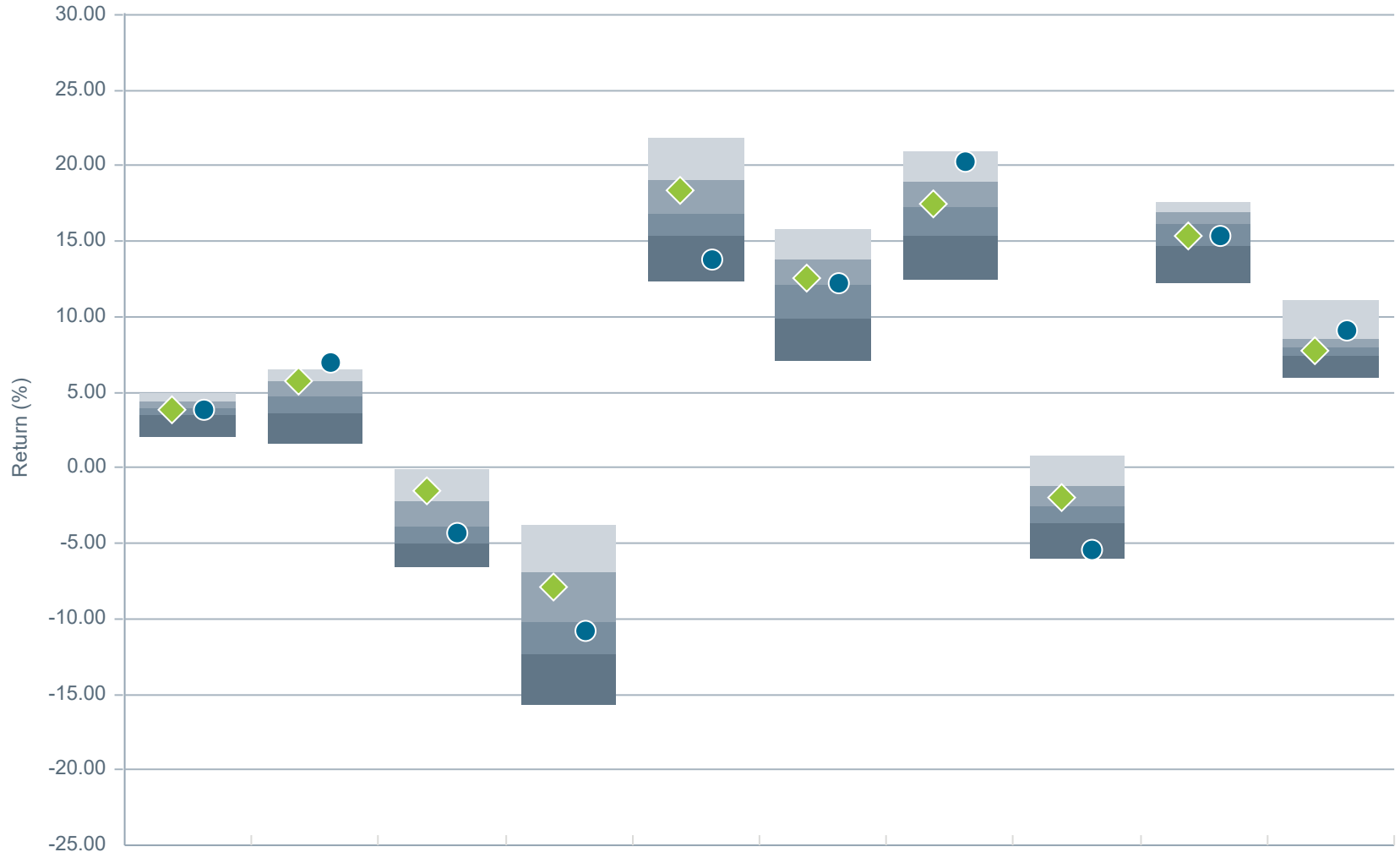


Net performance shown is net of all manager fees and expenses (Net-All). All Public Plans > \$5B Total Fund Median is reported gross of fees. Benchmark returns reflect unmanaged indices which are not impacted by management fees. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. The Allocation to Cash consists of the CAPP Cash Pension, all asset class STIFs, and Retirement Plan STIFs. It does not include Asset Class STIFs. Retirement plan benchmarks' inception dates were updated to 1/1/2011. US Fixed includes Core and Non-Core Fixed Income.



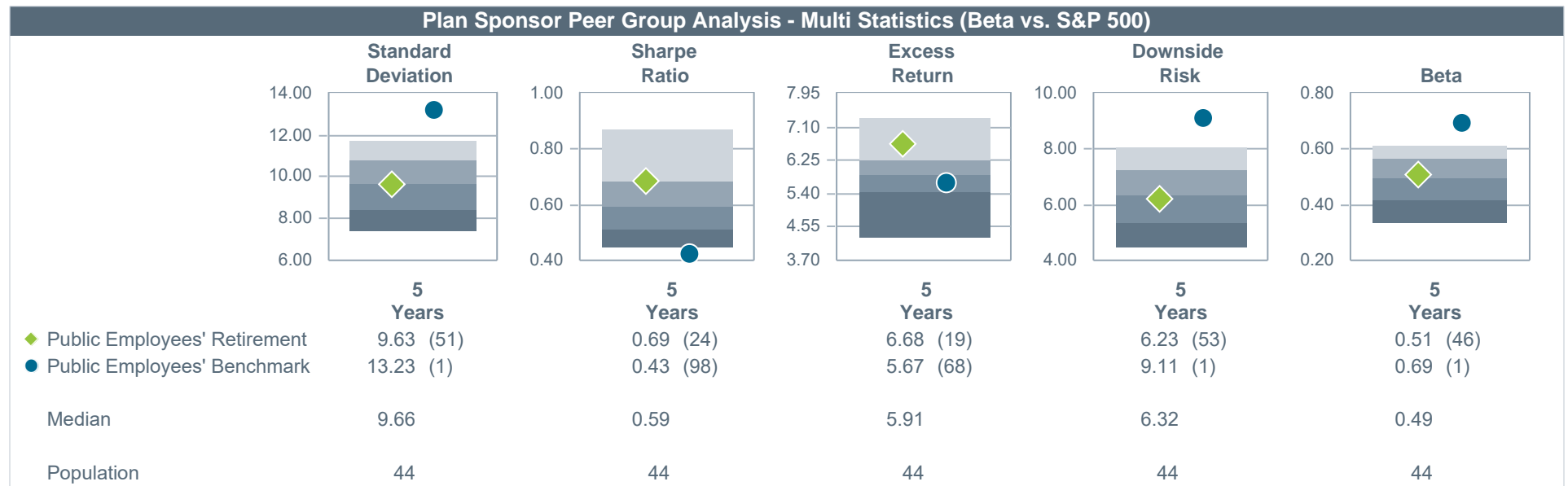
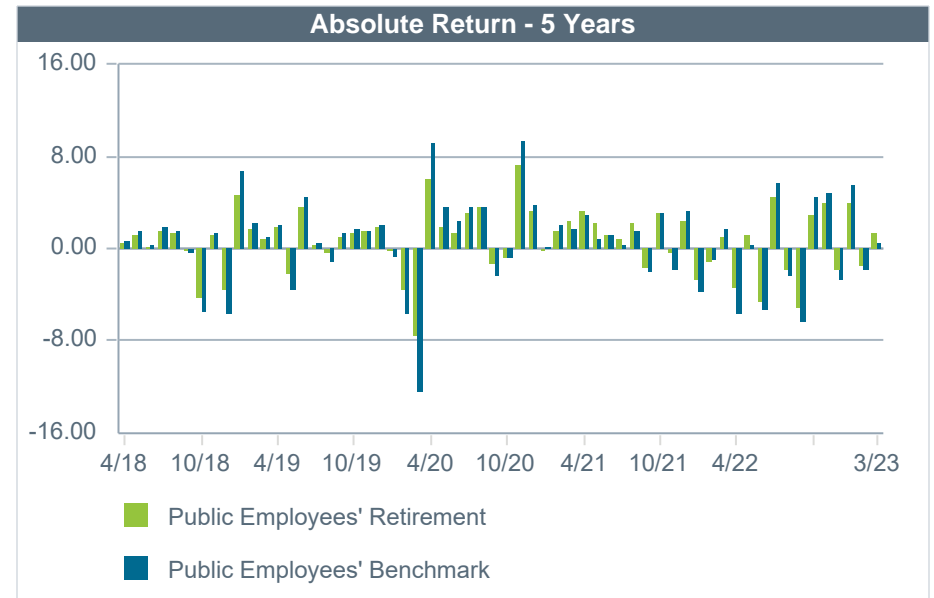
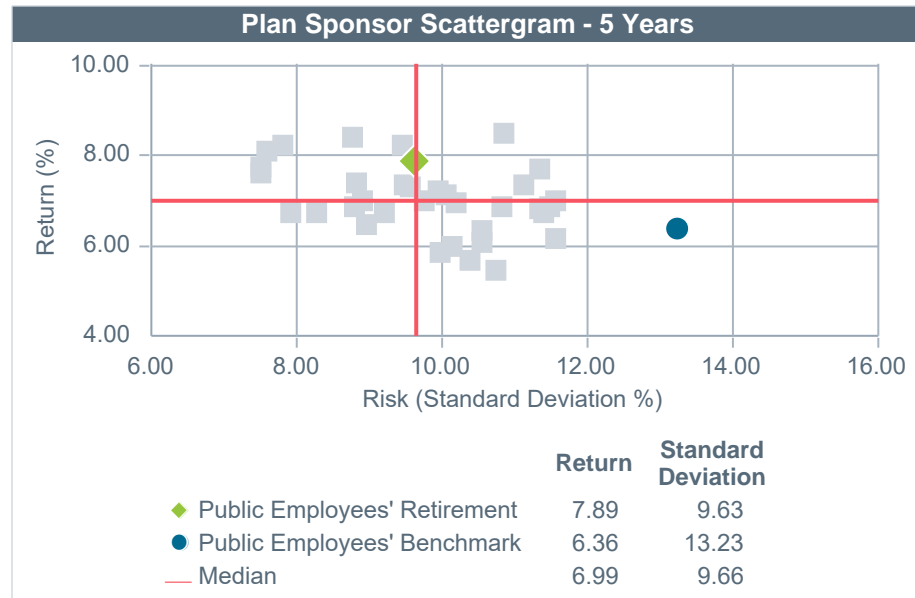
All Public Plans (>\$5B) (Custom PG)
Plan Sponsor Peer Group Analysis

As of March 31, 2023

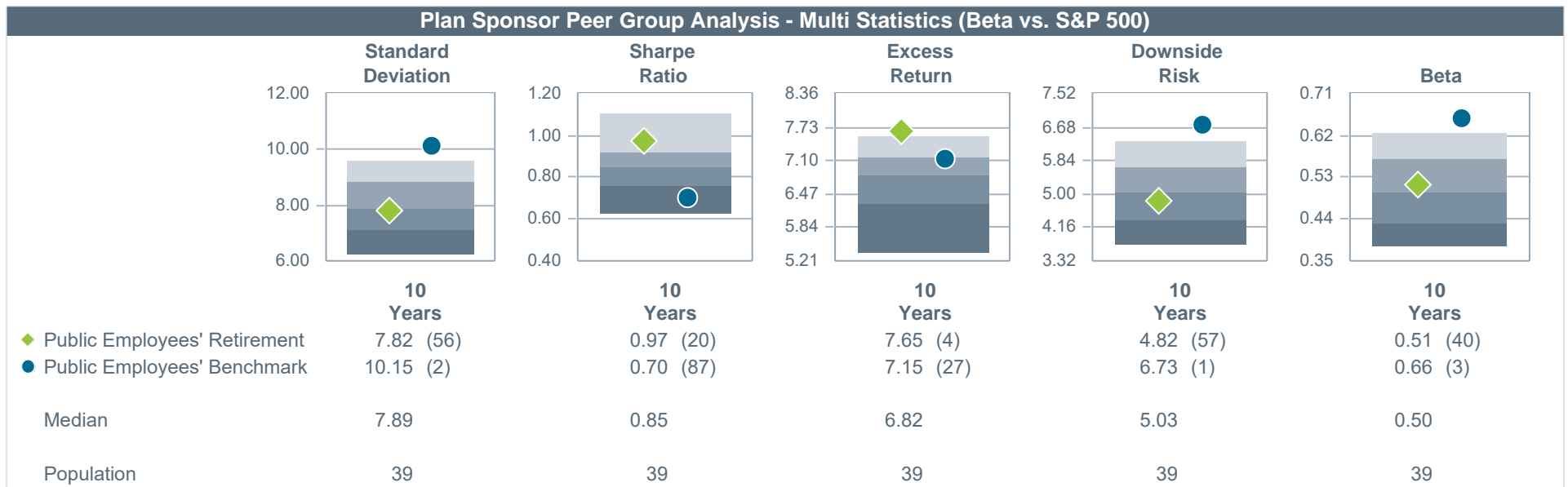
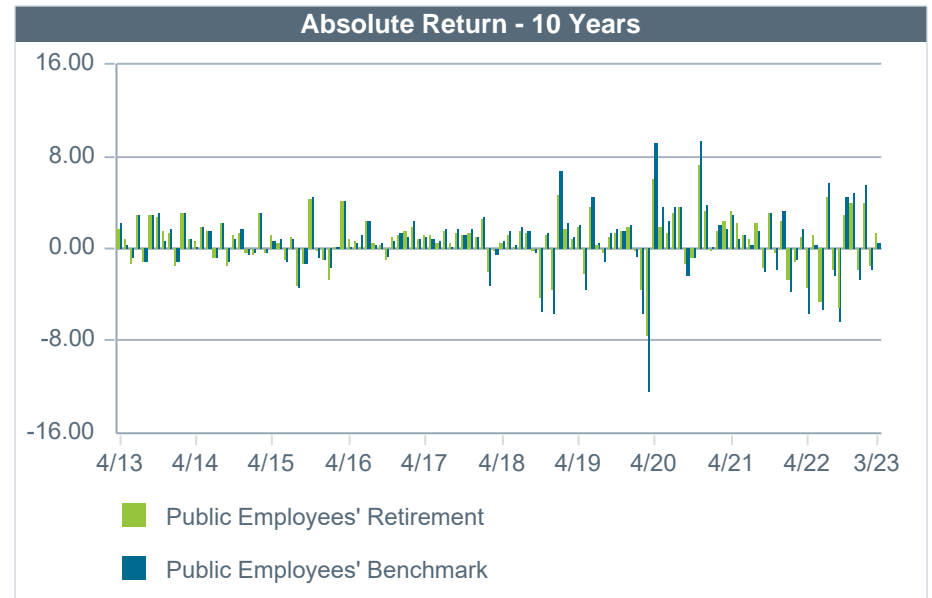
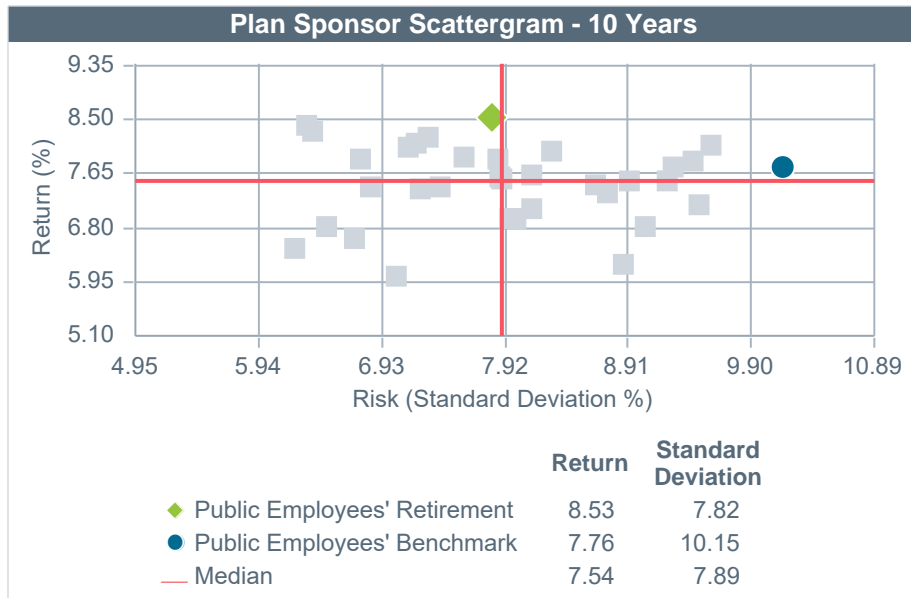


	QTD/ CYTD	FYTD	1 Year	2022	2021	2020	2019	2018	2017	2016
◆ Public Employees' Retirement	3.85 (58)	5.75 (25)	-1.55 (20)	-7.89 (35)	18.32 (32)	12.53 (41)	17.44 (42)	-2.03 (44)	15.34 (65)	7.78 (60)
● Public Employees' Benchmark	3.88 (56)	6.99 (1)	-4.30 (61)	-10.81 (58)	13.79 (87)	12.22 (49)	20.26 (13)	-5.47 (92)	15.34 (65)	9.12 (13)
Median	3.91	4.78	-3.86	-10.24	16.85	12.12	17.23	-2.52	16.15	8.01
Population	52	50	47	81	97	99	98	76	78	79

Performance is shown gross of fees. Parentheses contain percentile ranks. Fiscal year ends on 06/30.

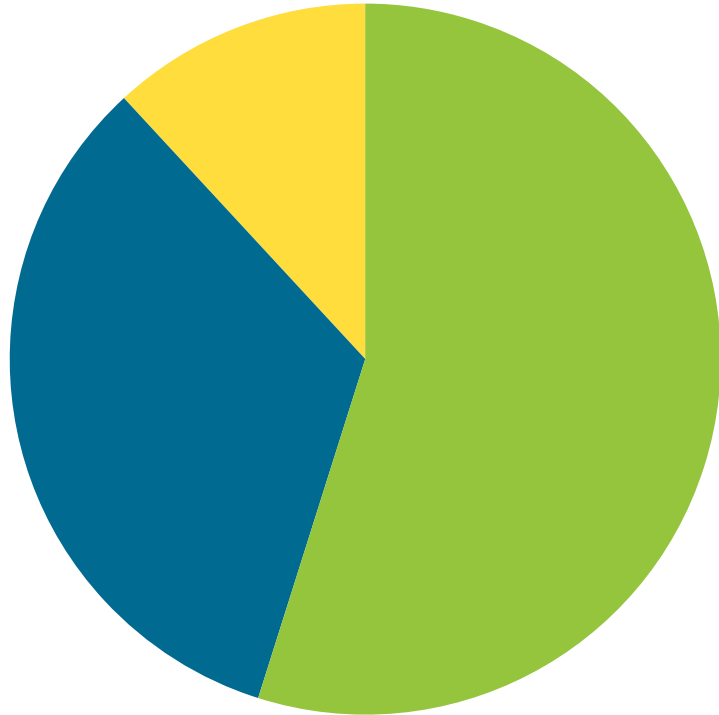


Performance shown is gross of fees. Calculation is based on monthly periodicity. Parentheses contain percentile ranks.



Performance shown is gross of fees. Calculation is based on monthly periodicity. Parentheses contain percentile ranks.

March 31, 2023 : \$24,944,597,634



	Market Value (\$)	Allocation (%)
Consolidated Asset Pension Pool (CAPP)	13,688,435,876	54.88
Short Term Investment Pool	8,293,623,007	33.25
Trust Funds Investment Pool	2,962,538,751	11.88

Allocations shown may not sum up to 100% exactly due to rounding. Market values do not include pending transactions.

**Comparative Performance
Investment Pools**

As of March 31, 2023

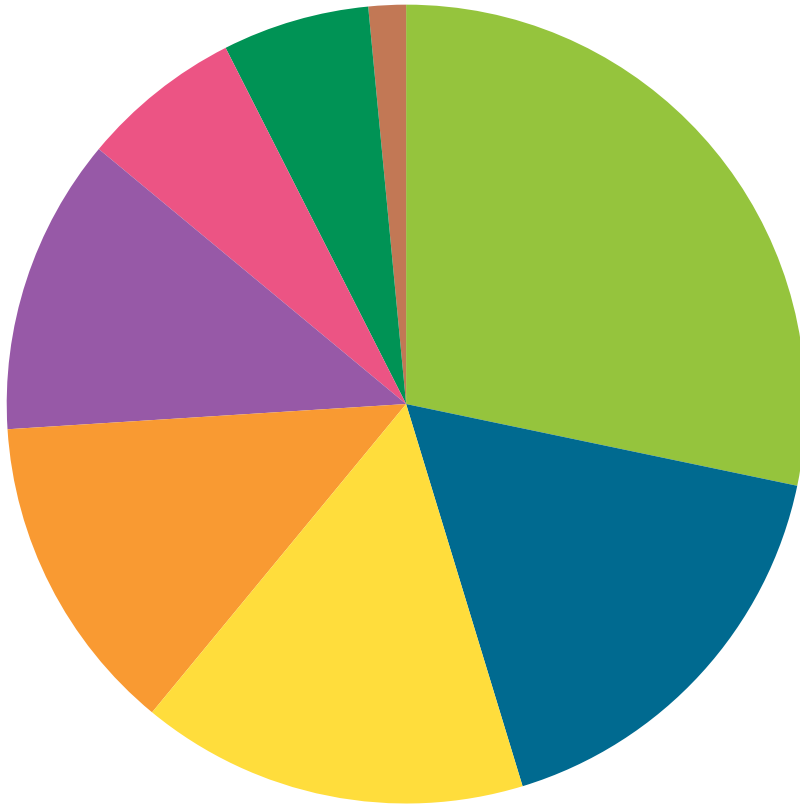
	QTD/ CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018	Since Incep.	Inception Date
Consolidated Asset Pension Pool (CAPP)	3.72	5.28	-2.25	12.19	7.34	N/A	N/A	-8.60	17.83	12.10	17.12	-2.74	7.88	04/01/2017
CAPP Custom Benchmark	3.91	7.00	-4.41	13.12	6.43	N/A	N/A	-10.99	13.95	12.38	20.70	-5.64	6.92	
Difference	-0.19	-1.72	2.16	-0.93	0.91	N/A	N/A	2.39	3.88	-0.28	-3.58	2.90	0.96	
Trust Funds Investment Pool	1.34	-0.58	-2.45	0.54	2.74	2.47	2.86	-6.26	1.49	7.23	8.98	0.45	5.49	10/01/1995
Trust Fund Custom Benchmark	0.82	0.32	-1.70	0.16	2.72	2.17	2.27	-5.05	0.71	7.51	8.72	0.01	4.70	
Difference	0.52	-0.90	-0.75	0.38	0.02	0.30	0.59	-1.21	0.78	-0.28	0.26	0.44	0.79	
Short Term Investment Pool	1.09	2.51	2.73	1.07	1.49	1.35	1.00	1.67	0.11	0.73	2.28	1.98	2.29	04/01/1997
Short Term Custom Index	1.13	2.65	2.81	0.98	1.37	1.27	0.95	1.69	0.04	0.36	2.14	1.95	2.21	
Difference	-0.04	-0.14	-0.08	0.09	0.12	0.08	0.05	-0.02	0.07	0.37	0.14	0.03	0.08	
iMoneynet Money Fund (Gross) Median	1.16	2.76	2.98	1.17	1.61	1.45	1.08	1.83	0.15	0.73	2.45	2.15	2.29	
Difference	-0.07	-0.25	-0.25	-0.10	-0.12	-0.10	-0.08	-0.16	-0.04	0.00	-0.17	-0.17	0.00	

Performance shown is net of all manager fees and expenses (Net-All). Benchmark returns reflect unmanaged indices which are not impacted by management fees. Fiscal year ends on 06/30. See the Addendum for custom index specification. Since inception performance may vary from State Street reported performance due to calculation methodology differences.

Asset Allocation
Consolidated Asset Pension Pool (CAPP)

As of March 31, 2023

March 31, 2023 : \$13,688,436,024



	Market Value (\$)	Allocation (%)
Domestic Equity	3,870,955,737	28.28
Private Investments	2,329,264,187	17.02
International Equity	2,145,888,919	15.68
Core Fixed Income	1,782,917,490	13.02
Real Estate	1,646,734,385	12.03
Non-Core Fixed Income	890,540,722	6.51
Real Assets*	814,556,293	5.95
Cash Pension	207,578,292	1.52

Allocations shown may not sum up to 100% due to rounding.
 *Formerly the Natural Resources pension asset class.



Comparative Performance Consolidated
Asset Pension Pool (CAPP)

As of March 31, 2023

	QTD/ CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018	Since Incep.	Inception Date
Domestic Equity	7.11	9.91	-8.44	18.91	10.08	11.58	11.46	-18.98	27.17	20.09	30.75	-7.09	9.39	05/01/2003
Domestic Equity Custom Index	7.35	9.97	-8.45	18.77	10.62	12.05	11.91	-19.22	26.12	21.10	31.14	-5.20	10.05	
Difference	-0.24	-0.06	0.01	0.14	-0.54	-0.47	-0.45	0.24	1.05	-1.01	-0.39	-1.89	-0.66	
International Equity	6.98	10.04	-5.44	12.24	2.50	6.00	4.57	-17.62	7.83	13.35	22.86	-14.99	4.59	04/01/1997
International Equity Custom Index	6.56	9.85	-5.84	12.20	2.35	5.83	4.26	-16.58	8.53	11.12	21.63	-14.76	4.83	
Difference	0.42	0.19	0.40	0.04	0.15	0.17	0.31	-1.04	-0.70	2.23	1.23	-0.23	-0.24	
Core Fixed Income	2.89	-0.14	-4.26	-2.16	1.01	0.91	1.48	-11.91	-1.54	8.25	6.90	0.95	5.13	04/01/1995
Core Fixed Income Custom Index	2.96	-0.09	-4.78	-2.77	0.50	0.53	1.12	-13.01	-1.54	7.51	6.39	0.68	4.48	
Difference	-0.07	-0.05	0.52	0.61	0.51	0.38	0.36	1.10	0.00	0.74	0.51	0.27	0.65	
Non-Core Fixed Income	2.33	5.91	-4.40	4.11	2.34	3.61	3.42	-11.25	3.21	6.40	13.98	-2.27	6.30	06/01/2009
Bloomberg US HY 2% Issuer Cap Index	3.57	7.19	-3.35	5.88	3.19	5.07	4.09	-11.18	5.26	7.05	14.32	-2.08	7.39	
Difference	-1.24	-1.28	-1.05	-1.77	-0.85	-1.46	-0.67	-0.07	-2.05	-0.65	-0.34	-0.19	-1.09	
Real Assets	2.39	8.66	12.06	14.17	5.24	N/A	N/A	15.88	21.24	-13.43	-2.18	5.55	5.31	04/01/2017
Real Assets Custom Index	1.46	5.17	-3.62	18.64	0.97	5.09	0.24	1.36	13.32	-12.32	13.06	-11.75	2.76	
Difference	0.93	3.49	15.68	-4.47	4.27	N/A	N/A	14.52	7.92	-1.11	-15.24	17.30	2.55	
Real Estate	-2.33	-0.14	6.50	10.35	8.41	8.45	9.70	12.00	20.00	-0.35	6.97	9.19	4.99	06/01/2006
Real Estate Custom Index	-5.17	-0.55	6.55	12.78	6.47	5.03	7.30	20.96	13.64	-19.66	25.84	-4.57	5.39	
Difference	2.84	0.41	-0.05	-2.43	1.94	3.42	2.40	-8.96	6.36	19.31	-18.87	13.76	-0.40	
Cash Pension	1.06	2.71	3.12	1.18	1.57	N/A	N/A	2.06	0.13	0.84	2.28	2.00	1.53	05/01/2017
Short Term Custom Index	1.13	2.65	2.81	0.98	1.37	1.27	0.95	1.69	0.04	0.36	2.14	1.95	1.38	
Difference	-0.07	0.06	0.31	0.20	0.20	N/A	N/A	0.37	0.09	0.48	0.14	0.05	0.15	
Private Investments*	1.15	0.19	5.31	18.18	15.15	14.43	13.62	5.94	39.81	10.91	12.95	11.55	12.97	05/01/2002
Private Investments Custom Index	3.75	9.64	-6.16	21.68	7.37	9.69	12.55	-13.86	16.54	18.90	27.38	-9.99	10.60	
Difference	-2.60	-9.45	11.47	-3.50	7.78	4.74	1.07	19.80	23.27	-7.99	-14.43	21.54	2.37	

For additional information on the Private Investments Custom Index, please see the Addendum.

*Performance is based on the prior quarter's fair market value adjusted for cash flows during the most recent quarterly period.

Performance shown is net of all manager fees and expenses (Net-All). Benchmark returns reflect unmanaged indices which are not impacted by management fees. Fiscal year ends on 06/30. Please see Addendum for custom index specification. Since inception performance may vary from State Street reported performance due to calculation methodology differences.

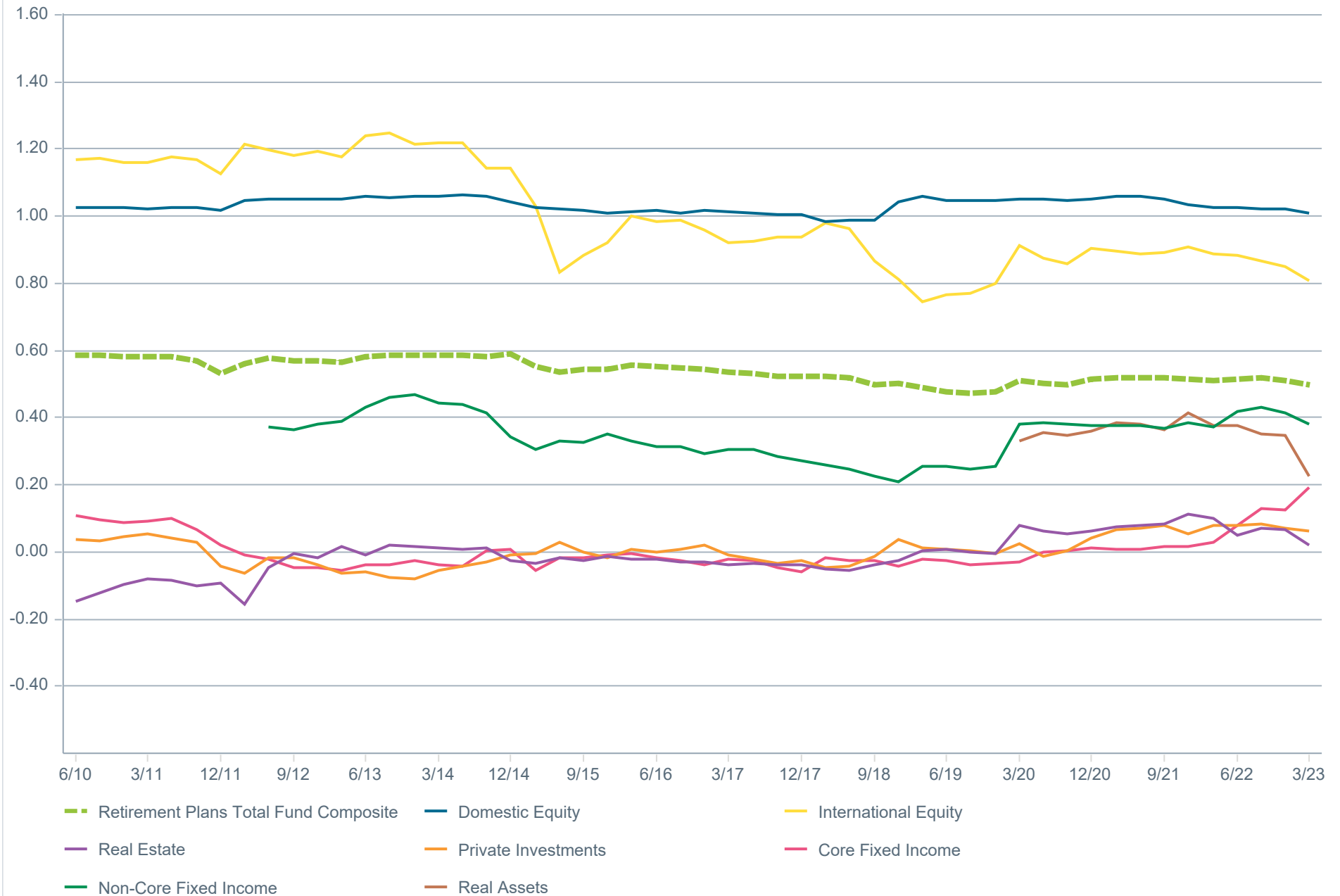
**Comparative Performance
Investment Pools**

As of March 31, 2023

	QTD/ CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018	Since Incep.	Inception Date
Domestic Equity	7.12	9.94	-8.41	19.09	10.31	11.85	11.74	-18.95	27.47	20.37	31.13	-6.78	9.66	05/01/2003
All Public Plans-US Equity Segment Median	7.02	9.38	-8.03	18.40	9.33	11.39	10.98	-18.06	24.57	18.92	30.04	-5.83	9.52	
Rank	42	34	63	22	25	29	23	63	30	32	28	74	40	
Population	56	53	53	47	46	43	35	65	70	67	65	66	10	
International Equity	7.01	10.11	-5.29	12.53	2.79	6.32	4.89	-17.46	8.18	13.71	23.28	-14.72	5.00	04/01/1997
All Public Plans-Intl. Equity Segment Median	7.63	11.54	-4.56	13.49	3.81	7.03	5.61	-16.99	9.51	12.76	23.71	-13.63	N/A	
Rank	66	67	68	74	71	77	80	56	74	45	62	78	N/A	
Population	54	54	54	49	48	48	38	65	69	68	65	68	N/A	
Core Fixed Income	2.90	-0.11	-4.22	-2.11	1.05	0.95	1.52	-11.87	-1.48	8.31	6.94	1.00	5.25	04/01/1995
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	3.16	0.23	-4.67	-1.82	1.34	1.39	1.78	-12.96	-1.23	8.51	9.18	0.06	4.97	
Rank	85	84	19	69	80	83	79	13	64	54	98	7	19	
Population	130	130	130	130	127	125	122	140	147	155	157	164	60	
Non-Core Fixed Income	2.35	5.99	-4.23	4.46	2.77	4.09	3.90	-11.05	3.64	6.91	14.60	-1.71	6.82	06/01/2009
IM U.S. High Yield Bonds (SA+CF) Median	3.39	7.10	-2.41	5.99	3.46	4.96	4.26	-9.58	5.31	6.55	14.23	-1.64	7.33	
Rank	91	85	81	89	89	84	70	82	91	43	41	53	79	
Population	138	138	138	136	131	123	111	154	161	175	188	198	88	
Trust Funds Investment Pool	1.39	-0.42	-2.21	0.69	2.87	2.58	2.97	-6.02	1.59	7.30	9.06	0.53	5.56	10/01/1995
All Public Plans-US Fixed Income Segment Median	2.98	0.34	-4.39	-0.88	1.60	1.80	2.01	-11.83	-0.11	8.59	9.25	-0.25	N/A	
Rank	96	78	20	20	1	16	7	14	12	78	53	22	N/A	
Population	59	59	59	52	50	49	43	70	73	74	68	72	N/A	
Real Estate	-2.07	0.47	7.57	11.54	9.83	9.98	11.17	13.02	21.37	1.11	8.65	11.12	6.41	06/01/2006
All Public Plans-Real Estate Segment Median	-1.73	-0.10	7.15	10.99	9.34	9.73	11.34	13.79	20.84	1.66	7.65	9.04	N/A	
Rank	55	47	44	35	46	47	55	56	47	72	39	15	N/A	
Population	40	38	38	29	24	21	14	42	41	38	35	27	N/A	

Performance shown is gross of fees. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. The All Public Plans US Equity, Intl Equity, US Fixed Income, and Real Estate segments currently do not have enough members to calculate trailing period returns.

Beta

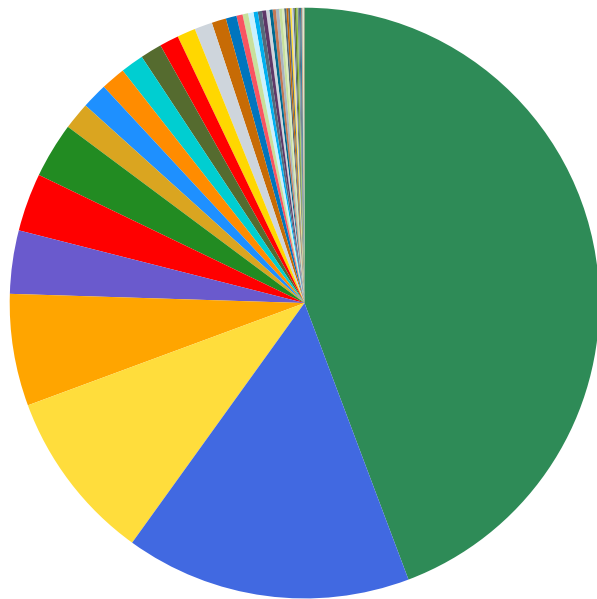


The objective of the Total Fund Beta is to measure the aggregate level of non-diversifiable or systematic equity risk exposure of the Client Retirement Plans. The Total Fund Beta is calculated using the S&P 500 (Cap Wtd) as the benchmark and is based on monthly periodicity. It represents a measure of the sensitivity of the total fund to movements of the S&P 500 (Cap Wtd) over the preceding three year period.



**Asset Allocation
Trust Accounts**

March 31, 2023 : \$9,208,231,974



REDACTED

Market Value (\$)	Allocation (%)
4,076,600,838	44.27
1,442,777,970	15.67
868,713,642	9.43
563,881,193	6.12
319,339,728	3.47
292,685,313	3.18
279,469,991	3.04
137,333,372	1.49
129,505,578	1.41
124,246,663	1.35
116,099,086	1.26
109,325,216	1.19
96,856,199	1.05
92,539,277	1.00
90,186,475	0.98
72,151,546	0.78
54,831,651	0.60
30,639,725	0.33
28,309,183	0.31
27,054,396	0.29
21,965,726	0.24
20,911,143	0.23
19,927,140	0.22
16,982,425	0.18
16,472,431	0.18
16,084,755	0.17
16,078,526	0.17
14,443,753	0.16
10,757,547	0.12
10,648,000	0.12
9,144,066	0.10
9,064,109	0.10
8,540,524	0.09
8,088,978	0.09
7,622,783	0.08
7,360,638	0.08
6,873,631	0.07
6,571,201	0.07
6,494,968	0.07
4,904,677	0.05
3,928,356	0.04
3,368,058	0.04
2,653,514	0.03
2,073,732	0.02
1,421,216	0.02
1,126,527	0.01
1,012,483	0.01
540,904	0.01
322,592	0.00
249,885	0.00
50,646	0.00

Allocations shown may not sum up to 100% exactly due to rounding.

Comparative Performance
Trust Accounts

As of March 31, 2023

	QTD/ CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018	Since Incep.	Inception Date
	1.08	2.51	2.72	1.07	1.54	1.33	1.27	1.68	0.13	0.73	2.41	1.85	3.67	12/01/1993
	1.31	1.10	-0.23	N/A	N/A	N/A	N/A	-3.87	1.36	N/A	N/A	N/A	0.38	05/01/2020
	1.30	1.16	-0.13	1.27	3.14	N/A	N/A	-3.71	1.34	6.80	8.56	N/A	3.13	03/01/2018
	1.31	1.00	-0.47	1.19	3.08	2.71	3.01	-4.27	1.45	7.12	8.67	0.48	4.35	07/01/2005
	1.28	1.24	0.09	1.21	2.74	2.37	2.30	-3.26	1.26	6.07	6.76	1.24	2.98	11/01/2008
	1.28	1.24	0.14	1.12	2.66	2.30	2.34	-3.17	1.19	5.65	7.04	0.96	3.22	11/01/2008
	1.32	1.00	-0.43	1.19	3.06	2.70	3.00	-4.20	1.43	6.99	8.64	0.47	5.55	12/01/1993
	1.32	1.08	-0.29	1.20	3.06	2.69	2.98	-4.02	1.37	6.86	8.63	0.48	5.53	12/01/1993
	1.14	2.16	2.09	1.16	2.35	2.08	1.96	0.48	0.42	2.65	5.52	1.20	1.93	01/01/2013
REDACTED	1.26	1.38	0.35	N/A	N/A	N/A	N/A	-2.81	N/A	N/A	N/A	N/A	0.50	03/01/2021
	1.32	0.92	-0.46	1.19	3.04	2.66	2.93	-4.18	1.41	7.01	8.54	0.46	4.30	08/01/2007
	1.31	1.10	-0.22	N/A	N/A	N/A	N/A	-3.85	1.36	N/A	N/A	N/A	0.41	05/01/2020
	1.11	1.71	1.09	0.46	1.36	1.18	1.01	-1.41	0.46	1.85	3.33	1.50	2.68	11/01/1997
	1.26	1.33	0.37	0.73	2.04	1.56	1.40	-2.79	0.98	3.84	5.46	1.14	3.59	12/01/1993
	1.31	1.03	-0.38	1.14	3.03	2.65	2.92	-4.13	1.38	6.83	8.62	0.51	4.98	12/01/1993
	1.18	1.98	1.67	0.92	1.82	1.49	1.36	-0.33	0.63	2.05	4.01	1.37	3.60	12/01/1993
	1.17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11/01/2022
	1.31	1.08	-0.27	1.20	3.03	N/A	N/A	-3.94	1.43	6.71	8.45	0.57	2.30	07/01/2016
	1.31	1.36	-0.07	N/A	N/A	N/A	N/A	-3.88	1.19	N/A	N/A	N/A	-0.29	10/01/2020
	1.29	1.17	-0.09	N/A	N/A	N/A	N/A	-3.60	1.25	N/A	N/A	N/A	0.45	05/01/2020
	1.29	1.38	0.37	N/A	N/A	N/A	N/A	-3.27	1.36	N/A	N/A	N/A	0.57	05/01/2020
	1.29	1.53	0.39	1.14	2.78	2.44	2.61	-2.92	1.14	5.61	7.48	0.74	4.70	09/01/1996
	1.19	2.29	2.19	0.96	1.57	1.43	1.17	0.58	0.30	1.30	2.87	1.87	1.88	08/01/2004
	1.10	2.42	2.55	1.07	1.56	1.41	1.08	1.36	0.20	1.01	2.56	1.91	1.73	03/01/2003
	1.28	1.12	-0.27	1.18	2.92	2.57	2.74	-3.95	1.44	6.65	8.00	0.67	3.74	11/01/2008
	1.13	1.95	1.71	1.40	2.26	2.00	1.89	-0.16	0.73	3.47	4.54	1.42	2.78	08/01/2002
	1.14	2.22	2.16	1.01	1.73	1.51	1.39	0.57	0.26	1.70	3.39	1.96	1.38	10/01/2011
	1.16	2.13	1.92	1.16	2.06	1.76	N/A	0.10	0.46	2.55	4.43	1.62	1.76	04/01/2016

Performance shown is gross of fees. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.



Comparative Performance
Trust Accounts

As of March 31, 2023

	QTD/ CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018	Since Incep.	Inception Date
	1.33	0.96	-0.45	1.17	3.08	2.70	2.96	-4.23	1.41	7.19	8.62	0.49	4.17	08/01/2007
	1.08	1.18	0.55	1.65	2.97	2.72	3.03	-2.02	1.82	5.57	6.81	1.28	5.32	12/01/1993
	5.74	7.02	-5.86	10.47	5.95	6.63	N/A	-15.55	13.16	14.06	20.77	-4.88	6.13	09/01/2015
	1.31	1.08	-0.28	1.21	3.03	N/A	N/A	-3.96	1.41	6.78	8.47	0.51	2.64	06/01/2016
	1.34	0.93	-0.55	1.18	3.12	2.74	3.05	-4.44	1.48	7.23	8.88	0.44	5.62	12/01/1993
	1.28	1.09	-0.41	1.13	2.78	N/A	N/A	-4.24	1.39	6.97	7.88	-0.13	2.41	01/01/2018
	1.29	1.18	-0.06	1.05	2.35	2.00	1.85	-3.54	1.29	5.62	5.64	1.57	2.11	11/01/2008
	2.42	1.93	-1.96	2.22	3.09	2.97	3.18	-7.68	3.04	7.62	9.65	0.38	5.15	12/01/1993
	1.31	1.12	-0.15	1.17	2.88	2.55	2.80	-3.70	1.27	6.47	7.92	0.57	4.85	02/01/1999
	1.51	2.94	3.14	1.21	1.58	1.41	1.04	1.66	0.13	0.73	2.28	1.98	2.87	12/01/1993
	1.35	0.98	-0.52	1.18	3.07	2.69	3.01	-4.40	1.51	7.10	8.67	0.46	5.05	01/01/2001
	1.09	2.40	2.53	0.92	1.40	1.28	0.98	1.34	0.10	0.63	2.28	1.97	2.69	12/01/1993
	1.34	0.95	-0.52	1.15	3.10	2.72	3.03	-4.37	1.47	7.15	8.81	0.46	5.50	12/01/1993
	1.34	0.95	-0.51	1.18	3.10	2.72	3.02	-4.37	1.47	7.15	8.80	0.45	5.20	06/01/2000
	1.34	1.00	-0.49	1.20	3.11	2.73	3.04	-4.37	1.47	7.19	8.84	0.43	6.19	07/01/1991
	1.33	0.93	-0.55	1.08	2.96	2.60	2.87	-4.37	1.53	6.68	8.50	0.49	5.14	07/01/1999
	1.32	0.99	-0.43	1.12	3.02	2.63	2.87	-4.22	1.36	6.90	8.52	0.67	5.07	06/01/1999
	1.11	2.40	2.49	1.15	2.00	1.76	1.59	1.22	0.32	1.55	4.24	1.49	1.59	09/01/2010
	1.34	0.93	-0.55	1.18	3.12	2.74	3.05	-4.44	1.48	7.23	8.88	0.44	4.86	12/01/1993
	1.33	1.05	-0.35	1.15	3.01	2.64	2.91	-4.10	1.38	6.75	8.54	0.51	4.98	12/01/1993
	0.98	1.48	0.85	N/A	N/A	N/A	N/A	-1.42	N/A	N/A	N/A	N/A	0.52	04/01/2021
	1.08	2.51	2.72	1.07	1.50	1.35	1.20	1.68	0.13	0.73	2.28	1.98	5.80	09/01/1999
	1.08	2.51	2.72	1.07	1.50	1.36	1.20	1.68	0.13	0.73	2.28	1.98	3.78	09/01/2005

Performance shown is gross of fees. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.



Equity Composites



**Comparative Performance
Equity Composites**

As of March 31, 2023

	QTD/ CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018	Since Incep.	Inception Date
Domestic Large Cap Equity - Net	7.75	10.09	-8.34	19.00	11.26	12.46	12.31	-19.30	28.39	21.44	31.06	-4.71	8.87	12/01/2006
S&P 500 Index (Cap Wtd)	7.50	9.98	-7.73	18.60	11.19	12.42	12.24	-18.11	28.71	18.40	31.49	-4.38	8.99	
Difference	0.25	0.11	-0.61	0.40	0.07	0.04	0.07	-1.19	-0.32	3.04	-0.43	-0.33	-0.12	
Domestic Large Cap Equity - Gross	7.75	10.10	-8.33	19.13	11.42	12.61	12.47	-19.29	28.61	21.66	31.29	-4.52	9.08	12/01/2006
IM U.S. Large Cap Equity (SA+CF) Median	6.49	9.77	-7.58	18.48	10.41	12.10	11.99	-17.14	27.35	18.36	30.42	-4.86	9.06	
Rank	33	39	64	32	29	35	34	67	37	34	42	46	49	
Domestic Mid Cap Equity - Net	3.82	12.19	-5.09	22.19	7.97	9.90	9.28	-13.07	25.15	13.53	28.03	-10.75	8.51	01/01/2005
Russell Mid Cap Index	4.06	9.70	-8.78	19.20	8.05	9.88	10.05	-17.32	22.58	17.10	30.54	-9.06	8.99	
Difference	-0.24	2.49	3.69	2.99	-0.08	0.02	-0.77	4.25	2.57	-3.57	-2.51	-1.69	-0.48	
Domestic Mid Cap Equity - Gross	3.82	12.19	-5.09	22.19	8.07	10.16	9.65	-13.07	25.15	13.53	28.11	-10.28	8.92	01/01/2005
IM U.S. Mid Cap Equity (SA+CF) Median	4.67	10.87	-6.82	20.08	8.45	10.64	10.67	-13.99	24.72	14.37	30.28	-9.67	9.54	
Rank	60	35	34	29	57	58	77	43	44	59	66	55	79	
Domestic Small Cap Equity - Net	3.73	10.30	-8.06	21.73	7.01	9.97	9.65	-16.81	27.56	13.07	25.76	-10.51	10.95	03/01/2003
Russell 2000 Index	2.74	6.75	-11.61	17.51	4.71	8.55	8.04	-20.44	14.82	19.96	25.53	-11.01	9.79	
Difference	0.99	3.55	3.55	4.22	2.30	1.42	1.61	3.63	12.74	-6.89	0.23	0.50	1.16	
Domestic Small Cap Equity - Gross	3.74	10.32	-8.04	22.00	7.33	10.39	10.15	-16.79	28.00	13.50	26.25	-10.09	11.45	03/01/2003
IM U.S. Small Cap Equity (SA+CF) Median	3.89	9.60	-7.74	21.55	7.31	10.30	10.03	-16.45	23.78	17.40	25.79	-10.34	11.80	
Rank	53	44	53	45	50	50	47	53	33	58	47	49	58	

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all composites. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.



**Comparative Performance
Equity Composites**

As of March 31, 2023

	QTD/ CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018	Since Incep.	Inception Date
International Large Cap Passive - Net	7.21	9.93	-4.71	11.87	2.55	6.03	4.41	-16.10	7.76	10.81	21.59	-14.04	5.83	06/01/2009
MSCI ACW Ex US Index (USD) (Net)	6.87	10.03	-5.07	11.80	2.47	5.86	4.17	-16.00	7.82	10.65	21.51	-14.20	5.64	
Difference	0.34	-0.10	0.36	0.07	0.08	0.17	0.24	-0.10	-0.06	0.16	0.08	0.16	0.19	
International Large Cap Passive - Gross	7.22	9.96	-4.66	11.94	2.61	6.10	4.49	-16.06	7.82	10.88	21.66	-13.98	5.90	06/01/2009
International Equity Active - Net	7.10	10.21	-6.14	12.79	2.67	6.19	5.29	-19.26	7.77	15.91	25.83	-16.18	3.67	04/01/1997
MSCI ACW Ex US Index (USD) (Net)	6.87	10.03	-5.07	11.80	2.47	5.86	4.17	-16.00	7.82	10.65	21.51	-14.20	4.91	
Difference	0.23	0.18	-1.07	0.99	0.20	0.33	1.12	-3.26	-0.05	5.26	4.32	-1.98	-1.24	
International Equity Active - Gross	7.25	10.68	-5.61	13.37	3.21	6.75	5.83	-18.82	8.30	16.50	26.48	-15.73	4.19	04/01/1997
IM International Large Cap Core Equity (SA+CF) Median	8.11	13.56	-2.78	13.39	3.84	6.69	5.91	-15.89	12.13	11.69	23.58	-14.32	6.77	
Rank	72	79	80	52	70	48	54	74	79	29	31	70	100	
International Value - Net	6.14	9.33	-5.49	13.61	2.74	6.65	5.15	-13.14	9.32	9.31	20.76	-13.97	2.65	11/01/2006
MSCI ACW Ex US Val Index (USD) (Net)	5.16	8.97	-4.00	13.82	1.26	5.00	3.06	-8.59	10.46	-0.77	15.72	-13.97	2.18	
Difference	0.98	0.36	-1.49	-0.21	1.48	1.65	2.09	-4.55	-1.14	10.08	5.04	0.00	0.47	
International Value - Gross	6.27	9.73	-5.04	14.16	3.25	7.19	5.70	-12.73	9.85	9.87	21.37	-13.52	3.22	11/01/2006
IM International Large Cap Value Equity (SA+CF) Median	8.75	14.78	0.49	15.62	3.48	6.55	5.51	-9.35	11.77	4.65	21.15	-14.75	4.24	
Rank	83	88	88	60	56	34	46	67	64	27	46	39	86	
International Growth - Net	9.90	14.07	-3.43	10.65	3.56	5.89	5.04	-23.99	3.79	23.08	31.39	-16.09	3.40	11/01/2006
MSCI ACW Ex US Grth Index (USD) (Net)	8.59	11.10	-6.35	9.49	3.36	6.47	5.08	-23.05	5.09	22.20	27.34	-14.43	4.03	
Difference	1.31	2.97	2.92	1.16	0.20	-0.58	-0.04	-0.94	-1.30	0.88	4.05	-1.66	-0.63	
International Growth - Gross	10.04	14.53	-2.91	11.24	4.12	6.48	5.60	-23.58	4.33	23.74	32.10	-15.61	3.95	11/01/2006
IM International Large Cap Growth Equity (SA+CF) Median	9.83	14.90	-4.95	12.55	5.23	7.94	6.81	-23.82	10.96	23.56	29.67	-13.61	5.43	
Rank	48	55	31	69	74	85	96	50	83	50	25	67	94	
International Small Cap - Net	4.13	5.84	-11.41	13.82	0.77	5.30	5.34	-21.69	11.57	14.63	23.91	-18.90	4.13	09/01/2006
MSCI ACWI Ex US Sm Cap Index IMI (USD) (Net)	4.70	8.70	-10.37	15.04	1.67	5.66	5.06	-19.97	12.93	14.24	22.42	-18.20	4.78	
Difference	-0.57	-2.86	-1.04	-1.22	-0.90	-0.36	0.28	-1.72	-1.36	0.39	1.49	-0.70	-0.65	

Gross of fees performance is not available (N/A) for the International Small Cap composite which currently consists of Acadian Ex US Small Cap (SA) and BlackRock MSCI ACW Ex-US Sm Cap Index (CF).

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all composites. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.



Composite	Market Value (\$)	Since Inception	Inception Date	+/- Benchmark
Domestic Large Cap Equity	3,293,683,540	8.87	Dec-2006	-0.10
Domestic Mid Cap Equity	18,175,375	8.51	Jan-2005	-0.48
Domestic Small Cap Equity	556,622,821	10.95	Mar-2003	1.16
International Large Cap Passive	978,319,072	5.83	Jun-2009	0.19
International Active	1,015,666,521	3.67	Apr-1997	-1.24
International Value	481,450,515	2.65	Nov-2006	0.47
International Growth	396,573,821	3.40	Nov-2006	-0.63
International Small Cap	289,686,143	4.13	Sep-2006	-0.65

Performance shown is gross of fees. Since inception performance may vary from State Street reported performance due to calculation methodology differences. Gross of fees performance is not available (N/A) for the International Small Cap composite, which currently consists of Acadian Ex US Small Cap (SA) and BlackRock MSCI ACW Ex US Sm Cap Index (CF). No comparable peer group exists for the International Large Cap Passive Composite. The International Large Cap Passive composite includes the International Equity Pool STIF which differs from State Street.

Composite - Performance Since Inception vs. Benchmark (Sorted)

As of March 31, 2023

Composite	Market Value (\$)	Since Inception	Inception Date	+/- Benchmark
Domestic Small Cap Equity	556,622,821	10.95	Mar-2003	1.16
International Value	481,450,515	2.65	Nov-2006	0.47
International Large Cap Passive	978,319,072	5.83	Jun-2009	0.19
Domestic Large Cap Equity	3,293,683,540	8.87	Dec-2006	-0.10
Domestic Mid Cap Equity	18,175,375	8.51	Jan-2005	-0.48
International Growth	396,573,821	3.40	Nov-2006	-0.63
International Small Cap	289,686,143	4.13	Sep-2006	-0.65
International Active	1,015,666,521	3.67	Apr-1997	-1.24

Performance shown is gross of fees. Since inception performance may vary from State Street reported performance due to calculation methodology differences. Gross of fees performance is not available (N/A) for the International Small Cap composite, which currently consists of Acadian Ex US Small Cap (SA) and BlackRock MSCI ACW Ex US Sm Cap Index (CF). No comparable peer group exists for the International Large Cap Passive Composite. The International Large Cap Passive composite includes the International Equity Pool STIF which differs from State Street.

Composite	Market Value (\$)	Since Inception	Inception Date	Percentile	+/- Median	Population
Domestic Large Cap Equity	3,293,683,540	9.08	Dec-2006	82	-0.13	38
Domestic Mid Cap Equity	18,175,375	8.92	Jan-2005	81	-0.80	103
Domestic Small Cap Equity	556,622,821	11.45	Mar-2003	58	-0.36	217
International Large Cap Passive	978,319,072	5.90	Jun-2009	N/A	N/A	N/A
International Active	1,015,666,521	4.19	Apr-1997	100	-2.58	40
International Value	481,450,515	3.22	Nov-2006	85	-1.02	60
International Growth	396,573,821	3.95	Nov-2006	94	-1.54	43
International Small Cap	289,686,143	N/A	Sep-2006	N/A	N/A	N/A

Performance shown is gross of fees. Since inception performance may vary from State Street reported performance due to calculation methodology differences. Gross of fees performance is not available (N/A) for the International Small Cap composite, which currently consists of Acadian Ex US Small Cap (SA) and BlackRock MSCI ACW Ex US Sm Cap Index (CF). No comparable peer group exists for the International Large Cap Passive Composite. The International Large Cap Passive composite includes the International Equity Pool STIF which differs from State Street.

Composite	Market Value (\$)	Since Inception	Inception Date	Percentile	+/- Median	Population
Domestic Large Cap Equity	3,293,683,540	9.08	Dec-2006	82	-0.13	38
Domestic Small Cap Equity	556,622,821	11.45	Mar-2003	58	-0.36	217
Domestic Mid Cap Equity	18,175,375	8.92	Jan-2005	81	-0.80	103
International Value	481,450,515	3.22	Nov-2006	85	-1.02	60
International Growth	396,573,821	3.95	Nov-2006	94	-1.54	43
International Active	1,015,666,521	4.19	Apr-1997	100	-2.58	40
International Large Cap Passive	978,319,072	5.90	Jun-2009	N/A	N/A	N/A
International Small Cap	289,686,143	N/A	Sep-2006	N/A	N/A	N/A

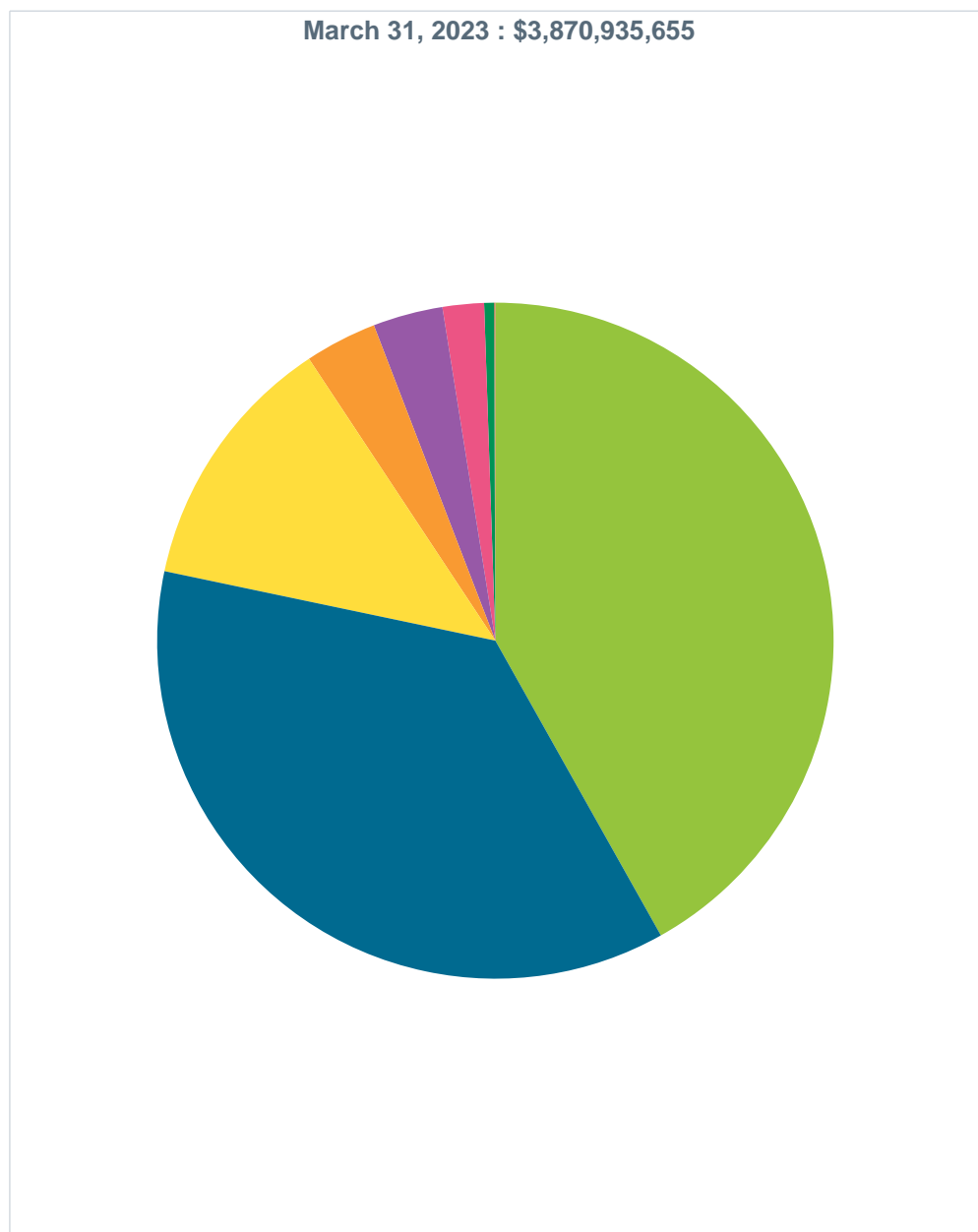
Performance shown is gross of fees. Since inception performance may vary from State Street reported performance due to calculation methodology differences. Gross of fees performance is not available (N/A) for the International Small Cap composite, which currently consists of Acadian Ex US Small Cap (SA) and BlackRock MSCI ACW Ex US Sm Cap Index (CF). No comparable peer group exists for the International Large Cap Passive Composite. The International Large Cap Passive composite includes the International Equity Pool STIF which differs from State Street.

Investment Managers



**Asset Allocation
Domestic Equity**

As of March 31, 2023



	Market Value (\$)	Allocation (%)
Northern Trust MSCI US Index (SA)	1,620,434,810	41.86
BlackRock MSCI US Equity Index (SA)	1,410,598,072	36.44
BlackRock MSCI USA Small Cap Index (SA)	480,108,189	12.40
iShares:Core S&P 500 (IVV)	133,251,582	3.44
iShares:Core S&P Tot USM (ITOT)	129,368,151	3.34
iShares:Core S&P Small Cap ETF (IJR)	76,505,559	1.98
iShares:Core S&P Md-Cp (IJH)	18,175,375	0.47
Domestic Equity Pool STIF	2,453,919	0.06
J.P. Morgan 130/30 (SA)	25,508	0.00
Vaughan Nelson Management (SA)	9,073	0.00
T. Rowe U.S. Structured Research (SA)	5,417	0.00

Allocations shown may not sum up to 100% exactly due to rounding. Market values do not include pending trades or securities not held by investment managers. J.P. Morgan 130/30, Vaughan Nelson and T. Rowe U.S. Structured Research were terminated during Q4 2021. Market values shown represent residual assets.



Comparative Performance
Domestic Equity Managers

As of March 31, 2023

	QTD/ CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018	Since Incep.	Inception Date
Domestic Large Cap Equity														
BlackRock MSCI US Equity Index (SA) - Net	7.72	9.97	-8.47	18.48	N/A	N/A	N/A	-19.46	26.95	21.33	N/A	N/A	11.47	04/01/2019
MSCI US Index (USD) (Gross)	7.73	9.98	-8.47	18.50	11.09	12.39	12.15	-19.46	26.97	21.37	31.64	-4.50	11.49	
Difference	-0.01	-0.01	0.00	-0.02	N/A	N/A	N/A	0.00	-0.02	-0.04	N/A	N/A	-0.02	
BlackRock MSCI US Equity Index (SA) - Gross	7.73	9.98	-8.46	18.49	N/A	N/A	N/A	-19.45	26.96	21.34	N/A	N/A	11.48	04/01/2019
IM U.S. Large Cap Core Equity (SA+CF) Median	6.36	9.46	-7.07	18.28	10.34	12.10	12.06	-16.49	27.71	17.54	30.03	-5.07	10.91	
Rank	20	37	77	46	N/A	N/A	N/A	77	55	29	N/A	N/A	33	
Northern Trust MSCI US Index (SA) - Net	7.72	9.96	-8.47	18.49	N/A	N/A	N/A	-19.46	26.97	21.34	31.70	N/A	11.74	11/01/2018
MSCI US Index (USD) (Gross)	7.73	9.98	-8.47	18.50	11.09	12.39	12.15	-19.46	26.97	21.37	31.64	-4.50	11.74	
Difference	-0.01	-0.02	0.00	-0.01	N/A	N/A	N/A	0.00	0.00	-0.03	0.06	N/A	0.00	
Northern Trust MSCI US Index (SA) - Gross	7.73	9.97	-8.47	18.50	N/A	N/A	N/A	-19.45	26.98	21.36	31.71	N/A	11.75	11/01/2018
IM U.S. Large Cap Core Equity (SA+CF) Median	6.36	9.46	-7.07	18.28	10.34	12.10	12.06	-16.49	27.71	17.54	30.03	-5.07	11.21	
Rank	20	37	77	46	N/A	N/A	N/A	77	55	29	31	N/A	39	
iShares:Core S&P Tot USM (ITOT) - Net	7.49	9.83	-8.54	N/A	N/A	N/A	N/A	-19.46	N/A	N/A	N/A	N/A	-7.71	12/01/2021
S&P Tot Mkt Index	7.24	9.70	-8.77	18.34	10.32	11.89	11.64	-19.53	25.66	20.79	30.90	-5.30	-7.92	
Difference	0.25	0.13	0.23	N/A	N/A	N/A	N/A	0.07	N/A	N/A	N/A	N/A	0.21	
iShares:Core S&P 500 (IVV) - Net	7.43	9.94	-7.81	N/A	N/A	N/A	N/A	-17.03	N/A	N/A	N/A	N/A	-5.14	12/01/2021
S&P 500 Index (Cap Wtd)	7.50	9.98	-7.73	18.60	11.19	12.42	12.24	-18.11	28.71	18.40	31.49	-4.38	-6.08	
Difference	-0.07	-0.04	-0.08	N/A	N/A	N/A	N/A	1.08	N/A	N/A	N/A	N/A	0.94	
Domestic Mid Cap Equity														
iShares:Core S&P Md-Cp (IJH) - Net	3.82	12.20	-5.08	22.19	7.61	N/A	N/A	-13.07	25.15	13.53	26.24	-13.95	7.66	07/01/2017
S&P Mid Cap 400 Index (Cap Wtd)	3.81	12.17	-5.12	22.10	7.67	9.95	9.80	-13.06	24.76	13.66	26.20	-11.08	8.22	
Difference	0.01	0.03	0.04	0.09	-0.06	N/A	N/A	-0.01	0.39	-0.13	0.04	-2.87	-0.56	

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.

Comparative Performance
Domestic Equity Managers

As of March 31, 2023

	QTD/ CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018	Since Incep.	Inception Date
Domestic Small Cap Equity														
BlackRock MSCI USA Small Cap Index (SA) - Net	3.92	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	08/01/2022
MSCI US Sm Cap Index (USD) (Net)	3.78	9.22	-8.97	20.66	6.61	9.53	9.09	-17.55	19.11	18.32	26.74	-10.40	-1.29	
Difference	0.14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
BlackRock MSCI USA Small Cap Index (SA) - Gross	3.92	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	08/01/2022
MSCI US Sm Cap Index (USD) (Gross)	3.90	9.63	-8.53	21.19	7.11	10.04	9.60	-17.17	19.56	18.90	27.38	-9.99	-0.95	
Difference	0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
iShares Core S&P Small Cap ETF (IJR) - Net	2.53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-0.47	11/01/2022
S&P Sm Cap 600 Index (Cap Wtd)	2.57	6.17	-8.82	21.71	6.30	9.64	9.87	-16.10	26.82	11.29	22.78	-8.48	-0.33	
Difference	-0.04	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-0.14	

Gross of fees performance is not available (N/A) for the following funds: iShares:Core S&P Tot USM (ITOT), iShares:Core S&P 500 (IVV), iShares:Core S&P Md-Cp (IJH), and iShares:Core S&P Small Cap ETF (IJR).

The current annual expense ratios for the iShares:Core S&P Tot USM (ITOT), iShares:Core S&P 500 (IVV), iShares:Core S&P Md-Cp (IJH), and iShares:Core S&P Small Cap ETF (IJR) are 0.03%, 0.03%, 0.05%, and 0.06%, respectively.

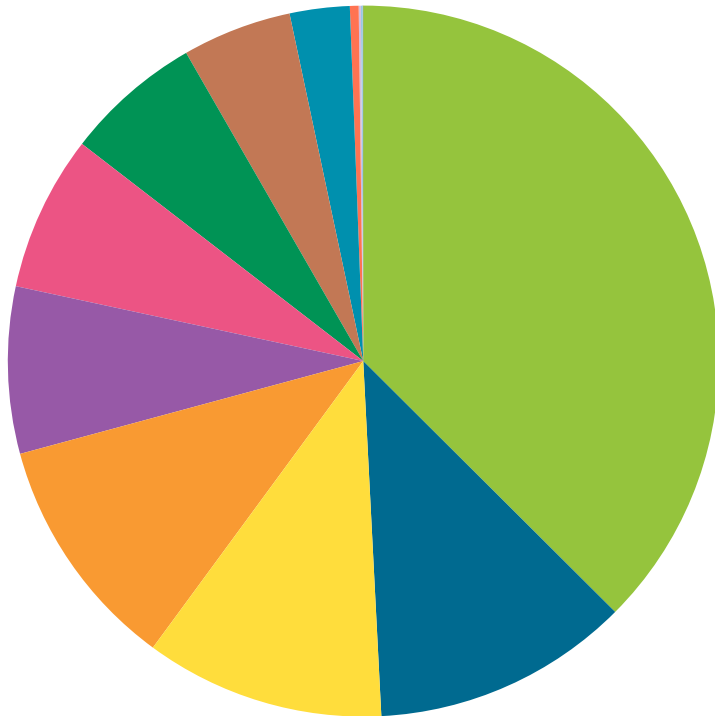
See the Addendum for custom index specification.

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.

**Asset Allocation
International Equity**

As of March 31, 2023

March 31, 2023 : \$2,146,029,552



	Market Value (\$)	Allocation (%)
BlackRock ACW Ex US SuperFund A (CF)	804,090,697	37.47
Acadian Asset Non-US Equity (SA)	251,559,523	11.72
Invesco (SA)	233,704,847	10.89
Lazard Asset Management (SA)	229,890,992	10.71
Baillie Gifford (SA)	162,868,974	7.59
BlackRock MSCI ACW Ex US Sm Cap Index (CF)	152,043,958	7.08
Acadian Ex US Small Cap (SA)	133,690,922	6.23
iShares:Core MSCI EAFE ETF (IEFA)	106,697,012	4.97
iShares:Core MSCI EmMkts (IEMG)	58,413,486	2.72
BlackRock MSCI Emg Mkts Index NL (CF)	8,601,754	0.40
American Century Investment Mgmt (SA)	2,162,309	0.10
Templeton Investment Counsel (SA)	1,788,954	0.08
International Equity Pool STIF	516,124	0.02

Allocations shown may not sum up to 100% exactly due to rounding. Market values do not include pending trades or securities not held by investment managers. American Century Investment Mgmt and Templeton Investment Counsel were terminated during Q1 2023. Market values shown represent residual values.



Comparative Performance
International Equity Managers

As of March 31, 2023

	QTD/ CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018	Since Incep.	Inception Date
International Developed Large Cap Equity														
Acadian Asset Non-US Equity (SA) - Net	3.00	6.11	-9.40	15.12	3.14	8.54	6.25	-13.02	16.67	8.89	19.38	-13.44	3.64	11/01/2006
MSCI ACW Ex US Val Index (USD) (Net)	5.16	8.97	-4.00	13.82	1.26	5.00	3.06	-8.59	10.46	-0.77	15.72	-13.97	2.18	
Difference	-2.16	-2.86	-5.40	1.30	1.88	3.54	3.19	-4.43	6.21	9.66	3.66	0.53	1.46	
Acadian Asset Non-US Equity (SA) - Gross	3.12	6.48	-8.98	15.67	3.65	9.08	6.79	-12.61	17.23	9.45	19.98	-12.99	4.20	11/01/2006
IM ACWI Ex US Value (SA+CF) Median	9.28	15.14	-1.01	14.88	3.48	6.55	5.43	-11.10	11.05	6.52	21.34	-14.78	4.24	
Rank	99	98	98	46	44	12	16	64	7	43	57	26	52	
Lazard Asset Management (SA) - Net	9.80	13.09	-0.81	12.92	2.63	5.22	N/A	-13.28	4.11	9.59	21.70	-14.32	3.54	06/01/2015
Lazard Custom Index	6.87	10.03	-5.07	11.80	2.21	5.70	3.54	-16.00	7.82	10.65	21.51	-15.55	2.88	
Difference	2.93	3.06	4.26	1.12	0.42	-0.48	N/A	2.72	-3.71	-1.06	0.19	1.23	0.66	
Lazard Asset Management (SA) - Gross	9.94	13.51	-0.31	13.47	3.15	5.75	N/A	-12.84	4.62	10.14	22.31	-13.88	4.07	06/01/2015
IM ACWI Ex US Value (SA+CF) Median	9.28	15.14	-1.01	14.88	3.48	6.55	5.43	-11.10	11.05	6.52	21.34	-14.78	4.41	
Rank	25	57	48	60	62	73	N/A	65	94	39	42	35	62	
BlackRock ACW Ex US SuperFund A (CF) - Net	6.95	10.17	-4.78	12.03	2.72	6.09	4.39	-15.77	8.00	10.80	21.77	-13.99	5.85	06/01/2009
MSCI ACW Ex US Index (USD) (Net)	6.87	10.03	-5.07	11.80	2.47	5.86	4.17	-16.00	7.82	10.65	21.51	-14.20	5.64	
Difference	0.08	0.14	0.29	0.23	0.25	0.23	0.22	0.23	0.18	0.15	0.26	0.21	0.21	
BlackRock ACW Ex US SuperFund A (CF) - Gross	6.96	10.20	-4.73	12.09	2.79	6.17	4.46	-15.72	8.07	10.88	21.85	-13.93	5.93	06/01/2009
IM All ACWI Ex US (SA+CF) Median	8.71	13.35	-3.18	12.96	3.87	6.85	5.99	-17.08	9.37	14.71	24.92	-14.61	7.49	
Rank	80	85	69	74	77	70	89	44	62	60	67	43	91	
iShares:Core MSCI EAFE ETF (IEFA) - Net	8.81	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	21.02	11/01/2022
MSCI EAFE IM Index (USD) (Net)	7.95	14.51	-2.66	12.83	3.12	6.06	5.10	-15.53	11.08	8.47	22.44	-14.40	20.17	
Difference	0.86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.85	
Baillie Gifford (SA) - Net	10.15	13.09	-7.35	8.79	2.90	6.09	N/A	-31.43	1.69	34.22	34.34	-17.35	4.51	06/01/2015
MSCI ACW Ex US Grth Index (USD) (Net)	8.59	11.10	-6.35	9.49	3.36	6.47	5.08	-23.05	5.09	22.20	27.34	-14.43	4.49	
Difference	1.56	1.99	-1.00	-0.70	-0.46	-0.38	N/A	-8.38	-3.40	12.02	7.00	-2.92	0.02	
Baillie Gifford (SA) - Gross	10.28	13.49	-6.91	9.30	3.40	6.61	N/A	-31.11	2.16	34.86	34.99	-16.93	5.03	06/01/2015
IM ACWI Ex US Growth (SA+CF) Median	9.86	14.81	-4.39	12.47	4.55	7.74	6.42	-23.43	8.81	22.06	29.53	-13.90	5.52	
Rank	33	68	70	87	79	73	N/A	92	91	14	7	85	73	

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. See the Addendum for custom index specification.

Comparative Performance
International Equity Managers

As of March 31, 2023

	QTD/ CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018	Since Incep.	Inception Date
Invesco (SA) - Net	9.72	14.76	-0.50	12.03	4.03	5.67	N/A	-17.80	5.60	14.84	29.29	-15.17	4.17	06/01/2015
MSCI ACW Ex US Grth Index (USD) (Net)	8.59	11.10	-6.35	9.49	3.36	6.47	5.08	-23.05	5.09	22.20	27.34	-14.43	4.49	
Difference	1.13	3.66	5.85	2.54	0.67	-0.80	N/A	5.25	0.51	-7.36	1.95	-0.74	-0.32	
Invesco (SA) - Gross	9.88	15.26	0.08	12.67	4.64	6.31	N/A	-17.32	6.20	15.51	30.05	-14.64	4.80	06/01/2015
IM ACWI Ex US Growth (SA+CF) Median	9.86	14.81	-4.39	12.47	4.55	7.74	6.42	-23.43	8.81	22.06	29.53	-13.90	5.52	
Rank	50	44	14	36	44	81	N/A	21	77	83	43	55	75	
International Developed Small Cap Equity														
BlackRock MSCI ACW Ex US Sm Cap Index (CF) - Net	4.53	8.65	-10.21	15.10	1.90	5.89	5.29	-19.65	12.84	14.45	22.68	-17.85	6.13	02/01/2012
MSCI ACWI Ex US Sm Cap Index IMI (USD) (Net)	4.70	8.70	-10.37	15.04	1.67	5.66	5.06	-19.97	12.93	14.24	22.42	-18.20	5.92	
Difference	-0.17	-0.05	0.16	0.06	0.23	0.23	0.23	0.32	-0.09	0.21	0.26	0.35	0.21	
BlackRock MSCI ACW Ex US Sm Cap Index (CF) - Gross	4.54	8.70	-10.14	15.22	2.01	6.02	5.43	-19.57	12.98	14.50	22.90	-17.74	6.28	02/01/2012
IM International Small Cap Equity (SA+CF) Median	6.51	11.44	-7.35	14.21	2.57	6.67	7.03	-21.48	13.78	13.73	24.78	-17.85	8.40	
Rank	78	75	74	38	59	61	89	40	57	48	62	49	92	
Acadian Ex US Small Cap (SA) - Net	3.96	5.43	-11.34	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-7.90	03/01/2022
MSCI ACW Ex US Sm Cap Index (USD) (Net)	4.70	8.70	-10.37	15.04	1.67	5.66	5.06	-19.97	12.93	14.24	22.42	-18.20	-8.77	
Difference	-0.74	-3.27	-0.97	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.87	
Acadian Ex US Small Cap (SA) - Gross	4.13	5.94	-10.74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-7.28	03/01/2022
IM All ACWI Ex US (SA+CF) Median	8.71	13.35	-3.18	12.96	3.87	6.85	5.99	-17.08	9.37	14.71	24.92	-14.61	-3.17	
Rank	99	98	99	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	87	
International Emerging Equity														
BlackRock MSCI Emg Mkts Index NL (CF) - Net	3.97	0.70	-10.71	7.55	-1.10	4.68	1.78	-20.22	-2.82	17.92	18.12	-14.69	1.95	02/01/2012
MSCI Emg Mkts Index (USD) (Net)	3.96	0.84	-10.70	7.83	-0.91	4.91	2.00	-20.09	-2.54	18.31	18.42	-14.57	2.19	
Difference	0.01	-0.14	-0.01	-0.28	-0.19	-0.23	-0.22	-0.13	-0.28	-0.39	-0.30	-0.12	-0.24	
BlackRock MSCI Emg Mkts Index NL (CF) - Gross	3.98	0.74	-10.66	7.65	-1.00	4.80	1.92	-20.16	-2.71	18.04	18.25	-14.60	2.09	02/01/2012
IM Emerging Markets Equity (SA+CF) Median	4.94	3.75	-8.78	10.01	0.69	6.07	3.30	-19.72	0.75	18.93	20.64	-15.23	3.92	
Rank	70	79	72	78	81	83	93	55	65	55	65	43	97	
iShares:Core MSCI EmMkts (IEMG)	4.62	1.00	-9.73	N/A	N/A	N/A	N/A	-21.88	N/A	N/A	N/A	N/A	-14.90	01/01/2022
MSCI Emg Mkts IM Index (USD) (Net)	3.94	1.55	-10.74	9.18	-0.58	5.01	2.13	-19.83	-0.28	18.39	17.65	-15.05	-13.58	
Difference	0.68	-0.55	1.01	N/A	N/A	N/A	N/A	-2.05	N/A	N/A	N/A	N/A	-1.32	

Gross of fees performance is not available (N/A) for the following funds: iShares:Core MSCI EAFE ETF (IEFA), International Equity Pool STIF, and iShares:Core MSCI Em Mkts (IEMG). The current annual expense ratios for the iShares:Core MSCI EAFE ETF (IEFA), and iShares:Core MSCI Em Mkts (IEMG): are 0.07%, and 0.09%, respectively.

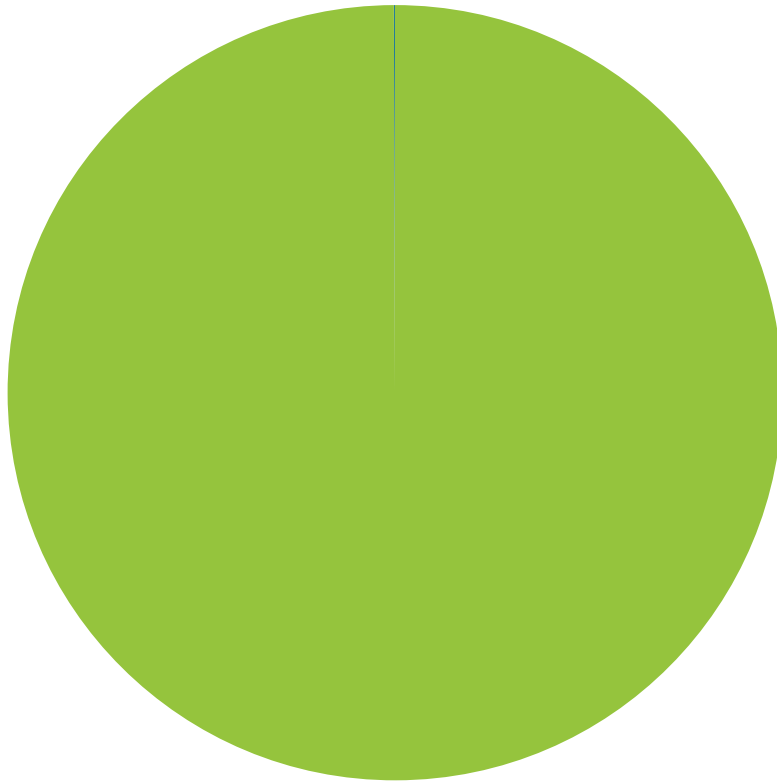
Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. See the Addendum for custom index specification.



**Asset Allocation
Core Fixed Income**

As of March 31, 2023

March 31, 2023 : \$1,783,719,355



	Market Value (\$)	Allocation (%)
■ US Fixed Income Aggregate	1,782,812,911	99.95
■ Reams Asset Core Plus (SA)	802,100	0.04
■ Core Fixed Income STIF	104,344	0.01

Allocations shown may not sum up to 100% exactly due to rounding. Market values do not include pending trades. CAPP asset classes are shown when the asset class does not utilize external management. Reams Asset Core Plus (SA) was terminated during Q1 2023. Market value shown represents residual values.

**Comparative Performance
Core Fixed Income Managers**

As of March 31, 2023

	QTD/ CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018	Since Incep.	Inception Date
US Fixed Income Aggregate - Net	2.88	-0.19	-4.24	-2.38	N/A	N/A	N/A	-11.87	-1.52	7.65	N/A	N/A	-1.20	12/01/2019
Bloomberg US Agg Bond Index	2.96	-0.09	-4.78	-2.77	0.90	0.88	1.36	-13.01	-1.55	7.51	8.72	0.01	-1.61	
Difference	-0.08	-0.10	0.54	0.39	N/A	N/A	N/A	1.14	0.03	0.14	N/A	N/A	0.41	

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.



Asset Allocation
Non-Core Fixed Income

As of March 31, 2023

March 31, 2023 : \$839,823,875



	Market Value (\$)	Allocation (%)
■ Oaktree US High Yield (SA) (CAPP)	205,747,735	24.50
■ Shenkman High Yield Fixed Income (SA) (CAPP)	182,324,477	21.71
■ Neuberger Berman High Yield (SA)	166,752,799	19.86
■ Payden & Rygel EMD (SA)	148,300,066	17.66
■ Cohen & Steers Preferred Securities (SA)	136,303,663	16.23
■ Non-Core Fixed Income STIF	395,135	0.05

Allocations shown may not sum up to 100% exactly due to rounding. Market values do not include pending trades. CAPP asset classes are shown when the asset class does not utilize external management.

Comparative Performance
Non-Core Fixed Income Managers

As of March 31, 2023

	QTD/ CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018	Since Incep.	Inception Date
Neuberger Berman High Yield (SA) - Net	3.21	7.32	-3.99	5.08	2.80	4.17	3.53	-11.34	4.76	6.30	13.75	-1.99	5.52	01/01/2010
Bloomberg US HY 2% Issuer Cap Index	3.57	7.19	-3.35	5.88	3.19	5.07	4.09	-11.18	5.26	7.05	14.32	-2.08	5.93	
Difference	-0.36	0.13	-0.64	-0.80	-0.39	-0.90	-0.56	-0.16	-0.50	-0.75	-0.57	0.09	-0.41	
Neuberger Berman High Yield (SA) - Gross	3.26	7.48	-3.80	5.35	3.14	4.55	3.93	-11.16	4.96	6.75	14.26	-1.56	5.95	01/01/2010
IM U.S. High Yield Bonds (SA+CF) Median	3.39	7.10	-2.41	5.99	3.46	4.96	4.26	-9.58	5.31	6.55	14.23	-1.64	6.08	
Rank	58	38	75	69	71	74	70	83	60	45	50	49	63	
Oaktree US High Yield (SA) (CAPP) - Net	3.07	7.40	-3.19	5.69	3.21	N/A	N/A	-9.92	4.91	6.56	15.44	-3.99	2.71	01/01/2018
Bloomberg US HY 2% Issuer Cap Index	3.57	7.19	-3.35	5.88	3.19	5.07	4.09	-11.18	5.26	7.05	14.32	-2.08	2.87	
Difference	-0.50	0.21	0.16	-0.19	0.02	N/A	N/A	1.26	-0.35	-0.49	1.12	-1.91	-0.16	
Oaktree US High Yield (SA) (CAPP) - Gross	3.17	7.70	-2.83	6.11	3.66	N/A	N/A	-9.60	5.34	7.07	16.02	-3.47	3.17	01/01/2018
IM U.S. High Yield Bonds (SA+CF) Median	3.39	7.10	-2.41	5.99	3.46	4.96	4.26	-9.58	5.31	6.55	14.23	-1.64	3.17	
Rank	64	30	58	46	36	N/A	N/A	51	49	41	17	92	51	
Shenkman High Yield Fixed Income (SA) (CAPP) - Net	3.51	7.19	-2.08	5.49	3.29	N/A	N/A	-8.87	4.24	6.32	13.65	-1.96	2.83	12/01/2017
Bloomberg US HY 2% Issuer Cap Index	3.57	7.19	-3.35	5.88	3.19	5.07	4.09	-11.18	5.26	7.05	14.32	-2.08	2.88	
Difference	-0.06	0.00	1.27	-0.39	0.10	N/A	N/A	2.31	-1.02	-0.73	-0.67	0.12	-0.05	
Shenkman High Yield Fixed Income (SA) (CAPP) - Gross	3.61	7.51	-1.70	5.93	3.75	N/A	N/A	-8.52	4.68	6.82	14.18	-1.46	3.29	12/01/2017
IM U.S. High Yield Bonds (SA+CF) Median	3.39	7.10	-2.41	5.99	3.46	4.96	4.26	-9.58	5.31	6.55	14.23	-1.64	3.16	
Rank	35	37	32	51	32	N/A	N/A	35	71	44	51	46	46	
Cohen & Steers Preferred Securities (SA) - Net	-2.45	-1.74	-8.81	N/A	N/A	N/A	N/A	-11.53	3.70	N/A	N/A	N/A	-2.69	11/01/2020
Cohen & Steers Preferred Securities Custom Benchmark	-0.38	0.55	-7.04	N/A	N/A	N/A	N/A	-12.02	2.72	N/A	N/A	N/A	-2.66	
Difference	-2.07	-2.29	-1.77	N/A	N/A	N/A	N/A	0.49	0.98	N/A	N/A	N/A	-0.03	
Cohen & Steers Preferred Securities (SA) - Gross	-2.37	-1.49	-8.50	N/A	N/A	N/A	N/A	-11.23	4.06	N/A	N/A	N/A	-2.35	11/01/2020
Payden & Rygel EMD (SA) - Net	2.74	7.48	-5.95	N/A	N/A	N/A	N/A	-15.45	-3.49	N/A	N/A	N/A	-7.54	01/01/2021
Payden & Rygel EMD Custom Benchmark	2.85	6.18	-5.07	N/A	N/A	N/A	N/A	-15.97	-3.92	N/A	N/A	N/A	-7.93	
Difference	-0.11	1.30	-0.88	N/A	N/A	N/A	N/A	0.52	0.43	N/A	N/A	N/A	0.39	
Payden & Rygel EMD (SA) - Gross	2.83	7.76	-5.63	N/A	N/A	N/A	N/A	-15.15	-3.14	N/A	N/A	N/A	-7.21	01/01/2021
IM Emerging Markets Debt (SA+CF) Median	2.35	6.54	-3.46	2.66	-0.11	2.40	1.70	-12.28	-2.12	6.72	14.30	-5.23	-6.24	
Rank	42	34	71	N/A	N/A	N/A	N/A	69	58	N/A	N/A	N/A	71	

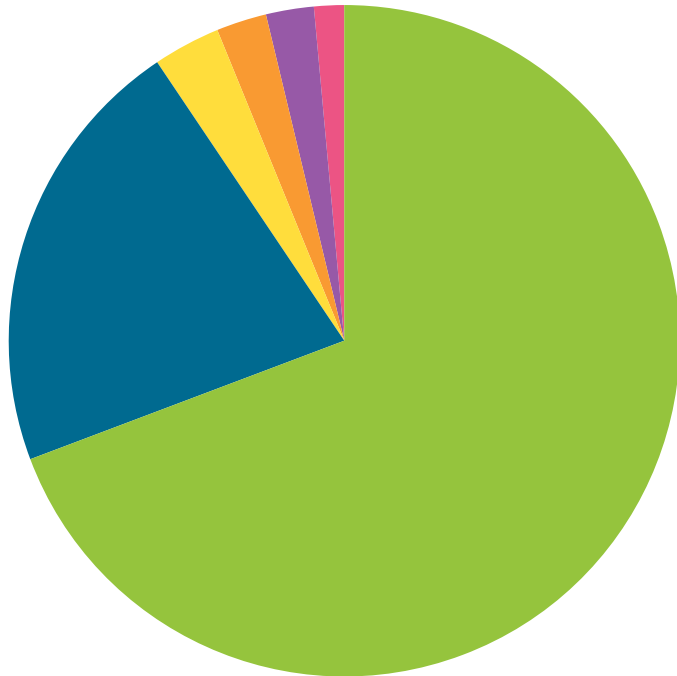
Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. No peer group is shown for Cohen & Steers Preferred Securities (SA) due to the lack of suitable Preferred Securities peer groups.



Asset Allocation
Trust Funds Investment Pool (TFIP)

As of March 31, 2023

March 31, 2023 : \$2,804,631,611



	Market Value (\$)	Allocation (%)
TFIP Internally Managed Fixed Income	1,942,510,153	69.26
TFIP Real Estate	597,971,076	21.32
Neuberger Berman High Yield (SA) (TFIP)	90,895,665	3.24
Oaktree US High Yield (SA) (TFIP)	67,842,479	2.42
Shenkman High Yield Fixed Income (SA) (TFIP)	64,731,858	2.31
TFIP Internally Managed Cash Equivalents	40,680,380	1.45

Allocations shown may not sum up to 100% exactly due to rounding. Market values do not include pending trades.

Comparative Performance
TFIP Fixed Income Managers

As of March 31, 2023

	QTD/ CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018	Since Incep.	Inception Date
Trust Funds Investment Pool Fixed Income	3.25	1.14	-3.39	-1.02	1.94	1.74	2.18	-11.24	-0.47	8.84	9.12	0.25	5.22	10/01/1995
Bloomberg US Agg Bond Index	2.96	-0.09	-4.78	-2.77	0.90	0.88	1.36	-13.01	-1.55	7.51	8.72	0.01	4.36	
Difference	0.29	1.23	1.39	1.75	1.04	0.86	0.82	1.77	1.08	1.33	0.40	0.24	0.86	
Trust Funds Investment Pool Fixed Income	3.25	1.14	-3.39	-1.02	1.94	1.74	2.18	-11.24	-0.47	8.84	9.12	0.25	5.22	10/01/1995
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	3.16	0.23	-4.67	-1.82	1.34	1.39	1.78	-12.96	-1.23	8.51	9.18	0.06	4.77	
Rank	36	6	6	20	10	14	15	8	21	37	55	29	6	
Shenkman High Yield Fixed Income (SA) (TFIP) - Net	3.49	7.17	-2.20	5.41	N/A	N/A	N/A	-9.04	4.31	6.05	N/A	N/A	2.14	07/01/2019
Bloomberg US HY 2% Issuer Cap Index	3.57	7.19	-3.35	5.88	3.19	5.07	4.09	-11.18	5.26	7.05	14.32	-2.08	2.02	
Difference	-0.08	-0.02	1.15	-0.47	N/A	N/A	N/A	2.14	-0.95	-1.00	N/A	N/A	0.12	
Shenkman High Yield Fixed Income (SA) (TFIP) - Gross	3.60	7.48	-1.82	5.84	N/A	N/A	N/A	-8.68	4.74	6.54	N/A	N/A	2.58	07/01/2019
IM U.S. High Yield Bonds (SA+CF) Median	3.39	7.10	-2.41	5.99	3.46	4.96	4.26	-9.58	5.31	6.55	14.23	-1.64	2.50	
Rank	36	37	33	53	N/A	N/A	N/A	36	68	51	N/A	N/A	45	
Oaktree US High Yield (SA) (TFIP) - Net	3.08	7.56	-2.88	5.92	N/A	N/A	N/A	-9.51	4.93	6.72	N/A	N/A	2.33	08/01/2019
Bloomberg US HY 2% Issuer Cap Index	3.57	7.19	-3.35	5.88	3.19	5.07	4.09	-11.18	5.26	7.05	14.32	-2.08	1.91	
Difference	-0.49	0.37	0.47	0.04	N/A	N/A	N/A	1.67	-0.33	-0.33	N/A	N/A	0.42	
Oaktree US High Yield (SA) (TFIP) - Gross	3.18	7.86	-2.52	6.35	N/A	N/A	N/A	-9.20	5.36	7.25	N/A	N/A	2.76	08/01/2019
IM U.S. High Yield Bonds (SA+CF) Median	3.39	7.10	-2.41	5.99	3.46	4.96	4.26	-9.58	5.31	6.55	14.23	-1.64	2.38	
Rank	64	25	53	37	N/A	N/A	N/A	46	49	37	N/A	N/A	30	
Neuberger Berman High Yield (SA) (TFIP) - Net	3.17	7.00	-4.18	4.67	N/A	N/A	N/A	-11.43	4.62	N/A	N/A	N/A	4.67	04/01/2020
Bloomberg US HY 2% Issuer Cap Index	3.57	7.19	-3.35	5.88	3.19	5.07	4.09	-11.18	5.26	7.05	14.32	-2.08	5.88	
Difference	-0.40	-0.19	-0.83	-1.21	N/A	N/A	N/A	-0.25	-0.64	N/A	N/A	N/A	-1.21	
Neuberger Berman High Yield (SA) (TFIP) - Gross	3.22	7.16	-3.99	4.93	N/A	N/A	N/A	-11.25	4.81	N/A	N/A	N/A	4.93	04/01/2020
IM U.S. High Yield Bonds (SA+CF) Median	3.39	7.10	-2.41	5.99	3.46	4.96	4.26	-9.58	5.31	6.55	14.23	-1.64	5.99	
Rank	60	46	77	80	N/A	N/A	N/A	83	64	N/A	N/A	N/A	80	

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.

Manager - Performance Since Inception vs. Benchmark

As of March 31, 2023

Manager	Region	Style	Market Value (\$)	Since Inception	Inception Date	+/- Benchmark
BlackRock MSCI US Equity Index (SA)	Domestic	Large Cap Passive	1,410,598,072	11.47	Apr-2019	-0.02
Northern Trust MSCI US Index (SA)	Domestic	Large Cap Passive	1,620,434,810	11.74	Nov-2018	0.00
iShares:Core S&P Tot USM (ITOT)	Domestic	Large Cap Passive	129,368,151	-7.71	Dec-2021	0.21
iShares:Core S&P 500 (IVV)	Domestic	Large Cap Passive	133,251,582	-5.14	Dec-2021	0.94
iShares:Core S&P Md-Cp (IJH)	Domestic	Mid Cap Core	18,175,375	7.66	Jul-2017	-0.56
BlackRock MSCI USA Small Cap Index (SA)	Domestic	Small Cap Core	480,108,189	1.61	Sep-2022	0.31
iShares:Core S&P Small Cap ETF (IJR)	Domestic	Small Cap Core	76,505,559	-0.47	Nov-2022	-0.14
Acadian Asset Non-US Equity (SA)	International	Large Cap Value	251,559,523	3.64	Nov-2006	1.46
Lazard Asset Management (SA)	International	Large Cap Value	229,890,992	3.54	Jun-2015	0.66
BlackRock ACW Ex US SuperFund A (CF)	International	Large Cap Core	804,090,697	5.85	Jun-2009	0.21
iShares:Core MSCI EAFE ETF (IEFA)	International	Large Cap Core	106,697,012	21.02	Nov-2022	0.85
Baillie Gifford (SA)	International	Large Cap Growth	162,868,974	4.51	Jun-2015	0.02
Invesco (SA)	International	Large Cap Growth	233,704,847	4.17	Jun-2015	-0.32
BlackRock MSCI ACW Ex US Sm Cap Index (CF)	International	Small Cap	152,043,958	6.13	Feb-2012	0.21
Acadian Ex US Small Cap (SA)	International	Small Cap	133,690,922	-7.81	Mar-2022	3.99
BlackRock MSCI Emg Mkts Index NL (CF)	International	Emerging Markets Equity	8,601,754	1.95	Feb-2012	-0.24
iShares:Core MSCI EmMkts (IEMG)	International	Emerging Markets Equity	58,413,486	-14.90	Jan-2022	-1.11
Cohen & Steers Preferred Securities (SA)	Domestic	Preferred Securities	136,303,663	-2.69	Nov-2020	-0.03
Payden & Rygel EMD (SA)	International	Emerging Markets Debt	148,300,066	-7.54	Jan-2021	0.39
Neuberger Berman High Yield (SA)	Domestic	High Yield Fixed Income	166,752,799	5.52	Jan-2010	-0.41
Oaktree US High Yield (SA)	Domestic	High Yield Fixed Income	205,747,735	2.71	Jan-2018	-0.16
Shenkman High Yield Fixed Income (SA)	Domestic	High Yield Fixed Income	182,324,477	2.83	Dec-2017	-0.05

Performance shown is net of all manager fees and expenses (Net-All). Since inception performance may vary from State Street reported performance due to calculation methodology

Manager - Performance Since Inception vs. Benchmark (Sorted)

As of March 31, 2023

Manager	Region	Style	Market Value (\$)	Since Inception	Inception Date	+/- Benchmark
Acadian Ex US Small Cap (SA)	International	Small Cap	133,690,922	-7.81	Mar-2022	3.99
Acadian Asset Non-US Equity (SA)	International	Large Cap Value	251,559,523	3.64	Nov-2006	1.46
iShares:Core S&P 500 (IVV)	Domestic	Large Cap Passive	133,251,582	-5.14	Dec-2021	0.94
iShares:Core MSCI EAFE ETF (IEFA)	International	Large Cap Core	106,697,012	21.02	Nov-2022	0.85
Lazard Asset Management (SA)	International	Large Cap Value	229,890,992	3.54	Jun-2015	0.66
Payden & Rygel EMD (SA)	International	Emerging Markets Debt	148,300,066	-7.54	Jan-2021	0.39
BlackRock MSCI USA Small Cap Index (SA)	Domestic	Small Cap Core	480,108,189	1.61	Sep-2022	0.31
BlackRock MSCI ACW Ex US Sm Cap Index (CF)	International	Small Cap	152,043,958	6.13	Feb-2012	0.21
BlackRock ACW Ex US SuperFund A (CF)	International	Large Cap Core	804,090,697	5.85	Jun-2009	0.21
iShares:Core S&P Tot USM (ITOT)	Domestic	Large Cap Passive	129,368,151	-7.71	Dec-2021	0.21
Baillie Gifford (SA)	International	Large Cap Growth	162,868,974	4.51	Jun-2015	0.02
Northern Trust MSCI US Index (SA)	Domestic	Large Cap Passive	1,620,434,810	11.74	Nov-2018	0.00
BlackRock MSCI US Equity Index (SA)	Domestic	Large Cap Passive	1,410,598,072	11.47	Apr-2019	-0.02
Cohen & Steers Preferred Securities (SA)	Domestic	Preferred Securities	136,303,663	-2.69	Nov-2020	-0.03
Shenkman High Yield Fixed Income (SA)	Domestic	High Yield Fixed Income	182,324,477	2.83	Dec-2017	-0.05
iShares:Core S&P Small Cap ETF (IJR)	Domestic	Small Cap Core	76,505,559	-0.47	Nov-2022	-0.14
Oaktree US High Yield (SA)	Domestic	High Yield Fixed Income	205,747,735	2.71	Jan-2018	-0.16
BlackRock MSCI Emg Mkts Index NL (CF)	International	Emerging Markets Equity	8,601,754	1.95	Feb-2012	-0.24
Invesco (SA)	International	Large Cap Growth	233,704,847	4.17	Jun-2015	-0.32
Neuberger Berman High Yield (SA)	Domestic	High Yield Fixed Income	166,752,799	5.52	Jan-2010	-0.41
iShares:Core S&P Md-Cp (IJH)	Domestic	Mid Cap Core	18,175,375	7.66	Jul-2017	-0.56
iShares:Core MSCI EmMkts (IEMG)	International	Emerging Markets Equity	58,413,486	-14.90	Jan-2022	-1.11

Performance shown is net of all manager fees and expenses (Net-All). Since inception performance may vary from State Street reported performance due to calculation methodology

Manager - Performance Since Inception vs. Peer Group

As of March 31, 2023

Manager	Region	Style	Market Value (\$)	Since Inception	Inception Date	Percentile	+/- Median	Population
BlackRock MSCI US Equity Index (SA)	Domestic	Large Cap Passive	1,410,598,072	11.48	Apr-2019	32	0.58	160
Northern Trust MSCI US Index (SA)	Domestic	Large Cap Passive	1,620,434,810	11.75	Nov-2018	N/A	N/A	N/A
iShares:Core S&P Tot USM (ITOT)	Domestic	Large Cap Passive	129,368,151	N/A	Dec-2021	N/A	N/A	N/A
iShares:Core S&P 500 (IVV)	Domestic	Large Cap Passive	133,251,582	N/A	Dec-2021	N/A	N/A	N/A
iShares:Core S&P Md-Cp (IJH)	Domestic	Mid Cap Core	18,175,375	N/A	Jul-2017	N/A	N/A	N/A
BlackRock MSCI USA Small Cap Index (SA)	Domestic	Small Cap Core	480,108,189	1.63	Sep-2022	N/A	N/A	N/A
iShares:Core S&P Small Cap ETF (IJR)	Domestic	Small Cap Core	76,505,559	N/A	Nov-2022	N/A	N/A	N/A
Acadian Asset Non-US Equity (SA)	International	Large Cap Value	251,559,523	4.20	Nov-2006	54	-0.05	60
Lazard Asset Management (SA)	International	Large Cap Value	229,890,992	4.07	Jun-2015	59	-0.37	87
BlackRock ACW Ex US SuperFund A (CF)	International	Large Cap Core	804,090,697	5.93	Jun-2009	N/A	N/A	N/A
iShares:Core MSCI EAFE ETF (IEFA)	International	Large Cap Core	106,697,012	N/A	Nov-2022	N/A	N/A	N/A
Baillie Gifford (SA)	International	Large Cap Growth	162,868,974	5.03	Jun-2015	71	-0.70	74
Invesco (SA)	International	Large Cap Growth	233,704,847	4.80	Jun-2015	78	-0.93	74
BlackRock MSCI ACW Ex US Sm Cap Index (CF)	International	Small Cap	152,043,958	6.28	Feb-2012	N/A	N/A	N/A
Acadian Ex US Small Cap (SA)	International	Small Cap	133,690,922	-7.81	Mar-2022	4	1.49	86
BlackRock MSCI Emg Mkts Index NL (CF)	International	Emerging Markets Equity	8,601,754	2.09	Feb-2012	N/A	N/A	N/A
iShares:Core MSCI EmMkts (IEMG)	International	Emerging Markets Equity	58,413,486	N/A	Jan-2022	N/A	N/A	N/A
Neuberger Berman High Yield (SA)	Domestic	High Yield Fixed Income	166,752,799	5.95	Jan-2010	61	-0.11	82
Cohen & Steers Preferred Securities (SA)	Domestic	Preferred Securities	136,303,663	-2.35	Nov-2020	N/A	N/A	N/A
Payden & Rygel EMD (SA)	International	Emerging Markets Debt	148,300,066	-7.21	Jan-2021	70	-0.83	105
Oaktree US High Yield (SA)	Domestic	High Yield Fixed Income	205,747,735	3.17	Jan-2018	50	0.02	118
Shenkman High Yield Fixed Income (SA)	Domestic	High Yield Fixed Income	182,324,477	3.29	Dec-2017	46	0.15	118

Performance shown is gross of fees. Gross of fees performance is not available (N/A) for the following funds: iShares:Core S&P Tot USM (ITOT), iShares:CoreS&P500 (IVV), iShares:Core S&P Md-Cp (IJH), iShares:Core S&P Small Cap ETF (IJR), iShares:Core MSCI EAFE ETF (IEFA), and iShares:Core MSCI EmMkts (IEMG).

Since inception performance may vary from State Street reported performance due to calculation methodology differences.

Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds.

Inception date shown represents first full month following transition.

Manager - Performance Since Inception vs. Peer Group (Sorted)

As of March 31, 2023

Manager	Region	Style	Market Value (\$)	Since Inception	Inception Date	Percentile	+/- Median	Population
Acadian Ex US Small Cap (SA)	International	Small Cap	133,690,922	-7.81	Mar-2022	4	1.49	86
BlackRock MSCI US Equity Index (SA)	Domestic	Large Cap Passive	1,410,598,072	11.48	Apr-2019	32	0.58	160
Shenkman High Yield Fixed Income (SA)	Domestic	High Yield Fixed Income	182,324,477	3.29	Dec-2017	46	0.15	118
Oaktree US High Yield (SA)	Domestic	High Yield Fixed Income	205,747,735	3.17	Jan-2018	50	0.02	118
Acadian Asset Non-US Equity (SA)	International	Large Cap Value	251,559,523	4.20	Nov-2006	54	-0.05	60
Neuberger Berman High Yield (SA)	Domestic	High Yield Fixed Income	166,752,799	5.95	Jan-2010	61	-0.11	82
Lazard Asset Management (SA)	International	Large Cap Value	229,890,992	4.07	Jun-2015	59	-0.37	87
Baillie Gifford (SA)	International	Large Cap Growth	162,868,974	5.03	Jun-2015	71	-0.70	74
Payden & Rygel EMD (SA)	International	Emerging Markets Debt	148,300,066	-7.21	Jan-2021	70	-0.83	105
Invesco (SA)	International	Large Cap Growth	233,704,847	4.80	Jun-2015	78	-0.93	74
Northern Trust MSCI US Index (SA)	Domestic	Large Cap Passive	1,620,434,810	11.75	Nov-2018	N/A	N/A	N/A
iShares:Core S&P Tot USM (ITOT)	Domestic	Large Cap Passive	129,368,151	N/A	Dec-2021	N/A	N/A	N/A
iShares:Core S&P 500 (IVV)	Domestic	Large Cap Passive	133,251,582	N/A	Dec-2021	N/A	N/A	N/A
iShares:Core S&P Md-Cp (IJH)	Domestic	Mid Cap Core	18,175,375	N/A	Jul-2017	N/A	N/A	N/A
BlackRock MSCI USA Small Cap Index (SA)	Domestic	Small Cap Core	480,108,189	1.63	Sep-2022	N/A	N/A	N/A
iShares:Core S&P Small Cap ETF (IJR)	Domestic	Small Cap Core	76,505,559	N/A	Nov-2022	N/A	N/A	N/A
BlackRock ACW Ex US SuperFund A (CF)	International	Large Cap Core	804,090,697	5.93	Jun-2009	N/A	N/A	N/A
iShares:Core MSCI EAFE ETF (IEFA)	International	Large Cap Core	106,697,012	N/A	Nov-2022	N/A	N/A	N/A
BlackRock MSCI ACW Ex US Sm Cap Index (CF)	International	Small Cap	152,043,958	6.28	Feb-2012	N/A	N/A	N/A
BlackRock MSCI Emg Mkts Index NL (CF)	International	Emerging Markets Equity	8,601,754	2.09	Feb-2012	N/A	N/A	N/A
iShares:Core MSCI EmMkts (IEMG)	International	Emerging Markets Equity	58,413,486	N/A	Jan-2022	N/A	N/A	N/A
Cohen & Steers Preferred Securities (SA)	Domestic	Preferred Securities	136,303,663	-2.35	Nov-2020	N/A	N/A	N/A

Performance shown is gross of fees. Gross of fees performance is not available (N/A) for the following funds: iShares:Core S&P Tot USM (ITOT), iShares:CoreS&P500 (IVV), iShares:Core S&P Md-Cp (IJH), iShares:Core S&P Small Cap ETF (IJR), iShares:Core MSCI EAFE ETF (IEFA), and iShares:Core MSCI EmMkts (IEMG).

Since inception performance may vary from State Street reported performance due to calculation methodology differences.

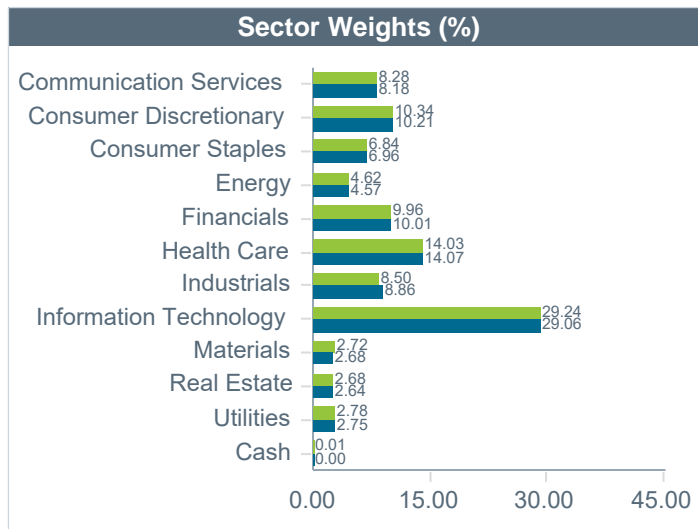
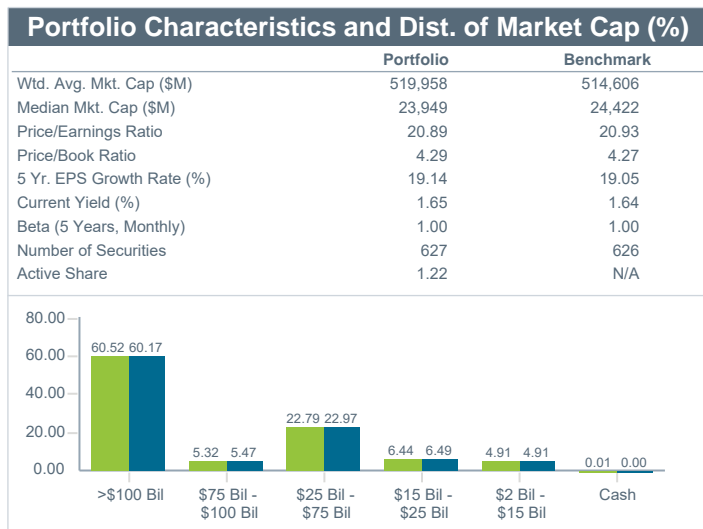
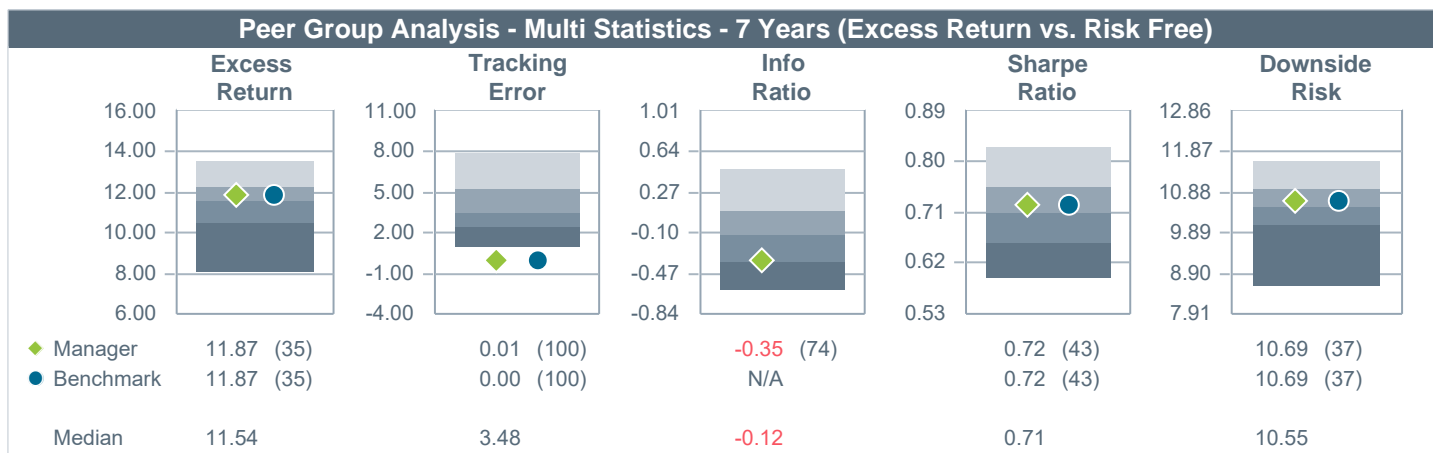
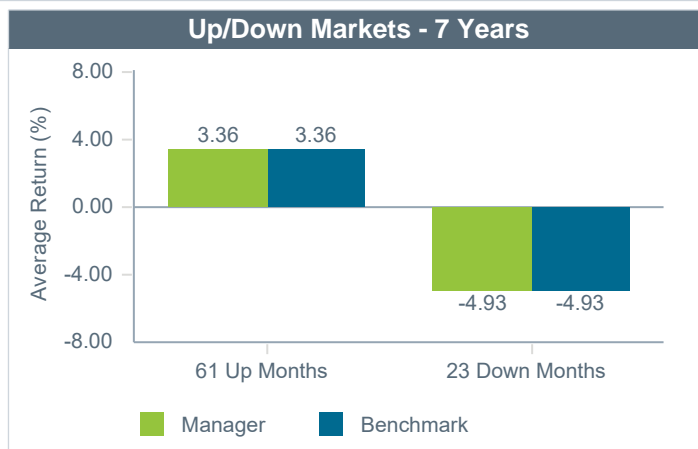
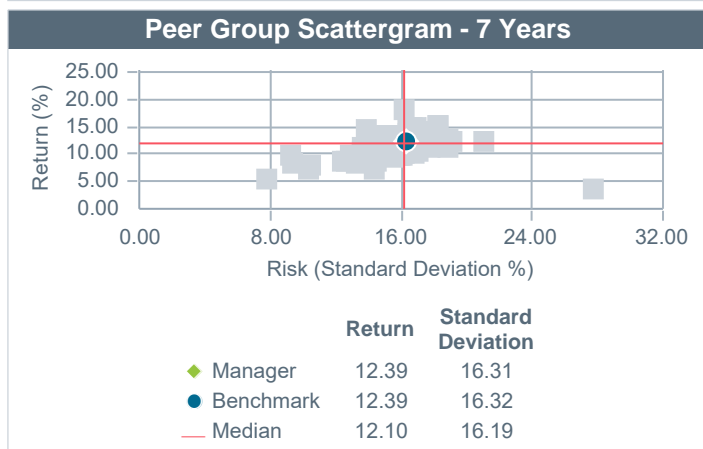
Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds.

Inception date shown represents first full month

Investment Manager Profiles



Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	7.73	-8.46	18.49	11.08	12.39	N/A	-19.45	26.96	21.34	31.62	-4.50
Benchmark	7.73	-8.47	18.50	11.09	12.39	12.15	-19.46	26.97	21.37	31.64	-4.50
Difference	0.00	0.01	-0.01	-0.01	0.00	N/A	0.01	-0.01	-0.03	-0.02	0.00
Peer Group Median	6.36	-7.07	18.28	10.34	12.10	12.06	-16.49	27.71	17.54	30.03	-5.07
Rank	20	77	46	34	38	N/A	77	55	29	31	42
Population	179	177	173	169	164	145	204	212	229	256	277



Performance shown is gross of fees and product specific prior to client inception. Calculation is based on monthly periodicity. Parentheses contain percentile ranks. BlackRock MSCI US Equity Index was transitioned into a separately managed account during Q1 2019. Inception date of returns represents first full month following transition.



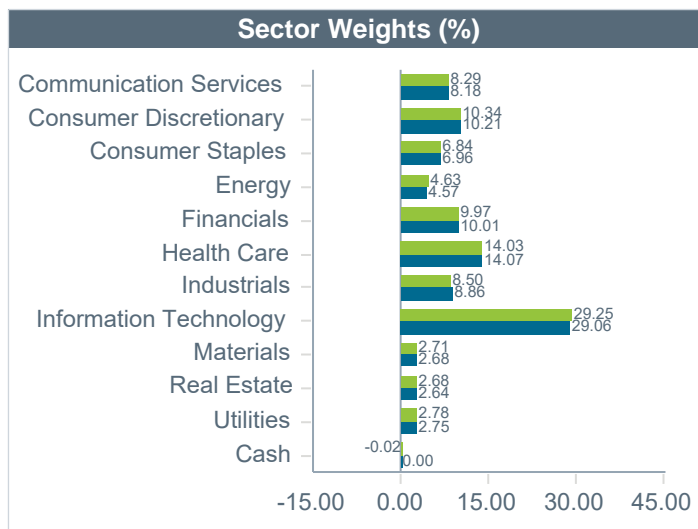
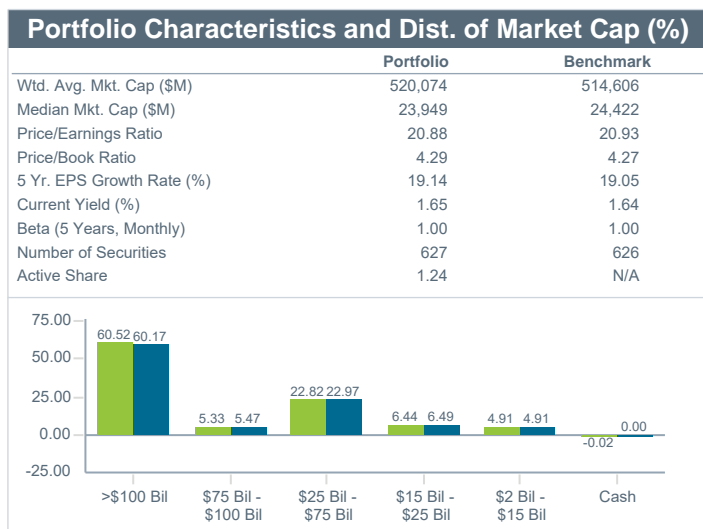
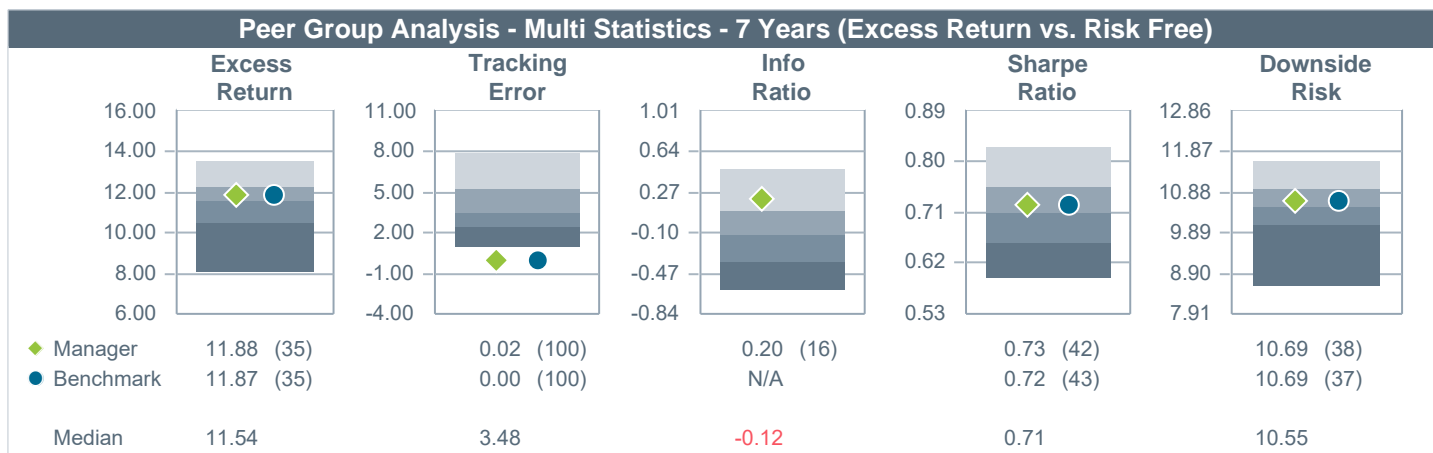
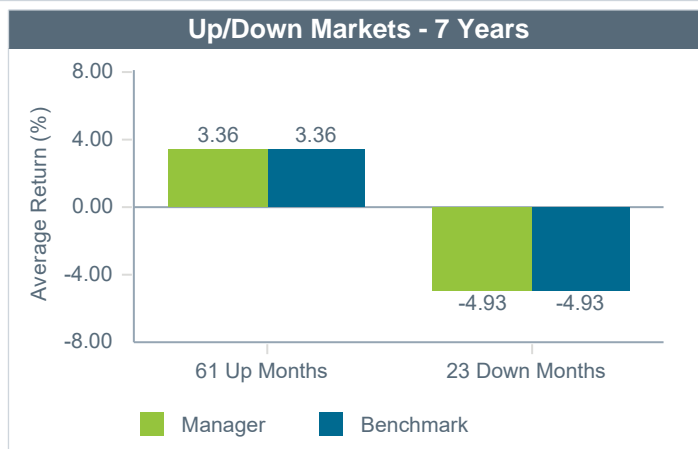
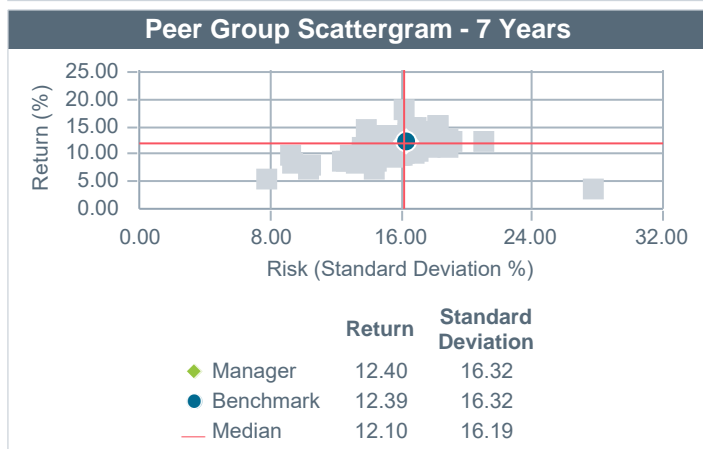
Manager: Northern Trust MSCI US Index (SA)

As of March 31, 2023

Benchmark: MSCI US Index (USD) (Gross)

Peer Group: IM U.S. Large Cap Core Equity (SA+CF)

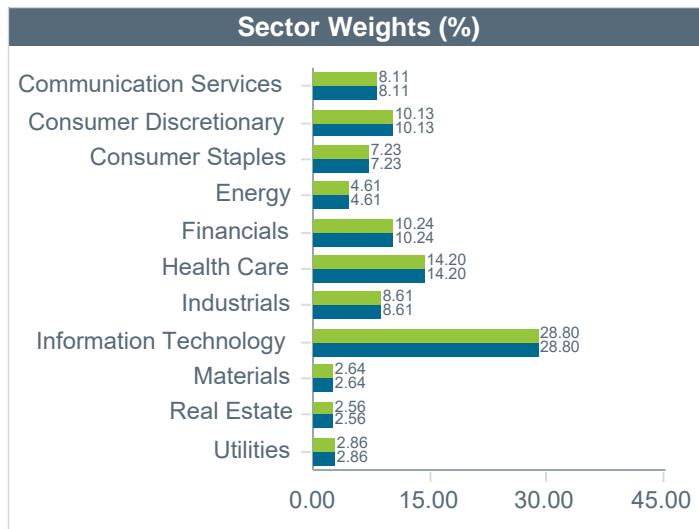
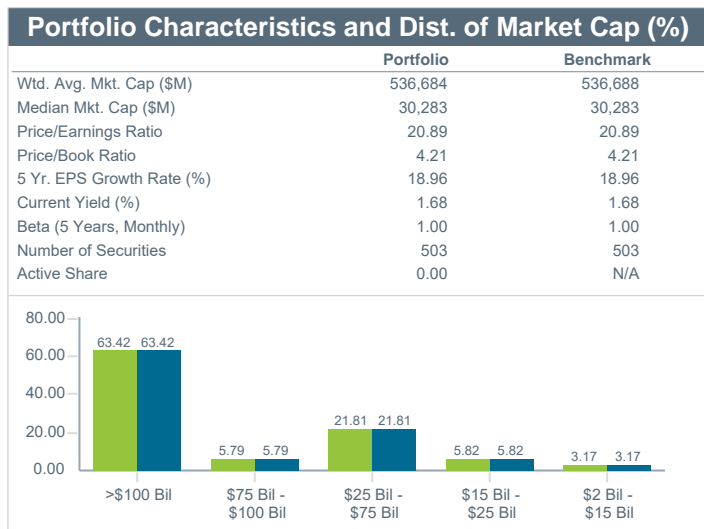
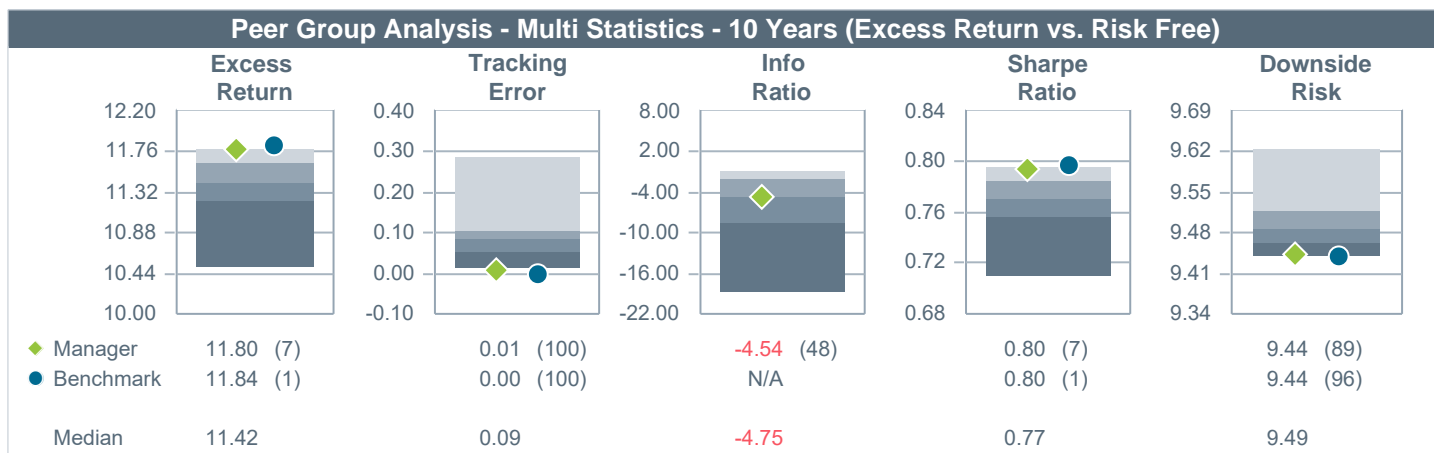
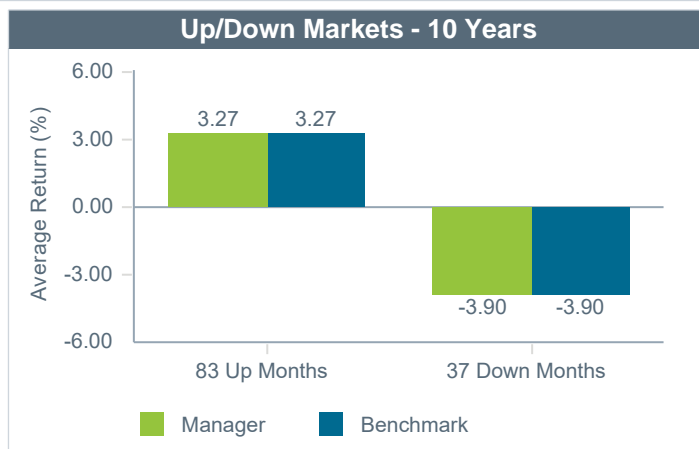
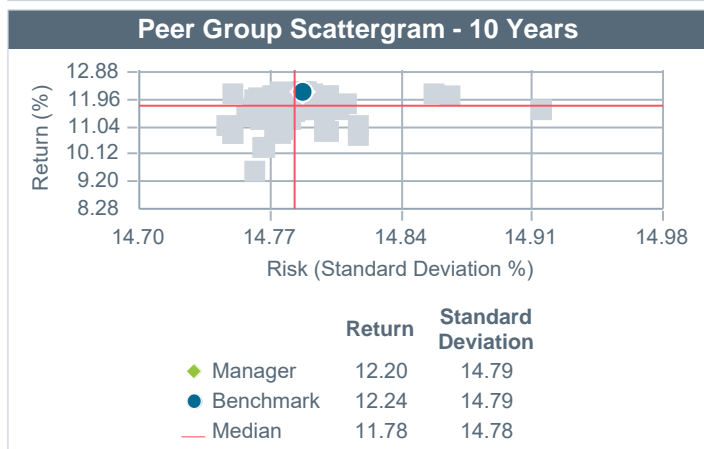
Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	7.73	-8.47	18.50	11.09	12.40	N/A	-19.45	26.98	21.36	31.71	-4.52
Benchmark	7.73	-8.47	18.50	11.09	12.39	12.15	-19.46	26.97	21.37	31.64	-4.50
Difference	0.00	0.00	0.00	0.00	0.01	N/A	0.01	0.01	-0.01	0.07	-0.02
Peer Group Median	6.36	-7.07	18.28	10.34	12.10	12.06	-16.49	27.71	17.54	30.03	-5.07
Rank	20	77	46	33	37	N/A	77	55	29	31	42
Population	179	177	173	169	164	145	204	212	229	256	277



Performance shown is gross of fees and product specific prior to client inception. Calculation is based on monthly periodicity. Parentheses contain percentile ranks.



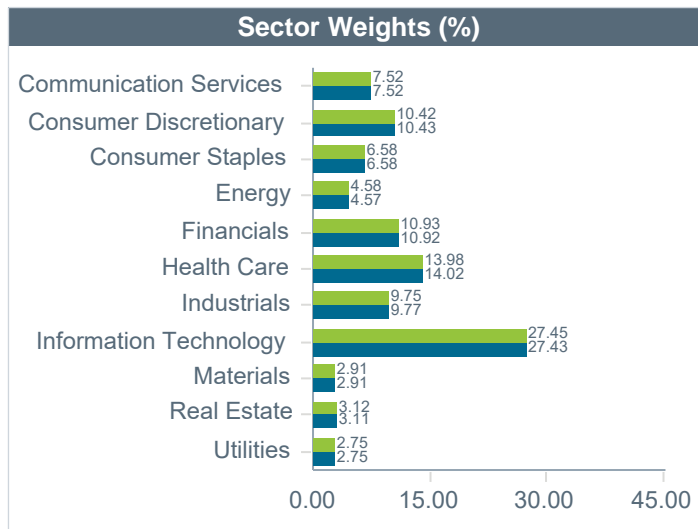
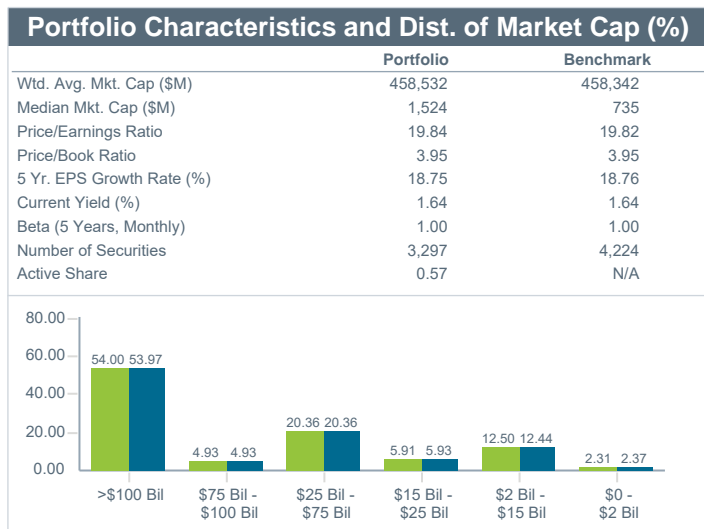
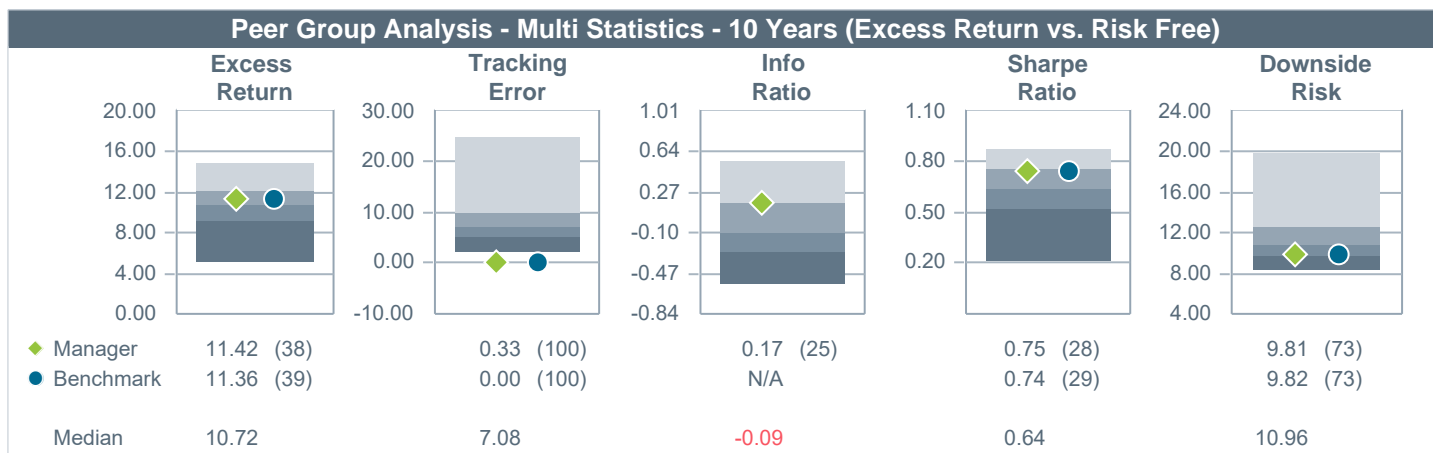
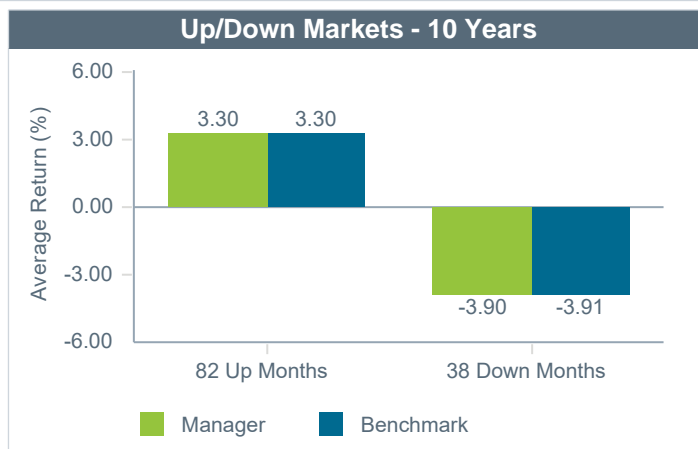
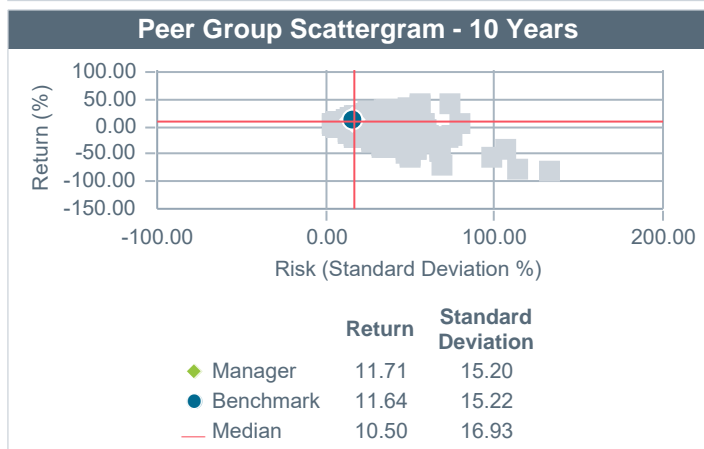
Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	7.49	-7.76	18.57	11.15	12.38	12.20	-18.13	28.66	18.37	31.44	-4.42
Benchmark	7.50	-7.73	18.60	11.19	12.42	12.24	-18.11	28.71	18.40	31.49	-4.38
Difference	-0.01	-0.03	-0.03	-0.04	-0.04	-0.04	-0.02	-0.05	-0.03	-0.05	-0.04
Peer Group Median	7.43	-8.01	18.25	10.83	12.04	11.78	-18.38	28.25	18.05	31.06	-4.66
Rank	11	7	9	9	6	7	10	10	14	9	14
Population	117	117	115	111	102	89	117	117	116	116	115



Performance shown is net of fees, product specific, and calculated using Net Asset Values (NAV). Calculation is based on monthly periodicity. Parentheses contain percentile ranks.



Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	7.25	-8.76	18.33	10.31	11.89	11.71	-19.51	25.64	20.75	30.87	-5.27
Benchmark	7.24	-8.77	18.34	10.32	11.89	11.64	-19.53	25.66	20.79	30.90	-5.30
Difference	0.01	0.01	-0.01	-0.01	0.00	0.07	0.02	-0.02	-0.04	-0.03	0.03
Peer Group Median	4.58	-7.47	18.47	8.80	10.74	10.50	-16.41	25.51	15.15	28.82	-6.43
Rank	33	61	52	31	36	33	62	50	38	38	43
Population	8,805	8,580	7,941	7,353	6,571	5,412	8,543	8,485	8,533	8,834	9,011



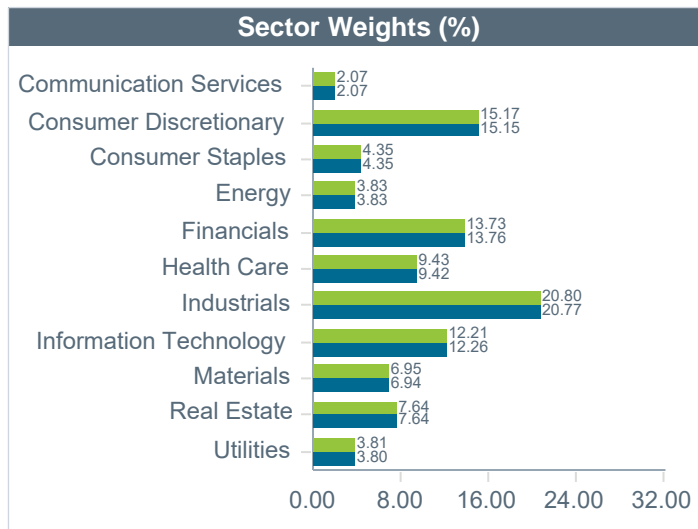
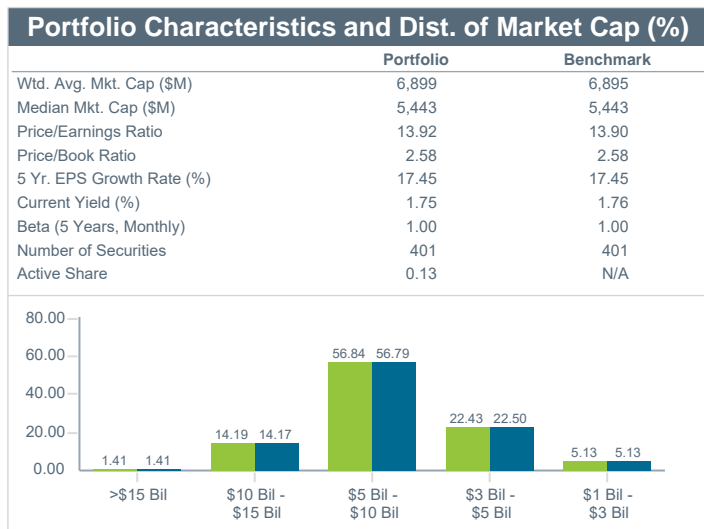
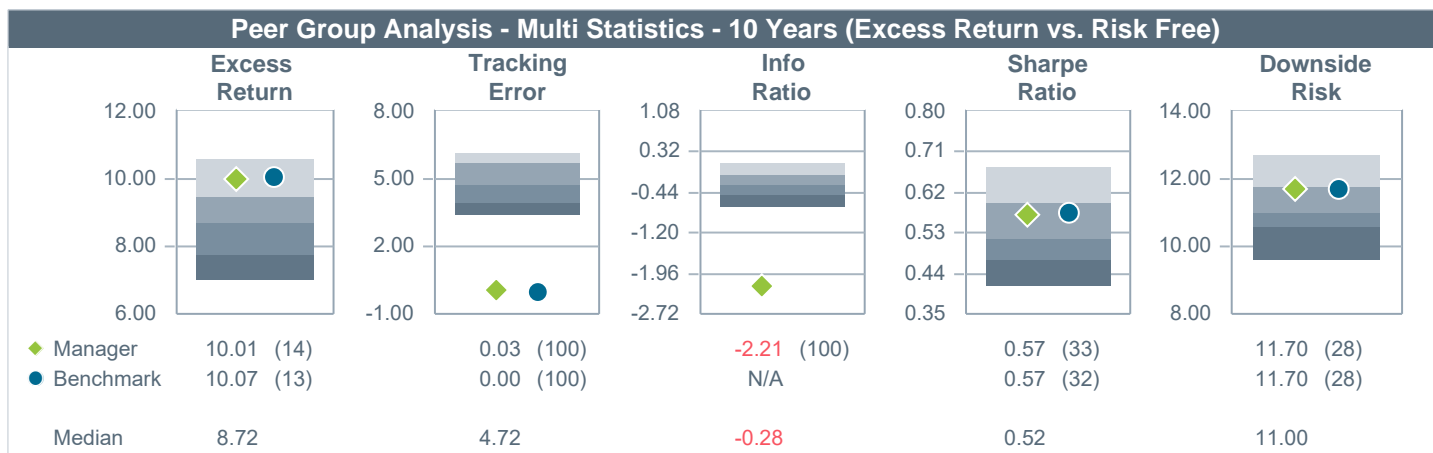
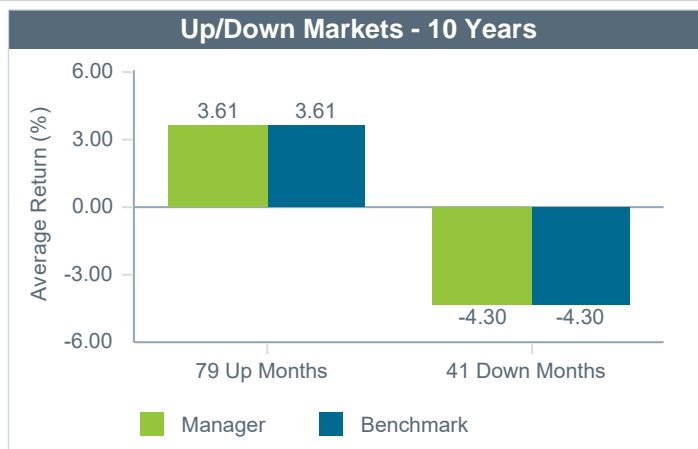
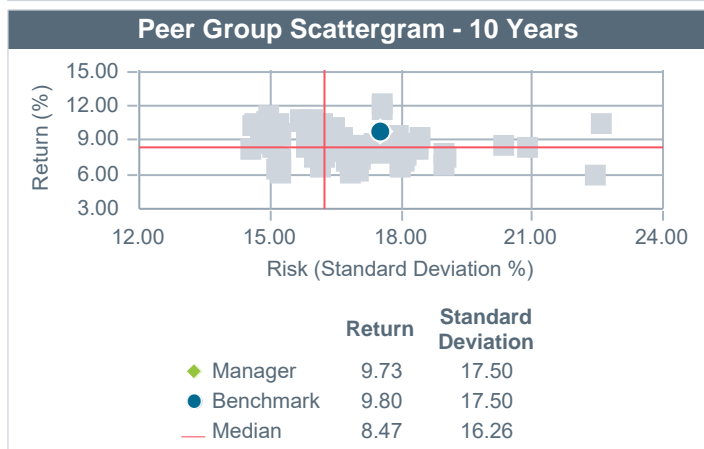
Performance shown is net of fees and product specific. Calculation is based on monthly periodicity. Parentheses contain percentile ranks.



Manager: iShares:Core S&P Md-Cp (IJH)
Benchmark: S&P Mid Cap 400 Index (Cap Wtd)
Peer Group: IM U.S. Mid Cap Core Equity (MF)

As of March 31, 2023

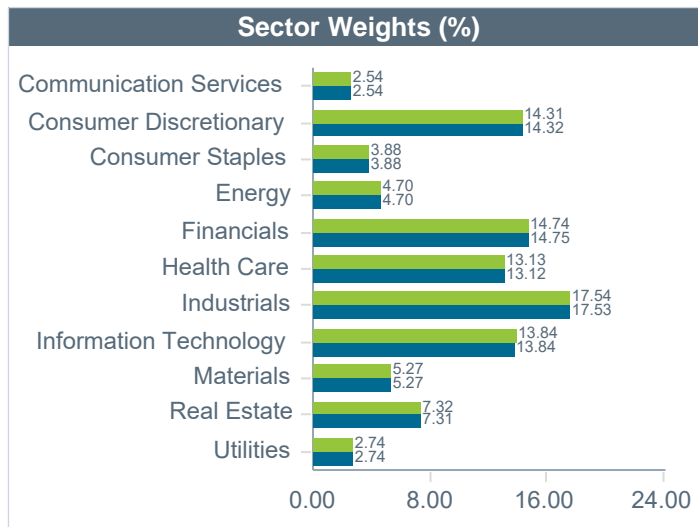
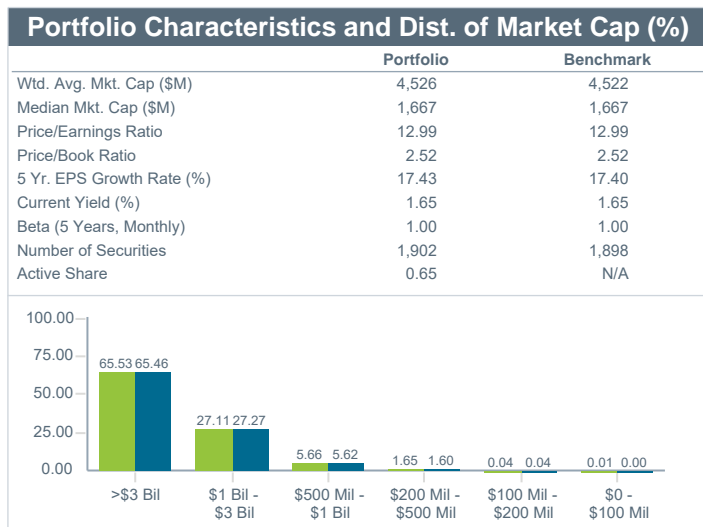
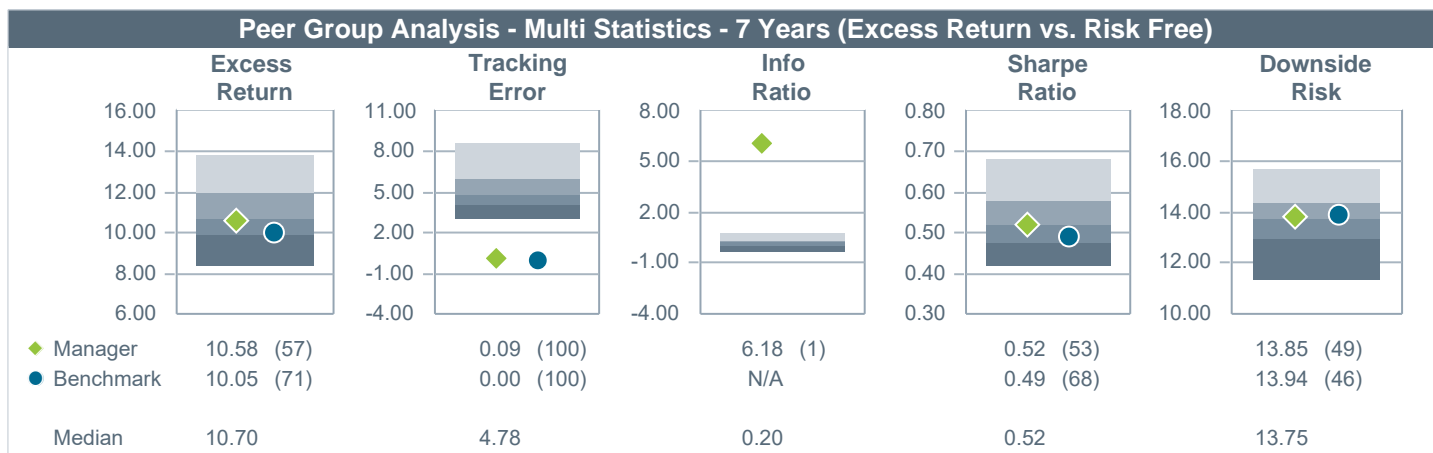
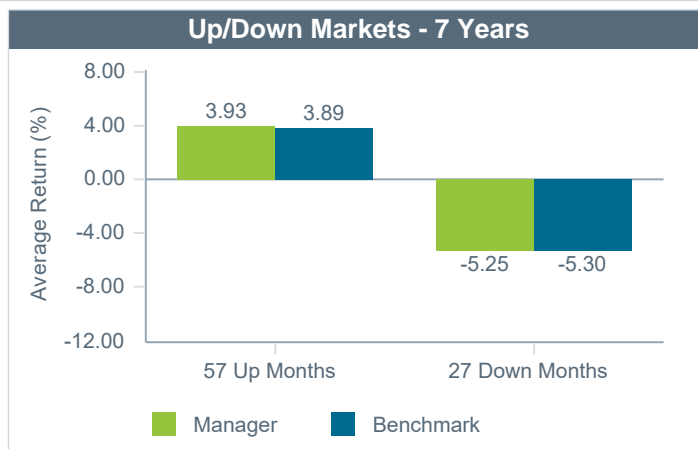
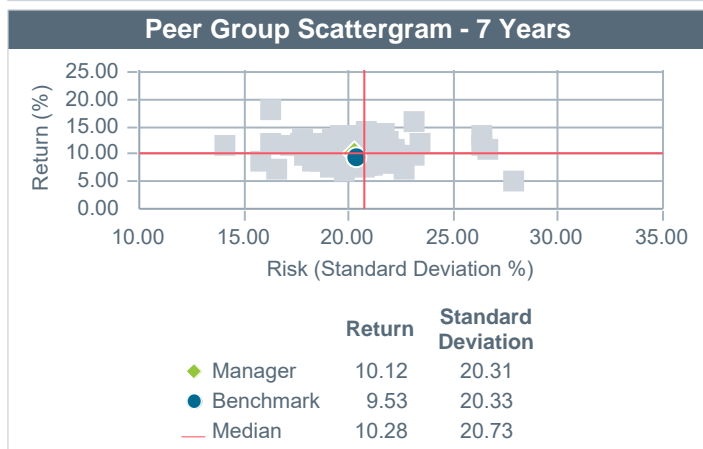
Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	3.81	-5.13	22.05	7.62	9.89	9.73	-13.08	24.68	13.61	26.14	-11.14
Benchmark	3.81	-5.12	22.10	7.67	9.95	9.80	-13.06	24.76	13.66	26.20	-11.08
Difference	0.00	-0.01	-0.05	-0.05	-0.06	-0.07	-0.02	-0.08	-0.05	-0.06	-0.06
Peer Group Median	2.31	-6.60	19.49	6.91	8.51	8.47	-13.21	25.73	8.44	28.59	-11.64
Rank	30	33	19	40	18	19	50	59	26	72	42
Population	250	237	227	214	174	129	241	239	246	261	276



Performance shown is net of fees, product specific, and calculated using Net Asset Values (NAV). Calculation is based on monthly periodicity. Parentheses contain percentile ranks.



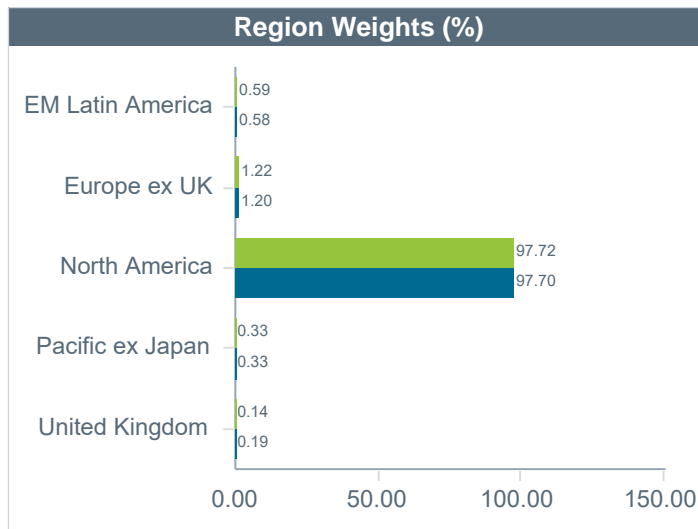
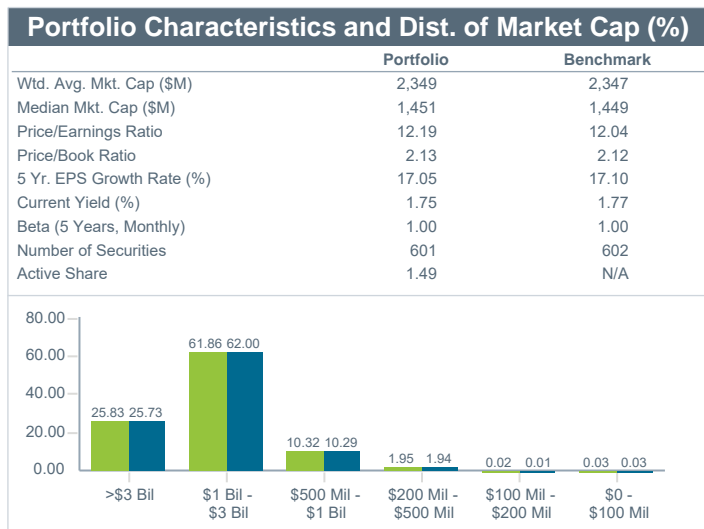
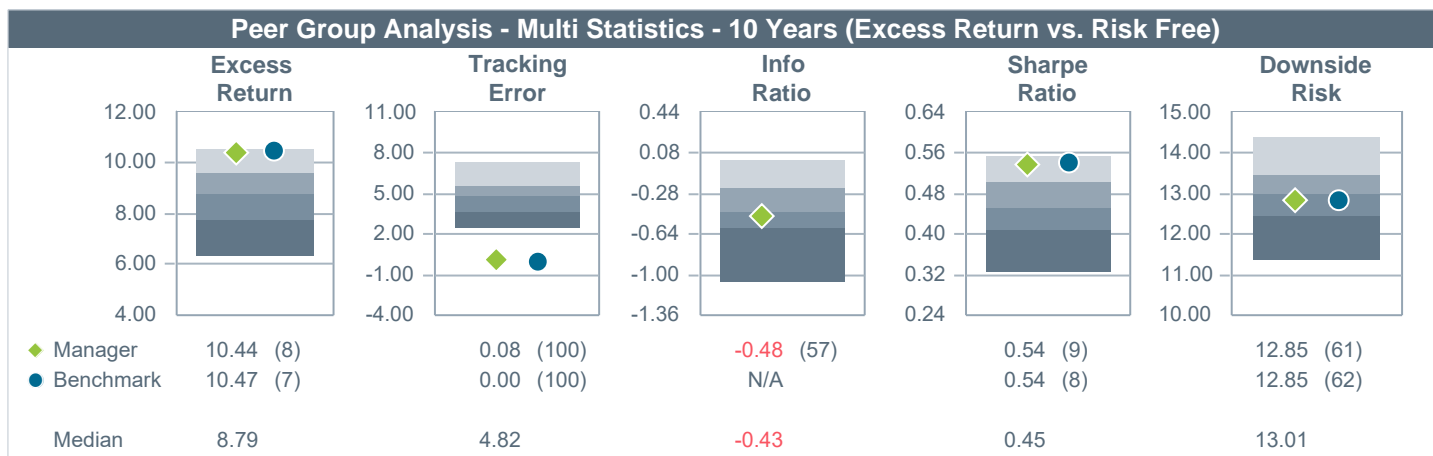
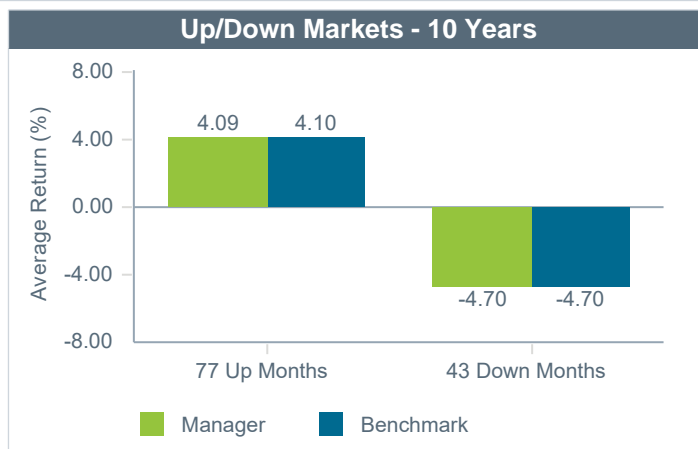
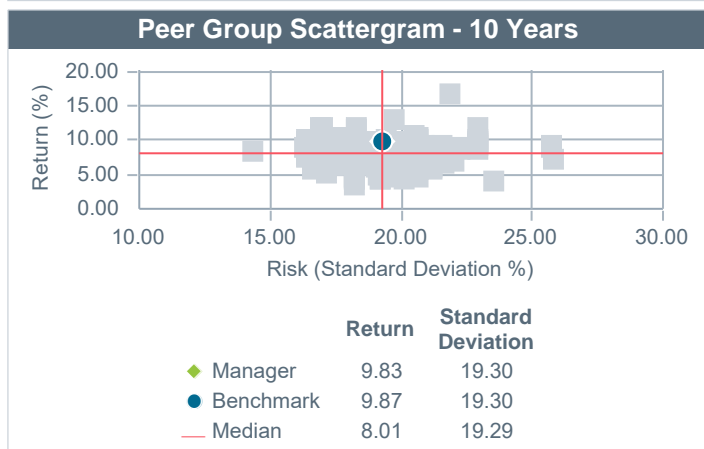
Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	3.98	-8.37	21.28	7.17	10.12	N/A	-17.07	19.62	18.95	27.34	-9.93
Benchmark	3.78	-8.97	20.66	6.61	9.53	9.09	-17.55	19.11	18.32	26.74	-10.40
Difference	0.20	0.60	0.62	0.56	0.59	N/A	0.48	0.51	0.63	0.60	0.47
Peer Group Median	3.88	-7.40	21.65	7.73	10.28	10.16	-16.18	24.10	18.71	25.88	-10.11
Rank	46	59	55	57	52	N/A	58	74	48	38	49
Population	122	121	117	114	107	98	139	152	158	168	188



Performance shown is gross of fees and product specific prior to client inception. Calculation is based on monthly periodicity. Parentheses contain percentile ranks.



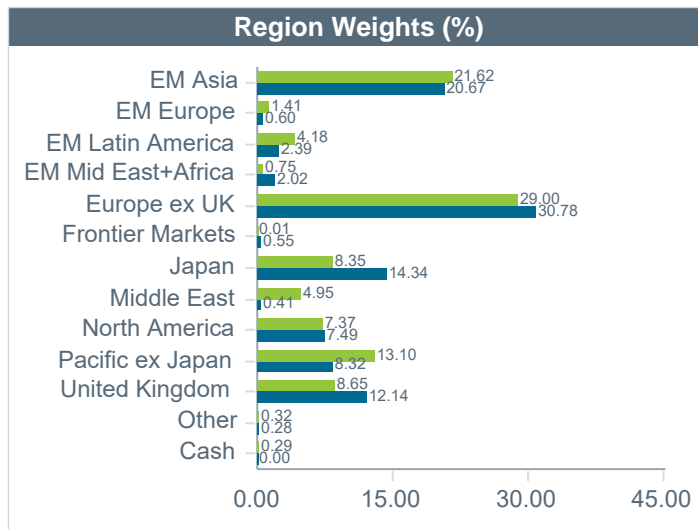
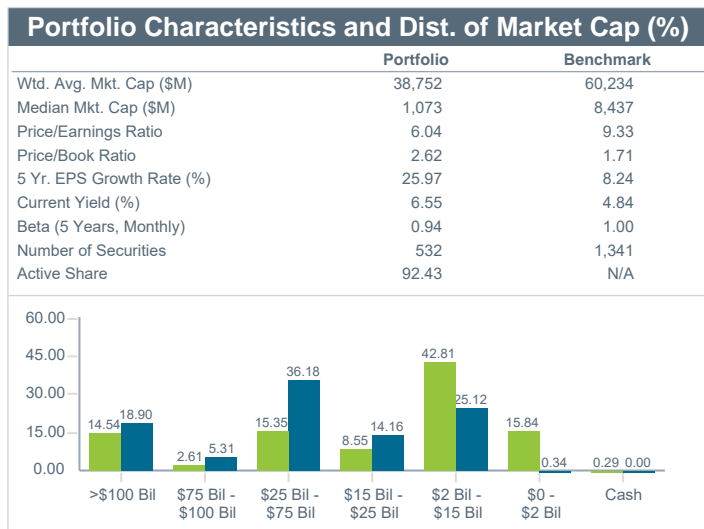
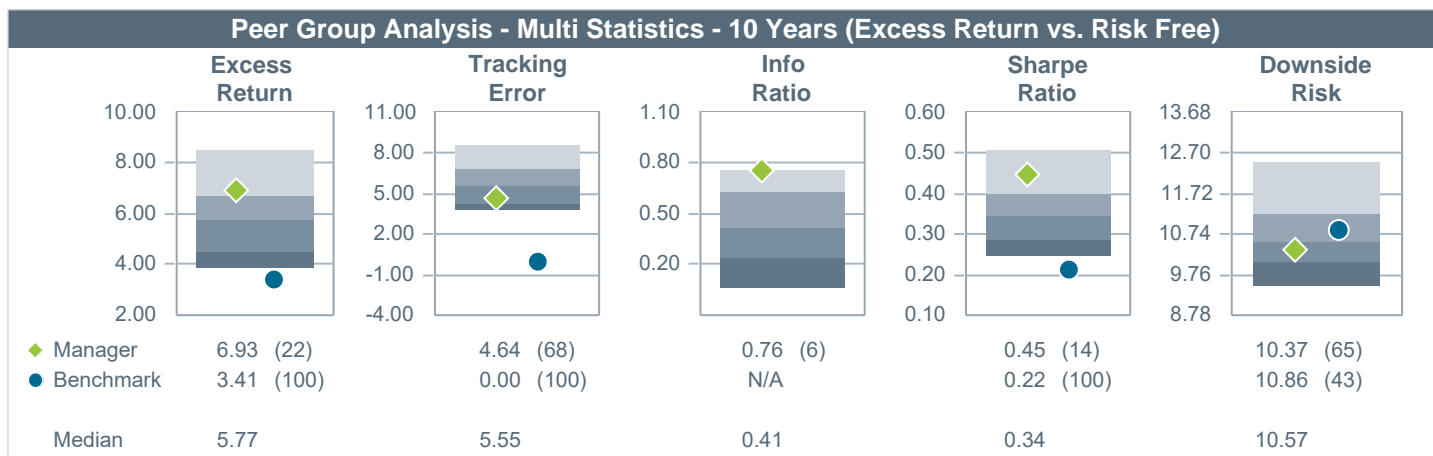
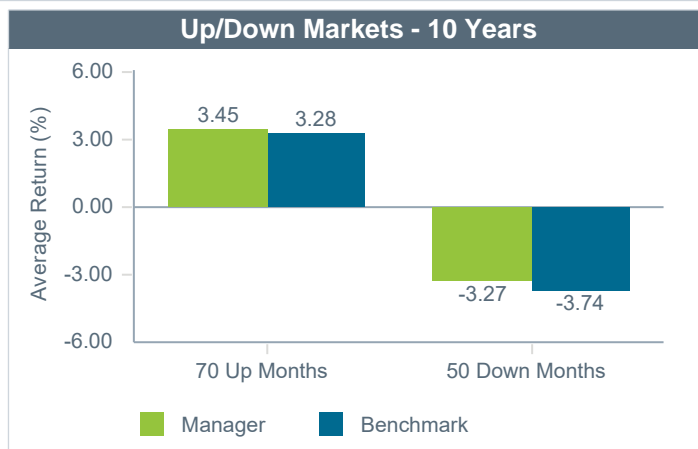
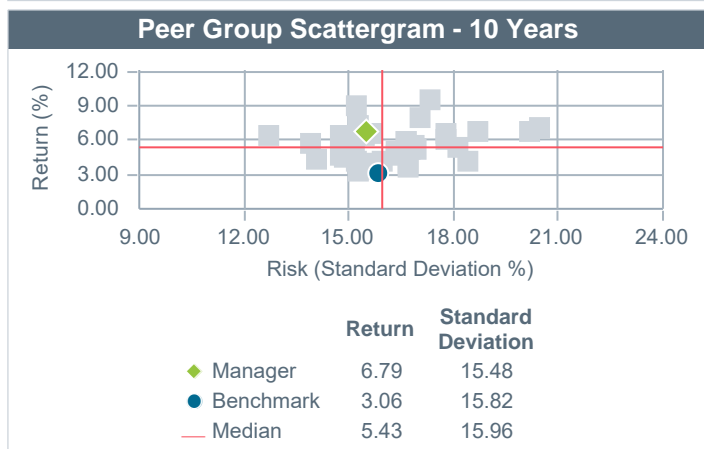
Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	2.57	-8.90	21.61	6.24	9.60	9.83	-16.20	26.69	11.24	22.79	-8.43
Benchmark	2.57	-8.82	21.71	6.30	9.64	9.87	-16.10	26.82	11.29	22.78	-8.48
Difference	0.00	-0.08	-0.10	-0.06	-0.04	-0.04	-0.10	-0.13	-0.05	0.01	0.05
Peer Group Median	2.71	-8.33	21.16	5.52	8.31	8.01	-15.78	25.12	9.89	23.94	-12.71
Rank	53	59	43	33	19	6	57	38	42	61	9
Population	690	684	656	615	540	425	683	703	722	742	776



Performance shown is net of fees, product specific, and calculated using Net Asset Values (NAV). Calculation is based on monthly periodicity. Parentheses contain percentile ranks.

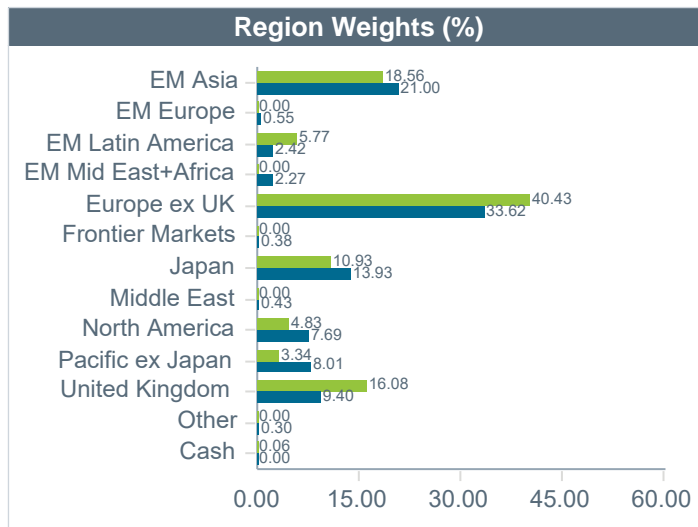
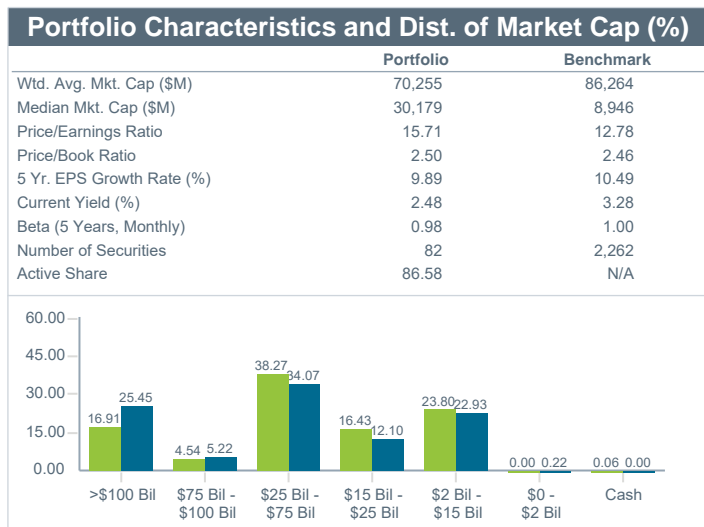
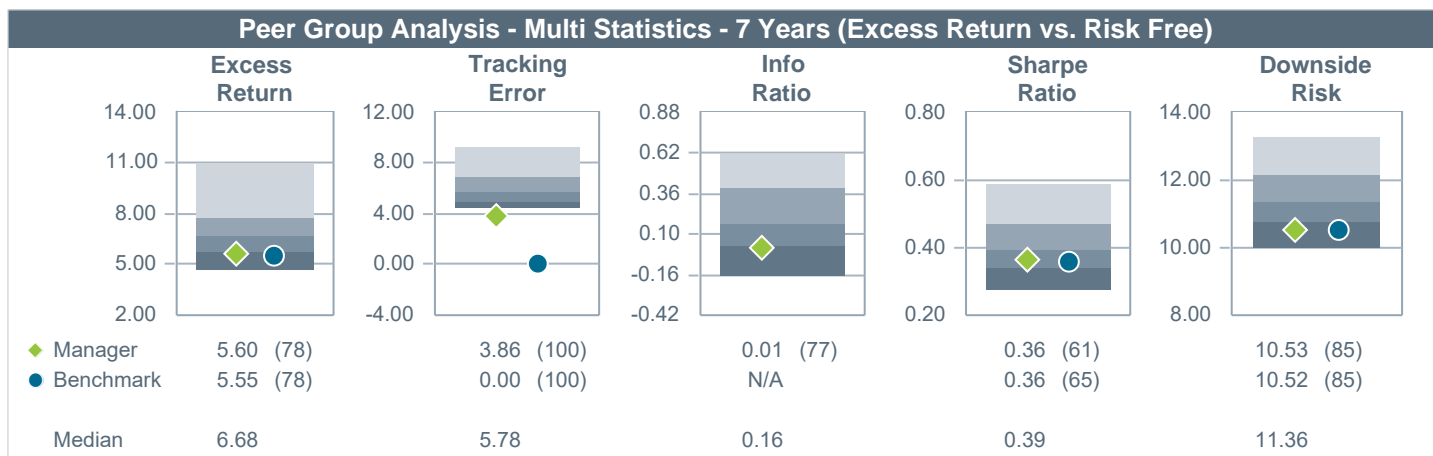
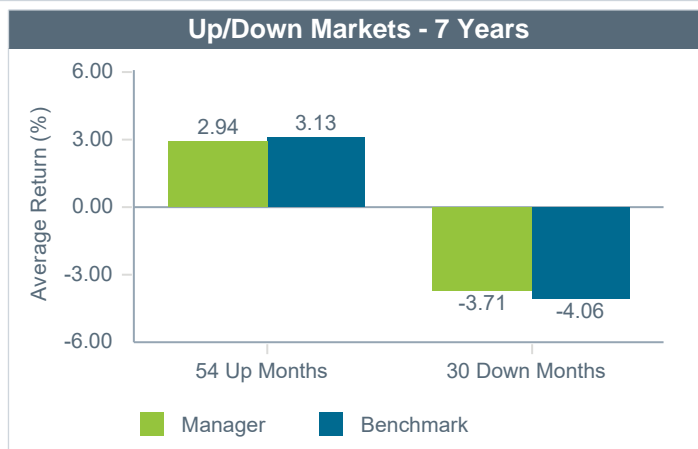
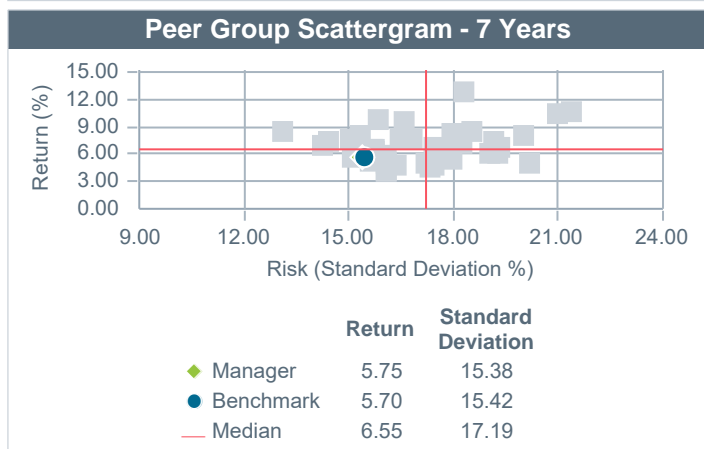


Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	3.12	-8.98	15.67	3.65	9.08	6.79	-12.61	17.23	9.45	19.98	-12.99
Benchmark	5.16	-4.00	13.82	1.26	5.00	3.06	-8.59	10.46	-0.77	15.72	-13.97
Difference	-2.04	-4.98	1.85	2.39	4.08	3.73	-4.02	6.77	10.22	4.26	0.98
Peer Group Median	9.28	-1.01	14.88	3.48	6.55	5.43	-11.10	11.05	6.52	21.34	-14.78
Rank	99	98	46	44	12	16	64	7	43	57	26
Population	39	39	39	39	39	37	40	44	51	55	58



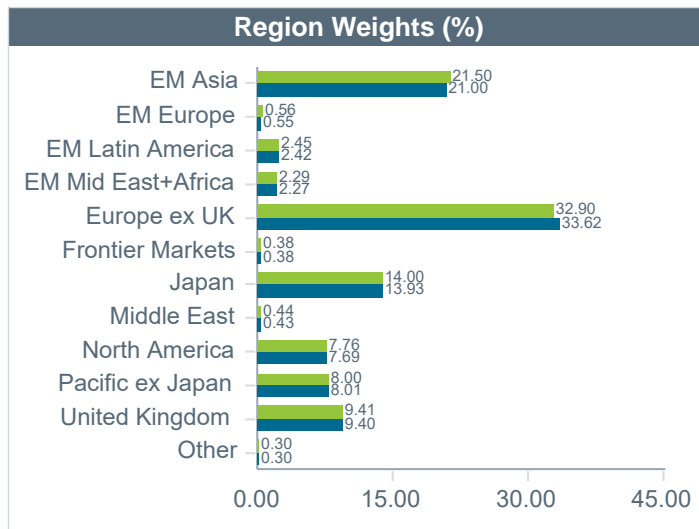
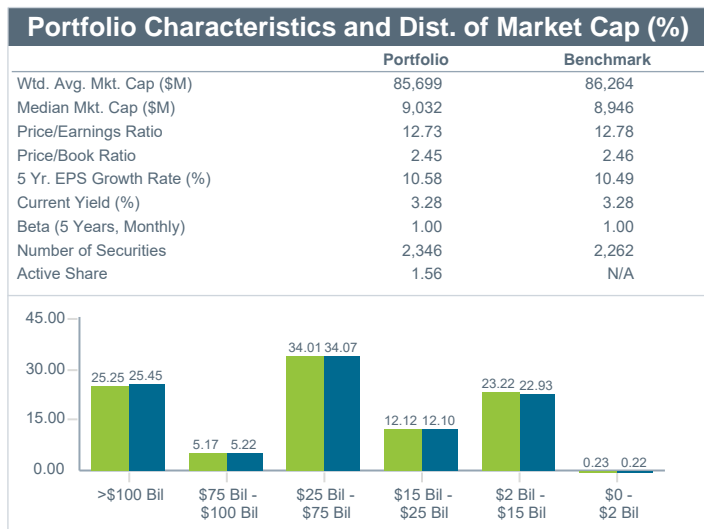
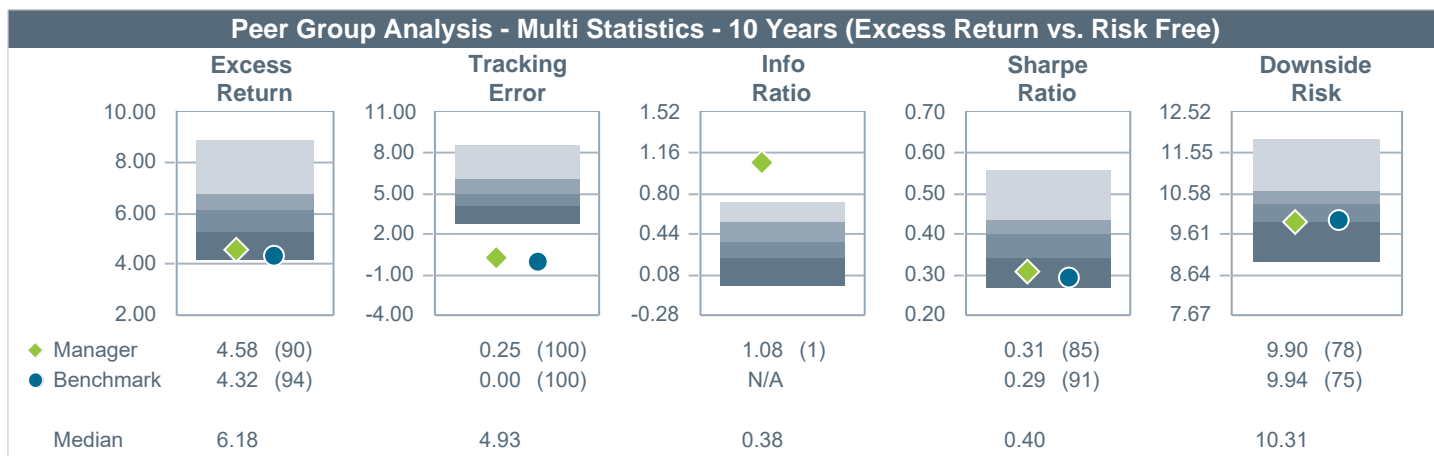
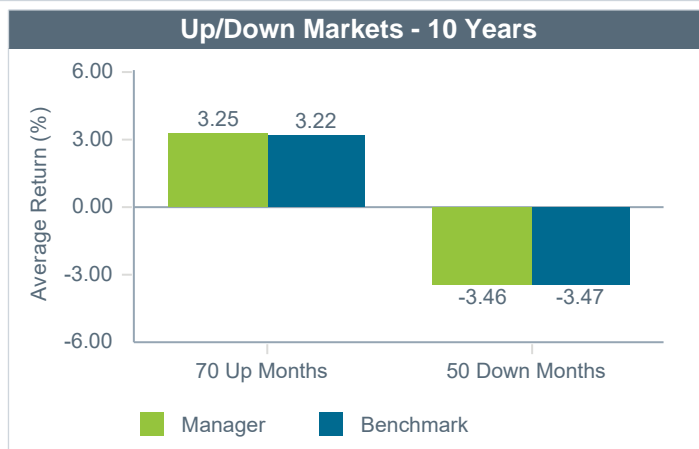
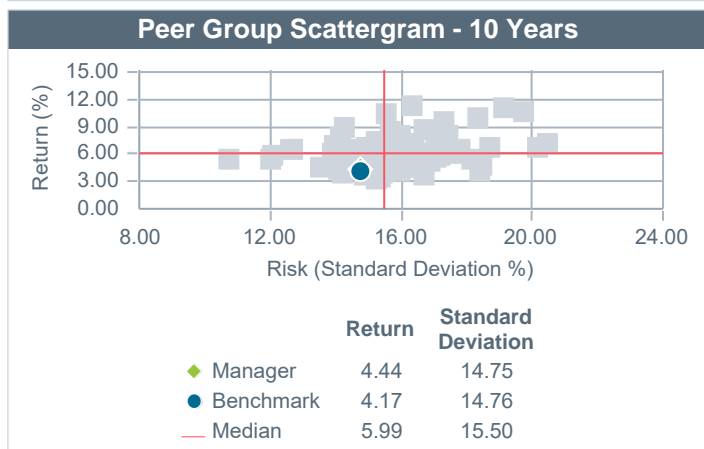
Performance shown is gross of fees and client specific. Calculation is based on monthly periodicity. Parentheses contain percentile ranks.

Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	9.94	-0.31	13.47	3.15	5.75	N/A	-12.84	4.62	10.14	22.31	-13.88
Benchmark	6.87	-5.07	11.80	2.21	5.70	3.54	-16.00	7.82	10.65	21.51	-15.55
Difference	3.07	4.76	1.67	0.94	0.05	N/A	3.16	-3.20	-0.51	0.80	1.67
Peer Group Median	9.28	-1.01	14.88	3.48	6.55	5.43	-11.10	11.05	6.52	21.34	-14.78
Rank	25	48	60	62	73	N/A	65	94	39	42	35
Population	39	39	39	39	39	37	40	44	51	55	58



Performance shown is gross of fees and client specific. Calculation is based on monthly periodicity. Parentheses contain percentile ranks. See the Addendum for custom index specifications.

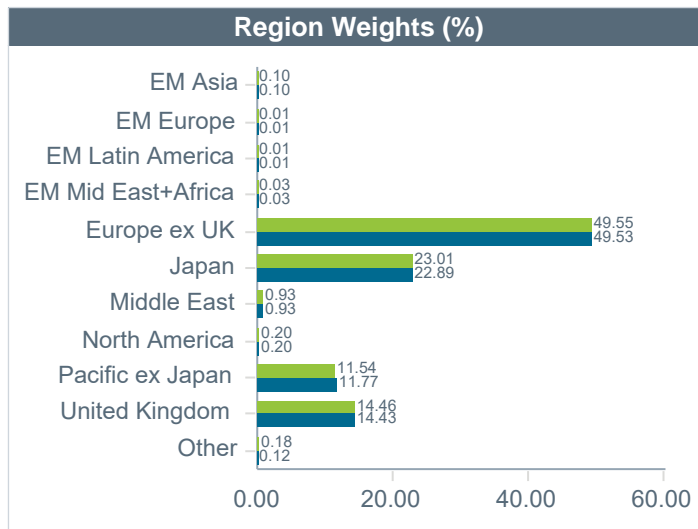
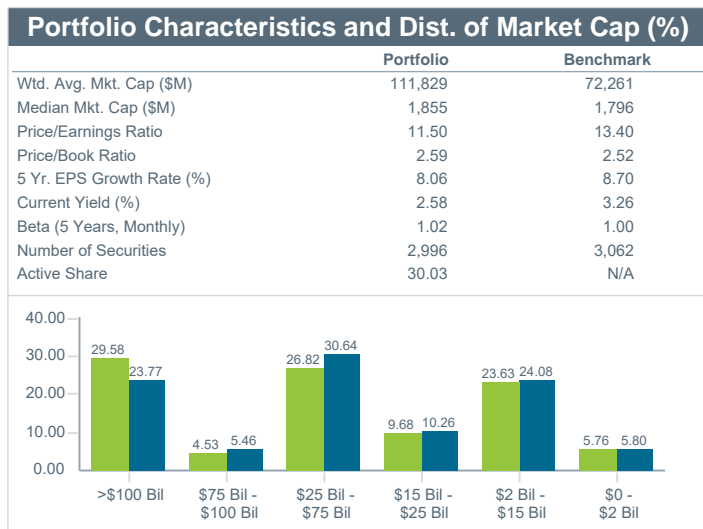
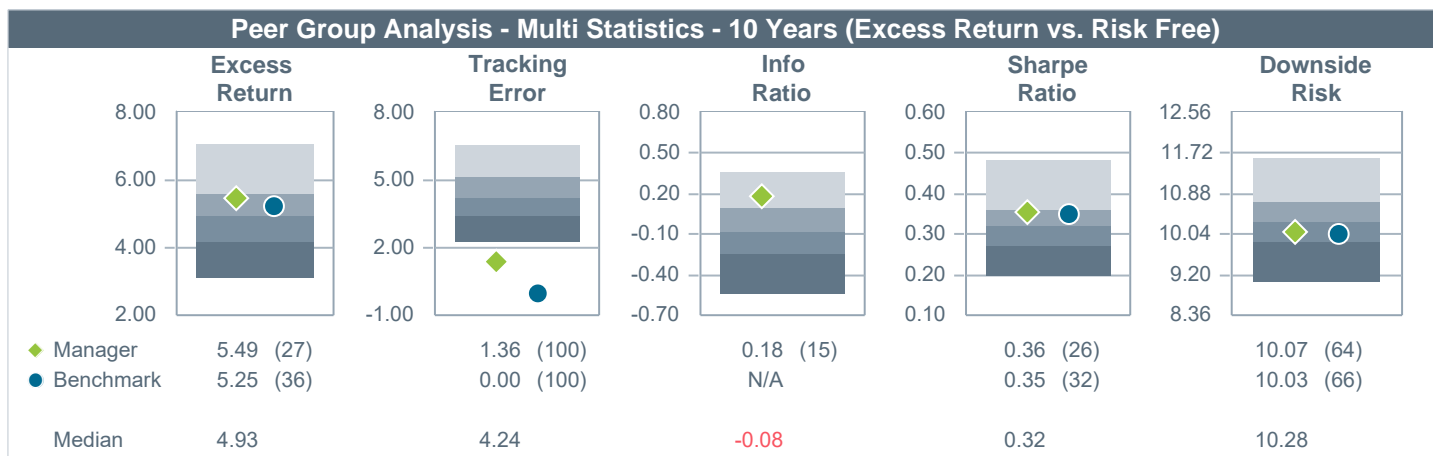
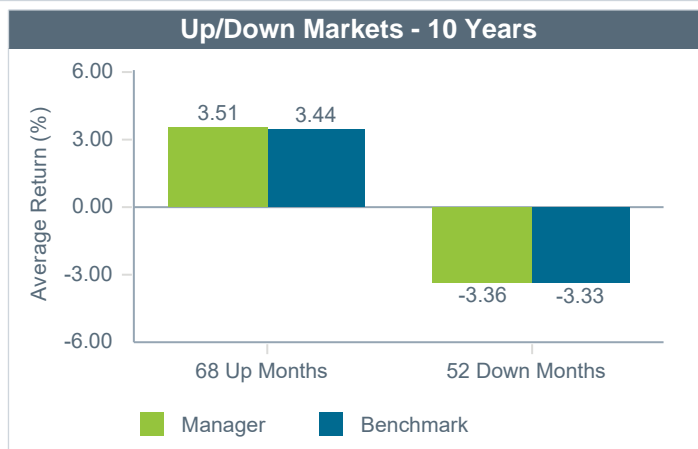
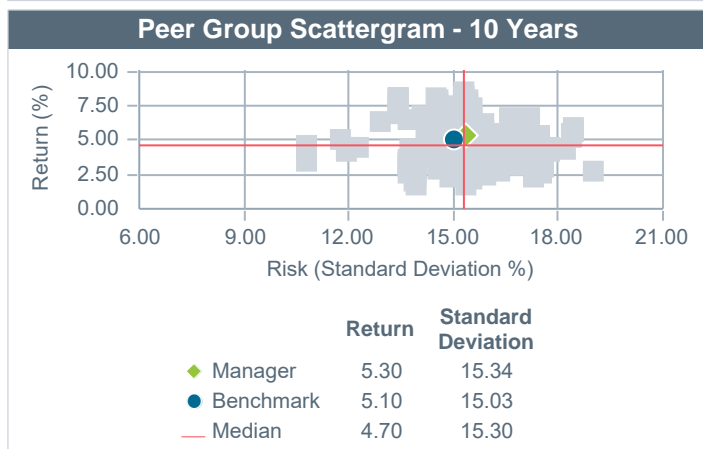
Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	6.96	-4.73	12.09	2.78	6.15	4.44	-15.72	8.07	10.87	21.82	-13.95
Benchmark	6.87	-5.07	11.80	2.47	5.86	4.17	-16.00	7.82	10.65	21.51	-14.20
Difference	0.09	0.34	0.29	0.31	0.29	0.27	0.28	0.25	0.22	0.31	0.25
Peer Group Median	8.71	-3.18	12.96	3.87	6.85	5.99	-17.08	9.37	14.71	24.92	-14.61
Rank	80	69	74	77	70	90	44	62	60	67	43
Population	139	138	137	137	137	126	142	149	161	168	178



Performance shown is gross of fees and product specific prior to 10/2020. Calculation is based on monthly periodicity. Parentheses contain percentile ranks.



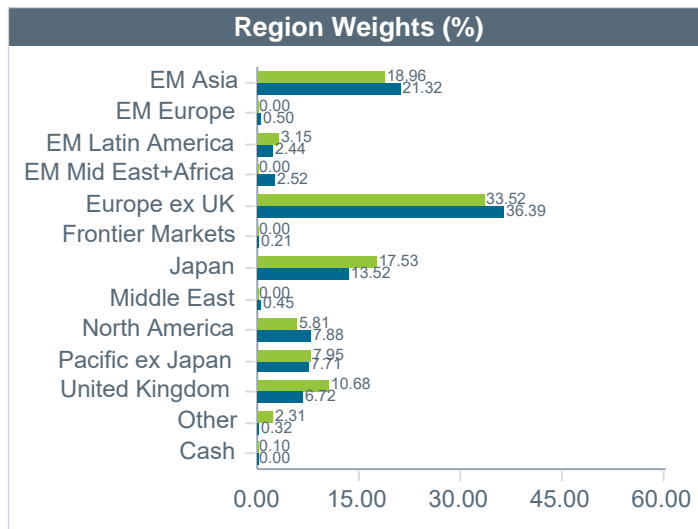
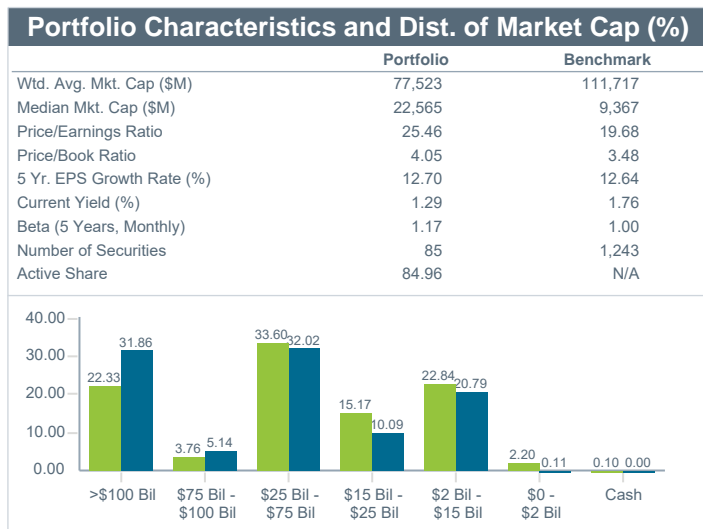
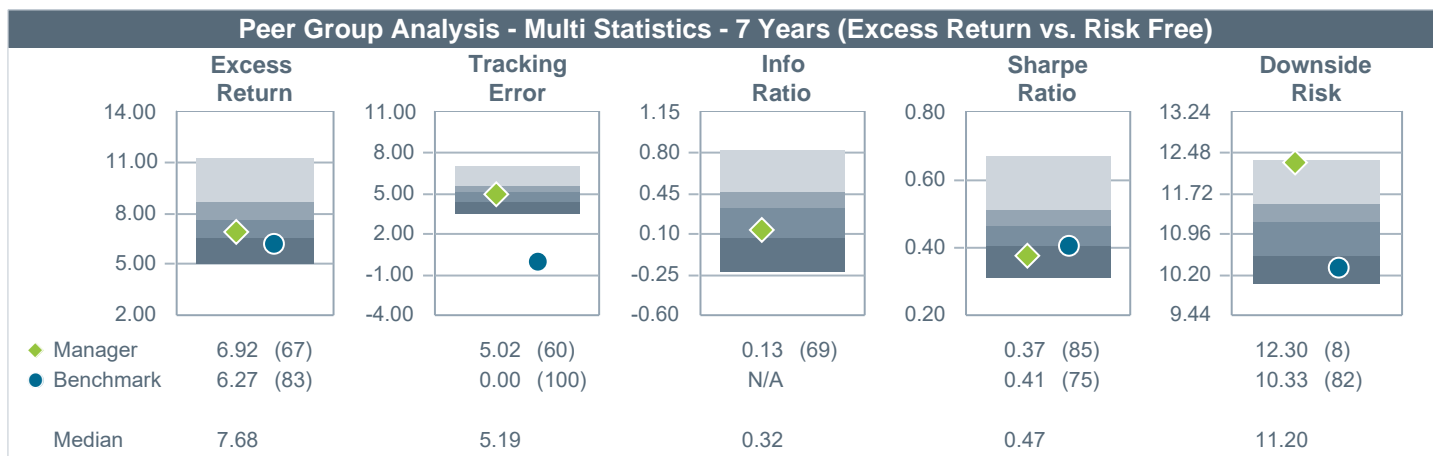
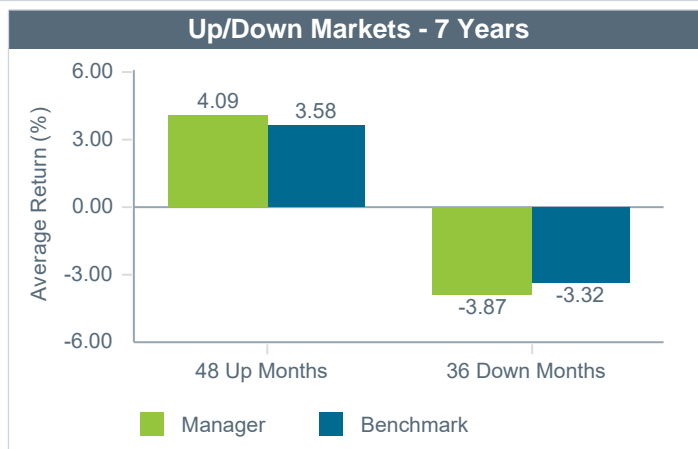
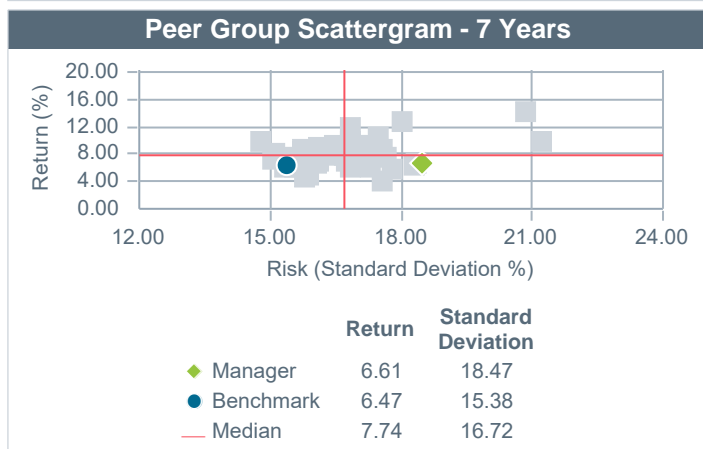
Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	8.13	-1.15	13.17	3.42	6.32	5.30	-15.13	11.29	8.55	22.67	-14.20
Benchmark	7.95	-2.66	12.83	3.12	6.06	5.10	-15.53	11.08	8.47	22.44	-14.40
Difference	0.18	1.51	0.34	0.30	0.26	0.20	0.40	0.21	0.08	0.23	0.20
Peer Group Median	8.47	-0.73	12.86	2.88	5.72	4.70	-15.38	10.79	8.17	21.59	-15.91
Rank	59	55	46	35	31	27	48	40	48	40	33
Population	517	517	517	517	506	405	523	558	597	643	672



Performance shown is net of fees, product specific, and calculated using Net Asset Values (NAV). Calculation is based on monthly periodicity. Parentheses contain percentile ranks.



Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	10.28	-6.91	9.30	3.40	6.61	N/A	-31.11	2.16	34.86	34.99	-16.93
Benchmark	8.59	-6.35	9.49	3.36	6.47	5.08	-23.05	5.09	22.20	27.34	-14.43
Difference	1.69	-0.56	-0.19	0.04	0.14	N/A	-8.06	-2.93	12.66	7.65	-2.50
Peer Group Median	9.86	-4.39	12.47	4.55	7.74	6.42	-23.43	8.81	22.06	29.53	-13.90
Rank	33	70	87	79	73	N/A	92	91	14	7	85
Population	47	46	46	46	45	43	49	51	52	54	57



Performance shown is gross of fees and client specific. Calculation is based on monthly periodicity. Parentheses contain percentile ranks.

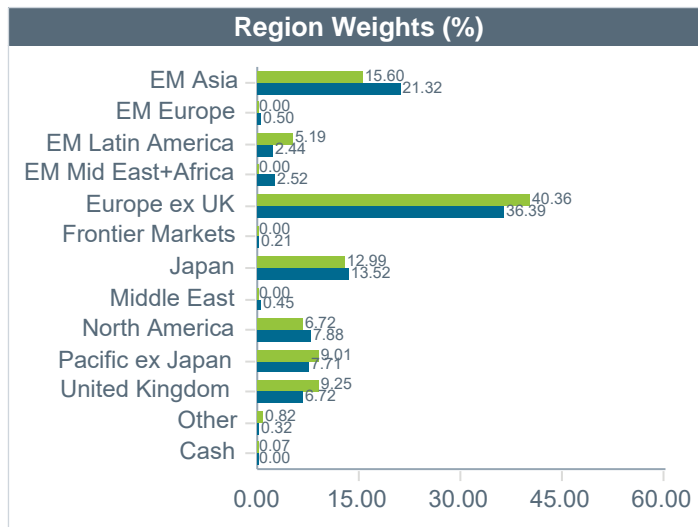
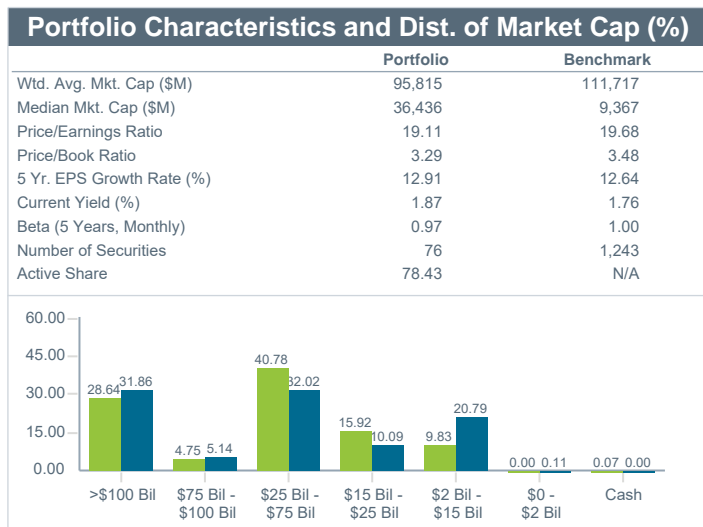
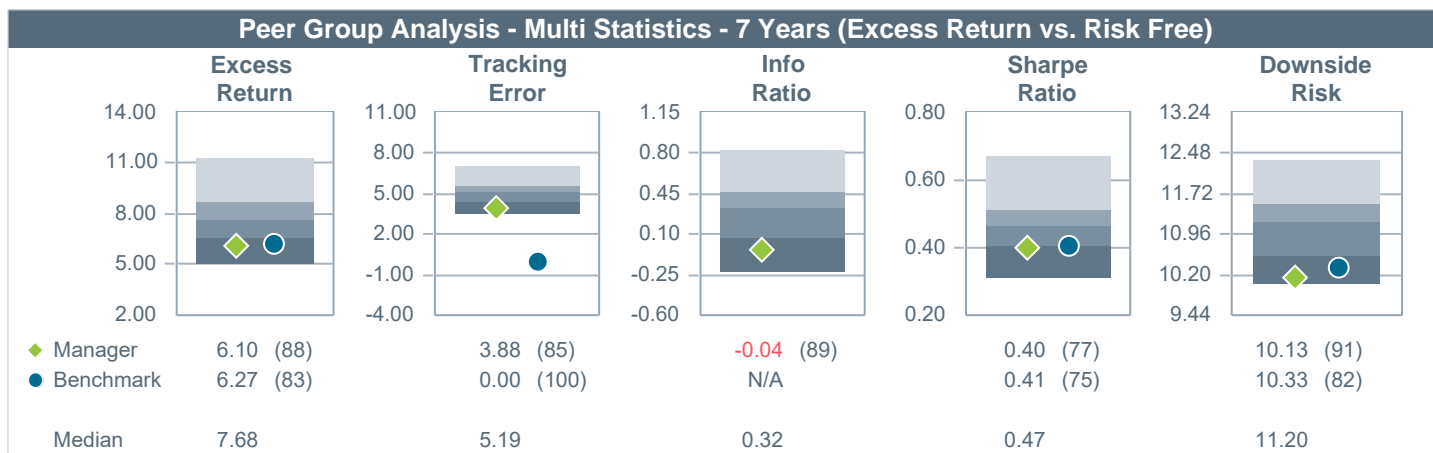
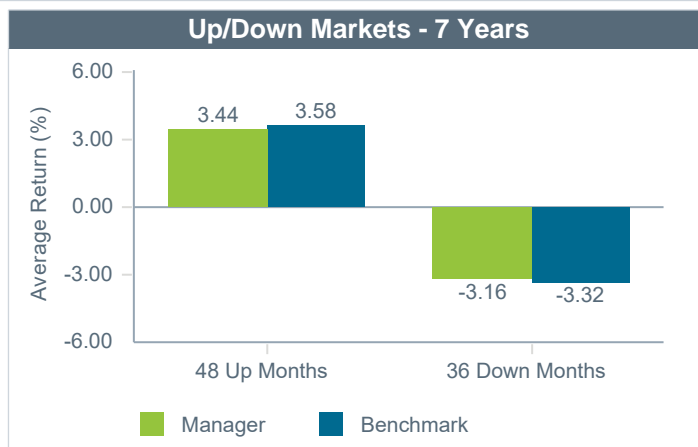
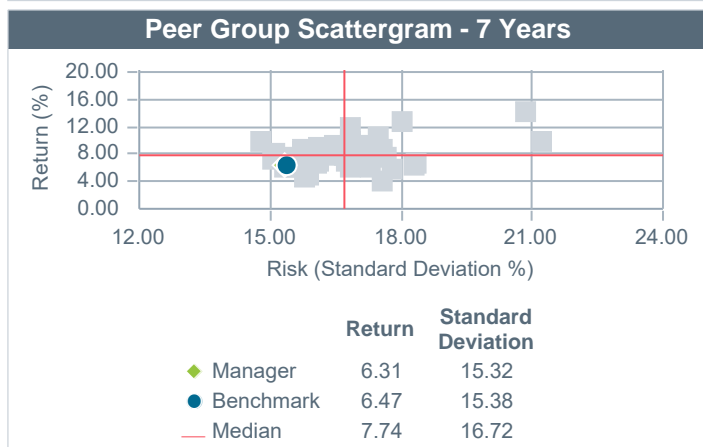
Manager: Invesco (SA)

As of March 31, 2023

Benchmark: MSCI ACW Ex US Grth Index (USD) (Net)

Peer Group: IM ACWI Ex US Growth (SA+CF)

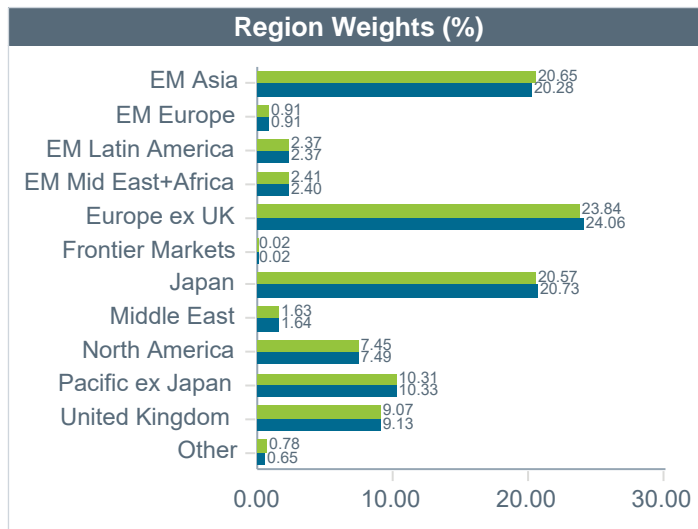
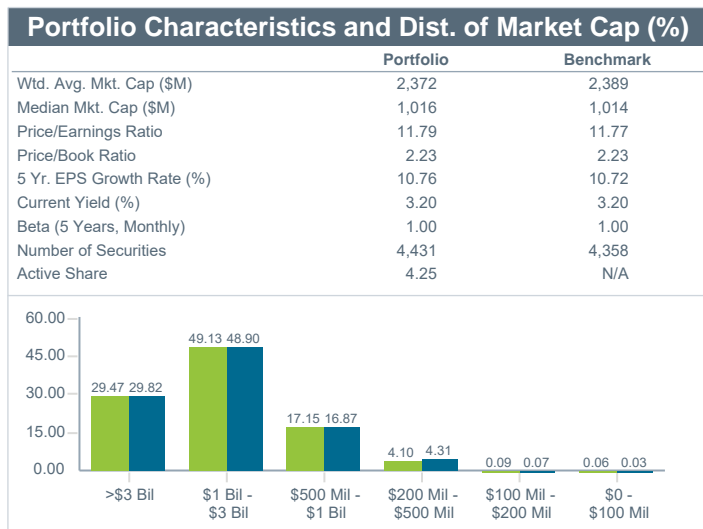
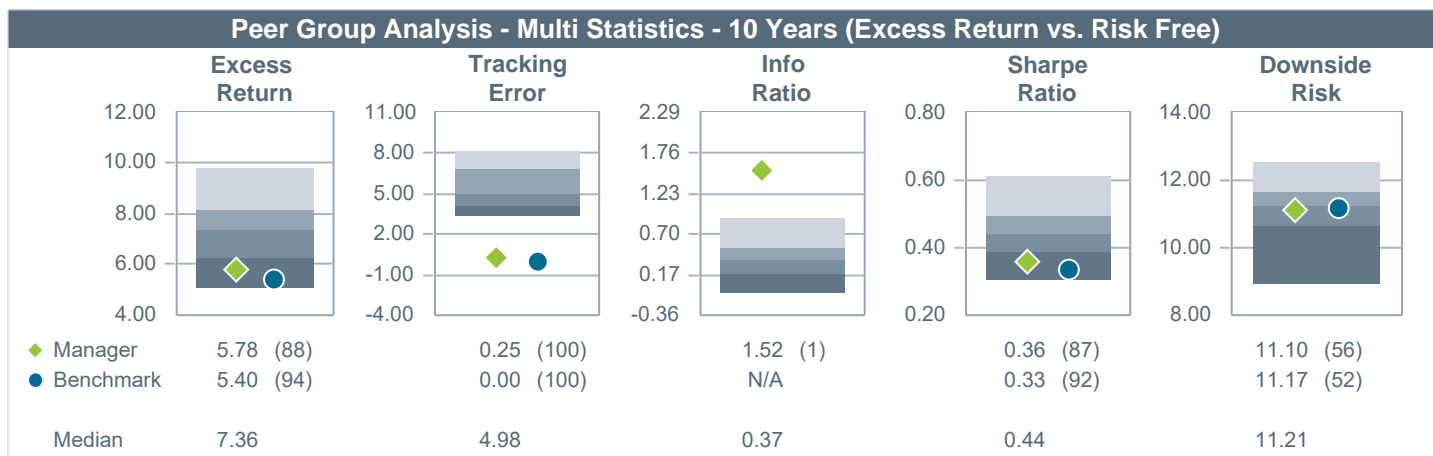
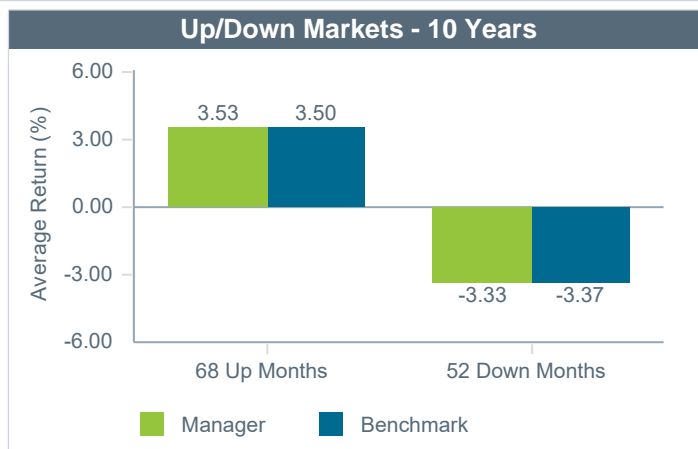
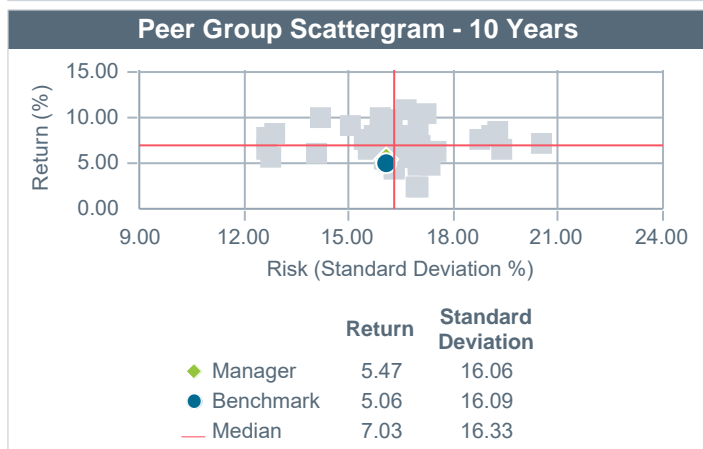
Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	9.88	0.08	12.67	4.64	6.31	N/A	-17.32	6.20	15.51	30.05	-14.64
Benchmark	8.59	-6.35	9.49	3.36	6.47	5.08	-23.05	5.09	22.20	27.34	-14.43
Difference	1.29	6.43	3.18	1.28	-0.16	N/A	5.73	1.11	-6.69	2.71	-0.21
Peer Group Median	9.86	-4.39	12.47	4.55	7.74	6.42	-23.43	8.81	22.06	29.53	-13.90
Rank	50	14	36	44	81	N/A	21	77	83	43	55
Population	47	46	46	46	45	43	49	51	52	54	57



Performance shown is gross of fees and client specific. Calculation is based on monthly periodicity. Parentheses contain percentile ranks.

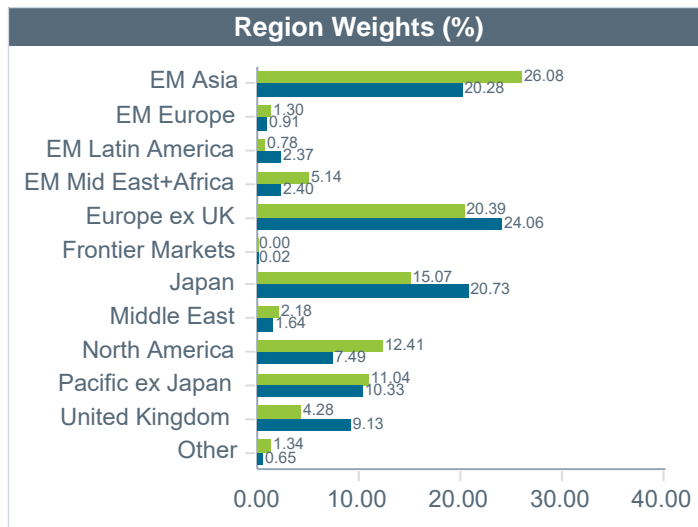
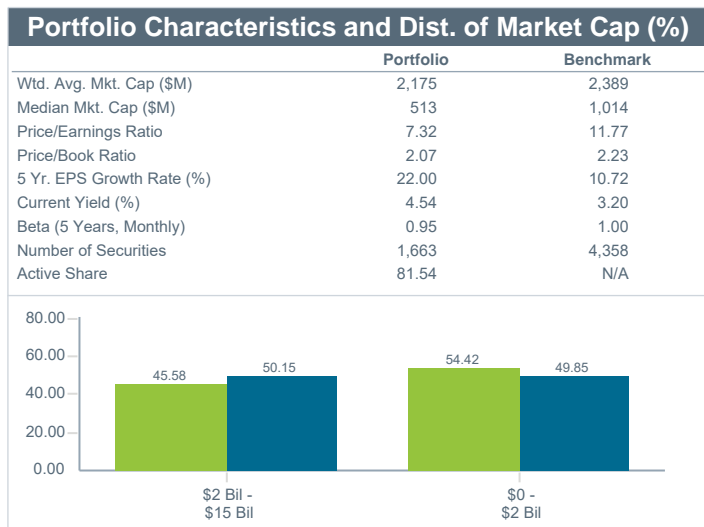
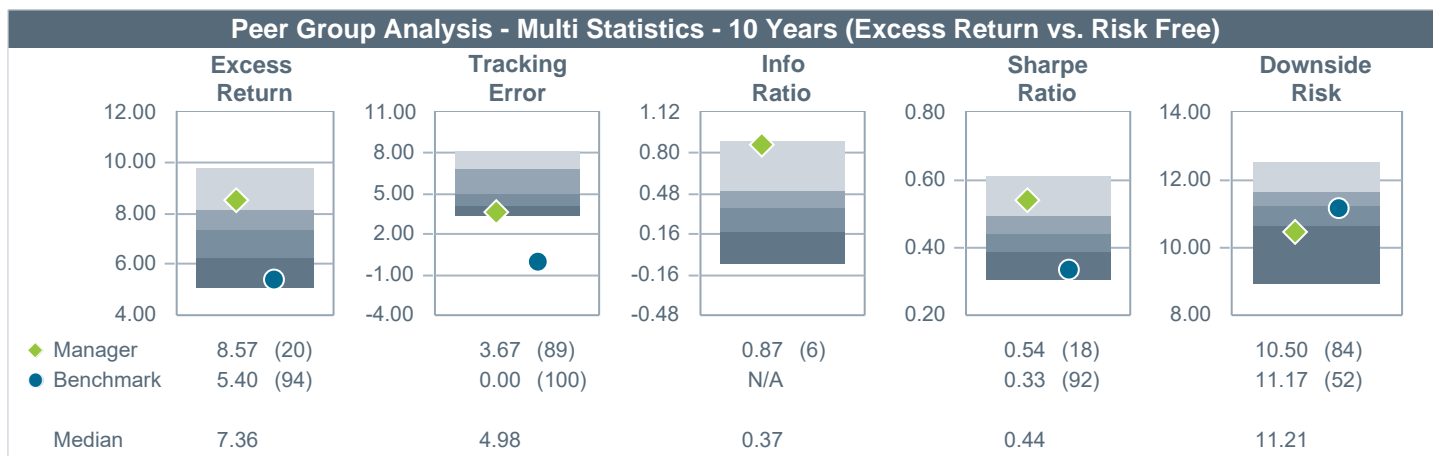
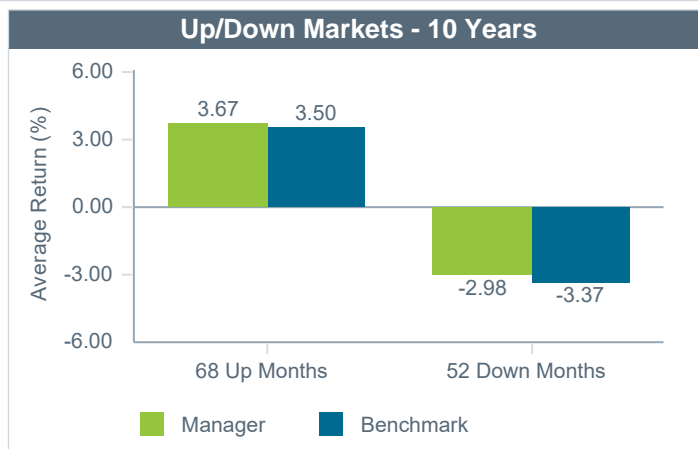
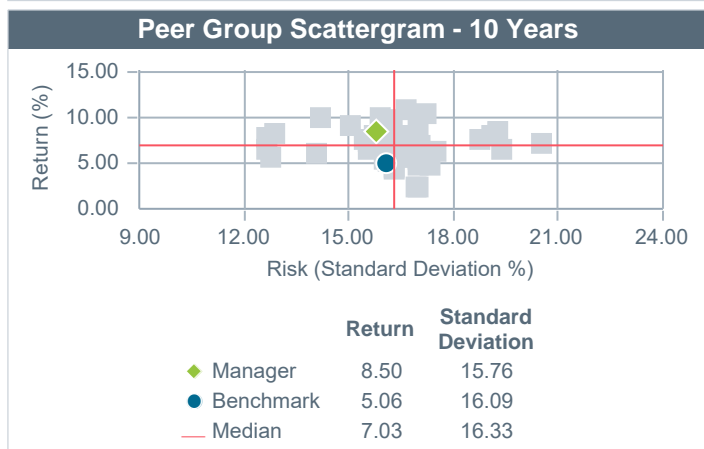


Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	4.87	-9.87	15.34	2.08	6.07	5.47	-19.58	12.98	14.49	22.95	-17.74
Benchmark	4.70	-10.37	15.04	1.67	5.66	5.06	-19.97	12.93	14.24	22.42	-18.20
Difference	0.17	0.50	0.30	0.41	0.41	0.41	0.39	0.05	0.25	0.53	0.46
Peer Group Median	6.51	-7.35	14.21	2.57	6.67	7.03	-21.48	13.78	13.73	24.78	-17.85
Rank	77	74	38	58	61	88	40	57	48	62	49
Population	111	111	106	99	90	70	118	116	128	129	135



Performance shown is gross of fees and product specific. Calculation is based on monthly periodicity. Parentheses contain percentile ranks.

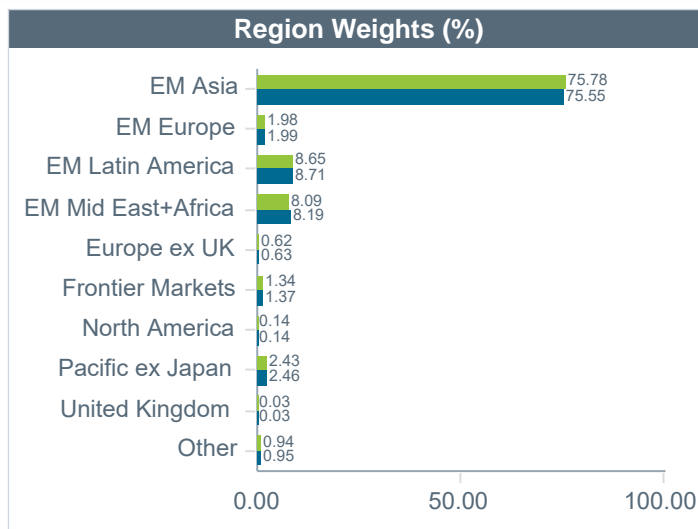
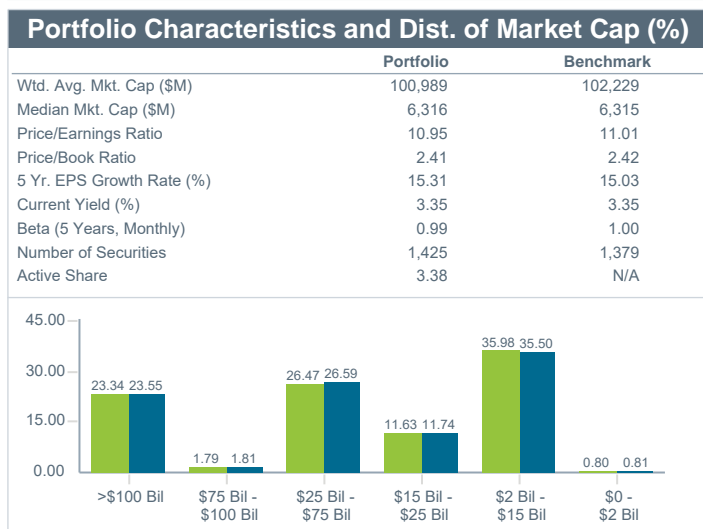
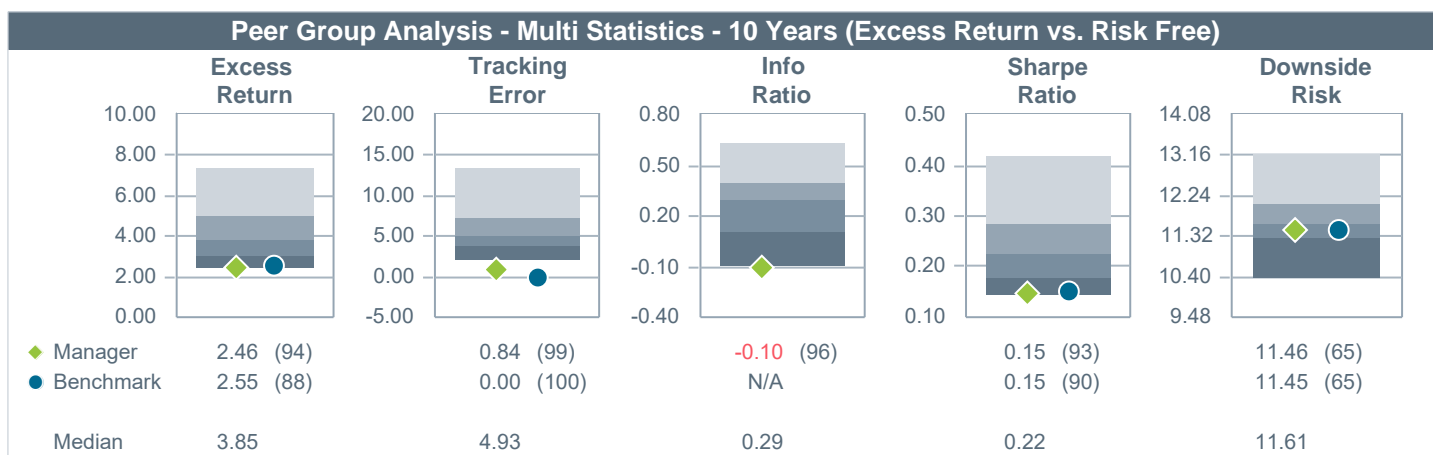
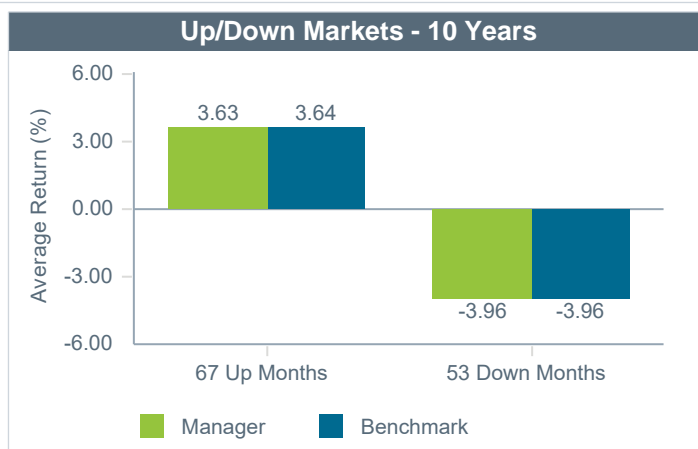
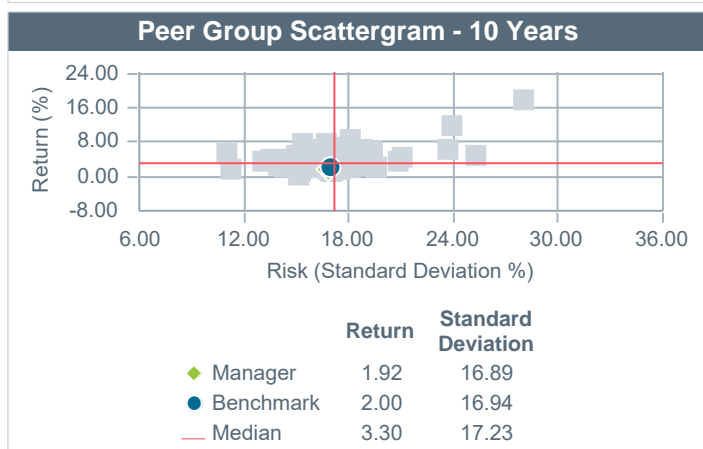
Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	4.13	-10.74	20.03	4.68	9.82	8.50	-16.07	23.49	18.71	21.46	-17.82
Benchmark	4.70	-10.37	15.04	1.67	5.66	5.06	-19.97	12.93	14.24	22.42	-18.20
Difference	-0.57	-0.37	4.99	3.01	4.16	3.44	3.90	10.56	4.47	-0.96	0.38
Peer Group Median	6.51	-7.35	14.21	2.57	6.67	7.03	-21.48	13.78	13.73	24.78	-17.85
Rank	83	75	10	13	9	18	26	4	33	76	49
Population	111	111	106	99	90	70	118	116	128	129	135



Performance shown is gross of fees and client specific. Calculation is based on monthly periodicity. Parentheses contain percentile ranks.

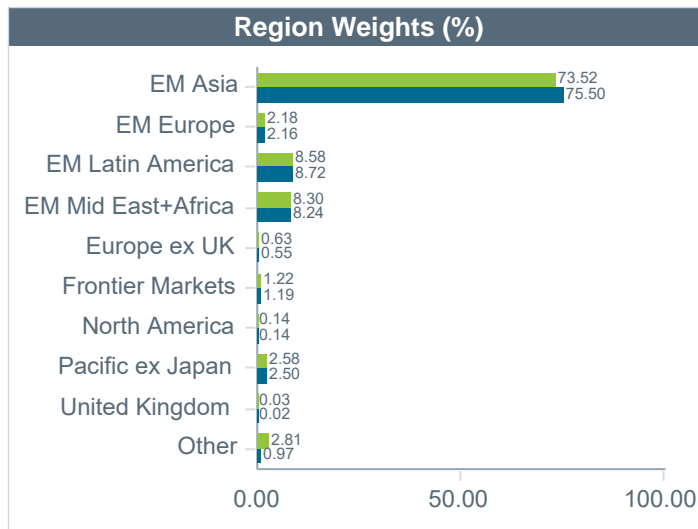
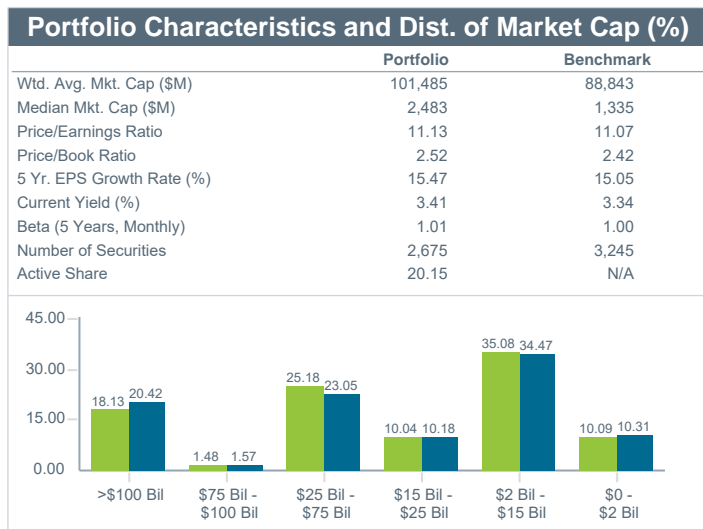
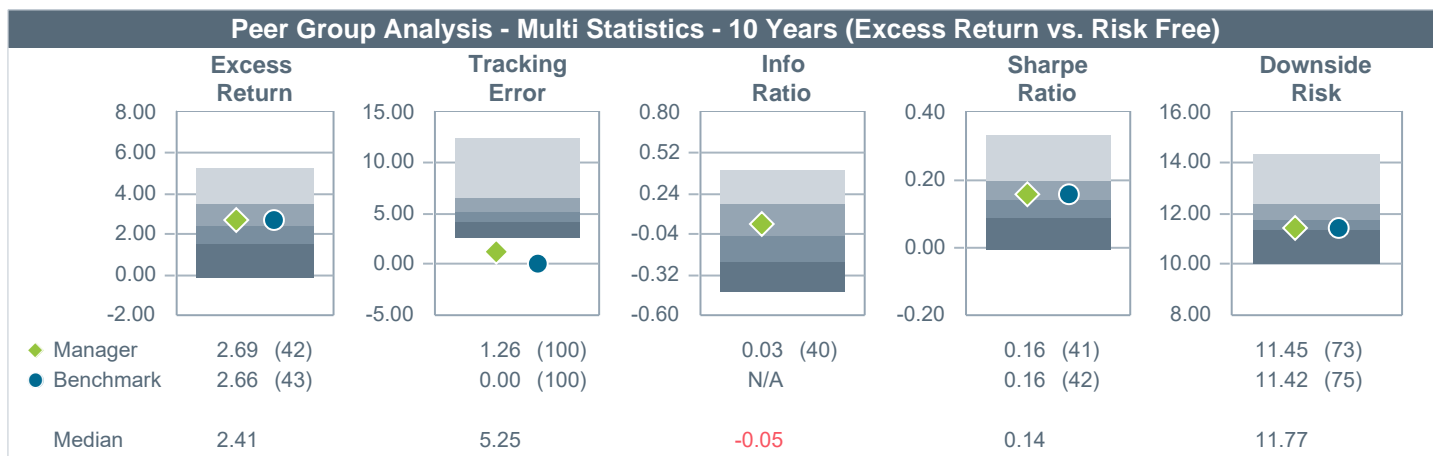
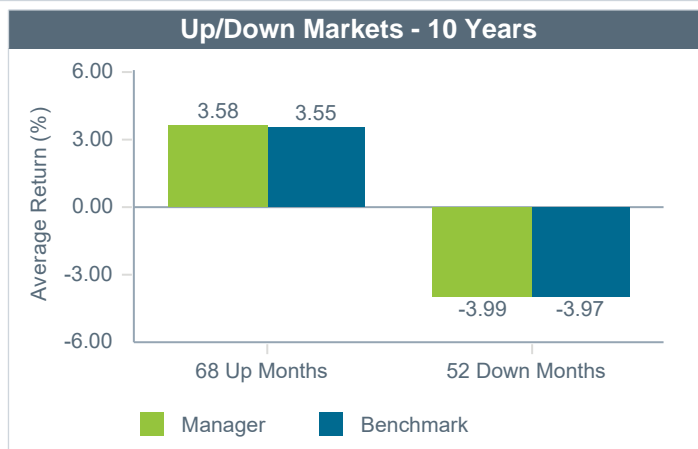
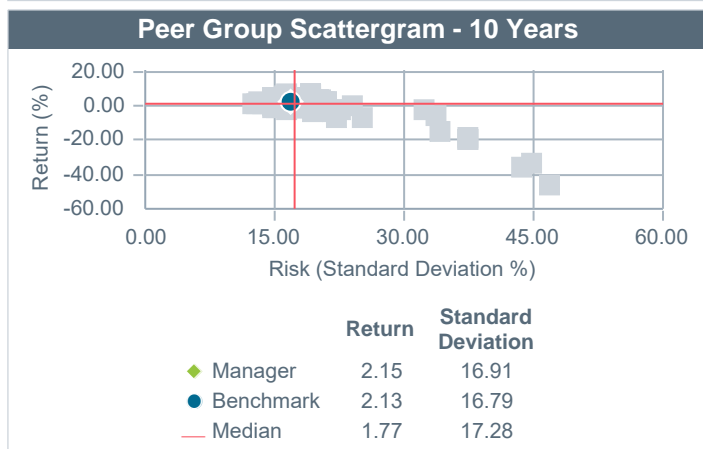


Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	3.98	-10.66	7.64	-1.01	4.80	1.92	-20.16	-2.71	18.02	18.25	-14.60
Benchmark	3.96	-10.70	7.83	-0.91	4.91	2.00	-20.09	-2.54	18.31	18.42	-14.57
Difference	0.02	0.04	-0.19	-0.10	-0.11	-0.08	-0.07	-0.17	-0.29	-0.17	-0.03
Peer Group Median	4.94	-8.78	10.01	0.69	6.07	3.30	-19.72	0.75	18.93	20.64	-15.23
Rank	70	72	78	81	83	93	55	65	55	65	43
Population	277	276	259	232	217	174	291	306	334	358	358



Performance shown is gross of fees and product specific. Calculation is based on monthly periodicity. Parentheses contain percentile ranks.

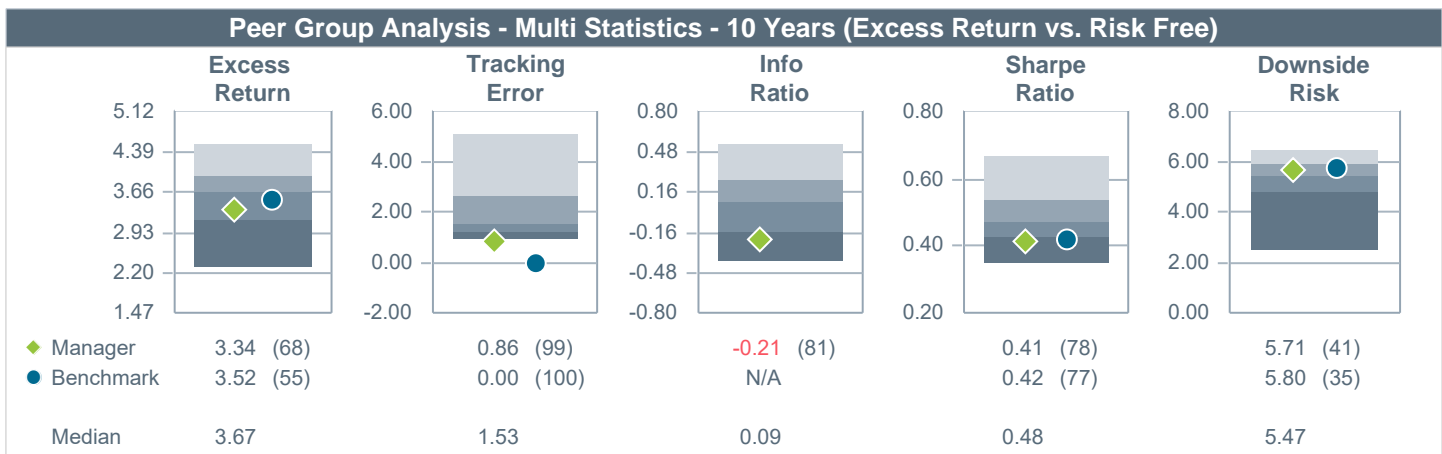
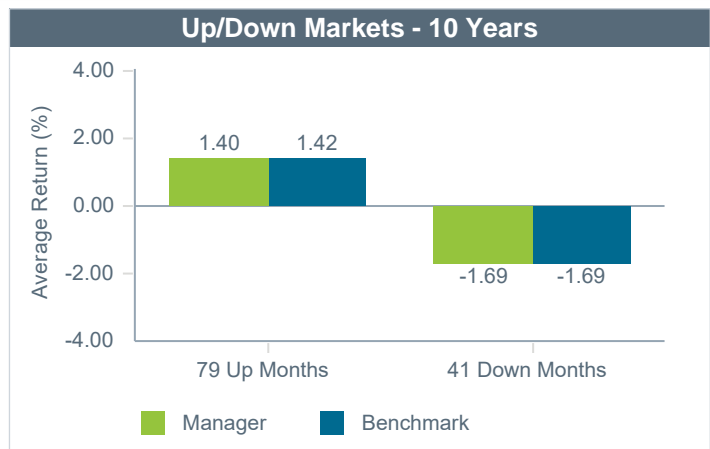
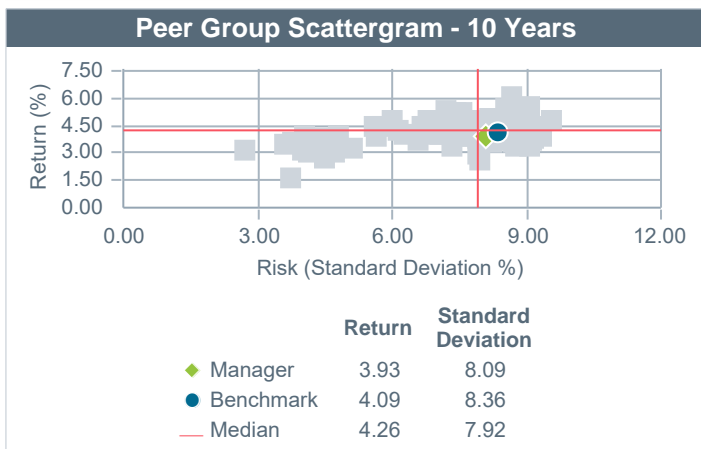
Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	4.25	-9.91	9.07	-0.57	5.00	2.15	-19.87	-0.64	18.18	17.50	-14.69
Benchmark	3.94	-10.74	9.18	-0.58	5.01	2.13	-19.83	-0.28	18.39	17.65	-15.05
Difference	0.31	0.83	-0.11	0.01	-0.01	0.02	-0.04	-0.36	-0.21	-0.15	0.36
Peer Group Median	5.02	-9.28	7.93	-1.08	4.67	1.77	-22.44	-1.62	17.66	20.17	-16.45
Rank	69	55	39	38	42	41	30	47	47	69	32
Population	828	789	702	615	529	368	772	765	780	821	818



Performance shown is net of fees, product specific, and calculated using Net Asset Values (NAV). Calculation is based on monthly periodicity. Parentheses contain percentile ranks.

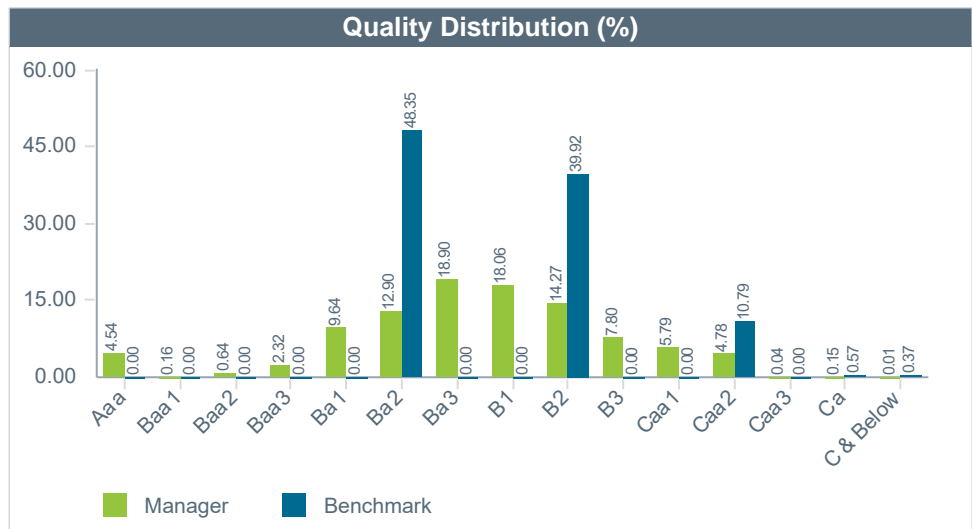


Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	3.26	-3.80	5.35	3.14	4.55	3.93	-11.16	4.96	6.75	14.26	-1.56
Benchmark	3.57	-3.35	5.88	3.19	5.07	4.09	-11.18	5.26	7.05	14.32	-2.08
Difference	-0.31	-0.45	-0.53	-0.05	-0.52	-0.16	0.02	-0.30	-0.30	-0.06	0.52
Peer Group Median	3.39	-2.41	5.99	3.46	4.96	4.26	-9.58	5.31	6.55	14.23	-1.64
Rank	58	75	69	71	74	70	83	60	45	50	49
Population	138	138	136	131	123	111	154	161	175	188	198



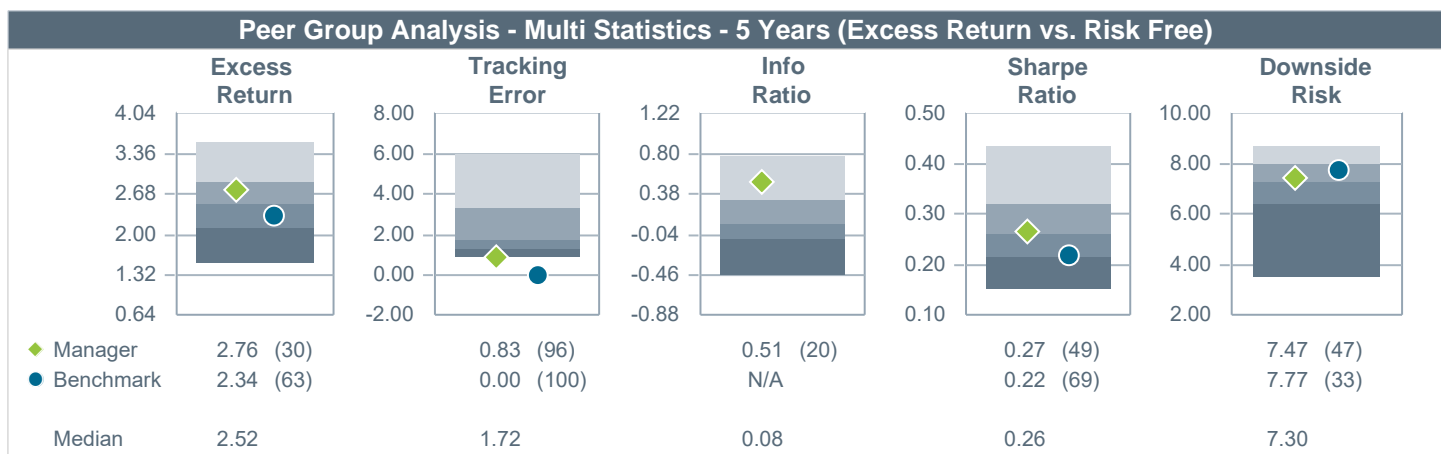
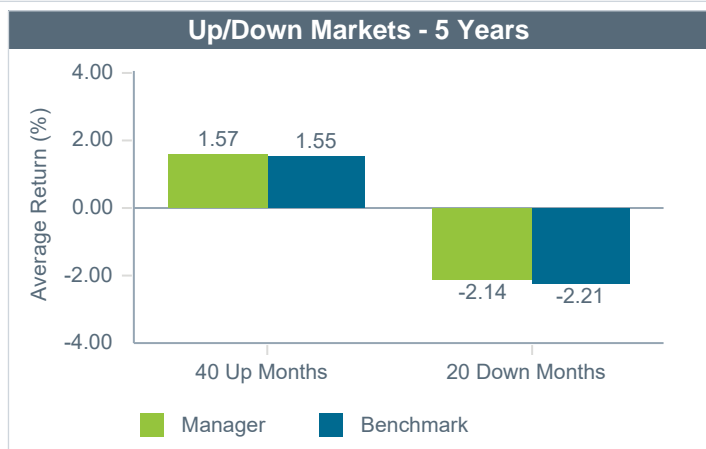
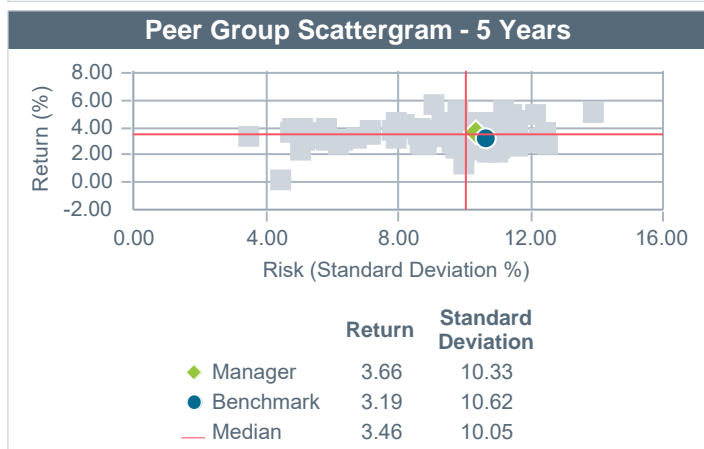
Portfolio Characteristics

	Portfolio	Benchmark
Effective Duration	3.66	3.68
Spread Duration	3.74	3.77
Avg. Maturity	5.73	5.32
Avg. Quality	B1	Ba3/B1
Yield To Maturity (%)	8.48	8.61
Coupon Rate (%)	6.01	5.85
Current Yield (%)	6.75	N/A
Holdings Count	518	2,021



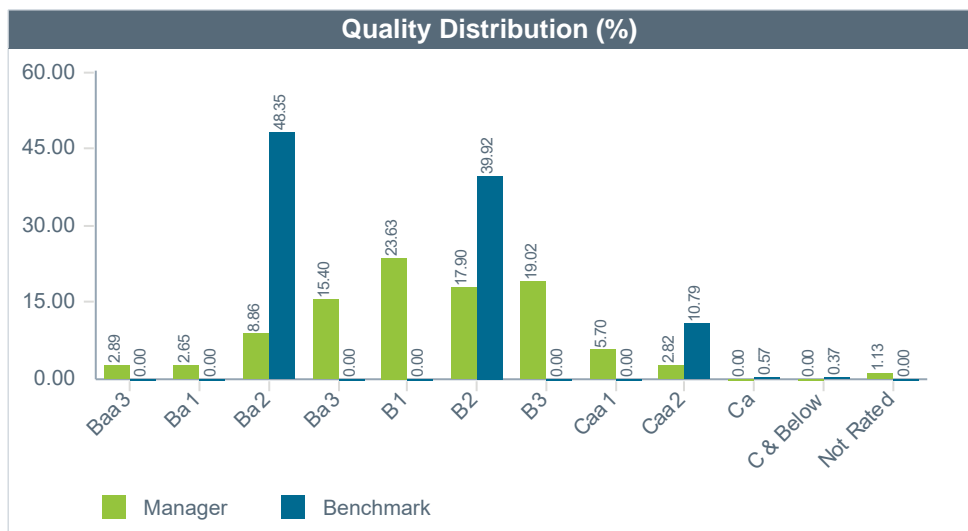
Performance shown is gross of fees and client specific. Calculation is based on quarterly periodicity. Parentheses contain percentile ranks.

Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	3.17	-2.83	6.11	3.66	N/A	N/A	-9.60	5.34	7.07	16.02	-3.47
Benchmark	3.57	-3.35	5.88	3.19	5.07	4.09	-11.18	5.26	7.05	14.32	-2.08
Difference	-0.40	0.52	0.23	0.47	N/A	N/A	1.58	0.08	0.02	1.70	-1.39
Peer Group Median	3.39	-2.41	5.99	3.46	4.96	4.26	-9.58	5.31	6.55	14.23	-1.64
Rank	64	58	46	36	N/A	N/A	51	49	41	17	92
Population	138	138	136	131	123	111	154	161	175	188	198



Portfolio Characteristics

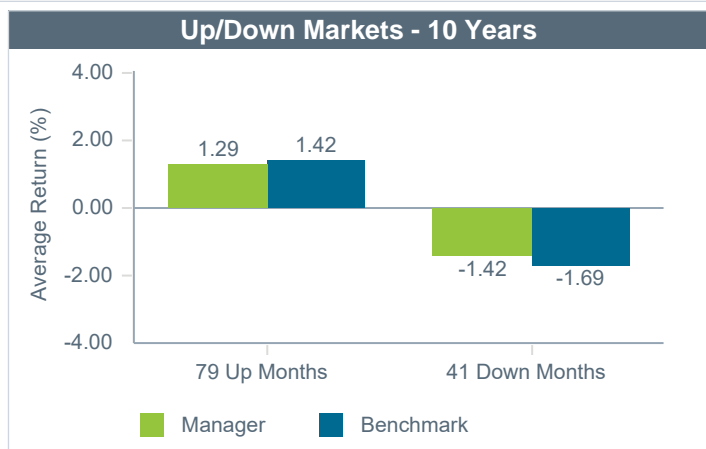
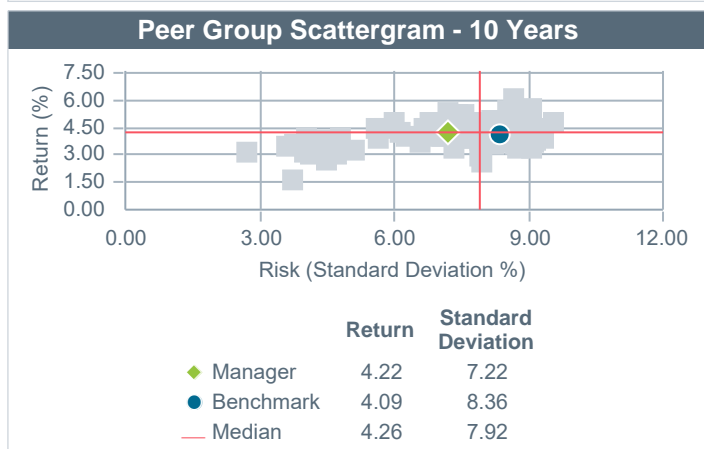
	Portfolio	Benchmark
Effective Duration	3.56	3.68
Spread Duration	4.00	3.77
Avg. Maturity	5.47	5.32
Avg. Quality	B1	Ba3/B1
Yield To Maturity (%)	8.35	8.61
Coupon Rate (%)	5.85	5.85
Current Yield (%)	6.58	N/A
Holdings Count	397	2,021



Performance shown is gross of fees and client specific. Calculation is based on quarterly periodicity. Parentheses contain percentile ranks.

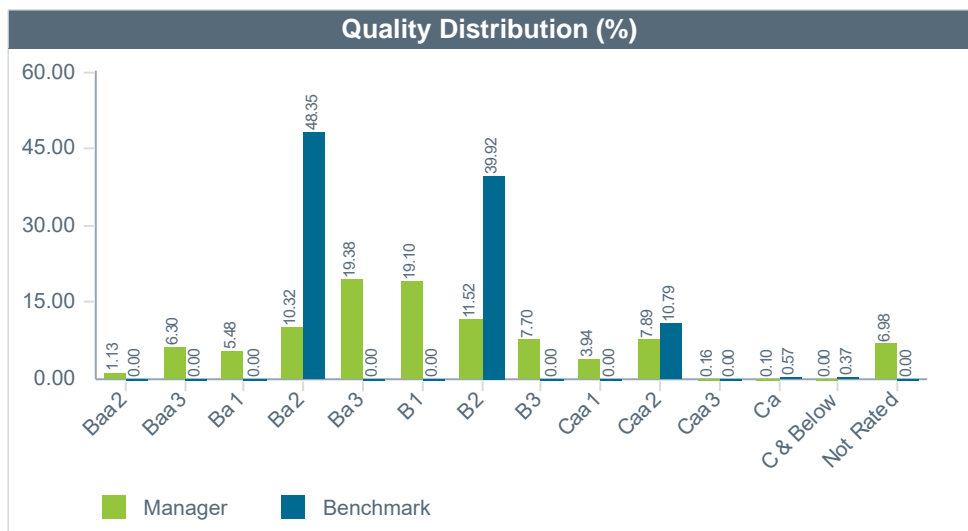


Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	3.61	-1.70	5.93	3.75	4.93	4.22	-8.52	4.68	6.82	14.18	-1.46
Benchmark	3.57	-3.35	5.88	3.19	5.07	4.09	-11.18	5.26	7.05	14.32	-2.08
Difference	0.04	1.65	0.05	0.56	-0.14	0.13	2.66	-0.58	-0.23	-0.14	0.62
Peer Group Median	3.39	-2.41	5.99	3.46	4.96	4.26	-9.58	5.31	6.55	14.23	-1.64
Rank	35	32	51	32	55	54	35	71	44	51	46
Population	138	138	136	131	123	111	154	161	175	188	198



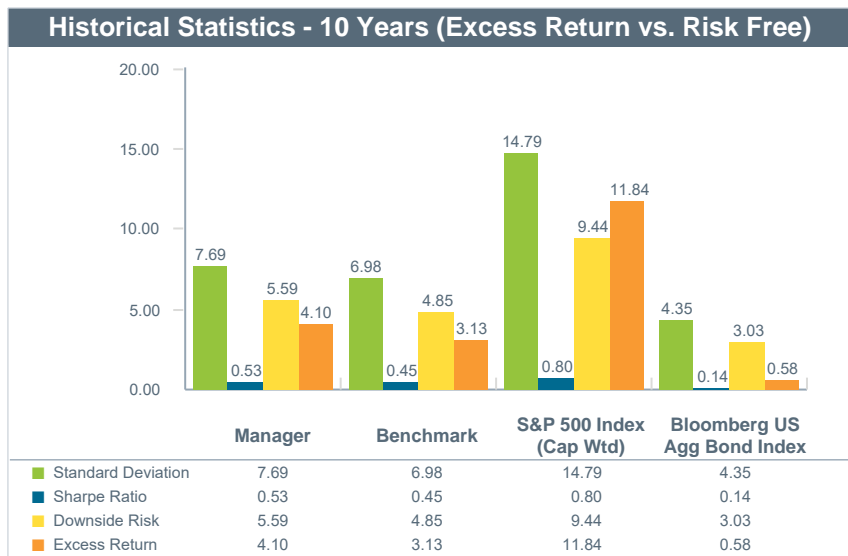
Portfolio Characteristics

	Portfolio	Benchmark
Effective Duration	3.47	3.68
Spread Duration	3.30	3.77
Avg. Maturity	5.03	5.32
Avg. Quality	B1	Ba3/B1
Yield To Maturity (%)	7.71	8.61
Coupon Rate (%)	5.57	5.85
Current Yield (%)	6.14	N/A
Holdings Count	590	2,021



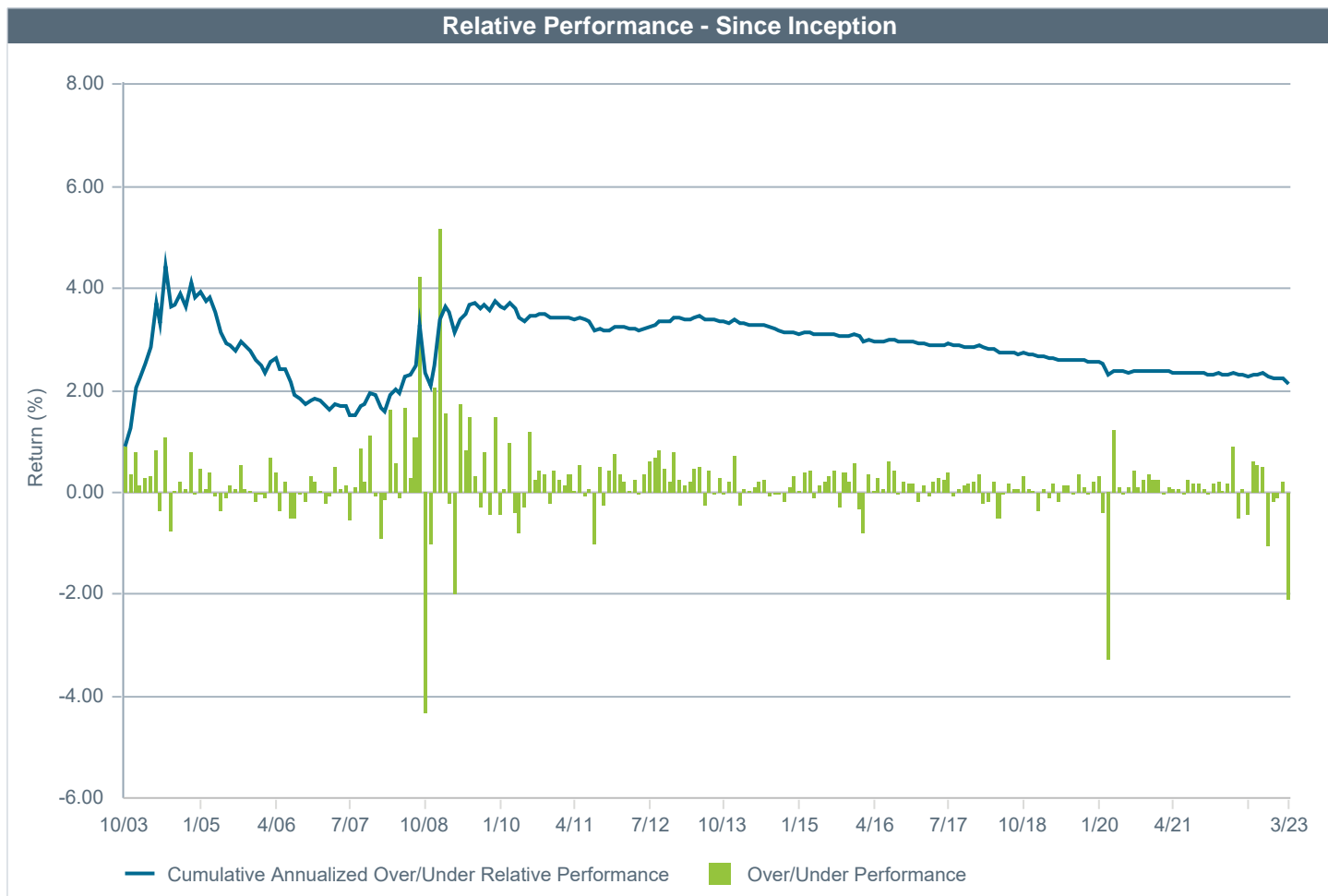
Performance shown is gross of fees and product specific prior to client inception. Calculation is based on quarterly periodicity. Parentheses contain percentile ranks.

Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	-2.37	-8.50	3.70	2.40	3.92	4.76	-11.23	4.06	7.32	19.11	-3.76
Benchmark	-0.38	-7.06	2.66	2.27	3.30	3.82	-12.04	2.71	7.94	18.43	-4.17
Difference	-1.99	-1.44	1.04	0.13	0.62	0.94	0.81	1.35	-0.62	0.68	0.41



Actual Correlation - 10 Years

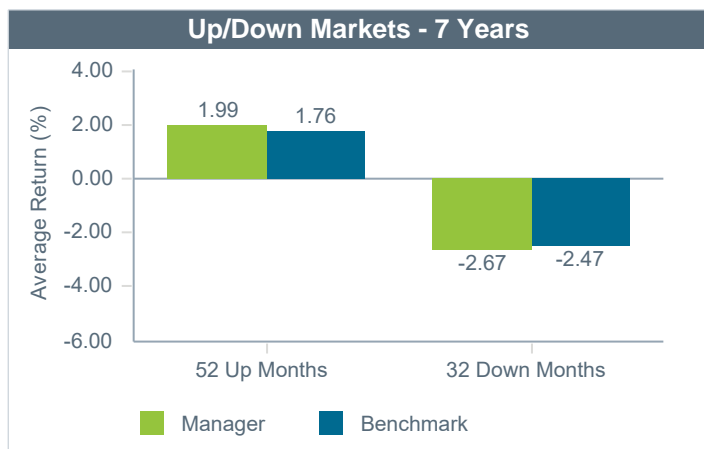
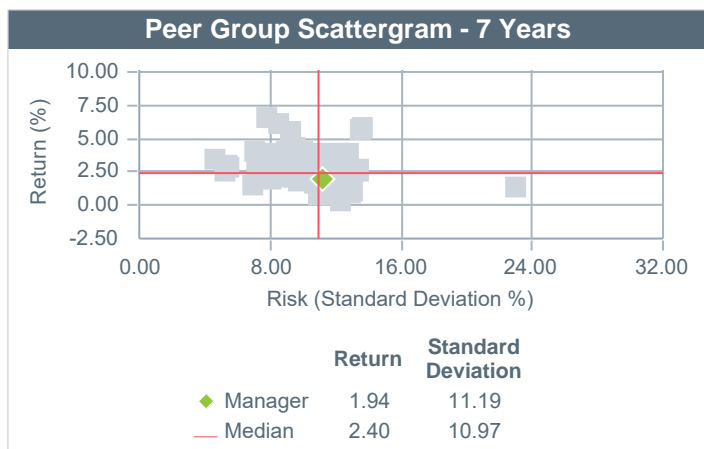
	Actual Correlation
Cohen & Steers Custom Index (Blended)	0.98
Consumer Price Index+5%	-0.11
S&P 500 Index (Cap Wtd)	0.65
Russell 2000 Index	0.63
MSCI EAFE Index (USD) (Net)	0.65
MSCI Emg Mkts Index (USD) (Net)	0.60
Bloomberg US Agg Bond Index	0.46
Bloomberg US Trsy US TIPS Index	0.48
Wilshire US REIT Index	0.69
HFRI FOF Comp Index	0.72
Bloomberg Cmdty Index (TR)	0.31
ICE BofAML 3 Mo US T-Bill Index	-0.21
Cons Price Index (Unadjusted)	-0.11



Performance shown is gross of fees and client specific. Calculation is based on monthly periodicity. Performance prior to 11/2020 consists of strategy specific returns provided by the manager.

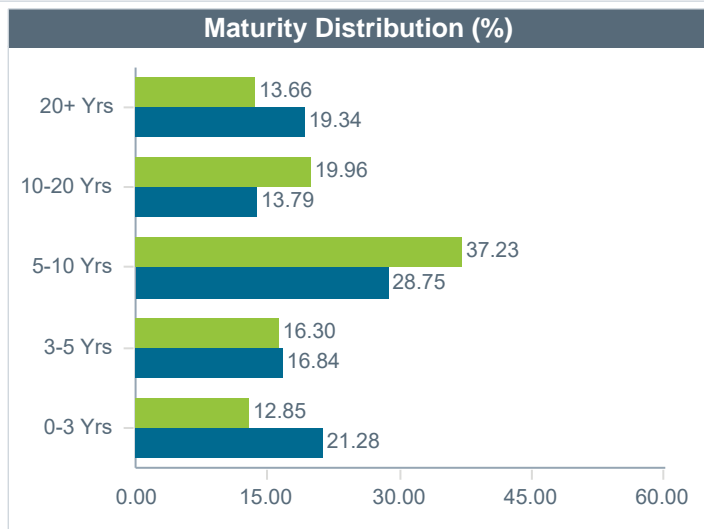


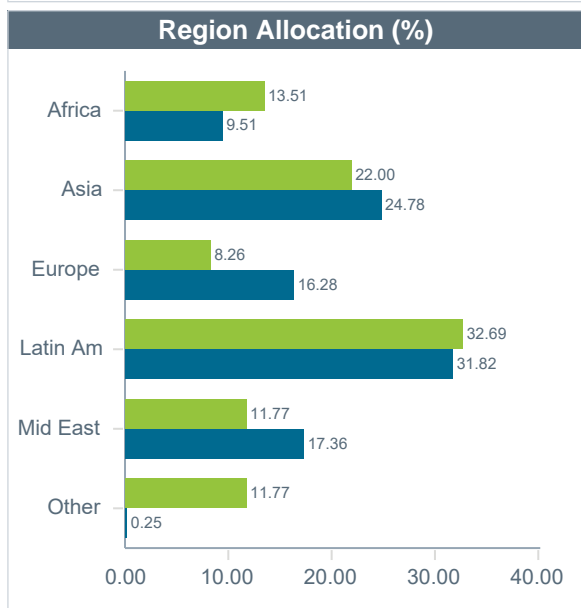
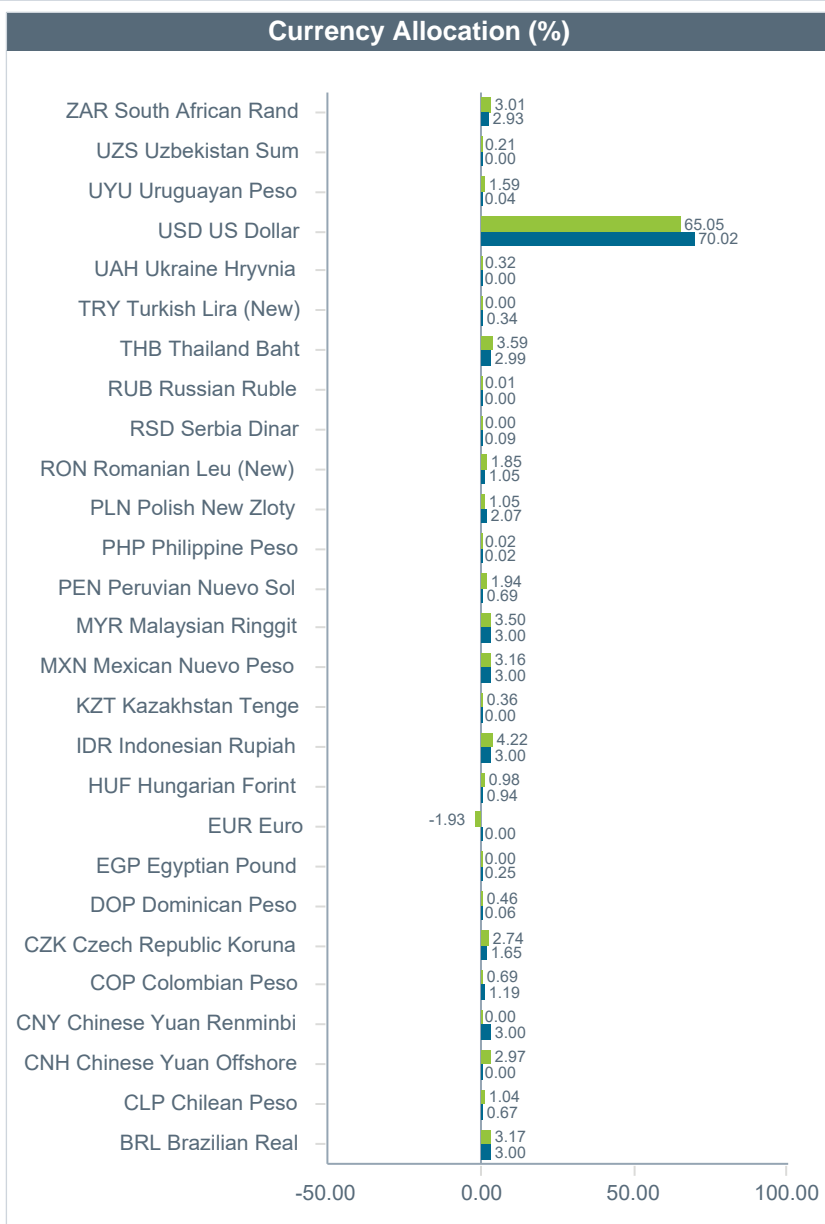
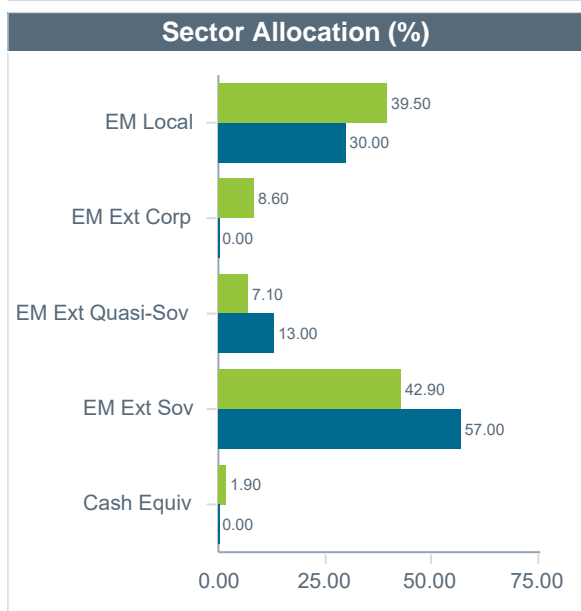
Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2022	2021	2020	2019	2018
Manager	2.83	-5.63	1.91	-1.09	1.94	N/A	-15.15	-3.14	4.97	16.20	-7.44
Benchmark	2.85	-5.07	0.28	-1.09	1.26	N/A	-15.97	-3.92	4.53	14.62	-4.77
Difference	-0.02	-0.56	1.63	0.00	0.68	N/A	0.82	0.78	0.44	1.58	-2.67
Peer Group Median	2.35	-3.46	2.66	-0.11	2.40	1.70	-12.28	-2.12	6.72	14.30	-5.23
Rank	42	71	71	71	75	N/A	69	58	72	13	81
Population	119	118	117	113	108	82	130	138	149	159	169



Portfolio Characteristics (%)

	Portfolio	Benchmark
Effective Duration	6.33	6.30
Spread Duration	4.23	4.91
Avg. Maturity	9.99	10.18
Avg. Quality	Ba1	Baa3
Yield To Maturity (%)	8.15	7.93
Coupon Rate (%)	5.57	5.06
Current Yield (%)	6.80	N/A
Holdings Count	278	1,264





Performance shown is gross of fees and product specific. Calculation is based on monthly periodicity. Parentheses contain percentile ranks. Performance prior to 12/2020 consists of EMD blend composite performance provided by the manager.

Addendum & Glossary



Performance Notes

- All gross and net performance data is provided by State Street Analytics (SSA). Reported gross returns for the retirement plans prior to 07/01/2002 are net of all fees.
- Gross performance for the retirement plans is calculated with fee accruals provided by Client's Accounting department.
- Gross of fees performance is not available (N/A) for the following funds: SPDR S&P 500 ETF (SPY), Domestic Equity Pool STIF, iShares:Core S&P Md-Cp (IJH), iShares:Russ 2000 ETF (IWM), iShares:MSCI EAFE ETF (EFA), and International Equity Pool STIF. The current annual expense ratios are as listed below.

Index Notes

- Retirement plan custom benchmarks are provided by State Street Bank and are calculated daily using actual allocations.
- The CAPP Custom Benchmark consists of the portfolio weighted average of the primary benchmark for each CAPP asset class.
- The Short Term Custom Benchmark consists of 100% ICE 1 Mo LIBOR Index (USD) through 4/30/2018, and 100% Federal Reserve US Treasury 1 Mo Constant Maturity Index thereafter.
- The Domestic Equity Custom Index consists of 100% S&P 1500 Comp Index through 04/30/2017 and 100% MSCI USA IM Index (USD) (Gross) thereafter.
- The International Equity Custom Index consists of 100% MSCI EAFE Index (USD) (Net) through 10/31/2006, 100% MSCI ACW Ex US Index (USD) (Net) through 06/30/2007, 92.5% MSCI ACW Ex US Index (USD) (Net) and 7.5% MSCI ACW Ex US SC IM Index (USD) (Net) through 02/28/2014, and 100% MSCI ACW Ex-US IM Index thereafter.
- The Real Estate Custom Index consists of 100% NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag) through 03/31/2017, 100% MSCI US REIT Index (USD) (Gross) through 06/30/2020, and 100% NCREIF ODCE (AWA) (1 Qtr Lag) Index thereafter.
- The Private Investments Custom Index consists of 100% S&P 1500 Comp Index+4% (1 Qtr Lag) through 03/31/2017, 100% MSCI US Small Cap Index (USD) (Gross) through 12/31/2020, and the portfolio weighted MSCI US SC / S&P LSTA US Leverage Loan 100 Index for PE / PC thereafter.
- The Lazard Custom Index consists of 100% MSCI ACW Ex US Value Index (USD) (Net) through 6/30/2018 and 100% MSCI ACW Ex US Index (USD) (Net) thereafter.
- The Templeton Custom Index consists of 100% MSCI ACW Ex US Small Cap Value Index (USD) (Net) through 5/31/2018, and 100% MSCI ACW Ex US Small Cap Index (USD) (Net) thereafter.
- The Reams Custom Index consists of 100% Bloomberg US Unv Bond Index through 03/31/2017, 100% Bloomberg US Agg Bond Index through 12/31/2019, and 100% Bloomberg US Unv Bond Index thereafter.
- The Cohen & Steers Custom Index consists of 60% ICE BofAML US IG Institutional Capital Securities Index, 20% ICE BofAML Core Fixed Rate Preferred Securities Index, and 20% Bloomberg Barclays Developed Market USD Contingent Capital Index.
- The Payden & Rygel Custom Index consists of 70% JP Morgan EMBI Global Diversified Index, 30% JP Morgan GBI-EM Global Diversified Index.
- The JPM US Equity Custom Benchmark consists of 100% S&P 500 Index (Cap Weighted) through 06/30/2019 and 100% MSCI US Index (USD) (Gross) thereafter.
- The Real Assets Custom Index consists of 100% MSCI All Country World Commodity Producers Index (USD) (Net) through 12/31/2020 and 33.33% MSCI All Country World Commodity Producers Index (USD) (Net), 33.33% MSCI All Country World Infrastructure Index, 33.33% Bloomberg Barclays Global Inflation Linked US TIPS Index thereafter.
- The Core Fixed Income Custom Index consists of 100% Bloomberg US Agg Bond Index through 03/31/2017, the portfolio weighted average of Broad Fixed Income - PAC Custom Blend, Bloomberg US Corp Inv Grade Index, Bloomberg US MBS Index, Bloomberg US Int TIPS Index, Bloomberg US Trsy Int Trm Index through 11/30/2019, and 100% Bloomberg US Agg Bond Index thereafter.
- The plan sponsor peer group was updated from All Public Plans >\$3B Total Fund Median to All Public Plans >\$5B Total Fund Median.
- As of 07/01/2021, the Trust Fund Custom Index Benchmark is the portfolio weighted averaged of the primary benchmark, consisting of NCREIF ODCE Index (1Q lag), Bloomberg US High Yield - 2% Issuer Cap Index, and Bloomberg US Aggregate Bond Index.

Trust Accounts Comments

- Hail Insurance Investments was added in 11/2022.

Manager Transition Comments

- American Century Investment Mgmt (SA) was terminated in 03/2023.
- Templeton Investment Counsel (SA) was terminated in 03/2023.

Manager Transition Comments (cont.)

- Reams Asset Core Plus (SA) was terminated in 03/2023.
- iShares:Russ 2000 ETF (IWM) and iShares:MSCI EAFE ETF (EFA) were liquidated in Q4 2022 to fund iShares:Core S&P Small Cap ETF (IJR) and iShares:Core MSCI EAFE ETF (IEFA), respectively.
- BlackRock MSCI USA Small Cap Index was transitioned from a commingled fund to a separate account structure during Q3 2022 to obtain a lower fee structure.
- Acadian Ex US Small Cap (SA) was funded in 02/2022.
- DFA Emg Mkts Sm Cap;I (DEMSX) was liquidated in 02/2022.
- DFA Intl Sm Co;I (DFISX) was liquidated in 02/2022.
- iShares:MSCI Em Mkts (EEM) was liquidated in 01/2022.
- iShares:Core MSCI EmMkts (IEMG) was funded in 12/2021.
- SPDR S&P 500 ETF (SPY) was liquidated in 12/2021.
- iShares:Core S&P 500 (IVV) was funded in 11/2021.
- DFA US Sm Cap Tr (CF) was liquidated in 11/2021.
- Jacobs Levy 130/30 Large Cap (SA) was liquidated in 11/2021.
- J.P. Morgan 130/30 (SA) was liquidated in 11/2021.
- T. Rowe U.S. Structured Research (SA) was liquidated in 11/2021.
- Vaughan Nelson Management (SA) was liquidated in 11/2021.
- iShares:Core S&P Tot USM (ITOT) was funded in 11/2021.
- Payden & Rygel EMD (SA) was funded in 12/2020.
- Cohen & Steers Preferred Securities (SA) was funded in 10/2020.
- Neuberger Berman High Yield (SA) and TFIP Private Real Estate were funded in the Trust Fund Investment Pool during Q1 2020.
- Post High Yield Plus (SA), GMO:Bchmk-Fr All;III (GBMFX), and PIMCO:All Asset;Inst (PAAIX) were liquidated during Q3 2019.
- Oaktree US High Yield Fixed Income (SA) and Shenkman High Yield Fixed Income (SA) were funded in the Trust Fund Investment Pool during Q3 2019.
- Artisan Partners (SA), Iridian Asset Management (SA), Congress Mid Cap Growth (SA), TimeSquare Capital Management (SA), and Alliance Bernstein (SA) were liquidated in Q2 2019.
- BlackRock MSCI US Equity Index (CF) was transitioned into a separately managed account during Q1 2019.
- Northern Trust MSCI US Equity Index (SA), GMO:Bchmk-Fr All;III (GBMFX), and PIMCO:All Asset;Inst (PAAIX) were funded during Q4 2018.
- Voya Investment Management (SA) was liquidated in 07/2018.
- iShares:Russ 2000 ETF (IWM) was funded in 04/2018.
- Jacobs Levy 130/30 Large Cap (SA) was funded in 03/2018.
- Congress Mid Cap Growth (SA) was funded in 02/2018.
- Oaktree US High Yield (SA) and Shenkman High Yield Fixed Income (SA) were funded in 12/2017.
- Analytic Investors 130/30 (SA) was liquidated in 09/2017.
- Effective 07/2016, the Metropolitan West Capital Management legal entity merged into the Wells Capital Management Incorporated legal entity. The Metropolitan West Capital Mgmt (SA) has been updated to Wells Capital Management (SA) to reflect the change.
- Residual assets from the liquidation of AllianceBernstein Int'l Value (SA), Martin Currie (SA), Hansberger Global Investors (SA), and Aberdeen Total Return Bond Strategy (SA) were distributed in 06/2017.
- INTECH Enhanced Plus was liquidated in 06/2017.
- BlackRock MSCI US Equity Index (CF), BlackRock MSCI US Sm Cap Equity Index (CF), and iShares:Core S&P Md-Cp (IJH) were funded in 06/2017.
- SPDR S&P 500 ETF (SPY) and iShares:MSCI EAFE ETF (EFA) were re-funded in 06/2017.
- BlackRock Equity Index Fund A (CF) and BlackRock Mid Cap Equity Index A (CF) were liquidated in 05/2017.
- Nicholas Investment Partners was liquidated in 07/2016. Residual assets from liquidation were distributed in 03/2017.
- Wells Capital Management (SA), Domestic Equity Pool SPIF, and International Equity Pool SPIF were liquidated in 10/2016. Wells Capital Management (SA) residual assets from liquidation were distributed in 03/2017.
- DFA Emg Mkts Sm Cap;I (DEMSX) was funded in 02/2017.
- SPDR S&P 500 ETF (SPY) was liquidated in 01/2017.
- iShares:MSCI Em Mkts (EEM) was funded in 12/2016.
- SPDR S&P 500 ETF (SPY) was initially funded in 09/2015, was then liquidated in 12/2015, and was re-funded in 10/2016.
- iShares S&P SmallCap 600 Index ETF (IJR) was liquidated in 01/2016.
- Effective 05/2014, ING rebranded to Voya. The ING Investment Management (SA) has been updated to Voya Investment Management (SA) to reflect the change.

Miscellaneous Comments

- Fiscal year ends on 06/30.
- During Q4 2019 Diversifying Strategies investments were liquidated and Investment Grade Credit, US Treasury & Agency, and TIPS were consolidated into the Core Fixed Income composite.
- Non-Core Fixed Income currently consists of High Yield, Preferred Securities and EMD.
- Private Investments currently consist of Private Equity, Private Credit, Venture Capital, and Passive ETFs.
- During Q1 2021 the Natural Resources PAC was renamed to the Real Assets PAC.

Fee Schedule

As of March 31, 2023

	Fee Schedule	Market Value As of 03/31/2023 (\$)
iShares:Core S&P Tot USM (ITOT)	0.03 % of Assets	129,368,151
iShares:Core S&P 500 (IVV)	0.03 % of Assets	133,251,582
iShares:Core S&P Md-Cp (IJH)	0.05 % of Assets	18,175,375
iShares:Core S&P Small Cap ETF (IJR)	0.06 % of Assets	76,505,559
iShares:Core MSCI EAFE ETF (IEFA)	0.07 % of Assets	106,697,012
iShares:Core MSCI EmMkts (IEMG)	0.09 % of Assets	58,413,486

ETF fees are sourced from Morningstar and/or the investment manager.



Glossary

Active Return - The difference between the investment manager/composite performance relative to the performance of an appropriate market benchmark.

Active Share - Measures the degree to which the holdings of a fund differ from the holdings of the benchmark. Active share is calculated by taking the sum of the absolute value of the differences of the weight of each holding in the fund versus the weight of each holding in the benchmark and dividing by two.

Alpha - A measure of the difference between a portfolio's actual returns and its expected performance, given its level of risk as measured by beta. It is a measure of the portfolio's historical performance not explained by movements of the market or a portfolio's non-systematic return.

Alpha Ratio - A measure of a portfolio's non-systematic return per unit of downside risk. It is measured by dividing the alpha of a portfolio by the downside risk. The non-systematic return is a measure of a portfolio's historical performance not explained by movements of the market.

Average Quality - Bond quality ratings are reported using the investment managers' and the index providers' preferred rating agency. *Average Quality for managers unable to provide this statistic is instead provided by Morningstar; if unavailable on Morningstar, it has been estimated using a credit quality distribution provided by the manager.* There are two primary rating agencies in the US. *Moody's* assigns ratings on a system that employs up to four symbols (consisting of letters and numbers), such as, Aaa, Aa2, etc., with Aaa being the highest or safest rating. *Standard & Poor's (S&P)* employs a system that uses + and - along with letters, such as AAA, AA+, etc. The two rating agencies' systems are summarized below:

<u>S&P</u>	<u>Moody's</u>	<u>Explanation</u>	<u>S&P</u>	<u>Moody's</u>	<u>Explanation</u>
Higher Credit Quality – Investment Grade			Lower Credit Quality – Below Investment Grade		
AAA	Aaa	Prime/Highest credit quality	BB+	Ba1	Speculative/Low credit quality
AA+	Aa1	High credit quality	BB	Ba2	
AA	Aa2		BB-	Ba3	
AA-	Aa3		B+	B1	Highly speculative
A+	A1	Upper-medium credit quality	B	B2	
A	A2		B-	B3	
A-	A3		CCC+	Caa1	Substantial credit/default risk
BBB+	Baa1	Lower-medium credit quality	CCC	Caa2	Extremely speculative
BBB	Baa2		CCC-	Caa3	
BBB-	Baa3		CC	Ca	Vulnerable to default
			C	Ca	
			D	C	In default

Benchmark Effect - The difference between the blended return of each respective managers' benchmark within a composite and the composite's benchmark return.

Beta - A measure of the sensitivity of a portfolio to the movements in the market. It is a measure of a portfolio's non-diversifiable or systematic risk.

Box Plots - A graphical representation of the distribution of observations. From top to bottom, the four boxes represent the spread between the maximum value and the minimum value in each quartile. A quartile represents the values that divide the observations into four quarters (i.e., 1st quartile, 2nd quartile, 3rd quartile, and 4th quartile). The median observation is where the 2nd quartile and 3rd quartile meet.

Buy and Hold Attribution - At the beginning of the time period under analysis, the manager and benchmark portfolios are broken down into segments (i.e., styles, sectors, countries, and regions) based on the desired type of attribution. The formula assumes zero turn-over to the manager and benchmark portfolios throughout the period and calculates the segment returns ("buy and hold returns") to arrive at performance attribution. Due to portfolio turnover, buy and hold attribution may not accurately represent quarterly performance relative to the benchmark. Country, region, sector, and style allocations are as of the date one quarter prior to the reporting date, and the returns shown are for those segments throughout the quarter reported. Due to disclosure guidelines set by each investment manager, equity characteristics shown are as of the most recent date available. The following is the methodology for segment classification:

Sector - Attribution is calculated using the Global Industry Classification Standard (GICS), which is a detailed and comprehensive structure for sector and industry analysis. Stocks are classified by their primary sector as defined by S&P Capital IQ data. Attribution to "other" is the result of securities based in industries that do not fit into any GICS classification.

Country/Region - Attribution is calculated using the Morgan Stanley Capital International (MSCI) region standards. Stocks are classified by their domicile country/region, as defined by S&P Capital IQ data, and thus may differ from the classification of the investment manager and/or index provider. Attribution to "other" is the result of securities based in countries/regions that do not fit into any MSCI classification.

Style - Stocks are classified into the following style boxes: large/mid/small vs. growth/neutral/value. Stocks are classified along large/mid/small categories at the time of the Russell index rebalancing, using the index market cap boundaries as cutoff points. Stocks are classified along growth/neutral/value categories at the time of the Russell index rebalancing, using the price/book ratio as supplied by S&P Capital IQ. Stocks in the Russell 3000 Index portfolio are sorted by price/book ratio; names with the highest price/book ratio that make up 1/3 of the total market capitalization are assigned to the growth category, and names that make up the subsequent 1/3 of the total market capitalization are assigned to the neutral category, while the balance of the names are assigned to the value category. Stocks are unclassified when there is not enough data to determine a size and style metric.

Portfolio Characteristics and Buy and Hold Attribution reports utilize product-specific data for all mutual funds and commingled funds.

Capital Markets Review -

Breakeven Inflation - Measures the expected inflation rate at each stated maturity by taking the difference between the real yield of the inflation-linked maturity curve and the yield of the closest nominal Treasury maturity.

Consumer Confidence - Measures domestic consumer confidence as defined by the degree of optimism on the state of the economy that consumers express through saving and spending.

Consumer Price Index (CPI) - Measures the change in the price level of consumer goods and services.



Glossary

- Federal Funds Rate** - The interest rate at which a depository institution lends funds maintained at the Federal Reserve to another depository institution overnight. It is one of the most influential interest rates in the US economy, since it affects monetary and financial conditions, which in turn have a bearing on key aspects of the broad economy including employment, growth and inflation.
- Option-Adjusted Spread** - Measures the flat spread of an index or bond to the Treasury yield curve after removing the effect of any embedded options.
- Purchasing Managers Index (PMI)** - Measures economic activity by surveying purchasing managers on a monthly basis as to whether business conditions have improved, worsened, or stayed the same.
- Real Gross Domestic Product (Real GDP)** - An inflation-adjusted measure that reflects the value of all goods and services produced by an economy in a given year.
- Unemployment Rate** - The percentage of the total labor force that is unemployed but actively seeking employment.
- US Dollar Total Weighted Index** - Measures the value of the US Dollar relative to a basket of other world currencies. It is calculated as the weighted geometric mean of the dollar's value versus the EUR, GBP, CAD, SEK, CHF, and JPY.
- VIX** - Measures the implied volatility of S&P 500 Index options by looking at the market's expectation of the S&P 500 Index volatility over the next 30 day period. Commonly referred to as the "fear index" or the "fear gauge."
- Cash Flow Effect** – The composite's active return minus the sum of each managers' active return minus the benchmark effect.
- Consistency** - The percentage of quarters that a product achieved a rate of return higher than that of its benchmark. The higher the consistency figure, the more value a manager has contributed to the product's performance.
- Convexity** - A measure of the shape of the curve that describes the relationship between bond prices and bond yields.
- Correlation** - A statistical measure of the relationship between asset class returns. A value of 1.00 is a perfect correlation; that is, the asset classes always move in the same direction. A value of -1.00 indicates a perfect negative correlation, in which the asset classes always move in opposite directions of each other. A value of 0 indicates there is no relationship between the direction of returns of the two asset classes. Correlation calculations only consider the direction of changes relative to two variables and not the magnitude of those changes.
- Coupon Rate** - The percentage rate of interest paid on a bond or fixed income security; it is typically paid twice per year.
- Current Yield** - The annual income of a security divided by the security's current price.
- Down Market Capture** - Down market by definition is negative benchmark return and down market capture represents the ratio in % terms of the average portfolios return over the benchmark during the down market period. The lower the value of the down market capture the better the product's performance.
- Downside Risk** - A measure similar to standard deviation that focuses only on the negative movements of the return series. It is calculated by taking the standard deviation of the negative returns for the selected periodicity. The higher the factor, the riskier the product.
- Earnings Per Share** - It is backward looking, calculated using the one year current EPS divided by the one year EPS five years ago.
- Effective Duration** - The approximate percentage change in a bond's price for a 100 basis point change in yield.
- Excess Return vs. Market** - Average of the monthly arithmetic difference between the manager's return and the benchmark return over a specified time period, shown on an annualized basis.
- Excess Return vs. Risk Free** - Average of the monthly arithmetic difference between the manager's return and the risk-free return (i.e., ICE BofAML 3 Mo US T-Bill Index unless specified otherwise) over a specified time period, shown on an annualized basis.
- Excess Risk** - A measure of the standard deviation of a portfolio's performance relative to the risk-free return.
- Expense Ratios** - Morningstar is the source for mutual fund expense ratios.
- Gain/Loss** - The net increase or decrease in the market value of a portfolio excluding its Net Cash Flow for a given period.
- Indices** - All indices and related information are considered intellectual property and are licensed by each index provider. The indices may not be copied, used, or distributed without the index provider's prior written approval. Index providers make no warranties and bear no liability with respect to the indices, any related data, their quality, accuracy, suitability, and/or completeness.
- Information Ratio** - Measured by dividing the active rate of return by the tracking error. The higher the information ratio, the more value-added contribution by the manager.
- Liability Driven Investing (LDI)** - A method to optimally structure asset investments relative to liabilities. The change in liabilities is estimated by the Ryan Labs Generic PPA Index of appropriate duration for that Plan. This benchmark is based on generic data and is therefore an approximation. RVK is not an actuarial firm, and does not have actuarial expertise.
- Estimated Funded Status** - The estimated ratio of a Plan's assets relative to its future liabilities. This is calculated by dividing the Plan's asset market value by the estimated present value of its liabilities. The higher the estimated funded status, the better the Plan's ability to cover its projected benefit obligations. An estimated funded status of 100% indicates a Plan that is fully funded.
- Estimated PV of Liabilities** - An estimate of a Plan's future liabilities in present value terms. The beginning of the period liability is provided by the Plan's actuary. The period-end present value liability estimate provided in this report is derived by applying the estimated percentage change generated using the Ryan Labs Generic PPA Index with duration similar to that reported on the most recent actuarial valuation report.
- Duration of Liabilities** - The sensitivity of the value of a Plan's liabilities to changes in interest rates, as calculated by the Plan's actuary.
- Duration of Assets** - The dollar-weighted average duration of all the individual Plan assets.
- Estimated Plan Hedge Ratio** - The estimate of how well a Plan's investment portfolio is hedged against changes in interest rates - a primary driver of funded status movements. This is calculated by dividing the dollar-weighted values of both the Plan asset duration by the liability duration and

Glossary

multiplying by the estimated funded status. An estimated plan hedge ratio of zero indicates that the Plan's liabilities have not been hedged, whereas a value of one indicates fully hedged.

Modified Duration - The approximate percentage change in a bond's price for a 100 basis point change in yield, assuming the bonds' expected cash flows do not change.

Mutual Fund Performance - Whenever possible, manager performance is extended for any share class that does not have 10 years of history. Using Morningstar's methodology, a single ticker within the same fund family (often the oldest share class) is chosen to append historical performance.

Net Cash Flow - The sum, in dollars, of a portfolio's contributions and withdrawals. This includes all management fees and expenses only when performance shown is gross of fees.

Peer Groups -

Plan Sponsor Peer Groups - RVK utilizes the Mellon Analytical Solutions Trust Universe along with the Investment Metrics Plan Sponsor Universe. The combined Mellon Analytical Solutions Trust Universe and Investment Metrics Plan Sponsor Universe is used for comparison of total fund composite results and utilizes actual client performance compiled from consultant and custodian data. The Plan Sponsor Peer Group database includes performance and other quantitative data for over 2,100 plans which include corporate, endowment, foundation, public, and Taft Hartley plans.

Investment Manager Peer Groups - RVK utilizes Investment Metrics' Peer Groups for investment manager peer comparison and ranking. The Investment Metrics Peer Group database includes performance and other quantitative data for over 840 investment management firms and 29,000 investments products, across more than 160 standard peer groups. Mutual Fund Peer Groups are net of fees.

Percentile Rankings - Percentile rank compares an individual fund's performance with those of other funds within a defined peer group of managers possessing a similar investment style. Percentile rank identifies the percentage of a fund's peer group that has a higher return (or other comparative measurement) than the fund being ranked. Conversely, 100 minus the individual fund's ranking will identify the percentage of funds within the peer group that have a lower return than the fund being ranked.

1 - Highest Statistical Value 100 - Lowest Statistical Value

Example: American Funds AMCP;R-4 (RAFEX) is ranked in the 4th percentile within the IM US Equity Large-Cap Growth Funds (MF) Peer Group for the Sharpe Ratio. Within the IM US Equity Large-Cap Growth Funds peer group, 4% of the other funds performed better than American Funds AMCP;R-4 (RAFEX), while 96% of the funds performed worse.

Performance Methodology - RVK calculates performance for investment managers and composites using different methodologies.

Investment Managers - Performance is calculated for interim periods between all large external cash flows for a given month and geometrically linked to calculate period returns. An external cash flow is defined as cash, securities, or assets that enter or exit a portfolio. RVK defines a "large cash flow" as a net aggregate cash flow of $\geq 10\%$ of the beginning-period portfolio market value or any cash flow that causes RVK calculated performance to deviate from manager/custodian reported performance in excess of 5 basis points for a given month.

Composites - The Modified Dietz methodology is utilized to calculate asset class, sub-asset class, and total fund composite performance. The Modified Dietz method calculates a time-weighted total rate of return that considers the timing of external cash flows; however, it does not utilize interim period performance to mitigate the impact of significant cash in- and outflows to the composite.

RVK calculates performance beginning with the first full month following inception. Since inception performance may vary from manager reported performance due to RVK using the first full month of returns as the inception date. Performance for both managers and composites is annualized for periods greater than one year.

Portfolio Characteristics - Due to disclosure guidelines set by each investment manager, portfolio characteristics shown are as of the most recent date available.

Price to Earnings Ratio - The ratio valuing a company's current share price relative to its trailing 12-month per-share earnings (EPS).

Private Equity Quartile Ranks - Private Equity quartile ranks are generated using vintage year peer group data provided by Thomson Reuters, and are based on each fund's annualized, since inception internal rate of return (IRR). Three Private Equity peer groups are available via Thomson Reuters: Buyout, Venture, and All Private Equity. Ranks are available quarterly, at a one-quarter lag.

R-Squared - The percentage of a portfolio's performance explained by the behavior of the appropriate benchmark. High R-Squared means a higher correlation of the portfolio's performance to the appropriate benchmark.

Return - Compounded rate of return for the period.

% Return - The time-weighted rate of return of a portfolio for a given period.

Risk Free Benchmark - ICE BofAML 3 Mo US T-Bill Index unless specified otherwise.

Glossary

RVK Liquidity Rating - A qualitative method for determining the relative amount of liquidity in a portfolio. The characteristics considered when determining relative liquidity include trading volume, gates for redemption, leverage, nature of transactions, and pricing mechanisms. The RVK Liquidity Rating is calculated using beginning of month investment weights applied to each corresponding asset class liquidity rating.

<u>Asset Class</u>	<u>RVK Liquidity Rating</u>	<u>Asset Class</u>	<u>RVK Liquidity Rating</u>
<u>Liquid Investments</u>		<u>Less Liquid Investments</u>	
T-Bills and Treasuries	100	Fixed Income Plus Sector	50
Cash Equivalents	98	Stable Value (Plan Sponsor Directed)	50
TIPS	95	Hedge Funds of Funds	35
US Large Cap Equity	95		
Diversified Real Return	93		
Stable Value (Participant Directed)	91		
Global Equity	90	<u>Not Liquid Investments</u>	
Non-US Large Cap Equity	90	Core Real Estate	25
Global Tactical Asset Allocation	88	Core Plus Real Estate	15
MLPs	85	Non-Core Real Estate	5
US Mid Cap Equity	85	Private Equity	5
US SMid Cap Equity	85	Private Credit	5
US Small Cap Equity	85		
REITs	85		
Non-US Small Cap Equity	85		
Emerging Markets Equity	85		
Core Fixed Income	85		
Core Plus Fixed Income	80		

Sector Allocation - Negative fixed income sector allocation reflects manager's use of derivatives, short selling, or interest rate swaps.

Sharpe Ratio - Represents the excess rate of return over the risk-free return (i.e., ICE BofAML 3 Mo US T-Bill Index unless specified otherwise), divided by the standard deviation of the excess return to the risk free asset. The result is the absolute rate of return per unit of risk. The higher the value, the better the product's historical risk-adjusted performance.

Simple Alpha - The difference between the manager's return and the benchmark's return.

Spread Duration - The approximate percentage change in a bond's price for a 100 basis point change in its spread over a Treasury of the same maturity.

Standard Deviation - A statistical measure of the range of a portfolio's performance. The variability of a return around its average return over a specified time period.

Thematic Classification - Represents dedicated manager allocations; as such, thematic allocations are approximations. RVK categorizes the following asset classes as Alpha, Capital Appreciation, Capital Preservation, and Inflation:

<u>Alpha</u>	<u>Capital Appreciation</u>	<u>Capital Preservation</u>	<u>Inflation</u>
Absolute Return Strategies	Public Equity	Core Fixed Income	TIPS
Currency Overlay	Private Equity	CMBS Fixed Income	Bank Loans
	Preferred Securities	Asset Backed Fixed Income	Core Real Estate
	High Yield	Domestic Core Plus Fixed Income	Real Return
	Convertible Fixed Income	Mortgage Backed Fixed Income	Inflation Hedges
	TALF Funds	International Developed Fixed Income	REITs
	Distressed Debt	Cash Equivalents	Commodities
	Emerging Market Fixed Income	Stable Value	
	Value Added Real Estate		
	Opportunistic Real Estate		

Time Period Abbreviations - **QTD** - Quarter-to-Date. **CYTD** - Calendar Year-to-Date. **FYTD** - Fiscal Year-to-Date. **YOY** - Year Over Year.

Total Fund Attribution - The Investment Decision Process (IDP) model provides an approach to evaluating investment performance that applies to all asset classes and investment styles. The IDP model is based on a top-down hierarchy framework of investment decisions, with each decision contributing to the overall profit or loss. The IDP approach starts from the strategic asset allocation and follows the flow of the investments down to the manager's skill.

Strategic Asset Allocation (SAA) - The percentage return gained or lost from the long-term strategic asset allocation decision, the most significant determinant of long-term performance. SAA is the product of the target asset allocation multiplied by the corresponding benchmark returns.

Tactical Asset Allocation (TAA) - The percentage return gained or lost from not having been precisely allocated at the target asset allocation mix, whether by deviations that are tactical in nature or a by-product of moving towards the target mix. TAA is the product of the actual asset allocation multiplied by the broad asset class benchmarks, less the SAA.

Style Selection (SS) - The percentage return gained or lost from intentional style biases within each asset class (e.g. value rather than core or overweight to emerging markets relative to benchmark). SS is the product of the actual manager allocation within each asset class multiplied by their specific benchmark, less TAA.

Manager's Skill (MS) - The percentage return gained or lost from manager value added relative to their specific benchmark. MS is the product of the actual manager allocation multiplied by their achieved excess return.

Total Fund Beta - Total Fund Beta is calculated using the S&P 500 as the benchmark. It represents a measure of the sensitivity of the total fund to movements in the S&P 500 and is a measure of the Total Fund's non-diversifiable or systematic risk.



Glossary

Tracking Error - A measure of the standard deviation of a portfolio's performance relative to the performance of an appropriate market benchmark.

Treynor Ratio - Similar to Sharpe ratio, but focuses on beta rather than excess risk (standard deviation). Treynor ratio represents the excess rate of return over the risk-free rate (i.e., ICE BofAML 3 Mo US T-Bill Index unless specified otherwise) divided by the beta. The result is the absolute rate of return per unit of risk. The higher the value, the better historical risk-adjusted performance.

Unit Value - The dollar value of a portfolio, assuming an initial nominal investment of \$100, growing at the compounded rate of %Return for a given period.

Up Market Capture - Up market by definition is positive benchmark return and up market capture represents the ratio in % terms of the average portfolio's return over the benchmark during the up market period. The higher the value of the up market capture the better the product's performance.

Yield to Maturity - The rate of return achieved on a bond or other fixed income security assuming the security is bought and held to maturity and that the coupon interest paid over the life of the bond will be reinvested at the same rate of return. The 30-Day SEC Yield is similar to the Yield to Maturity and is reported for mutual funds.

Yield to Worst - The bond yield calculated by using the worst possible yield taking into consideration all call, put, and optional sink dates.

PORTLAND

BOISE

CHICAGO

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Public Fund Universe Analysis

SACRS

Period Ending December 31, 2022

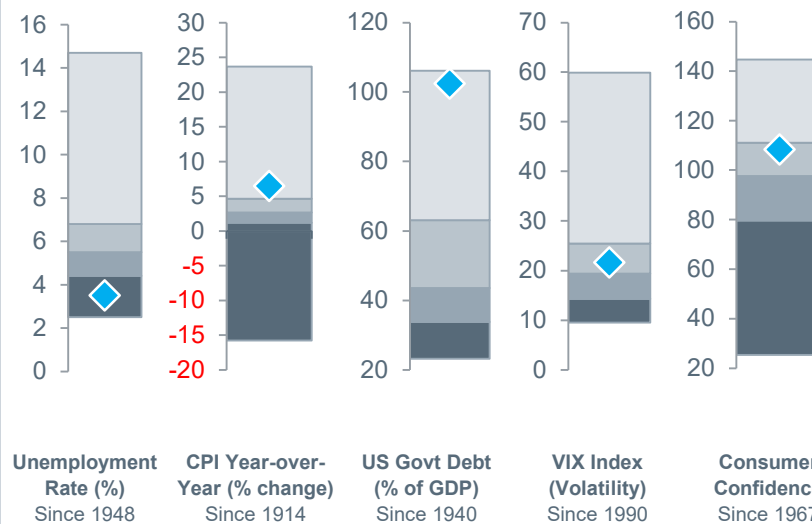


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Fourth Quarter Economic Environment

In Q4, equity and fixed income markets delivered improved results while continuing to experience elevated volatility. However, positive quarterly returns came on the tail of a significantly negative year for many investors. Regarding economic conditions, the impact of tightening monetary policy and persistent inflation, combined with supply shocks and an energy crisis in Europe, are leading to increasing odds of a global recession in 2023. On a relatively positive note, recent data indicates that the inflationary environment is showing signs of abating. Notably, the US Consumer Price Index declined for a sixth straight month in December with a reading of 6.5%, the lowest level since October 2021. In December, the FOMC did slow the pace of policy rate hikes with a 50 basis point increase, following a series of four straight 75 basis point increases. Internationally, the war in Ukraine caused an energy price shock and trade tensions continue to test economic and political relationships across multiple regions. Within emerging markets, investor attention is focused on China with some pointing to signs of a softening stance toward pandemic restrictions as reason to be optimistic regarding the country's outlook. However, these views are countered with concerns over indications of social unrest and the consolidation of power around President Xi Jinping. With all this considered, global GDP growth forecasts continue to moderate with the OECD forecasting growth of 3.1% in 2022 with an expected decline to 2.2% global GDP growth in 2023.

Key Economic Indicators



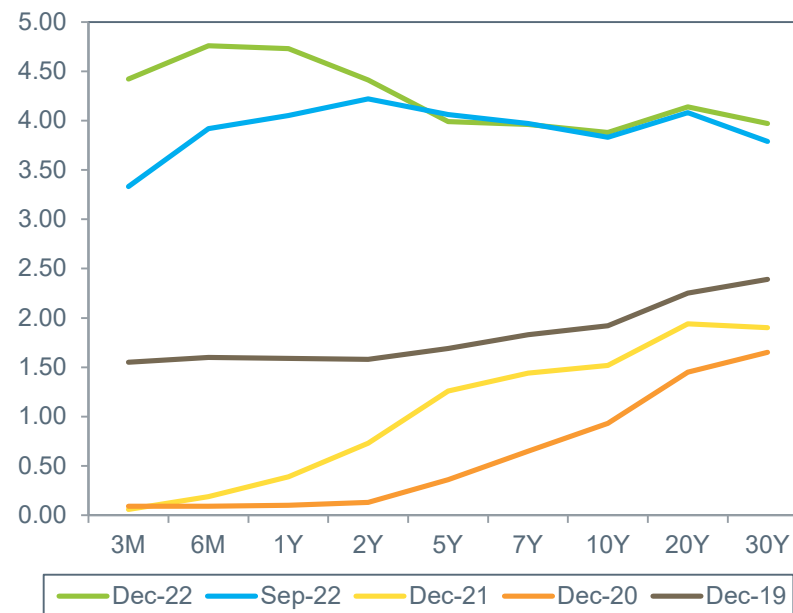
Economic Indicators

	Dec-22	Sep-22	Dec-21	Dec-19	20 Yr
Federal Funds Rate (%)	4.33 ▲	3.08	0.07	1.55	1.30
Breakeven Infl. - 5 Yr (%)	2.38 ▲	2.16	2.91	1.70	1.92
Breakeven Infl. - 10 Yr (%)	2.30 ▲	2.15	2.59	1.79	2.08
CPI YoY (Headline) (%)	6.5 ▼	8.2	7.0	2.3	2.5
Unemployment Rate (%)	3.5 —	3.5	3.9	3.6	6.0
Real GDP YoY (%)	1.0 ▼	1.8	5.7	2.6	2.0
PMI - Manufacturing	48.4 ▼	50.9	58.8	47.9	53.7
USD Total Wtd Idx	121.51 ▼	127.64	115.37	114.67	103.33
WTI Crude Oil per Barrel (\$)	80.3 ▲	79.5	75.2	61.1	67.9
Gold Spot per Oz (\$)	1,824 ▲	1,661	1,829	1,517	1,160

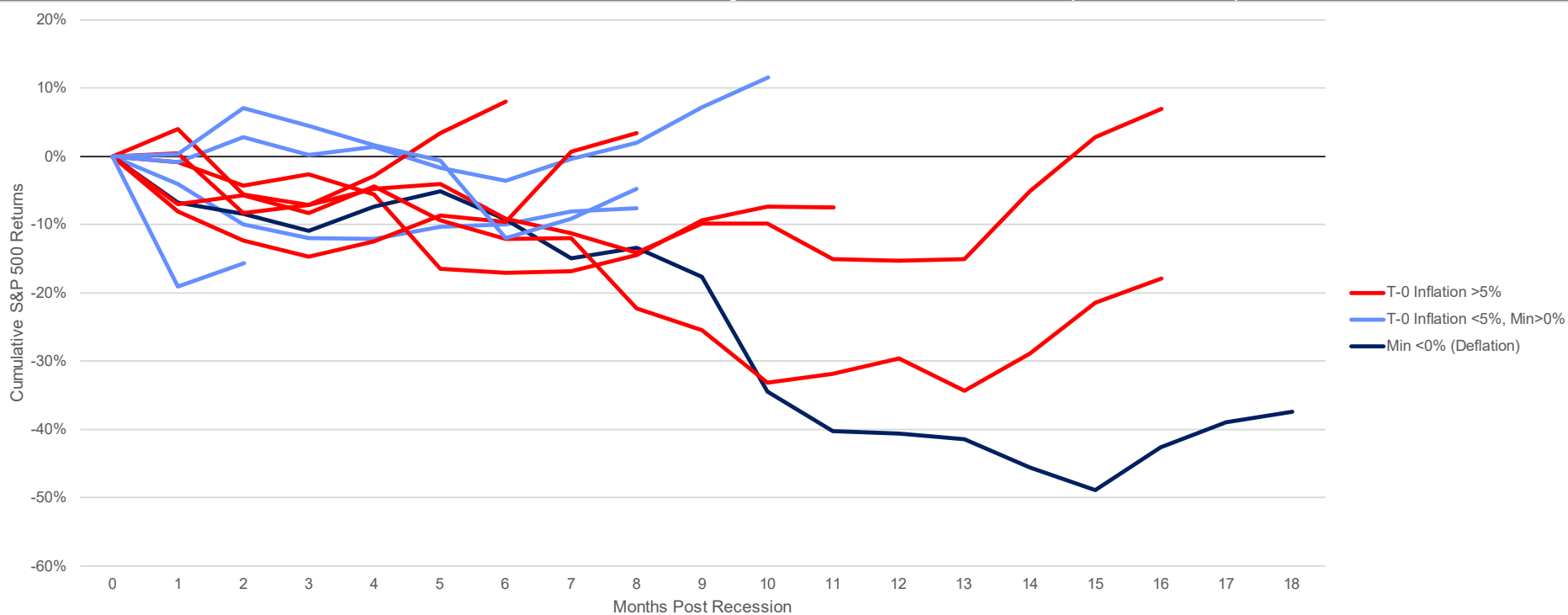
Market Performance (%)

	QTD	CYTD	1 Yr	5 Yr	10 Yr
S&P 500 (Cap Wtd)	7.56	-18.11	-18.11	9.42	12.56
Russell 2000	6.23	-20.44	-20.44	4.13	9.01
MSCI EAFE (Net)	17.34	-14.45	-14.45	1.54	4.67
MSCI EAFE SC (Net)	15.79	-21.39	-21.39	-0.05	6.21
MSCI Emg Mkts (Net)	9.70	-20.09	-20.09	-1.40	1.44
Bloomberg US Agg Bond	1.87	-13.01	-13.01	0.02	1.06
ICE BofAML 3 Mo US T-Bill	0.84	1.46	1.46	1.26	0.76
NCREIF ODCE (Gross)	-4.96	7.47	7.47	8.68	10.10
FTSE NAREIT Eq REIT (TR)	5.24	-24.37	-24.37	3.68	6.53
HFRI FOF Comp	1.79	-5.25	-5.25	3.02	3.51
Bloomberg Cmdty (TR)	2.22	16.09	16.09	6.44	-1.29

Treasury Yield Curve (%)



S&P 500 Performance - Recessionary Periods and Inflation Levels (1957 - Present)



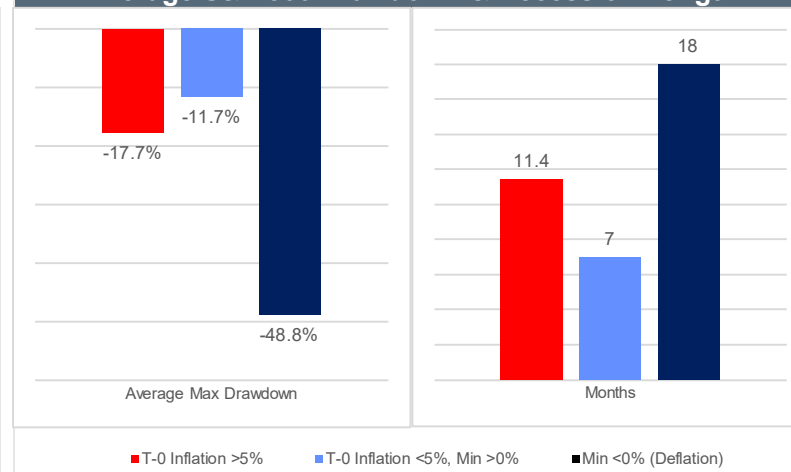
Recession Statistics

Start Date	Length Months	YoY CPI% @ T-0	Max YoY CPI%	Min YoY CPI%	Max Drawdown From T-0	Cumulative Return
9/30/1957	8	2.9	3.4	2.8	-12.0%	-7.6%
5/31/1960	10	1.6	1.6	0.9	-3.6%	11.6%
1/31/1970	11	5.9	5.9	5.0	-17.0%	-7.5%
12/31/1973	16	8.4	11.2	8.4	-34.2%	-17.9%
2/29/1980	6	13.0	13.5	12.1	-7.1%	8.0%
8/31/1981	16	9.9	9.9	4.1	-15.3%	7.0%
8/31/1990	8	5.5	6.0	4.6	-14.7%	3.4%
4/30/2001	8	3.0	3.0	1.7	-11.9%	-4.7%
1/31/2008	18	3.9	5.5	-2.0	-48.8%	-37.4%
3/31/2020	2	1.2	1.2	0.3	-19.1%	-15.7%

Averages

T-0 Inflation > 5%	11.4	8.5	9.3	6.8	-17.7%	-1.4%
T-0 Inflation < 5%, Min > 0%	7.0	2.2	2.3	1.4	-11.7%	-4.1%
Min < 0% (Deflation)	18.0	3.9	5.5	-2.0	-48.8%	-37.4%

Average S&P 500 Drawdown & Recession Length



Performance for each period begins where T-0 is equal to the start of an official recession and runs until the official end of the recession (as reported by the National Bureau of Economic Reporting).

Inflation is measured as the YoY % change in CPI. T-0 = the official recession start date.

Max and Min refer to the maximum and minimum observed YoY CPI% change during the recessionary period.

Source: RVK calculations, based on data from S&P Dow Jones Indices and FRED Database.

Fourth Quarter Review

Broad Market

US equity markets experienced a decrease in volatility in Q4 with short term spikes around CPI release dates and Fed meetings. Returns were positive across market cap and style groups in Q4. The reversal to growth seen in Q3 was short-lived, as value stocks led growth by a wide margin in Q4. Energy had its best year on record with the S&P 500 Energy Index gaining 65.72%.

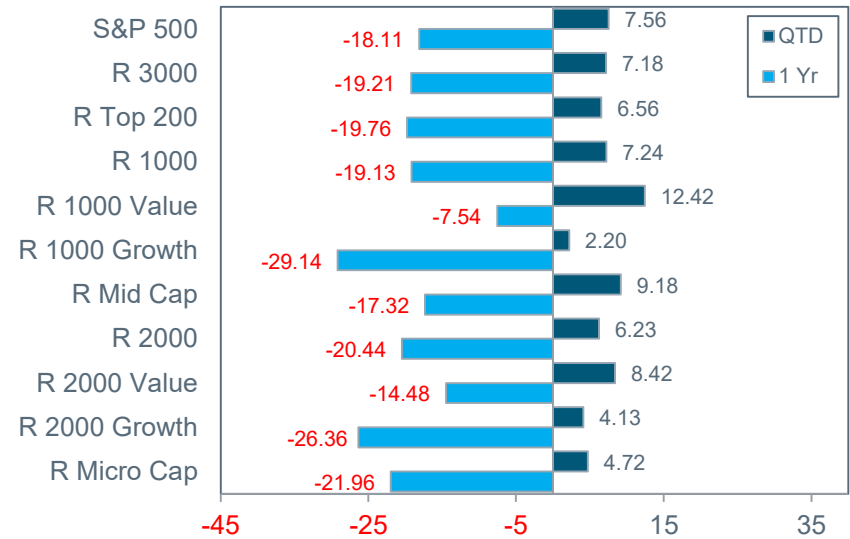
Market Cap

This year marks the worst performance of US equities across market cap groups since the GFC, and only the third time in the last 15 years that the Russell 3000 Index has generated negative returns.

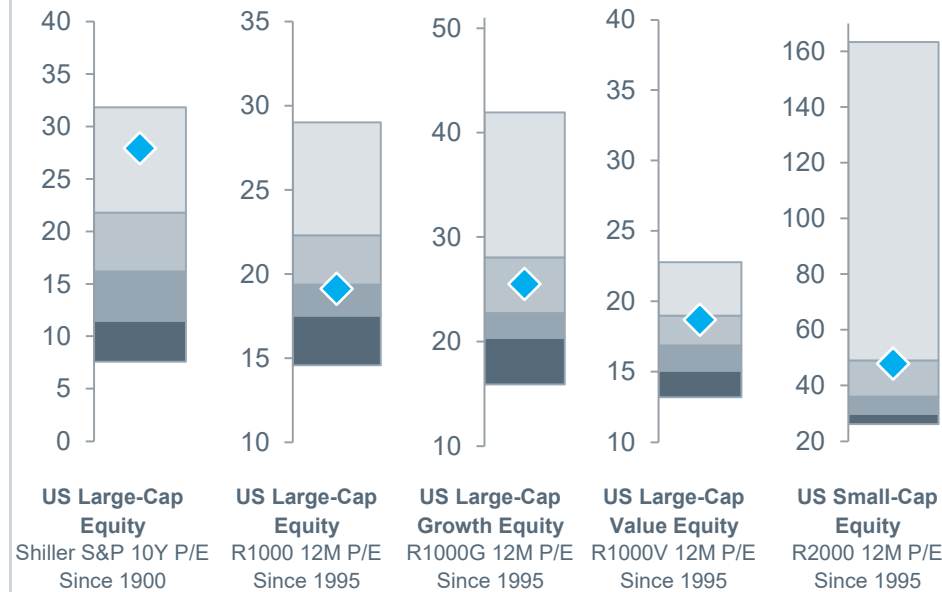
Style and Sector

Value-oriented managers had a higher success rate than core or growth managers in the small- and mid-cap spaces, while large-cap core and growth managers fared better than value managers. Growth managers across the market cap spectrum struggled to provide downside protection in 2022, while value and core managers were broadly successful.

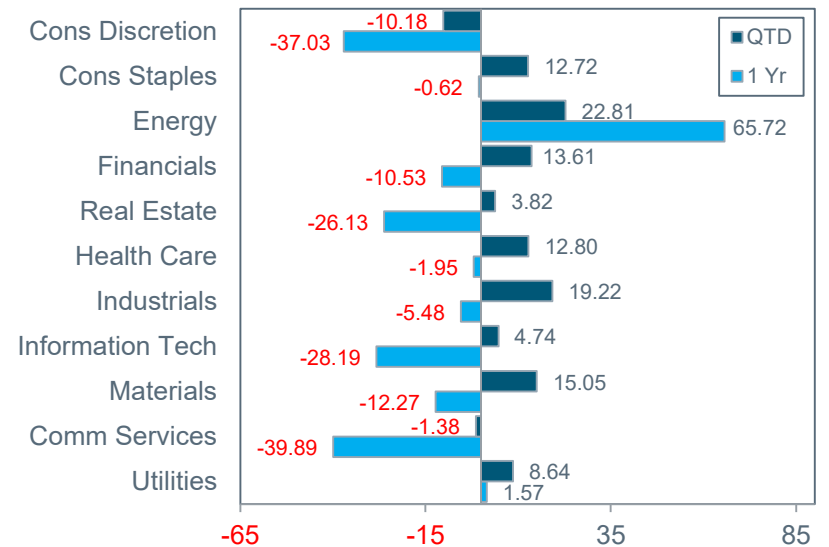
Style and Capitalization Market Performance (%)



Valuations



S&P 500 Index Sector Performance (%)



Valuation data courtesy of Bloomberg Professional Service and Robert J. Shiller, Irrational Exuberance, Second Edition (2000). P/E metrics shown represent the 5th through 95th percentiles to minimize the effect of outliers.



Fourth Quarter Review

Developed Markets

International developed markets meaningfully outperformed their domestic counterparts in Q4 with the MSCI EAFE Index realizing a 17.3% return for the period. Value stocks rebounded back into favor, outperforming growth in a reversal from the prior quarter, while large-cap continued its outperformance over small-cap stocks. Overall, market trends pointed to investors anticipating moderating inflation and easing of rate hikes despite the ongoing uncertainty led by the conflict in Ukraine and near-term recession fears.

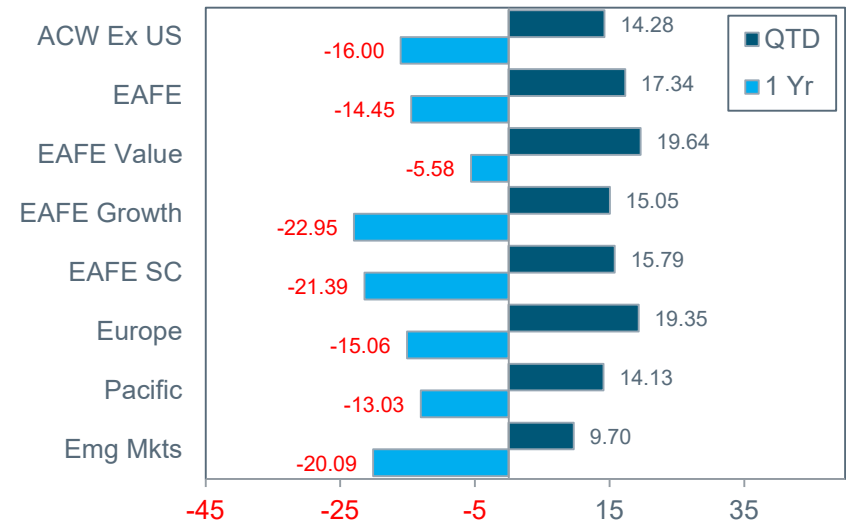
Emerging Markets

Emerging markets lagged behind developed during the quarter with the MSCI Emerging Markets Index finishing with a 9.7% return. Value stocks narrowly outperformed growth and large-cap beat small-cap.

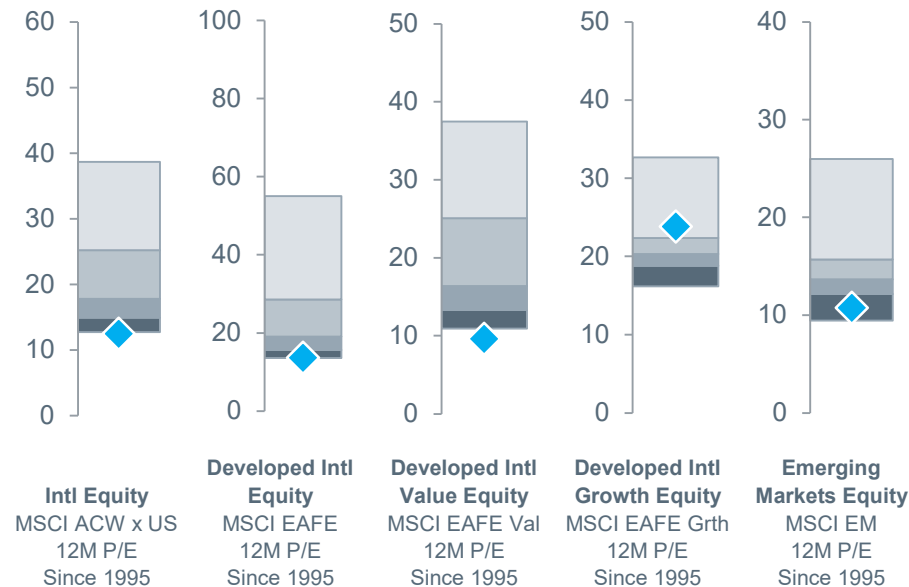
Market Cap & Style

The majority of active managers in emerging markets outperformed the index in Q4; however, active managers in international developed mostly underperformed.

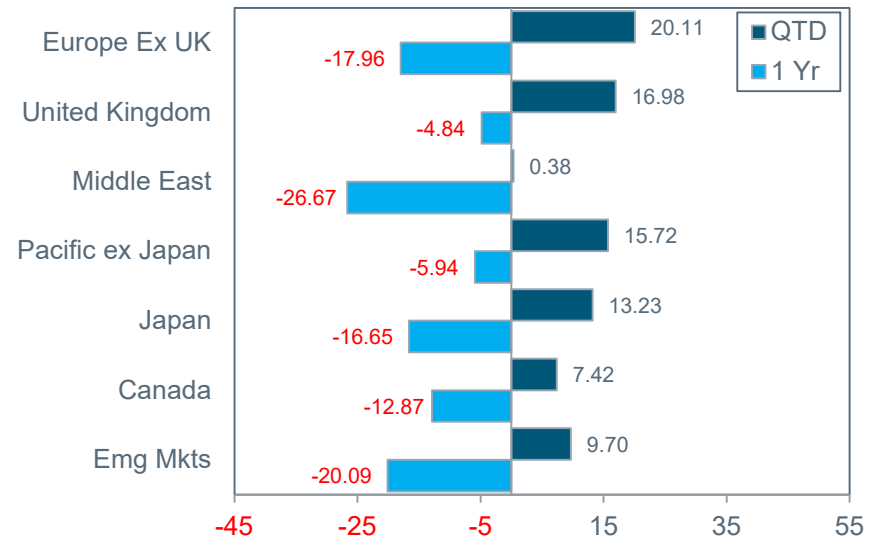
MSCI Style and Capitalization Market Performance (%)



Valuations



MSCI Region Performance (%)



Valuation data courtesy of Bloomberg Professional Service.

P/E metrics shown represent the 5th through 95th percentiles to minimize the effect of outliers. All returns are shown net of foreign taxes on dividends.



Fourth Quarter Review

Broad Market

The Bloomberg US Aggregate Index finished Q4 with a return of 1.9%, capping off a decline of -13.0% in 2022, the most negative calendar year on record for the index. The year was defined by rising interest rates, as treasury yields rose 236 basis points from 1.5% to 3.9% as measured by the 10-year US Treasury yield. The Federal Reserve aggressively hiked the Federal Funds rate in response to persistent inflation over the course of the year.

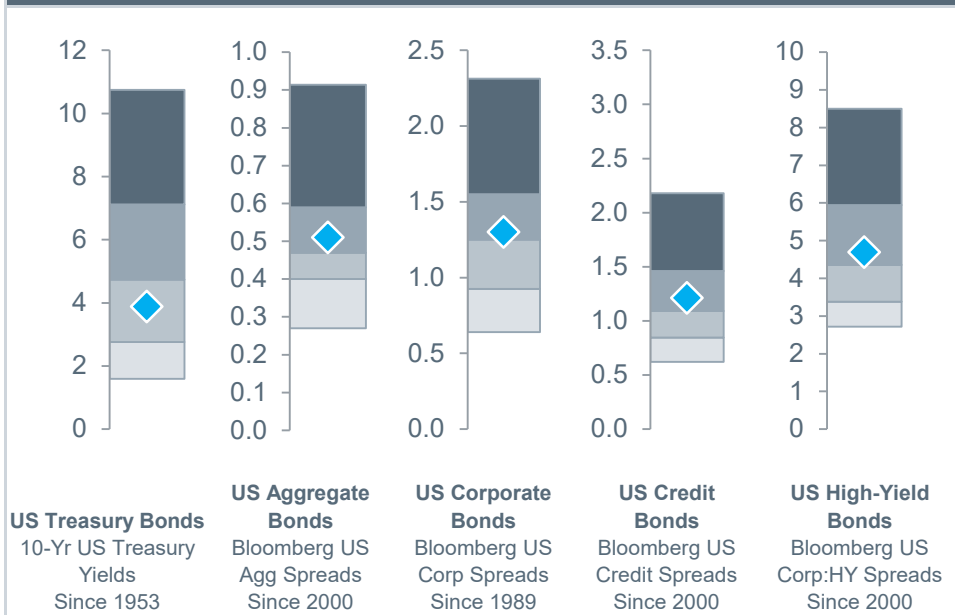
Credit Market

US investment grade corporate bonds rebounded in Q4 as low supply and softer Federal Reserve rhetoric bolstered credit markets. Non-investment grade corporate credit relatively outperformed investment grade over the year.

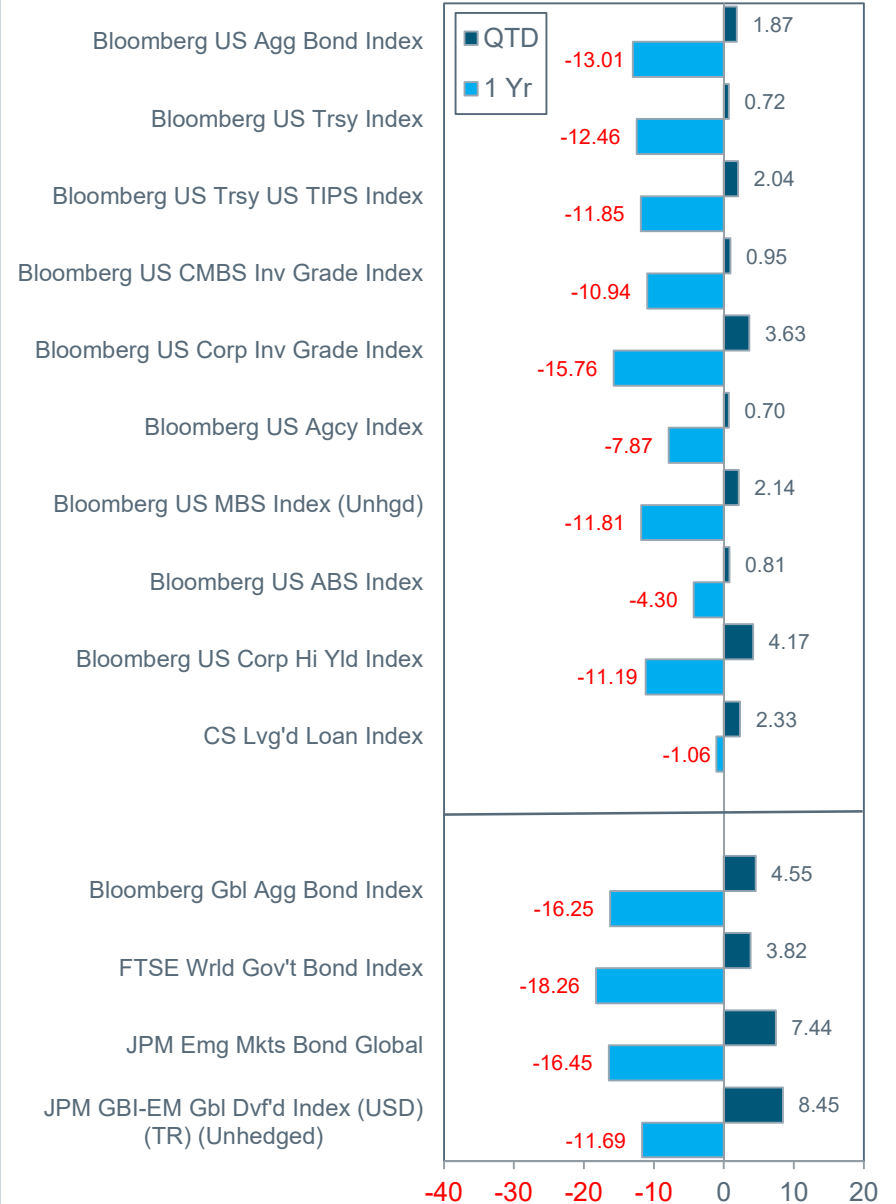
Emerging Market Debt

Conditions in global fixed income markets were defined by concerns over low growth, persistent inflation, rising interest rates, a strong US Dollar, and geopolitical conflict. The Bloomberg Global Aggregate Index returned 1.0% in Q4 and -11.2% in 2022, while the JPM EMBI Global Diversified returned 8.1% and -17.8% over these respective periods.

Valuations



Fixed Income Performance (%)



Valuation data courtesy of Bloomberg Professional Service. Valuations shown represent the 5th through 95th percentiles to minimize the effect of outliers.



Fourth Quarter Review - Absolute Return

General Market - Hedge Funds

Despite a highly challenging market backdrop, hedge funds broadly delivered much-needed capital preservation to institutional investors. The year also ended on a strong note given most managers were reducing leverage and overall market exposure going into Q4. The HFRI Fund-Asset-Weighted Composite Index delivered an annual return of 1.0% while its Asset-Weighted counterpart ended the year at -4.0%.

General Market - Global Tactical Asset Allocation (GTAA)

Global Tactical Asset Allocation (GTAA) strategies that RVK follows closely posted significant gains with moderate dispersion to close an otherwise challenging year. Given a strong quarter for non-US equity, as well as value-oriented equity within the US, nearly all active managers with significant diversification outperformed a US centric blend of 60% equity and 40% fixed income. The top performing long-biased GTAA strategies were those who have included meaningful market neutral idiosyncratic relative valuation exposures. While those who moderately underperformed peers benefitted from a value bias despite maintaining US equity and fixed income exposures.

Fourth Quarter Review - Real Assets

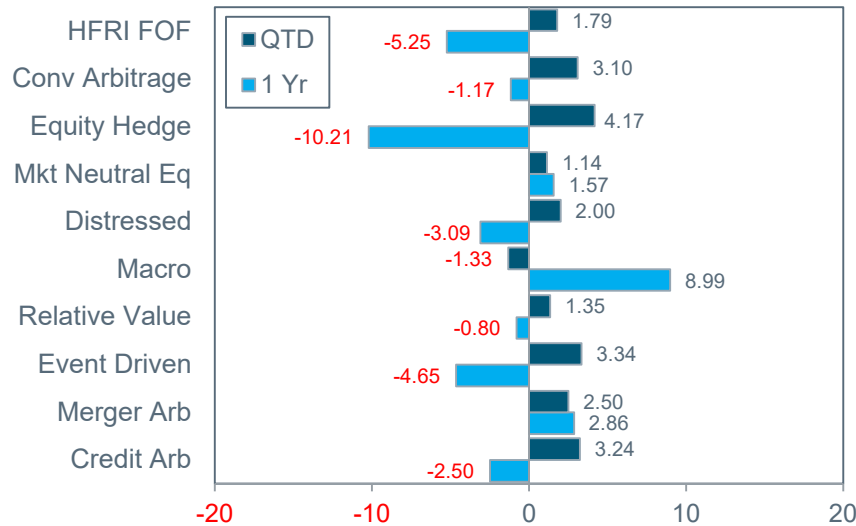
General Market - Diversified Inflation Strategies (DIS)

DIS managers tracked closely by RVK have outperformed a US-centric blend of 60% equity and 40% fixed income both year to date, and over the quarter. After responding positively to record inflationary pressures in Q1 of 2022, DIS posted losses in the second and third quarters that followed. Strong Q4 performance has materialized across the peer group, with those who rely on income-oriented investment processes and those who hold larger TIPS allocation lagging the group to a moderate degree.

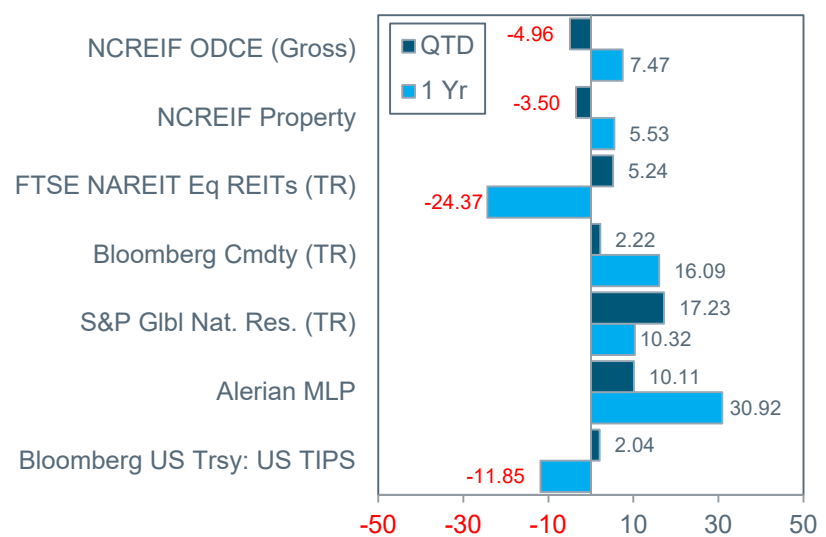
General Market - Real Estate

Core private real estate generated a negative return of -5.0% in Q4 (on a preliminary and gross of fee basis), as reported by the NFI-ODCE Index, with the total return comprising of 0.8% income and -5.8% price appreciation. Investors of publicly traded real estate significantly outperformed their private market counterparts by a meaningful margin. Publicly traded real estate delivered a fourth quarter total return of 4.5%, as measured by FTSE/NAREIT All REITs Index.

HFRI Hedge Fund Performance (%)



Real Asset Performance (%)



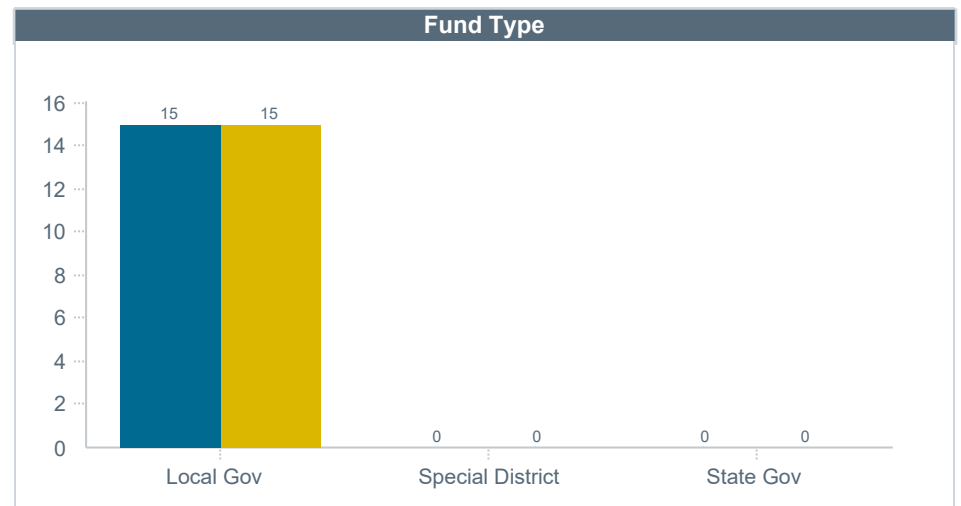
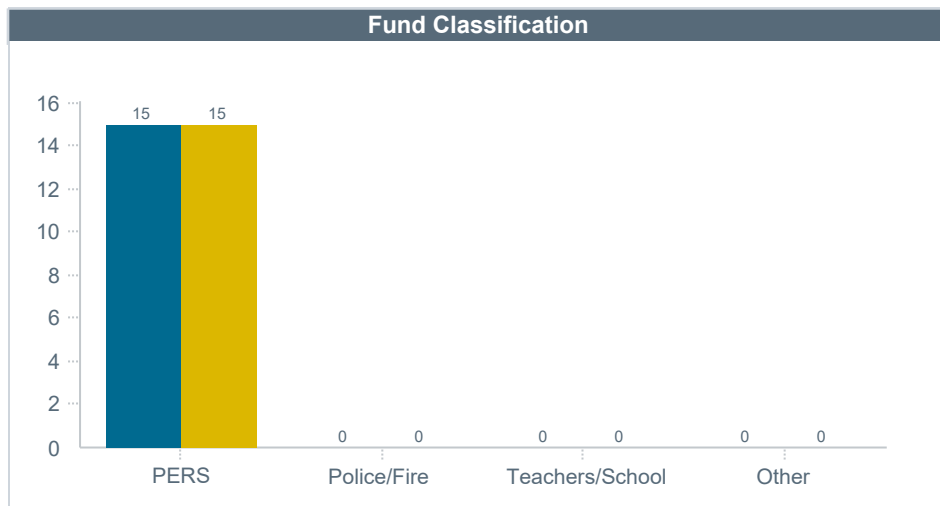
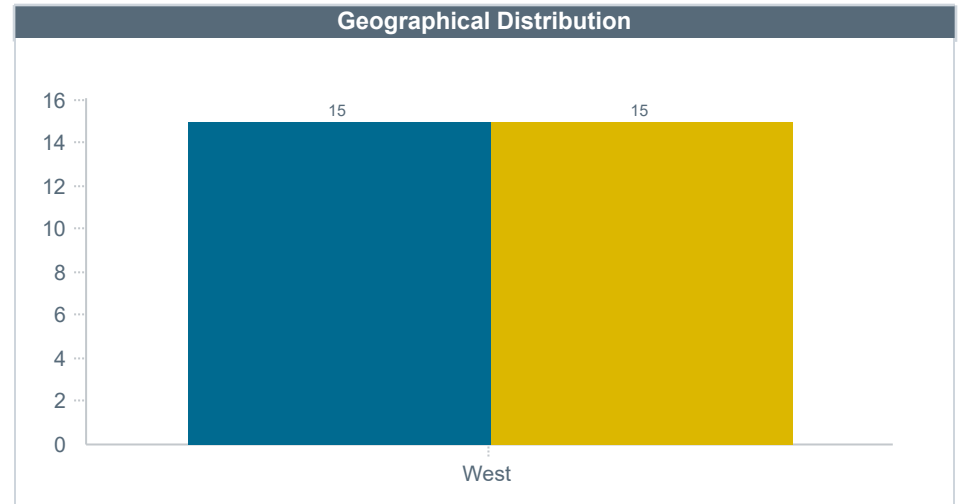
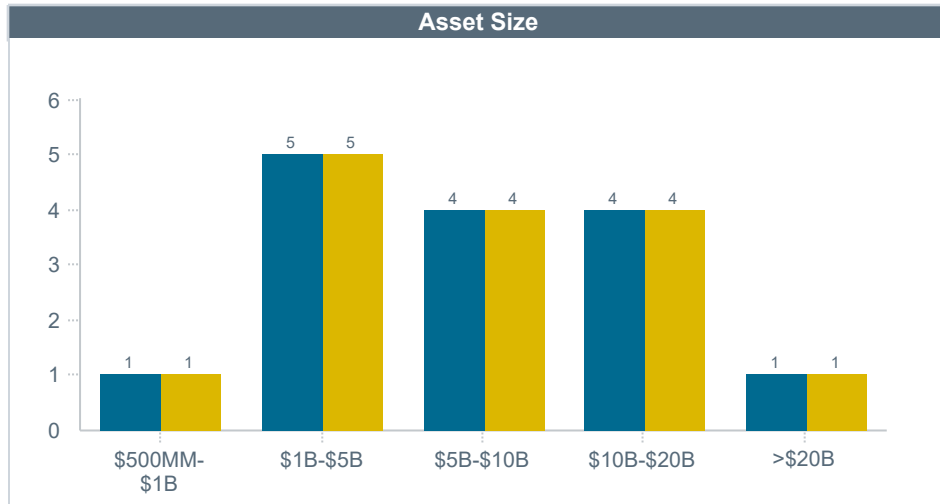
Annual Asset Class Performance

As of December 31, 2022

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	CYTD
Best	8.44	78.51	27.94	22.49	20.00	38.82	30.14	15.02	21.31	37.28	8.35	31.49	19.96	43.24	16.09
	5.24	58.21	26.85	15.99	18.23	32.39	19.31	9.59	17.13	33.01	1.87	26.00	18.40	28.71	7.47
	2.06	46.78	22.04	13.56	18.06	29.30	13.69	3.20	11.96	25.03	0.01	25.53	18.31	27.11	1.46
	-2.35	31.78	18.88	8.29	17.32	22.78	12.50	1.38	11.77	21.83	-1.26	24.96	16.12	22.17	-5.25
	-10.01	28.01	16.83	7.84	16.35	13.94	5.97	0.55	11.19	14.65	-2.08	22.01	12.34	14.82	-11.19
	-21.37	27.17	16.36	4.98	16.00	8.96	4.89	0.05	8.77	10.71	-4.02	19.59	10.99	11.26	-11.85
	-26.16	26.46	15.12	2.11	15.81	7.44	3.64	-0.27	8.52	7.77	-4.38	18.42	10.88	10.10	-13.01
	-33.79	18.91	15.06	0.10	10.94	2.47	3.37	-0.81	6.67	7.62	-4.62	14.32	7.82	6.17	-14.45
	-35.65	11.47	10.16	-4.18	8.78	0.07	2.45	-1.44	4.68	7.50	-4.68	8.72	7.51	5.96	-18.11
	-37.00	11.41	7.75	-5.72	6.98	-2.02	0.04	-3.30	2.65	5.23	-11.01	8.43	7.11	5.28	-20.09
	-37.74	5.93	6.54	-12.14	4.79	-2.60	-2.19	-4.41	2.18	3.54	-11.25	8.39	1.19	0.05	-20.44
	-43.33	1.92	6.31	-13.32	4.21	-8.61	-4.90	-4.47	1.00	3.01	-13.73	7.69	0.67	-1.55	-21.39
	-47.01	0.21	5.70	-15.94	0.11	-8.83	-4.95	-14.92	0.51	1.70	-14.57	5.34	-3.12	-2.52	-24.37
Worst	-53.33	-29.76	0.13	-18.42	-1.06	-9.52	-17.01	-24.66	0.33	0.86	-17.89	2.28	-8.00	-2.54	-27.09
	S&P 500 - US Large Cap	R 2000 - US Small Cap	MSCI EAFE (Net) - Int'l Dev.	MSCI EAFE SC (Net) - Int'l SC	MSCI EM (Net) - Int'l Emg Mkts	Bloombrg US Agg Bond - FI	Bloombrg US Corp Hi Yield - FI	Bloombrg US Trsy US TIPS - FI	Bloombrg US Gov Credit Lng - FI	NCREIF ODCE (Gross) - Real Estate	FTSE NAREIT Eq REITs Index (TR)	HFRI FOF Comp Index - ARS	Bloombrg Comdty (TR) - Commod.	ICE BofAML 3 Mo T-Bill - Cash Equiv	

NCREIF ODCE (Gross) performance is reported quarterly; performance is shown N/A in interim-quarter months.

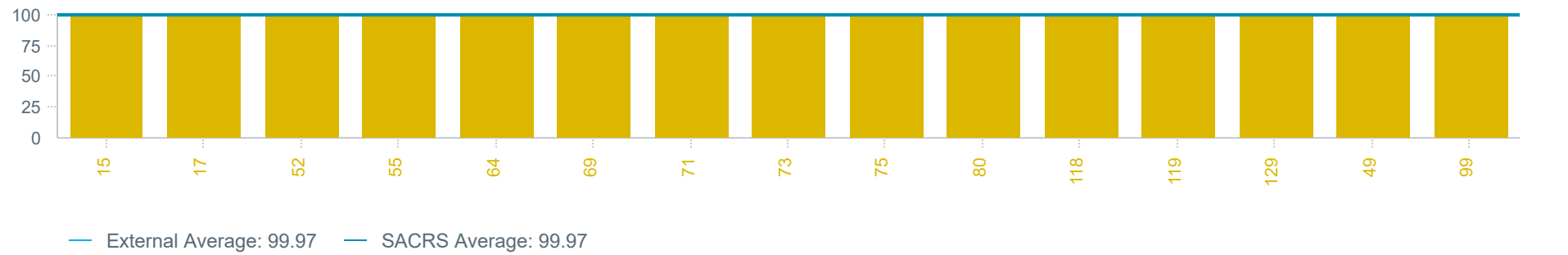




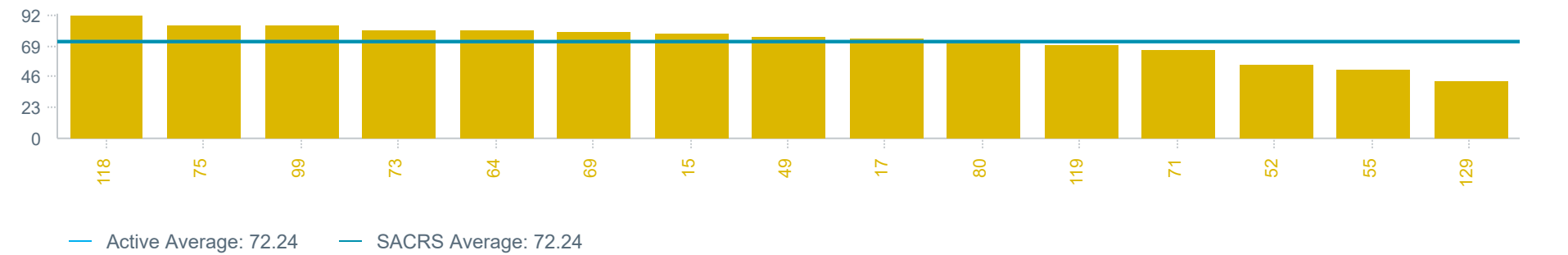
■ Universe: 15 funds ■ SACRS: 15 funds



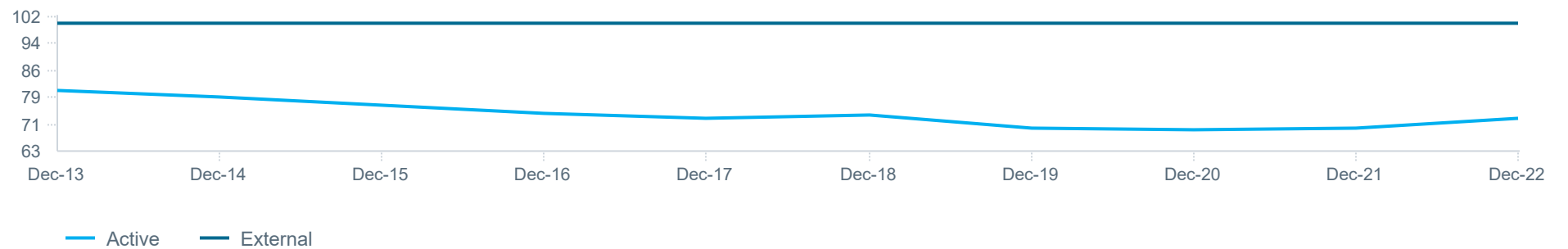
External Management (%)



Active Management (%)



Public Fund Universe Historical Average (%)



SACRS

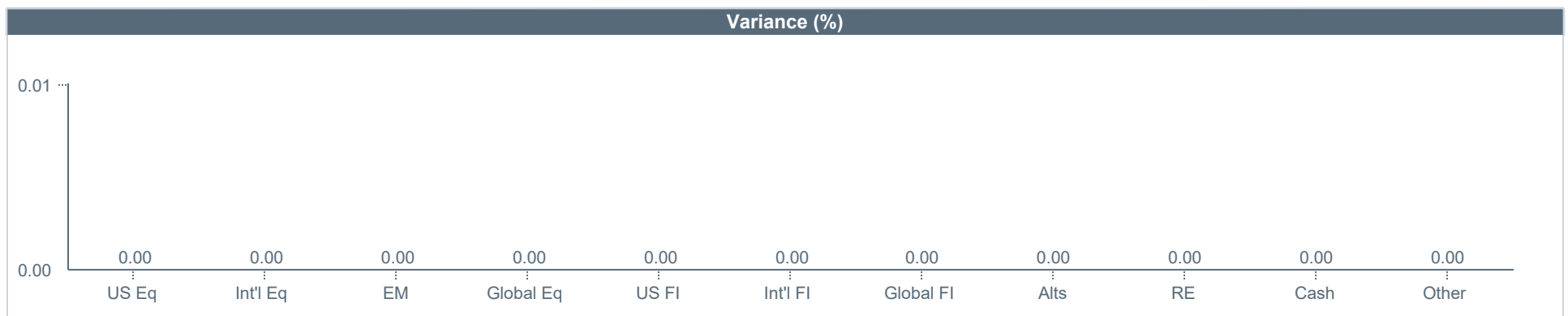
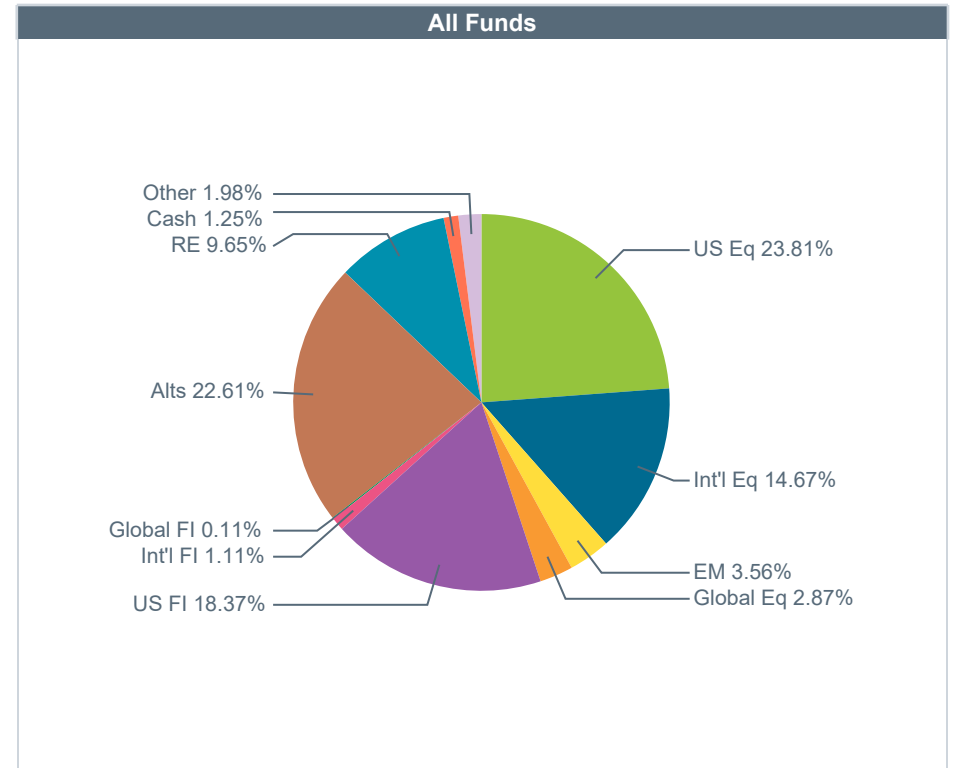
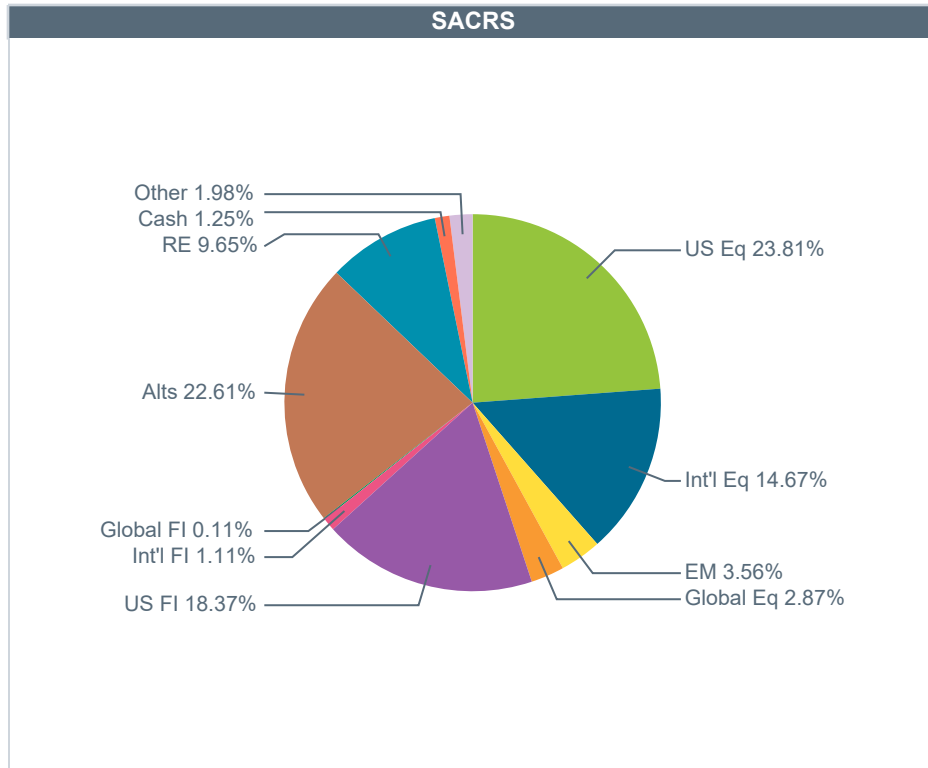


Asset Range	Actively Managed (%)	Passively Managed (%)	Externally Managed (%)	Internally Managed (%)
Over \$20B	72.66	27.34	76.68	23.32
\$10B-\$20B	78.99	21.01	92.42	7.58
\$5B-\$10B	74.01	25.99	98.19	1.81
\$1B-\$5B	73.62	26.38	98.66	1.34
\$500MM-\$1B	82.85	17.15	99.92	0.08
Under \$500MM	78.17	21.83	100.00	0.00
SACRS	72.24	27.76	99.97	0.03

Percentages shown for asset ranges are representative of the average allocation.

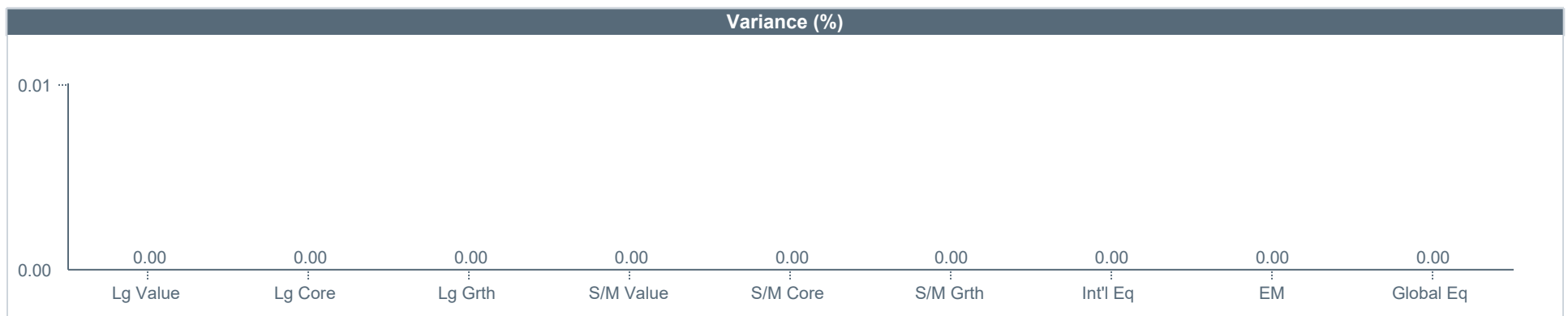
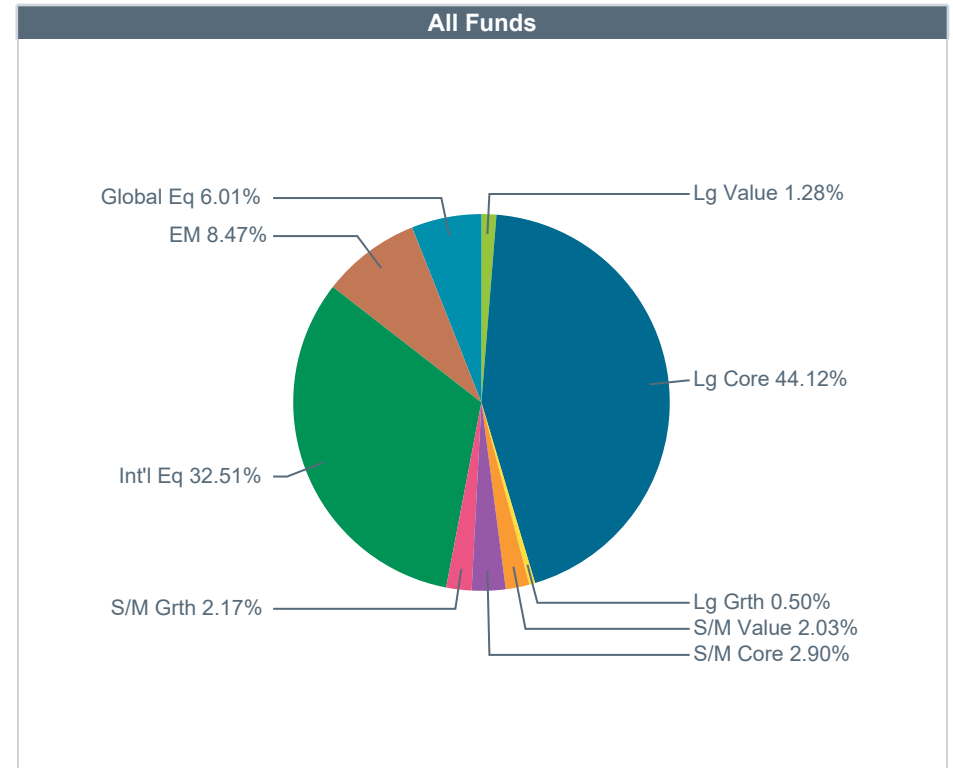
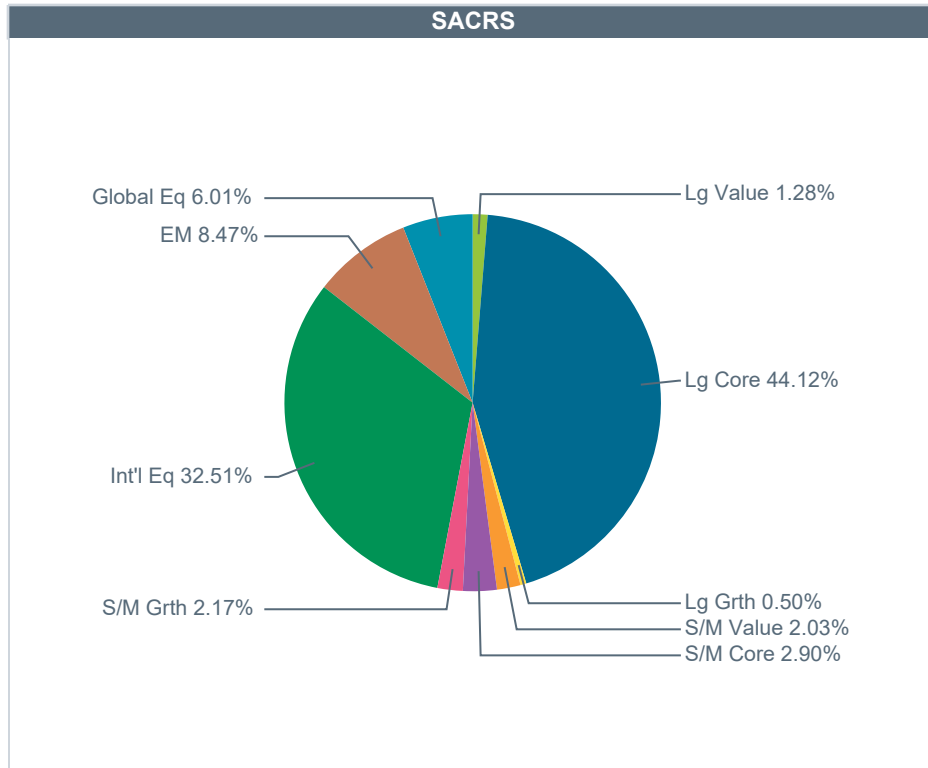
Portfolio (%)	Active Management		External Management	
	Public Fund Universe	SACRS	Public Fund Universe	SACRS
90 to 100	12	1	46	15
50 to 89	43	13	8	0
10 to 49	4	1	5	0
Less than 10	0	0	0	0
Total Funds Reporting	59	15	59	15





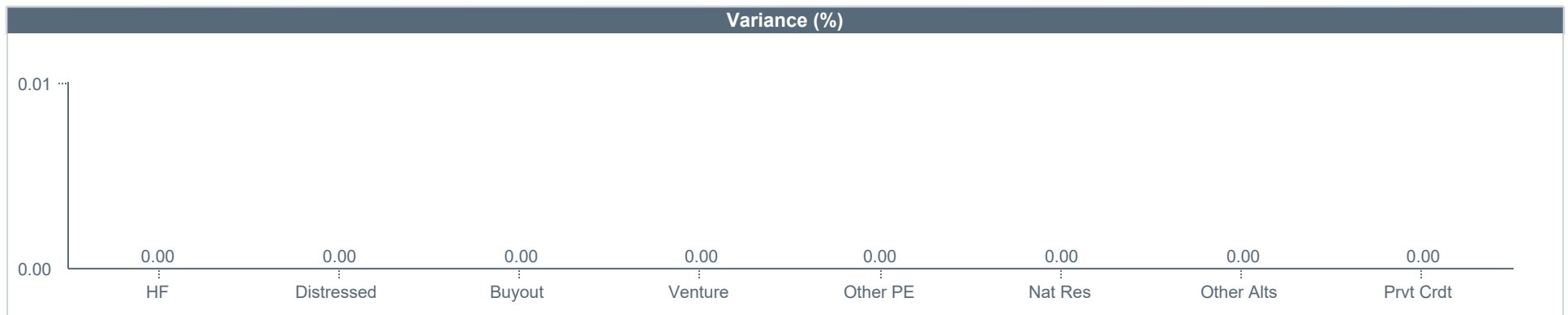
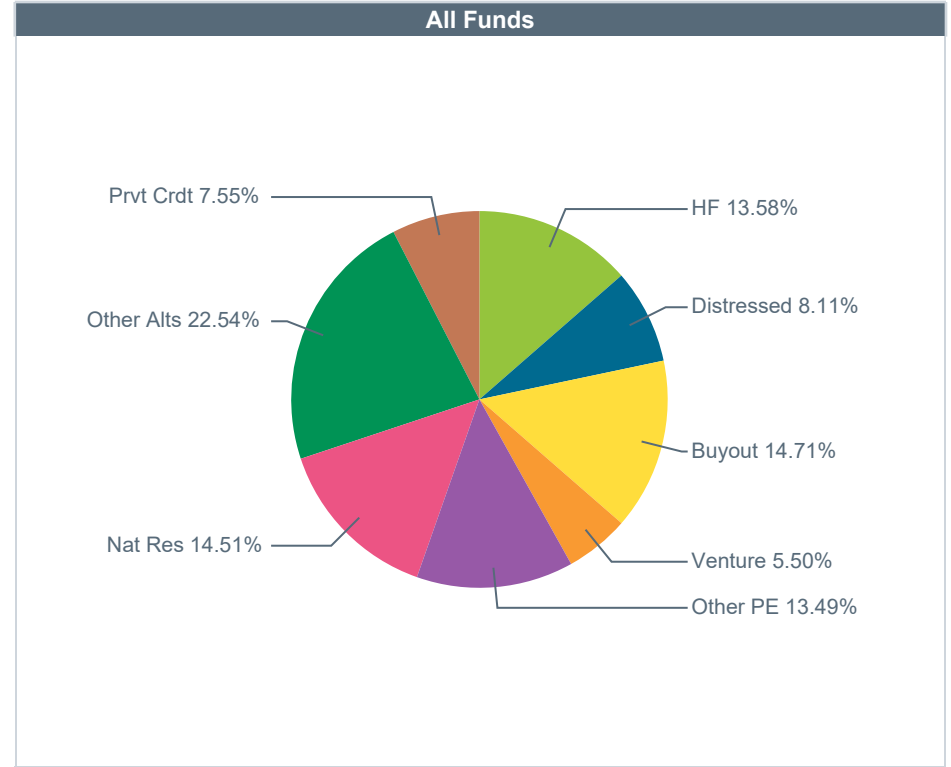
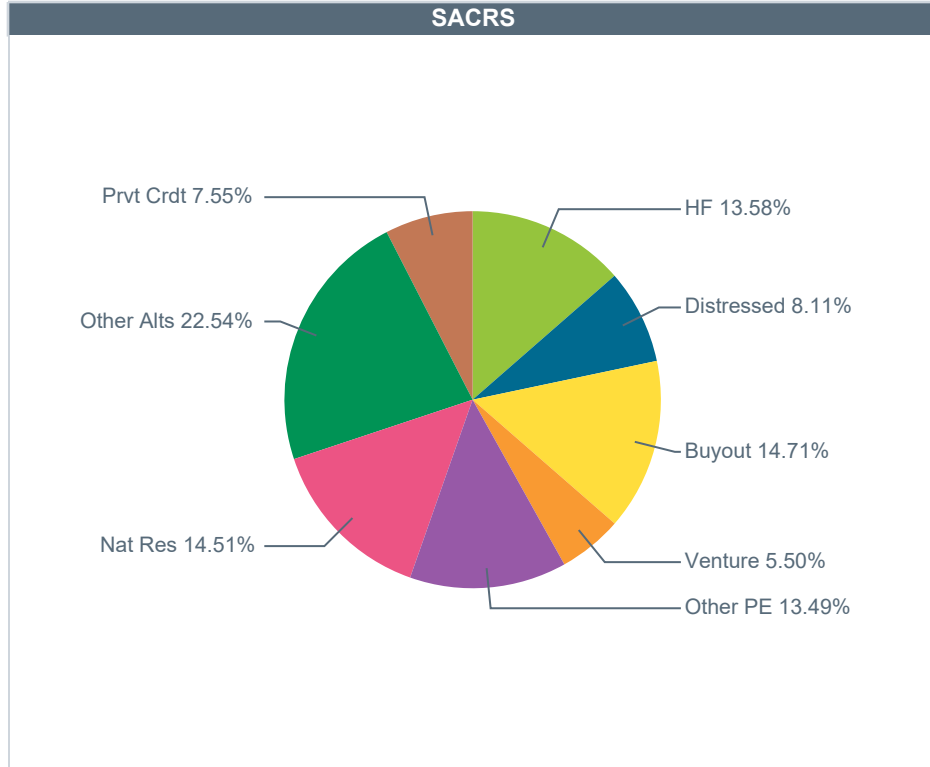
Allocations shown may not sum up to 100% exactly due to rounding.





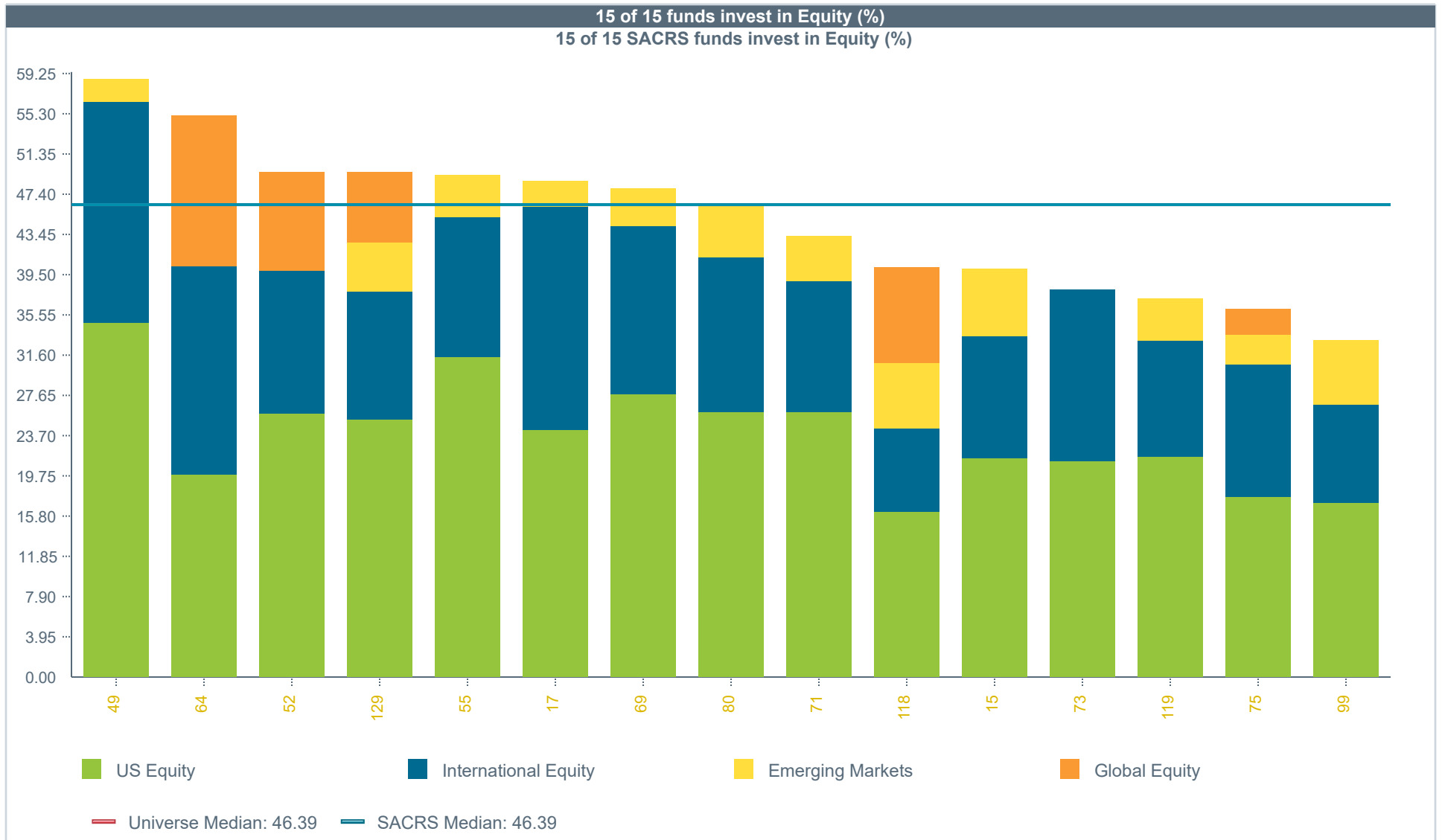
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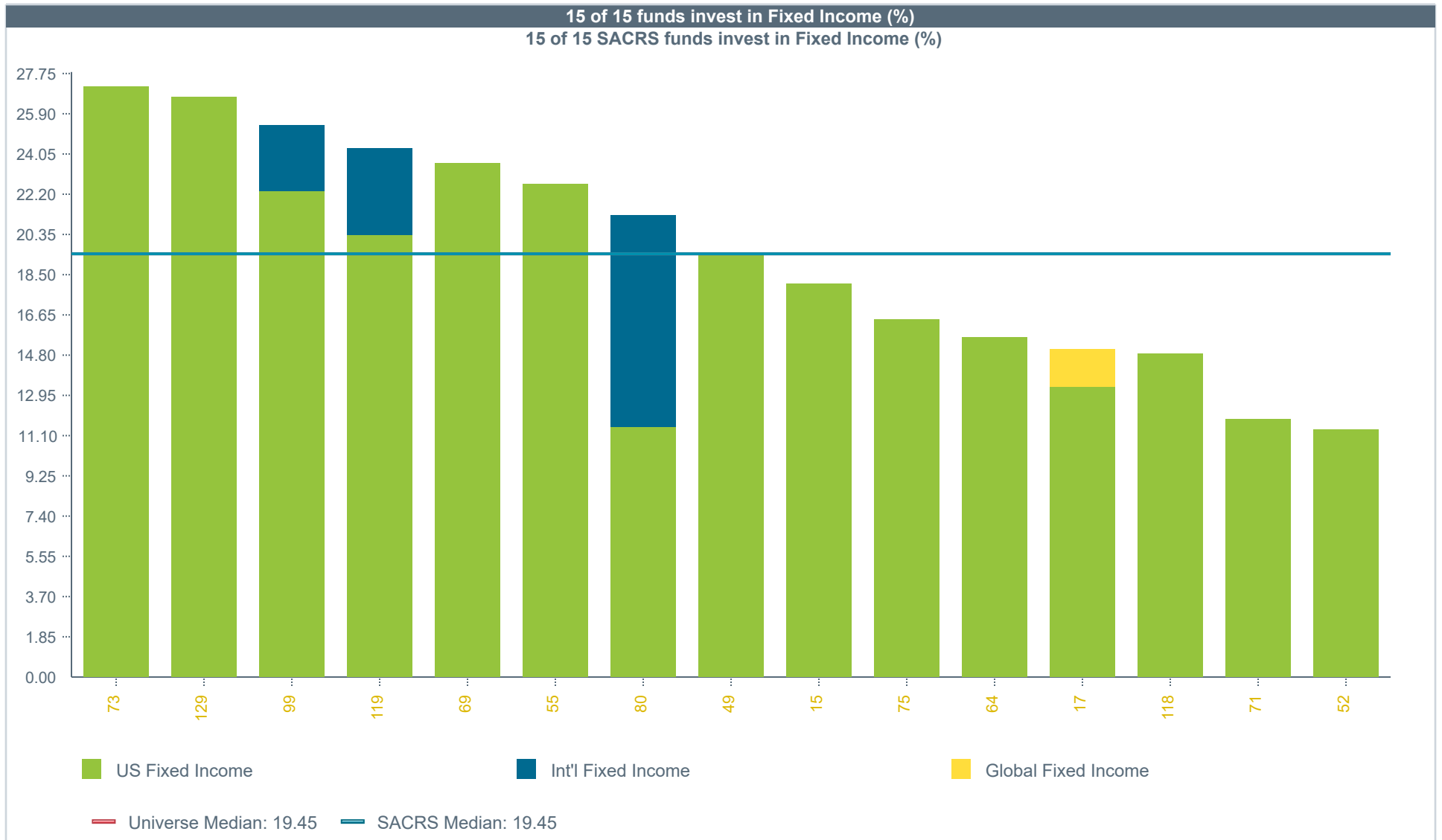


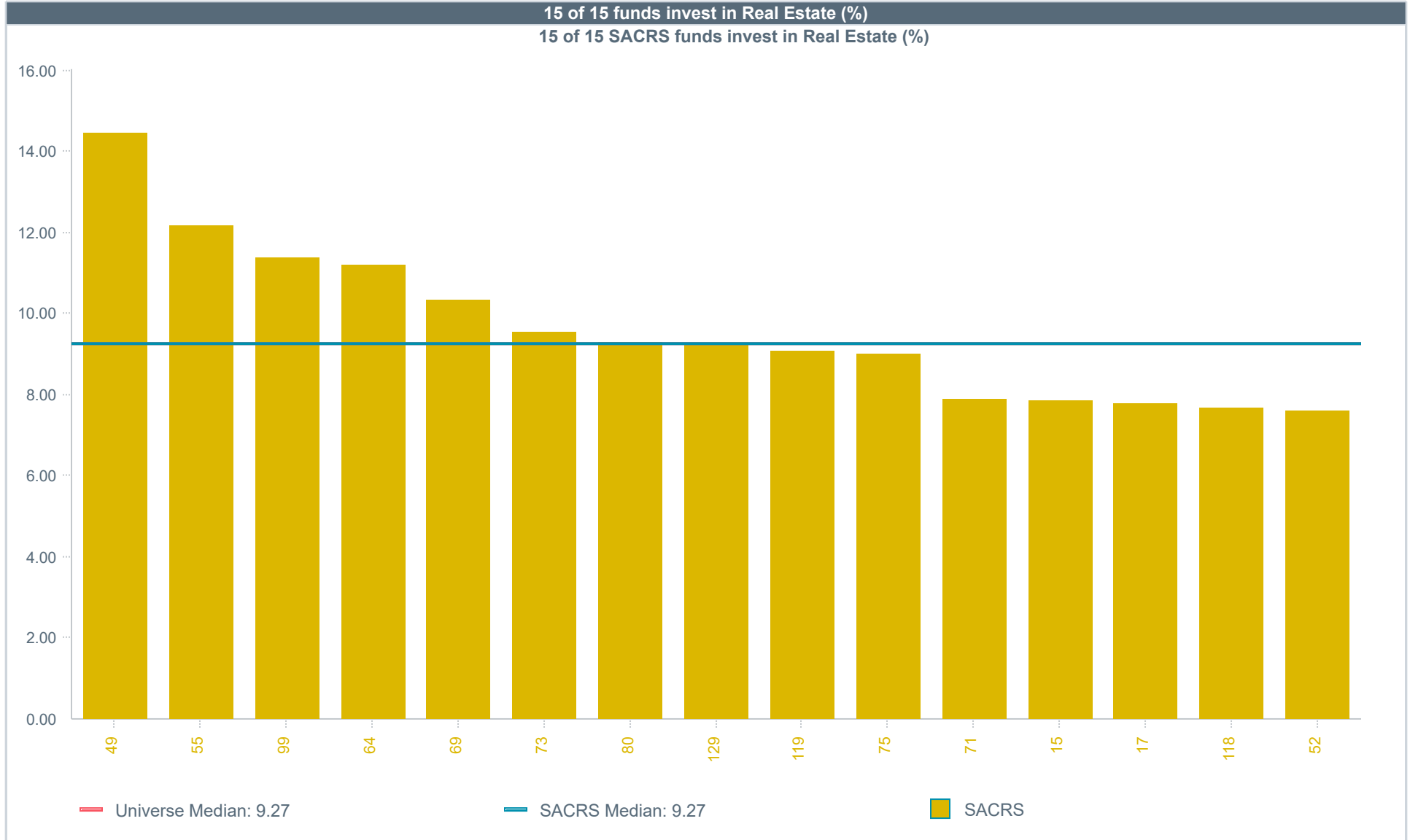


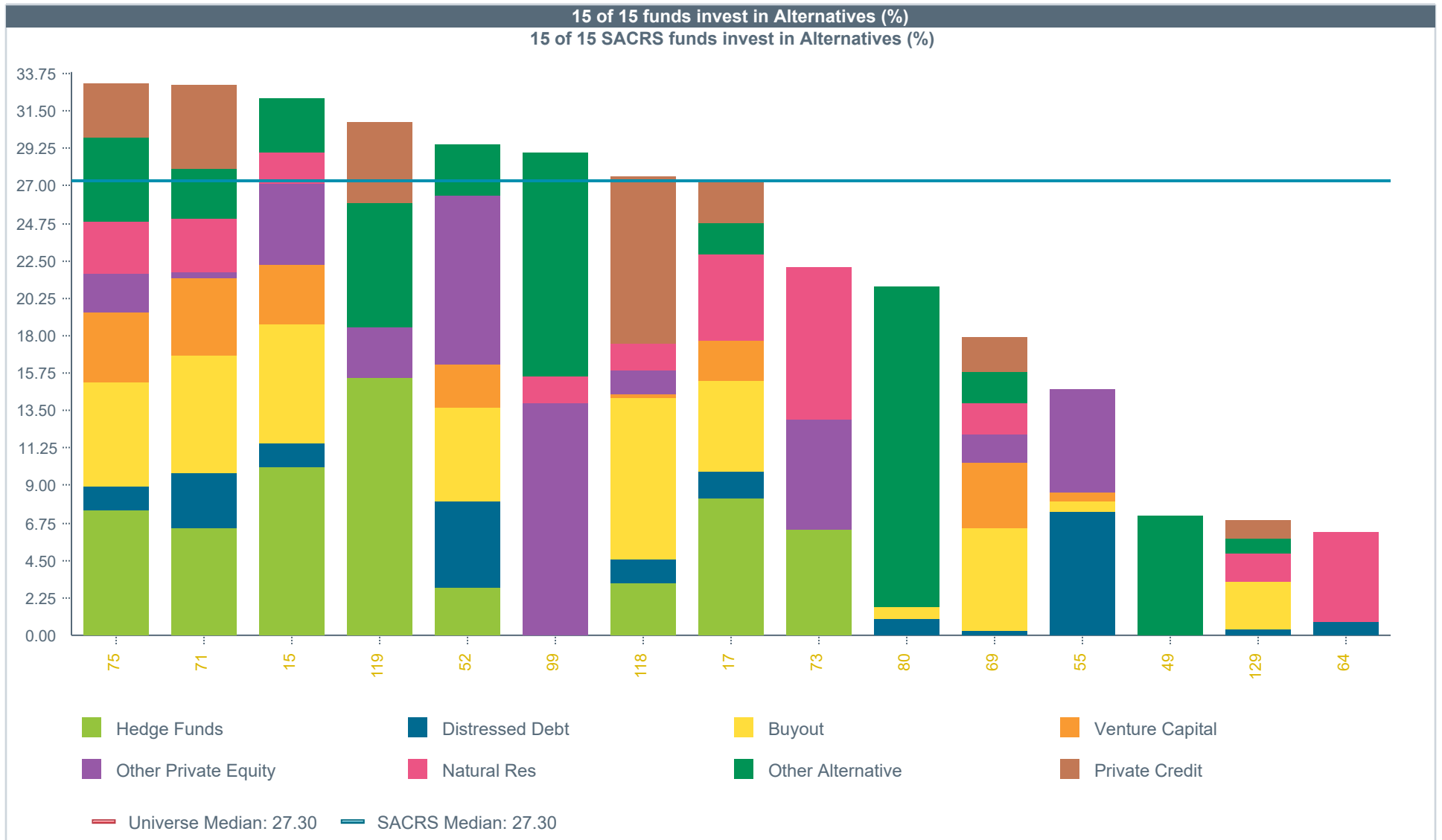
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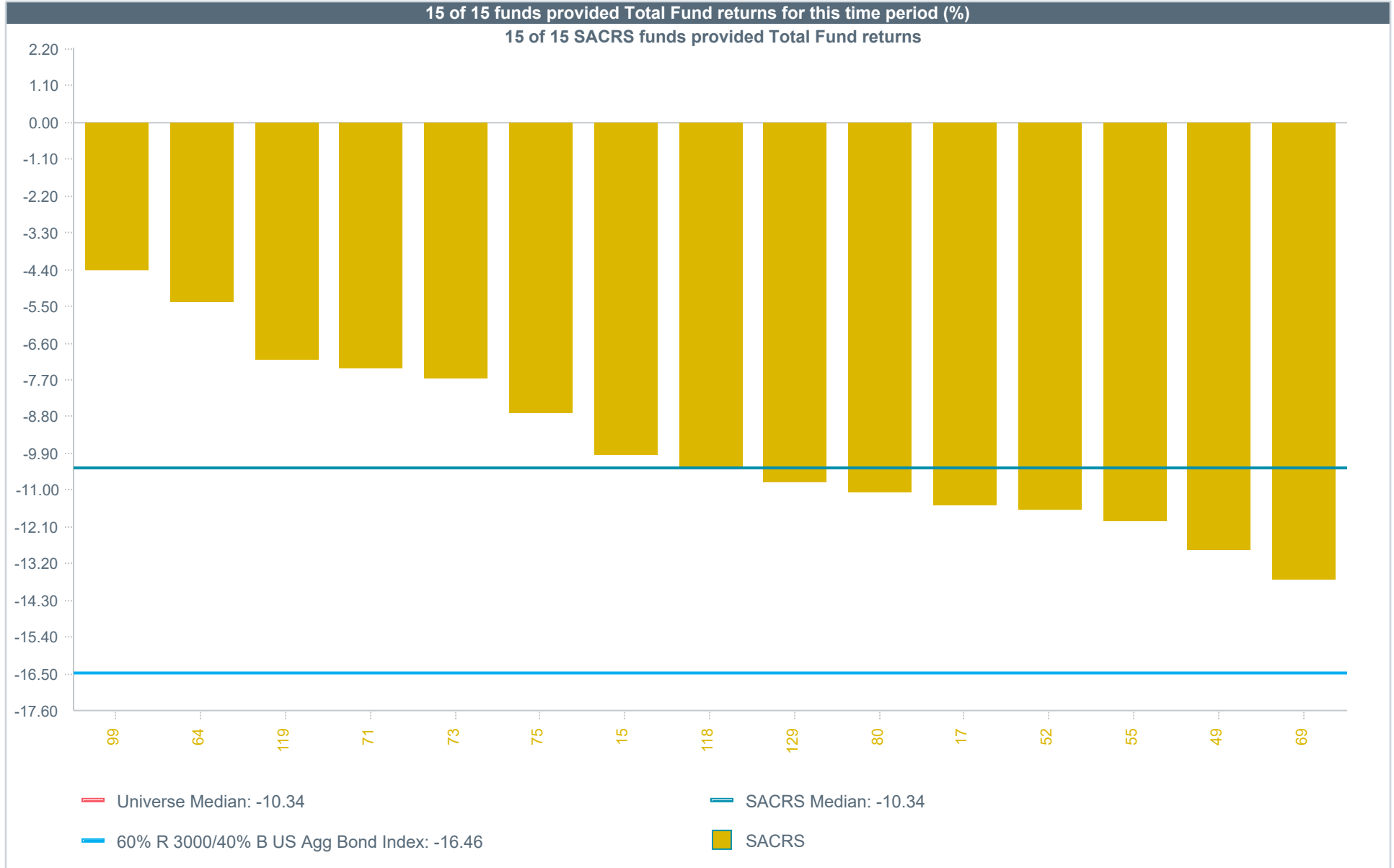






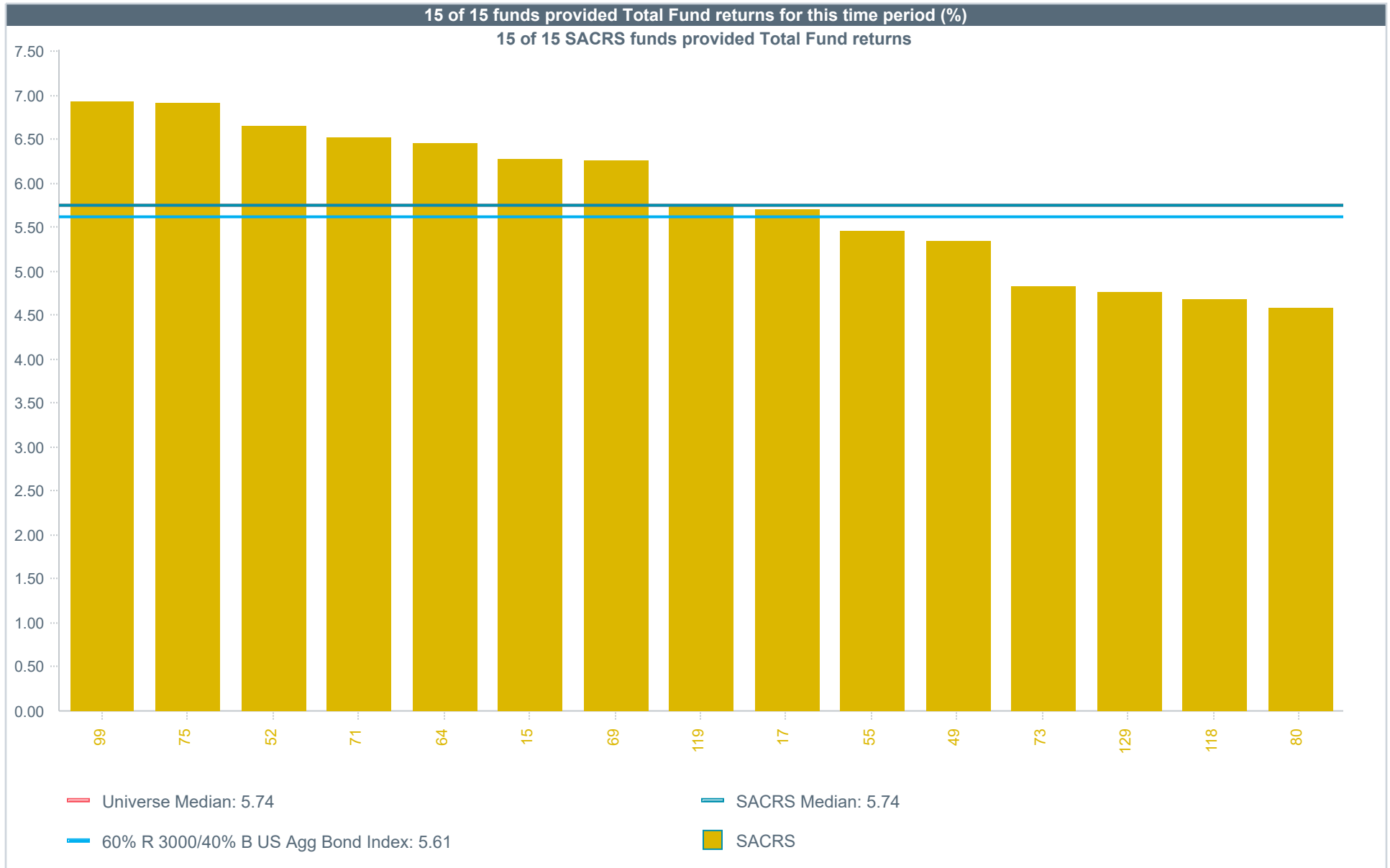






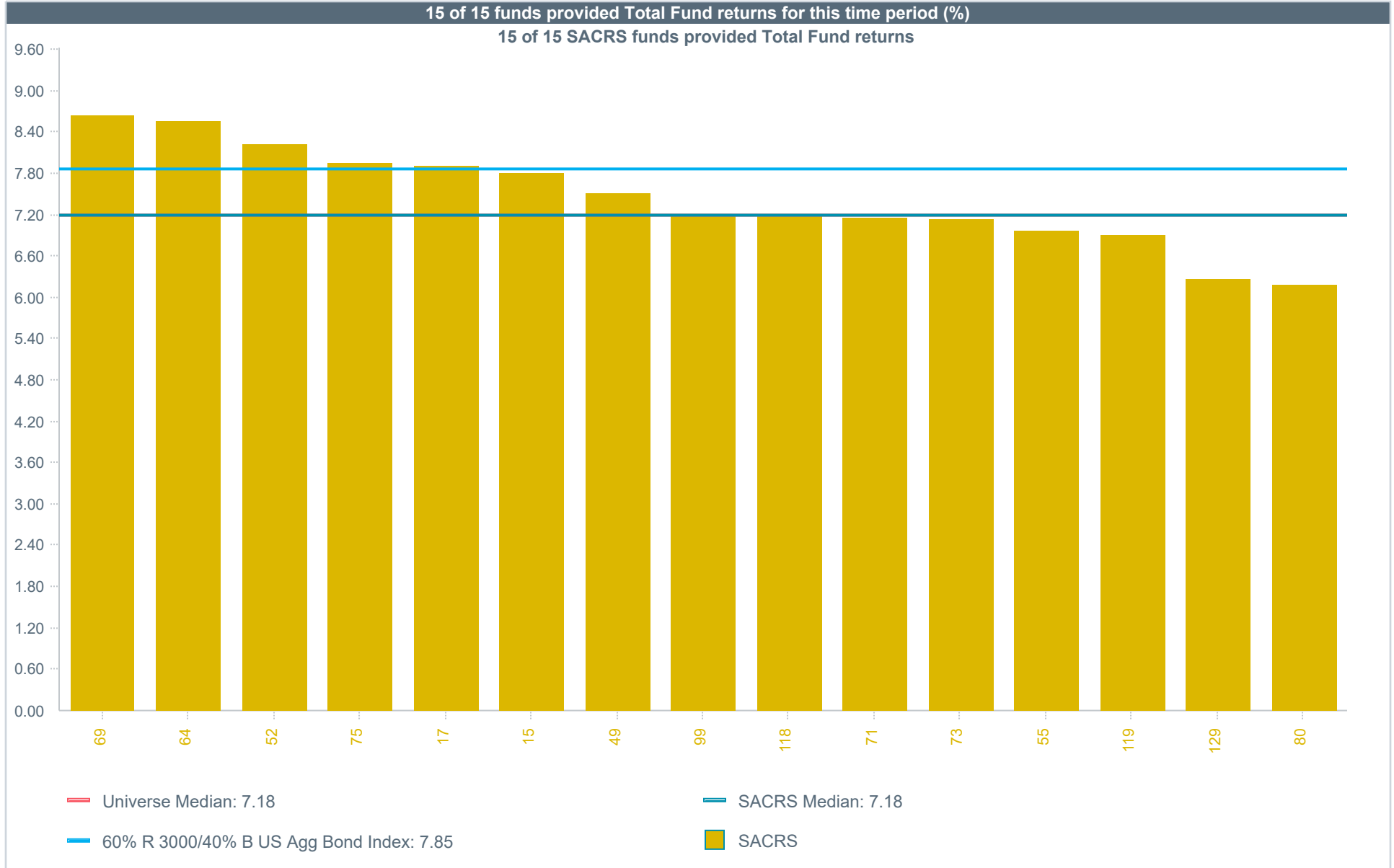
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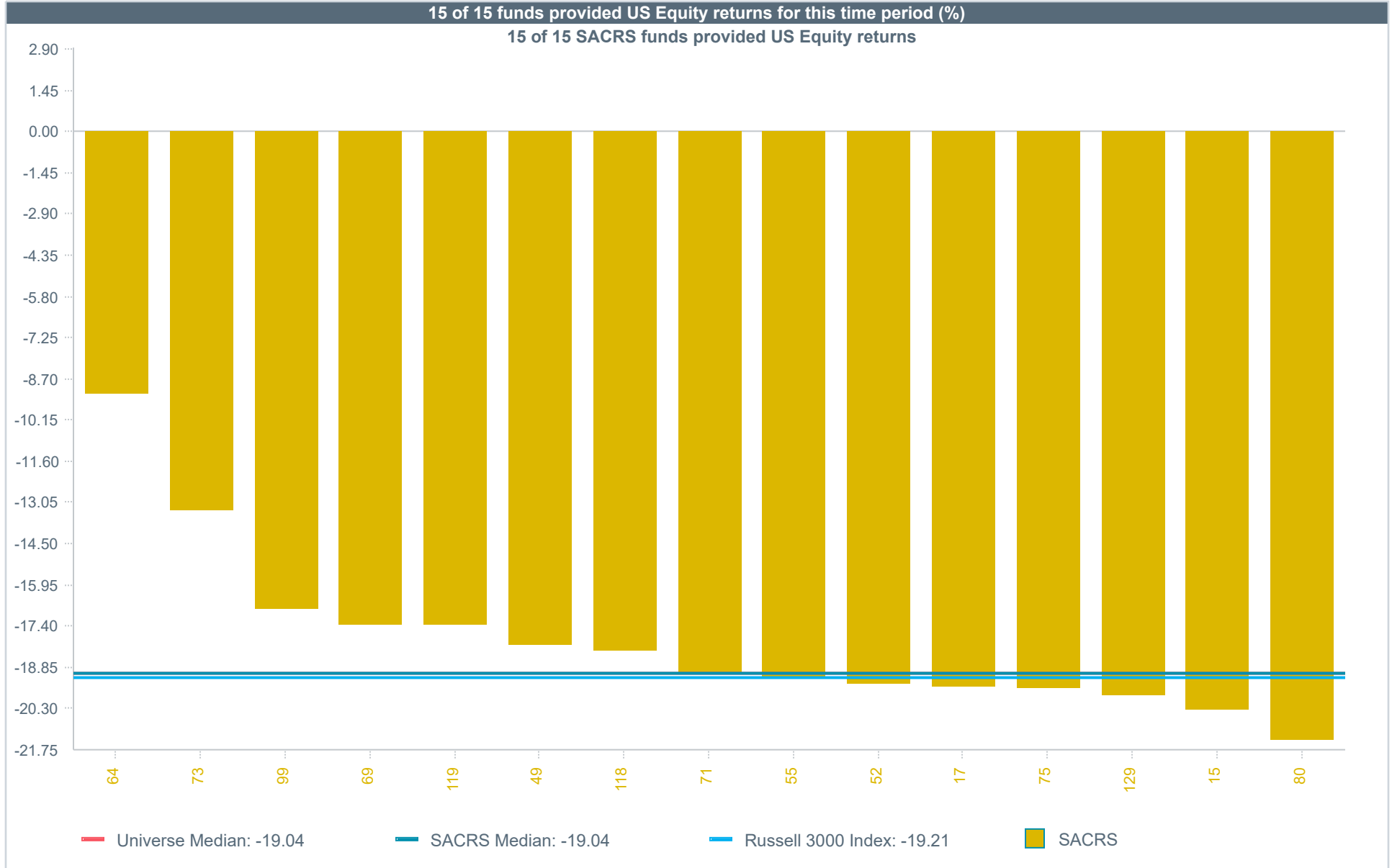
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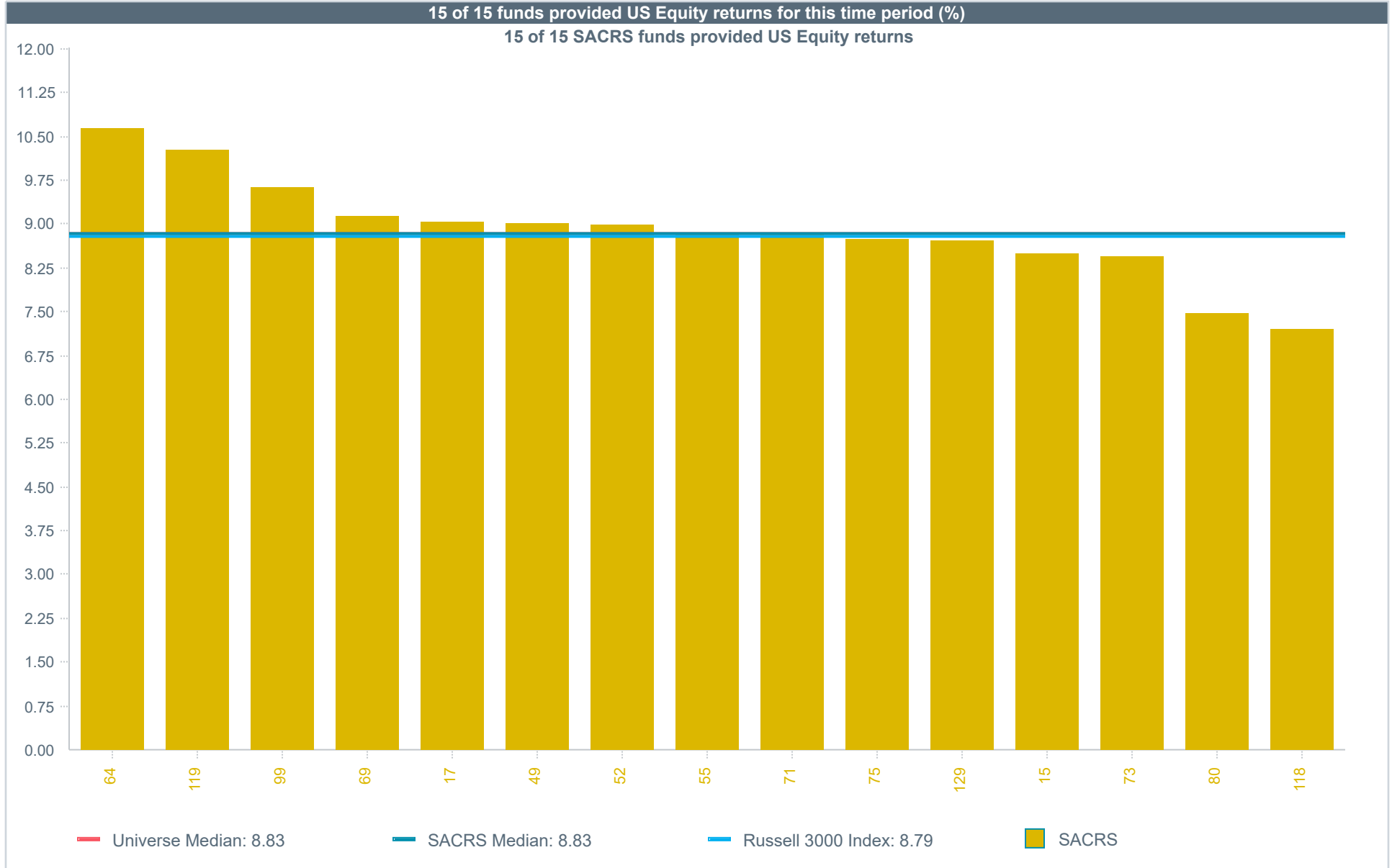
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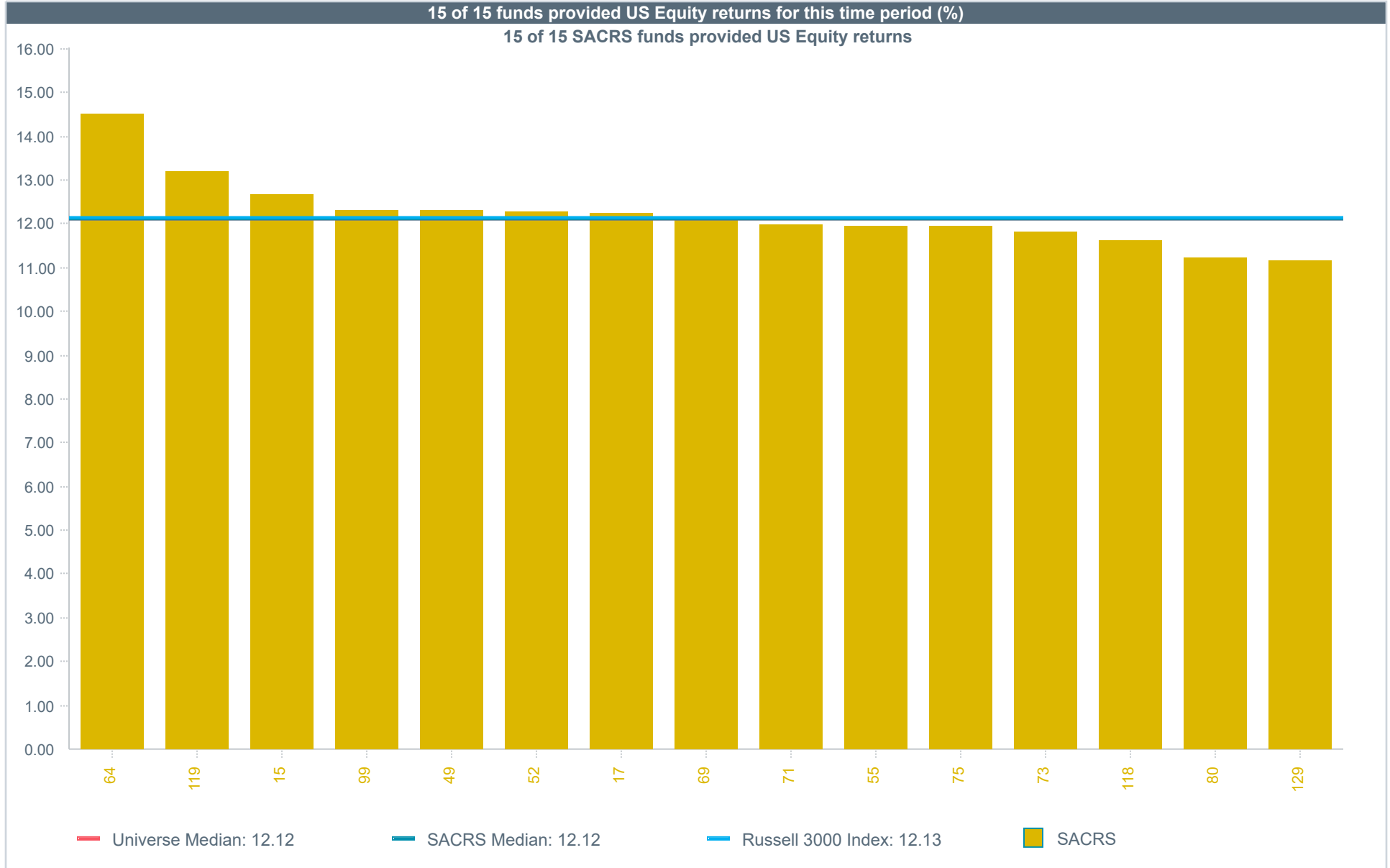
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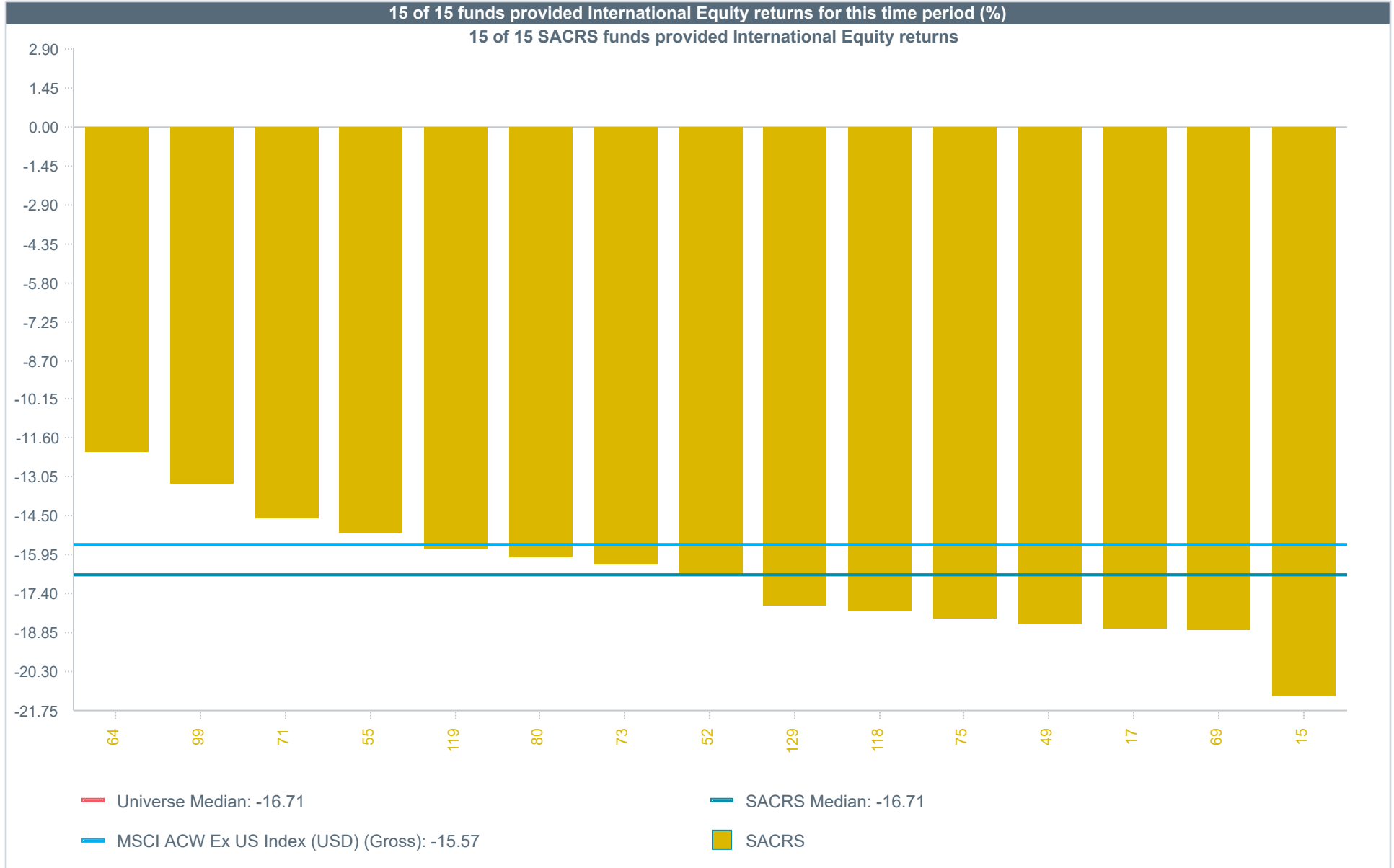
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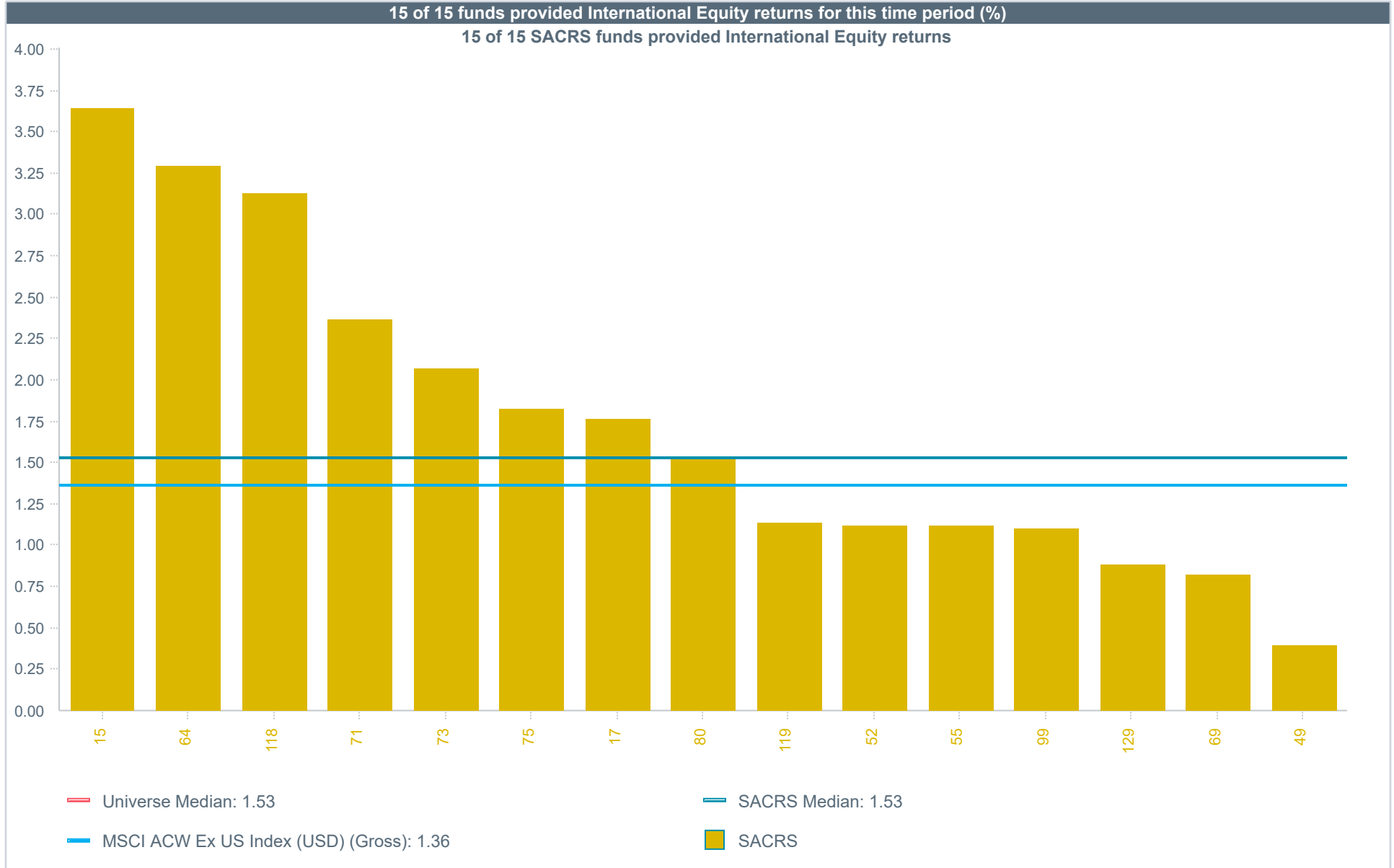
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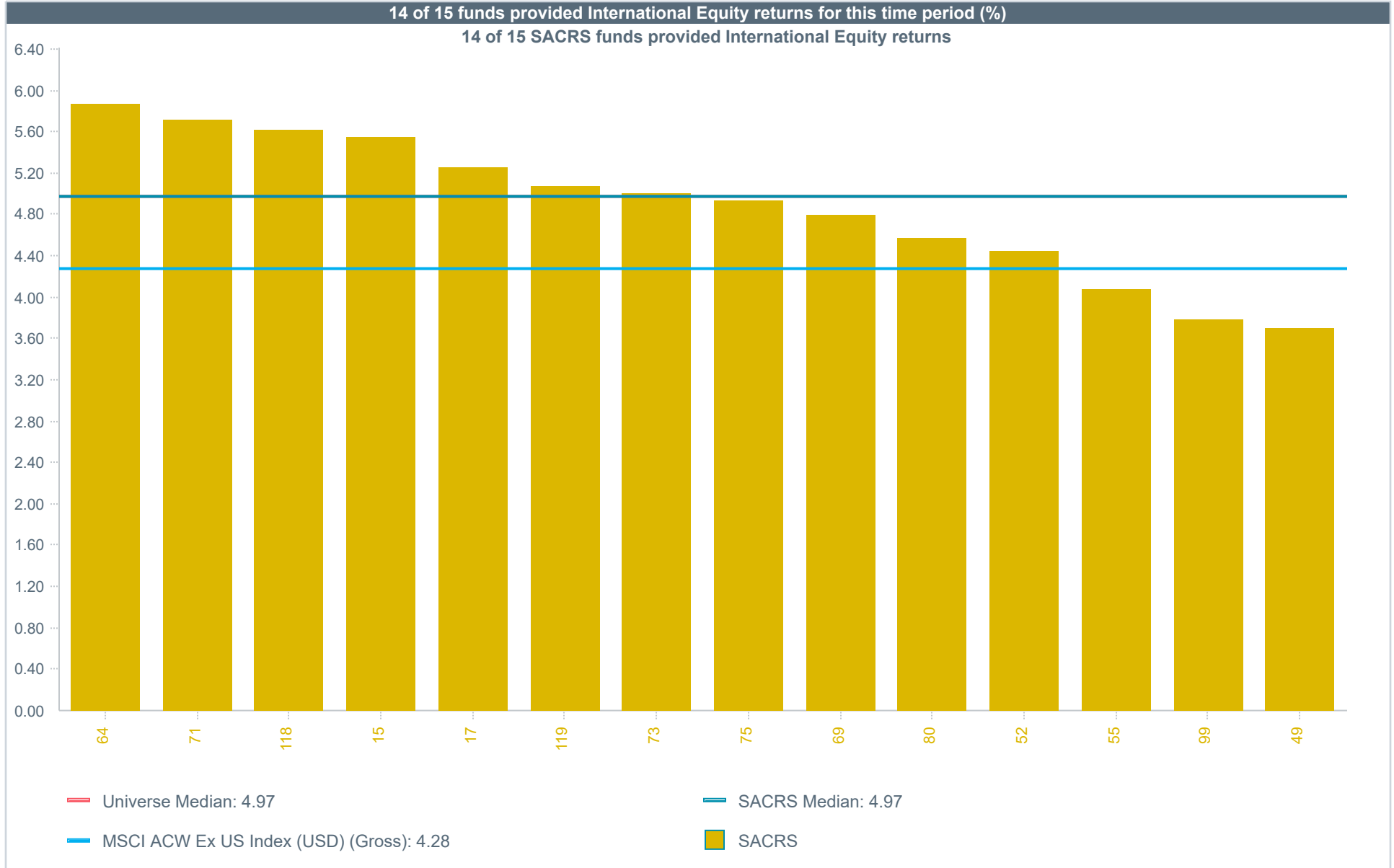
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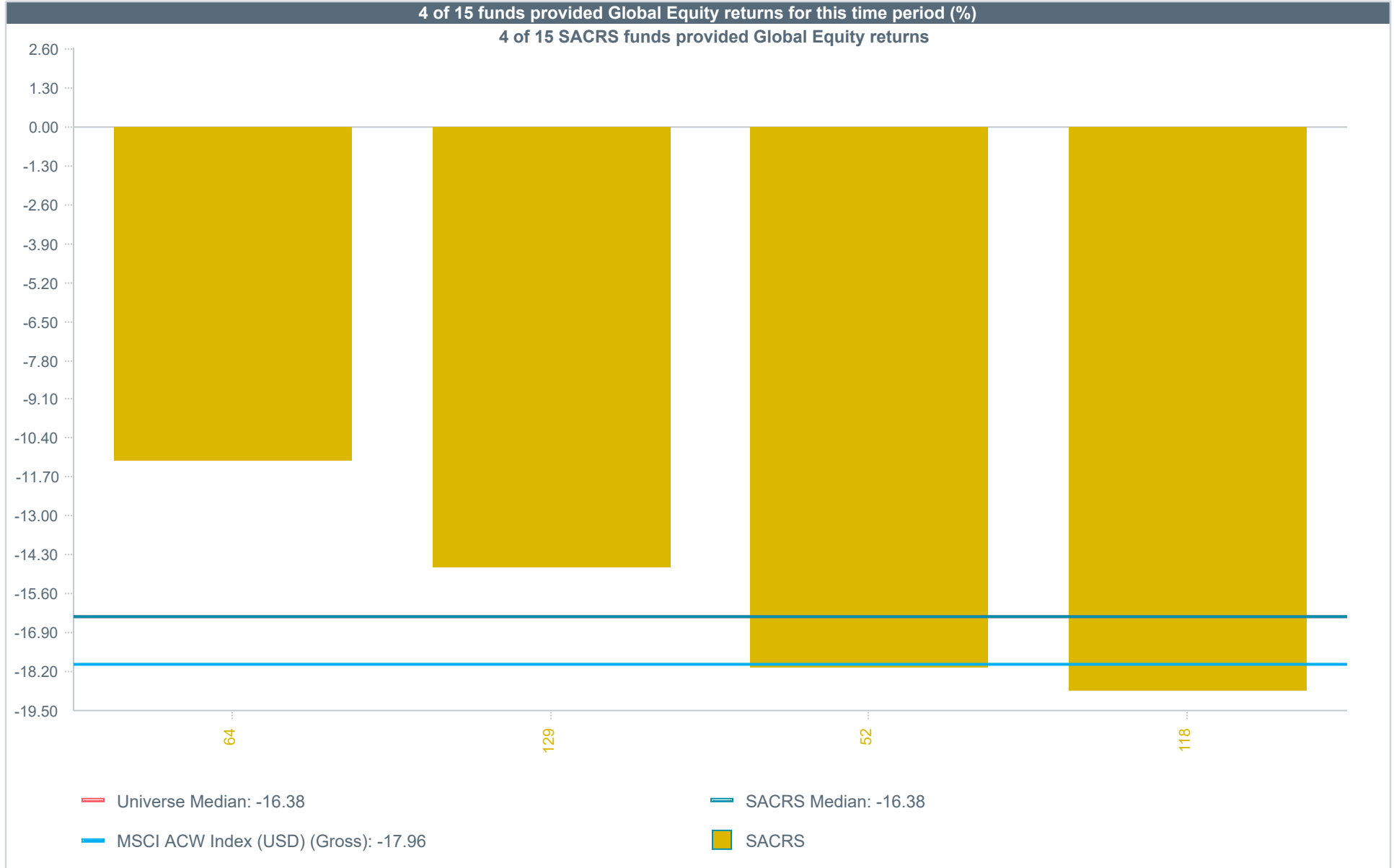
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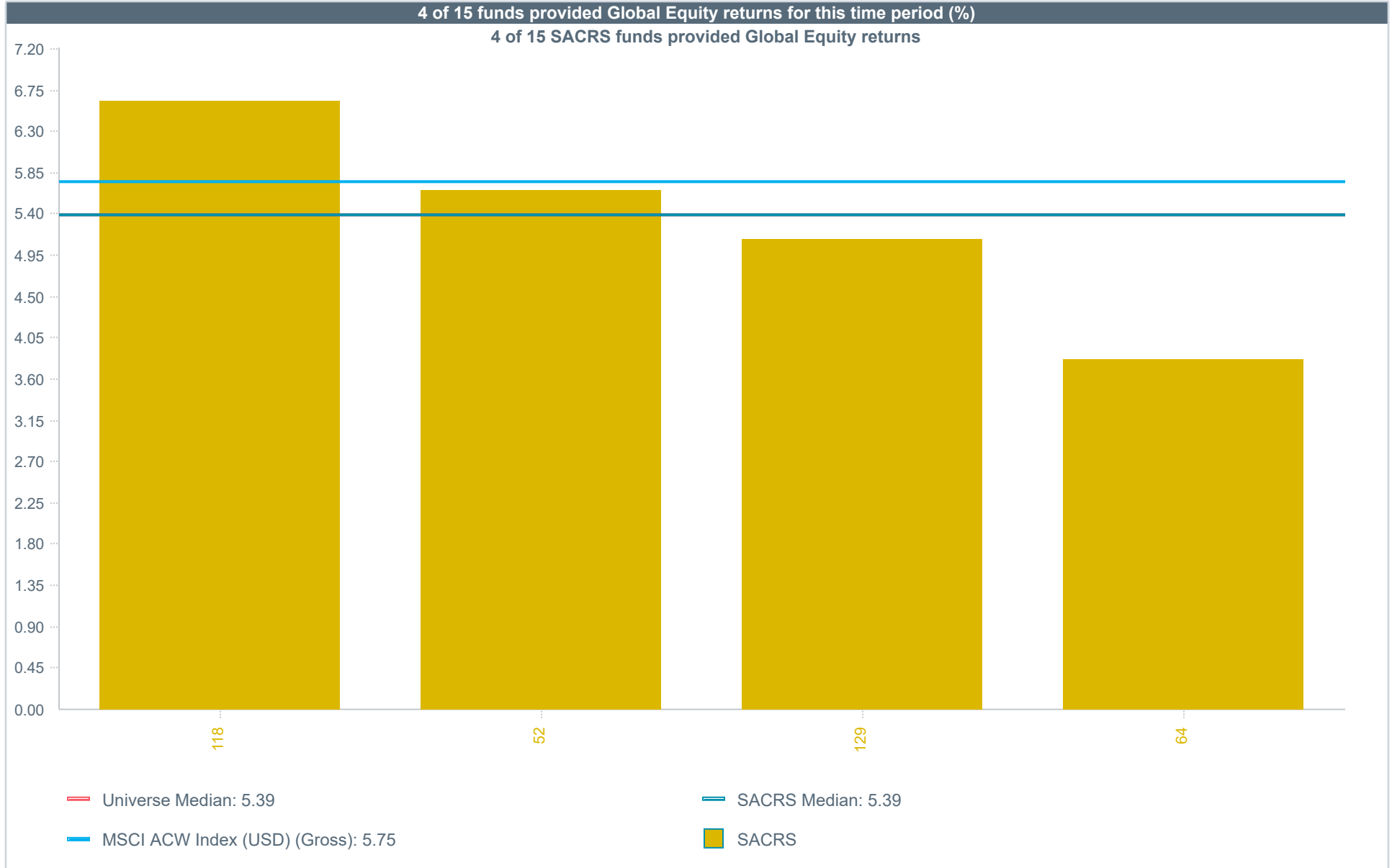
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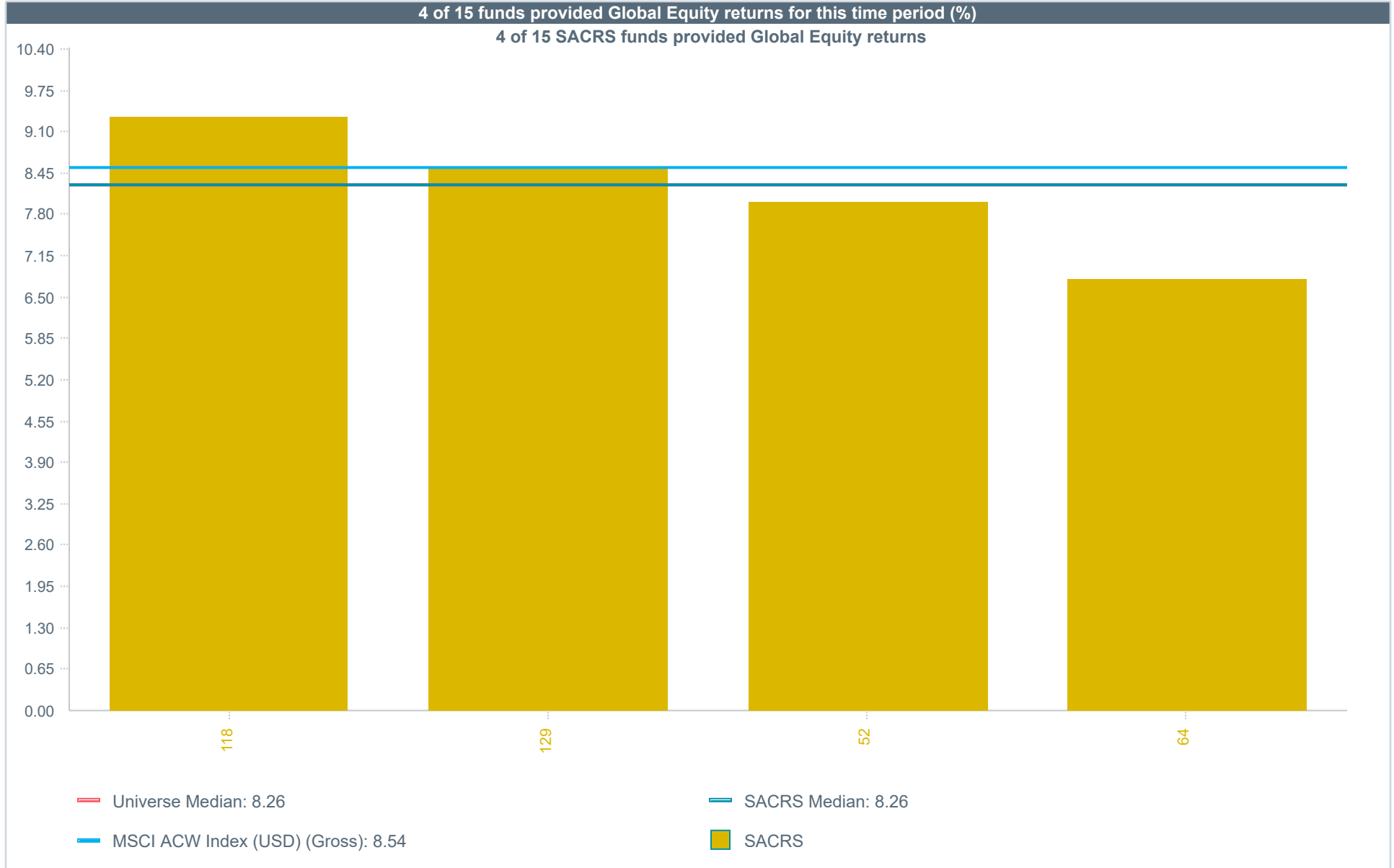
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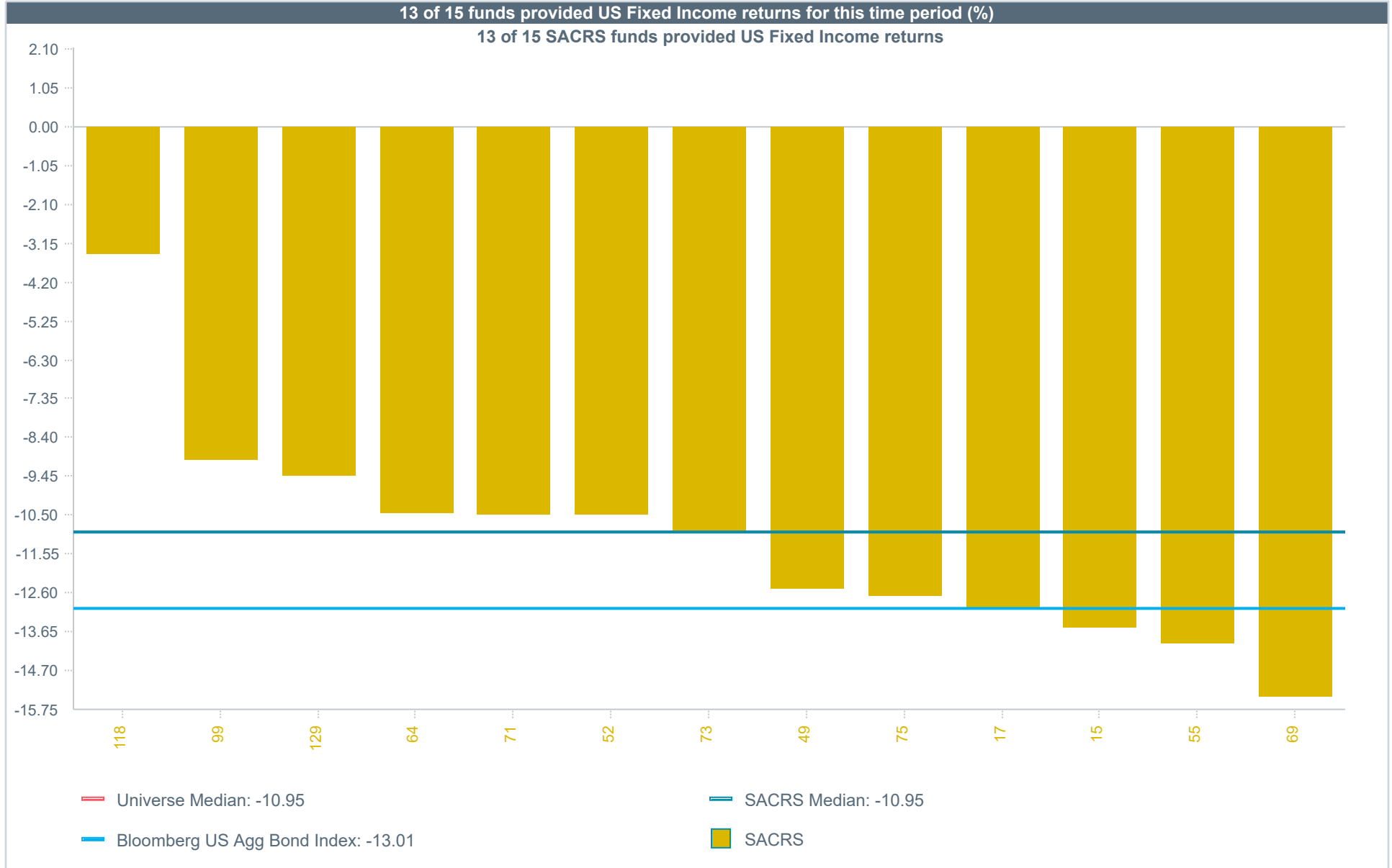
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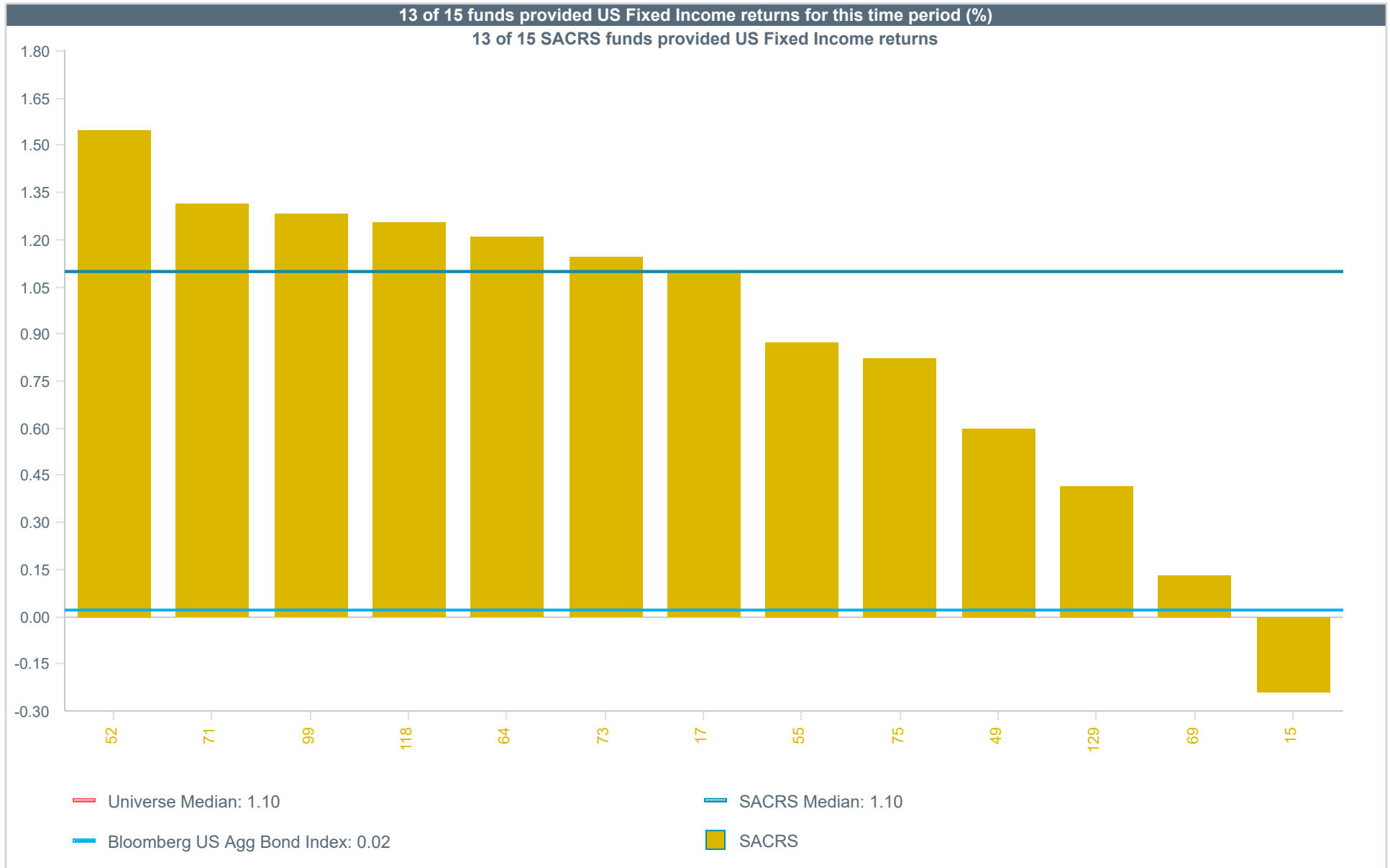
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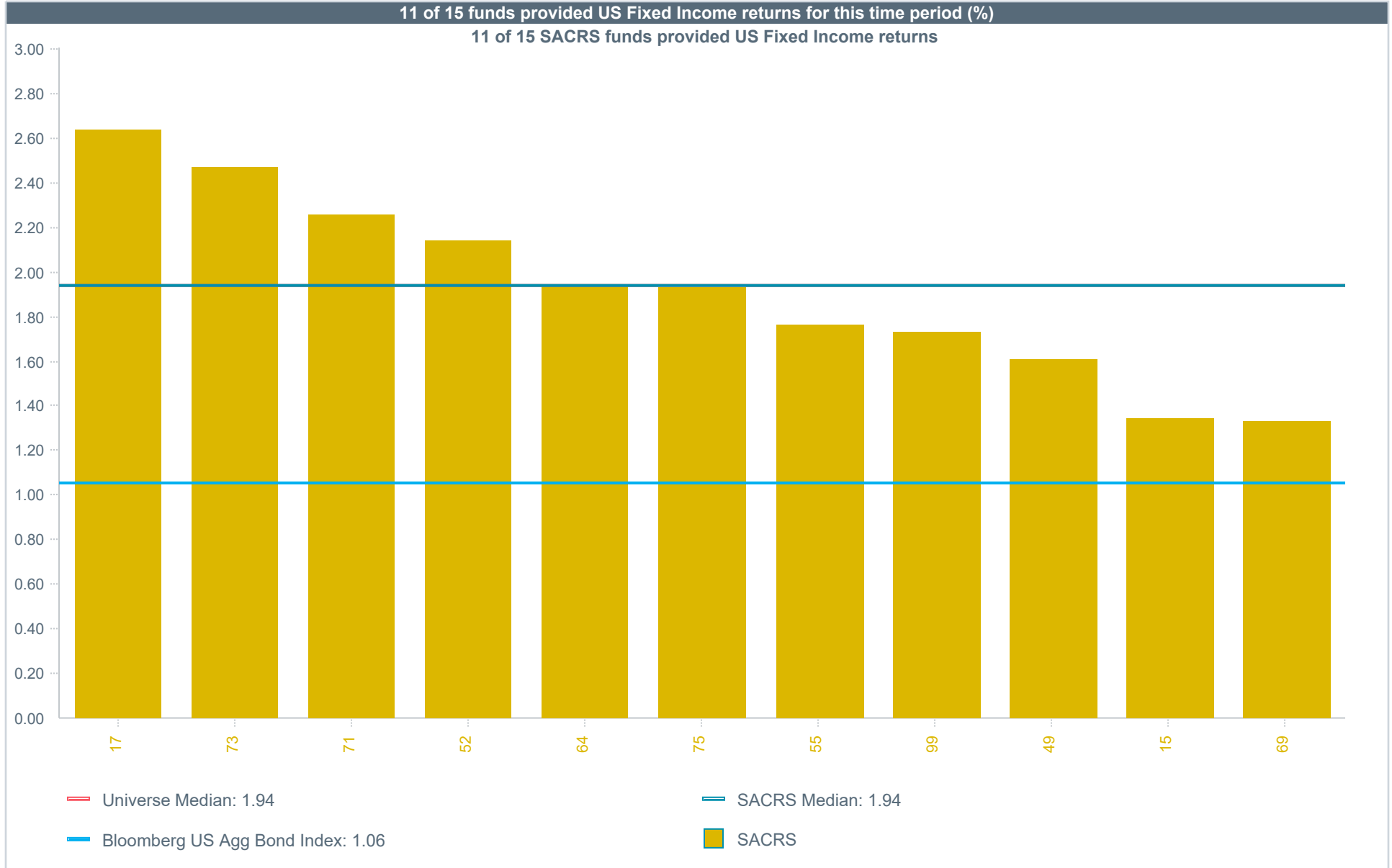
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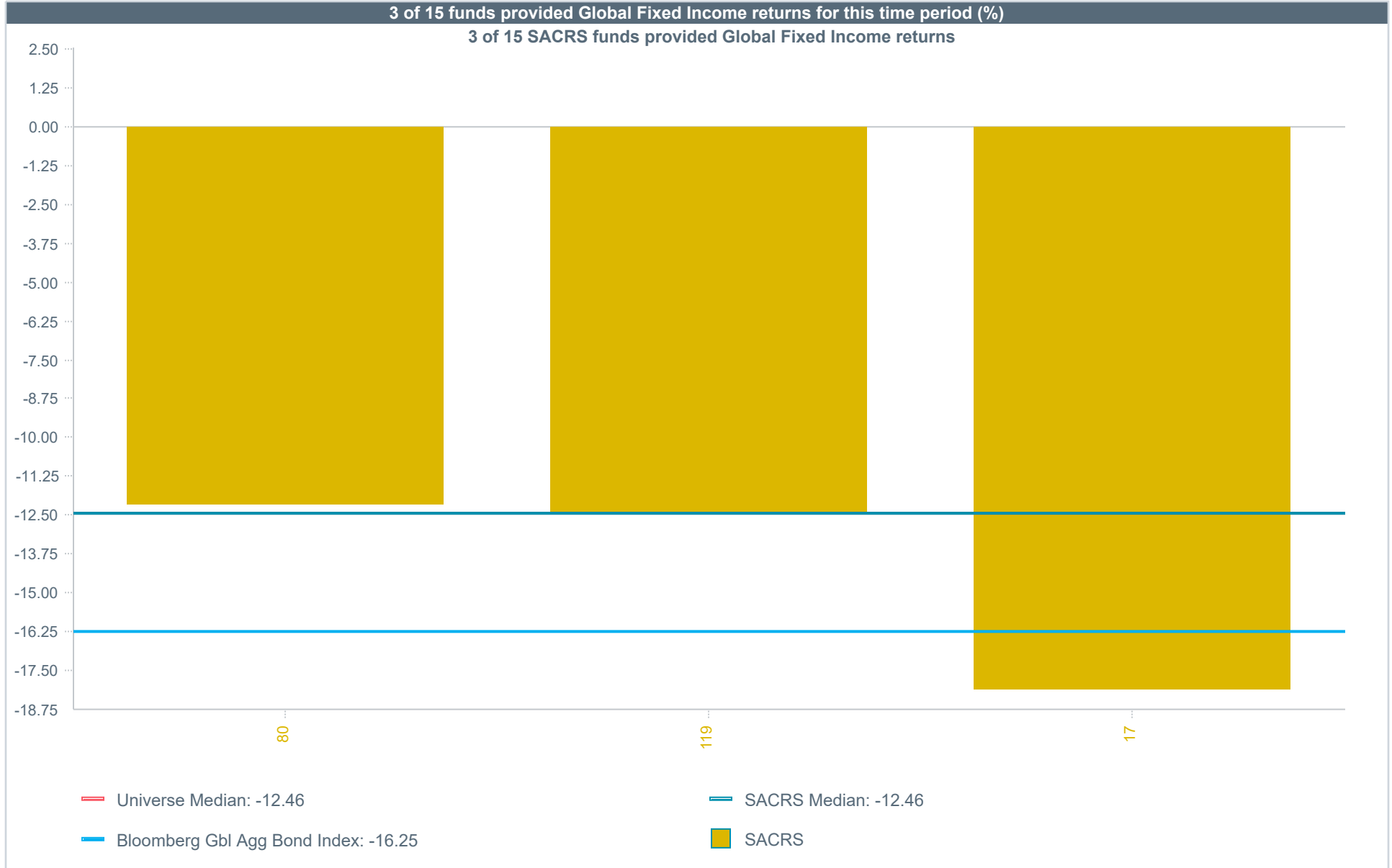
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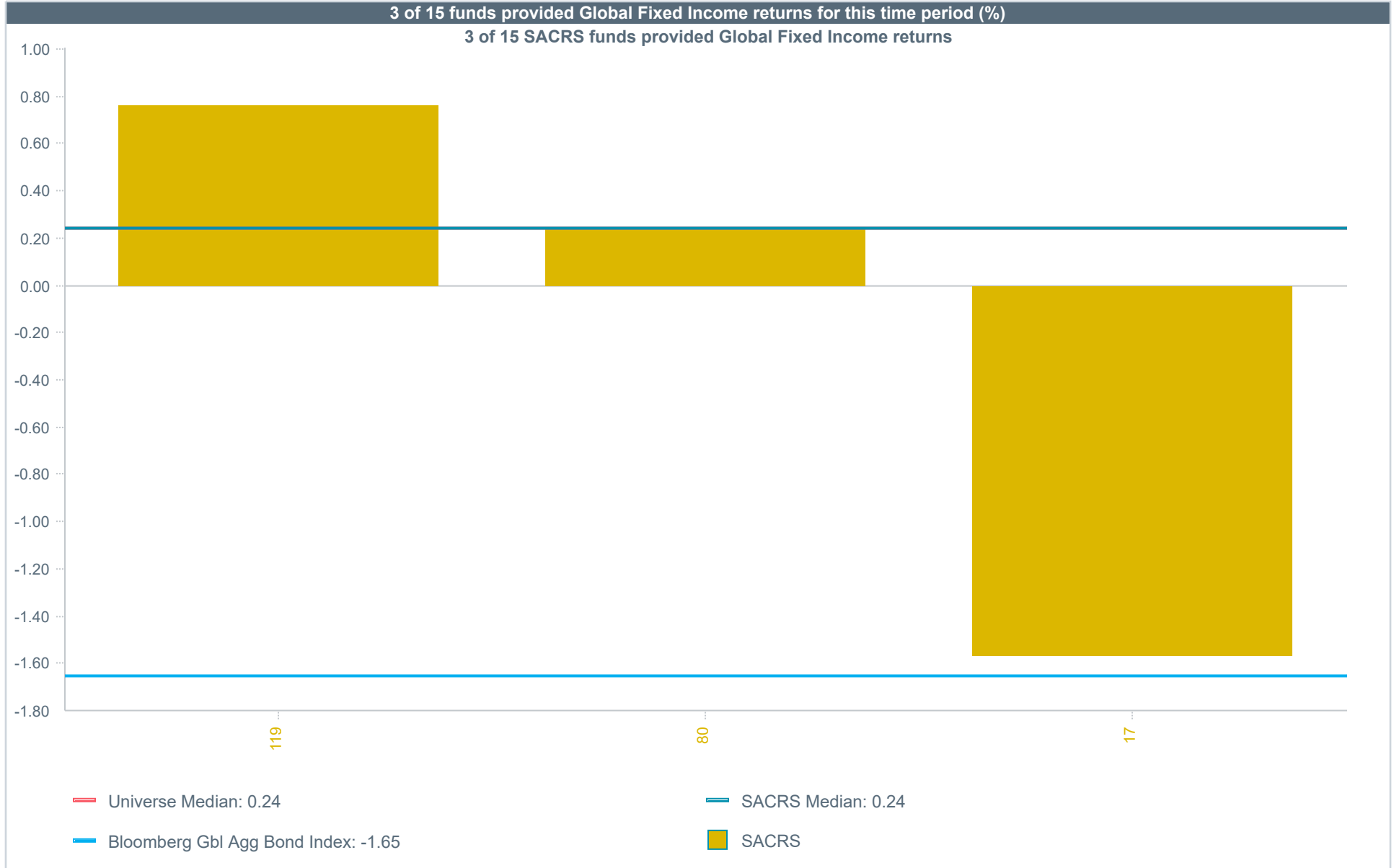
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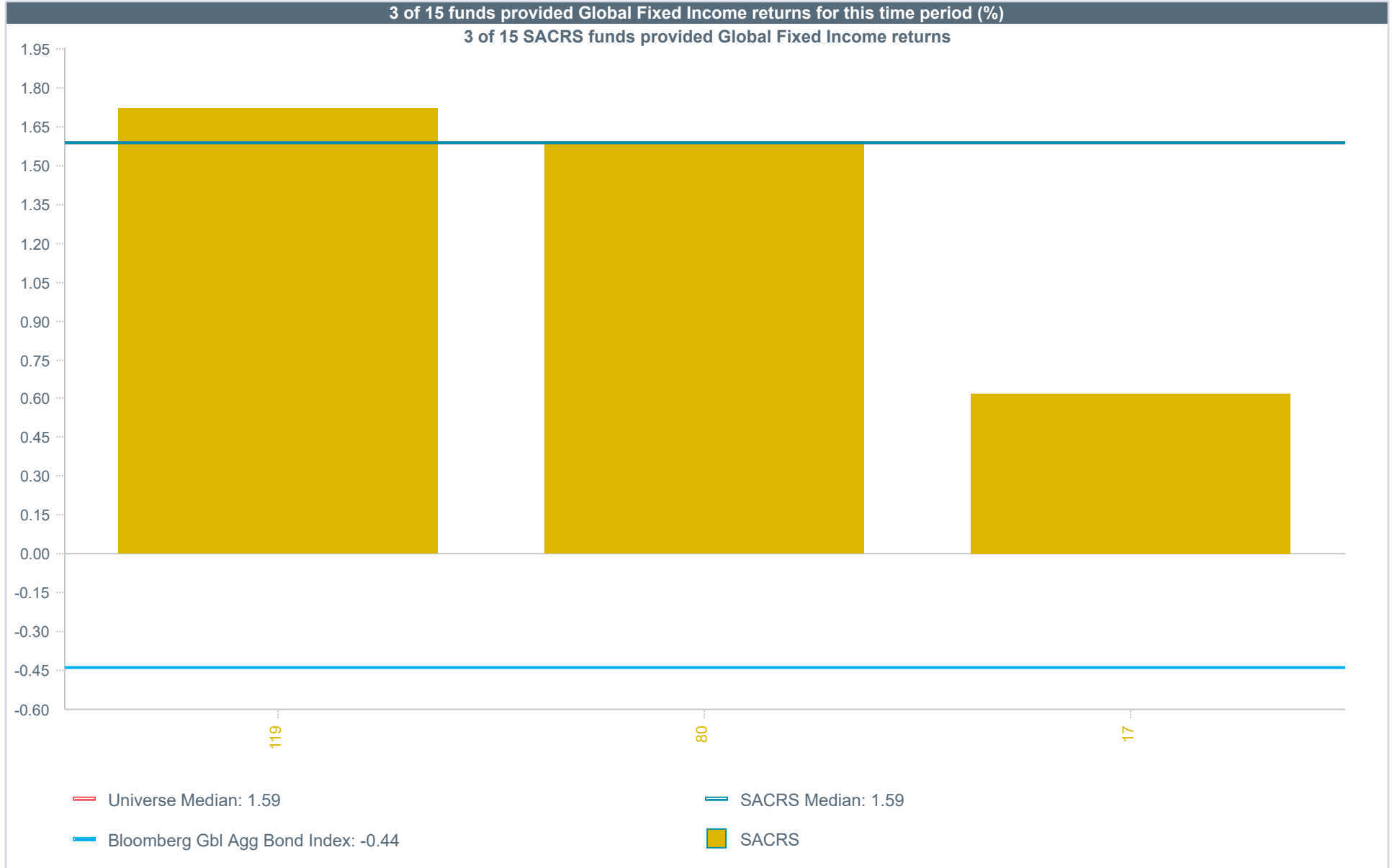
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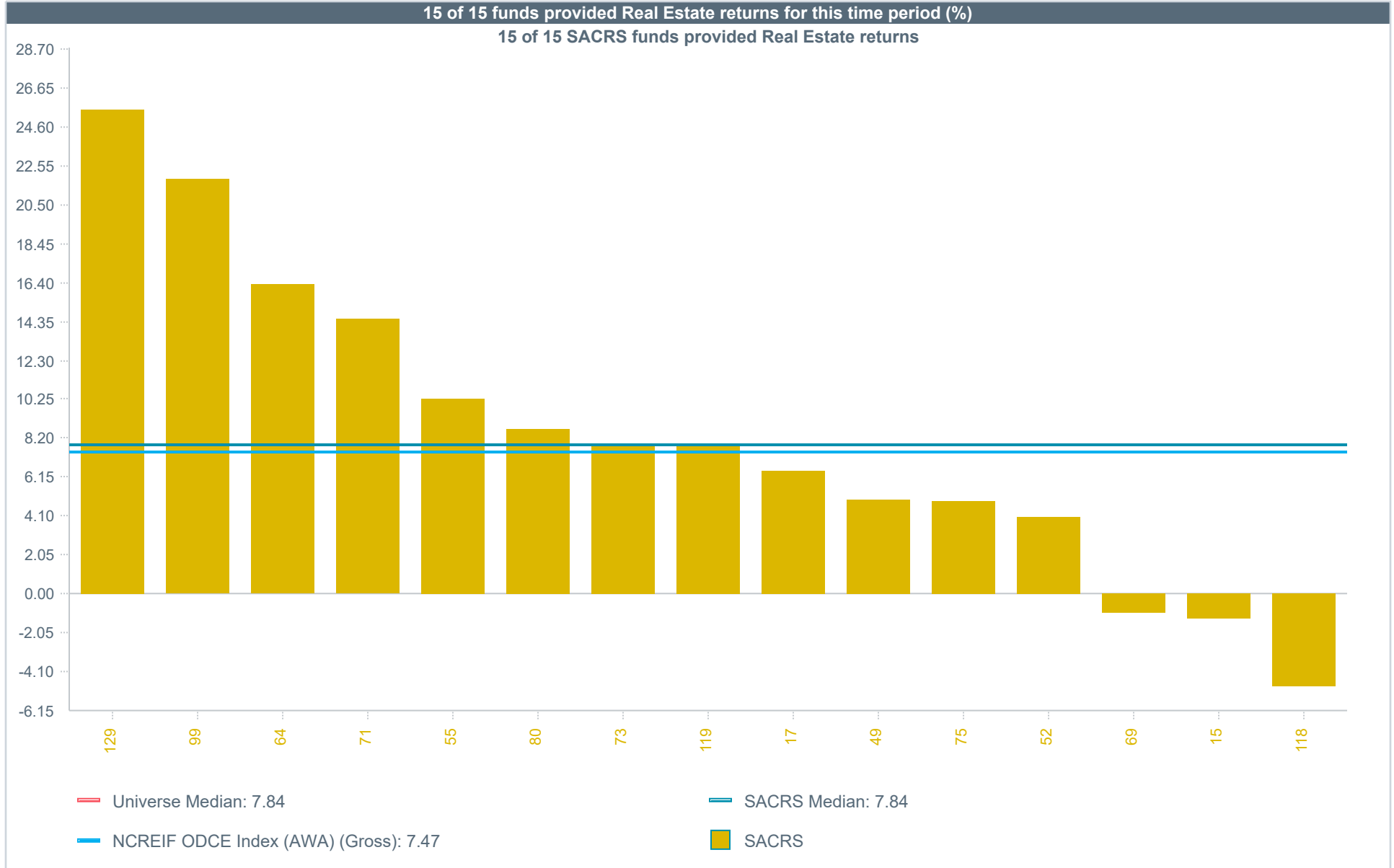
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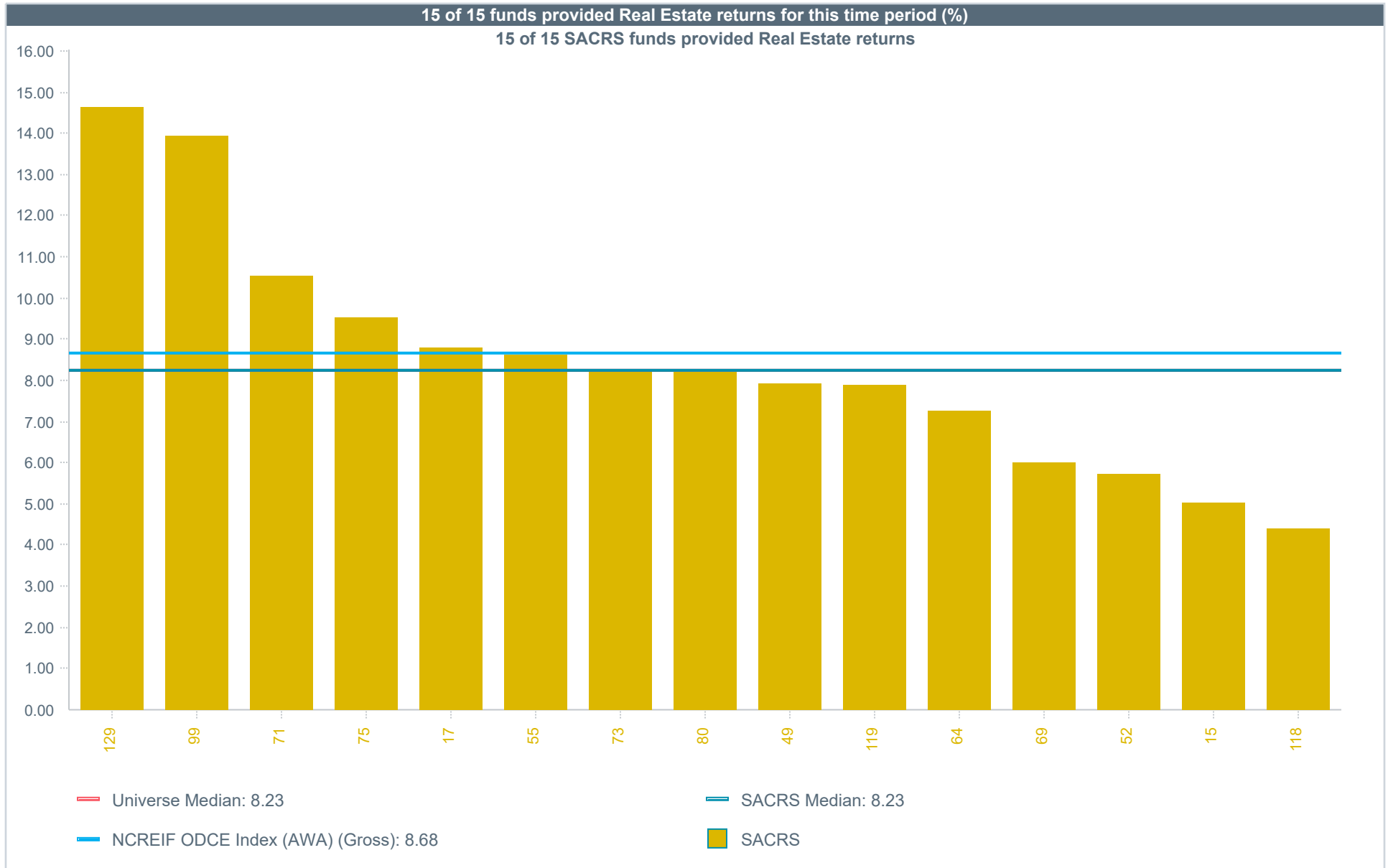
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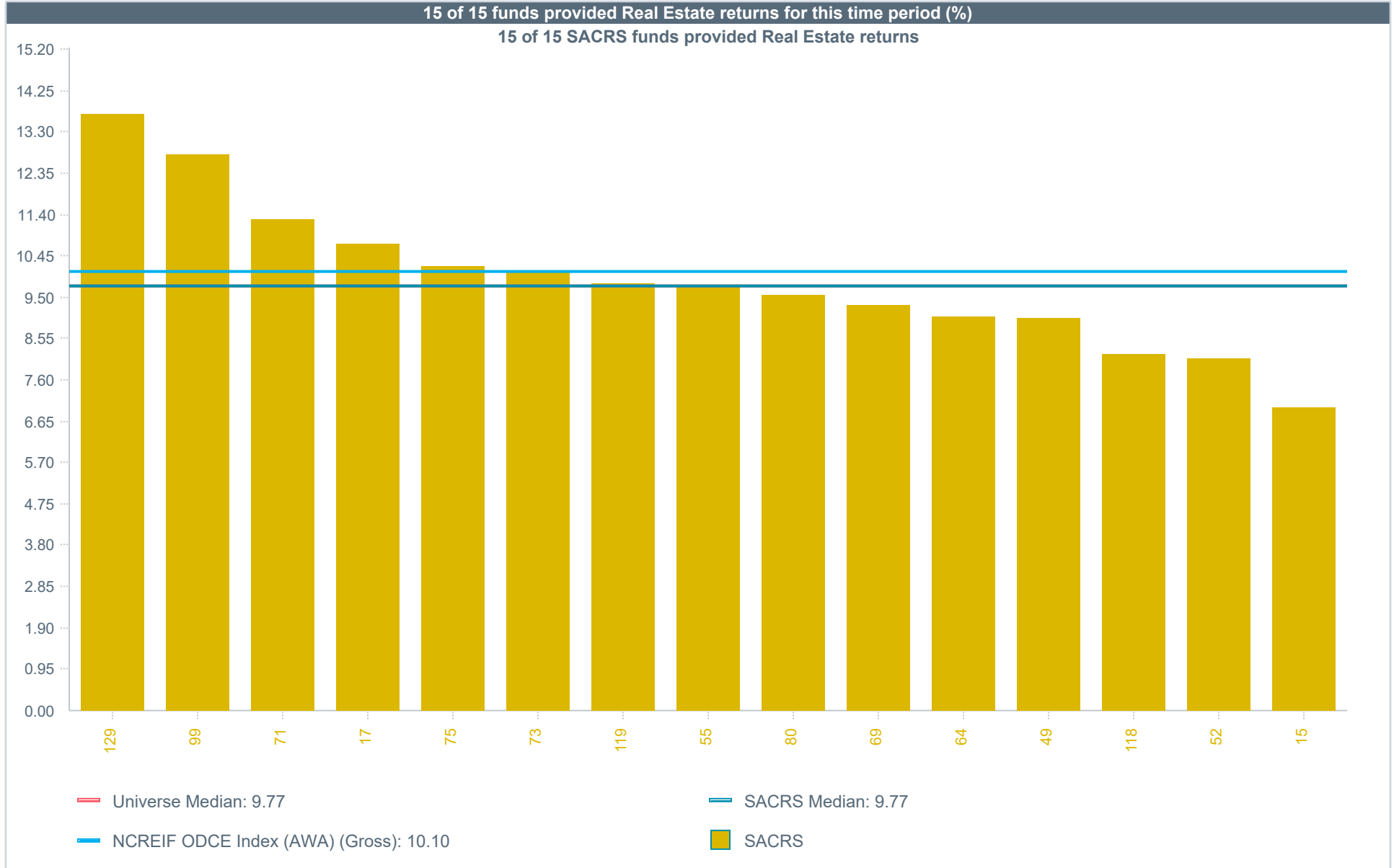
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Funds with less history than the specified time period will not appear in the chart.

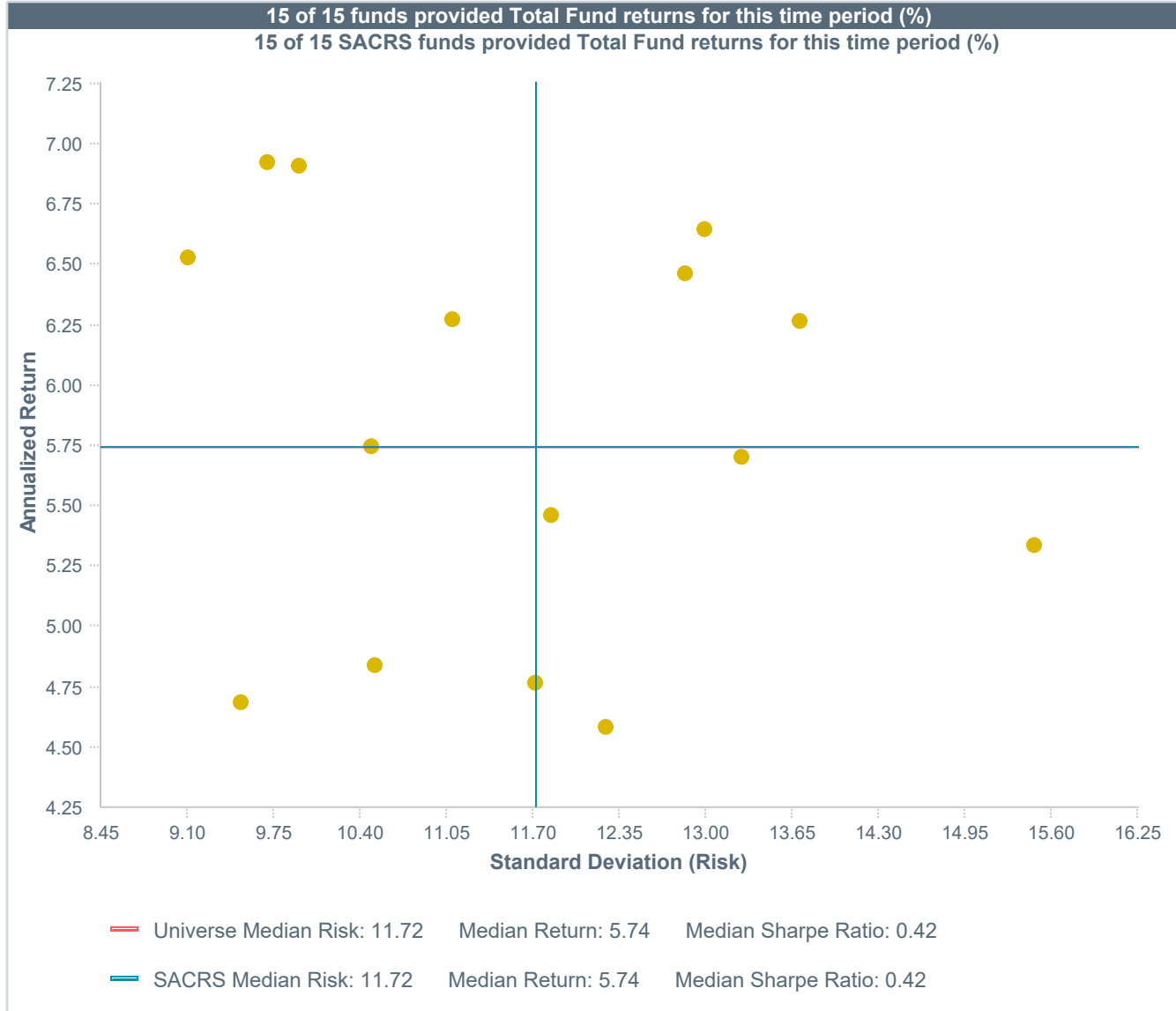




Funds with less history than the specified time period will not appear in the chart.



5 Year Annualized Total Fund Returns vs. Standard Deviation

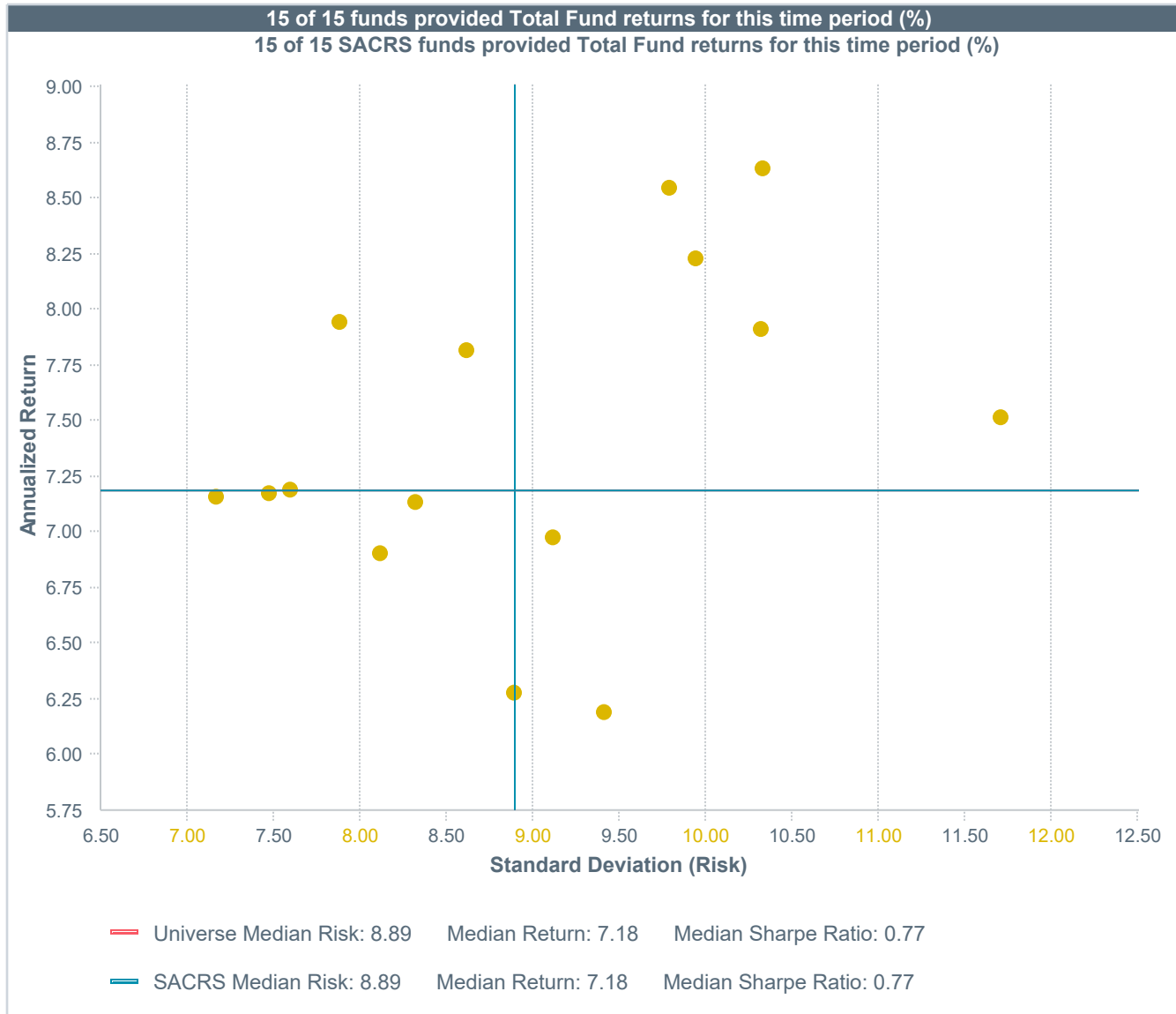


ID	Risk (%)	Return (%)	Sharpe
99	9.71	6.92	0.60
75	9.95	6.91	0.59
52	12.99	6.65	0.46
71	9.12	6.52	0.60
64	12.86	6.46	0.45
15	11.10	6.27	0.49
69	13.72	6.26	0.42
119	10.49	5.74	0.46
17	13.28	5.70	0.39
55	11.85	5.46	0.40
49	15.47	5.34	0.33
73	10.52	4.83	0.38
129	11.72	4.76	0.35
118	9.51	4.68	0.40
80	12.25	4.58	0.32

Funds with less history than the specified time period will not appear in the chart.



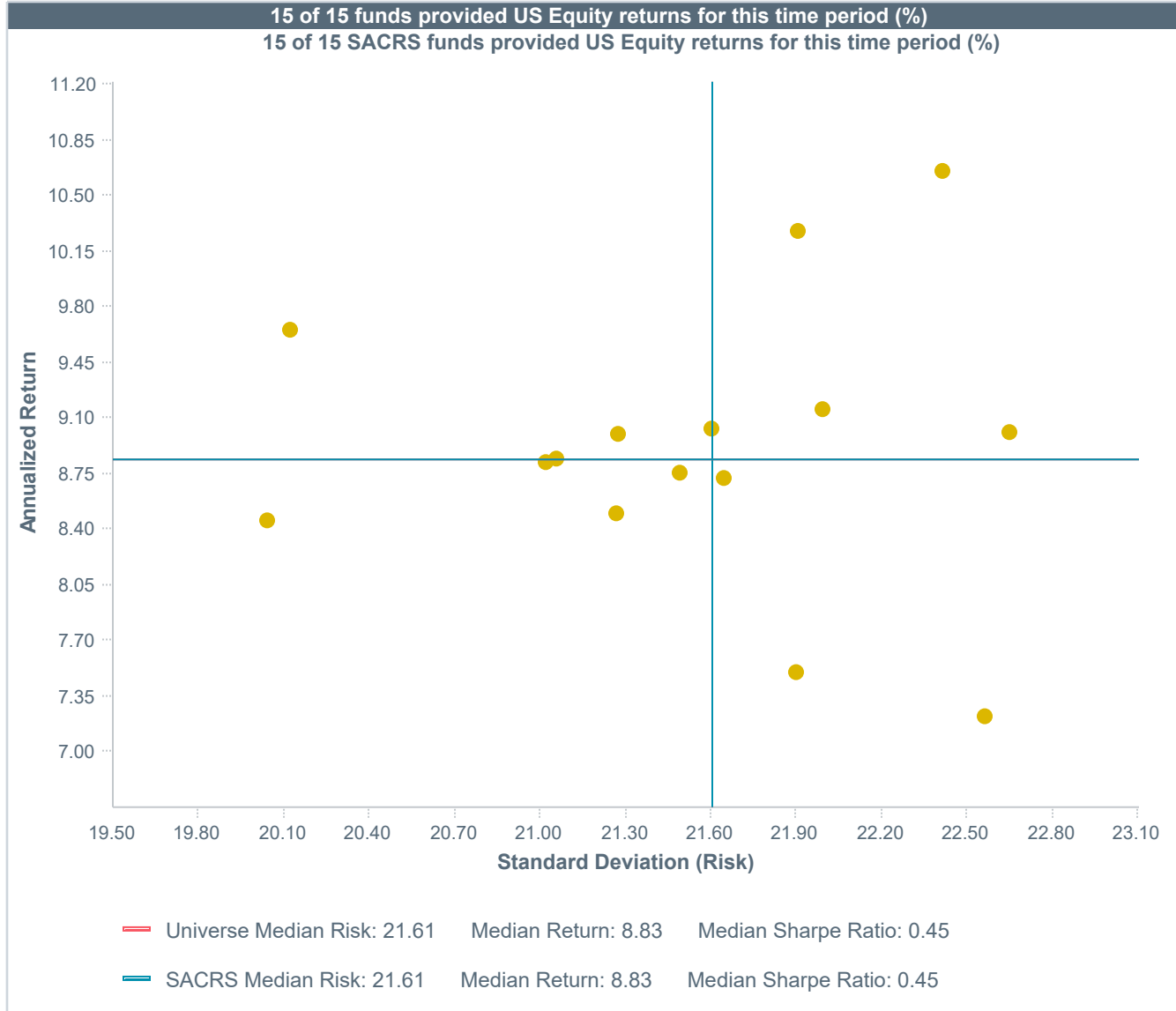
10 Year Annualized Total Fund Returns vs. Standard Deviation



ID	Risk (%)	Return (%)	Sharpe
69	10.34	8.63	0.78
64	9.80	8.54	0.81
52	9.95	8.22	0.77
75	7.89	7.94	0.91
17	10.33	7.90	0.72
15	8.63	7.81	0.82
49	11.71	7.51	0.61
99	7.60	7.18	0.85
118	7.48	7.17	0.86
71	7.17	7.15	0.89
73	8.32	7.13	0.77
55	9.13	6.97	0.70
119	8.12	6.90	0.77
129	8.89	6.27	0.64
80	9.42	6.19	0.60

Funds with less history than the specified time period will not appear in the chart.





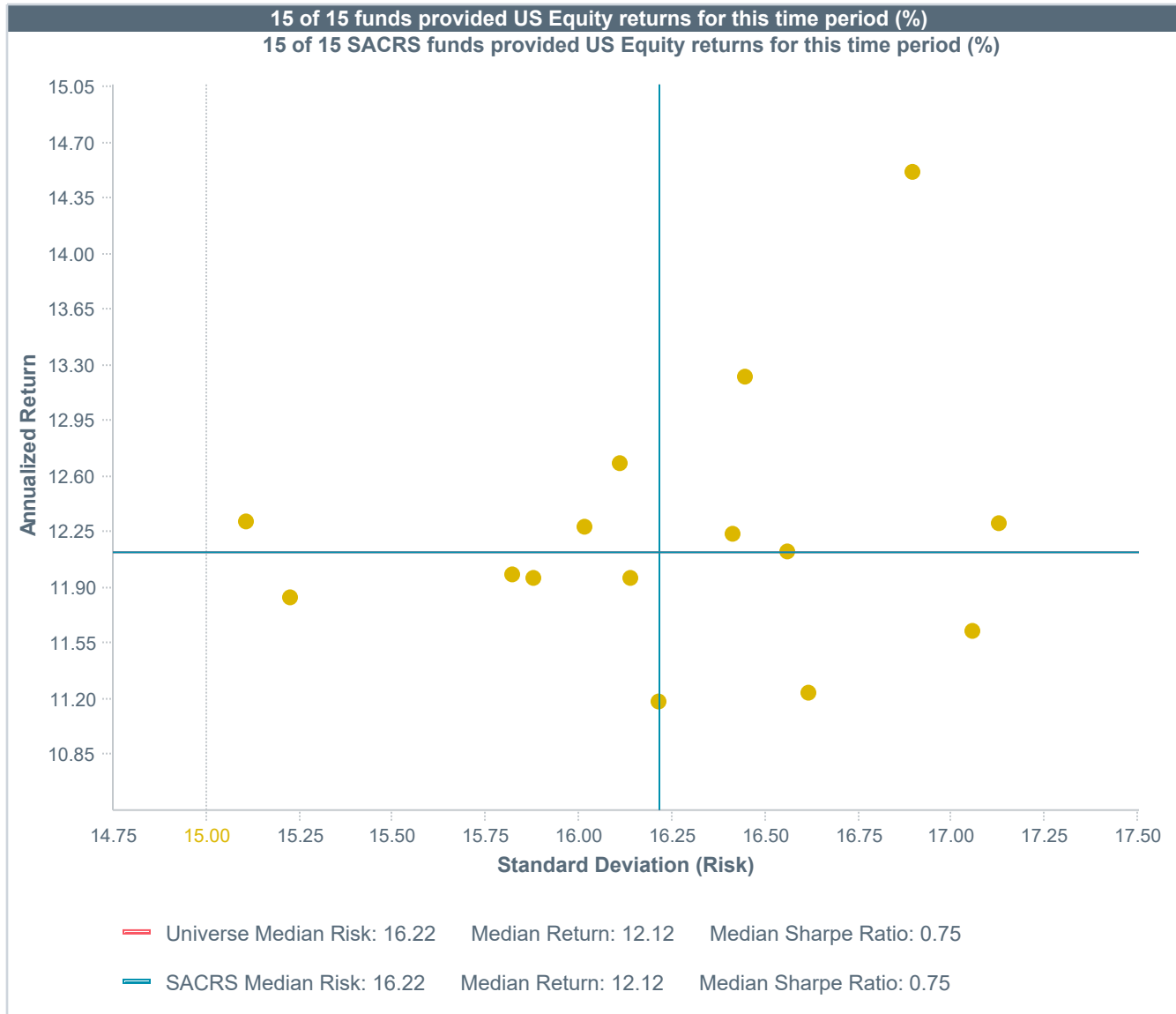
ID	Risk (%)	Return (%)	Sharpe
64	22.42	10.65	0.52
119	21.91	10.27	0.50
99	20.12	9.64	0.50
69	22.00	9.15	0.46
17	21.61	9.03	0.46
49	22.65	9.00	0.44
52	21.28	8.99	0.46
55	21.06	8.83	0.45
71	21.03	8.81	0.45
75	21.50	8.75	0.44
129	21.65	8.71	0.44
15	21.27	8.49	0.44
73	20.05	8.45	0.45
80	21.90	7.49	0.39
118	22.57	7.21	0.37

Funds with less history than the specified time period will not appear in the chart.



Risk/Return Analysis
10 Year Annualized US Equity Returns vs. Standard Deviation

As of December 31, 2022



ID	Risk (%)	Return (%)	Sharpe
64	16.90	14.51	0.85
119	16.45	13.22	0.80
15	16.11	12.67	0.78
99	15.11	12.31	0.80
49	17.13	12.30	0.73
52	16.02	12.28	0.76
17	16.42	12.24	0.75
69	16.56	12.12	0.74
71	15.83	11.98	0.75
55	15.88	11.96	0.75
75	16.14	11.95	0.74
73	15.23	11.83	0.77
118	17.06	11.62	0.69
80	16.62	11.23	0.68
129	16.22	11.17	0.69

Funds with less history than the specified time period will not appear in the chart.





ID	Risk (%)	Return (%)	Sharpe
15	21.00	3.64	0.21
64	20.37	3.29	0.20
118	19.76	3.13	0.19
71	20.92	2.36	0.16
73	19.59	2.07	0.14
75	20.52	1.83	0.13
17	21.45	1.76	0.13
80	21.21	1.53	0.12
119	20.54	1.14	0.10
52	20.31	1.12	0.10
55	20.84	1.12	0.10
99	19.60	1.10	0.09
129	21.03	0.88	0.09
69	20.55	0.82	0.08
49	23.46	0.40	0.08

Funds with less history than the specified time period will not appear in the chart.





ID	Risk (%)	Return (%)	Sharpe
64	16.20	5.87	0.39
71	16.53	5.72	0.38
118	15.45	5.61	0.38
15	16.69	5.55	0.36
17	16.96	5.26	0.35
119	16.30	5.08	0.34
73	15.57	5.01	0.35
75	16.34	4.94	0.33
69	16.26	4.80	0.33
80	16.76	4.58	0.31
52	15.97	4.44	0.31
55	16.44	4.08	0.28
99	15.57	3.79	0.27
49	18.29	3.71	0.25

Funds with less history than the specified time period will not appear in the chart.



Risk/Return Analysis
5 Year Annualized Global Equity Returns vs. Standard Deviation

As of December 31, 2022



ID	Risk (%)	Return (%)	Sharpe
118	18.60	6.63	0.37
52	20.03	5.66	0.32
129	19.82	5.13	0.29
64	21.23	3.83	0.23

Funds with less history than the specified time period will not appear in the chart.



Risk/Return Analysis
 10 Year Annualized Global Equity Returns vs. Standard Deviation

As of December 31, 2022



ID	Risk (%)	Return (%)	Sharpe
118	14.30	9.33	0.65
129	15.15	8.52	0.57
52	15.36	8.00	0.53
64	15.87	6.78	0.45

Funds with less history than the specified time period will not appear in the chart.

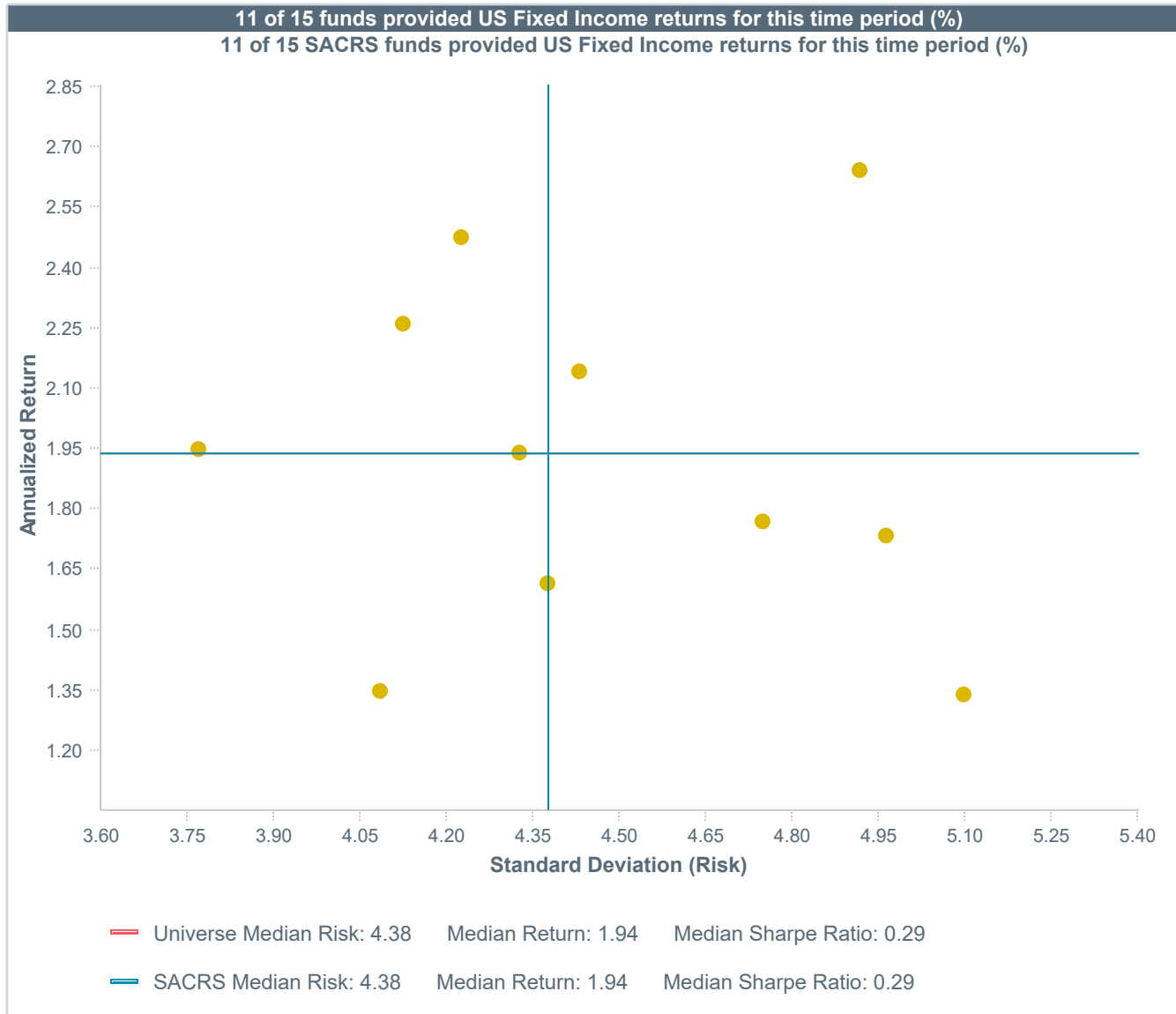




ID	Risk (%)	Return (%)	Sharpe
52	5.79	1.55	0.08
71	4.83	1.32	0.04
99	6.11	1.28	0.03
118	2.15	1.25	0.01
64	4.87	1.21	0.01
73	5.10	1.15	0.00
17	6.04	1.10	0.00
55	5.82	0.88	-0.04
75	5.21	0.82	-0.06
49	5.51	0.60	-0.09
129	3.82	0.41	-0.21
69	6.22	0.13	-0.15
15	5.05	-0.24	-0.28

Funds with less history than the specified time period will not appear in the chart.





ID	Risk (%)	Return (%)	Sharpe
17	4.92	2.64	0.40
73	4.23	2.47	0.42
71	4.13	2.26	0.38
52	4.43	2.14	0.33
64	3.77	1.94	0.33
75	4.33	1.94	0.29
55	4.75	1.77	0.23
99	4.96	1.73	0.22
49	4.38	1.61	0.22
15	4.09	1.34	0.16
69	5.10	1.33	0.14

Funds with less history than the specified time period will not appear in the chart.



Risk/Return Analysis
 5 Year Annualized Global Fixed Income Returns vs. Standard Deviation

As of December 31, 2022

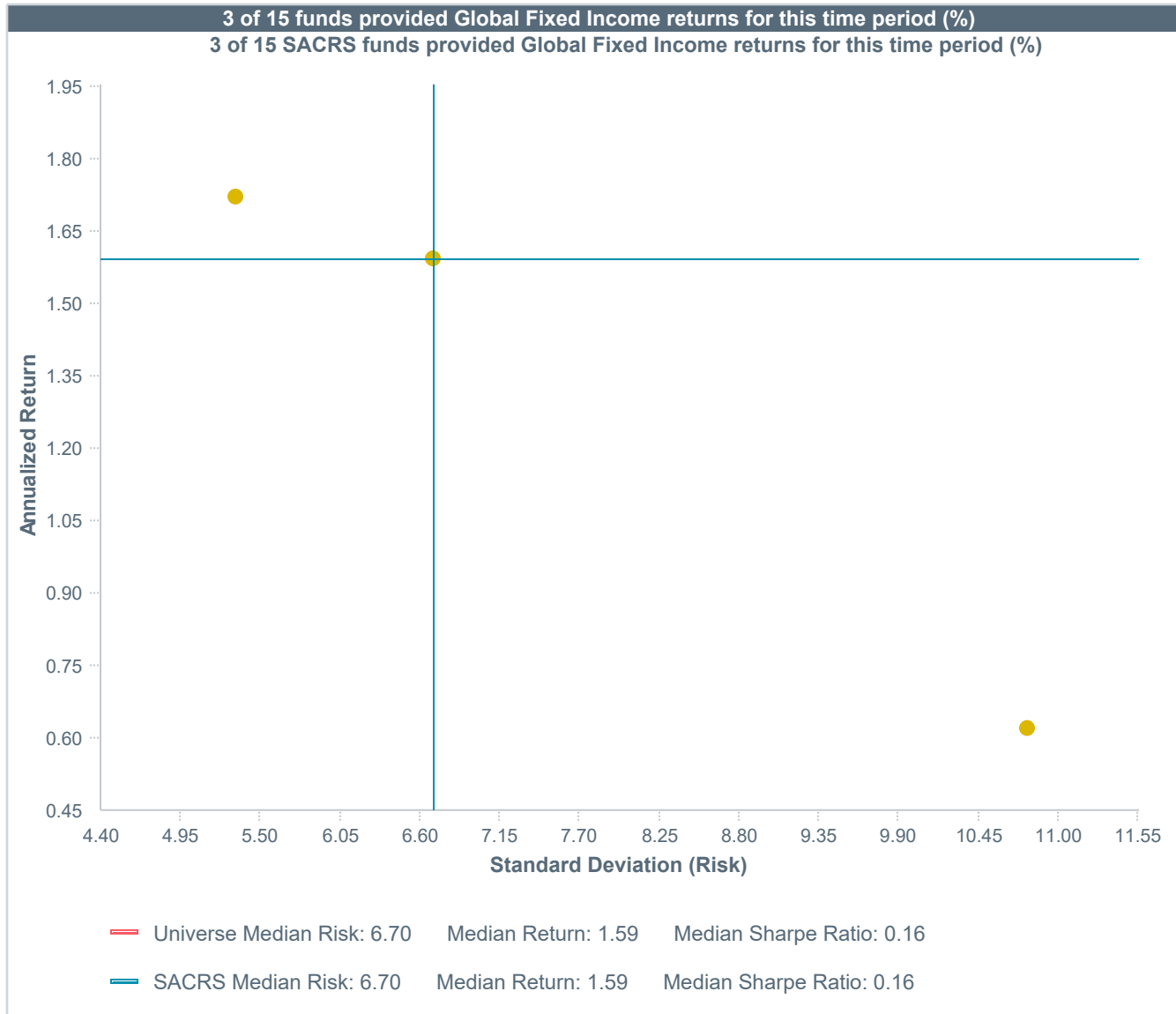


ID	Risk (%)	Return (%)	Sharpe
119	6.58	0.76	-0.04
80	8.48	0.24	-0.08
17	13.32	-1.56	-0.14

Funds with less history than the specified time period will not appear in the chart.



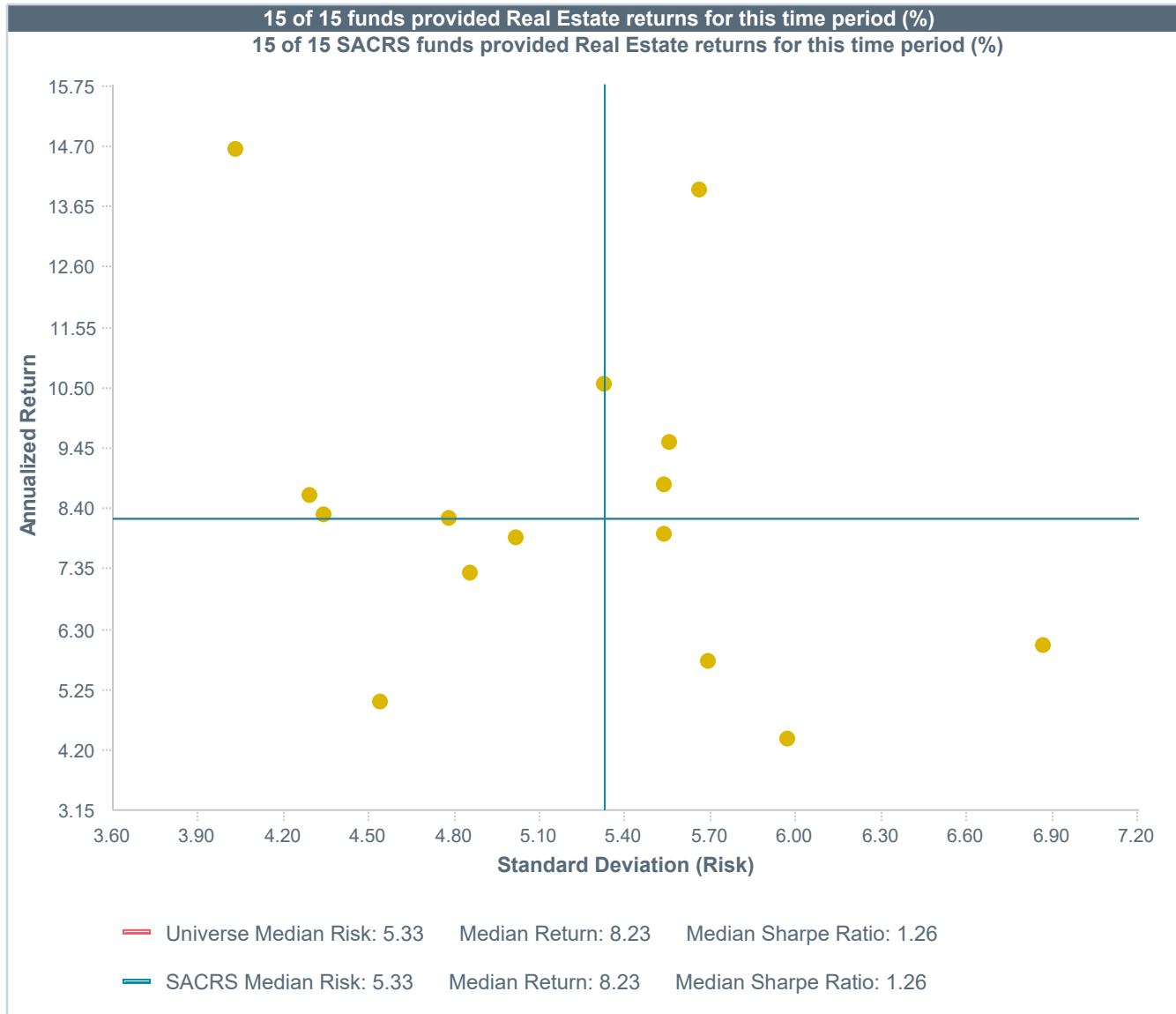
10 Year Annualized Global Fixed Income Returns vs. Standard Deviation



ID	Risk (%)	Return (%)	Sharpe
119	5.34	1.72	0.20
80	6.70	1.59	0.16
17	10.79	0.62	0.04

Funds with less history than the specified time period will not appear in the chart.





ID	Risk (%)	Return (%)	Sharpe
129	4.03	14.64	3.16
99	5.66	13.95	2.06
71	5.33	10.55	1.62
75	5.56	9.55	1.37
17	5.54	8.80	1.26
55	4.30	8.62	1.58
73	4.34	8.30	1.50
80	4.78	8.23	1.36
49	5.54	7.93	1.13
119	5.02	7.89	1.22
64	4.86	7.26	1.17
69	6.87	6.01	0.68
52	5.70	5.72	0.75
15	4.54	5.02	0.80
118	5.97	4.39	0.53

Funds with less history than the specified time period will not appear in the chart.



Risk/Return Analysis
 10 Year Annualized Real Estate Returns vs. Standard Deviation

As of December 31, 2022



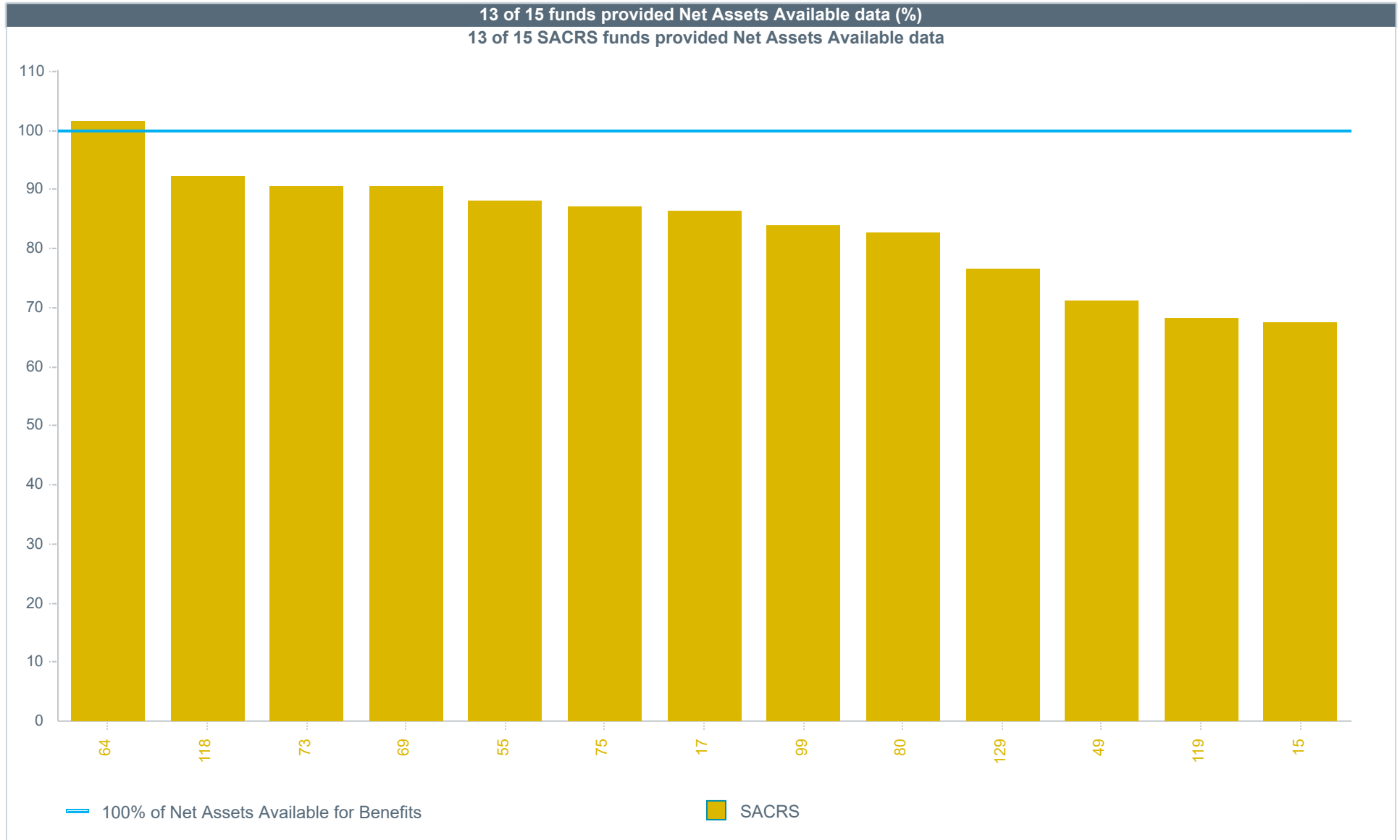
ID	Risk (%)	Return (%)	Sharpe
129	3.92	13.69	3.16
99	4.28	12.77	2.61
71	4.55	11.30	2.14
17	4.28	10.72	2.11
75	4.20	10.23	2.06
73	3.48	10.09	2.42
119	4.32	9.82	1.92
55	3.44	9.77	2.37
80	3.68	9.57	2.19
69	5.64	9.34	1.42
64	3.71	9.05	2.05
49	4.27	9.02	1.78
118	5.42	8.20	1.31
52	4.30	8.08	1.57
15	3.55	6.97	1.63

Funds with less history than the specified time period will not appear in the chart.



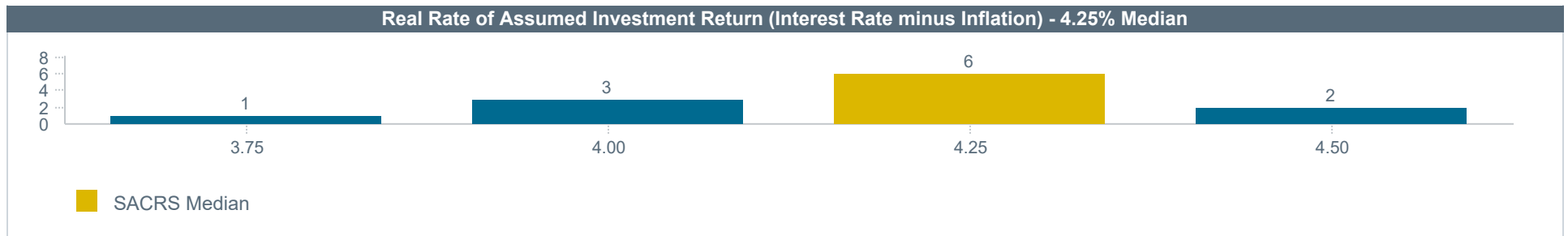
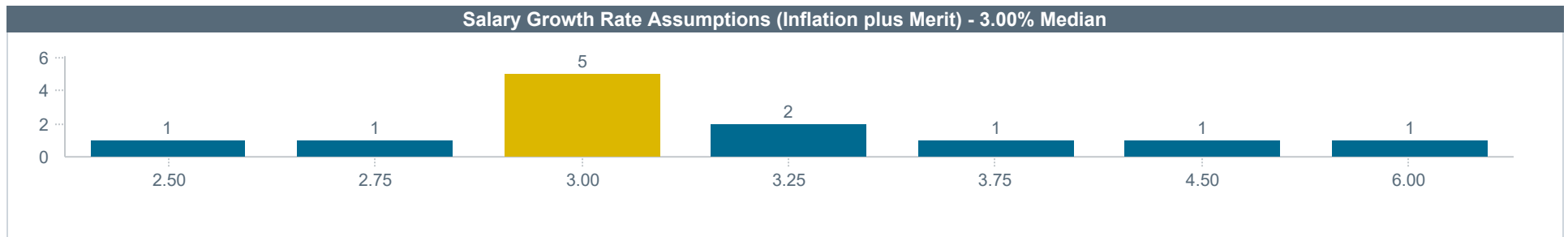
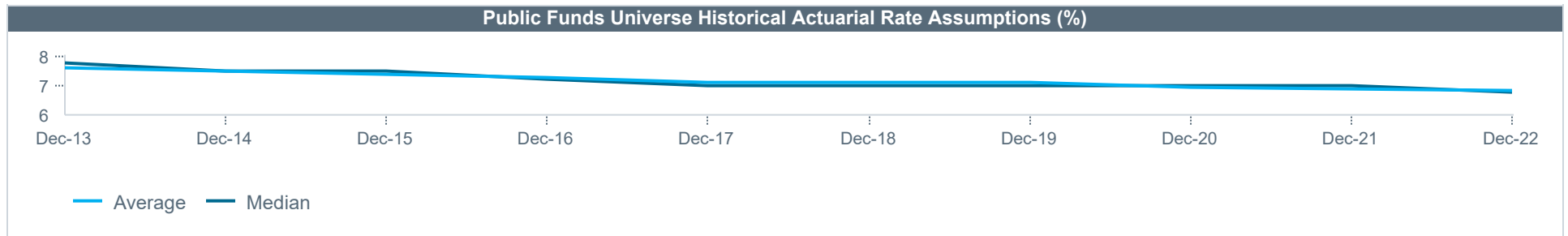
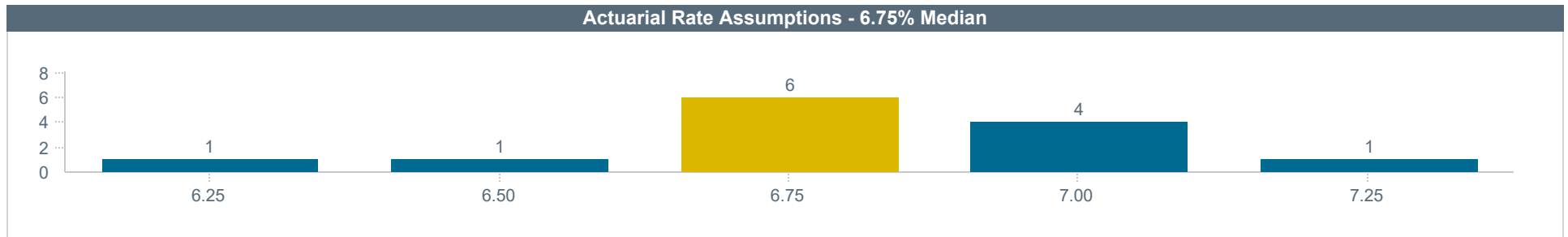
Net Assets Available For Benefits
Expressed as a Percentage of the Pension Benefit Obligation

As of December 31, 2022



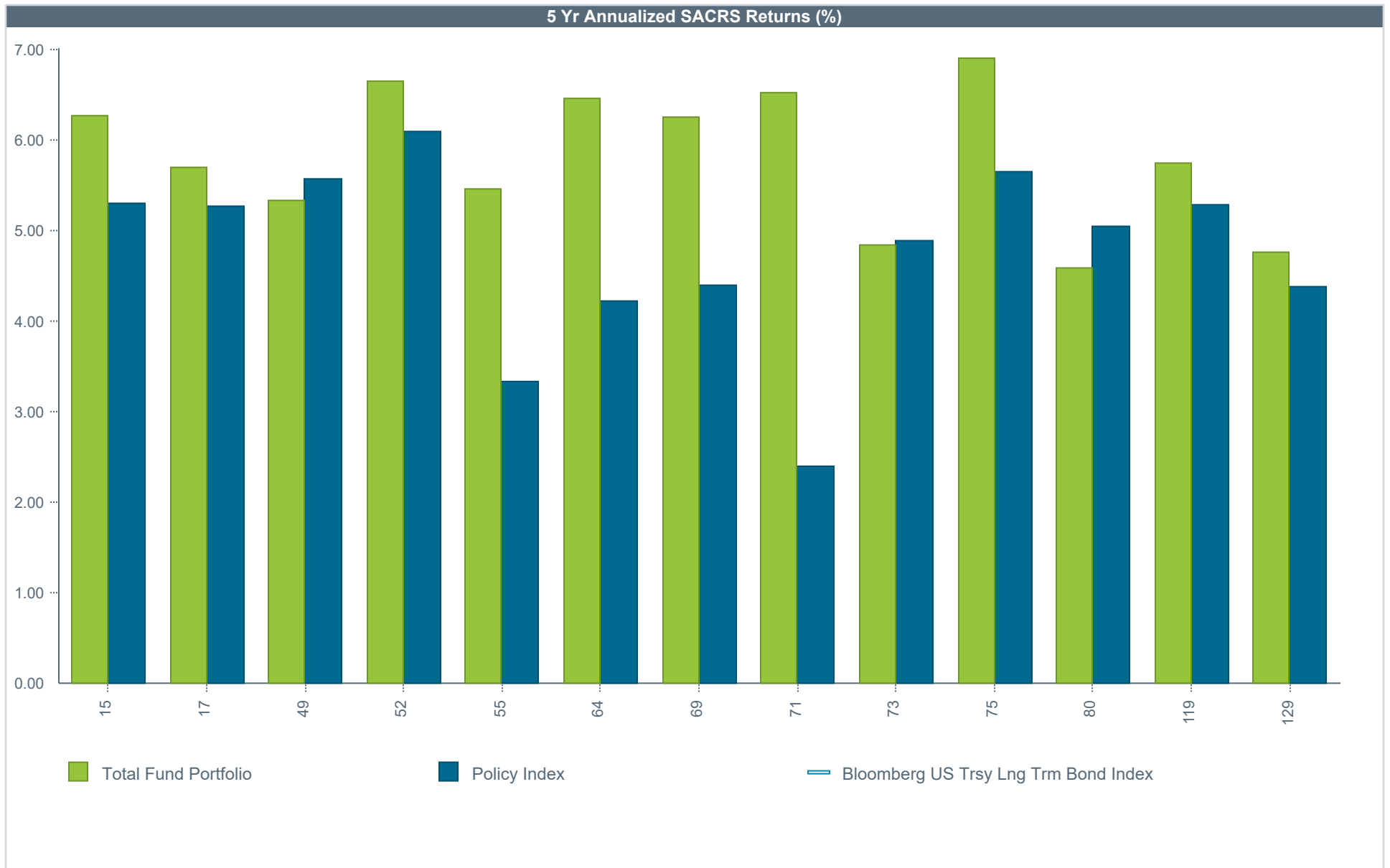
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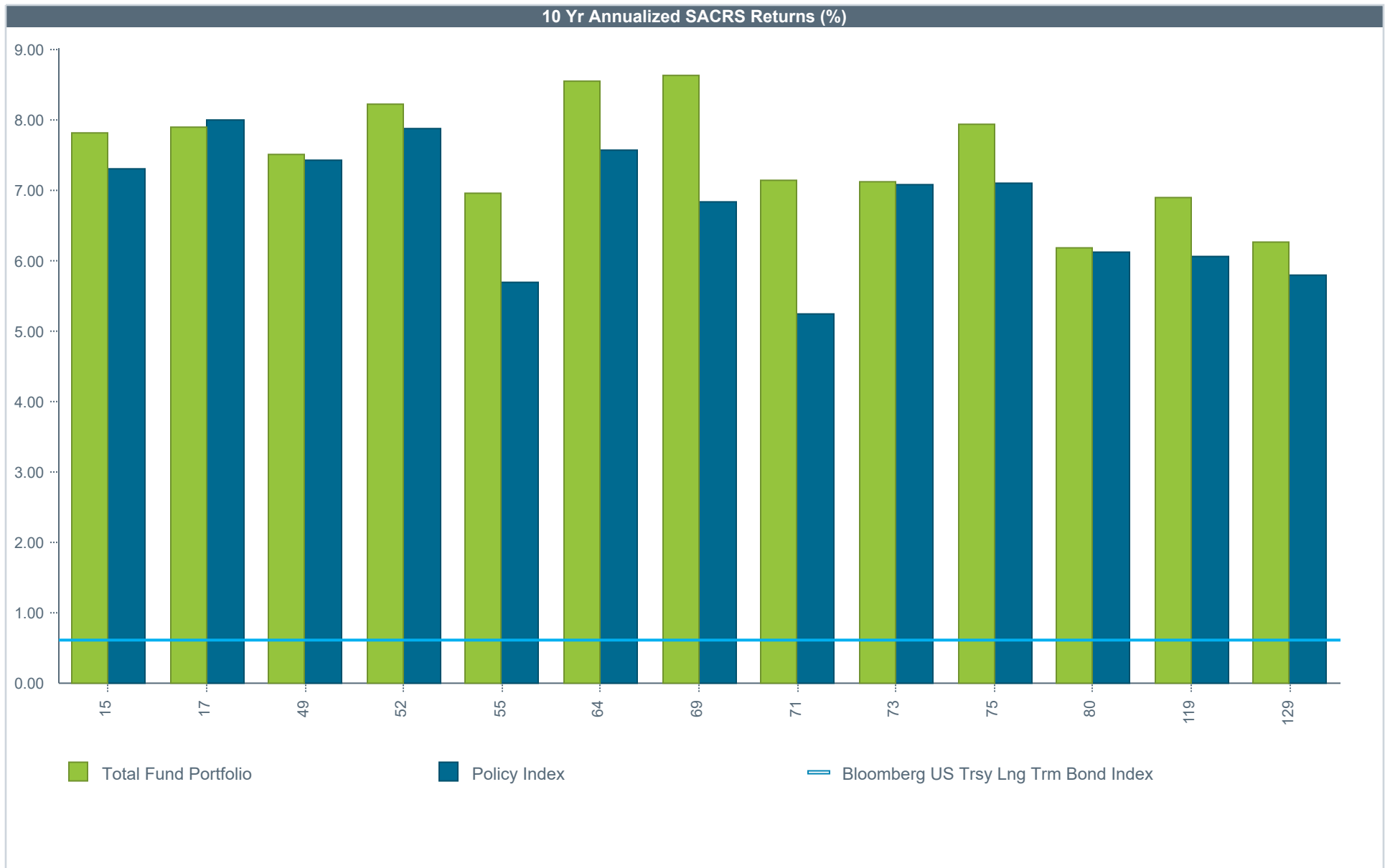


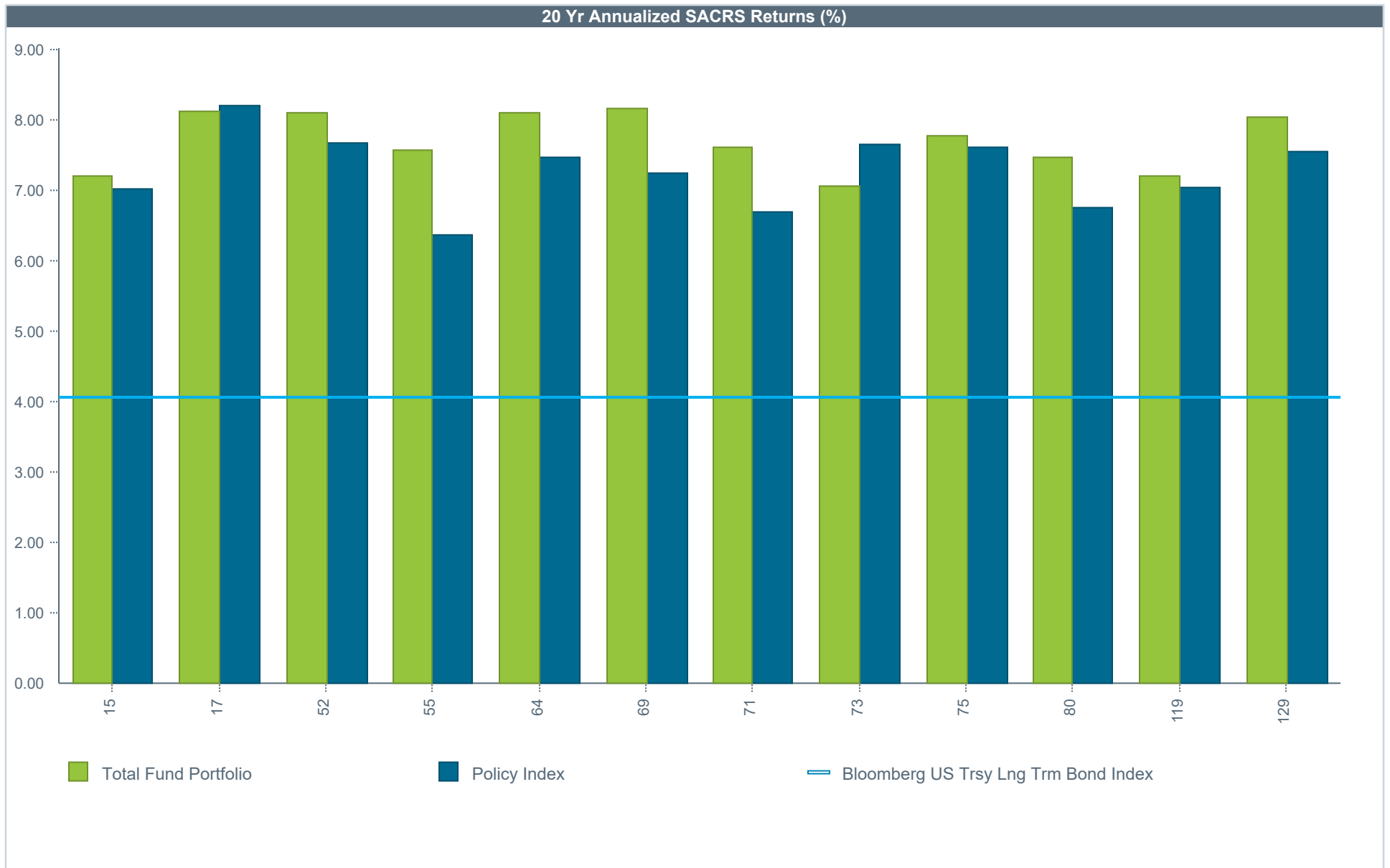


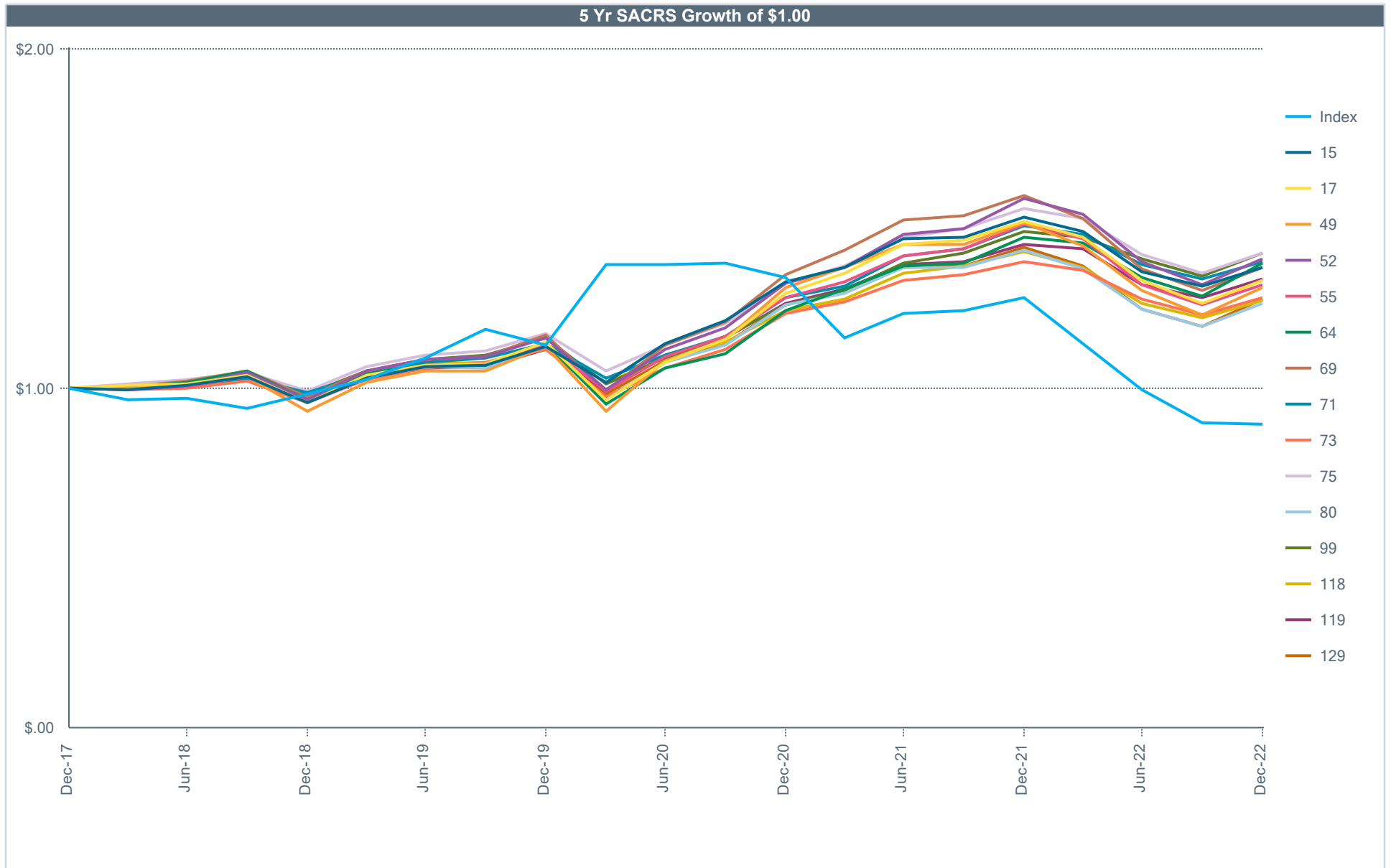
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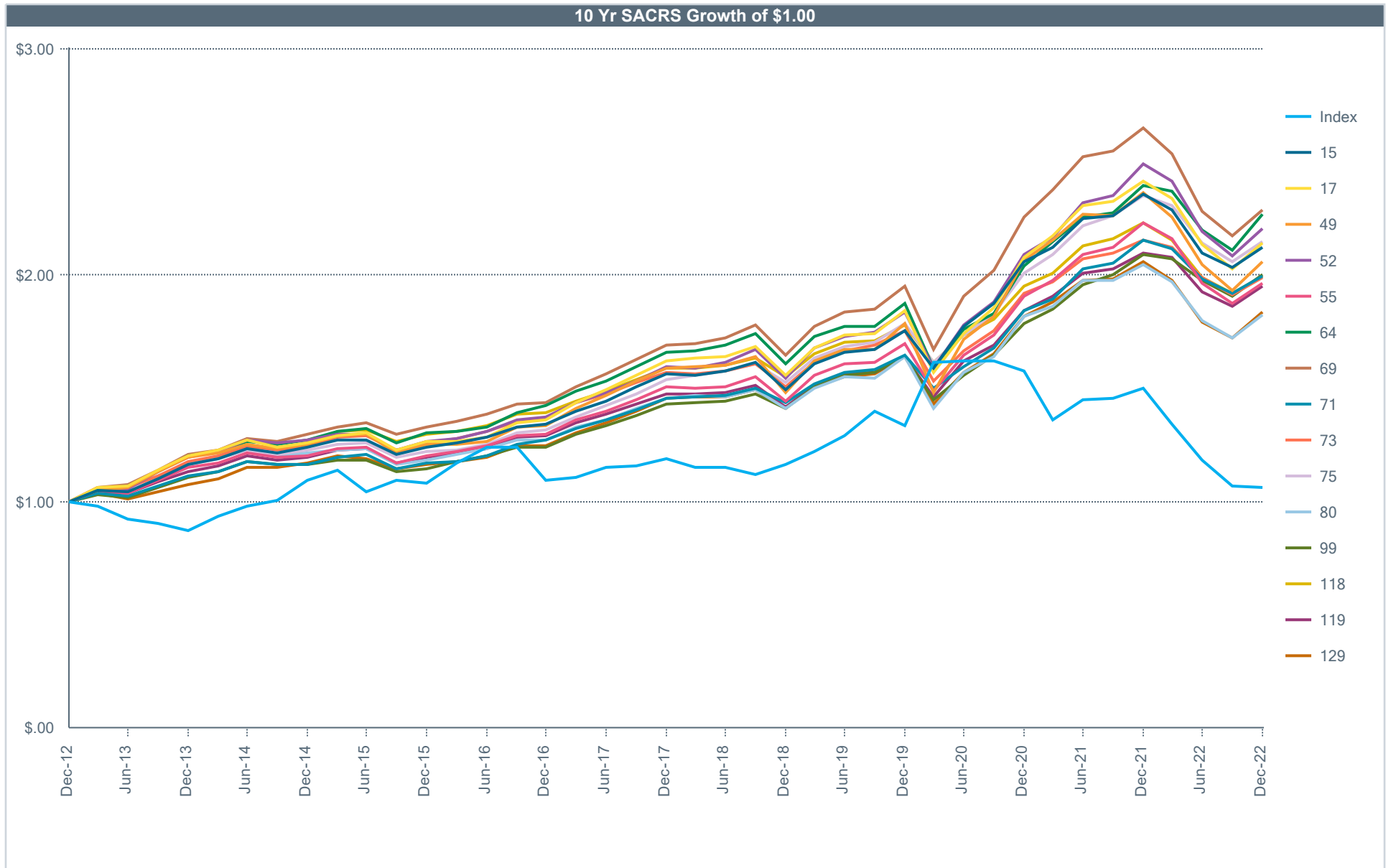






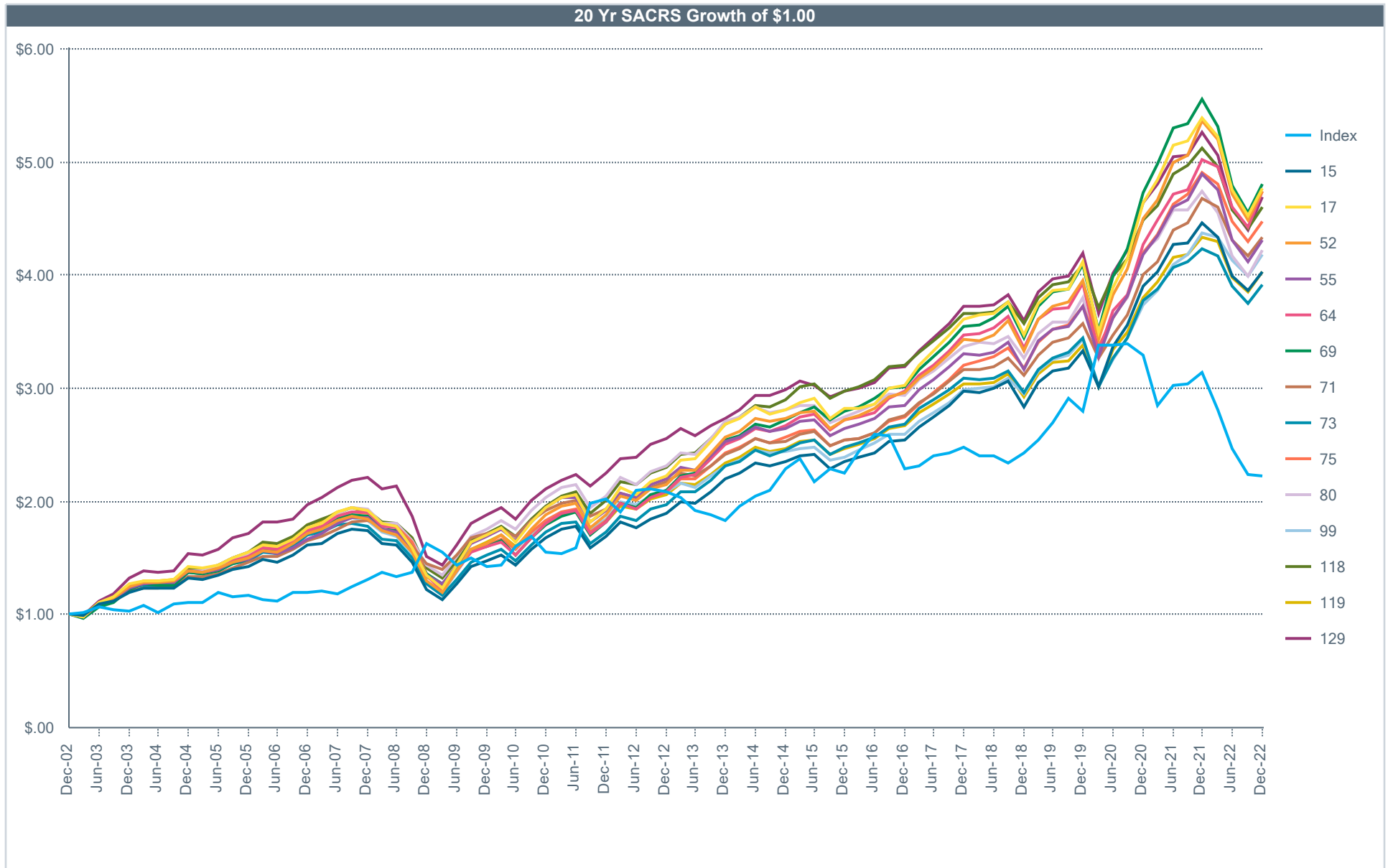
Index - Bloomberg US Trsy Lng Trm Bond Index





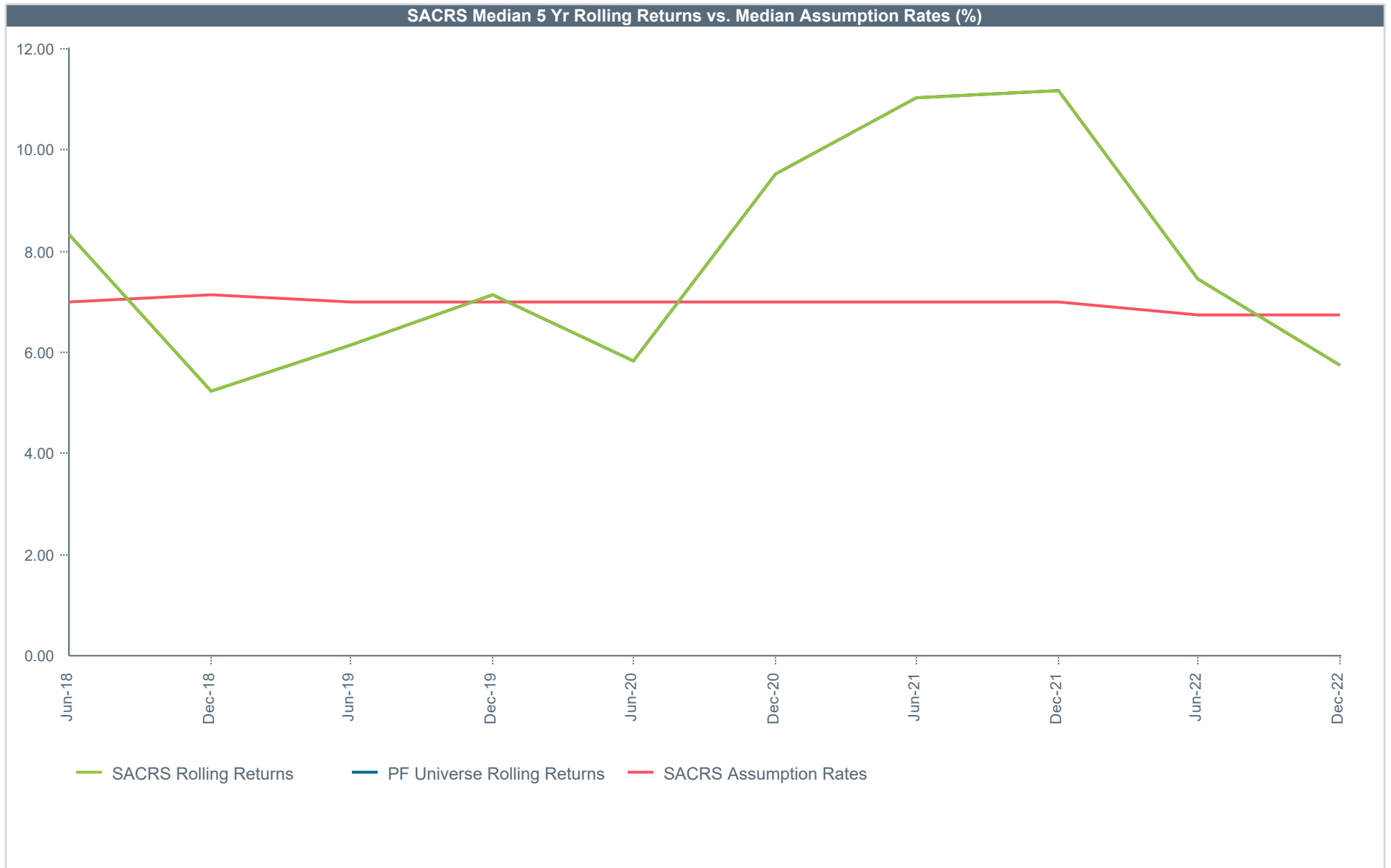
Index - Bloomberg US Trsy Lng Trm Bond Index

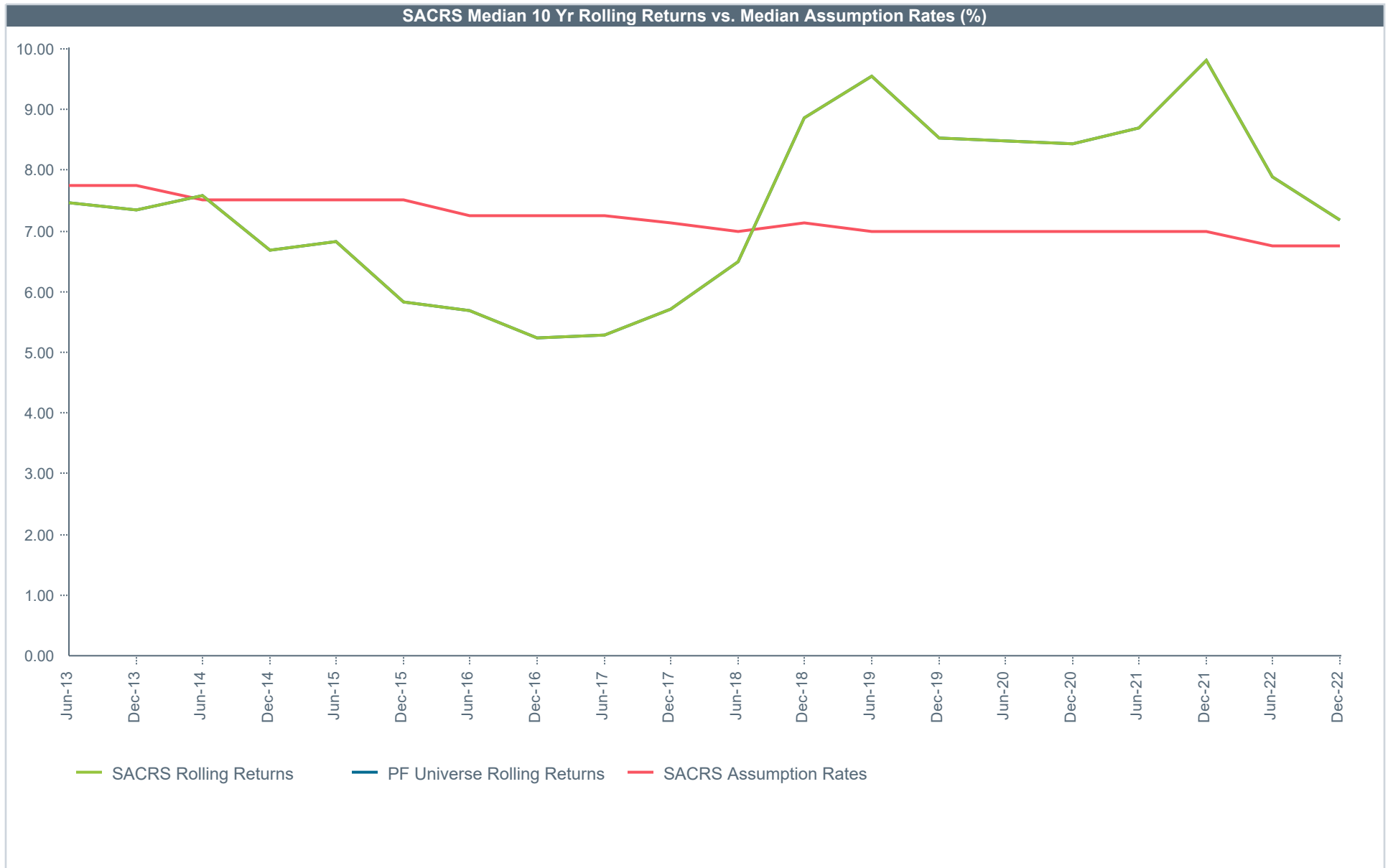


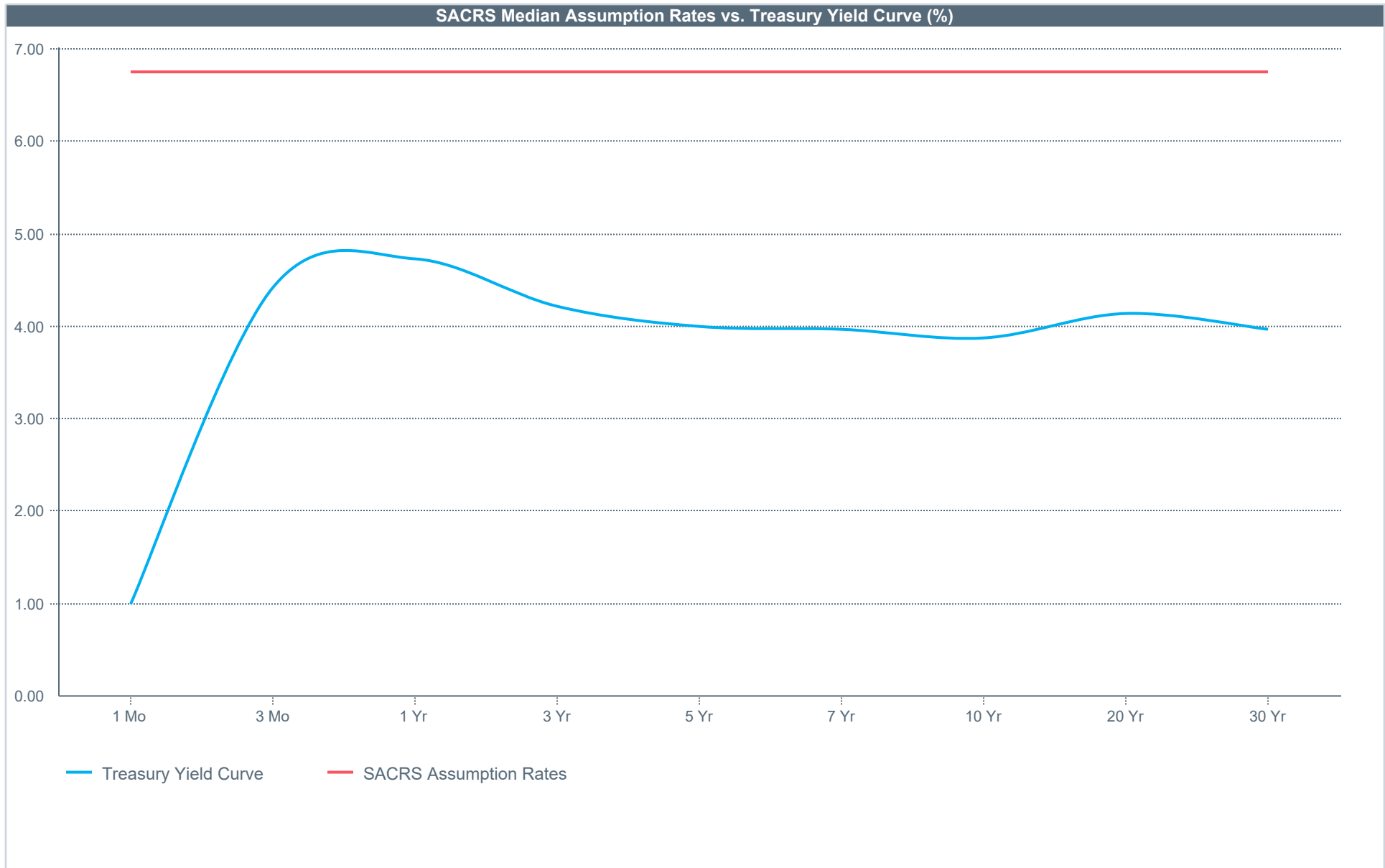


Index - Bloomberg US Trsy Lng Trm Bond Index









Miscellaneous Comments

- Performance shown is gross of fees, with the exception of the following:
 - Funds 8, 31, 49, 60, 350, and 351: Performance shown is net of fees.
 - Funds 4, 55, 75, and 85: Performance shown for Real Estate is net of fees.
- Performance shown is calculated using quarterly performance provided by participating public funds.
- Performance shown may differ from a fund's actual performance due to rounding.
- Net Assets Available for Benefits includes funding percentage valuation as of dates between December 2021 and December 2022.
 - Fund 96: Net Assets Available for Benefits shown is the higher funded ratio for one of two commingled systems reported by the fund.
- Allocations shown reflect dedicated managers/mandates rather than actual exposure, with the exception of the following:
 - Funds 29, 86, and 119: Performance shown for Global Fixed Income includes US and Non-US Fixed Income funds.
 - Fund 121: Performance shown for Global Fixed Income includes Non-US Fixed Income funds.
 - Funds 4, 42, 64, 99, 202, and 240: Performance shown for US Fixed Income includes US and Non-US Fixed Income funds.

Glossary of Terms

Beta - A measure of the sensitivity of a portfolio to the movements in the market. It is a measure of a portfolio's non-diversifiable or systematic risk. Calculation is based on quarterly periodicity.

Return - Compounded rate of return for the period.

% Return - The time-weighted rate of return of a portfolio for a given period.

Sharpe Ratio - Represents the excess rate of return over the risk-free return (i.e., ICE BofAML 3 Mo US T-Bill Index unless specified otherwise), divided by the standard deviation of the excess return to the risk free asset. The result is the absolute rate of return per unit of risk. The higher the value, the better the product's historical risk-adjusted performance. Calculation is based on quarterly periodicity.

Standard Deviation - A statistical measure of the range of a portfolio's performance. The variability of a return around its average return over a specified time period. Calculation is based on quarterly periodicity.

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SACRS – Annual System Comparison

RVK, Inc.



Capital Markets Review – 1 Year Ending 6/30

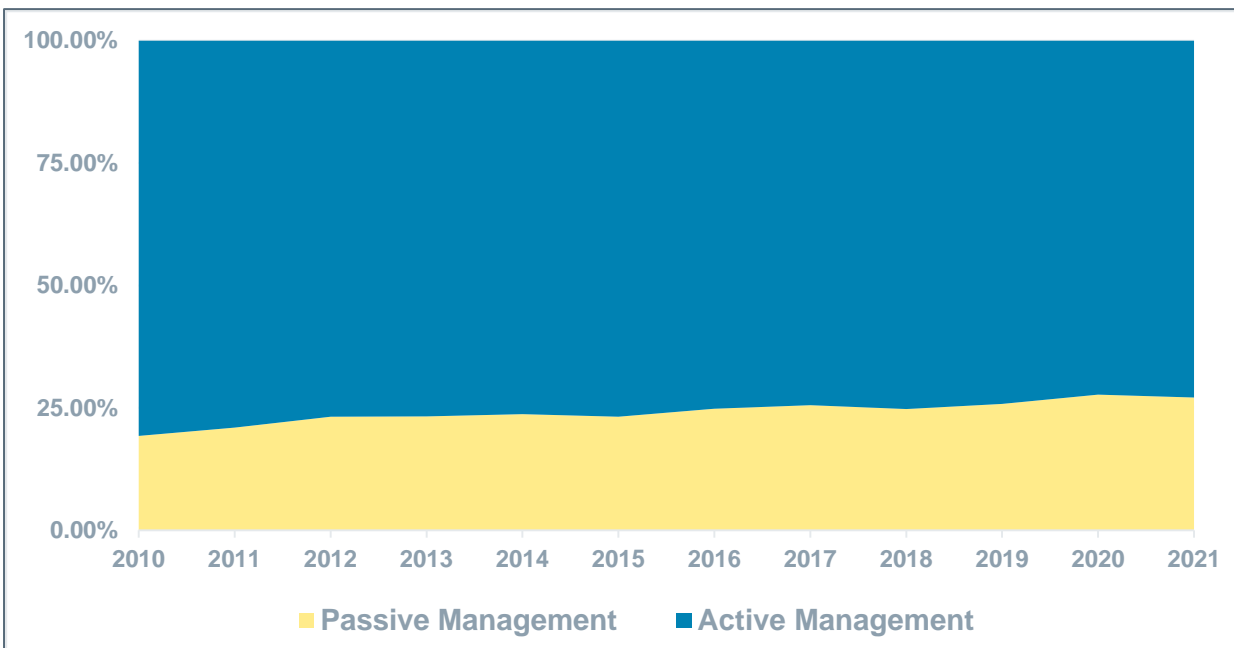
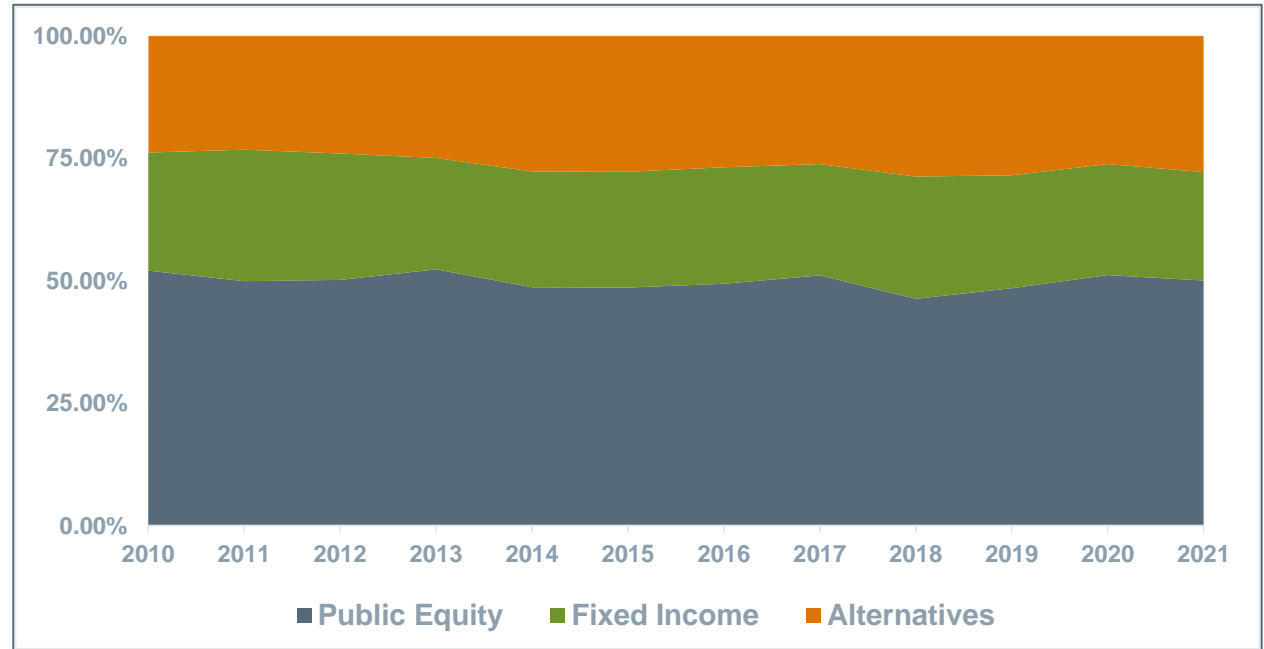
While dated at the time of this presentation, it is important to understand how capital markets fared over the one and ten year periods to give some context on the performance of the Systems.

Index	1 Year Return	10 Year Return
MSCI ACW	39.26	9.90
Russell 3000	44.16	14.70
MSCI EAFE	32.35	5.89
MSCI Emerging Markets	40.90	4.29
Bloomberg US Aggregate Fixed Income	-0.34	3.39
NCREIF ODCE	7.09	8.60
HFRI Asset Wtd.	16.35	4.13
Cambridge US PE	55.43	15.47

- Equity markets continued their historic rebound from COVID-induced lows.
- Renewed optimism stemming from reopening efforts, lifted mask mandates, and a proposed bipartisan infrastructure bill.
- Key economic indicators were largely positive and the IMF improved its forward looking expectations for GDP in 2021 and 2022.
- Key inflation figures saw meaningful YoY increases, but were largely viewed as transitory.

Trends in Asset Allocation and Implementation

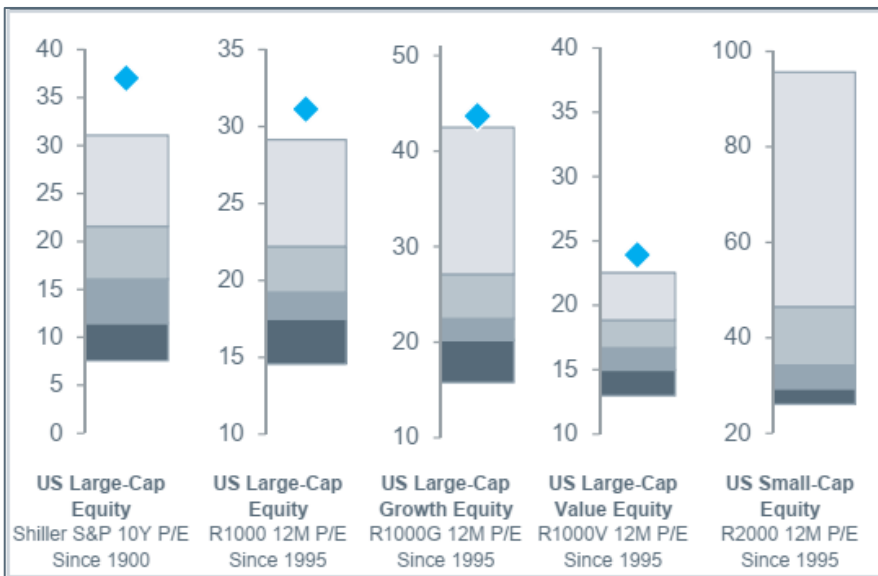
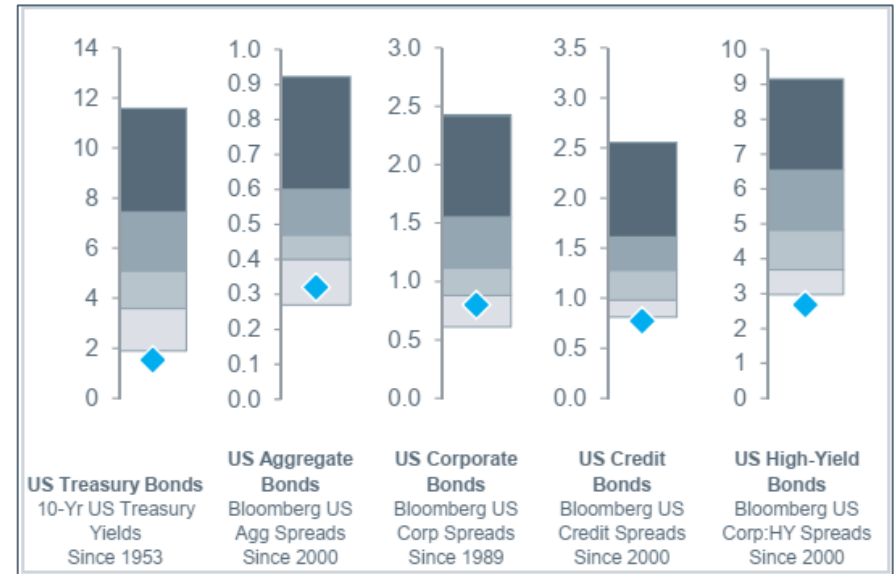
- Continued decrease in FI exposure.
- Despite public scrutiny, alternatives exposure relatively consistent.



- Passive exposure continues to increase, primarily in US equity portfolios.

Downward Pressure on Future Expectations

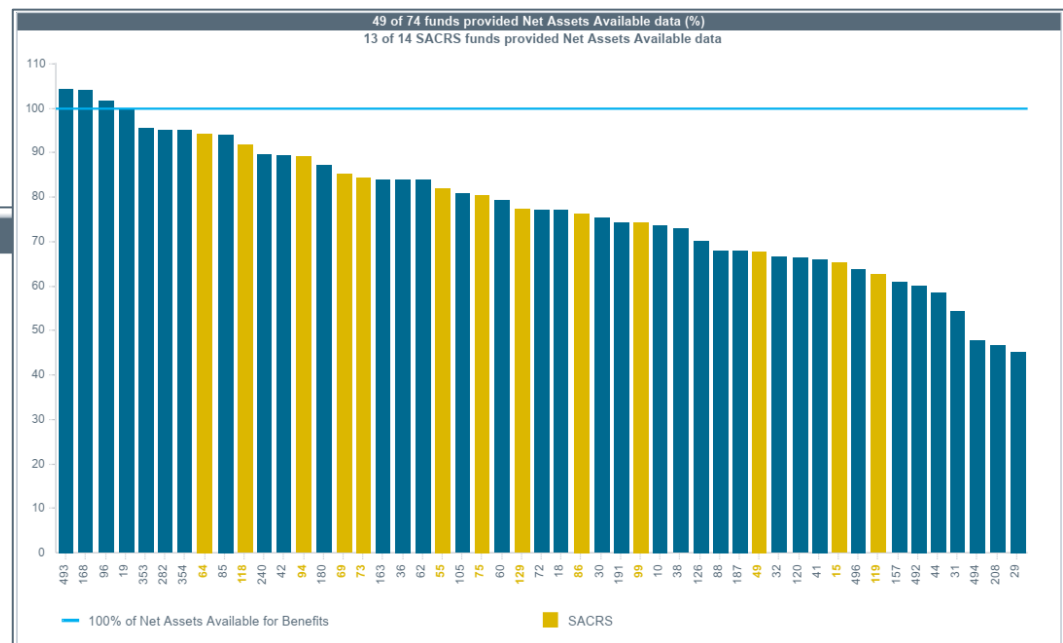
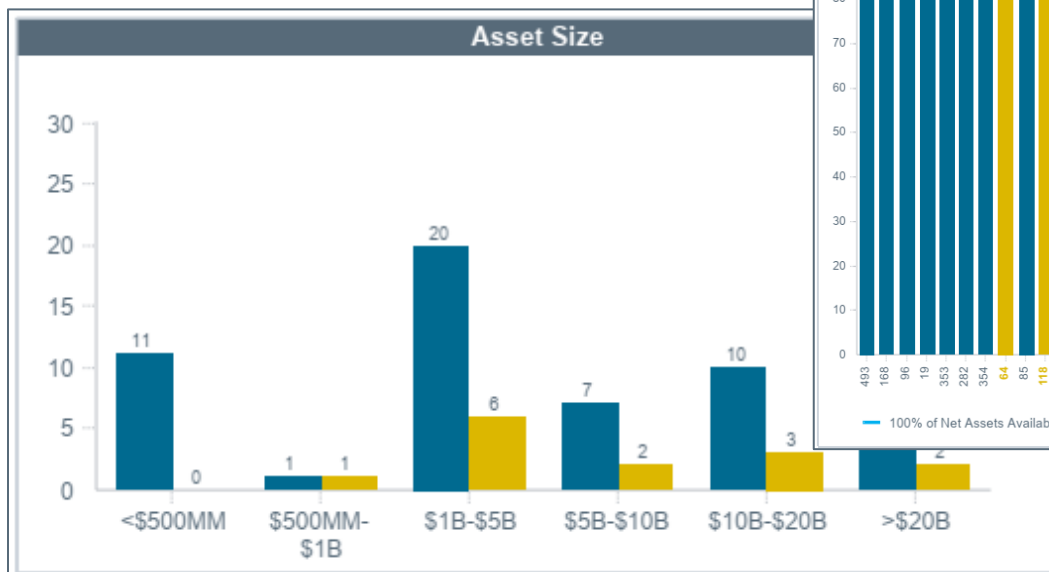
- Fixed income yields are near all-time lows.
- Additional returns sought via “spread” sectors carry additional risk and reduced return expectations.



- US equity valuations near/above all-time highs.
- Small cap stocks have a negative EPS as of 6/30/21.

SACRS Annual Comparison – A Foreword

- Comparisons amongst peers often receive notable attention from decision making bodies and media outlets.
- RVK would recommend some amount of caution in viewing the results, as peer comparisons are often made with limited insight into the unique characteristics of peers.
- While each SACRS member is a peer in many ways, there are distinct differences in each System that may be overlooked during this analysis:
 - Funded status
 - Contribution policy
 - Payout ratio/cash flow needs
 - Governance



SACRS Annual Comparison – 1 Year Returns

System	1 Year Return	Avg. Public Equity Exposure	Avg. FI Exposure	Avg. Alts Exposure
	31.75	69%	20%	11%
	30.56	53%	23%	24%
	28.23	64%	18%	18%
	27.90	42%	17%	41%
	27.17	55%	24%	21%
	27.08	49%	22%	29%
Redacted	26.68	48%	16%	36%
	26.05	52%	28%	20%
	25.77	54%	23%	23%
	25.66	40%	25%	35%
	25.63	38%	27%	35%
	24.50	41%	28%	31%
	24.20	44%	26%	30%
	23.96	50%	28%	22%
	22.64	45%	22%	33%

SACRS Annual Comparison – 5 Year Returns

System	5 Year Return	5 Year Standard Deviation	Avg. Public Equity Exposure	Avg. FI Exposure	Avg. Alts Exposure
	12.40	11.65	53%	23%	24%
	12.34	13.75	68%	21%	11%
	12.13	8.43	43%	17%	40%
	11.95	9.54	50%	22%	28%
	11.17	11.52	59%	18%	23%
	11.13	10.02	56%	26%	18%
Redacted	11.06	8.34	41%	27%	32%
	11.02	7.76	48%	16%	36%
	10.58	9.82	49%	24%	27%
	10.26	8.77	41%	24%	35%
	10.23	9.23	42%	31%	27%
	9.98	10.40	44%	33%	23%
	9.91	9.33	48%	28%	26%
	9.76	7.91	46%	24%	30%
	9.66	9.51	40%	25%	35%

SACRS Annual Comparison – 10 Year Returns

System	10 Year Return	10 Year Standard Deviation	Avg. Public Equity Exposure	Avg. FI Exposure	Avg. Alts Exposure
	10.60	10.27	56%	22%	22%
	9.44	10.17	59%	18%	23%
	9.22	11.94	66%	23%	11%
	9.15	8.99	53%	24%	23%
	9.12	8.44	45%	18%	37%
Redacted	8.91	7.68	47%	26%	27%
	8.86	7.70	46%	25%	29%
	8.58	9.34	56%	27%	16%
	8.47	8.10	36%	22%	42%
	8.35	9.05	47%	22%	31%
	8.14	7.29	41%	19%	40%
	8.09	8.40	45%	30%	25%
	7.88	9.42	45%	35%	20%
	7.86	8.05	42%	29%	29%
	7.65	8.91	49%	28%	23%

SACRS Annual Comparison – Summary Comments

- Capital markets have experienced outsized returns over the last 10+ years, partially driven by non-market forces (fiscal and monetary policies).
- The likelihood of similar returns over the next 10+ years is relatively low; high valuations in equity combined with low yields in fixed income create a difficult environment going forward.
- Public retirement systems need to carefully examine asset allocation and implementation to ensure portfolios are well positioned to meet cash flow needs.
- Objectively measuring an individual system's performance requires a thoughtful combination of benchmarks; peer groups should be carefully used as part of this exercise.

PORTLAND

BOISE

CHICAGO

NEW YORK

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Overview

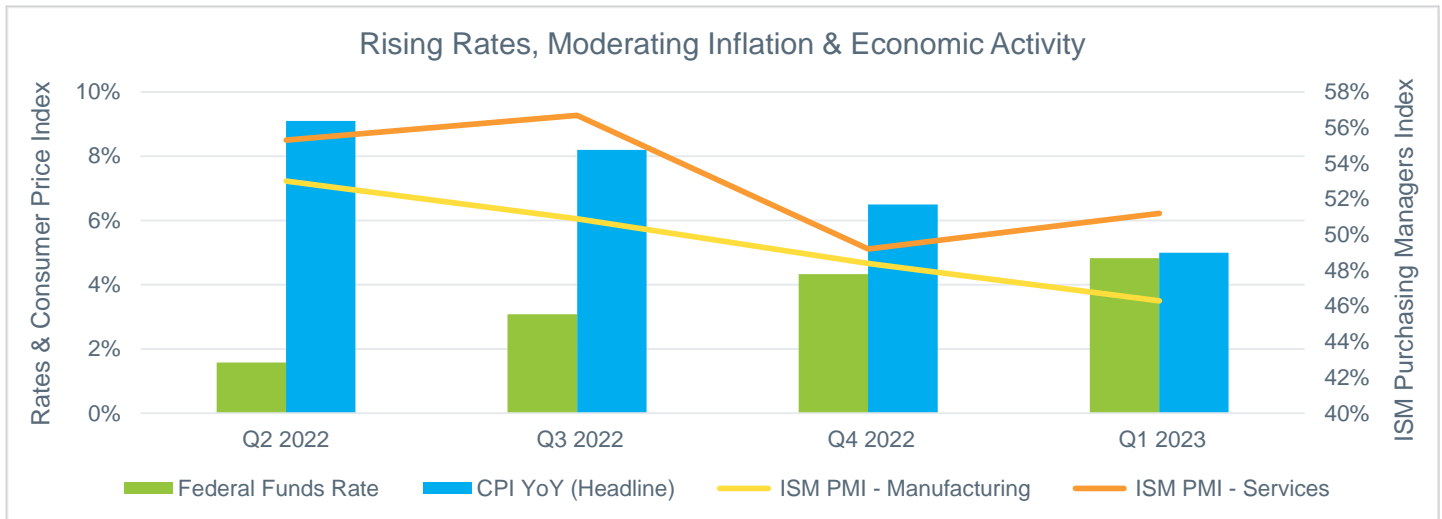
During Q1, both defensive and risk assets generally provided positive returns, following a difficult environment in 2022 characterized by geopolitical risk and rising interest rates, although capital markets continued to experience bouts of volatility. During the last month of the quarter, market price action, investor sentiment, and headlines were driven by the failure of multiple US banks, the most prominent being Silicon Valley Bank and Signature Bank—which represented the second and third largest bank failures in US history. Following the collapse of these banks, concerns around liquidity spread, causing sharp declines in market value for other US regional banks and some European banks. The Federal Reserve, US Treasury Department and Federal Deposit Insurance Corporation all intervened to assure depositors of access to their capital and calm funding markets. Among European banks, investor confidence in Credit Suisse declined most acutely, after which the firm sought liquidity from the Swiss National Bank before agreeing to an acquisition by UBS.

Despite the volatility experienced in the second half of the quarter, broad equity market indexes finished Q1 in positive territory. Improved sentiment in equity markets appeared to have been driven by moderating to declining inflation levels and a renewed focus on growth-oriented policies in China. However, the quarter saw significant dispersion among styles and market caps, with growth-oriented stocks providing positive returns. Conversely, US value, US small cap and European value indexes each depreciated sharply, given the heavier exposure to the failed banks and other banks perceived to be at-risk. Unlike in 2022, the broad bond market delivered positive returns amidst equity market volatility as market participants changed expectations on future interest rate moves from pricing in rate hikes to discounting rate pauses, or in some circumstances, cuts.

Following the bank failures, the Federal Open Market Committee (FOMC) decided to increase the federal funds rate to a target range between 4.75%-5.00%, representing a second straight monthly increase of 0.25% after a string of 0.50% to 0.75% increases. The FOMC’s actions demonstrated continued focus on combating inflation, although FOMC data indicated that most officials expect only one more rate hike in 2023. The increase to the federal funds rate was preceded by a Consumer Price Index (CPI) report finding year-over-year inflation of 6.0% in February, which met market expectations. The most recent data release indicated that Headline CPI for March came in slightly below average expectations, with estimated year-over-year inflation of 5.0%. Labor markets have provided mixed signals in recent months, as payroll growth was revised higher for

1st Quarter Performance



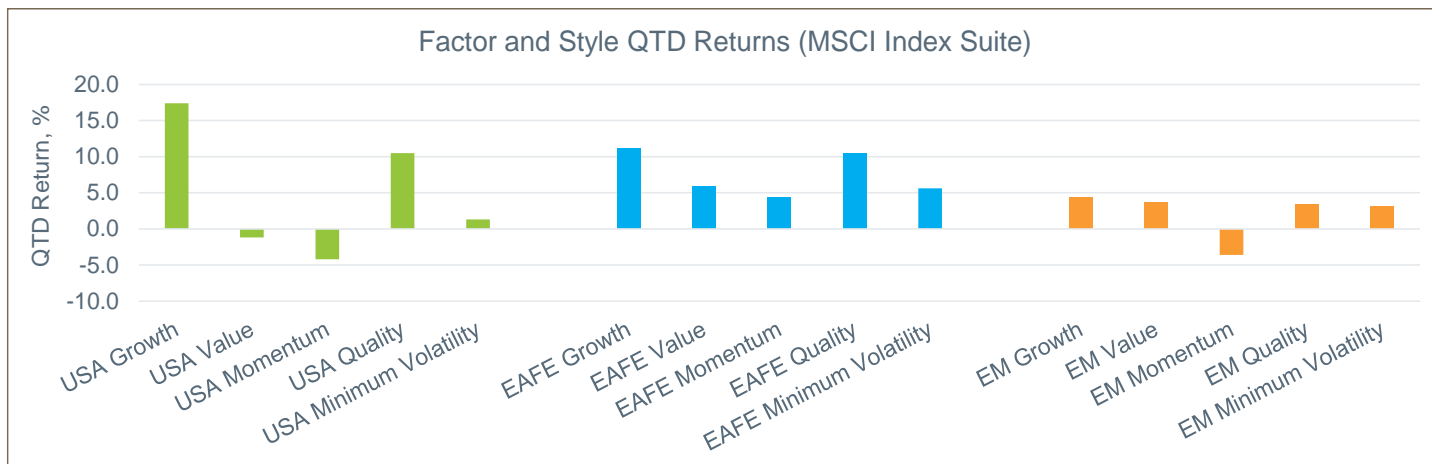


February (well above expectations), although reports for March indicated moderating levels of payroll growth. Recessionary risks remained a concern, and recent FOMC minutes indicated that members thought it was increasingly likely that the US will enter a recession later in 2023 due to the banking sector stress.

Internationally, moderate winter temperatures helped to ease energy price inflation in Europe, but uncertainty around supply shortages persisted due to the ongoing war in Ukraine. In early April, the International Monetary Fund (IMF) revised its global GDP growth forecast at the end of the quarter to 2.8%, a decline from its January 2023 forecast of 2.9%. While pockets of higher GDP growth are forecasted outside of developed markets, the growth from advanced economies was estimated at 1.3% in 2023. The IMF also outlined a scenario where banking sector stress persists, causing further tightening of global financial conditions and leading to global GDP growth of 2.5% in 2023—with developed economy growth sinking to 1.0%. Additionally, the IMF estimated that global inflation levels would moderate to 7.0% in 2023, a decline from 8.7% in 2022, while noting that target levels are unlikely to be reached until 2025.

Expanded Review of Key Economic Indicators

	Q1 2023	Q4 2022	Q3 2022	10 Year Average
Federal Funds Rate	4.83%	4.33%	3.08%	0.89%
Treasury - 1 Year	4.64%	4.73%	4.05%	1.12%
Treasury - 10 Year	3.48%	3.88%	3.83%	2.19%
Treasury - 30 Year	3.67%	3.97%	3.79%	2.77%
Breakeven Inflation - 5 Year	2.49%	2.38%	2.16%	1.88%
Breakeven Inflation - 10 Year	2.33%	2.30%	2.15%	1.97%
Breakeven Inflation - 30 Year	2.25%	2.35%	2.09%	2.03%
BB US Corp: Hi Yld Index - OAS	4.55%	4.68%	5.52%	4.28%
Capacity Utilization	79.11%	78.75%	80.06%	77.25%
Unemployment Rate	3.50%	3.50%	3.50%	5.15%
ISM PMI - Manufacturing	46.30%	48.40%	50.90%	54.36%
Baltic Dry Index - Shipping	1,560	1,383	1,760	1,355
Consumer Confidence (Conf. Board)	104.20	109.00	108.00	106.56
CPI YoY (Headline)	5.00%	6.50%	8.20%	2.59%
PPI YoY - Producer Prices	3.20%	9.00%	11.50%	2.81%
US Dollar Total Weighted Index	119.50	122.20	127.64	110.93
WTI Crude Oil per Barrel	\$80	\$80	\$79	\$65
Gold Spot per Ounce	\$2,004	\$1,824	\$1,661	\$1,446



US Equity

US equity markets performed well in Q1 overall, despite market turmoil caused by the banking sector in March and uncertainty regarding the Fed’s path for short-term interest rates. The Russell 1000 Index finished Q1 up 7.5%, while the Russell 2000 Index was up 2.7%. At the beginning of Q1, US stocks were buoyed by investor optimism after economic data indicated that inflation continued to cool, leading to expectations that the Fed’s rate hiking cycle could end soon. However, the remainder of the quarter saw significant volatility, especially after both Silicon Valley Bank and Signature Bank were taken over by regulators and deposits were backstopped by multiple federal government agencies. Concerns around weakening earnings also contributed to market volatility.

There was a strong rotation back into growth stocks across market capitalizations in Q1. The Russell 1000 Growth and Russell 2000 Growth indexes exceeded their value counterparts by 13.4% and 6.7%, respectively. Information technology and communication services were the best performing sectors while energy, healthcare, financials, and utilities were the largest contractors.

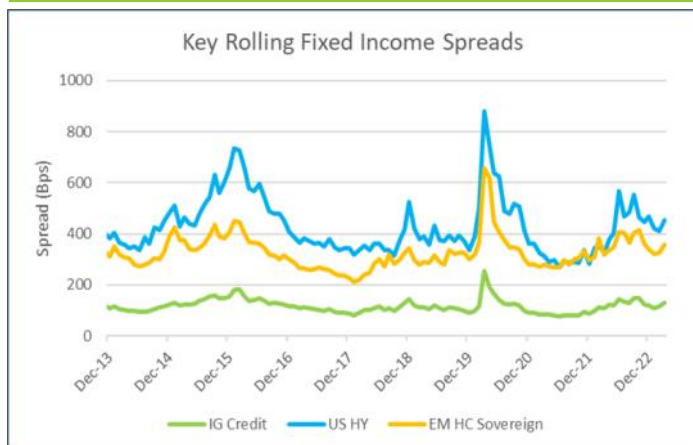
Active large- and mid-cap managers across all style groups struggled to outpace their respective benchmarks in Q1. Small-cap managers performed well, with value-oriented managers having a better success rate than core and growth managers.

Non-US Equity

Q1 represented another strong showing for developed international equity markets, with the MSCI EAFE returning 8.5%, which outperformed both US as well as emerging markets. Growth stocks outperformed value stocks during the quarter, but they still lagged when measured over the trailing three-year period. Small-cap stocks underperformed large-cap stocks. Active management was broadly additive during the quarter.

Although concerns about bank stability began in the US, they soon spread to Europe. After turmoil at Swiss bank Credit Suisse, UBS stepped in at the end of March to buy the troubled firm for \$3.25 billion, averting a major failure. The European Central Bank (ECB) is now forecasting economic growth of 1.0% due to tamer inflation, as well as improving business and consumer confidence.

As noted above, emerging markets continued to lag developed markets during Q1 with the MSCI Emerging Market Index returning 4.0%. Performance was similar across growth and value and large- and small-cap stocks. Positive sentiments for Chinese equities, which had performed well after COVID restrictions, waned; however, China still outperformed broader emerging markets. India was a significant detractor this quarter, as Hindenburg Research’s allegations of fraud and stock manipulation against companies owned by multi-billionaire Gautam Adani wiped out \$100 billion in market value.



Fixed Income

The decline in yields across Treasury notes and bonds produced a tailwind for fixed income markets, as the Bloomberg US Aggregate Bond Index experienced its best quarter in three years, returning 3.0% in Q1. However, volatility from 2022 continued into the new year as the Fed appeared to maintain its focus on fighting inflation, despite multiple bank failures and other signs of potential economic weakness. After initially declining in January, intermediate and long-term Treasury yields rose in February before falling again in March, ending the tumultuous quarter at least 0.30% lower on all Treasury maturities between 2-year and 30-year.

Corporate credit rallied to start the year amid expectations for a more dovish Fed. The optimism proved to be short-lived, however, as the banking crisis pushed spreads wider again in March. Nevertheless, corporate credit was resilient over the quarter, boosted by already higher yields and the rally in Treasuries. The Bloomberg US Credit Index returned 3.5% in Q1, lagging the Bloomberg US High Yield Index return of 3.6%.

Emerging market debt added to its recent rally, with the JPMorgan EMBI Global Diversified Index returning 1.9% in Q1, benefitting from the decline in Treasury yields. However, local currency debt far overshadowed its hard currency counterpart. Despite a resurgence in February, the US dollar weakened over the quarter vs. emerging market currencies, and the JPMorgan GBI-EM Global Diversified Index ended the quarter up 5.2%.



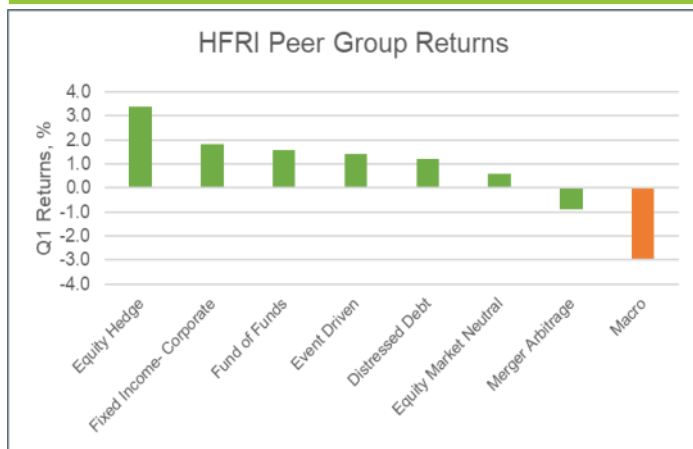
Multi-Asset

Global Tactical Asset Allocation (GTAA) strategies that RVK follows closely generally posted positive returns during Q1 with moderate dispersion. Almost all active managers with significant diversification underperformed a US-centric blend of 60% equity and 40% fixed income during the quarter, which favored larger market cap companies globally.

Multi-Asset managers with value-oriented processes and an overweight to US holdings generally underperformed during the quarter, while those featuring greater developed markets and growth equity exposure outperformed. Asset managers who target reduced correlations, low volatility, and limited market sensitivity again produced widely disparate absolute returns, with certain managers underperforming peers due to short duration positions in developed markets.

Alternative Risk Premia strategies ranged from flat to strongly positive over the quarter. The best performing managers in this peer group benefitted from factor exposures within equities and commodities.

Diversified Inflation Strategy (DIS) managers tracked closely by RVK generally underperformed a US-centric blend of 60% equity and 40% fixed income over the quarter. Managers with larger exposures to TIPS and energy commodities, lagged peers most significantly in a quarter where strong equity performance on a global basis outperformed nearly all inflation sensitive asset classes.



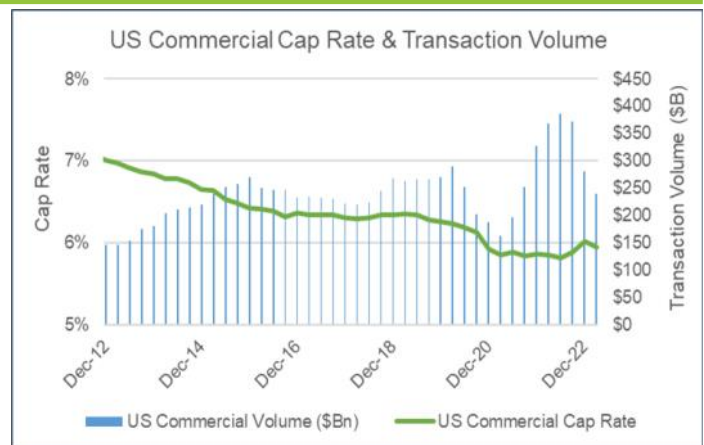
Diversified Hedge Funds

During Q1, hedge funds broadly delivered positive results across most peer groups. Led by strong conditions for long/short equity and fixed income trading, the HFRI Fund-Weighted Composite Index delivered a quarterly return of 1.3%.

Macro-oriented strategies, one of the top performing peer groups in 2022, widely struggled in Q1, driven by shifting momentum across interest rate and commodity trends that provided strong tailwinds in recent quarters. Although there were significant fluctuations throughout, overall alpha was broadly flat for the quarter, with longs performing above global indices as shorts struggled. Performance in Q1 represented a shift from patterns observed in both 2021 and 2022, where managers found themselves in significantly negative territory going into Q2.

On a sector level, alpha was driven by longs in technology, communication services, and consumer stocks. Shorts of energy and real estate securities generally fared best. Across managers that RVK follows closely, contrarian opportunities arising from industries such as software, automotive, and homebuilders were top contributors.

Across all major regions, hedge fund net exposures steadily increased throughout Q1 and are currently at levels not seen since mid-2020. The higher exposures suggest greater manager confidence in global market stability and a strong pipeline of buying opportunities.



Real Estate

Core private real estate returned -3.2% in Q1 (preliminary, gross of fees), as reported by the NFI-ODCE Index. The total return comprised of 0.8% income and -4.0% price appreciation. Income returns continue to trend at the lower end of historical levels, while price appreciation continues to trend negatively. Investors of publicly traded real estate outperformed private market, delivering a Q1 total return of 1.5%, as measured by FTSE NAREIT All REIT Index.

During Q1, private real estate markets experienced similar headwinds as the prior two quarters, as elevated volatility and wide bid-ask spreads continue to limit liquidity. Sectors with resilient fundamentals performed better, led by necessity-based retail, industrial and residential. However, all sectors were impacted by slower rent growth and upward revisions to valuation model assumptions.

The issues in the banking sector are top of mind at quarter end. Regional banks comprise 60% to 70% of commercial real estate lending, leading to concerns that continued banking instability amidst a rising rate environment could cause knock-on effects to the office sector. Tenants continue to downsize, and some borrowers are determining that it may be more economical to take a loss and “hand the keys back” to their lenders rather than put up additional capital. It is difficult to ascertain the impact of these challenges, but risks to the real estate market grow if the Fed overshoots on inflation or if a significant portion of borrowers turn away from the sector.

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To read more about the Coalition Greenwich award, please refer to the following URL: <https://www.rvkinc.com/about/about.php>.

Glossary of Acronyms

- **Capital Markets Assumptions – CMA**
- **DB: Defined Benefit**
- **DC: Defined Contribution**
- **Investment Manager Research Team – IMR**
- **Investment Program Review – IPR**
- **OCIO: Outsourced Chief Investment Officer**
- **Performance Measurement & Analytics Team – PMA**
- **Request for Proposals – RFP**
- **RVK, Inc. – RVK**