

Investment Performance Review  
Period Ending December 31, 2022

# Retirement Board of Allegheny County

---



On behalf of everyone at AndCo, we want to Thank You for the opportunity to serve you and for the trust you place in us! We take our role as your consultant and trusted advisor seriously and will continue working hard to maintain your confidence.

Looking back at the year, we would like to provide a brief update on where we stand as a firm. 2022 marked the 22nd straight year of revenue growth for the firm and we advise on approximately \$90 billion in client assets as of December 31st. We reinvested 100% of our net profits back into the organization so we can continue to evolve and adapt within a market environment that is constantly changing and challenging. As we have stated in previous updates, we do not believe the “status quo” is an effective strategy and we are convicted in our belief that a firm not focused on moving forward in our industry is moving backward.

To execute on our commitment to evolve and continue to enhance the organization, we made additional personnel and technology investments in 2022. Specifically, we hired a Chief Information Officer (Bharat Kumta) after a national search led by a specialized executive recruiting firm. We believe technology is going to drive successful firms in our industry and we plan to invest heavily within this business function to support digital transformation. We also integrated a new Chief Human Resources Officer (Stacie Runion) through a national search led by an executive recruiter. We believe our firm's most important asset is our people, so we need to ensure we have the right leadership team in HR to focus on that asset. We also hired team members in Finance, Human Resources, Consulting, Research, Solutions & Growth, Technology and Performance & Reporting. These personnel investments focused on further enhancing functional areas, departmental service levels, and narrowing potential gaps. We also continued to invest in our proprietary software system to compile and share information firmwide to better serve our clients more effectively and efficiently. Finally, we engaged several outside consulting firms to help us better assess and invest in areas within our firm we believe will drive value for our clients going forward. Some examples include working with an outside group to evaluate and enhance our Operational Due Diligence efforts with investment managers and a separate group to help us review and analyze our current Discretionary Services offerings and how to make this service stronger for our clients.

As we start 2023, we are 93 team members strong with plans to grow. We are targeting several new positions for the year as we thoughtfully continue to invest in our firm to provide the quality services you expect from AndCo. These talent enhancements cover multiple functions and departments at AndCo including Consulting, Research, Performance & Reporting, Marketing, Technology and Compliance. While adding additional resources to a firm our size is a significant investment, it is one we embrace due to the impact we believe it will have on our ability to continue serving our clients at a high level and will push us closer to our vision of being a transformational organization viewed as the leader in our industry. We thoughtfully grow while helping to ensure that service will not suffer at AndCo at the expense of growth. Rather, we utilize growth to enhance our value proposition and overall service to our valued clients.

At the beginning of each year, we also discuss the AndCo partnership and, when earned, announce new partners.

This year I am thrilled to share three new team members were named partners at AndCo – Jon Breth, Tyler Grumbles and Brooke Wilson. Jon has been with AndCo for 11-years and Tyler has been with AndCo for 15-years. Jon and Tyler are both members of our Consulting Department. Brooke was recently promoted to Executive Director of our Performance & Reporting Department and has been with AndCo 7-years. We could not be happier for Jon, Tyler, and Brooke or more grateful for the contributions they have made to AndCo since joining the firm. Jon, Tyler, and Brooke represent what it means to be an AndCo team member, and we are honored and fortunate to have them as partners at our firm.

While three new members will be added to the partnership in 2023, we will also be losing one valuable team member. Donna Sullivan retired on December 31, 2022. Donna joined AndCo at its inception in September of 2000. Donna has been integral in the success of the firm and for many years was the glue that held everything together. Her contributions and sacrifices are too many to reference in this letter. While we are extraordinarily excited for her and the next chapter of her life, she will be greatly missed as a partner and team member. We will be honoring Donna and her legacy with the Donna Sullivan Believe Award. This award will be given each year to the team member at AndCo that best demonstrates their belief in AndCo's Mission, Vision, and Values. Donna believed in what AndCo stood for before anyone else did, and she carried that belief for 23 years. Thank you, Donna!

With the addition of Jon, Tyler, and Brooke, and Donna's retirement, we now have 15 partners representing various functions and departments at AndCo. Our growing partnership group provides great perspective and insight which continues to strengthen AndCo and reaffirm our belief that 100% employee management is vital to the long-term success of our organization. We have great team members at AndCo and this partnership group will continue to expand as we move forward.

In closing, we know that 2022 was a dramatically different environment for investing as compared to 2021, with record high inflation and double-digit losses in both equity AND fixed income assets - all resulting in challenging client portfolio results. Please know our team works tirelessly to provide the advice and guidance you need regardless of the market environment. Our name, AndCo, reminds us of who we work for every day - “Our Client” & Co. You are first in our service model. As we continue to discuss strategic decisions and reinvestments regarding our firm, please know that our decisions are filtered through the following question: “How does this keep our clients' interests first?” If it doesn't meet this standard, we don't do it - it's that simple.

Thank you again for your valued partnership and the opportunity to serve you.  
Happy New Year!



Mike Welker, CFA®  
CEO



# Organizational Chart



## PARTNERSHIP

**Mike Welker, CFA®**  
**Brian Green**  
**Brooke Wilson, CIPM®**  
**Bryan Bakardjiev, CFA®**  
**Dan Johnson**  
**Dan Osika, CFA®**  
**Evan Scussel, CFA®, CAIA®**  
**Jacob Peacock, CPFA**

**Jason Purdy**  
**Jon Breth, CFP®**  
**Kerry Richardville, CFA®**  
**Kim Spurlin, CPA**  
**Steve Gordon**  
**Troy Brown, CFA®**  
**Tyler Grumbles, CFA®, CIPM®, CAIA®**

## LEADERSHIP & MANAGEMENT

**Mike Welker, CFA®**  
 CEO

**Bharat Kumta**  
 CIO

**Bryan Bakardjiev, CFA®**  
 COO

**Evan Scussel, CFA®, CAIA®**  
 Executive Director of Research

**Kim Spurlin, CPA**  
 CFO

**Sara Searle**  
 CCO

**Stacie Runion**  
 CHRO

**Steve Gordon**  
 Solutions & Growth Director

**Troy Brown, CFA®**  
 Executive Director of Consulting

**Brooke Wilson, CIPM®**  
 Executive Director of Performance Reporting

**Dan Johnson**  
 Consulting Director

**Jack Evatt**  
 Consulting Director

**Jacob Peacock, CPFA**  
 Consulting Director

**Jason Purdy**  
 I.T. Director

**Molly Halcom**  
 Solutions & Growth Director

**Philip Schmitt**  
 Research Director

**Rachel Brignoni, MHR**  
 People & Culture Director

## INVESTMENT POLICY COMMITTEE

**Bryan Bakardjiev, CFA®**  
**Mike Welker, CFA®**

**Sara Searle**  
**Troy Brown, CFA®**

## CONSULTING

**Annette Bidart**  
**Brad Hess, CFA®, CPFA**  
**Brendon Vavrica, CFP®**  
**Brian Green**  
**Chris Kuhn, CFA®, CAIA®**  
**Christiaan Brokaw, CFA®**  
**Dave West, CFA®**  
**Doug Anderson, CPFA**  
**Frank Burnette**  
**Gwelda Swilley**  
**Ian Jones**

**James Ross**  
**Jeff Kuchta, CFA®, CPFA**  
**Jennifer Brozstek**  
**Jennifer Gainfort, CFA®, CPFA**  
**John Mellinger**  
**John Thinnis, CFA®, CAIA®, CPFA**  
**Jon Breth, CFP®**  
**Jorge Friguls, CPFA**  
**Justin Lauver, Esq.**  
**Kerry Richardville, CFA®**

**Mary Nye**  
**Michael Fleiner**  
**Michael Holycross**  
**Mike Bostler**  
**Oleg Sydyak, CFA®, FSA, EA**  
**Paul Murray, CPFA**  
**Peter Brown**  
**Tim Walters**  
**Tony Kay**  
**Tyler Grumbles, CFA®, CIPM®, CAIA®**

## PERFORMANCE REPORTING

**Albert Sauerland**  
**Amy Steele**  
**Bob Bulas**  
**David Gough, CPFA**  
**Don Delaney**  
**Donnell Lehrer, CPFA**

**Edward Cha**  
**Grace Niebrzydowski**  
**James Culpepper**  
**James Reno**  
**Jeff Pruniski**  
**Joe Carter, CPFA**

**Julio Garcia Rengifo**  
**Kim Hummel**  
**Rotchild Dorson**  
**Yoon Lee-Choi**

## OPERATIONS

**FINANCE**  
**Kahjeelia Pope**  
**Michelle Boff**  
**Robert Marquetti**

**HUMAN RESOURCES**  
**Kelly Pearce**  
**Shelley Berthold**

**I.T. & OPERATIONS**  
**Geoffrey Granger**  
**Jerry Camel**  
**Kenneth Day**

**COMPLIANCE**  
**Allen Caldwell**  
**Thay Arroyo**

**MARKETING**  
**Lauren Kaufmann**

**SOLUTIONS & GROWTH**  
**Dan Osika, CFA®**  
**John Rodak, CIPM®**  
**Paola Gervasi**

## RESEARCH

**Andrew Mulhall**  
 Public Equity & Fixed Income

**Ben Baldrige, CFA®, CAIA®**  
 Private & Hedged Fixed Income

**Chester Wyche**  
 Real Estate & Real Assets

**Dan Lomelino, CFA®**  
 Fixed Income

**David Julier**  
 Real Estate & Real Assets

**Elizabeth Wolfe**  
 Capital Markets & Asset Allocation

**Evan Scussel, CFA®, CAIA®**  
 Private & Public Equity

**Joseph Ivaszuk**  
 Operational Due Diligence

**Josue Christiansen, CFA®, CIPM®**  
 Public Equity

**Julie Baker, CFA®, CAIA®**  
 Private & Hedged Equity

**Justin Ellsesser, CFA®, CAIA®**  
 Private Equity

**Kevin Laake, CFA®, CAIA®**  
 Private Equity

**Michael Kosoff**  
 Hedge Funds

**Philip Schmitt**  
 Fixed Income & Capital Markets

**Ryan McCuskey**  
 Real Estate & Real Assets

**Xinxin Liu, CFA®, FRM**  
 Private Equity and Private Debt

**Zac Chichinski, CFA®, CIPM®**  
 Public Equity



93  
EMPLOYEES

37 ADVANCED  
DEGREES

23 CFA®

8 CAIA®

11 CPFA 5 CIPM®

Employee counts are as of 1/1/2023 and reflect only full time employees and do not include any who are part time, temporary or independent contractors.



## 4th Quarter 2022 Market Environment



## The Economy

- US GDP growth is expected to remain strong in the 4th quarter. While the final measure of 3rd quarter GDP was revised upward to 3.2%, global GDP growth remains challenged with higher energy prices continuing to act as a headwind, especially in Europe. However, China is beginning the process of reopening its economy which should boost emerging markets.
- The US Federal Reserve Bank (the Fed) continued to increase interest rates during the quarter with a 0.75% increase in November and a 0.50% increase in December. Importantly, the Fed signaled it remains committed to fighting inflation through additional rate hikes if needed.
- The US labor market continued to show its resiliency by adding roughly 680 thousand jobs during the 4th quarter. As a result, the unemployment rate fell to 3.5% in December. Despite these gains, the number of announced layoffs during the quarter increased, which could impact labor markets in the future periods.
- Global markets were broadly positive during the 4th quarter. Despite persistent inflation, tighter central bank monetary policy, slowing GDP growth, and continuing geopolitical risks investors were focused on the potential of central banks slowing the pace of tightening as inflation moderated.

## Equity (Domestic and International)

- US equities moved higher during the 4th quarter despite concerns regarding inflation, the potential for higher interest rates, and a slowing global GDP growth. Large cap value was the best performing domestic segment of the equity market relative to other US market capitalizations and styles during the period while large cap growth performed the worst.
- International stocks also experienced strong returns during the 4th quarter. While local currency performance was solid, the primary catalyst for outsized returns was a weakening USD, which fell against most major and emerging market currencies. GDP growth, especially in Europe, remained under pressure as central bank policies remained restrictive and elevated energy prices acted as a headwind. Finally, China began to relax its zero-tolerance policy regarding Covid-19, which positively contributed to both global GDP growth and equity market performance.

## Fixed Income

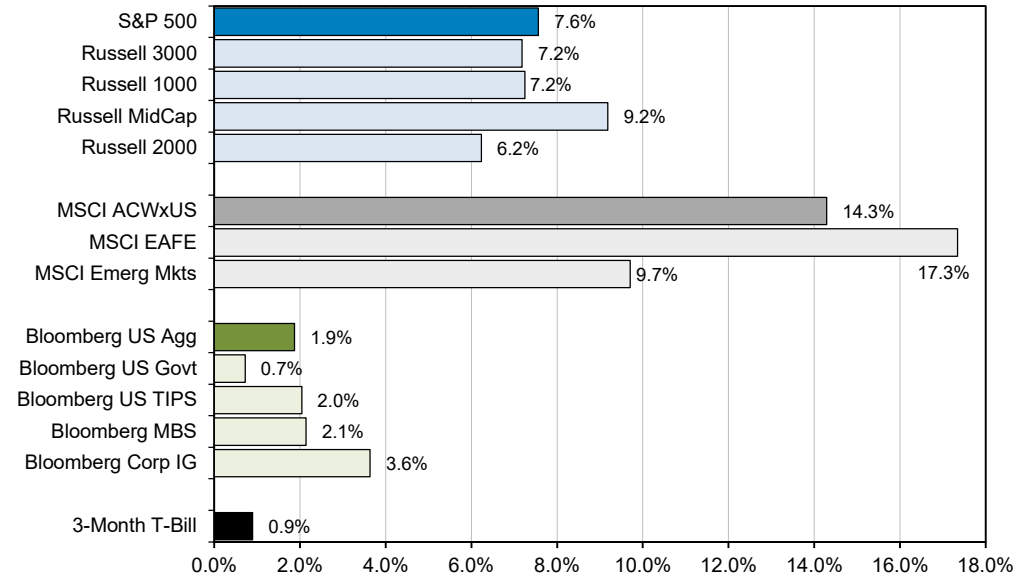
- While inflation declined during the 4th quarter, the Fed continued increasing interest rates with two increases totaling 1.25%. Despite the short-term increases, long-term interest rates remained relatively stable during the period. US interest rates moved slightly higher during the quarter with the US 10-Year Treasury bond rising 0.08% to close the year at a yield of 3.88%.
- Performance across domestic bond market sectors was positive during the quarter, led by US high yield and corporate investment grade bonds. Much like equities, global bonds outperformed their domestic peers mainly due to a weaker USD.
- The combination of higher coupons, a shorter maturity profile relative to high quality government bonds, and narrower credit spreads were the primary drivers of relative return during the period.
- US Treasury bonds lagged their corporate bond peers during the quarter as investors' concerns about rising interest rates and the need for safety subsided.

## Market Themes

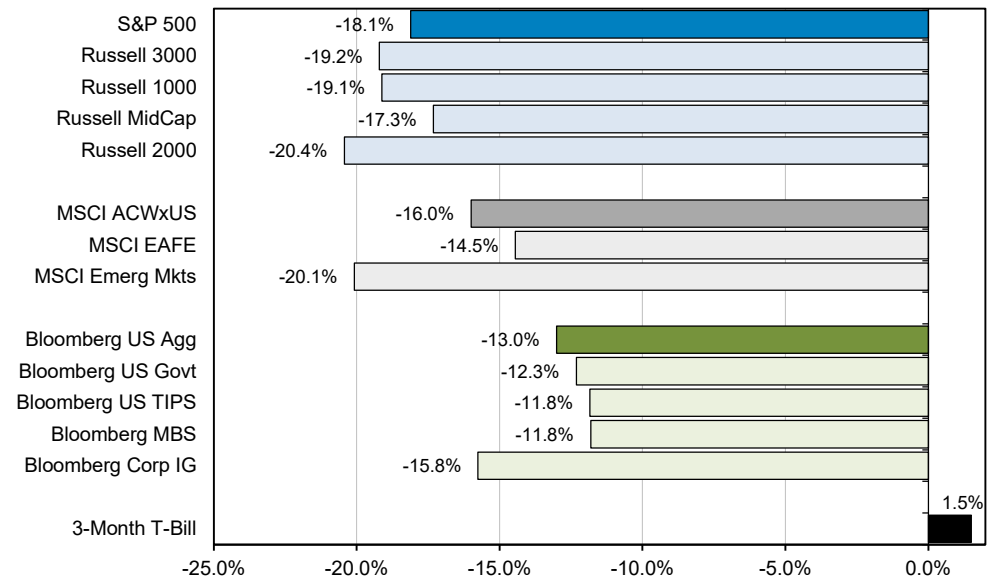
- Central banks remained vigilant in their fight against inflation with the Fed, the Bank of England, and the European Central Bank all raising interest rates during the quarter. Additionally, the Bank of Japan relaxed their targeting of interest rates, allowing the 10-Year Japanese Government Bond to float to 0.50%, above the previous 0.25% level.
- The conflict in Ukraine continues to disrupt global energy markets, in addition to the ongoing humanitarian crisis. Energy costs remain elevated which could further negatively impact economic growth.
- Both US and international equity markets rebounded during the quarter on expectations that inflation would continue to moderate, which could lead central banks to begin the process of slowing the pace of monetary tightening. Value-oriented stocks outperformed growth stocks as investors remained concerned about the pace of future growth.
- Short-term interest rates rose across most developed markets as central banks continued to tighten. Despite concerns about the potential for slowing economic growth, lower quality corporate bonds outperformed higher quality government bonds and USD weakness acted as a tailwind for global bonds during the quarter.

- Equity markets moved higher during the 4th quarter, but it was not sufficient to offset prior quarter pullbacks. Factors that contributed to performance included declining inflation, expectations that the Fed would slow the pace of future interest rate increases, and expectations that China would begin to open its economy. For the period, the S&P 500 large cap benchmark returned 7.6%, compared to 9.2% for mid-cap and 6.2% for small cap benchmarks.
- Like domestic equities, developed markets international and emerging market equities delivered positive results for the 4th quarter. Europe continues to face headwinds from higher-than-expected inflation, elevated energy prices, geopolitical risks related to the conflict in Ukraine, and rising interest rates. Emerging markets were positively impacted by China's decision to loosen restrictions related to the pandemic. Importantly, global equities were positively impacted by a decline in the USD. For the quarter, the MSCI EAFE Index returned 17.3% while the MSCI Emerging Markets Index rose by 9.7%.
- For the quarter, performance of the bond market was broadly positive due to lower inflation and lower interest rate volatility. The Bloomberg (BB) US Aggregate Index returned 1.9%, for the period while investment grade corporate bonds posted a return of 3.6%.
- Performance for developed equity markets was strongly negative over the trailing 1-year period. The bellwether S&P 500 Index dropped -18.1% for the year. The primary drivers of return during the period were concerns related to rising inflation, tighter monetary policy from global central banks, and slowing global economic growth. The weakest relative performance outlier was the Russell 2000 Index which declined by -20.4% for the year.
- Over the trailing 1-year period, international markets declined similarly to domestic markets. The MSCI EAFE Index returned -14.5% while the MSCI Emerging Markets Index fell by -20.1%. Continued concerns related to Ukraine, elevated inflation, and slowing global economic growth negatively impacted markets. However, a weakening USD acted as a tailwind to international performance in the second half of the year.
- Bond market returns were widely negative over the trailing 1-year period due primarily to concerns about persistently high inflation and the expectation of higher future interest rates. US TIPS and mortgage-backed bonds were the least negative sectors with both returning -11.6% for the year. Investment grade corporate bonds suffered the year's largest loss, falling -15.8%.

### Quarter Performance



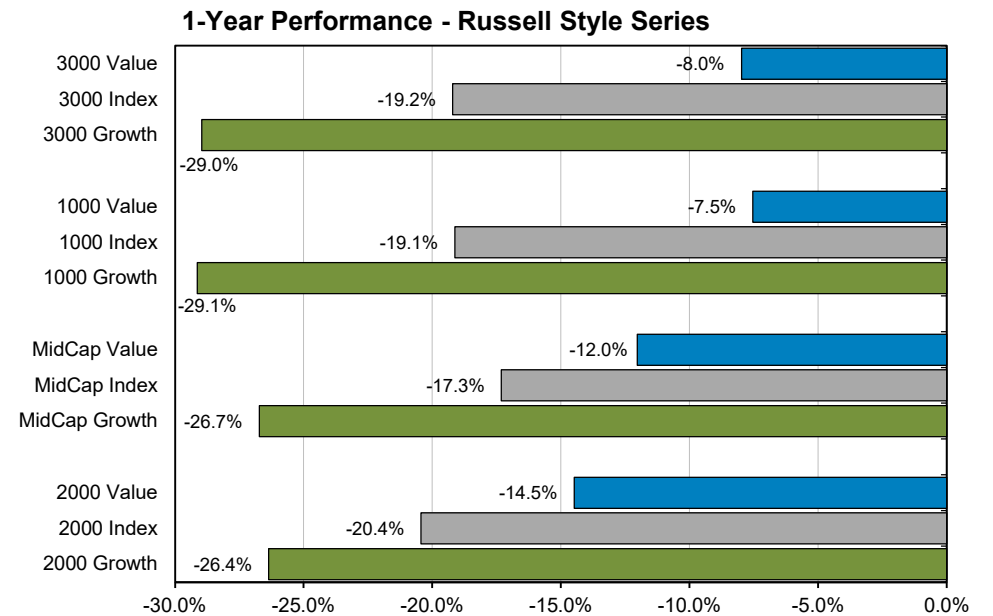
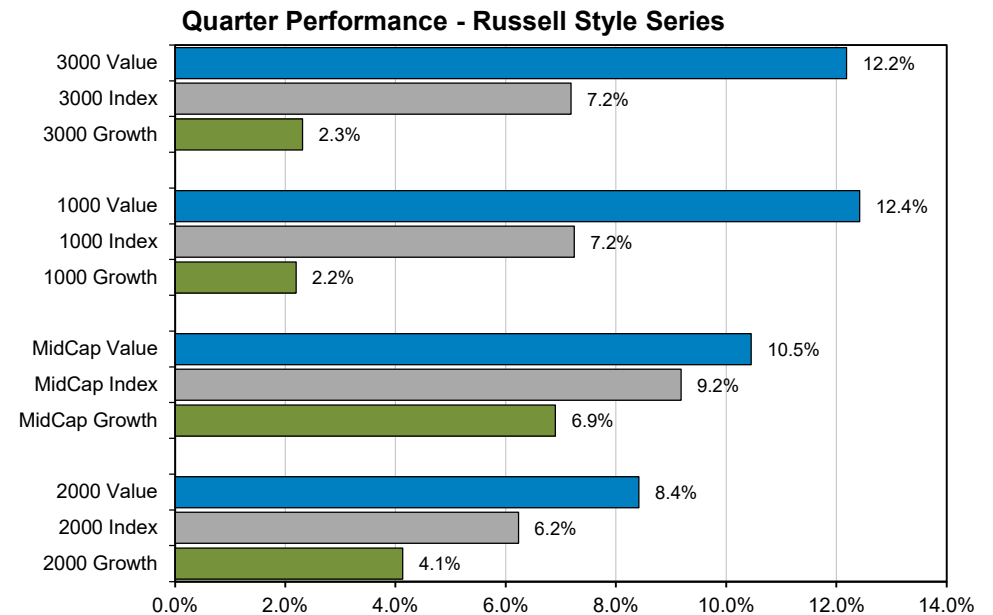
### 1-Year Performance



Source: Investment Metrics



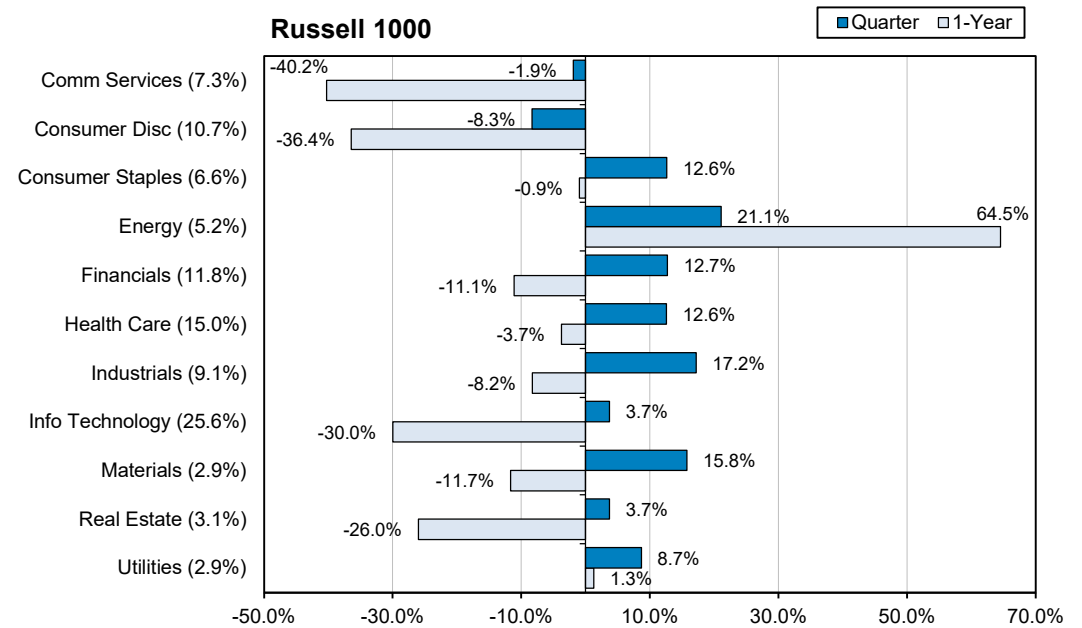
- Despite a pullback in December, equity markets broadly experienced strong absolute returns during the 4th quarter across both the style and market capitalization spectrums. With concerns about the potential for slowing economic conditions, large cap stocks resumed their leadership, followed by mid and small cap stocks. The Russell 1000 Value Index delivered 12.4% for the quarter, followed by while the Russell Mid Cap Value Index and the Russell 2000 Index, which rose by 10.5% and 8.4%, respectively.
- Performance across styles and market capitalizations was disparate during the quarter. Large, mid, and small cap value stocks all outperformed their growth counterparts. For the period, the Russell 1000 Value Index was the best relative performing style index, posting a return of 12.4%. Large and small cap growth stocks were the laggards during the period with the Russell Large Cap Growth Index and Russell 2000 Growth Index returning 2.2% and 4.1%, respectively.
- In contrast to the 4th quarter's positive performance, there was a wide range of negative results across market capitalizations over the trailing 1-year period. The Russell 2000 Index returned a disappointing -20.4% for the year, which underperformed both its large and mid cap index counterparts.
- There was also a wide performance dispersion across the style-based indexes for the year with growth stocks down significantly more than their value counterparts at all capitalization ranges. Within large cap stocks, the Russell 1000 Value Index returned -7.5% compared to much larger -29.1% decline for the Russell Large Cap Growth benchmark. The Russell Mid Cap Value Index returned -12.0% while the Russell 2000 Value Index returned -14.5% for the period. While these value benchmark results represented double-digit losses for the year, the Russell Mid Cap Growth Index fell a much larger -26.7% and the Russell 2000 Growth Index declined by a similar -26.4%.



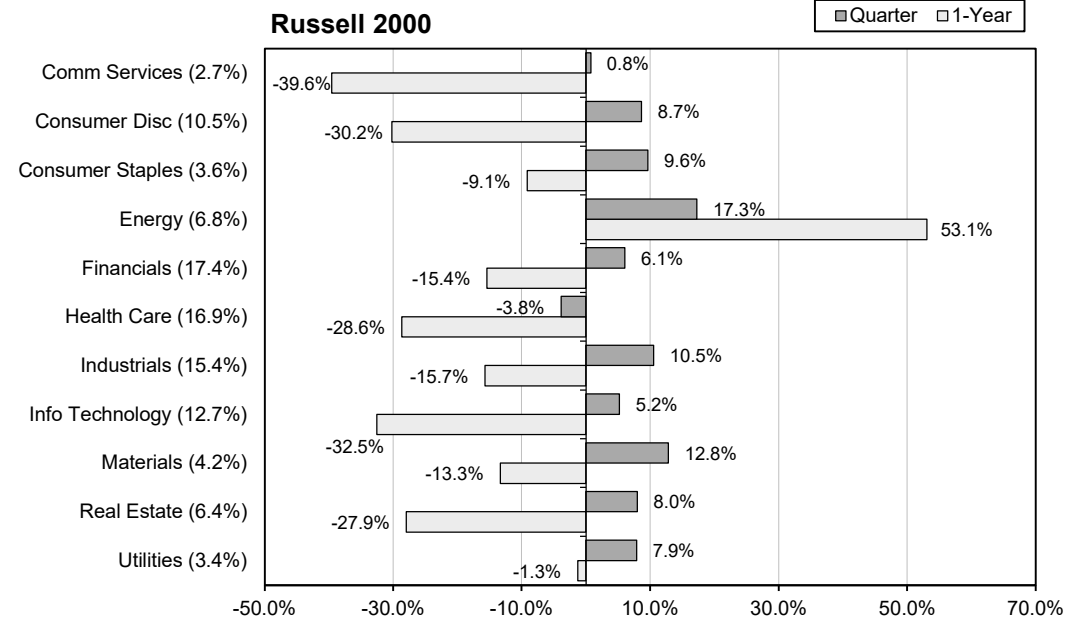
Source: Investment Metrics



- Economic sector performance was positive for nine of the eleven large cap economic sectors for the 4th quarter. Seven sectors outpaced the return of the broad index on a relative basis during the period.
- Energy continued its strong 2022 performance with a 4th quarter return of 21.1%. Other sectors that outpaced the headline index's return for the quarter included industrials (17.2%), materials (15.8%), financials (12.7%), healthcare (12.6%), consumer staples (12.6%), and utilities (8.7%). The real estate (3.7%), information technology (3.7%), communication services (-1.9%), and consumer discretionary (-8.3%) sectors all trailed the Russell 1000 Index return for the period.
- For the full year, seven economic sectors exceeded the return of the broad large cap benchmark but only the energy (64.5%) and utilities (1.3%) sectors managed to post positive, albeit vastly different, results. The weakest economic sector performance in the Russell 1000 for the year was communication services which declined by a staggering -40.2%.



- Ten small cap economic sectors posted positive returns during the quarter and seven exceeded the 6.2% return of the broader Russell 2000 Index. The energy (17.3%), materials (12.8%), and industrials (10.5%) sectors each posted double-digit positive results for the quarter. The only small cap economic sector that posted negative performance for the quarter was health care which fell by -3.8%.
- For the trailing 1-year period, six of the eleven economic sectors were down less than the broad small cap benchmark's return of -20.4%. Energy was the best performing and only positive economic sector for the year with a strong return of 53.1%. The utilities (-1.3%) and consumer staples (-9.1%) sectors were only small cap index segments to fall less than double-digit amounts for the year. The worst performing sector for the full year was communication services with a return of -39.6%. In addition, the information technology (-32.5%), consumer discretionary (-30.2%), health care (28.6%), and real estate (-27.9%) sectors all were down significantly for the year.



Source: Morningstar Direct





**The Market Environment**  
**Top 10 Index Weights & Quarterly Performance for the Russell 1000 & 2000**  
As of December 31, 2022

Top 10 Weighted Stocks				
Russell 1000	Weight	1-Qtr Return	1-Year Return	Sector
Apple Inc	5.5%	-5.8%	-26.4%	Information Technology
Microsoft Corp	5.1%	3.3%	-28.0%	Information Technology
Amazon.com Inc	2.1%	-25.7%	-49.6%	Consumer Discretionary
Berkshire Hathaway Inc Class B	1.6%	15.7%	3.3%	Financials
Alphabet Inc Class A	1.5%	-7.8%	-39.1%	Communication Services
UnitedHealth Group Inc	1.4%	5.3%	7.0%	Health Care
Alphabet Inc Class C	1.3%	-7.7%	-38.7%	Communication Services
Johnson & Johnson	1.3%	8.8%	6.0%	Health Care
Exxon Mobil Corp	1.3%	27.4%	87.4%	Energy
JPMorgan Chase & Co	1.1%	29.5%	-12.6%	Financials

Top 10 Performing Stocks (by Quarter)				
Russell 1000	Weight	1-Qtr Return	1-Year Return	Sector
Horizon Therapeutics PLC	0.1%	83.9%	5.6%	Health Care
Burlington Stores Inc	0.0%	81.2%	-30.4%	Consumer Discretionary
Halliburton Co	0.1%	60.4%	74.5%	Energy
Universal Health Services Inc Class B	0.0%	60.0%	9.4%	Health Care
PVH Corp	0.0%	57.7%	-33.7%	Consumer Discretionary
Spectrum Brands Holdings Inc	0.0%	57.4%	-38.6%	Consumer Staples
Boeing Co	0.3%	57.3%	-5.4%	Industrials
Under Armour Inc A	0.0%	52.8%	-52.1%	Consumer Discretionary
Exact Sciences Corp	0.0%	52.4%	-36.4%	Health Care
Moderna Inc	0.2%	51.9%	-29.3%	Health Care

Bottom 10 Performing Stocks (by Quarter)				
Russell 1000	Weight	1-Qtr Return	1-Year Return	Sector
Carvana Co Class A	0.0%	-76.7%	-98.0%	Consumer Discretionary
Opendoor Technologies Inc Class A	0.0%	-62.7%	-92.1%	Real Estate
Tesla Inc	0.9%	-53.6%	-65.0%	Consumer Discretionary
Lucid Group Inc Shs	0.0%	-51.1%	-82.1%	Consumer Discretionary
Guardant Health Inc	0.0%	-49.5%	-72.8%	Health Care
Affirm Holdings Inc - Class A	0.0%	-48.5%	-90.4%	Information Technology
WeWork Inc	0.0%	-46.0%	-83.4%	Real Estate
AppLovin Corp - Class A	0.0%	-46.0%	-88.8%	Information Technology
Ginkgo Bioworks Holdings Inc	0.0%	-45.8%	-79.7%	Materials
Olaplex Holdings Inc	0.0%	-45.5%	-82.1%	Consumer Staples

Top 10 Weighted Stocks				
Russell 2000	Weight	1-Qtr Return	1-Year Return	Sector
Halozyme Therapeutics Inc	0.3%	43.9%	41.5%	Health Care
ShockWave Medical Inc	0.3%	-26.1%	15.3%	Health Care
Inspire Medical Systems Inc	0.3%	42.0%	9.5%	Health Care
EMCOR Group Inc	0.3%	28.4%	16.8%	Industrials
Crocs Inc	0.3%	57.9%	-15.4%	Consumer Discretionary
Matador Resources Co	0.3%	17.2%	55.9%	Energy
Iridium Communications Inc	0.3%	15.8%	24.5%	Communication Services
Murphy Oil Corp	0.3%	22.9%	68.3%	Energy
Agree Realty Corp	0.3%	6.0%	3.5%	Real Estate
Texas Roadhouse Inc	0.3%	4.7%	4.1%	Consumer Discretionary

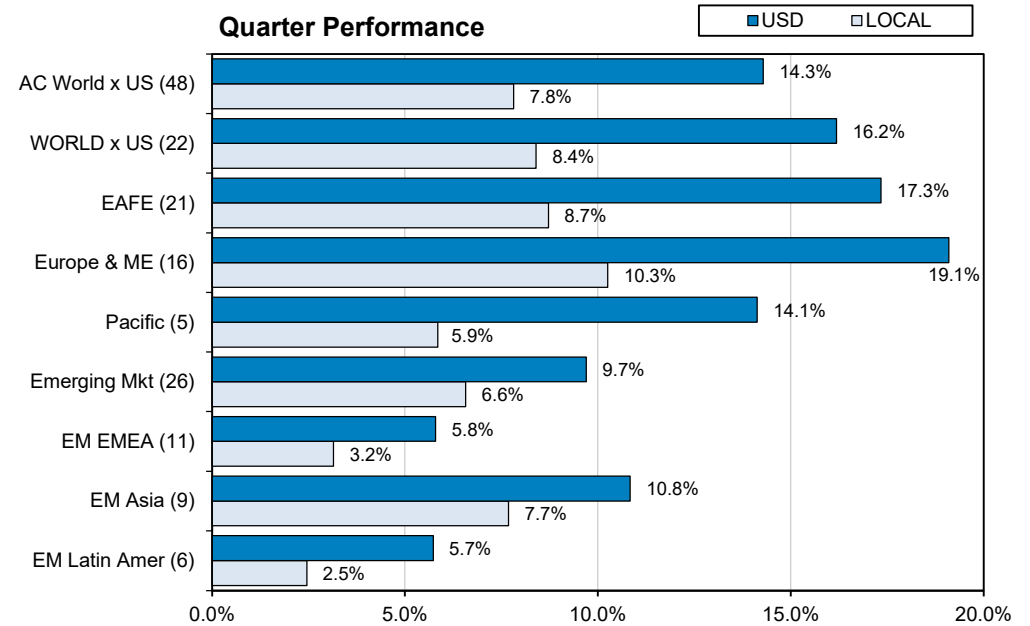
Top 10 Performing Stocks (by Quarter)				
Russell 2000	Weight	1-Qtr Return	1-Year Return	Sector
Madrigal Pharmaceuticals Inc	0.2%	346.6%	242.5%	Health Care
Immunovant Inc	0.0%	218.1%	108.3%	Health Care
Rayonier Advanced Materials Inc	0.0%	204.8%	68.1%	Materials
Maxar Technologies Inc	0.2%	176.5%	75.5%	Industrials
4D Molecular Therapeutics Inc	0.0%	176.2%	1.2%	Health Care
Icosavax Inc	0.0%	151.3%	-65.3%	Health Care
Imago BioSciences Inc	0.0%	138.9%	51.6%	Health Care
Provention Bio Inc	0.0%	134.9%	88.1%	Health Care
Biohaven Ltd	0.0%	120.3%	N/A	Health Care
Oceaneering International Inc	0.1%	119.7%	54.6%	Energy

Bottom 10 Performing Stocks (by Quarter)				
Russell 2000	Weight	1-Qtr Return	1-Year Return	Sector
Tricida Inc	0.0%	-98.5%	-98.4%	Health Care
Relmada Therapeutics Inc	0.0%	-90.6%	-84.5%	Health Care
Avaya Holdings Corp	0.0%	-87.7%	-99.0%	Information Technology
Instil Bio Inc	0.0%	-87.0%	-96.3%	Health Care
Greenidge Generation Holdings Inc.	0.0%	-85.5%	-98.2%	Information Technology
Eiger BioPharmaceuticals Inc	0.0%	-84.3%	-77.3%	Health Care
Cano Health Inc - Class A	0.0%	-84.2%	-84.6%	Health Care
Gossamer Bio Inc	0.0%	-81.9%	-80.8%	Health Care
Rockley Photonics Holdings Ltd	0.0%	-80.3%	-96.8%	Information Technology
Boxed Inc	0.0%	-78.9%	-98.6%	Consumer Discretionary

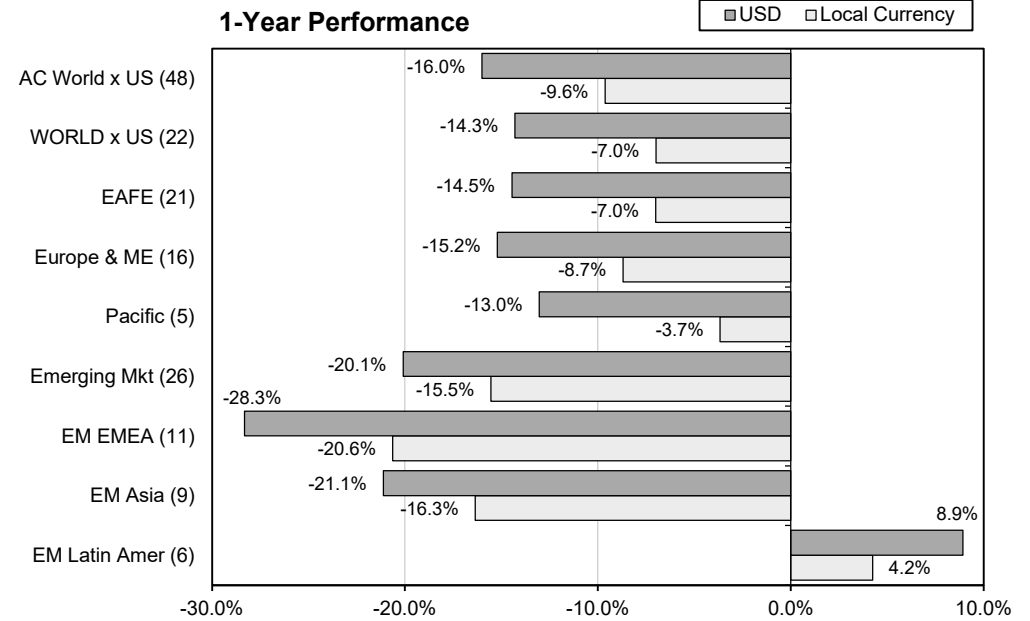
Source: Morningstar Direct



- Each of the developed and emerging market international equity indexes tracked in the chart posted positive returns in both US dollar (USD) and local currency (LC) terms for the 4th quarter. A weaker USD acted as a tailwind for non-US index performance during the quarter. Higher energy prices and the reopening of China also drove performance, especially in emerging markets. The developed market MSCI EAFE Index returned a strong 17.3% in USD and 8.7% in LC terms for the period, and the MSCI Emerging Markets Index rose by 9.7% in USD and 6.6% in LC terms.



- The trailing 1-year results for international developed and emerging markets were negative across most regions and currencies. The MSCI EAFE Index returned -14.5% in USD for the year and -7.0% in LC terms. Similarly, returns across emerging markets were broadly lower except for Latin America which returned 8.9% in USD and 4.2% in LC terms. The MSCI Emerging Markets Index declined by -20.1% in USD and -15.5% in LC terms for the year. Performance in the EMEA regional benchmark significantly detracted from emerging market index performance with the EMEA Index posting returns of -28.3% in USD and -20.6% in LC terms.



Source: MSCI Global Index Monitor (Returns are Net)



**The Market Environment**  
**US Dollar International Index Attribution & Country Detail**  
As of December 31, 2022

MSCI - EAFE	Sector Weight	Quarter Return	1-Year Return
Communication Services	7.8%	10.1%	-16.8%
Consumer Discretionary	5.0%	17.8%	-22.4%
Consumer Staples	18.7%	10.6%	-13.0%
Energy	4.5%	19.8%	27.7%
Financials	15.1%	23.9%	-4.6%
Health Care	13.6%	14.2%	-11.0%
Industrials	10.5%	19.0%	-20.6%
Information Technology	7.8%	14.9%	-32.4%
Materials	11.1%	20.7%	-10.3%
Real Estate	3.5%	11.0%	-20.9%
Utilities	2.6%	19.4%	-12.4%
<b>Total</b>	<b>100.0%</b>	<b>17.3%</b>	<b>-14.5%</b>

MSCI - ACWixUS	Sector Weight	Quarter Return	1-Year Return
Communication Services	8.4%	12.0%	-21.6%
Consumer Discretionary	6.0%	14.7%	-21.7%
Consumer Staples	21.0%	9.8%	-11.9%
Energy	5.9%	13.3%	8.1%
Financials	12.3%	15.6%	-7.3%
Health Care	9.8%	14.1%	-12.9%
Industrials	8.9%	17.3%	-18.4%
Information Technology	10.8%	13.5%	-34.5%
Materials	11.4%	16.6%	-11.2%
Real Estate	3.4%	10.4%	-20.6%
Utilities	2.3%	13.0%	-11.1%
<b>Total</b>	<b>100.0%</b>	<b>14.3%</b>	<b>-16.0%</b>

MSCI - Emerging Mkt	Sector Weight	Quarter Return	1-Year Return
Communication Services	8.9%	58.8%	1.8%
Consumer Discretionary	4.9%	46.2%	5.6%
Consumer Staples	22.1%	77.4%	48.9%
Energy	9.9%	92.9%	40.2%
Financials	6.1%	44.6%	24.5%
Health Care	4.1%	53.5%	3.8%
Industrials	6.4%	49.7%	18.8%
Information Technology	18.6%	9.8%	-34.7%
Materials	14.1%	45.6%	10.6%
Real Estate	3.0%	13.8%	-15.4%
Utilities	1.9%	38.8%	26.8%
<b>Total</b>	<b>100.0%</b>	<b>9.7%</b>	<b>-20.1%</b>

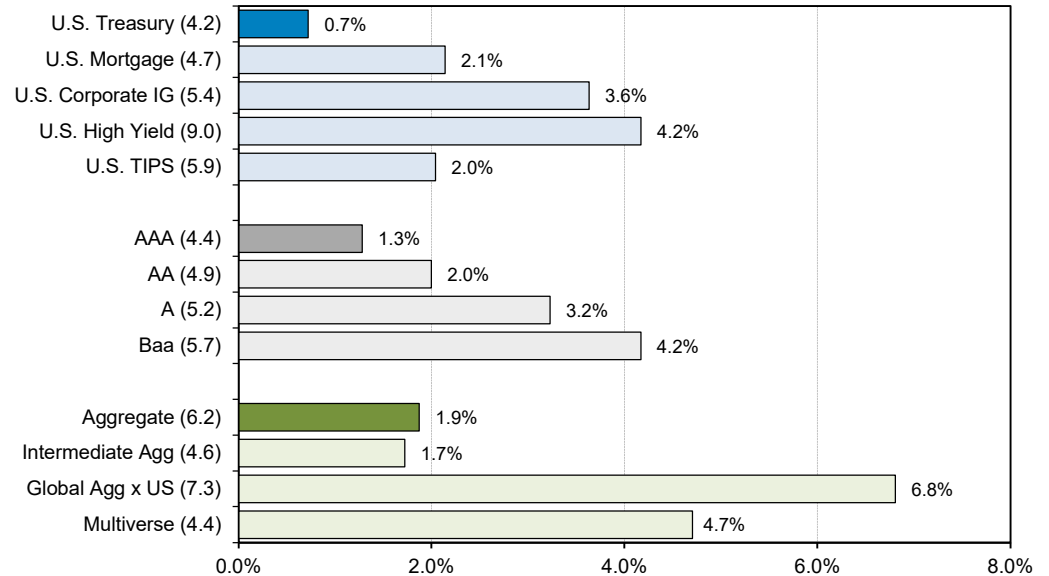
Country	MSCI-EAFE Weight	MSCI-ACWixUS Weight	Quarter Return	1-Year Return
Japan	21.9%	14.0%	13.2%	-16.6%
United Kingdom	15.3%	9.8%	17.0%	-4.8%
France	11.8%	7.6%	22.2%	-13.3%
Switzerland	10.1%	6.5%	10.4%	-18.3%
Australia	7.9%	5.1%	15.7%	-5.3%
Germany	8.2%	5.2%	24.6%	-22.3%
Netherlands	4.3%	2.7%	21.0%	-27.7%
Sweden	3.3%	2.1%	18.1%	-28.4%
Hong Kong	3.0%	1.9%	18.2%	-4.7%
Denmark	3.0%	1.9%	31.6%	-4.8%
Spain	2.4%	1.5%	22.9%	-7.3%
Italy	2.3%	1.5%	26.4%	-14.4%
Singapore	1.5%	1.0%	10.5%	-11.0%
Belgium	1.0%	0.7%	22.6%	-12.5%
Finland	1.0%	0.7%	16.3%	-15.3%
Norway	0.8%	0.5%	16.9%	-7.0%
Israel	0.7%	0.5%	0.4%	-26.7%
Ireland	0.7%	0.4%	21.5%	-26.2%
Portugal	0.2%	0.1%	17.2%	0.2%
Austria	0.2%	0.1%	31.1%	-26.4%
New Zealand	0.2%	0.1%	24.5%	-13.6%
<b>Total EAFE Countries</b>	<b>100.0%</b>	<b>63.9%</b>	<b>17.3%</b>	<b>-14.5%</b>
Canada		7.7%	7.4%	-12.9%
<b>Total Developed Countries</b>		<b>71.6%</b>	<b>16.2%</b>	<b>-14.3%</b>
China		9.2%	13.5%	-21.9%
Taiwan		3.9%	9.6%	-29.8%
India		4.1%	2.0%	-8.0%
Korea		3.2%	18.1%	-29.4%
Brazil		1.5%	2.4%	14.2%
Saudi Arabia		1.2%	-7.4%	-5.1%
South Africa		1.0%	18.3%	-3.9%
Mexico		0.6%	12.5%	-2.0%
Thailand		0.6%	16.1%	5.0%
Indonesia		0.5%	-3.6%	3.6%
Malaysia		0.4%	14.0%	-5.8%
United Arab Emirates		0.4%	-1.5%	-6.2%
Qatar		0.3%	-15.3%	-6.9%
Kuwait		0.3%	5.7%	10.1%
Philippines		0.2%	21.1%	-13.9%
Poland		0.2%	47.7%	-27.2%
Chile		0.2%	6.2%	19.4%
Turkey		0.2%	62.9%	90.4%
Peru		0.1%	17.4%	9.4%
Greece		0.1%	29.1%	0.3%
Colombia		0.0%	19.7%	-6.0%
Czech Republic		0.0%	6.5%	-14.4%
Hungary		0.1%	36.3%	-31.1%
Egypt		0.0%	28.5%	-22.6%
<b>Total Emerging Countries</b>		<b>28.4%</b>	<b>9.7%</b>	<b>-20.1%</b>
<b>Total ACWixUS Countries</b>		<b>100.0%</b>	<b>14.3%</b>	<b>-16.0%</b>

Source: Morningstar Direct, MSCI Global Index Monitor (Returns are Net in USD)

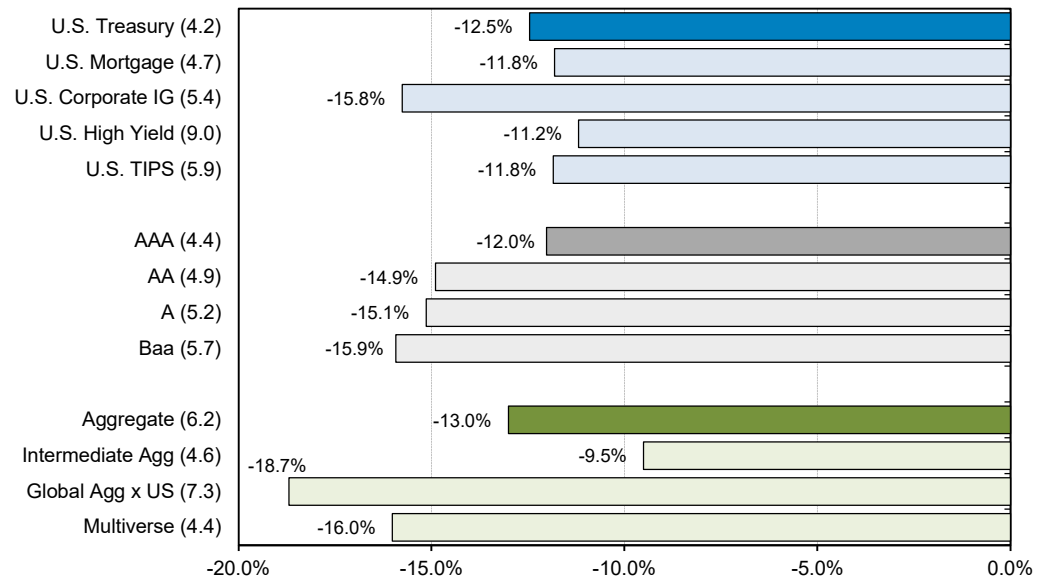


- After an extremely challenging year in fixed income markets, the 4th quarter's positive bond benchmark results were a welcome relief. Despite two rate increases during the quarter, bond performance was aided by lower investor concerns about rising inflation as US CPI declined. This was reflected in both intermediate and long-term interest rates which remained relatively stable during the quarter.
- The return for the BB US Aggregate Bond Index, the bellwether US investment grade benchmark, rose by 1.9% for the period.
- Performance across the investment grade index's segments was also positive during the period with the US Corporate Investment Grade Index returning 3.6% and the US Mortgage Index component posting a return of 2.1%.
- High yield bonds outperformed their investment grade counterparts, surging 4.2% during the quarter. US TIPS, which have delivered strong performance in recent periods, rose by 2.0% as investors' expectations of future inflation declined.
- Outside of domestic markets, the Bloomberg Global Aggregate ex US Index posted a strong return of 6.8% for the quarter. Like domestic bonds, global bond index performance was positively impacted declining inflation, but the benchmark also received a boost from the decline in the USD for the quarter.
- Over the trailing 1-year period, the bellwether BB US Aggregate Bond Index declined by -13.0% and each of the benchmark's components fell by more than -10%. US TIPS, which are excluded from the bellwether index, dropped by -11.8% for the year.
- Lower quality high yield corporate bonds were down less than their investment grade counterparts on a relative basis with the Bloomberg US High Yield Index posting still discouraging return of -11.2% for the period.
- Performance for non-US bonds was also strongly negative for the year with the developed market Bloomberg Global Aggregate ex US Index falling by -18.7%. The combination of rising interest rates overseas, elevated inflation, geopolitical risks, and USD strength earlier in the year hindered non-US index performance.

**Quarter Performance**



**1-Year Performance**

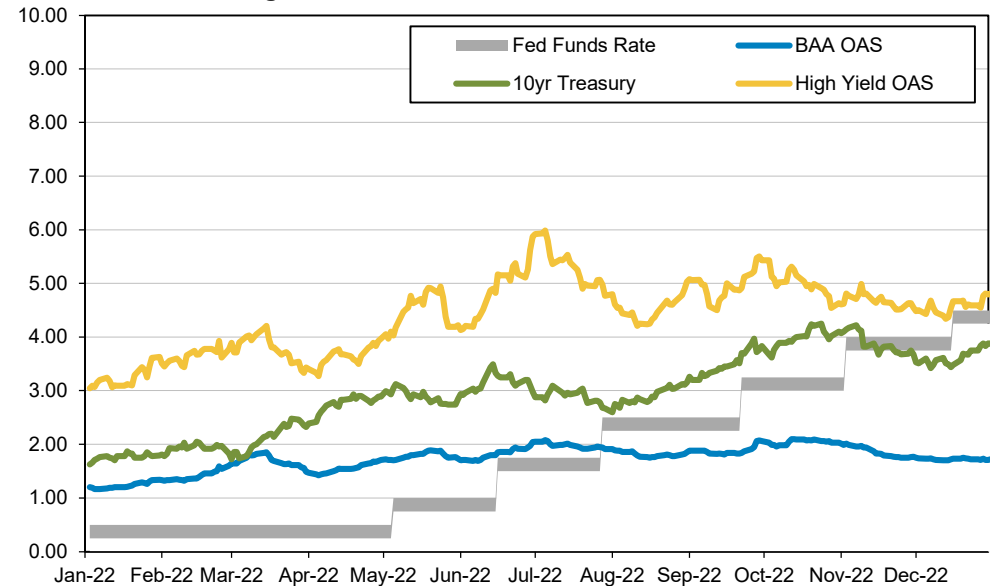


Source: Bloomberg

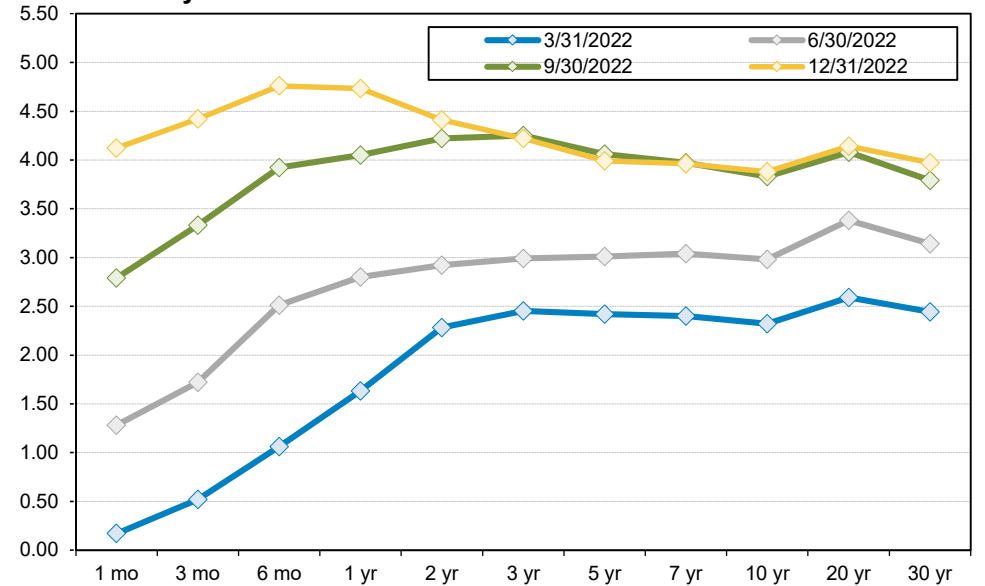


- The gray band across the graph illustrates the range of the current Fed Funds Rate. In the 4th quarter this year, the Fed raised the lower end of its target rate range from 3.00% to 4.25% through a 0.75% increase in November and a 0.50% increase in December. During its December meeting, the Federal Open Market Committee (FOMC) stated it intends to monitor economic growth closely and will continue to raise interest rates to fight inflation if needed. The FOMC also stated that it would continue its policy of removing liquidity from the market by allowing bonds held on its balance sheet to mature without reinvesting those proceeds.
- The yield on the US 10-year Treasury (green line) ended the period slightly higher as concerns over the pace of inflation, combined with the Fed's announced rate increase, drove yields. The closing yield on the 10-Year Treasury was 3.88% at year-end, an increase of 0.08% from its 3rd quarter closing yield. The benchmark's rate peaked in October, reaching a high of roughly 4.25% before declining to end the quarter.
- The blue line illustrates changes in the BAA OAS (Option Adjusted Spread). This measure quantifies the additional yield premium that investors require to purchase and hold non-US Treasury investment grade issues. For the full year, the spread widened slightly from 1.17% to 1.72%. High Yield OAS spreads rose from roughly 3.05% at the beginning of the year to 4.81% at year-end. During 2022, high yield spreads reached a level of 5.80% in early July before trading lower the remainder of the year.
- The lower graph provides a snapshot of the US Treasury yield curve at the end of each of the last four quarters. Short-term rates continued to rise during the 4th quarter as the FOMC increased interest rates twice to combat elevated inflation. Despite these short-term rate increases, both intermediate and longer-term rates remained largely unchanged during the quarter. The yield curve remained inverted between 2-year and 10-year rates. Said differently, the short-term rate was higher than the long-term rate. Historically, a persistent inversion of these two key rates has been an indication of a future recession withing 6- to 24-months.

**1-Year Trailing Market Rates**



**Treasury Yield Curve**



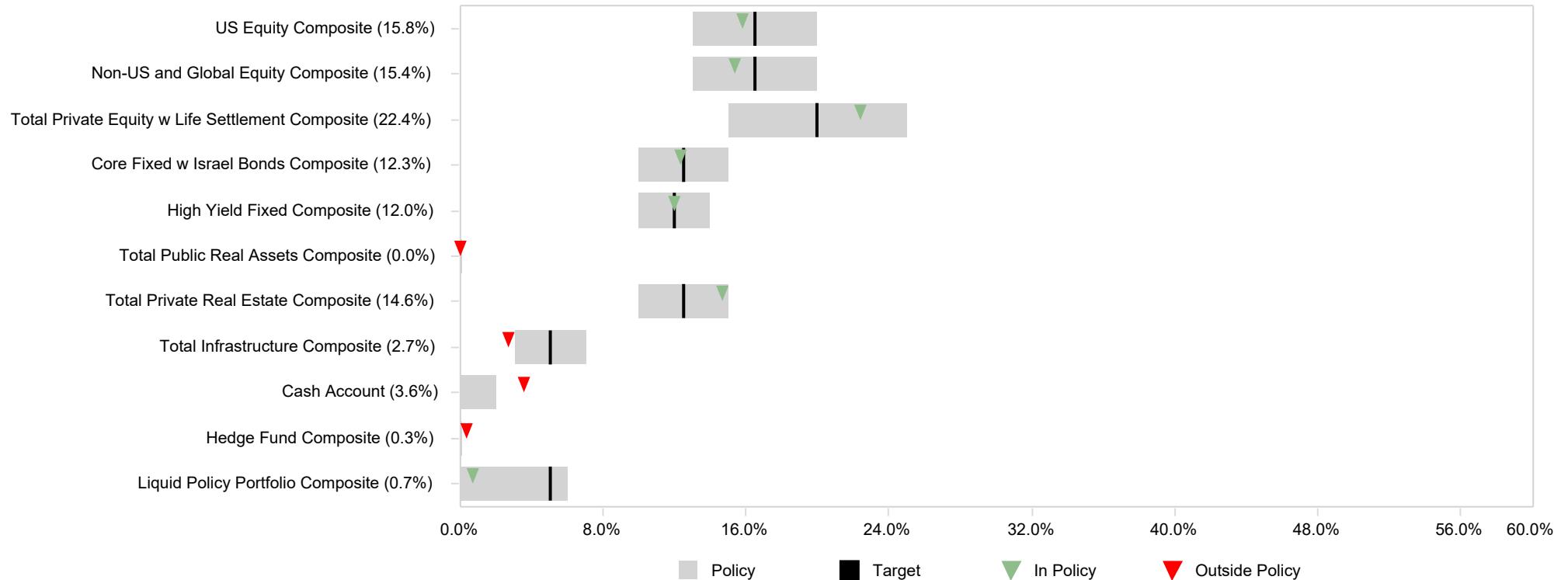
Source: US Department of Treasury, FRED (Federal Reserve of St. Louis)



Page Intentionally Left Blank



**Executive Summary**



**Asset Allocation Compliance**

	Asset Allocation \$	Current Allocation (%)	Minimum Allocation (%)	Maximum Allocation (%)	Target Allocation (%)
<b>Total Fund</b>	<b>931,455,640</b>	<b>100.0</b>	<b>N/A</b>	<b>N/A</b>	<b>100.0</b>
US Equity Composite	147,543,825	15.8	13.0	20.0	16.5
Non-US and Global Equity Composite	143,544,365	15.4	13.0	20.0	16.5
Total Private Equity w Life Settlement Composite	208,889,445	22.4	15.0	25.0	20.0
Core Fixed w Israel Bonds Composite	114,877,809	12.3	10.0	15.0	12.5
High Yield Fixed Composite	111,802,399	12.0	10.0	14.0	12.0
Total Public Real Assets Composite	8	0.0	0.0	0.0	0.0
Total Private Real Estate Composite	136,392,660	14.6	10.0	15.0	12.5
Total Infrastructure Composite	24,985,477	2.7	3.0	7.0	5.0
Cash Account	33,444,243	3.6	0.0	2.0	0.0
Hedge Fund Composite	3,109,271	0.3	0.0	0.0	0.0
Liquid Policy Portfolio Composite	6,866,138	0.7	0.0	6.0	5.0

*Asset Allocation includes assets of the Emerging, Minority, and Women owned Investment Manager Program. The Investment Policy Statement for the Retirement Board of Allegheny County allows for the Pension's asset allocation to temporarily fall outside of the stated policy ranges due to market fluctuations and the Pension's short-term cash flow needs. Recommendations are provided by the Pension's investment consultant regarding rebalancing of the Pension's asset allocation.*



**Historical Asset Allocation  
Total Fund**

As of December 31, 2022

Asset Allocation Attributes	Dec-2022		Sep-2022		Jun-2022		Mar-2022	
	(\$)	%	(\$)	%	(\$)	%	(\$)	%
	Total Fund	931,455,640	100.00	915,856,819	100.00	968,724,869	100.00	1,056,431,762
<b>US Equity Composite</b>	<b>147,543,825</b>	<b>15.84</b>	<b>144,264,998</b>	<b>15.75</b>	<b>150,923,916</b>	<b>15.58</b>	<b>180,163,045</b>	<b>17.05</b>
SSgA S&P 500 Index	67,423,331	7.24	67,354,093	7.35	70,812,454	7.31	84,402,437	7.99
Fragasso Large Core (EMWO)	5,871,405	0.63	5,548,895	0.61	5,921,990	0.61	6,988,141	0.66
Twin Capital Enhanced Equity	35,361,960	3.80	33,271,566	3.63	34,978,827	3.61	41,397,972	3.92
Vesper U.S. Large Cap Short-Term Reversal Strategy ETF (UTRN) (EMWO)	1,321,390	0.14	1,245,181	0.14	1,332,487	0.14	1,428,926	0.14
Earnest Small Value	13,246,310	1.42	13,728,777	1.50	14,308,378	1.48	16,511,363	1.56
Emerald Advisors Small Cap	12,167,091	1.31	11,397,795	1.24	11,396,825	1.18	14,240,025	1.35
Emerald Advisors All Cap (EMWO)	4,632,778	0.50	4,679,112	0.51	4,858,103	0.50	6,371,490	0.60
Ethos (EMWO)	1,650,527	0.18	1,543,065	0.17	1,589,693	0.16	2,019,477	0.19
CIM Small Cap (EMWO)	4,647,267	0.50	4,362,503	0.48	4,573,253	0.47	5,473,904	0.52
Cookson Peirce (EMWO)	1,221,766	0.13	1,134,011	0.12	1,151,906	0.12	1,329,310	0.13
<b>Non US Equity Composite</b>	<b>143,544,302</b>	<b>15.41</b>	<b>124,485,700</b>	<b>13.59</b>	<b>138,960,201</b>	<b>14.34</b>	<b>164,146,200</b>	<b>15.54</b>
SSgA ACWI ex US	33,256,835	3.57	29,105,249	3.18	32,304,036	3.33	37,347,180	3.54
Baillie Gifford Intl Equity	50,257,224	5.40	43,596,829	4.76	49,321,563	5.09	59,489,941	5.63
FIAM Select International Equity	27,817,679	2.99	24,379,716	2.66	27,189,741	2.81	31,349,834	2.97
Segall, Bryant & Hamill	32,212,563	3.46	27,403,906	2.99	30,144,861	3.11	35,959,245	3.40
<b>Global Equity Composite</b>	<b>63</b>	<b>0.00</b>	<b>63</b>	<b>0.00</b>	<b>62</b>	<b>0.00</b>	<b>62</b>	<b>0.00</b>
Columbus Macro (EMWO)	63	0.00	63	0.00	62	0.00	62	0.00
<b>Core Fixed w Israel Bonds Composite</b>	<b>114,877,809</b>	<b>12.33</b>	<b>114,454,306</b>	<b>12.50</b>	<b>122,951,479</b>	<b>12.69</b>	<b>127,635,605</b>	<b>12.08</b>
C S McKee	33,587,514	3.61	37,897,799	4.14	39,779,032	4.11	41,696,118	3.95
Federated Core Broad	26,563,367	2.85	30,981,986	3.38	36,554,326	3.77	38,195,499	3.62
CIM Investment Mgmt	26,629,153	2.86	26,211,750	2.86	26,946,688	2.78	27,558,343	2.61
StoneRidge Partners (EMWO)	5,043,347	0.54	4,971,485	0.54	5,117,385	0.53	5,241,029	0.50
Gridiron Capital Fixed Income	12,982,933	1.39	4,437,279	0.48	4,546,930	0.47	4,773,059	0.45
FNB (EMWO)	2,612,198	0.28	2,577,556	0.28	2,648,686	0.27	2,708,051	0.26
Israel Bonds	7,459,297	0.80	7,376,451	0.81	7,358,433	0.76	7,463,505	0.71
<b>High Yield Fixed Composite</b>	<b>111,802,399</b>	<b>12.00</b>	<b>110,842,500</b>	<b>12.10</b>	<b>111,700,649</b>	<b>11.53</b>	<b>123,524,625</b>	<b>11.69</b>
Oaktree High Yield	59,143,921	6.35	60,226,495	6.58	60,420,606	6.24	66,909,229	6.33
Federated High Yield	49,248,902	5.29	47,246,527	5.16	47,913,985	4.95	53,015,275	5.02
Sound Point	3,409,576	0.37	3,369,478	0.37	3,366,058	0.35	3,600,120	0.34
<b>TIPS Fixed Composite</b>	<b>-</b>	<b>0.00</b>	<b>13,461,193</b>	<b>1.47</b>	<b>14,191,061</b>	<b>1.46</b>	<b>41,654,324</b>	<b>3.94</b>
MCM TIPS	-	0.00	13,461,193	1.47	14,191,061	1.46	41,654,324	3.94





**Historical Asset Allocation  
Total Fund**

As of December 31, 2022

	Dec-2022		Sep-2022		Jun-2022		Mar-2022	
	(\$)	%	(\$)	%	(\$)	%	(\$)	%
<b>Real Estate Composite</b>	<b>124,747,556</b>	<b>13.39</b>	<b>128,736,426</b>	<b>14.06</b>	<b>129,441,915</b>	<b>13.36</b>	<b>126,467,718</b>	<b>11.97</b>
Morgan Stanley Prime Property Fund	94,836,523	10.18	97,863,068	10.69	97,917,742	10.11	95,026,175	9.00
Oaktree Real Estate	5,941,114	0.64	6,378,697	0.70	6,421,511	0.66	6,465,443	0.61
Washington Alliance (EMWO)	15,048,134	1.62	15,377,402	1.68	15,086,173	1.56	14,925,450	1.41
Washington Alliance II (EMWO)	2,133,109	0.23	2,220,553	0.24	2,162,729	0.22	1,606,004	0.15
Siguler Guff Distressed RE	6,505,491	0.70	6,896,706	0.75	7,853,760	0.81	8,444,646	0.80
Artemis Real Estate Partners Fund IV	283,185	0.03	-	0.00	-	0.00	-	0.00
<b>ERECT Composite</b>	<b>11,645,104</b>	<b>1.25</b>	<b>11,465,104</b>	<b>1.25</b>	<b>11,411,014</b>	<b>1.18</b>	<b>11,411,014</b>	<b>1.08</b>
ERECT Fund II	11,645,104	1.25	11,465,104	1.25	11,411,014	1.18	11,411,014	1.08
<b>Infrastructure Composite</b>	<b>24,985,477</b>	<b>2.68</b>	<b>25,069,973</b>	<b>2.74</b>	-	<b>0.00</b>	-	<b>0.00</b>
JP Morgan Infrastructure Fund (IIF Hedged)	24,985,477	2.68	25,069,973	2.74	-	0.00	-	0.00
<b>Private Equity Composite</b>	<b>198,567,496</b>	<b>21.32</b>	<b>206,178,260</b>	<b>22.51</b>	<b>219,998,309</b>	<b>22.71</b>	<b>219,253,042</b>	<b>20.75</b>
<b>Life Settlement Composite</b>	<b>10,321,948</b>	<b>1.11</b>	<b>10,403,116</b>	<b>1.14</b>	<b>11,373,871</b>	<b>1.17</b>	<b>13,122,706</b>	<b>1.24</b>
<b>Hedge Fund Composite</b>	<b>3,109,271</b>	<b>0.33</b>	<b>2,965,030</b>	<b>0.32</b>	<b>3,083,282</b>	<b>0.32</b>	<b>3,414,731</b>	<b>0.32</b>
Gridiron Capital Multi-Asset (EMWO)	3,109,100	0.33	2,964,861	0.32	3,083,114	0.32	3,414,563	0.32
<b>Liquid Policy Portfolio Composite</b>	<b>6,866,138</b>	<b>0.74</b>	<b>11,811,936</b>	<b>1.29</b>	<b>21,215,370</b>	<b>2.19</b>	<b>40,408,096</b>	<b>3.82</b>
BlackRock Liquidity iShares Public Pension Fund	6,866,138	0.74	11,811,936	1.29	21,215,370	2.19	40,408,096	3.82
Cash Account	33,444,243	3.59	11,718,206	1.28	33,473,731	3.46	5,230,586	0.50



Financial Reconciliation	Market Value 10/01/2022	Net Flows	Return On Investment	Market Value 12/31/2022
<b>Total Fund</b>	<b>915,856,819</b>	<b>-17,441,282</b>	<b>33,410,037</b>	<b>931,455,640</b>
SSgA S&P 500 Index	67,354,093	-5,000,000	5,069,238	67,423,331
Fragasso Large Core (EMWO)	5,548,895	8,685	322,510	5,871,405
Twin Capital Enhanced Equity	33,271,566	32,589	2,089,599	35,361,960
Vesper U.S. Large Cap Short-Term Reversal Strategy ETF (UTRN) (EMWO)	1,245,181	-	76,209	1,321,390
Earnest Small Value	13,728,777	-1,965,824	1,517,534	13,246,310
Emerald Advisors Small Cap	11,397,795	23,251	769,296	12,167,091
Emerald Advisors All Cap (EMWO)	4,679,112	7,272	-46,335	4,632,778
Ethos (EMWO)	1,543,065	-6,921	114,383	1,650,527
CIM Small Cap (EMWO)	4,362,503	8,972	284,764	4,647,267
Cookson Peirce (EMWO)	1,134,011	1,574	87,755	1,221,766
<b>US Equity Composite</b>	<b>144,264,998</b>	<b>-6,890,403</b>	<b>10,284,953</b>	<b>147,543,825</b>
SSgA ACWI ex US	29,105,249	-	4,151,586	33,256,835
Baillie Gifford Intl Equity	43,596,829	-	6,660,395	50,257,224
FIAM Select International Equity	24,379,716	22,244	3,437,964	27,817,679
Segall, Bryant & Hamill	27,403,906	48,991	4,808,657	32,212,563
<b>Non US Equity Composite</b>	<b>124,485,700</b>	<b>71,235</b>	<b>19,058,602</b>	<b>143,544,302</b>
Columbus Macro (EMWO)	63	-	1	63
<b>Global Equity Composite</b>	<b>63</b>	<b>-</b>	<b>1</b>	<b>63</b>
C S McKee	37,897,799	-4,980,687	689,715	33,587,514
Federated Core Broad	30,981,986	-4,974,666	581,381	26,563,367
CIM Investment Mgmt	26,211,750	16,643	417,403	26,629,153
StoneRidge Partners (EMWO)	4,971,485	2,506	71,862	5,043,347
Gridiron Capital Fixed Income	4,437,279	8,020,840	545,654	12,982,933
FNB (EMWO)	2,577,556	2,269	34,642	2,612,198
Israel Bonds	7,376,451	3,691	82,845	7,459,297
<b>Core Fixed w Israel Bonds Composite</b>	<b>114,454,306</b>	<b>-1,909,403</b>	<b>2,423,503</b>	<b>114,877,809</b>
Oaktree High Yield	60,226,495	-4,000,000	3,003,110	59,143,921
Federated High Yield	47,246,527	-	2,002,375	49,248,902
Sound Point	3,369,478	-	40,097	3,409,576
<b>High Yield Fixed Composite</b>	<b>110,842,500</b>	<b>-4,000,000</b>	<b>5,045,583</b>	<b>111,802,399</b>
MCM TIPS	13,461,193	-13,810,264	349,071	-
<b>TIPS Fixed Composite</b>	<b>13,461,193</b>	<b>-13,810,264</b>	<b>349,071</b>	<b>-</b>



	Market Value 10/01/2022	Net Flows	Return On Investment	Market Value 12/31/2022
Morgan Stanley Prime Property Fund	97,863,068	-3,026,545	-	94,836,523
Oaktree Real Estate	6,378,697	-200,000	-237,583	5,941,114
Washington Alliance (EMWO)	15,377,402	-329,268	-	15,048,134
Washington Alliance II (EMWO)	2,220,553	-87,444	-	2,133,109
Siguler Guff Distressed RE	6,896,706	-391,215	-	6,505,491
Artemis Real Estate Partners Fund IV	-	283,185	-	283,185
<b>Real Estate Composite</b>	<b>128,736,426</b>	<b>-3,751,286</b>	<b>-237,583</b>	<b>124,747,556</b>
<b>ERECT Composite</b>	<b>11,465,104</b>	<b>-</b>	<b>180,000</b>	<b>11,645,104</b>
<b>Infrastructure Composite</b>	<b>25,069,973</b>	<b>-</b>	<b>-84,496</b>	<b>24,985,477</b>
JP Morgan Infrastructure Fund (IIF Hedged)	25,069,973	-	-84,496	24,985,477
<b>Private Equity Composite</b>	<b>206,178,260</b>	<b>-2,711,308</b>	<b>-4,899,456</b>	<b>198,567,496</b>
<b>Life Settlement Composite</b>	<b>10,403,116</b>	<b>-</b>	<b>-81,168</b>	<b>10,321,948</b>
Gridiron Capital Multi-Asset (EMWO)	2,964,861	5,858	144,239	3,109,100
Maplewood (EMWO)	169	-	2	171
<b>Hedge Fund Composite</b>	<b>2,965,030</b>	<b>5,858</b>	<b>144,241</b>	<b>3,109,271</b>
BlackRock Liquidity iShares Public Pension Fund	11,811,936	-6,000,000	1,054,202	6,866,138
<b>Liquid Policy Portfolio Composite</b>	<b>11,811,936</b>	<b>-6,000,000</b>	<b>1,054,202</b>	<b>6,866,138</b>
<b>MLP Composite</b>	<b>8</b>	<b>-</b>	<b>-</b>	<b>8</b>
Cash Account	11,718,206	21,554,288	172,585	33,444,243

Financial Reconciliation	Market Value 01/01/2022	Net Flows	Income	Return On Investment	Market Value 12/31/2022
<b>Total Fund</b>	<b>1,096,847,739</b>	<b>-64,791,457</b>	<b>710,219</b>	<b>-99,066,578</b>	<b>931,455,640</b>
SSgA S&P 500 Index	94,096,192	-9,989,158	-	-16,672,862	67,423,331
Fragasso Large Core (EMWO)	7,282,231	36,638	1,705	-1,410,825	5,871,405
Twin Capital Enhanced Equity	43,179,388	132,247	14,945	-7,818,224	35,361,960
Vesper U.S. Large Cap Short-Term Reversal Strategy ETF (UTRN) (EMWO)	1,578,091	-	-	-256,701	1,321,390
Earnest Small Value	16,770,333	-1,894,612	3,190	-1,524,023	13,246,310
Emerald Advisors Small Cap	15,923,325	94,898	2,983	-3,757,328	12,167,091
Emerald Advisors All Cap (EMWO)	6,645,020	32,192	1,305	-2,012,295	4,632,778
Ethos (EMWO)	2,215,004	-80,737	-1	-483,740	1,650,527
CIM Small Cap (EMWO)	5,867,714	38,322	401	-1,221,668	4,647,267
Cookson Peirce (EMWO)	1,408,568	4,716	-53	-186,802	1,221,766
<b>US Equity Composite</b>	<b>194,965,866</b>	<b>-11,625,495</b>	<b>24,476</b>	<b>-35,344,469</b>	<b>147,543,825</b>
SSgA ACWI ex US	39,473,532	17,846	-	-6,216,696	33,256,835
Baillie Gifford Intl Equity	70,428,526	-	-	-20,171,302	50,257,224
FIAM Select International Equity	33,861,588	98,962	-	-6,043,909	27,817,679
Segall, Bryant & Hamill	36,833,806	105,288	-458,896	-4,568,985	32,212,563
<b>Non US Equity Composite</b>	<b>180,597,451</b>	<b>222,096</b>	<b>-458,896</b>	<b>-37,000,892</b>	<b>143,544,302</b>
Columbus Macro (EMWO)	62	-	-	1	63
<b>Global Equity Composite</b>	<b>62</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>63</b>
C S McKee	44,252,683	-4,912,048	33,275	-5,665,169	33,587,514
Federated Core Broad	40,339,887	-8,900,642	22,856	-4,776,520	26,563,367
CIM Investment Mgmt	28,732,165	67,825	12,375	-2,103,012	26,629,153
StoneRidge Partners (EMWO)	5,471,185	10,291	-3,855	-427,838	5,043,347
Gridiron Capital Fixed Income	4,966,214	8,043,692	337,921	16,719	12,982,933
FNB (EMWO)	2,824,616	9,331	16	-212,418	2,612,198
Israel Bonds	7,594,790	14,822	66,011	-135,493	7,459,297
<b>Core Fixed w Israel Bonds Composite</b>	<b>134,181,540</b>	<b>-5,666,730</b>	<b>468,599</b>	<b>-13,303,731</b>	<b>114,877,809</b>
Oaktree High Yield	69,504,798	-4,000,000	-	-5,980,482	59,143,921
Federated High Yield	55,256,029	-	-	-6,007,127	49,248,902
Sound Point	3,640,838	-	-	-231,262	3,409,576
<b>High Yield Fixed Composite</b>	<b>128,401,665</b>	<b>-4,000,000</b>	<b>-</b>	<b>-12,218,871</b>	<b>111,802,399</b>
MCM TIPS	42,930,455	-38,825,061	-	-4,098,508	-
<b>TIPS Fixed Composite</b>	<b>42,930,455</b>	<b>-38,825,061</b>	<b>-</b>	<b>-4,098,508</b>	<b>-</b>



## Financial Reconciliation

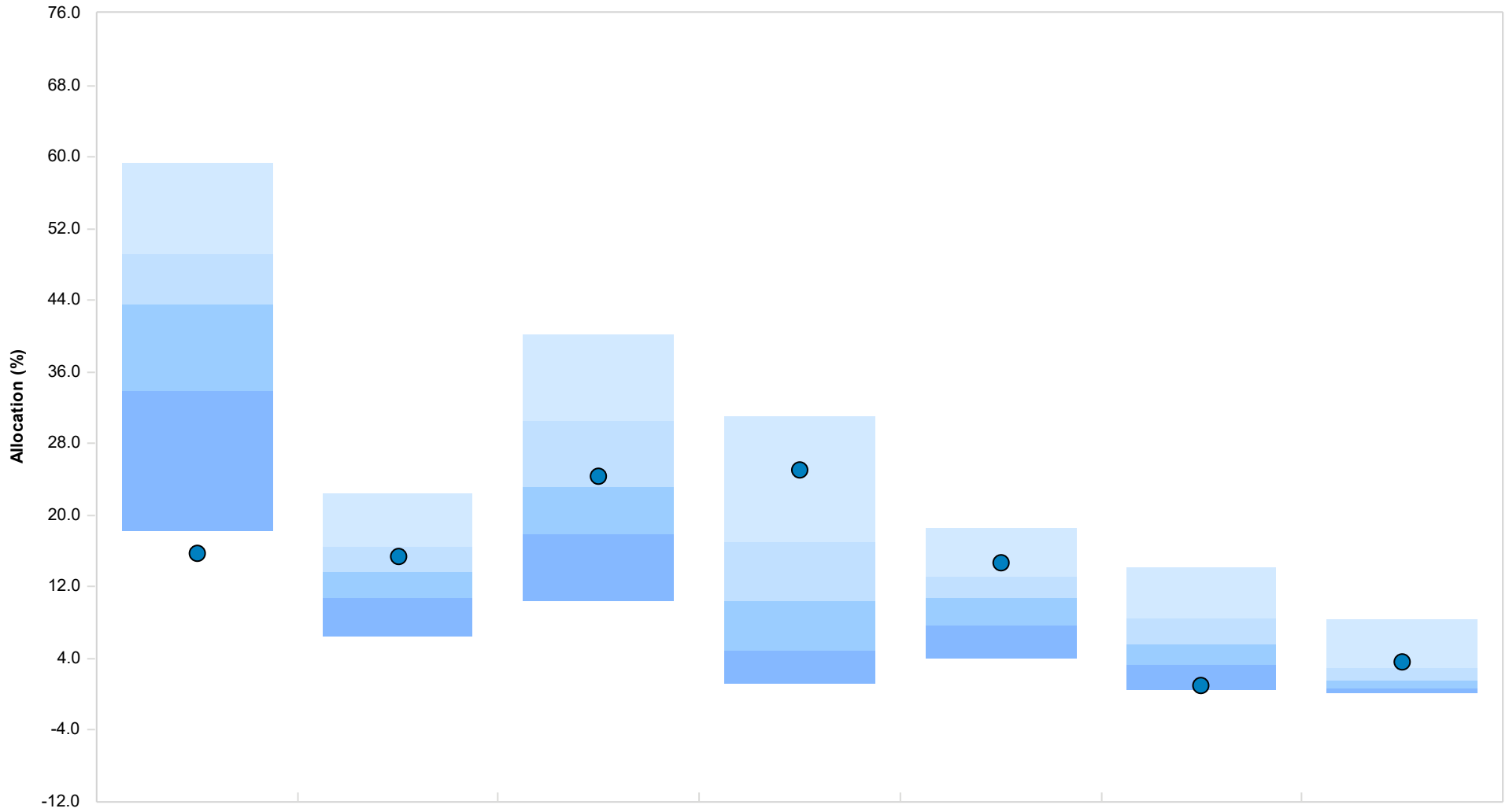
## Total Fund

Year To Date Ending December 31, 2022

	Market Value 01/01/2022	Net Flows	Income	Return On Investment	Market Value 12/31/2022
Morgan Stanley Prime Property Fund	88,802,131	-3,026,545	-	9,060,937	94,836,523
Oaktree Real Estate	6,567,794	-200,000	-	-426,680	5,941,114
Washington Alliance (EMWO)	14,925,450	-664,634	-	787,318	15,048,134
Washington Alliance II (EMWO)	1,572,293	480,340	-	80,476	2,133,109
Siguler Guff Distressed RE	9,333,655	-1,959,301	-	-868,863	6,505,491
Artemis Real Estate Partners Fund IV	-	283,185	-	-	283,185
<b>Real Estate Composite</b>	<b>121,201,323</b>	<b>-5,086,954</b>	<b>-</b>	<b>8,633,188</b>	<b>124,747,556</b>
<b>ERECT Composite</b>	<b>10,441,201</b>	<b>-</b>	<b>-</b>	<b>1,203,903</b>	<b>11,645,104</b>
<b>Infrastructure Composite</b>	<b>-</b>	<b>25,000,000</b>	<b>624,089</b>	<b>-14,523</b>	<b>24,985,477</b>
JP Morgan Infrastructure Fund (IIF Hedged)	-	25,000,000	624,089	-14,523	24,985,477
<b>Private Equity Composite</b>	<b>215,873,991</b>	<b>-16,249,843</b>	<b>-</b>	<b>-997,022</b>	<b>198,567,496</b>
<b>Life Settlement Composite</b>	<b>13,584,945</b>	<b>-3,507,801</b>	<b>-</b>	<b>244,804</b>	<b>10,321,948</b>
Gridiron Capital Multi-Asset (EMWO)	3,564,587	24,091	4,457	-455,487	3,109,100
Maplewood (EMWO)	168	-	-	3	171
<b>Hedge Fund Composite</b>	<b>3,564,755</b>	<b>24,091</b>	<b>4,457</b>	<b>-455,484</b>	<b>3,109,271</b>
BlackRock Liquidity iShares Public Pension Fund	42,539,612	-29,700,000	-	-5,973,474	6,866,138
<b>Liquid Policy Portfolio Composite</b>	<b>42,539,612</b>	<b>-29,700,000</b>	<b>-</b>	<b>-5,973,474</b>	<b>6,866,138</b>
<b>MLP Composite</b>	<b>8</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>8</b>
Cash Account	8,564,864	24,624,240	47,494	258,500	33,444,243



Plan Sponsor TF Asset Allocation vs. All Public DB Plans



	US Equity	Global ex-US Equity	US Fixed	Alternatives	Total Real Estate	Global TAA	Cash & Equivalents
● Total Fund	15.84 (97)	15.41 (33)	24.34 (46)	25.14 (11)	14.61 (16)	1.07 (91)	3.59 (19)
5th Percentile	59.26	22.49	40.15	31.12	18.54	14.19	8.45
1st Quartile	49.14	16.53	30.42	16.92	13.20	8.54	2.94
Median	43.43	13.71	23.07	10.40	10.88	5.50	1.47
3rd Quartile	33.77	10.83	17.90	4.90	7.73	3.36	0.70
95th Percentile	18.22	6.41	10.48	1.25	3.92	0.51	0.09



Asset Allocation & Performance	Allocation		Performance(%)							
	Market Value \$	%	MTH	QTR	YTD	1 YR	3 YR	5 YR	Inception	Inception Date
<b>Total Fund</b>	<b>931,455,640</b>	<b>100.0</b>	<b>-1.57</b>	<b>3.59</b>	<b>-9.25</b>	<b>-9.25</b>	<b>4.21</b>	<b>4.72</b>	<b>7.10</b>	<b>12/1993</b>
Total Fund Policy Index			-2.11	3.59	-9.02	-9.02	5.12	5.55	7.27	
<b>US Equity Composite</b>	<b>147,543,825</b>	<b>15.8</b>	<b>-6.12</b>	<b>6.95</b>	<b>-18.74</b>	<b>-18.74</b>	<b>6.34</b>	<b>7.93</b>	<b>8.76</b>	<b>11/1993</b>
FT Wilshire 5000 Total Market TR Index			-5.87	7.10	-19.04	-19.04	7.41	8.99	9.49	
<b>Non US Equity Composite</b>	<b>143,544,302</b>	<b>15.4</b>	<b>-1.69</b>	<b>15.25</b>	<b>-20.64</b>	<b>-20.64</b>	<b>-1.09</b>	<b>0.20</b>	<b>4.39</b>	<b>01/2001</b>
Non US Equity Policy Index			-0.75	14.28	-16.00	-16.00	0.27	0.89	3.73	
<b>Core Fixed w Israel Bonds Composite*</b>	<b>114,877,809</b>	<b>12.3</b>	<b>0.20</b>	<b>2.00</b>	<b>-10.14</b>	<b>-10.14</b>	<b>-1.21</b>	<b>0.91</b>	<b>6.36</b>	<b>01/1983</b>
Bimbg. U.S. Aggregate Index			-0.45	1.87	-13.01	-13.01	-2.71	0.02	6.30	
<b>High Yield Fixed Composite</b>	<b>111,802,399</b>	<b>12.0</b>	<b>-0.71</b>	<b>4.64</b>	<b>-9.67</b>	<b>-9.67</b>	<b>0.44</b>	<b>2.02</b>	<b>5.64</b>	<b>04/2008</b>
FTSE High Yield Market Capped Index			-0.61	4.03	-10.85	-10.85	-0.32	2.01	5.90	
<b>Real Estate Composite</b>	<b>124,747,556</b>	<b>13.4</b>	<b>-0.19</b>	<b>-0.19</b>	<b>7.15</b>	<b>7.15</b>	<b>9.27</b>	<b>8.92</b>	<b>8.94</b>	<b>04/2003</b>
NCREIF Fund Index-ODCE (VW) (Net)			-5.17	-5.17	6.55	6.55	8.97	7.72	7.41	
<b>ERECT Composite</b>	<b>11,645,104</b>	<b>1.3</b>	<b>0.00</b>	<b>1.57</b>	<b>11.53</b>	<b>11.53</b>	<b>6.07</b>	<b>7.48</b>	<b>7.02</b>	<b>09/2010</b>
CPI - All Urban Consumers (SA)			-0.08	0.46	6.42	6.42	4.90	3.77	2.57	
<b>Total Infrastructure Composite</b>	<b>24,985,477</b>	<b>2.7</b>	<b>-0.56</b>	<b>-0.34</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-0.06</b>	<b>07/2022</b>
CPI + 3%			0.17	1.20	9.61	9.61	8.05	6.88	2.45	
<b>Total Private Equity w Life Settlement Composite*</b>	<b>208,889,445</b>	<b>22.4</b>	<b>-0.53</b>	<b>-2.31</b>	<b>-0.63</b>	<b>-0.63</b>	<b>12.71</b>	<b>11.12</b>	<b>7.57</b>	<b>04/2003</b>
Total Private Equity Policy Index			-0.53	-2.31	-0.60	-0.60	13.50	11.60	7.69	
<b>Hedge Fund Composite</b>	<b>3,109,271</b>	<b>0.3</b>	<b>-2.90</b>	<b>4.67</b>	<b>-13.43</b>	<b>-13.43</b>	<b>1.41</b>	<b>1.46</b>	<b>1.93</b>	<b>04/2003</b>
90 Day T-Bill Index + 3%			0.61	1.59	4.50	4.50	3.74	4.30	4.27	
<b>Liquid Policy Portfolio Composite</b>	<b>6,866,138</b>	<b>0.7</b>	<b>-3.39</b>	<b>7.87</b>	<b>-15.21</b>	<b>-15.21</b>	<b>N/A</b>	<b>N/A</b>	<b>-2.66</b>	<b>03/2021</b>
Liquid Policy Benchmark			-2.95	7.78	-15.53	-15.53	N/A	N/A	-2.81	
<b>Cash Account</b>	<b>33,444,243</b>	<b>3.6</b>	<b>0.36</b>	<b>1.39</b>	<b>2.45</b>	<b>2.45</b>	<b>1.21</b>	<b>1.56</b>	<b>0.88</b>	<b>01/2012</b>
90 Day U.S. Treasury Bill			0.36	0.84	1.46	1.46	0.72	1.26	0.69	

\* All returns prior to March 2021 are from the original Core Fixed Composite and the Private Equity Composite, respectively. All returns from March 2021 and forward are from the composites inclusive of the Israel Bonds and Life Settlement funds, respectively



## Asset Allocation &amp; Performance

	Allocation		Performance(%)						
	Market Value \$	%	QTR	YTD	1 YR	3 YR	5 YR	Inception	Inception Date
<b>Total Fund</b>	<b>931,455,640</b>	<b>100.0</b>	<b>3.59</b>	<b>-9.25</b>	<b>-9.25</b>	<b>4.21</b>	<b>4.72</b>	<b>7.10</b>	<b>12/1993</b>
Total Fund Policy Index			3.59	-9.02	-9.02	5.12	5.55	7.27	
<b>US Equity Composite</b>	<b>147,543,825</b>	<b>15.8</b>	<b>6.95</b>	<b>-18.74</b>	<b>-18.74</b>	<b>6.34</b>	<b>7.93</b>	<b>8.76</b>	<b>11/1993</b>
FT Wilshire 5000 Total Market TR Index			7.10	-19.04	-19.04	7.41	8.99	9.49	
SSgA S&P 500 Index	67,423,331	7.2	7.56	-18.12	-18.12	7.68	9.44	8.39	11/2007
S&P 500 Index			7.56	-18.11	-18.11	7.66	9.42	8.35	
Fragasso Large Core (EMWO)	5,871,405	0.6	5.66	-19.85	-19.85	3.23	6.99	10.07	09/2012
S&P 500 Index			7.56	-18.11	-18.11	7.66	9.42	12.37	
Twin Capital Enhanced Equity	35,361,960	3.8	6.18	-18.40	-18.40	6.51	8.04	8.69	01/2006
S&P 500 Index			7.56	-18.11	-18.11	7.66	9.42	9.01	
Vesper U.S. Large Cap Short-Term Reversal Strategy ETF (UTRN) (EMWO)	1,321,390	0.1	6.12	-16.27	-16.27	N/A	N/A	-16.27	01/2022
S&P 500 Index			7.56	-18.11	-18.11	7.66	9.42	-18.11	
Earnest Small Value	13,246,310	1.4	10.97	-9.57	-9.57	6.19	5.49	12.16	06/2009
Russell 2000 Value Index			8.42	-14.48	-14.48	4.70	4.13	10.69	
Emerald Advisors Small Cap	12,167,091	1.3	6.55	-24.18	-24.18	3.10	4.51	9.53	11/2004
Russell 2000 Growth Index			4.13	-26.36	-26.36	0.65	3.51	8.02	
Emerald Advisors All Cap (EMWO)	4,632,778	0.5	-1.15	-30.72	-30.72	8.34	9.96	11.83	10/2015
Russell 3000 Growth Index			2.31	-28.97	-28.97	7.32	10.45	13.15	
Ethos (EMWO)	1,650,527	0.2	7.41	-22.02	-22.02	5.70	8.50	10.74	08/2016
S&P 500 Index			7.56	-18.11	-18.11	7.66	9.42	11.30	
CIM Small Cap (EMWO)	4,647,267	0.5	6.32	-21.44	-21.44	-1.65	1.14	3.68	01/2014
Russell 2000 Index			6.23	-20.44	-20.44	3.10	4.13	6.12	
Cookson Peirce (EMWO)	1,221,766	0.1	7.60	-13.59	-13.59	8.72	N/A	11.51	12/2018
Russell 3000 Index			7.18	-19.21	-19.21	7.07	8.79	9.68	
<b>Non US Equity Composite</b>	<b>143,544,302</b>	<b>15.4</b>	<b>15.25</b>	<b>-20.64</b>	<b>-20.64</b>	<b>-1.09</b>	<b>0.20</b>	<b>4.39</b>	<b>01/2001</b>
Non US Equity Policy Index			14.28	-16.00	-16.00	0.27	0.89	3.73	
SSgA ACWI ex US	33,256,835	3.6	14.26	-15.79	-15.79	0.38	1.46	2.79	05/2015
MSCI AC World ex USA (Net)			14.28	-16.00	-16.00	0.07	0.88	2.46	





Asset Allocation & Performance

Total Fund

As of December 31, 2022

	Allocation		Performance(%)						Inception Date
	Market Value \$	%	QTR	YTD	1 YR	3 YR	5 YR	Inception	
Baillie Gifford Intl Equity MSCI AC World ex USA (Net)	50,257,224	5.4	15.28 14.28	-28.64 -16.00	-28.64 -16.00	-3.56 0.07	-0.21 0.88	6.42 4.65	08/2009
FIAM Select International Equity FIAM Policy Index	27,817,679	3.0	14.00 14.28	-18.13 -16.00	-18.13 -16.00	1.04 0.07	1.41 0.88	4.10 3.66	01/2001
Segall, Bryant & Hamill MSCI EAFE Small Cap (net) Index	32,212,563	3.5	17.35 15.79	-12.84 -21.39	-12.84 -21.39	-1.50 -0.93	-2.71 -0.05	2.42 3.95	05/2015
<b>Core Fixed w Israel Bonds Composite*</b> Blmbg. U.S. Aggregate Index	<b>114,877,809</b>	<b>12.3</b>	<b>2.00</b> 1.87	<b>-10.14</b> -13.01	<b>-10.14</b> -13.01	<b>-1.21</b> -2.71	<b>0.91</b> 0.02	<b>6.36</b> 6.30	<b>01/1983</b>
C S McKee Blmbg. U.S. Aggregate Index	33,587,514	3.6	2.23 1.87	-12.60 -13.01	-12.60 -13.01	-2.37 -2.71	0.38 0.02	6.66 6.30	01/1983
Federated Core Broad Blmbg. U.S. Aggregate Index	26,563,367	2.9	1.80 1.87	-11.92 -13.01	-11.92 -13.01	-0.89 -2.71	1.24 0.02	3.83 3.00	09/2006
CIM Investment Mgmt Bloomberg Intermediate US Govt/Credit Idx	26,629,153	2.9	1.53 1.54	-7.55 -8.24	-7.55 -8.24	-1.06 -1.26	0.64 0.73	2.55 2.87	11/2005
StoneRidge Partners (EMWO) StoneRidge Policy Index	5,043,347	0.5	1.40 1.91	-8.01 -8.55	-8.01 -8.55	-1.81 -1.27	0.03 0.85	0.74 1.26	08/2015
Gridiron Capital Fixed Income Blmbg. U.S. Aggregate Index	12,982,933	1.4	6.25 1.87	-5.53 -13.01	-5.53 -13.01	0.96 -2.71	2.78 0.02	2.55 0.58	02/2017
FNB (EMWO) Bloomberg Intermed Aggregate Index	2,612,198	0.3	1.26 1.72	-7.85 -9.51	-7.85 -9.51	-1.08 -1.93	0.71 0.31	0.64 0.40	07/2017
Israel Bonds	7,459,297	0.8	1.07	-1.98	-1.98	0.75	1.39	2.34	01/2012
<b>High Yield Fixed Composite</b> FTSE High Yield Market Capped Index	<b>111,802,399</b>	<b>12.0</b>	<b>4.64</b> 4.03	<b>-9.67</b> -10.85	<b>-9.67</b> -10.85	<b>0.44</b> -0.32	<b>2.02</b> 2.01	<b>5.64</b> 5.90	<b>04/2008</b>
Oaktree High Yield FTSE High Yield Market Capped Index	59,143,921	6.3	5.18 4.03	-8.86 -10.85	-8.86 -10.85	0.69 -0.32	1.66 2.01	5.39 5.90	04/2008
Federated High Yield Blmbg. U.S. High Yield - 2% Issuer Cap	49,248,902	5.3	4.24 4.17	-10.87 -11.18	-10.87 -11.18	0.06 0.03	2.50 2.30	2.68 2.54	07/2017
Sound Point Credit Suisse Leveraged Loan Index	3,409,576	0.4	1.19 2.34	-6.35 -1.06	-6.35 -1.06	1.38 2.34	2.06 3.24	3.35 3.61	08/2013

\* All returns prior to March 2021 are from the original Core Fixed Composite. All returns March 2021 and forward are from the composite inclusive of the Israel Bonds.



	Allocation		Performance(%)						
	Market Value \$	%	QTR	YTD	1 YR	3 YR	5 YR	Inception	Inception Date
<b>Real Estate Composite</b>	<b>124,747,556</b>	<b>13.4</b>	<b>-0.19</b>	<b>7.15</b>	<b>7.15</b>	<b>9.27</b>	<b>8.92</b>	<b>8.94</b>	<b>04/2003</b>
NCREIF Fund Index-ODCE (VW) (Net)			-5.17	6.55	6.55	8.97	7.72	7.41	
Morgan Stanley Prime Property Fund	94,836,523	10.2	0.00	10.20	10.20	10.68	9.22	9.07	04/2003
NCREIF Fund Index-ODCE (VW) (Net)			-5.17	6.55	6.55	8.97	7.72	7.41	
Oaktree Real Estate	5,941,114	0.6	-3.73	-6.50	-6.50	-5.08	-1.97	3.33	08/2013
Washington Alliance (EMWO)	15,048,134	1.6	0.00	5.32	5.32	12.89	14.50	13.36	08/2013
Washington Alliance II (EMWO)	2,133,109	0.2	0.00	4.28	4.28	N/A	N/A	13.68	03/2020
Siguler Guff Distressed RE	6,505,491	0.7	0.00	-10.30	-10.30	1.18	5.19	5.70	03/2014
Artemis Real Estate Partners Fund IV	283,185	0.0	N/A	N/A	N/A	N/A	N/A	N/A	01/2023
<b>ERECT Composite</b>	<b>11,645,104</b>	<b>1.3</b>	<b>1.57</b>	<b>11.53</b>	<b>11.53</b>	<b>6.07</b>	<b>7.48</b>	<b>7.02</b>	<b>09/2010</b>
CPI - All Urban Consumers (SA)			0.46	6.42	6.42	4.90	3.77	2.57	
<b>Total Infrastructure Composite</b>	<b>24,985,477</b>	<b>2.7</b>	<b>-0.34</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-0.06</b>	<b>07/2022</b>
CPI + 3%			1.20	9.61	9.61	8.05	6.88	2.45	
JP Morgan Infrastructure Fund (IIF Hedged)	24,985,477	2.7	-0.34	N/A	N/A	N/A	N/A	-0.06	07/2022
CPI + 3%			1.20	9.61	9.61	8.05	6.88	2.45	
<b>Private Equity Composite</b>	<b>198,567,496</b>	<b>21.3</b>	<b>-2.39</b>	<b>-0.70</b>	<b>-0.70</b>	<b>13.36</b>	<b>11.51</b>	<b>7.67</b>	<b>04/2003</b>
Private Equity Policy Index			-2.39	-0.70	-0.70	13.36	11.51	7.67	
<b>Life Settlement Composite</b>	<b>10,321,948</b>	<b>1.1</b>	<b>-0.78</b>	<b>1.58</b>	<b>1.58</b>	<b>-4.02</b>	<b>-3.22</b>	<b>4.89</b>	<b>09/2009</b>
<b>Hedge Fund Composite</b>	<b>3,109,271</b>	<b>0.3</b>	<b>4.67</b>	<b>-13.43</b>	<b>-13.43</b>	<b>1.41</b>	<b>1.46</b>	<b>1.93</b>	<b>04/2003</b>
90 Day T-Bill Index + 3%			1.59	4.50	4.50	3.74	4.30	4.27	
Gridiron Capital Multi-Asset (EMWO)	3,109,100	0.3	4.67	-13.43	-13.43	2.32	N/A	4.22	02/2019
HFRI FoF Composite Lagged			1.74	-5.30	-5.30	3.69	3.01	4.28	
<b>Liquid Policy Portfolio Composite</b>	<b>6,866,138</b>	<b>0.7</b>	<b>7.87</b>	<b>-15.21</b>	<b>-15.21</b>	<b>N/A</b>	<b>N/A</b>	<b>-2.66</b>	<b>03/2021</b>
Liquid Policy Benchmark			7.78	-15.53	-15.53	N/A	N/A	-2.81	
BlackRock Liquidity iShares Public Pension Fund	6,866,138	0.7	7.71	-15.33	-15.33	N/A	N/A	-3.99	04/2021
Liquid Policy Benchmark			7.78	-15.53	-15.53	N/A	N/A	-4.03	
Cash Account	33,444,243	3.6	1.39	2.45	2.45	1.21	1.56	0.88	01/2012

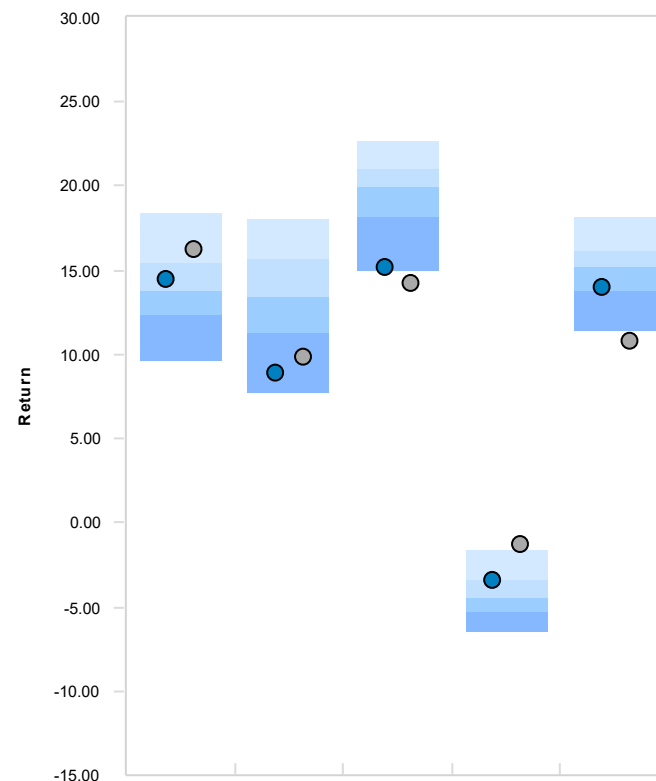
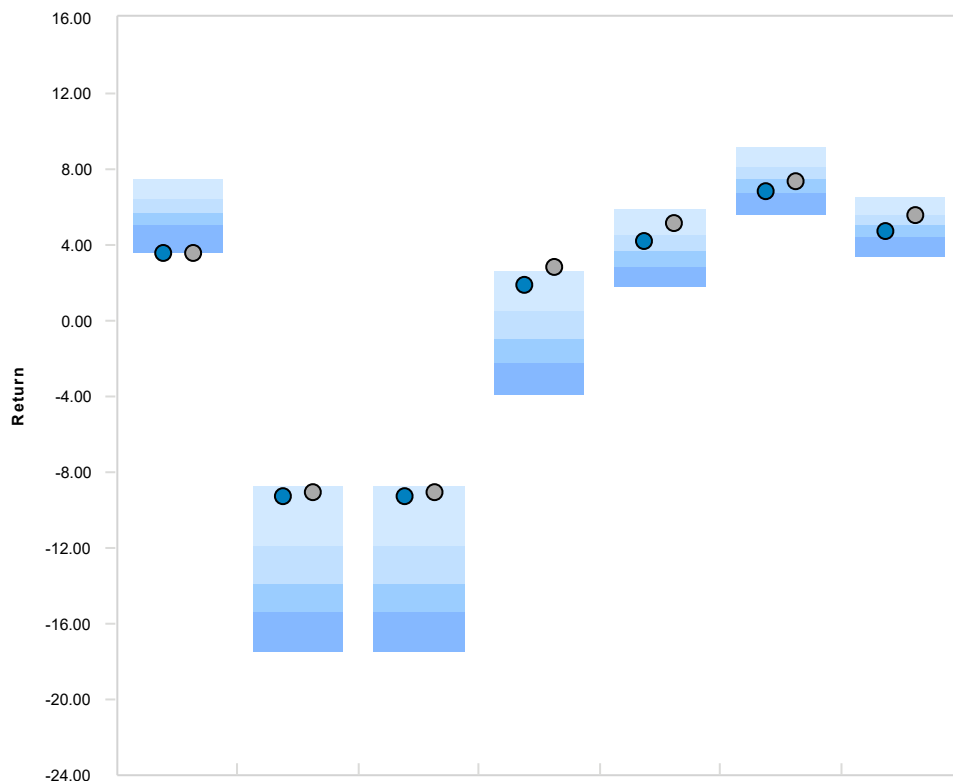


**Comparative Performance - IRR**  
**Private Real Estate Accounts**  
As of December 31, 2022

<b>Comparative Performance - IRR</b>							
	<b>1 YR</b>	<b>3 YR</b>	<b>5 YR</b>	<b>7 YR</b>	<b>Inception</b>	<b>Inception Date</b>	
Oaktree Real Estate NEW	-6.50	-5.07	-1.90	0.52	5.41	09/18/2013	
Siguler Guff Distressed RE	-10.49	1.68	6.35	8.67	7.40	06/30/2014	
Washington Alliance (EMWO)	5.34	12.87	14.95	14.82	15.06	03/31/2014	
Washington Alliance II (EMWO)	4.27	N/A	N/A	N/A	14.03	03/13/2020	
Artemis Real Estate Partners Fund IV	N/A	N/A	N/A	N/A	N/A		



Plan Sponsor Peer Group Analysis - All Public DB Plans



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Total Fund	3.59 (96)	-9.25 (7)	-9.25 (7)	1.92 (9)	4.21 (32)	6.84 (73)	4.72 (62)
● Total Fund Policy Index	3.59 (96)	-9.02 (7)	-9.02 (7)	2.85 (5)	5.12 (12)	7.33 (59)	5.55 (27)
Median	5.70	-13.93	-13.93	-0.94	3.66	7.53	5.02

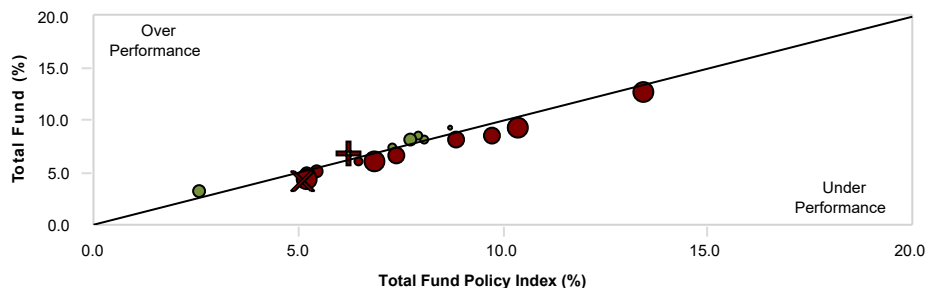
	2021	2020	2019	2018	2017
● Total Fund	14.48 (38)	8.93 (92)	15.16 (94)	-3.36 (25)	13.97 (71)
● Total Fund Policy Index	16.27 (17)	9.82 (88)	14.24 (97)	-1.27 (4)	10.82 (97)
Median	13.79	13.37	19.89	-4.50	15.16

Comparative Performance

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Total Fund	-3.69	-6.80	-2.40	4.64	0.83	4.89
Total Fund Policy Index	-3.84	-6.95	-1.85	4.84	1.49	5.43

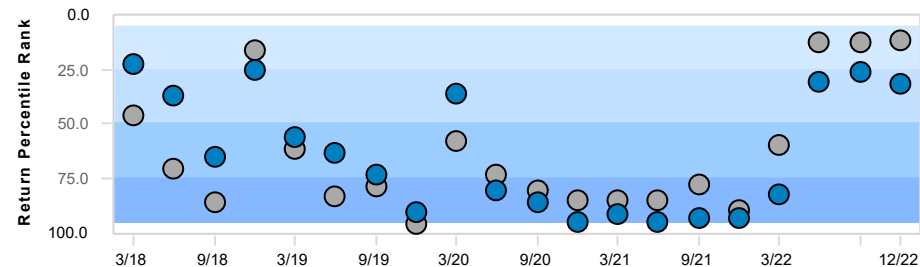


### 3 Yr Rolling Under/Over Performance - 5 Years



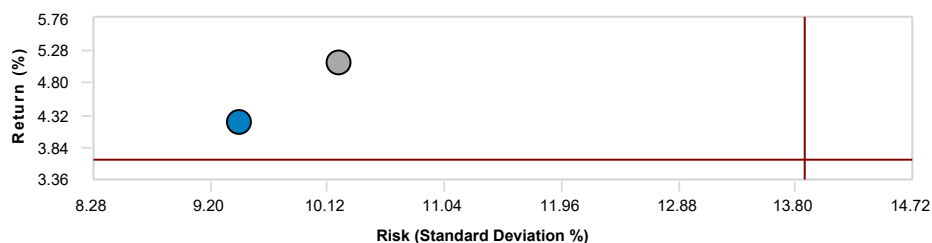
- Over Performance
- Under Performance
- + Earliest Date
- X Latest Date

### 3 Yr Rolling Percentile Ranking - 5 Years



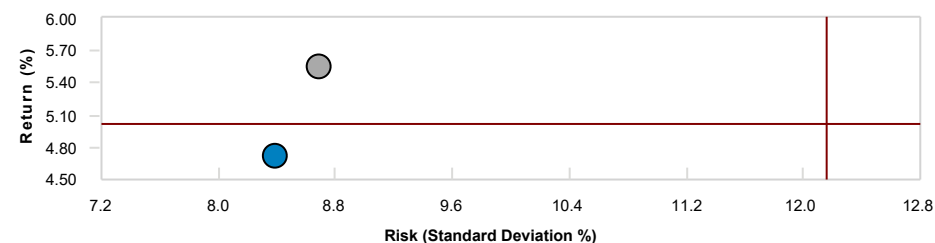
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
<span style="color: blue;">●</span> Total Fund	20	2 (10%)	5 (25%)	4 (20%)	9 (45%)
<span style="color: grey;">●</span> Total Fund Policy Index	20	4 (20%)	1 (5%)	5 (25%)	10 (50%)

### Peer Group Scattergram - 3 Years



	Return	Standard Deviation
<span style="color: blue;">●</span> Total Fund	4.21	9.43
<span style="color: grey;">●</span> Total Fund Policy Index	5.12	10.21
<span style="color: red;">—</span> Median	3.66	13.88

### Peer Group Scattergram - 5 Years



	Return	Standard Deviation
<span style="color: blue;">●</span> Total Fund	4.72	8.38
<span style="color: grey;">●</span> Total Fund Policy Index	5.55	8.68
<span style="color: red;">—</span> Median	5.02	12.16

### Historical Statistics - 3 Years

	Tracking Error	Up Market Capture	Down Market Capture	Alpha	Information Ratio	Sharpe Ratio	Beta	Downside Risk
Total Fund	1.46	92.96	97.90	-0.49	-0.65	0.40	0.92	6.65
Total Fund Policy Index	0.00	100.00	100.00	0.00	N/A	0.46	1.00	6.96

### Historical Statistics - 5 Years

	Tracking Error	Up Market Capture	Down Market Capture	Alpha	Information Ratio	Sharpe Ratio	Beta	Downside Risk
Total Fund	1.31	96.91	104.16	-0.56	-0.63	0.44	0.95	5.83
Total Fund Policy Index	0.00	100.00	100.00	0.00	N/A	0.52	1.00	5.82



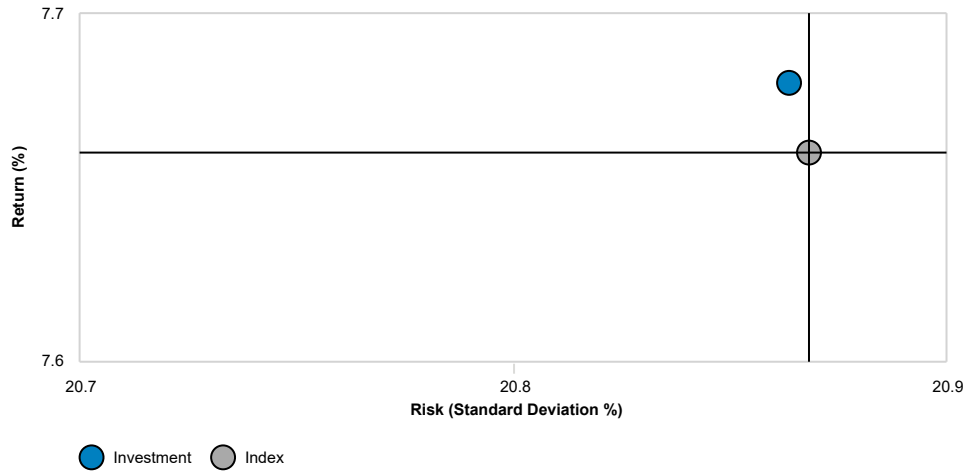
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	7.68	20.86	0.42	99.98	8	99.91	4
Index	7.66	20.87	0.42	100.00	8	100.00	4

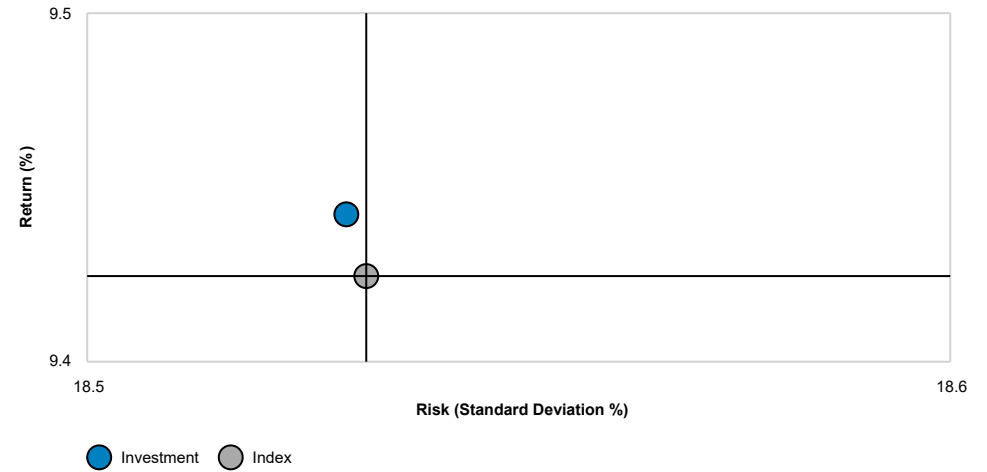
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	9.44	18.53	0.51	100.01	14	99.95	6
Index	9.42	18.53	0.51	100.00	14	100.00	6

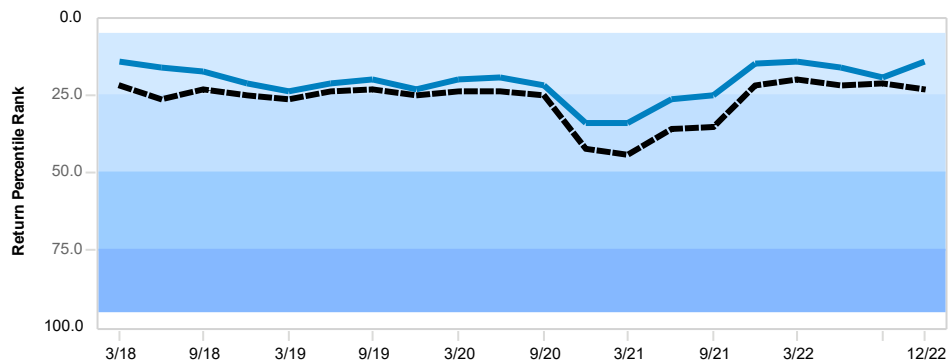
**Risk and Return 3 Years**



**Risk and Return 5 Years**

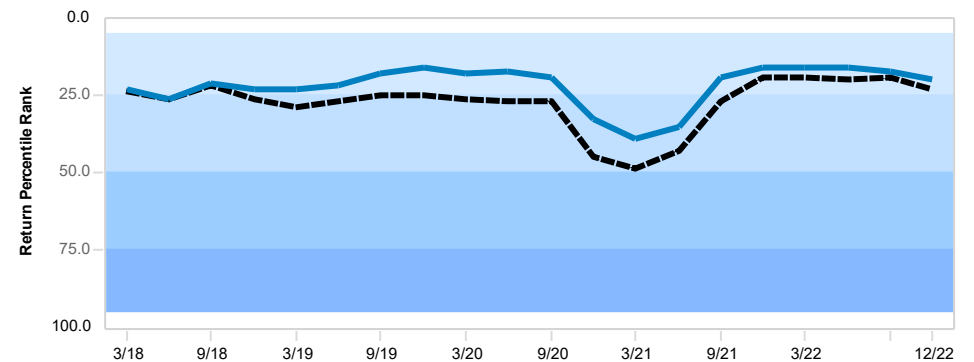


**3 Year Rolling Percentile Rank IM U.S. Large Cap Index Equity (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	17 (85%)	3 (15%)	0 (0%)	0 (0%)
Index	20	14 (70%)	6 (30%)	0 (0%)	0 (0%)

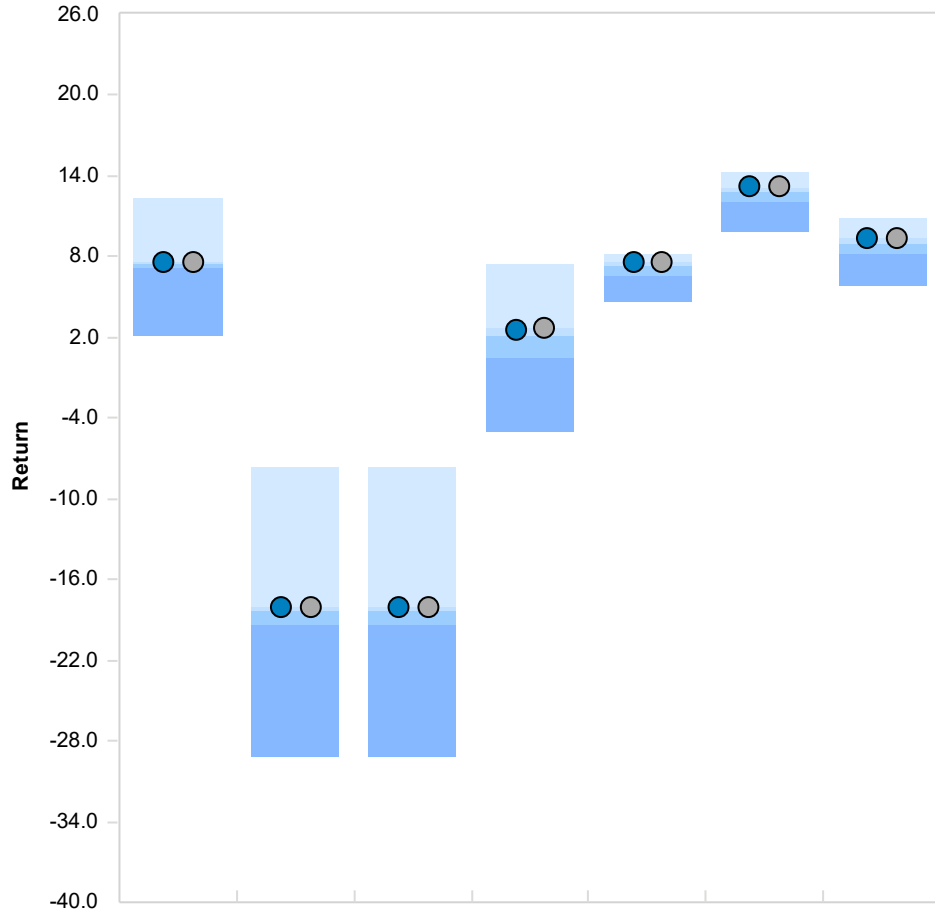
**5 Year Rolling Percentile Rank IM U.S. Large Cap Index Equity (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	16 (80%)	4 (20%)	0 (0%)	0 (0%)
Index	20	9 (45%)	11 (55%)	0 (0%)	0 (0%)

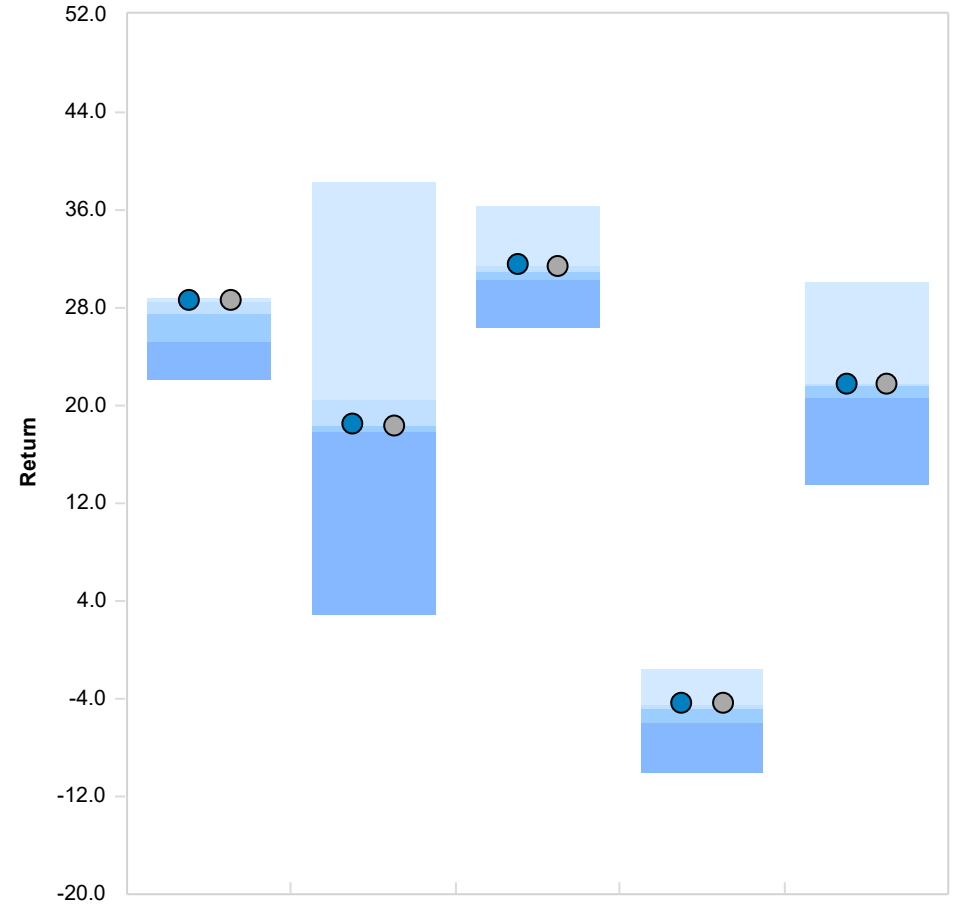


Peer Group Analysis - IM U.S. Large Cap Index Equity (SA+CF)



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	7.56 (22)	-18.12 (31)	-18.12 (31)	2.63 (31)	7.68 (14)	13.21 (17)	9.44 (20)
● Index	7.56 (25)	-18.11 (27)	-18.11 (27)	2.66 (24)	7.66 (23)	13.18 (24)	9.42 (23)
Median	7.42	-18.30	-18.30	2.14	7.36	12.81	8.97

Peer Group Analysis - IM U.S. Large Cap Index Equity (SA+CF)



	2021	2020	2019	2018	2017
● Investment	28.65 (16)	18.53 (47)	31.54 (17)	-4.40 (24)	21.85 (22)
● Index	28.71 (9)	18.40 (53)	31.49 (25)	-4.38 (22)	21.83 (25)
Median	27.53	18.45	30.95	-4.87	21.58

Comparative Performance

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-4.89 (57)	-16.11 (37)	-4.60 (27)	11.01 (25)	0.56 (29)	8.53 (27)
Index	-4.88 (49)	-16.10 (32)	-4.60 (26)	11.03 (17)	0.58 (15)	8.55 (21)
Median	-4.88	-16.19	-4.68	10.33	0.31	8.39



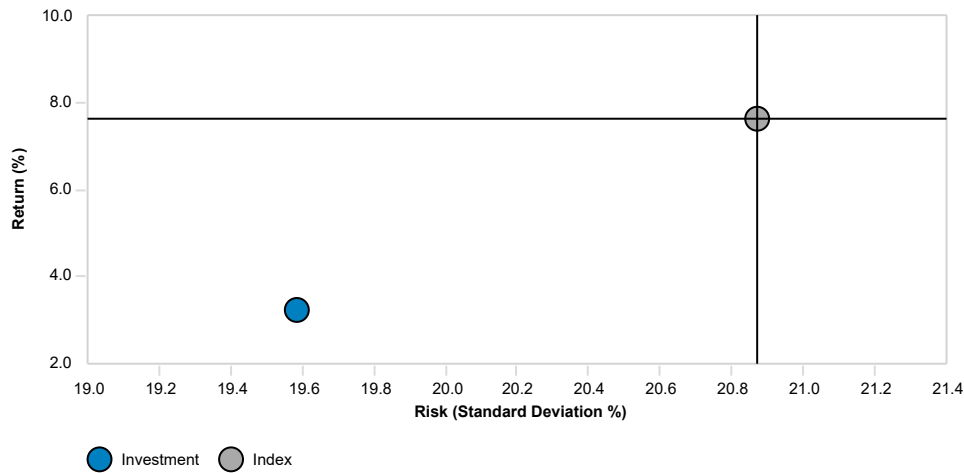
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	3.23	19.59	0.22	87.44	8	100.09	4
Index	7.66	20.87	0.42	100.00	8	100.00	4

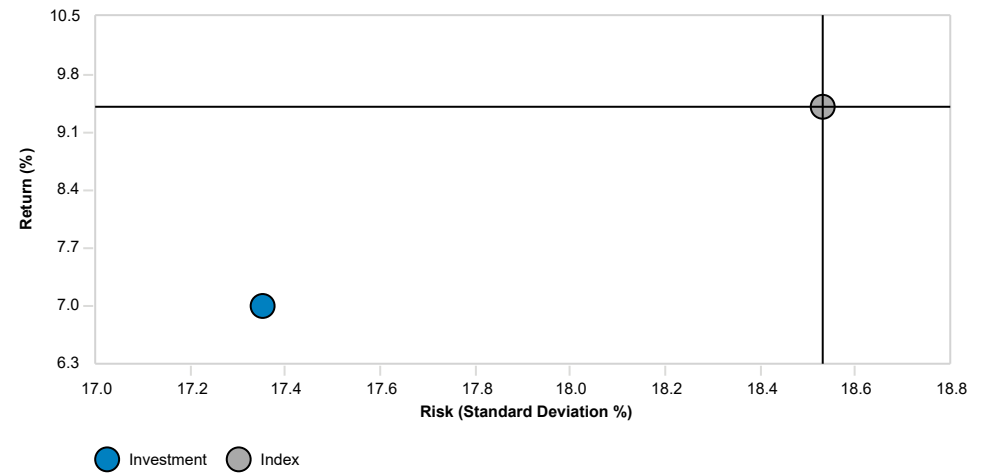
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	6.99	17.35	0.40	90.50	14	97.23	6
Index	9.42	18.53	0.51	100.00	14	100.00	6

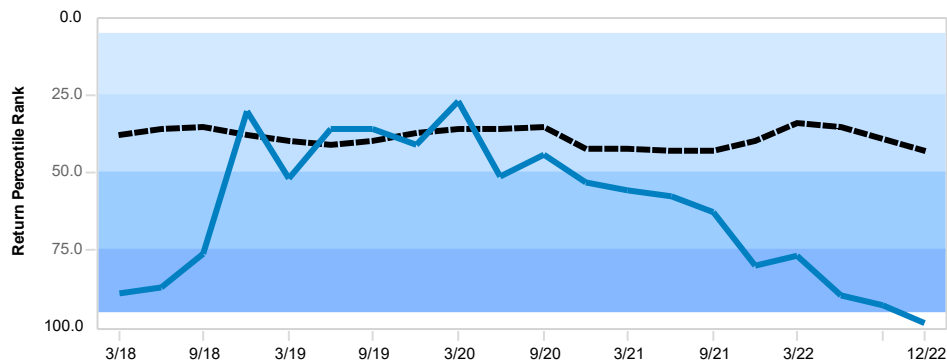
**Risk and Return 3 Years**



**Risk and Return 5 Years**

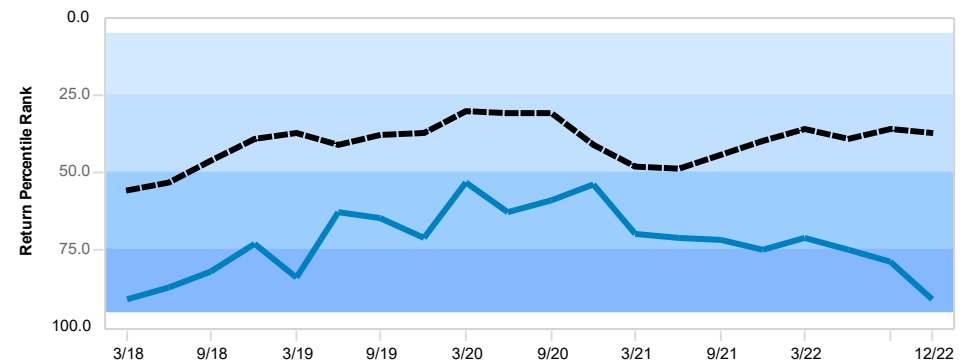


**3 Year Rolling Percentile Rank IM U.S. Large Cap Core Equity (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	6 (30%)	6 (30%)	8 (40%)
Index	20	0 (0%)	20 (100%)	0 (0%)	0 (0%)

**5 Year Rolling Percentile Rank IM U.S. Large Cap Core Equity (SA+CF)**

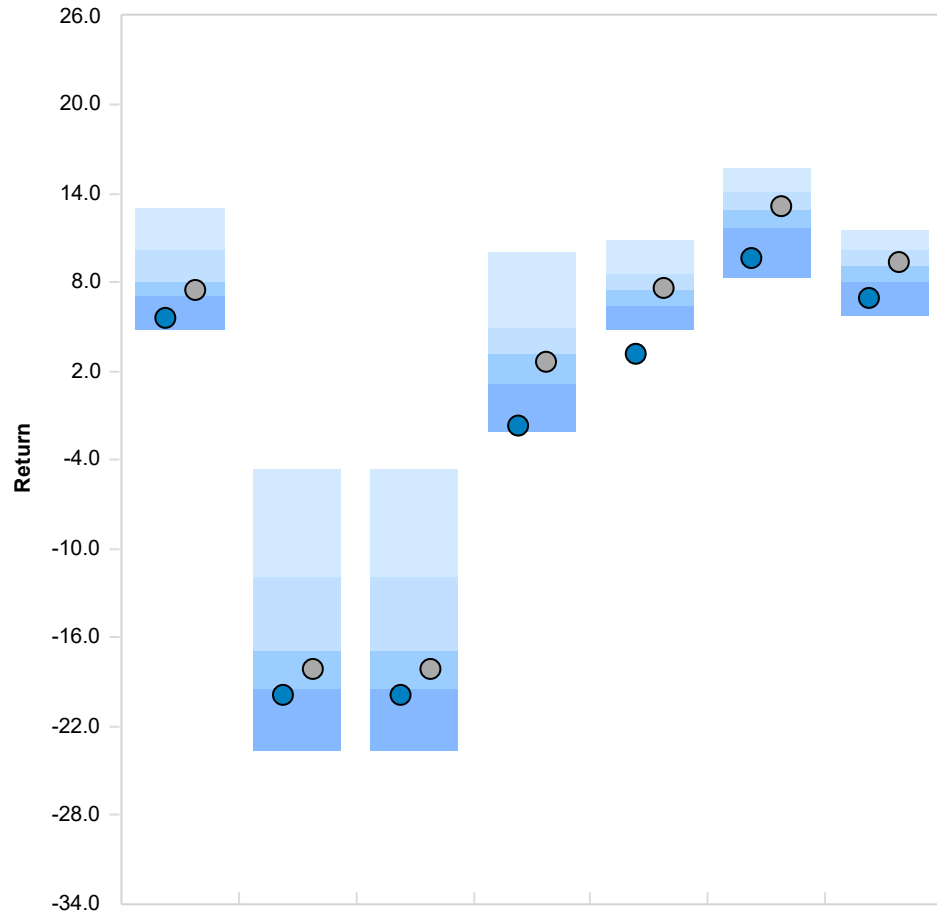


	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	0 (0%)	14 (70%)	6 (30%)
Index	20	0 (0%)	18 (90%)	2 (10%)	0 (0%)



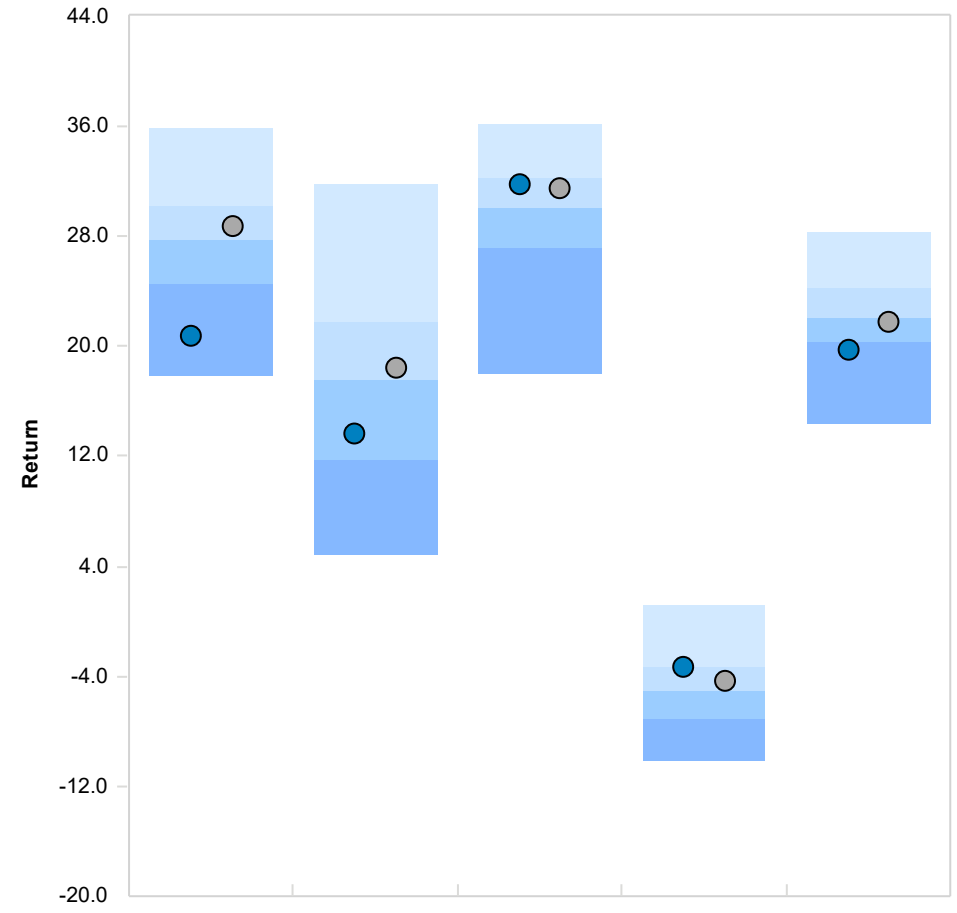


**Peer Group Analysis - IM U.S. Large Cap Core Equity (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	5.66 (92)	-19.85 (83)	-19.85 (83)	-1.61 (94)	3.23 (99)	9.74 (92)	6.99 (91)
● Index	7.56 (64)	-18.11 (64)	-18.11 (64)	2.66 (55)	7.66 (43)	13.18 (41)	9.42 (37)
Median	8.08	-16.86	-16.86	3.23	7.47	12.91	9.08

**Peer Group Analysis - IM U.S. Large Cap Core Equity (SA+CF)**



	2021	2020	2019	2018	2017
● Investment	20.79 (89)	13.61 (68)	31.87 (29)	-3.35 (25)	19.69 (80)
● Index	28.71 (37)	18.40 (46)	31.49 (33)	-4.38 (40)	21.83 (55)
Median	27.77	17.54	30.03	-5.07	22.09

**Comparative Performance**

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-6.45 (93)	-15.38 (54)	-4.17 (40)	7.31 (86)	0.09 (58)	7.12 (72)
Index	-4.88 (57)	-16.10 (68)	-4.60 (51)	11.03 (32)	0.58 (32)	8.55 (33)
Median	-4.75	-15.21	-4.59	10.20	0.19	8.09



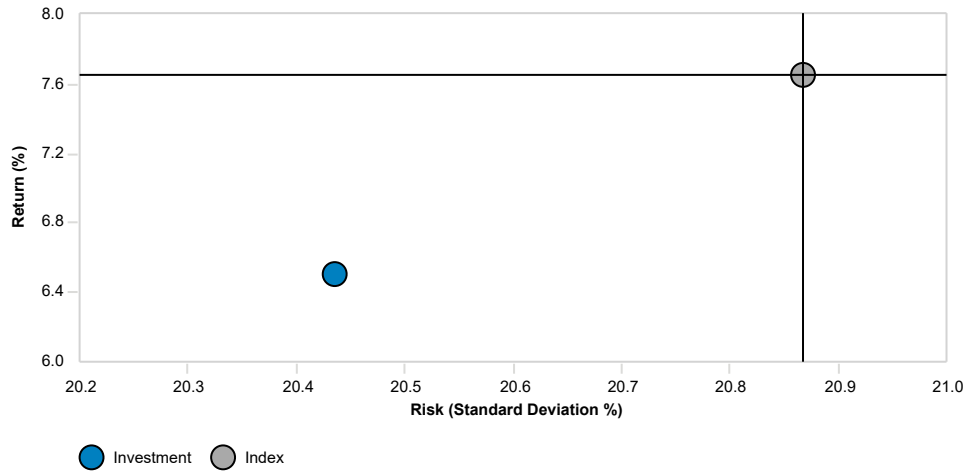
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	6.51	20.43	0.37	95.71	8	98.64	4
Index	7.66	20.87	0.42	100.00	8	100.00	4

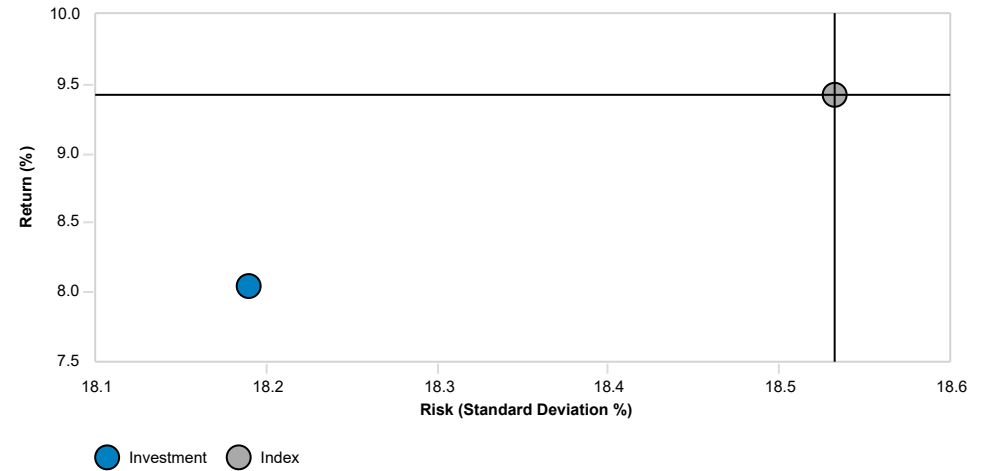
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	8.04	18.19	0.45	95.27	14	99.13	6
Index	9.42	18.53	0.51	100.00	14	100.00	6

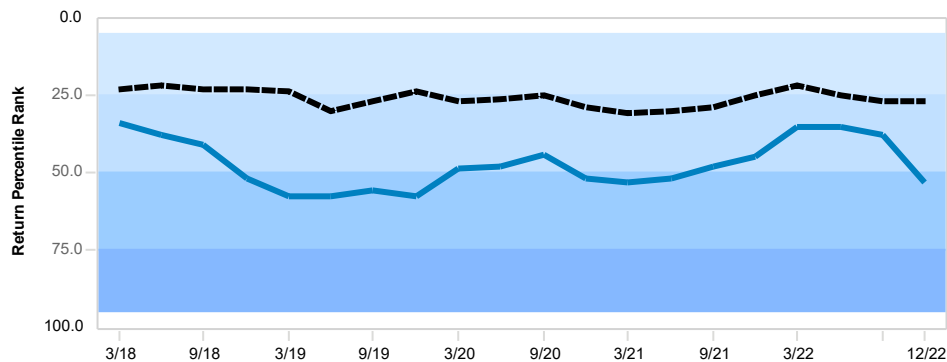
**Risk and Return 3 Years**



**Risk and Return 5 Years**

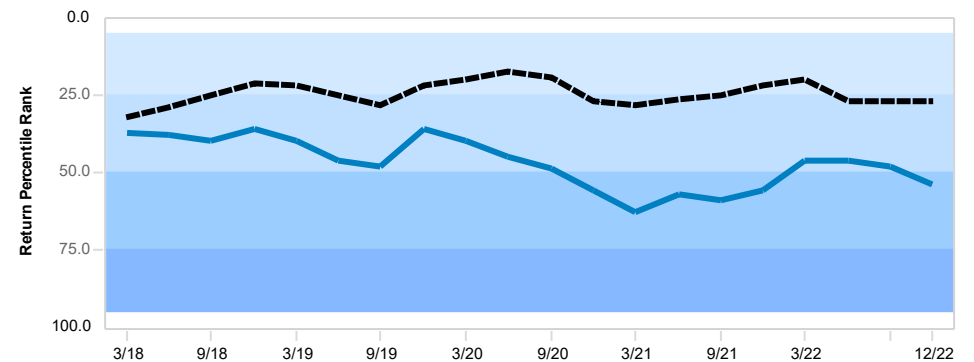


**3 Year Rolling Percentile Rank IM U.S. Large Cap Core Equity (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	11 (55%)	9 (45%)	0 (0%)
Index	20	10 (50%)	10 (50%)	0 (0%)	0 (0%)

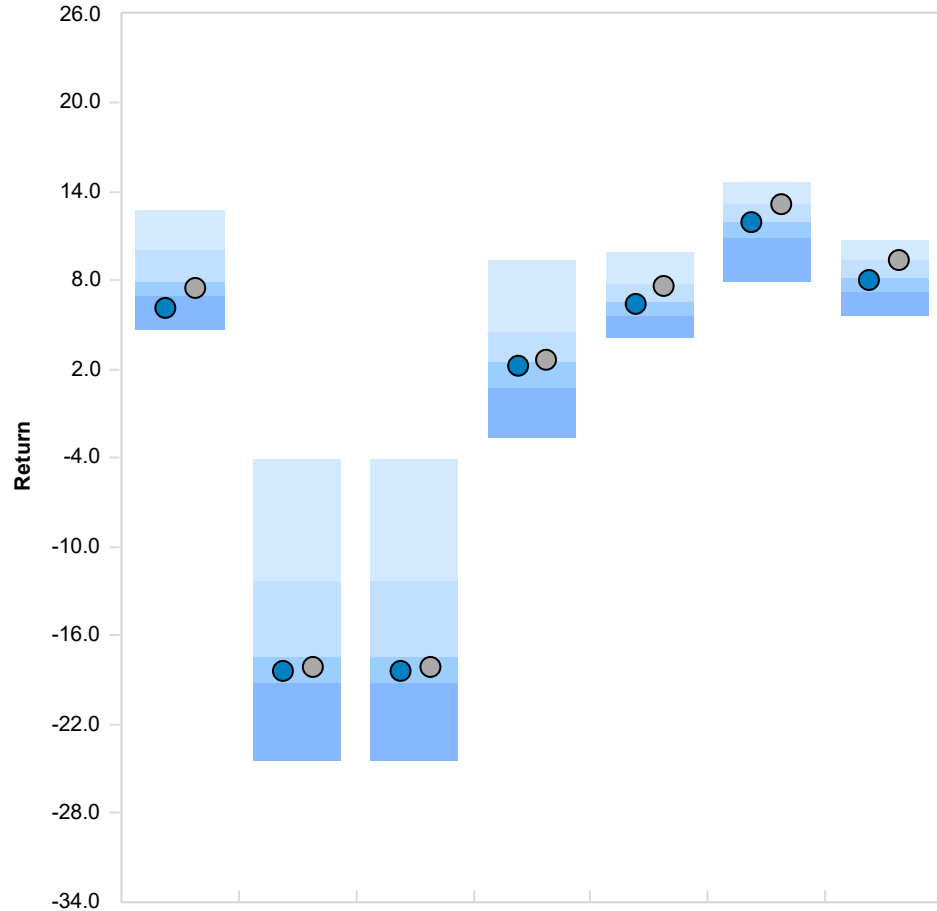
**5 Year Rolling Percentile Rank IM U.S. Large Cap Core Equity (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	14 (70%)	6 (30%)	0 (0%)
Index	20	11 (55%)	9 (45%)	0 (0%)	0 (0%)

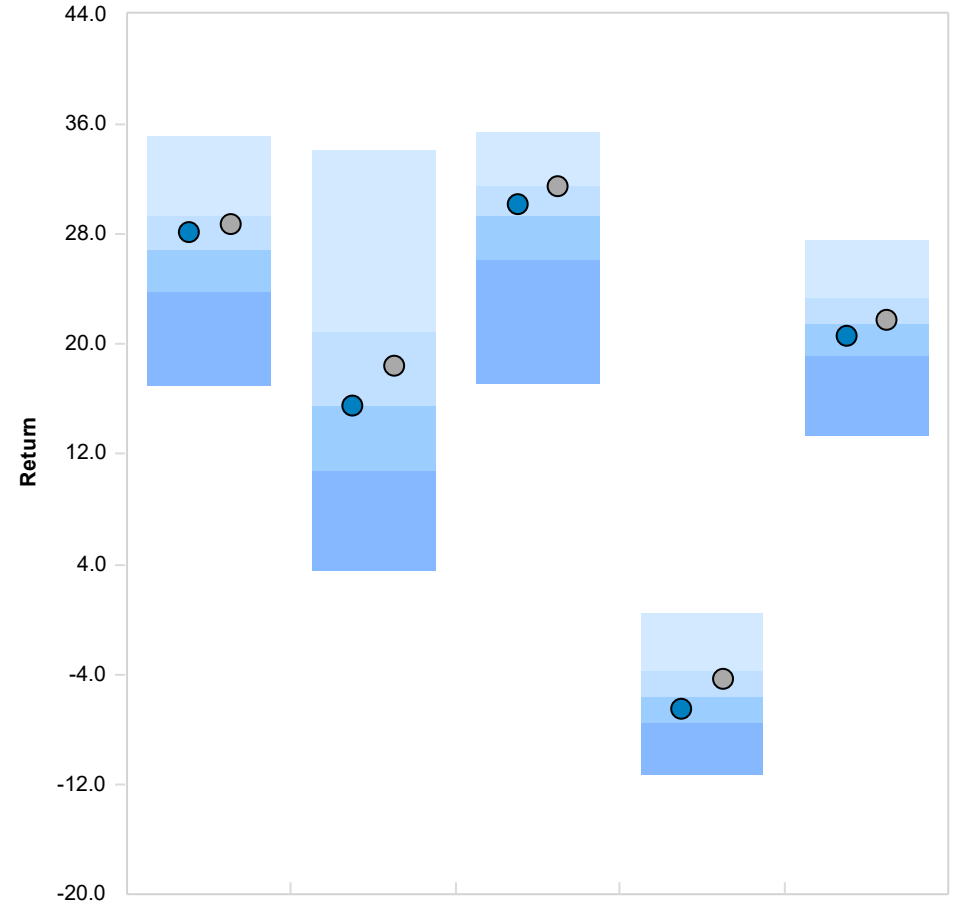


**Peer Group Analysis - IM U.S. Large Cap Core Equity (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	6.18 (86)	-18.40 (62)	-18.40 (62)	2.25 (54)	6.51 (53)	12.00 (51)	8.04 (54)
● Index	7.56 (59)	-18.11 (59)	-18.11 (59)	2.66 (48)	7.66 (27)	13.18 (24)	9.42 (27)
Median	7.97	-17.36	-17.36	2.54	6.65	12.00	8.19

**Peer Group Analysis - IM U.S. Large Cap Core Equity (SA+CF)**



	2021	2020	2019	2018	2017
● Investment	28.13 (37)	15.56 (50)	30.24 (37)	-6.43 (61)	20.67 (61)
● Index	28.71 (29)	18.40 (39)	31.49 (26)	-4.38 (32)	21.83 (45)
Median	26.87	15.56	29.36	-5.70	21.51

**Comparative Performance**

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-4.97 (54)	-15.58 (57)	-4.21 (41)	11.19 (23)	0.04 (54)	7.88 (50)
Index	-4.88 (48)	-16.10 (72)	-4.60 (48)	11.03 (26)	0.58 (26)	8.55 (23)
Median	-4.93	-15.27	-4.66	10.13	0.11	7.86



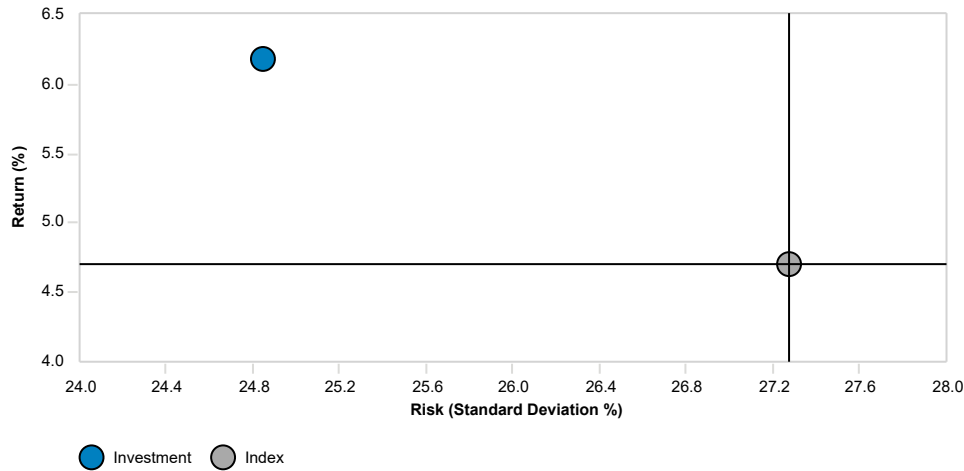
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	6.19	24.84	0.34	92.36	6	88.33	6
Index	4.70	27.27	0.28	100.00	7	100.00	5

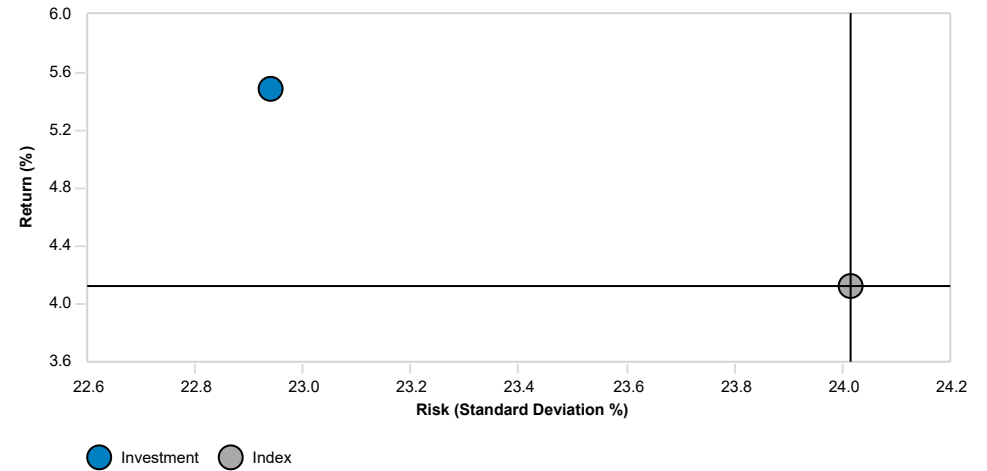
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	5.49	22.94	0.29	97.44	12	93.36	8
Index	4.13	24.01	0.24	100.00	12	100.00	8

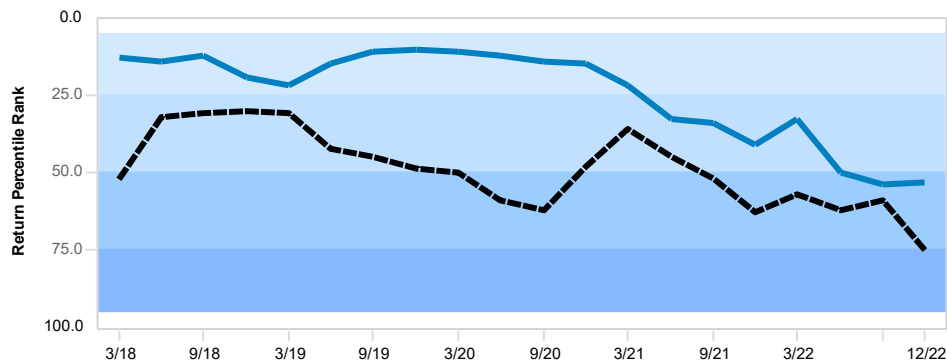
**Risk and Return 3 Years**



**Risk and Return 5 Years**

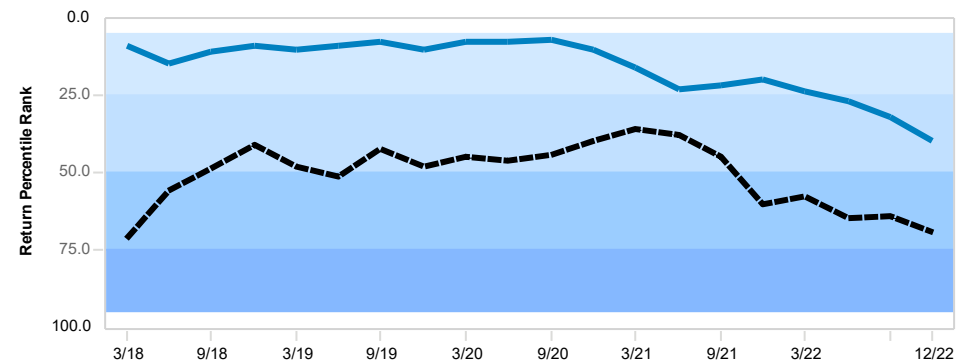


**3 Year Rolling Percentile Rank IM U.S. Small Cap Value Equity (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	13 (65%)	5 (25%)	2 (10%)	0 (0%)
Index	20	0 (0%)	11 (55%)	9 (45%)	0 (0%)

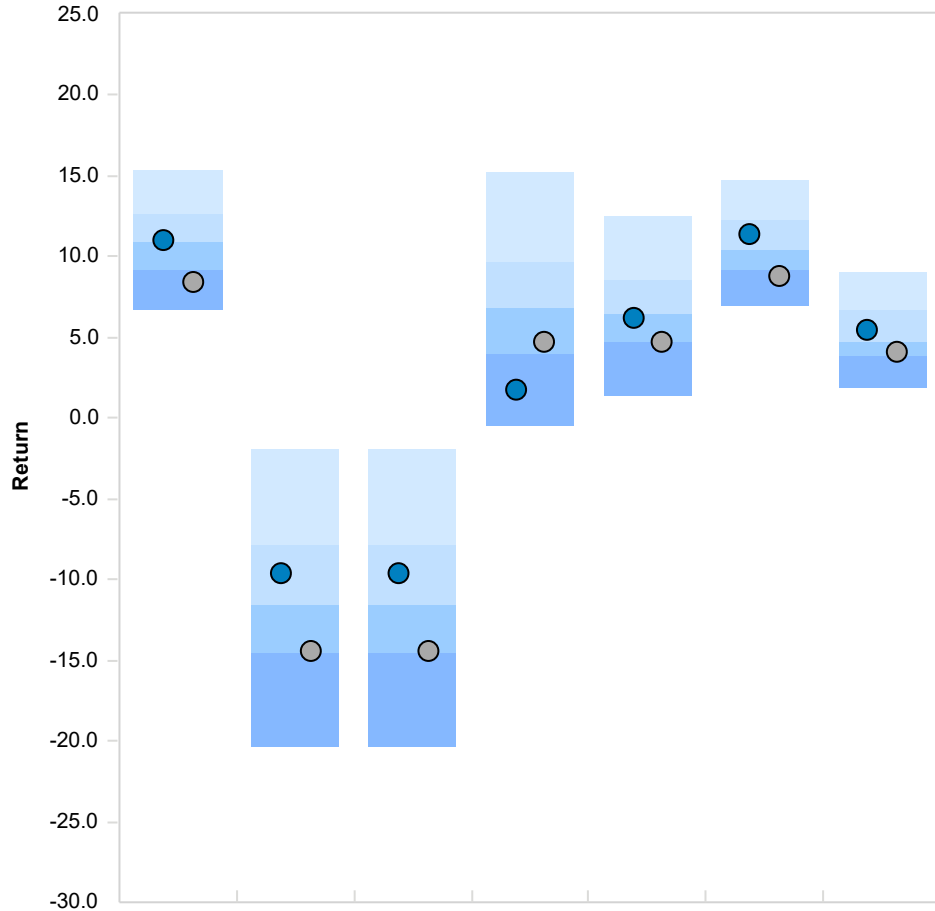
**5 Year Rolling Percentile Rank IM U.S. Small Cap Value Equity (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	17 (85%)	3 (15%)	0 (0%)	0 (0%)
Index	20	0 (0%)	12 (60%)	8 (40%)	0 (0%)

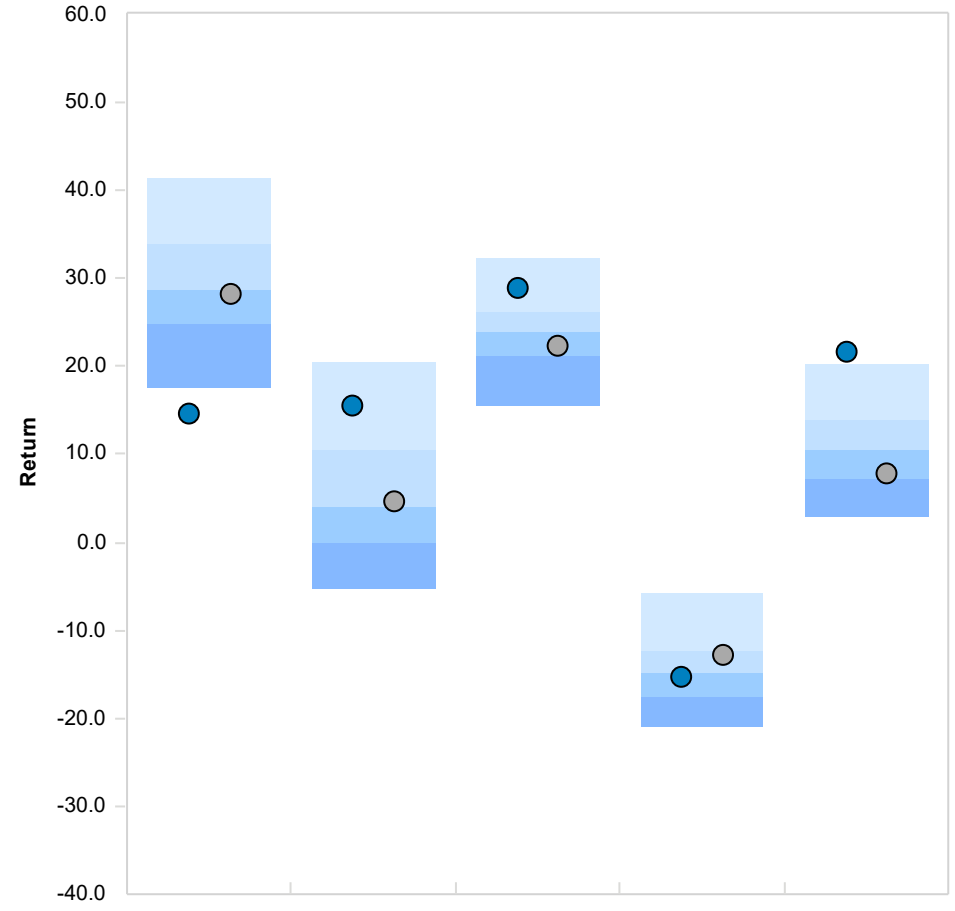


**Peer Group Analysis - IM U.S. Small Cap Value Equity (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	10.97 (48)	-9.57 (33)	-9.57 (33)	1.82 (85)	6.19 (53)	11.46 (35)	5.49 (40)
● Index	8.42 (81)	-14.48 (75)	-14.48 (75)	4.73 (69)	4.70 (75)	8.87 (77)	4.13 (69)
Median	10.86	-11.57	-11.57	6.80	6.44	10.39	4.73

**Peer Group Analysis - IM U.S. Small Cap Value Equity (SA+CF)**



	2021	2020	2019	2018	2017
● Investment	14.64 (98)	15.50 (15)	28.89 (12)	-15.35 (56)	21.78 (4)
● Index	28.27 (53)	4.63 (49)	22.39 (65)	-12.86 (32)	7.84 (71)
Median	28.62	4.10	23.95	-14.85	10.50

**Comparative Performance**

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-4.26 (44)	-13.55 (51)	-1.54 (29)	4.55 (85)	-2.12 (54)	-1.48 (100)
Index	-4.61 (52)	-15.28 (77)	-2.40 (39)	4.36 (87)	-2.98 (76)	4.56 (35)
Median	-4.54	-13.53	-3.06	6.66	-2.04	3.90



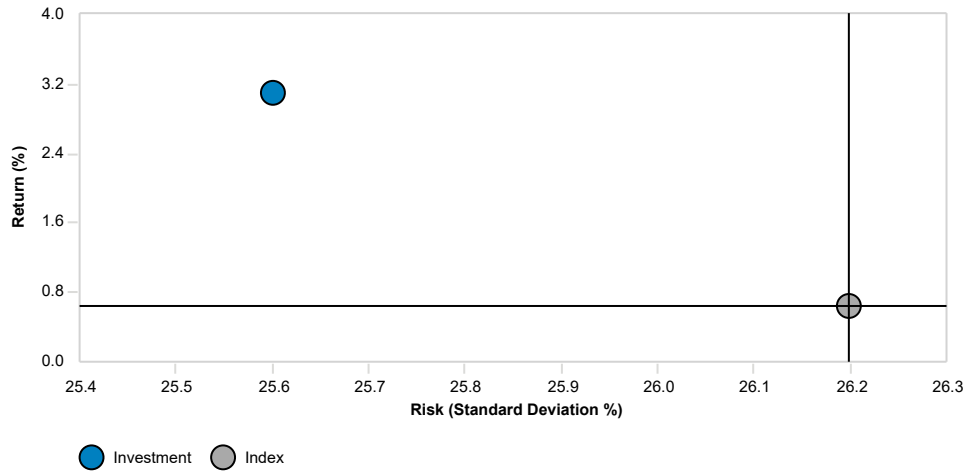
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	3.10	25.60	0.22	103.01	7	96.43	5
Index	0.65	26.20	0.13	100.00	8	100.00	4

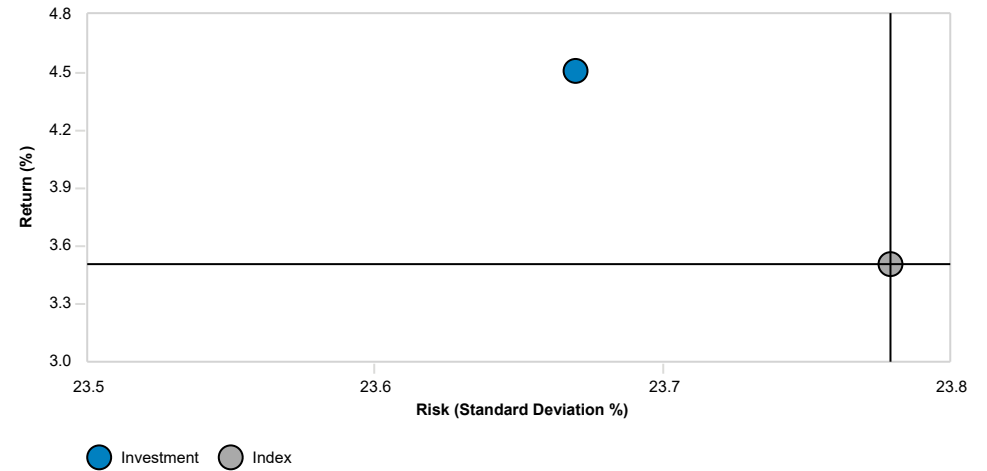
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	4.51	23.67	0.25	101.39	12	98.36	8
Index	3.51	23.78	0.21	100.00	14	100.00	6

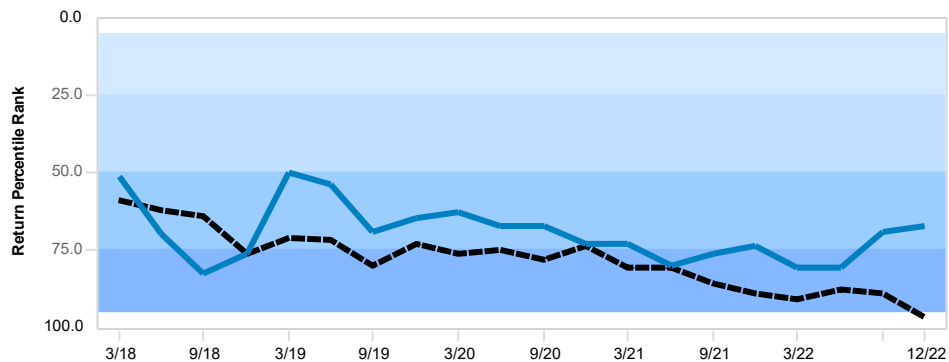
Risk and Return 3 Years



Risk and Return 5 Years

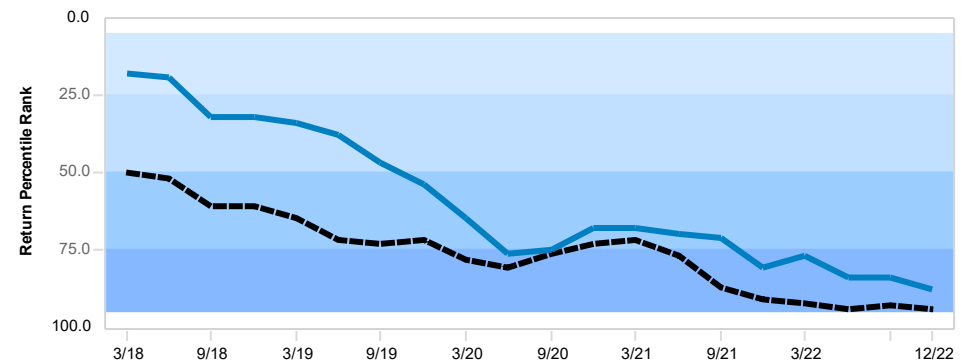


3 Year Rolling Percentile Rank IM U.S. Small Cap Growth Equity (SA+CF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	1 (5%)	13 (65%)	6 (30%)
Index	20	0 (0%)	0 (0%)	8 (40%)	12 (60%)

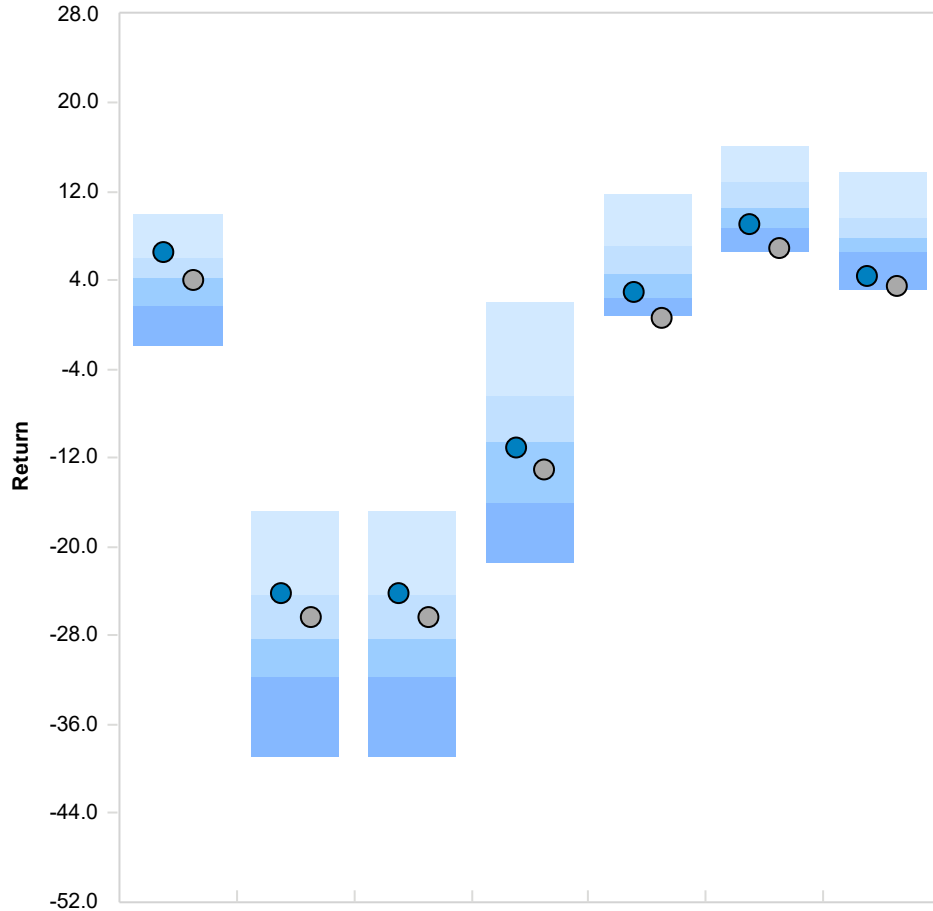
5 Year Rolling Percentile Rank IM U.S. Small Cap Growth Equity (SA+CF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	2 (10%)	5 (25%)	7 (35%)	6 (30%)
Index	20	0 (0%)	1 (5%)	9 (45%)	10 (50%)

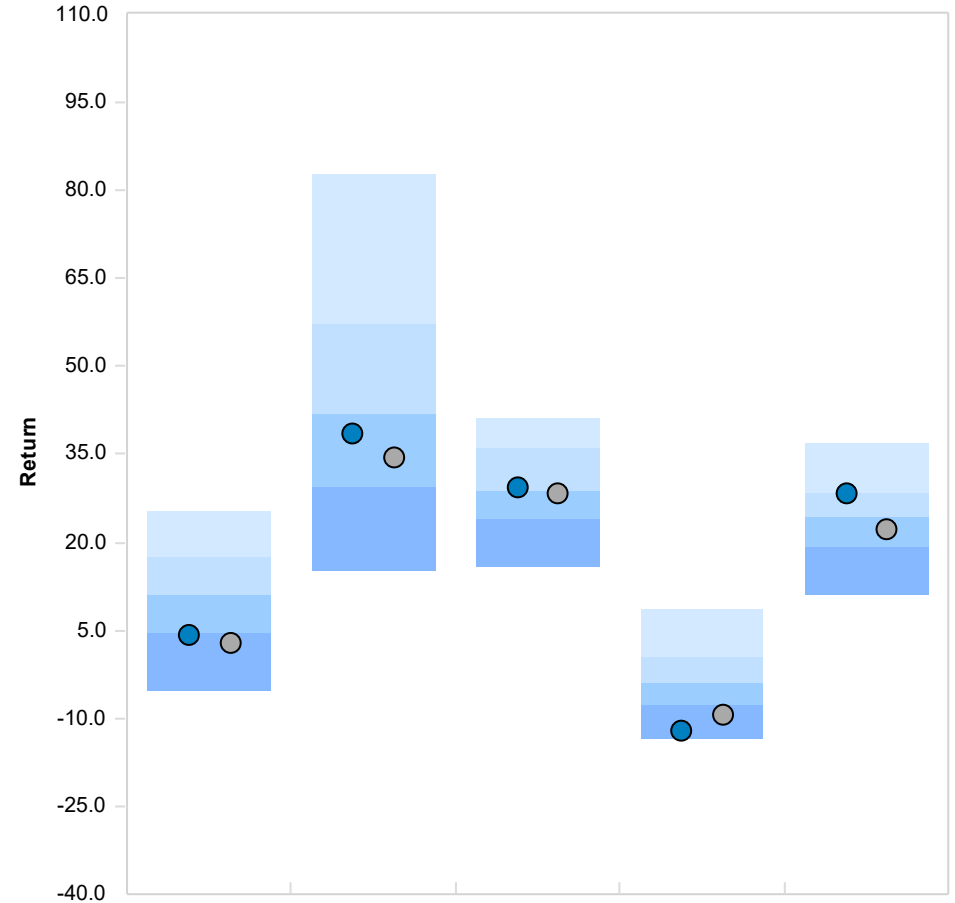


**Peer Group Analysis - IM U.S. Small Cap Growth Equity (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	6.55 (20)	-24.18 (24)	-24.18 (24)	-11.06 (55)	3.10 (67)	9.09 (69)	4.51 (88)
● Index	4.13 (51)	-26.36 (36)	-26.36 (36)	-12.98 (62)	0.65 (97)	6.98 (94)	3.51 (94)
Median	4.18	-28.23	-28.23	-10.53	4.66	10.48	7.92

**Peer Group Analysis - IM U.S. Small Cap Growth Equity (SA+CF)**



	2021	2020	2019	2018	2017
● Investment	4.32 (78)	38.53 (59)	29.23 (49)	-11.94 (92)	28.31 (25)
● Index	2.83 (83)	34.63 (65)	28.48 (51)	-9.31 (81)	22.17 (58)
Median	11.17	41.84	28.82	-3.95	24.13

**Comparative Performance**

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-0.19 (40)	-20.13 (48)	-10.74 (21)	0.01 (67)	-1.58 (47)	3.51 (77)
Index	0.24 (32)	-19.25 (44)	-12.63 (44)	0.01 (67)	-5.65 (93)	3.92 (74)
Median	-0.94	-20.27	-13.30	2.35	-1.75	5.34



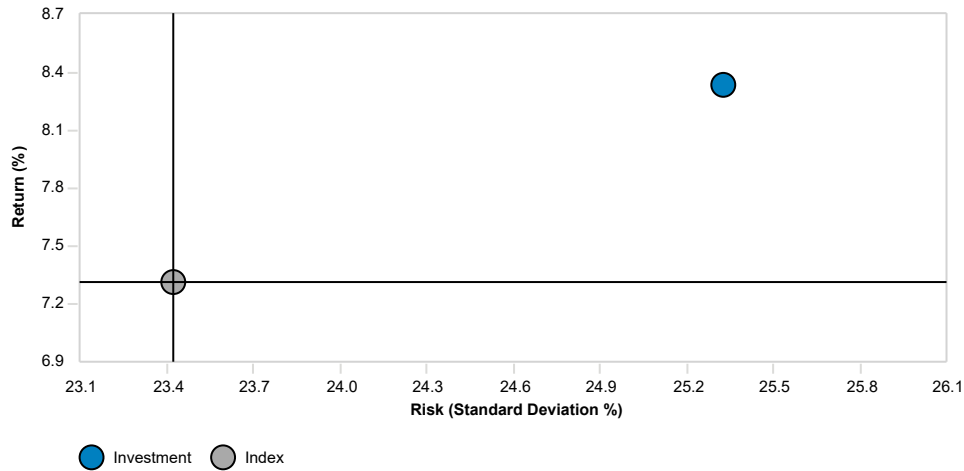
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	8.34	25.33	0.41	99.34	6	94.36	6
Index	7.32	23.43	0.39	100.00	8	100.00	4

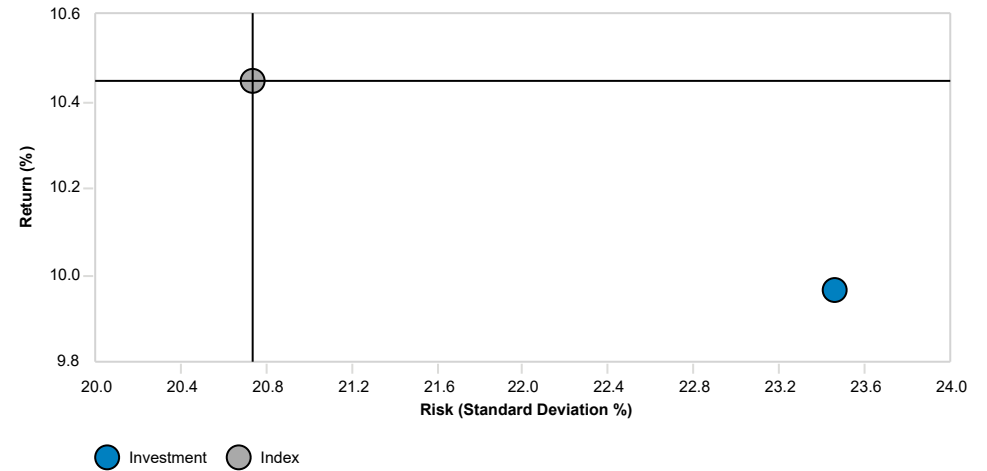
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	9.96	23.46	0.47	102.30	12	102.80	8
Index	10.45	20.74	0.52	100.00	15	100.00	5

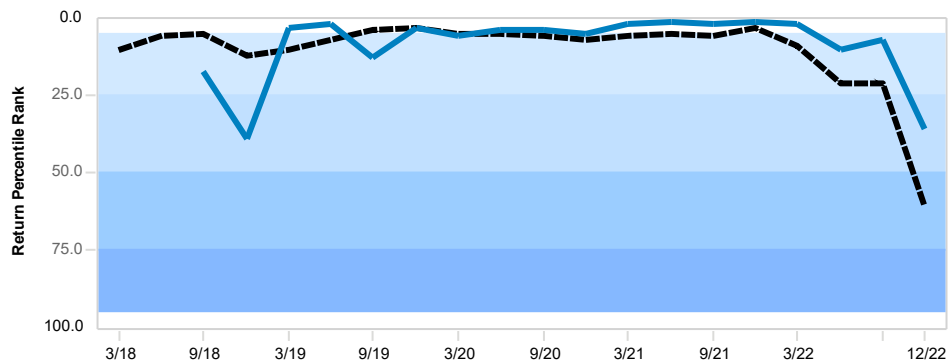
**Risk and Return 3 Years**



**Risk and Return 5 Years**

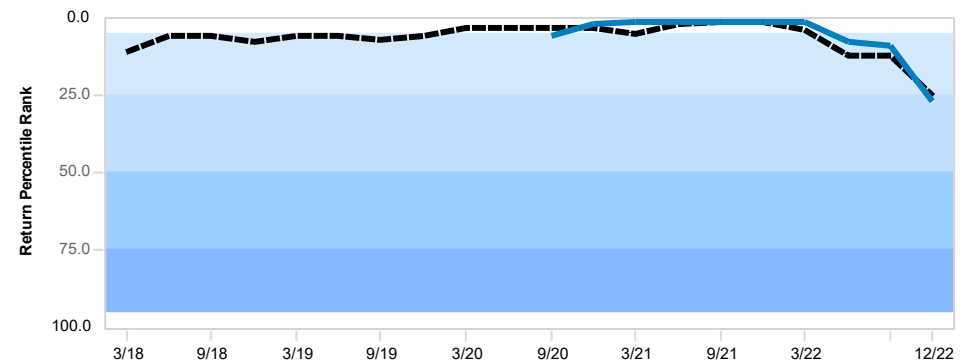


**3 Year Rolling Percentile Rank IM U.S. All Cap Core Equity (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	18	16 (89%)	2 (11%)	0 (0%)	0 (0%)
Index	20	19 (95%)	0 (0%)	1 (5%)	0 (0%)

**5 Year Rolling Percentile Rank IM U.S. All Cap Core Equity (SA+CF)**

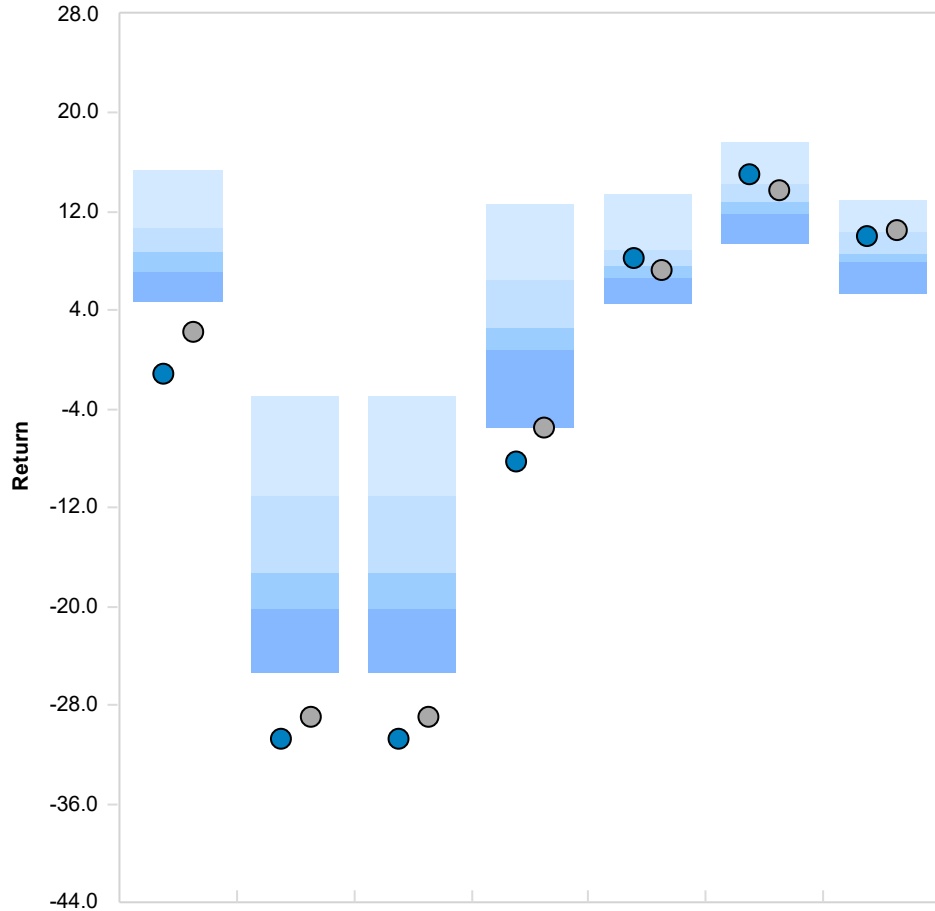


	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	10	9 (90%)	1 (10%)	0 (0%)	0 (0%)
Index	20	20 (100%)	0 (0%)	0 (0%)	0 (0%)



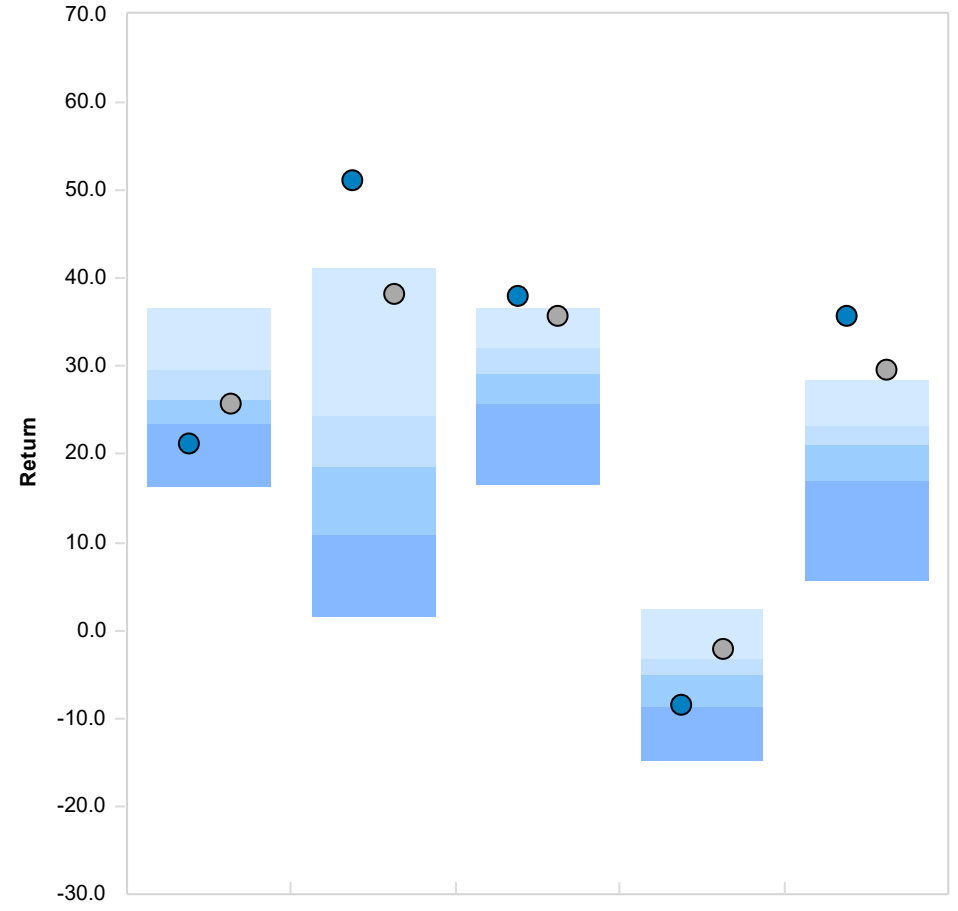


**Peer Group Analysis - IM U.S. All Cap Core Equity (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-1.15 (100)	-30.72 (100)	-30.72 (100)	-8.32 (100)	8.34 (36)	15.10 (19)	9.96 (27)
● Index	2.31 (100)	-28.97 (98)	-28.97 (98)	-5.45 (95)	7.32 (61)	13.83 (28)	10.45 (25)
Median	8.73	-17.31	-17.31	2.58	7.67	12.80	8.62

**Peer Group Analysis - IM U.S. All Cap Core Equity (SA+CF)**



	2021	2020	2019	2018	2017
● Investment	21.32 (83)	51.29 (2)	38.03 (3)	-8.39 (74)	35.81 (1)
● Index	25.85 (55)	38.26 (9)	35.85 (7)	-2.12 (18)	29.59 (4)
Median	26.28	18.60	29.28	-5.10	20.92

**Comparative Performance**

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-3.84 (23)	-23.88 (98)	-4.26 (32)	3.11 (97)	-0.97 (83)	11.89 (2)
Index	-3.37 (18)	-20.83 (96)	-9.25 (91)	10.89 (25)	0.69 (24)	11.38 (4)
Median	-4.52	-15.00	-5.02	9.37	0.04	7.48



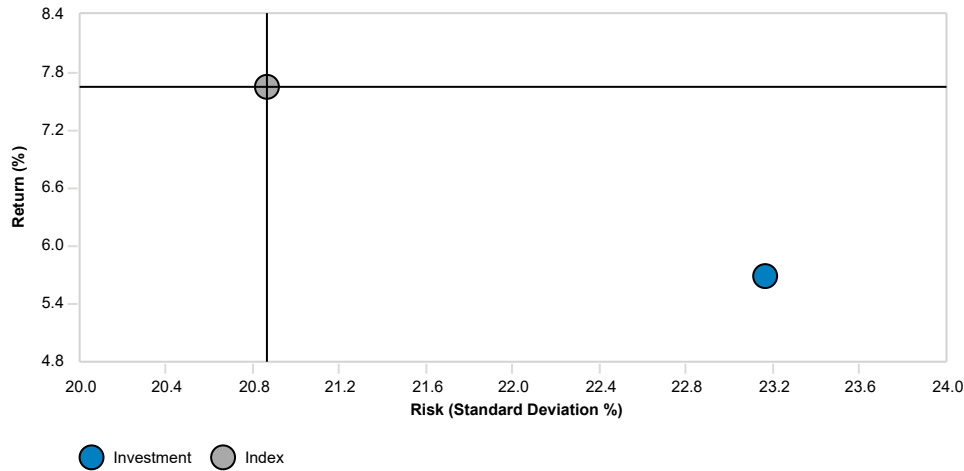
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	5.70	23.17	0.32	100.24	7	105.45	5
Index	7.66	20.87	0.42	100.00	8	100.00	4

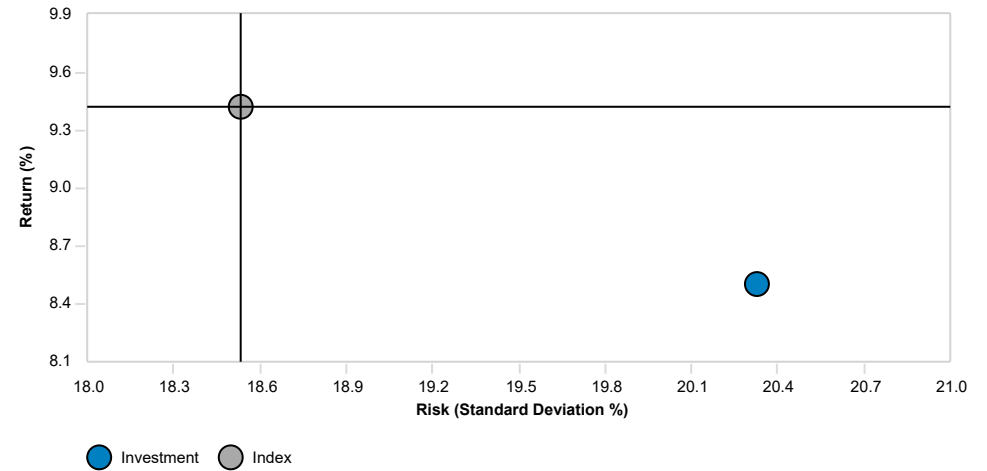
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	8.50	20.33	0.44	100.32	14	102.78	6
Index	9.42	18.53	0.51	100.00	14	100.00	6

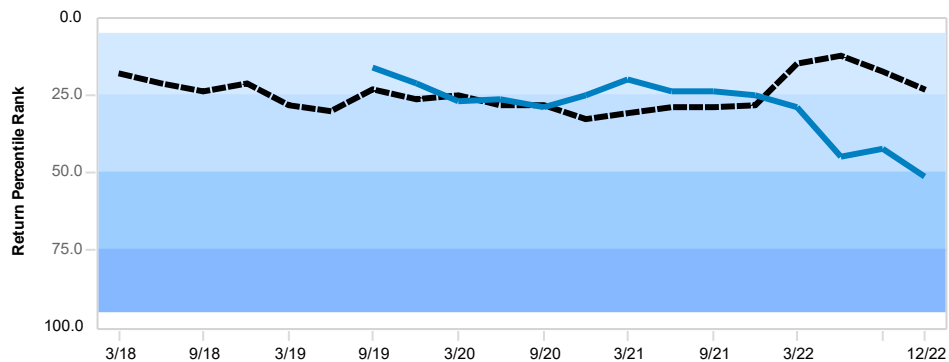
Risk and Return 3 Years



Risk and Return 5 Years

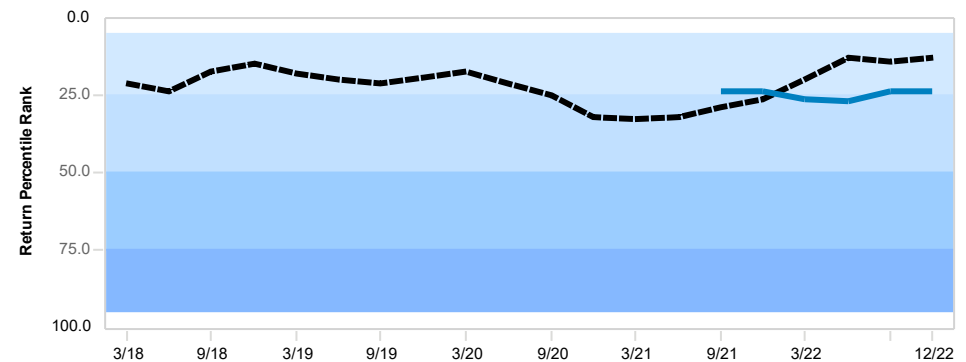


3 Year Rolling Percentile Rank IM U.S. Equity (MF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	14	7 (50%)	6 (43%)	1 (7%)	0 (0%)
Index	20	10 (50%)	10 (50%)	0 (0%)	0 (0%)

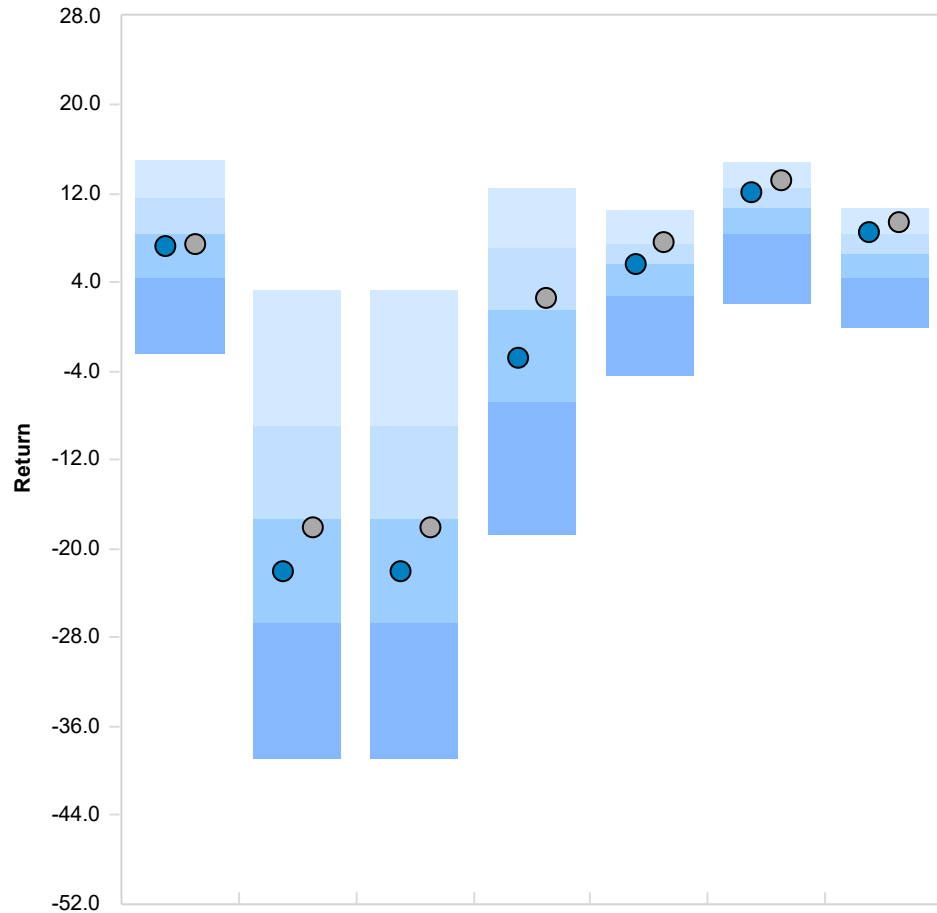
5 Year Rolling Percentile Rank IM U.S. Equity (MF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	6	4 (67%)	2 (33%)	0 (0%)	0 (0%)
Index	20	15 (75%)	5 (25%)	0 (0%)	0 (0%)

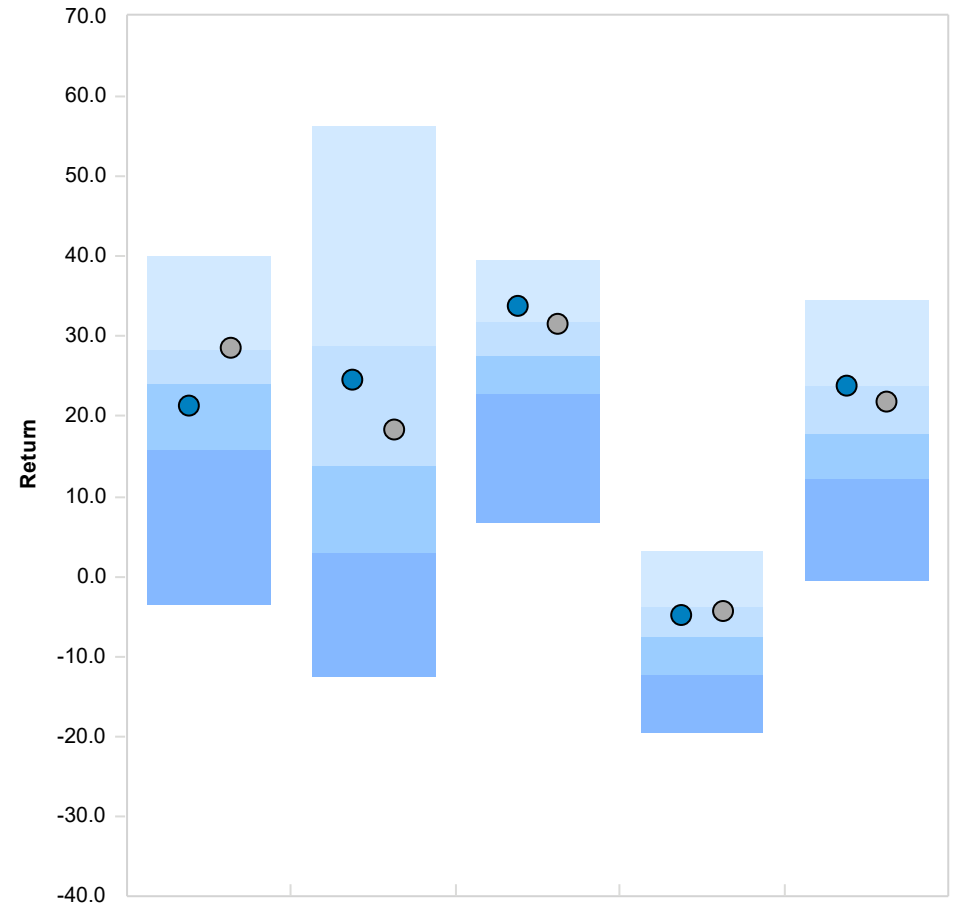


Peer Group Analysis - IM U.S. Equity (MF)



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	7.41 (58)	-22.02 (66)	-22.02 (66)	-2.67 (67)	5.70 (51)	12.13 (31)	8.50 (24)
● Index	7.56 (56)	-18.11 (53)	-18.11 (53)	2.66 (43)	7.66 (23)	13.18 (16)	9.42 (13)
Median	8.34	-17.25	-17.25	1.52	5.70	10.70	6.65

Peer Group Analysis - IM U.S. Equity (MF)



	2021	2020	2019	2018	2017
● Investment	21.48 (62)	24.65 (30)	33.89 (17)	-4.89 (33)	23.74 (26)
● Index	28.71 (24)	18.40 (41)	31.49 (27)	-4.38 (29)	21.83 (32)
Median	24.23	13.98	27.51	-7.48	17.94

Comparative Performance

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-2.69 (24)	-18.17 (71)	-8.83 (69)	8.32 (39)	-1.50 (67)	5.07 (69)
Index	-4.88 (56)	-16.10 (57)	-4.60 (42)	11.03 (14)	0.58 (23)	8.55 (27)
Median	-4.64	-15.44	-5.54	7.28	-0.58	6.45



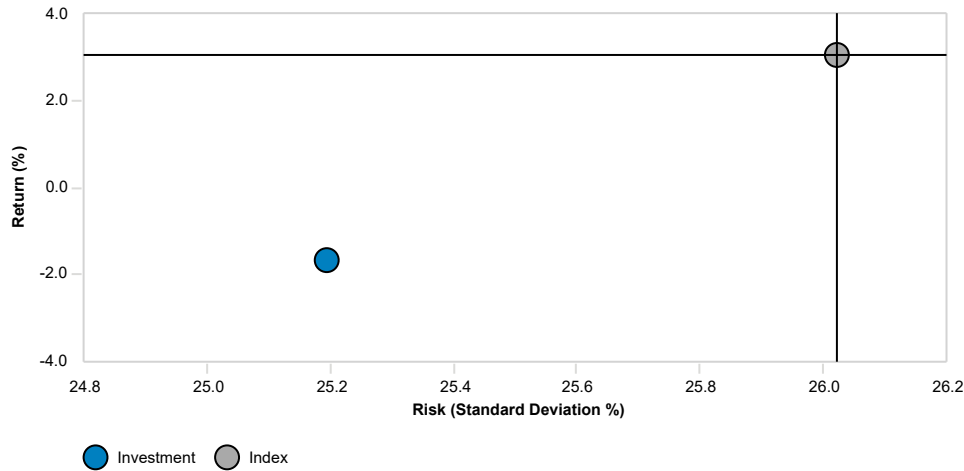
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-1.65	25.20	0.03	88.78	7	102.26	5
Index	3.10	26.02	0.22	100.00	7	100.00	5

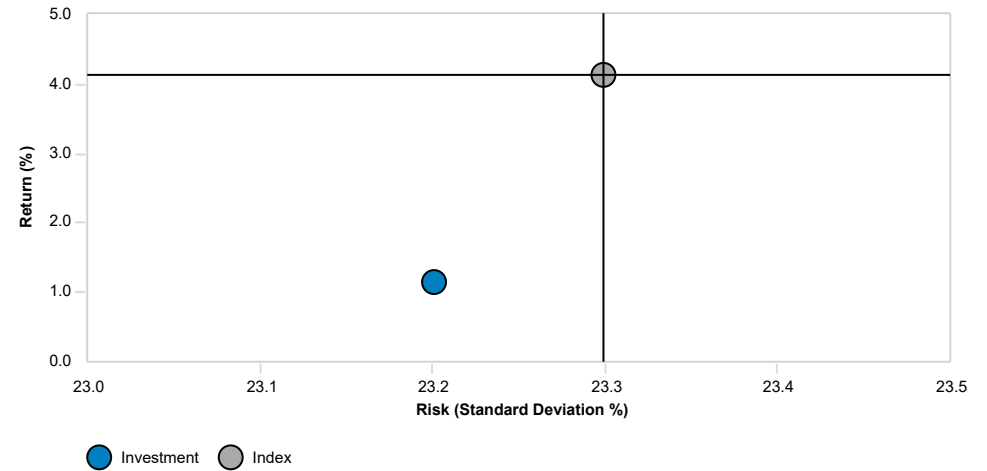
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	1.14	23.20	0.11	94.09	14	103.28	6
Index	4.13	23.30	0.24	100.00	12	100.00	8

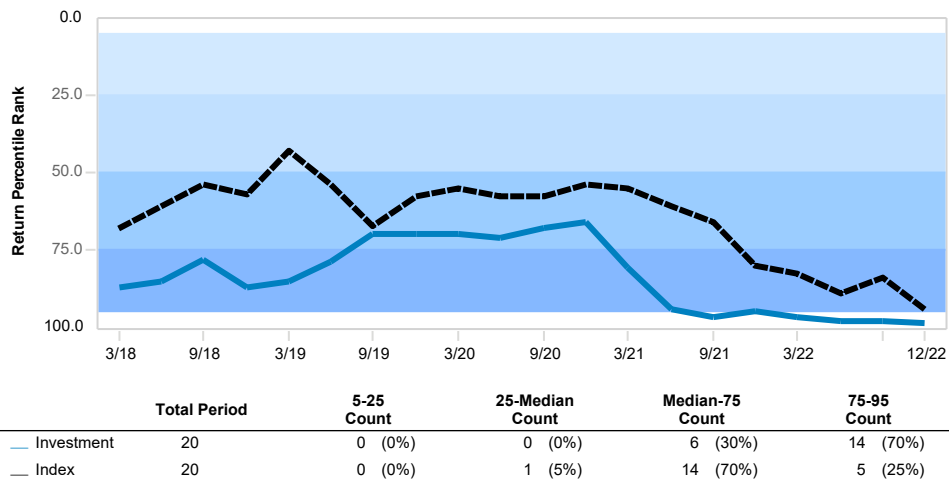
**Risk and Return 3 Years**



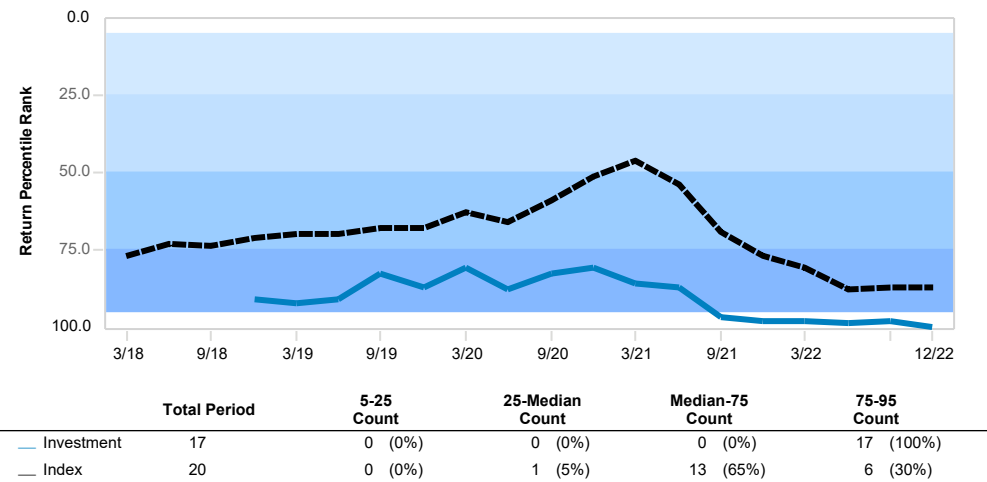
**Risk and Return 5 Years**



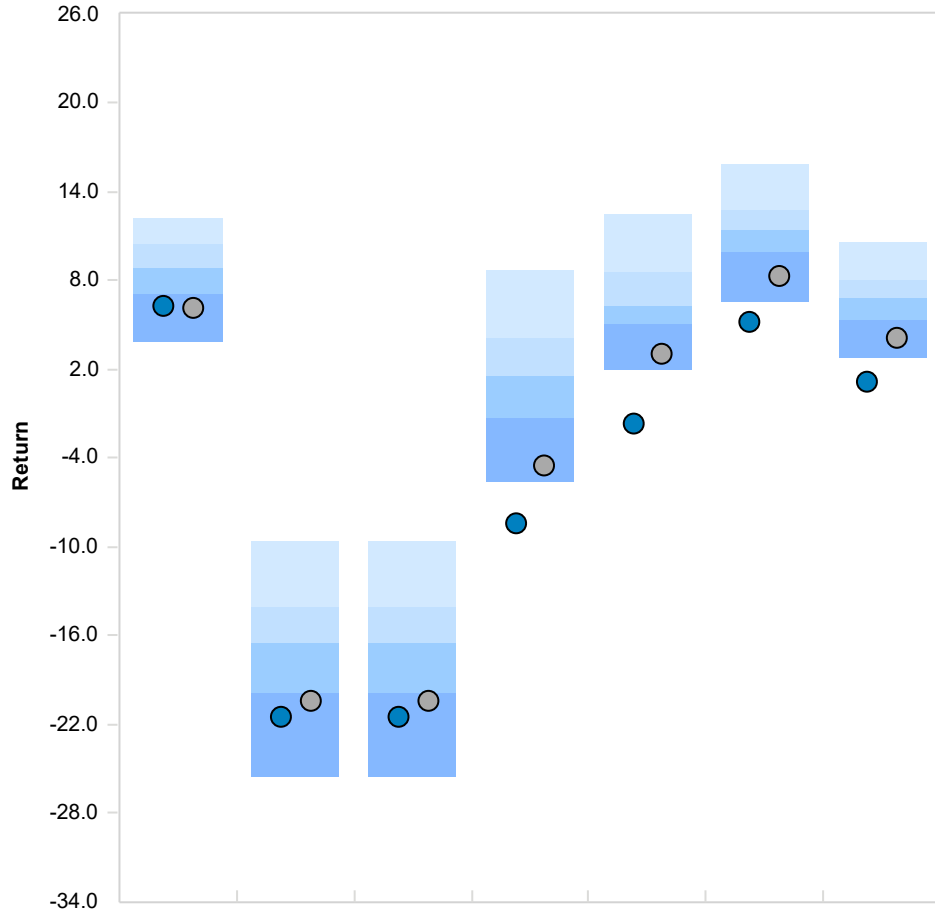
**3 Year Rolling Percentile Rank IM U.S. Small Cap Core Equity (SA+CF)**



**5 Year Rolling Percentile Rank IM U.S. Small Cap Core Equity (SA+CF)**

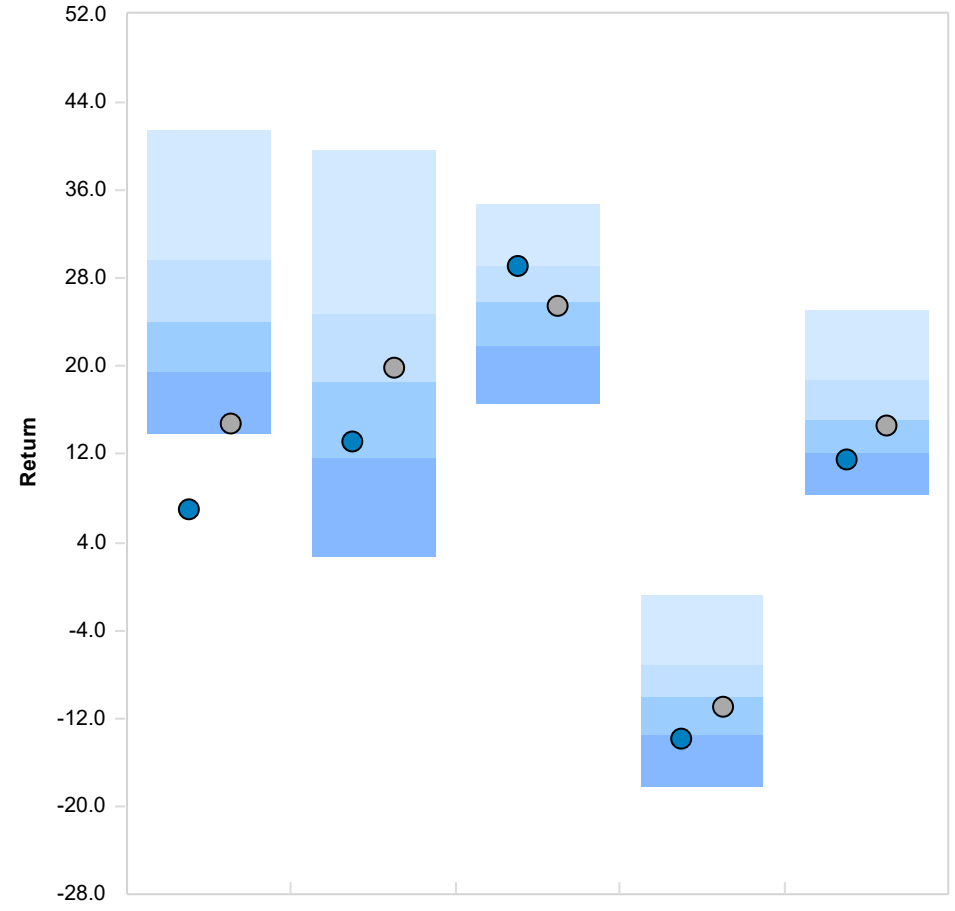


**Peer Group Analysis - IM U.S. Small Cap Core Equity (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	6.32 (86)	-21.44 (81)	-21.44 (81)	-8.33 (97)	-1.65 (99)	5.29 (98)	1.14 (100)
● Index	6.23 (87)	-20.44 (79)	-20.44 (79)	-4.42 (93)	3.10 (94)	8.30 (90)	4.13 (87)
Median	8.90	-16.43	-16.43	1.59	6.29	11.41	6.90

**Peer Group Analysis - IM U.S. Small Cap Core Equity (SA+CF)**



	2021	2020	2019	2018	2017
● Investment	6.97 (99)	13.19 (70)	29.19 (26)	-13.87 (78)	11.60 (81)
● Index	14.82 (93)	19.96 (40)	25.53 (52)	-11.01 (59)	14.65 (56)
Median	24.14	18.71	25.88	-10.11	15.13

**Comparative Performance**

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-4.80 (81)	-16.63 (67)	-6.89 (53)	1.79 (92)	-7.63 (98)	2.01 (90)
Index	-2.19 (31)	-17.20 (80)	-7.53 (66)	2.14 (91)	-4.36 (92)	4.29 (64)
Median	-3.30	-15.38	-6.80	5.96	-1.24	4.77



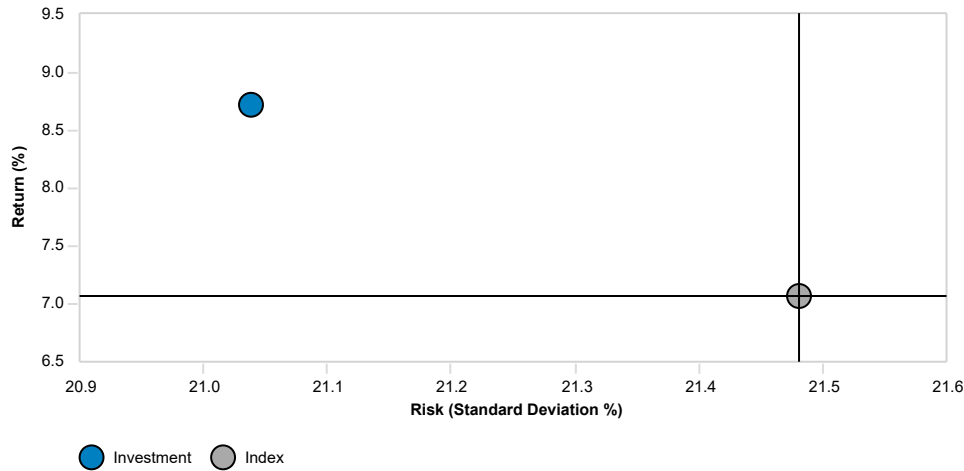
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	8.72	21.04	0.47	92.76	8	84.79	4
Index	7.07	21.48	0.39	100.00	7	100.00	5

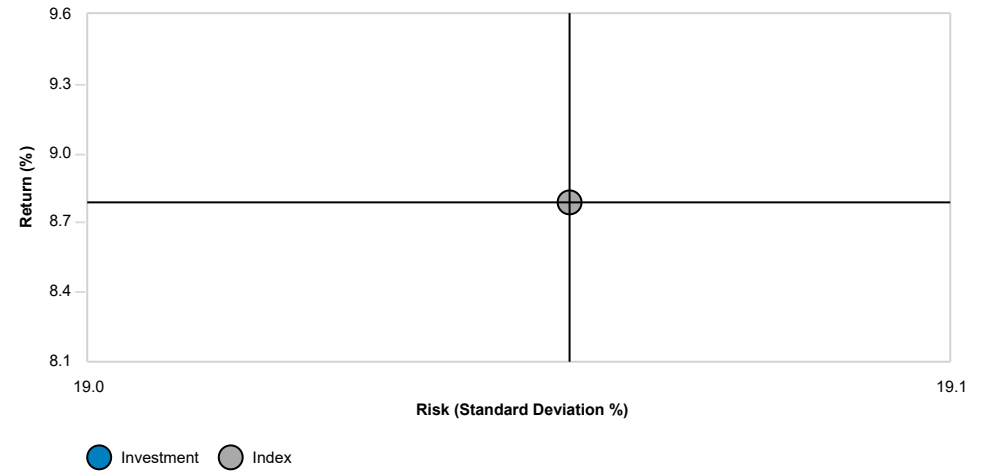
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Index	8.79	19.06	0.47	100.00	13	100.00	7

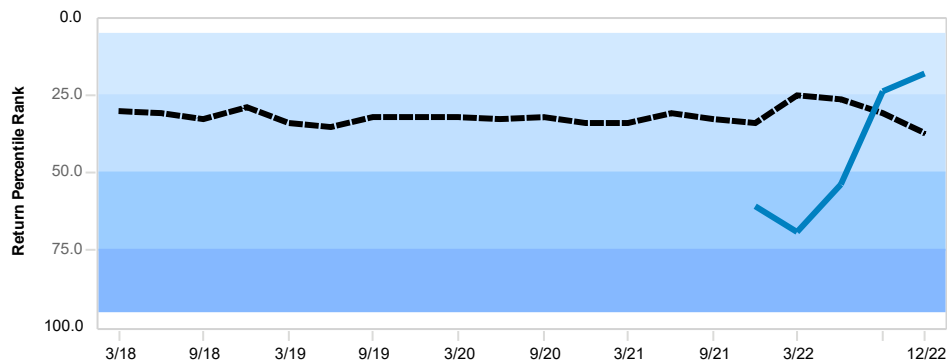
**Risk and Return 3 Years**



**Risk and Return 5 Years**

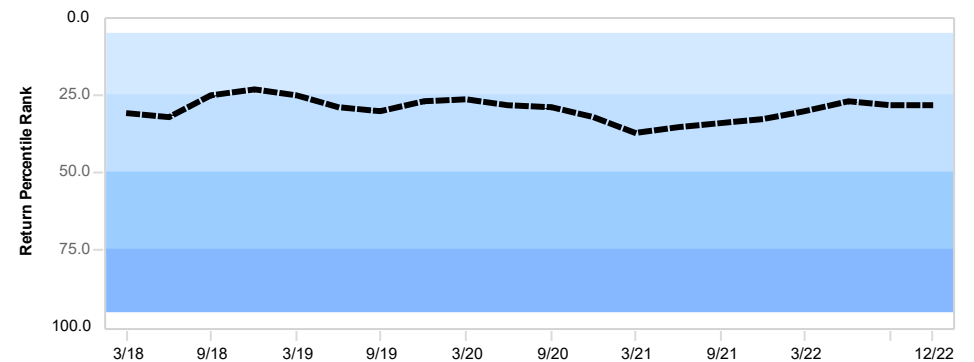


**3 Year Rolling Percentile Rank IM U.S. Equity (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	5	2 (40%)	0 (0%)	3 (60%)	0 (0%)
Index	20	1 (5%)	19 (95%)	0 (0%)	0 (0%)

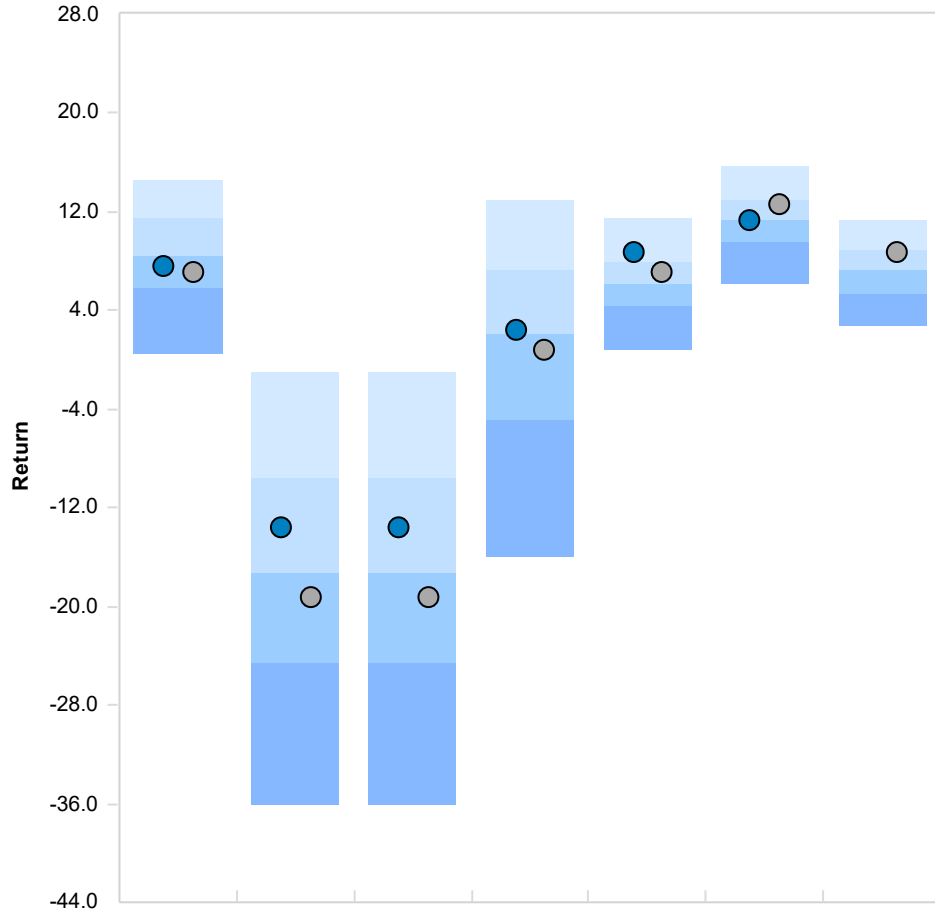
**5 Year Rolling Percentile Rank IM U.S. Equity (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	0	0	0	0	0
Index	20	3 (15%)	17 (85%)	0 (0%)	0 (0%)

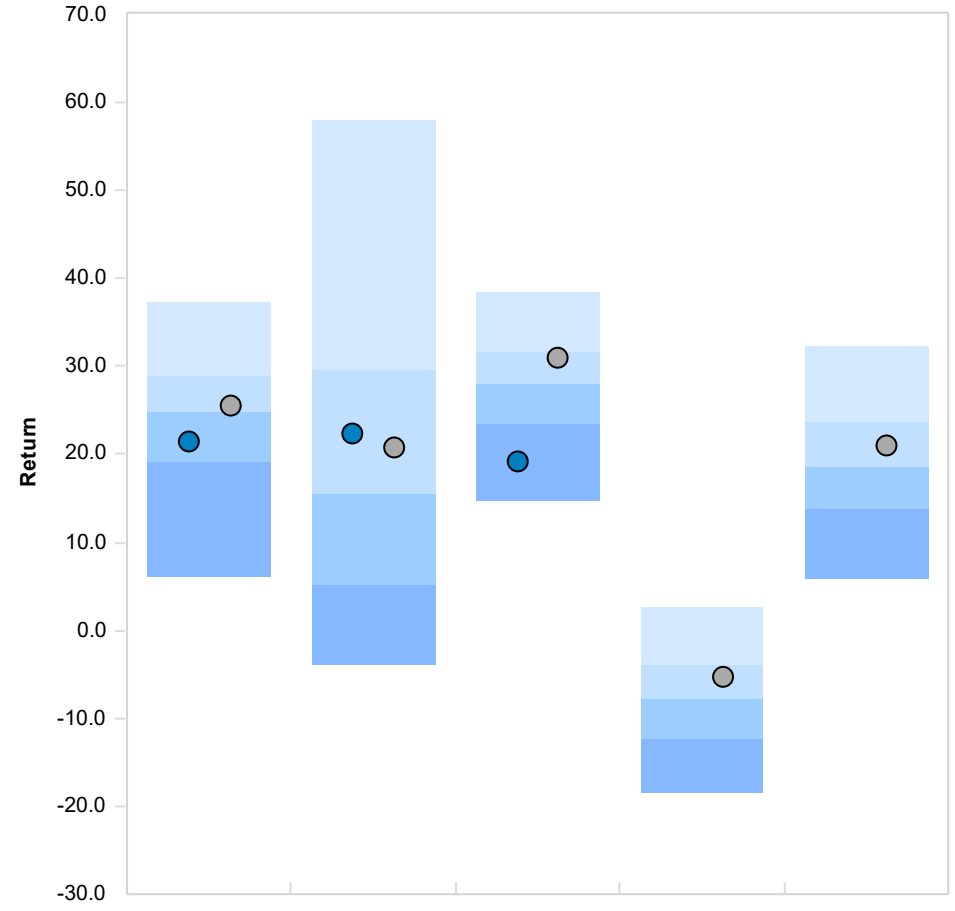


**Peer Group Analysis - IM U.S. Equity (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	7.60 (59)	-13.59 (38)	-13.59 (38)	2.50 (48)	8.72 (18)	11.26 (52)	N/A
● Index	7.18 (65)	-19.21 (61)	-19.21 (61)	0.76 (58)	7.07 (37)	12.61 (32)	8.79 (28)
Median	8.47	-17.25	-17.25	2.16	6.11	11.35	7.34

**Peer Group Analysis - IM U.S. Equity (SA+CF)**



	2021	2020	2019	2018	2017
● Investment	21.59 (67)	22.31 (35)	19.24 (90)	N/A	N/A
● Index	25.66 (46)	20.89 (37)	31.02 (31)	-5.24 (35)	21.13 (38)
Median	24.97	15.49	28.05	-7.68	18.57

**Comparative Performance**

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-1.55 (17)	-13.46 (35)	-5.74 (53)	15.43 (1)	1.38 (12)	3.87 (85)
Index	-4.46 (52)	-16.70 (65)	-5.28 (49)	9.28 (27)	-0.10 (40)	8.24 (28)
Median	-4.39	-15.33	-5.43	7.26	-0.53	6.32



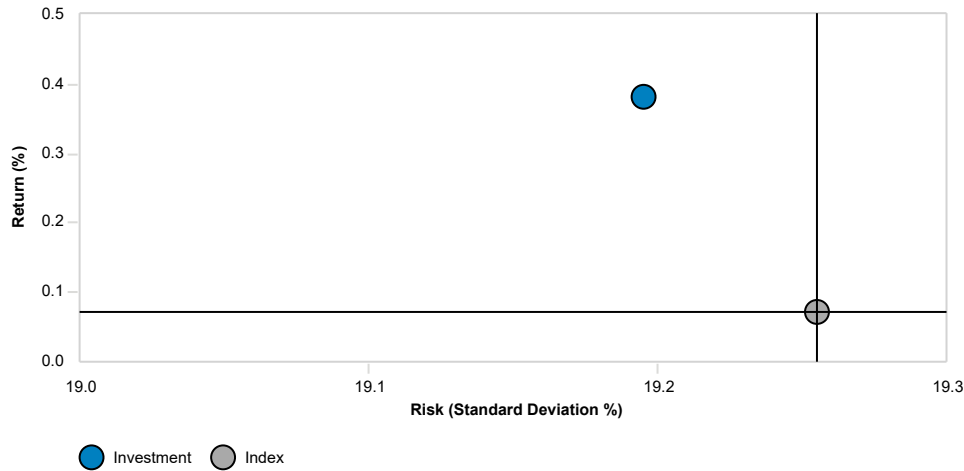
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	0.38	19.20	0.08	100.63	7	99.48	5
Index	0.07	19.26	0.06	100.00	7	100.00	5

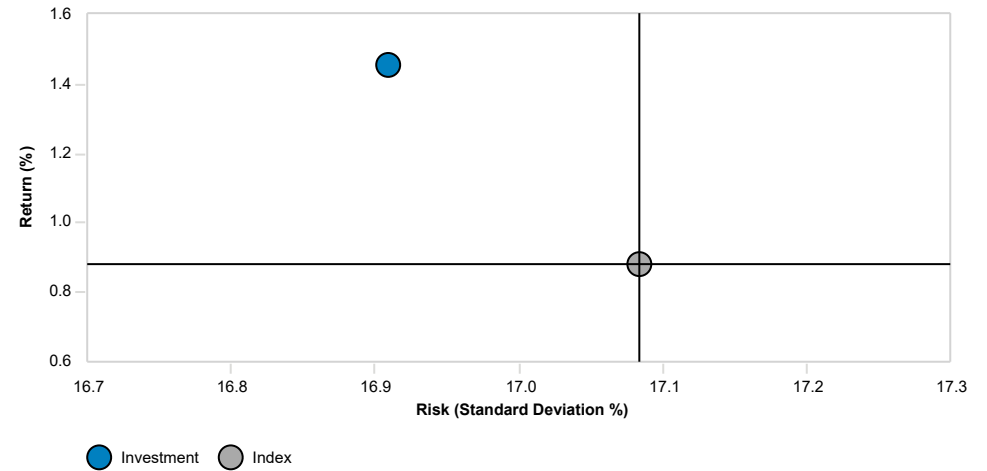
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	1.46	16.91	0.10	99.90	11	97.42	9
Index	0.88	17.08	0.06	100.00	11	100.00	9

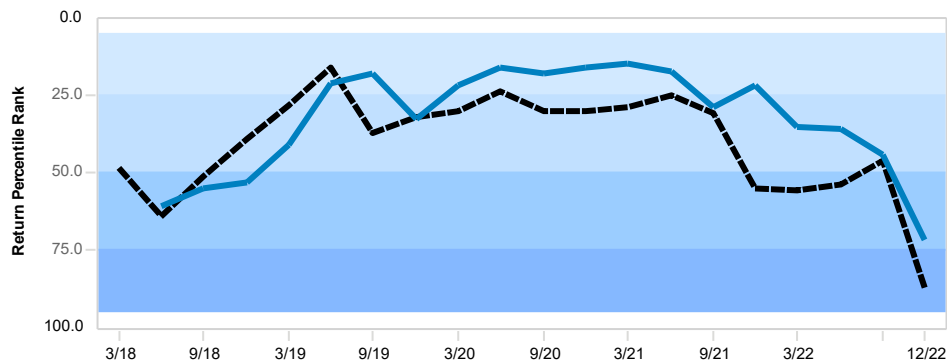
Risk and Return 3 Years



Risk and Return 5 Years

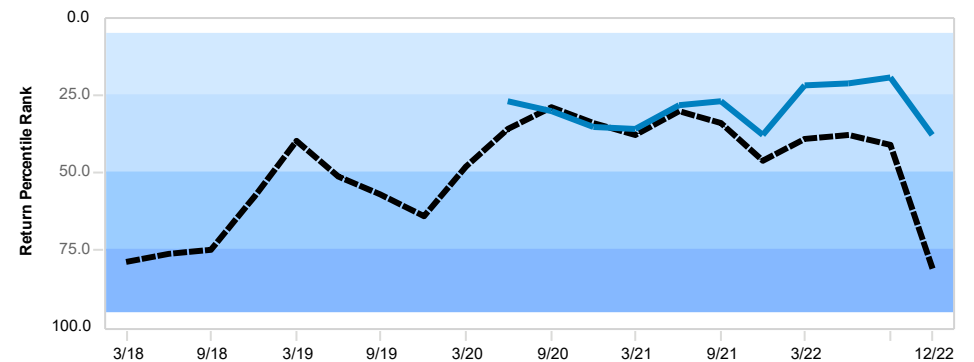


3 Year Rolling Percentile Rank IM Enhanced and Indexed International Equity (SA+CF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	19	9 (47%)	6 (32%)	4 (21%)	0 (0%)
Index	20	3 (15%)	11 (55%)	5 (25%)	1 (5%)

5 Year Rolling Percentile Rank IM Enhanced and Indexed International Equity (SA+CF)

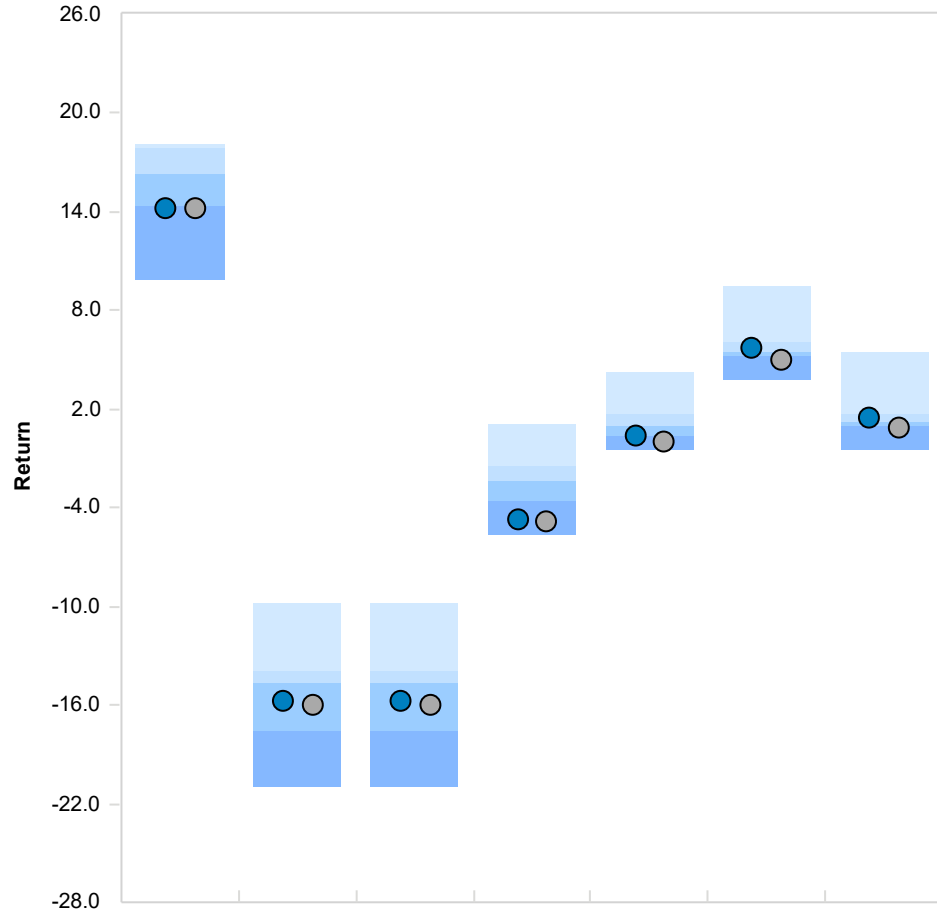


	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	11	3 (27%)	8 (73%)	0 (0%)	0 (0%)
Index	20	0 (0%)	12 (60%)	5 (25%)	3 (15%)



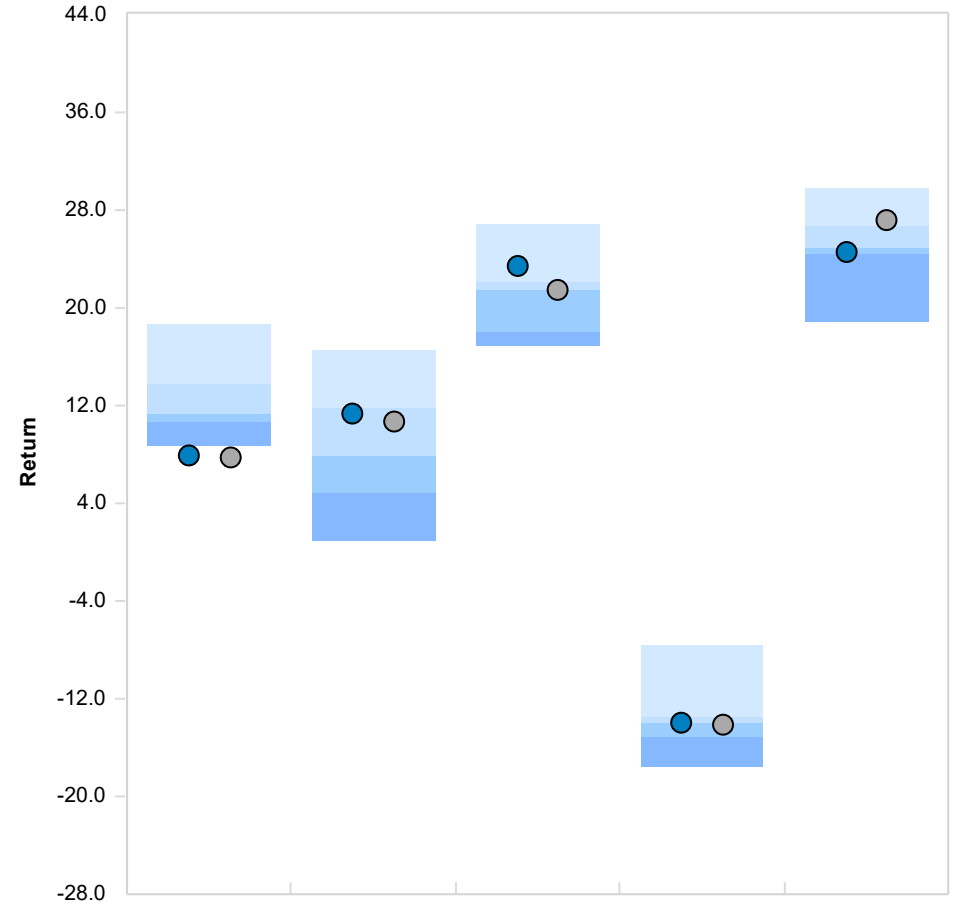


Peer Group Analysis - IM Enhanced and Indexed International Equity (SA+CF)



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	14.26 (76)	-15.79 (62)	-15.79 (62)	-4.66 (88)	0.38 (72)	5.70 (44)	1.46 (38)
● Index	14.28 (76)	-16.00 (63)	-16.00 (63)	-4.83 (91)	0.07 (87)	5.05 (85)	0.88 (81)
Median	16.32	-14.64	-14.64	-2.35	1.01	5.55	1.19

Peer Group Analysis - IM Enhanced and Indexed International Equity (SA+CF)



	2021	2020	2019	2018	2017
● Investment	7.96 (100)	11.27 (32)	23.42 (20)	-13.88 (45)	24.56 (67)
● Index	7.82 (100)	10.65 (36)	21.51 (50)	-14.20 (59)	27.19 (21)
Median	11.33	7.90	21.50	-13.97	24.95

Comparative Performance

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-9.92 (36)	-13.52 (54)	-5.40 (38)	1.84 (83)	-3.02 (92)	5.57 (42)
Index	-9.91 (36)	-13.73 (58)	-5.44 (38)	1.82 (84)	-2.99 (91)	5.48 (47)
Median	-10.18	-13.48	-6.08	3.02	-1.10	5.41



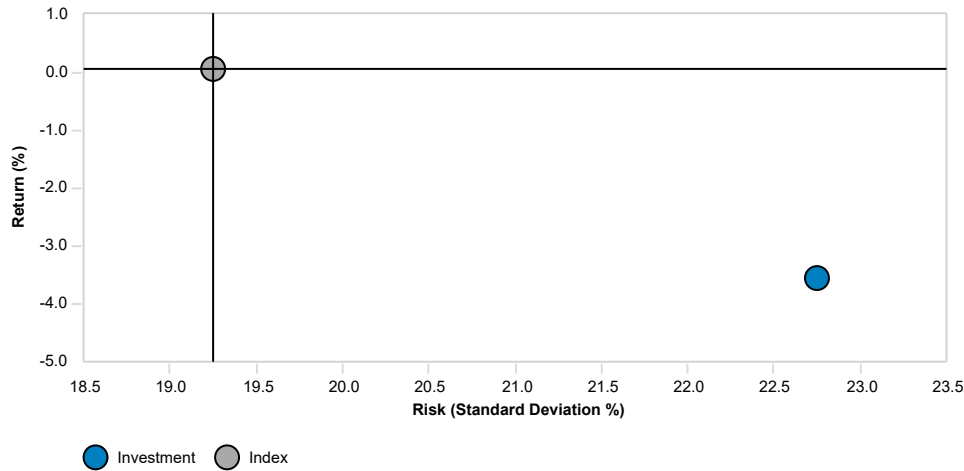
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-3.56	22.74	-0.08	111.21	6	124.13	6
Index	0.07	19.26	0.06	100.00	7	100.00	5

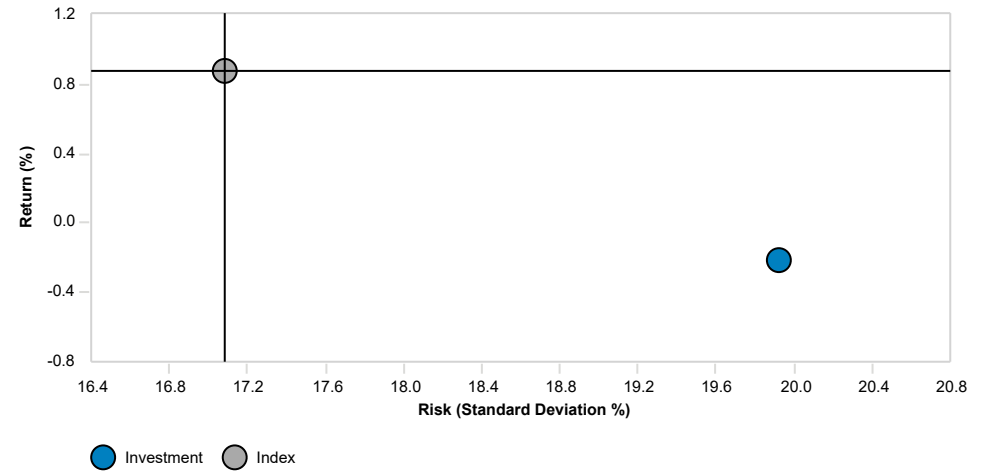
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-0.21	19.92	0.03	110.96	10	114.76	10
Index	0.88	17.08	0.06	100.00	11	100.00	9

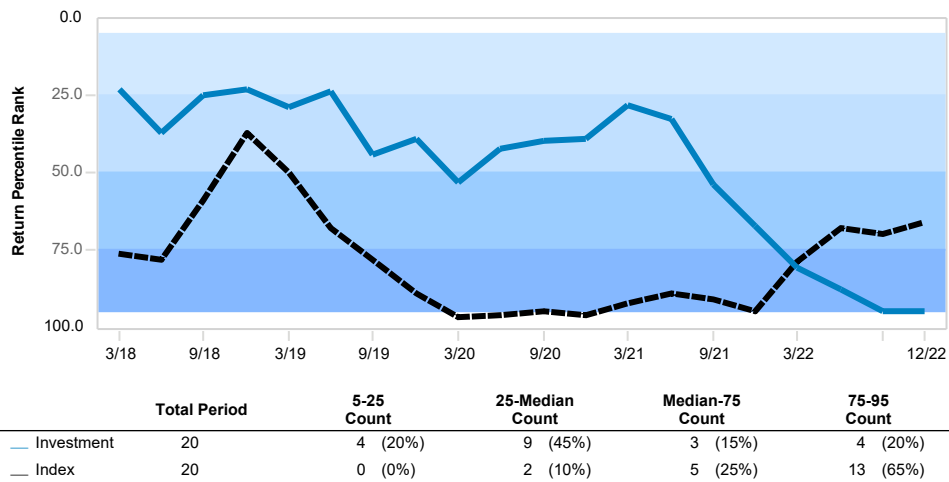
**Risk and Return 3 Years**



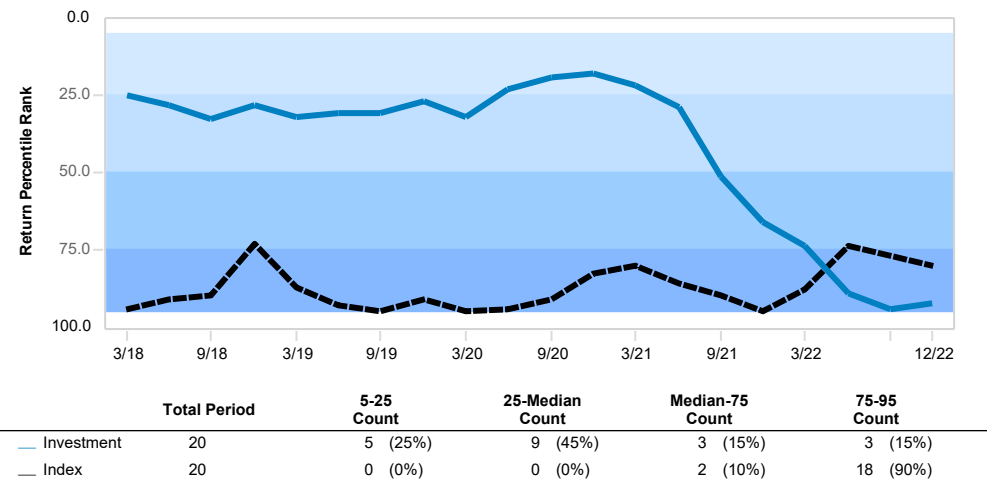
**Risk and Return 5 Years**



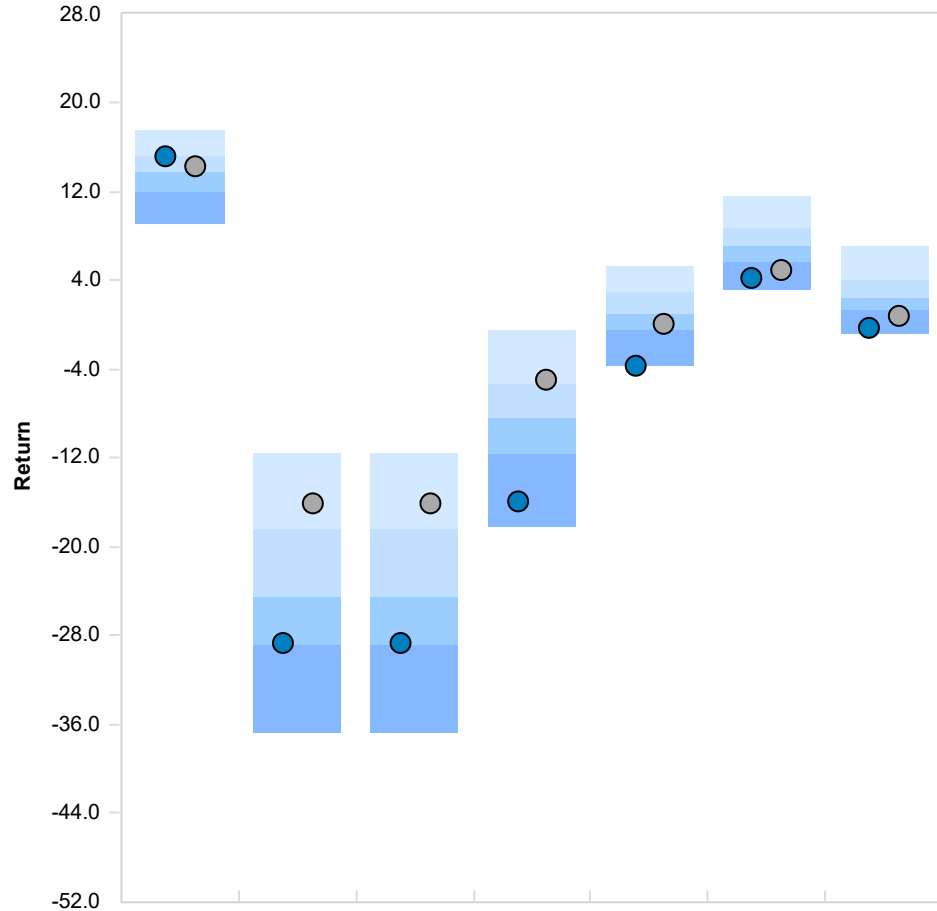
**3 Year Rolling Percentile Rank IM International Large Cap Growth Equity (SA+CF)**



**5 Year Rolling Percentile Rank IM International Large Cap Growth Equity (SA+CF)**

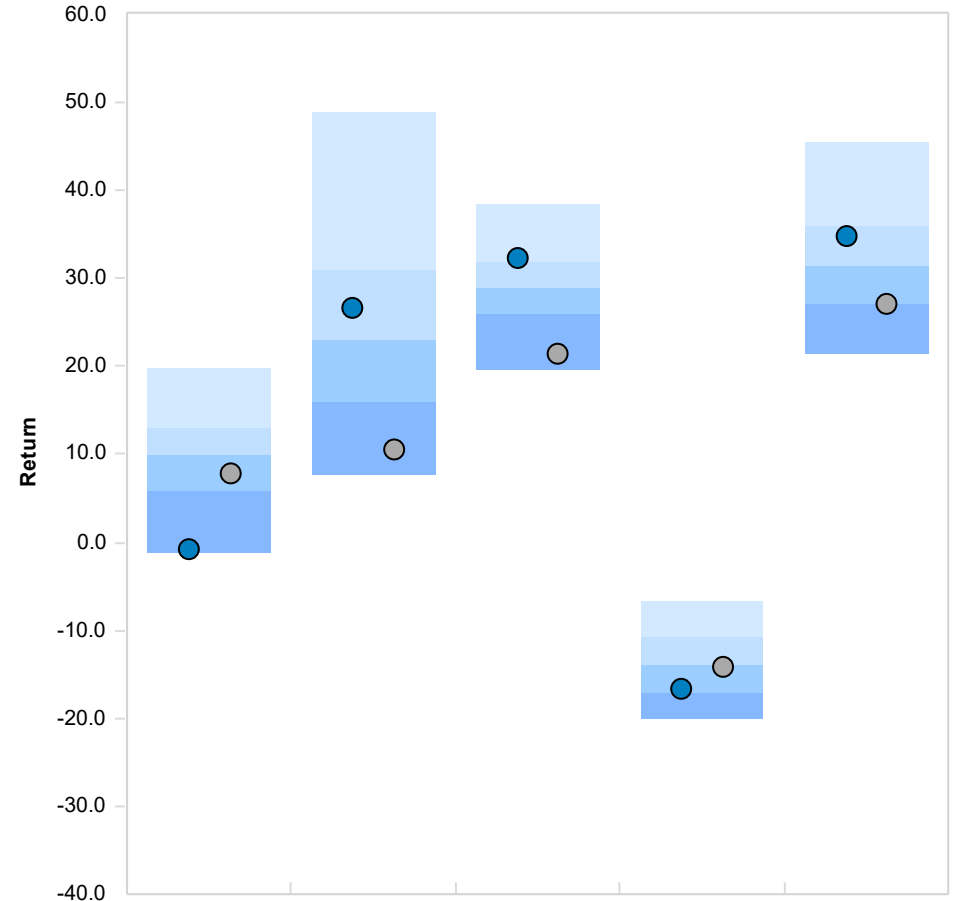


**Peer Group Analysis - IM International Large Cap Growth Equity (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	15.28 (25)	-28.64 (72)	-28.64 (72)	-15.83 (88)	-3.56 (95)	4.36 (88)	-0.21 (92)
● Index	14.28 (43)	-16.00 (14)	-16.00 (14)	-4.83 (25)	0.07 (66)	5.05 (84)	0.88 (80)
Median	13.81	-24.48	-24.48	-8.32	1.07	7.19	2.53

**Peer Group Analysis - IM International Large Cap Growth Equity (SA+CF)**



	2021	2020	2019	2018	2017
● Investment	-0.72 (95)	26.60 (41)	32.23 (22)	-16.57 (68)	34.83 (32)
● Index	7.82 (65)	10.65 (90)	21.51 (92)	-14.20 (54)	27.19 (76)
Median	9.97	23.09	29.02	-13.86	31.35

**Comparative Performance**

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-11.61 (94)	-17.09 (57)	-15.53 (78)	-0.60 (83)	-5.42 (96)	3.91 (95)
Index	-9.91 (74)	-13.73 (21)	-5.44 (8)	1.82 (66)	-2.99 (75)	5.48 (68)
Median	-8.91	-16.71	-12.40	2.52	-0.01	6.91



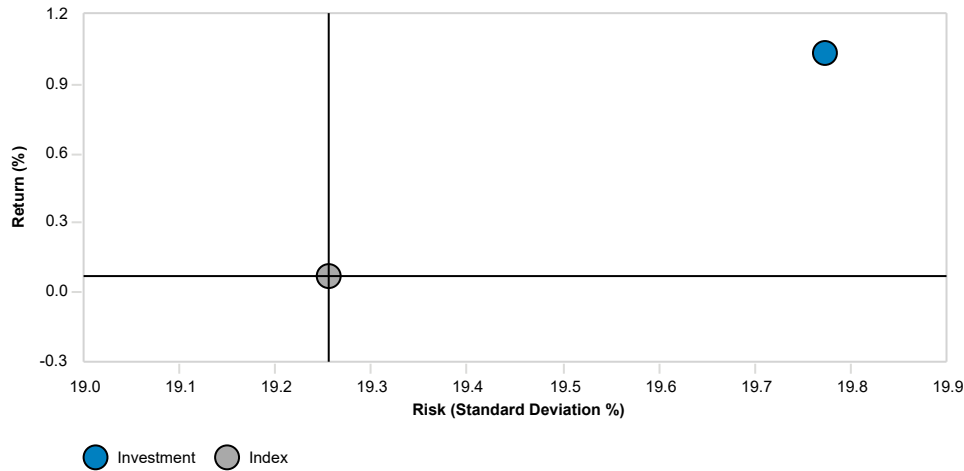
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	1.04	19.77	0.11	106.04	7	102.23	5
Index	0.07	19.26	0.06	100.00	7	100.00	5

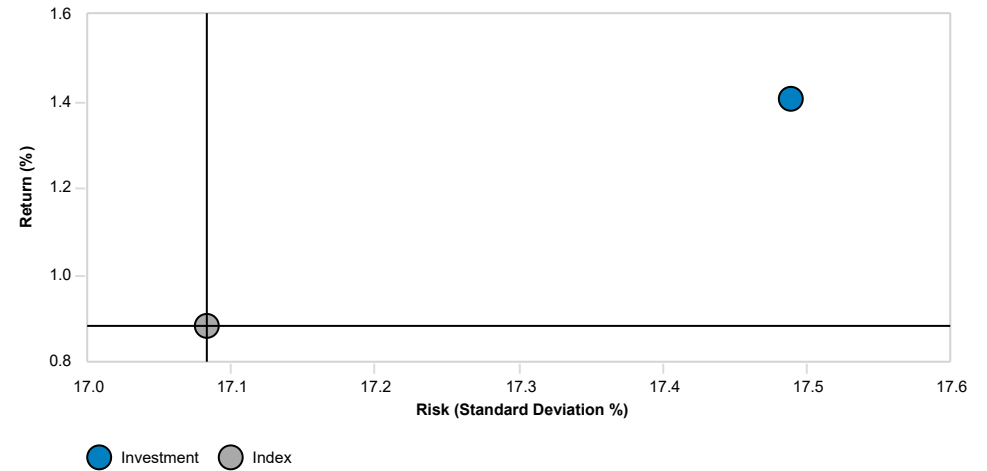
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	1.41	17.49	0.10	103.33	11	100.99	9
Index	0.88	17.08	0.06	100.00	11	100.00	9

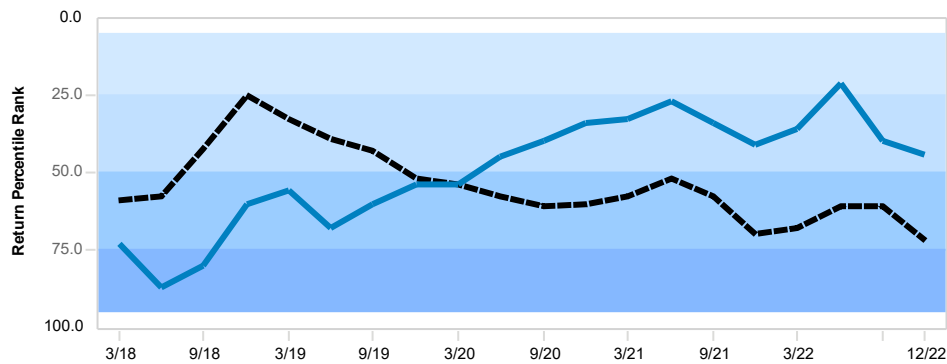
**Risk and Return 3 Years**



**Risk and Return 5 Years**

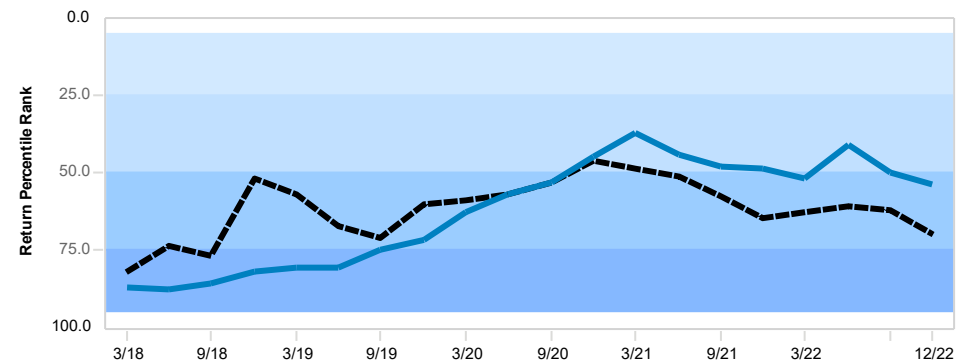


**3 Year Rolling Percentile Rank IM International Large Cap Core Equity (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	1 (5%)	10 (50%)	7 (35%)	2 (10%)
Index	20	1 (5%)	4 (20%)	15 (75%)	0 (0%)

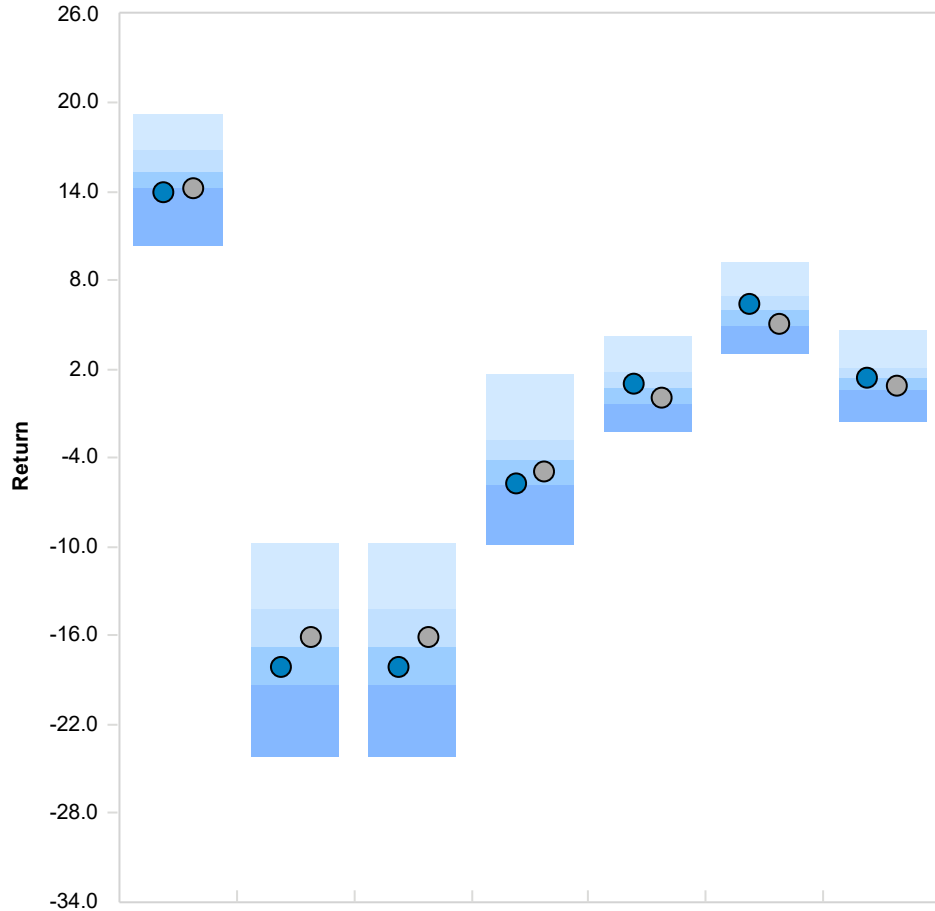
**5 Year Rolling Percentile Rank IM International Large Cap Core Equity (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	7 (35%)	7 (35%)	6 (30%)
Index	20	0 (0%)	2 (10%)	16 (80%)	2 (10%)

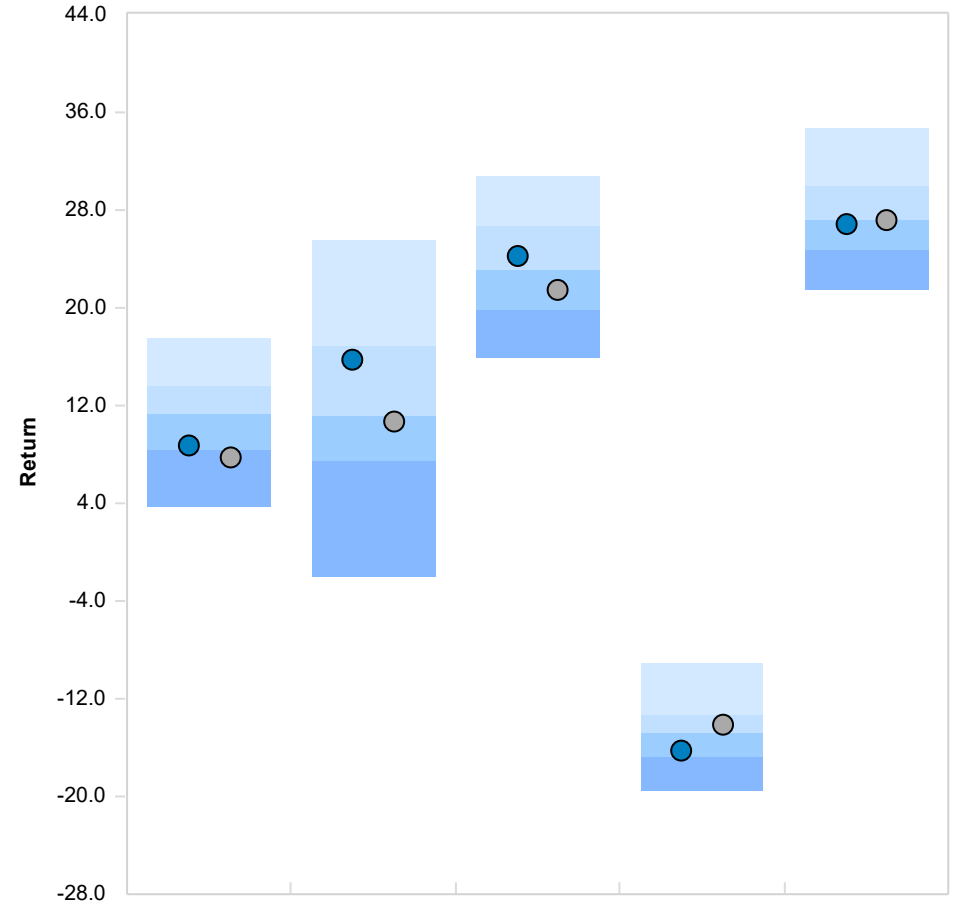


**Peer Group Analysis - IM International Large Cap Core Equity (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	14.00 (78)	-18.13 (67)	-18.13 (67)	-5.63 (74)	1.04 (44)	6.40 (37)	1.41 (54)
● Index	14.28 (75)	-16.00 (42)	-16.00 (42)	-4.83 (65)	0.07 (72)	5.05 (73)	0.88 (70)
Median	15.29	-16.76	-16.76	-4.03	0.81	6.01	1.51

**Peer Group Analysis - IM International Large Cap Core Equity (SA+CF)**



	2021	2020	2019	2018	2017
● Investment	8.78 (72)	15.83 (30)	24.24 (39)	-16.33 (70)	26.92 (52)
● Index	7.82 (79)	10.65 (56)	21.51 (63)	-14.20 (44)	27.19 (50)
Median	11.35	11.12	23.08	-14.85	27.16

**Comparative Performance**

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-10.41 (80)	-13.35 (36)	-7.49 (58)	2.23 (64)	-2.77 (82)	5.86 (49)
Index	-9.91 (64)	-13.73 (40)	-5.44 (29)	1.82 (73)	-2.99 (84)	5.48 (58)
Median	-9.42	-14.61	-6.71	2.94	-1.26	5.81



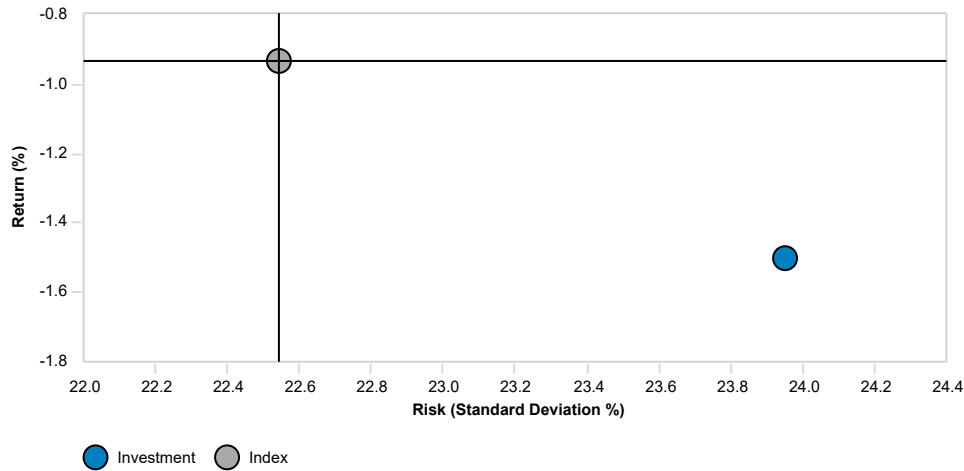
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-1.50	23.95	0.03	100.76	7	101.37	5
Index	-0.93	22.54	0.04	100.00	8	100.00	4

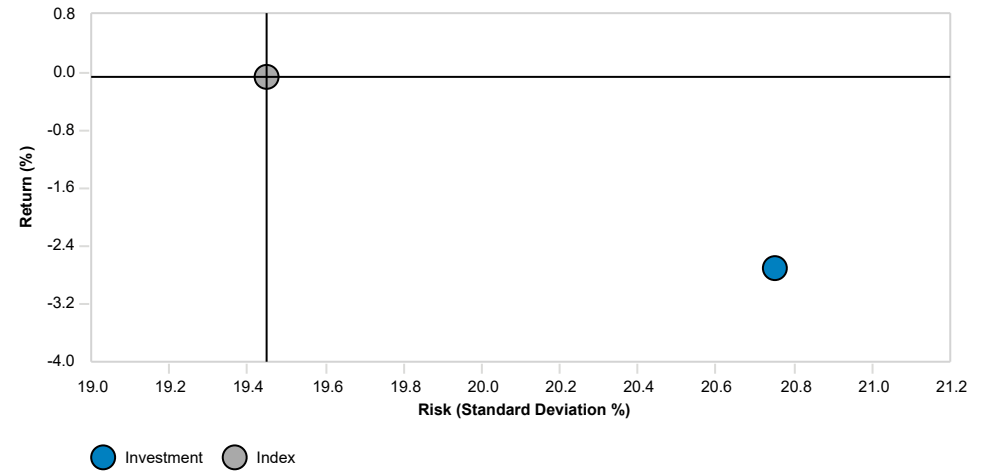
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-2.71	20.75	-0.08	99.59	9	109.30	11
Index	-0.05	19.45	0.03	100.00	12	100.00	8

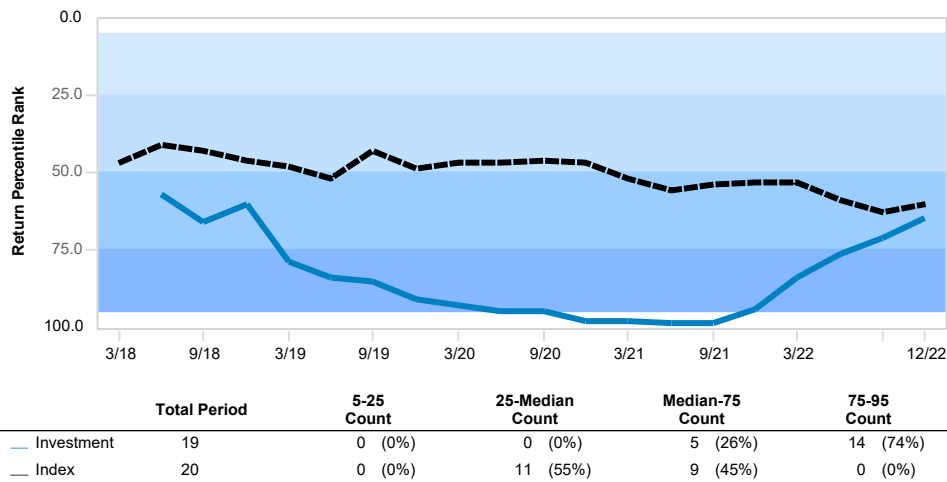
**Risk and Return 3 Years**



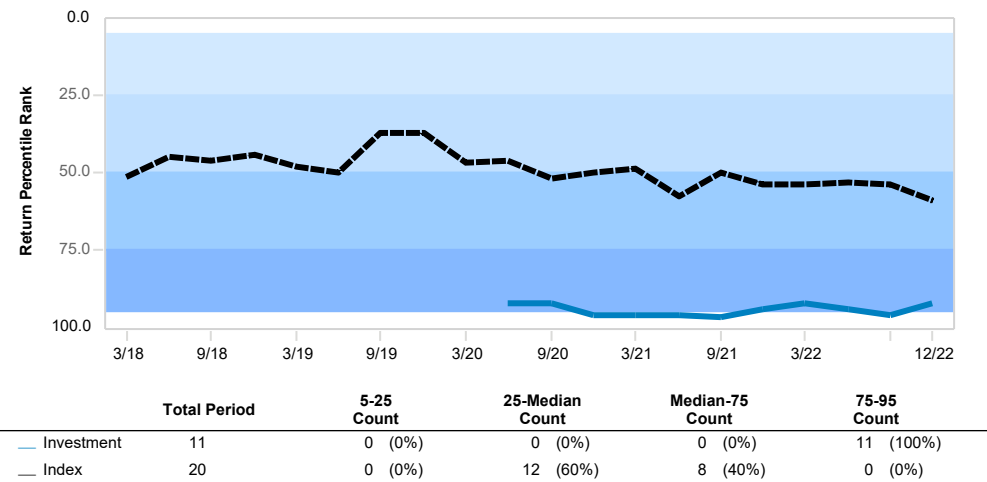
**Risk and Return 5 Years**



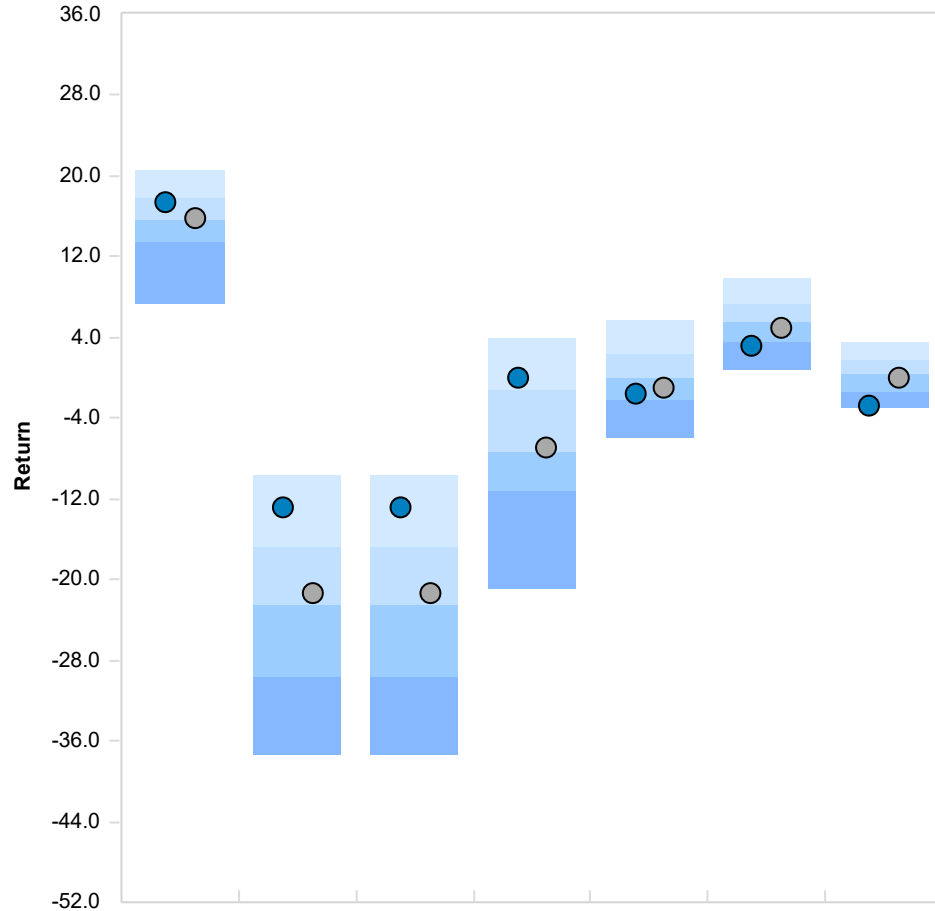
**3 Year Rolling Percentile Rank IM International Small Cap Equity (SA+CF)**



**5 Year Rolling Percentile Rank IM International Small Cap Equity (SA+CF)**

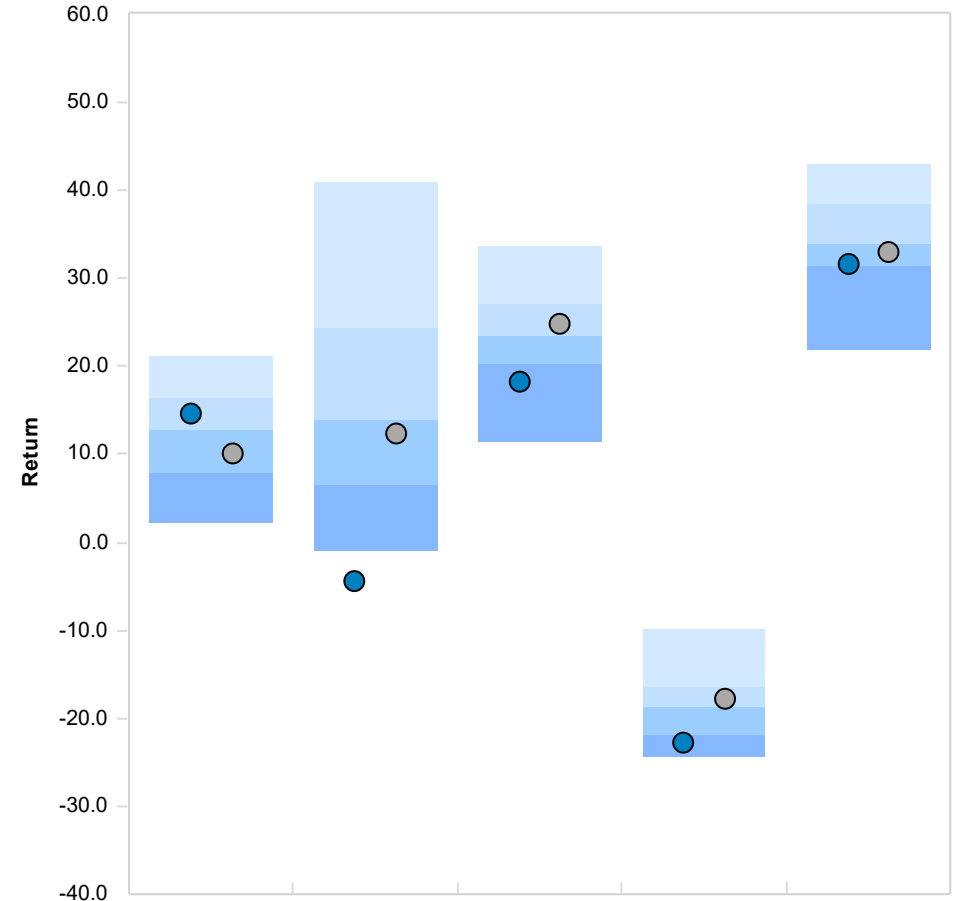


**Peer Group Analysis - IM International Small Cap Equity (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	17.35 (31)	-12.84 (15)	-12.84 (15)	-0.07 (16)	-1.50 (65)	3.09 (80)	-2.71 (92)
● Index	15.79 (48)	-21.39 (44)	-21.39 (44)	-6.97 (47)	-0.93 (60)	4.99 (58)	-0.05 (59)
Median	15.72	-22.61	-22.61	-7.23	-0.04	5.58	0.44

**Peer Group Analysis - IM International Small Cap Equity (SA+CF)**



	2021	2020	2019	2018	2017
● Investment	14.56 (32)	-4.29 (99)	18.21 (83)	-22.85 (84)	31.71 (74)
● Index	10.10 (65)	12.34 (54)	24.96 (36)	-17.89 (40)	33.01 (60)
Median	12.81	13.88	23.39	-18.80	34.02

**Comparative Performance**

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-9.09 (40)	-16.31 (42)	-2.37 (7)	0.97 (39)	-0.92 (67)	5.89 (67)
Index	-9.83 (56)	-17.69 (67)	-8.53 (39)	0.07 (53)	0.90 (31)	4.34 (90)
Median	-9.59	-16.88	-10.60	0.30	-0.09	6.69



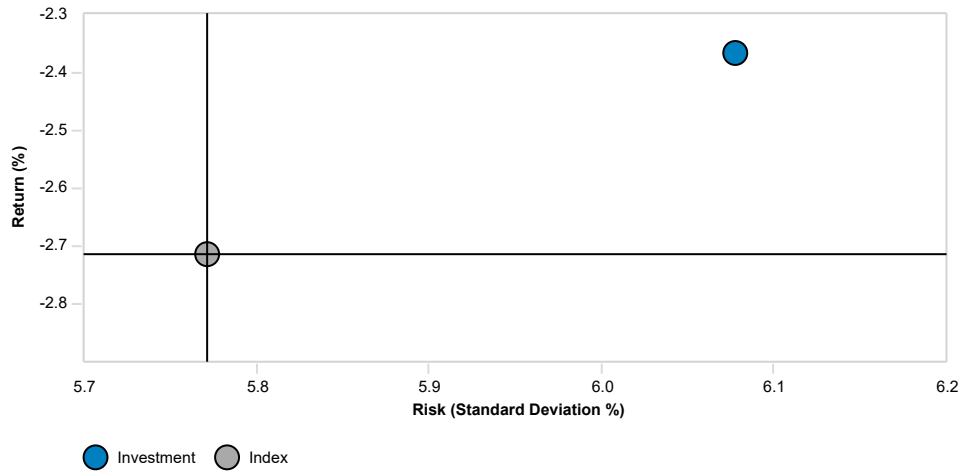
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-2.37	6.08	-0.48	108.60	6	101.94	6
Index	-2.71	5.77	-0.57	100.00	8	100.00	4

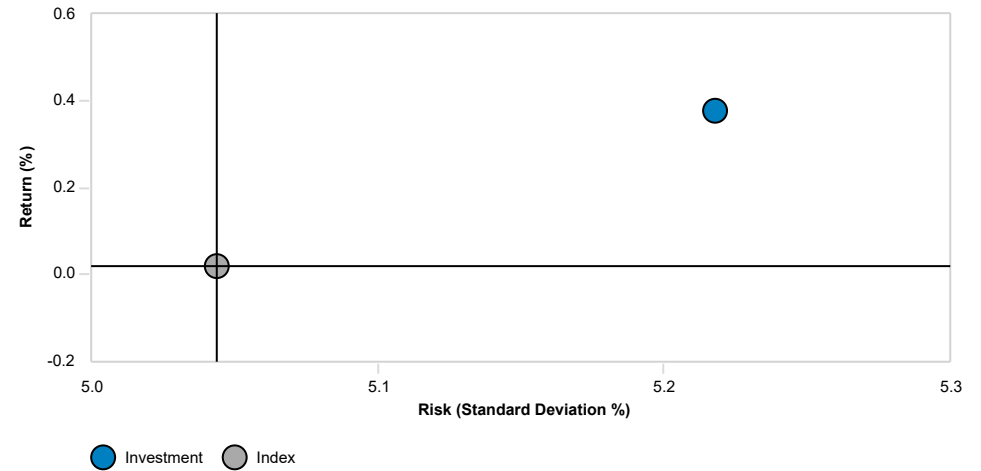
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	0.38	5.22	-0.14	105.00	12	99.41	8
Index	0.02	5.04	-0.22	100.00	14	100.00	6

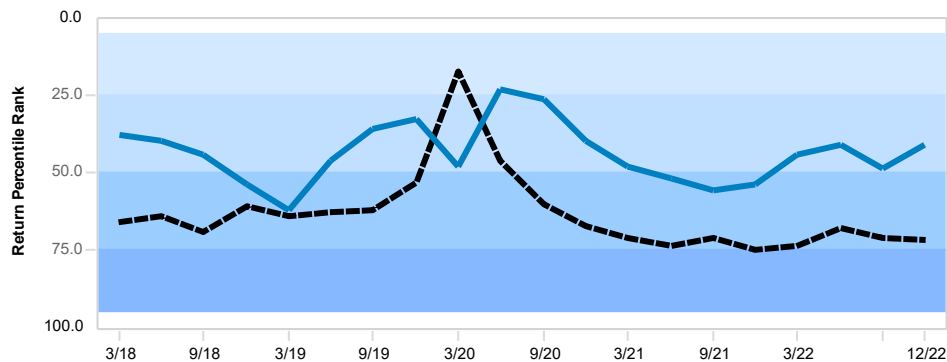
Risk and Return 3 Years



Risk and Return 5 Years

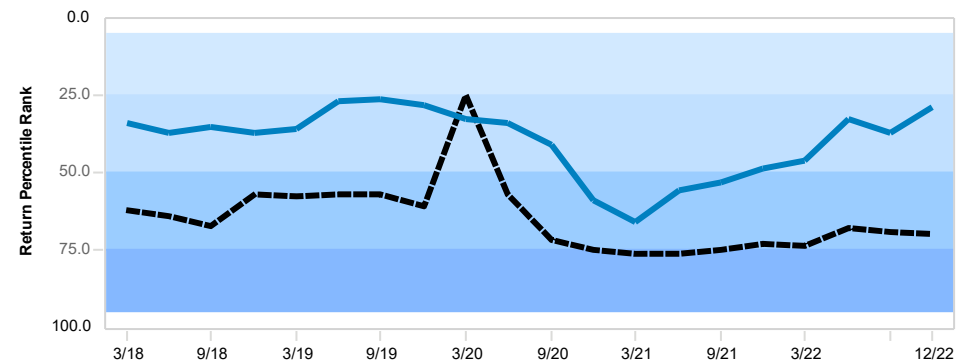


3 Year Rolling Percentile Rank IM U.S. Broad Market Core Fixed Income (SA+CF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	1 (5%)	14 (70%)	5 (25%)	0 (0%)
Index	20	1 (5%)	1 (5%)	18 (90%)	0 (0%)

5 Year Rolling Percentile Rank IM U.S. Broad Market Core Fixed Income (SA+CF)

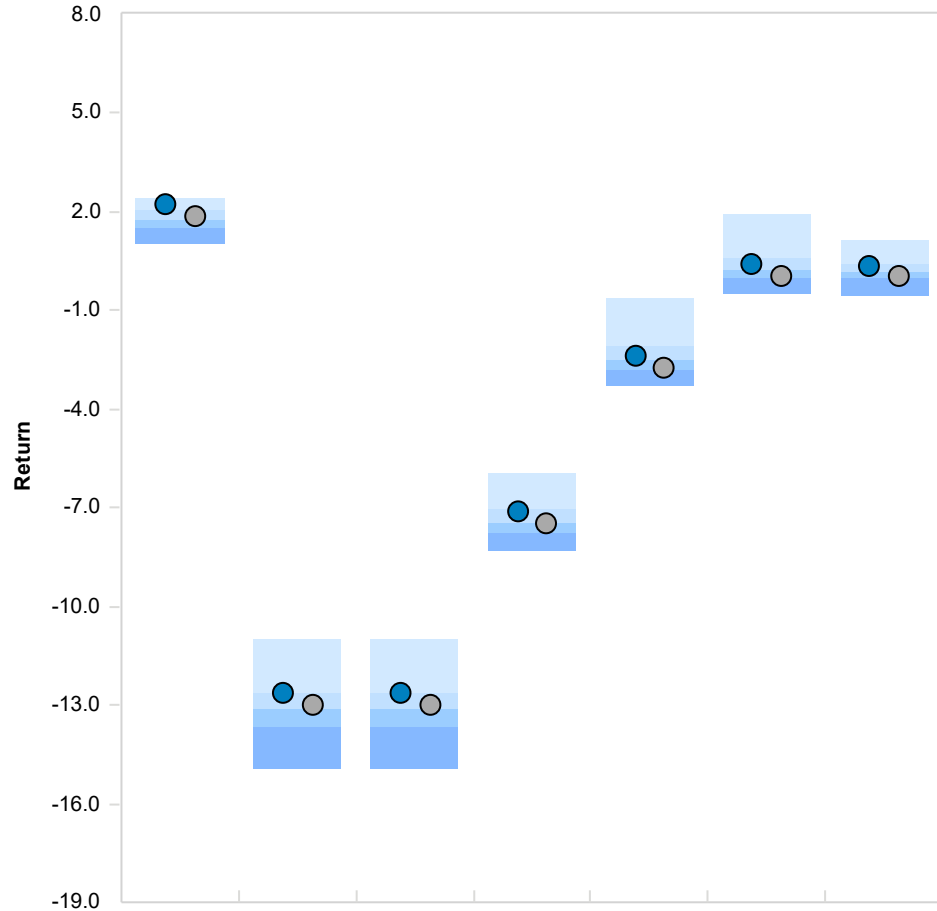


	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	16 (80%)	4 (20%)	0 (0%)
Index	20	1 (5%)	0 (0%)	17 (85%)	2 (10%)



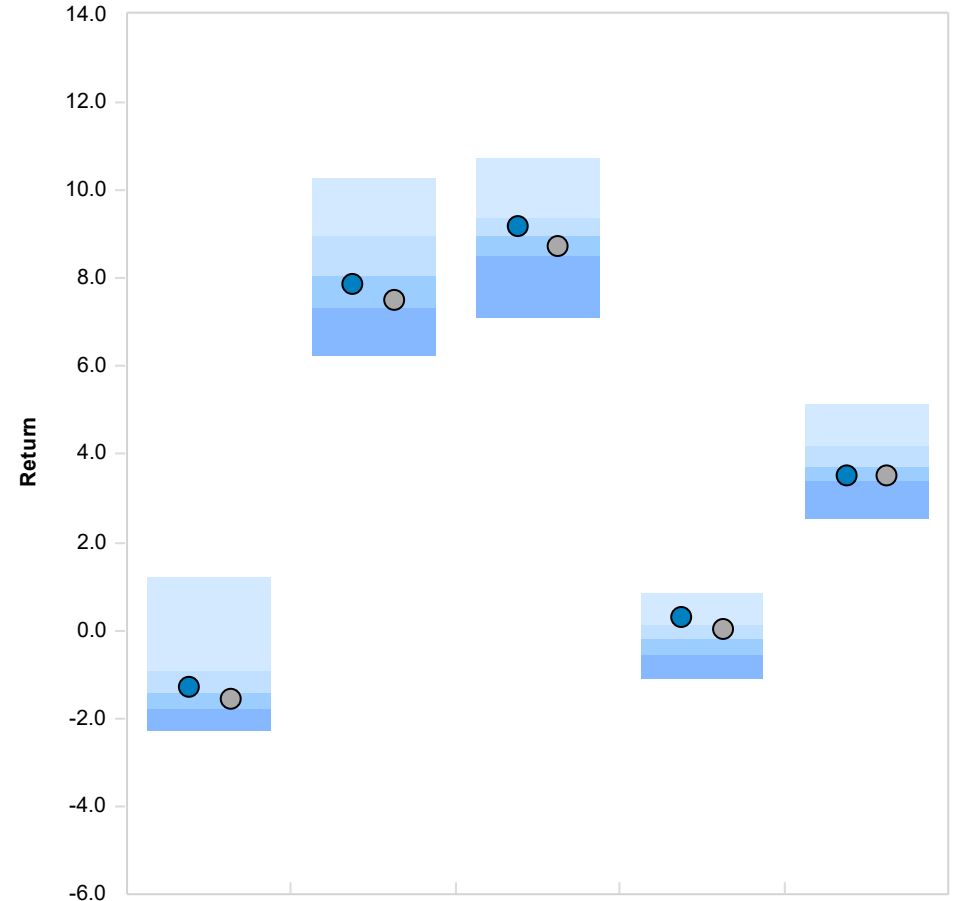


Peer Group Analysis - IM U.S. Broad Market Core Fixed Income (SA+CF)



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	2.23 (9)	-12.60 (25)	-12.60 (25)	-7.11 (34)	-2.37 (41)	0.40 (35)	0.38 (29)
● Index	1.87 (36)	-13.01 (38)	-13.01 (38)	-7.45 (51)	-2.71 (72)	0.03 (71)	0.02 (70)
Median	1.77	-13.12	-13.12	-7.45	-2.47	0.25	0.18

Peer Group Analysis - IM U.S. Broad Market Core Fixed Income (SA+CF)



	2021	2020	2019	2018	2017
● Investment	-1.29 (45)	7.87 (56)	9.18 (36)	0.29 (14)	3.52 (68)
● Index	-1.55 (58)	7.51 (67)	8.72 (66)	0.01 (32)	3.54 (65)
Median	-1.43	8.05	8.95	-0.18	3.72

Comparative Performance

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-4.78 (66)	-4.65 (24)	-5.83 (46)	-0.01 (24)	-0.09 (86)	2.01 (41)
Index	-4.75 (61)	-4.69 (30)	-5.93 (58)	0.01 (18)	0.05 (44)	1.83 (74)
Median	-4.64	-4.91	-5.86	-0.11	0.03	1.94



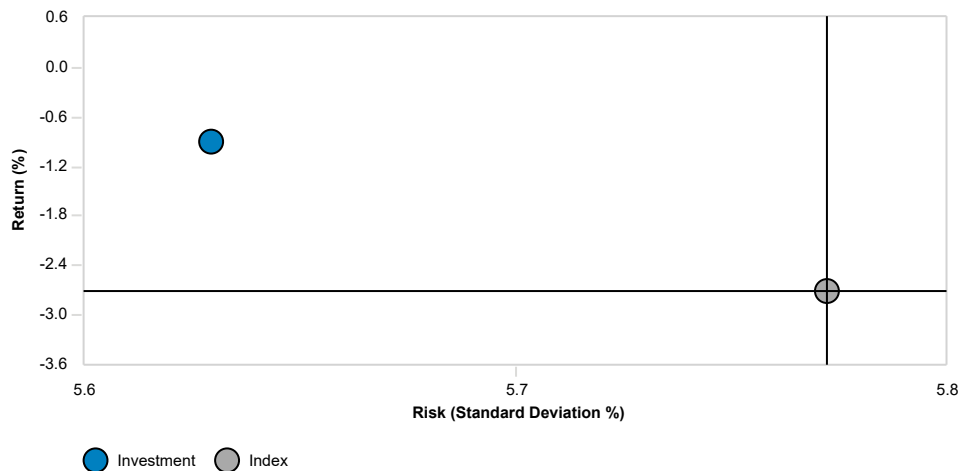
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-0.89	5.63	-0.26	111.39	8	87.59	4
Index	-2.71	5.77	-0.57	100.00	8	100.00	4

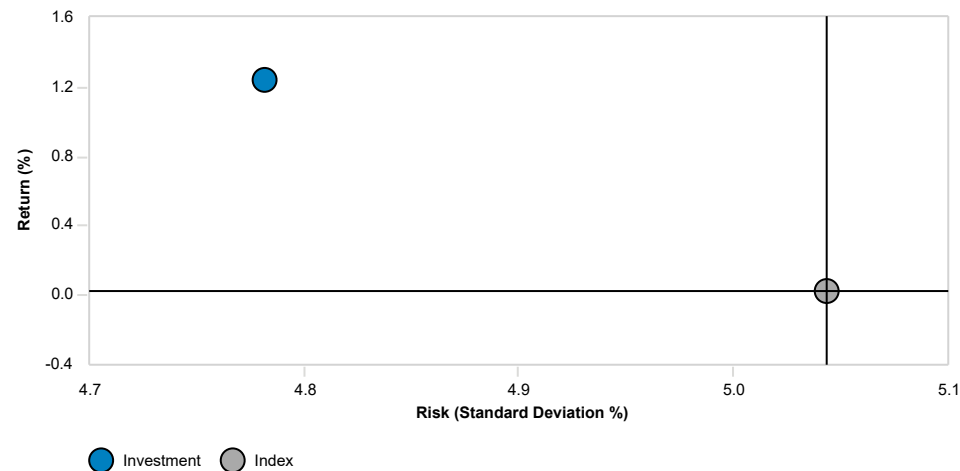
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	1.24	4.78	0.02	102.92	14	84.33	6
Index	0.02	5.04	-0.22	100.00	14	100.00	6

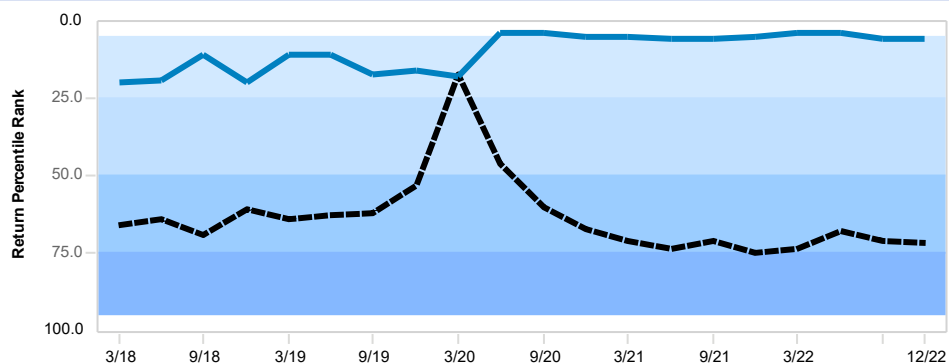
Risk and Return 3 Years



Risk and Return 5 Years

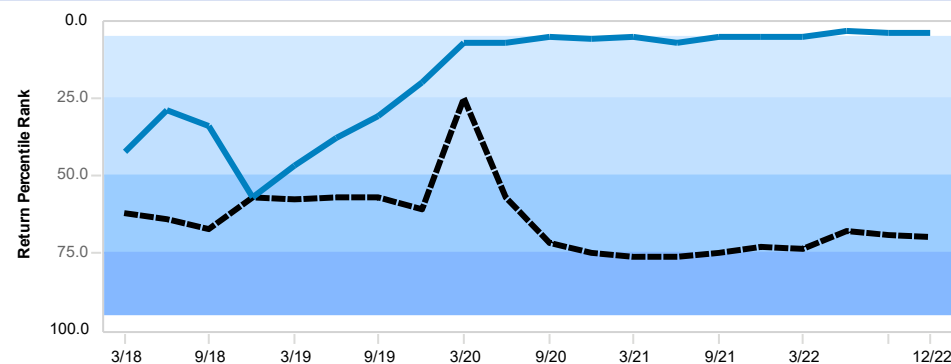


3 Year Rolling Percentile Rank IM U.S. Broad Market Core Fixed Income (SA+CF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	20 (100%)	0 (0%)	0 (0%)	0 (0%)
Index	20	1 (5%)	1 (5%)	18 (90%)	0 (0%)

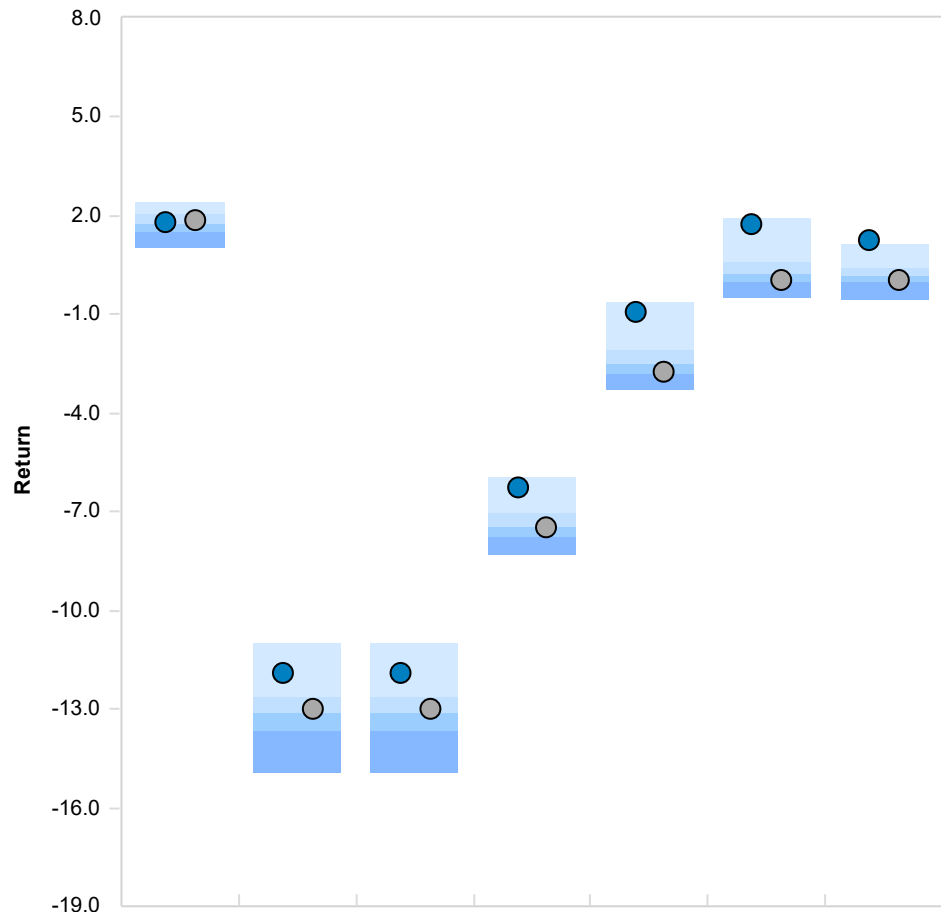
5 Year Rolling Percentile Rank IM U.S. Broad Market Core Fixed Income (SA+CF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	13 (65%)	6 (30%)	1 (5%)	0 (0%)
Index	20	1 (5%)	0 (0%)	17 (85%)	2 (10%)

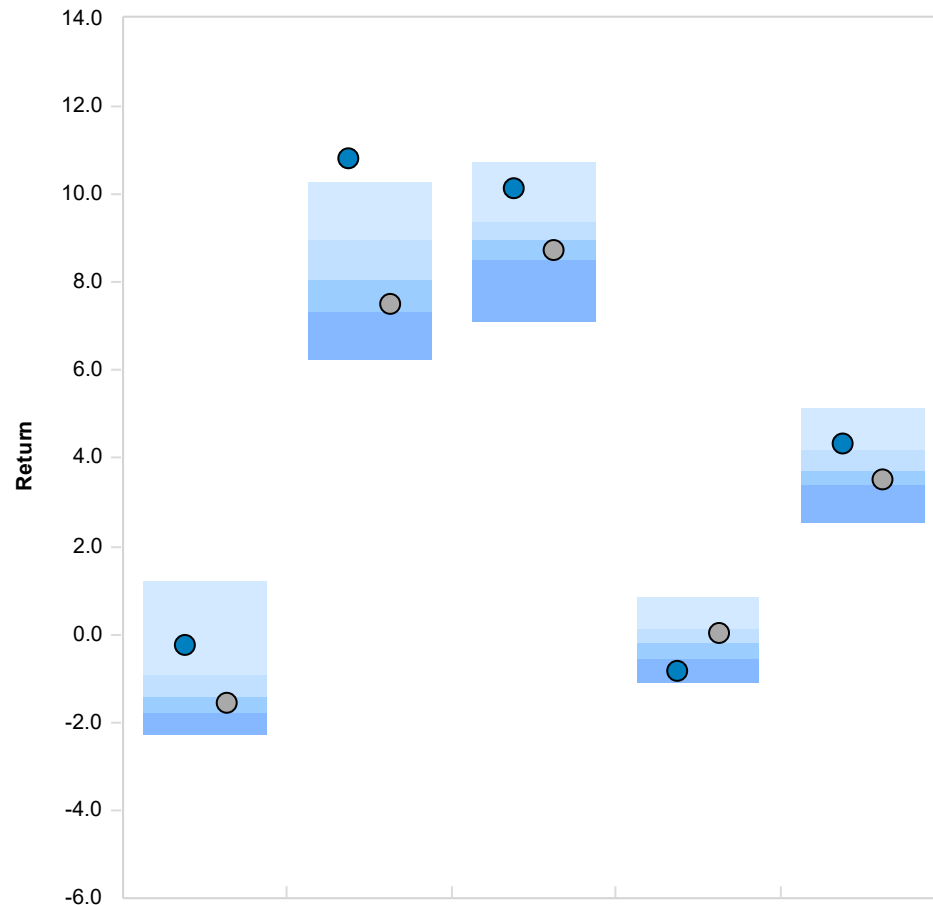


**Peer Group Analysis - IM U.S. Broad Market Core Fixed Income (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	1.80 (47)	-11.92 (13)	-11.92 (13)	-6.27 (9)	-0.89 (6)	1.76 (6)	1.24 (4)
● Index	1.87 (36)	-13.01 (38)	-13.01 (38)	-7.45 (51)	-2.71 (72)	0.03 (71)	0.02 (70)
Median	1.77	-13.12	-13.12	-7.45	-2.47	0.25	0.18

**Peer Group Analysis - IM U.S. Broad Market Core Fixed Income (SA+CF)**



	2021	2020	2019	2018	2017
● Investment	-0.25 (9)	10.80 (3)	10.15 (9)	-0.81 (89)	4.33 (18)
● Index	-1.55 (58)	7.51 (67)	8.72 (66)	0.01 (32)	3.54 (65)
Median	-1.43	8.05	8.95	-0.18	3.72

**Comparative Performance**

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-4.40 (23)	-4.36 (18)	-5.37 (15)	0.09 (10)	0.02 (58)	2.05 (36)
Index	-4.75 (61)	-4.69 (30)	-5.93 (58)	0.01 (18)	0.05 (44)	1.83 (74)
Median	-4.64	-4.91	-5.86	-0.11	0.03	1.94



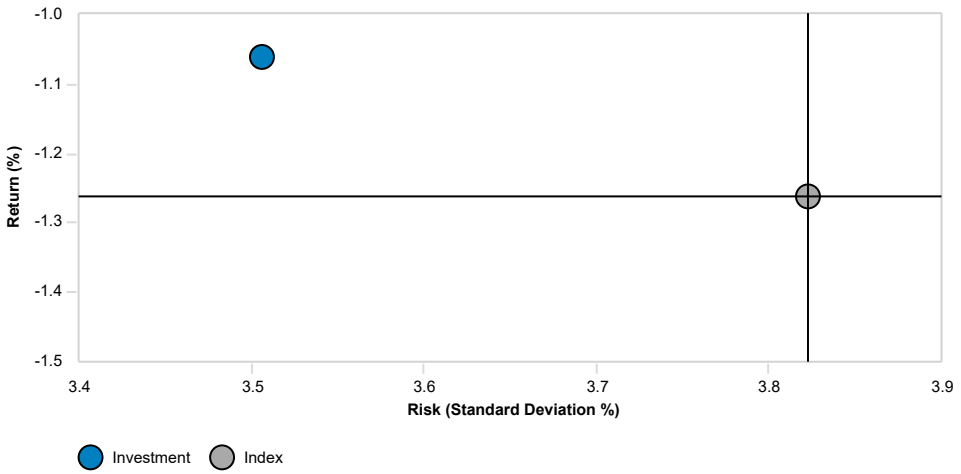
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-1.06	3.51	-0.50	88.27	6	87.38	6
Index	-1.26	3.82	-0.50	100.00	7	100.00	5

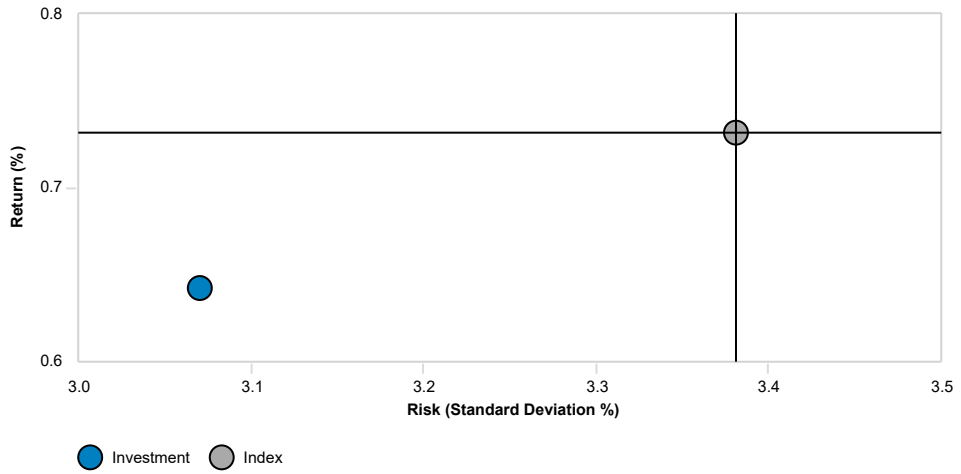
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	0.64	3.07	-0.19	88.05	13	88.16	7
Index	0.73	3.38	-0.14	100.00	14	100.00	6

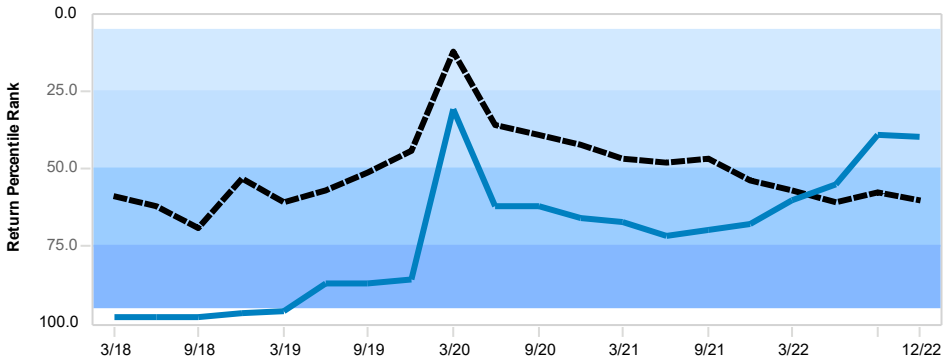
**Risk and Return 3 Years**



**Risk and Return 5 Years**

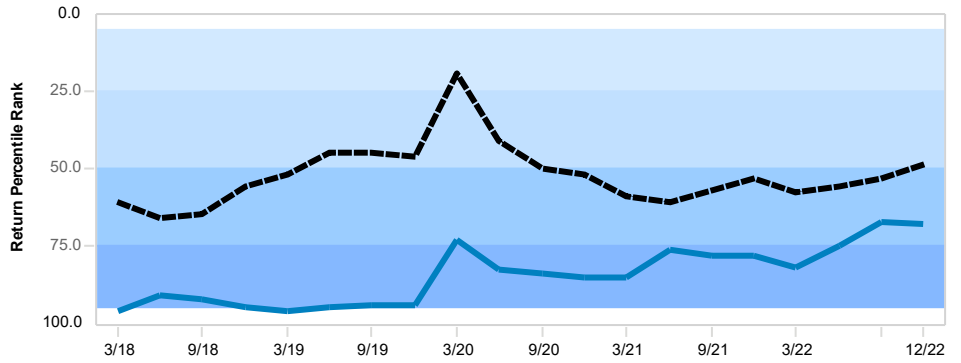


**3 Year Rolling Percentile Rank IM U.S. Intermediate Duration (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	3 (15%)	9 (45%)	8 (40%)
Index	20	1 (5%)	7 (35%)	12 (60%)	0 (0%)

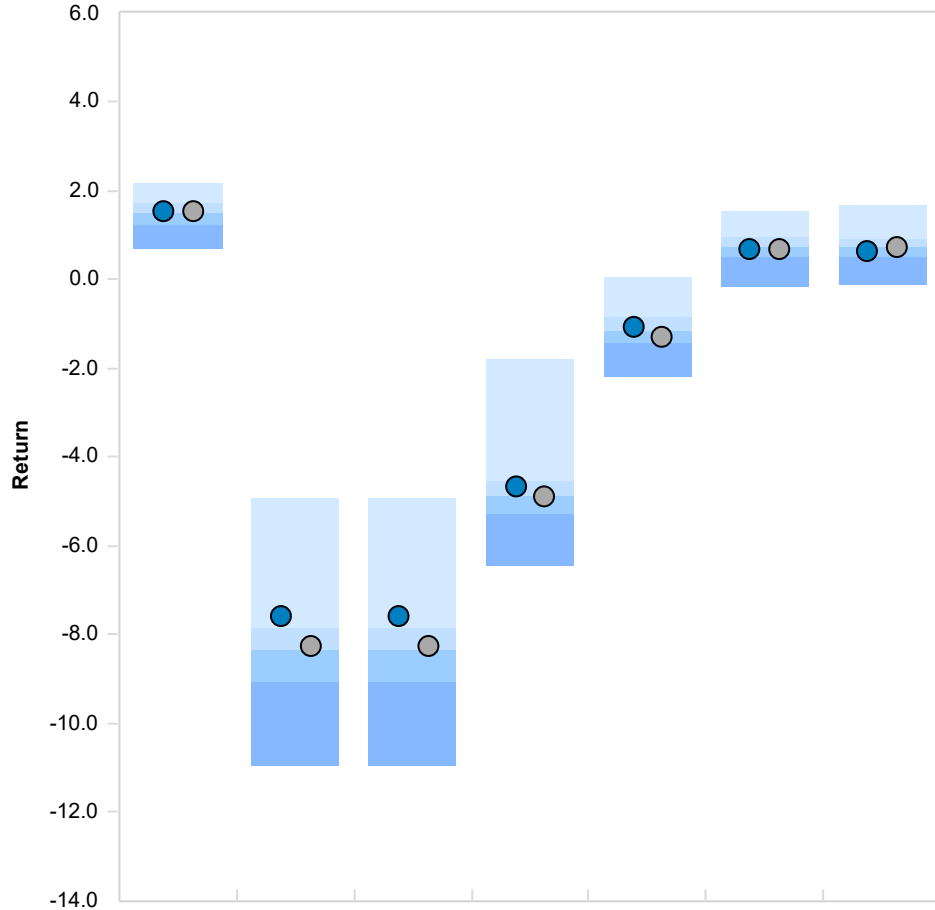
**5 Year Rolling Percentile Rank IM U.S. Intermediate Duration (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	0 (0%)	4 (20%)	16 (80%)
Index	20	1 (5%)	6 (30%)	13 (65%)	0 (0%)

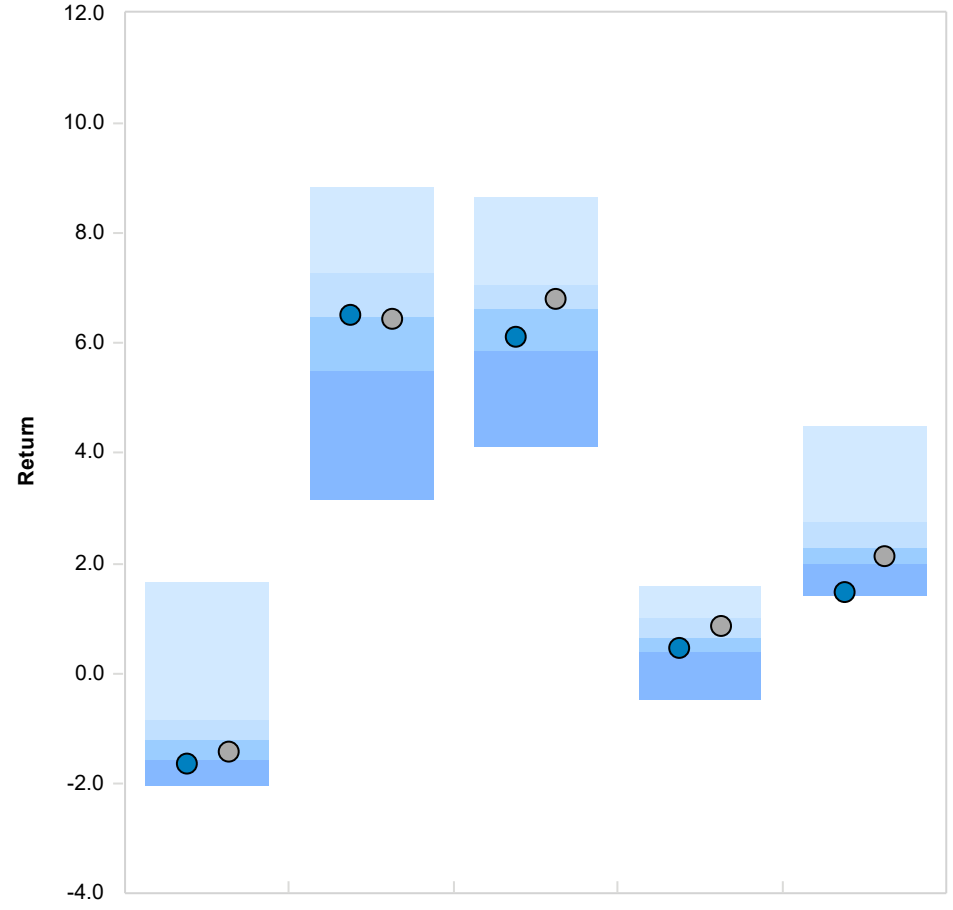


**Peer Group Analysis - IM U.S. Intermediate Duration (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	1.53 (44)	-7.55 (22)	-7.55 (22)	-4.65 (31)	-1.06 (40)	0.68 (55)	0.64 (68)
● Index	1.54 (44)	-8.24 (43)	-8.24 (43)	-4.90 (53)	-1.26 (60)	0.70 (53)	0.73 (49)
Median	1.49	-8.34	-8.34	-4.88	-1.17	0.72	0.73

**Peer Group Analysis - IM U.S. Intermediate Duration (SA+CF)**



	2021	2020	2019	2018	2017
● Investment	-1.65 (82)	6.52 (48)	6.11 (70)	0.47 (66)	1.49 (91)
● Index	-1.44 (65)	6.43 (53)	6.80 (41)	0.88 (35)	2.14 (65)
Median	-1.20	6.48	6.64	0.66	2.27

**Comparative Performance**

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-2.79 (25)	-2.28 (22)	-4.15 (33)	-0.60 (59)	-0.11 (88)	0.97 (55)
Index	-3.06 (54)	-2.37 (25)	-4.51 (63)	-0.57 (48)	0.02 (45)	0.98 (53)
Median	-3.05	-2.65	-4.40	-0.58	0.00	0.99



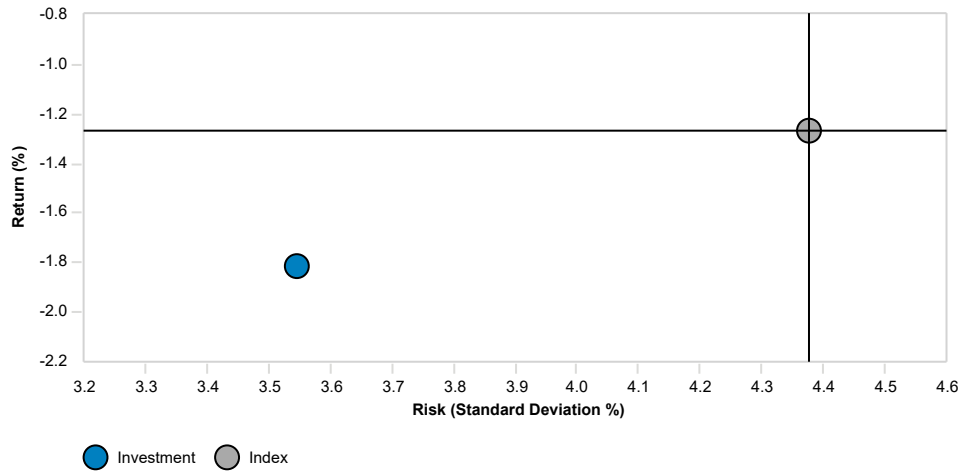
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-1.81	3.55	-0.70	70.72	5	85.08	7
Index	-1.27	4.38	-0.43	100.00	7	100.00	5

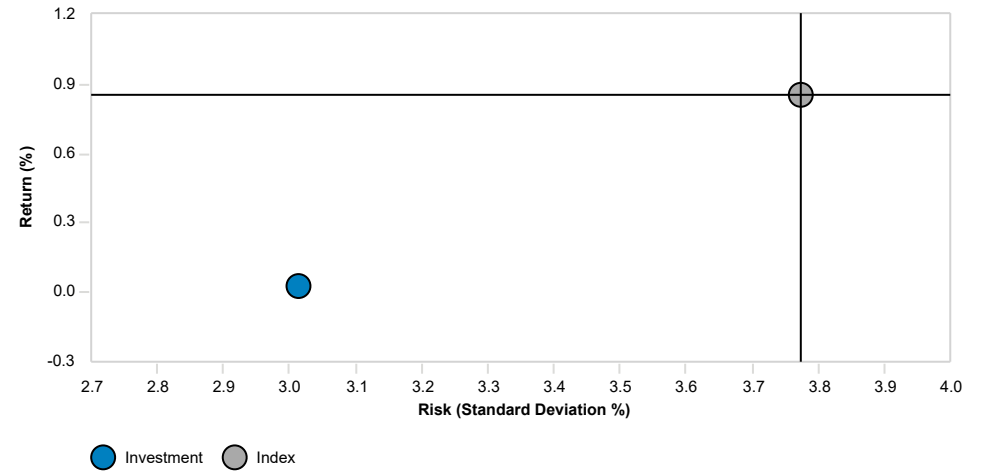
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	0.03	3.01	-0.40	69.89	12	82.55	8
Index	0.85	3.77	-0.09	100.00	13	100.00	7

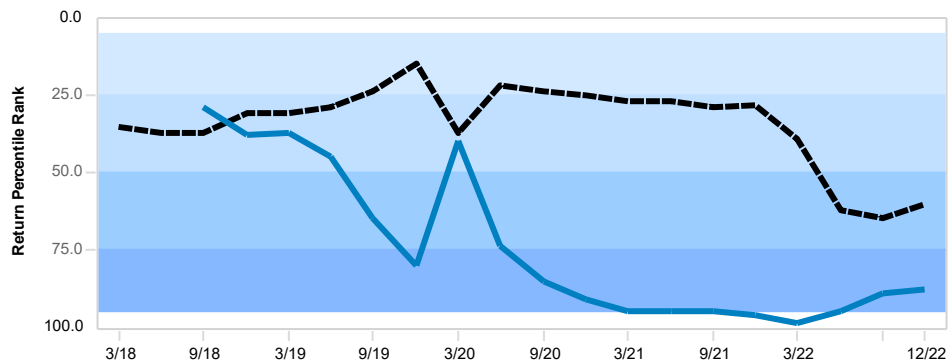
**Risk and Return 3 Years**



**Risk and Return 5 Years**

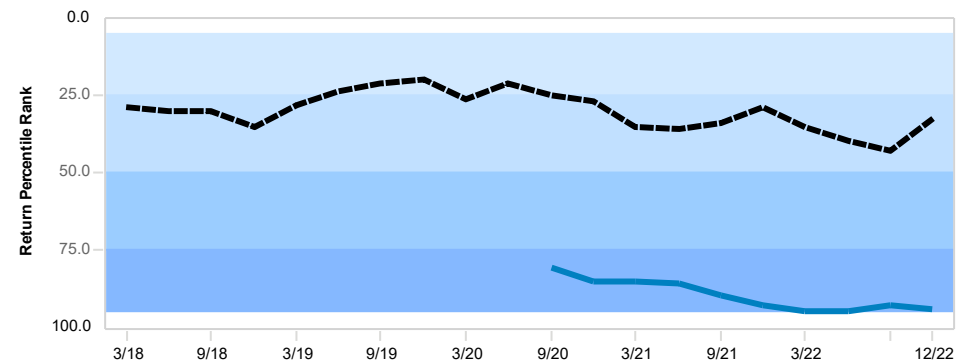


**3 Year Rolling Percentile Rank IM U.S. Intermediate Duration (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	18	0 (0%)	5 (28%)	2 (11%)	11 (61%)
Index	20	5 (25%)	12 (60%)	3 (15%)	0 (0%)

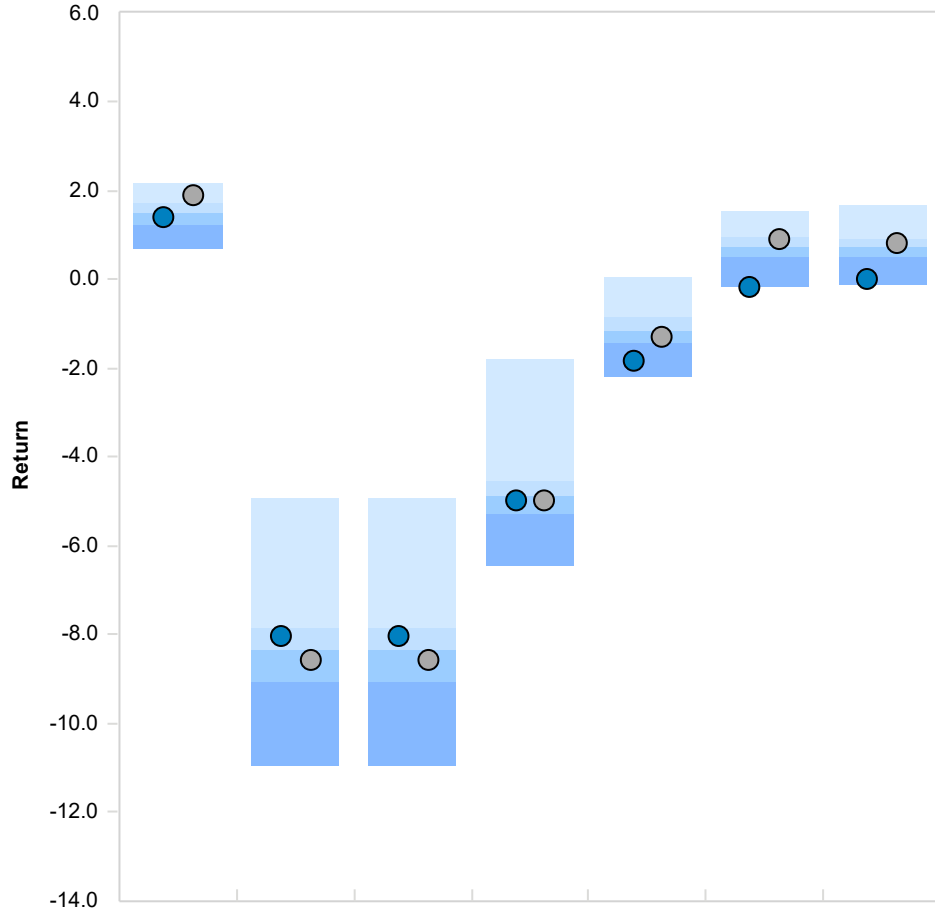
**5 Year Rolling Percentile Rank IM U.S. Intermediate Duration (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	10	0 (0%)	0 (0%)	0 (0%)	10 (100%)
Index	20	5 (25%)	15 (75%)	0 (0%)	0 (0%)

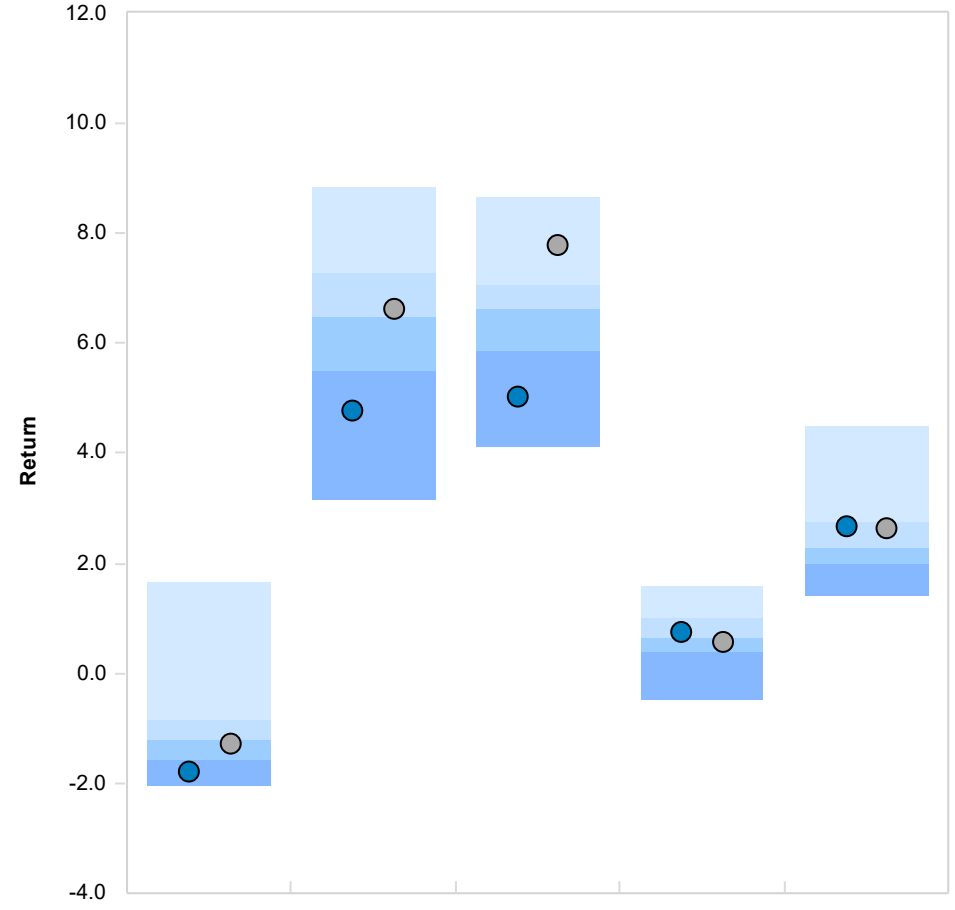


**Peer Group Analysis - IM U.S. Intermediate Duration (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	1.40 (65)	-8.01 (33)	-8.01 (33)	-4.95 (58)	-1.81 (88)	-0.14 (96)	0.03 (94)
● Index	1.91 (14)	-8.55 (59)	-8.55 (59)	-4.99 (61)	-1.27 (60)	0.92 (30)	0.85 (33)
Median	1.49	-8.34	-8.34	-4.88	-1.17	0.72	0.73

**Peer Group Analysis - IM U.S. Intermediate Duration (SA+CF)**



	2021	2020	2019	2018	2017
● Investment	-1.80 (89)	4.79 (89)	5.02 (92)	0.74 (46)	2.68 (29)
● Index	-1.29 (58)	6.62 (46)	7.78 (11)	0.58 (58)	2.65 (29)
Median	-1.20	6.48	6.64	0.66	2.27

**Comparative Performance**

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-2.90 (31)	-2.41 (28)	-4.26 (39)	-0.69 (79)	-0.09 (84)	0.83 (75)
Index	-3.07 (54)	-2.84 (65)	-4.72 (84)	-0.56 (46)	0.04 (36)	1.18 (24)
Median	-3.05	-2.65	-4.40	-0.58	0.00	0.99



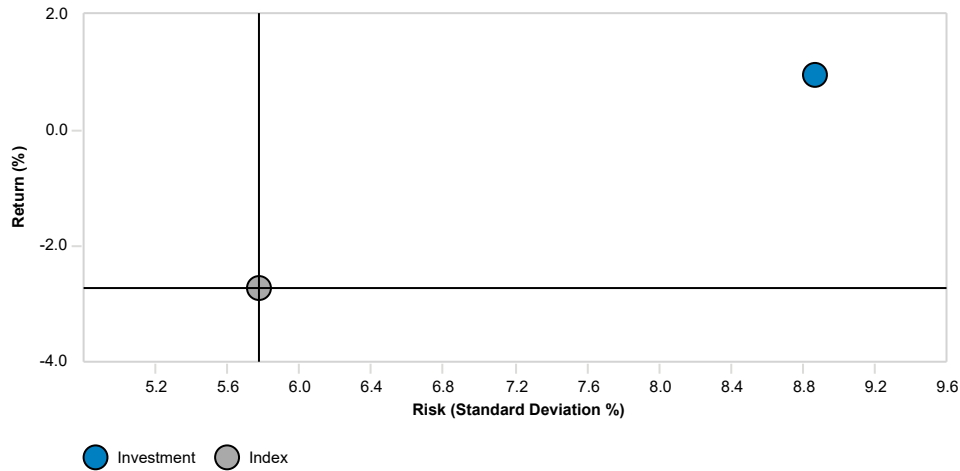
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	0.96	8.87	0.07	127.47	7	75.81	5
Index	-2.71	5.77	-0.57	100.00	8	100.00	4

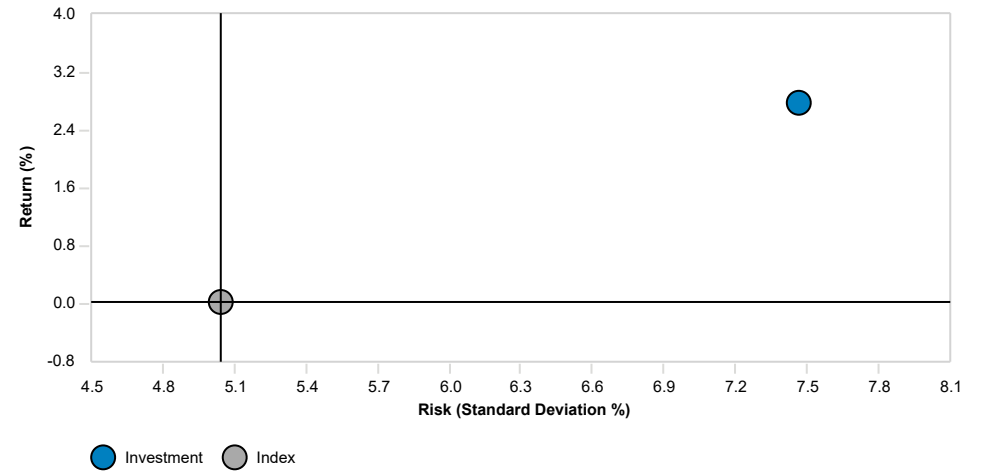
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	2.78	7.46	0.24	113.95	12	69.39	8
Index	0.02	5.04	-0.22	100.00	14	100.00	6

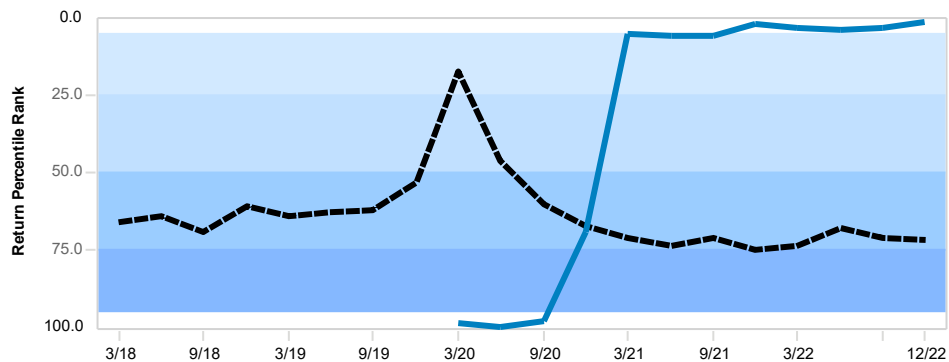
**Risk and Return 3 Years**



**Risk and Return 5 Years**

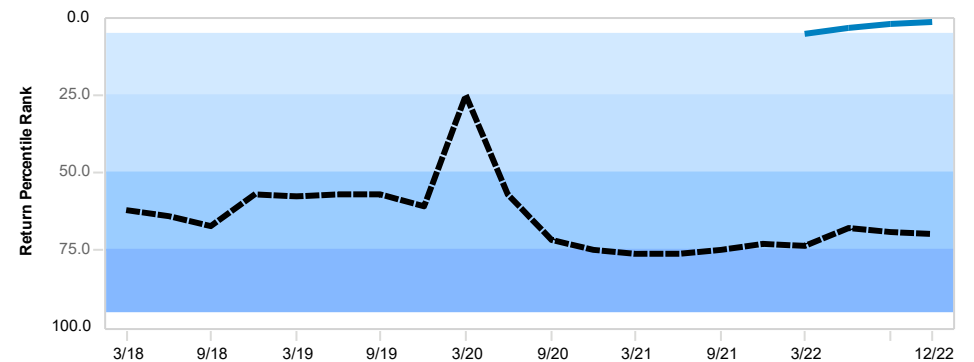


**3 Year Rolling Percentile Rank IM U.S. Broad Market Core Fixed Income (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	12	8 (67%)	0 (0%)	1 (8%)	3 (25%)
Index	20	1 (5%)	1 (5%)	18 (90%)	0 (0%)

**5 Year Rolling Percentile Rank IM U.S. Broad Market Core Fixed Income (SA+CF)**

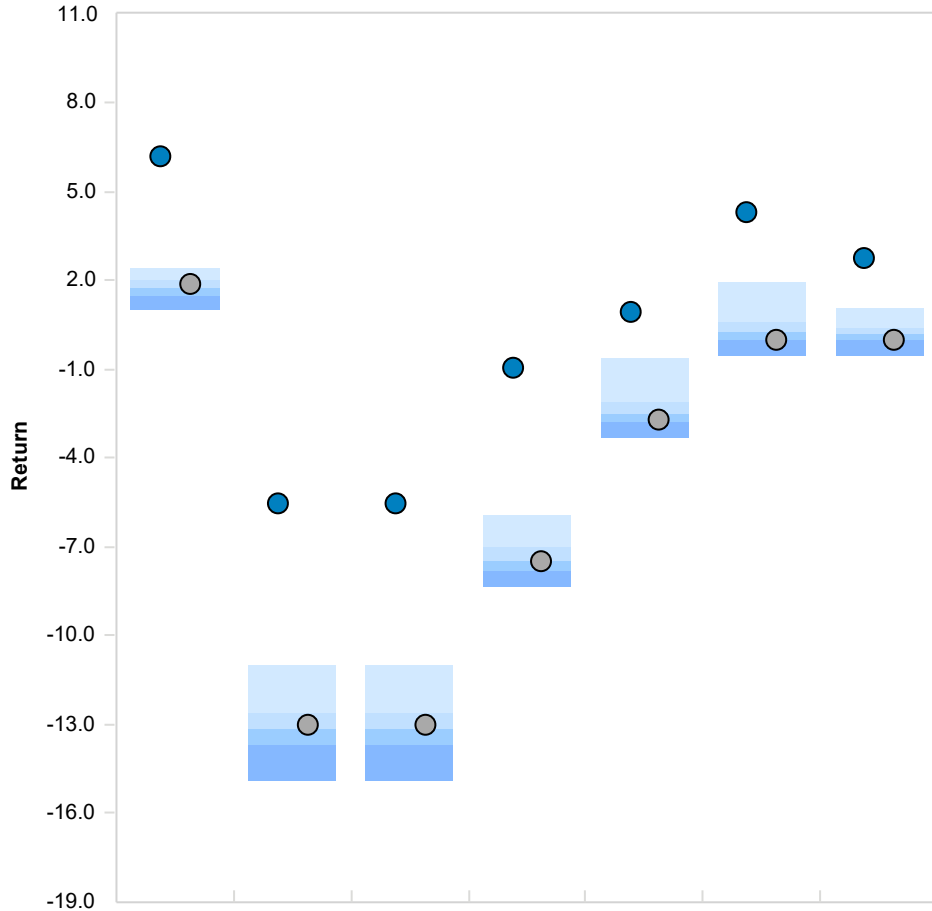


	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	4	4 (100%)	0 (0%)	0 (0%)	0 (0%)
Index	20	1 (5%)	0 (0%)	17 (85%)	2 (10%)



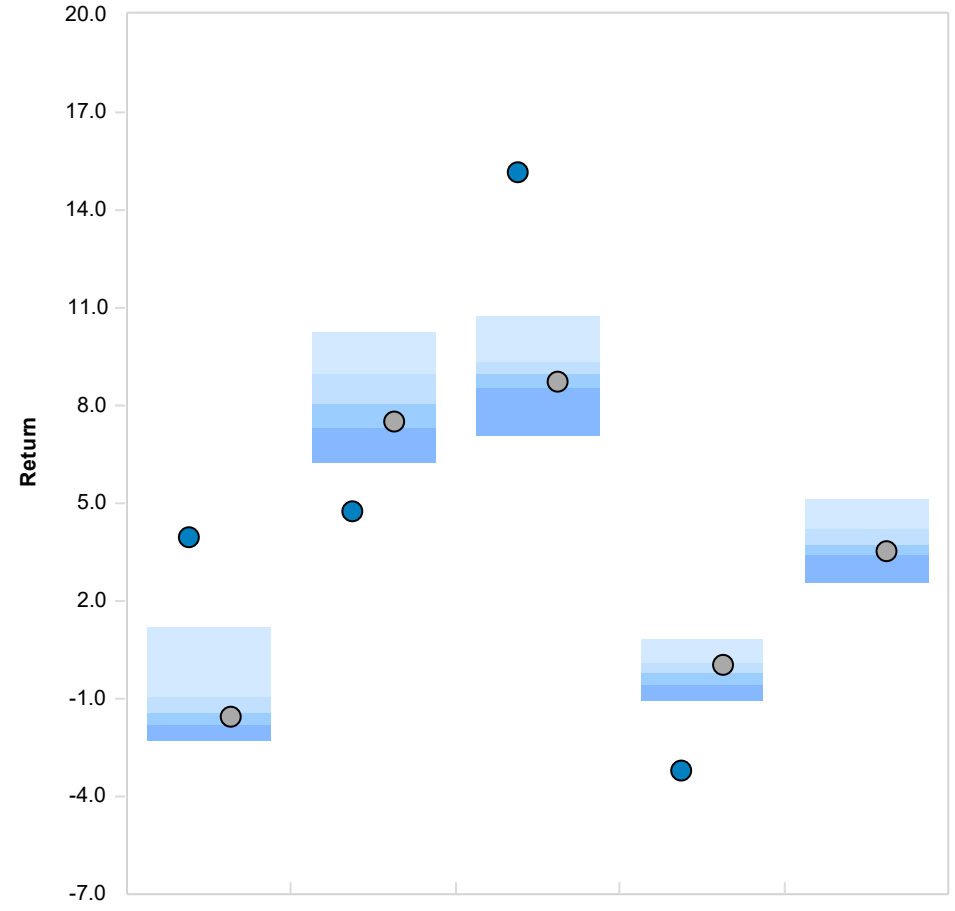


**Peer Group Analysis - IM U.S. Broad Market Core Fixed Income (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	6.25 (1)	-5.53 (1)	-5.53 (1)	-0.90 (1)	0.96 (1)	4.33 (1)	2.78 (1)
● Index	1.87 (36)	-13.01 (38)	-13.01 (38)	-7.45 (51)	-2.71 (72)	0.03 (71)	0.02 (70)
Median	1.77	-13.12	-13.12	-7.45	-2.47	0.25	0.18

**Peer Group Analysis - IM U.S. Broad Market Core Fixed Income (SA+CF)**



	2021	2020	2019	2018	2017
● Investment	3.95 (1)	4.78 (99)	15.16 (1)	-3.20 (100)	N/A
● Index	-1.55 (58)	7.51 (67)	8.72 (66)	0.01 (32)	3.54 (65)
Median	-1.43	8.05	8.95	-0.18	3.72

**Comparative Performance**

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-2.57 (3)	-4.89 (48)	-4.05 (1)	0.15 (5)	-0.14 (91)	2.75 (3)
Index	-4.75 (61)	-4.69 (30)	-5.93 (58)	0.01 (18)	0.05 (44)	1.83 (74)
Median	-4.64	-4.91	-5.86	-0.11	0.03	1.94



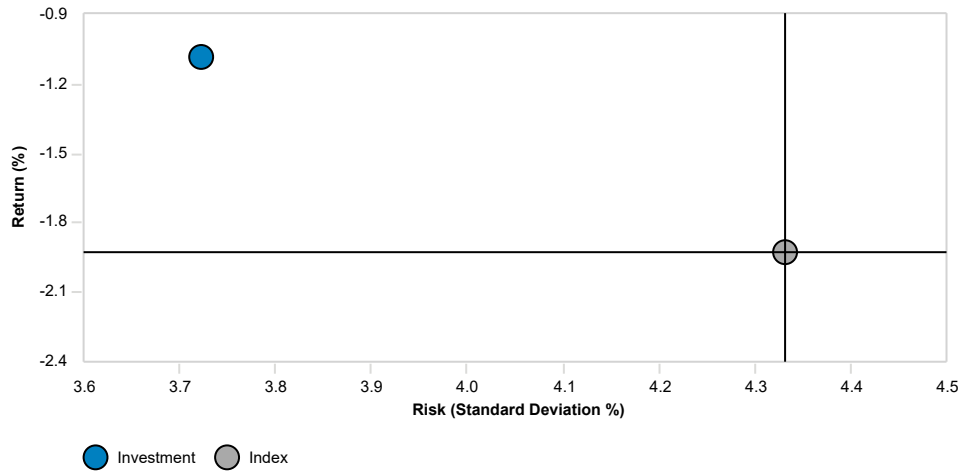
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-1.08	3.72	-0.46	104.14	6	89.56	6
Index	-1.93	4.33	-0.59	100.00	7	100.00	5

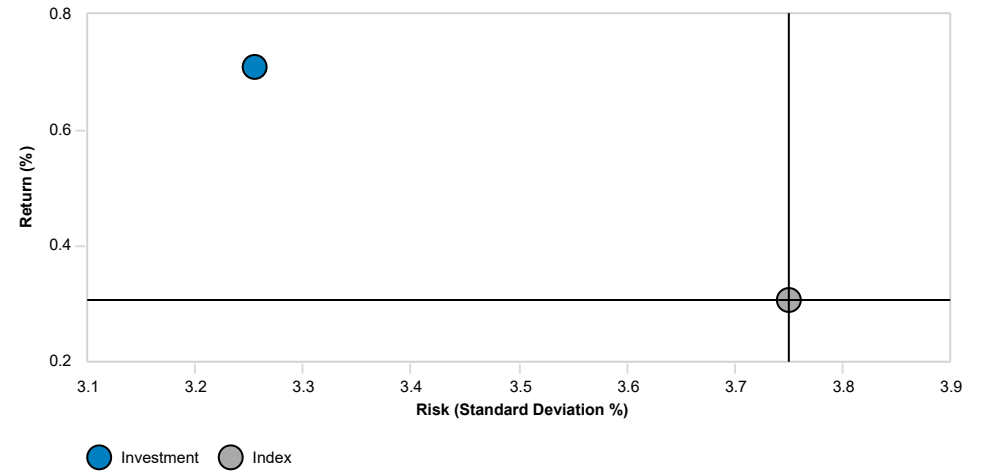
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	0.71	3.25	-0.15	95.97	12	86.83	8
Index	0.31	3.75	-0.24	100.00	14	100.00	6

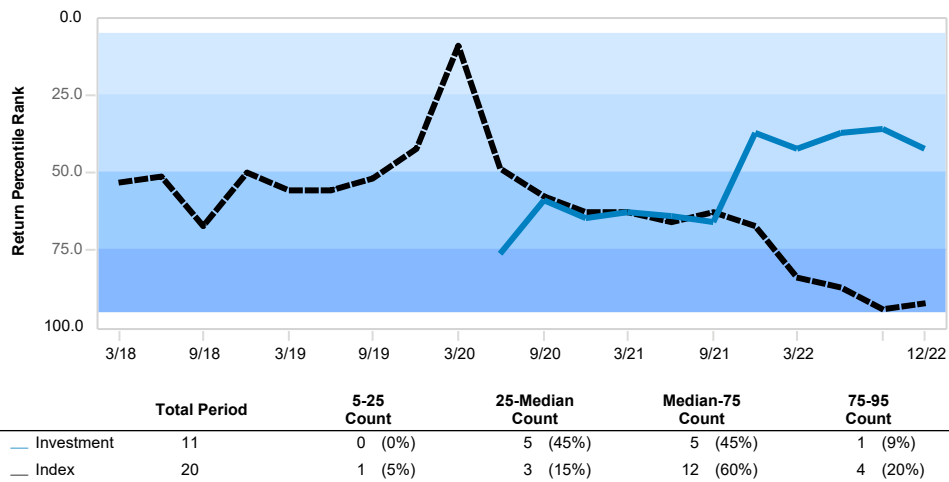
**Risk and Return 3 Years**



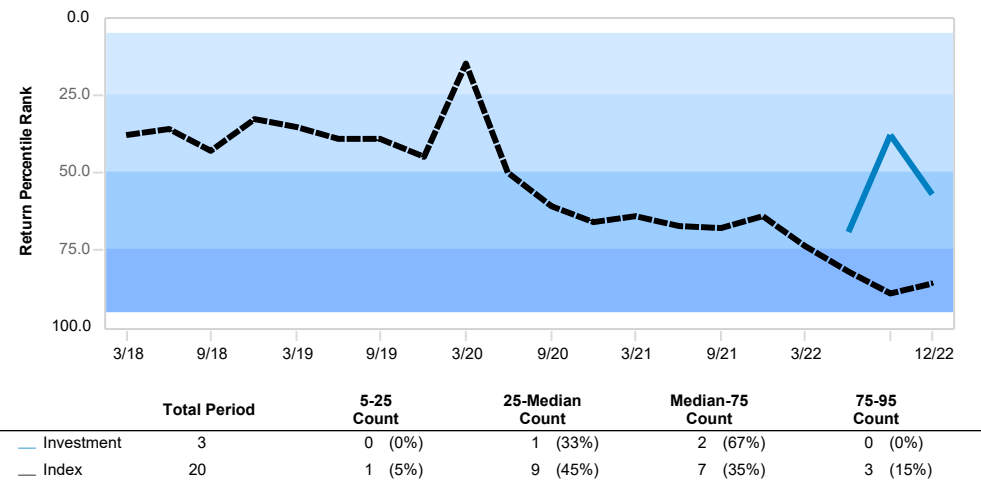
**Risk and Return 5 Years**



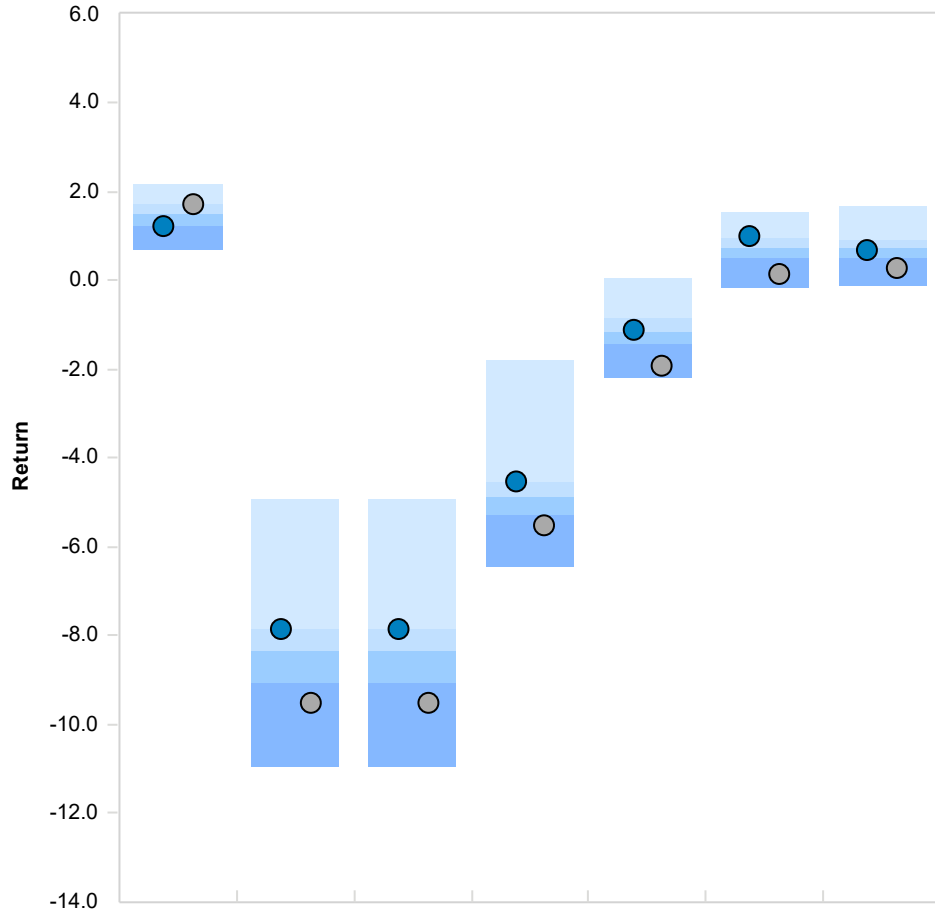
**3 Year Rolling Percentile Rank IM U.S. Intermediate Duration (SA+CF)**



**5 Year Rolling Percentile Rank IM U.S. Intermediate Duration (SA+CF)**

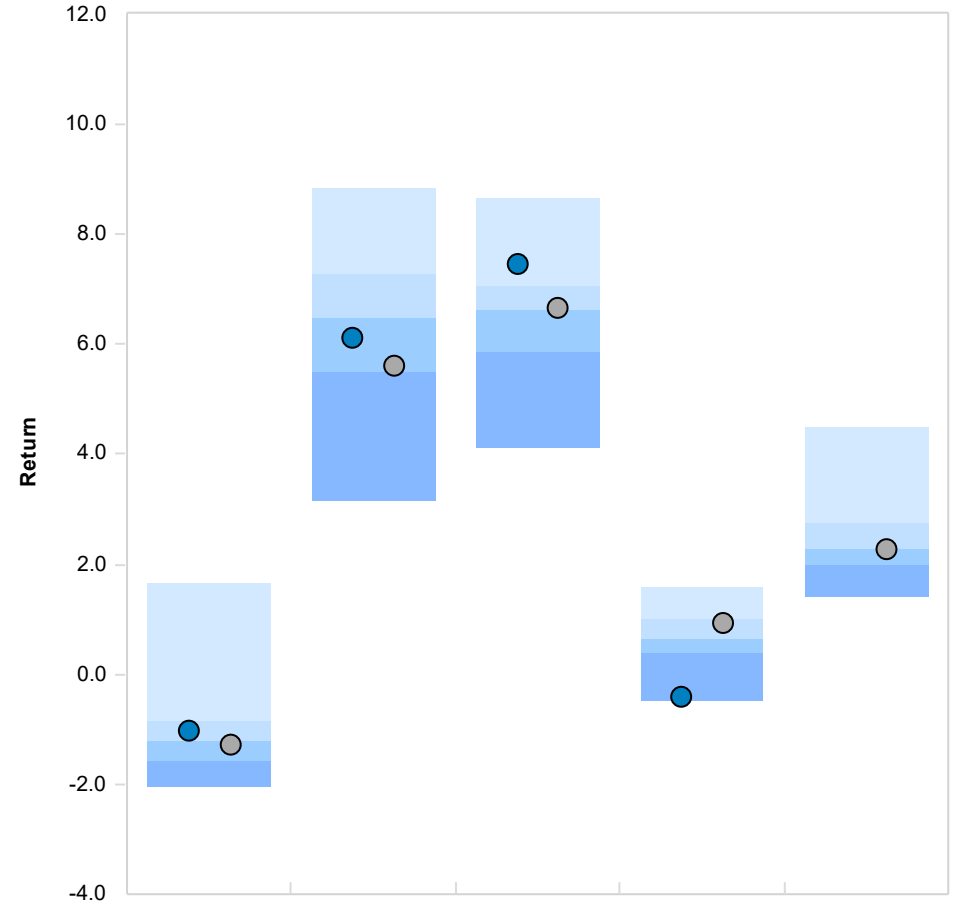


**Peer Group Analysis - IM U.S. Intermediate Duration (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	1.26 (74)	-7.85 (26)	-7.85 (26)	-4.50 (25)	-1.08 (42)	0.99 (24)	0.71 (57)
● Index	1.72 (26)	-9.51 (85)	-9.51 (85)	-5.49 (84)	-1.93 (92)	0.16 (88)	0.31 (86)
Median	1.49	-8.34	-8.34	-4.88	-1.17	0.72	0.73

**Peer Group Analysis - IM U.S. Intermediate Duration (SA+CF)**



	2021	2020	2019	2018	2017
● Investment	-1.04 (35)	6.13 (64)	7.47 (16)	-0.40 (95)	N/A
● Index	-1.29 (58)	5.60 (74)	6.67 (48)	0.92 (33)	2.27 (50)
Median	-1.20	6.48	6.64	0.66	2.27

**Comparative Performance**

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-2.86 (28)	-2.28 (22)	-4.13 (31)	-0.45 (22)	0.00 (52)	0.96 (63)
Index	-3.84 (91)	-2.93 (72)	-4.69 (80)	-0.51 (30)	0.05 (33)	0.78 (79)
Median	-3.05	-2.65	-4.40	-0.58	0.00	0.99



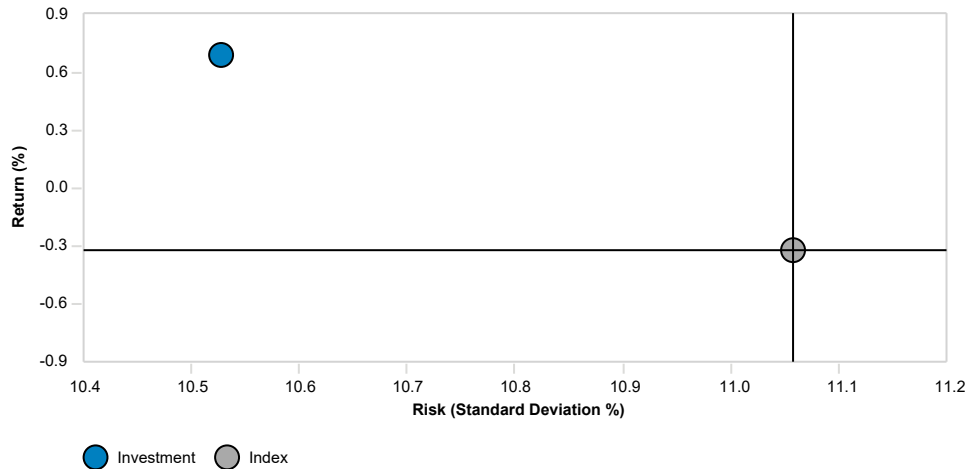
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	0.69	10.53	0.05	102.14	8	94.60	4
Index	-0.32	11.06	-0.04	100.00	8	100.00	4

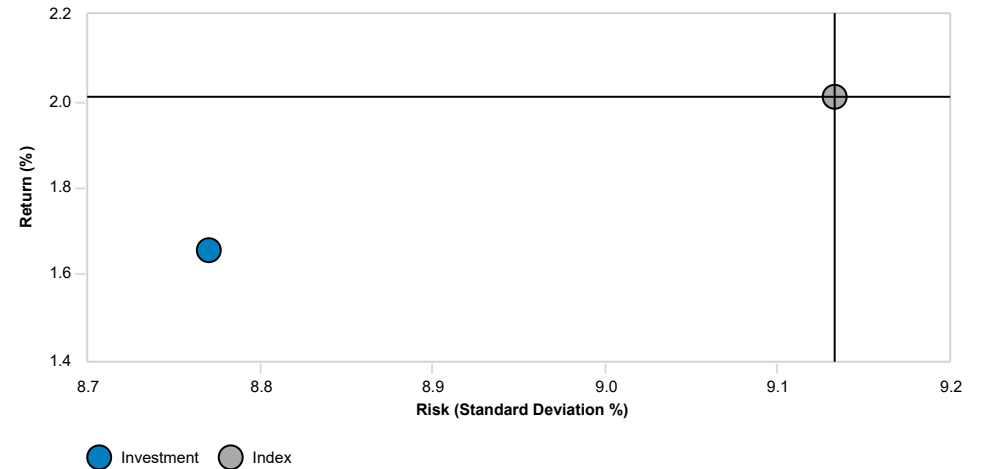
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	1.66	8.77	0.09	94.30	14	97.03	6
Index	2.01	9.13	0.13	100.00	14	100.00	6

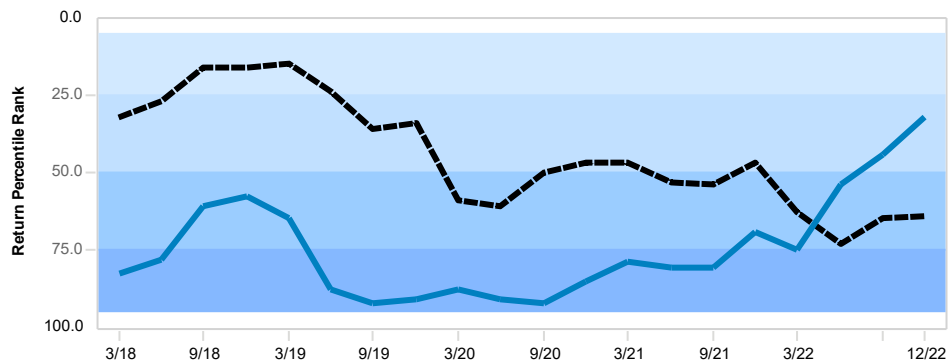
Risk and Return 3 Years



Risk and Return 5 Years

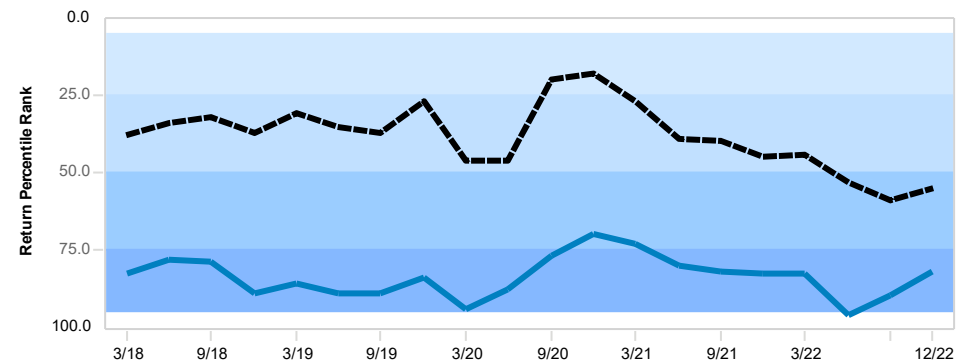


3 Year Rolling Percentile Rank IM U.S. High Yield Bonds (SA+CF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	2 (10%)	6 (30%)	12 (60%)
Index	20	4 (20%)	8 (40%)	8 (40%)	0 (0%)

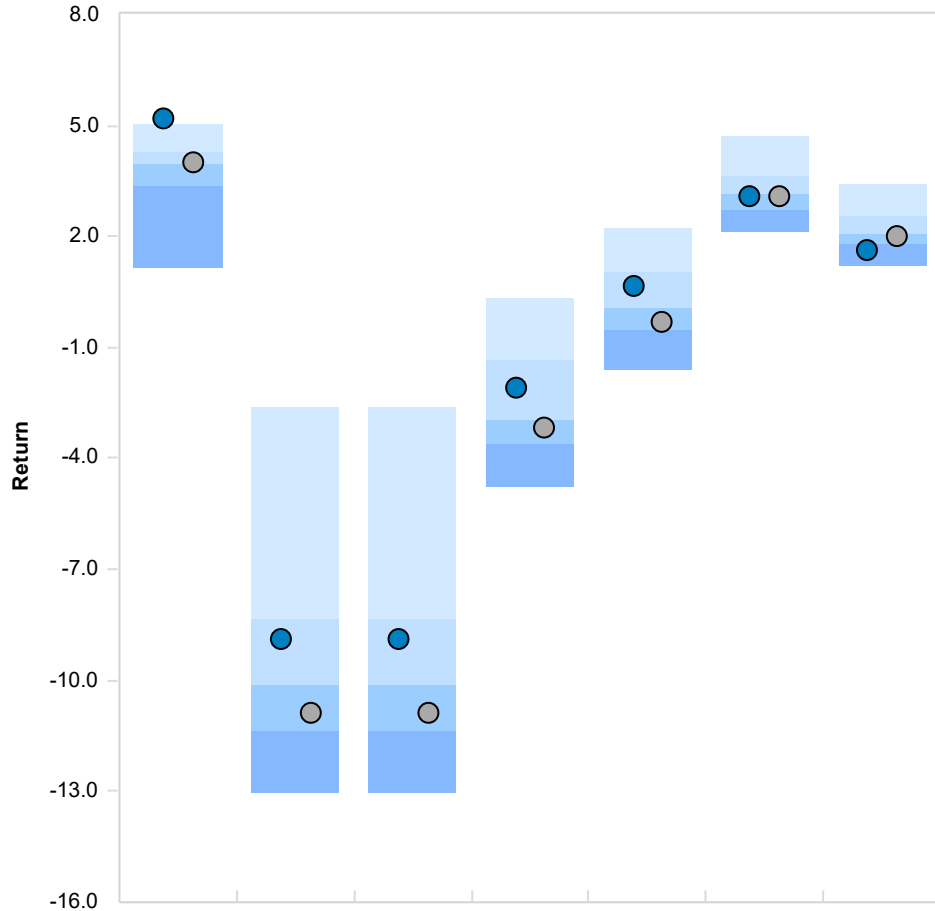
5 Year Rolling Percentile Rank IM U.S. High Yield Bonds (SA+CF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	0 (0%)	2 (10%)	18 (90%)
Index	20	2 (10%)	15 (75%)	3 (15%)	0 (0%)

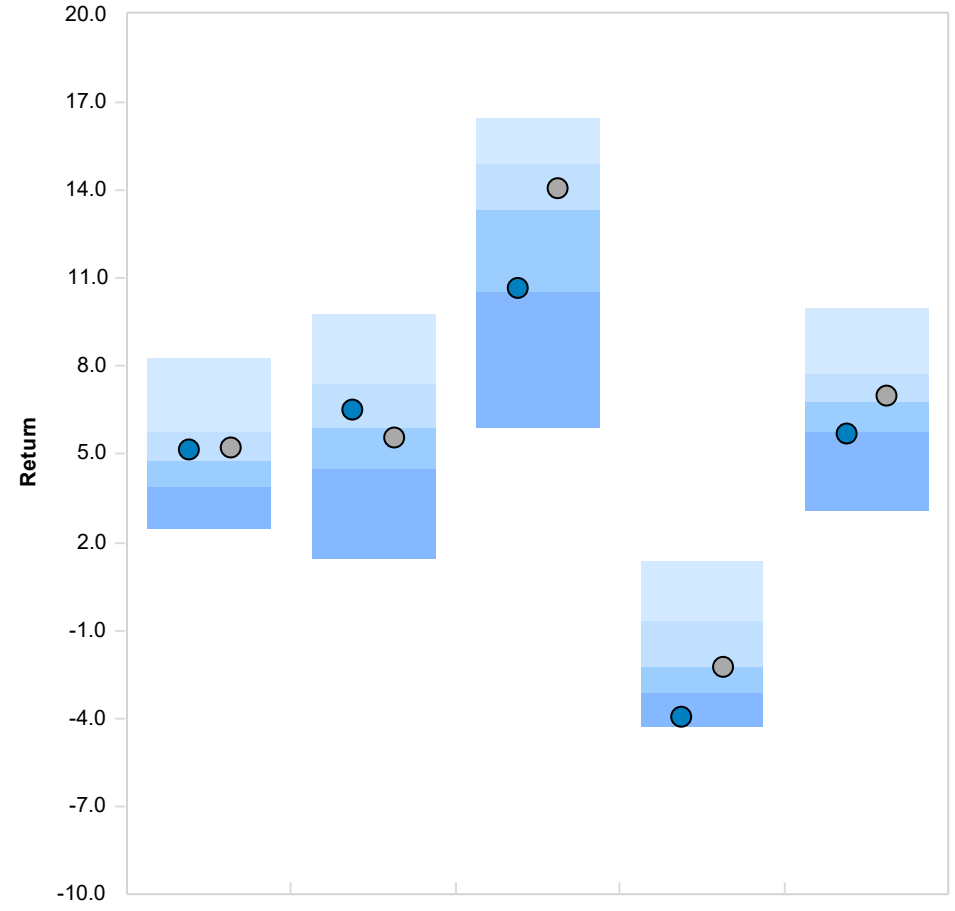


**Peer Group Analysis - IM U.S. High Yield Bonds (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	5.18 (3)	-8.86 (31)	-8.86 (31)	-2.11 (34)	0.69 (32)	3.11 (55)	1.66 (82)
● Index	4.03 (45)	-10.85 (65)	-10.85 (65)	-3.15 (59)	-0.32 (64)	3.10 (56)	2.01 (55)
Median	3.93	-10.11	-10.11	-2.95	0.08	3.15	2.08

**Peer Group Analysis - IM U.S. High Yield Bonds (SA+CF)**



	2021	2020	2019	2018	2017
● Investment	5.15 (43)	6.53 (42)	10.71 (75)	-3.94 (91)	5.69 (79)
● Index	5.22 (41)	5.60 (61)	14.05 (42)	-2.22 (50)	6.97 (48)
Median	4.76	5.95	13.32	-2.24	6.78

**Comparative Performance**

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-0.32 (31)	-9.70 (59)	-3.73 (41)	0.93 (7)	0.94 (23)	2.37 (65)
Index	-0.63 (58)	-9.90 (70)	-4.29 (63)	0.67 (37)	0.93 (23)	2.59 (43)
Median	-0.52	-9.52	-3.95	0.59	0.78	2.50



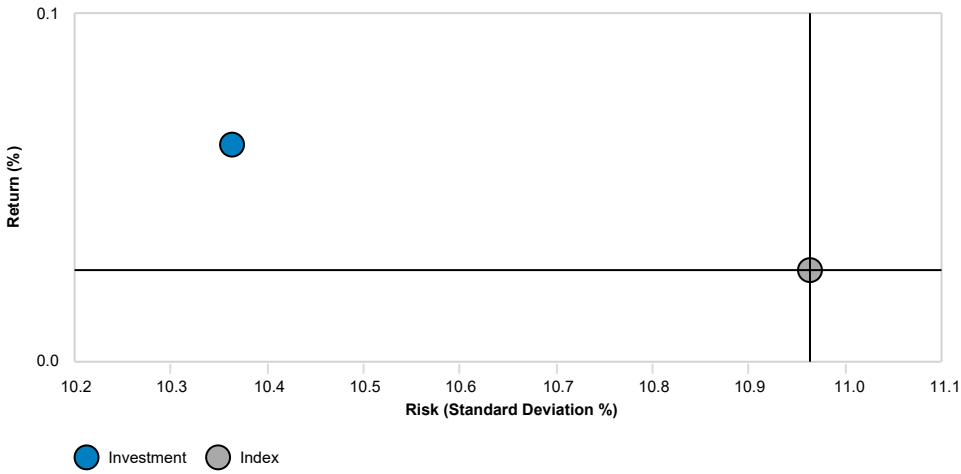
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	0.06	10.36	-0.01	95.54	8	95.58	4
Index	0.03	10.96	-0.01	100.00	8	100.00	4

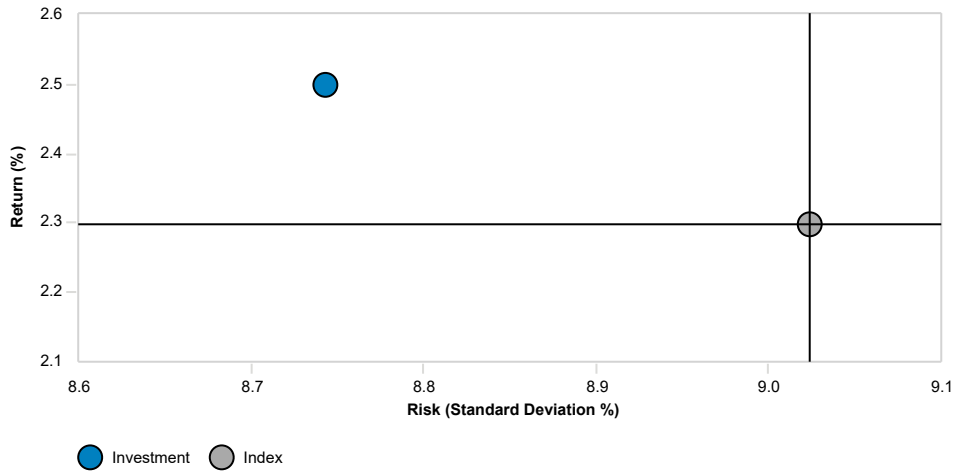
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	2.50	8.74	0.18	99.72	14	97.74	6
Index	2.30	9.02	0.16	100.00	14	100.00	6

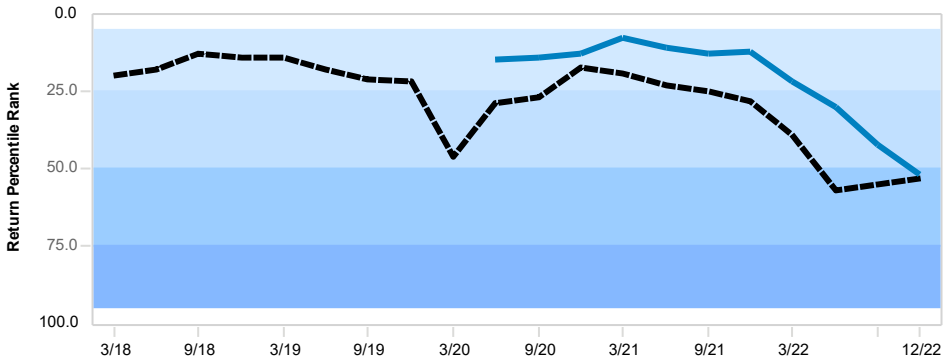
**Risk and Return 3 Years**



**Risk and Return 5 Years**

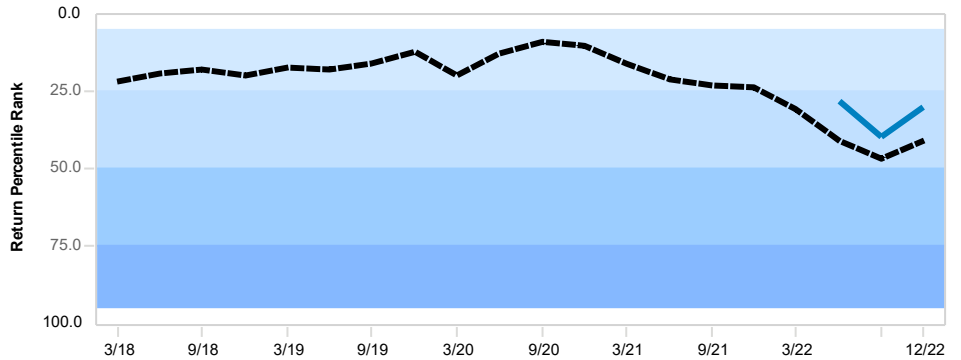


**3 Year Rolling Percentile Rank IM U.S. High Yield Bonds (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	11	8 (73%)	2 (18%)	1 (9%)	0 (0%)
Index	20	12 (60%)	5 (25%)	3 (15%)	0 (0%)

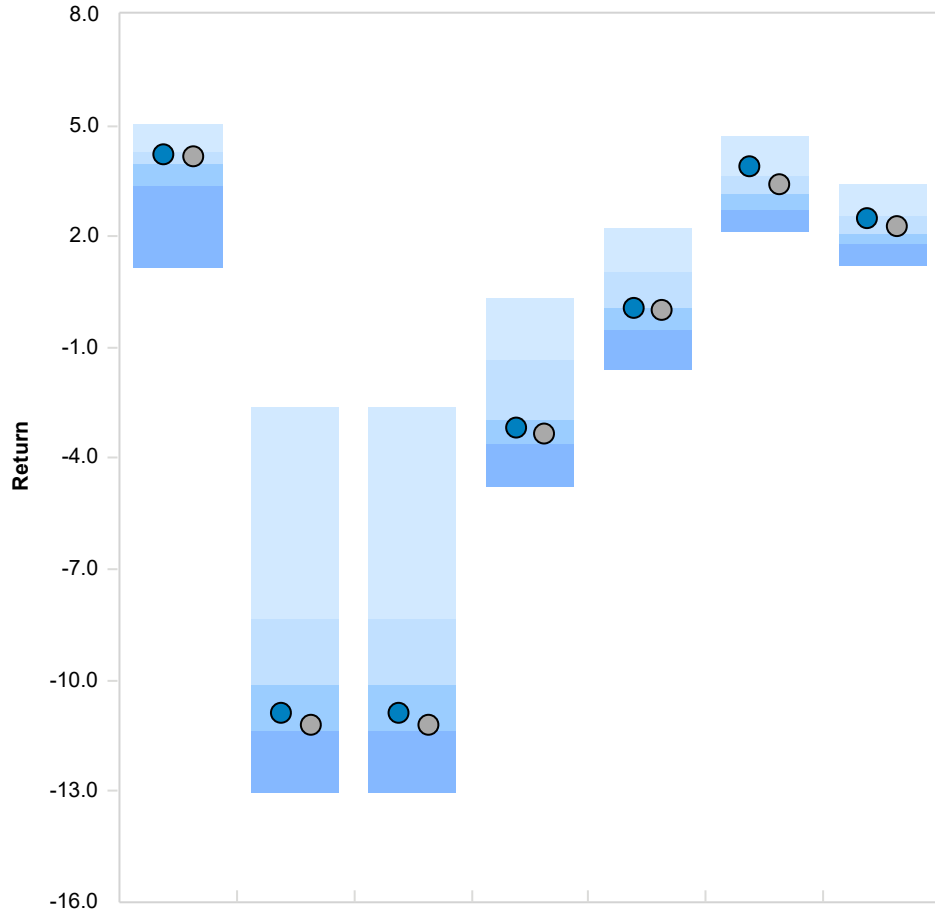
**5 Year Rolling Percentile Rank IM U.S. High Yield Bonds (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	3	0 (0%)	3 (100%)	0 (0%)	0 (0%)
Index	20	16 (80%)	4 (20%)	0 (0%)	0 (0%)

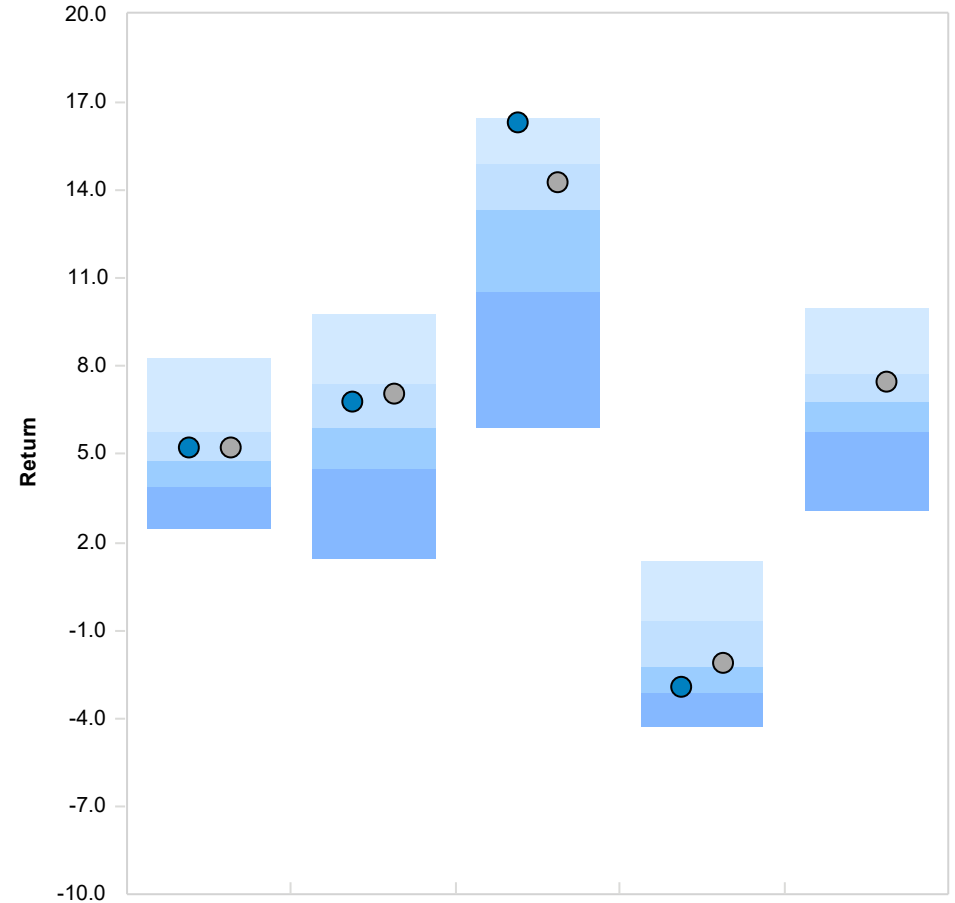


**Peer Group Analysis - IM U.S. High Yield Bonds (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	4.24 (27)	-10.87 (65)	-10.87 (65)	-3.14 (57)	0.06 (52)	3.90 (18)	2.50 (30)
● Index	4.17 (30)	-11.18 (72)	-11.18 (72)	-3.31 (63)	0.03 (53)	3.42 (33)	2.30 (41)
Median	3.93	-10.11	-10.11	-2.95	0.08	3.15	2.08

**Peer Group Analysis - IM U.S. High Yield Bonds (SA+CF)**



	2021	2020	2019	2018	2017
● Investment	5.27 (40)	6.78 (37)	16.30 (7)	-2.90 (70)	N/A
● Index	5.26 (40)	7.05 (31)	14.32 (35)	-2.08 (45)	7.50 (34)
Median	4.76	5.95	13.32	-2.24	6.78

**Comparative Performance**

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-1.39 (93)	-9.62 (54)	-4.06 (54)	0.61 (45)	0.70 (62)	2.60 (41)
Index	-0.64 (58)	-9.84 (66)	-4.82 (91)	0.69 (35)	0.89 (27)	2.74 (34)
Median	-0.52	-9.52	-3.95	0.59	0.78	2.50



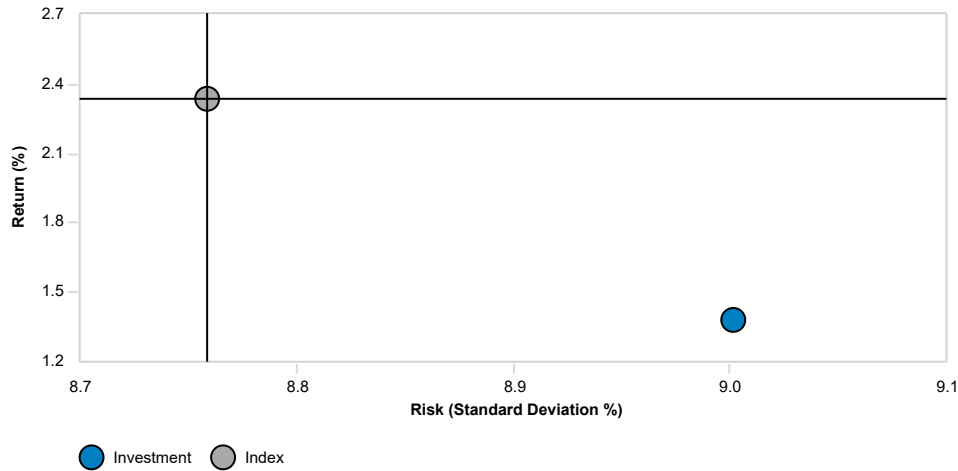
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	1.38	9.00	0.12	102.23	9	116.13	3
Index	2.34	8.76	0.22	100.00	9	100.00	3

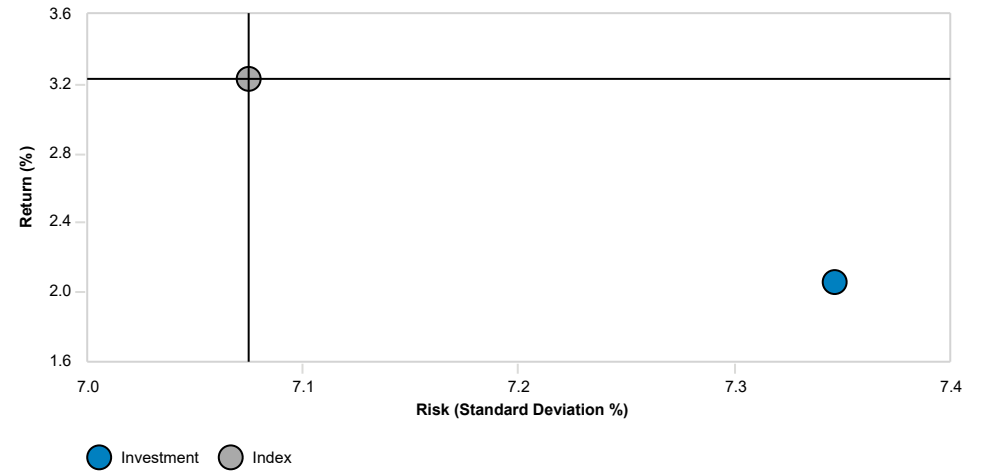
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	2.06	7.35	0.14	94.10	15	112.37	5
Index	3.24	7.07	0.31	100.00	16	100.00	4

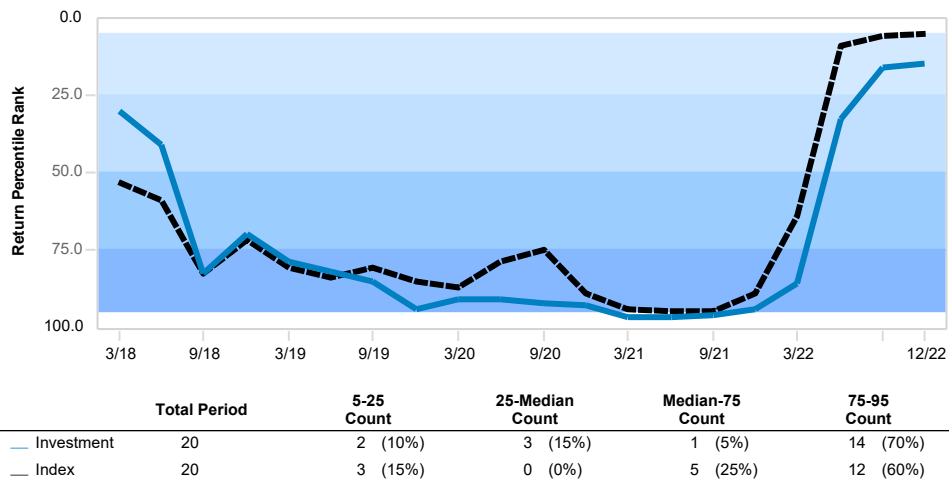
**Risk and Return 3 Years**



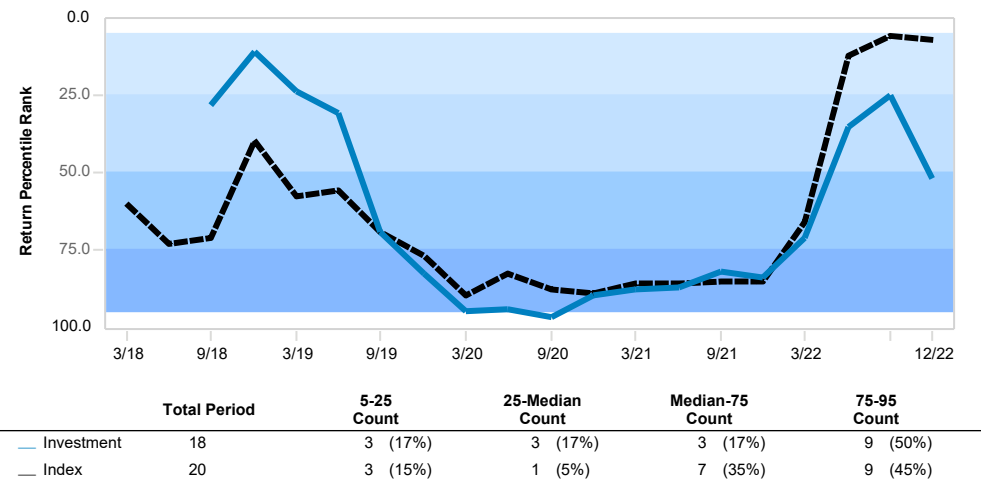
**Risk and Return 5 Years**



**3 Year Rolling Percentile Rank IM U.S. High Yield Bonds (SA+CF)**

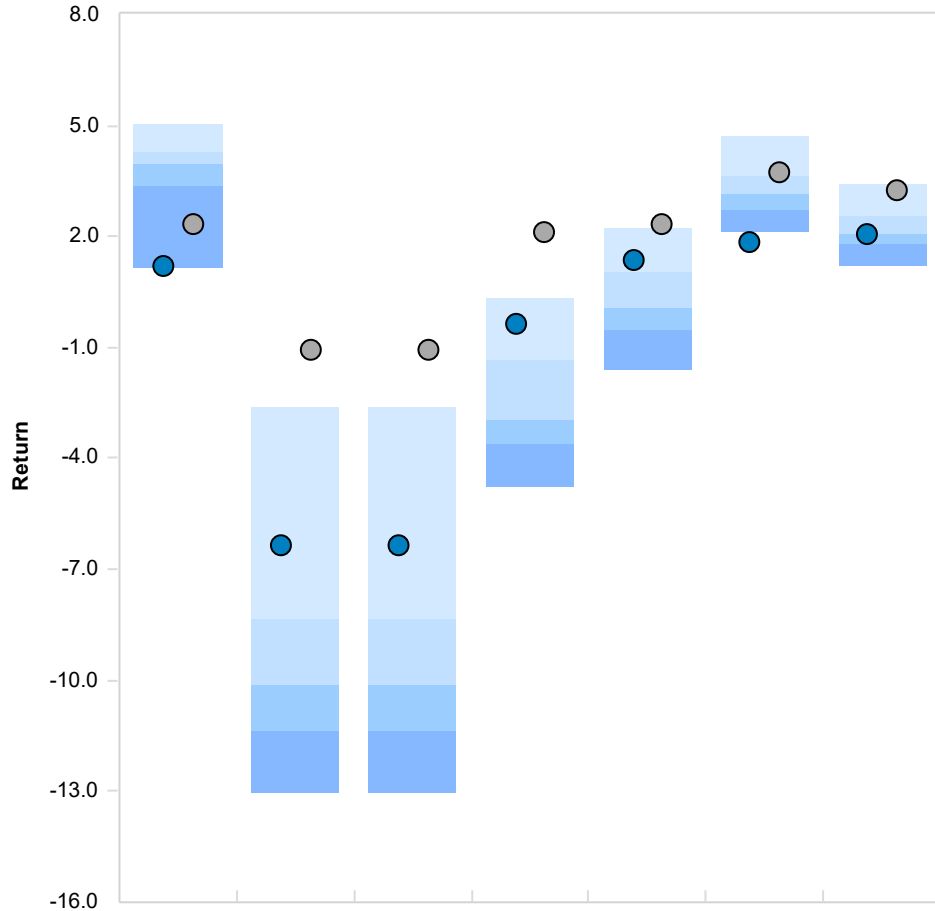


**5 Year Rolling Percentile Rank IM U.S. High Yield Bonds (SA+CF)**



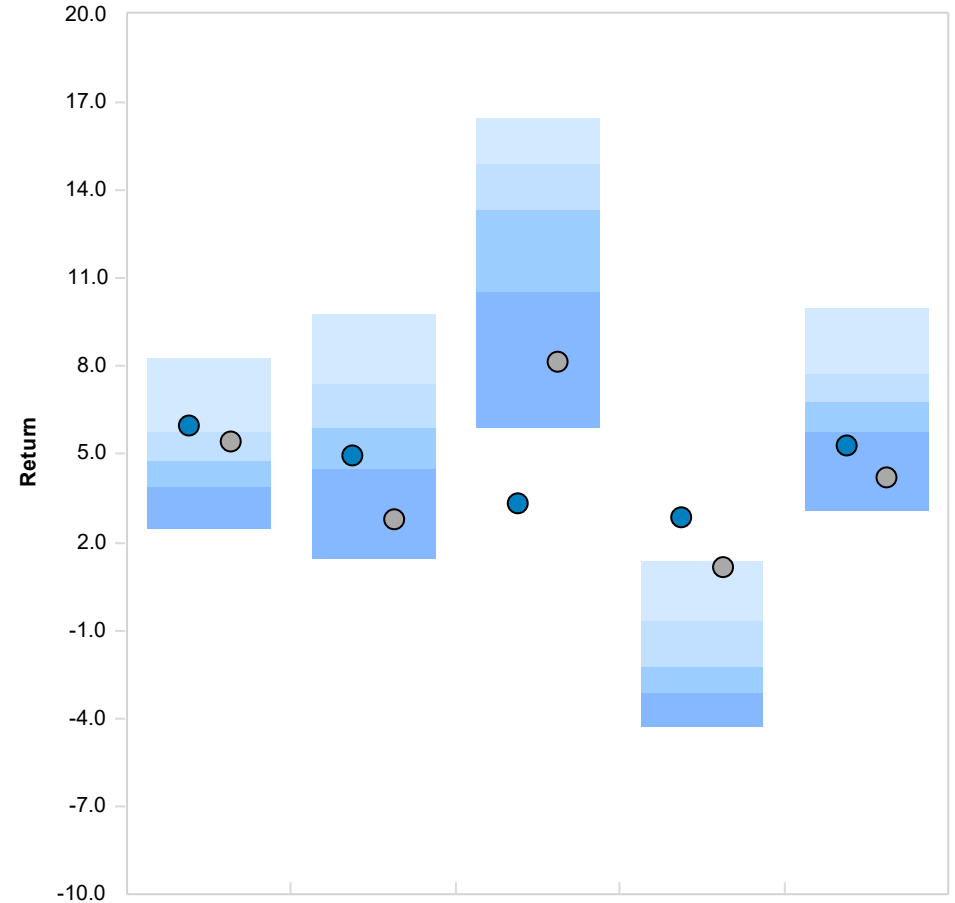


**Peer Group Analysis - IM U.S. High Yield Bonds (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	1.19 (95)	-6.35 (19)	-6.35 (19)	-0.37 (15)	1.38 (15)	1.86 (97)	2.06 (52)
● Index	2.34 (88)	-1.06 (2)	-1.06 (2)	2.12 (1)	2.34 (5)	3.77 (21)	3.24 (7)
Median	3.93	-10.11	-10.11	-2.95	0.08	3.15	2.08

**Peer Group Analysis - IM U.S. High Yield Bonds (SA+CF)**



	2021	2020	2019	2018	2017
● Investment	5.99 (19)	4.98 (68)	3.31 (99)	2.84 (2)	5.31 (84)
● Index	5.41 (34)	2.78 (90)	8.16 (86)	1.14 (8)	4.25 (89)
Median	4.76	5.95	13.32	-2.24	6.78

**Comparative Performance**

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	0.10 (18)	-6.50 (16)	-1.12 (4)	0.60 (46)	1.17 (10)	1.84 (84)
Index	1.18 (2)	-4.36 (7)	-0.10 (2)	0.72 (30)	1.13 (11)	1.45 (90)
Median	-0.52	-9.52	-3.95	0.59	0.78	2.50



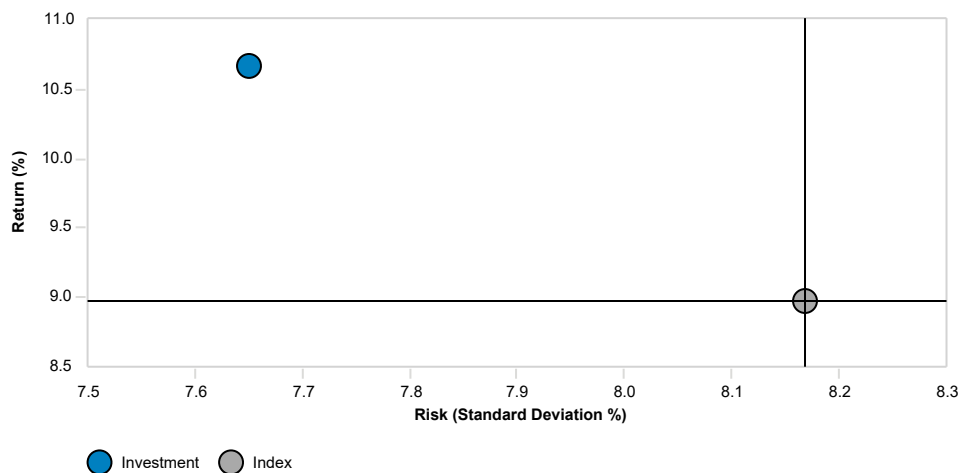
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	10.68	7.65	1.26	98.53	10	26.80	2
Index	8.97	8.17	0.99	100.00	10	100.00	2

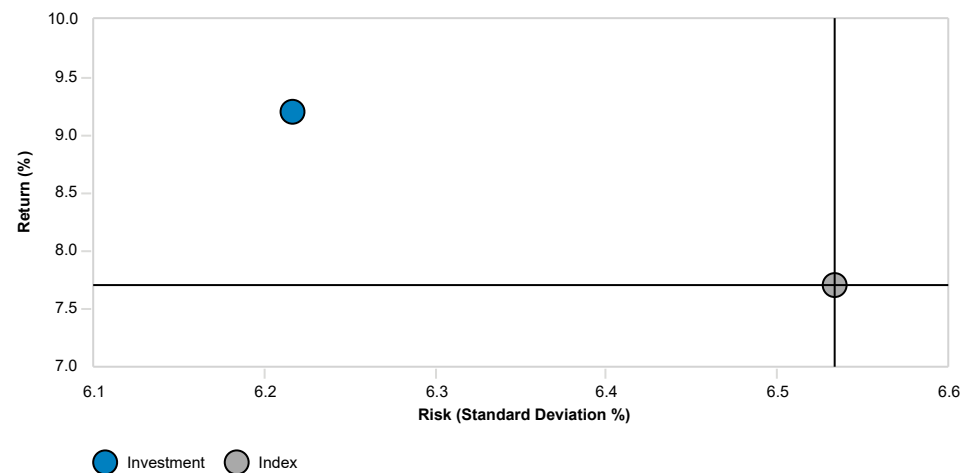
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	9.22	6.22	1.24	103.94	18	26.80	2
Index	7.72	6.53	0.97	100.00	18	100.00	2

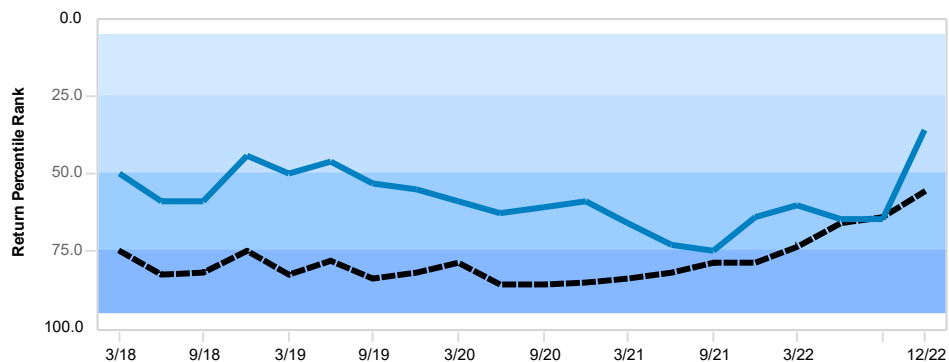
Risk and Return 3 Years



Risk and Return 5 Years

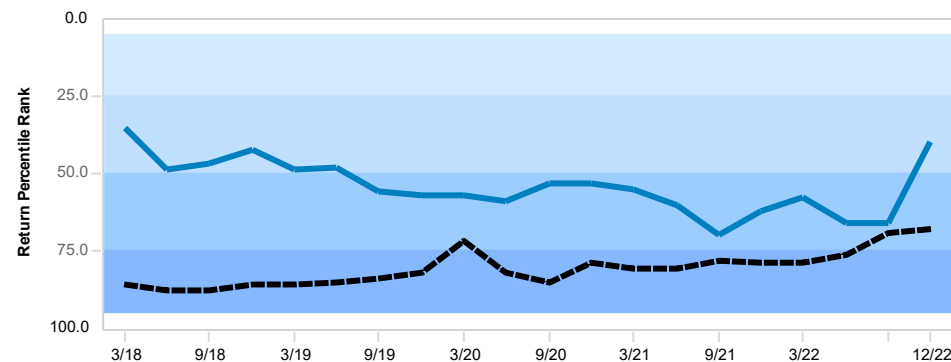


3 Year Rolling Percentile Rank IM U.S. Private Real Estate (SA+CF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	5 (25%)	15 (75%)	0 (0%)
Index	20	0 (0%)	0 (0%)	6 (30%)	14 (70%)

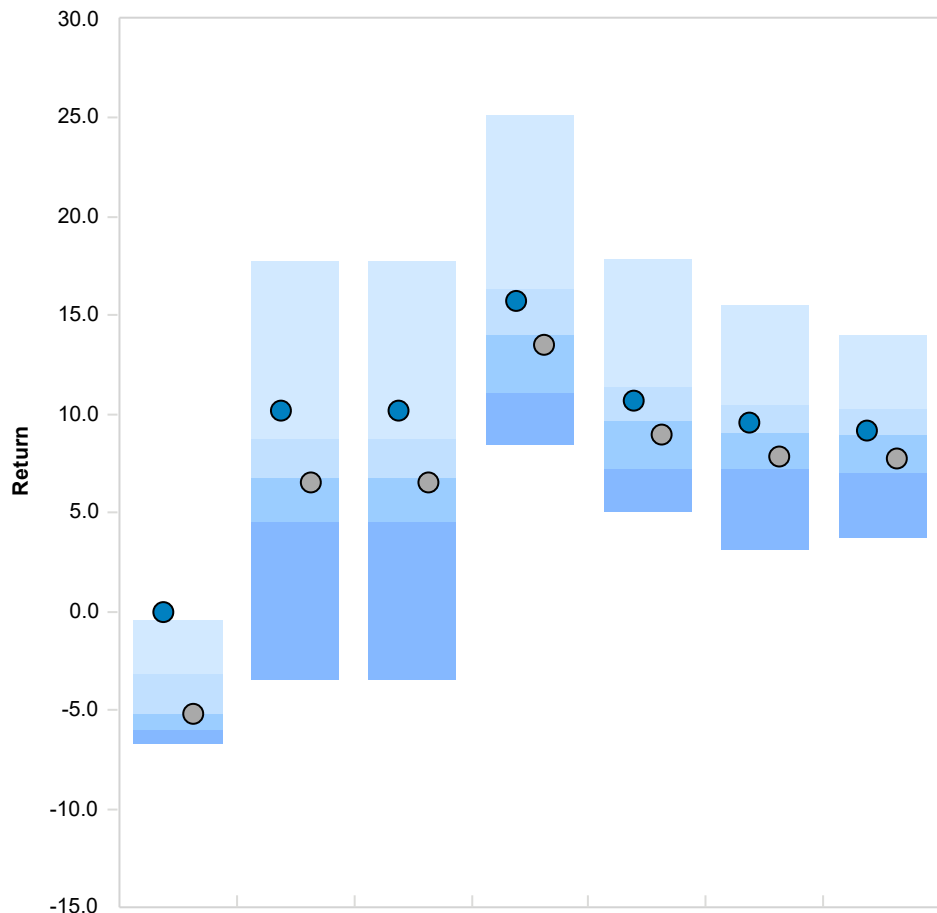
5 Year Rolling Percentile Rank IM U.S. Private Real Estate (SA+CF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	7 (35%)	13 (65%)	0 (0%)
Index	20	0 (0%)	0 (0%)	3 (15%)	17 (85%)

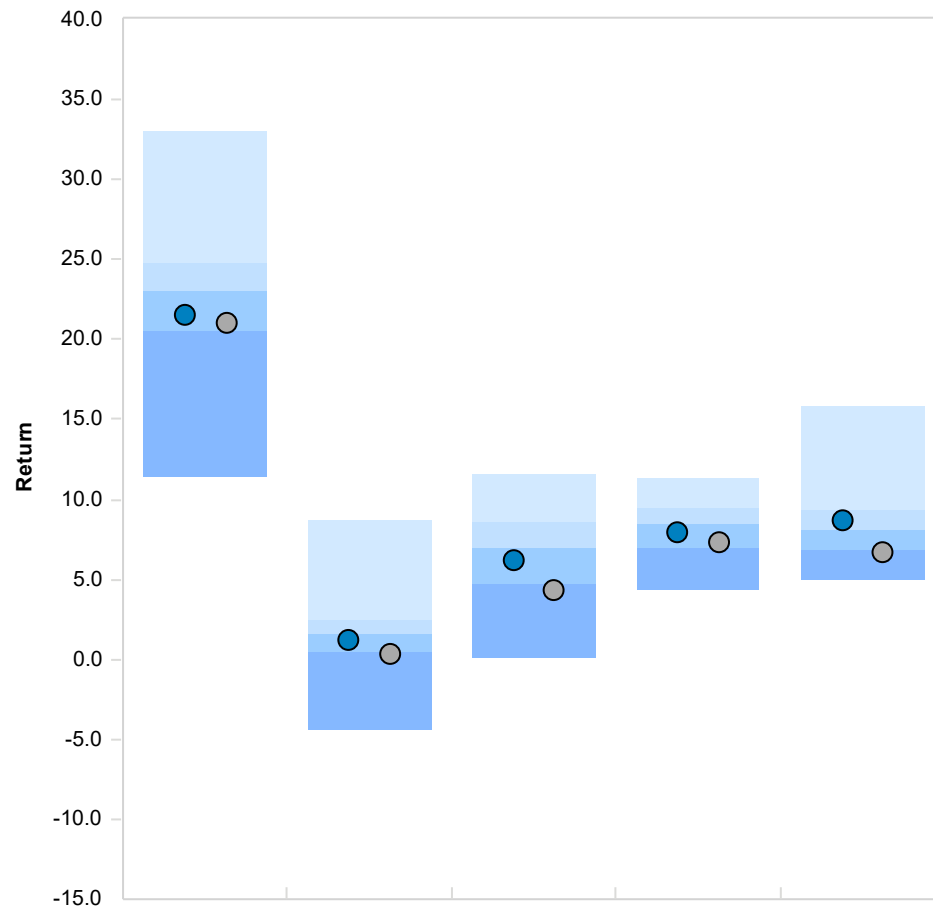


Peer Group Analysis - IM U.S. Private Real Estate (SA+CF)



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	0.00 (4)	10.20 (13)	10.20 (13)	15.71 (35)	10.68 (36)	9.53 (35)	9.22 (40)
● Index	-5.17 (50)	6.55 (52)	6.55 (52)	13.55 (58)	8.97 (56)	7.80 (68)	7.72 (68)
Median	-5.18	6.78	6.78	14.03	9.72	9.03	9.01

Peer Group Analysis - IM U.S. Private Real Estate (SA+CF)



	2021	2020	2019	2018	2017
● Investment	21.48 (65)	1.26 (62)	6.17 (69)	7.96 (58)	8.75 (40)
● Index	21.02 (68)	0.34 (76)	4.39 (79)	7.36 (73)	6.66 (77)
Median	23.02	1.58	7.01	8.42	8.07

Comparative Performance

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-0.06 (68)	3.04 (78)	7.01 (47)	9.60 (21)	5.83 (72)	2.78 (87)
Index	0.31 (61)	4.54 (41)	7.14 (39)	7.66 (48)	6.41 (49)	3.68 (76)
Median	0.60	4.39	6.86	7.58	6.33	4.17



**Private Equity Summary of Partnership**  
**Total Private Equity w Life Settlement Composite**  
As of December 31, 2022

**Private Equity Summary of Partnership**

Partnerships	Vintage Year	Capital Commitment \$	Market Value \$
<b>Total Private Equity w Life Settlement Composite</b>		<b>334,900,410</b>	<b>208,889,445</b>
Accolade Partners V	2015	3,000,000	5,503,723
Accolade Partners VI	2018	3,000,000	2,857,047
Adams Street 2003 U.S Fund	2003	13,733,000	201,922
Adams Street 2008 Global	2008	10,000,000	3,789,906
Adams Street 2009 Global	2009	5,000,000	2,705,753
Auldbrass Spec Opps II	2018	4,000,000	4,225,952
Birchmere Ventures IV	2012	525,000	13,331
BlackRock Multi-Alternative Opps	2016	3,000,000	2,207,692
Blackstone Tac Op I	2012	2,000,000	303,708
Blackstone Tac Op II	2015	3,000,000	788,875
Blackstone Tac Op III	2019	5,000,000	4,189,897
CCA Black	2015	7,500,000	7,036,405
CCA Blue	2013	3,800,000	-
CCA Green	2009	15,000,000	-
CCA Longevity Fund VI LP	2019	5,000,000	3,285,543
Commonfund Venture Partners XII	2018	3,000,000	4,848,727
Constitution Ironsides Direct Investment Fund IV	2016	3,000,000	2,557,501
Constitution Ironsides Opportunities Fund	2018	4,000,000	3,015,136
Constitution Ironsides Partnership Fund II	2011	6,000,000	-
Constitution Ironsides Partnership Fund III	2014	8,000,000	4,363,936
Crestline Opportunity Fund III	2016	4,000,000	2,777,775
Crestline Recovery II	2011	3,000,000	55,536
DCM Fund IV	2015	3,000,000	3,601,127
Draper Triangle II	2005	10,000,000	5,528
Draper Triangle III	2013	13,500,000	14,998,456
Emerald Advisors Fin Srv I	2018	2,000,000	1,614,353
Entrust Special Opportunities Fund III	2015	3,000,000	974,829
Entrust Special Opportunities Fund IV	2018	3,000,000	2,873,314
Farol Fund II	2020	4,000,000	6,289,988
Five Points III	2017	3,000,000	3,087,324
Glouston Private Equity Opportunities IV	2011	3,000,000	402,132
Goldman Sachs Private Equity Partners 2004	2005	10,000,000	206,350
Greenspring Early Stage I LP	2018	4,000,000	6,093,826
Greenspring Opportunities II-A	2013	3,000,000	2,242,910
Greenspring Opportunities III	2014	3,000,000	2,363,080
Greenspring Opportunities IV	2015	3,000,000	4,080,077
Greenspring Opportunities V	2018	3,000,000	3,795,556
Greenspring Secondaries I	2014	1,000,000	636,296
Greenspring Secondaries II	2016	2,000,000	1,058,380

*Data Sources:*  
Market Values - BNY Mellon and Investment Managers  
Commitments - Asset Strategies



**Private Equity Summary of Partnership**  
**Total Private Equity w Life Settlement Composite**  
As of December 31, 2022

Partnerships	Vintage Year	Capital Commitment \$	Market Value \$
iNetworks INOF II	2013	-	6,659,083
iNetworks Opportunity Fund	2013	11,000,000	15,173,088
iNetworks Opportunity Fund II	2020	12,500,000	8,765,981
JMI Equity Fund IX-A	2019	3,000,000	4,224,431
Magarac Ventures	2022	10,000,000	600,000
Mellon PAM Fund V	2005	10,000,000	36,224
Mesirow Partners Fund IV	2006	17,000,000	2,731,323
North Haven Capital Partners VI	2015	3,000,000	2,530,542
North Haven Senior Loan Fund	2018	4,000,000	2,514,231
Pharos Capital Partners III	2013	3,000,000	2,472,922
PLSG Accelerator Fund	2011	250,000	44,792
ValStone Partners IV	2008	20,000,000	-
ValStone Partners V	2013	20,000,000	19,722,132
ValStone Partners VI	2017	20,000,000	18,160,665
Valstone Senior Living	2018	13,092,410	16,202,139

*Data Sources:*  
Market Values - BNY Mellon and Investment Managers  
Commitments - Asset Strategies



**Historical Hybrid Composition**  
**Total Fund Policy Index**  
As of December 31, 2022

**Historical Hybrid Composition**

Allocation Mandate	Weight (%)	Allocation Mandate	Weight (%)
<b>Jan-1979</b>		<b>Jun-2010</b>	
Russell 3000 Index	65.00	FT Wilshire 5000 Total Market TR Index	20.00
Blmbg. U.S. Aggregate Index	35.00	MSCI AC World ex USA (Net)	25.00
<b>Mar-2007</b>		Blmbg. U.S. Aggregate Index	14.00
FT Wilshire 5000 Total Market TR Index	45.00	FTSE High Yield Market Capped Index	10.00
MSCI EAFE (Net) Index	10.00	Bloomberg U.S. TIPS Index	6.00
Blmbg. U.S. Aggregate Index	25.00	Bloomberg Commodity Index Total Return	5.00
Bloomberg Commodity Index Total Return	5.00	NCREIF Fund Index-Open End Diversified Core Equity (VW) (Net) Monthly	10.00
NCREIF Fund Index-Open End Diversified Core Equity (VW) (Net) Monthly	5.00	Private Equity Composite	10.00
Private Equity Composite	5.00	<b>Mar-2013</b>	
90 Day U.S. Treasury Bill	5.00	FT Wilshire 5000 Total Market TR Index	16.10
<b>Sep-2008</b>		MSCI AC World ex USA (Net)	18.90
FT Wilshire 5000 Total Market TR Index	45.00	Blmbg. U.S. Aggregate Index	10.00
MSCI AC World ex USA (Net)	10.00	FTSE High Yield Market Capped Index	12.00
Blmbg. U.S. Aggregate Index	25.00	Bloomberg U.S. TIPS Index	5.00
Bloomberg Commodity Index Total Return	5.00	Bloomberg Commodity Index Total Return	8.00
NCREIF Fund Index-Open End Diversified Core Equity (VW) (Net) Monthly	5.00	NCREIF Fund Index-Open End Diversified Core Equity (VW) (Net) Monthly	10.00
Private Equity Composite	5.00	Private Equity Composite	20.00
90 Day U.S. Treasury Bill	5.00	<b>Apr-2016</b>	
<b>Dec-2008</b>		FT Wilshire 5000 Total Market TR Index	15.00
FT Wilshire 5000 Total Market TR Index	35.00	MSCI AC World ex USA (Net)	15.00
MSCI AC World ex USA (Net)	15.00	Blmbg. U.S. Aggregate Index	10.00
Blmbg. U.S. Aggregate Index	20.00	FTSE High Yield Market Capped Index	12.00
FTSE High Yield Market Capped Index	5.00	Bloomberg U.S. TIPS Index	8.00
Bloomberg U.S. TIPS Index	5.00	Bloomberg Commodity Index Total Return	2.50
Bloomberg Commodity Index Total Return	5.00	NCREIF Fund Index-Open End Diversified Core Equity (VW) (Net) Monthly	10.00
NCREIF Fund Index-Open End Diversified Core Equity (VW) (Net) Monthly	7.50	Private Equity Composite	22.50
Private Equity Composite	5.00	Alerian MLP Index	5.00
90 Day U.S. Treasury Bill	2.50	<b>Jan-2019</b>	
<b>Sep-2009</b>		FT Wilshire 5000 Total Market TR Index	16.50
FT Wilshire 5000 Total Market TR Index	30.00	MSCI AC World ex USA (Net)	16.50
MSCI AC World ex USA (Net)	20.00	Blmbg. U.S. Aggregate Index	12.50
Blmbg. U.S. Aggregate Index	15.00	FTSE High Yield Market Capped Index	12.00
FTSE High Yield Market Capped Index	10.00	Bloomberg U.S. TIPS Index	5.00
Bloomberg U.S. TIPS Index	7.50	NCREIF Fund Index-Open End Diversified Core Equity (VW) (Net) Monthly	12.50
Bloomberg Commodity Index Total Return	2.50	Private Equity Composite	20.00
NCREIF Fund Index-Open End Diversified Core Equity (VW) (Net) Monthly	10.00	Alerian MLP Index	5.00
Private Equity Composite	5.00		



Allocation Mandate	Weight (%)
<b>Mar-2021</b>	
Russell 3000 Index	16.50
MSCI AC World ex USA (Net)	16.50
Blmbg. U.S. Aggregate Index	12.50
FTSE High Yield Market Capped Index	12.00
Bloomberg U.S. TIPS Index	5.00
NCREIF Fund Index-Open End Diversified Core Equity (VW) (Net) Monthly	12.50
Liquid Policy Benchmark	5.00
Total Private Equity w Life Settlement Composite	20.00
<b>Jul-2022</b>	
Russell 3000 Index	16.50
MSCI AC World ex USA (Net)	16.50
Blmbg. U.S. Aggregate Index	12.50
FTSE High Yield Market Capped Index	12.00
CPI + 3%	5.00
NCREIF Fund Index-Open End Diversified Core Equity (VW) (Net) Monthly	12.50
Liquid Policy Benchmark	5.00
Total Private Equity w Life Settlement Composite	20.00



**Historical Hybrid Composition**

**Allocation Mandate**

**Weight (%)**

**Nov-1993**

FT Wilshire 5000 Total Market TR Index

100.00

**Mar-2021**

Russell 3000 Index

100.00





**Historical Hybrid Composition**

<b>Allocation Mandate</b>	<b>Weight (%)</b>
<b>Dec-2000</b>	
MSCI EAFE (Net) Index	100.00
<b>Sep-2008</b>	
MSCI AC World ex USA (Net)	100.00
<b>Mar-2015</b>	
MSCI AC World ex USA IMI (Net)	100.00
<b>Mar-2021</b>	
MSCI AC World ex USA (Net)	100.00



**Historical Hybrid Composition**

**Allocation Mandate**

**Weight (%)**

**Mar-2021**

S&P 500 Index	30.00
S&P MidCap 400 Index	2.00
S&P SmallCap 600 Index	10.50
MSCI EAFE IMI (Net)	16.90
MSCI Emerging Markets IMI (Net)	6.10
Blmbg. U.S. Aggregate Index	25.00
ICE BofAML 1-3 Year Treasury	4.50
FTSE NAREIT Equity REIT Index	5.00

	Estimated Annual Fee (%)	Market Value (\$)	Estimated Annual Fee (\$)	Fee Schedule
<b>Domestic Equity</b>				
SSgA S&P 500 Index	0.02	67,423,331	13,485	0.02 % of Assets
Fragasso Large Core (EMWO)	0.62	5,871,405	36,482	1.00 % of First \$0 M 0.95 % of Next \$0 M 0.75 % of Next \$1 M 0.65 % of Next \$2 M 0.55 % of Next \$3 M 0.50 % of Next \$3 M 0.25 % of Next \$3 M 0.20 % Thereafter
Twin Capital Enhanced Equity	0.35	35,361,960	123,767	0.35 % of Assets
Vesper U.S. Large Cap Short-Term Reversal Strategy ETF (UTRN) (EMWO)	0.75	1,321,390	9,910	0.75 % of Assets
Earnest Small Value	0.94	13,246,310	124,347	1.00 % of First \$10 M 0.75 % of Next \$15 M 0.60 % of Next \$25 M 0.50 % Thereafter
Emerald Advisors Small Cap	0.76	12,167,091	93,003	1.00 % of First \$2 M 0.75 % of Next \$8 M 0.60 % Thereafter
Emerald Advisors All Cap (EMWO)	0.60	4,632,778	27,797	0.60 % of Assets
Ethos (EMWO)	0.47	1,650,527	7,757	0.47 % of Assets
CIM Small Cap (EMWO)	0.75	4,647,267	34,855	0.75 % of First \$5 M 0.40 % of Next \$10 M 0.25 % Thereafter
Cookson Peirce (EMWO)	0.50	1,221,766	6,109	0.50 % of Assets
<b>International Equity</b>				
SSgA ACWI ex US	0.07	33,256,835	23,280	0.07 % of Assets
Baillie Gifford Intl Equity	0.61	50,257,224	306,569	0.61 % of Assets
FIAM Select International Equity	0.33	27,817,679	92,608	0.34 % of First \$25 M 0.27 % of Next \$25 M 0.24 % of Next \$150 M 0.20 % Thereafter
Segall, Bryant & Hamill	0.64	32,212,563	207,169	0.75 % of First \$15 M 0.55 % of Next \$20 M 0.45 % of Next \$30 M 0.35 % Thereafter
<b>Global Equity</b>				
Columbus Macro (EMWO)	0.69	63	-	0.70 % of Assets



	Estimated Annual Fee (%)	Market Value (\$)	Estimated Annual Fee (\$)	Fee Schedule
<b>Core Fixed w Israel Bonds</b>				
C S McKee	0.25	33,587,514	83,969	0.25 % of Assets
Federated Core Broad	0.30	26,563,367	78,908	0.30 % of First \$25 M 0.25 % of Next \$25 M 0.20 % Thereafter
CIM Investment Mgmt	0.25	26,629,153	66,573	0.25 % of Assets
StoneRidge Partners (EMWO)	0.30	5,043,347	15,130	0.30 % of Assets
Gridiron Capital Fixed Income	0.65	12,982,933	84,389	0.65 % of Assets
FNB (EMWO)	0.35	2,612,198	9,143	0.35 % of First \$5 M 0.30 % of Next \$5 M 0.25 % of Next \$10 M 0.20 % Thereafter
Israel Bonds	0.20	7,459,297	14,919	0.20 % of Assets
<b>High Yield Fixed</b>				
Oaktree High Yield	0.50	59,143,921	295,720	0.50 % of Assets
Federated High Yield	0.45	49,248,902	221,620	0.45 % of Assets
Sound Point	1.00	3,409,576	34,096	1.00 % of Assets
<b>Real Estate</b>				
Morgan Stanley Prime Property Fund	0.84	94,836,523	796,627	0.84 % of Assets
Oaktree Real Estate^	1.97	5,941,114	117,040	1.97 % of Assets
Washington Alliance (EMWO)	1.50	15,048,134	225,722	1.50 % of Assets
Washington Alliance II (EMWO)	1.50	2,133,109	31,997	1.50 % of Assets
Siguler Guff Distressed RE^	1.14	6,505,491	74,163	1.14 % of Assets
Artemis Real Estate Partners Fund IV	1.50	283,185	4,248	1.50 % of Assets
ERECT Fund II	1.35	11,645,104	157,209	1.35 % of Assets
<b>Infrastructure</b>				
JP Morgan Infrastructure Fund (IIF Hedged)	1.00	24,985,477	249,855	1.00 % of Assets
<b>Hedge Fund</b>				
Gridiron Capital Multi-Asset (EMWO)	0.75	3,109,100	23,318	Performance Based 0.75 and 10.00
<b>Liquid Policy Portfolio</b>				
BlackRock Liquidity iShares Public Pension Fund*	0.08	6,866,138	5,493	0.08 % of Assets
<b>Investments ex Private Equity</b>		<b>663,853,112</b>	<b>3,443,171</b>	

^ Due to limitations in reporting as a result of the variable and commitment based fee structure, AndCo calculated an approximation for this noted fee schedule. This figure demonstrates the "effective" basis point charge, computed based on the most recently available assessed quarterly fee + expenses, divided by the ending market value. The actual fee schedule can be found in Appendix A.  
\* Estimated fee based on average of underlying funds



**Allegheny County Employees' Retirement System**  
**2020 Private Investment Management Fee Summary**  
**June 30, 2021**

**\*\*All fee information provided by Asset Strategies**

	Commitment Amount \$	2020 Mgmt Fees \$
<b>Total Private Equity w Life Settlement Composite</b>	<b>324,900,410.00</b>	<b>2,674,986.40</b>
Accolade Partners V	3,000,000.00	15,369.00
Accolade Partners VI	3,000,000.00	-
Adams Street 2003 U.S. Fund	13,733,000.00	-
Adams Street 2008 Global	10,000,000.00	41,884.00
Adams Street 2009 Global	5,000,000.00	26,463.00
Auldbrass Spec Opps II	4,000,000.00	50,000.00
Birchmere Ventures IV	525,000.00	3,800.00
Blackrock Multi-Alternative Opps	3,000,000.00	14,252.70
Blackstone Tac Op I	2,000,000.00	9,960.00
Blackstone Tac Op II	3,000,000.00	21,306.00
Blackstone Tac Op III	5,000,000.00	72,708.00
CCA Black	7,500,000.00	166,543.00
CCA Blue	3,800,000.00	51,149.00
CCA Green	15,000,000.00	(186,372.00)
CCA Longevity Fund VI LP	5,000,000.00	62,500.00
Commonfund Venture Partners XII*	3,000,000.00	21,000.00
Constitution Ironsides Direct Investment Fund IV	3,000,000.00	13,351.78
Constitution Ironsides Opportunities Fund	4,000,000.00	-
Constitution Ironsides Partnership Fund II	6,000,000.00	-
Constitution Ironsides Partnership Fund III	8,000,000.00	32,794.03
Crestline Opportunity Fund III	4,000,000.00	45,703.59
Crestline Recovery II	3,000,000.00	2,455.00
DCM Fund IV	3,000,000.00	19,853.00
Draper Triangle II	10,000,000.00	-
Draper Triangle III	13,500,000.00	209,629.00
Emerald Advisors Fin Srv I	2,000,000.00	30,000.00
Entrust Special Opportunities Fund III	3,000,000.00	16,835.00
Entrust Special Opportunities Fund IV	3,000,000.00	30,670.00
Farol Fund II	4,000,000.00	91,632.71
Five Points III	3,000,000.00	30,000.00
Glouston Private Equity Opportunities IV	3,000,000.00	16,410.59
Goldman Sachs Private Equity Partners 2004	10,000,000.00	5,179.00
Greenspring Early Stage I LP	4,000,000.00	9,868.00
Greenspring Opportunities II-A	3,000,000.00	58,200.00
Greenspring Opportunities III	3,000,000.00	54,106.00
Greenspring Opportunities IV	3,000,000.00	54,723.00
Greenspring Opportunities V	3,000,000.00	50,961.00
Greenspring Secondaries I	1,000,000.00	7,500.00
Greenspring Secondaries II	2,000,000.00	1,500.00



**\*\*All fee information provided by Asset Strategies**

	Commitment Amount \$	2020 Mgmt Fees \$
iNetworks INOF II	-	89,932.00
iNetworks Opportunity Fund	11,000,000.00	178,200.00
iNetworks Opportunity Fund II	12,500,000.00	250,000.00
JMI Equity Fund IX-A	3,000,000.00	36,522.00
Mellon PAM Fund V	10,000,000.00	25,000.00
Mesirow Partners Fund IV	17,000,000.00	78,860.00
North Haven Capital Partners VI	3,000,000.00	48,574.00
North Haven Senior Loan Fund	4,000,000.00	30,551.00
Pharos Capital Partners III	3,000,000.00	37,136.00
PLSG Accelerator Fund	250,000.00	-
Valstone Partners IV	20,000,000.00	-
Valstone Partners V	20,000,000.00	300,000.00
Valstone Partners VI	20,000,000.00	300,000.00
Valstone Senior Living	13,092,410.00	148,277.00

*\*Commonfund Ven XII management fees for 2020 estimate based on Committed Amount and fee percent outlined in fund documents*



## Oaktree Real Estate Opportunities VI LP Fee Calculation

The annual Management Fee shall be an amount equal to the sum of the amounts determined with respect to each Limited Partner as follows: (a) prior to the end of the Investment Period, the product of the Management Fee Percentage attributable to such Limited Partner's Capital Commitment and the Capital Commitment of such Limited Partner and (b) from and after the day following the end of the Investment Period, the product of the Management Fee Percentage attributable to such Limited Partner's Capital Commitment and the lesser of (i) such Limited Partner's allocable portion of the Aggregate Contributed Capital and (ii) such Limited Partner's allocable portion of the cost basis of the Permitted Investments held by the Fund as of the end of the next-to-last month of the immediately preceding calendar quarter.

## Siguler Guff Distressed Real Estate Opportunities Fund II, LP Fee Calculation

A management fee shall be payable with respect to each Limited Partner by the Partnership to the Investment Manager (the "Management Fee") quarterly in arrears on the last day of each fiscal quarter. Up to and including the end of the Direct Investment Commitment Period or, if earlier, the date on which pursuant to Section 7.03(b) the Partners and Parallel Company Partners have voted to require the General Partner to cease making both Direct Investments and additional commitments to Funds (the "Investment Termination Date"), the Management Fee, for each Limited Partner, shall be payable at that Limited Partner's Blended Rate multiplied by the aggregate amount of such Limited Partner's Capital Commitment. From and after the end of the Direct Investment Commitment Period or, if earlier, the Investment Termination Date, the Management Fee, for each Limited Partner, shall be payable at that Limited Partner's Applicable Percentage (as hereinafter defined) per annum multiplied by the aggregate amount of such Limited Partner's Capital Commitment. The "Blended Rate" shall be a percentage of a Limited Partner's Capital Commitment calculated by combining (x) one percent (1%) per annum on the first \$10,000,000 of such Limited Partner's Capital Commitment, (y) eighty-five one hundredths of one percent (0.85%) per annum on the next \$40,000,000 of such Limited Partner's Capital Commitment and (z) five tenths of one percent (0.50%) per annum on such Limited Partner's remaining Capital Commitment. The "Applicable Percentage" shall represent an amount equal to eighty percent (80%) of the Blended Rate used to calculate the Management Fee for the preceding year. For example, in the first year following the termination of the Direct Investment Commitment Period or the Investment Termination Date, as the case may be, the Applicable Percentage with respect to Limited Partners with Capital Commitments less than or equal to \$10,000,000 (and therefore with Blended Rates of 1%) shall be 0.80% (80% of 1%), and for the following year, the Applicable Percentage shall be 0.64% (80% of 0.80%).



---

<b>Active Return</b>	- Arithmetic difference between the manager's performance and the designated benchmark return over a specified time period.
<b>Alpha</b>	- A measure of the difference between a portfolio's actual performance and its expected return based on its level of risk as determined by beta. It determines the portfolio's non-systemic return, or its historical performance not explained by movements of the market.
<b>Beta</b>	- A measure of the sensitivity of a portfolio to the movements in the market. It is a measure of the portfolio's systematic risk.
<b>Consistency</b>	- The percentage of quarters that a product achieved a rate of return higher than that of its benchmark. Higher consistency indicates the manager has contributed more to the product's performance.
<b>Distributed to Paid In (DPI)</b>	- The ratio of money distributed to Limited Partners by the fund, relative to contributions. It is calculated by dividing cumulative distributions by paid in capital. This multiple shows the investor how much money they got back. It is a good measure for evaluating a fund later in its life because there are more distributions to measure against.
<b>Down Market Capture</b>	- The ratio of average portfolio performance over the designated benchmark during periods of negative returns. A lower value indicates better product performance
<b>Downside Risk</b>	- A measure similar to standard deviation that utilizes only the negative movements of the return series. It is calculated by taking the standard deviation of the negative quarterly set of returns. A higher factor is indicative of a riskier product.
<b>Excess Return</b>	- Arithmetic difference between the manager's performance and the risk-free return over a specified time period.
<b>Excess Risk</b>	- A measure of the standard deviation of a portfolio's performance relative to the risk free return.
<b>Information Ratio</b>	- This calculates the value-added contribution of the manager and is derived by dividing the active rate of return of the portfolio by the tracking error. The higher the Information Ratio, the more the manager has added value to the portfolio.
<b>Public Market Equivalent (PME)</b>	- Designs a set of analyses used in the Private Equity Industry to evaluate the performance of a Private Equity Fund against a public benchmark or index.
<b>R-Squared</b>	- The percentage of a portfolio's performance that can be explained by the behavior of the appropriate benchmark. A high R-Squared means the portfolio's performance has historically moved in the same direction as the appropriate benchmark.
<b>Return</b>	- Compounded rate of return for the period.
<b>Sharpe Ratio</b>	- Represents the excess rate of return over the risk free return divided by the standard deviation of the excess return. The result is an absolute rate of return per unit of risk. A higher value demonstrates better historical risk-adjusted performance.
<b>Standard Deviation</b>	- A statistical measure of the range of a portfolio's performance. It represents the variability of returns around the average return over a specified time period.
<b>Total Value to Paid In (TVPI)</b>	- The ratio of the current value of remaining investments within a fund, plus the total value of all distributions to date, relative to the total amount of capital paid into the fund to date. It is a good measure of performance before the end of a fund's life
<b>Tracking Error</b>	- This is a measure of the standard deviation of a portfolio's returns in relation to the performance of its designated market benchmark.
<b>Treynor Ratio</b>	- Similar to Sharpe ratio but utilizes beta rather than excess risk as determined by standard deviation. It is calculated by taking the excess rate of return above the risk free rate divided by beta to derive the absolute rate of return per unit of risk. A higher value indicates a product has achieved better historical risk-adjusted performance.
<b>Up Market Capture</b>	- The ratio of average portfolio performance over the designated benchmark during periods of positive returns. A higher value indicates better product performance.





---

AndCo compiled this report for the sole use of the client for which it was prepared. AndCo is responsible for evaluating the performance results of the Total Fund along with the investment advisors by comparing their performance with indices and other related peer universe data that is deemed appropriate. AndCo uses the results from this evaluation to make observations and recommendations to the client.

AndCo uses time-weighted calculations which are founded on standards recommended by the CFA Institute. The calculations and values shown are based on information that is received from custodians. AndCo analyzes transactions as indicated on the custodian statements and reviews the custodial market values of the portfolio. As a result, this provides AndCo with a reasonable basis that the investment information presented is free from material misstatement. This methodology of evaluating and measuring performance provides AndCo with a practical foundation for our observations and recommendations. Nothing came to our attention that would cause AndCo to believe that the information presented is significantly misstated.

This performance report is based on data obtained by the client's custodian(s), investment fund administrator, or other sources believed to be reliable. While these sources are believed to be reliable, the data providers are responsible for the accuracy and completeness of their statements. Clients are encouraged to compare the records of their custodian(s) to ensure this report fairly and accurately reflects their various asset positions.

The strategies listed may not be suitable for all investors. We believe the information provided here is reliable, but do not warrant its accuracy or completeness. Past performance is not an indication of future performance. Any information contained in this report is for informational purposes only and should not be construed to be an offer to buy or sell any securities, investment consulting, or investment management services.

Additional information included in this document may contain data provided by from index databases, public economic sources and the managers themselves.

This document may contain data provided by Bloomberg Barclays. Bloomberg Barclays Index data provided by way of Barclays Live.

This document may contain data provided by Standard and Poor's. Nothing contained within any document, advertisement or presentation from S&P Indices constitutes an offer of services in jurisdictions where S&P Indices does not have the necessary licenses. All information provided by S&P Indices is impersonal and is not tailored to the needs of any person, entity or group of persons. Any returns or performance provided within any document is provided for illustrative purposes only and does not demonstrate actual performance. Past performance is not a guarantee of future investment results.

This document may contain data provided by MSCI, Inc. Copyright MSCI, 2017. Unpublished. All Rights Reserved. This information may only be used for your internal use, may not be reproduced or disseminated in any form and may not be used to create any financial instruments or products or any indices. This information is provided on an "as is" basis and the user of this information assumes the entire risk of any use it may make or permit to be made of this information. Neither MSCI, any of its affiliates or any other person involved in or related to compiling, computing or creating this information makes any express or implied warranties or representations with respect to such information or the results to be obtained by the use thereof, and MSCI, its affiliates and each such other person hereby expressly disclaim all warranties (including, without limitation, all warranties of originality, accuracy, completeness, timeliness, non-infringement, merchantability and fitness for a particular purpose) with respect to this information. Without limiting any of the foregoing, in no event shall MSCI, any of its affiliates or any other person involved in or related to compiling, computing or creating this information have any liability for any direct, indirect, special, incidental, punitive, consequential or any other damages (including, without limitation, lost profits) even if notified of, or if it might otherwise have anticipated, the possibility of such damages.

This document may contain data provided by Russell Investment Group. Russell Investment Group is the source owner of the data contained or reflected in this material and all trademarks and copyrights related thereto. The material may contain confidential information and unauthorized use, disclosure, copying, dissemination or redistribution is strictly prohibited. This is a user presentation of the data. Russell Investment Group is not responsible for the formatting or configuration of this material or for any inaccuracy in presentation thereof.

This document may contain data provided by Morningstar. All rights reserved. Use of this content requires expert knowledge. It is to be used by specialist institutions only. The information contained herein: (1) is proprietary to Morningstar and/or its content providers; (2) may not be copied, adapted or distributed; and (3) is not warranted to be accurate, complete or timely. Neither Morningstar nor its content providers are responsible for any damages or losses arising from any use of this information, except where such damages or losses cannot be limited or excluded by law in your jurisdiction. Past financial performance is not guarantee of future results.



**Clients first.**



CHICAGO | CLEVELAND | DALLAS | DETROIT | ORLANDO | PITTSBURGH | RENO

**AndCo Consulting** | (844) 44-ANDCO | *AndCoConsulting.com*