

Investment Performance Review  
Period Ending September 30, 2022

# Retirement Board of Allegheny County

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# 3rd Quarter 2022 Market Environment



## The Economy

- Broadly, global markets declined during the 3rd quarter as inflation remained elevated, causing global central banks further drain liquidity from the market, and geopolitical risks increased as the conflict in Ukraine escalated.
- While inflation moderated slightly in the US, it showed signs of increasing, especially in Europe, where UK and German inflation reached multi-decade highs. US CPI was 8.3% in August, down from 9.1% at the end of the 2nd quarter.
- The US Federal Reserve Bank (the Fed) continued to increase interest rates during the quarter by raising 0.75% at the July and September meetings. Importantly, the Fed signaled it was committed to fight inflation by additional rate hikes if needed.
- The US labor market showed its resiliency during the quarter by adding an estimated 1.1 million jobs. As a result, the unemployment rate fell to 3.5% in September. The number of workers re-entering the workforce increased slightly during the period as wage growth remained strong.
- Real estate markets were under pressure during the quarter as rising interest rates pushed mortgages to their highest levels since 2007. As of September, the average 30-year fixed mortgage was roughly 6.7%, up from roughly 3.0% last year at the same time.

## Equity (Domestic and International)

- US equities declined during the 3rd quarter as concerns regarding inflation, the path of interest rates, and a slowing global economy acted as headwinds. Small cap growth was the best performing domestic segment of the equity market relative to other US market capitalizations and styles during the period while large cap value performed the worst.
- Momentum was decidedly negative in international stocks during the 3rd quarter. The escalating conflict in Ukraine, rising inflation in Europe, and tightening monetary policy all contributed to the decline. The continued strength of the US dollar, which rose against most major developed market and emerging market currencies, also acted as a headwind. Finally, China continued its zero-tolerance policy regarding Covid-19, which led to additional restrictions.

## Fixed Income

- While inflation fell slightly during the quarter, the Fed continued increasing interest rates which acted as a headwind for fixed income performance during the quarter. US interest rates moved significantly higher during the quarter with the US 10-Year Treasury bond rising 83 basis points to close at 3.80%.
- Performance across all bond market sectors was negative during the quarter, with US high yield corporate bonds and US Treasury bonds down the least.
- The combination of higher coupons and a shorter maturity profile relative to high quality government bonds was the primary driver of the relative outperformance of high yield bonds during the period.
- US Treasury bonds declined less than other investment grade bond market sectors during the quarter. During periods of increased volatility, investors have historically preferred the safety of government bonds over those with credit risk.

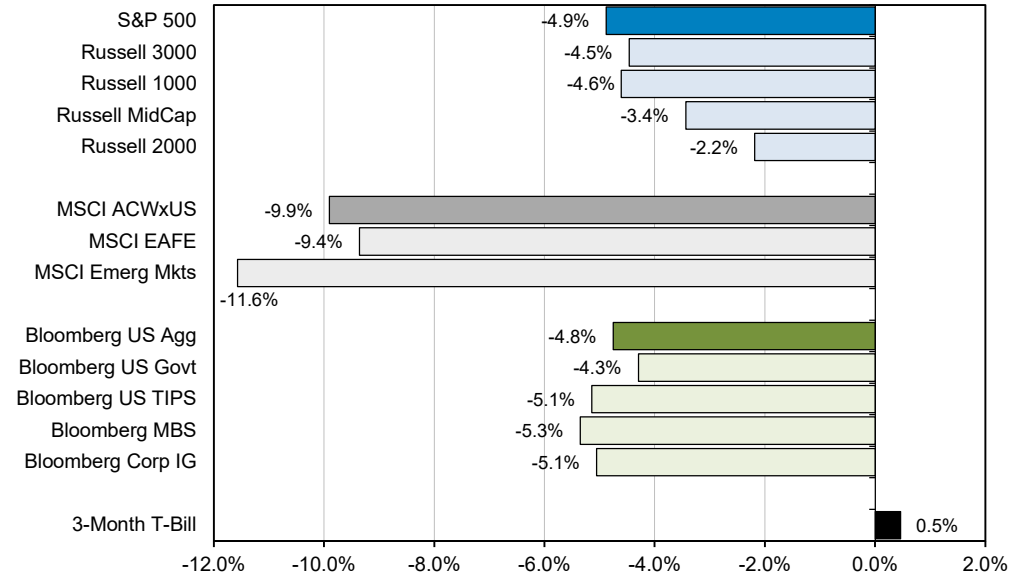
## Market Themes

- Central banks remained hawkish during the quarter with several banks raising interest rates to fight higher inflation. The Fed, the Bank of England, and European Central Bank all raised rates during the quarter. Additionally, the Fed is currently allowing bonds to mature without reinvesting (quantitative tightening), while other banks are also considering similar actions. The outcome would be additional liquidity from the market.
- The escalating crisis in Ukraine spilled over as several gas pipelines were attacked in the Baltic Sea. The result was further disruption of energy supplies to Europe, Germany in particular. Energy costs have risen significantly since the start of the conflict which have negatively impacted economic activity in the region.
- US equity markets experienced their third consecutive quarter of negative performance during the 3rd quarter. Growth-oriented stocks outperformed value stocks as investors believe the Fed will begin slowing the rise of interest rates as economic growth declines. Historically, growth stocks have outperformed value stocks as the economy reaches the trough following a recession.
- Interest rates rose across the Treasury yield curve during the quarter as the Fed hiked interest rates by 0.75% at both the July and September meetings. The 3rd quarter marks the third consecutive quarter the bond market has suffered negative absolute returns. Long-term mortgage and investment grade corporate bonds underperformed during the quarter given their maturity profiles. High yield bonds outperformed primarily due to their shorter maturity profile and higher coupons.

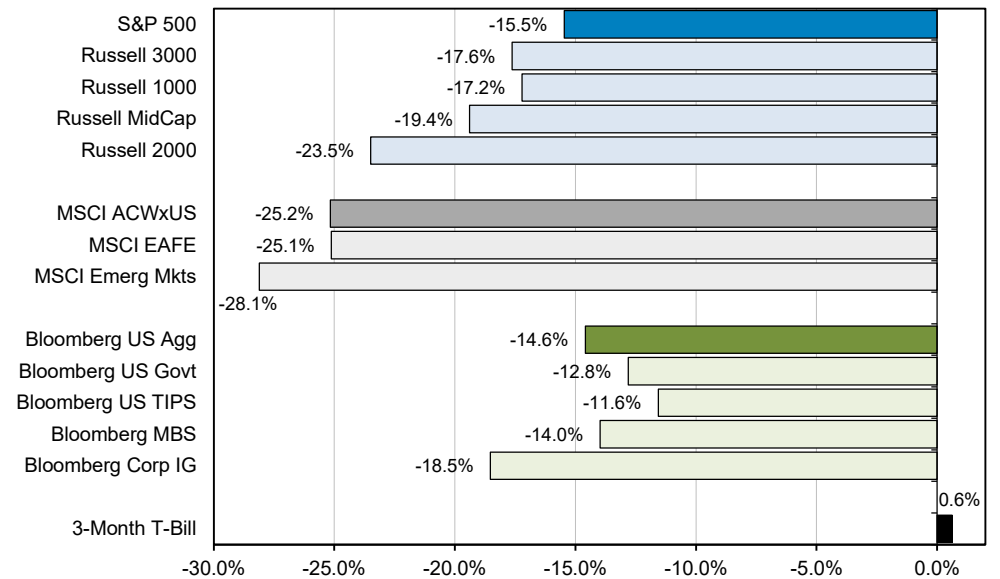


- Negative momentum continued during the 3rd quarter as broad US equity markets experienced negative returns. Factors that contributed to performance included elevated inflation, tighter monetary policy, continued geopolitical events in Ukraine, and expectations of slower economic growth. For the period, the S&P 500 large cap benchmark returned -4.9%, compared to -3.4% for mid-cap and -2.2% for small cap indices.
- Like domestic equities, developed markets international equities also suffered negative results for the 3rd quarter. Europe was negatively impacted by higher-than-expected inflation, the conflict in Ukraine, uncertainty regarding energy supplies, and rising interest rates. Emerging markets were also negatively impacted by war in Ukraine and a strengthening USD. During the period, the MSCI EAFE Index returned -9.4% while the MSCI Emerging Markets Index declined by -11.6%.
- For the quarter, performance of the bond market was broadly negative due to continued concerns about inflation and the FOMC's decision to raise interest rates twice during the period. The Bloomberg (BB) US Aggregate Index returned -4.8%, for the period while Investment Grade Corporate bonds posted a return of -5.1%.
- Performance for developed equity markets was strongly negative over the trailing 1-year period. The primary drivers of return during the period were weakening global economic growth, more restrictive monetary policy from global central banks, and elevated inflation. The S&P 500 large cap stock index led equity market performance for the year with a return of -15.5%. The outlier was the MSCI ACWI ex-US index which declined by -25.2% for the year.
- Over the trailing 1-year period, international markets fell with the developed market MSCI EAFE Index returning -25.1% while the MSCI Emerging Markets Index fell by -28.1%. Global economic growth slowed throughout the year and both developed and emerging markets were negatively impacted by a strong USD and continued geopolitical concerns.
- Bond market returns disappointed over the trailing 1-year period due primarily to concerns about rising inflation and the expectation of higher future interest rates. US TIPS were the best performing sector returning -11.6% while investment grade corporate bonds was the worst, falling -18.5%.

### Quarter Performance



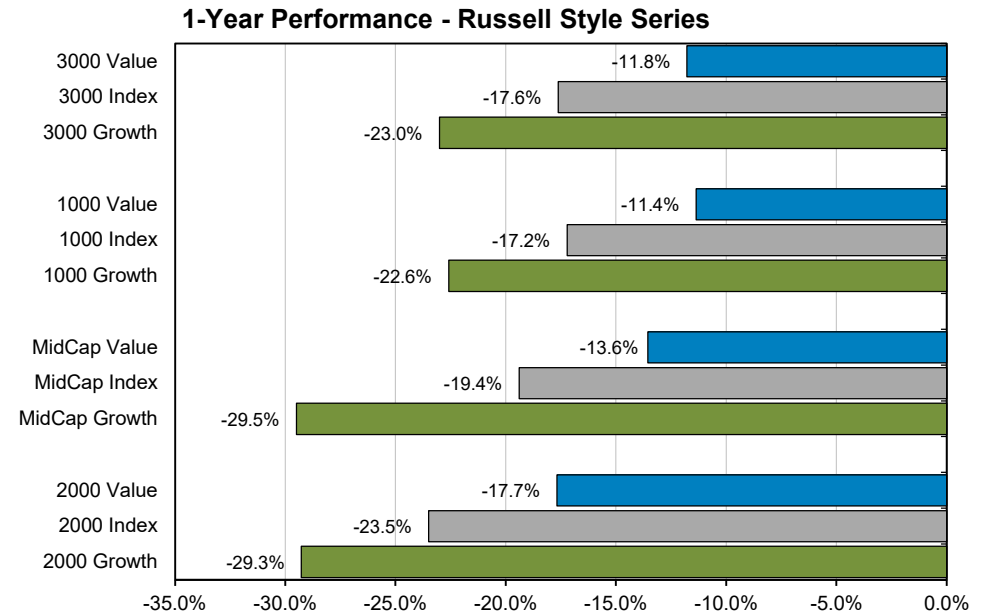
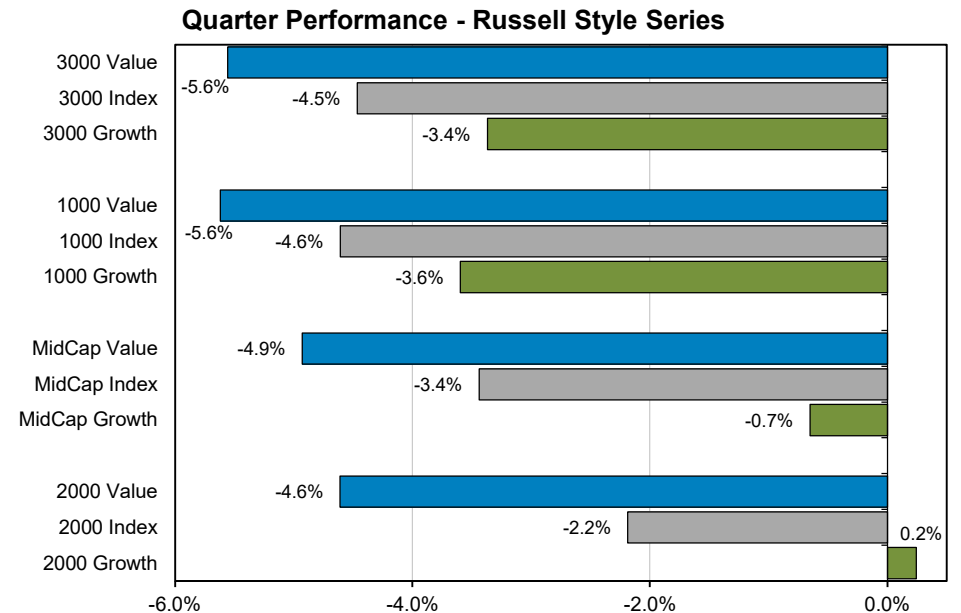
### 1-Year Performance



Source: Investment Metrics



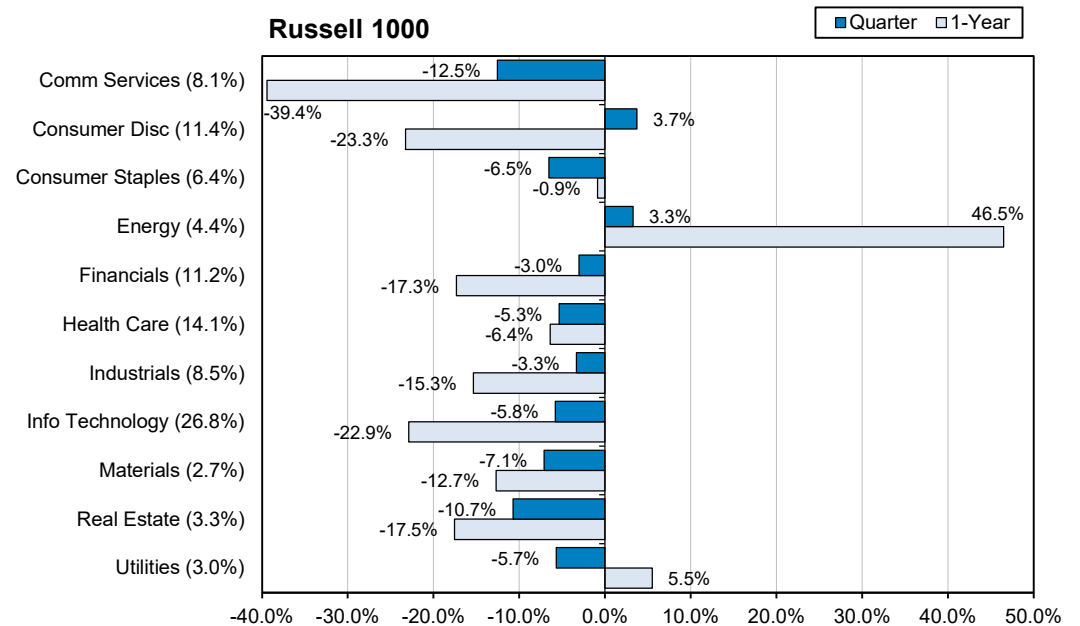
- Volatility was high during the 3rd quarter as broad US equity markets rose sharply before falling to close the period with negative results across both the style and market capitalization spectrums. Leadership switched during the quarter with small cap stocks outperforming, followed by mid and large cap issues. The Russell 2000 Index declined by -2.2% for the quarter while the Russell Mid Cap Index and the Russell 1000 Index fell by -3.4% and -4.6%, respectively.
- Performance across styles and market capitalizations was disparate during the quarter. Large, mid, and small cap growth stocks all outperformed their value counterparts. For the period, the Russell 2000 Growth Index was the best relative performing style index, posting a return of 0.0%. Large and mid cap value stocks were the laggards during the period with the Russell Large Cap Value Index and Russell Mid Cap Value Index falling by -5.6% and -4.9%, respectively.
- Performance across all market capitalizations and styles was negative over the trailing 1-year period. Unlike the 3rd quarter, large cap stocks outperformed mid and small cap stocks for the year. The Russell 1000 Index return of -17.2% for the year, significantly outperformed both its mid and small cap growth index counterparts. The outlier during the period was the Russell 2000 Index which returned -23.5%.
- There was wide performance dispersion within across all style-based indexes. Value significantly outperformed growth over the year. Within large cap stocks, the Russell 1000 Value returned -11.4% compared to -22.6% for the Russell 1000 Growth benchmark. The Russell Mid Cap Value Index returned -13.6% while the Russell 2000 Value Index returned -17.7% for the period. In comparison, the Russell Mid Cap Growth Index returned -29.5%, while the Russell 2000 Growth Index declined by -29.3%.



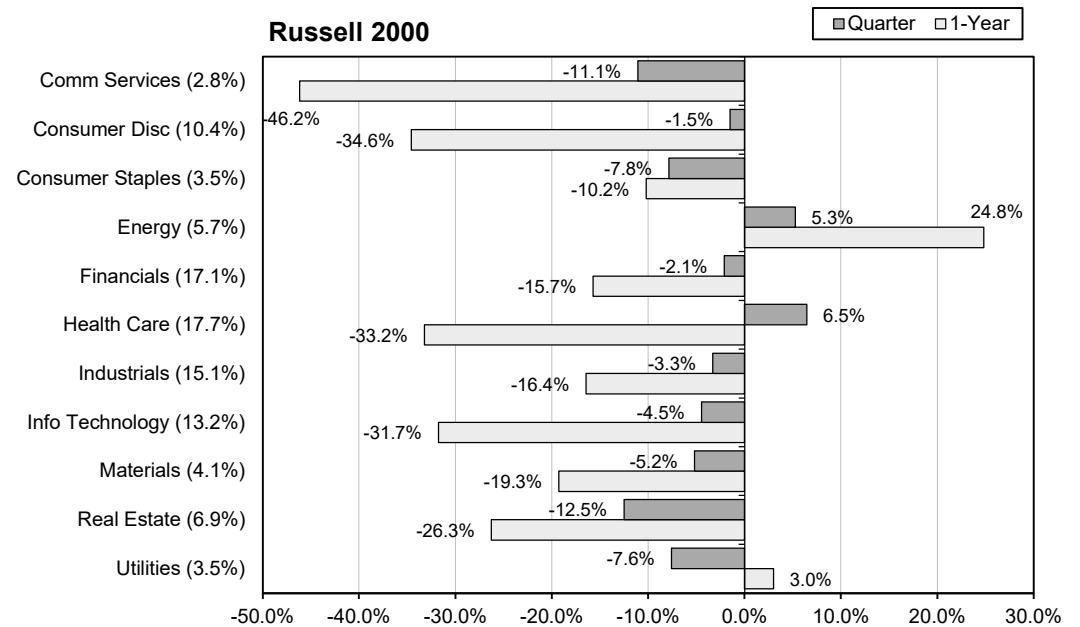
Source: Investment Metrics



- Economic sector performance was negative across nine of the eleven large cap economic sectors for the 3rd quarter. Four sectors outpaced the return of the broad index on a relative basis during the period.
- Consumer Discretionary (3.7%) and Energy (3.3%) were the only sectors with positive absolute performance during the period. Additionally, Financials (-3.0%) and Industrials (-3.3%) outperformed the broad index. Strong consumer demand acted as a tailwind for consumer-related stocks during the quarter. Energy continued its relative outperformance as the price of oil remained elevated.
- For the full year, six sectors exceeded the return of the broad large cap benchmark: Energy (46.5%), Utilities (5.5%), Consumer Staples (-0.9%), Health Care (-6.4%), Materials (-12.7%), and Industrials (-15.3%). The weakest economic sector performance in the Russell 1000 for the year was Communication Services which declined by returns (-39.4%).



- Small cap sector performance was also mixed during the quarter with two economic sectors posting positive performance relative to return of the broader Russell 2000 Index (-2.2%). Health Care (6.5%), and Energy (5.3%) were the best performing sectors for the period. Real Estate (-12.5%), and Communication Services (-11.1%) were the worst performing sectors for the quarter.
- For the trailing 1-year period, six of the eleven sectors outpaced the broad benchmark's return. Not surprisingly, sector performance was led by Energy (24.8%), Utilities (3.0%), Consumer Staples (-10.2%), Financials (-15.7%), and Industrials (-16.4%). The weakest sector over the full year was Communication Services (-46.2%), followed by Consumer Discretionary (-34.6%).



Source: Morningstar Direct  
 As a result of the GICS classification changes on 9/28/2018 and certain associated reporting limitations, sector performance represents backward looking performance for the prior year of each sector's current constituency, post creation of the Communication Services sector.



**The Market Environment**  
**Top 10 Index Weights & Quarterly Performance for the Russell 1000 & 2000**  
As of September 30, 2022

Top 10 Weighted Stocks				
Russell 1000	Weight	1-Qtr Return	1-Year Return	Sector
Apple Inc	6.31%	1.22%	-1.79%	Information Technology
Microsoft Corp	5.21%	-9.12%	-16.69%	Information Technology
Amazon.com Inc	3.00%	6.39%	-31.20%	Consumer Discretionary
Tesla Inc	2.02%	18.17%	2.61%	Consumer Discretionary
Alphabet Inc Class A	1.72%	-12.22%	-28.45%	Communication Services
Alphabet Inc Class C	1.55%	-12.09%	-27.85%	Communication Services
Berkshire Hathaway Inc Class B	1.44%	-2.20%	-2.17%	Financials
UnitedHealth Group Inc	1.41%	-1.36%	30.94%	Health Care
Johnson & Johnson	1.28%	-7.35%	3.82%	Health Care
Exxon Mobil Corp	1.09%	2.91%	55.15%	Energy

Top 10 Performing Stocks (by Quarter)				
Russell 1000	Weight	1-Qtr Return	1-Year Return	Sector
Signify Health Inc Ordinary Shares	0.01%	111.23%	63.12%	Health Care
First Solar Inc	0.04%	94.14%	38.56%	Information Technology
Wolfspeed Inc	0.04%	62.90%	28.03%	Information Technology
Penumbra Inc	0.02%	52.26%	-28.86%	Health Care
Oak Street Health Inc Ordinary Shares	0.01%	49.15%	-42.35%	Health Care
Sarepta Therapeutics Inc	0.03%	47.47%	19.53%	Health Care
Constellation Energy Corp	0.08%	45.54%	N/A	Energy
The Trade Desk Inc Class A	0.08%	42.64%	-15.01%	Information Technology
Nutanix Inc Class A	0.01%	42.38%	-44.75%	Information Technology
Enphase Energy Inc	0.11%	42.12%	85.02%	Energy

Bottom 10 Performing Stocks (by Quarter)				
Russell 1000	Weight	1-Qtr Return	1-Year Return	Sector
Sotera Health Co Ordinary Shares	0.00%	-65.2%	-73.9%	Health Care
Novavax Inc	0.00%	-64.6%	-91.2%	Health Care
Spectrum Brands Holdings Inc	0.00%	-52.1%	-58.4%	Consumer Staples
AMC Entertainment Holdings Inc	0.01%	-48.6%	-81.7%	Communication Services
WeWork Inc	0.00%	-47.2%	N/A	Real Estate
The Scotts Miracle Gro Co A	0.01%	-45.4%	-70.1%	Materials
AppLovin Corp Ordinary Shares	0.01%	-43.4%	-73.1%	Information Technology
Azenta Inc	0.01%	-40.6%	-58.1%	Health Care
NCR Corp	0.01%	-38.9%	-51.0%	Information Technology
Enhabit Inc Shs	0.00%	-38.9%	N/A	Health Care

Top 10 Weighted Stocks				
Russell 2000	Weight	1-Qtr Return	1-Year Return	Sector
ShockWave Medical Inc	0.45%	45.5%	35.1%	Health Care
Biohaven Pharmaceutical Holding Co	0.43%	3.7%	8.8%	Health Care
Chart Industries Inc	0.31%	10.1%	-3.5%	Industrials
Karuna Therapeutics Inc	0.30%	77.8%	83.9%	Health Care
Apellis Pharmaceuticals Inc	0.28%	51.0%	107.2%	Health Care
Murphy USA Inc	0.28%	18.2%	65.3%	Consumer Discretionary
Texas Roadhouse Inc	0.27%	19.8%	-2.4%	Consumer Discretionary
SouthState Corp	0.27%	3.2%	8.5%	Financials
RBC Bearings Inc	0.27%	12.4%	-2.1%	Industrials
EMCOR Group Inc	0.27%	12.3%	0.5%	Information Technology

Top 10 Performing Stocks (by Quarter)				
Russell 2000	Weight	1-Qtr Return	1-Year Return	Sector
Akero Therapeutics Inc	0.04%	260.3%	52.3%	Health Care
Forma Therapeutics Holdings Inc	0.03%	189.6%	-14.0%	Health Care
Velo3D Inc	0.01%	185.5%	-52.9%	Industrials
Ventyx Biosciences Inc	0.04%	185.4%	N/A	Health Care
Verve Therapeutics Inc	0.06%	124.8%	-26.9%	Health Care
AN2 Therapeutics Inc	0.00%	124.3%	N/A	Health Care
Prothena Corp PLC	0.10%	123.3%	-14.9%	Health Care
Target Hospitality Corp Class A	0.02%	121.0%	238.3%	Consumer Discretionary
1Life Healthcare Inc Ordinary Shares	0.14%	118.8%	-15.3%	Health Care
Global Blood Therapeutics Inc	0.19%	113.1%	167.3%	Health Care

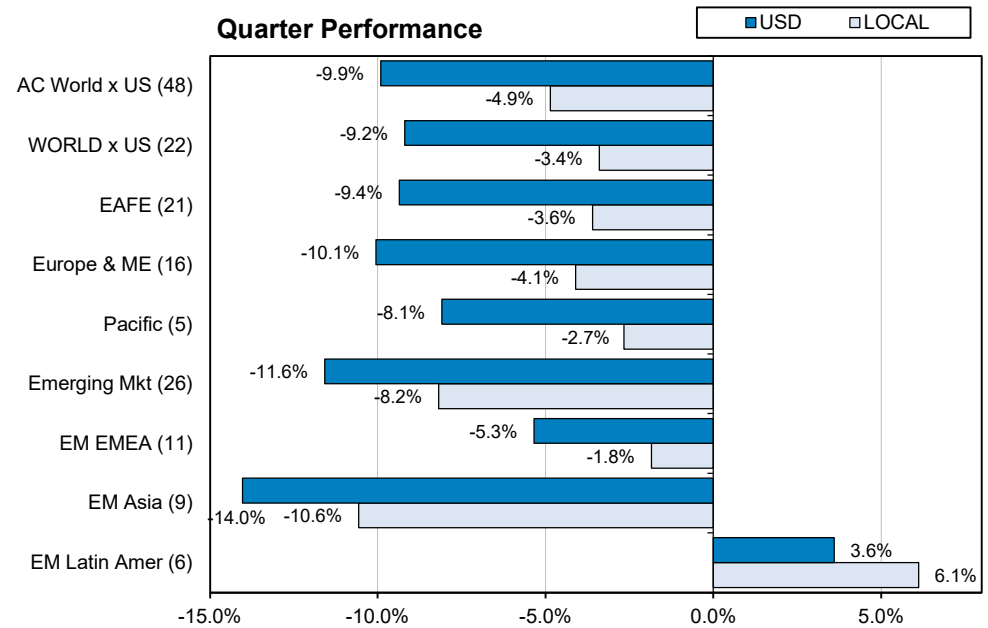
Bottom 10 Performing Stocks (by Quarter)				
Russell 2000	Weight	1-Qtr Return	1-Year Return	Sector
Leafly Holdings Inc	0.00%	-84.9%	0.0%	Communication Services
VistaGen Therapeutics Inc	0.00%	-82.7%	N/A	Health Care
Faraday Future Intelligent Electric Inc	0.00%	-75.5%	N/A	Consumer Discretionary
SelectQuote Inc Ordinary Shares	0.00%	-70.6%	-94.4%	Financials
IronNet Inc	0.00%	-68.8%	N/A	Information Technology
Core Scientific Inc Ord Shs - Class A	0.00%	-67.9%	N/A	Consumer Discretionary
Rockley Photonics Holdings Ltd	0.00%	-67.4%	N/A	Information Technology
Loyalty Ventures Inc Ordinary Shares	0.00%	-66.1%	0.0%	Communication Services
Cryptyde Inc	0.00%	-65.9%	0.0%	Materials
Vintage Wine Estates Inc	0.00%	-64.8%	-72.9%	Consumer Staples

Source: Morningstar Direct



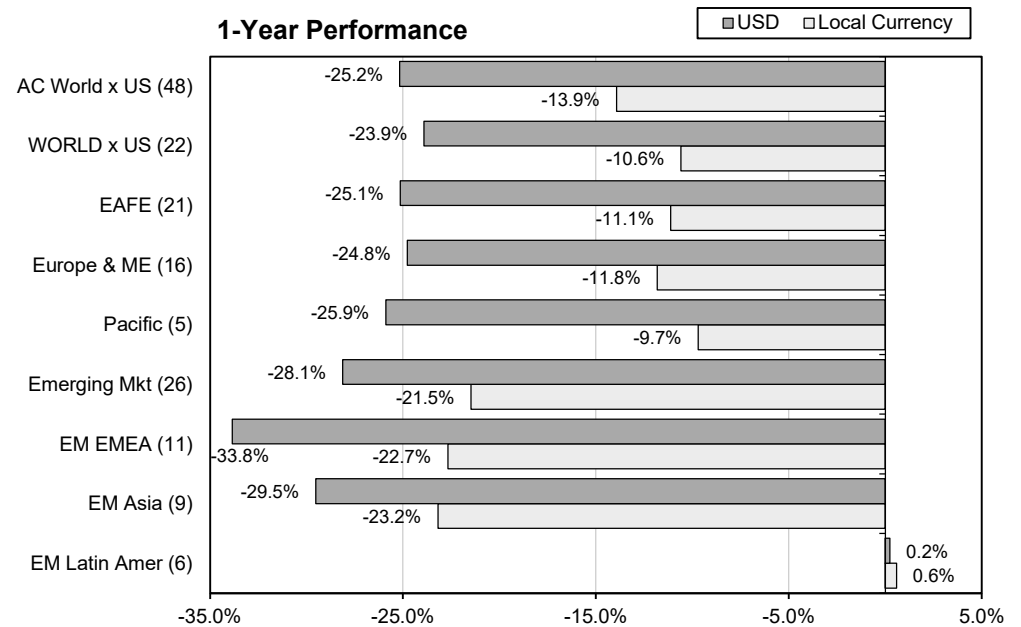
- Most developed and emerging market international equity indexes tracked in the chart posted negative returns in both US dollar (USD) and local currency (LC) terms for the 3rd quarter. The outlier during the period was the Latin America region. Higher commodity prices and demand benefited export-driven countries like Brazil. The developed market MSCI EAFE Index returned -9.4% in USD and -3.6% in LC terms for the period, while the MSCI Emerging Markets Index declined by -11.6% in USD and -8.2% in LC terms.

**Quarter Performance**



- The trailing 1-year results for international developed and emerging markets were broadly negative across most regions and currencies. The MSCI EAFE Index returned -25.1% in USD for the year and -11.1% in LC terms. Similarly, returns across emerging markets were broadly lower with the exception being Latin America with the MSCI Emerging Markets Index declining by -28.1% in USD and -21.5% in LC terms. Latin America regional index's return were the outlier, rising by 0.2% in USD and 0.6% in LC term. In contrast, performance in the EMEA regional benchmark significantly detracted from emerging market index performance with the EMEA Index returning -33.8% in USD and -22.7% in LC terms, respectively, due primarily to concerns related to Ukraine.

**1-Year Performance**



Source: MSCI Global Index Monitor (Returns are Net)





**The Market Environment**  
**US Dollar International Index Attribution & Country Detail**  
As of September 30, 2022

MSCI - EAFE	Sector Weight	Quarter Return	1-Year Return
Communication Services	4.8%	-13.7%	-28.6%
Consumer Discretionary	11.3%	-9.8%	-32.3%
Consumer Staples	11.3%	-7.1%	-17.3%
Energy	4.9%	-5.0%	6.0%
Financials	17.6%	-9.6%	-22.1%
Health Care	13.5%	-10.6%	-19.8%
Industrials	15.0%	-8.3%	-31.5%
Information Technology	7.9%	-8.3%	-38.9%
Materials	7.5%	-8.9%	-21.3%
Real Estate	2.8%	-13.1%	-29.1%
Utilities	3.4%	-13.3%	-20.3%
<b>Total</b>	<b>100.0%</b>	<b>-9.4%</b>	<b>-25.1%</b>

MSCI - ACWixUS	Sector Weight	Quarter Return	1-Year Return
Communication Services	6.1%	-16.5%	-32.0%
Consumer Discretionary	11.4%	-13.0%	-32.3%
Consumer Staples	9.4%	-6.4%	-16.7%
Energy	6.2%	-6.3%	-5.0%
Financials	20.7%	-7.9%	-18.3%
Health Care	9.6%	-11.0%	-23.5%
Industrials	12.1%	-8.2%	-28.7%
Information Technology	10.8%	-12.1%	-39.3%
Materials	8.2%	-7.9%	-21.1%
Real Estate	2.4%	-14.5%	-29.8%
Utilities	3.4%	-10.9%	-16.0%
<b>Total</b>	<b>100.0%</b>	<b>-9.9%</b>	<b>-25.2%</b>

MSCI - Emerging Mkt	Sector Weight	Quarter Return	1-Year Return
Communication Services	9.7%	-19.3%	-36.2%
Consumer Discretionary	14.0%	-18.7%	-33.7%
Consumer Staples	6.6%	-4.5%	-17.8%
Energy	5.3%	-2.6%	-30.1%
Financials	22.6%	-5.1%	-14.3%
Health Care	3.9%	-13.8%	-42.8%
Industrials	5.8%	-9.9%	-20.8%
Information Technology	18.3%	-15.5%	-36.1%
Materials	8.7%	-7.4%	-26.3%
Real Estate	2.0%	-19.3%	-31.9%
Utilities	3.2%	-4.3%	-8.0%
<b>Total</b>	<b>100.0%</b>	<b>-11.6%</b>	<b>-28.1%</b>

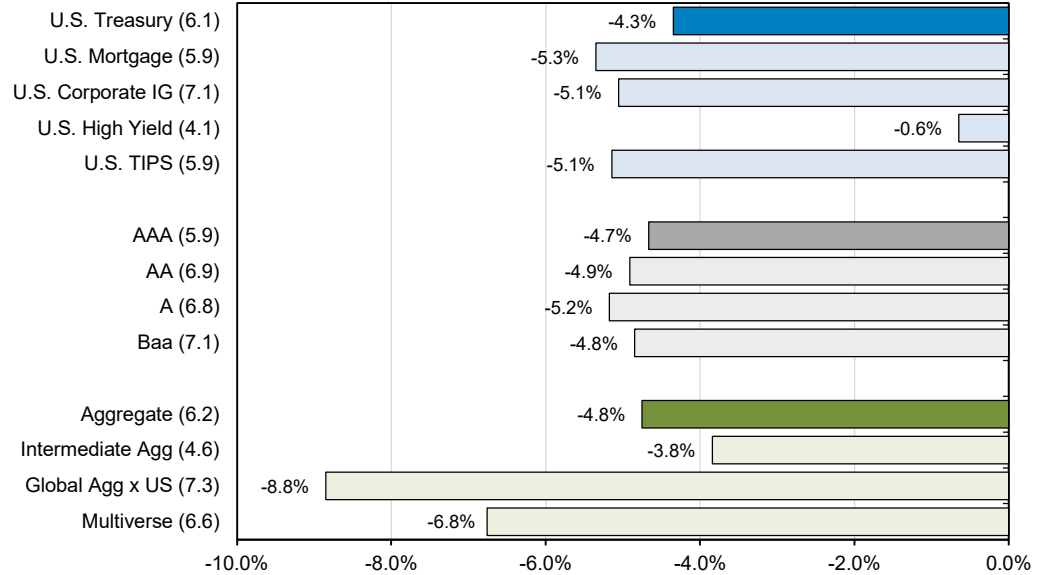
Country	MSCI-EAFE Weight	MSCI-ACWixUS Weight	Quarter Return	1-Year Return
Japan	22.6%	14.1%	-7.7%	-29.3%
United Kingdom	15.5%	9.7%	-10.8%	-14.1%
France	11.3%	7.1%	-8.9%	-24.0%
Switzerland	10.7%	6.7%	-7.5%	-16.5%
Australia	8.0%	5.0%	-6.7%	-16.4%
Germany	7.6%	4.7%	-12.6%	-37.1%
Netherlands	4.1%	2.6%	-10.7%	-38.2%
Sweden	3.4%	2.1%	-8.8%	-35.7%
Hong Kong	3.0%	1.9%	-17.0%	-22.3%
Denmark	2.6%	1.7%	-12.3%	-23.5%
Spain	2.4%	1.5%	-14.1%	-25.6%
Italy	2.3%	1.4%	-8.5%	-28.5%
Singapore	1.6%	1.0%	-1.5%	-22.1%
Belgium	1.0%	0.6%	-13.2%	-27.3%
Finland	1.0%	0.6%	-7.2%	-25.0%
Norway	0.8%	0.5%	-15.3%	-20.7%
Israel	0.8%	0.5%	-1.9%	-21.8%
Ireland	0.6%	0.4%	-5.5%	-38.9%
Portugal	0.2%	0.1%	-11.0%	-12.9%
Austria	0.2%	0.1%	-15.2%	-40.9%
New Zealand	0.2%	0.1%	-8.6%	-33.4%
<b>Total EAFE Countries</b>	<b>100.0%</b>	<b>62.5%</b>	<b>-9.4%</b>	<b>-25.1%</b>
Canada		8.2%	-7.8%	-12.6%
<b>Total Developed Countries</b>		<b>70.7%</b>	<b>-9.2%</b>	<b>-23.9%</b>
China		9.2%	-22.5%	-35.4%
Taiwan		4.0%	-14.5%	-30.5%
India		4.5%	6.5%	-9.9%
Korea		3.1%	-16.4%	-40.7%
Brazil		1.7%	8.5%	4.3%
Saudi Arabia		1.4%	-0.1%	1.9%
South Africa		1.0%	-12.3%	-19.2%
Mexico		0.7%	-5.4%	-7.4%
Thailand		0.6%	-2.9%	-6.8%
Indonesia		0.6%	7.8%	14.3%
Malaysia		0.4%	-7.1%	-15.9%
United Arab Emirates		0.4%	-2.5%	5.1%
Qatar		0.4%	3.1%	12.7%
Kuwait		0.3%	-5.5%	6.4%
Philippines		0.2%	-13.6%	-26.3%
Poland		0.2%	-25.1%	-51.9%
Chile		0.2%	3.2%	0.6%
Turkey		0.1%	16.3%	3.8%
Peru		0.1%	-0.9%	3.0%
Greece		0.1%	-7.5%	-25.2%
Colombia		0.0%	-18.5%	-23.6%
Czech Republic		0.0%	-19.2%	-9.8%
Hungary		0.0%	-15.0%	-54.3%
Egypt		0.0%	-1.3%	-28.8%
<b>Total Emerging Countries</b>		<b>29.3%</b>	<b>-11.6%</b>	<b>-28.1%</b>
<b>Total ACWixUS Countries</b>		<b>100.0%</b>	<b>-9.9%</b>	<b>-25.2%</b>

Source: Morningstar Direct, MSCI Global Index Monitor (Returns are Net in USD)  
As a result of the GICS classification changes on 9/28/2018 and certain associated reporting limitations, sector performance represents backward looking performance for the prior year of each sector's current constituency, post creation of the Communication Services sector.

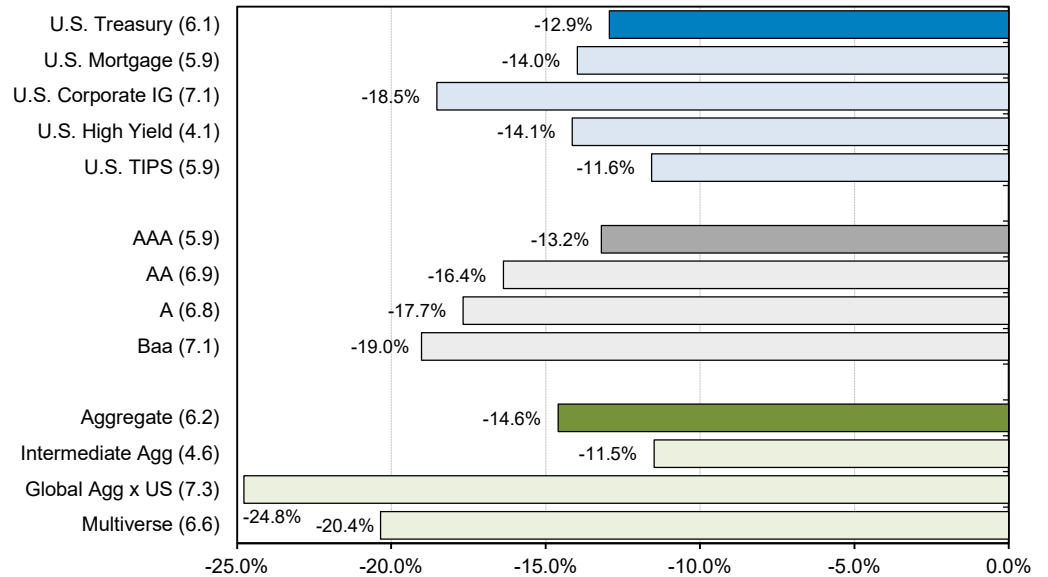


- Fixed income market results were broadly negative during the 3rd quarter. Investors' concerns about rising inflation, combined with expectations of higher US interest rates, detracted from performance. As a result, US Treasury yields continued to rise across the maturity curve throughout the quarter.
- The return for the BB US Aggregate Bond Index, the bellwether investment grade benchmark, was down -4.8% for the period.
- Performance across the investment grade index's segments was also negative during the period with the US Corporate Investment Grade bonds returning -5.1% and the US Mortgage index component posting a return of -5.3%.
- High yield bonds outperformed their investment grade counterparts, but still declined by -0.6%. US TIPS, which have delivered strong performance in recent periods, posted a decline of -5.1% as investors' expectations of future inflation declined.
- Outside of domestic markets, the BB Global Aggregate ex US Index posted a return of -8.8% for the quarter. Like domestic bonds, global bond index performance was negatively impacted by rising interest rates and a strengthening USD, which acted as a drag on domestic index returns.
- Over the trailing 1-year period, domestic investment grade benchmark performance was negative, led lower by investment grade corporate bonds (-18.5%), followed by mortgage-backed bonds (-14.0%), US Treasury bonds (-12.9%), and US TIPS (-11.6%). The bellwether Bloomberg US Aggregate Bond Index (-14.6%) declined for the year.
- Lower quality high yield corporate bonds outperformed their investment grade counterparts on a relative basis with the Bloomberg US High Yield Index returning -14.1% for the period.
- Performance for non-US bonds was broadly negative for the year with the developed market Bloomberg Global Aggregate ex US Index falling by -24.9%. The combination of rising interest rates overseas, persistent inflation, and USD strength hindered index performance for the year.

**Quarter Performance**



**1-Year Performance**

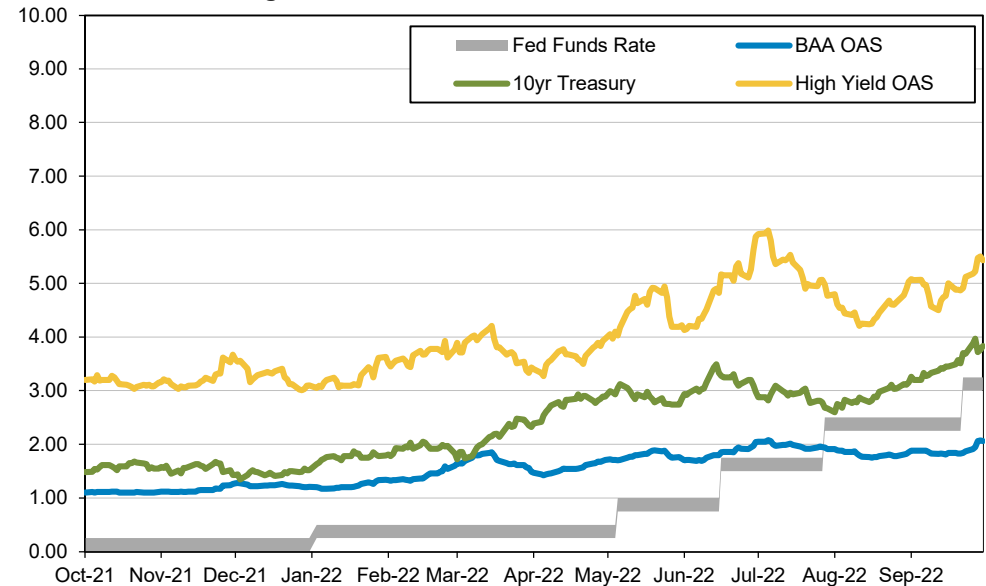


Source: Bloomberg

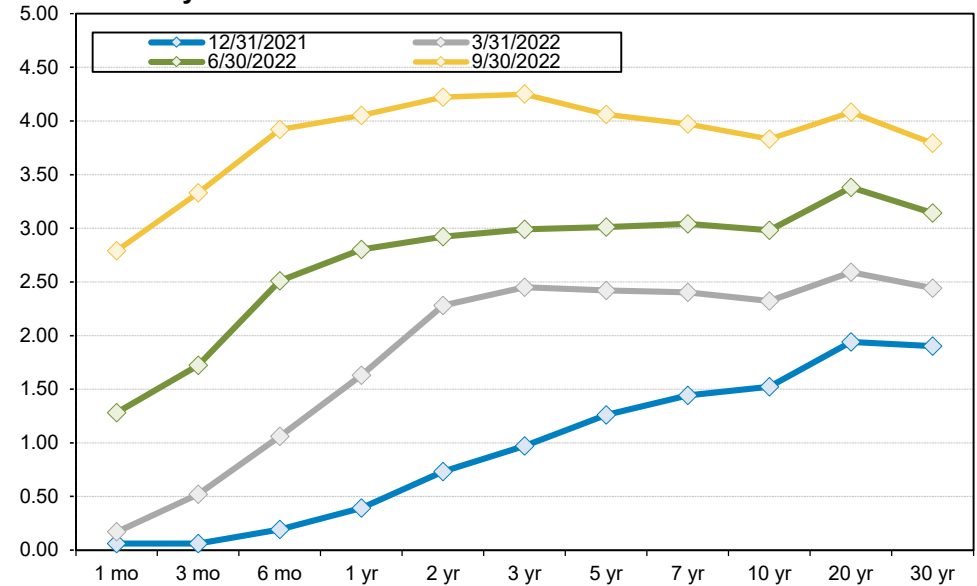


- The gray band across the graph illustrates the range of the current Fed Funds Rate. In the 3rd quarter this year, the Fed raised its target rate range from 1.75% to 3.25%. During its recent September meeting, the Federal Open Market Committee (FOMC) stated it intends to continue to remove liquidity from the market by raising interest rates and also allowing bonds held on its balance sheet to mature without reinvesting those proceeds. Importantly, the FOMC stated that it will remain vigilant in its fight against persistently higher inflation.
- The yield on the US 10-year Treasury (green line) ended the period higher as concerns over the pace of inflation, combined with the Fed's announced rate increase, drove yields higher. Interest rates continued to climb during the quarter, reaching a high of roughly 4.00% during the latter part of September 2022, before settling at 3.83% at the end of the month.
- 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 1.10% to 2.06%. High Yield OAS was largely unchanged during the year as spreads rose from 3.17% to 5.43%. High Yield spreads reached as high as 5.80% in early July before trading lower the remainder of the quarter.
- 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 3rd quarter as the FOMC continued raising rates to combat rising inflation. Both intermediate and longer-term rates were modestly higher across the curve, albeit less dramatically than short-term rates. The curve remained inverted between 2-year rates 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**



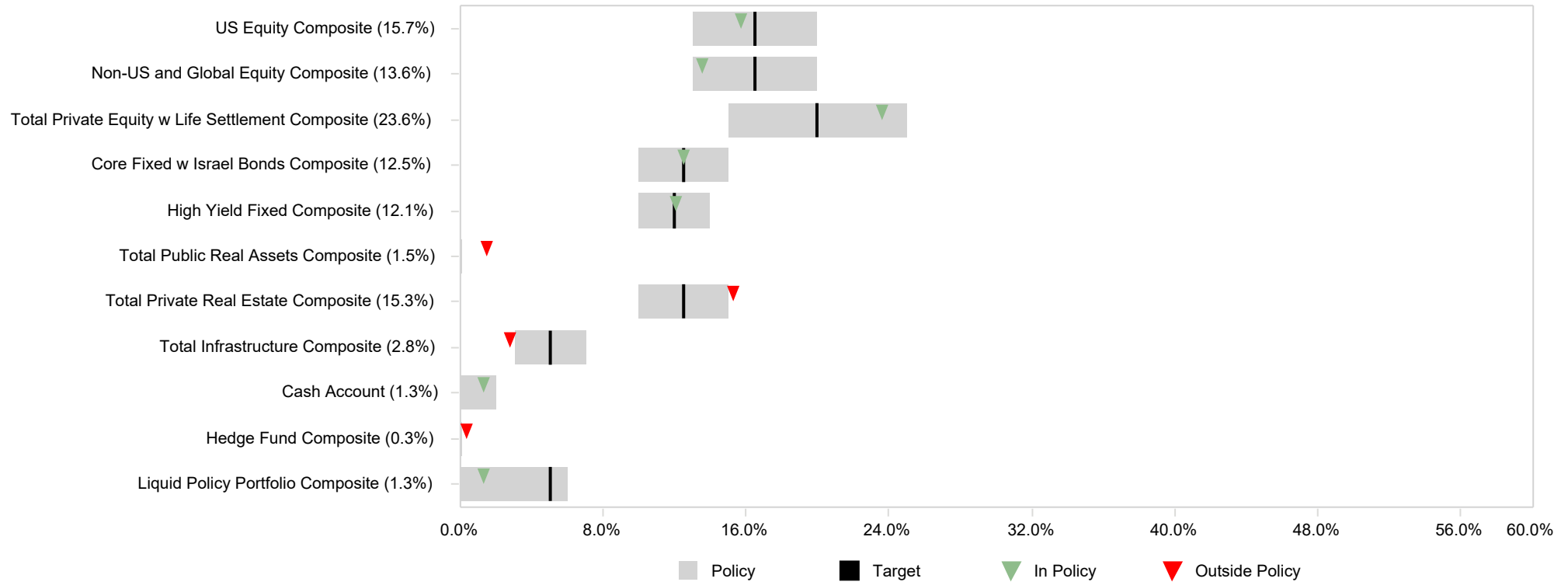
Source: US Department of Treasury, FRED (Federal Reserve of St. Louis)



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**Executive Summary**



**Asset Allocation Compliance**

	Asset Allocation \$	Current Allocation (%)	Minimum Allocation (%)	Maximum Allocation (%)	Target Allocation (%)
<b>Total Fund</b>	<b>916,451,621</b>	<b>100.0</b>	<b>N/A</b>	<b>N/A</b>	<b>100.0</b>
US Equity Composite	144,264,998	15.7	13.0	20.0	16.5
Non-US and Global Equity Composite	124,485,763	13.6	13.0	20.0	16.5
Total Private Equity w Life Settlement Composite	216,581,376	23.6	15.0	25.0	20.0
Core Fixed w Israel Bonds Composite	114,454,306	12.5	10.0	15.0	12.5
High Yield Fixed Composite	110,842,500	12.1	10.0	14.0	12.0
Total Public Real Assets Composite	13,461,201	1.5	0.0	0.0	0.0
Total Private Real Estate Composite	140,156,809	15.3	10.0	15.0	12.5
Total Infrastructure Composite	25,709,496	2.8	3.0	7.0	5.0
Cash Account	11,718,206	1.3	0.0	2.0	0.0
Hedge Fund Composite	2,965,030	0.3	0.0	0.0	0.0
Liquid Policy Portfolio Composite	11,811,936	1.3	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.



Asset Allocation Attributes	Sep-2022		Jun-2022		Mar-2022		Dec-2021	
	(\$)	%	(\$)	%	(\$)	%	(\$)	%
	Total Fund	916,451,621	100.00	968,724,869	100.00	1,056,431,762	100.00	1,096,847,739
<b>US Equity Composite</b>	<b>144,264,998</b>	<b>15.74</b>	<b>150,923,916</b>	<b>15.58</b>	<b>180,163,045</b>	<b>17.05</b>	<b>194,965,866</b>	<b>17.78</b>
SSgA S&P 500 Index	67,354,093	7.35	70,812,454	7.31	84,402,437	7.99	94,096,192	8.58
Fragasso Large Core (EMWO)	5,548,895	0.61	5,921,990	0.61	6,988,141	0.66	7,282,231	0.66
Twin Capital Enhanced Equity	33,271,566	3.63	34,978,827	3.61	41,397,972	3.92	43,179,388	3.94
Vesper U.S. Large Cap Short-Term Reversal Strategy ETF (UTRN) (EMWO)	1,245,181	0.14	1,332,487	0.14	1,428,926	0.14	1,578,091	0.14
Earnest Small Value	13,728,777	1.50	14,308,378	1.48	16,511,363	1.56	16,770,333	1.53
Emerald Advisors Small Cap	11,397,795	1.24	11,396,825	1.18	14,240,025	1.35	15,923,325	1.45
Emerald Advisors All Cap (EMWO)	4,679,112	0.51	4,858,103	0.50	6,371,490	0.60	6,645,020	0.61
Ethos (EMWO)	1,543,065	0.17	1,589,693	0.16	2,019,477	0.19	2,215,004	0.20
CIM Small Cap (EMWO)	4,362,503	0.48	4,573,253	0.47	5,473,904	0.52	5,867,714	0.53
Cookson Peirce (EMWO)	1,134,011	0.12	1,151,906	0.12	1,329,310	0.13	1,408,568	0.13
<b>Non US Equity Composite</b>	<b>124,485,700</b>	<b>13.58</b>	<b>138,960,201</b>	<b>14.34</b>	<b>164,146,200</b>	<b>15.54</b>	<b>180,597,451</b>	<b>16.47</b>
SSgA ACWI ex US	29,105,249	3.18	32,304,036	3.33	37,347,180	3.54	39,473,532	3.60
Baillie Gifford Intl Equity	43,596,829	4.76	49,321,563	5.09	59,489,941	5.63	70,428,526	6.42
FIAM Select International Equity	24,379,716	2.66	27,189,741	2.81	31,349,834	2.97	33,861,588	3.09
Segall, Bryant & Hamill	27,403,906	2.99	30,144,861	3.11	35,959,245	3.40	36,833,806	3.36
<b>Global Equity Composite</b>	<b>63</b>	<b>0.00</b>	<b>62</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	62	0.00	62	0.00	62	0.00
<b>Core Fixed w Israel Bonds Composite</b>	<b>114,454,306</b>	<b>12.49</b>	<b>122,951,479</b>	<b>12.69</b>	<b>127,635,605</b>	<b>12.08</b>	<b>134,181,540</b>	<b>12.23</b>
C S McKee	37,897,799	4.14	39,779,032	4.11	41,696,118	3.95	44,252,683	4.03
Federated Core Broad	30,981,986	3.38	36,554,326	3.77	38,195,499	3.62	40,339,887	3.68
CIM Investment Mgmt	26,211,750	2.86	26,946,688	2.78	27,558,343	2.61	28,732,165	2.62
StoneRidge Partners (EMWO)	4,971,485	0.54	5,117,385	0.53	5,241,029	0.50	5,471,185	0.50
Gridiron Capital Fixed Income (EMWO)	4,437,279	0.48	4,546,930	0.47	4,773,059	0.45	4,966,214	0.45
FNB (EMWO)	2,577,556	0.28	2,648,686	0.27	2,708,051	0.26	2,824,616	0.26
Israel Bonds	7,376,451	0.80	7,358,433	0.76	7,463,505	0.71	7,594,790	0.69
<b>High Yield Fixed Composite</b>	<b>110,842,500</b>	<b>12.09</b>	<b>111,700,649</b>	<b>11.53</b>	<b>123,524,625</b>	<b>11.69</b>	<b>128,401,665</b>	<b>11.71</b>
Oaktree High Yield	60,226,495	6.57	60,420,606	6.24	66,909,229	6.33	69,504,798	6.34
Federated High Yield	47,246,527	5.16	47,913,985	4.95	53,015,275	5.02	55,256,029	5.04
Sound Point	3,369,478	0.37	3,366,058	0.35	3,600,120	0.34	3,640,838	0.33
<b>TIPS Fixed Composite</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>	<b>42,930,455</b>	<b>3.91</b>
MCM TIPS	13,461,193	1.47	14,191,061	1.46	41,654,324	3.94	42,930,455	3.91



**Historical Asset Allocation  
Total Fund**

As of September 30, 2022

	Sep-2022		Jun-2022		Mar-2022		Dec-2021	
	(\$)	%	(\$)	%	(\$)	%	(\$)	%
<b>Real Estate Composite</b>	<b>128,691,705</b>	<b>14.04</b>	<b>129,441,915</b>	<b>13.36</b>	<b>126,467,718</b>	<b>11.97</b>	<b>121,201,323</b>	<b>11.05</b>
Morgan Stanley Prime Property Fund	97,863,068	10.68	97,917,742	10.11	95,026,175	9.00	88,802,131	8.10
Oaktree Real Estate	6,378,697	0.70	6,421,511	0.66	6,465,443	0.61	6,567,794	0.60
Washington Alliance (EMWO)	15,086,173	1.65	15,086,173	1.56	14,925,450	1.41	14,925,450	1.36
Washington Alliance II (EMWO)	2,162,729	0.24	2,162,729	0.22	1,606,004	0.15	1,572,293	0.14
Siguler Guff Distressed RE	7,201,039	0.79	7,853,760	0.81	8,444,646	0.80	9,333,655	0.85
<b>ERECT Composite</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>	<b>10,441,201</b>	<b>0.95</b>
ERECT Fund II	11,465,104	1.25	11,411,014	1.18	11,411,014	1.08	10,441,201	0.95
<b>Infrastructure Composite</b>	<b>25,709,496</b>	<b>2.81</b>	<b>-</b>	<b>0.00</b>	<b>-</b>	<b>0.00</b>	<b>-</b>	<b>0.00</b>
JP Morgan Infrastructure Fund (IIF Hedged)	25,709,496	2.81	-	0.00	-	0.00	-	0.00
<b>Private Equity Composite</b>	<b>206,178,260</b>	<b>22.50</b>	<b>219,998,309</b>	<b>22.71</b>	<b>219,253,042</b>	<b>20.75</b>	<b>215,873,991</b>	<b>19.68</b>
<b>Life Settlement Composite</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>13,584,945</b>	<b>1.24</b>
<b>Hedge Fund Composite</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>	<b>3,564,755</b>	<b>0.32</b>
Gridiron Capital Multi-Asset (EMWO)	2,964,861	0.32	3,083,114	0.32	3,414,563	0.32	3,564,587	0.32
<b>Liquid Policy Portfolio Composite</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>	<b>42,539,612</b>	<b>3.88</b>
BlackRock Liquidity iShares Public Pension Fund	11,811,936	1.29	21,215,370	2.19	40,408,096	3.82	42,539,612	3.88
Cash Account	11,718,206	1.28	33,473,731	3.46	5,230,586	0.50	8,564,864	0.78



Financial Reconciliation	Market Value 07/01/2022	Net Flows	Return On Investment	Market Value 09/30/2022
<b>Total Fund</b>	<b>968,724,869</b>	<b>-17,135,195</b>	<b>-34,743,788</b>	<b>916,451,621</b>
SSgA S&P 500 Index	70,812,454	3,218	-3,458,361	67,354,093
Fragasso Large Core (EMWO)	5,921,990	8,686	-373,095	5,548,895
Twin Capital Enhanced Equity	34,978,827	31,454	-1,707,262	33,271,566
Vesper U.S. Large Cap Short-Term Reversal Strategy ETF (UTRN) (EMWO)	1,332,487	-	-87,306	1,245,181
Earnest Small Value	14,308,378	-	-545,137	13,728,777
Emerald Advisors Small Cap	11,396,825	22,097	970	11,397,795
Emerald Advisors All Cap (EMWO)	4,858,103	7,684	-178,991	4,679,112
Ethos (EMWO)	1,589,693	-4,011	-42,617	1,543,065
CIM Small Cap (EMWO)	4,573,253	8,879	-210,749	4,362,503
Cookson Peirce (EMWO)	1,151,906	-	-17,895	1,134,011
<b>US Equity Composite</b>	<b>150,923,916</b>	<b>78,006</b>	<b>-6,620,443</b>	<b>144,264,998</b>
SSgA ACWI ex US	32,304,036	5,453	-3,198,786	29,105,249
Baillie Gifford Intl Equity	49,321,563	-	-5,724,735	43,596,829
FIAM Select International Equity	27,189,741	-	-2,786,255	24,379,716
Segall, Bryant & Hamill	30,144,861	-	-2,688,697	27,403,906
<b>Non US Equity Composite</b>	<b>138,960,201</b>	<b>5,453</b>	<b>-14,398,473</b>	<b>124,485,700</b>
Columbus Macro (EMWO)	62	-	-	63
<b>Global Equity Composite</b>	<b>62</b>	<b>-</b>	<b>-</b>	<b>63</b>
C S McKee	39,779,032	21,791	-1,881,232	37,897,799
Federated Core Broad	36,554,326	-4,000,000	-1,547,111	30,981,986
CIM Investment Mgmt	26,946,688	16,382	-734,937	26,211,750
StoneRidge Partners (EMWO)	5,117,385	2,546	-145,900	4,971,485
Gridiron Capital Fixed Income (EMWO)	4,546,930	7,498	-109,652	4,437,279
FNB (EMWO)	2,648,686	-	-68,801	2,577,556
Israel Bonds	7,358,433	3,697	18,018	7,376,451
<b>Core Fixed w Israel Bonds Composite</b>	<b>122,951,479</b>	<b>-3,948,085</b>	<b>-4,469,615</b>	<b>114,454,306</b>
Oaktree High Yield	60,420,606	-	-84,982	60,226,495
Federated High Yield	47,913,985	-	-667,459	47,246,527
Sound Point	3,366,058	-	3,420	3,369,478
<b>High Yield Fixed Composite</b>	<b>111,700,649</b>	<b>-</b>	<b>-749,020</b>	<b>110,842,500</b>
MCM TIPS	14,191,061	1,010	-729,868	13,461,193
<b>TIPS Fixed Composite</b>	<b>14,191,061</b>	<b>1,010</b>	<b>-729,868</b>	<b>13,461,193</b>





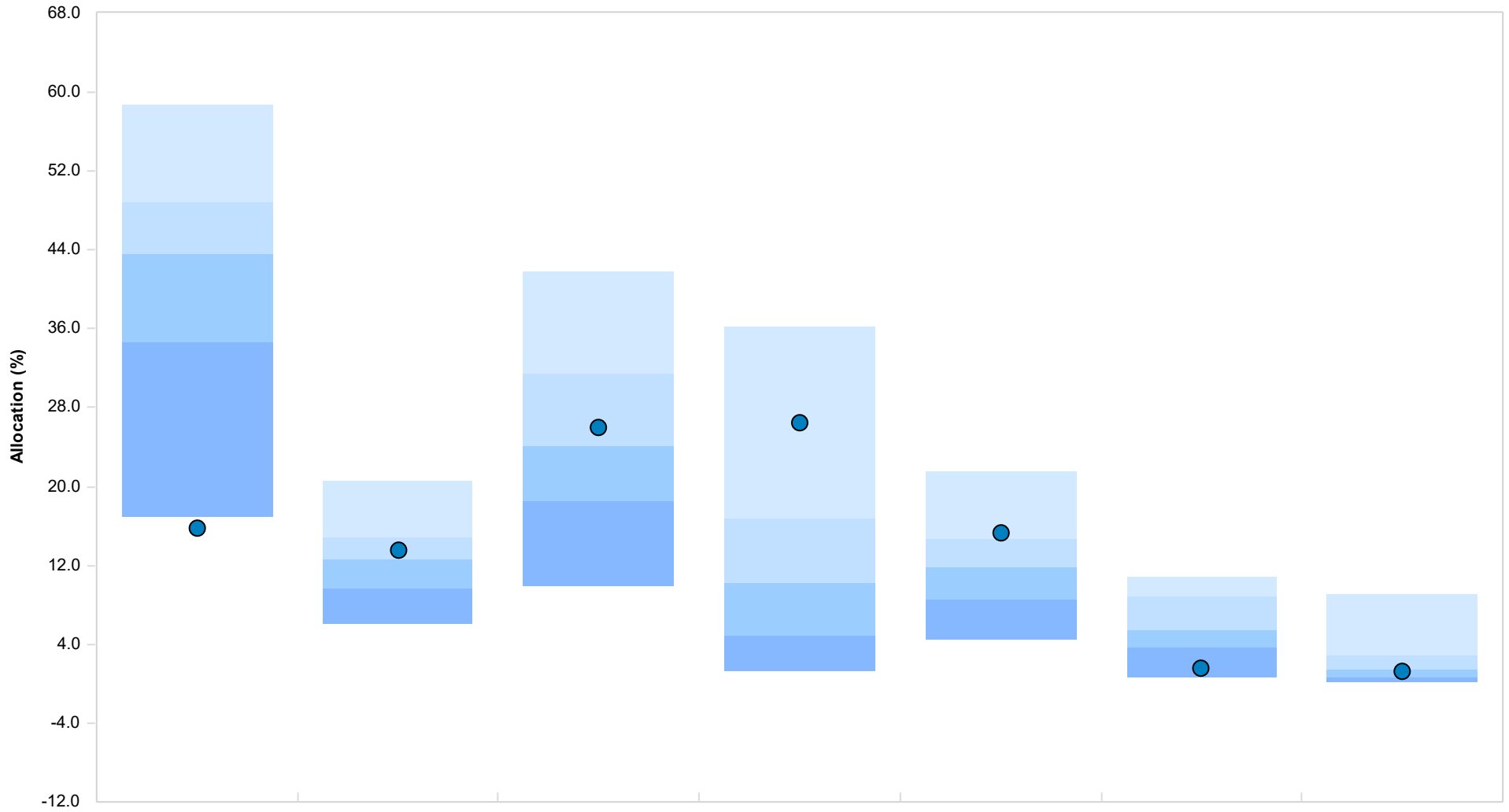
	Market Value 07/01/2022	Net Flows	Return On Investment	Market Value 09/30/2022
Morgan Stanley Prime Property Fund	97,917,742	-	-54,674	97,863,068
Oaktree Real Estate	6,421,511	-	-42,814	6,378,697
Washington Alliance (EMWO)	15,086,173	-	-	15,086,173
Washington Alliance II (EMWO)	2,162,729	-	-	2,162,729
Siguler Guff Distressed RE	7,853,760	-652,721	-	7,201,039
<b>Real Estate Composite</b>	<b>129,441,915</b>	<b>-652,721</b>	<b>-97,488</b>	<b>128,691,705</b>
<b>ERECT Composite</b>	<b>11,411,014</b>	<b>-</b>	<b>54,090</b>	<b>11,465,104</b>
<b>Infrastructure Composite</b>	<b>-</b>	<b>25,000,000</b>	<b>709,496</b>	<b>25,709,496</b>
JP Morgan Infrastructure Fund (IIF Hedged)	-	25,000,000	709,496	25,709,496
<b>Private Equity Composite</b>	<b>219,998,309</b>	<b>-5,871,310</b>	<b>-7,948,739</b>	<b>206,178,260</b>
<b>Life Settlement Composite</b>	<b>11,373,871</b>	<b>-948,771</b>	<b>-21,984</b>	<b>10,403,116</b>
Gridiron Capital Multi-Asset (EMWO)	3,083,114	5,843	-118,253	2,964,861
Maplewood (EMWO)	168	-	1	169
<b>Hedge Fund Composite</b>	<b>3,083,282</b>	<b>5,843</b>	<b>-118,252</b>	<b>2,965,030</b>
BlackRock Liquidity iShares Public Pension Fund	21,215,370	-9,000,000	-403,434	11,811,936
<b>Liquid Policy Portfolio Composite</b>	<b>21,215,370</b>	<b>-9,000,000</b>	<b>-403,434</b>	<b>11,811,936</b>
<b>MLP Composite</b>	<b>8</b>	<b>-</b>	<b>-</b>	<b>8</b>
Cash Account	33,473,731	-21,804,619	49,942	11,718,206

Financial Reconciliation	Market Value 01/01/2022	Net Flows	Income	Return On Investment	Market Value 09/30/2022
<b>Total Fund</b>	<b>1,096,847,739</b>	<b>-47,438,282</b>	<b>527,805</b>	<b>-131,796,020</b>	<b>916,451,621</b>
SSgA S&P 500 Index	94,096,192	-4,989,158	-	-21,742,100	67,354,093
Fragasso Large Core (EMWO)	7,282,231	27,953	-627	-1,733,336	5,548,895
Twin Capital Enhanced Equity	43,179,388	99,658	5,317	-9,907,823	33,271,566
Vesper U.S. Large Cap Short-Term Reversal Strategy ETF (UTRN) (EMWO)	1,578,091	-	-	-332,910	1,245,181
Earnest Small Value	16,770,333	36,747	956	-3,007,092	13,728,777
Emerald Advisors Small Cap	15,923,325	71,647	2,081	-4,526,625	11,397,795
Emerald Advisors All Cap (EMWO)	6,645,020	24,920	453	-1,965,960	4,679,112
Ethos (EMWO)	2,215,004	-73,816	-1	-598,123	1,543,065
CIM Small Cap (EMWO)	5,867,714	29,350	66	-1,506,432	4,362,503
Cookson Peirce (EMWO)	1,408,568	3,142	-478	-274,557	1,134,011
<b>US Equity Composite</b>	<b>194,965,866</b>	<b>-4,769,557</b>	<b>7,767</b>	<b>-45,594,957</b>	<b>144,264,998</b>
SSgA ACWI ex US	39,473,532	17,846	-	-10,368,282	29,105,249
Baillie Gifford Intl Equity	70,428,526	-	-	-26,831,697	43,596,829
FIAM Select International Equity	33,861,588	52,948	-	-9,458,103	24,379,716
Segall, Bryant & Hamill	36,833,806	56,297	265,596	-9,377,642	27,403,906
<b>Non US Equity Composite</b>	<b>180,597,451</b>	<b>127,091</b>	<b>265,596</b>	<b>-56,035,724</b>	<b>124,485,700</b>
Columbus Macro (EMWO)	62	-	-	-	63
<b>Global Equity Composite</b>	<b>62</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>63</b>
C S McKee	44,252,683	68,639	35,203	-6,354,884	37,897,799
Federated Core Broad	40,339,887	-3,951,205	33,339	-5,332,672	30,981,986
CIM Investment Mgmt	28,732,165	51,182	22,696	-2,520,415	26,211,750
StoneRidge Partners (EMWO)	5,471,185	7,784	-3,443	-499,700	4,971,485
Gridiron Capital Fixed Income (EMWO)	4,966,214	22,851	104,756	-528,935	4,437,279
FNB (EMWO)	2,824,616	2,418	9	-244,732	2,577,556
Israel Bonds	7,594,790	11,131	47,264	-218,339	7,376,451
<b>Core Fixed w Israel Bonds Composite</b>	<b>134,181,540</b>	<b>-3,787,199</b>	<b>239,825</b>	<b>-15,699,675</b>	<b>114,454,306</b>
Oaktree High Yield	69,504,798	-	-	-8,983,592	60,226,495
Federated High Yield	55,256,029	-	-	-8,009,502	47,246,527
Sound Point	3,640,838	-	-	-271,360	3,369,478
<b>High Yield Fixed Composite</b>	<b>128,401,665</b>	<b>-</b>	<b>-</b>	<b>-17,264,454</b>	<b>110,842,500</b>
MCM TIPS	42,930,455	-25,014,797	-	-4,447,579	13,461,193
<b>TIPS Fixed Composite</b>	<b>42,930,455</b>	<b>-25,014,797</b>	<b>-</b>	<b>-4,447,579</b>	<b>13,461,193</b>



	Market Value 01/01/2022	Net Flows	Income	Return On Investment	Market Value 09/30/2022
Morgan Stanley Prime Property Fund	88,802,131	-	-	9,060,937	97,863,068
Oaktree Real Estate	6,567,794	-	-	-189,097	6,378,697
Washington Alliance (EMWO)	14,925,450	-335,366	-	496,089	15,086,173
Washington Alliance II (EMWO)	1,572,293	567,784	-	22,652	2,162,729
Siguler Guff Distressed RE	9,333,655	-1,568,086	-	-564,530	7,201,039
<b>Real Estate Composite</b>	<b>121,201,323</b>	<b>-1,335,668</b>	<b>-</b>	<b>8,826,050</b>	<b>128,691,705</b>
<b>ERECT Composite</b>	<b>10,441,201</b>	<b>-</b>	<b>-</b>	<b>1,023,903</b>	<b>11,465,104</b>
<b>Infrastructure Composite</b>	<b>-</b>	<b>25,000,000</b>	<b>-</b>	<b>709,496</b>	<b>25,709,496</b>
JP Morgan Infrastructure Fund (IIF Hedged)	-	25,000,000	-	709,496	25,709,496
<b>Private Equity Composite</b>	<b>215,873,991</b>	<b>-13,538,536</b>	<b>-</b>	<b>3,902,433</b>	<b>206,178,260</b>
<b>Life Settlement Composite</b>	<b>13,584,945</b>	<b>-3,507,801</b>	<b>-</b>	<b>325,973</b>	<b>10,403,116</b>
Gridiron Capital Multi-Asset (EMWO)	3,564,587	18,233	-276	-599,726	2,964,861
Maplewood (EMWO)	168	-	-	1	169
<b>Hedge Fund Composite</b>	<b>3,564,755</b>	<b>18,233</b>	<b>-276</b>	<b>-599,725</b>	<b>2,965,030</b>
BlackRock Liquidity iShares Public Pension Fund	42,539,612	-23,700,000	-	-7,027,676	11,811,936
<b>Liquid Policy Portfolio Composite</b>	<b>42,539,612</b>	<b>-23,700,000</b>	<b>-</b>	<b>-7,027,676</b>	<b>11,811,936</b>
<b>MLP Composite</b>	<b>8</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>8</b>
Cash Account	8,564,864	3,069,952	14,894	85,916	11,718,206

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	15.74 (96)	13.58 (37)	26.05 (42)	26.44 (11)	15.29 (21)	1.61 (93)	1.28 (57)
5th Percentile	58.75	20.64	41.86	36.24	21.59	10.82	9.10
1st Quartile	48.86	14.90	31.39	16.75	14.65	8.85	2.84
Median	43.57	12.59	24.12	10.12	11.83	5.38	1.48
3rd Quartile	34.58	9.78	18.47	4.89	8.55	3.70	0.69
95th Percentile	16.96	6.12	9.93	1.22	4.42	0.57	0.11



Asset Allocation & Performance	Allocation		Performance(%)							
	Market Value \$	%	MTH	QTR	YTD	1 YR	3 YR	5 YR	Inception	Inception Date
<b>Total Fund</b>	<b>916,451,621</b>	<b>100.0</b>	<b>-4.43</b>	<b>-3.63</b>	<b>-12.34</b>	<b>-8.27</b>	<b>4.49</b>	<b>4.71</b>	<b>7.04</b>	<b>12/1993</b>
Total Fund Policy Index			-4.71	-3.84	-12.17	-7.93	5.21	5.45	7.21	
<b>US Equity Composite</b>	<b>144,264,998</b>	<b>15.7</b>	<b>-9.15</b>	<b>-4.46</b>	<b>-24.01</b>	<b>-17.27</b>	<b>7.09</b>	<b>7.85</b>	<b>8.59</b>	<b>11/1993</b>
FT Wilshire 5000 Total Market TR Index			-9.34	-4.45	-24.41	-17.17	8.07	8.85	9.32	
<b>Non US Equity Composite</b>	<b>124,485,700</b>	<b>13.6</b>	<b>-11.08</b>	<b>-10.42</b>	<b>-31.13</b>	<b>-30.60</b>	<b>-2.42</b>	<b>-1.72</b>	<b>3.76</b>	<b>01/2001</b>
Non US Equity Policy Index			-9.99	-9.91	-26.50	-25.17	-1.24	-0.77	3.14	
<b>Core Fixed w Israel Bonds Composite*</b>	<b>114,454,306</b>	<b>12.5</b>	<b>-3.65</b>	<b>-3.71</b>	<b>-11.88</b>	<b>-11.94</b>	<b>-1.73</b>	<b>0.58</b>	<b>6.35</b>	<b>01/1983</b>
Bimbg. U.S. Aggregate Index			-4.32	-4.75	-14.61	-14.60	-3.26	-0.27	6.29	
<b>High Yield Fixed Composite</b>	<b>110,842,500</b>	<b>12.1</b>	<b>-4.06</b>	<b>-0.77</b>	<b>-13.68</b>	<b>-13.00</b>	<b>-0.19</b>	<b>1.14</b>	<b>5.41</b>	<b>04/2008</b>
FTSE High Yield Market Capped Index			-4.15	-0.63	-14.31	-13.73	-0.70	1.32	5.71	
<b>TIPS Fixed Composite</b>	<b>13,461,193</b>	<b>1.5</b>	<b>-6.61</b>	<b>-5.15</b>	<b>-13.90</b>	<b>-11.92</b>	<b>0.66</b>	<b>1.87</b>	<b>2.67</b>	<b>04/2008</b>
Bloomberg U.S. TIPS Index			-6.62	-5.14	-13.61	-11.57	0.79	1.95	2.66	
<b>Real Estate Composite</b>	<b>128,691,705</b>	<b>14.0</b>	<b>-0.08</b>	<b>-0.08</b>	<b>7.31</b>	<b>17.26</b>	<b>9.90</b>	<b>9.70</b>	<b>9.07</b>	<b>04/2003</b>
NCREIF Fund Index-ODCE (VW) (Net)			0.31	0.31	12.36	20.96	11.38	9.26	7.80	
<b>ERECT Composite</b>	<b>11,465,104</b>	<b>1.3</b>	<b>0.02</b>	<b>0.47</b>	<b>9.81</b>	<b>9.21</b>	<b>5.86</b>	<b>7.43</b>	<b>7.03</b>	<b>09/2010</b>
CPI - All Urban Consumers (SA)			0.39	0.49	5.94	8.22	4.97	3.79	2.59	
<b>Total Infrastructure Composite</b>	<b>25,709,496</b>	<b>2.8</b>	<b>2.60</b>	<b>2.84</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>2.84</b>	<b>07/2022</b>
CPI + 3%			0.63	1.23	8.31	11.47	8.12	6.90	1.23	
<b>Total Private Equity w Life Settlement Composite*</b>	<b>216,581,376</b>	<b>23.6</b>	<b>-0.80</b>	<b>-3.48</b>	<b>1.72</b>	<b>9.34</b>	<b>14.55</b>	<b>12.53</b>	<b>7.80</b>	<b>04/2003</b>
Total Private Equity Policy Index			-0.80	-3.48	1.75	9.77	15.36	13.01	7.92	
<b>Hedge Fund Composite</b>	<b>2,965,030</b>	<b>0.3</b>	<b>-6.05</b>	<b>-4.02</b>	<b>-17.29</b>	<b>-14.01</b>	<b>1.33</b>	<b>0.74</b>	<b>1.71</b>	<b>04/2003</b>
90 Day T-Bill Index + 3%			0.50	1.21	2.86	3.63	3.61	4.18	4.24	
<b>Liquid Policy Portfolio Composite</b>	<b>11,811,936</b>	<b>1.3</b>	<b>-8.05</b>	<b>-6.26</b>	<b>-21.39</b>	<b>-17.26</b>	<b>N/A</b>	<b>N/A</b>	<b>-7.60</b>	<b>03/2021</b>
Liquid Policy Benchmark			-8.06	-5.99	-21.63	-17.60	N/A	N/A	-7.72	
<b>Cash Account</b>	<b>11,718,206</b>	<b>1.3</b>	<b>0.24</b>	<b>0.61</b>	<b>1.05</b>	<b>1.12</b>	<b>0.90</b>	<b>1.34</b>	<b>0.77</b>	<b>01/2012</b>
90 Day U.S. Treasury Bill			0.25	0.46	0.61	0.62	0.59	1.15	0.63	

\* 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>916,451,621</b>	<b>100.0</b>	<b>-3.63</b>	<b>-12.34</b>	<b>-8.27</b>	<b>4.49</b>	<b>4.71</b>	<b>7.04</b>	<b>12/1993</b>
Total Fund Policy Index			-3.84	-12.17	-7.93	5.21	5.45	7.21	
<b>US Equity Composite</b>	<b>144,264,998</b>	<b>15.7</b>	<b>-4.46</b>	<b>-24.01</b>	<b>-17.27</b>	<b>7.09</b>	<b>7.85</b>	<b>8.59</b>	<b>11/1993</b>
FT Wilshire 5000 Total Market TR Index			-4.45	-24.41	-17.17	8.07	8.85	9.32	
SSgA S&P 500 Index	67,354,093	7.3	-4.89	-23.88	-15.49	8.18	9.26	8.01	11/2007
S&P 500 Index			-4.88	-23.87	-15.47	8.16	9.24	7.97	
Fragasso Large Core (EMWO)	5,548,895	0.6	-6.45	-24.14	-18.60	3.89	7.29	9.74	09/2012
S&P 500 Index			-4.88	-23.87	-15.47	8.16	9.24	11.88	
Twin Capital Enhanced Equity	33,271,566	3.6	-4.97	-23.16	-14.56	7.56	8.20	8.44	01/2006
S&P 500 Index			-4.88	-23.87	-15.47	8.16	9.24	8.67	
Vesper U.S. Large Cap Short-Term Reversal Strategy ETF (UTRN) (EMWO)	1,245,181	0.1	-6.55	-21.10	N/A	N/A	N/A	-21.10	01/2022
S&P 500 Index			-4.88	-23.87	-15.47	8.16	9.24	-23.87	
Earnest Small Value	13,728,777	1.5	-4.05	-18.33	-14.62	5.13	4.60	11.55	06/2009
Russell 2000 Value Index			-4.61	-21.12	-17.69	4.72	2.87	10.23	
Emerald Advisors Small Cap	11,397,795	1.2	-0.19	-28.84	-28.83	4.58	4.69	9.28	11/2004
Russell 2000 Growth Index			0.24	-29.28	-29.27	2.94	3.60	7.90	
Emerald Advisors All Cap (EMWO)	4,679,112	0.5	-3.84	-29.92	-27.74	13.79	12.32	12.46	10/2015
Russell 3000 Growth Index			-3.37	-30.57	-23.01	10.16	11.57	13.28	
Ethos (EMWO)	1,543,065	0.2	-2.69	-27.40	-21.36	5.90	8.28	9.92	08/2016
S&P 500 Index			-4.88	-23.87	-15.47	8.16	9.24	10.47	
CIM Small Cap (EMWO)	4,362,503	0.5	-4.80	-26.11	-24.79	-0.85	0.56	3.07	01/2014
Russell 2000 Index			-2.19	-25.10	-23.50	4.29	3.55	5.57	
Cookson Peirce (EMWO)	1,134,011	0.1	-1.55	-19.70	-7.31	8.18	N/A	10.18	12/2018
Russell 3000 Index			-4.46	-24.62	-17.63	7.70	8.62	8.37	
<b>Non US Equity Composite</b>	<b>124,485,700</b>	<b>13.6</b>	<b>-10.42</b>	<b>-31.13</b>	<b>-30.60</b>	<b>-2.42</b>	<b>-1.72</b>	<b>3.76</b>	<b>01/2001</b>
Non US Equity Policy Index			-9.91	-26.50	-25.17	-1.24	-0.77	3.14	
SSgA ACWI ex US	29,105,249	3.2	-9.92	-26.31	-24.95	-1.40	-0.40	1.05	05/2015
MSCI AC World ex USA (Net)			-9.91	-26.50	-25.17	-1.52	-0.81	0.72	



	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)	43,596,829	4.8	-11.61 -9.91	-38.10 -26.50	-38.47 -25.17	-4.44 -1.52	-1.96 -0.81	5.40 3.68	08/2009
FIAM Select International Equity FIAM Policy Index	24,379,716	2.7	-10.33 -9.91	-28.13 -26.50	-26.53 -25.17	-0.45 -1.52	-0.45 -0.81	3.52 3.07	01/2001
Segall, Bryant & Hamill MSCI EAFE Small Cap (net) Index	27,403,906	3.0	-9.09 -9.83	-25.73 -32.11	-25.00 -32.06	-3.03 -2.16	-5.05 -1.79	0.31 2.05	05/2015
<b>Core Fixed w Israel Bonds Composite*</b> Blmbg. U.S. Aggregate Index	<b>114,454,306</b>	<b>12.5</b>	<b>-3.71</b> -4.75	<b>-11.88</b> -14.61	<b>-11.94</b> -14.60	<b>-1.73</b> -3.26	<b>0.58</b> -0.27	<b>6.35</b> 6.29	<b>01/1983</b>
C S McKee Blmbg. U.S. Aggregate Index	37,897,799	4.1	-4.78 -4.75	-14.51 -14.61	-14.51 -14.60	-3.02 -3.26	0.02 -0.27	6.64 6.29	01/1983
Federated Core Broad Blmbg. U.S. Aggregate Index	30,981,986	3.4	-4.33 -4.75	-13.42 -14.61	-13.34 -14.60	-1.30 -3.26	1.02 -0.27	3.78 2.93	09/2006
CIM Investment Mgmt Bloomberg Intermediate US Govt/Credit Idx	26,211,750	2.9	-2.79 -3.06	-8.94 -9.63	-9.49 -10.14	-1.46 -1.64	0.31 0.38	2.49 2.82	11/2005
StoneRidge Partners (EMWO) StoneRidge Policy Index	4,971,485	0.5	-2.90 -3.07	-9.27 -10.26	-9.90 -10.77	-2.18 -1.69	-0.19 0.45	0.57 1.04	08/2015
Gridiron Capital Fixed Income (EMWO) Blmbg. U.S. Aggregate Index	4,437,279	0.5	-2.57 -4.75	-11.09 -14.61	-10.95 -14.60	-0.56 -3.26	1.47 -0.27	1.58 0.27	02/2017
FNB (EMWO) Bloomberg Intermed Aggregate Index	2,577,556	0.3	-2.69 -3.84	-8.83 -11.04	-9.24 -11.49	-1.36 -2.33	0.54 -0.05	0.46 0.09	07/2017
Israel Bonds	7,376,451	0.8	0.19	-3.02	-1.88	0.81	1.45	2.30	01/2012
<b>High Yield Fixed Composite</b> FTSE High Yield Market Capped Index	<b>110,842,500</b>	<b>12.1</b>	<b>-0.77</b> -0.63	<b>-13.68</b> -14.31	<b>-13.00</b> -13.73	<b>-0.19</b> -0.70	<b>1.14</b> 1.32	<b>5.41</b> 5.71	<b>04/2008</b>
Oaktree High Yield FTSE High Yield Market Capped Index	60,226,495	6.6	-0.32 -0.63	-13.35 -14.31	-12.54 -13.73	-0.27 -0.70	0.66 1.32	5.12 5.71	04/2008
Federated High Yield Blmbg. U.S. High Yield - 2% Issuer Cap	47,246,527	5.2	-1.39 -0.64	-14.50 -14.73	-13.98 -14.15	-0.18 -0.47	1.70 1.56	2.00 1.86	07/2017
Sound Point Credit Suisse Leveraged Loan Index	3,369,478	0.4	0.10 1.18	-7.45 -3.32	-6.89 -2.63	1.09 2.12	1.98 3.00	3.31 3.45	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>TIPS Fixed Composite</b>	<b>13,461,193</b>	<b>1.5</b>	<b>-5.15</b>	<b>-13.90</b>	<b>-11.92</b>	<b>0.66</b>	<b>1.87</b>	<b>2.67</b>	<b>04/2008</b>
Bloomberg U.S. TIPS Index			-5.14	-13.61	-11.57	0.79	1.95	2.66	
MCM TIPS	13,461,193	1.5	-5.15	-13.59	-11.60	0.78	1.94	2.11	12/2016
Bloomberg U.S. TIPS Index			-5.14	-13.61	-11.57	0.79	1.95	1.95	
<b>Real Estate Composite</b>	<b>128,691,705</b>	<b>14.0</b>	<b>-0.08</b>	<b>7.31</b>	<b>17.26</b>	<b>9.90</b>	<b>9.70</b>	<b>9.07</b>	<b>04/2003</b>
NCREIF Fund Index-ODCE (VW) (Net)			0.31	12.36	20.96	11.38	9.26	7.80	
Morgan Stanley Prime Property Fund	97,863,068	10.7	-0.06	10.20	20.78	11.24	9.67	9.19	04/2003
NCREIF Fund Index-ODCE (VW) (Net)			0.31	12.36	20.96	11.38	9.26	7.80	
Oaktree Real Estate	6,378,697	0.7	-0.67	-2.88	-8.60	-4.47	-1.06	3.86	08/2013
Washington Alliance (EMWO)	15,086,173	1.6	0.00	3.33	19.78	13.32	14.58	13.51	08/2013
Washington Alliance II (EMWO)	2,162,729	0.2	0.00	1.57	40.06	N/A	N/A	13.93	03/2020
Siguler Guff Distressed RE	7,201,039	0.8	0.00	-6.39	-2.02	2.81	7.51	6.40	03/2014
<b>ERECT Composite</b>	<b>11,465,104</b>	<b>1.3</b>	<b>0.47</b>	<b>9.81</b>	<b>9.21</b>	<b>5.86</b>	<b>7.43</b>	<b>7.03</b>	<b>09/2010</b>
CPI - All Urban Consumers (SA)			0.49	5.94	8.22	4.97	3.79	2.59	
<b>Total Infrastructure Composite</b>	<b>25,709,496</b>	<b>2.8</b>	<b>2.84</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>2.84</b>	<b>07/2022</b>
CPI + 3%			1.23	8.31	11.47	8.12	6.90	1.23	
JP Morgan Infrastructure Fund (IIF Hedged)	25,709,496	2.8	2.84	N/A	N/A	N/A	N/A	2.84	07/2022
CPI + 3%			1.23	8.31	11.47	8.12	6.90	1.23	
<b>Private Equity Composite</b>	<b>206,178,260</b>	<b>22.5</b>	<b>-3.63</b>	<b>1.72</b>	<b>9.95</b>	<b>15.25</b>	<b>12.94</b>	<b>7.90</b>	<b>04/2003</b>
Private Equity Policy Index			-3.63	1.72	9.95	15.25	12.94	7.90	
<b>Life Settlement Composite</b>	<b>10,403,116</b>	<b>1.1</b>	<b>-0.21</b>	<b>2.38</b>	<b>1.05</b>	<b>-4.41</b>	<b>-3.59</b>	<b>5.04</b>	<b>09/2009</b>
<b>Hedge Fund Composite</b>	<b>2,965,030</b>	<b>0.3</b>	<b>-4.02</b>	<b>-17.29</b>	<b>-14.01</b>	<b>1.33</b>	<b>0.74</b>	<b>1.71</b>	<b>04/2003</b>
90 Day T-Bill Index + 3%			1.21	2.86	3.63	3.61	4.18	4.24	
Gridiron Capital Multi-Asset (EMWO)	2,964,861	0.3	-4.02	-17.29	-14.01	2.65	N/A	3.22	02/2019
HFRI FoF Composite Lagged			-0.41	-6.97	-6.57	4.13	3.06	4.07	
<b>Liquid Policy Portfolio Composite</b>	<b>11,811,936</b>	<b>1.3</b>	<b>-6.26</b>	<b>-21.39</b>	<b>-17.26</b>	<b>N/A</b>	<b>N/A</b>	<b>-7.60</b>	<b>03/2021</b>
Liquid Policy Benchmark			-5.99	-21.63	-17.60	N/A	N/A	-7.72	
BlackRock Liquidity iShares Public Pension Fund	11,811,936	1.3	-6.26	-21.39	-17.26	N/A	N/A	-9.25	04/2021
Liquid Policy Benchmark			-5.99	-21.63	-17.60	N/A	N/A	-9.33	





	Allocation		Performance(%)						
	Market Value \$	%	QTR	YTD	1 YR	3 YR	5 YR	Inception	Inception Date
Cash Account	11,718,206	1.3	0.61	1.05	1.12	0.90	1.34	0.77	01/2012

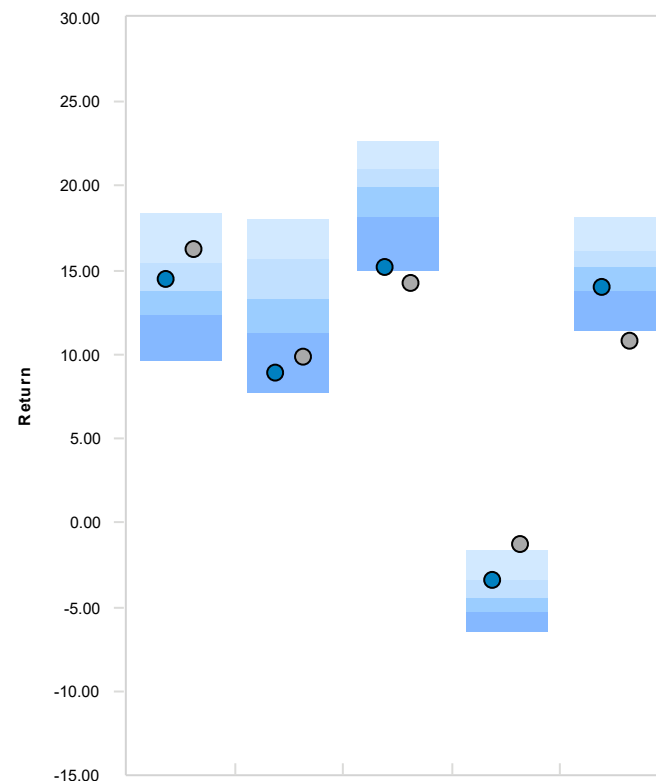
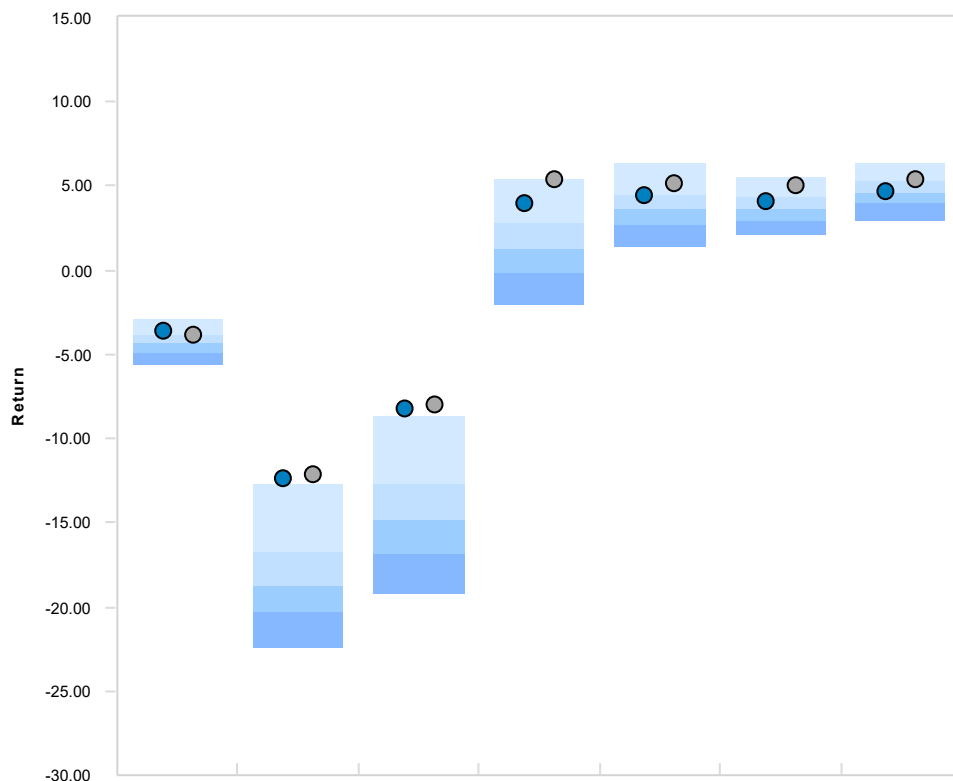


**Comparative Performance - IRR**  
**Private Real Estate Accounts**  
As of September 30, 2022

Comparative Performance - IRR						
	1 YR	3 YR	5 YR	7 YR	Inception	Inception Date
Oaktree Real Estate NEW	-8.60	-4.46	-0.90	0.91	5.65	09/18/2013
Siguler Guff Distressed RE	-1.73	2.88	8.79	9.09	7.86	06/30/2014
Washington Alliance (EMWO)	20.16	13.28	15.01	14.97	15.27	03/31/2014
Washington Alliance II (EMWO)	36.23	N/A	N/A	N/A	14.43	03/13/2020



Plan Sponsor Peer Group Analysis - All Public DB Plans



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Total Fund	-3.62 (19)	-12.33 (5)	-8.27 (4)	3.99 (14)	4.50 (25)	4.11 (32)	4.71 (44)
● Total Fund Policy Index	-3.84 (27)	-12.17 (4)	-7.93 (3)	5.44 (6)	5.21 (14)	5.04 (11)	5.45 (21)
Median	-4.33	-18.70	-14.89	1.22	3.61	3.65	4.58

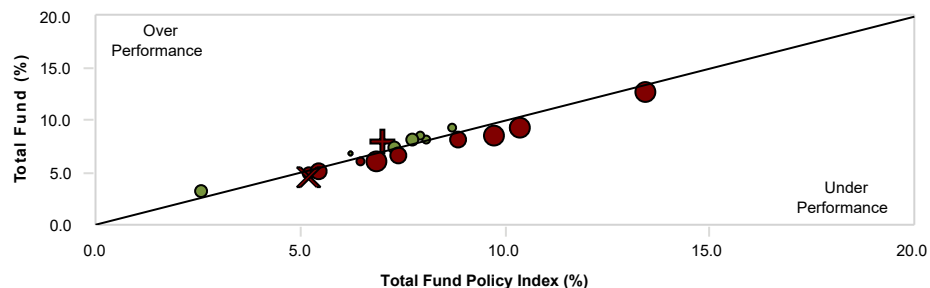
	2021	2020	2019	2018	2017
● Total Fund	14.48 (38)	8.93 (92)	15.16 (94)	-3.36 (25)	13.97 (70)
● Total Fund Policy Index	16.27 (17)	9.82 (88)	14.24 (97)	-1.27 (4)	10.82 (97)
Median	13.79	13.35	19.89	-4.50	15.15

Comparative Performance

	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	1 Qtr Ending Mar-2021
<b>Total Fund</b>	<b>-6.80</b>	<b>-2.40</b>	<b>4.64</b>	<b>0.83</b>	<b>4.89</b>	<b>3.44</b>
Total Fund Policy Index	-6.95	-1.85	4.84	1.49	5.43	3.65

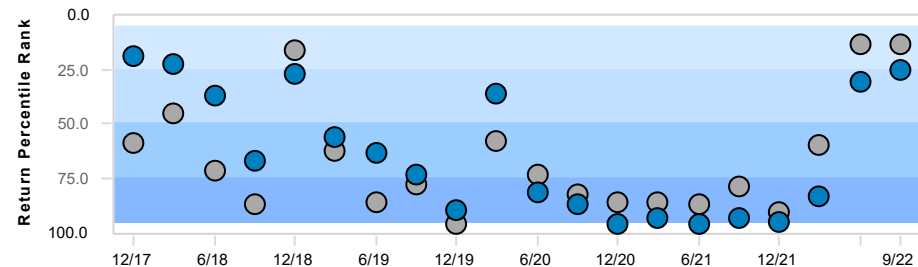


### 3 Yr Rolling Under/Over Performance - 5 Years



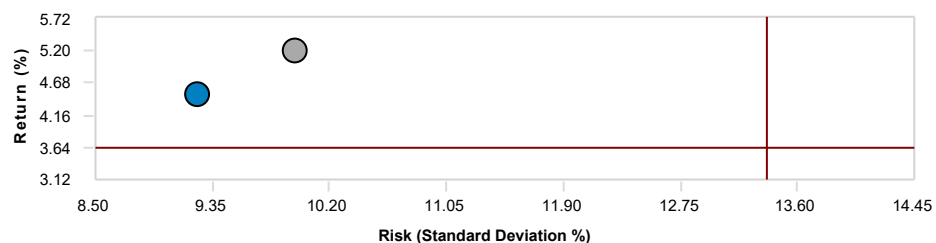
- Over Performance
- Under Performance
- + Earliest Date
- X Latest Date

### 3 Yr Rolling Percentile Ranking - 5 Years



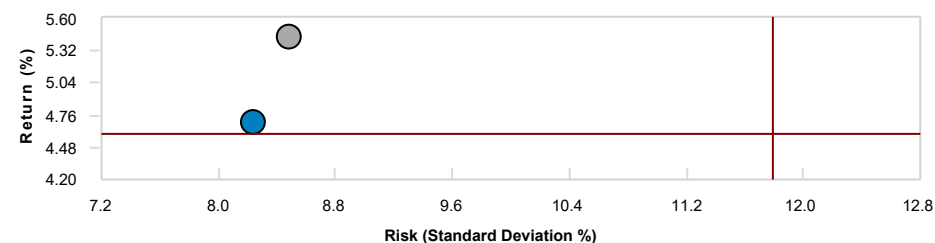
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
<span style="color: blue;">●</span> Total Fund	20	3 (15%)	4 (20%)	4 (20%)	9 (45%)
<span style="color: grey;">●</span> Total Fund Policy Index	20	3 (15%)	1 (5%)	6 (30%)	10 (50%)

### Peer Group Scattergram - 3 Years



	Return	Standard Deviation
<span style="color: blue;">●</span> Total Fund	4.50	9.24
<span style="color: grey;">●</span> Total Fund Policy Index	5.21	9.95
<span style="color: red;">—</span> Median	3.62	13.38

### Peer Group Scattergram - 5 Years



	Return	Standard Deviation
<span style="color: blue;">●</span> Total Fund	4.71	8.23
<span style="color: grey;">●</span> Total Fund Policy Index	5.45	8.48
<span style="color: red;">—</span> Median	4.59	11.79

### Historical Statistics - 3 Years

	Tracking Error	Up Market Capture	Down Market Capture	Alpha	Information Ratio	Sharpe Ratio	Beta	Downside Risk
Total Fund	1.44	94.93	99.26	-0.31	-0.52	0.45	0.92	6.58
Total Fund Policy Index	0.00	100.00	100.00	0.00	N/A	0.49	1.00	6.85

### Historical Statistics - 5 Years

	Tracking Error	Up Market Capture	Down Market Capture	Alpha	Information Ratio	Sharpe Ratio	Beta	Downside Risk
Total Fund	1.31	98.15	105.50	-0.49	-0.55	0.46	0.96	5.78
Total Fund Policy Index	0.00	100.00	100.00	0.00	N/A	0.53	1.00	5.74



**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	8.18	20.01	0.46	99.97	8	99.90	4
Index	8.16	20.02	0.46	100.00	8	100.00	4

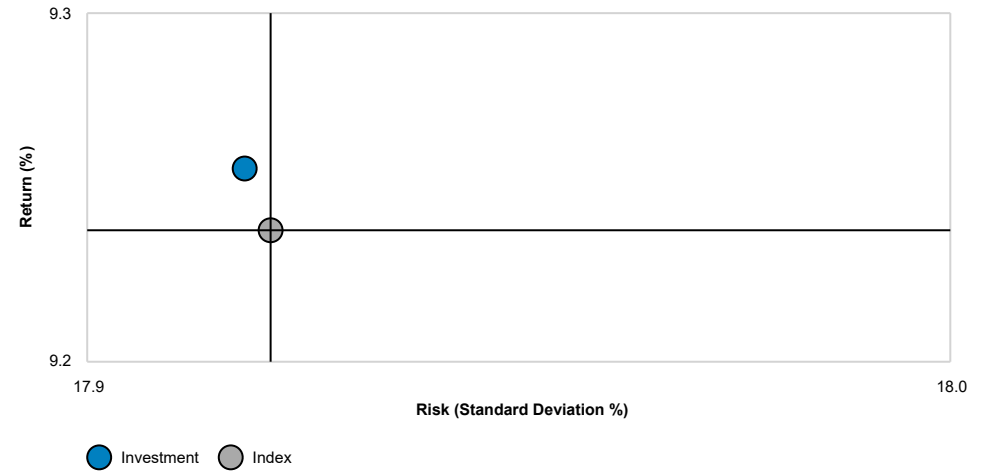
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	9.26	17.92	0.52	100.01	14	99.94	6
Index	9.24	17.92	0.52	100.00	14	100.00	6

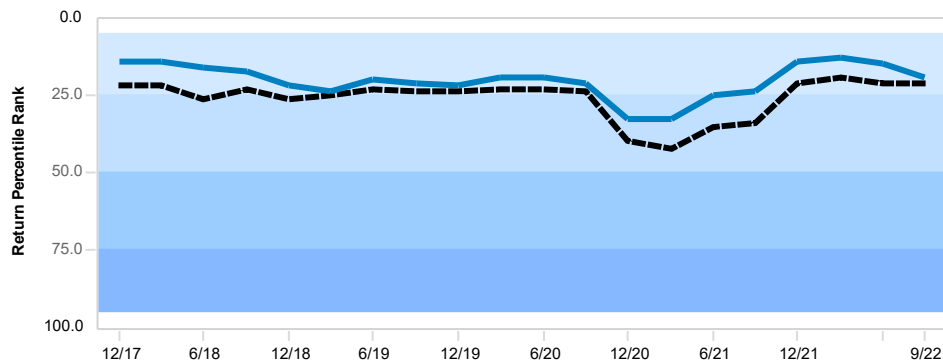
**Risk and Return 3 Years**



**Risk and Return 5 Years**

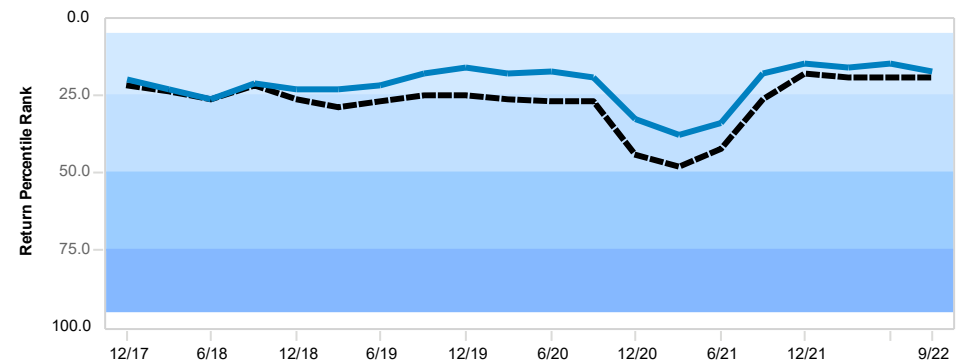


**3 Year Rolling Percentile Rank IM U.S. Large Cap Index Equity (SA+CF)**



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

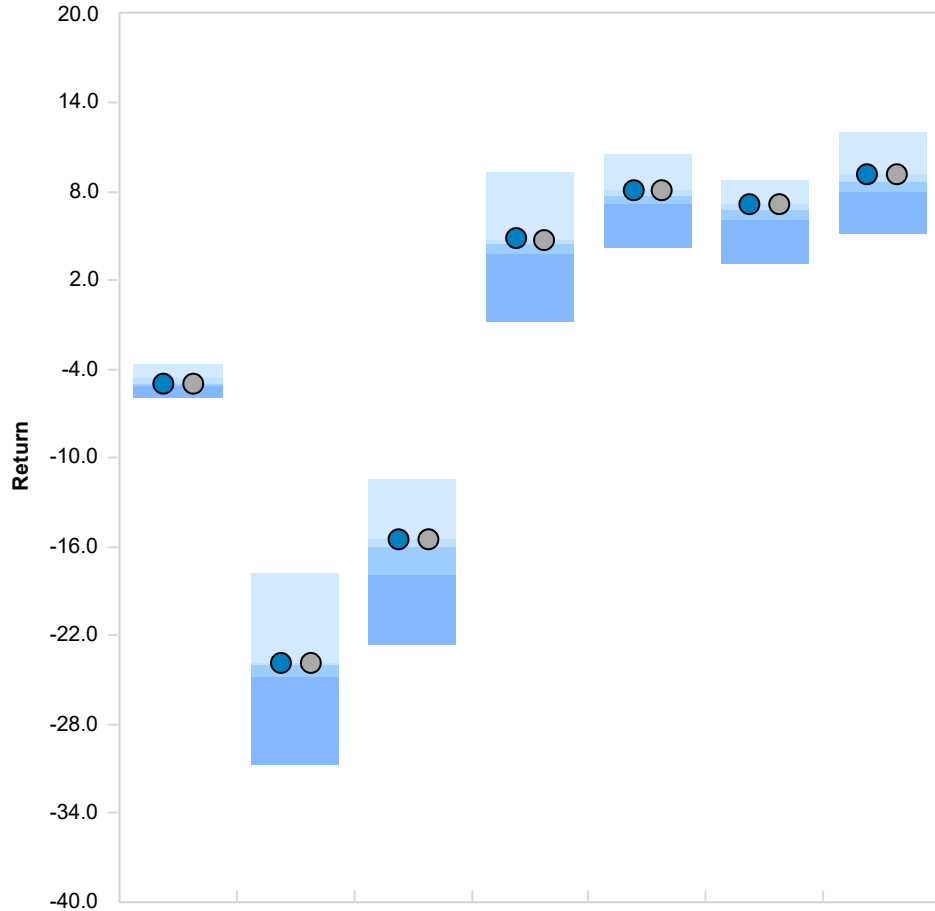
**5 Year Rolling Percentile Rank IM U.S. Large Cap Index Equity (SA+CF)**



	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%)

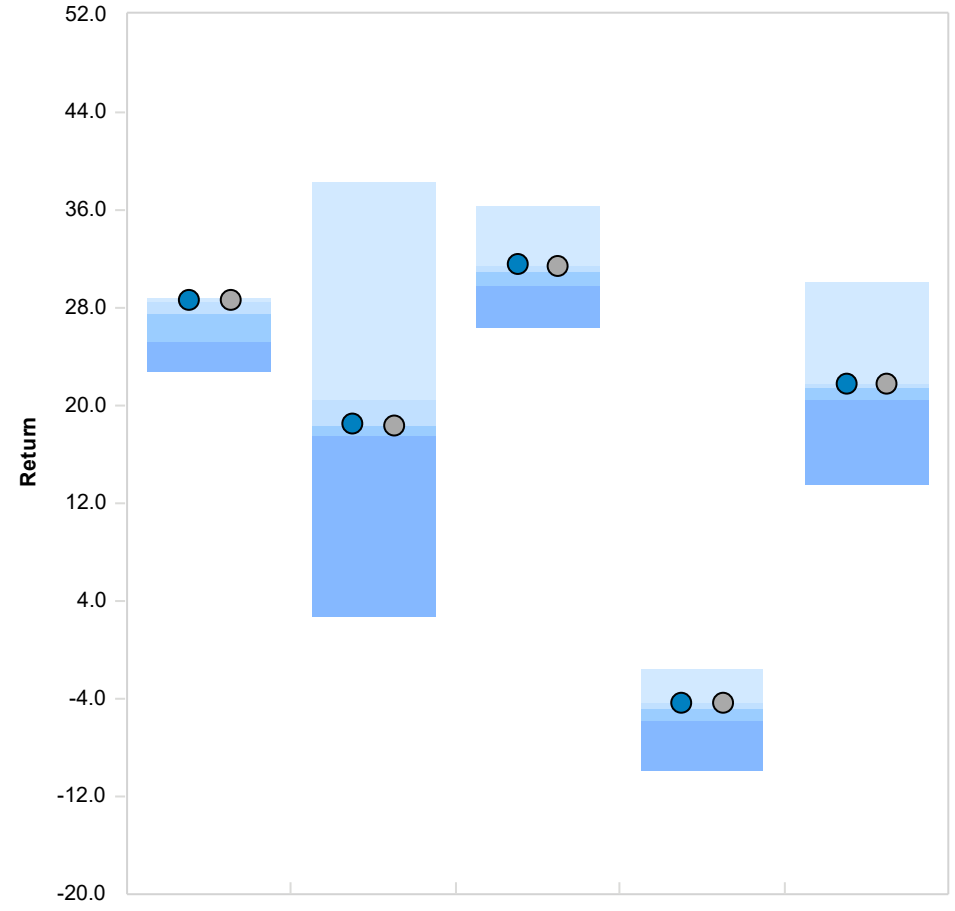


Peer Group Analysis - IM U.S. Large Cap Index Equity (SA+CF)



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-4.89 (58)	-23.88 (36)	-15.49 (29)	4.84 (22)	8.18 (19)	7.20 (17)	9.26 (17)
● Index	-4.88 (50)	-23.87 (30)	-15.47 (23)	4.83 (25)	8.16 (21)	7.17 (22)	9.24 (19)
Median	-4.88	-23.99	-15.94	4.47	7.78	6.75	8.68

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



	2021	2020	2019	2018	2017
● Investment	28.65 (15)	18.53 (45)	31.54 (16)	-4.40 (26)	21.85 (21)
● Index	28.71 (9)	18.40 (51)	31.49 (24)	-4.38 (25)	21.83 (24)
Median	27.44	18.42	30.95	-4.84	21.53

Comparative Performance

	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	1 Qtr Ending Mar-2021
Investment	-16.11 (41)	-4.60 (31)	11.01 (28)	0.56 (28)	8.53 (26)	6.18 (46)
Index	-16.10 (36)	-4.60 (30)	11.03 (20)	0.58 (15)	8.55 (20)	6.17 (52)
Median	-16.14	-4.67	10.73	0.31	8.38	6.18



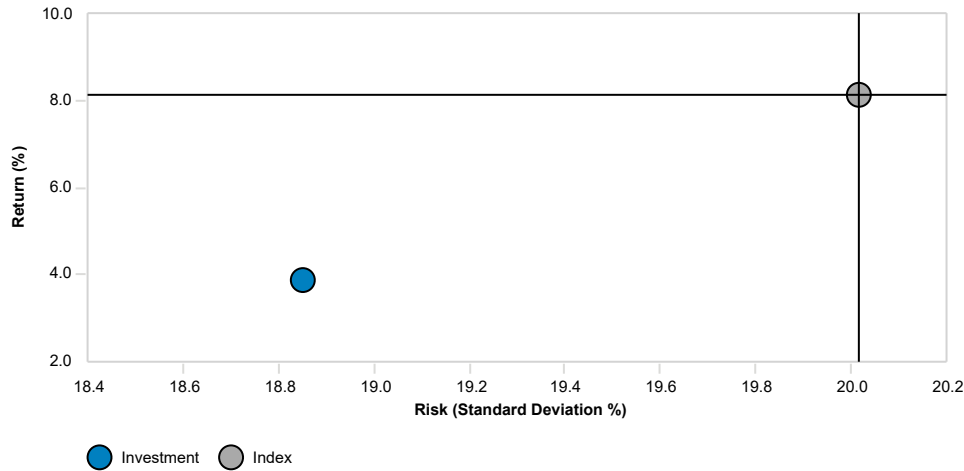
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	3.89	18.85	0.26	87.60	8	100.30	4
Index	8.16	20.02	0.46	100.00	8	100.00	4

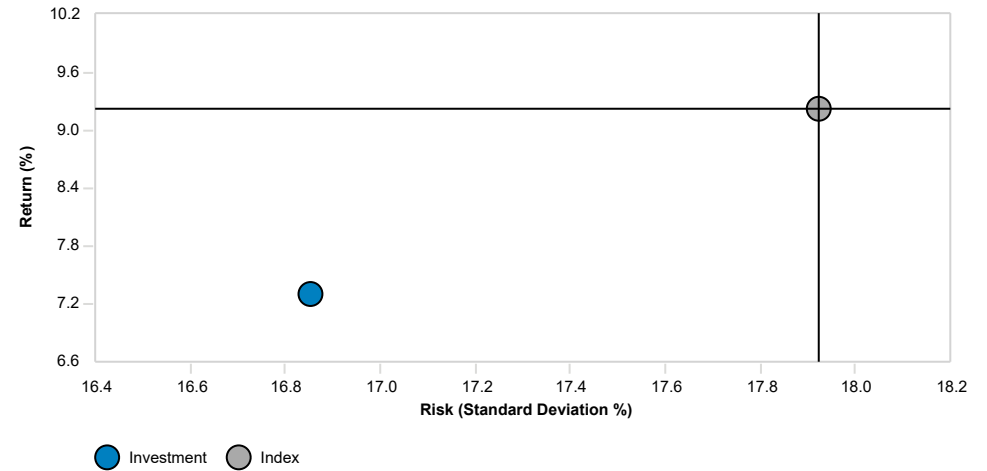
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	7.29	16.85	0.43	91.72	14	97.22	6
Index	9.24	17.92	0.52	100.00	14	100.00	6

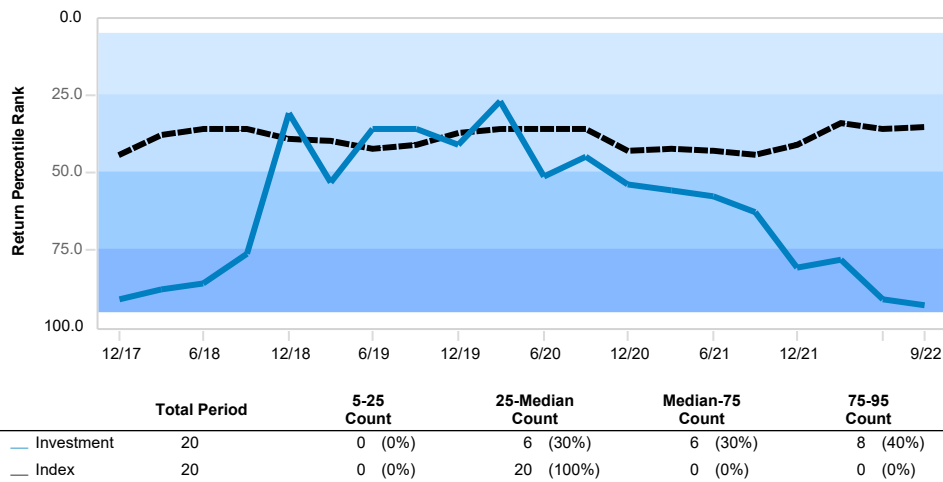
**Risk and Return 3 Years**



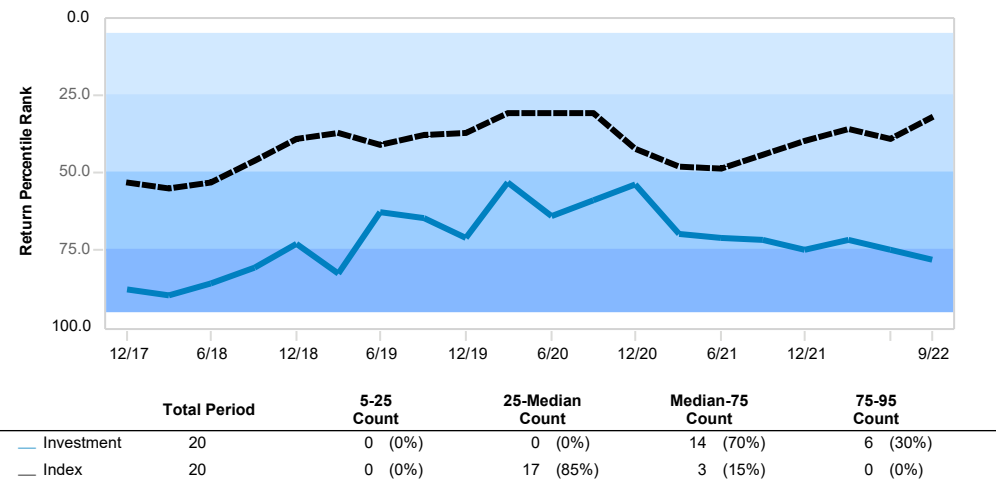
**Risk and Return 5 Years**



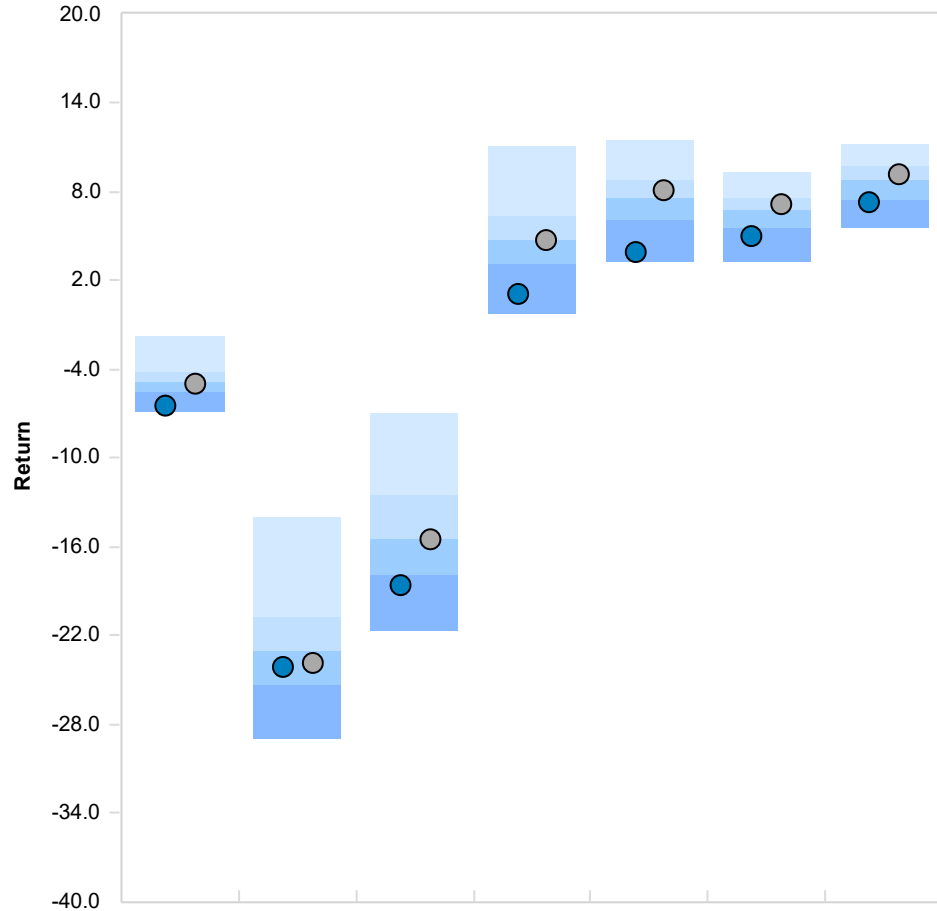
**3 Year Rolling Percentile Rank IM U.S. Large Cap Core Equity (SA+CF)**



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

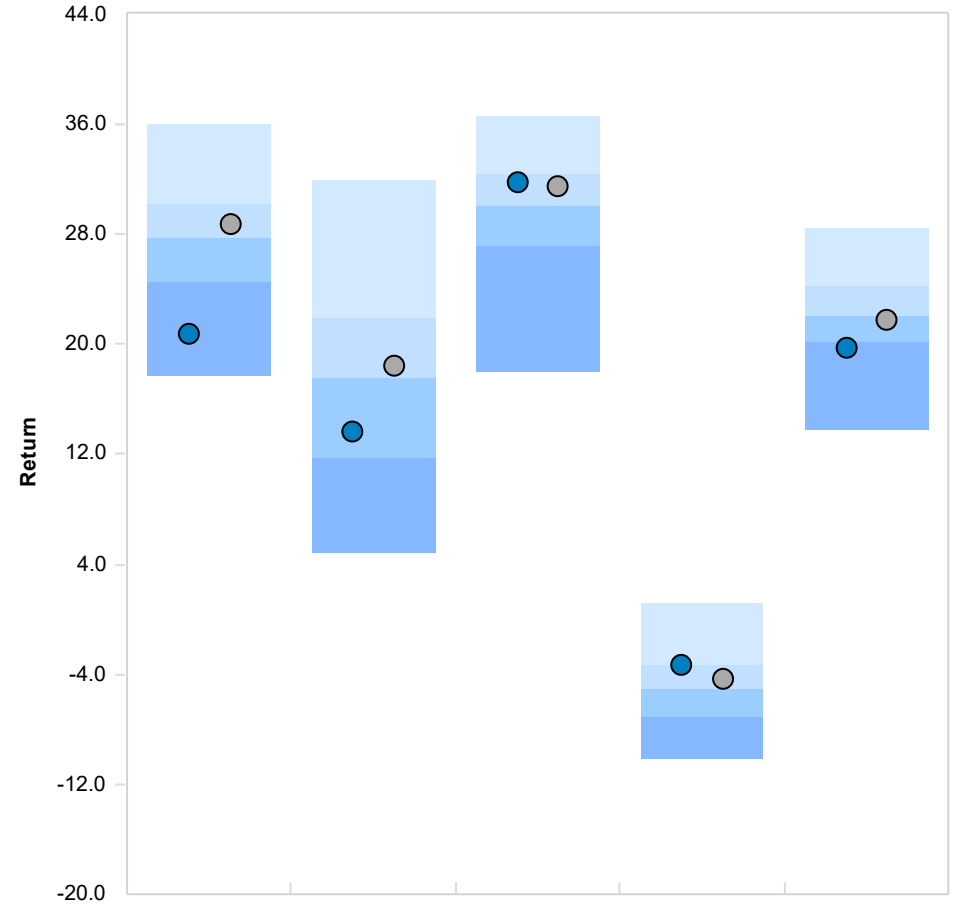


**Peer Group Analysis - IM U.S. Large Cap Core Equity (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-6.45 (92)	-24.14 (62)	-18.60 (82)	1.11 (92)	3.89 (93)	5.06 (84)	7.29 (78)
● Index	-4.88 (55)	-23.87 (61)	-15.47 (52)	4.83 (47)	8.16 (35)	7.17 (36)	9.24 (32)
Median	-4.84	-23.04	-15.41	4.77	7.63	6.75	8.80

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



	2021	2020	2019	2018	2017
● Investment	20.79 (89)	13.61 (69)	31.87 (30)	-3.35 (26)	19.69 (79)
● Index	28.71 (38)	18.40 (46)	31.49 (34)	-4.38 (41)	21.83 (55)
Median	27.78	17.56	30.09	-5.07	22.08

**Comparative Performance**

	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	1 Qtr Ending Mar-2021
Investment	-15.38 (53)	-4.17 (39)	7.31 (86)	0.09 (58)	7.12 (73)	4.98 (77)
Index	-16.10 (67)	-4.60 (51)	11.03 (32)	0.58 (32)	8.55 (33)	6.17 (57)
Median	-15.23	-4.60	10.20	0.20	8.10	6.62





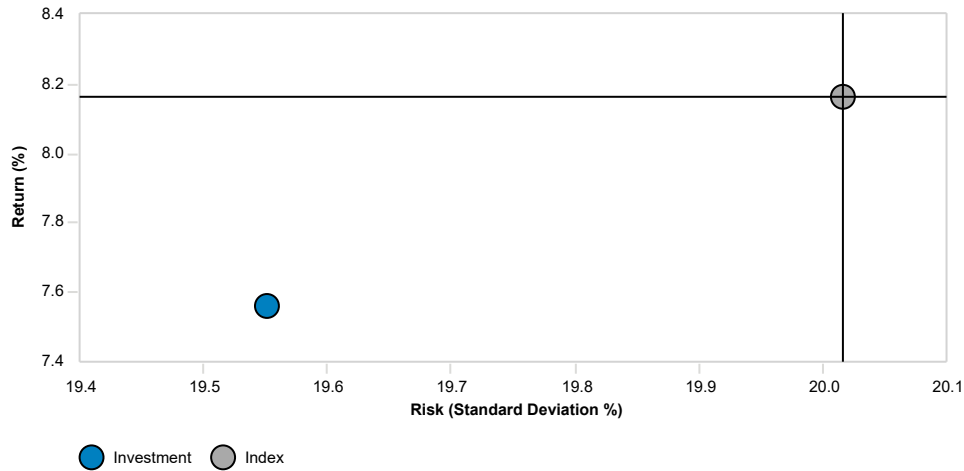
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	7.56	19.55	0.44	96.35	8	97.55	4
Index	8.16	20.02	0.46	100.00	8	100.00	4

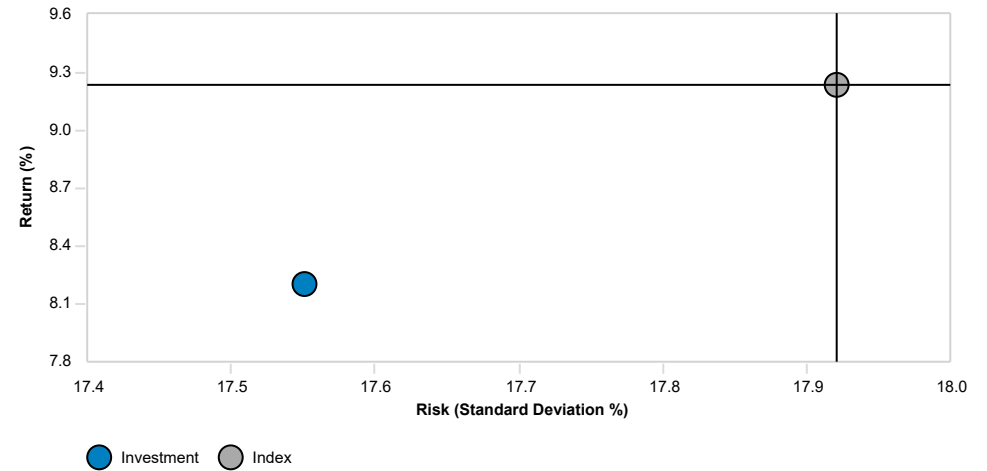
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	8.20	17.55	0.47	95.61	14	98.38	6
Index	9.24	17.92	0.52	100.00	14	100.00	6

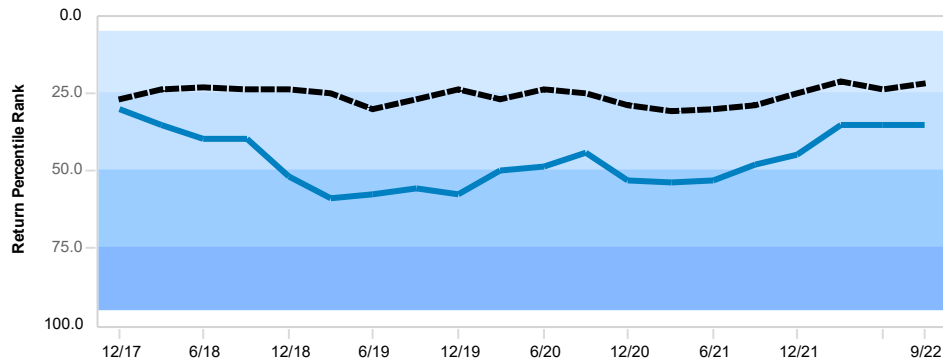
**Risk and Return 3 Years**



**Risk and Return 5 Years**

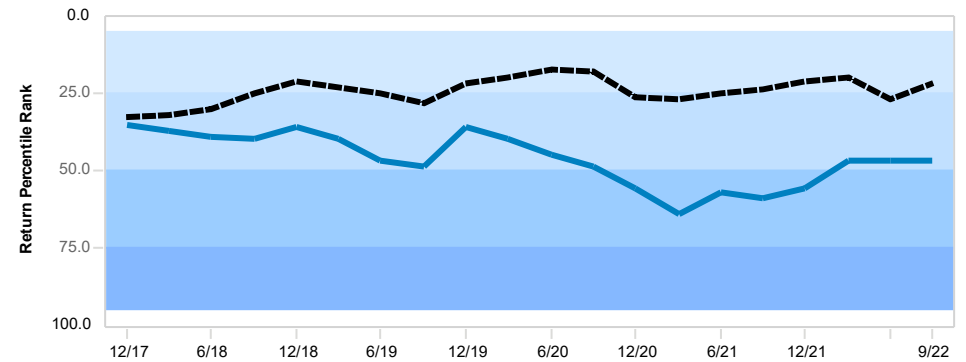


**3 Year Rolling Percentile Rank IM U.S. Large Cap Core Equity (SA+CF)**



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

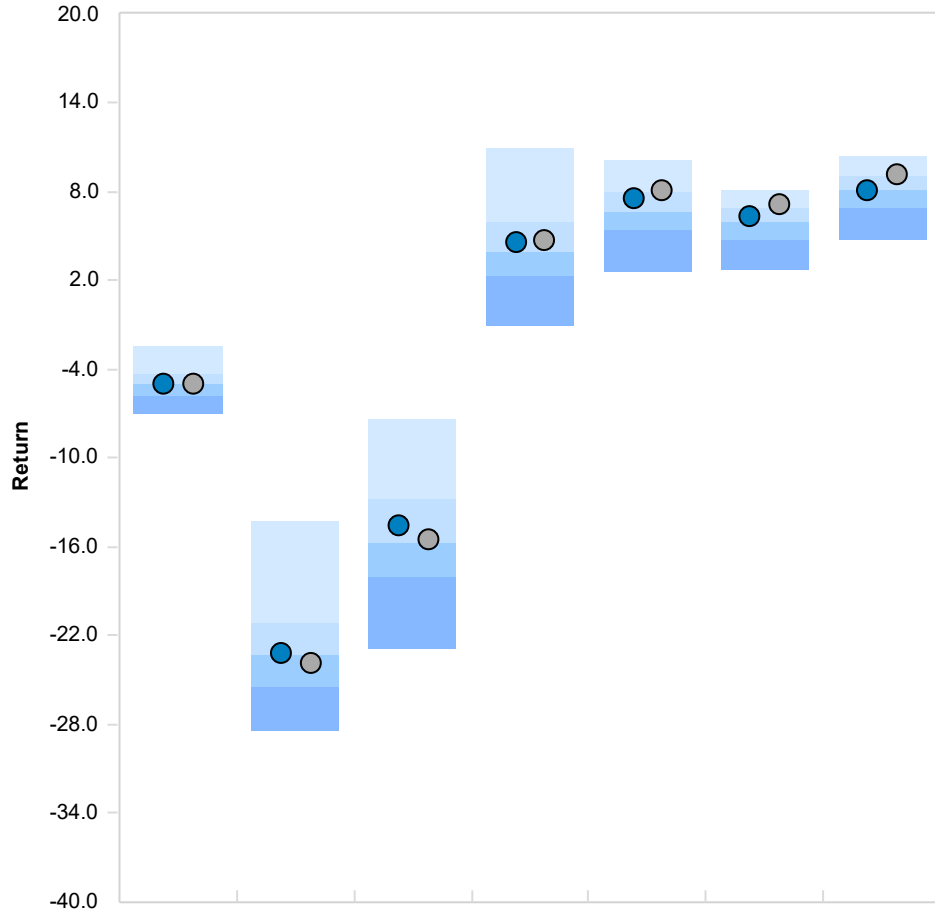
**5 Year Rolling Percentile Rank IM U.S. Large Cap Core Equity (SA+CF)**



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

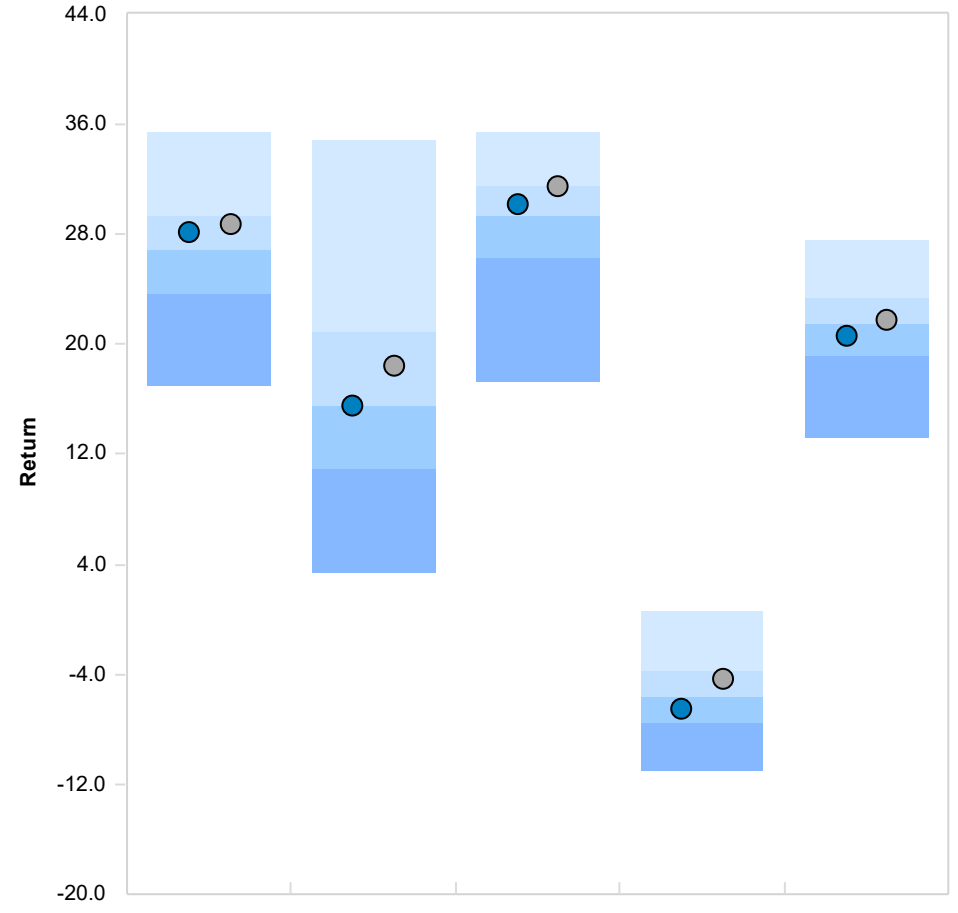


**Peer Group Analysis - IM U.S. Large Cap Core Equity (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-4.97 (51)	-23.16 (49)	-14.56 (36)	4.66 (39)	7.56 (35)	6.32 (42)	8.20 (47)
● Index	-4.88 (45)	-23.87 (56)	-15.47 (45)	4.83 (35)	8.16 (22)	7.17 (21)	9.24 (22)
Median	-4.96	-23.25	-15.77	3.95	6.63	5.92	8.10

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



	2021	2020	2019	2018	2017
● Investment	28.13 (36)	15.56 (51)	30.24 (37)	-6.43 (62)	20.67 (60)
● Index	28.71 (29)	18.40 (39)	31.49 (26)	-4.38 (33)	21.83 (44)
Median	26.82	15.61	29.38	-5.66	21.50

**Comparative Performance**

	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	1 Qtr Ending Mar-2021
Investment	-15.58 (57)	-4.21 (40)	11.19 (22)	0.04 (54)	7.88 (50)	6.78 (47)
Index	-16.10 (73)	-4.60 (47)	11.03 (26)	0.58 (26)	8.55 (24)	6.17 (55)
Median	-15.27	-4.67	10.10	0.11	7.86	6.55



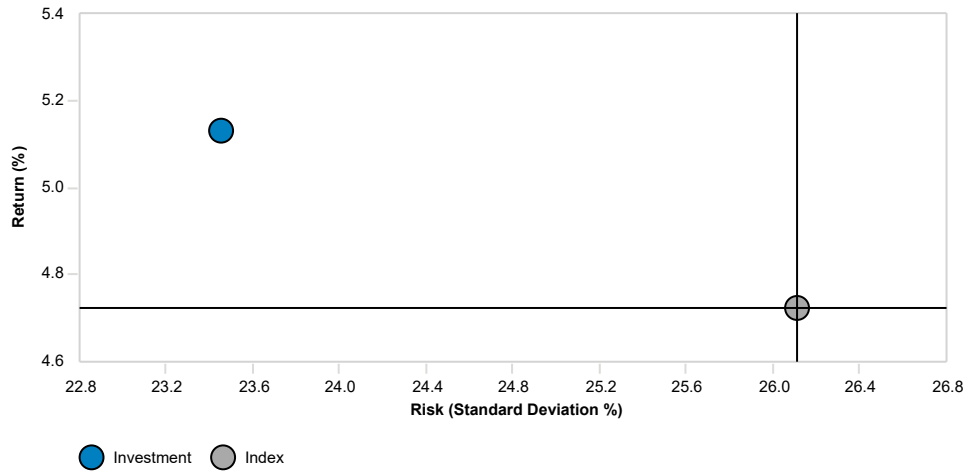
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	5.13	23.45	0.31	89.88	6	88.42	6
Index	4.72	26.11	0.29	100.00	7	100.00	5

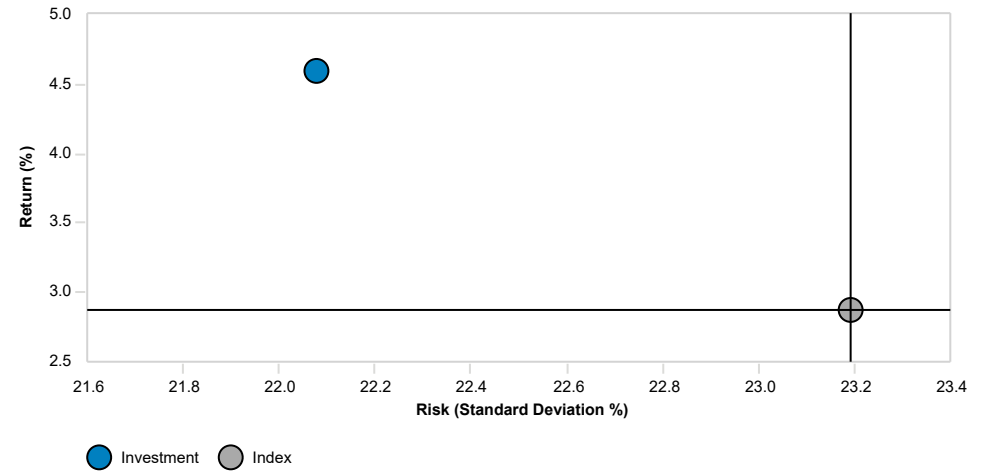
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	4.60	22.08	0.26	98.86	12	93.69	8
Index	2.87	23.19	0.19	100.00	12	100.00	8

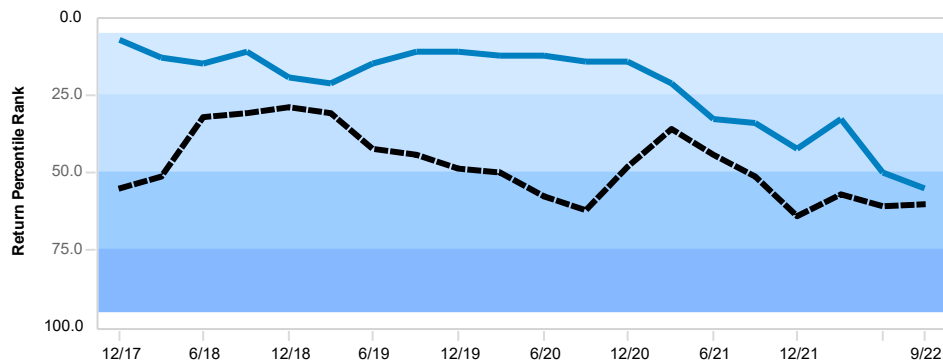
**Risk and Return 3 Years**



**Risk and Return 5 Years**

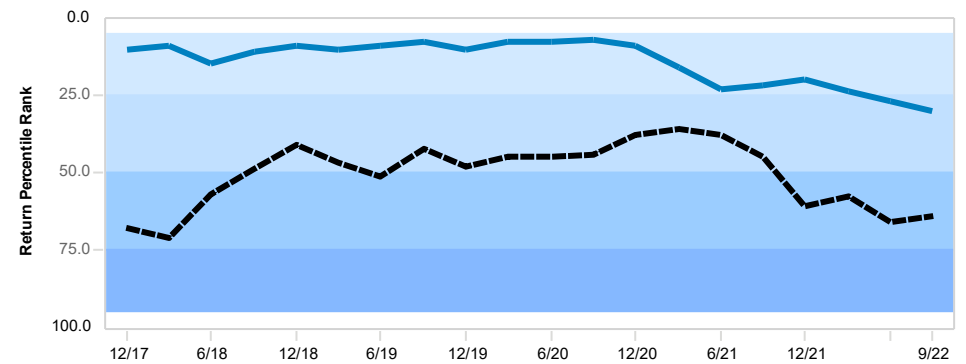


**3 Year Rolling Percentile Rank IM U.S. Small Cap Value Equity (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	14 (70%)	5 (25%)	1 (5%)	0 (0%)
Index	20	0 (0%)	11 (55%)	9 (45%)	0 (0%)

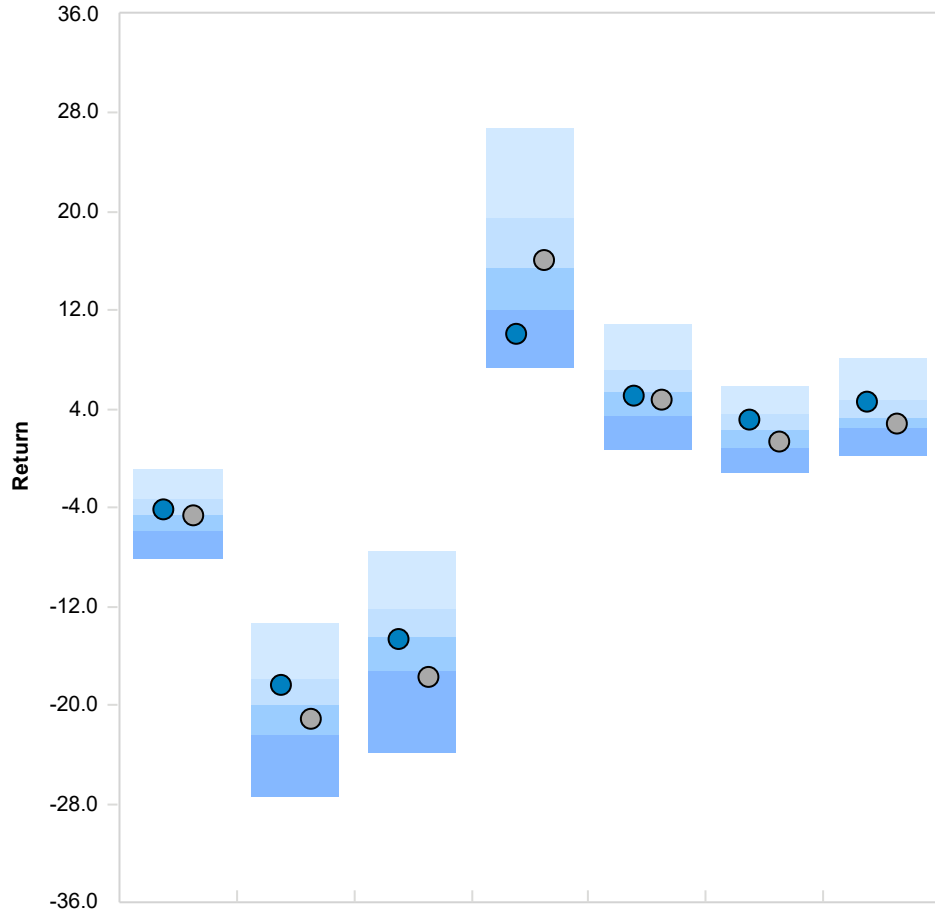
**5 Year Rolling Percentile Rank IM U.S. Small Cap Value Equity (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	18 (90%)	2 (10%)	0 (0%)	0 (0%)
Index	20	0 (0%)	12 (60%)	8 (40%)	0 (0%)

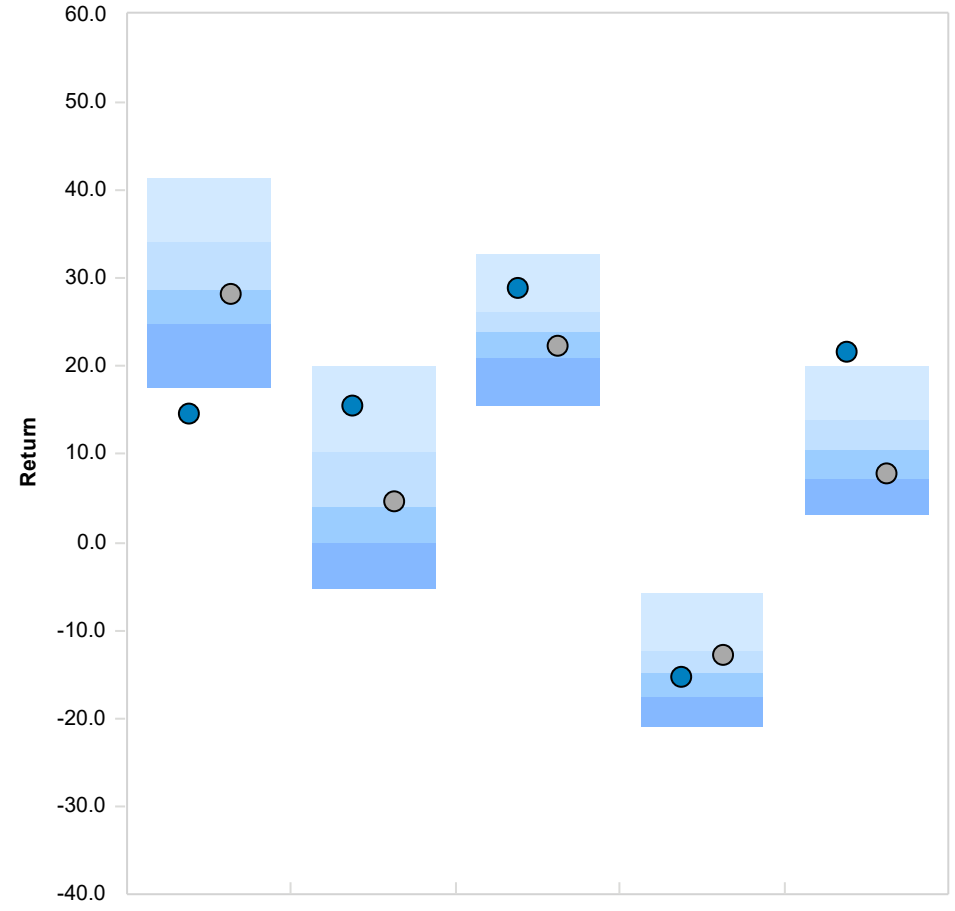


**Peer Group Analysis - IM U.S. Small Cap Value Equity (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-4.05 (42)	-18.33 (33)	-14.62 (51)	10.15 (86)	5.13 (55)	3.13 (31)	4.60 (30)
● Index	-4.61 (52)	-21.12 (64)	-17.69 (79)	16.16 (46)	4.72 (60)	1.32 (69)	2.87 (64)
Median	-4.55	-19.92	-14.53	15.50	5.44	2.30	3.38

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



	2021	2020	2019	2018	2017
● Investment	14.64 (98)	15.50 (14)	28.89 (12)	-15.35 (56)	21.78 (4)
● Index	28.27 (53)	4.63 (48)	22.39 (64)	-12.86 (32)	7.84 (71)
Median	28.62	3.97	23.95	-14.87	10.49

**Comparative Performance**

	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	1 Qtr Ending Mar-2021
Investment	-13.55 (52)	-1.54 (29)	4.55 (85)	-2.12 (54)	-1.48 (100)	13.70 (86)
Index	-15.28 (79)	-2.40 (39)	4.36 (87)	-2.98 (77)	4.56 (34)	21.17 (30)
Median	-13.42	-3.06	6.66	-2.03	3.88	18.95



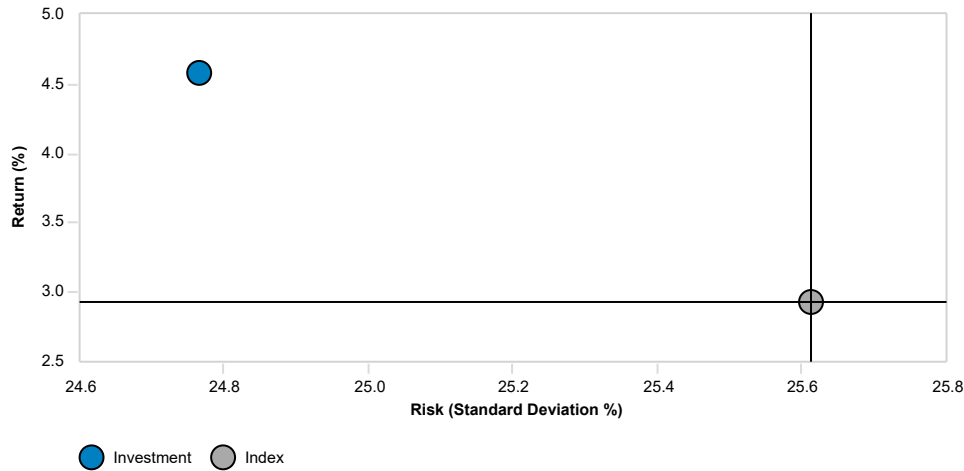
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	4.58	24.77	0.28	100.95	7	96.56	5
Index	2.94	25.61	0.22	100.00	8	100.00	4

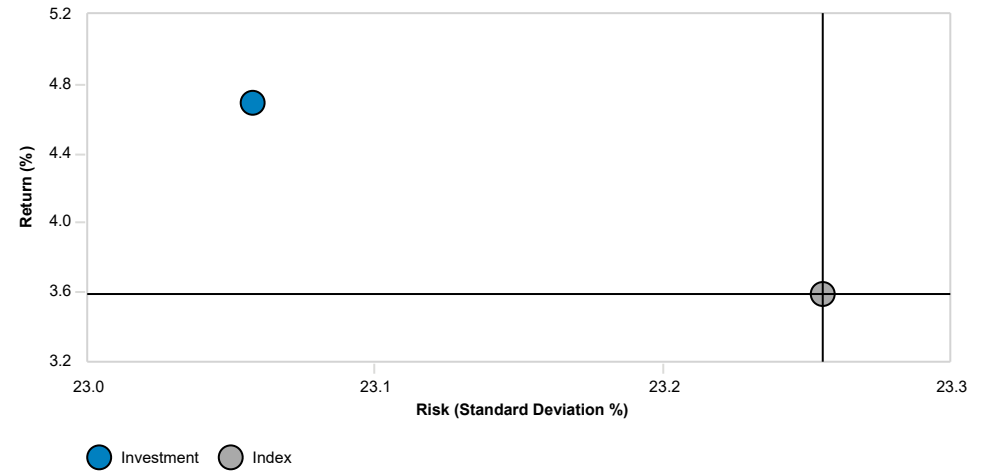
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	4.69	23.06	0.27	101.86	12	98.54	8
Index	3.60	23.26	0.22	100.00	14	100.00	6

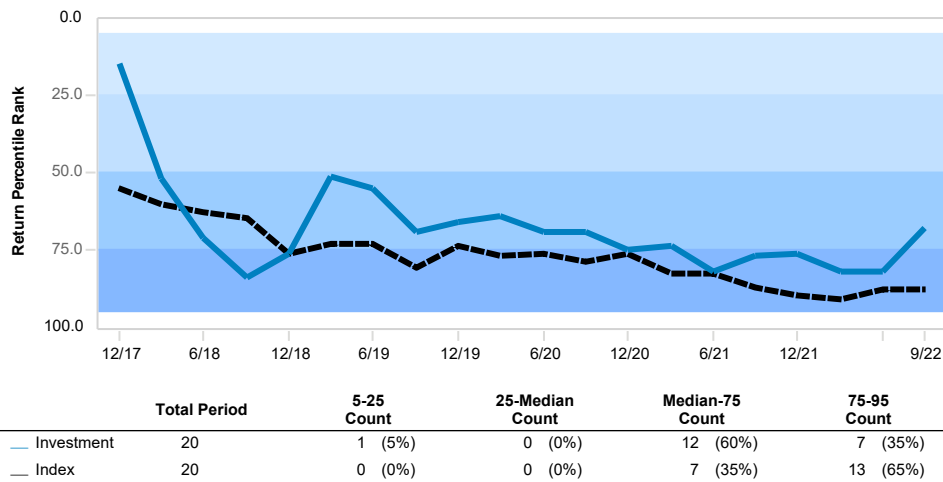
**Risk and Return 3 Years**



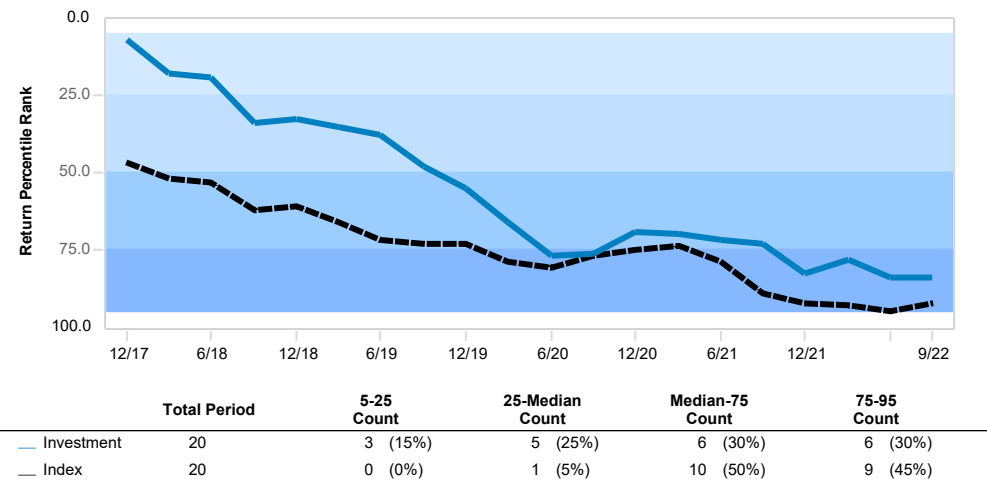
**Risk and Return 5 Years**



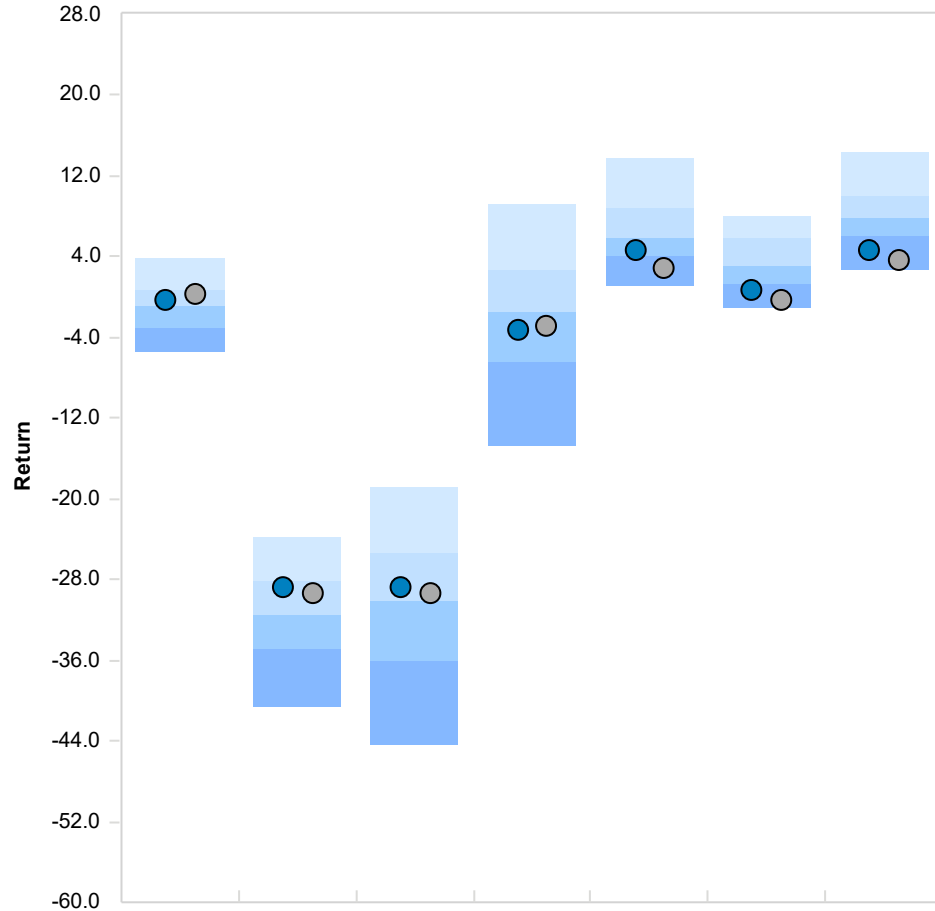
**3 Year Rolling Percentile Rank IM U.S. Small Cap Growth Equity (SA+CF)**



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

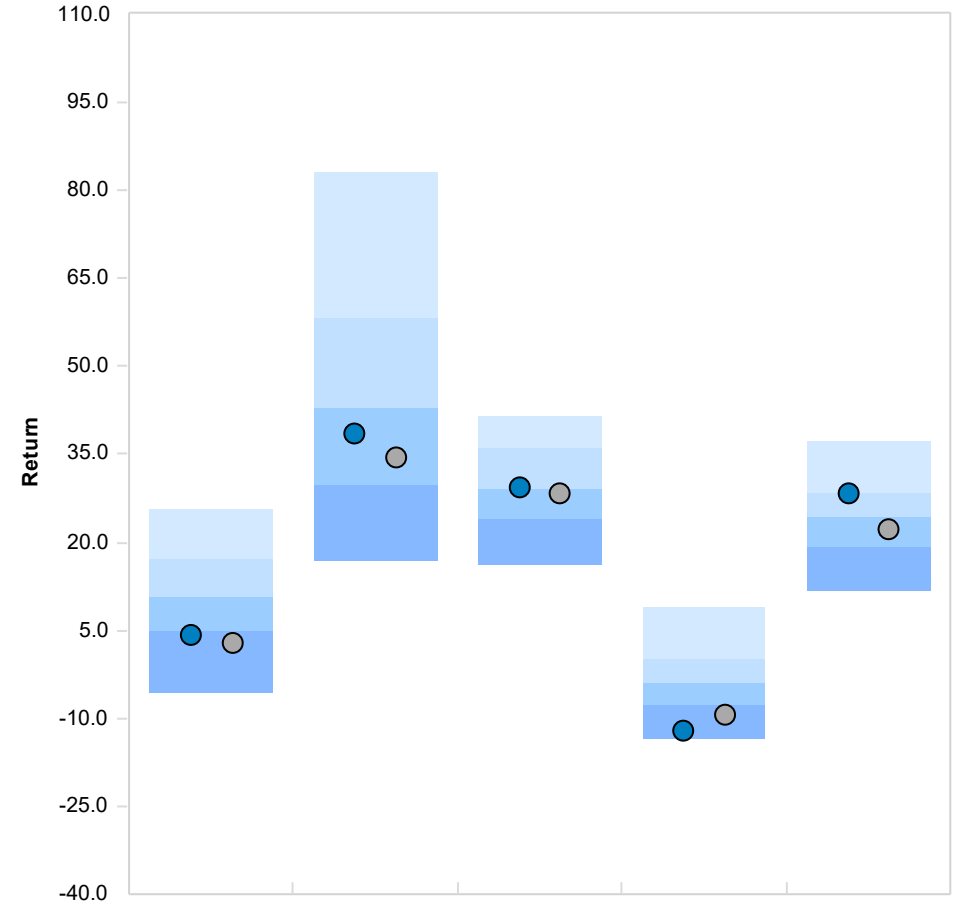


**Peer Group Analysis - IM U.S. Small Cap Growth Equity (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-0.19 (41)	-28.84 (34)	-28.83 (42)	-3.17 (60)	4.58 (68)	0.72 (81)	4.69 (84)
● Index	0.24 (33)	-29.28 (35)	-29.27 (45)	-2.91 (60)	2.94 (88)	-0.36 (89)	3.60 (92)
Median	-0.86	-31.54	-30.16	-1.39	5.91	3.16	7.80

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



	2021	2020	2019	2018	2017
● Investment	4.32 (79)	38.53 (60)	29.23 (50)	-11.94 (92)	28.31 (26)
● Index	2.83 (83)	34.63 (66)	28.48 (52)	-9.31 (81)	22.17 (60)
Median	10.77	43.04	28.90	-3.98	24.22

**Comparative Performance**

	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	1 Qtr Ending Mar-2021
Investment	-20.13 (47)	-10.74 (19)	0.01 (66)	-1.58 (46)	3.51 (77)	2.38 (70)
Index	-19.25 (43)	-12.63 (42)	0.01 (66)	-5.65 (94)	3.92 (74)	4.88 (49)
Median	-20.50	-13.42	2.19	-1.79	5.67	4.57



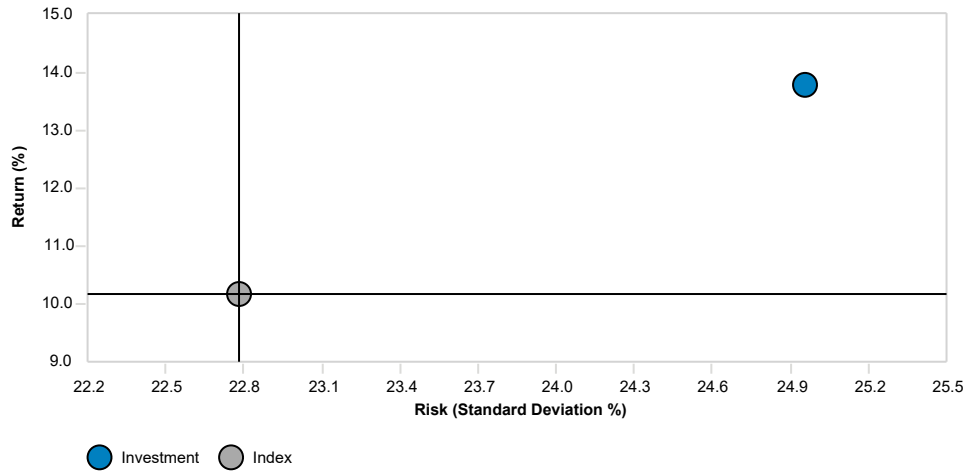
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	13.79	24.96	0.62	105.09	7	93.42	5
Index	10.16	22.78	0.51	100.00	8	100.00	4

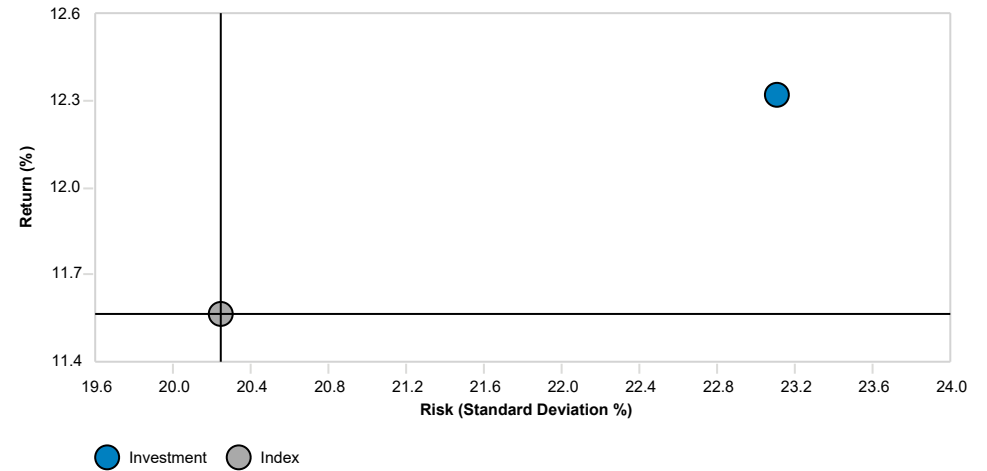
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	12.32	23.11	0.57	105.37	13	102.69	7
Index	11.57	20.25	0.59	100.00	15	100.00	5

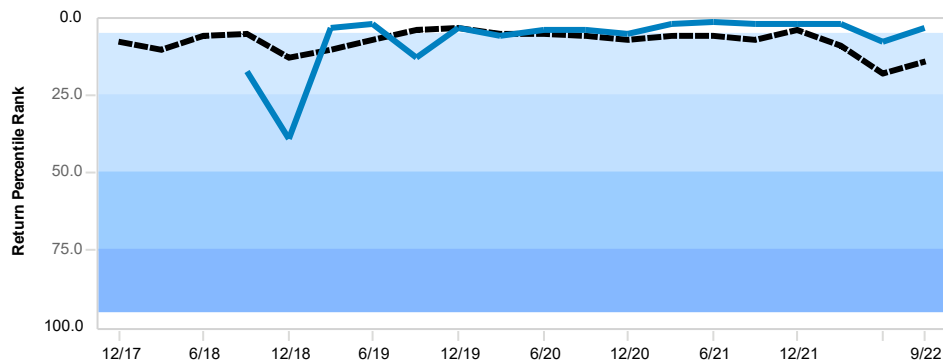
**Risk and Return 3 Years**



**Risk and Return 5 Years**

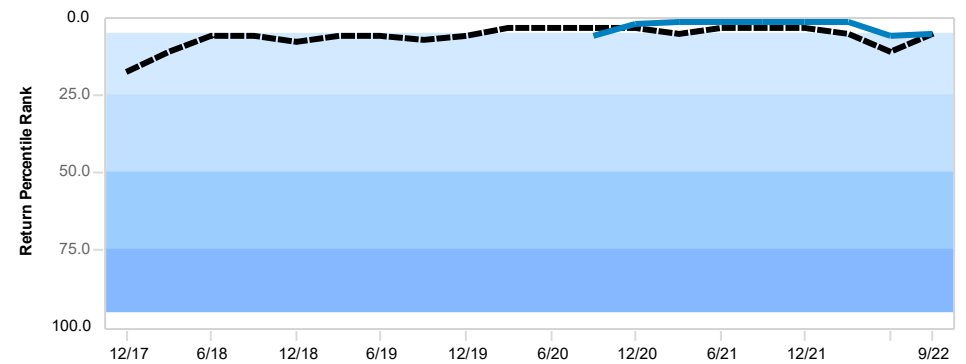


**3 Year Rolling Percentile Rank IM U.S. All Cap Core Equity (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	17	16 (94%)	1 (6%)	0 (0%)	0 (0%)
Index	20	20 (100%)	0 (0%)	0 (0%)	0 (0%)

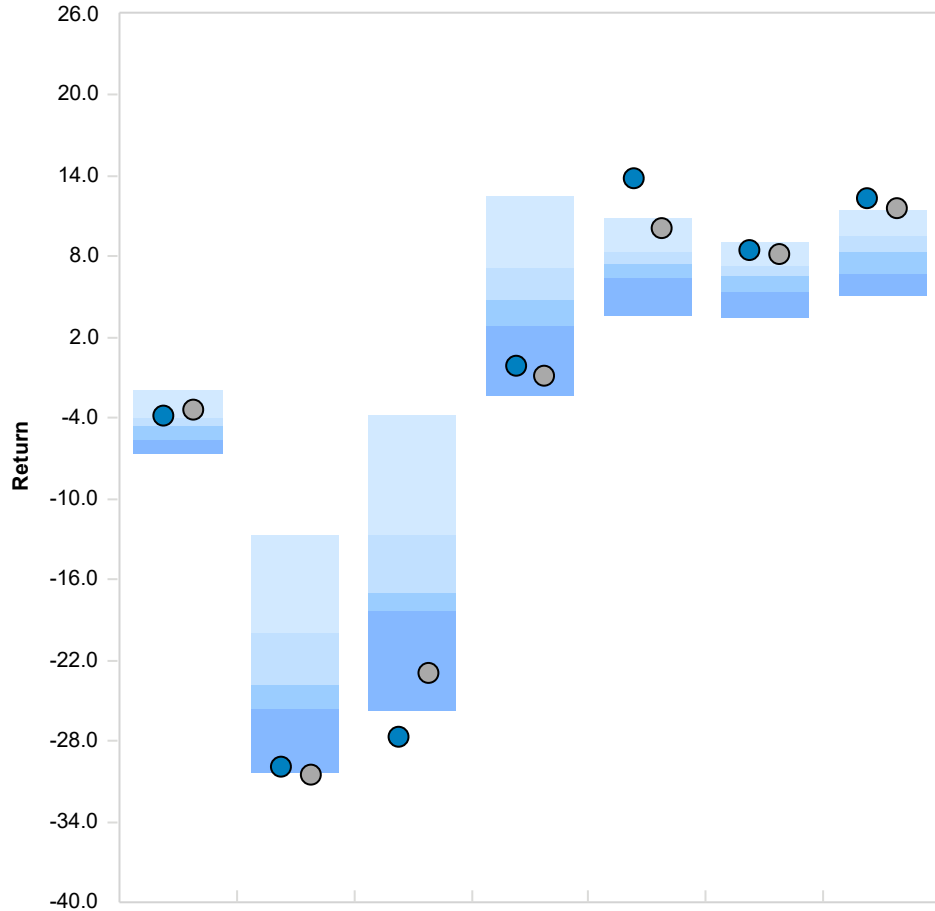
**5 Year Rolling Percentile Rank IM U.S. All Cap Core Equity (SA+CF)**



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

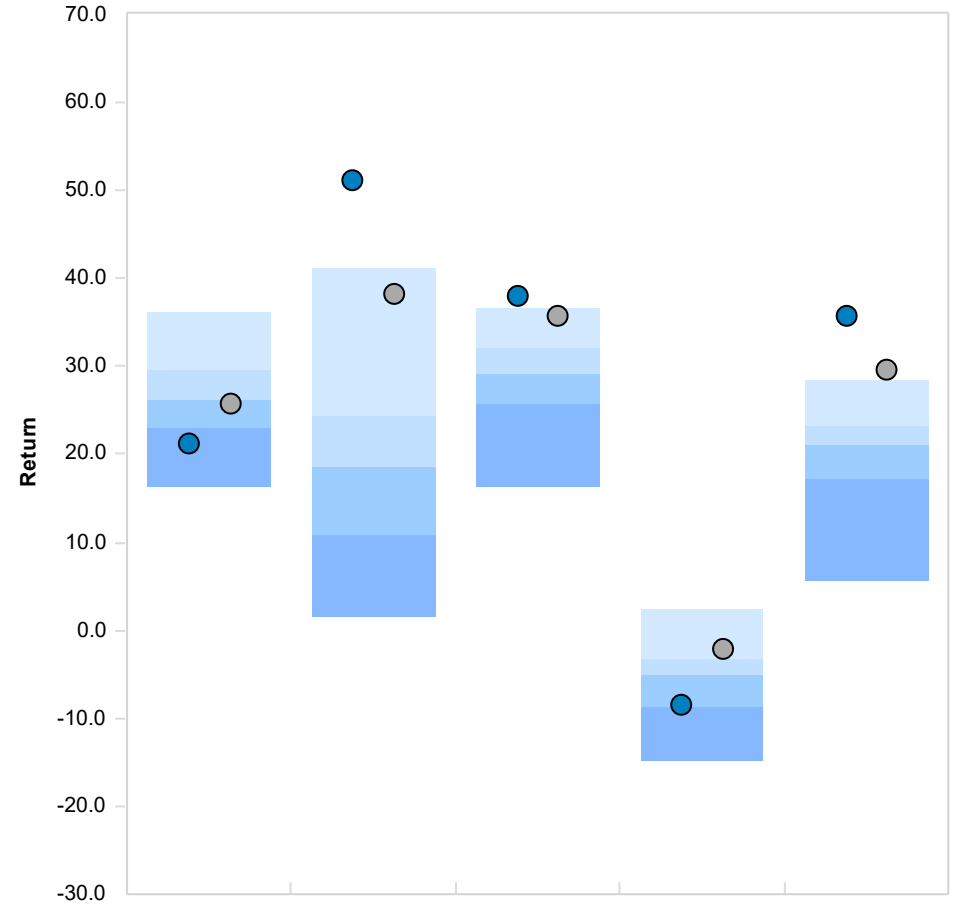


**Peer Group Analysis - IM U.S. All Cap Core Equity (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-3.84 (20)	-29.92 (95)	-27.74 (98)	-0.09 (93)	13.79 (3)	8.46 (13)	12.32 (5)
● Index	-3.37 (16)	-30.57 (96)	-23.01 (93)	-0.90 (94)	10.16 (14)	8.25 (16)	11.57 (5)
Median	-4.56	-23.88	-17.01	4.83	7.49	6.54	8.41

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



	2021	2020	2019	2018	2017
● Investment	21.32 (82)	51.29 (2)	38.03 (3)	-8.39 (75)	35.81 (1)
● Index	25.85 (55)	38.26 (9)	35.85 (7)	-2.12 (18)	29.59 (4)
Median	26.27	18.60	29.22	-5.10	20.92

**Comparative Performance**

	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	1 Qtr Ending Mar-2021
Investment	-23.88 (99)	-4.26 (31)	3.11 (97)	-0.97 (83)	11.89 (2)	6.19 (58)
Index	-20.83 (97)	-9.25 (91)	10.89 (25)	0.69 (24)	11.38 (4)	1.19 (97)
Median	-14.97	-5.10	9.39	0.04	7.50	6.42





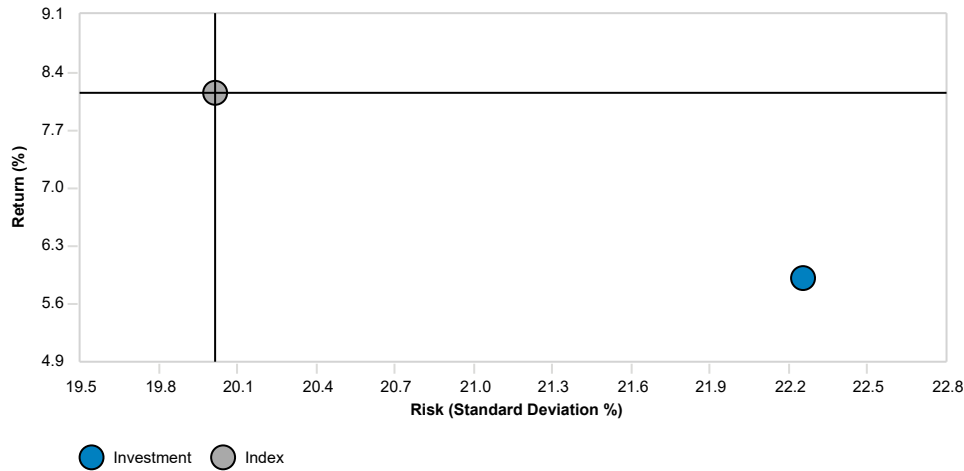
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	5.90	22.26	0.34	98.63	7	104.87	5
Index	8.16	20.02	0.46	100.00	8	100.00	4

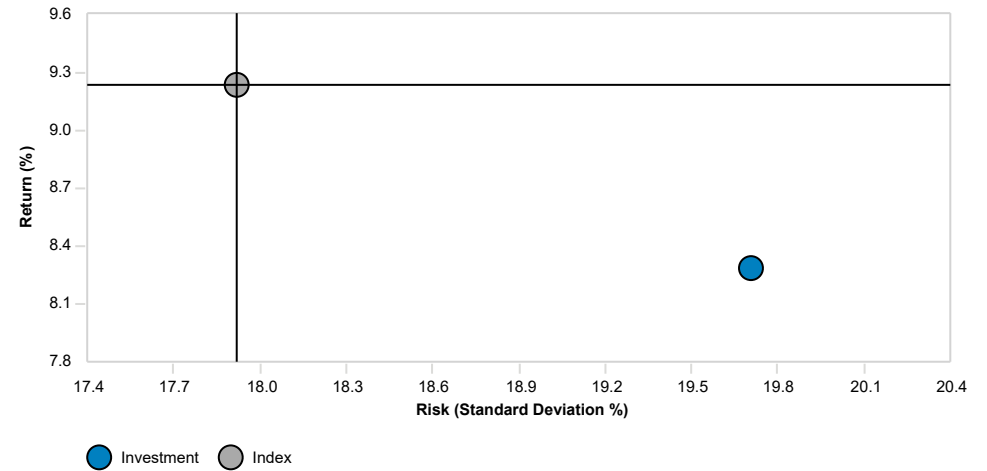
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	8.28	19.71	0.45	99.72	14	102.22	6
Index	9.24	17.92	0.52	100.00	14	100.00	6

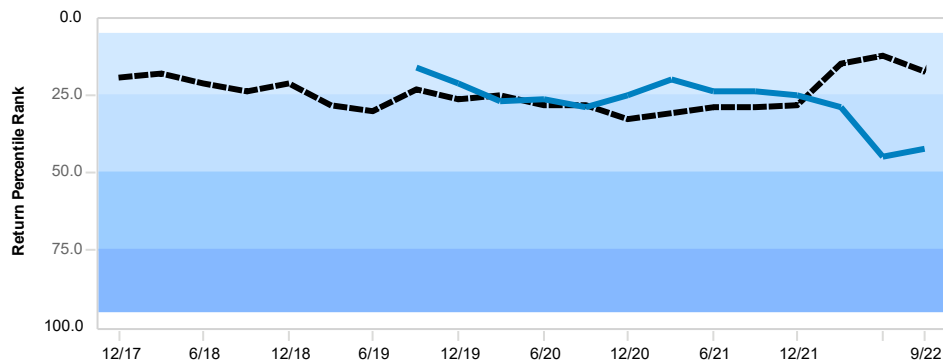
Risk and Return 3 Years



Risk and Return 5 Years

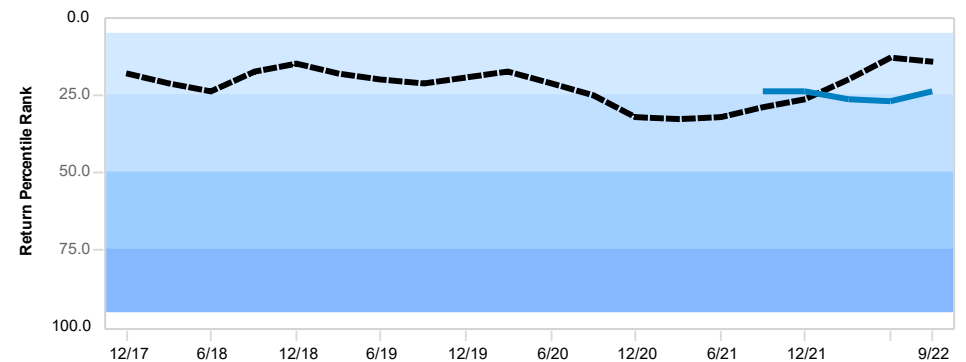


3 Year Rolling Percentile Rank IM U.S. Equity (MF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	13	7 (54%)	6 (46%)	0 (0%)	0 (0%)
Index	20	10 (50%)	10 (50%)	0 (0%)	0 (0%)

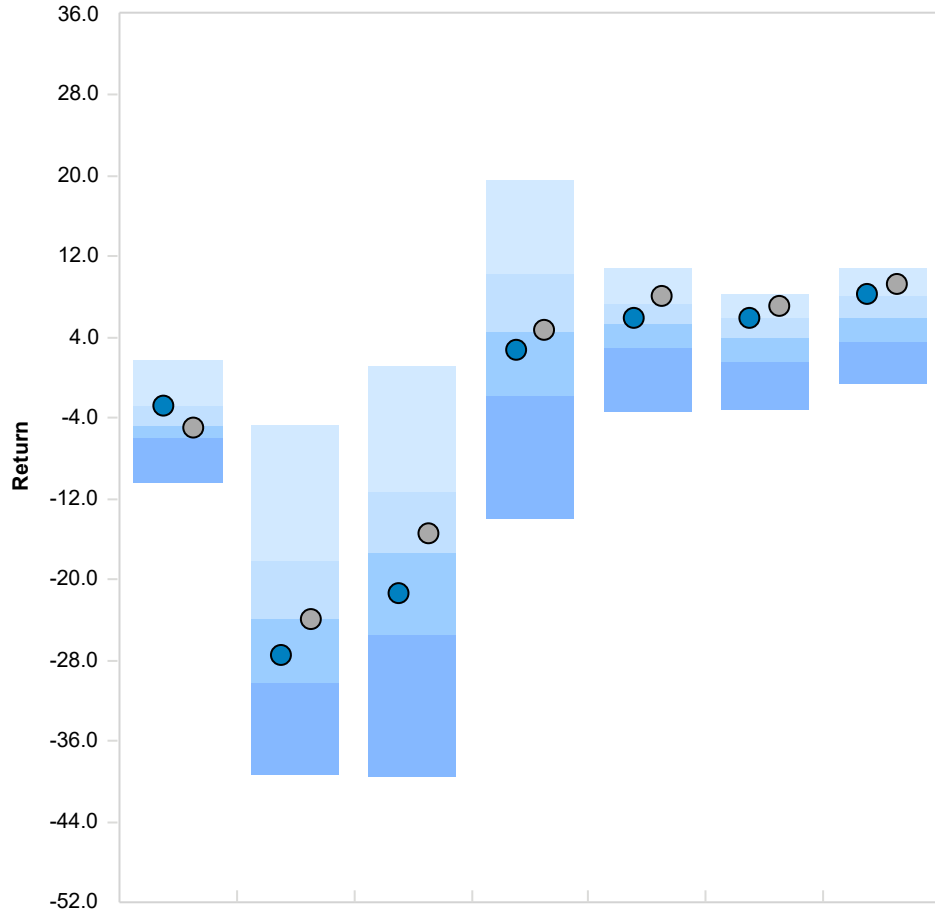
5 Year Rolling Percentile Rank IM U.S. Equity (MF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	5	3 (60%)	2 (40%)	0 (0%)	0 (0%)
Index	20	15 (75%)	5 (25%)	0 (0%)	0 (0%)

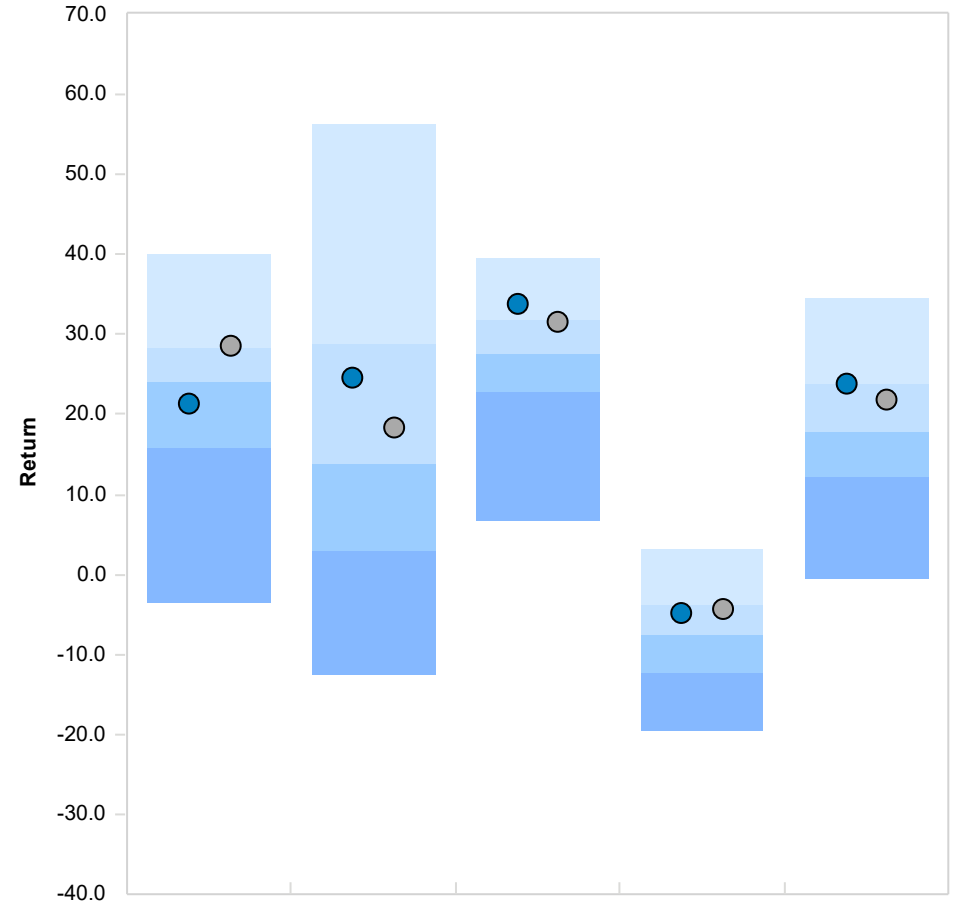


Peer Group Analysis - IM U.S. Equity (MF)



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-2.69 (24)	-27.40 (66)	-21.36 (66)	2.75 (60)	5.90 (42)	5.99 (26)	8.28 (24)
● Index	-4.88 (56)	-23.87 (50)	-15.47 (40)	4.83 (49)	8.16 (17)	7.17 (12)	9.24 (14)
Median	-4.64	-23.93	-17.39	4.56	5.27	4.03	5.86

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 Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021	1 Qtr Ending Mar-2021
Investment	-18.17 (71)	-8.83 (69)	8.32 (39)	-1.50 (67)	5.07 (69)	8.36 (45)
Index	-16.10 (57)	-4.60 (42)	11.03 (14)	0.58 (23)	8.55 (27)	6.17 (58)
Median	-15.44	-5.54	7.28	-0.58	6.45	7.43



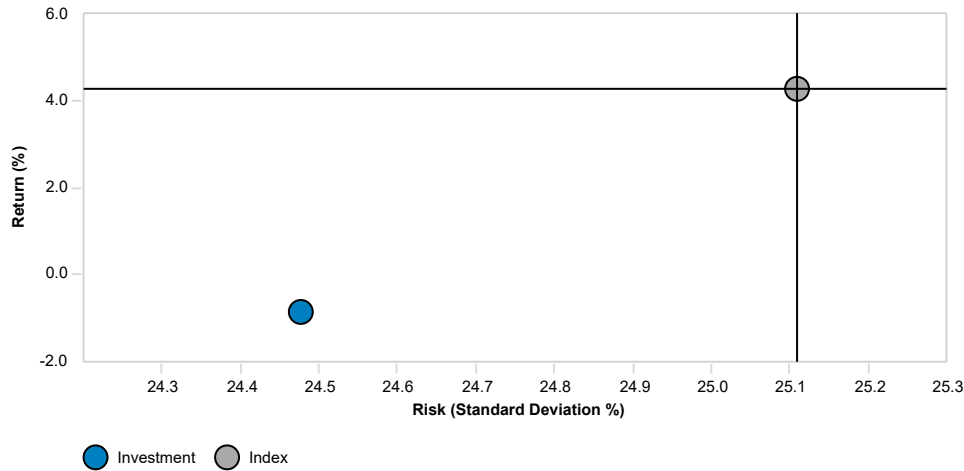
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-0.85	24.48	0.07	87.77	7	102.64	5
Index	4.29	25.11	0.27	100.00	7	100.00	5

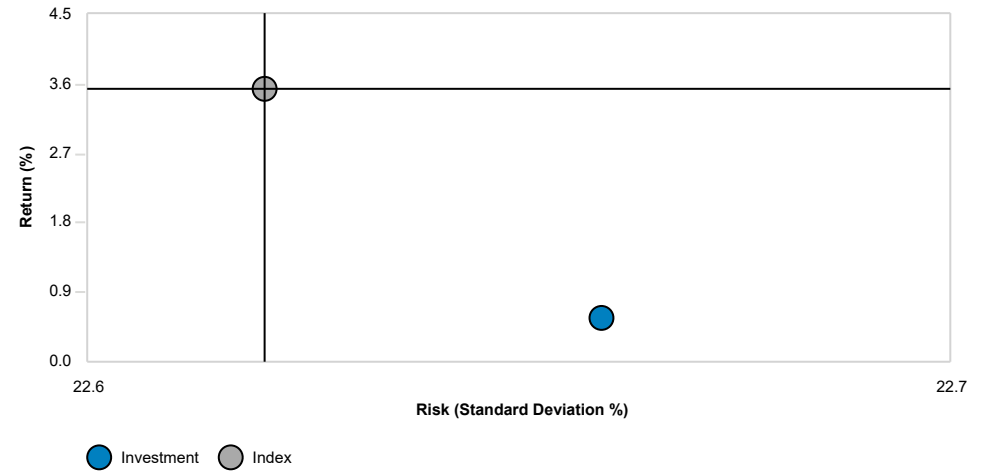
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	0.56	22.66	0.09	94.20	14	103.99	6
Index	3.55	22.62	0.22	100.00	12	100.00	8

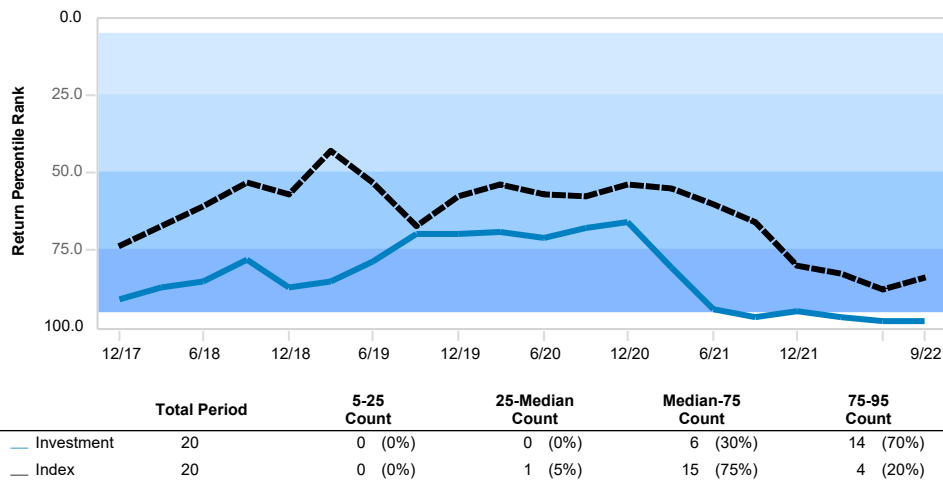
**Risk and Return 3 Years**



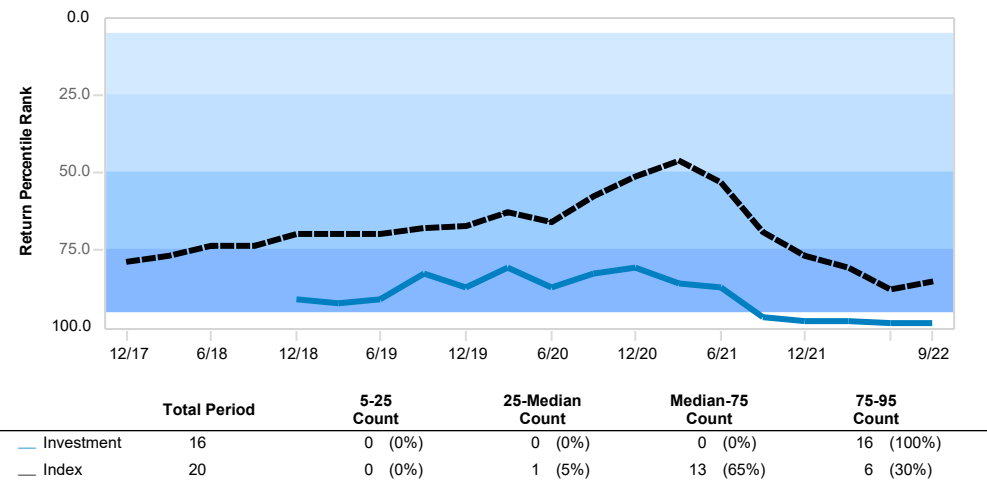
**Risk and Return 5 Years**



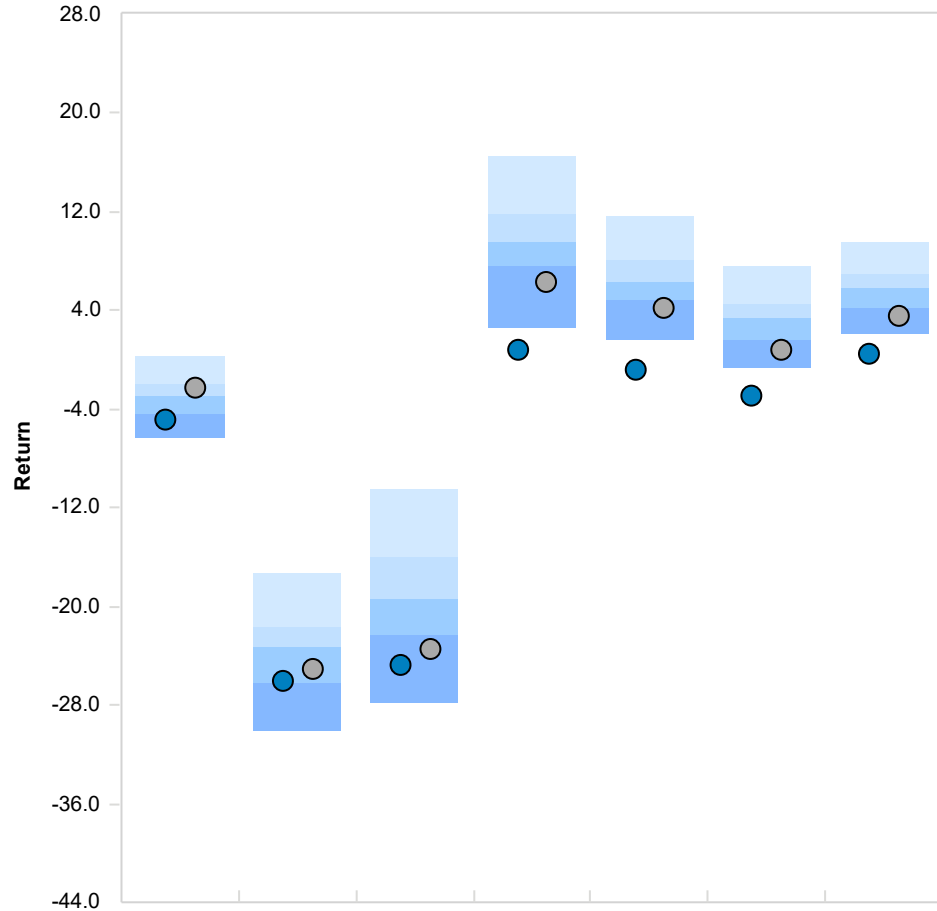
**3 Year Rolling Percentile Rank IM U.S. Small Cap Core Equity (SA+CF)**



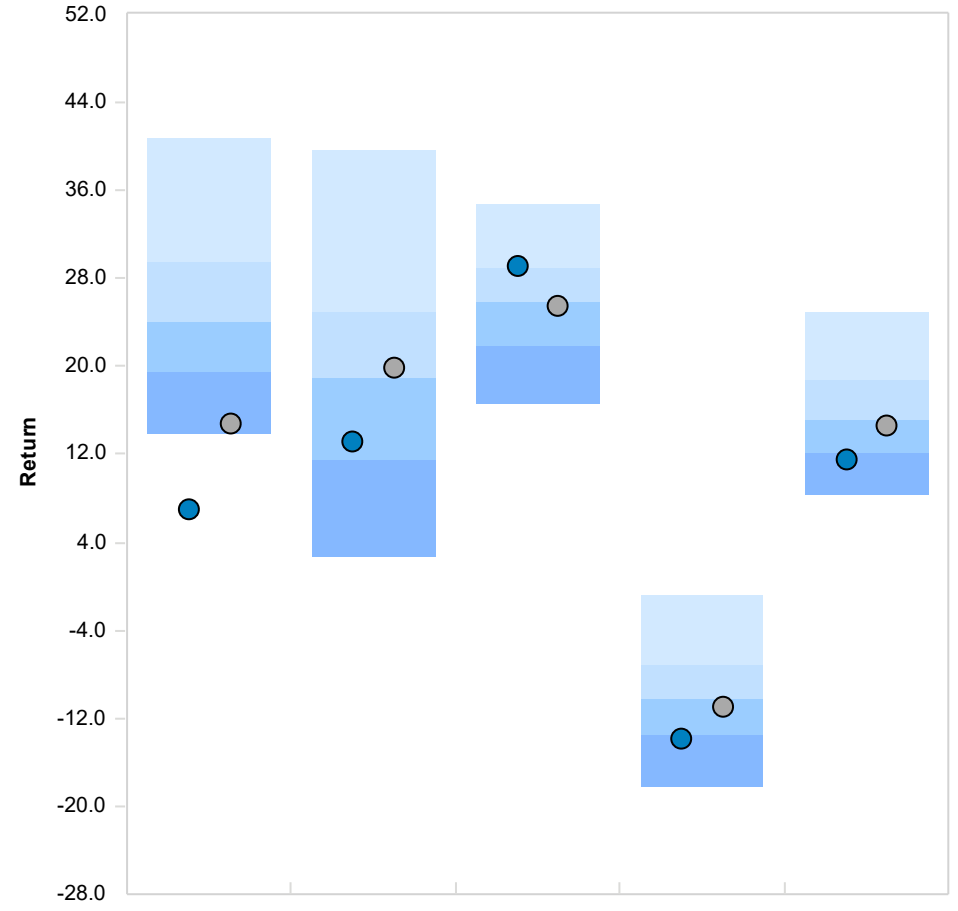
**5 Year Rolling Percentile Rank IM U.S. Small Cap Core Equity (SA+CF)**



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



**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	-4.80 (83)	-26.11 (75)	-24.79 (88)	0.88 (97)	-0.85 (98)	-2.85 (98)	0.56 (99)
Index	-2.19 (34)	-25.10 (69)	-23.50 (84)	6.29 (85)	4.29 (84)	0.82 (83)	3.55 (85)
Median	-2.94	-23.35	-19.39	9.56	6.24	3.41	5.89

	2021	2020	2019	2018	2017
Investment	6.97 (99)	13.19 (70)	29.19 (25)	-13.87 (78)	11.60 (81)
Index	14.82 (93)	19.96 (40)	25.53 (51)	-11.01 (59)	14.65 (56)
Median	24.15	18.90	25.82	-10.13	15.09

**Comparative Performance**

	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	1 Qtr Ending Mar-2021
Investment	-16.63 (68)	-6.89 (53)	1.79 (91)	-7.63 (98)	2.01 (91)	11.53 (67)
Index	-17.20 (80)	-7.53 (66)	2.14 (91)	-4.36 (92)	4.29 (64)	12.70 (56)
Median	-15.31	-6.79	5.89	-1.24	4.77	13.29



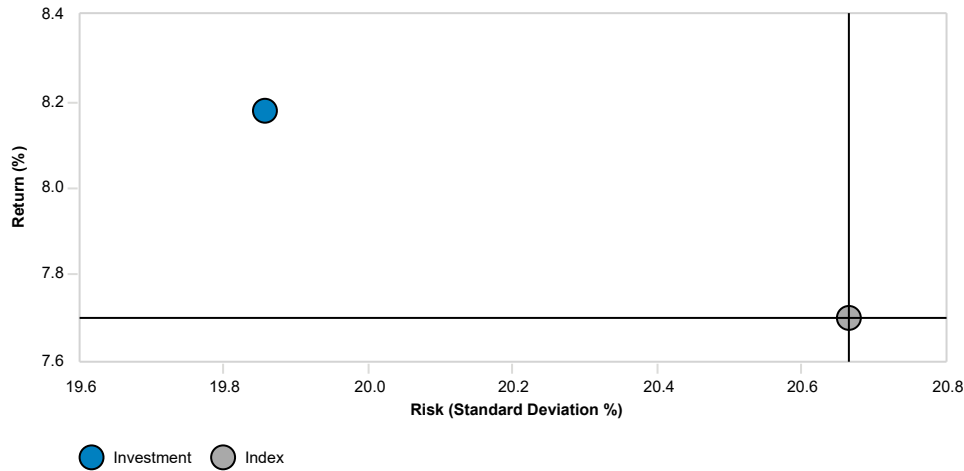
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	8.18	19.86	0.46	88.52	8	82.89	4
Index	7.70	20.66	0.43	100.00	7	100.00	5

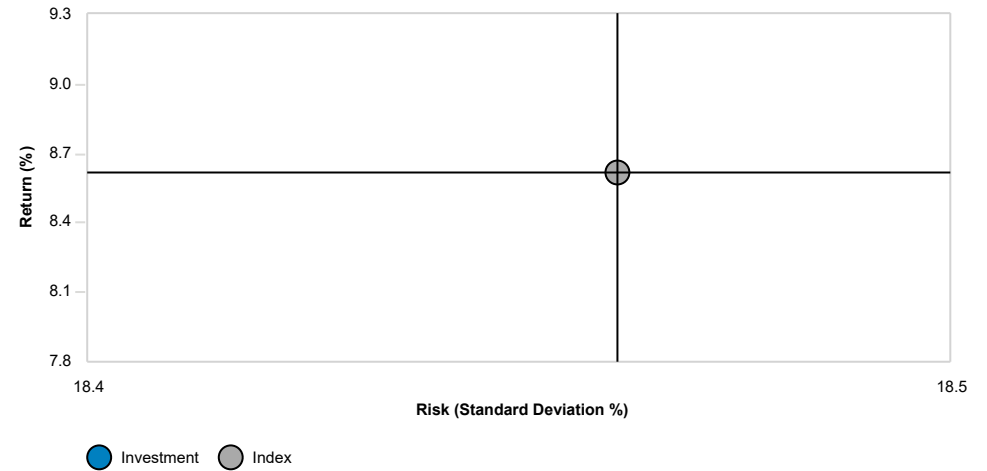
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Index	8.62	18.46	0.48	100.00	13	100.00	7

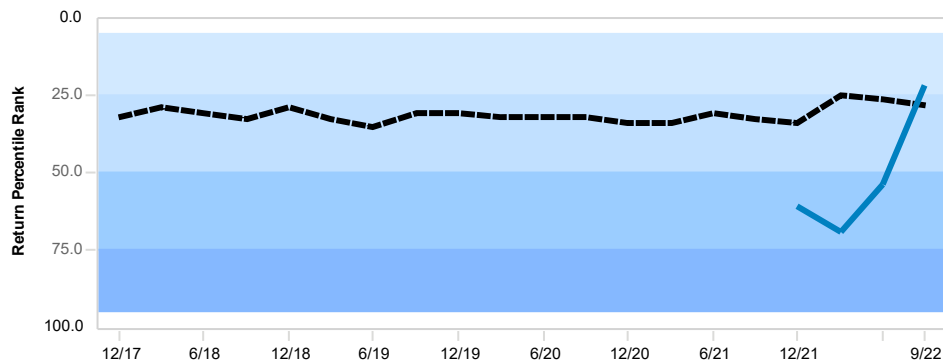
**Risk and Return 3 Years**



**Risk and Return 5 Years**

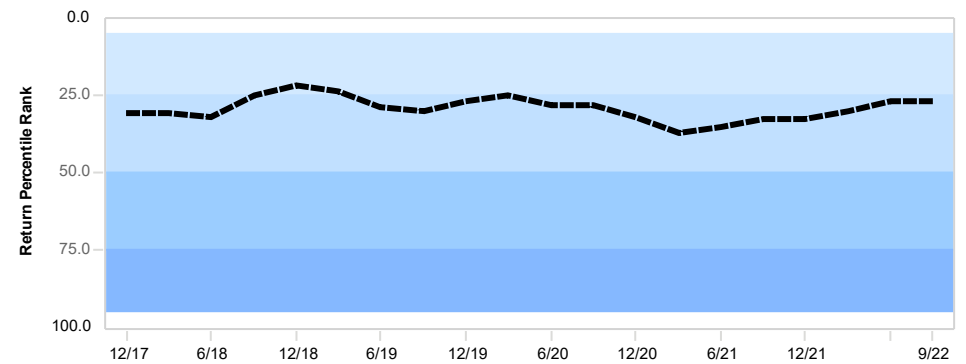


**3 Year Rolling Percentile Rank IM U.S. Equity (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	4	1 (25%)	0 (0%)	3 (75%)	0 (0%)
Index	20	1 (5%)	19 (95%)	0 (0%)	0 (0%)

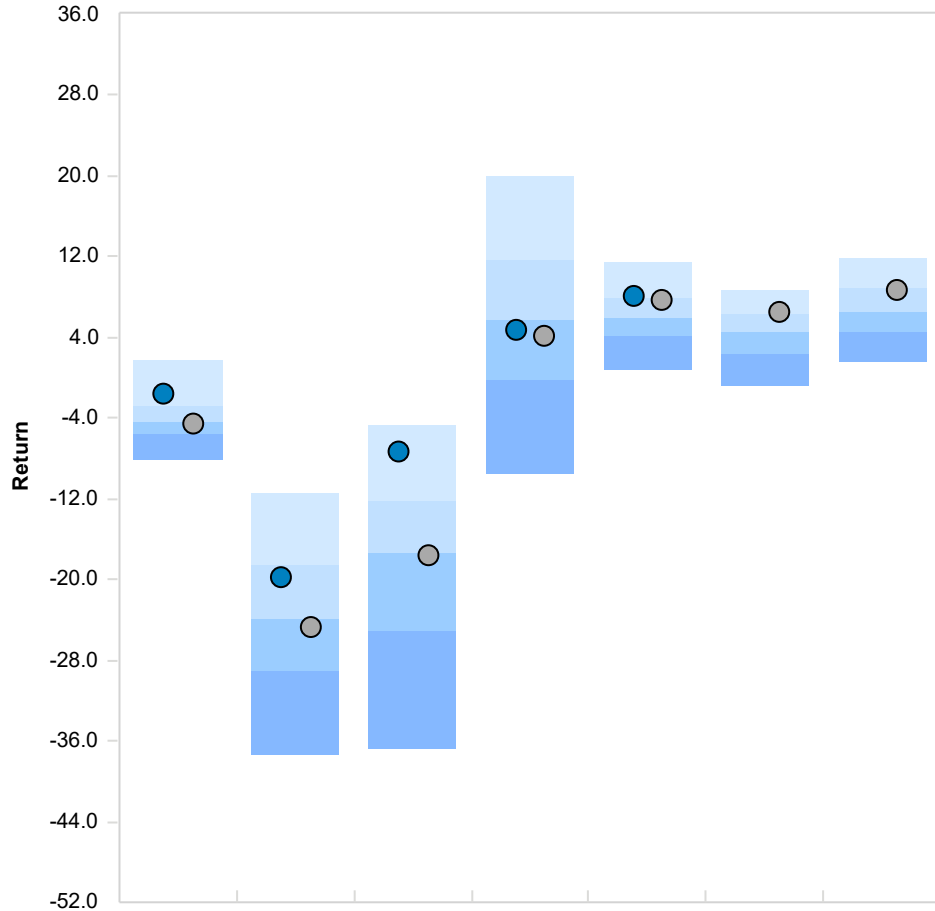
**5 Year Rolling Percentile Rank IM U.S. Equity (SA+CF)**



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

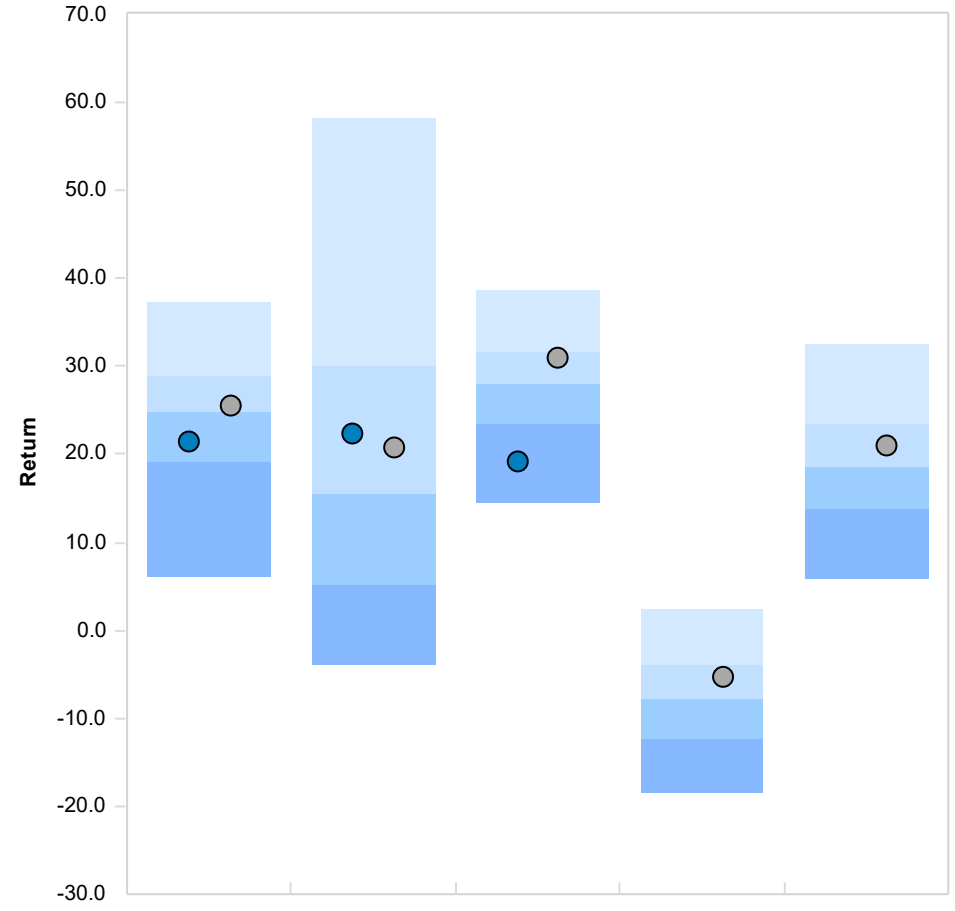


**Peer Group Analysis - IM U.S. Equity (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-1.55 (16)	-19.70 (29)	-7.31 (10)	4.82 (55)	8.18 (22)	N/A	N/A
● Index	-4.46 (52)	-24.62 (56)	-17.63 (51)	4.23 (58)	7.70 (28)	6.48 (24)	8.62 (27)
Median	-4.40	-23.91	-17.41	5.75	5.97	4.55	6.56

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



	2021	2020	2019	2018	2017
● Investment	21.59 (68)	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	24.98	15.56	28.05	-7.71	18.51

**Comparative Performance**

	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	1 Qtr Ending Mar-2021
Investment	-13.46 (35)	-5.74 (52)	15.43 (1)	1.38 (12)	3.87 (85)	0.03 (94)
Index	-16.70 (65)	-5.28 (49)	9.28 (27)	-0.10 (41)	8.24 (28)	6.35 (63)
Median	-15.31	-5.45	7.27	-0.50	6.34	9.02



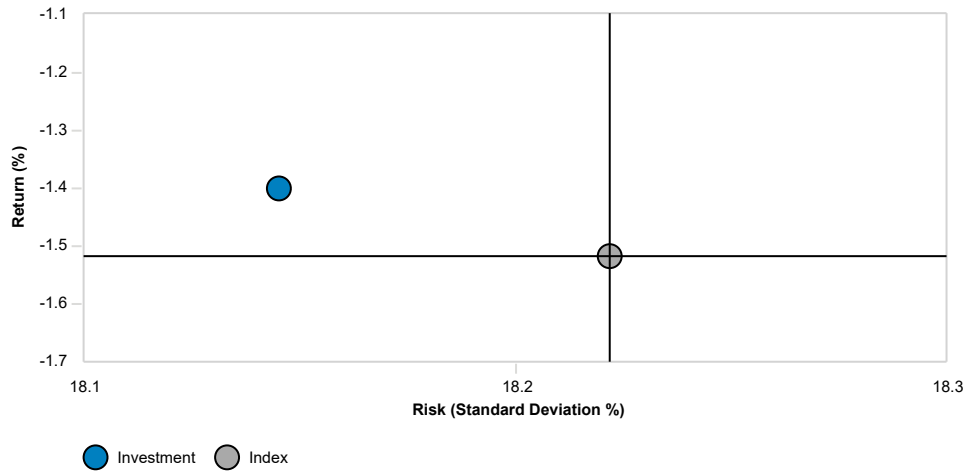
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-1.40	18.15	-0.02	99.90	7	99.47	5
Index	-1.52	18.22	-0.02	100.00	7	100.00	5

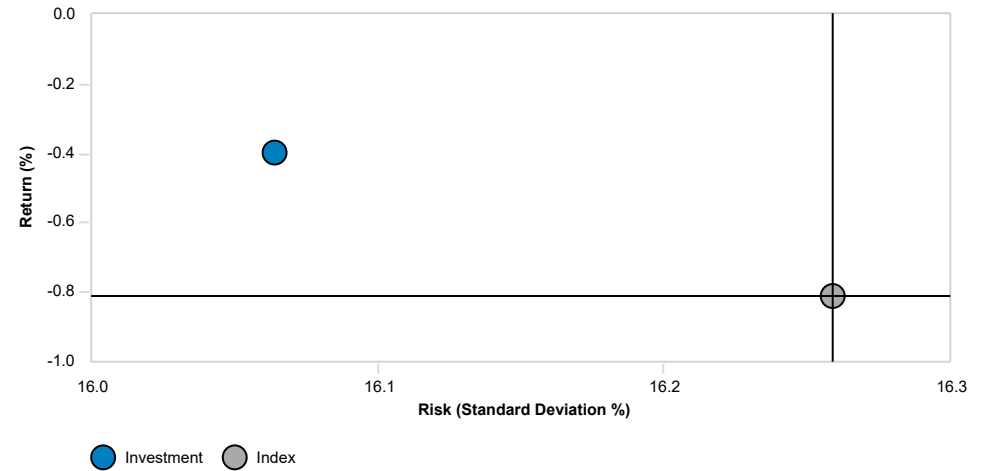
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-0.40	16.06	-0.01	99.18	11	97.39	9
Index	-0.81	16.26	-0.04	100.00	11	100.00	9

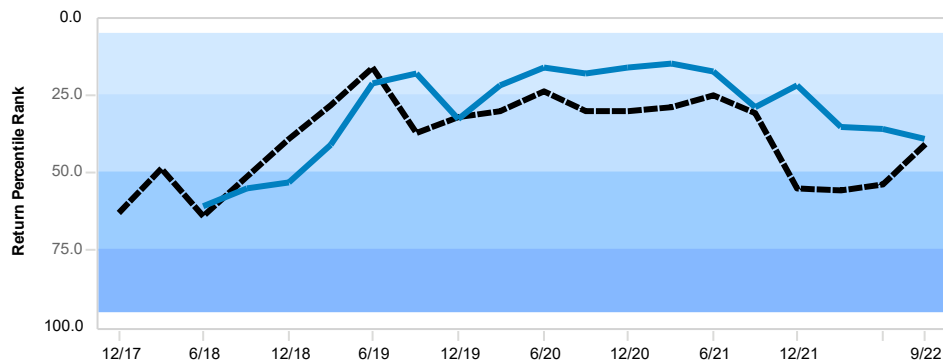
**Risk and Return 3 Years**



**Risk and Return 5 Years**

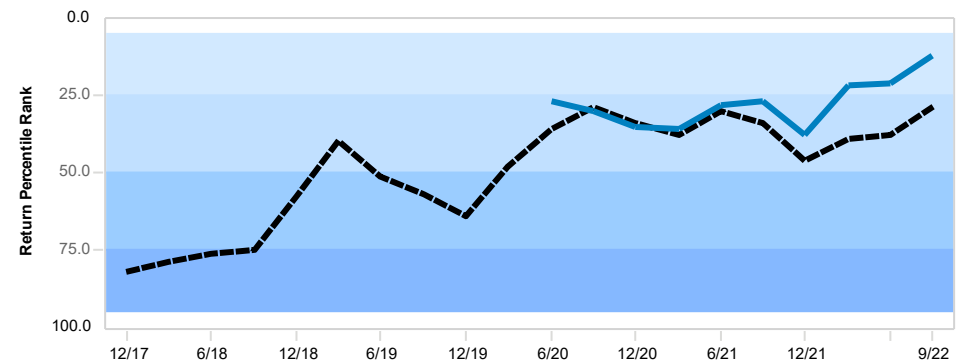


**3 Year Rolling Percentile Rank IM Enhanced and Indexed International Equity (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	18	9 (50%)	6 (33%)	3 (17%)	0 (0%)
Index	20	3 (15%)	11 (55%)	6 (30%)	0 (0%)

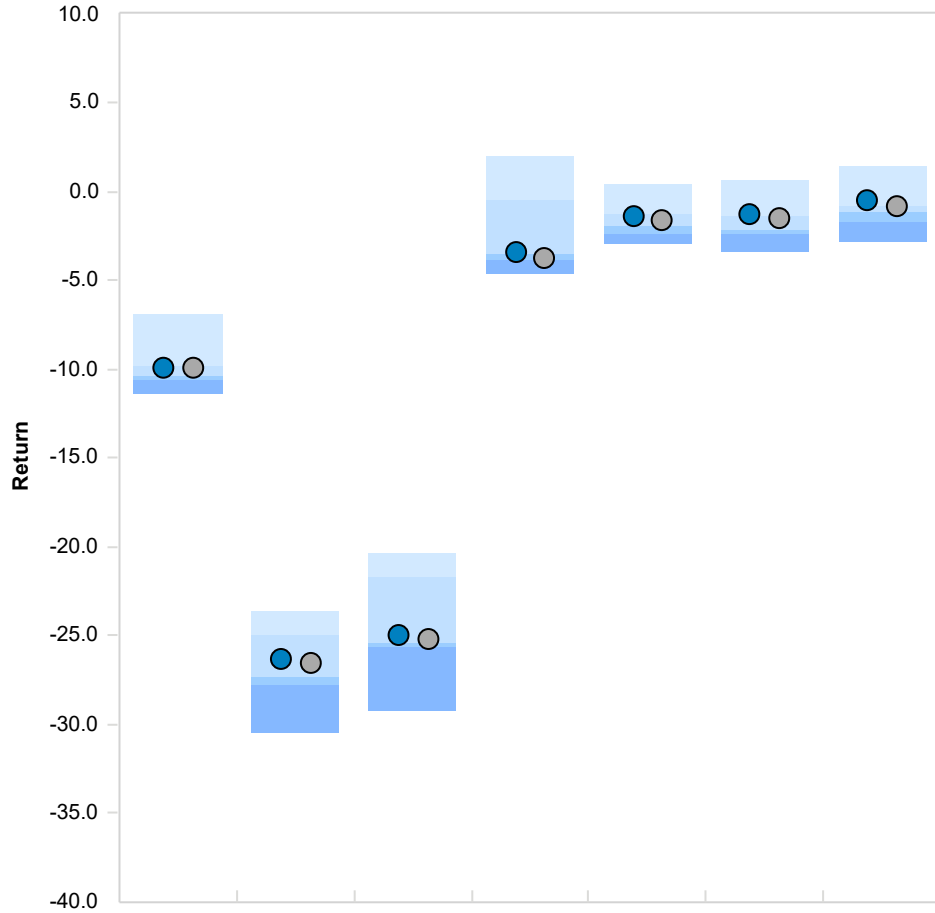
**5 Year Rolling Percentile Rank IM Enhanced and Indexed International Equity (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	10	3 (30%)	7 (70%)	0 (0%)	0 (0%)
Index	20	0 (0%)	12 (60%)	5 (25%)	3 (15%)

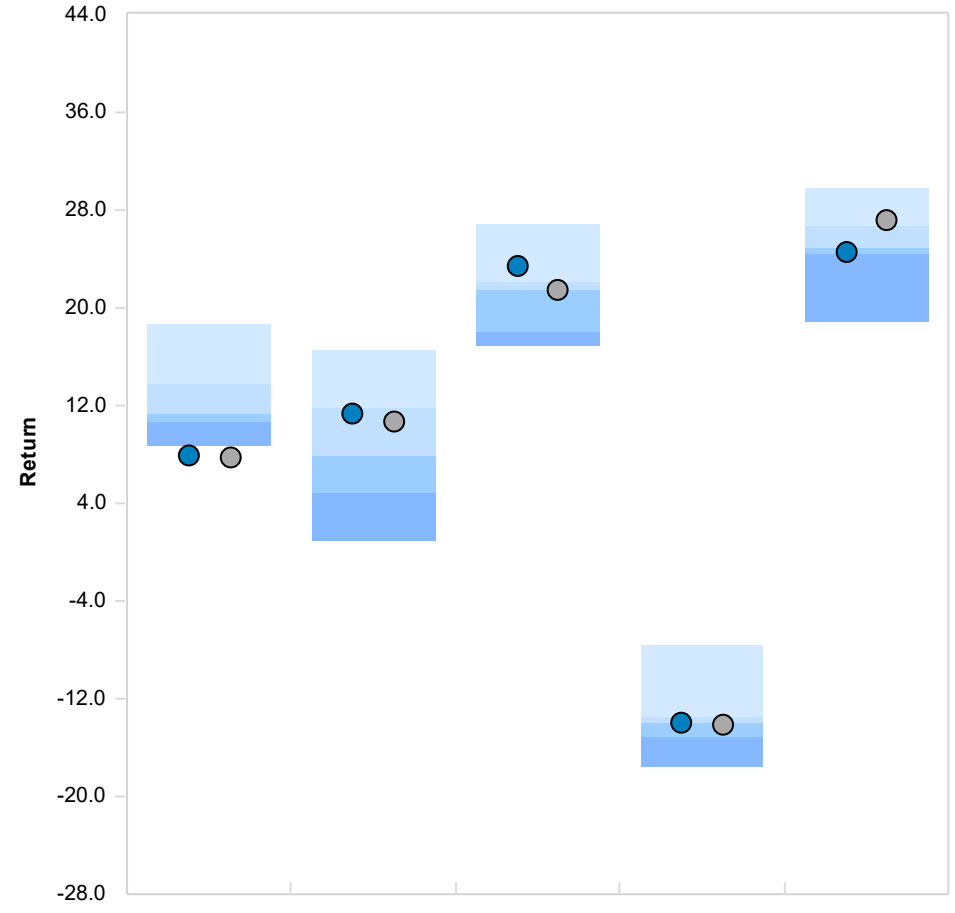


**Peer Group Analysis - IM Enhanced and Indexed International Equity (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-9.92 (27)	-26.31 (35)	-24.95 (38)	-3.39 (49)	-1.40 (39)	-1.21 (13)	-0.40 (12)
● Index	-9.91 (26)	-26.50 (36)	-25.17 (44)	-3.70 (59)	-1.52 (41)	-1.45 (28)	-0.81 (29)
Median	-10.34	-27.29	-25.40	-3.46	-1.88	-2.10	-1.17

**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 Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021	1 Qtr Ending Mar-2021
Investment	-13.52 (54)	-5.40 (38)	1.84 (83)	-3.02 (92)	5.57 (42)	3.54 (62)
Index	-13.73 (58)	-5.44 (38)	1.82 (84)	-2.99 (91)	5.48 (47)	3.49 (70)
Median	-13.48	-6.08	3.02	-1.10	5.41	3.88





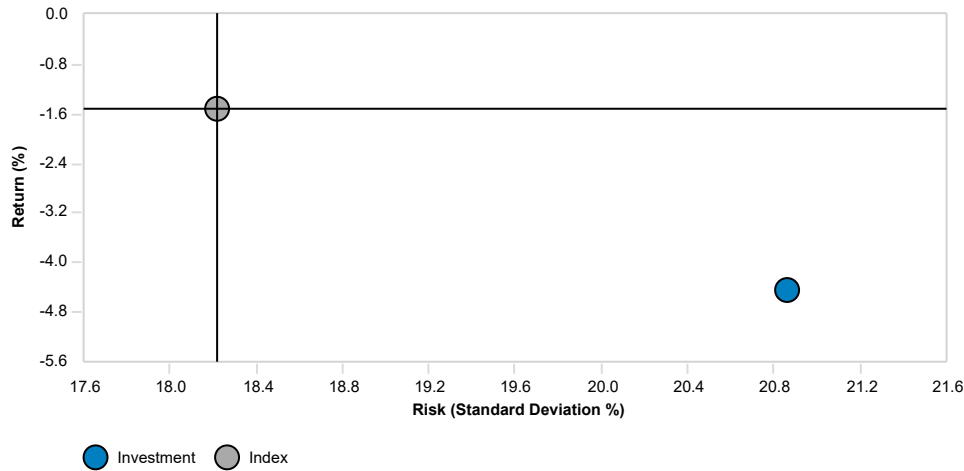
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-4.44	20.86	-0.14	110.12	6	120.31	6
Index	-1.52	18.22	-0.02	100.00	7	100.00	5

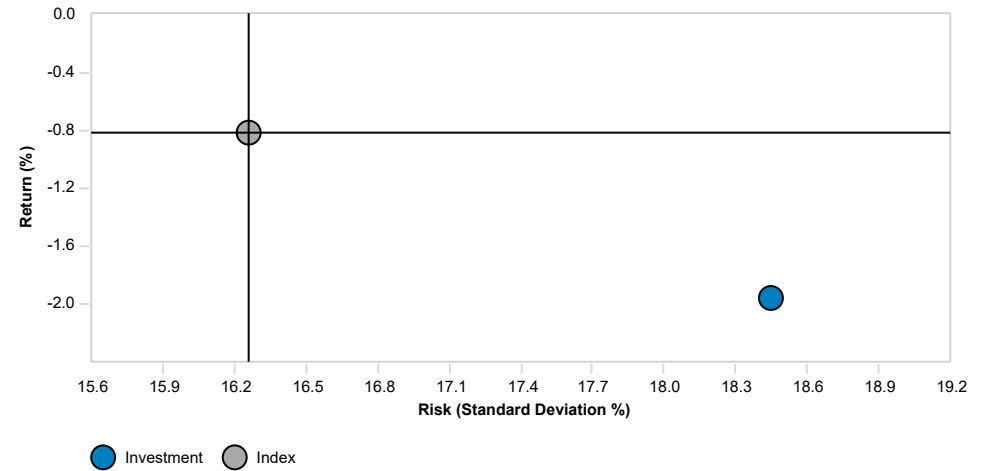
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-1.96	18.45	-0.08	108.36	10	112.12	10
Index	-0.81	16.26	-0.04	100.00	11	100.00	9

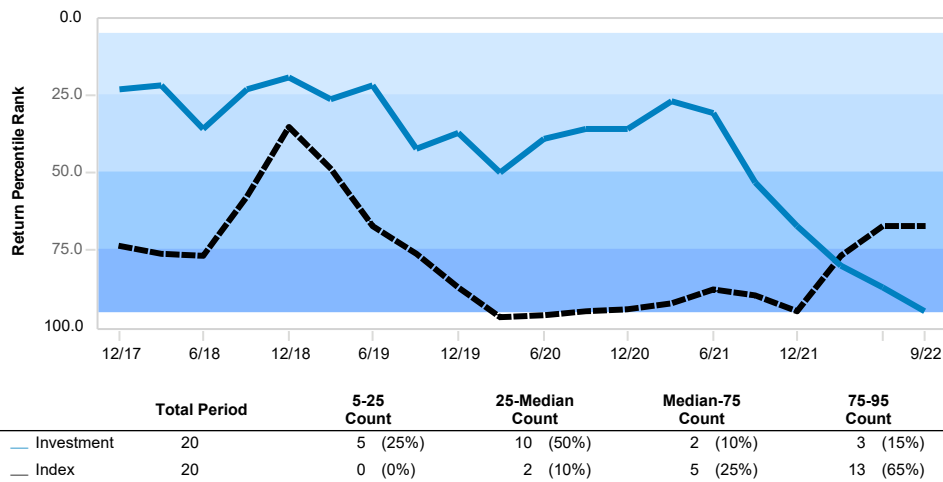
**Risk and Return 3 Years**



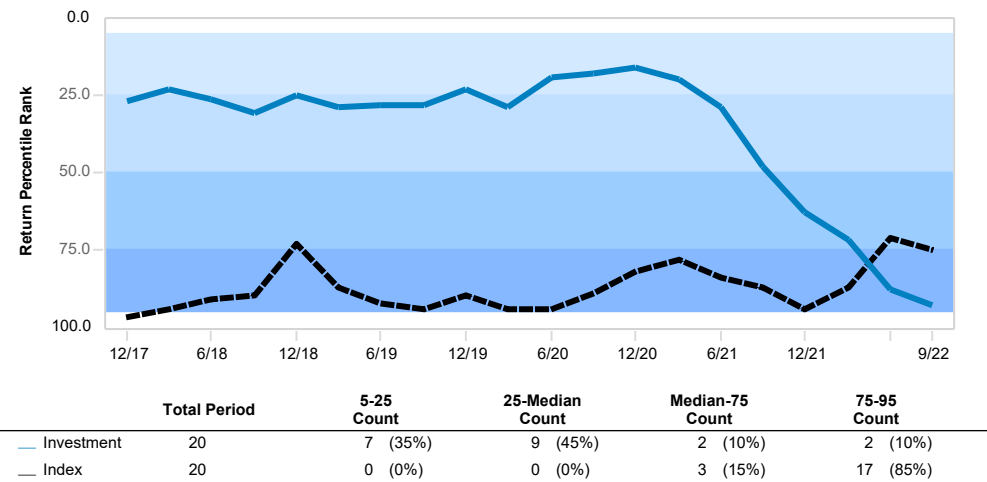
**Risk and Return 5 Years**



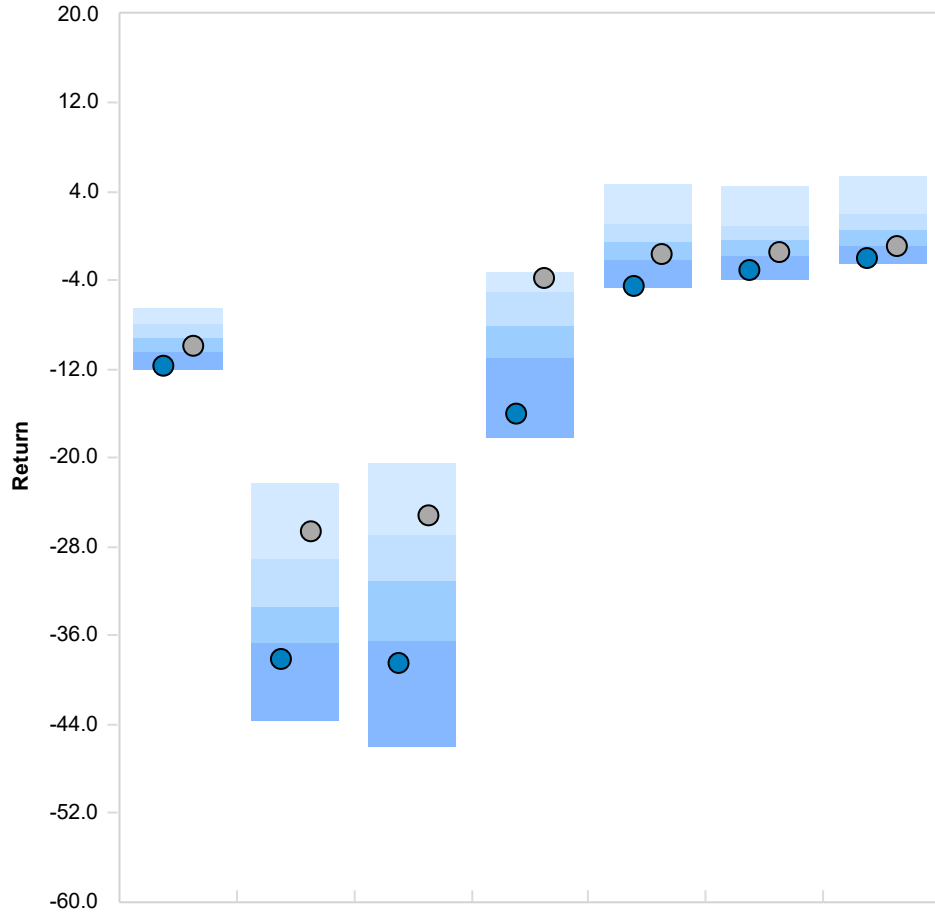
**3 Year Rolling Percentile Rank IM International Large Cap Growth Equity (SA+CF)**



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

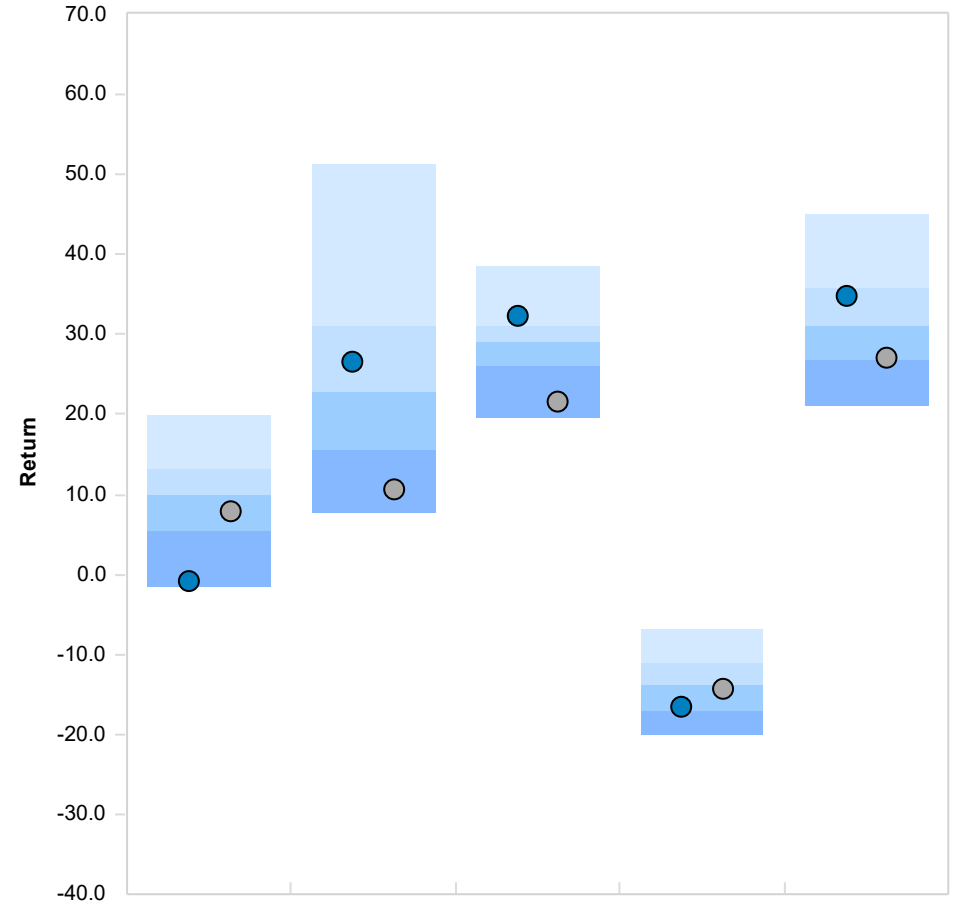


**Peer Group Analysis - IM International Large Cap Growth Equity (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-11.61 (94)	-38.10 (81)	-38.47 (84)	-15.95 (92)	-4.44 (95)	-3.04 (86)	-1.96 (93)
● Index	-9.91 (73)	-26.50 (15)	-25.17 (14)	-3.70 (11)	-1.52 (67)	-1.45 (66)	-0.81 (75)
Median	-9.09	-33.37	-31.10	-8.10	-0.41	-0.35	0.62

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



	2021	2020	2019	2018	2017
● Investment	-0.72 (94)	26.60 (40)	32.23 (20)	-16.57 (69)	34.83 (30)
● Index	7.82 (65)	10.65 (88)	21.51 (91)	-14.20 (53)	27.19 (73)
Median	9.97	22.88	28.99	-13.90	31.14

**Comparative Performance**

	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	1 Qtr Ending Mar-2021
Investment	-17.09 (58)	-15.53 (79)	-0.60 (83)	-5.42 (96)	3.91 (94)	1.63 (28)
Index	-13.73 (23)	-5.44 (9)	1.82 (64)	-2.99 (74)	5.48 (69)	3.49 (9)
Median	-16.65	-12.40	2.38	-0.13	6.91	0.73



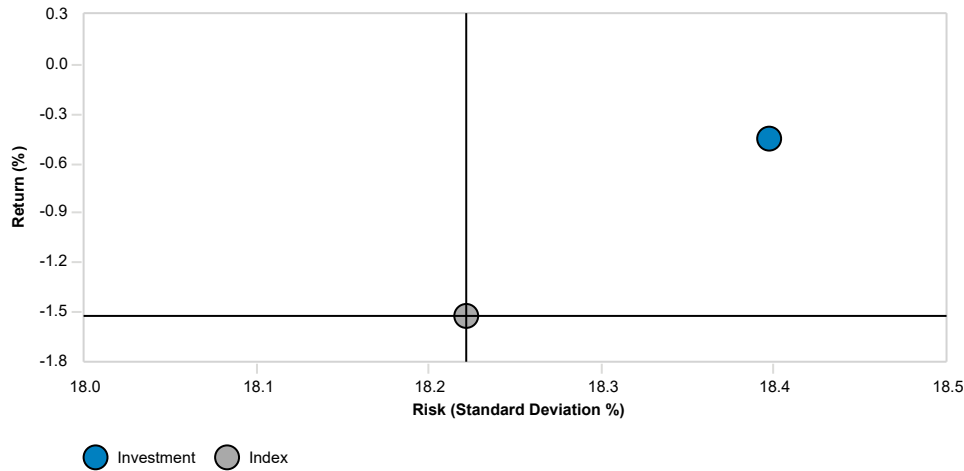
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-0.45	18.40	0.04	104.32	7	99.82	5
Index	-1.52	18.22	-0.02	100.00	7	100.00	5

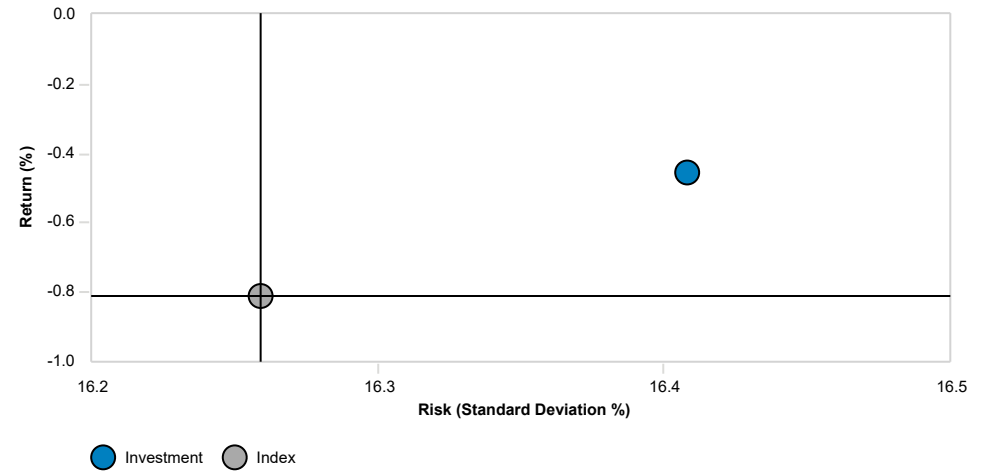
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-0.45	16.41	-0.01	101.11	11	99.36	9
Index	-0.81	16.26	-0.04	100.00	11	100.00	9

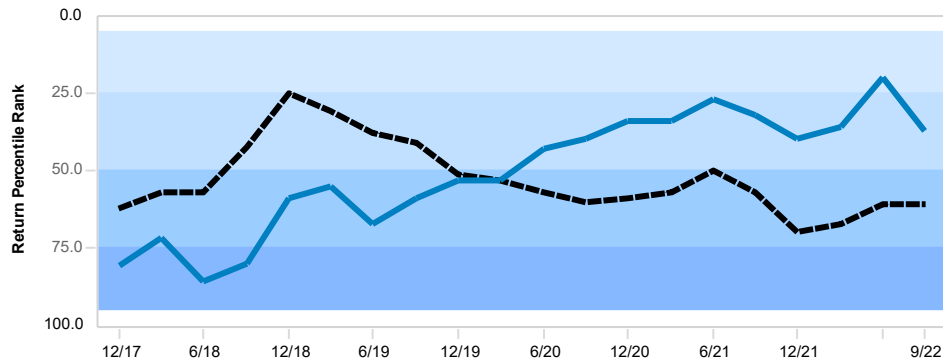
**Risk and Return 3 Years**



**Risk and Return 5 Years**

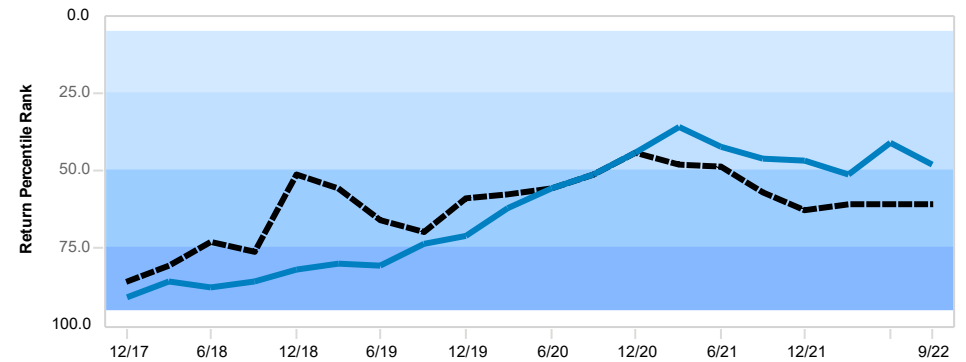


**3 Year Rolling Percentile Rank IM International Large Cap Core Equity (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	1 (5%)	9 (45%)	7 (35%)	3 (15%)
Index	20	1 (5%)	5 (25%)	14 (70%)	0 (0%)

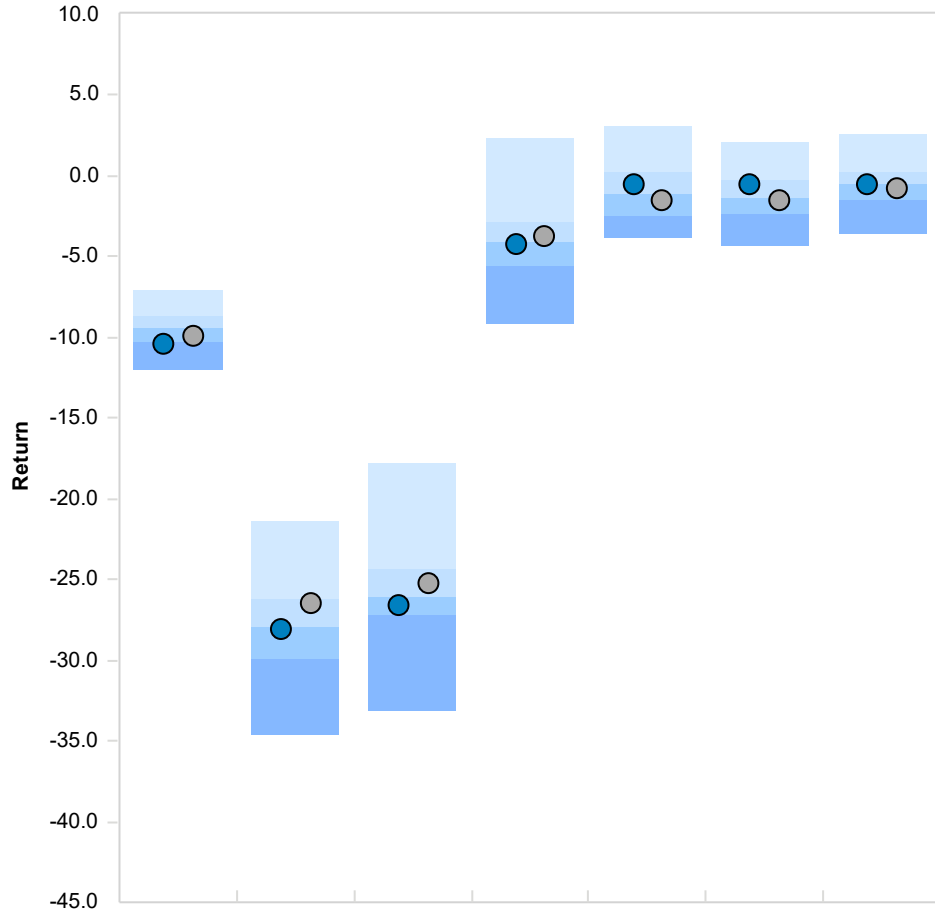
**5 Year Rolling Percentile Rank IM International Large Cap Core Equity (SA+CF)**



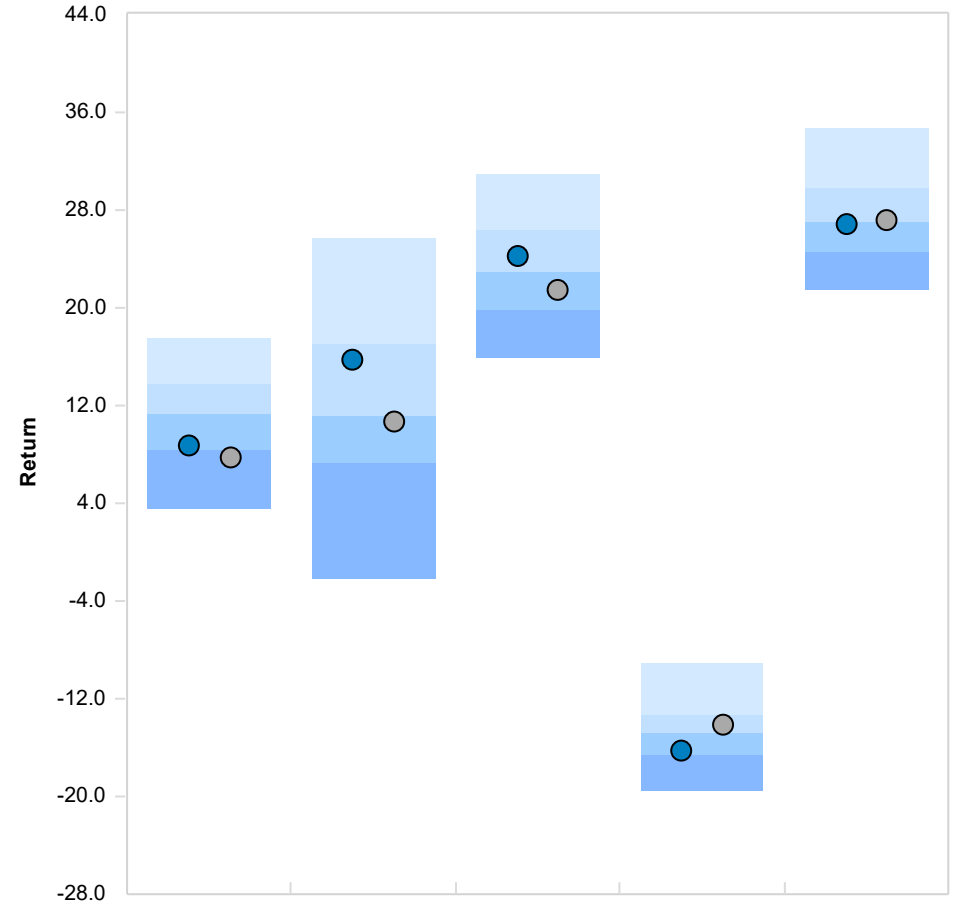
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	7 (35%)	6 (30%)	7 (35%)
Index	20	0 (0%)	3 (15%)	14 (70%)	3 (15%)



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



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



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
Investment	-10.33 (77)	-28.13 (51)	-26.53 (59)	-4.27 (58)	-0.45 (37)	-0.45 (29)	-0.45 (48)
Index	-9.91 (63)	-26.50 (28)	-25.17 (34)	-3.70 (41)	-1.52 (61)	-1.45 (53)	-0.81 (61)
Median	-9.45	-27.99	-26.11	-4.09	-1.15	-1.33	-0.50

	2021	2020	2019	2018	2017
Investment	8.78 (72)	15.83 (31)	24.24 (38)	-16.33 (71)	26.92 (51)
Index	7.82 (79)	10.65 (55)	21.51 (63)	-14.20 (45)	27.19 (49)
Median	11.35	11.12	22.96	-14.74	27.03

**Comparative Performance**

	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	1 Qtr Ending Mar-2021
Investment	-13.35 (36)	-7.49 (58)	2.23 (65)	-2.77 (82)	5.86 (50)	3.38 (57)
Index	-13.73 (40)	-5.44 (29)	1.82 (73)	-2.99 (85)	5.48 (58)	3.49 (55)
Median	-14.61	-6.71	2.95	-1.30	5.84	3.86



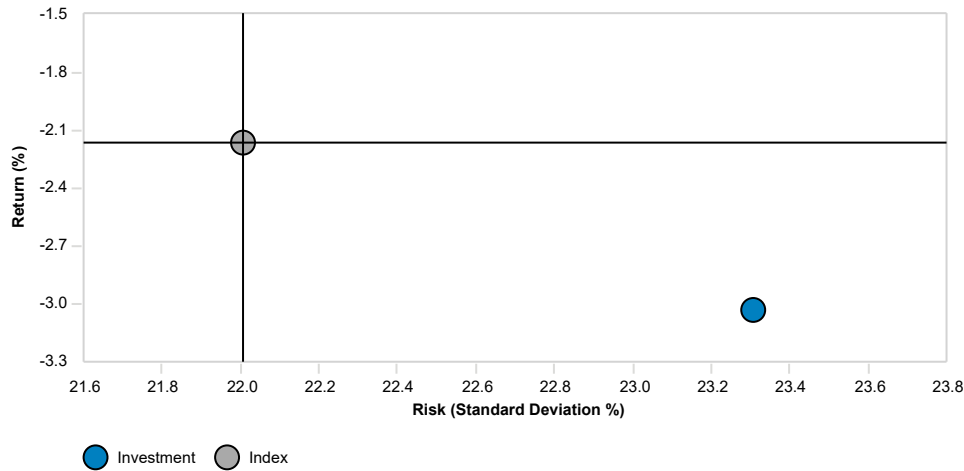
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-3.03	23.31	-0.03	99.64	7	101.37	5
Index	-2.16	22.00	-0.01	100.00	8	100.00	4

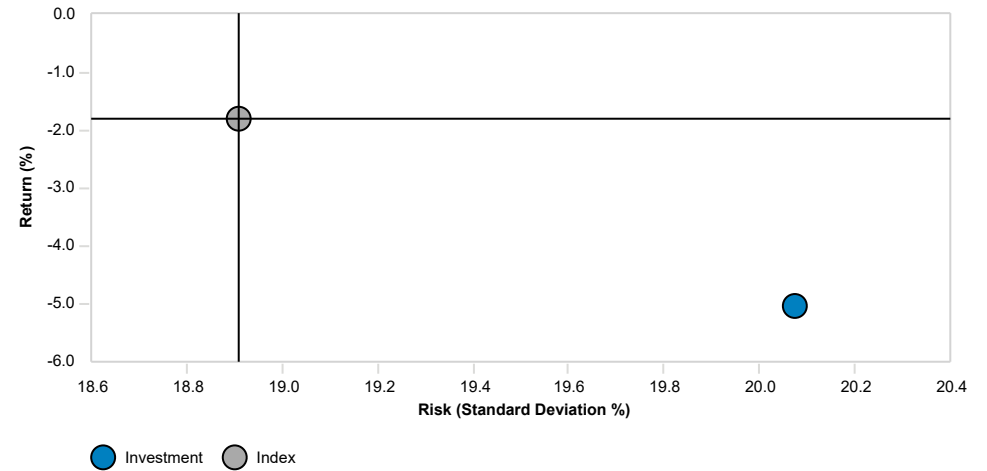
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-5.05	20.07	-0.21	96.72	9	109.30	11
Index	-1.79	18.91	-0.06	100.00	12	100.00	8

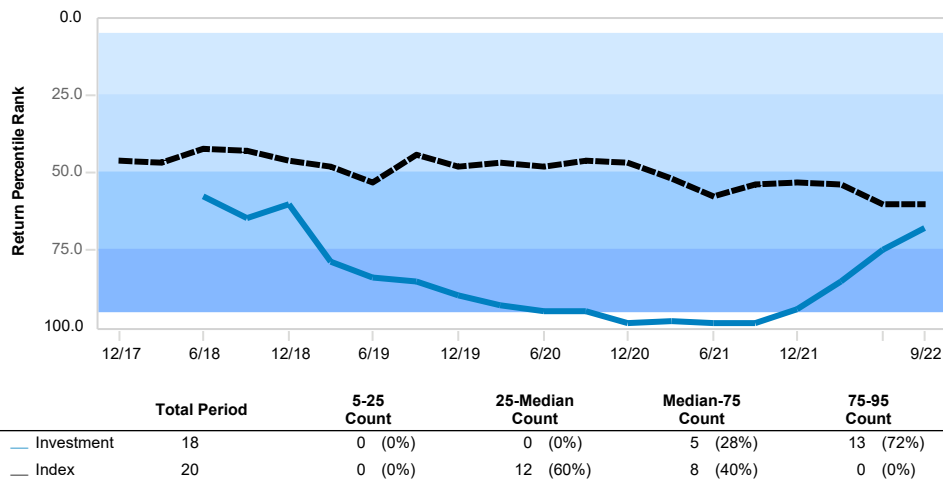
**Risk and Return 3 Years**



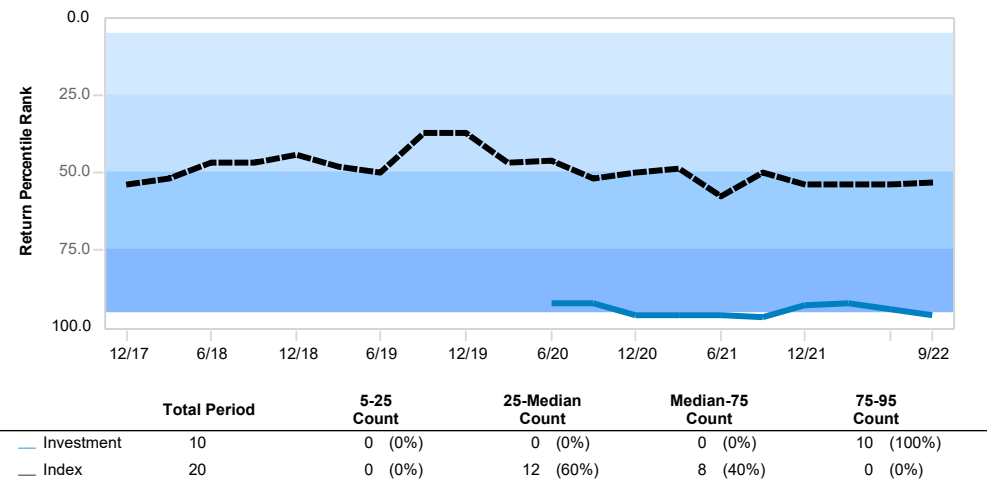
**Risk and Return 5 Years**



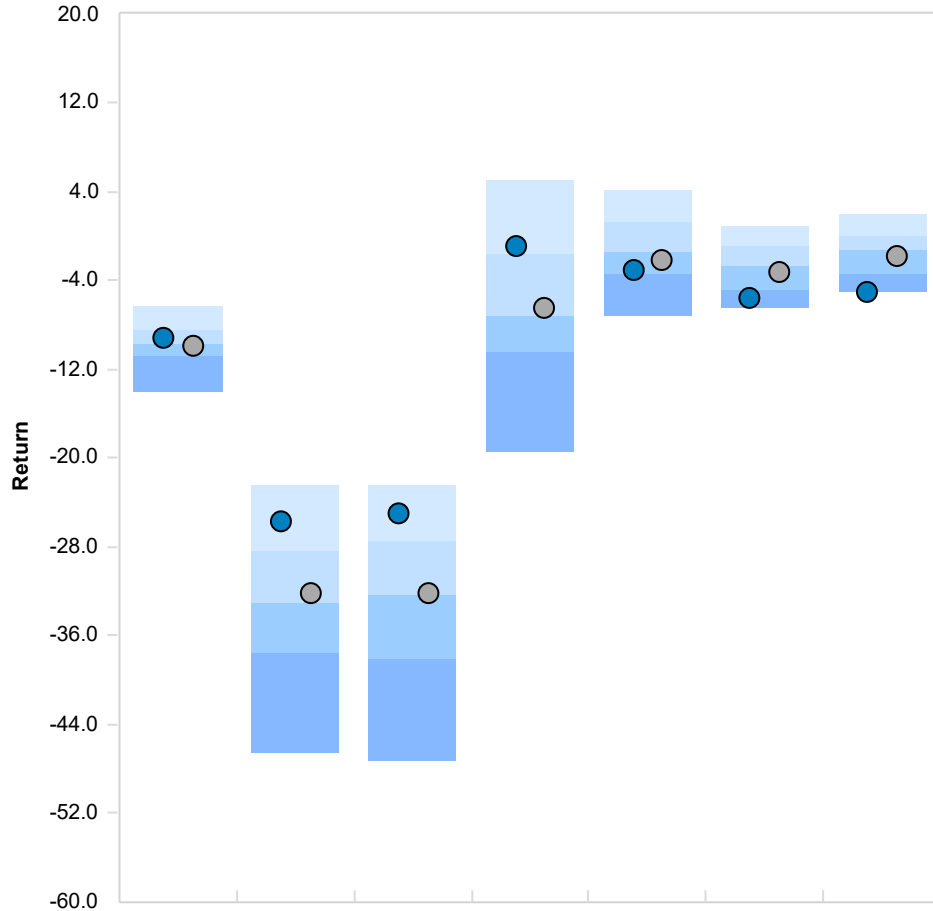
**3 Year Rolling Percentile Rank IM International Small Cap Equity (SA+CF)**



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

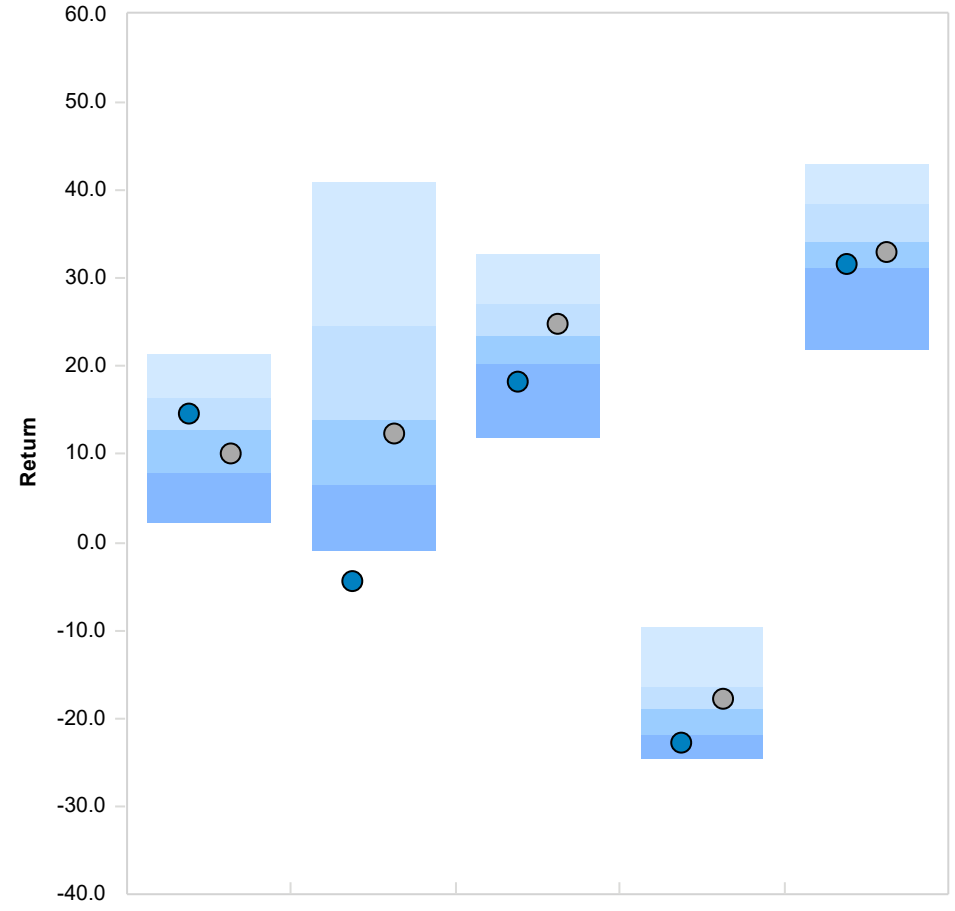


**Peer Group Analysis - IM International Small Cap Equity (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-9.09 (39)	-25.73 (17)	-25.00 (15)	-0.93 (21)	-3.03 (68)	-5.58 (90)	-5.05 (96)
● Index	-9.83 (56)	-32.11 (44)	-32.06 (49)	-6.38 (47)	-2.16 (60)	-3.12 (56)	-1.79 (53)
Median	-9.58	-32.95	-32.37	-7.19	-1.45	-2.60	-1.30

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



	2021	2020	2019	2018	2017
● Investment	14.56 (32)	-4.29 (99)	18.21 (82)	-22.85 (84)	31.71 (73)
● Index	10.10 (65)	12.34 (54)	24.96 (36)	-17.89 (38)	33.01 (60)
Median	12.81	13.88	23.39	-18.86	34.10

**Comparative Performance**

	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	1 Qtr Ending Mar-2021
Investment	-16.31 (41)	-2.37 (8)	0.97 (40)	-0.92 (67)	5.89 (68)	8.14 (22)
Index	-17.69 (67)	-8.53 (39)	0.07 (53)	0.90 (30)	4.34 (90)	4.50 (47)
Median	-16.90	-10.60	0.30	-0.09	6.69	4.10



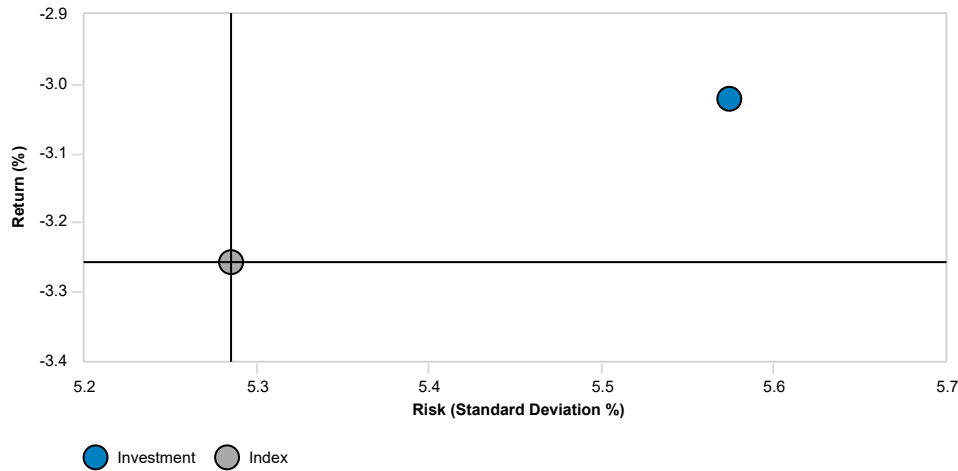
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-3.02	5.57	-0.62	110.04	6	103.22	6
Index	-3.26	5.29	-0.70	100.00	8	100.00	4

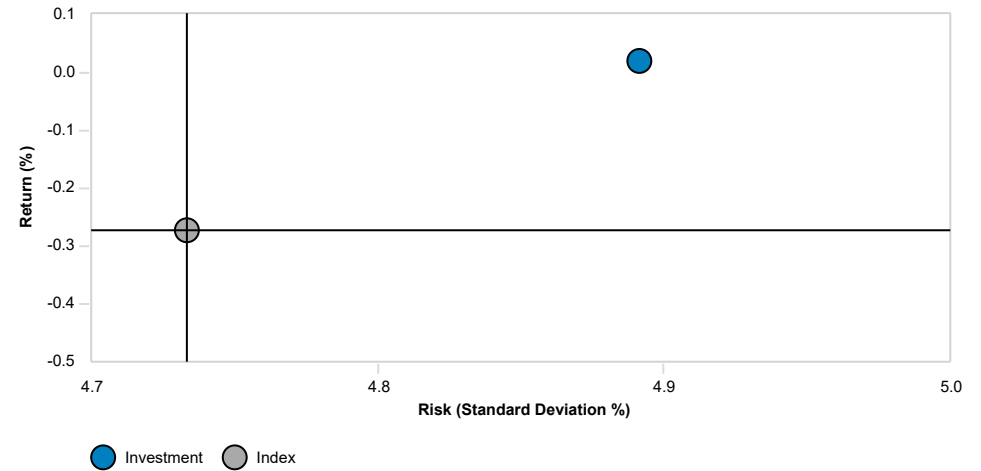
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	0.02	4.89	-0.21	105.42	12	100.38	8
Index	-0.27	4.73	-0.28	100.00	14	100.00	6

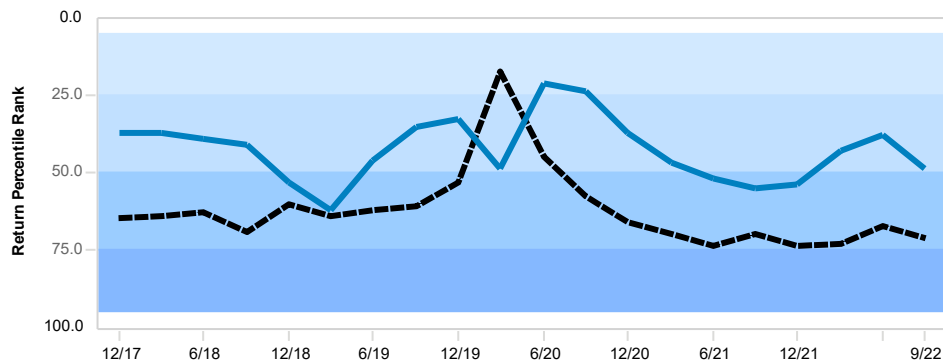
Risk and Return 3 Years



Risk and Return 5 Years

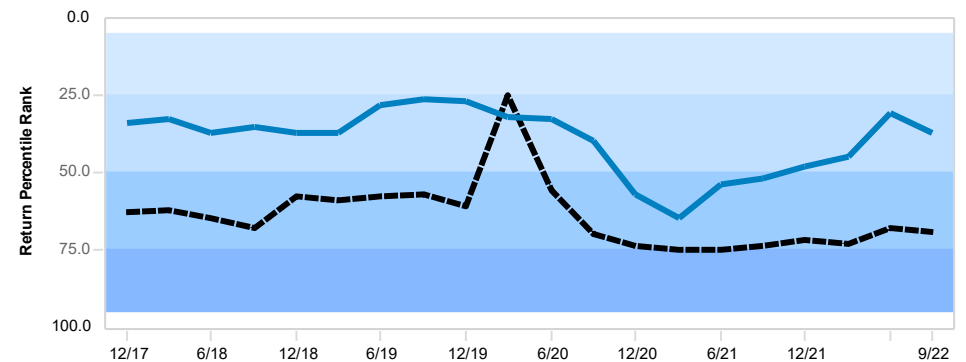


3 Year Rolling Percentile Rank IM U.S. Broad Market Core Fixed Income (SA+CF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	2 (10%)	13 (65%)	5 (25%)	0 (0%)
Index	20	1 (5%)	1 (5%)	18 (90%)	0 (0%)

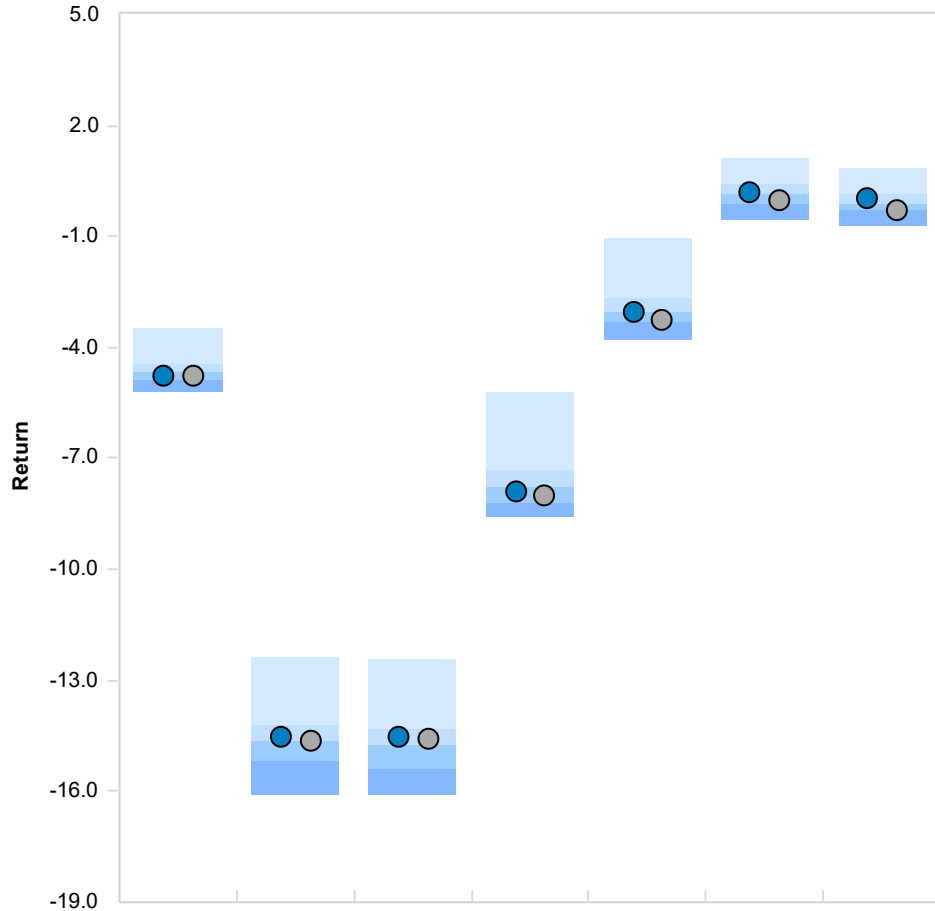
5 Year Rolling Percentile Rank IM U.S. Broad Market Core Fixed Income (SA+CF)



	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%)	19 (95%)	0 (0%)

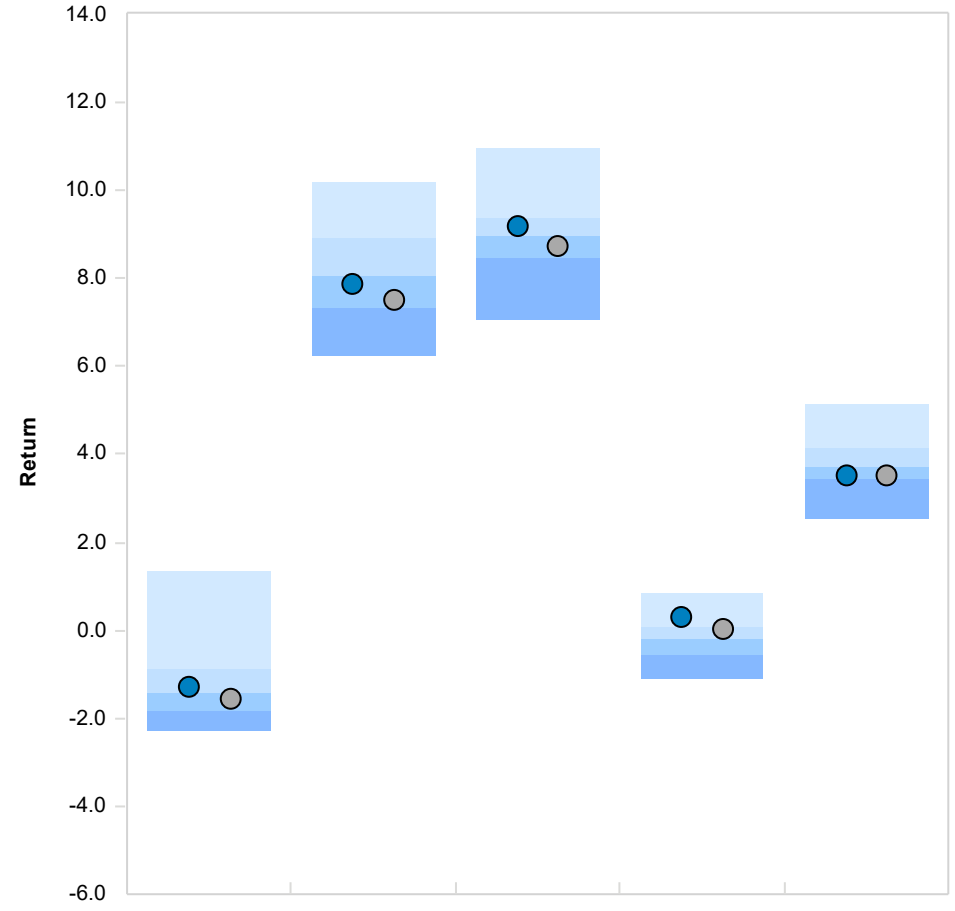


Peer Group Analysis - IM U.S. Broad Market Core Fixed Income (SA+CF)



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-4.78 (65)	-14.51 (40)	-14.51 (37)	-7.88 (55)	-3.02 (49)	0.19 (44)	0.02 (37)
● Index	-4.75 (62)	-14.61 (48)	-14.60 (44)	-8.00 (63)	-3.26 (71)	-0.03 (69)	-0.27 (69)
Median	-4.63	-14.64	-14.74	-7.79	-3.03	0.13	-0.10

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



	2021	2020	2019	2018	2017
● Investment	-1.29 (45)	7.87 (55)	9.18 (37)	0.29 (14)	3.52 (68)
● Index	-1.55 (57)	7.51 (66)	8.72 (66)	0.01 (31)	3.54 (65)
Median	-1.44	8.05	8.94	-0.20	3.73

Comparative Performance

	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	1 Qtr Ending Mar-2021
Investment	-4.65 (23)	-5.83 (44)	-0.01 (25)	-0.09 (87)	2.01 (42)	-3.14 (45)
Index	-4.69 (30)	-5.93 (58)	0.01 (18)	0.05 (46)	1.83 (73)	-3.38 (64)
Median	-4.91	-5.86	-0.11	0.04	1.94	-3.20





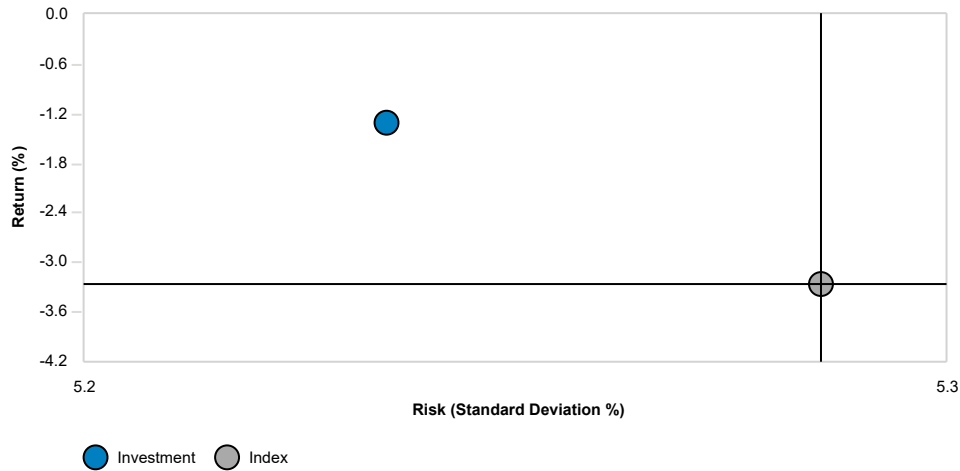
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-1.30	5.24	-0.33	116.91	8	86.94	4
Index	-3.26	5.29	-0.70	100.00	8	100.00	4

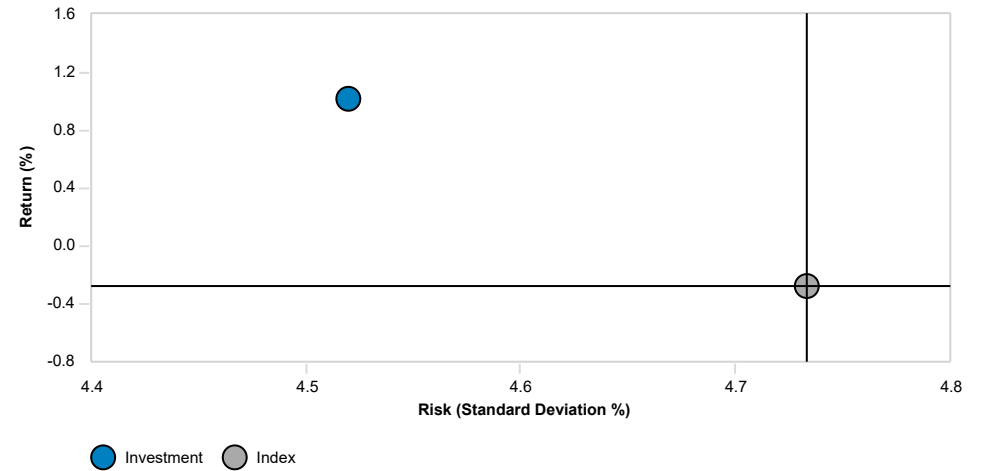
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	1.02	4.52	0.00	105.64	14	84.48	6
Index	-0.27	4.73	-0.28	100.00	14	100.00	6

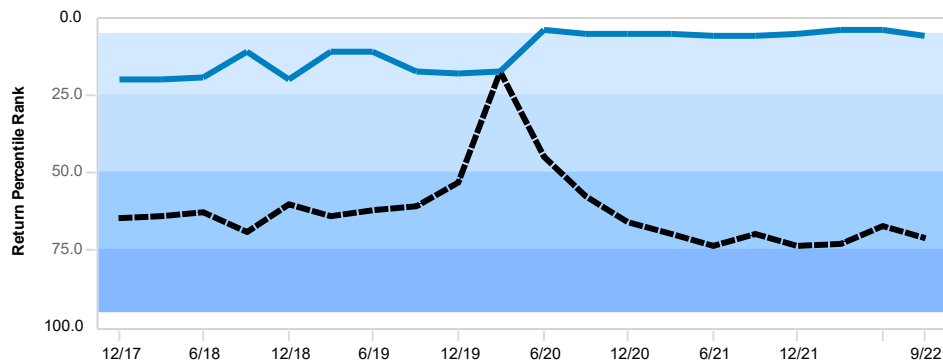
**Risk and Return 3 Years**



**Risk and Return 5 Years**

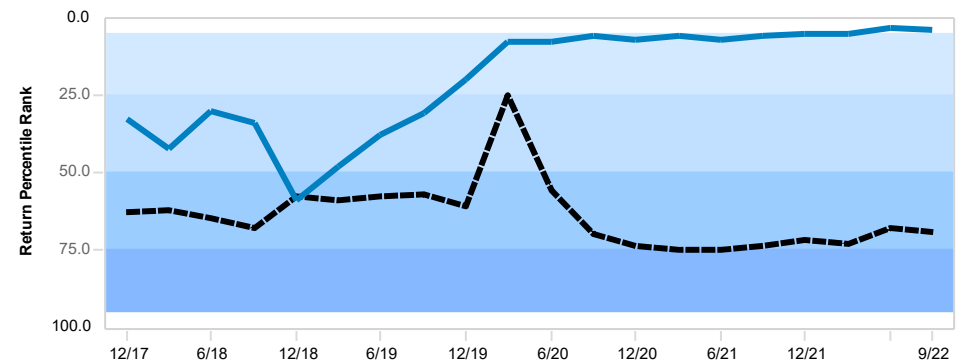


**3 Year Rolling Percentile Rank IM U.S. Broad Market Core Fixed Income (SA+CF)**



	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%)

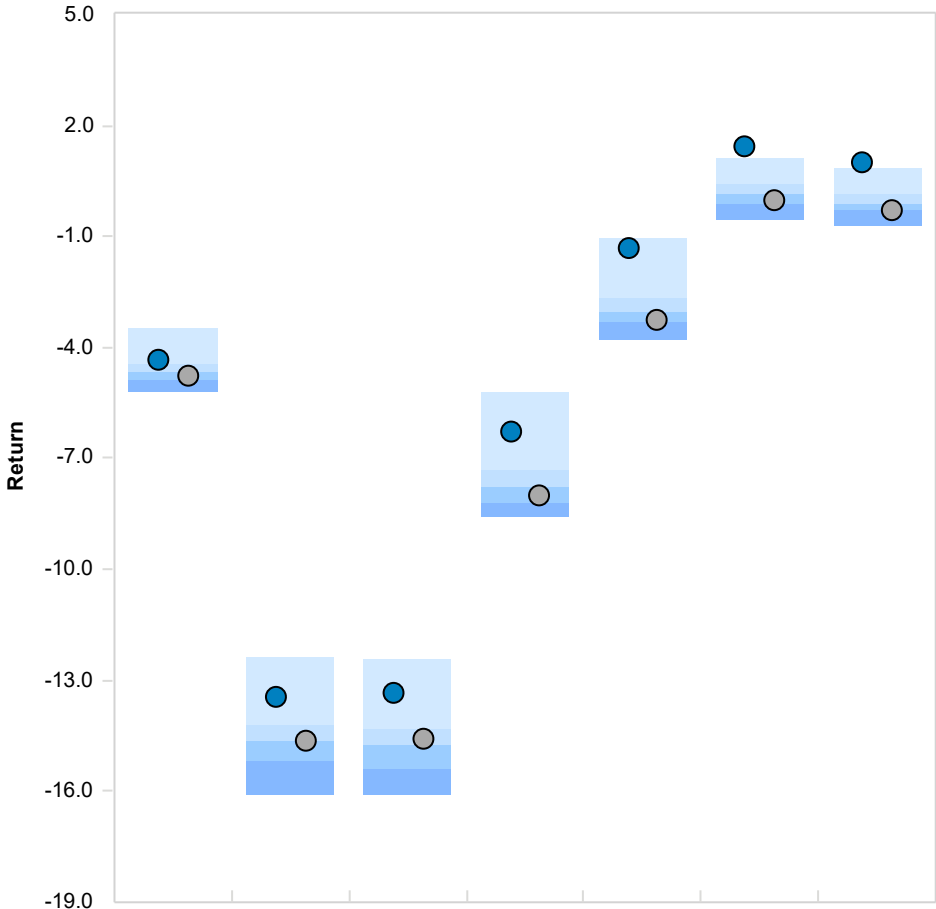
**5 Year Rolling Percentile Rank IM U.S. Broad Market Core Fixed Income (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	12 (60%)	7 (35%)	1 (5%)	0 (0%)
Index	20	1 (5%)	0 (0%)	19 (95%)	0 (0%)

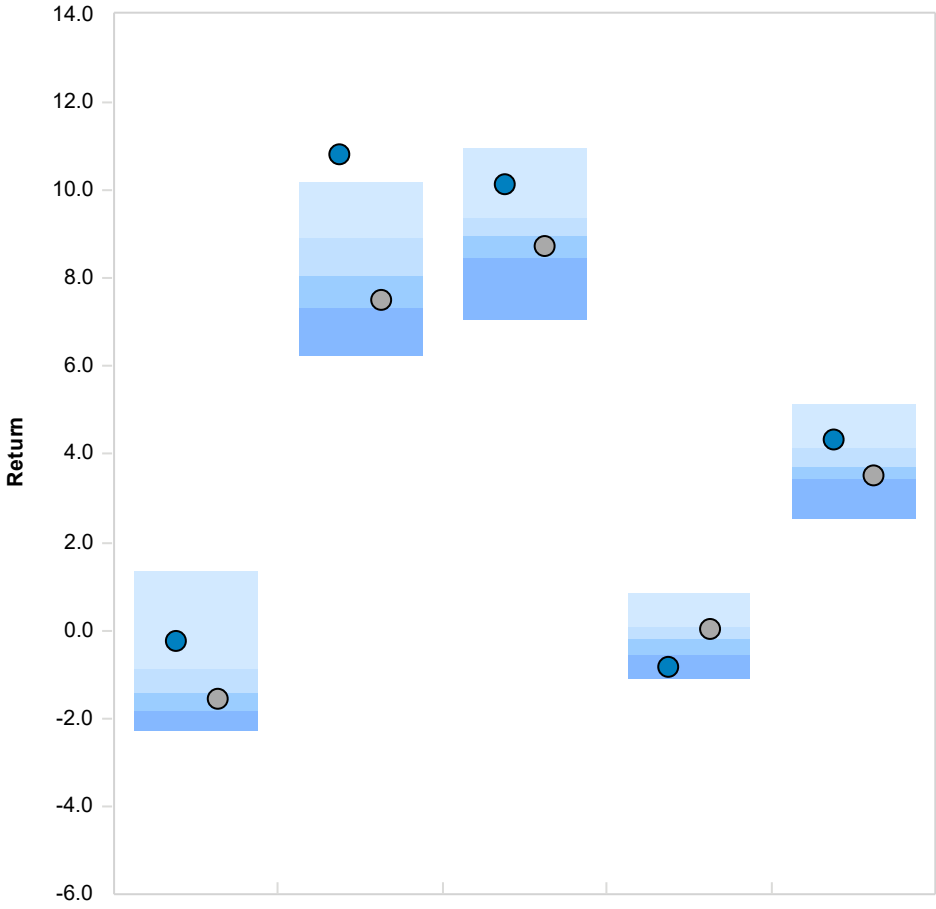


**Peer Group Analysis - IM U.S. Broad Market Core Fixed Income (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-4.33 (19)	-13.42 (10)	-13.34 (8)	-6.29 (8)	-1.30 (6)	1.41 (4)	1.02 (4)
● Index	-4.75 (62)	-14.61 (48)	-14.60 (44)	-8.00 (63)	-3.26 (71)	-0.03 (69)	-0.27 (69)
Median	-4.63	-14.64	-14.74	-7.79	-3.03	0.13	-0.10

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



	2021	2020	2019	2018	2017
● Investment	-0.25 (10)	10.80 (3)	10.15 (9)	-0.81 (89)	4.33 (17)
● Index	-1.55 (57)	7.51 (66)	8.72 (66)	0.01 (31)	3.54 (65)
Median	-1.44	8.05	8.94	-0.20	3.73

**Comparative Performance**

	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	1 Qtr Ending Mar-2021
Investment	-4.36 (17)	-5.37 (15)	0.09 (10)	0.02 (58)	2.05 (37)	-2.36 (10)
Index	-4.69 (30)	-5.93 (58)	0.01 (18)	0.05 (46)	1.83 (73)	-3.38 (64)
Median	-4.91	-5.86	-0.11	0.04	1.94	-3.20



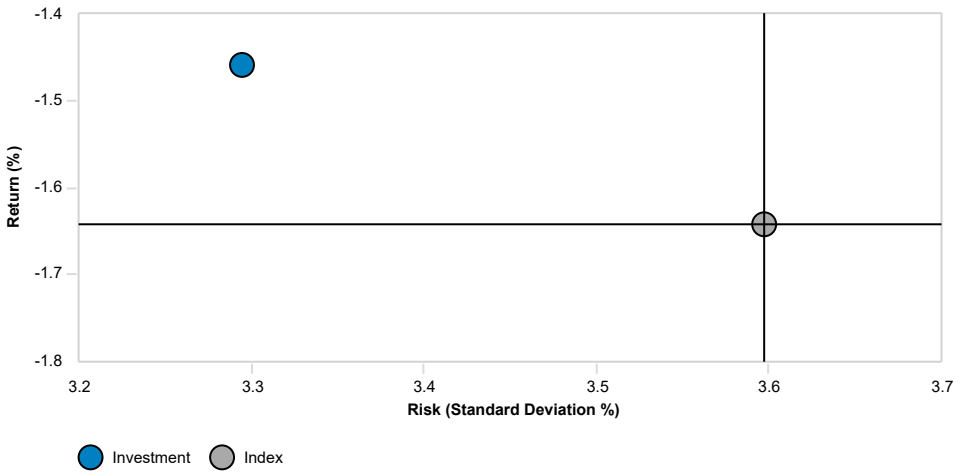
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-1.46	3.29	-0.61	87.34	6	87.81	6
Index	-1.64	3.60	-0.60	100.00	7	100.00	5

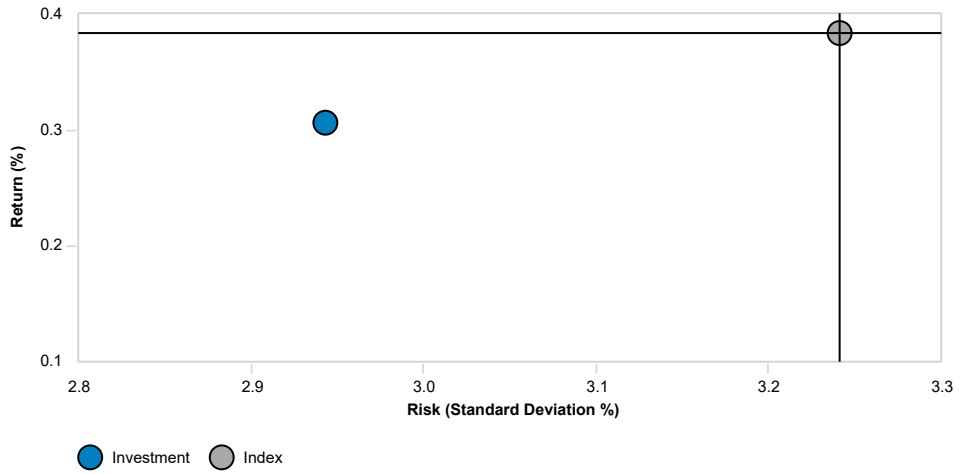
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	0.31	2.94	-0.27	88.41	12	89.32	8
Index	0.38	3.24	-0.22	100.00	13	100.00	7

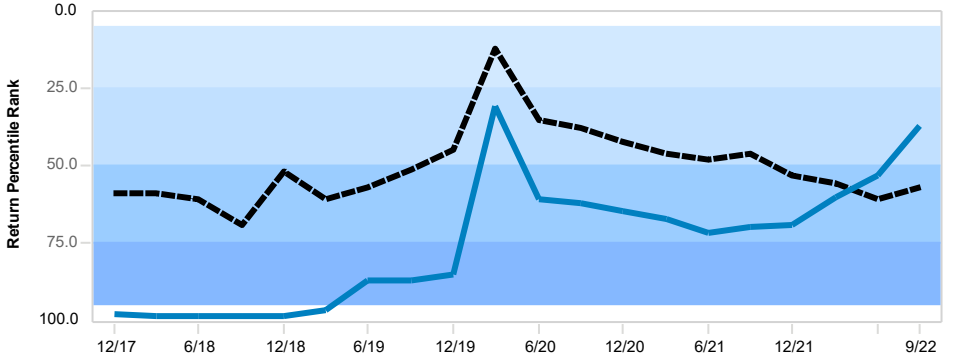
**Risk and Return 3 Years**



**Risk and Return 5 Years**

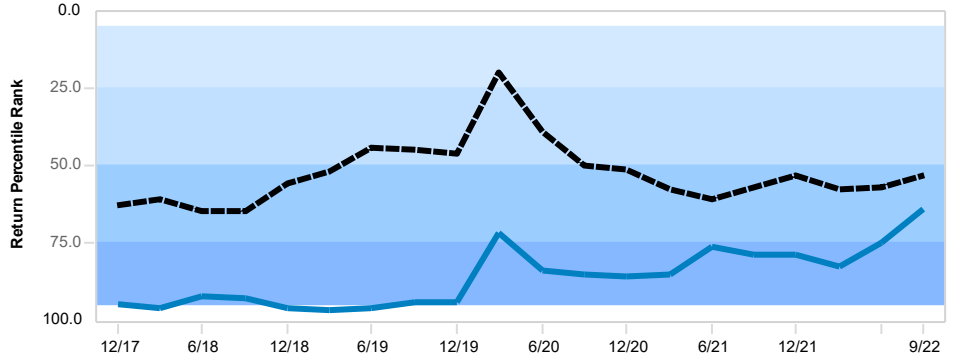


**3 Year Rolling Percentile Rank IM U.S. Intermediate Duration (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	2 (10%)	9 (45%)	9 (45%)
Index	20	1 (5%)	7 (35%)	12 (60%)	0 (0%)

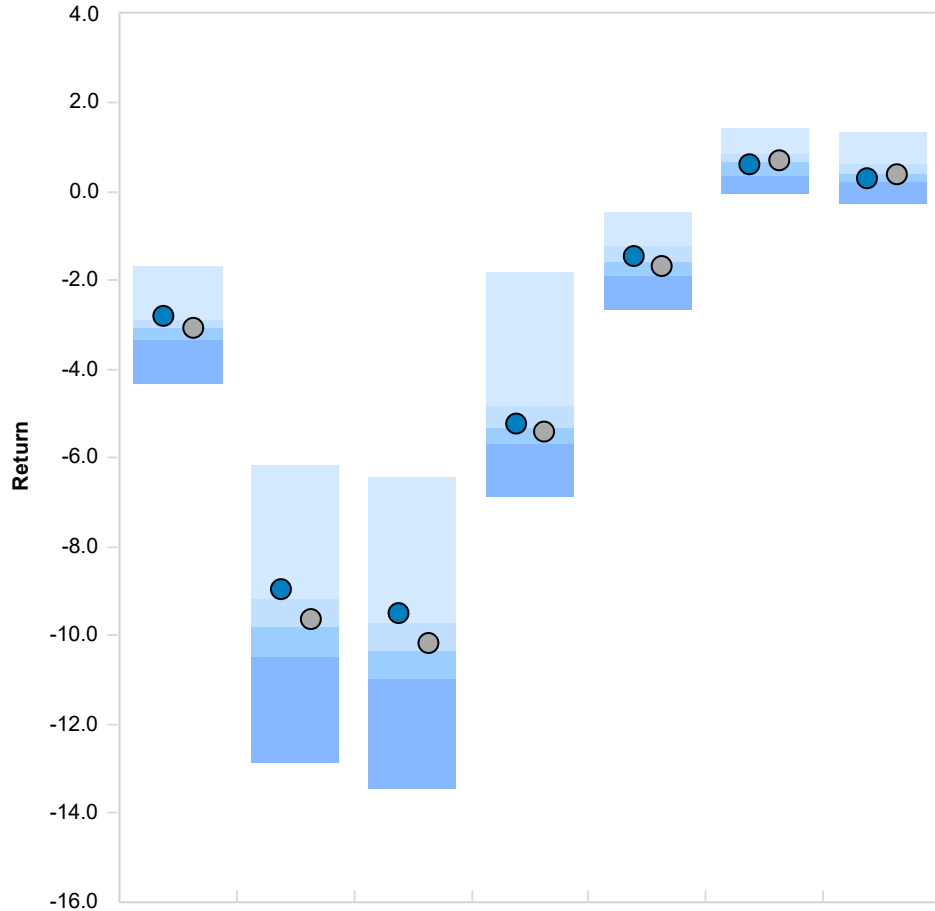
**5 Year Rolling Percentile Rank IM U.S. Intermediate Duration (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	0 (0%)	3 (15%)	17 (85%)
Index	20	1 (5%)	5 (25%)	14 (70%)	0 (0%)

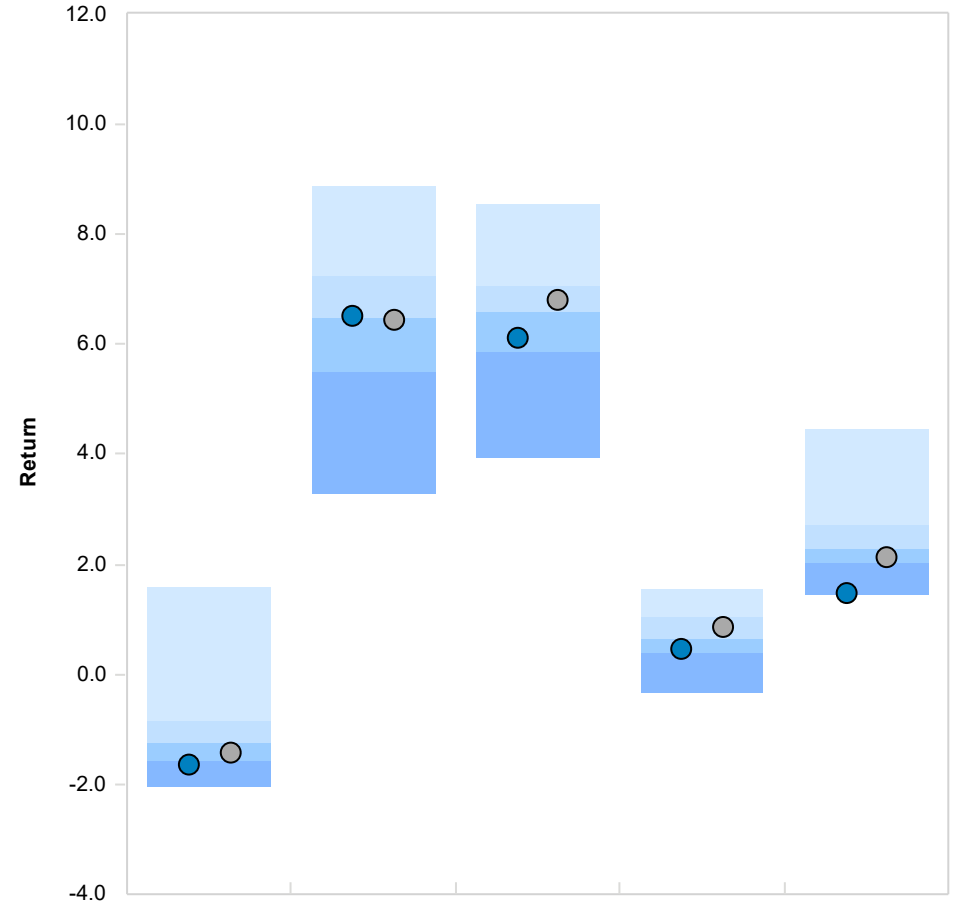


**Peer Group Analysis - IM U.S. Intermediate Duration (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-2.79 (23)	-8.94 (20)	-9.49 (21)	-5.20 (43)	-1.46 (37)	0.63 (59)	0.31 (64)
● Index	-3.06 (53)	-9.63 (41)	-10.14 (41)	-5.39 (56)	-1.64 (57)	0.72 (40)	0.38 (53)
Median	-3.05	-9.82	-10.36	-5.31	-1.58	0.68	0.40

**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 (68)	1.49 (91)
● Index	-1.44 (64)	6.43 (53)	6.80 (41)	0.88 (36)	2.14 (65)
Median	-1.22	6.48	6.60	0.66	2.27

**Comparative Performance**

	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	1 Qtr Ending Mar-2021
Investment	-2.28 (20)	-4.15 (31)	-0.60 (59)	-0.11 (87)	0.97 (56)	-1.90 (74)
Index	-2.37 (24)	-4.51 (65)	-0.57 (48)	0.02 (45)	0.98 (54)	-1.86 (71)
Median	-2.65	-4.40	-0.58	0.00	0.99	-1.66



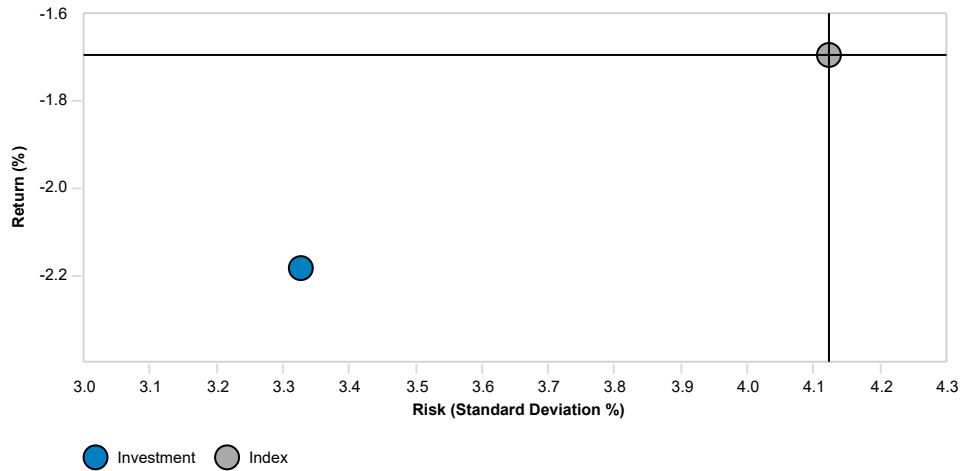
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-2.18	3.33	-0.82	68.11	5	84.64	7
Index	-1.69	4.12	-0.53	100.00	7	100.00	5

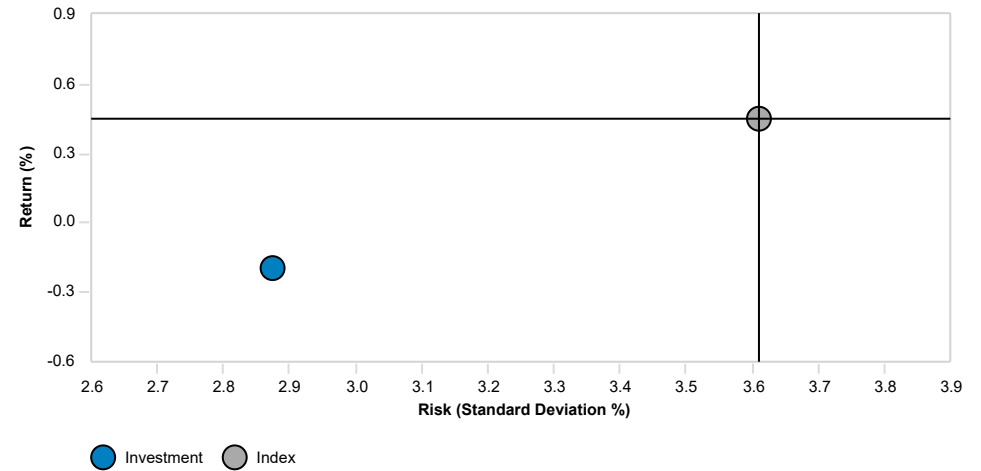
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-0.19	2.87	-0.46	70.06	12	81.62	8
Index	0.45	3.61	-0.17	100.00	12	100.00	8

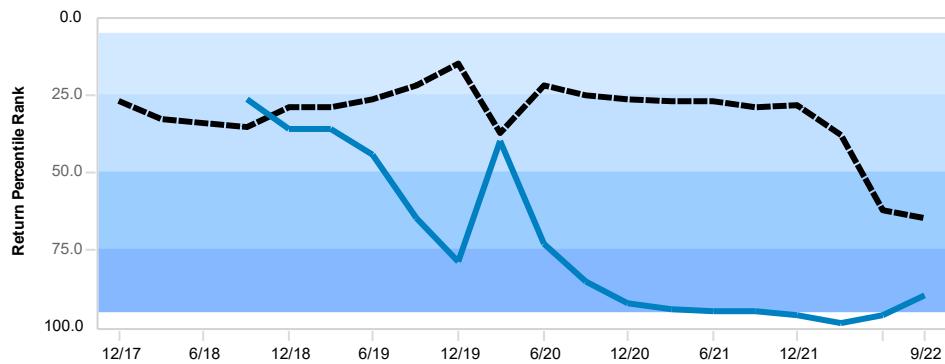
**Risk and Return 3 Years**



**Risk and Return 5 Years**

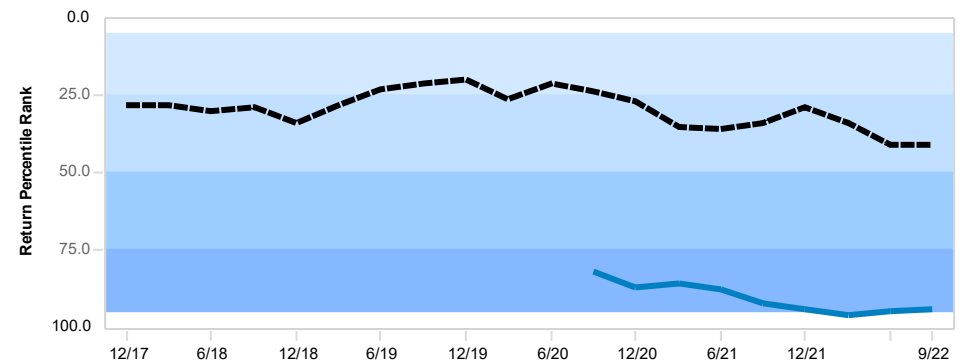


**3 Year Rolling Percentile Rank IM U.S. Intermediate Duration (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	17	0 (0%)	5 (29%)	2 (12%)	10 (59%)
Index	20	4 (20%)	14 (70%)	2 (10%)	0 (0%)

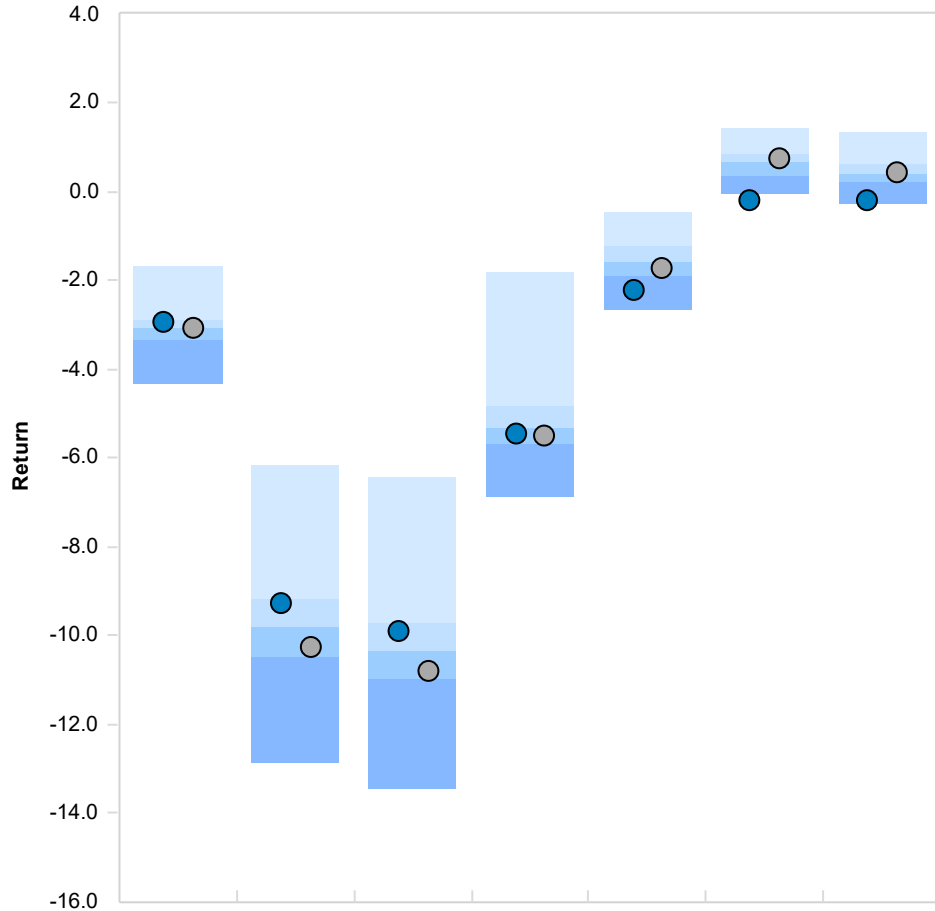
**5 Year Rolling Percentile Rank IM U.S. Intermediate Duration (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	9	0 (0%)	0 (0%)	0 (0%)	9 (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	-2.90 (29)	-9.27 (27)	-9.90 (30)	-5.45 (60)	-2.18 (90)	-0.18 (96)	-0.19 (94)
● Index	-3.07 (53)	-10.26 (73)	-10.77 (69)	-5.49 (62)	-1.69 (65)	0.78 (35)	0.45 (41)
Median	-3.05	-9.82	-10.36	-5.31	-1.58	0.68	0.40

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



	2021	2020	2019	2018	2017
● Investment	-1.80 (91)	4.79 (89)	5.02 (91)	0.74 (47)	2.68 (28)
● Index	-1.29 (57)	6.62 (45)	7.78 (12)	0.58 (59)	2.65 (28)
Median	-1.22	6.48	6.60	0.66	2.27

**Comparative Performance**

	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	1 Qtr Ending Mar-2021
Investment	-2.41 (27)	-4.26 (39)	-0.69 (81)	-0.09 (84)	0.83 (76)	-1.83 (68)
Index	-2.84 (66)	-4.72 (85)	-0.56 (45)	0.04 (36)	1.18 (25)	-1.93 (78)
Median	-2.65	-4.40	-0.58	0.00	0.99	-1.66



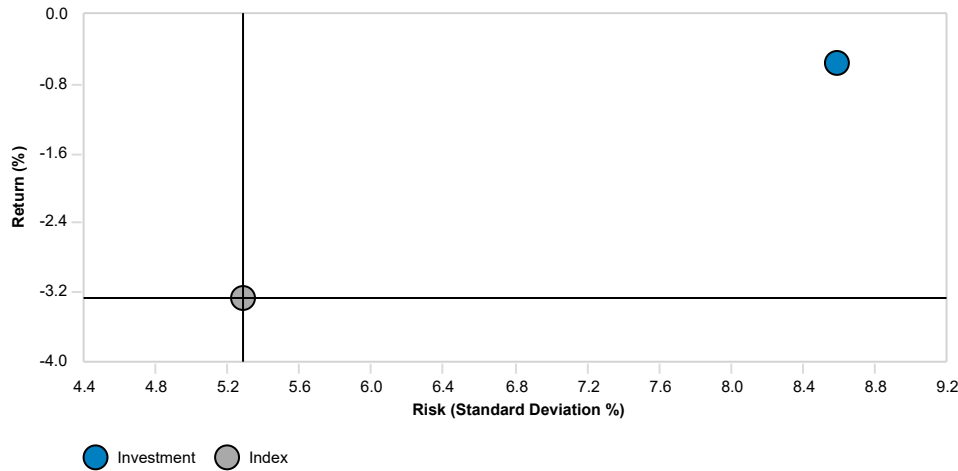
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-0.56	8.59	-0.09	139.11	7	89.15	5
Index	-3.26	5.29	-0.70	100.00	8	100.00	4

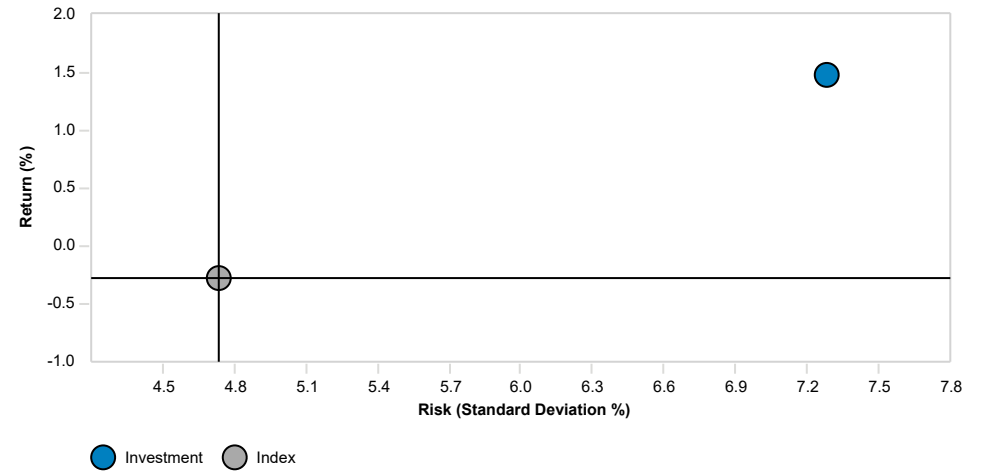
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	1.47	7.28	0.08	117.24	11	85.72	9
Index	-0.27	4.73	-0.28	100.00	14	100.00	6

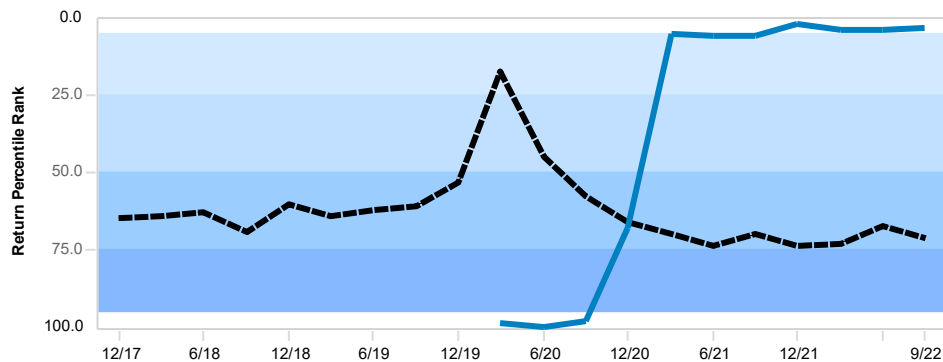
**Risk and Return 3 Years**



**Risk and Return 5 Years**

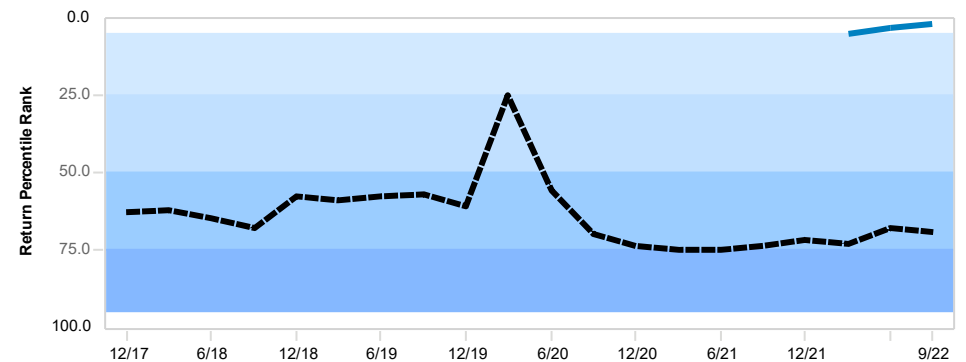


**3 Year Rolling Percentile Rank IM U.S. Broad Market Core Fixed Income (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	11	7 (64%)	0 (0%)	1 (9%)	3 (27%)
Index	20	1 (5%)	1 (5%)	18 (90%)	0 (0%)

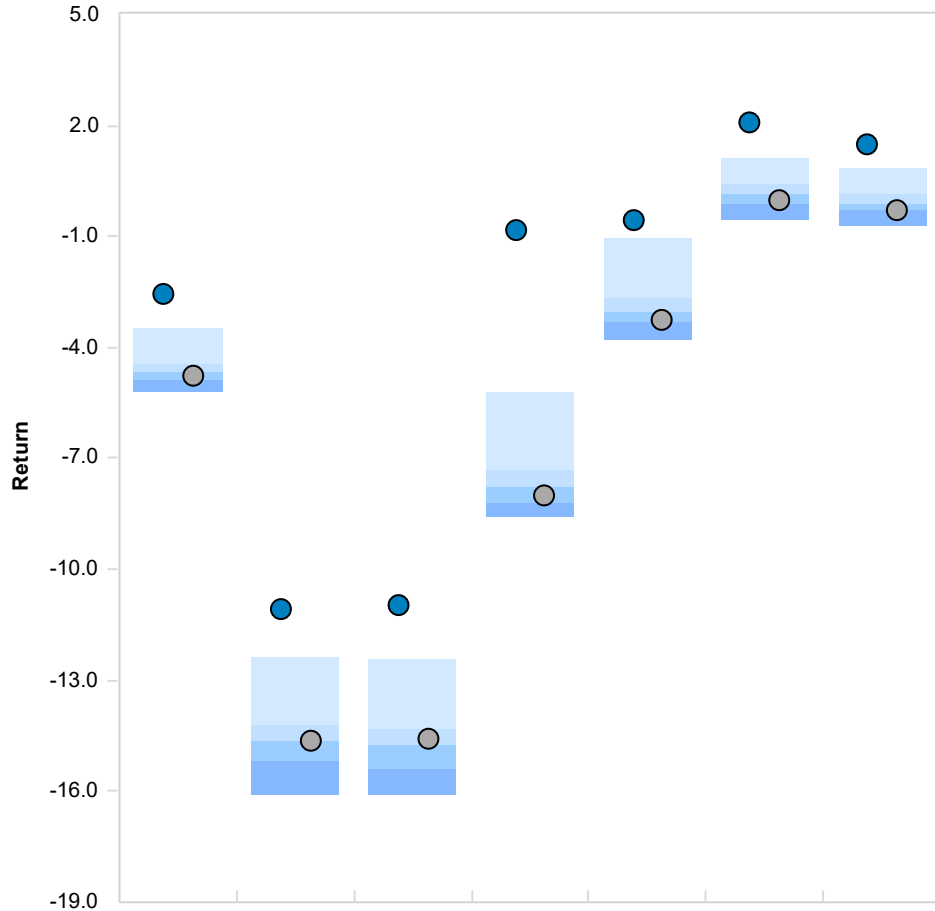
**5 Year Rolling Percentile Rank IM U.S. Broad Market Core Fixed Income (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	3	3 (100%)	0 (0%)	0 (0%)	0 (0%)
Index	20	1 (5%)	0 (0%)	19 (95%)	0 (0%)

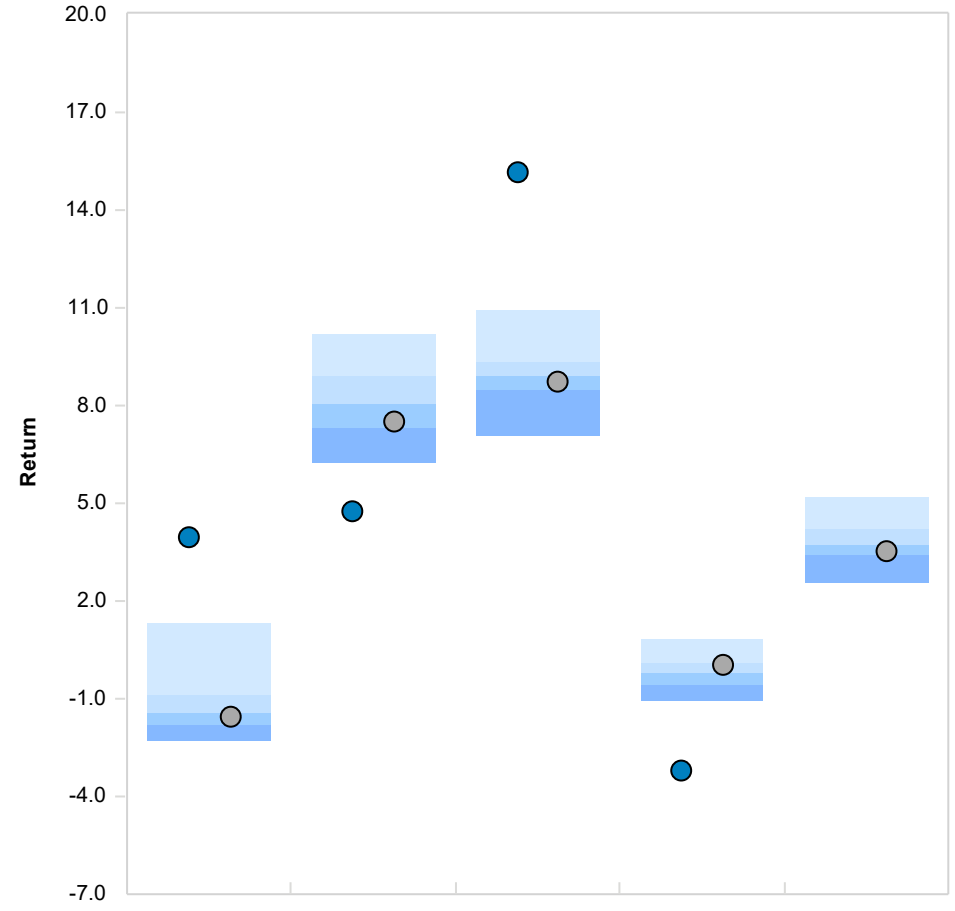


**Peer Group Analysis - IM U.S. Broad Market Core Fixed Income (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-2.57 (4)	-11.09 (4)	-10.95 (3)	-0.84 (2)	-0.56 (3)	2.10 (2)	1.47 (2)
● Index	-4.75 (62)	-14.61 (48)	-14.60 (44)	-8.00 (63)	-3.26 (71)	-0.03 (69)	-0.27 (69)
Median	-4.63	-14.64	-14.74	-7.79	-3.03	0.13	-0.10

**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 (57)	7.51 (66)	8.72 (66)	0.01 (31)	3.54 (65)
Median	-1.44	8.05	8.94	-0.20	3.73

**Comparative Performance**

	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	1 Qtr Ending Mar-2021
Investment	-4.89 (48)	-4.05 (1)	0.15 (5)	-0.14 (90)	2.75 (3)	1.16 (1)
Index	-4.69 (30)	-5.93 (58)	0.01 (18)	0.05 (46)	1.83 (73)	-3.38 (64)
Median	-4.91	-5.86	-0.11	0.04	1.94	-3.20





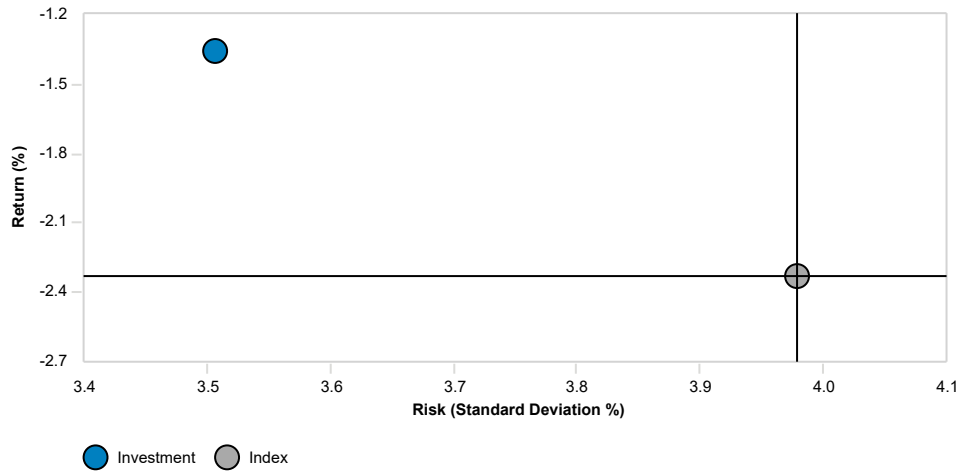
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-1.36	3.51	-0.53	110.65	6	90.02	6
Index	-2.33	3.98	-0.71	100.00	7	100.00	5

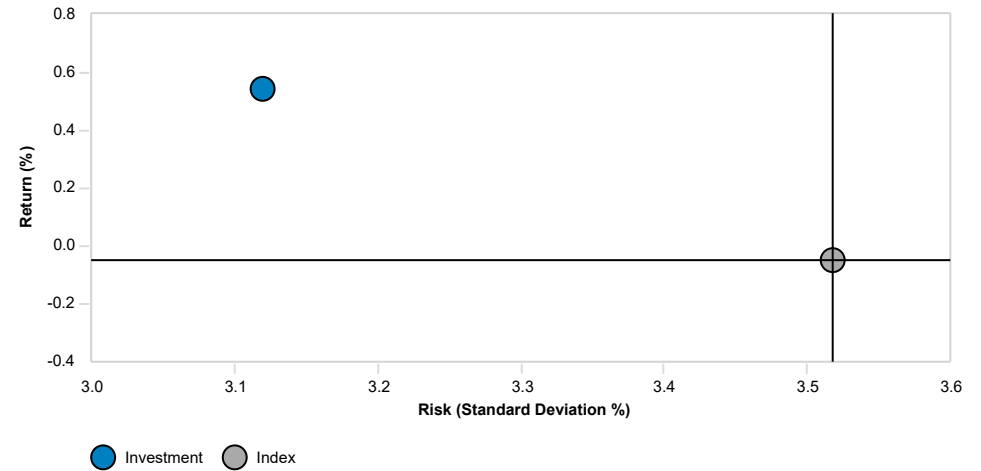
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	0.54	3.12	-0.18	99.83	12	86.12	8
Index	-0.05	3.52	-0.32	100.00	13	100.00	7

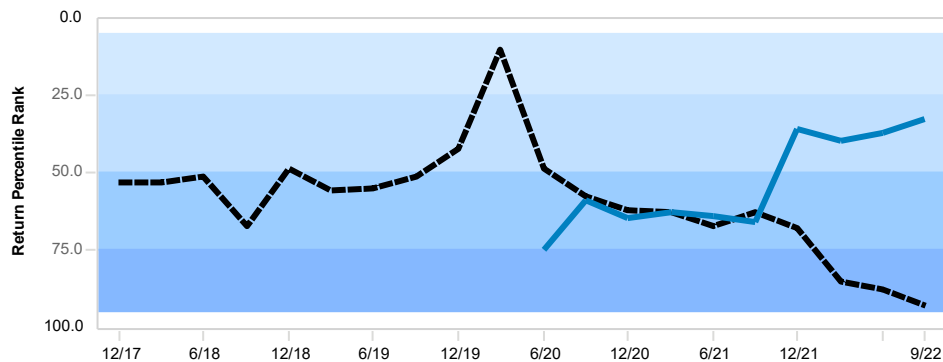
**Risk and Return 3 Years**



**Risk and Return 5 Years**

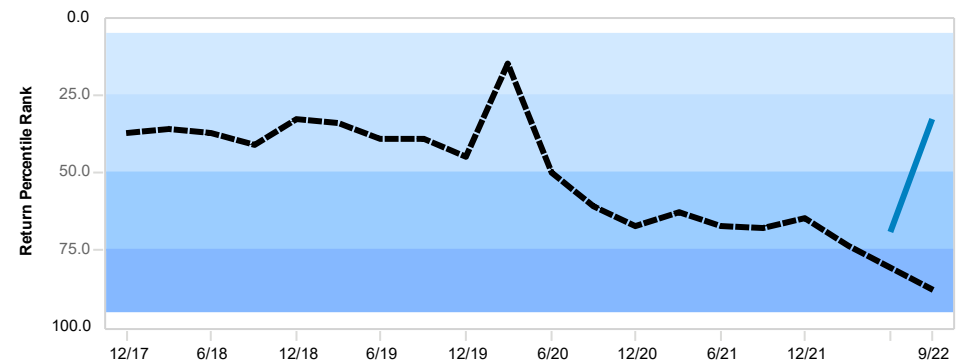


**3 Year Rolling Percentile Rank IM U.S. Intermediate Duration (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	10	0 (0%)	4 (40%)	6 (60%)	0 (0%)
Index	20	1 (5%)	3 (15%)	13 (65%)	3 (15%)

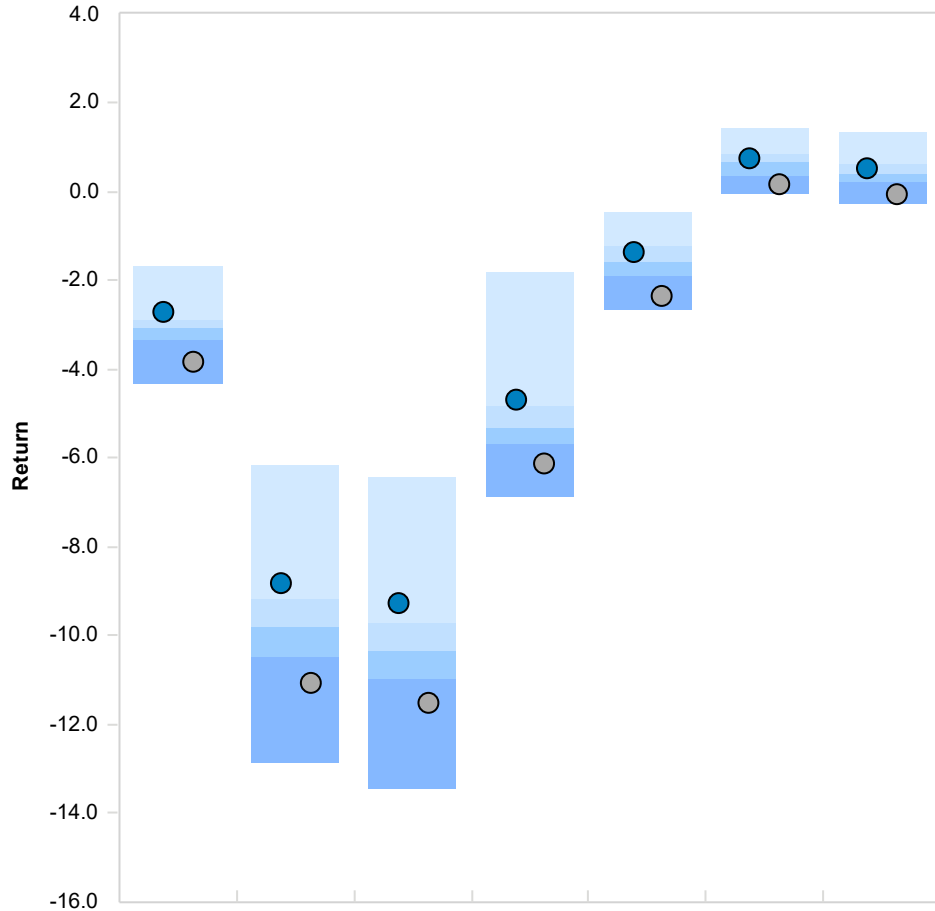
**5 Year Rolling Percentile Rank IM U.S. Intermediate Duration (SA+CF)**



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

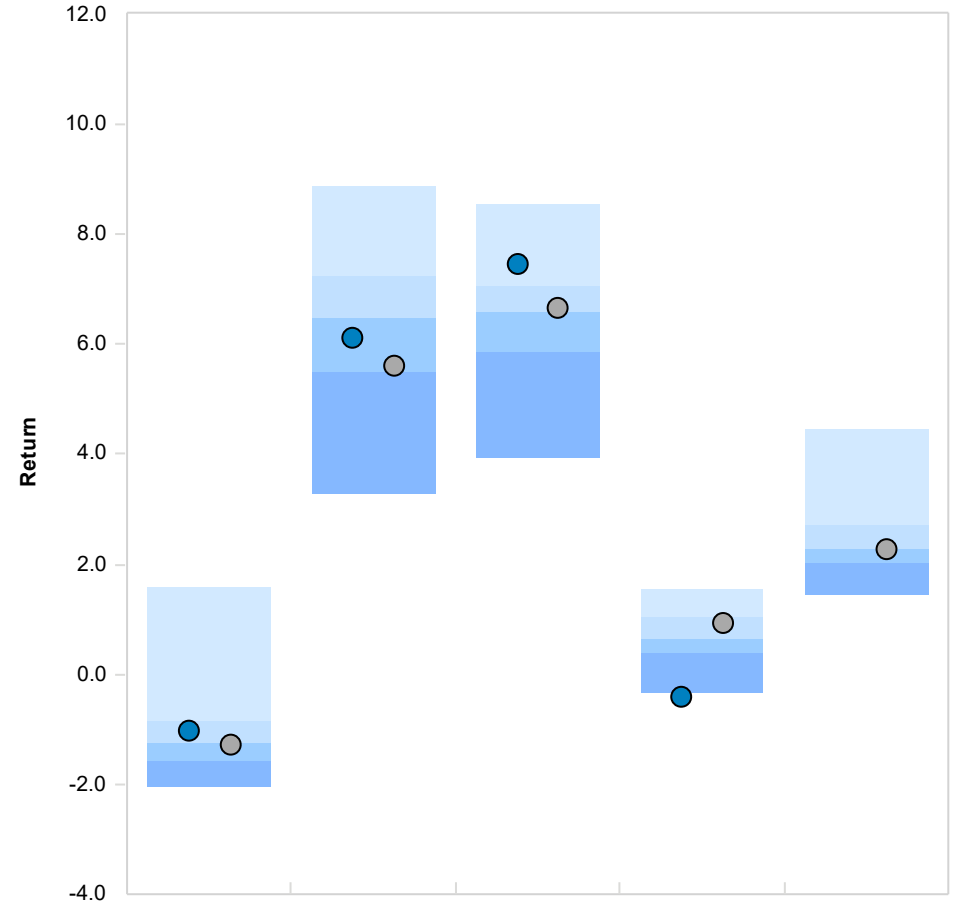


**Peer Group Analysis - IM U.S. Intermediate Duration (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-2.69 (18)	-8.83 (19)	-9.24 (15)	-4.68 (20)	-1.36 (33)	0.77 (36)	0.54 (33)
● Index	-3.84 (91)	-11.04 (87)	-11.49 (86)	-6.10 (89)	-2.33 (93)	0.17 (88)	-0.05 (88)
Median	-3.05	-9.82	-10.36	-5.31	-1.58	0.68	0.40

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



	2021	2020	2019	2018	2017
● Investment	-1.04 (35)	6.13 (65)	7.47 (16)	-0.40 (96)	N/A
● Index	-1.29 (57)	5.60 (73)	6.67 (47)	0.92 (34)	2.27 (50)
Median	-1.22	6.48	6.60	0.66	2.27

**Comparative Performance**

	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	1 Qtr Ending Mar-2021
Investment	-2.28 (20)	-4.13 (29)	-0.45 (21)	0.00 (50)	0.96 (64)	-1.53 (37)
Index	-2.93 (73)	-4.69 (81)	-0.51 (30)	0.05 (32)	0.78 (79)	-1.61 (44)
Median	-2.65	-4.40	-0.58	0.00	0.99	-1.66



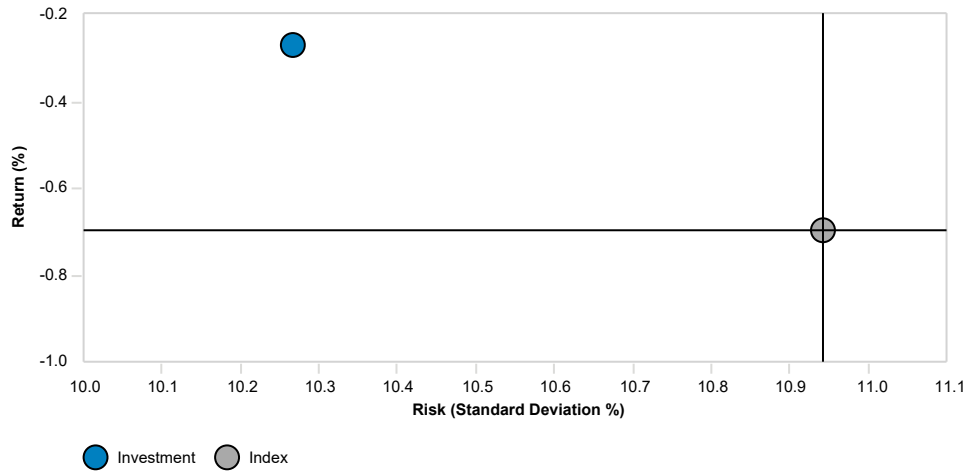
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-0.27	10.27	-0.03	96.88	8	94.05	4
Index	-0.70	10.94	-0.06	100.00	8	100.00	4

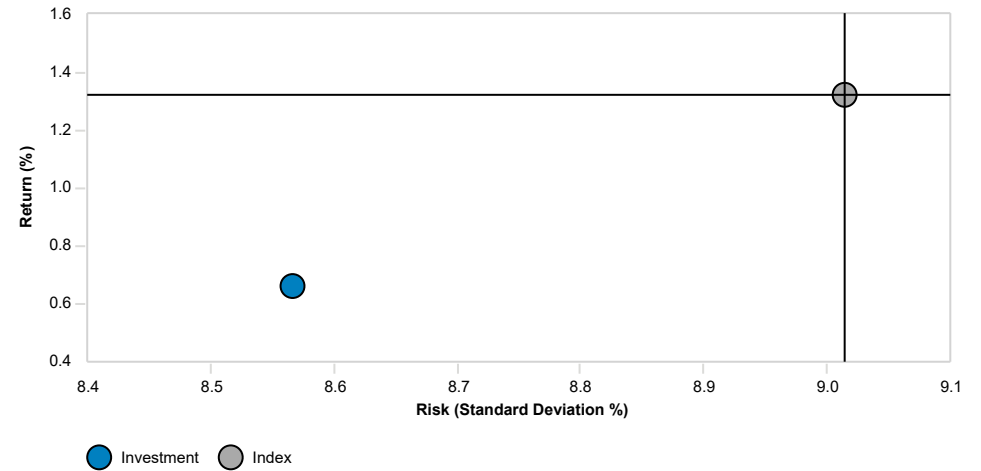
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	0.66	8.57	-0.01	90.65	14	96.68	6
Index	1.32	9.01	0.06	100.00	14	100.00	6

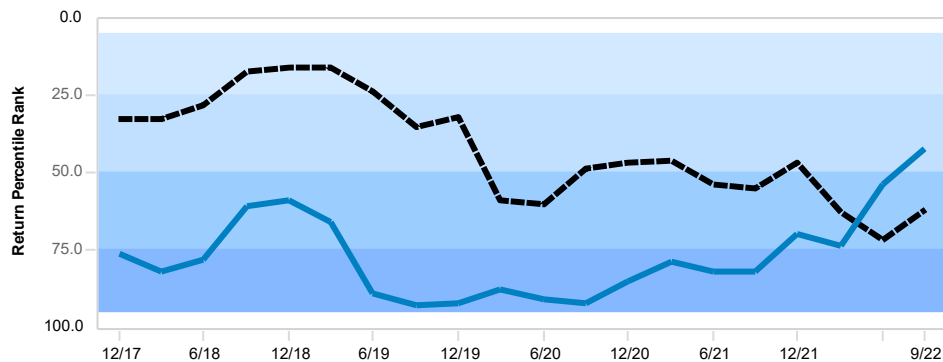
**Risk and Return 3 Years**



**Risk and Return 5 Years**

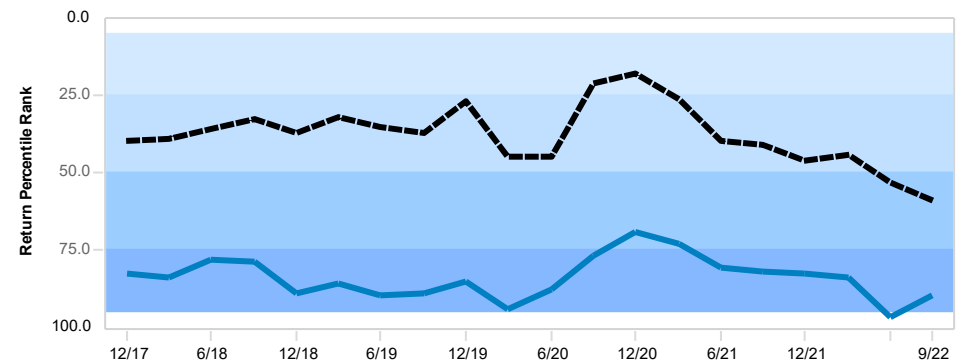


**3 Year Rolling Percentile Rank IM U.S. High Yield Bonds (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	1 (5%)	6 (30%)	13 (65%)
Index	20	4 (20%)	9 (45%)	7 (35%)	0 (0%)

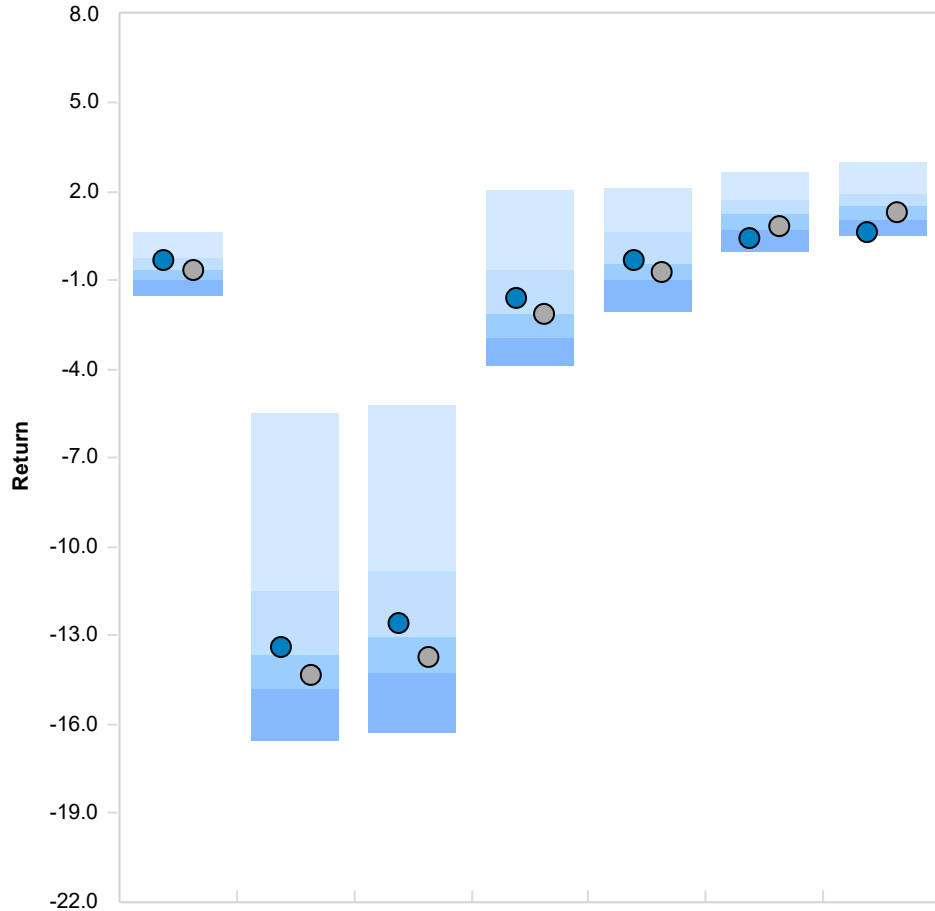
**5 Year Rolling Percentile Rank IM U.S. High Yield Bonds (SA+CF)**



	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%)	16 (80%)	2 (10%)	0 (0%)

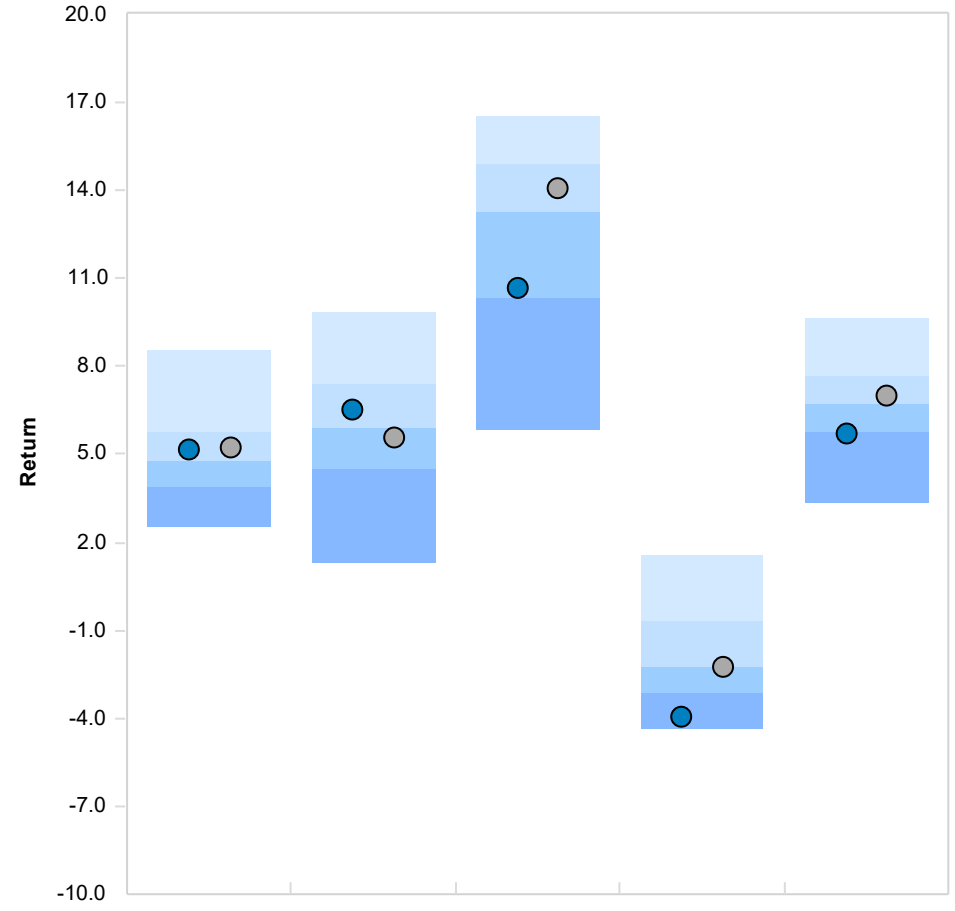


**Peer Group Analysis - IM U.S. High Yield Bonds (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-0.32 (30)	-13.35 (42)	-12.54 (41)	-1.60 (41)	-0.27 (42)	0.42 (88)	0.66 (90)
● Index	-0.63 (53)	-14.31 (62)	-13.73 (63)	-2.10 (50)	-0.70 (62)	0.85 (71)	1.32 (59)
Median	-0.61	-13.63	-13.00	-2.11	-0.42	1.23	1.50

**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 (80)
● Index	5.22 (41)	5.60 (61)	14.05 (42)	-2.22 (50)	6.97 (47)
Median	4.79	5.94	13.23	-2.24	6.77

**Comparative Performance**

	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	1 Qtr Ending Mar-2021
Investment	-9.70 (60)	-3.73 (41)	0.93 (8)	0.94 (23)	2.37 (67)	0.82 (54)
Index	-9.90 (71)	-4.29 (62)	0.67 (37)	0.93 (24)	2.59 (44)	0.94 (46)
Median	-9.53	-3.97	0.59	0.78	2.51	0.89



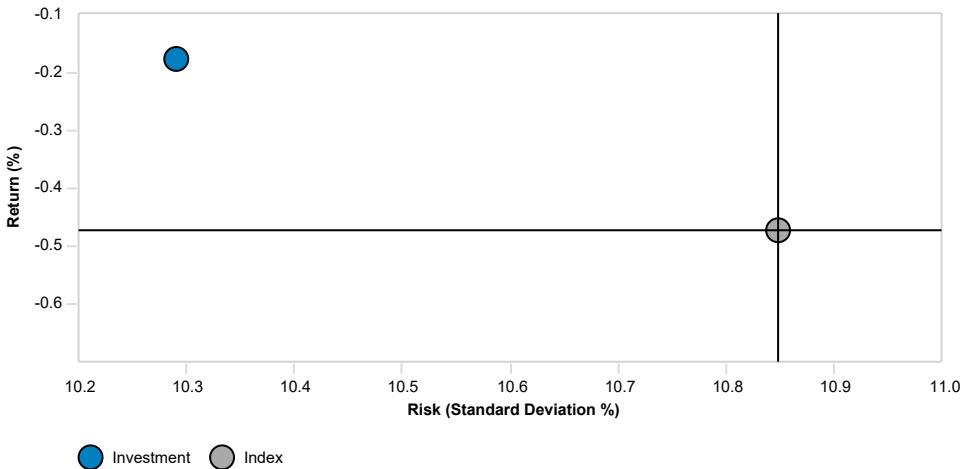
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-0.18	10.29	-0.02	97.29	8	95.35	4
Index	-0.47	10.85	-0.04	100.00	8	100.00	4

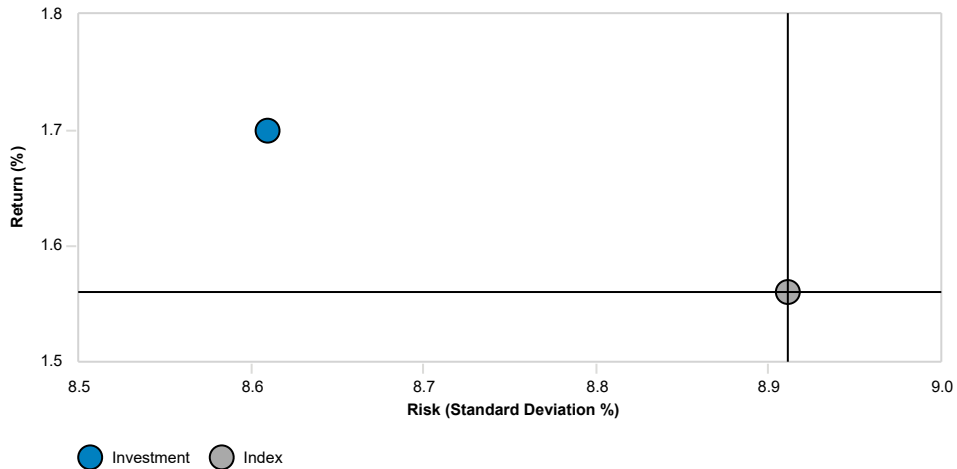
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	1.70	8.61	0.11	98.83	14	97.35	6
Index	1.56	8.91	0.09	100.00	14	100.00	6

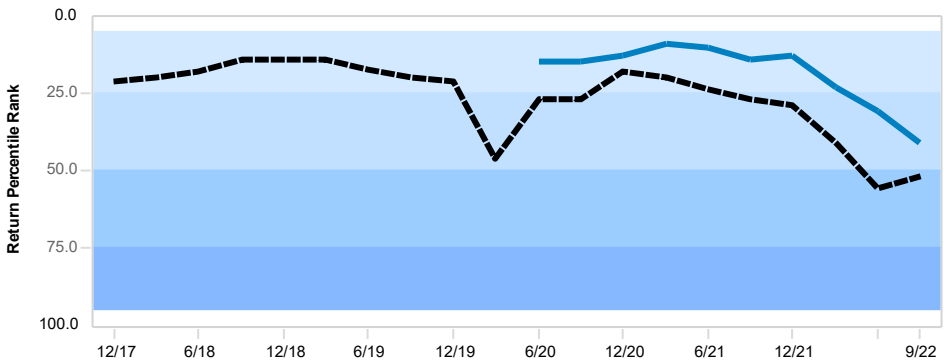
**Risk and Return 3 Years**



**Risk and Return 5 Years**

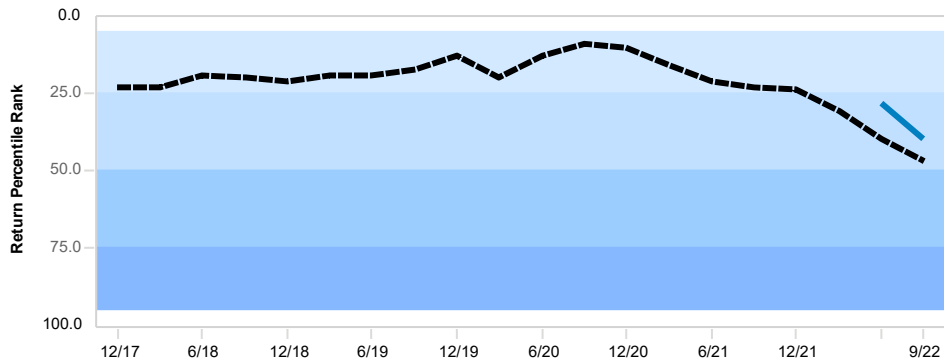


**3 Year Rolling Percentile Rank IM U.S. High Yield Bonds (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	10	8 (80%)	2 (20%)	0 (0%)	0 (0%)
Index	20	12 (60%)	6 (30%)	2 (10%)	0 (0%)

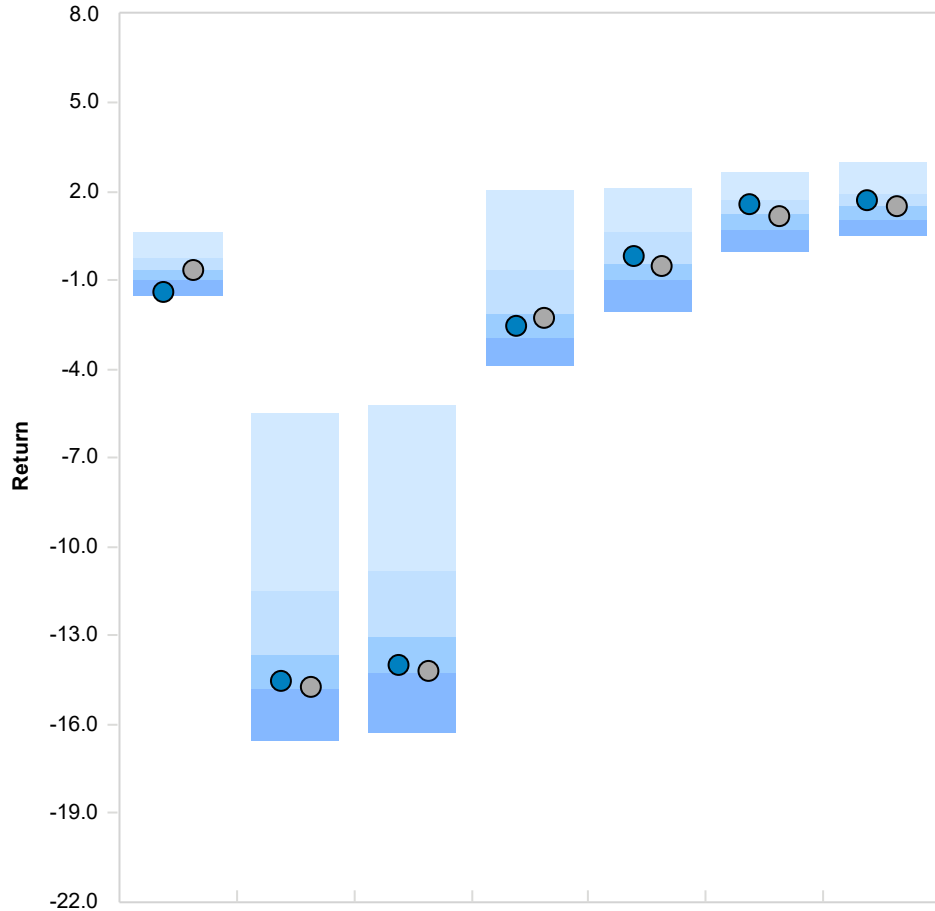
**5 Year Rolling Percentile Rank IM U.S. High Yield Bonds (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	2	0 (0%)	2 (100%)	0 (0%)	0 (0%)
Index	20	17 (85%)	3 (15%)	0 (0%)	0 (0%)

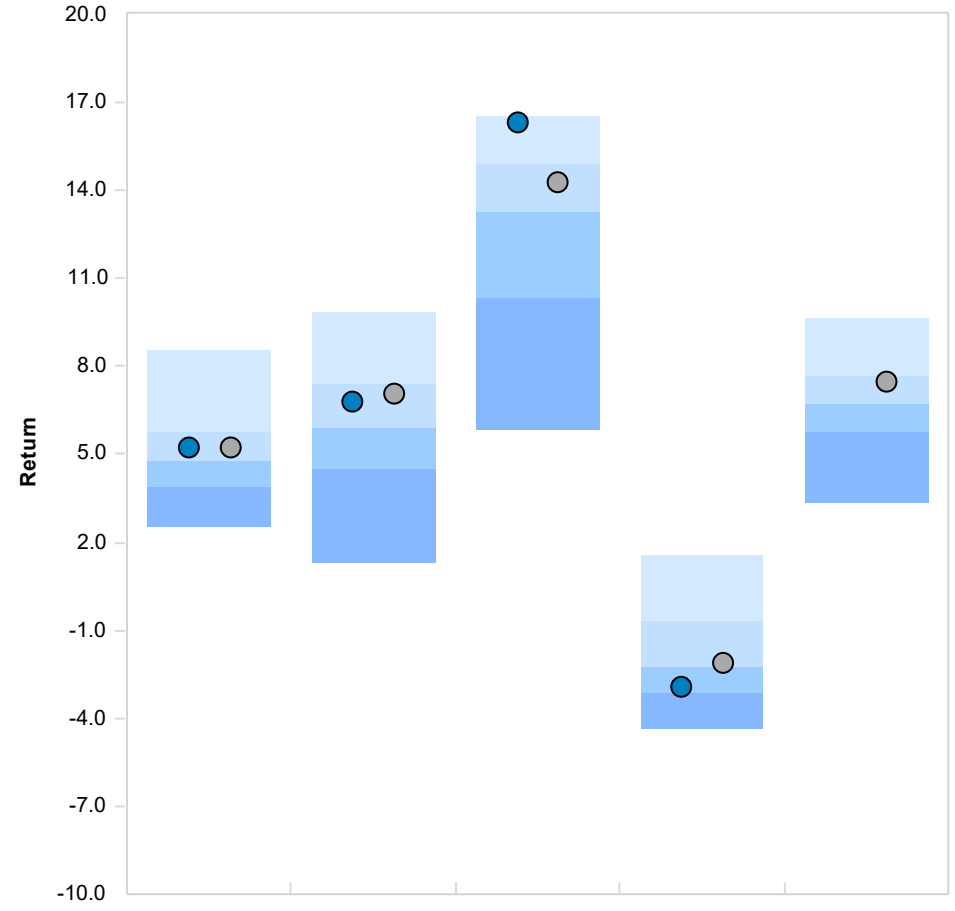


**Peer Group Analysis - IM U.S. High Yield Bonds (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-1.39 (92)	-14.50 (69)	-13.98 (68)	-2.52 (64)	-0.18 (41)	1.56 (38)	1.70 (40)
● Index	-0.64 (53)	-14.73 (74)	-14.15 (75)	-2.26 (57)	-0.47 (52)	1.19 (52)	1.56 (47)
Median	-0.61	-13.63	-13.00	-2.11	-0.42	1.23	1.50

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



	2021	2020	2019	2018	2017
● Investment	5.27 (40)	6.78 (36)	16.30 (7)	-2.90 (69)	N/A
● Index	5.26 (40)	7.05 (30)	14.32 (34)	-2.08 (46)	7.50 (34)
Median	4.79	5.94	13.23	-2.24	6.77

**Comparative Performance**

	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	1 Qtr Ending Mar-2021
Investment	-9.62 (54)	-4.06 (53)	0.61 (45)	0.70 (62)	2.60 (42)	1.27 (37)
Index	-9.84 (66)	-4.82 (90)	0.69 (35)	0.89 (28)	2.74 (35)	0.86 (51)
Median	-9.53	-3.97	0.59	0.78	2.51	0.89



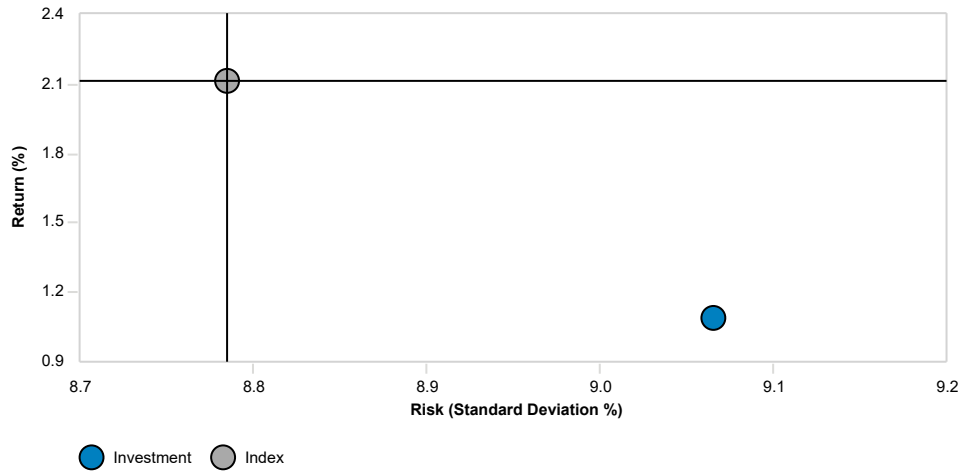
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	1.09	9.07	0.10	104.38	9	119.57	3
Index	2.12	8.78	0.21	100.00	9	100.00	3

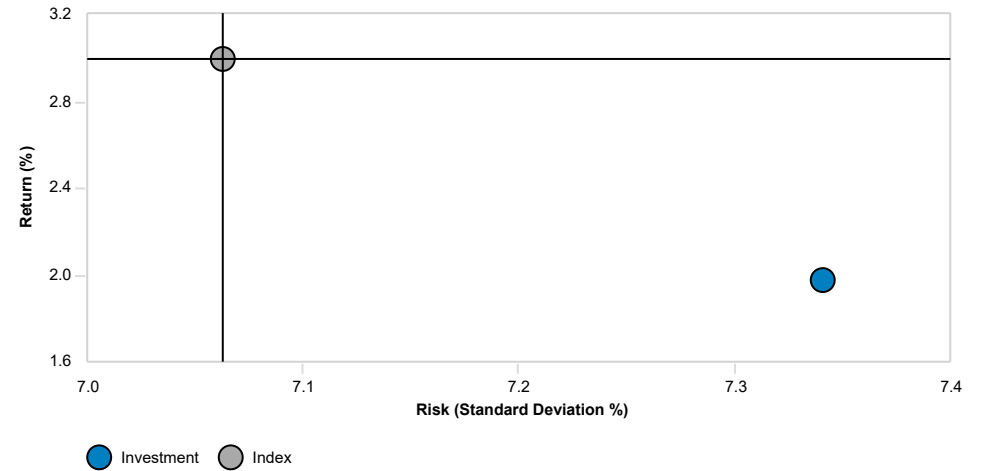
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	1.98	7.34	0.15	95.77	15	112.37	5
Index	3.00	7.06	0.29	100.00	16	100.00	4

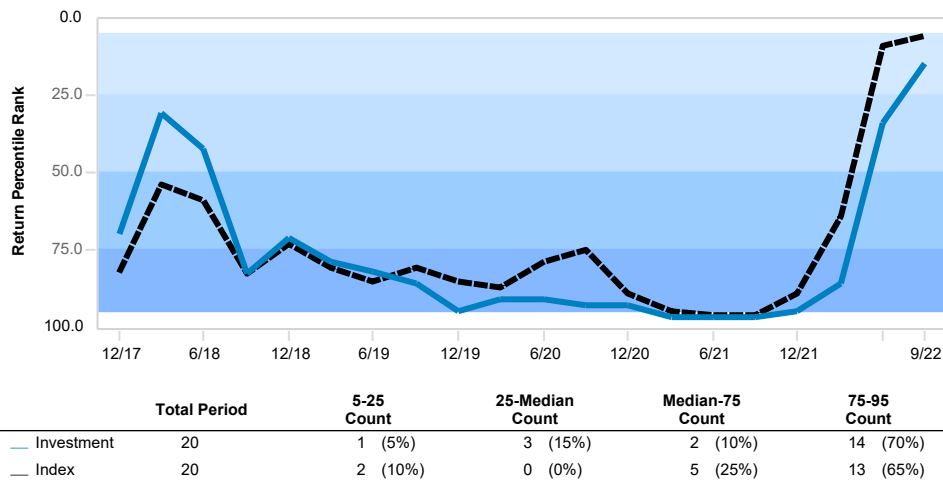
**Risk and Return 3 Years**



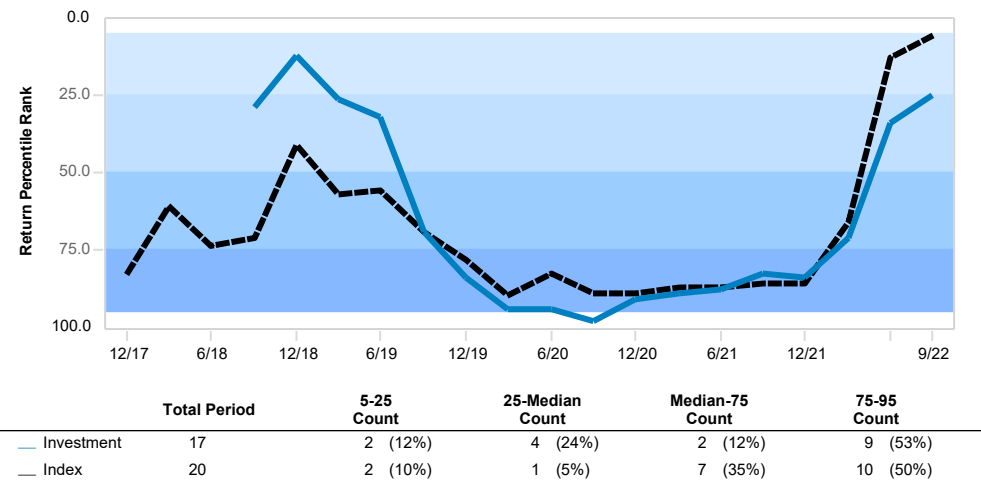
**Risk and Return 5 Years**



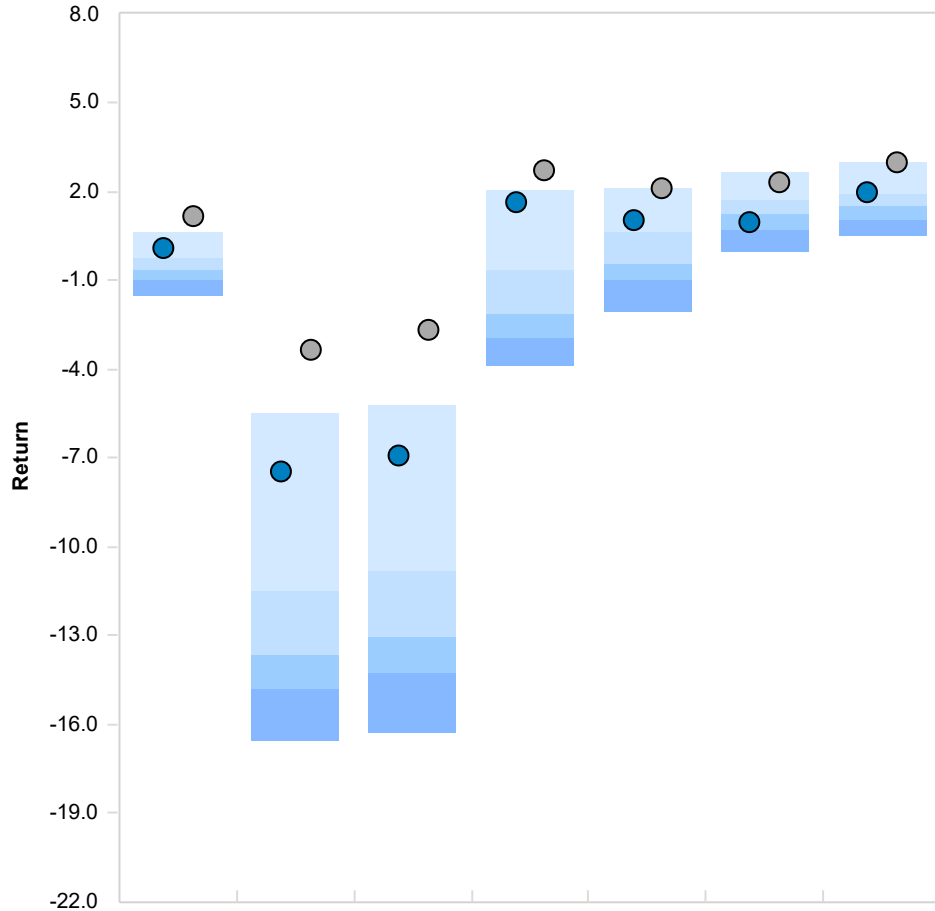
**3 Year Rolling Percentile Rank IM U.S. High Yield Bonds (SA+CF)**



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

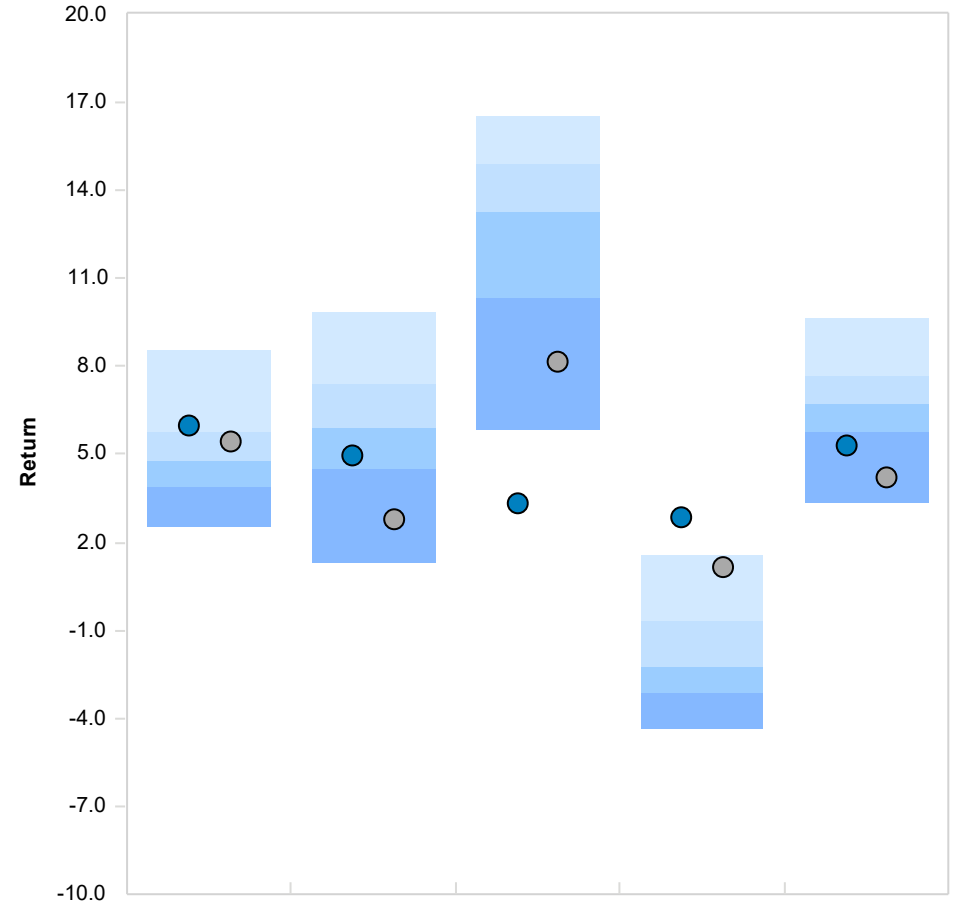


**Peer Group Analysis - IM U.S. High Yield Bonds (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	0.10 (18)	-7.45 (11)	-6.89 (11)	1.68 (8)	1.09 (15)	0.96 (63)	1.98 (25)
● Index	1.18 (2)	-3.32 (1)	-2.63 (1)	2.77 (2)	2.12 (6)	2.36 (9)	3.00 (6)
Median	-0.61	-13.63	-13.00	-2.11	-0.42	1.23	1.50

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



	2021	2020	2019	2018	2017
● Investment	5.99 (21)	4.98 (69)	3.31 (99)	2.84 (2)	5.31 (84)
● Index	5.41 (35)	2.78 (88)	8.16 (86)	1.14 (9)	4.25 (90)
Median	4.79	5.94	13.23	-2.24	6.77

**Comparative Performance**

	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	1 Qtr Ending Mar-2021
Investment	-6.50 (17)	-1.12 (4)	0.60 (46)	1.17 (11)	1.84 (85)	2.25 (15)
Index	-4.36 (7)	-0.10 (1)	0.72 (31)	1.13 (12)	1.45 (91)	2.01 (18)
Median	-9.53	-3.97	0.59	0.78	2.51	0.89





**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	0.78	6.77	0.06	99.76	8	99.88	4
Index	0.79	6.77	0.06	100.00	8	100.00	4

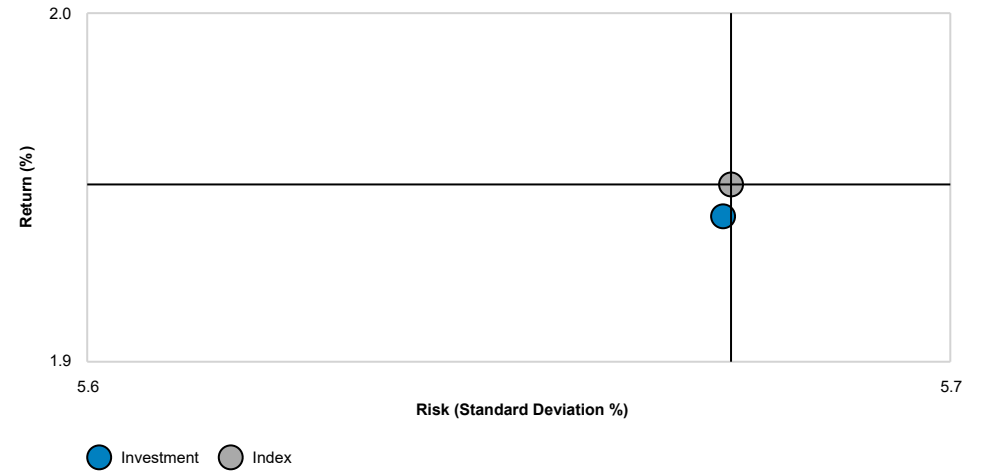
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	1.94	5.67	0.16	99.82	13	99.91	7
Index	1.95	5.67	0.17	100.00	13	100.00	7

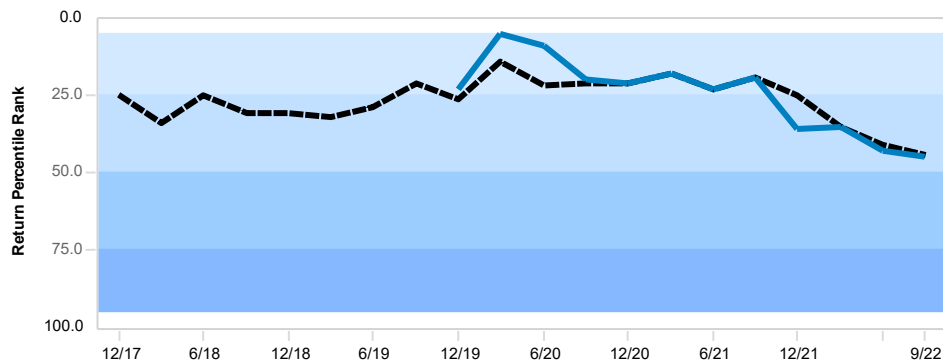
**Risk and Return 3 Years**



**Risk and Return 5 Years**

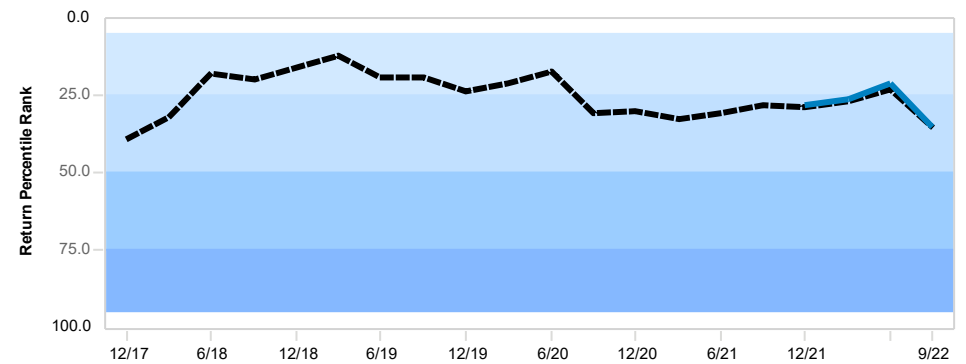


**3 Year Rolling Percentile Rank IM U.S. TIPS (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	12	8 (67%)	4 (33%)	0 (0%)	0 (0%)
Index	20	11 (55%)	9 (45%)	0 (0%)	0 (0%)

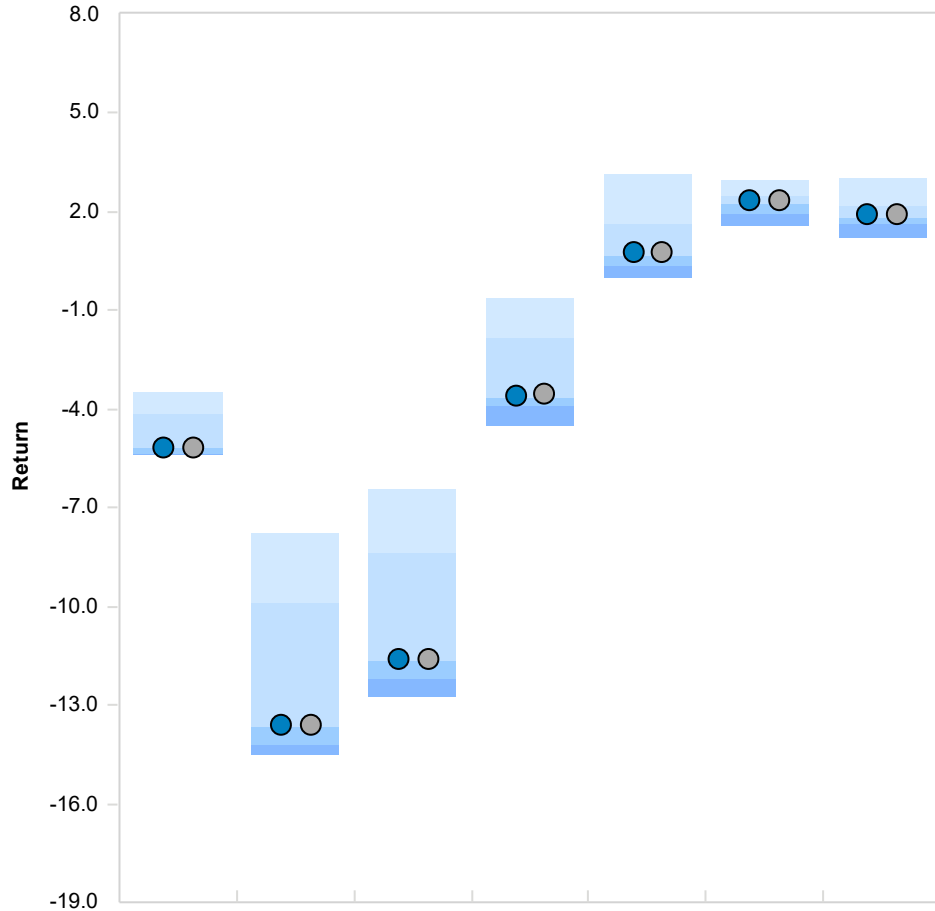
**5 Year Rolling Percentile Rank IM U.S. TIPS (SA+CF)**



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	4	1 (25%)	3 (75%)	0 (0%)	0 (0%)
Index	20	10 (50%)	10 (50%)	0 (0%)	0 (0%)

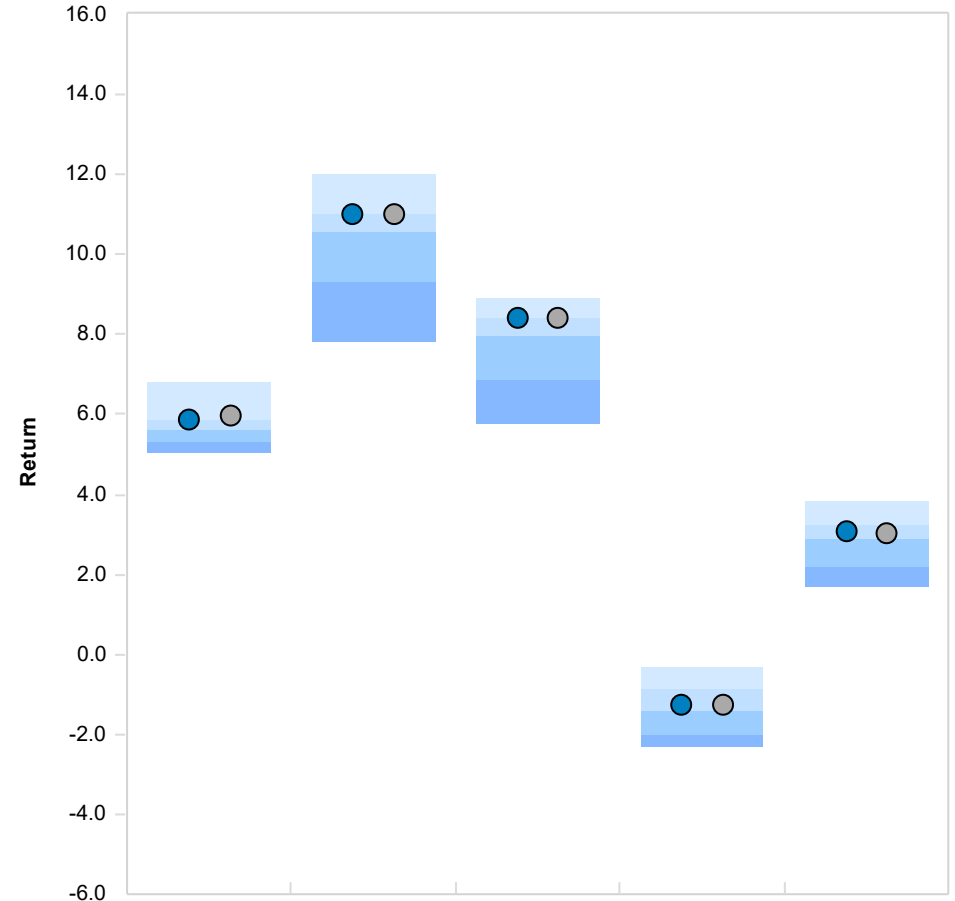


**Peer Group Analysis - IM U.S. TIPS (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-5.15 (46)	-13.59 (49)	-11.60 (45)	-3.59 (47)	0.78 (45)	2.33 (34)	1.94 (35)
● Index	-5.14 (45)	-13.61 (50)	-11.57 (39)	-3.55 (46)	0.79 (44)	2.34 (34)	1.95 (35)
Median	-5.19	-13.63	-11.64	-3.63	0.68	2.24	1.82

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



	2021	2020	2019	2018	2017
● Investment	5.87 (26)	11.02 (25)	8.43 (22)	-1.27 (38)	3.10 (35)
● Index	5.96 (19)	10.99 (27)	8.43 (22)	-1.26 (38)	3.01 (43)
Median	5.62	10.57	7.95	-1.40	2.90

**Comparative Performance**

	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	1 Qtr Ending Mar-2021
Investment	-6.10 (45)	-2.98 (57)	2.30 (27)	1.74 (20)	3.24 (31)	-1.48 (63)
Index	-6.08 (43)	-3.02 (60)	2.36 (9)	1.75 (18)	3.25 (30)	-1.47 (63)
Median	-6.19	-2.89	2.17	1.65	3.12	-1.36



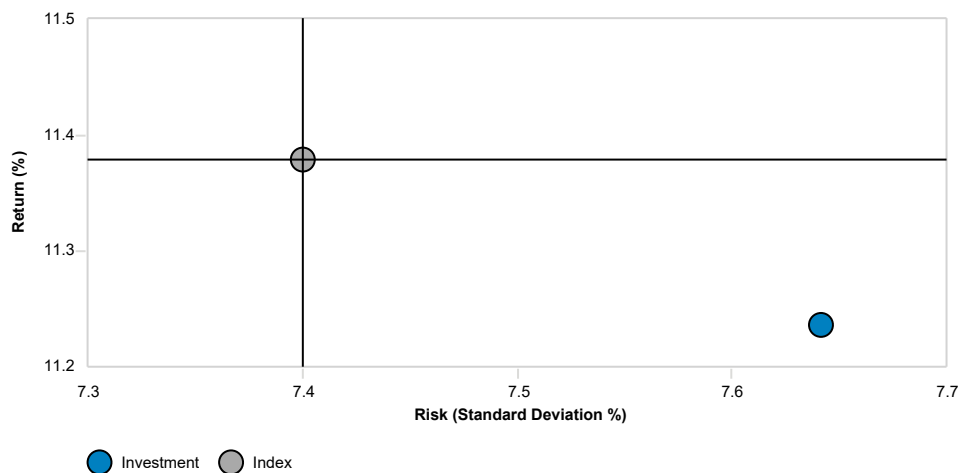
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	11.24	7.64	1.35	99.31	10	105.82	2
Index	11.38	7.40	1.41	100.00	11	100.00	1

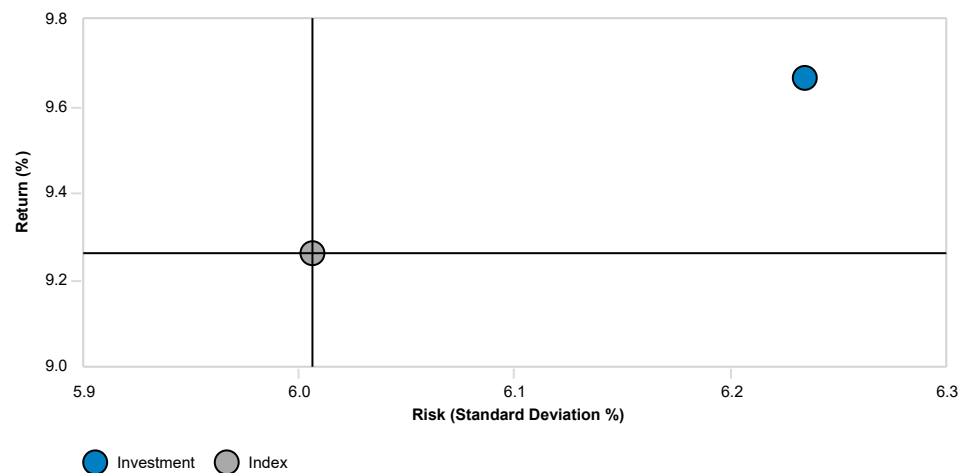
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	9.67	6.23	1.32	104.29	18	105.82	2
Index	9.26	6.01	1.31	100.00	19	100.00	1

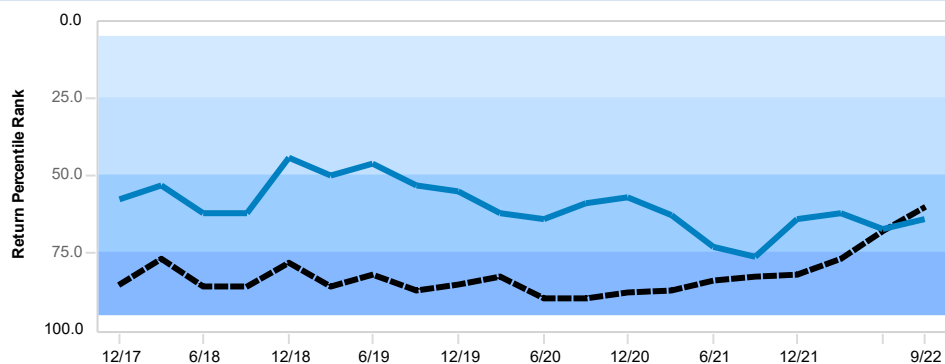
Risk and Return 3 Years



Risk and Return 5 Years

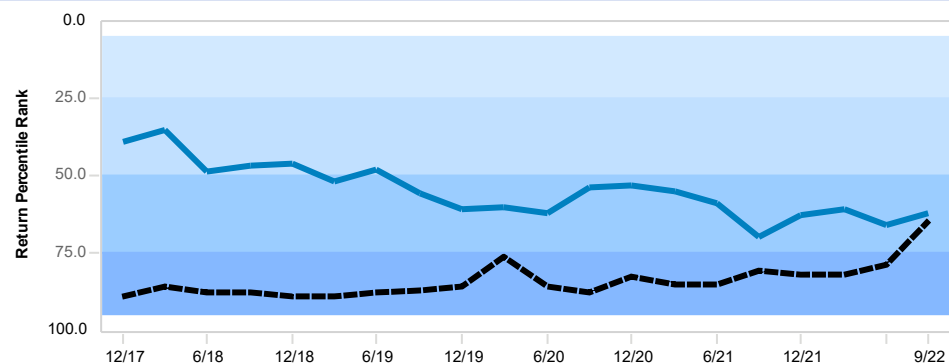


3 Year Rolling Percentile Rank IM U.S. Private Real Estate (SA+CF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	3 (15%)	16 (80%)	1 (5%)
Index	20	0 (0%)	0 (0%)	2 (10%)	18 (90%)

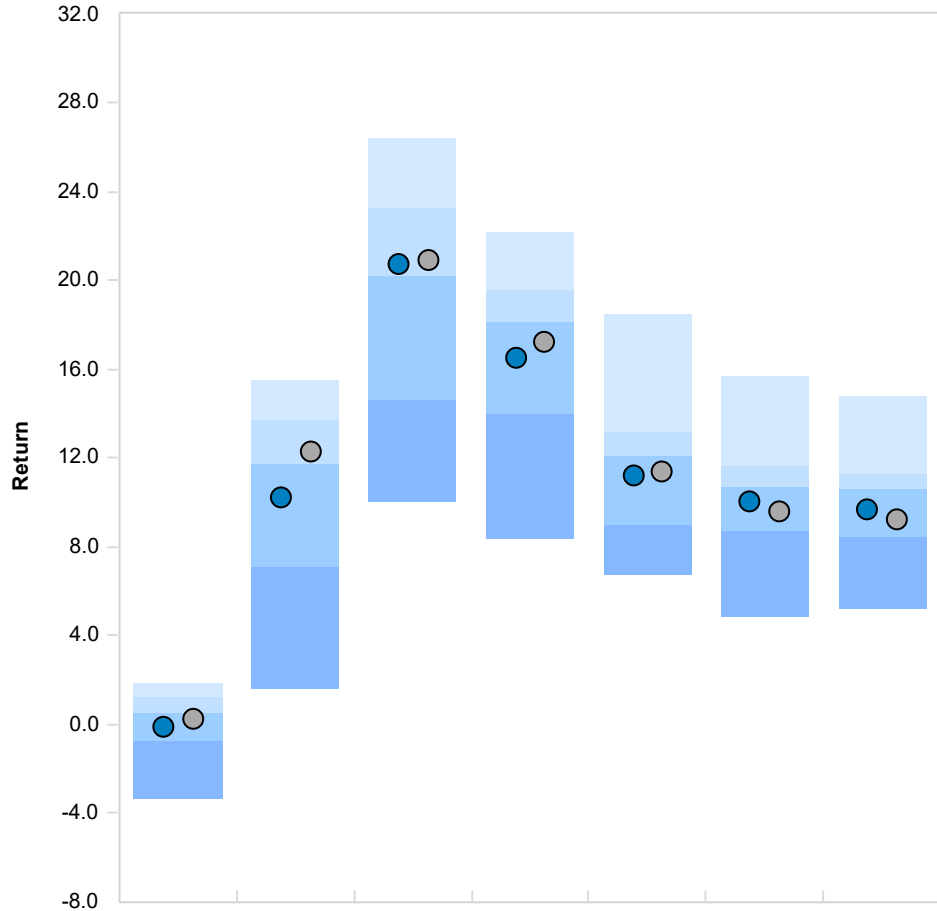
5 Year Rolling Percentile Rank IM U.S. Private Real Estate (SA+CF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	6 (30%)	14 (70%)	0 (0%)
Index	20	0 (0%)	0 (0%)	1 (5%)	19 (95%)

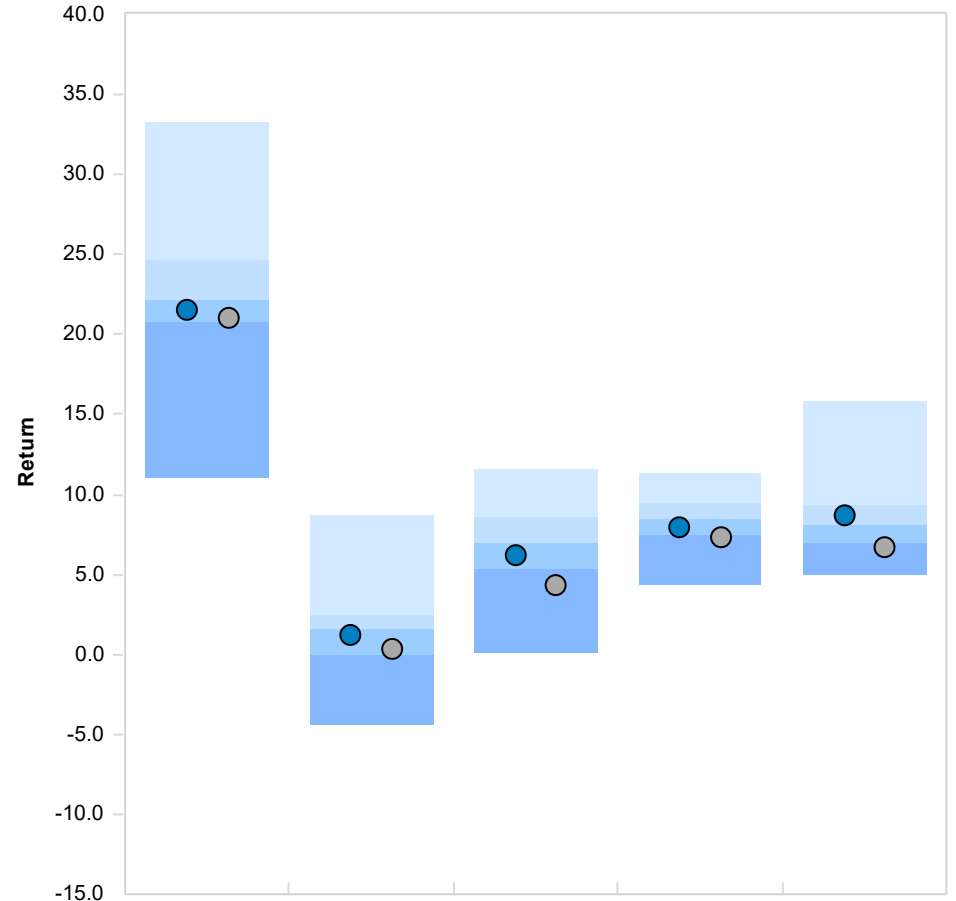


**Peer Group Analysis - IM U.S. Private Real Estate (SA+CF)**



	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-0.06 (63)	10.20 (68)	20.78 (41)	16.56 (59)	11.24 (64)	10.06 (60)	9.67 (62)
● Index	0.31 (55)	12.36 (46)	20.96 (40)	17.24 (57)	11.38 (60)	9.66 (63)	9.26 (65)
Median	0.56	11.79	20.19	18.12	12.14	10.69	10.65

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



	2021	2020	2019	2018	2017
● Investment	21.48 (64)	1.26 (62)	6.17 (72)	7.96 (60)	8.75 (40)
● Index	21.02 (68)	0.34 (73)	4.39 (81)	7.36 (76)	6.66 (80)
Median	22.11	1.56	7.01	8.41	8.07

**Comparative Performance**

	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	1 Qtr Ending Mar-2021
Investment	3.04 (77)	7.01 (48)	9.60 (22)	5.83 (72)	2.78 (91)	1.91 (55)
Index	4.54 (42)	7.14 (41)	7.66 (46)	6.41 (49)	3.68 (76)	1.89 (56)
Median	4.21	6.96	7.57	6.33	4.17	2.10



**Private Equity Summary of Partnership**  
**Total Private Equity w Life Settlement Composite**  
As of September 30, 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>216,581,376</b>
Accolade Partners V	2015	3,000,000	5,805,900
Accolade Partners VI	2018	3,000,000	2,985,493
Adams Street 2003 U.S Fund	2003	13,733,000	312,765
Adams Street 2008 Global	2008	10,000,000	4,092,983
Adams Street 2009 Global	2009	5,000,000	2,936,880
Auldbrass Spec Opps II	2018	4,000,000	4,094,895
Birchmere Ventures IV	2012	525,000	13,331
BlackRock Multi-Alternative Opps	2016	3,000,000	2,316,396
Blackstone Tac Op I	2012	2,000,000	501,931
Blackstone Tac Op II	2015	3,000,000	796,860
Blackstone Tac Op III	2019	5,000,000	4,070,640
CCA Black	2015	7,500,000	7,116,839
CCA Blue	2013	3,800,000	-
CCA Green	2009	15,000,000	-
CCA Longevity Fund VI LP	2019	5,000,000	3,286,278
Commonfund Venture Partners XII	2018	3,000,000	5,018,105
Constitution Ironsides Direct Investment Fund IV	2016	3,000,000	2,516,522
Constitution Ironsides Opportunities Fund	2018	4,000,000	2,981,455
Constitution Ironsides Partnership Fund II	2011	6,000,000	-
Constitution Ironsides Partnership Fund III	2014	8,000,000	4,315,639
Crestline Opportunity Fund III	2016	4,000,000	2,761,531
Crestline Recovery II	2011	3,000,000	67,657
DCM Fund IV	2015	3,000,000	3,684,025
Draper Triangle II	2005	10,000,000	31,075
Draper Triangle III	2013	13,500,000	17,658,295
Emerald Advisors Fin Srv I	2018	2,000,000	1,846,114
Entrust Special Opportunities Fund III	2015	3,000,000	1,517,580
Entrust Special Opportunities Fund IV	2018	3,000,000	2,986,574
Farol Fund II	2020	4,000,000	6,298,319
Five Points III	2017	3,000,000	3,117,514
Glouston Private Equity Opportunities IV	2011	3,000,000	457,860
Goldman Sachs Private Equity Partners 2004	2005	10,000,000	206,350
Greenspring Early Stage I LP	2018	4,000,000	6,224,360
Greenspring Opportunities II-A	2013	3,000,000	2,243,534
Greenspring Opportunities III	2014	3,000,000	1,990,788
Greenspring Opportunities IV	2015	3,000,000	4,479,138
Greenspring Opportunities V	2018	3,000,000	5,288,712
Greenspring Secondaries I	2014	1,000,000	656,133
Greenspring Secondaries II	2016	2,000,000	1,602,132

*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 September 30, 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	8,561,076
JMI Equity Fund IX-A	2019	3,000,000	4,775,011
Magarac Ventures	2022	10,000,000	600,000
Mellon PAM Fund V	2005	10,000,000	43,261
Mesirow Partners Fund IV	2006	17,000,000	3,230,754
North Haven Capital Partners VI	2015	3,000,000	2,644,099
North Haven Senior Loan Fund	2018	4,000,000	2,566,270
Pharos Capital Partners III	2013	3,000,000	2,352,474
PLSG Accelerator Fund	2011	250,000	48,750
ValStone Partners IV	2008	20,000,000	-
ValStone Partners V	2013	20,000,000	19,678,110
ValStone Partners VI	2017	20,000,000	18,480,225
Valstone Senior Living	2018	13,092,410	15,488,572

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



**Historical Hybrid Composition**  
**Total Fund Policy Index**  
As of September 30, 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		



<b>Allocation Mandate</b>	<b>Weight (%)</b>
<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





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**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	67,354,093	13,471	0.02 % of Assets
Fragasso Large Core (EMWO)	0.63	5,548,895	34,869	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	33,271,566	116,450	0.35 % of Assets
Vesper U.S. Large Cap Short-Term Reversal Strategy ETF (UTRN) (EMWO)	0.75	1,245,181	9,339	0.75 % of Assets
Earnest Small Value	0.93	13,728,777	127,966	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	0.78	11,397,795	88,387	1.00 % of First \$2 M 0.75 % of Next \$8 M 0.60 % Thereafter
Emerald Advisors All Cap (EMWO)	0.60	4,679,112	28,075	0.60 % of Assets
Ethos (EMWO)	0.47	1,543,065	7,252	0.47 % of Assets
CIM Small Cap (EMWO)	0.75	4,362,503	32,719	0.75 % of First \$5 M 0.40 % of Next \$10 M 0.25 % Thereafter
Cookson Peirce (EMWO)	0.50	1,134,011	5,670	0.50 % of Assets
<b>International Equity</b>				
SSgA ACWI ex US	0.07	29,105,249	20,374	0.07 % of Assets
Baillie Gifford Intl Equity	0.61	43,596,829	265,941	0.61 % of Assets
FIAM Select International Equity	0.34	24,379,716	82,891	0.34 % of First \$25 M 0.27 % of Next \$25 M 0.24 % of Next \$150 M 0.20 % Thereafter
Segall, Bryant & Hamill	0.66	27,403,906	180,721	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)	0.70	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	37,897,799	94,745	0.25 % of Assets
Federated Core Broad	0.29	30,981,986	89,955	0.30 % of First \$25 M 0.25 % of Next \$25 M 0.20 % Thereafter
CIM Investment Mgmt	0.25	26,211,750	65,529	0.25 % of Assets
StoneRidge Partners (EMWO)	0.30	4,971,485	14,914	0.30 % of Assets
Gridiron Capital Fixed Income (EMWO)	0.65	4,437,279	28,842	0.65 % of Assets
FNB (EMWO)	0.35	2,577,556	9,021	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	7,376,451	14,753	0.20 % of Assets
<b>High Yield Fixed</b>				
Oaktree High Yield	0.50	60,226,495	301,132	0.50 % of Assets
Federated High Yield	0.45	47,246,527	212,609	0.45 % of Assets
Sound Point	1.00	3,369,478	33,695	1.00 % of Assets
<b>TIPS Fixed</b>				
MCM TIPS	0.03	13,461,193	4,038	0.03 % of First \$50 M 0.02 % of Next \$50 M 0.01 % Thereafter
<b>Real Estate</b>				
Morgan Stanley Prime Property Fund	0.84	97,863,068	822,050	0.84 % of Assets
Oaktree Real Estate <sup>^</sup>	1.79	6,378,697	114,179	1.79 % of Assets
Washington Alliance (EMWO)	1.50	15,086,173	226,293	1.50 % of Assets
Washington Alliance II (EMWO)	1.50	2,162,729	32,441	1.50 % of Assets
Siguler Guff Distressed RE <sup>^</sup>	1.25	7,201,039	90,013	1.25 % of Assets
ERECT Fund II	1.35	11,465,104	154,779	1.35 % of Assets
<b>Infrastructure</b>				
JP Morgan Infrastructure Fund (IIF Hedged)	1.00	25,709,496	257,095	1.00 % of Assets
<b>Hedge Fund</b>				
Gridiron Capital Multi-Asset (EMWO)	0.75	2,964,861	22,236	Performance Based 0.75 and 10.00
<b>Liquid Policy Portfolio</b>				
BlackRock Liquidity iShares Public Pension Fund*	0.08	11,811,936	9,450	0.08 % of Assets

<sup>^</sup> 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



	Estimated Annual Fee (%)	Market Value (\$)	Estimated Annual Fee (\$)	Fee Schedule
Investments ex Private Equity		662,442,367	3,354,800	



**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%).



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<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.



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