

December 31, 2021

**Pennsylvania SERS 401(a)**



**Investment Measurement Service  
Quarterly Review**

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## What's Next for the Recovery in the U.S.?

### ECONOMY

**2** The fourth quarter of 2021 closed out another remarkable year following the wild ride through the pandemic and the recovery. U.S. GDP notched an incredibly strong 6.9% quarterly gain (4Q over 4Q), which translates to annual growth of 5.7% over 2020. So what's next?

## Agg Is Flat as Real Yields Stay Negative

### FIXED INCOME

**8** The Bloomberg Aggregate was flat in 4Q21, and real yields remain solidly in negative territory. Global returns were muted for unhedged U.S. investors in both 4Q and 2021. Emerging market debt indices underperformed most other fixed income sectors in 2021.

## Strong Demand Due to Focus on Yield

### PRIVATE CREDIT

**12** Private credit remains attractive to institutional investors due to its yield and income-generating characteristics. Private credit has, on average, generated net IRRs of 8% to 10% for most trailing periods ended 4Q20. Fundraising significantly rebounded in the first half of 2021.

## Another Year of Gains but New Threats Rise

### INSTITUTIONAL INVESTORS

**4** In 2021 all institutional investor types had strong gains but lagged a benchmark composed of 60% S&P 500/40% Bloomberg US Aggregate Index. For many, the question they face now is what to do in a low-yield environment with growing concerns over inflation.

## ODCE's Best Quarter; U.S. REITs Top Stocks

### REAL ESTATE/REAL ASSETS

**10** The NCREIF ODCE Index had its best performance ever in 4Q21, up 7.7%. Net operating income fell for Office as Omicron delayed office returns. Global REITs rose 10.4% compared to 7.8% for MSCI World; U.S. REITs rose 16.3%, beating the S&P 500 Index, which rose 11.0%.

## Ending the Year on a Positive Note

### HEDGE FUNDS/MACs

**13** Hedge funds ended higher, despite inflation and Omicron concerns growing in 4Q21; the HFRI Fund Weighted Composite Index gained 0.4%. Event-driven strategies finished on a strong note. Equity hedge finished in positive territory; macro strategies ended slightly lower.

## S&P 500 Up Again; Global Stocks Falter

### EQUITY

**6** The S&P 500 posted a strong 11.0% gain in 4Q21; large cap growth was the top performer, small cap growth the worst. Globally, emerging markets struggled relative to developed markets due to the economic slowdown and regulatory crackdown in China.

## Big Bounce Back in 2021 After 2020 Drop

### PRIVATE EQUITY

**11** Private equity fared exceedingly well in 2021, after 2020's big dip. Company investment and exit activity is up across the board, and IPO markets had another gangbuster year. On average, year-over-year transaction activity rose by 30% and dollar volumes by 70%.

## Index Falls in 3Q21, First Time Since 1Q20

### DEFINED CONTRIBUTION

**15** The Callan DC Index™ declined 0.4% in 3Q21. The Age 45 Target Date Fund had a slightly lower return (-0.8%), attributable to its higher allocation to equity, which underperformed fixed income. Balances also fell, by 0.7%. Target date funds received the largest net inflows.

## Broad Market Quarterly Returns

### U.S. Equity Russell 3000



### Global ex-U.S. Equity MSCI ACWI ex USA



### U.S. Fixed Income Bloomberg Agg



### Global ex-U.S. Fixed Income Bloomberg Global Agg ex US



Sources: Bloomberg, FTSE Russell, MSCI

# What's Next for the Post-Pandemic Economy?

ECONOMY | Jay Kloepfer

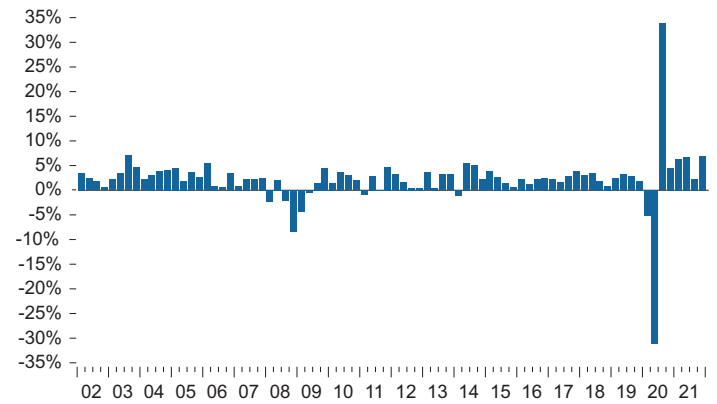
The fourth quarter of 2021 closed out another remarkable year following the wild ride through the pandemic and the recovery, a cycle that began in earnest in February 2020. U.S. GDP notched an incredibly strong 6.9% quarterly gain (4Q over 4Q), which translates to annual growth of 5.7% over 2020. We have not seen such growth since the Ronald Reagan administration, following the consecutive recessions of 1980 and 1982 induced in part to wring double-digit inflation out of the economy.

A short detour into monetary policy history is relevant here. The advent of current monetary policy began during the Reagan administration under Fed Chair Paul Volcker, although he was appointed by Jimmy Carter. Alan Greenspan took on the mantle of “monetarist” from Volcker and enshrined the discipline into Fed policy. That monetarist bent was then modified seriously by Ben Bernanke to address the Global Financial Crisis, where a zero interest rate policy was employed both in the U.S. and by most central banks around the world to rescue the global economy from collapse. Zero rates were combined with massive monetary intervention through the purchase of bonds to keep rates low and infuse liquidity into the system. Emboldened by what we learned in the GFC and the innovation in monetary intervention tools we developed, we applied zero rates with substantial monetary intervention to rescue the global economy again at the onset of the pandemic. After two years and a complete recovery to pre-pandemic GDP levels, the question now is what is next for the post-pandemic economy.

At the risk of *not* sounding an alarm, we believe supply chains will untangle, labor markets will slowly equilibrate, and supply and demand will line up the economy’s production function and the consumer’s normalizing demand for goods, services, food, and shelter. The Fed has begun tapering its asset purchases intended to supply liquidity to capital markets, and it is strongly signaling that interest rates will rise, with three hikes in the Fed Funds rate in 2022 articulated in the last FOMC meeting in January (the market is discounting four hikes). As policy is

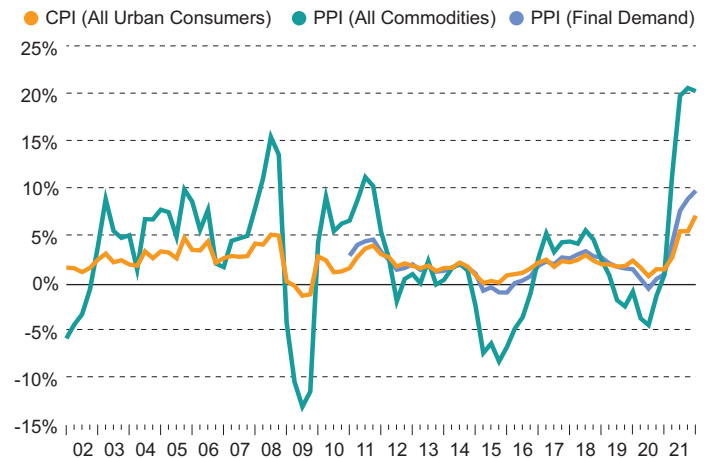
## Quarterly Real GDP Growth

(20 Years)



Source: Bureau of Economic Analysis

## Inflation Year-Over-Year



Source: Bureau of Labor Statistics

withdrawn, the global economy will move to stand on its own two feet, complete with the cycles of growth and recession fully expected in a market system. Top of mind for many is inflation, which hit a peak of 7% in 4Q21. There is now an entire generation of market participants who have never experienced sustained inflation, which was last seen in the early 1980s.

After starting 2021 in the shadow of renewed lockdowns in 4Q20 following then-record spikes in pandemic infections and

hospitalizations, the global economy and the U.S. in particular began a spurt of optimistic growth in the spring, and many measures of economic growth took off: consumption, business spending, production, travel, home-buying (which had started surging in 2020), and the opening of retail trade, dining, hospitality, and recreation. U.S. GDP surged in the second and fourth quarters, and the increase of 5.7% for 2021 compares to the 3.6% decline in 2020. Much has been made of the supply chain issues that have restricted output and the supply of goods, the fundamental mismatch between job seekers and available jobs, and the impact of both on potential growth and inflation. We believe the remaining supply chain issues will be ironed out over the course of 2022, increasing the supply of goods and relieving the pressure on prices. We also believe that the labor market will adjust, but that the process may be slower than that for goods and services, and that higher wages may be a feature of the U.S. economy for at least another year and perhaps in to 2023. The job segments most disrupted by the pandemic—retail, wholesale trade, transportation services, hospitality, education, state and local government—are those facing the most obstacles to rehiring at prevailing wages.

A couple of key metrics point toward a slowdown from the manic growth of 2021. First, within GDP, the building of inventory accounted for 4.9% of the 6.9% growth for 4Q21. Inventories built now boost current GDP, but suggest downward pressure on prices of those inventoried goods and slower growth from future production. Second, one of the key forward-looking indicators is the Purchasing Managers' Index (PMI), which surveys planned activity by market participants—new orders, output, input prices, employment—and covers both goods and services. The PMI for new orders around the globe went flat

### The Long-Term View

Index	4Q21	Periods Ended 12/31/21			
		1 Yr	5 Yrs	10 Yrs	25 Yrs
<b>U.S. Equity</b>					
Russell 3000	9.3	25.7	18.0	16.3	9.8
S&P 500	11.0	28.7	18.5	16.6	9.8
Russell 2000	2.1	14.8	12.0	13.2	9.0
<b>Global ex-U.S. Equity</b>					
MSCI EAFE	2.7	11.3	9.5	8.0	5.2
MSCI ACWI ex USA	1.8	7.8	9.6	7.3	--
MSCI Emerging Markets	-1.3	-2.5	9.9	5.5	--
MSCI ACWI ex USA Small Cap	0.6	12.9	11.2	9.5	6.9
<b>Fixed Income</b>					
Bloomberg Agg	0.0	-1.5	3.6	2.9	4.9
90-Day T-Bill	0.0	0.0	1.1	0.6	2.1
Bloomberg Long G/C	2.2	-2.5	7.4	5.7	7.3
Bloomberg GI Agg ex US	-1.2	-7.0	3.1	0.8	3.4
<b>Real Estate</b>					
NCREIF Property	6.1	17.7	7.8	9.3	9.4
FTSE Nareit Equity	16.3	43.2	10.8	11.4	9.9
<b>Alternatives</b>					
CS Hedge Fund	0.9	8.2	5.5	4.9	6.7
Cambridge PE*	4.8	49.5	21.2	17.2	15.7
Bloomberg Commodity	-1.6	27.1	3.7	-2.9	1.1
Gold Spot Price	4.1	-3.5	9.7	1.6	6.6
<b>Inflation – CPI-U</b>	1.6	7.0	2.9	2.1	2.3

\*Data for most recent period lags by a quarter. Data as of 9/30/21.

Sources: Bloomberg, Bureau of Economic Analysis, Credit Suisse, FTSE Russell, MSCI, NCREIF, Refinitiv/Cambridge, S&P Dow Jones Indices

in August 2021 and stayed flat through December, as first the Delta then the Omicron variants spooked consumers and businesses. Third, at the start of 2022, the PMI for new orders has fallen sharply, driven by weakness emerging in the order data in China and the U.S., two of the biggest global economies.

### Recent Quarterly Economic Indicators

	4Q21	3Q21	2Q21	1Q21	4Q20	3Q20	2Q20	1Q20
Employment Cost–Total Compensation Growth	4.0%	3.7%	2.9%	2.6%	2.5%	2.4%	2.7%	2.8%
Nonfarm Business–Productivity Growth	6.6%	-5.0%	2.4%	4.3%	-3.4%	4.6%	11.2%	-0.8%
GDP Growth	6.9%	2.3%	6.7%	6.3%	4.5%	33.8%	-31.2%	-5.1%
Manufacturing Capacity Utilization	77.0%	76.1%	75.4%	74.5%	74.0%	71.9%	64.3%	74.4%
Consumer Sentiment Index (1966=100)	69.9	74.8	85.6	80.2	79.8	75.6	74.0	96.4

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve, IHS Economics, Reuters/University of Michigan

# Most Investors Saw Double-Digit Gains in 2021

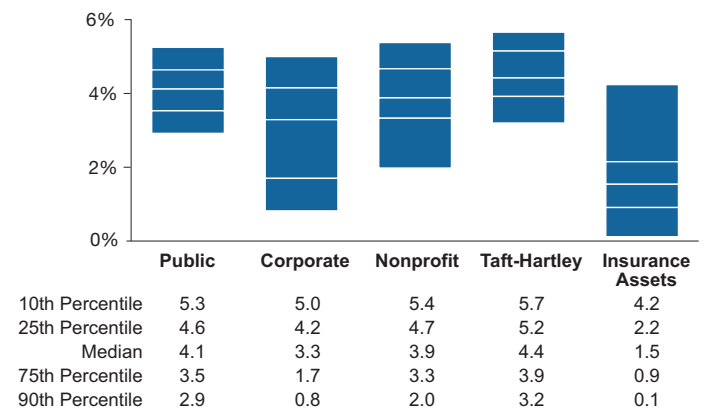
## INSTITUTIONAL INVESTORS

- In 2021 all institutional investor types had strong gains but lagged a benchmark composed of 60% S&P 500/40% Bloomberg US Aggregate.
- Taft Hartley plans (+15.0%) topped the list while corporate defined benefit (DB) plans (+9.5%) had the lowest returns.
- Almost all investor types have seen double-digit returns for four of the last five calendar years, with single-digit losses in 2018 being the exception.
- Their returns more closely track the 60%/40% benchmark over longer time periods, with results over the last 20 years roughly comparable.
- Strategic conversations among investors remain focused on where to go from here. Many just enjoyed the best annual returns, calendar or fiscal year, in a generation, but their elation is tempered by sobering capital markets assumptions.
- Inflation is one major topic of conversation.
- But for all the concern about inflation, few investors have taken action to address it in portfolios.
- Another, related topic is what to do with fixed income:
  - How low can the fixed income allocation go?
  - Should portfolios have bonds at all?
  - Should investors migrate out of an anchor to the Aggregate?
- Fixed income structures focus on the role of the asset

class—to diversify equity, to serve as a flight to quality, to act as a source of liquidity, to provide interest rate exposure—balanced against the desire for return in a very low-yield environment. Investors are evaluating how they can avoid undue risk.

- Some investors have looked at creative reconstruction of “core” fixed income, away from lower-returning segments of the Aggregate anchor position:
  - Private credit
  - Securitized debt
  - High yield

### Quarterly Returns, Callan Database Groups



Source: Callan

### Callan Database Median and Index Returns\* for Periods Ended 12/31/21

Database Group	Quarter	1 Year	3 Years	5 Years	10 Years	20 Years
Public Database	4.1	13.7	14.8	10.9	9.6	7.5
Corporate Database	3.3	9.5	14.1	10.2	9.0	7.3
Nonprofit Database	3.9	14.0	15.1	11.0	9.5	7.4
Taft-Hartley Database	4.4	15.0	14.8	11.0	10.0	7.2
Insurance Assets Database	1.5	5.1	8.4	6.1	5.3	5.6
All Institutional Investors	4.0	13.4	14.7	10.8	9.5	7.4
Large (>\$1 billion)	3.8	14.4	15.0	11.1	9.9	7.7
Medium (\$100mm - \$1bn)	4.0	12.9	14.7	10.9	9.5	7.3
Small (<\$100 million)	4.2	13.3	14.4	10.3	9.2	7.0
60% S&P 500/40% Bloomberg Agg	6.6	15.9	15.9	17.5	11.1	7.7

\*Returns less than one year are not annualized.

Source: Callan. Callan's database includes the following groups: public defined benefit (DB) plans, corporate DB plans, nonprofits, insurance assets, and Taft-Hartley plans. Approximately 10% to 15% of the database constituents are Callan's clients. All database group returns presented gross of fees. Past performance is no guarantee of future results. Reference to or inclusion in this report of any product, service, or entity should not be construed as a recommendation, approval, affiliation, or endorsement of such product, service, or entity by Callan.

- Bank loans
  - Private placements
  - Global fixed income
  - TIPS
- Risk-seeking in fixed income is not for all; some investors want to dial down the amount of risk their managers are taking, specifically credit.
  - There is growing concern among investors about a market drawdown, given high valuations relative to historical averages.
  - Hedge funds and other absolute return strategies may gain a new appreciation when compared to low fixed income expectations as a way to diversify growth risk with less of a return penalty.
  - Real assets are under review with the growing concerns over inflation.
    - Will the inflation of the future come from the same sources as the global energy complex evolves?
    - Are investors hedging inflation or outperforming it?
  - Investors are questioning the inclusion of past real assets stalwarts: natural resources, energy, MLPs, and commodities.

**Corporate DB Plans**

- Many are conducting asset/liability (A/L) studies.
- Lower return expectations stress their EROA assumptions, but the American Rescue Plan Act (ARPA) provides a shot

in the arm to them: lower liabilities, higher funded status, and lower required contributions.

**Public DB Plans**

- These investors are also in the midst of numerous A/L studies.
- Low projected returns mean downward pressure on EROA assumptions. Weaker returns may derail the expressed desire to bring in risk, spurring further demand for alternatives exposures and leading to discussions of total fund leverage.

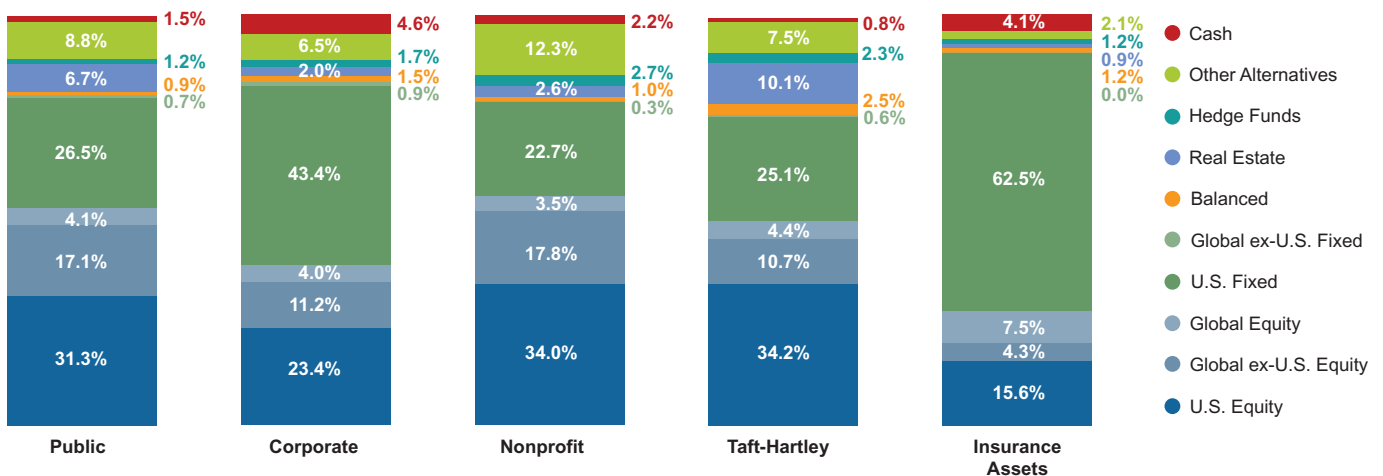
**Defined Contribution Plans**

- DC glidepaths are being reassessed due to lower short-term capital markets assumptions, with some glidepath managers risking up. The long-term equilibrium did not change, but it is coming from a lower starting point.
- Sponsors are starting to discuss retirement income as their plans mature.

**Nonprofits**

- Subdued expectations for capital markets returns are challenging both their risk tolerance and the sustainability of established spending rates.
- They are dissatisfied with private real assets, hedge funds, and fixed income; portfolio reconstruction is on the table.

**Average Asset Allocation, Callan Database Groups**



Note: charts may not sum to 100% due to rounding. Other alternatives include but is not limited to: diversified multi-asset, private credit, private equity, and real assets. Source: Callan



# Equity

## U.S. Equities

### Returns grind higher despite mounting concerns

- S&P 500 posted a strong 11.0% gain in 4Q21; large cap growth (Russell 1000 Growth) was the top performer, which contrasted with the worst-performing asset class, small cap growth (Russell 2000 Growth: 0.0%).
- The new Omicron variant, continued supply chain disruptions, and renewed fears of persistent inflation pushed investors into the perceived safety of the largest stocks.
- S&P 500 sector results were mixed, with Real Estate (+17.5%) posting the top returns alongside Technology (+16.7%) and Materials (+15.2%); Communication Services (0.0%) and Financials (+4.6%) lagged broad returns.
- In 2021, small value outperformed small growth by over 2,500 bps (Russell 2000 Value: 28.3% vs. Russell 2000 Growth: 2.8%), a stark reversal from 2020 and a pattern consistent with periods of robust GDP growth.

### Index concentration driving positive returns...

- The 10 largest stocks in the S&P 500 comprised 30.5% of the index but accounted for 65% of the 2021 return.
- During 4Q21, top 10 weights accounted for ~40% of return.

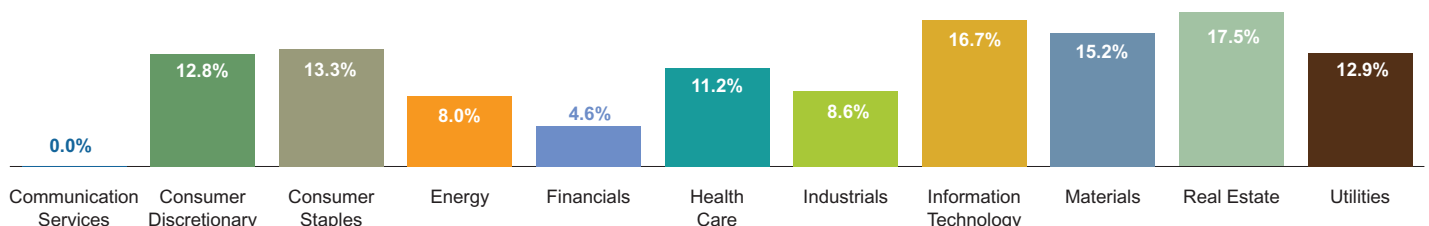
### ...but may be hiding underlying weakness

- Nearly 10% of Russell 3000 stocks fell by 35% or more in 2021, which is unusual for a year when market returns were in excess of 25%.

### Market capitalization, style driving divergence in returns

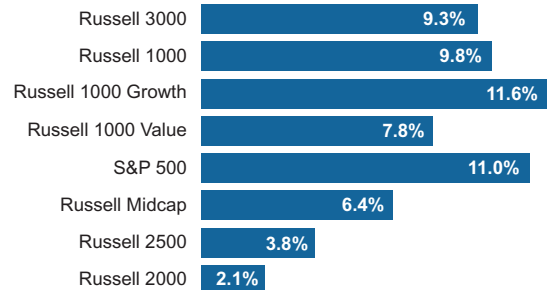
- Mega-cap growth (Russell Top 200 Growth) was the strongest performer in both 4Q21 and 2021.

## Quarterly Performance of Industry Sectors

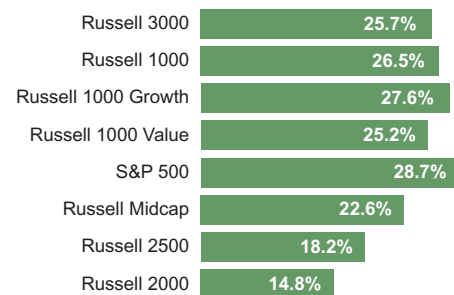


Source: S&P Dow Jones Indices

## U.S. Equity: Quarterly Returns



## U.S. Equity: One-Year Returns



Sources: FTSE Russell and S&P Dow Jones Indices

- Growth style returns highly correlated with market capitalization in both 4Q21 and 2021 (higher market capitalization = high return).
- Within micro-, small-, and smid-cap growth, Health Care (especially biotech/pharma) was biggest detractor to returns.
- Value returns correlated with market capitalization in 4Q21; for 2021, value returns did not experience much divergence.

## Global Equity

### Omicron takes center stage

- A recovery-driven market shifted back to COVID favorites, boosting Information Technology stocks.
- Small cap underperformed large amid global growth concerns.
- Emerging markets struggled relative to developed markets as China experienced significant pressure from an economic slowdown and its regulatory crackdown.

### Stalled recovery

- As the new variant took hold, Energy and Communication Services lagged on fear of restrained growth.
- Japan suffered from both supply chain issues and economic constraints from COVID-19.
- Growth and momentum factors outperformed in developed markets but not in emerging markets.

### U.S. dollar vs. other currencies

- The U.S. dollar rose against other major currencies as tapering accelerated alongside the expectation for 2022 rate hikes, which notably detracted from global ex-U.S. results.

### Growth vs. value

- Inflationary pressures and the ultimate rebound from COVID-19 supported value's leadership for the full year, despite the shift to growth in 4Q21.

### Regulation has spooked Chinese market

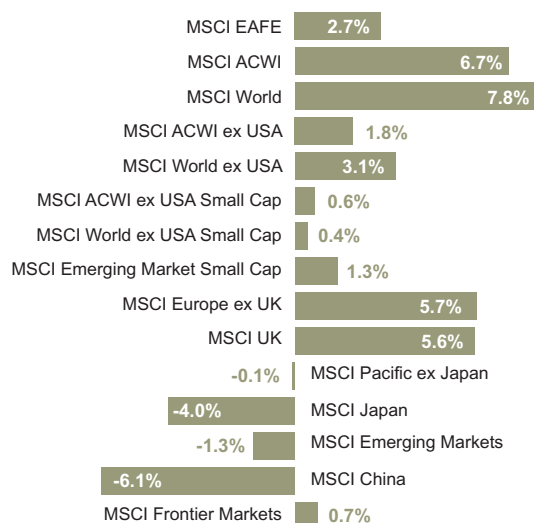
- Although regulation is not new in China, the duration, scope, and intensity of the current regime are unprecedented.
- Regulations have been centered on antitrust, financial markets, data/national security, and social welfare to enhance the sustainability of its economy.
- Regulatory uncertainty should subside as China focuses on implementation.

### Inflation is expected to normalize in a few years

- Forecasted year-over-year core CPI is expected to reach its peak between 1Q22 and 2Q22.
- Inflationary environment by and large has shifted central banks to contractionary policy.

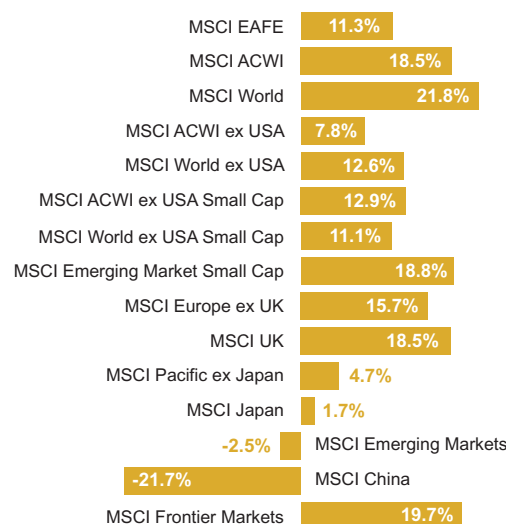
## Global ex-U.S. Equity: Quarterly Returns

(U.S. Dollar)



## Global ex-U.S. Equity: One-Year Returns

(U.S. Dollar)



Source: MSCI

## Rise in inflation expectations tends to stoke value

- Correlation between cyclical sectors and inflation/interest rate expectations generally has been positive.
- Growth relative to value is more vulnerable as interest rates normalize.
- Global recovery from COVID and deficit in Energy should support value.

# Fixed Income

## U.S. Fixed Income

### Treasury yields again unchanged

- 10-year at 1.52% at 9/30 and 12/31, up slightly from 1.45% on 6/30.
- TIPS outperformed nominal Treasuries and 10-year breakeven spreads widened to 2.56%.
- Real yields remain solidly in negative territory.

### Bloomberg Aggregate was flat, literally

- Spread sectors (Agencies, ABS, CMBS, MBS, and Credit) all underperformed UST by a modest amount (but positive YTD).
- Yield curve flattened; curve positioning had a meaningful impact on returns in 4Q.

### High yield and leveraged performed relatively well

- Spreads remain near historic tight.
- High yield issuers' default rate declined to a record low in December (J.P. Morgan).
- New issuance hit a record for the second year in a row as issuers looked to finance at relatively low rates.

### Munis outperformed Treasuries

- Lower-quality bonds continued their trend of outperformance as investors sought yield.

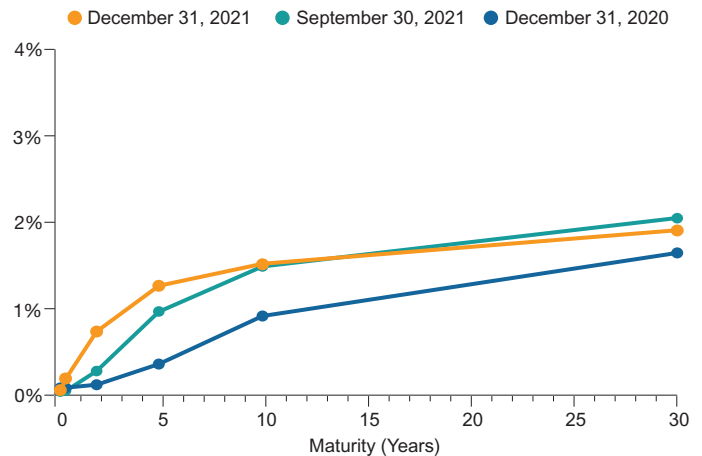
### Inflation is being felt, indicated by several measures

- Annual CPI jumped to 7.0% in December—its eighth consecutive reading above 5% and the largest 12-month increase since the period ending June 1982.
- Increases for shelter and for used cars/trucks were the largest contributors to the seasonally adjusted all-items increase.
- Even service inflation, which had declined initially, has since recovered and is on an upward trend.

### Fed has turned more hawkish than expected

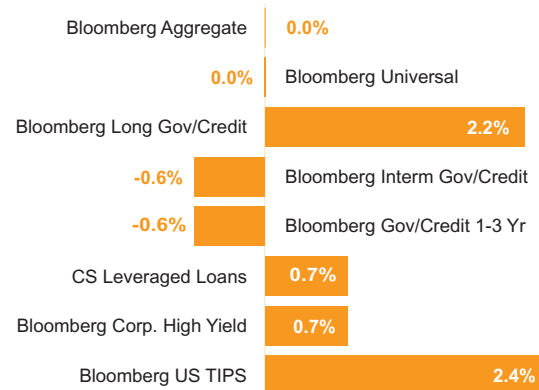
- Fed announced a doubling of the pace of tapering and an upward revision to the anticipated path of rate hikes.
- FOMC participants now expect three rate hikes in 2022 to bring the targeted range to 0.75%-1.0% by year-end.

## U.S. Treasury Yield Curves



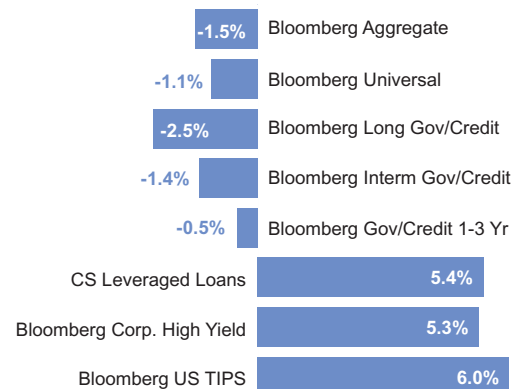
Source: Bloomberg

## U.S. Fixed Income: Quarterly Returns



Sources: Bloomberg and Credit Suisse

## U.S. Fixed Income: One-Year Returns



Sources: Bloomberg and Credit Suisse

## FIXED INCOME (Continued)

### Spreads have returned to tights

- Fundamentals remain strong and default expectations low.
- Revenue, profits, and free cash flow at or near cycle highs.
- Gross and net leverage trending lower while interest coverage trends higher.

### Global Fixed Income

#### Flat on a hedged basis

- Returns were muted and U.S. dollar strength eroded returns for unhedged U.S. investors in both 4Q and 2021.
- Yen was a notable underperformer in developed markets, falling 10% for the year.

#### Emerging market debt posted negative returns

- Emerging market debt indices underperformed most other fixed income sectors in 2021.
- Currencies fared the worst vs. the U.S. dollar; the Turkish lira sank 44% on spiking inflation.

#### Global outlook may shift lower with regional variance

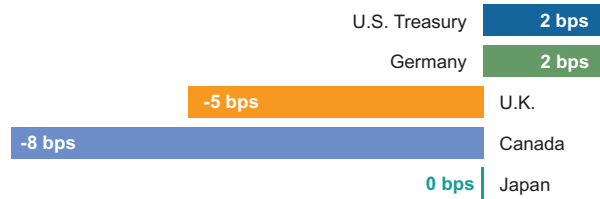
- Moderating and differentiated outlook for various regions reflects certain DM and EM economies shifting to tightening balanced by others managing legacy issues.

#### Central bank policy is mixed

- The U.K. has led the way with interest rate hikes as the BOE expects inflation to peak in April 2022.
- Europe and Japan continue to have below-target inflation and are expected to maintain relatively accommodating monetary policy.
- EM central banks, having moved early to battle inflation, may be moving to a more late-cycle posture.

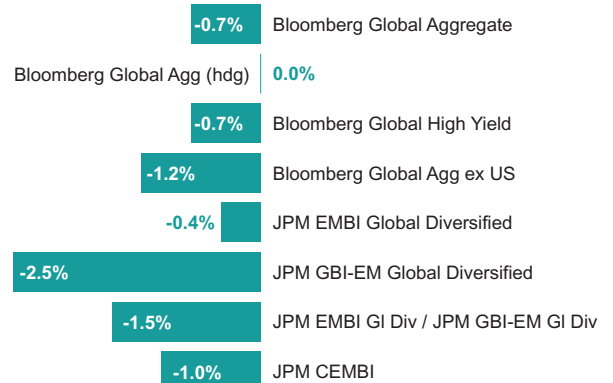
### Change in 10-Year Global Government Bond Yields

3Q21 to 4Q21



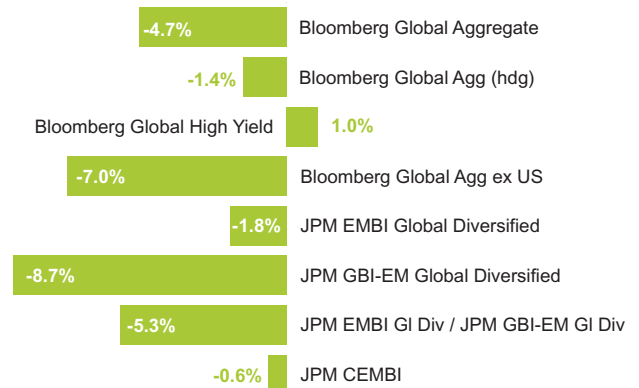
Source: Bloomberg

### Global Fixed Income: Quarterly Returns



Sources: Bloomberg and JPMorgan Chase

### Global Fixed Income: One-Year Returns



Sources: Bloomberg and JPMorgan Chase

# Best Gain Ever for ODCE; U.S. REITs Top Stocks

REAL ESTATE/REAL ASSETS | Munir Iman

## Strongest gains for ODCE ever

- The NCREIF Open End Diversified Core Equity (ODCE) Index posted its best return ever in 4Q21 (7.7%); Industrial was the best performer.
- Income returns were positive across sectors.
- Appraisers are pricing in a recovery due to strong fundamentals in Industrial and Multifamily.
- Return dispersion by manager within the ODCE Index was due to the composition of underlying portfolios.
- Niche sectors such as self-storage and life sciences continued to be accretive.

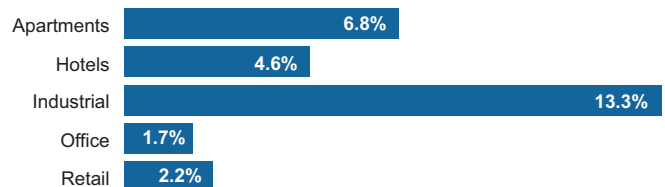
## Compression in vacancy rates

- Vacancy rates kept compressing in Industrial and Multifamily as demand continued.
- Net operating income turned negative for Office as the Omicron variant delayed many return-to-work plans.
- 4Q21 rent collections were stable across all sectors.
- Demand outpaced supply as new construction of preleased Industrial and Multifamily occurred.

## Global REITs and U.S. REITs outperform

- Global REITs outperformed in 4Q21, increasing 10.4% compared to 7.8% for global equities (MSCI World).
- U.S. REITs rose 16.3% in 4Q21, beating the S&P 500 Index, which gained 11.0%.
- Global REITs were trading below NAV, except for those in Australia, Japan, the United States, and Canada.
- Property sectors were mixed as out-of-favor sectors such as Office, Hotels, and Retail traded below NAV.
- Ongoing volatility in REIT share prices offers opportunities to purchase mispriced securities, individual assets from REIT owners, and discounted debt, as well as lend to companies and/or execute take-privates of public companies.

## Sector Quarterly Returns by Property Type



Source: NCREIF

## Callan Database Median and Index Returns\* for Periods Ended 12/31/21

Private Real Assets	Quarter	Year to Date	1 Year	3 Years	5 Years	10 Years	15 Years
<b>Real Estate ODCE Style</b>	<b>4.5</b>	<b>18.5</b>	<b>18.5</b>	<b>7.9</b>	<b>7.8</b>	<b>9.4</b>	<b>5.8</b>
NFI-ODCE (value wt net)	7.7	21.1	21.1	8.2	7.7	9.4	5.8
NCREIF Property	6.1	17.7	17.7	8.4	7.8	9.3	7.2
NCREIF Farmland	3.8	7.8	7.8	5.2	5.7	9.7	10.6
NCREIF Timberland	4.6	9.2	9.2	3.7	3.6	5.3	5.1
<b>Public Real Estate</b>							
<b>Global Real Estate Style</b>	<b>10.5</b>	<b>28.5</b>	<b>28.5</b>	<b>16.1</b>	<b>11.0</b>	<b>11.0</b>	<b>5.5</b>
FTSE EPRA Nareit Developed	10.2	26.1	26.1	11.8	7.8	8.6	3.5
<b>Global ex-U.S. Real Estate Style</b>	<b>3.2</b>	<b>10.8</b>	<b>10.8</b>	<b>10.8</b>	<b>9.7</b>	<b>10.1</b>	<b>3.9</b>
FTSE EPRA Nareit Dev ex US	2.0	8.1	8.1	6.7	6.4	7.2	1.9
<b>U.S. REIT Style</b>	<b>15.9</b>	<b>42.8</b>	<b>42.8</b>	<b>20.9</b>	<b>12.4</b>	<b>12.4</b>	<b>7.9</b>
EPRA Nareit Equity REITs	16.3	43.2	43.2	18.4	10.8	11.4	6.9

\*Returns less than one year are not annualized.

Sources: Callan, FTSE Russell, NCREIF

# A Big Bounce Back in 2021

PRIVATE EQUITY | Gary Robertson

Private equity has adapted well to the COVID environment with tremendous growth last year. On average, year-over-year transaction activity increased by 30% and dollar volumes by 70%.

**Fundraising** ► Based on preliminary data, in 2021 private equity partnerships holding final closes raised \$815 billion across 2,368 partnerships (unless otherwise noted, all data is from PitchBook and 4Q numbers are very preliminary). The dollar amount is only 5% away from 2020's total, while the number of partnerships trails by 22%; both will exceed 2020 when final tallies are concluded. 4Q21 had final closes totaling \$162 billion, up 5% from 3Q. The number of funds totaled 479, down 6%.

**Buyouts** ► New buyout investments for 2021 totaled 12,410, up 32% from 2020. Dollar volume increased 52% to \$797 billion. 4Q saw 3,022 new investments, a 1% decrease from 3Q, and dollar volume fell 20% to \$204 billion.

**VC Investments** ► The year produced 45,665 rounds of new investment in venture capital (VC) companies, up 13% from 2020. Announced volume of \$710 billion was up a stunning 99%. 4Q saw 10,196 new rounds, an 11% decline from 3Q, and dollar volume rose 11% to \$204 billion.

**Exits** ► Last year also saw 3,001 buyout-backed private M&A exits, up 31% from 2020, with proceeds of \$692 billion, up 66%. 4Q had 755 private exits, down 3% from 3Q, with proceeds of \$188 billion, down 11%. The year's 427 buyout-backed IPOs rose 150% from 2020, with proceeds of \$132 billion, up 76%. 4Q IPOs numbered 112, unchanged from 3Q, but proceeds of \$27 billion declined 16%.

Venture-backed M&A exits for the year totaled 3,080, up 40% from 2020. Announced dollar volume of \$218 billion was up 63%. The final quarter had 739 exits, down 10% from 3Q, and value of \$48 billion, down 24%. The year's 636 venture-backed IPOs rose 49% from 2020, with proceeds of \$201 billion, up 179%. There were 162 in 4Q, a 16% jump from 3Q, and the \$39 billion of proceeds rose 18%.

## Funds Closed 1/1/21 to 12/31/21

Strategy	No. of Funds	Amt (\$mm)	Share
Venture Capital	1,536	230,022	28%
Growth Equity	176	103,648	13%
Buyouts	463	354,739	44%
Mezzanine Debt	20	14,163	2%
Distressed	32	48,573	6%
Energy	5	2,129	0%
Secondary and Other	99	52,651	6%
Fund-of-Funds	37	8,691	1%
<b>Totals</b>	<b>2,368</b>	<b>814,616</b>	<b>100%</b>

Source: PitchBook (Figures may not total due to rounding.)

## Private Equity Performance (%) (Pooled Horizon IRRs through 9/30/21\*)

Strategy	Quarter	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years	25 Years
All Venture	7.2	76.0	36.3	27.5	20.6	15.6	11.5	23.8
Growth Equity	4.4	52.3	29.0	24.3	18.1	15.6	14.7	16.4
All Buyouts	4.4	42.8	21.8	20.2	16.1	12.6	14.2	13.7
Mezzanine	3.0	22.2	11.8	12.4	12.2	11.0	10.5	10.4
Credit Opportunities	2.1	21.7	7.0	8.8	9.9	9.0	9.9	9.9
Control Distressed	7.2	42.6	16.6	14.3	13.5	10.8	11.7	11.9
<b>All Private Equity</b>	<b>5.1</b>	<b>49.8</b>	<b>24.8</b>	<b>21.4</b>	<b>16.7</b>	<b>13.3</b>	<b>13.2</b>	<b>14.8</b>
S&P 500	0.6	30.0	16.0	16.9	16.6	10.4	9.5	9.7
Russell 3000	-0.1	31.9	16.0	16.9	16.6	10.4	9.8	9.7

Note: Private equity returns are net of fees. Sources: Refinitiv/Cambridge and S&P Dow Jones Indices  
\*Most recent data available at time of publication

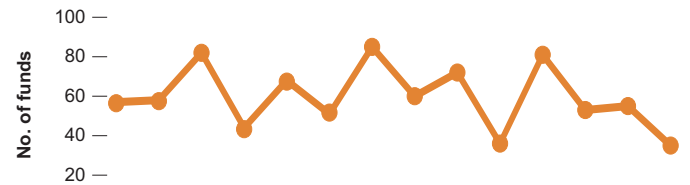
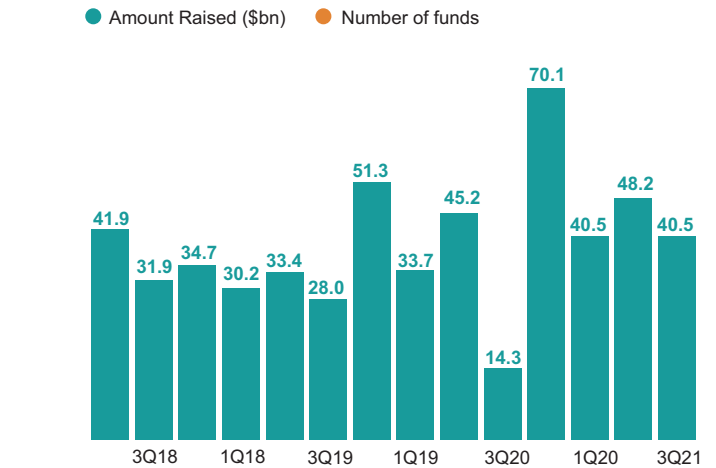
Note: Transaction count and dollar volume figures across all private equity measures are preliminary figures and are subject to update in subsequent versions of the *Capital Markets Review* and other Callan publications.

# Strong Demand Due to Focus on Yield/Income

PRIVATE CREDIT | Catherine Beard

- The yield and income-generating characteristics of private credit remain attractive in a low-rate environment.
- In addition, many direct lending assets employ a floating rate, which can add protection against rising rates.
- Direct lending pricing is back to pre-COVID levels; portfolios were resilient during the COVID dislocation due to liquidity injected into the U.S. economy.
- That liquidity has also limited U.S. corporate stress and has muted the corporate distressed opportunity set.
- Opportunities within private credit include those that offer diversification through differentiated collateral and/or low correlation to public markets, including specialty finance, asset-backed lending, and niche areas (life science lending and intellectual property).
- Private credit performance varies across sub-asset class and underlying return drivers. On average, the asset class has generated net IRRs of 8% to 10% for trailing periods ended Dec. 31, 2020. Higher-risk strategies performed better than lower-risk strategies.
- Private credit fundraising tapered off in 3Q20 due to COVID-related disruption; it significantly rebounded in 4Q20 and the first half of 2021.
- There was strong fundraising activity in 2021 for senior debt and mezzanine capital, with a ramp-up in specialty finance, asset-backed lending, and venture debt.
- There has also been continued strong PC fundraising activity from large credit shops as well as new offerings from traditional fixed income managers.
- Consolidation is ramping up, with large traditional firms acquiring alternative credit managers, such as T. Rowe Price buying Oak Hill Advisors.

## Private Credit Fundraising (\$bn)



Source: Preqin

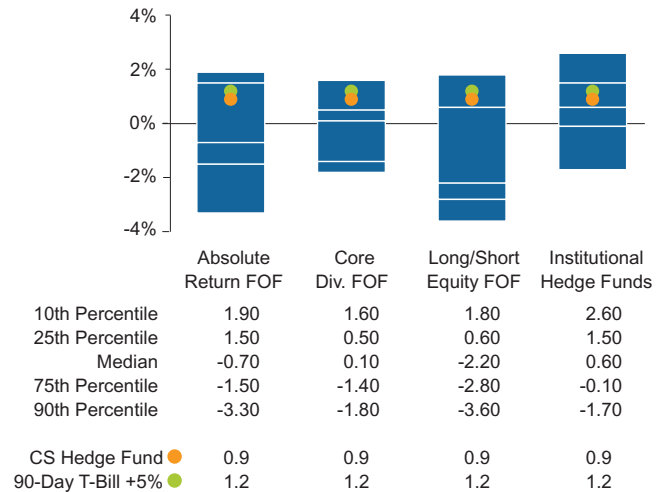
# Hedge Funds Ended the Year on a Positive Note

HEDGE FUNDS/MACs | Joe McGuane

The fourth quarter saw a resurgence of COVID as the highly transmissible Omicron variant produced another wave of infections around the world, disrupting the positive momentum markets had experienced up to that point. Supply chain constraints continued, as service sectors were impacted by the new variant, and rising input prices persisted throughout the quarter. Further exacerbating markets were the hawkish comments made by Fed Chair Powell, opening the door to more aggressive tapering and rate increases next year. The confluence of a spike in COVID and the Fed now worried about curbing high inflation called into question the strength of economic growth moving forward. Investors grew concerned as they reassessed the probability of tighter monetary policy.

Despite increased market volatility during the final two months of the year, the S&P 500 (+11%) ended the quarter positive, with investors showing no sign of distress. This

## Hedge Fund Style Group Returns



Sources: Callan, Credit Suisse, Federal Reserve

## Callan Peer Group Median and Index Returns\* for Periods Ended 12/31/21

Hedge Fund Universe	Quarter	1 Year	3 Years	5 Years	10 Years	15 Years
Callan Institutional Hedge Fund Peer Group	0.6	9.3	6.4	5.4	6.1	7.0
Callan Fund-of-Funds Peer Group	-0.6	5.2	8.9	5.9	5.7	4.8
Callan Absolute Return FOF Style	-0.7	5.6	7.1	4.8	4.7	3.9
Callan Core Diversified FOF Style	0.1	6.2	8.5	5.7	5.5	4.4
Callan Long/Short Equity FOF Style	-2.2	3.3	12.6	8.3	7.1	5.5
BB GS Cross Asset Risk Premia 6% Vol Idx	-2.7	-0.5	1.4	1.9	3.7	5.2
Credit Suisse Hedge Fund	0.9	8.2	8.0	5.5	4.9	4.3
CS Convertible Arbitrage	1.7	6.3	8.2	5.4	4.6	4.3
CS Distressed	1.1	12.5	5.8	4.6	5.3	4.2
CS Emerging Markets	0.5	5.2	10.2	7.1	6.0	4.8
CS Equity Market Neutral	1.9	6.2	3.1	2.5	1.8	-1.2
CS Event-Driven Multi	-0.3	13.9	10.7	6.4	5.2	4.6
CS Fixed Income Arb	0.5	5.2	5.0	4.5	4.6	3.8
CS Global Macro	0.6	9.6	8.8	5.6	4.4	5.8
CS Long/Short Equity	2.1	8.4	9.4	7.2	6.7	5.1
CS Managed Futures	0.0	8.2	6.3	3.0	1.8	2.8
CS Multi-Strategy	1.0	7.0	6.6	5.1	6.2	5.2
CS Risk Arbitrage	1.0	5.3	8.6	6.3	4.4	4.3
HFRI Asset Wtd Composite	1.3	7.5	5.7	4.6	4.6	--
90-Day T-Bill + 5%	1.2	5.1	6.0	6.1	5.6	5.9

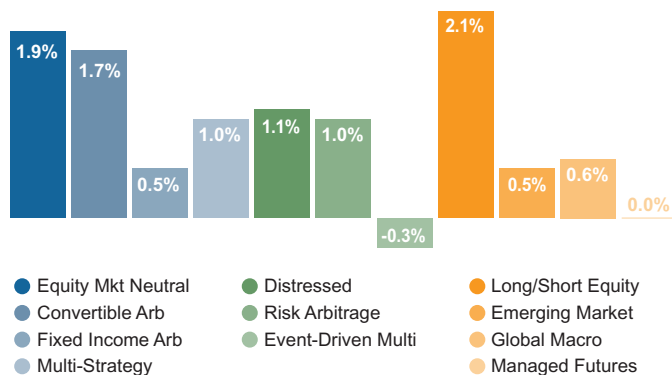
\*Net of fees. Sources: Bloomberg GSAM, Callan, Credit Suisse, Hedge Fund Research



equity market surge was aided by strength in U.S. mega caps, while riskier equities underperformed in December, particularly within areas of technology such as software, fintech, and electric vehicles, all of which cooled off dramatically. U.S. small cap equities underperformed large cap due to worries around future growth. The Bloomberg High Yield Index ended the quarter higher (+0.7%), as the U.S. yield curve flattened throughout the quarter, driven by concerns for future growth amid expected tightening policies from central banks.

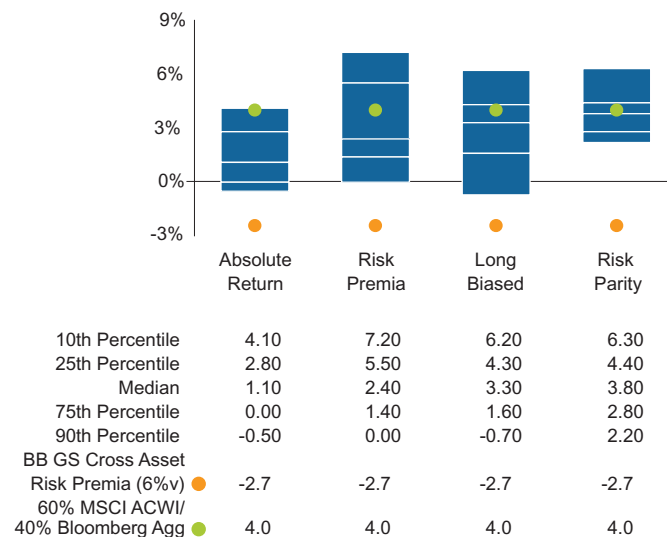
Representing hedge funds reporting performance without implementation costs, the HFRI Fund Weighted Composite

### Credit Suisse Hedge Fund Strategy Returns



Source: Credit Suisse

### MAC Style Group Returns



Sources: Bloomberg, Callan, Eurekahedge, S&P Dow Jones Indices

Index gained 0.4% in 4Q. Within the HFRI indices, the best-performing strategy was Event Driven (+1.5%), as an abundance of corporate activity created alpha opportunities. Equity hedge ended higher (+0.8%), when value positioning paid off. Macro strategies had a difficult quarter (-0.5%), after interest rate volatility went against some manager positions.

Across the Callan Hedge FOF Database, the median Absolute Return FOF lost 0.7%. With exposures to non-directional and directional styles, the Core Diversified FOF rose 0.7%. Long/Short Equity FOF was negative at 2.2%, after a difficult December where growth equities sold off aggressively. Serving as a proxy for large, broadly diversified hedge funds with low-beta exposure to equity markets, the median Callan Institutional Hedge Fund Peer Group added 0.6%.

Since the Global Financial Crisis, liquid alternatives to hedge funds have become popular for their attractive risk-adjusted returns uncorrelated with stock and bond investments but offered at a lower cost. Much of that interest is focused on rules-based, long-short strategies that isolate risk premia such as value, momentum, and carry. These alternative risk premia are often embedded in hedge funds as well as other actively managed investment products.

In 4Q, the Bloomberg GSAM Risk Premia Index decreased 2.7% based upon a 6% volatility target. Within the underlying styles of the index, Equity Low Risk L/S (+5.9%) and Equity Trend (+1.6%) ended the quarter in positive territory as growth sold off relative to value in December. Equity Momentum (-4.8%) and FX Carry (-3.0%) had a difficult quarter as market volatility was elevated throughout the final month of the year.

The median managers of the Callan Multi-Asset Class (MAC) Style Groups generated gains gross of fees. The Callan Risk Premia MAC rose 2.4% based on its exposures to uncorrelated style premia targeting 5% to 15% portfolio volatility. The Callan Risk Parity MAC, which typically targets an equal risk-weighted allocation to the major asset classes with leverage, was up 3.8%. As the most conservative MAC style focused on non-directional strategies of long and short asset class exposures, the Callan Absolute Return MAC gained 1.1%.

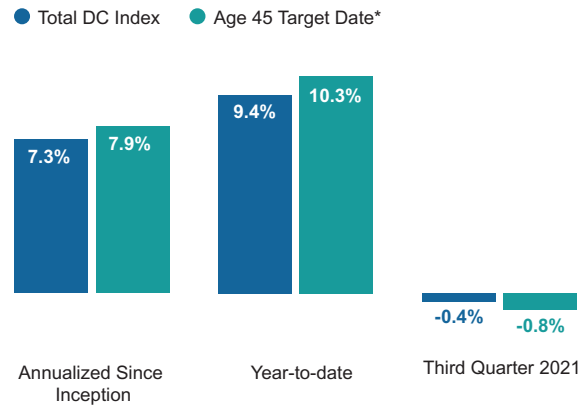
# Index Declines Slightly in 3Q21, First Time Since 1Q20

DEFINED CONTRIBUTION | Patrick Wisdom

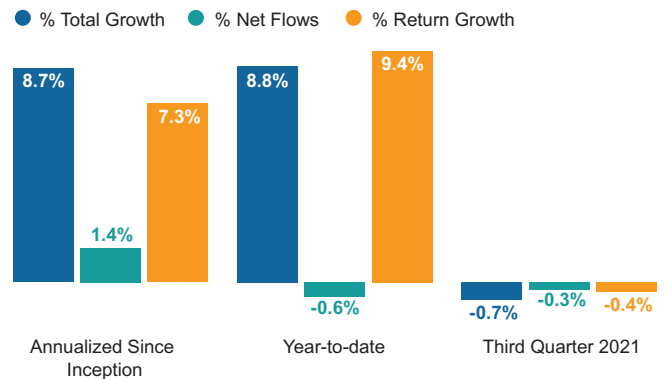
- The Callan DC Index™ fell 0.4% in 3Q21, the first decline since the pandemic-induced 15.0% 1Q20 plunge.
- The Age 45 Target Date Fund (analogous to the 2040 vintage) had a slightly lower return (-0.8%), attributable to its higher allocation to equity, which underperformed fixed income during the quarter.
- Balances within the DC Index declined by 0.7%. Investment returns (-0.4%) and net flows (-0.3%) both contributed to the lower aggregate balances.
- For the third straight quarter, target date funds received the largest net inflows, at 75.6% for the quarter.
- In a reversal from 2Q21, investors transferred assets into money market funds (13.1%). U.S. fixed income (-2.4%) had net outflows, albeit to a much smaller degree than the previous quarter (-17.7%).
- U.S. equity saw material net outflows, as U.S. large cap (-54.2%) and U.S. small/mid cap (-21.8%) drained assets. Global ex-U.S. equity (-1.0%) had smaller net outflows.
- Real return/TIPS also had larger-than-typical net inflows (4.8%), perhaps an indication that more participants are looking to hedge potential inflation.
- Turnover (i.e., net transfer activity levels within DC plans) decreased in 3Q to 0.19% from 2Q's measure of 0.37%.
- The Index's overall allocation to equity (72.23%) increased by 3 basis points.
- In a reversal from the previous quarter, U.S. small/mid cap (8.3%) had the largest percentage decrease in allocation.
- Company stock (2.5%) had the largest percentage increase in allocation.
- For plans with more than \$1 billion in assets, the average asset-weighted investment management fee decreased by 1 basis point. Plans with assets between \$500 million and \$1 billion also saw a fee decrease of 1 basis point, while the fee for plans with assets less than \$500 million had the largest decrease of 3 basis points.

*The Callan DC Index is an equally weighted index tracking the cash flows and performance of over 100 plans, representing nearly \$300 billion in assets. The Index is updated quarterly and is available on Callan's website.*

## Investment Performance



## Growth Sources



## Net Cash Flow Analysis (3Q21)

(Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
Target Date Funds	75.56%
Money Market	13.14%
U.S. Small/Mid Cap	-21.76%
U.S. Large Cap	-54.20%
<b>Total Turnover**</b>	<b>0.19%</b>

Data provided here is the most recent available at time of publication.

Source: Callan DC Index

Note: DC Index inception date is January 2006.

\* The Age 45 Fund transitioned from the average 2035 TDF to the 2040 TDF in June 2018.

\*\* Total Index "turnover" measures the percentage of total invested assets (transfers only, excluding contributions and withdrawals) that moved between asset classes.



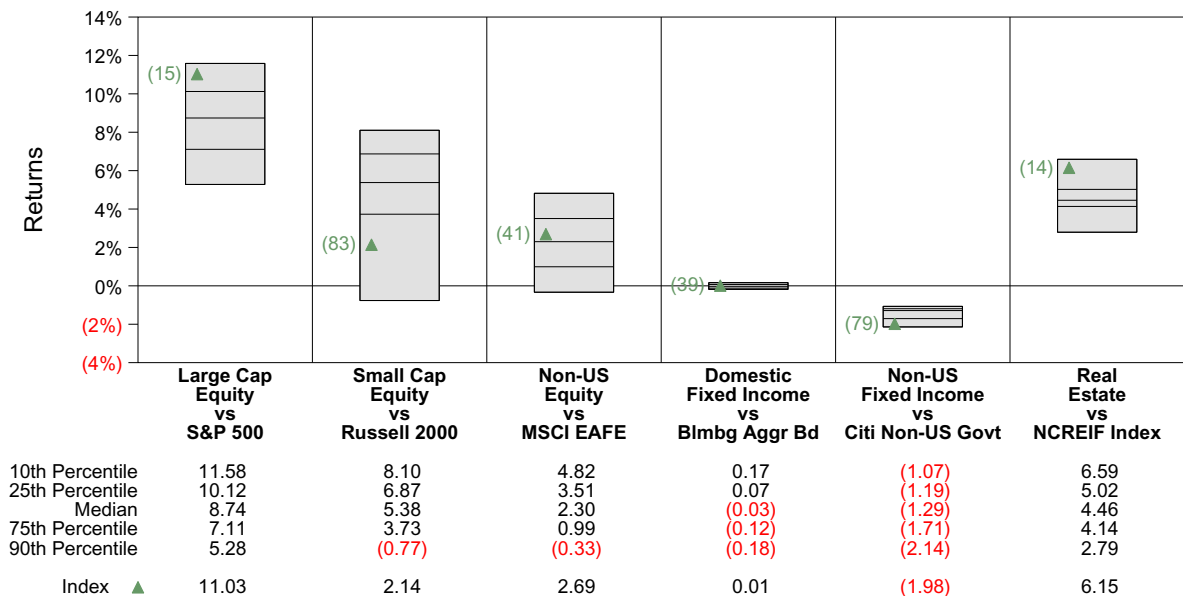
## Market Overview

### Active Management vs Index Returns

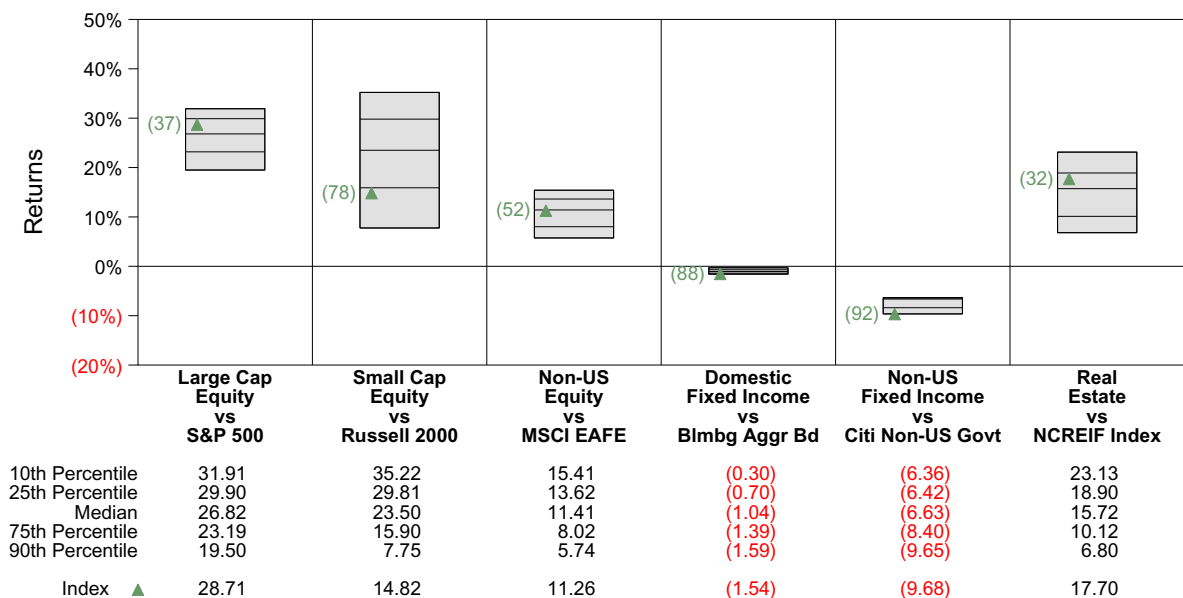
#### Market Overview

The charts below illustrate the range of returns across managers in Callan's Separate Account database over the most recent one quarter and one year time periods. The database is broken down by asset class to illustrate the difference in returns across those asset classes. An appropriate index is also shown for each asset class for comparison purposes. As an example, the first bar in the upper chart illustrates the range of returns for domestic equity managers over the last quarter. The triangle represents the S&P 500 return. The number next to the triangle represents the ranking of the S&P 500 in the Large Cap Equity manager database.

#### Range of Separate Account Manager Returns by Asset Class One Quarter Ended December 31, 2021



#### Range of Separate Account Manager Returns by Asset Class One Year Ended December 31, 2021

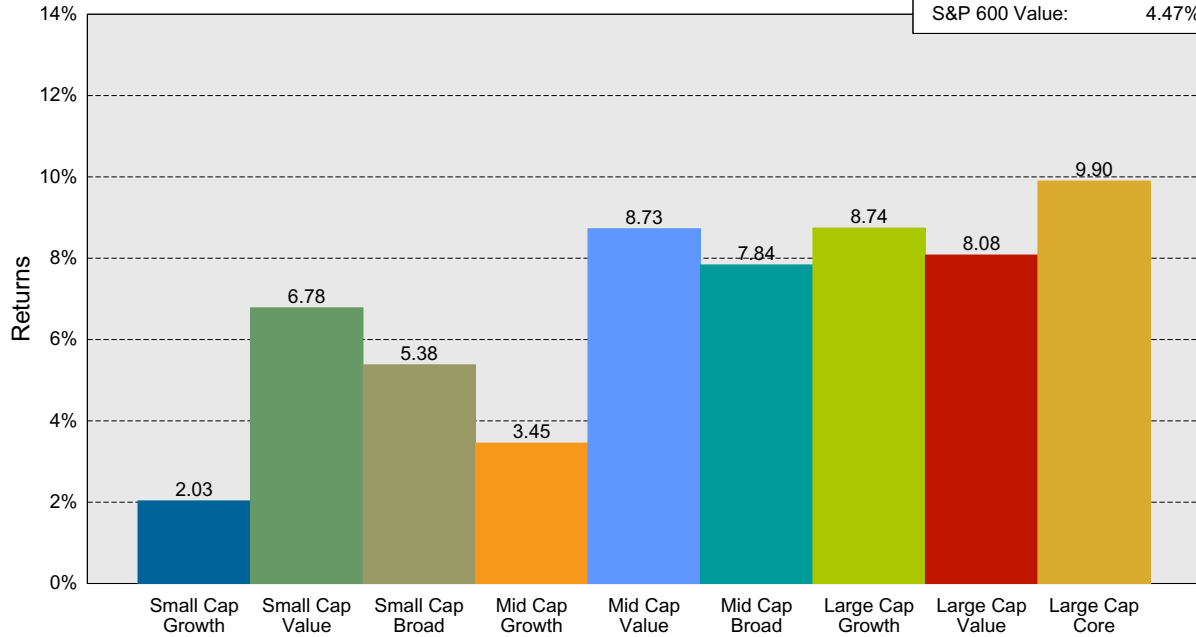


## Domestic Equity Active Management Overview

The S&P 500 was one of the best-performing major indices for the quarter (+11.0%) and the year (+28.7%). While every sector posted double-digit results for the year, returns were mixed in 4Q. For the quarter, Communication Services (0%) was the laggard, and Real Estate (+18%) and Tech (+17%) took the top slots. For the year, the worst sector was Utilities (+18%) and the best was Energy (+55%). Since the market low in March 2020, the S&P 500 is up over 100%. Growth stocks outperformed value for the quarter and the year in the large cap space, but mid cap and small cap growth underperformed value for both periods.

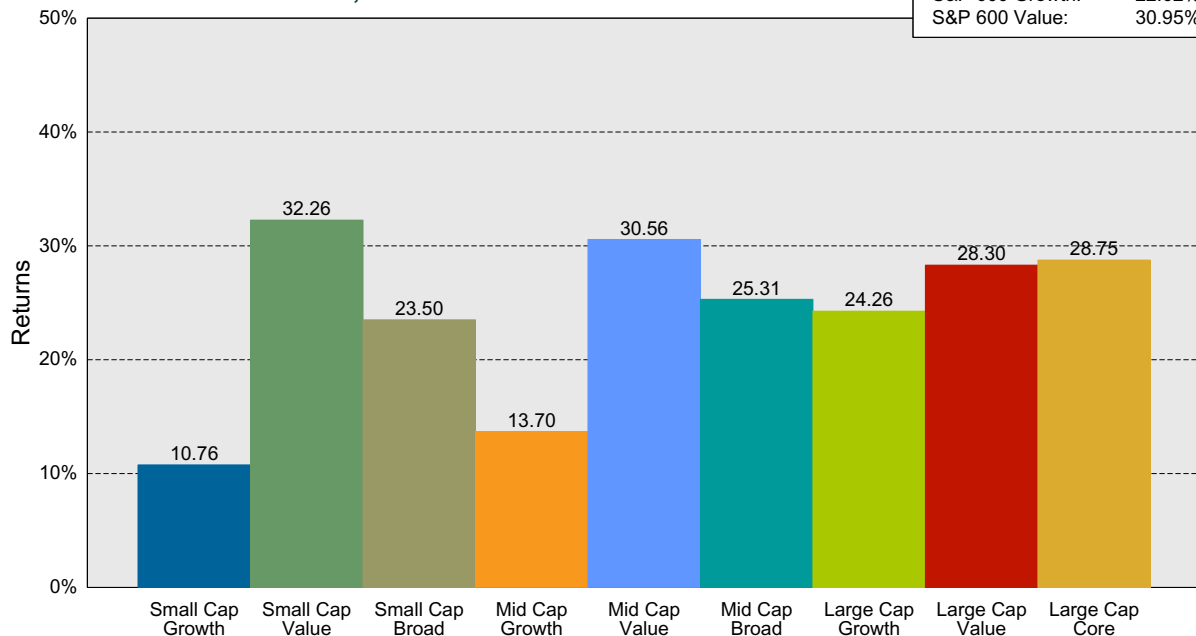
S&P 500:	11.03%
S&P 500 Growth:	13.37%
S&P 500 Value:	8.31%
S&P Mid Cap:	8.00%
S&P 600:	5.64%
S&P 600 Growth:	6.86%
S&P 600 Value:	4.47%

### Separate Account Style Group Median Returns for Quarter Ended December 31, 2021



S&P 500:	28.71%
S&P 500 Growth:	32.01%
S&P 500 Value:	24.90%
S&P Mid Cap:	24.76%
S&P 600:	26.82%
S&P 600 Growth:	22.62%
S&P 600 Value:	30.95%

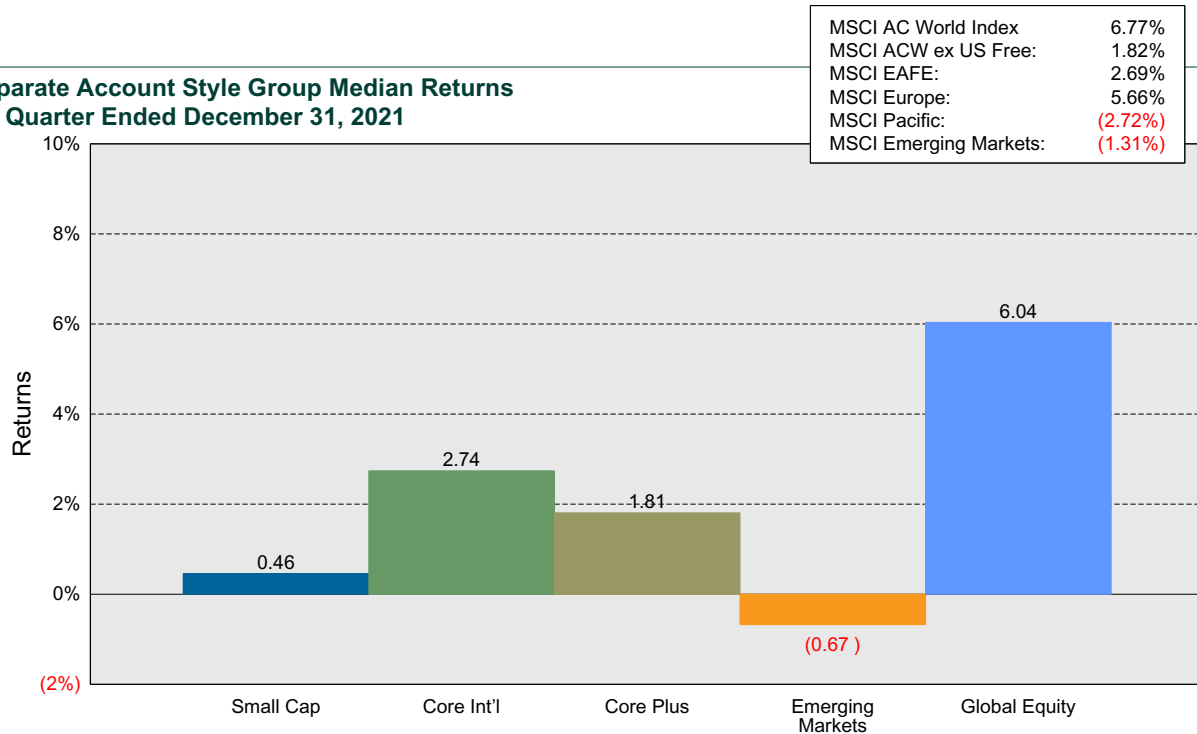
### Separate Account Style Group Median Returns for One Year Ended December 31, 2021



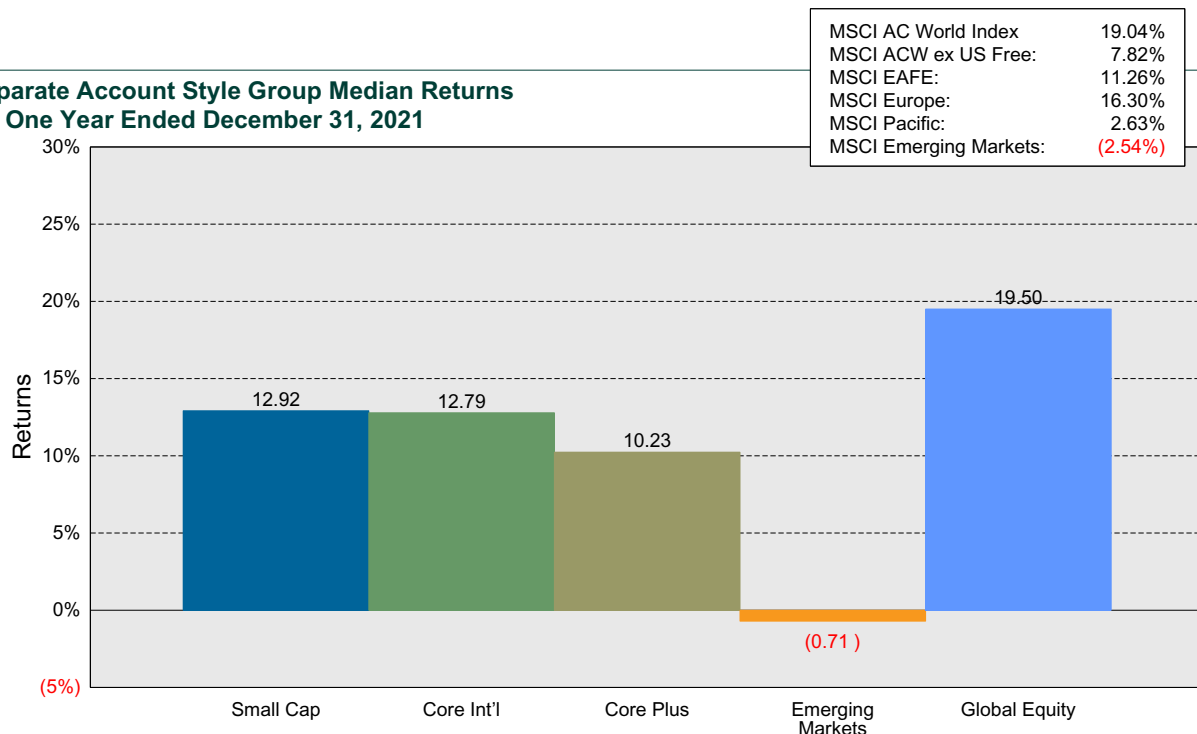
## International Equity Active Management Overview

Non-U.S. stocks were hurt by U.S. dollar strength; the MSCI ACWI ex-USA Index was up 1.8% for the quarter and 7.8% for the year but in local terms it was up 13.0% for the year. The yen sank 10% in 2021 vs. the U.S. dollar, the largest drop since 2014. Japan was up nearly 14% in local terms in 2021 but only 2% in dollar terms. Emerging markets (MSCI EM: -1.3%; -2.5%) did not participate in the stock rally the rest of the world enjoyed. China's weight in the Index (35%) and poor performance (-6%; -22%) was a key driver. China stocks were hurt by slowing growth and heightened regulation. Brazil (-6%; -17%) was also a notable underperformer. India (-0.2%; +26%) and Russia (-9%; +19%) fell in 4Q but were up for the year. Turkey (-11%; -28%) was the worst performer and the 44% decline in the Turkish lira was also notable. The country is battling high inflation (36% in December) with unconventional monetary policy (lowering rates).

### Separate Account Style Group Median Returns for Quarter Ended December 31, 2021



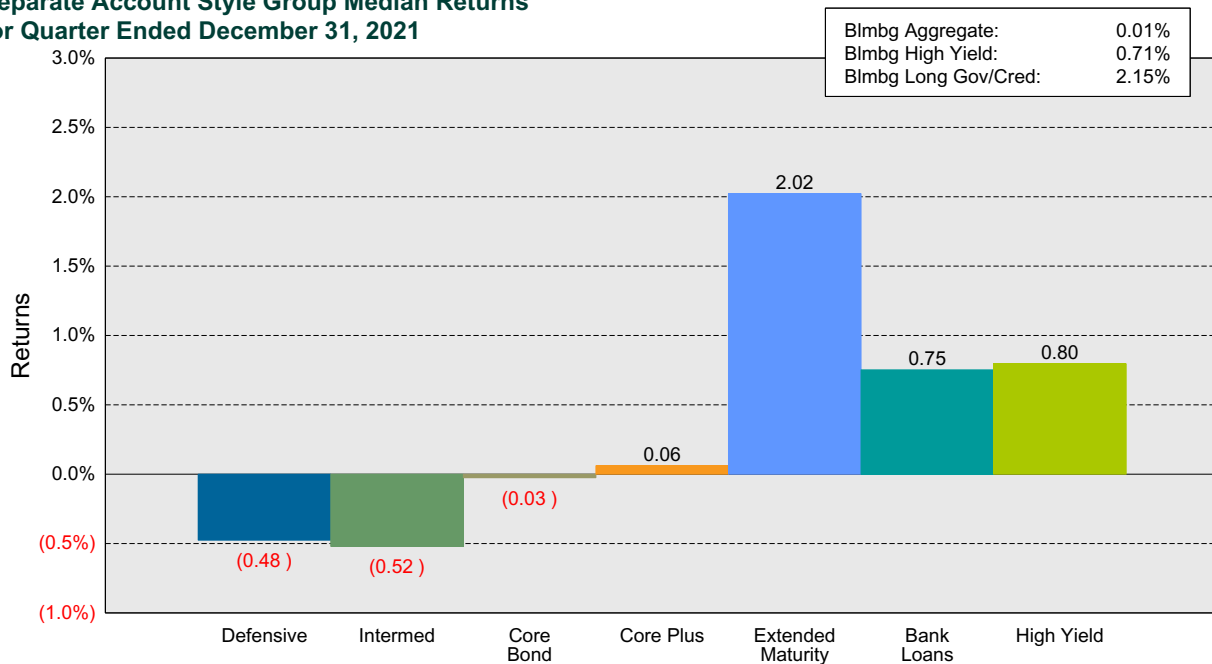
### Separate Account Style Group Median Returns for One Year Ended December 31, 2021



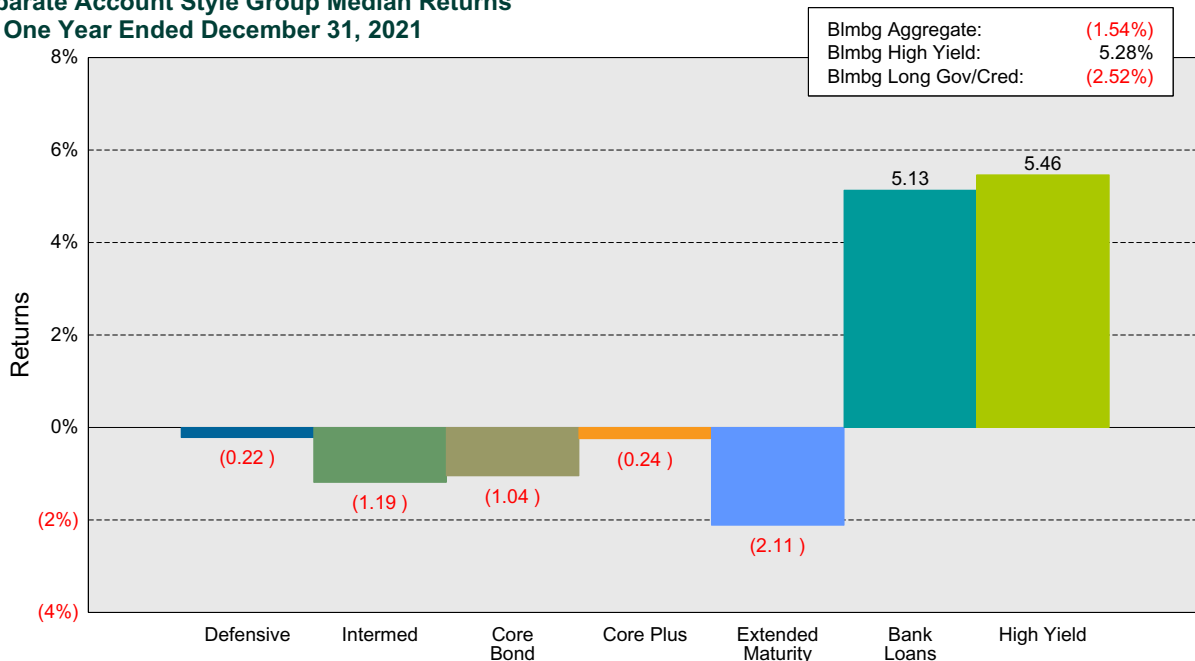
## Domestic Fixed Income Active Management Overview

U.S. fixed income returns were literally flat in 4Q (0.0%) and the Bloomberg Aggregate posted an unusual negative result for the calendar year (-1.5%), for only the fourth time since the inception of the Index in 1976. Spread sectors underperformed in 4Q but outperformed for the year. The 10-year U.S. Treasury yield closed the year at 1.52%, up from 0.93% on 12/31/20 but flat over the course of the quarter. TIPS sharply outperformed the Aggregate for the quarter and the year (Bloomberg US TIPS Index: +2.4%; +6.0%) as expectations for inflation rose. High yield corporates were top performers for the quarter and the year (Bloomberg US HY: +0.7%; +5.3%) and the yield-to-worst for this Index was 4.21% as of year-end. Leveraged loans (S&P LSTA Lev Loan: +0.6%; +5.2%) also did relatively well.<sup>^L</sup>

### Separate Account Style Group Median Returns for Quarter Ended December 31, 2021



### Separate Account Style Group Median Returns for One Year Ended December 31, 2021



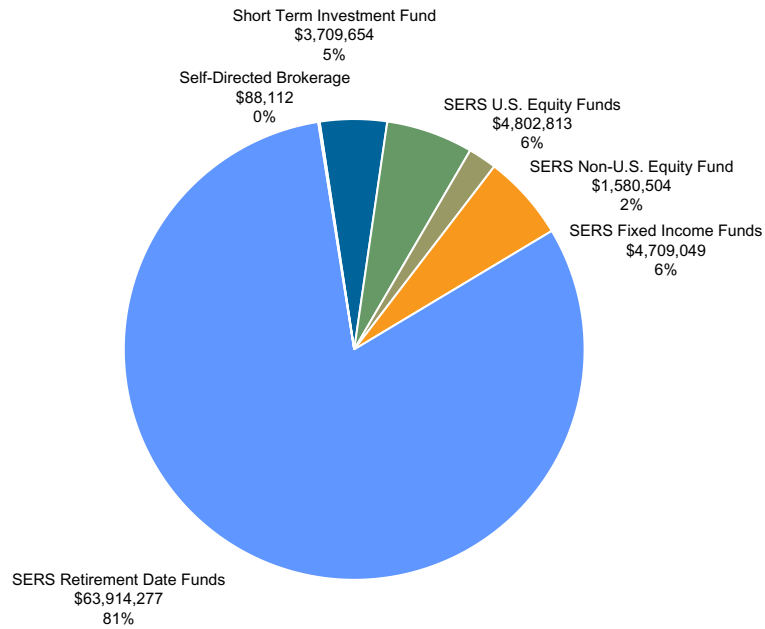




## Changes in Investment Fund Balances Period Ended December 31, 2021

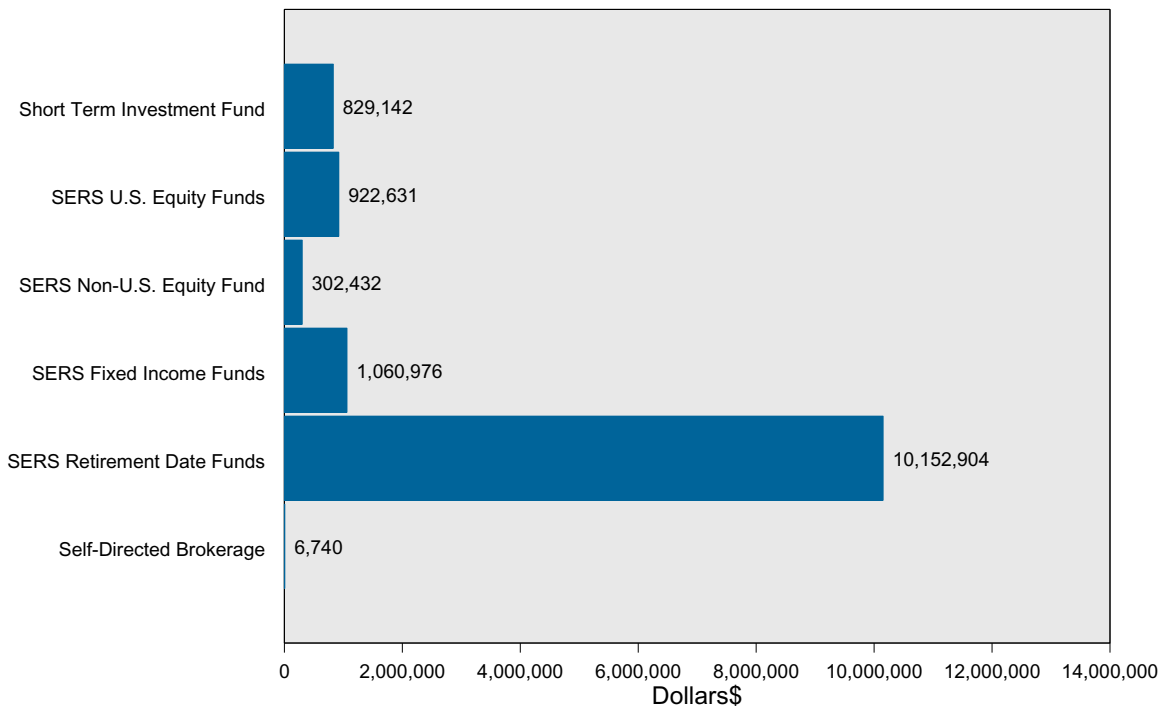
### Allocation Across Investment Options

The chart below illustrates the allocation of the aggregate fund assets across the various investment options for the quarter ended December 31, 2021.



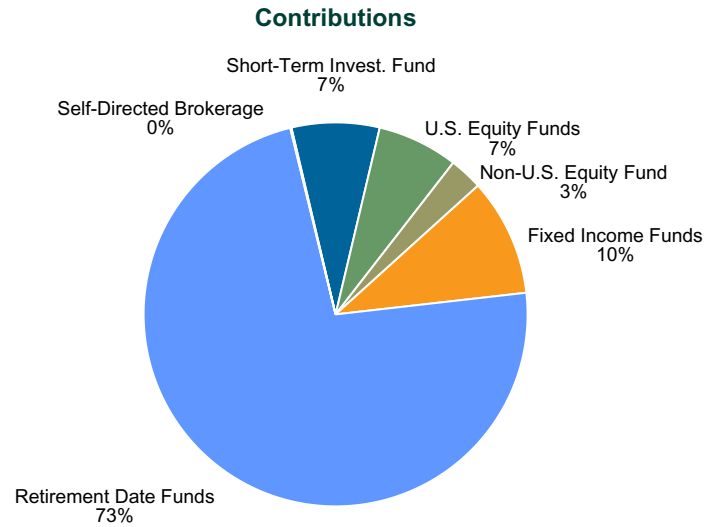
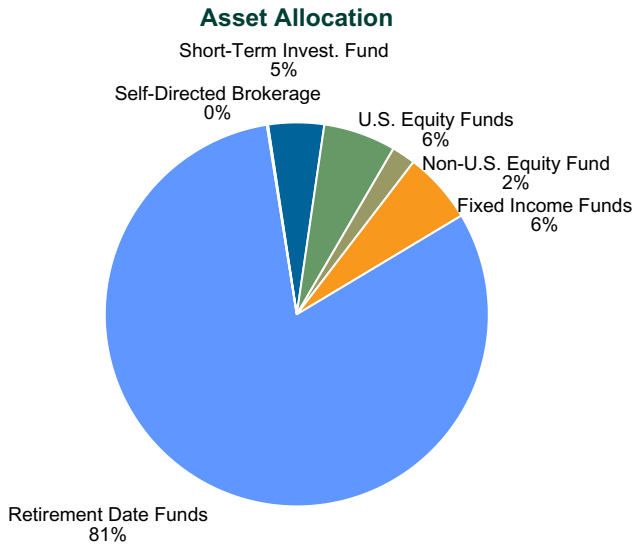
### Changes in Fund Values

The chart below shows the net change in fund values across the various investment options for the quarter ended December 31, 2021. The change in value for each fund is the result of a combination of 3 factors: 1) market movements; 2) contributions or disbursements into or out of the funds by the participants (and any matching done by the company); and 3) transfers between funds by the participants.

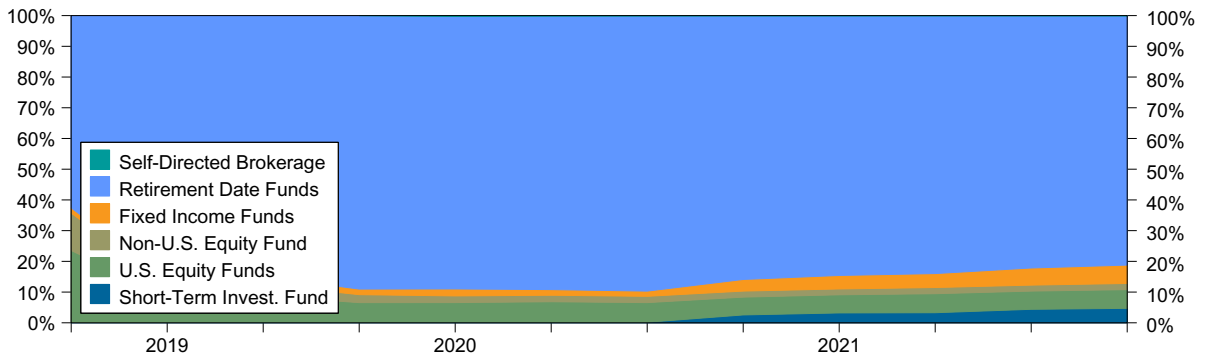


## Asset Allocation

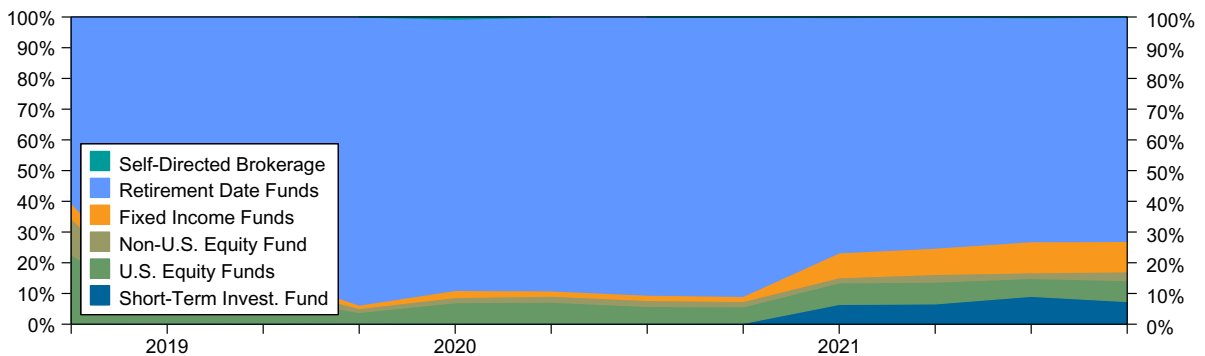
The charts below illustrate the historical asset allocation of the fund as well as the historical allocations of contributions to the fund. The pie charts on the top show the most recent allocations of both assets and contributions which include exchanges and transfers within the plan. The middle chart displays the historical allocation of fund assets. The bottom chart illustrates the historical allocation of contributions.



## Historical Asset Allocation



## Historical Allocation of Contributions



## Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of December 31, 2021, with the distribution as of September 30, 2021. The change in asset distribution is broken down into the dollar change due to Net New Investment and the dollar change due to Investment Return.

### Asset Distribution Across Investment Managers

	December 31, 2021			September 30, 2021		
	Market Value	% of Total	Net New Inv.	Inv. Return	Market Value	% of Total
<b>SERS Retirement Date Funds</b>	<b>\$63,914,277</b>	<b>85.11%</b>	<b>\$7,040,223</b>	<b>\$3,112,682</b>	<b>\$53,761,372</b>	<b>85.81%</b>
SERS Post Retirement Fund	1,059,063	1.41%	101,412	24,303	933,348	1.49%
SERS 2025 Retirement Fund	3,077,116	4.10%	412,794	83,994	2,580,328	4.12%
SERS 2030 Retirement Fund	5,866,372	7.81%	567,740	207,384	5,091,249	8.13%
SERS 2035 Retirement Fund	7,758,015	10.33%	725,670	325,765	6,706,579	10.70%
SERS 2040 Retirement Fund	7,046,524	9.38%	1,050,699	332,803	5,663,022	9.04%
SERS 2045 Retirement Fund	7,799,267	10.39%	813,417	406,976	6,578,874	10.50%
SERS 2050 Retirement Fund	8,788,739	11.70%	852,765	487,015	7,448,959	11.89%
SERS 2055 Retirement Fund	8,819,763	11.74%	996,949	486,873	7,335,942	11.71%
SERS 2060 Retirement Fund	8,458,562	11.26%	800,697	473,999	7,183,866	11.47%
SERS 2065 Retirement Fund	5,240,856	6.98%	718,081	283,570	4,239,205	6.77%
<b>SERS U.S. Equity</b>	<b>\$4,802,813</b>	<b>6.40%</b>	<b>\$562,249</b>	<b>\$360,382</b>	<b>\$3,880,182</b>	<b>6.19%</b>
SERS U.S. Large Company Idx Fund	2,968,439	3.95%	488,429	258,645	2,221,366	3.55%
SERS U.S. All Company Idx Fund	1,165,275	1.55%	22,225	98,310	1,044,740	1.67%
SERS U.S. SMID Company Idx Fund	669,099	0.89%	51,596	3,427	614,077	0.98%
<b>SERS Non-U.S. Equity</b>						
SERS Global Non-U.S. Index Fund	1,580,504	2.10%	274,075	28,357	1,278,072	2.04%
<b>SERS Fixed Income</b>	<b>\$4,709,049</b>	<b>6.27%</b>	<b>\$1,057,931</b>	<b>\$3,046</b>	<b>\$3,648,073</b>	<b>5.82%</b>
SERS Short Term Investment Fund	3,709,654	4.94%	828,744	398	2,880,512	4.60%
SERS U.S. Short Term Bond Idx Fund	26,665	0.04%	(16,469)	(262)	43,396	0.07%
SERS U.S. TIPS Index Fund	210,120	0.28%	56,567	3,843	149,710	0.24%
SERS U.S. Bond Index Fund	762,610	1.02%	189,089	(934)	574,455	0.92%
<b>Self-Directed Brokerage</b>						
SERS Self-Directed Brokerage	88,112	0.12%	6,850	(111)	81,372	0.13%
<b>Total Fund</b>	<b>\$75,094,755</b>	<b>100.0%</b>	<b>\$8,941,328</b>	<b>\$3,504,356</b>	<b>\$62,649,071</b>	<b>100.0%</b>

## Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2021. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

### Returns for Periods Ended December 31, 2021

	Last Quarter	1 Year	Last 3 Years	Last 5 Years
<b>Net Performance</b>				
<b>Target Date Funds</b>				
SERS Post Retirement Fund	2.52%	6.95%	11.47%	8.05%
BlackRock Post Retirement Index	2.59%	7.02%	11.43%	8.02%
Callan Tgt Date 2000-2010	2.73%	8.05%	11.54%	8.23%
SERS 2025 Retirement Fund	3.12%	8.99%	13.19%	9.46%
BlackRock 2025 Index	3.19%	9.07%	13.14%	9.40%
Callan Target Date 2025	3.58%	10.07%	13.75%	9.88%
SERS 2030 Retirement Fund	3.94%	11.43%	14.96%	10.66%
BlackRock 2030 Index	4.00%	11.50%	14.90%	10.58%
Callan Target Date 2030	4.20%	11.65%	15.40%	10.91%
SERS 2035 Retirement Fund	4.71%	13.80%	16.66%	11.81%
BlackRock 2035 Index	4.76%	13.85%	16.59%	11.71%
Callan Target Date 2035	4.75%	13.93%	16.76%	11.85%
SERS 2040 Retirement Fund	5.42%	15.96%	18.18%	12.83%
BlackRock 2040 Index	5.46%	15.97%	18.10%	12.70%
Callan Target Date 2040	5.36%	15.76%	18.00%	12.66%
SERS 2045 Retirement Fund	5.99%	17.72%	19.44%	13.60%
BlackRock 2045 Index	6.01%	17.70%	19.33%	13.44%
Callan Target Date 2045	5.68%	16.85%	18.97%	13.21%
SERS 2050 Retirement Fund	6.31%	18.67%	20.06%	13.96%
BlackRock 2050 Index	6.32%	18.62%	19.96%	13.81%
Callan Target Date 2050	5.84%	17.19%	19.19%	13.29%
SERS 2055 Retirement Fund	6.38%	18.83%	20.18%	14.01%
BlackRock 2055 Index	6.39%	18.81%	20.10%	13.88%
Callan Target Date 2055	5.81%	17.27%	19.37%	13.53%
SERS 2060 Retirement Fund	6.38%	18.82%	20.17%	14.00%
BlackRock 2060 Index	6.39%	18.81%	20.10%	13.88%
Callan Target Date 2060	5.92%	17.44%	19.62%	13.63%
SERS 2065 Retirement Fund	6.36%	18.77%	-	-
BlackRock 2065 Index	6.39%	18.80%	-	-
Callan Target Date 2065	5.68%	17.01%	19.22%	-

## Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2021. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	Returns for Periods Ended December 31, 2021			
	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
<b>Net Performance</b>				
<b>Target Date Funds</b>				
SERS Post Retirement Fund	6.41%	6.57%	5.78%	-
BlackRock Post Retirement Index	6.38%	6.53%	5.76%	6.03%
Callan Tgt Date 2000-2010	6.62%	7.49%	5.59%	5.68%
SERS 2025 Retirement Fund	7.53%	8.28%	5.99%	-
BlackRock 2025 Index	7.45%	8.22%	5.94%	6.48%
Callan Target Date 2025	7.83%	9.05%	6.19%	-
SERS 2030 Retirement Fund	8.42%	9.21%	6.38%	-
BlackRock 2030 Index	8.32%	9.12%	6.32%	6.84%
Callan Target Date 2030	8.63%	9.92%	6.62%	6.80%
SERS 2035 Retirement Fund	9.28%	10.08%	6.75%	-
BlackRock 2035 Index	9.15%	9.97%	6.67%	7.14%
Callan Target Date 2035	9.32%	10.81%	7.03%	-
SERS 2040 Retirement Fund	10.02%	10.83%	7.05%	-
BlackRock 2040 Index	9.86%	10.71%	6.95%	7.40%
Callan Target Date 2040	9.96%	11.31%	7.41%	7.12%
SERS 2045 Retirement Fund	10.58%	11.45%	7.26%	-
BlackRock 2045 Index	10.39%	11.31%	7.16%	7.58%
Callan Target Date 2045	10.41%	11.57%	7.39%	-
SERS 2050 Retirement Fund	10.83%	11.83%	-	-
BlackRock 2050 Index	10.65%	11.69%	7.44%	7.97%
Callan Target Date 2050	10.45%	11.70%	7.40%	-
SERS 2055 Retirement Fund	10.87%	12.03%	-	-
BlackRock 2055 Index	10.70%	11.91%	-	-
Callan Target Date 2055	10.61%	11.87%	-	-

\*Funds not shown do not have longer term historical performance.

## Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2021. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

### Returns for Periods Ended December 31, 2021

	Last Quarter	1 Year	Last 3 Years	Last 5 Years
<b>Net Performance</b>				
<b>Domestic Equity</b>				
SERS U.S. Large Company Index Fund	11.03%	28.70%	26.09%	18.49%
S&P 500 Index	11.03%	28.71%	26.07%	18.47%
Callan Lg Cap Broad MF	8.34%	25.50%	25.48%	17.66%
SERS U.S. All Company Index Fund	9.27%	25.61%	25.72%	17.91%
Russell 3000 Index	9.28%	25.66%	25.79%	17.97%
Callan Multi Cap Brd MF	7.74%	24.17%	23.58%	15.93%
SERS U.S. SMID Company Idx Fund	0.84%	12.89%	24.09%	15.42%
Dow Jones US Completion	0.66%	12.36%	23.85%	15.21%
Callan SMID Broad MFs	5.37%	19.56%	22.40%	15.84%
<b>International Equity</b>				
SERS Global Non-U.S. Index Fund	2.14%	7.97%	13.48%	9.95%
MSCI ACWI ex US	1.82%	7.82%	13.18%	9.61%
Callan Non US Equity MFs	2.45%	9.47%	14.48%	10.12%
<b>Domestic Fixed Income</b>				
SERS Short Term Investment Fund	0.01%	0.07%	1.01%	1.24%
3-month Treasury Bill	0.01%	0.05%	0.99%	1.14%
Callan Cash Database(1)	(0.00%)	0.13%	1.21%	1.39%
SERS U.S. Short Term Bond Idx Fund	(0.58%)	(0.52%)	2.27%	-
Blmbg Gov/Cred 1-3 Yr	(0.56%)	(0.47%)	2.28%	1.85%
Callan Short US Govt MFs	(0.65%)	(1.14%)	1.99%	1.56%
SERS U.S. TIPS Index Fund	2.30%	5.87%	8.40%	-
Blmbg US TIPS	2.36%	5.96%	8.44%	5.34%
Callan TIPS MFs	2.02%	5.55%	8.03%	5.06%
SERS U.S. Bond Index Fund	(0.06%)	(1.65%)	4.76%	3.55%
Blmbg Aggregate	0.01%	(1.54%)	4.79%	3.57%
Callan Core Bond MFs	(0.10%)	(1.18%)	5.49%	3.96%

(1) Callan Cash Database includes STIF, enhanced cash, and money market funds.

## Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2021. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	Returns for Periods Ended December 31, 2021			
	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
<b>Net Performance</b>				
<b>Domestic Equity</b>				
SERS U.S. Large Company Index Fund	14.95%	16.57%	10.70%	9.56%
S&P 500 Index	14.93%	16.55%	10.66%	9.52%
Callan Lg Cap Broad MF	13.83%	15.77%	10.37%	9.36%
SERS U.S. All Company Index Fund	14.50%	16.28%	-	-
Russell 3000 Index	14.55%	16.30%	10.59%	9.72%
Callan Multi Cap Brd MF	12.30%	14.64%	9.51%	9.26%
SERS U.S. SMID Company Idx Fund	12.63%	15.01%	10.52%	10.93%
Dow Jones US Completion	12.41%	14.79%	10.29%	10.74%
Callan SMID Broad MFs	12.40%	14.00%	10.68%	10.19%
<b>International Equity</b>				
SERS Global Non-U.S. Index Fund	6.88%	7.53%	-	-
MSCI ACWI ex US	6.56%	7.28%	3.77%	6.80%
Callan Non US Equity MFs	6.95%	8.43%	4.33%	6.69%
<b>Domestic Fixed Income</b>				
SERS Short Term Investment Fund	1.00%	0.75%	1.10%	-
3-month Treasury Bill	0.87%	0.63%	0.91%	1.29%
Callan Cash Database(1)	1.16%	0.97%	1.41%	1.62%
Blmbg Gov/Cred 1-3 Yr	1.60%	1.39%	2.25%	2.50%
Callan Short US Govt MFs	1.31%	1.13%	2.17%	2.48%
Blmbg US TIPS	4.25%	3.09%	4.69%	5.31%
Callan TIPS MFs	3.97%	2.85%	4.32%	5.01%
SERS U.S. Bond Index Fund	2.97%	2.86%	4.04%	4.28%
Blmbg Aggregate	3.00%	2.90%	4.09%	4.33%
Callan Core Bond MFs	3.33%	3.33%	4.41%	4.55%

(1) Callan Cash Database includes STIF, enhanced cash, and money market funds.

\*Funds not shown do not have longer term historical performance.

## Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	2021	2020	2019	2018	2017
<b>Net Performance</b>					
<b>Target Date Funds</b>					
SERS Post Retirement Fund	6.95%	11.97%	15.65%	(3.47%)	10.18%
BlackRock Post Retirement Index	7.02%	11.80%	15.63%	(3.48%)	10.10%
Callan Tgt Date 2000-2010	8.05%	10.59%	14.39%	(3.15%)	10.09%
SERS 2025 Retirement Fund	8.99%	12.19%	18.60%	(4.86%)	13.91%
BlackRock 2025 Index	9.07%	12.01%	18.56%	(4.90%)	13.75%
Callan Target Date 2025	10.07%	12.58%	18.51%	(5.19%)	14.94%
SERS 2030 Retirement Fund	11.43%	12.88%	20.80%	(5.71%)	15.83%
BlackRock 2030 Index	11.50%	12.72%	20.70%	(5.76%)	15.64%
Callan Target Date 2030	11.65%	13.23%	20.43%	(6.12%)	16.77%
SERS 2035 Retirement Fund	13.80%	13.58%	22.84%	(6.50%)	17.72%
BlackRock 2035 Index	13.85%	13.44%	22.72%	(6.58%)	17.48%
Callan Target Date 2035	13.93%	14.28%	22.17%	(7.03%)	18.51%
SERS 2040 Retirement Fund	15.96%	14.14%	24.71%	(7.22%)	19.38%
BlackRock 2040 Index	15.97%	13.98%	24.62%	(7.33%)	19.09%
Callan Target Date 2040	15.76%	14.91%	23.62%	(7.89%)	19.84%
SERS 2045 Retirement Fund	17.72%	14.83%	26.05%	(7.85%)	20.47%
BlackRock 2045 Index	17.70%	14.65%	25.90%	(7.99%)	20.15%
Callan Target Date 2045	16.85%	15.52%	24.60%	(8.21%)	20.63%
SERS 2050 Retirement Fund	18.67%	15.20%	26.60%	(8.11%)	20.85%
BlackRock 2050 Index	18.62%	15.07%	26.48%	(8.26%)	20.55%
Callan Target Date 2050	17.19%	15.71%	24.89%	(8.44%)	20.74%
SERS 2055 Retirement Fund	18.83%	15.32%	26.67%	(8.13%)	20.82%
BlackRock 2055 Index	18.81%	15.18%	26.58%	(8.28%)	20.55%
Callan Target Date 2055	17.27%	15.83%	24.97%	(8.44%)	21.10%
SERS 2060 Retirement Fund	18.82%	15.31%	26.66%	(8.14%)	20.77%
BlackRock 2060 Index	18.81%	15.19%	26.58%	(8.28%)	20.55%
Callan Target Date 2060	17.44%	15.90%	25.08%	(8.35%)	21.15%
SERS 2065 Retirement Fund	18.77%	15.15%	-	-	-
BlackRock 2065 Index	18.80%	15.19%	-	-	-
Callan Target Date 2065	17.01%	16.43%	25.62%	(8.63%)	-



## Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	2021	2020	2019	2018	2017
<b>Net Performance</b>					
<b>Domestic Equity</b>					
SERS U.S. Large Company Index Fund	28.70%	18.43%	31.51%	(4.39%)	21.84%
S&P 500 Index	28.71%	18.40%	31.49%	(4.38%)	21.83%
Callan Lg Cap Broad MF	25.50%	18.47%	30.14%	(4.54%)	23.56%
SERS U.S. All Company Index Fund	25.61%	21.20%	30.52%	(5.29%)	21.09%
Russell 3000 Index	25.66%	20.89%	31.02%	(5.24%)	21.13%
Callan Multi Cap Brd MF	24.17%	17.19%	29.12%	(6.82%)	20.75%
SERS U.S. SMID Company Idx Fund	12.89%	32.03%	28.20%	(9.32%)	18.21%
Dow Jones US Completion	12.36%	32.17%	27.94%	(9.57%)	18.12%
Callan SMID Broad MFs	19.56%	24.00%	29.40%	(8.69%)	17.14%
<b>International Equity</b>					
SERS Global Non-U.S. Index Fund	7.97%	11.15%	21.77%	(13.86%)	27.63%
MSCI ACWI ex US	7.82%	10.65%	21.51%	(14.20%)	27.19%
Callan Non US Equity MFs	9.47%	11.12%	22.83%	(15.04%)	26.90%
<b>Domestic Fixed Income</b>					
SERS Short Term Investment Fund	0.07%	0.67%	2.31%	2.09%	1.08%
3-month Treasury Bill	0.05%	0.67%	2.28%	1.87%	0.86%
Callan Cash Database(1)	0.13%	1.06%	2.67%	2.00%	1.18%
SERS U.S. Short Term Bond Idx Fund	(0.52%)	3.36%	4.02%	1.58%	-
Blmbg Gov/Cred 1-3 Yr	(0.47%)	3.33%	4.03%	1.60%	0.84%
Callan Short US Govt MFs	(1.14%)	3.57%	3.52%	1.15%	0.59%
SERS U.S. TIPS Index Fund	5.87%	11.00%	8.40%	-	-
Blmbg US TIPS	5.96%	10.99%	8.43%	(1.26%)	3.01%
Callan TIPS MFs	5.55%	10.29%	8.26%	(1.53%)	3.12%
SERS U.S. Bond Index Fund	(1.65%)	7.56%	8.69%	0.02%	3.53%
Blmbg Aggregate	(1.54%)	7.51%	8.72%	0.01%	3.54%
Callan Core Bond MFs	(1.18%)	8.65%	9.17%	(0.35%)	3.71%

(1) Callan Cash Database includes STIF, enhanced cash, and money market funds.

## Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2021. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

### Returns for Periods Ended December 31, 2021

	Last Quarter	1 Year	Last 3 Years	Last 5 Years
<b>Gross Performance</b>				
<b>Target Date Funds</b>				
SERS Post Retirement Fund	2.54%	7.03%	11.54%	8.12%
BlackRock Post Retirement Index	2.59%	7.02%	11.43%	8.02%
Callan Tgt Date 2000-2010	2.73%	8.05%	11.54%	8.23%
SERS 2025 Retirement Fund	3.14%	9.06%	13.26%	9.54%
BlackRock 2025 Index	3.19%	9.07%	13.14%	9.40%
Callan Target Date 2025	3.58%	10.07%	13.75%	9.88%
SERS 2030 Retirement Fund	3.96%	11.50%	15.03%	10.74%
BlackRock 2030 Index	4.00%	11.50%	14.90%	10.58%
Callan Target Date 2030	4.20%	11.65%	15.40%	10.91%
SERS 2035 Retirement Fund	4.72%	13.88%	16.74%	11.88%
BlackRock 2035 Index	4.76%	13.85%	16.59%	11.71%
Callan Target Date 2035	4.75%	13.93%	16.76%	11.85%
SERS 2040 Retirement Fund	5.44%	16.04%	18.26%	12.90%
BlackRock 2040 Index	5.46%	15.97%	18.10%	12.70%
Callan Target Date 2040	5.36%	15.76%	18.00%	12.66%
SERS 2045 Retirement Fund	6.01%	17.79%	19.51%	13.67%
BlackRock 2045 Index	6.01%	17.70%	19.33%	13.44%
Callan Target Date 2045	5.68%	16.85%	18.97%	13.21%
SERS 2050 Retirement Fund	6.32%	18.75%	20.14%	14.04%
BlackRock 2050 Index	6.32%	18.62%	19.96%	13.81%
Callan Target Date 2050	5.84%	17.19%	19.19%	13.29%
SERS 2055 Retirement Fund	6.39%	18.91%	20.26%	14.09%
BlackRock 2055 Index	6.39%	18.81%	20.10%	13.88%
Callan Target Date 2055	5.81%	17.27%	19.37%	13.53%
SERS 2060 Retirement Fund	6.39%	18.90%	20.25%	14.07%
BlackRock 2060 Index	6.39%	18.81%	20.10%	13.88%
Callan Target Date 2060	5.92%	17.44%	19.62%	13.63%
SERS 2065 Retirement Fund	6.38%	18.85%	-	-
BlackRock 2065 Index	6.39%	18.80%	-	-
Callan Target Date 2065	5.68%	17.01%	19.22%	-

## Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2021. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended December 31, 2021				
	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
<b>Gross Performance</b>				
<b>Target Date Funds</b>				
SERS Post Retirement Fund	6.49%	6.64%	5.85%	-
BlackRock Post Retirement Index	6.38%	6.53%	5.76%	6.03%
Callan Tgt Date 2000-2010	6.62%	7.49%	5.59%	5.68%
SERS 2025 Retirement Fund	7.60%	8.35%	6.06%	-
BlackRock 2025 Index	7.45%	8.22%	5.94%	6.48%
Callan Target Date 2025	7.83%	9.05%	6.19%	-
SERS 2030 Retirement Fund	8.50%	9.28%	6.45%	-
BlackRock 2030 Index	8.32%	9.12%	6.32%	6.84%
Callan Target Date 2030	8.63%	9.92%	6.62%	6.80%
SERS 2035 Retirement Fund	9.35%	10.15%	6.82%	-
BlackRock 2035 Index	9.15%	9.97%	6.67%	7.14%
Callan Target Date 2035	9.32%	10.81%	7.03%	-
SERS 2040 Retirement Fund	10.09%	10.90%	7.12%	-
BlackRock 2040 Index	9.86%	10.71%	6.95%	7.40%
Callan Target Date 2040	9.96%	11.31%	7.41%	7.12%
SERS 2045 Retirement Fund	10.65%	11.52%	7.34%	-
BlackRock 2045 Index	10.39%	11.31%	7.16%	7.58%
Callan Target Date 2045	10.41%	11.57%	7.39%	-
SERS 2050 Retirement Fund	10.90%	11.91%	-	-
BlackRock 2050 Index	10.65%	11.69%	7.44%	7.97%
Callan Target Date 2050	10.45%	11.70%	7.40%	-
SERS 2055 Retirement Fund	10.94%	12.11%	-	-
BlackRock 2055 Index	10.70%	11.91%	-	-
Callan Target Date 2055	10.61%	11.87%	-	-

\*Funds not shown do not have longer term historical performance.

## Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2021. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

### Returns for Periods Ended December 31, 2021

	Last Quarter	1 Year	Last 3 Years	Last 5 Years
<b>Gross Performance</b>				
<b>Domestic Equity</b>				
SERS U.S. Large Company Index Fund	11.03%	28.71%	26.09%	18.49%
S&P 500 Index	11.03%	28.71%	26.07%	18.47%
Callan Lg Cap Broad MF	8.34%	25.50%	25.48%	17.66%
SERS U.S. All Company Index Fund	9.27%	25.62%	25.72%	17.91%
Russell 3000 Index	9.28%	25.66%	25.79%	17.97%
Callan Multi Cap Brd MF	7.74%	24.17%	23.58%	15.93%
SERS U.S. SMID Company Idx Fund	0.84%	12.90%	24.10%	15.42%
Dow Jones US Completion	0.66%	12.36%	23.85%	15.21%
Callan SMID Broad MFs	5.37%	19.56%	22.40%	15.84%
<b>International Equity</b>				
SERS Global Non-U.S. Index Fund	2.14%	7.98%	13.50%	9.96%
MSCI ACWI ex US	1.82%	7.82%	13.18%	9.61%
Callan Non US Equity MFs	2.45%	9.47%	14.48%	10.12%
<b>Domestic Fixed Income</b>				
SERS Short Term Investment Fund	0.01%	0.07%	1.01%	1.24%
3-month Treasury Bill	0.01%	0.05%	0.99%	1.14%
Callan Cash Database(1)	(0.00%)	0.13%	1.21%	1.39%
SERS U.S. Short Term Bond Idx Fund	(0.58%)	(0.51%)	2.27%	-
Blmbg Gov/Cred 1-3 Yr	(0.56%)	(0.47%)	2.28%	1.85%
Callan Short US Govt MFs	(0.65%)	(1.14%)	1.99%	1.56%
SERS U.S. TIPS Index Fund	2.31%	5.88%	8.41%	-
Blmbg US TIPS	2.36%	5.96%	8.44%	5.34%
Callan TIPS MFs	2.02%	5.55%	8.03%	5.06%
SERS U.S. Bond Index Fund	(0.06%)	(1.64%)	4.77%	3.56%
Blmbg Aggregate	0.01%	(1.54%)	4.79%	3.57%
Callan Core Bond MFs	(0.10%)	(1.18%)	5.49%	3.96%

(1) Callan Cash Database includes STIF, enhanced cash, and money market funds.

## Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2021. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

### Returns for Periods Ended December 31, 2021

	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
<b>Gross Performance</b>				
<b>Domestic Equity</b>				
SERS U.S. Large Company Index Fund	14.95%	16.57%	10.71%	9.57%
S&P 500 Index	14.93%	16.55%	10.66%	9.52%
Callan Lg Cap Broad MF	13.83%	15.77%	10.37%	9.36%
SERS U.S. All Company Index Fund	14.51%	16.28%	-	-
Russell 3000 Index	14.55%	16.30%	10.59%	9.72%
Callan Multi Cap Brd MF	12.30%	14.64%	9.51%	9.26%
SERS U.S. SMID Company Idx Fund	12.63%	15.02%	10.53%	10.94%
Dow Jones US Completion	12.41%	14.79%	10.29%	10.74%
Callan SMID Broad MFs	12.40%	14.00%	10.68%	10.19%
<b>International Equity</b>				
SERS Global Non-U.S. Index Fund	6.90%	7.55%	-	-
MSCI ACWI ex US	6.56%	7.28%	3.77%	6.80%
Callan Non US Equity MFs	6.95%	8.43%	4.33%	6.69%
<b>Domestic Fixed Income</b>				
SERS Short Term Investment Fund	1.00%	0.75%	1.10%	-
3-month Treasury Bill	0.87%	0.63%	0.91%	1.29%
Callan Cash Database(1)	1.16%	0.97%	1.41%	1.62%
Blmbg Gov/Cred 1-3 Yr	1.60%	1.39%	2.25%	2.50%
Callan Short US Govt MFs	1.31%	1.13%	2.17%	2.48%
Blmbg US TIPS	4.25%	3.09%	4.69%	5.31%
Callan TIPS MFs	3.97%	2.85%	4.32%	5.01%
SERS U.S. Bond Index Fund	2.97%	2.86%	4.04%	4.29%
Blmbg Aggregate	3.00%	2.90%	4.09%	4.33%
Callan Core Bond MFs	3.33%	3.33%	4.41%	4.55%

(1) Callan Cash Database includes STIF, enhanced cash, and money market funds.

## Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	2021	2020	2019	2018	2017
<b>Gross Performance</b>					
<b>Target Date Funds</b>					
SERS Post Retirement Fund	7.03%	12.04%	15.72%	(3.41%)	10.25%
BlackRock Post Retirement Index	7.02%	11.80%	15.63%	(3.48%)	10.10%
Callan Tgt Date 2000-2010	8.05%	10.59%	14.39%	(3.15%)	10.09%
SERS 2025 Retirement Fund	9.06%	12.26%	18.67%	(4.80%)	13.99%
BlackRock 2025 Index	9.07%	12.01%	18.56%	(4.90%)	13.75%
Callan Target Date 2025	10.07%	12.58%	18.51%	(5.19%)	14.94%
SERS 2030 Retirement Fund	11.50%	12.96%	20.86%	(5.63%)	15.91%
BlackRock 2030 Index	11.50%	12.72%	20.70%	(5.76%)	15.64%
Callan Target Date 2030	11.65%	13.23%	20.43%	(6.12%)	16.77%
SERS 2035 Retirement Fund	13.88%	13.65%	22.93%	(6.43%)	17.77%
BlackRock 2035 Index	13.85%	13.44%	22.72%	(6.58%)	17.48%
Callan Target Date 2035	13.93%	14.28%	22.17%	(7.03%)	18.51%
SERS 2040 Retirement Fund	16.04%	14.22%	24.80%	(7.17%)	19.45%
BlackRock 2040 Index	15.97%	13.98%	24.62%	(7.33%)	19.09%
Callan Target Date 2040	15.76%	14.91%	23.62%	(7.89%)	19.84%
SERS 2045 Retirement Fund	17.79%	14.90%	26.12%	(7.78%)	20.54%
BlackRock 2045 Index	17.70%	14.65%	25.90%	(7.99%)	20.15%
Callan Target Date 2045	16.85%	15.52%	24.60%	(8.21%)	20.63%
SERS 2050 Retirement Fund	18.75%	15.27%	26.70%	(8.05%)	20.94%
BlackRock 2050 Index	18.62%	15.07%	26.48%	(8.26%)	20.55%
Callan Target Date 2050	17.19%	15.71%	24.89%	(8.44%)	20.74%
SERS 2055 Retirement Fund	18.91%	15.40%	26.75%	(8.07%)	20.90%
BlackRock 2055 Index	18.81%	15.18%	26.58%	(8.28%)	20.55%
Callan Target Date 2055	17.27%	15.83%	24.97%	(8.44%)	21.10%
SERS 2060 Retirement Fund	18.90%	15.38%	26.74%	(8.08%)	20.85%
BlackRock 2060 Index	18.81%	15.19%	26.58%	(8.28%)	20.55%
Callan Target Date 2060	17.44%	15.90%	25.08%	(8.35%)	21.15%
SERS 2065 Retirement Fund	18.85%	15.22%	-	-	-
BlackRock 2065 Index	18.80%	15.19%	-	-	-
Callan Target Date 2065	17.01%	16.43%	25.62%	(8.63%)	-

## Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	2021	2020	2019	2018	2017
<b>Gross Performance</b>					
<b>Domestic Equity</b>					
SERS U.S. Large Company Index Fund	28.71%	18.44%	31.51%	(4.38%)	21.85%
S&P 500 Index	28.71%	18.40%	31.49%	(4.38%)	21.83%
Callan Lg Cap Broad MF	25.50%	18.47%	30.14%	(4.54%)	23.56%
SERS U.S. All Company Index Fund	25.62%	21.20%	30.53%	(5.29%)	21.09%
Russell 3000 Index	25.66%	20.89%	31.02%	(5.24%)	21.13%
Callan Multi Cap Brd MF	24.17%	17.19%	29.12%	(6.82%)	20.75%
SERS U.S. SMID Company Idx Fund	12.90%	32.04%	28.21%	(9.32%)	18.21%
Dow Jones US Completion	12.36%	32.17%	27.94%	(9.57%)	18.12%
Callan SMID Broad MFs	19.56%	24.00%	29.40%	(8.69%)	17.14%
<b>International Equity</b>					
SERS Global Non-U.S. Index Fund	7.98%	11.17%	21.79%	(13.85%)	27.65%
MSCI ACWI ex US	7.82%	10.65%	21.51%	(14.20%)	27.19%
Callan Non US Equity MFs	9.47%	11.12%	22.83%	(15.04%)	26.90%
<b>Domestic Fixed Income</b>					
SERS Short Term Investment Fund	0.07%	0.67%	2.31%	2.09%	1.08%
3-month Treasury Bill	0.05%	0.67%	2.28%	1.87%	0.86%
Callan Cash Database(1)	0.13%	1.06%	2.67%	2.00%	1.18%
SERS U.S. Short Term Bond Idx Fund	(0.51%)	3.37%	4.02%	1.58%	-
Blmbg Gov/Cred 1-3 Yr	(0.47%)	3.33%	4.03%	1.60%	0.84%
Callan Short US Govt MFs	(1.14%)	3.57%	3.52%	1.15%	0.59%
SERS U.S. TIPS Index Fund	5.88%	11.00%	8.40%	-	-
Blmbg US TIPS	5.96%	10.99%	8.43%	(1.26%)	3.01%
Callan TIPS MFs	5.55%	10.29%	8.26%	(1.53%)	3.12%
SERS U.S. Bond Index Fund	(1.64%)	7.56%	8.69%	0.03%	3.53%
Blmbg Aggregate	(1.54%)	7.51%	8.72%	0.01%	3.54%
Callan Core Bond MFs	(1.18%)	8.65%	9.17%	(0.35%)	3.71%

(1) Callan Cash Database includes STIF, enhanced cash, and money market funds.

**Pennsylvania SERS 401(a)**  
**Investment Manager Performance Monitoring Summary Report**  
**December 31, 2021**

Investment Manager	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	10 Year Return	5 Year Return Consistency	5 Year Risk Quadrant	Expense Ratio
<b>Net of Fee Performance</b>									
<b>Target Date Funds</b>									
<b>SERS Post Retirement Fund</b> Callan Tgt Date Ret Inc	2.5 35	7.0 36	11.5 17	8.1 16	6.4 16	6.6 19			0.08 81
BlackRock Post Retirement Index	2.6 31	7.0 32	11.4 19	8.0 16	6.4 17	6.5 20			
<b>SERS 2025 Retirement Fund</b> Callan Target Date 2025	3.1 73	9.0 77	13.2 62	9.5 61	7.5 63	8.3 75			0.08 80
BlackRock 2025 Index	3.2 71	9.1 75	13.1 63	9.4 65	7.5 66	8.2 75			
<b>SERS 2030 Retirement Fund</b> Callan Target Date 2030	3.9 65	11.4 61	15.0 60	10.7 63	8.4 59	9.2 74			0.08 79
BlackRock 2030 Index	4.0 64	11.5 56	14.9 61	10.6 64	8.3 64	9.1 75			
<b>SERS 2035 Retirement Fund</b> Callan Target Date 2035	4.7 52	13.8 53	16.7 53	11.8 53	9.3 54	10.1 74			0.08 80
BlackRock 2035 Index	4.8 50	13.9 52	16.6 61	11.7 61	9.1 63	10.0 78			
<b>SERS 2040 Retirement Fund</b> Callan Target Date 2040	5.4 45	16.0 41	18.2 43	12.8 42	10.0 47	10.8 69			0.08 79
BlackRock 2040 Index	5.5 43	16.0 39	18.1 46	12.7 47	9.9 52	10.7 70			
<b>SERS 2045 Retirement Fund</b> Callan Target Date 2045	6.0 31	17.7 21	19.4 32	13.6 31	10.6 37	11.4 59			0.08 80
BlackRock 2045 Index	6.0 30	17.7 22	19.3 36	13.4 41	10.4 50	11.3 66			
<b>SERS 2050 Retirement Fund</b> Callan Target Date 2050	6.3 26	18.7 13	20.1 17	14.0 18	10.8 30	11.8 39			0.08 79
BlackRock 2050 Index	6.3 25	18.6 13	20.0 21	13.8 24	10.7 38	11.7 50			
<b>SERS 2055 Retirement Fund</b> Callan Target Date 2055	6.4 24	18.8 14	20.2 18	14.0 22	10.9 30	12.0 43			0.08 83
BlackRock 2055 Index	6.4 23	18.8 14	20.1 20	13.9 25	10.7 40	11.9 49			
<b>SERS 2060 Retirement Fund</b> Callan Target Date 2060	6.4 26	18.8 16	20.2 24	14.0 23	10.9 42				0.08 81
BlackRock 2060 Index	6.4 25	18.8 16	20.1 26	13.9 31	10.7 52				

Returns:  
■ above median  
■ third quartile  
■ fourth quartile

Return Consistency:  
■ above median  
■ third quartile  
■ fourth quartile

Risk Quadrant:  


Expense Ratio:  
■ below median  
■ second quartile  
■ first quartile



**Pennsylvania SERS 401(a)**  
**Investment Manager Performance Monitoring Summary Report**  
**December 31, 2021**

Investment Manager	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	10 Year Return	5 Year Return Consistency	5 Year Risk Quadrant	Expense Ratio
<b>SERS 2065 Retirement Fund</b> Callan Target Date 2065	6.4 23	18.8 16							0.08 53
BlackRock 2065 Index	6.4 22	18.8 15							
<b>Domestic Equity</b>									
<b>SERS U.S. Large Company Stock Index Fund</b> Callan Lg Cap Broad MF	11.0 13	28.7 21	26.1 48	18.5 48	14.9 45	16.6 44			0.02 99
S&P 500 Index	11.0 13	28.7 21	26.1 48	18.5 48	14.9 45	16.6 44			
<b>SERS U.S. All Company Index Fund</b> Callan Multi Cap Brd MF	9.3 30	25.6 41	25.7 38	17.9 38	14.5 31	16.3 28			0.03 99
Russell 3000 Index	9.3 30	25.7 41	25.8 38	18.0 37	14.5 31	16.3 27			
<b>U.S. Small/Mid Company Stock Index Fund</b> Callan SMID Broad MFs	0.8 83	12.9 65	24.1 38	15.4 53	12.6 49	15.0 39			0.03 100
Dow Jones US Completion	0.7 84	12.4 66	23.9 39	15.2 54	12.4 50	14.8 42			
<b>International Equity</b>									
<b>SERS Global Non-U.S. Index Fund</b> Callan Non US Equity MFs	2.1 55	8.0 68	13.5 60	9.9 54	6.9 51	7.5 65			0.06 99
MSCI ACWI ex US	1.8 57	7.8 69	13.2 63	9.6 56	6.6 54	7.3 72			
<b>Domestic Fixed Income</b>									
<b>SERS Short Term Investment Fund</b> Callan Cash Database	0.0 37	0.1 76	1.0 83	1.2 79	1.0 76	0.8 77			0.00 100
3-month Treasury Bill	0.0 37	0.0 81	1.0 85	1.1 89	0.9 92	0.6 95			
<b>Comments:</b> Callan Cash Database includes STIF, enhanced cash, and money market funds.									
<b>SERS U.S. Short Term Bond Idx Fund</b> Callan Short US Govt MFs	-0.6 36	-0.5 17	2.3 26						0.03 99
Blmbg Gov/Cred 1-3 Yr	-0.6 34	-0.5 17	2.3 25	1.9 18	1.6 13	1.4 19			
<b>SERS U.S. TIPS Index Fund</b> Callan TIPS MFs	2.3 21	5.9 36	8.4 35						0.03 99
Blmbg US TIPS	2.4 18	6.0 30	8.4 33	5.3 33	4.2 29	3.1 30			

Returns:  
 above median  
 third quartile  
 fourth quartile

Return Consistency:  
 above median  
 third quartile  
 fourth quartile

Risk Quadrant:  
 above median  
 third quartile  
 fourth quartile

Expense Ratio:  
 below median  
 second quartile  
 first quartile

**Pennsylvania SERS 401(a)**  
**Investment Manager Performance Monitoring Summary Report**  
**December 31, 2021**

Investment Manager	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	10 Year Return	5 Year Return Consistency	5 Year Risk Quadrant	Expense Ratio
<b>SERS U.S. Bond Index Fund</b>	-0.1 29	-1.6 81	4.8 95	3.6 92	3.0 87	2.9 95			0.03 98
Callan Core Bond MFs									
Blmbg Aggregate	0.0 14	-1.5 78	4.8 95	3.6 91	3.0 84	2.9 93			

Returns:  
 above median  
 third quartile  
 fourth quartile

Return Consistency:  
 above median  
 third quartile  
 fourth quartile

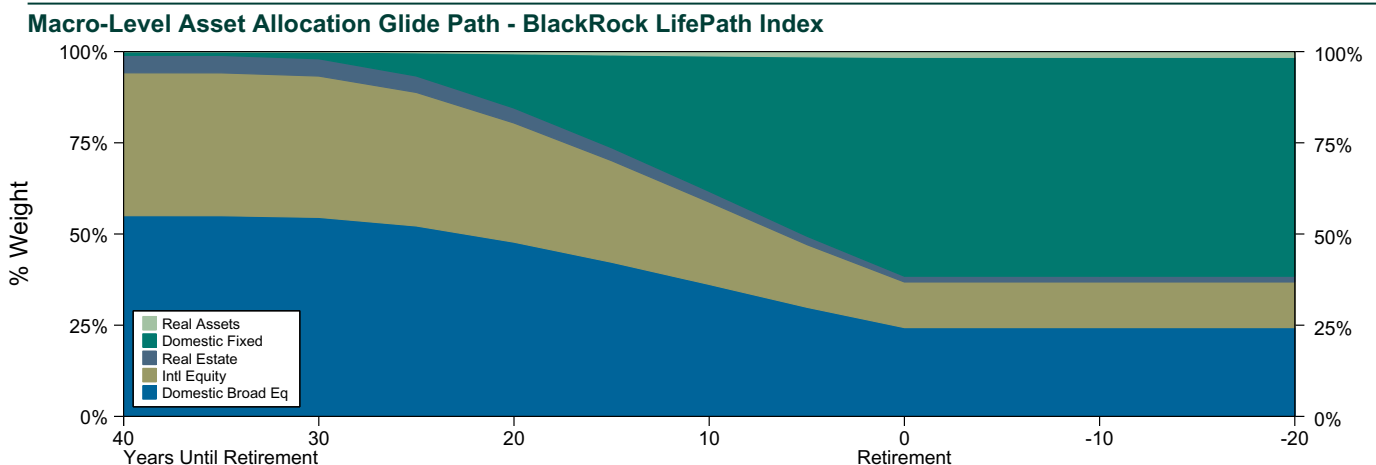
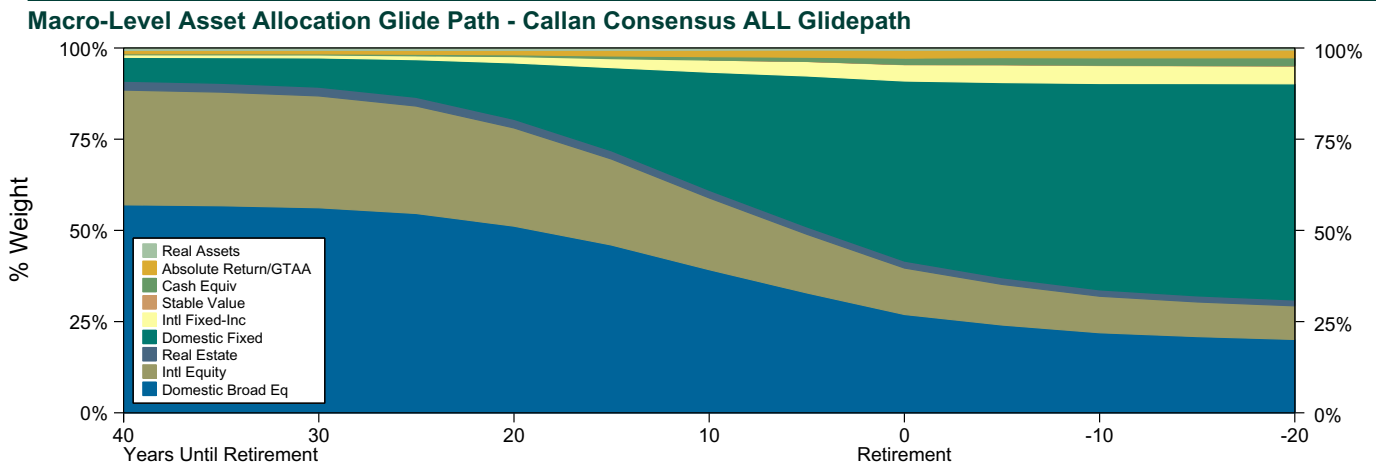
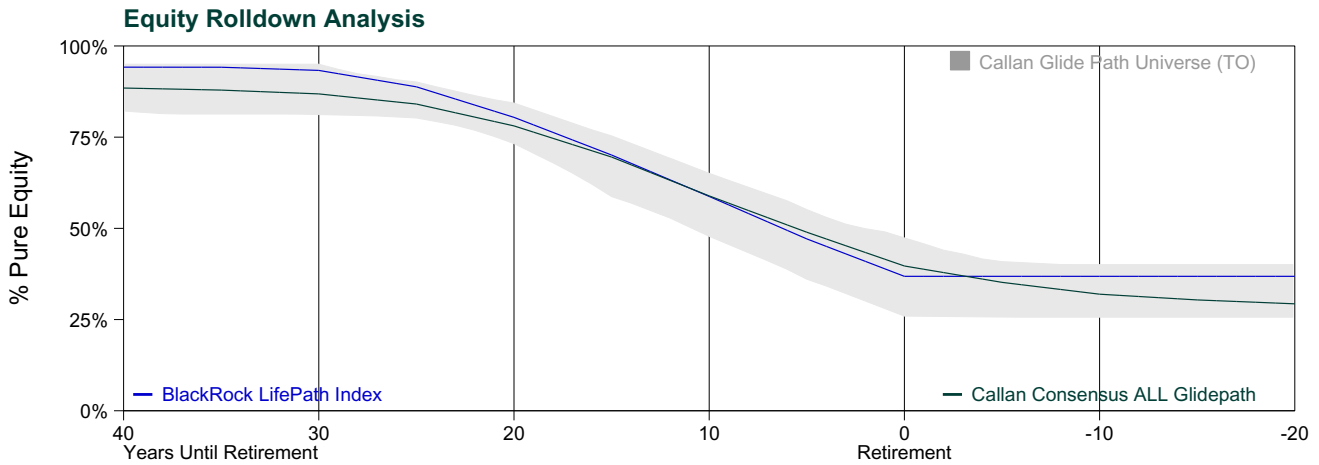
Risk Quadrant:  
  
Return  
Risk

Expense Ratio:  
 below median  
 second quartile  
 first quartile



# Callan Consensus ALL Glidepath Target Date Glide Path Analysis as of December 31, 2021

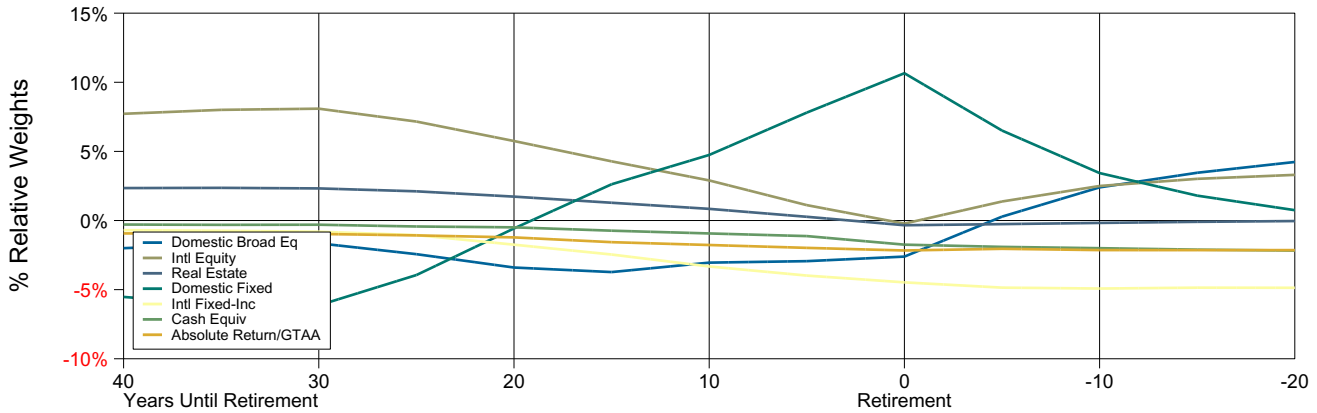
The following charts illustrate the asset allocation "glide path" underlying the relevant suite of target date funds. This analysis covers forty years of investor wealth accumulation up to retirement, as well as twenty years of wealth decumulation following retirement. The top chart shows the "pure" equity exposure (public equities excluding REITs) versus the peer group and index. The subsequent charts show more asset allocation detail at the high "macro" level.



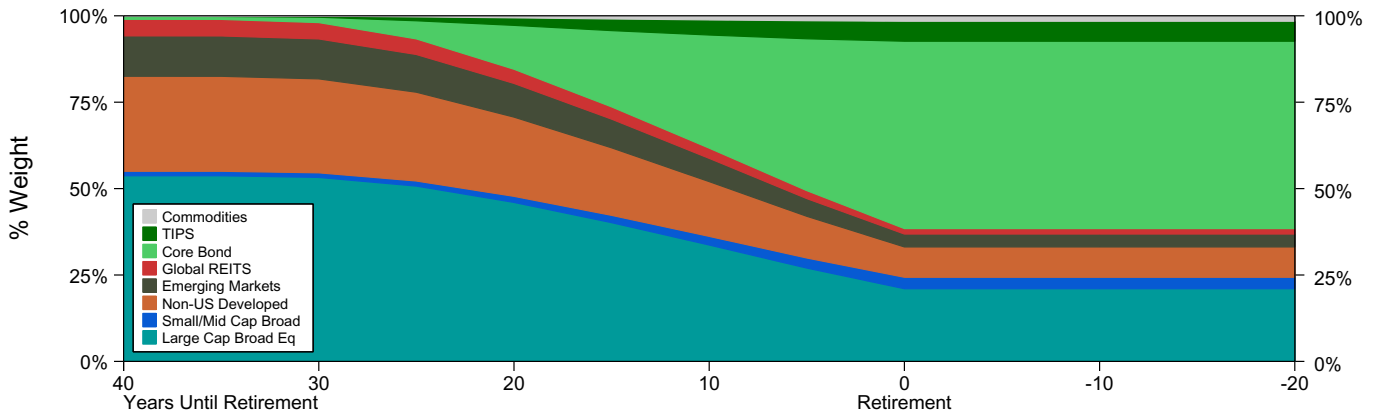
# BlackRock LifePath Index Target Date Glide Path Analysis as of December 31, 2021

The following charts illustrate the asset allocation "glide path" underlying the relevant suite of target date funds. This analysis covers forty years of investor wealth accumulation up to retirement, as well as twenty years of wealth decumulation following retirement. The top chart highlights any significant "macro-level" differences between the manager's asset allocation glide path and that of the glide path index. The bottom two charts illustrate the asset allocation glide paths of both the manager and index at the more detailed "micro" level.

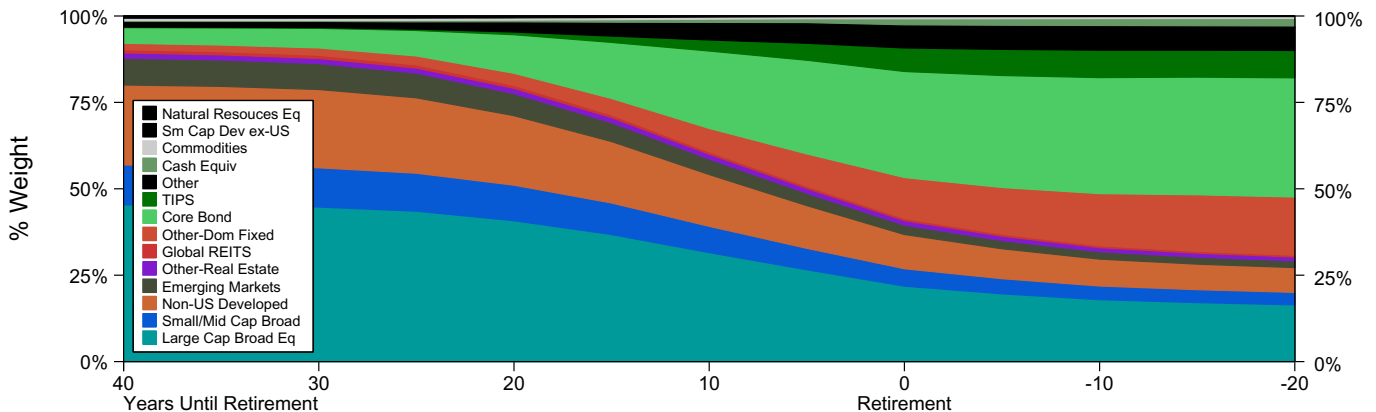
**Relative Macro Asset Allocation - BlackRock LifePath Index vs. Callan Consensus ALL Glidep**



**Micro-Level Asset Allocation Glide Path - BlackRock LifePath Index**



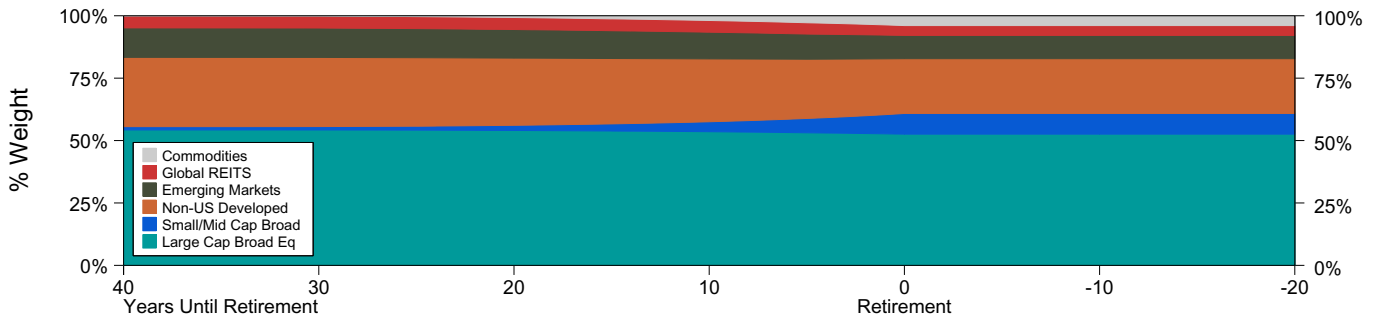
**Micro-Level Asset Allocation Glide Path - Callan Consensus ALL Glidepath**



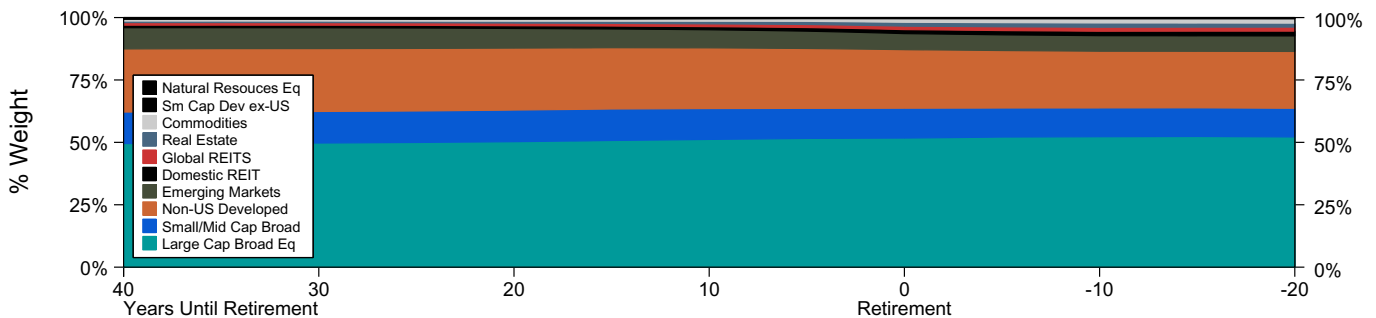
# BlackRock LifePath Index Target Date Glide Path Analysis as of December 31, 2021

The first two charts below illustrate the detailed composition over time of the "risky", or "growth" portion of the glide paths for both the manager and index, defined to be all public equity and real estate asset classes. These charts highlight both the levels of diversification and aggressiveness within the wealth creation portion of the glide paths. The last two charts serve a similar purpose but focus on the composition over time of the remaining wealth preservation portion (non-equity) of the manager and index glide paths.

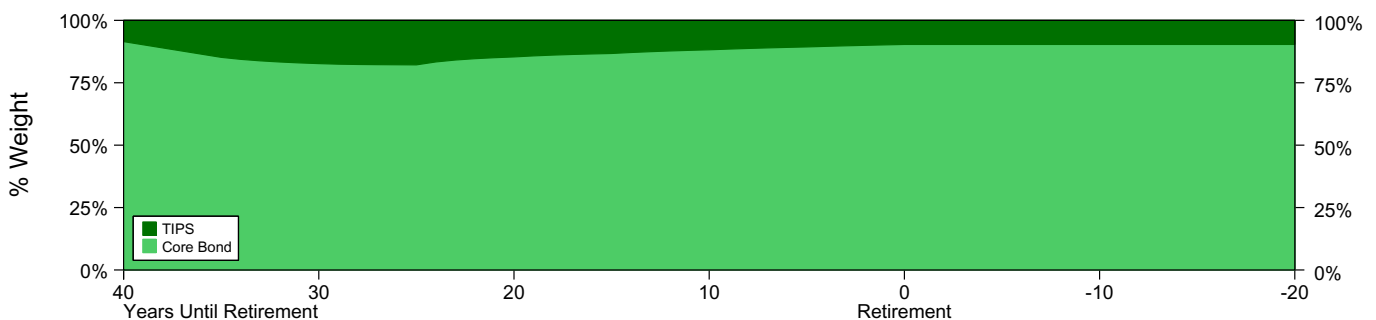
## Micro-Level Equity Allocation Glide Path - BlackRock LifePath Index



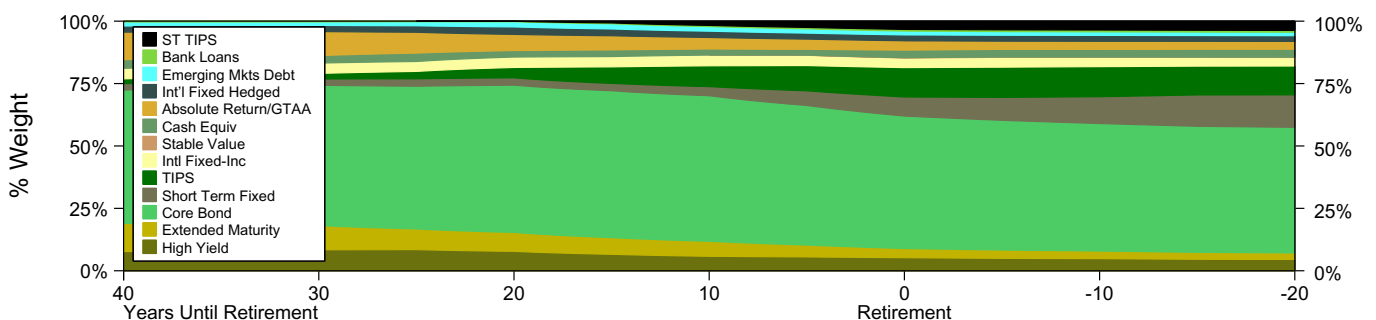
## Micro-Level Equity Asset Allocation Glide Path - Callan Consensus ALL Glidepath



## Micro-Level Non-Equity Allocation Glide Path - BlackRock LifePath Index



## Micro-Level Non-Equity Asset Allocation Glide Path - Callan Consensus ALL Glidep

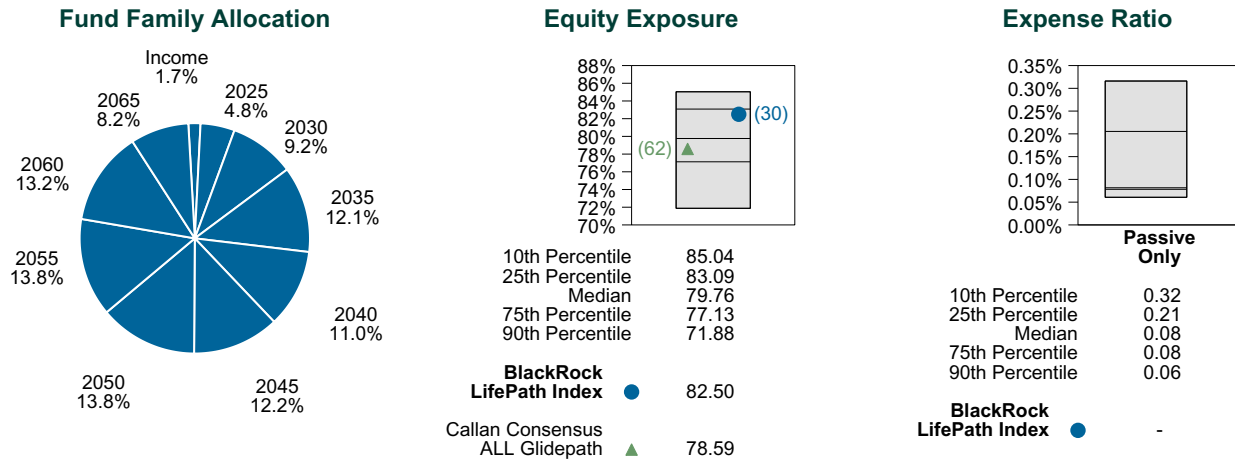


# Pennsylvania SERS 401(a) - BlackRock LifePath Index Target Date Fund Family Analysis as of December 31, 2021

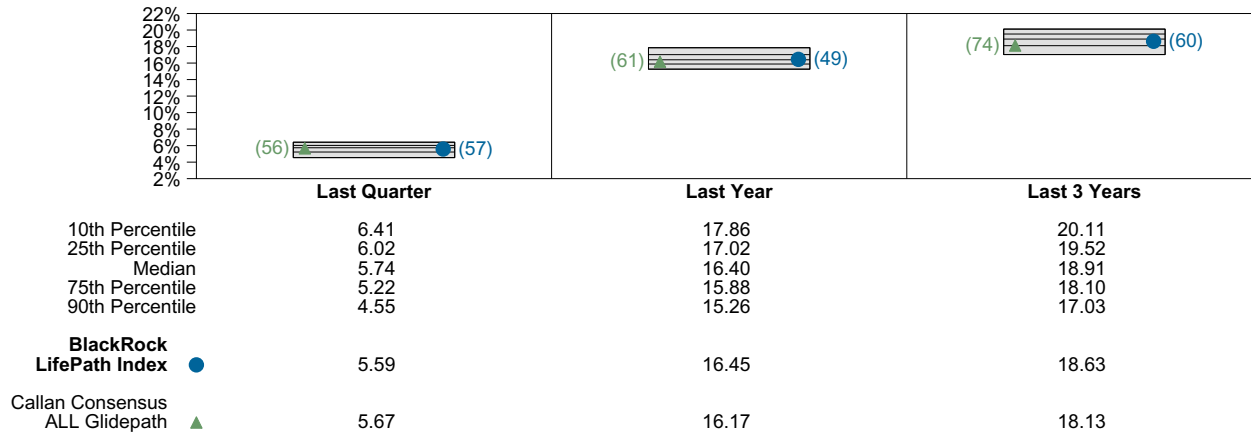
The following is an analysis of the client's suite of target date funds as an aggregated portfolio using actual proportions held by the client's participants. The upper-left pie chart shows the current client weights across target dates. The rest of the charts compare different attributes of the aggregated client target date portfolio to a peer group of target date fund families, as well as target date indices, by mimicking the client target date weights using these alternatives. The first two charts evaluate the aggregate client equity exposure and expense ratio via target date funds. The last two charts analyze aggregate client target date performance on both an actual return basis as well as a "glide path return" basis (simulated returns using each funds' asset allocation "glide path" weights and index returns).

**Glidepath Peer Group: ALL**

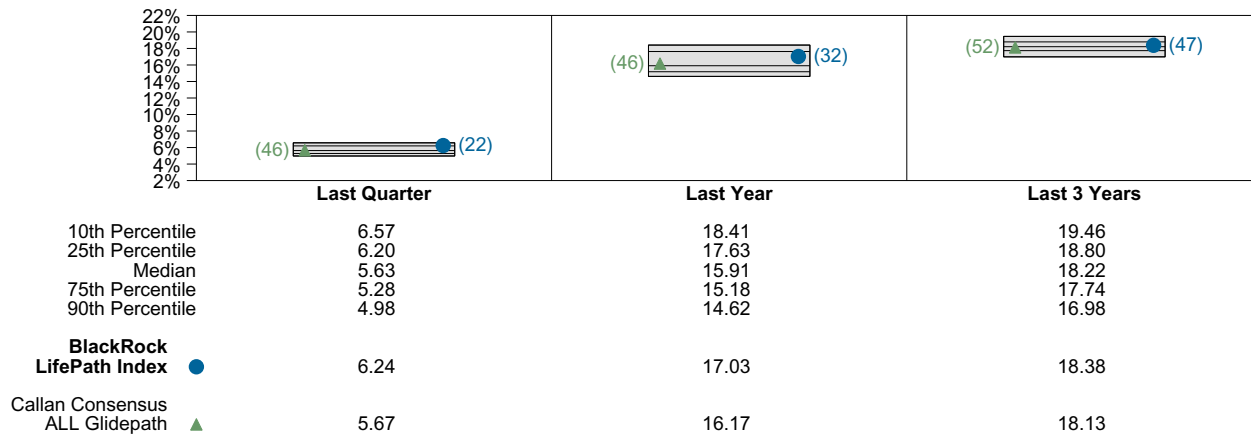
**Fee/Return Type: Gross**



## Target Date Family Performance vs Peer Families



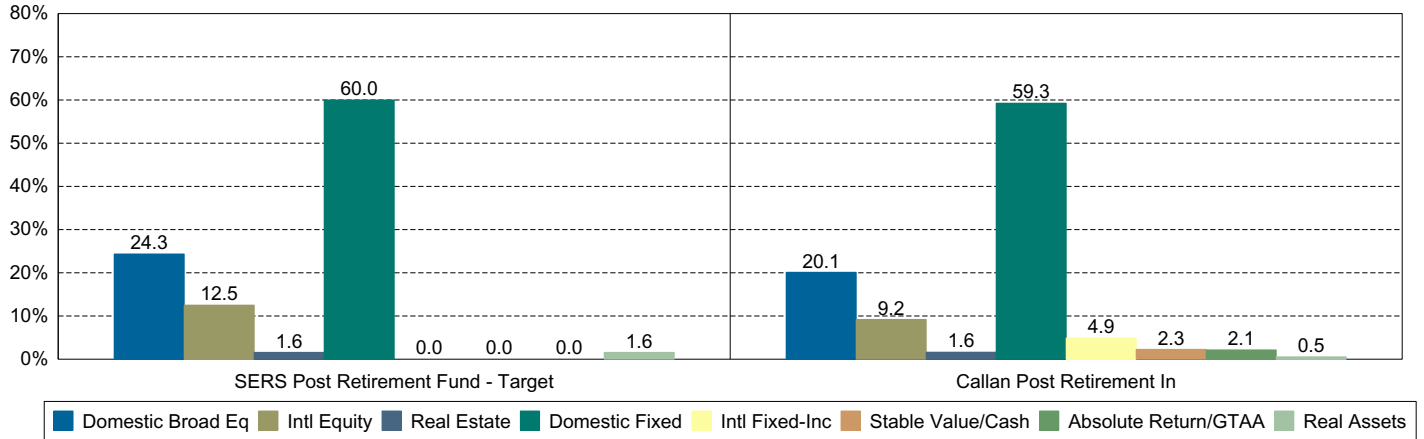
## Target Date Family Glide Path Returns vs Peer Families



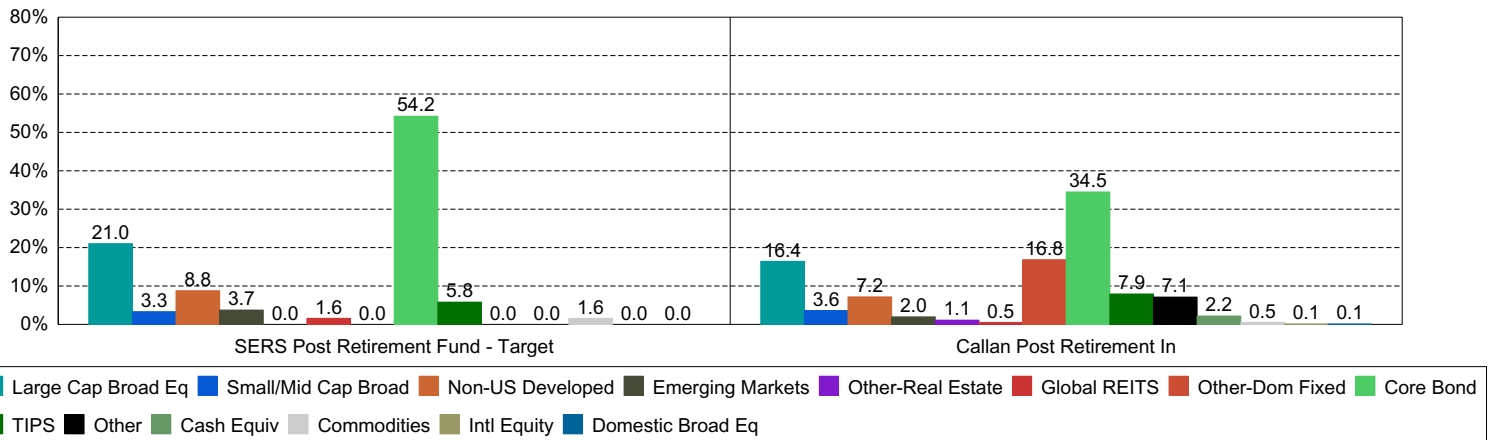
# SERS Post Retirement Fund Target Date Fund Asset Allocation as of December 31, 2021

The charts below illustrate the current target asset allocation of the relevant target date fund based on its underlying glide path and compares it to an index. The top charts compare target asset allocation at a high "macro" asset class level, while the middle charts show a more detailed "micro" level view. The bottom chart compares the current "macro" level target asset allocation, and index, to a relevant peer group of target date funds by ranking the various target asset class weights versus those peer target date funds.

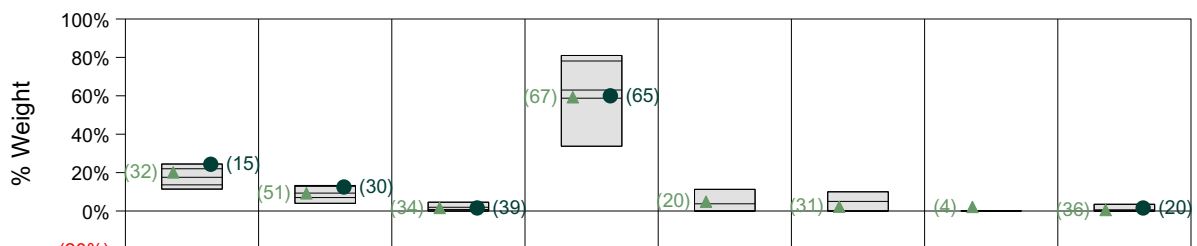
## Macro-Level Asset Allocation



## Micro-Level Asset Allocation



## Macro Asset Allocation Rankings vs. Callan Target Date Retirement Income



	Domestic Broad Eq	Intl Equity	Real Estate	Domestic Fixed	Intl Fixed-Inc	Stable Value/Cash	Absolute Return/GTAA	Real Assets
10th Percentile	24.47	13.29	4.58	81.00	11.28	10.00	0.00	3.50
25th Percentile	22.00	12.83	1.95	78.12	3.75	5.00	0.00	0.62
Median	17.55	9.32	0.80	63.00	0.00	0.00	0.00	0.00
75th Percentile	13.62	7.00	0.00	58.75	0.00	0.00	0.00	0.00
90th Percentile	11.40	4.00	0.00	33.72	0.00	0.00	0.00	0.00

<b>SERS Post Retirement Fund - Target</b>	●	24.34	12.51	1.58	60.00	-	-	1.57	
Callan Post Retirement In	▲	20.11	9.20	1.62	59.25	4.87	2.27	2.14	0.54



# SERS Post Retirement Fund

## Period Ended December 31, 2021

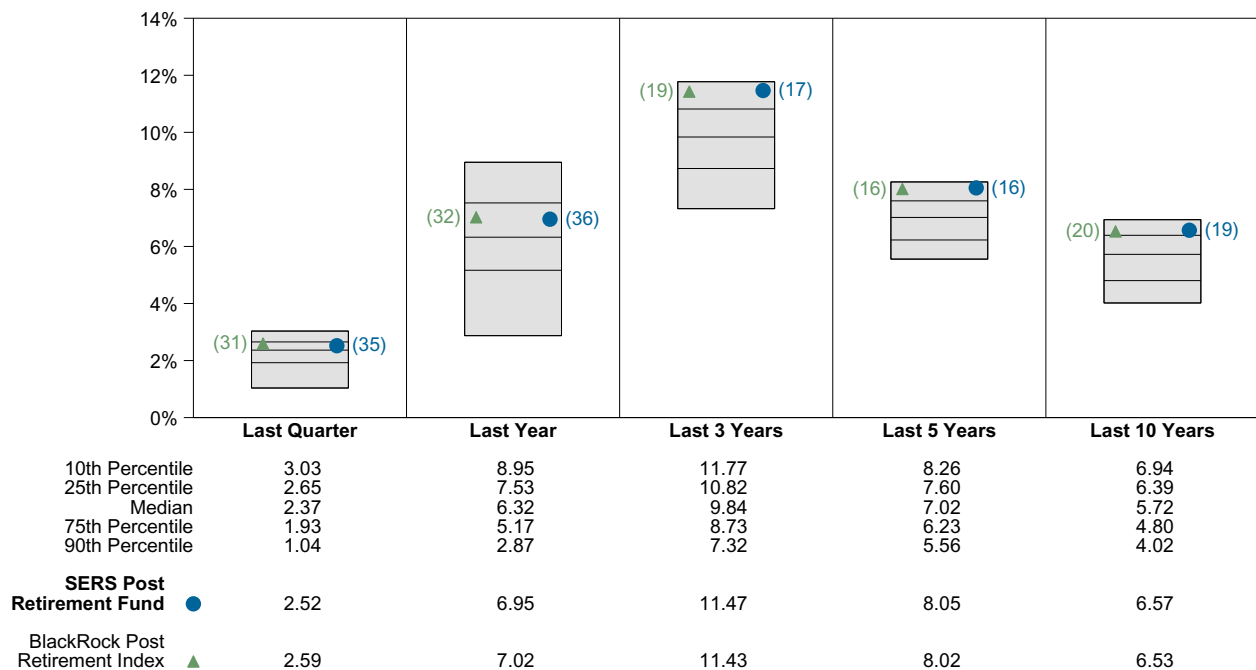
### Investment Philosophy

The BlackRock LifePath(R) Index Retirement Fund (the "Fund") seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. The Fund will be diversified across global asset classes, with allocations changing over the investment horizon to become more heavily oriented toward debt and debt-like securities, on the premise that individuals investing for retirement desire to reduce investment risk in their retirement accounts as their retirement date approaches.

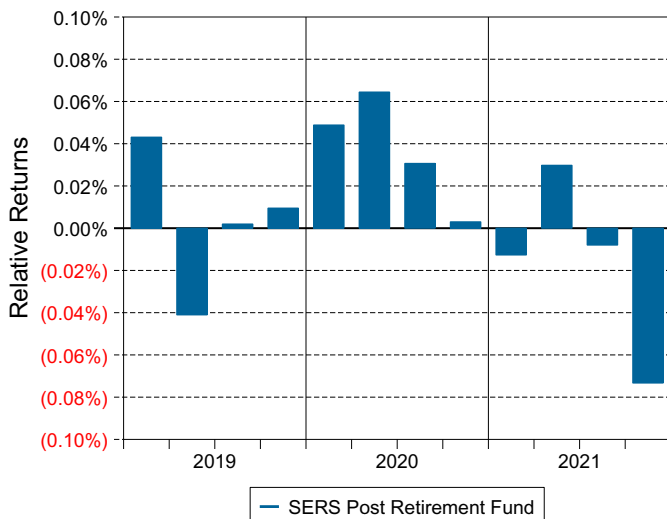
### Quarterly Summary and Highlights

- SERS Post Retirement Fund's portfolio posted a 2.52% return for the quarter placing it in the 35 percentile of the Callan Target Date Retirement Income group for the quarter and in the 36 percentile for the last year.
- SERS Post Retirement Fund's portfolio underperformed the BlackRock Post Retirement Index by 0.08% for the quarter and underperformed the BlackRock Post Retirement Index for the year by 0.07%.

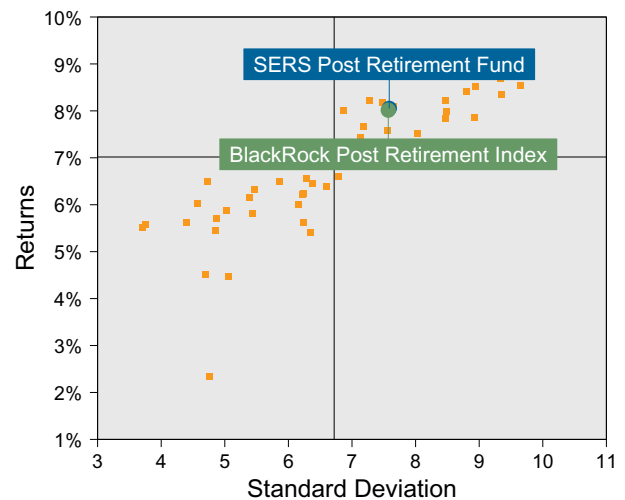
### Performance vs Callan Target Date Retirement Income (Net)



### Relative Returns vs BlackRock Post Retirement Index



### Callan Target Date Retirement Income (Net) Annualized Five Year Risk vs Return

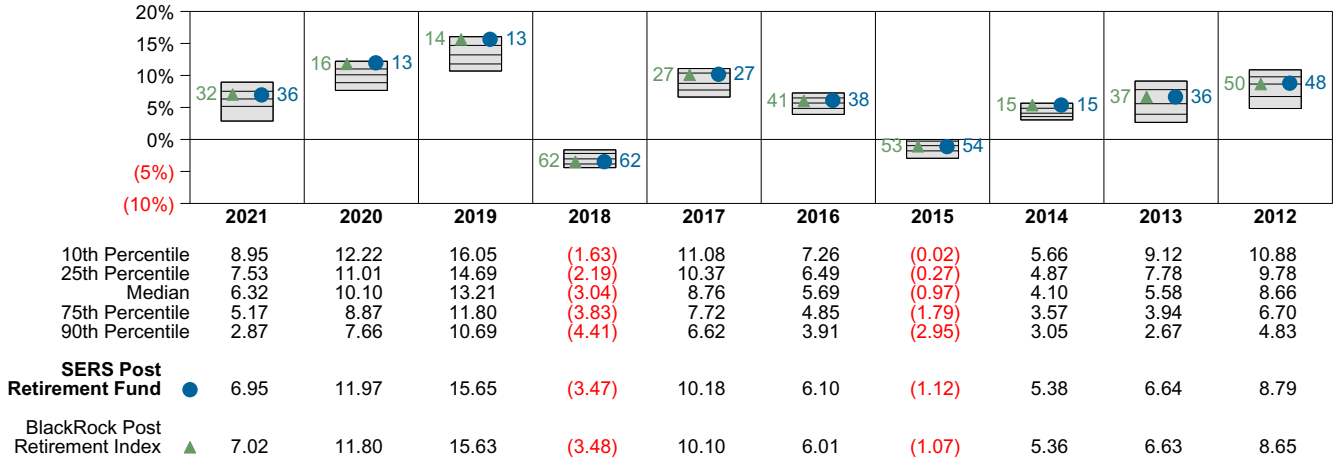


# SERS Post Retirement Fund Return Analysis Summary

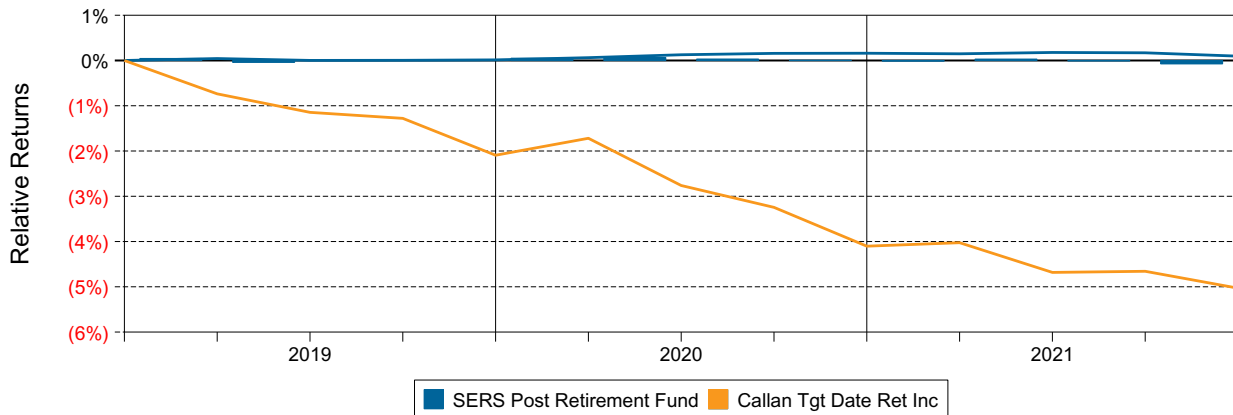
## Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

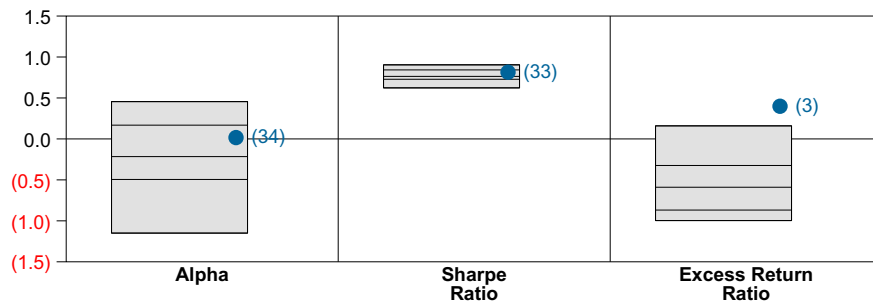
### Performance vs Callan Target Date Retirement Income (Net)



### Cumulative and Quarterly Relative Return vs BlackRock Post Retirement Index



### Risk Adjusted Return Measures vs BlackRock Post Retirement Index Rankings Against Callan Target Date Retirement Income (Net) Seven Years Ended December 31, 2021

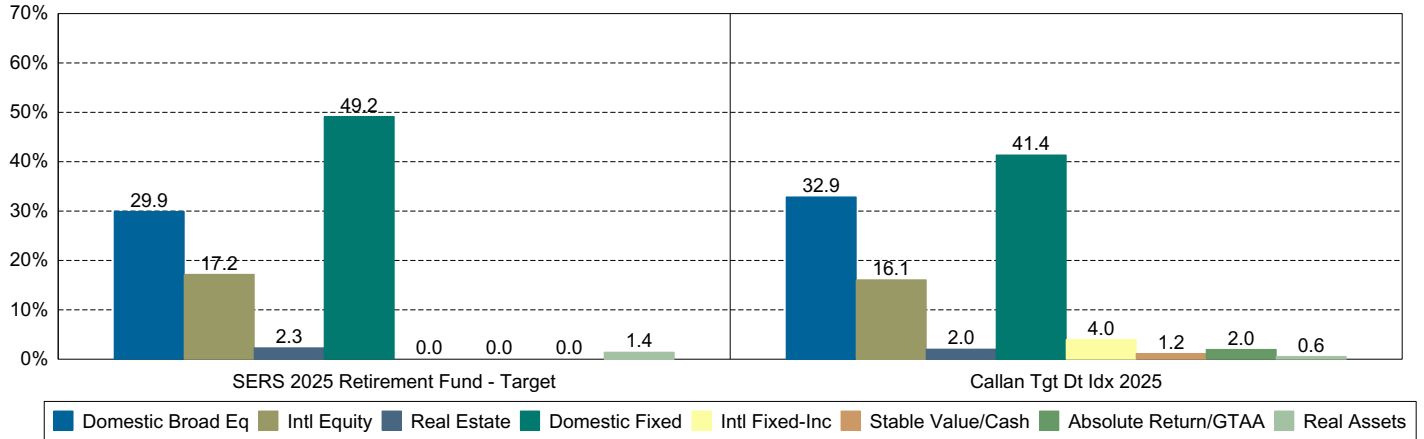


10th Percentile	0.46	0.90	0.16
25th Percentile	0.17	0.84	(0.32)
Median	(0.22)	0.76	(0.59)
75th Percentile	(0.49)	0.73	(0.87)
90th Percentile	(1.15)	0.62	(1.00)
<b>SERS Post Retirement Fund</b>	0.02	0.81	0.40

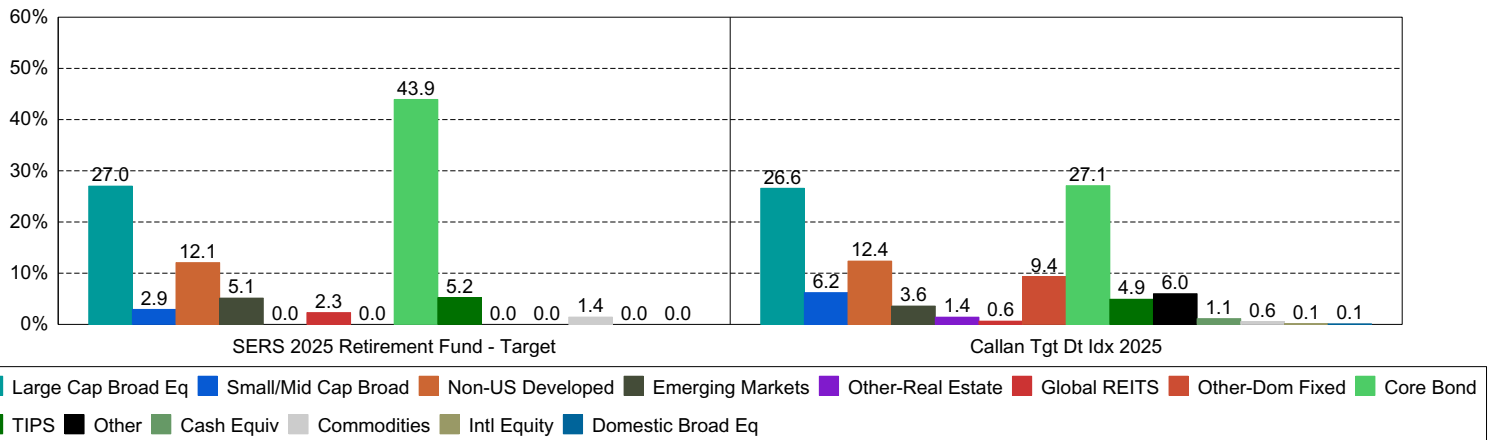
# SERS 2025 Retirement Fund Target Date Fund Asset Allocation as of December 31, 2021

The charts below illustrate the current target asset allocation of the relevant target date fund based on its underlying glide path and compares it to an index. The top charts compare target asset allocation at a high "macro" asset class level, while the middle charts show a more detailed "micro" level view. The bottom chart compares the current "macro" level target asset allocation, and index, to a relevant peer group of target date funds by ranking the various target asset class weights versus those peer target date funds.

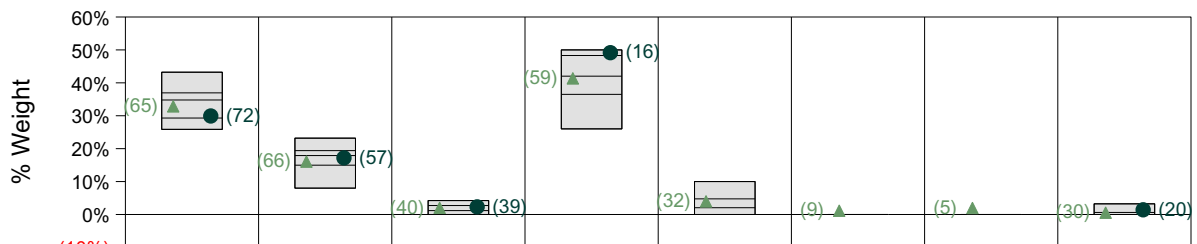
## Macro-Level Asset Allocation



## Micro-Level Asset Allocation



## Macro Asset Allocation Rankings vs. Callan Target Date 2025



	Domestic Broad Eq	Intl Equity	Real Estate	Domestic Fixed	Intl Fixed-Inc	Stable Value/Cash	Absolute Return/GTAA	Real Assets
10th Percentile	43.23	23.19	4.23	50.00	10.00	0.00	0.00	3.24
25th Percentile	36.95	19.40	2.72	48.30	4.74	0.00	0.00	0.62
Median	34.79	17.90	1.18	42.02	2.05	0.00	0.00	0.00
75th Percentile	29.30	14.98	0.00	36.50	0.00	0.00	0.00	0.00
90th Percentile	25.86	8.00	0.00	26.01	0.00	0.00	0.00	0.00

<b>SERS 2025 Retirement Fund - Target</b>	●	29.92	17.19	2.30	49.16	-	-	1.42
Callan Tgt Dt Idx 2025	▲	32.86	16.08	2.03	41.36	3.98	1.16	1.98

# SERS 2025 Retirement Fund

## Period Ended December 31, 2021

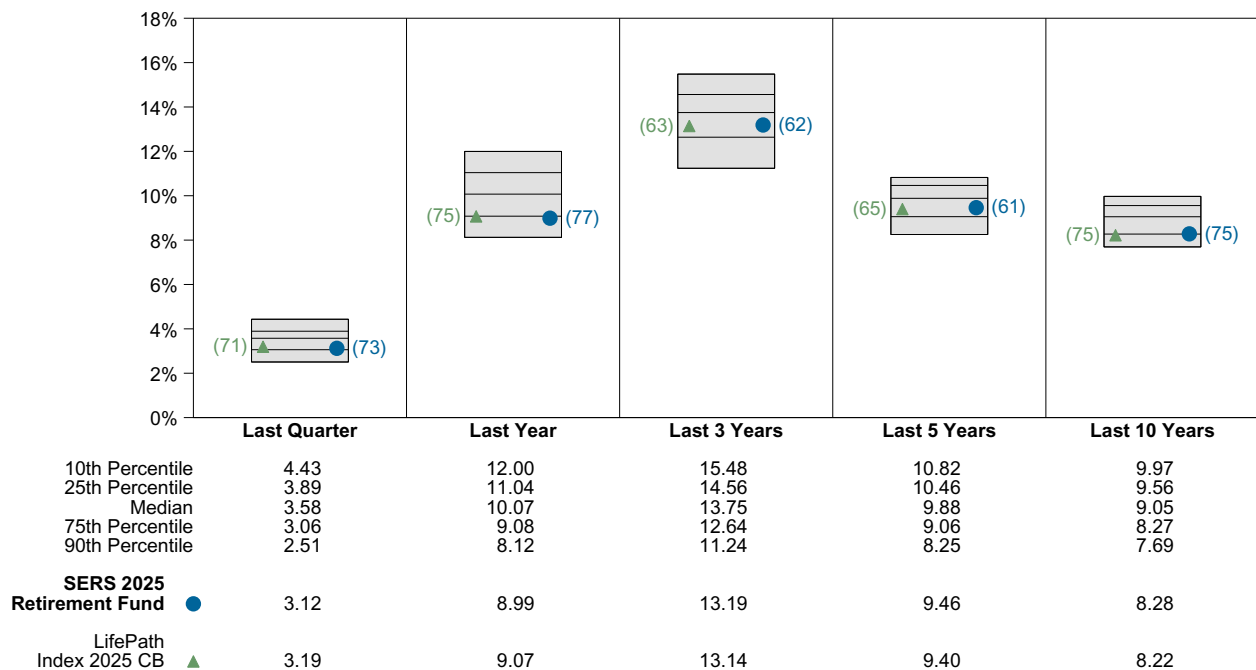
### Investment Philosophy

The BlackRock LifePath(R) Index 2025 Fund (the "Fund") seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. The Fund will be diversified across global asset classes, with allocations changing over the investment horizon to become more heavily oriented toward debt and debt-like securities, on the premise that individuals investing for retirement desire to reduce investment risk in their retirement accounts as their retirement date approaches.

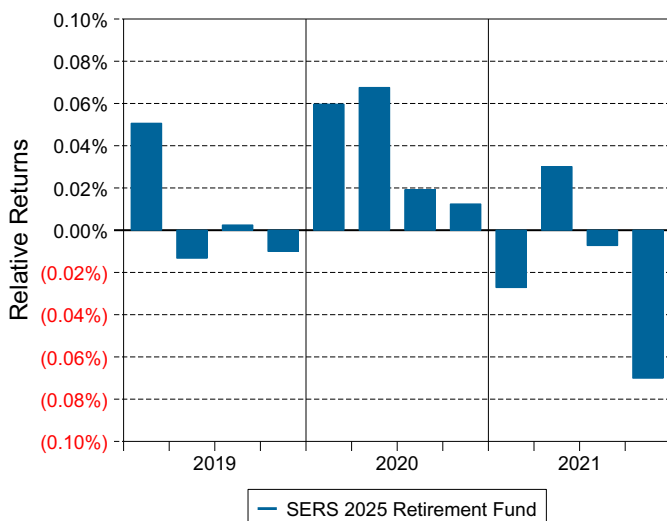
### Quarterly Summary and Highlights

- SERS 2025 Retirement Fund's portfolio posted a 3.12% return for the quarter placing it in the 73rd percentile of the Callan Target Date 2025 group for the quarter and in the 77th percentile for the last year.
- SERS 2025 Retirement Fund's portfolio underperformed the LifePath Index 2025 CB by 0.07% for the quarter and underperformed the LifePath Index 2025 CB for the year by 0.08%.

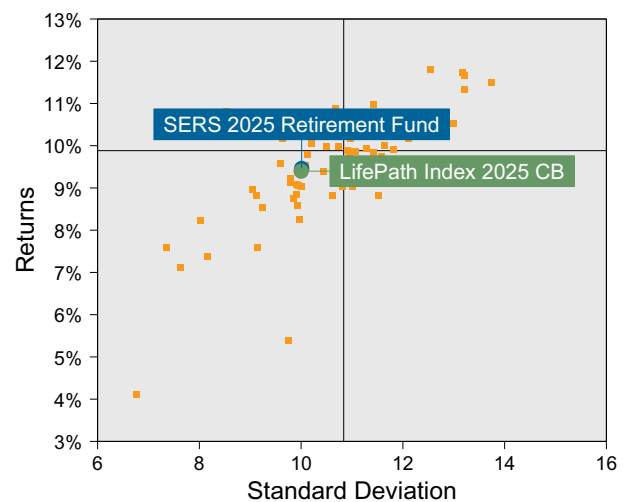
### Performance vs Callan Target Date 2025 (Net)



### Relative Return vs LifePath Index 2025 CB



### Callan Target Date 2025 (Net) Annualized Five Year Risk vs Return

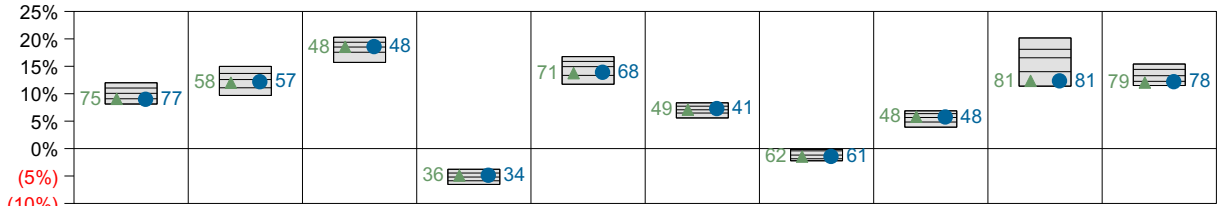


# SERS 2025 Retirement Fund Return Analysis Summary

## Return Analysis

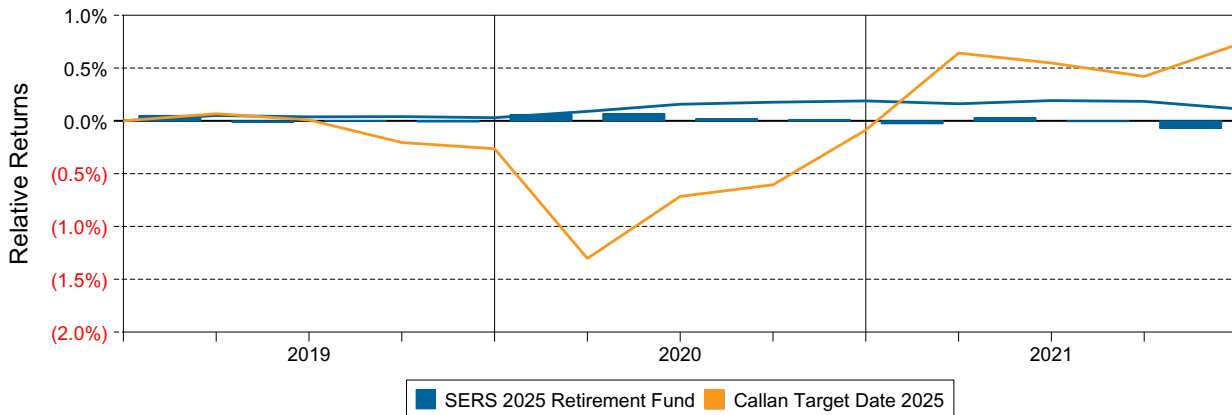
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

### Performance vs Callan Target Date 2025 (Net)

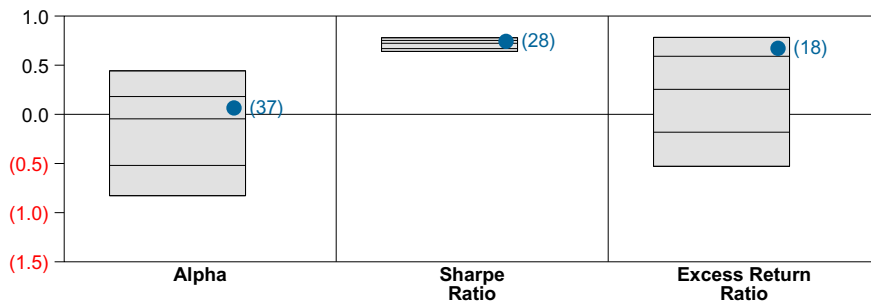


	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
10th Percentile	12.00	14.98	20.30	(3.77)	16.77	8.34	(0.13)	6.88	20.17	15.41
25th Percentile	11.04	13.70	19.39	(4.46)	15.89	7.73	(0.41)	6.37	18.10	14.44
Median	10.07	12.58	18.51	(5.19)	14.94	7.07	(1.19)	5.67	16.55	13.28
75th Percentile	9.08	11.08	17.56	(5.87)	13.34	6.48	(1.85)	4.84	14.02	12.26
90th Percentile	8.12	9.69	15.71	(6.53)	11.73	5.59	(2.22)	3.90	11.38	11.50
<b>SERS 2025 Retirement Fund</b>	8.99	12.19	18.60	(4.86)	13.91	7.30	(1.43)	5.77	12.34	12.20
LifePath Index 2025 CB	9.07	12.01	18.56	(4.90)	13.75	7.10	(1.45)	5.82	12.35	12.04

### Cumulative and Quarterly Relative Return vs LifePath Index 2025 CB



### Risk Adjusted Return Measures vs LifePath Index 2025 CB Rankings Against Callan Target Date 2025 (Net) Seven Years Ended December 31, 2021



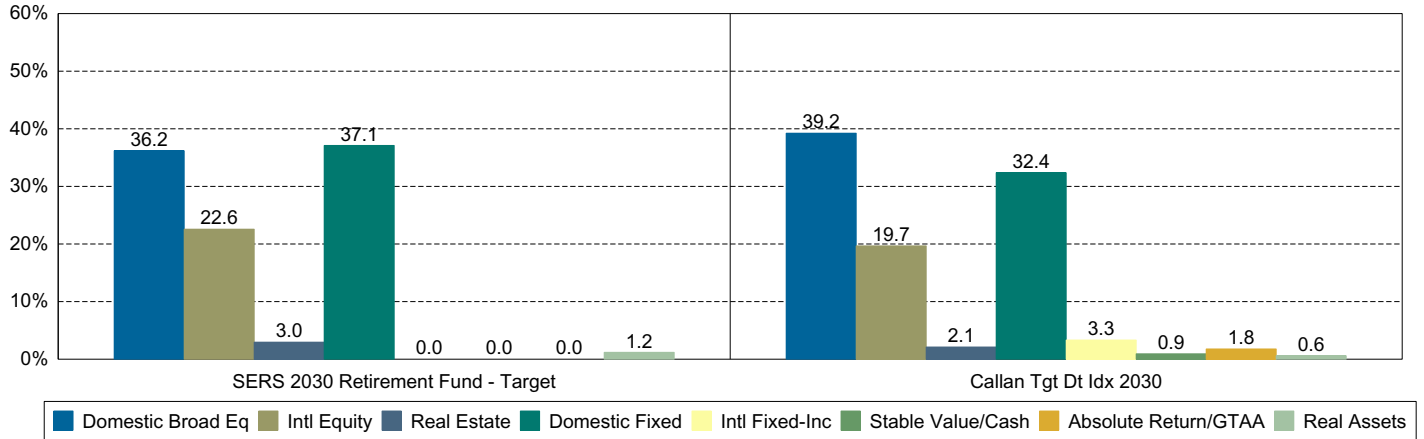
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.44	0.78	0.78
25th Percentile	0.18	0.75	0.59
Median	(0.05)	0.72	0.25
75th Percentile	(0.52)	0.67	(0.18)
90th Percentile	(0.83)	0.64	(0.53)
<b>SERS 2025 Retirement Fund</b>	0.06	0.74	0.67

# SERS 2030 Retirement Fund

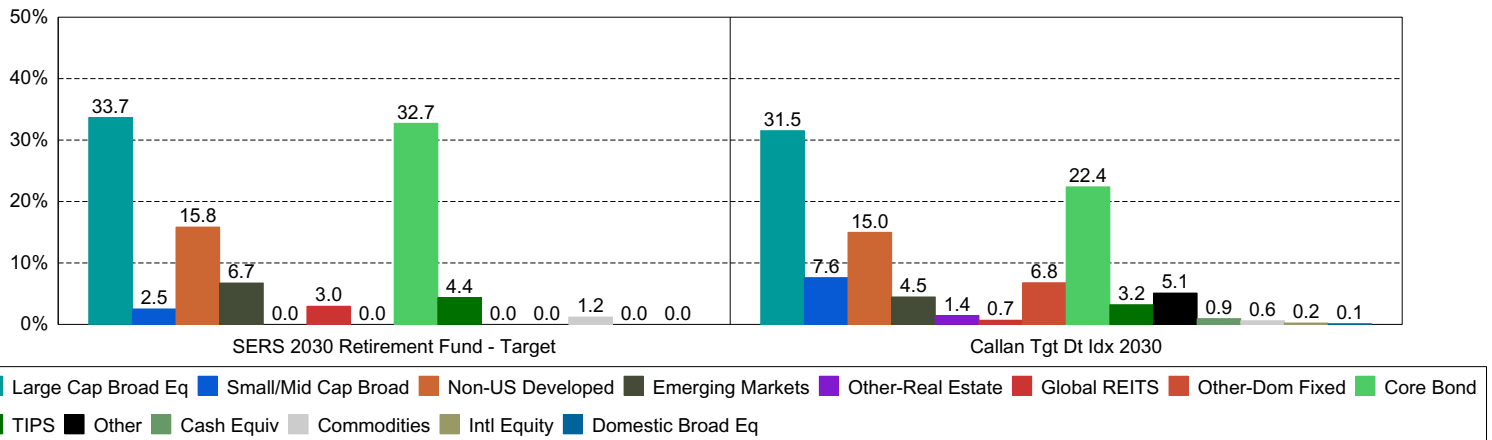
## Target Date Fund Asset Allocation as of December 31, 2021

The charts below illustrate the current target asset allocation of the relevant target date fund based on its underlying glide path and compares it to an index. The top charts compare target asset allocation at a high "macro" asset class level, while the middle charts show a more detailed "micro" level view. The bottom chart compares the current "macro" level target asset allocation, and index, to a relevant peer group of target date funds by ranking the various target asset class weights versus those peer target date funds.

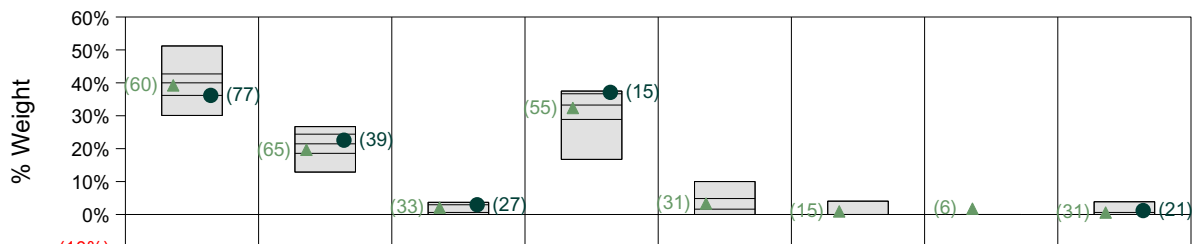
### Macro-Level Asset Allocation



### Micro-Level Asset Allocation



### Macro Asset Allocation Rankings vs. Callan Target Date 2030



	Domestic Broad Eq	Intl Equity	Real Estate	Domestic Fixed	Intl Fixed-Inc	Stable Value/Cash	Absolute Return/GTAA	Real Assets
10th Percentile	51.20	26.70	3.70	37.49	10.00	4.05	0.00	3.87
25th Percentile	42.70	24.40	2.95	36.67	4.84	0.00	0.00	0.62
Median	40.00	21.47	0.62	33.25	1.62	0.00	0.00	0.00
75th Percentile	36.18	18.57	0.00	28.88	0.00	0.00	0.00	0.00
90th Percentile	30.09	12.88	0.00	16.74	0.00	0.00	0.00	0.00

<b>SERS 2030 Retirement Fund - Target</b>	●	36.18	22.57	2.95	37.11	-	-	1.19
Callan Tgt Dt Idx 2030	▲	39.23	19.67	2.11	32.36	3.32	0.94	1.77

# SERS 2030 Retirement Fund

## Period Ended December 31, 2021

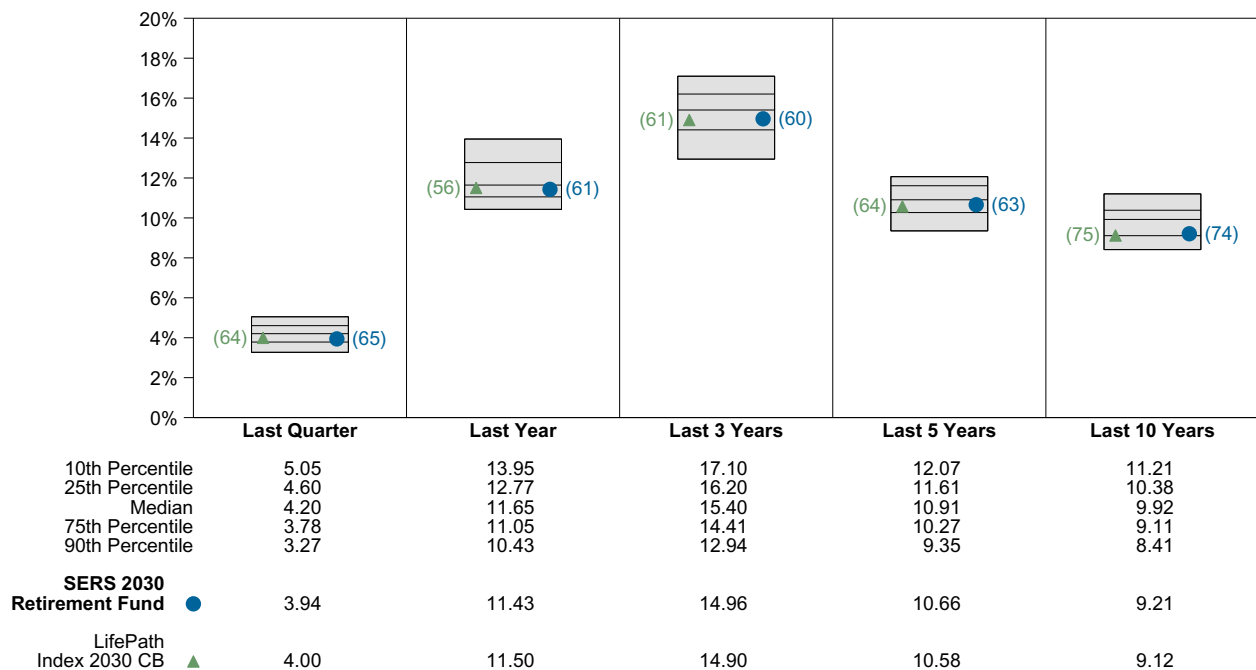
### Investment Philosophy

The BlackRock LifePath(R) Index 2030 Fund (the "Fund") seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. The Fund will be diversified across global asset classes, with allocations changing over the investment horizon to become more heavily oriented toward debt and debt-like securities, on the premise that individuals investing for retirement desire to reduce investment risk in their retirement accounts as their retirement date approaches.

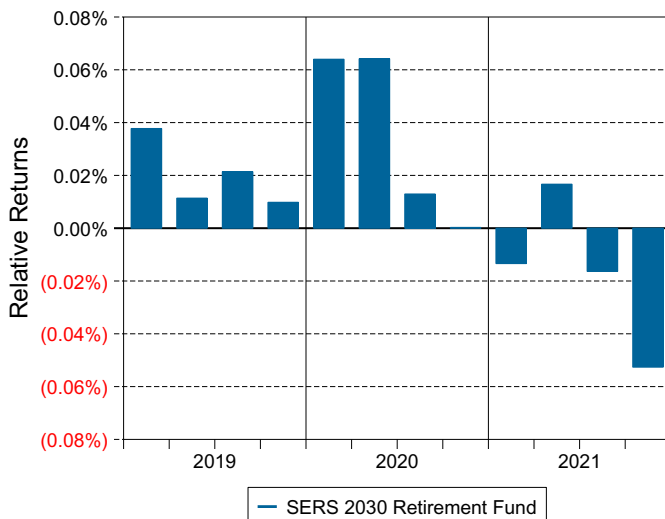
### Quarterly Summary and Highlights

- SERS 2030 Retirement Fund's portfolio posted a 3.94% return for the quarter placing it in the 65 percentile of the Callan Target Date 2030 group for the quarter and in the 61 percentile for the last year.
- SERS 2030 Retirement Fund's portfolio underperformed the LifePath Index 2030 CB by 0.05% for the quarter and underperformed the LifePath Index 2030 CB for the year by 0.07%.

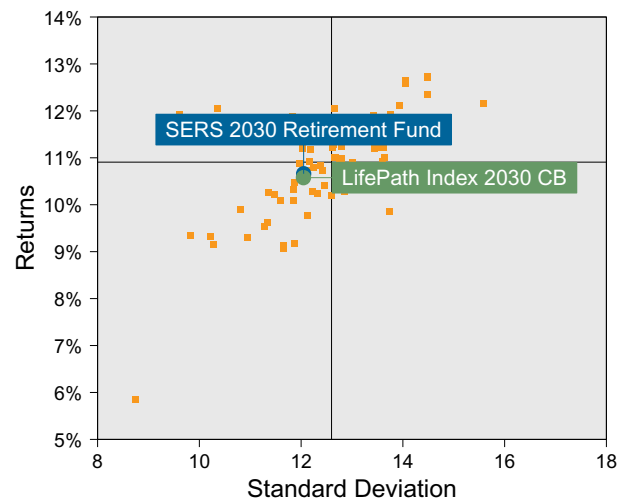
### Performance vs Callan Target Date 2030 (Net)



### Relative Return vs LifePath Index 2030 CB



### Callan Target Date 2030 (Net) Annualized Five Year Risk vs Return

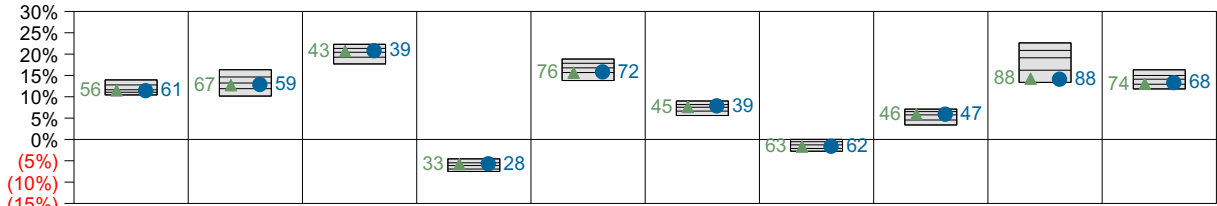


# SERS 2030 Retirement Fund Return Analysis Summary

## Return Analysis

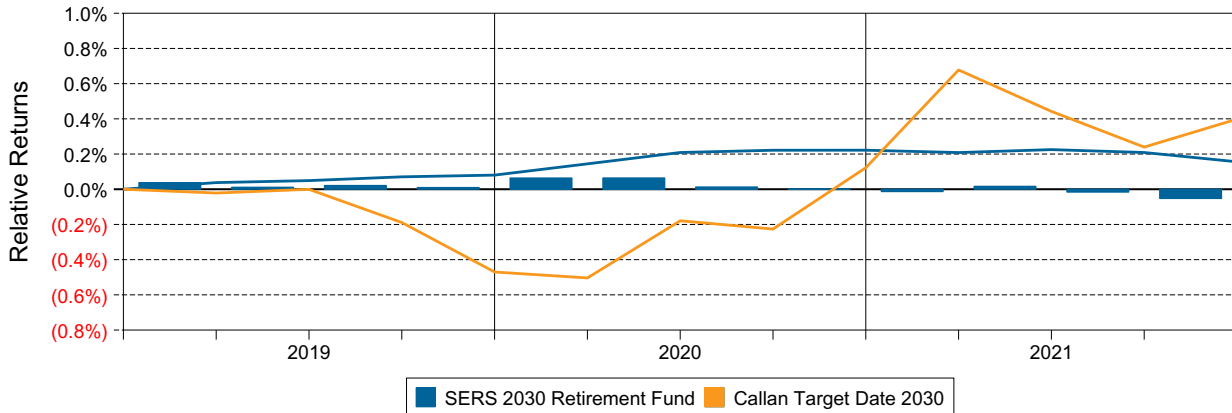
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

### Performance vs Callan Target Date 2030 (Net)

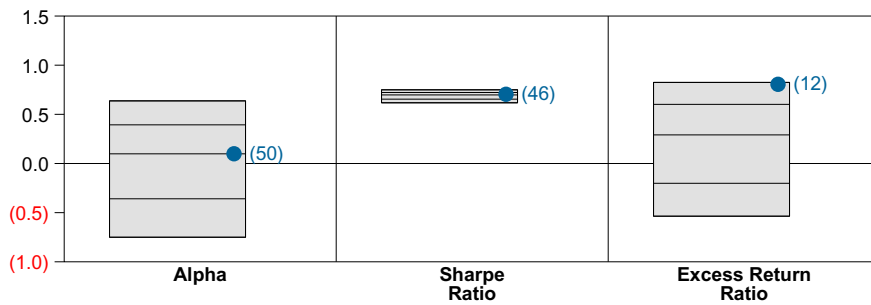


	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
10th Percentile	13.95	16.35	22.30	(4.55)	18.85	9.01	0.01	7.11	22.62	16.33
25th Percentile	12.77	14.64	21.34	(5.48)	17.85	8.17	(0.53)	6.53	20.87	14.99
Median	11.65	13.23	20.43	(6.12)	16.77	7.54	(1.27)	5.76	19.13	14.12
75th Percentile	11.05	11.90	19.28	(6.94)	15.68	6.64	(2.12)	4.56	16.22	12.94
90th Percentile	10.43	10.16	17.70	(7.50)	13.81	5.61	(2.77)	3.39	13.37	11.84
<b>SERS 2030 Retirement Fund</b>	● 11.43	12.88	20.80	(5.71)	15.83	7.88	(1.60)	5.92	14.12	13.31
LifePath Index 2030 CB	▲ 11.50	12.72	20.70	(5.76)	15.64	7.61	(1.66)	5.95	14.26	13.04

### Cumulative and Quarterly Relative Return vs LifePath Index 2030 CB



### Risk Adjusted Return Measures vs LifePath Index 2030 CB Rankings Against Callan Target Date 2030 (Net) Seven Years Ended December 31, 2021



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.64	0.75	0.82
25th Percentile	0.39	0.72	0.60
Median	0.10	0.70	0.29
75th Percentile	(0.36)	0.65	(0.20)
90th Percentile	(0.75)	0.62	(0.54)
<b>SERS 2030 Retirement Fund</b>	● 0.10	0.70	0.81

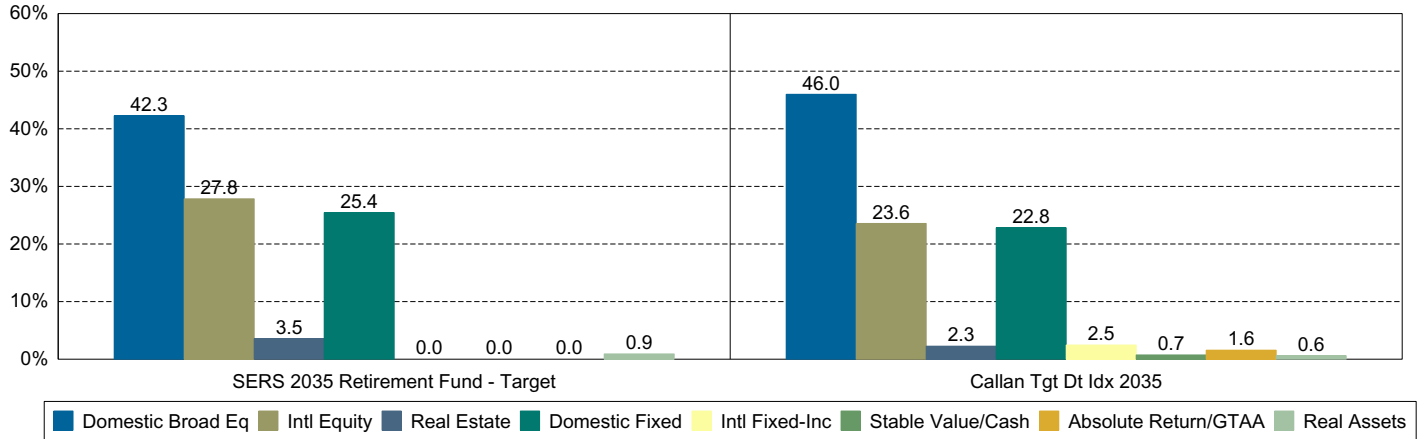


# SERS 2035 Retirement Fund

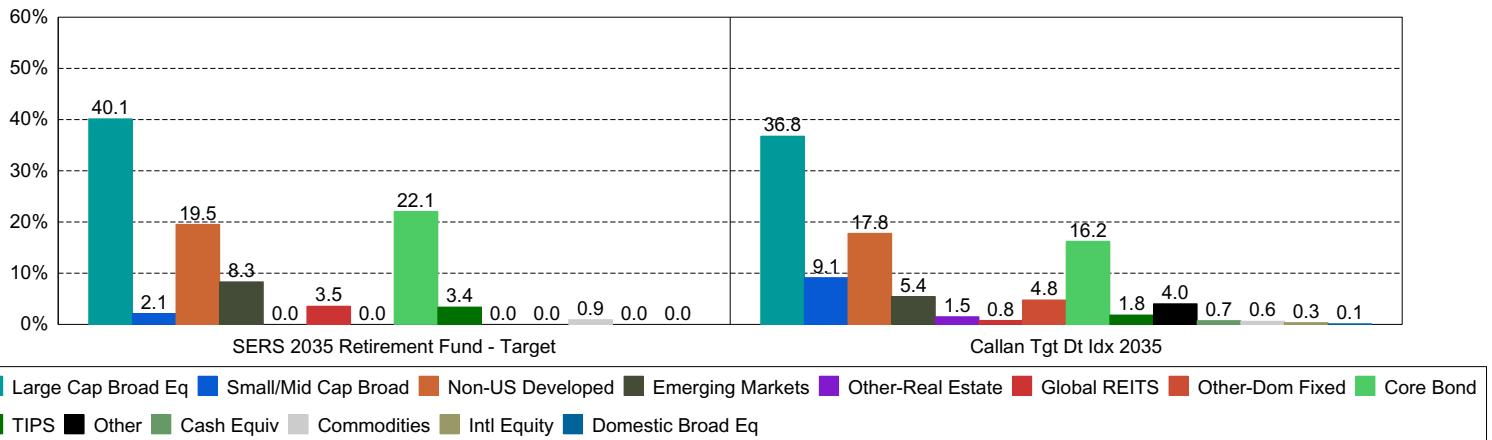
## Target Date Fund Asset Allocation as of December 31, 2021

The charts below illustrate the current target asset allocation of the relevant target date fund based on its underlying glide path and compares it to an index. The top charts compare target asset allocation at a high "macro" asset class level, while the middle charts show a more detailed "micro" level view. The bottom chart compares the current "macro" level target asset allocation, and index, to a relevant peer group of target date funds by ranking the various target asset class weights versus those peer target date funds.

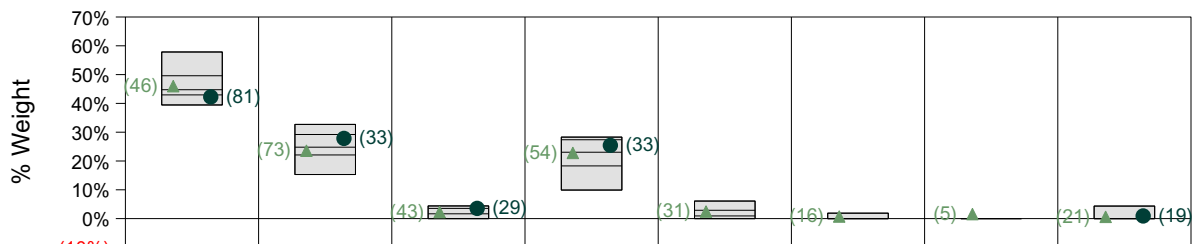
### Macro-Level Asset Allocation



### Micro-Level Asset Allocation



### Macro Asset Allocation Rankings vs. Callan Target Date 2035



	Domestic Broad Eq	Intl Equity	Real Estate	Domestic Fixed	Intl Fixed-Inc	Stable Value/Cash	Absolute Return/GTAA	Real Assets
10th Percentile	57.85	32.70	4.40	28.30	6.09	1.89	0.00	4.35
25th Percentile	49.60	29.20	3.55	27.38	2.89	0.00	0.00	0.00
Median	44.75	24.80	1.67	23.05	0.93	0.00	0.00	0.00
75th Percentile	42.96	22.10	0.00	18.30	0.00	0.00	0.00	0.00
90th Percentile	39.45	15.31	0.00	9.91	0.00	0.00	0.00	0.00

<b>SERS 2035 Retirement Fund - Target</b>	●	42.26	27.84	3.55	25.43	-	-	-	0.92
Callan Tgt Dt Idx 2035	▲	45.99	23.56	2.26	22.81	2.46	0.74	1.57	0.61

# SERS 2035 Retirement Fund Period Ended December 31, 2021

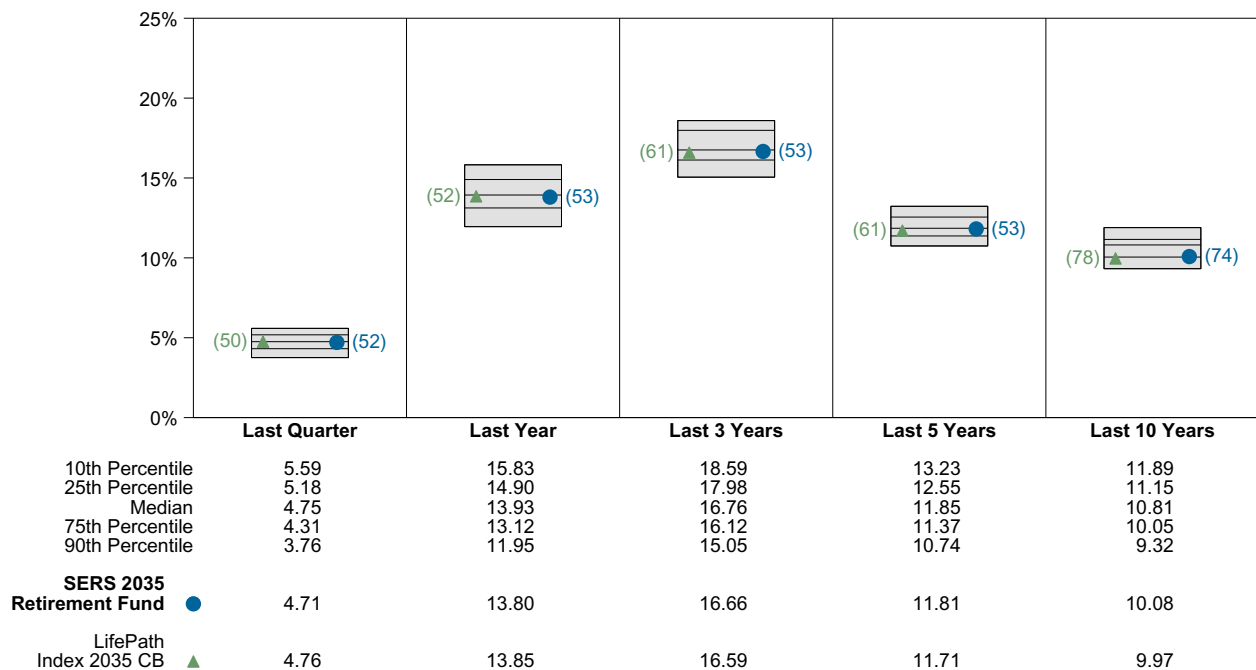
## Investment Philosophy

The BlackRock LifePath(R) Index 2035 Fund (the "Fund") seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. The Fund will be diversified across global asset classes, with allocations changing over the investment horizon to become more heavily oriented toward debt and debt-like securities, on the premise that individuals investing for retirement desire to reduce investment risk in their retirement accounts as their retirement date approaches.

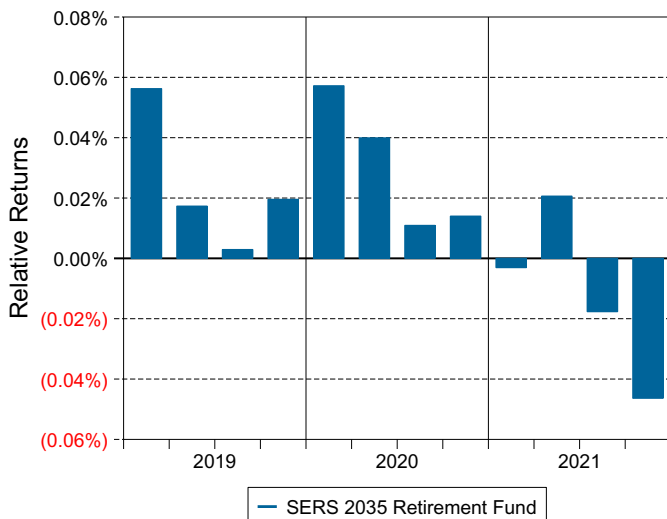
## Quarterly Summary and Highlights

- SERS 2035 Retirement Fund's portfolio posted a 4.71% return for the quarter placing it in the 52 percentile of the Callan Target Date 2035 group for the quarter and in the 53 percentile for the last year.
- SERS 2035 Retirement Fund's portfolio underperformed the LifePath Index 2035 CB by 0.05% for the quarter and underperformed the LifePath Index 2035 CB for the year by 0.05%.

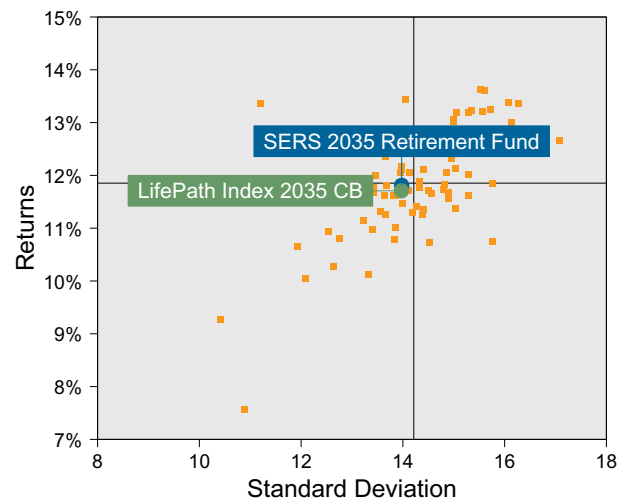
## Performance vs Callan Target Date 2035 (Net)



## Relative Return vs LifePath Index 2035 CB



## Callan Target Date 2035 (Net) Annualized Five Year Risk vs Return

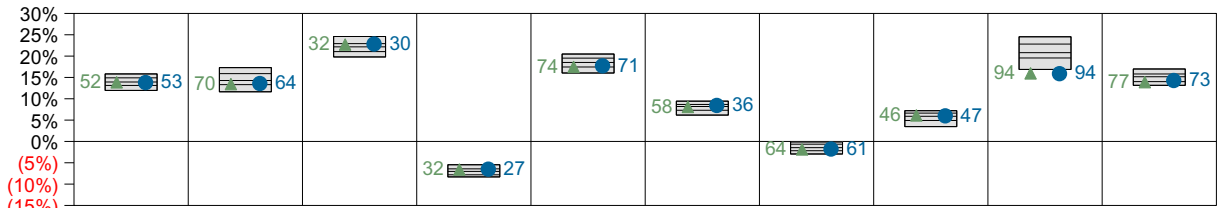


# SERS 2035 Retirement Fund Return Analysis Summary

## Return Analysis

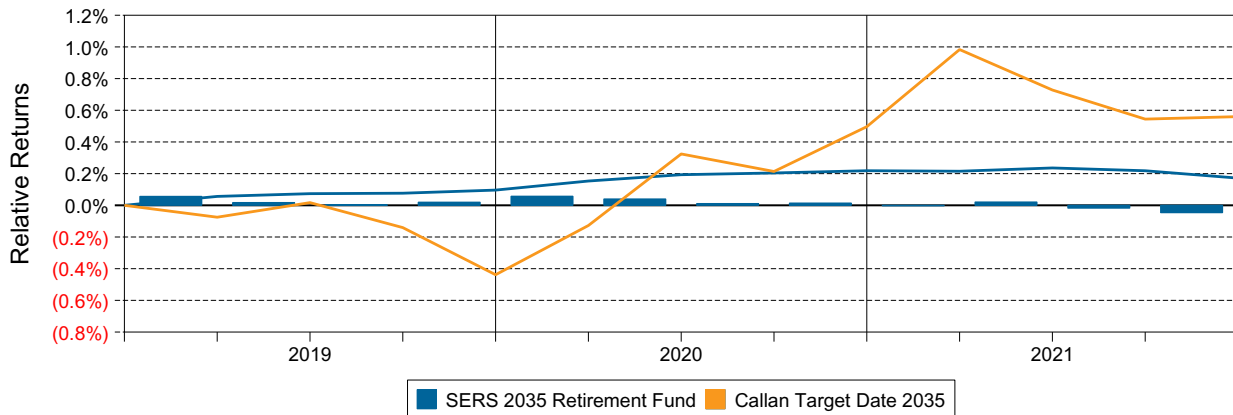
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

### Performance vs Callan Target Date 2035 (Net)

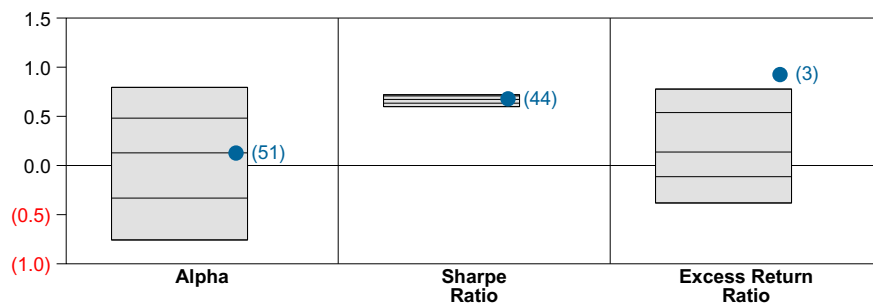


	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
10th Percentile	15.83	17.30	24.59	(5.46)	20.49	9.45	(0.10)	7.21	24.53	16.98
25th Percentile	14.90	15.89	22.92	(6.42)	19.53	8.67	(0.64)	6.63	22.82	15.81
Median	13.93	14.28	22.17	(7.03)	18.51	8.19	(1.46)	5.89	20.81	15.16
75th Percentile	13.12	13.31	21.05	(7.82)	17.45	7.30	(2.17)	4.91	19.56	14.02
90th Percentile	11.95	11.64	19.80	(8.31)	16.04	6.17	(2.95)	3.47	16.87	13.15
<b>SERS 2035 Retirement Fund</b>	● 13.80	13.58	22.84	(6.50)	17.72	8.44	(1.78)	5.99	15.88	14.28
LifePath Index 2035 CB	▲ 13.85	13.44	22.72	(6.58)	17.48	8.08	(1.86)	6.11	15.96	13.90

### Cumulative and Quarterly Relative Return vs LifePath Index 2035 CB



### Risk Adjusted Return Measures vs LifePath Index 2035 CB Rankings Against Callan Target Date 2035 (Net) Seven Years Ended December 31, 2021



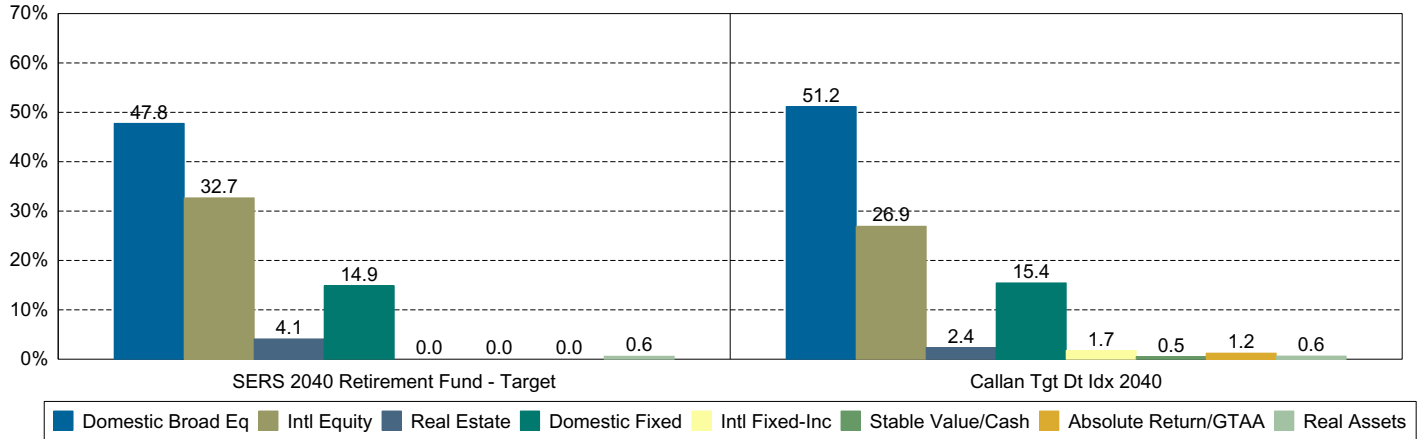
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.79	0.72	0.78
25th Percentile	0.48	0.71	0.54
Median	0.13	0.67	0.14
75th Percentile	(0.33)	0.63	(0.11)
90th Percentile	(0.76)	0.60	(0.38)
<b>SERS 2035 Retirement Fund</b>	● 0.13	0.68	0.92

# SERS 2040 Retirement Fund

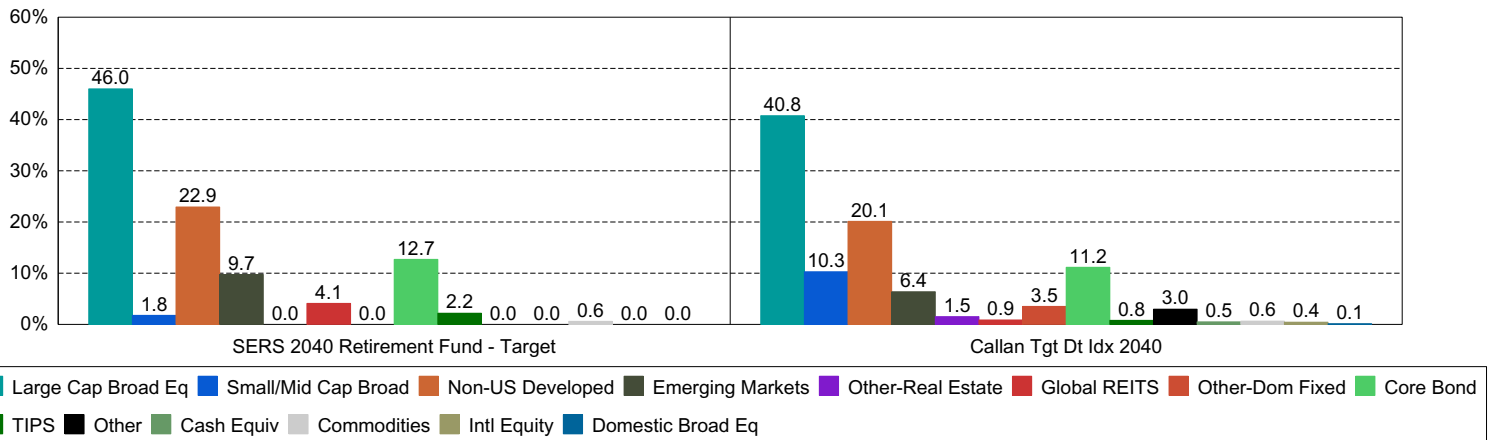
## Target Date Fund Asset Allocation as of December 31, 2021

The charts below illustrate the current target asset allocation of the relevant target date fund based on its underlying glide path and compares it to an index. The top charts compare target asset allocation at a high "macro" asset class level, while the middle charts show a more detailed "micro" level view. The bottom chart compares the current "macro" level target asset allocation, and index, to a relevant peer group of target date funds by ranking the various target asset class weights versus those peer target date funds.

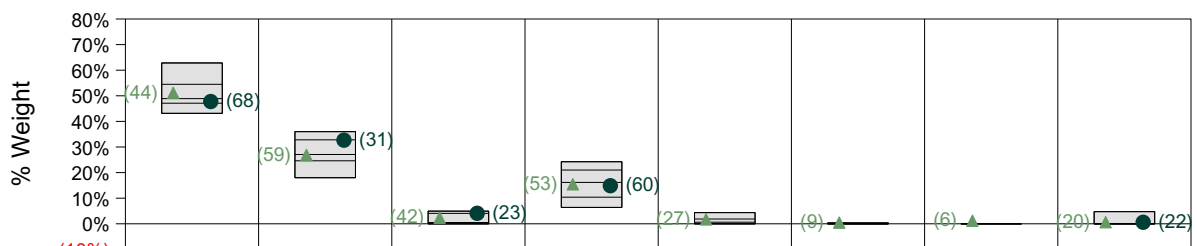
### Macro-Level Asset Allocation



### Micro-Level Asset Allocation



### Macro Asset Allocation Rankings vs. Callan Target Date 2040



	Domestic Broad Eq	Intl Equity	Real Estate	Domestic Fixed	Intl Fixed-Inc	Stable Value/Cash	Absolute Return/GTAA	Real Assets
10th Percentile	62.83	36.00	4.95	24.25	4.38	0.37	0.00	4.75
25th Percentile	54.49	32.80	4.08	21.00	1.87	0.00	0.00	0.00
Median	48.90	27.07	0.50	16.17	0.63	0.00	0.00	0.00
75th Percentile	47.10	24.61	0.00	10.40	0.00	0.00	0.00	0.00
90th Percentile	43.15	18.00	0.00	6.40	0.00	0.00	0.00	0.00

<b>SERS 2040 Retirement Fund - Target</b>	●	47.76	32.67	4.10	14.87	-	-	0.59
Callan Tgt Dt Idx 2040	▲	51.16	26.92	2.37	15.45	1.75	0.49	1.22

# SERS 2040 Retirement Fund

## Period Ended December 31, 2021

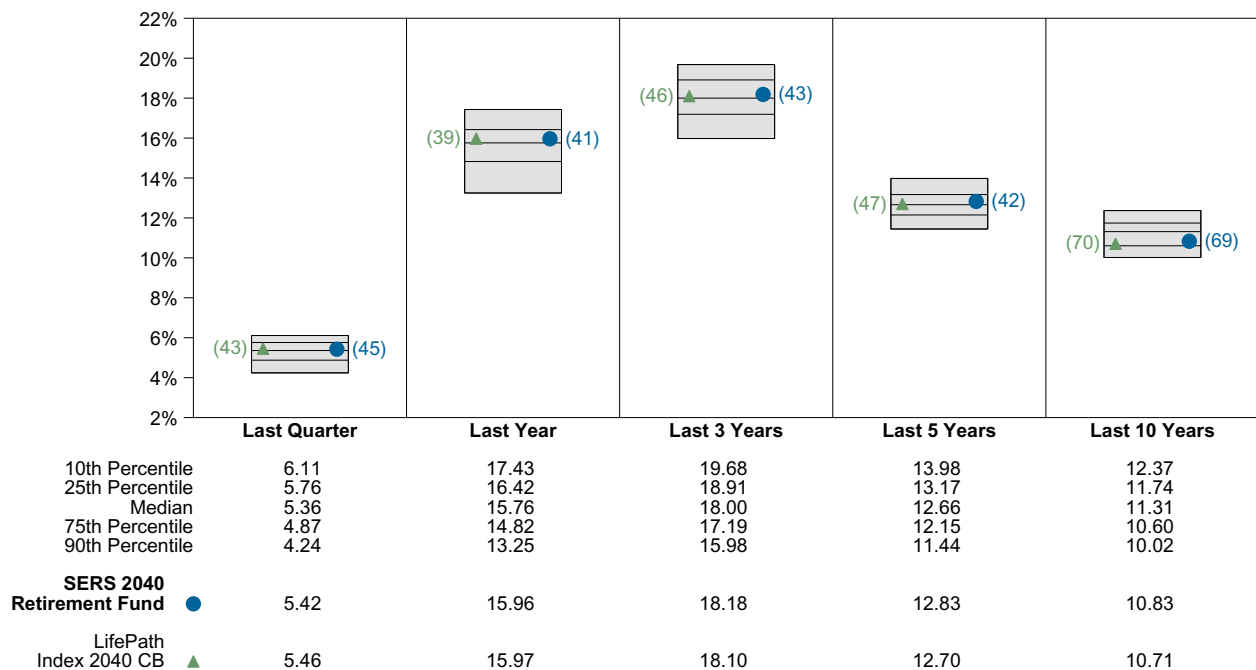
### Investment Philosophy

The BlackRock LifePath(R) Index 2040 Fund (the "Fund") seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. The Fund will be diversified across global asset classes, with allocations changing over the investment horizon to become more heavily oriented toward debt and debt-like securities, on the premise that individuals investing for retirement desire to reduce investment risk in their retirement accounts as their retirement date approaches.

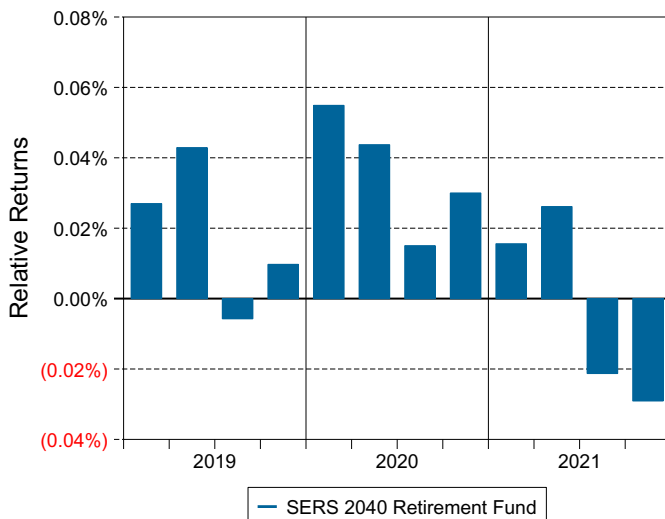
### Quarterly Summary and Highlights

- SERS 2040 Retirement Fund's portfolio posted a 5.42% return for the quarter placing it in the 45 percentile of the Callan Target Date 2040 group for the quarter and in the 41 percentile for the last year.
- SERS 2040 Retirement Fund's portfolio underperformed the LifePath Index 2040 CB by 0.03% for the quarter and underperformed the LifePath Index 2040 CB for the year by 0.01%.

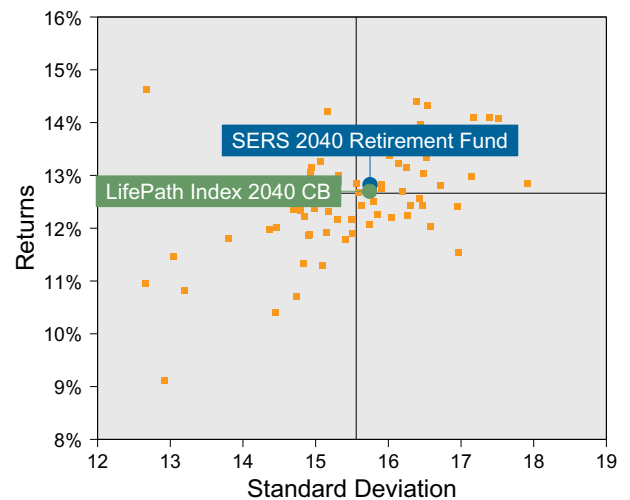
### Performance vs Callan Target Date 2040 (Net)



### Relative Return vs LifePath Index 2040 CB



### Callan Target Date 2040 (Net) Annualized Five Year Risk vs Return

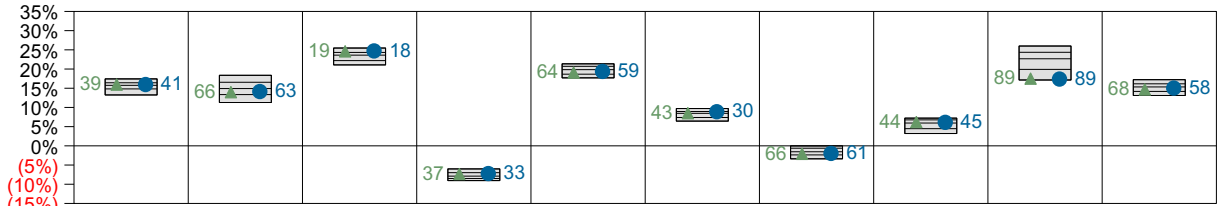


# SERS 2040 Retirement Fund Return Analysis Summary

## Return Analysis

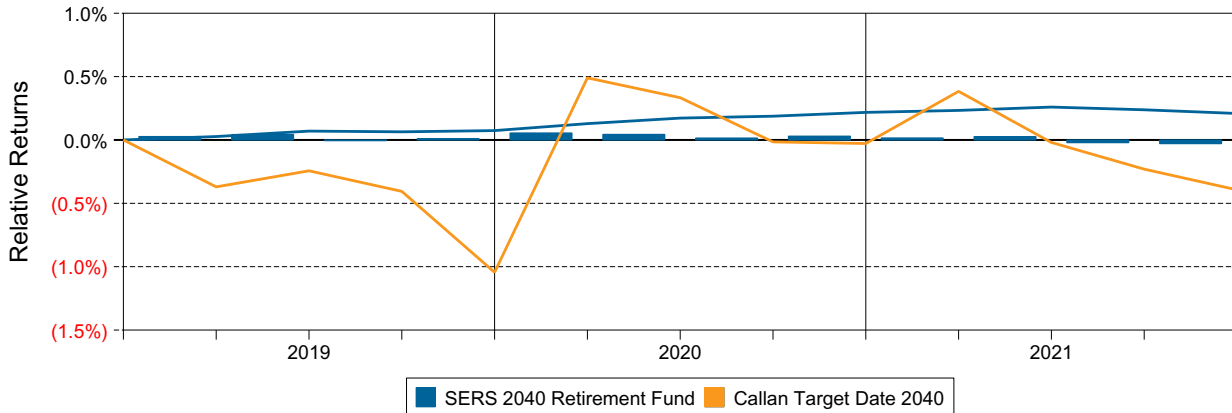
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

### Performance vs Callan Target Date 2040 (Net)

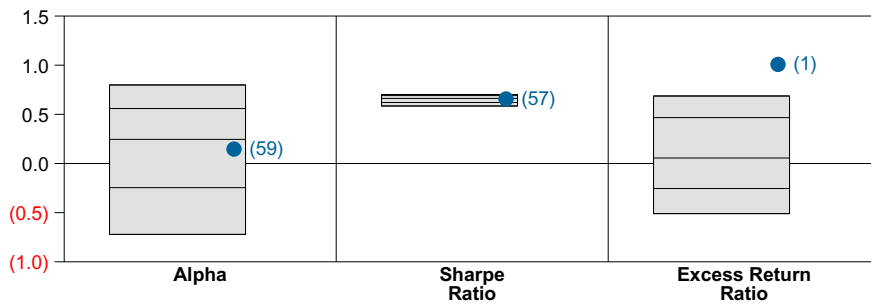


	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
10th Percentile	17.43	18.37	25.47	(6.01)	21.35	9.71	(0.03)	7.22	26.00	17.23
25th Percentile	16.42	16.56	24.33	(6.99)	20.71	8.94	(0.62)	6.76	24.36	16.15
Median	15.76	14.91	23.62	(7.89)	19.84	8.46	(1.54)	5.94	22.67	15.34
75th Percentile	14.82	13.35	22.20	(8.52)	18.66	7.38	(2.36)	4.47	19.91	14.18
90th Percentile	13.25	11.29	21.07	(9.05)	17.70	6.44	(3.38)	3.21	17.15	13.11
<b>SERS 2040 Retirement Fund</b>	● 15.96	14.14	24.71	(7.22)	19.38	8.88	(1.98)	6.12	17.39	15.04
LifePath Index 2040 CB	▲ 15.97	13.98	24.62	(7.33)	19.09	8.51	(2.08)	6.21	17.52	14.70

### Cumulative and Quarterly Relative Return vs LifePath Index 2040 CB



### Risk Adjusted Return Measures vs LifePath Index 2040 CB Rankings Against Callan Target Date 2040 (Net) Seven Years Ended December 31, 2021



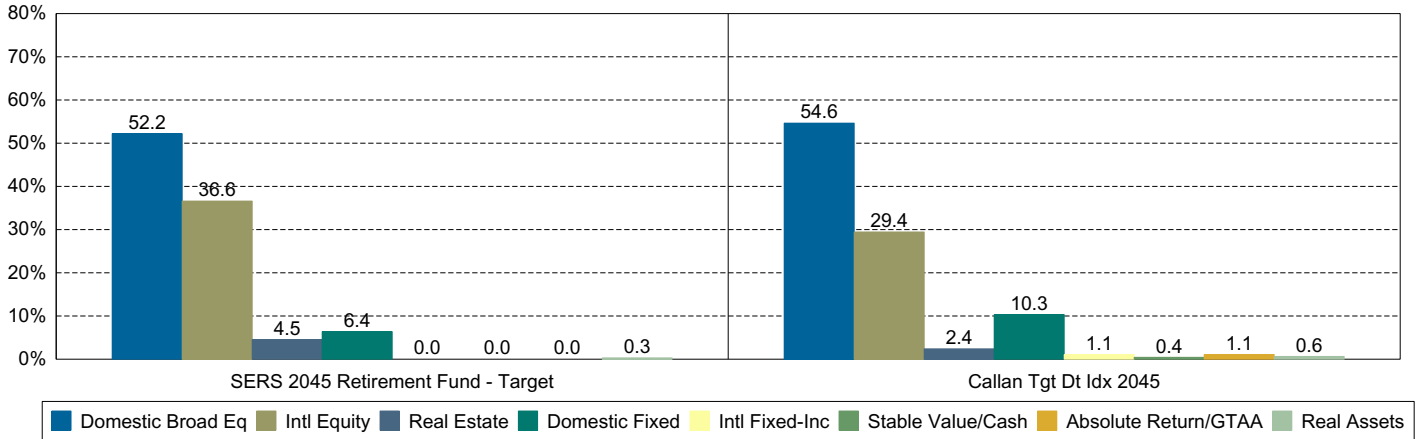
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.80	0.70	0.69
25th Percentile	0.56	0.69	0.47
Median	0.25	0.66	0.06
75th Percentile	(0.25)	0.62	(0.25)
90th Percentile	(0.72)	0.58	(0.51)
<b>SERS 2040 Retirement Fund</b>	● 0.15	0.66	1.01

# SERS 2045 Retirement Fund

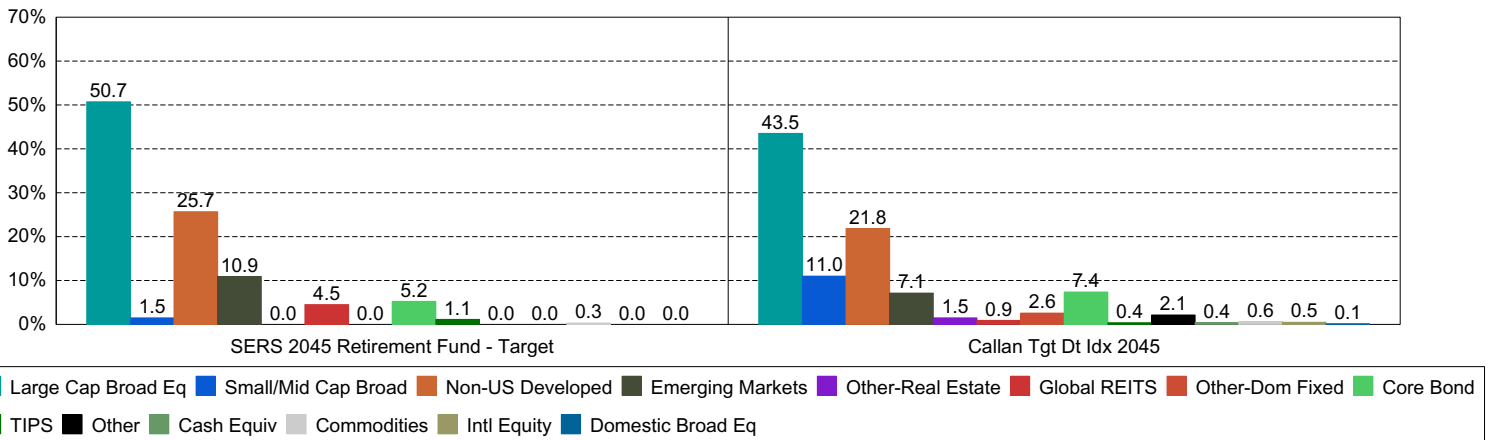
## Target Date Fund Asset Allocation as of December 31, 2021

The charts below illustrate the current target asset allocation of the relevant target date fund based on its underlying glide path and compares it to an index. The top charts compare target asset allocation at a high "macro" asset class level, while the middle charts show a more detailed "micro" level view. The bottom chart compares the current "macro" level target asset allocation, and index, to a relevant peer group of target date funds by ranking the various target asset class weights versus those peer target date funds.

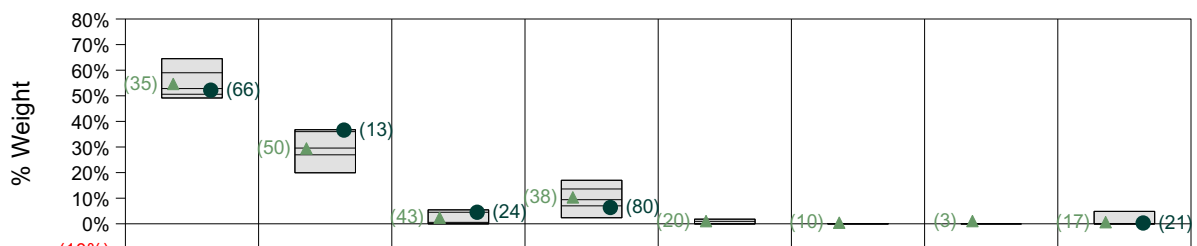
### Macro-Level Asset Allocation



### Micro-Level Asset Allocation



### Macro Asset Allocation Rankings vs. Callan Target Date 2045



	Domestic Broad Eq	Intl Equity	Real Estate	Domestic Fixed	Intl Fixed-Inc	Stable Value/Cash	Absolute Return/GTAA	Real Assets
10th Percentile	64.50	36.75	5.45	17.00	1.81	0.12	0.00	4.85
25th Percentile	59.00	36.00	4.51	13.60	0.96	0.00	0.00	0.00
Median	52.83	29.58	0.56	9.42	0.00	0.00	0.00	0.00
75th Percentile	50.60	26.95	0.00	7.01	0.00	0.00	0.00	0.00
90th Percentile	49.15	19.93	0.00	2.36	0.00	0.00	0.00	0.00

<b>SERS 2045 Retirement Fund - Target</b>	●	52.20	36.60	4.51	6.38	-	-	0.31
Callan Tgt Dt Idx 2045	▲	54.63	29.44	2.40	10.32	1.06	1.08	0.64

# SERS 2045 Retirement Fund

## Period Ended December 31, 2021

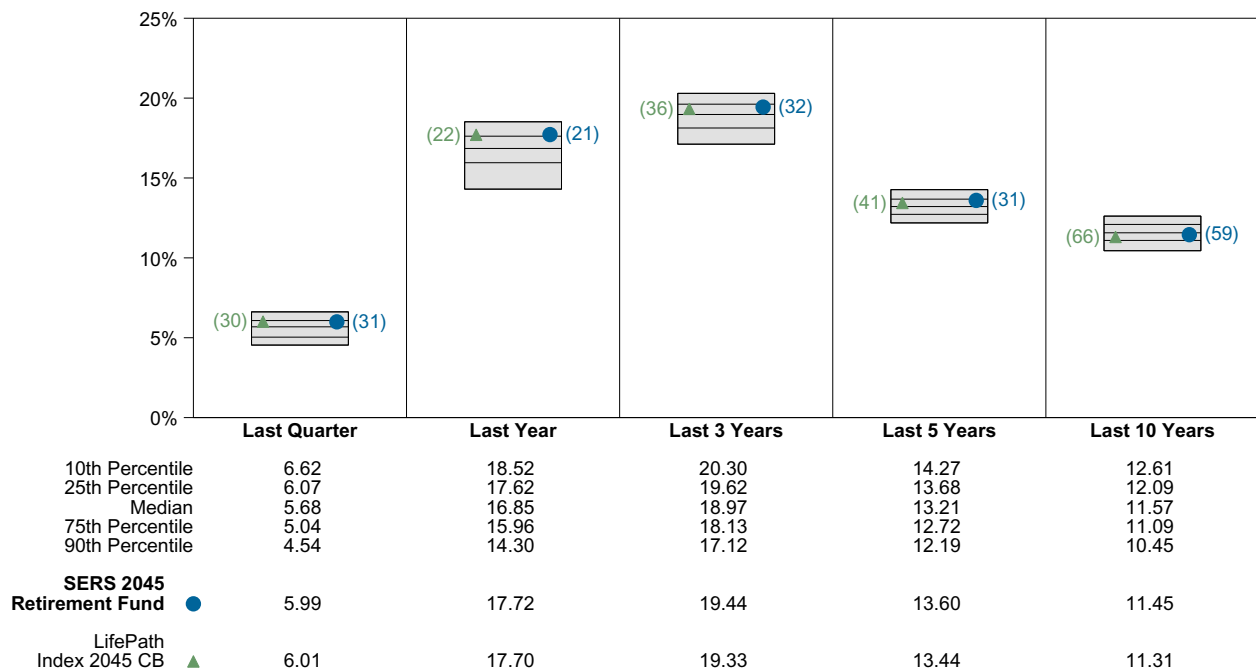
### Investment Philosophy

The BlackRock LifePath(R) Index 2045 Fund (the "Fund") seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. The Fund will be diversified across global asset classes, with allocations changing over the investment horizon to become more heavily oriented toward debt and debt-like securities, on the premise that individuals investing for retirement desire to reduce investment risk in their retirement accounts as their retirement date approaches.

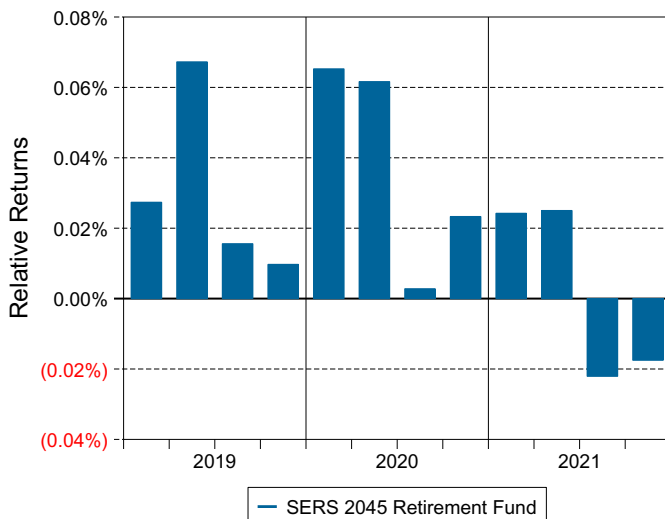
### Quarterly Summary and Highlights

- SERS 2045 Retirement Fund's portfolio posted a 5.99% return for the quarter placing it in the 31 percentile of the Callan Target Date 2045 group for the quarter and in the 21 percentile for the last year.
- SERS 2045 Retirement Fund's portfolio underperformed the LifePath Index 2045 CB by 0.02% for the quarter and outperformed the LifePath Index 2045 CB for the year by 0.01%.

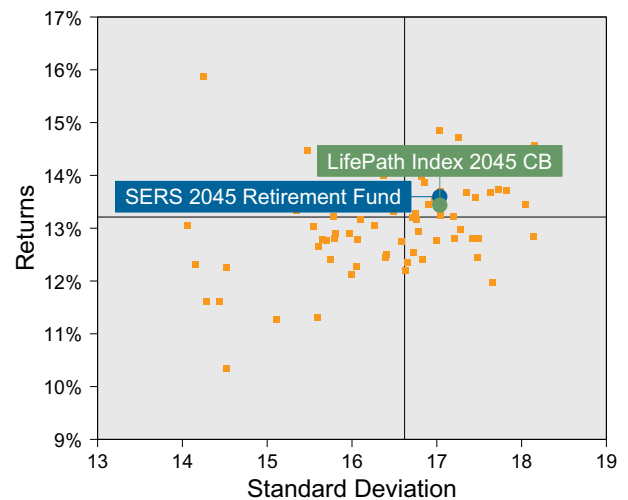
### Performance vs Callan Target Date 2045 (Net)



### Relative Return vs LifePath Index 2045 CB



### Callan Target Date 2045 (Net) Annualized Five Year Risk vs Return



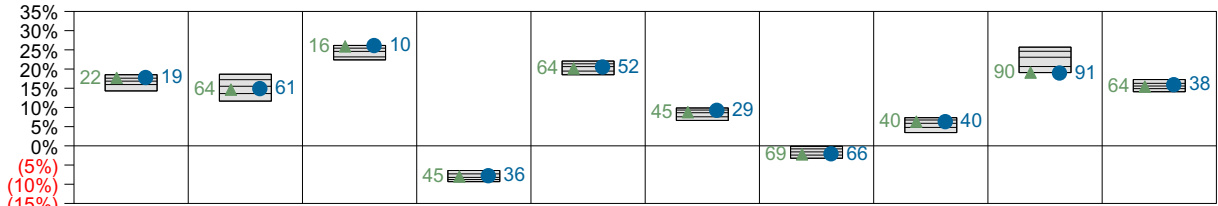


# SERS 2045 Retirement Fund Return Analysis Summary

## Return Analysis

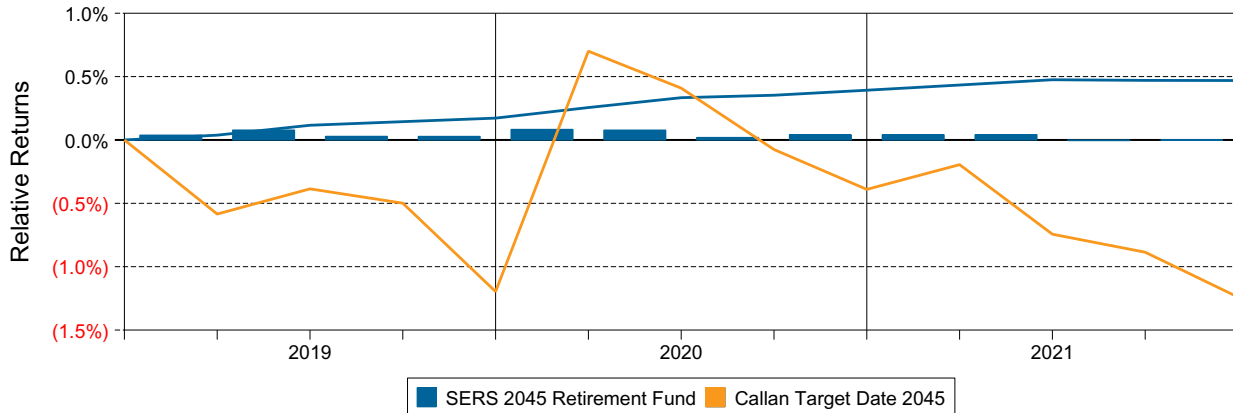
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

### Performance vs Callan Target Date 2045 (Net)

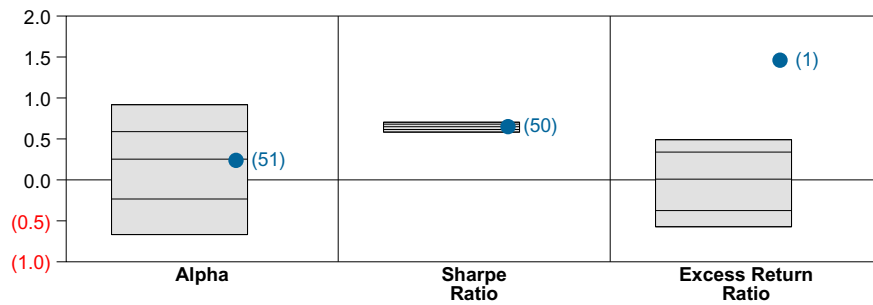


	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
10th Percentile	18.52	18.65	26.14	(6.43)	22.08	9.86	(0.12)	7.33	25.70	17.26
25th Percentile	17.62	17.23	25.44	(7.30)	21.36	9.32	(0.79)	6.73	24.63	16.28
Median	16.85	15.52	24.60	(8.21)	20.63	8.63	(1.57)	5.87	23.08	15.58
75th Percentile	15.96	13.61	23.16	(8.78)	19.47	7.56	(2.41)	4.80	20.66	14.90
90th Percentile	14.30	11.64	22.38	(9.33)	18.51	6.62	(3.23)	3.45	19.08	14.09
<b>SERS 2045 Retirement Fund</b>	● 17.79	14.90	26.12	(7.78)	20.54	9.25	(2.07)	6.30	18.97	15.92
LifePath Index 2045 CB	▲ 17.70	14.65	25.90	(7.99)	20.15	8.77	(2.22)	6.31	19.09	15.43

### Cumulative and Quarterly Relative Return vs LifePath Index 2045 CB



### Risk Adjusted Return Measures vs LifePath Index 2045 CB Rankings Against Callan Target Date 2045 (Net) Seven Years Ended December 31, 2021



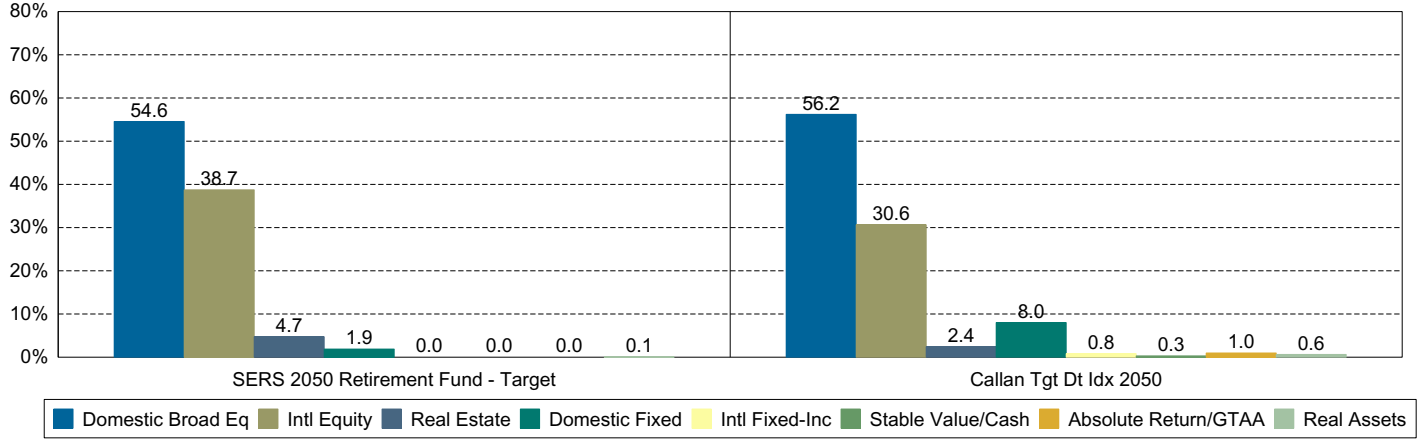
10th Percentile	0.92	0.70	0.49
25th Percentile	0.59	0.68	0.34
Median	0.25	0.65	0.01
75th Percentile	(0.23)	0.61	(0.37)
90th Percentile	(0.67)	0.58	(0.57)
<b>SERS 2045 Retirement Fund</b>	● 0.24	0.65	1.46

# SERS 2050 Retirement Fund

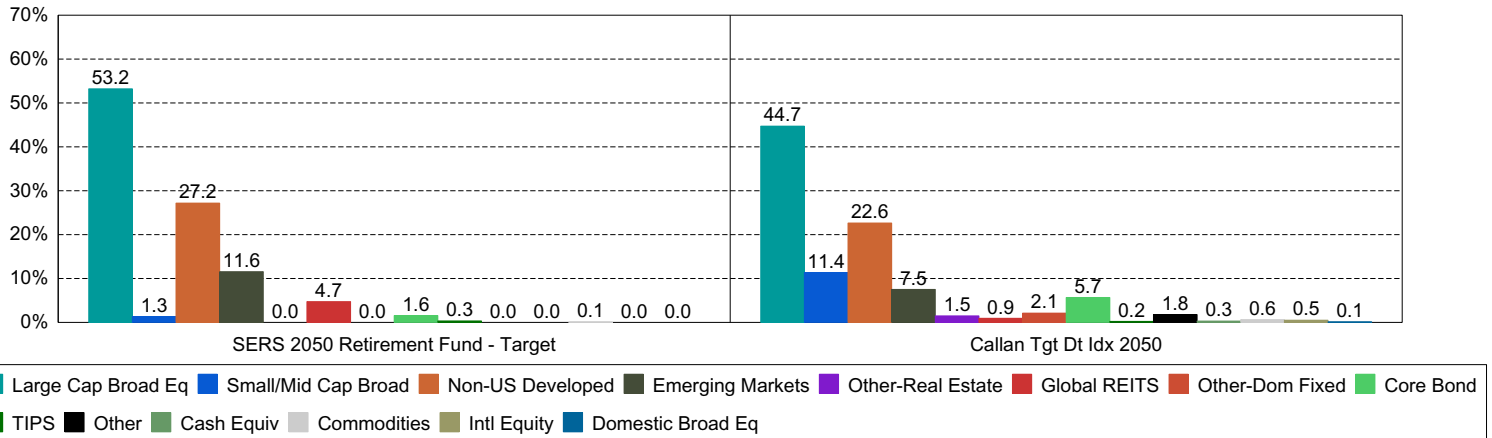
## Target Date Fund Asset Allocation as of December 31, 2021

The charts below illustrate the current target asset allocation of the relevant target date fund based on its underlying glide path and compares it to an index. The top charts compare target asset allocation at a high "macro" asset class level, while the middle charts show a more detailed "micro" level view. The bottom chart compares the current "macro" level target asset allocation, and index, to a relevant peer group of target date funds by ranking the various target asset class weights versus those peer target date funds.

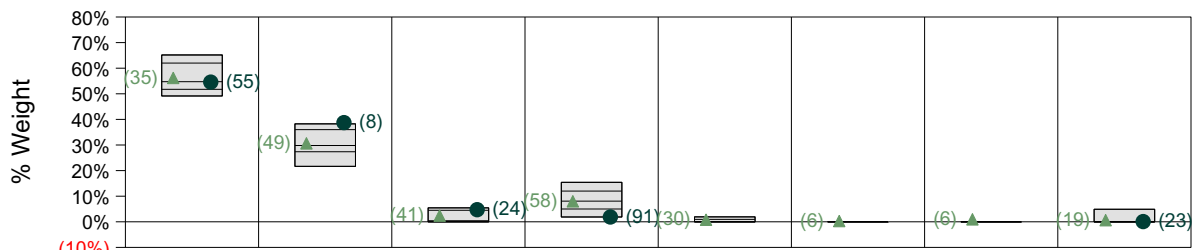
### Macro-Level Asset Allocation



### Micro-Level Asset Allocation



### Macro Asset Allocation Rankings vs. Callan Target Date 2050



	Domestic Broad Eq	Intl Equity	Real Estate	Domestic Fixed	Intl Fixed-Inc	Stable Value/Cash	Absolute Return/GTAA	Real Assets
10th Percentile	65.17	38.26	5.45	15.42	1.92	0.00	0.00	4.90
25th Percentile	62.00	36.00	4.50	12.00	0.95	0.00	0.00	0.00
Median	54.73	29.80	0.42	8.08	0.00	0.00	0.00	0.00
75th Percentile	51.75	27.36	0.00	5.00	0.00	0.00	0.00	0.00
90th Percentile	49.15	21.66	0.00	1.88	0.00	0.00	0.00	0.00
<b>SERS 2050 Retirement Fund - Target</b>	● 54.56	38.74	4.73	1.88	-	-	-	0.09
Callan Tgt Dt Idx 2050	▲ 56.21	30.65	2.41	8.01	0.81	0.30	0.97	0.63

# SERS 2050 Retirement Fund

## Period Ended December 31, 2021

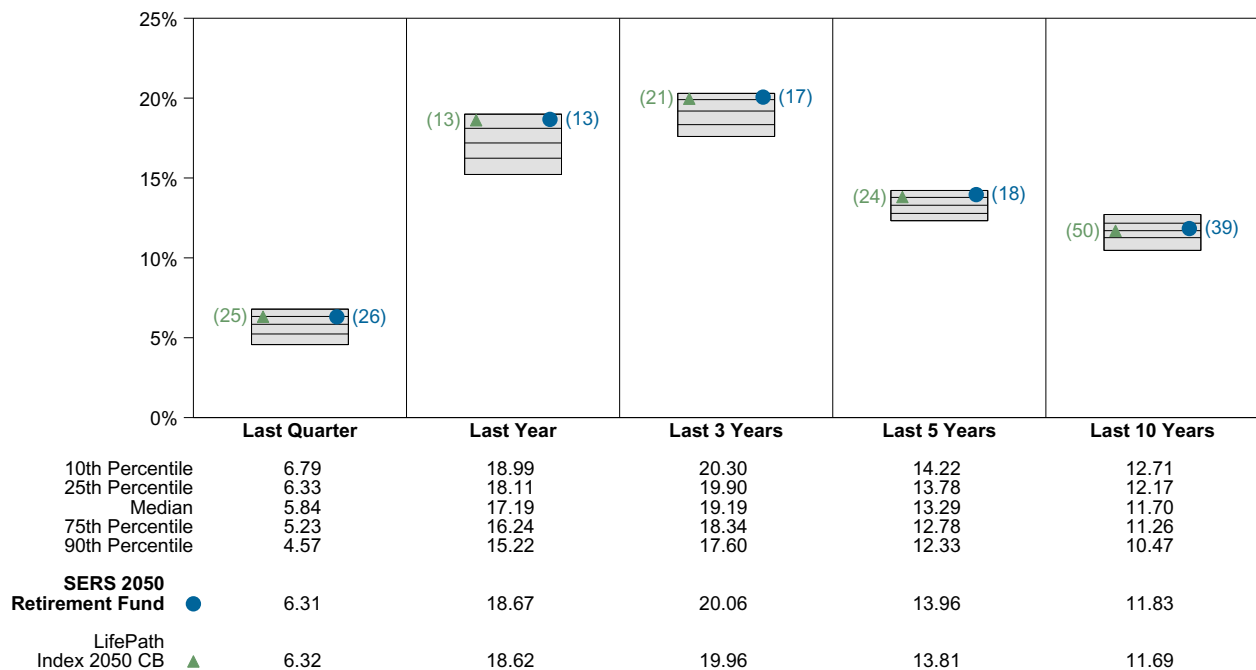
### Investment Philosophy

The BlackRock LifePath(R) Index 2050 Fund (the "Fund") seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. The Fund will be diversified across global asset classes, with allocations changing over the investment horizon to become more heavily oriented toward debt and debt-like securities, on the premise that individuals investing for retirement desire to reduce investment risk in their retirement accounts as their retirement date approaches.

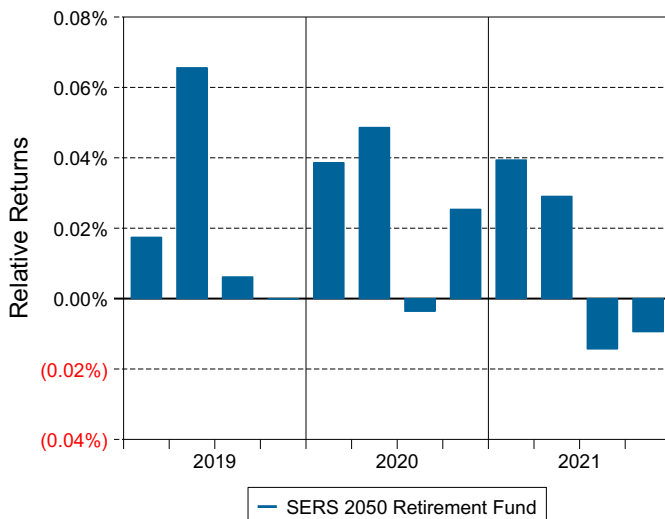
### Quarterly Summary and Highlights

- SERS 2050 Retirement Fund's portfolio posted a 6.31% return for the quarter placing it in the 26 percentile of the Callan Target Date 2050 group for the quarter and in the 13 percentile for the last year.
- SERS 2050 Retirement Fund's portfolio underperformed the LifePath Index 2050 CB by 0.01% for the quarter and outperformed the LifePath Index 2050 CB for the year by 0.05%.

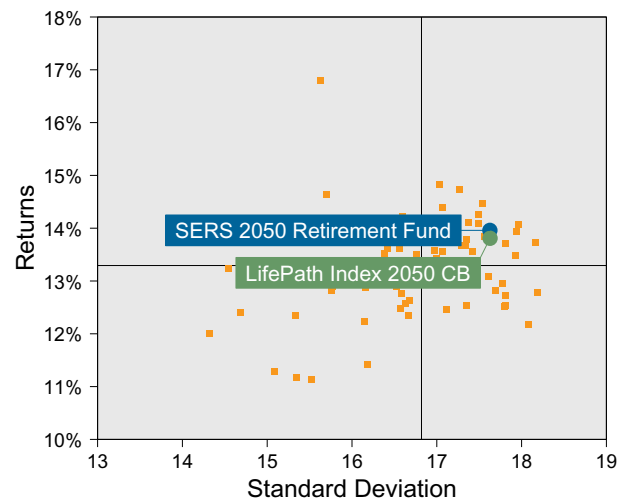
### Performance vs Callan Target Date 2050 (Net)



### Relative Return vs LifePath Index 2050 CB



### Callan Target Date 2050 (Net) Annualized Five Year Risk vs Return

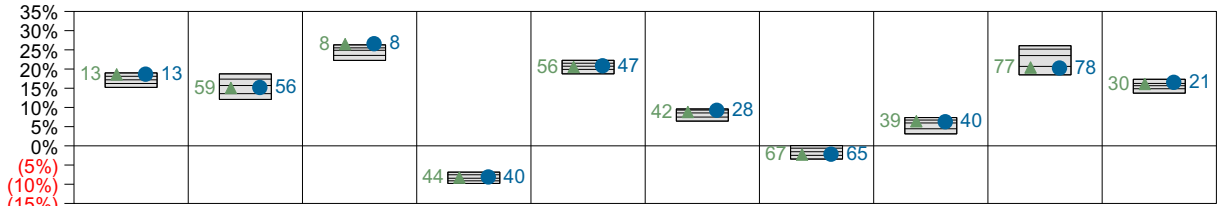


# SERS 2050 Retirement Fund Return Analysis Summary

## Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

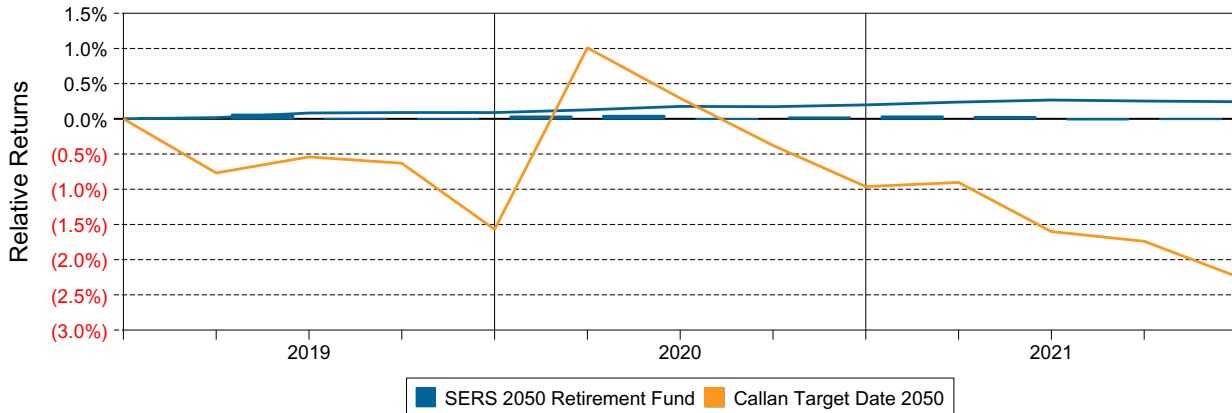
### Performance vs Callan Target Date 2050 (Net)



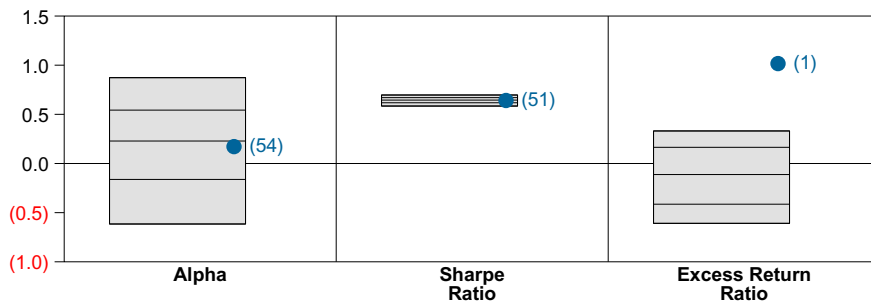
10th Percentile	18.99	18.74	26.30	(6.84)	22.27	9.60	0.05	7.37	26.07	17.34
25th Percentile	18.11	17.38	25.51	(7.53)	21.51	9.32	(0.61)	6.72	25.18	16.25
Median	17.19	15.71	24.89	(8.44)	20.74	8.57	(1.54)	5.96	23.51	15.66
75th Percentile	16.24	13.59	23.55	(9.11)	19.91	7.49	(2.48)	4.45	20.69	14.87
90th Percentile	15.22	12.08	22.25	(9.80)	18.75	6.44	(3.45)	3.12	18.49	13.71

	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
<b>SERS 2050 Retirement Fund</b>	18.67	15.20	26.60	(8.11)	20.85	9.26	(2.17)	6.28	20.26	16.54
LifePath Index 2050 CB	18.62	15.07	26.48	(8.26)	20.55	8.82	(2.26)	6.41	20.40	16.12

### Cumulative and Quarterly Relative Return vs LifePath Index 2050 CB



### Risk Adjusted Return Measures vs LifePath Index 2050 CB Rankings Against Callan Target Date 2050 (Net) Seven Years Ended December 31, 2021



10th Percentile	0.87	0.70	0.33
25th Percentile	0.54	0.67	0.16
Median	0.23	0.64	(0.11)
75th Percentile	(0.16)	0.62	(0.41)
90th Percentile	(0.62)	0.58	(0.61)

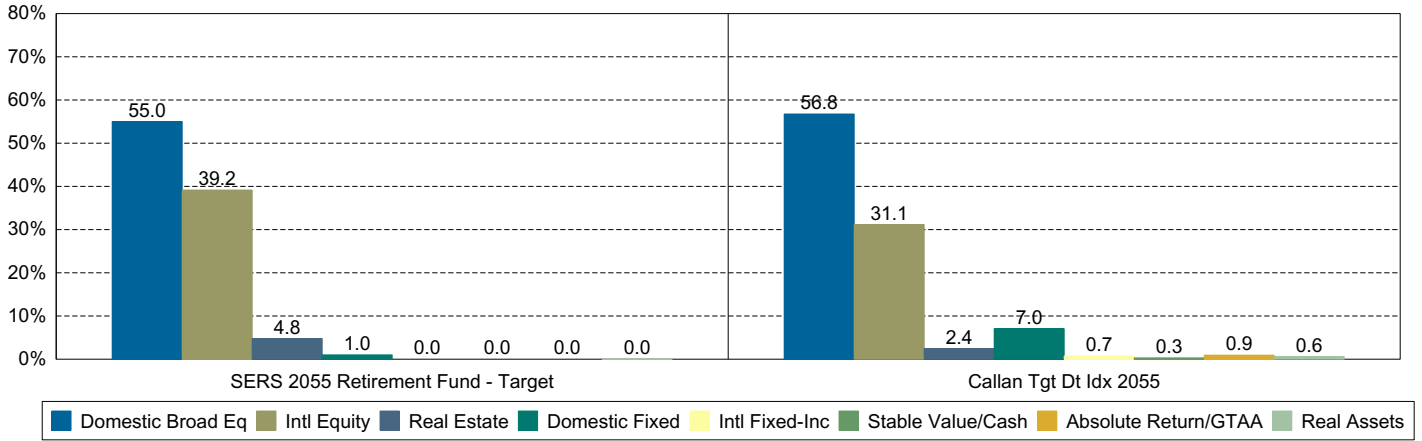
<b>SERS 2050 Retirement Fund</b>	0.17	0.64	1.02
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# SERS 2055 Retirement Fund

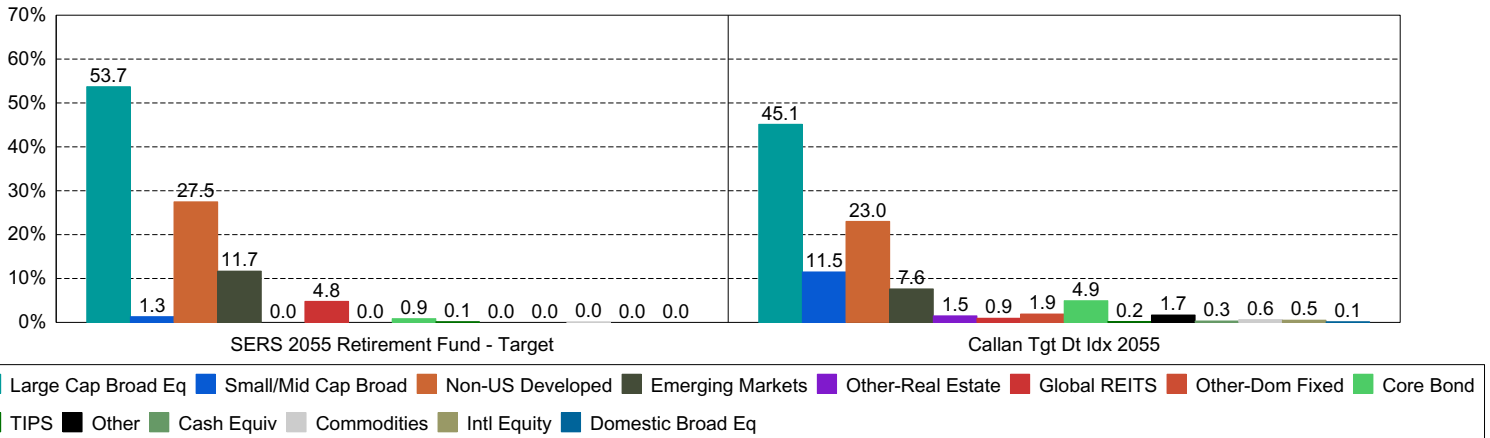
## Target Date Fund Asset Allocation as of December 31, 2021

The charts below illustrate the current target asset allocation of the relevant target date fund based on its underlying glide path and compares it to an index. The top charts compare target asset allocation at a high "macro" asset class level, while the middle charts show a more detailed "micro" level view. The bottom chart compares the current "macro" level target asset allocation, and index, to a relevant peer group of target date funds by ranking the various target asset class weights versus those peer target date funds.

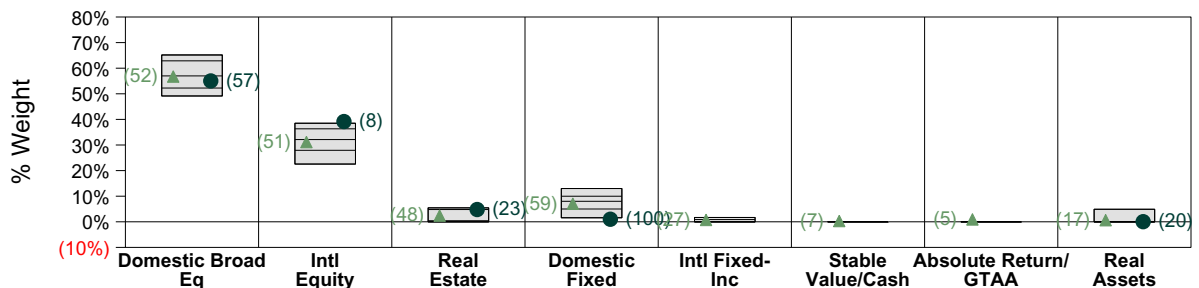
### Macro-Level Asset Allocation



### Micro-Level Asset Allocation



### Macro Asset Allocation Rankings vs. Callan Target Date 2055



	Domestic Broad Eq	Intl Equity	Real Estate	Domestic Fixed	Intl Fixed-Inc	Stable Value/Cash	Absolute Return/GTAA	Real Assets
10th Percentile	65.17	38.50	5.45	13.00	1.68	0.00	0.00	4.90
25th Percentile	62.88	36.33	4.79	9.99	0.88	0.00	0.00	0.00
Median	56.99	32.12	0.42	8.01	0.00	0.00	0.00	0.00
75th Percentile	52.25	27.93	0.00	5.00	0.00	0.00	0.00	0.00
90th Percentile	49.15	22.55	0.00	1.57	0.00	0.00	0.00	0.00

<b>SERS 2055 Retirement Fund - Target</b>	●	55.02	39.15	4.79	1.00	-	-	-	0.04
Callan Tgt Dt Idx 2055	▲	56.75	31.15	2.43	7.05	0.74	0.31	0.93	0.63

# SERS 2055 Retirement Fund

## Period Ended December 31, 2021

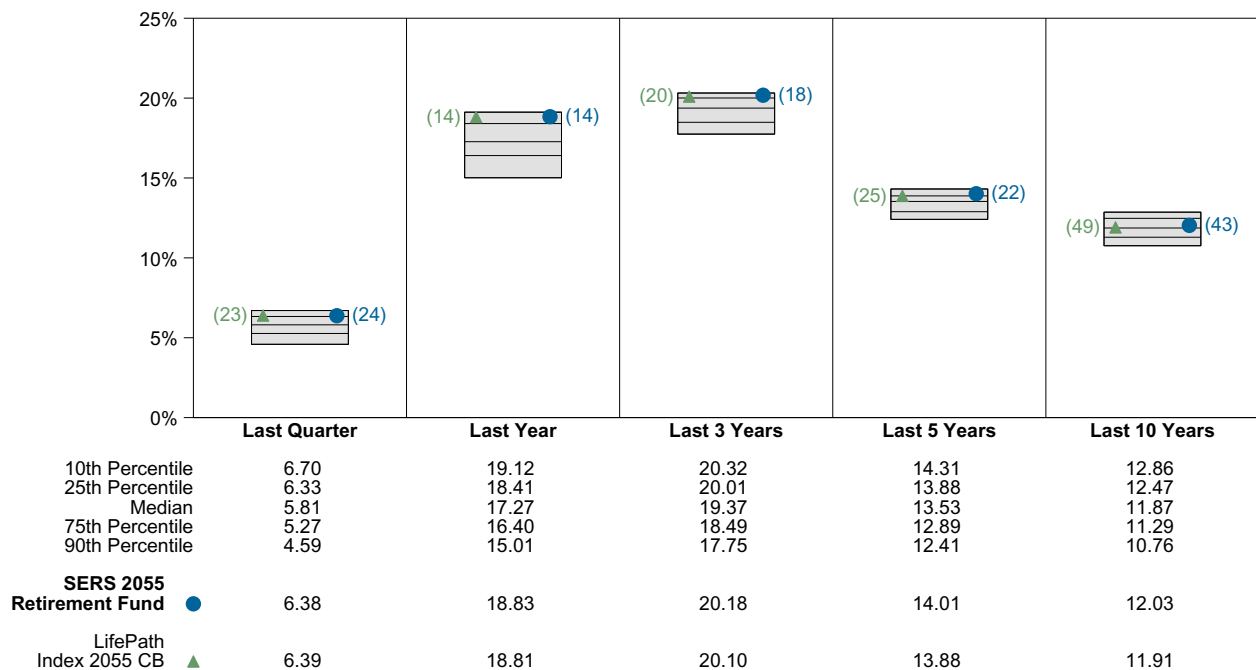
### Investment Philosophy

The BlackRock LifePath(R) Index 2055 Fund (the "Fund") seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. The Fund will be diversified across global asset classes, with allocations changing over the investment horizon to become more heavily oriented toward debt and debt-like securities, on the premise that individuals investing for retirement desire to reduce investment risk in their retirement accounts as their retirement date approaches.

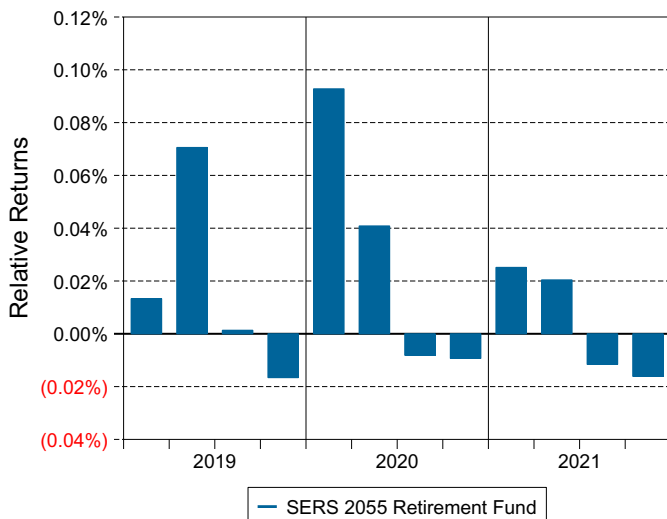
### Quarterly Summary and Highlights

- SERS 2055 Retirement Fund's portfolio posted a 6.38% return for the quarter placing it in the 24 percentile of the Callan Target Date 2055 group for the quarter and in the 14 percentile for the last year.
- SERS 2055 Retirement Fund's portfolio underperformed the LifePath Index 2055 CB by 0.02% for the quarter and outperformed the LifePath Index 2055 CB for the year by 0.02%.

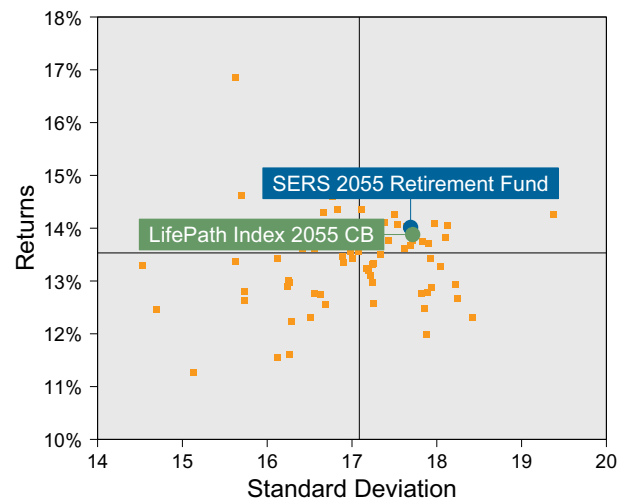
### Performance vs Callan Target Date 2055 (Net)



### Relative Return vs LifePath Index 2055 CB



### Callan Target Date 2055 (Net) Annualized Five Year Risk vs Return

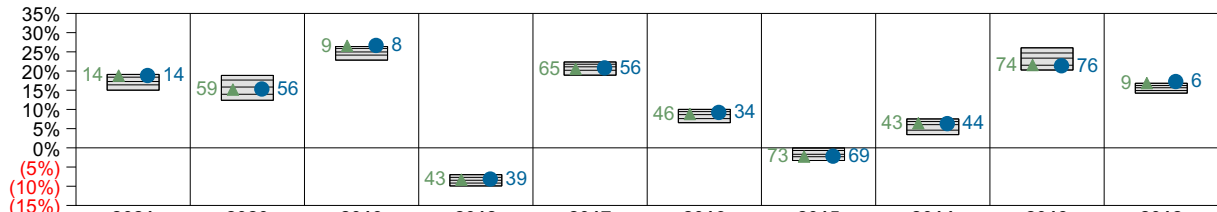


# SERS 2055 Retirement Fund Return Analysis Summary

## Return Analysis

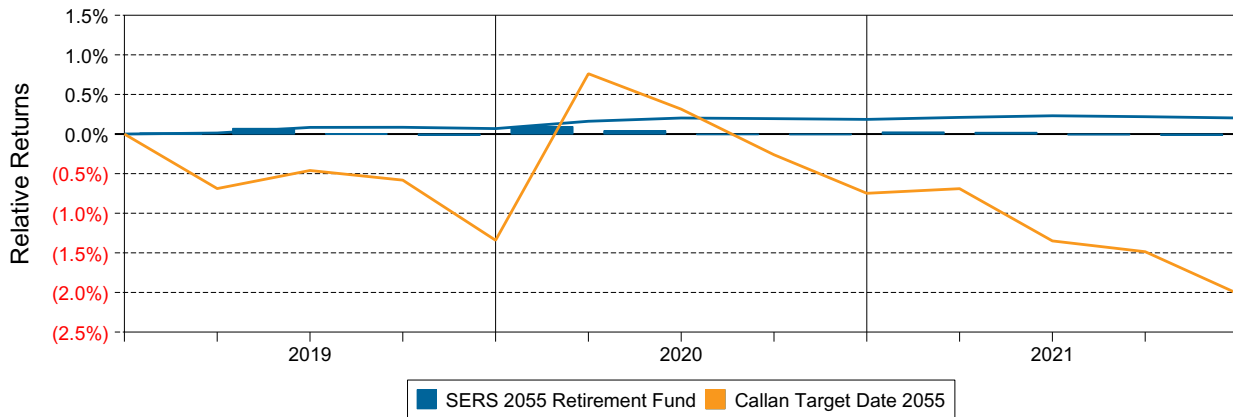
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

### Performance vs Callan Target Date 2055 (Net)

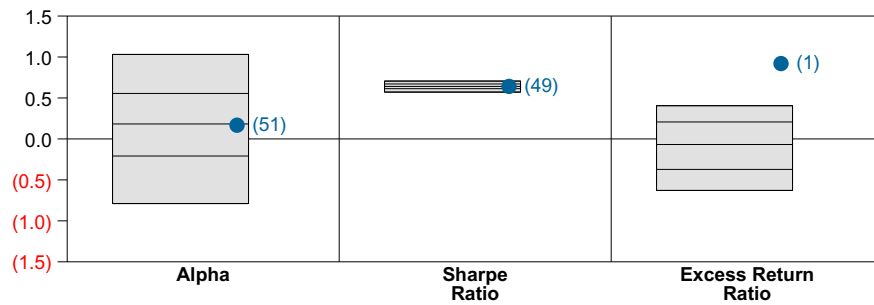


	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
10th Percentile	19.12	18.86	26.39	(6.99)	22.36	10.01	(0.05)	7.53	26.05	16.82
25th Percentile	18.41	17.65	25.90	(7.69)	21.77	9.44	(0.69)	6.85	24.70	16.22
Median	17.27	15.83	24.97	(8.44)	21.10	8.65	(1.68)	6.04	23.36	15.65
75th Percentile	16.40	13.95	24.15	(9.18)	20.20	7.61	(2.31)	4.60	21.51	14.93
90th Percentile	15.01	12.38	22.84	(9.93)	18.92	6.55	(3.30)	3.44	20.26	14.25
<b>SERS 2055 Retirement Fund</b>	● 18.83	15.32	26.67	(8.13)	20.82	9.22	(2.17)	6.31	21.37	17.27
LifePath Index 2055 CB	▲ 18.81	15.18	26.58	(8.28)	20.55	8.82	(2.26)	6.41	21.58	16.87

### Cumulative and Quarterly Relative Return vs LifePath Index 2055 CB



### Risk Adjusted Return Measures vs LifePath Index 2055 CB Rankings Against Callan Target Date 2055 (Net) Seven Years Ended December 31, 2021



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	1.03	0.71	0.41
25th Percentile	0.56	0.67	0.21
Median	0.18	0.64	(0.07)
75th Percentile	(0.21)	0.61	(0.37)
90th Percentile	(0.79)	0.57	(0.63)
<b>SERS 2055 Retirement Fund</b>	● 0.17	0.64	0.92

# SERS 2060 Retirement Fund

## Period Ended December 31, 2021

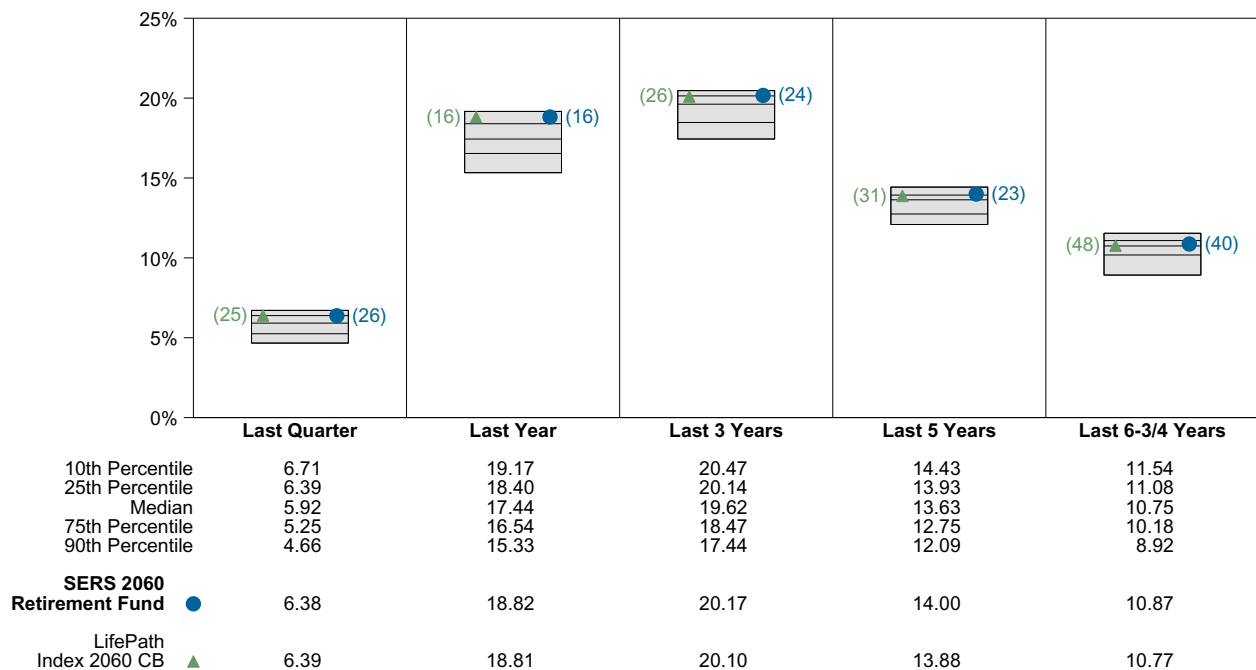
### Investment Philosophy

The BlackRock LifePath(R) Index 2060 Fund (the "Fund") seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. The Fund will be diversified across global asset classes, with allocations changing over the investment horizon to become more heavily oriented toward debt and debt-like securities, on the premise that individuals investing for retirement desire to reduce investment risk in their retirement accounts as their retirement date approaches.

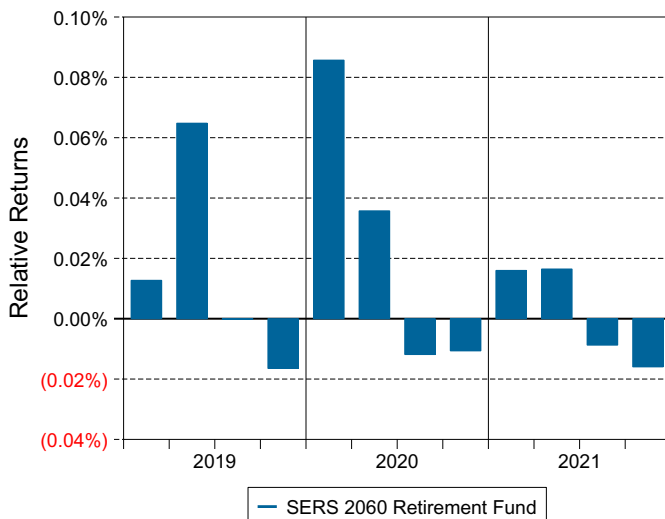
### Quarterly Summary and Highlights

- SERS 2060 Retirement Fund's portfolio posted a 6.38% return for the quarter placing it in the 26 percentile of the Callan Target Date 2060 group for the quarter and in the 16 percentile for the last year.
- SERS 2060 Retirement Fund's portfolio underperformed the LifePath Index 2060 CB by 0.02% for the quarter and outperformed the LifePath Index 2060 CB for the year by 0.01%.

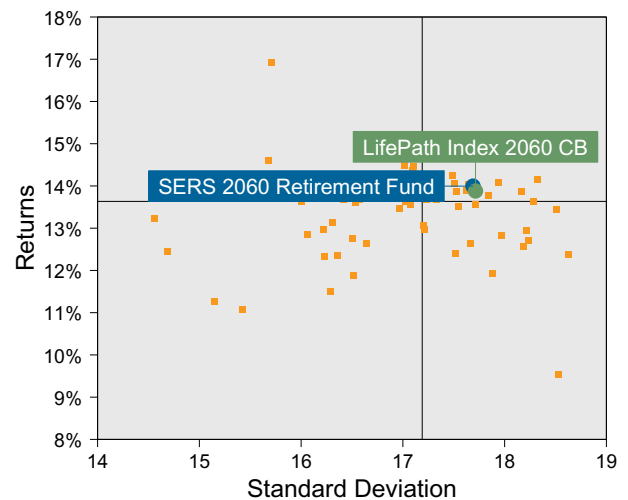
### Performance vs Callan Target Date 2060 (Net)



### Relative Return vs LifePath Index 2060 CB



### Callan Target Date 2060 (Net) Annualized Five Year Risk vs Return



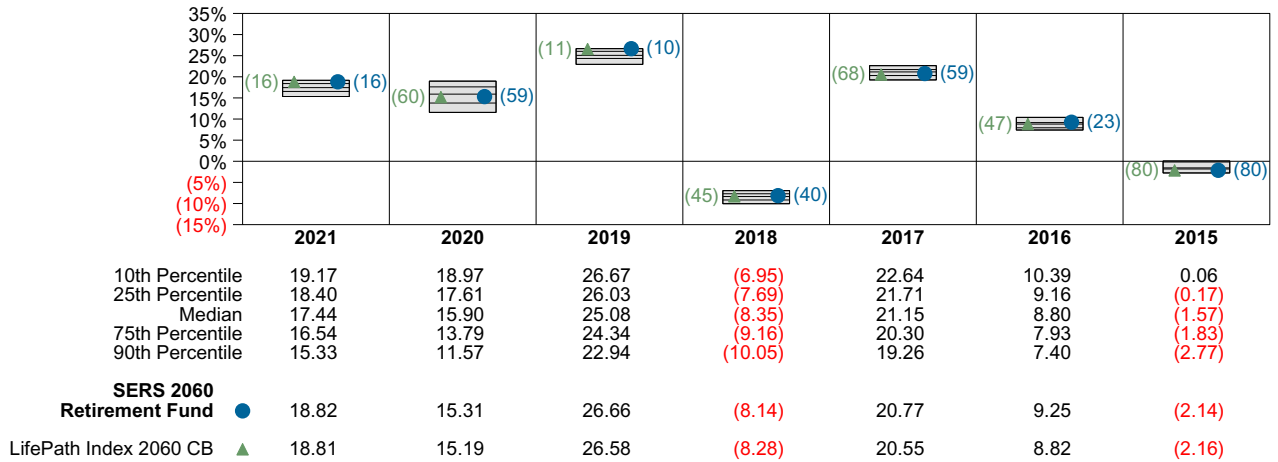


# SERS 2060 Retirement Fund Return Analysis Summary

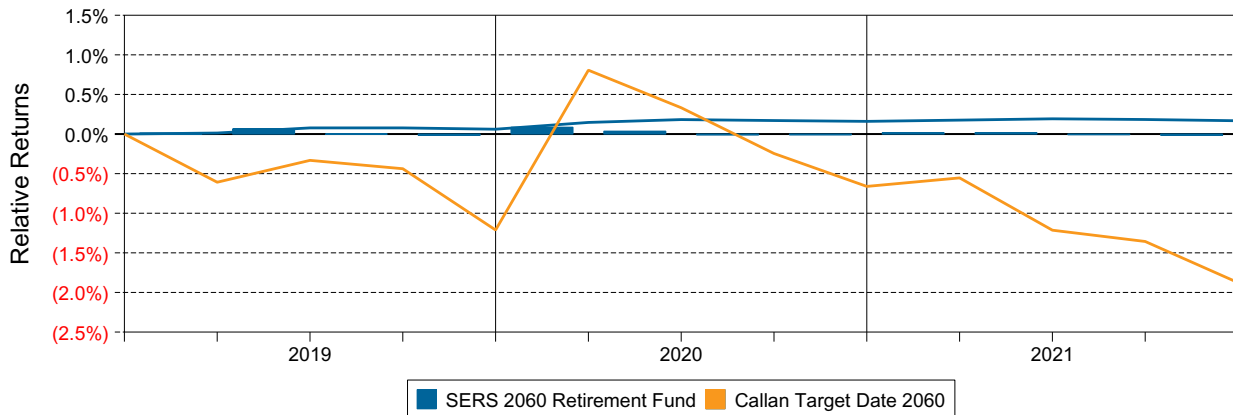
## Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

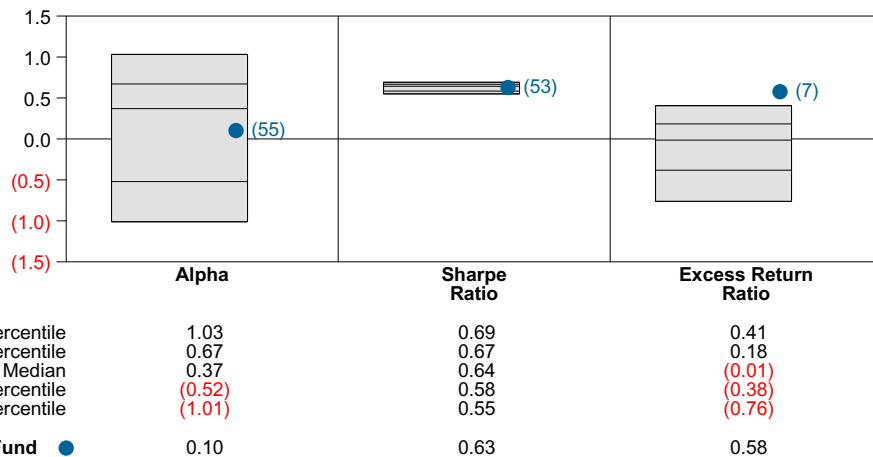
### Performance vs Callan Target Date 2060 (Net)



### Cumulative and Quarterly Relative Return vs LifePath Index 2060 CB



### Risk Adjusted Return Measures vs LifePath Index 2060 CB Rankings Against Callan Target Date 2060 (Net) Six and Three-Quarter Years Ended December 31, 2021



# SERS 2065 Retirement Fund

## Period Ended December 31, 2021

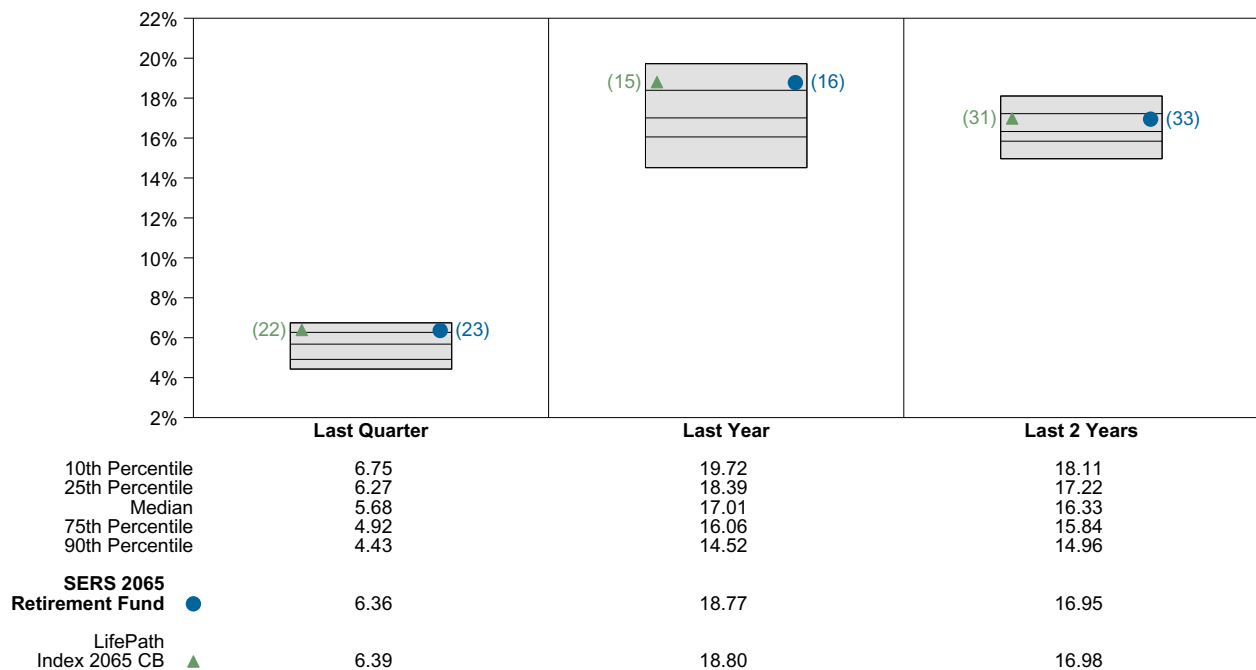
### Investment Philosophy

The BlackRock LifePath(R) Index 2065 Fund (the "Fund") seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. The Fund will be diversified across global asset classes, with allocations changing over the investment horizon to become more heavily oriented toward debt and debt-like securities, on the premise that individuals investing for retirement desire to reduce investment risk in their retirement accounts as their retirement date approaches.

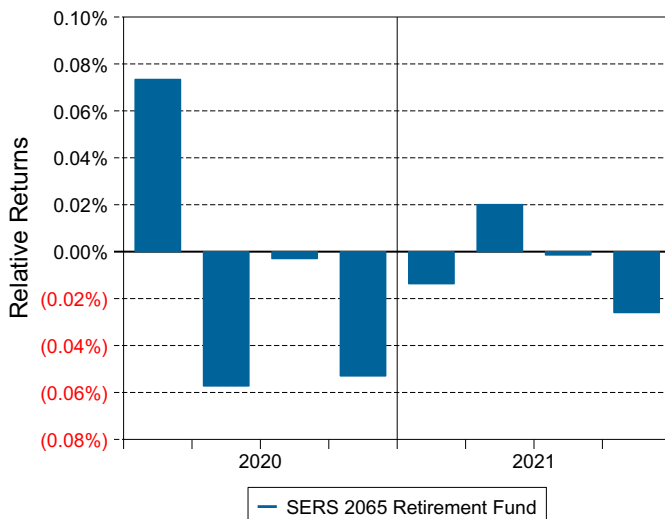
### Quarterly Summary and Highlights

- SERS 2065 Retirement Fund's portfolio posted a 6.36% return for the quarter placing it in the 23 percentile of the Callan Target Date 2065 group for the quarter and in the 16 percentile for the last year.
- SERS 2065 Retirement Fund's portfolio underperformed the LifePath Index 2065 CB by 0.03% for the quarter and underperformed the LifePath Index 2065 CB for the year by 0.02%.

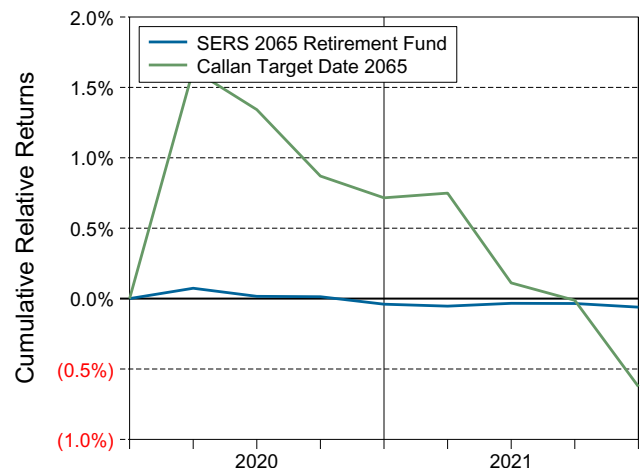
### Performance vs Callan Target Date 2065 (Net)



### Relative Return vs LifePath Index 2065 CB



### Cumulative Returns vs LifePath Index 2065 CB





# SERS U.S. Large Company Index Period Ended December 31, 2021

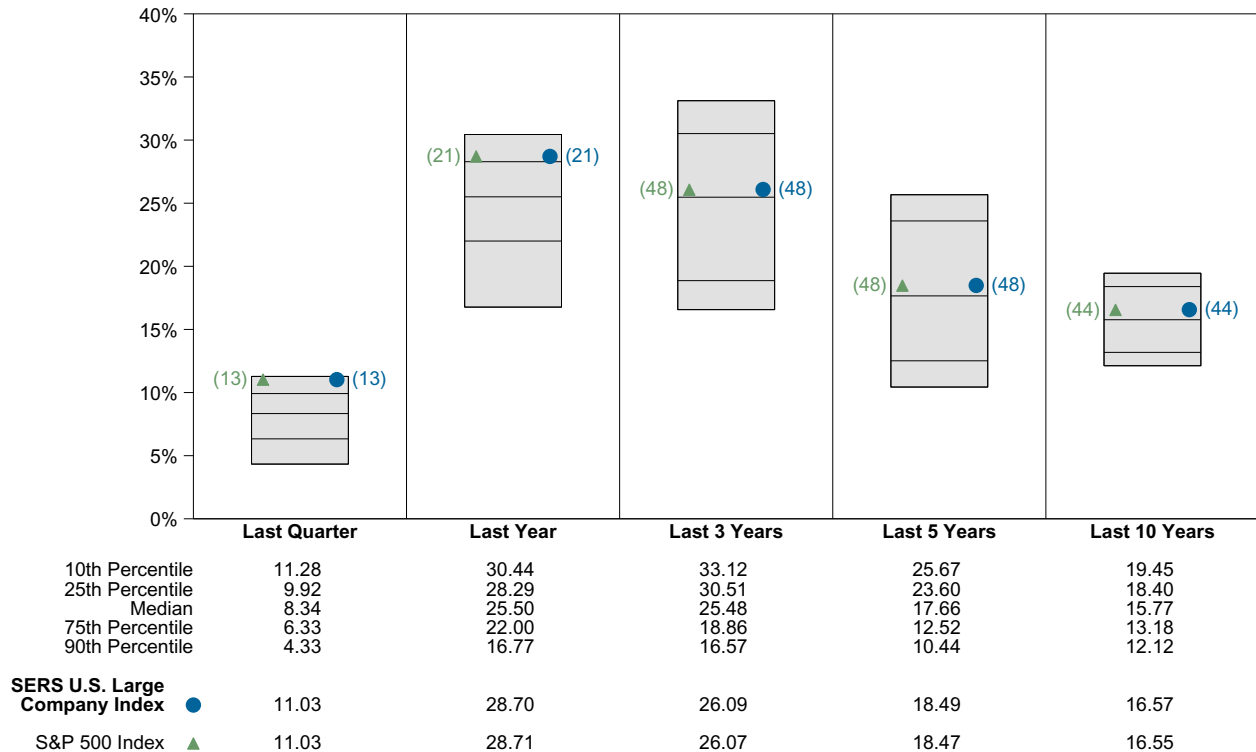
## Investment Philosophy

The strategy seeks to replicate the performance and characteristics of the S&P 500 Index with minimal tracking error. Mellon Capital uses full replication to construct the portfolio, holding each security in the index in its proportionate weight. This fund is managed by Mellon Capital Management.

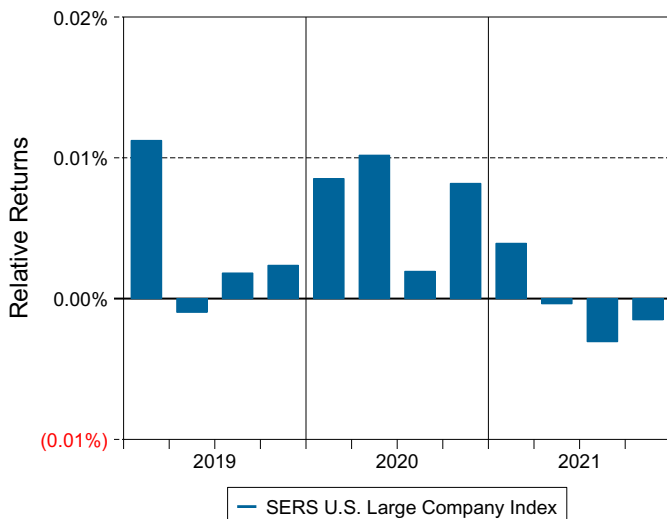
## Quarterly Summary and Highlights

- SERS U.S. Large Company Index's portfolio posted a 11.03% return for the quarter placing it in the 13 percentile of the Callan Large Cap Broad Equity Mut Funds group for the quarter and in the 21 percentile for the last year.
- SERS U.S. Large Company Index's portfolio underperformed the S&P 500 Index by 0.00% for the quarter and underperformed the S&P 500 Index for the year by 0.00%.

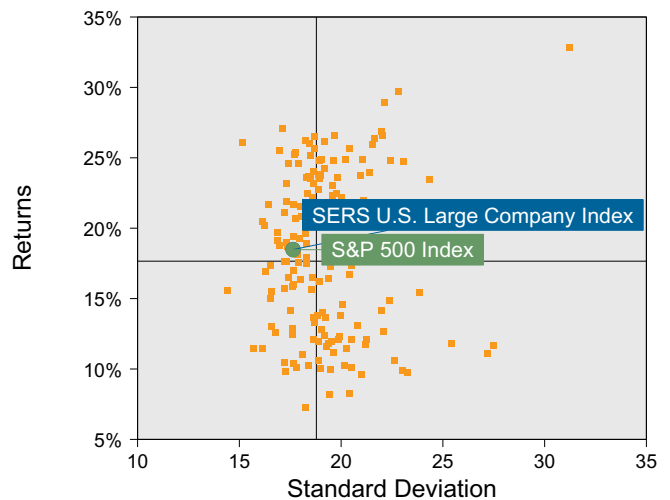
## Performance vs Callan Large Cap Broad Equity Mut Funds (Institutional Net)



## Relative Return vs S&P 500 Index



## Callan Large Cap Broad Equity Mut Funds (Institutional Net) Annualized Five Year Risk vs Return

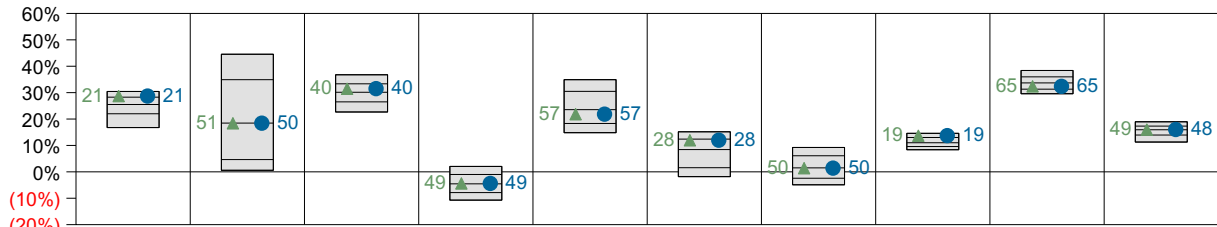


# SERS U.S. Large Company Index Return Analysis Summary

## Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

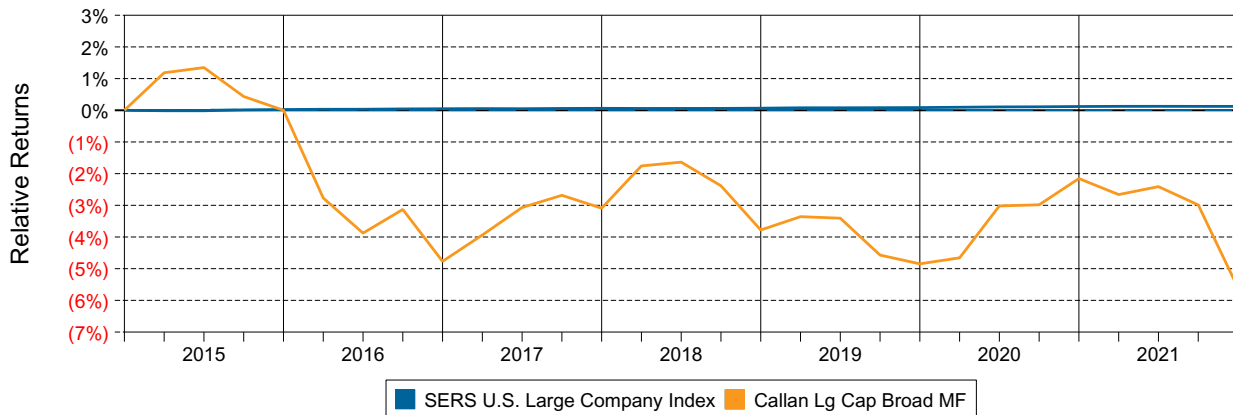
### Performance vs Callan Large Cap Broad Equity Mut Funds (Institutional Net)



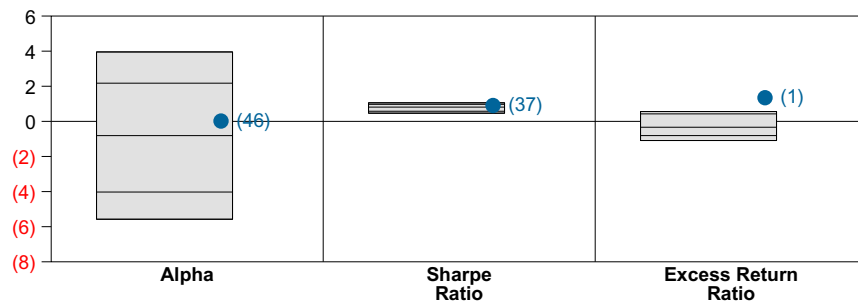
	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
10th Percentile	30.44	44.54	36.76	2.05	34.91	15.17	9.23	14.58	38.40	18.96
25th Percentile	28.29	34.90	33.34	(1.00)	30.48	12.39	6.09	13.01	35.98	17.33
Median	25.50	18.47	30.14	(4.54)	23.56	8.43	1.50	11.02	33.69	15.94
75th Percentile	22.00	4.64	26.51	(7.86)	18.33	1.56	(2.42)	9.59	31.31	13.94
90th Percentile	16.77	0.58	22.66	(10.72)	14.82	(1.82)	(4.91)	8.38	29.58	11.29

	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
SERS U.S. Large Company Index	28.71	18.44	31.51	(4.38)	21.85	11.99	1.41	13.72	32.39	16.04
S&P 500 Index	28.71	18.40	31.49	(4.38)	21.83	11.96	1.38	13.69	32.39	16.00

### Cumulative and Quarterly Relative Return vs S&P 500 Index



### Risk Adjusted Return Measures vs S&P 500 Index Rankings Against Callan Large Cap Broad Equity Mut Funds (Institutional Net) Seven Years Ended December 31, 2021



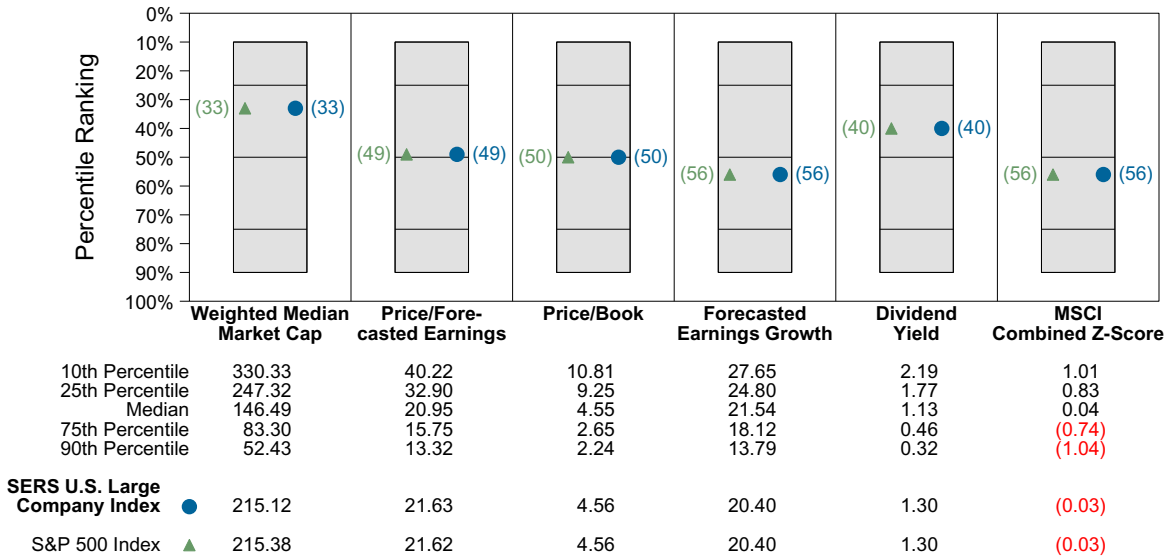
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	3.95	1.06	0.56
25th Percentile	2.17	0.97	0.43
Median	(0.81)	0.81	(0.33)
75th Percentile	(4.03)	0.58	(0.81)
90th Percentile	(5.58)	0.47	(1.09)
SERS U.S. Large Company Index	0.02	0.90	1.35

# SERS U.S. Large Company Index Equity Characteristics Analysis Summary

## Portfolio Characteristics

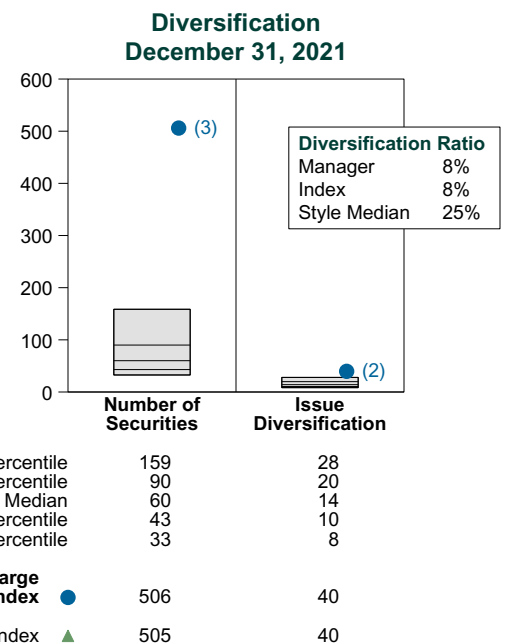
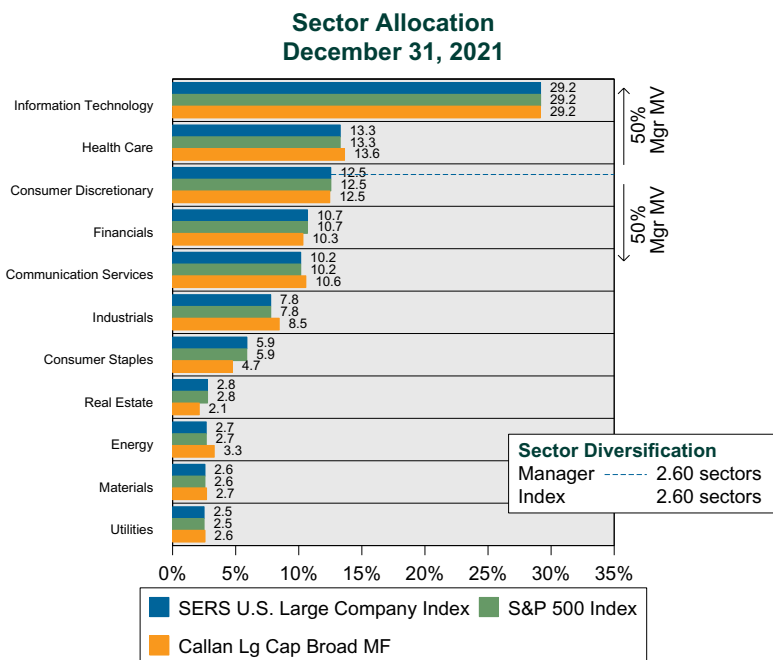
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

## Portfolio Characteristics Percentile Rankings Rankings Against Callan Large Cap Broad Equity Mut Funds as of December 31, 2021



## Sector Weights

The graph below contrasts the manager's sector weights with those of the benchmark and median sector weights across the members of the peer group. The magnitude of sector weight differences from the index and the manager's sector diversification are also shown. Diversification by number and concentration of holdings are also compared to the benchmark and peer group. Issue Diversification represents by count, and Diversification Ratio by percent, the number of holdings that account for half of the portfolio's market value.



## SERS U.S. Large Company Index Top 10 Portfolio Holdings Characteristics as of December 31, 2021

### 10 Largest Holdings

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Apple Inc	Information Technology	\$203,451	6.9%	25.67%	2913.28	30.34	0.50%	15.15%
Microsoft Corp	Information Technology	\$185,620	6.3%	19.51%	2525.08	34.07	0.74%	16.03%
Amazon.Com	Consumer Discretionary	\$106,879	3.6%	1.50%	1691.00	64.64	0.00%	37.40%
Alphabet Inc Cl A	Communication Services	\$64,039	2.2%	8.36%	871.46	25.77	0.00%	14.93%
Tesla Mtrs Inc	Consumer Discretionary	\$63,213	2.1%	36.27%	1061.29	125.11	0.00%	73.06%
Alphabet Inc Cl C	Communication Services	\$59,494	2.0%	8.56%	919.40	25.77	0.00%	32.74%
Facebook Inc Cl A	Communication Services	\$58,525	2.0%	(0.90)%	795.90	23.63	0.00%	21.35%
Nvidia Corp	Information Technology	\$54,009	1.8%	41.99%	735.28	57.26	0.05%	39.37%
Berkshire Hathaway Inc Del Cl B New	Financials	\$40,266	1.4%	9.55%	389.74	23.43	0.00%	39.31%
Unitedhealth Group	Health Care	\$34,777	1.2%	28.92%	472.94	23.19	1.16%	14.07%

### 10 Best Performers

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Arista Networks Inc	Information Technology	\$2,365	0.1%	67.33%	44.17	41.50	0.00%	18.39%
Teradyne Inc	Information Technology	\$1,930	0.1%	49.89%	26.66	25.34	0.24%	17.81%
Ford Motor Co	Consumer Discretionary	\$5,990	0.2%	47.43%	81.53	10.43	1.93%	77.67%
Dollar Tree Inc	Consumer Discretionary	\$2,327	0.1%	46.80%	31.61	19.22	0.00%	14.79%
Qualcomm Inc	Information Technology	\$15,061	0.5%	42.33%	204.81	16.72	1.49%	25.62%
Nvidia Corp	Information Technology	\$54,009	1.8%	41.99%	735.28	57.26	0.05%	39.37%
Smith A O	Industrials	\$838	0.0%	41.13%	11.43	24.76	1.30%	14.91%
Xilinx	Information Technology	\$3,862	0.1%	40.69%	52.56	53.66	0.70%	18.83%
Advanced Micro Devices Inc	Information Technology	\$12,788	0.4%	39.84%	173.78	43.14	0.00%	39.76%
Hp Inc	Information Technology	\$3,228	0.1%	38.61%	43.42	8.95	2.65%	21.30%

### 10 Worst Performers

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Moderna Inc	Health Care	\$6,595	0.2%	(34.01)%	102.98	9.55	0.00%	-
Penn Natl Gaming Inc	Consumer Discretionary	\$629	0.0%	(28.44)%	8.79	22.05	0.00%	36.33%
Twitter Inc	Communication Services	\$2,542	0.1%	(28.43)%	34.56	45.07	0.00%	51.68%
Paypal Holdings Inc	Information Technology	\$16,293	0.5%	(27.53)%	221.57	35.67	0.00%	18.40%
Dish Network Corp Cl A	Communication Services	\$598	0.0%	(25.36)%	9.42	11.72	0.00%	(25.56)%
Viacomcbs Inc Cl B	Communication Services	\$1,359	0.0%	(23.00)%	18.31	7.87	3.18%	(6.27)%
Norwegian Cruise Line Hldgs Shs	Consumer Discretionary	\$557	0.0%	(22.36)%	8.65	(1152.22)	0.00%	21.74%
Gap	Consumer Discretionary	\$285	0.0%	(21.85)%	6.59	9.15	2.72%	(5.20)%
Carnival Corp	Consumer Discretionary	\$1,183	0.0%	(19.55)%	19.74	(60.42)	0.00%	18.61%
Medtronic Plc Shs	Health Care	\$10,308	0.3%	(19.35)%	139.13	17.21	2.44%	11.46%

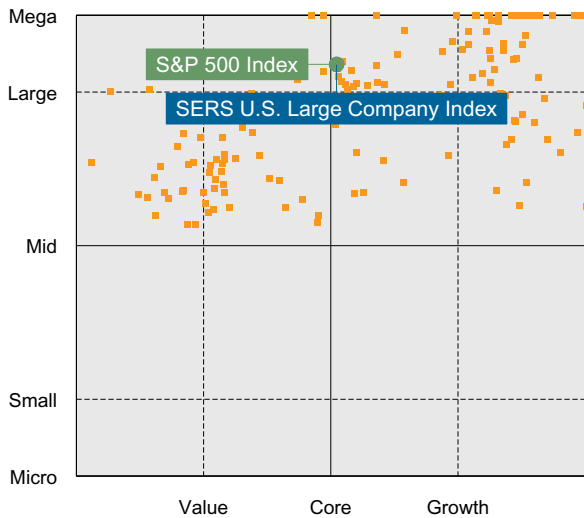
# Historical Holdings Based Style Analysis

## SERS U.S. Large Company Index

### For Three Years Ended December 31, 2021

This page analyzes the historical investment style of a portfolio utilizing a detailed holdings-based style analysis to determine average actual exposures to various market capitalization and style segments of the domestic equity market. The market is segmented quarterly by capitalization and style. The capitalization segments are dictated by capitalization decile breakpoints. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the average historical market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the average historical portfolio and index weights and stock counts (in parentheses) in each capitalization/style segment of the market. The next two style exposure charts illustrate the actual quarterly cap/style and style only segment exposures of the portfolio through history.

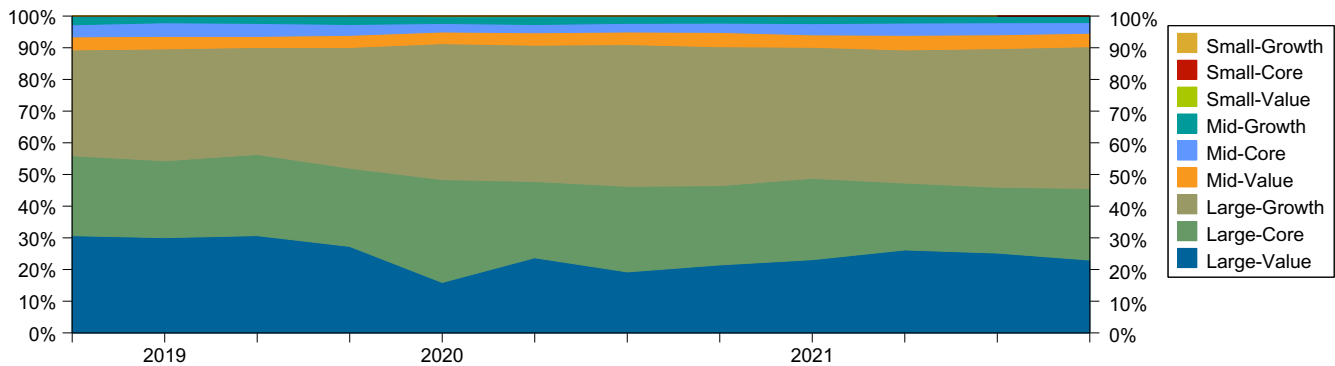
**Average Style Map vs Callan Lg Cap Broad MF Holdings for Three Years Ended December 31, 2021**



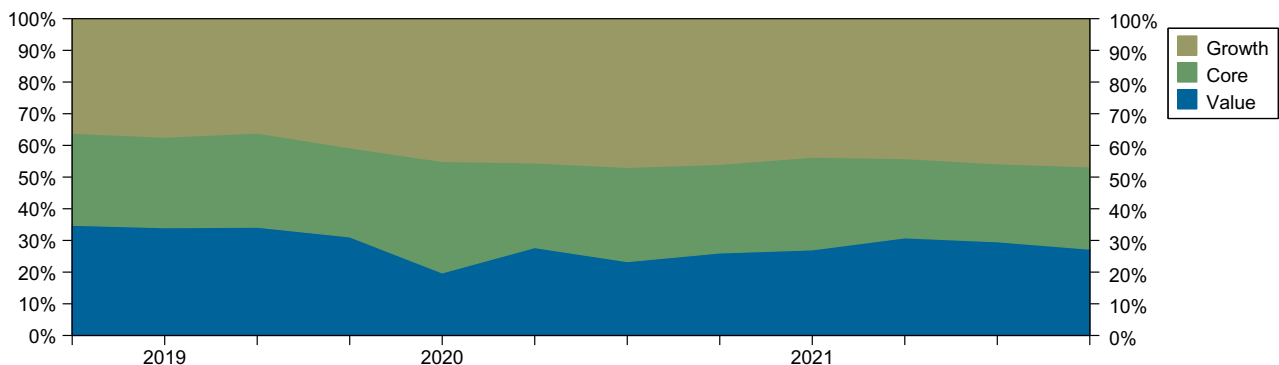
**Average Style Exposure Matrix Holdings for Three Years Ended December 31, 2021**

Large	24.7% (96)	24.9% (96)	40.6% (85)	<b>90.2% (277)</b>
Mid	4.1% (100)	3.4% (76)	2.3% (45)	<b>9.7% (221)</b>
Small	0.0% (4)	0.0% (2)	0.0% (1)	<b>0.1% (7)</b>
Micro	0.0% (0)	0.0% (0)	0.0% (0)	<b>0.0% (0)</b>
<b>Total</b>	<b>28.8% (200)</b>	<b>28.3% (174)</b>	<b>42.9% (131)</b>	<b>100.0% (505)</b>
	Value	Core	Growth	Total

### SERS U.S. Large Company Index Historical Cap/Style Exposures



### SERS U.S. Large Company Index Historical Style Only Exposures





# SERS U.S. All Company Index Fund

## Period Ended December 31, 2021

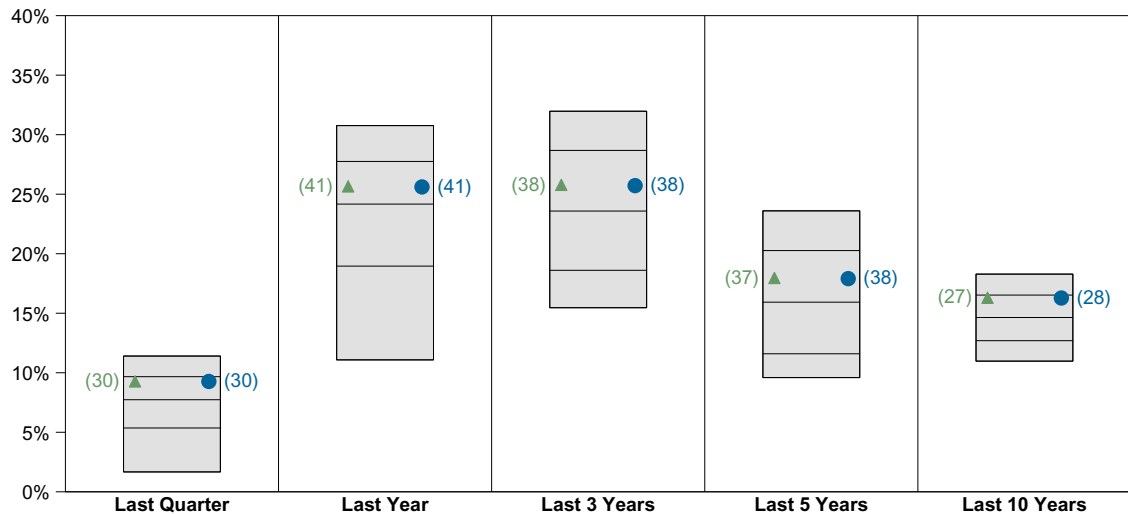
### Investment Philosophy

The U.S. All Company Stock Index Fund's Investment objective is to track the performance of the Russell 3000 index. In meeting this objective, the Fund may invest in securities and a combination of other collective funds that together are designed to track the performance of the Index. The Fund will principally invest in other affiliated bank collective funds and equity securities, including common stock of U.S. companies. This fund is managed by Mellon Capital Management.

### Quarterly Summary and Highlights

- SERS U.S. All Company Index Fund's portfolio posted a 9.27% return for the quarter placing it in the 30 percentile of the Callan Multi Cap Broad Mutual Funds group for the quarter and in the 41 percentile for the last year.
- SERS U.S. All Company Index Fund's portfolio underperformed the Russell 3000 Index by 0.01% for the quarter and underperformed the Russell 3000 Index for the year by 0.05%.

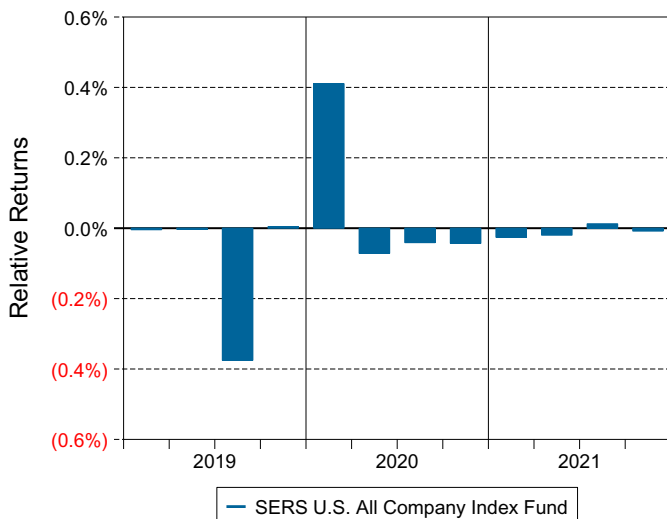
### Performance vs Callan Multi Cap Broad Mutual Funds (Institutional Net)



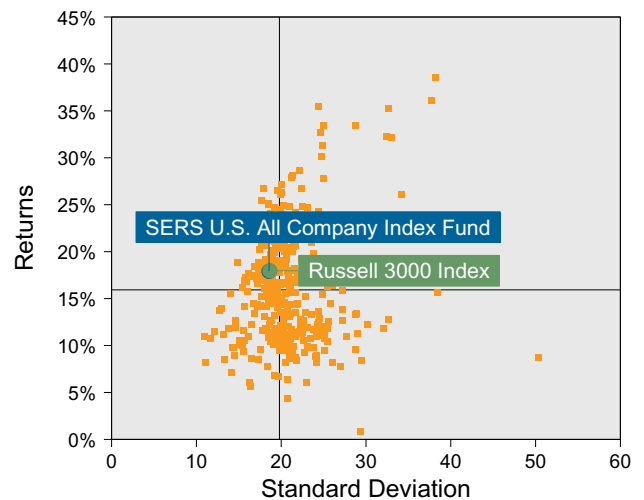
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	11.40	30.76	31.97	23.60	18.29
25th Percentile	9.67	27.75	28.68	20.27	16.53
Median	7.74	24.17	23.58	15.93	14.64
75th Percentile	5.36	18.96	18.61	11.59	12.69
90th Percentile	1.67	11.08	15.46	9.59	10.98

		Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>SERS U.S. All Company Index Fund</b>	●	9.27	25.61	25.72	17.91	16.28
Russell 3000 Index	▲	9.28	25.66	25.79	17.97	16.30

### Relative Return vs Russell 3000 Index



### Callan Multi Cap Broad Mutual Funds (Institutional Net) Annualized Five Year Risk vs Return

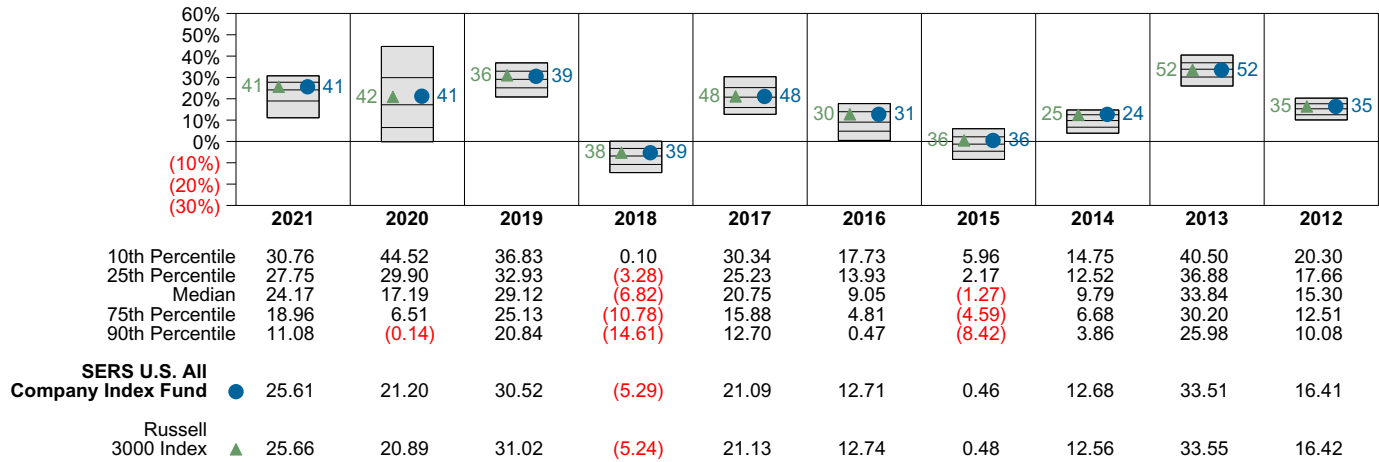


# SERS U.S. All Company Index Fund Return Analysis Summary

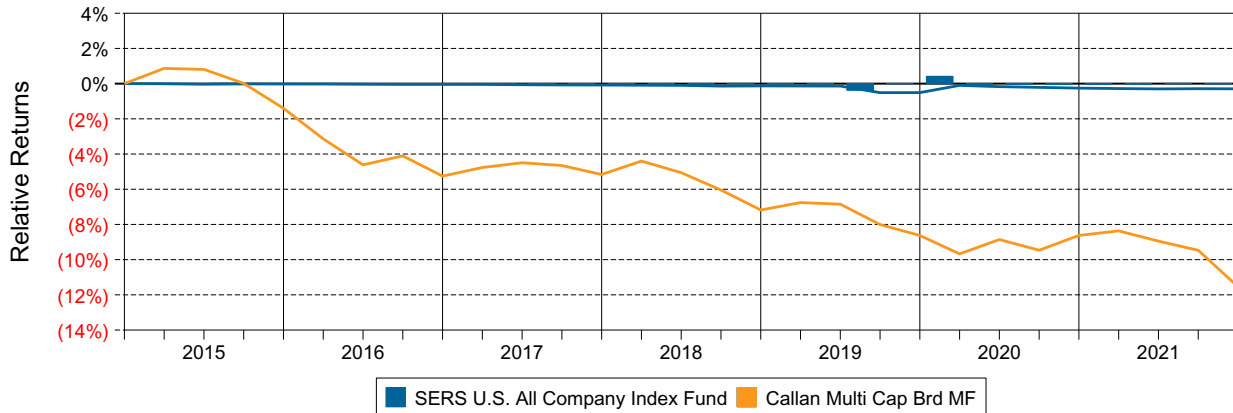
## Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

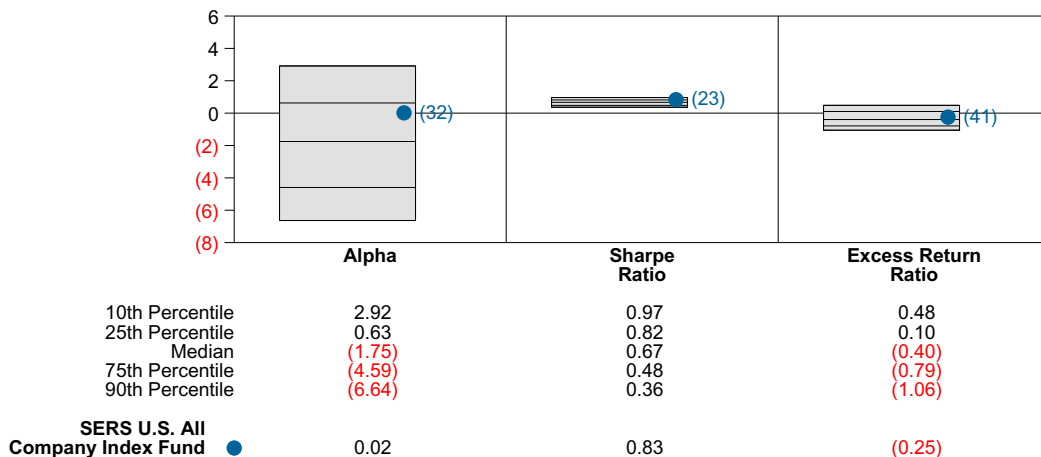
### Performance vs Callan Multi Cap Broad Mutual Funds (Institutional Net)



### Cumulative and Quarterly Relative Return vs Russell 3000 Index



### Risk Adjusted Return Measures vs Russell 3000 Index Rankings Against Callan Multi Cap Broad Mutual Funds (Institutional Net) Seven Years Ended December 31, 2021

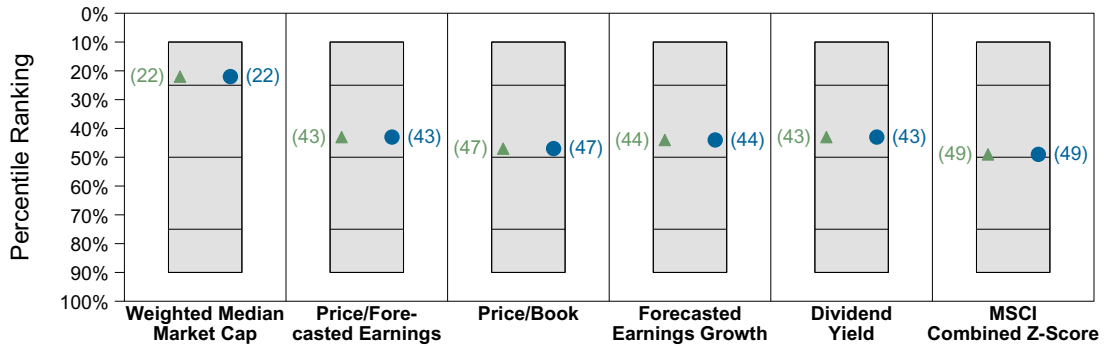


# SERS U.S. All Company Index Fund Equity Characteristics Analysis Summary

## Portfolio Characteristics

This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

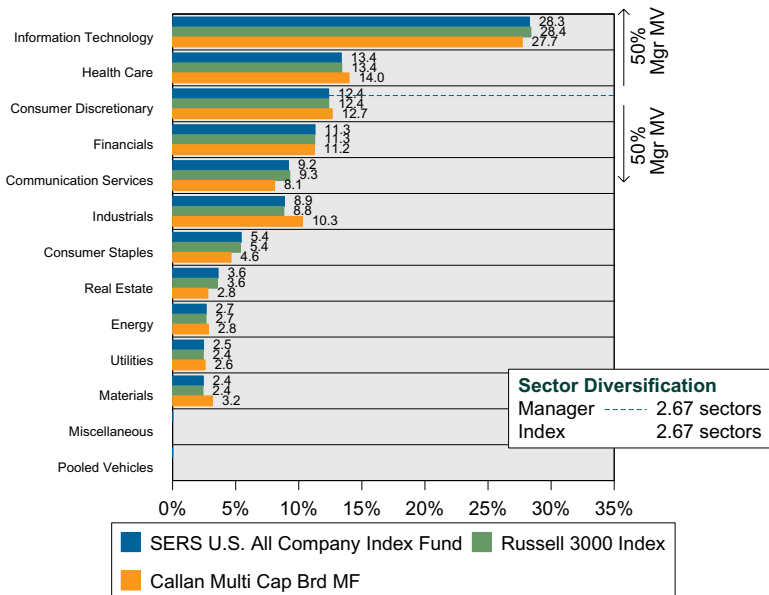
## Portfolio Characteristics Percentile Rankings Rankings Against Callan Multi Cap Broad Mutual Funds as of December 31, 2021



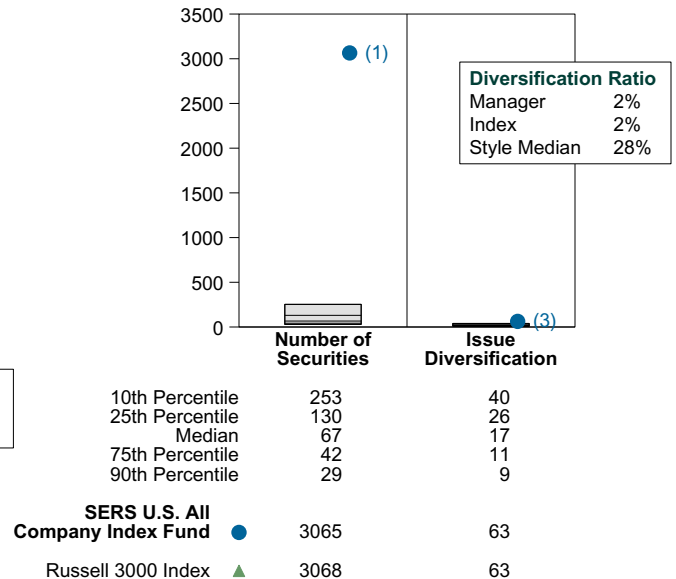
## Sector Weights

The graph below contrasts the manager's sector weights with those of the benchmark and median sector weights across the members of the peer group. The magnitude of sector weight differences from the index and the manager's sector diversification are also shown. Diversification by number and concentration of holdings are also compared to the benchmark and peer group. Issue Diversification represents by count, and Diversification Ratio by percent, the number of holdings that account for half of the portfolio's market value.

### Sector Allocation December 31, 2021



### Diversification December 31, 2021



## SERS U.S. All Company Index Fund Top 10 Portfolio Holdings Characteristics as of December 31, 2021

### 10 Largest Holdings

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Apple Inc	Information Technology	\$66,827	5.7%	25.67%	2913.28	30.34	0.50%	15.15%
Microsoft Corp	Information Technology	\$61,798	5.3%	19.51%	2525.08	34.07	0.74%	16.03%
Amazon.Com	Consumer Discretionary	\$35,285	3.0%	1.50%	1691.00	64.64	0.00%	37.40%
Alphabet Inc Cl A	Communication Services	\$21,235	1.8%	8.36%	871.46	25.77	0.00%	14.93%
Tesla Mtrs Inc	Consumer Discretionary	\$20,831	1.8%	36.27%	1061.29	125.11	0.00%	73.06%
Alphabet Inc Cl C	Communication Services	\$19,799	1.7%	8.56%	919.40	25.77	0.00%	32.74%
Facebook Inc Cl A	Communication Services	\$19,374	1.7%	(0.90)%	795.90	23.63	0.00%	21.35%
Nvidia Corp	Information Technology	\$17,144	1.5%	41.99%	735.28	57.26	0.05%	39.37%
Berkshire Hathaway Inc Del Cl B New	Financials	\$13,376	1.1%	9.55%	389.74	23.43	0.00%	39.31%
Unitedhealth Group	Health Care	\$11,518	1.0%	28.92%	472.94	23.19	1.16%	14.07%

### 10 Best Performers

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Yellow Corp	Industrials	\$15	0.0%	187.01%	0.65	26.51	0.00%	28.13%
Adicet Bio Inc	Health Care	\$9	0.0%	122.80%	0.67	(7.74)	0.00%	-
Donnelley R R & Sons Co	Industrials	\$19	0.0%	119.07%	0.82	8.34	0.00%	(26.92)%
Chemocentryx Inc	Health Care	\$47	0.0%	112.93%	2.55	(19.31)	0.00%	-
Irhythm Technologies Inc	Health Care	\$84	0.0%	100.97%	3.46	(36.76)	0.00%	-
Bluelinx Hldgs Inc	Industrials	\$22	0.0%	95.91%	0.93	8.14	0.00%	(48.31)%
Kezar Life Sciences Inc	Health Care	\$14	0.0%	93.49%	0.82	(11.90)	0.00%	-
Alpha & Omega Semiconductor Shs	Information Technology	\$31	0.0%	93.05%	1.60	14.49	0.00%	33.04%
Protagonist Therapeutics Inc	Health Care	\$37	0.0%	93.01%	1.63	(10.92)	0.00%	-
Clearfield Inc	Information Technology	\$24	0.0%	91.21%	1.16	45.31	0.00%	1.10%

### 10 Worst Performers

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Allakos Inc	Health Care	\$8	0.0%	(90.75)%	0.53	(2.35)	0.00%	-
Cortexyme	Health Care	\$6	0.0%	(86.23)%	0.38	(4.84)	0.00%	-
Rafael Hldgs Inc Com Cl B	Real Estate	\$1	0.0%	(83.40)%	0.10	(3.43)	0.00%	-
Adagio Therapeutics Inc Common Stock	Health Care	\$4	0.0%	(82.81)%	0.81	(2.15)	0.00%	-
Mink Therapeutics	Health Care	\$0	0.0%	(75.07)%	0.15	(2.75)	0.00%	-
Atea Pharmaceuticals Inc	Health Care	\$15	0.0%	(74.51)%	0.74	(5.15)	0.00%	-
Eros Intl Plc Shs New	Communication Services	\$2	0.0%	(74.40)%	0.09	2.40	0.00%	(11.32)%
Reata Pharmaceuticals Inc Cl A	Health Care	\$18	0.0%	(73.79)%	0.83	(3.06)	0.00%	-
Generation Bio Co	Health Care	\$7	0.0%	(71.76)%	0.40	(3.03)	0.00%	-
Deciphera Pharmaceuticals In	Health Care	\$10	0.0%	(71.24)%	0.57	(3.50)	0.00%	-

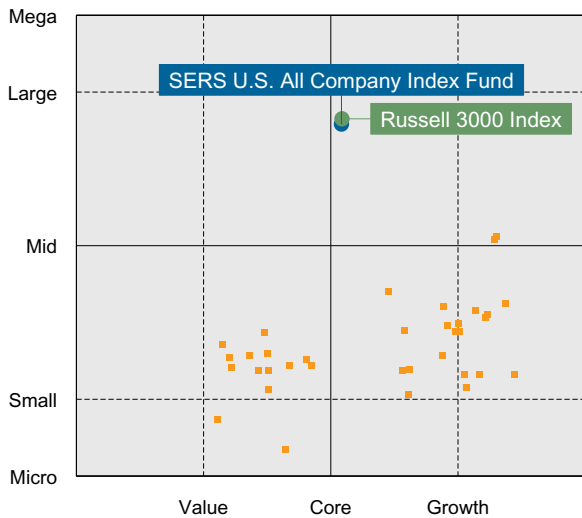
# Historical Holdings Based Style Analysis

## SERS U.S. All Company Index Fund

### For Three and 1/4 Years Ended December 31, 2021

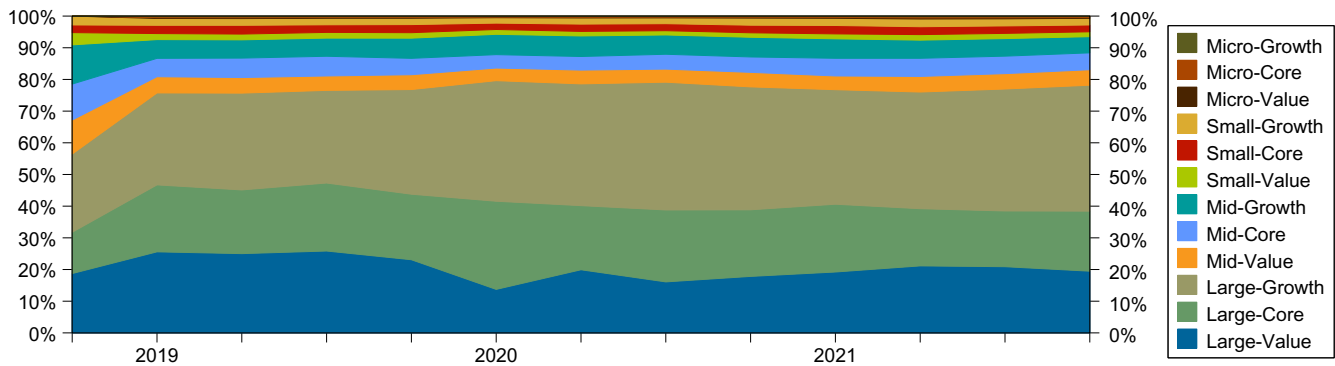
This page analyzes the historical investment style of a portfolio utilizing a detailed holdings-based style analysis to determine average actual exposures to various market capitalization and style segments of the domestic equity market. The market is segmented quarterly by capitalization and style. The capitalization segments are dictated by capitalization decile breakpoints. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the average historical market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the average historical portfolio and index weights and stock counts (in parentheses) in each capitalization/style segment of the market. The next two style exposure charts illustrate the actual quarterly cap/style and style only segment exposures of the portfolio through history.

**Average Style Map vs Callan SMID Broad MFs** Holdings for Three and 1/4 Years Ended December 31, 2021 **Average Style Exposure Matrix** Holdings for Three and 1/4 Years Ended December 31, 2021

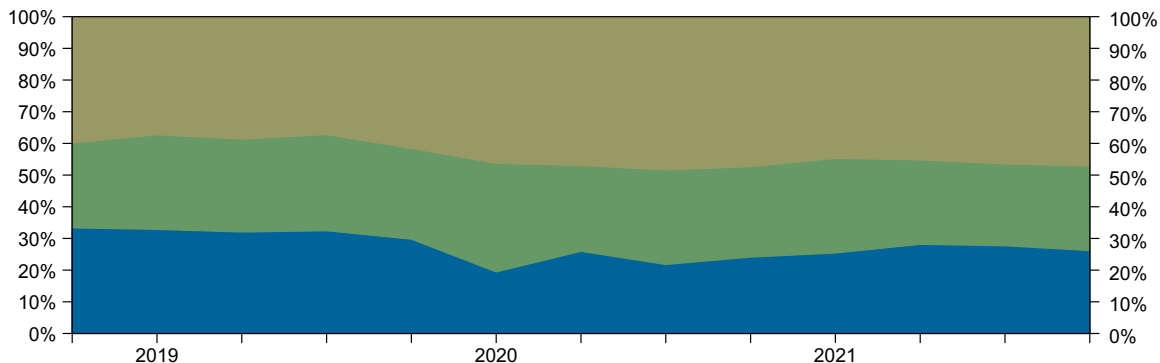


	Value	Core	Growth	Total
Large	20.5% (93)	20.3% (94)	34.9% (98)	75.7% (285)
	20.9% (98)	21.1% (98)	35.3% (103)	77.3% (299)
Mid	5.1% (163)	5.8% (202)	6.5% (225)	17.3% (590)
	4.6% (165)	5.3% (205)	6.0% (228)	15.9% (598)
Small	1.8% (294)	2.4% (470)	2.1% (369)	6.3% (1133)
	1.6% (309)	2.4% (497)	2.1% (392)	6.2% (1198)
Micro	0.2% (305)	0.3% (362)	0.1% (159)	0.7% (826)
	0.3% (328)	0.3% (396)	0.2% (175)	0.7% (899)
Total	27.6% (855)	28.8% (1128)	43.6% (851)	100.0% (2834)
	27.4% (900)	29.1% (1196)	43.5% (898)	100.0% (2994)

### SERS U.S. All Company Index Fund Historical Cap/Style Exposures



### SERS U.S. All Company Index Fund Historical Style Only Exposures



# SERS U.S. SMID Company Index Period Ended December 31, 2021

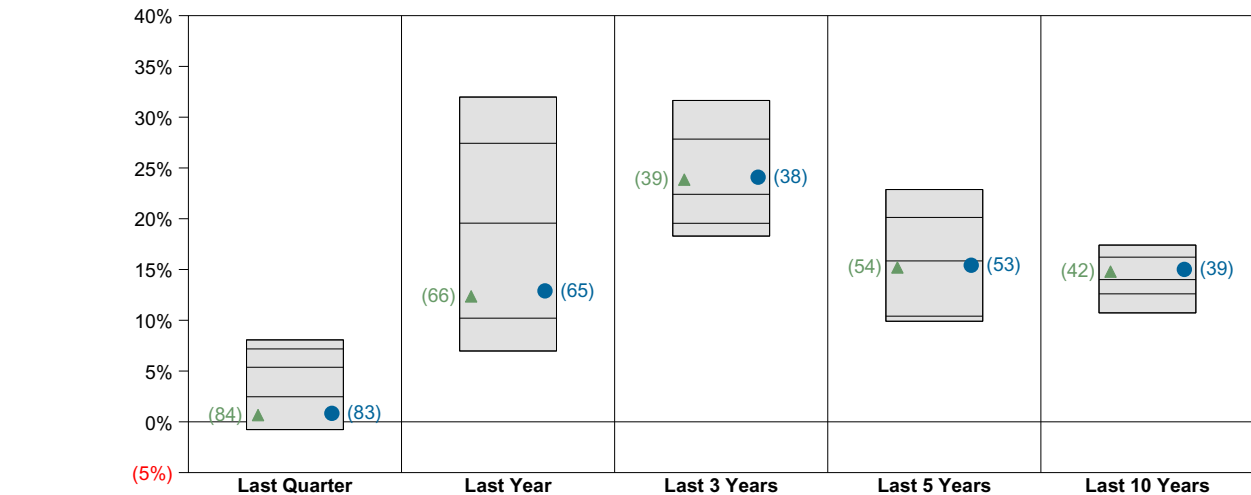
## Investment Philosophy

The objective of the U.S. Small/Mid Company Stock Index Fund is to track the performance of the Dow Jones U.S. Completion Total Stock Market Index. In meeting this objective, the Fund may invest in securities, exchange-traded/mutual funds and a combination of other collective funds that together are designed to track the performance of the Dow Jones U.S. Completion Total Stock Market Index. This fund is managed by Mellon Capital Management.

## Quarterly Summary and Highlights

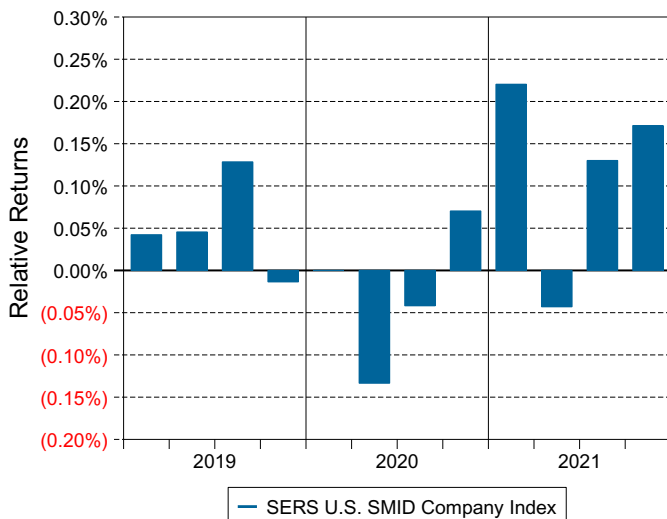
- SERS U.S. SMID Company Index's portfolio posted a 0.84% return for the quarter placing it in the 83 percentile of the Callan Small/MidCap Broad Mutual Funds group for the quarter and in the 65 percentile for the last year.
- SERS U.S. SMID Company Index's portfolio outperformed the Dow Jones US Completion by 0.17% for the quarter and outperformed the Dow Jones US Completion for the year by 0.54%.

## Performance vs Callan Small/MidCap Broad Mutual Funds (Institutional Net)

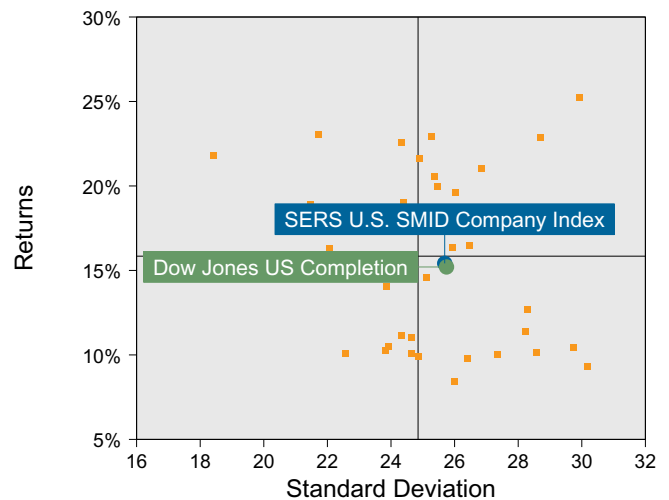


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	8.07	31.98	31.65	22.87	17.40
25th Percentile	7.18	27.43	27.84	20.13	16.22
Median	5.37	19.56	22.40	15.84	14.00
75th Percentile	2.47	10.21	19.55	10.40	12.60
90th Percentile	(0.77)	6.97	18.29	9.90	10.73
<b>SERS U.S. SMID Company Index</b> ●	0.84	12.89	24.09	15.42	15.01
Dow Jones US Completion ▲	0.66	12.36	23.85	15.21	14.79

## Relative Return vs Dow Jones US Completion



## Callan Small/MidCap Broad Mutual Funds (Institutional Net) Annualized Five Year Risk vs Return

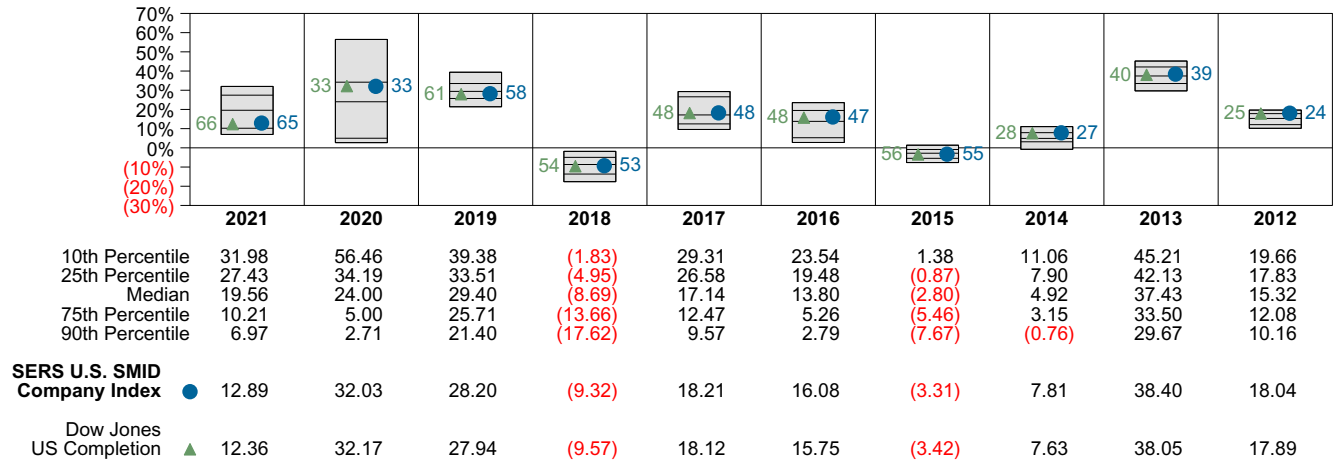


# SERS U.S. SMID Company Index Return Analysis Summary

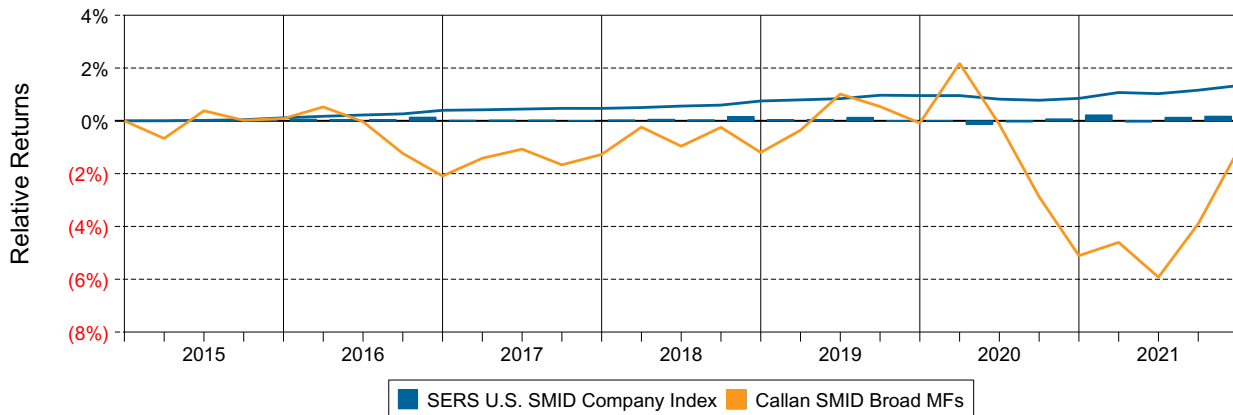
## Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

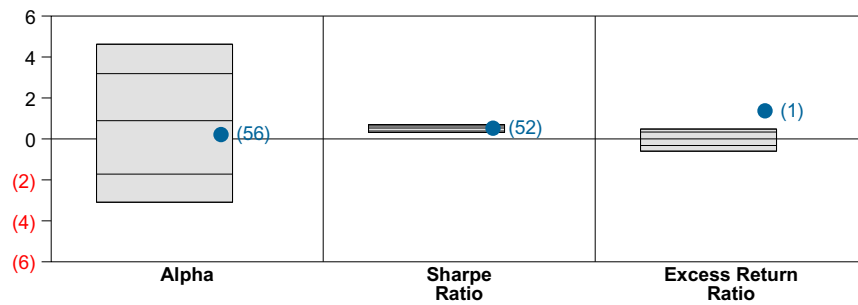
### Performance vs Callan Small/MidCap Broad Mutual Funds (Institutional Net)



### Cumulative and Quarterly Relative Return vs Dow Jones US Completion



### Risk Adjusted Return Measures vs Dow Jones US Completion Rankings Against Callan Small/MidCap Broad Mutual Funds (Institutional Net) Seven Years Ended December 31, 2021



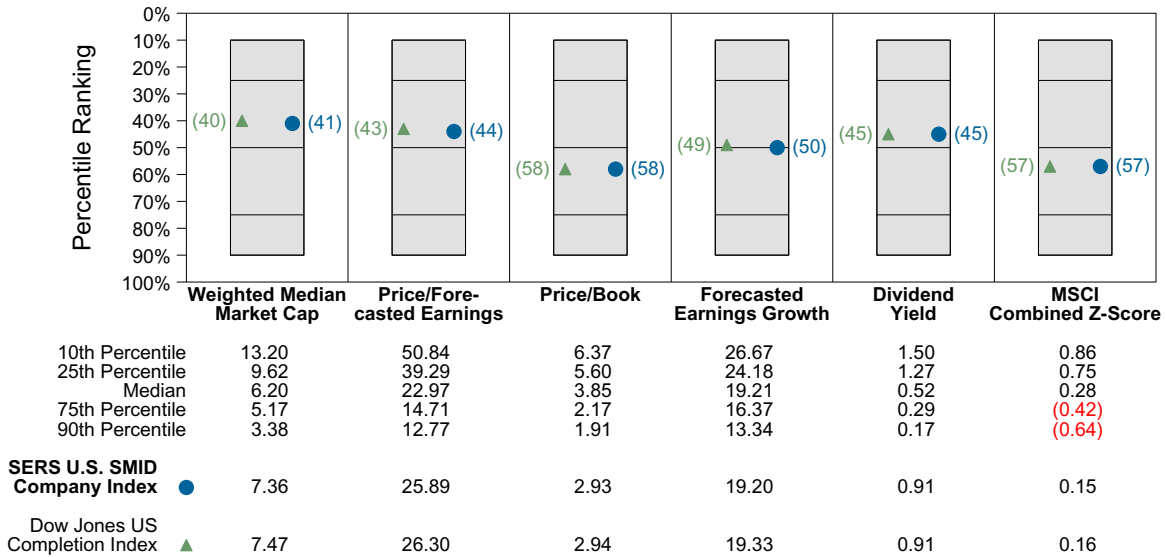
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	4.62	0.70	0.48
25th Percentile	3.19	0.63	0.34
Median	0.89	0.53	0.00
75th Percentile	(1.72)	0.38	(0.32)
90th Percentile	(3.09)	0.31	(0.60)
<b>SERS U.S. SMID Company Index</b>	● 0.21	0.52	1.37

# SERS U.S. SMID Company Index Equity Characteristics Analysis Summary

## Portfolio Characteristics

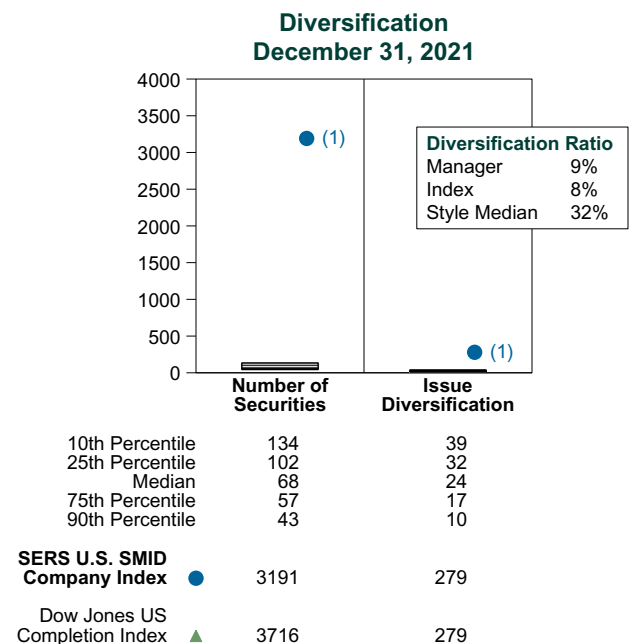
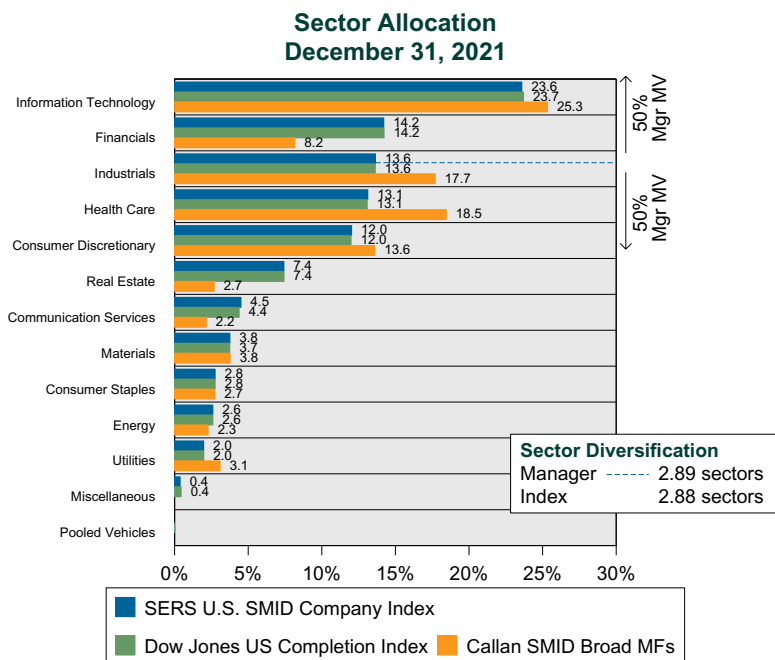
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

## Portfolio Characteristics Percentile Rankings Rankings Against Callan Small/MidCap Broad Mutual Funds as of December 31, 2021



## Sector Weights

The graph below contrasts the manager's sector weights with those of the benchmark and median sector weights across the members of the peer group. The magnitude of sector weight differences from the index and the manager's sector diversification are also shown. Diversification by number and concentration of holdings are also compared to the benchmark and peer group. Issue Diversification represents by count, and Diversification Ratio by percent, the number of holdings that account for half of the portfolio's market value.





## SERS U.S. SMID Company Index Top 10 Portfolio Holdings Characteristics as of December 31, 2021

### 10 Largest Holdings

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Blackstone Group Inc Com Cl A	Financials	\$7,231	1.1%	12.09%	88.87	25.89	3.18%	29.17%
Snowflake Inc Cl A	Information Technology	\$6,360	1.0%	12.01%	101.93	37638.89	0.00%	(0.14)%
Marvell Technology Group Ltd	Information Technology	\$5,904	0.9%	45.20%	72.06	41.02	0.27%	42.82%
Uber Technologies Inc	Industrials	\$5,692	0.9%	(6.41)%	81.35	(64.91)	0.00%	59.30%
Square Inc Cl A	Information Technology	\$5,246	0.8%	(32.66)%	64.47	88.45	0.00%	47.45%
Airbnb Inc Cl A Com Usd0.0001 Cl A	Consumer Discretionary	\$4,698	0.7%	(0.75)%	57.74	180.57	0.00%	-
Palo Alto Networks Inc	Information Technology	\$4,465	0.7%	16.23%	54.93	69.97	0.00%	24.04%
Workday Inc Cl A	Information Technology	\$4,252	0.6%	9.32%	52.72	76.01	0.00%	15.75%
Snap Inc Cl A	Communication Services	\$4,089	0.6%	(36.33)%	63.75	82.08	0.00%	-
Lululemon Athletica Inc	Consumer Discretionary	\$3,763	0.6%	(4.48)%	48.78	42.91	0.00%	29.90%

### 10 Best Performers

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Smith Midland Corp	Materials	\$17	0.0%	238.86%	0.24	32.50	0.12%	36.33%
Yellow Corp	Industrials	\$48	0.0%	187.01%	0.65	26.51	0.00%	28.13%
Phunware Inc	Information Technology	\$11	0.0%	183.10%	0.25	(21.04)	0.00%	-
Assertio Holdings Inc	Health Care	\$4	0.0%	140.70%	0.10	10.90	0.00%	5.42%
Adicet Bio Inc	Health Care	\$22	0.0%	122.80%	0.67	(7.74)	0.00%	-
Donnelley R R & Sons Co	Industrials	\$70	0.0%	119.07%	0.82	8.34	0.00%	(26.92)%
Chemocentryx Inc	Health Care	\$145	0.0%	112.93%	2.55	(19.31)	0.00%	-
Bluerock Resident Gr Reit In Com Cl	Real Estate	\$53	0.0%	108.41%	0.70	(12.60)	2.46%	-
Huttig Bldg Prods Inc	Industrials	\$22	0.0%	107.69%	0.30	7.30	0.00%	-
Tricida Inc	Health Care	\$25	0.0%	105.97%	0.55	(4.04)	0.00%	-

### 10 Worst Performers

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Abeona Therapeutics Inc	Health Care	\$3	0.0%	-	0.03	(0.68)	0.00%	-
Allakos Inc	Health Care	\$27	0.0%	(90.75)%	0.53	(2.35)	0.00%	-
Cortexyme	Health Care	\$16	0.0%	(86.23)%	0.38	(4.84)	0.00%	-
Rafael Hldgs Inc Com Cl B	Real Estate	\$4	0.0%	(83.40)%	0.10	(3.43)	0.00%	-
Excure Inc	Health Care	\$1	0.0%	(83.17)%	0.02	(0.47)	0.00%	-
Adagio Therapeutics Inc Common Stock	Health Care	\$10	0.0%	(82.81)%	0.81	(2.15)	0.00%	-
Bakkt Holdings Inc Com Cl A	Financials	\$18	0.0%	(79.99)%	0.49	(2.36)	0.00%	-
Datchat	Information Technology	\$19	0.0%	(77.80)%	0.06	(12.07)	0.00%	-
Catalyst Biosciences Inc	Health Care	\$1	0.0%	(77.78)%	0.03	(0.68)	0.00%	-
Camber Energy Inc	Energy	\$5	0.0%	(77.75)%	0.21	(3.20)	0.00%	-

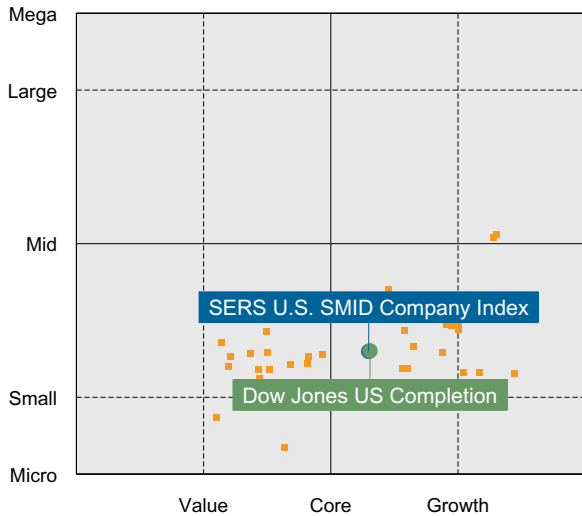
# Historical Holdings Based Style Analysis

## SERS U.S. SMID Company Index

### For Three Years Ended December 31, 2021

This page analyzes the historical investment style of a portfolio utilizing a detailed holdings-based style analysis to determine average actual exposures to various market capitalization and style segments of the domestic equity market. The market is segmented quarterly by capitalization and style. The capitalization segments are dictated by capitalization decile breakpoints. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the average historical market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the average historical portfolio and index weights and stock counts (in parentheses) in each capitalization/style segment of the market. The next two style exposure charts illustrate the actual quarterly cap/style and style only segment exposures of the portfolio through history.

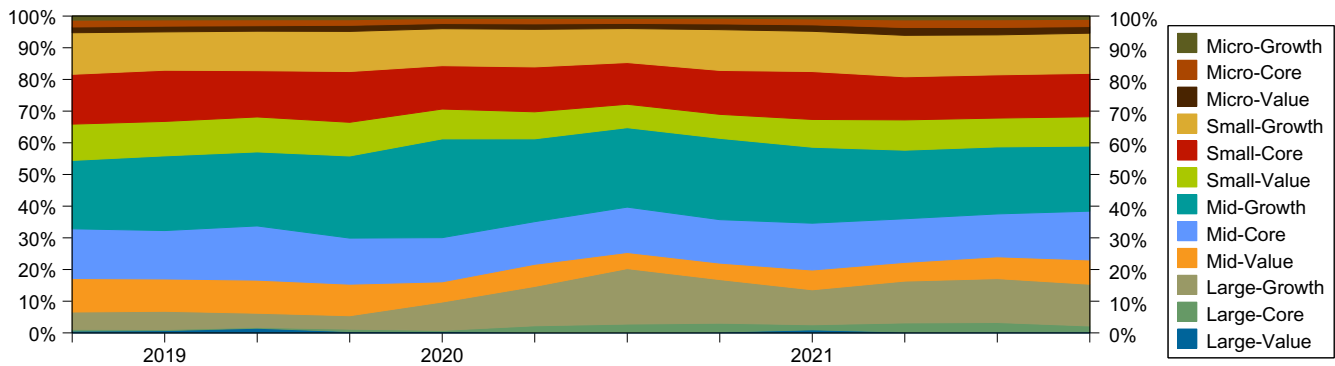
**Average Style Map vs Callan SMID Broad MFs Holdings for Three Years Ended December 31, 2021**



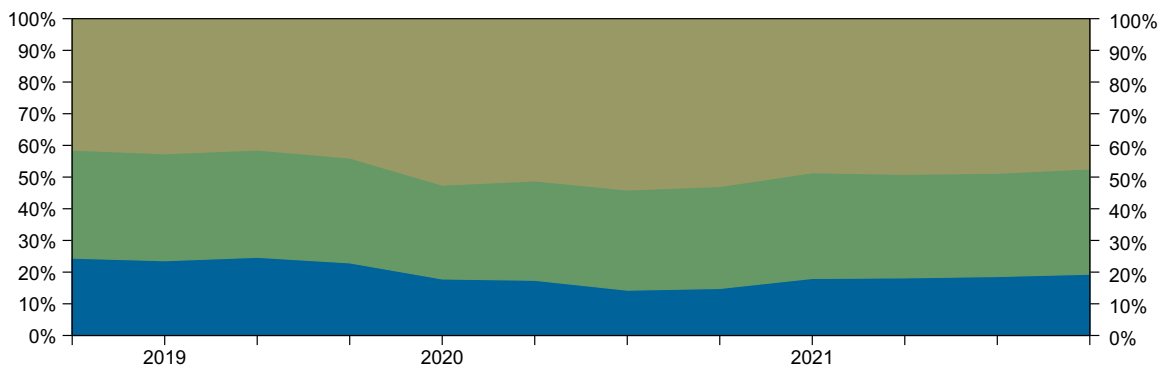
**Average Style Exposure Matrix Holdings for Three Years Ended December 31, 2021**

	0.5% (2)	1.6% (4)	10.3% (18)	12.4% (24)
Large	0.5% (2)	1.6% (4)	10.4% (18)	12.5% (24)
Mid	7.6% (67)	14.6% (134)	24.2% (183)	46.4% (384)
	7.6% (67)	14.6% (133)	24.2% (184)	46.4% (384)
Small	9.5% (299)	14.5% (515)	12.4% (397)	36.3% (1211)
	9.4% (299)	14.4% (512)	12.4% (400)	36.2% (1211)
Micro	1.9% (518)	2.0% (538)	1.0% (206)	4.9% (1262)
	1.8% (666)	2.1% (799)	1.0% (259)	4.9% (1724)
<b>Total</b>	<b>19.5% (886)</b>	<b>32.6% (1191)</b>	<b>47.8% (804)</b>	<b>100.0% (2881)</b>
	19.3% (1034)	32.7% (1448)	48.0% (861)	100.0% (3343)
	Value	Core	Growth	Total

### SERS U.S. SMID Company Index Historical Cap/Style Exposures



### SERS U.S. SMID Company Index Historical Style Only Exposures





# SERS Global Non-U.S. Index Fund

## Period Ended December 31, 2021

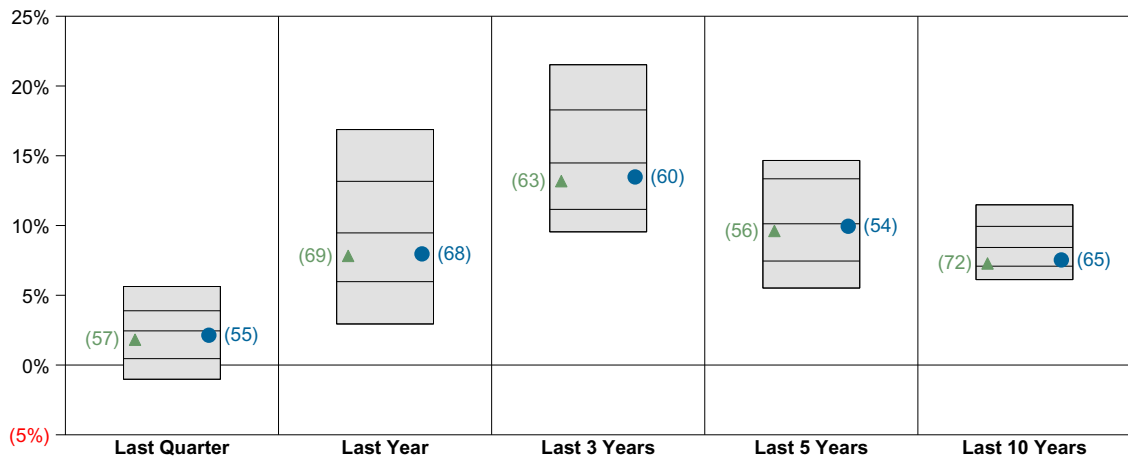
### Investment Philosophy

The Global Non-U.S. Stock Index Fund seeks to track the performance of the MSCI All Country World Index (ACWI) ex-U.S. Index. In meeting this objective, the assets of the Fund may be invested in securities, and a combination of other collective funds that are designed to track the performance of such Index. The Fund will principally invest in a combination of other affiliated bank collective funds, equity securities and derivatives, including common stock of foreign companies, depository receipts, financial futures and over-the-counter derivatives that represent developed and emerging market equity securities. This fund is managed by Mellon Capital Management.

### Quarterly Summary and Highlights

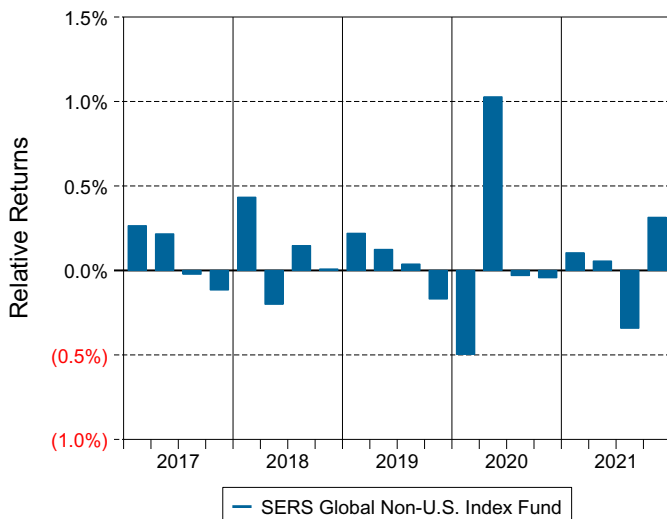
- SERS Global Non-U.S. Index Fund's portfolio posted a 2.14% return for the quarter placing it in the 55 percentile of the Callan Non US Equity Mutual Funds group for the quarter and in the 68 percentile for the last year.
- SERS Global Non-U.S. Index Fund's portfolio outperformed the MSCI ACWI ex US by 0.32% for the quarter and outperformed the MSCI ACWI ex US for the year by 0.14%.

### Performance vs Callan Non US Equity Mutual Funds (Institutional Net)

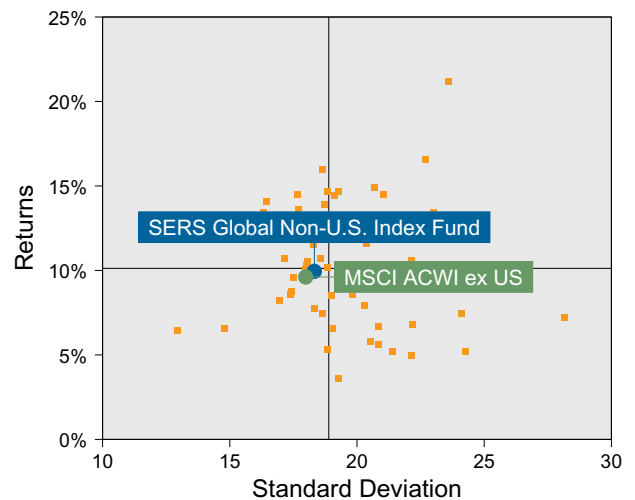


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	5.63	16.88	21.53	14.66	11.49
25th Percentile	3.89	13.17	18.29	13.35	9.94
Median	2.45	9.47	14.48	10.12	8.43
75th Percentile	0.46	5.98	11.16	7.45	7.09
90th Percentile	(1.02)	2.94	9.55	5.52	6.12
<b>SERS Global Non-U.S. Index Fund</b>	2.14	7.97	13.48	9.95	7.53
<b>MSCI ACWI ex US</b>	1.82	7.82	13.18	9.61	7.28

### Relative Return vs MSCI ACWI ex US



### Callan Non US Equity Mutual Funds (Institutional Net) Annualized Five Year Risk vs Return

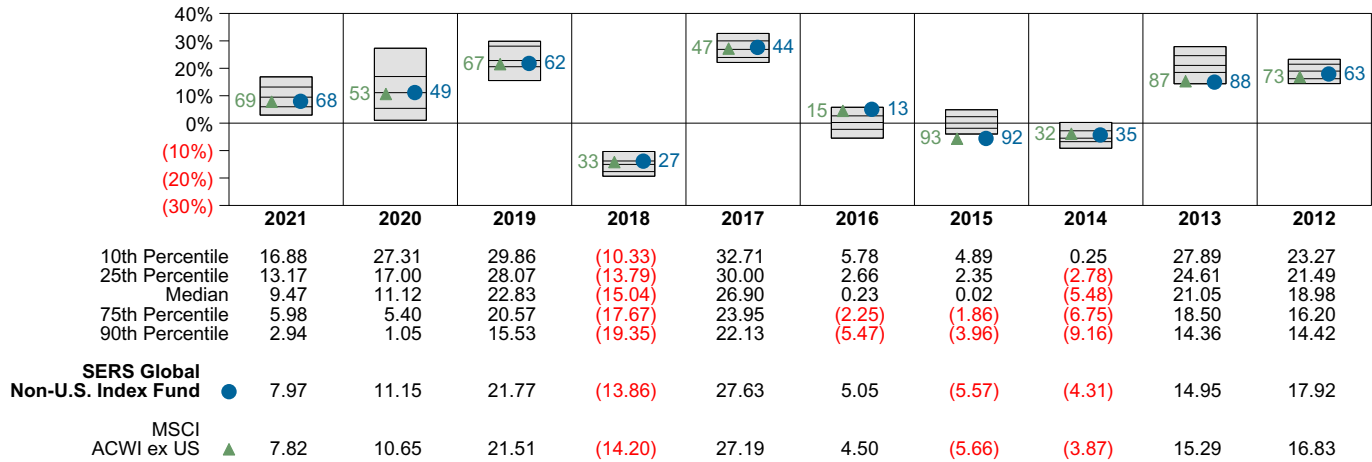


# SERS Global Non-U.S. Index Fund Return Analysis Summary

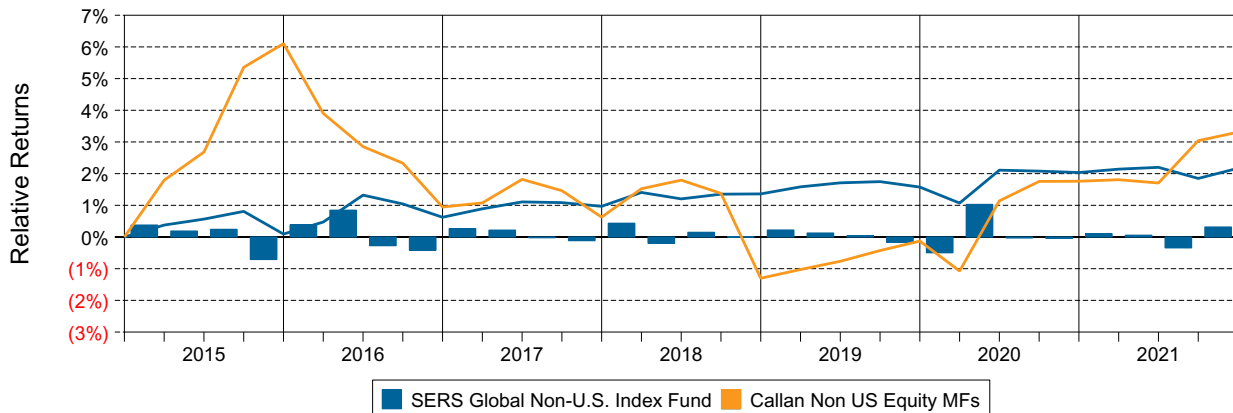
## Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

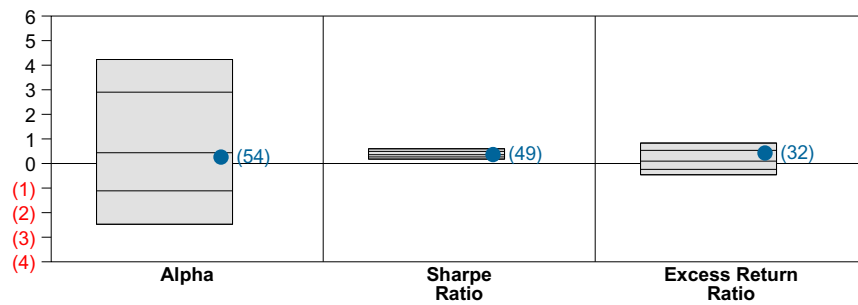
### Performance vs Callan Non US Equity Mutual Funds (Institutional Net)



### Cumulative and Quarterly Relative Return vs MSCI ACWI ex US



### Risk Adjusted Return Measures vs MSCI ACWI ex US Rankings Against Callan Non US Equity Mutual Funds (Institutional Net) Seven Years Ended December 31, 2021



10th Percentile	4.23	0.60	0.83
25th Percentile	2.90	0.49	0.54
Median	0.44	0.36	0.10
75th Percentile	(1.11)	0.27	(0.24)
90th Percentile	(2.47)	0.18	(0.46)

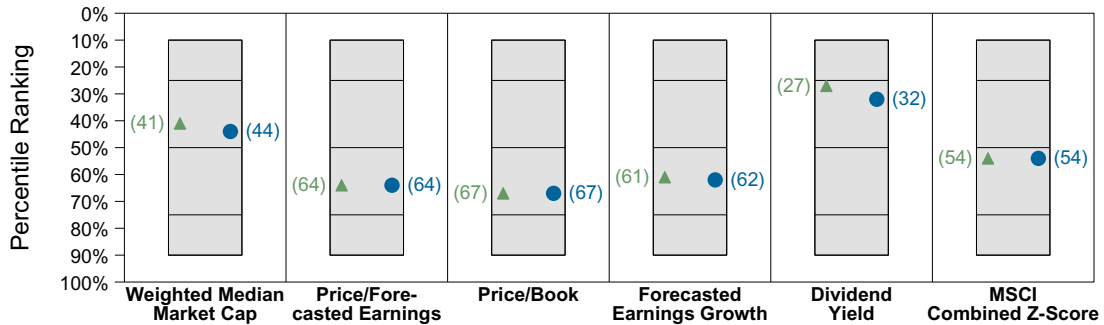
**SERS Global Non-U.S. Index Fund** ● 0.26      0.36      0.43

# SERS Global Non-U.S. Index Fund Equity Characteristics Analysis Summary

## Portfolio Characteristics

This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

## Portfolio Characteristics Percentile Rankings Rankings Against Callan Non US Equity Mutual Funds as of December 31, 2021

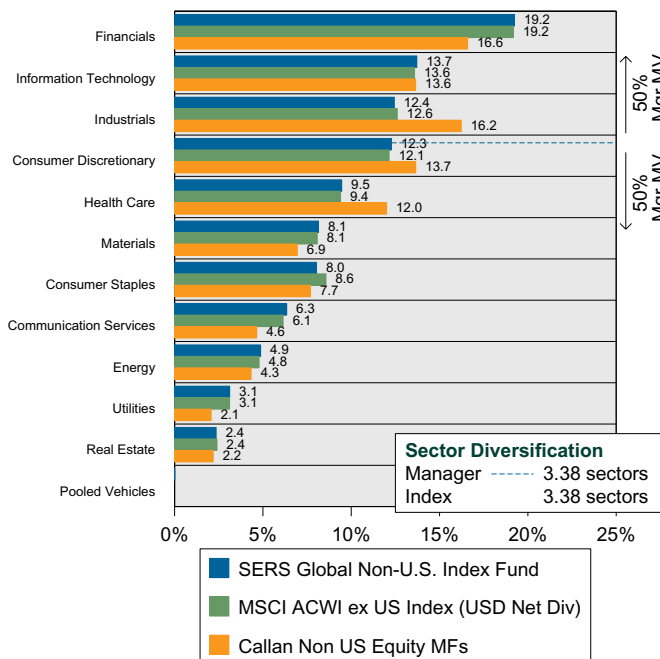


	Weighted Median Market Cap	Price/Forecasted Earnings	Price/Book	Forecasted Earnings Growth	Dividend Yield	MSCI Combined Z-Score
10th Percentile	67.65	26.52	4.15	22.68	2.86	0.95
25th Percentile	55.94	20.61	3.29	19.88	2.53	0.42
Median	40.36	16.01	2.35	17.44	2.07	0.05
75th Percentile	32.11	12.84	1.59	15.99	1.40	(0.32)
90th Percentile	14.74	10.62	1.29	14.03	0.97	(0.60)
<b>SERS Global Non-U.S. Index Fund</b>	<b>42.73</b>	<b>14.28</b>	<b>1.82</b>	<b>16.83</b>	<b>2.37</b>	<b>(0.01)</b>
MSCI ACWI ex US Index (USD Net Div)	44.33	14.31	1.83	16.95	2.45	(0.00)

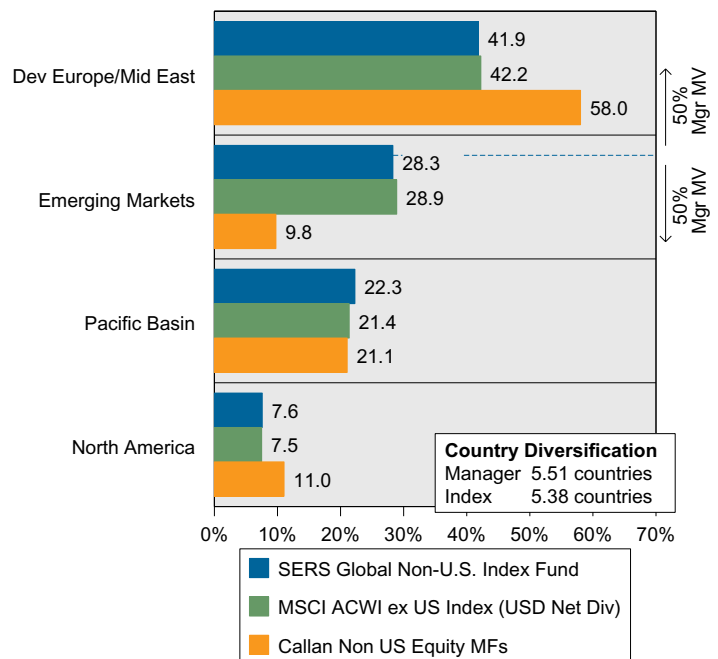
## Sector Weights

The graph below contrasts the manager's sector weights with those of the benchmark and median sector weights across the members of the peer group. The magnitude of sector weight differences from the index and the manager's sector diversification are also shown. The regional allocation chart compares the manager's geographical region weights with those of the benchmark as well as the median region weights of the peer group.

### Sector Allocation December 31, 2021



### Regional Allocation December 31, 2021



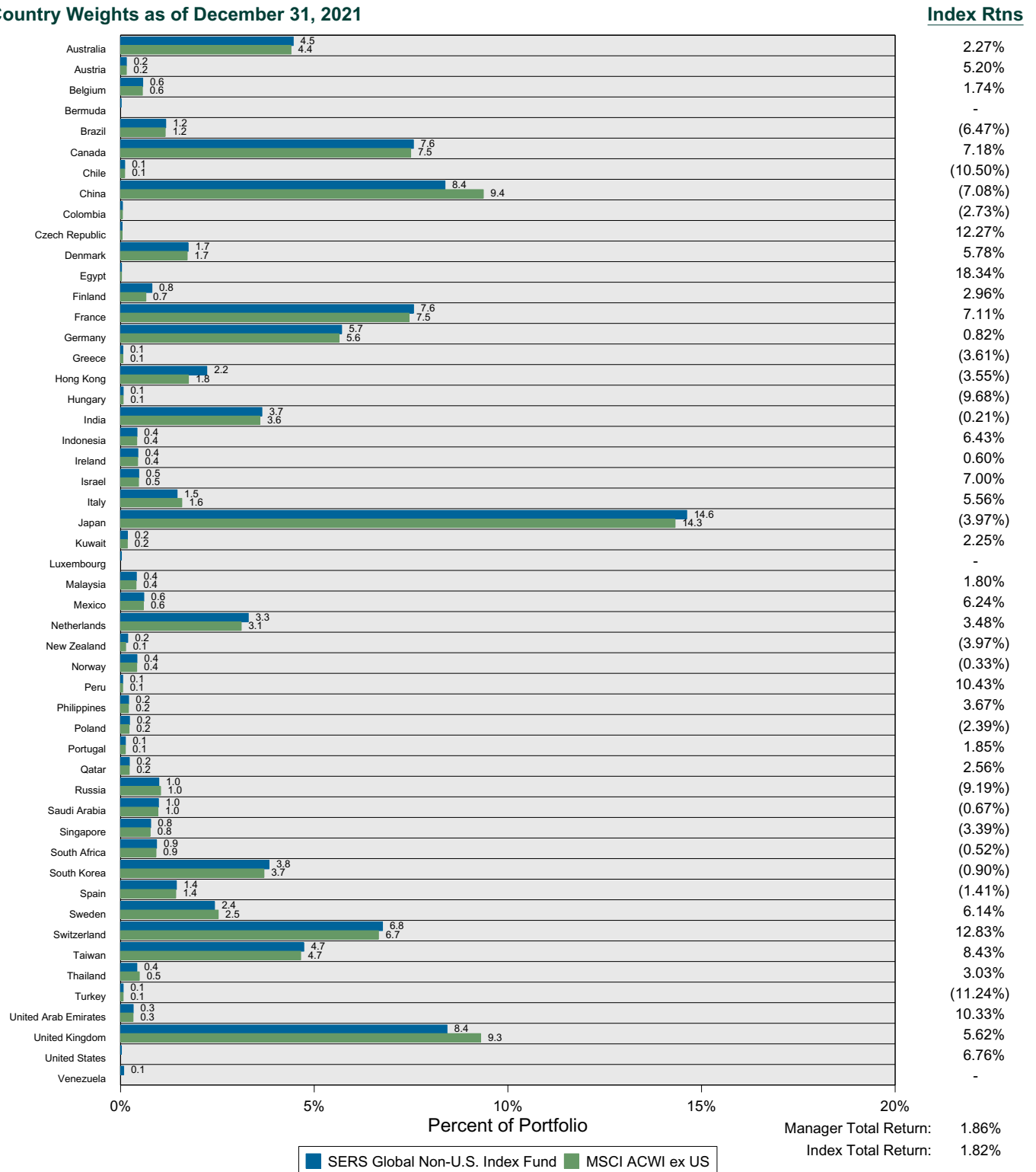
# Country Allocation

## SERS Global Non-U.S. Index Fund VS MSCI ACWI ex US Index (USD Net Div)

### Country Allocation

The chart below contrasts the portfolio's country allocation with that of the index as of December 31, 2021. This chart is useful because large deviations in country allocation relative to the index are often good predictors of tracking error in the subsequent quarter. To the extent that the portfolio allocation is similar to the index, the portfolio should experience more "index-like" performance. In order to illustrate the performance effect on the portfolio and index of these country allocations, the individual index country returns are also shown.

Country Weights as of December 31, 2021



## SERS Global Non-U.S. Index Fund Top 10 Portfolio Holdings Characteristics as of December 31, 2021

### 10 Largest Holdings

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Taiwan Semicond Manufac Co L Shs	Information Technology	\$32,374	2.0%	7.26%	576.40	22.41	1.75%	16.25%
Nestle S A Shs Nom New	Consumer Staples	\$23,169	1.5%	13.18%	393.73	26.63	2.16%	6.17%
Tencent Holdings Limited Shs Par Hkd	Communication Services	\$19,896	1.3%	0.19%	562.97	23.68	0.35%	18.29%
Asml Holding N V Asml Rev Stk Spl	Information Technology	\$19,547	1.2%	7.65%	326.67	42.88	0.47%	30.67%
Samsung Electronics Co Ltd Ord	Information Technology	\$18,604	1.2%	5.76%	393.21	11.69	3.85%	25.70%
Roche Hldgs Ag Basel Div Rts Ctf	Health Care	\$17,202	1.1%	11.86%	292.32	18.21	2.40%	6.00%
Alibaba Group Holding Ltd	Consumer Discretionary	\$13,641	0.9%	(15.14)%	330.77	12.68	0.00%	5.32%
Lvmh Moet Hennessy Lou Vuitt Ord	Consumer Discretionary	\$13,506	0.9%	13.59%	417.30	31.00	0.96%	36.70%
Toyota Motor Corp	Consumer Discretionary	\$11,410	0.7%	2.06%	298.30	9.65	2.42%	18.36%
Novartis	Health Care	\$11,360	0.7%	6.98%	214.49	13.35	3.74%	7.10%

### 10 Best Performers

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Cnp Assurances Act	Financials	\$246	0.0%	114.91%	16.98	9.68	3.54%	3.69%
Jiangsu Zhong Tian Techs.Co. A	Industrials	\$10	0.0%	89.16%	9.08	14.30	0.59%	20.84%
Wuhu Token Science 'a'	Information Technology	\$10	0.0%	81.89%	5.12	22.37	0.75%	25.00%
Unimicron Technology	Information Technology	\$588	0.0%	76.22%	12.32	21.97	0.60%	55.04%
Lg Innotek	Information Technology	\$255	0.0%	73.88%	7.25	10.04	0.19%	38.50%
Pearlabyss	Communication Services	\$212	0.0%	71.33%	7.70	31.39	0.00%	0.92%
Yongxing Spc.Sstl.A	Materials	\$10	0.0%	59.69%	9.43	30.43	0.21%	18.36%
Oneness Biotech	Health Care	\$140	0.0%	56.49%	3.97	(207.80)	0.00%	-
Merdeka Copper Gold	Materials	\$188	0.0%	55.02%	6.25	67.50	0.02%	-
Wus Printed Circuit (Kunshan) 'a'	Information Technology	\$4	0.0%	50.11%	4.93	19.40	1.10%	44.58%

### 10 Worst Performers

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Shimao Services Holdings	Real Estate	\$24	0.0%	(65.83)%	1.72	6.15	2.03%	9.85%
Shimao China Hdg. Ltd.	Real Estate	\$46	0.0%	(60.56)%	2.48	1.10	31.37%	5.92%
Futu Hldgs Ltd Sponsored Ads	Financials	\$128	0.0%	(52.50)%	3.67	13.74	0.00%	-
Agile Property Hld Hkd0.10	Real Estate	\$39	0.0%	(51.47)%	2.13	1.50	26.00%	31.53%
A Living Services Co Ltd H Common St	Real Estate	\$59	0.0%	(51.27)%	2.42	4.74	2.99%	29.97%
Gome ElctrcI Applins Hldgs L Shs	Consumer Discretionary	\$59	0.0%	(50.80)%	2.86	(8.50)	0.00%	(28.57)%
Magazine Luiza Sa	Consumer Discretionary	\$228	0.0%	(50.75)%	8.75	81.25	0.58%	35.78%
Sunac Services Holdings Ltd Common S	Real Estate	\$64	0.0%	(49.88)%	3.15	9.90	0.87%	30.10%
China Evergrande Group Shs	Real Estate	\$50	0.0%	(48.41)%	2.69	1.65	11.22%	50.16%
21vianet Group Inc Sponsored Adr	Information Technology	\$52	0.0%	(47.20)%	1.26	(21.76)	0.00%	(47.15)%



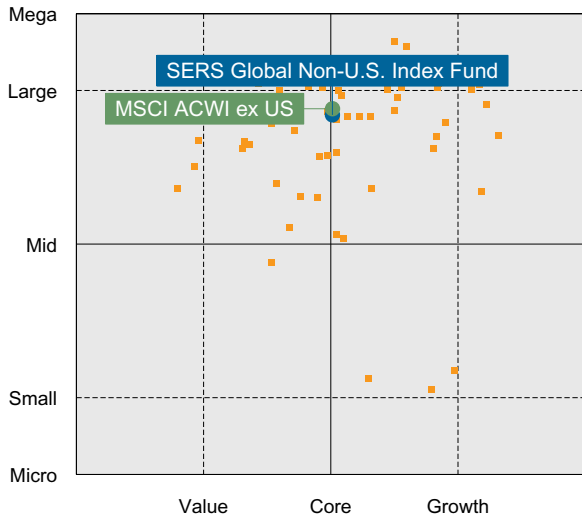
# Historical Holdings Based Style Analysis

## SERS Global Non-U.S. Index Fund

### For Three Years Ended December 31, 2021

This page analyzes the historical investment style of a portfolio utilizing a detailed holdings-based style analysis to determine average actual exposures to various region and style segments of the international/global equity market. The market is segmented quarterly by region and style. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the average historical market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the average historical portfolio and index weights and stock counts (in parentheses) in each region/style segment of the market. The next two style exposure charts illustrate the actual quarterly region/style and style only segment exposures of the portfolio through history.

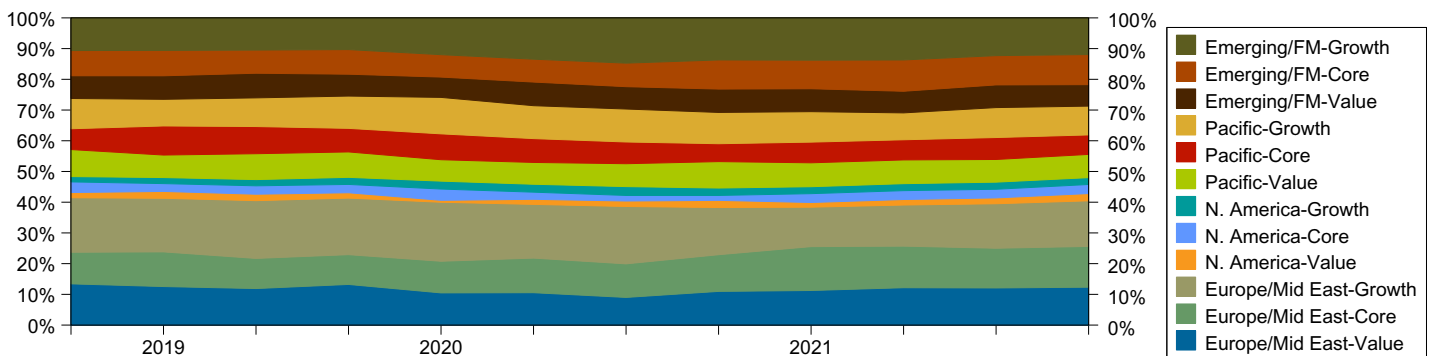
**Average Style Map vs Callan Non US Equity MFs Holdings for Three Years Ended December 31, 2021**



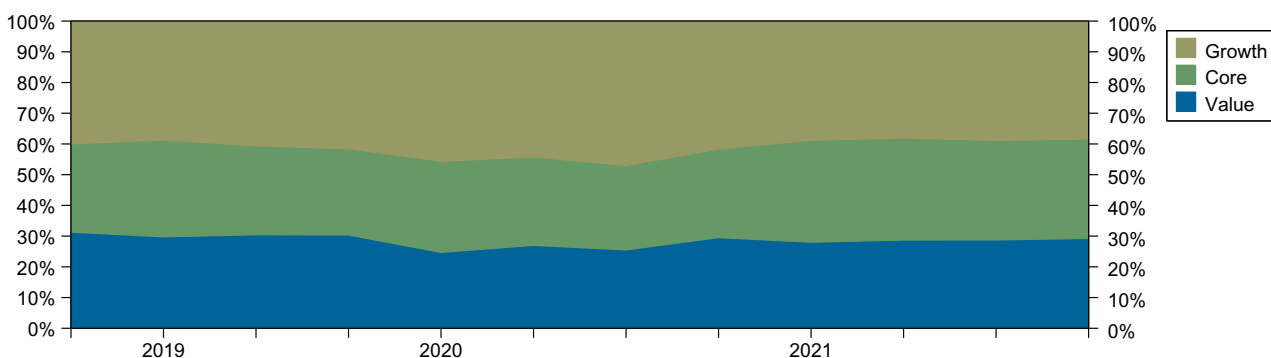
**Average Style Exposure Matrix Holdings for Three Years Ended December 31, 2021**

Europe/ Mid East	11.7% (129)	11.6% (120)	16.6% (160)	<b>39.8% (409)</b>
	12.2% (142)	11.5% (123)	17.0% (177)	<b>40.7% (442)</b>
N. America	1.8% (25)	2.7% (29)	2.3% (29)	<b>6.8% (83)</b>
	1.8% (27)	2.7% (32)	2.4% (33)	<b>6.9% (92)</b>
Pacific	7.8% (149)	7.4% (138)	10.0% (154)	<b>25.1% (441)</b>
	7.5% (150)	7.1% (138)	9.6% (154)	<b>24.2% (442)</b>
Emerging/ FM	7.4% (417)	8.6% (346)	12.3% (343)	<b>28.2% (1106)</b>
	7.4% (476)	8.5% (412)	12.3% (407)	<b>28.3% (1295)</b>
<b>Total</b>	<b>28.6% (720)</b>	<b>30.3% (633)</b>	<b>41.1% (686)</b>	<b>100.0% (2039)</b>
	<b>28.9% (795)</b>	<b>29.8% (705)</b>	<b>41.3% (771)</b>	<b>100.0% (2271)</b>
	Value	Core	Growth	Total

**SERS Global Non-U.S. Index Fund Historical Region/Style Exposures**



**SERS Global Non-U.S. Index Fund Historical Style Only Exposures**





# SERS Short Term Investment Fund

## Period Ended December 31, 2021

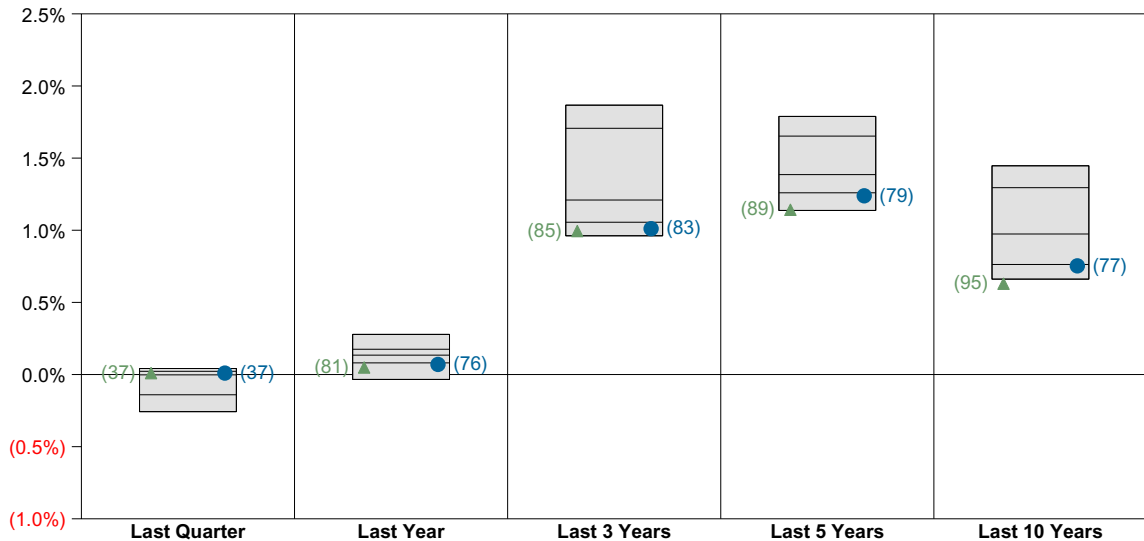
### Investment Philosophy

The Short Term Investment Fund seeks to achieve the highest current income consistent with maintaining liquidity and safety of principal. This fund is managed by the Pennsylvania State Treasurer. It is compared against the Callan Cash Database, which includes STIF, enhanced cash, and money market funds.

### Quarterly Summary and Highlights

- SERS Short Term Investment Fund's portfolio posted a 0.01% return for the quarter placing it in the 37 percentile of the Callan Cash Database group for the quarter and in the 76 percentile for the last year.
- SERS Short Term Investment Fund's portfolio outperformed the 3-month Treasury Bill by 0.00% for the quarter and outperformed the 3-month Treasury Bill for the year by 0.02%.

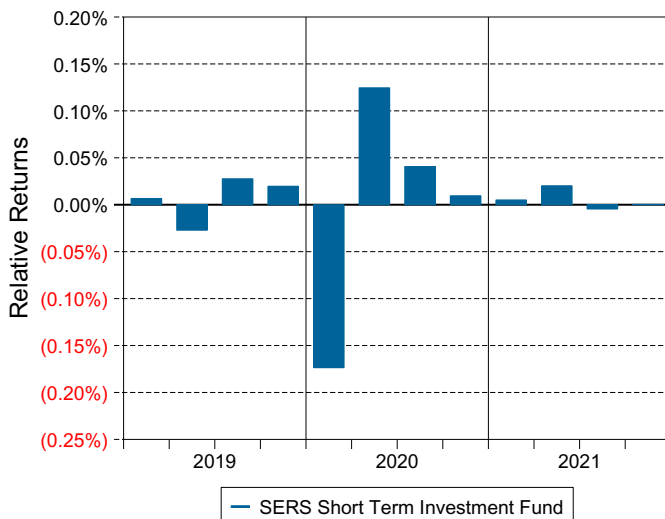
### Performance vs Callan Cash Database (Gross)



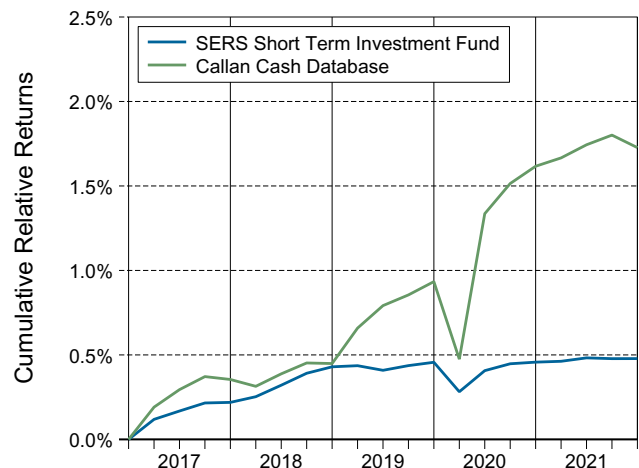
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	0.04	0.28	1.87	1.79	1.45
25th Percentile	0.02	0.18	1.71	1.65	1.30
Median	(0.00)	0.13	1.21	1.39	0.97
75th Percentile	(0.14)	0.08	1.06	1.26	0.76
90th Percentile	(0.26)	(0.03)	0.96	1.14	0.66

<b>SERS Short Term Investment Fund</b>	●	0.01	0.07	1.01	1.24	0.75
3-month Treasury Bill	▲	0.01	0.05	0.99	1.14	0.63

### Relative Return vs 3-month Treasury Bill



### Cumulative Returns vs 3-month Treasury Bill

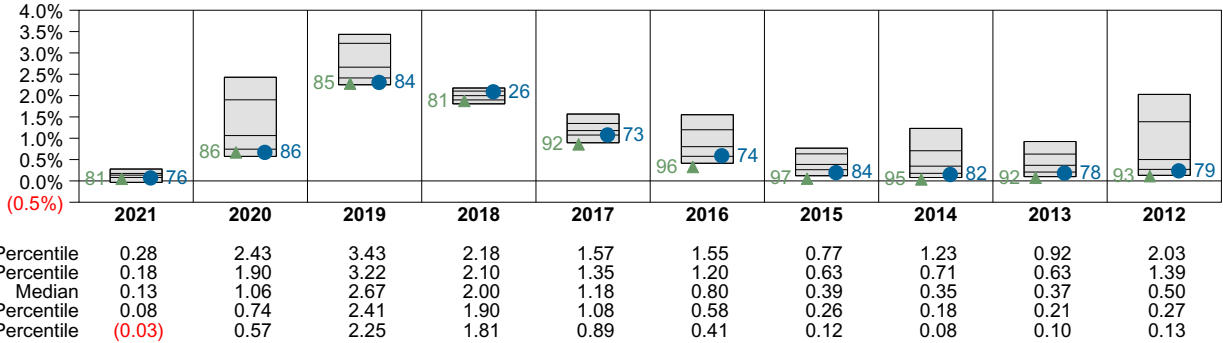


# SERS Short Term Investment Fund Return Analysis Summary

## Return Analysis

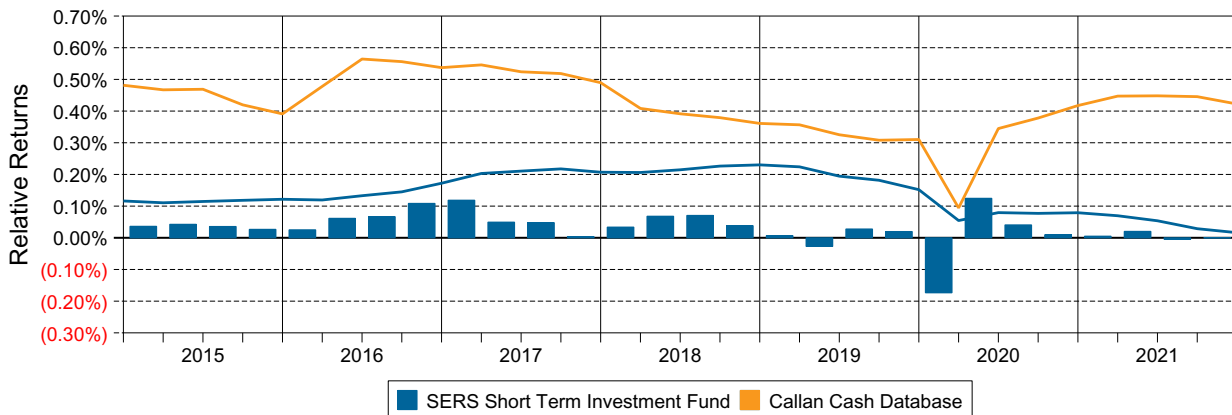
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and 12 quarter rolling manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures. Callan Cash Database includes STIF, enhanced cash, and money market funds.

## Performance vs Callan Cash Database (Gross)

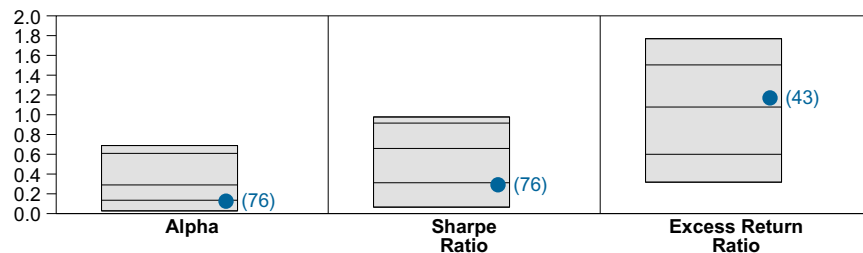


SERS Short Term Investment Fund	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
●	0.07	0.67	2.31	2.09	1.08	0.59	0.19	0.15	0.18	0.24
3-month Treasury Bill	▲	0.05	0.67	2.28	1.87	0.86	0.33	0.05	0.07	0.11

## Rolling 12 Quarter and Quarterly Relative Return vs 3-month Treasury Bill



## Risk Adjusted Return Measures vs 3-month Treasury Bill Rankings Against Callan Cash Database (Gross) Seven Years Ended December 31, 2021



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.69	0.98	1.77
25th Percentile	0.61	0.92	1.50
Median	0.29	0.66	1.08
75th Percentile	0.13	0.31	0.60
90th Percentile	0.03	0.07	0.32
SERS Short Term Investment Fund	● 0.13	0.29	1.17

# SERS U.S. Short Term Bond Idx Fund

## Period Ended December 31, 2021

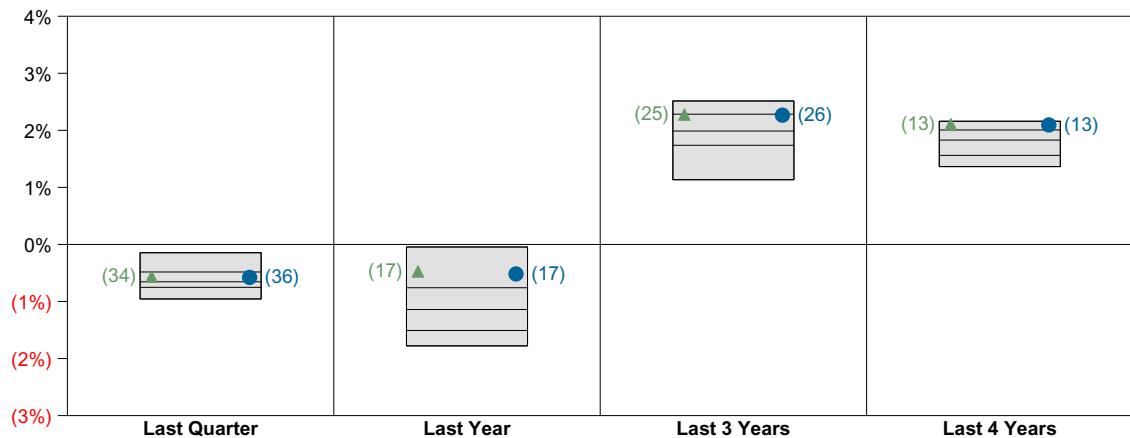
### Investment Philosophy

The Fund's investment objective is to seek to track the performance of the Bloomberg Barclays U.S. 1-3 Year Government/Credit Index ("Index"). In meeting this objective, the Fund may invest in securities (including those issued through private placements) and a combination of other collective funds that together are designed to track the performance of the Index. The Fund will principally invest in other affiliated bank collective funds, debt securities of U.S. corporations and the U.S. government, its agencies and instrumentalities, including mortgage-related and asset-backed securities. This fund is managed by Mellon Capital Management.

### Quarterly Summary and Highlights

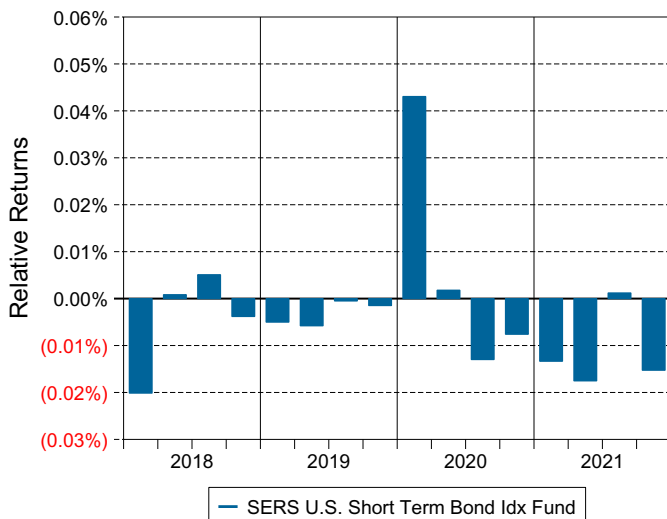
- SERS U.S. Short Term Bond Idx Fund's portfolio posted a (0.58)% return for the quarter placing it in the 36 percentile of the Callan Short US Gov Bond Mut Funds group for the quarter and in the 17 percentile for the last year.
- SERS U.S. Short Term Bond Idx Fund's portfolio underperformed the Blmbg Gov/Cred 1-3 Yr by 0.02% for the quarter and underperformed the Blmbg Gov/Cred 1-3 Yr for the year by 0.04%.

### Performance vs Callan Short US Gov Bond Mut Funds (Institutional Net)

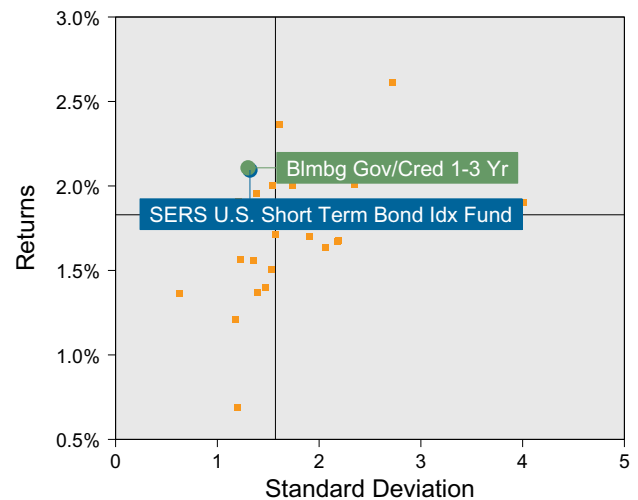


	Last Quarter	Last Year	Last 3 Years	Last 4 Years
10th Percentile	(0.14)	(0.04)	2.52	2.16
25th Percentile	(0.48)	(0.76)	2.28	2.01
Median	(0.65)	(1.14)	1.99	1.83
75th Percentile	(0.75)	(1.51)	1.74	1.56
90th Percentile	(0.96)	(1.78)	1.13	1.36
<b>SERS U.S. Short Term Bond Idx Fund</b>	<b>(0.58)</b>	<b>(0.52)</b>	<b>2.27</b>	<b>2.09</b>
<b>Blmbg Gov/Cred 1-3 Yr</b>	<b>(0.56)</b>	<b>(0.47)</b>	<b>2.28</b>	<b>2.11</b>

### Relative Return vs Blmbg Gov/Cred 1-3 Yr



### Callan Short US Gov Bond Mut Funds (Institutional Net) Annualized Four Year Risk vs Return



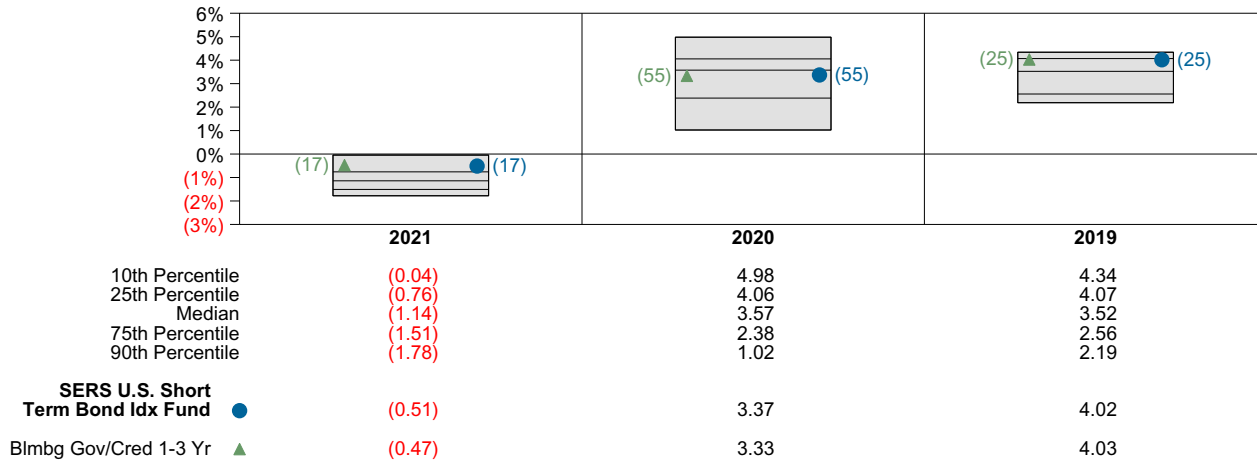
# SERS U.S. Short Term Bond Idx Fund

## Return Analysis Summary

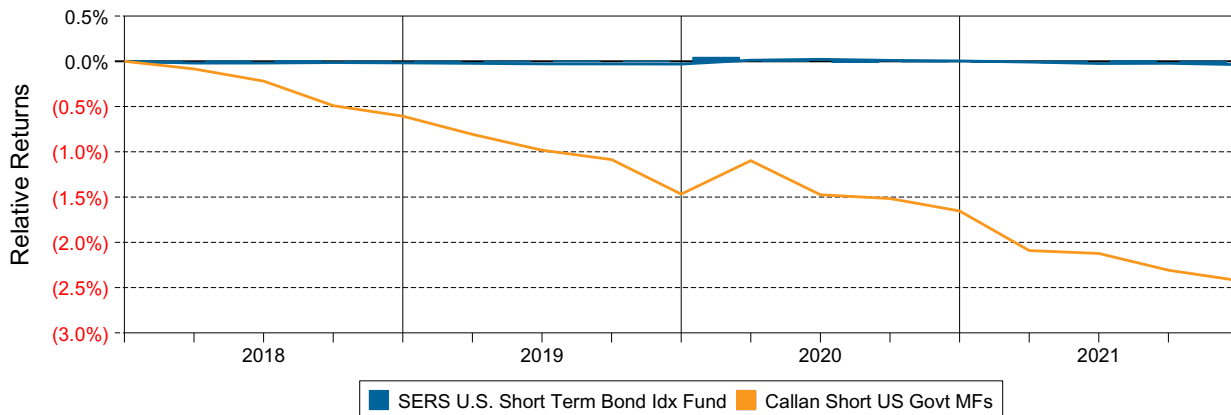
### Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures. Callan Cash Database includes STIF, enhanced cash, and money market funds.

### Performance vs Callan Short US Gov Bond Mut Funds (Institutional Net)



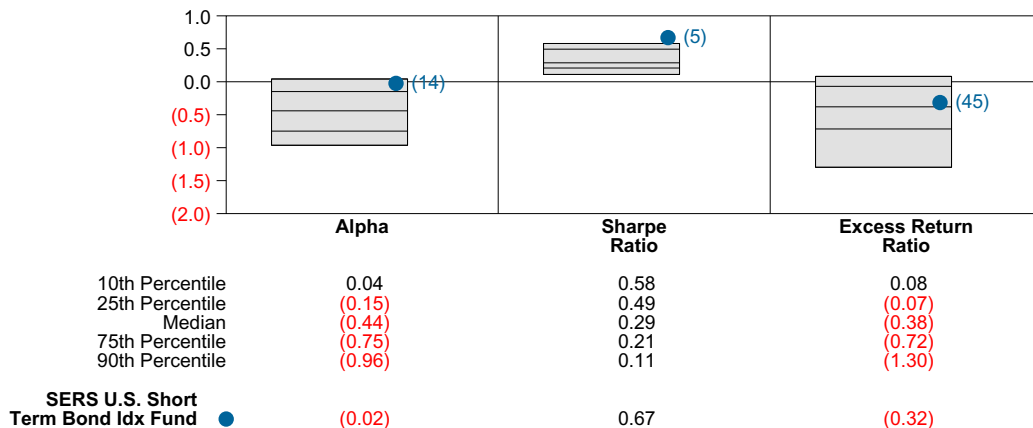
### Cumulative and Quarterly Relative Return vs Blmbg Gov/Cred 1-3 Yr



### Risk Adjusted Return Measures vs Blmbg Gov/Cred 1-3 Yr

#### Rankings Against Callan Short US Gov Bond Mut Funds (Institutional Net)

#### Four Years Ended December 31, 2021



# SERS U.S. Short Term Bond Idx Fund

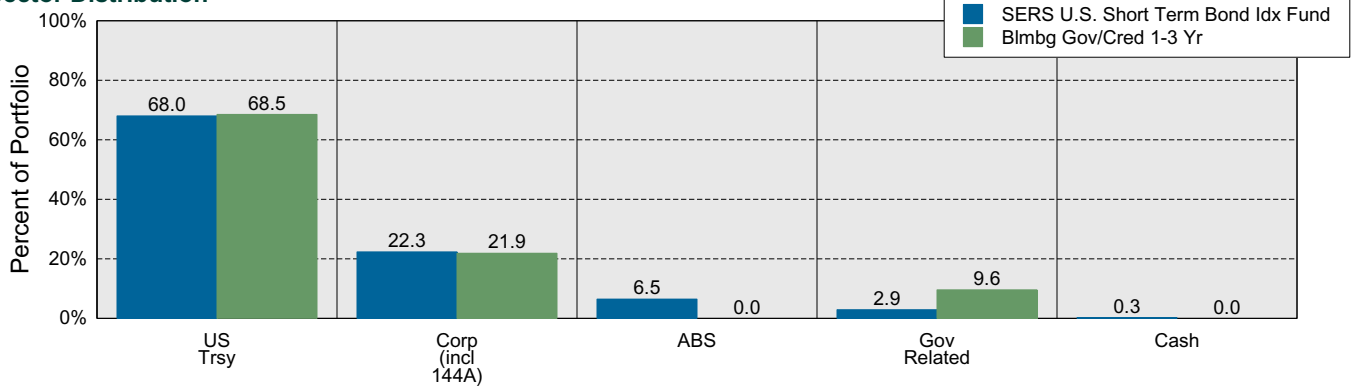
## Portfolio Characteristics Summary

### As of December 31, 2021

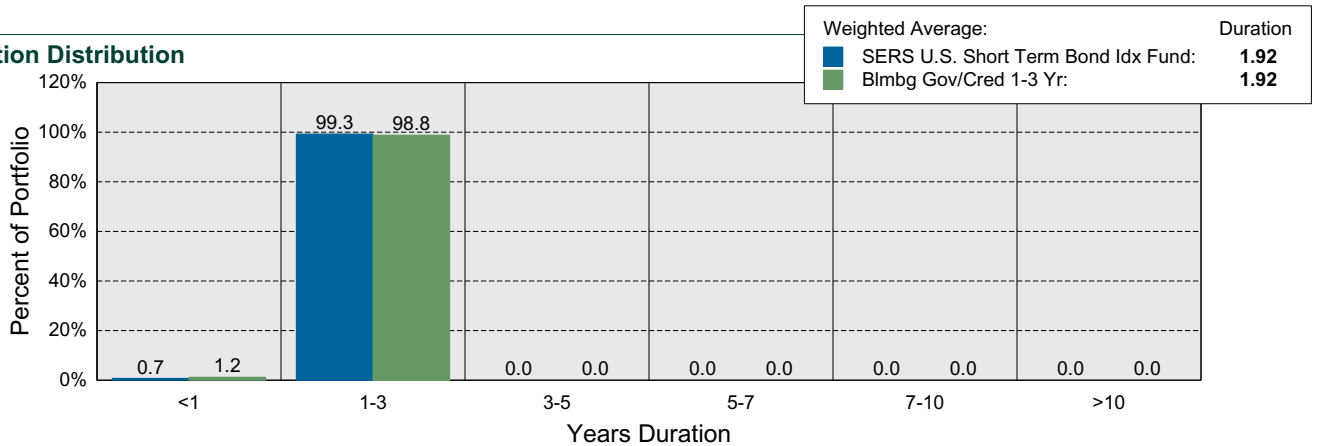
#### Portfolio Structure Comparison

The charts below compare the structure of the portfolio to that of the index from the three perspectives that have the greatest influence on return. The first chart compares the two portfolios across sectors. The second chart compares the duration distribution. The last chart compares the distribution across quality ratings.

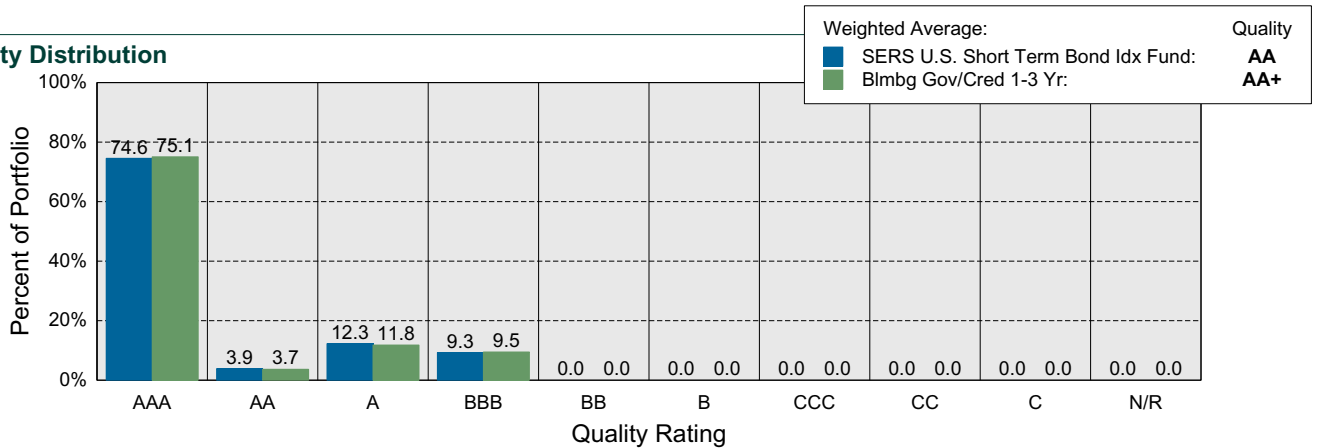
#### Sector Distribution



#### Duration Distribution



#### Quality Distribution



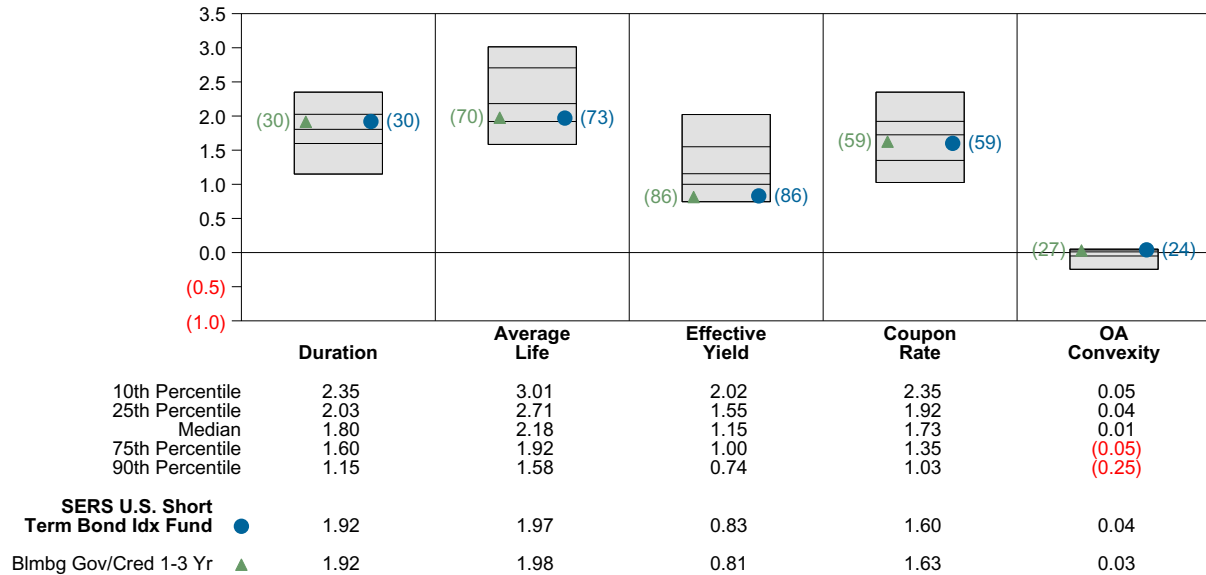
# SERS U.S. Short Term Bond Idx Fund

## Bond Characteristics Analysis Summary

### Portfolio Characteristics

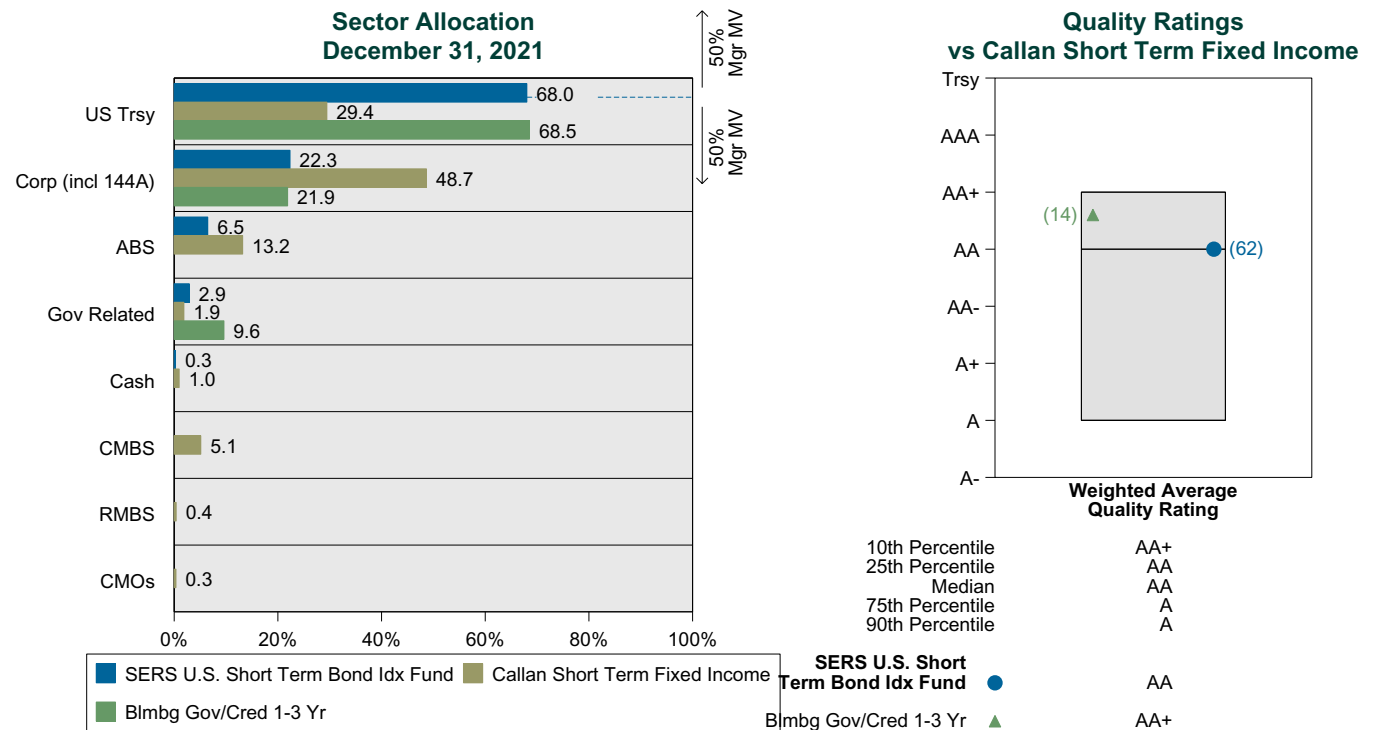
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

### Fixed Income Portfolio Characteristics Rankings Against Callan Short Term Fixed Income as of December 31, 2021



### Sector Allocation and Quality Ratings

The first graph compares the manager's sector allocation with the average allocation across all the members of the manager's style. The second graph compares the manager's weighted average quality rating with the range of quality ratings for the style.





# SERS U.S. TIPS Index Fund

## Period Ended December 31, 2021

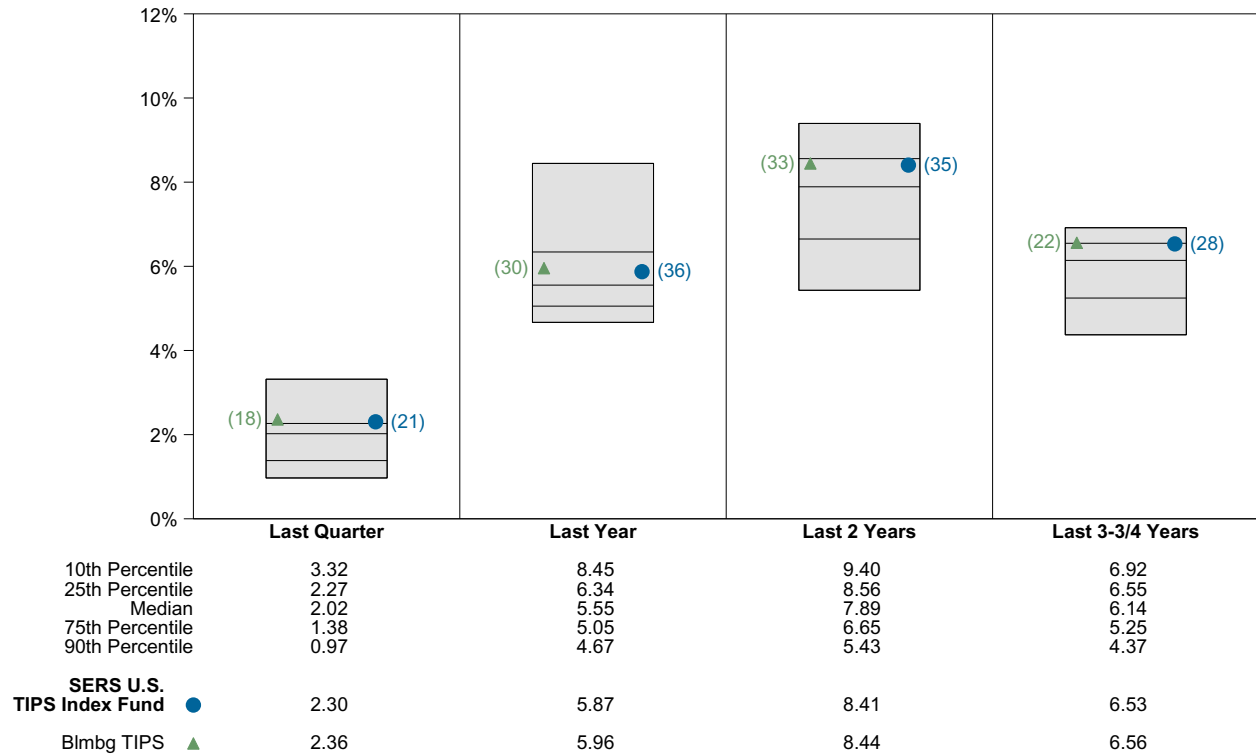
### Investment Philosophy

The objective of the U.S. Treasury Inflation Protected Security Index Fund is to track the performance of the U.S. inflation-linked government bond market (otherwise known as Treasury Inflation Protected Securities, or "TIPS"). This fund is managed by Mellon Capital Management.

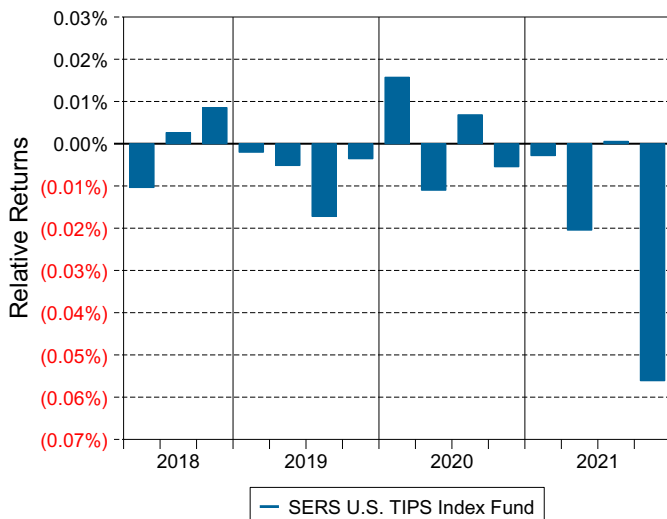
### Quarterly Summary and Highlights

- SERS U.S. TIPS Index Fund's portfolio posted a 2.30% return for the quarter placing it in the 21 percentile of the Callan Treas Infl Prot Securities MFs group for the quarter and in the 36 percentile for the last year.
- SERS U.S. TIPS Index Fund's portfolio underperformed the Blmbg TIPS by 0.06% for the quarter and underperformed the Blmbg TIPS for the year by 0.08%.

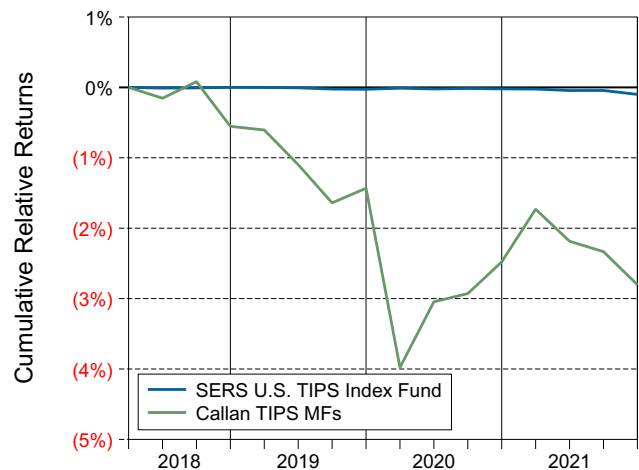
### Performance vs Callan Treas Infl Prot Securities MFs (Institutional Net)



### Relative Return vs Blmbg TIPS



### Cumulative Returns vs Blmbg TIPS



# SERS U.S. TIPS Index Fund

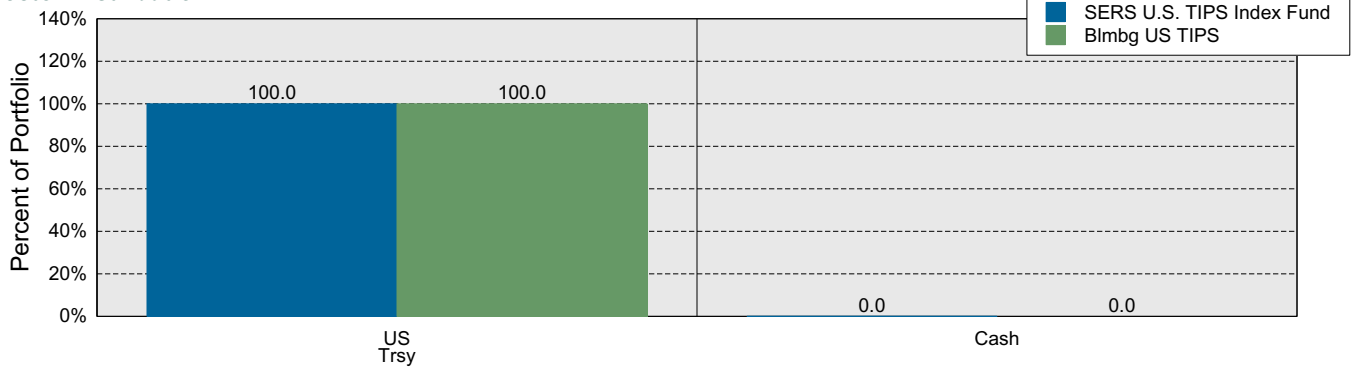
## Portfolio Characteristics Summary

### As of December 31, 2021

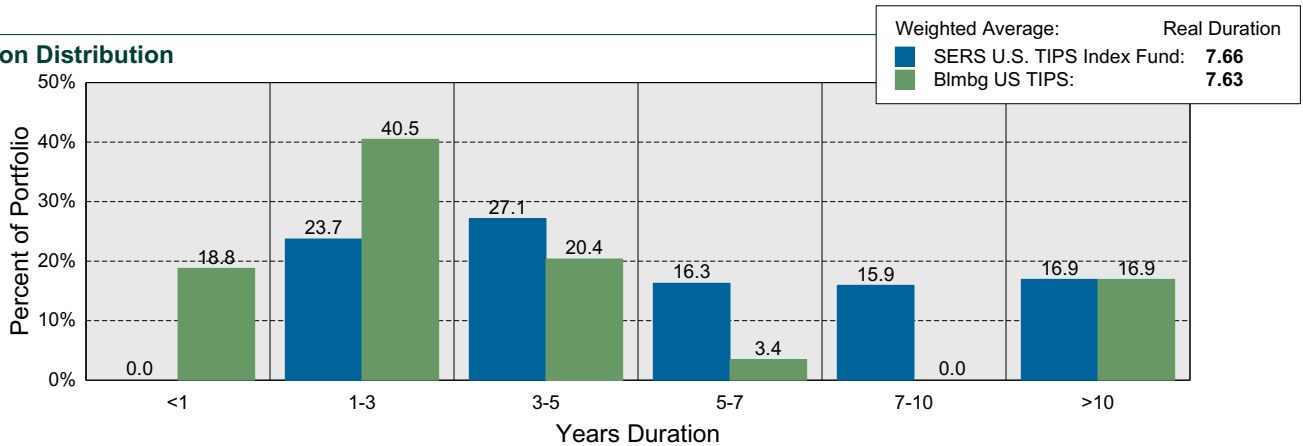
#### Portfolio Structure Comparison

The charts below compare the structure of the portfolio to that of the index from the three perspectives that have the greatest influence on return. The first chart compares the two portfolios across sectors. The second chart compares the duration distribution. The last chart compares the distribution across quality ratings.

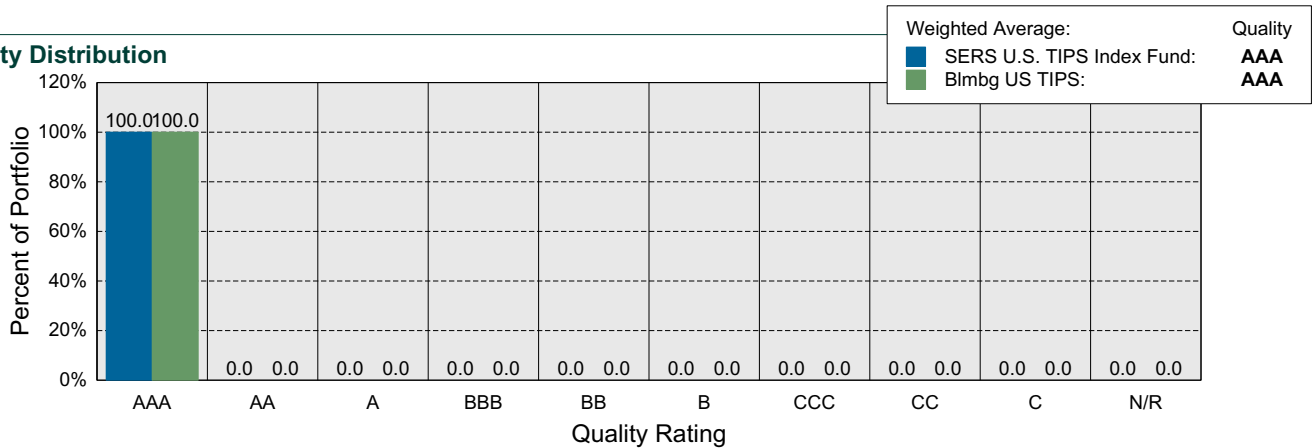
#### Sector Distribution



#### Duration Distribution



#### Quality Distribution

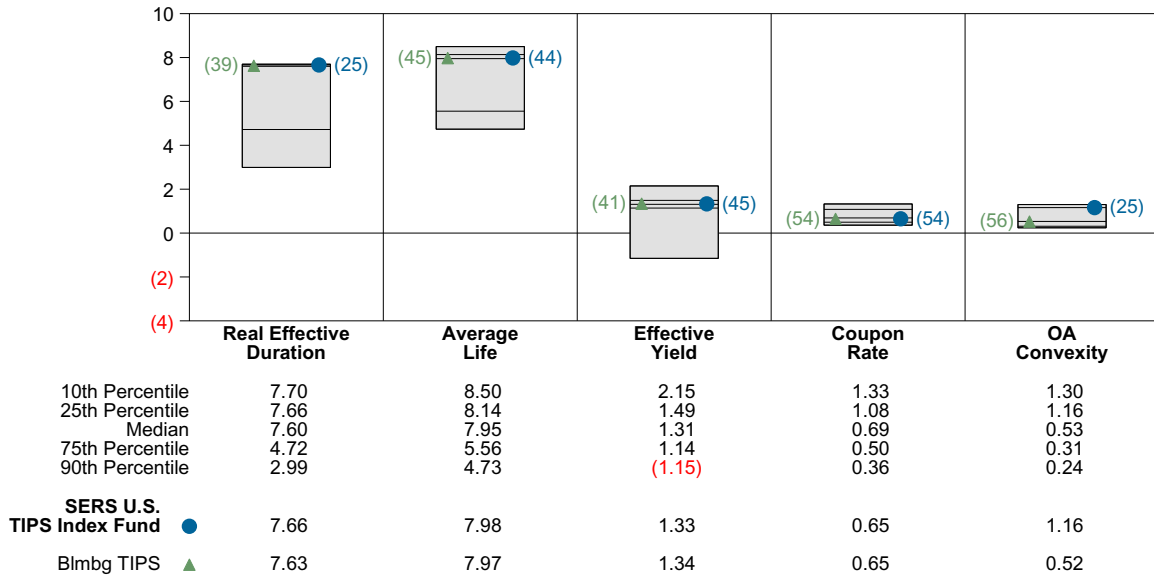


# SERS U.S. TIPS Index Fund Bond Characteristics Analysis Summary

## Portfolio Characteristics

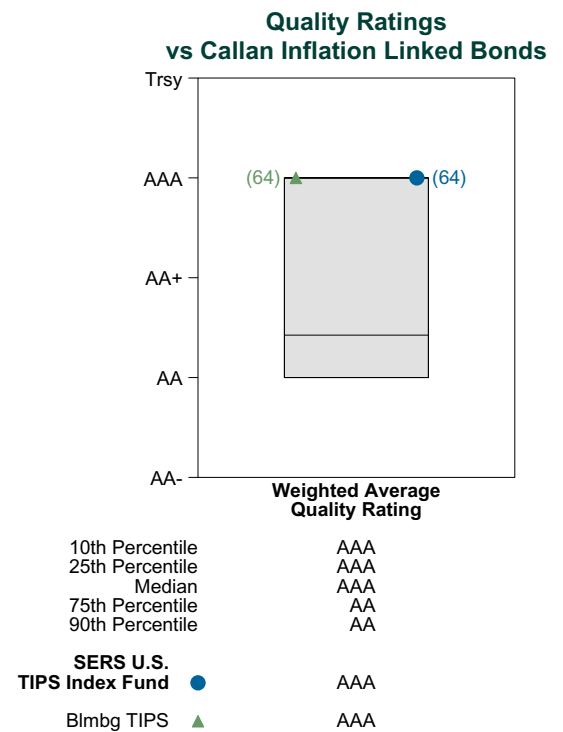
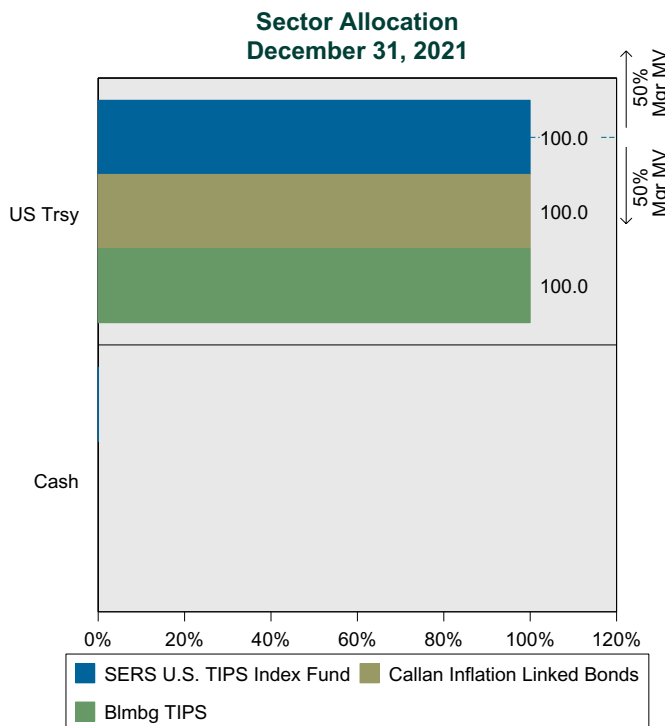
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

## Fixed Income Portfolio Characteristics Rankings Against Callan Inflation Linked Bonds as of December 31, 2021



## Sector Allocation and Quality Ratings

The first graph compares the manager's sector allocation with the average allocation across all the members of the manager's style. The second graph compares the manager's weighted average quality rating with the range of quality ratings for the style.



# SERS U.S. Bond Index Fund

## Period Ended December 31, 2021

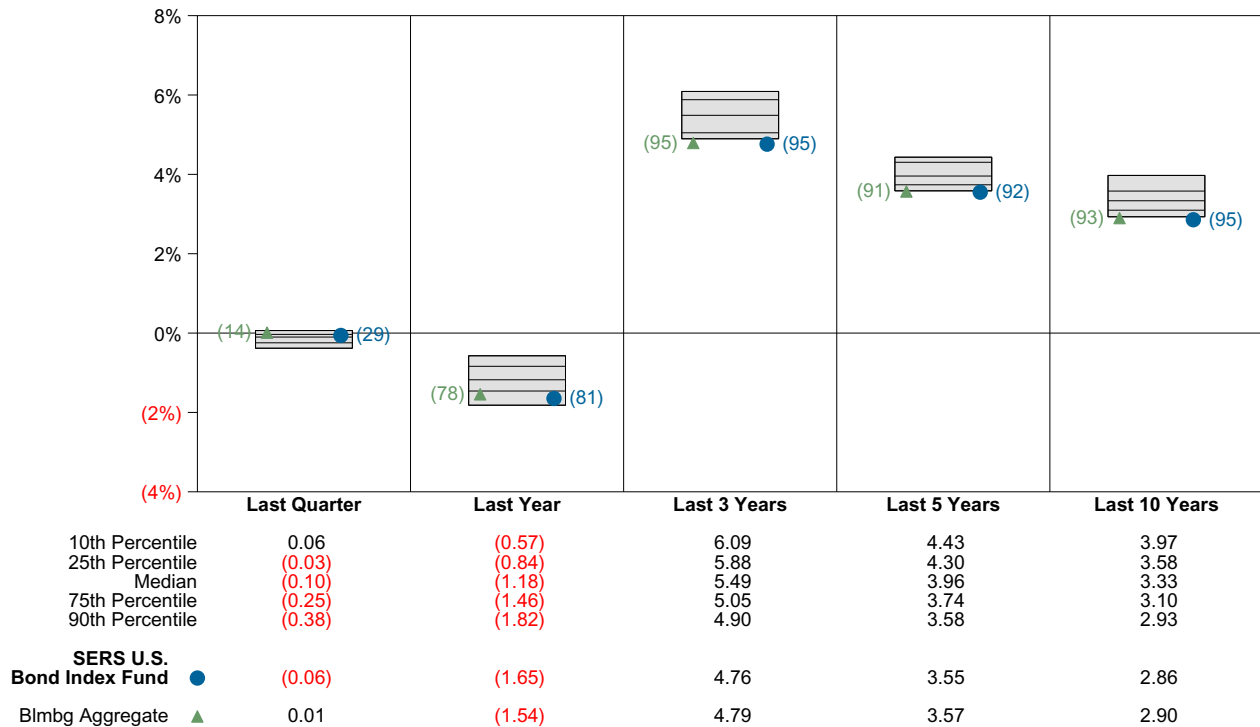
### Investment Philosophy

The objective of the Fund is to track the performance of the Bloomberg US Aggregate Bond Index. In meeting this objective, the Fund may invest in securities (including those issued through private placements) and a combination of other collective funds that together are designed to track the performance of the Bloomberg US Aggregate Bond Index. This fund is managed by Mellon Capital Management.

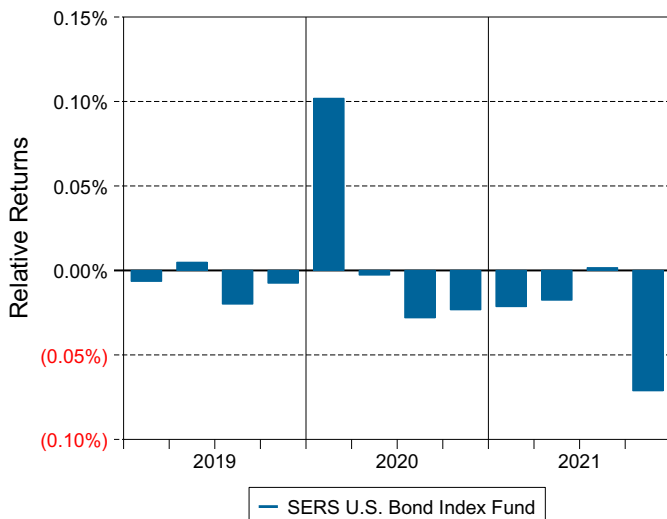
### Quarterly Summary and Highlights

- SERS U.S. Bond Index Fund's portfolio posted a (0.06)% return for the quarter placing it in the 29 percentile of the Callan Core Bond Mutual Funds group for the quarter and in the 81 percentile for the last year.
- SERS U.S. Bond Index Fund's portfolio underperformed the Blmbg Aggregate by 0.07% for the quarter and underperformed the Blmbg Aggregate for the year by 0.11%.

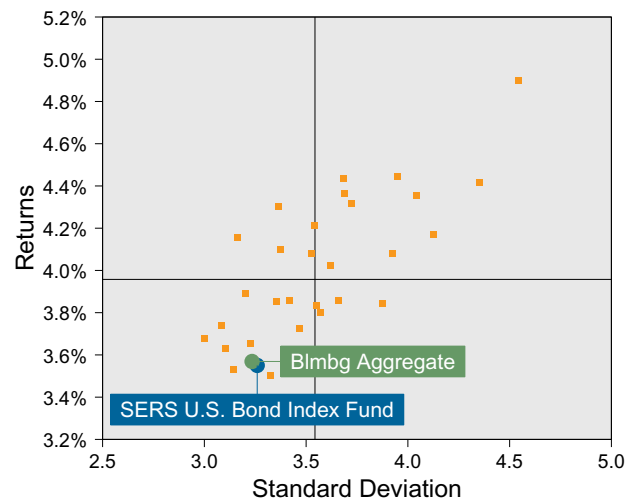
### Performance vs Callan Core Bond Mutual Funds (Institutional Net)



### Relative Return vs Blmbg Aggregate



### Callan Core Bond Mutual Funds (Institutional Net) Annualized Five Year Risk vs Return

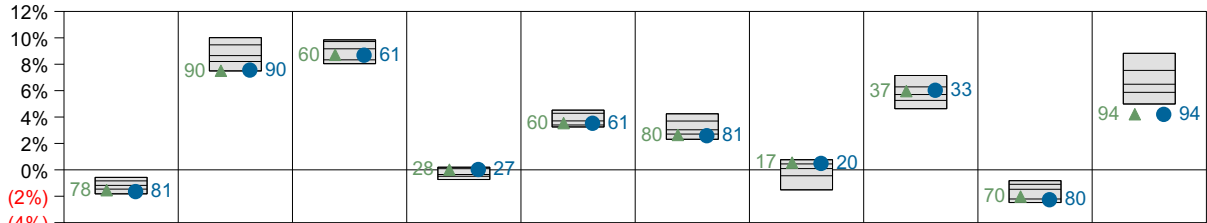


# SERS U.S. Bond Index Fund Return Analysis Summary

## Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

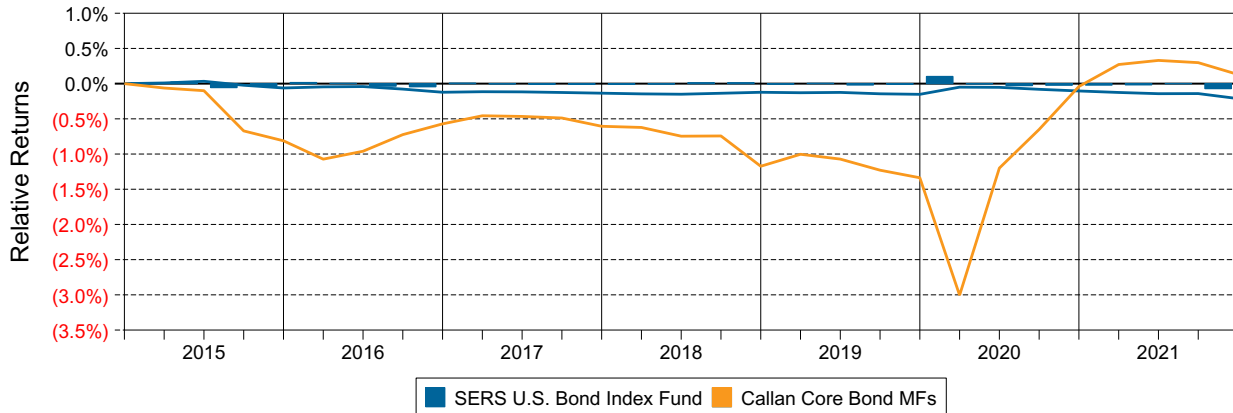
### Performance vs Callan Core Bond Mutual Funds (Institutional Net)



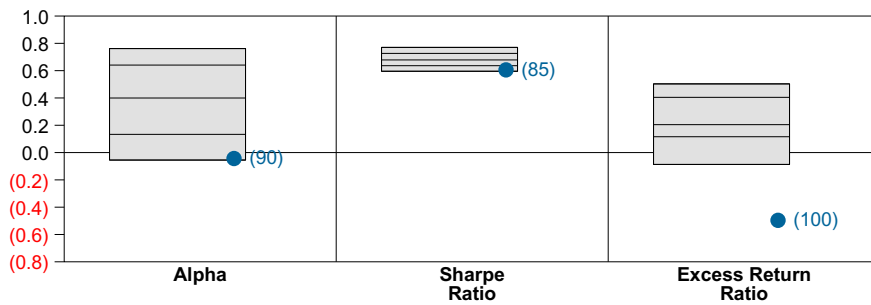
10th Percentile	(0.57)	10.01	9.85	0.20	4.52	4.25	0.77	7.15	(0.82)	8.83
25th Percentile	(0.84)	9.47	9.72	0.09	4.28	3.70	0.45	6.29	(1.10)	7.53
Median	(1.18)	8.65	9.17	(0.35)	3.71	3.03	0.10	5.71	(1.47)	6.49
75th Percentile	(1.46)	8.21	8.33	(0.49)	3.40	2.71	(0.45)	5.26	(2.21)	5.87
90th Percentile	(1.82)	7.49	8.04	(0.73)	3.25	2.31	(1.52)	4.63	(2.48)	4.99

	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
<b>SERS U.S. Bond Index Fund</b> ●	(1.65)	7.56	8.69	0.02	3.53	2.59	0.49	6.03	(2.26)	4.20
Blmbg Aggregate ▲	(1.54)	7.51	8.72	0.01	3.54	2.65	0.55	5.97	(2.02)	4.21

### Cumulative and Quarterly Relative Return vs Blmbg Aggregate



### Risk Adjusted Return Measures vs Blmbg Aggregate Rankings Against Callan Core Bond Mutual Funds (Institutional Net) Seven Years Ended December 31, 2021



10th Percentile	0.76	0.77	0.50
25th Percentile	0.64	0.73	0.40
Median	0.40	0.68	0.20
75th Percentile	0.13	0.64	0.12
90th Percentile	(0.05)	0.60	(0.09)
<b>SERS U.S. Bond Index Fund</b> ●	(0.04)	0.61	(0.50)

# SERS U.S. Bond Index Fund

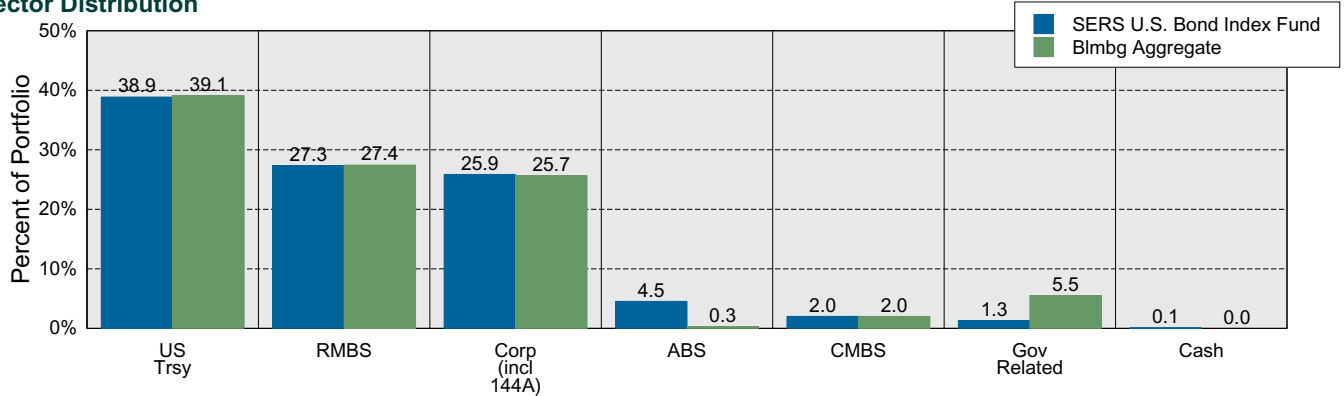
## Portfolio Characteristics Summary

### As of December 31, 2021

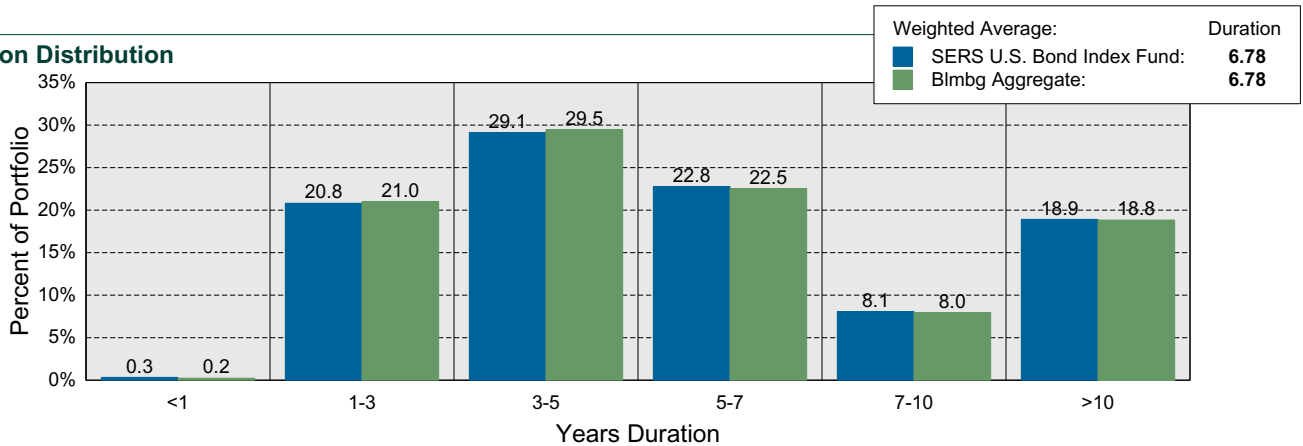
#### Portfolio Structure Comparison

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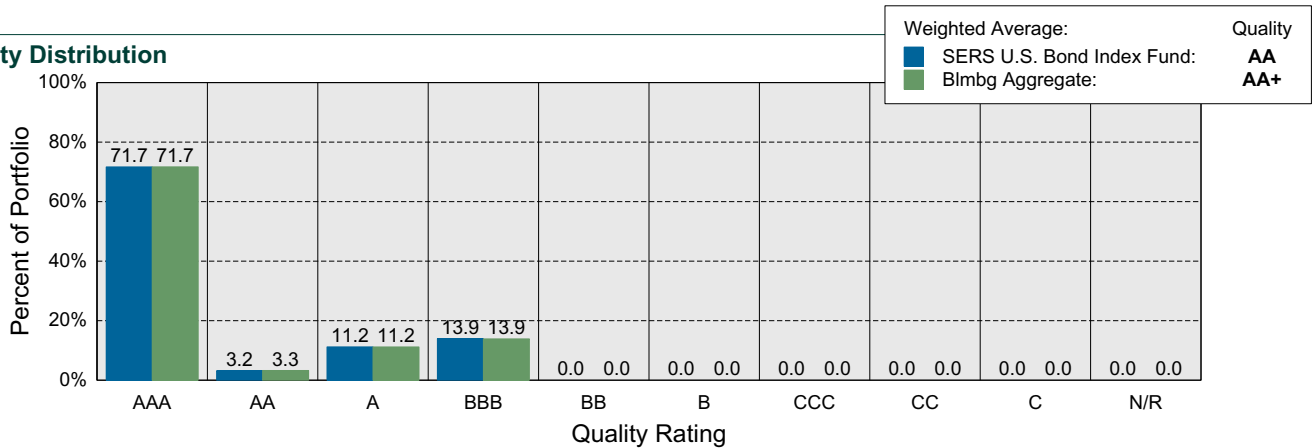
#### Sector Distribution



#### Duration Distribution



#### Quality Distribution



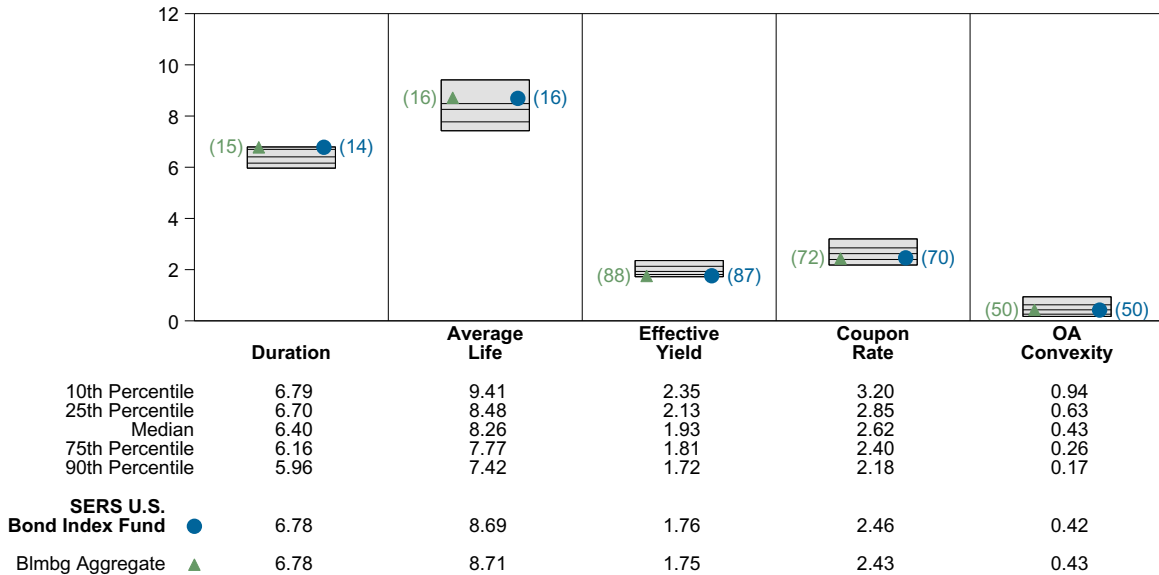
# SERS U.S. Bond Index Fund

## Bond Characteristics Analysis Summary

### Portfolio Characteristics

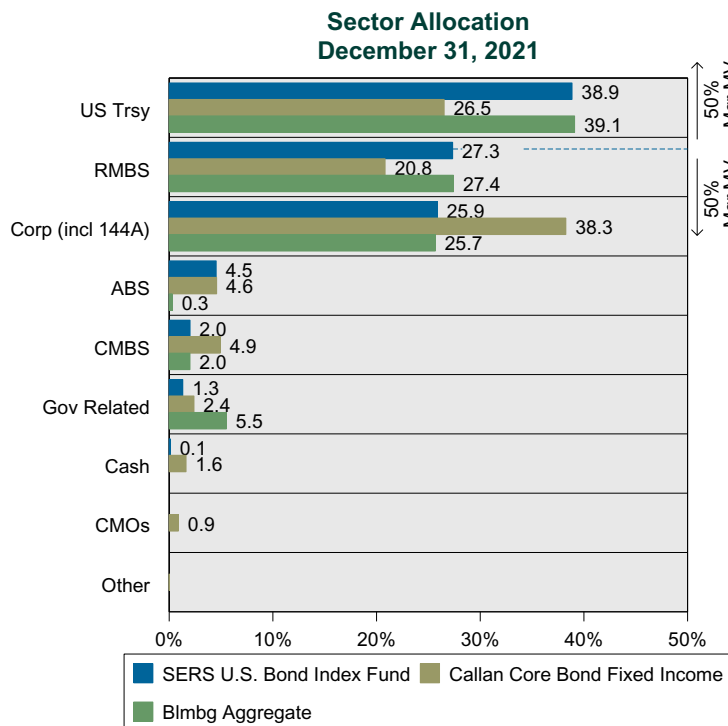
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

### Fixed Income Portfolio Characteristics Rankings Against Callan Core Bond Fixed Income as of December 31, 2021

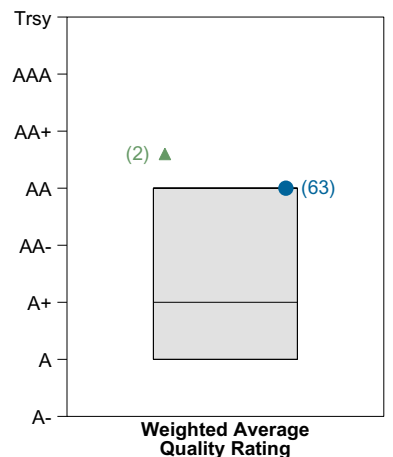


### Sector Allocation and Quality Ratings

The first graph compares the manager's sector allocation with the average allocation across all the members of the manager's style. The second graph compares the manager's weighted average quality rating with the range of quality ratings for the style.



#### Quality Ratings vs Callan Core Bond Fixed Income



10th Percentile	AA
25th Percentile	AA
Median	AA
75th Percentile	A+
90th Percentile	A
<b>SERS U.S. Bond Index Fund</b>	AA
Blmbg Aggregate	AA+





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## Equity Market Indicators

The market indicators included in this report are regarded as measures of equity or fixed income performance results. The returns shown reflect both income and capital appreciation.

**Standard & Poor's 500 Index** is designed to measure performance of the broad domestic economy through changes in the aggregate market value of 500 stocks representing all major industries. The index is capitalization-weighted, with each stock weighted by its proportion of the total market value of all 500 issues. Thus, larger companies have a greater effect on the index.

## Fixed Income Market Indicators

**90-Day U.S. Treasury Bills** provide a measure of riskless return. The rate of return is the average interest rate available on the beginning of each month for a Treasury Bill maturing in ninety days.

**Bloomberg Aggregate** is a combination of the Mortgage Backed Securities Index and the intermediate and long-term components of the Government/Credit Bond Index.

## International Equity Market Indicators

**Morgan Stanley Capital International (MSCI) EAFE Index** is composed of approximately 1000 equity securities representing the stock exchanges of Europe, Australia, New Zealand and the Far East. The index is capitalization-weighted and is expressed in terms of U.S. dollars.

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## Callan Databases

In order to provide comparative investment results for use in evaluating a fund's performance, Callan gathers rate of return data from investment managers. These data are then grouped by type of assets managed and by the type of investment manager. Except for mutual funds, the results are for tax-exempt fund assets. The databases, excluding mutual funds, represent investment managers who handle over 80% of all tax-exempt fund assets.

### Equity Funds

Equity funds concentrate their investments in common stocks and convertible securities. The funds included maintain well-diversified portfolios.

**Middle Capitalization** - Mutual Funds who invest primarily in mid-range companies with market capitalizations between core equity companies and small capitalization companies. The average market capitalization is approximately \$7 billion. Invests in securities with greater volatility than the broader market as measured by the risk statistics Beta and Standard Deviation. The Middle Capitalization Style Group consists of the Middle Capitalization Growth Equity and the Middle Capitalization Value Equity Style Groups.

### Fixed Income Funds

Fixed Income funds concentrate their investments in bonds, preferred stocks, and money market securities. The funds included maintain well-diversified portfolios.

**Core Bond** - Mutual Funds that construct portfolios to approximate the investment results of the Bloomberg Barclays Capital Government/Credit Bond Index or the Bloomberg Barclays Capital Aggregate Bond Index with a modest amount of variability in duration around the index. The objective is to achieve value added from sector and/or issue selection.

### Balanced Funds

Balanced funds diversify their investments among common stocks, bonds, preferred stocks and money market securities. The funds included maintain well-diversified equity and fixed income portfolios.

**Mutual Fund Balanced Funds** - The Mutual Fund Balanced Fund Database consists of open-end mutual fund balanced products.

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## Risk/Reward Statistics

The risk statistics used in this report examine performance characteristics of a manager or a portfolio relative to a benchmark (market indicator) which assumes to represent overall movements in the asset class being considered. The main unit of analysis is the excess return, which is the portfolio return minus the return on a risk free asset (3 month T-Bill).

**Alpha** measures a portfolio's return in excess of the market return adjusted for risk. It is a measure of the manager's contribution to performance with reference to security selection. A positive alpha indicates that a portfolio was positively rewarded for the residual risk which was taken for that level of market exposure.

**Beta** measures the sensitivity of rates of portfolio returns to movements in the market index. A portfolio's beta measures the expected change in return per 1% change in the return on the market. If a beta of a portfolio is 1.5, a 1 percent increase in the return on the market will result, on average, in a 1.5 percent increase in the return on the portfolio. The converse would also be true.

**Downside Risk** stems from the desire to differentiate between "good risk" (upside volatility) and "bad risk" (downside volatility). Whereas standard deviation punishes both upside and downside volatility, downside risk measures only the standard deviation of returns below the target. Returns above the target are assigned a deviation of zero. Both the frequency and magnitude of underperformance affect the amount of downside risk.

**Excess Return Ratio** is a measure of risk adjusted relative return. This ratio captures the amount of active management performance (value added relative to an index) per unit of active management risk (tracking error against the index.) It is calculated by dividing the manager's annualized cumulative excess return relative to the index by the standard deviation of the individual quarterly excess returns. The Excess Return Ratio can be interpreted as the manager's active risk/reward tradeoff for diverging from the index when the index is mandated to be the "riskless" market position.

**Information Ratio** measures the manager's market risk-adjusted excess return per unit of residual risk relative to a benchmark. It is computed by dividing alpha by the residual risk over a given time period. Assuming all other factors being equal, managers with lower residual risk achieve higher values in the information ratio. Managers with higher information ratios will add value relative to the benchmark more reliably and consistently.

**R-Squared** indicates the extent to which the variability of the portfolio returns are explained by market action. It can also be thought of as measuring the diversification relative to the appropriate benchmark. An r-squared value of .75 indicates that 75% of the fluctuation in a portfolio return is explained by market action. An r-squared of 1.0 indicates that a portfolio's returns are entirely related to the market and it is not influenced by other factors. An r-squared of zero indicates that no relationship exists between the portfolio's return and the market.

**Relative Standard Deviation** is a simple measure of a manager's risk (volatility) relative to a benchmark. It is calculated by dividing the manager's standard deviation of returns by the benchmark's standard deviation of returns. A relative standard deviation of 1.20, for example, means the manager has exhibited 20% more risk than the benchmark over that time period. A ratio of .80 would imply 20% less risk. This ratio is especially useful when analyzing the risk of investment grade fixed-income products where actual historical durations are not available. By using this relative risk measure over rolling time periods one can illustrate the "implied" historical duration patterns of the portfolio versus the benchmark.

**Residual Portfolio Risk** is the unsystematic risk of a fund, the portion of the total risk unique to the fund (manager) itself and not related to the overall market. This reflects the "bets" which the manager places in that particular asset market. These bets may reflect emphasis in particular sectors, maturities (for bonds), or other issue specific factors which the manager considers a good investment opportunity. Diversification of the portfolio will reduce or eliminate the residual risk of that portfolio.

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## Risk/Reward Statistics

**Rising Declining Periods** refer to the sub-asset class cycles vis-a-vis the broader asset class. This is determined by evaluating the cumulative relative sub-asset class index performance to that of the broader asset class index. For example, to determine the Growth Style cycle, the S&P 500 Growth Index (sub-asset class) performance is compared to that of the S&P 500 Index (broader asset class).

**Sharpe Ratio** is a commonly used measure of risk-adjusted return. It is calculated by subtracting the "risk-free" return (usually 3 Month Treasury Bill) from the portfolio return and dividing the resulting "excess return" by the portfolio's risk level (standard deviation). The result is a measure of return gained per unit of risk taken.

**Sortino Ratio** is a downside risk-adjusted measure of value-added. It measures excess return over a benchmark divided by downside risk. The natural appeal is that it identifies value-added per unit of truly bad risk. The danger of interpretation, however, lies in these two areas: (1) the statistical significance of the denominator, and (2) its reliance on the persistence of skewness in return distributions.

**Standard Deviation** is a statistical measure of portfolio risk. It reflects the average deviation of the observations from their sample mean. Standard deviation is used as an estimate of risk since it measures how wide the range of returns typically is. The wider the typical range of returns, the higher the standard deviation of returns, and the higher the portfolio risk. If returns are normally distributed (ie. has a bell shaped curve distribution) then approximately 2/3 of the returns would occur within plus or minus one standard deviation from the sample mean.

**Total Portfolio Risk** is a measure of the volatility of the quarterly excess returns of an asset. Total risk is composed of two measures of risk: market (non-diversifiable or systematic) risk and residual (diversifiable or unsystematic) risk. The purpose of portfolio diversification is to reduce the residual risk of the portfolio.

**Tracking Error** is a statistical measure of a portfolio's risk relative to an index. It reflects the standard deviation of a portfolio's individual quarterly or monthly returns from the index's returns. Typically, the lower the Tracking Error, the more "index-like" the portfolio.

**Treynor Ratio** represents the portfolio's average excess return over a specified period divided by the beta relative to its benchmark over that same period. This measure reflects the reward over the risk-free rate relative to the systematic risk assumed.

Note: Alpha, Total Risk, and Residual Risk are annualized.



## Quarterly Highlights

The Callan Institute provides research to update clients on the latest industry trends and carefully structured educational programs to enhance the knowledge of industry professionals. Visit [www.callan.com/research-library](http://www.callan.com/research-library) to see all of our publications, and [www.callan.com/blog](http://www.callan.com/blog) to view our blog. For more information contact Barb Gerraty at 415-274-3093 / [institute@callan.com](mailto:institute@callan.com).

## New Research from Callan's Experts

**[2021 Investment Management Fee Study](#)** | The purpose of this study, the ninth we have done, is to provide a detailed analysis on institutional investment management fee levels and trends across multiple asset classes and mandate sizes, for both active and passive management.

**[2021 Nuclear Decommissioning Funding Study](#)** | This study offers key insights into the status of nuclear decommissioning funding to make peer comparisons more accurate and relevant.

**[2021 Private Equity Fees and Terms Study](#)** | This study is intended to help institutional investors better evaluate private equity funds, serving as an industry benchmark when comparing a partnership's terms to its peers.

**[2021 Cost of Doing Business Survey](#)** | In this survey, Callan compares the costs of administering and operating funds across all types of tax-exempt and tax-qualified organizations in the U.S. We identify practices to help institutional investors manage expenses.

**[A Guide to Reinsurance for Institutional Investors](#)** | Reinsurance investments are a potential option for institutional investors looking to diversify both equity and rate risks while also offering attractive risk-adjusted returns. Sean Lee examines how insurance-linked securities can be incorporated into institutional investors' portfolios.

**[2021 ESG Survey](#)** | Callan's ninth annual survey assessing the status of environmental, social, and governance (ESG) investing in the U.S. institutional investment market.

## Blog Highlights

**[Rising Rates! Why the Heck Do We Own Bonds?](#)** | Investment grade bonds spin off yield and participate in rising rate markets through principal reinvestment, and their return distribution

provides downside protection that counter-balances growth-oriented portfolio investments. Despite frustratingly low expected returns, IG bonds can still contribute meaningfully to the long-term investment goals of most institutional investors.

**[Understanding Return Forecasts for Public DB Plans](#)** | It is important for decision makers to understand that actuaries and investment consultants offer assumptions on expected return that are inherently different: Actuarial discount rates assume a static return over time with no variability, whereas investment consultants estimate a median and a range of expected returns based on expected risk.

## Quarterly Periodicals

**[Private Equity Trends, 3Q21](#)** | A high-level summary of private equity activity in the quarter through all the investment stages

**[Active vs. Passive Charts, 3Q21](#)** | A comparison of active managers alongside relevant benchmarks over the long term

**[Market Pulse Flipbook, 3Q21](#)** | A quarterly market reference guide covering trends in the U.S. economy, developments for institutional investors, and the latest data on the capital markets

**[Capital Markets Review, 3Q21](#)** | Analysis and a broad overview of the economy and public and private market activity each quarter across a wide range of asset classes

**[Hedge Fund Quarterly, 3Q21](#)** | Commentary on developments for hedge funds and multi-asset class (MAC) strategies

**[Real Assets Reporter, 3Q21](#)** | A summary of market activity for real assets and private real estate during the quarter

## Events

A complete list of all upcoming events can be found on our website: [callan.com/events-education](http://callan.com/events-education).

Please mark your calendar and look forward to upcoming invitations:

**2022 DC Survey Results Webinar**  
February 23, 2022 – 9:30 am (PT)

**National Conference**  
April 25-27, 2022, in San Francisco

For more information about events, please contact Barb Gerraty: 415-274-3093 / [gerraty@callan.com](mailto:gerraty@callan.com)

## Education: By the Numbers

**50+** Unique pieces of research the Institute generates each year

**525** Attendees (on average) of the Institute's annual National Conference

**3,700** Total attendees of the "Callan College" since 1994



"Research is the foundation of all we do at Callan, and sharing our best thinking with the investment community is our way of helping to foster dialogue to raise the bar across the industry."

Greg Allen, CEO and Chief Research Officer

## Education

Founded in 1994, the "Callan College" offers educational sessions for industry professionals involved in the investment decision-making process.

**Introduction to Investments**  
March 1-3, 2022 – Virtual

This program familiarizes institutional investor trustees and staff and asset management advisers with basic investment theory, terminology, and practices. Our virtual session is held over three days with virtual modules of 2.5-3 hours, while the in-person session lasts one-and-a-half days. This course is designed for individuals with less than two years of experience with asset-management oversight and/or support responsibilities. Virtual tuition is \$950 per person and includes instruction and digital materials. In-person tuition is \$2,350 per person and includes instruction, all materials, breakfast and lunch on each day, and dinner on the first evening with the instructors.

Additional information including registration can be found at: [callan.com/events/ccintro-march/](http://callan.com/events/ccintro-march/)

**Introductory Workshop for DC Plan Fiduciaries**  
March 23, 2022 – San Francisco

This one-day workshop centers on the fundamentals of administering a defined contribution (DC) plan. Designed primarily for ERISA fiduciaries and supporting staff members, attendees will gain a better understanding of the key responsibilities of an ERISA fiduciary and best practices for executing those responsibilities. Additionally, we will cover the basics of capital markets theory and DC investment menu design principles; investment manager evaluation, selection, and monitoring; best practices for evaluating fees; the regulatory and legal landscape; and industry trends. This workshop is complimentary and open to institutional investor clients.

Additional information including dates and registration can be found at: [callan.com/events/mar-dc-college/](http://callan.com/events/mar-dc-college/)









