

March 31, 2020

**Pennsylvania SERS 401(a)**



**Investment Measurement Service  
Quarterly Review**

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**U.S. EQUITY**

During the 1st quarter of 2020, the COVID-19 pandemic coupled with an oil price war between Saudi Arabia and Russia spurred extreme global market volatility, which was further exacerbated by the realization that a shelter-in-place mandate was required to overcome the spread of the disease, subsequently inducing an all-but-certain global recession.

**Large cap (S&P 500: -19.6%; Russell 1000: -20.2%)**

- Cyclical were punished while Technology, Staples, and Health Care were more resilient.
- Energy (-50.5%) plunged as demand declined and OPEC and Russia refused to cut production, driving down oil prices globally.
- Financials (-31.9%) and Industrials (-27.1%) fell sharply as interest rates were cut by the Fed in an emergency session, and due to expectations of a steep GDP decline because of COVID-19.
- Technology fared the best (-11.9%). The FAAMG stocks had an average return of -7.9% in Q1, led by Amazon (+5.5%) and Microsoft (+0.3%); Health Care (-12.7%) and Consumer Staples (-12.7%) also held up better than the index average.

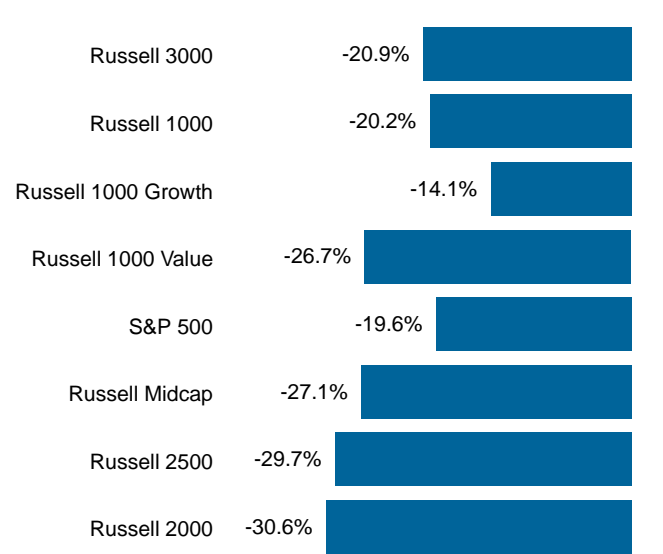
**Large cap outpaced small cap for the quarter**

- The Russell 2000 (-30.6%) experienced its worst quarter on record.
- The perceived safety of larger companies combined with more acute exposure to COVID-19 impact (e.g., restaurants, hotels, airlines, REITs) drove the sell-off.
- The performance of the Russell 2000 Value (-35.7%) was driven by its exposure to Energy (especially exploration and production companies) and Financials (banks).

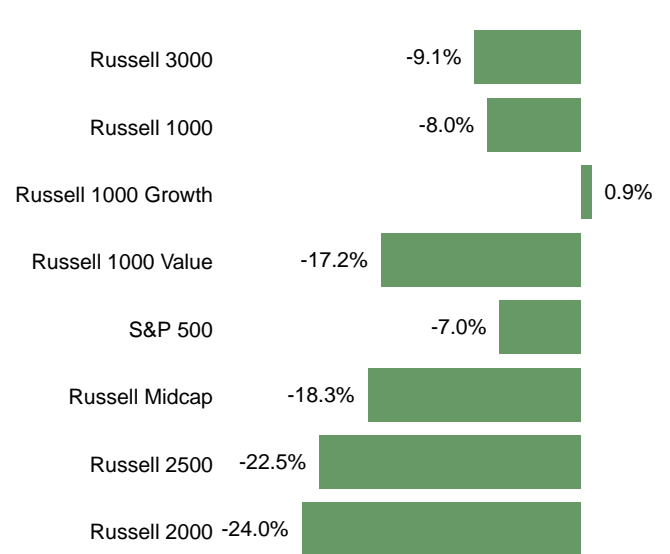
**Growth outpaces value across market capitalizations**

- The spread between Russell 1000 Growth (-14.1%) and Russell 2000 Value (-35.7%) was one of the widest ever.
- Russell MidCap Value (-0.8%) and Russell 2000 Value (-2.4%) now have negative annualized returns over a trailing five-year time period.

**U.S. Equity: Quarterly Returns**

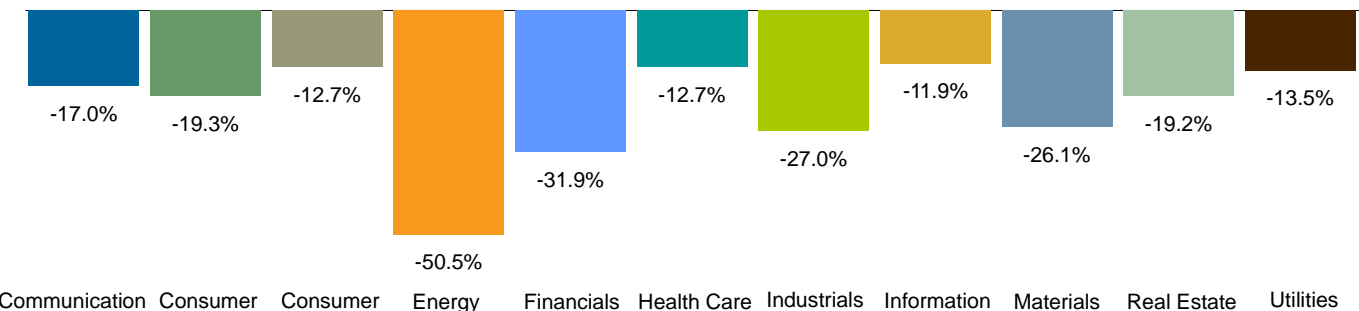


**U.S. Equity: One-Year Returns**



Sources: FTSE Russell, Standard & Poor's

**S&P Sector Returns, Quarter Ended March 31, 2020**



Source: Standard & Poor's

**GLOBAL/GLOBAL EX-U.S. EQUITY**

The COVID-19 pandemic coupled with the oil price war between Saudi Arabia and Russia injected significant volatility into the global equity markets, with most major indices entering bear market territory.

**Global/Developed ex-U.S.** (MSCI EAFE: -22.8%; MSCI World ex USA: -23.3%; MSCI ACWI ex USA: -23.4%; MSCI Japan: -16.8%; MSCI Pacific ex Japan: -27.6%)

- Fears of the pandemic and a global recession stoked the worst quarterly sell off since 2008 as economic activity halted worldwide.
- The oil price war further exacerbated the market meltdown, bidding up safe-haven assets and currencies.
- The U.S. dollar outperformed the euro, the British pound, and other major currencies, while underperforming the Swiss franc and yen.
- Every sector posted negative returns, led by cyclicals like travel-related industries, Energy, and Financials given the state of the economy and oil prices.
- Defensive sectors generally were under less pressure as demand for basic necessities to function (i.e., e-commerce and mobility) and combat the pandemic (i.e., diagnostics and treatment) helped stabilize Health Care, Consumer Staples, and Information Technology.
- Factor performance in developed ex-U.S. markets reflected risk aversion, including beta, size, and volatility.

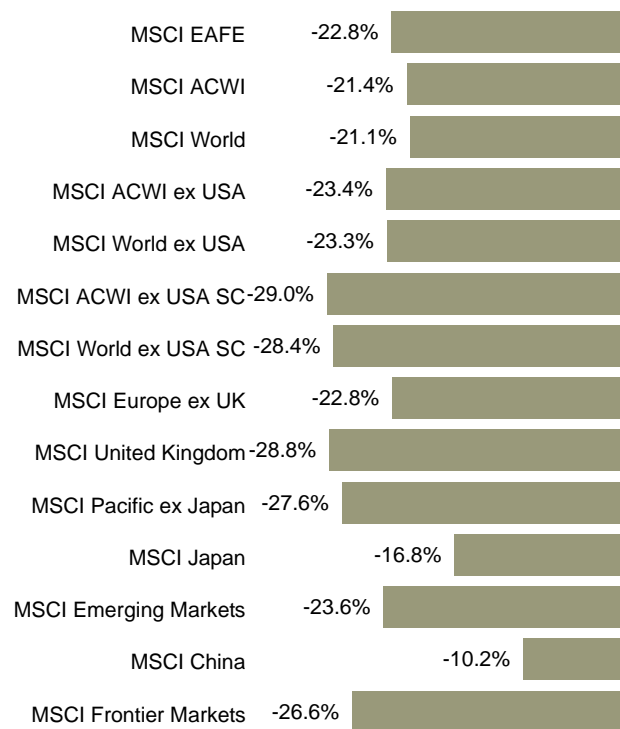
**Emerging Markets** (MSCI Emerging Markets Index: -23.6%)

- Decisive actions to contain the pandemic and stimulate the economy allowed China to outperform every developed and developing country.
- A looming global recession and the collapse in oil prices decimated commodities-levered economies like Brazil, South Africa, and Russia.
- Every sector posted negative returns, led by cyclicals such as travel-related industries, Energy, and Financials.
- Defensive sectors generally were under less pressure as demand for basic necessities and for diagnostics and treatment helped stabilize Health Care, Consumer Staples, and Information Technology.

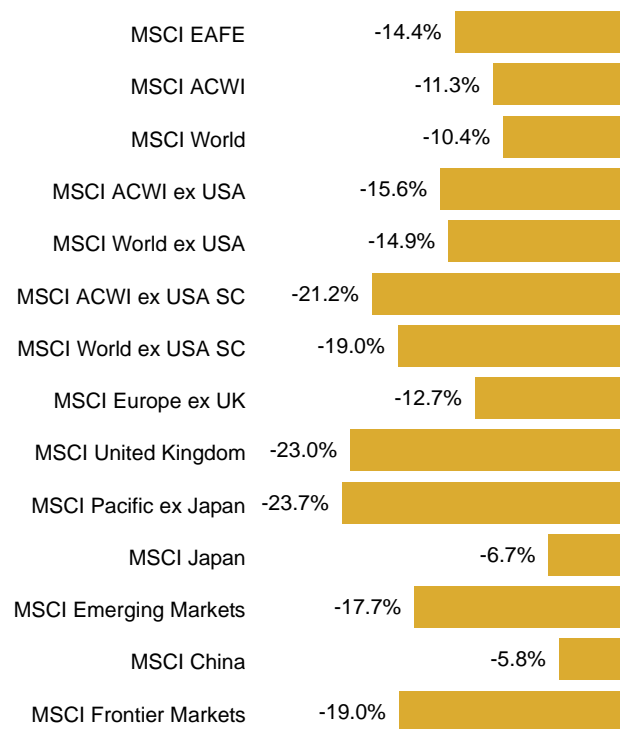
**Global ex-U.S. Small Cap** (MSCI World ex USA Small Cap: -28.4%; MSCI EM Small Cap: -31.4%; MSCI ACWI ex USA Small Cap: -29.0%)

- "Risk-off" market environment challenged small cap relative to large cap in both developed and emerging markets.
- Growth significantly outperformed value both within developed and emerging markets, supported by strong performance in Health Care, Consumer Staples, and Information Technology.

**Global Equity: Quarterly Returns**



**Global Equity: One-Year Returns**



Source: MSCI

**U.S. FIXED INCOME**

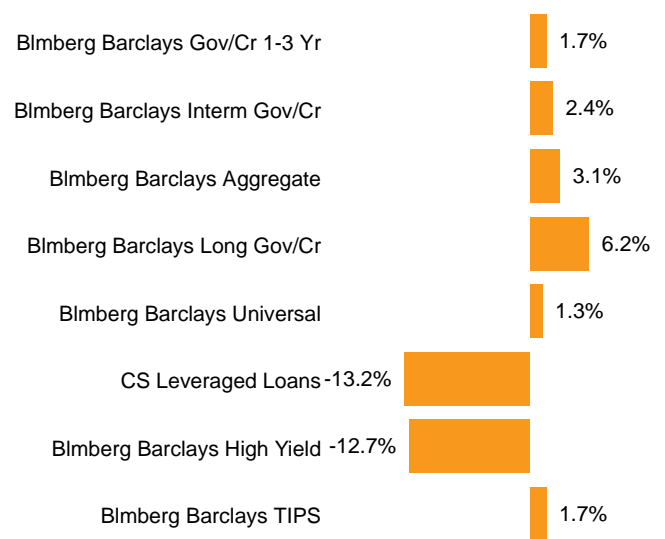
**Treasuries rallied as investors sought safety**

- The 10-year U.S. Treasury yield reached a low in March of 0.31% before closing the quarter at 0.70%, down sharply from the 2019 year-end level of 1.92%.
- The Treasury yield curve steepened as the Fed cut rates to 0%-0.25%.
- TIPS underperformed nominal Treasuries as expectations for inflation sank. The 10-year breakeven spread ended the quarter at 87 bps, down sharply from 177 bps at year-end.

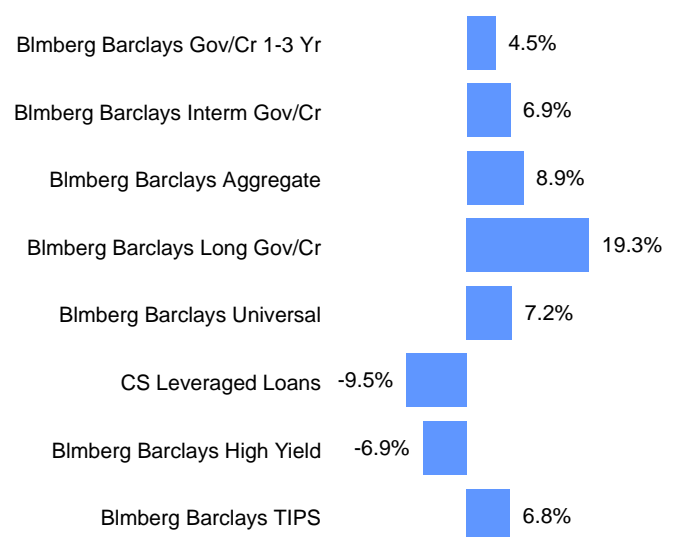
**Investors spurned credit risk**

- Investment grade and high yield bond funds experienced record outflows as investors flocked to cash.
- Investment grade corporate spreads widened by 149 bps to 272 bps, representing the hardest hit sector in the Bloomberg Barclays US Aggregate Bond Index, particularly within Industrials, where several well-known issuers were downgraded to below investment grade, including Occidental Petroleum and Ford.
- The quality bias was evident as BBB-rated credit (-7.4%) underperformed single A or higher (+0.5%).
- CCC-rated high yield corporates (-20.6%) lagged BB-rated corporates (-10.2%).
- Energy (-38.9%) was the lowest-performing high yield bond sub-sector as oil prices collapsed.

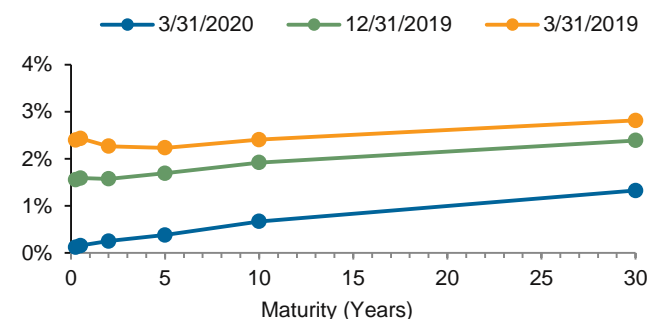
**U.S. Fixed Income: Quarterly Returns**



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



**U.S. Treasury Yield Curves**



Sources: Bloomberg, Bloomberg Barclays, Credit Suisse

**GLOBAL FIXED INCOME**

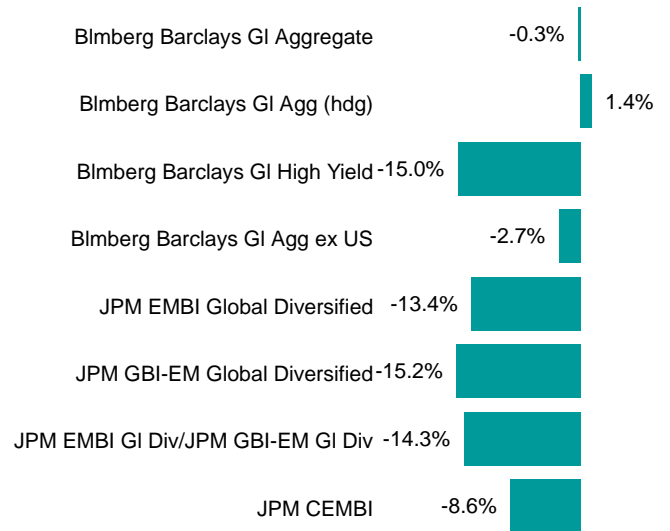
**Global ex-U.S. fixed income ended slightly down**

- Developed market sovereign bond yields ended the quarter slightly higher even as central banks stepped in to provide support to their economies; the European Central Bank launched a €750 billion stimulus program and the Bank of England cut interest rates.
- The U.S. dollar rose against the Australian dollar, British pound, and euro as investors sought safety within the greenback.

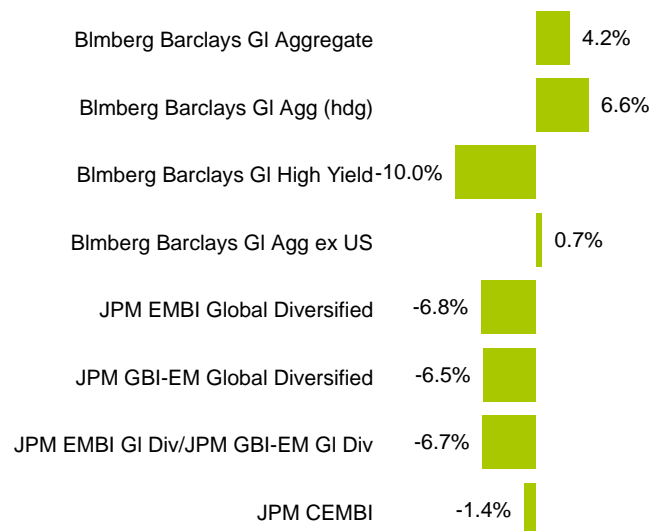
**Emerging market debt plummeted in the risk-off environment**

- Within the dollar-denominated benchmark, returns were mixed amongst its 60+ constituents.
- Within the local currency-denominated benchmark, several local market returns in Latin America dropped about 20% (Brazil, Mexico, and Colombia) and South Africa dropped 29% as oil-sensitive economies suffered from the drop in oil prices.

**Global Fixed Income: Quarterly Returns**

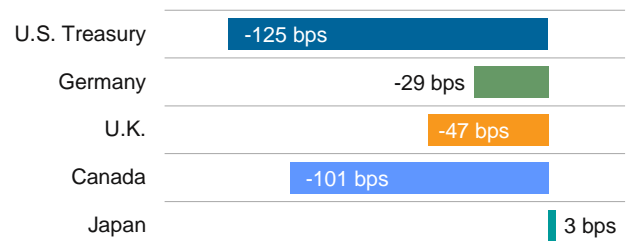


**Global Fixed Income: One-Year Returns**



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

**4Q19 to 1Q20**



Sources: Bloomberg, Bloomberg Barclays, JP Morgan





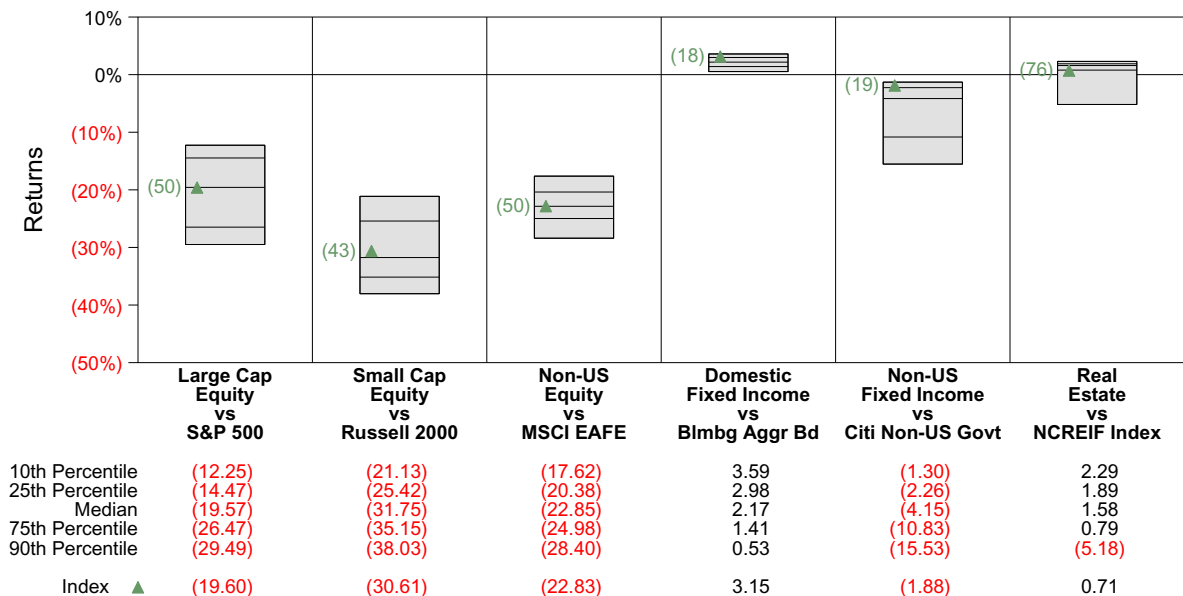
## Market Overview

### Active Management vs Index Returns

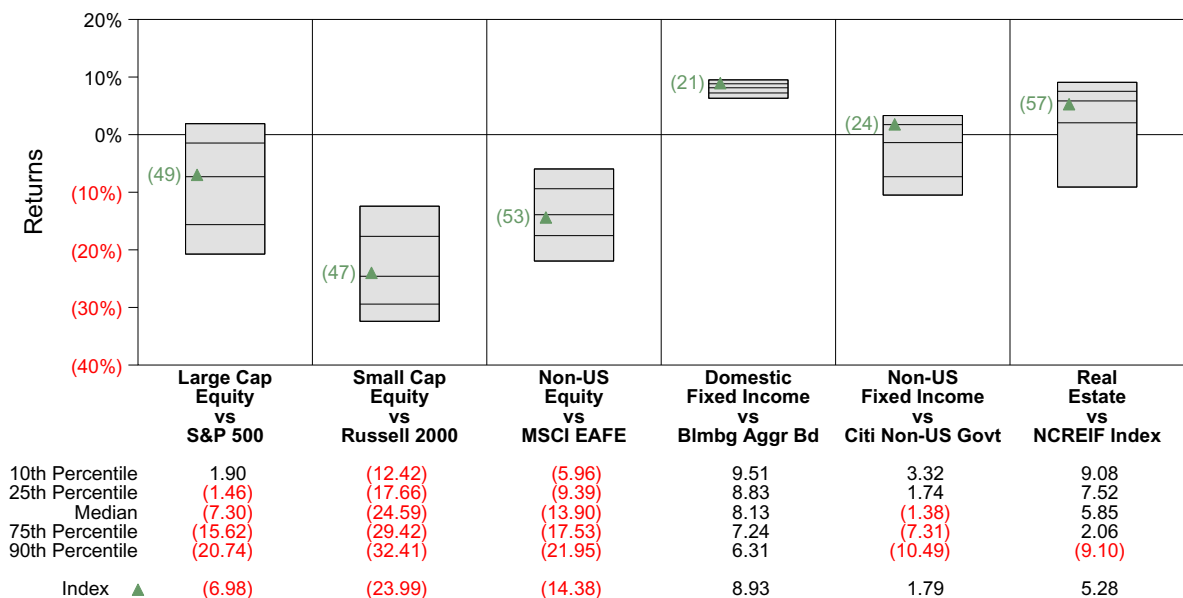
#### Market Overview

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 March 31, 2020



#### Range of Separate Account Manager Returns by Asset Class One Year Ended March 31, 2020

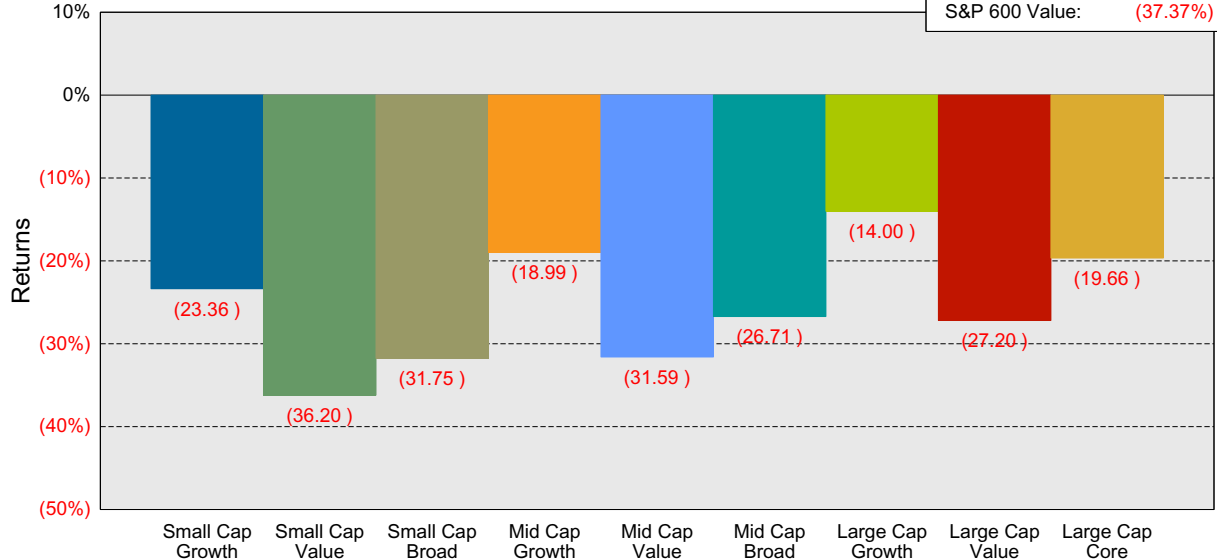


## Domestic Equity Active Management Overview

The S&P 500 Index plunged 19.6% in the first quarter, its worst quarterly return since the Global Financial Crisis. After falling more than 30% from peak to trough in just a few weeks, the Index rallied 20% going into quarter-end as investors were heartened by the prospect of a \$2 trillion stimulus package. Notably, the decline marked the fastest bear market (defined as 20% drop in prices) in history 16 days from the high mark hit on February 19. Every sector experienced double-digit declines, with Information Technology (-11.9%), Consumer Staples (-12.7%), and Health Care (-12.7%) feeling the least pain. Financials (-31.9%) and Energy (-50.5%) fell the most. Financials were hurt by sharp declines in interest rates, and Energy's performance reflected plummeting oil prices. Oil prices tumbled 66%, with WTI Crude ending the quarter at \$20.48, down from roughly \$60 at the start of the year. From a style viewpoint, growth significantly outperformed value (Russell 1000 Growth: -14.1%; Russell 1000 Value: -26.7%). Growth indices benefited from Technology exposure while Value struggled with relatively heavy weights in Energy and Financials. Large cap (Russell 1000: -20.2%) outperformed small cap (Russell 2000: -30.6%). Small value (Russell 2000 Value: -35.7%) saw the sharpest decline.

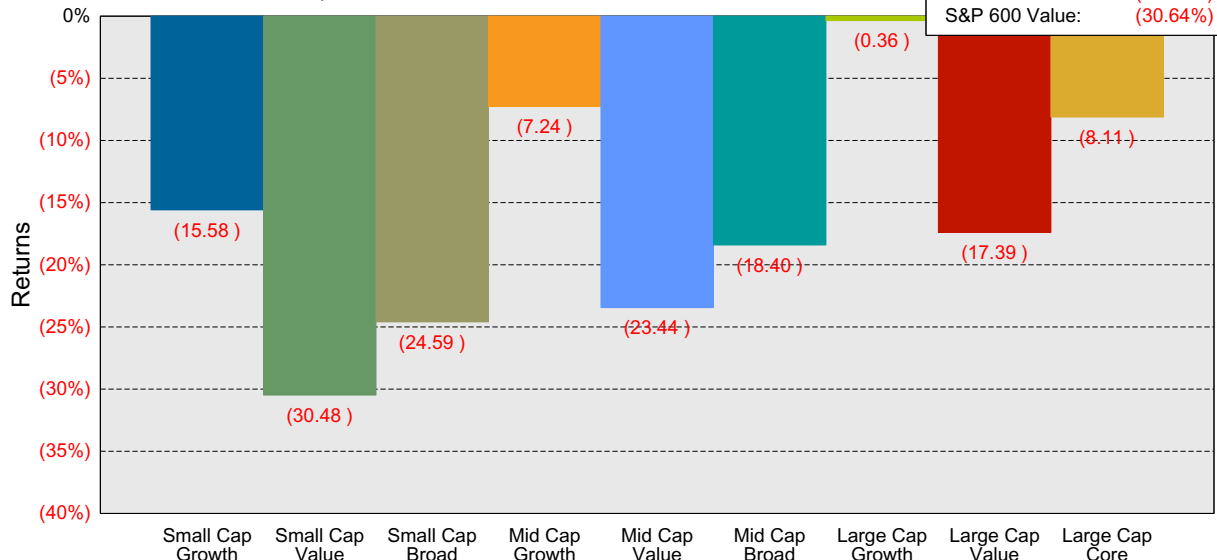
S&P 500:	(19.60%)
S&P 500 Growth:	(14.50%)
S&P 500 Value:	(25.34%)
S&P Mid Cap:	(29.70%)
S&P 600:	(32.64%)
S&P 600 Growth:	(28.11%)
S&P 600 Value:	(37.37%)

### Separate Account Style Group Median Returns for Quarter Ended March 31, 2020



S&P 500:	(6.98%)
S&P 500 Growth:	(2.47%)
S&P 500 Value:	(12.20%)
S&P Mid Cap:	(22.51%)
S&P 600:	(25.89%)
S&P 600 Growth:	(21.44%)
S&P 600 Value:	(30.64%)

### Separate Account Style Group Median Returns for One Year Ended March 31, 2020

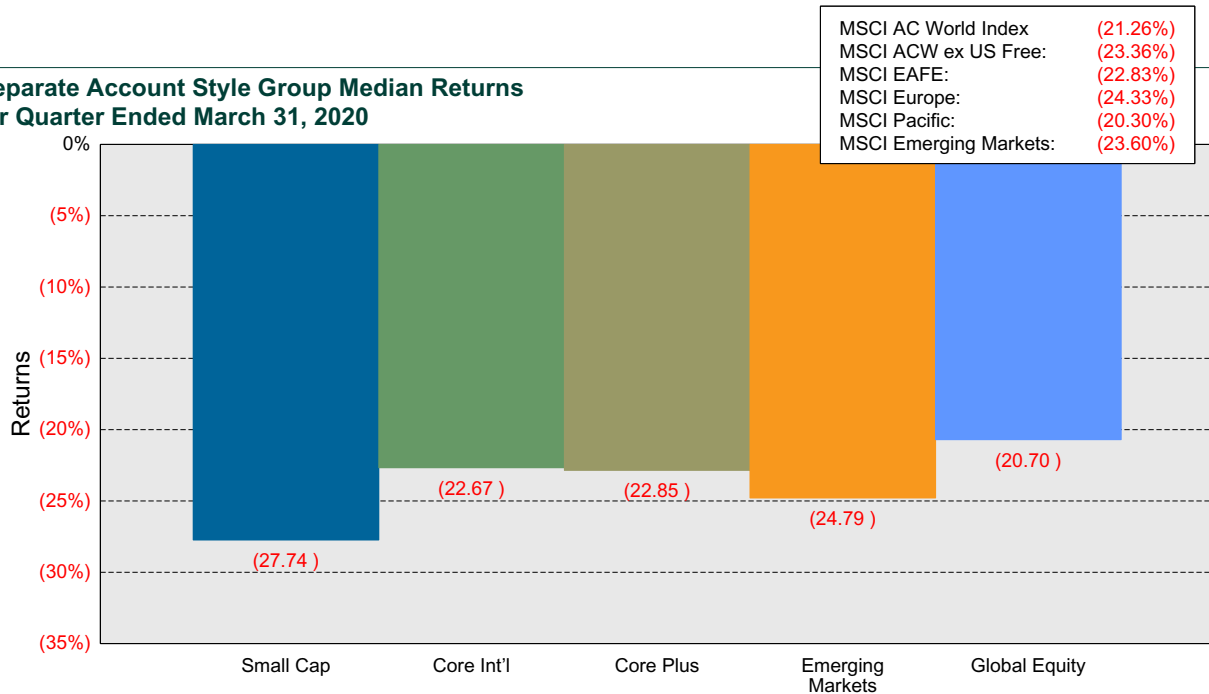


## International Equity Active Management Overview

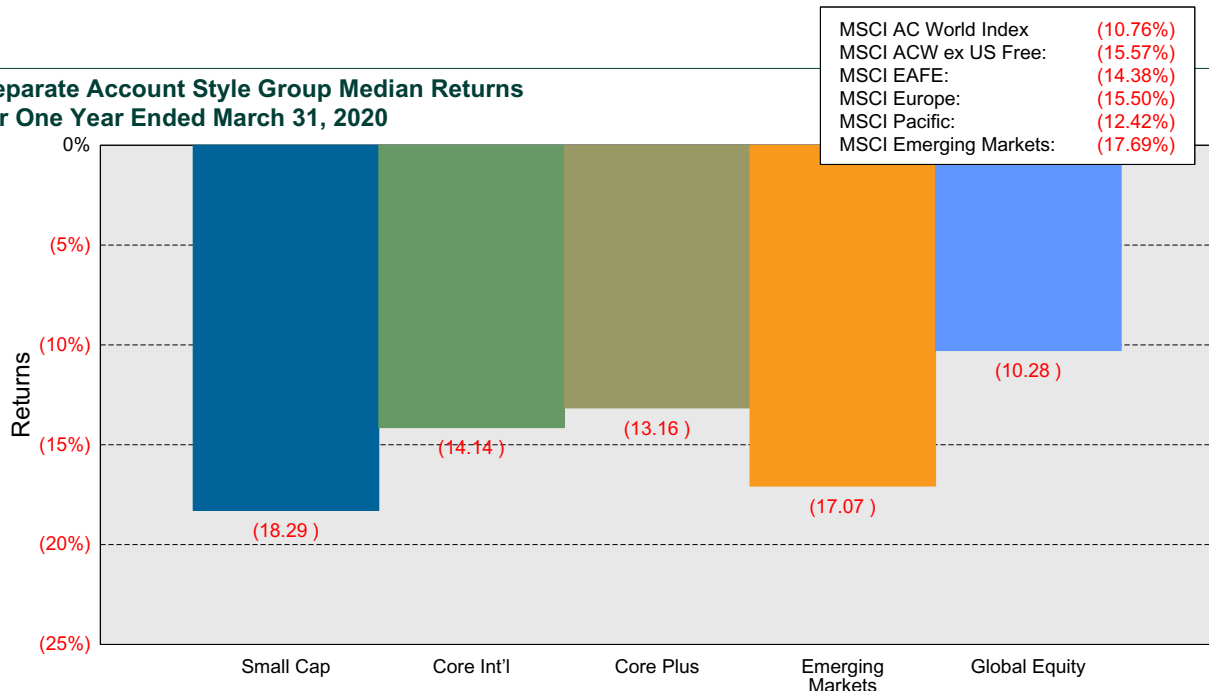
Global ex-U.S. equity indices fell sharply in the first quarter; the MSCI ACWI ex-USA Index dropped 23.4%. Across developed markets, Canada (-28%), the U.K. (-30%), and Australia (-34%) were among the worst performers while Japan (-17%) fared better, in relative terms. Modest appreciation of the U.S. dollar versus a basket of developed market currencies acted as a headwind for U.S. investors. As in the U.S., growth (MSCI ACWI ex-USA Growth: -18%) outperformed value (MSCI ACWI ex-USA Value: -29%). Also mirroring performance in the U.S., Health Care (-9%) was a top-performing sector while Energy (-38%) was the worst.

Emerging markets equities (MSCI EM: -23.6%) also sold off with currency depreciation being a key driver. Collectively, Latin American countries fell 46% in U.S. dollar terms and 32% in local currency terms. Russia dropped 36% in U.S. dollars (-22% local) and South Africa fell 41% (-24% local). India sank 32% (-27% local) while China performed relatively well, down only 10% in the quarter in U.S. dollar terms.

**Separate Account Style Group Median Returns  
for Quarter Ended March 31, 2020**



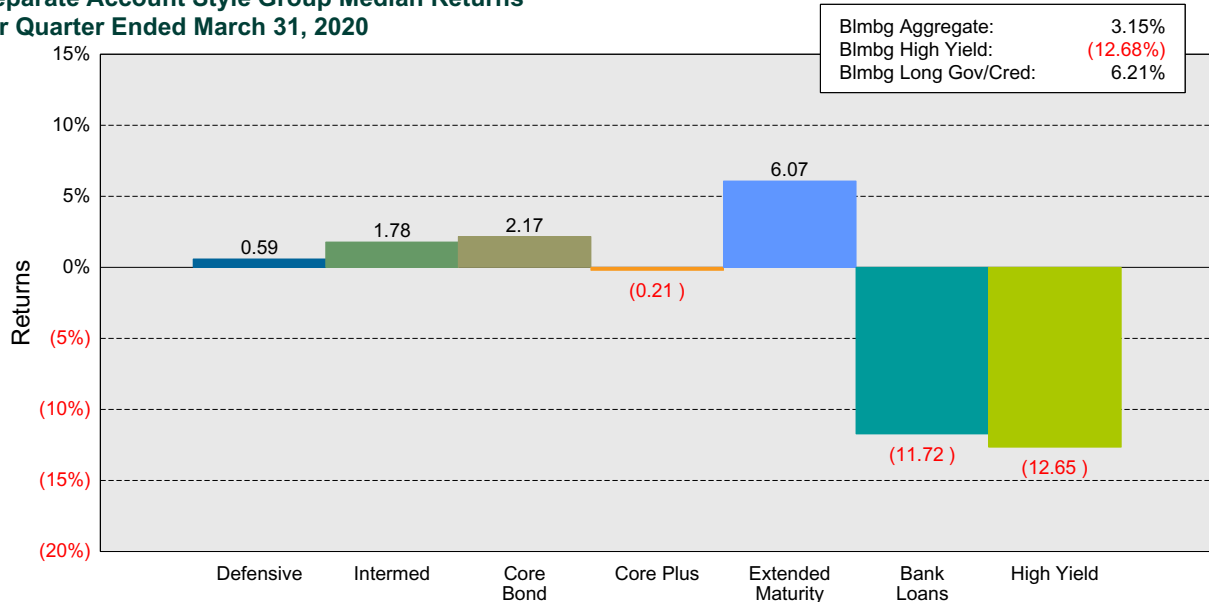
**Separate Account Style Group Median Returns  
for One Year Ended March 31, 2020**



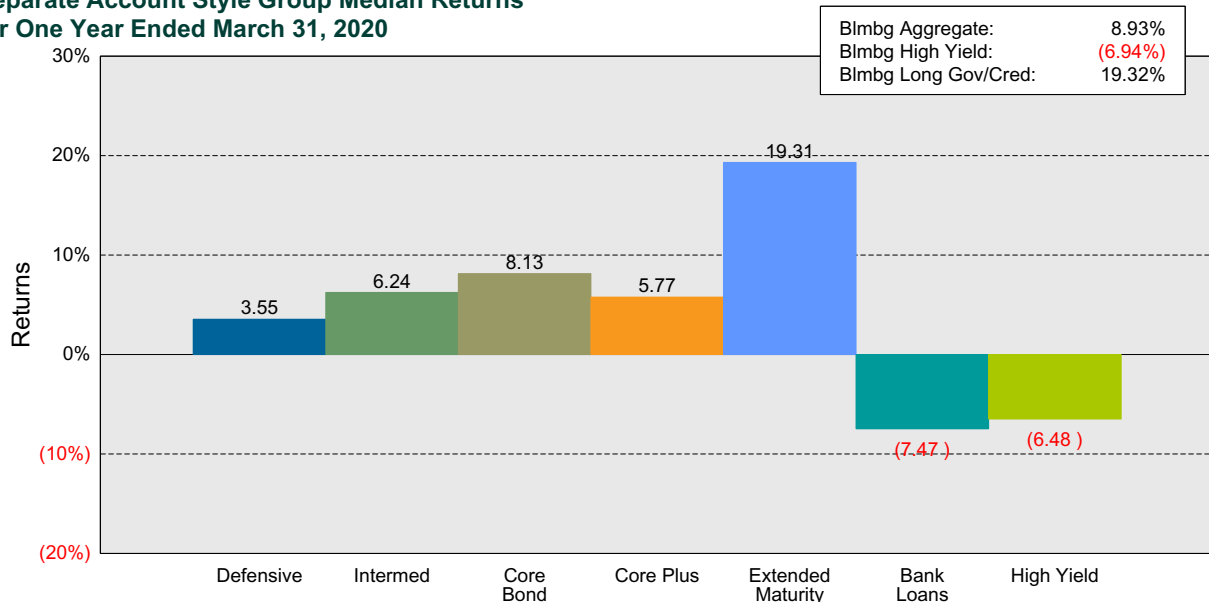
## Domestic Fixed Income Active Management Overview

U.S. Treasury yields fell to record lows in March as investors sought safety and the Fed cut rates to 0%-0.25%. The 10-year U.S. Treasury yield reached a low in March of 0.31% before closing the quarter at 0.70%, down sharply from the year-end level of 1.92%. Most sectors underperformed U.S. Treasuries, hurt both by challenging liquidity conditions as well as a flight to safety. While the Bloomberg Barclays US Aggregate Bond Index rose 3.1% for the quarter, results were driven largely by performance of the Treasury sector (+8.2%). Corporates (-3.6%) and most securitized sectors underperformed U.S. Treasuries. The quality bias was evident in the return for the AAA-rated component (+5.8%) versus BBBs (-7.4%). TIPS (Bloomberg Barclays TIPS: +1.7%) sharply underperformed nominal Treasuries as expectations for inflation sank. The 10-year breakeven spread ended the quarter at 87 bps, down sharply from 177 bps at year-end. High yield corporate bonds (Bloomberg Barclays High Yield: -12.7%) fell sharply and ended the quarter with a yield-to-worst of 9.4% though it topped 10% in mid-March, the highest level since the GFC. Excluding the beleaguered Energy sector, high yield fell 9.1%. Leveraged loans performed even worse (S&P LSTA: -13.0%) and both high yield and loans experienced heavy outflows.

### Separate Account Style Group Median Returns for Quarter Ended March 31, 2020



### Separate Account Style Group Median Returns for One Year Ended March 31, 2020

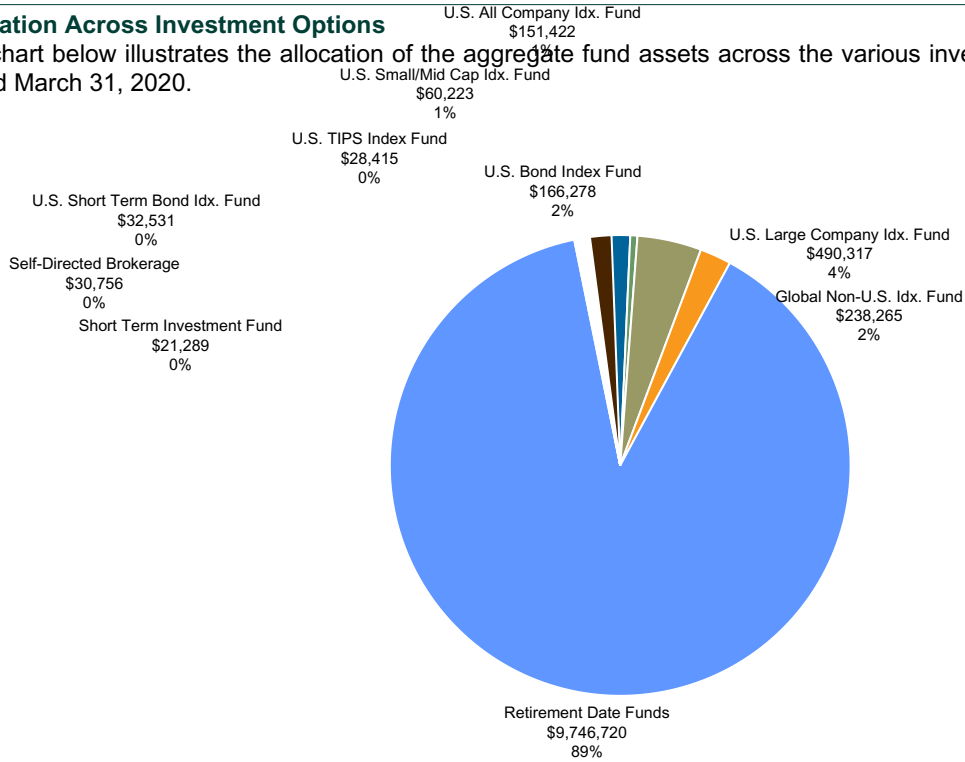




# Changes in Investment Fund Balances Period Ended March 31, 2020

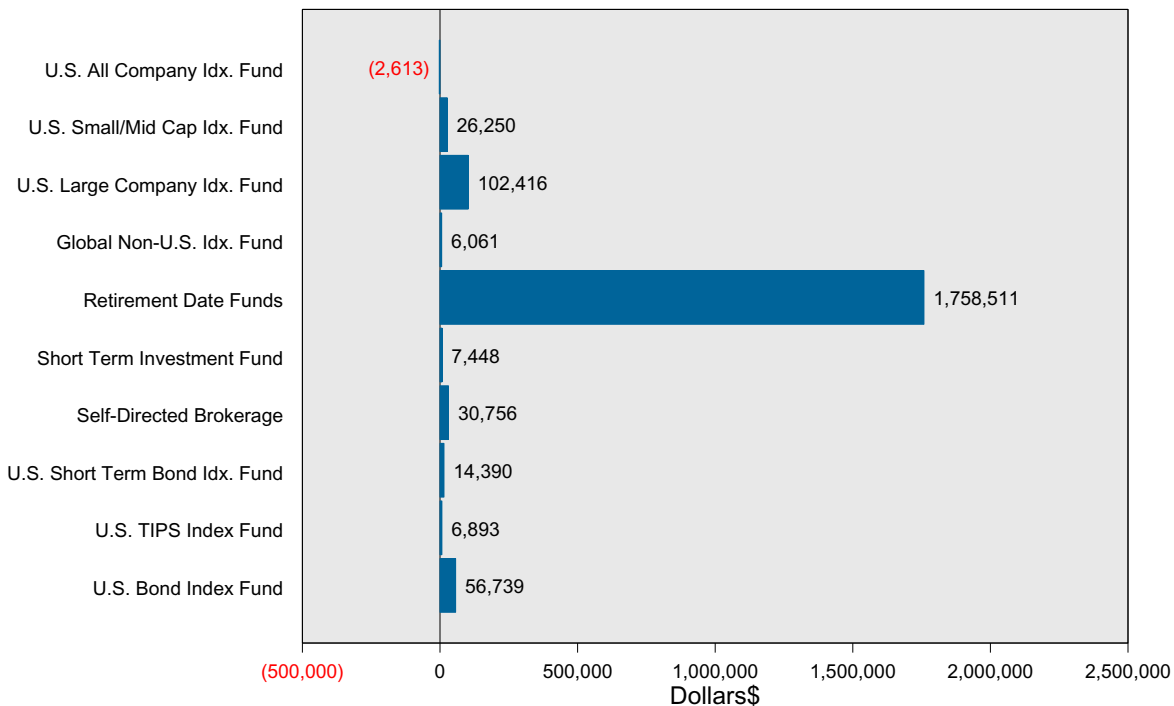
## Allocation Across Investment Options

The chart below illustrates the allocation of the aggregate fund assets across the various investment options for the quarter ended March 31, 2020.



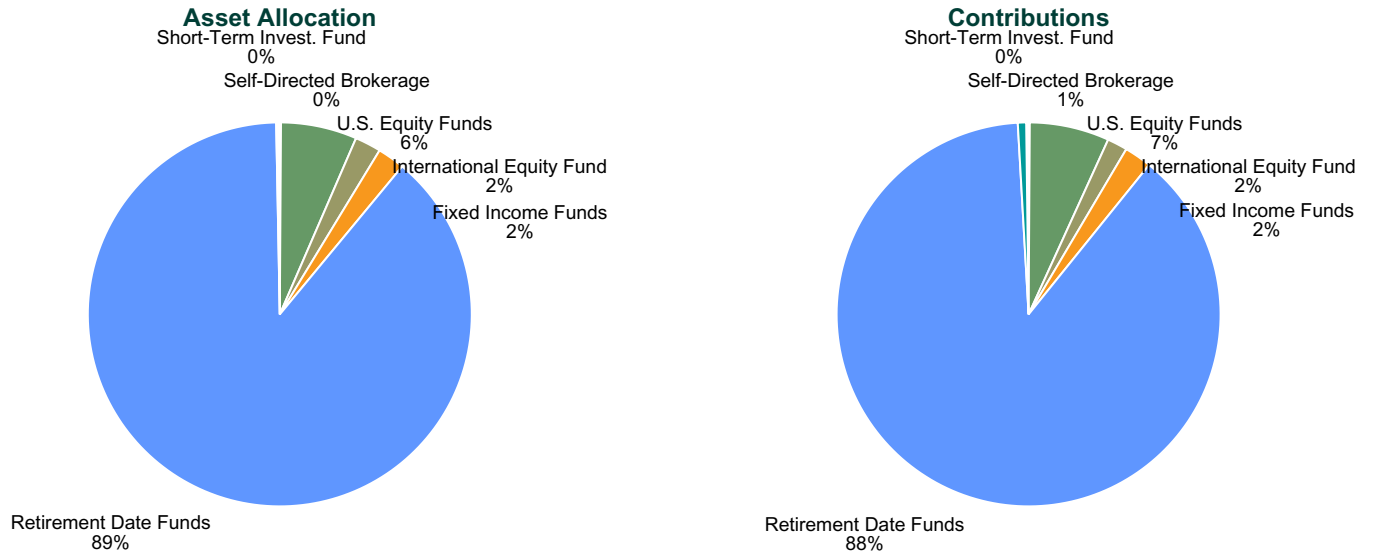
## Changes in Fund Values

The chart below shows the net change in fund values across the various investment options for the quarter ended March 31, 2020. 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.

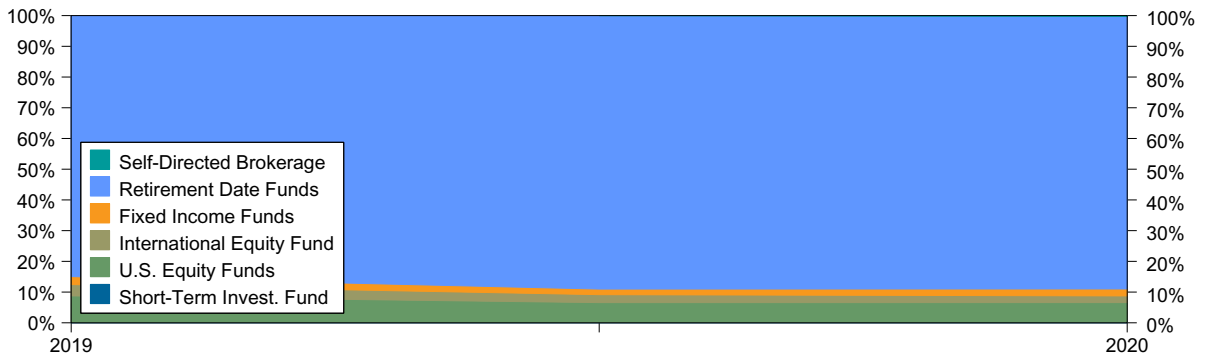


## Asset Allocation

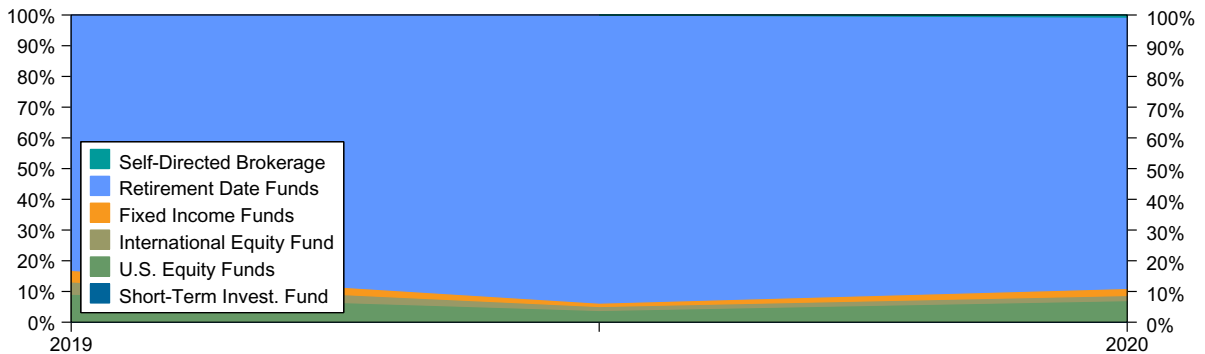
The charts below illustrate the historical asset allocation of the fund as well as the historical allocations of contributions to the fund. The pie charts on the top show the most recent allocations of both assets and contributions which include exchanges and transfers within the plan. The middle chart 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 March 31, 2020, with the distribution as of December 31, 2019. 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

	March 31, 2020			December 31, 2019		
	Market Value	% of Total	Net New Inv.	Inv. Return	Market Value	% of Total
<b>SERS Retirement Date Funds</b>	<b>\$9,746,720</b>	<b>88.88%</b>	<b>\$3,917,593</b>	<b>\$(2,159,082)</b>	<b>\$7,988,209</b>	<b>89.16%</b>
SERS Post Retirement Fund	211,576	1.93%	79,003	(16,420)	148,993	1.66%
SERS 2025 Retirement Fund	500,006	4.56%	181,392	(59,367)	377,981	4.22%
SERS 2030 Retirement Fund	1,133,624	10.34%	314,906	(177,204)	995,922	11.12%
SERS 2035 Retirement Fund	851,824	7.77%	344,854	(157,676)	664,646	7.42%
SERS 2040 Retirement Fund	963,873	8.79%	389,401	(213,337)	787,809	8.79%
SERS 2045 Retirement Fund	1,499,650	13.68%	596,455	(377,450)	1,280,645	14.29%
SERS 2050 Retirement Fund	1,374,651	12.54%	666,914	(348,090)	1,055,827	11.78%
SERS 2055 Retirement Fund	1,236,247	11.27%	533,523	(307,814)	1,010,538	11.28%
SERS 2060 Retirement Fund	1,286,534	11.73%	524,710	(327,783)	1,089,607	12.16%
SERS 2065 Retirement Fund	688,735	6.28%	286,436	(173,940)	576,240	6.43%
<b>SERS U.S. Equity</b>	<b>\$701,962</b>	<b>6.40%</b>	<b>\$283,457</b>	<b>\$(157,404)</b>	<b>\$575,910</b>	<b>6.43%</b>
SERS U.S. Large Company Idx Fund	490,317	4.47%	204,025	(101,609)	387,901	4.33%
SERS U.S. All Company Idx Fund	151,422	1.38%	34,915	(37,528)	154,035	1.72%
SERS U.S. SMID Company Idx Fund	60,223	0.55%	44,517	(18,267)	33,974	0.38%
<b>International Equity</b>						
SERS Global Non-U.S. Index Fund	238,265	2.17%	69,881	(63,819)	232,204	2.59%
<b>SERS Fixed Income</b>	<b>\$248,514</b>	<b>2.27%</b>	<b>\$80,467</b>	<b>\$5,004</b>	<b>\$163,043</b>	<b>1.82%</b>
SERS Short Term Investment Fund	21,289	0.19%	7,386	62	13,841	0.15%
SERS U.S. Short Term Bond Idx Fund	32,531	0.30%	13,948	442	18,141	0.20%
SERS U.S. TIPS Index Fund	28,415	0.26%	6,568	325	21,522	0.24%
SERS U.S. Bond Index Fund	166,278	1.52%	52,565	4,174	109,539	1.22%
<b>Self-Directed Brokerage</b>						
SERS Self-Directed Brokerage	30,756	0.28%	33,600	(2,844)	-	-
<b>Total Fund</b>	<b>\$10,966,218</b>	<b>100.0%</b>	<b>\$4,384,998</b>	<b>\$(2,378,146)</b>	<b>\$8,959,366</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 March 31, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

### Returns for Periods Ended March 31, 2020

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
<b>Net Performance</b>					
<b>Target Date Funds</b>					
SERS Post Retirement Fund	(7.73%)	(0.02%)	3.36%	3.20%	3.82%
BlackRock Post Retirement Index	(7.78%)	(0.04%)	3.33%	3.17%	3.79%
Callan Tgt Date 2000-2010	(7.56%)	(0.35%)	2.96%	3.08%	4.04%
SERS 2025 Retirement Fund	(11.32%)	(2.98%)	3.16%	3.38%	4.58%
BlackRock 2025 Index	(11.37%)	(3.02%)	3.08%	3.31%	4.51%
Callan Target Date 2025	(12.44%)	(4.33%)	2.59%	3.12%	4.76%
SERS 2030 Retirement Fund	(14.36%)	(5.53%)	2.68%	3.24%	4.69%
BlackRock 2030 Index	(14.41%)	(5.63%)	2.59%	3.14%	4.59%
Callan Target Date 2030	(14.76%)	(6.17%)	2.36%	3.16%	5.06%
SERS 2035 Retirement Fund	(17.11%)	(7.91%)	2.24%	3.12%	4.78%
BlackRock 2035 Index	(17.16%)	(7.99%)	2.12%	2.99%	4.66%
Callan Target Date 2035	(17.10%)	(8.23%)	1.96%	3.03%	5.14%
SERS 2040 Retirement Fund	(19.61%)	(10.07%)	1.78%	2.95%	4.82%
BlackRock 2040 Index	(19.65%)	(10.16%)	1.66%	2.81%	4.69%
Callan Target Date 2040	(18.86%)	(9.75%)	1.62%	2.92%	5.18%
SERS 2045 Retirement Fund	(21.29%)	(11.58%)	1.42%	2.79%	4.87%
BlackRock 2045 Index	(21.34%)	(11.72%)	1.26%	2.62%	4.72%
Callan Target Date 2045	(20.14%)	(10.81%)	1.40%	2.84%	5.14%
SERS 2050 Retirement Fund	(22.06%)	(12.30%)	1.22%	2.69%	4.90%
BlackRock 2050 Index	(22.09%)	(12.40%)	1.08%	2.53%	4.77%
Callan Target Date 2050	(20.41%)	(11.10%)	1.20%	2.71%	5.16%
SERS 2055 Retirement Fund	(22.11%)	(12.35%)	1.20%	2.66%	4.99%
BlackRock 2055 Index	(22.19%)	(12.48%)	1.05%	2.51%	4.85%
Callan Target Date 2055	(20.64%)	(11.46%)	1.08%	2.75%	5.28%
SERS 2060 Retirement Fund	(22.11%)	(12.35%)	1.18%	2.66%	-
BlackRock 2060 Index	(22.18%)	(12.47%)	1.05%	2.55%	-
Callan Target Date 2060	(20.66%)	(11.35%)	1.24%	3.01%	5.80%
SERS 2065 Retirement Fund	(22.12%)	-	-	-	-
BlackRock 2065 Index	(22.18%)	-	-	-	-

## Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended March 31, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	Returns for Periods Ended March 31, 2020		
	Last 10 Years	Last 15 Years	Last 20 Years
<b>Net Performance</b>			
<b>Target Date Funds</b>			
SERS Post Retirement Fund	4.99%	-	-
BlackRock Post Retirement Index	4.96%	4.94%	5.05%
Callan Tgt Date 2000-2010	5.10%	4.41%	-
SERS 2025 Retirement Fund	5.82%	-	-
BlackRock 2025 Index	5.76%	5.19%	4.00%
Callan Target Date 2025	6.13%	5.16%	-
SERS 2030 Retirement Fund	5.99%	-	-
BlackRock 2030 Index	5.90%	5.22%	3.82%
Callan Target Date 2030	6.45%	5.15%	3.27%
SERS 2035 Retirement Fund	6.14%	-	-
BlackRock 2035 Index	6.02%	5.22%	3.64%
Callan Target Date 2035	6.53%	5.38%	-
SERS 2040 Retirement Fund	6.22%	-	-
BlackRock 2040 Index	6.10%	5.20%	3.43%
Callan Target Date 2040	6.64%	5.32%	2.60%
SERS 2045 Retirement Fund	6.30%	-	-
BlackRock 2045 Index	6.17%	5.18%	3.32%
Callan Target Date 2045	6.51%	5.81%	-
SERS 2050 Retirement Fund	6.40%	-	-
BlackRock 2050 Index	6.26%	5.43%	3.54%
Callan Target Date 2050	6.70%	-	-
Callan Target Date 2055	6.91%	-	-

\*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 March 31, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

### Returns for Periods Ended March 31, 2020

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
<b>Net Performance</b>					
<b>Domestic Equity</b>					
SERS U.S. Large Company Index Fund	(19.59%)	(6.97%)	5.11%	6.74%	9.63%
S&P 500 Index	(19.60%)	(6.98%)	5.10%	6.73%	9.62%
Callan Lg Cap Broad MF	(19.15%)	(7.01%)	4.67%	5.95%	8.96%
SERS U.S. All Company Index Fund	(20.57%)	(9.09%)	3.98%	5.75%	8.96%
Russell 3000 Index	(20.90%)	(9.13%)	4.00%	5.77%	8.96%
Callan Multi Cap Brd MF	(21.16%)	(11.17%)	1.99%	3.44%	7.27%
SERS U.S. SMID Company Idx Fund	(28.02%)	(20.47%)	(1.85%)	1.06%	5.59%
Dow Jones US Completion	(28.01%)	(20.61%)	(2.02%)	0.87%	5.40%
Callan SMID Broad MFs	(25.28%)	(19.07%)	1.00%	2.02%	5.28%
<b>International Equity</b>					
SERS Global Non-U.S. Index Fund	(23.74%)	(16.00%)	(1.90%)	(0.51%)	1.17%
MSCI ACWI ex US	(23.36%)	(15.57%)	(1.96%)	(0.64%)	1.06%
Callan Non US Equity MFs	(22.82%)	(14.66%)	(2.03%)	(0.79%)	1.58%
<b>Domestic Fixed Income</b>					
SERS Short Term Investment Fund	0.40%	2.10%	1.88%	1.32%	0.99%
3-month Treasury Bill	0.57%	2.25%	1.83%	1.19%	0.86%
Callan Cash Database(1)	0.36%	2.16%	1.98%	1.42%	1.11%
SERS U.S. Short Term Bond Idx Fund	1.73%	4.56%	-	-	-
Blmbg Gov/Cred 1-3 Yr	1.69%	4.53%	2.58%	1.90%	1.61%
Callan Short US Govt MFs	2.19%	4.58%	2.39%	1.65%	1.31%
SERS U.S. TIPS Index Fund	1.71%	6.84%	-	-	-
Blmbg US TIPS	1.69%	6.85%	3.46%	2.67%	1.37%
Callan TIPS MFs	0.06%	4.64%	2.70%	1.94%	0.80%
SERS U.S. Bond Index Fund	3.25%	9.02%	4.85%	3.35%	3.16%
Blmbg Aggregate	3.15%	8.93%	4.82%	3.36%	3.19%
Callan Core Bond MFs	1.54%	7.36%	4.27%	3.19%	2.98%

(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 March 31, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	Returns for Periods Ended March 31, 2020		
	Last 10 Years	Last 15 Years	Last 20 Years
<b>Net Performance</b>			
<b>Domestic Equity</b>			
SERS U.S. Large Company Index Fund	10.55%	7.62%	4.84%
S&P 500 Index	10.53%	7.58%	4.79%
Callan Lg Cap Broad MF	9.61%	7.34%	4.63%
Russell 3000 Index	10.15%	7.50%	4.91%
Callan Multi Cap Brd MF	8.43%	6.51%	5.01%
SERS U.S. SMID Company Idx Fund	8.26%	7.22%	5.26%
Dow Jones US Completion	8.06%	7.02%	4.88%
Callan SMID Broad MFs	7.98%	7.28%	6.26%
<b>International Equity</b>			
SERS Global Non-U.S. Index Fund	2.20%	-	-
MSCI ACWI ex US	2.05%	3.39%	-
Callan Non US Equity MFs	2.87%	3.35%	2.43%
<b>Domestic Fixed Income</b>			
SERS Short Term Investment Fund	0.76%	1.55%	-
3-month Treasury Bill	0.64%	1.39%	1.74%
Callan Cash Database(1)	0.92%	1.76%	2.10%
Blmbg Gov/Cred 1-3 Yr	1.62%	2.59%	3.21%
Callan Short US Govt MFs	1.58%	2.52%	3.15%
Blmbg US TIPS	3.48%	3.92%	5.37%
Callan TIPS MFs	2.82%	3.52%	4.61%
SERS U.S. Bond Index Fund	3.85%	4.37%	5.04%
Blmbg Aggregate	3.88%	4.40%	5.08%
Callan Core Bond MFs	3.93%	4.51%	4.97%

(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.

	12/2019- 3/2020	2019	2018	2017	2016
<b>Net Performance</b>					
<b>Target Date Funds</b>					
SERS Post Retirement Fund	(7.73%)	15.65%	(3.47%)	10.18%	6.10%
BlackRock Post Retirement Index	(7.78%)	15.63%	(3.48%)	10.10%	6.01%
Callan Tgt Date 2000-2010	(7.56%)	14.39%	(3.15%)	10.09%	5.79%
SERS 2025 Retirement Fund	(11.32%)	18.60%	(4.86%)	13.91%	7.30%
BlackRock 2025 Index	(11.37%)	18.56%	(4.90%)	13.75%	7.10%
Callan Target Date 2025	(12.44%)	18.51%	(5.19%)	14.94%	7.08%
SERS 2030 Retirement Fund	(14.36%)	20.80%	(5.71%)	15.83%	7.88%
BlackRock 2030 Index	(14.41%)	20.70%	(5.76%)	15.64%	7.61%
Callan Target Date 2030	(14.76%)	20.43%	(6.12%)	16.77%	7.58%
SERS 2035 Retirement Fund	(17.11%)	22.84%	(6.50%)	17.72%	8.44%
BlackRock 2035 Index	(17.16%)	22.72%	(6.58%)	17.48%	8.08%
Callan Target Date 2035	(17.10%)	22.17%	(7.03%)	18.51%	8.20%
SERS 2040 Retirement Fund	(19.61%)	24.71%	(7.22%)	19.38%	8.88%
BlackRock 2040 Index	(19.65%)	24.62%	(7.33%)	19.09%	8.51%
Callan Target Date 2040	(18.86%)	23.59%	(7.89%)	19.84%	8.48%
SERS 2045 Retirement Fund	(21.29%)	26.05%	(7.85%)	20.47%	9.20%
BlackRock 2045 Index	(21.34%)	25.90%	(7.99%)	20.15%	8.77%
Callan Target Date 2045	(20.14%)	24.60%	(8.21%)	20.63%	8.63%
SERS 2050 Retirement Fund	(22.06%)	26.60%	(8.11%)	20.85%	9.26%
BlackRock 2050 Index	(22.09%)	26.48%	(8.26%)	20.55%	8.82%
Callan Target Date 2050	(20.41%)	24.89%	(8.44%)	20.74%	8.61%
SERS 2055 Retirement Fund	(22.11%)	26.67%	(8.13%)	20.82%	9.22%
BlackRock 2055 Index	(22.19%)	26.58%	(8.28%)	20.55%	8.82%
Callan Target Date 2055	(20.64%)	24.97%	(8.44%)	21.10%	8.65%
SERS 2060 Retirement Fund	(22.11%)	26.66%	(8.14%)	20.77%	9.25%
BlackRock 2060 Index	(22.18%)	26.58%	(8.28%)	20.55%	8.82%
Callan Target Date 2060	(20.66%)	25.08%	(8.35%)	21.15%	8.80%
SERS 2065 Retirement Fund	(22.12%)	-	-	-	-
BlackRock 2065 Index	(22.18%)	-	-	-	-

## 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.

	12/2019- 3/2020	2019	2018	2017	2016
<b>Net Performance</b>					
<b>Domestic Equity</b>					
SERS U.S. Large Company Index Fund	(19.59%)	31.51%	(4.39%)	21.84%	11.98%
S&P 500 Index	(19.60%)	31.49%	(4.38%)	21.83%	11.96%
Callan Lg Cap Broad MF	(19.15%)	30.14%	(4.54%)	23.56%	8.43%
SERS U.S. All Company Index Fund	(20.57%)	30.52%	(5.29%)	21.09%	12.71%
Russell 3000 Index	(20.90%)	31.02%	(5.24%)	21.13%	12.74%
Callan Multi Cap Brd MF	(21.16%)	29.12%	(6.82%)	20.75%	9.05%
SERS U.S. SMID Company Idx Fund	(28.02%)	28.20%	(9.32%)	18.21%	16.08%
Dow Jones US Completion	(28.01%)	27.91%	(9.57%)	18.12%	15.75%
Callan SMID Broad MFs	(25.28%)	29.40%	(8.69%)	17.14%	13.80%
<b>International Equity</b>					
SERS Global Non-U.S. Index Fund	(23.74%)	21.77%	(13.86%)	27.63%	5.05%
MSCI ACWI ex US	(23.36%)	21.51%	(14.20%)	27.19%	4.50%
Callan Non US Equity MFs	(22.82%)	22.83%	(15.04%)	26.90%	0.23%
<b>Domestic Fixed Income</b>					
SERS Short Term Investment Fund	0.40%	2.31%	2.09%	1.08%	0.59%
3-month Treasury Bill	0.57%	2.28%	1.87%	0.86%	0.33%
Callan Cash Database(1)	0.36%	2.69%	2.00%	1.19%	0.95%
SERS U.S. Short Term Bond Idx Fund	1.73%	4.02%	1.58%	-	-
Blmbg Gov/Cred 1-3 Yr	1.69%	4.03%	1.60%	0.84%	1.28%
Callan Short US Govt MFs	2.19%	3.52%	1.15%	0.59%	0.64%
SERS U.S. TIPS Index Fund	1.71%	8.40%	-	-	-
Blmbg US TIPS	1.69%	8.43%	(1.26%)	3.01%	4.68%
Callan TIPS MFs	0.06%	8.26%	(1.53%)	3.12%	4.63%
SERS U.S. Bond Index Fund	3.25%	8.69%	0.02%	3.53%	2.59%
Blmbg Aggregate	3.15%	8.72%	0.01%	3.54%	2.65%
Callan Core Bond MFs	1.54%	9.17%	(0.35%)	3.71%	3.03%

(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 March 31, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

### Returns for Periods Ended March 31, 2020

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
<b>Gross Performance</b>					
<b>Target Date Funds</b>					
SERS Post Retirement Fund	(7.72%)	0.05%	5.10%	4.26%	4.60%
BlackRock Post Retirement Index	(7.78%)	(0.04%)	3.33%	3.17%	3.79%
Callan Tgt Date 2000-2010	(7.56%)	(0.35%)	2.96%	3.08%	4.04%
SERS 2025 Retirement Fund	(11.30%)	(2.91%)	5.71%	4.93%	5.72%
BlackRock 2025 Index	(11.37%)	(3.02%)	3.08%	3.31%	4.51%
Callan Target Date 2025	(12.44%)	(4.33%)	2.59%	3.12%	4.76%
SERS 2030 Retirement Fund	(14.34%)	(5.47%)	5.72%	5.09%	6.04%
BlackRock 2030 Index	(14.41%)	(5.63%)	2.59%	3.14%	4.59%
Callan Target Date 2030	(14.76%)	(6.17%)	2.36%	3.16%	5.06%
SERS 2035 Retirement Fund	(17.10%)	(7.84%)	5.73%	5.24%	6.33%
BlackRock 2035 Index	(17.16%)	(7.99%)	2.12%	2.99%	4.66%
Callan Target Date 2035	(17.10%)	(8.23%)	1.96%	3.03%	5.14%
SERS 2040 Retirement Fund	(19.60%)	(10.01%)	5.68%	5.32%	6.56%
BlackRock 2040 Index	(19.65%)	(10.16%)	1.66%	2.81%	4.69%
Callan Target Date 2040	(18.86%)	(9.75%)	1.62%	2.92%	5.18%
SERS 2045 Retirement Fund	(21.28%)	(11.53%)	1.49%	2.85%	4.93%
BlackRock 2045 Index	(21.34%)	(11.72%)	1.26%	2.62%	4.72%
Callan Target Date 2045	(20.14%)	(10.81%)	1.40%	2.84%	5.14%
SERS 2050 Retirement Fund	(22.05%)	(12.24%)	5.55%	5.33%	6.85%
BlackRock 2050 Index	(22.09%)	(12.40%)	1.08%	2.53%	4.77%
Callan Target Date 2050	(20.41%)	(11.10%)	1.20%	2.71%	5.16%
SERS 2055 Retirement Fund	(22.10%)	(12.29%)	1.26%	2.73%	5.06%
BlackRock 2055 Index	(22.19%)	(12.48%)	1.05%	2.51%	4.85%
Callan Target Date 2055	(20.64%)	(11.46%)	1.08%	2.75%	5.28%
SERS 2060 Retirement Fund	(22.10%)	(12.29%)	5.52%	5.31%	-
BlackRock 2060 Index	(22.18%)	(12.47%)	1.05%	2.55%	-
Callan Target Date 2060	(20.66%)	(11.35%)	1.24%	3.01%	5.80%
SERS 2065 Retirement Fund	(22.11%)	-	-	-	-
BlackRock 2065 Index	(22.18%)	-	-	-	-

## Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended March 31, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	Returns for Periods Ended March 31, 2020		
	Last 10 Years	Last 15 Years	Last 20 Years
<b>Gross Performance</b>			
<b>Target Date Funds</b>			
SERS Post Retirement Fund	5.57%	-	-
BlackRock Post Retirement Index	4.96%	4.94%	5.05%
Callan Tgt Date 2000-2010	5.10%	4.41%	-
SERS 2025 Retirement Fund	6.65%	-	-
BlackRock 2025 Index	5.76%	5.19%	4.00%
Callan Target Date 2025	6.13%	5.16%	-
SERS 2030 Retirement Fund	5.99%	-	-
BlackRock 2030 Index	5.90%	5.22%	3.82%
Callan Target Date 2030	6.45%	5.15%	3.27%
SERS 2035 Retirement Fund	7.26%	-	-
BlackRock 2035 Index	6.02%	5.22%	3.64%
Callan Target Date 2035	6.53%	5.38%	-
SERS 2040 Retirement Fund	7.48%	-	-
BlackRock 2040 Index	6.10%	5.20%	3.43%
Callan Target Date 2040	6.64%	5.32%	2.60%
SERS 2045 Retirement Fund	6.37%	-	-
BlackRock 2045 Index	6.17%	5.18%	3.32%
Callan Target Date 2045	6.51%	5.81%	-
SERS 2050 Retirement Fund	7.80%	-	-
BlackRock 2050 Index	6.26%	5.43%	3.54%
Callan Target Date 2050	6.70%	-	-
Callan Target Date 2055	6.91%	-	-

\*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 March 31, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

### Returns for Periods Ended March 31, 2020

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
<b>Gross Performance</b>					
<b>Domestic Equity</b>					
SERS U.S. Large Company Index Fund	(19.59%)	(6.96%)	5.12%	6.75%	9.64%
S&P 500 Index	(19.60%)	(6.98%)	5.10%	6.73%	9.62%
Callan Lg Cap Broad MF	(19.15%)	(7.01%)	4.67%	5.95%	8.96%
SERS U.S. All Company Index Fund	(20.57%)	(9.09%)	3.99%	5.75%	8.96%
Russell 3000 Index	(20.90%)	(9.13%)	4.00%	5.77%	8.96%
Callan Multi Cap Brd MF	(21.16%)	(11.17%)	1.99%	3.44%	7.27%
SERS U.S. SMID Company Idx Fund	(28.02%)	(20.47%)	(1.84%)	1.07%	5.60%
Dow Jones US Completion	(28.01%)	(20.61%)	(2.02%)	0.87%	5.40%
Callan SMID Broad MFs	(25.28%)	(19.07%)	1.00%	2.02%	5.28%
<b>International Equity</b>					
SERS Global Non-U.S. Index Fund	(23.73%)	(15.99%)	(1.89%)	(0.49%)	1.18%
MSCI ACWI ex US	(23.36%)	(15.57%)	(1.96%)	(0.64%)	1.06%
Callan Non US Equity MFs	(22.82%)	(14.66%)	(2.03%)	(0.79%)	1.58%
<b>Domestic Fixed Income</b>					
SERS Short Term Investment Fund	0.40%	2.10%	1.88%	1.32%	0.99%
3-month Treasury Bill	0.57%	2.25%	1.83%	1.19%	0.86%
Callan Cash Database(1)	0.36%	2.16%	1.98%	1.42%	1.11%
SERS U.S. Short Term Bond Idx Fund	1.73%	4.56%	-	-	-
Blmbg Gov/Cred 1-3 Yr	1.69%	4.53%	2.58%	1.90%	1.61%
Callan Short US Govt MFs	2.19%	4.58%	2.39%	1.65%	1.31%
SERS U.S. TIPS Index Fund	1.71%	6.84%	-	-	-
Blmbg US TIPS	1.69%	6.85%	3.46%	2.67%	1.37%
Callan TIPS MFs	0.06%	4.64%	2.70%	1.94%	0.80%
SERS U.S. Bond Index Fund	3.25%	9.03%	4.85%	3.35%	3.16%
Blmbg Aggregate	3.15%	8.93%	4.82%	3.36%	3.19%
Callan Core Bond MFs	1.54%	7.36%	4.27%	3.19%	2.98%

(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 March 31, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	Returns for Periods Ended March 31, 2020		
	Last 10 Years	Last 15 Years	Last 20 Years
<b>Gross Performance</b>			
<b>Domestic Equity</b>			
SERS U.S. Large Company Index Fund	10.55%	7.63%	4.85%
S&P 500 Index	10.53%	7.58%	4.79%
Callan Lg Cap Broad MF	9.61%	7.34%	4.63%
Russell 3000 Index	10.15%	7.50%	4.91%
Callan Multi Cap Brd MF	8.43%	6.51%	5.01%
SERS U.S. SMID Company Idx Fund	8.26%	7.22%	5.27%
Dow Jones US Completion	8.06%	7.02%	4.88%
Callan SMID Broad MFs	7.98%	7.28%	6.26%
<b>International Equity</b>			
SERS Global Non-U.S. Index Fund	2.21%	-	-
MSCI ACWI ex US	2.05%	3.39%	-
Callan Non US Equity MFs	2.87%	3.35%	2.43%
<b>Domestic Fixed Income</b>			
SERS Short Term Investment Fund	0.76%	1.55%	-
3-month Treasury Bill	0.64%	1.39%	1.74%
Callan Cash Database(1)	0.92%	1.76%	2.10%
Blmbg Gov/Cred 1-3 Yr	1.62%	2.59%	3.21%
Callan Short US Govt MFs	1.58%	2.52%	3.15%
Blmbg US TIPS	3.48%	3.92%	5.37%
Callan TIPS MFs	2.82%	3.52%	4.61%
SERS U.S. Bond Index Fund	3.86%	4.37%	5.05%
Blmbg Aggregate	3.88%	4.40%	5.08%
Callan Core Bond MFs	3.93%	4.51%	4.97%

(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.

	12/2019- 3/2020	2019	2018	2017	2016
<b>Gross Performance</b>					
<b>Target Date Funds</b>					
SERS Post Retirement Fund	(7.72%)	15.72%	1.34%	10.25%	6.18%
BlackRock Post Retirement Index	(7.78%)	15.63%	(3.48%)	10.10%	6.01%
Callan Tgt Date 2000-2010	(7.56%)	14.39%	(3.15%)	10.09%	5.79%
SERS 2025 Retirement Fund	(11.30%)	18.67%	2.22%	13.99%	7.37%
BlackRock 2025 Index	(11.37%)	18.56%	(4.90%)	13.75%	7.10%
Callan Target Date 2025	(12.44%)	18.51%	(5.19%)	14.94%	7.08%
SERS 2030 Retirement Fund	(14.34%)	20.86%	2.76%	15.91%	7.95%
BlackRock 2030 Index	(14.41%)	20.70%	(5.76%)	15.64%	7.61%
Callan Target Date 2030	(14.76%)	20.43%	(6.12%)	16.77%	7.58%
SERS 2035 Retirement Fund	(17.10%)	22.93%	3.27%	17.77%	8.50%
BlackRock 2035 Index	(17.16%)	22.72%	(6.58%)	17.48%	8.08%
Callan Target Date 2035	(17.10%)	22.17%	(7.03%)	18.51%	8.20%
SERS 2040 Retirement Fund	(19.60%)	24.80%	3.71%	19.45%	8.95%
BlackRock 2040 Index	(19.65%)	24.62%	(7.33%)	19.09%	8.51%
Callan Target Date 2040	(18.86%)	23.59%	(7.89%)	19.84%	8.48%
SERS 2045 Retirement Fund	(21.28%)	26.12%	(7.78%)	20.54%	9.25%
BlackRock 2045 Index	(21.34%)	25.90%	(7.99%)	20.15%	8.77%
Callan Target Date 2045	(20.14%)	24.60%	(8.21%)	20.63%	8.63%
SERS 2050 Retirement Fund	(22.05%)	26.70%	4.05%	20.94%	9.31%
BlackRock 2050 Index	(22.09%)	26.48%	(8.26%)	20.55%	8.82%
Callan Target Date 2050	(20.41%)	24.89%	(8.44%)	20.74%	8.61%
SERS 2055 Retirement Fund	(22.10%)	26.75%	(8.07%)	20.90%	9.30%
BlackRock 2055 Index	(22.19%)	26.58%	(8.28%)	20.55%	8.82%
Callan Target Date 2055	(20.64%)	24.97%	(8.44%)	21.10%	8.65%
SERS 2060 Retirement Fund	(22.10%)	26.74%	4.06%	20.85%	9.32%
BlackRock 2060 Index	(22.18%)	26.58%	(8.28%)	20.55%	8.82%
Callan Target Date 2060	(20.66%)	25.08%	(8.35%)	21.15%	8.80%
SERS 2065 Retirement Fund	(22.11%)	-	-	-	-
BlackRock 2065 Index	(22.18%)	-	-	-	-

## 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.

	12/2019- 3/2020	2019	2018	2017	2016
<b>Gross Performance</b>					
<b>Domestic Equity</b>					
SERS U.S. Large Company Index Fund	(19.59%)	31.51%	(4.38%)	21.85%	11.99%
S&P 500 Index	(19.60%)	31.49%	(4.38%)	21.83%	11.96%
Callan Lg Cap Broad MF	(19.15%)	30.14%	(4.54%)	23.56%	8.43%
SERS U.S. All Company Index Fund	(20.57%)	30.53%	(5.29%)	21.09%	12.71%
Russell 3000 Index	(20.90%)	31.02%	(5.24%)	21.13%	12.74%
Callan Multi Cap Brd MF	(21.16%)	29.12%	(6.82%)	20.75%	9.05%
SERS U.S. SMID Company Idx Fund	(28.02%)	28.21%	(9.32%)	18.21%	16.08%
Dow Jones US Completion	(28.01%)	27.91%	(9.57%)	18.12%	15.75%
Callan SMID Broad MFs	(25.28%)	29.40%	(8.69%)	17.14%	13.80%
<b>International Equity</b>					
SERS Global Non-U.S. Index Fund	(23.73%)	21.79%	(13.85%)	27.65%	5.06%
MSCI ACWI ex US	(23.36%)	21.51%	(14.20%)	27.19%	4.50%
Callan Non US Equity MFs	(22.82%)	22.83%	(15.04%)	26.90%	0.23%
<b>Domestic Fixed Income</b>					
SERS Short Term Investment Fund	0.40%	2.31%	2.09%	1.08%	0.59%
3-month Treasury Bill	0.57%	2.28%	1.87%	0.86%	0.33%
Callan Cash Database(1)	0.36%	2.69%	2.00%	1.19%	0.95%
SERS U.S. Short Term Bond Idx Fund	1.73%	4.02%	1.58%	-	-
Blmbg Gov/Cred 1-3 Yr	1.69%	4.03%	1.60%	0.84%	1.28%
Callan Short US Govt MFs	2.19%	3.52%	1.15%	0.59%	0.64%
SERS U.S. TIPS Index Fund	1.71%	8.40%	-	-	-
Blmbg US TIPS	1.69%	8.43%	(1.26%)	3.01%	4.68%
Callan TIPS MFs	0.06%	8.26%	(1.53%)	3.12%	4.63%
SERS U.S. Bond Index Fund	3.25%	8.69%	0.03%	3.53%	2.59%
Blmbg Aggregate	3.15%	8.72%	0.01%	3.54%	2.65%
Callan Core Bond MFs	1.54%	9.17%	(0.35%)	3.71%	3.03%

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

**Pennsylvania SERS 401(a)**  
**Investment Manager Performance Monitoring Summary Report**  
**March 31, 2020**

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	-7.7 59	-0.0 42	3.4 21	3.2 16	3.8 19	5.0 13			0.08 96
BlackRock Post Retirement Index	-7.8 61	-0.0 43	3.3 22	3.2 17	3.8 22	5.0 16			
<b>SERS 2025 Retirement Fund</b> Callan Target Date 2025	-11.3 24	-3.0 22	3.2 23	3.4 29	4.6 61	5.8 61			0.08 96
BlackRock 2025 Index	-11.4 26	-3.0 23	3.1 24	3.3 31	4.5 66	5.8 64			
<b>SERS 2030 Retirement Fund</b> Callan Target Date 2030	-14.4 40	-5.5 34	2.7 31	3.2 41	4.7 69	6.0 64			0.08 97
BlackRock 2030 Index	-14.4 43	-5.6 38	2.6 39	3.1 51	4.6 74	5.9 73			
<b>SERS 2035 Retirement Fund</b> Callan Target Date 2035	-17.1 51	-7.9 43	2.2 32	3.1 43	4.8 68	6.1 68			0.08 97
BlackRock 2035 Index	-17.2 51	-8.0 45	2.1 37	3.0 53	4.7 75	6.0 76			
<b>SERS 2040 Retirement Fund</b> Callan Target Date 2040	-19.6 70	-10.1 57	1.8 36	2.9 47	4.8 75	6.2 65			0.08 97
BlackRock 2040 Index	-19.7 70	-10.2 60	1.7 47	2.8 56	4.7 77	6.1 71			
<b>SERS 2045 Retirement Fund</b> Callan Target Date 2045	-21.3 80	-11.6 67	1.4 46	2.8 51	4.9 68	6.3 59			0.08 97
BlackRock 2045 Index	-21.3 84	-11.7 71	1.3 54	2.6 57	4.7 79	6.2 72			
<b>SERS 2050 Retirement Fund</b> Callan Target Date 2050	-22.1 89	-12.3 78	1.2 49	2.7 50	4.9 69	6.4 60			0.08 97
BlackRock 2050 Index	-22.1 89	-12.4 78	1.1 52	2.5 60	4.8 74	6.3 65			
<b>SERS 2055 Retirement Fund</b> Callan Target Date 2055	-22.1 82	-12.3 73	1.2 44	2.7 53	5.0 66				0.08 97
BlackRock 2055 Index	-22.2 86	-12.5 75	1.1 53	2.5 60	4.8 71				
<b>SERS 2060 Retirement Fund</b> Callan Target Date 2060	-22.1 79	-12.4 74	1.2 51	2.7 65					0.08 96
BlackRock 2060 Index	-22.2 83	-12.5 75	1.1 56	2.5 71					

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**  
**March 31, 2020**

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>	-22.1 76								0.08 89
Callan Target Date 2065									
BlackRock 2065 Index	-22.2 78								
<b>Domestic Equity</b>									
<b>SERS U.S. Large Company Stock Index Fund</b>	-19.6 52	-7.0 50	5.1 48	6.7 43	9.6 43	10.5 39			0.02 99
Callan Lg Cap Broad MF									
S&P 500 Index	-19.6 53	-7.0 50	5.1 48	6.7 43	9.6 44	10.5 39			
<b>SERS U.S. All Company Index Fund</b>	-20.6 46	-9.1 40	4.0 39	5.7 29	9.0 30				0.03 99
Callan Multi Cap Brd MF									
Russell 3000 Index	-20.9 48	-9.1 40	4.0 39	5.8 29	9.0 30	10.1 25			
<b>U.S. Small/Mid Company Stock Index Fund</b>	-28.0 55	-20.5 53	-1.8 56	1.1 52	5.6 47	8.3 49			0.03 100
Callan SMID Broad MFs									
Dow Jones US Completion	-28.0 55	-20.6 53	-2.0 56	0.9 52	5.4 49	8.1 50			
<b>International Equity</b>									
<b>SERS Global Non-U.S. Index Fund</b>	-23.7 59	-16.0 59	-1.9 49	-0.5 46	1.2 62	2.2 63			0.06 99
Callan Non US Equity MFs									
MSCI ACWI ex US	-23.4 55	-15.6 55	-2.0 49	-0.6 48	1.1 64	2.1 66			
<b>Domestic Fixed Income</b>									
<b>SERS Short Term Investment Fund</b>	0.4 39	2.1 65	1.9 74	1.3 75	1.0 82	0.8 81			
Callan Cash Database									
3-month Treasury Bill	0.6 4	2.3 34	1.8 77	1.2 92	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>	1.7 67	4.6 50							0.03 99
Callan Short US Govt MFs									
Blmbg Gov/Cred 1-3 Yr	1.7 67	4.5 51	2.6 38	1.9 20	1.6 19	1.6 43			
<b>SERS U.S. TIPS Index Fund</b>	1.7 16	6.8 17							0.03 97
Callan TIPS MFs									
Blmbg US TIPS	1.7 18	6.8 16	3.5 16	2.7 20	1.4 15	3.5 14			

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**  
**March 31, 2020**

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>	3.3 12	9.0 11	4.8 9	3.3 29	3.2 30	3.9 63			0.03 98
Callan Core Bond MFs									
Blmbg Aggregate	3.1 12	8.9 11	4.8 9	3.4 28	3.2 28	3.9 60			

Returns:  
 above median  
 third quartile  
 fourth quartile

Return Consistency:  
 above median  
 third quartile  
 fourth quartile

Risk Quadrant:  
 above median  
 second quartile  
 first quartile

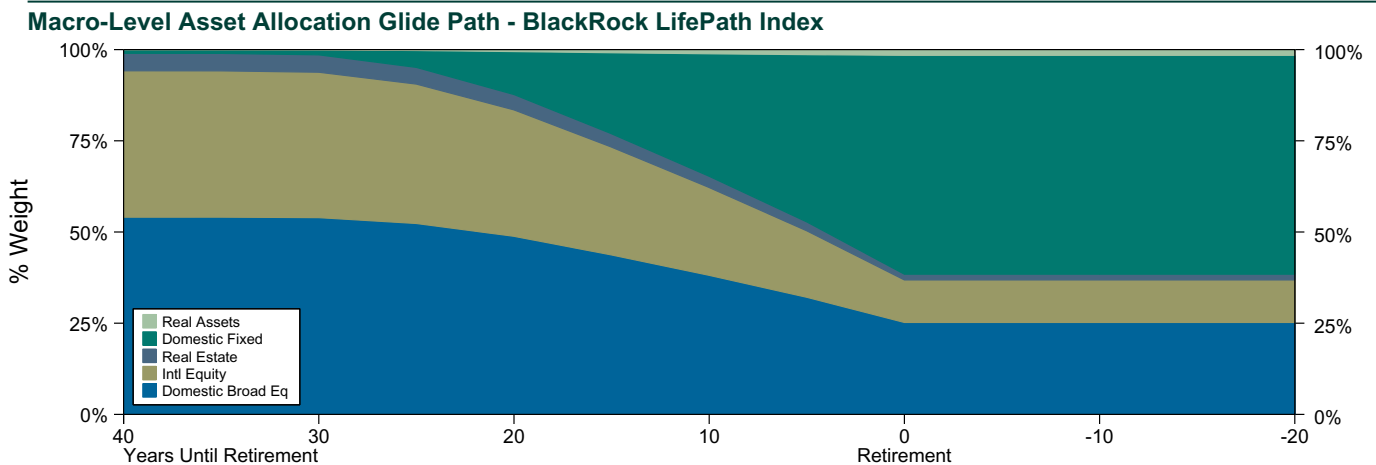
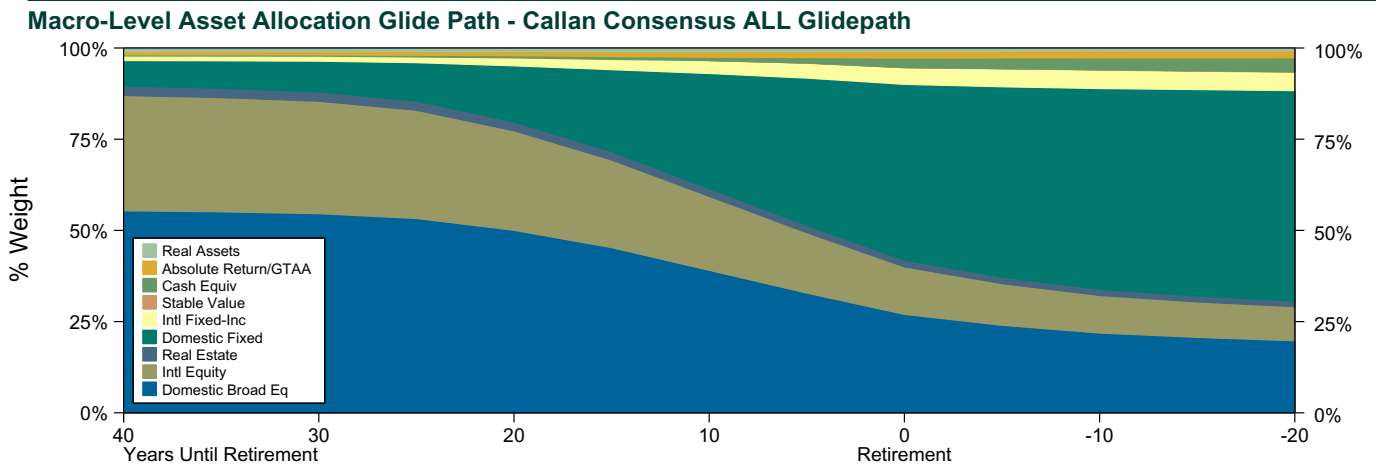
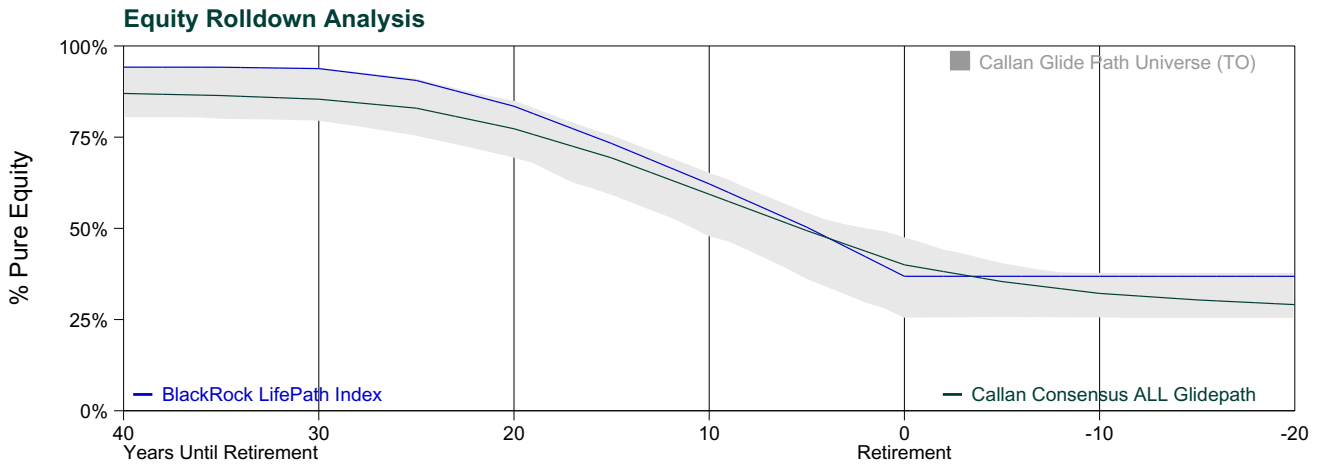
Expense Ratio:  
 below median  
 second quartile  
 first quartile





# Callan Consensus ALL Glidepath Target Date Glide Path Analysis as of March 31, 2020

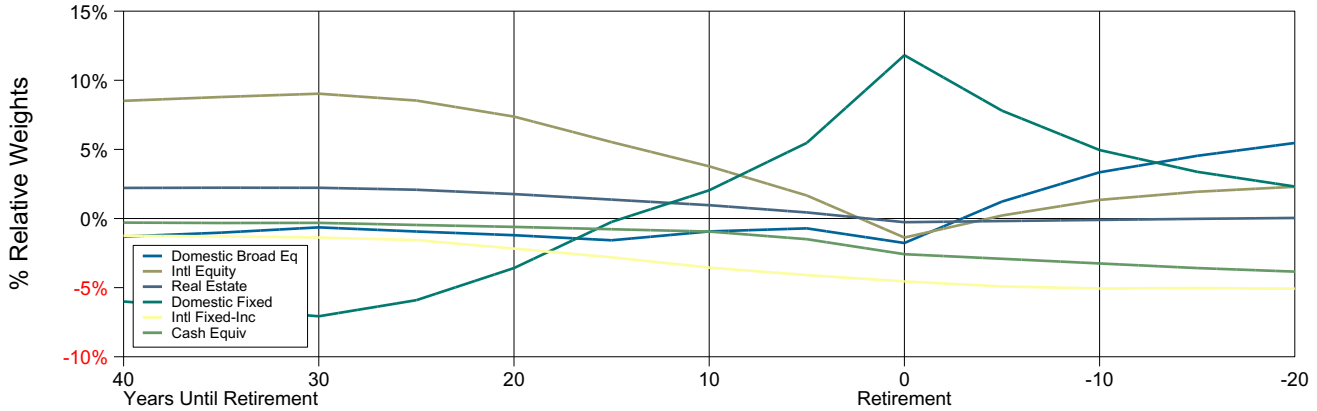
The following charts illustrate the asset allocation "glide path" underlying the relevant suite of target date funds. This analysis covers forty years of investor wealth accumulation up to retirement, as well as twenty years of wealth decumulation following retirement. The top chart shows the "pure" 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.



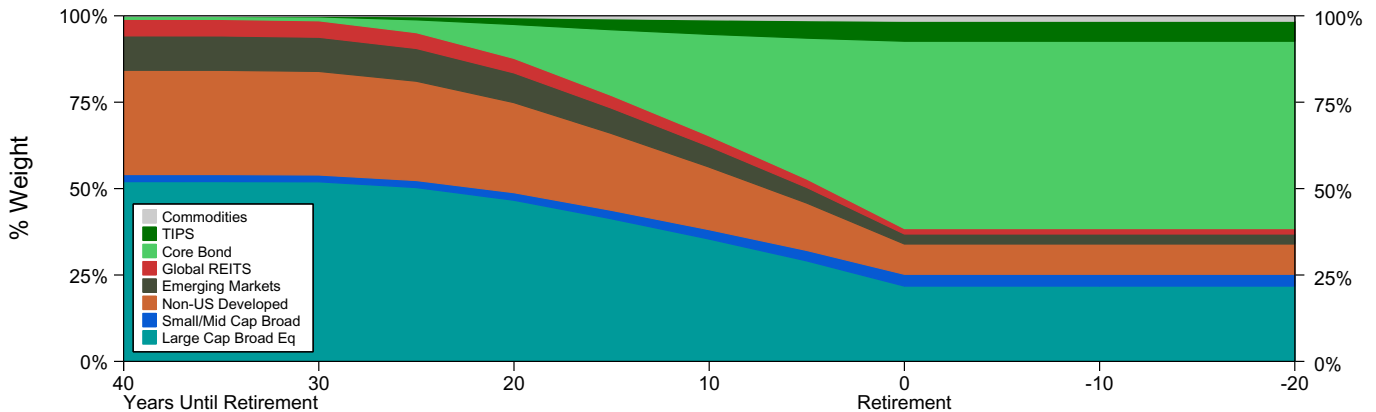
# BlackRock LifePath Index Target Date Glide Path Analysis as of March 31, 2020

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.

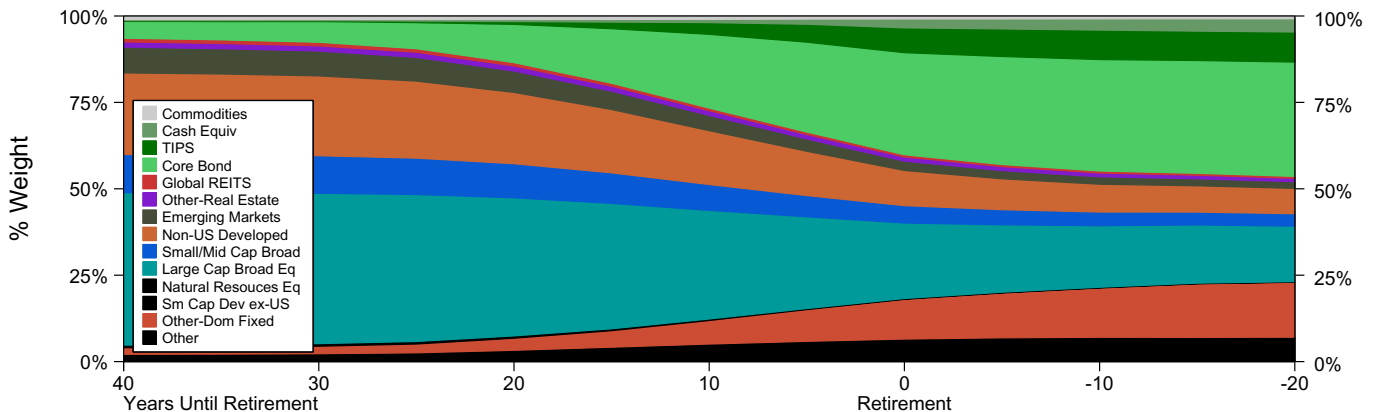
**Relative Macro Asset Allocation - BlackRock LifePath Index vs. Callan Consensus ALL Glidep**



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



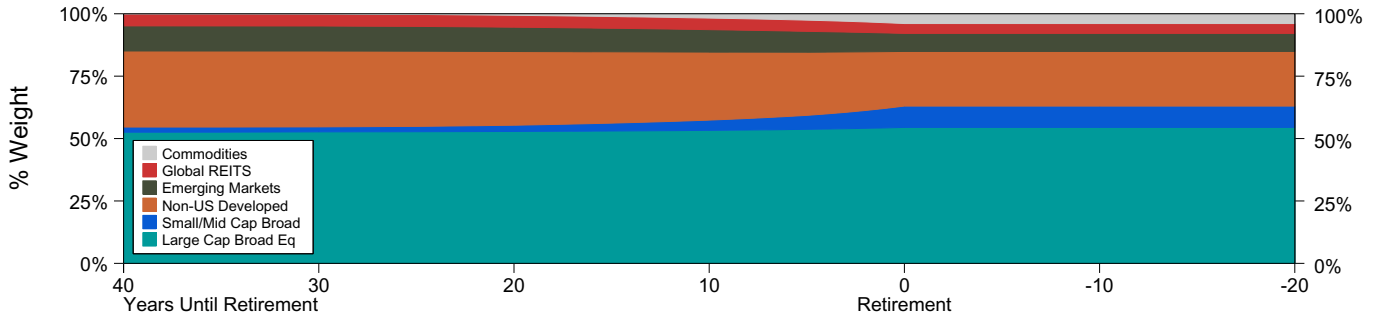
**Micro-Level Asset Allocation Glide Path - Callan Consensus ALL Glidepath**



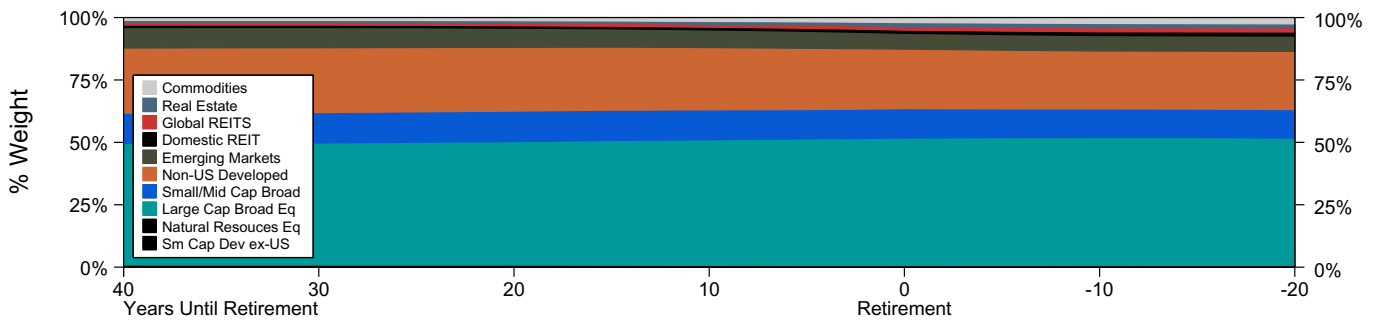
# BlackRock LifePath Index Target Date Glide Path Analysis as of March 31, 2020

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.

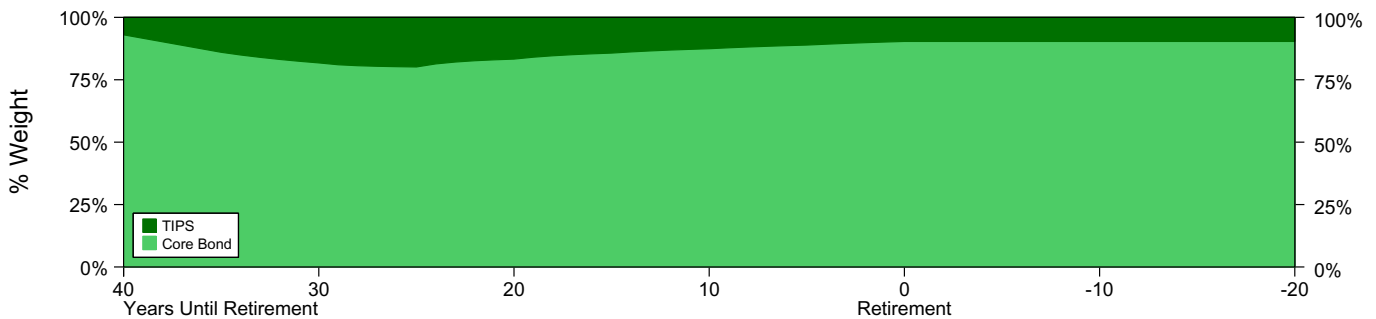
## Micro-Level Equity Allocation Glide Path - BlackRock LifePath Index



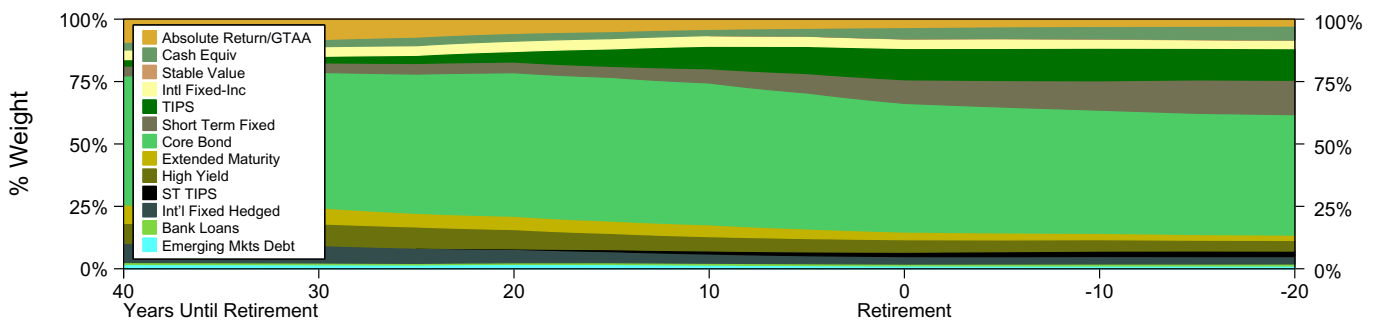
## Micro-Level Equity Asset Allocation Glide Path - Callan Consensus ALL Glidepath



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



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



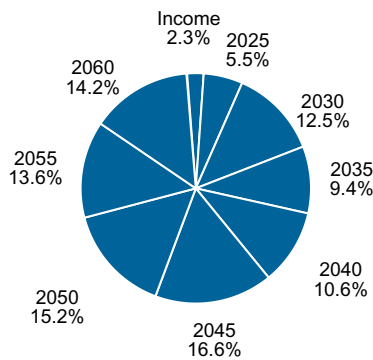
# Pennsylvania SERS 401(a) - BlackRock LifePath Index Target Date Fund Family Analysis as of March 31, 2020

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).

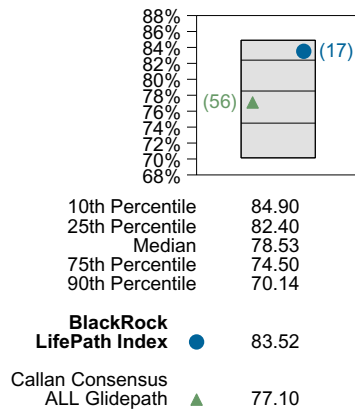
**Glidepath Peer Group: ALL**

**Fee/Return Type: Gross**

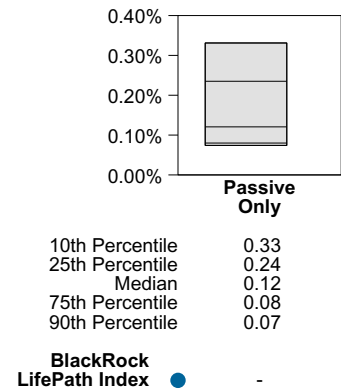
## Fund Family Allocation



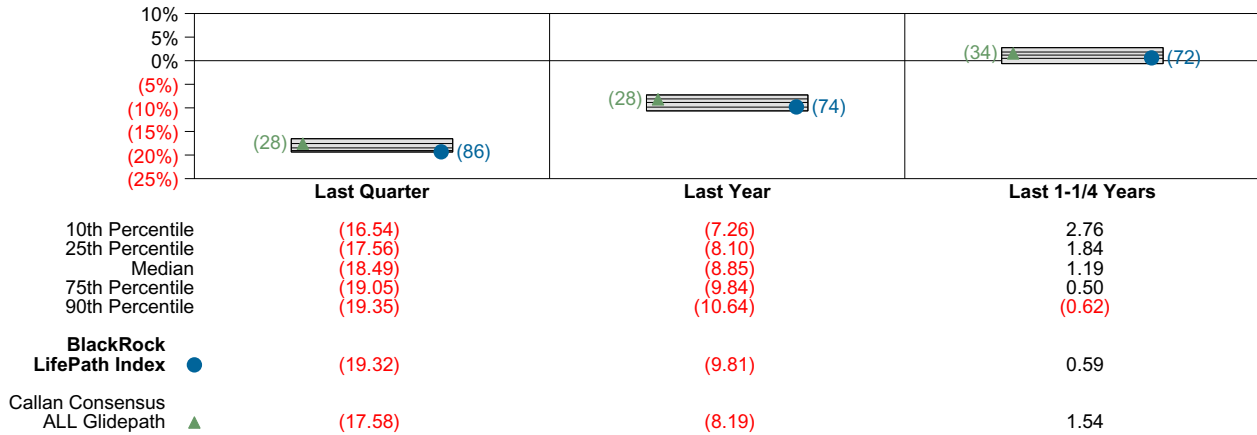
## Equity Exposure



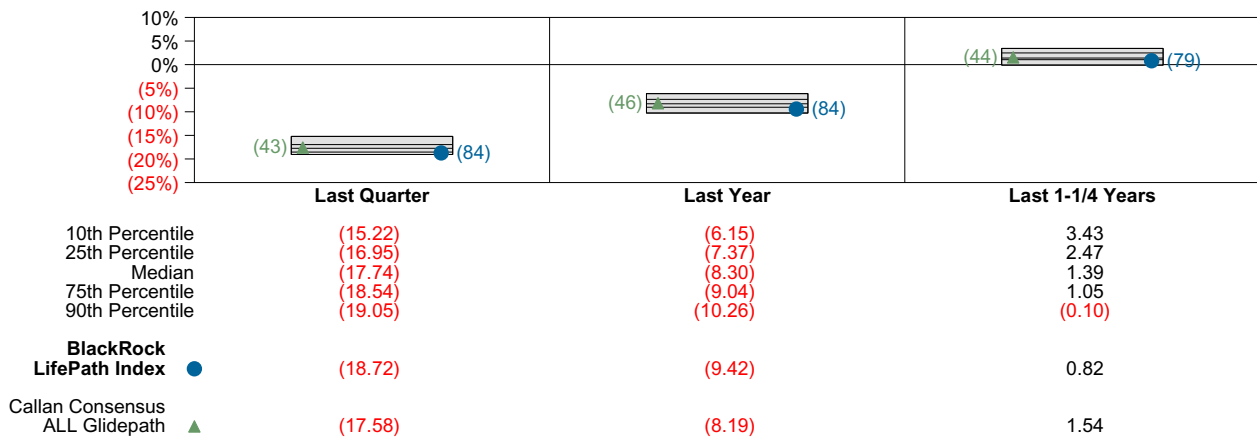
## Expense Ratio



## Target Date Family Performance vs Peer Families



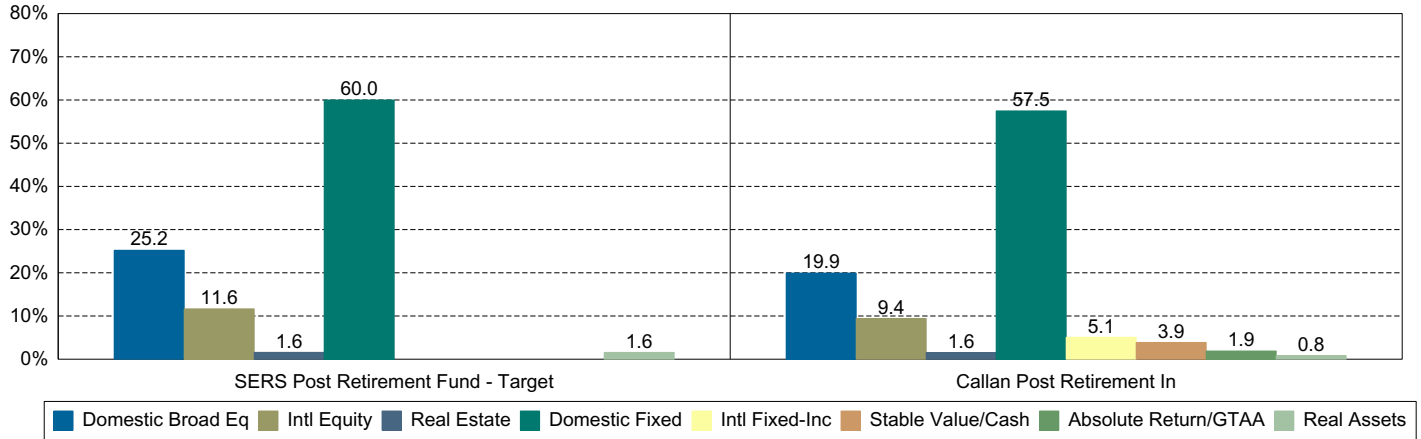
## Target Date Family Glide Path Returns vs Peer Families



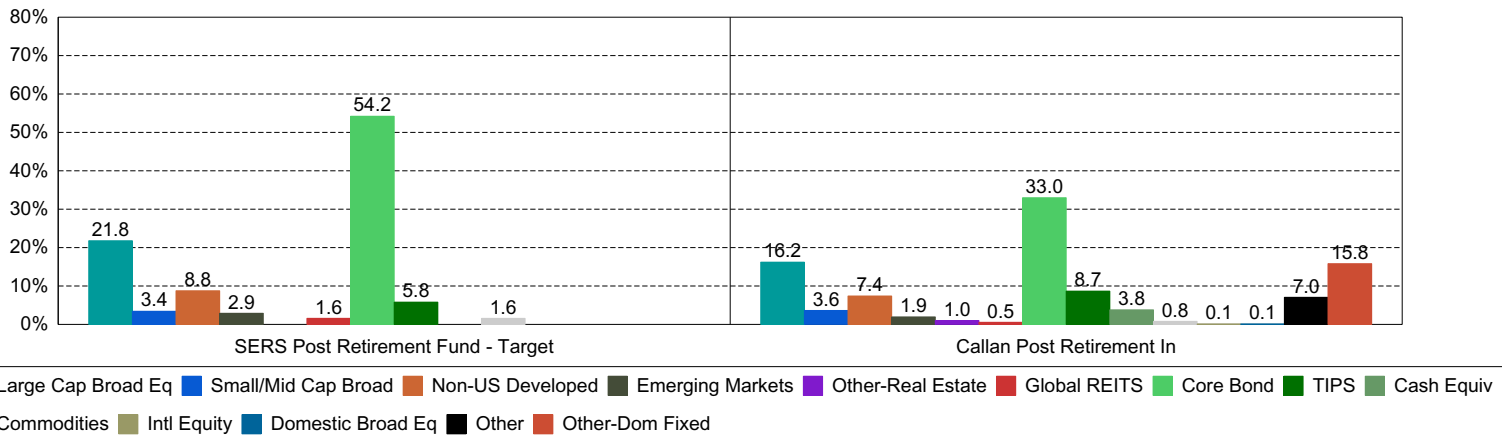
# SERS Post Retirement Fund Target Date Fund Asset Allocation as of March 31, 2020

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.

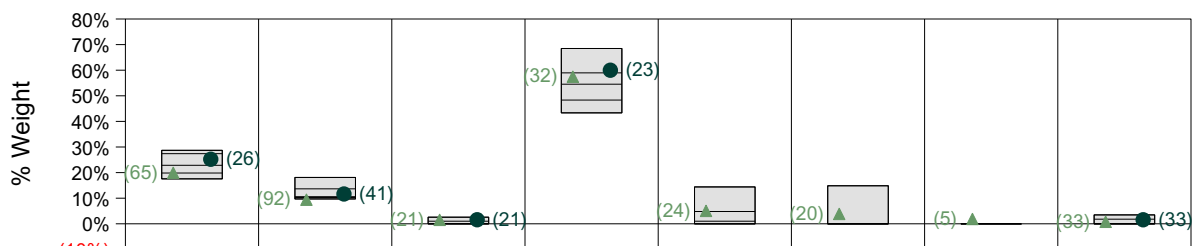
## Macro-Level Asset Allocation



## Micro-Level Asset Allocation



## Macro Asset Allocation Rankings vs. Callan Target Date 2000-2010



	Domestic Broad Eq	Intl Equity	Real Estate	Domestic Fixed	Intl Fixed-Inc	Stable Value/Cash	Absolute Return/GTAA	Real Assets
10th Percentile	28.70	18.10	2.58	68.47	14.41	14.86	0.00	3.48
25th Percentile	27.40	13.66	1.01	58.96	4.80	0.00	0.00	1.80
Median	22.85	10.59	0.04	54.53	1.01	0.00	0.00	0.00
75th Percentile	19.83	10.26	0.00	48.33	0.00	0.00	0.00	0.00
90th Percentile	17.55	9.71	0.00	43.33	0.00	0.00	0.00	0.00

<b>SERS Post Retirement Fund - Target</b>	●	25.21	11.65	1.58	59.99	-	-	-	1.57
Callan Post Retirement In	▲	19.93	9.42	1.55	57.47	5.07	3.88	1.89	0.79

# SERS Post Retirement Fund Period Ended March 31, 2020

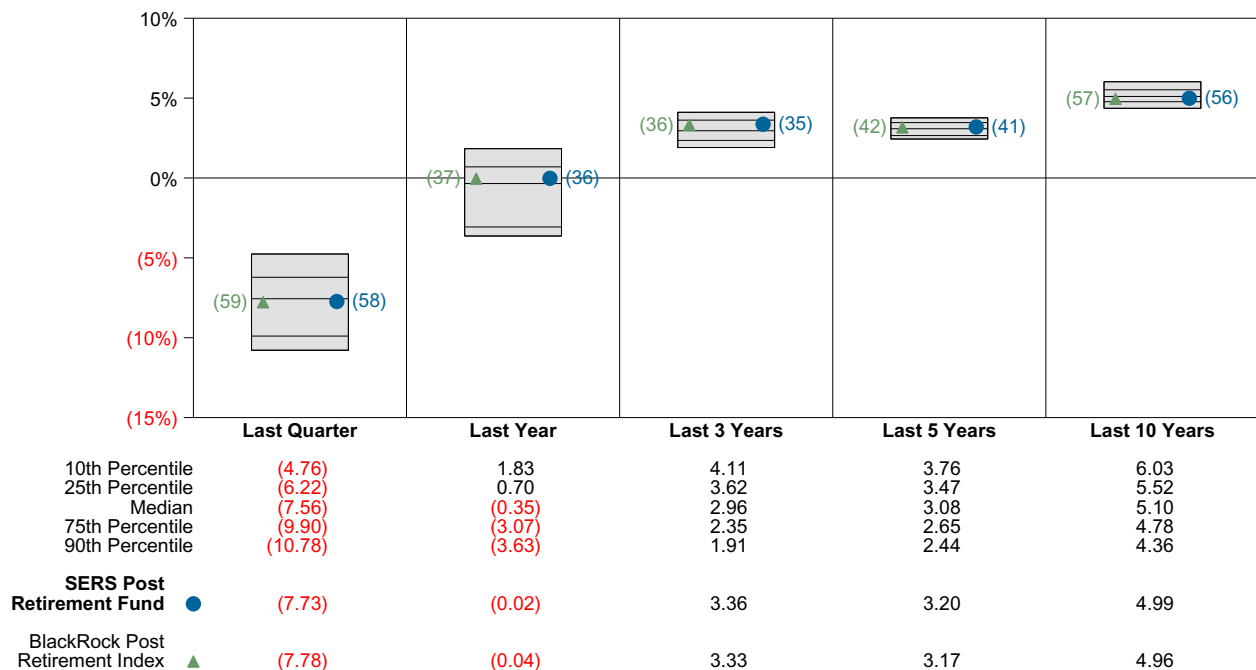
## Investment Philosophy

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.

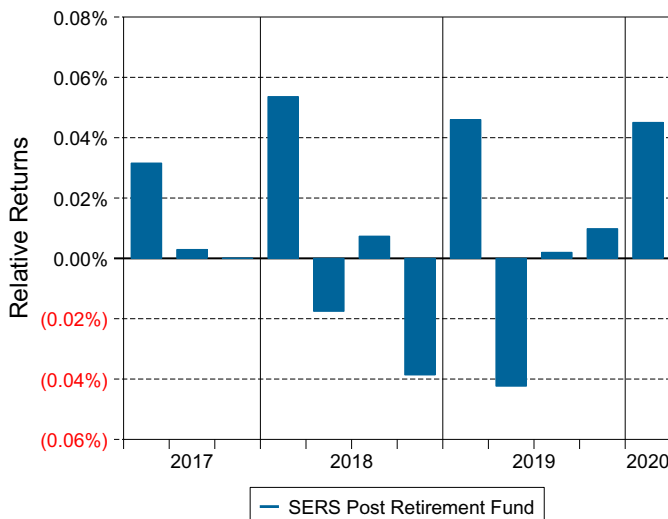
## Quarterly Summary and Highlights

- SERS Post Retirement Fund's portfolio posted a (7.73)% return for the quarter placing it in the 58 percentile of the Callan Target Date 2000-2010 group for the quarter and in the 36 percentile for the last year.
- SERS Post Retirement Fund's portfolio outperformed the BlackRock Post Retirement Index by 0.05% for the quarter and outperformed the BlackRock Post Retirement Index for the year by 0.02%.

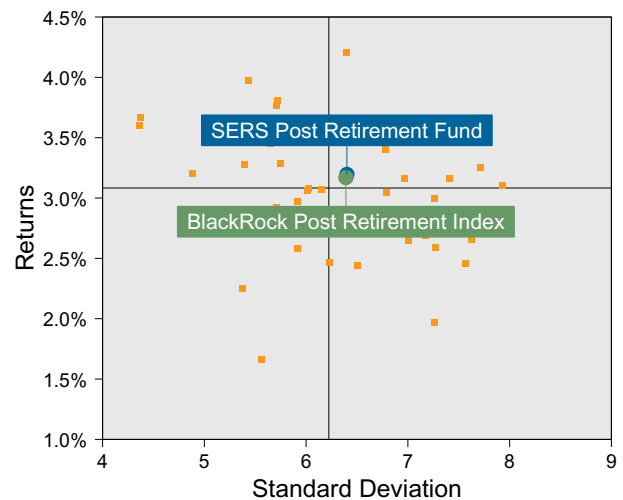
## Performance vs Callan Target Date 2000-2010 (Net)



## Relative Returns vs BlackRock Post Retirement Index



## Callan Target Date 2000-2010 (Net) Annualized Five Year Risk vs Return

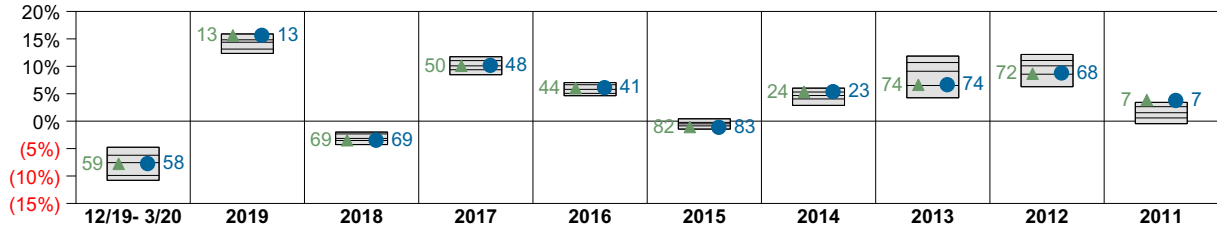


# SERS Post Retirement Fund Return Analysis Summary

## Return Analysis

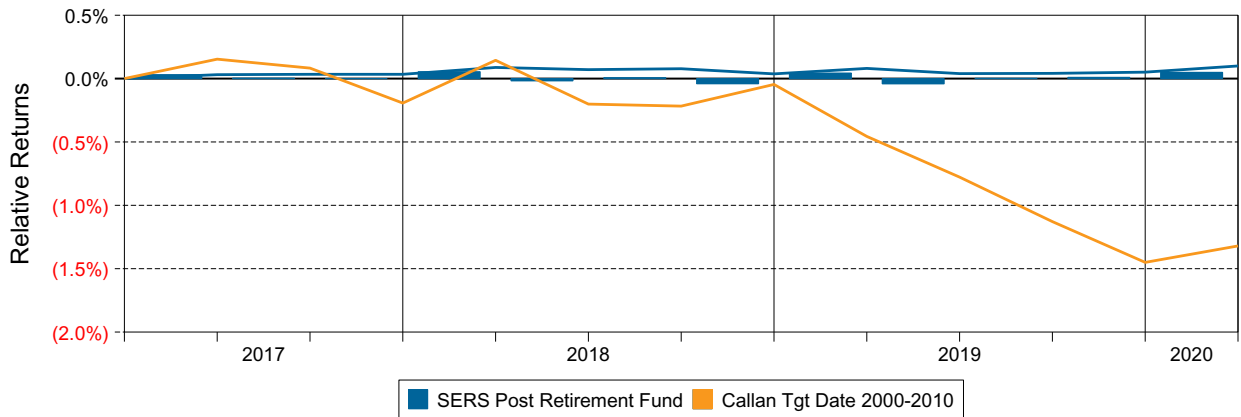
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate 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 2000-2010 (Net)

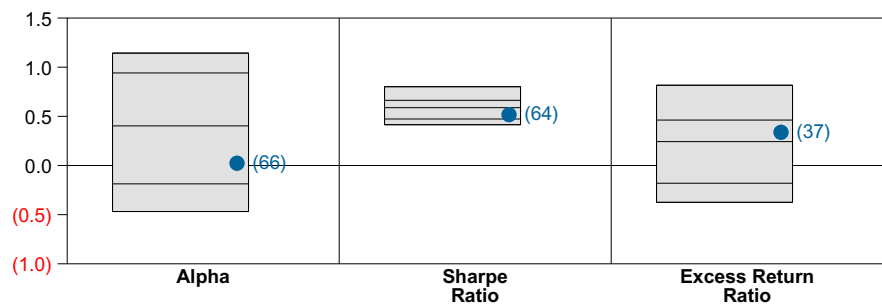


10th Percentile	(4.76)	15.90	(1.99)	11.74	7.03	0.43	6.02	11.86	12.16	3.42
25th Percentile	(6.22)	14.83	(2.33)	11.04	6.64	(0.22)	5.31	10.69	11.06	2.64
Median	(7.56)	14.39	(3.15)	10.09	5.79	(0.48)	4.67	9.10	10.08	1.54
75th Percentile	(9.90)	13.13	(3.53)	9.37	5.06	(0.86)	4.05	6.50	8.56	0.59
90th Percentile	(10.78)	12.35	(4.27)	8.47	4.64	(1.45)	2.88	4.26	6.28	(0.46)
<b>SERS Post Retirement Fund</b>	<b>(7.73)</b>	15.65	(3.47)	10.18	6.10	(1.12)	5.38	6.64	8.79	3.78
<b>BlackRock Post Retirement Index</b>	<b>(7.78)</b>	15.63	(3.48)	10.10	6.01	(1.07)	5.36	6.63	8.65	3.85

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



### Risk Adjusted Return Measures vs BlackRock Post Retirement Index Rankings Against Callan Target Date 2000-2010 (Net) Seven Years Ended March 31, 2020

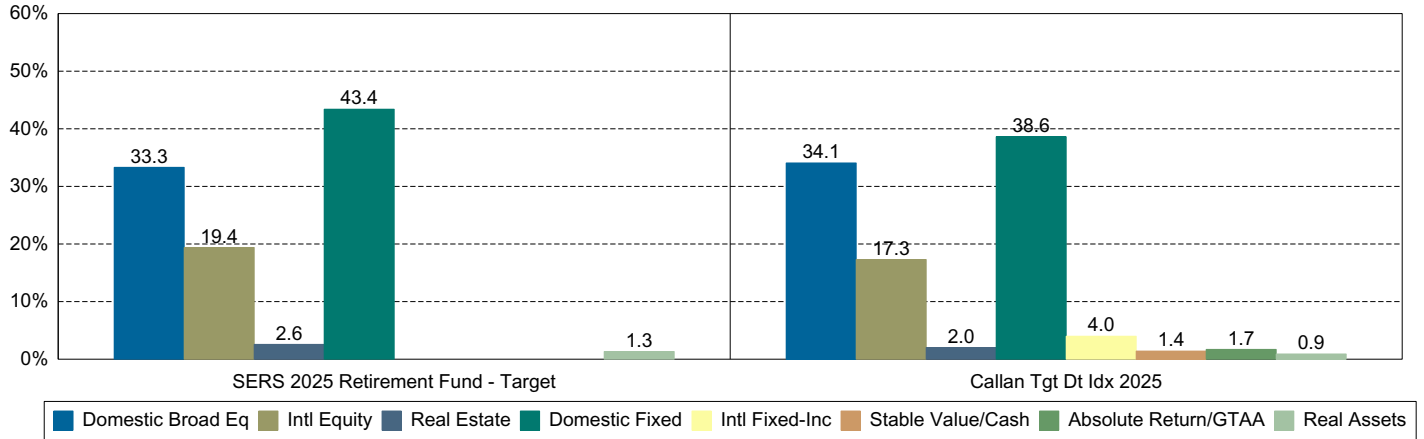


10th Percentile	1.14	0.80	0.82
25th Percentile	0.94	0.66	0.46
Median	0.40	0.59	0.24
75th Percentile	(0.19)	0.47	(0.18)
90th Percentile	(0.47)	0.41	(0.37)
<b>SERS Post Retirement Fund</b>	<b>0.02</b>	<b>0.52</b>	<b>0.34</b>

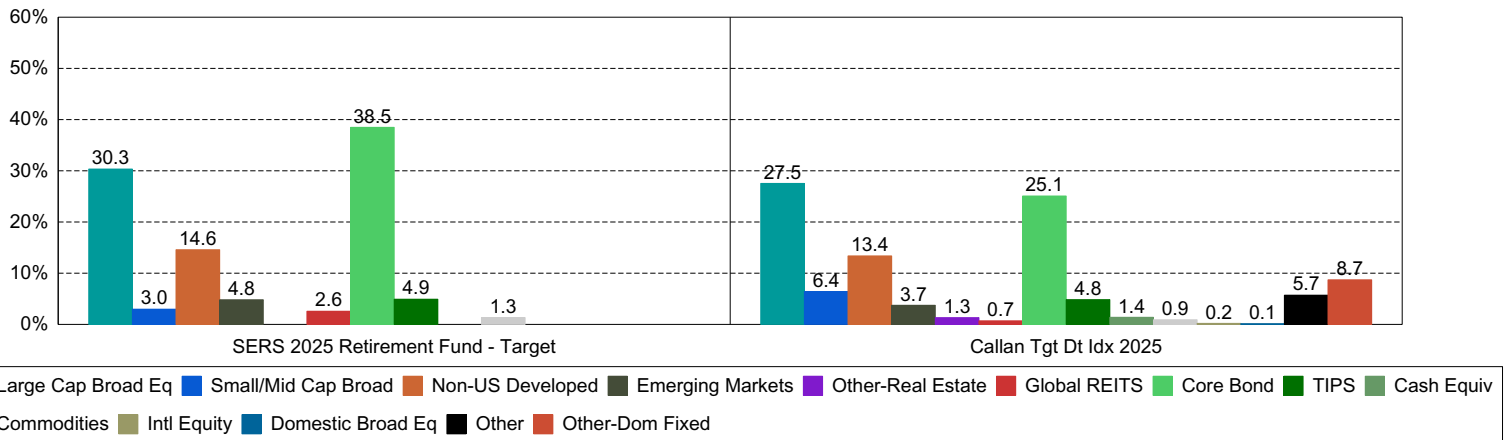
# SERS 2025 Retirement Fund Target Date Fund Asset Allocation as of March 31, 2020

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.

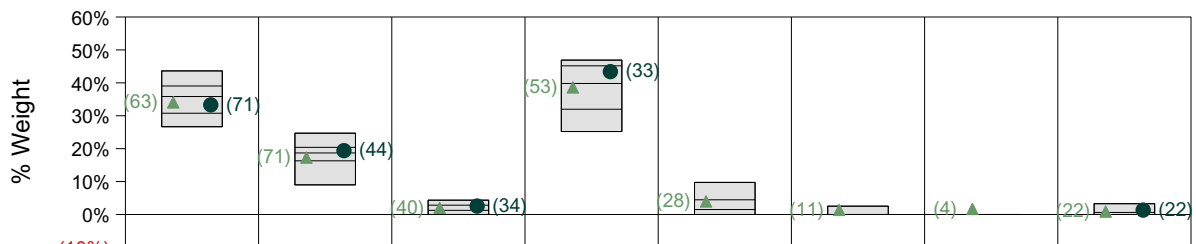
## Macro-Level Asset Allocation



## 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	43.62	24.70	4.35	46.90	9.74	2.53	0.00	3.28
25th Percentile	39.04	20.40	2.83	45.16	4.46	0.00	0.00	0.62
Median	35.84	18.70	1.26	39.80	1.50	0.00	0.00	0.00
75th Percentile	30.76	16.31	0.00	31.97	0.00	0.00	0.00	0.00
90th Percentile	26.66	9.00	0.00	25.20	0.00	0.00	0.00	0.00

<b>SERS 2025 Retirement Fund - Target</b>	●	33.31	19.39	2.57	43.40	-	-	-	1.33
Callan Tgt Dt Idx 2025	▲	34.06	17.30	2.02	38.62	3.98	1.41	1.70	0.90



# SERS 2025 Retirement Fund Period Ended March 31, 2020

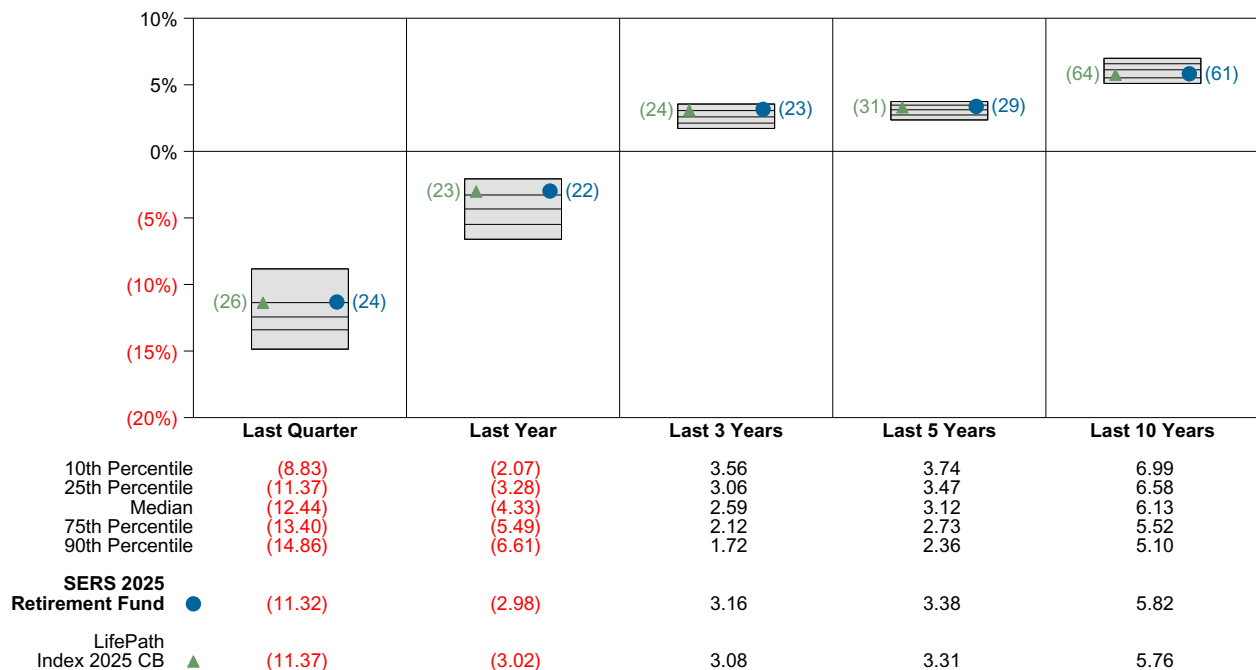
## Investment Philosophy

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.

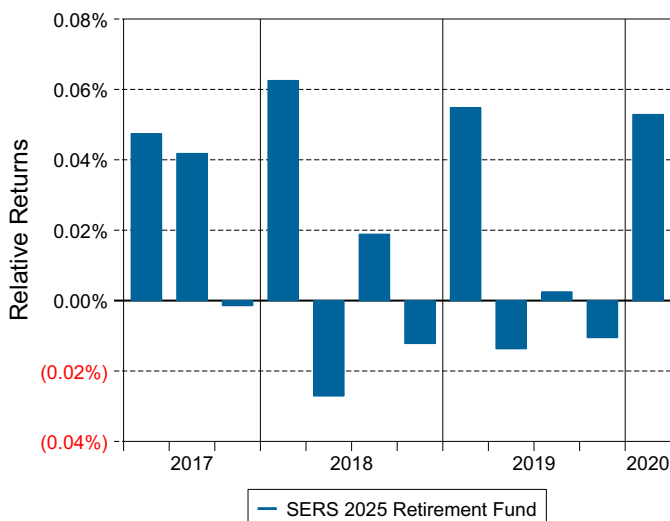
## Quarterly Summary and Highlights

- SERS 2025 Retirement Fund's portfolio posted a (11.32)% return for the quarter placing it in the 24 percentile of the Callan Target Date 2025 group for the quarter and in the 22 percentile for the last year.
- SERS 2025 Retirement Fund's portfolio outperformed the LifePath Index 2025 CB by 0.05% for the quarter and outperformed the LifePath Index 2025 CB for the year by 0.04%.

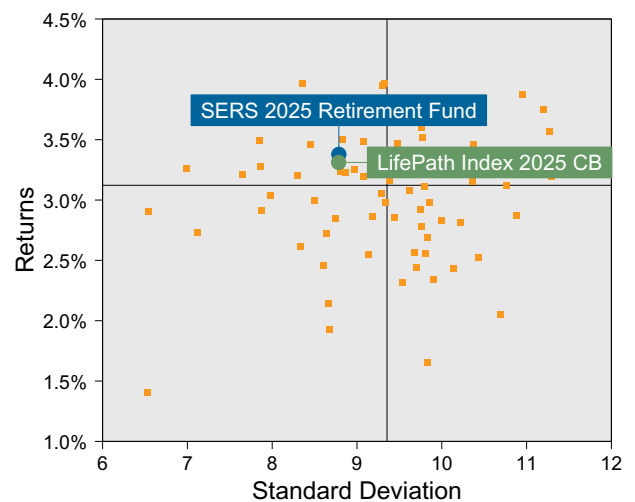
## Performance vs Callan Target Date 2025 (Net)



## Relative Return vs LifePath Index 2025 CB



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

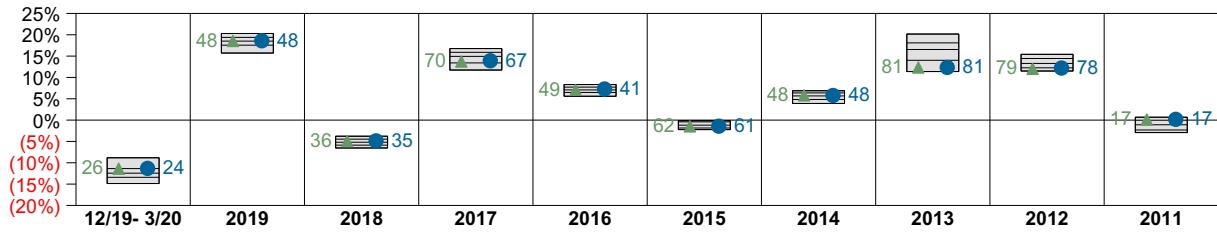


# SERS 2025 Retirement Fund Return Analysis Summary

## Return Analysis

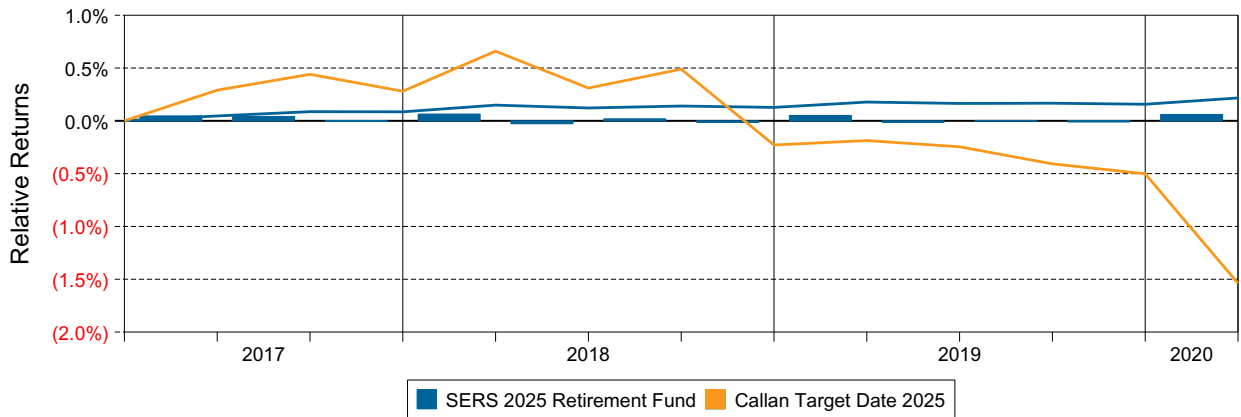
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate 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)

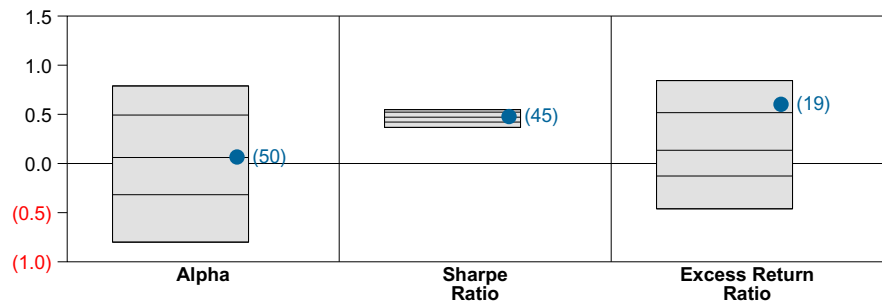


	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
<b>SERS 2025 Retirement Fund</b>	● (11.32)	18.60	(4.86)	13.91	7.30	(1.43)	5.77	12.34	12.20	0.18
LifePath Index 2025 CB	▲ (11.37)	18.56	(4.90)	13.75	7.10	(1.45)	5.82	12.35	12.04	0.16

### 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 March 31, 2020



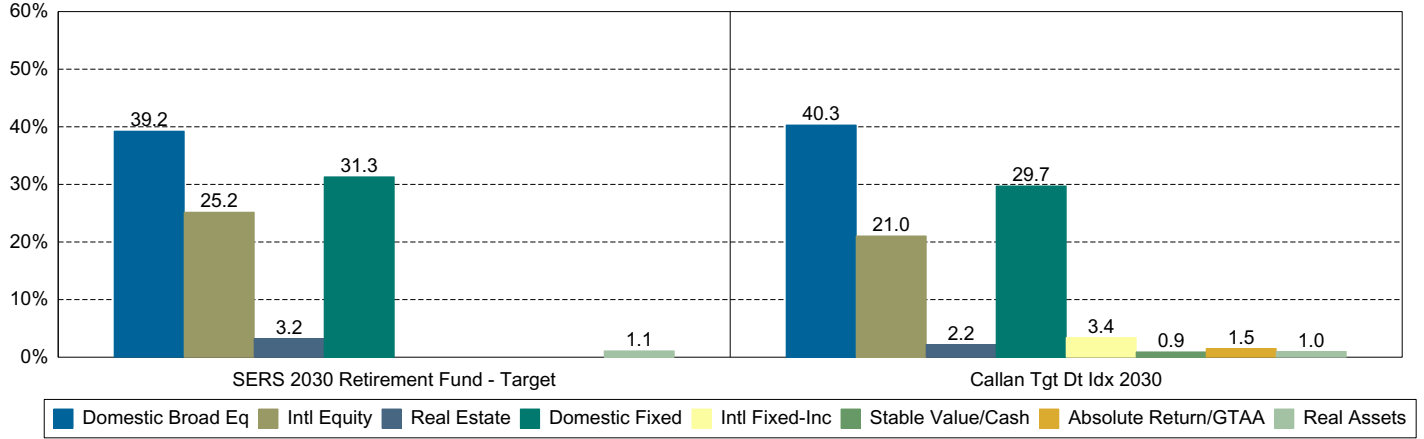
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.79	0.55	0.84
25th Percentile	0.49	0.52	0.52
Median	0.06	0.47	0.13
75th Percentile	(0.32)	0.42	(0.13)
90th Percentile	(0.80)	0.37	(0.46)
<b>SERS 2025 Retirement Fund</b>	● 0.07	0.48	0.60

# SERS 2030 Retirement Fund

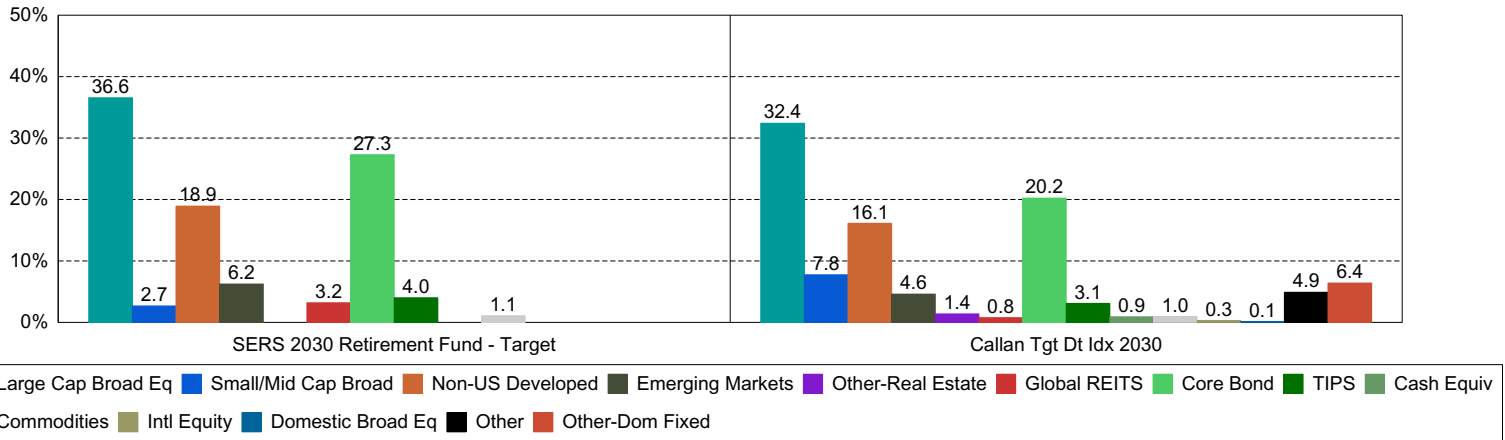
## Target Date Fund Asset Allocation as of March 31, 2020

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.

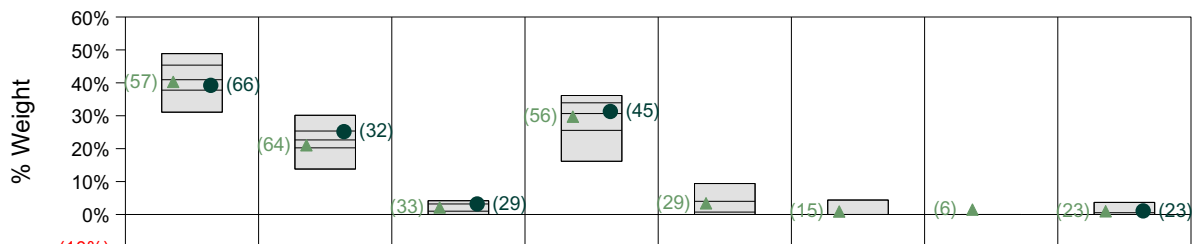
### Macro-Level Asset Allocation



### 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	48.88	30.14	4.19	36.14	9.40	4.39	0.00	3.67
25th Percentile	45.38	25.36	3.20	33.93	4.00	0.00	0.00	0.54
Median	40.95	22.65	1.00	30.66	0.73	0.00	0.00	0.00
75th Percentile	37.78	20.25	0.00	25.56	0.00	0.00	0.00	0.00
90th Percentile	31.08	13.81	0.00	16.16	0.00	0.00	0.00	0.00

<b>SERS 2030 Retirement Fund - Target</b>	●	39.24	25.17	3.20	31.31	-	-	1.09
Callan Tgt Dt Idx 2030	▲	40.30	21.04	2.15	29.72	3.40	0.91	1.50

# SERS 2030 Retirement Fund Period Ended March 31, 2020

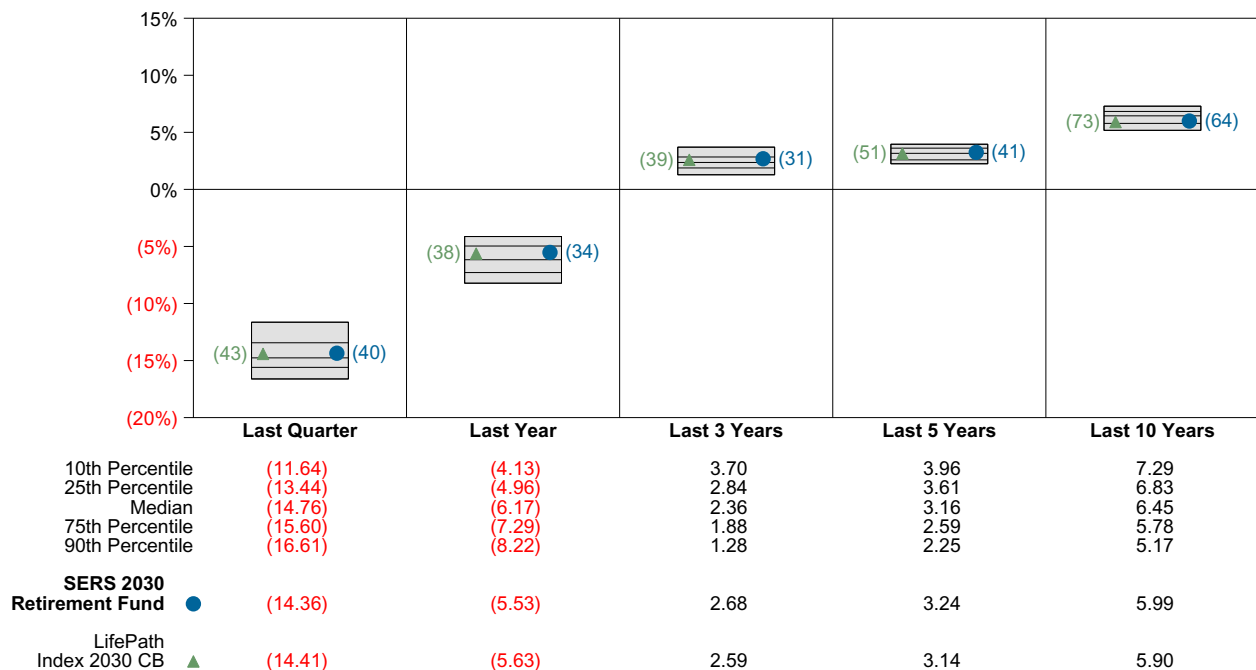
## Investment Philosophy

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.

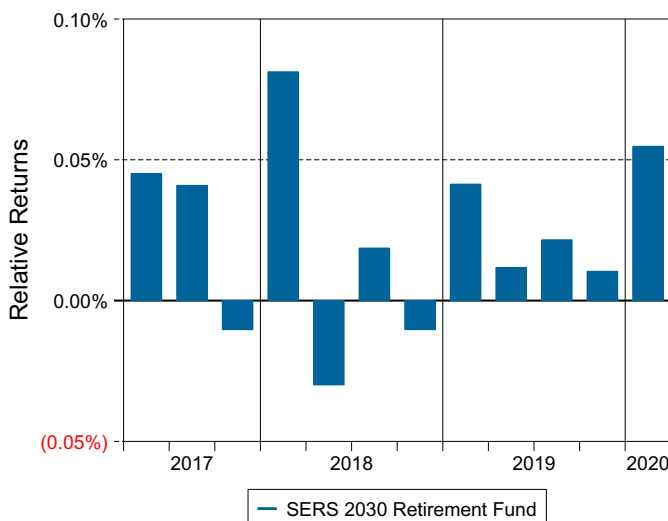
## Quarterly Summary and Highlights

- SERS 2030 Retirement Fund's portfolio posted a (14.36)% return for the quarter placing it in the 40 percentile of the Callan Target Date 2030 group for the quarter and in the 34 percentile for the last year.
- SERS 2030 Retirement Fund's portfolio outperformed the LifePath Index 2030 CB by 0.05% for the quarter and outperformed the LifePath Index 2030 CB for the year by 0.10%.

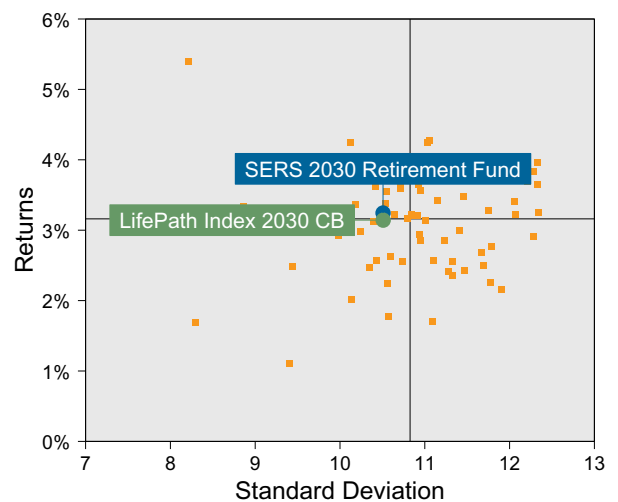
## Performance vs Callan Target Date 2030 (Net)



## Relative Return vs LifePath Index 2030 CB



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

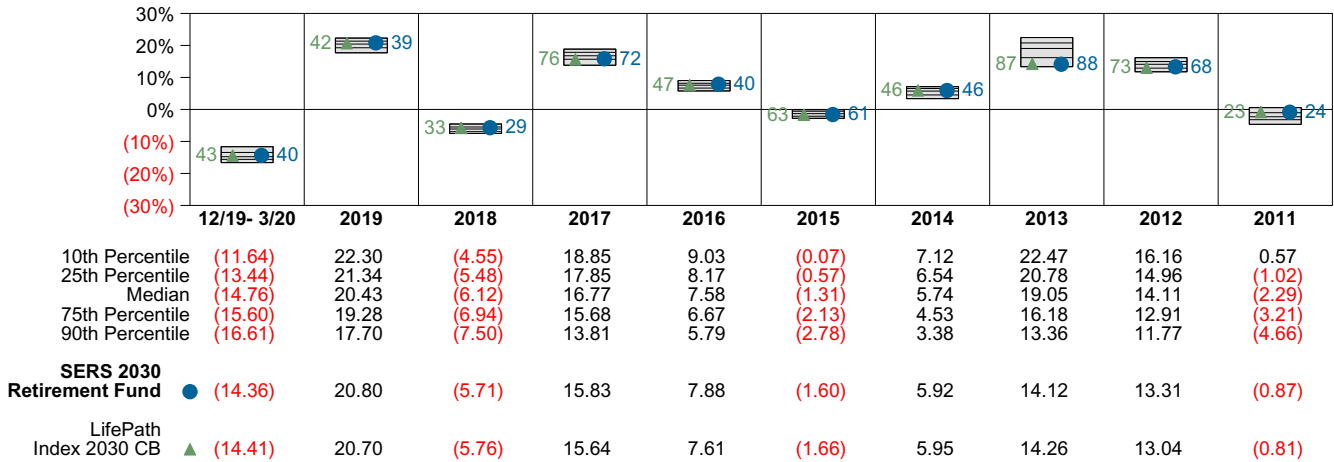


# SERS 2030 Retirement Fund Return Analysis Summary

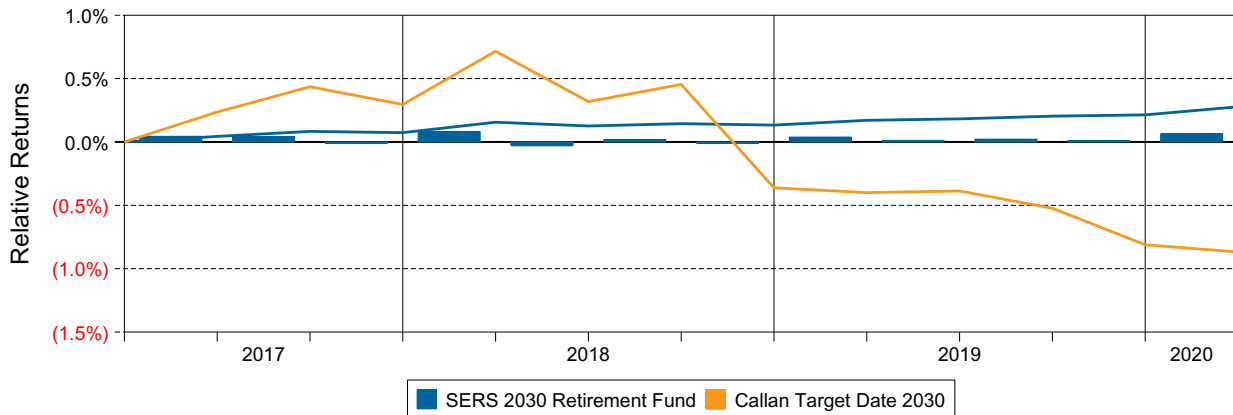
## Return Analysis

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.

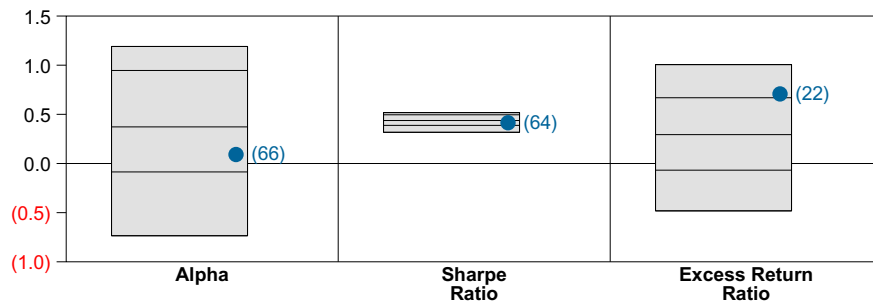
### Performance vs Callan Target Date 2030 (Net)



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



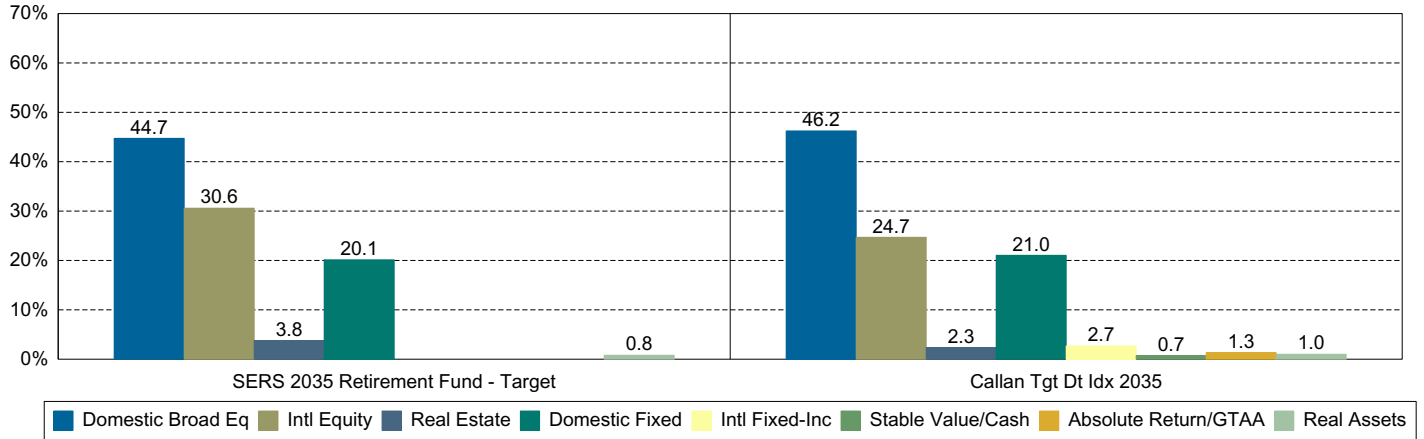
### Risk Adjusted Return Measures vs LifePath Index 2030 CB Rankings Against Callan Target Date 2030 (Net) Seven Years Ended March 31, 2020



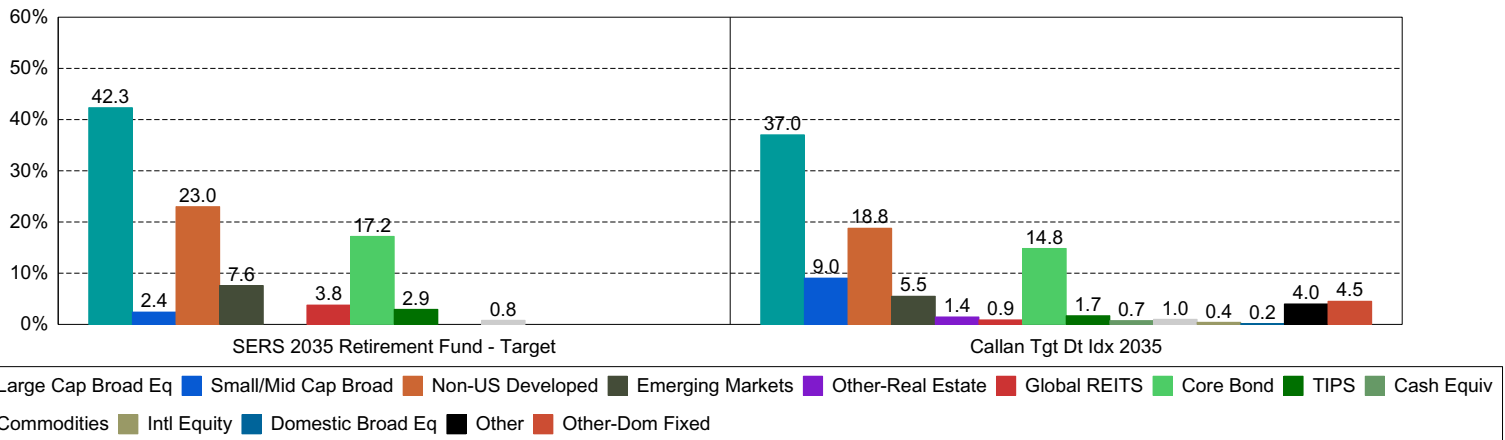
# SERS 2035 Retirement Fund Target Date Fund Asset Allocation as of March 31, 2020

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.

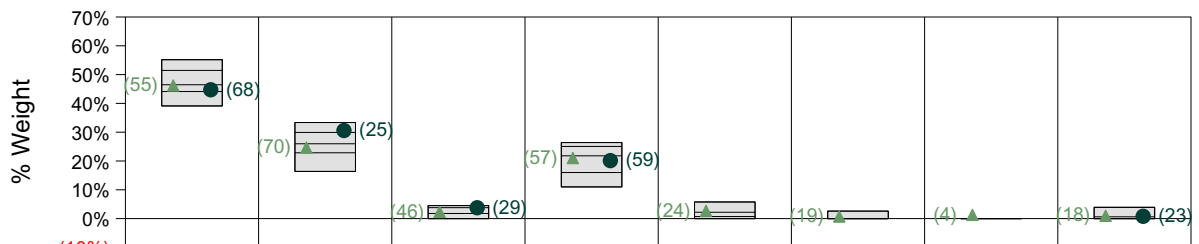
## Macro-Level Asset Allocation



## 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	55.17	33.36	4.52	26.41	5.78	2.60	0.00	3.91
25th Percentile	51.45	29.92	3.79	25.05	2.20	0.00	0.00	0.62
Median	46.47	25.99	1.78	21.80	0.72	0.00	0.00	0.00
75th Percentile	44.12	22.85	0.00	16.00	0.00	0.00	0.00	0.00
90th Percentile	39.11	16.38	0.00	11.00	0.00	0.00	0.00	0.00

<b>SERS 2035 Retirement Fund - Target</b>	●	44.73	30.58	3.77	20.13	-	-	0.80
Callan Tgt Dt Idx 2035	▲	46.23	24.68	2.32	21.04	2.68	0.74	1.31

# SERS 2035 Retirement Fund Period Ended March 31, 2020

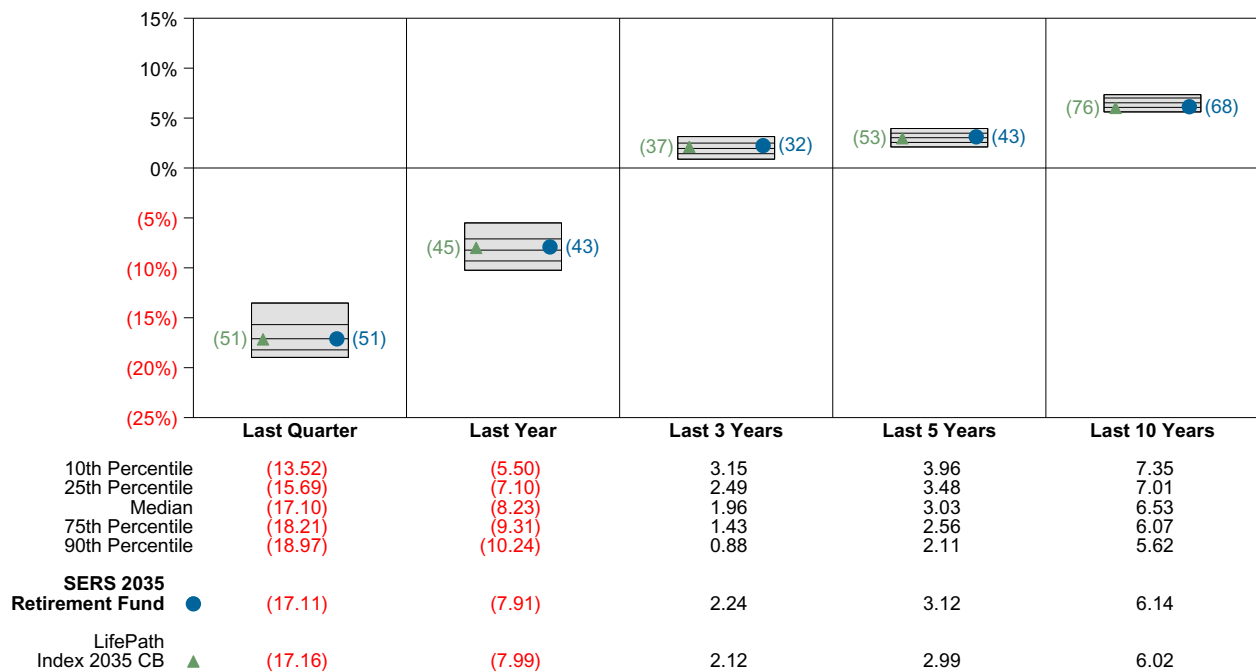
## Investment Philosophy

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.

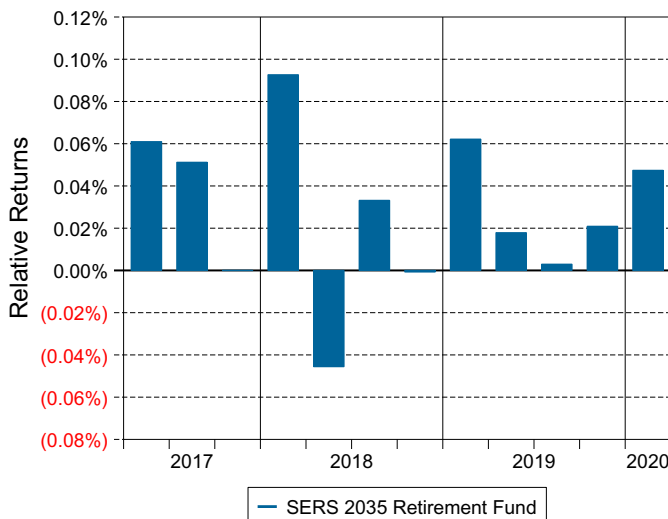
## Quarterly Summary and Highlights

- SERS 2035 Retirement Fund's portfolio posted a (17.11)% return for the quarter placing it in the 51 percentile of the Callan Target Date 2035 group for the quarter and in the 43 percentile for the last year.
- SERS 2035 Retirement Fund's portfolio outperformed the LifePath Index 2035 CB by 0.05% for the quarter and outperformed the LifePath Index 2035 CB for the year by 0.09%.

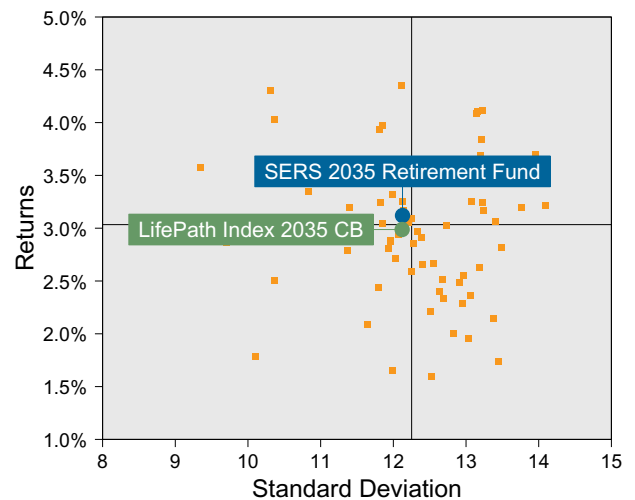
## Performance vs Callan Target Date 2035 (Net)



## Relative Return vs LifePath Index 2035 CB



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

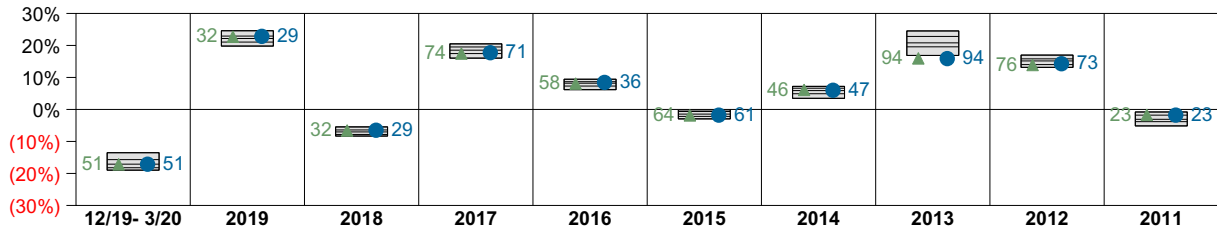


# SERS 2035 Retirement Fund Return Analysis Summary

## Return Analysis

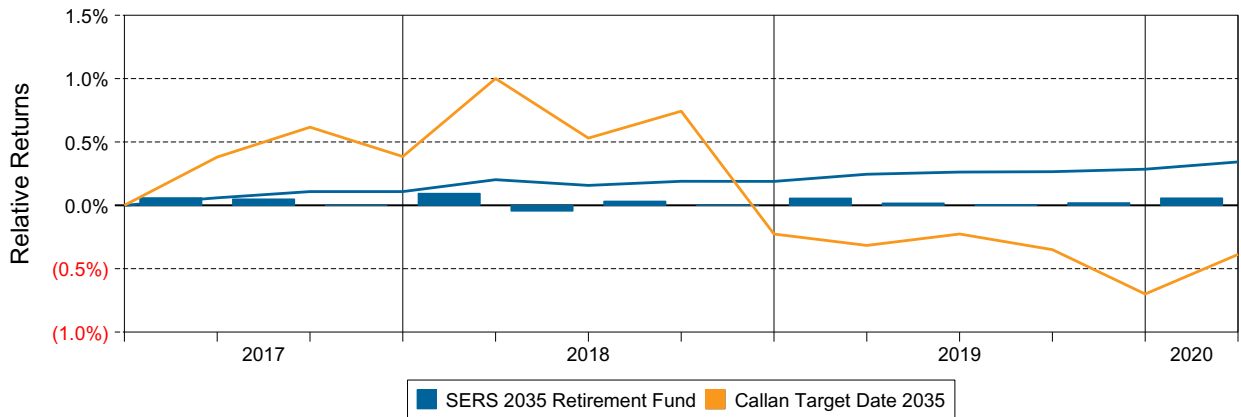
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate 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)

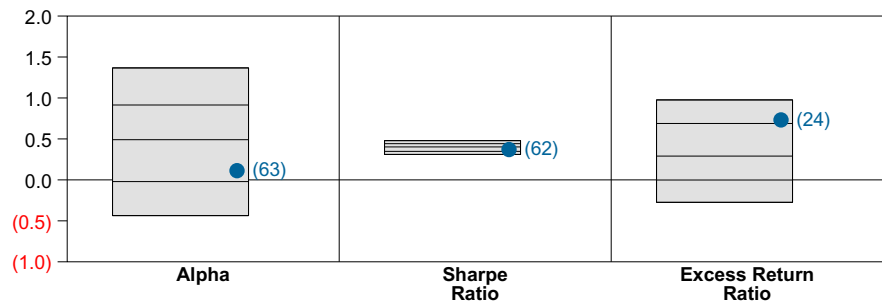


	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	(13.52)	24.59	(5.46)	20.49	9.44	(0.10)	7.21	24.53	16.98	(0.79)
25th Percentile	(15.69)	22.92	(6.41)	19.53	8.67	(0.64)	6.63	22.82	15.81	(1.79)
Median	(17.10)	22.17	(7.03)	18.51	8.20	(1.46)	5.89	20.81	15.16	(3.09)
75th Percentile	(18.21)	21.05	(7.82)	17.46	7.30	(2.17)	4.91	19.56	14.02	(3.81)
90th Percentile	(18.97)	19.80	(8.31)	16.04	6.17	(2.95)	3.47	16.87	13.15	(5.15)
<b>SERS 2035 Retirement Fund</b>	● (17.11)	22.84	(6.50)	17.72	8.44	(1.78)	5.99	15.88	14.28	(1.77)
LifePath Index 2035 CB	▲ (17.16)	22.72	(6.58)	17.48	8.08	(1.86)	6.11	15.96	13.90	(1.71)

### 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 March 31, 2020



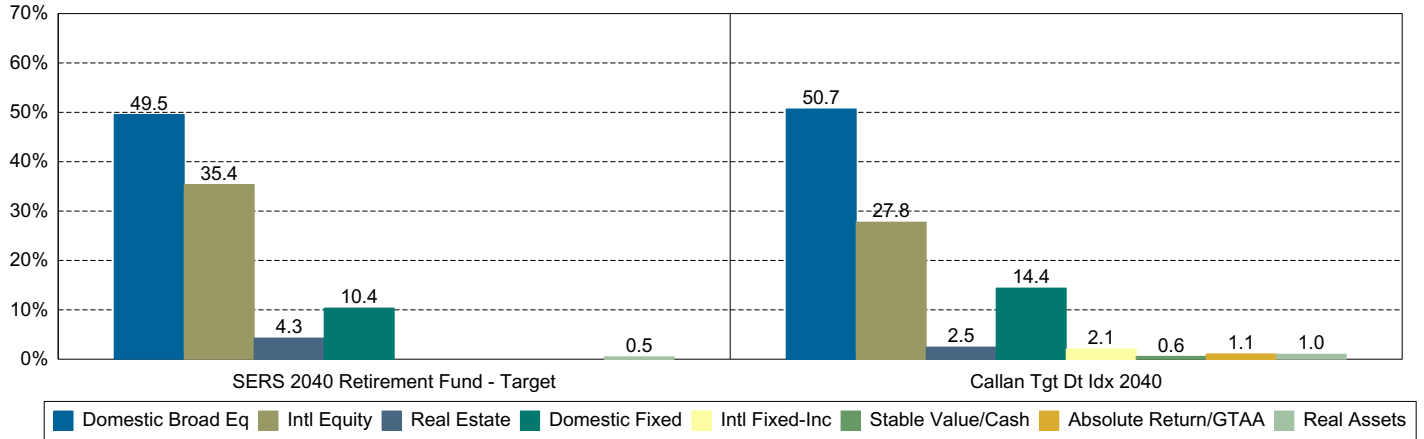
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	1.37	0.48	0.98
25th Percentile	0.91	0.44	0.69
Median	0.49	0.40	0.29
75th Percentile	(0.02)	0.35	(0.00)
90th Percentile	(0.44)	0.31	(0.27)
<b>SERS 2035 Retirement Fund</b>	● 0.11	0.37	0.73



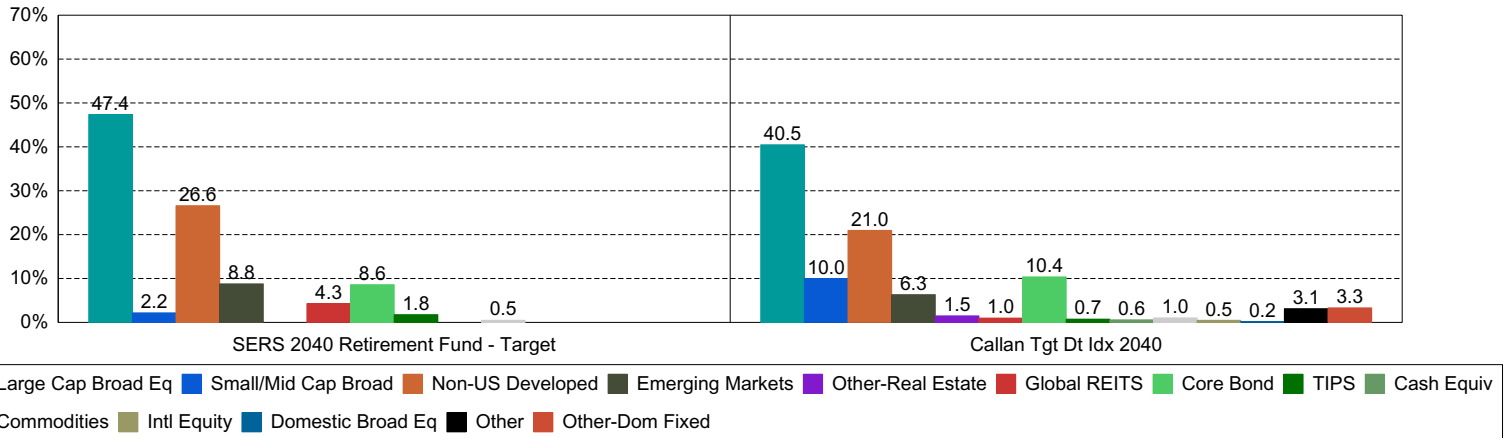
# SERS 2040 Retirement Fund Target Date Fund Asset Allocation as of March 31, 2020

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.

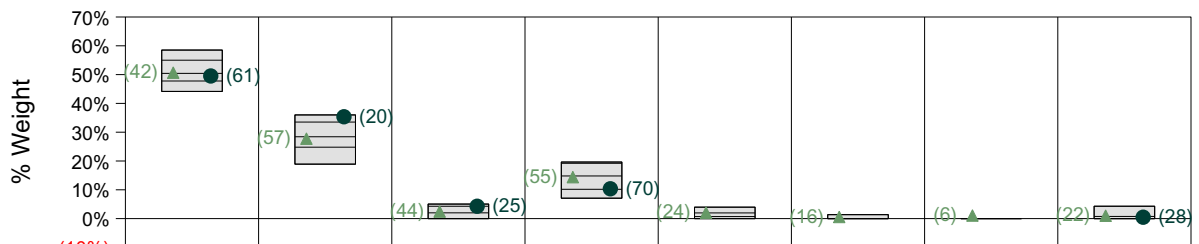
## Macro-Level Asset Allocation



## 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	58.52	36.00	5.05	19.64	3.97	1.37	0.00	4.30
25th Percentile	55.00	33.52	4.28	19.20	1.97	0.00	0.00	0.75
Median	50.43	28.42	2.00	14.80	0.70	0.00	0.00	0.00
75th Percentile	47.78	24.80	0.00	10.18	0.00	0.00	0.00	0.00
90th Percentile	44.16	18.90	0.00	7.08	0.00	0.00	0.00	0.00

<b>SERS 2040 Retirement Fund - Target</b>	●	49.52	35.36	4.28	10.35	-	-	-	0.48
Callan Tgt Dt Idx 2040	▲	50.68	27.76	2.45	14.40	2.05	0.58	1.07	1.01

# SERS 2040 Retirement Fund Period Ended March 31, 2020

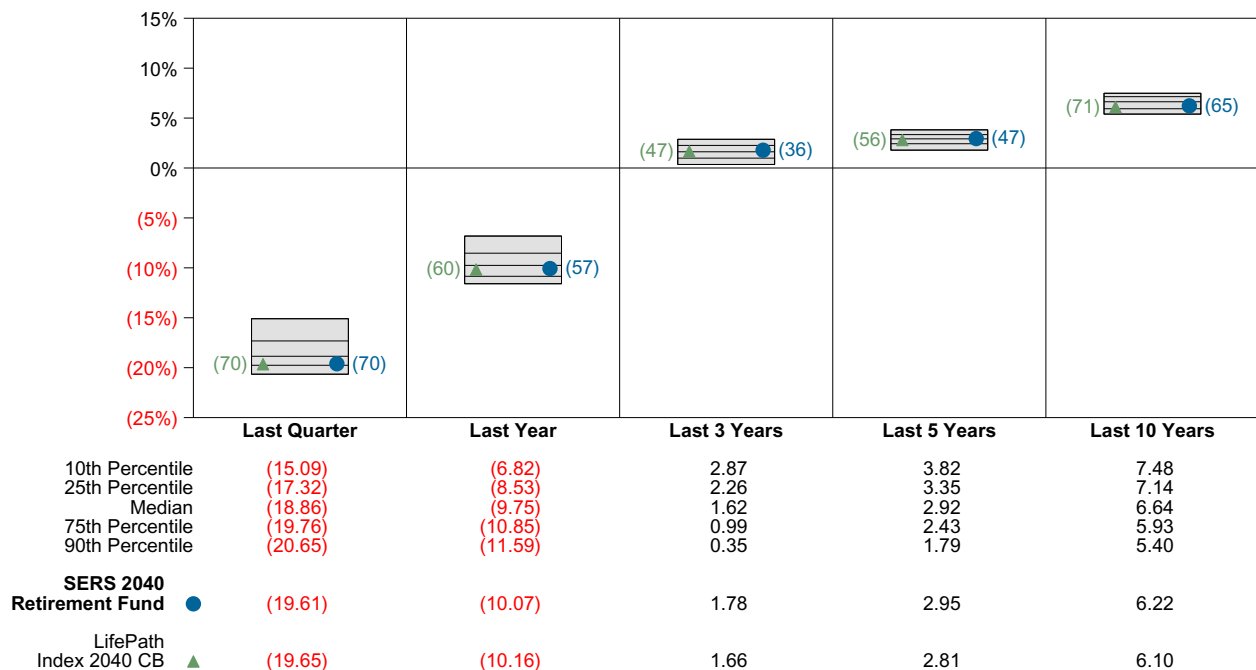
## Investment Philosophy

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.

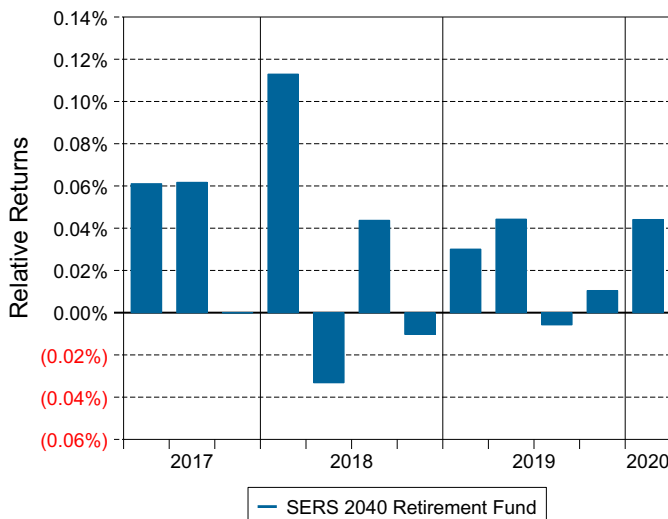
## Quarterly Summary and Highlights

- SERS 2040 Retirement Fund's portfolio posted a (19.61)% return for the quarter placing it in the 70 percentile of the Callan Target Date 2040 group for the quarter and in the 57 percentile for the last year.
- SERS 2040 Retirement Fund's portfolio outperformed the LifePath Index 2040 CB by 0.04% for the quarter and outperformed the LifePath Index 2040 CB for the year by 0.09%.

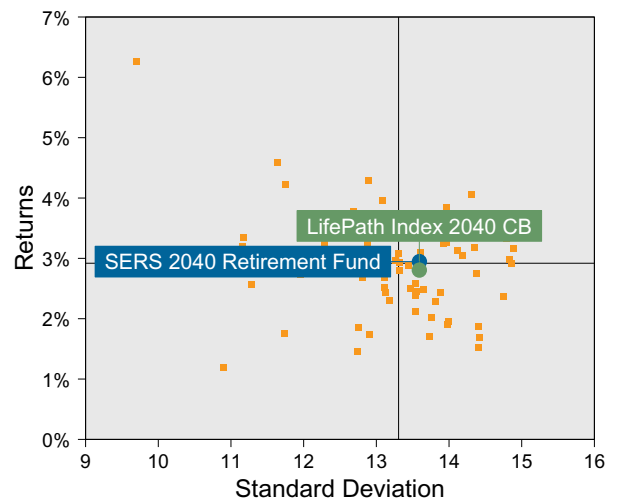
## Performance vs Callan Target Date 2040 (Net)



## Relative Return vs LifePath Index 2040 CB



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

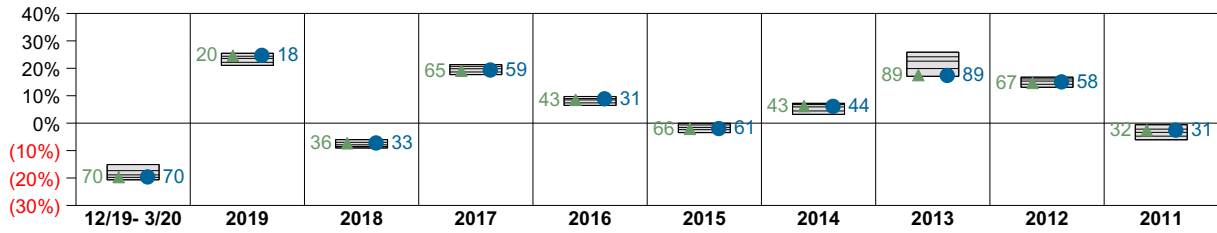


# SERS 2040 Retirement Fund Return Analysis Summary

## Return Analysis

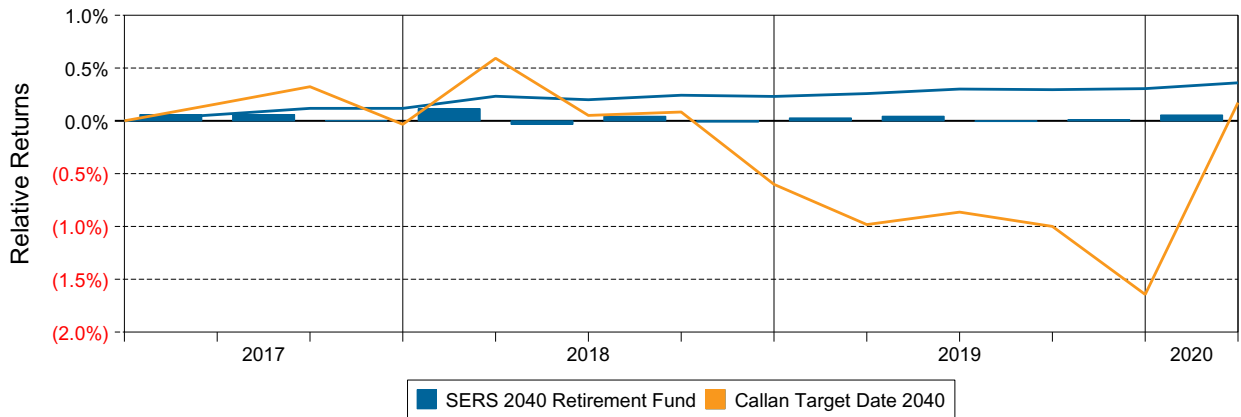
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate 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)

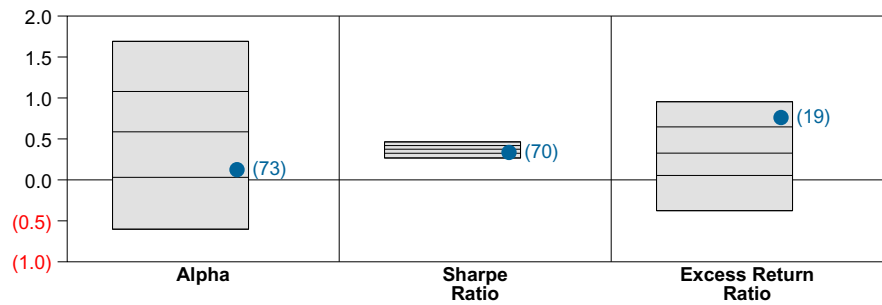


10th Percentile	(15.09)	25.48	(6.01)	21.35	9.72	(0.05)	7.22	25.88	16.76	(0.57)
25th Percentile	(17.32)	24.40	(6.99)	20.71	8.96	(0.65)	6.77	24.20	16.13	(2.19)
Median	(18.86)	23.59	(7.89)	19.84	8.48	(1.55)	5.92	22.61	15.34	(3.36)
75th Percentile	(19.76)	22.18	(8.52)	18.66	7.40	(2.37)	4.45	19.90	14.17	(4.74)
90th Percentile	(20.65)	21.07	(9.05)	17.70	6.47	(3.45)	3.20	17.07	13.07	(6.06)
<b>SERS 2040 Retirement Fund</b>	● (19.61)	24.71	(7.22)	19.38	8.88	(1.98)	6.12	17.39	15.04	(2.54)
LifePath Index 2040 CB	▲ (19.65)	24.62	(7.33)	19.09	8.51	(2.08)	6.21	17.52	14.70	(2.58)

### 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 March 31, 2020



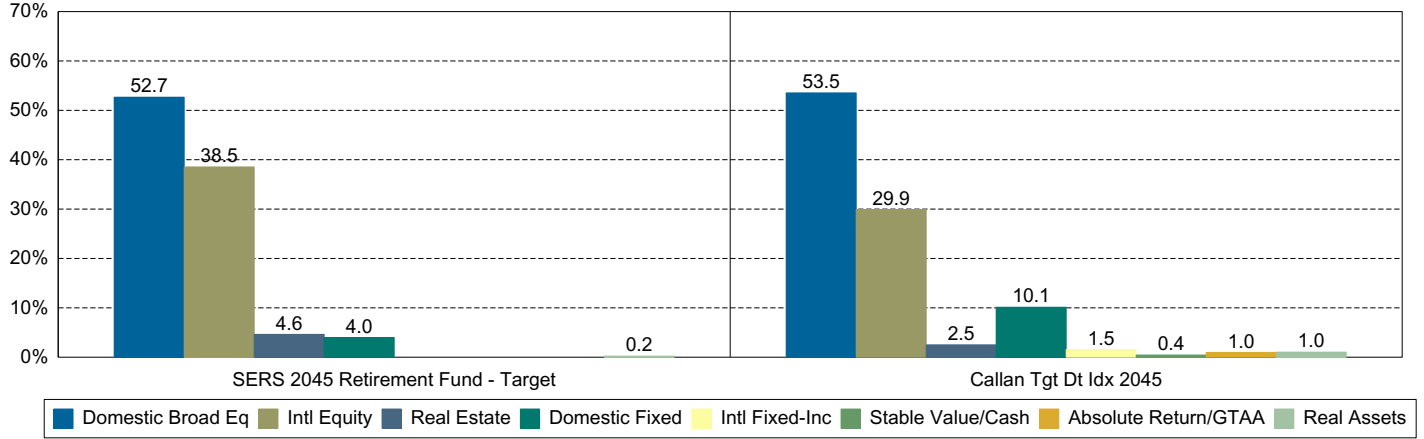
10th Percentile	1.69	0.46	0.95
25th Percentile	1.08	0.42	0.65
Median	0.59	0.37	0.33
75th Percentile	0.03	0.33	0.05
90th Percentile	(0.60)	0.27	(0.38)
<b>SERS 2040 Retirement Fund</b>	● 0.12	0.33	0.76

# SERS 2045 Retirement Fund

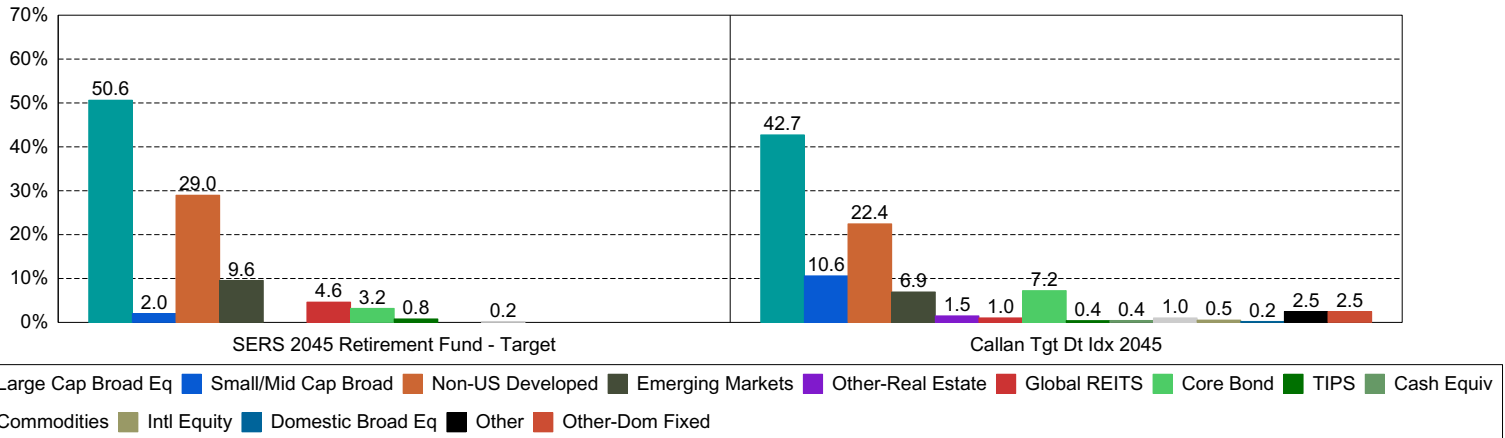
## Target Date Fund Asset Allocation as of March 31, 2020

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.

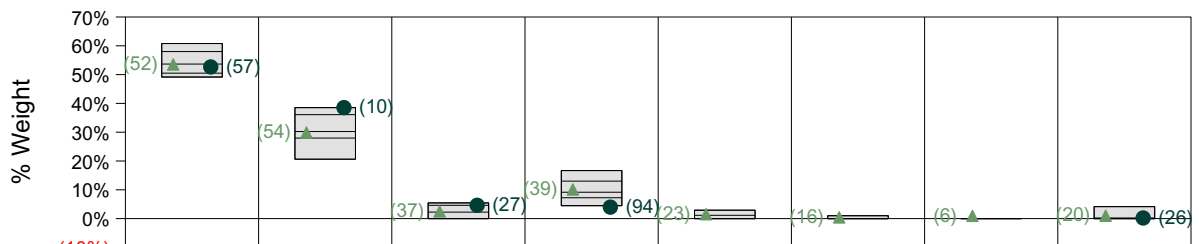
### Macro-Level Asset Allocation



### 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	60.79	38.53	5.45	16.68	2.92	1.00	0.00	4.16
25th Percentile	58.00	36.09	4.62	13.01	1.14	0.00	0.00	0.21
Median	53.66	30.23	2.25	9.16	0.00	0.00	0.00	0.00
75th Percentile	50.50	27.96	0.00	7.24	0.00	0.00	0.00	0.00
90th Percentile	49.15	20.62	0.00	4.48	0.00	0.00	0.00	0.00

<b>SERS 2045 Retirement Fund - Target</b>	●	52.66	38.53	4.62	3.98	-	-	0.21
Callan Tgt Dt Idx 2045	▲	53.53	29.90	2.51	10.12	1.52	0.44	0.96

# SERS 2045 Retirement Fund Period Ended March 31, 2020

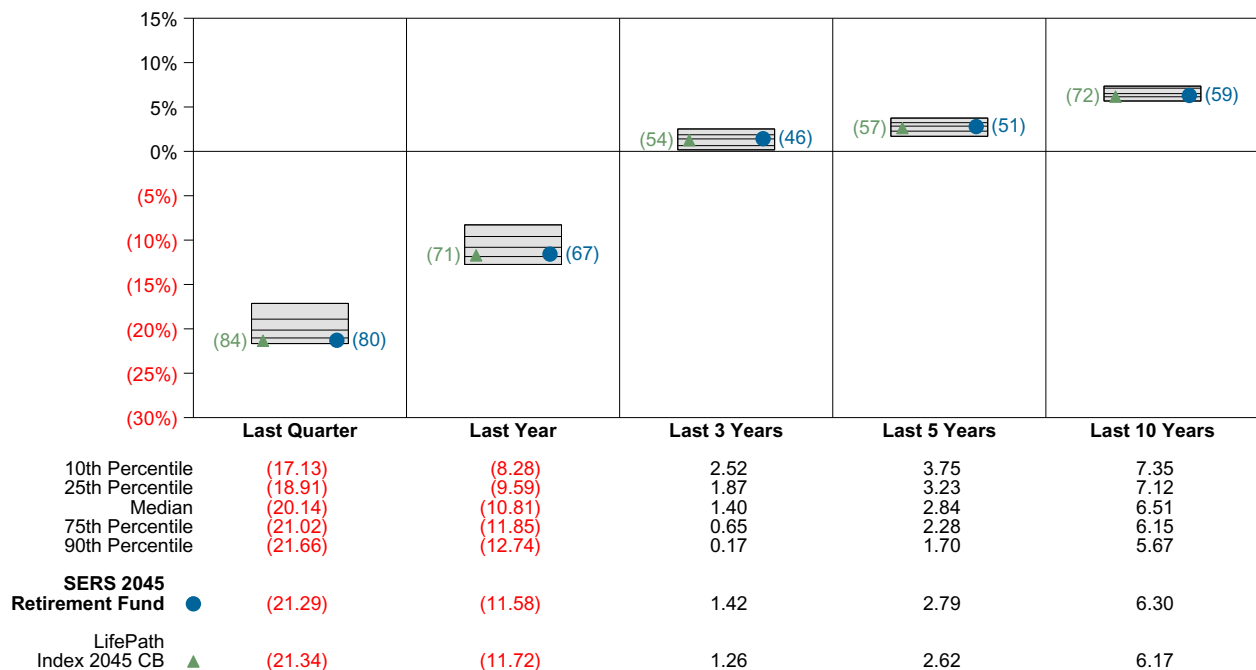
## Investment Philosophy

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.

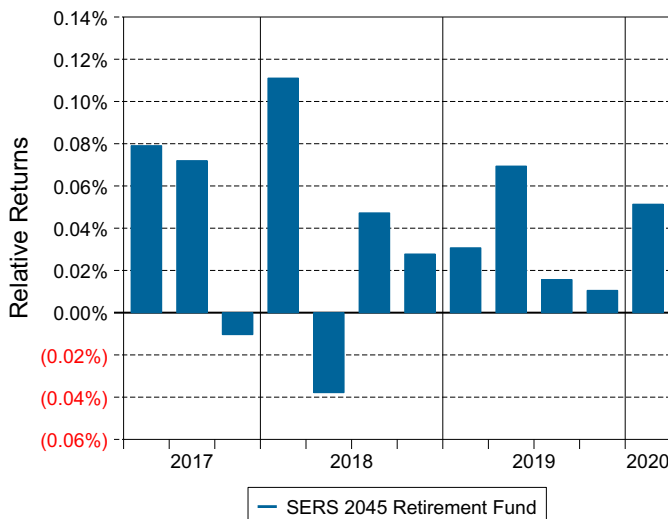
## Quarterly Summary and Highlights

- SERS 2045 Retirement Fund's portfolio posted a (21.29)% return for the quarter placing it in the 80 percentile of the Callan Target Date 2045 group for the quarter and in the 67 percentile for the last year.
- SERS 2045 Retirement Fund's portfolio outperformed the LifePath Index 2045 CB by 0.05% for the quarter and outperformed the LifePath Index 2045 CB for the year by 0.14%.

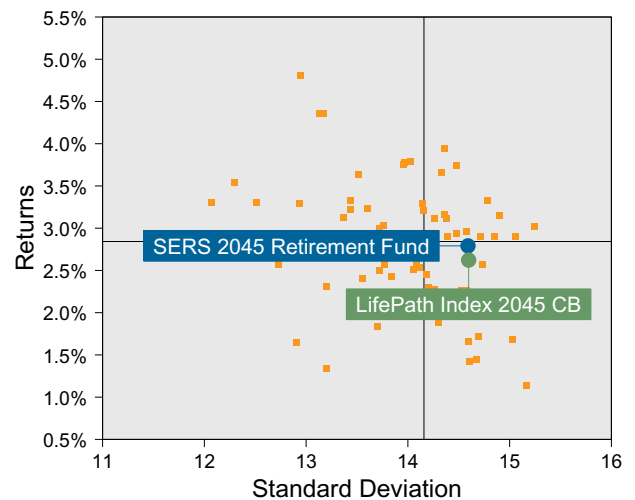
## Performance vs Callan Target Date 2045 (Net)



## Relative Return vs LifePath Index 2045 CB



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

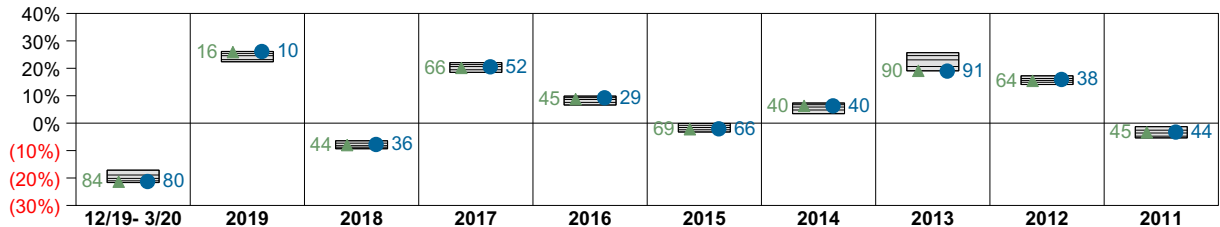


# SERS 2045 Retirement Fund Return Analysis Summary

## Return Analysis

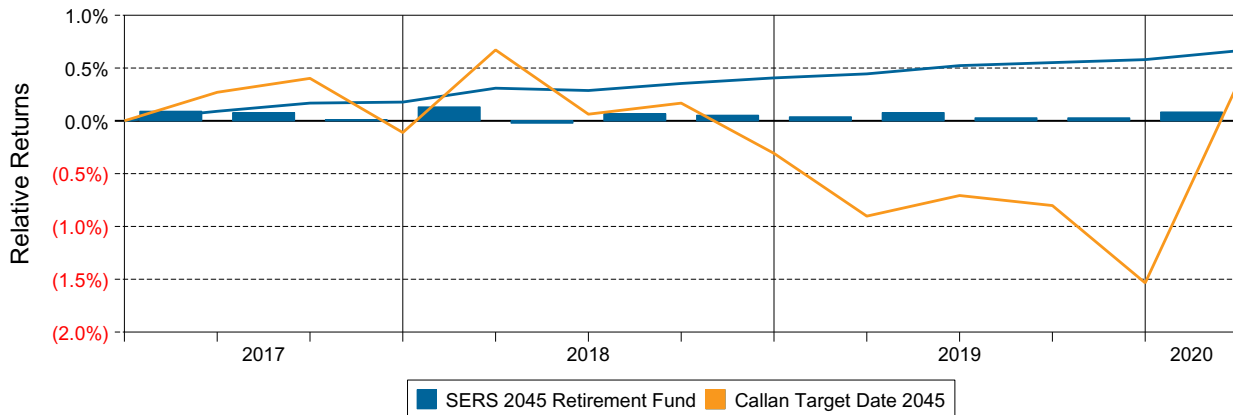
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate 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)

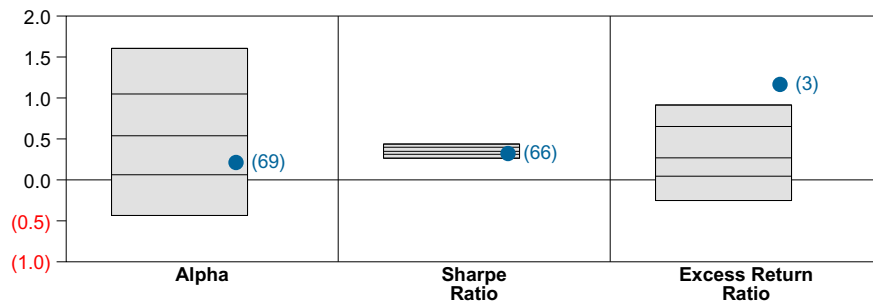


10th Percentile	(17.13)	26.14	(6.43)	22.08	9.86	(0.12)	7.33	25.70	17.26	(1.28)
25th Percentile	(18.91)	25.44	(7.30)	21.36	9.31	(0.79)	6.73	24.63	16.28	(2.56)
Median	(20.14)	24.60	(8.21)	20.63	8.63	(1.58)	5.87	23.08	15.58	(3.59)
75th Percentile	(21.02)	23.16	(8.78)	19.47	7.56	(2.41)	4.80	20.66	14.90	(4.74)
90th Percentile	(21.66)	22.38	(9.33)	18.51	6.62	(3.23)	3.45	19.08	14.08	(5.37)
<b>SERS 2045 Retirement Fund</b>	● (21.28)	26.12	(7.78)	20.54	9.25	(2.07)	6.30	18.97	15.92	(3.26)
LifePath Index 2045 CB	▲ (21.34)	25.90	(7.99)	20.15	8.77	(2.22)	6.31	19.09	15.43	(3.36)

### 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 March 31, 2020



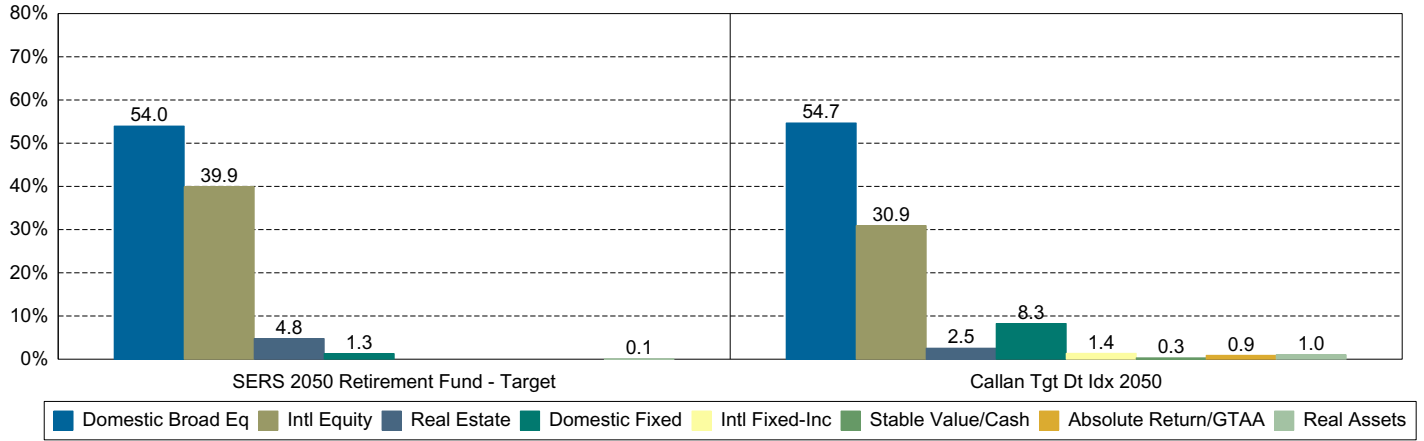
10th Percentile	1.61	0.44	0.91
25th Percentile	1.05	0.40	0.65
Median	0.54	0.35	0.27
75th Percentile	0.06	0.31	0.05
90th Percentile	(0.43)	0.26	(0.25)
<b>SERS 2045 Retirement Fund</b>	● 0.21	0.32	1.17

# SERS 2050 Retirement Fund

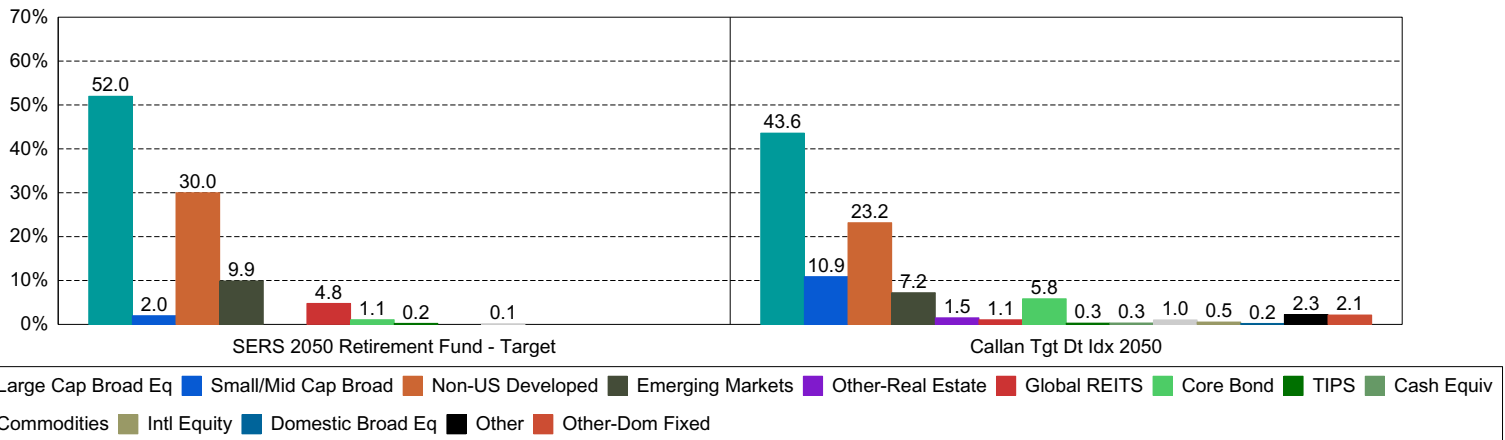
## Target Date Fund Asset Allocation as of March 31, 2020

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.

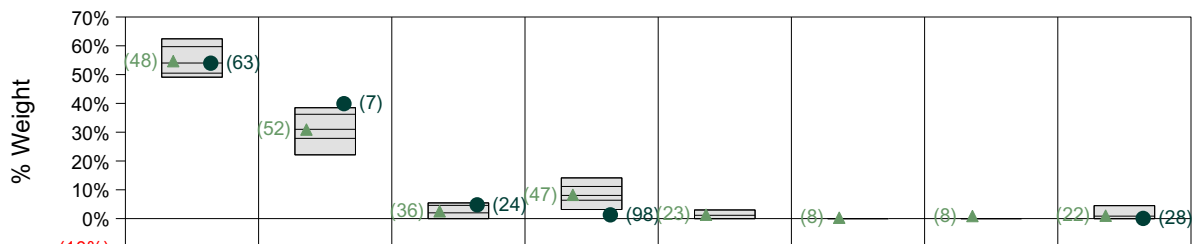
### Macro-Level Asset Allocation



### 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	62.43	38.50	5.45	14.14	3.00	0.00	0.00	4.50
25th Percentile	59.70	36.22	4.59	11.16	1.15	0.00	0.00	0.85
Median	54.02	31.00	2.00	8.05	0.00	0.00	0.00	0.00
75th Percentile	50.50	27.86	0.00	6.38	0.00	0.00	0.00	0.00
90th Percentile	49.10	22.14	0.00	3.15	0.00	0.00	0.00	0.00
<b>SERS 2050 Retirement Fund - Target</b>	● 53.96	39.90	4.77	1.30	-	-	-	0.06
Callan Tgt Dt Idx 2050	▲ 54.68	30.92	2.55	8.26	1.36	0.32	0.90	1.02

# SERS 2050 Retirement Fund Period Ended March 31, 2020

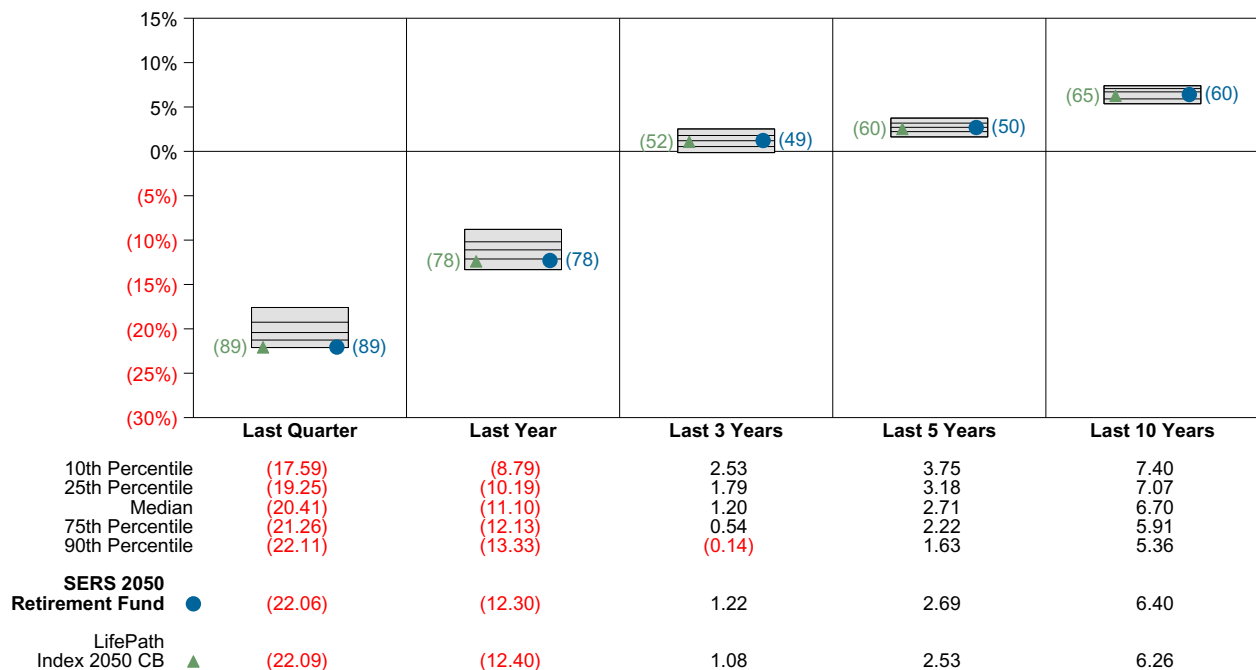
## Investment Philosophy

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.

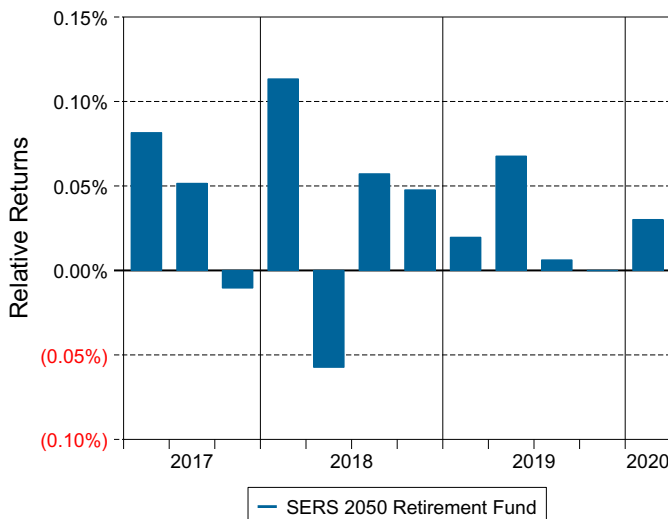
## Quarterly Summary and Highlights

- SERS 2050 Retirement Fund's portfolio posted a (22.06)% return for the quarter placing it in the 89 percentile of the Callan Target Date 2050 group for the quarter and in the 78 percentile for the last year.
- SERS 2050 Retirement Fund's portfolio outperformed the LifePath Index 2050 CB by 0.03% for the quarter and outperformed the LifePath Index 2050 CB for the year by 0.10%.

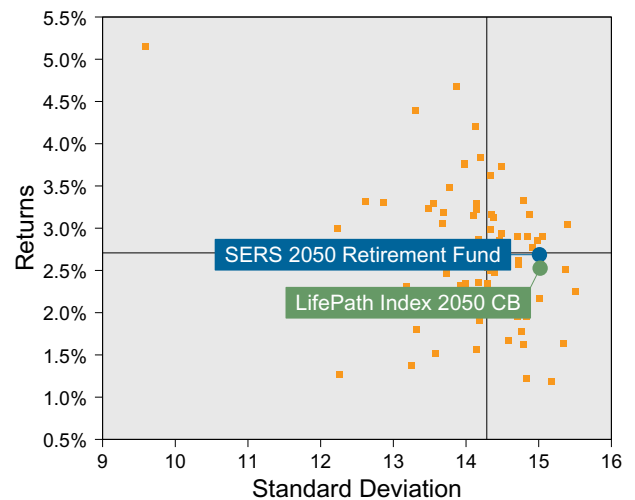
## Performance vs Callan Target Date 2050 (Net)



## Relative Return vs LifePath Index 2050 CB



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



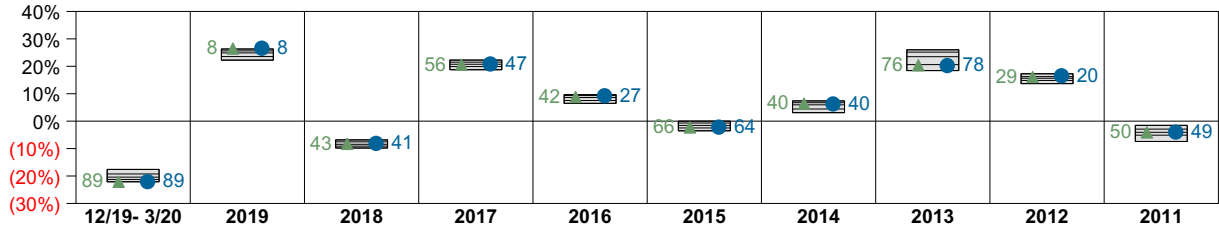


# SERS 2050 Retirement Fund Return Analysis Summary

## Return Analysis

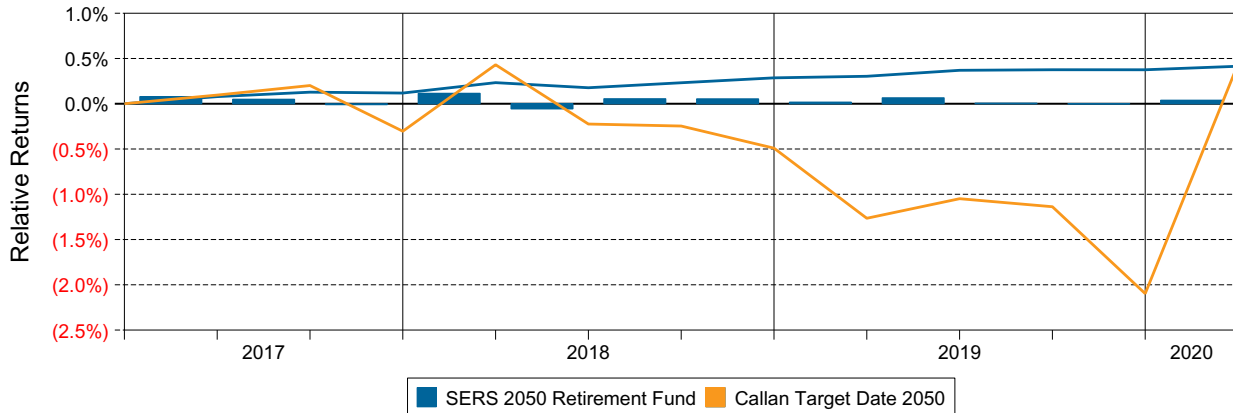
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate 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)

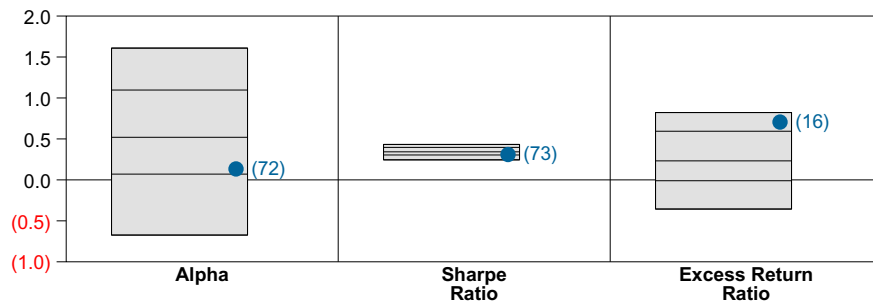


10th Percentile	(17.59)	26.30	(6.84)	22.27	9.65	(0.02)	7.38	26.02	17.27	(1.53)
25th Percentile	(19.25)	25.62	(7.54)	21.51	9.32	(0.68)	6.73	25.17	16.24	(2.91)
Median	(20.41)	24.89	(8.44)	20.74	8.61	(1.56)	5.95	23.50	15.65	(4.08)
75th Percentile	(21.26)	23.55	(9.11)	19.91	7.52	(2.48)	4.44	20.62	14.84	(5.11)
90th Percentile	(22.11)	22.25	(9.80)	18.75	6.49	(3.51)	3.10	18.44	13.68	(7.41)
<b>SERS 2050 Retirement Fund</b>	● (22.06)	26.60	(8.11)	20.85	9.26	(2.17)	6.28	20.26	16.54	(3.98)
LifePath Index 2050 CB	▲ (22.09)	26.48	(8.26)	20.55	8.82	(2.26)	6.41	20.40	16.12	(4.08)

### 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 March 31, 2020



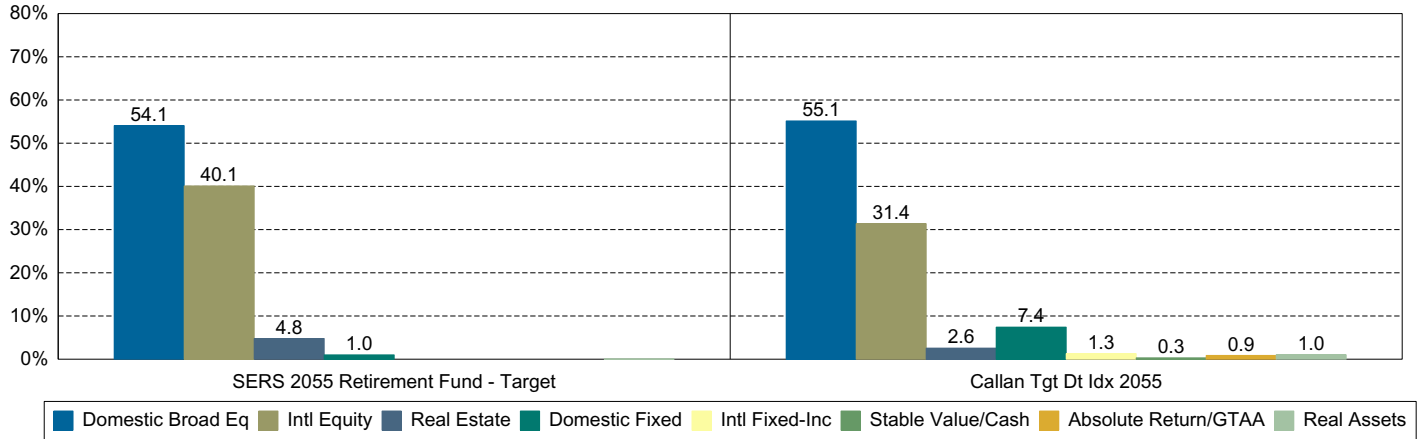
10th Percentile	1.61	0.43	0.82
25th Percentile	1.10	0.40	0.59
Median	0.52	0.34	0.23
75th Percentile	0.07	0.30	(0.01)
90th Percentile	(0.67)	0.24	(0.36)
<b>SERS 2050 Retirement Fund</b>	● 0.13	0.31	0.71

# SERS 2055 Retirement Fund

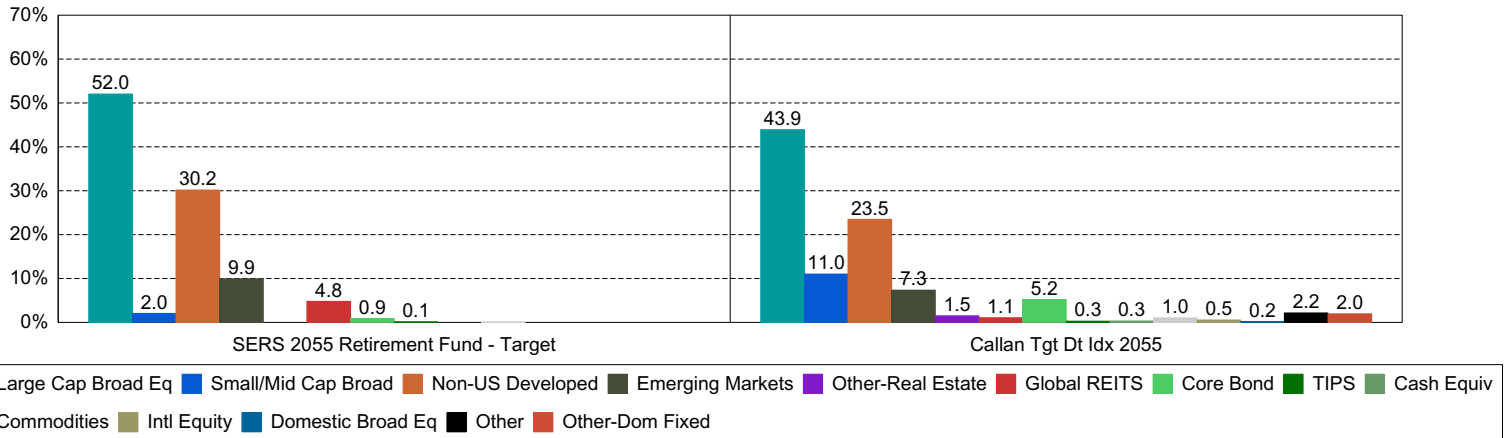
## Target Date Fund Asset Allocation as of March 31, 2020

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.

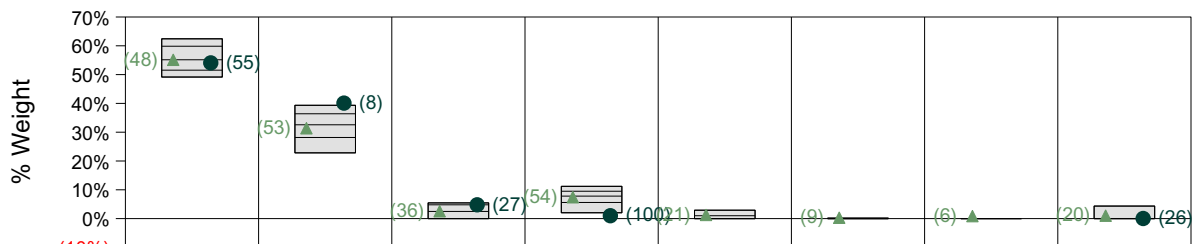
### Macro-Level Asset Allocation



### 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	62.43	39.34	5.45	11.20	2.92	0.18	0.00	4.36
25th Percentile	59.85	36.40	4.79	9.50	1.00	0.00	0.00	0.04
Median	55.14	32.57	2.49	7.80	0.00	0.00	0.00	0.00
75th Percentile	51.53	28.17	0.00	5.60	0.00	0.00	0.00	0.00
90th Percentile	49.15	22.82	0.00	2.02	0.00	0.00	0.00	0.00
<b>SERS 2055 Retirement Fund - Target</b>	● 54.07	40.11	4.79	1.00	-	-	-	0.04
Callan Tgt Dt Idx 2055	▲ 55.15	31.37	2.56	7.42	1.29	0.32	0.87	1.02

# SERS 2055 Retirement Fund Period Ended March 31, 2020

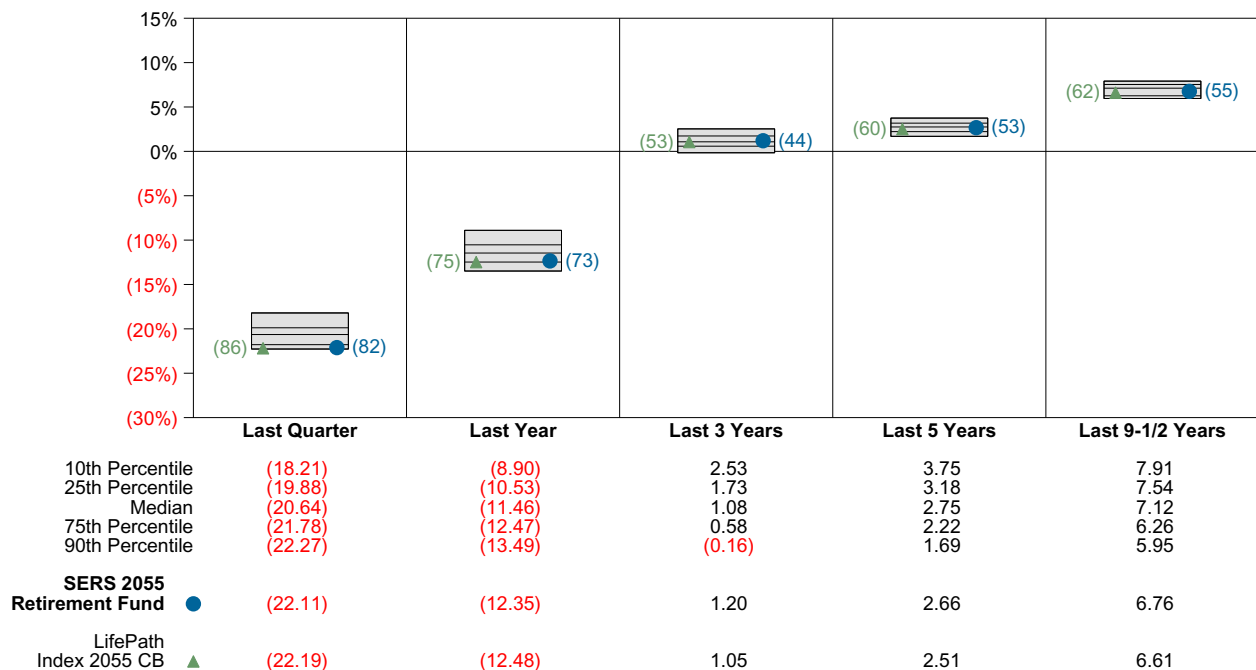
## Investment Philosophy

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.

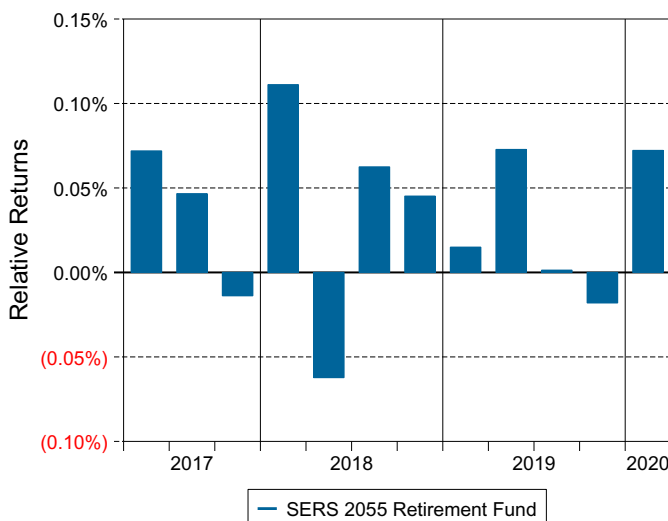
## Quarterly Summary and Highlights

- SERS 2055 Retirement Fund's portfolio posted a (22.11)% return for the quarter placing it in the 82 percentile of the Callan Target Date 2055 group for the quarter and in the 73 percentile for the last year.
- SERS 2055 Retirement Fund's portfolio outperformed the LifePath Index 2055 CB by 0.07% for the quarter and outperformed the LifePath Index 2055 CB for the year by 0.13%.

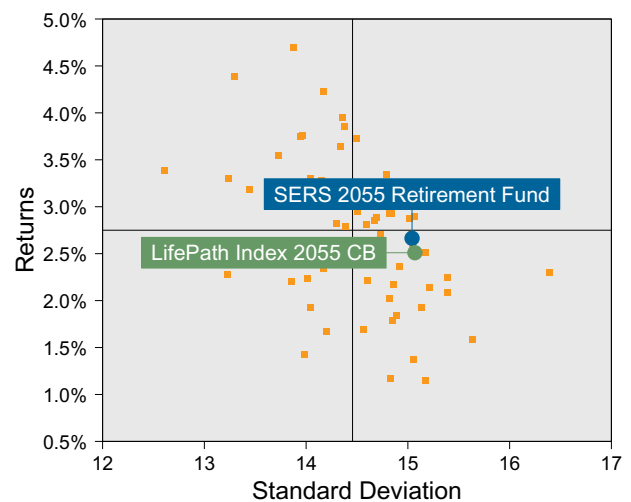
## Performance vs Callan Target Date 2055 (Net)



## Relative Return vs LifePath Index 2055 CB



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

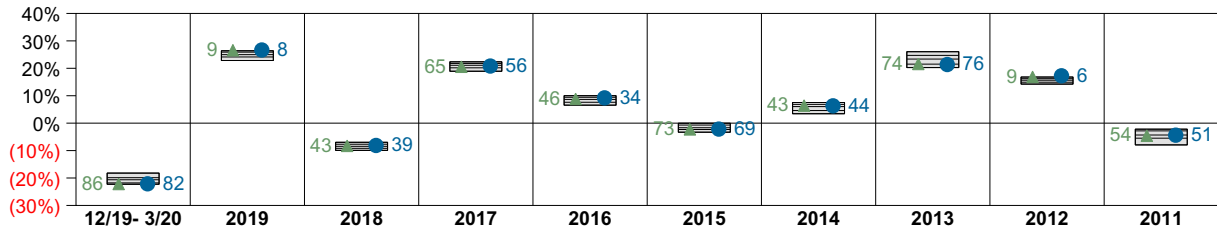


# SERS 2055 Retirement Fund Return Analysis Summary

## Return Analysis

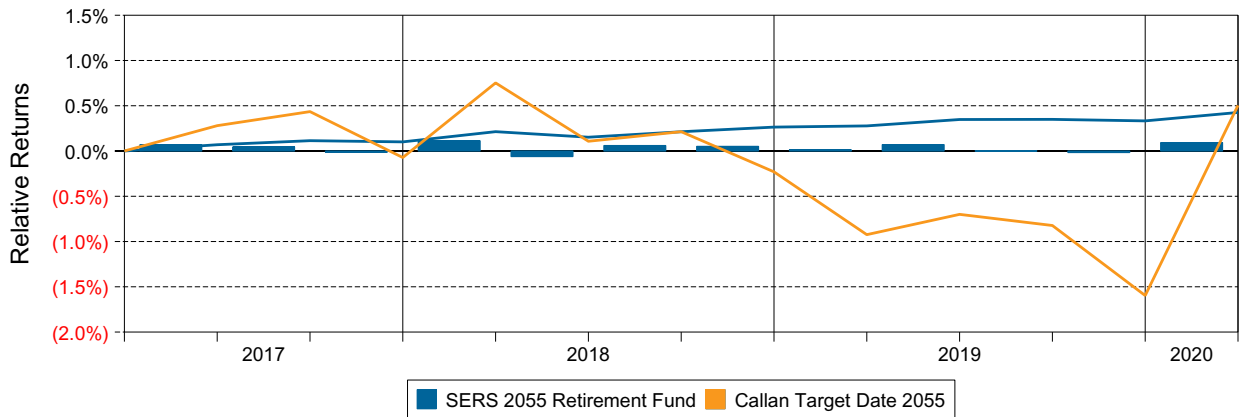
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate 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)

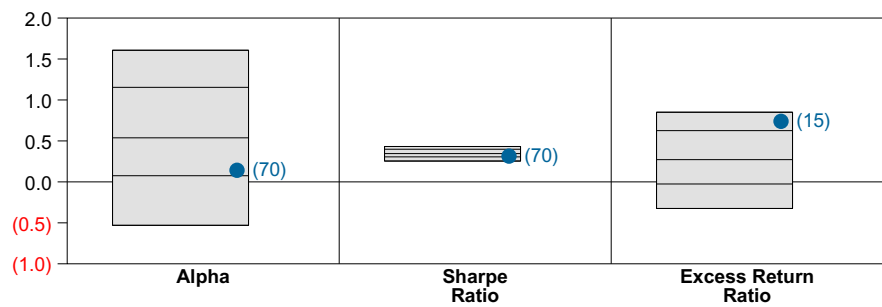


10th Percentile	(18.21)	26.39	(6.98)	22.36	10.01	(0.05)	7.53	26.05	16.82	(2.19)
25th Percentile	(19.88)	25.90	(7.69)	21.77	9.44	(0.69)	6.85	24.70	16.22	(2.81)
Median	(20.64)	24.97	(8.44)	21.10	8.65	(1.67)	6.04	23.36	15.65	(4.33)
75th Percentile	(21.78)	24.13	(9.18)	20.17	7.61	(2.31)	4.60	21.51	14.93	(5.48)
90th Percentile	(22.27)	22.84	(9.93)	18.92	6.55	(3.30)	3.44	20.26	14.25	(7.93)
<b>SERS 2055 Retirement Fund</b>	● (22.11)	26.67	(8.13)	20.82	9.22	(2.17)	6.31	21.37	17.27	(4.38)
LifePath Index 2055 CB	▲ (22.19)	26.58	(8.28)	20.55	8.82	(2.26)	6.41	21.58	16.87	(4.56)

### 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 March 31, 2020



10th Percentile	1.61	0.43	0.85
25th Percentile	1.15	0.40	0.63
Median	0.54	0.35	0.27
75th Percentile	0.08	0.31	(0.03)
90th Percentile	(0.53)	0.25	(0.32)
<b>SERS 2055 Retirement Fund</b>	● 0.14	0.31	0.74

# SERS 2060 Retirement Fund Period Ended March 31, 2020

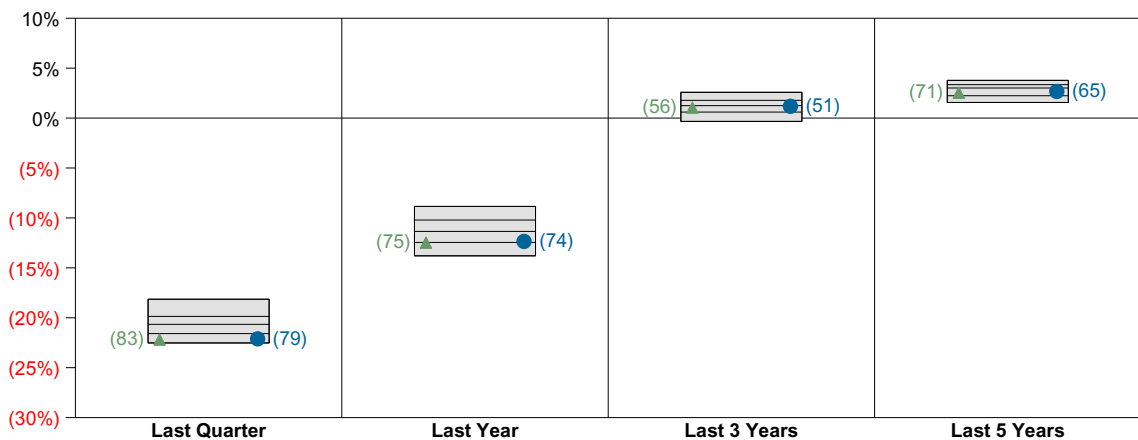
## Investment Philosophy

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

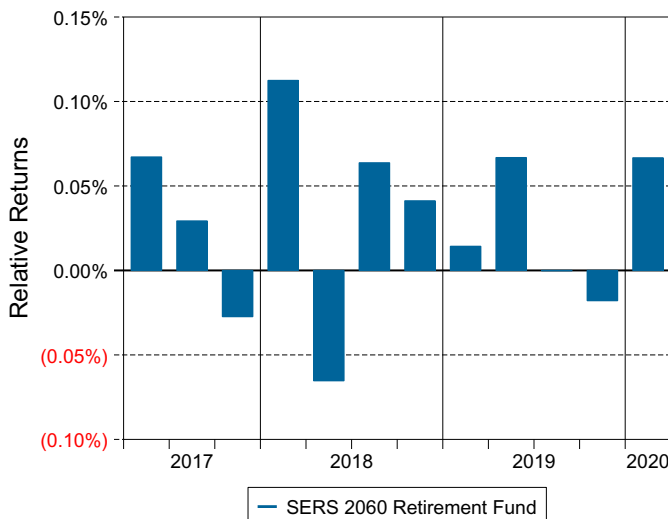
- SERS 2060 Retirement Fund's portfolio posted a (22.11)% return for the quarter placing it in the 79 percentile of the Callan Target Date 2060 group for the quarter and in the 74 percentile for the last year.
- SERS 2060 Retirement Fund's portfolio outperformed the LifePath Index 2060 CB by 0.07% for the quarter and outperformed the LifePath Index 2060 CB for the year by 0.12%.

## Performance vs Callan Target Date 2060 (Net)

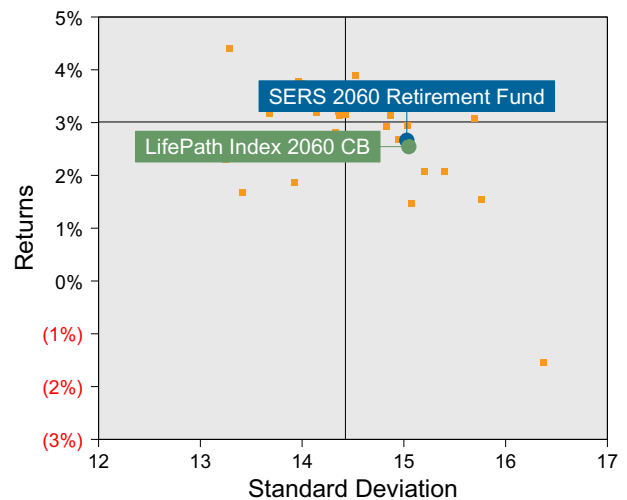


10th Percentile	(18.14)	(8.85)	2.58	3.78
25th Percentile	(19.86)	(10.21)	1.78	3.35
Median	(20.66)	(11.35)	1.24	3.01
75th Percentile	(21.59)	(12.45)	0.60	2.24
90th Percentile	(22.52)	(13.80)	(0.33)	1.56
<b>SERS 2060 Retirement Fund</b>	<b>(22.11)</b>	<b>(12.35)</b>	<b>1.18</b>	<b>2.66</b>
LifePath Index 2060 CB	(22.18)	(12.47)	1.05	2.55

## Relative Return vs LifePath Index 2060 CB



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

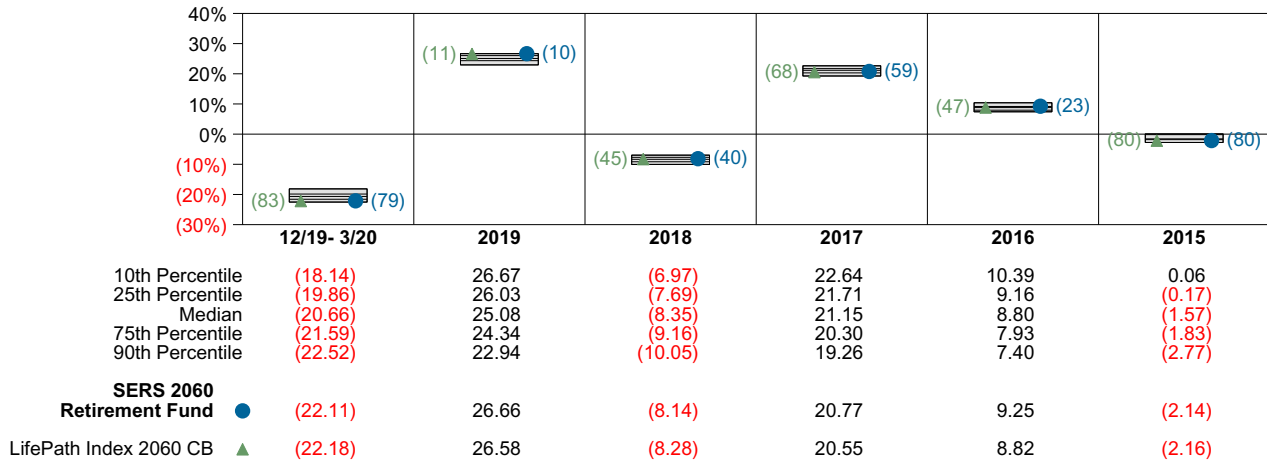


# SERS 2060 Retirement Fund Return Analysis Summary

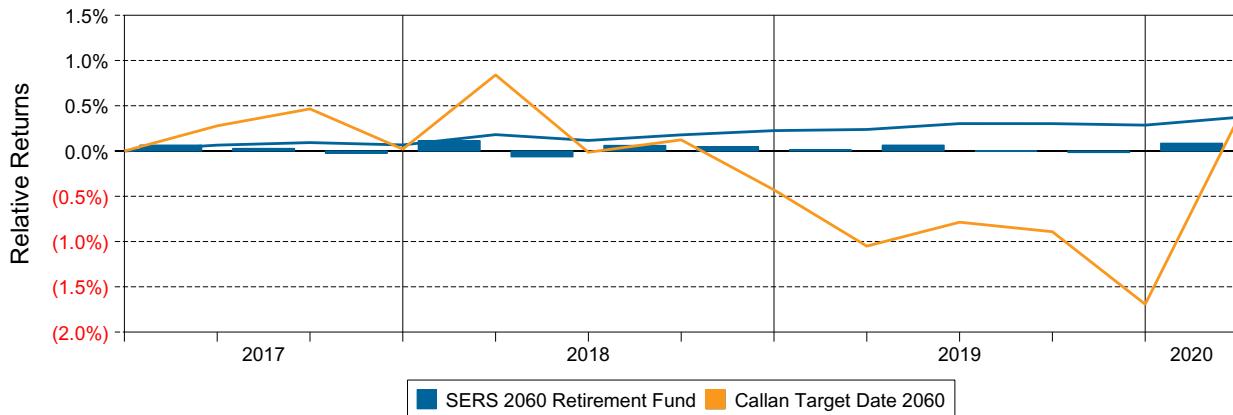
## Return Analysis

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.

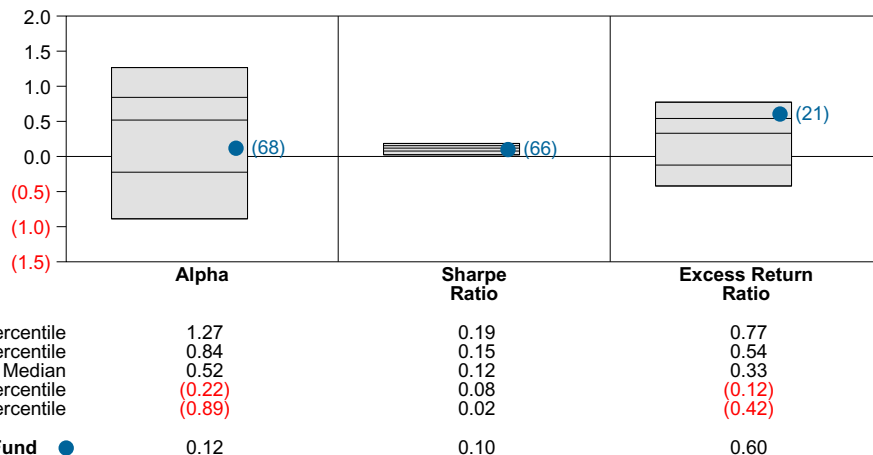
### Performance vs Callan Target Date 2060 (Net)



### 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) Five Years Ended March 31, 2020



# SERS 2065 Retirement Fund

## Period Ended March 31, 2020

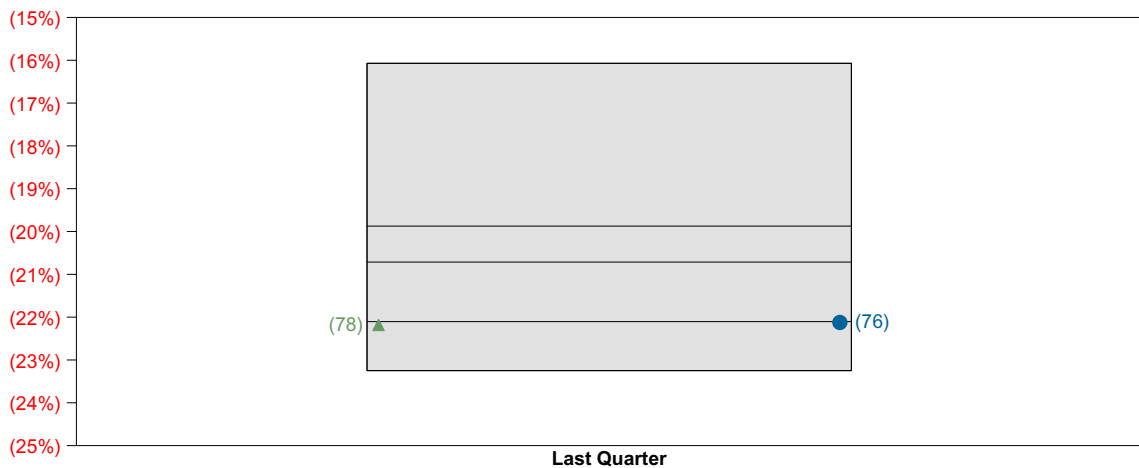
### Investment Philosophy

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

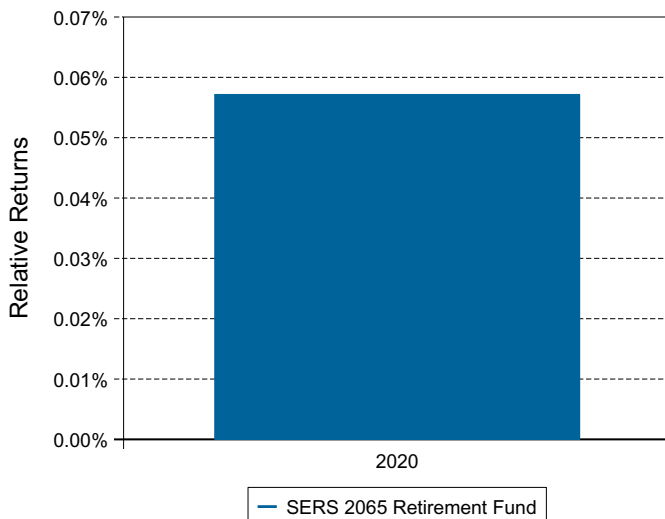
- SERS 2065 Retirement Fund's portfolio posted a (22.12)% return for the quarter placing it in the 76 percentile of the Callan Target Date 2065 group for the quarter.
- SERS 2065 Retirement Fund's portfolio outperformed the LifePath Index 2065 CB by 0.06% for the quarter.

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

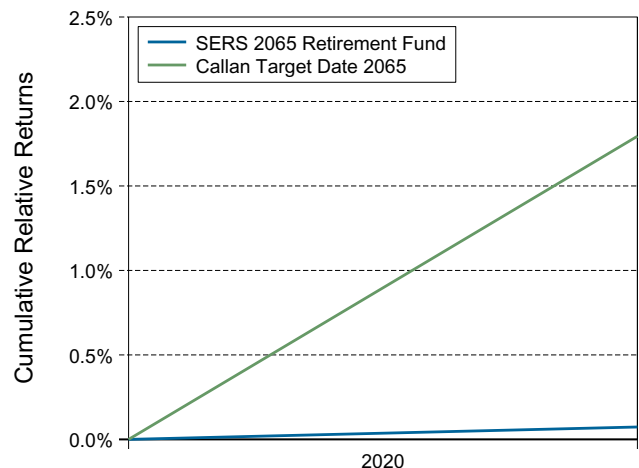


10th Percentile	(16.07)
25th Percentile	(19.87)
Median	(20.71)
75th Percentile	(22.10)
90th Percentile	(23.25)
<b>SERS 2065 Retirement Fund</b>	<b>(22.12)</b>
LifePath Index 2065 CB	(22.18)

### Relative Return vs LifePath Index 2065 CB



### Cumulative Returns vs LifePath Index 2065 CB







# SERS U.S. Large Company Index Period Ended March 31, 2020

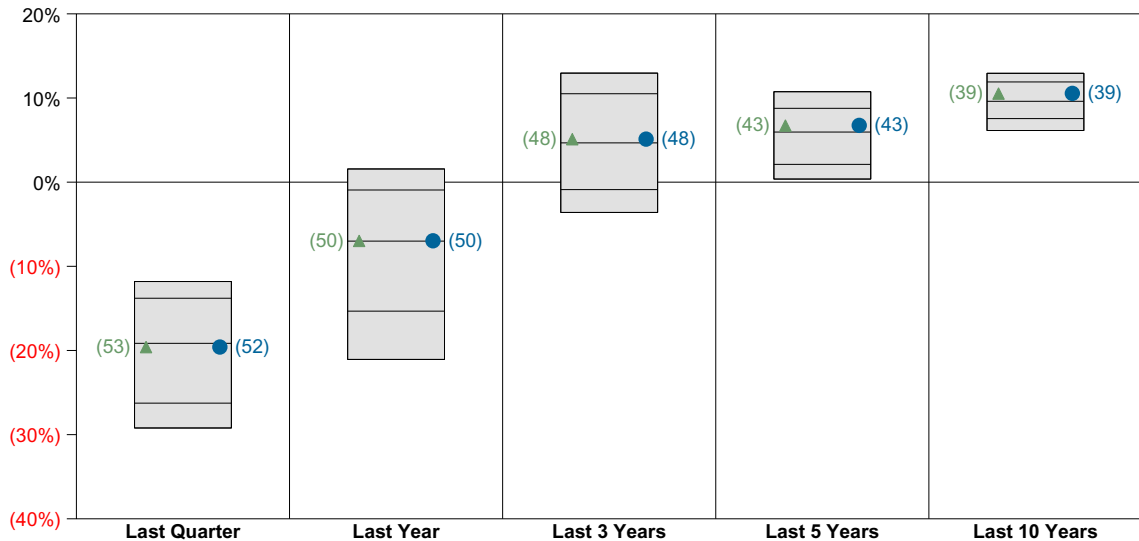
## Investment Philosophy

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

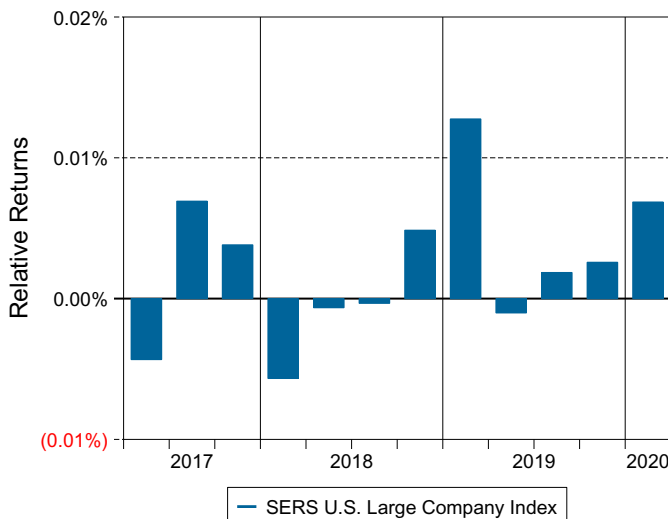
- SERS U.S. Large Company Index's portfolio posted a (19.59)% return for the quarter placing it in the 52 percentile of the Callan Large Cap Broad Equity Mut Funds group for the quarter and in the 50 percentile for the last year.
- SERS U.S. Large Company Index's portfolio outperformed the S&P 500 Index by 0.01% for the quarter and outperformed the S&P 500 Index for the year by 0.01%.

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

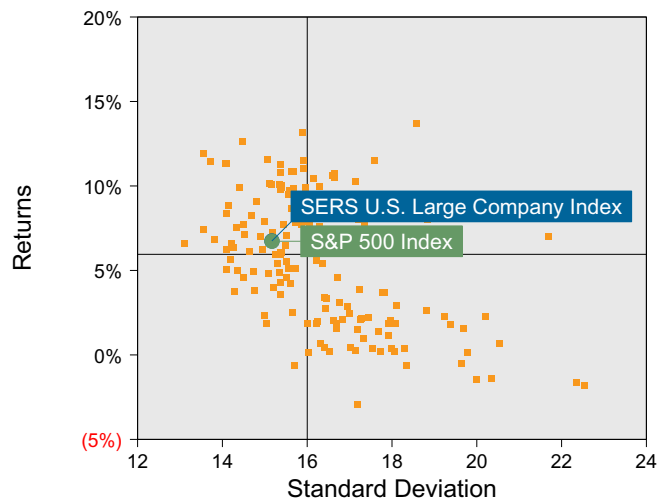


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(11.81)	1.57	12.95	10.75	12.94
25th Percentile	(13.79)	(0.93)	10.51	8.77	11.91
Median	(19.15)	(7.01)	4.67	5.95	9.61
75th Percentile	(26.26)	(15.33)	(0.88)	2.11	7.55
90th Percentile	(29.21)	(21.06)	(3.60)	0.37	6.14
SERS U.S. Large Company Index	(19.59)	(6.97)	5.11	6.74	10.55
S&P 500 Index	(19.60)	(6.98)	5.10	6.73	10.53

## Relative Return vs S&P 500 Index



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

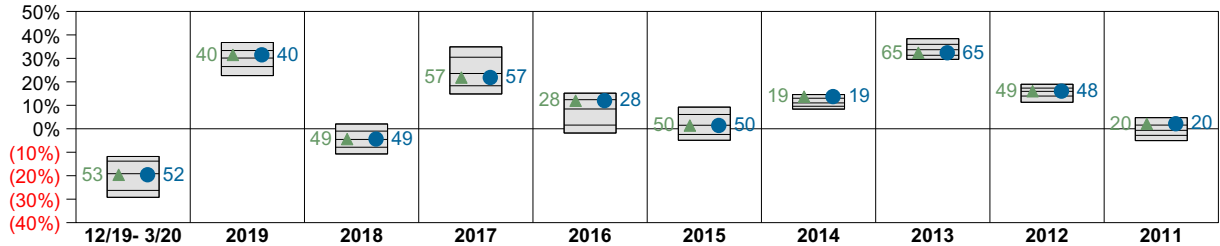


# SERS U.S. Large Company Index Return Analysis Summary

## 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.

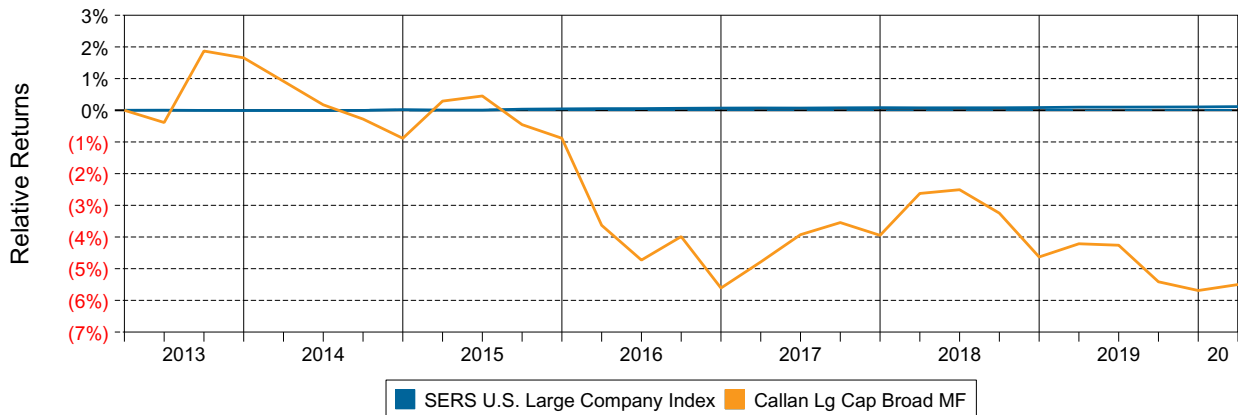
### Performance vs Callan Large Cap Broad Equity Mut Funds (Institutional Net)



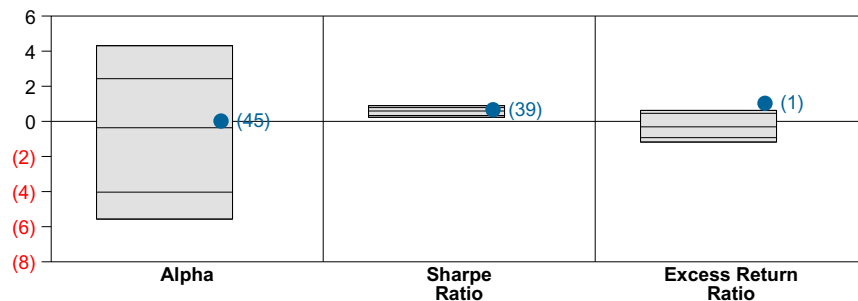
	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	(11.81)	36.76	2.05	34.91	15.17	9.23	14.58	38.40	18.96	4.74
25th Percentile	(13.79)	33.34	(1.00)	30.48	12.39	6.09	13.01	35.98	17.33	1.57
Median	(19.15)	30.14	(4.54)	23.56	8.43	1.50	11.02	33.69	15.94	(0.67)
75th Percentile	(26.26)	26.51	(7.86)	18.33	1.56	(2.42)	9.59	31.31	13.94	(2.81)
90th Percentile	(29.21)	22.66	(10.72)	14.82	(1.82)	(4.91)	8.38	29.58	11.29	(5.04)

<b>SERS U.S. Large Company Index</b>	● (19.59)	31.51	(4.38)	21.85	11.99	1.41	13.72	32.39	16.04	2.15
S&P 500 Index	▲ (19.60)	31.49	(4.38)	21.83	11.96	1.38	13.69	32.39	16.00	2.11

### 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 March 31, 2020



10th Percentile	4.31	0.90	0.62
25th Percentile	2.43	0.79	0.46
Median	(0.36)	0.59	(0.31)
75th Percentile	(4.03)	0.33	(0.93)
90th Percentile	(5.57)	0.23	(1.18)

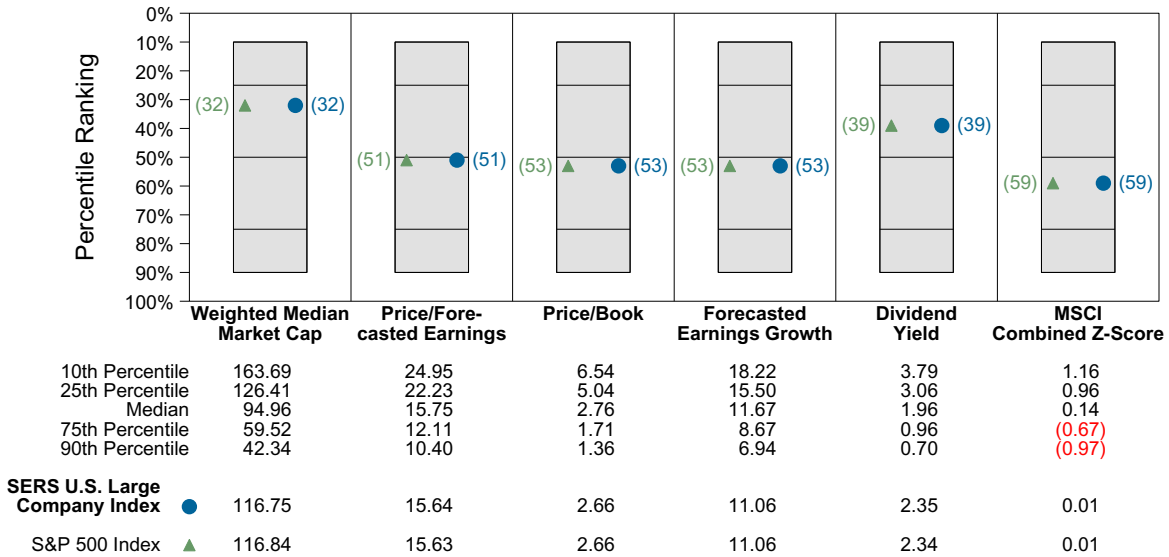
<b>SERS U.S. Large Company Index</b>	● 0.02	0.66	1.03
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# SERS U.S. Large Company Index Equity Characteristics Analysis Summary

## Portfolio Characteristics

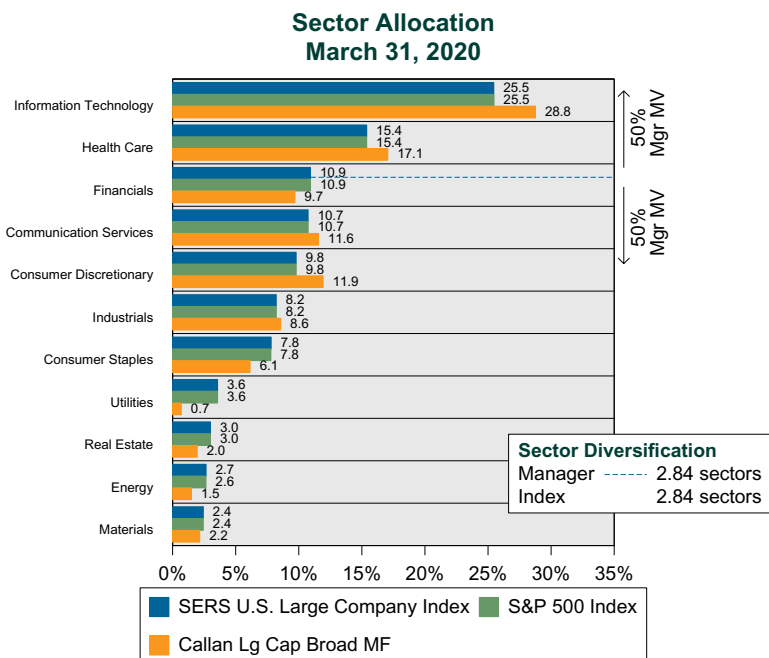
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

## Portfolio Characteristics Percentile Rankings Rankings Against Callan Large Cap Broad Equity Mut Funds as of March 31, 2020

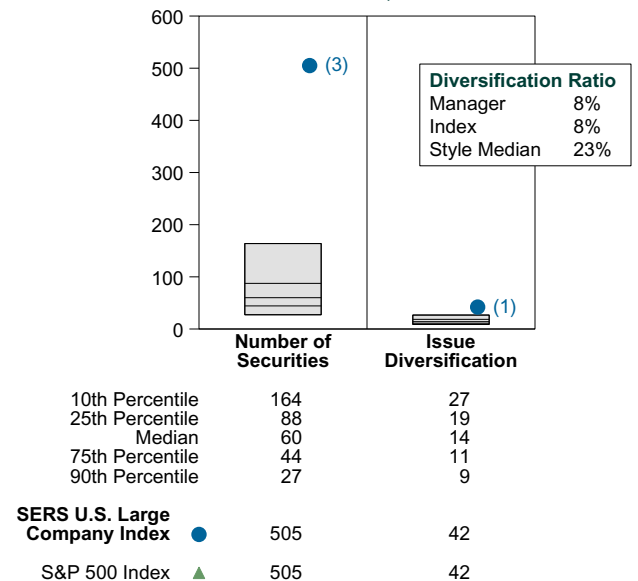


## Sector Weights

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.



## Diversification March 31, 2020



## SERS U.S. Large Company Index Top 10 Portfolio Holdings Characteristics as of March 31, 2020

### 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
Microsoft Corp	Information Technology	\$27,507	5.6%	0.28%	1199.55	26.03	1.29%	15.00%
Apple Inc	Information Technology	\$24,282	5.0%	(13.20)%	1112.64	18.12	1.21%	13.00%
Amazon.Com	Consumer Discretionary	\$18,565	3.8%	5.51%	970.59	62.45	0.00%	30.00%
Facebook Inc Cl A	Communication Services	\$9,178	1.9%	(18.73)%	401.28	18.07	0.00%	11.40%
Berkshire Hathaway Inc Del Cl B New	Financials	\$8,177	1.7%	(19.28)%	252.74	17.01	0.00%	9.02%
Alphabet Inc Cl A	Communication Services	\$7,961	1.6%	(13.25)%	348.46	21.72	0.00%	4.80%
Alphabet Inc Cl C	Communication Services	\$7,947	1.6%	(13.03)%	396.49	21.66	0.00%	22.47%
Johnson & Johnson	Health Care	\$7,891	1.6%	(9.52)%	345.70	14.37	2.90%	5.59%
JPMorgan Chase & Co	Financials	\$6,457	1.3%	(35.00)%	276.75	8.69	4.00%	7.75%
Visa Inc Com Cl A	Information Technology	\$6,307	1.3%	(14.13)%	274.87	25.19	0.74%	14.76%

### 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
Regeneron Pharmaceutical	Health Care	\$890	0.2%	30.04%	52.82	17.37	0.00%	8.02%
Citrix Sys Inc	Information Technology	\$371	0.1%	28.02%	17.32	25.44	0.99%	6.40%
Nortonlifelock Inc	Information Technology	\$247	0.1%	27.67%	11.66	16.96	2.67%	1.98%
Digital Realty Trust	Real Estate	\$833	0.2%	17.02%	36.02	106.94	3.23%	(17.91)%
Gilead Sciences	Health Care	\$2,164	0.4%	16.19%	94.12	11.68	3.64%	0.51%
Netflix Inc	Communication Services	\$3,764	0.8%	16.05%	164.77	57.13	0.00%	44.73%
Clorox Co	Consumer Staples	\$496	0.1%	13.60%	21.67	26.24	2.45%	3.63%
Sba Communications Corp New Cl A	Real Estate	\$694	0.1%	12.22%	30.22	115.37	0.69%	23.92%
Msci Inc	Financials	\$559	0.1%	12.16%	24.57	38.74	0.94%	10.60%
Nvidia Corp	Information Technology	\$3,690	0.8%	12.10%	161.32	33.55	0.24%	10.00%

### 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
Apache Corp	Energy	\$37	0.0%	(83.54)%	1.58	(2.55)	23.92%	(20.95)%
Norwegian Cruise Line Hldgs Shs	Consumer Discretionary	\$54	0.0%	(81.24)%	2.34	5.05	0.00%	(24.85)%
Marathon Oil Corp	Energy	\$62	0.0%	(75.66)%	2.62	(14.95)	6.08%	3.75%
Royal Caribbean Cruises Ltd	Consumer Discretionary	\$132	0.0%	(75.61)%	6.72	4.94	9.70%	13.70%
Noble Energy Inc	Energy	\$67	0.0%	(75.54)%	2.93	(11.87)	7.95%	(18.09)%
Carnival Corp	Consumer Discretionary	\$119	0.0%	(73.79)%	6.95	4.62	15.19%	7.55%
Devon Energy Corp	Energy	\$62	0.0%	(73.06)%	2.65	(14.02)	6.37%	(270.00)%
Capri Holdings Limited Shs	Consumer Discretionary	\$38	0.0%	(71.71)%	1.61	2.47	0.00%	3.70%
Halliburton Co	Energy	\$140	0.0%	(71.69)%	6.03	9.22	10.51%	(5.20)%
Diamondback Energy Inc	Energy	\$98	0.0%	(71.62)%	4.15	5.24	5.73%	19.70%

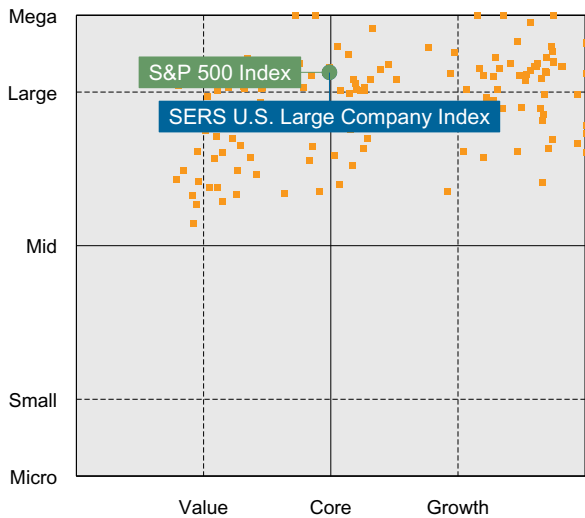
# Historical Holdings Based Style Analysis

## SERS U.S. Large Company Index

### For Three Years Ended March 31, 2020

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.

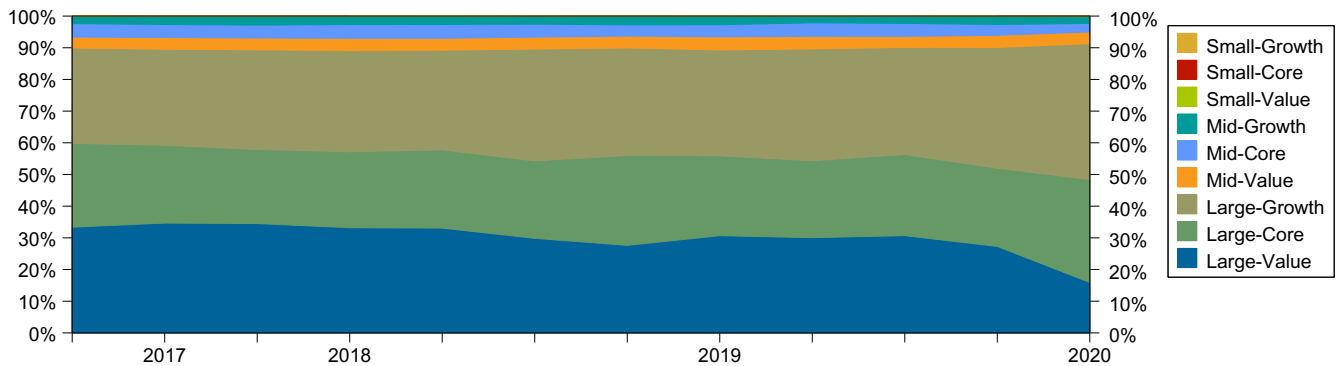
**Average Style Map vs Callan Lg Cap Broad MF Holdings for Three Years Ended March 31, 2020**



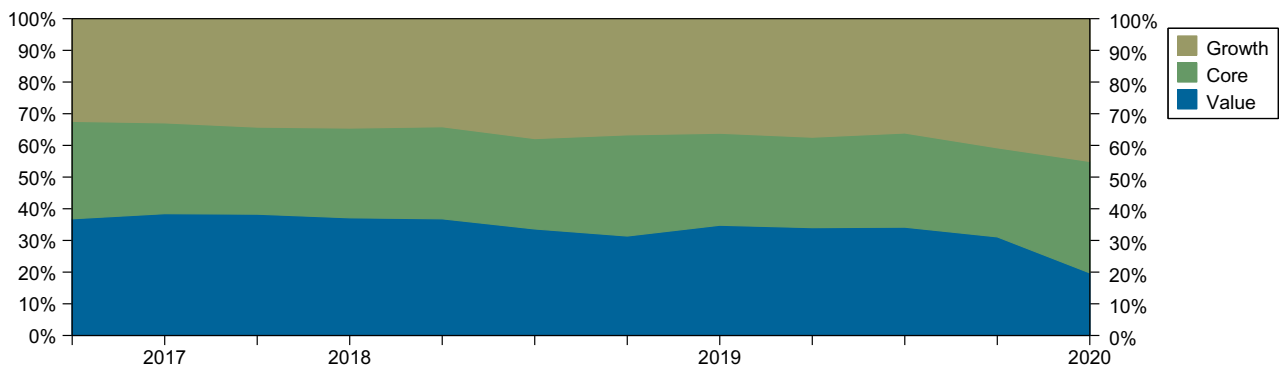
**Average Style Exposure Matrix Holdings for Three Years Ended March 31, 2020**

	Value	Core	Growth	Total
Large	30.1% (102)	25.7% (94)	34.0% (88)	<b>89.8% (284)</b>
Mid	3.8% (87)	3.9% (80)	2.5% (49)	<b>10.2% (216)</b>
Small	0.0% (3)	0.0% (0)	0.0% (1)	<b>0.1% (4)</b>
Micro	0.0% (0)	0.0% (0)	0.0% (0)	<b>0.0% (0)</b>
<b>Total</b>	<b>33.9% (192)</b>	<b>29.6% (174)</b>	<b>36.5% (138)</b>	<b>100.0% (504)</b>

### 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 March 31, 2020

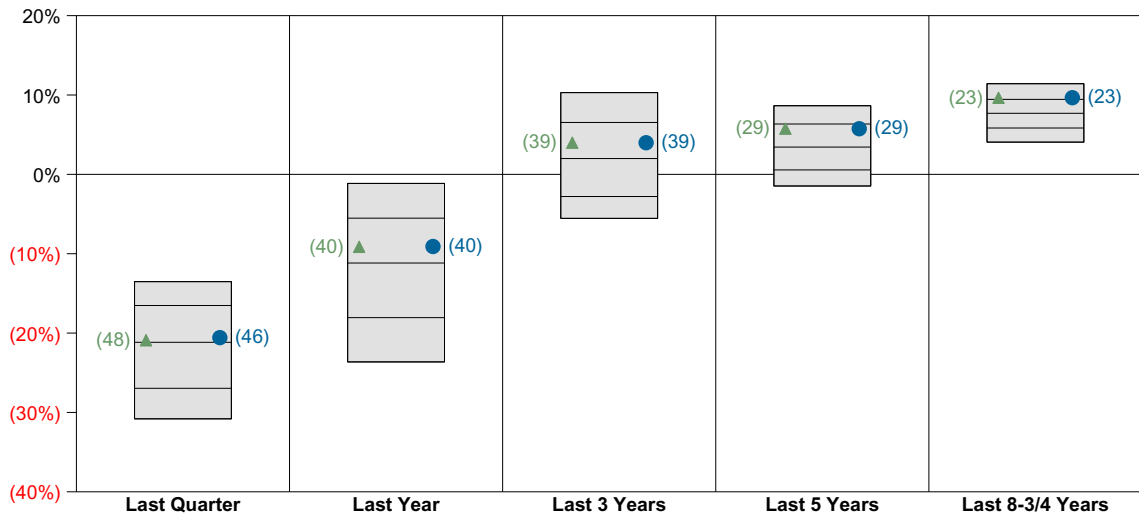
### Investment Philosophy

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 (20.57)% return for the quarter placing it in the 46 percentile of the Callan Multi Cap Broad Mutual Funds group for the quarter and in the 40 percentile for the last year.
- SERS U.S. All Company Index Fund's portfolio outperformed the Russell 3000 Index by 0.32% for the quarter and outperformed the Russell 3000 Index for the year by 0.03%.

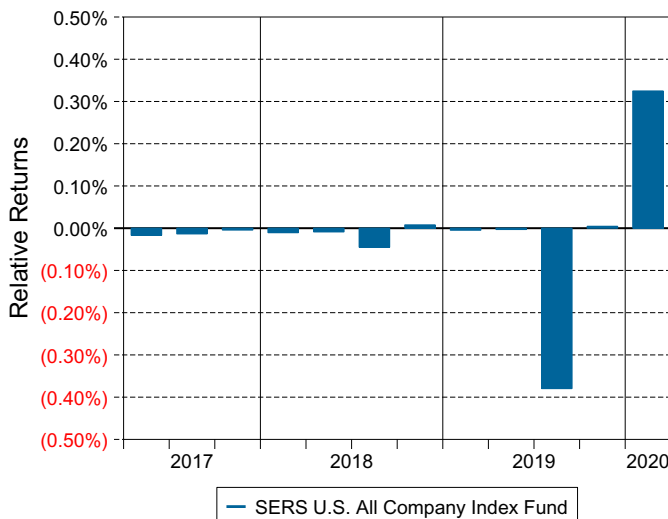
### Performance vs Callan Multi Cap Broad Mutual Funds (Institutional Net)



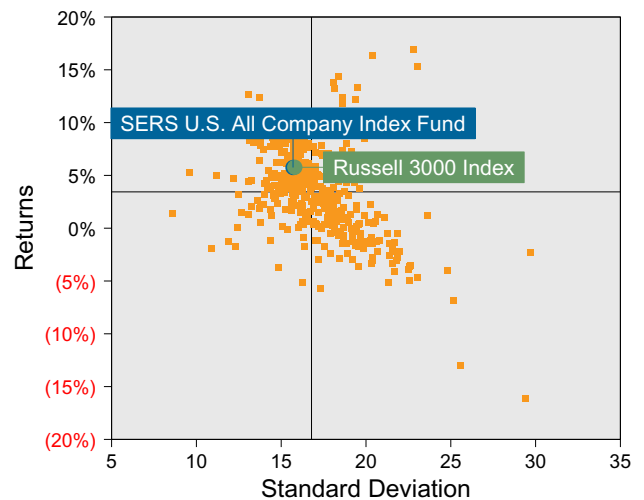
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 8-3/4 Years
10th Percentile	(13.52)	(1.14)	10.30	8.65	11.42
25th Percentile	(16.53)	(5.52)	6.54	6.34	9.45
Median	(21.16)	(11.17)	1.99	3.44	7.69
75th Percentile	(26.96)	(18.05)	(2.79)	0.56	5.84
90th Percentile	(30.81)	(23.64)	(5.55)	(1.47)	4.06

**SERS U.S. All Company Index Fund** ● (20.57)  
 Russell 3000 Index ▲ (20.90)

### Relative Return vs Russell 3000 Index



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

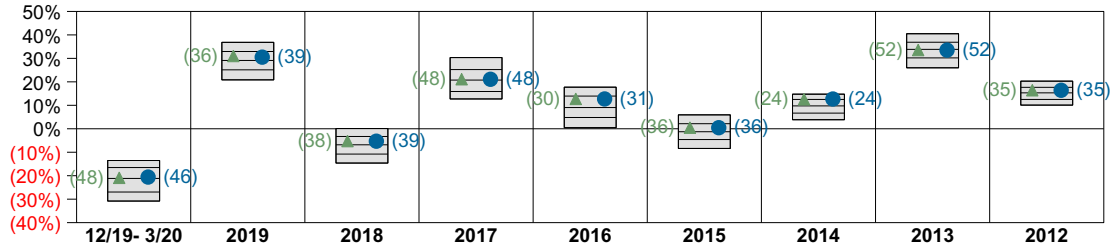


# SERS U.S. All Company Index Fund Return Analysis Summary

## 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.

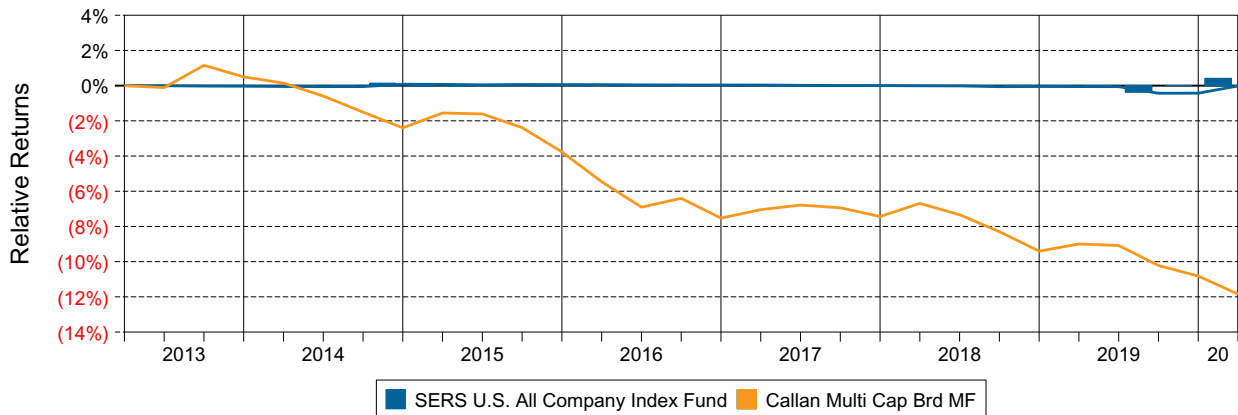
### Performance vs Callan Multi Cap Broad Mutual Funds (Institutional Net)



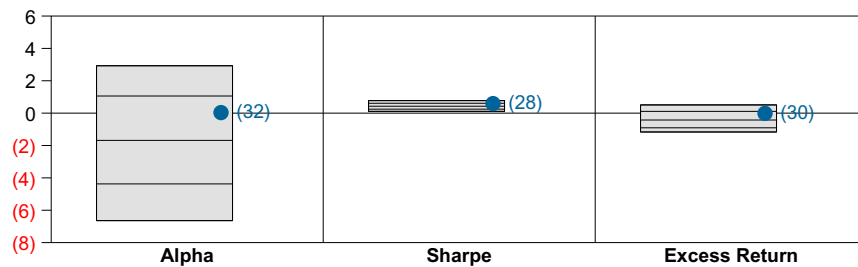
10th Percentile	(13.52)	36.83	0.10	30.34	17.73	5.93	14.75	40.50	20.30
25th Percentile	(16.53)	32.93	(3.28)	25.23	13.93	2.16	12.50	36.88	17.66
Median	(21.16)	29.12	(6.82)	20.75	9.05	(1.26)	9.75	33.84	15.30
75th Percentile	(26.96)	25.11	(10.78)	15.88	4.81	(4.59)	6.68	30.20	12.50
90th Percentile	(30.81)	20.84	(14.61)	12.70	0.47	(8.39)	3.86	25.98	10.08

<b>SERS U.S. All Company Index Fund</b>	● (20.57)	30.52	(5.29)	21.09	12.71	0.46	12.68	33.51	16.41
Russell 3000 Index	▲ (20.90)	31.02	(5.24)	21.13	12.74	0.48	12.56	33.55	16.42

### 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 March 31, 2020



10th Percentile	2.93	0.77	0.51
25th Percentile	1.06	0.61	0.11
Median	(1.68)	0.43	(0.43)
75th Percentile	(4.37)	0.25	(0.91)
90th Percentile	(6.64)	0.11	(1.16)

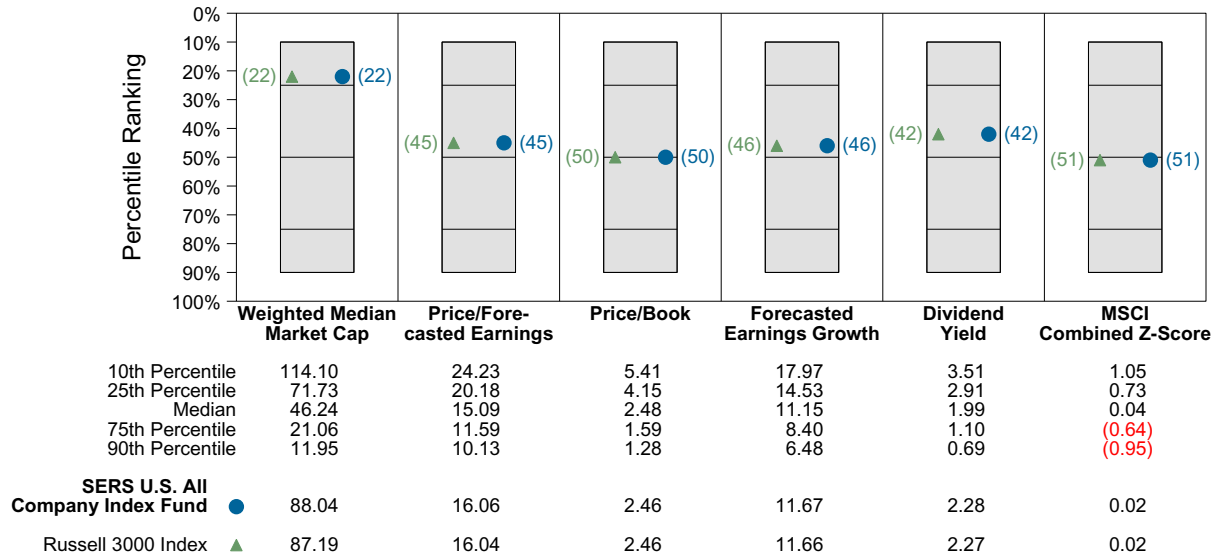
<b>SERS U.S. All Company Index Fund</b>	● 0.03	0.59	(0.01)
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# SERS U.S. All Company Index Fund Equity Characteristics Analysis Summary

## Portfolio Characteristics

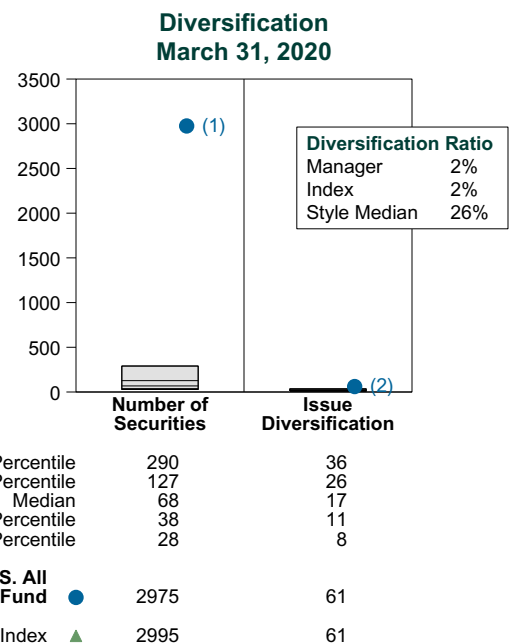
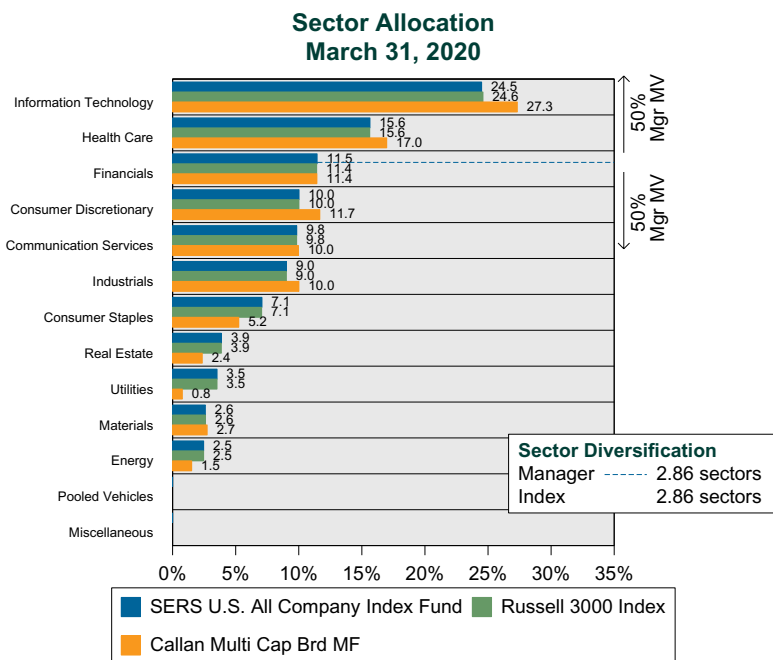
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

## Portfolio Characteristics Percentile Rankings Rankings Against Callan Multi Cap Broad Mutual Funds as of March 31, 2020



## 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. All Company Index Fund Top 10 Portfolio Holdings Characteristics as of March 31, 2020

### 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
Microsoft Corp	Information Technology	\$7,251	4.8%	0.28%	1199.55	26.03	1.29%	15.00%
Apple Inc	Information Technology	\$6,372	4.2%	(13.20)%	1112.64	18.12	1.21%	13.00%
Amazon.Com	Consumer Discretionary	\$4,956	3.3%	5.51%	970.59	62.45	0.00%	30.00%
Facebook Inc Cl A	Communication Services	\$2,423	1.6%	(18.73)%	401.28	18.07	0.00%	11.40%
Berkshire Hathaway Inc Del Cl B New	Financials	\$2,175	1.4%	(19.28)%	252.74	17.01	0.00%	9.02%
Alphabet Inc Cl C	Communication Services	\$2,120	1.4%	(13.03)%	396.49	21.66	0.00%	22.47%
Johnson & Johnson	Health Care	\$2,117	1.4%	(9.52)%	345.70	14.37	2.90%	5.59%
Alphabet Inc Cl A	Communication Services	\$2,115	1.4%	(13.25)%	348.46	21.72	0.00%	4.80%
JPMorgan Chase & Co	Financials	\$1,707	1.1%	(35.00)%	276.75	8.69	4.00%	7.75%
Visa Inc Com Cl A	Information Technology	\$1,678	1.1%	(14.13)%	274.87	25.19	0.74%	14.76%

### 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
Novavax Inc	Health Care	\$3	0.0%	241.45%	0.70	(5.28)	0.00%	-
Vir Biotechnology	Health Care	\$1	0.0%	172.54%	3.76	(16.37)	0.00%	-
Athersys Inc	Health Care	\$3	0.0%	143.88%	0.49	(9.49)	0.00%	-
Forty Seven Inc	Health Care	\$14	0.0%	142.37%	4.60	(34.76)	0.00%	-
Kala Pharmaceuticals Inc	Health Care	\$1	0.0%	138.18%	0.49	(4.77)	0.00%	-
Aduro Biotech Inc	Health Care	\$1	0.0%	132.03%	0.22	(3.71)	0.00%	-
Tocagen Inc	Health Care	\$0	0.0%	128.97%	0.03	(0.71)	0.00%	-
Inovio Pharmaceuticals Inc	Health Care	\$4	0.0%	125.58%	1.08	(9.36)	0.00%	-
Neon Therapeutics Inc	Health Care	\$0	0.0%	123.63%	0.08	(1.82)	0.00%	26.90%
Cytosorbents Corp	Health Care	\$1	0.0%	100.79%	0.27	(17.69)	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
Centennial Resource Dev Inc Cl A	Energy	\$0	0.0%	(94.31)%	0.07	(0.74)	0.00%	(36.13)%
Independence Contract Drilli	Energy	\$0	0.0%	(93.01)%	0.01	(0.12)	0.00%	-
Qep Res Inc	Energy	\$0	0.0%	(92.51)%	0.08	5.97	23.92%	99.84%
Whiting Pete Corp New	Energy	\$0	0.0%	(90.87)%	0.06	(0.28)	0.00%	(35.19)%
Amplify Energy Corp New	Energy	\$0	0.0%	(90.41)%	0.02	3.13	70.68%	(27.64)%
Penn Va Corp New	Energy	\$0	0.0%	(89.81)%	0.05	0.84	0.00%	-
Nine Energy Svc Inc	Energy	\$0	0.0%	(89.65)%	0.02	(0.56)	0.00%	(54.20)%
Pacific Drilling (Nys)	Energy	\$0	0.0%	(89.46)%	0.03	(0.13)	0.00%	38.09%
Forum Energy Technologies In	Energy	\$0	0.0%	(89.38)%	0.02	(0.70)	0.00%	(60.94)%
Oasis Pete Inc New	Energy	\$1	0.0%	(89.27)%	0.11	(0.63)	0.00%	10.11%

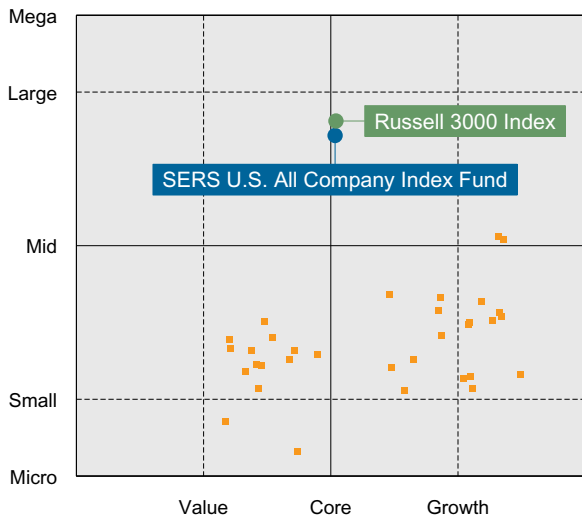
# Historical Holdings Based Style Analysis

## SERS U.S. All Company Index Fund

### For One and 1/2 Years Ended March 31, 2020

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.

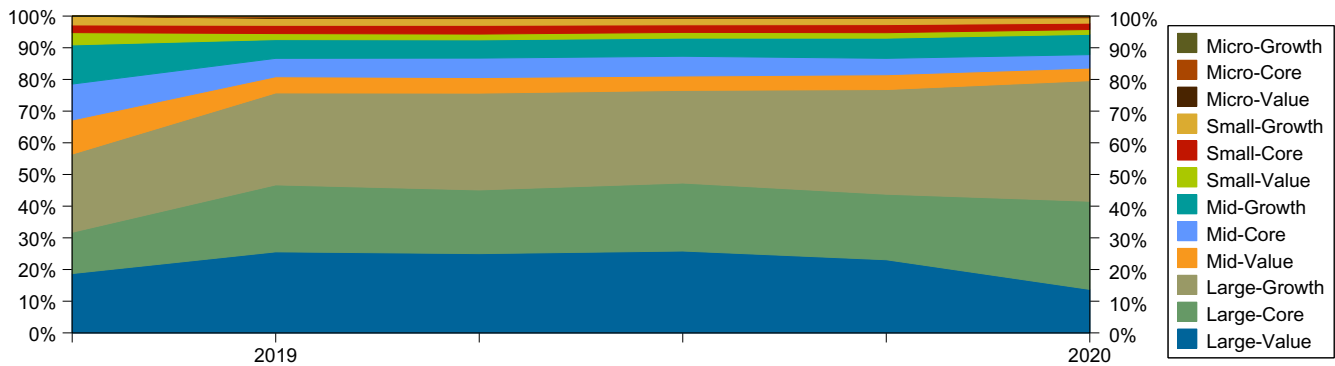
**Average Style Map vs Callan SMID Broad MFs Holdings for One and 1/2 Years Ended March 31, 2020**



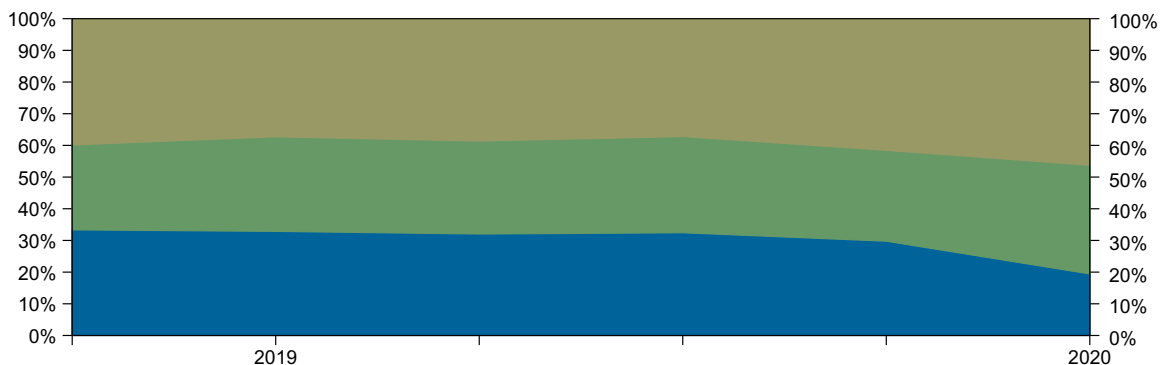
**Average Style Exposure Matrix Holdings for One and 1/2 Years Ended March 31, 2020**

Large	22.0% (90)	20.7% (88)	30.8% (90)	<b>73.5% (268)</b>
	22.8% (100)	22.5% (98)	31.6% (100)	<b>76.8% (298)</b>
Mid	5.7% (164)	6.5% (191)	7.1% (215)	<b>19.2% (570)</b>
	4.7% (169)	5.5% (202)	6.0% (224)	<b>16.2% (595)</b>
Small	2.1% (296)	2.5% (417)	2.1% (330)	<b>6.7% (1043)</b>
	1.8% (330)	2.5% (482)	2.0% (379)	<b>6.3% (1191)</b>
Micro	0.2% (253)	0.2% (319)	0.1% (163)	<b>0.6% (735)</b>
	0.3% (303)	0.3% (391)	0.2% (199)	<b>0.7% (893)</b>
Total	<b>30.0% (803)</b>	<b>29.9% (1015)</b>	<b>40.1% (798)</b>	<b>100.0% (2616)</b>
	<b>29.4% (902)</b>	<b>30.8% (1173)</b>	<b>39.8% (902)</b>	<b>100.0% (2977)</b>
	Value	Core	Growth	Total

### 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 March 31, 2020

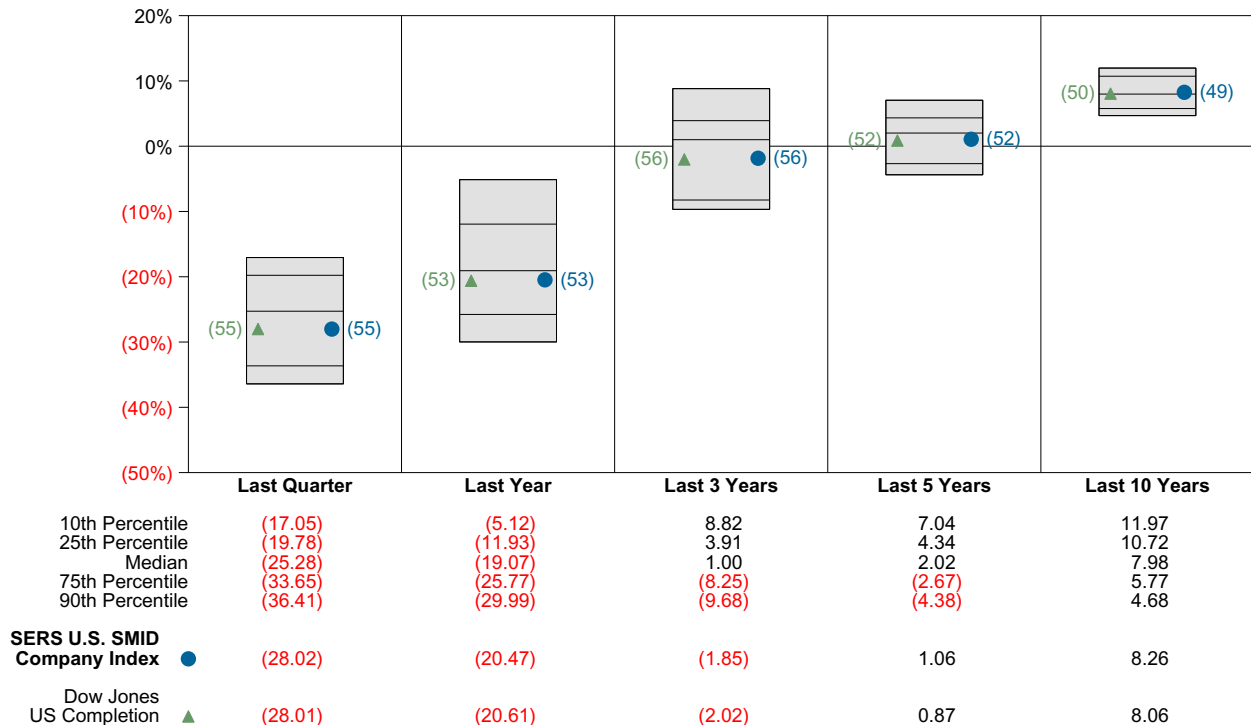
## Investment Philosophy

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.

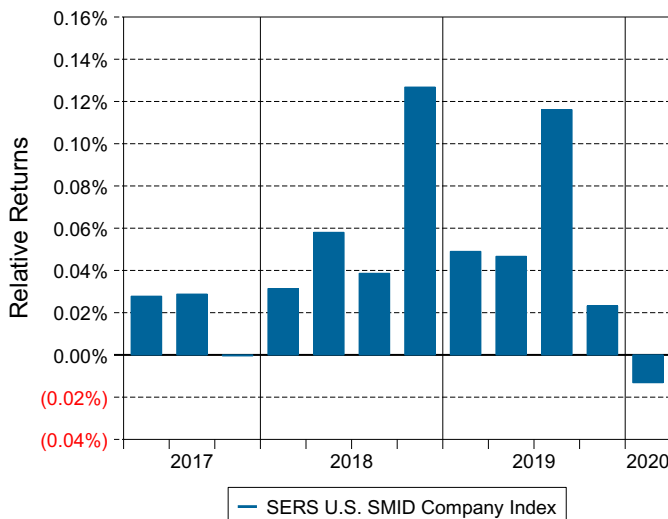
## Quarterly Summary and Highlights

- SERS U.S. SMID Company Index's portfolio posted a (28.02)% return for the quarter placing it in the 55 percentile of the Callan Small/MidCap Broad Mutual Funds group for the quarter and in the 53 percentile for the last year.
- SERS U.S. SMID Company Index's portfolio underperformed the Dow Jones US Completion by 0.01% for the quarter and outperformed the Dow Jones US Completion for the year by 0.13%.

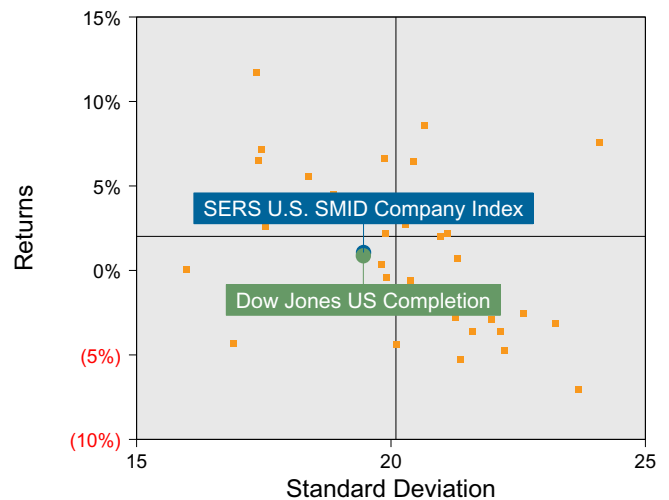
## Performance vs Callan Small/MidCap Broad Mutual Funds (Institutional Net)



## Relative Return vs Dow Jones US Completion



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

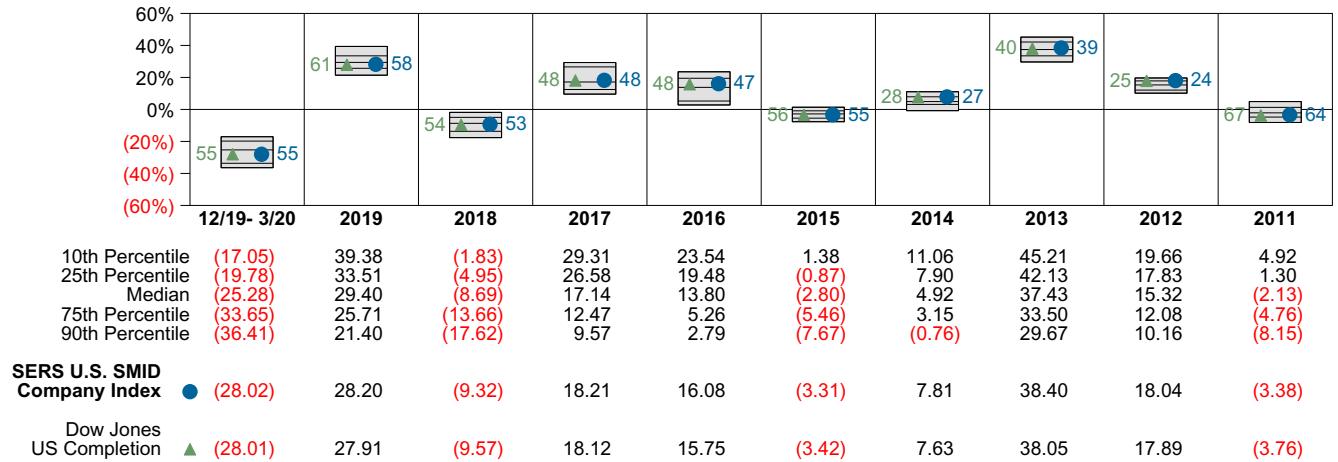


# SERS U.S. SMID Company Index Return Analysis Summary

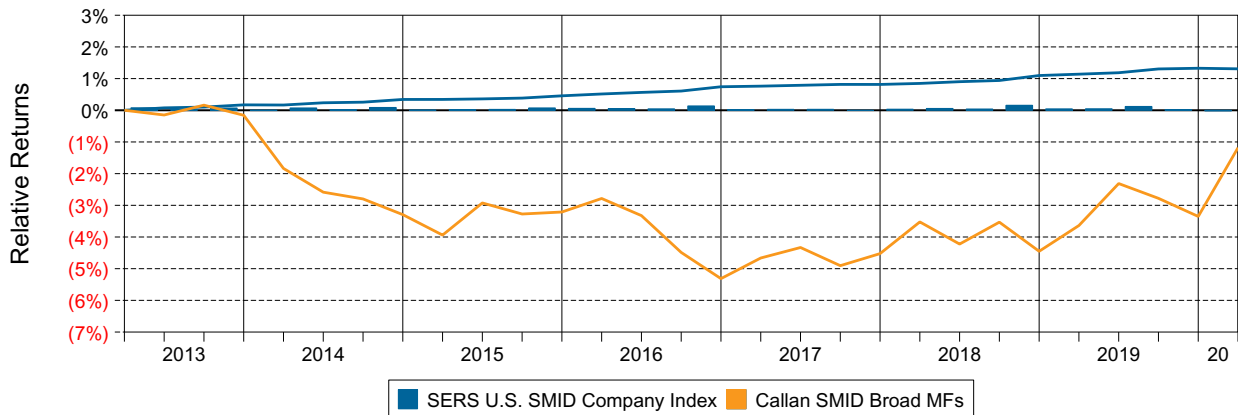
## Return Analysis

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.

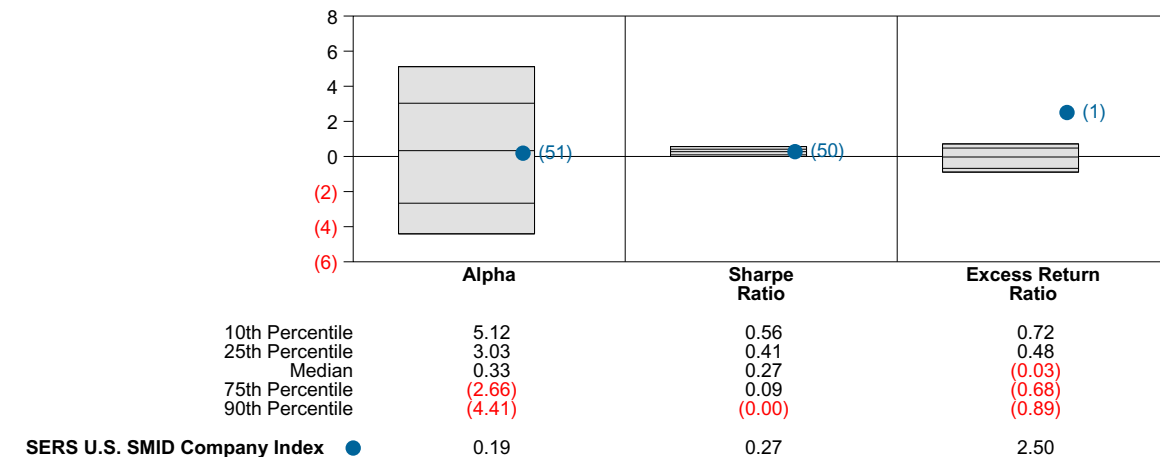
### Performance vs Callan Small/MidCap Broad Mutual Funds (Institutional Net)



### 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 March 31, 2020

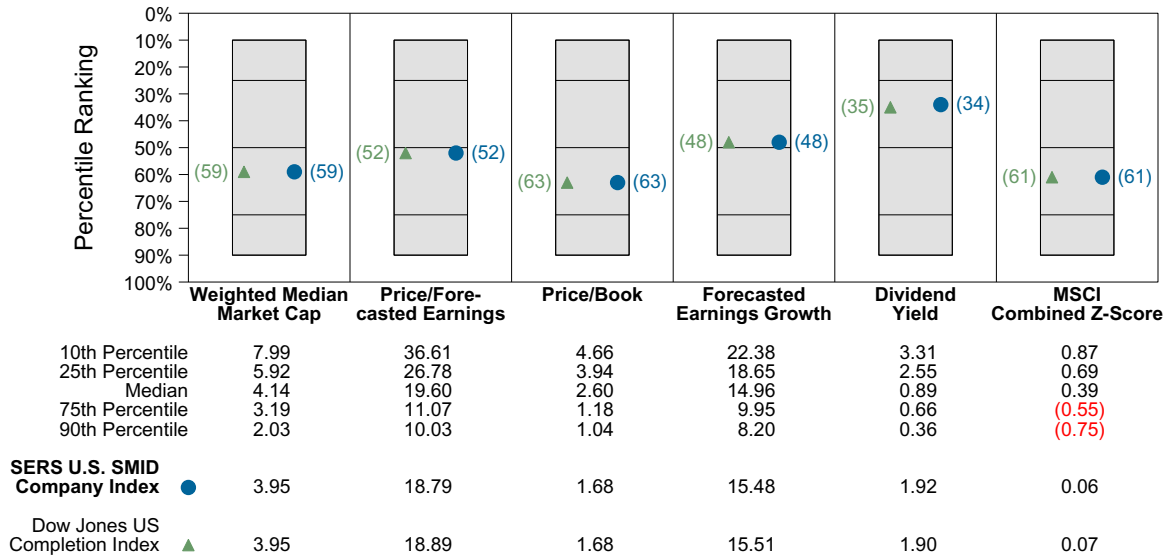


# SERS U.S. SMID Company Index Equity Characteristics Analysis Summary

## Portfolio Characteristics

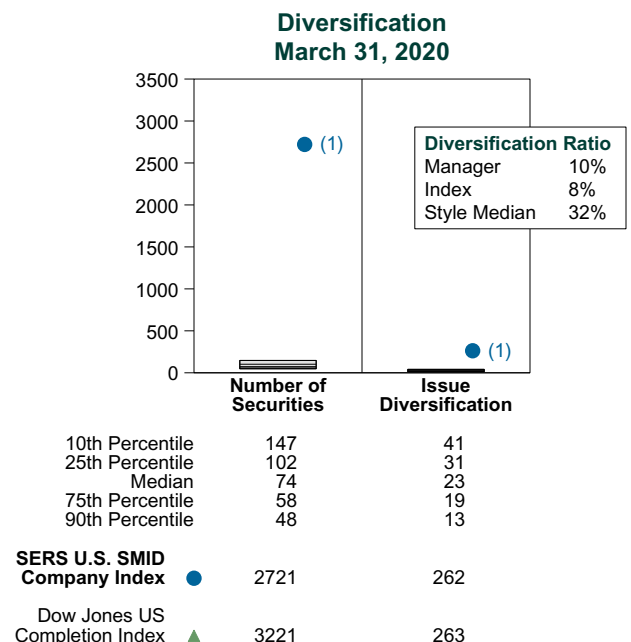
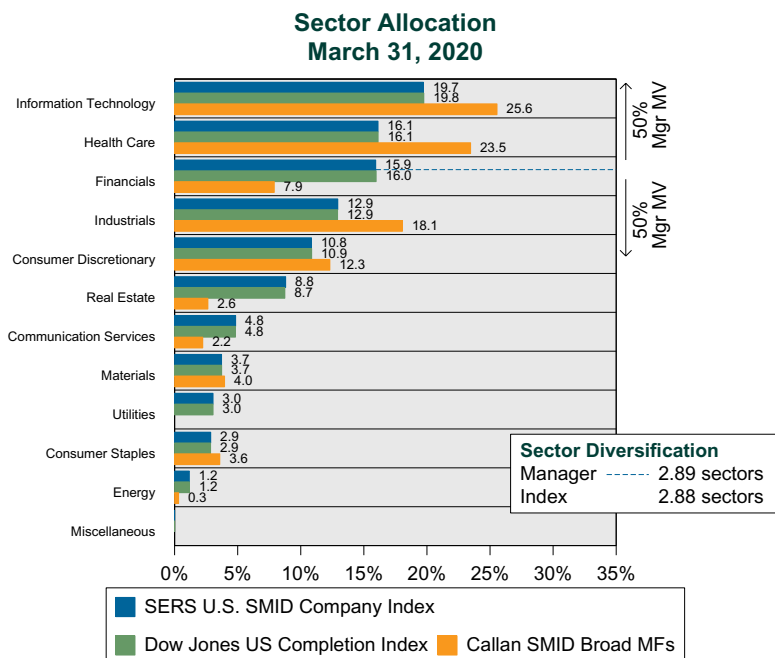
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

## Portfolio Characteristics Percentile Rankings Rankings Against Callan Small/MidCap Broad Mutual Funds as of March 31, 2020



## 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 March 31, 2020

### 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
Tesla Mtrs Inc	Consumer Discretionary	\$1,215	2.0%	25.26%	96.47	65.52	0.00%	-
Blackstone Group Inc Com Cl A	Financials	\$489	0.8%	(17.74)%	30.70	15.52	4.28%	17.36%
Dexcom Inc	Health Care	\$400	0.7%	23.10%	24.66	110.95	0.00%	54.60%
Lululemon Athletica Inc	Consumer Discretionary	\$370	0.6%	(18.18)%	23.53	35.89	0.00%	15.45%
Costar Group Inc	Industrials	\$350	0.6%	(1.85)%	21.52	53.25	0.00%	46.53%
Workday Inc Cl A	Information Technology	\$348	0.6%	(20.81)%	22.14	57.44	0.00%	20.00%
Veeva Sys Inc Cl A Com	Health Care	\$335	0.6%	11.17%	20.96	61.11	0.00%	19.40%
Splunk Inc	Information Technology	\$317	0.5%	(15.72)%	20.02	325.34	0.00%	32.75%
Square Inc Cl A	Information Technology	\$293	0.5%	(16.27)%	18.59	63.88	0.00%	38.93%
Liberty Broadband Corp Com Ser C	Communication Services	\$276	0.5%	(11.95)%	16.94	37.87	0.00%	-

### 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
Vaxart Inc	Health Care	\$2	0.0%	403.71%	0.13	(3.40)	0.00%	(35.45)%
Ibio Inc	Health Care	\$1	0.0%	325.22%	0.11	(1.04)	0.00%	-
Alpha Pro Tech Ltd	Industrials	\$2	0.0%	252.19%	0.16	88.18	0.00%	35.50%
Novavax Inc	Health Care	\$12	0.0%	241.45%	0.70	(5.28)	0.00%	-
Athersys Inc	Health Care	\$8	0.0%	143.88%	0.49	(9.49)	0.00%	-
Forty Seven Inc	Health Care	\$45	0.1%	142.37%	4.60	(34.76)	0.00%	-
Kala Pharmaceuticals Inc	Health Care	\$3	0.0%	138.18%	0.49	(4.77)	0.00%	-
Aduro Biotech Inc	Health Care	\$3	0.0%	132.03%	0.22	(3.71)	0.00%	-
Inovio Pharmaceuticals Inc	Health Care	\$17	0.0%	125.58%	1.08	(9.36)	0.00%	-
Neon Therapeutics Inc	Health Care	\$0	0.0%	123.63%	0.08	(1.82)	0.00%	26.90%

### 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
Stage Stores Inc	Consumer Discretionary	\$0	0.0%	(95.52)%	0.01	(0.26)	55.01%	-
Centennial Resource Dev Inc Cl A	Energy	\$1	0.0%	(94.31)%	0.07	(0.74)	0.00%	(36.13)%
Valaris Plc Shs Class A	Energy	\$1	0.0%	(93.21)%	0.09	(0.10)	35.55%	(23.10)%
Qep Res Inc	Energy	\$1	0.0%	(92.51)%	0.08	5.97	23.92%	99.84%
Whiting Pete Corp New	Energy	\$1	0.0%	(90.87)%	0.06	(0.28)	0.00%	(35.19)%
Amplify Energy Corp New	Energy	\$0	0.0%	(90.41)%	0.02	3.13	70.68%	(27.64)%
Penn Va Corp New	Energy	\$1	0.0%	(89.81)%	0.05	0.84	0.00%	-
Nine Energy Svc Inc	Energy	\$0	0.0%	(89.65)%	0.02	(0.56)	0.00%	(54.20)%
Forum Energy Technologies In	Energy	\$0	0.0%	(89.38)%	0.02	(0.70)	0.00%	(60.94)%
Oasis Pete Inc New	Energy	\$2	0.0%	(89.27)%	0.11	(0.63)	0.00%	10.11%

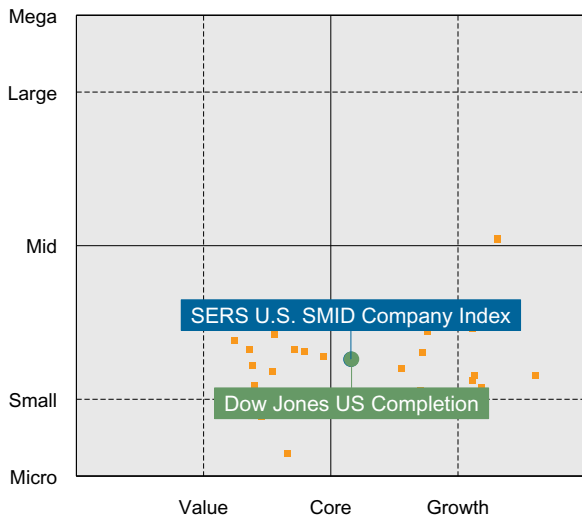
# Historical Holdings Based Style Analysis

## SERS U.S. SMID Company Index

### For Three Years Ended March 31, 2020

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.

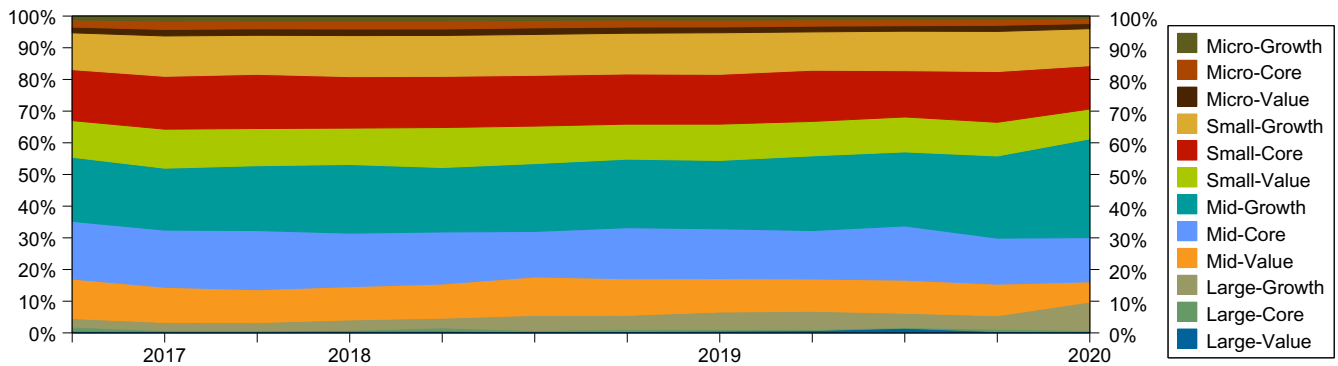
**Average Style Map vs Callan SMID Broad MFs Holdings for Three Years Ended March 31, 2020**



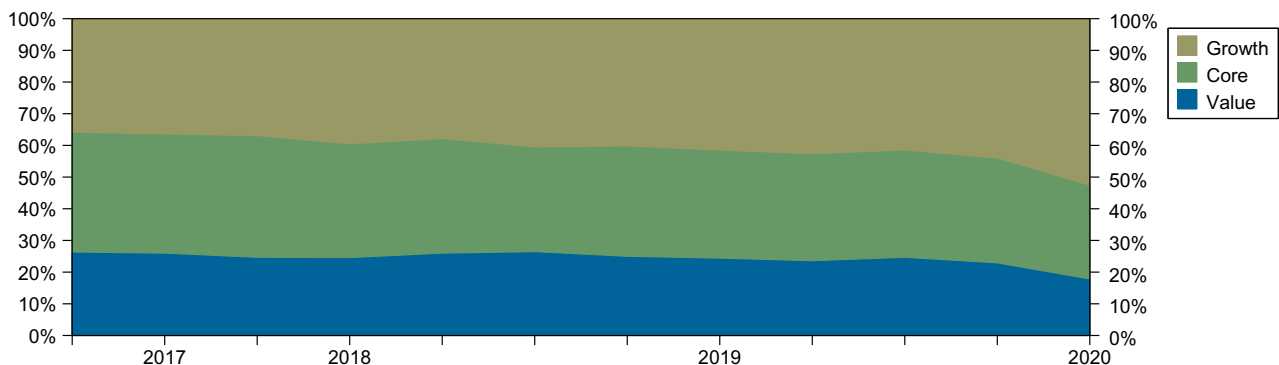
**Average Style Exposure Matrix Holdings for Three Years Ended March 31, 2020**

	Value	Core	Growth	Total
Large	0.6% (2)	0.5% (3)	4.3% (9)	5.5% (14)
	0.6% (2)	0.5% (2)	4.3% (9)	5.4% (13)
Mid	10.5% (88)	16.3% (133)	22.6% (164)	49.4% (385)
	10.5% (88)	16.3% (134)	22.6% (164)	49.4% (386)
Small	11.3% (322)	15.9% (486)	12.5% (379)	39.7% (1187)
	11.3% (322)	15.9% (489)	12.6% (381)	39.7% (1192)
Micro	1.9% (447)	2.2% (609)	1.3% (251)	5.4% (1307)
	1.9% (545)	2.3% (839)	1.3% (295)	5.5% (1679)
<b>Total</b>	<b>24.4% (859)</b>	<b>34.9% (1231)</b>	<b>40.8% (803)</b>	<b>100.0% (2893)</b>
	<b>24.3% (957)</b>	<b>34.9% (1464)</b>	<b>40.8% (849)</b>	<b>100.0% (3270)</b>

### 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 March 31, 2020

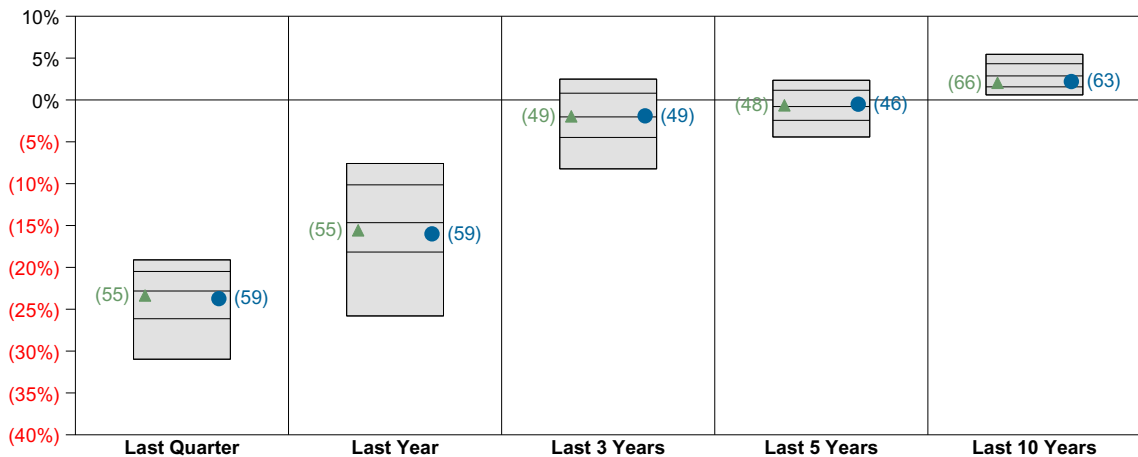
### Investment Philosophy

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

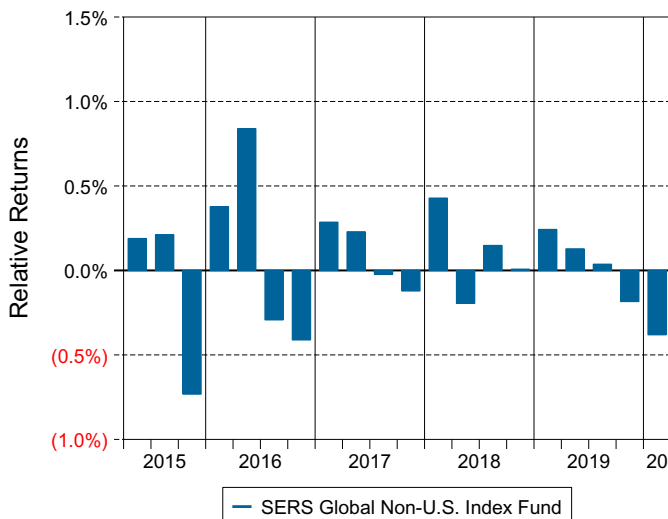
- SERS Global Non-U.S. Index Fund's portfolio posted a (23.74)% return for the quarter placing it in the 59 percentile of the Callan Non US Equity Mutual Funds group for the quarter and in the 59 percentile for the last year.
- SERS Global Non-U.S. Index Fund's portfolio underperformed the MSCI ACWI ex US by 0.38% for the quarter and underperformed the MSCI ACWI ex US for the year by 0.43%.

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

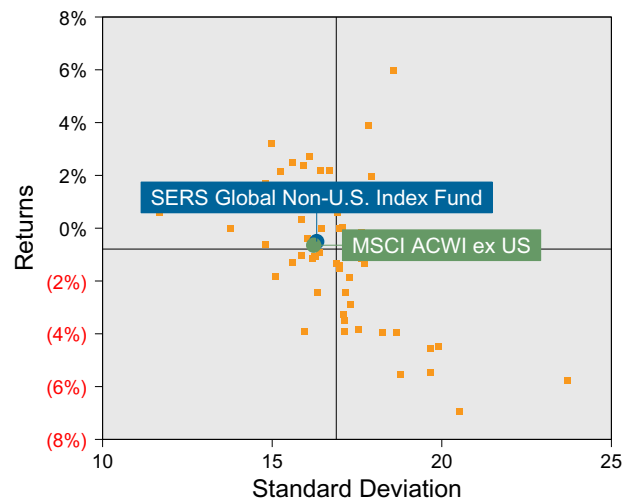


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(19.10)	(7.59)	2.49	2.35	5.45
25th Percentile	(20.49)	(10.14)	0.81	1.16	4.32
Median	(22.82)	(14.66)	(2.03)	(0.79)	2.87
75th Percentile	(26.13)	(18.17)	(4.48)	(2.44)	1.56
90th Percentile	(30.97)	(25.80)	(8.23)	(4.42)	0.60
<b>SERS Global Non-U.S. Index Fund</b>	● (23.74)	(16.00)	(1.90)	(0.51)	2.20
<b>MSCI ACWI ex US</b>	▲ (23.36)	(15.57)	(1.96)	(0.64)	2.05

### Relative Return vs MSCI ACWI ex US



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

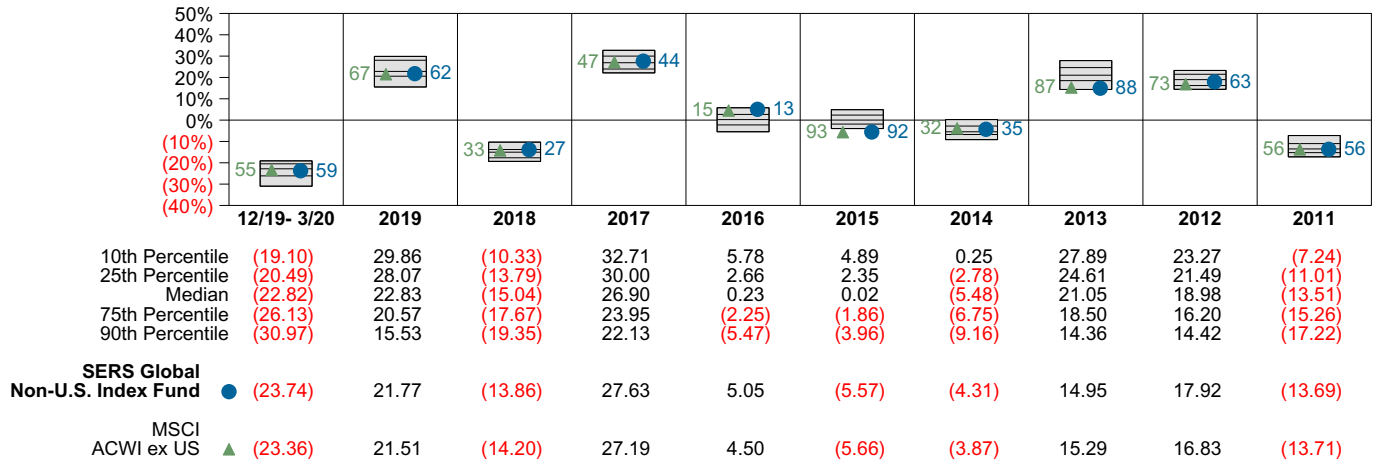


# SERS Global Non-U.S. Index Fund Return Analysis Summary

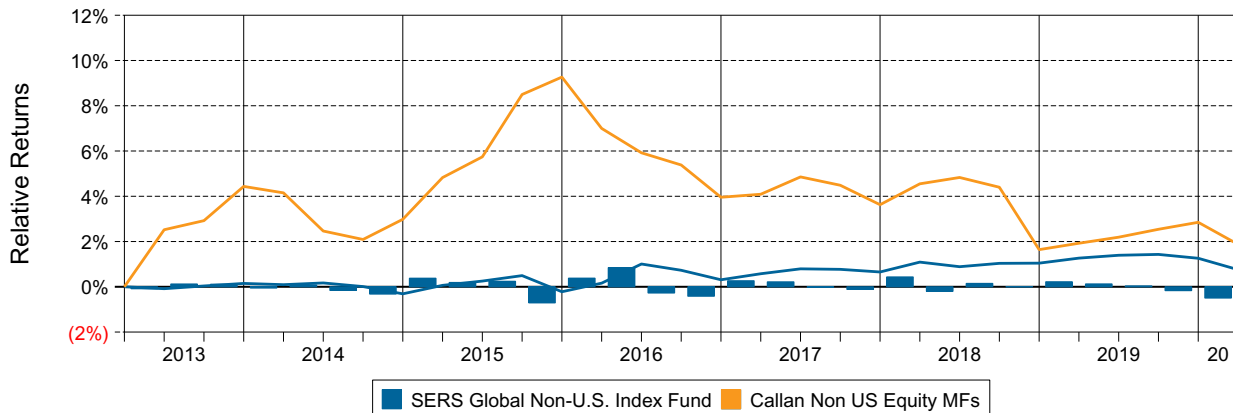
## Return Analysis

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.

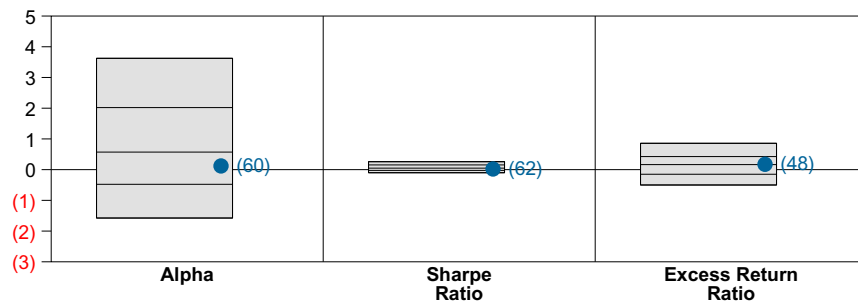
### Performance vs Callan Non US Equity Mutual Funds (Institutional Net)



### 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 March 31, 2020



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	3.62	0.26	0.86
25th Percentile	2.02	0.15	0.43
Median	0.57	0.05	0.16
75th Percentile	(0.48)	(0.02)	(0.15)
90th Percentile	(1.58)	(0.10)	(0.50)

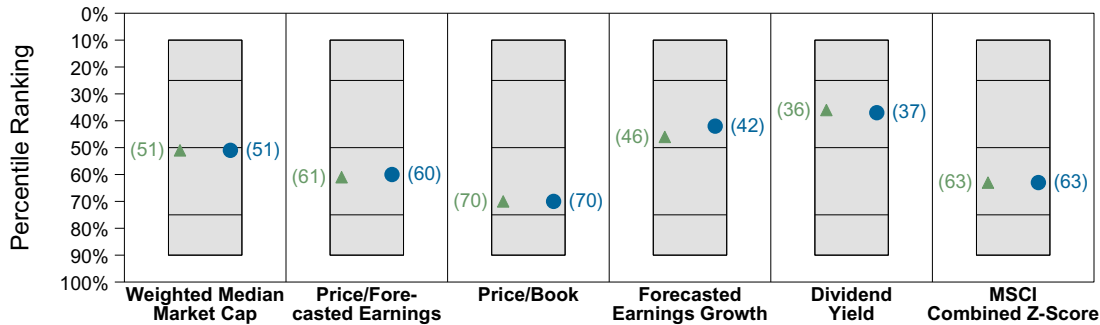
**SERS Global Non-U.S. Index Fund** ● 0.12      0.02      0.17

# 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 March 31, 2020

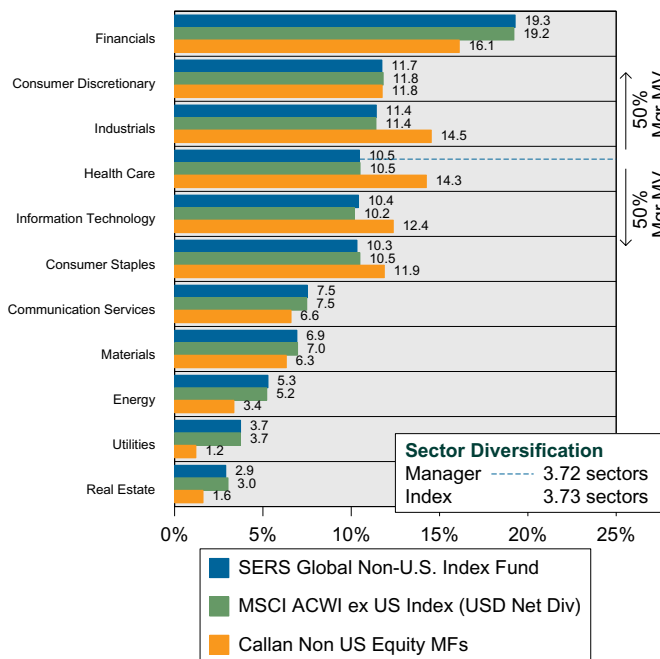


	Weighted Median Market Cap	Price/Forecasted Earnings	Price/Book	Forecasted Earnings Growth	Dividend Yield	MSCI Combined Z-Score
10th Percentile	50.06	18.21	2.91	14.76	4.64	0.96
25th Percentile	36.04	15.60	2.19	11.29	3.97	0.61
Median	28.04	12.88	1.75	9.22	3.17	0.22
75th Percentile	20.16	10.42	1.06	7.61	2.25	(0.23)
90th Percentile	12.79	9.05	0.86	6.32	1.61	(0.66)
<b>SERS Global Non-U.S. Index Fund</b>	● 27.58	12.12	1.28	9.45	3.49	0.03
MSCI ACWI ex US Index (USD Net Div)	▲ 27.61	12.03	1.27	9.42	3.56	0.03

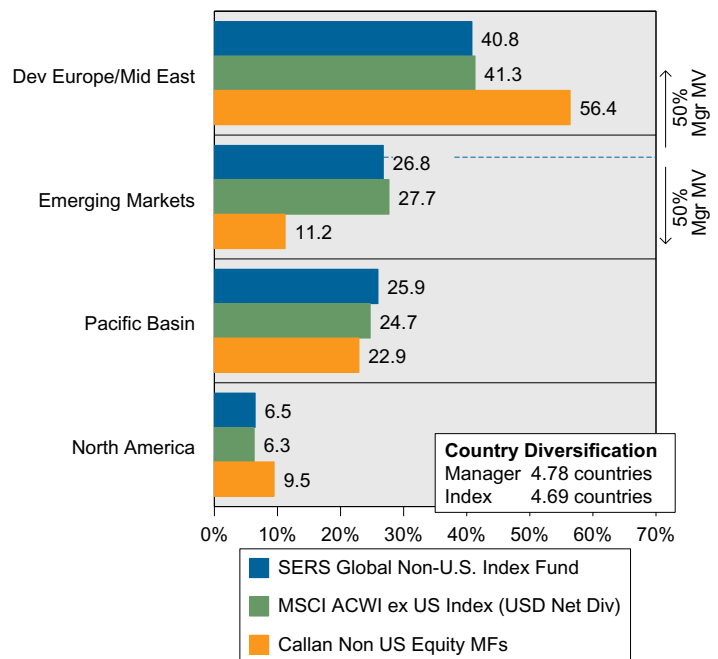
## Sector Weights

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 March 31, 2020



### Regional Allocation March 31, 2020



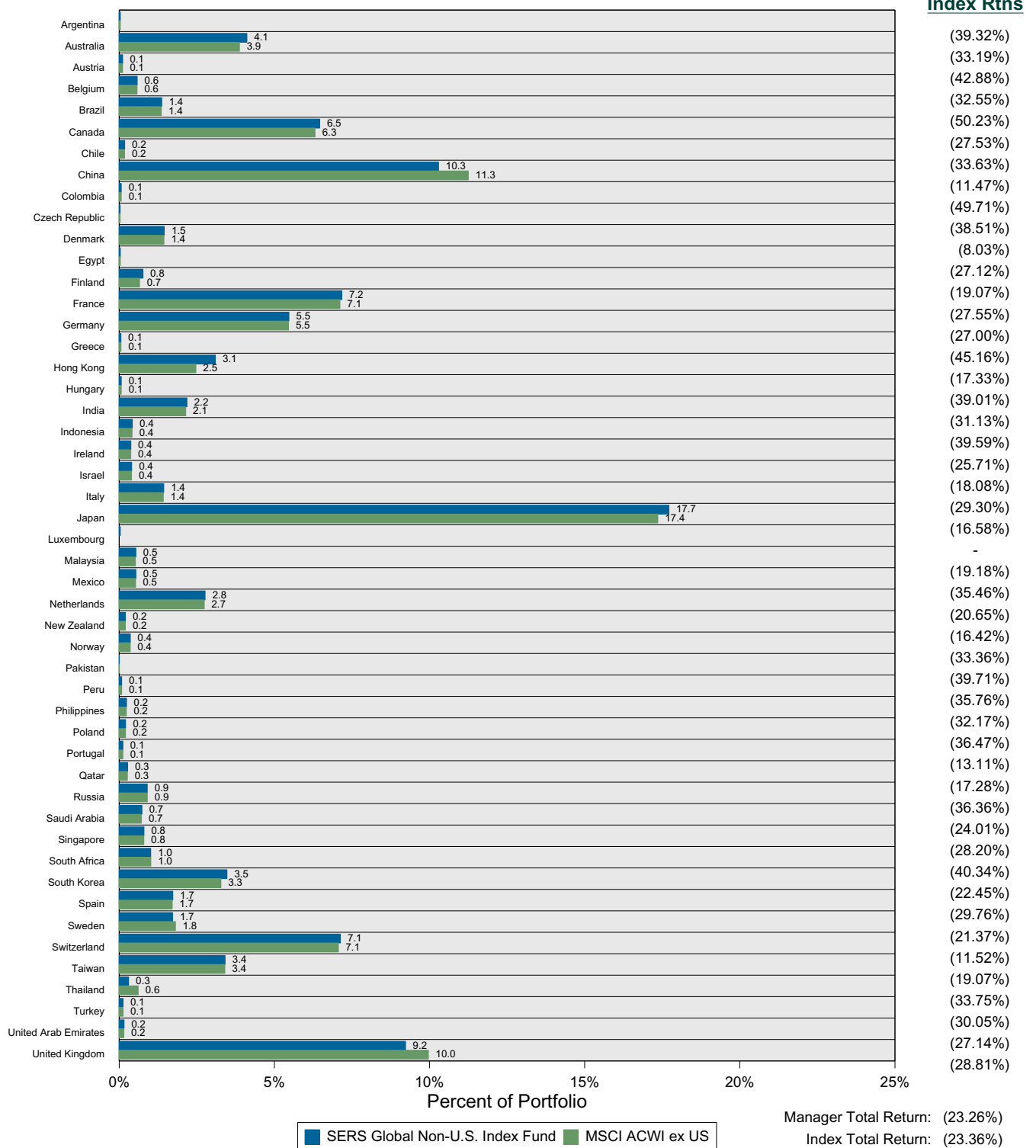
# Country Allocation

## 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 March 31, 2020. 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 March 31, 2020



## SERS Global Non-U.S. Index Fund Top 10 Portfolio Holdings Characteristics as of March 31, 2020

### 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
Alibaba Group Hldg Ltd Sponsored Ads	Consumer Discretionary	\$4,739	2.0%	(8.30)%	521.74	22.51	0.00%	23.00%
Nestle S A Shs Nom New	Consumer Staples	\$4,246	1.8%	(5.01)%	305.89	21.60	2.71%	7.23%
Tencent Holdings Limited Shs Par Hkd	Communication Services	\$3,942	1.7%	(0.53)%	468.60	27.50	0.32%	21.37%
Roche Hldgs Ag Basel Div Rts Ctf	Health Care	\$3,166	1.3%	3.02%	228.04	15.06	2.87%	5.30%
Taiwan Semicond Manufac Co L Shs	Information Technology	\$3,152	1.3%	(17.12)%	234.94	16.12	3.47%	12.68%
Samsung Electronics Co Ltd Ord	Information Technology	\$2,657	1.1%	(18.20)%	234.16	10.03	2.97%	(7.20)%
Novartis	Health Care	\$2,461	1.0%	(9.88)%	208.58	13.97	3.69%	7.01%
Toyota Motor Corp	Consumer Discretionary	\$1,945	0.8%	(15.16)%	196.50	8.58	3.38%	10.24%
Astrazeneca Plc Ord	Health Care	\$1,630	0.7%	(9.38)%	117.41	21.12	3.03%	15.90%
Hsbc Holdings (Gb)	Financials	\$1,589	0.7%	(22.85)%	114.71	8.84	8.76%	(1.86)%

### 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
Beijing Dabeinong Tech. Gp. 'a'	Consumer Staples	\$2	0.0%	70.69%	5.12	14.35	0.70%	(4.16)%
Celltrion Healthcare	Health Care	\$54	0.0%	60.77%	10.61	72.88	0.00%	135.99%
Wuhan Guide Infrared 'a'	Information Technology	\$1	0.0%	57.92%	4.46	59.50	0.06%	9.52%
Sic. New Hope Agri A	Consumer Staples	\$2	0.0%	54.81%	18.68	11.27	0.10%	(3.96)%
Zhejiang Huahai Pharm. A	Health Care	\$2	0.0%	46.31%	4.79	39.35	0.00%	0.98%
21 Cn Cybernet Corp.	Health Care	\$85	0.0%	41.50%	20.19	836.00	0.00%	9.78%
A Living Services Co Ltd H Common St	Industrials	\$29	0.0%	37.72%	2.11	24.94	0.66%	31.44%
Shanghai Kingstar Winning Sftw. 'a'	Health Care	\$1	0.0%	37.56%	4.85	58.04	0.10%	28.28%
Langchao Eltn. Info. A	Information Technology	\$2	0.0%	36.94%	7.88	37.72	0.14%	41.70%
Muyuan Foodstuff 'a'	Consumer Staples	\$5	0.0%	35.25%	37.98	7.91	0.04%	34.06%

### 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
Sasol	Materials	\$16	0.0%	(90.47)%	1.29	2.26	37.37%	(14.30)%
Flight Centre Limited Shs	Consumer Discretionary	\$5	0.0%	(80.42)%	0.61	6.50	15.94%	(5.64)%
Cenovus Energy Inc	Energy	\$29	0.0%	(80.06)%	2.45	(19.80)	8.80%	(7.07)%
Bombardier Inc Cl B	Industrials	\$10	0.0%	(78.52)%	0.68	(2.25)	0.00%	24.80%
Redefine Properties Ltd Shs	Real Estate	\$10	0.0%	(75.46)%	0.77	2.50	41.06%	5.00%
Alsea Sa De Cv Mexico Shs	Consumer Discretionary	\$5	0.0%	(75.34)%	0.54	10.00	5.14%	32.72%
Ccc Sa	Consumer Discretionary	\$3	0.0%	(75.15)%	0.30	7.73	1.60%	22.72%
Carnival Plc Shs	Consumer Discretionary	\$27	0.0%	(74.47)%	1.91	2.70	16.19%	7.55%
Lan Airlines	Industrials	\$8	0.0%	(74.28)%	1.57	4.06	2.72%	54.07%
Oil Search Ltd Ord	Energy	\$27	0.0%	(71.06)%	2.22	11.12	6.04%	12.30%

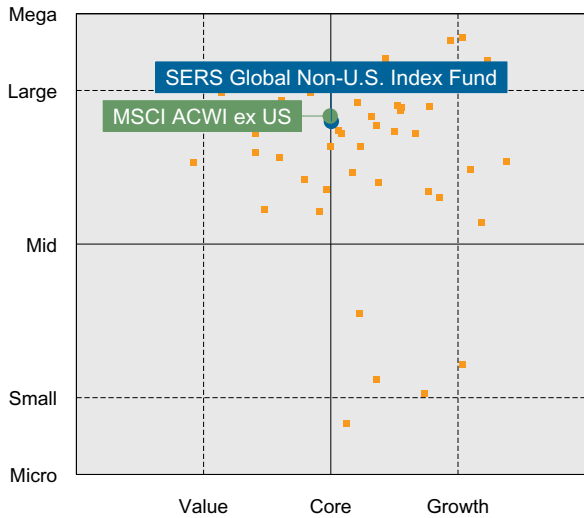
# Historical Holdings Based Style Analysis

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

### For Three Years Ended March 31, 2020

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.

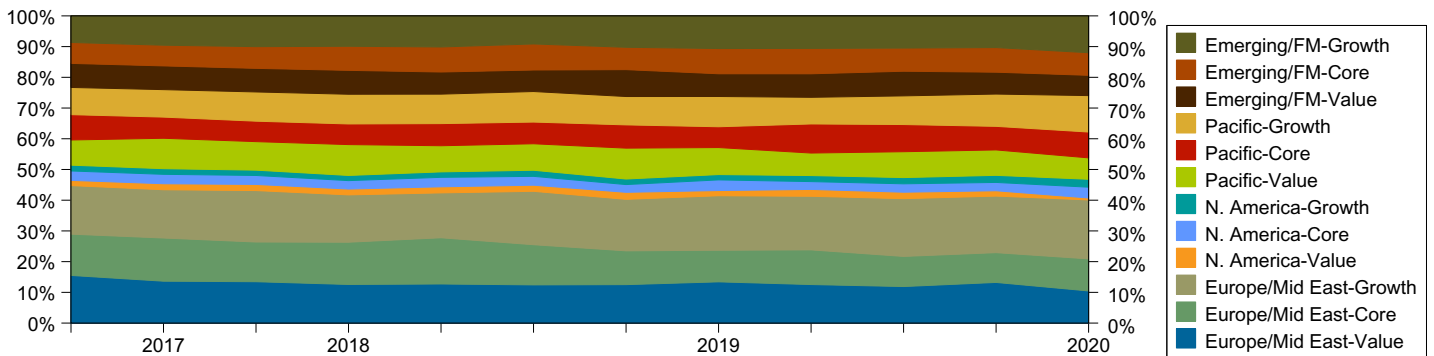
**Average Style Map vs Callan Non US Equity MFs Holdings for Three Years Ended March 31, 2020**



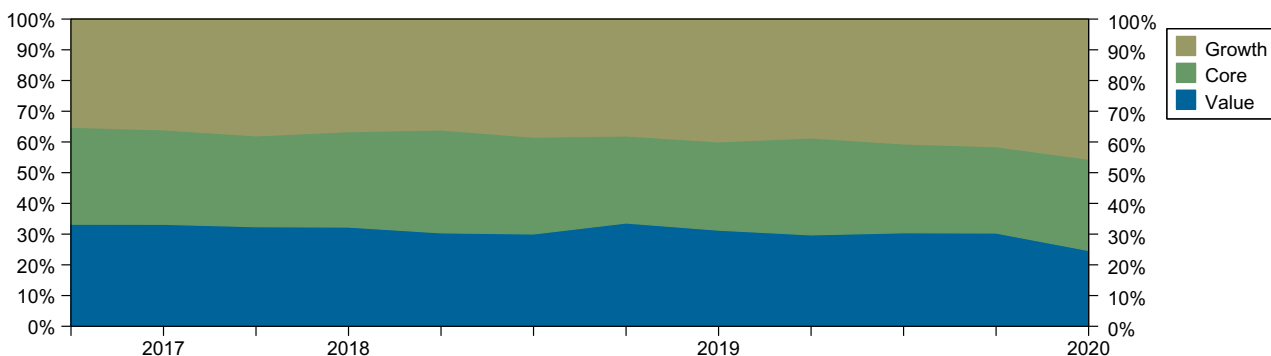
**Average Style Exposure Matrix Holdings for Three Years Ended March 31, 2020**

	12.9% (127)	12.1% (122)	17.0% (176)	41.9% (425)
Europe/ Mid East	13.1% (136)	11.9% (126)	17.0% (187)	42.0% (449)
N. America	1.8% (28)	2.9% (29)	1.9% (31)	6.7% (88)
	1.8% (29)	3.0% (30)	1.9% (32)	6.7% (91)
Pacific	8.7% (148)	7.6% (147)	9.7% (175)	26.0% (470)
	8.5% (149)	7.3% (146)	9.2% (175)	25.0% (470)
Emerging/ FM	7.6% (345)	7.6% (293)	10.1% (294)	25.3% (932)
	8.0% (387)	7.9% (339)	10.4% (340)	26.3% (1066)
<b>Total</b>	<b>31.0% (648)</b>	<b>30.3% (591)</b>	<b>38.7% (676)</b>	<b>100.0% (1915)</b>
	<b>31.4% (701)</b>	<b>30.0% (641)</b>	<b>38.6% (734)</b>	<b>100.0% (2076)</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 March 31, 2020

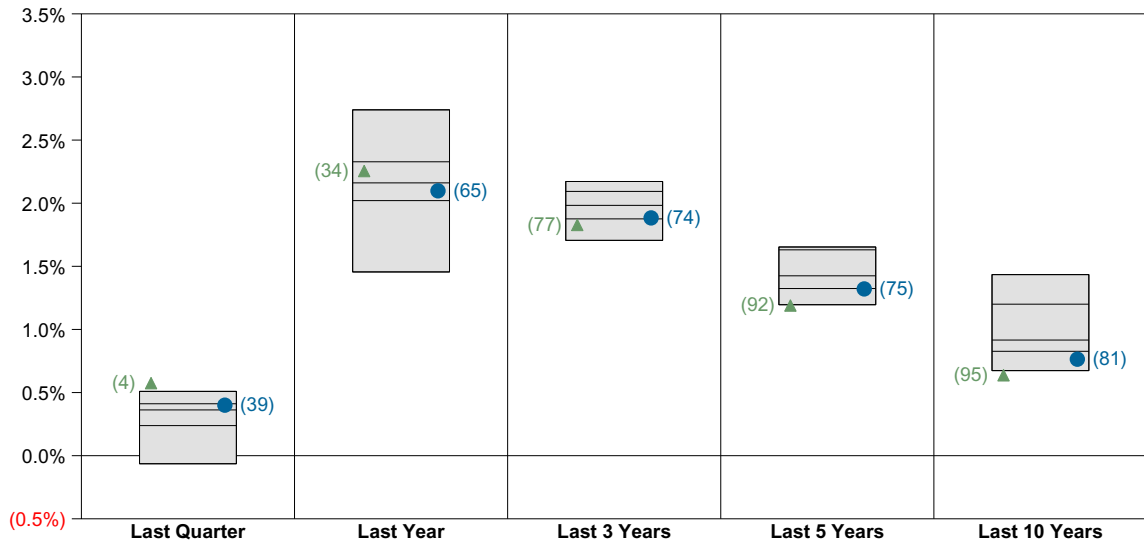
### Investment Philosophy

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 0.40% return for the quarter placing it in the 39 percentile of the Callan Cash Database group for the quarter and in the 65 percentile for the last year.
- SERS Short Term Investment Fund's portfolio underperformed the 3-month Treasury Bill by 0.17% for the quarter and underperformed the 3-month Treasury Bill for the year by 0.16%.

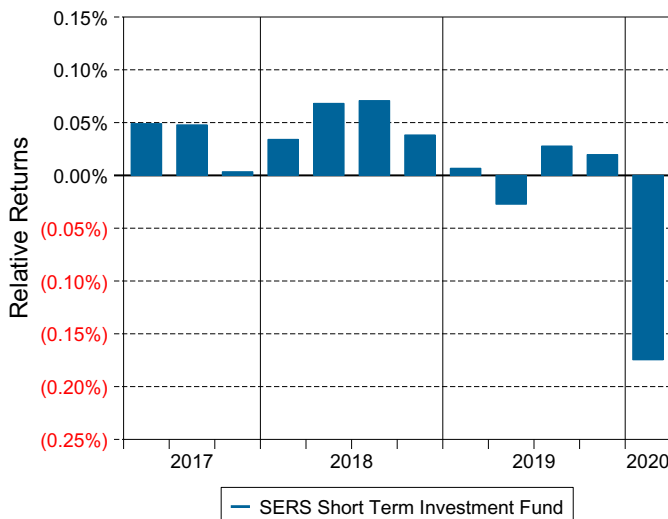
### Performance vs Callan Cash Database (Gross)



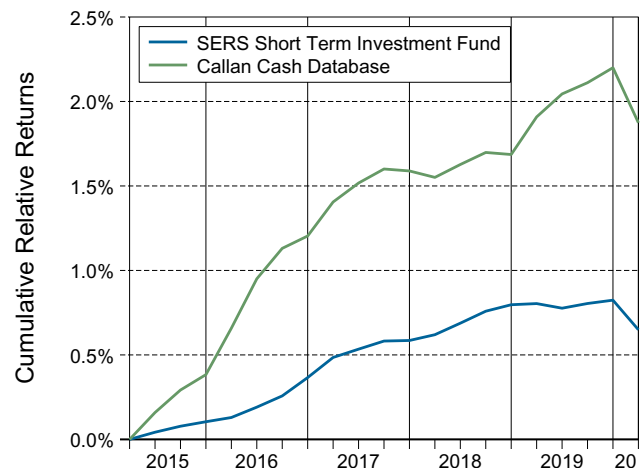
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	0.51	2.74	2.17	1.65	1.43
25th Percentile	0.41	2.33	2.09	1.63	1.20
Median	0.36	2.16	1.98	1.42	0.92
75th Percentile	0.24	2.02	1.88	1.32	0.83
90th Percentile	(0.06)	1.46	1.71	1.20	0.67

<b>SERS Short Term Investment Fund</b>	●	0.40	2.10	1.88	1.32	0.76
3-month Treasury Bill	▲	0.57	2.25	1.83	1.19	0.64

### Relative Return vs 3-month Treasury Bill



### Cumulative Returns vs 3-month Treasury Bill



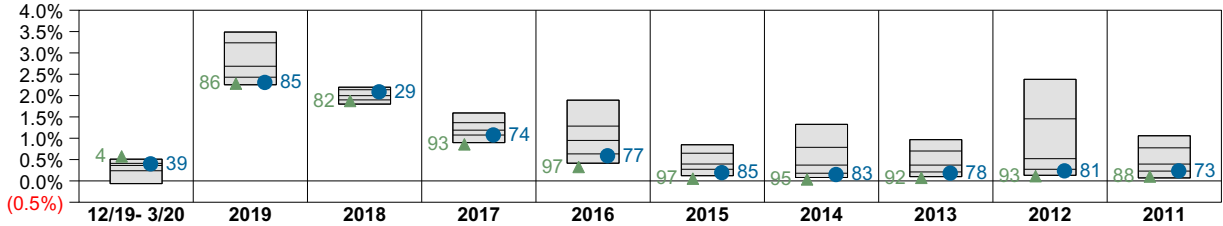


# SERS Short Term Investment Fund Return Analysis Summary

## 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.

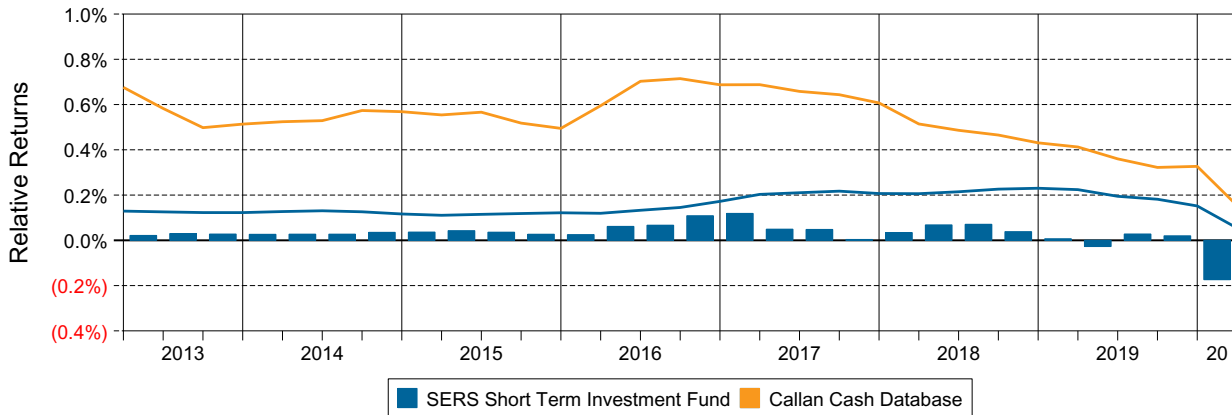
## Performance vs Callan Cash Database (Gross)



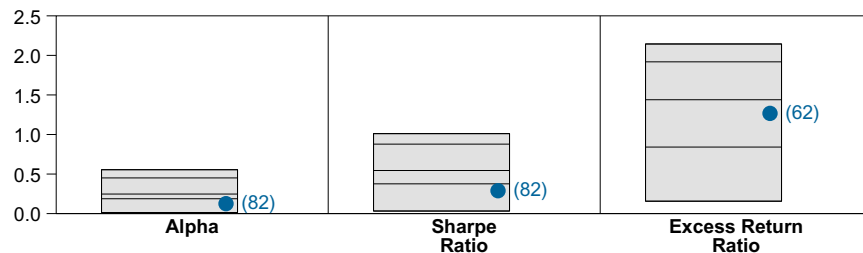
10th Percentile	0.51	3.49	2.20	1.59	1.89	0.85	1.33	0.97	2.38	1.06
25th Percentile	0.41	3.24	2.14	1.36	1.28	0.65	0.79	0.70	1.45	0.78
Median	0.36	2.69	2.00	1.19	0.95	0.40	0.37	0.37	0.52	0.39
75th Percentile	0.24	2.43	1.90	1.08	0.63	0.27	0.18	0.21	0.27	0.23
90th Percentile	(0.06)	2.25	1.80	0.90	0.41	0.12	0.08	0.10	0.13	0.07

SERS Short Term Investment Fund	●	0.40	2.31	2.09	1.08	0.59	0.19	0.15	0.18	0.24	0.24
3-month Treasury Bill	▲	0.57	2.28	1.87	0.86	0.33	0.05	0.03	0.07	0.11	0.10

## 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 March 31, 2020



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.55	1.01	2.14
25th Percentile	0.45	0.88	1.92
Median	0.25	0.54	1.44
75th Percentile	0.19	0.38	0.84
90th Percentile	0.01	0.03	0.16
SERS Short Term Investment Fund	● 0.13	0.29	1.27

# SERS U.S. Short Term Bond Idx Fund

## Period Ended March 31, 2020

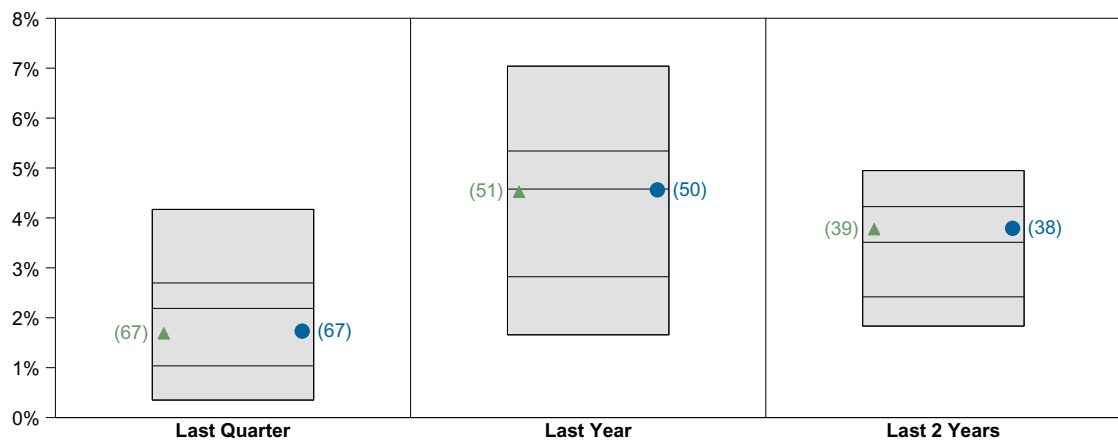
### Investment Philosophy

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 1.73% return for the quarter placing it in the 67 percentile of the Callan Short US Gov Bond Mut Funds group for the quarter and in the 50 percentile for the last year.
- SERS U.S. Short Term Bond Idx Fund's portfolio outperformed the Blmbg Gov/Cred 1-3 Yr by 0.04% for the quarter and outperformed the Blmbg Gov/Cred 1-3 Yr for the year by 0.04%.

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



10th Percentile  
25th Percentile  
Median  
75th Percentile  
90th Percentile

4.17  
2.70  
2.19  
1.04  
0.35

7.04  
5.34  
4.58  
2.82  
1.66

4.95  
4.23  
3.51  
2.42  
1.83

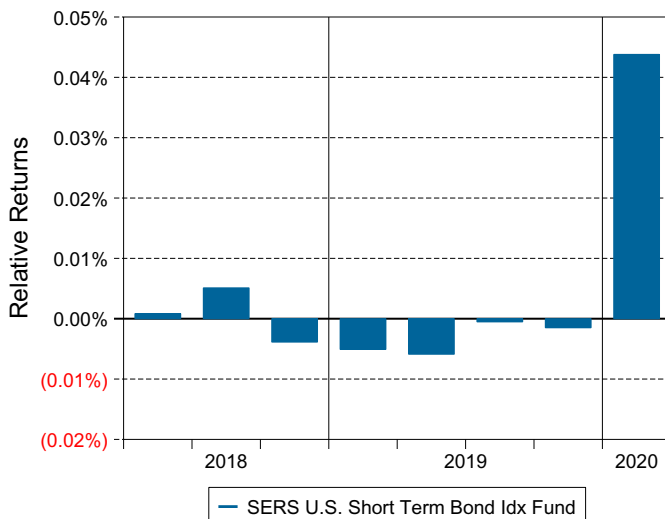
**SERS U.S. Short Term Bond Idx Fund** ●  
Blmbg Gov/Cred 1-3 Yr ▲

1.73  
1.69

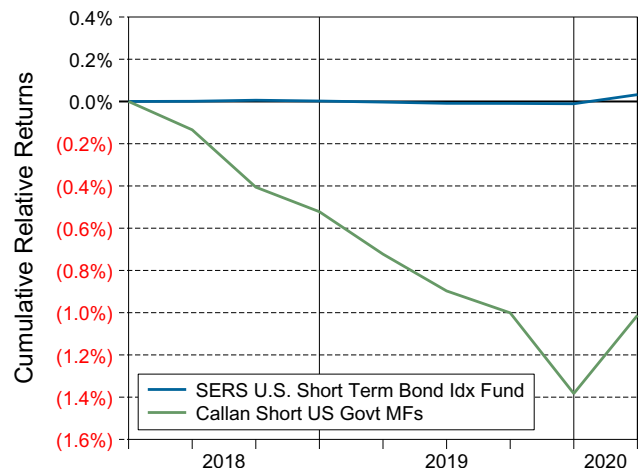
4.56  
4.53

3.79  
3.77

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



### Cumulative Returns vs Blmbg Gov/Cred 1-3 Yr



# SERS U.S. Short Term Bond Idx Fund

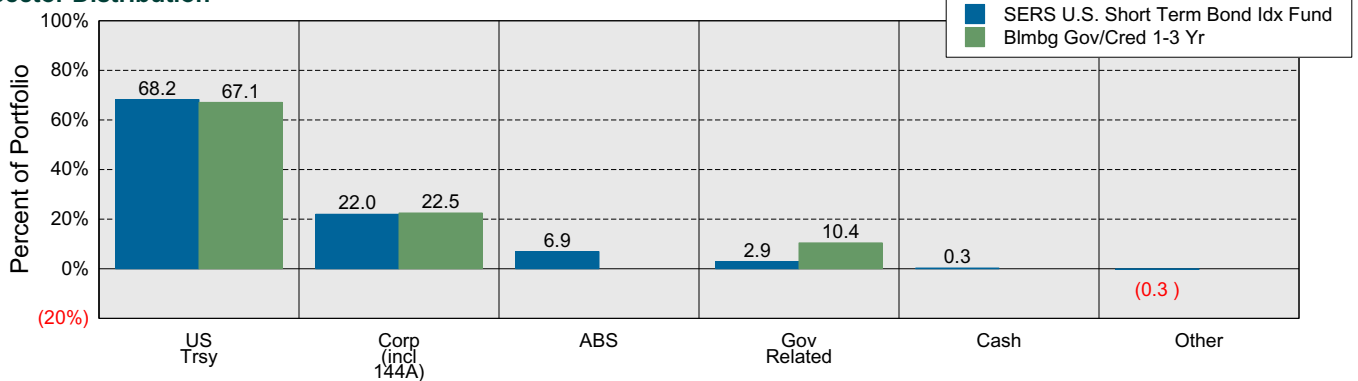
## Portfolio Characteristics Summary

### As of March 31, 2020

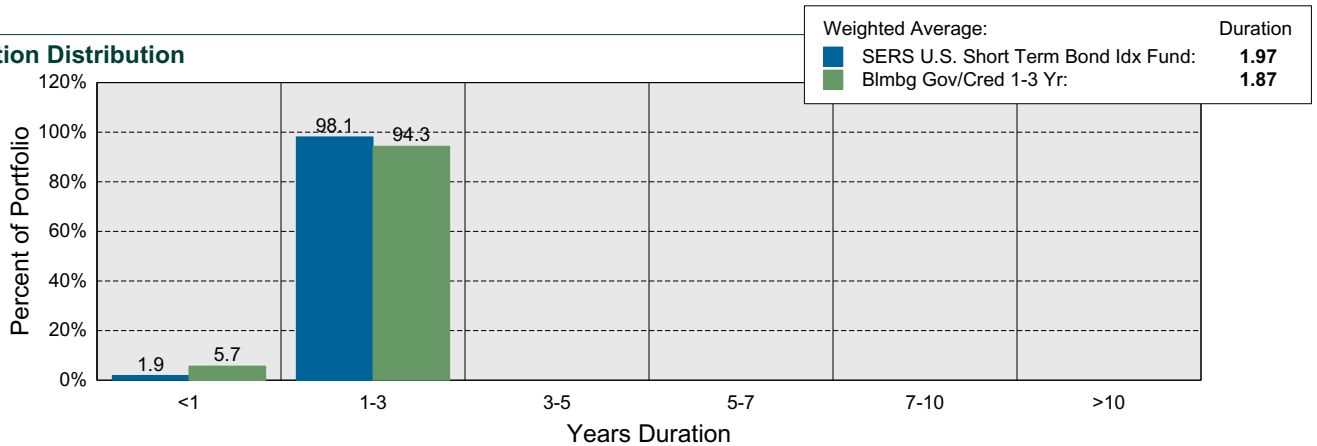
#### Portfolio Structure Comparison

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.

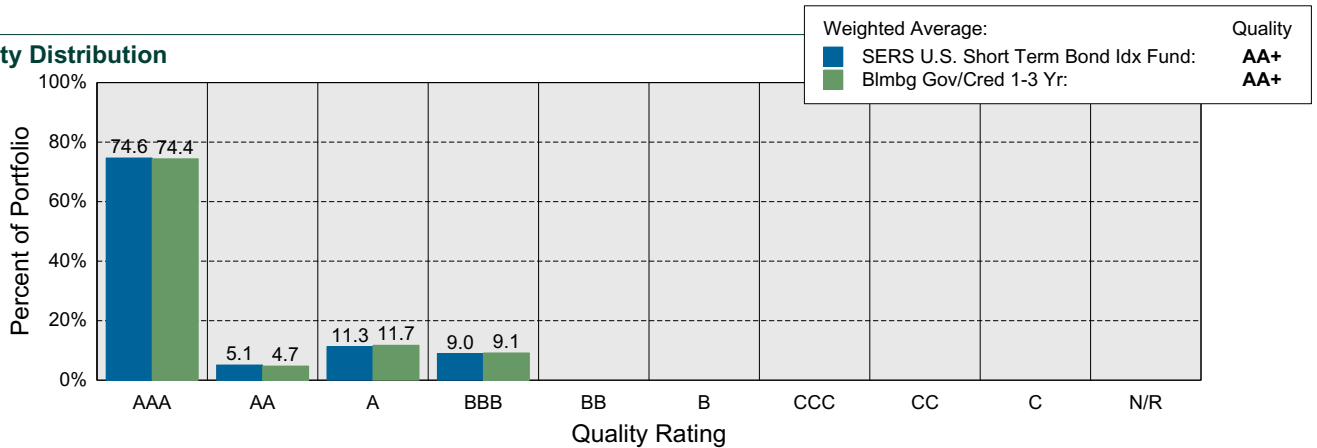
#### Sector Distribution



#### Duration Distribution



#### Quality Distribution



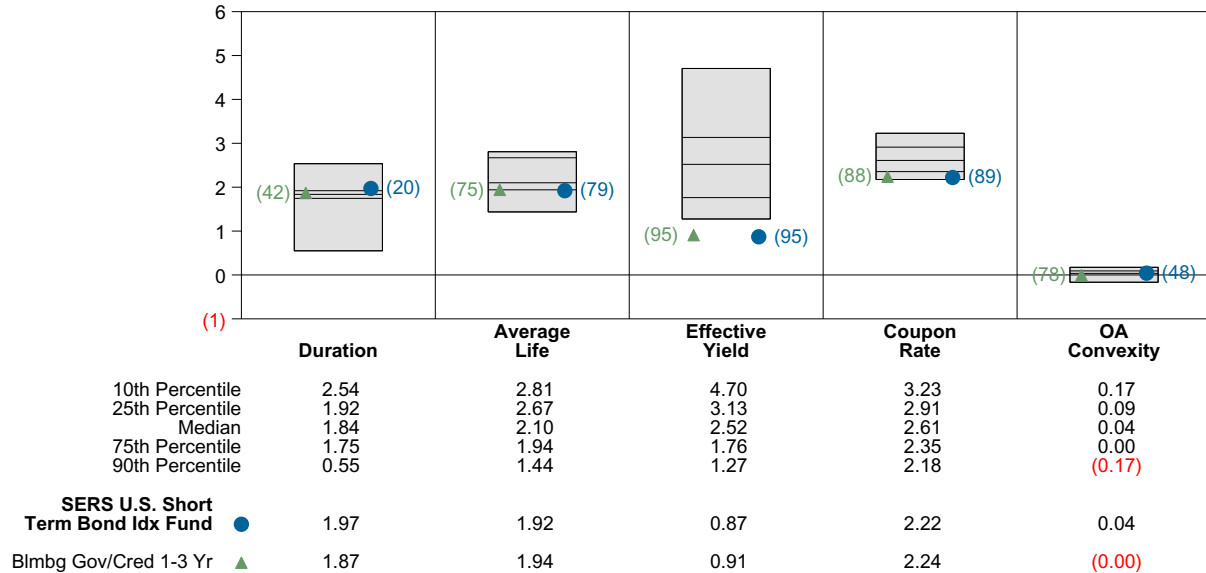
# SERS U.S. Short Term Bond Idx Fund

## Bond Characteristics Analysis Summary

### Portfolio Characteristics

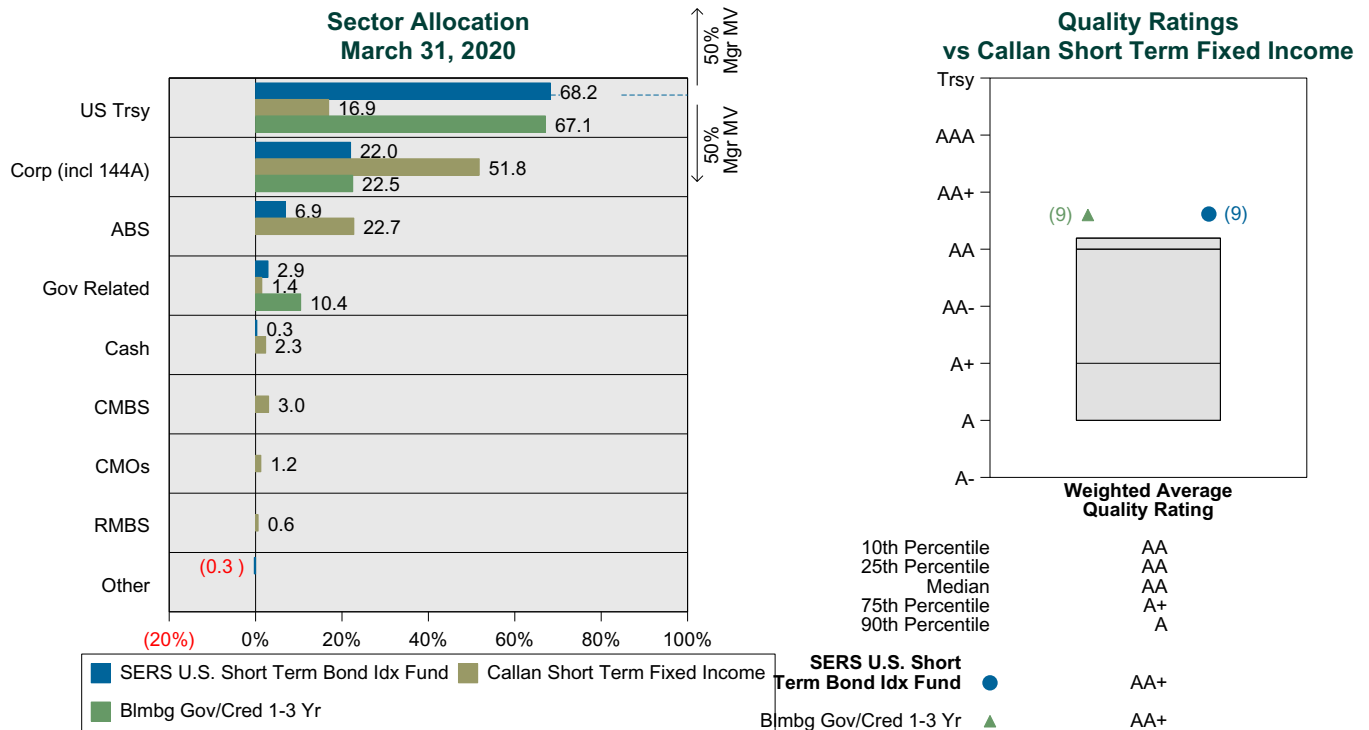
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

### Fixed Income Portfolio Characteristics Rankings Against Callan Short Term Fixed Income as of March 31, 2020



### 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 March 31, 2020

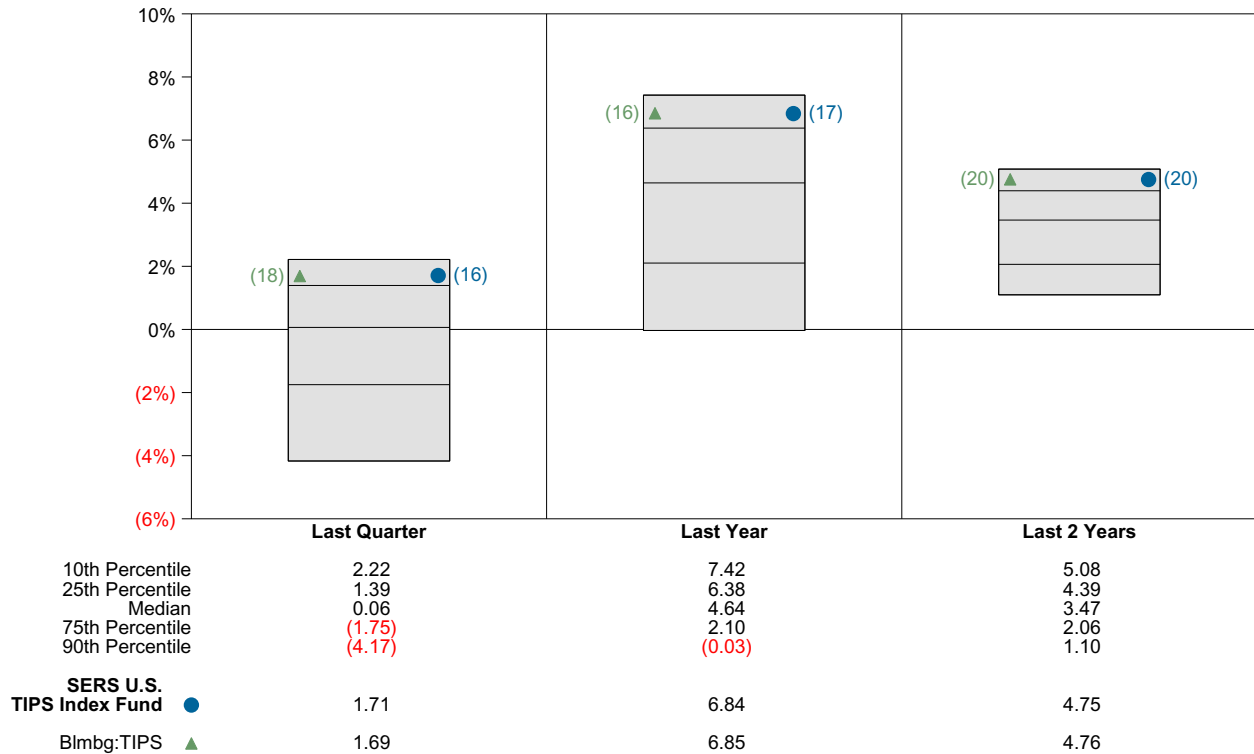
### Investment Philosophy

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.

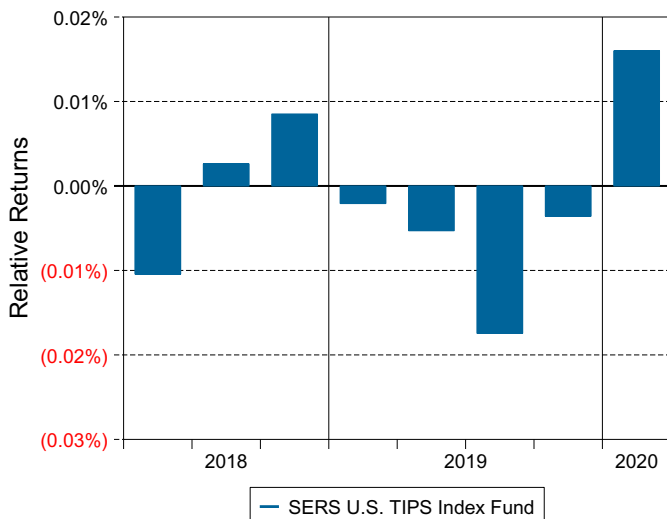
### Quarterly Summary and Highlights

- SERS U.S. TIPS Index Fund's portfolio posted a 1.71% return for the quarter placing it in the 16 percentile of the Callan Treas Infl Prot Securities MFs group for the quarter and in the 17 percentile for the last year.
- SERS U.S. TIPS Index Fund's portfolio outperformed the Blmbg:TIPS by 0.02% for the quarter and underperformed the Blmbg:TIPS for the year by 0.01%.

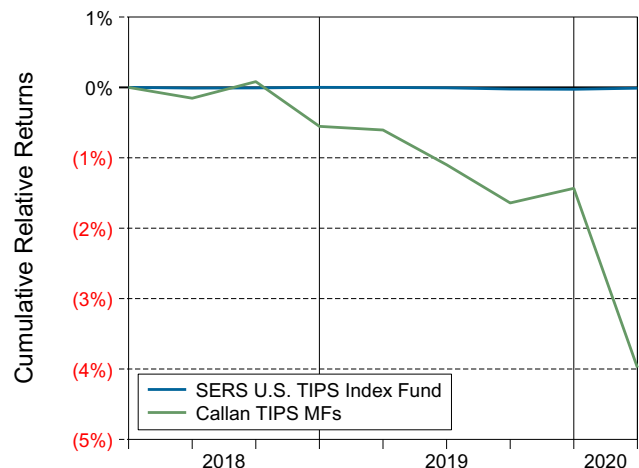
### Performance vs Callan Treas Infl Prot Securities MFs (Institutional Net)



### Relative Return vs Blmbg:TIPS



### Cumulative Returns vs Blmbg:TIPS



# SERS U.S. TIPS Index Fund

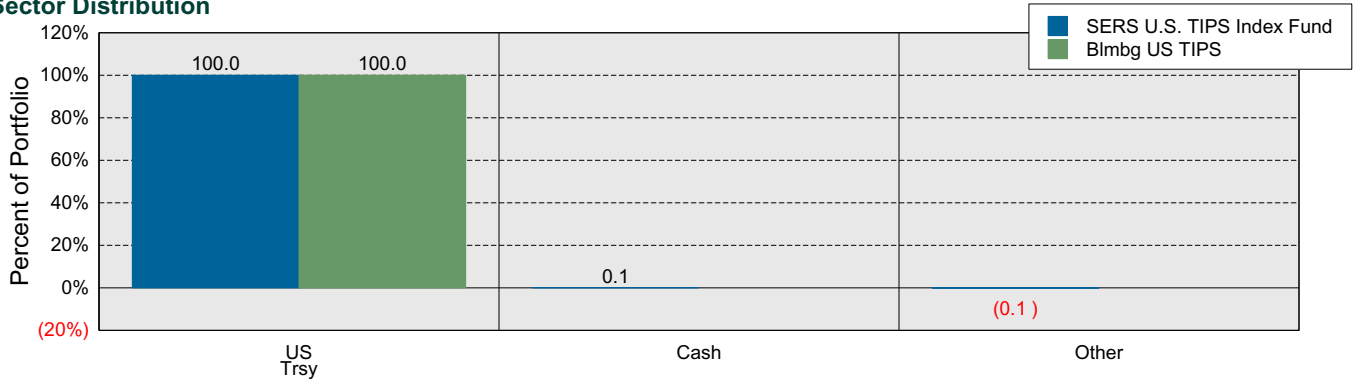
## Portfolio Characteristics Summary

### As of March 31, 2020

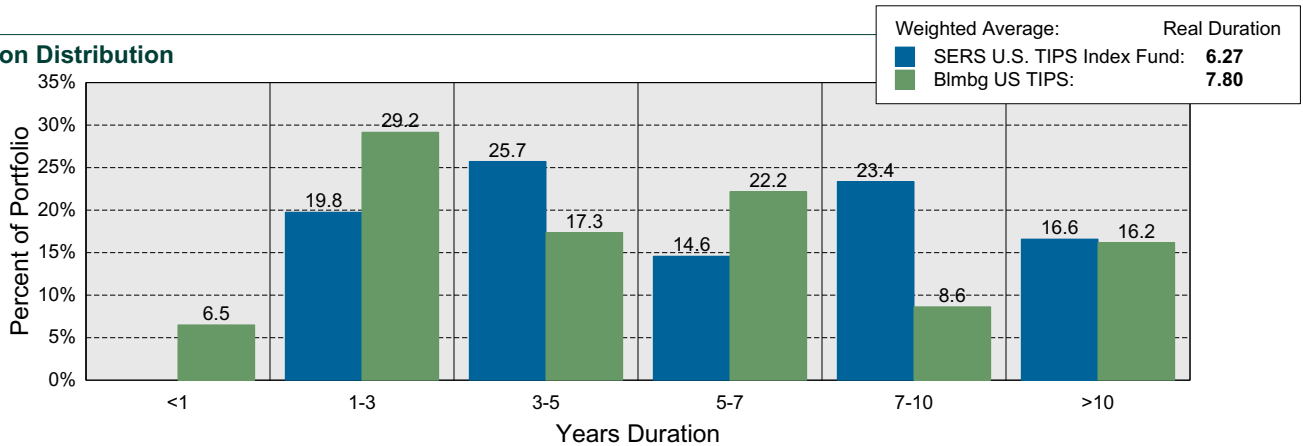
#### Portfolio Structure Comparison

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.

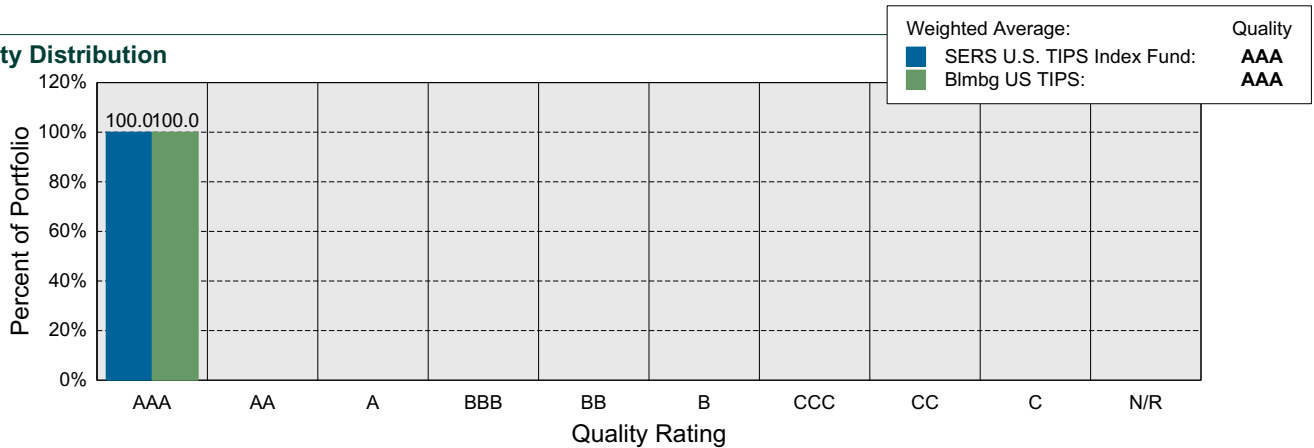
#### Sector Distribution



#### Duration Distribution



#### Quality Distribution

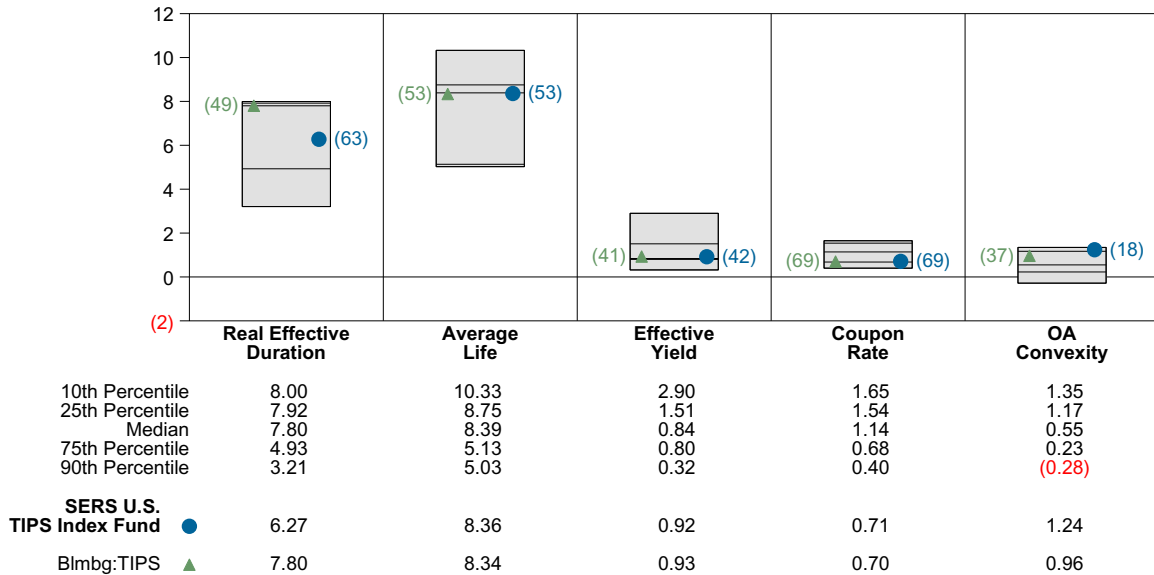


# SERS U.S. TIPS Index Fund Bond Characteristics Analysis Summary

## Portfolio Characteristics

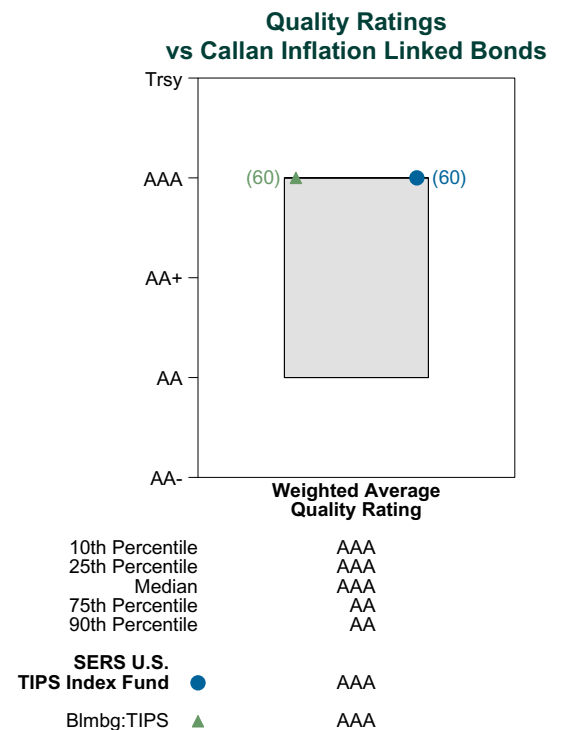
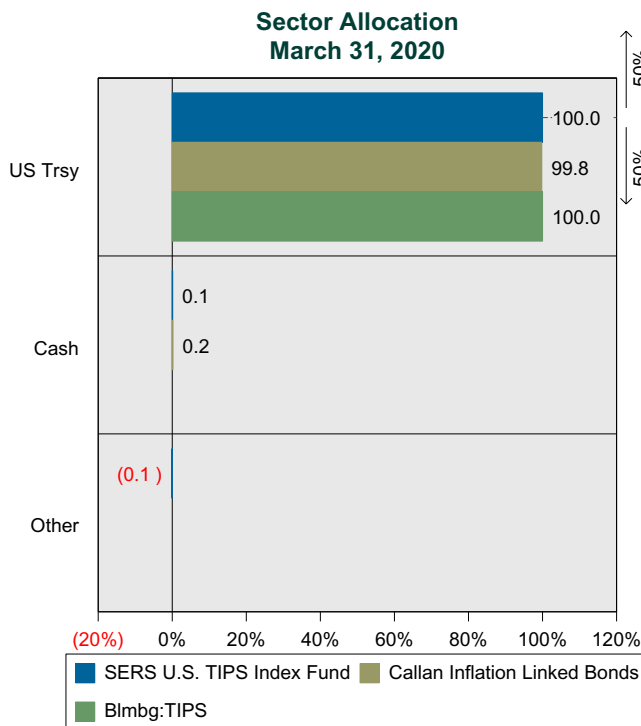
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

## Fixed Income Portfolio Characteristics Rankings Against Callan Inflation Linked Bonds as of March 31, 2020



## 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 March 31, 2020

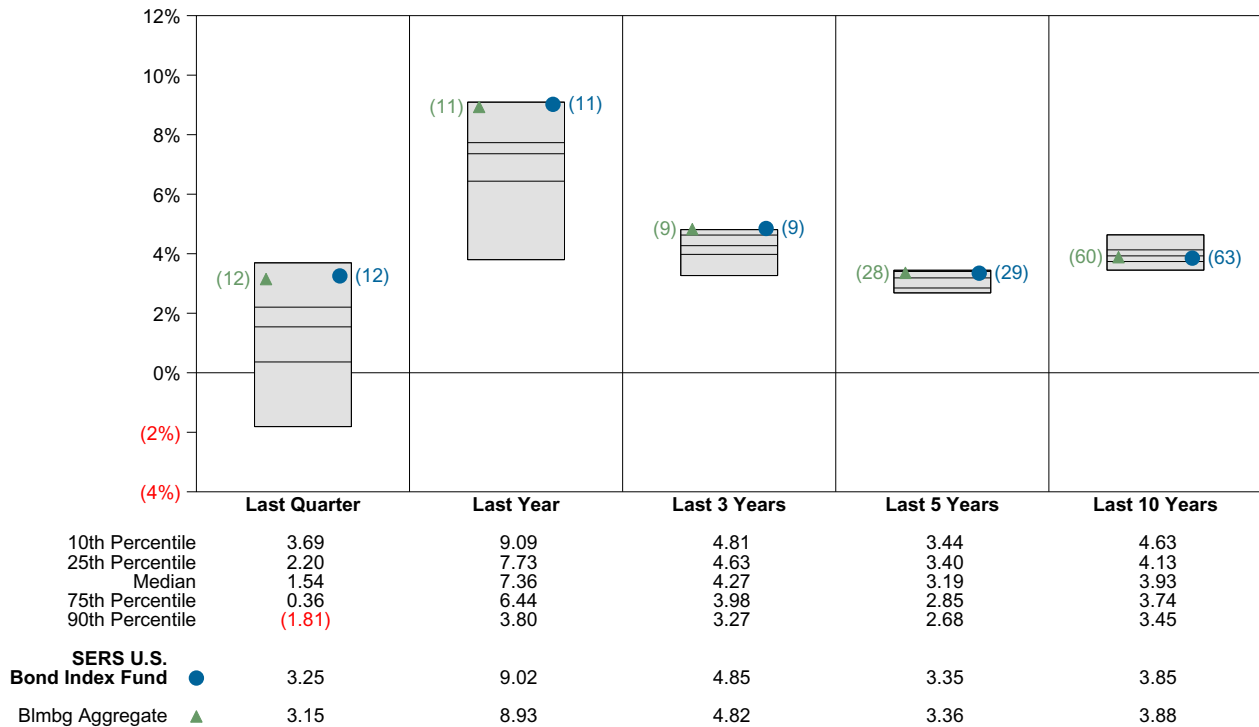
## Investment Philosophy

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.

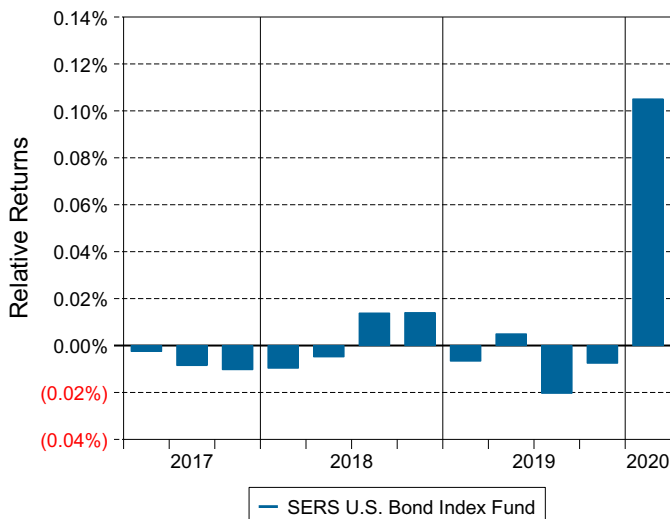
## Quarterly Summary and Highlights

- SERS U.S. Bond Index Fund's portfolio posted a 3.25% return for the quarter placing it in the 12 percentile of the Callan Core Bond Mutual Funds group for the quarter and in the 11 percentile for the last year.
- SERS U.S. Bond Index Fund's portfolio outperformed the Blmbg Aggregate by 0.11% for the quarter and outperformed the Blmbg Aggregate for the year by 0.09%.

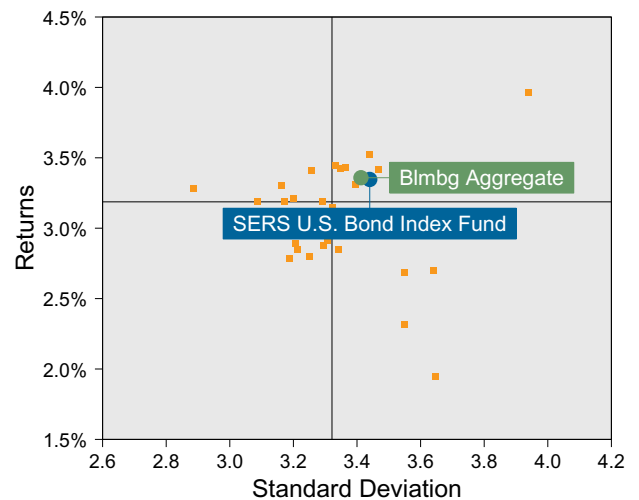
## Performance vs Callan Core Bond Mutual Funds (Institutional Net)



## Relative Return vs Blmbg Aggregate



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



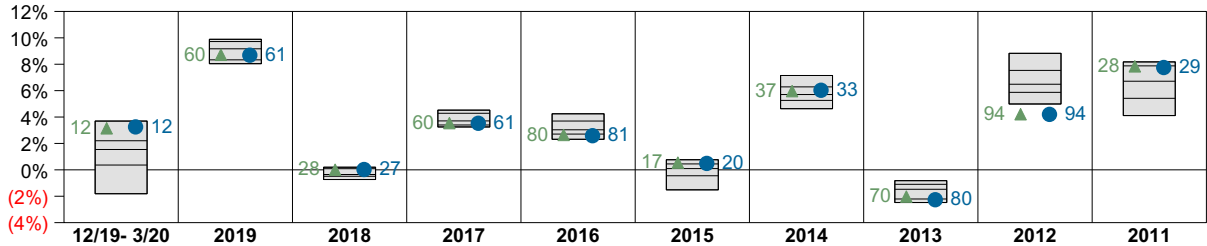


# SERS U.S. Bond Index Fund Return Analysis Summary

## 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.

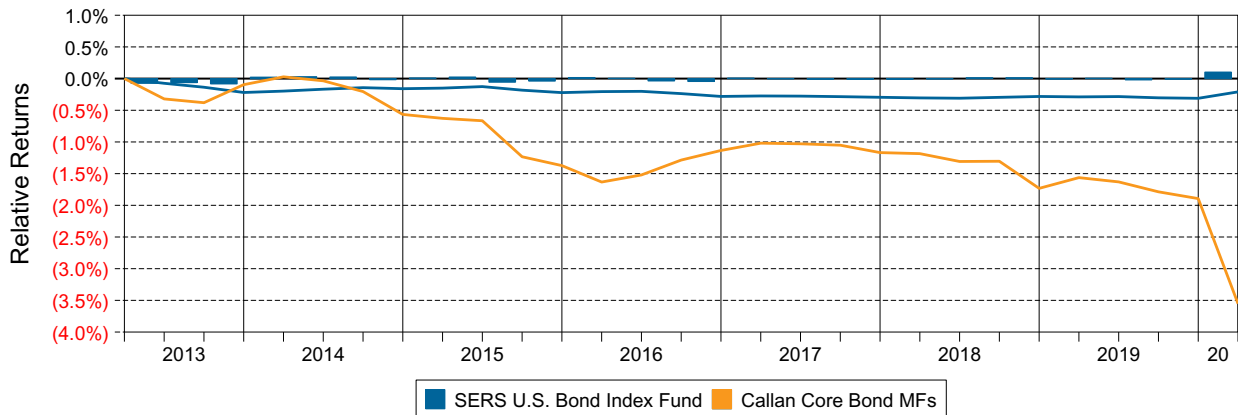
### Performance vs Callan Core Bond Mutual Funds (Institutional Net)



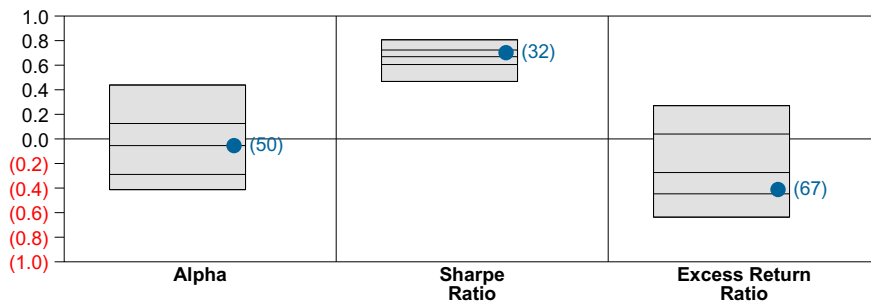
	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	3.69	9.89	0.20	4.52	4.25	0.77	7.15	(0.82)	8.83	8.18
25th Percentile	2.20	9.72	0.09	4.28	3.70	0.45	6.29	(1.10)	7.53	7.88
Median	1.54	9.17	(0.35)	3.71	3.03	0.10	5.71	(1.47)	6.49	6.71
75th Percentile	0.36	8.33	(0.49)	3.40	2.71	(0.45)	5.26	(2.21)	5.87	5.42
90th Percentile	(1.81)	8.04	(0.73)	3.25	2.31	(1.52)	4.63	(2.48)	4.99	4.11

	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
<b>SERS U.S. Bond Index Fund</b>	● 3.25	8.69	0.02	3.53	2.59	0.49	6.03	(2.26)	4.20	7.75
Blmbg Aggregate	▲ 3.15	8.72	0.01	3.54	2.65	0.55	5.97	(2.02)	4.21	7.84

### 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 March 31, 2020



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.44	0.81	0.27
25th Percentile	0.13	0.72	0.04
Median	(0.05)	0.67	(0.27)
75th Percentile	(0.29)	0.61	(0.45)
90th Percentile	(0.41)	0.47	(0.64)
<b>SERS U.S. Bond Index Fund</b>	● (0.05)	0.70	(0.41)

# SERS U.S. Bond Index Fund

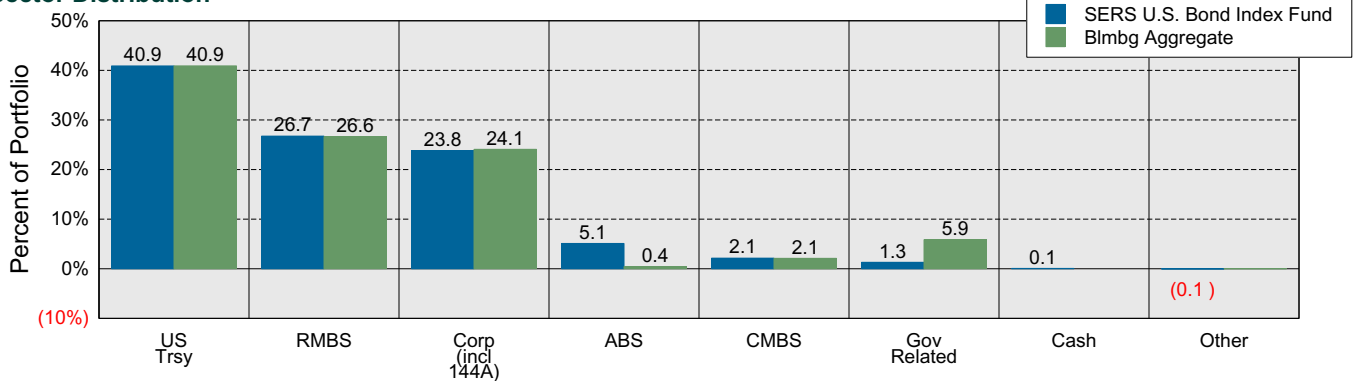
## Portfolio Characteristics Summary

### As of March 31, 2020

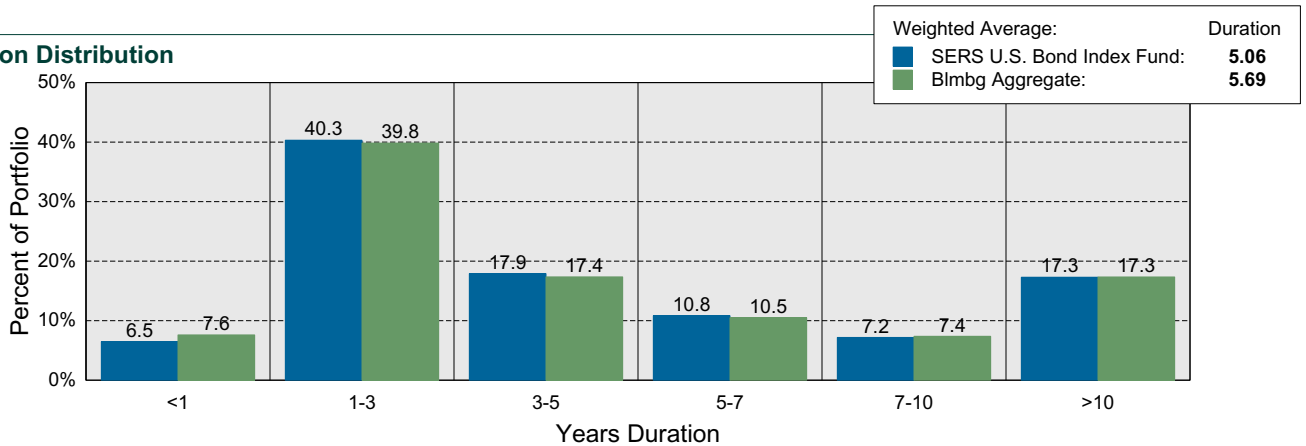
#### Portfolio Structure Comparison

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.

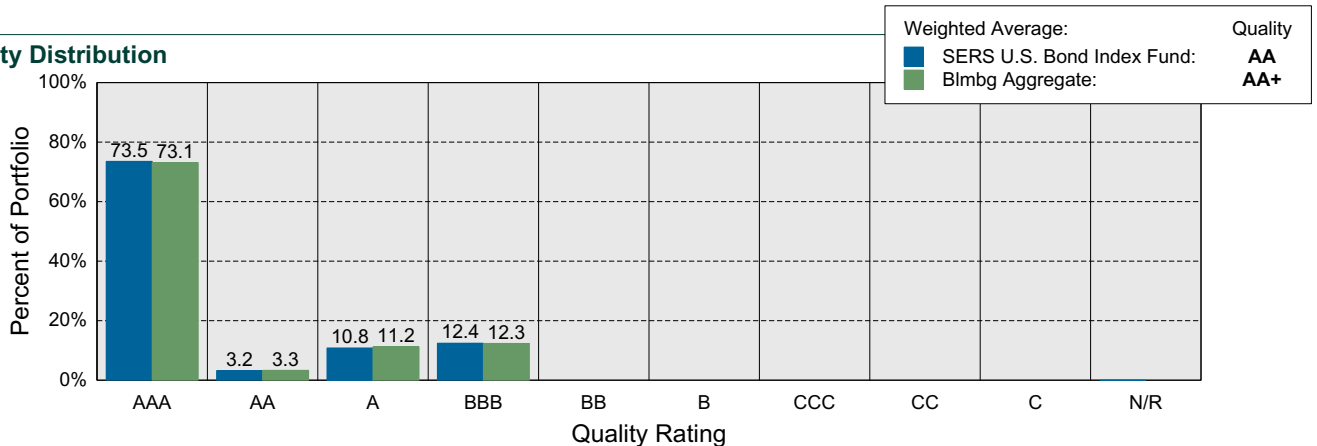
#### Sector Distribution



#### Duration Distribution



#### Quality Distribution



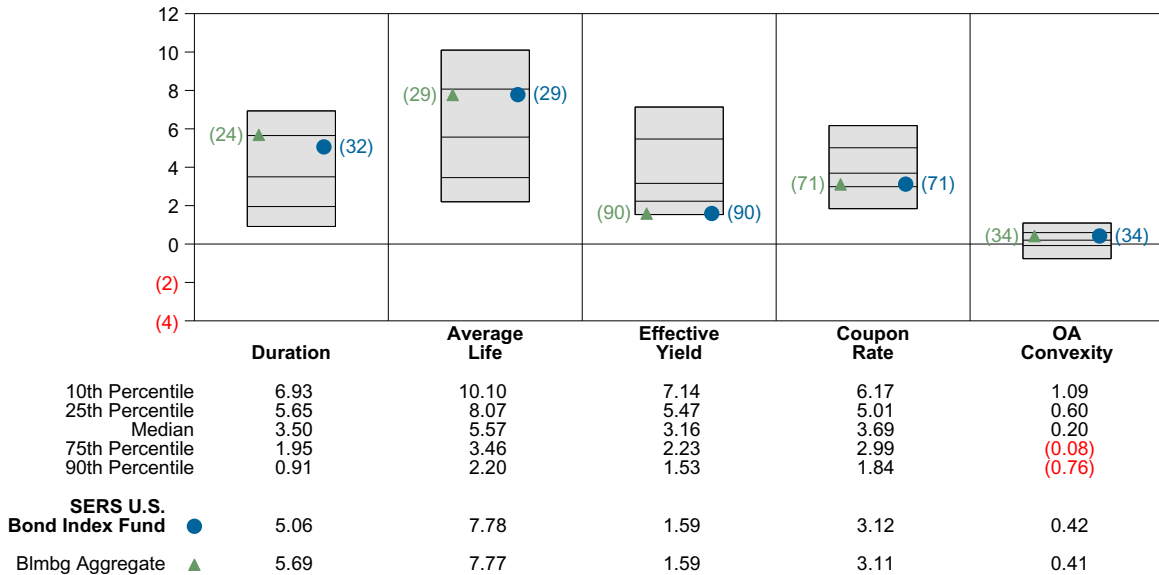
# SERS U.S. Bond Index Fund

## Bond Characteristics Analysis Summary

### Portfolio Characteristics

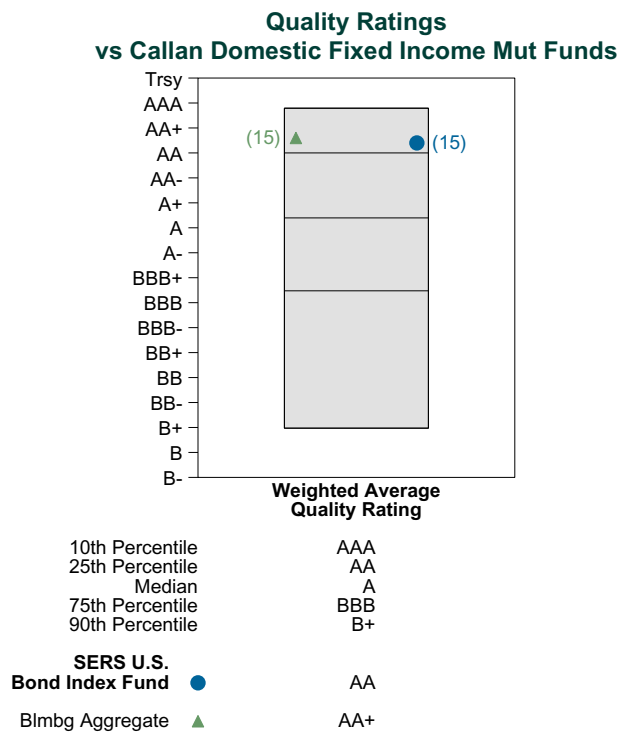
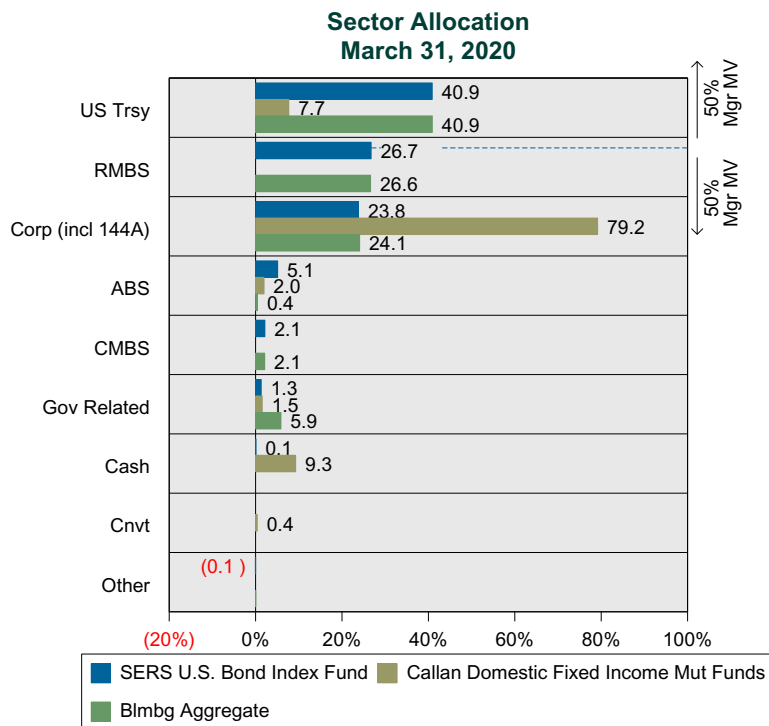
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

### Fixed Income Portfolio Characteristics Rankings Against Callan Domestic Fixed Income Mut Funds as of March 31, 2020



### 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.





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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 Barclays Aggregate Bond Index** 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.





## Research and Educational Programs

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/library](http://www.callan.com/library) to see all of our publications, and [www.callan.com/blog](http://www.callan.com/blog) to view our blog "Perspectives." For more information contact Barb Gerraty at 415-274-3093 / [institute@callan.com](mailto:institute@callan.com).

## New Research from Callan's Experts

### [2020 National Workshop Summary: Turbocharging DC Plans](#)

In this workshop, Connie Lee, Jana Steele, and James Veneruso described ways in which defined contribution plan sponsors can improve participant outcomes, including plan design strategies and investment implementation steps.

[2019 Nuclear Decommissioning Funding Study](#) | Callan's annual study offers insights into the status of nuclear decommissioning funding to make peer comparisons more accurate and relevant.

### [2020 National Workshop Summary: Diversifying Alternatives](#)

In this workshop, presenters Pete Keliuotis, Catherine Beard, and Ashley DeLuce discussed three lesser-known alternatives strategies: specialty lending, emerging market private equity, and insurance-linked strategies.

[2020 DC Trends Survey](#) | Callan's *2020 Defined Contribution Trends Survey* is designed to provide a benchmark for sponsors to evaluate their plans compared to peers, and to offer insights to help sponsors improve their plans and the outcomes for their participants.

### [How Sponsors Can Harness DC Plan Data for Better Outcomes](#)

Defined contribution (DC) plans are designed to help participants achieve the most beneficial outcomes. But participants' choices may not necessarily reflect asset allocation best practices. Sponsors can help participants by analyzing how investment options are used and make adjustments based on those observations.

[The Callan Periodic Table of Investment Returns](#) | We offer our Periodic Table Collection and the Callan Periodic Table of Investment Returns (Key Indices: 2000-2019).

[Callan's 2020-2029 Capital Market Assumptions](#) | Callan develops capital market assumptions to help clients with their long-term strategic planning. This year, we reduced our fixed income

assumptions to reflect lower starting yields following the Fed pivot in policy, but we held constant our real equity return over inflation.

[2020 National Workshop Summary: Fee Study](#) | In this 2020 workshop, presenters Butch Cliff, Mark Stahl, and Brady O'Connell discussed the major themes of our *2019 Investment Management Fee Study* and their impact on the institutional investor community.

[An Introduction to Our New Hedge Fund Peer Group](#) | The Callan Institutional Hedge Fund Peer Group is designed to help institutional investors better understand alpha-oriented solutions that can diversify their existing stock and bond exposures, and it represents the available pool of hedge fund talent that investors will want to consider, or at least compare with their existing hedge fund portfolios.

## Quarterly Periodicals

[Private Equity Trends, 4Q19](#) | A high-level summary of private equity activity in the quarter through all the investment stages

[Active vs. Passive Charts, 4Q19](#) | A comparison of active managers alongside relevant benchmarks over the long term

[Market Pulse Flipbook, 4Q19](#) | 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 Market Review, 4Q19](#) | 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, 4Q19](#) | Commentary on developments for hedge funds and multi-asset class (MAC) strategies

[Real Assets Reporter, 4Q19](#) | Data and insights on real estate and other real assets investment topics.

## Events

Miss out on a Callan conference or workshop? Event summaries and speakers' presentations are available on our website: [www.callan.com/library/](http://www.callan.com/library/)

Please mark your calendar and look forward to upcoming invitations:

### Upcoming Webinars

**May 21 – Hedge Fund Overview**

**July 8 – China Update**

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

## Education

Through the "Callan College," the Callan Institute offers educational sessions for industry professionals involved in the investment decision-making process. It was founded in 1994 to provide both clients and non-clients with basic- to intermediate-level instruction.

### Introduction to Investments for Institutional Investors

This program familiarizes institutional investor trustees and staff and asset management advisers with basic investment theory, terminology, and practices. It lasts one-and-a-half days and is designed for individuals with less than two years of experience with asset-management oversight and/or support responsibilities. 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 dates and registration can be found at: [www.callan.com/callan-college-intro-2/](http://www.callan.com/callan-college-intro-2/)

### Alternative Investments for Institutional Investors

Alternative investments like private equity, hedge funds, and real estate can play a key role in any portfolio. In this one-day session, Callan experts will provide instruction about the importance of allocations to alternatives, and how to integrate, evaluate, and monitor them.

Learn from some of Callan's senior consultants and experts, including Pete Keliuotis, the head of Alternatives Consulting. The session will cover private equity, private credit, hedge funds, real estate, and real assets; why invest in alternatives; risk/return characteristics and liquidity; designing and implementing an alternatives program; and trends and case studies.

Tuition is \$2,000 per person and includes instruction, all materials, and breakfast and lunch with the instructors.

Additional information including dates and registration can be found at: <https://www.callan.com/callan-college-alternatives-2/>



"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