

December 31, 2019

Pennsylvania SERS 401(a)



**Investment Measurement Service
Quarterly Review**

Information contained herein includes confidential, trade secret and proprietary information. Neither this Report nor any specific information contained herein is to be used other than by the intended recipient for its intended purpose or disseminated to any other person without Callan's permission. Certain information herein has been compiled by Callan and is based on information provided by a variety of sources believed to be reliable for which Callan has not necessarily verified the accuracy or completeness of or updated. This content may consist of statements of opinion, which are made as of the date they are expressed and are not statements of fact. This content is for informational purposes only and should not be construed as legal or tax advice on any matter. Any decision you make on the basis of this content is your sole responsibility. You should consult with legal and tax advisers before applying any of this information to your particular situation. Past performance is no guarantee of future results. For further information, please see Appendix for Important Information and Disclosures.

Table of Contents

December 31, 2019

Capital Markets Review	
Capital Markets Overview	2
Active Management Overview	3
Plan Assets and Performance	8
Retirement Date Funds	
Post Retirement Date Fund	32
2025 Retirement Date Fund	35
2030 Retirement Date Fund	38
2035 Retirement Date Fund	41
2040 Retirement Date Fund	44
2045 Retirement Date Fund	47
2050 Retirement Date Fund	50
2055 Retirement Date Fund	53
2060 Retirement Date Fund	56
U.S. Equity	
U.S. Large Company Stock Index Fund	59
U.S. All Company Stock Index Fund	64
U.S. Small/Mid Company Stock Index Fund	69
International Equity	
Global Non-U.S. Stock Index Fund	75
Domestic Fixed Income	
Short Term Investment Fund	82
U.S. Short Term Bond Index Fund	84
U.S. Treasury Inflation Protected Securities Index Fund	87
U.S. Bond Index Fund	90
Definitions	
Market Indicators	95
Database Groups	96
Risk/Reward Statistics	98
Callan Research/Education	100
Disclosures	103

U.S. EQUITY

The fourth quarter closed out a near-historic year for equity markets, in particular the S&P 500, which ended 2019 up 31.5%—enough to claim second place behind 2013 for the strongest year of the decade (during which large cap equities only saw one down year). Both Apple (+85%) and Microsoft (+54%) reached over \$1 trillion in market cap and accounted for 15% of the S&P 500's advance for the year. For the recent quarter, investors globally were spurred by three interest rate cuts by the Fed, a potential U.S.-China trade armistice, continued low inflation, and some clarity around Brexit.

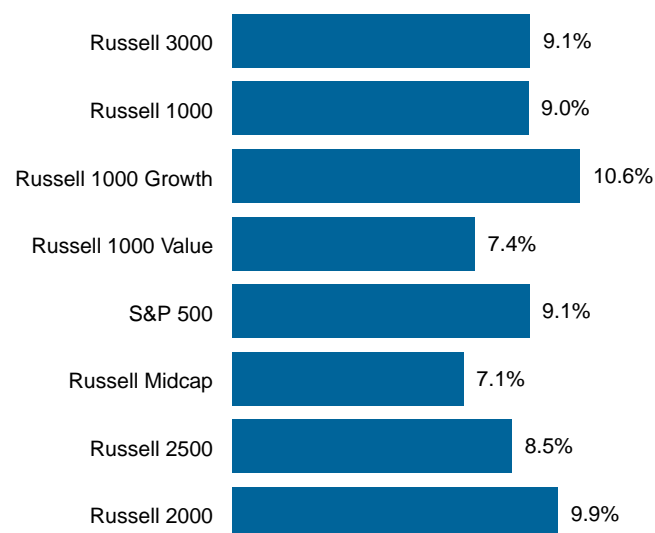
Large cap vs. small cap (Russell 2000: +9.9%; Russell 1000: +9.0%)

- Small cap trailed for most of 2019 but eclipsed large cap stocks in the fourth quarter due to notable contributions from the Health Care sector, where the biotech and pharmaceutical industries saw heightened new drug approvals and M&A activity during the quarter.
- Small growth outpaced small value for the quarter, the year, and the decade; the Russell 2000 Growth Index outpaced the Russell 2000 Value Index by 3% annualized over the past 10 years as the low interest rate environment favored growth stocks and challenged the Russell 2000 Value's heavy exposure to Financials.
- While small cap outpaced large cap in the fourth quarter, large cap stocks led for the third straight year, owing much to Tech (+50.3%) and Communication Services (+32.7%).

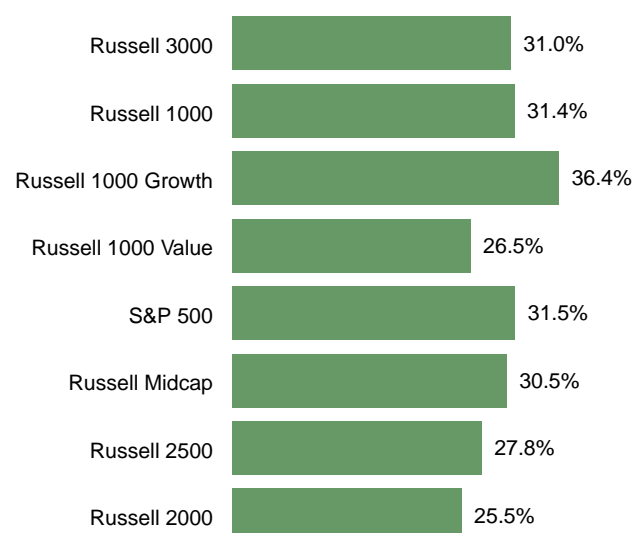
Growth vs. Value (Russell 1000 Growth: +10.6%; Russell 1000 Value: +7.4%)

- Growth continued its dominance over value during the quarter, closing out a decade-long trend.
- Tech giants Facebook, Apple, Microsoft, and Alphabet/Google remained meaningful contributors for the quarter although Health Care (+14.4%) was also among the top sector performers.
- The fourth quarter saw a rotation away from the more defensive sectors (e.g., Consumer Staples (+3.5%), Utilities (+0.8%), and Real Estate (-0.5%)) and into Cyclical, further supporting growth stocks.

U.S. Equity: Quarterly Returns

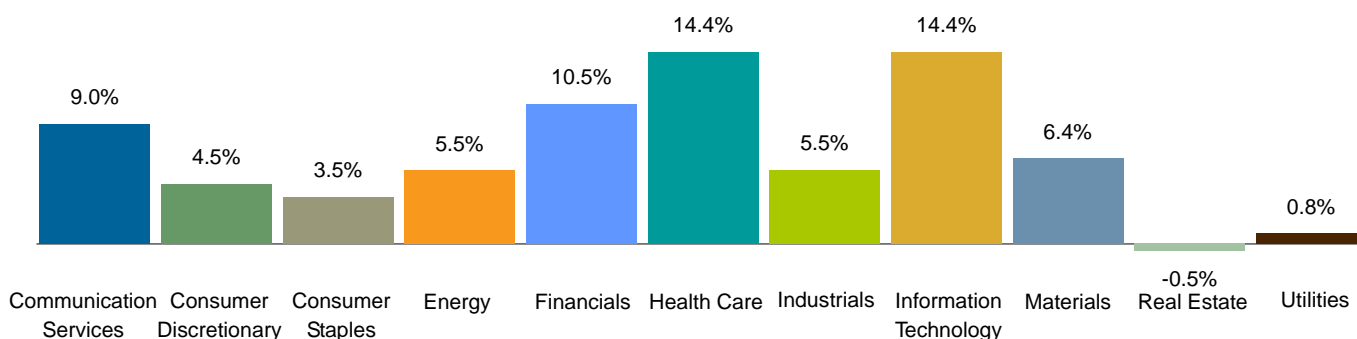


U.S. Equity: One-Year Returns



Sources: FTSE Russell, Standard & Poor's

S&P Sector Returns, Quarter Ended December 31, 2019



Source: Standard & Poor's

GLOBAL/GLOBAL EX-U.S. EQUITY

Global equity markets bounced back in the fourth quarter as uncertainties abated. De-escalation of the U.S.-China trade war coupled with some Brexit clarity boosted markets. With this backdrop, trade-related areas of the market led the rally.

Global/Developed ex-U.S. (MSCI EAFE: +8.2%; MSCI World ex USA: +7.9%; MSCI ACWI ex USA: +8.9%; MSCI Japan: +7.6%; MSCI Pacific ex Japan: +5.8%)

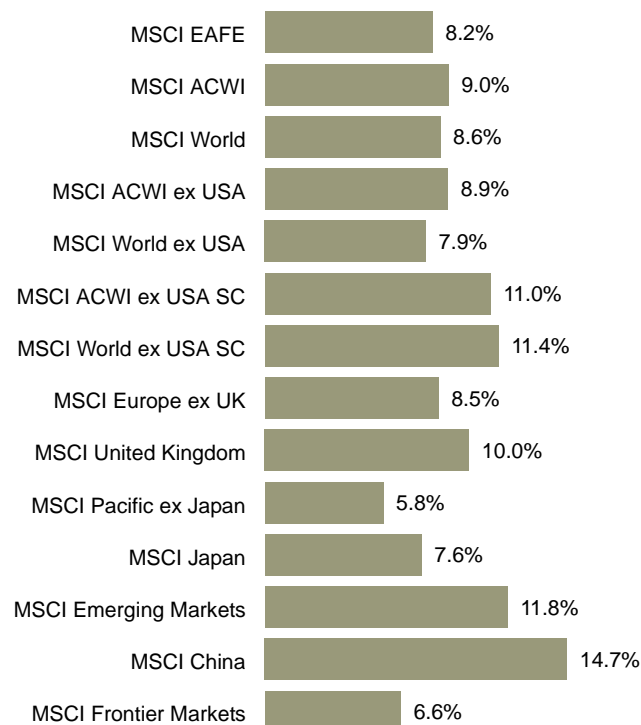
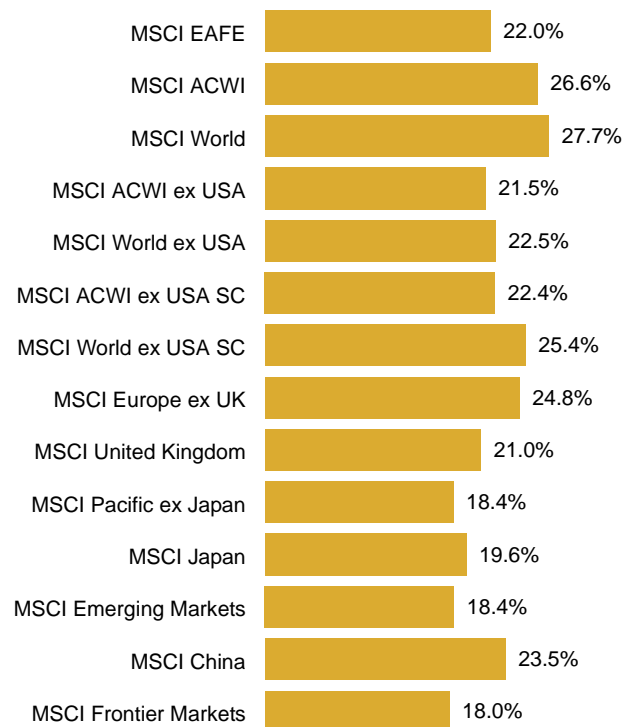
- Optimism catalyzed by easing tension between the U.S. and China and nearing conclusion of Brexit boosted the markets, and the U.S. dollar fell against most currencies within developed and emerging markets.
- British Prime Minister Boris Johnson gained command of the Parliament as a result of the Dec. 12 election, adding further clarity to Brexit and sparking the pound to its best quarterly results in a decade by rising 7.5% relative to the dollar.
- Accommodative policies such as a fiscal stimulus program and dovish monetary rhetoric continued to support the Japanese economy and its market.
- Despite GDP contraction of 3.2% and its first recession in a decade due to political protests, Hong Kong rose 7.3% as U.S.-China trade tensions improved.
- Every sector generated positive returns, led by Technology.

Emerging Markets (MSCI Emerging Markets Index: +11.8%)

- Emerging markets were the best-performing among the global ex-U.S. markets as trade war uncertainty receded.
- China soared 14.7% with easing trade tensions and expected fiscal and monetary stimulus packages in 2020.
- Brazil posted a 14.2% gain, its best quarter since late 2017, emboldened by President Jair Bolsonaro's deregulation policies, the country's 1.2% GDP growth, and pending pension reform.
- Russia was the best-performing country in 2019 (+50.9%) and a top five performer in the quarter (+16.8%) as rising oil prices over the past year helped fuel sentiment.
- Every sector generated positive returns, led by Asian technology companies, given the "phase one" trade deal, chip demands for 5G, and growth in China.

Global ex-U.S. Small Cap (MSCI World ex USA Small Cap: +11.4%; MSCI EM Small Cap: +9.5%; MSCI ACWI ex USA Small Cap: +11.0%)

- The "risk-on" market environment triggered by the U.S.-China trade war de-escalation enabled small caps to outperform large caps.
- Additional Brexit clarity drove the U.K. as the top country performer (+19.4%) within developed ex-U.S.
- Argentina (+33.5%) and Brazil (+24.8%) were two of the top EM country performers as key appointments in the Argentinian government, and deregulation and pension reform in Brazil, boosted market sentiment.

Global Equity: Quarterly Returns**Global Equity: One-Year Returns**

Source: MSCI

FIXED INCOME

The Federal Open Market Committee (FOMC) cut short-term interest rates by 25 basis points once in the fourth quarter to 1.50%-1.75%, citing weak business investment and export data, along with muted inflation. The overall economic backdrop remained strong supported by a solid labor market, which led to a pause in rate cuts at the most recent FOMC meeting. The FOMC indicated its current monetary policy stance is appropriate to sustain the economic expansion. The European Central Bank kept rates steady while continuing to purchase assets in the open market. Yield movement was mixed in the U.S. as short-term rates fell and long-term rates rose amid ongoing trade negotiations.

U.S. Fixed Income (Bloomberg Barclays US Aggregate Bond Index: +0.2%)

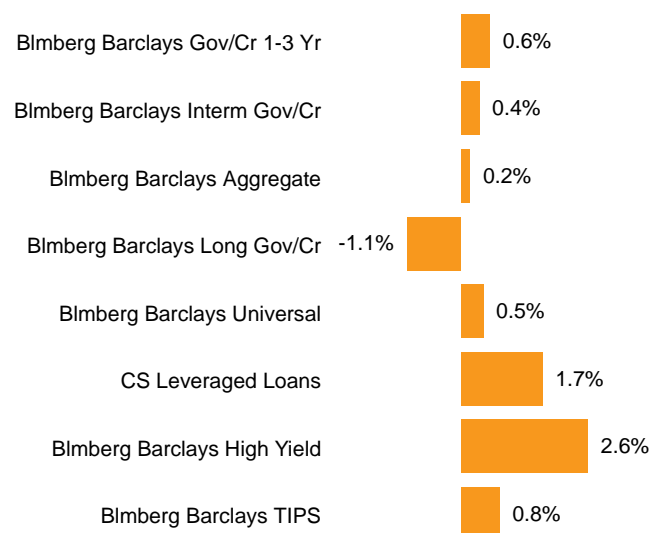
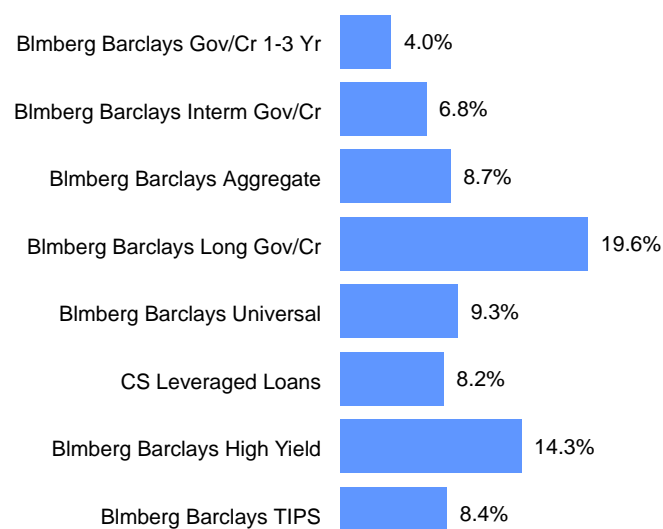
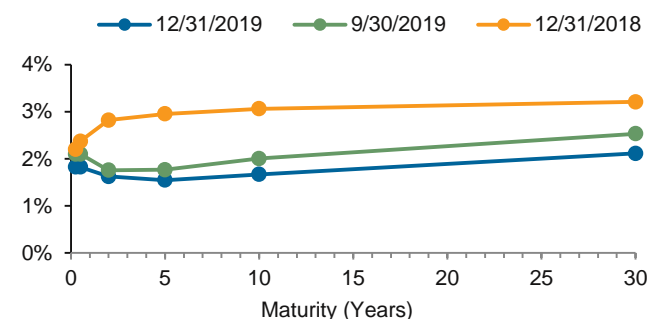
- Treasuries fell 0.8% as the Treasury yield curve steepened, with yields falling on the short end and rising modestly in the intermediate and long end of the curve on expectations of stronger economic growth.
- The spread between the 2-year and 10-year Treasury remained positive, ending the year at 34 bps.
- Long Treasuries fell 4.1% as the 30-year yield rose 27 bps to end the year at 2.39% as investors favored risk assets.
- TIPS outperformed nominal Treasuries as inflation expectations rose; the 10-year breakeven spread was 1.77% at quarter end, up from 1.53% as of Sept. 30.

Investment Grade Corporates (Bloomberg Barclays Corporate: +1.2%)

- Investment grade corporate credit spreads narrowed in the fourth quarter and posted the best results within the Bloomberg Barclays US Aggregate Bond Index amid a risk-on market environment; BBB-rated corporates (+1.7%) outperformed single A-rated or higher corporates (+0.7%), indicating investors' willingness to extend risk down the credit spectrum.
- Issuance in the corporate bond market was \$200 billion in the fourth quarter, which was \$8 billion lower than that from a year ago. Issuance was \$140 billion lower compared to the third quarter, as is typical toward year-end; demand remained strong amid the risk-on market tone as global investors continued their hunt for positive-yielding assets.

High Yield (Bloomberg Barclays Corporate High Yield: +2.6%)

- CCC-rated corporates (+3.7%) outperformed BB-rated corporates (+2.5%), as the risk-on market sentiment spurred demand for lower-rated securities.
- Spreads across credit quality buckets tightened in the fourth quarter, as the market anticipated improvements in credit fundamentals.

U.S. Fixed Income: Quarterly Returns**U.S. Fixed Income: One-Year Returns****U.S. Treasury Yield Curves**

Sources: Bloomberg, Bloomberg Barclays, Credit Suisse

Leveraged Loans (CS Leveraged Loans: +1.7%)

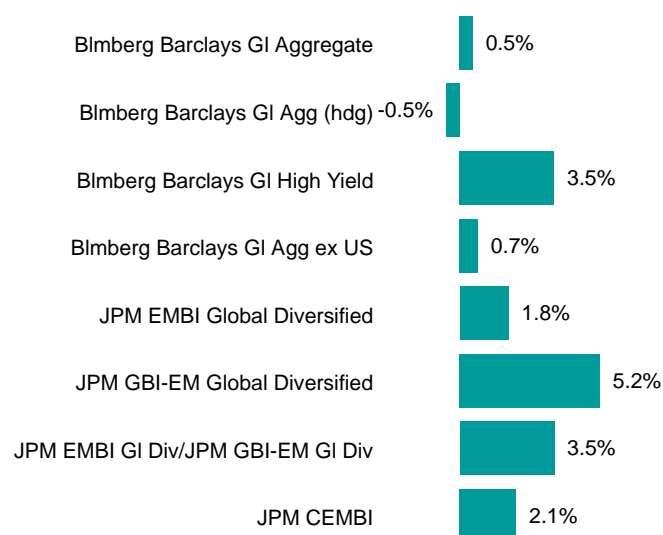
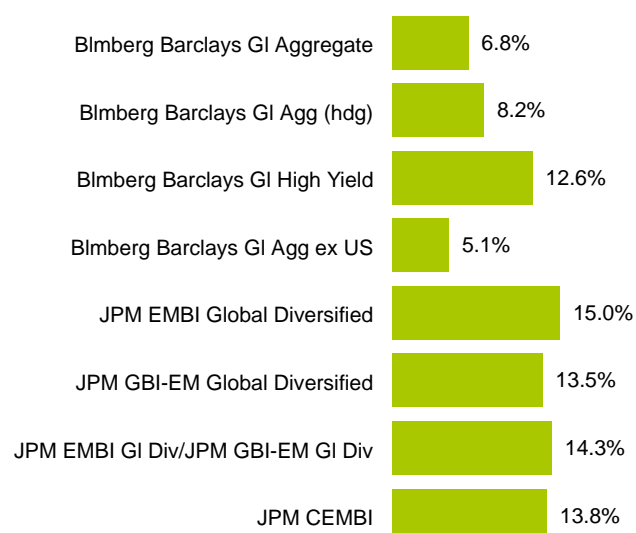
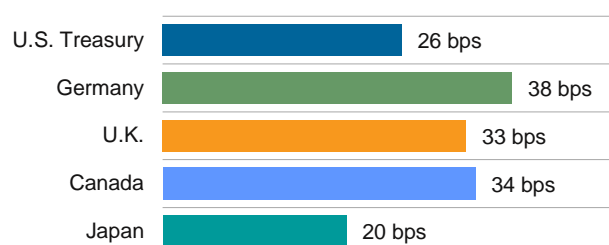
- Bank loans, which have floating-rate coupons, underperformed high yield as investors shunned loans in favor of high yield bonds.
- CLO issuance remained consistent, providing technical support for the leveraged loan market.

Global Fixed Income (Bloomberg Barclays Global Aggregate (unhedged): +0.5%; (hedged): -0.5%)

- Developed market sovereign bond yields rose modestly in the fourth quarter as global financial conditions improved, but ended lower on the year. The ECB kept the deposit rate steady at its December meeting; negative-yielding debt totaled less than \$12 trillion, down from \$17 trillion in the third quarter.
- The U.S. dollar declined in the fourth quarter versus the euro, Australian dollar, and British pound; however, it had a modest gain versus the Japanese yen.

US\$ EMD (JPM EMBI Global Diversified: +1.8%), **Local Currency EMD** (JPM GBI-EM Global Diversified: +5.2%)

- Broadly, emerging market debt benefited from dovish global central banks and a risk-on environment.
- Within the dollar-denominated benchmark, which posted mixed results, Lebanon (-29.4%) was an outlier as the debt-to-GDP ratio continued to swell and anti-government protests persisted; Argentina rallied (+20.8%) to end the year down 23.6% as a new president was inaugurated. Returns in the local debt benchmark were largely positive, with only Chile (-6.2%) and the Dominican Republic (-0.7%) declining. South Africa (+10.2%) and Russia (+10.0%) were top performers.

Global Fixed Income: Quarterly Returns**Global Fixed Income: One-Year Returns****Change in 10-Year Global Government Bond Yields****3Q19 to 4Q19**

Sources: Bloomberg, Bloomberg Barclays, JP Morgan

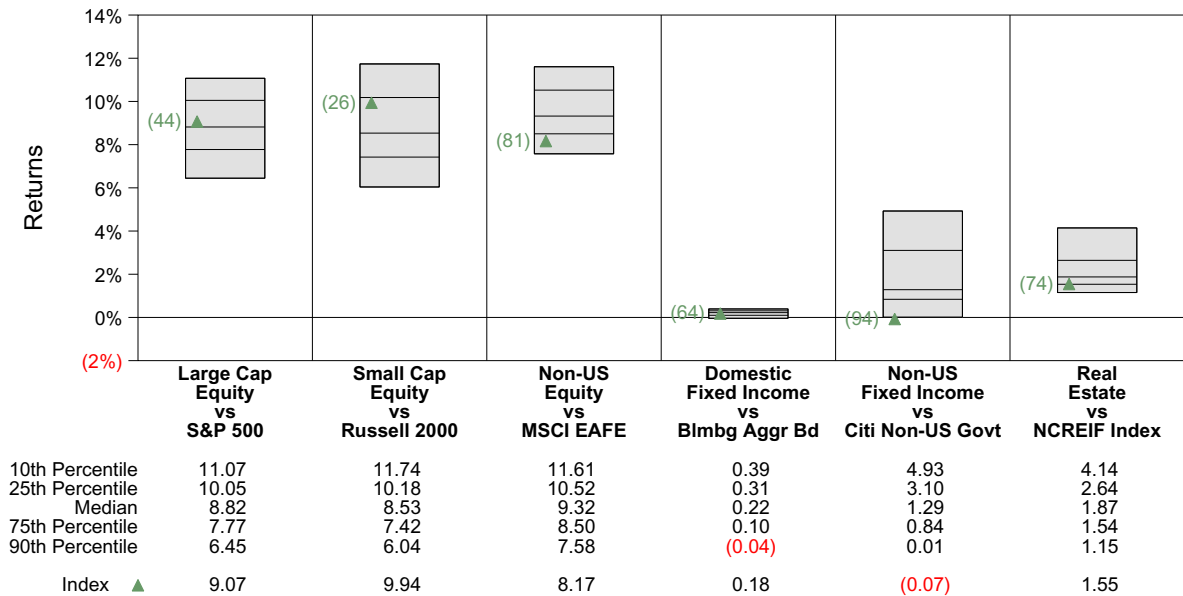
Market Overview

Active Management vs Index Returns

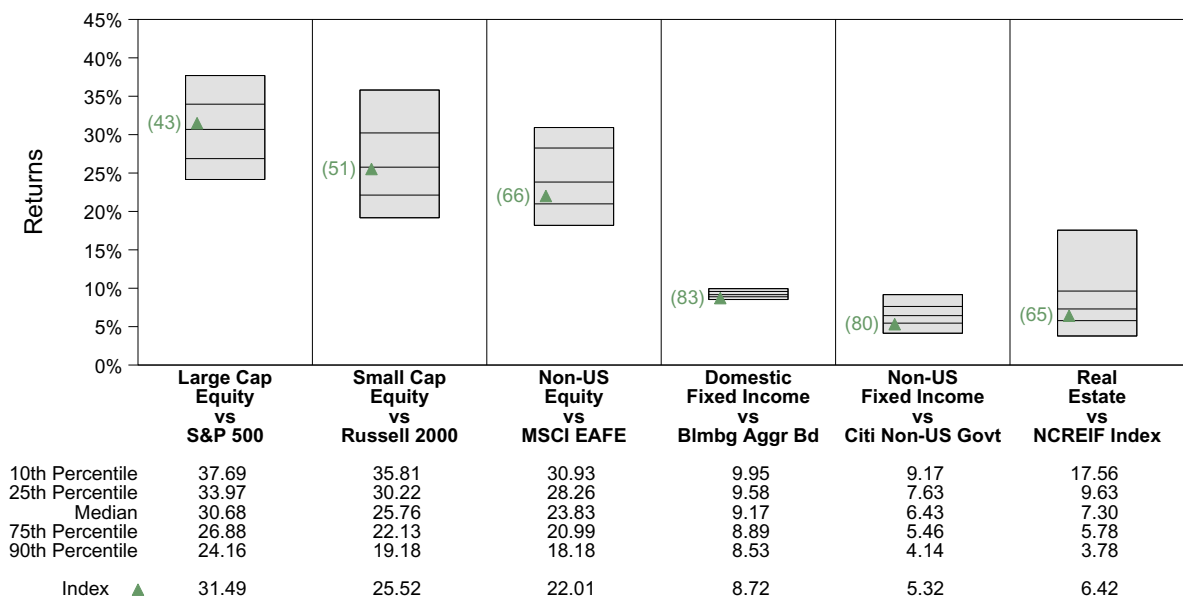
Market Overview

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 December 31, 2019



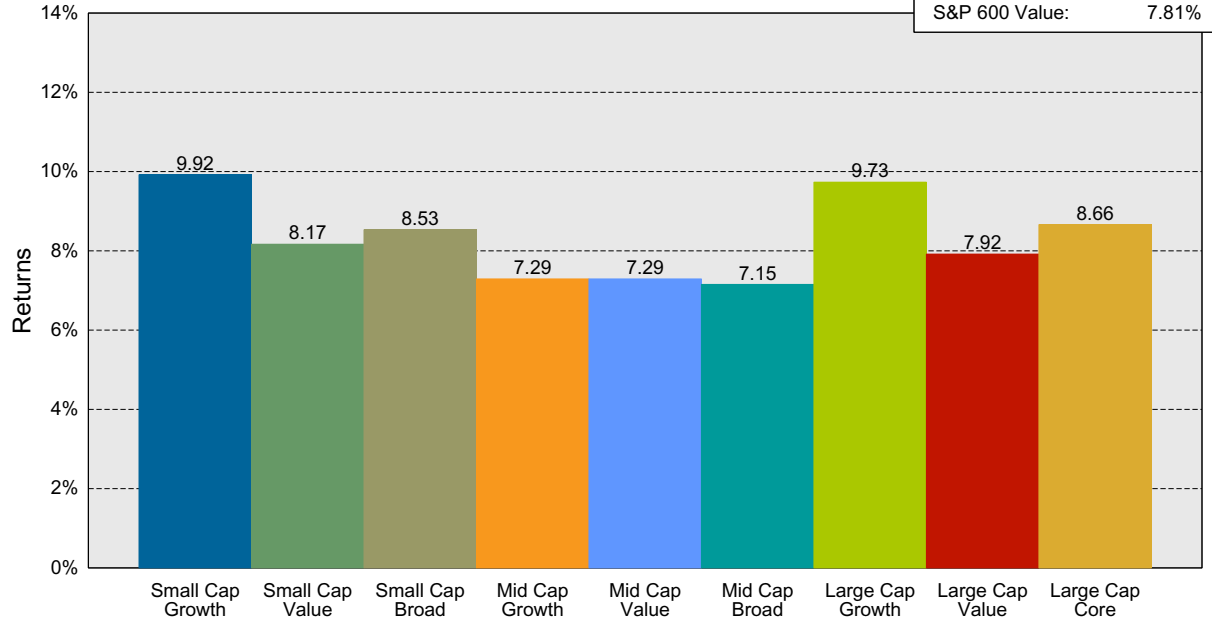
Range of Separate Account Manager Returns by Asset Class One Year Ended December 31, 2019



Domestic Equity Active Management Overview

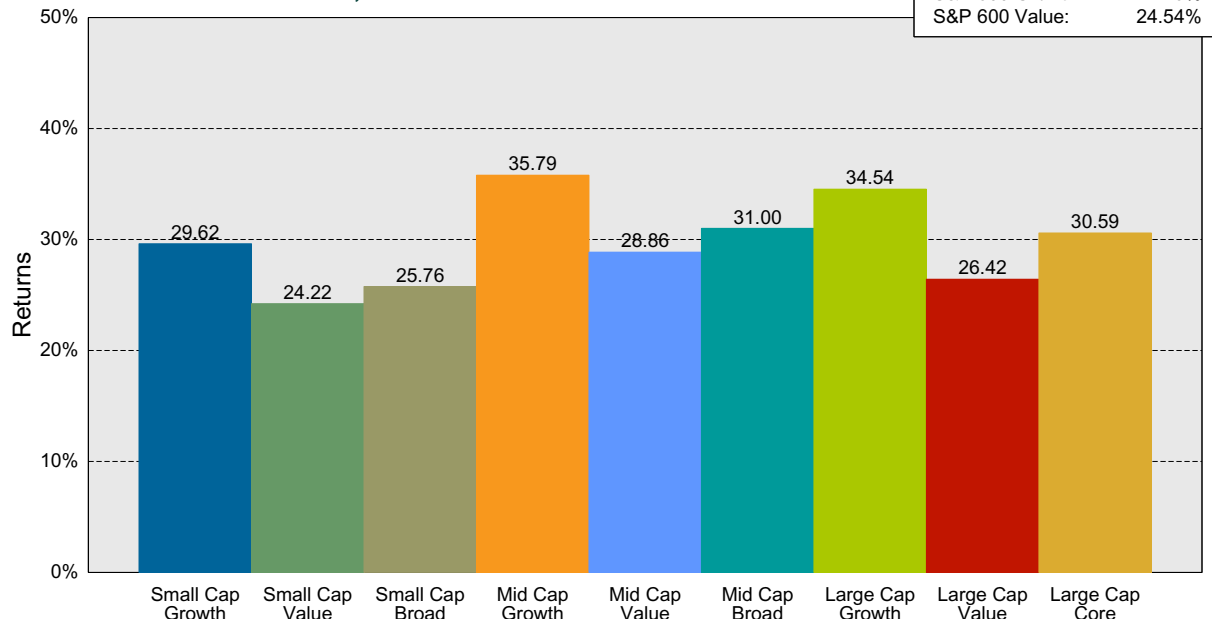
The S&P 500 Index rose 9.1% in the fourth quarter, bringing its year-to-date result to a whopping 31.5%, the best calendar year return since 2013 and capping a decade of strong performance. Small cap stocks outperformed in the fourth quarter, but trailed for the year (Russell 2000: +9.9%; +25.5% vs. Russell 1000: 9.0%; +31.4%). Growth stocks outperformed for both periods (Russell 1000 Growth: +10.6%; +36.3%; Russell 1000 Value: +7.4%; +26.5). From a sector perspective, Real Estate (-0.5%) was the only sector to post a negative return in the fourth quarter, though Utilities (+0.8%) was only modestly positive. Technology and Health Care (both +14.4%) were the twin "winners." For the year, all sectors posted double-digit returns; Energy (+11.8%) and Technology (+50.3%) were the bookends.

Separate Account Style Group Median Returns for Quarter Ended December 31, 2019



S&P 500:	9.07%
S&P 500 Growth:	8.32%
S&P 500 Value:	9.93%
S&P Mid Cap:	7.06%
S&P 600:	8.21%
S&P 600 Growth:	8.64%
S&P 600 Value:	7.81%

Separate Account Style Group Median Returns for One Year Ended December 31, 2019

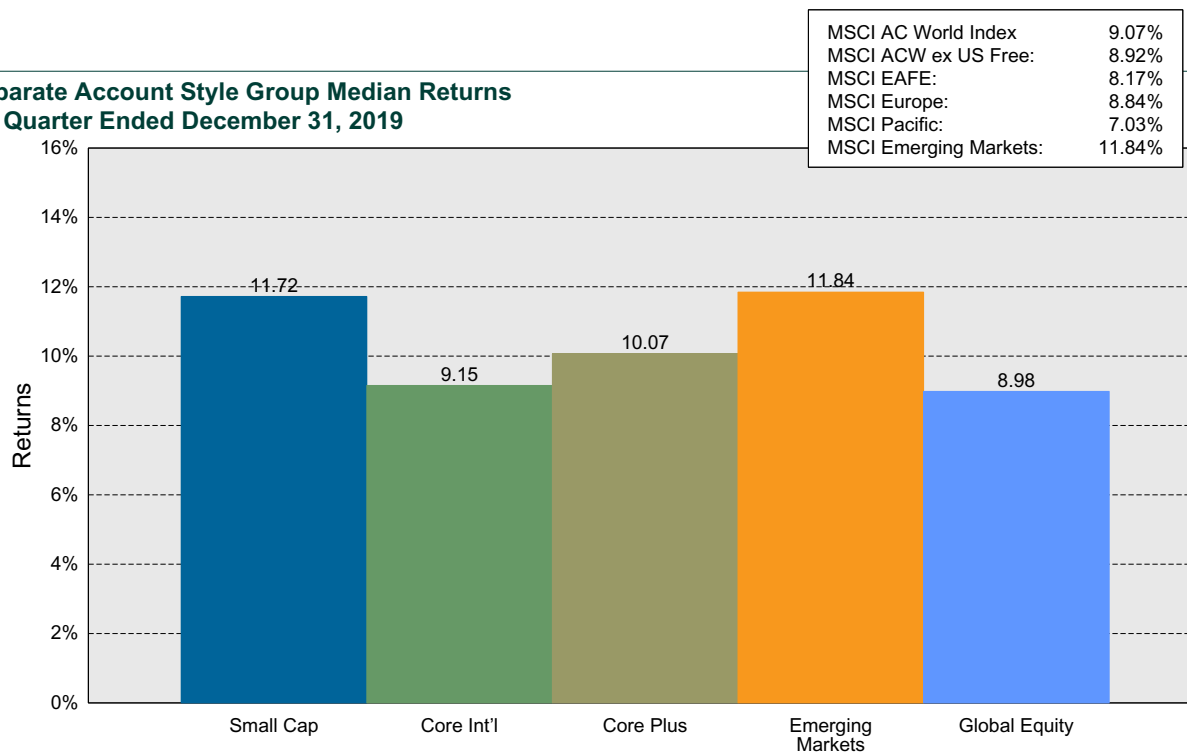


S&P 500:	31.49%
S&P 500 Growth:	31.13%
S&P 500 Value:	31.93%
S&P Mid Cap:	26.20%
S&P 600:	22.78%
S&P 600 Growth:	21.13%
S&P 600 Value:	24.54%

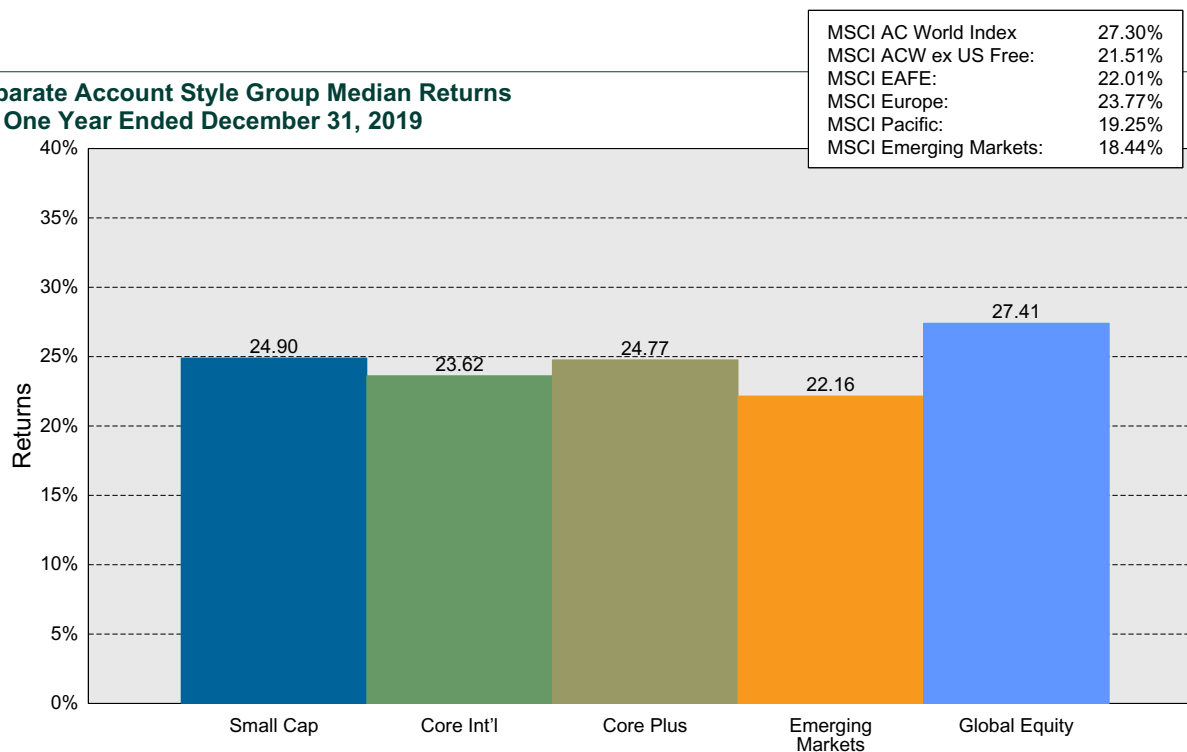
International Equity Active Management Overview

Non-U.S. developed markets trailed the U.S. but were still up sharply in the fourth quarter and 2019 (MSCI ACWI ex-USA: +8.9%; +21.5%). Virtually all countries posted positive returns for both periods, though results were varied. Emerging markets outperformed developed markets in the fourth quarter but trailed for the full year (MSCI EM Index: +11.8% +18.4%). Chile (-8.8%; -16.9%) was the only country to deliver a negative return for both periods due to a sharp decline in the Chilean peso amid civil unrest. Russia (+16.8%; +50.9%) was the top performer for the year as its central bank aggressively cut rates. Returns for the BRIC countries were mixed. Brazil (+14.2%; +26.3%) and China (+14.7%; +23.5%) also posted strong results while returns from India (+5.3%; +7.6%) were more modest.

**Separate Account Style Group Median Returns
for Quarter Ended December 31, 2019**



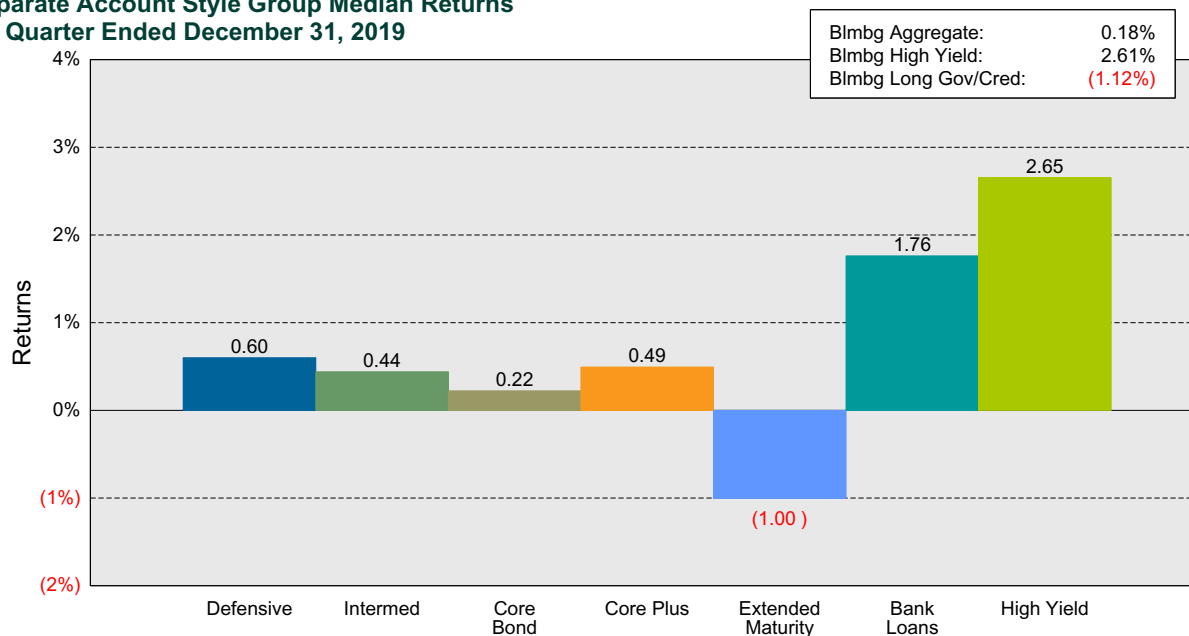
**Separate Account Style Group Median Returns
for One Year Ended December 31, 2019**



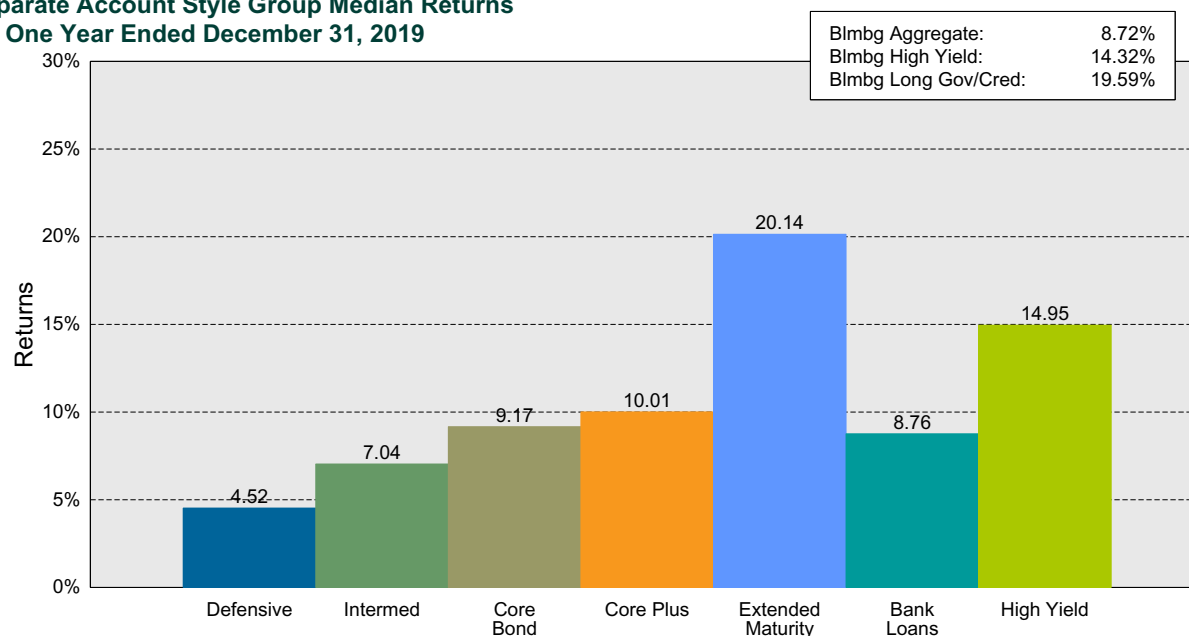
Domestic Fixed Income Active Management Overview

Fixed income markets posted strong returns in 2019 fueled both by falling interest rates and strong investor demand, especially for higher-yielding sectors. The 10-year U.S. Treasury closed the year at 1.92%, up from 1.68% at the end of the third quarter and down sharply from 2.69% at the close of 2018. The Bloomberg Barclays US Aggregate Bond Index rose 8.7%, the best calendar year return since 2002, with the lowest-quality tier of the Index up 16.4%. Fourth quarter gains were more muted at 0.2% as Treasury yields rose modestly. Corporate bonds were the best-performing sector in the fourth quarter and 2019 (Bloomberg Barclays Corporate Index: +1.2%; +14.5%). High yield corporates also posted sharp gains; the Bloomberg Barclays Corporate High Yield Index rose 2.6% in the fourth quarter and 14.3% in 2019. Leveraged loans suffered outflows throughout the year, but still posted a solid return (CS Leveraged Loan: +1.7%; +9.0%). The Bloomberg Barclays US TIPS Index sharply outperformed the Treasury Index in the fourth quarter as inflation expectations rose.

Separate Account Style Group Median Returns for Quarter Ended December 31, 2019



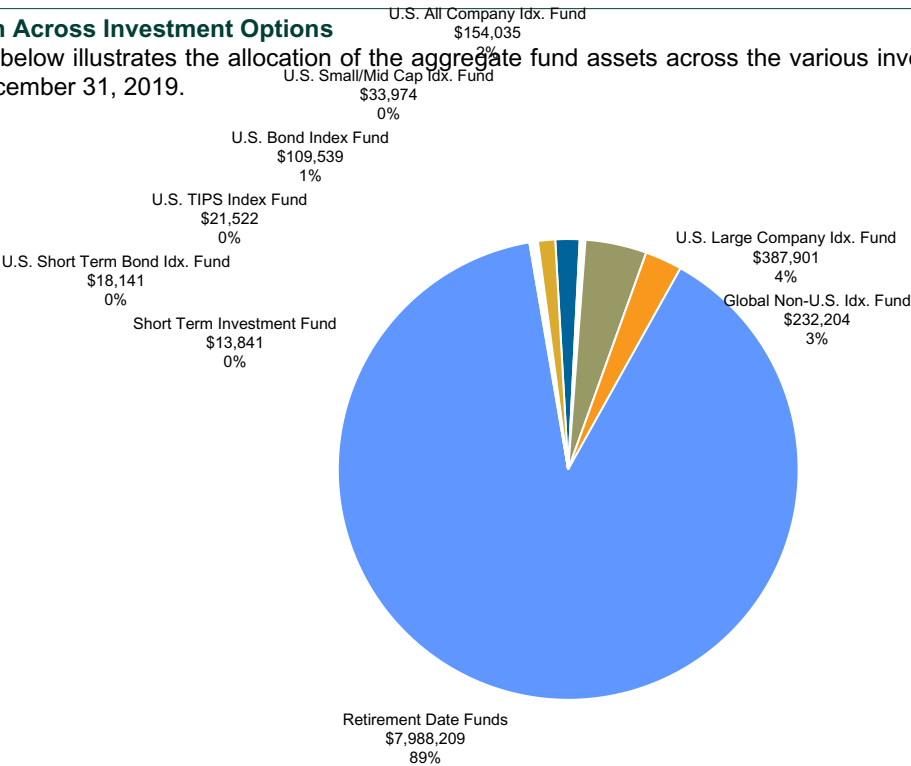
Separate Account Style Group Median Returns for One Year Ended December 31, 2019



Changes in Investment Fund Balances Period Ended December 31, 2019

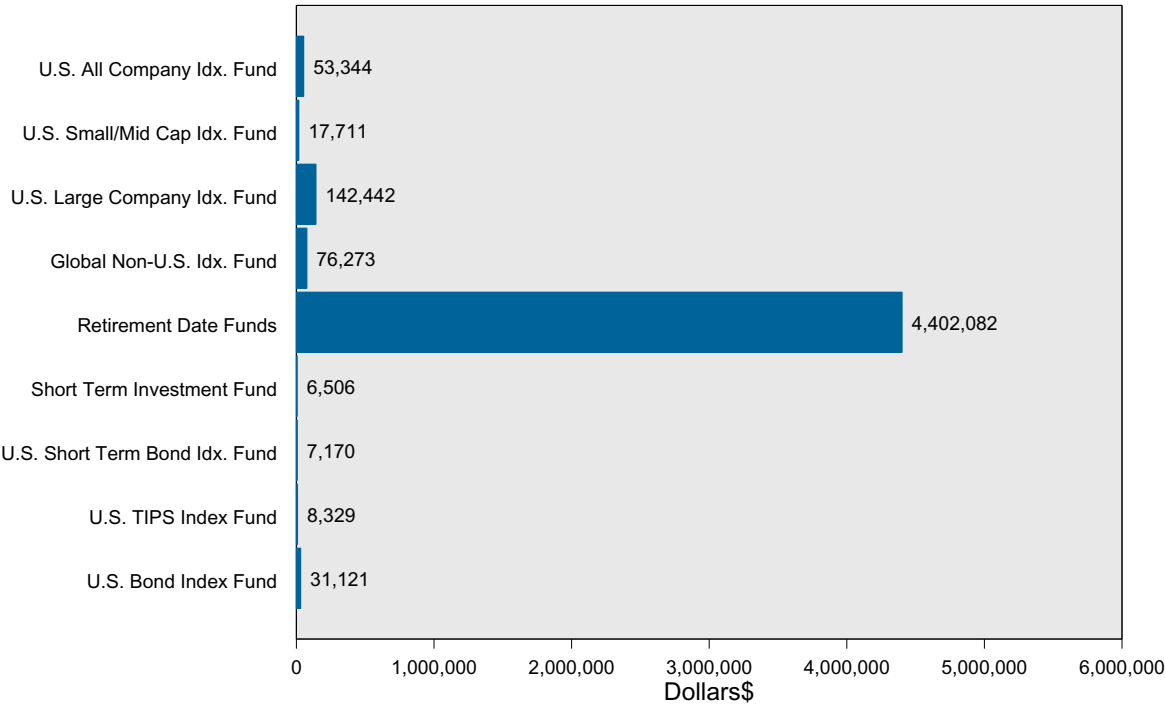
Allocation Across Investment Options

The chart below illustrates the allocation of the aggregate fund assets across the various investment options for the quarter ended December 31, 2019.



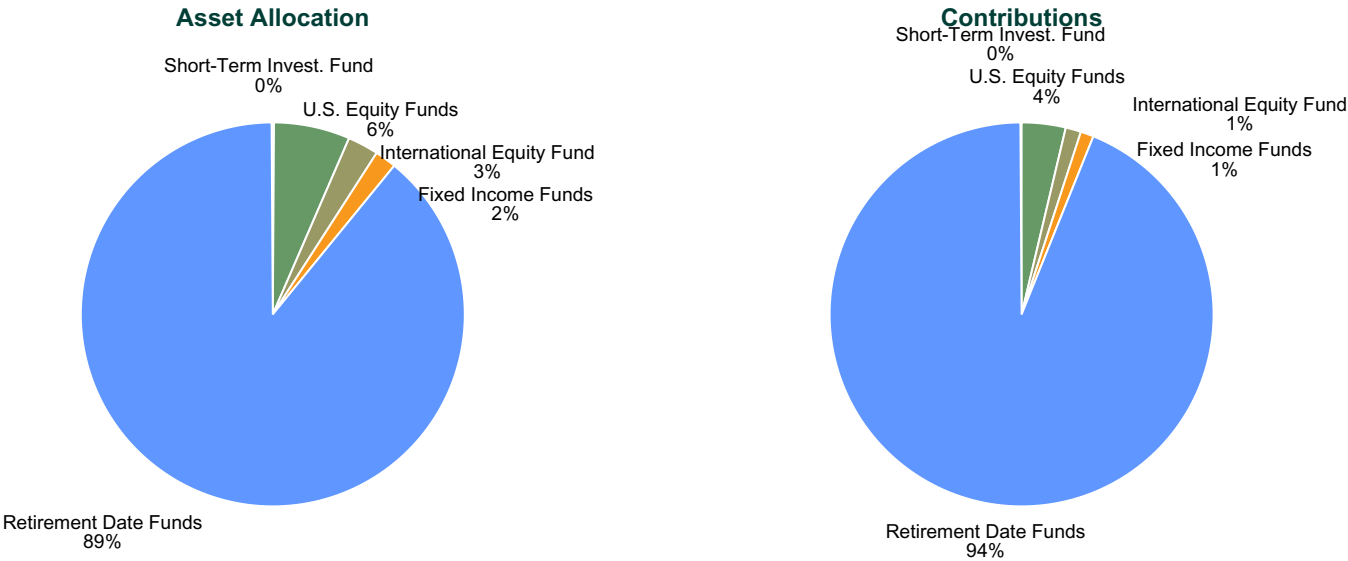
Changes in Fund Values

The chart below shows the net change in fund values across the various investment options for the quarter ended December 31, 2019. The change in value for each fund is the result of a combination of 3 factors: 1) market movements; 2) contributions or disbursements into or out of the funds by the participants (and any matching done by the company); and 3) transfers between funds by the participants.

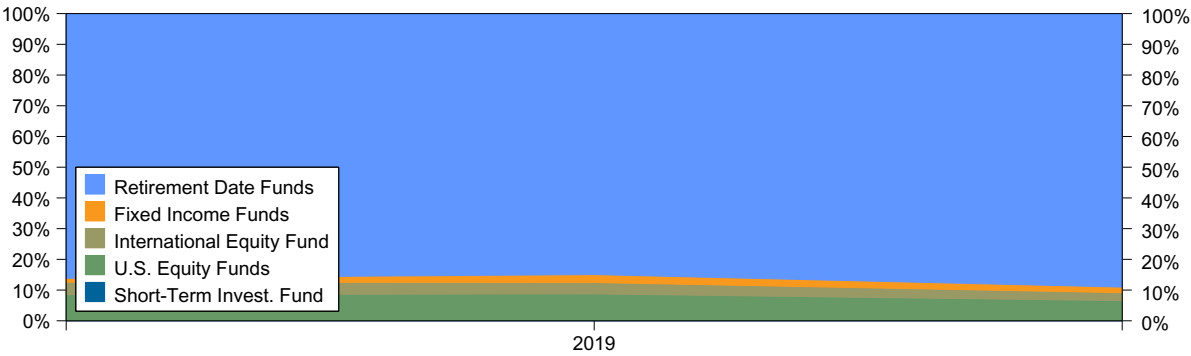


Asset Allocation

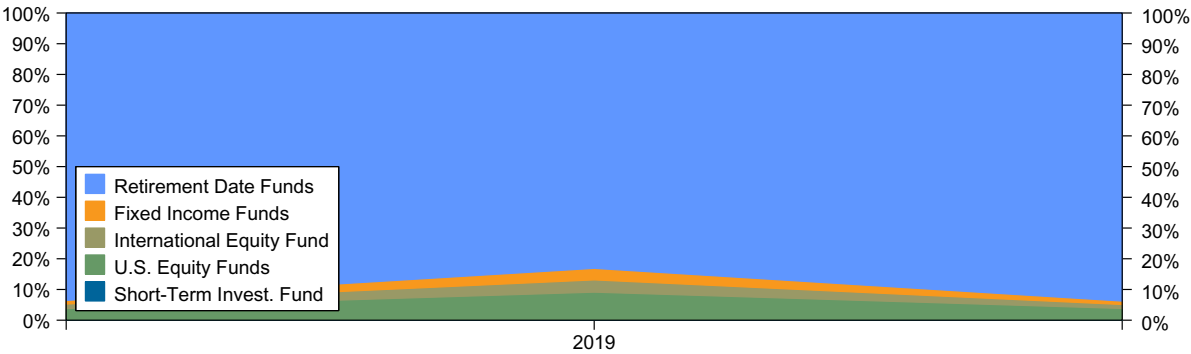
The charts below illustrate the historical asset allocation of the fund as well as the historical allocations of contributions to the fund. The pie charts on the top show the most recent allocations of both assets and contributions which include exchanges and transfers within the plan. The middle chart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



Historical Asset Allocation



Historical Allocation of Contributions



Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of December 31, 2019, with the distribution as of September 30, 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

	December 31, 2019			September 30, 2019		
	Market Value	% of Total	Net New Inv.	Inv. Return	Market Value	% of Total
SERS Retirement Date Funds	\$7,988,209	89.16%	\$3,951,921	\$450,161	\$3,586,127	85.09%
SERS Post Retirement Fund	148,993	1.66%	113,633	3,677	31,683	0.75%
SERS 2020 Retirement Fund	0	0.00%	(44,501)	386	44,115	1.05%
SERS 2025 Retirement Fund	377,981	4.22%	147,651	14,109	216,221	5.13%
SERS 2030 Retirement Fund	995,922	11.12%	660,639	43,691	291,592	6.92%
SERS 2035 Retirement Fund	664,646	7.42%	308,235	33,731	322,680	7.66%
SERS 2040 Retirement Fund	787,809	8.79%	359,664	44,919	383,227	9.09%
SERS 2045 Retirement Fund	1,280,645	14.29%	680,982	77,506	522,157	12.39%
SERS 2050 Retirement Fund	1,055,827	11.78%	499,444	65,129	491,254	11.66%
SERS 2055 Retirement Fund	1,010,538	11.28%	451,715	64,509	494,314	11.73%
SERS 2060 Retirement Fund	1,089,607	12.16%	224,471	76,253	788,882	18.72%
SERS 2065 Retirement Fund	576,240	6.43%	549,988	26,252	-	-
SERS U.S. Equity	\$575,910	6.43%	\$172,394	\$41,103	\$362,412	8.60%
SERS U.S. Large Company Idx Fund	387,901	4.33%	114,689	27,753	245,459	5.82%
SERS U.S. All Company Idx Fund	154,035	1.72%	42,133	11,211	100,691	2.39%
SERS U.S. SMID Company Idx Fund	33,974	0.38%	15,573	2,139	16,262	0.39%
International Equity						
SERS Global Non-U.S. Index Fund	232,204	2.59%	60,126	16,147	155,931	3.70%
SERS Fixed Income	\$163,043	1.82%	\$52,751	\$374	\$109,918	2.61%
SERS Short Term Investment Fund	13,841	0.15%	6,458	48	7,334	0.17%
SERS U.S. Short Term Bond Idx Fund	18,141	0.20%	7,093	77	10,972	0.26%
SERS U.S. TIPS Index Fund	21,522	0.24%	8,204	124	13,193	0.31%
SERS U.S. Bond Index Fund	109,539	1.22%	30,996	125	78,419	1.86%
Total Fund	\$8,959,366	100.0%	\$4,237,192	\$507,785	\$4,214,389	100.0%

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2019. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
Net Performance					
Target Date Funds					
SERS Post Retirement Fund	3.58%	15.63%	7.13%	5.22%	5.44%
BlackRock Post Retirement Index	3.57%	15.63%	7.11%	5.20%	5.43%
Callan Tgt Date 2000-2010	3.35%	14.39%	6.83%	5.14%	5.73%
SERS 2025 Retirement Fund	4.82%	18.59%	8.71%	6.32%	7.08%
BlackRock 2025 Index	4.84%	18.56%	8.65%	6.24%	7.04%
Callan Target Date 2025	4.79%	18.51%	8.71%	6.32%	7.64%
SERS 2030 Retirement Fund	5.89%	20.77%	9.67%	6.96%	7.80%
BlackRock 2030 Index	5.88%	20.70%	9.57%	6.84%	7.74%
Callan Target Date 2030	5.71%	20.42%	9.60%	6.97%	8.36%
SERS 2035 Retirement Fund	6.88%	22.84%	10.56%	7.55%	8.48%
BlackRock 2035 Index	6.86%	22.72%	10.44%	7.40%	8.39%
Callan Target Date 2035	6.50%	22.17%	10.31%	7.46%	8.96%
SERS 2040 Retirement Fund	7.78%	24.71%	11.35%	8.05%	9.06%
BlackRock 2040 Index	7.77%	24.62%	11.21%	7.88%	8.97%
Callan Target Date 2040	7.07%	23.58%	10.84%	7.76%	9.41%
SERS 2045 Retirement Fund	8.39%	26.03%	11.83%	8.36%	9.49%
BlackRock 2045 Index	8.38%	25.90%	11.65%	8.16%	9.39%
Callan Target Date 2045	7.57%	24.60%	11.21%	8.08%	9.62%
SERS 2050 Retirement Fund	8.66%	26.60%	12.01%	8.47%	9.76%
BlackRock 2050 Index	8.66%	26.48%	11.84%	8.27%	9.65%
Callan Target Date 2050	7.68%	24.87%	11.23%	8.02%	9.80%
SERS 2055 Retirement Fund	8.68%	26.66%	12.02%	8.47%	9.91%
BlackRock 2055 Index	8.70%	26.58%	11.86%	8.28%	9.81%
Callan Target Date 2055	7.83%	24.97%	11.38%	8.19%	9.90%
SERS 2060 Retirement Fund	8.68%	26.65%	11.99%	8.47%	-
BlackRock 2060 Index	8.70%	26.58%	11.86%	8.30%	-
Callan Target Date 2060	7.83%	25.04%	11.47%	8.41%	10.35%

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2019. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended December 31, 2019			
	Last 10 Years	Last 15 Years	Last 20 Years
Net Performance			
Target Date Funds			
SERS Post Retirement Fund	6.14%	-	-
BlackRock Post Retirement Index	6.13%	5.44%	5.60%
Callan Tgt Date 2000-2010	6.23%	4.79%	-
SERS 2025 Retirement Fund	7.50%	-	-
BlackRock 2025 Index	7.46%	5.94%	4.78%
Callan Target Date 2025	8.01%	6.05%	-
SERS 2030 Retirement Fund	8.07%	-	-
BlackRock 2030 Index	8.00%	6.21%	4.79%
Callan Target Date 2030	8.59%	6.21%	4.40%
SERS 2035 Retirement Fund	8.58%	-	-
BlackRock 2035 Index	8.50%	6.44%	4.78%
Callan Target Date 2035	9.03%	6.51%	-
SERS 2040 Retirement Fund	9.03%	-	-
BlackRock 2040 Index	8.93%	6.62%	4.73%
Callan Target Date 2040	9.30%	6.73%	3.95%
SERS 2045 Retirement Fund	9.36%	-	-
BlackRock 2045 Index	9.25%	6.75%	4.72%
Callan Target Date 2045	9.36%	7.13%	-
SERS 2050 Retirement Fund	9.59%	-	-
BlackRock 2050 Index	9.46%	7.01%	5.37%
Callan Target Date 2050	9.38%	7.57%	-

(1) Funds not listed do not have longer term history.

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2019. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
Net Performance					
Domestic Equity					
SERS U.S. Large Company Index Fund	9.07%	31.49%	15.27%	11.70%	14.73%
S&P 500 Index	9.07%	31.49%	15.27%	11.70%	14.73%
Callan Lg Cap Broad MF	8.76%	30.14%	14.69%	10.58%	13.86%
SERS U.S. All Company Index Fund	9.10%	30.51%	14.37%	11.11%	14.29%
Russell 3000 Index	9.10%	31.02%	14.57%	11.24%	14.38%
Callan Multi Cap Brd MF	8.24%	29.12%	12.95%	9.39%	12.85%
SERS U.S. SMID Company Idx Fund	8.84%	28.18%	11.15%	9.03%	12.62%
Dow Jones US Completion	8.82%	27.91%	10.96%	8.84%	12.42%
Callan SMID Broad MFs	7.68%	29.40%	12.48%	9.18%	12.02%
International Equity					
SERS Global Non-U.S. Index Fund	8.73%	21.72%	10.16%	5.78%	5.51%
MSCI ACWI ex US	8.92%	21.51%	9.87%	5.51%	5.44%
Callan Non US Equity MFs	9.02%	22.83%	9.96%	5.60%	6.20%
Domestic Fixed Income					
SERS Short Term Investment Fund	0.48%	2.31%	1.82%	1.25%	0.94%
3-month Treasury Bill	0.46%	2.28%	1.67%	1.07%	0.78%
Callan Cash Database(1)	0.53%	2.62%	1.99%	1.41%	1.09%
SERS U.S. Short Term Bond Idx Fund	0.58%	3.99%	-	-	-
Blmbg Gov/Cred 1-3 Yr	0.59%	4.03%	2.15%	1.67%	1.40%
Callan Short US Govt MFs	0.29%	3.52%	1.74%	1.26%	0.99%
SERS U.S. TIPS Index Fund	0.78%	8.36%	-	-	-
Blmbg US TIPS	0.79%	8.43%	3.32%	2.62%	1.08%
Callan TIPS MFs	0.91%	8.26%	3.13%	2.32%	0.91%
SERS U.S. Bond Index Fund	0.17%	8.66%	4.00%	2.99%	2.64%
Blmbg Aggregate	0.18%	8.72%	4.03%	3.05%	2.72%
Callan Core Bond MFs	0.15%	9.17%	4.17%	3.12%	2.71%

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

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2019. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended December 31, 2019			
	Last 10 Years	Last 15 Years	Last 20 Years
Net Performance			
Domestic Equity			
SERS U.S. Large Company Index Fund	13.57%	9.03%	6.10%
S&P 500 Index	13.56%	9.00%	6.06%
Callan Lg Cap Broad MF	12.67%	8.85%	5.96%
Russell 3000 Index	13.42%	9.03%	6.39%
Callan Multi Cap Brd MF	12.00%	8.23%	6.74%
SERS U.S. SMID Company Idx Fund	12.92%	9.33%	7.49%
Dow Jones US Completion	12.72%	9.13%	7.12%
Callan SMID Broad MFs	12.28%	8.91%	8.28%
International Equity			
SERS Global Non-U.S. Index Fund	5.11%	-	-
MSCI ACWI ex US	4.97%	5.25%	-
Callan Non US Equity MFs	5.93%	5.31%	3.78%
Domestic Fixed Income			
SERS Short Term Investment Fund	0.73%	1.56%	-
3-month Treasury Bill	0.58%	1.39%	1.78%
Callan Cash Database(1)	0.91%	1.81%	2.14%
Blmbg Gov/Cred 1-3 Yr	1.54%	2.46%	3.19%
Callan Short US Govt MFs	1.36%	2.31%	3.10%
Blmbg US TIPS	3.36%	3.78%	5.51%
Callan TIPS MFs	3.01%	3.51%	4.76%
SERS U.S. Bond Index Fund	3.68%	4.09%	4.98%
Blmbg Aggregate	3.75%	4.15%	5.03%
Callan Core Bond MFs	4.04%	4.38%	5.08%

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

(2) Funds not listed do not have longer term history.

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.

	2019	2018	2017	2016	2015
Net Performance					
Target Date Funds					
SERS Post Retirement Fund	15.63%	(3.49%)	10.17%	6.09%	(1.14%)
BlackRock Post Retirement Index	15.63%	(3.48%)	10.10%	6.01%	(1.07%)
Callan Tgt Date 2000-2010	14.39%	(3.15%)	10.16%	5.79%	(0.48%)
SERS 2025 Retirement Fund	18.59%	(4.88%)	13.90%	7.28%	(1.43%)
BlackRock 2025 Index	18.56%	(4.90%)	13.75%	7.10%	(1.45%)
Callan Target Date 2025	18.51%	(5.19%)	15.03%	7.08%	(1.19%)
SERS 2030 Retirement Fund	20.77%	(5.71%)	15.82%	7.87%	(1.61%)
BlackRock 2030 Index	20.70%	(5.76%)	15.64%	7.61%	(1.66%)
Callan Target Date 2030	20.42%	(6.12%)	16.81%	7.58%	(1.31%)
SERS 2035 Retirement Fund	22.84%	(6.50%)	17.68%	8.41%	(1.80%)
BlackRock 2035 Index	22.72%	(6.58%)	17.48%	8.08%	(1.86%)
Callan Target Date 2035	22.17%	(7.03%)	18.54%	8.20%	(1.46%)
SERS 2040 Retirement Fund	24.71%	(7.24%)	19.35%	8.86%	(2.00%)
BlackRock 2040 Index	24.62%	(7.33%)	19.09%	8.51%	(2.08%)
Callan Target Date 2040	23.58%	(7.89%)	19.84%	8.48%	(1.55%)
SERS 2045 Retirement Fund	26.03%	(7.85%)	20.44%	9.16%	(2.15%)
BlackRock 2045 Index	25.90%	(7.99%)	20.15%	8.77%	(2.22%)
Callan Target Date 2045	24.60%	(8.21%)	20.63%	8.63%	(1.58%)
SERS 2050 Retirement Fund	26.60%	(8.12%)	20.83%	9.24%	(2.20%)
BlackRock 2050 Index	26.48%	(8.26%)	20.55%	8.82%	(2.26%)
Callan Target Date 2050	24.87%	(8.44%)	20.76%	8.61%	(1.56%)
SERS 2055 Retirement Fund	26.66%	(8.15%)	20.81%	9.21%	(2.18%)
BlackRock 2055 Index	26.58%	(8.28%)	20.55%	8.82%	(2.26%)
Callan Target Date 2055	24.97%	(8.44%)	21.12%	8.65%	(1.67%)
SERS 2060 Retirement Fund	26.65%	(8.15%)	20.76%	9.23%	(2.15%)
BlackRock 2060 Index	26.58%	(8.28%)	20.55%	8.82%	(2.16%)
Callan Target Date 2060	25.04%	(8.35%)	21.14%	8.80%	(1.57%)

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.

	2019	2018	2017	2016	2015
Net Performance					
Domestic Equity					
SERS U.S. Large Company Index Fund	31.49%	(4.40%)	21.83%	11.97%	1.39%
S&P 500 Index	31.49%	(4.38%)	21.83%	11.96%	1.38%
Callan Lg Cap Broad MF	30.14%	(4.54%)	23.56%	8.43%	1.50%
SERS U.S. All Company Index Fund	30.51%	(5.30%)	21.05%	12.69%	0.45%
Russell 3000 Index	31.02%	(5.24%)	21.13%	12.74%	0.48%
Callan Multi Cap Brd MF	29.12%	(6.82%)	20.75%	9.05%	(1.26%)
SERS U.S. SMID Company Idx Fund	28.18%	(9.34%)	18.18%	16.05%	(3.32%)
Dow Jones US Completion	27.91%	(9.57%)	18.12%	15.75%	(3.42%)
Callan SMID Broad MFs	29.40%	(8.69%)	17.14%	13.80%	(2.80%)
International Equity					
SERS Global Non-U.S. Index Fund	21.72%	(13.91%)	27.57%	5.00%	(5.63%)
MSCI ACWI ex US	21.51%	(14.20%)	27.19%	4.50%	(5.66%)
Callan Non US Equity MFs	22.83%	(15.04%)	26.90%	0.23%	0.02%
Domestic Fixed Income					
SERS Short Term Investment Fund	2.31%	2.09%	1.08%	0.59%	0.19%
3-month Treasury Bill	2.28%	1.87%	0.86%	0.33%	0.05%
Callan Cash Database(1)	2.62%	2.00%	1.19%	0.95%	0.40%
SERS U.S. Short Term Bond Idx Fund	3.99%	1.55%	-	-	-
Blmbg Gov/Cred 1-3 Yr	4.03%	1.60%	0.84%	1.28%	0.65%
Callan Short US Govt MFs	3.52%	1.15%	0.59%	0.64%	0.35%
SERS U.S. TIPS Index Fund	8.36%	(1.27%)	-	-	-
Blmbg US TIPS	8.43%	(1.26%)	3.01%	4.68%	(1.44%)
Callan TIPS MFs	8.26%	(1.53%)	3.12%	4.63%	(1.76%)
SERS U.S. Bond Index Fund	8.66%	0.00%	3.50%	2.56%	0.46%
Blmbg Aggregate	8.72%	0.01%	3.54%	2.65%	0.55%
Callan Core Bond MFs	9.17%	(0.35%)	3.71%	3.03%	0.10%

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

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2019. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
Gross Performance					
Target Date Funds					
SERS Post Retirement Fund	3.60%	15.72%	7.21%	5.30%	5.52%
BlackRock Post Retirement Index	3.57%	15.63%	7.11%	5.20%	5.43%
Callan Tgt Date 2000-2010	3.35%	14.39%	6.83%	5.14%	5.73%
SERS 2025 Retirement Fund	4.84%	18.68%	8.80%	6.40%	7.16%
BlackRock 2025 Index	4.84%	18.56%	8.65%	6.24%	7.04%
Callan Target Date 2025	4.79%	18.51%	8.71%	6.32%	7.64%
SERS 2030 Retirement Fund	5.91%	20.86%	9.75%	7.04%	7.88%
BlackRock 2030 Index	5.88%	20.70%	9.57%	6.84%	7.74%
Callan Target Date 2030	5.71%	20.42%	9.60%	6.97%	8.36%
SERS 2035 Retirement Fund	6.90%	22.93%	10.65%	7.63%	8.56%
BlackRock 2035 Index	6.86%	22.72%	10.44%	7.40%	8.39%
Callan Target Date 2035	6.50%	22.17%	10.31%	7.46%	8.96%
SERS 2040 Retirement Fund	7.80%	24.80%	11.44%	8.14%	9.14%
BlackRock 2040 Index	7.77%	24.62%	11.21%	7.88%	8.97%
Callan Target Date 2040	7.07%	23.58%	10.84%	7.76%	9.41%
SERS 2045 Retirement Fund	8.41%	26.12%	11.92%	8.45%	9.58%
BlackRock 2045 Index	8.38%	25.90%	11.65%	8.16%	9.39%
Callan Target Date 2045	7.57%	24.60%	11.21%	8.08%	9.62%
SERS 2050 Retirement Fund	8.68%	26.70%	12.10%	8.55%	9.84%
BlackRock 2050 Index	8.66%	26.48%	11.84%	8.27%	9.65%
Callan Target Date 2050	7.68%	24.87%	11.23%	8.02%	9.80%
SERS 2055 Retirement Fund	8.70%	26.76%	12.10%	8.55%	9.99%
BlackRock 2055 Index	8.70%	26.58%	11.86%	8.28%	9.81%
Callan Target Date 2055	7.83%	24.97%	11.38%	8.19%	9.90%
SERS 2060 Retirement Fund	8.70%	26.74%	12.08%	8.55%	-
BlackRock 2060 Index	8.70%	26.58%	11.86%	8.30%	-
Callan Target Date 2060	7.83%	25.04%	11.47%	8.41%	10.35%

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2019. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended December 31, 2019			
	Last 10 Years	Last 15 Years	Last 20 Years
Gross Performance			
Target Date Funds			
SERS Post Retirement Fund	6.22%	-	-
BlackRock Post Retirement Index	6.13%	5.44%	5.60%
Callan Tgt Date 2000-2010	6.23%	4.79%	-
SERS 2025 Retirement Fund	7.58%	-	-
BlackRock 2025 Index	7.46%	5.94%	4.78%
Callan Target Date 2025	8.01%	6.05%	-
SERS 2030 Retirement Fund	8.16%	-	-
BlackRock 2030 Index	8.00%	6.21%	4.79%
Callan Target Date 2030	8.59%	6.21%	4.40%
SERS 2035 Retirement Fund	8.67%	-	-
BlackRock 2035 Index	8.50%	6.44%	4.78%
Callan Target Date 2035	9.03%	6.51%	-
SERS 2040 Retirement Fund	9.12%	-	-
BlackRock 2040 Index	8.93%	6.62%	4.73%
Callan Target Date 2040	9.30%	6.73%	3.95%
SERS 2045 Retirement Fund	9.45%	-	-
BlackRock 2045 Index	9.25%	6.75%	4.72%
Callan Target Date 2045	9.36%	7.13%	-
SERS 2050 Retirement Fund	9.67%	-	-
BlackRock 2050 Index	9.46%	7.01%	5.37%
Callan Target Date 2050	9.38%	7.57%	-

(1) Funds not listed do not have longer term history.

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2019. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
Gross Performance					
Domestic Equity					
SERS U.S. Large Company Idx Fund	9.07%	31.51%	15.29%	11.72%	14.75%
S&P 500 Index	9.07%	31.49%	15.27%	11.70%	14.73%
Callan Lg Cap Broad MF	8.76%	30.14%	14.69%	10.58%	13.86%
SERS U.S. All Company Index Fund	9.10%	30.54%	14.40%	11.14%	14.32%
Russell 3000 Index	9.10%	31.02%	14.57%	11.24%	14.38%
Callan Multi Cap Brd MF	8.24%	29.12%	12.95%	9.39%	12.85%
SERS U.S. SMID Company Idx Fund	8.85%	28.21%	11.18%	9.06%	12.65%
Dow Jones US Completion	8.82%	27.91%	10.96%	8.84%	12.42%
Callan SMID Broad MFs	7.68%	29.40%	12.48%	9.18%	12.02%
International Equity					
SERS Global Non-U.S. Index Fund	8.74%	21.79%	10.23%	5.85%	5.58%
MSCI ACWI ex US	8.92%	21.51%	9.87%	5.51%	5.44%
Callan Non US Equity MFs	9.02%	22.83%	9.96%	5.60%	6.20%
Domestic Fixed Income					
SERS Short Term Investment Fund	0.48%	2.31%	1.82%	1.25%	0.94%
3-month Treasury Bill	0.46%	2.28%	1.67%	1.07%	0.78%
Callan Cash Database(1)	0.53%	2.62%	1.99%	1.41%	1.09%
SERS U.S. TIPS Index Fund	0.79%	8.39%	-	-	-
Blmbg US TIPS	0.79%	8.43%	3.32%	2.62%	1.08%
Callan TIPS MFs	0.91%	8.26%	3.13%	2.32%	0.91%
SERS U.S. Short Term Bond Idx Fund	0.59%	4.02%	-	-	-
Blmbg Gov/Cred 1-3 Yr	0.59%	4.03%	2.15%	1.67%	1.40%
Callan Short US Govt MFs	0.29%	3.52%	1.74%	1.26%	0.99%
SERS U.S. Bond Index Fund	0.17%	8.69%	4.02%	3.02%	2.67%
Blmbg Aggregate	0.18%	8.72%	4.03%	3.05%	2.72%
Callan Core Bond MFs	0.15%	9.17%	4.17%	3.12%	2.71%

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

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2019. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	Returns for Periods Ended December 31, 2019		
	Last 10 Years	Last 15 Years	Last 20 Years
Gross Performance			
Domestic Equity			
SERS U.S. Large Company Idx Fund	13.59%	9.05%	6.11%
S&P 500 Index	13.56%	9.00%	6.06%
Callan Lg Cap Broad MF	12.67%	8.85%	5.96%
Russell 3000 Index	13.42%	9.03%	6.39%
Callan Multi Cap Brd MF	12.00%	8.23%	6.74%
SERS U.S. SMID Company Idx Fund	12.94%	9.36%	7.51%
Dow Jones US Completion	12.72%	9.13%	7.12%
Callan SMID Broad MFs	12.28%	8.91%	8.28%
International Equity			
SERS Global Non-U.S. Index Fund	5.17%	-	-
MSCI ACWI ex US	4.97%	5.25%	-
Callan Non US Equity MFs	5.93%	5.31%	3.78%
Domestic Fixed Income			
SERS Short Term Investment Fund	0.73%	1.56%	-
3-month Treasury Bill	0.58%	1.39%	1.78%
Callan Cash Database(1)	0.91%	1.81%	2.14%
Blmbg US TIPS	3.36%	3.78%	5.51%
Callan TIPS MFs	3.01%	3.51%	4.76%
Blmbg Gov/Cred 1-3 Yr	1.54%	2.46%	3.19%
Callan Short US Govt MFs	1.36%	2.31%	3.10%
SERS U.S. Bond Index Fund	3.70%	4.12%	5.00%
Blmbg Aggregate	3.75%	4.15%	5.03%
Callan Core Bond MFs	4.04%	4.38%	5.08%

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

(2) Funds not listed do not have longer term history.

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.

	2019	2018	2017	2016	2015
Gross Performance					
Target Date Funds					
SERS Post Retirement Fund	15.72%	(3.41%)	10.25%	6.18%	(1.06%)
BlackRock Post Retirement Index	15.63%	(3.48%)	10.10%	6.01%	(1.07%)
Callan Tgt Date 2000-2010	14.39%	(3.15%)	10.16%	5.79%	(0.48%)
SERS 2025 Retirement Fund	18.68%	(4.80%)	13.99%	7.37%	(1.36%)
BlackRock 2025 Index	18.56%	(4.90%)	13.75%	7.10%	(1.45%)
Callan Target Date 2025	18.51%	(5.19%)	15.03%	7.08%	(1.19%)
SERS 2030 Retirement Fund	20.86%	(5.63%)	15.91%	7.96%	(1.53%)
BlackRock 2030 Index	20.70%	(5.76%)	15.64%	7.61%	(1.66%)
Callan Target Date 2030	20.42%	(6.12%)	16.81%	7.58%	(1.31%)
SERS 2035 Retirement Fund	22.93%	(6.43%)	17.77%	8.49%	(1.72%)
BlackRock 2035 Index	22.72%	(6.58%)	17.48%	8.08%	(1.86%)
Callan Target Date 2035	22.17%	(7.03%)	18.54%	8.20%	(1.46%)
SERS 2040 Retirement Fund	24.80%	(7.17%)	19.44%	8.94%	(1.92%)
BlackRock 2040 Index	24.62%	(7.33%)	19.09%	8.51%	(2.08%)
Callan Target Date 2040	23.58%	(7.89%)	19.84%	8.48%	(1.55%)
SERS 2045 Retirement Fund	26.12%	(7.78%)	20.54%	9.24%	(2.07%)
BlackRock 2045 Index	25.90%	(7.99%)	20.15%	8.77%	(2.22%)
Callan Target Date 2045	24.60%	(8.21%)	20.63%	8.63%	(1.58%)
SERS 2050 Retirement Fund	26.70%	(8.05%)	20.92%	9.32%	(2.12%)
BlackRock 2050 Index	26.48%	(8.26%)	20.55%	8.82%	(2.26%)
Callan Target Date 2050	24.87%	(8.44%)	20.76%	8.61%	(1.56%)
SERS 2055 Retirement Fund	26.76%	(8.07%)	20.90%	9.30%	(2.10%)
BlackRock 2055 Index	26.58%	(8.28%)	20.55%	8.82%	(2.26%)
Callan Target Date 2055	24.97%	(8.44%)	21.12%	8.65%	(1.67%)
SERS 2060 Retirement Fund	26.74%	(8.08%)	20.85%	9.32%	(2.07%)
BlackRock 2060 Index	26.58%	(8.28%)	20.55%	8.82%	(2.16%)
Callan Target Date 2060	25.04%	(8.35%)	21.14%	8.80%	(1.57%)

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.

	2019	2018	2017	2016	2015
Gross Performance					
Domestic Equity					
SERS U.S. Large Company Idx Fund	31.51%	(4.38%)	21.85%	11.99%	1.41%
S&P 500 Index	31.49%	(4.38%)	21.83%	11.96%	1.38%
Callan Lg Cap Broad MF	30.14%	(4.54%)	23.56%	8.43%	1.50%
SERS U.S. All Company Index Fund	30.54%	(5.28%)	21.08%	12.72%	0.47%
Russell 3000 Index	31.02%	(5.24%)	21.13%	12.74%	0.48%
Callan Multi Cap Brd MF	29.12%	(6.82%)	20.75%	9.05%	(1.26%)
SERS U.S. SMID Company Idx Fund	28.21%	(9.32%)	18.21%	16.08%	(3.30%)
Dow Jones US Completion	27.91%	(9.57%)	18.12%	15.75%	(3.42%)
Callan SMID Broad MFs	29.40%	(8.69%)	17.14%	13.80%	(2.80%)
International Equity					
SERS Global Non-U.S. Index Fund	21.79%	(13.85%)	27.65%	5.07%	(5.56%)
MSCI ACWI ex US	21.51%	(14.20%)	27.19%	4.50%	(5.66%)
Callan Non US Equity MFs	22.83%	(15.04%)	26.90%	0.23%	0.02%
Domestic Fixed Income					
SERS Short Term Investment Fund	2.31%	2.09%	1.08%	0.59%	0.19%
3-month Treasury Bill	2.28%	1.87%	0.86%	0.33%	0.05%
Callan Cash Database(1)	2.62%	2.00%	1.19%	0.95%	0.40%
SERS U.S. TIPS Index Fund	8.39%	(1.25%)	-	-	-
Blmbg US TIPS	8.43%	(1.26%)	3.01%	4.68%	(1.44%)
Callan TIPS MFs	8.26%	(1.53%)	3.12%	4.63%	(1.76%)
SERS U.S. Short Term Bond Idx Fund	4.02%	1.58%	-	-	-
Blmbg Gov/Cred 1-3 Yr	4.03%	1.60%	0.84%	1.28%	0.65%
Callan Short US Govt MFs	3.52%	1.15%	0.59%	0.64%	0.35%
SERS U.S. Bond Index Fund	8.69%	0.03%	3.53%	2.59%	0.49%
Blmbg Aggregate	8.72%	0.01%	3.54%	2.65%	0.55%
Callan Core Bond MFs	9.17%	(0.35%)	3.71%	3.03%	0.10%

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

Pennsylvania SERS 401(a)
Investment Manager Performance Monitoring Summary Report
December 31, 2019

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
Gross of Fee Performance									
Target Date Funds									
SERS Post Retirement Fund Callan Tgt Date 2000-2010	3.6 35	15.7 12	7.2 33	5.3 38	5.5 61	6.2 51			0.08 95
BlackRock Post Retirement Index	3.6 40	15.6 13	7.1 34	5.2 46	5.4 62	6.1 61			
SERS 2025 Retirement Fund Callan Target Date 2025	4.8 43	18.7 43	8.8 46	6.4 43	7.2 70	7.6 65			0.08 95
BlackRock 2025 Index	4.8 43	18.6 47	8.6 55	6.2 56	7.0 71	7.5 71			
SERS 2030 Retirement Fund Callan Target Date 2030	5.9 38	20.9 39	9.8 44	7.0 44	7.9 68	8.2 62			0.08 96
BlackRock 2030 Index	5.9 39	20.7 42	9.6 52	6.8 56	7.7 70	8.0 65			
SERS 2035 Retirement Fund Callan Target Date 2035	6.9 22	22.9 26	10.7 34	7.6 35	8.6 69	8.7 64			0.08 97
BlackRock 2035 Index	6.9 23	22.7 33	10.4 47	7.4 55	8.4 74	8.5 70			
SERS 2040 Retirement Fund Callan Target Date 2040	7.8 16	24.8 18	11.4 28	8.1 27	9.1 63	9.1 55			0.08 97
BlackRock 2040 Index	7.8 19	24.6 20	11.2 33	7.9 42	9.0 70	8.9 59			
SERS 2045 Retirement Fund Callan Target Date 2045	8.4 12	26.1 10	11.9 19	8.4 24	9.6 56	9.4 46			0.08 96
BlackRock 2045 Index	8.4 13	25.9 16	11.7 30	8.2 41	9.4 67	9.2 56			
SERS 2050 Retirement Fund Callan Target Date 2050	8.7 8	26.7 8	12.1 16	8.6 20	9.8 47	9.7 40			0.08 97
BlackRock 2050 Index	8.7 9	26.5 9	11.8 28	8.3 42	9.7 55	9.5 48			
SERS 2055 Retirement Fund Callan Target Date 2055	8.7 9	26.8 7	12.1 17	8.6 24	10.0 43				0.08 96
BlackRock 2055 Index	8.7 9	26.6 9	11.9 31	8.3 49	9.8 55				
SERS 2060 Retirement Fund Callan Target Date 2060	8.7 8	26.7 10	12.1 21	8.6 40					0.08 95
BlackRock 2060 Index	8.7 8	26.6 11	11.9 35	8.3 64					

Returns:
■ above median
■ third quartile
■ fourth quartile

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

Risk Quadrant:


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

Pennsylvania SERS 401(a)
Investment Manager Performance Monitoring Summary Report
December 31, 2019

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
Domestic Equity									
SERS U.S. Large Company Stock Index Fund Callan Lg Cap Broad MF S&P 500 Index	9.1 42	31.5 40	15.3 45	11.7 39	14.7 37	13.6 34			0.01 99
SERS U.S. All Company Index Fund Callan Multi Cap Brd MF Russell 3000 Index	9.1 34	30.5 39	14.4 39	11.1 27	14.3 26				0.03 99
U.S. Small/Mid Company Stock Index Fund Callan SMID Broad MFs Dow Jones US Completion	8.8 29	28.2 58	11.2 52	9.1 51	12.7 38	12.9 40			0.03 100
International Equity									
SERS Global Non-U.S. Index Fund Callan Non US Equity MFs MSCI ACWI ex US	8.7 59	21.8 62	10.2 49	5.9 43	5.6 65	5.2 62			0.06 100
Domestic Fixed income									
SERS Short Term Investment Fund Callan Cash Database 3-month Treasury Bill	0.5 79	2.3 83	1.8 76	1.2 78	0.9 79	0.7 79			0.00 100
Comments: Callan Cash Database includes STIF, enhanced cash, and money market funds.									
SERS U.S. Short Term Bond Idx Fund Callan Short US Govt MFs Blmbg Gov/Cred 1-3 Yr	0.6 1	4.0 26							0.03 99
SERS U.S. TIPS Index Fund Callan TIPS MFs Blmbg US TIPS	0.8 60	8.4 34							0.03 99
SERS U.S. Bond Index Fund Callan Core Bond MFs Blmbg Aggregate	0.2 43	8.7 61	4.0 64	3.0 64	2.7 56	3.7 82			0.03 98

Returns:
■ above median
■ third quartile
■ fourth quartile

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

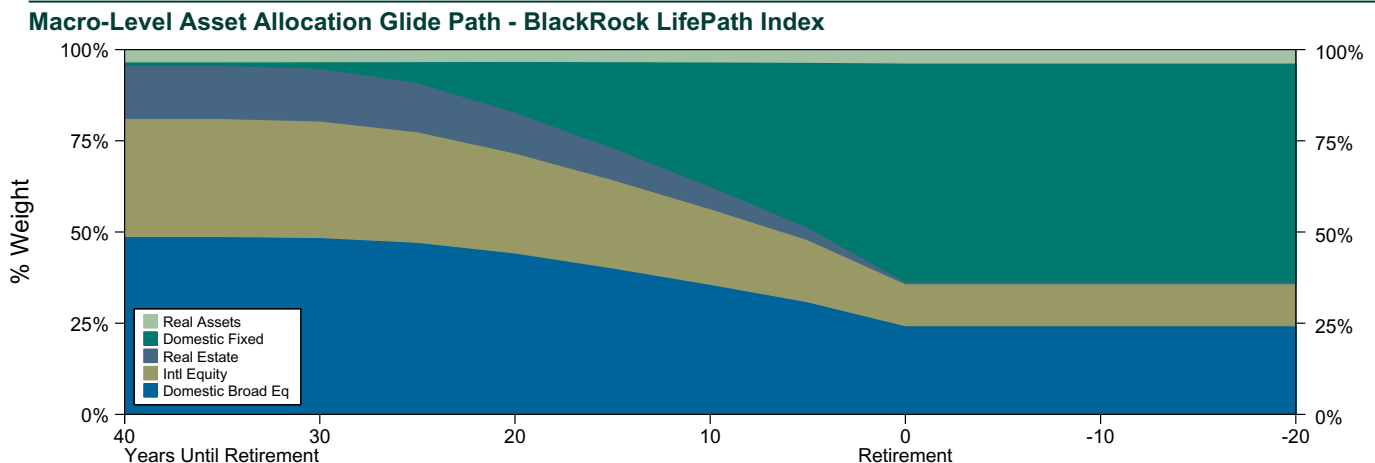
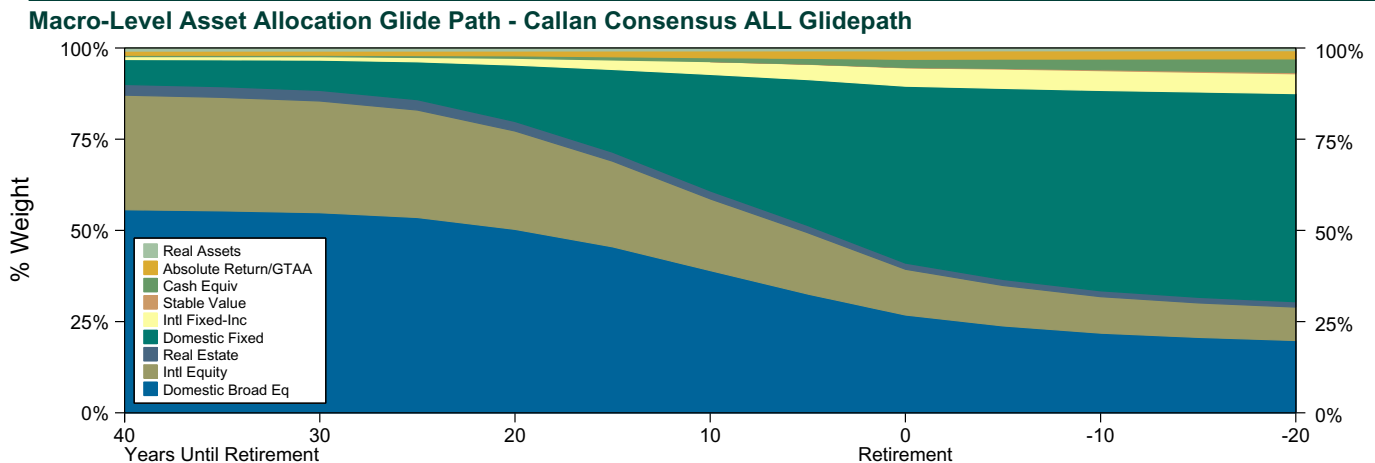
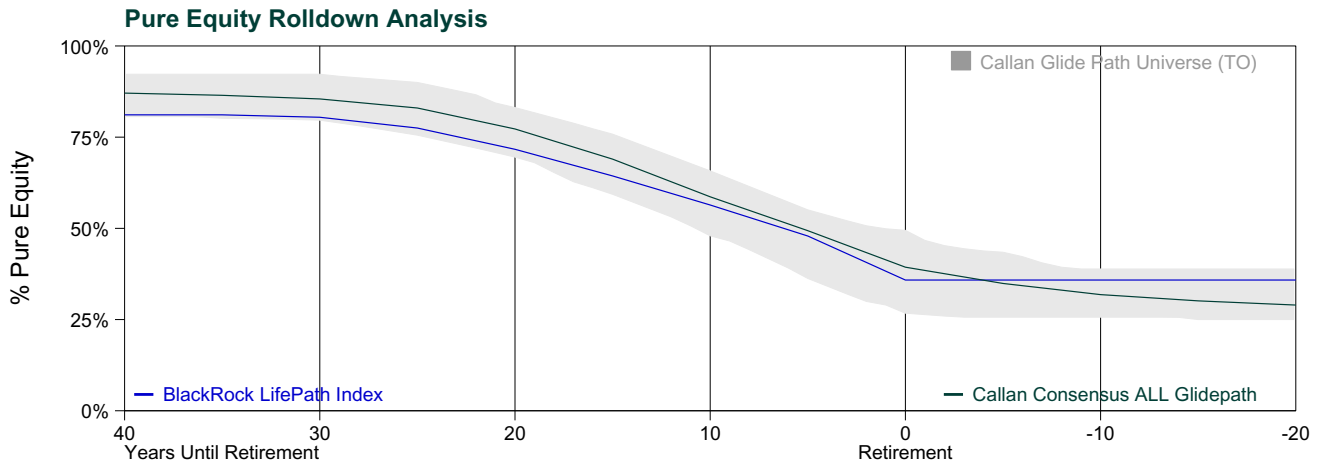
Risk Quadrant:

Return
Risk

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

Callan Consensus ALL Glidepath Target Date Glide Path Analysis as of December 31, 2019

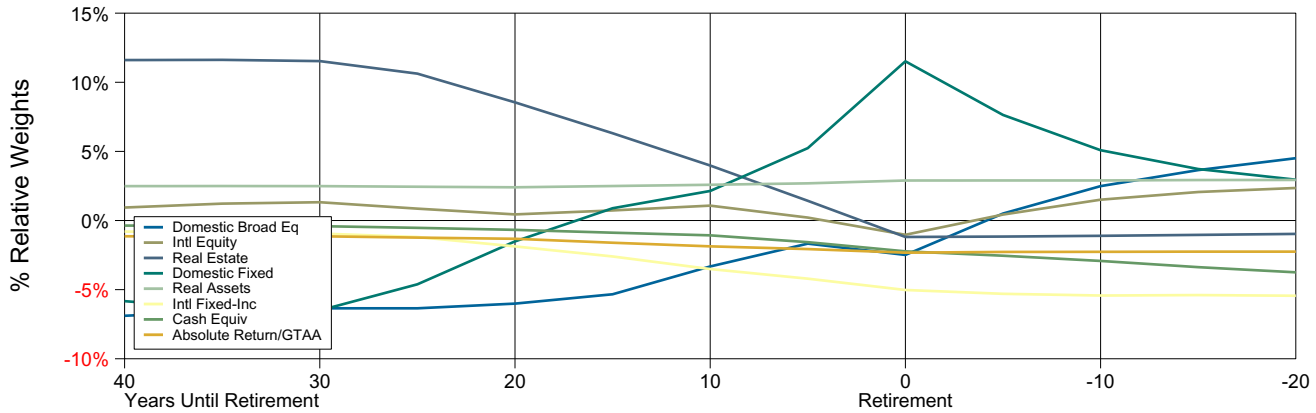
The following charts illustrate the asset allocation "glide path" underlying the relevant suite of target date funds. This analysis covers forty years of investor wealth accumulation up to retirement, as well as twenty years of wealth decumulation following retirement. The top chart shows the "pure"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



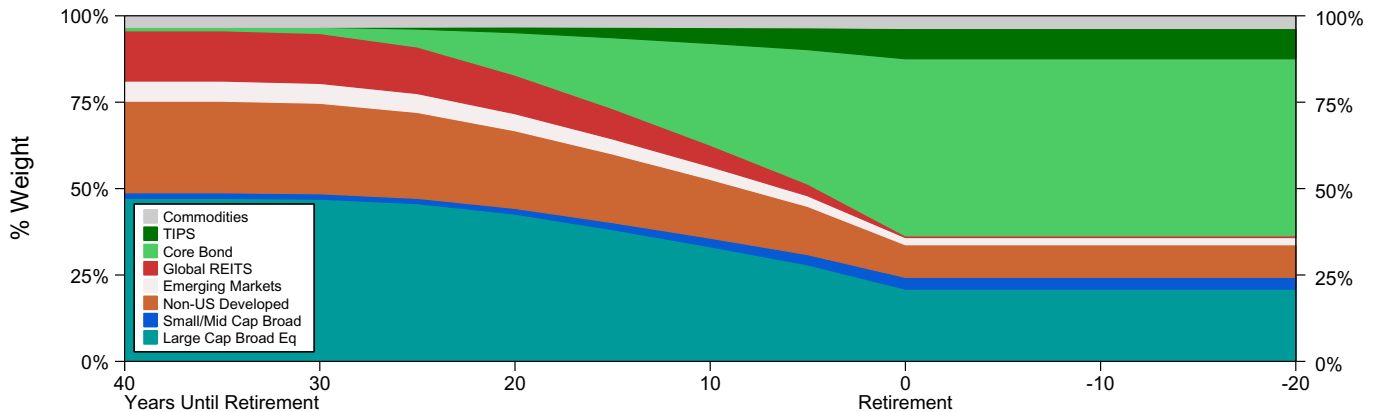
BlackRock LifePath Index Target Date Glide Path Analysis as of December 31, 2019

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

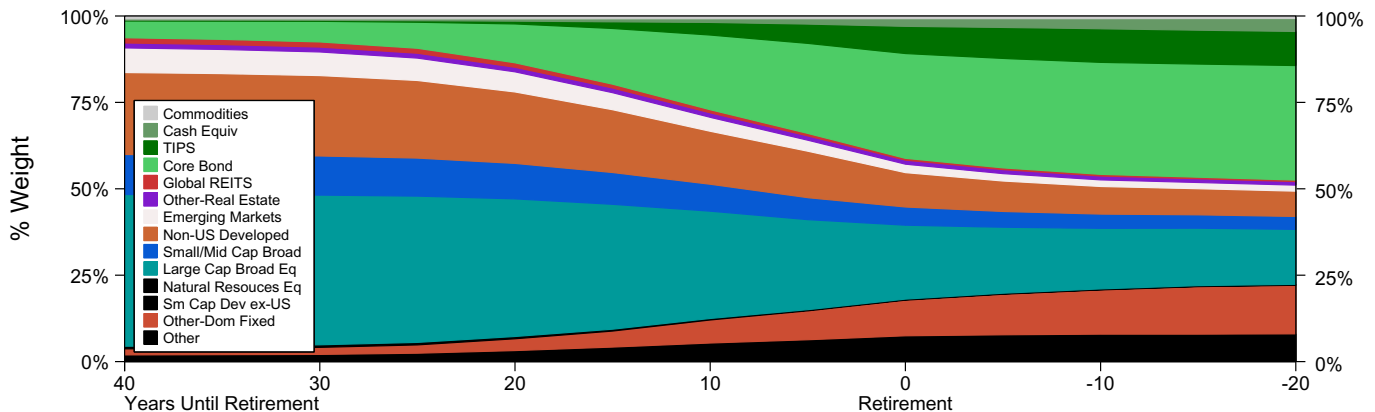
Relative Macro Asset Allocation - BlackRock LifePath Index vs. Callan Consensus ALL Glidep



Micro-Level Asset Allocation Glide Path - BlackRock LifePath Index



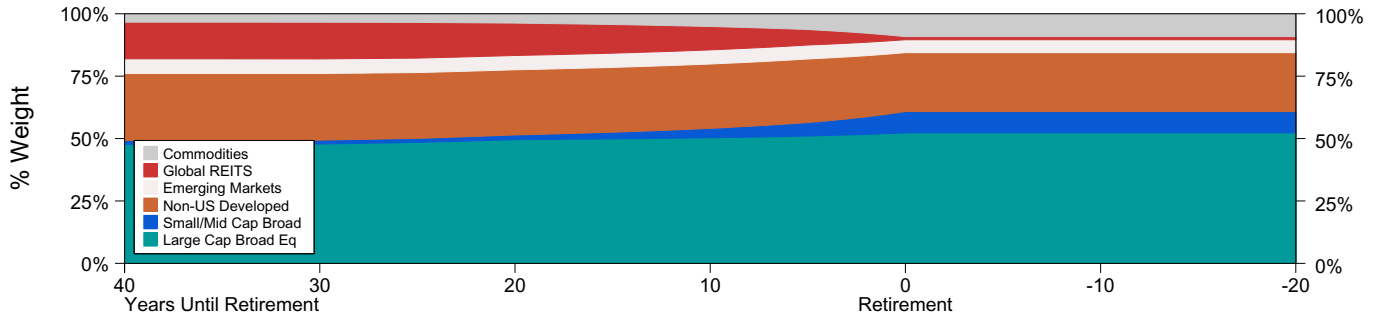
Micro-Level Asset Allocation Glide Path - Callan Consensus ALL Glidepath



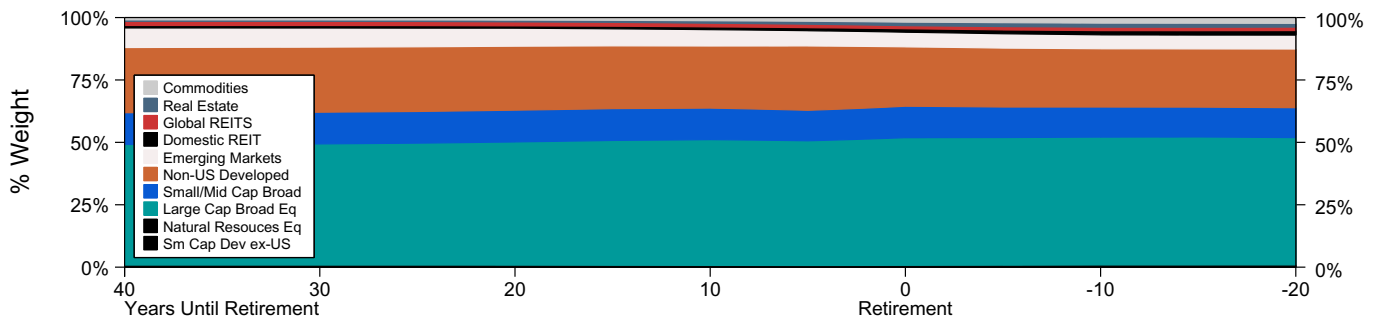
BlackRock LifePath Index Target Date Glide Path Analysis as of December 31, 2019

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

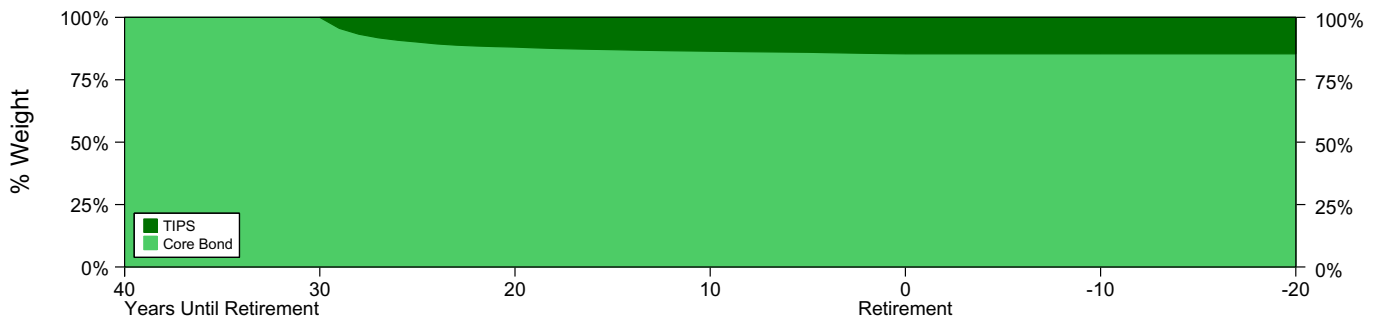
Micro-Level Equity Allocation Glide Path - BlackRock LifePath Index



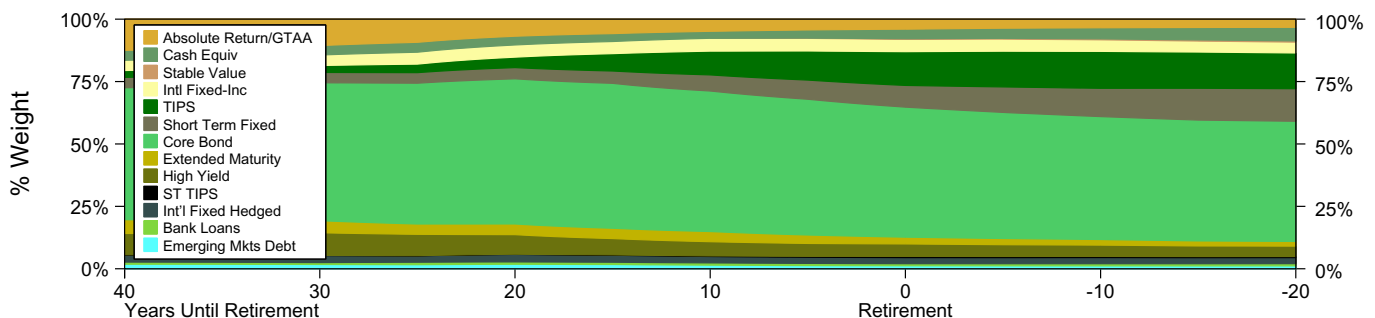
Micro-Level Equity Asset Allocation Glide Path - Callan Consensus ALL Glidepath



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



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



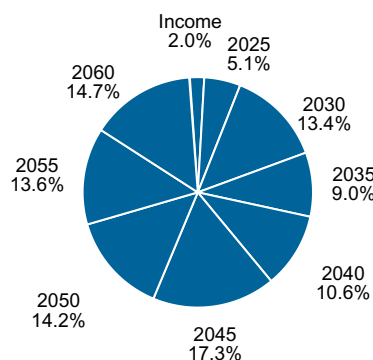
Pennsylvania SERS 401(a) - BlackRock LifePath Index Target Date Fund Family Analysis as of December 31, 2019

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).

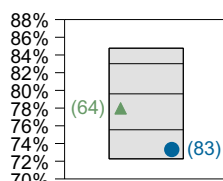
Glidepath Peer Group: ALL

Fee/Return Type: Gross

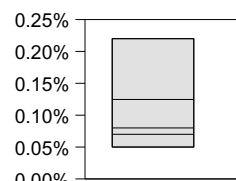
Fund Family Allocation



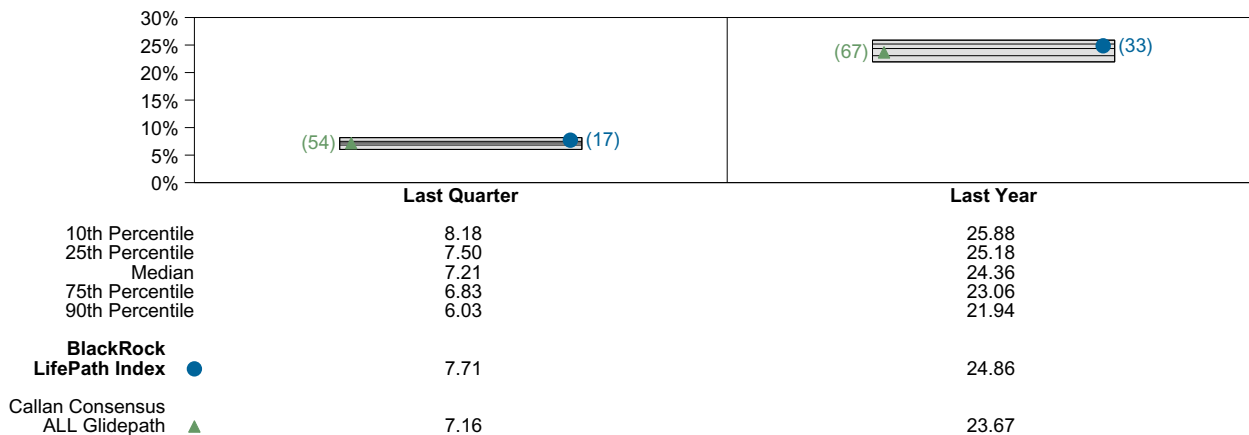
Equity Exposure



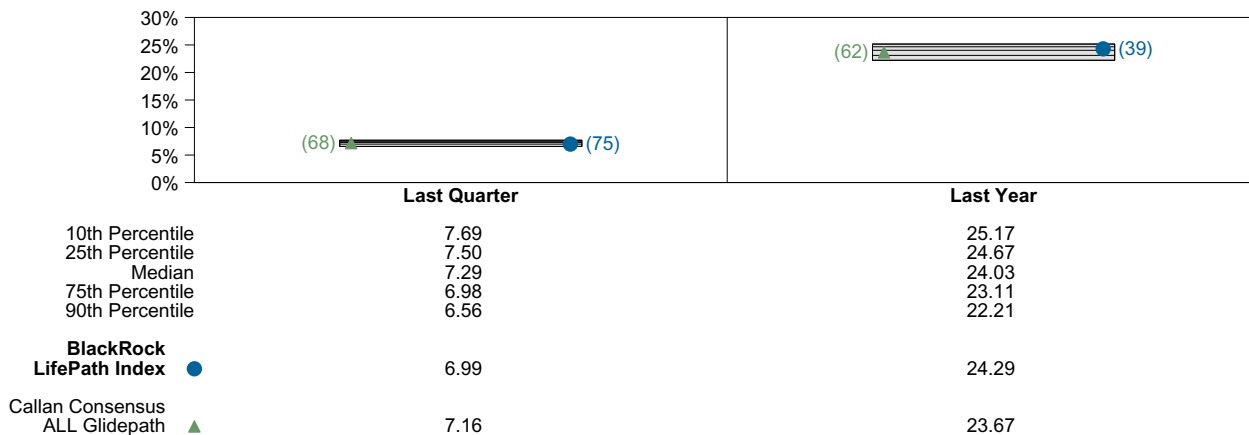
Expense Ratio



Target Date Family Performance vs Peer Families



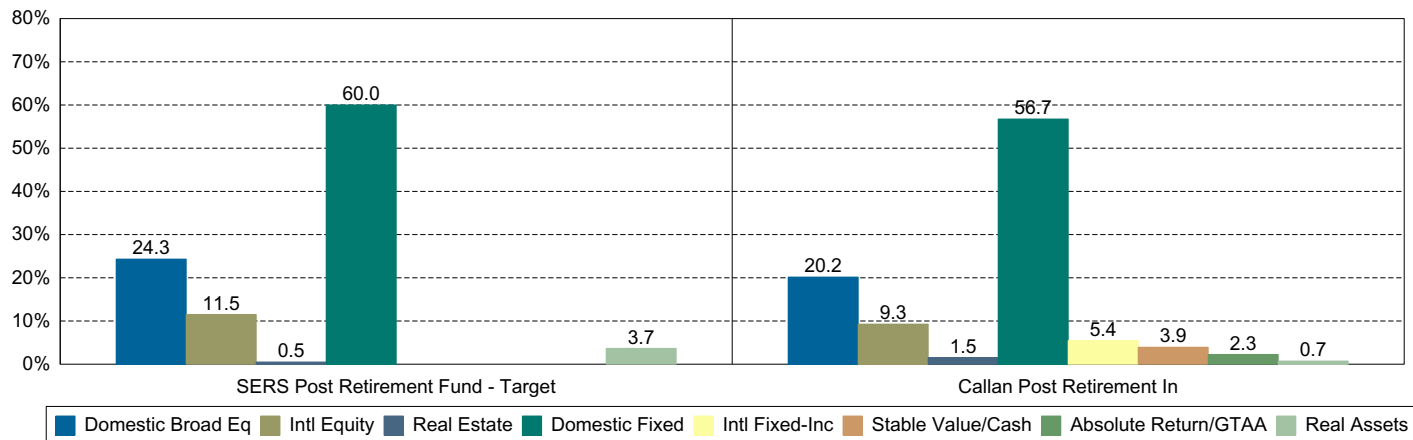
Target Date Family Glide Path Returns vs Peer Families



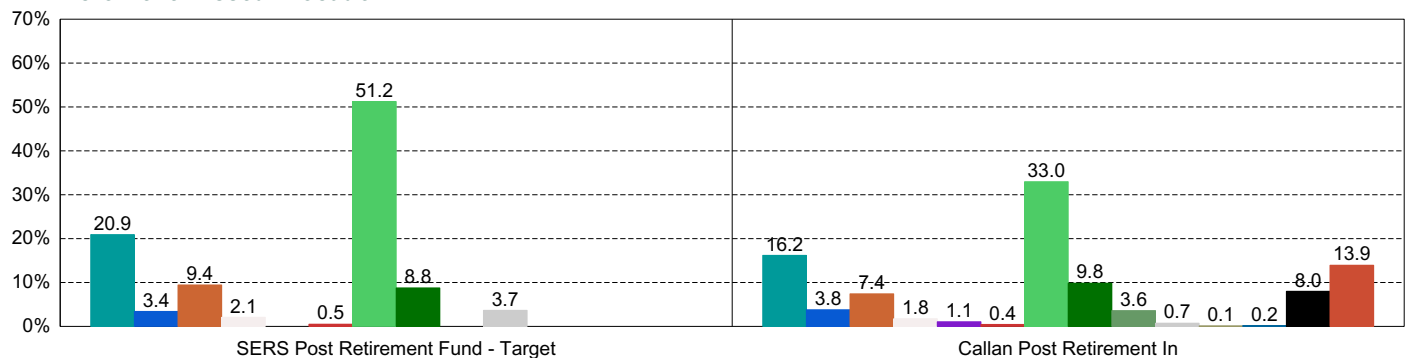
SERS Post Retirement Fund Target Date Fund Asset Allocation as of December 31, 2019

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.

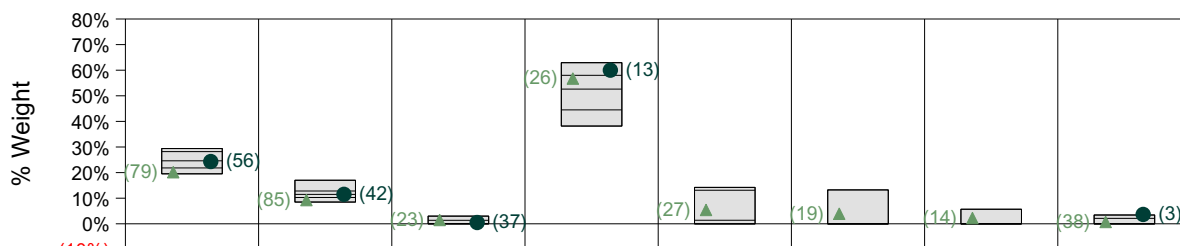
Macro-Level Asset Allocation



Micro-Level Asset Allocation



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



SERS Post Retirement Fund - Target

●	24.32	11.51	0.50	60.01	-	-	-	3.66
▲	20.16	9.27	1.50	56.74	5.42	3.92	2.25	0.73

SERS Post Retirement Fund Period Ended December 31, 2019

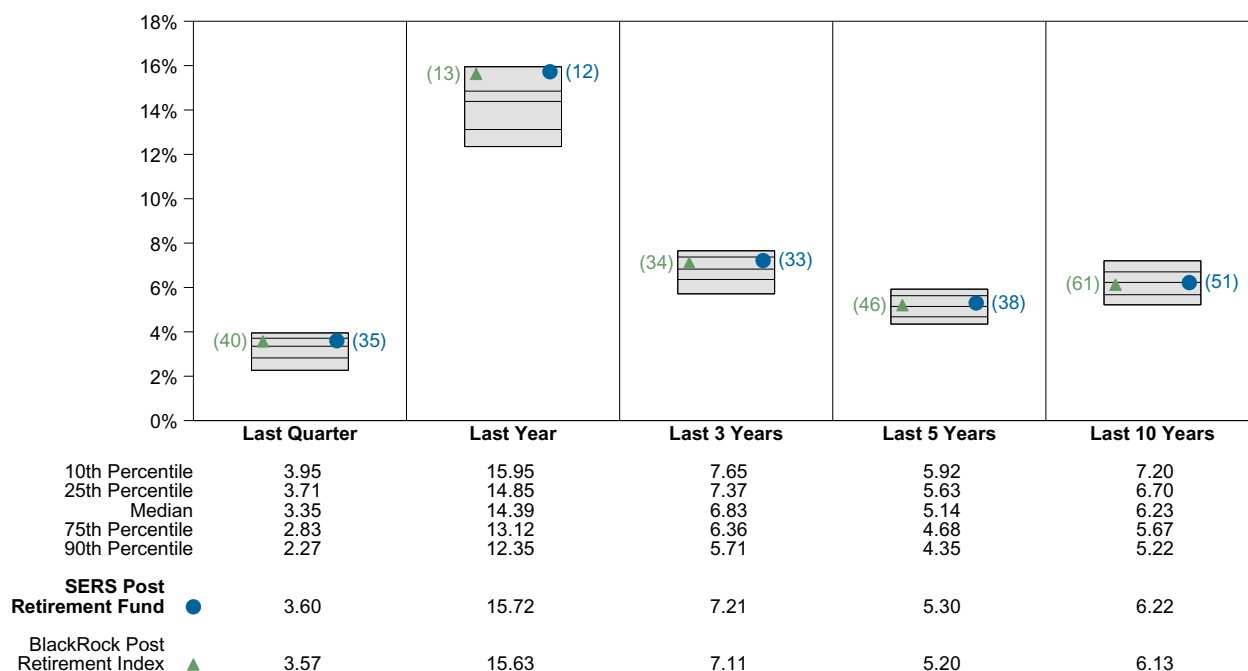
Investment Philosophy

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.

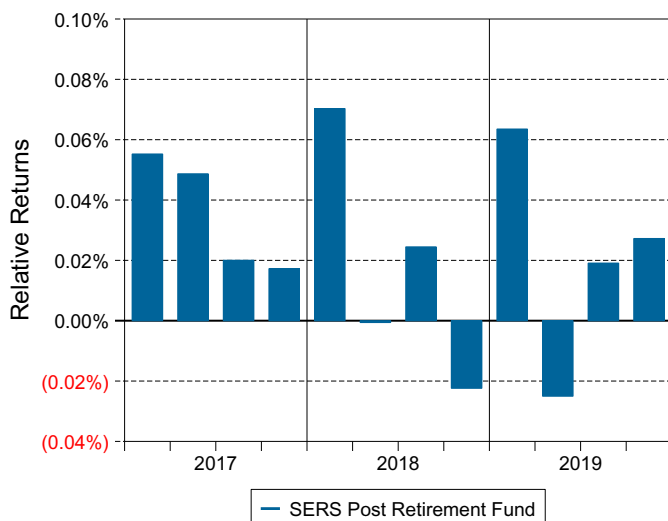
Quarterly Summary and Highlights

- SERS Post Retirement Fund's portfolio posted a 3.60% return for the quarter placing it in the 35 percentile of the Callan Target Date 2000-2010 group for the quarter and in the 12 percentile for the last year.
- SERS Post Retirement Fund's portfolio outperformed the BlackRock Post Retirement Index by 0.03% for the quarter and outperformed the BlackRock Post Retirement Index for the year by 0.09%.

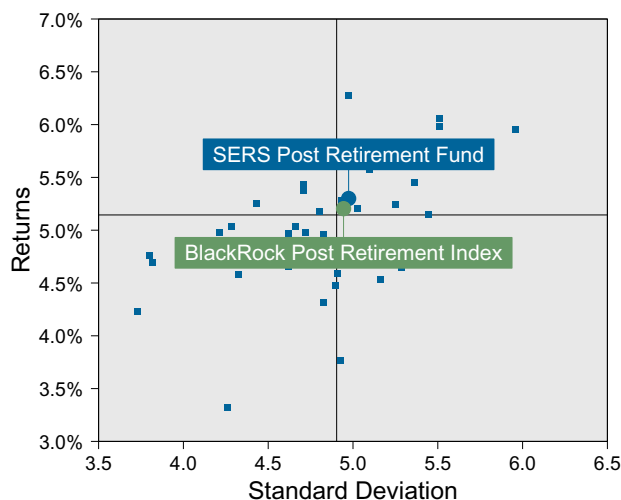
Performance vs Callan Target Date 2000-2010 (Net)



Relative Returns vs BlackRock Post Retirement Index



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

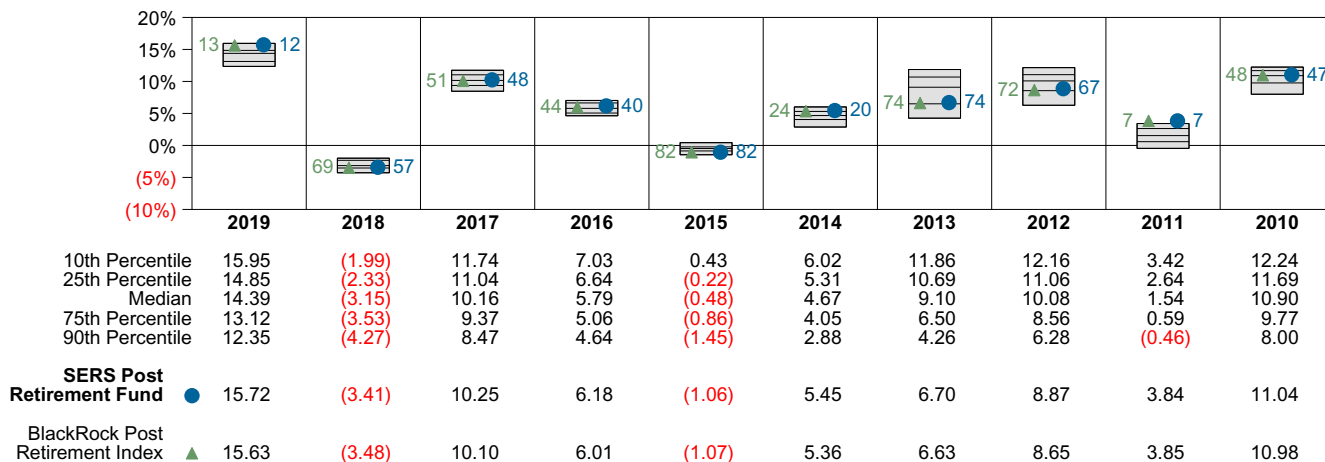


SERS Post Retirement Fund Return Analysis Summary

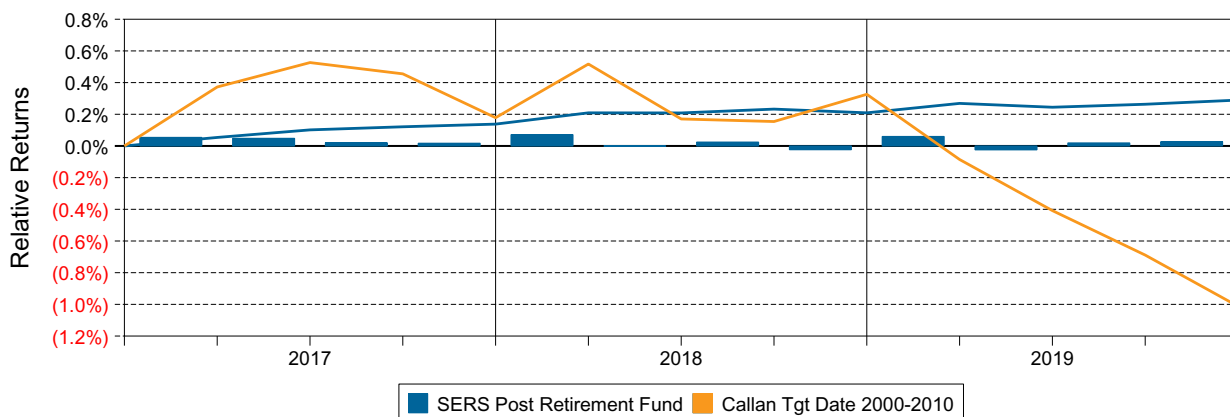
Return Analysis

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.

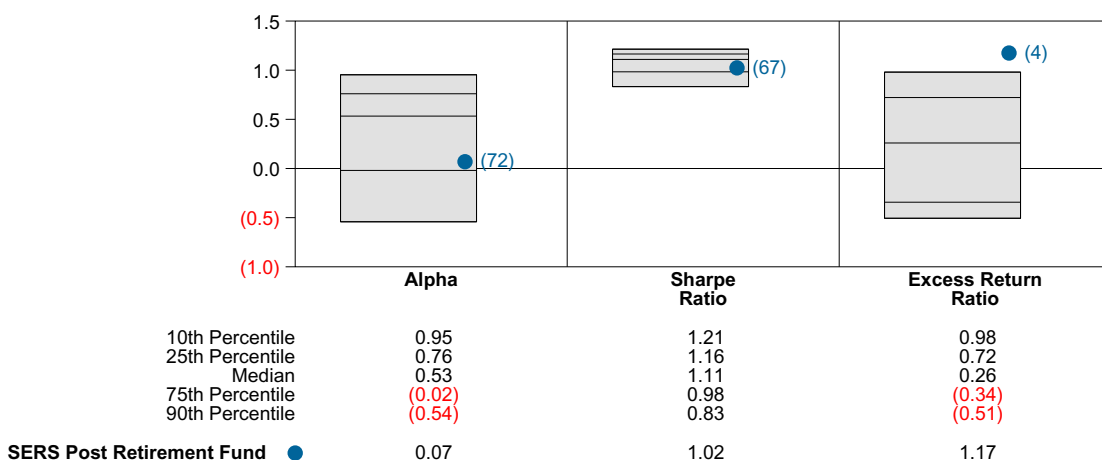
Performance vs Callan Target Date 2000-2010 (Net)



Cumulative and Quarterly Relative Return vs BlackRock Post Retirement Index



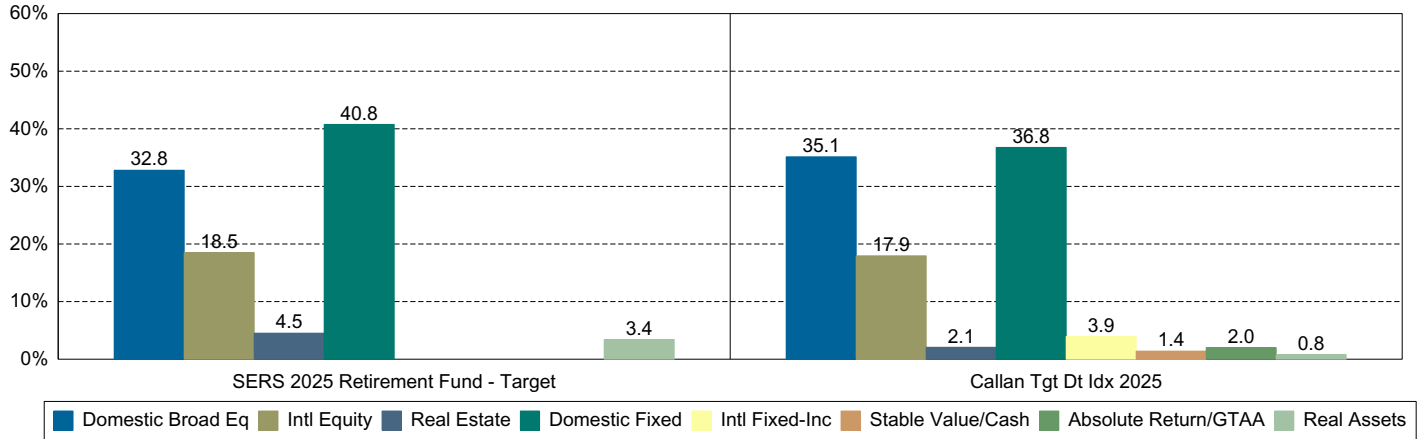
Risk Adjusted Return Measures vs BlackRock Post Retirement Index Rankings Against Callan Target Date 2000-2010 (Net) Seven Years Ended December 31, 2019



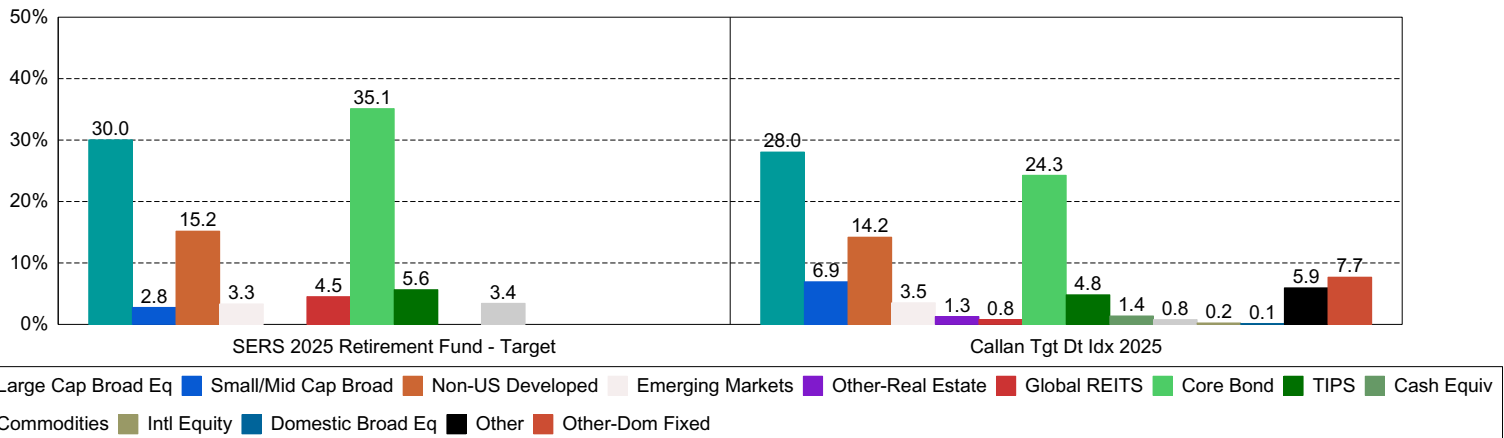
SERS 2025 Retirement Fund Target Date Fund Asset Allocation as of December 31, 2019

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.

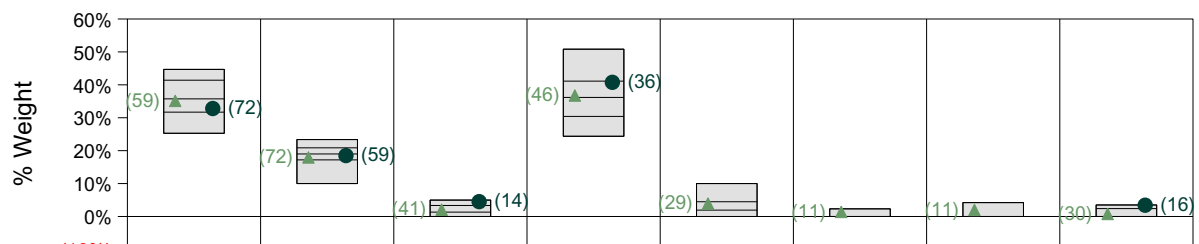
Macro-Level Asset Allocation



Micro-Level Asset Allocation



Macro Asset Allocation Rankings vs. Callan Target Date 2025



SERS 2025 Retirement Fund - Target

●	32.80	18.50	4.51	40.76	-	-	-	3.42
▲	35.13	17.95	2.07	36.76	3.93	1.40	1.99	0.78

SERS 2025 Retirement Fund Period Ended December 31, 2019

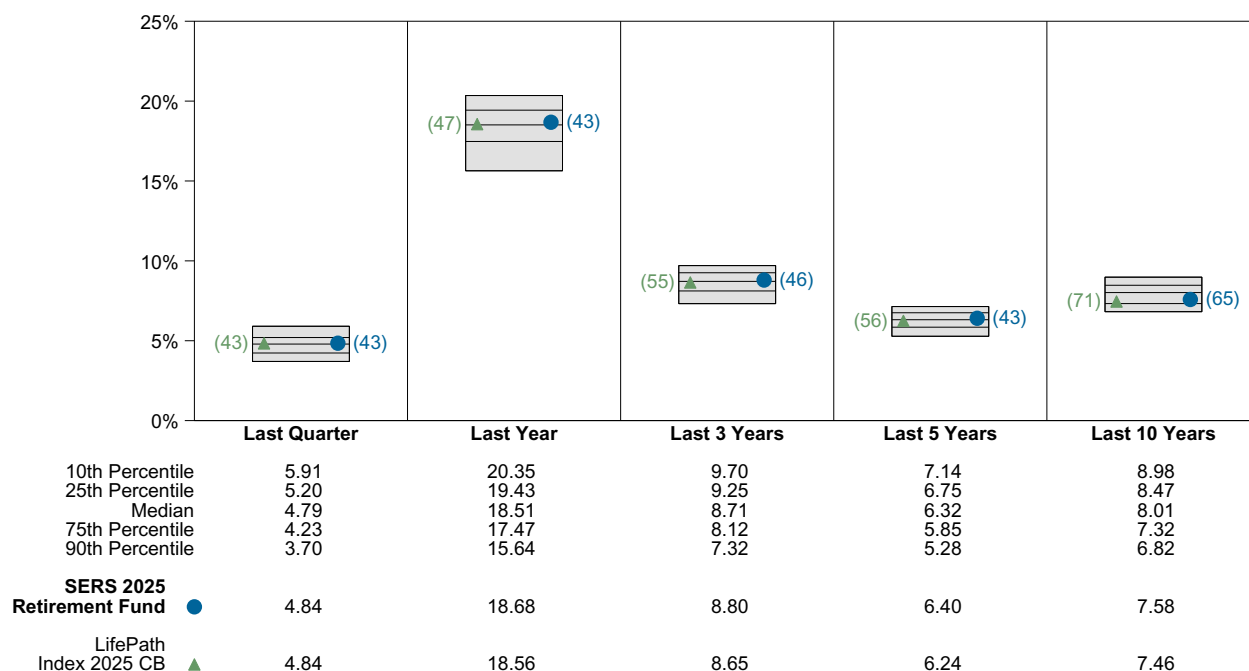
Investment Philosophy

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.

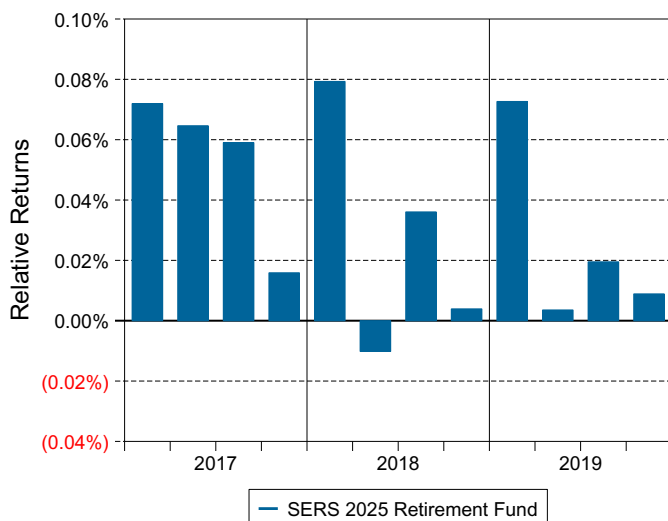
Quarterly Summary and Highlights

- SERS 2025 Retirement Fund's portfolio posted a 4.84% return for the quarter placing it in the 43 percentile of the Callan Target Date 2025 group for the quarter and in the 43 percentile for the last year.
- SERS 2025 Retirement Fund's portfolio outperformed the LifePath Index 2025 CB by 0.01% for the quarter and outperformed the LifePath Index 2025 CB for the year by 0.12%.

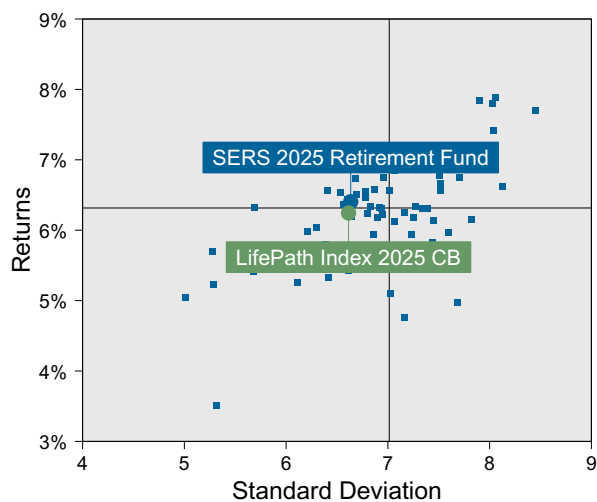
Performance vs Callan Target Date 2025 (Net)



Relative Return vs LifePath Index 2025 CB



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

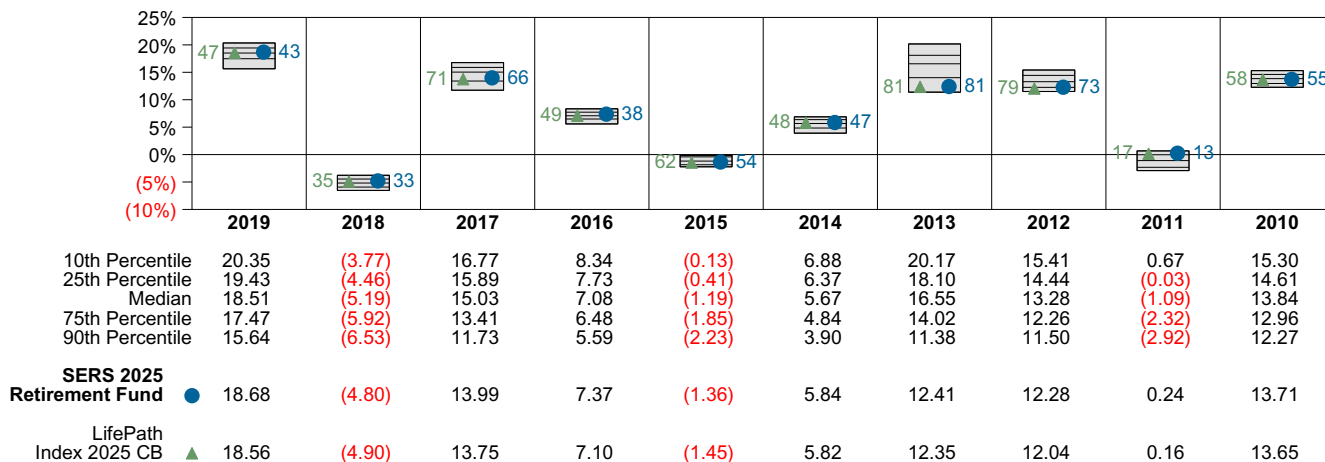


SERS 2025 Retirement Fund Return Analysis Summary

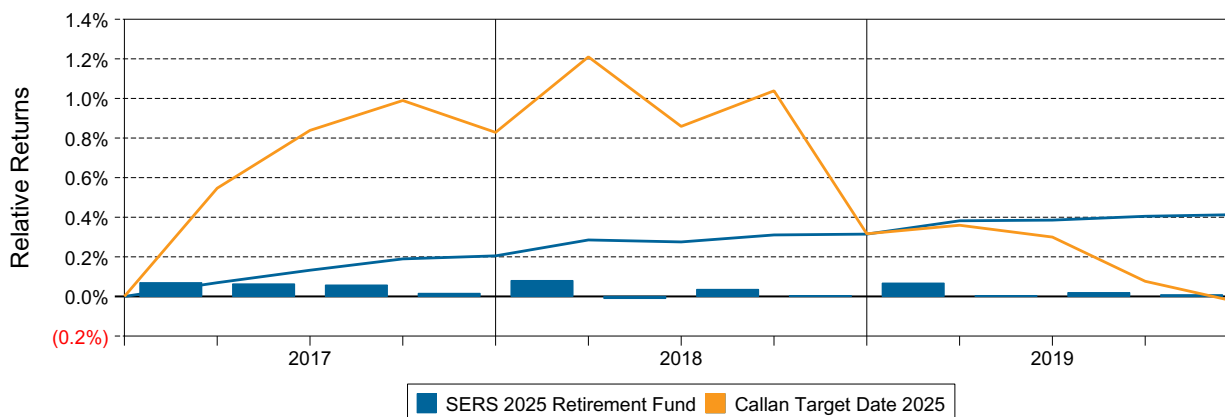
Return Analysis

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)



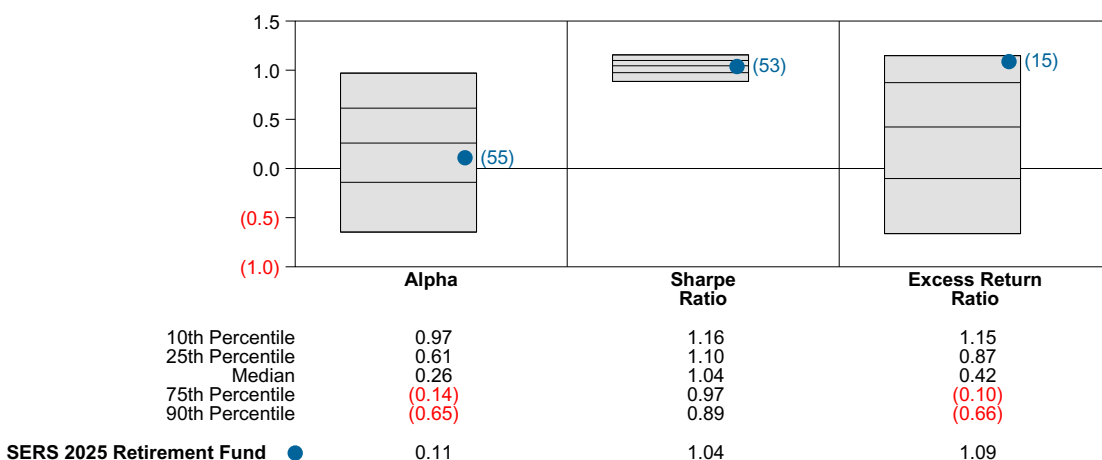
Cumulative and Quarterly Relative Return vs LifePath Index 2025 CB



Risk Adjusted Return Measures vs LifePath Index 2025 CB

Rankings Against Callan Target Date 2025 (Net)

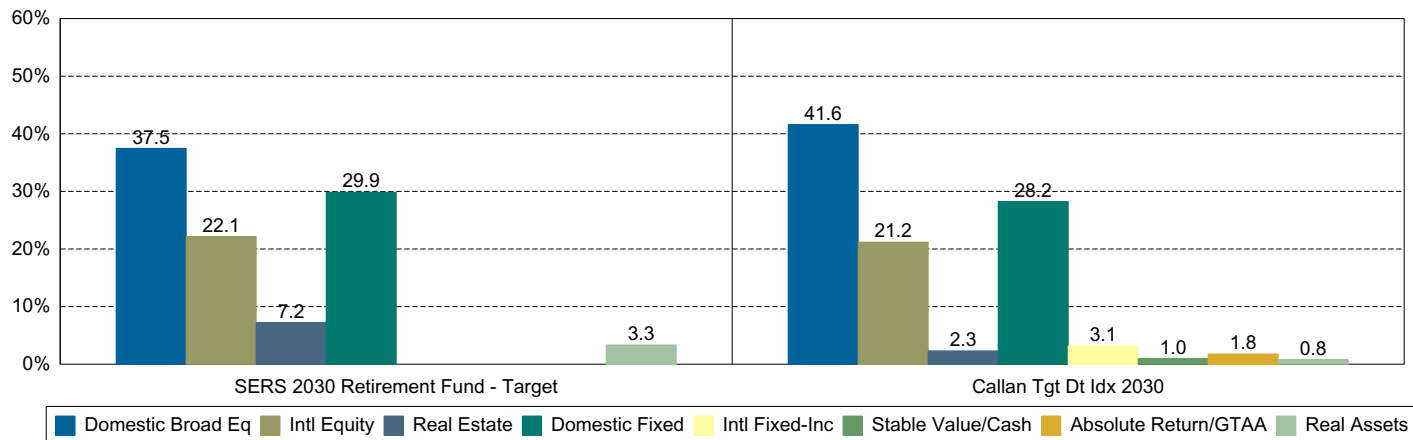
Seven Years Ended December 31, 2019



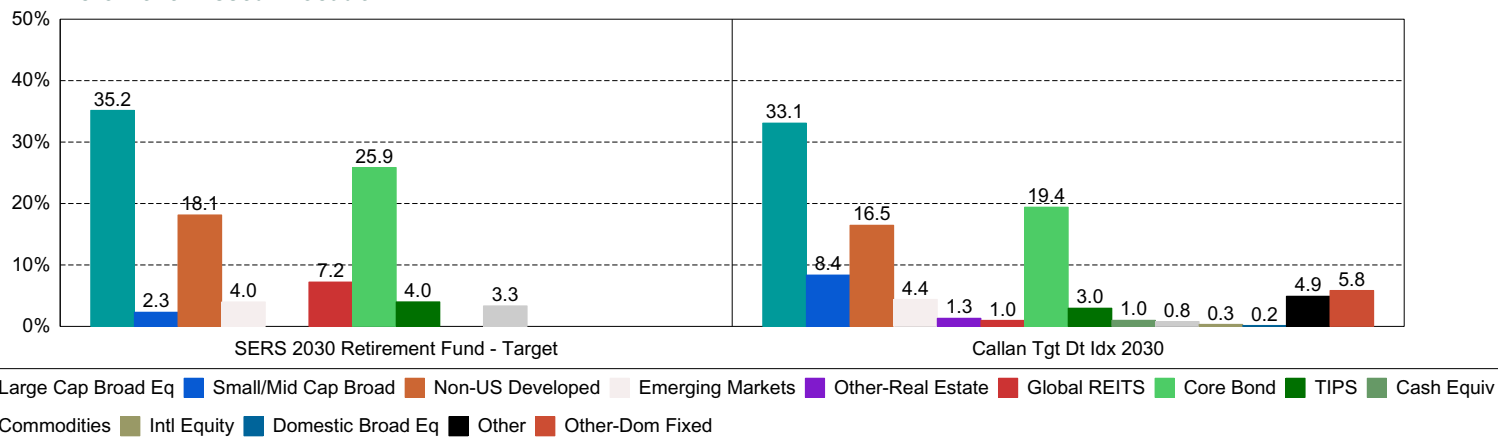
SERS 2030 Retirement Fund Target Date Fund Asset Allocation as of December 31, 2019

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.

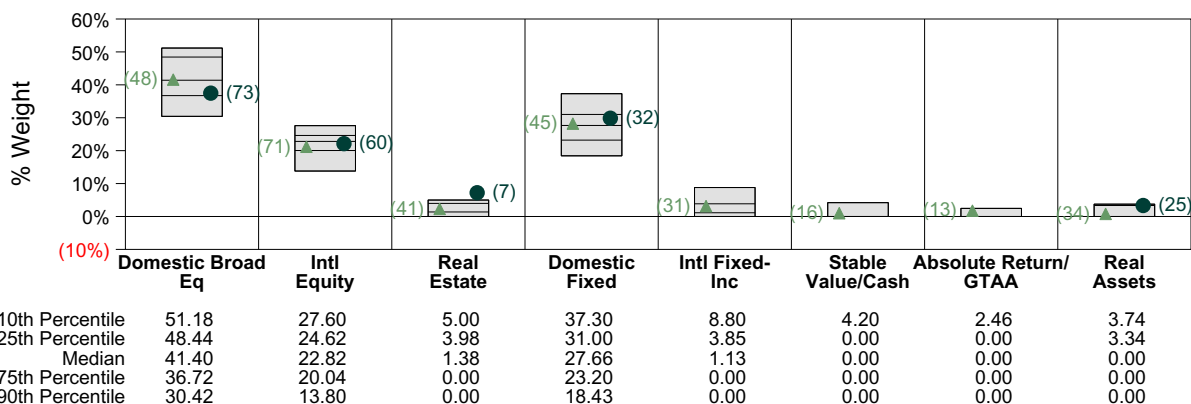
Macro-Level Asset Allocation



Micro-Level Asset Allocation



Macro Asset Allocation Rankings vs. Callan Target Date 2030



SERS 2030 Retirement Fund - Target	●	37.47	22.12	7.22	29.85	-	-	-	3.34
Callan Tgt Dt Idx 2030	▲	41.59	21.18	2.31	28.22	3.15	1.00	1.76	0.79

SERS 2030 Retirement Fund Period Ended December 31, 2019

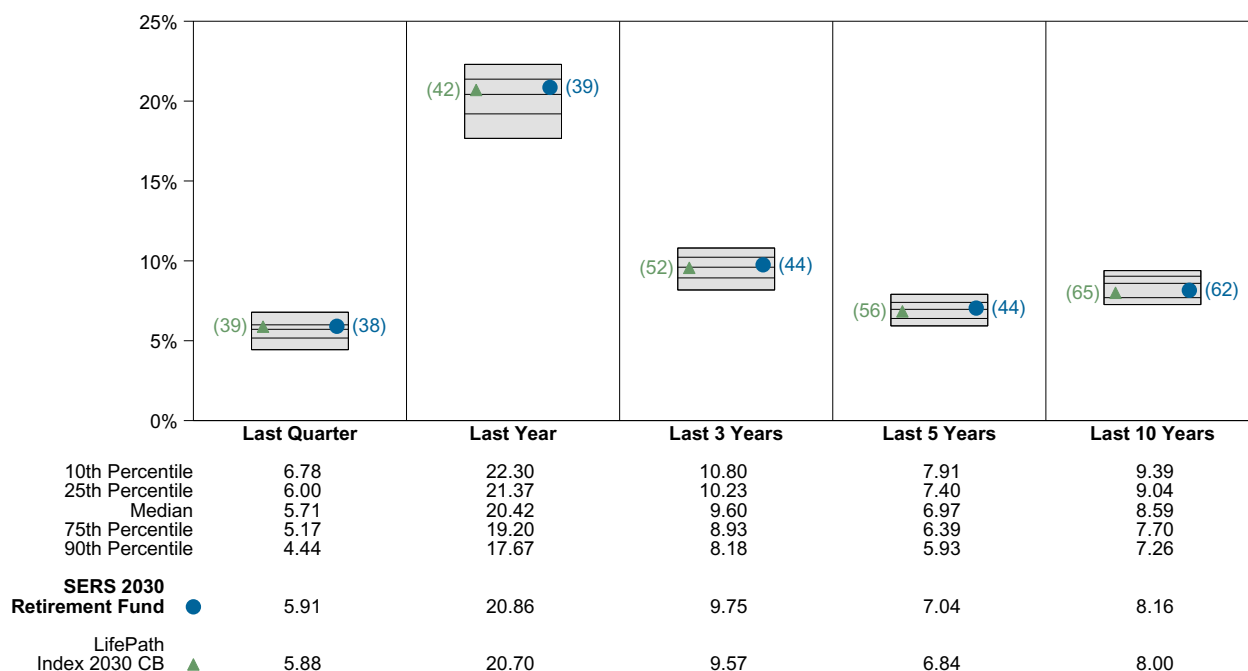
Investment Philosophy

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.

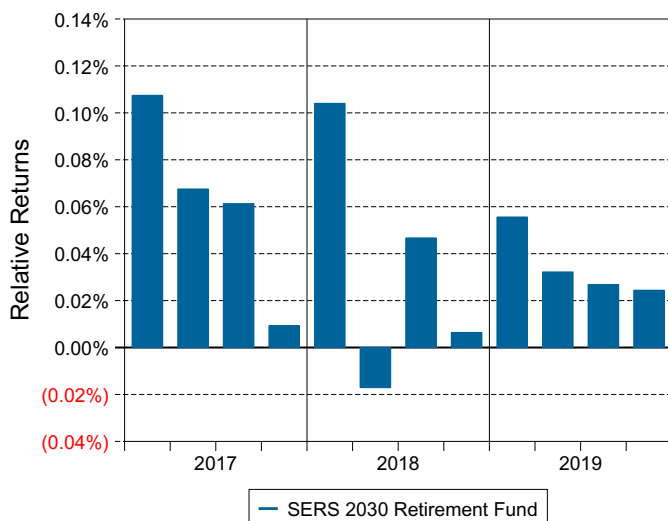
Quarterly Summary and Highlights

- SERS 2030 Retirement Fund's portfolio posted a 5.91% return for the quarter placing it in the 38 percentile of the Callan Target Date 2030 group for the quarter and in the 39 percentile for the last year.
- SERS 2030 Retirement Fund's portfolio outperformed the LifePath Index 2030 CB by 0.02% for the quarter and outperformed the LifePath Index 2030 CB for the year by 0.16%.

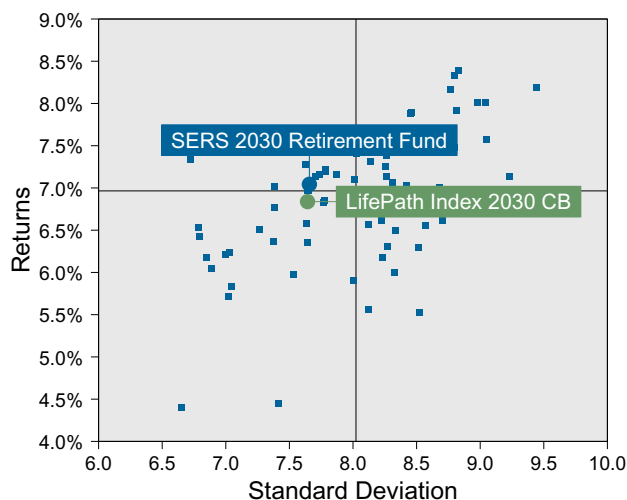
Performance vs Callan Target Date 2030 (Net)



Relative Return vs LifePath Index 2030 CB



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

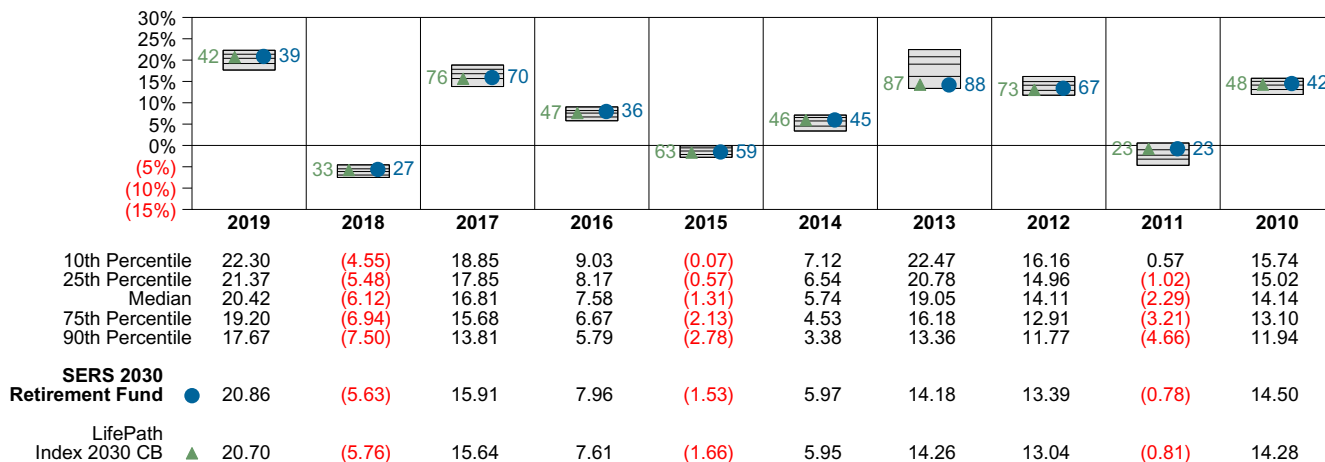


SERS 2030 Retirement Fund Return Analysis Summary

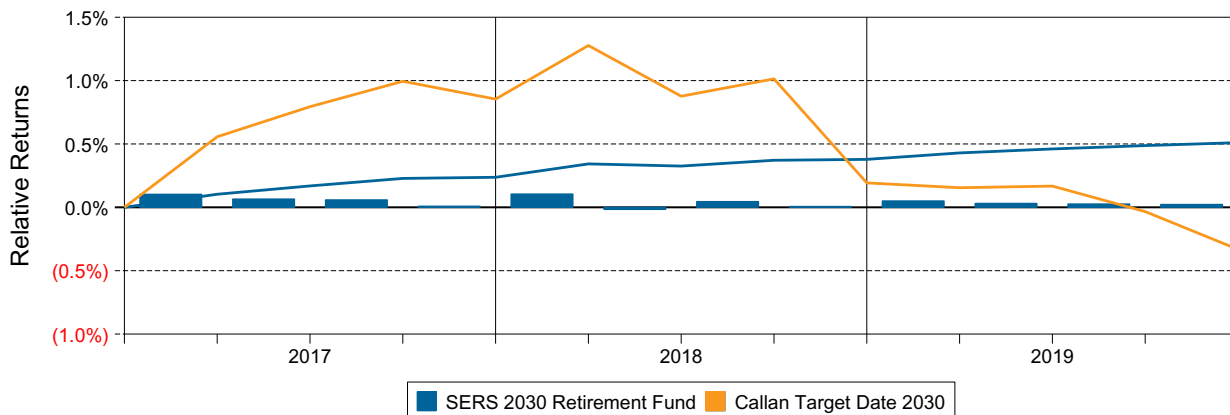
Return Analysis

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)



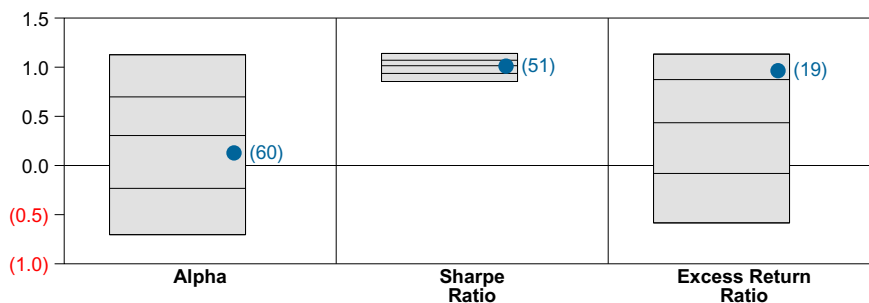
Cumulative and Quarterly Relative Return vs LifePath Index 2030 CB



Risk Adjusted Return Measures vs LifePath Index 2030 CB

Rankings Against Callan Target Date 2030 (Net)

Seven Years Ended December 31, 2019

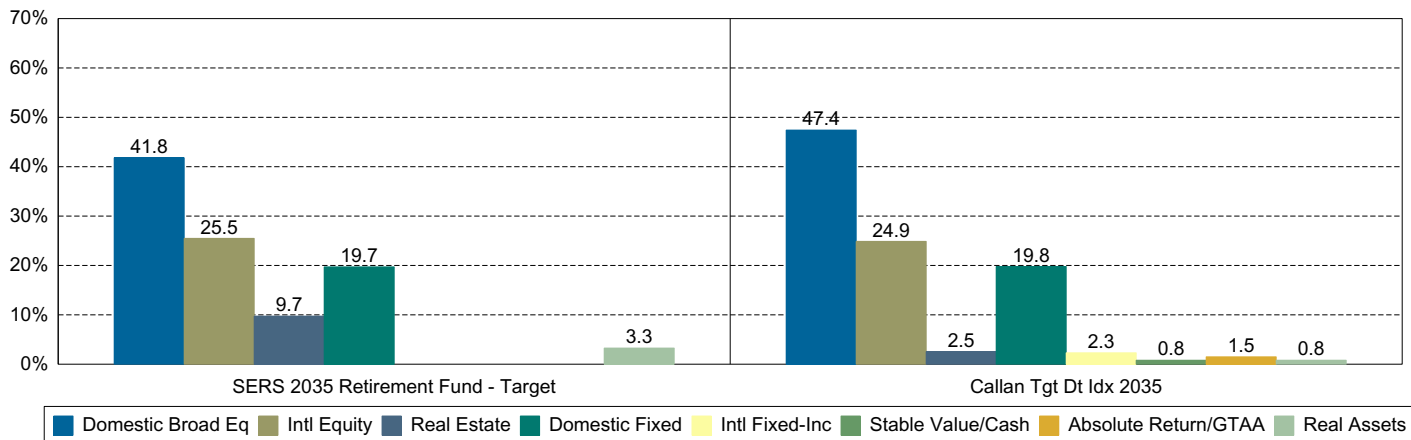


10th Percentile	1.13	1.14	1.13
25th Percentile	0.70	1.07	0.87
Median	0.30	1.02	0.44
75th Percentile	(0.23)	0.94	(0.08)
90th Percentile	(0.70)	0.85	(0.58)
SERS 2030 Retirement Fund	0.13	1.01	0.96

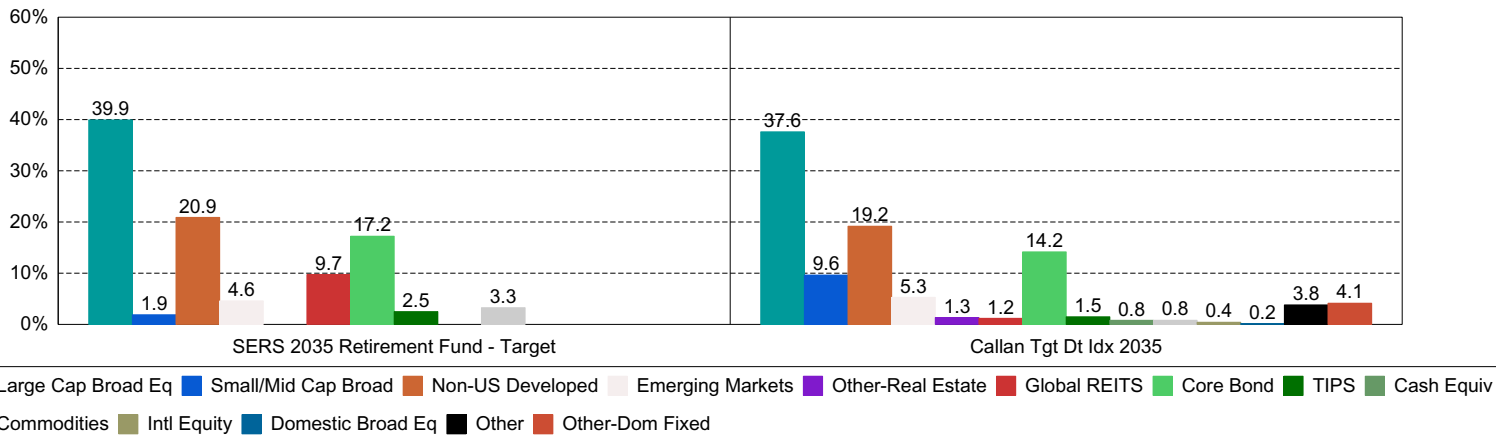
SERS 2035 Retirement Fund Target Date Fund Asset Allocation as of December 31, 2019

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.

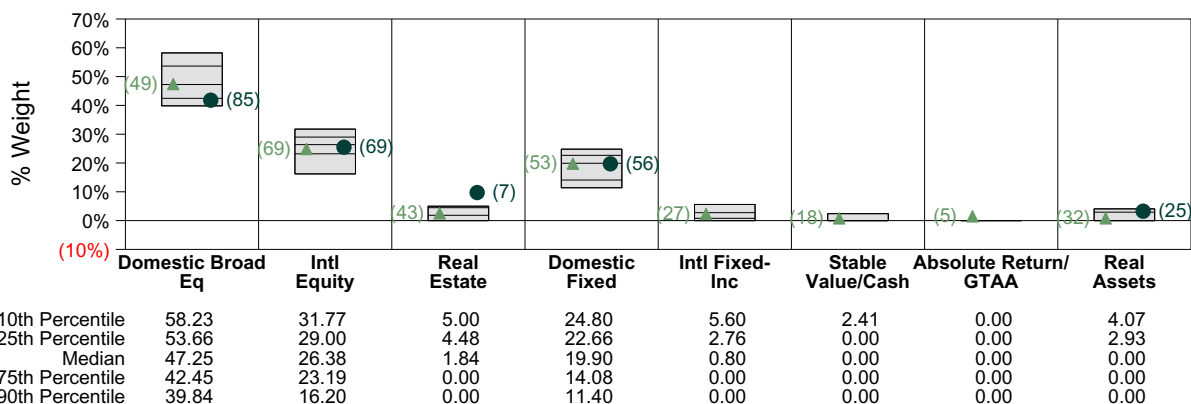
Macro-Level Asset Allocation



Micro-Level Asset Allocation



Macro Asset Allocation Rankings vs. Callan Target Date 2035



SERS 2035 Retirement Fund - Target	●	41.81	25.48	9.74	19.71	-	-	-	3.26
Callan Tgt Dt Idx 2035	▲	47.41	24.87	2.53	19.78	2.31	0.80	1.49	0.80

SERS 2035 Retirement Fund Period Ended December 31, 2019

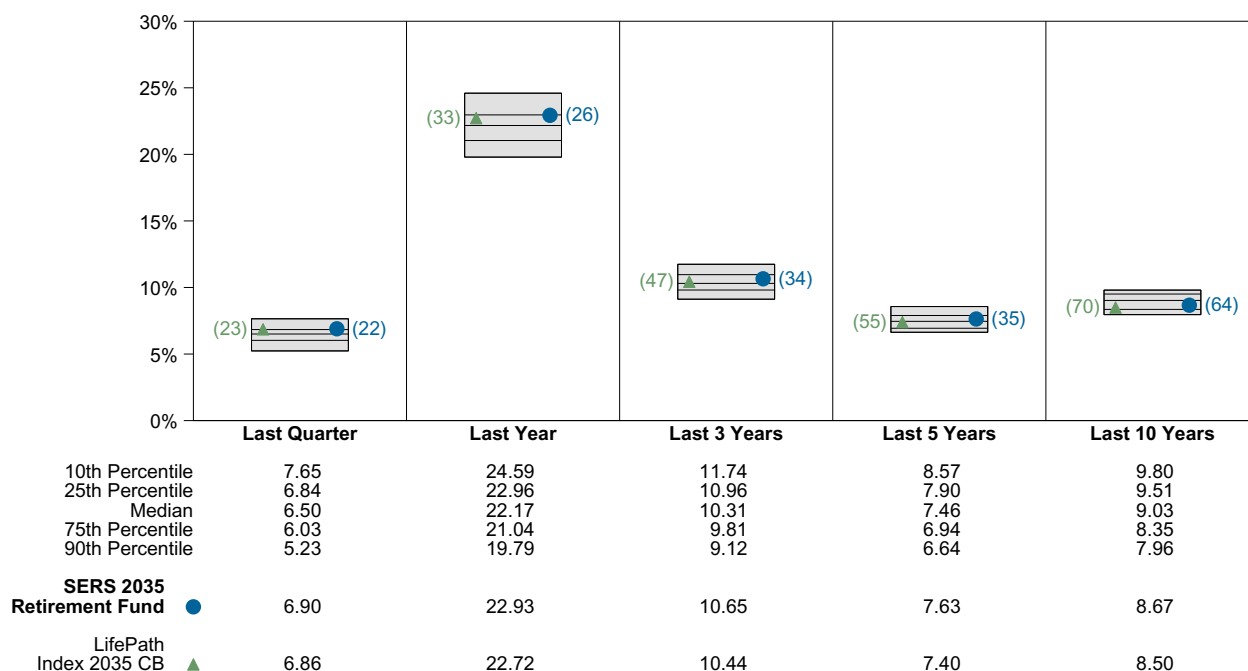
Investment Philosophy

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.

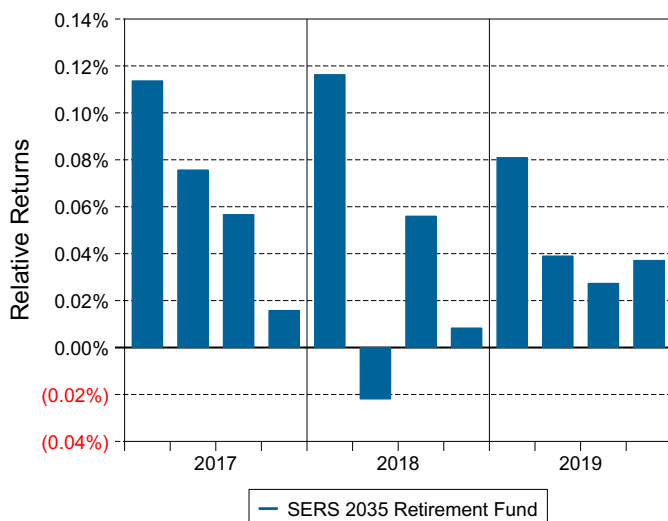
Quarterly Summary and Highlights

- SERS 2035 Retirement Fund's portfolio posted a 6.90% return for the quarter placing it in the 22 percentile of the Callan Target Date 2035 group for the quarter and in the 26 percentile for the last year.
- SERS 2035 Retirement Fund's portfolio outperformed the LifePath Index 2035 CB by 0.04% for the quarter and outperformed the LifePath Index 2035 CB for the year by 0.21%.

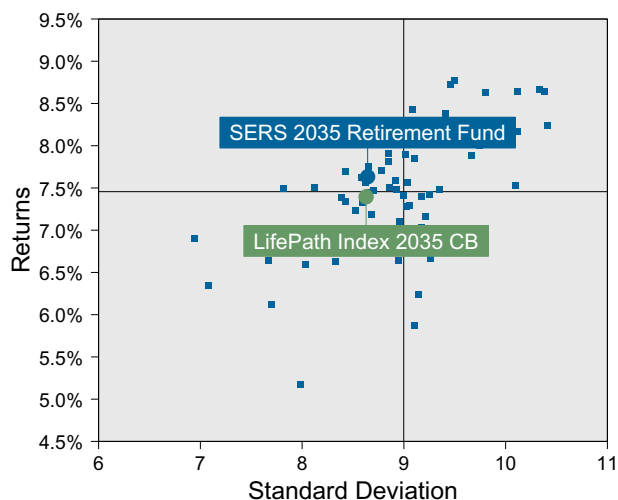
Performance vs Callan Target Date 2035 (Net)



Relative Return vs LifePath Index 2035 CB



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

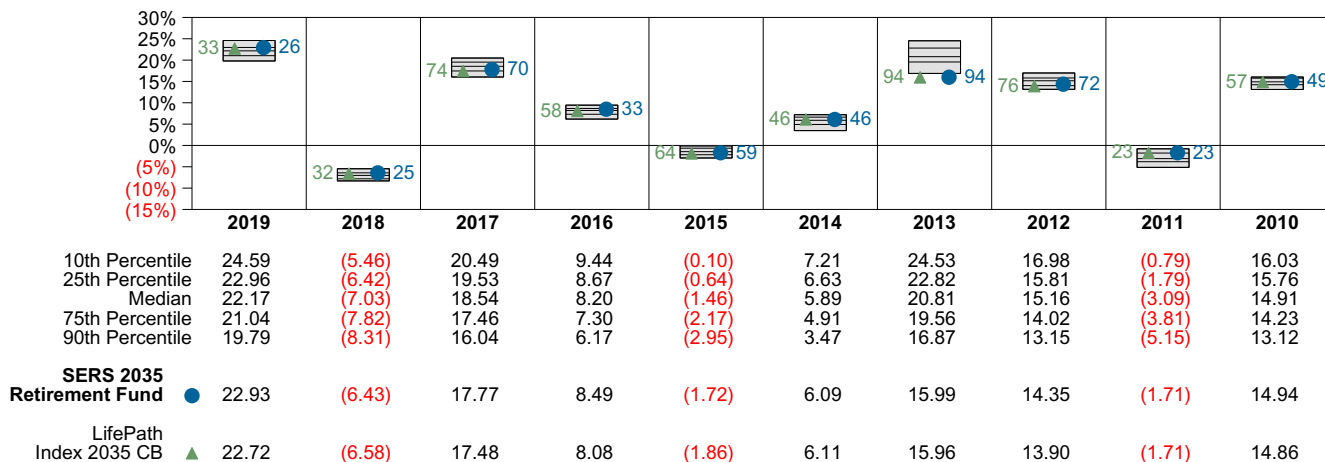


SERS 2035 Retirement Fund Return Analysis Summary

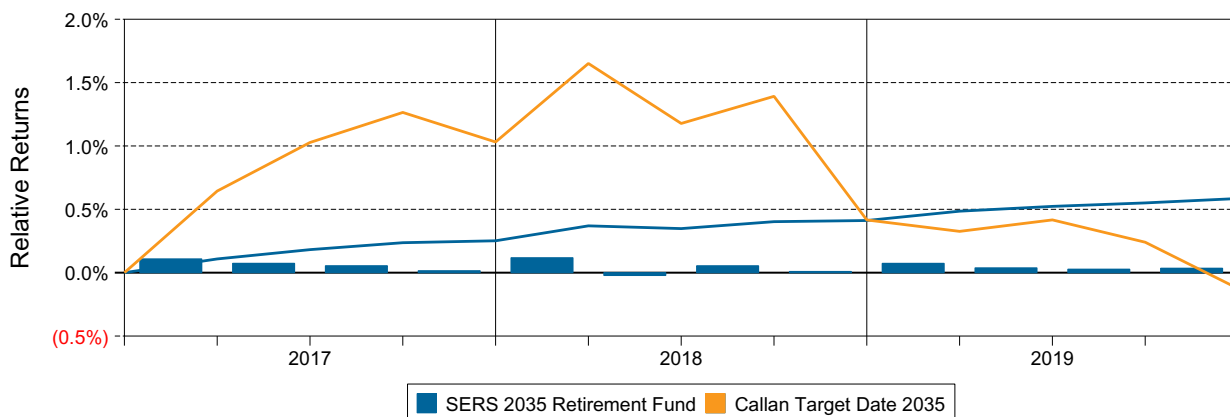
Return Analysis

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)



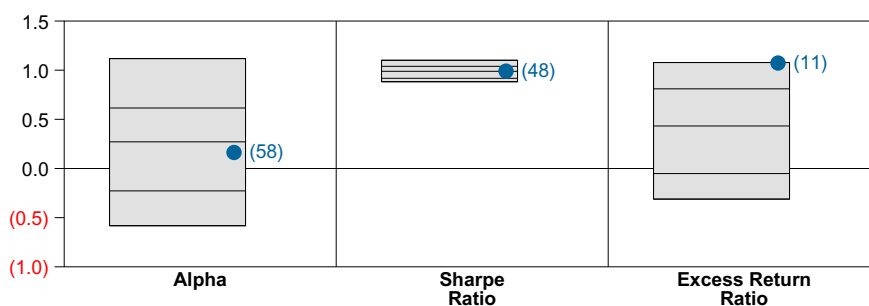
Cumulative and Quarterly Relative Return vs LifePath Index 2035 CB



Risk Adjusted Return Measures vs LifePath Index 2035 CB

Rankings Against Callan Target Date 2035 (Net)

Seven Years Ended December 31, 2019



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

1.12
0.62
0.27
(0.23)
(0.58)

1.10
1.04
0.99
0.92
0.88

1.08
0.81
0.43
(0.05)
(0.31)

SERS 2035 Retirement Fund

0.16

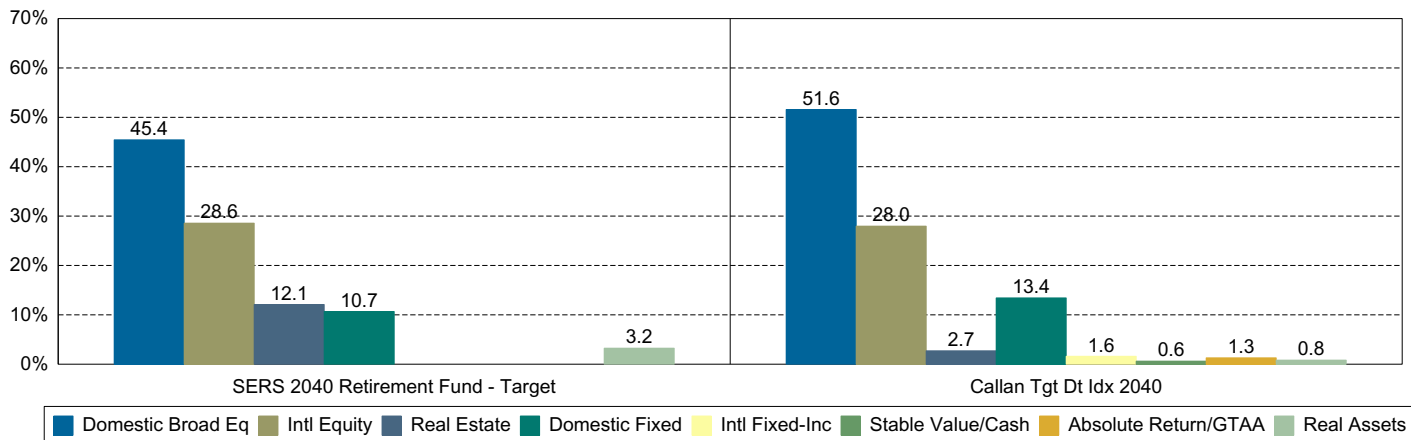
0.99

1.07

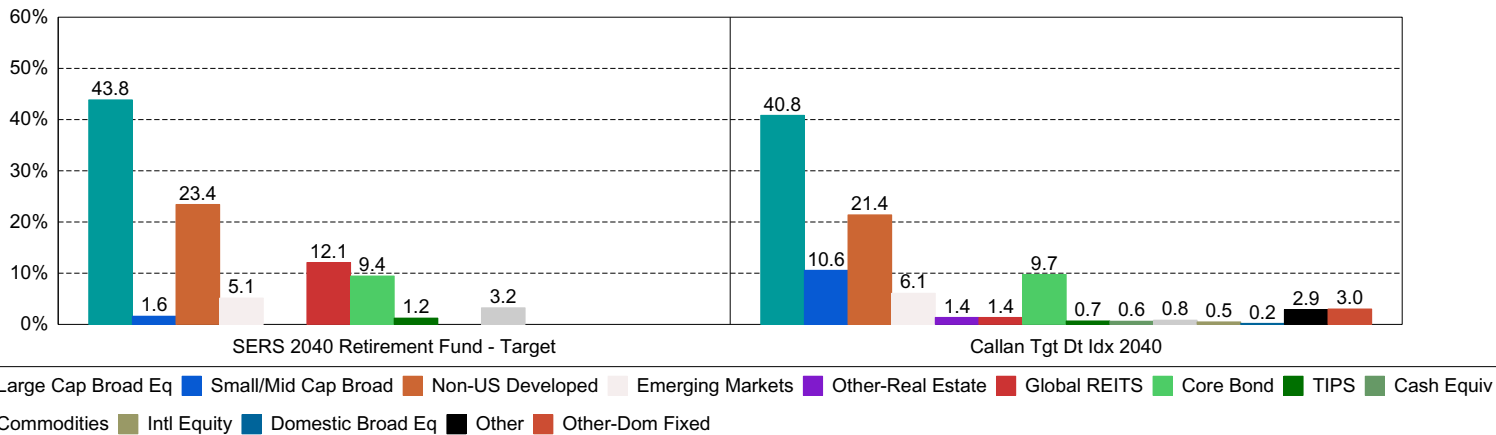
SERS 2040 Retirement Fund Target Date Fund Asset Allocation as of December 31, 2019

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.

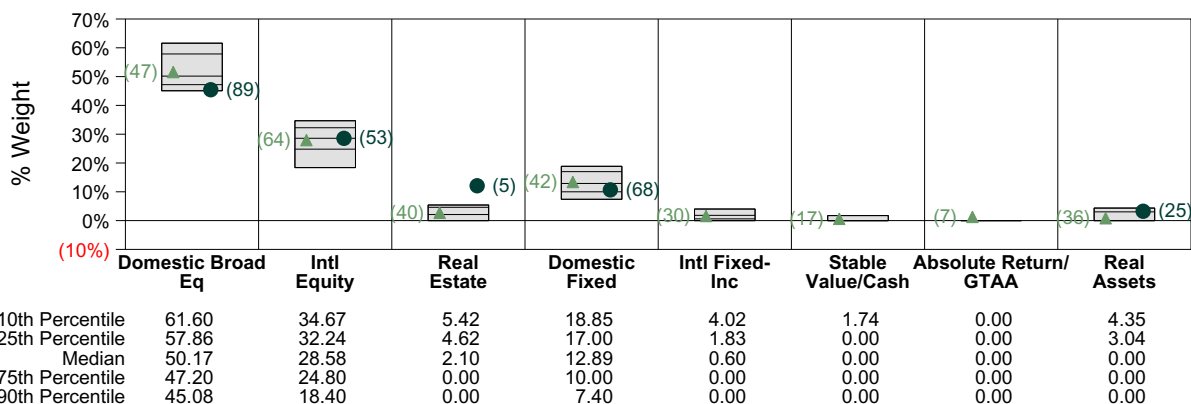
Macro-Level Asset Allocation



Micro-Level Asset Allocation



Macro Asset Allocation Rankings vs. Callan Target Date 2040



SERS 2040 Retirement Fund - Target	●	45.44	28.56	12.09	10.67	-	-	-	3.24
Callan Tgt Dt Idx 2040	▲	51.59	27.95	2.71	13.42	1.60	0.62	1.29	0.82

SERS 2040 Retirement Fund Period Ended December 31, 2019

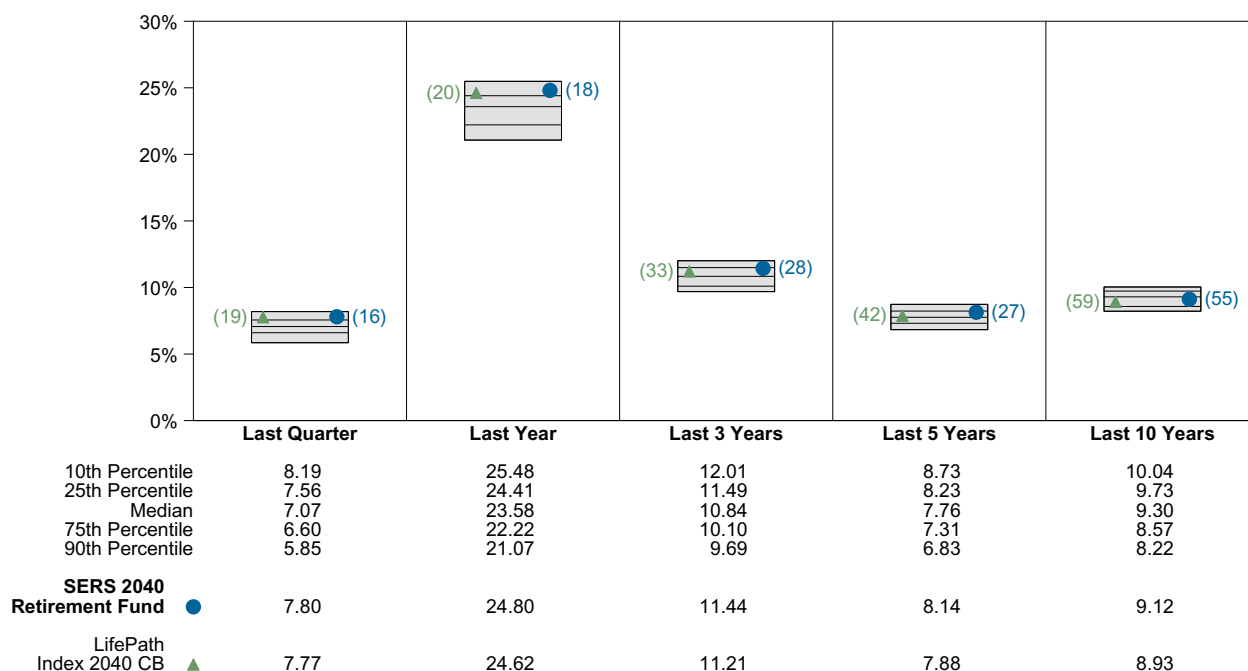
Investment Philosophy

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.

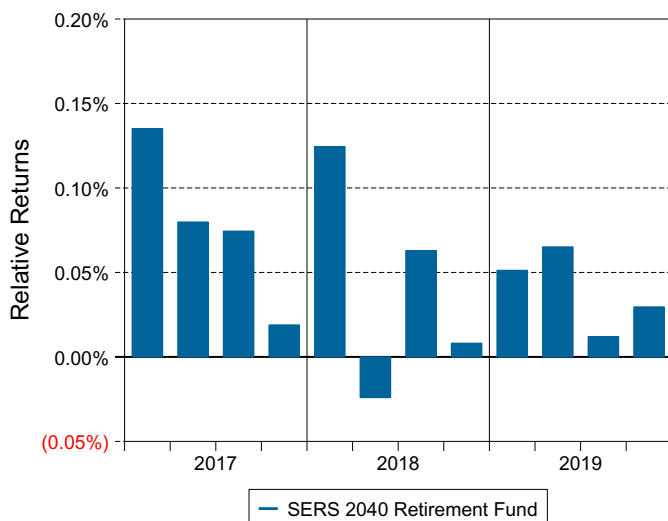
Quarterly Summary and Highlights

- SERS 2040 Retirement Fund's portfolio posted a 7.80% return for the quarter placing it in the 16 percentile of the Callan Target Date 2040 group for the quarter and in the 18 percentile for the last year.
- SERS 2040 Retirement Fund's portfolio outperformed the LifePath Index 2040 CB by 0.03% for the quarter and outperformed the LifePath Index 2040 CB for the year by 0.18%.

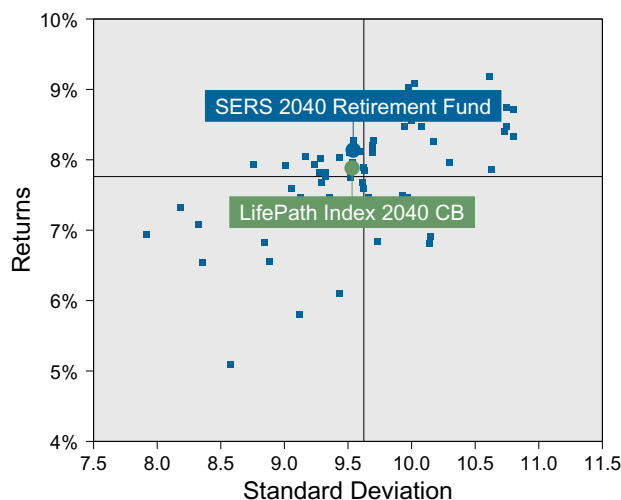
Performance vs Callan Target Date 2040 (Net)



Relative Return vs LifePath Index 2040 CB



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

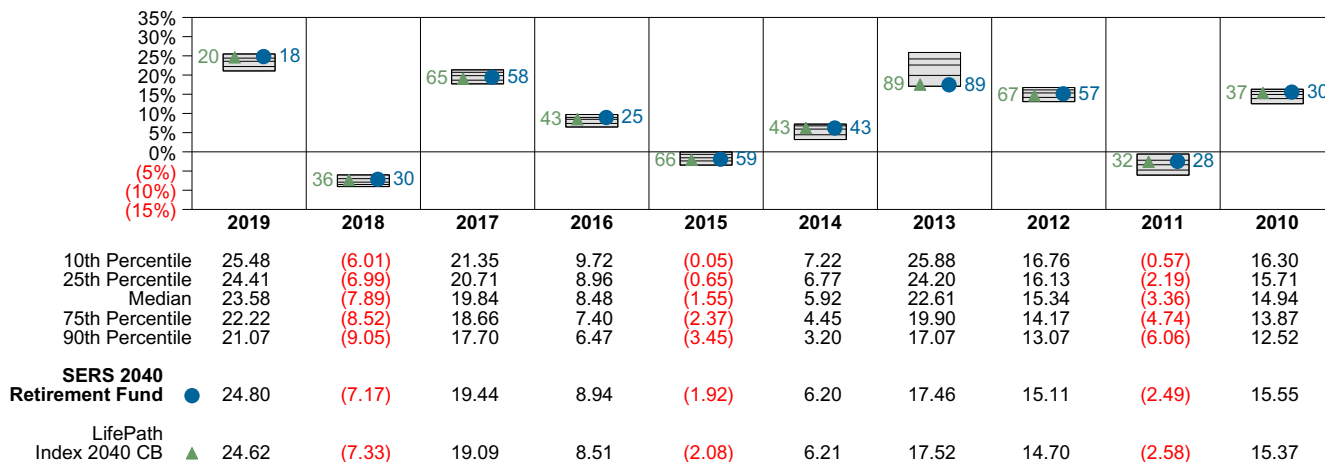


SERS 2040 Retirement Fund Return Analysis Summary

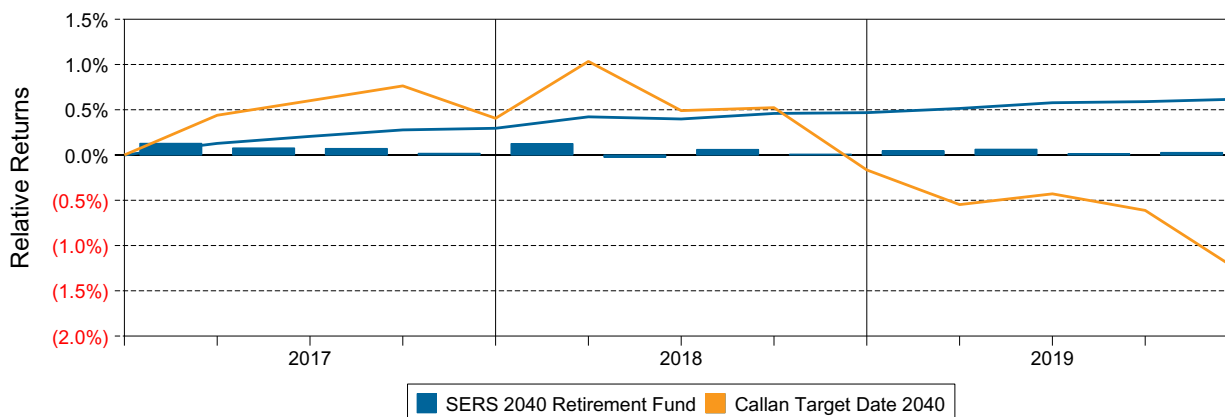
Return Analysis

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)



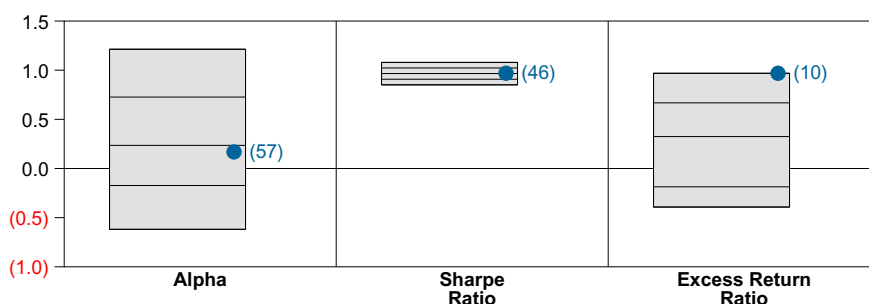
Cumulative and Quarterly Relative Return vs LifePath Index 2040 CB



Risk Adjusted Return Measures vs LifePath Index 2040 CB

Rankings Against Callan Target Date 2040 (Net)

Seven Years Ended December 31, 2019



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

1.21
0.73
0.24
(0.17)
(0.62)

1.08
1.02
0.97
0.91
0.85

0.97
0.67
0.32
(0.19)
(0.39)

SERS 2040 Retirement Fund

0.17

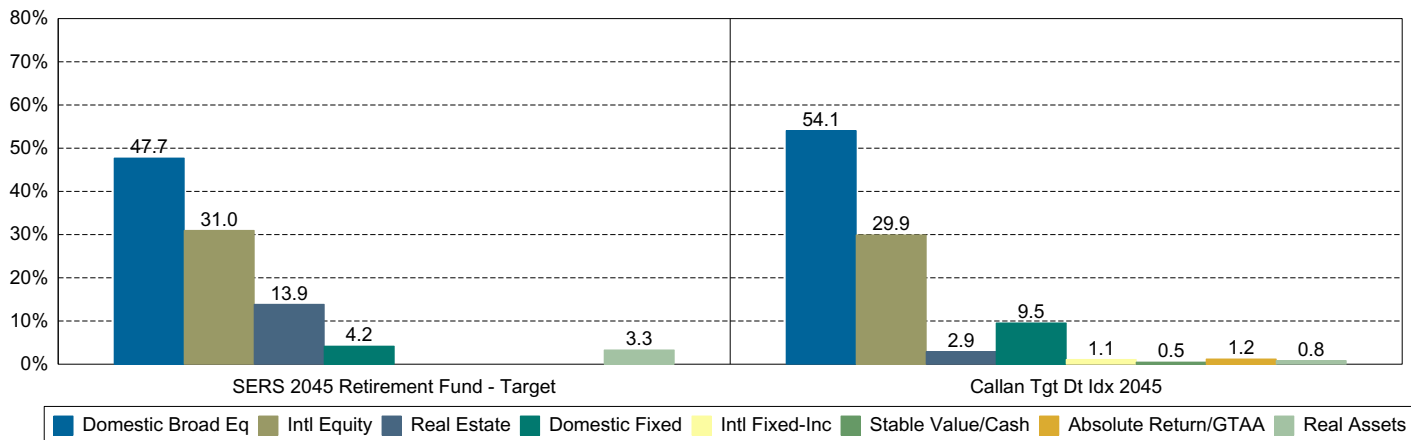
0.97

0.97

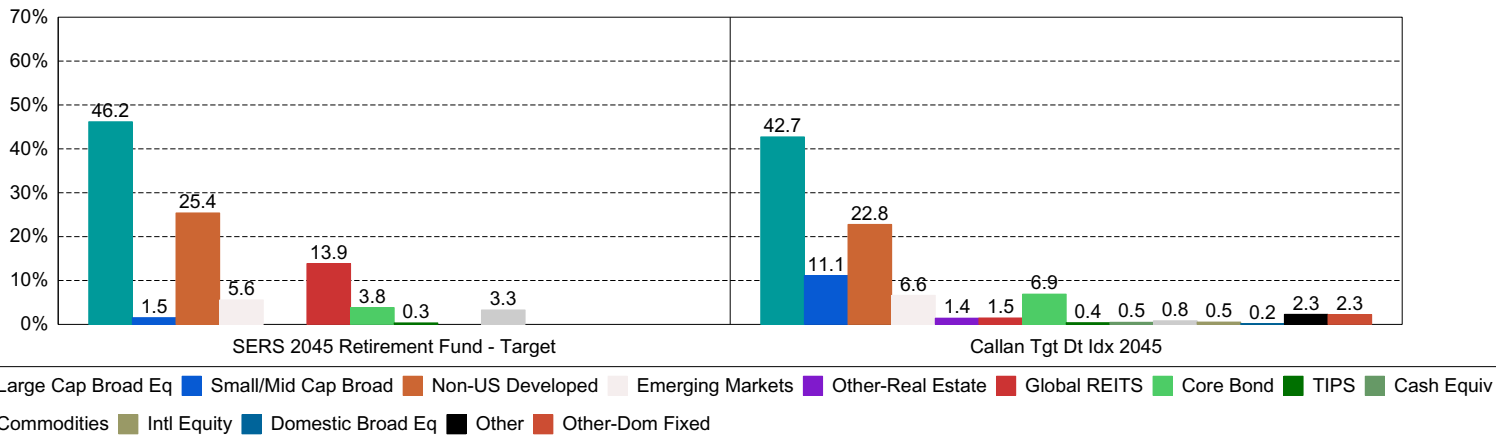
SERS 2045 Retirement Fund Target Date Fund Asset Allocation as of December 31, 2019

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.

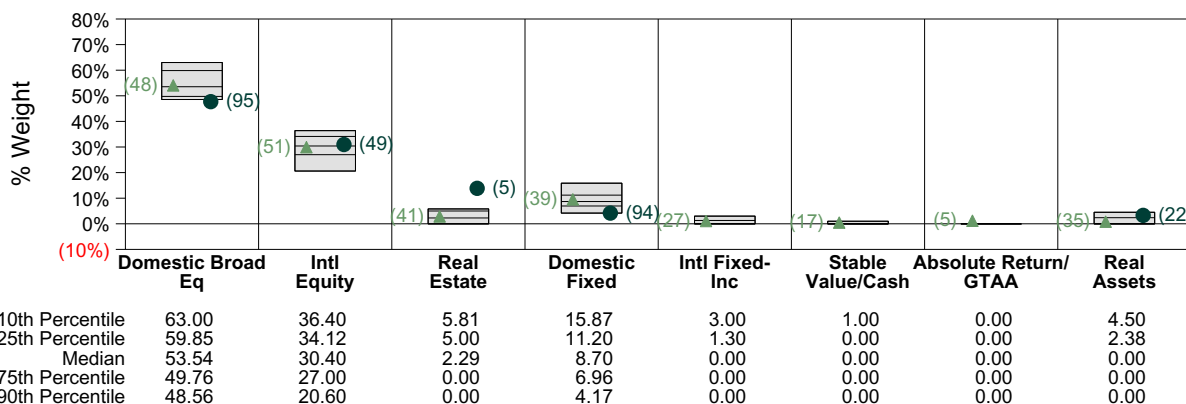
Macro-Level Asset Allocation



Micro-Level Asset Allocation



Macro Asset Allocation Rankings vs. Callan Target Date 2045



SERS 2045 Retirement Fund - Target	●	47.71	30.97	13.86	4.17	-	-	3.29
Callan Tgt Dt Idx 2045	▲	54.06	29.92	2.87	9.54	1.09	1.20	0.83

SERS 2045 Retirement Fund Period Ended December 31, 2019

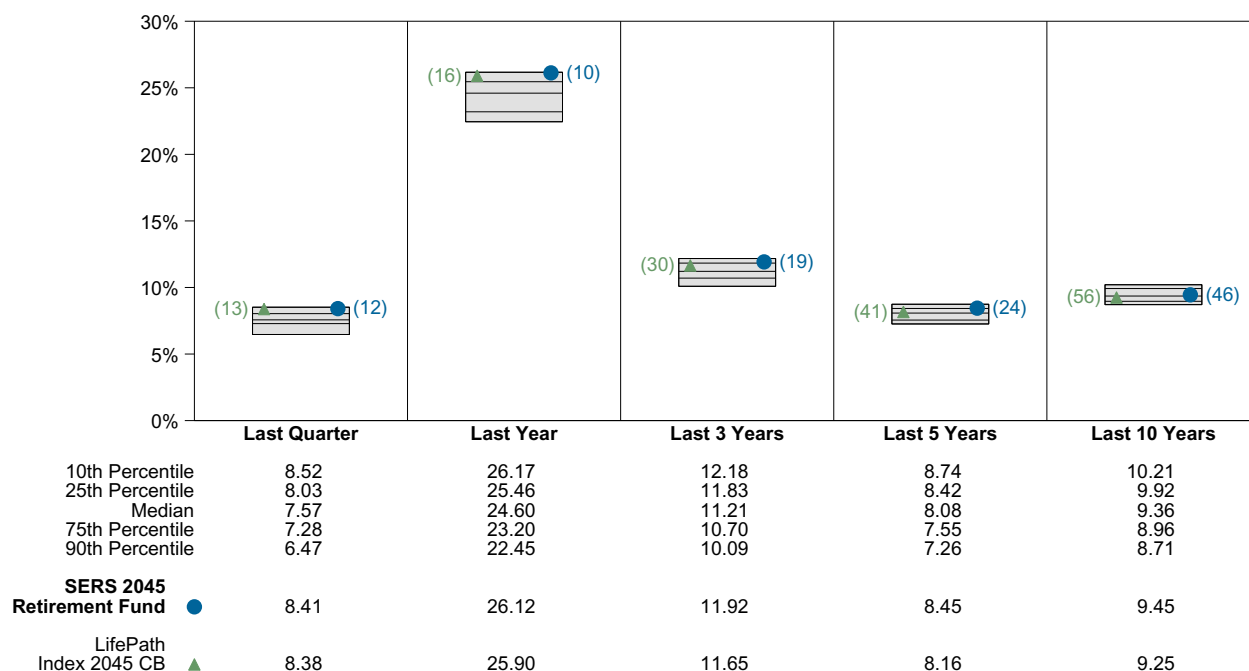
Investment Philosophy

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.

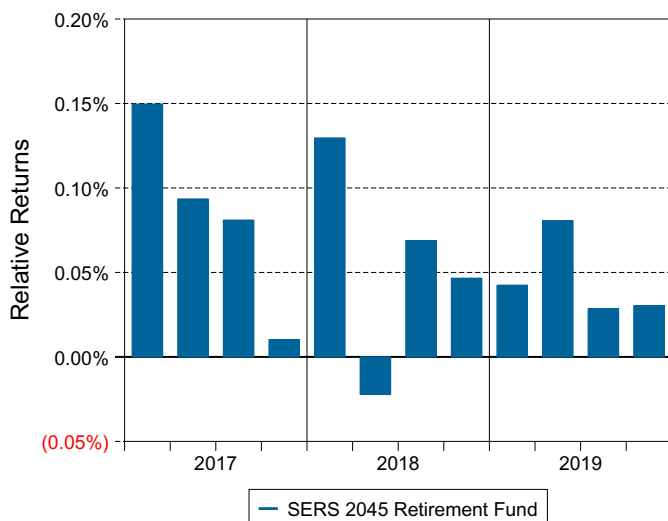
Quarterly Summary and Highlights

- SERS 2045 Retirement Fund's portfolio posted a 8.41% return for the quarter placing it in the 12 percentile of the Callan Target Date 2045 group for the quarter and in the 10 percentile for the last year.
- SERS 2045 Retirement Fund's portfolio outperformed the LifePath Index 2045 CB by 0.03% for the quarter and outperformed the LifePath Index 2045 CB for the year by 0.22%.

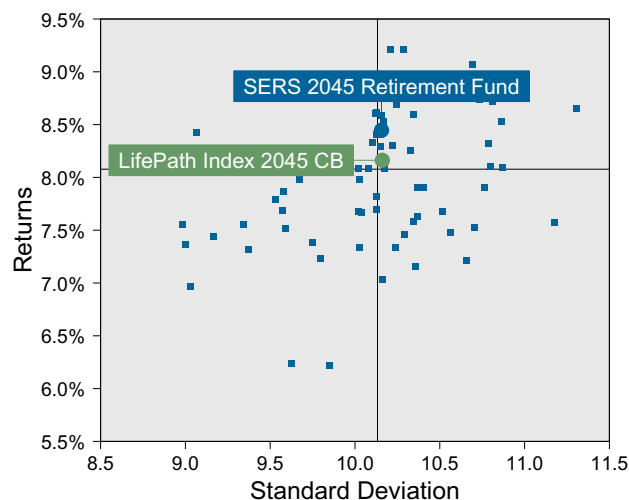
Performance vs Callan Target Date 2045 (Net)



Relative Return vs LifePath Index 2045 CB



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

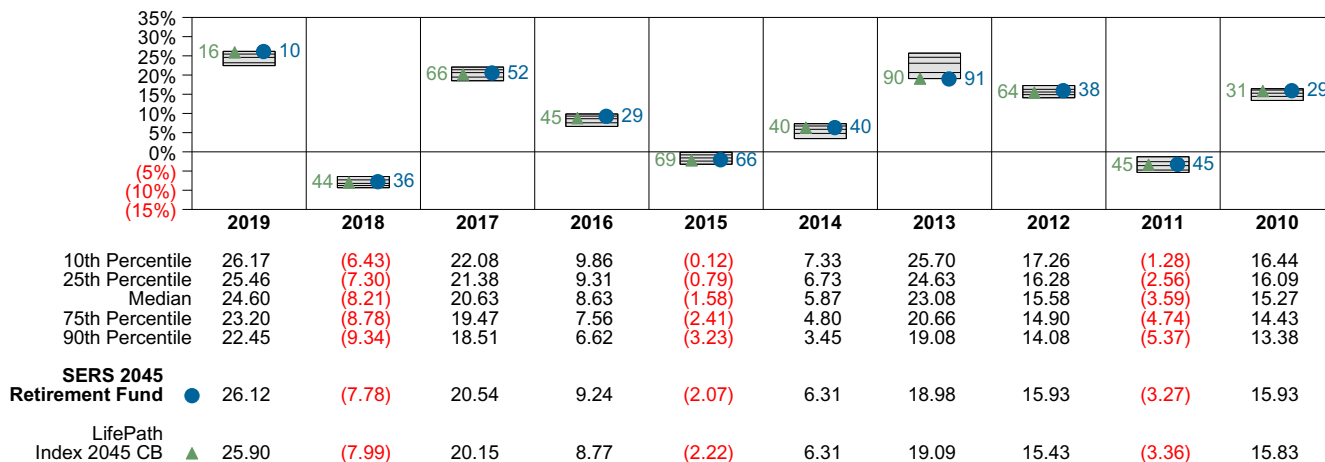


SERS 2045 Retirement Fund Return Analysis Summary

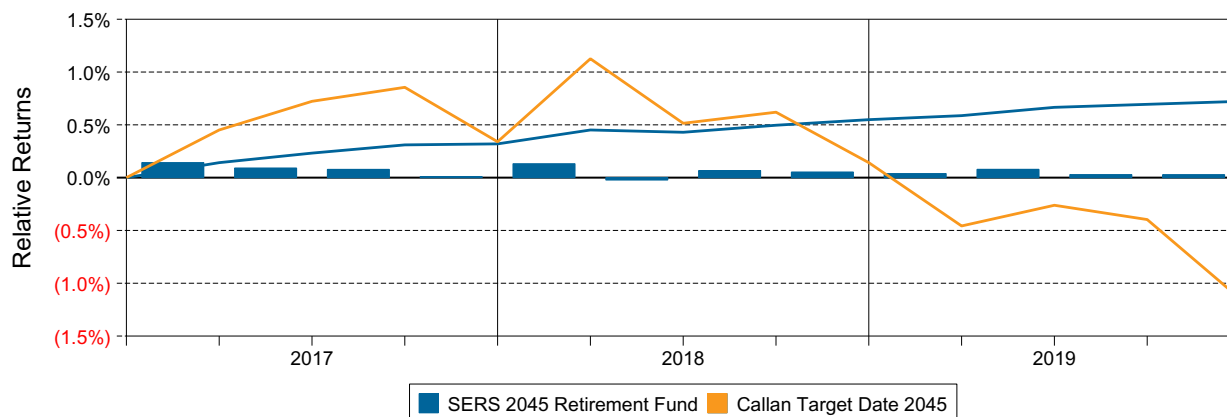
Return Analysis

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.

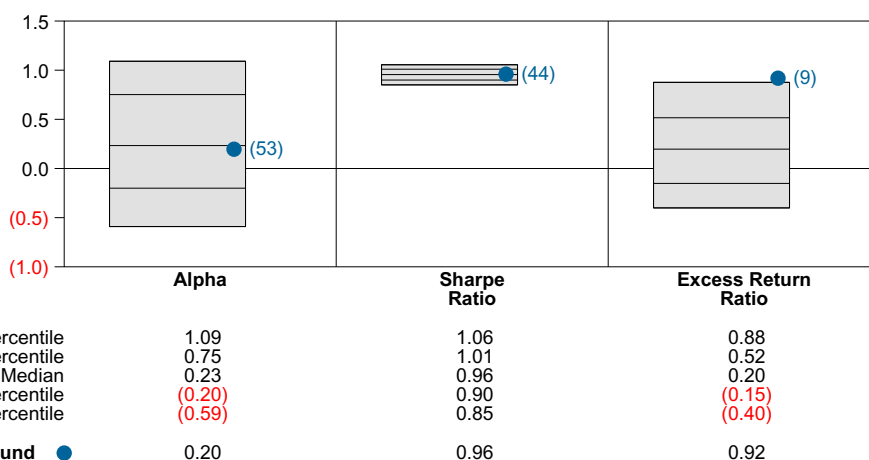
Performance vs Callan Target Date 2045 (Net)



Cumulative and Quarterly Relative Return vs LifePath Index 2045 CB



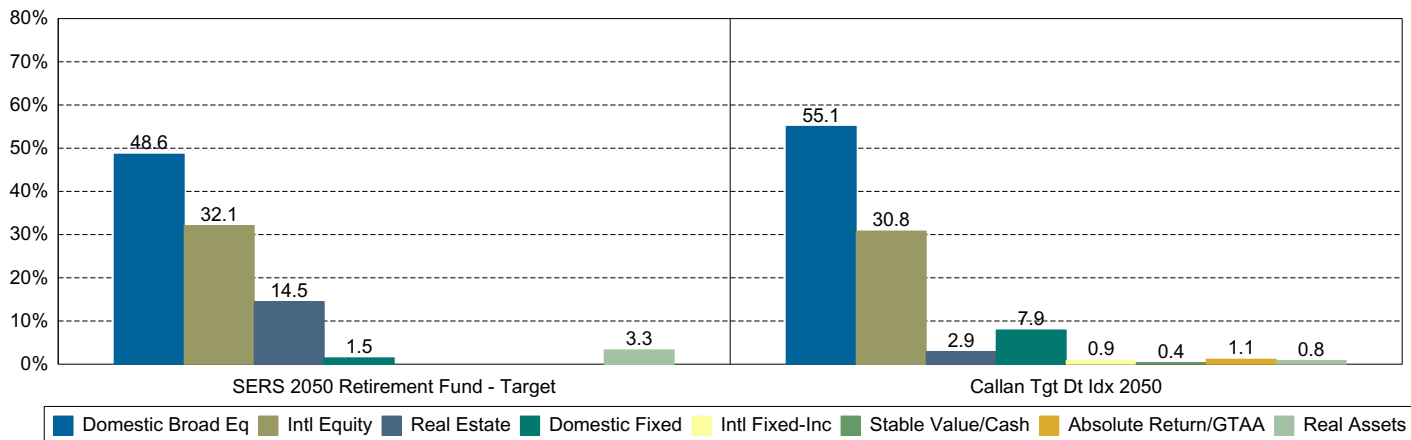
Risk Adjusted Return Measures vs LifePath Index 2045 CB Rankings Against Callan Target Date 2045 (Net) Seven Years Ended December 31, 2019



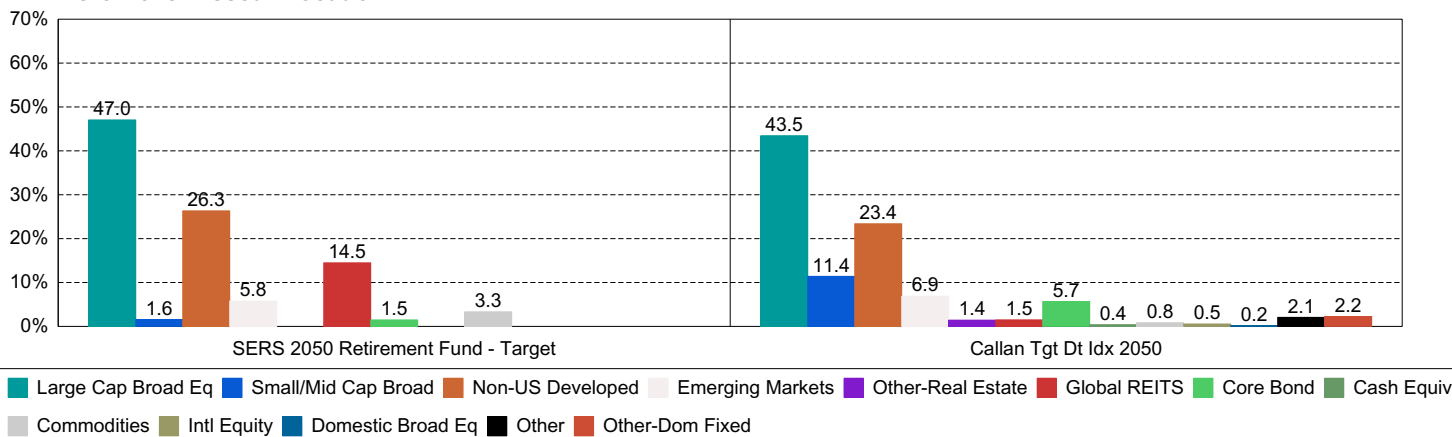
SERS 2050 Retirement Fund Target Date Fund Asset Allocation as of December 31, 2019

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.

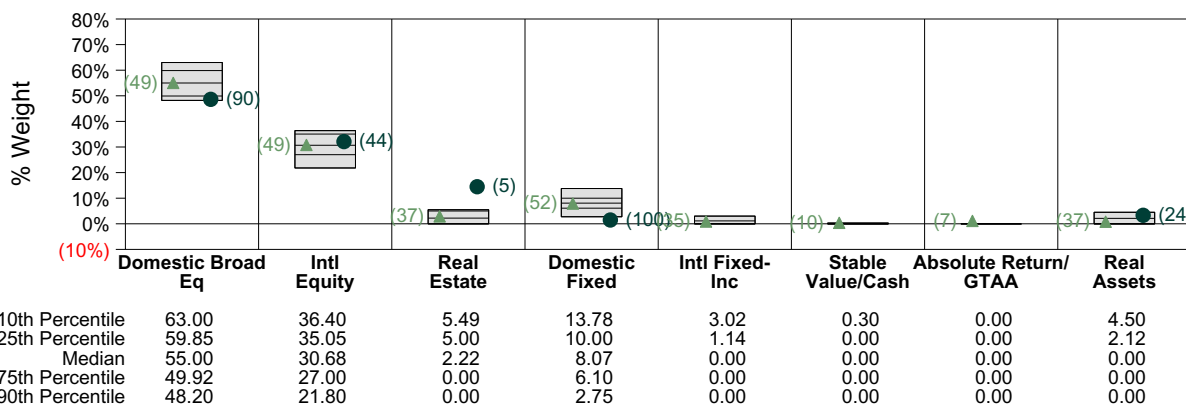
Macro-Level Asset Allocation



Micro-Level Asset Allocation



Macro Asset Allocation Rankings vs. Callan Target Date 2050



SERS 2050 Retirement Fund - Target	●	48.61	32.11	14.48	1.47	-	-	-	3.32
Callan Tgt Dt Idx 2050	▲	55.05	30.82	2.92	7.92	0.91	0.40	1.15	0.83

SERS 2050 Retirement Fund Period Ended December 31, 2019

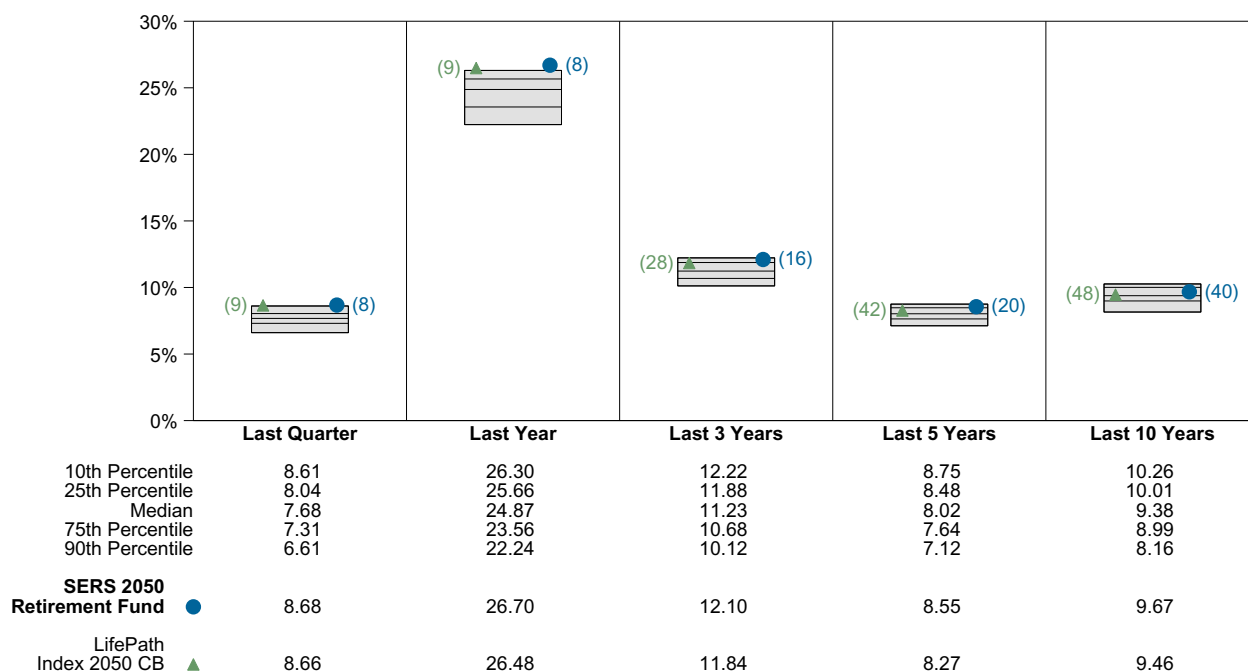
Investment Philosophy

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.

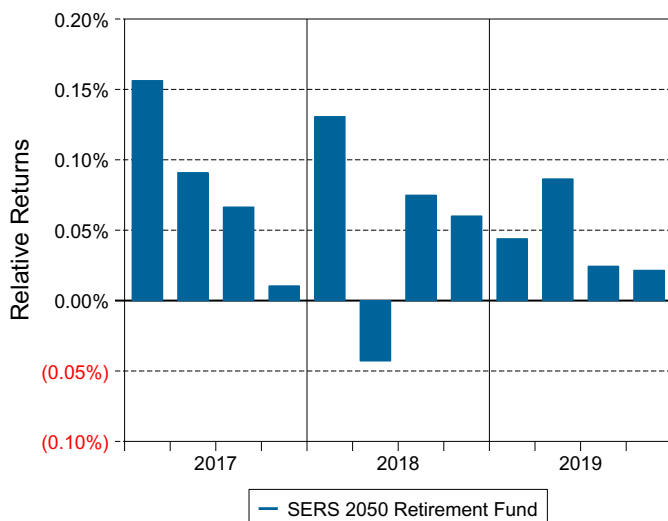
Quarterly Summary and Highlights

- SERS 2050 Retirement Fund's portfolio posted a 8.68% return for the quarter placing it in the 8 percentile of the Callan Target Date 2050 group for the quarter and in the 8 percentile for the last year.
- SERS 2050 Retirement Fund's portfolio outperformed the LifePath Index 2050 CB by 0.02% for the quarter and outperformed the LifePath Index 2050 CB for the year by 0.21%.

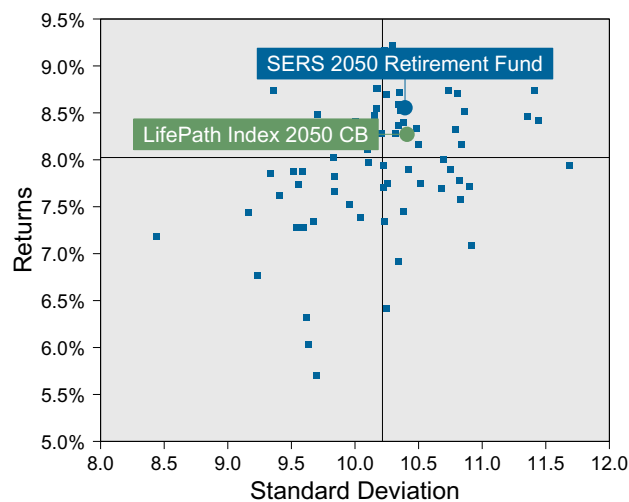
Performance vs Callan Target Date 2050 (Net)



Relative Return vs LifePath Index 2050 CB



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

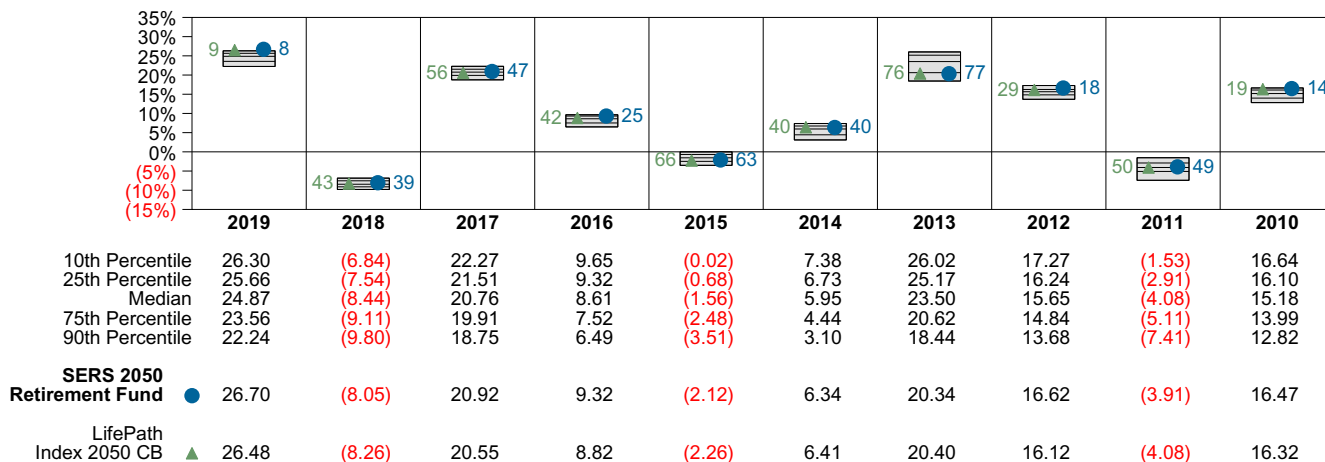


SERS 2050 Retirement Fund Return Analysis Summary

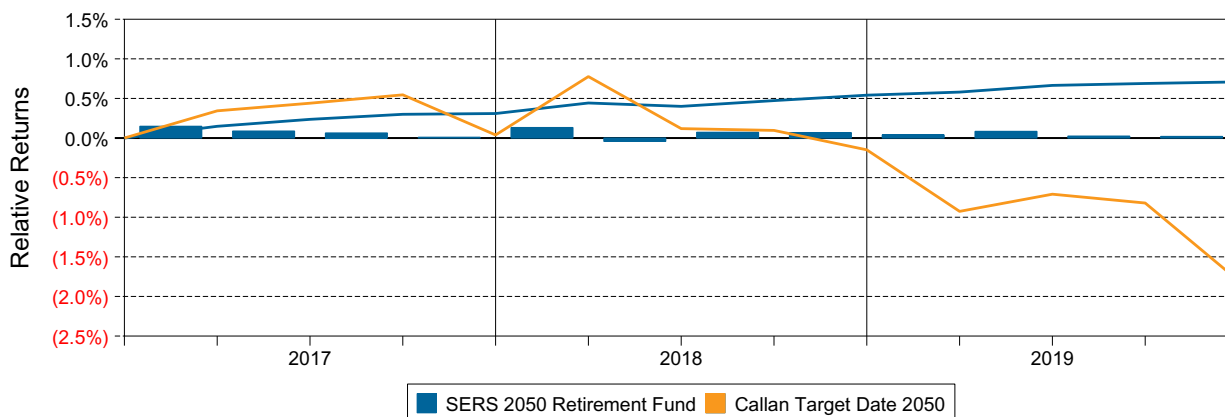
Return Analysis

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.

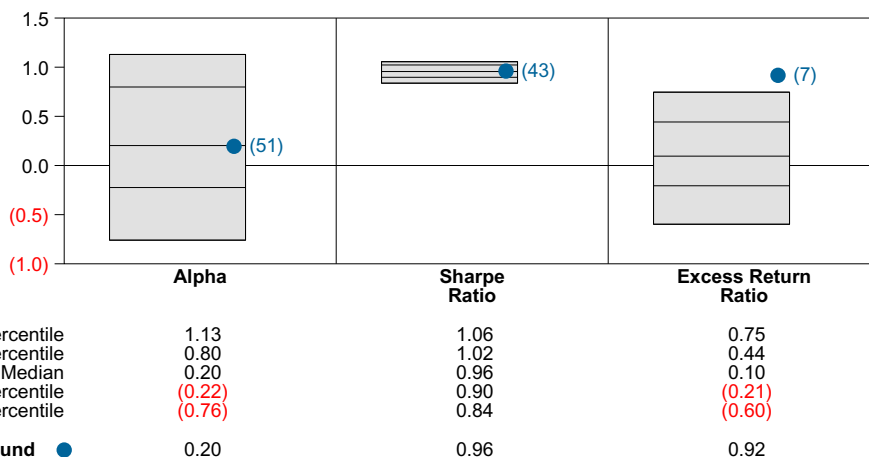
Performance vs Callan Target Date 2050 (Net)



Cumulative and Quarterly Relative Return vs LifePath Index 2050 CB



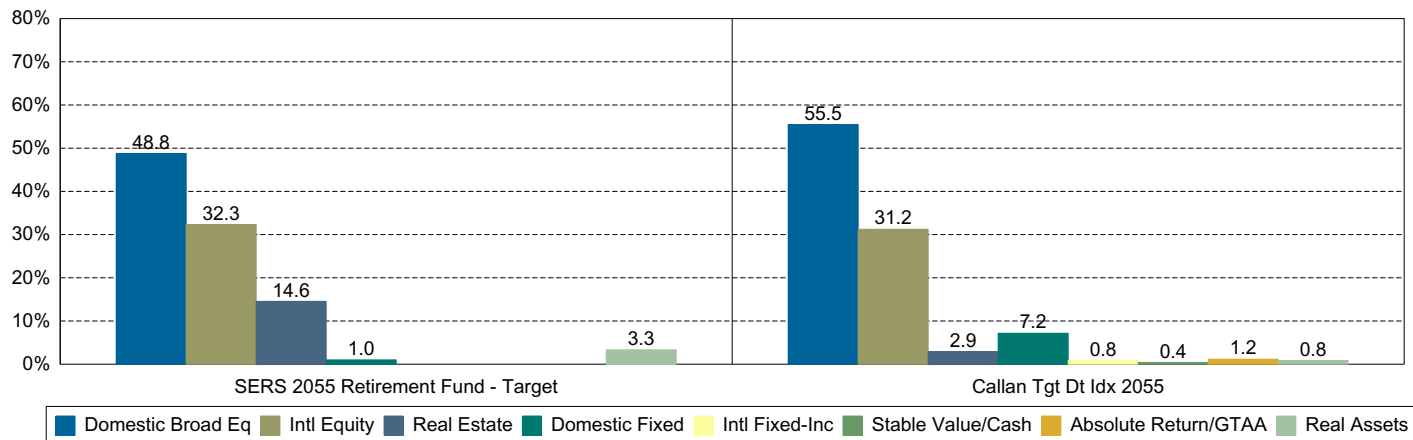
Risk Adjusted Return Measures vs LifePath Index 2050 CB Rankings Against Callan Target Date 2050 (Net) Seven Years Ended December 31, 2019



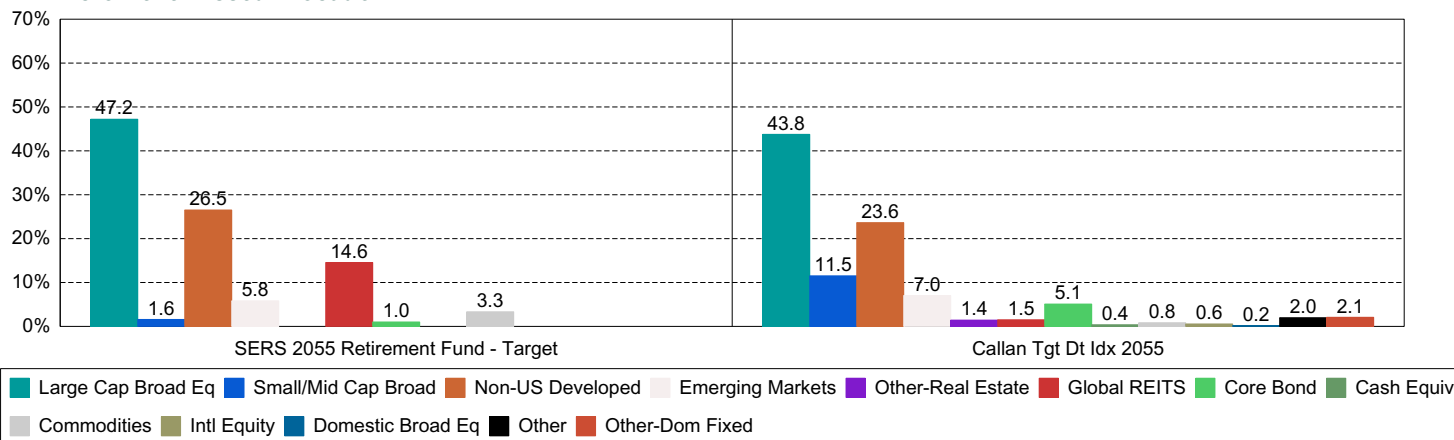
SERS 2055 Retirement Fund Target Date Fund Asset Allocation as of December 31, 2019

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.

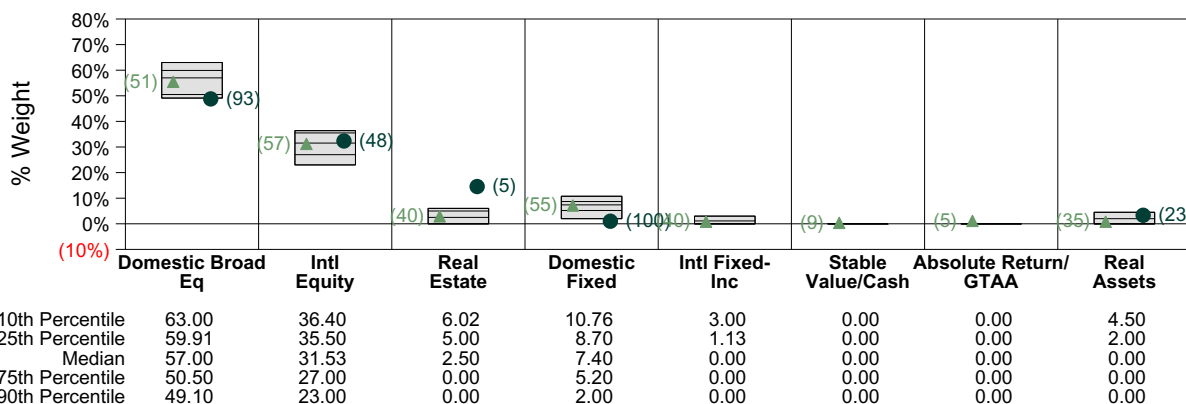
Macro-Level Asset Allocation



Micro-Level Asset Allocation



Macro Asset Allocation Rankings vs. Callan Target Date 2055



SERS 2055 Retirement Fund - Target	●	48.78	32.34	14.55	1.00	-	-	-	3.33
Callan Tgt Dt Idx 2055	▲	55.48	31.23	2.93	7.16	0.83	0.37	1.15	0.84

SERS 2055 Retirement Fund Period Ended December 31, 2019

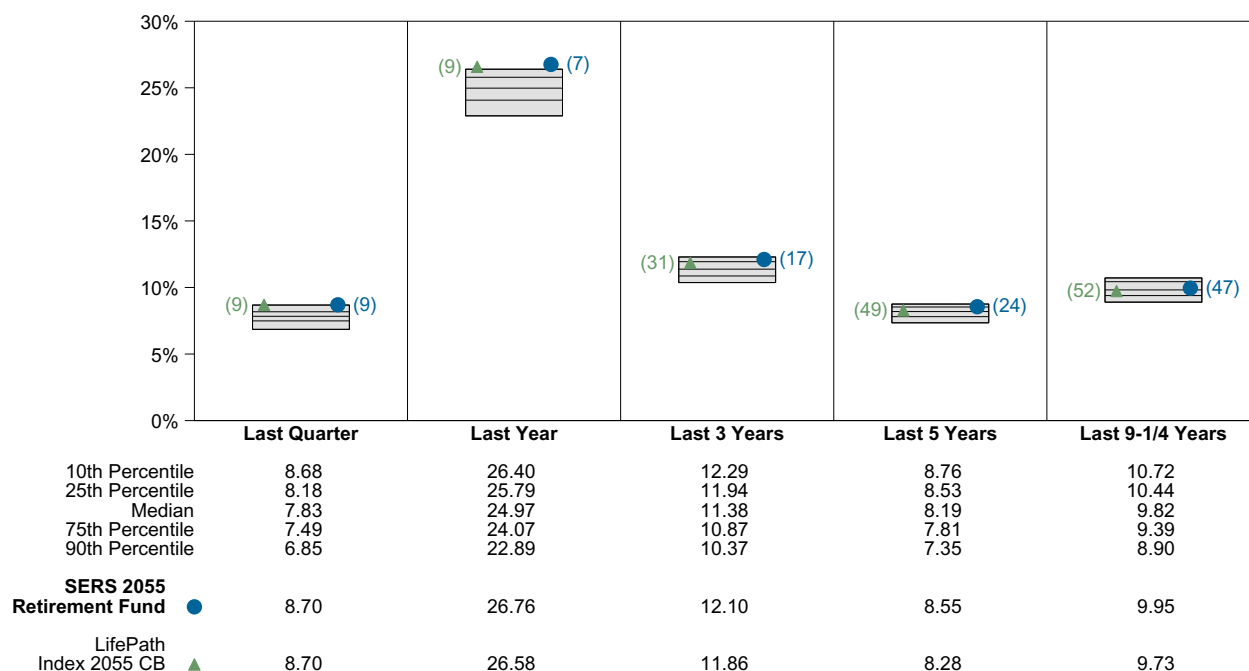
Investment Philosophy

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.

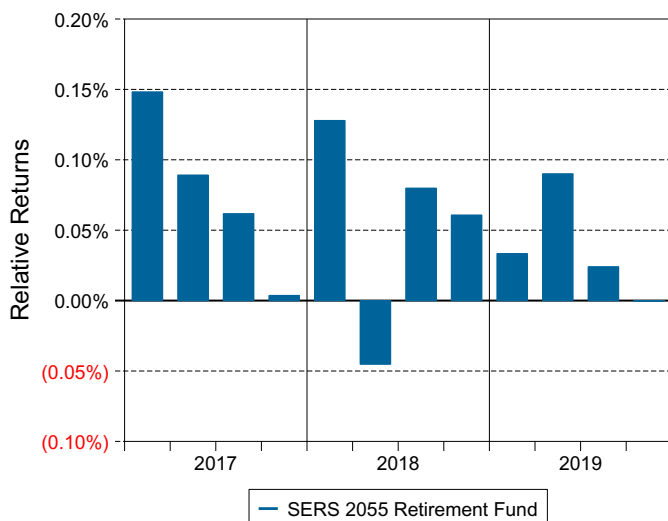
Quarterly Summary and Highlights

- SERS 2055 Retirement Fund's portfolio posted a 8.70% return for the quarter placing it in the 9 percentile of the Callan Target Date 2055 group for the quarter and in the 7 percentile for the last year.
- SERS 2055 Retirement Fund's portfolio underperformed the LifePath Index 2055 CB by 0.00% for the quarter and outperformed the LifePath Index 2055 CB for the year by 0.18%.

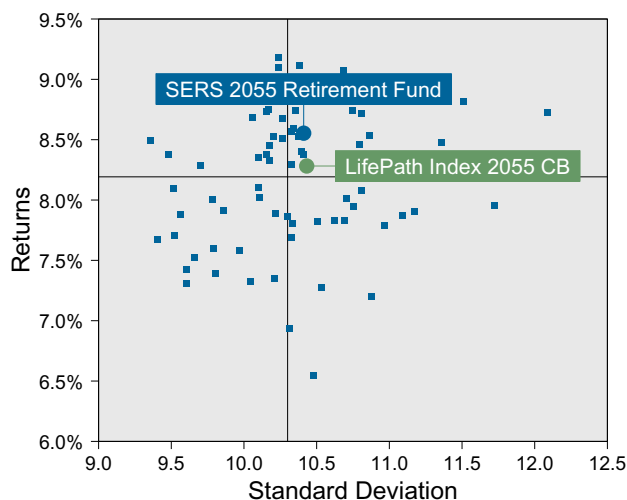
Performance vs Callan Target Date 2055 (Net)



Relative Return vs LifePath Index 2055 CB



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

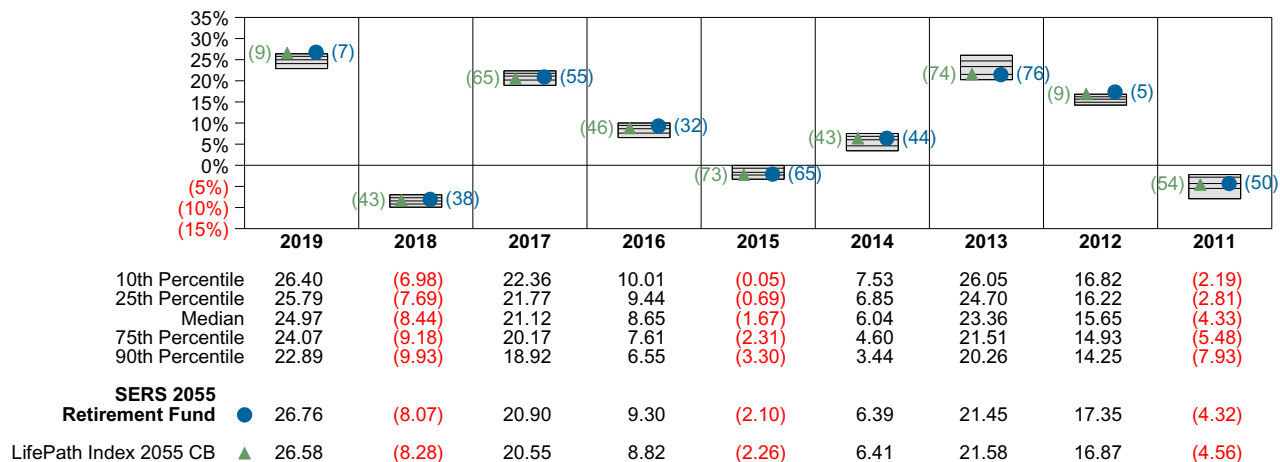


SERS 2055 Retirement Fund Return Analysis Summary

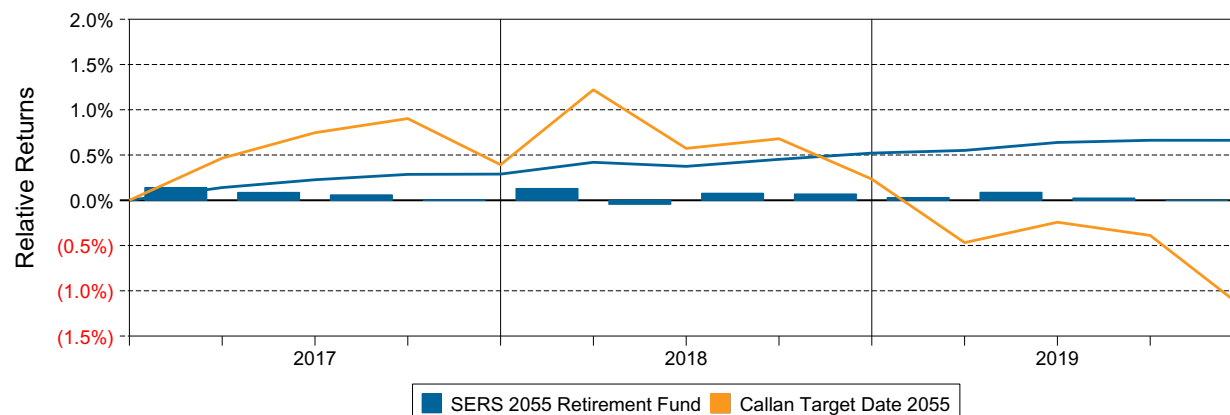
Return Analysis

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.

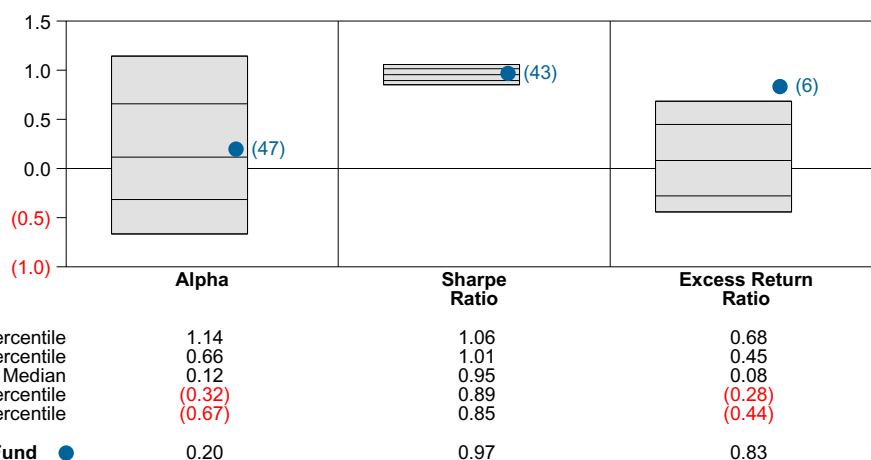
Performance vs Callan Target Date 2055 (Net)



Cumulative and Quarterly Relative Return vs LifePath Index 2055 CB



Risk Adjusted Return Measures vs LifePath Index 2055 CB Rankings Against Callan Target Date 2055 (Net) Seven Years Ended December 31, 2019



SERS 2060 Retirement Fund Period Ended December 31, 2019

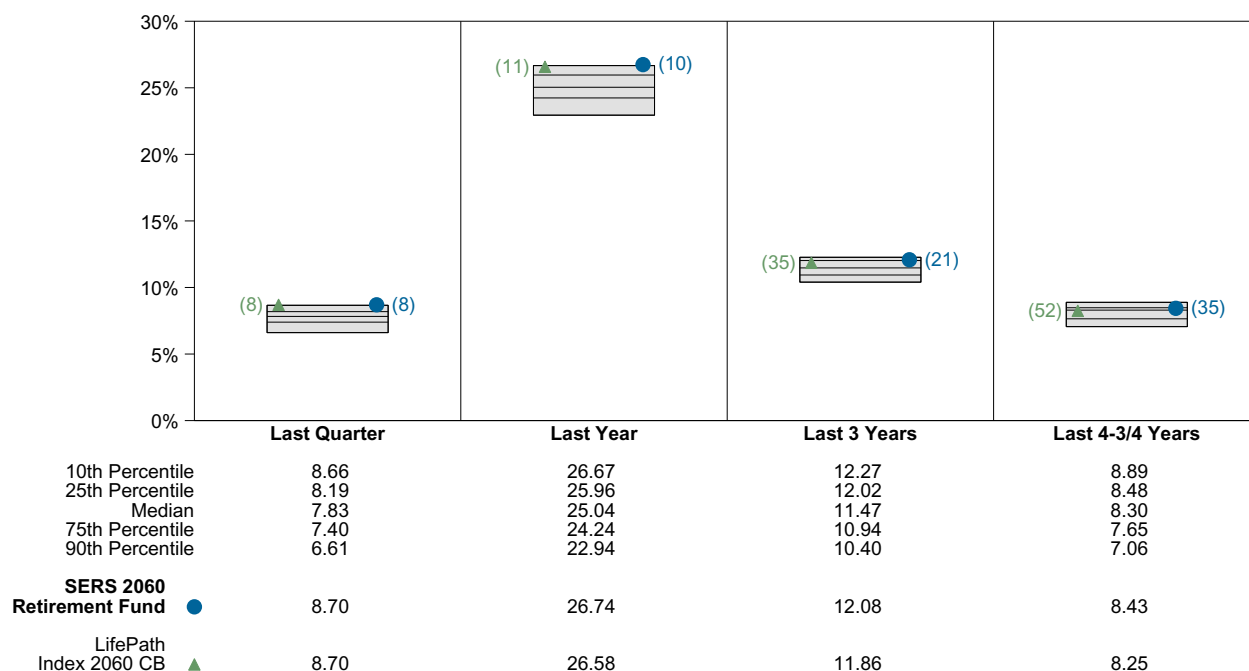
Investment Philosophy

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.

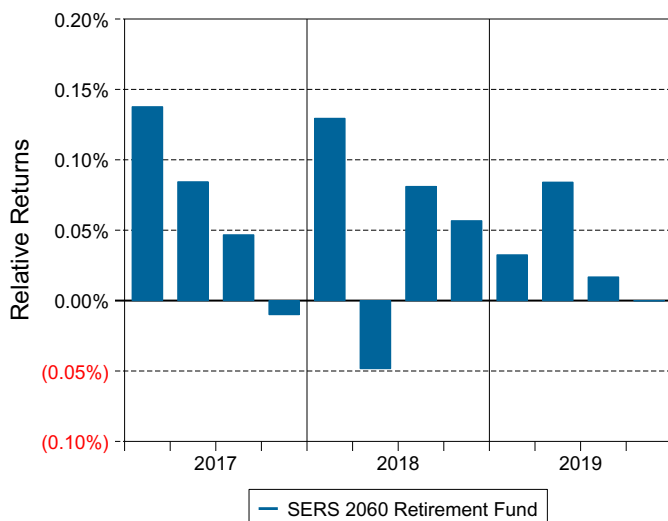
Quarterly Summary and Highlights

- SERS 2060 Retirement Fund's portfolio posted a 8.70% return for the quarter placing it in the 8 percentile of the Callan Target Date 2060 group for the quarter and in the 10 percentile for the last year.
- SERS 2060 Retirement Fund's portfolio underperformed the LifePath Index 2060 CB by 0.00% for the quarter and outperformed the LifePath Index 2060 CB for the year by 0.16%.

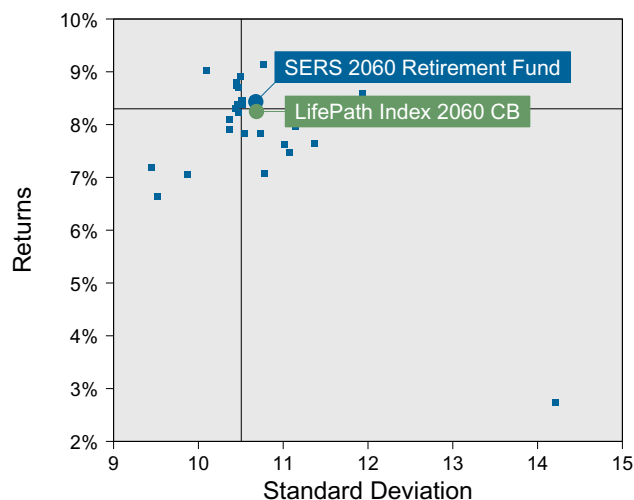
Performance vs Callan Target Date 2060 (Net)



Relative Return vs LifePath Index 2060 CB



Callan Target Date 2060 (Net) Annualized Four and Three-Quarter Year Risk vs Return

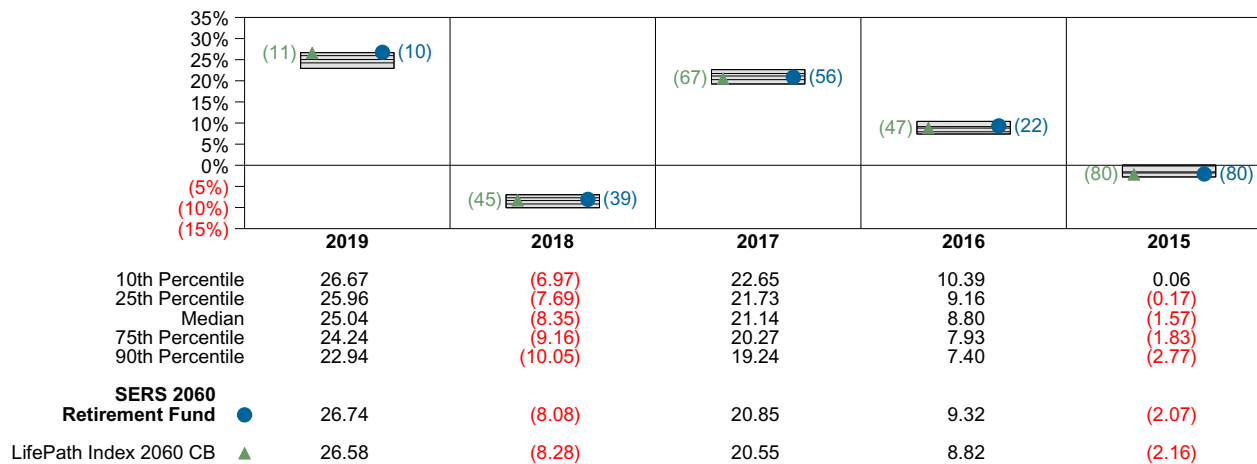


SERS 2060 Retirement Fund Return Analysis Summary

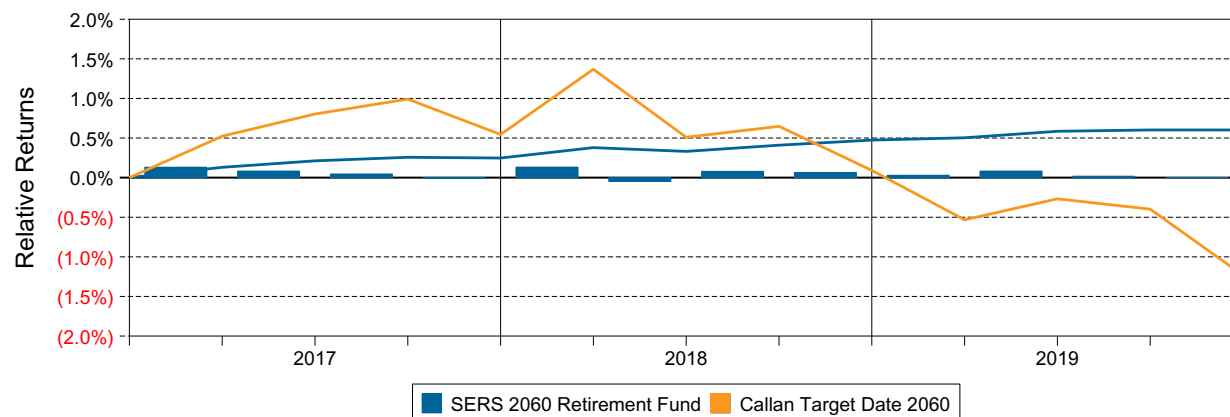
Return Analysis

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.

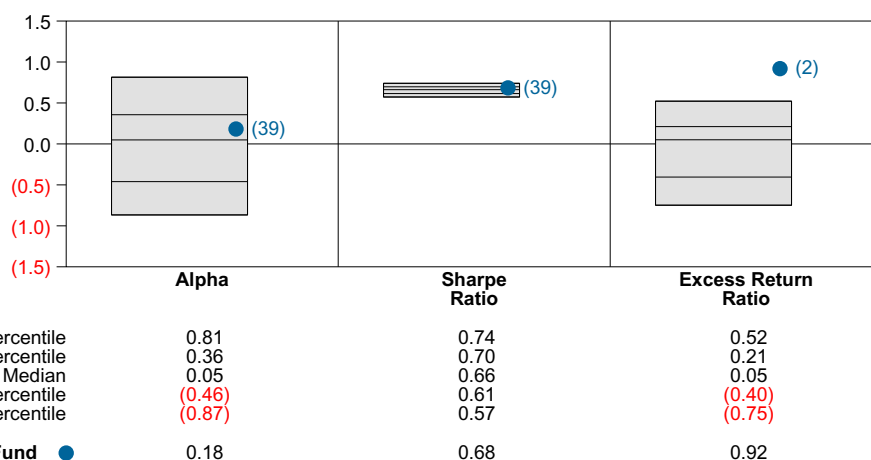
Performance vs Callan Target Date 2060 (Net)



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) Four and Three-Quarter Years Ended December 31, 2019



SERS U.S. Large Company Stock Index Fund

Period Ended December 31, 2019

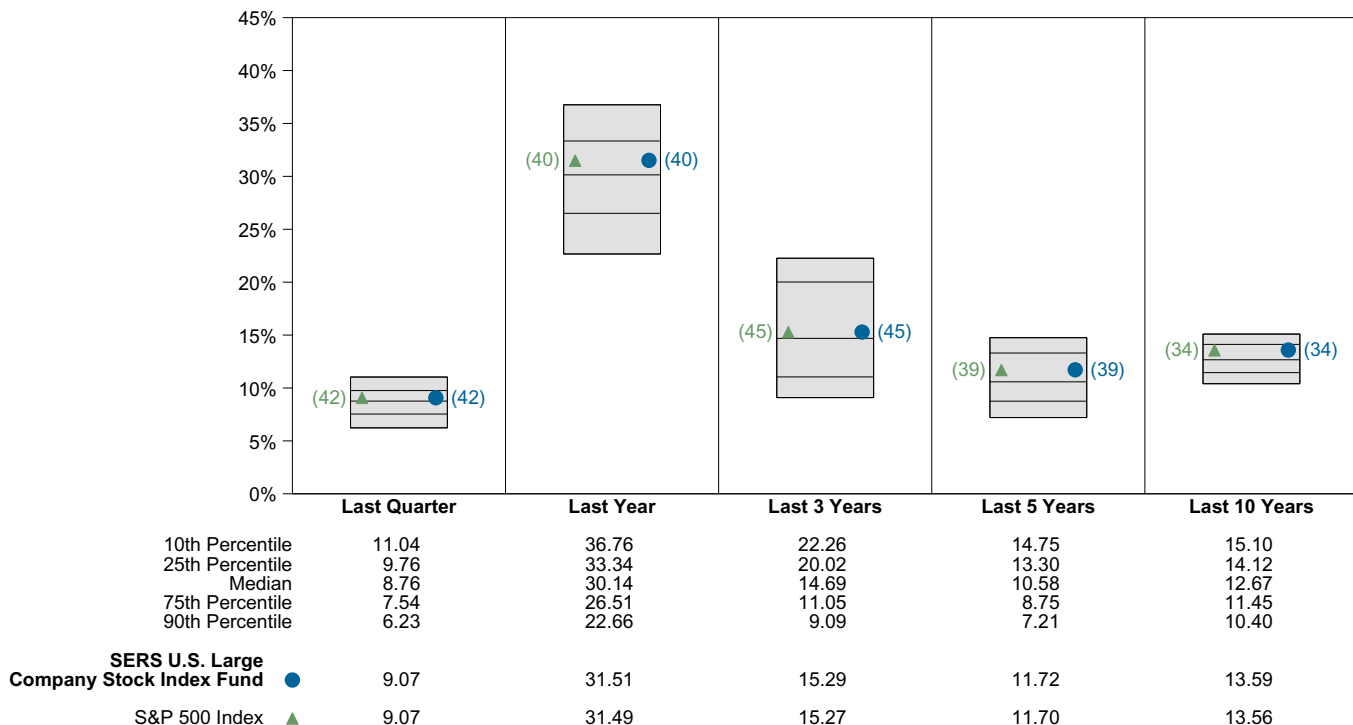
Investment Philosophy

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.

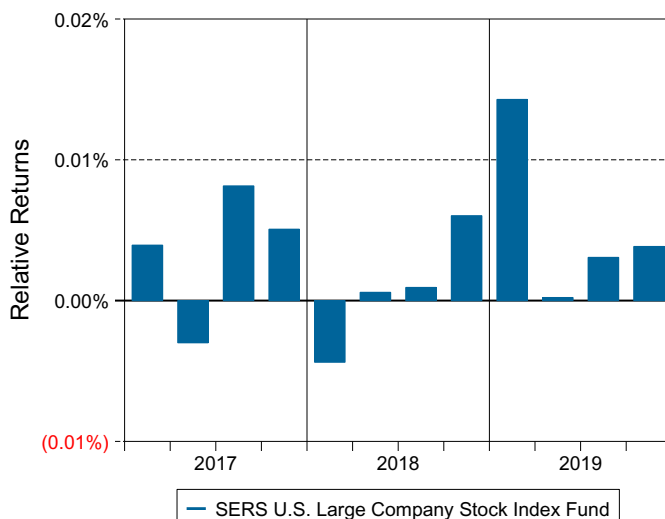
Quarterly Summary and Highlights

- SERS U.S. Large Company Stock Index Fund's portfolio posted a 9.07% return for the quarter placing it in the 42 percentile of the Callan Large Cap Broad Equity Mut Funds group for the quarter and in the 40 percentile for the last year.
- SERS U.S. Large Company Stock Index Fund's portfolio outperformed the S&P 500 Index by 0.00% for the quarter and outperformed the S&P 500 Index for the year by 0.03%.

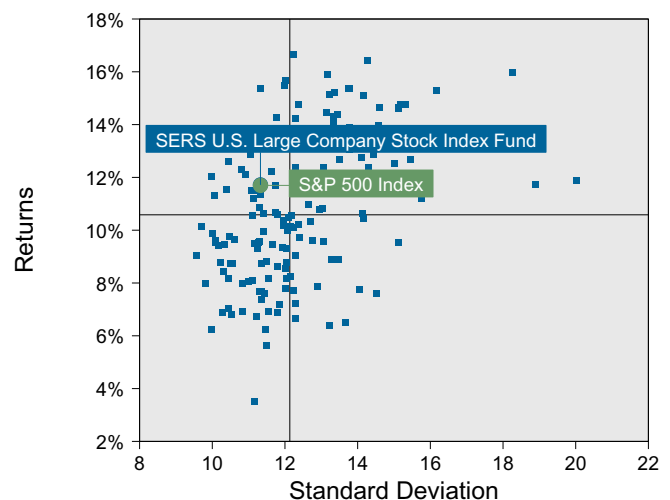
Performance vs Callan Large Cap Broad Equity Mut Funds (Institutional Net)



Relative Return vs S&P 500 Index



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



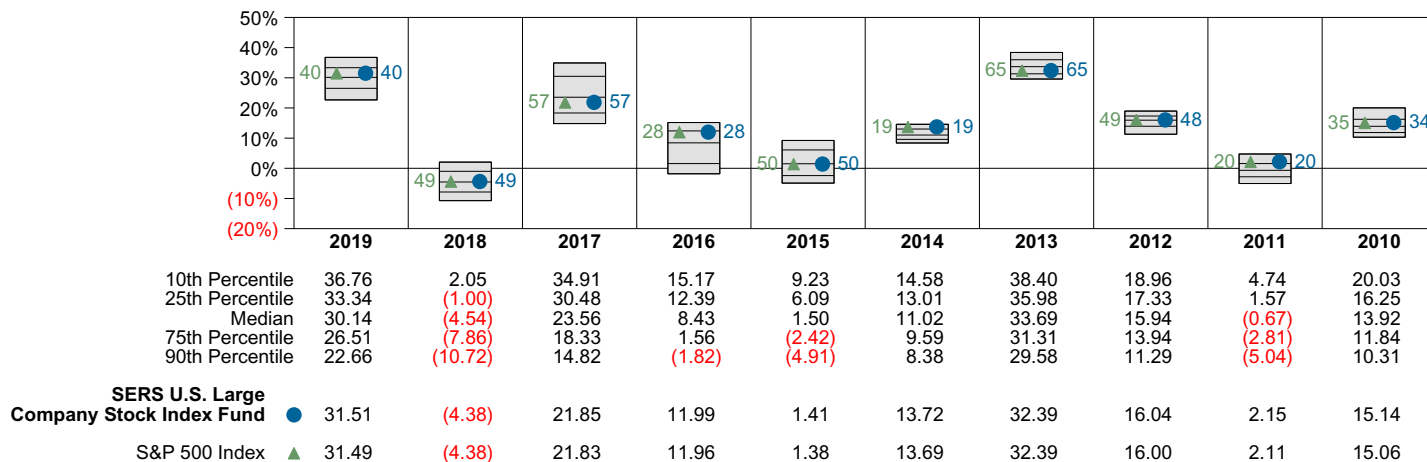
SERS U.S. Large Company Stock Index Fund

Return Analysis Summary

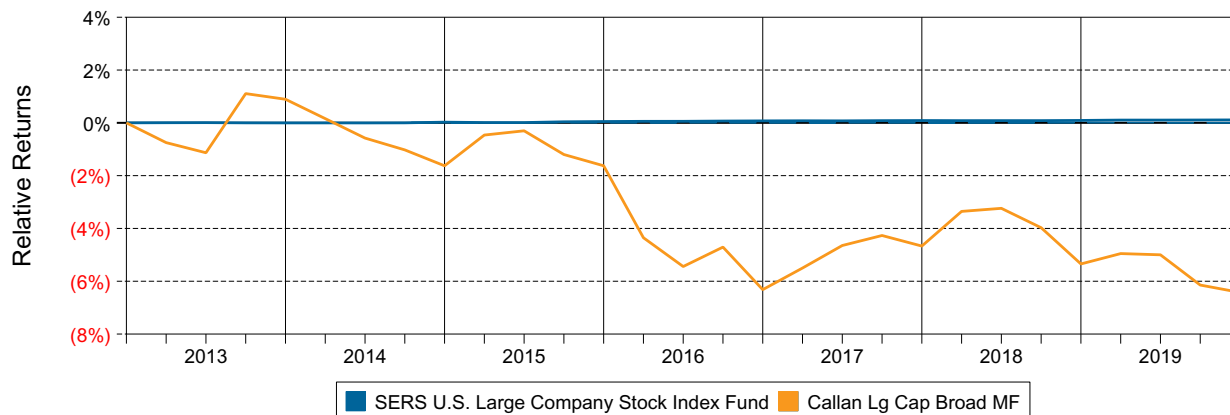
Return Analysis

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 Large Cap Broad Equity Mut Funds (Institutional Net)

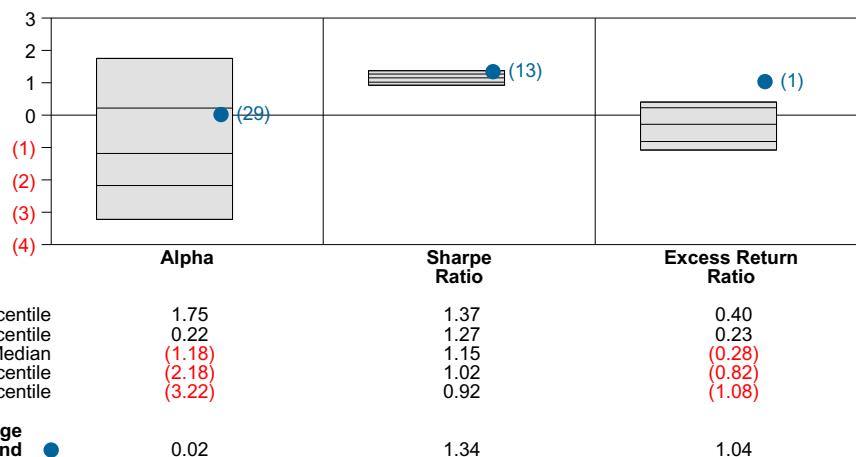


Cumulative and Quarterly Relative Return vs S&P 500 Index



Risk Adjusted Return Measures vs S&P 500 Index

Rankings Against Callan Large Cap Broad Equity Mut Funds (Institutional Net) Seven Years Ended December 31, 2019



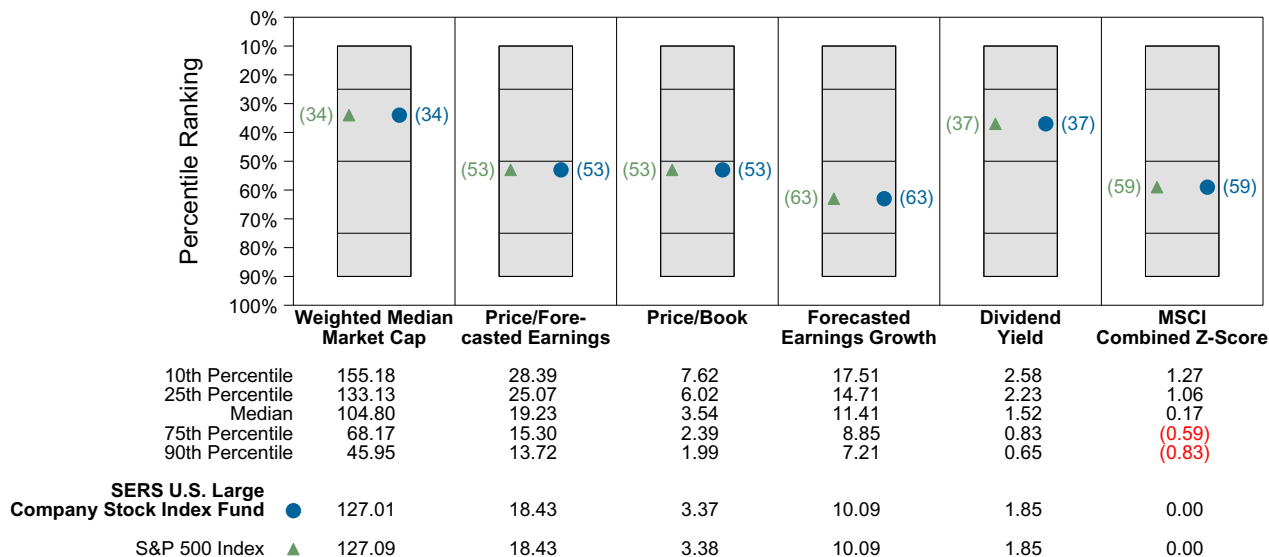
SERS U.S. Large Company Stock Index Fund

Equity Characteristics Analysis Summary

Portfolio Characteristics

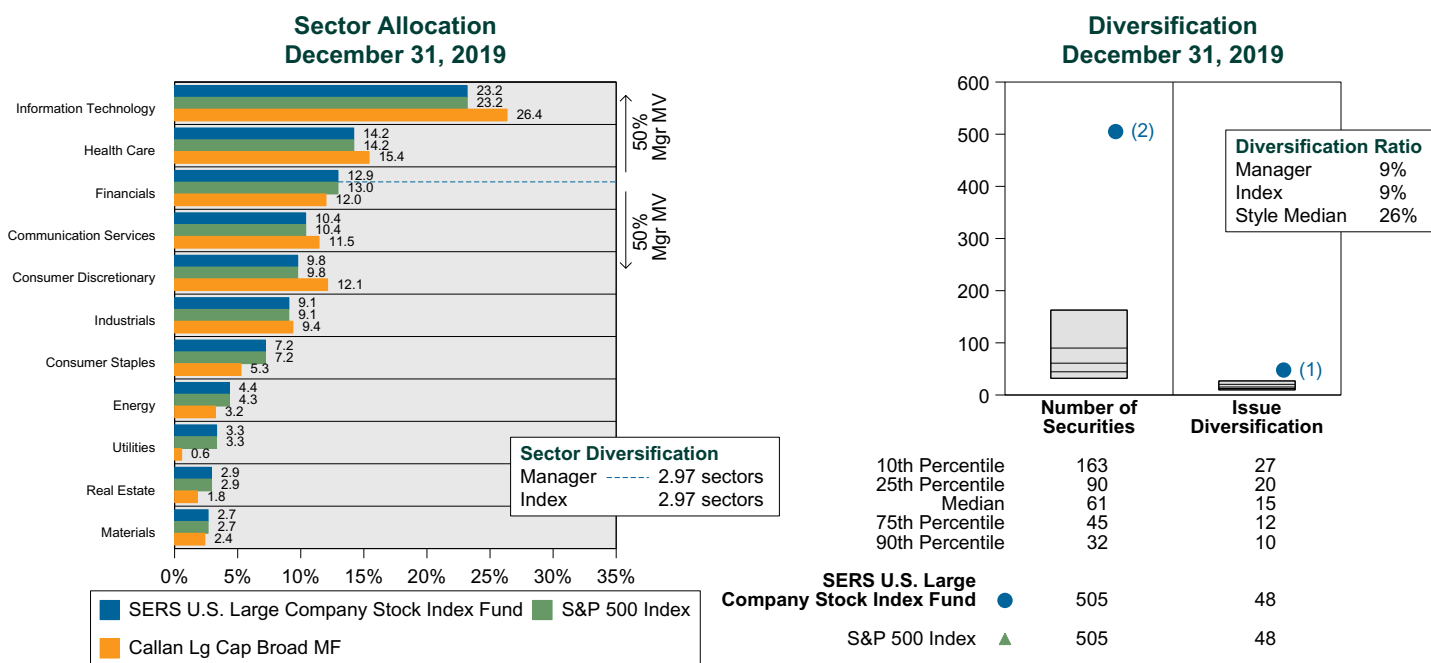
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Portfolio Characteristics Percentile Rankings Rankings Against Callan Large Cap Broad Equity Mut Funds as of December 31, 2019



Sector Weights

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



SERS U.S. Large Company Stock Index Fund

Top 10 Portfolio Holdings Characteristics

as of December 31, 2019

10 Largest Holdings

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Apple Inc	Information Technology	\$17,777	4.6%	31.50%	1304.76	21.70	1.05%	8.97%
Microsoft Corp	Information Technology	\$17,438	4.5%	13.82%	1203.06	27.55	1.29%	14.05%
Amazon.Com	Consumer Discretionary	\$11,154	2.9%	6.45%	916.15	68.21	0.00%	28.00%
Facebook Inc Cl A	Communication Services	\$7,158	1.8%	15.26%	493.93	22.43	0.00%	11.53%
Berkshire Hathaway Inc Del Cl B New	Financials	\$6,421	1.7%	8.88%	313.34	21.19	0.00%	6.72%
JPMorgan Chase & Co	Financials	\$6,336	1.6%	19.40%	437.23	13.15	2.58%	7.71%
Alphabet Inc Cl A	Communication Services	\$5,816	1.5%	9.68%	401.32	24.75	0.00%	10.00%
Alphabet Inc Cl C	Communication Services	\$5,791	1.5%	9.68%	459.33	24.65	0.00%	12.91%
Johnson & Johnson	Health Care	\$5,564	1.4%	13.53%	383.91	16.03	2.61%	5.30%
Visa Inc Com Cl A	Information Technology	\$4,661	1.2%	9.42%	321.81	29.06	0.64%	15.20%

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
Advanced Micro Devices Inc	Information Technology	\$739	0.2%	58.19%	51.07	41.69	0.00%	36.49%
Qorvo Inc	Information Technology	\$194	0.1%	56.77%	13.50	18.19	0.00%	11.90%
Align Technology Inc	Health Care	\$289	0.1%	54.23%	21.99	43.20	0.00%	19.30%
Skyworks Solutions	Information Technology	\$297	0.1%	53.21%	20.59	18.04	1.46%	14.05%
Centene Corp Del	Health Care	\$380	0.1%	45.33%	26.02	13.10	0.00%	14.95%
Tiffany & Co	Consumer Discretionary	\$212	0.1%	44.91%	16.03	27.03	1.74%	8.12%
Humana	Health Care	\$702	0.2%	43.57%	48.54	19.64	0.60%	13.15%
Fortinet Inc	Information Technology	\$222	0.1%	39.08%	18.26	39.39	0.00%	19.00%
Freeport-Mcmoran Inc Cl B	Materials	\$278	0.1%	37.81%	19.04	24.75	1.52%	(2.88)%
Unitedhealth Group	Health Care	\$4,036	1.0%	35.80%	278.52	17.86	1.47%	13.25%

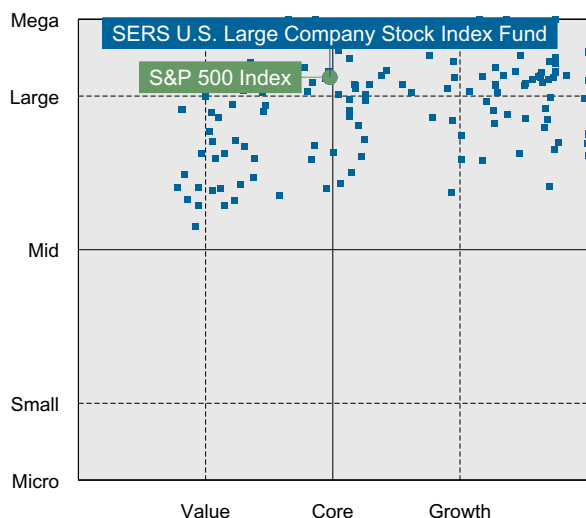
10 Worst Performers

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Twitter Inc	Communication Services	\$362	0.1%	(22.21)%	24.88	35.61	0.00%	13.90%
Ventas	Real Estate	\$313	0.1%	(19.85)%	21.52	49.35	5.49%	(0.50)%
Expedia Group Inc	Consumer Discretionary	\$221	0.1%	(19.26)%	15.07	15.49	1.26%	7.60%
Dollar Tree Inc	Consumer Discretionary	\$325	0.1%	(17.62)%	22.26	17.65	0.00%	3.70%
Arista Networks Inc	Information Technology	\$163	0.0%	(14.87)%	15.54	22.50	0.00%	9.12%
Boeing Co	Industrials	\$2,523	0.7%	(13.89)%	183.33	17.22	2.52%	7.20%
Public Storage	Real Estate	\$462	0.1%	(12.32)%	37.20	27.69	3.76%	6.41%
Alliance Data Systems Corp	Information Technology	\$66	0.0%	(11.92)%	5.17	5.41	2.25%	4.96%
Ball Corp	Materials	\$308	0.1%	(10.98)%	21.16	21.70	0.93%	15.92%
Yum Brands	Consumer Discretionary	\$440	0.1%	(10.82)%	30.47	24.27	1.67%	14.63%

Historical Holdings Based Style Analysis SERS U.S. Large Company Stock Index Fund For Three Years Ended December 31, 2019

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

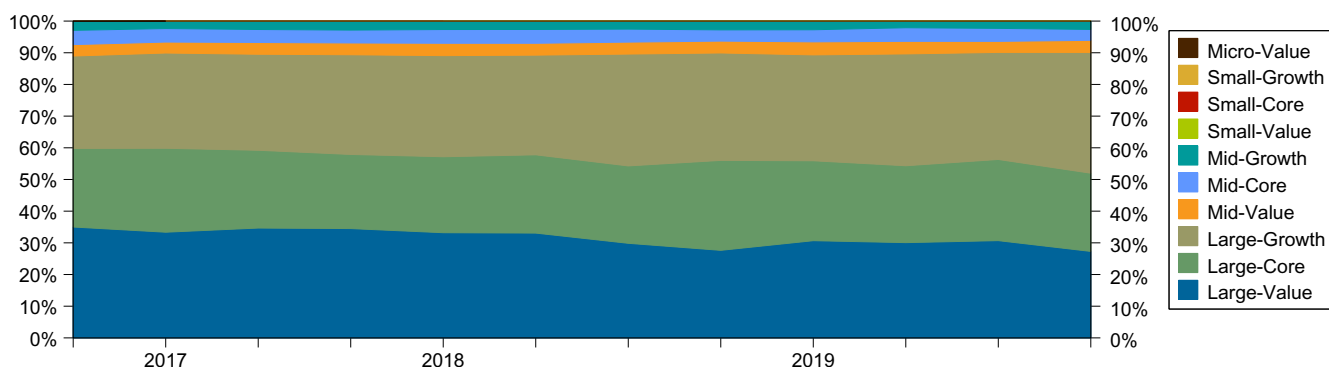
Average Style Map vs Callan Lg Cap Broad MF Holdings for Three Years Ended December 31, 2019



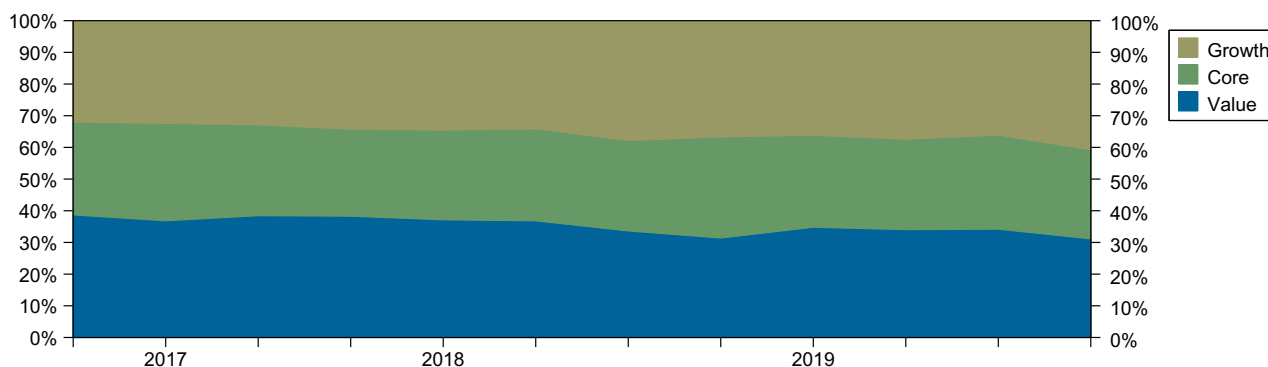
Average Style Exposure Matrix Holdings for Three Years Ended December 31, 2019

	Value	Core	Growth	Total
Large	31.7% (105)	25.0% (92)	32.9% (87)	89.6% (284)
	31.6% (105)	25.1% (92)	32.9% (88)	89.6% (285)
Mid	3.8% (84)	4.1% (83)	2.6% (49)	10.4% (216)
	3.7% (84)	4.1% (83)	2.5% (49)	10.4% (216)
Small	0.0% (2)	0.0% (0)	0.0% (1)	0.0% (3)
	0.0% (2)	0.0% (0)	0.0% (1)	0.0% (3)
Micro	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Total	35.5% (191)	29.1% (175)	35.4% (137)	100.0% (503)
	35.4% (191)	29.1% (175)	35.4% (138)	100.0% (504)
	Value	Core	Growth	Total

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



SERS U.S. Large Company Stock Index Fund Historical Style Only Exposures



SERS U.S. All Company Index Fund

Period Ended December 31, 2019

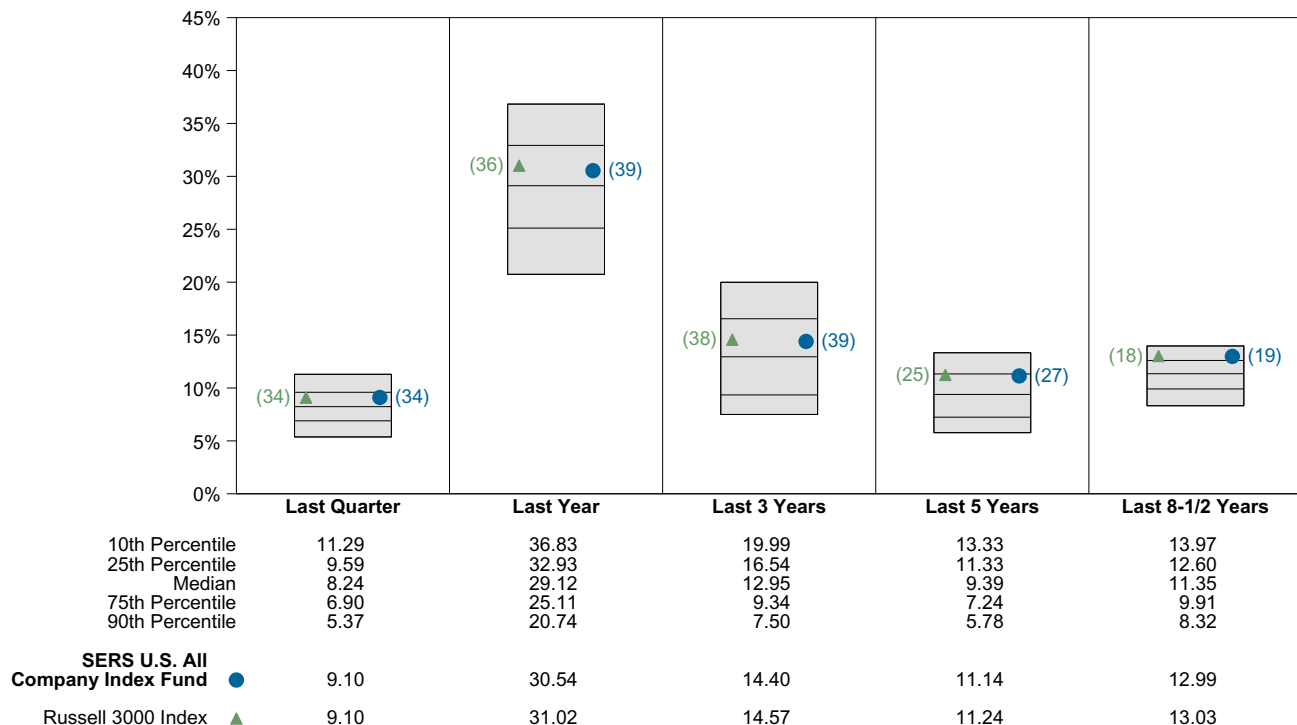
Investment Philosophy

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

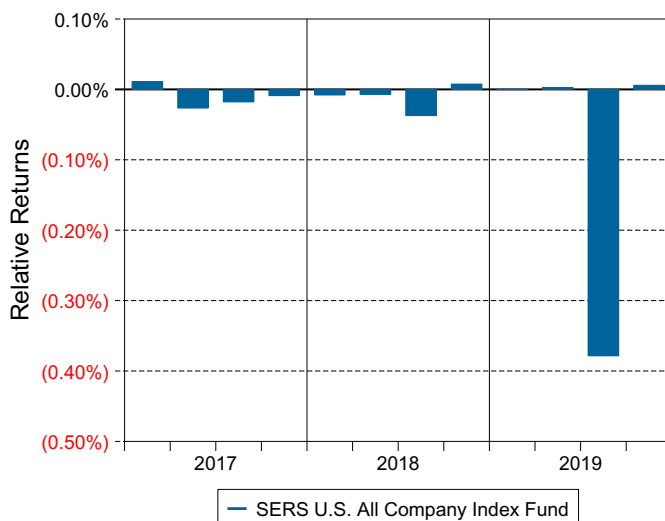
Quarterly Summary and Highlights

- SERS U.S. All Company Index Fund's portfolio posted a 9.10% return for the quarter placing it in the 34 percentile of the Callan Multi Cap Broad Mutual Funds group for the quarter and in the 39 percentile for the last year.
- SERS U.S. All Company Index Fund's portfolio outperformed the Russell 3000 Index by 0.01% for the quarter and underperformed the Russell 3000 Index for the year by 0.48%.

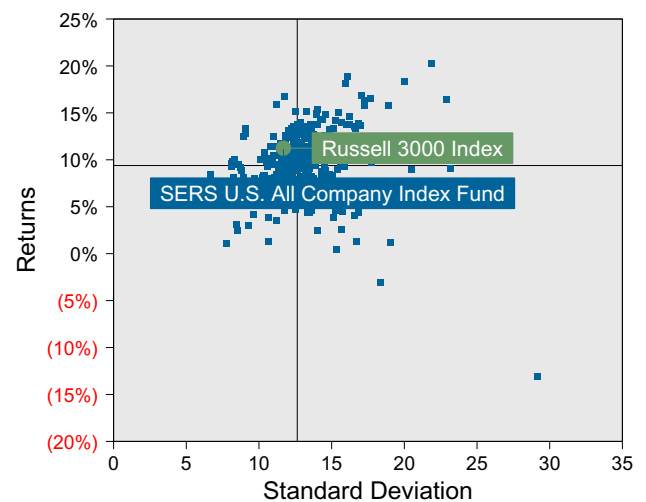
Performance vs Callan Multi Cap Broad Mutual Funds (Institutional Net)



Relative Return vs Russell 3000 Index



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

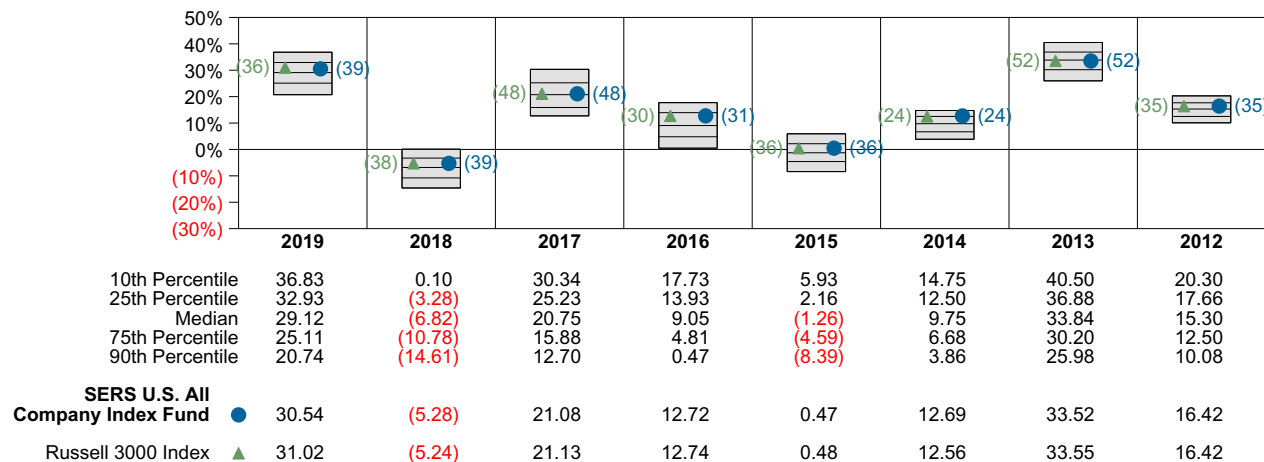


SERS U.S. All Company Index Fund Return Analysis Summary

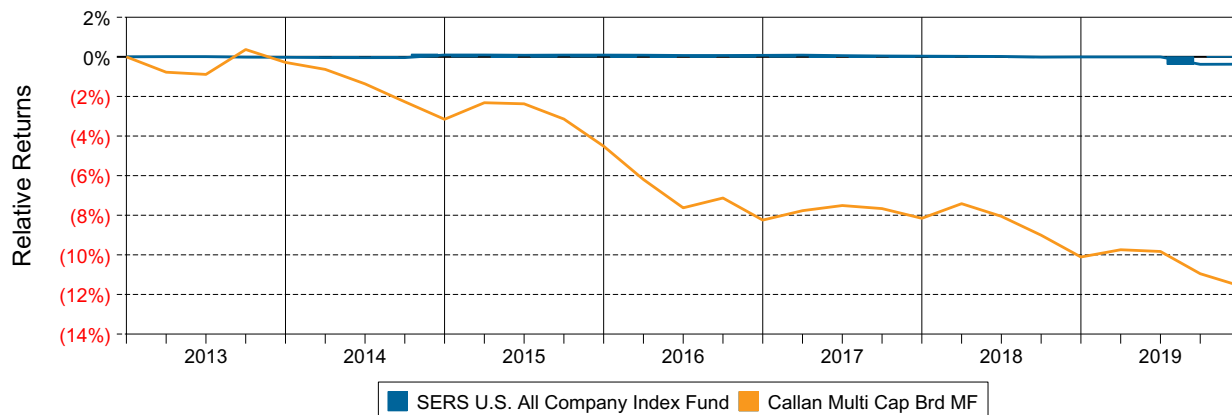
Return Analysis

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

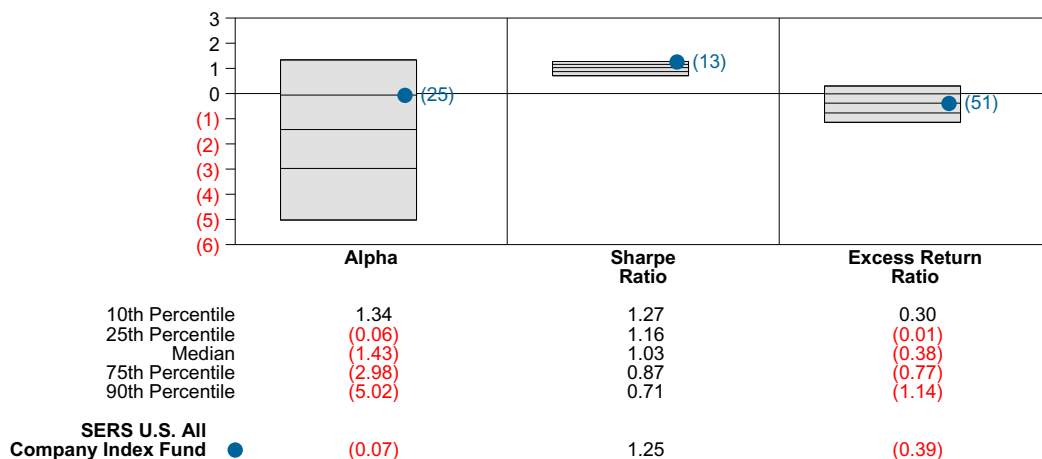
Performance vs Callan Multi Cap Broad Mutual Funds (Institutional Net)



Cumulative and Quarterly Relative Return vs Russell 3000 Index



Risk Adjusted Return Measures vs Russell 3000 Index Rankings Against Callan Multi Cap Broad Mutual Funds (Institutional Net) Seven Years Ended December 31, 2019



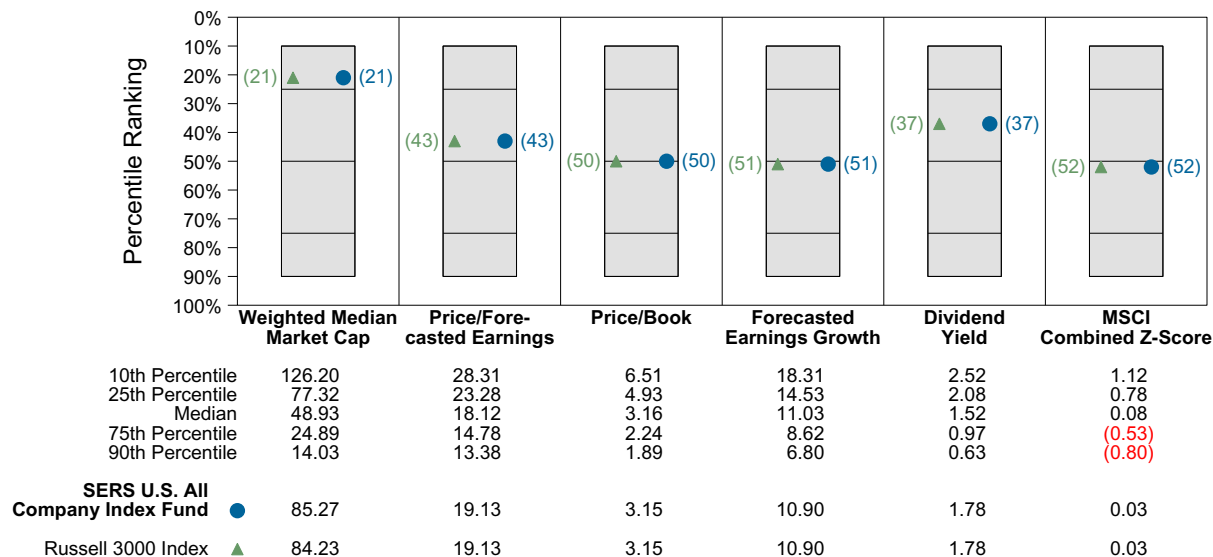
SERS U.S. All Company Index Fund

Equity Characteristics Analysis Summary

Portfolio Characteristics

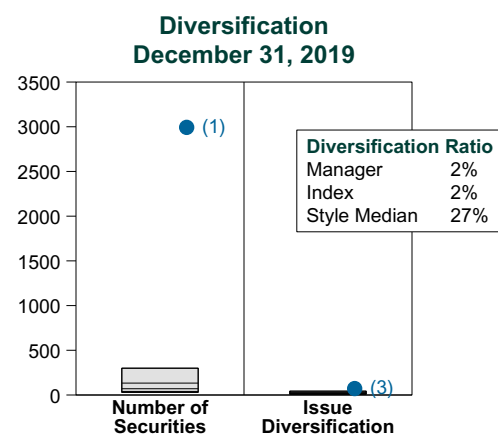
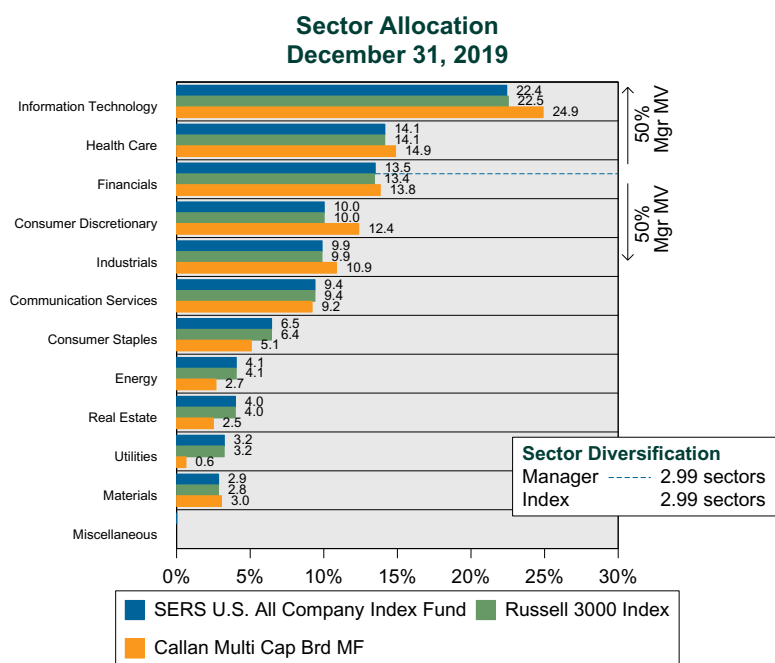
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Portfolio Characteristics Percentile Rankings Rankings Against Callan Multi Cap Broad Mutual Funds as of December 31, 2019



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 December 31, 2019

10 Largest Holdings

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Apple Inc	Information Technology	\$6,331	4.1%	31.50%	1304.76	21.70	1.05%	8.97%
Microsoft Corp	Information Technology	\$5,785	3.8%	13.82%	1203.06	27.55	1.29%	14.05%
Amazon.Com	Consumer Discretionary	\$3,707	2.4%	6.45%	916.15	68.21	0.00%	28.00%
Facebook Inc Cl A	Communication Services	\$2,378	1.5%	15.26%	493.93	22.43	0.00%	11.53%
Berkshire Hathaway Inc Del Cl B New	Financials	\$2,151	1.4%	8.88%	313.34	21.19	0.00%	6.72%
JPMorgan Chase & Co	Financials	\$2,110	1.4%	19.40%	437.23	13.15	2.58%	7.71%
Alphabet Inc Cl A	Communication Services	\$1,943	1.3%	9.68%	401.32	24.75	0.00%	10.00%
Alphabet Inc Cl C	Communication Services	\$1,942	1.3%	9.68%	459.33	24.65	0.00%	12.91%
Johnson & Johnson	Health Care	\$1,882	1.2%	13.53%	383.91	16.03	2.61%	5.30%
Visa Inc Com Cl A	Information Technology	\$1,561	1.0%	9.42%	321.81	29.06	0.64%	15.20%

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
Constellation Pharmcetics I	Health Care	\$3	0.0%	629.26%	1.89	(14.59)	0.00%	-
Forty Seven Inc	Health Care	\$4	0.0%	513.24%	1.86	(14.47)	0.00%	-
Chemocentryx Inc	Health Care	\$8	0.0%	483.33%	2.30	(27.66)	0.00%	-
Axsome Therapeutics Inc.	Health Care	\$12	0.0%	410.67%	3.80	(61.16)	0.00%	-
Kodiak Sciences Inc	Health Care	\$8	0.0%	400.35%	3.16	(36.34)	0.00%	-
Karuna Therapeutics	Health Care	\$2	0.0%	361.64%	1.96	(26.25)	0.00%	-
Intra Cellular Therapies Inc	Health Care	\$7	0.0%	359.30%	1.90	(9.32)	0.00%	-
Synthorx	Health Care	\$3	0.0%	329.56%	2.26	(47.22)	0.00%	-
Mersana Therapeutics Inc	Health Care	\$1	0.0%	262.66%	0.27	(4.04)	0.00%	-
Vbi Vaccines Inc	Health Care	\$0	0.0%	192.99%	0.25	(5.31)	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
Restorbio Inc	Health Care	\$0	0.0%	(83.14)%	0.05	(1.15)	0.00%	-
Transenterix Inc	Health Care	\$0	0.0%	(81.76)%	0.03	(0.53)	0.00%	(1.34)%
Unit Corp	Energy	\$0	0.0%	(79.41)%	0.04	(2.17)	0.00%	(18.78)%
Cyclerion Therapeutics	Health Care	\$0	0.0%	(77.56)%	0.07	(1.16)	0.00%	-
Waitr Hldgs Inc	Consumer Discretionary	\$0	0.0%	(74.94)%	0.02	(0.38)	0.00%	26.00%
Intelsat S A	Communication Services	\$2	0.0%	(69.17)%	0.99	(2.15)	0.00%	104.96%
Contura Energy Inc	Energy	\$1	0.0%	(67.63)%	0.16	(4.69)	0.00%	(26.41)%
Mcdermott Intl Inc	Energy	\$1	0.0%	(66.50)%	0.12	0.88	0.00%	(5.26)%
Pareteum Corp	Communication Services	\$0	0.0%	(66.12)%	0.05	2.92	0.00%	-
Exela Technologies Inc	Information Technology	\$0	0.0%	(65.42)%	0.06	(1.32)	0.00%	-

Historical Holdings Based Style Analysis

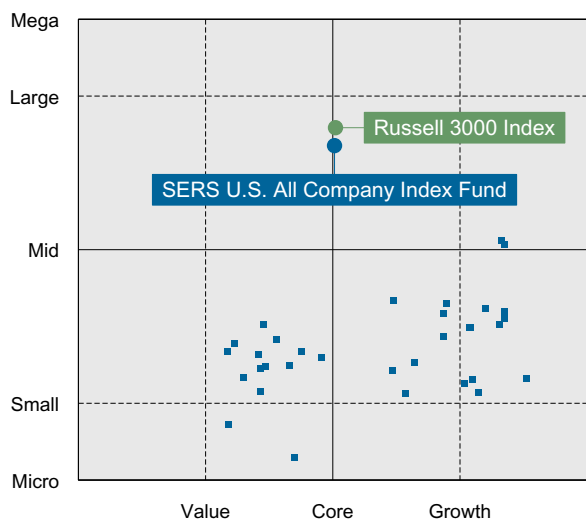
SERS U.S. All Company Index Fund

For One and 1/4 Years Ended December 31, 2019

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.

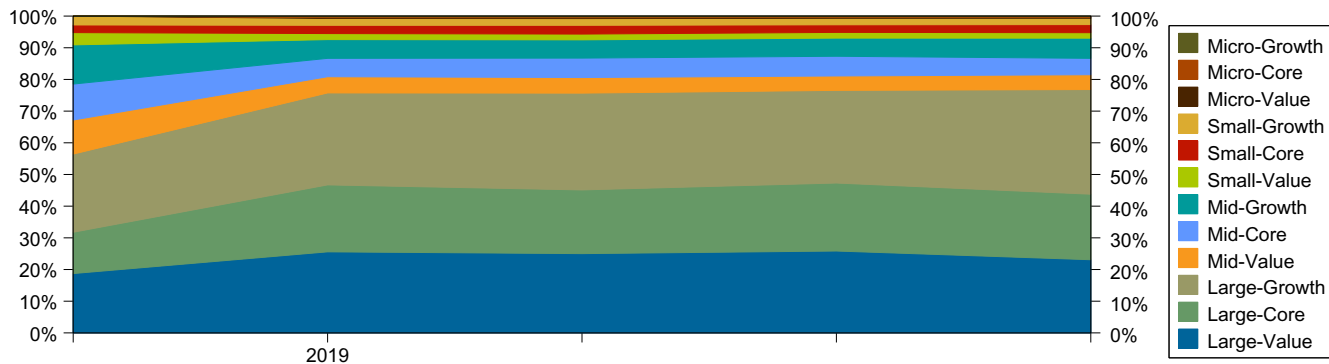
Average Style Map vs Callan SMID Broad MFs
Holdings for One and 1/4 Years Ended December 31, 2019

Average Style Exposure Matrix
Holdings for One and 1/4 Years Ended December 31, 2019

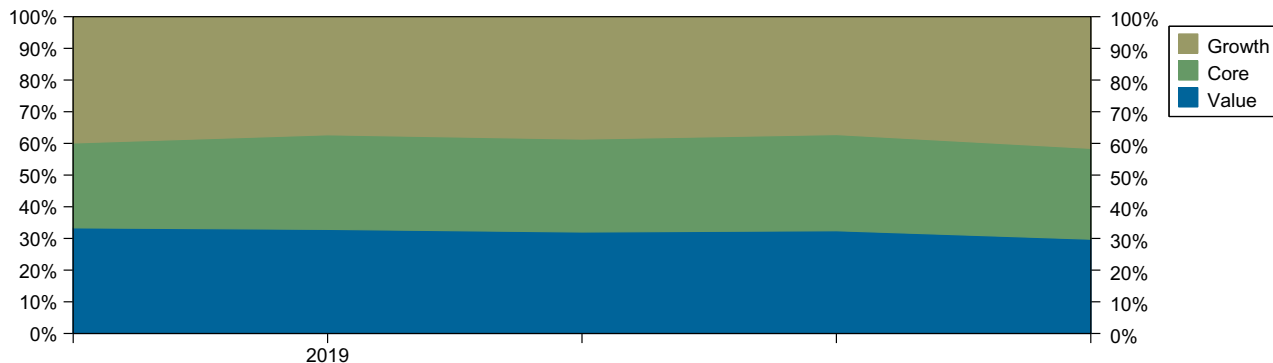


	23.7% (93)	19.3% (84)	29.3% (85)	72.2% (262)
Large	24.6% (105)	21.4% (96)	30.3% (97)	76.3% (298)
Mid	6.0% (166)	6.9% (194)	7.2% (204)	20.2% (564)
Small	4.8% (173)	5.7% (207)	6.0% (215)	16.5% (595)
Micro	2.2% (288)	2.6% (403)	2.2% (321)	7.0% (1012)
	1.8% (329)	2.6% (482)	2.1% (380)	6.5% (1191)
	0.2% (236)	0.2% (306)	0.1% (166)	0.6% (708)
	0.3% (295)	0.3% (390)	0.2% (209)	0.7% (894)
Total	32.1% (783)	29.0% (987)	38.9% (776)	100.0% (2546)
	31.5% (902)	30.1% (1175)	38.5% (901)	100.0% (2978)
	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



U.S. Small/Mid Company Stock Idx Fund Period Ended December 31, 2019

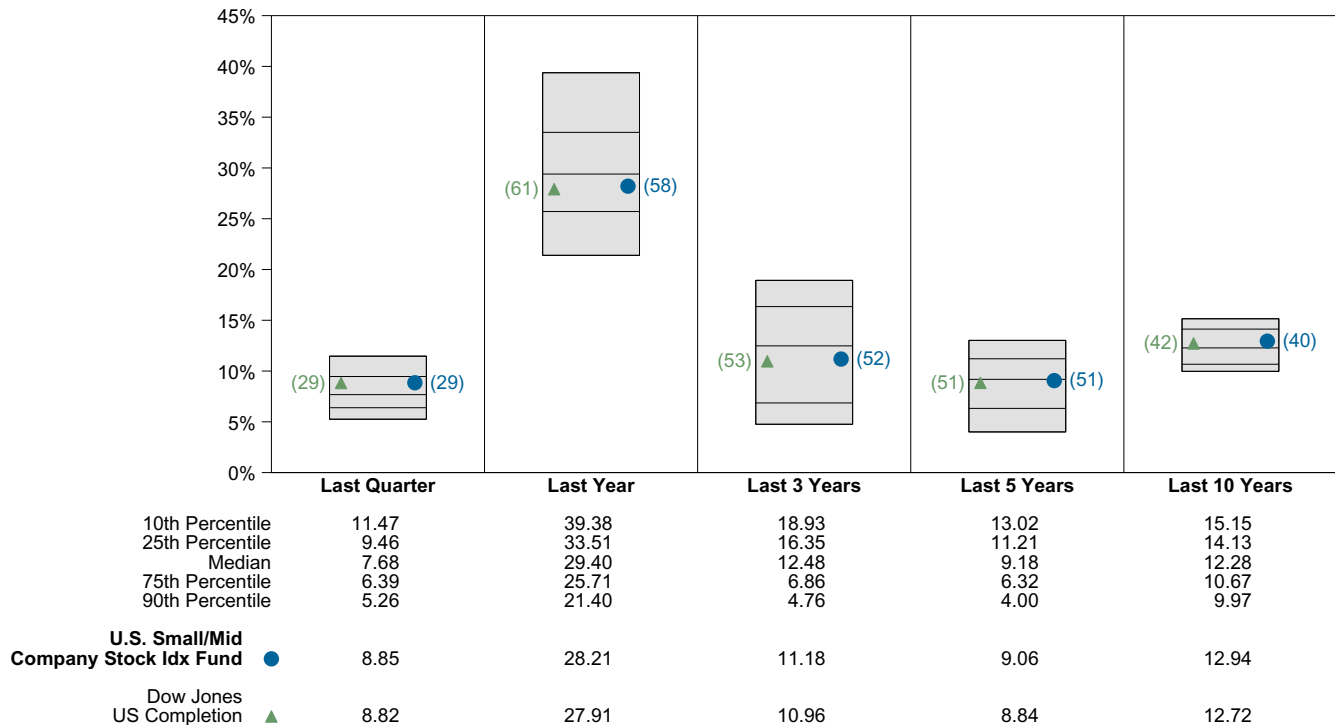
Investment Philosophy

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.

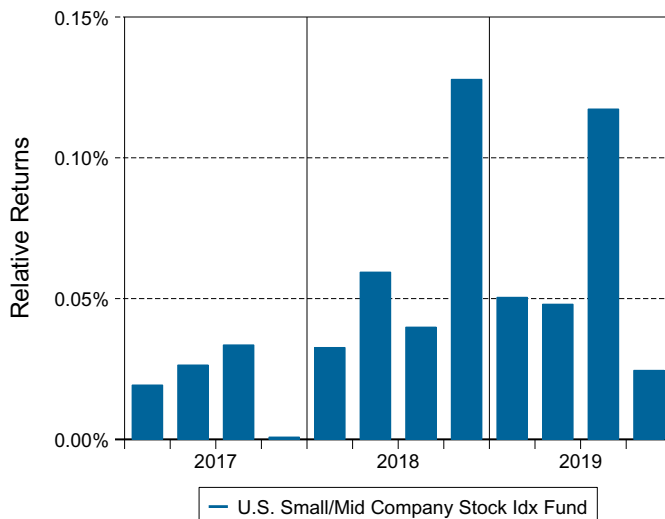
Quarterly Summary and Highlights

- U.S. Small/Mid Company Stock Idx Fund's portfolio posted a 8.85% return for the quarter placing it in the 29 percentile of the Callan Small/MidCap Broad Mutual Funds group for the quarter and in the 58 percentile for the last year.
- U.S. Small/Mid Company Stock Idx Fund's portfolio outperformed the Dow Jones US Completion by 0.02% for the quarter and outperformed the Dow Jones US Completion for the year by 0.30%.

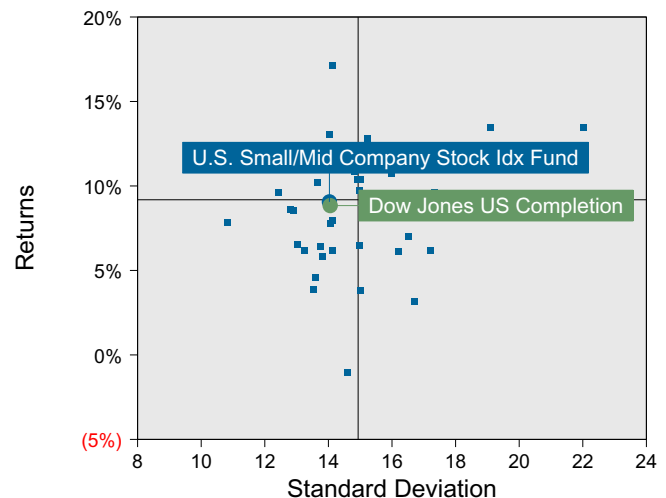
Performance vs Callan Small/MidCap Broad Mutual Funds (Institutional Net)



Relative Return vs Dow Jones US Completion



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

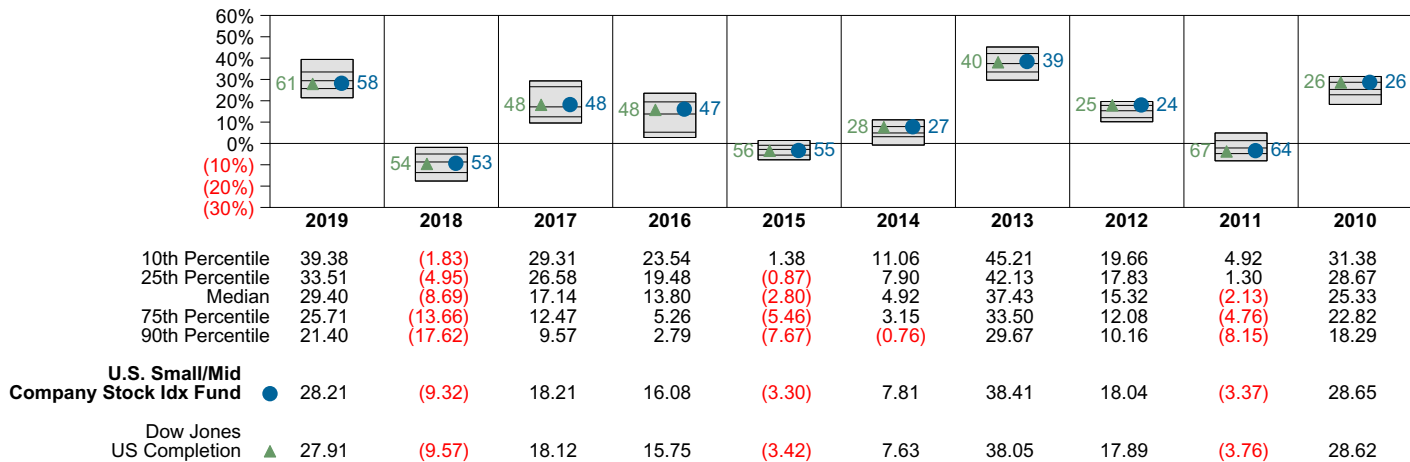


U.S. Small/Mid Company Stock Idx Fund Return Analysis Summary

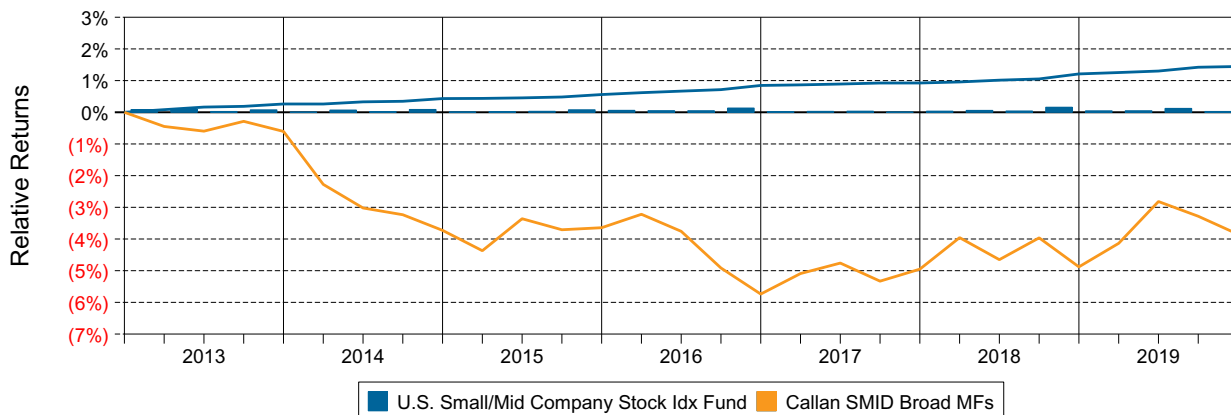
Return Analysis

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

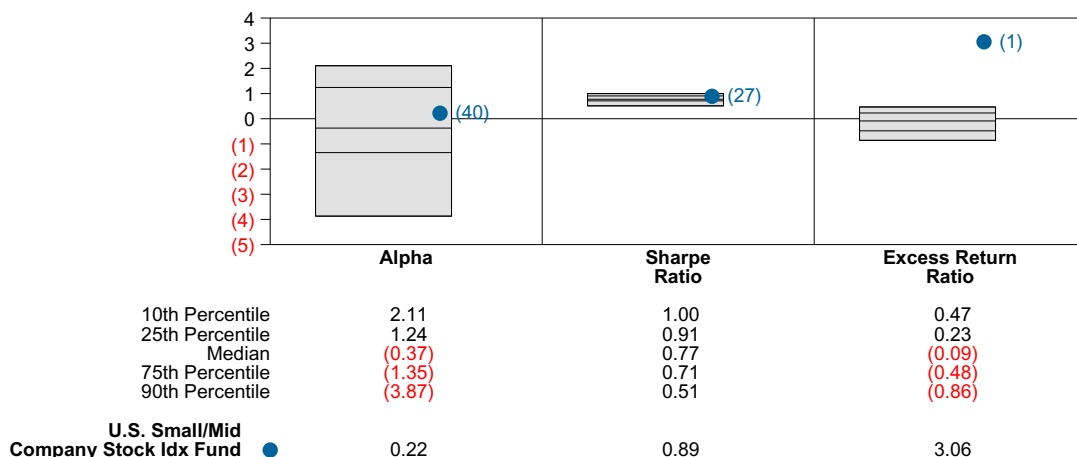
Performance vs Callan Small/MidCap Broad Mutual Funds (Institutional Net)



Cumulative and Quarterly Relative Return vs Dow Jones US Completion



Risk Adjusted Return Measures vs Dow Jones US Completion Rankings Against Callan Small/MidCap Broad Mutual Funds (Institutional Net) Seven Years Ended December 31, 2019

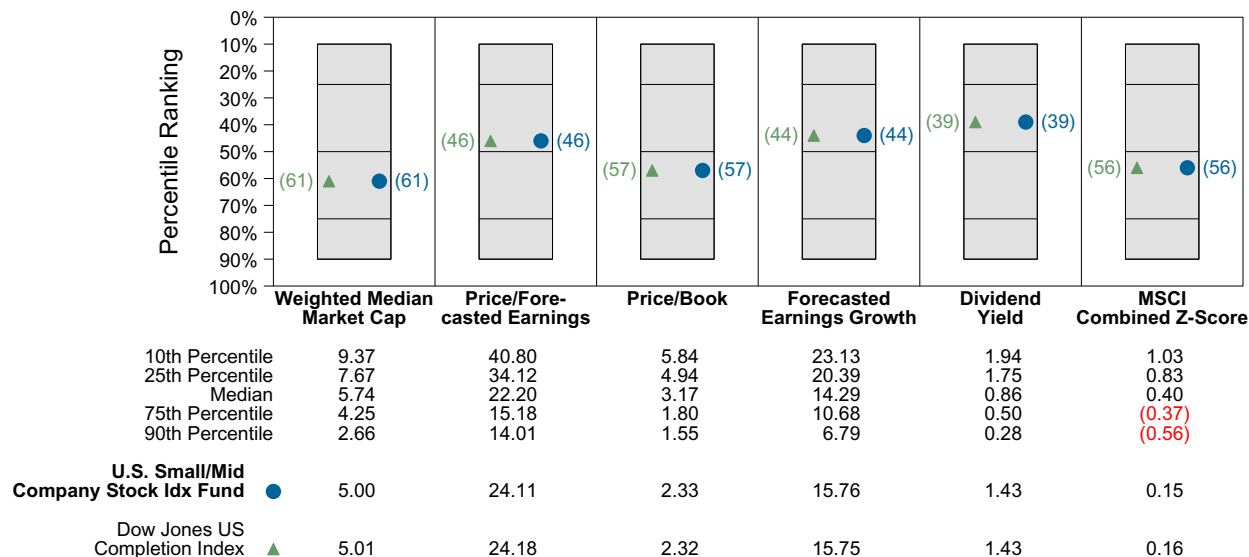


U.S. Small/Mid Company Stock Idx Fund Equity Characteristics Analysis Summary

Portfolio Characteristics

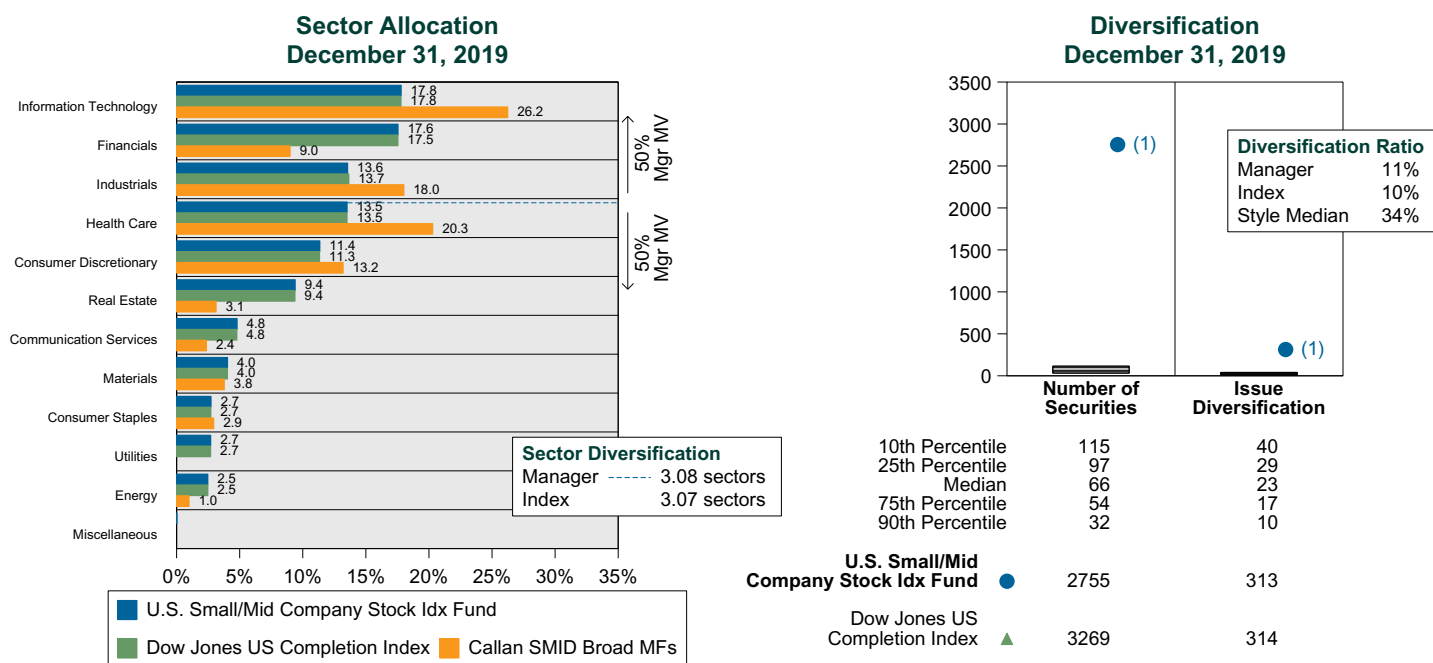
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Portfolio Characteristics Percentile Rankings Rankings Against Callan Small/MidCap Broad Mutual Funds as of December 31, 2019



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.



U.S. Small/Mid Company Stock Idx Fund

Top 10 Portfolio Holdings Characteristics

as of December 31, 2019

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	\$389	1.1%	73.67%	75.40	77.47	0.00%	-
Blackstone Group Inc Com Cl A	Financials	\$241	0.7%	15.58%	36.88	18.28	3.43%	16.70%
Lululemon Athletica Inc	Consumer Discretionary	\$182	0.5%	20.33%	28.57	41.25	0.00%	20.70%
Workday Inc Cl A	Information Technology	\$176	0.5%	(3.24)%	27.46	76.24	0.00%	25.90%
Splunk Inc	Information Technology	\$151	0.4%	27.07%	23.36	64.81	0.00%	37.20%
Palo Alto Networks Inc	Information Technology	\$148	0.4%	13.45%	22.65	42.00	0.00%	13.62%
Costar Group Inc	Industrials	\$143	0.4%	0.86%	21.92	57.58	0.00%	46.53%
Square Inc Cl A	Information Technology	\$140	0.4%	0.98%	21.72	65.17	0.00%	40.66%
Dexcom Inc	Health Care	\$131	0.4%	46.57%	20.02	120.19	0.00%	78.00%
Liberty Broadband Corp Com Ser C	Communication Services	\$125	0.4%	20.14%	19.20	40.96	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
Iveric Bio Inc	Health Care	\$2	0.0%	666.07%	0.41	(8.61)	0.00%	-
Constellation Pharmaceuticals	Health Care	\$3	0.0%	629.26%	1.89	(14.59)	0.00%	-
Forty Seven Inc	Health Care	\$8	0.0%	513.24%	1.86	(14.47)	0.00%	-
Chemocentryx Inc	Health Care	\$10	0.0%	483.33%	2.30	(27.66)	0.00%	-
Axsome Therapeutics Inc.	Health Care	\$16	0.0%	410.67%	3.80	(61.16)	0.00%	-
Kodiak Sciences Inc	Health Care	\$11	0.0%	400.35%	3.16	(36.34)	0.00%	-
Karuna Therapeutics	Health Care	\$4	0.0%	361.64%	1.96	(26.25)	0.00%	-
Clearside Biomedical Inc	Health Care	\$1	0.0%	360.32%	0.12	(6.04)	0.00%	-
Intra Cellular Therapies Inc	Health Care	\$9	0.0%	359.30%	1.90	(9.32)	0.00%	-
Cassava Sciences Inc	Health Care	\$0	0.0%	333.33%	0.09	37.14	0.00%	58.11%

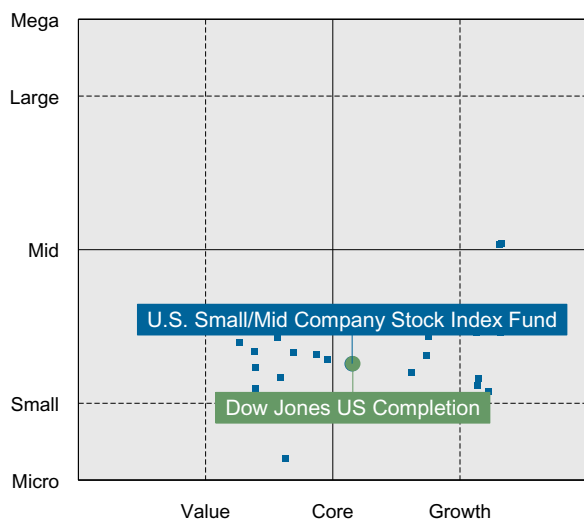
10 Worst Performers

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Lipocine Inc New	Health Care	\$0	0.0%	(86.30)%	0.01	(1.28)	0.00%	-
Lsc Communications Inc	Industrials	\$0	0.0%	(85.07)%	0.01	(0.12)	0.00%	(42.26)%
Restorbio Inc	Health Care	\$0	0.0%	(83.14)%	0.05	(1.15)	0.00%	-
Mcclatchy Co Cl A New	Communication Services	\$0	0.0%	(83.04)%	0.00	(0.20)	0.00%	(41.69)%
Transenterix Inc	Health Care	\$0	0.0%	(81.76)%	0.03	(0.53)	0.00%	(1.34)%
Unit Corp	Energy	\$0	0.0%	(79.41)%	0.04	(2.17)	0.00%	(18.78)%
Cyclerion Therapeutics	Health Care	\$0	0.0%	(77.56)%	0.07	(1.16)	0.00%	-
Contura Energy Inc	Energy	\$1	0.0%	(67.63)%	0.16	(4.69)	0.00%	(26.41)%
Mcdermott Intl Inc	Energy	\$1	0.0%	(66.50)%	0.12	0.88	0.00%	(5.26)%
Cpi Card Group Inc	Information Technology	\$0	0.0%	(65.12)%	0.01	(4.09)	100.00%	-

Historical Holdings Based Style Analysis U.S. Small/Mid Company Stock Index Fund For Three Years Ended December 31, 2019

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

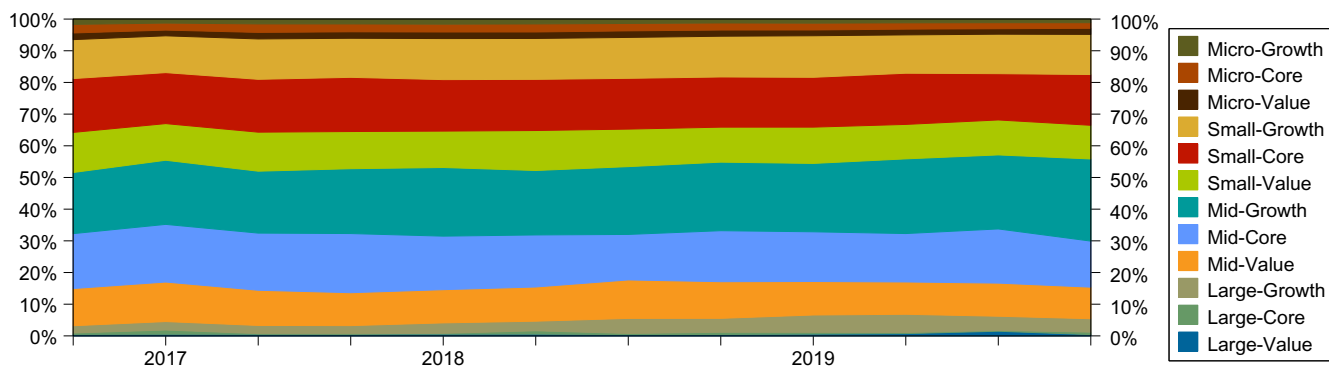
**Average Style Map vs Callan SMID Broad MFs
Holdings for Three Years Ended December 31, 2019**



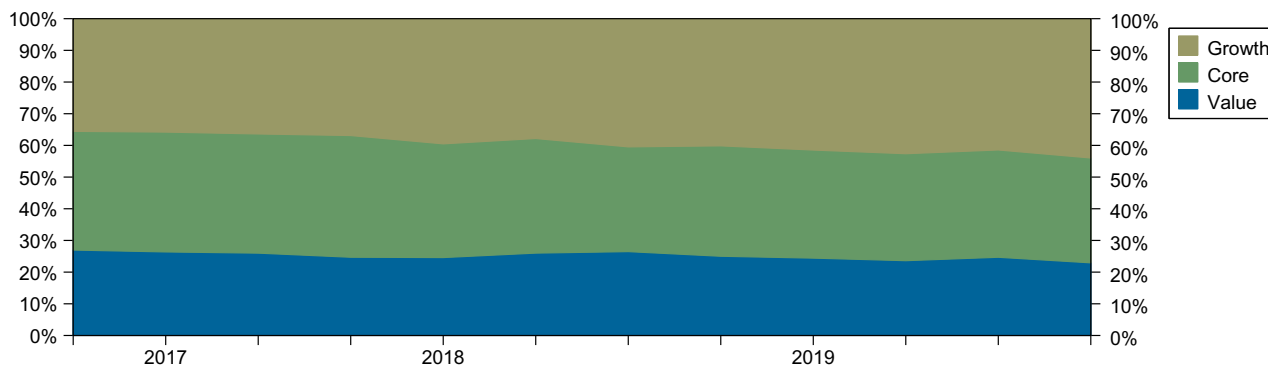
**Average Style Exposure Matrix
Holdings for Three Years Ended December 31, 2019**

	Value	Core	Growth	Total
Large	0.6% (2) 0.6% (2)	0.5% (3) 0.5% (2)	3.8% (8) 3.8% (8)	4.9% (13) 4.8% (12)
Mid	11.0% (91) 11.0% (92)	16.6% (134) 16.6% (135)	21.6% (157) 21.6% (158)	49.1% (382) 49.2% (385)
Small	11.6% (325) 11.5% (325)	16.1% (484) 16.1% (488)	12.6% (377) 12.6% (380)	40.3% (1186) 40.3% (1193)
Micro	2.0% (441) 1.9% (534)	2.3% (631) 2.4% (854)	1.4% (260) 1.4% (300)	5.6% (1332) 5.7% (1688)
Total	25.1% (859) 25.0% (953)	35.5% (1252) 35.6% (1479)	39.3% (802) 39.4% (846)	100.0% (2913) 100.0% (3278)

U.S. Small/Mid Company Stock Index Fund Historical Cap/Style Exposures



U.S. Small/Mid Company Stock Index Fund Historical Style Only Exposures



SERS Global Non-U.S. Index Fund

Period Ended December 31, 2019

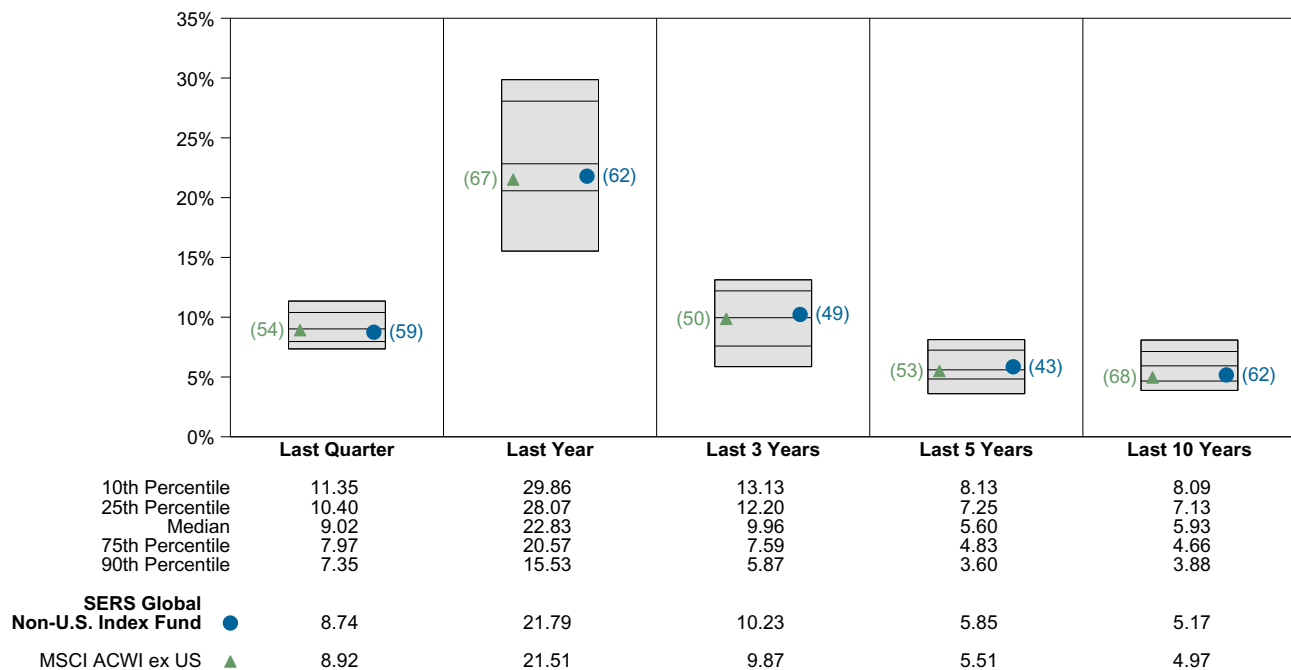
Investment Philosophy

The Global Non-U.S. Stock Index Fund 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.

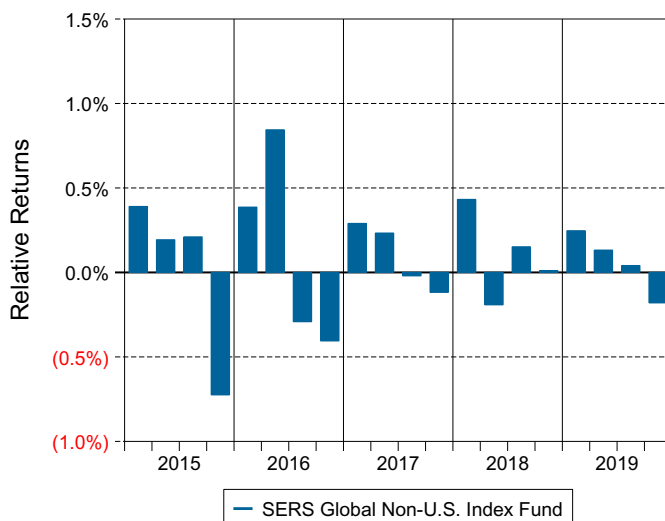
Quarterly Summary and Highlights

- SERS Global Non-U.S. Index Fund's portfolio posted a 8.74% 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 62 percentile for the last year.
- SERS Global Non-U.S. Index Fund's portfolio underperformed the MSCI ACWI ex US by 0.18% for the quarter and outperformed the MSCI ACWI ex US for the year by 0.28%.

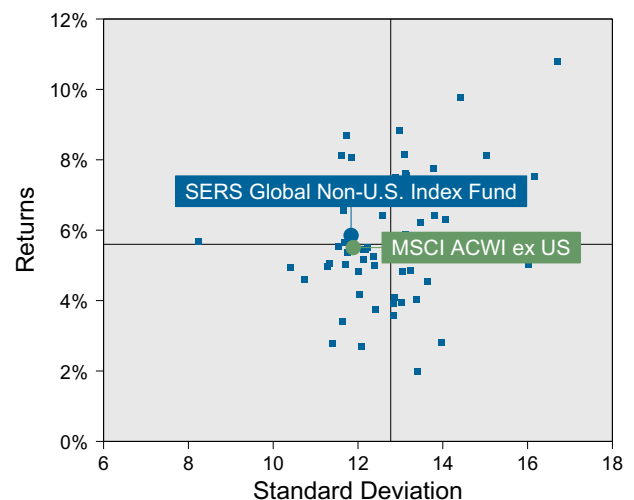
Performance vs Callan Non US Equity Mutual Funds (Institutional Net)



Relative Return vs MSCI ACWI ex US



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

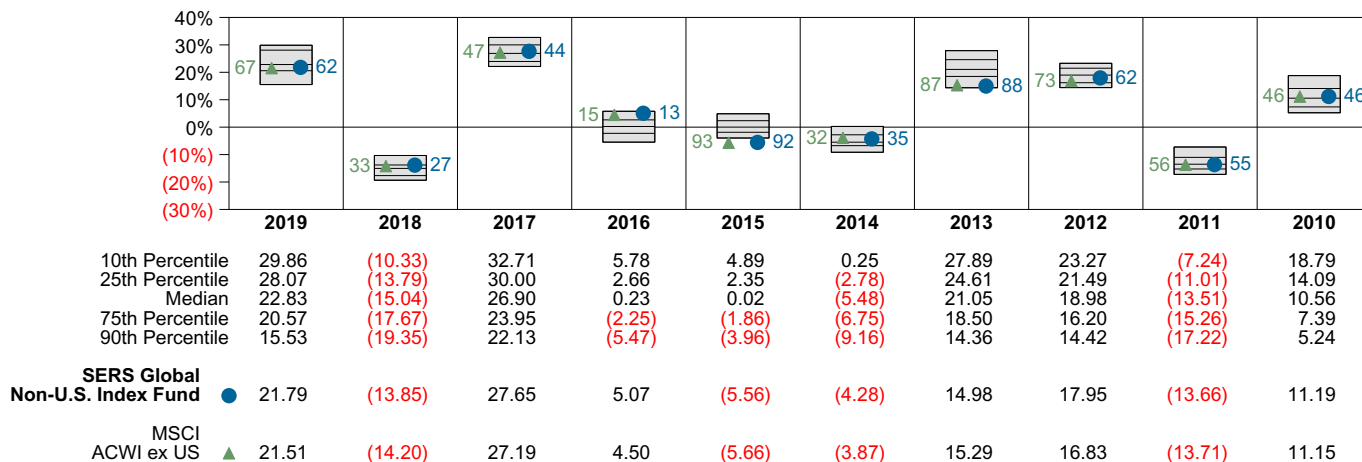


SERS Global Non-U.S. Index Fund Return Analysis Summary

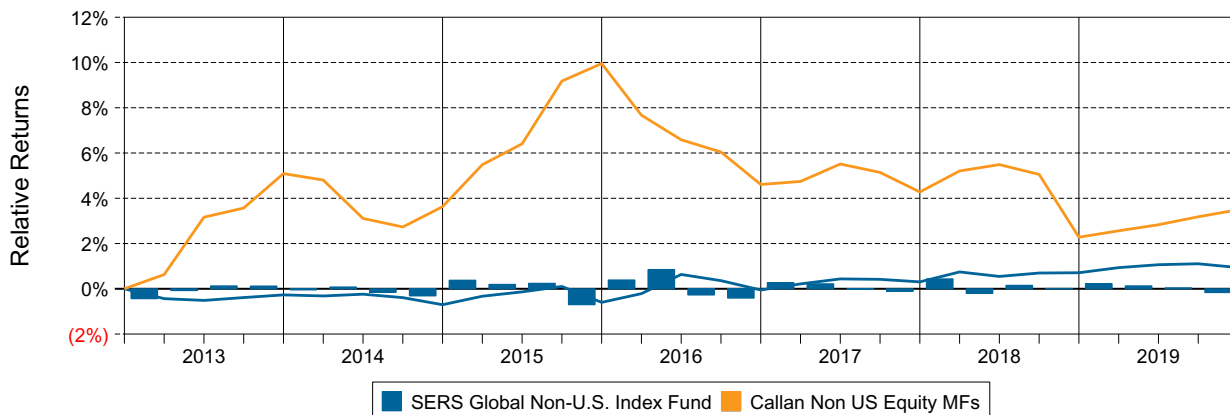
Return Analysis

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

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

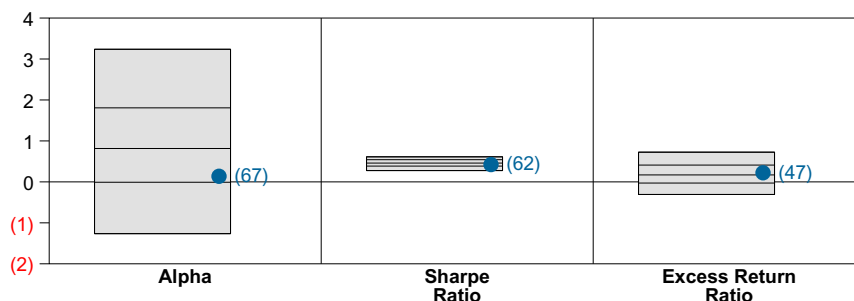


Cumulative and Quarterly Relative Return vs MSCI ACWI ex US



Risk Adjusted Return Measures vs MSCI ACWI ex US

Rankings Against Callan Non US Equity Mutual Funds (Institutional Net) Seven Years Ended December 31, 2019



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

3.24
1.81
0.81
(0.01)
(1.26)

0.61
0.54
0.46
0.39
0.28

0.73
0.41
0.17
(0.03)
(0.31)

SERS Global Non-U.S. Index Fund

0.14

0.42

0.22

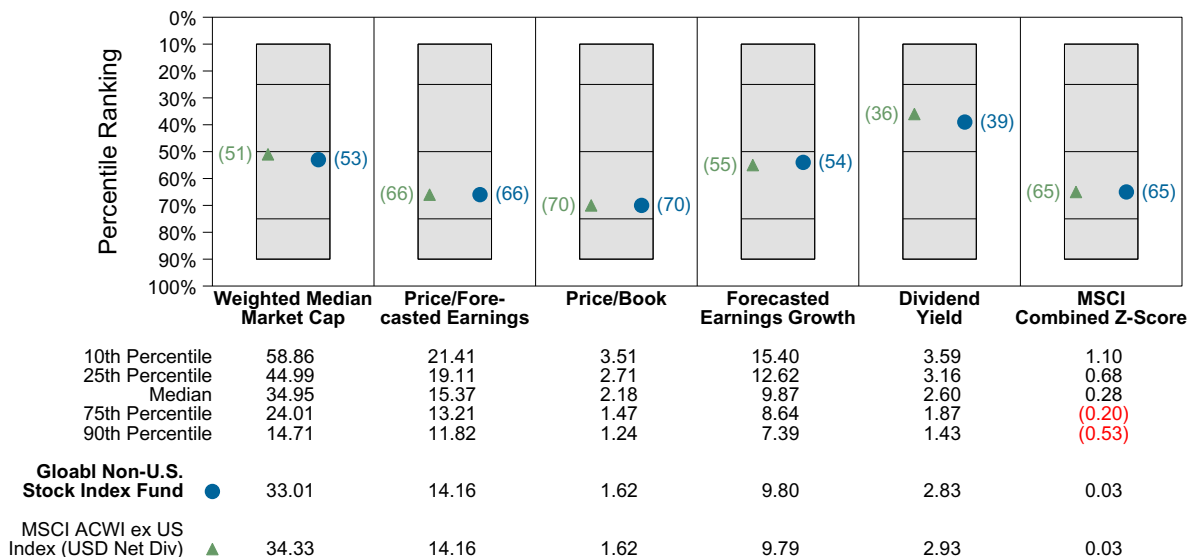
Gloabl Non-U.S. Stock Index Fund

Equity Characteristics Analysis Summary

Portfolio Characteristics

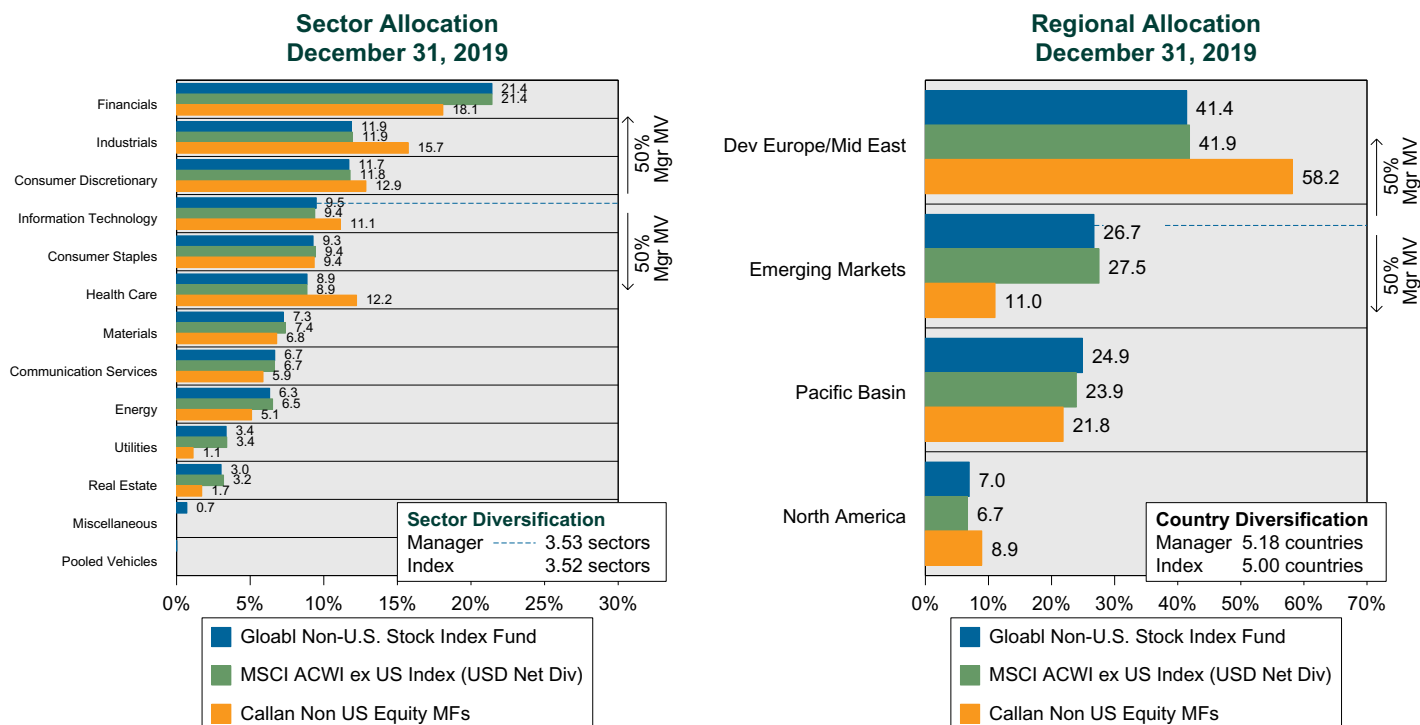
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Portfolio Characteristics Percentile Rankings Rankings Against Callan Non US Equity Mutual Funds as of December 31, 2019



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.



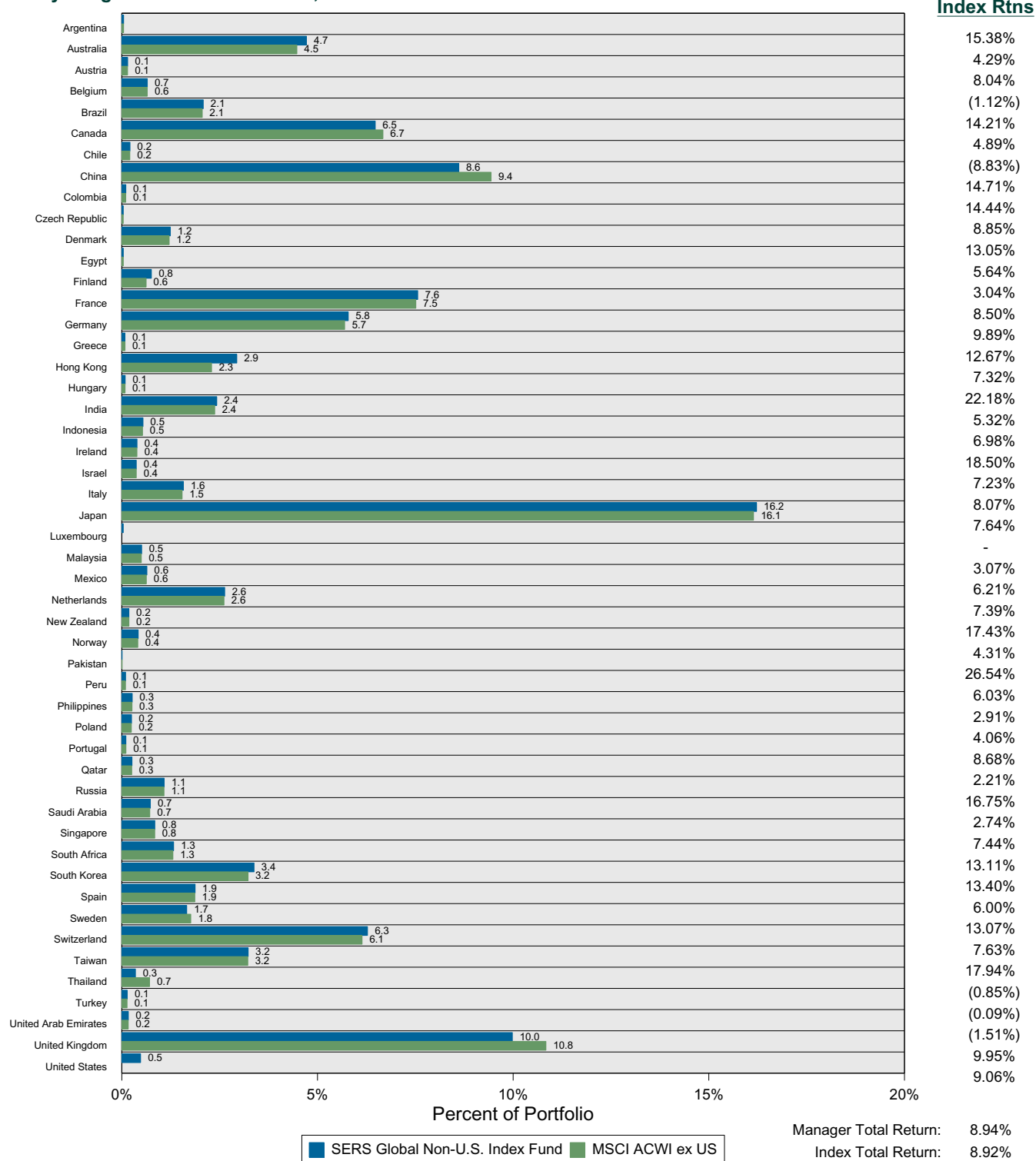
Country Allocation

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

Country Allocation

The chart below contrasts the portfolio's country allocation with that of the index as of December 31, 2019. This chart is useful because large deviations in country allocation relative to the index are often good predictors of tracking error in the subsequent quarter. To the extent that the portfolio allocation is similar to the index, the portfolio should experience more "index-like" performance. In order to illustrate the performance effect on the portfolio and index of these country allocations, the individual index country returns are also shown.

Country Weights as of December 31, 2019



SERS Global Non-U.S. Index Fund

Top 10 Portfolio Holdings Characteristics

as of December 31, 2019

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	\$3,754	1.6%	26.83%	569.01	24.84	0.00%	25.80%
Nestle S A Shs Nom New	Consumer Staples	\$3,371	1.5%	(0.36)%	322.01	22.10	2.34%	8.81%
Tencent Holdings Limited Shs Par Hkd	Communication Services	\$2,890	1.2%	14.44%	460.47	28.12	0.27%	20.80%
Taiwan Semicond Manufac Co L Shs	Information Technology	\$2,845	1.2%	26.88%	286.32	20.00	2.72%	11.17%
Samsung Electronics Co Ltd Ord	Information Technology	\$2,410	1.0%	18.53%	288.05	13.30	2.54%	(7.20)%
Roche Hldgs Ag Basel Div Rts Ctf	Health Care	\$2,385	1.0%	11.32%	227.81	15.36	2.64%	7.10%
Novartis	Health Care	\$2,134	0.9%	9.35%	239.85	16.56	3.10%	8.18%
Toyota Motor Corp	Consumer Discretionary	\$1,675	0.7%	7.74%	231.61	9.35	2.85%	12.54%
Hsbc Holdings (Gb)	Financials	\$1,636	0.7%	3.26%	159.28	11.20	6.73%	1.52%
Sap Se Shs	Information Technology	\$1,389	0.6%	14.60%	165.92	22.20	1.25%	13.20%

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
Nio Inc Ads	Consumer Discretionary	\$26	0.0%	157.66%	3.10	(4.64)	0.00%	26.20%
Sibanye Gold Ltd	Materials	\$59	0.0%	85.43%	6.85	5.55	0.00%	31.00%
Yageo Corporation Shs	Information Technology	\$40	0.0%	83.48%	6.25	23.52	10.26%	57.79%
Delivery Hero	Consumer Discretionary	\$93	0.0%	80.05%	15.01	(35.24)	0.00%	-
Stars Group Inc	Consumer Discretionary	\$63	0.0%	74.50%	7.52	13.75	0.00%	(9.85)%
Mitsubishi Tanabe Pharma Cor Shs	Health Care	\$43	0.0%	68.48%	10.37	118.46	2.79%	(44.19)%
Aac Technologies Holdings In Shs New	Information Technology	\$67	0.0%	64.86%	10.55	23.59	2.10%	12.71%
Impala Platinum Holdings	Materials	\$85	0.0%	63.33%	8.20	8.18	0.00%	18.80%
Zhejiang Jinlei Refrac. 'a'	Communication Services	\$1	0.0%	63.31%	8.19	23.48	0.41%	17.26%
China Agri Ind Hldgs Ltd Shs	Consumer Staples	\$13	0.0%	62.87%	2.79	14.32	0.77%	3.28%

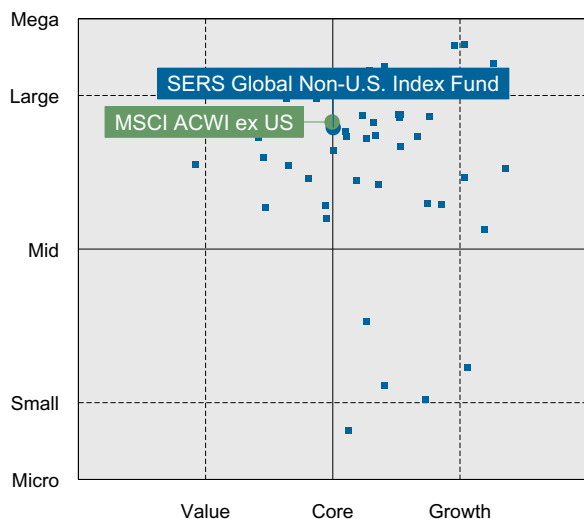
10 Worst Performers

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
China Veh.Compns.Tech. Hdg.	Consumer Discretionary	\$1	0.0%	(88.14)%	0.17	(8.75)	0.00%	-
Ford Otomotiv Sanayi As Shs	Consumer Discretionary	\$9	0.0%	(68.46)%	4.18	10.09	5.17%	23.55%
Aurora Cannabis Inc	Health Care	\$16	0.0%	(51.05)%	2.26	(19.20)	0.00%	-
Banco Espirito Santo E Comer Ord	Financials	\$0	0.0%	(50.00)%	0.00	-	0.00%	-
Telkom Sa Ltd Shs	Communication Services	\$7	0.0%	(45.69)%	1.27	6.09	9.22%	7.20%
Shijiazhuang Baoshi A	Information Technology	\$1	0.0%	(39.38)%	2.64	8.00	2.08%	6.99%
Qudian Inc Adr	Financials	\$8	0.0%	(31.65)%	0.89	2.02	0.00%	35.83%
Nmc Health	Health Care	\$22	0.0%	(29.90)%	4.89	12.07	1.02%	28.55%
Wisetech Global	Information Technology	\$24	0.0%	(29.87)%	5.23	74.00	0.19%	39.20%
Interglobe Aviation	Industrials	\$18	0.0%	(29.69)%	7.19	22.24	0.37%	(17.30)%

Historical Holdings Based Style Analysis SERS Global Non-U.S. Index Fund For Three Years Ended December 31, 2019

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

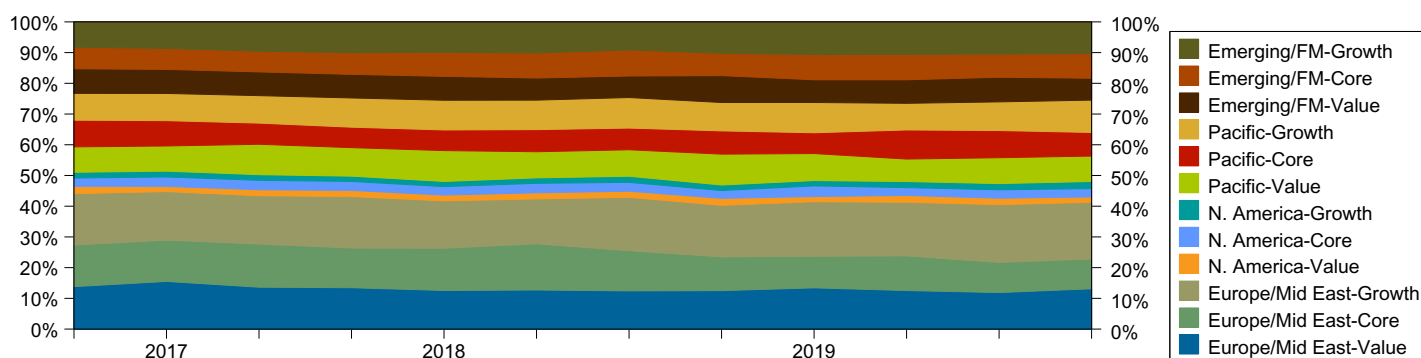
Average Style Map vs Callan Non US Equity MFs Holdings for Three Years Ended December 31, 2019



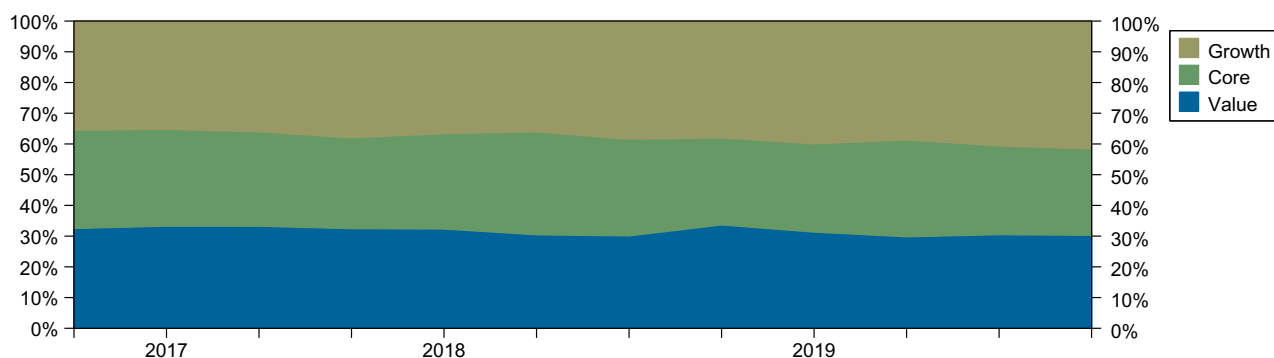
Average Style Exposure Matrix Holdings for Three Years Ended December 31, 2019

Europe/ Mid East	13.1% (126)	12.3% (124)	16.8% (179)	42.3% (429)
	13.3% (135)	12.1% (128)	16.8% (189)	42.2% (452)
N. America	2.0% (29)	2.9% (29)	1.9% (30)	6.8% (88)
	2.0% (30)	2.9% (30)	1.9% (32)	6.7% (92)
Pacific	8.8% (146)	7.7% (149)	9.4% (175)	25.9% (470)
	8.6% (147)	7.3% (148)	9.0% (175)	24.9% (470)
Emerging/ FM	7.7% (337)	7.6% (289)	9.8% (288)	25.1% (914)
	8.1% (372)	7.9% (327)	10.1% (328)	26.1% (1027)
Total	31.6% (638)	30.5% (591)	37.9% (672)	100.0% (1901)
	32.0% (684)	30.3% (633)	37.7% (724)	100.0% (2041)
	Value	Core	Growth	Total

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



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



SERS Short Term Investment Fund Period Ended December 31, 2019

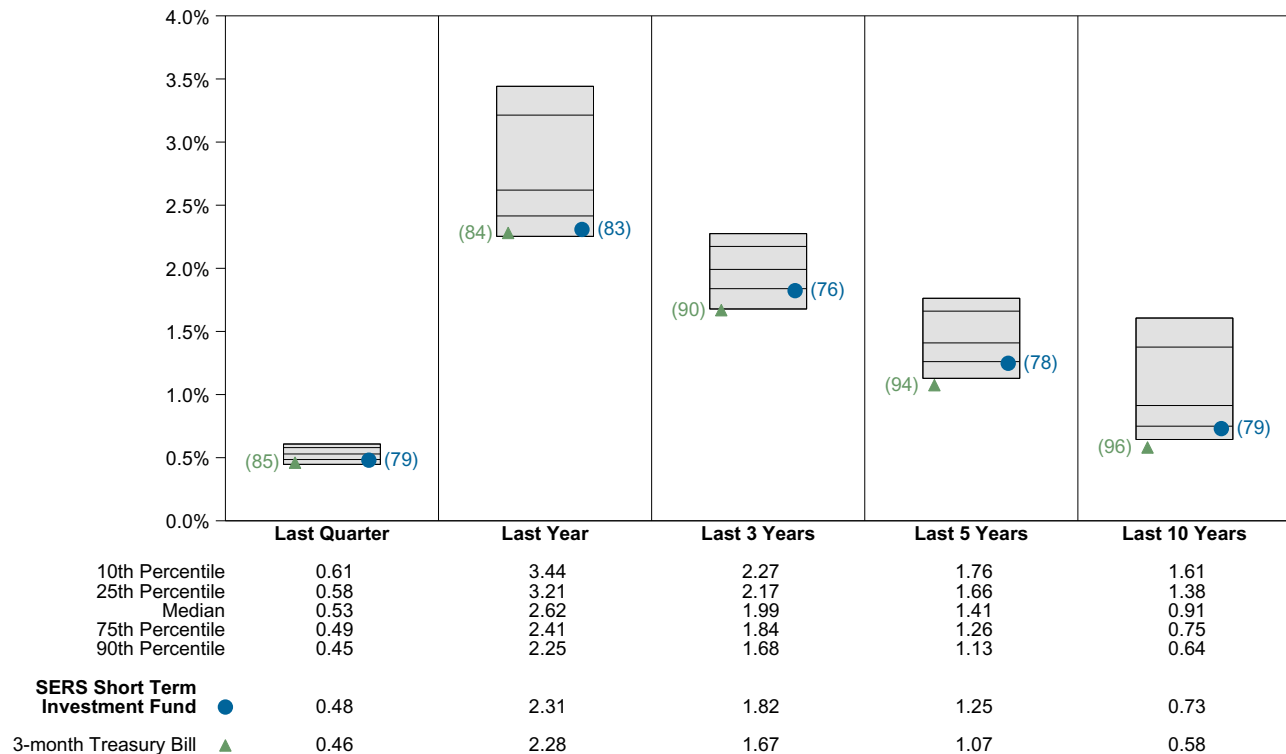
Investment Philosophy

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.

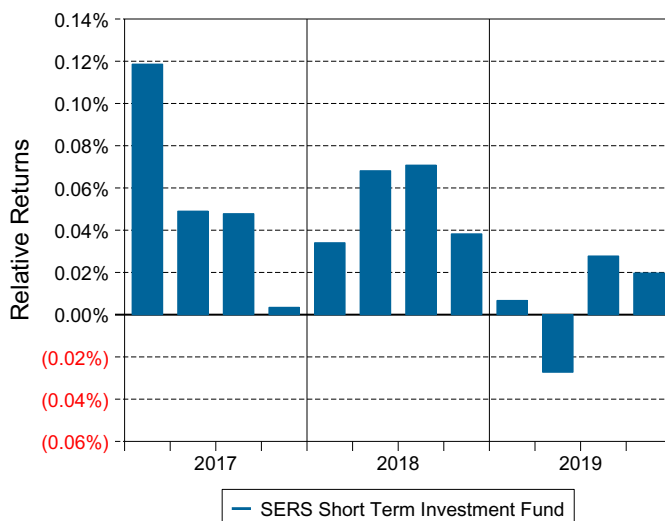
Quarterly Summary and Highlights

- SERS Short Term Investment Fund's portfolio posted a 0.48% return for the quarter placing it in the 79 percentile of the Callan Cash Database group for the quarter and in the 83 percentile for the last year.
- SERS Short Term Investment Fund's portfolio outperformed the 3-month Treasury Bill by 0.02% for the quarter and outperformed the 3-month Treasury Bill for the year by 0.03%.

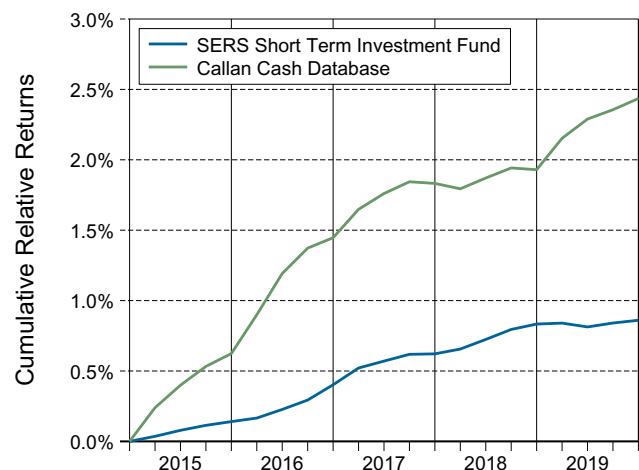
Performance vs Callan Cash Database (Gross)



Relative Return vs 3-month Treasury Bill



Cumulative Returns vs 3-month Treasury Bill



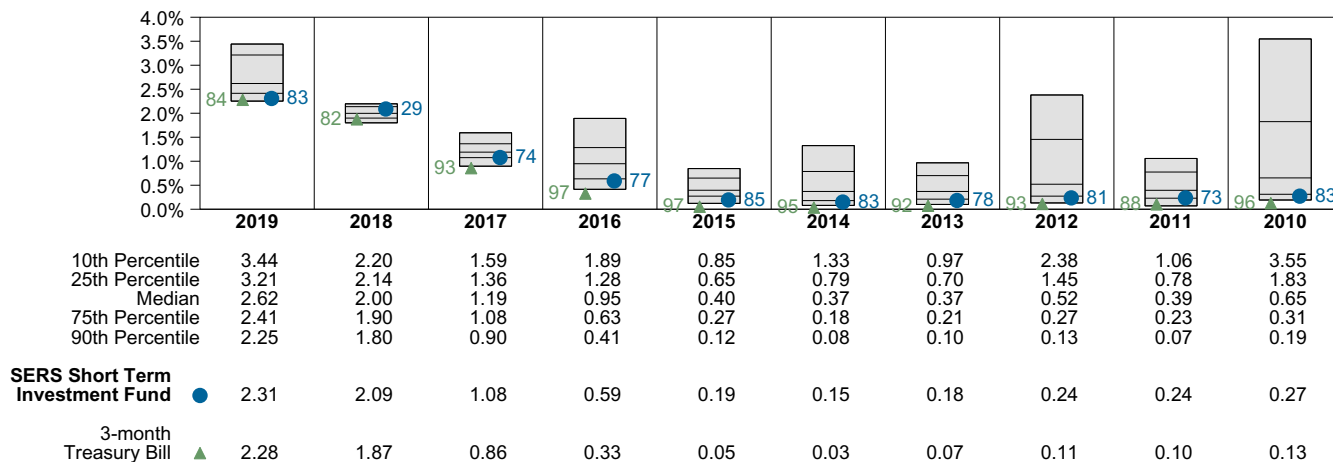
SERS Short Term Investment Fund Return Analysis Summary

Return Analysis

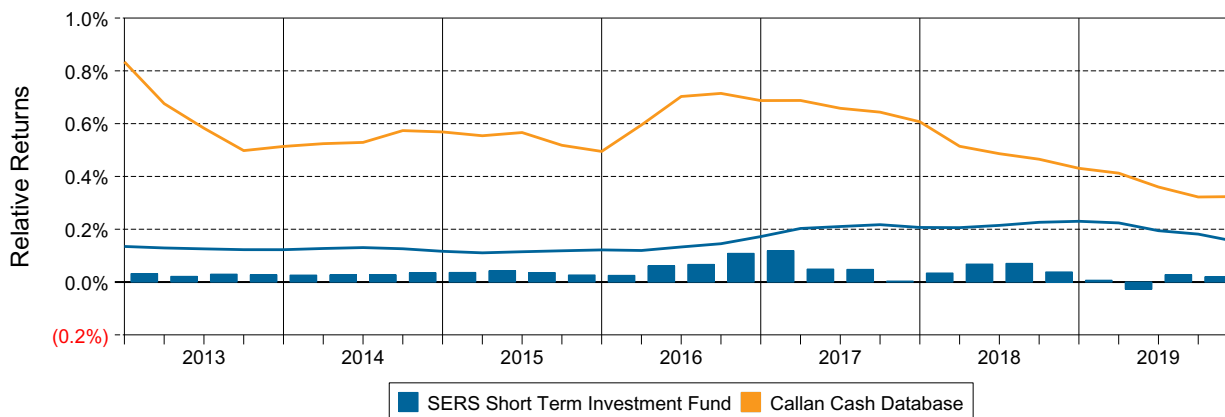
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and 12 quarter rolling manager returns versus the appropriate 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.

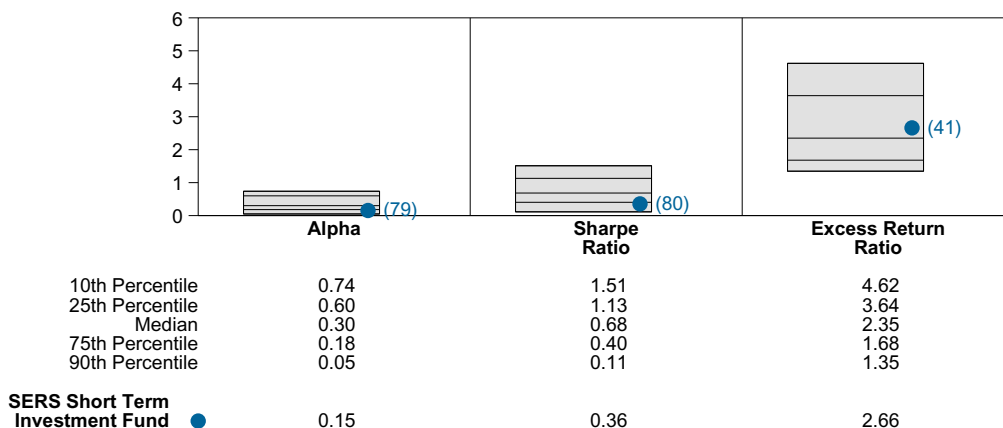
Performance vs Callan Cash Database (Gross)



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



Risk Adjusted Return Measures vs 3-month Treasury Bill Rankings Against Callan Cash Database (Gross) Seven Years Ended December 31, 2019



SERS U.S. Short Term Bond Idx Fund

Period Ended December 31, 2019

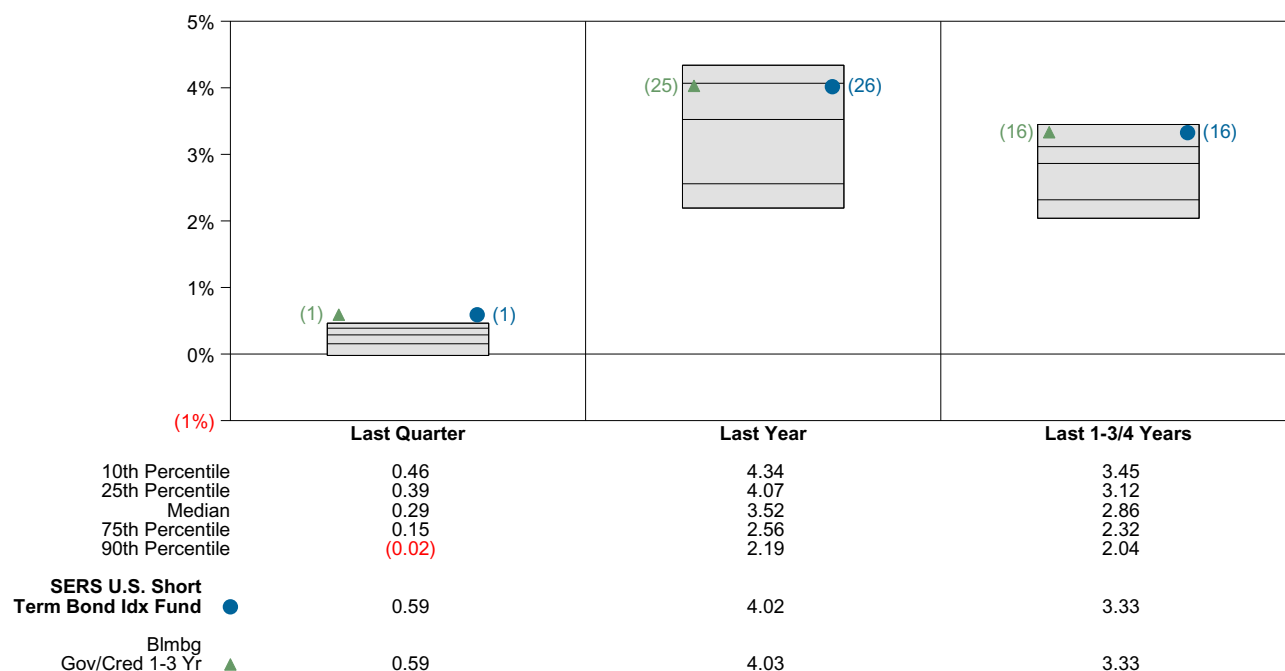
Investment Philosophy

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

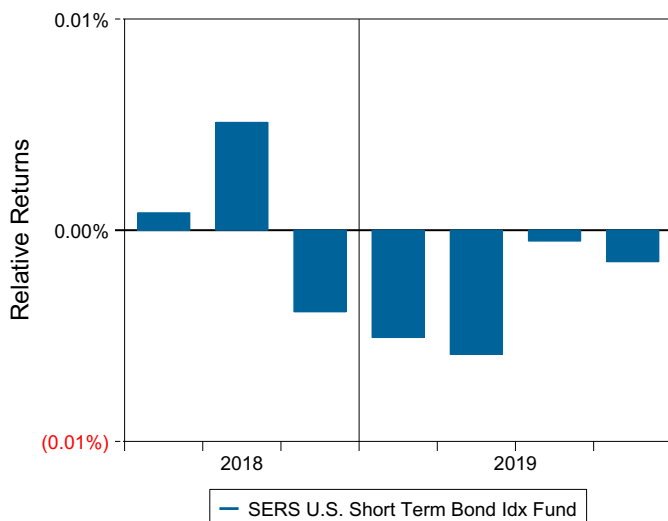
Quarterly Summary and Highlights

- SERS U.S. Short Term Bond Idx Fund's portfolio posted a 0.59% return for the quarter placing it in the 1 percentile of the Callan Short US Gov Bond Mut Funds group for the quarter and in the 26 percentile for the last year.
- SERS U.S. Short Term Bond Idx Fund's portfolio underperformed the Blmbg Gov/Cred 1-3 Yr by 0.00% for the quarter and underperformed the Blmbg Gov/Cred 1-3 Yr for the year by 0.01%.

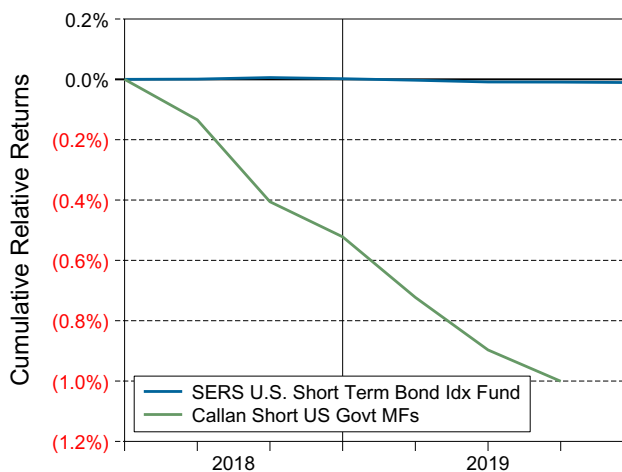
Performance vs Callan Short US Gov Bond Mut Funds (Institutional Net)



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

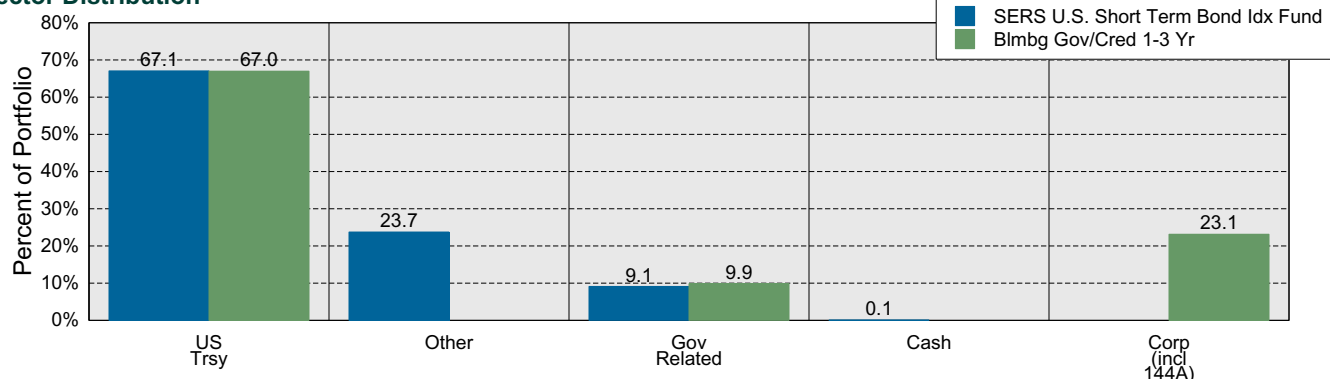
Portfolio Characteristics Summary

As of December 31, 2019

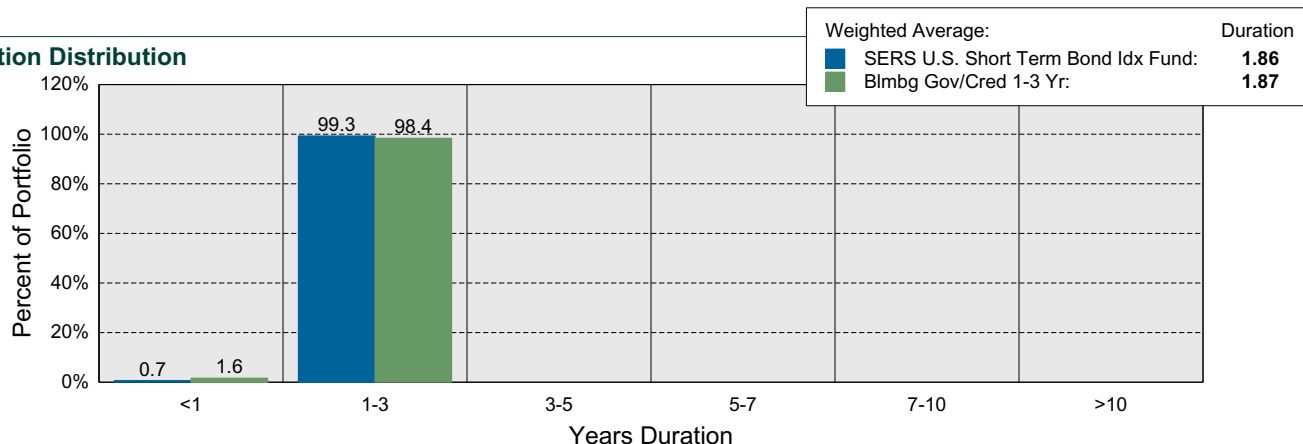
Portfolio Structure Comparison

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

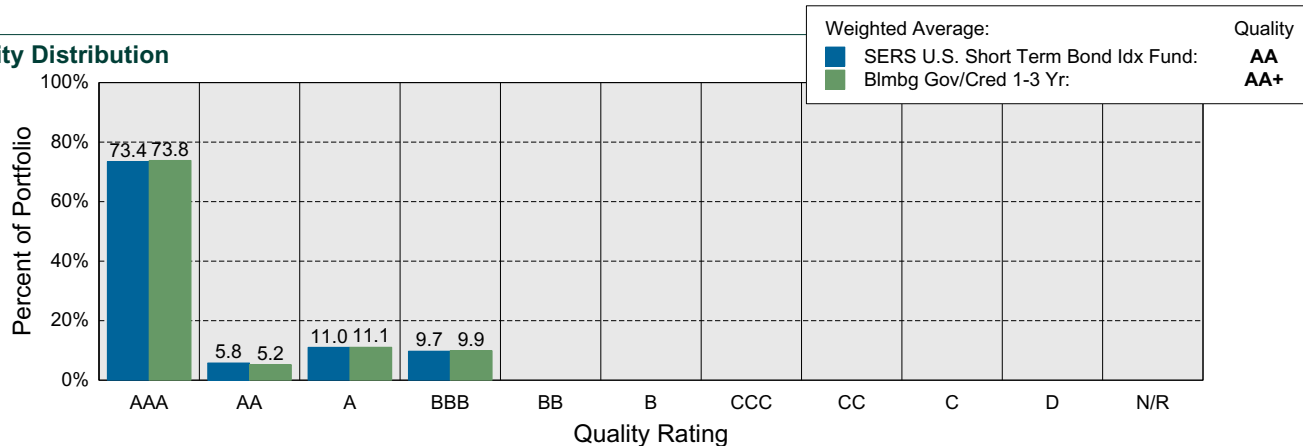
Sector Distribution



Duration Distribution



Quality Distribution



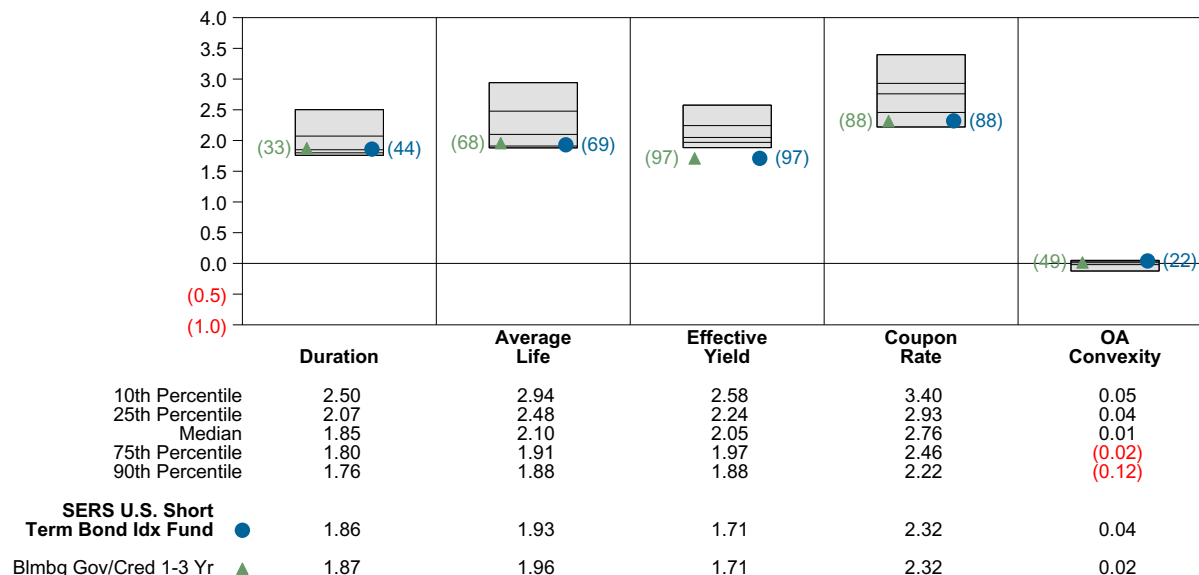
SERS U.S. Short Term Bond Idx Fund

Bond Characteristics Analysis Summary

Portfolio Characteristics

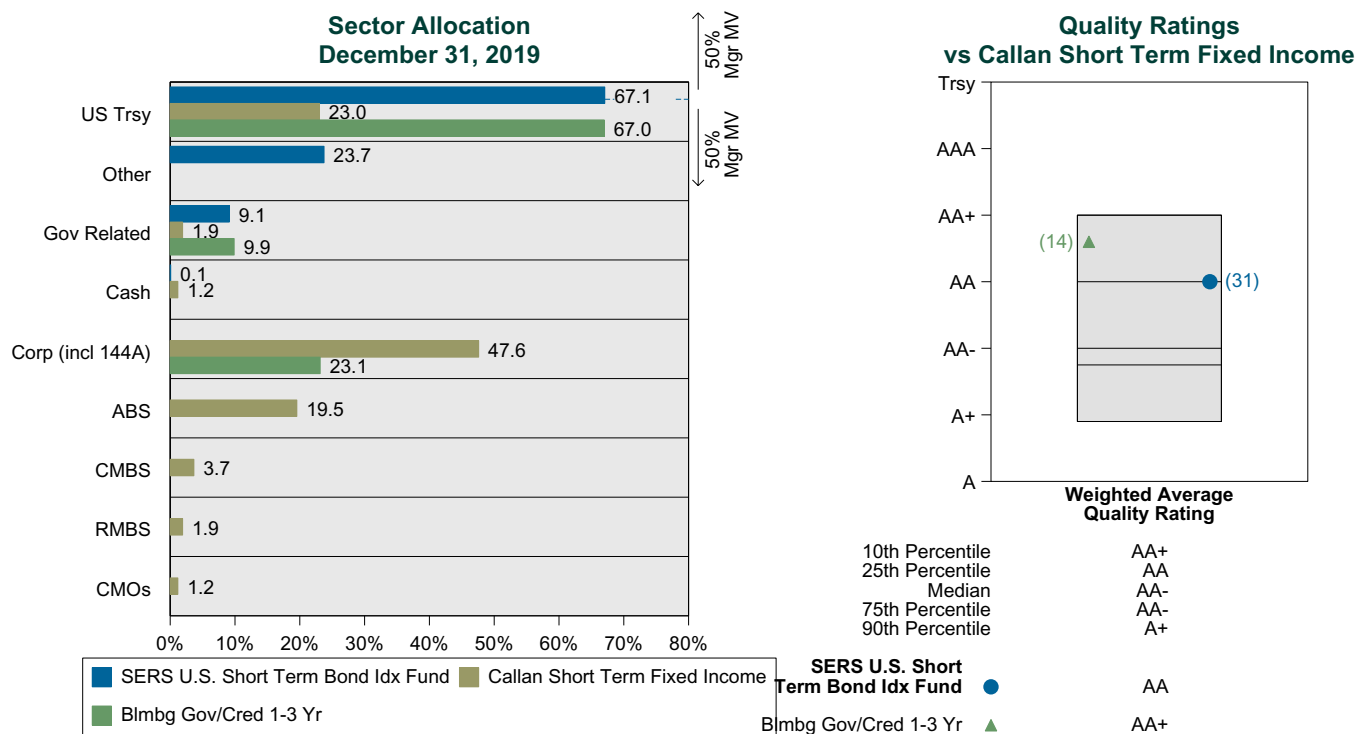
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Fixed Income Portfolio Characteristics Rankings Against Callan Short Term Fixed Income as of December 31, 2019



Sector Allocation and Quality Ratings

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



SERS U.S. TIPS Index Fund

Period Ended December 31, 2019

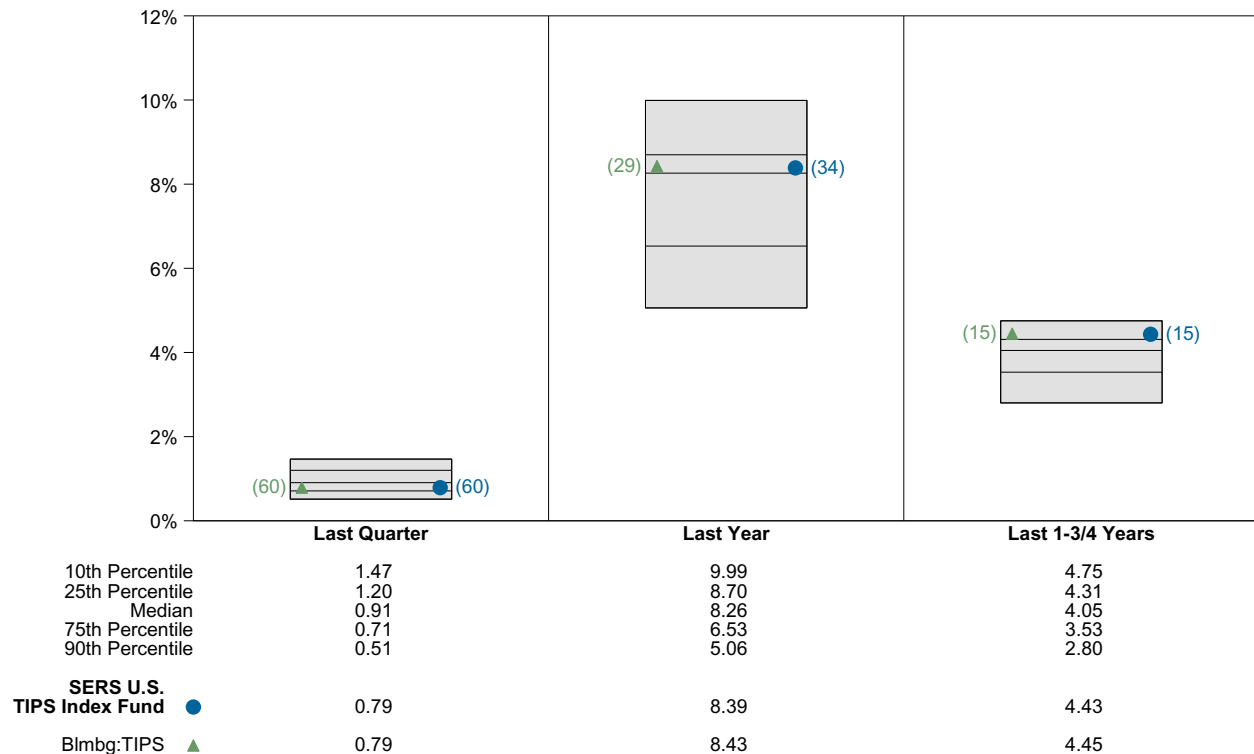
Investment Philosophy

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.

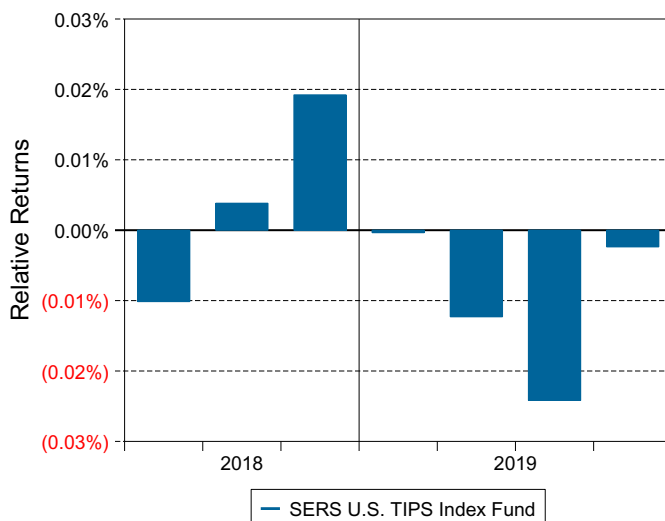
Quarterly Summary and Highlights

- SERS U.S. TIPS Index Fund's portfolio posted a 0.79% return for the quarter placing it in the 60 percentile of the Callan Treas Infl Prot Securities MFs group for the quarter and in the 34 percentile for the last year.
- SERS U.S. TIPS Index Fund's portfolio underperformed the Blmbg:TIPS by 0.00% for the quarter and underperformed the Blmbg:TIPS for the year by 0.04%.

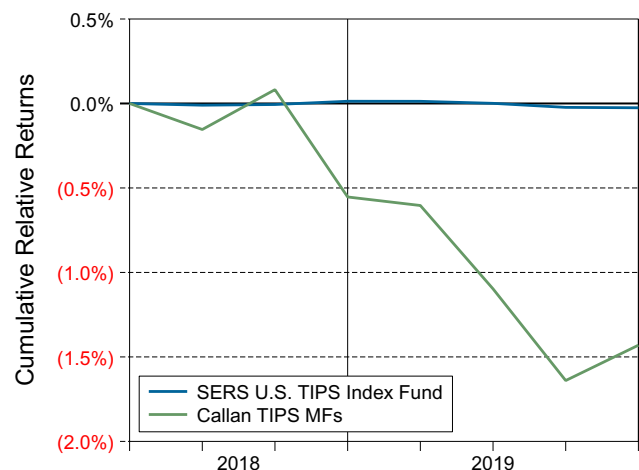
Performance vs Callan Treas Infl Prot Securities MFs (Institutional Net)



Relative Return vs Blmbg:TIPS



Cumulative Returns vs Blmbg:TIPS



SERS U.S. TIPS Index Fund

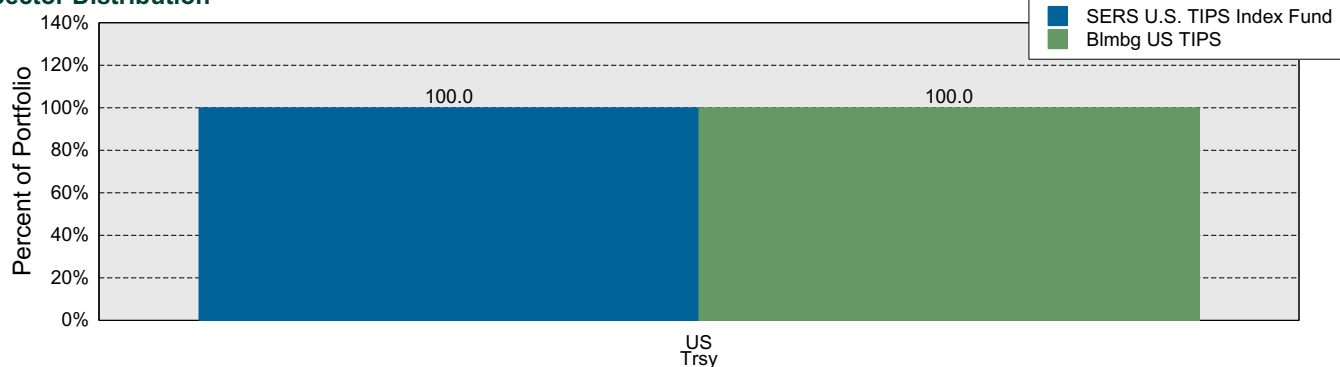
Portfolio Characteristics Summary

As of December 31, 2019

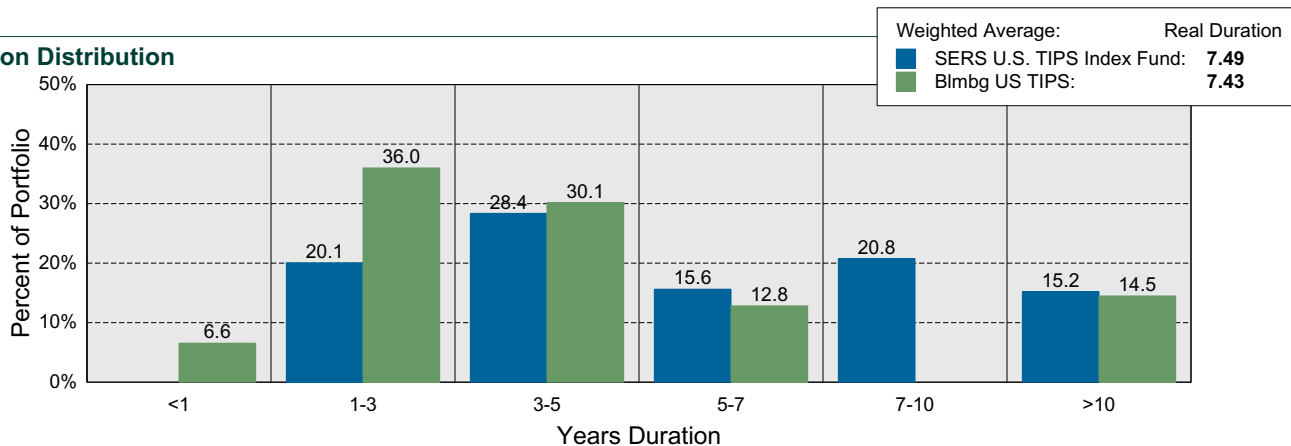
Portfolio Structure Comparison

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

Sector Distribution



Duration Distribution



Quality Distribution

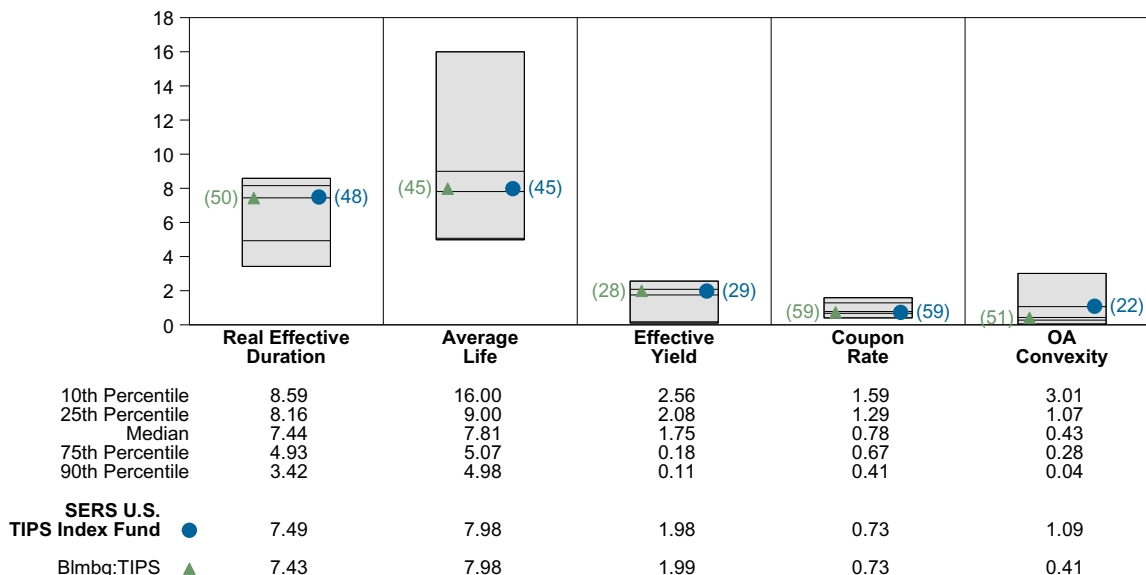


SERS U.S. TIPS Index Fund Bond Characteristics Analysis Summary

Portfolio Characteristics

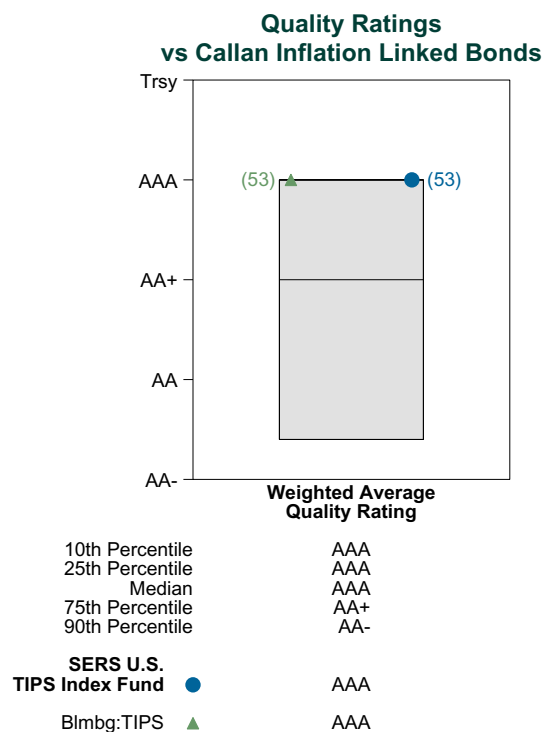
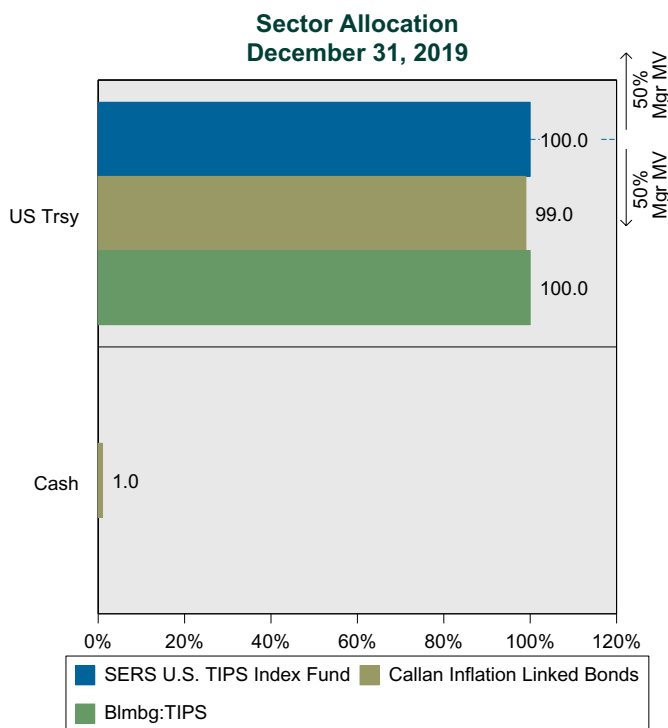
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Fixed Income Portfolio Characteristics Rankings Against Callan Inflation Linked Bonds as of December 31, 2019



Sector Allocation and Quality Ratings

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



SERS U.S. Bond Index Fund

Period Ended December 31, 2019

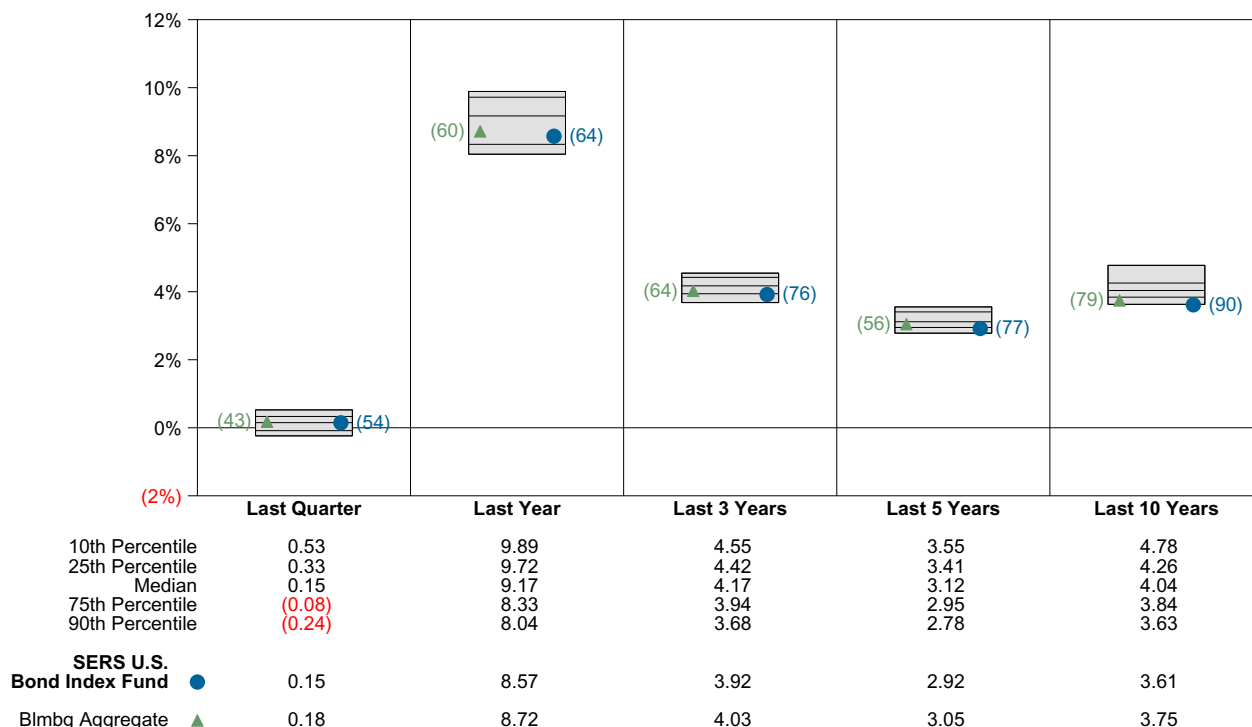
Investment Philosophy

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

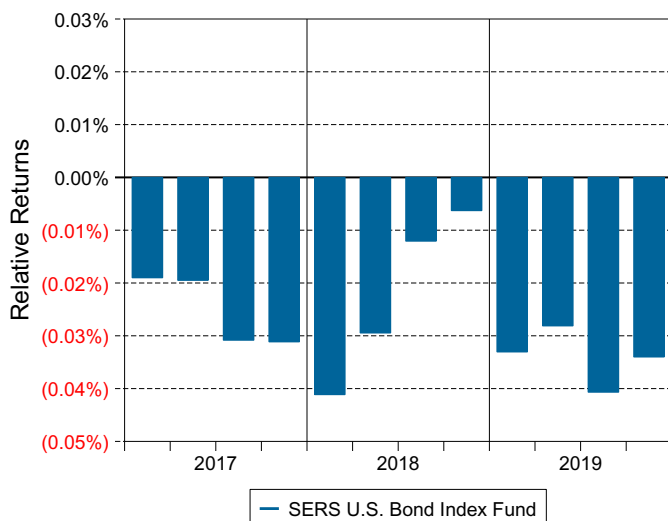
Quarterly Summary and Highlights

- SERS U.S. Bond Index Fund's portfolio posted a 0.15% return for the quarter placing it in the 54 percentile of the Callan Core Bond Mutual Funds group for the quarter and in the 64 percentile for the last year.
- SERS U.S. Bond Index Fund's portfolio underperformed the Blmbg Aggregate by 0.03% for the quarter and underperformed the Blmbg Aggregate for the year by 0.14%.

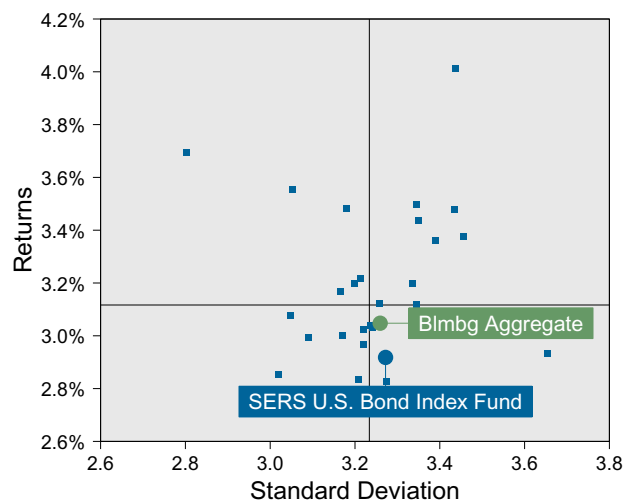
Performance vs Callan Core Bond Mutual Funds (Institutional Net)



Relative Return vs Blmbg Aggregate



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

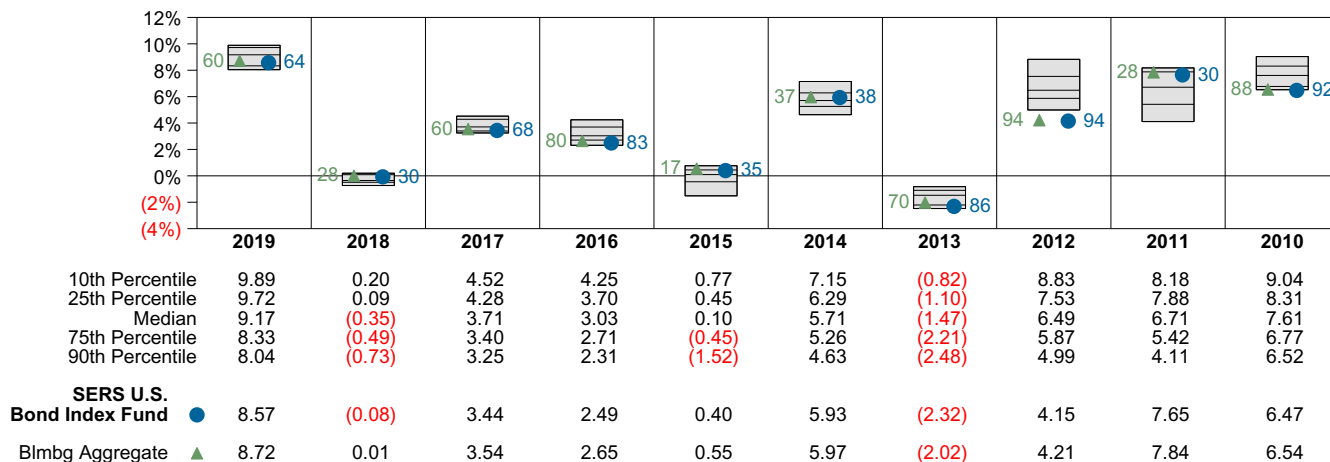


SERS U.S. Bond Index Fund Return Analysis Summary

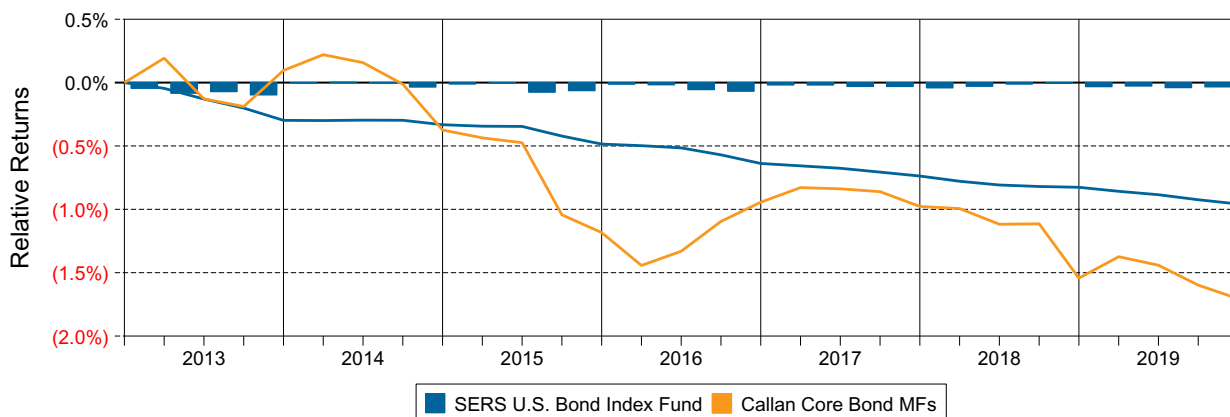
Return Analysis

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.

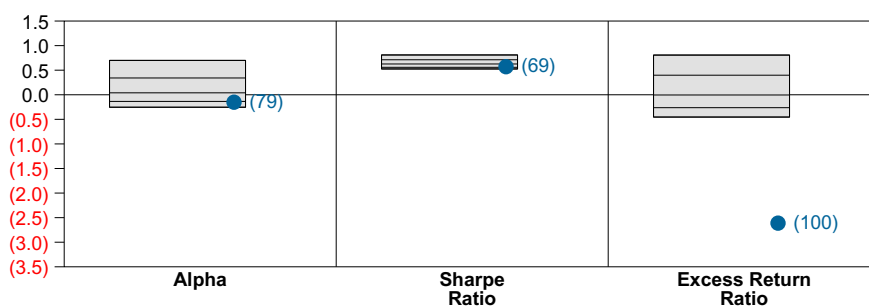
Performance vs Callan Core Bond Mutual Funds (Institutional Net)



Cumulative and Quarterly Relative Return vs Blmbg Aggregate



Risk Adjusted Return Measures vs Blmbg Aggregate Rankings Against Callan Core Bond Mutual Funds (Institutional Net) Seven Years Ended December 31, 2019



SERS U.S. Bond Index Fund

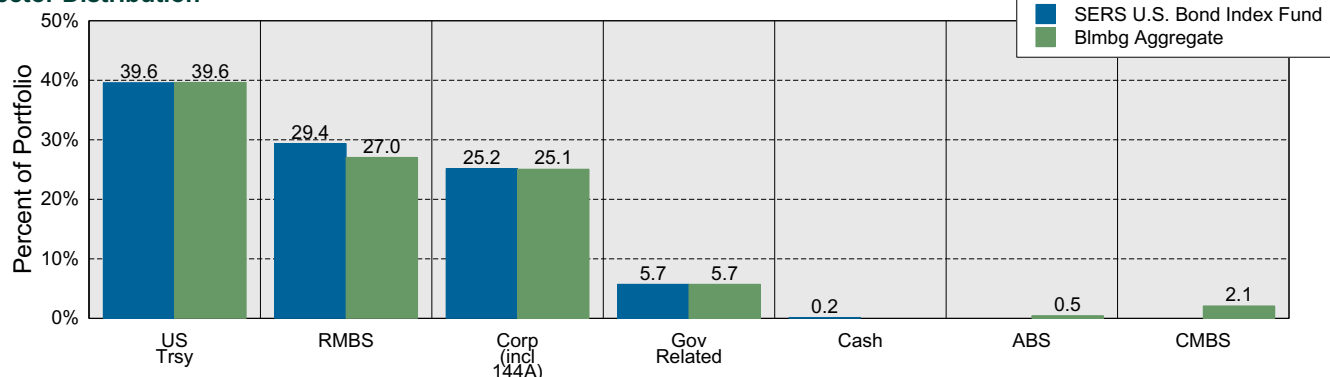
Portfolio Characteristics Summary

As of December 31, 2019

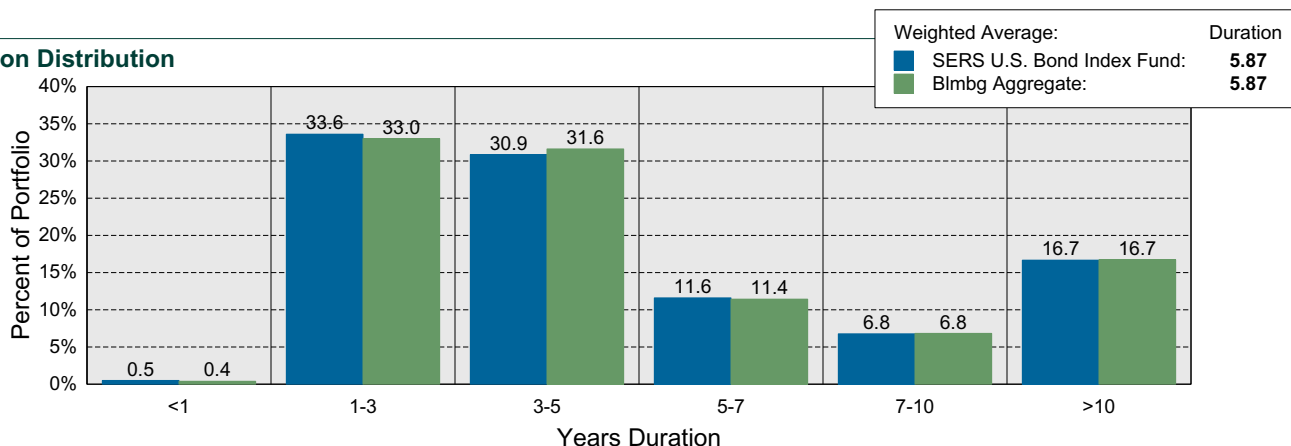
Portfolio Structure Comparison

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.

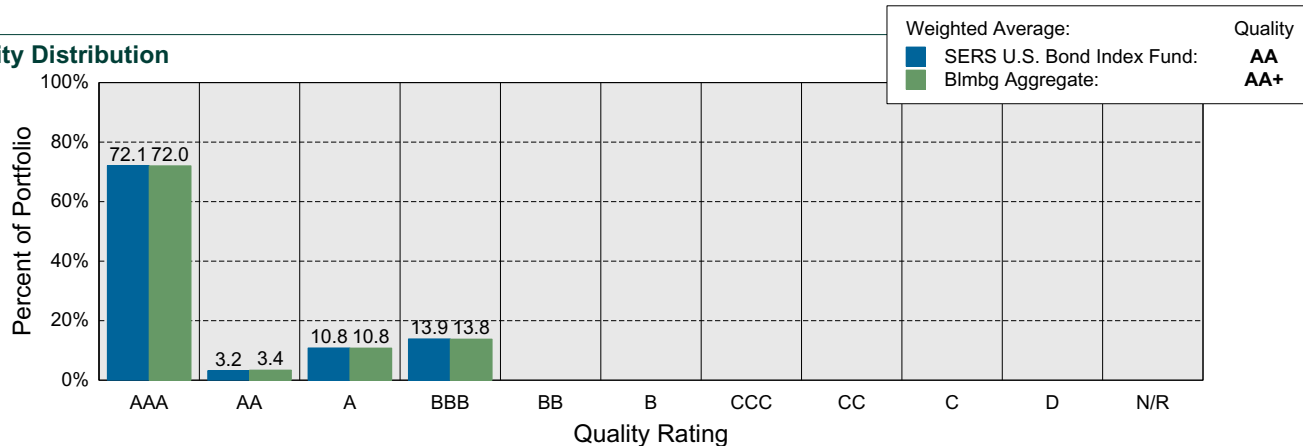
Sector Distribution



Duration Distribution



Quality Distribution



SERS U.S. Bond Index Fund

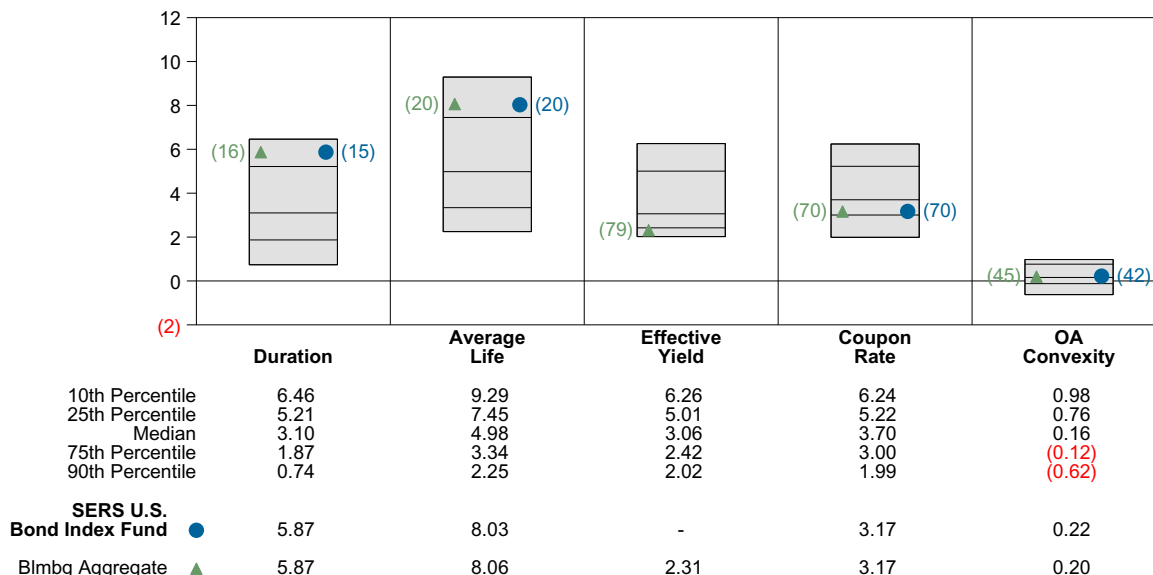
Bond Characteristics Analysis Summary

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.

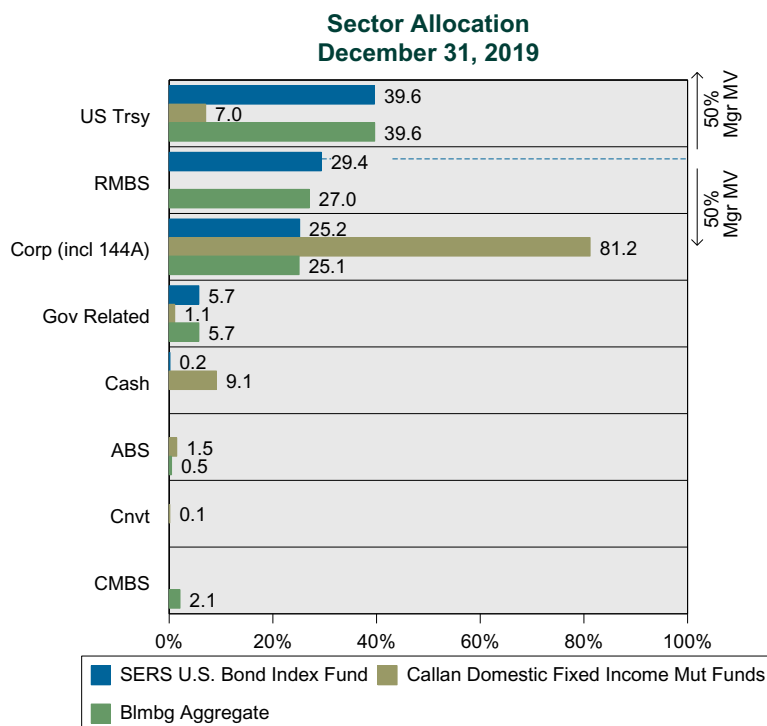
Fixed Income Portfolio Characteristics

Rankings Against Callan Domestic Fixed Income Mut Funds as of December 31, 2019

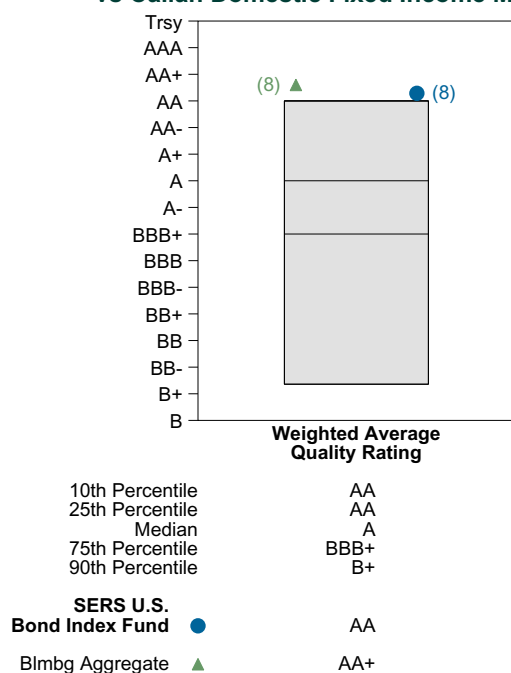


Sector Allocation and Quality Ratings

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



Quality Ratings vs Callan Domestic Fixed Income Mut Funds



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.

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.

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.

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

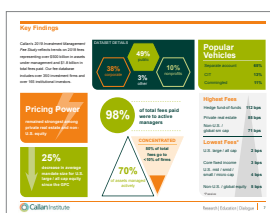
The Callan Institute provides research to update clients on the latest industry trends and carefully structured educational programs to enhance the knowledge of industry professionals. Visit www.callan.com/library to see all of our publications, and www.callan.com/blog to view our blog "Perspectives."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

New Research from Callan's Experts

Long-Dated Private Equity Funds: More Illiquidity Please? |

In this paper, Ashley DeLuce of Callan's Private Equity Consulting Group analyzes long-dated private equity funds, which have terms of 15 years or more (some even have no fixed term), and tend to focus on stable, mature businesses that may not fit a traditional private equity investment profile. Although these companies may not generate the outsized internal rates of return associated with traditional private equity investments, they tend to have stronger downside protection. In evaluating a potential long-dated fund investment, investors need to be wary of the strategy's increased illiquidity and how it can impact annual commitment pacing.

Callan 2019 Investment Management Fee Study | This study using Callan's proprietary database is our eighth examination of institutional investment management fee trends. The purpose of the study is to provide a detailed analysis on fee levels and trends across multiple asset classes and mandate sizes, for both active and passive management.



Gold: Real Asset, Risk Mitigator, or Pet Rock? | In this *Hedge Fund Monitor*, Jim McKee reviews the history of gold as a form of money, the reasons behind the recent renaissance in gold, the potential roles of gold for institutional investors, and the alternative approaches to invest in gold-related themes. For some institutional investors, gold can play a useful role in diversifying risk or enhancing returns. For others, particularly those with higher risk tolerances and longer time horizons, a strategic gold allocation has about as much purpose as a Pet Rock.



Quarterly Periodicals

Private Equity Trends, 3Q19 | This newsletter from Callan's Private Equity Consulting Group provides a high-level summary of private equity activity in the quarter through all the investment stages, from fundraising to exits, as well as long-term performance data.

Monthly Periodic Table of Investment Returns, November 2019 | A regular update to Callan's Periodic Table covering the major public equity and fixed income asset classes.

Active vs. Passive Report, 3Q19 | This series of charts compares active managers alongside relevant benchmarks over the long term.

Market Pulse Flipbook, 3Q19 | A quarterly market reference guide covering trends in the U.S. economy, developments for institutional investors, and the latest data for U.S. and global ex-U.S. equities and fixed income, alternatives, and defined contribution plans.

Capital Market Review, 3Q19 | This newsletter provides 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, 3Q19 | Callan's Jim McKee of our Hedge Fund Research Group provides commentary on developments for hedge funds and multi-asset class (MAC) strategies.

Real Estate Indicators: Too Hot to Touch or Cool Enough to Handle? | Callan's Real Assets Consulting Group identifies seven indicators that, combined with an understanding of prevailing market dynamics, have helped signal when the institutional real estate market is overheated or cooled.

Real Assets Reporter, 3Q19 | This newsletter from our experts offers Callan's data and insights on real estate and other real asset 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/

Please mark your calendar and look forward to upcoming invitations:

2020 June Regional Workshops

June 23 – San Francisco

June 25 – Chicago

2020 October Regional Workshops

October 27 – Atlanta

October 29 – Portland

Please also keep your eye out for upcoming Webinars in 2020! We will be sending invitations to register for these events and will also have registration links on our website at www.callan.com/webinarsupcoming.

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

Education: By the Numbers

50+

Unique pieces of research the Institute generates each year

525

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

3,700

Total attendees of the "Callan College" since 1994



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

Greg Allen, CEO and Chief Research Officer

Education

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

April 21-22, 2020 – San Francisco

July 21-22, 2020 – Chicago

October 13-14, 2020 – Chicago

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.

Learn more at www.callan.com/callan-college-intro-2/

Alternative Investments for Institutional Investors

June 16, 2020 – San Francisco

November 3, 2020 – Chicago

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 the head of Alternatives Consulting Pete Keliuotis. 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.

Learn more at: <https://www.callan.com/callan-college-alternatives-2/>

Confidential – For Callan Client Use Only

The list below is an important component of our conflicts management and disclosure process. It identifies those investment managers that pay Callan fees for educational, consulting, software, database or reporting products and services. We update the list quarterly because we believe that our fund sponsor clients should know the investment managers that do business with Callan, particularly those investment manager clients that the fund sponsor clients may be using or considering using. Please note that if an investment manager receives a product or service on a complimentary basis (e.g. attending an educational event), they are not included in the list below. Callan is committed to ensuring that we do not consider an investment manager's business relationship with Callan, or lack thereof, in performing evaluations for or making suggestions or recommendations to its other clients. Please refer to Callan's ADV Part 2A for a more detailed description of the services and products that Callan makes available to investment manager clients through our Institutional Consulting Group, Independent Adviser Group and Fund Sponsor Consulting Group. Due to the complex corporate and organizational ownership structures of many investment management firms, parent and affiliate firm relationships are not indicated on our list.

Manager Name	Actual	Target
John Smith	85	90
Jane Doe	92	88
Michael Brown	78	82
Sarah White	88	92
David Green	82	85
Emily Black	95	90
James Grey	75	80
Alice Blue	80	85
Robert Red	88	90
Olivia Yellow	72	78
Benjamin Purple	85	88
Charlotte Pink	90	92
William Silver	78	82
Isabella Gold	82	85
Lucas Bronze	88	90
Amelia Copper	75	80
Matthew Iron	85	88
Harper Steel	92	95
Ethan Titanium	78	82
Sophia Zirconium	88	90
Alexander Platinum	72	78
Madison Nickel	85	88
Christopher Cobalt	90	92
Chloe Manganese	75	80
Christopher Vanadium	82	85
Isabella Chromium	88	90
Matthew Molybdenum	72	78
Amelia Cadmium	85	88
Benjamin Barium	90	92
Charlotte Strontium	78	82
William Bismuth	82	85
Olivia Polonium	88	90
Robert Astatine	75	80
Emily Tellurium	85	88
James Selenium	92	95
Alice Arsenic	78	82
David Antimony	88	90
Sarah Bismuth	72	78
Michael Tellurium	85	88
Jane Selenium	90	92
Michael Arsenic	75	80
Sarah Antimony	82	85
David Polonium	88	90
Emily Astatine	72	78
James Tellurium	85	88
Olivia Selenium	90	92
Benjamin Arsenic	78	82
Amelia Antimony	82	85
Lucas Bismuth	88	90
Isabella Polonium	75	80
Matthew Tellurium	85	88
Harper Selenium	92	95
Ethan Arsenic	78	82
Sophia Antimony	88	90
Alexander Polonium	72	78
Madison Astatine	85	88
Christopher Tellurium	90	92
Chloe Selenium	75	80
Christopher Arsenic	82	85
Isabella Antimony	88	90
Matthew Polonium	72	78
Amelia Astatine	85	88
Benjamin Tellurium	90	92
Charlotte Selenium	78	82
William Arsenic	82	85
Olivia Antimony	88	90
Robert Polonium	75	80
Emily Astatine	85	88
James Tellurium	92	95
Alice Selenium	78	82
David Arsenic	88	90
Sarah Antimony	72	78
Michael Polonium	85	88
Jane Astatine	90	92
Michael Tellurium	75	80
Sarah Selenium	82	85
David Arsenic	88	90
Emily Antimony	72	78
James Polonium	85	88
Olivia Astatine	90	92
Benjamin Tellurium	78	82
Amelia Selenium	82	85
Lucas Arsenic	88	90
Isabella Antimony	75	80
Matthew Polonium	85	88
Harper Astatine	92	95
Ethan Tellurium	78	82
Sophia Selenium	88	90
Alexander Arsenic	72	78
Madison Antimony	85	88
Christopher Polonium	90	92
Chloe Astatine	75	80
Christopher Tellurium	82	85
Isabella Selenium	88	90
Matthew Arsenic	72	78
Amelia Antimony	85	88
Benjamin Polonium	90	92
Charlotte Astatine	78	82
William Tellurium	82	85
Olivia Selenium	88	90
Robert Arsenic	75	80
Emily Antimony	85	88
James Polonium	92	95
Alice Astatine	78	82
David Tellurium	88	90
Sarah Selenium	72	78
Michael Arsenic	85	88
Jane Antimony	90	92
Michael Polonium	75	80
Sarah Astatine	82	85
David Tellurium	88	90
Emily Selenium	72	78
James Arsenic	85	88
Olivia Antimony	90	92
Benjamin Polonium	78	82
Amelia Astatine	82	85
Lucas Tellurium	88	90
Isabella Selenium	75	80
Matthew Arsenic	85	88
Harper Antimony	92	95
Ethan Polonium	78	82
Sophia Astatine	88	90
Alexander Tellurium	72	78
Madison Selenium	85	88
Christopher Arsenic	90	

[illegible]

[illegible]

Manager Name	
John Smith	85%
Jane Doe	78%
Michael Chen	92%
Sarah Johnson	88%
David Williams	75%
Emily Davis	82%
James Miller	90%
Alice Brown	72%
Robert Taylor	85%
Olivia White	79%
Benjamin Green	87%
Isabella Black	76%
Ethan Red	83%
Ava Blue	91%
Noah Yellow	74%
Charlotte Purple	86%
Liam Grey	77%
Amelia Silver	89%
Lucas Gold	73%
Sophia Bronze	84%
Henry Iron	71%
Victoria Steel	86%
Sebastian Copper	75%
Madison Nickel	88%
Julian Zinc	72%
Chloe Cadmium	89%
Isaac Tin	70%
Grace Lead	87%
Samuel Platinum	74%
Abigail Palladium	88%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75%
Isabella Nickel	87%
Benjamin Zinc	72%
Charlotte Cadmium	88%
Lucas Tin	73%
Ava Lead	86%
Noah Platinum	74%
Chloe Palladium	89%
Isaac Silver	71%
Grace Gold	85%
Samuel Iron	70%
Victoria Steel	87%
Sebastian Copper	75%
Madison Nickel	89%
Julian Zinc	72%
Chloe Cadmium	86%
Isaac Tin	70%
Grace Lead	88%
Samuel Platinum	74%
Abigail Palladium	87%
Matthew Silver	73%
Evelyn Gold	85%
Christopher Iron	71%
Madelyn Steel	89%
Christopher Copper	75