

Investment Performance Review
Period Ending December 31, 2018

Howard County Retirement Plans



As we start 2019, we first want to say “Thank you” for giving AndCo the opportunity to serve you. On behalf of our entire organization, we are extremely grateful for our client partnerships and we will continue working hard to maintain your trust and confidence. Our mission statement reads – “To represent the sole interest of our clients by redefining independence”. We’re happy to report we remain steadfast in this core belief and continue to build an organization and service model that is singularly focused and independent. This helps ensure all recommendations are truly in the best interest of our valued clients. We believe this approach will drive value for our client partnerships long into the future.

AndCo also remains committed to delivering high quality, customized services. As we start 2019, we are 89 employees strong advising approximately \$90 billion in client assets - both record highs for AndCo. In 2018 we hired 7 new team members including one consultant, two research professionals, one additional compliance officer, one technology administrator and two team members within our client solutions group. All hires were made to better service our clients.

2019 will represent another year of reinvestment in the organization to better serve our clients and make AndCo stronger. For example, we have already hired a new Senior Research Analyst bringing our dedicated research team to 15 professionals. As 2019 progresses, we are targeting additional hires in research, software development, content creation and our client solutions group. We will also be partnering with an external firm this year to conduct an in-depth client assessment to help ensure we are meeting the evolving needs of our clients and exceeding their service expectations. There will be more information regarding this survey from the firm and your consultant over the coming months.

Finally, we just completed our annual Firmwide retreat. This retreat was a great opportunity for our firm to spend time together with colleagues and get a clear understanding of where the company is going, and more importantly, why we’re headed in that direction. Since the inception of AndCo, the idea has been to make the firm a multigenerational organization owned and managed by its employees. As a result, since 2015, along with the strategic elements of our annual retreat, we also started the process of announcing new partners of the firm to foster this succession plan and today we have 8 partners controlling 100% of the company.

The evolution of our firm would not be possible without great partners like you. Our name reminds us who we work for every day: “Our Client” &Co. You will always be first in our service approach. As we continue to discuss updates with our firm, please know every decision is made by asking “How does this benefit our clients?” If it doesn’t benefit you, we don’t do it, it’s that simple. We know our clients are facing many challenges and we want to be there to help get you through all environments. We are honored and humbled you have chosen AndCo as your partner. We don’t take that relationship for granted and will continue to work tirelessly to exceed your expectations.

On behalf of AndCo, thank you for your valued partnership and the opportunity to serve you.



Mike Welker, CFA®
President/CEO

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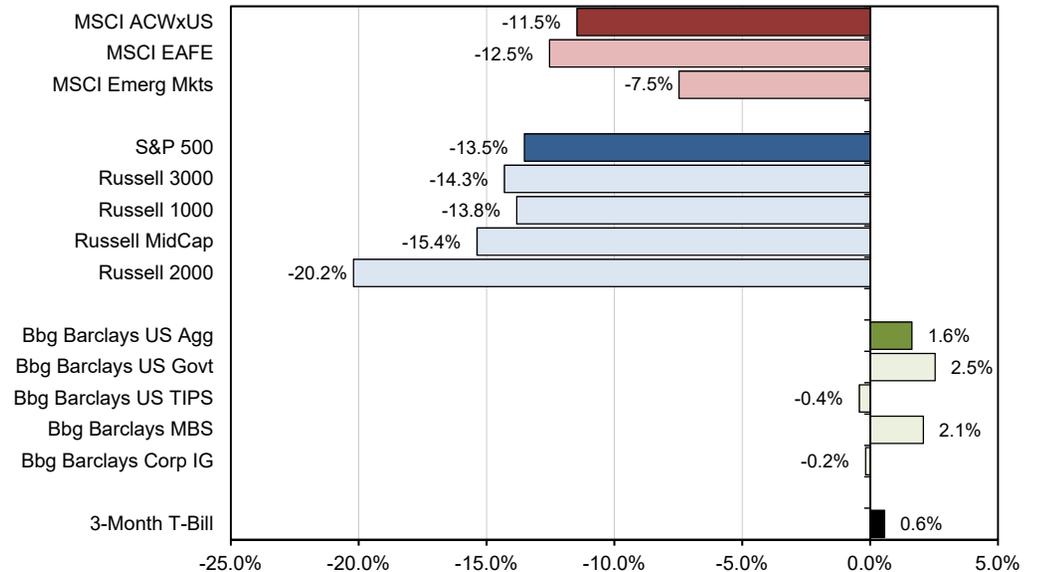


Market Environment

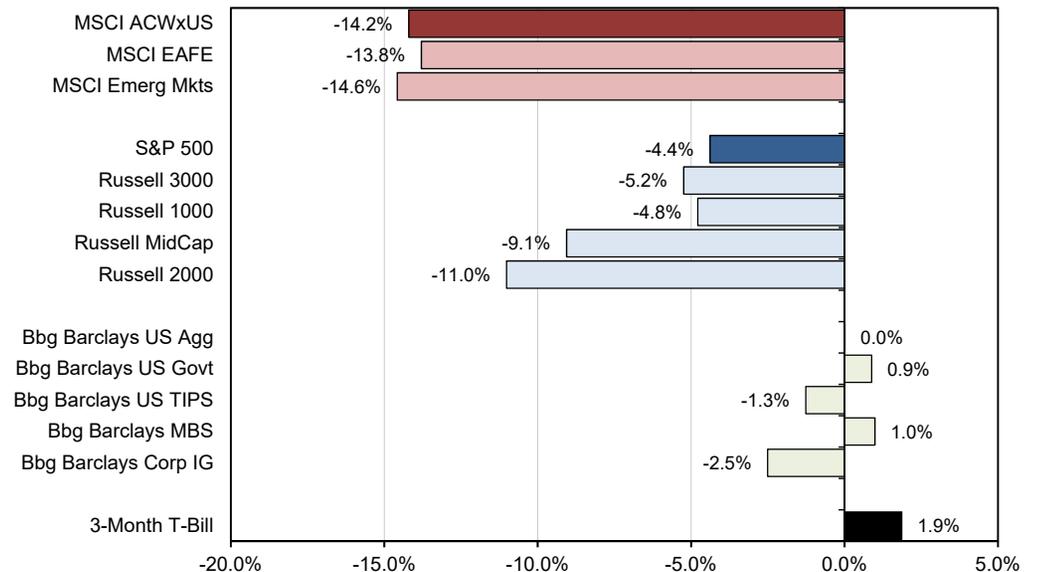


- Markets were volatile to end the 2018 calendar year. Both international and domestic equity markets had considerable losses during the 4th quarter while fixed income returns were muted, but outperformed relative to equities. Within equities, domestic stocks trailed international markets, reversing the 2018 trend of US market strength. Trade tensions between the US and China, midterm elections in US Congress, the effects of ongoing monetary policy tightening by the Federal Reserve (Fed), federal debt ceiling negotiations and the subsequent partial government shutdown outweighed generally positive corporate earnings and macroeconomic data reported during the quarter. The large cap S&P 500 Index returned -13.5% during the quarter while the small cap Russell 2000 Index fell by over 20% for the period. The drop in equity prices over the last three months was enough to take the returns for major US equity indices into negative territory for the 2018 calendar year. Returns over the 1-year period were -4.4% and -11.0% for the S&P 500 and Russell 2000 respectively.
- Similar to US equities, international equity index returns finished the quarter in negative territory with the MSCI ACWI ex US Index returning -11.5%. International markets faced headwinds from softening global macroeconomic data, tightening global monetary policy, uncertainty around Brexit negotiations, turmoil surrounding global trade relations, falling commodity prices and continued US Dollar (USD) strength. The developed market MSCI EAFE Index fell -12.5% during the 4th quarter, ending the year down -13.8%. Emerging markets performed well by comparison, only losing -7.5% during the quarter. Despite the 4th quarter outperformance, returns for emerging market equities trailed developed markets over the 1-year period with the MSCI Emerging Markets Index returning -14.6% versus a -13.8% return for the MSCI EAFE Index.
- Fixed income securities outperformed equities through both the 4th quarter and calendar year 2018 with the broad market Bloomberg Barclays Aggregate Index returning 1.6% and 0.0% respectively. Interest rates on the US Treasury Yield Curve continued their 2018 flattening trend as short-term rates increased to near-term highs while long-term rates fell during the quarter. Some of the increase in short-term rates can be attributed to the late December Fed interest rate hike. This marked the fourth Fed interest rate increase of 2018. This movement in rates did lead to some short-term rates being higher than those of longer dated maturities. More conservative fixed income sectors such as Treasuries and mortgage backed securities outperformed during the quarter and for the year as investors moved toward the relative safety these securities provide while widening credit spreads acted as a headwind to corporate issues.

Quarter Performance

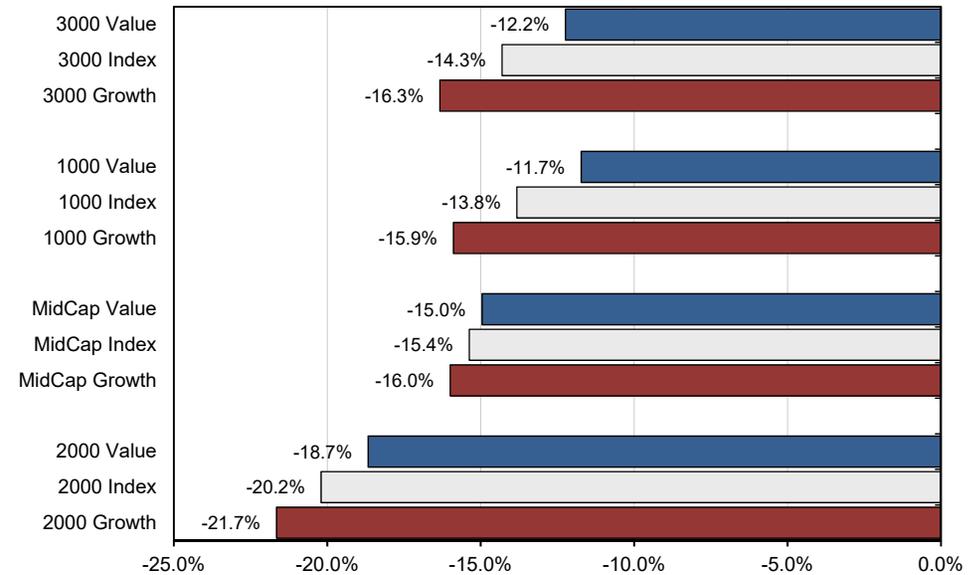


1-Year Performance

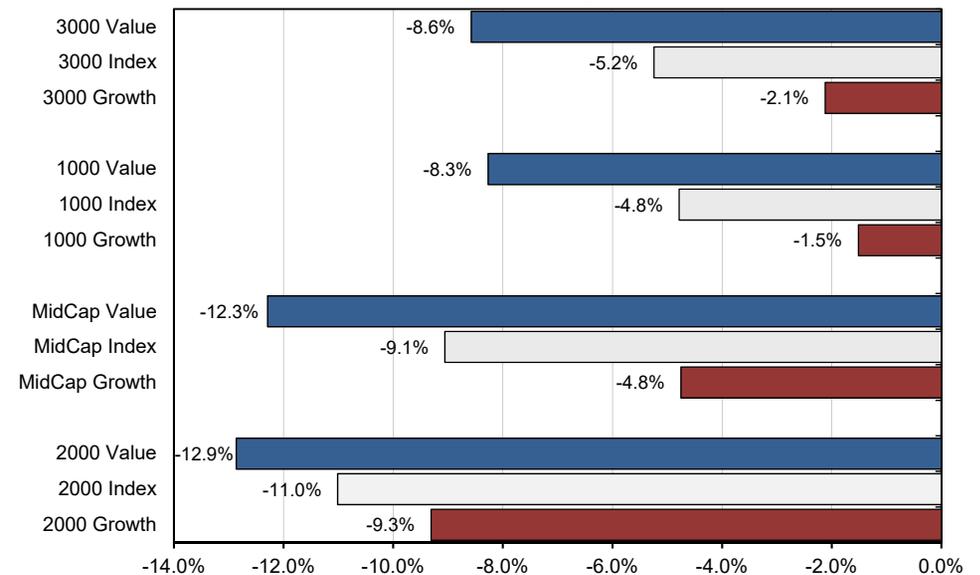


- US equity index returns were strongly negative across the style and capitalization spectrum during the 4th quarter of 2018. Despite these negative results, there was positive data in GDP, unemployment, wage growth, retail sales, and corporate earnings during the period. These positive economic factors were offset by softening data in housing, consumer confidence and manufacturing, tightening monetary policy, negative guidance for future corporate earnings and signs of slowing global growth which all contributed to the heavy selling in equities. Investors also considered the effects of ongoing trade negotiations, especially between the US and China, and the results of the US congressional midterm elections which likely reduced the chances of any major policy changes or new fiscal stimulus measures. The effects of partisan politics was particularly evident at the end of the quarter as budget negotiations between Democrats and Republicans collapsed over disagreement around the inclusion of funds for a border wall with Mexico, leading to a partial government shutdown to end the year.
- During the quarter, large cap stocks outperformed mid and small cap equities across growth, value and core indices. The large cap Russell 1000 Index fell -13.8% during the 4th quarter versus a -20.2% drop for the Russell 2000 Index. Part of the reason for weakness in small cap names is the steady increase in interest rates that occurred over 2018 as small cap companies typically maintain a higher percentage of debt than their large cap peers. Small cap names are also typically more volatile than larger companies and they have historically underperformed during market downturns. Similar to the most recent quarter, large cap stocks outperformed relative to small caps through calendar year 2018. The Russell 1000 returned -4.8% for the 1-year periods compared to a -11.0% return for the Russell 2000.
- Value indices outperformed growth indices across the market cap spectrum during the 4th quarter, reversing a year-to-date trend of growth stock outperformance. The large cap Russell 1000 Value Index was the best performing style index for the period, returning -11.7% for the quarter, while the Russell 2000 Growth Index was the worst performer, returning -21.7%. Value benchmarks tend to outperform in down markets as they benefit from their relative safety and higher dividend yields. Despite the short-term underperformance, growth benchmarks continue to outperform over the 1-year period, however, many of the sector exposures that drove growth stock outperformance during the first three quarters of the year, such as technology and consumer discretionary, were relative detractors during the 4th quarter.

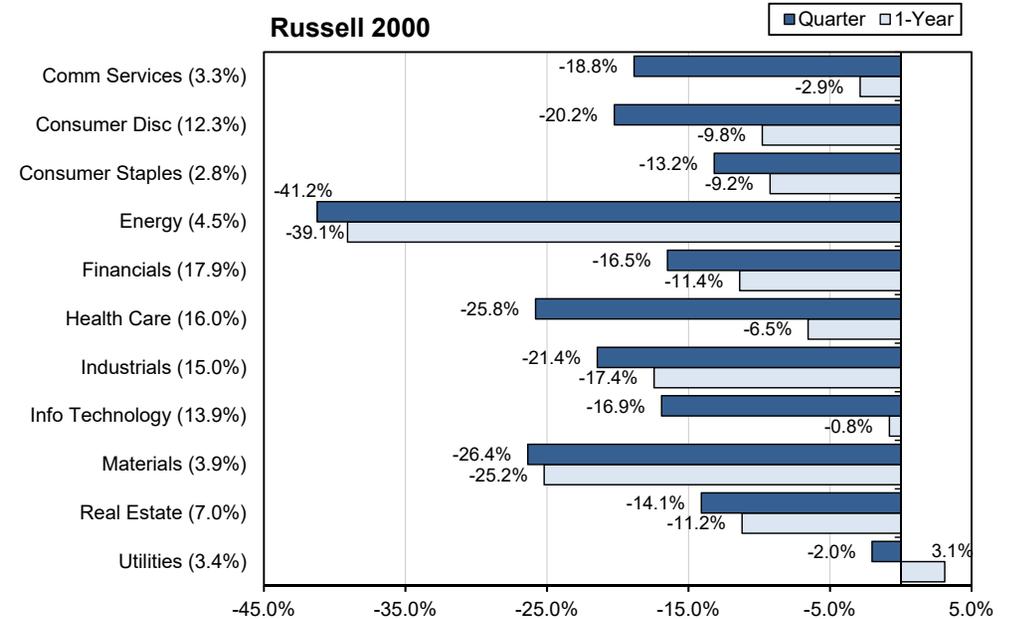
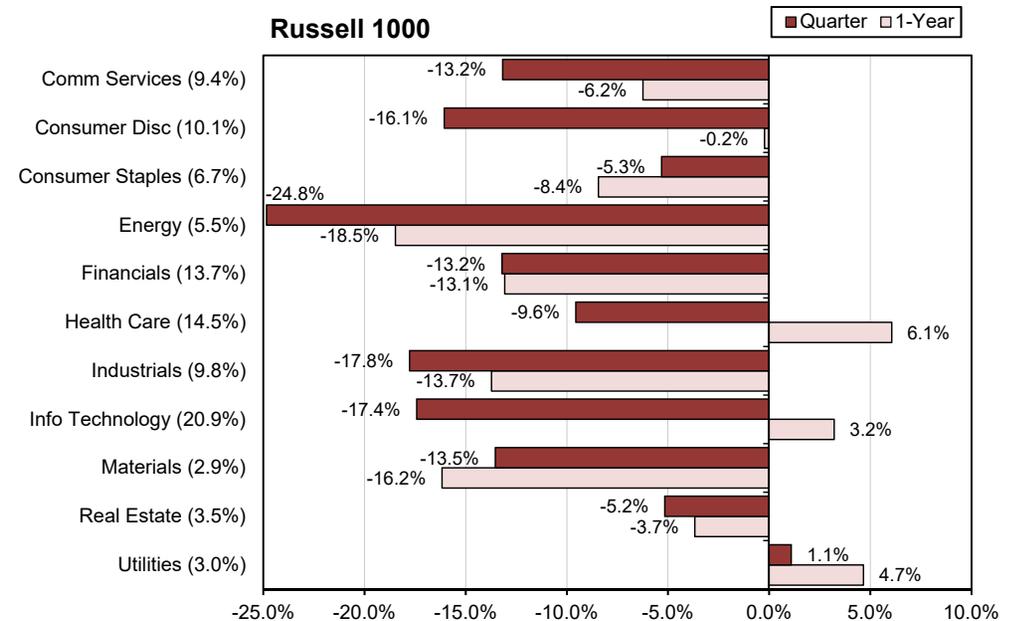
Quarter Performance - Russell Style Series



1-Year Performance - Russell Style Series



- Both S&P Dow Jones Indices and MSCI made changes to the Global Industry Classification Standard (GICS) sector configurations of their indices, creating a new GICS sector classification called Communication Services which replaced the Telecommunications sector on September 28, 2018. The Communication Services sector is comprised of companies in the Telecommunications sector, as well as certain companies formerly classified as Consumer Discretionary and Information Technology. As a result, the sector, went from a weighting of about 2% of the Russell 1000 Index to almost 10% post reclassification. Notable names now classified under Communication Services include Netflix, Alphabet, Facebook and Disney. This is just the second change to the GICS classifications since 1999.
- Sector performance was broadly negative across large cap sectors for the 4th quarter. All sectors within the Russell 1000 Index with the exception of the utilities sector posted negative returns for the period with seven sectors outpacing the return on the index. Cyclical sectors such as energy, industrials and technology were the worst performers through the quarter returning -24.8%, -17.8% and -17.4% respectively. Energy companies were hurt by a steep decline in oil prices during the quarter while technology and industrial companies fell on negative guidance for future earnings. More defensive, higher dividend paying sectors such as utilities, REITs and consumer staples were the strongest performing sectors with returns of 1.1%, -5.2% and -5.3% respectively. Only three sectors (health care, utilities, technology) posted positive results over the 1-year period with the remaining sectors losing ground during the calendar year.
- Quarterly results for small cap sectors were generally lower relative to their large capitalization counterparts. All eleven sectors had negative returns during the period with six of eleven economic sectors outpacing the Russell 2000 Index return for the quarter. Energy, materials and healthcare posted the worst returns for the period returning -41.2%, -26.4% and -25.8% respectively. Similar to large caps, defensive sectors performed well with utilities, consumer staples and real estate detracting the least returning -2.0%, -13.2% and -14.1% respectively. Over the trailing 1-year period, only utilities posted a gain returning 3.1%. Energy stocks were the worst performers in 2018, falling a considerable -41.2%.
- Using S&P 500 sector valuations as a proxy for the market, forward P/E ratios for three of the eleven GICS sectors were higher than their long-term averages at quarter-end. Using these historical P/E measures, the utilities, consumer discretionary and real estate sectors appear the most extended. In contrast the financials, technology and energy sectors were trading at a discount to their long-term average P/E ratios.



Source: Morningstar Direct

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



The Market Environment
Top 10 Index Weights & Quarterly Performance for the Russell 1000 & 2000
As of December 31, 2018

Top 10 Weighted Stocks				
Russell 1000	Weight	1-Qtr Return	1-Year Return	Sector
Microsoft Corp	3.27%	-11.2%	20.3%	Information Technology
Apple Inc	3.24%	-29.9%	-5.4%	Information Technology
Amazon.com Inc	2.59%	-25.0%	28.4%	Consumer Discretionary
Berkshire Hathaway Inc B	1.68%	-4.6%	3.0%	Financials
Johnson & Johnson	1.47%	-6.0%	-5.1%	Health Care
JPMorgan Chase & Co	1.39%	-12.9%	-6.6%	Financials
Alphabet Inc Class C	1.34%	-13.2%	-1.0%	Communication Services
Alphabet Inc A	1.32%	-13.4%	-0.8%	Communication Services
Facebook Inc A	1.32%	-20.3%	-25.7%	Communication Services
Exxon Mobil Corp	1.23%	-19.0%	-15.1%	Energy

Top 10 Performing Stocks (by Quarter)				
Russell 1000	Weight	1-Qtr Return	1-Year Return	Sector
Tesaro Inc	0.01%	90.3%	-10.4%	Health Care
Red Hat Inc	0.13%	28.9%	46.2%	Information Technology
Virtu Financial Inc A	0.00%	27.1%	45.9%	Financials
Tesla Inc	0.19%	25.7%	6.9%	Consumer Discretionary
SCANA Corp	0.03%	23.2%	23.1%	Utilities
Tribune Media Co A	0.02%	18.9%	9.7%	Communication Services
MarketAxess Holdings Inc	0.03%	18.6%	5.6%	Financials
ARRIS International PLC	0.02%	17.6%	19.0%	Information Technology
United States Cellular Corp	0.00%	16.1%	38.1%	Communication Services
Newmont Mining Corp	0.08%	15.2%	-6.2%	Materials

Bottom 10 Performing Stocks (by Quarter)				
Russell 1000	Weight	1-Qtr Return	1-Year Return	Sector
Weatherford International PLC	0.00%	-79.4%	-86.6%	Energy
Nabors Industries Ltd	0.00%	-66.8%	-69.3%	Energy
Extraction Oil & Gas Inc	0.00%	-62.0%	-70.0%	Energy
Adient PLC	0.01%	-61.4%	-80.4%	Consumer Discretionary
Whiting Petroleum Corp	0.01%	-57.2%	-14.3%	Energy
Kosmos Energy Ltd	0.00%	-56.5%	-40.6%	Energy
Chesapeake Energy Corp	0.01%	-53.2%	-47.0%	Energy
Conduent Inc	0.01%	-52.8%	-34.2%	Information Technology
NVIDIA Corp	0.33%	-52.4%	-30.8%	Information Technology
SM Energy Co	0.01%	-50.8%	-29.6%	Energy

Top 10 Weighted Stocks				
Russell 2000	Weight	1-Qtr Return	1-Year Return	Sector
Integrated Device Technology Inc	0.35%	3.0%	62.9%	Information Technology
Etsy Inc	0.32%	-7.4%	132.6%	Consumer Discretionary
Five Below Inc	0.31%	-21.3%	54.3%	Consumer Discretionary
Haemonetics Corp	0.29%	-12.7%	72.3%	Health Care
Ciena Corp	0.27%	8.5%	62.0%	Information Technology
Planet Fitness Inc A	0.26%	-0.8%	54.8%	Consumer Discretionary
Idacorp Inc	0.26%	-5.6%	4.6%	Utilities
HubSpot Inc	0.26%	-16.7%	42.2%	Information Technology
LivaNova PLC	0.25%	-26.2%	14.5%	Health Care
Cree Inc	0.24%	13.0%	15.2%	Information Technology

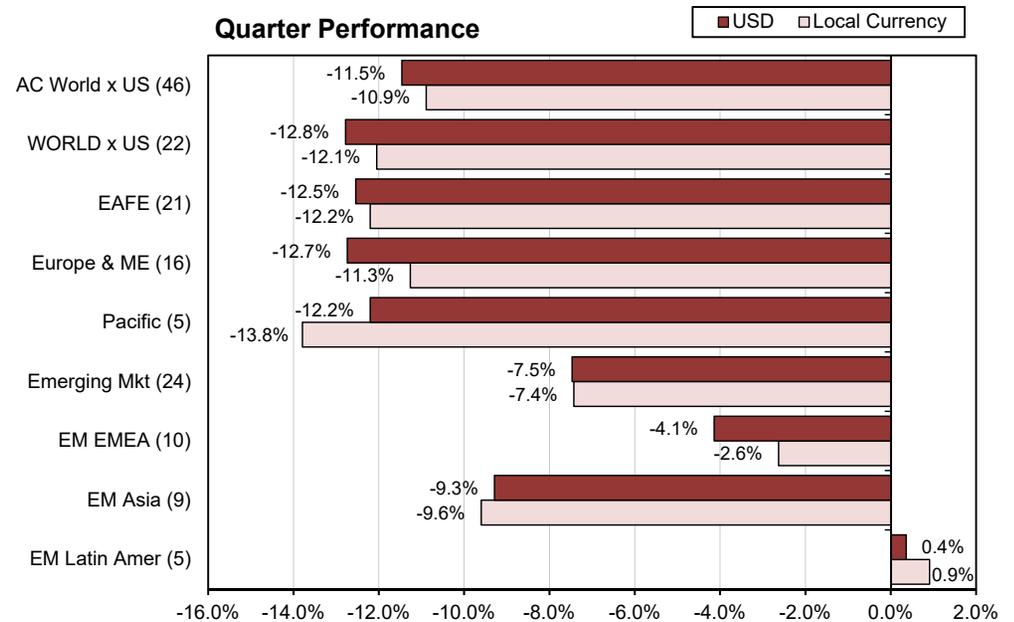
Top 10 Performing Stocks (by Quarter)				
Russell 2000	Weight	1-Qtr Return	1-Year Return	Sector
Electro Scientific Industries Inc	0.05%	71.7%	39.8%	Information Technology
Fluent Inc	0.01%	67.4%	3.4%	Communication Services
Mitek Systems Inc	0.02%	53.3%	20.8%	Information Technology
Arsanis Inc	0.00%	43.2%	-81.8%	Health Care
Inovalon Holdings Inc	0.05%	41.1%	-5.5%	Health Care
K12 Inc	0.05%	40.1%	55.9%	Consumer Discretionary
Investment Technology Group Inc	0.05%	39.9%	59.0%	Financials
Eidos Therapeutics Inc	0.01%	37.9%	N/A	Health Care
Belmond Ltd Class A	0.13%	37.2%	104.3%	Consumer Discretionary
Pacific Biosciences of California Inc	0.06%	36.8%	180.3%	Health Care

Bottom 10 Performing Stocks (by Quarter)				
Russell 2000	Weight	1-Qtr Return	1-Year Return	Sector
Synergy Pharmaceuticals Inc	0.00%	-93.3%	-94.9%	Health Care
Sanchez Energy Corp	0.00%	-88.3%	-94.9%	Energy
Sienna Biopharmaceuticals Inc	0.00%	-84.3%	-87.2%	Health Care
Cloud Peak Energy Inc	0.00%	-84.1%	-91.8%	Energy
Selecta Biosciences Inc	0.00%	-82.9%	-72.9%	Health Care
Clearside Biomedical Inc	0.00%	-82.6%	-84.7%	Health Care
Key Energy Services Inc	0.00%	-81.9%	-82.4%	Energy
AAC Holdings Inc	0.00%	-81.7%	-84.4%	Health Care
PHI Inc Non-Voting Shares	0.00%	-80.2%	-84.0%	Energy
Bristow Group Inc	0.00%	-80.0%	-82.0%	Energy

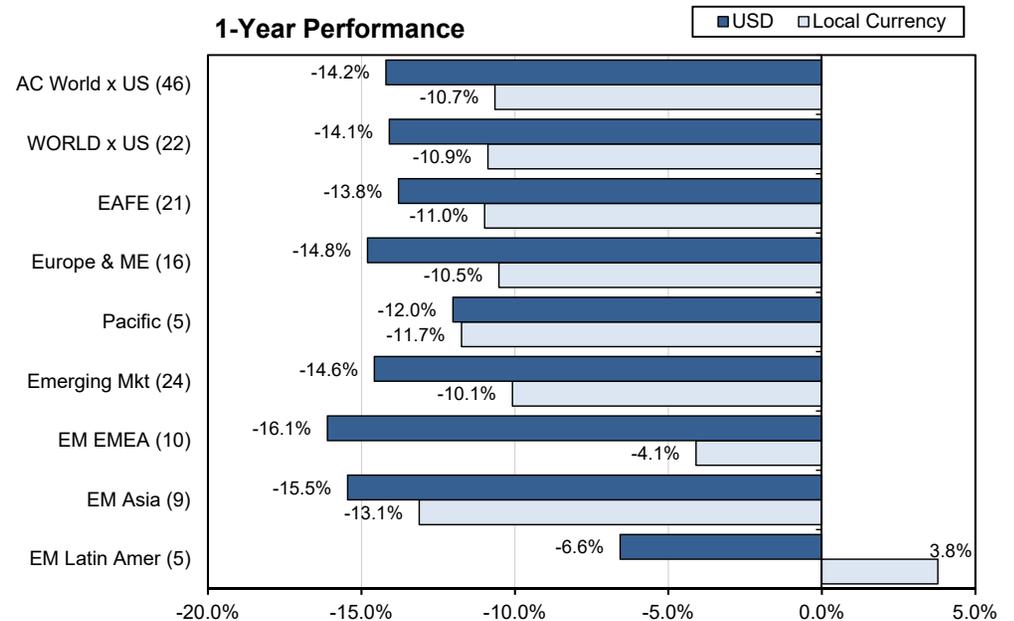


- Broad international equity returns were negative for the quarter in both local currency and USD terms. Geopolitical concerns, weakening economic data and the tightening of global monetary policy drove most of the negative performance. The USD also continued to strengthen against most currencies for the period which provided a headwind for USD based investors. The MSCI ACWI ex US Index fell -10.9% in local currency terms and -11.5% in USD terms during the 4th quarter. Returns for international indices were also broadly negative over the 1-year period in both local currency and USD terms with the MSCI ACWI ex US returning -10.7% and -14.2% respectively.
- Fourth quarter results for developed market international indices were negative in both local currency and USD terms with the MSCI EAFE Index returning -12.2% and -12.5% respectively. Returns were dampened for US investors as the USD continued to appreciate against most currencies, pushing returns lower. Global economic reporting during the quarter fueled concerns that global growth was beginning to slow. Japanese economic data faced headwinds from several natural disasters and data out of Europe was generally disappointing. Investors also weighed the effects of several significant political events in Europe including riots in France, ongoing budget negotiations between Italy and the EU and uncertainty around Brexit. Concerns over a “no deal” Brexit grew during the quarter as the draft withdrawal agreement presented by UK Prime Minister Theresa May was poorly received leading to a wave of cabinet resignations, a delay in the parliamentary vote and a “no confidence” vote which she ultimately won. The MSCI EAFE Index returned -11.0% and -13.8% for the last twelve months in local currency and USD terms respectively.
- Emerging markets outperformed relative to developed markets for the 4th quarter, but still declined in both local currency and USD terms with the MSCI Emerging Markets Index returning -7.4% and -7.5% respectively. Returns in emerging markets were hurt by the continued uncertainty surrounding trade relations between the US and China as both countries agreed to a 90-day hold on any new tariffs to allow for continued negotiations. Chinese economic data also appeared to be slowing during the quarter prompting the announcement of additional monetary and fiscal stimulus. The election of President Andres Manuel Lopez Obrador hurt returns in Mexico as investors feared the potential ramifications of his nationalist campaign promises. In contrast, Brazil was one of the few bright spots during the quarter as market participants looked favorably on the election of President Jair Bolsonaro in anticipation of market friendly economic reforms, including reforms associated with the country’s bloated state pension system which has weighed heavily on the country’s debt load. One year returns for the MSCI Emerging Market Index were -10.1% in local currency terms and -14.6% in USD terms.

Quarter Performance



1-Year Performance



The Market Environment
US Dollar International Index Attribution & Country Detail
As of December 31, 2018

MSCI - EAFE	Sector Weight	Quarter Return	1-Year Return
Communication Services	5.6%	-7.7%	-12.1%
Consumer Discretionary	11.2%	-14.2%	-16.1%
Consumer Staples	11.6%	-8.4%	-10.8%
Energy	5.9%	-17.5%	-7.2%
Financials	19.5%	-13.7%	-20.1%
Health Care	11.2%	-10.3%	-4.3%
Industrials	14.3%	-14.6%	-15.7%
Information Technology	6.0%	-16.7%	-15.6%
Materials	7.4%	-15.2%	-17.5%
Real Estate	3.7%	-5.4%	-9.9%
Utilities	3.8%	-0.1%	1.1%
Total	100.0%	-12.5%	-13.8%

MSCI - ACWIxUS	Sector Weight	Quarter Return	1-Year Return
Communication Services	7.6%	-5.5%	-11.9%
Consumer Discretionary	10.6%	-14.1%	-20.2%
Consumer Staples	9.9%	-7.4%	-11.2%
Energy	7.3%	-16.3%	-8.1%
Financials	22.2%	-10.7%	-16.8%
Health Care	8.4%	-11.2%	-6.2%
Industrials	11.7%	-13.7%	-15.1%
Information Technology	8.0%	-14.6%	-17.6%
Materials	7.7%	-13.4%	-15.9%
Real Estate	3.4%	-3.8%	-11.6%
Utilities	3.4%	0.5%	-0.9%
Total	100.0%	-11.5%	-14.2%

MSCI - Emerging Mkt	Sector Weight	Quarter Return	1-Year Return
Communication Services	14.1%	-3.7%	-14.9%
Consumer Discretionary	10.4%	-13.5%	-32.5%
Consumer Staples	6.7%	-4.6%	-13.7%
Energy	8.0%	-10.6%	4.7%
Financials	24.8%	-0.9%	-8.7%
Health Care	2.8%	-16.2%	-20.9%
Industrials	5.5%	-3.8%	-12.6%
Information Technology	14.2%	-12.7%	-19.3%
Materials	7.7%	-10.8%	-11.6%
Real Estate	3.0%	1.4%	-17.2%
Utilities	2.7%	3.6%	-3.8%
Total	100.0%	-7.5%	-14.6%

Country	MSCI-EAFE Weight	MSCI-ACWIxUS Weight	Quarter Return	1-Year Return
Japan	24.6%	16.6%	-14.2%	-12.9%
United Kingdom	16.9%	11.4%	-11.8%	-14.2%
France	11.1%	7.5%	-15.1%	-12.8%
Germany	8.8%	6.0%	-15.5%	-22.2%
Switzerland	8.7%	5.8%	-8.9%	-9.1%
Australia	6.9%	4.7%	-10.0%	-12.0%
Hong Kong	3.9%	2.6%	-4.5%	-7.8%
Netherlands	3.4%	2.3%	-11.0%	-13.1%
Spain	3.1%	2.1%	-8.7%	-16.2%
Sweden	2.7%	1.8%	-14.2%	-13.7%
Italy	2.3%	1.5%	-11.8%	-17.8%
Denmark	1.8%	1.2%	-9.8%	-15.4%
Singapore	1.4%	0.9%	-6.7%	-9.4%
Finland	1.0%	0.7%	-14.7%	-3.4%
Belgium	1.0%	0.6%	-18.5%	-26.9%
Norway	0.7%	0.5%	-18.1%	-8.6%
Ireland	0.5%	0.4%	-17.7%	-25.3%
Israel	0.5%	0.4%	-14.4%	-5.5%
Austria	0.2%	0.2%	-20.7%	-27.4%
New Zealand	0.2%	0.2%	-6.6%	-4.0%
Portugal	0.2%	0.1%	-14.3%	-11.1%
Total EAFE Countries	100.0%	67.5%	-12.5%	-13.8%
Canada		6.5%	-15.3%	-17.2%
Total Developed Countries		74.0%	-12.8%	-14.1%
China		7.9%	-10.7%	-18.9%
Korea		3.6%	-13.1%	-20.9%
Taiwan		3.0%	-13.7%	-8.9%
India		2.4%	2.5%	-7.3%
Brazil		2.0%	13.4%	-0.5%
South Africa		1.6%	-3.8%	-24.8%
Russia		1.0%	-9.0%	-0.7%
Mexico		0.7%	-18.8%	-15.5%
Malaysia		0.6%	-5.8%	-6.0%
Thailand		0.6%	-10.2%	-5.5%
Indonesia		0.6%	9.7%	-9.2%
Poland		0.3%	-3.0%	-12.9%
Philippines		0.3%	5.3%	-16.5%
Qatar		0.3%	8.4%	29.8%
Chile		0.3%	-8.7%	-19.7%
United Arab Emirates		0.2%	-5.5%	-7.7%
Turkey		0.2%	4.8%	-41.4%
Colombia		0.1%	-19.0%	-11.5%
Peru		0.1%	-2.9%	1.6%
Hungary		0.1%	5.9%	-6.1%
Greece		0.1%	-16.0%	-36.8%
Czech Republic		0.0%	-8.7%	-4.5%
Egypt		0.0%	-9.4%	-14.0%
Pakistan		0.0%	-22.4%	-34.8%
Total Emerging Countries		26.0%	-7.5%	-14.6%
Total ACWIxUS Countries		100.0%	-11.5%	-14.2%

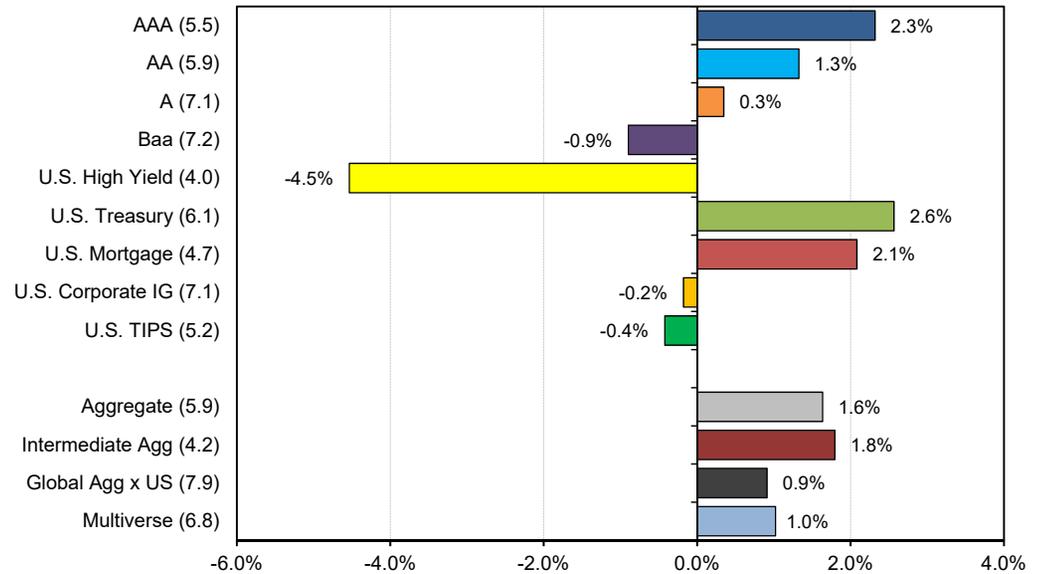
Source: Morningstar Direct, MSCI Global Index Monitor (Returns are Net in USD)

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

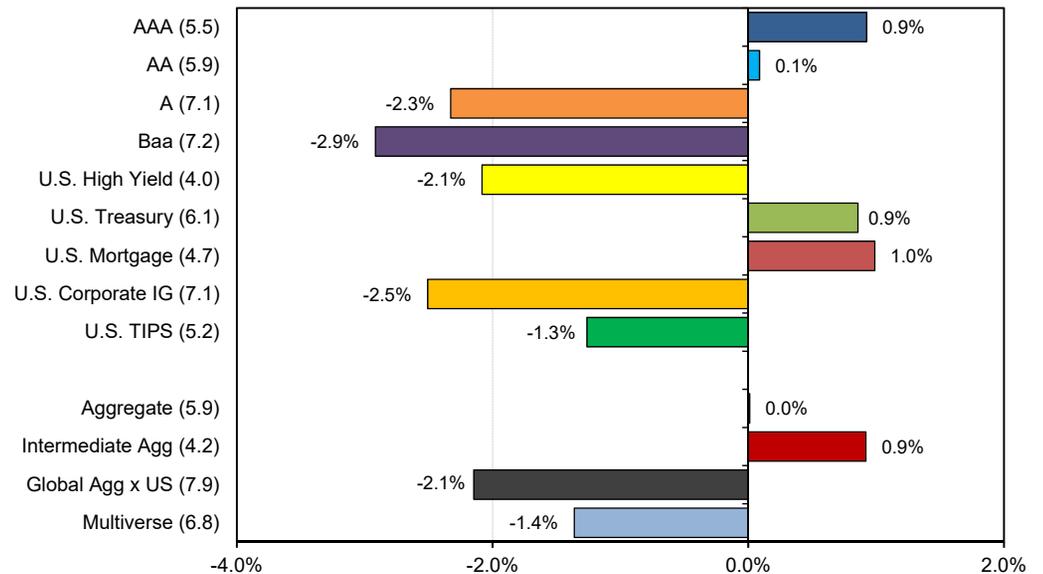


- Broad fixed income benchmarks had mixed results during the 4th quarter. Interest rates rose across short-term maturities, but fell on those on the middle and long end of the US Treasury Yield Curve. The Federal Open Market Committee (FOMC), decided to increase short-term interest rates by 25 basis points at their December meeting citing the strength of the US economy which caused an increase in short-term interest rates, but equity market volatility led market participants toward less volatile assets, pushing rates lower on maturities greater than 1-year. This was the fourth rate hike of 2018. The current Fed Funds Rate target range sits at 2.25%-2.50%. This caused continued flattening in the yield curve with some moderate inversion, which happens when short-term maturities have greater yields than long-term securities, in the middle of curve. The difference in yields between the 2-year and 10-year Treasury now sits at just 0.21%. Historically, an inverted yield curve has signaled a greater probability of a recession. The Fed is also continuing the reduction of the size of its balance sheet by slowing its pace of reinvestment as the securities it holds mature. However, the Fed did lower its guidance for future rate increases in 2019 following a reduction in expectations for GDP and inflation. The Fed is now projecting just two additional interest rate increases in 2019. The Bloomberg Barclays US Aggregate Index was positive during the quarter, posting a 1.6% return, but was flat, returning 0.0% over the 1-year period.
- Within investment grade credit, higher quality issues outperformed lower quality issues as investors preferred more conservative securities. On an absolute basis, without negating the duration differences in the sub-indices, AAA rated credit was the best performing investment grade credit quality segment returning 2.3% for the quarter, while Baa was the worst performing, falling -0.9%. High yield debt trailed investment grade credit as spreads widened the most for these issues, returning -4.5%. Returns are mixed for the investment grade quality segments when viewed over the 1-year period with higher quality issues outperforming lower quality securities. High yield performed well relative to lower quality investment grade debt due to the relatively strong returns experienced during the first three quarters of 2018.
- During the 4th quarter, the more defensive Treasury and mortgage backed sectors of the Bloomberg Barclays US Aggregate Index's three broad sectors were the best performers returning 2.6% and 2.1% respectively. Investment grade corporate credit underperformed, returning -0.2%, as credit spreads widened considerably during the period. This trend carried through to the 1-year period as both Treasuries and mortgage backed securities outperformed both investment grade and high yield corporate debt. Calendar year 2018 performance for the Treasury, mortgage backed and investment grade corporate issues was 0.9%, 1.0% and -2.5% respectively. US TIPS returned -0.4% and -1.3% for the 4th quarter and 1-year period.

Quarter Performance

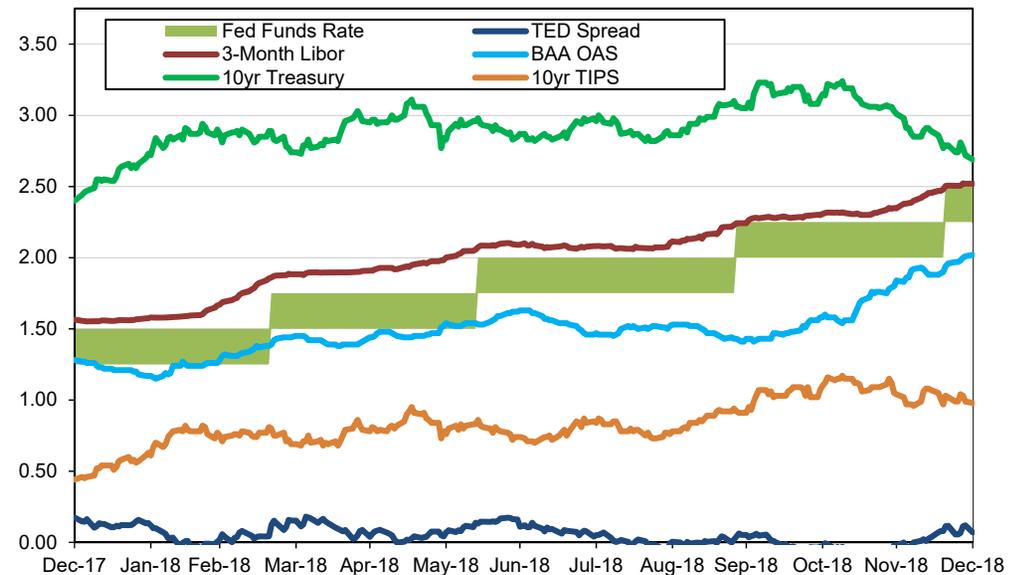


1-Year Performance

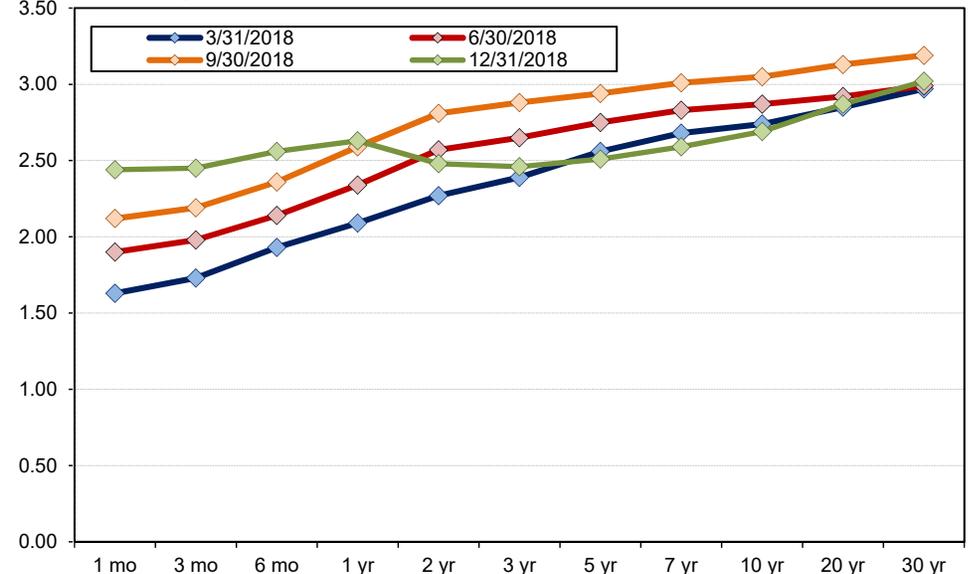


- Global fixed income indices continue to struggle relative to their domestic counterparts, underperforming during the 4th quarter. These indices have lower yields and the returns of these indices are also significantly influenced by fluctuations in their currency denomination relative to the USD. During the 4th quarter the USD strengthened against most other currencies, negatively impacting the returns on global bond indices. The return on global bonds, as represented by the Bloomberg Barclays Global Aggregate ex US Index, was 0.9% and -2.1% for the quarter and 1-year period respectively. As the global economy continues to recover, several international central banks have started to move toward less accommodative postures. Notably, the ECB, began to slow its monthly bond purchase program in September, reducing new purchases to 15 billion euro per month from 30 billion euro per month and ended the program entirely at year end. However, they have indicated a continuation of reinvestment in maturing securities and would likely not raise interest rates from current levels until summer 2019. The Bank of England and the Bank of Japan made no major policy changes during the quarter as they continue to review macroeconomic data within their respective countries.
- Much of the index performance detailed in the bar graphs on the previous page is visible on a time series basis by reviewing the line graphs to the right. The '1-Year Trailing Market Rates' chart illustrates that the 10-year Treasury yield (green line) fell during the 4th quarter after rising steadily through most of the year as investors moved to safe haven assets during the period, ending the year at 2.69%. The blue line illustrates changes in the BAA OAS (Option Adjusted Spread). This measure quantifies the additional yield premium that investors require to purchase and hold non-Treasury issues. This line illustrates a relatively tight range in credit spreads throughout most of 2018, but highlights an abrupt increase during the 4th quarter as investors moved to higher quality assets. This increase is equivalent to an interest rate increase on corporate bonds, which produces an additional headwind for corporate bond index returns. These credit spreads have widened by about 59 basis points over the last 3-months. The green band across the graph illustrates the gradual increase in the Federal Funds Rate (four increases in the last twelve months) due to the continued tightening of US monetary policy.
- The lower graph provides a snapshot of the US Treasury yield curve at the end of each of the last four calendar quarters. As mentioned, the yield curve continues to flatten as yields on shorter-term maturities have risen more than interest rates on the long end of the curve. The upward momentum of interest rates as well as a general flattening of the yield curve are clearly visible over the last twelve months with some minor inversion visible in the middle of the yield curve.

1-Year Trailing Market Rates



Treasury Yield Curve



Howard County Retirement Plans

Executive Summary

December 31, 2018

Winners for the Trailing 12 Months

- Alternative and private investments that were not directly exposed to public market trading outperformed public market investments.
 - Private Equity composite: 18.4%
 - NCREIF Property Index [3-month lag]: 8.4%
 - Hedge Fund (HFRI) FOF Conservative Index: -0.8%%

Losers for the Trailing 12 Months

- Concerns about slowing global economic growth, U.S.-China trade concerns, ongoing Brexit negotiations, and potential U.S. political gridlock after mid-term elections, all weighed on equity markets. Currency declines versus the US dollar especially dragged on international developed and EM equity returns.
 - MSCI Emerging Markets: -14.2%
 - MSCI EAFE: -13.4%

Areas of Positive Performance for the Trailing 12 Months

- The Total Fund Composite outperformed its Implementation Index by 60 bps for the trailing 12 months; Total Fund returned -1.4% versus the benchmark return of -2.0%. While the Total Fund absolute returns were disappointing, they ranked in the 13th percentile versus other Public Fund peers.
- The Private Equity composite returned 18.4% and was the best performing asset class for the year.
- The Real Assets Composite returned 14.7%, outperforming the NCREIF Property Index [3 month lag] by 7.6 percentage points, and ranked in the 2nd percentile versus peers.
- The Hedge Fund Composite returned 1.2% and outperformed its index, the HFRI FOF Conservative Index by 2.0 percentage points.

Areas of Negative Performance for the Trailing 12 Months

- The International Equity Composite was the worst performing composite in absolute returns, with a -12.3% return for the trailing year. However, it ranked in the 23rd percentile amongst its peers and outperformed the MSCI World AC ex US index by 188 bps.

Winners for the Recent Quarter:

- Interest rates over last year fell amid economic concerns. US and global sovereign debt benefitted from investors seeking lower risk investments as global markets traded down, especially in December 2018.
 - U.S. Treasuries: 2.6%
 - JPM GBI-EM Global Div: 2.1%
 - Bg Barclays US Agg: 1.6%

Losers for the Recent Quarter:

- The US Government political party posturing, concerns about future global growth, the Fed signaling more rate increases and ongoing trade concerns led the equity markets downward. Growth trailed value and U.S. equity markets trailed international equity markets.
 - Russell 2000 Growth: -21.65
 - Russell 1000 Growth: -15.89
 - MSCI EAFE: -12.54

Areas of Positive Performance for the Recent Quarter

- The Private Equity Composite was the best performing asset class for the quarter, returning 4.9%. The continuing maturation of the portfolio, with many prior vintage years entering their prime for realizations and distributions, can provide some relative stability when the public equity markets experience trading volatility.
- Real Assets returned 2.9% for the quarter. The maturity of some of the investments and the diversified exposure to sub-asset classes contributed to the stability of the Real Assets portfolio.
- Fixed Income returned 1.1% as investors fled to safe haven areas. Higher quality bonds outperformed lower quality bonds. U.S. Treasuries returned 2.6% while high yield bonds lost -4.5%.
- Hedge funds held up in a difficult equity market, outperforming the broad equity market by 11.1 percentage points (Russell 3000: -14.3 versus HFRI FOF Conservative: -3.2%). Magnitude and Blackstone both outperformed the index, adding to relative returns.

Areas of Negative Performance for the Recent Quarter

- The US Equity Composite was down 16.0% over the quarter, and underperformed the Russell 3000 Index by 170 bps .
- The International Equity Composite was down -10.9%, but beat its index, the MSCI AC World Ex US by 61 bps.



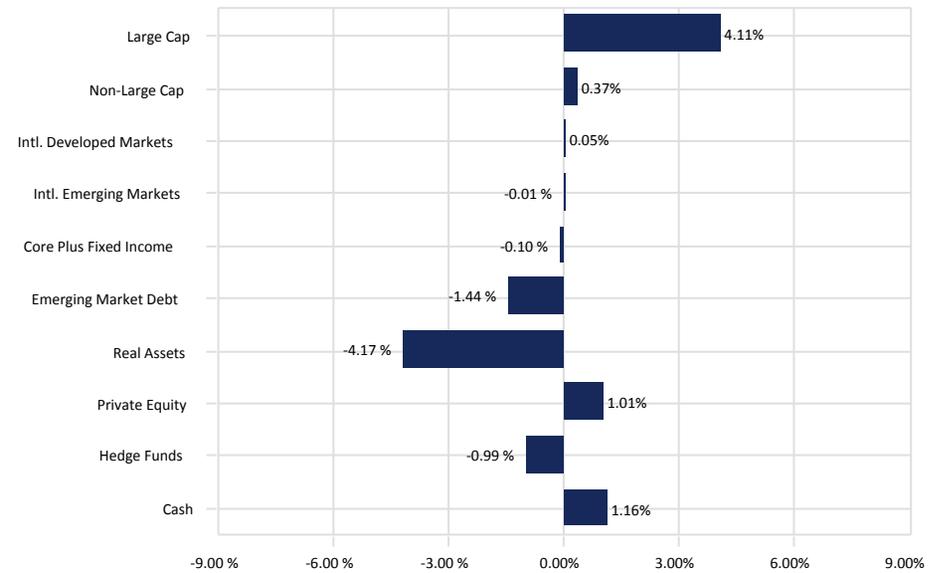
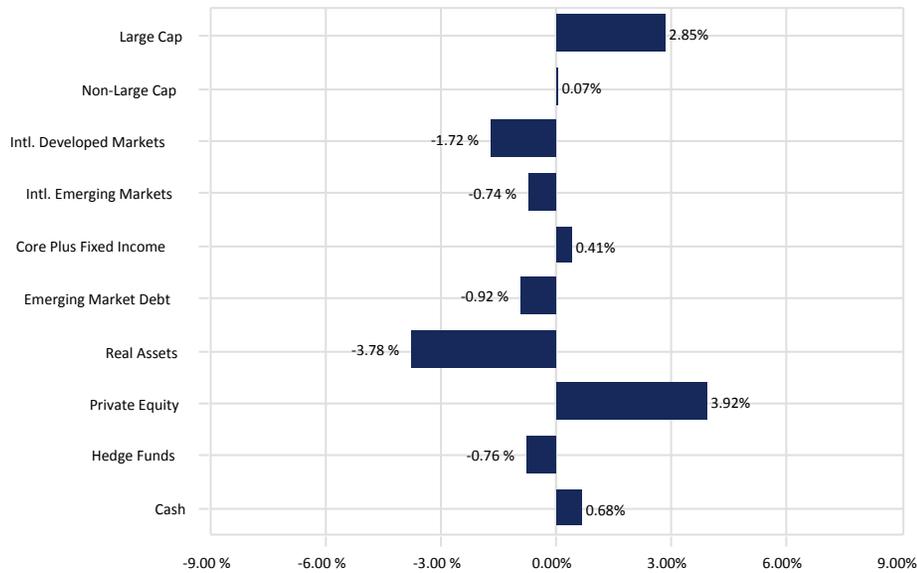
Total Fund



Howard County Retirement Plans

Asset Allocation vs. Target Allocation

December 31, 2018



December 31, 2018

	<u>Market Value</u> (\$)	<u>Allocation</u> (%)	<u>Target</u> (%)
Large Cap	175,495,838	17.85	15.00
Non-Large Cap	49,814,454	5.07	5.00
Intl. Developed Markets	110,954,493	11.28	13.00
Intl. Emerging Markets	61,581,335	6.26	7.00
Core Plus Fixed Income	249,899,135	25.41	25.00
Emerging Market Debt	40,172,569	4.08	5.00
Real Assets	36,544,585	3.72	7.50
Private Equity	136,852,194	13.92	10.00
Hedge Funds	115,456,723	11.74	12.50
Cash	6,660,965	0.68	0.00
Total Fund	983,432,291	100.00	100.00

December 31, 2017

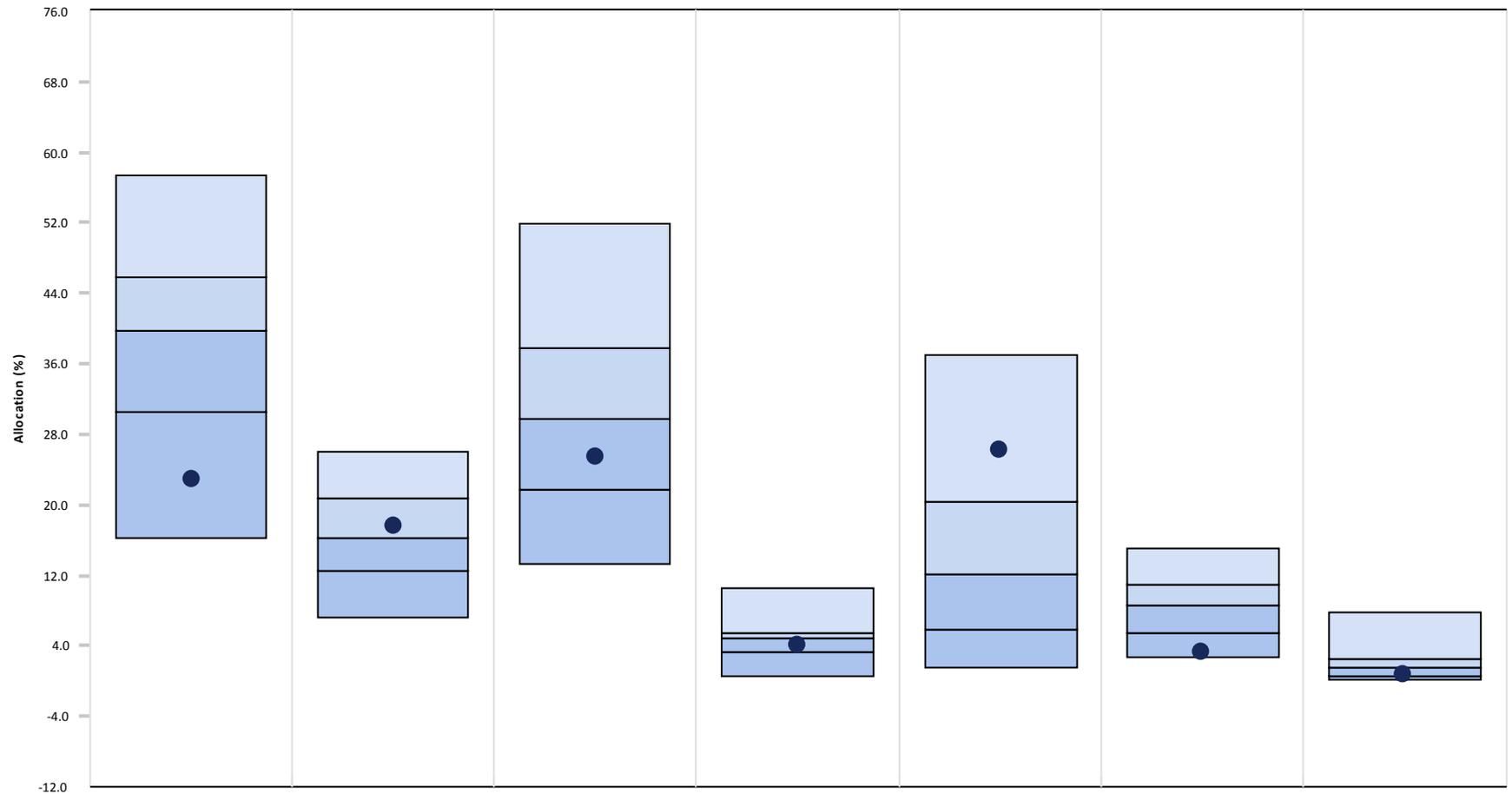
	<u>Market Value</u> (\$)	<u>Allocation</u> (%)	<u>Target</u> (%)
Large Cap	189,441,429	19.11	15.00
Non-Large Cap	53,279,749	5.37	5.00
Intl. Developed Markets	129,397,425	13.05	13.00
Intl. Emerging Markets	69,347,936	6.99	7.00
Core Plus Fixed Income	246,858,728	24.90	25.00
Emerging Market Debt	35,310,365	3.56	5.00
Real Assets	33,001,370	3.33	7.50
Private Equity	109,192,151	11.01	10.00
Hedge Funds	114,123,641	11.51	12.50
Cash	11,466,237	1.16	0.00
Total Fund	991,419,031	100.00	100.00



Howard County Retirement Plans

Plan Sponsor TF Asset Allocation - All Public Plans

December 31, 2018



	<u>US Equity</u>	<u>Intl. Equity</u>	<u>US Fixed Income</u>	<u>Intl. Fixed Income</u>	<u>Alternative Inv.</u>	<u>Real Estate</u>	<u>Cash</u>
● Total Fund Composite	22.91 (88)	17.54 (43)	25.41 (63)	4.08 (67)	26.14 (13)	3.23 (94)	0.68 (71)
5th Percentile	57.47	26.12	51.88	10.63	37.02	14.96	7.84
1st Quartile	45.78	20.81	37.77	5.49	20.27	10.93	2.55
Median	39.77	16.29	29.76	4.76	12.15	8.63	1.44
3rd Quartile	30.49	12.58	21.66	3.19	5.80	5.49	0.47
95th Percentile	16.32	7.25	13.35	0.63	1.53	2.65	0.07
Population	788	743	726	212	216	360	593

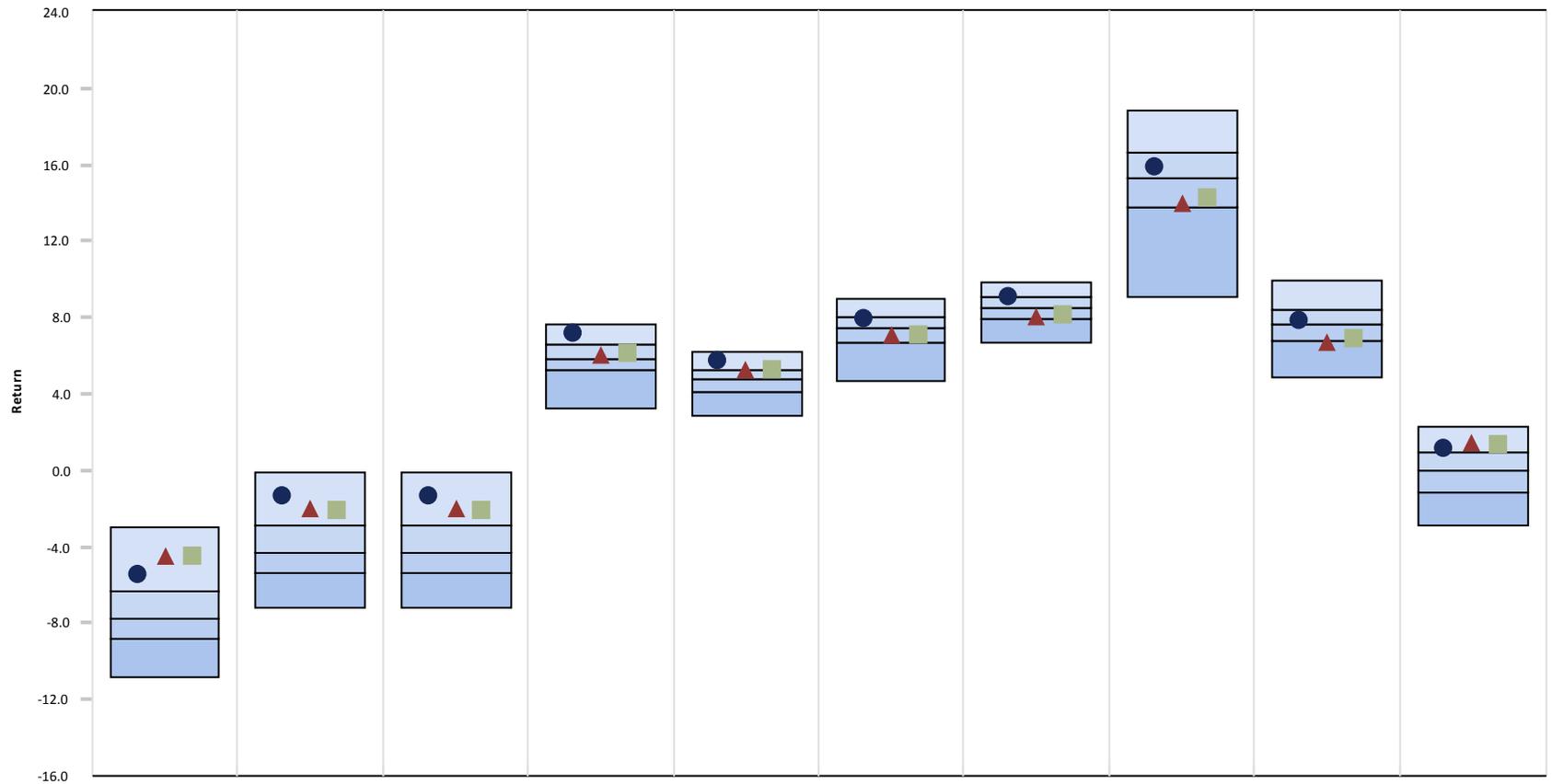
Parentheses contain percentile rankings.



Howard County Retirement Plans

All Public Plans - Total Fund Peer Group Return

December 31, 2018



	<u>3 Month</u>	<u>CYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>7 Year</u>	<u>10 Year</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>
● Total Fund Composite	-5.46 (18)	-1.38 (13)	-1.38 (13)	7.20 (11)	5.70 (16)	7.95 (28)	9.03 (26)	15.87 (41)	7.80 (45)	1.15 (18)
▲ Total Implementation Index	-4.54 (12)	-2.02 (17)	-2.02 (17)	6.02 (44)	5.20 (28)	7.02 (64)	8.07 (68)	13.97 (73)	6.71 (77)	1.44 (14)
■ Total Policy Index	-4.49 (11)	-2.08 (18)	-2.08 (18)	6.13 (40)	5.22 (26)	7.03 (64)	8.10 (66)	14.23 (70)	6.87 (73)	1.31 (16)
5th Percentile	-2.98	-0.13	-0.13	7.60	6.23	8.98	9.82	18.86	9.97	2.24
1st Quartile	-6.31	-2.88	-2.88	6.59	5.25	8.03	9.03	16.65	8.45	0.91
Median	-7.78	-4.34	-4.34	5.86	4.74	7.45	8.51	15.30	7.61	-0.03
3rd Quartile	-8.85	-5.36	-5.36	5.24	4.10	6.66	7.91	13.77	6.76	-1.14
95th Percentile	-10.79	-7.21	-7.21	3.26	2.89	4.69	6.65	9.02	4.90	-2.88
Population	297	292	292	277	263	254	228	316	316	284

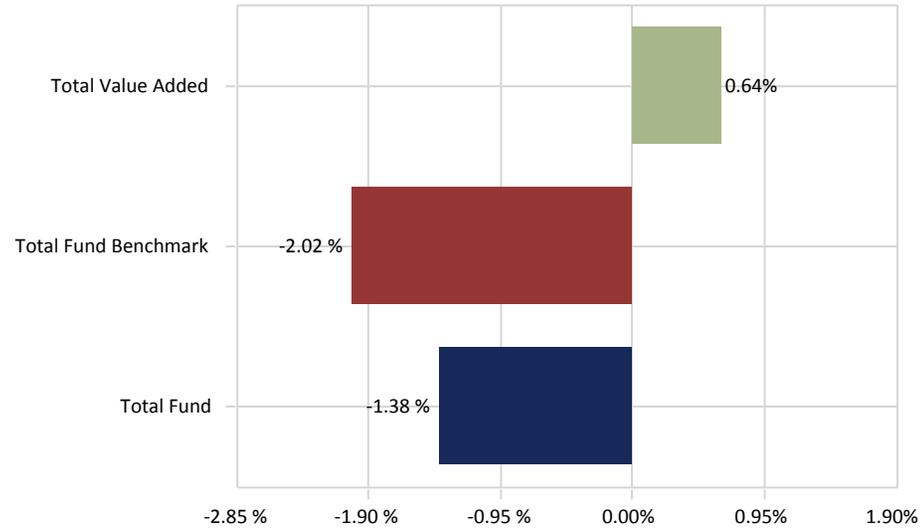


Howard County Retirement Plans

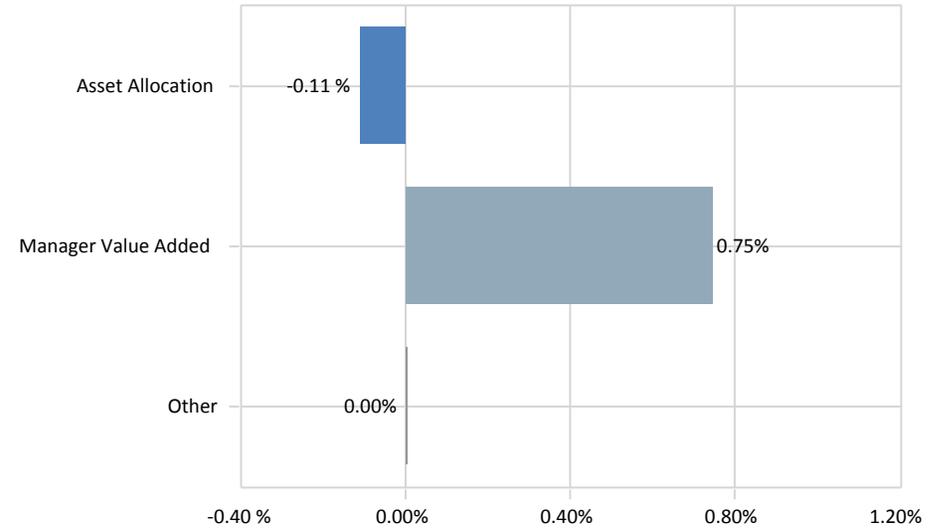
Total Fund Attribution

Year To Date Ending December 31, 2018

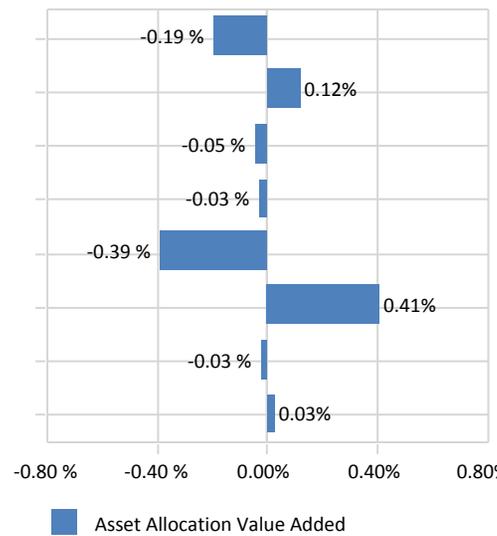
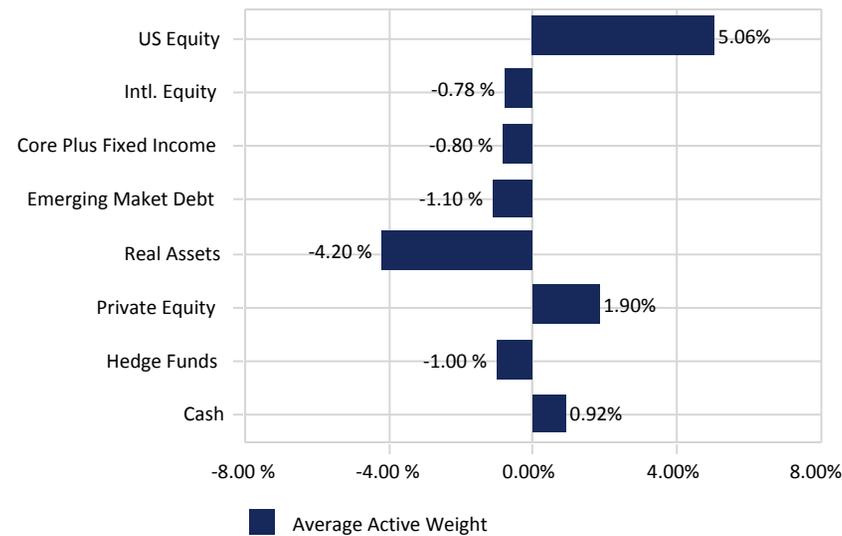
Total Fund Performance



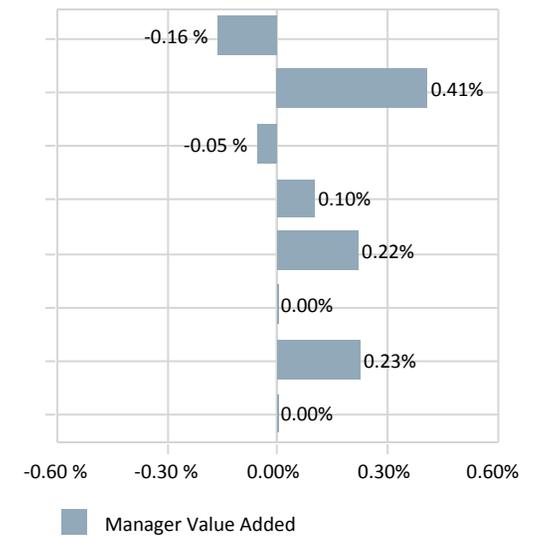
Total Value Added: 0.64%



Total Asset Allocation: -0.11%



Total Manager Value Added: 0.75%

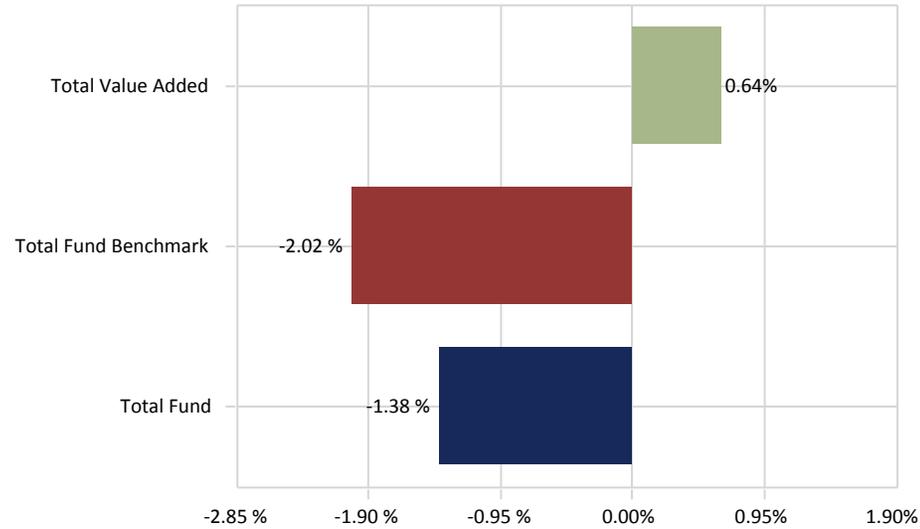


Howard County Retirement Plans

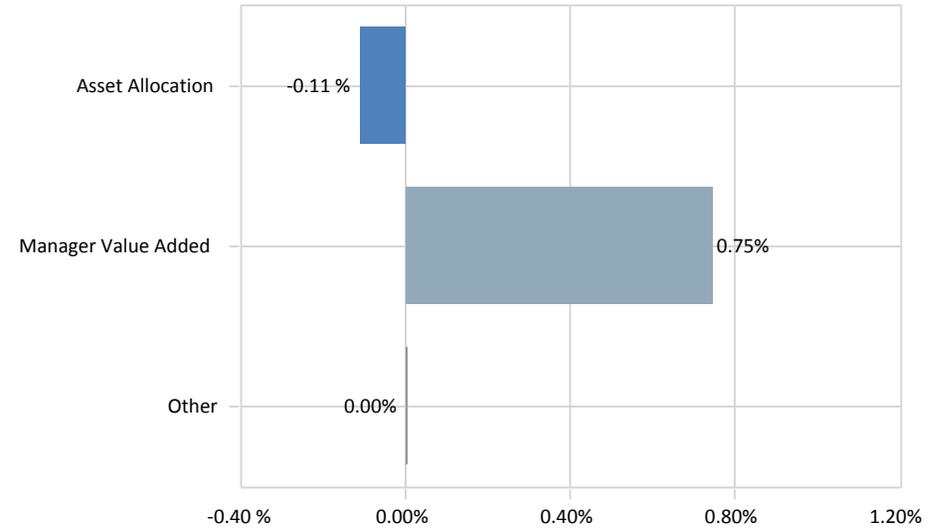
Total Fund Attribution

1 Year Ending December 31, 2018

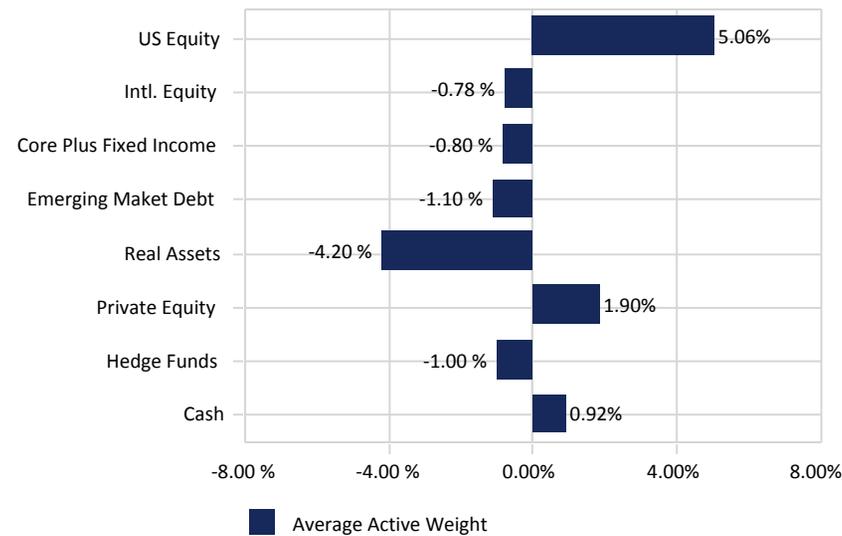
Total Fund Performance



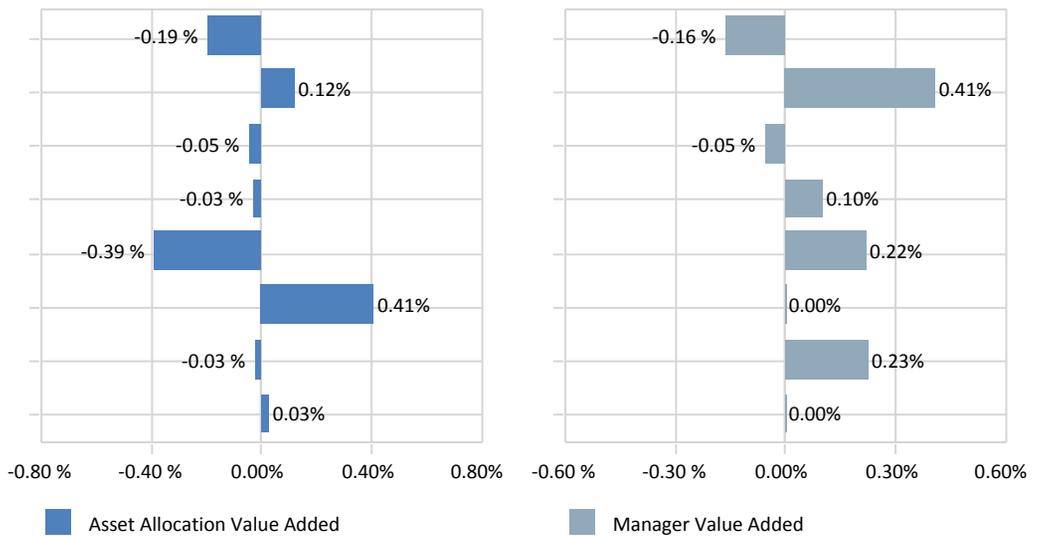
Total Value Added: 0.64%



Total Asset Allocation: -0.11%



Total Manager Value Added: 0.75%

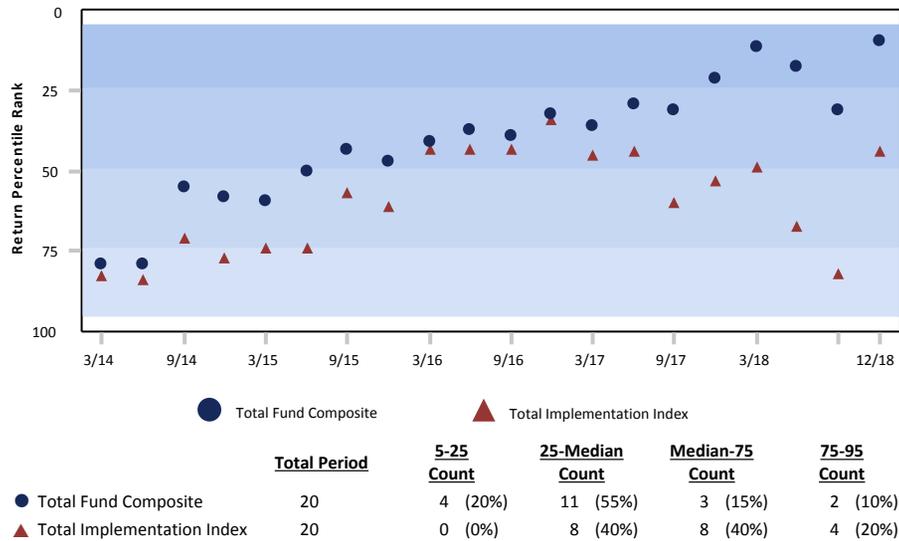


Howard County Retirement Plans

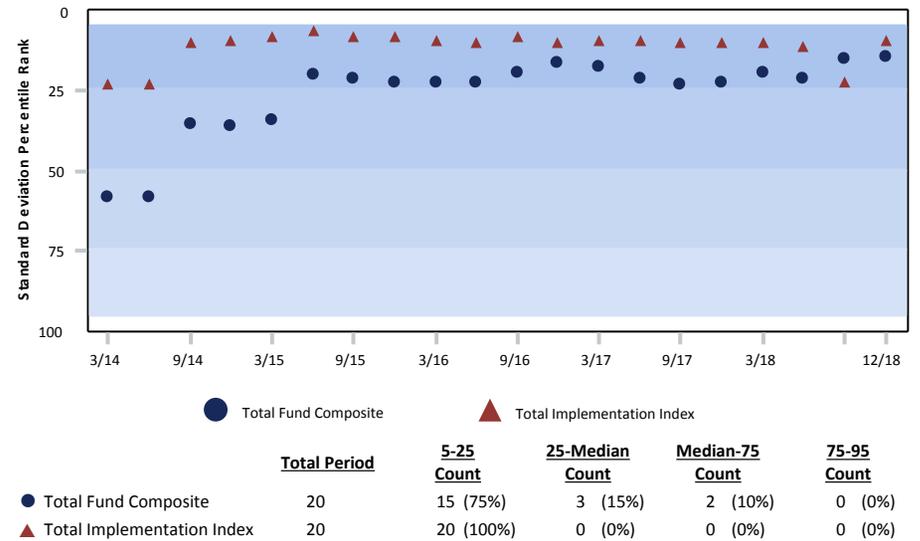
Total Fund Composite

December 31, 2018

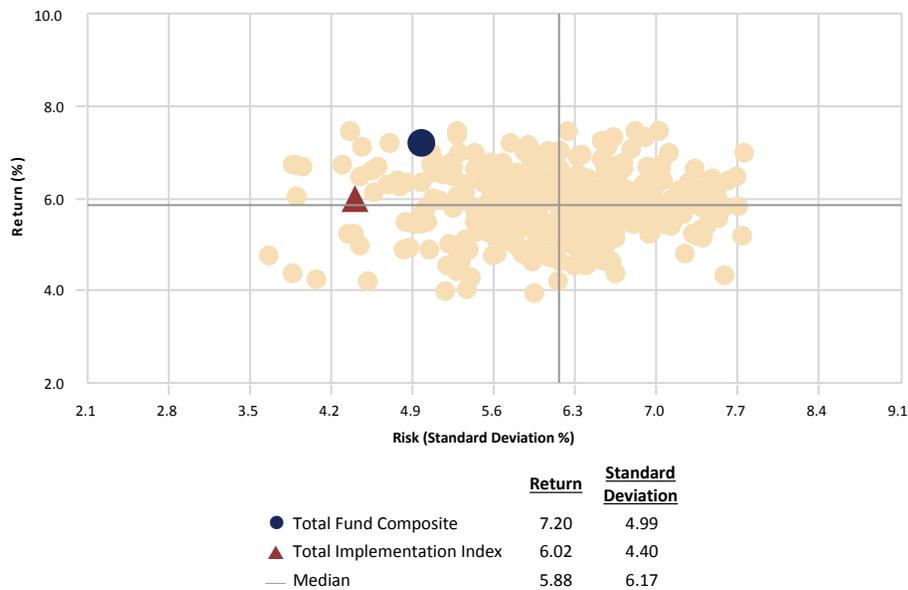
3 Year Rolling Return Rank



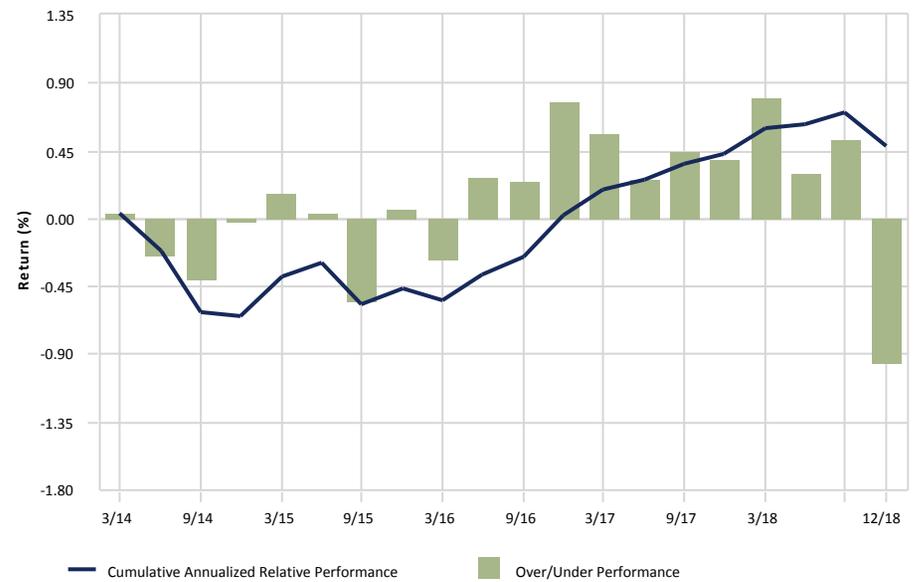
3 Year Rolling Standard Deviation Rank



Risk vs. Return (01/01/16 - 12/31/18)



Relative Performance vs. Total Implementation Index

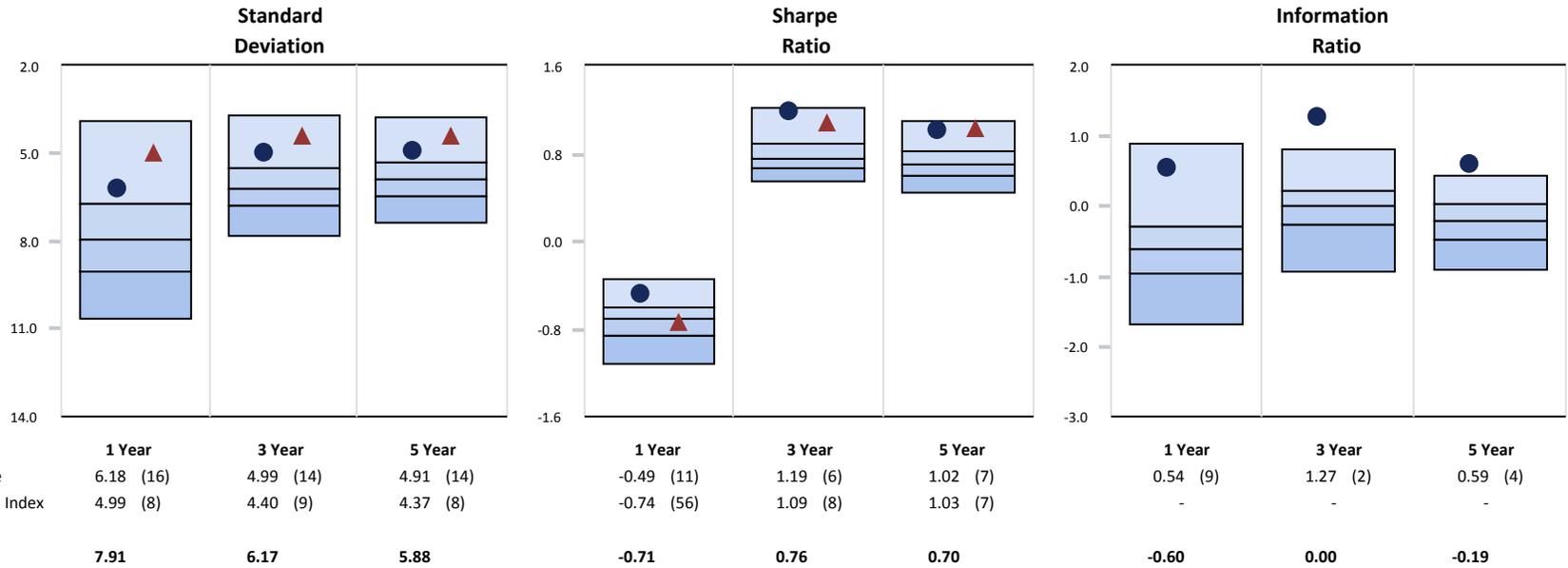


Howard County Retirement Plans

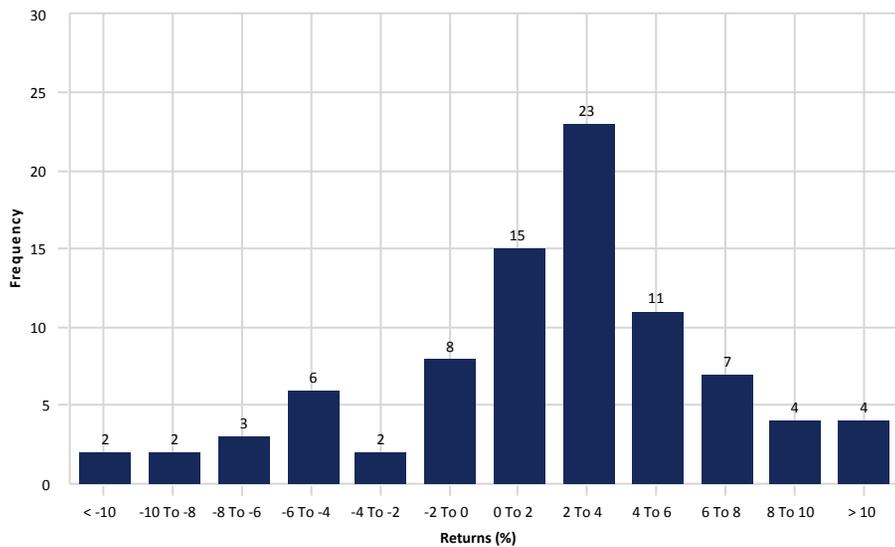
Total Fund Composite

December 31, 2018

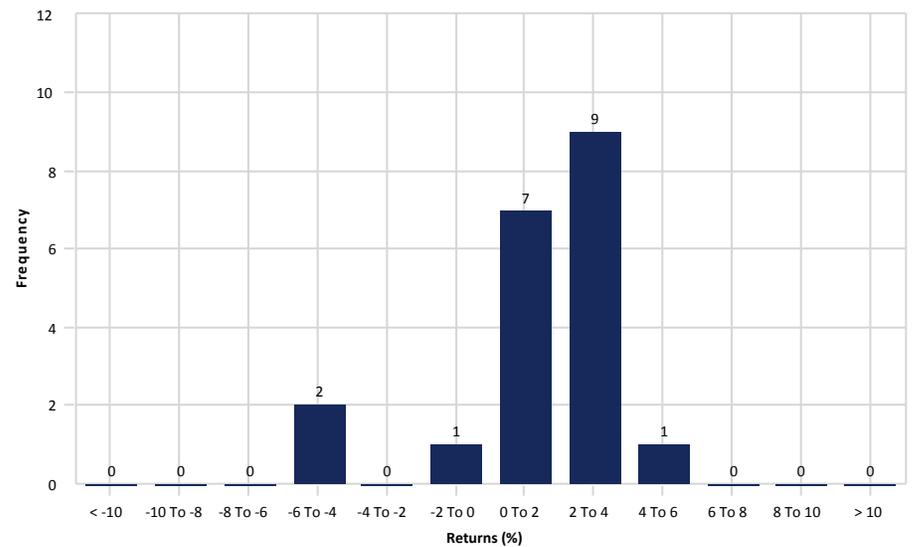
Peer Group Analysis: All Public Plans-Total Fund



Inception - Quarterly Distribution of Returns



5 Years - Quarterly Distribution of Returns

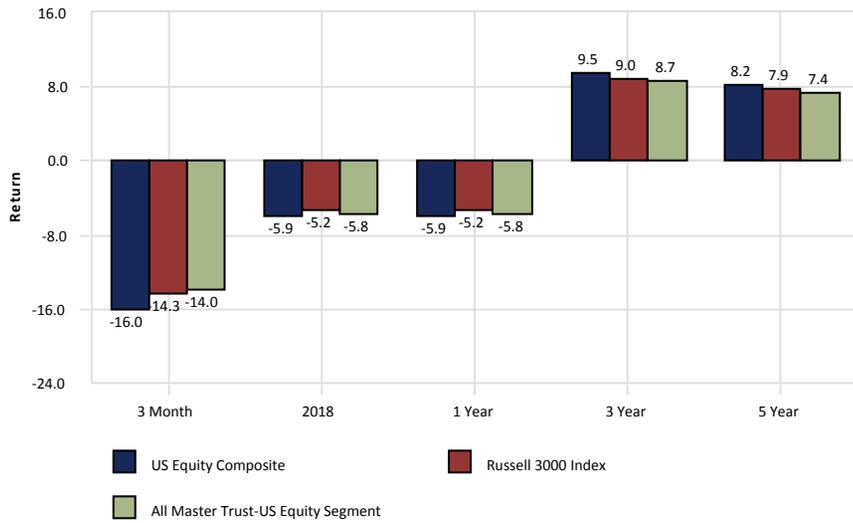


Howard County Retirement Plans

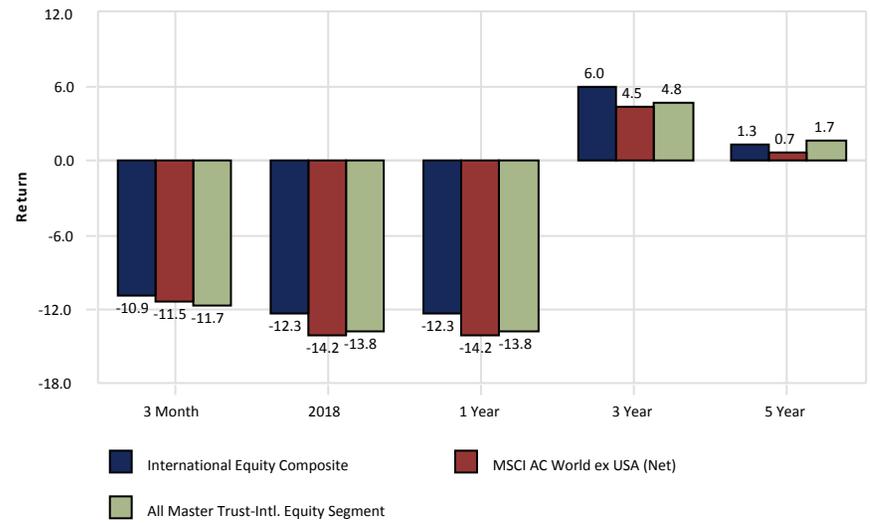
Composite Summary

December 31, 2018

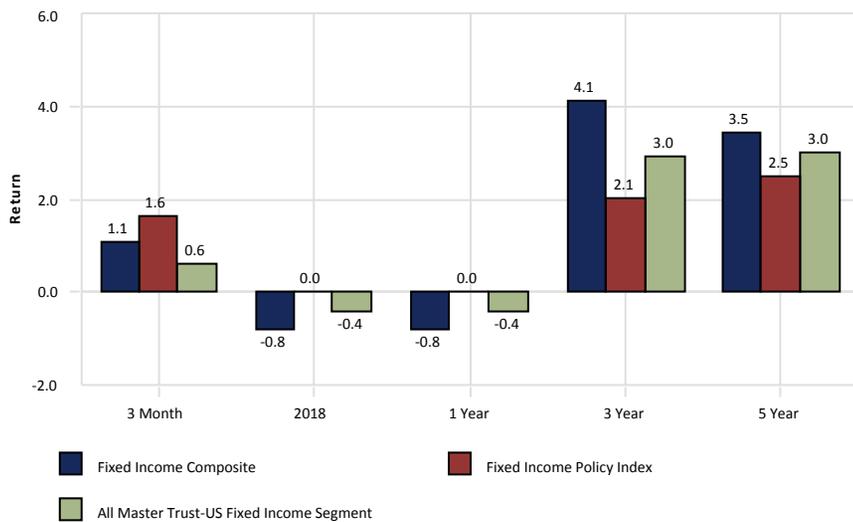
US Equity Composite



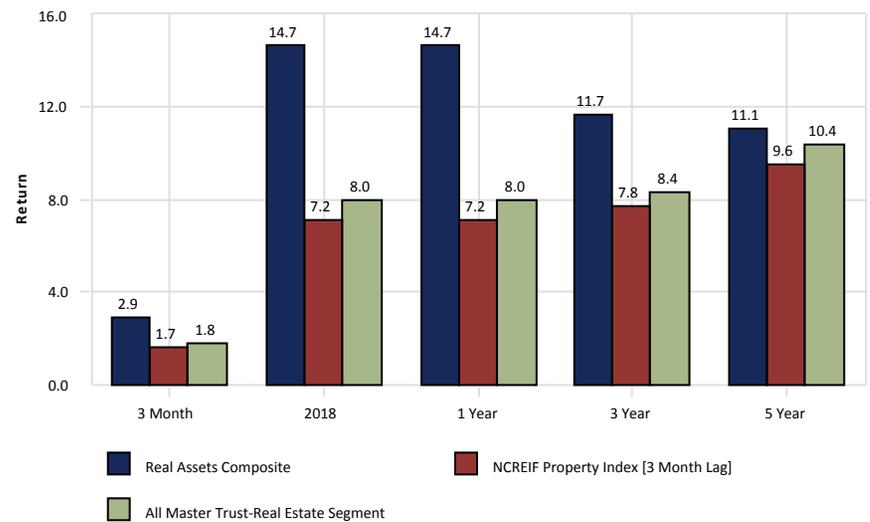
International Equity Composite



Fixed Income Composite



Real Assets Composite



Howard County Retirement Plans

Composite Asset Allocation & Performance % | gross of fees

December 31, 2018

	Asset \$	Asset %	3 Month	CYTD	FYTD	1 Year	3 Year	5 Year	Since Inception	Inception Date
Total Fund Composite	983,432,291	100.00	-5.46 (18)	-1.38 (13)	-2.86 (15)	-1.38 (13)	7.20 (11)	5.70 (16)	7.03 (36)	Apr-1997
<i>Total Implementation Index</i>			-4.54	-2.02	-2.41	-2.02	6.02	5.20	6.53	
Excess Return			-0.92	0.64	-0.45	0.64	1.18	0.50	0.50	
<i>Total Policy Index</i>			-4.49	-2.08	-2.44	-2.08	6.13	5.22	7.02	Apr-1997
Total Fund EX Alternatives	735,739,719	74.81	-7.55	-4.63	-5.07	-4.63	6.59	4.75	5.72	Jul-2008
Total Fund EX Real Assets	946,887,707	96.28	-5.74	-1.90	-3.09	-1.90	7.06	5.50	6.93	Dec-2003
Total Equity Composite	397,846,121	40.45	-13.85	-8.77	-9.93	-8.77	7.97	5.18	6.40	Apr-2000
US Equity Composite	225,310,293	22.91	-16.00 (90)	-5.88 (54)	-10.33 (83)	-5.88 (54)	9.54 (19)	8.21 (20)	7.88 (31)	Jul-1997
<i>Russell 3000 Index</i>			-14.30	-5.24	-8.20	-5.24	8.97	7.91	7.16	
Excess Return			-1.70	-0.64	-2.13	-0.64	0.57	0.30	0.72	
<i>US Equity Allocation Index</i>			-15.26	-5.99	-9.45	-5.99	8.80	7.45	8.11	Jan-2004
Large Cap Composite	175,495,838	17.85	-14.61 (63)	-6.00 (59)	-8.82 (65)	-6.00 (59)	8.95 (45)	8.09 (48)	7.74 (34)	Apr-2001
<i>Russell 1000 Index</i>			-13.82	-4.78	-7.42	-4.78	9.09	8.21	6.77	
Excess Return			-0.79	-1.22	-1.40	-1.22	-0.14	-0.12	0.97	
Non-Large Cap Composite	49,814,454	5.07	-20.57 (84)	-5.47 (24)	-15.32 (66)	-5.47 (24)	11.38 (9)	8.83 (8)	11.65 (27)	Apr-1993
<i>Russell 2500 Index</i>			-18.49	-10.00	-14.66	-10.00	7.32	5.15	9.78	
Excess Return			-2.08	4.53	-0.66	4.53	4.06	3.68	1.87	
International Equity Composite	172,535,828	17.54	-10.85 (31)	-12.32 (23)	-9.40 (23)	-12.32 (23)	5.98 (22)	1.28 (68)	4.17 (87)	Jul-1997
<i>MSCI AC World ex USA (Net)</i>			-11.46	-14.20	-10.84	-14.20	4.48	0.68	-	
Excess Return			0.61	1.88	1.44	1.88	1.50	0.60	-	
International Developed Markets Composite	110,954,493	11.28	-13.25 (44)	-13.22 (31)	-12.15 (40)	-13.22 (31)	2.57 (71)	0.54 (84)	1.89 (74)	Mar-2008
<i>MSCI EAFE Index (Net)</i>			-12.50	-13.36	-11.26	-13.36	3.38	1.00	1.66	
Excess Return			-0.75	0.14	-0.89	0.14	-0.81	-0.46	0.23	
International Emerging Markets Composite	61,581,335	6.26	-6.07 (33)	-10.48 (11)	-3.86 (9)	-10.48 (11)	13.24 (3)	2.67 (35)	5.40 (45)	Feb-2006
<i>MSCI Emerging Markets Index (Net)</i>			-7.40	-14.25	-8.28	-14.25	9.65	2.03	4.41	
Excess Return			1.33	3.77	4.42	3.77	3.59	0.64	0.99	
Fixed Income Composite	290,071,704	29.50	1.12 (27)	-0.80 (59)	1.05 (40)	-0.80 (59)	4.14 (23)	3.47 (38)	5.27 (56)	Jul-1997
<i>Fixed Income Policy Index</i>			1.64	0.01	1.66	0.01	2.06	2.52	5.07	
Excess Return			-0.52	-0.81	-0.61	-0.81	2.08	0.95	0.20	



Howard County Retirement Plans

Composite Asset Allocation & Performance % | gross of fees

December 31, 2018

	Asset \$	Asset %	3 Month	CYTD	FYTD	1 Year	3 Year	5 Year	Since Inception	Inception Date
Real Assets Composite	36,544,585	3.72	2.93 (16)	14.74 (2)	4.07 (45)	14.74 (2)	11.73 (9)	11.09 (40)	7.66 (80)	Jul-2003
<i>NCREIF Property Index [3 Month Lag]</i>			1.67	7.16	3.51	7.16	7.75	9.57	9.03	
Excess Return			1.26	7.58	0.56	7.58	3.98	1.52	-1.37	
<i>NCREIF Fund Index-ODCE (VW) [M]</i>			1.76	8.35	3.88	8.35	8.24	10.41	8.28	Jul-2003
Alternatives Composite	252,308,916	25.66	1.36	9.77	4.49	9.77	8.95	9.53	8.65	Jul-2008
Private Equity Composite	136,852,194	13.92	4.89	18.39	10.26	18.39	15.90	16.75	12.95	Jul-2008
Hedge Fund Composite	115,456,723	11.74	-2.52	1.17	-1.57	1.17	2.74	3.99	4.40	Jan-2011
<i>HFRI FOF: Conservative Index</i>			-3.19	-0.82	-2.43	-0.82	1.71	1.72	2.08	
Excess Return			0.67	1.99	0.86	1.99	1.03	2.27	2.32	
Cash Composite	6,660,965	0.68	0.72	1.66	1.11	1.66	0.74	0.45	1.33	Dec-2003
<i>FTSE 3 Month T-Bill</i>			0.57	1.86	1.07	1.86	0.99	0.60	1.26	
Excess Return			0.15	-0.20	0.04	-0.20	-0.25	-0.15	0.07	



Howard County Retirement Plans

Manager Allocation & Performance % | gross of fees

December 31, 2018

	Asset \$	Asset %	3 Month	CYTD	FYTD	1 Year	3 Year	5 Year	Since Inception	Inception Date
US Equity										
Invesco	59,075,057	6.01	-13.67 (47)	-5.02 (47)	-7.39 (45)	-5.02 (47)	8.93 (41)	8.18 (50)	7.00 (63)	Apr-2001
<i>S&P 500</i>			-13.52	-4.38	-6.85	-4.38	9.26	8.49	6.54	
Excess Return			-0.15	-0.64	-0.54	-0.64	-0.33	-0.31	0.46	
LSV Asset Management*	55,074,957	5.60	-13.63 (53)	-11.42 (75)	-9.62 (65)	-11.42 (75)	7.61 (45)	6.65 (37)	9.21 (11)	May-2000
<i>Russell 1000 Value Index</i>			-11.72	-8.27	-6.69	-8.27	6.95	5.95	6.25	
Excess Return			-1.91	-3.15	-2.93	-3.15	0.66	0.70	2.96	
Westfield	61,345,825	6.24	-16.30 (69)	-1.70 (55)	-9.43 (69)	-1.70 (55)	10.21 (50)	9.34 (58)	14.20 (55)	Jul-2010
<i>Russell 1000 Growth Index</i>			-15.89	-1.51	-8.17	-1.51	11.15	10.40	14.97	
Excess Return			-0.41	-0.19	-1.26	-0.19	-0.94	-1.06	-0.77	
William Blair	16,198,268	1.65	-18.35 (28)	-0.91 (25)	-11.23 (32)	-0.91 (25)	11.82 (15)	10.49 (1)	10.91 (14)	Jun-2006
<i>Russell 2500 Growth Index</i>			-20.08	-7.47	-14.35	-7.47	8.11	6.19	8.23	
Excess Return			1.73	6.56	3.12	6.56	3.71	4.30	2.68	
Investment Counselors of Maryland	19,435,177	1.98	-20.51 (74)	-13.20 (39)	-19.41 (71)	-13.20 (39)	9.47 (17)	5.87 (17)	11.37 (65)	Apr-1993
<i>Russell 2000 Value Index</i>			-18.67	-12.86	-17.36	-12.86	7.37	3.61	9.43	
Excess Return			-1.84	-0.34	-2.05	-0.34	2.10	2.26	1.94	
Brown Capital Management	14,181,010	1.44	-23.05 (79)	1.53 (20)	-13.88 (35)	1.53 (20)	13.74 (15)	10.79 (4)	16.55 (2)	Aug-2011
<i>Russell 2000 Growth Index</i>			-21.65	-9.31	-17.33	-9.31	7.24	5.13	9.52	
Excess Return			-1.40	10.84	3.45	10.84	6.50	5.66	7.03	
International Equity										
Mondrian International	54,937,682	5.59	-9.77 (4)	-11.21 (17)	-7.86 (3)	-11.21 (17)	4.24 (30)	1.53 (54)	0.96 (72)	Dec-2007
<i>MSCI EAFE Index (Net)</i>			-12.54	-13.79	-11.35	-13.79	2.87	0.53	0.19	
Excess Return			2.77	2.58	3.49	2.58	1.37	1.00	0.77	
Baillie Gifford	56,016,811	5.70	-16.32 (86)	-	-15.76 (77)	-	-	-	-14.89 (37)	May-2018
<i>MSCI EAFE Index (Net)</i>			-12.54	-	-11.35	-	-	-	-14.40	
Excess Return			-3.78	-	-4.41	-	-	-	-0.49	
DFA Emerging Markets	25,940,520	2.64	-8.07 (66)	-12.39 (18)	-5.91 (22)	-12.39 (18)	12.43 (7)	2.25 (51)	5.39 (45)	Feb-2006
<i>MSCI Emerging Markets (Net)</i>			-7.47	-14.58	-8.49	-14.58	9.25	1.65	4.06	
Excess Return			-0.60	2.19	2.58	2.19	3.18	0.60	1.33	
GQG Partners EM	35,640,815	3.62	-	-	-	-	-	-	-0.28 (5)	Dec-2018
<i>MSCI Emerging Markets (Net)</i>			-	-	-	-	-	-	-2.66	
Excess Return			-	-	-	-	-	-	2.38	

All returns are time-weighted and calculated using custodian data.
* Inception date differs from manager; partial month returns are not calculated.



Howard County Retirement Plans

Manager Allocation & Performance % | gross of fees

December 31, 2018

	Asset \$	Asset %	3 Month	CYTD	FYTD	1 Year	3 Year	5 Year	Since Inception	Inception Date
Fixed Income										
Dodge & Cox	118,979,336	12.10	0.54 (94)	0.11 (46)	1.23 (85)	0.11 (46)	3.70 (4)	3.33 (12)	4.08 (11)	May-2010
<i>Blmbg. Barc. U.S. Aggregate</i>			1.64	0.01	1.66	0.01	2.06	2.52	3.00	
Excess Return			-1.10	0.10	-0.43	0.10	1.64	0.81	1.08	
PIMCO Total Return	109,680,564	11.15	1.33 (58)	-0.24 (85)	1.43 (72)	-0.24 (85)	2.87 (21)	2.77 (56)	3.54 (44)	May-2010
<i>Blmbg. Barc. U.S. Aggregate</i>			1.64	0.01	1.66	0.01	2.06	2.52	3.00	
Excess Return			-0.31	-0.25	-0.23	-0.25	0.81	0.25	0.54	
State Street Global Advisors TIPS	21,239,235	2.16	-0.43 (54)	-1.27 (69)	-1.23 (54)	-1.27 (69)	2.09 (75)	1.68 (52)	2.80 (61)	Nov-2009
<i>Blmbg. Barc. U.S. TIPS</i>			-0.42	-1.26	-1.24	-1.26	2.11	1.69	2.82	
Excess Return			-0.01	-0.01	0.01	-0.01	-0.02	-0.01	-0.02	
Colchester LMD	40,172,569	4.08	3.13 (7)	-3.61 (20)	0.78 (11)	-3.61 (20)	9.25 (1)	-	8.01 (1)	Oct-2015
<i>JPM GBI-EM Global Diversified</i>			2.11	-6.21	0.25	-6.21	5.91	-	5.44	
Excess Return			1.02	2.60	0.53	2.60	3.34	-	2.57	
Real Assets										
TA Realty Associates VIII	81,867	0.01	5.81	17.58	10.15	17.58	9.74	11.04	2.60	Jul-2007
TA Realty Associates IX	5,627	0.00	-4.26	-3.09	-3.91	-3.09	1.14	6.61	7.13	Apr-2010
Partners Group Global RE 2011	6,102,618	0.62	-2.85	0.01	-6.72	0.01	7.72	7.09	6.04	Mar-2012
Partners Group Global RE 2014	17,788,185	1.81	1.88	15.12	3.10	15.12	12.27	-	10.04	Dec-2014
Commonfund Natural Resources X	4,637,731	0.47	0.91	27.51	8.52	27.51	-	-	22.73	Apr-2016
Commonfund Natural Resources XI	150,000	0.02	0.00	-	-	-	-	-	0.00	Oct-2018
Partners Group Global RE 2017	2,265,856	0.23	-	-	-	-	-	-	0.00	Dec-2018
Aether Real Assets IV	4,327,998	0.44	7.08	16.45	10.95	16.45	-	-	5.69	Jun-2016
Aether Real Assets V	1,184,702	0.12	79.22	-	-	-	-	-	79.22	Oct-2018
Private Equity										
Siguler Guff Distressed Opps III	1,769,965	0.18	0.22	10.46	4.07	10.46	8.70	8.44	9.00	Jul-2008
Greenspring IV	5,043,401	0.51	1.21	12.28	9.63	12.28	10.90	17.06	15.74	Jul-2009
Pantheon Global Secondaries IV	668,575	0.07	-0.34	12.92	4.63	12.92	10.68	11.74	12.87	Sep-2010
LGT Crown Asia-Pacific II	13,858,158	1.41	-1.43	7.65	-0.31	7.65	9.82	14.76	-10.78	Jul-2011

All returns are time-weighted and calculated using custodian data.
 * Inception date differs from manager; partial month returns are not calculated.



Howard County Retirement Plans

Manager Allocation & Performance % | gross of fees

December 31, 2018

	Asset \$	Asset %	3 Month	CYTD	FYTD	1 Year	3 Year	5 Year	Since Inception	Inception Date
Greenspring V	8,116,202	0.83	8.51	20.37	12.24	20.37	18.82	22.45	18.41	Sep-2011
Adveq Europe V	6,992,004	0.71	-0.18	16.66	2.55	16.66	16.41	6.70	8.15	Jan-2013
LGT Crown Global Secondaries III	4,858,335	0.49	-2.90	4.23	1.77	4.23	8.69	13.46	15.23	Feb-2013
Flag Private Equity V	14,723,601	1.50	6.38	24.27	16.18	24.27	19.37	18.07	17.14	Oct-2013
HarbourVest Partners 2013 Direct	16,277,172	1.66	4.94	10.78	7.34	10.78	19.24	18.21	18.21	Jan-2014
Greenspring VI	10,024,167	1.02	12.34	34.57	19.43	34.57	22.13	-	18.51	Apr-2014
Greenspring Secondaries Fund I	4,305,857	0.44	15.79	70.14	49.03	70.14	30.71	-	28.65	May-2014
Greenspring VIII	2,183,082	0.22	4.37	14.22	17.47	14.22	-	-	-3.20	Sep-2017
Adveq Europe VI	3,677,354	0.37	-2.06	14.58	-1.24	14.58	5.83	-	4.91	Feb-2015
Flag Private Equity VI	13,338,653	1.36	4.85	30.27	13.96	30.27	21.23	-	18.42	Aug-2015
57 Stars	5,394,702	0.55	1.34	3.17	5.67	3.17	0.30	-	0.28	Oct-2015
NB Crossroads XXI	9,690,751	0.99	7.11	14.30	8.36	14.30	7.03	-	6.47	Oct-2015
LGT Crown Asia-Pacific III	5,194,177	0.53	14.35	38.22	16.67	38.22	19.91	-	24.87	Nov-2015
HarbourVest IV	8,302,777	0.84	7.36	12.40	11.33	12.40	-	-	13.42	Jan-2017
Aberdeen US PE VII	1,841,570	0.19	7.39	22.47	23.29	22.47	-	-	20.57	Dec-2017
Adveq Europe Dir II	103,539	0.01	-	-	-	-	-	-	0.00	Dec-2018
Adveq Europe VII	488,153	0.05	-	-	-	-	-	-	0.00	Dec-2018

All returns are time-weighted and calculated using custodian data.

* Inception date differs from manager; partial month returns are not calculated.



Howard County Retirement Plans

Manager Allocation & Performance % | gross of fees

December 31, 2018

	Asset \$	Asset %	3 Month	CYTD	FYTD	1 Year	3 Year	5 Year	Since Inception	Inception Date
Hedge Funds										
Magnitude International	56,780,660	5.77	-3.16	0.75	-2.54	0.75	1.72	3.83	4.39	Jan-2011
<i>HFRI FOF: Conservative Index</i>			-3.19	-0.82	-2.43	-0.82	1.71	1.72	2.08	
Excess Return			0.03	1.57	-0.11	1.57	0.01	2.11	2.31	
Blackstone Offshore F1	58,676,062	5.97	-1.89	1.58	-0.61	1.58	3.77	4.14	4.46	Mar-2011
<i>HFRI FOF: Conservative Index</i>			-3.19	-0.82	-2.43	-0.82	1.71	1.72	1.94	
Excess Return			1.30	2.40	1.82	2.40	2.06	2.42	2.52	
Cash										
Cash - General Employees	2,958,146	0.30	0.46	1.50	0.88	1.50	0.70	0.44	1.32	Jan-2004
Cash - Police & Fire	3,675,619	0.37	0.46	1.41	0.84	1.41	0.65	0.39	1.27	Jan-2004

All returns are time-weighted and calculated using custodian data.
 * Inception date differs from manager; partial month returns are not calculated.



US Equity

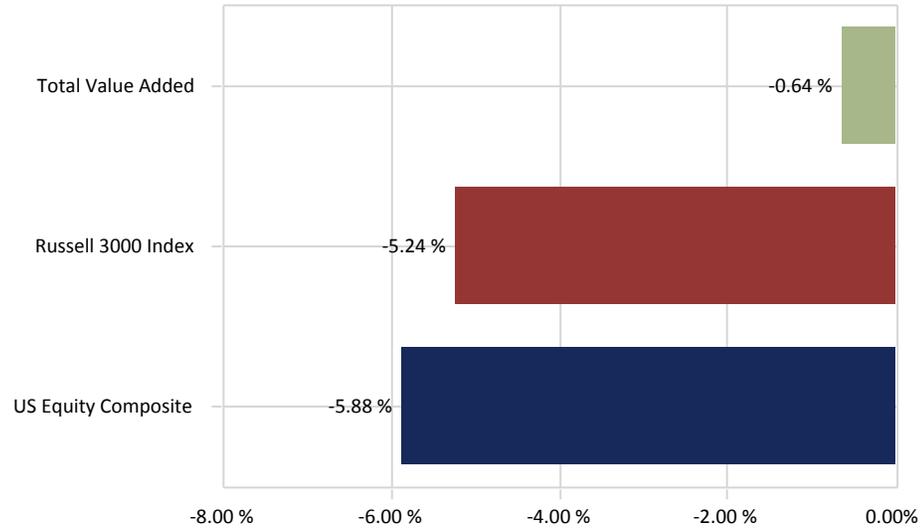


Howard County Retirement Plans

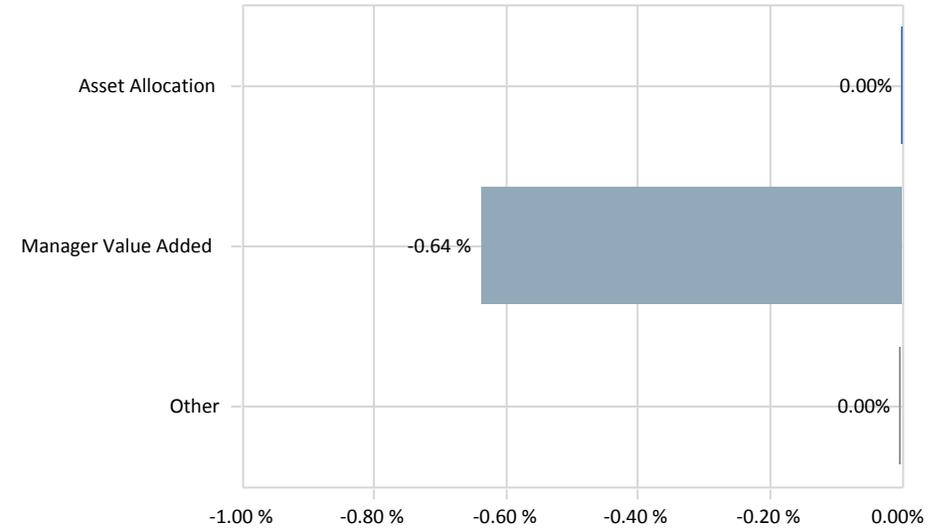
US Equity Composite Attribution

Year To Date Ending December 31, 2018

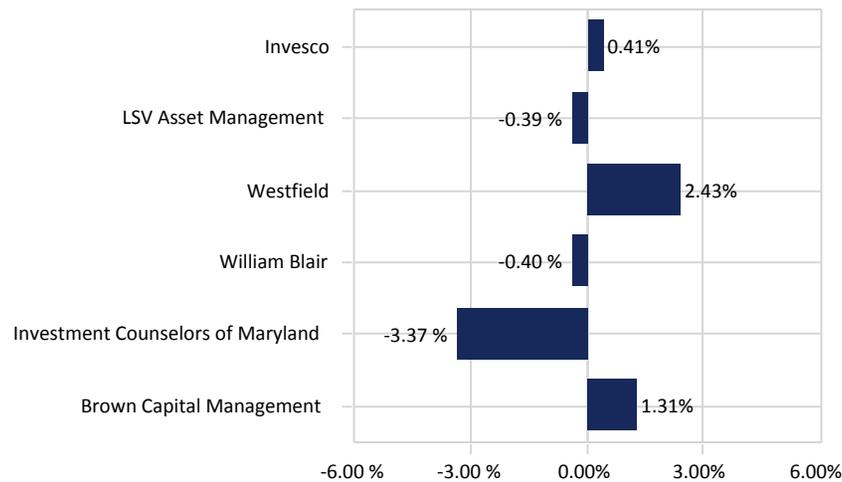
Total Fund Performance



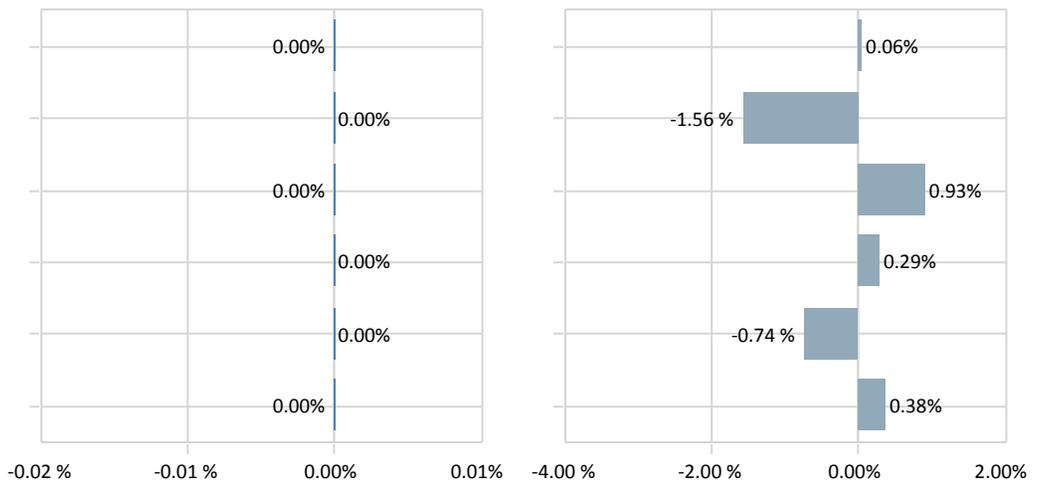
Total Value Added:-0.64 %



Total Asset Allocation:0.00%



Total Manager Value Added:-0.64 %



■ Average Active Weight

■ Asset Allocation Value Added

■ Manager Value Added



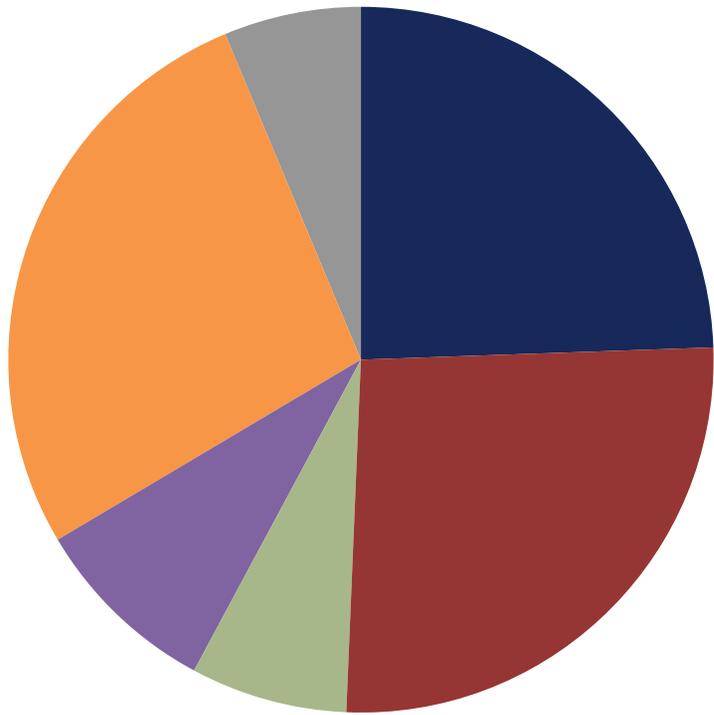
Howard County Retirement Plans

US Equity Composite vs. Russell 3000 Index

December 31, 2018

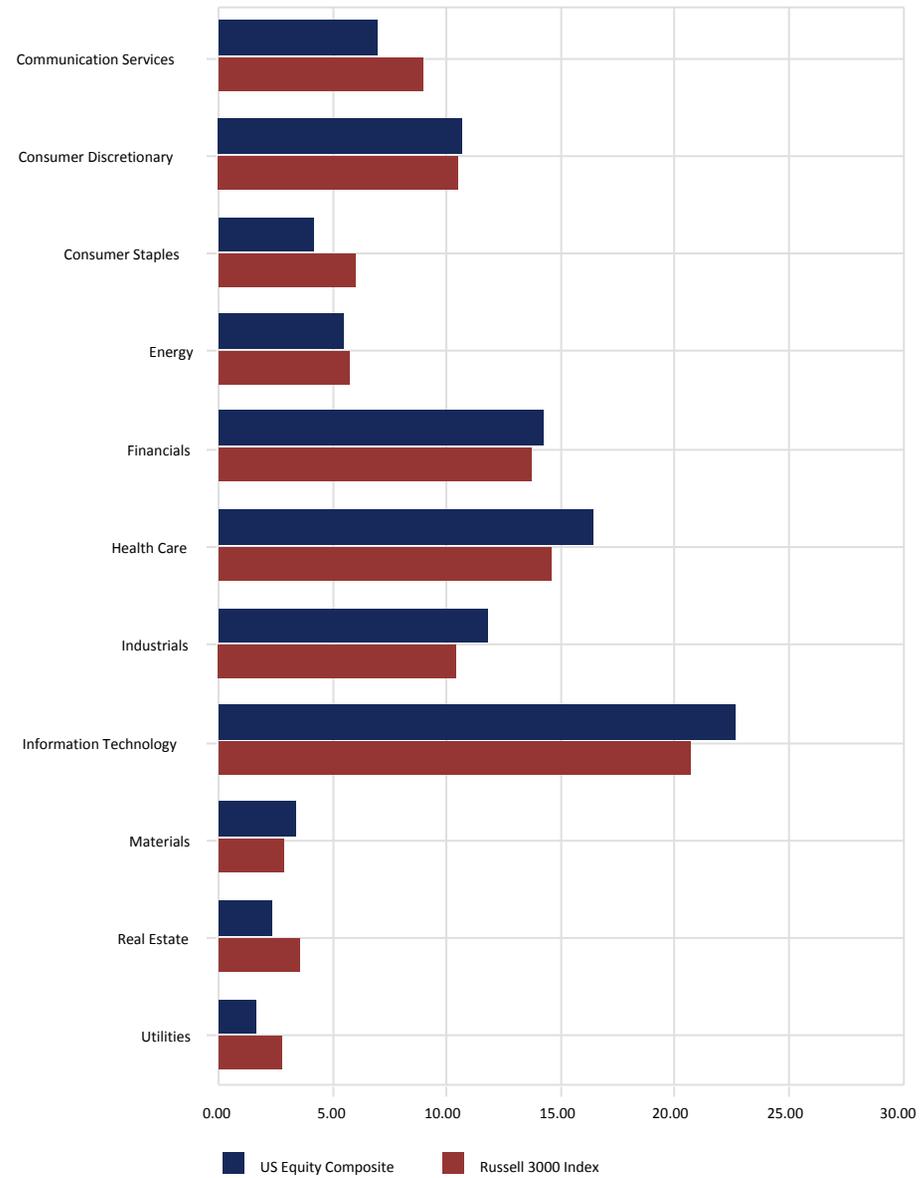
Manager Allocation

December 31, 2018 : \$225,310,293



	Market Value (\$)	Allocation (%)
LSV Asset Management	55,074,957	24.44
Invesco	59,075,057	26.22
William Blair	16,198,268	7.19
Investment Counselors of Maryland	19,435,177	8.63
Westfield	61,345,825	27.23
Brown Capital Management	14,181,010	6.29

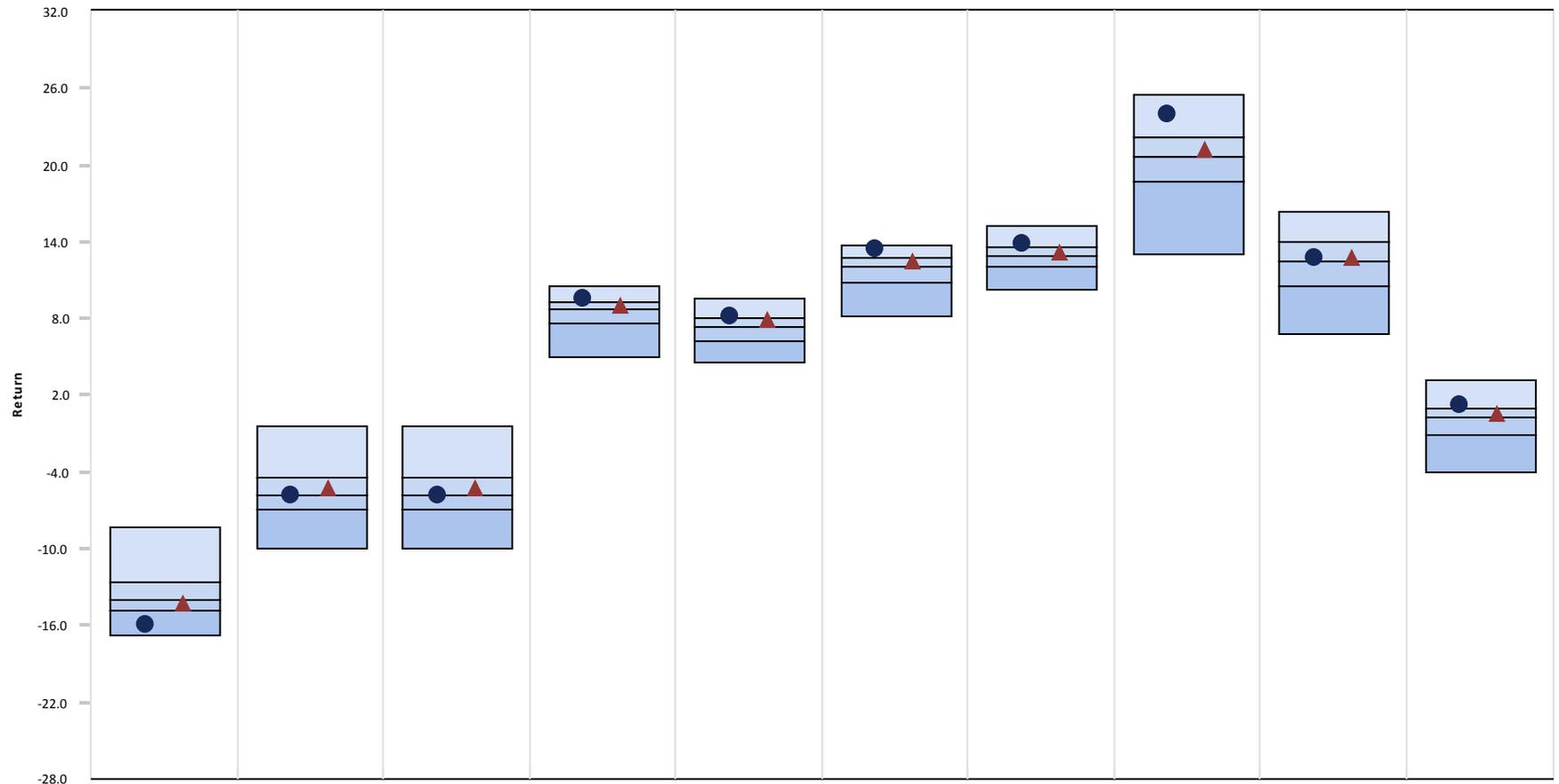
Sector Allocation - Holdings Based



Howard County Retirement Plans

All Master Trust - US Equity Peer Group Return

December 31, 2018



	<u>3 Month</u>	<u>CYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>7 Year</u>	<u>10 Year</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>
● US Equity Composite	-16.00 (90)	-5.88 (54)	-5.88 (54)	9.54 (19)	8.21 (20)	13.45 (8)	13.89 (16)	23.93 (14)	12.68 (46)	1.22 (20)
▲ Russell 3000 Index	-14.30 (61)	-5.24 (41)	-5.24 (41)	8.97 (41)	7.91 (28)	12.46 (36)	13.18 (42)	21.13 (42)	12.74 (45)	0.48 (42)
5th Percentile	-8.35	-0.49	-0.49	10.50	9.49	13.74	15.18	25.49	16.30	3.14
1st Quartile	-12.60	-4.46	-4.46	9.33	8.00	12.70	13.52	22.14	13.93	1.00
Median	-13.98	-5.78	-5.78	8.70	7.38	12.02	12.93	20.65	12.45	0.27
3rd Quartile	-14.86	-6.92	-6.92	7.68	6.22	10.75	12.00	18.77	10.46	-1.14
95th Percentile	-16.77	-9.97	-9.97	4.96	4.55	8.20	10.19	13.07	6.84	-3.97
Population	311	291	291	274	250	213	143	310	288	209

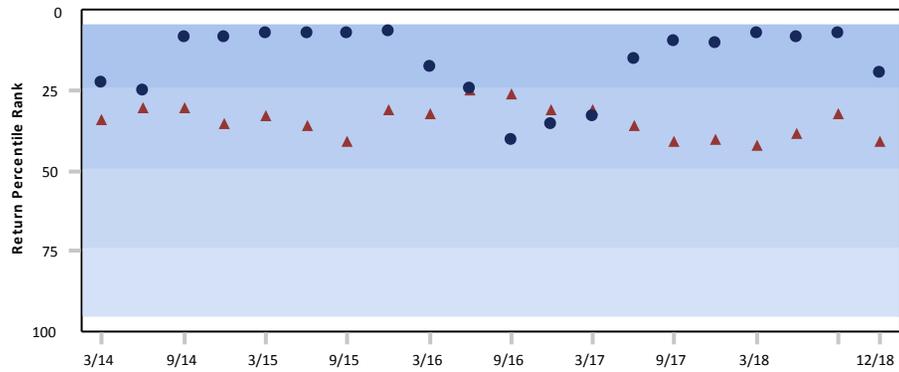


Howard County Retirement Plans

US Equity Composite

December 31, 2018

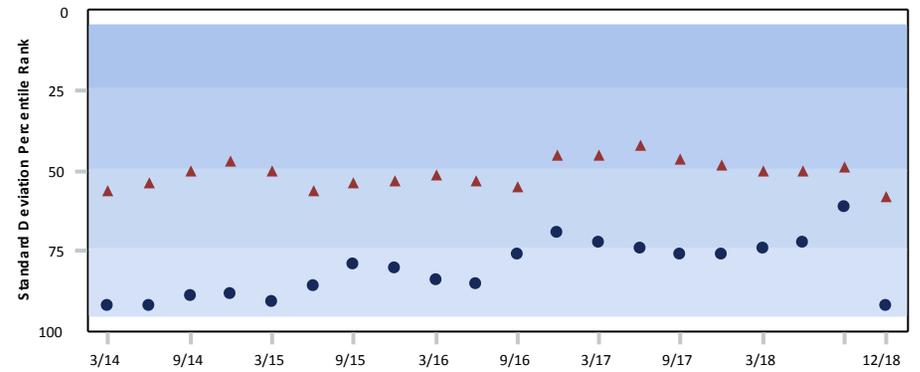
3 Year Rolling Return Rank



● US Equity Composite ▲ Russell 3000 Index

	<u>Total Period</u>	<u>5-25</u> <u>Count</u>	<u>25-Median</u> <u>Count</u>	<u>Median-75</u> <u>Count</u>	<u>75-95</u> <u>Count</u>
● US Equity Composite	20	17 (85%)	3 (15%)	0 (0%)	0 (0%)
▲ Russell 3000 Index	20	1 (5%)	19 (95%)	0 (0%)	0 (0%)

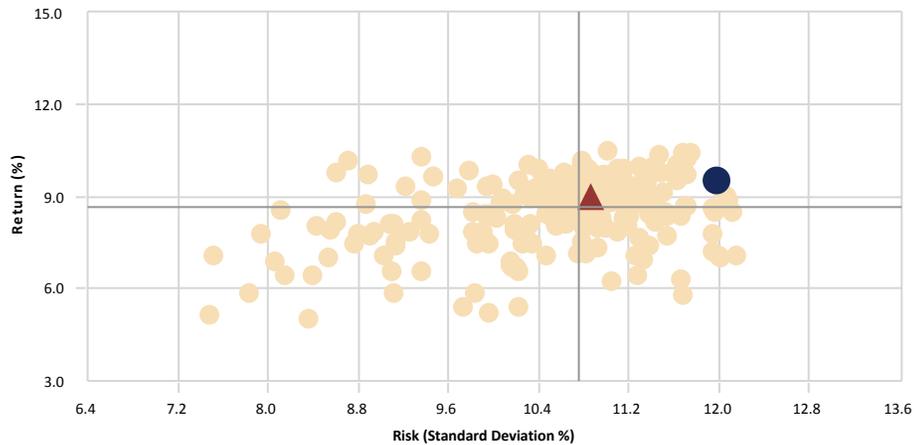
3 Year Rolling Standard Deviation Rank



● US Equity Composite ▲ Russell 3000 Index

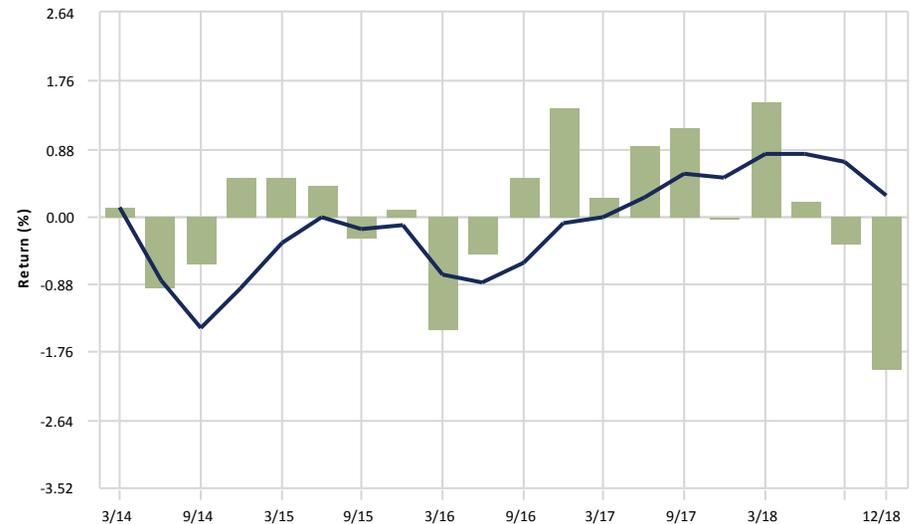
	<u>Total Period</u>	<u>5-25</u> <u>Count</u>	<u>25-Median</u> <u>Count</u>	<u>Median-75</u> <u>Count</u>	<u>75-95</u> <u>Count</u>
● US Equity Composite	20	0 (0%)	0 (0%)	6 (30%)	14 (70%)
▲ Russell 3000 Index	20	0 (0%)	11 (55%)	9 (45%)	0 (0%)

Risk vs. Return (01/01/16 - 12/31/18)



	<u>Return</u>	<u>Standard</u> <u>Deviation</u>
● US Equity Composite	9.54	11.98
▲ Russell 3000 Index	8.97	10.86
— Median	8.70	10.75

Relative Performance vs. Russell 3000 Index



— Cumulative Annualized Relative Performance ■ Over/Under Performance

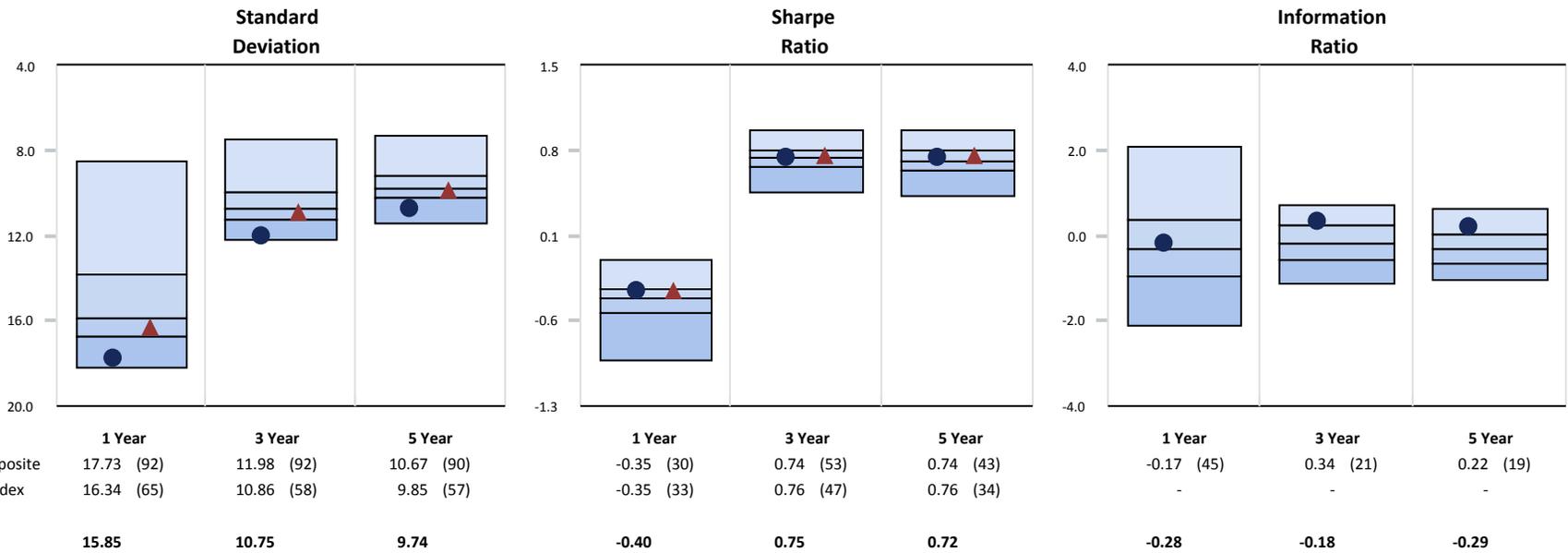


Howard County Retirement Plans

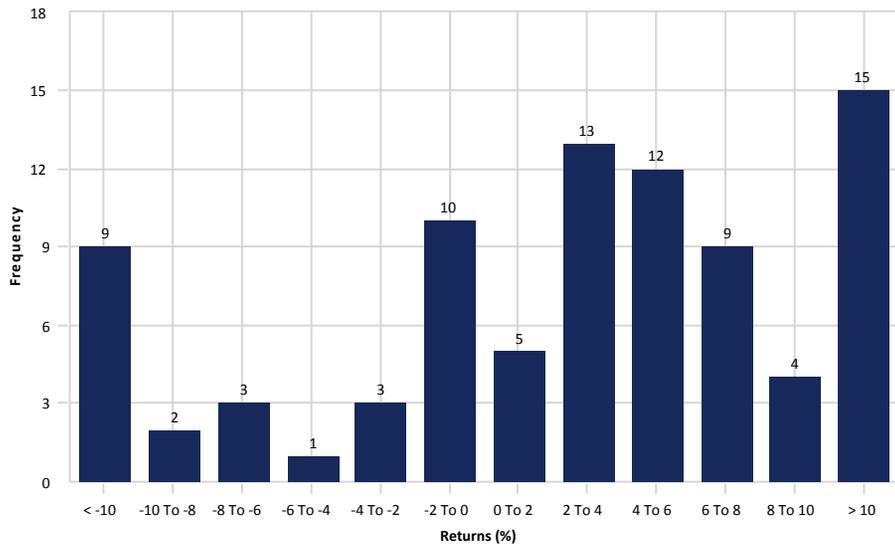
US Equity Composite

December 31, 2018

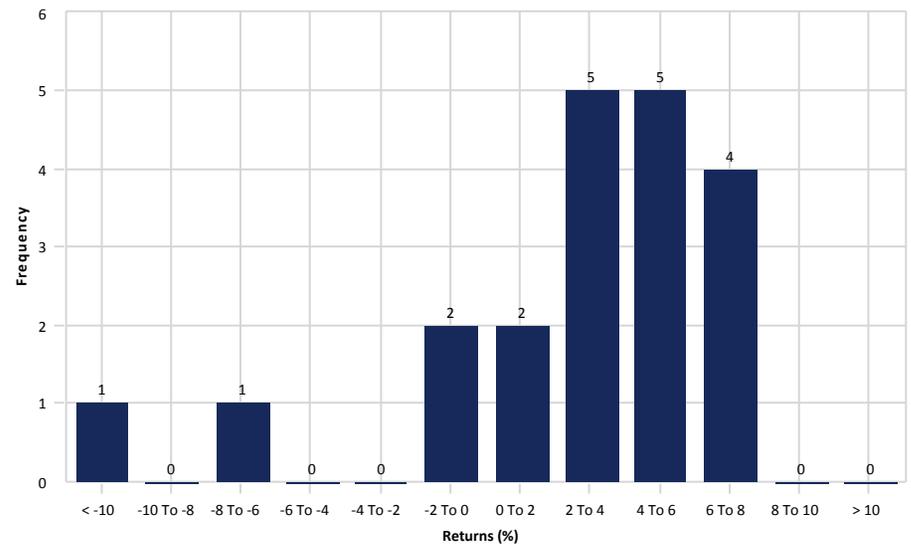
Peer Group Analysis: All Master Trust-US Equity Segment



Inception - Quarterly Distribution of Returns



5 Years - Quarterly Distribution of Returns



International Equity

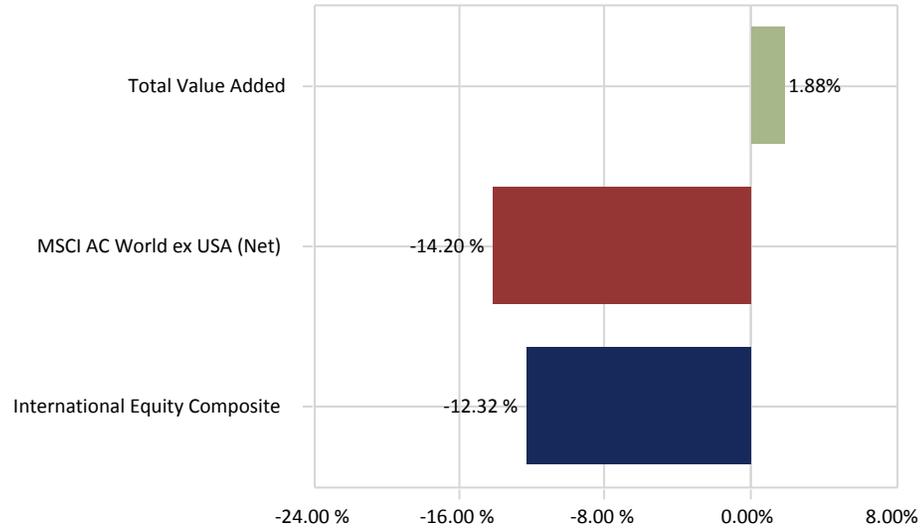


Howard County Retirement Plans

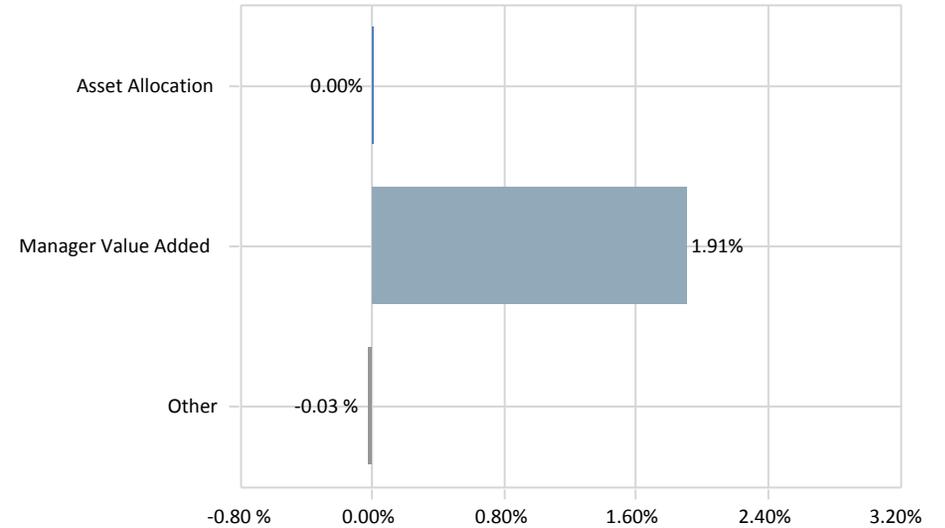
International Equity Composite Attribution

Year To Date Ending December 31, 2018

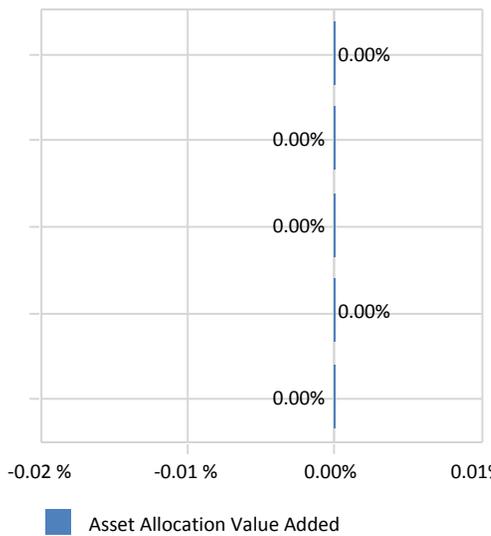
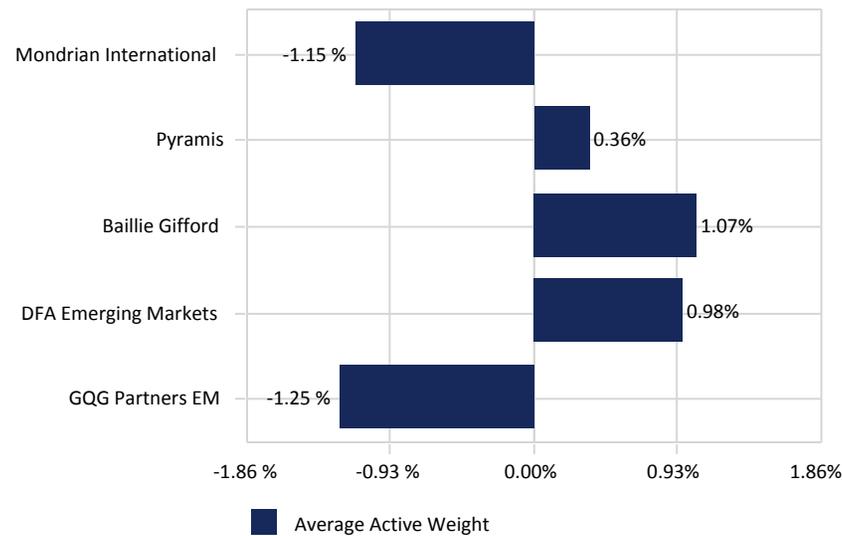
Total Fund Performance



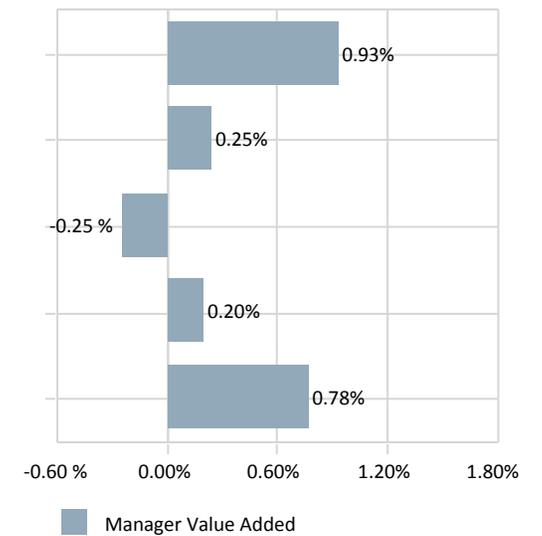
Total Value Added:1.88%



Total Asset Allocation:0.00%



Total Manager Value Added:1.91%



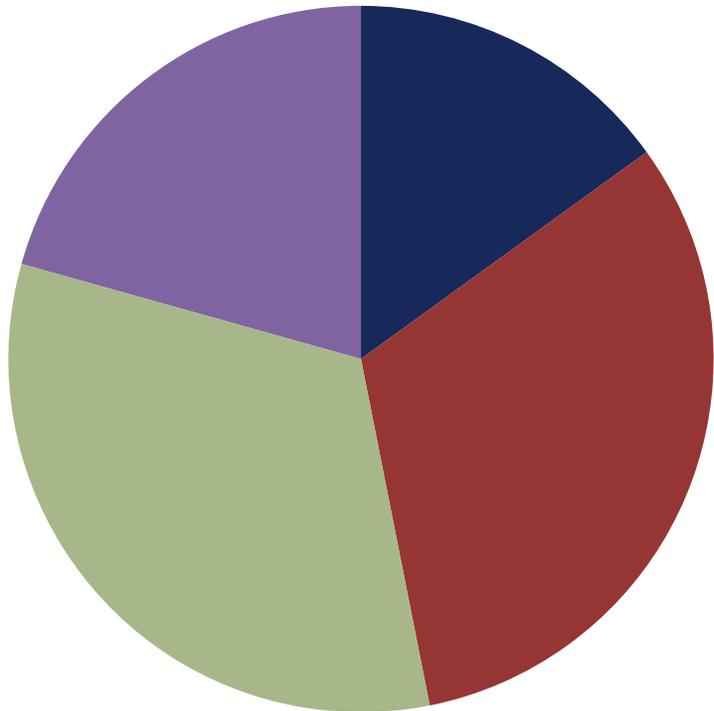
Howard County Retirement Plans

International Equity Composite vs. MSCI AC World ex USA (Net)

December 31, 2018

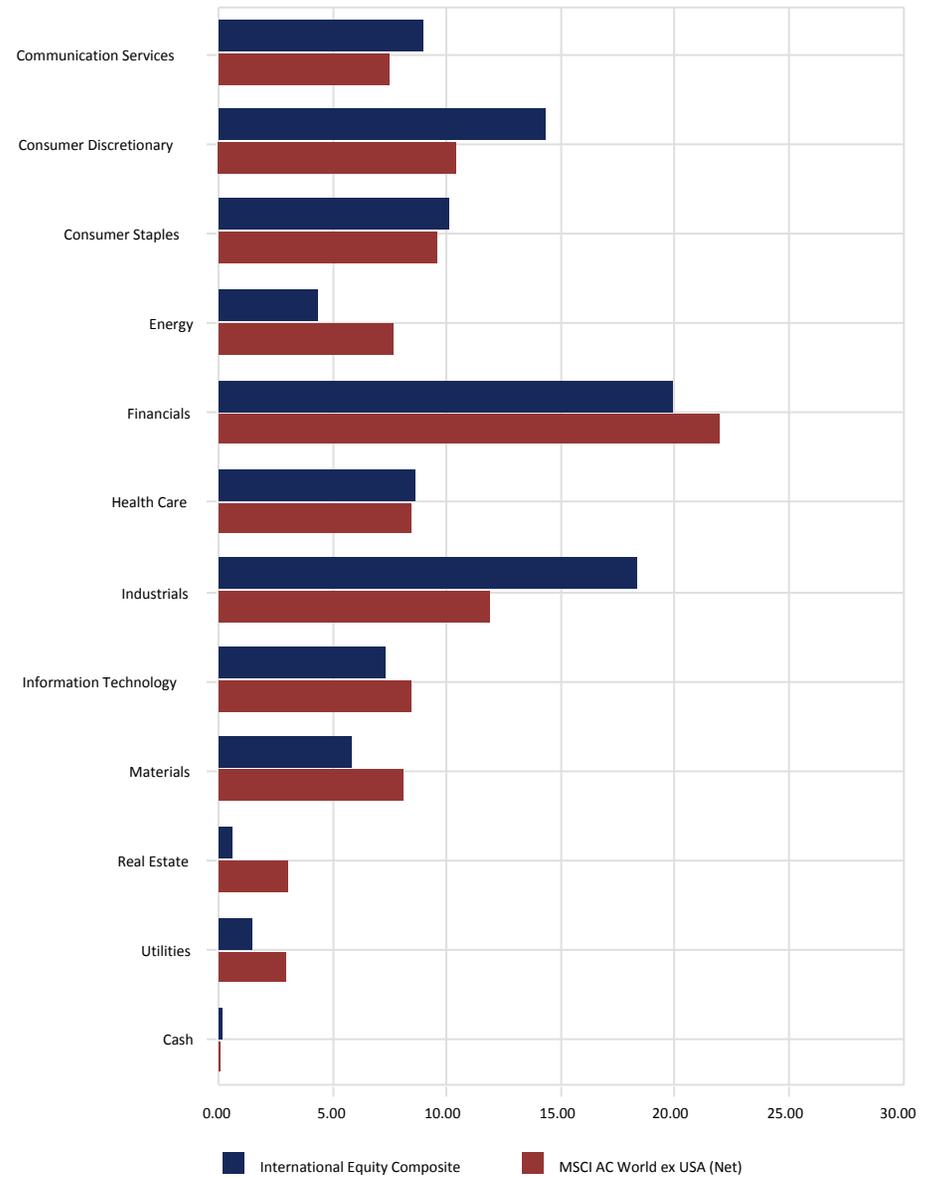
Manager Allocation

December 31, 2018 : \$172,535,828



	Market Value (\$)	Allocation (%)
DFA Emerging Markets	25,940,520	15.03
Mondrian International	54,937,682	31.84
Baillie Gifford	56,016,811	32.47
GQG Partners EM	35,640,815	20.66

Sector Allocation - Holdings Based

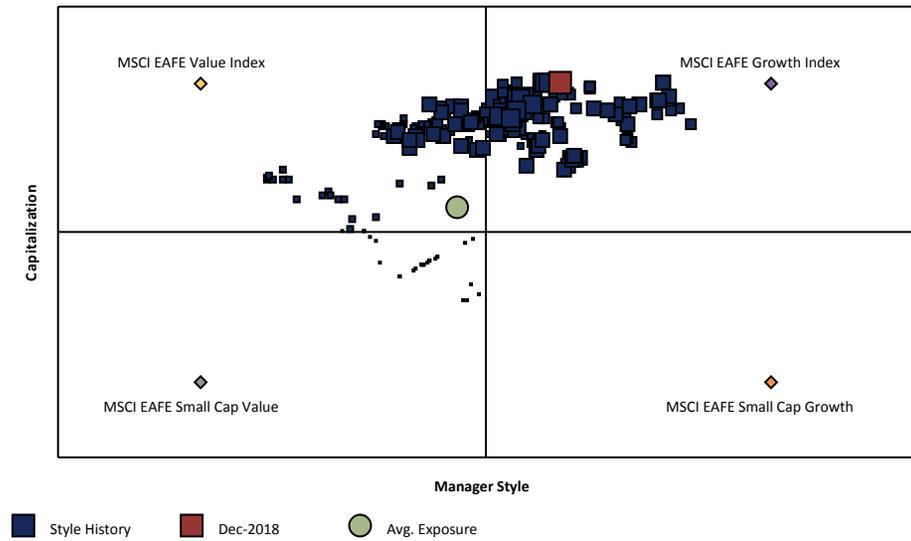


Howard County Retirement Plans

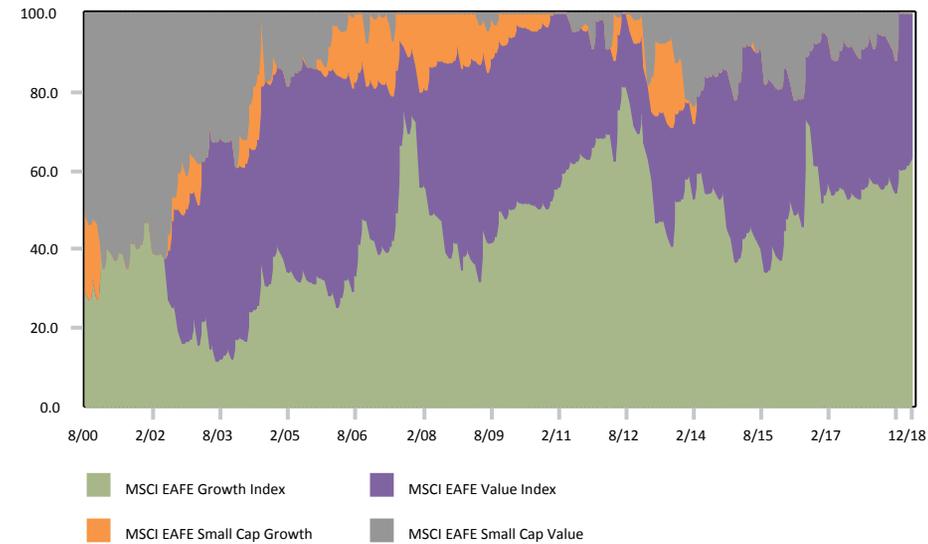
International Equity Composite vs. MSCI AC World ex USA (Net)

December 31, 2018

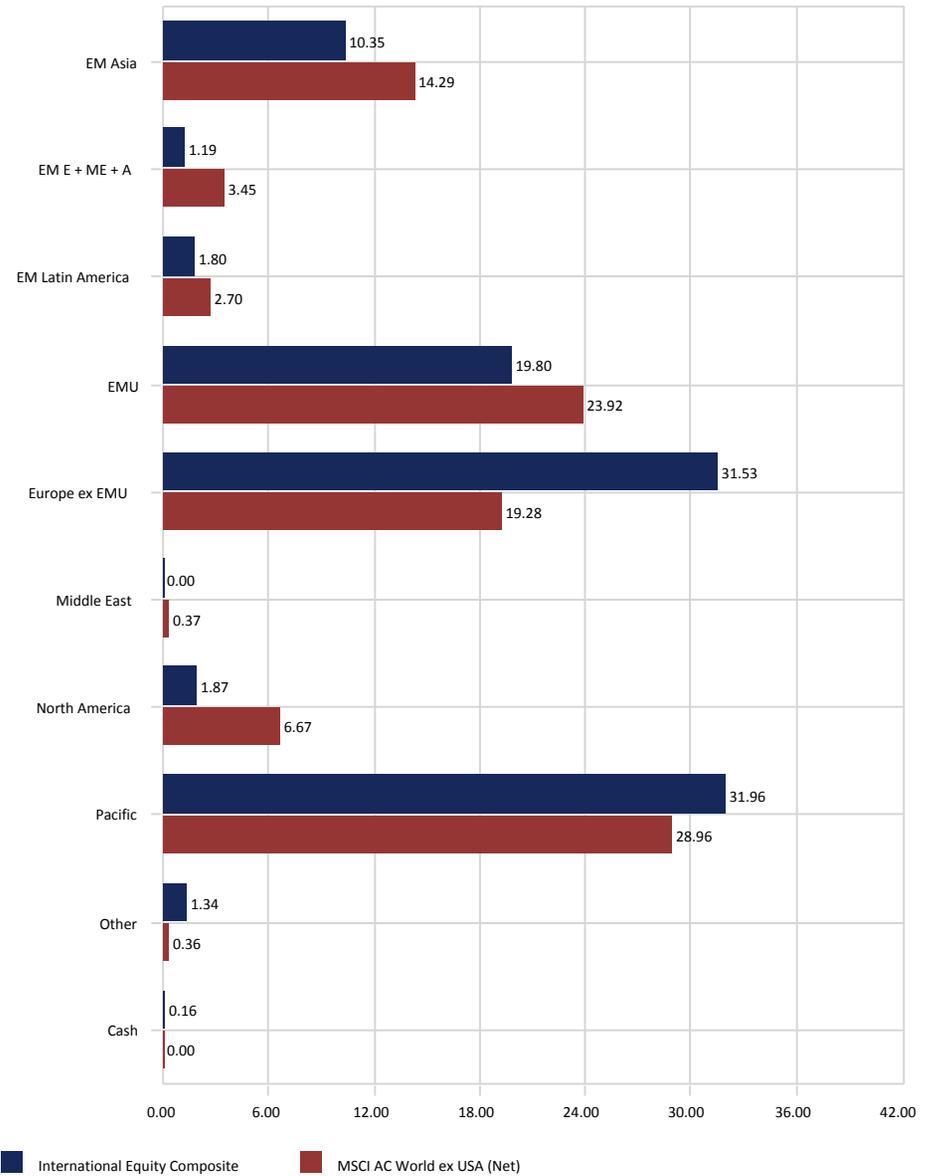
Style Analysis - Returns Based



3 Year Style Analysis



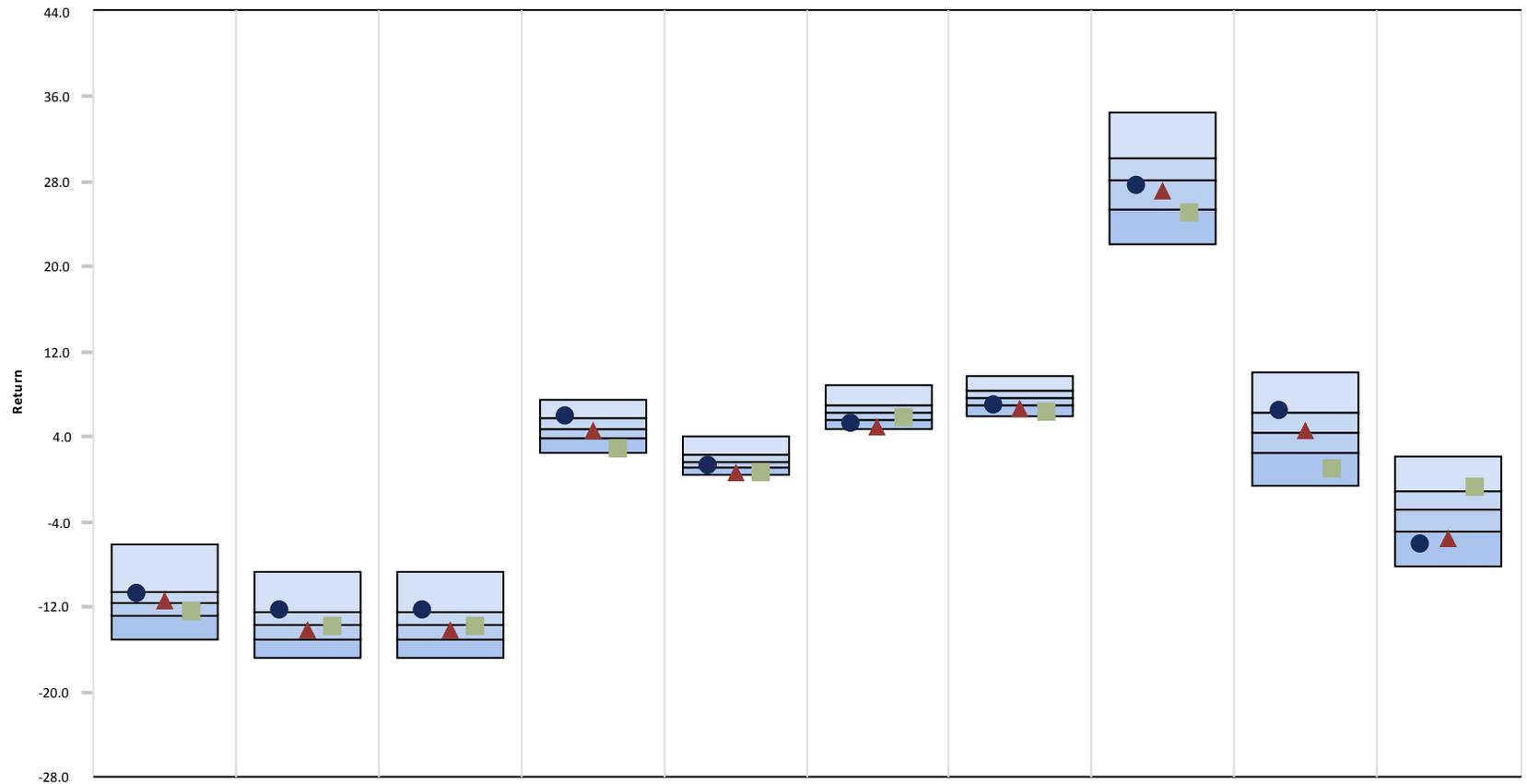
Region Allocation - Holdings Based



Howard County Retirement Plans

All Master Trust - International Equity Peer Group Return

December 31, 2018



	<u>3 Month</u>	<u>CYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>7 Year</u>	<u>10 Year</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>
● International Equity Composite	-10.85 (31)	-12.32 (23)	-12.32 (23)	5.98 (22)	1.28 (68)	5.32 (82)	7.02 (77)	27.55 (57)	6.45 (25)	-6.13 (91)
▲ MSCI AC World ex USA (Net)	-11.46 (43)	-14.20 (60)	-14.20 (60)	4.48 (65)	0.68 (91)	4.85 (93)	6.57 (88)	27.19 (63)	4.50 (49)	-5.66 (86)
■ MSCI EAFE Index (Net)	-12.54 (71)	-13.79 (51)	-13.79 (51)	2.87 (93)	0.53 (94)	5.75 (72)	6.32 (92)	25.03 (80)	1.00 (87)	-0.81 (22)
5th Percentile	-6.12	-8.72	-8.72	7.51	3.99	8.79	9.74	34.55	10.03	2.23
1st Quartile	-10.55	-12.49	-12.49	5.80	2.33	6.96	8.26	30.14	6.23	-1.12
Median	-11.69	-13.77	-13.77	4.79	1.65	6.28	7.64	28.18	4.40	-2.90
3rd Quartile	-12.78	-15.04	-15.04	3.88	1.09	5.58	7.05	25.44	2.50	-4.89
95th Percentile	-15.00	-16.86	-16.86	2.50	0.40	4.66	5.87	22.08	-0.57	-8.27
Population	297	277	277	252	220	180	122	277	257	177

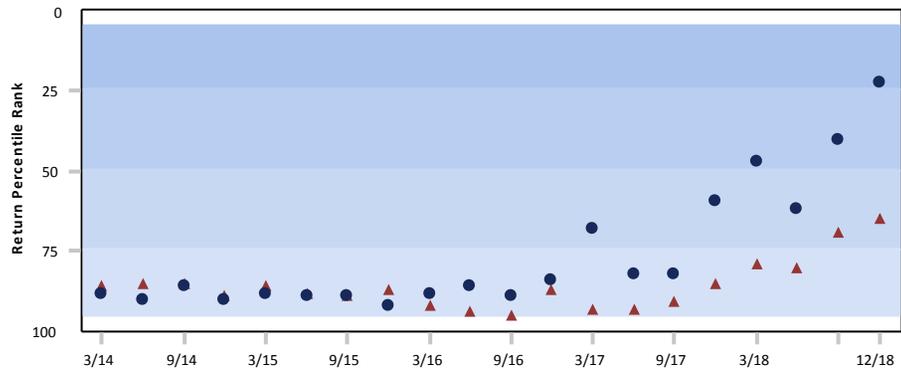


Howard County Retirement Plans

International Equity Composite

December 31, 2018

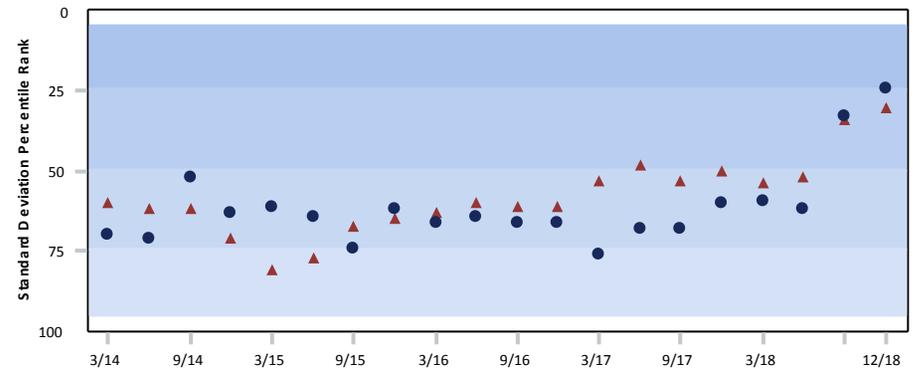
3 Year Rolling Return Rank



● International Equity Composite ▲ MSCI AC World ex USA (Net)

	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
● International Equity Composite	20	1 (5%)	2 (10%)	3 (15%)	14 (70%)
▲ MSCI AC World ex USA (Net)	20	0 (0%)	0 (0%)	2 (10%)	18 (90%)

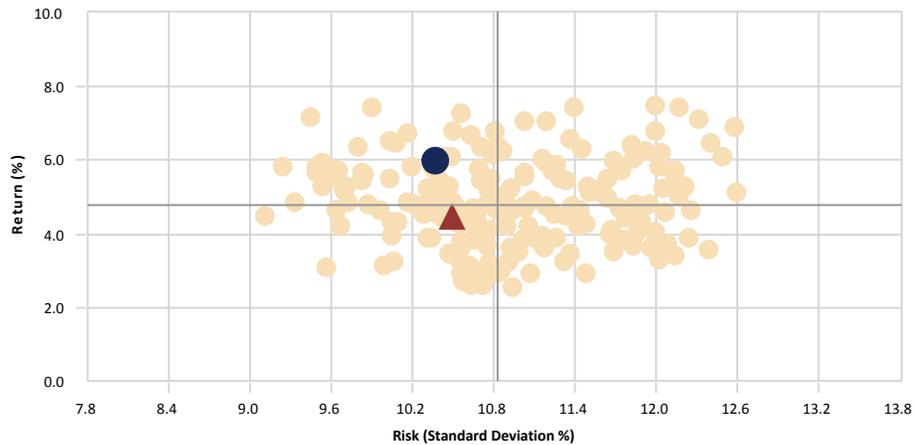
3 Year Rolling Standard Deviation Rank



● International Equity Composite ▲ MSCI AC World ex USA (Net)

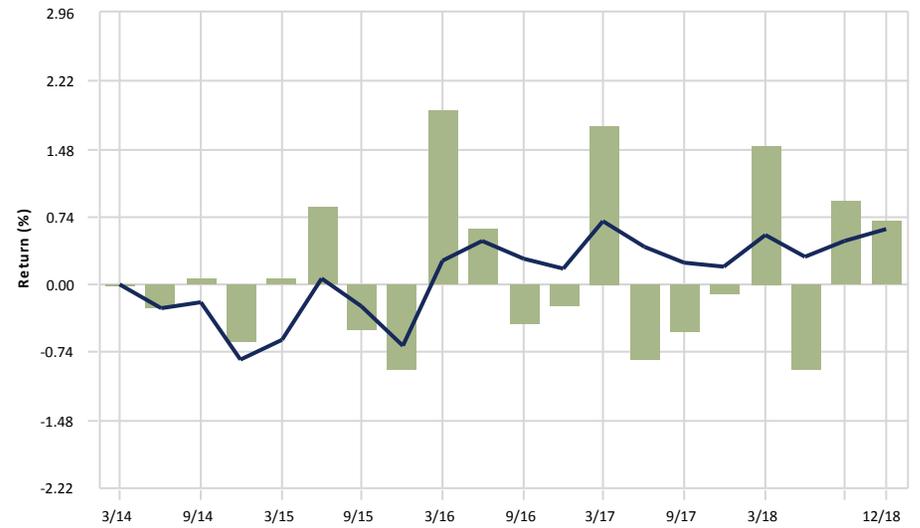
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
● International Equity Composite	20	1 (5%)	1 (5%)	17 (85%)	1 (5%)
▲ MSCI AC World ex USA (Net)	20	0 (0%)	4 (20%)	14 (70%)	2 (10%)

Risk vs. Return (01/01/16 - 12/31/18)



	Return	Standard Deviation
● International Equity Composite	5.98	10.37
▲ MSCI AC World ex USA (Net)	4.48	10.49
— Median	4.79	10.83

Relative Performance vs. MSCI AC World ex USA (Net)



— Cumulative Annualized Relative Performance ■ Over/Under Performance

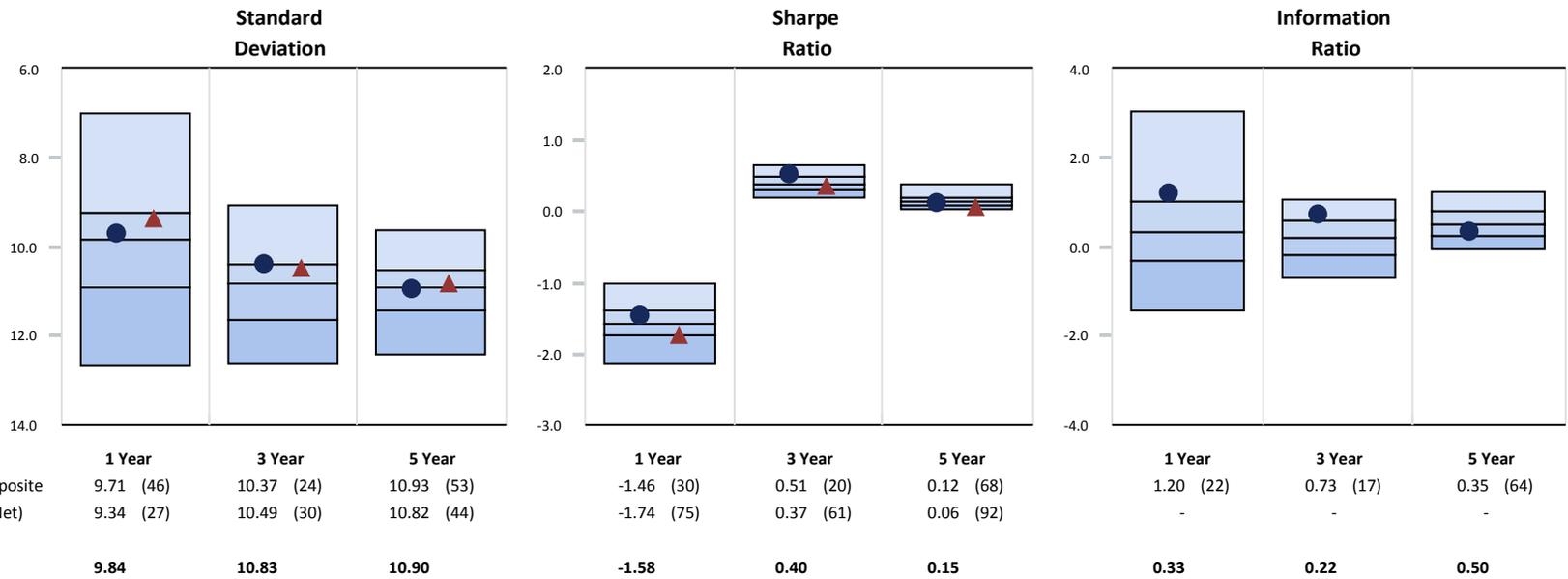


Howard County Retirement Plans

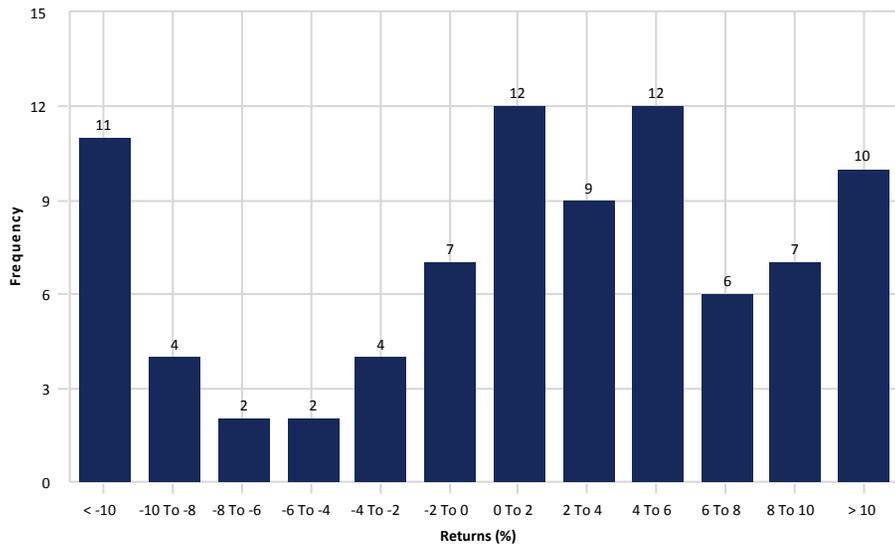
International Equity Composite

December 31, 2018

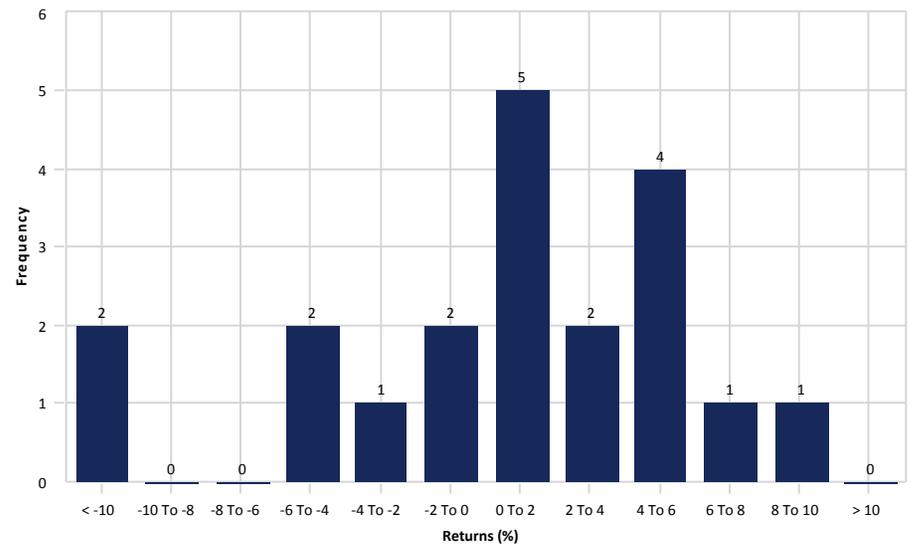
Peer Group Analysis: All Master Trust-Intl. Equity Segment



Inception - Quarterly Distribution of Returns



5 Years - Quarterly Distribution of Returns



Fixed Income

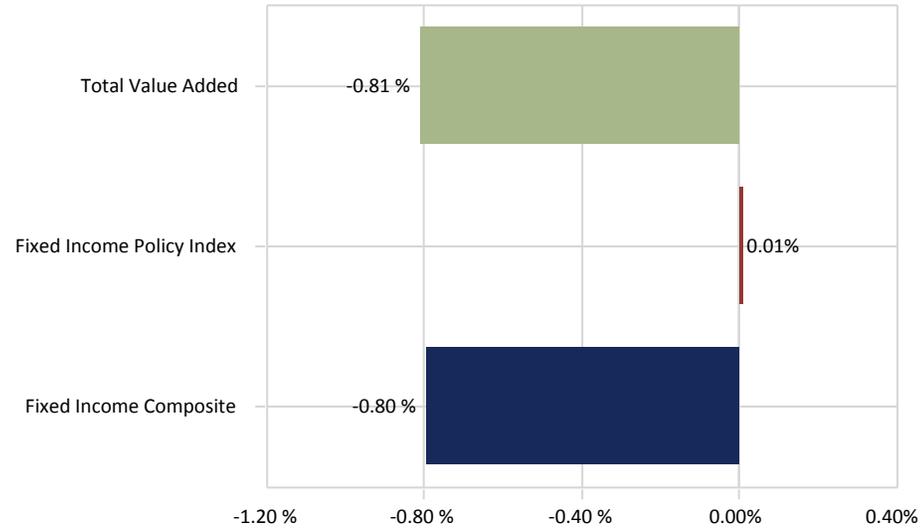


Howard County Retirement Plans

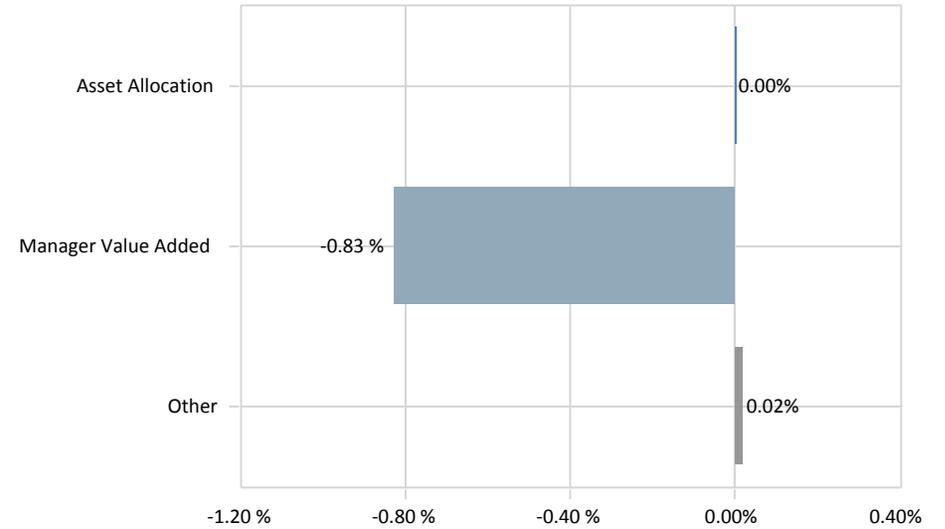
Fixed Income Composite Attribution

Year To Date Ending December 31, 2018

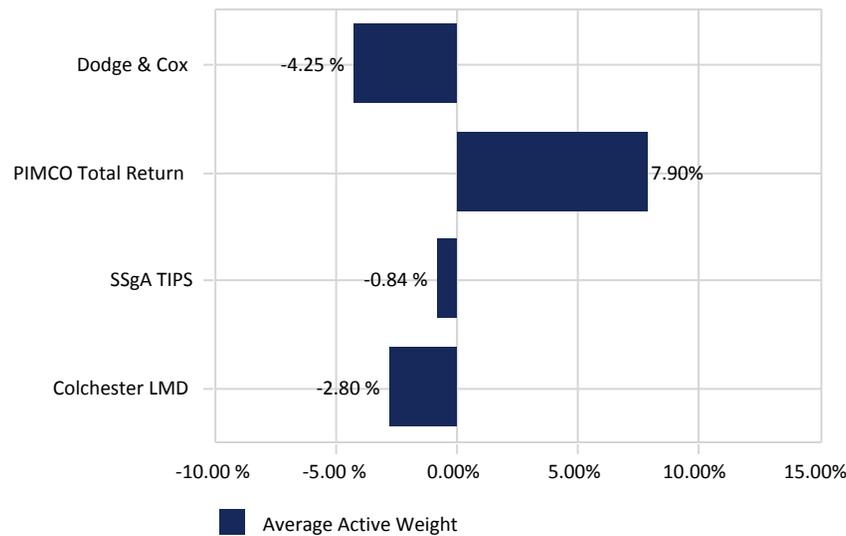
Total Fund Performance



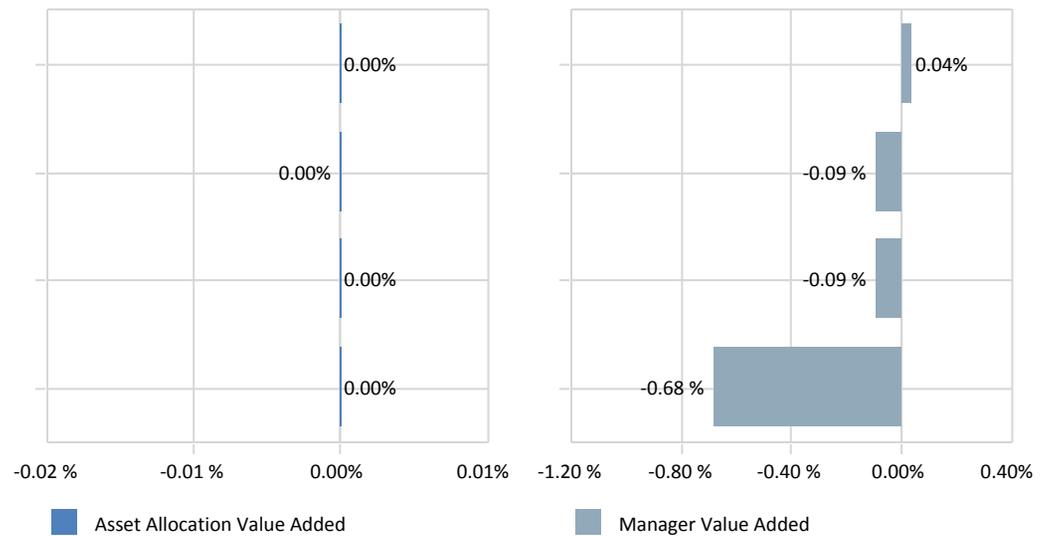
Total Value Added:-0.81 %



Total Asset Allocation:0.00%



Total Manager Value Added:-0.83 %



■ Average Active Weight

■ Asset Allocation Value Added

■ Manager Value Added



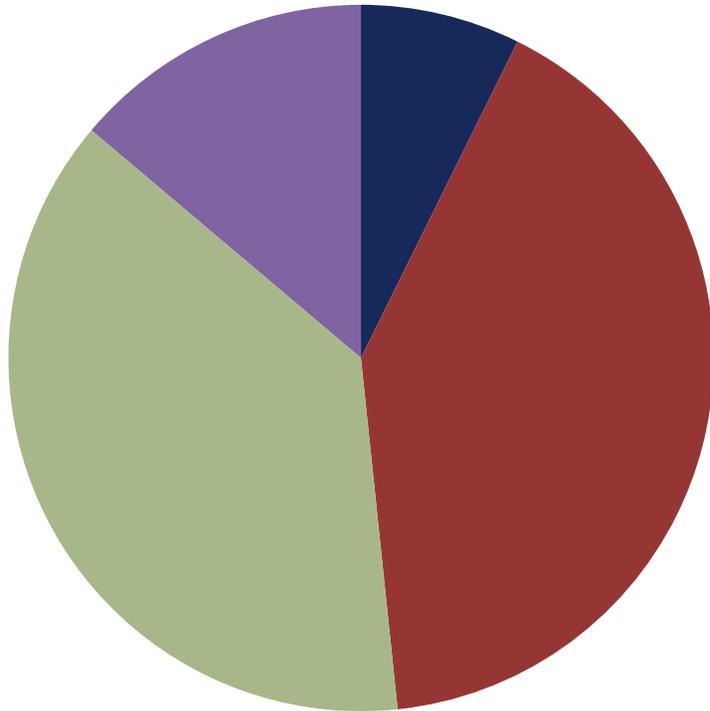
Howard County Retirement Plans

Fixed Income Composite

December 31, 2018

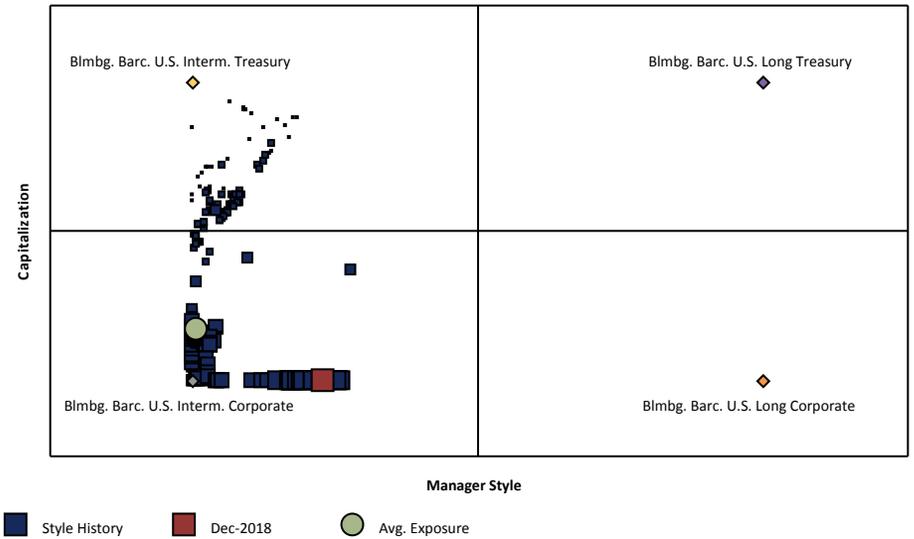
Manager Allocation

December 31, 2018 : \$290,071,704

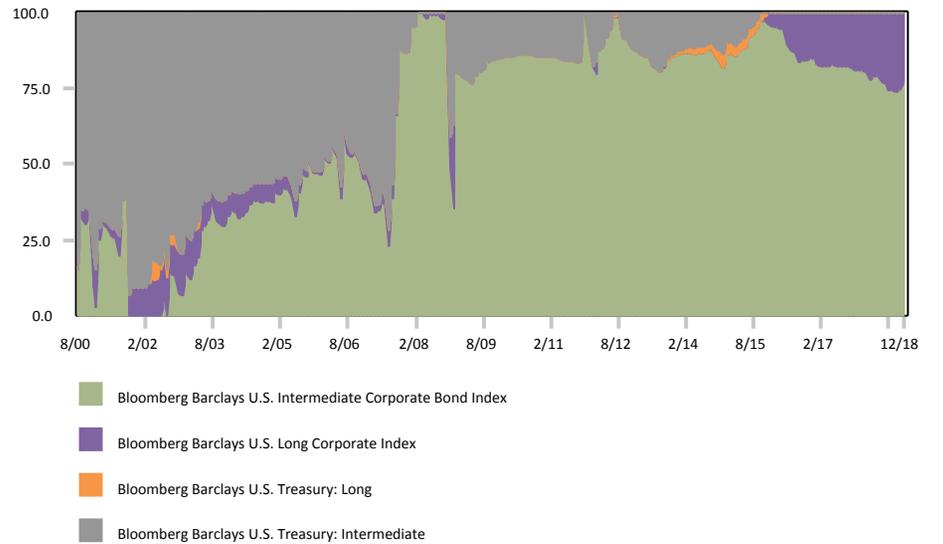


	Market Value (\$)	Allocation (%)
State Street Global Advisors TIPS	21,239,235	7.32
Dodge & Cox	118,979,336	41.02
PIMCO Total Return	109,680,564	37.81
Colchester LMD	40,172,569	13.85

Style Analysis - Returns Based



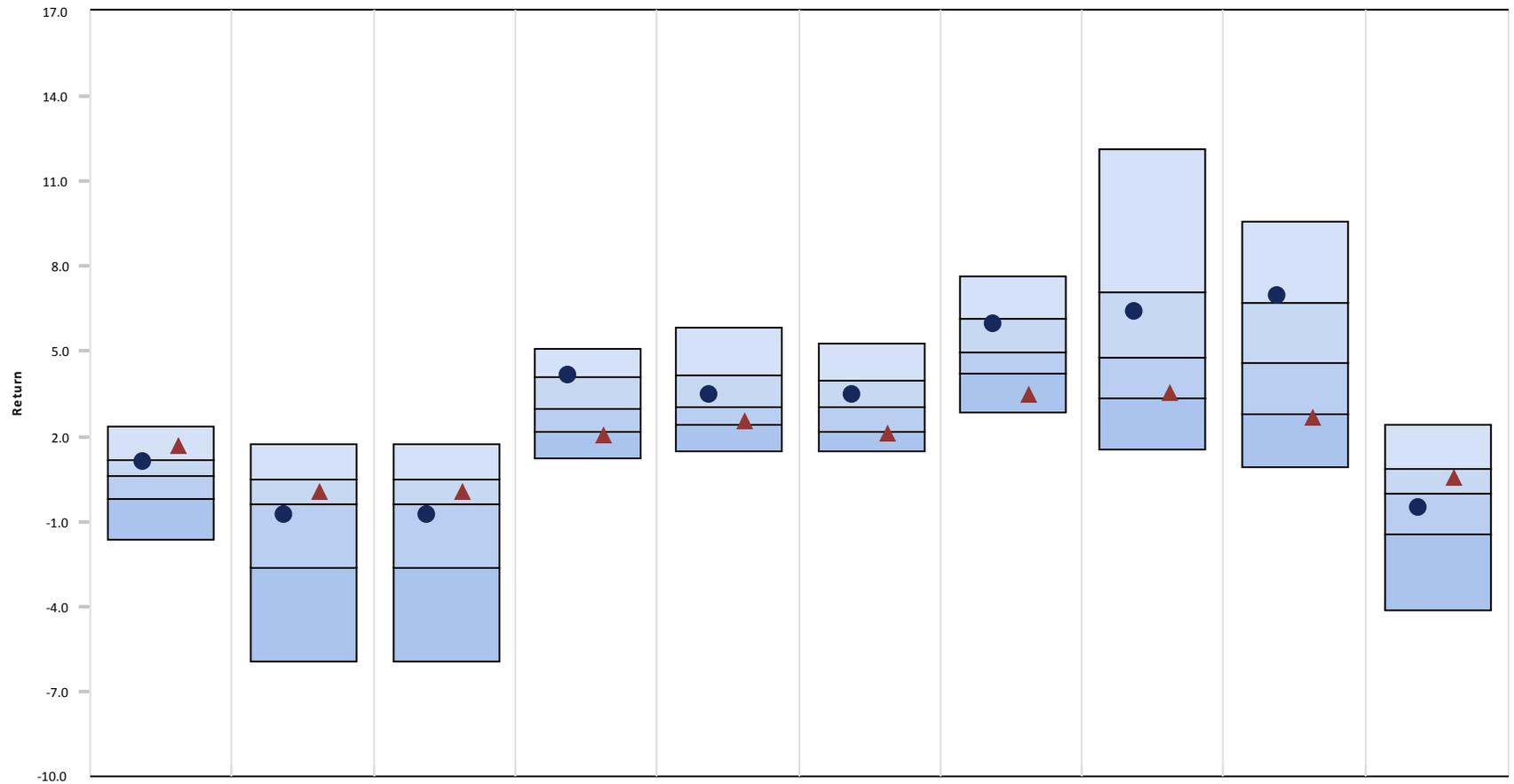
3 Year Style Analysis



Howard County Retirement Plans

All Master Trust - US Fixed Income Peer Group Return

December 31, 2018



	<u>3 Month</u>	<u>CYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>7 Year</u>	<u>10 Year</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>
● Fixed Income Composite	1.12 (27)	-0.80 (59)	-0.80 (59)	4.14 (23)	3.47 (38)	3.48 (40)	5.98 (31)	6.43 (30)	6.97 (23)	-0.53 (62)
▲ Fixed Income Policy Index	1.64 (10)	0.01 (36)	0.01 (36)	2.06 (83)	2.52 (68)	2.10 (78)	3.48 (87)	3.54 (69)	2.65 (78)	0.55 (33)
5th Percentile	2.37	1.73	1.73	5.10	5.81	5.26	7.64	12.11	9.60	2.40
1st Quartile	1.19	0.47	0.47	4.07	4.17	3.95	6.14	7.07	6.69	0.86
Median	0.62	-0.39	-0.39	2.96	3.01	3.01	4.98	4.79	4.60	-0.04
3rd Quartile	-0.23	-2.64	-2.64	2.18	2.41	2.16	4.20	3.36	2.81	-1.44
95th Percentile	-1.67	-5.97	-5.97	1.19	1.50	1.49	2.83	1.52	0.94	-4.13
Population	301	288	288	270	240	209	138	301	281	200

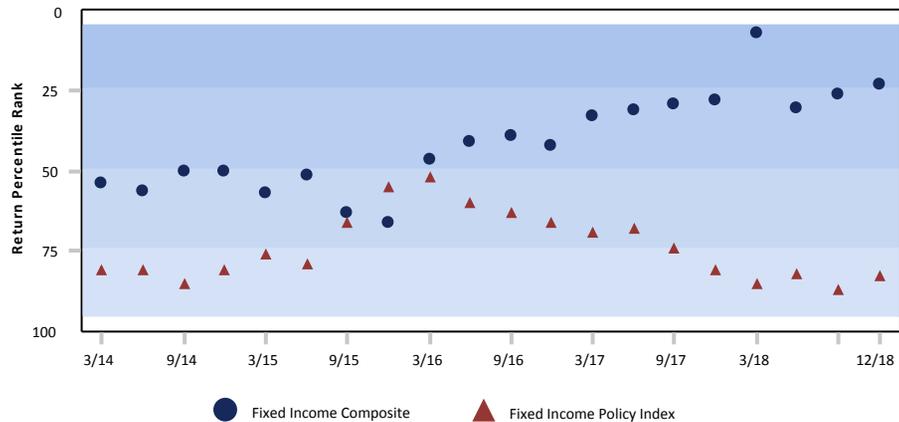


Howard County Retirement Plans

Fixed Income Composite

December 31, 2018

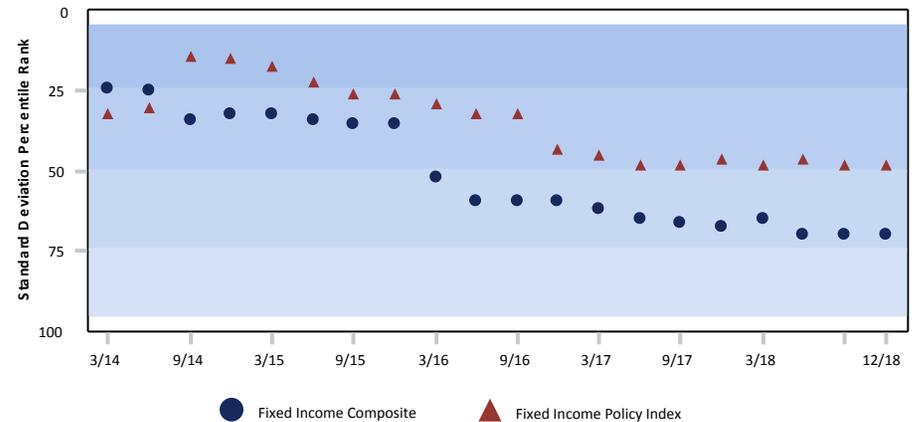
3 Year Rolling Return Rank



● Fixed Income Composite ▲ Fixed Income Policy Index

	<u>Total Period</u>	<u>5-25</u> <u>Count</u>	<u>25-Median</u> <u>Count</u>	<u>Median-75</u> <u>Count</u>	<u>75-95</u> <u>Count</u>
● Fixed Income Composite	20	2 (10%)	12 (60%)	6 (30%)	0 (0%)
▲ Fixed Income Policy Index	20	0 (0%)	0 (0%)	9 (45%)	11 (55%)

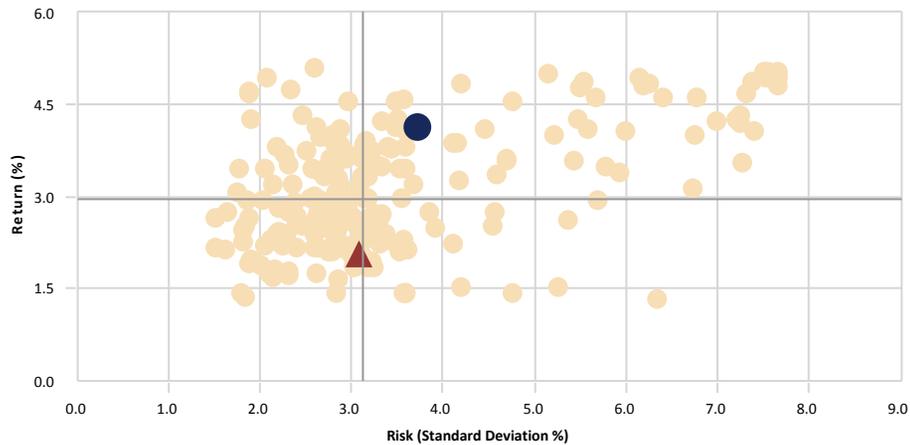
3 Year Rolling Standard Deviation Rank



● Fixed Income Composite ▲ Fixed Income Policy Index

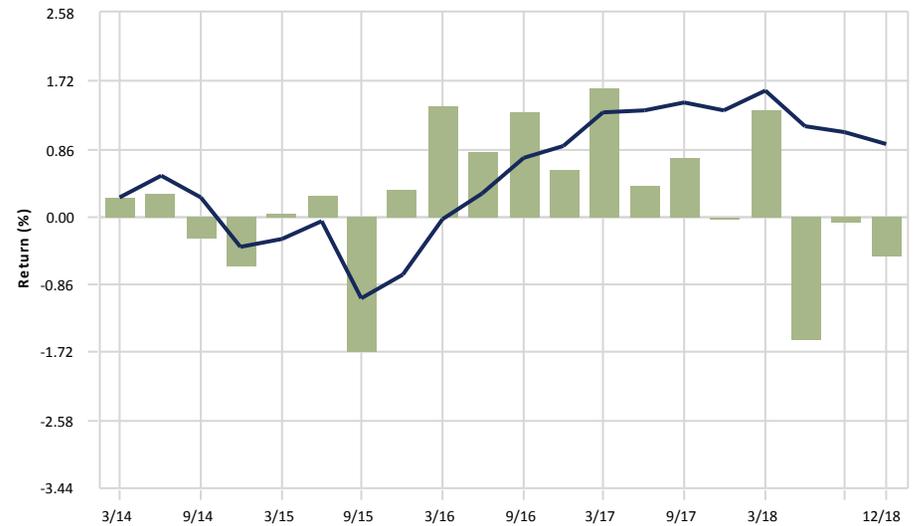
	<u>Total Period</u>	<u>5-25</u> <u>Count</u>	<u>25-Median</u> <u>Count</u>	<u>Median-75</u> <u>Count</u>	<u>75-95</u> <u>Count</u>
● Fixed Income Composite	20	2 (10%)	6 (30%)	12 (60%)	0 (0%)
▲ Fixed Income Policy Index	20	4 (20%)	16 (80%)	0 (0%)	0 (0%)

Risk vs. Return (01/01/16 - 12/31/18)



	<u>Return</u>	<u>Standard</u> <u>Deviation</u>
● Fixed Income Composite	4.14	3.73
▲ Fixed Income Policy Index	2.06	3.07
— Median	2.96	3.11

Relative Performance vs. Fixed Income Policy Index



— Cumulative Annualized Relative Performance ■ Over/Under Performance

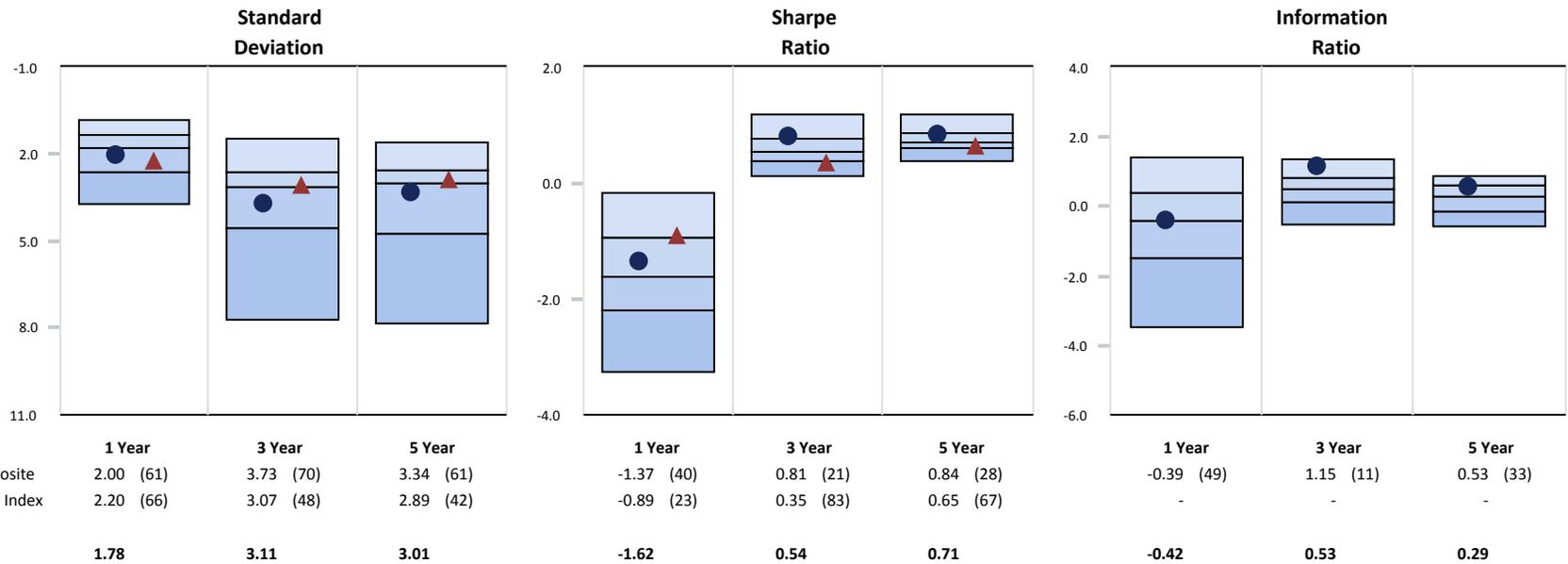


Howard County Retirement Plans

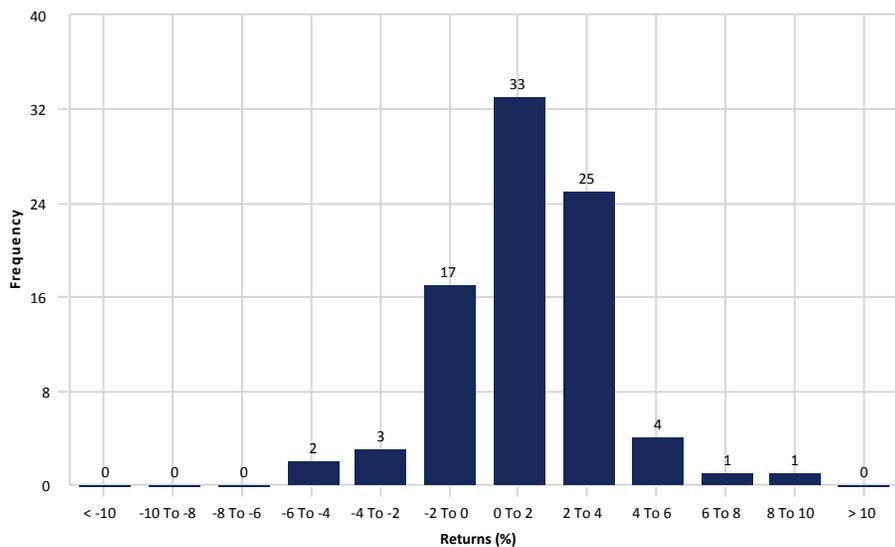
Fixed Income Composite

December 31, 2018

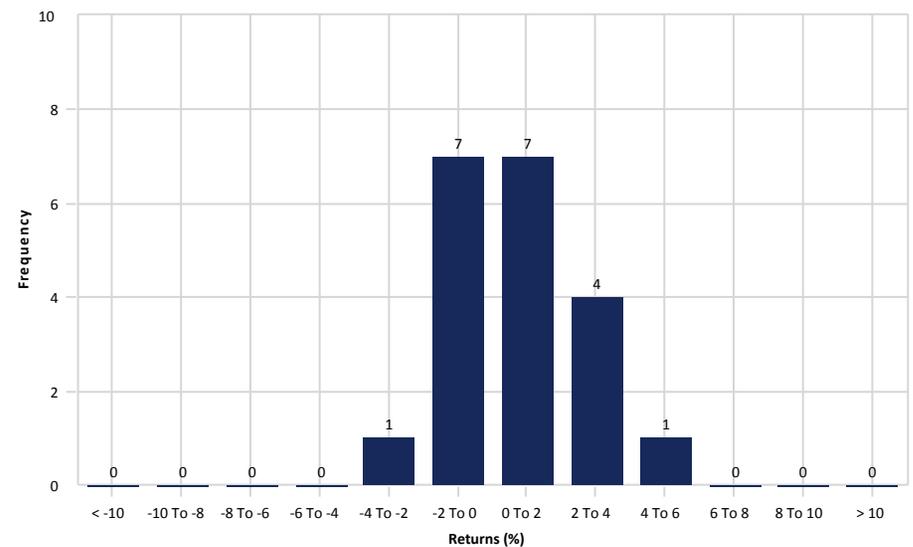
Peer Group Analysis: All Master Trust-US Fixed Income Segment



Inception - Quarterly Distribution of Returns



5 Years - Quarterly Distribution of Returns



Real Assets



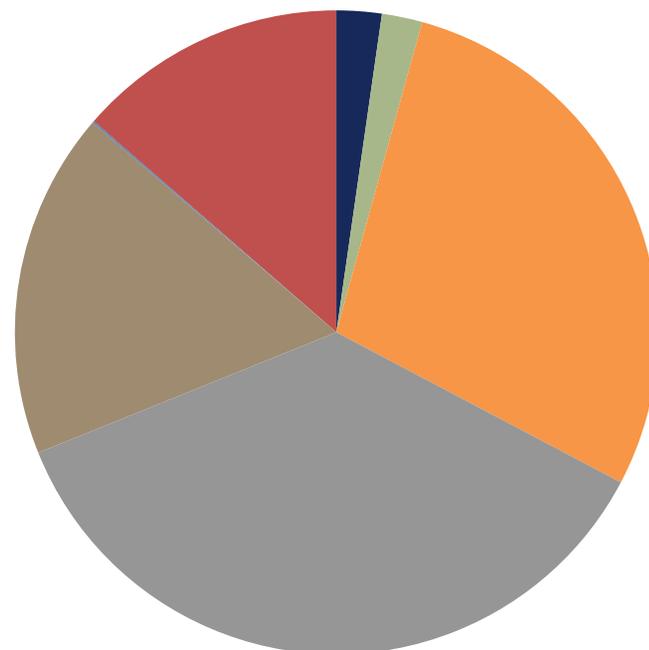
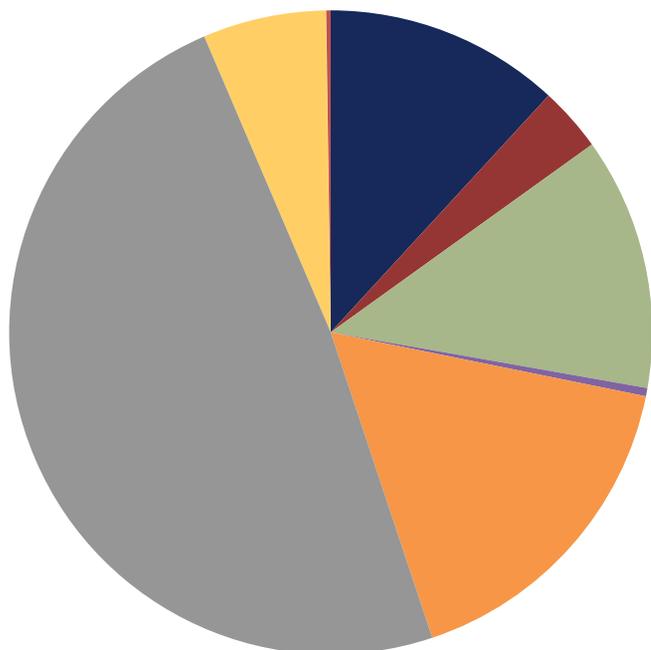
Real Assets Manager Allocation Chart

Asset Allocation By Manager

December 31, 2018

December 31, 2018 : \$36,544,585

December 31, 2016 : \$37,773,341



	Market Value (\$)	Allocation (%)
Aether Real Assets IV	4,327,998	11.84
Aether Real Assets V	1,184,702	3.24
Commonfund Natural Resources X	4,637,731	12.69
Commonfund Natural Resources XI	150,000	0.41
Partners Group Global RE 2011	6,102,618	16.70
Partners Group Global RE 2014	17,788,185	48.68
Partners Group Global RE 2017	2,265,856	6.20
TA Realty Associates IX	5,627	0.02
TA Realty Associates VII	-	0.00
TA Realty Associates VIII	81,867	0.22

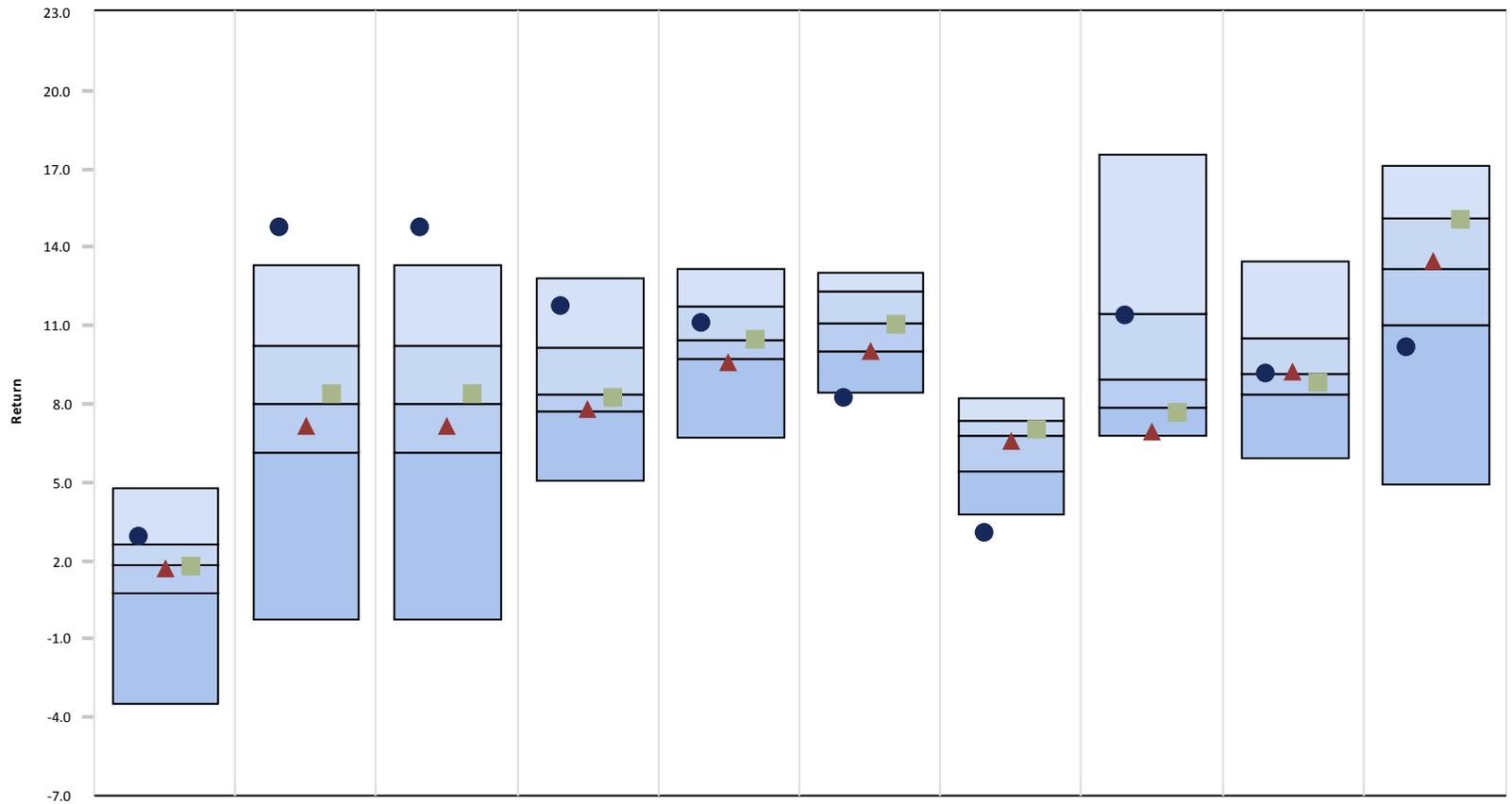
	Market Value (\$)	Allocation (%)
Aether Real Assets IV	856,098	2.27
Aether Real Assets V	-	0.00
Commonfund Natural Resources X	767,376	2.03
Commonfund Natural Resources XI	-	0.00
Partners Group Global RE 2011	10,736,621	28.42
Partners Group Global RE 2014	13,665,700	36.18
Partners Group Global RE 2017	-	0.00
TA Realty Associates IX	6,572,390	17.40
TA Realty Associates VII	31,729	0.08
TA Realty Associates VIII	5,143,428	13.62



Howard County Retirement Plans

All Master Trust - Real Estate Peer Group Return

December 31, 2018



	<u>3 Month</u>	<u>CYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>7 Year</u>	<u>10 Year</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>
● Real Assets Composite	2.93 (16)	14.74 (2)	14.74 (2)	11.73 (9)	11.09 (40)	8.21 (98)	3.07 (100)	11.40 (26)	9.13 (52)	10.12 (81)
▲ NCREIF Property Index [3 Month Lag]	1.67 (57)	7.16 (72)	7.16 (72)	7.75 (70)	9.57 (79)	9.98 (77)	6.54 (55)	6.89 (93)	9.22 (50)	13.48 (44)
■ NCREIF Fund Index-ODCE (VW) [M]	1.76 (54)	8.35 (45)	8.35 (45)	8.24 (53)	10.41 (51)	10.99 (61)	7.00 (44)	7.62 (78)	8.77 (57)	15.02 (26)
5th Percentile	4.77	13.33	13.33	12.81	13.17	13.00	8.20	17.55	13.44	17.08
1st Quartile	2.64	10.23	10.23	10.15	11.72	12.32	7.34	11.46	10.49	15.08
Median	1.82	8.03	8.03	8.35	10.44	11.11	6.76	8.92	9.18	13.18
3rd Quartile	0.73	6.12	6.12	7.71	9.74	10.01	5.44	7.84	8.33	10.99
95th Percentile	-3.47	-0.26	-0.26	5.05	6.72	8.45	3.74	6.81	5.94	4.89
Population	138	92	92	61	47	34	22	81	65	42



Howard County Retirement Plans

Real Assets Summary of Partnerships*

December 31, 2018

Partnerships	Vintage Year	Investment Strategy	Capital Commitment (\$)	Drawn Down (\$)	Distributed (\$)	Market Value (\$,1)	IRR (% ¹)	TVPI Multiple (1, 2)	Valuation Date (1)
Real Asset Partnerships									
TA Realty Associates VIII	2006	Real Estate - Value Added	10,000,000	10,000,000	9,854,909	81,867	-0.07	0.99	12/31/2018
TA Realty Associates IX	2008	Real Estate - Value Added	10,000,000	10,000,000	16,140,494	5,627	10.72	1.62	12/31/2018
Partners Group Global Real Estate 2011(3)	2011	Real Estate - Opportunistic (FOF)	15,000,000	13,351,599	11,268,487	6,102,618	6.41	1.30	12/31/2018
Partners Group Global Real Estate 2014	2013	Real Estate - Opportunistic (FOF)	25,000,000	13,833,263	1,679,104	17,788,185	11.83	1.41	12/31/2018
Partners Group Global RE 2017	2017	Secondaries (FOF)	10,000,000	2,265,856	-	2,265,856	0.00	1.00	12/31/2018
Commonfund Natural Resources X	2015	Natural Resources - Diversified (FOF)	7,500,000	3,923,073	651,504	4,637,731	31.60	1.35	12/31/2018
Commonfund Natural Resources XI	2018	Natural Resources - Diversified (FOF)	7,500,000	150,000	-	150,000	0.00	1.00	12/31/2018
Aether Real Assets IV	2015	Natural Resources - Diversified (FOF)	7,500,000	4,673,444	1,123,551	4,327,998	14.18	1.17	12/31/2018
Aether Real Assets V	2018	Natural Resources - Diversified (FOF)	7,500,000	661,030	-	1,184,702	89.26	1.79	12/31/2018
Total Real Assets (4)			115,000,000	72,806,832	59,773,094	36,544,585	6.69	1.32	12/31/2018

1) Valuations are typically reported on one quarter lag. If the valuation date is earlier than the statement's date, the market value and performance are estimated by rolling forward the latest reported balance to include relevant new cash flows.

2) Total Value to Paid In (TVPI) reflects total realized and unrealized performance.

3) Fund is not USD: Cash flows are in actual USD per the custodian. Market values and remaining commitment are translated using the spot on the valuation date.

4) Total Real Assets include fully realized partnerships.

*Source of performance data is from the Custodial Bank.

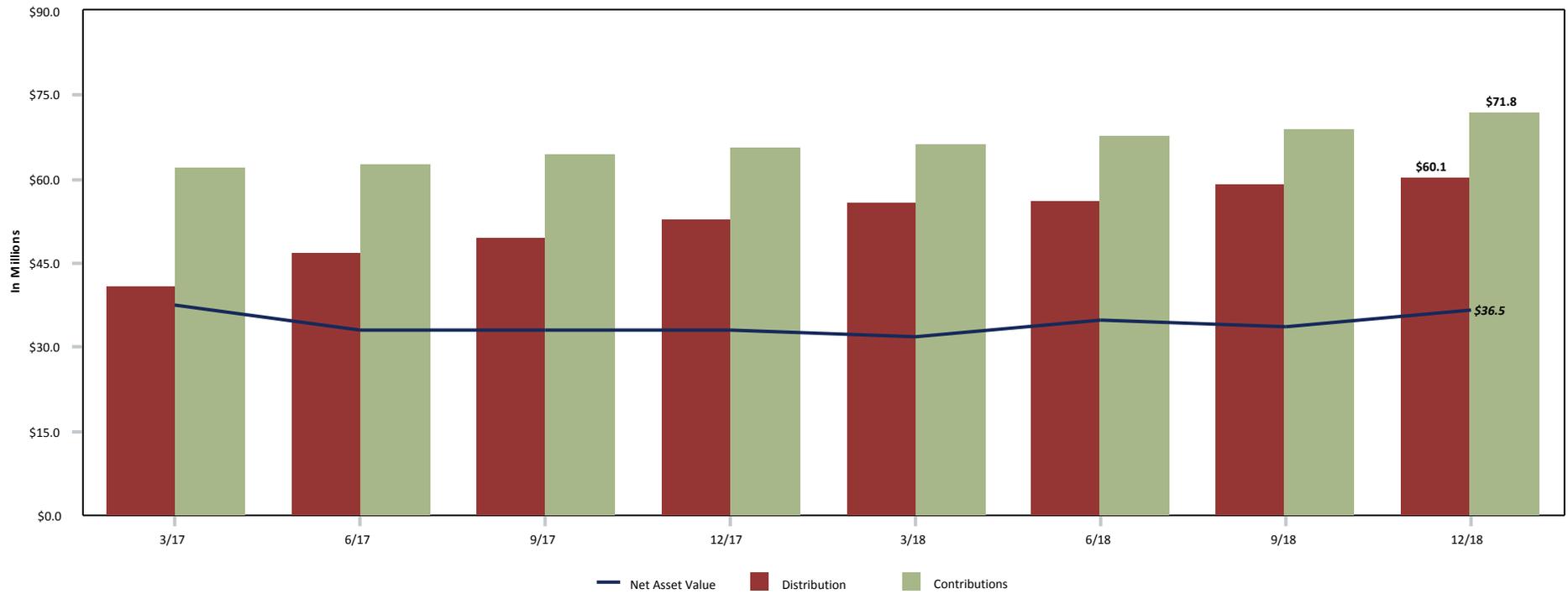


Howard County Retirement Plans

Real Assets Portfolio Summary*

December 31, 2018

Cumulative Cash Flow Analysis



*The Custodial Bank is the source of performance data for liquid real assets.



Alternatives



Howard County Retirement Plans

Private Equity Summary of Partnerships

December 31, 2018

Partnerships	Vintage Year	Investment Strategy	Capital Commitment (\$)	Drawn Down (\$,1)	Distributed (\$,1)	Market Value (\$,1,2)	IRR (%) (3)	TVPI Multiple (3)	Valuation Date
Private Equity									
Siguler Guff Distressed Opps III	2007	Distressed Debt (FOF)	10,000,000	10,220,383	14,259,130	1,769,965	10.51	1.57	12/31/2018
Greenspring IV	2008	Venture Capital (FOF)	4,000,000	4,092,217	4,540,032	5,043,401	18.29	2.34	12/31/2018
Pantheon Global Secondaries IV	2010	Secondaries (FOF)	3,000,000	2,186,420	2,684,421	668,575	14.06	1.53	12/31/2018
LGT Crown Asia-Pacific II	2011	International Private Equity (FOF)	14,000,000	12,055,006	5,236,000	13,858,158	11.93	1.58	12/31/2018
Greenspring V	2011	Venture Capital (FOF)	7,000,000	6,353,846	5,999,000	8,116,202	20.81	2.22	12/31/2018
Adveq Europe V	2012	Buyout - Small (FOF)	10,000,000	8,019,488	3,588,157	6,992,004	9.63	1.32	12/31/2018
LGT Crown Global Secondaries III	2012	Secondaries (FOF)	10,000,000	6,814,447	4,810,000	4,858,335	13.66	1.42	12/31/2018
Flag Private Equity V	2013	Diversified (FOF)	15,000,000	14,564,188	7,744,710	14,723,601	18.61	1.54	12/31/2018
HarbourVest Partners 2013 Direct	2013	Diversified (COI)	15,000,000	15,748,646	9,280,194	16,277,172	18.35	1.62	12/31/2018
Greenspring VI	2014	Venture Capital (FOF)	7,500,000	6,601,152	1,698,750	10,024,167	21.47	1.78	12/31/2018
Greenspring Secondaries Fund I	2014	Secondaries	2,500,000	2,399,097	955,415	4,305,857	28.93	2.19	12/31/2018
Adveq Europe VI	2015	Buyout - Small (FOF)	7,500,000	3,757,770	672,047	3,677,354	10.35	1.16	12/31/2018
Flag Private Equity VI	2014	Buyout - Small (FOF)	15,000,000	11,475,000	2,375,410	13,338,653	21.79	1.37	12/31/2018
57 Stars	2015	Diversified (FOF)	7,000,000	5,485,227	539,227	5,394,702	5.83	1.08	12/31/2018
NB Crossroads XXI	2015	Diversified (FOF)	15,000,000	8,850,000	750,000	9,690,751	11.46	1.18	12/31/2018
LGT Crown Asia-Pacific III	2014	International Private Equity (FOF)	5,000,000	3,518,161	235,000	5,194,177	26.55	1.54	12/31/2018
HarbourVest IV	2016	Buyout - Mid (COI)	10,000,000	8,291,364	1,453,885	8,302,777	14.31	1.18	12/31/2018
Aberdeen US Private Equity VII	2017	Buyout - Small (FOF)	5,000,000	1,600,223	42,890	1,841,570	27.40	1.18	12/31/2018
Greenspring VIII B	2017	Venture Capital (FOF)	5,000,000	2,000,000	-	2,183,082	17.94	1.09	12/31/2018
Adveq Europe Dir II	2018	Buyout - Small (COI)	1,000,000	103,539	-	103,539	0.00	1.00	12/31/2018
Adveq Europe VII	2018	Buyout - Small (COI)	4,000,000	488,153	-	488,153	0.00	1.00	12/31/2018
Total Private Equity			172,500,000	134,624,327	66,864,268	136,852,194	15.40	1.51	12/31/2018

1. Information contained in this report is being derived from custodial data. 2. Custodial valuations may be lagged in comparison to actual fund valuations. 3. In the beginning life of a fund, fees and expenses disproportionately large compared to investments (aka "J-Curve"); therefore performance is considered not meaningful until a fund is about 50% drawn.



Manager Detail

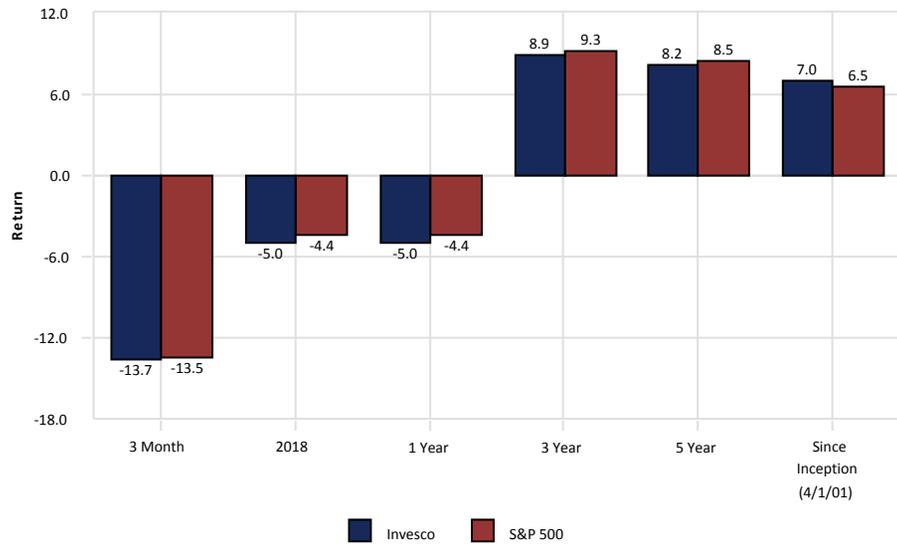


Howard County Retirement Plans

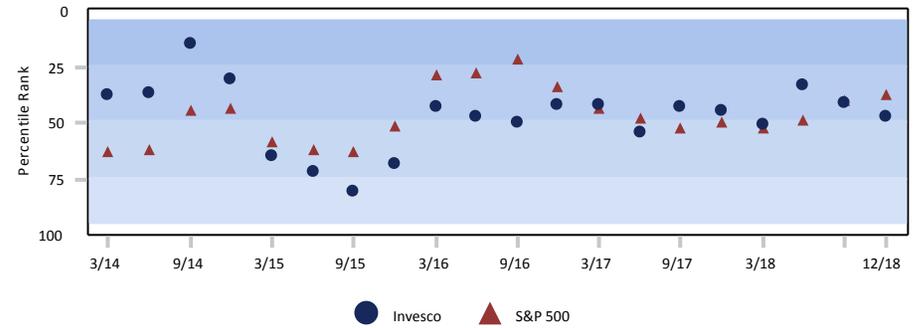
Invesco vs. IM U.S. Large Cap Core Equity (SA+CF)

December 31, 2018

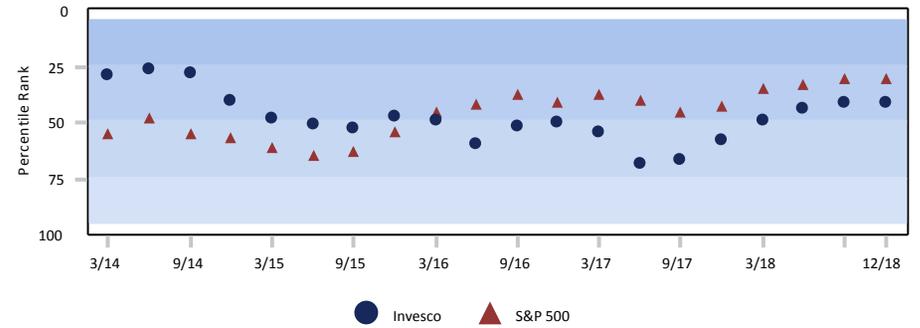
Comparative Performance



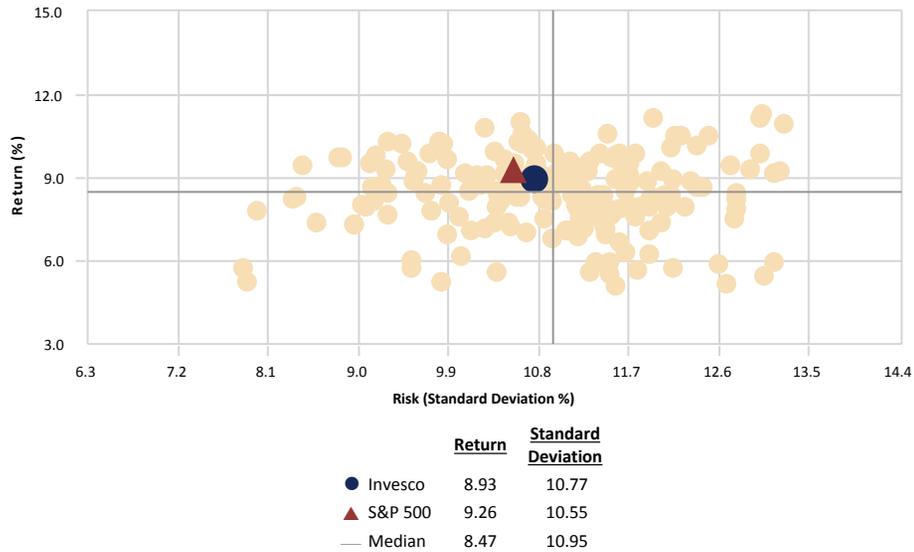
1 Year Rolling Percentile Ranking



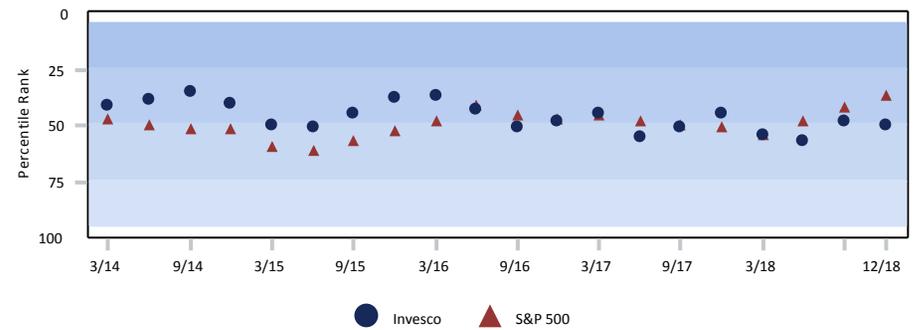
3 Year Rolling Percentile Ranking



Risk/Return (01/01/16 - 12/31/18)



5 Year Rolling Percentile Ranking



Howard County Retirement Plans

Invesco

December 31, 2018

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
Invesco	-13.67	-5.02	-5.02	8.93	8.18
S&P 500	-13.52	-4.38	-4.38	9.26	8.49
IM U.S. Large Cap Core Equity (SA+CF) Median	-13.83	-5.20	-5.20	8.47	8.15
Invesco Rank	47	47	47	41	50

Top 10 Positions

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Microsoft Corp	3.79	3.73	0.06	-10.80
Apple Inc	3.45	3.38	0.07	-29.88
Amazon.com Inc	2.88	2.93	-0.05	-25.01
Berkshire Hathaway Inc	1.83	1.89	-0.06	-4.64
Alphabet Inc Class A	1.71	1.49	0.22	-13.43
JPMorgan Chase & Co	1.59	1.54	0.05	-12.89
Pfizer Inc	1.52	1.20	0.32	-0.19
Verizon Communications Inc	1.37	1.10	0.27	6.46
Intel Corp	1.37	1.02	0.35	-0.13
Cisco Systems Inc	1.32	0.93	0.39	-10.33

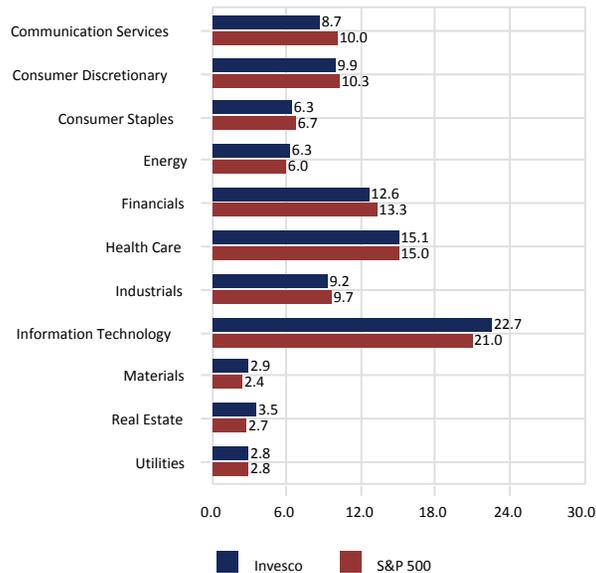
Historical Statistics (3 Year)

	Alpha	Beta	Standard Deviation	R-Squared	Information Ratio	Up Capture	Down Capture
Invesco	-0.38	1.01	10.97	0.99	-0.24	98.90	100.79
S&P 500	0.00	1.00	10.80	1.00	-	100.00	100.00

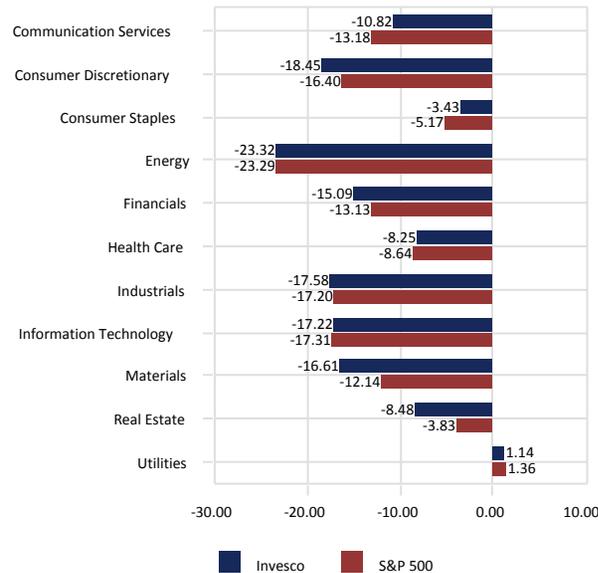
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$000)	190,039,030	198,164,869
Median Mkt. Cap (\$000)	31,784,508	18,449,053
Price/Earnings ratio	14.85	17.38
Price/Book ratio	3.10	3.16
5 Yr. EPS Growth Rate (%)	16.85	16.00
Current Yield (%)	2.34	2.23
Beta (5 Years, Monthly)	0.99	1.00
Number of Stocks	238	505

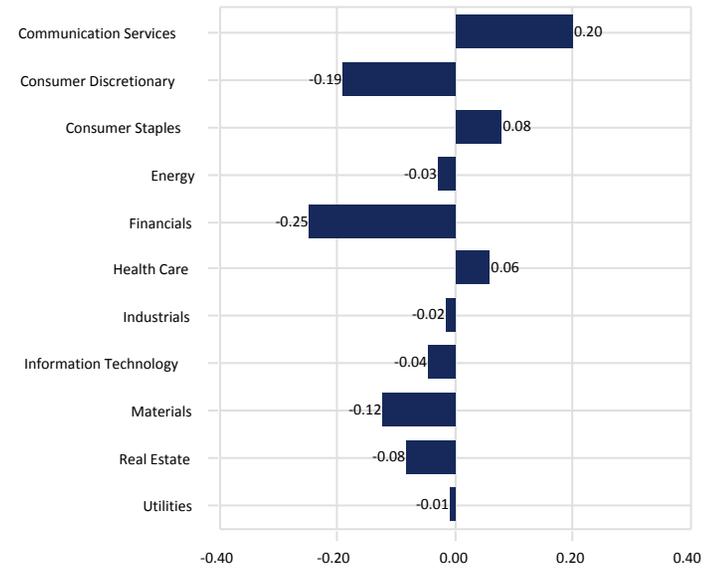
Sector Allocation



Sector Performance



Total Sector Attribution



gross of fees

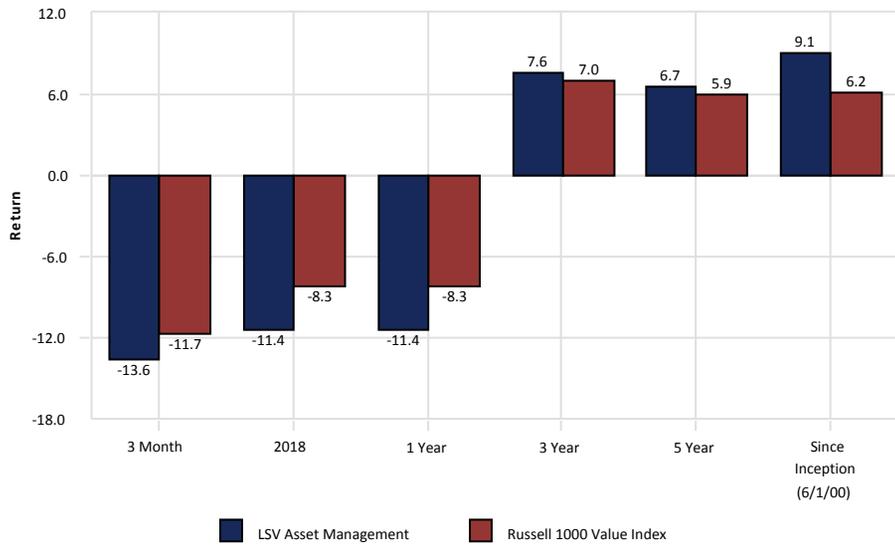


Howard County Retirement Plans

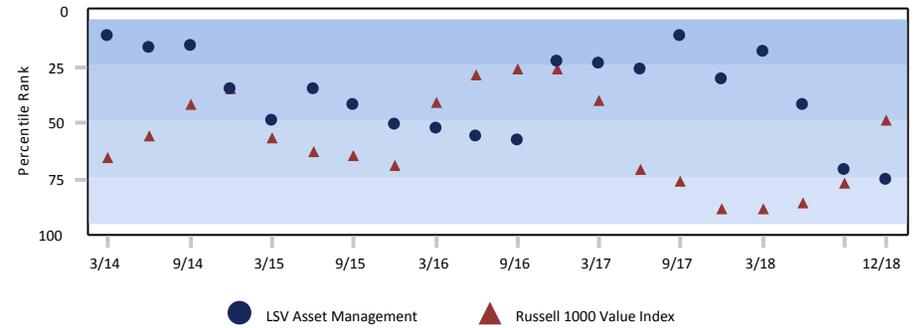
LSV Asset Management vs. IM U.S. Large Cap Value Equity (SA+CF)

December 31, 2018

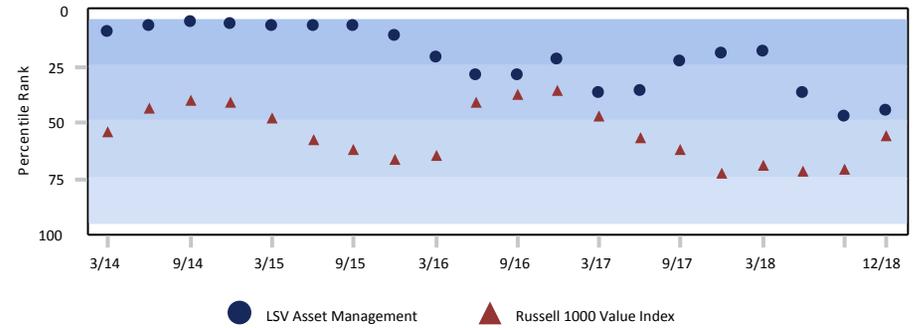
Comparative Performance



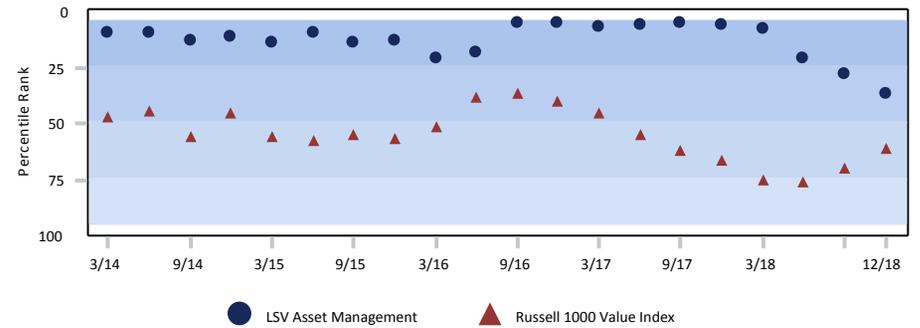
1 Year Rolling Percentile Ranking



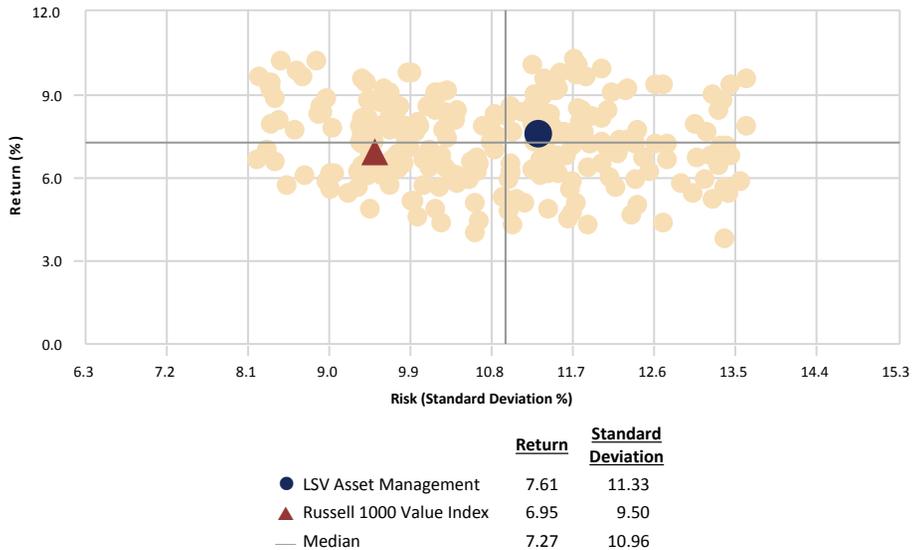
3 Year Rolling Percentile Ranking



5 Year Rolling Percentile Ranking



Risk/Return (01/01/16 - 12/31/18)



Howard County Retirement Plans

LSV Asset Management

December 31, 2018

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
LSV Asset Management	-13.63	-11.42	-11.42	7.61	6.65
<i>Russell 1000 Value Index</i>	-11.72	-8.27	-8.27	6.95	5.95
<i>IM U.S. Large Cap Value Equity (SA+CF) Median</i>	-13.57	-8.39	-8.39	7.27	6.23
LSV Asset Management Rank	53	75	75	45	37

Top 10 Positions

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
JPMorgan Chase & Co	3.43	2.74	0.69	-12.89
Cisco Systems Inc	3.08	1.67	1.41	-10.33
Pfizer Inc	3.08	2.15	0.93	-0.19
Johnson & Johnson	2.60	2.41	0.19	-6.01
Intel Corp	2.40	1.82	0.58	-0.13
Bank of America Corp	2.23	1.91	0.32	-15.88
Verizon Communications Inc	2.01	1.97	0.04	6.46
Walgreens Boots Alliance Inc	1.90	0.47	1.43	-5.77
Exxon Mobil Corp	1.85	2.45	-0.60	-18.98
Citigroup Inc	1.74	1.08	0.66	-26.94

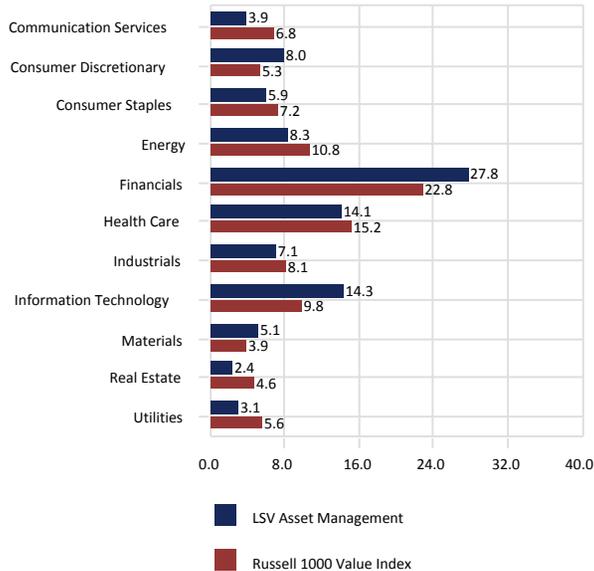
Historical Statistics (3 Year)

	Alpha	Beta	Standard Deviation	R-Squared	Information Ratio	Up Capture	Down Capture
LSV Asset Management	-0.17	1.13	12.55	0.96	0.27	110.06	109.29
<i>Russell 1000 Value Index</i>	0.00	1.00	10.82	1.00	-	100.00	100.00

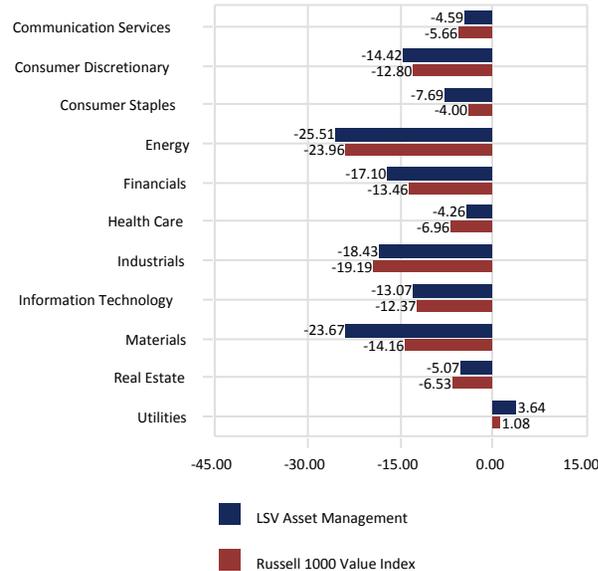
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$000)	88,528,789	119,165,529
Median Mkt. Cap (\$000)	11,982,796	8,313,076
Price/Earnings ratio	10.65	13.70
Price/Book ratio	1.93	2.06
5 Yr. EPS Growth Rate (%)	10.66	8.60
Current Yield (%)	3.40	2.89
Beta (5 Years, Monthly)	1.09	1.00
Number of Stocks	150	725

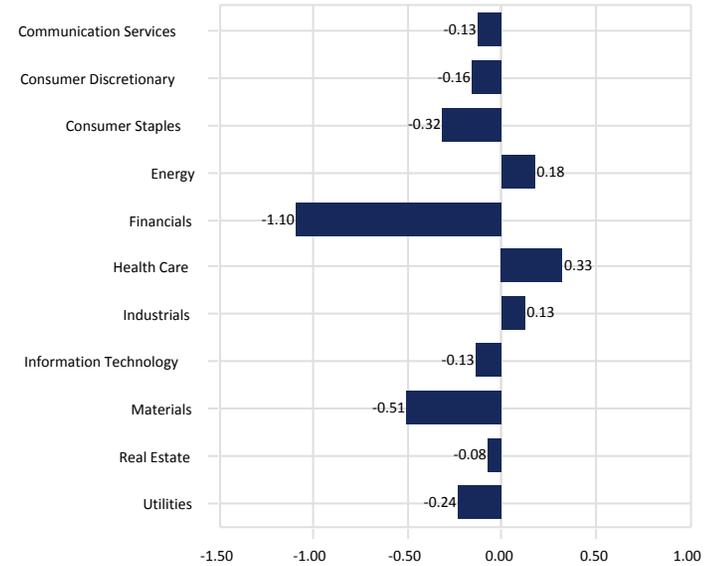
Sector Allocation



Sector Performance



Total Sector Attribution



gross of fees

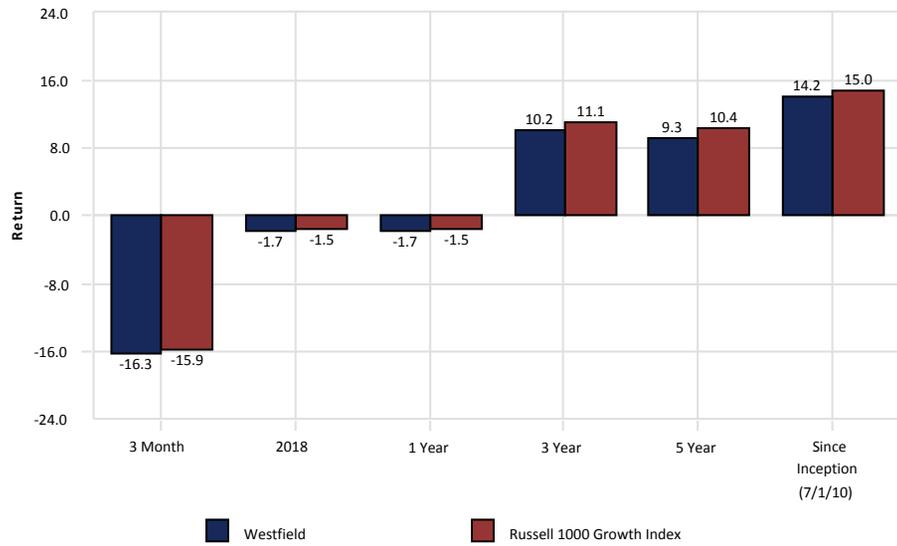


Howard County Retirement Plans

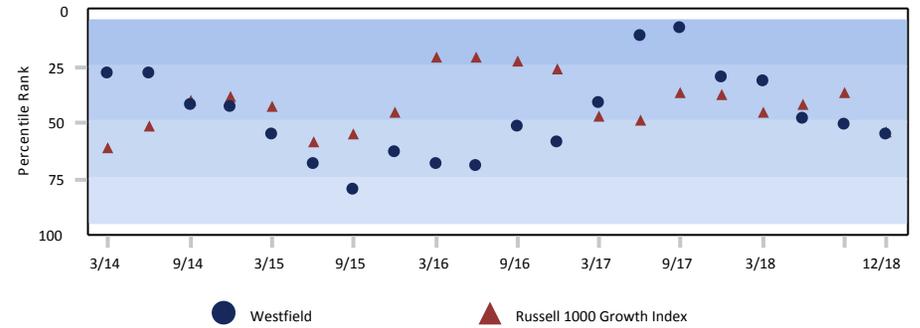
Westfield vs. IM U.S. Large Cap Growth Equity (SA+CF)

December 31, 2018

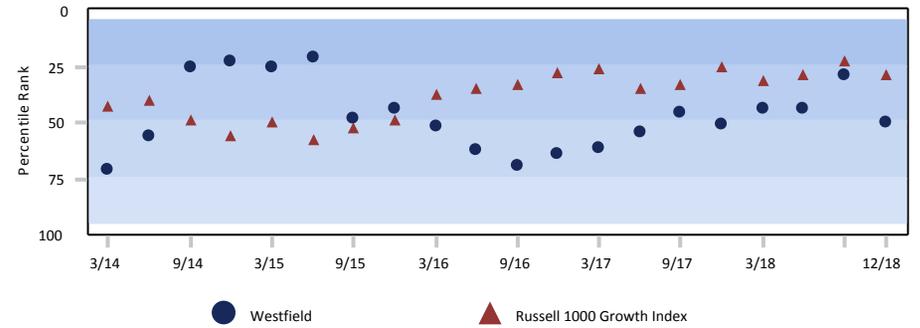
Comparative Performance



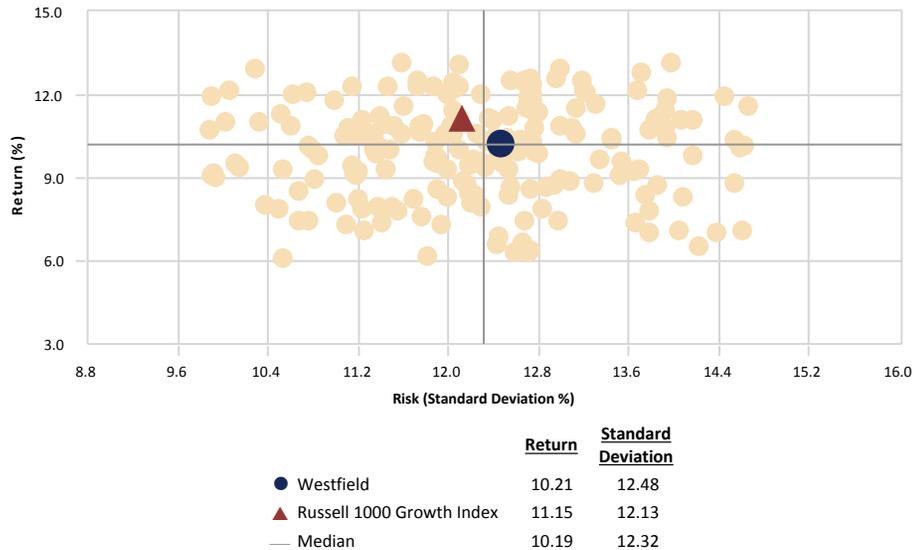
1 Year Rolling Percentile Ranking



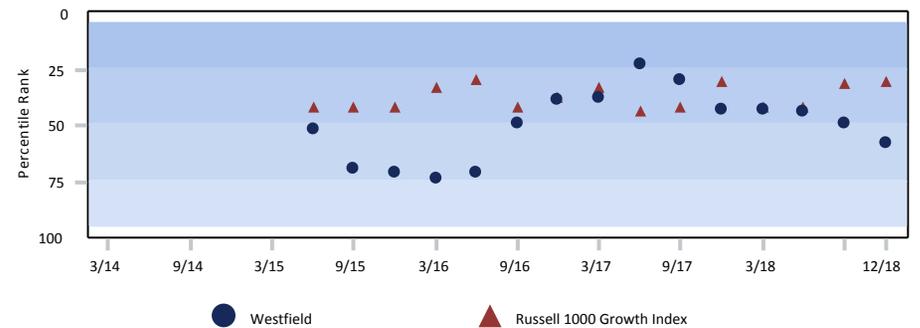
3 Year Rolling Percentile Ranking



Risk/Return (01/01/16 - 12/31/18)



5 Year Rolling Percentile Ranking



Howard County Retirement Plans

Westfield

December 31, 2018

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
Westfield	-16.30	-1.70	-1.70	10.21	9.34
<i>Russell 1000 Growth Index</i>	<i>-15.89</i>	<i>-1.51</i>	<i>-1.51</i>	<i>11.15</i>	<i>10.40</i>
<i>IM U.S. Large Cap Growth Equity (SA+CF) Median</i>	<i>-15.14</i>	<i>-1.17</i>	<i>-1.17</i>	<i>10.19</i>	<i>9.66</i>
Westfield Rank	69	55	55	50	58

Top 10 Positions

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Amazon.com Inc	5.60	5.28	0.32	-25.01
Apple Inc	5.39	6.48	-1.09	-29.88
Unitedhealth Group Inc	3.93	2.06	1.87	-6.06
Boeing Co	3.90	1.49	2.41	-12.88
Microsoft Corp	3.77	6.31	-2.54	-10.80
Visa Inc	3.64	2.01	1.63	-11.94
Alphabet Inc	3.61	2.73	0.88	-13.23
salesforce.com Inc	3.06	0.85	2.21	-13.87
Alphabet Inc Class A	2.74	2.70	0.04	-13.43
Home Depot Inc. (The)	2.64	1.71	0.93	-16.57

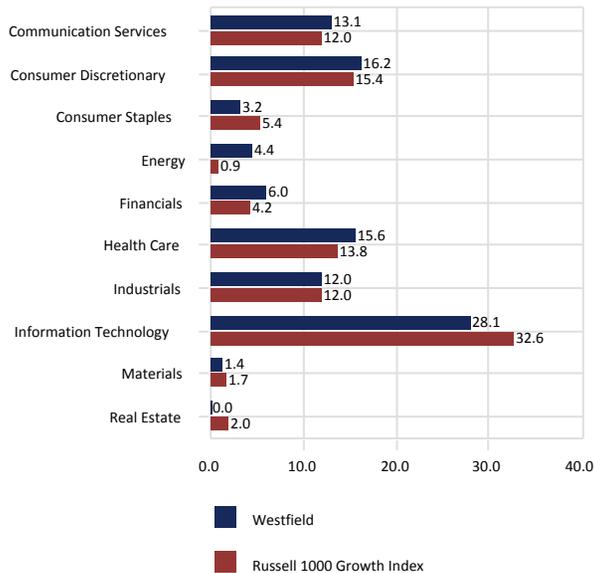
Historical Statistics (3 Year)

	Alpha	Beta	Standard Deviation	R-Squared	Information Ratio	Up Capture	Down Capture
Westfield	-0.85	1.00	12.48	0.95	-0.30	97.66	102.59
<i>Russell 1000 Growth Index</i>	<i>0.00</i>	<i>1.00</i>	<i>12.13</i>	<i>1.00</i>	<i>-</i>	<i>100.00</i>	<i>100.00</i>

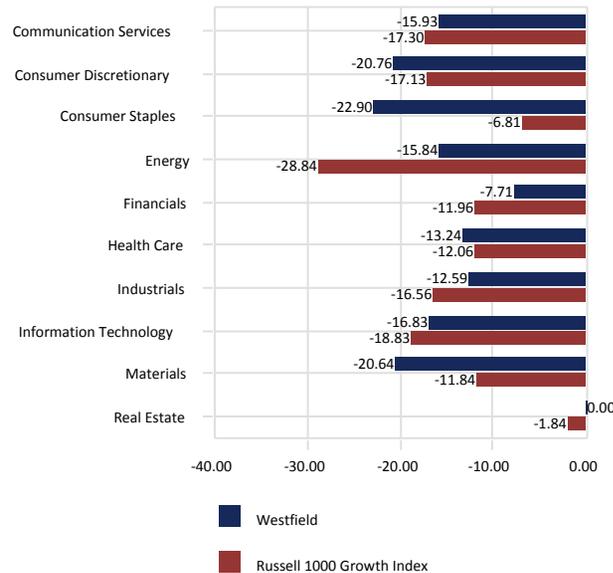
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$000)	236,113,416	241,404,618
Median Mkt. Cap (\$000)	92,238,835	10,324,999
Price/Earnings ratio	18.37	22.71
Price/Book ratio	4.72	6.12
5 Yr. EPS Growth Rate (%)	27.10	23.58
Current Yield (%)	1.20	1.45
Beta (5 Years, Monthly)	1.02	1.00
Number of Stocks	45	546

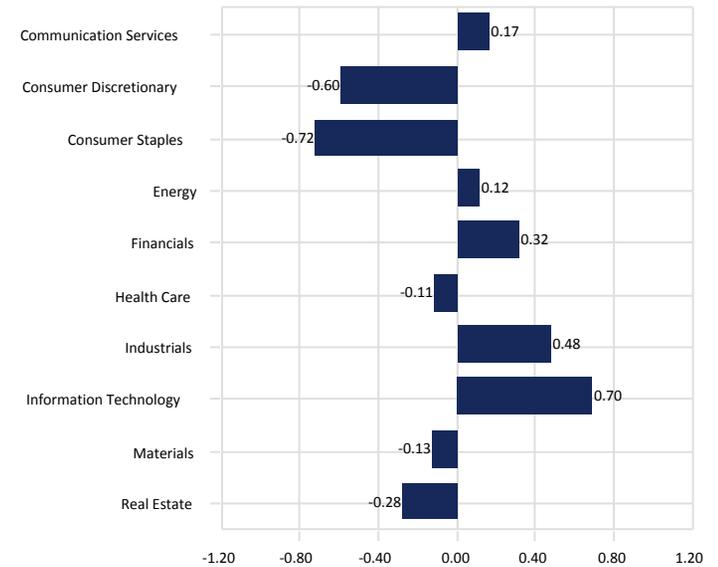
Sector Allocation



Sector Performance



Total Sector Attribution



gross of fees

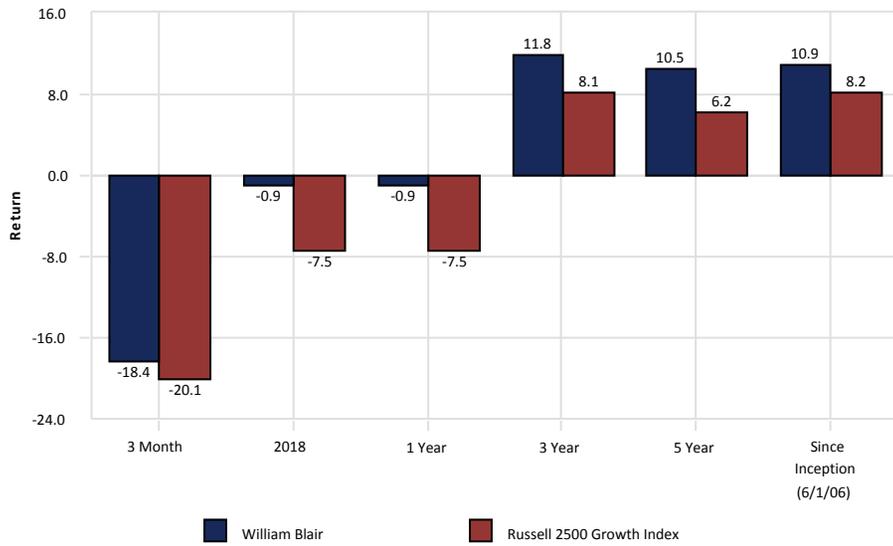


Howard County Retirement Plans

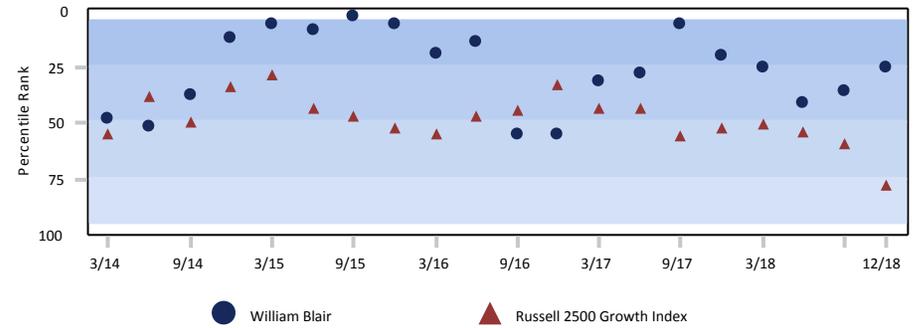
William Blair vs. IM U.S. SMID Cap Growth Equity (SA+CF)

December 31, 2018

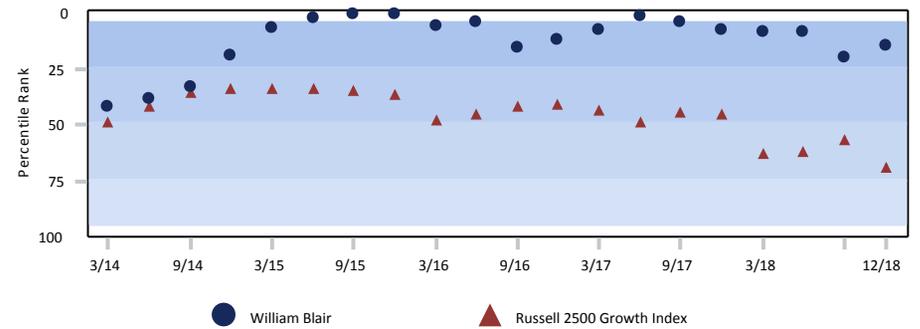
Comparative Performance



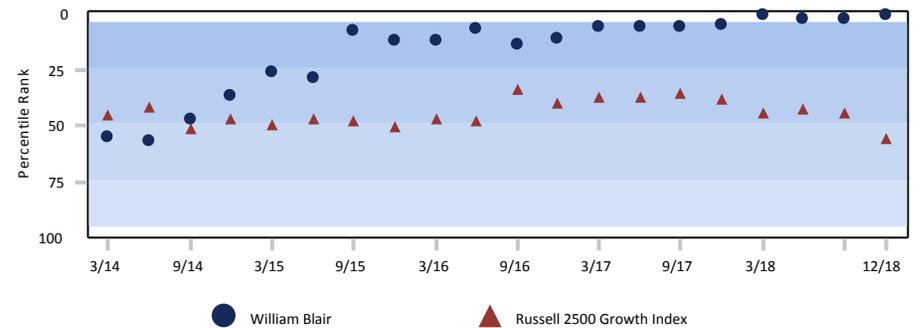
1 Year Rolling Percentile Ranking



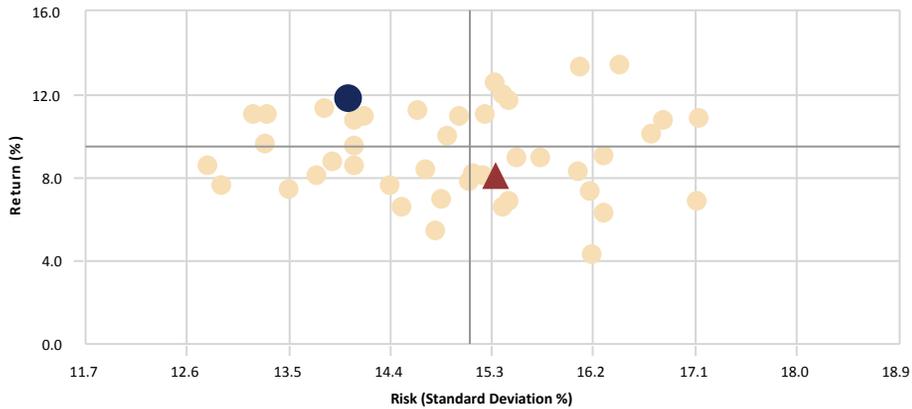
3 Year Rolling Percentile Ranking



5 Year Rolling Percentile Ranking



Risk/Return (01/01/16 - 12/31/18)



	<u>Return</u>	<u>Standard Deviation</u>
● William Blair	11.82	14.04
▲ Russell 2500 Growth Index	8.11	15.33
— Median	9.51	15.11

gross of fees



Howard County Retirement Plans

William Blair

December 31, 2018

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
William Blair	-18.35	-0.91	-0.91	11.82	10.49
<i>Russell 2500 Growth Index</i>	-20.08	-7.47	-7.47	8.11	6.19
<i>IM U.S. SMID Cap Growth Equity (SA+CF) Median</i>	-19.56	-4.48	-4.48	9.51	6.62
William Blair Rank	28	25	25	15	1

Top 10 Positions

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Copart Inc	3.02	0.00	3.02	-7.28
CoStar Group Inc	2.74	0.00	2.74	-19.84
Ball Corp	2.53	0.00	2.53	4.74
Cboe Global Markets Inc	2.50	0.00	2.50	2.24
Booz Allen Hamilton Holding Corp	2.49	0.32	2.17	-8.85
Euronet Worldwide Inc	2.42	0.14	2.28	2.15
BWX Technologies Inc	2.30	0.21	2.09	-38.65
Adtalem Global Education Inc	2.18	0.00	2.18	-1.83
Live Nation Entertainment Inc	2.17	0.37	1.80	-9.58
Veeva Systems Inc	2.08	0.59	1.49	-17.96

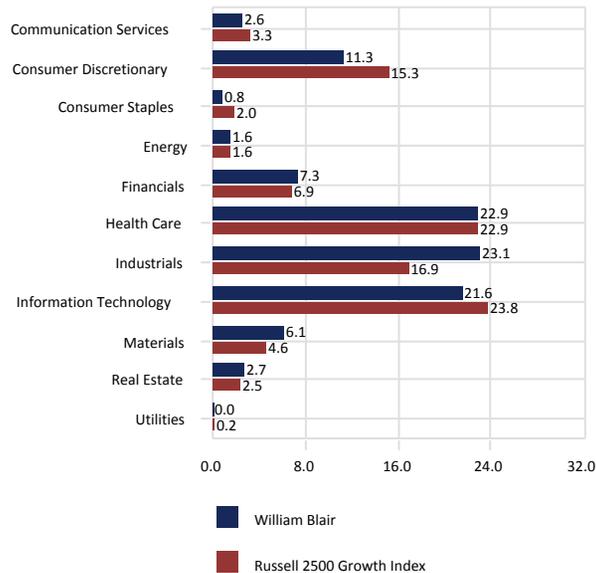
Historical Statistics (3 Year)

	Alpha	Beta	Standard Deviation	R-Squared	Information Ratio	Up Capture	Down Capture
William Blair	4.30	0.89	14.04	0.94	0.82	101.29	80.31
<i>Russell 2500 Growth Index</i>	0.00	1.00	15.33	1.00	-	100.00	100.00

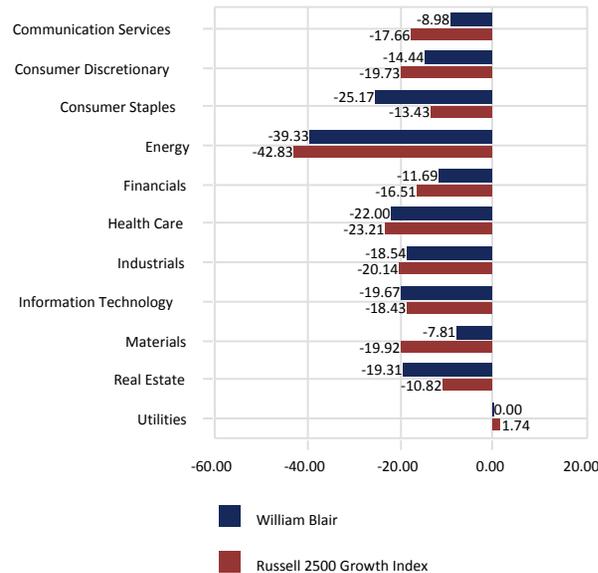
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$000)	6,547,068	4,611,087
Median Mkt. Cap (\$000)	4,691,108	1,026,286
Price/Earnings ratio	23.95	20.30
Price/Book ratio	4.47	4.09
5 Yr. EPS Growth Rate (%)	19.91	18.88
Current Yield (%)	0.71	0.88
Beta (5 Years, Monthly)	0.85	1.00
Number of Stocks	73	1,508

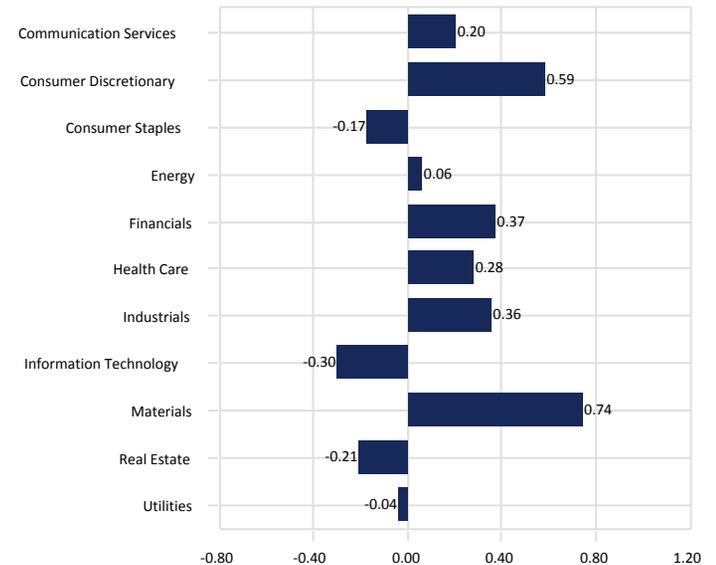
Sector Allocation



Sector Performance



Total Sector Attribution



gross of fees

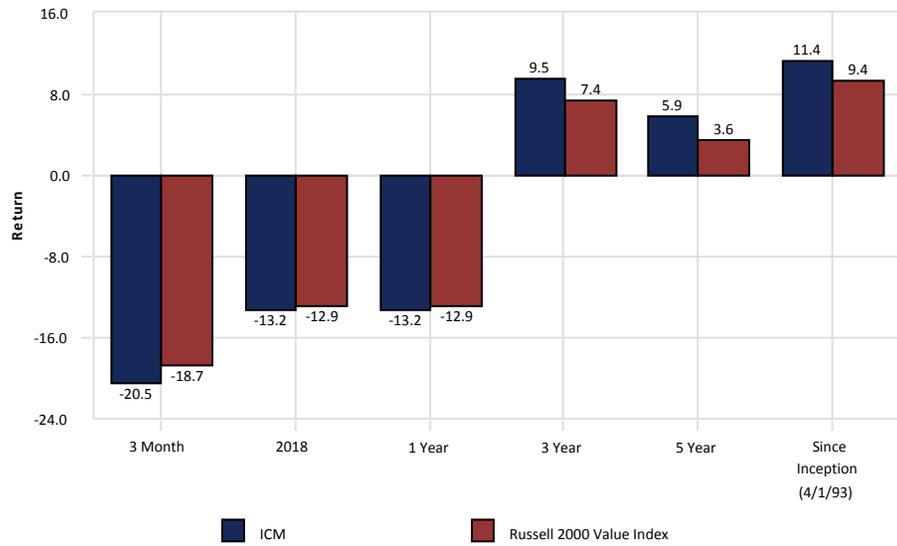


Howard County Retirement Plans

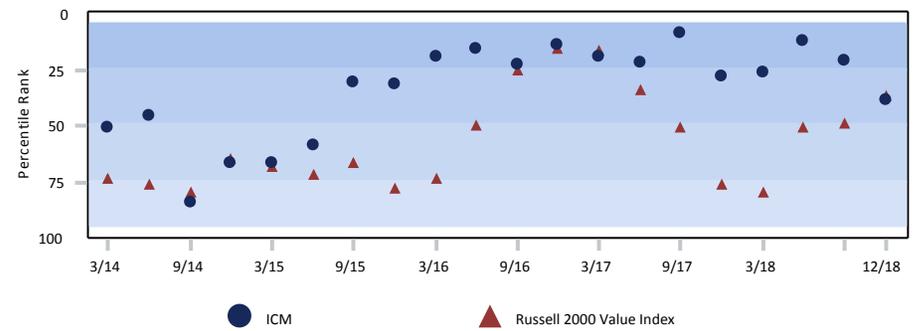
ICM vs. IM U.S. Small Cap Value Equity (SA+CF)

December 31, 2018

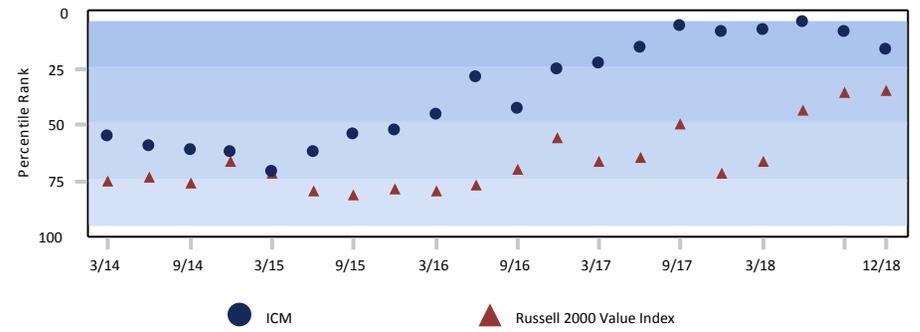
Comparative Performance



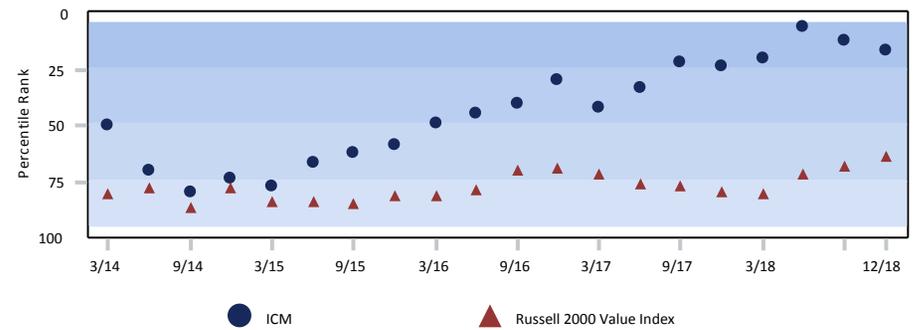
1 Year Rolling Percentile Ranking



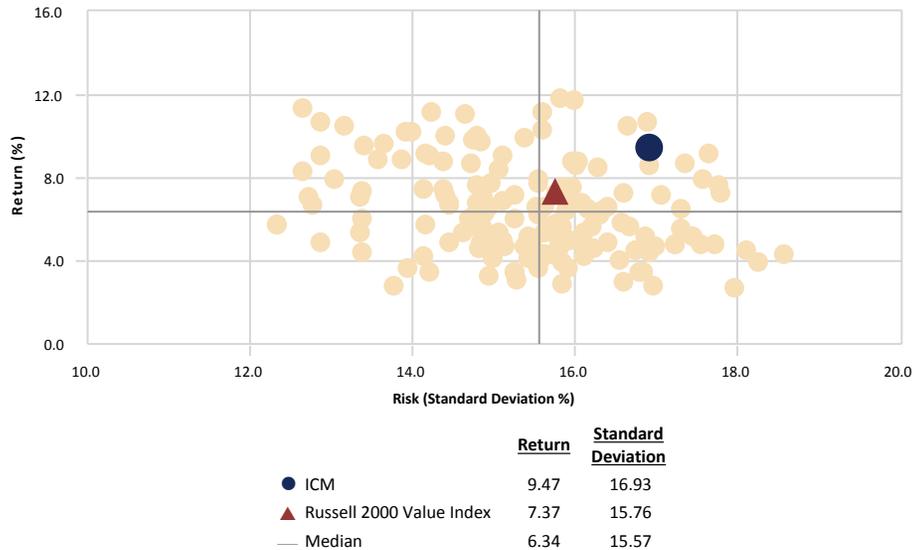
3 Year Rolling Percentile Ranking



5 Year Rolling Percentile Ranking



Risk/Return (01/01/16 - 12/31/18)



gross of fees



Howard County Retirement Plans

ICM

December 31, 2018

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
ICM	-20.51	-13.20	-13.20	9.47	5.87
<i>Russell 2000 Value Index</i>	-18.67	-12.86	-12.86	7.37	3.61
<i>IM U.S. Small Cap Value Equity (SA+CF) Median</i>	-19.21	-14.36	-14.36	6.34	4.10
ICM Rank	74	39	39	17	17

Top 10 Positions

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Cooper Tire & Rubber Co	1.77	0.19	1.58	14.59
Armstrong World Industries Inc	1.73	0.00	1.73	-16.15
ICF International Inc	1.57	0.12	1.45	-13.96
Argo Group International Holdings Ltd	1.48	0.25	1.23	7.08
Verint Systems Inc	1.46	0.31	1.15	-15.55
ABM Industries Inc	1.43	0.24	1.19	0.11
Simmons First National Corp	1.43	0.25	1.18	-17.59
Perficient Inc	1.42	0.05	1.37	-16.47
Kite Realty Group Trust	1.40	0.13	1.27	-13.64
QTS Realty Trust Inc	1.38	0.12	1.26	-12.21

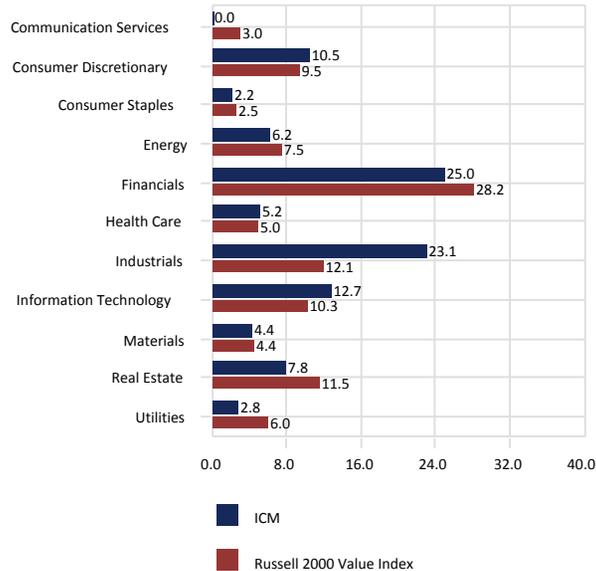
Historical Statistics (3 Year)

	Alpha	Beta	Standard Deviation	R-Squared	Information Ratio	Up Capture	Down Capture
ICM	1.72	1.05	16.93	0.96	0.61	107.56	97.84
<i>Russell 2000 Value Index</i>	0.00	1.00	15.76	1.00	-	100.00	100.00

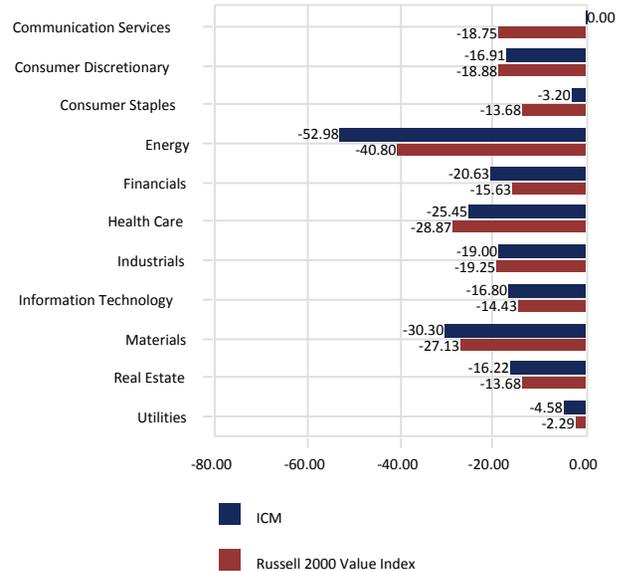
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$000)	1,600,355	1,837,496
Median Mkt. Cap (\$000)	1,179,544	632,325
Price/Earnings ratio	15.45	12.68
Price/Book ratio	1.61	1.54
5 Yr. EPS Growth Rate (%)	9.98	8.28
Current Yield (%)	1.80	2.51
Beta (5 Years, Monthly)	1.04	1.00
Number of Stocks	106	1,387

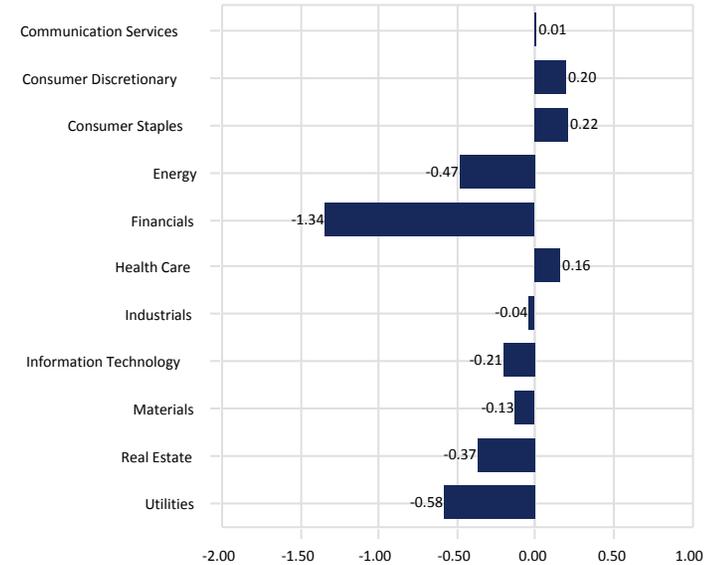
Sector Allocation



Sector Performance



Total Sector Attribution



gross of fees

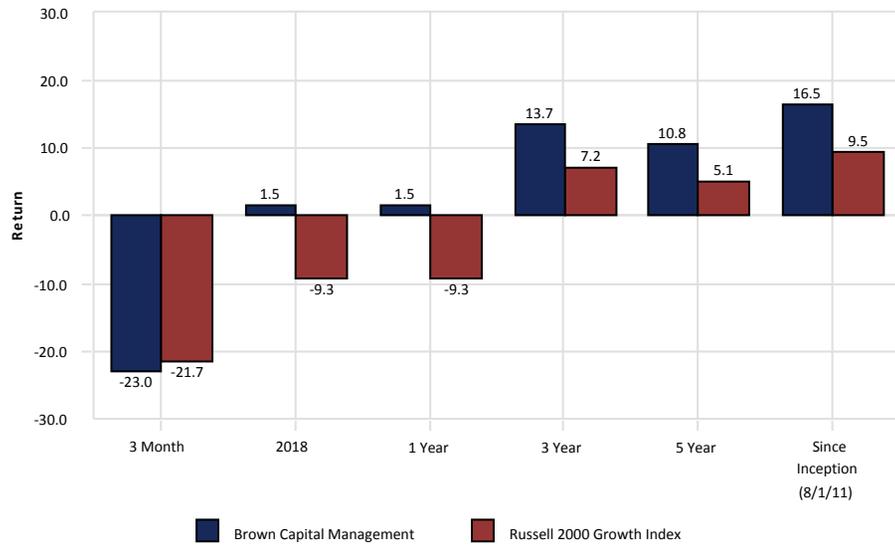


Howard County Retirement Plans

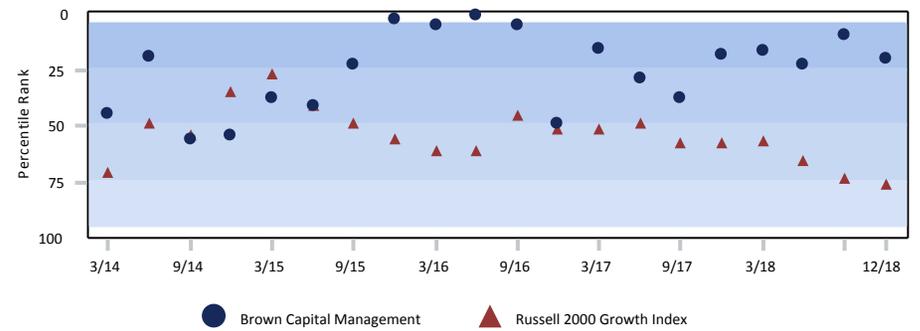
Brown Capital Management vs. IM U.S. Small Cap Growth Equity (SA+CF)

December 31, 2018

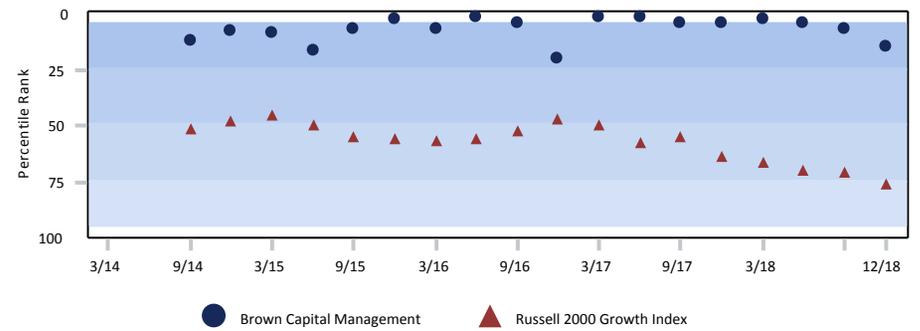
Comparative Performance



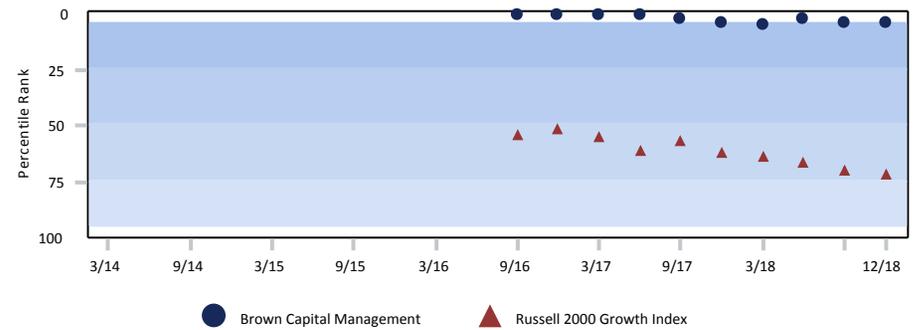
1 Year Rolling Percentile Ranking



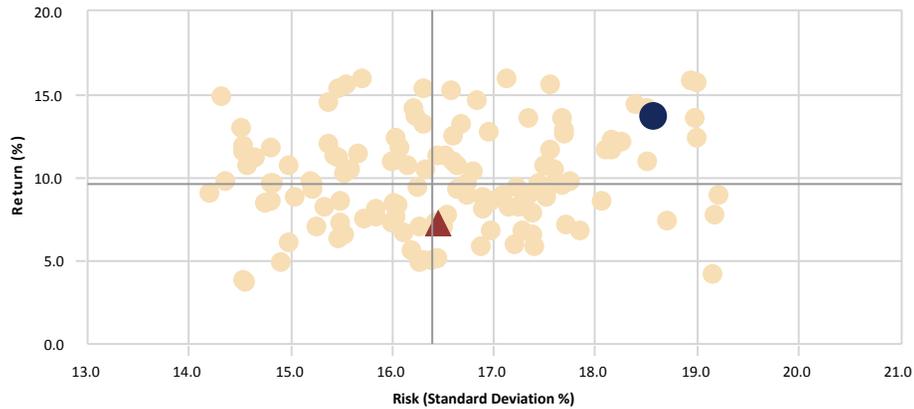
3 Year Rolling Percentile Ranking



5 Year Rolling Percentile Ranking



Risk/Return (01/01/16 - 12/31/18)



	<u>Return</u>	<u>Standard Deviation</u>
● Brown Capital Management	13.74	18.58
▲ Russell 2000 Growth Index	7.24	16.46
— Median	9.61	16.40

gross of fees



Howard County Retirement Plans

Brown Capital Management

December 31, 2018

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
Brown Capital Management	-23.05	1.53	1.53	13.74	10.79
<i>Russell 2000 Growth Index</i>	-21.65	-9.31	-9.31	7.24	5.13
<i>IM U.S. Small Cap Growth Equity (SA+CF) Median</i>	-20.70	-4.28	-4.28	9.61	6.44
Brown Capital Management Rank	79	20	20	15	4

Top 10 Positions

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Veeva Systems Inc	5.35	0.00	5.35	-17.96
Proto Labs Inc	5.24	0.33	4.91	-30.27
Paycom Software Inc	5.20	0.00	5.20	-21.21
Tyler Technologies Inc.	4.96	0.00	4.96	-24.17
Neogen Corp	4.72	0.31	4.41	-20.31
ABIOMED Inc	4.58	0.00	4.58	-27.73
Cognex Corp	4.14	0.00	4.14	-30.64
Manhattan Associates Inc	3.94	0.00	3.94	-22.40
ANSYS Inc	3.88	0.00	3.88	-23.43
Quidel Corp	3.58	0.18	3.40	-25.09

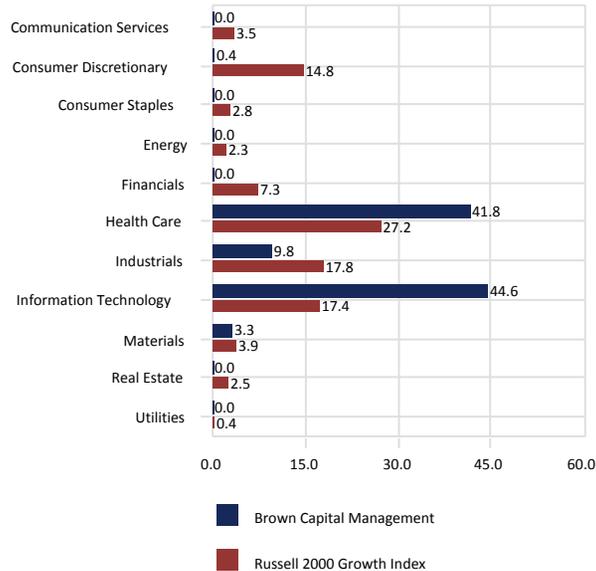
Historical Statistics (3 Year)

	Alpha	Beta	Standard Deviation	R-Squared	Information Ratio	Up Capture	Down Capture
Brown Capital Management	6.34	1.02	18.58	0.81	0.79	113.40	81.51
<i>Russell 2000 Growth Index</i>	0.00	1.00	16.46	1.00	-	100.00	100.00

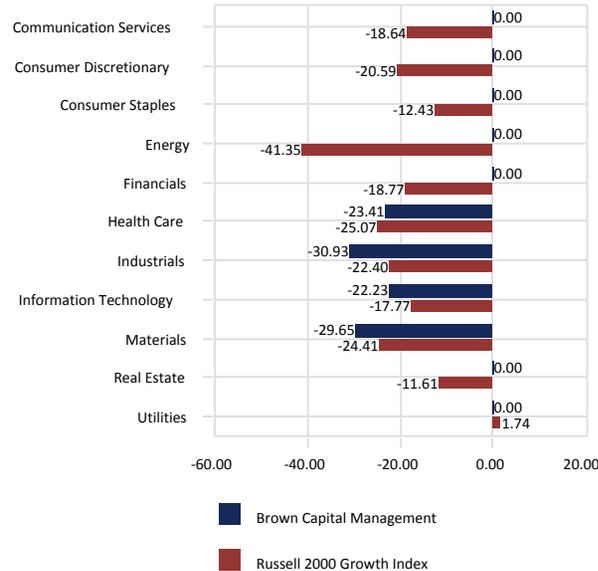
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$000)	4,654,125	2,178,504
Median Mkt. Cap (\$000)	2,489,916	787,045
Price/Earnings ratio	48.93	19.19
Price/Book ratio	5.90	3.50
5 Yr. EPS Growth Rate (%)	23.62	16.24
Current Yield (%)	0.19	0.80
Beta (5 Years, Monthly)	0.94	1.00
Number of Stocks	38	1,257

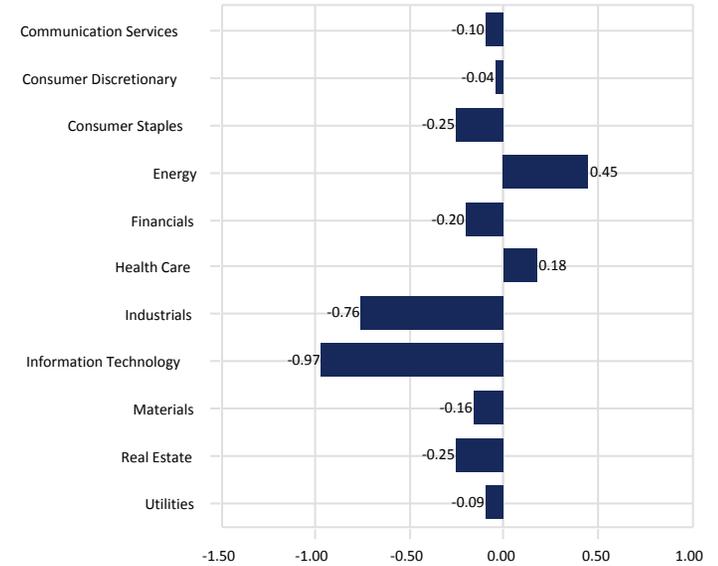
Sector Allocation



Sector Performance



Total Sector Attribution



gross of fees

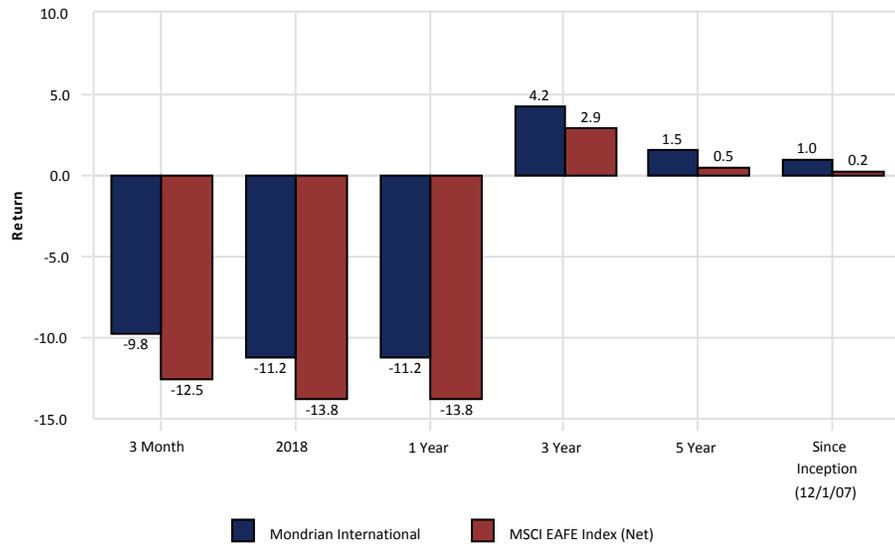


Howard County Retirement Plans

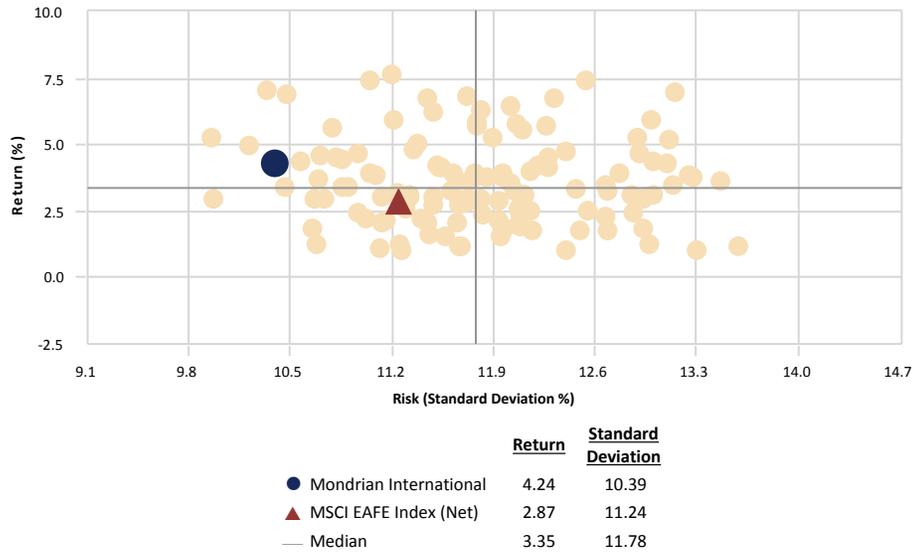
Mondrian International vs. IM International Core Equity (SA+CF)

December 31, 2018

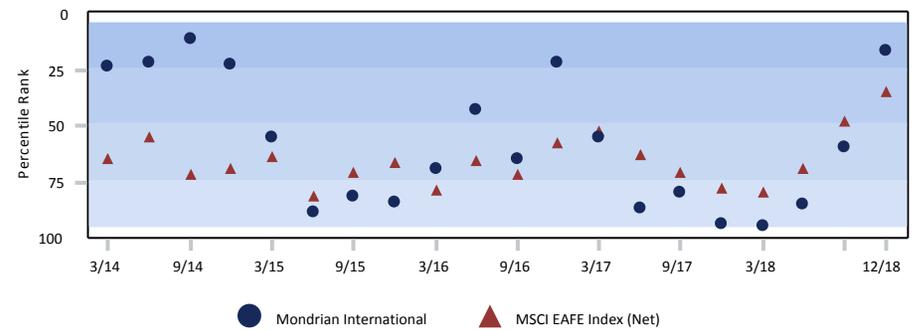
Comparative Performance



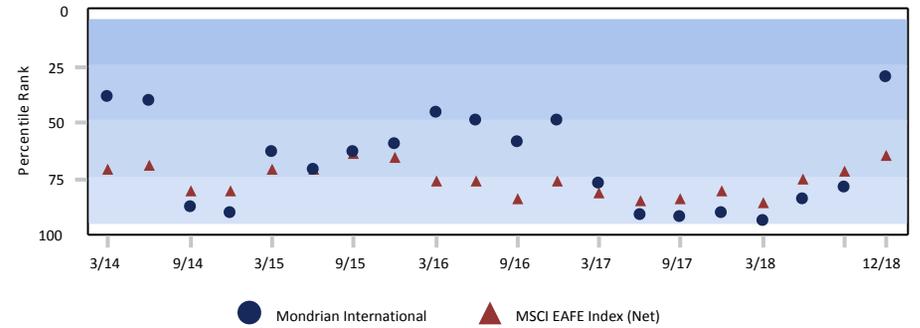
Risk/Return (01/01/16 - 12/31/18)



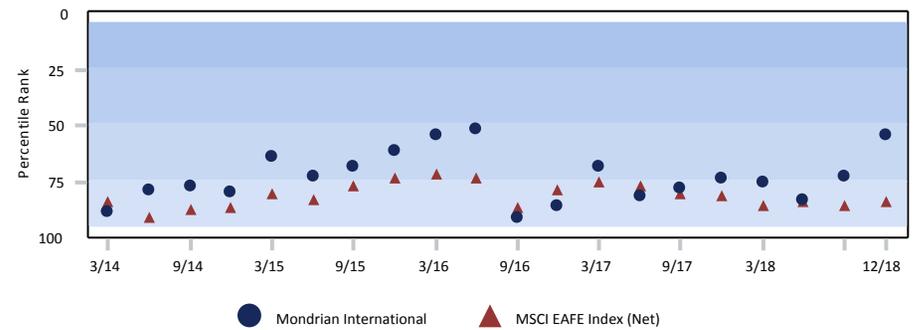
1 Year Rolling Percentile Ranking



3 Year Rolling Percentile Ranking



5 Year Rolling Percentile Ranking



Howard County Retirement Plans

Mondrian International

December 31, 2018

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
Mondrian International	-9.77	-11.21	-11.21	4.24	1.53
<i>MSCI EAFE Index (Net)</i>	<i>-12.54</i>	<i>-13.79</i>	<i>-13.79</i>	<i>2.87</i>	<i>0.53</i>
<i>IM International Core Equity (SA+CF) Median</i>	<i>-13.54</i>	<i>-15.12</i>	<i>-15.12</i>	<i>3.35</i>	<i>1.70</i>
Mondrian International Rank	4	17	17	30	54

Top 10 Positions

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Zurich Insurance Group AG	37.72	0.36	37.36	-6.27
Tokio Marine Holdings Inc	12.11	0.26	11.85	-3.93
Royal Dutch Shell PLC	7.71	0.89	6.82	-13.71
Novartis AG	6.09	1.48	4.61	-1.23
Fujifilm Holdings Corp	4.59	0.12	4.47	-13.66
Sanofi	3.75	0.78	2.97	-2.62
Honda Motor Co Ltd	3.62	0.34	3.28	-12.07
Jardine Matheson Holdings Ltd	3.09	0.12	2.97	10.88
Allianz SE	2.44	0.69	1.75	-10.12
National Grid plc	2.35	0.26	2.09	-3.83

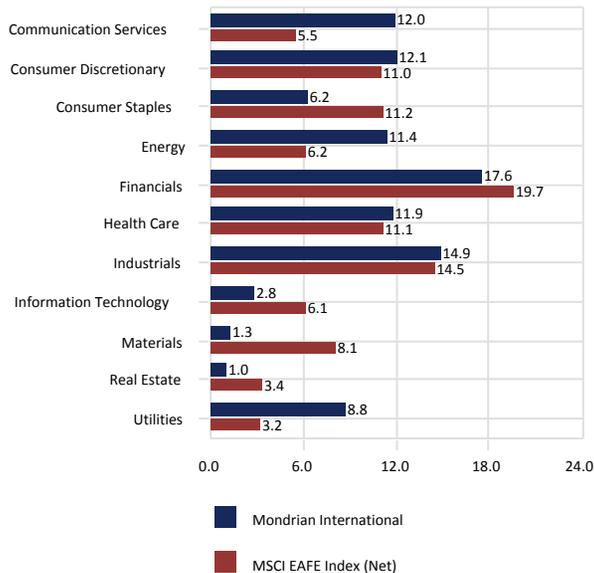
Historical Statistics (3 Year)

	Alpha	Beta	Standard Deviation	R-Squared	Information Ratio	Up Capture	Down Capture
Mondrian International	1.68	0.87	10.39	0.89	0.33	100.64	92.08
<i>MSCI EAFE Index (Net)</i>	<i>0.00</i>	<i>1.00</i>	<i>11.24</i>	<i>1.00</i>	<i>-</i>	<i>100.00</i>	<i>100.00</i>

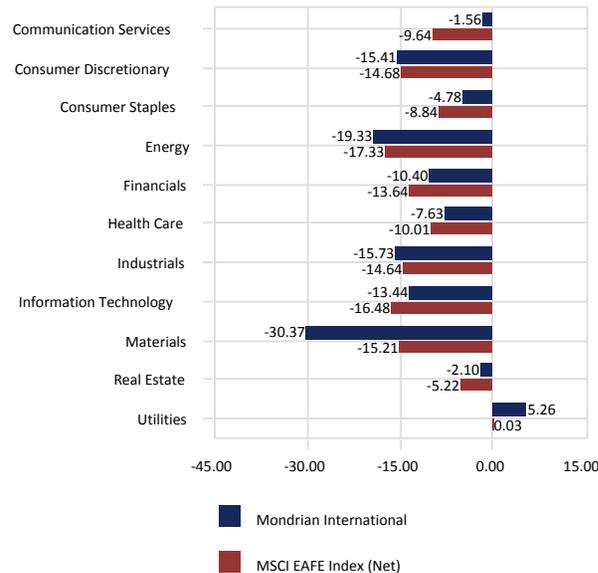
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$000)	67,375,617	55,193,733
Median Mkt. Cap (\$000)	31,580,775	9,371,617
Price/Earnings ratio	12.26	12.27
Price/Book ratio	1.46	2.12
5 Yr. EPS Growth Rate (%)	4.40	9.78
Current Yield (%)	5.01	3.73
Beta (5 Years, Monthly)	0.94	1.00
Number of Stocks	55	920

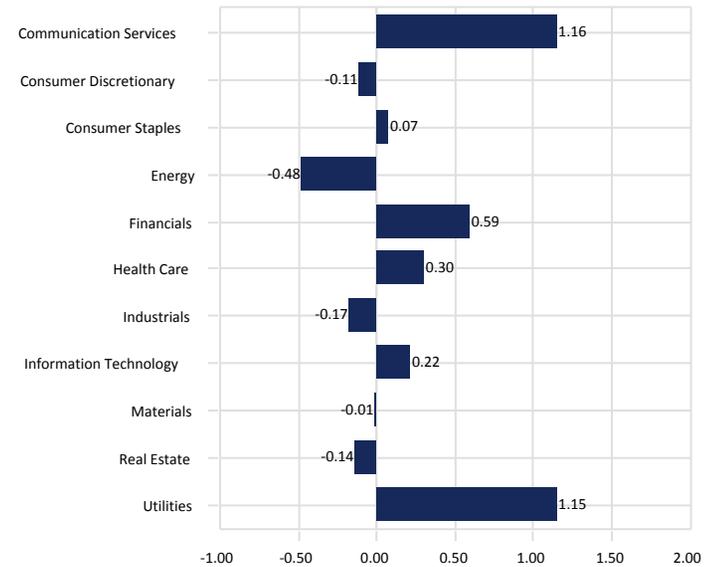
Sector Allocation



Sector Performance



Total Sector Attribution



gross of fees

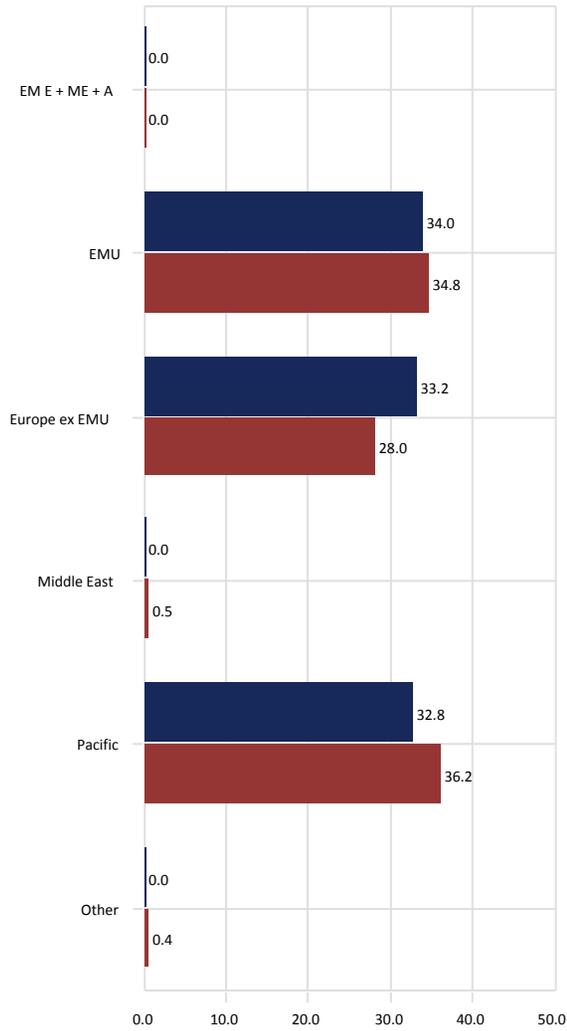


Howard County Retirement Plans

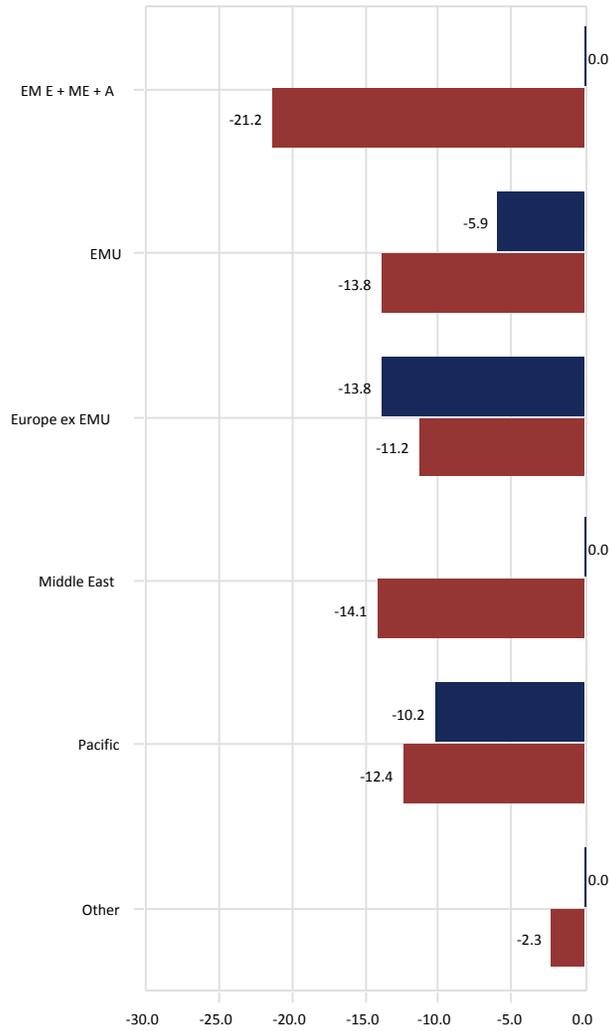
Mondrian International vs. MSCI EAFE Index (Net)

December 31, 2018

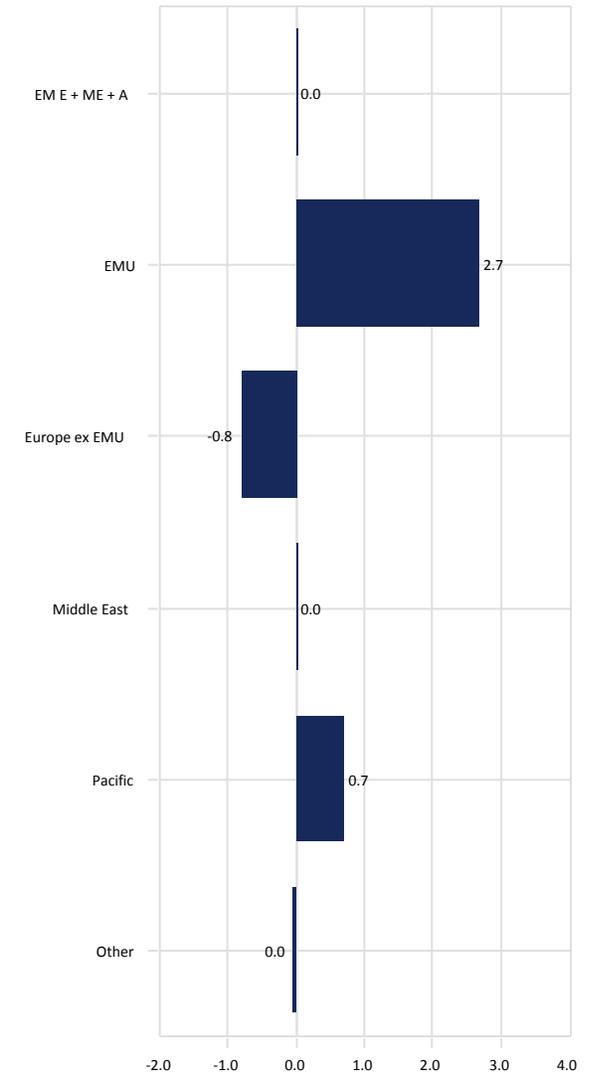
Allocation Quarterly



Performance Quarterly



Attribution Quarterly



■ Mondrian International ■ MSCI EAFE Index (Net)

■ Mondrian International ■ MSCI EAFE Index (Net)

gross of fees

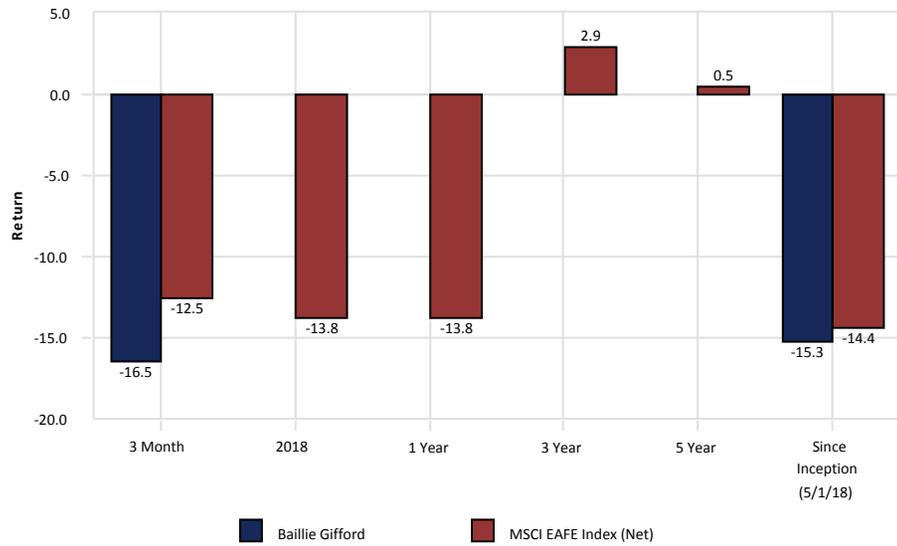


Howard County Retirement Plans

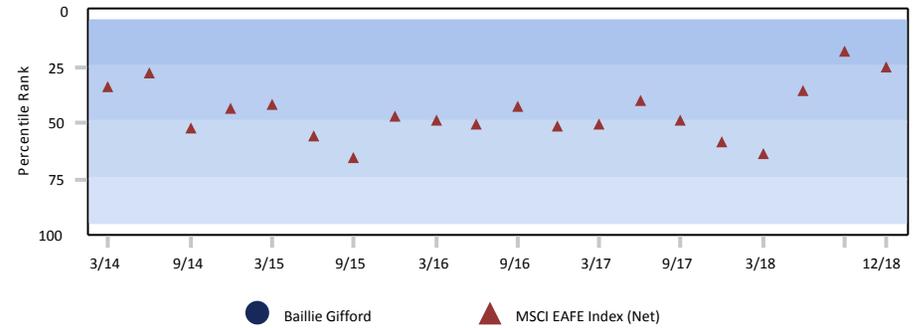
Baillie Gifford vs. IM International Core Equity (MF)

December 31, 2018

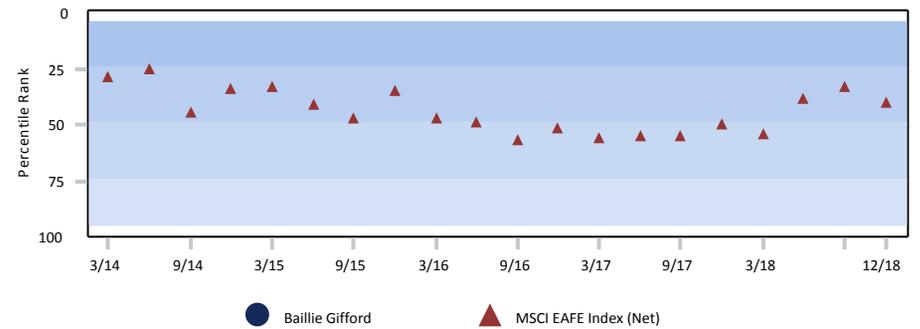
Comparative Performance



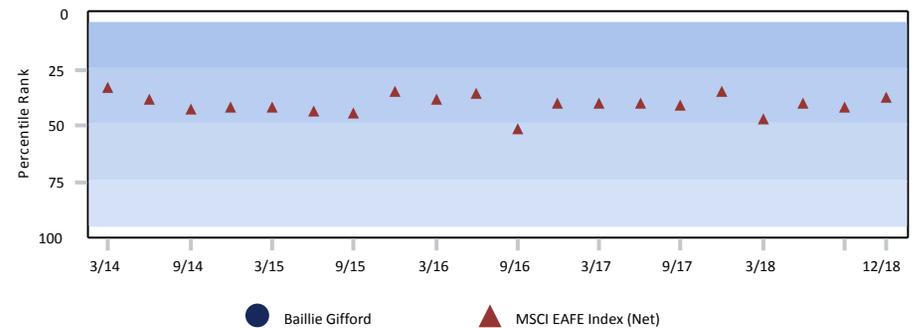
1 Year Rolling Percentile Ranking



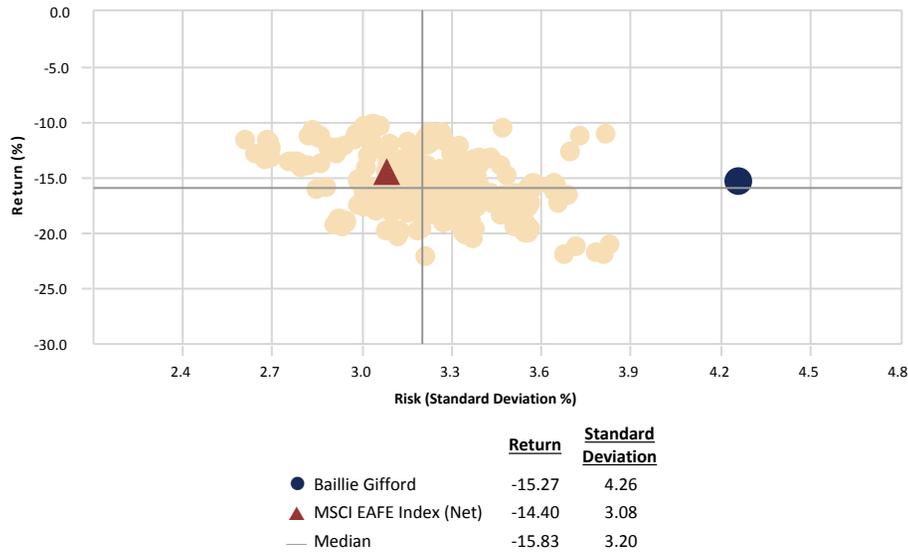
3 Year Rolling Percentile Ranking



5 Year Rolling Percentile Ranking



Risk/Return (05/01/18 - 12/31/18)



net of fees



Howard County Retirement Plans

Baillie Gifford

December 31, 2018

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
Baillie Gifford	-16.46	-	-	-	-
<i>MSCI EAFE Index (Net)</i>	-12.54	-13.79	-13.79	2.87	0.53
<i>IM International Core Equity (MF) Median</i>	-13.16	-15.40	-15.40	2.50	0.21
Baillie Gifford Rank	95	-	-	-	-

Top 10 Positions

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Hargreaves Lansdown PLC	3.66	0.05	3.61	-19.18
AIA Group Ltd	3.36	0.80	2.56	-7.09
Shiseido Co Ltd	2.99	0.19	2.80	-18.73
Svenska Handelsbanken	2.89	0.14	2.75	-12.40
Cochlear Ltd	2.86	0.06	2.80	-15.77
Mettler-Toledo International Inc	2.76	0.00	2.76	-7.13
Rightmove PLC	2.68	0.00	2.68	-5.53
MS&AD Insurance Group Holdings Inc	2.67	0.11	2.56	-14.62
Novozymes A/S	2.66	0.08	2.58	-18.79
United Overseas Bank Ltd	2.65	0.19	2.46	-8.98

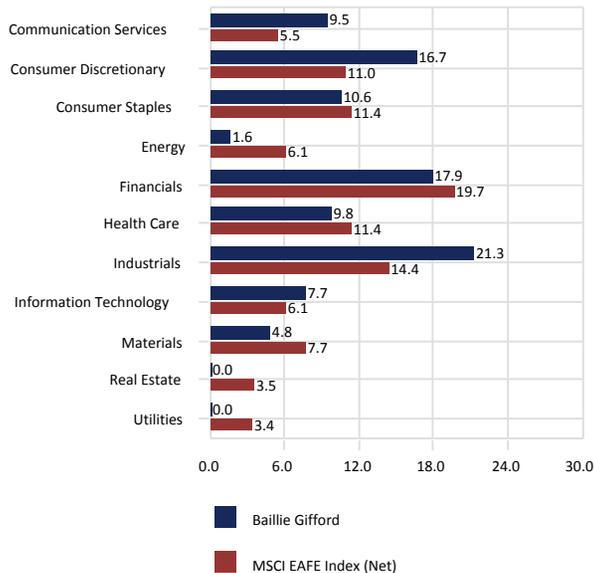
Historical Statistics (3 Year)

	Alpha	Beta	Standard Deviation	R-Squared	Information Ratio	Up Capture	Down Capture
Baillie Gifford	-	-	-	-	-	-	-
<i>MSCI EAFE Index (Net)</i>	0.00	1.00	11.24	1.00	-	100.00	100.00

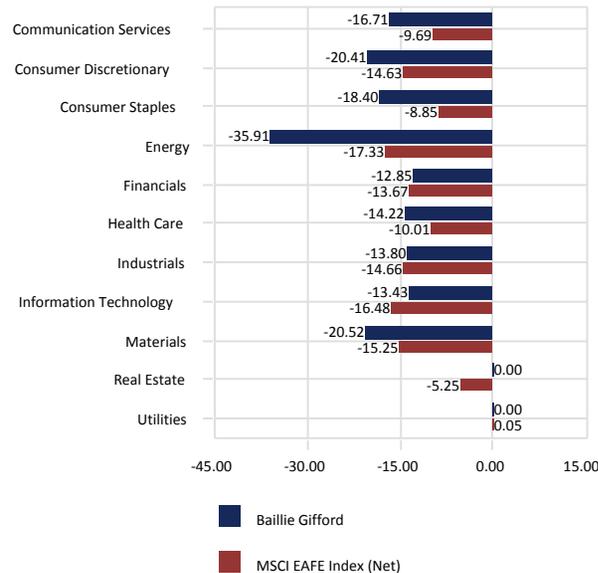
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$000)	24,561,862	55,193,733
Median Mkt. Cap (\$000)	13,115,741	9,371,617
Price/Earnings ratio	15.43	12.27
Price/Book ratio	3.47	2.12
5 Yr. EPS Growth Rate (%)	12.53	9.78
Current Yield (%)	2.19	3.73
Beta	-	1.00
Number of Stocks	57	920

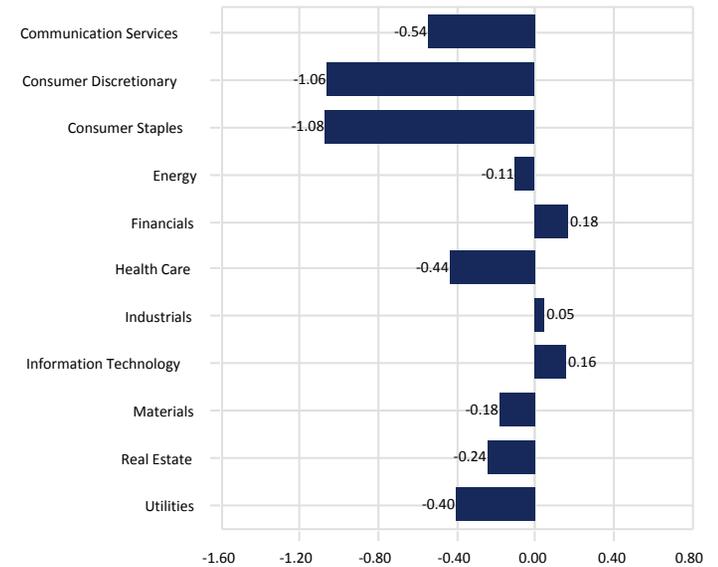
Sector Allocation



Sector Performance



Total Sector Attribution



net of fees

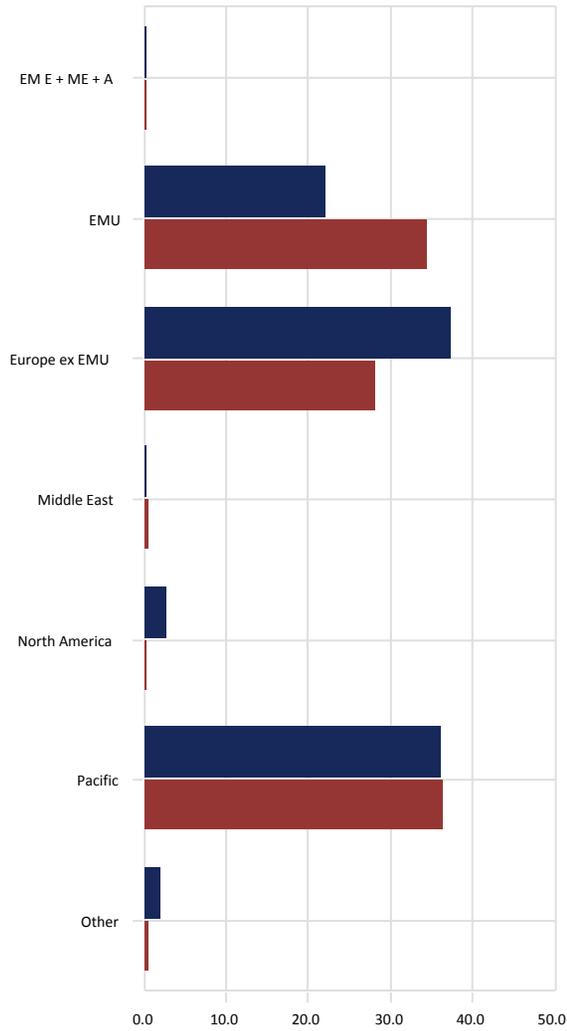


Howard County Retirement Plans

Ballie Gifford EAFE Pure Focus (Net)

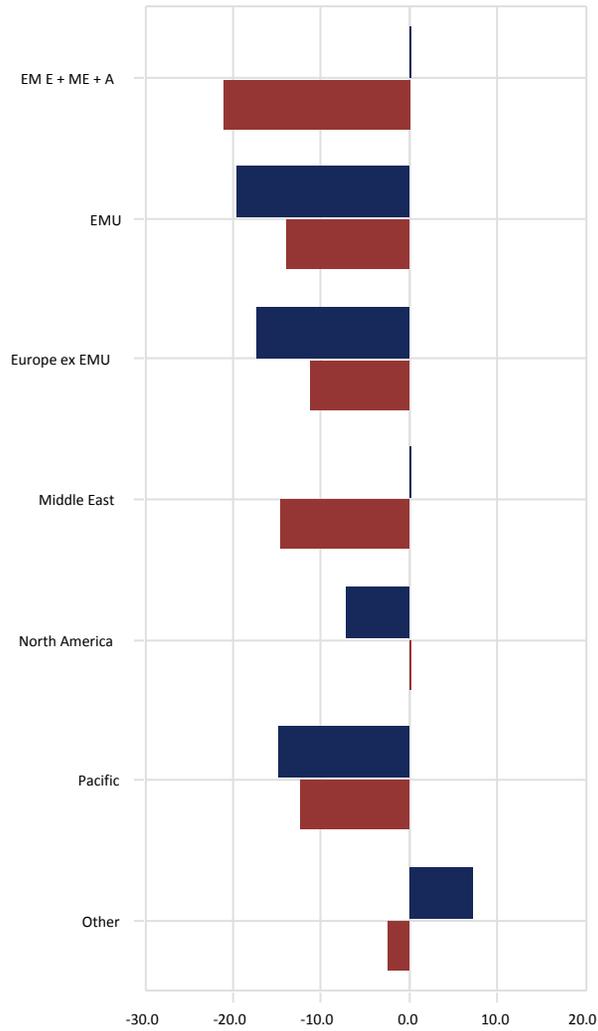
December 31, 2018

Allocation Quarterly



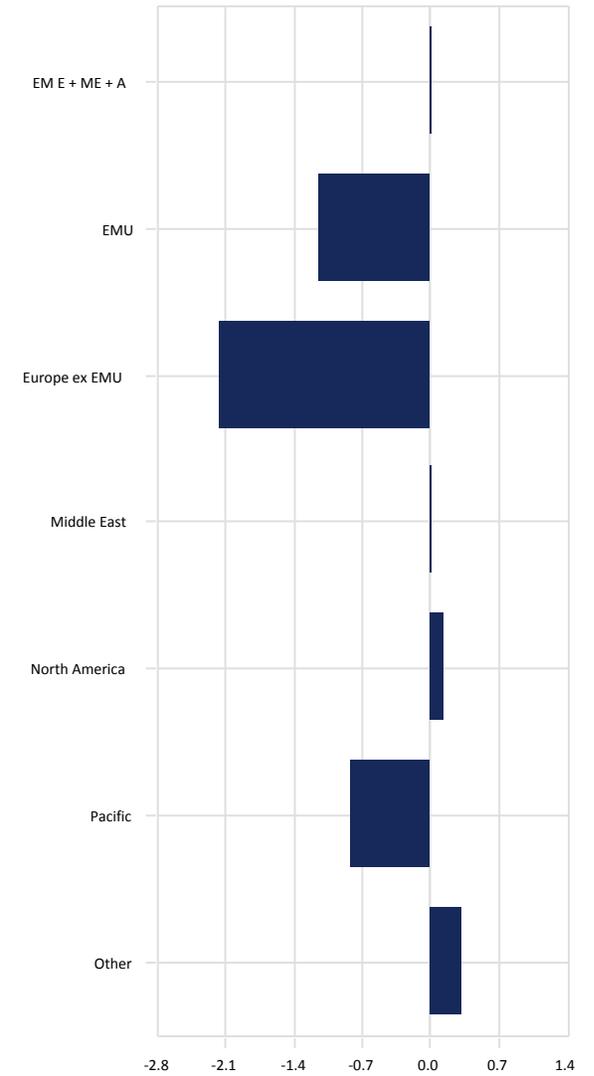
■ Baillie Gifford ■ MSCI EAFE Index (Net)

Performance Quarterly



■ Baillie Gifford ■ MSCI EAFE Index (Net)

Attribution Quarterly



net of fees

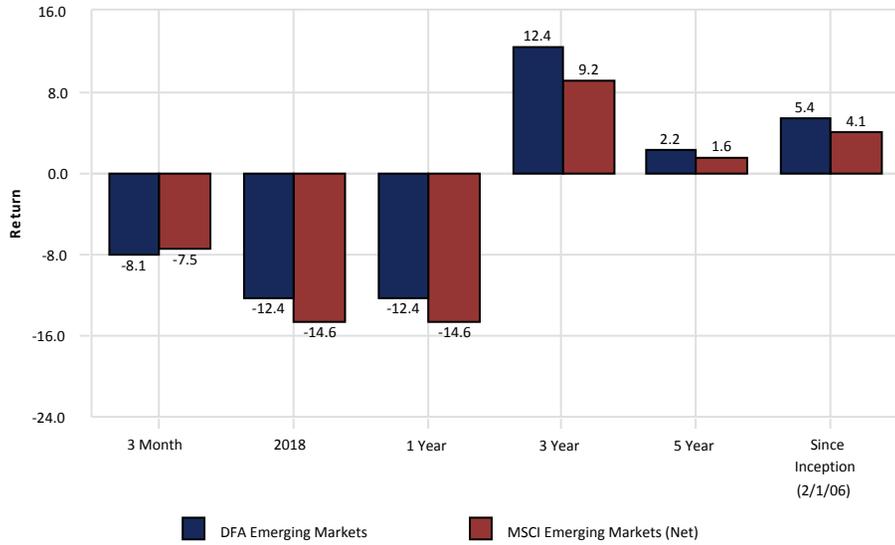


Howard County Retirement Plans

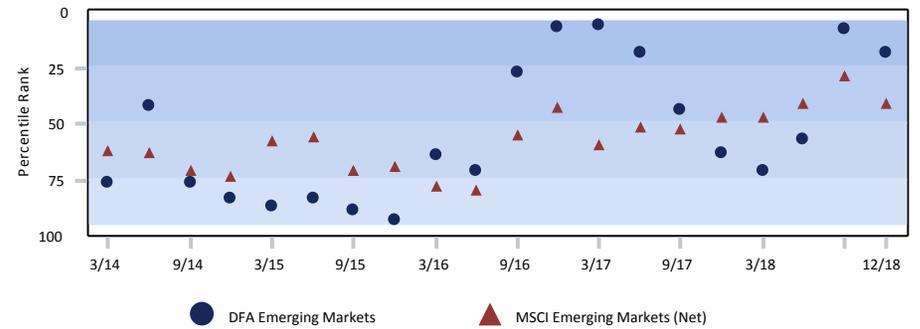
DFA Emerging Markets vs. IM Emerging Markets Equity (SA+CF)

December 31, 2018

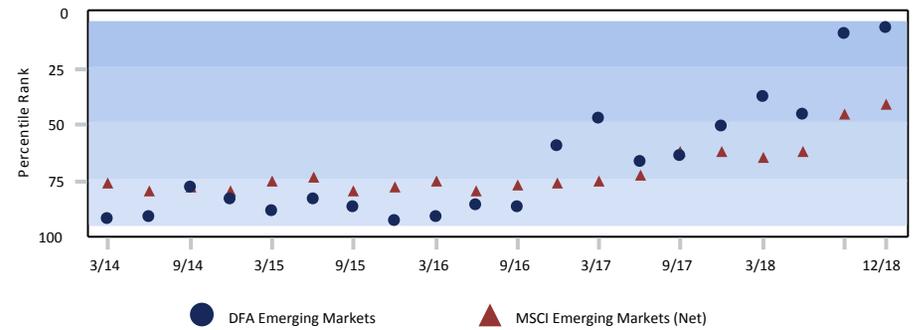
Comparative Performance



1 Year Rolling Percentile Ranking



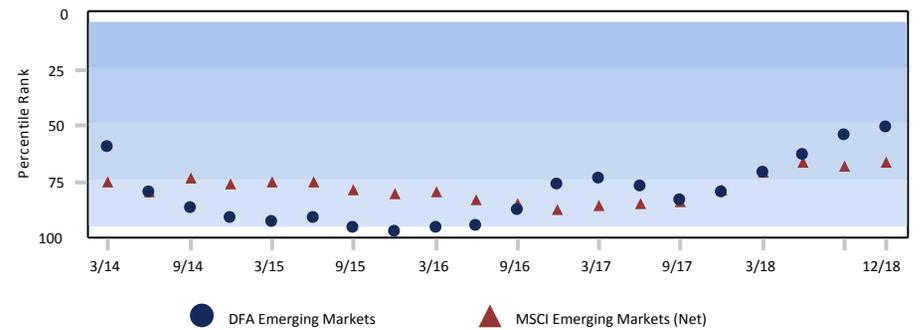
3 Year Rolling Percentile Ranking



Risk/Return (01/01/16 - 12/31/18)



5 Year Rolling Percentile Ranking



gross of fees



Howard County Retirement Plans

DFA Emerging Markets

December 31, 2018

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
DFA Emerging Markets	-8.22	-12.93	-12.93	11.76	1.63
<i>MSCI Emerging Markets (Net)</i>	-7.47	-14.58	-14.58	9.25	1.65
<i>IM Emerging Markets Equity (SA+CF) Median</i>	-7.28	-15.23	-15.23	8.69	2.25
DFA Emerging Markets Rank	68	22	22	11	68

Top 10 Positions

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Reliance Industries Ltd	3.32	0.95	2.37	-7.10
China Construction Bank Corp	2.10	1.65	0.45	-5.64
Petroleo Brasileiro S.A.- Petrobras	2.08	0.41	1.67	8.42
Vale SA	2.06	0.87	1.19	-11.88
Industrial & Commercial Bank of China Ltd	1.94	1.03	0.91	-2.36
Vale SA	1.43	0.87	0.56	-11.12
Oil Co LUKOIL PJSC	1.36	0.73	0.63	-4.17
Standard Bank Group Ltd	1.28	0.33	0.95	0.33
China Mobile Ltd	1.13	1.23	-0.10	-2.42
PTT Public Co Ltd	1.10	0.31	0.79	-13.91

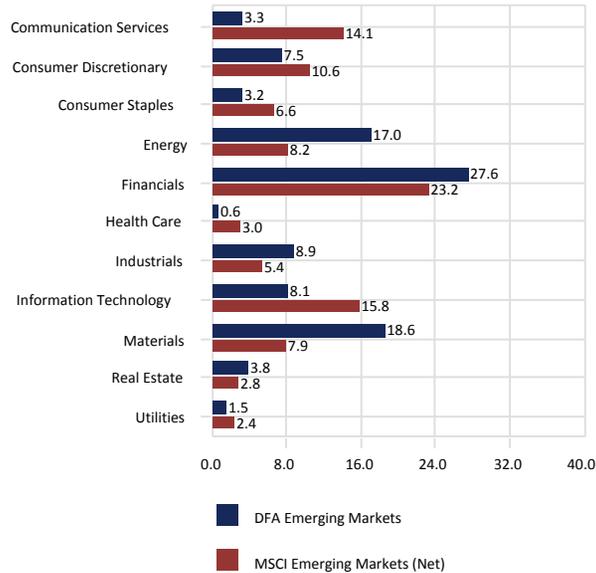
Historical Statistics (3 Year)

	Alpha	Beta	Standard Deviation	R-Squared	Information Ratio	Up Capture	Down Capture
DFA Emerging Markets	2.01	1.05	15.78	0.94	0.62	111.24	102.21
<i>MSCI Emerging Markets (Net)</i>	0.00	1.00	14.60	1.00	-	100.00	100.00

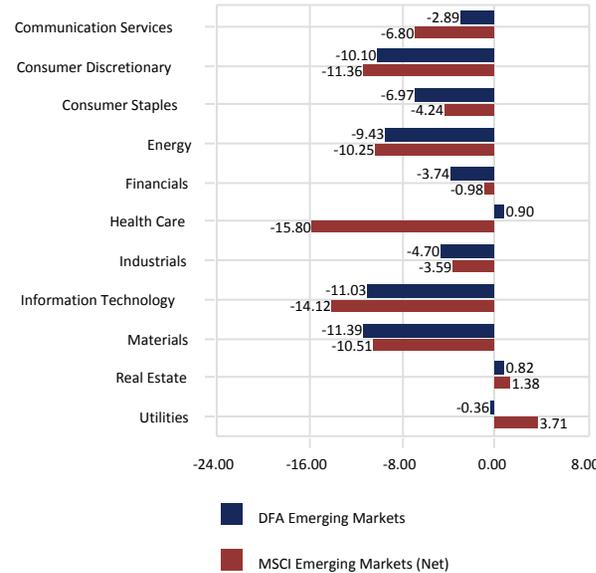
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$000)	25,955,763	70,373,005
Median Mkt. Cap (\$000)	343,876	4,928,215
Price/Earnings ratio	9.32	11.13
Price/Book ratio	1.44	2.37
5 Yr. EPS Growth Rate (%)	5.47	13.53
Current Yield (%)	3.64	3.07
Beta (5 Years, Monthly)	1.07	1.00
Number of Stocks	2,473	1,125

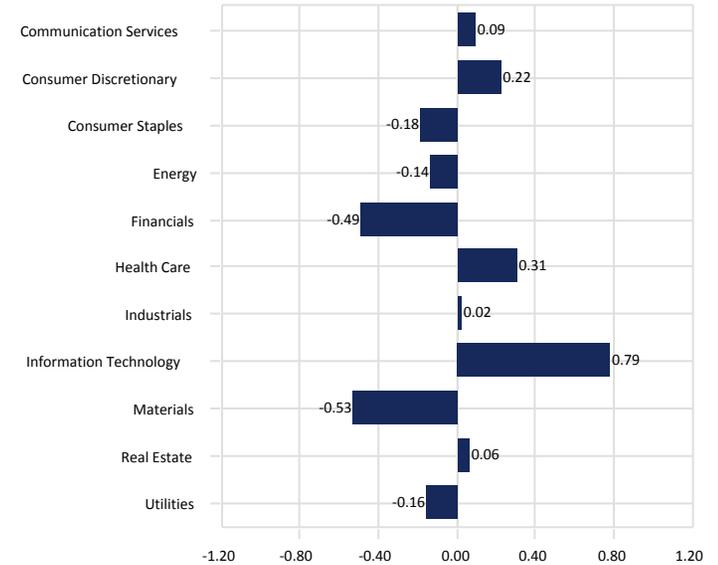
Sector Allocation



Sector Performance



Total Sector Attribution



net of fees

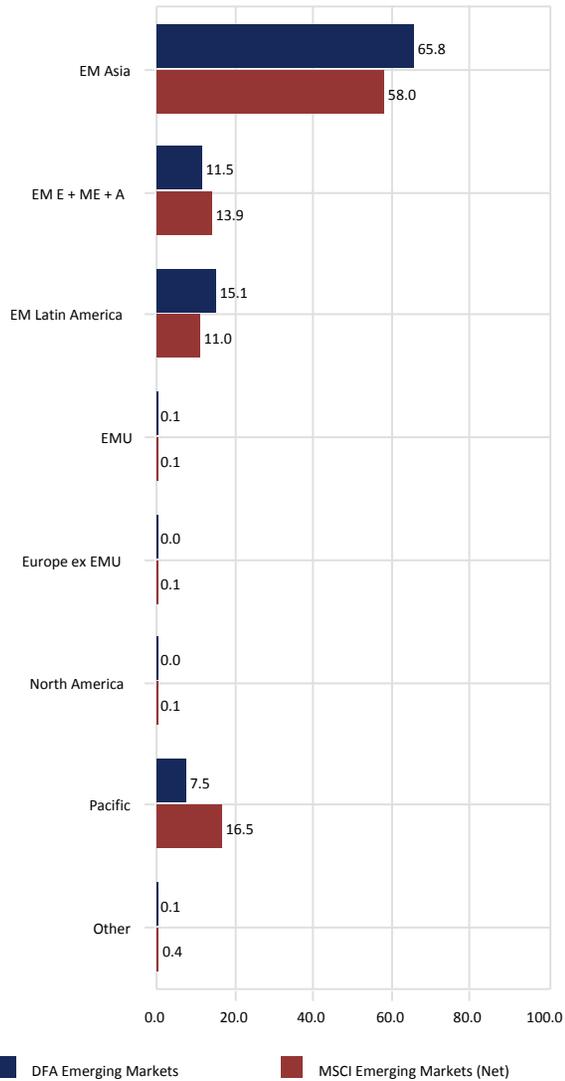


Howard County Retirement Plans

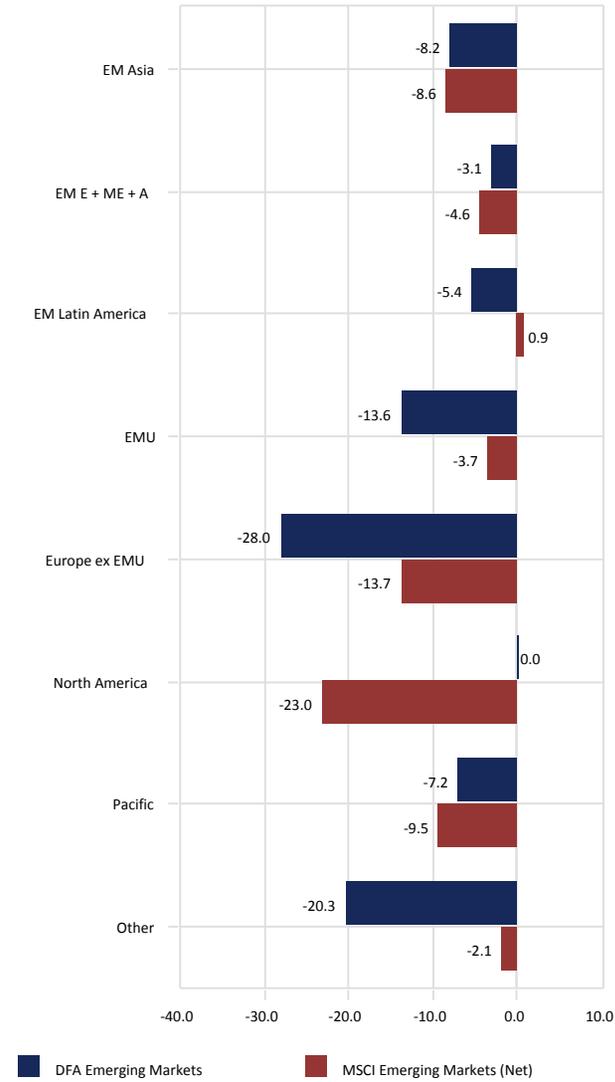
DFA vs. MSCI Emerging Markets Index (Net)

December 31, 2018

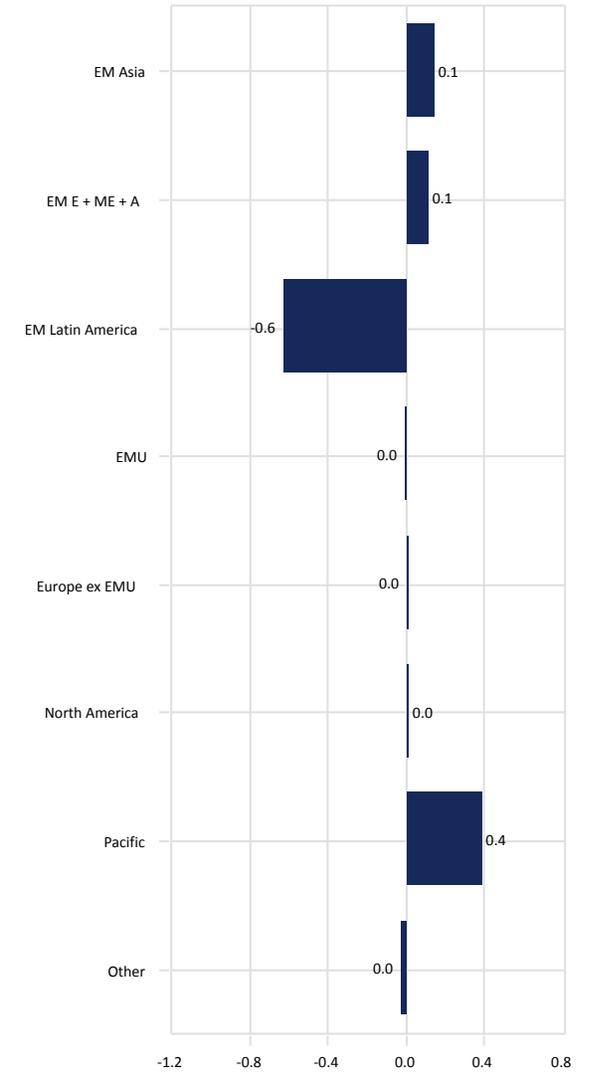
Allocation Quarterly



Performance Quarterly



Attribution Quarterly



gross of fees

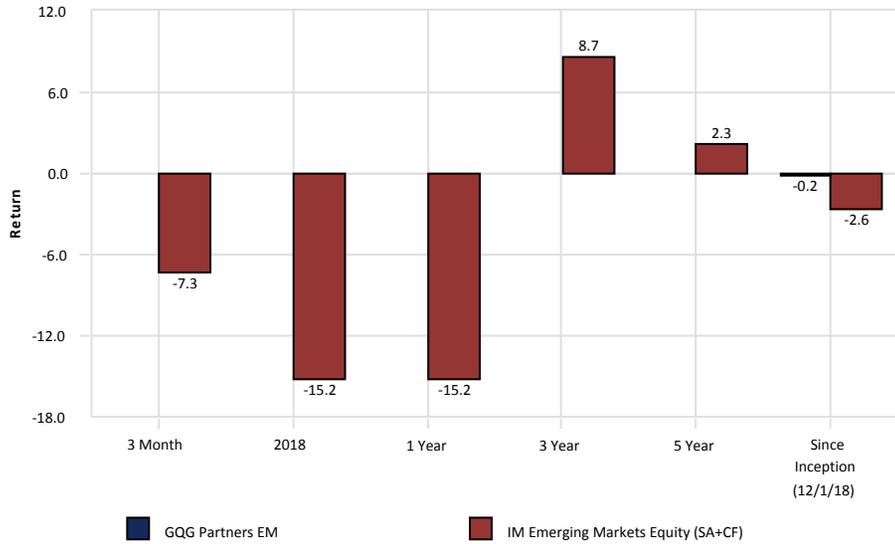


Howard County Retirement Plans

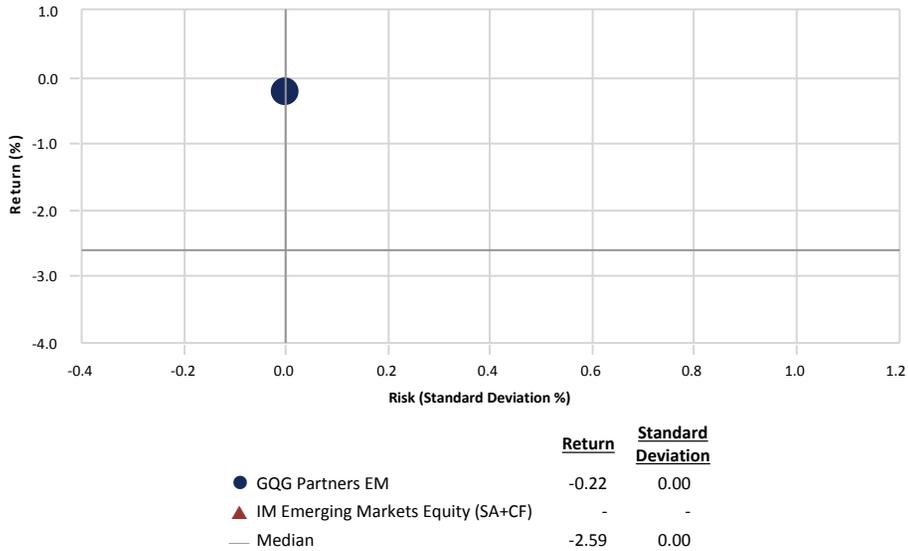
GQG Partners EM vs. IM Emerging Markets Equity (SA+CF)

December 31, 2018

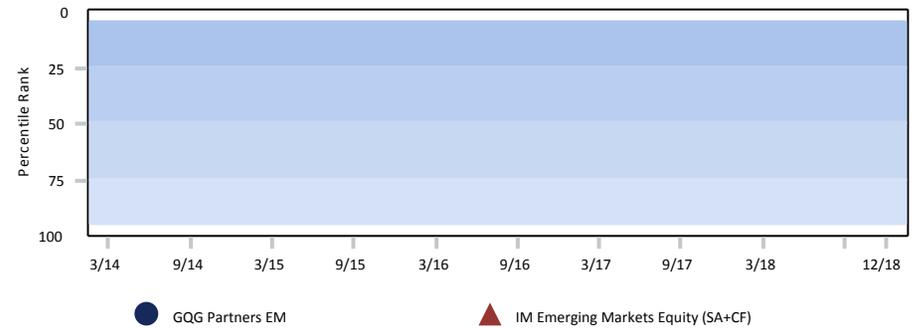
Comparative Performance



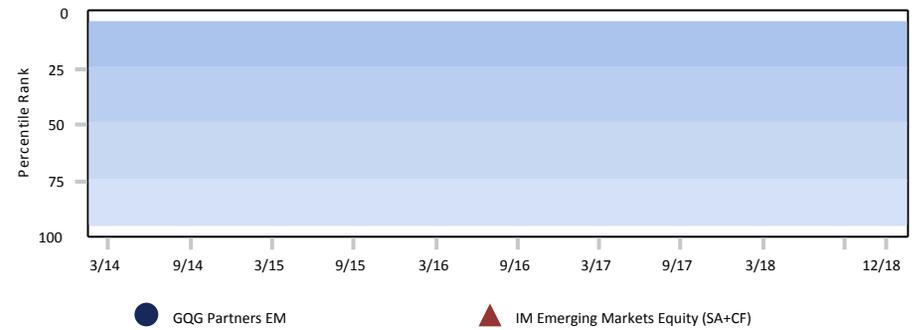
Risk/Return (12/01/18 - 12/31/18)



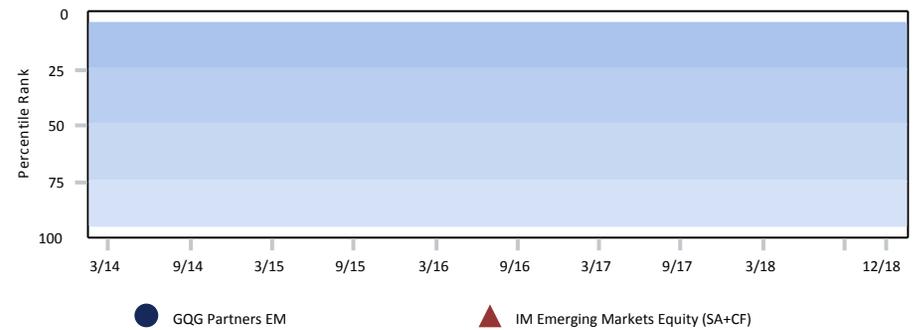
1 Year Rolling Percentile Ranking



3 Year Rolling Percentile Ranking



5 Year Rolling Percentile Ranking



Howard County Retirement Plans

GQG Partners EM

December 31, 2018

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
GQG Partners EM	-	-	-	-	-
<i>MSCI Emerging Markets (Net)</i>	-7.47	-14.58	-14.58	9.25	1.65
<i>IM Emerging Markets Equity (SA+CF) Median</i>	-7.28	-15.23	-15.23	8.69	2.25
GQG Partners EM Rank	-	-	-	-	-

Top 10 Positions

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Housing Development Finance Corp Ltd	7.06	0.94	6.12	16.93
H D F C Bank Ltd	5.47	0.00	5.47	10.09
PT Bank Central Asia TBK	4.63	0.37	4.26	11.65
Heineken NV	4.13	0.00	4.13	-5.81
AIA Group Ltd	3.70	0.00	3.70	-7.09
Ping An Insurance Group	3.34	0.96	2.38	-13.09
Link Real Estate Investment Trust	3.34	0.00	3.34	4.67
Infosys Ltd	2.66	0.69	1.97	-5.42
CK Infrastructure Hldngs Ltd	2.52	0.00	2.52	-4.44
Tata Consultancy Services Ltd	2.42	0.51	1.91	-9.45

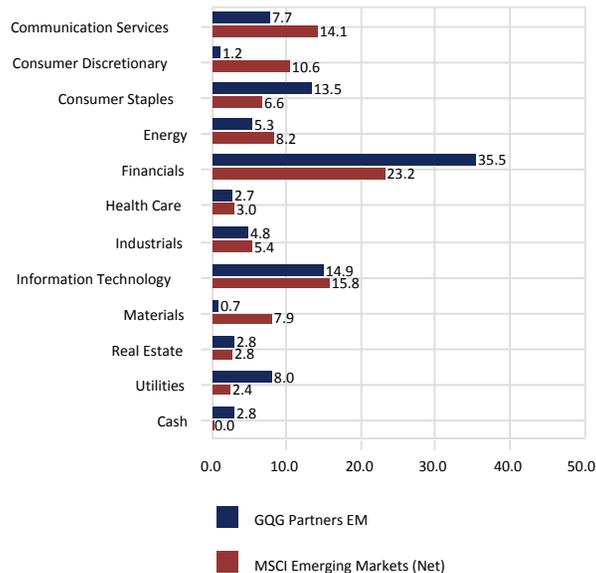
Historical Statistics (3 Year)

	Alpha	Beta	Standard Deviation	R-Squared	Information Ratio	Up Capture	Down Capture
GQG Partners EM	-	-	-	-	-	-	-
<i>MSCI Emerging Markets (Net)</i>	0.00	1.00	14.60	1.00	-	100.00	100.00

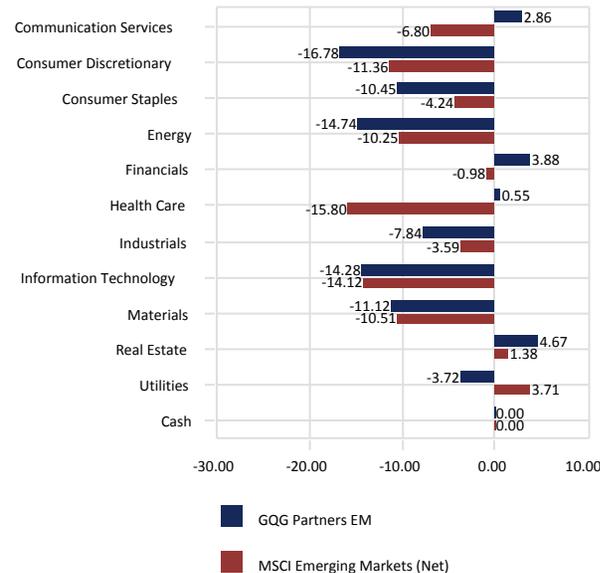
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$000)	48,013,380	70,373,005
Median Mkt. Cap (\$000)	29,925,138	4,928,215
Price/Earnings ratio	13.26	11.13
Price/Book ratio	2.60	2.37
5 Yr. EPS Growth Rate (%)	9.46	13.53
Current Yield (%)	2.56	3.07
Beta	-	1.00
Number of Stocks	55	1,125

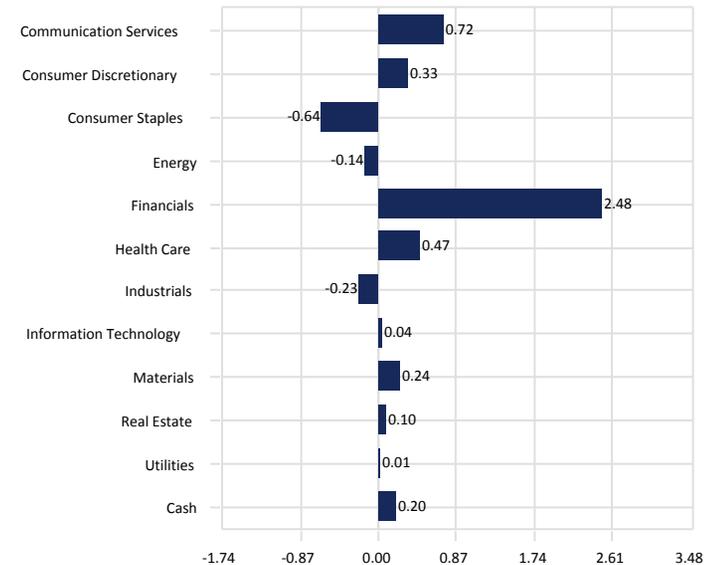
Sector Allocation



Sector Performance



Total Sector Attribution



gross of fees

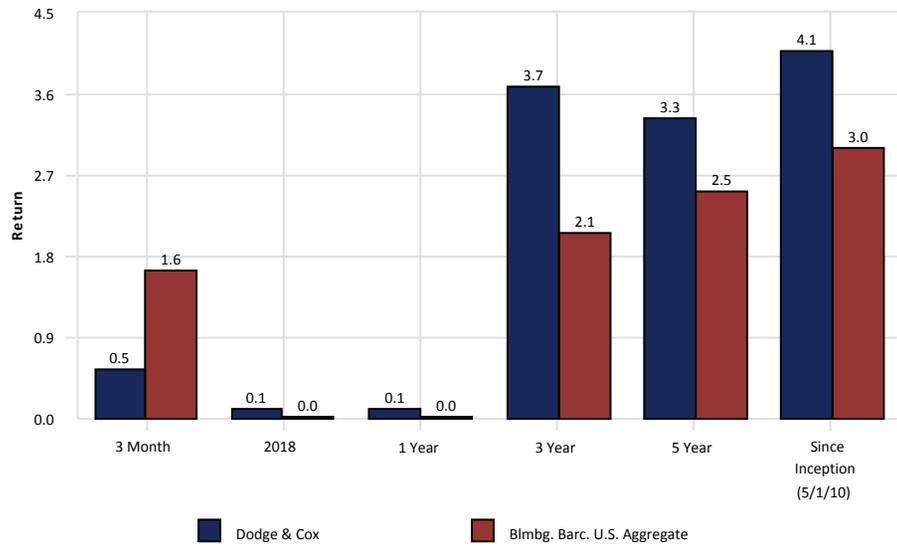


Howard County Retirement Plans

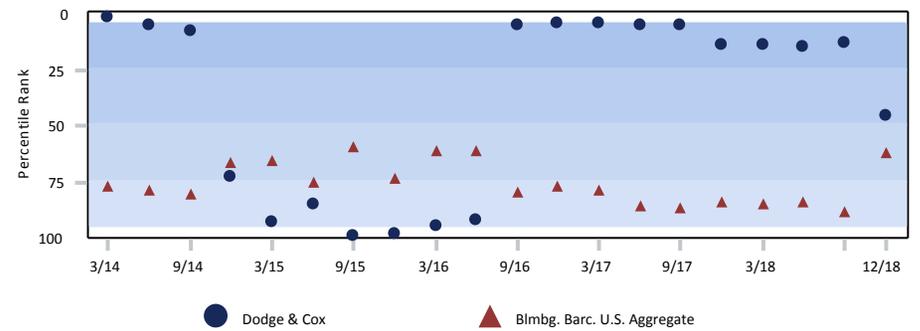
Dodge & Cox vs. IM U.S. Broad Market Core Fixed Income (SA+CF)

December 31, 2018

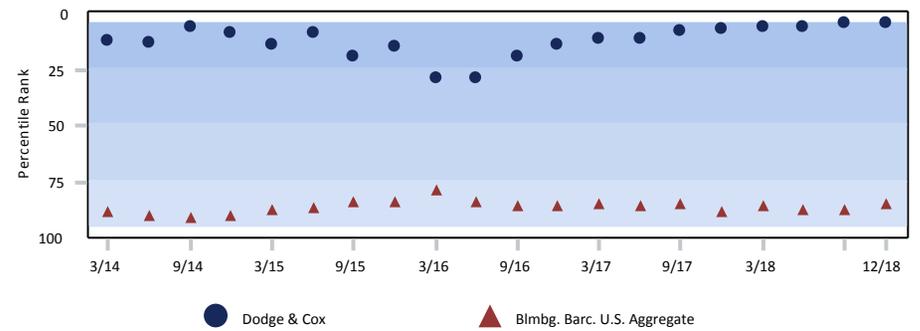
Comparative Performance



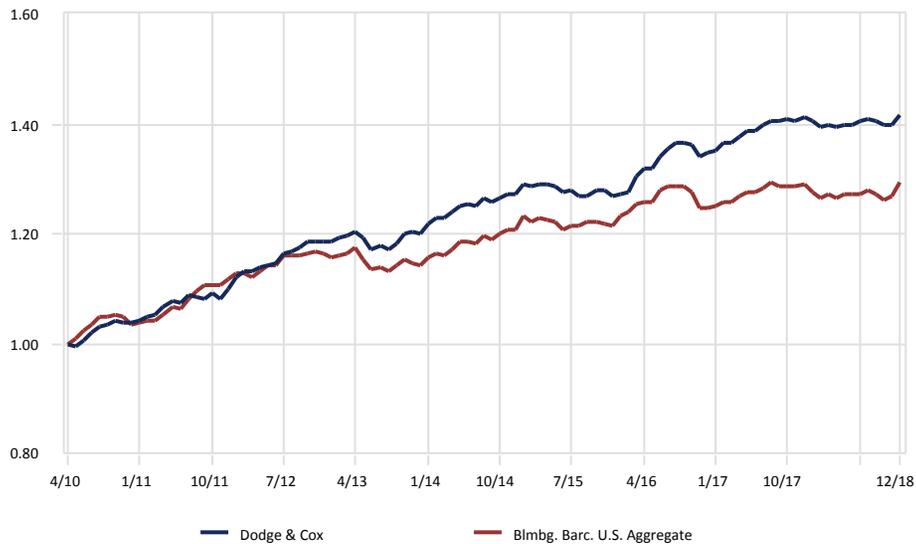
1 Year Rolling Percentile Ranking



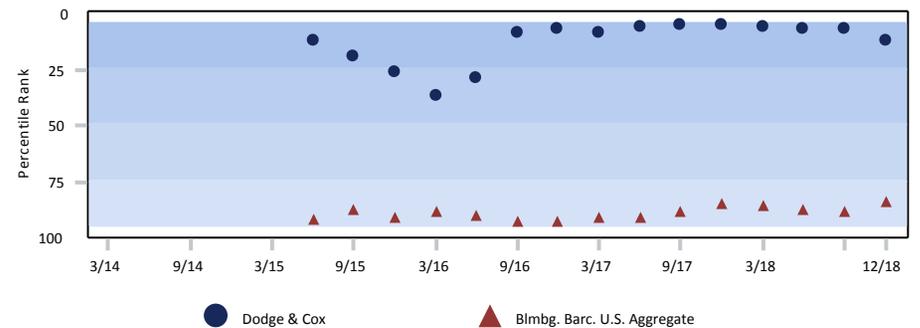
3 Year Rolling Percentile Ranking



Growth of \$1



5 Year Rolling Percentile Ranking



gross of fees



Howard County Retirement Plans

Dodge & Cox

December 31, 2018

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
Dodge & Cox	0.54	0.11	0.11	3.70	3.33
<i>Blmbg. Barc. U.S. Aggregate</i>	1.64	0.01	0.01	2.06	2.52
<i>IM U.S. Broad Mkt Core Fixed Income (SA+CF)</i>	1.40	0.07	0.07	2.48	2.86
Dodge & Cox Rank	94	46	46	4	12

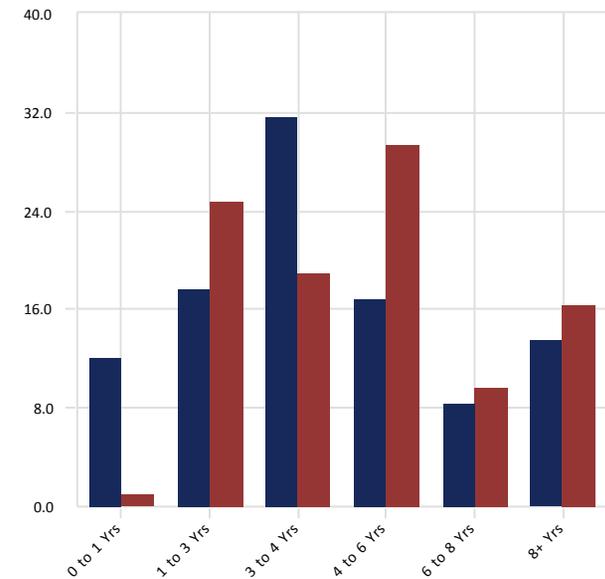
Portfolio Characteristics

	Portfolio	Benchmark
Modified Duration	4.44	6.06
Yield To Maturity (%)	4.06	3.28
Avg. Maturity	7.99	8.63
Avg. Quality	A+	AA2
Coupon Rate (%)	4.37	3.19

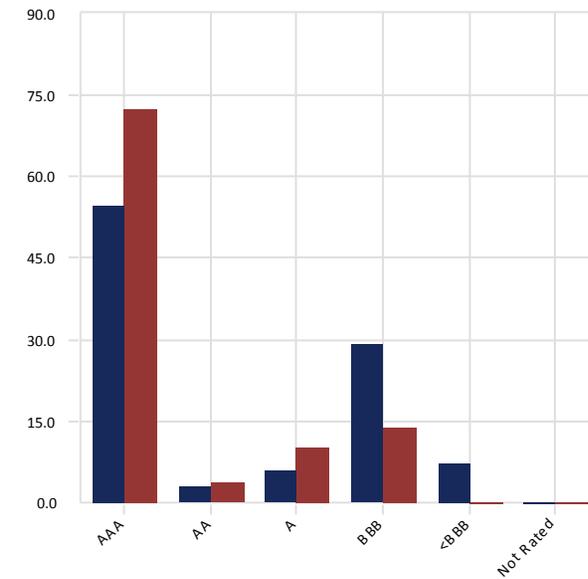
Historical Statistics (3 Year)

	Sharpe Ratio	Information Ratio	Standard Deviation
Dodge & Cox	1.08	0.98	2.43
<i>Blmbg. Barc. U.S. Aggregate</i>	0.38	-	2.84
FTSE 3 Month T-Bill	-	-0.38	0.20

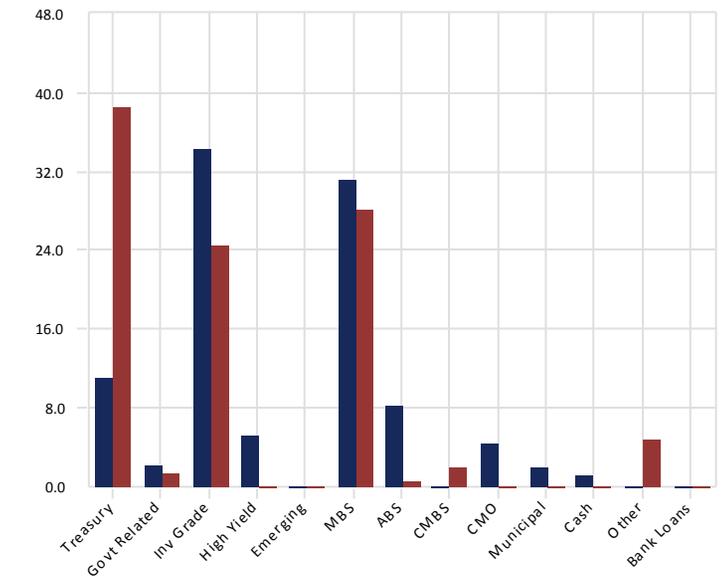
Duration Distribution (%)



Credit Quality Distribution (%)



Sector Distribution (%)



■ Dodge & Cox ■ Blmbg. Barc. U.S. Aggregate

gross of fees

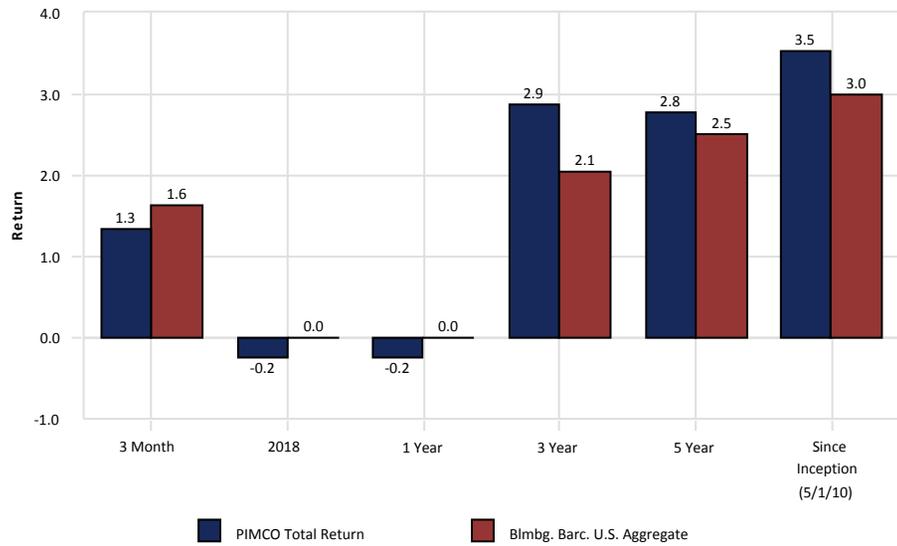


Howard County Retirement Plans

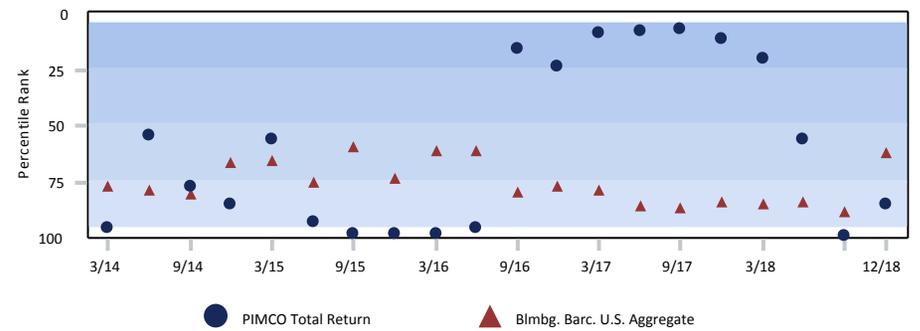
PIMCO Total Return vs. IM U.S. Broad Market Core Fixed Income (SA+CF)

December 31, 2018

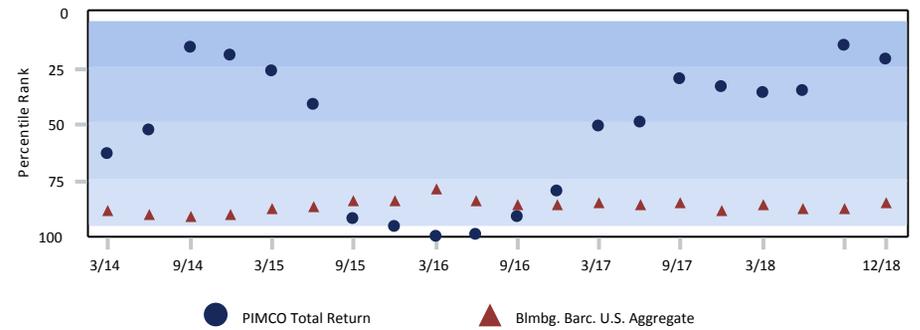
Comparative Performance



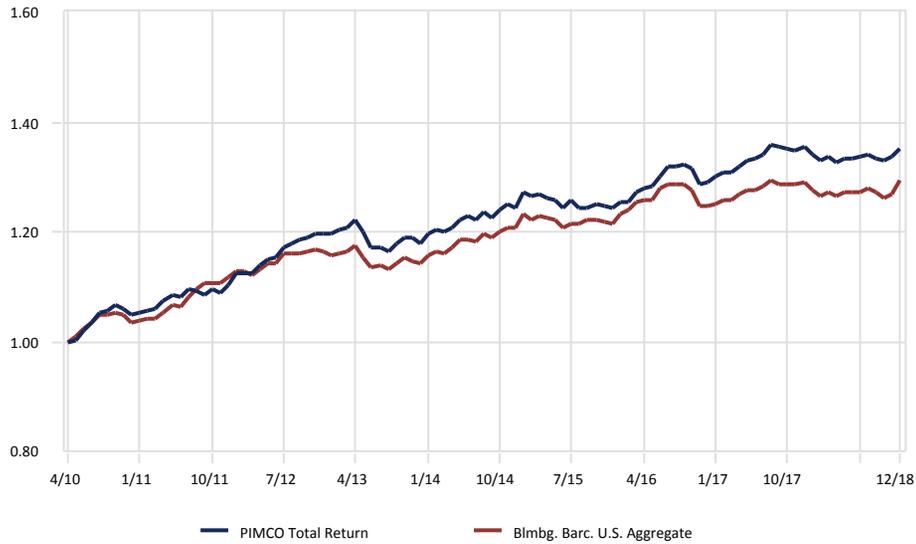
1 Year Rolling Percentile Ranking



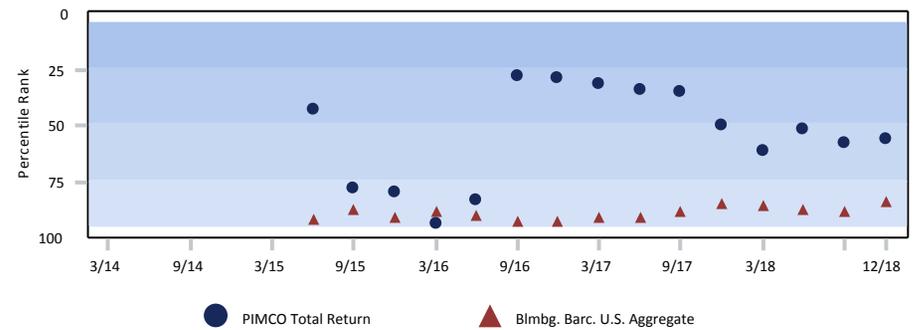
3 Year Rolling Percentile Ranking



Growth of \$1



5 Year Rolling Percentile Ranking



gross of fees



Howard County Retirement Plans

PIMCO Total Return

December 31, 2018

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
PIMCO Total Return	1.33	-0.24	-0.24	2.87	2.77
<i>Blmbg. Barc. U.S. Aggregate</i>	1.64	0.01	0.01	2.06	2.52
<i>IM U.S. Broad Mkt Core Fixed Income (SA+CF)</i>	1.40	0.07	0.07	2.48	2.86
PIMCO Total Return Rank	58	85	85	21	56

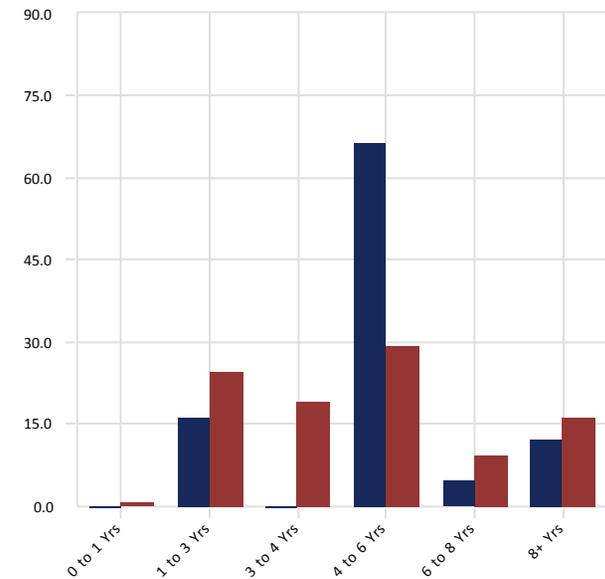
Portfolio Characteristics

	Portfolio	Benchmark
Modified Duration	3.88	6.06
Yield To Maturity (%)	8.07	3.28
Avg. Maturity	8.07	8.63
Avg. Quality	AA-	AA2
Coupon Rate (%)	3.40	3.19

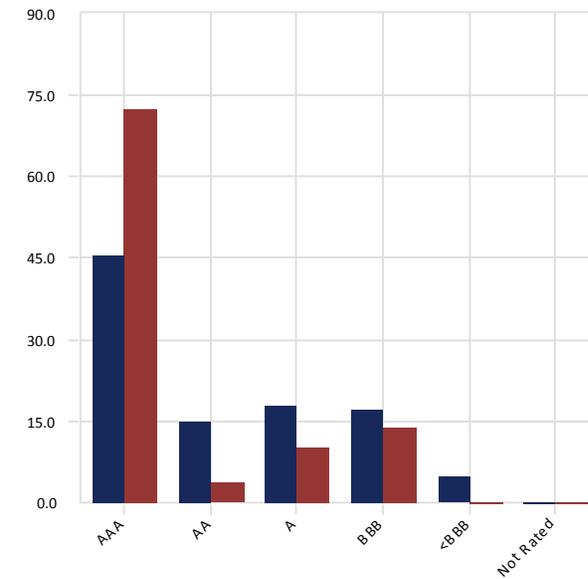
Historical Statistics (3 Year)

	Sharpe Ratio	Information Ratio	Standard Deviation
PIMCO Total Return	0.69	0.77	2.67
<i>Blmbg. Barc. U.S. Aggregate</i>	0.38	-	2.84
FTSE 3 Month T-Bill	-	-0.38	0.20

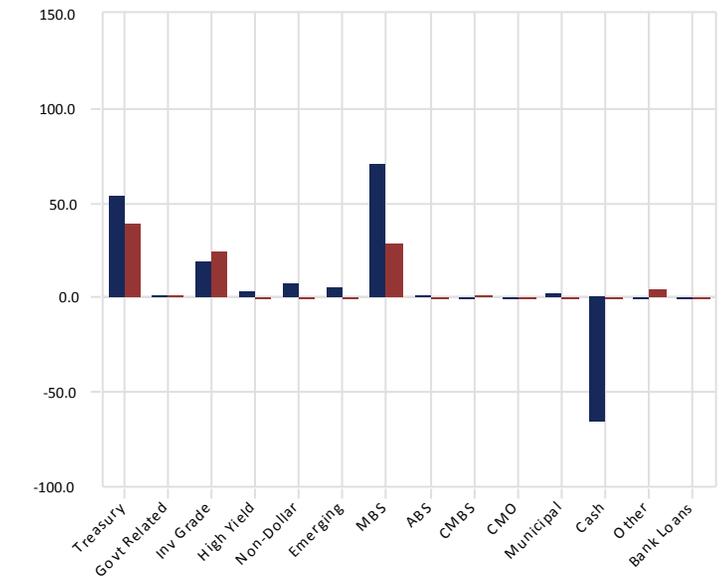
Duration Distribution (%)



Credit Quality Distribution (%)



Sector Distribution (%)



■ PIMCO Total Return ■ Blmbg. Barc. U.S. Aggregate

gross of fees

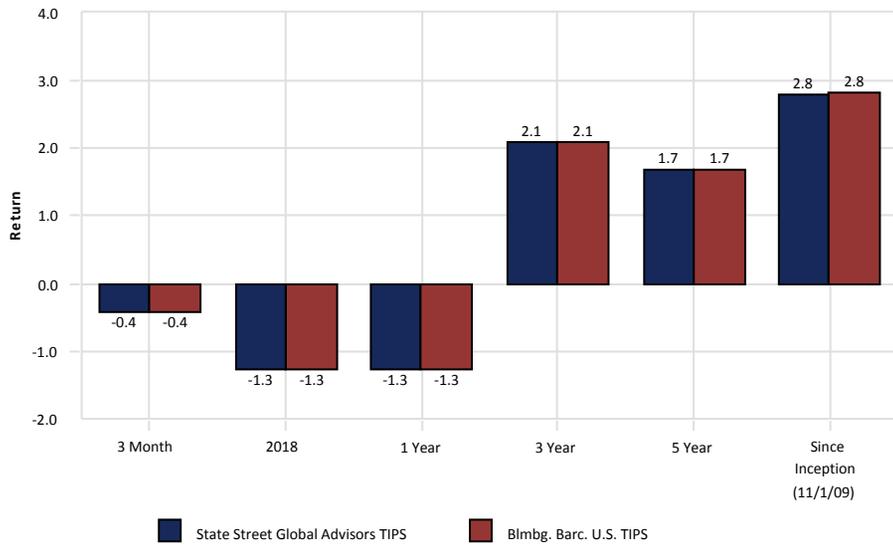


Howard County Retirement Plans

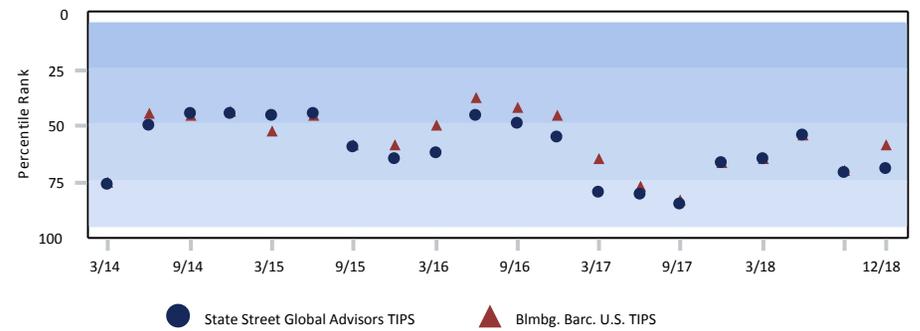
State Street Global Advisors TIPS vs. IM U.S. TIPS (SA+CF)

December 31, 2018

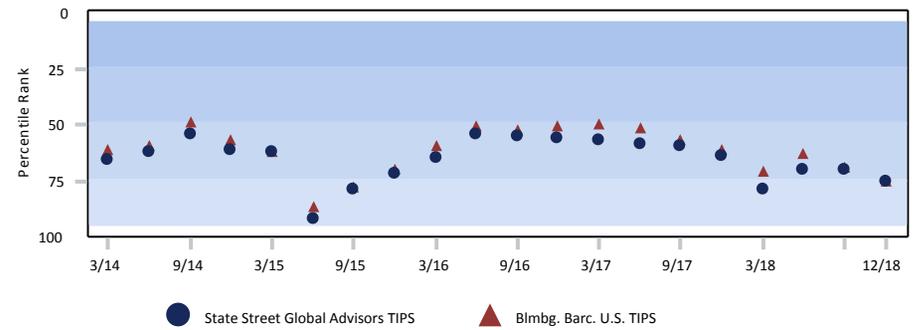
Comparative Performance



1 Year Rolling Percentile Ranking



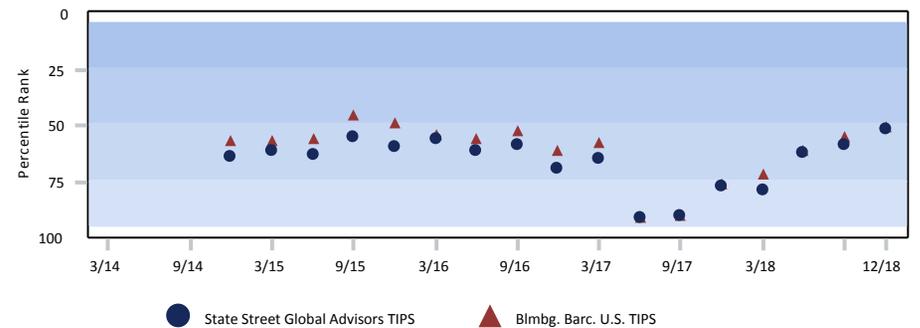
3 Year Rolling Percentile Ranking



Growth of \$1



5 Year Rolling Percentile Ranking



gross of fees



Howard County Retirement Plans

State Street Global Advisors TIPS

December 31, 2018

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
State Street Global Advisors TIPS	-0.43	-1.27	-1.27	2.09	1.68
<i>Blmbg. Barc. U.S. TIPS</i>	-0.42	-1.26	-1.26	2.11	1.69
<i>IM U.S. TIPS (SA+CF) Median</i>	-0.42	-1.20	-1.20	2.17	1.70
State Street Global Advisors TIPS Rank	54	69	69	75	52

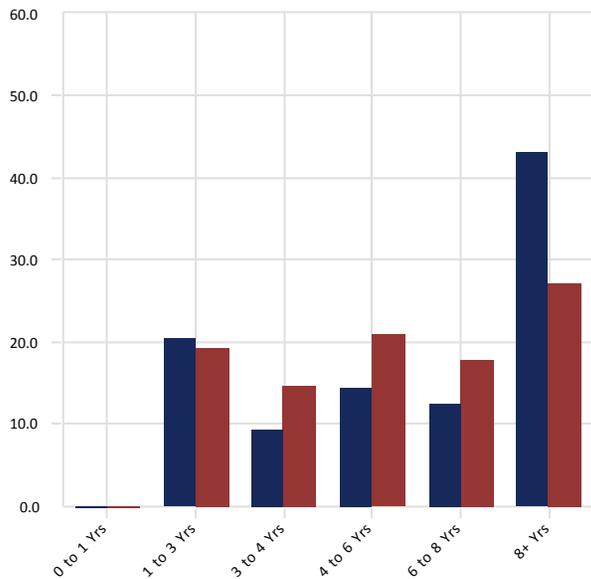
Portfolio Characteristics

	<u>Portfolio</u>	<u>Benchmark</u>
Modified Duration	5.44	7.30
Yield To Maturity (%)	3.14	2.81
Avg. Maturity	8.16	7.90
Avg. Quality	AAA	AA+
Coupon Rate (%)	0.82	0.76

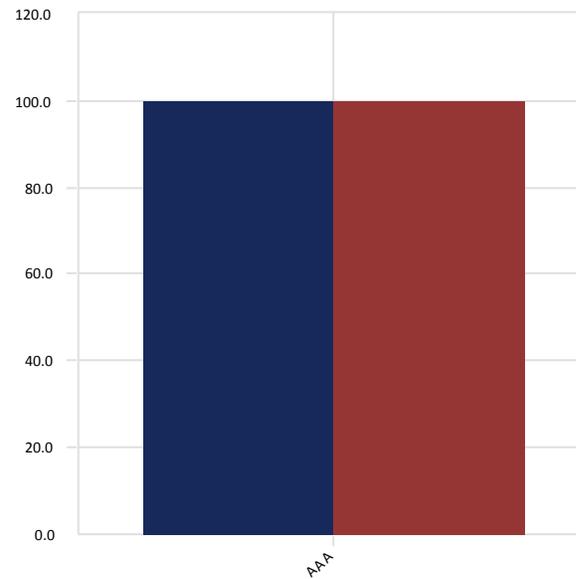
Historical Statistics (3 Year)

	Sharpe Ratio	Information Ratio	Standard Deviation
State Street Global Advisors TIPS	0.37	-0.57	3.06
<i>Blmbg. Barc. U.S. TIPS</i>	0.37	-	3.05
FTSE 3 Month T-Bill	-	-0.37	0.20

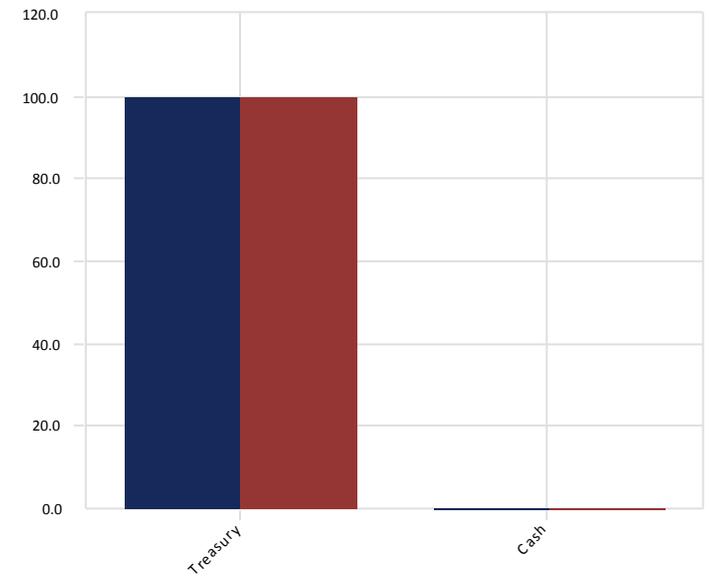
Duration Distribution (%)



Credit Quality Distribution (%)



Sector Distribution (%)



■ State Street Global Advisors TIPS ■ Blmbg. Barc. U.S. TIPS

gross of fees

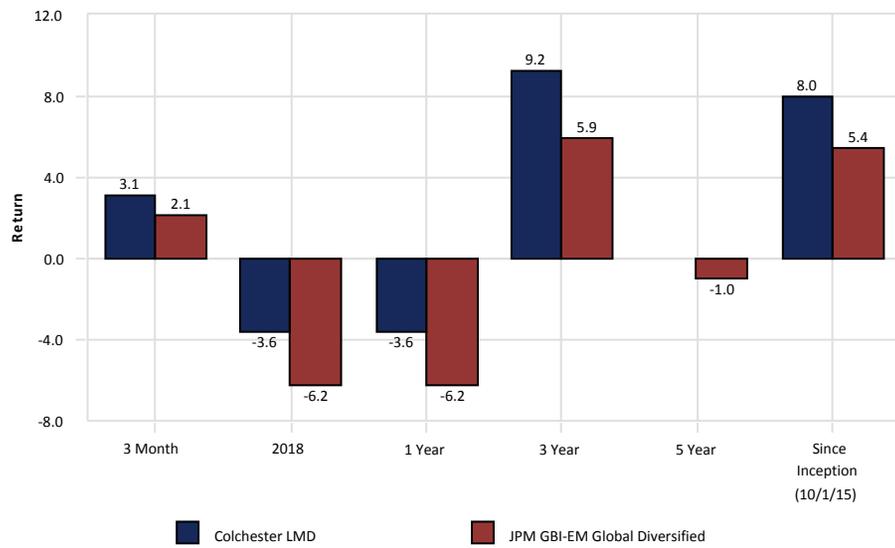


Howard County Retirement Plans

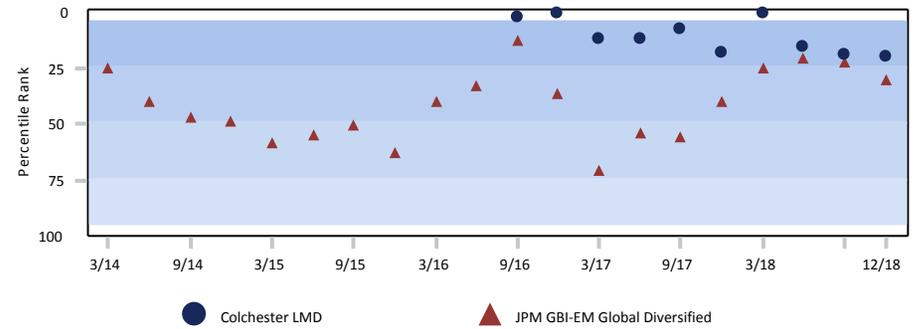
Colchester LMD vs. IM Emerging Markets Debt - LC (MF)

December 31, 2018

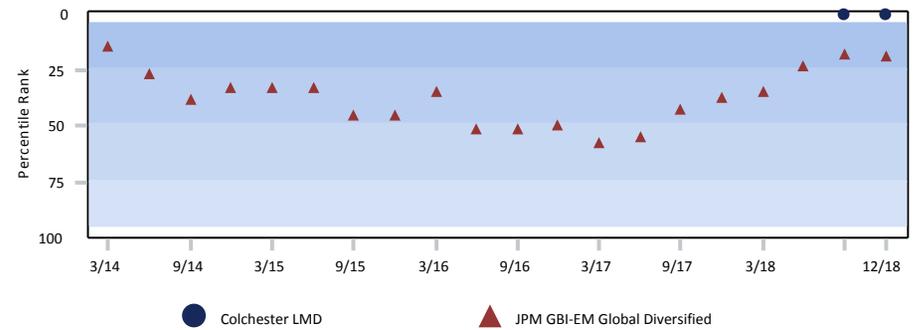
Comparative Performance



1 Year Rolling Percentile Ranking



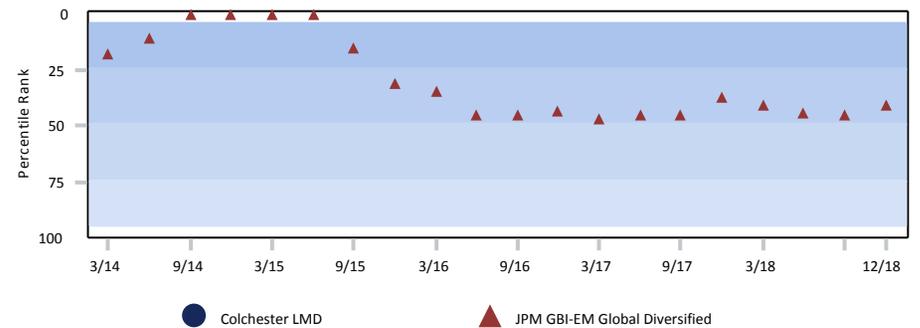
3 Year Rolling Percentile Ranking



Growth of \$1



5 Year Rolling Percentile Ranking



gross of fees



Howard County Retirement Plans

Colchester LMD

December 31, 2018

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
Colchester LMD	3.13	-3.61	-3.61	9.25	-
<i>JPM GBI-EM Global Diversified</i>	2.11	-6.21	-6.21	5.91	-0.96
<i>IM Emerging Markets Debt - LC (MF) Median</i>	1.82	-7.54	-7.54	5.21	-1.17
Colchester LMD Rank	7	20	20	1	-

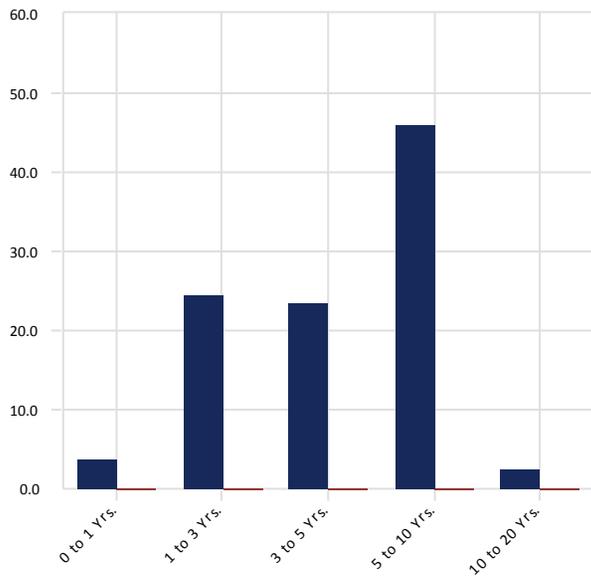
Portfolio Characteristics

	Portfolio	Benchmark
Modified Duration	4.91	5.13
Yield To Maturity (%)	7.29	6.74
Avg. Maturity	7.40	7.55
Avg. Quality	BBB	BBB+
Coupon Rate (%)	6.91	6.02

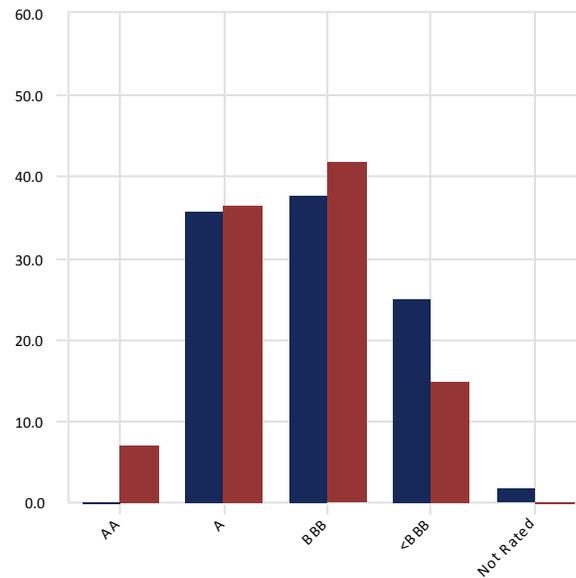
Historical Statistics (3 Year)

	Sharpe Ratio	Information Ratio	Standard Deviation
Colchester LMD	0.67	1.27	13.10
<i>JPM GBI-EM Global Diversified</i>	0.48	-	11.09
FTSE 3 Month T-Bill	-	-0.48	0.20

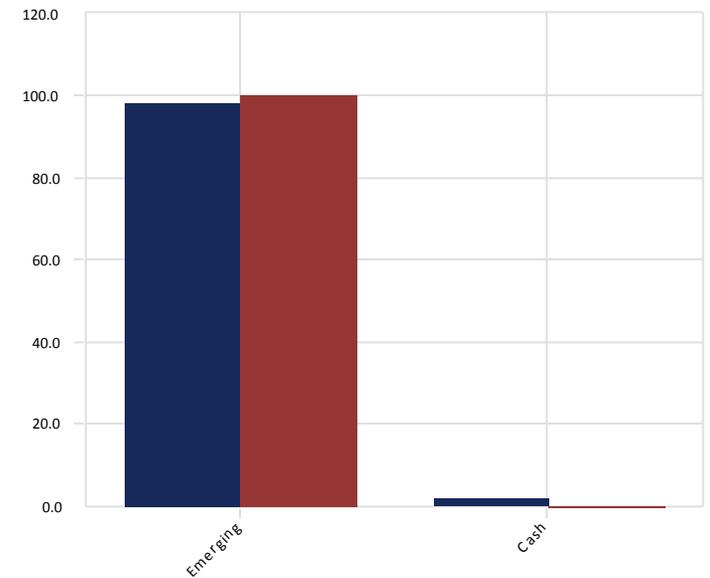
Duration Distribution (%)



Credit Quality Distribution (%)



Sector Distribution (%)



■ Colchester LMD ■ JPM GBI-EM Global Diversified

gross of fees

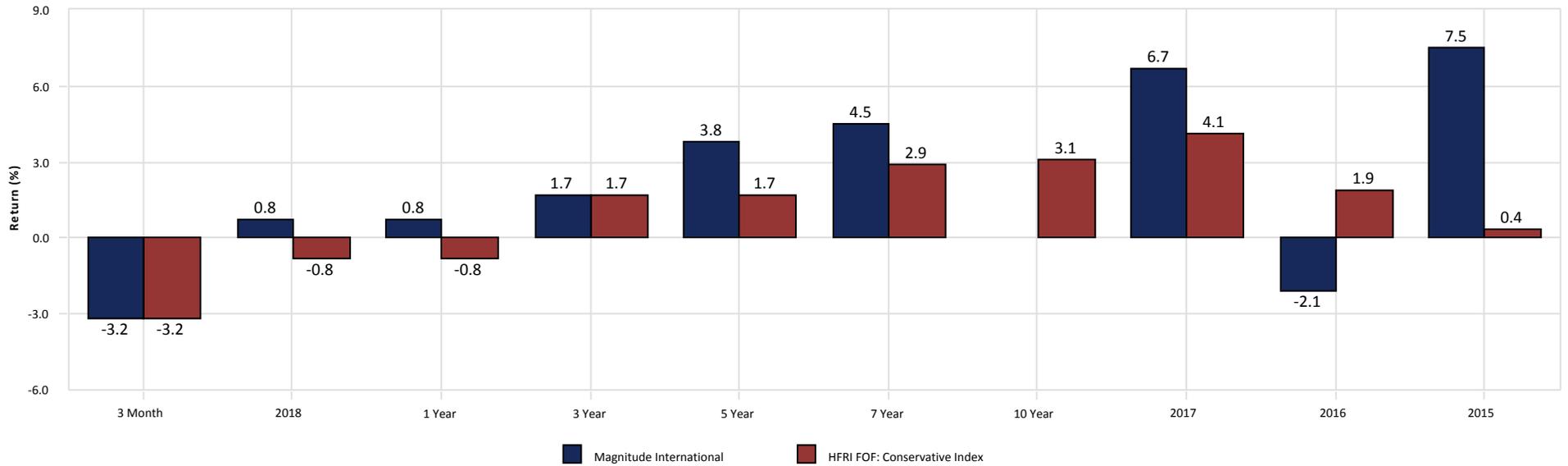


Howard County Retirement Plans

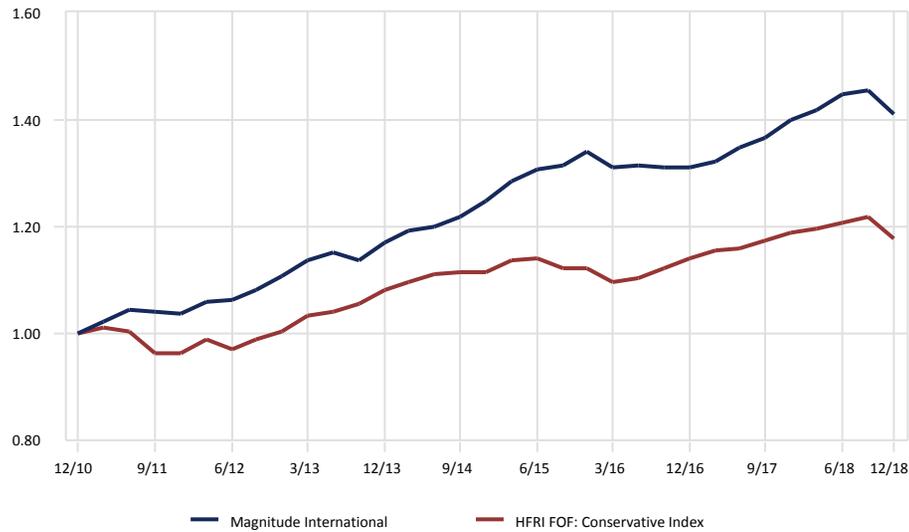
Magnitude International

December 31, 2018

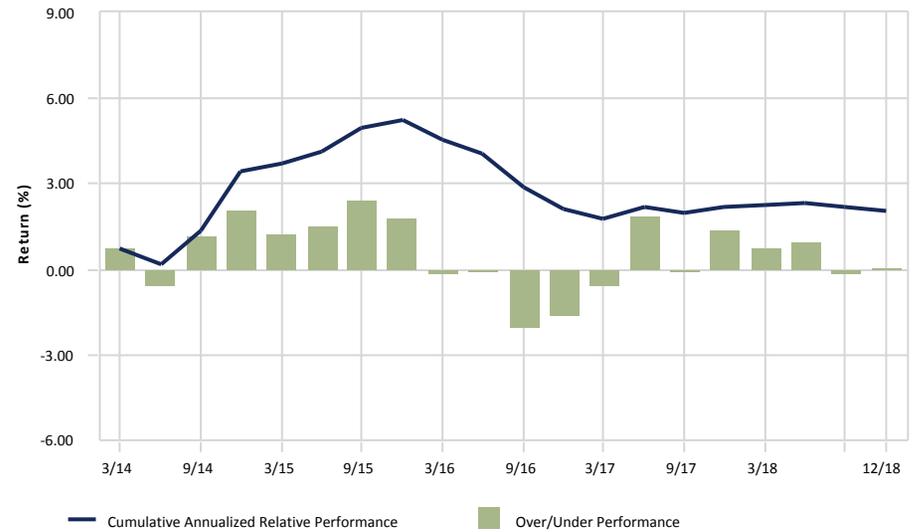
Comparative Performance



Growth of \$1 - Since Inception (01/01/11)



Relative Performance vs. HFRI FOF: Conservative Index



net of fees

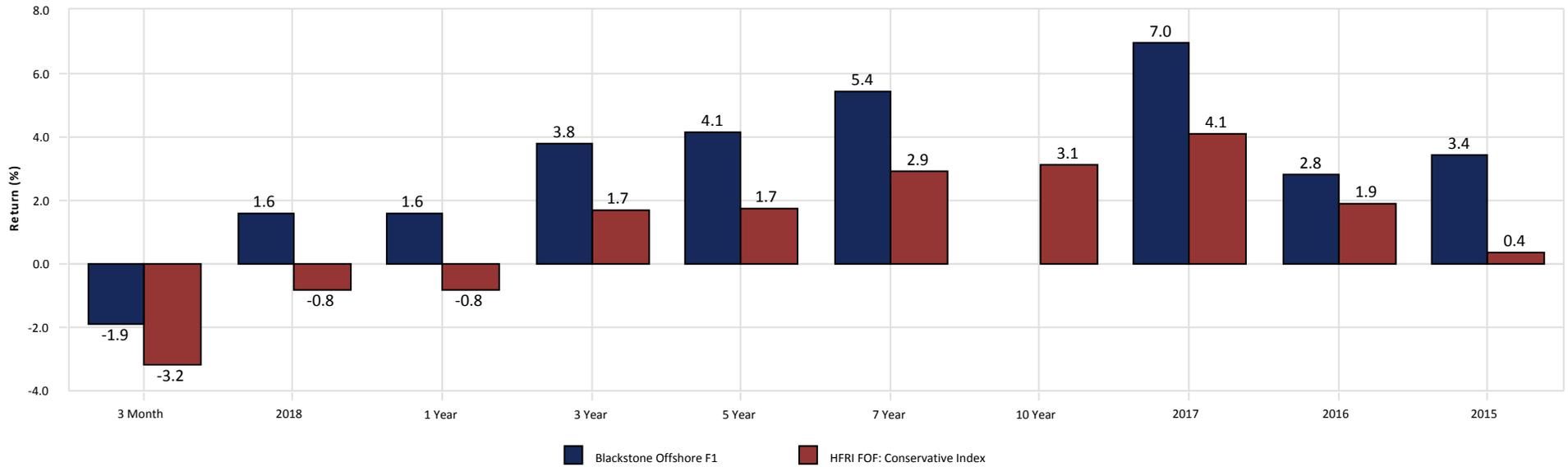


Howard County Retirement Plans

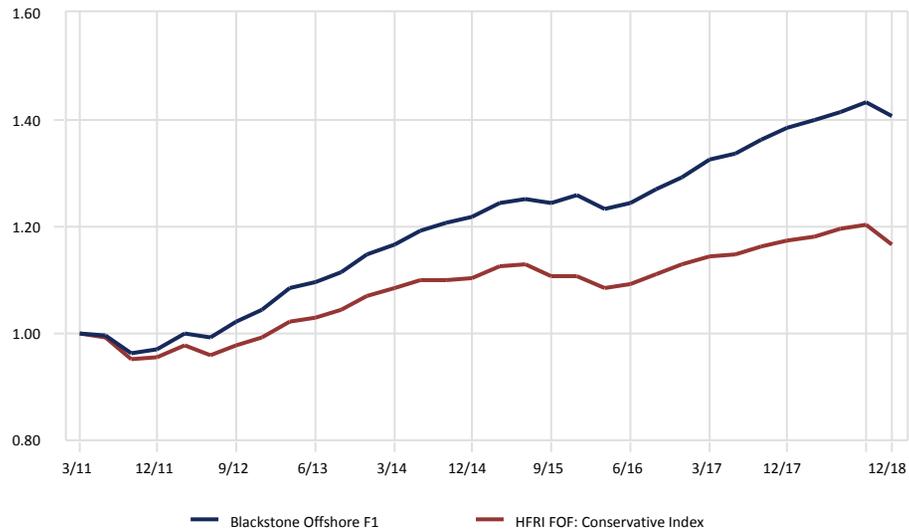
Blackstone Offshore F1

December 31, 2018

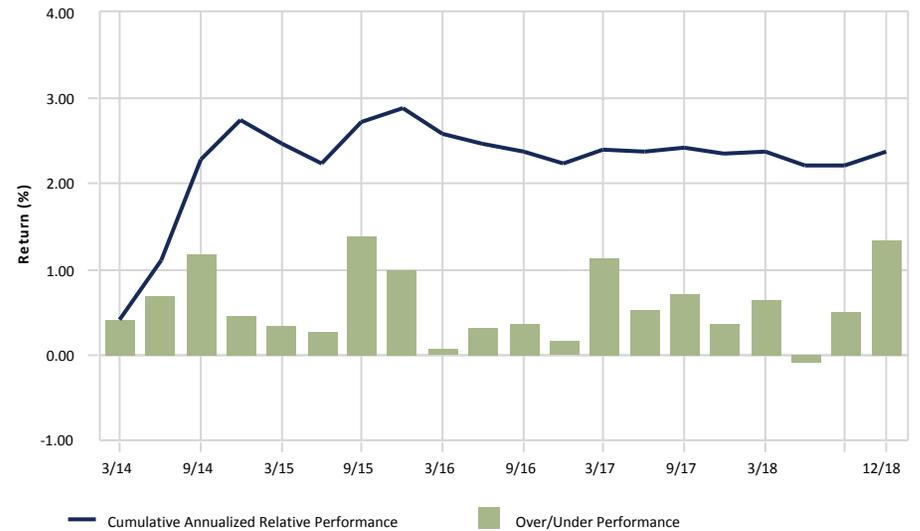
Comparative Performance



Growth of \$1 - Since Inception (03/01/11)



Relative Performance vs. HFRI FOF: Conservative Index



net of fees



Appendix



Howard County Retirement Plans

Composite Asset Allocation & Performance % | Net of Fees

December 31, 2018

	Asset \$	Asset %	3 Month	CYTD	FYTD	1 Year	3 Year	5 Year	Since Inception	Inception Date
Total Fund Composite	983,432,291	100.00	-5.50	-1.64	-2.97	-1.64	6.88	5.38	6.69	Apr-1997
<i>Total Implementation Index</i>			<i>-4.54</i>	<i>-2.02</i>	<i>-2.41</i>	<i>-2.02</i>	<i>6.02</i>	<i>5.20</i>	<i>6.53</i>	
Excess Return			-0.96	0.38	-0.56	0.38	0.86	0.18	0.16	
<i>Total Policy Index</i>			<i>-4.49</i>	<i>-2.08</i>	<i>-2.44</i>	<i>-2.08</i>	<i>6.13</i>	<i>5.22</i>	<i>7.02</i>	<i>Apr-1997</i>
Total Fund EX Alternatives	735,739,719	74.81	-7.61	-4.95	-5.21	-4.95	6.19	4.35	5.33	Jul-2008
Total Fund EX Real Assets	946,887,707	96.28	-5.79	-2.16	-3.21	-2.16	6.73	5.17	6.38	Jan-2004
Total Equity Composite	397,846,121	40.45	-13.89	-9.12	-10.07	-9.12	7.47	4.66	7.07	Jan-2004
US Equity Composite	225,310,293	22.91	-16.03	-6.27	-10.47	-6.27	9.02	7.67	8.70	Jan-2004
<i>Russell 3000 Index</i>			<i>-14.30</i>	<i>-5.24</i>	<i>-8.20</i>	<i>-5.24</i>	<i>8.97</i>	<i>7.91</i>	<i>7.89</i>	
Excess Return			-1.73	-1.03	-2.27	-1.03	0.05	-0.24	0.81	
<i>US Equity Allocation Index</i>			<i>-15.26</i>	<i>-5.99</i>	<i>-9.45</i>	<i>-5.99</i>	<i>8.80</i>	<i>7.45</i>	<i>8.11</i>	<i>Jan-2004</i>
Large Cap Composite	175,495,838	17.85	-14.63	-6.26	-8.91	-6.26	8.59	7.71	8.12	Jan-2004
<i>Russell 1000 Index</i>			<i>-13.82</i>	<i>-4.78</i>	<i>-7.42</i>	<i>-4.78</i>	<i>9.09</i>	<i>8.21</i>	<i>7.93</i>	
Excess Return			-0.81	-1.48	-1.49	-1.48	-0.50	-0.50	0.19	
Non-Large Cap Composite	49,814,454	5.07	-20.65	-6.30	-15.62	-6.30	10.29	7.81	9.49	Jan-2004
<i>Russell 2500 Index</i>			<i>-18.49</i>	<i>-10.00</i>	<i>-14.66</i>	<i>-10.00</i>	<i>7.32</i>	<i>5.15</i>	<i>8.23</i>	
Excess Return			-2.16	3.70	-0.96	3.70	2.97	2.66	1.26	
International Equity Composite	172,535,828	17.54	-10.92	-12.64	-9.55	-12.64	5.51	0.78	4.91	Jan-2004
<i>MSCI AC World ex USA (Net)</i>			<i>-11.46</i>	<i>-14.20</i>	<i>-10.84</i>	<i>-14.20</i>	<i>4.48</i>	<i>0.68</i>	<i>5.22</i>	
Excess Return			0.54	1.56	1.29	1.56	1.03	0.10	-0.31	
International Developed Markets Composite	110,954,493	11.28	-13.28	-13.41	-12.24	-13.41	2.19	0.11	-	Dec-2007
<i>MSCI EAFE Index (Net)</i>			<i>-12.50</i>	<i>-13.36</i>	<i>-11.26</i>	<i>-13.36</i>	<i>3.38</i>	<i>1.00</i>	<i>0.66</i>	
Excess Return			-0.78	-0.05	-0.98	-0.05	-1.19	-0.89	-	
International Emerging Markets Composite	61,581,335	6.26	-6.21	-11.02	-4.15	-11.02	12.57	2.05	5.06	Feb-2006
<i>MSCI Emerging Markets Index (Net)</i>			<i>-7.40</i>	<i>-14.25</i>	<i>-8.28</i>	<i>-14.25</i>	<i>9.65</i>	<i>2.03</i>	<i>4.41</i>	
Excess Return			1.19	3.23	4.13	3.23	2.92	0.02	0.65	
Fixed Income Composite	290,071,704	29.50	1.09	-1.05	0.95	-1.05	3.83	3.19	4.13	Jan-2004
<i>Fixed Income Policy Index</i>			<i>1.64</i>	<i>0.01</i>	<i>1.66</i>	<i>0.01</i>	<i>2.06</i>	<i>2.52</i>	<i>3.97</i>	
Excess Return			-0.55	-1.06	-0.71	-1.06	1.77	0.67	0.16	



Howard County Retirement Plans

Composite Asset Allocation & Performance % | Net of Fees

December 31, 2018

	Asset \$	Asset %	3 Month	CYTD	FYTD	1 Year	3 Year	5 Year	Since Inception	Inception Date
Real Assets Composite	36,544,585	3.72	2.93	14.74	4.07	14.74	11.73	11.09	7.31	Jul-2003
<i>NCREIF Property Index [3 Month Lag]</i>			1.67	7.16	3.51	7.16	7.75	9.57	9.03	
Excess Return			1.26	7.58	0.56	7.58	3.98	1.52	-1.72	
<i>NCREIF Fund Index-ODCE (VW) [M]</i>			1.76	8.35	3.88	8.35	8.24	10.41	8.28	Jul-2003
Alternatives Composite	252,308,916	25.66	1.36	9.77	4.49	9.77	8.95	9.53	8.65	Jul-2008
Private Equity Composite	136,852,194	13.92	4.89	18.39	10.26	18.39	15.90	16.75	12.95	Jul-2008
Hedge Fund Composite	115,456,723	11.74	-2.52	1.17	-1.57	1.17	2.74	3.99	4.40	Jan-2011
<i>HFRI FOF: Conservative Index</i>			-3.19	-0.82	-2.43	-0.82	1.71	1.72	2.08	
Excess Return			0.67	1.99	0.86	1.99	1.03	2.27	2.32	
Cash Composite	6,660,965	0.68	-2.37	-1.46	-1.99	-1.46	-0.30	-0.17	1.12	Jan-2004
<i>FTSE 3 Month T-Bill</i>			0.57	1.86	1.07	1.86	0.99	0.60	1.26	
Excess Return			-2.94	-3.32	-3.06	-3.32	-1.29	-0.77	-0.14	



Howard County Retirement Plans

Manager Allocation & Performance % | Net of Fees

December 31, 2018

	Asset \$	Asset %	3 Month	CYTD	FYTD	1 Year	3 Year	5 Year	Since Inception	Inception Date
US Equity										
Invesco	59,075,057	6.01	-13.67	-5.21	-7.44	-5.21	8.66	7.90	7.91	Jan-2004
<i>S&P 500</i>			-13.52	-4.38	-6.85	-4.38	9.26	8.49	7.77	
Excess Return			-0.15	-0.83	-0.59	-0.83	-0.60	-0.59	0.14	
LSV Asset Management*	55,074,957	5.60	-13.63	-11.76	-9.73	-11.76	7.08	6.11	8.45	Jan-2004
<i>Russell 1000 Value Index</i>			-11.72	-8.27	-6.69	-8.27	6.95	5.95	7.04	
Excess Return			-1.91	-3.49	-3.04	-3.49	0.13	0.16	1.41	
Westfield	61,345,825	6.24	-16.35	-1.94	-9.54	-1.94	9.94	9.02	13.87	Jul-2010
<i>Russell 1000 Growth Index</i>			-15.89	-1.51	-8.17	-1.51	11.15	10.40	14.97	
Excess Return			-0.46	-0.43	-1.37	-0.43	-1.21	-1.38	-1.10	
William Blair	16,198,268	1.65	-18.35	-1.53	-11.41	-1.53	10.81	9.50	9.99	Jun-2006
<i>Russell 2500 Growth Index</i>			-20.08	-7.47	-14.35	-7.47	8.11	6.19	8.23	
Excess Return			1.73	5.94	2.94	5.94	2.70	3.31	1.76	
Investment Counselors of Maryland	19,435,177	1.98	-20.69	-13.96	-19.77	-13.96	8.53	4.94	10.58	Apr-1993
<i>Russell 2000 Value Index</i>			-18.67	-12.86	-17.36	-12.86	7.37	3.61	9.43	
Excess Return			-2.02	-1.10	-2.41	-1.10	1.16	1.33	1.15	
Brown Capital Management	14,181,010	1.44	-23.05	0.35	-14.19	0.35	12.31	9.61	15.48	Aug-2011
<i>Russell 2000 Growth Index</i>			-21.65	-9.31	-17.33	-9.31	7.24	5.13	9.52	
Excess Return			-1.40	9.66	3.14	9.66	5.07	4.48	5.96	
International Equity										
Mondrian International	54,937,682	5.59	-9.77	-11.58	-7.98	-11.58	3.72	0.98	0.36	Dec-2007
<i>MSCI EAFE Index (Net)</i>			-12.50	-13.36	-11.26	-13.36	3.38	1.00	0.66	
Excess Return			2.73	1.78	3.28	1.78	0.34	-0.02	-0.30	
Baillie Gifford	56,016,811	5.70	-16.46	-	-16.05	-	-	-	-15.27	May-2018
<i>MSCI EAFE Index (Net)</i>			-12.54	-	-11.35	-	-	-	-14.40	
Excess Return			-3.92	-	-4.70	-	-	-	-0.87	
DFA Emerging Markets	25,940,520	2.64	-8.22	-12.93	-6.20	-12.93	11.76	1.63	4.80	Feb-2006
<i>MSCI Emerging Markets (Net)</i>			-7.40	-14.25	-8.28	-14.25	9.65	2.03	4.41	
Excess Return			-0.82	1.32	2.08	1.32	2.11	-0.40	0.39	

All returns are time-weighted and calculated using custodian data.

* Inception date differs from manager; partial month returns are not calculated.



Howard County Retirement Plans

Manager Allocation & Performance % | Net of Fees

December 31, 2018

	Asset \$	Asset %	3 Month	CYTD	FYTD	1 Year	3 Year	5 Year	Since Inception	Inception Date
GQG Partners EM	35,640,815	3.62	-	-	-	-	-	-	1.83	Nov-2018
<i>MSCI Emerging Markets (Net)</i>			-	-	-	-	-	-	1.35	
Excess Return			-	-	-	-	-	-	0.48	
Fixed Income										
Dodge & Cox	118,979,336	12.10	0.54	-0.05	1.18	-0.05	3.49	3.12	3.88	May-2010
<i>Blmbg. Barc. U.S. Aggregate</i>			1.64	0.01	1.66	0.01	2.06	2.52	3.00	
Excess Return			-1.10	-0.06	-0.48	-0.06	1.43	0.60	0.88	
PIMCO Total Return	109,680,564	11.15	1.26	-0.53	1.29	-0.53	2.53	2.48	3.24	May-2010
<i>Blmbg. Barc. U.S. Aggregate</i>			1.64	0.01	1.66	0.01	2.06	2.52	3.00	
Excess Return			-0.38	-0.54	-0.37	-0.54	0.47	-0.04	0.24	
State Street Global Advisors TIPS	21,239,235	2.16	-0.43	-1.29	-1.23	-1.29	2.05	1.63	2.75	Nov-2009
<i>Blmbg. Barc. U.S. TIPS</i>			-0.42	-1.26	-1.24	-1.26	2.11	1.69	2.82	
Excess Return			-0.01	-0.03	0.01	-0.03	-0.06	-0.06	-0.07	
Colchester LMD	40,172,569	4.08	3.13	-4.12	0.60	-4.12	8.54	-	7.30	Oct-2015
<i>JPM GBI-EM Global Diversified</i>			2.11	-6.21	0.25	-6.21	5.91	-	5.44	
Excess Return			1.02	2.09	0.35	2.09	2.63	-	1.86	
Real Assets										
TA Realty Associates VIII	81,867	0.01	5.81	17.58	10.15	17.58	9.74	11.04	2.05	Jul-2007
TA Realty Associates IX	5,627	0.00	-4.26	-3.09	-3.91	-3.09	1.14	6.61	7.01	Apr-2010
Partners Group Global RE 2011	6,102,618	0.62	-2.85	0.01	-6.72	0.01	7.72	7.09	6.04	Mar-2012
Partners Group Global RE 2014	17,788,185	1.81	1.88	15.12	3.10	15.12	12.27	-	10.04	Dec-2014
Commonfund Natural Resources X	4,637,731	0.47	0.91	27.51	8.52	27.51	-	-	22.73	Apr-2016
Partners Group Global RE 2017	2,265,856	0.23	-	-	-	-	-	-	0.00	Dec-2018
Aether Real Assets IV	4,327,998	0.44	7.08	16.45	10.95	16.45	-	-	5.69	Jun-2016
Aether Real Assets V	1,184,702	0.12	79.22	-	-	-	-	-	79.22	Aug-2018
Private Equity										
Siguler Guff Distressed Opps III	1,769,965	0.18	0.22	10.46	4.07	10.46	8.70	8.44	9.00	Jul-2008
Greenspring IV	5,043,401	0.51	1.21	12.28	9.63	12.28	10.90	17.06	15.74	Jul-2009

All returns are time-weighted and calculated using custodian data.

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Howard County Retirement Plans

Manager Allocation & Performance % | Net of Fees

December 31, 2018

	Asset \$	Asset %	3 Month	CYTD	FYTD	1 Year	3 Year	5 Year	Since Inception	Inception Date
Pantheon Global Secondaries IV	668,575	0.07	-0.34	12.92	4.63	12.92	10.68	11.74	12.87	Sep-2010
LGT Crown Asia-Pacific II	13,858,158	1.41	-1.43	7.65	-0.31	7.65	9.82	14.76	-10.78	Jul-2011
Greenspring V	8,116,202	0.83	8.51	20.37	12.24	20.37	18.82	22.45	18.41	Sep-2011
Adveq Europe V	6,992,004	0.71	-0.18	16.66	2.55	16.66	16.41	6.70	8.15	Jan-2013
LGT Crown Global Secondaries III	4,858,335	0.49	-2.90	4.23	1.77	4.23	8.69	13.46	15.23	Feb-2013
Flag Private Equity V	14,723,601	1.50	6.38	24.27	16.18	24.27	19.37	18.07	17.14	Oct-2013
HarbourVest Partners 2013 Direct	16,277,172	1.66	4.94	10.78	7.34	10.78	19.24	18.21	18.21	Jan-2014
Greenspring VI	10,024,167	1.02	12.34	34.57	19.43	34.57	22.13	-	18.51	Apr-2014
Greenspring Secondaries Fund I	4,305,857	0.44	15.79	70.14	49.03	70.14	30.71	-	28.65	May-2014
Greenspring VIII	2,183,082	0.22	4.37	14.22	17.47	14.22	-	-	-3.20	Sep-2017
Adveq Europe VI	3,677,354	0.37	-2.06	14.58	-1.24	14.58	5.83	-	4.91	Feb-2015
Flag Private Equity VI	13,338,653	1.36	4.85	30.27	13.96	30.27	21.23	-	18.42	Aug-2015
57 Stars	5,394,702	0.55	1.34	3.17	5.67	3.17	0.30	-	0.28	Oct-2015
NB Crossroads XXI	9,690,751	0.99	7.11	14.30	8.36	14.30	7.03	-	6.47	Oct-2015
LGT Crown Asia-Pacific III	5,194,177	0.53	14.35	38.22	16.67	38.22	19.91	-	24.87	Nov-2015
HarbourVest IV	8,302,777	0.84	7.36	12.40	11.33	12.40	-	-	13.42	Jan-2017
Aberdeen US PE VII	1,841,570	0.19	7.39	22.47	23.29	22.47	-	-	20.57	Dec-2017
Adveq Europe Dir II	103,539	0.01	-	-	-	-	-	-	0.00	Dec-2018
Adveq Europe VII	488,153	0.05	-	-	-	-	-	-	0.00	Dec-2018
Hedge Funds										
Magnitude International	56,780,660	5.77	-3.16	0.75	-2.54	0.75	1.72	3.83	4.39	Jan-2011
<i>HFRI FOF: Conservative Index</i>			<i>-3.19</i>	<i>-0.82</i>	<i>-2.43</i>	<i>-0.82</i>	<i>1.71</i>	<i>1.72</i>	<i>2.08</i>	
Excess Return			0.03	1.57	-0.11	1.57	0.01	2.11	2.31	

All returns are time-weighted and calculated using custodian data.

* Inception date differs from manager; partial month returns are not calculated.



Howard County Retirement Plans

Manager Allocation & Performance % | Net of Fees

December 31, 2018

	Asset \$	Asset %	3 Month	CYTD	FYTD	1 Year	3 Year	5 Year	Since Inception	Inception Date
Blackstone Offshore F1	58,676,062	5.97	-1.89	1.58	-0.61	1.58	3.77	4.14	4.46	Mar-2011
<i>HFRI FOF: Conservative Index</i>			-3.19	-0.82	-2.43	-0.82	1.71	1.72	1.94	
Excess Return			1.30	2.40	1.82	2.40	2.06	2.42	2.52	
Cash										
Cash - General Employees	2,958,146	0.30	0.46	1.50	0.88	1.50	0.70	0.44	1.32	Jan-2004
Cash - Police & Fire	3,675,619	0.37	0.46	1.41	0.84	1.41	0.65	0.39	1.27	Jan-2004

All returns are time-weighted and calculated using custodian data.
 * Inception date differs from manager; partial month returns are not calculated.



Howard County Retirement Plans

Historical Footnotes

December 31, 2018

All performance prior to 9/30/18 was calculated by Summit Strategies Group.

All asset class and master trust returns prior to 4/1/00 were approximated by using the actual quarterly returns from each plan and weighting them by the plans' beginning of period asset values.

Large Cap and Non-Large Cap Composites prior to 12/31/03 are approximated by using the actual quarterly returns for each manager and weighting them by the the accounts' beginning of period asset values.



Howard County Retirement Plans

US Equity Policy Index

December 31, 2018

	(%)
Jul-2006	
Russell 3000 Index	100.00
Jun-2002	
S&P 500	55.60
S&P MidCap 400 Index	22.20
Russell 2000 Index	22.20
May-1992	
S&P 500	80.00
Russell 2000 Index	20.00



Howard County Retirement Plans

Fixed Income Policy Index

December 31, 2018

	(%)
Jul-2006	
Blmbg. Barc. U.S. Aggregate	100.00
Jun-2002	
Blmbg. Barc. U.S. Aggregate	85.70
Blmbg. Barc. U.S. Corp: High Yield	14.30
Apr-2002	
Blmbg. Barc. U.S. Aggregate	87.50
Blmbg. Barc. U.S. Corp: High Yield	12.50
Dec-1993	
Blmbg. Barc. U.S. Aggregate	100.00



Howard County Retirement Plans

Total Implementation Index

December 31, 2018

	(%)		(%)
Dec-2015		Sep-1986	
Russell 3000 Index	20.00	Russell 3000 Index	45.00
MSCI AC World ex USA (Net)	20.00	MSCI EAFE Index	15.00
Blmbg. Barc. U.S. Aggregate	25.00	Blmbg. Barc. U.S. Aggregate	30.00
JPM GBI-EM Global Diversified	5.00	ICE BofAML High Yield Master II	5.00
NCREIF Property Index [3 Month Lag]	7.50	NCREIF Property Index [3 Month Lag]	5.00
Private Equity Composite	10.00		
HFRI FOF: Conservative Index	12.50		
FTSE 3 Month T-Bill	0.00		
Jan-2012			
Russell 3000 Index	22.50		
MSCI AC World ex USA (Net)	22.50		
Blmbg. Barc. U.S. Aggregate	32.50		
NCREIF Property Index [3 Month Lag]	5.00		
Private Equity Composite	10.00		
HFRI FOF: Conservative Index	7.50		
FTSE 3 Month T-Bill	0.00		
Dec-2007			
Russell 3000 Index	39.00		
MSCI World ex US	21.00		
Blmbg. Barc. U.S. Aggregate	35.00		
NCREIF Property Index [3 Month Lag]	5.00		
FTSE 3 Month T-Bill	0.00		
Jul-2006			
Russell 3000 Index	39.00		
MSCI World ex US	21.00		
Blmbg. Barc. U.S. Aggregate	35.00		
NCREIF Property Index [3 Month Lag]	5.00		



Howard County Retirement Plans

Total Fund Policy Composition

December 31, 2018

	(%)		(%)
Dec-2015		Dec-2007	
S&P 500	15.00	S&P 500	24.00
Russell 2500 Index	5.00	Russell 2500 Index	15.00
MSCI EAFE Index (Net)	13.00	MSCI EAFE Index	16.00
MSCI Emerging Markets (Net)	7.00	MSCI Emerging Markets Index	5.00
Blmbg. Barc. U.S. Aggregate	25.00	Blmbg. Barc. U.S. Aggregate	35.00
JPM GBI-EM Global Diversified	5.00	NCREIF Property Index [3 Month Lag]	5.00
NCREIF Property Index [3 Month Lag]	7.50	FTSE 3 Month T-Bill	0.00
Private Equity Composite	10.00		
HFRI FOF: Conservative Index	12.50	Jul-2006	
FTSE 3 Month T-Bill	0.00	S&P 500	24.00
		Russell 2500 Index	15.00
Jan-2012		MSCI EAFE Index	16.00
S&P 500	16.90	MSCI Emerging Markets Index	5.00
Russell 2500 Index	5.60	Blmbg. Barc. U.S. Aggregate	35.00
MSCI EAFE Index (Net)	14.60	NCREIF Property Index [3 Month Lag]	5.00
MSCI Emerging Markets (Net)	7.90		
Blmbg. Barc. U.S. Aggregate	32.50	Oct-2003	
NCREIF Property Index [3 Month Lag]	5.00	S&P 500	25.00
Private Equity Composite	10.00	S&P MidCap 400 Index	10.00
HFRI Fund of Funds Composite Index	7.50	Russell 2000 Index	10.00
FTSE 3 Month T-Bill	0.00	MSCI EAFE Index	15.00
		Blmbg. Barc. U.S. Aggregate	30.00
Jul-2008		Blmbg. Barc. U.S. Corp: High Yield	5.00
S&P 500	22.00	NCREIF Property Index [3 Month Lag]	5.00
Russell 2500 Index	13.80		
MSCI EAFE Index	14.70		
MSCI Emerging Markets Index	4.50		
Blmbg. Barc. U.S. Aggregate	35.00		
NCREIF Property Index [3 Month Lag]	5.00		
FTSE 3 Month T-Bill	5.00		
FTSE 3 Month T-Bill	0.00		



Howard County Retirement Plans

Total Fund Policy Composition

December 31, 2018

	(%)		(%)
Jun-2002		Jul-1990	
S&P 500	26.00	S&P 500	55.00
S&P MidCap 400 Index	11.00	Blmbg. Barc. U.S. Aggregate	45.00
Russell 2000 Index	11.00		
MSCI EAFE Index	15.00		
Blmbg. Barc. U.S. Aggregate	32.00		
Blmbg. Barc. U.S. Corp: High Yield	5.00		
Apr-2002			
S&P 500	40.00		
Russell 2000 Index	10.00		
MSCI EAFE Index	10.00		
Blmbg. Barc. U.S. Aggregate	35.00		
Blmbg. Barc. U.S. Corp: High Yield	5.00		
Jul-1998			
S&P 500	40.00		
Russell 2000 Index	10.00		
MSCI EAFE Index	10.00		
Blmbg. Barc. U.S. Aggregate	40.00		
Jan-1997			
S&P 500	60.00		
Blmbg. Barc. U.S. Aggregate	40.00		
Jan-1996			
S&P 500	50.00		
Blmbg. Barc. U.S. Aggregate	50.00		
Oct-1994			
S&P 500	55.00		
Blmbg. Barc. U.S. Aggregate	45.00		



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



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