

Monthly Performance Review

As of July 31, 2021



Wilshire

IMRF Commentary

- **The Illinois Municipal Retirement Fund (“IMRF”) ended July 2021 with a market value of \$54.8 billion, up for the month by approximately \$138 million. IMRF returned +0.91% during the month, outperforming the Total Fund Benchmark which returned +0.76%. Total Fund outperformance was primarily driven by strong investment manager results, most notably within International Equity.**
 - Year-to-date, IMRF has returned +11.62% versus its benchmark of +8.56%.
- **The U.S. Equity Portfolio trailed the Russell 3000 Index during the month, returning +1.34% versus +1.69%. In aggregate, investment manager performance in Large Cap and Small Cap modestly underperformed the respective benchmarks. Additionally, the Portfolio’s bias to small cap stocks detracted from relative outperformance as small caps stocks underperformed large cap stocks during the month by approximately 5.7%.**
 - Year-to-date; however, the U.S. Equity Portfolio has outperformed the benchmark, returning +17.46% versus +17.06%.
- **The Internally Managed Scientific Beta Portfolio outperformed the benchmark during July, returning +1.84% versus +1.62%. Since inception, the strategy has outperformed the benchmark, returning +16.86% versus +16.08%.**
- **The Internally Managed GSAM-Factor Diversity Portfolio outperformed the benchmark during the month, returning +2.21% versus +2.15%.**
- **The Public Real Assets Portfolio outperformed its benchmark during the month, returning +1.36% versus +1.05%.**
- **The International Equity Portfolio outperformed the benchmark during July, returning -0.57% versus -1.65%. In aggregate, investment manager performance in Large Cap Growth, Large Cap Core, All Cap and Small Cap outperformed the respective benchmarks. Additionally, the Portfolio’s dedicated allocation to small cap stocks contributed to relative outperformance as the small cap market returned +0.80%, outperforming the broad market.**
 - Year-to-date, IMRF’s International Equity Portfolio continues to be very strong, returning +10.14% versus +7.36% for the benchmark.
- **The Fixed Income Portfolio modestly trailed the benchmark during the month, returning +0.98% versus +1.12%. The Portfolio’s allocation to Bank Loans, Emerging Markets and High Yield was the largest detractor from relative performance during the month; however, year-to-date, these allocations have been strong contributors to relative outperformance. IMRF’s Fixed Income Portfolio has returned +0.34% versus -0.51% for the benchmark, year-to-date.**
- **As of July month-end, Domestic Equity and International Equity were 5.4% and 4.3%, respectively, over their target. The current Statement of Investment Policy states that when actual allocations of the asset class differ by more than four percentage points from the policy target, a recommendation for rebalancing will be made to the Board of Trustees. The Chief Investment Officer, Investment Staff and Consultant will provide a recommendation for rebalancing at the August 2021 Meeting.**

Market Dashboard

Returns though Friday July 30, 2021

Portfolio Allocations	MTD	JUN	MAY	QTD	Q2 2021	YTD	1 Year	3 Year	5 Year
Global 60/40	0.86	1.07	1.06	0.86	5.15	7.49	18.79	10.93	9.70
Wilshire Risk Parity (12%)	4.78	0.76	2.86	4.78	9.31	13.32	28.67	13.20	10.12

Strategic Allocation Themes *	MTD	JUN	MAY	QTD	Q2 2021	YTD	1 Year	3 Year	5 Year
Growth ¹	0.69	1.32	1.56	0.69	7.39	13.08	33.19	13.76	13.81
Defensive Growth ²	0.69	1.60	0.44	0.69	4.77	7.92	23.76	14.14	12.07
Diversified Credit ³	0.34	0.94	0.65	0.34	3.11	2.12	7.93	6.25	5.65
Real Assets ⁴	3.66	0.70	2.62	3.66	9.98	17.53	29.59	10.94	6.71
Defensive ⁵	1.12	0.70	0.33	1.12	1.83	(0.50)	(0.65)	5.76	3.13

Major Asset Classes	MTD	JUN	MAY	QTD	Q2 2021	YTD	1 Year	3 Year	5 Year
Wilshire 5000 Total Market	1.79	2.51	0.46	1.79	8.42	17.52	39.83	18.46	17.47
MSCI ACWI-ex-USA (Net)	(1.65)	(0.65)	3.13	(1.65)	5.48	7.36	26.49	7.85	9.65
Bloomberg Barclays U.S. Aggregate	1.12	0.70	0.33	1.12	1.83	(0.50)	(0.65)	5.76	3.13
Bloomberg Barclays U.S. Corporate High Yield	0.38	1.34	0.30	0.38	2.74	4.01	10.83	7.23	6.99
Wilshire Global Real Estate Securities	4.02	2.02	1.86	4.02	10.74	22.82	36.79	9.65	6.07
Bloomberg Commodity	1.84	1.85	2.73	1.84	13.30	23.37	41.15	5.30	3.86

Source: Bloomberg. All returns are in USD

* Strategic Allocations are comprised of the following asset mixes (rebalanced monthly)

¹ Growth : 100% Global Equity

² Defensive Growth : 60% Low Vol Global Equity, 40% US Convertibles

³ Diversified Credit : 42.5% U.S. High Yield, 42.5% EMD, 15% Banks Loans

⁴ Real Assets : 43% Global REITS/GLI, 33% Commodities, 48% TIPS, 9% Gold, -31% Cash

⁵ Defensive : 100% US Core Bonds

Market Returns

Returns through Friday July 30, 2021

US Equity	MTD	JUN	MAY	QTD	Q2 2021	YTD	1 Year	3 Year	5 Year
Wilshire 5000 Total Market	1.79	2.51	0.46	1.79	8.42	17.52	39.83	18.46	17.47
Standard & Poor's 500	2.38	2.33	0.70	2.38	8.55	17.99	37.51	18.35	17.35
Wilshire 4500 Completion	(0.65)	2.68	(0.40)	(0.65)	6.83	15.36	52.73	18.36	17.62
Wilshire US Large Cap	2.13	2.53	0.66	2.13	8.42	16.73	36.88	16.93	15.69
Wilshire US Large-Cap Growth	2.99	5.30	(1.35)	2.99	11.72	17.14	41.10	22.98	21.73
Wilshire US Large-Cap Value	1.05	(0.78)	2.34	1.05	4.50	15.25	30.89	10.43	9.37
Wilshire US Small Cap	(2.63)	0.90	1.04	(2.63)	4.39	15.05	50.04	10.85	12.04
Wilshire US Small-Cap Growth	(1.98)	1.89	(1.60)	(1.98)	3.05	9.93	43.18	14.46	16.31
Wilshire US Small-Cap Value	(3.26)	0.10	2.51	(3.26)	5.75	20.37	54.70	6.61	7.56

Non-US Equity	MTD	JUN	MAY	QTD	Q2 2021	YTD	1 Year	3 Year	5 Year
MSCI ACWI-ex-USA (Net)	(1.65)	(0.65)	3.13	(1.65)	5.48	7.36	26.49	7.85	9.65
MSCI EAFE (Net)	0.75	(1.13)	3.26	0.75	5.17	9.65	28.49	7.57	9.35
MSCI EM (Net)	(6.73)	0.17	2.32	(6.73)	5.05	0.22	20.29	7.85	10.37
MSCI ACWI-ex-US Small cap (Net)	0.80	(0.62)	2.32	0.80	6.35	13.14	40.44	9.63	10.94

Global Equity	MTD	JUN	MAY	QTD	Q2 2021	YTD	1 Year	3 Year	5 Year
MSCI ACWI (Net)	0.69	1.32	1.56	0.69	7.39	13.08	33.19	13.76	13.81
MSCI ACWI Minimum Volatility (Net)	1.58	0.64	1.85	1.58	5.30	8.80	16.52	9.17	8.31

Fixed Income	MTD	JUN	MAY	QTD	Q2 2021	YTD	1 Year	3 Year	5 Year
Bloomberg Barclays U.S. Aggregate	1.12	0.70	0.33	1.12	1.83	(0.50)	(0.65)	5.76	3.13
Bloomberg Barclays Long Term Treasury	3.65	3.57	0.45	3.65	6.46	(4.56)	(11.09)	9.97	3.42
Bloomberg Barclays U.S. TIPS	2.67	0.61	1.21	2.67	3.25	4.44	7.16	7.68	4.54
Bloomberg Barclays U.S. Corporate High Yield	0.38	1.34	0.30	0.38	2.74	4.01	10.83	7.23	6.99
Credit Suisse Leveraged Loan	(0.00)	0.41	0.52	(0.00)	1.44	3.48	9.65	4.08	4.75
ICE BofA US Convertible Index	(0.64)	3.04	(1.69)	(0.64)	3.92	6.22	34.62	21.58	17.66
JPM EMBI Global Diversified	0.42	0.73	1.06	0.42	4.06	(0.25)	4.46	5.97	4.57

Real Assets	MTD	JUN	MAY	QTD	Q2 2021	YTD	1 Year	3 Year	5 Year
Wilshire Global Real Estate Securities	4.02	2.02	1.86	4.02	10.74	22.82	36.79	9.65	6.07
FTSE Global Core Infrastructure 50/50	1.34	(0.97)	0.62	1.34	3.09	8.93	17.26	8.64	7.97
Alerian Midstream Energy	(3.67)	3.42	6.00	(3.67)	16.39	35.52	48.39	2.41	3.24
Bloomberg Commodity	1.84	1.85	2.73	1.84	13.30	23.37	41.15	5.30	3.86
Gold	2.49	(7.17)	7.79	2.49	3.65	(4.43)	(7.28)	14.10	6.07
Bitcoin	17.65	(5.74)	(35.42)	17.65	(41.34)	40.33	264.91	70.94	128.19

Source: Bloomberg, All returns are in USD

Factor/Relative Returns

Returns though Friday July 30, 2021

Asset Class Differentials	MTD	JUN	MAY	QTD	Q2 2021	YTD	1 Year	3 Year	5 Year
Stocks (ACWI) > Bonds (BB US Aggregate)	(0.43)	0.61	1.23	(0.43)	5.56	13.58	33.84	8.00	10.68
Stocks (ACWI) > Mkt Alts (Equity Hedged)	(0.05)	1.31	0.44	(0.05)	3.54	2.90	15.47	8.81	9.20
Mkt Alts (Relative Value) > Bonds (BB US Aggregate)	(1.19)	(0.77)	0.08	(1.19)	(0.79)	1.70	5.98	(2.68)	(0.42)

Equity & Real Assets Differentials	MTD	JUN	MAY	QTD	Q2 2021	YTD	1 Year	3 Year	5 Year
US Small > Large	(4.81)	(1.55)	0.20	(4.81)	(4.03)	(1.81)	12.46	(6.65)	(3.94)
US Value > Growth	(1.75)	(5.94)	3.86	(1.75)	(6.75)	(0.61)	(7.51)	(10.26)	(10.20)
ACWI-ex-US > US	(3.44)	(3.16)	2.67	(3.44)	(2.95)	(10.16)	(13.33)	(10.61)	(7.82)
EM > EAFE	(7.48)	1.30	(0.94)	(7.48)	(0.12)	(9.43)	(8.20)	0.28	1.02
ACWI-ex-US Currency Impact	(0.03)	(1.94)	1.16	(0.03)	0.73	(2.38)	1.75	0.35	0.01
EAFE Currency Impact	0.36	(2.50)	1.18	0.36	0.38	(3.55)	0.51	0.82	0.28
EM Currency Impact	(0.62)	(0.66)	0.97	(0.62)	1.22	(1.14)	2.47	(1.13)	(0.85)
Global Low Volatility > ACWI	0.89	(0.67)	0.29	0.89	(2.10)	(4.28)	(16.67)	(4.60)	(5.50)
Global RE > ACWI	3.33	0.71	0.30	3.33	3.35	9.74	3.60	(4.12)	(7.73)
Commodities > Global RE	(2.18)	(0.17)	0.87	(2.18)	2.56	0.56	4.36	(4.35)	(2.22)
Commodities > TIPS	(0.83)	1.25	1.52	(0.83)	10.06	18.93	33.99	(2.38)	(0.69)
Gold > Commodities	0.65	(9.02)	5.06	0.65	(9.65)	(27.81)	(48.43)	8.80	2.21

Fixed Income Differentials	MTD	JUN	MAY	QTD	Q2 2021	YTD	1 Year	3 Year	5 Year
Duration (LT > Int Treasury)	2.87	3.65	0.13	2.87	5.84	(4.19)	(10.39)	5.66	1.34
IG Credit > Treasury	0.01	0.99	0.42	0.01	1.80	1.34	4.50	2.74	2.54
High Yield > IG Credit	(0.99)	(0.29)	(0.47)	(0.99)	(0.80)	3.92	9.32	(0.82)	2.11
High Yield > Loans	0.41	0.97	(0.29)	0.41	1.27	0.76	1.27	3.09	2.30
TIPS > Treasury	0.66	(0.25)	0.60	0.66	0.75	5.88	10.42	0.87	1.89
EMD > Dev Hdg	(1.19)	0.39	0.79	(1.19)	2.64	(0.21)	2.87	1.78	1.64
EMD > High Yield	(0.22)	(0.62)	0.62	(0.22)	0.25	(4.45)	(7.32)	(1.06)	(2.39)
Non-US > US Core	0.39	(2.72)	1.03	0.39	(0.91)	(2.48)	2.34	(2.04)	(1.36)
Non-US Hdg > US Core	0.24	(0.38)	(0.20)	0.24	(1.48)	0.28	1.29	(1.38)	(0.16)
FI Currency Impact	0.15	(2.34)	1.23	0.15	0.57	(2.76)	1.06	(0.66)	(1.20)

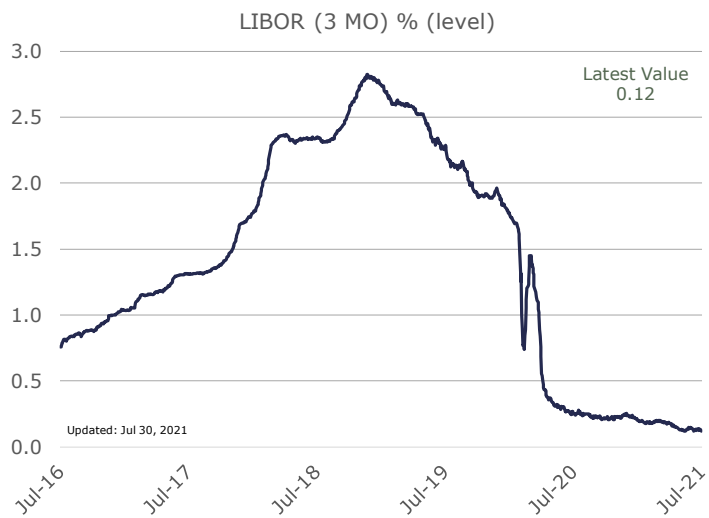
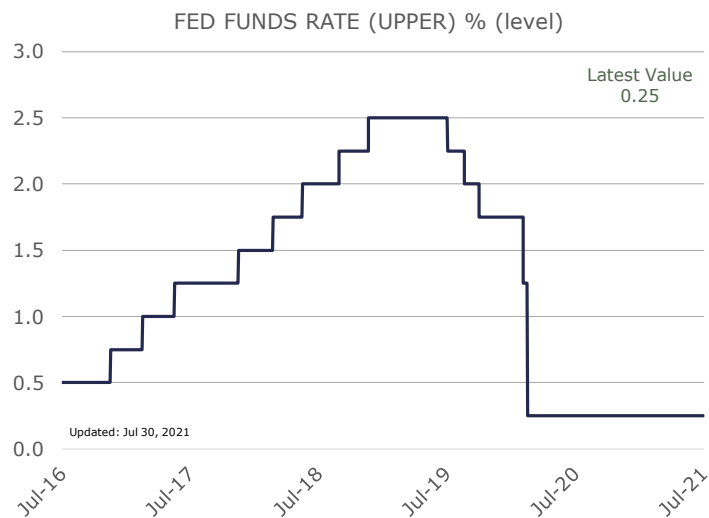
Source: Bloomberg, All returns are in USD

Market Yields & Breakeven Inflation

		Previous 3 Month-ends			Previous 2 Quarter-ends		EOY Prior	1 Yr Ago	3 Yrs Ago	5 Yrs Ago
Govt/Treasury Yields	07/30/21	06/30/21	05/31/21	04/30/21	06/30/21	03/31/21	12/31/20	07/30/20	07/30/18	07/29/16
Fed Funds Target Rate (Upper)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	2.00	0.50
2-Year Treasury	0.19	0.25	0.14	0.16	0.25	0.16	0.12	0.12	2.66	0.66
5-Year Treasury	0.69	0.89	0.80	0.85	0.89	0.94	0.36	0.23	2.85	1.03
10-Year Treasury	1.22	1.47	1.60	1.63	1.47	1.74	0.92	0.55	2.97	1.45
30-Year Treasury	1.89	2.09	2.28	2.30	2.09	2.41	1.65	1.21	3.11	2.18
10-Year Real Treasury	(1.18)	(0.88)	(0.86)	(0.78)	(0.88)	(0.63)	(1.09)	(0.98)	0.84	(0.04)
Term Spreads	07/30/21	06/30/21	05/31/21	04/30/21	06/30/21	03/31/21	12/31/20	07/30/20	07/30/18	07/29/16
5 - 2 Year Treasury Spread	0.50	0.64	0.65	0.68	0.64	0.78	0.24	0.11	0.18	0.36
10 - 5 Year Treasury Spread	0.53	0.58	0.79	0.77	0.58	0.80	0.55	0.31	0.12	0.43
10 - 2 Year Treasury Spread	1.03	1.22	1.45	1.46	1.22	1.58	0.79	0.42	0.31	0.79
30 - 10Year Treasury Spread	0.67	0.62	0.68	0.67	0.62	0.67	0.73	0.66	0.13	0.73
30 - 2Year Treasury Spread	1.70	1.84	2.14	2.13	1.84	2.25	1.52	1.08	0.44	1.52
Market Yields	07/30/21	06/30/21	05/31/21	04/30/21	06/30/21	03/31/21	12/31/20	07/30/20	07/30/18	07/29/16
Bloomberg Barclays U.S. Treasury YTW	0.81	0.95	0.91	0.95	0.95	1.00	0.57	0.42	2.84	1.13
Bloomberg Barclays U.S. Aggregate YTW	1.36	1.50	1.50	1.51	1.50	1.61	1.12	1.07	3.37	1.86
Bloomberg Barclays U.S. Long Treasury YTW	1.84	2.03	2.21	2.22	2.03	2.34	1.51	1.10	3.09	2.04
Bloomberg Barclays U.S. Long Govt/Credit YTW	2.48	2.66	2.87	2.90	2.66	3.02	2.28	2.10	3.99	3.21
Credit Spreads	07/30/21	06/30/21	05/31/21	04/30/21	06/30/21	03/31/21	12/31/20	07/30/20	07/30/18	07/29/16
Bloomberg Investment Grade OAS	0.86	0.80	0.84	0.88	0.80	0.91	0.96	1.33	1.10	1.45
Bloomberg High Yield OAS	2.94	2.68	2.96	2.91	2.68	3.10	3.60	4.91	3.32	5.40
Breakeven Inflation Rates	07/30/21	06/30/21	05/31/21	04/30/21	06/30/21	03/31/21	12/31/20	07/30/20	07/30/18	07/29/16
1-Year Breakeven Inflation	3.29	3.17	3.32	2.64	3.17	2.69	2.02	0.96	0.92	0.46
2-Year Breakeven Inflation	2.83	2.72	2.83	2.68	2.72	2.66	2.01	1.11	1.63	1.04
5-Year Breakeven Inflation	2.62	2.50	2.60	2.59	2.50	2.60	1.97	1.38	2.02	1.32
10-Year Breakeven Inflation	2.40	2.34	2.45	2.41	2.34	2.37	1.99	1.52	2.13	1.49
5-Year 5-Year Forward Breakeven Inflation	2.27	2.18	2.31	2.25	2.18	2.27	1.97	1.68	2.25	1.75

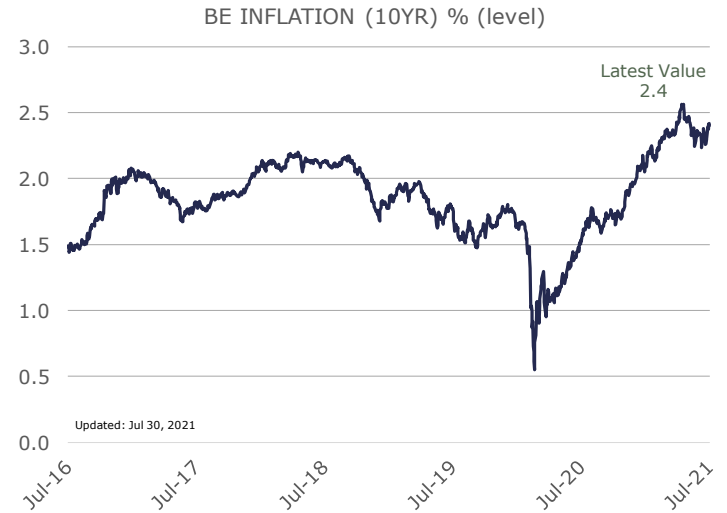
Source: Bloomberg

Short Rates



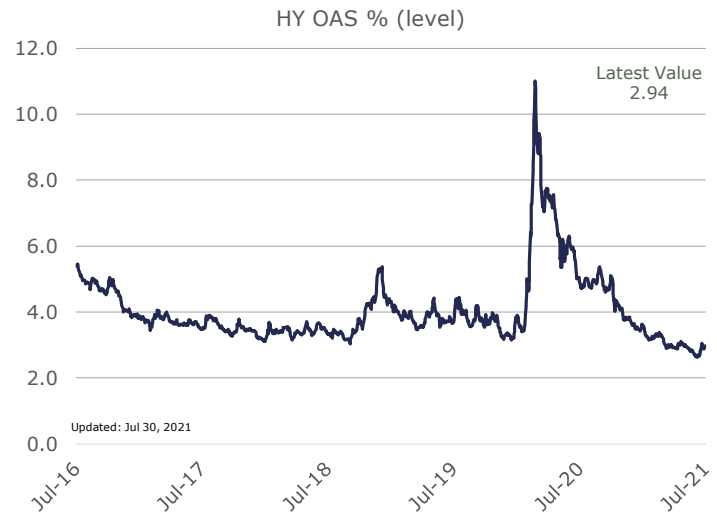
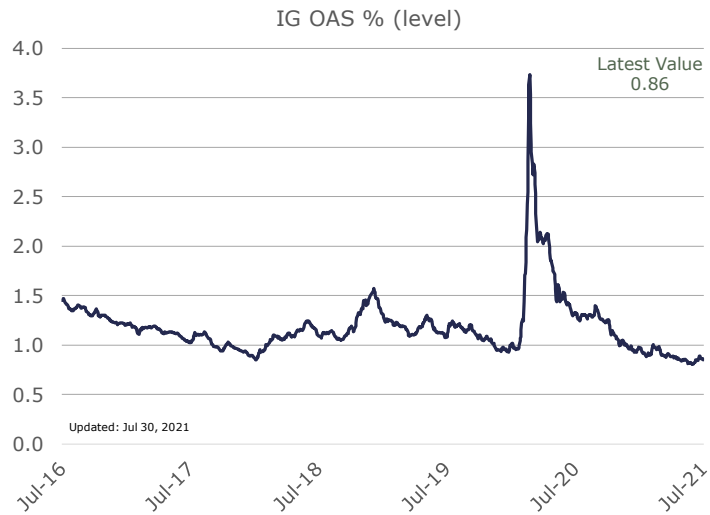
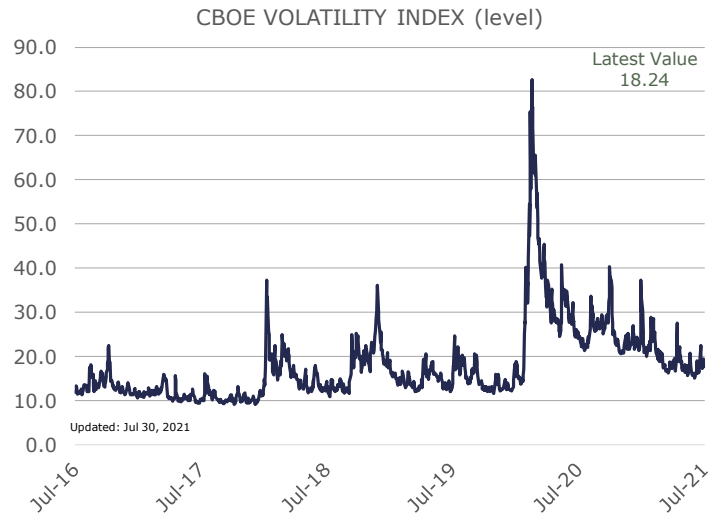
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Treasury Rates



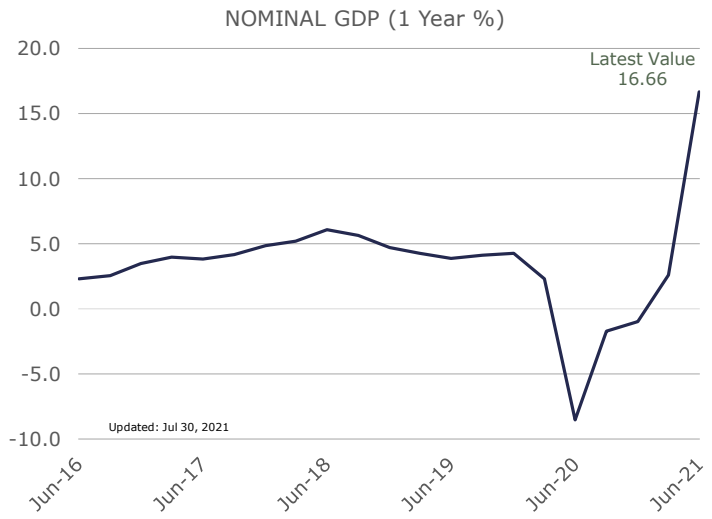
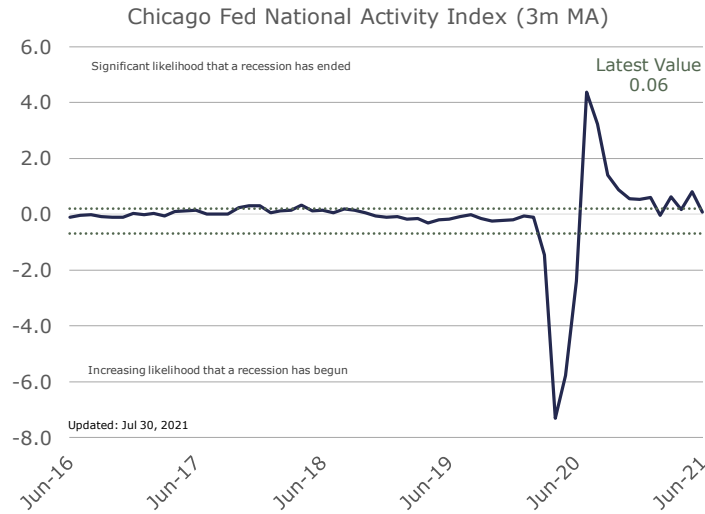
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Volatility & Credit Risk



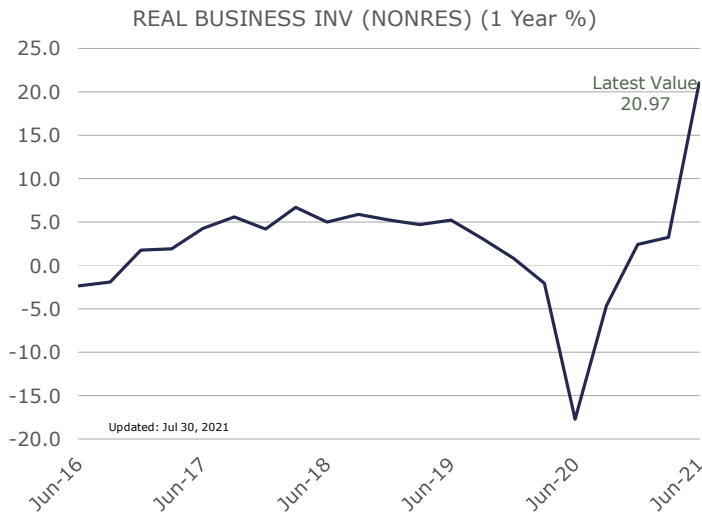
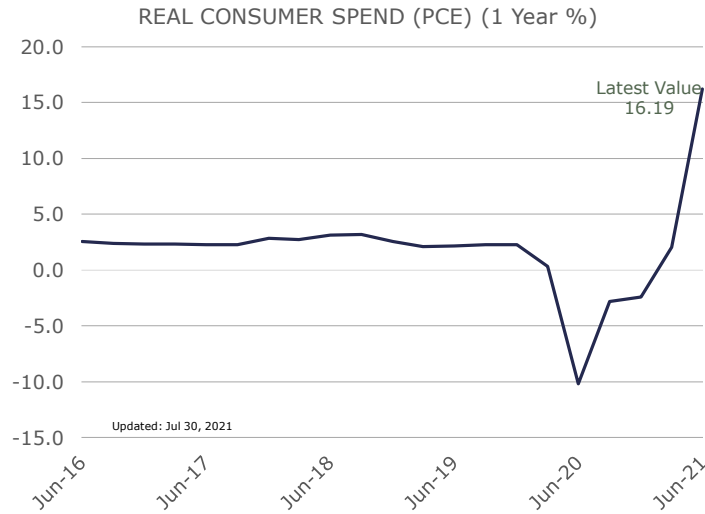
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Economic Growth



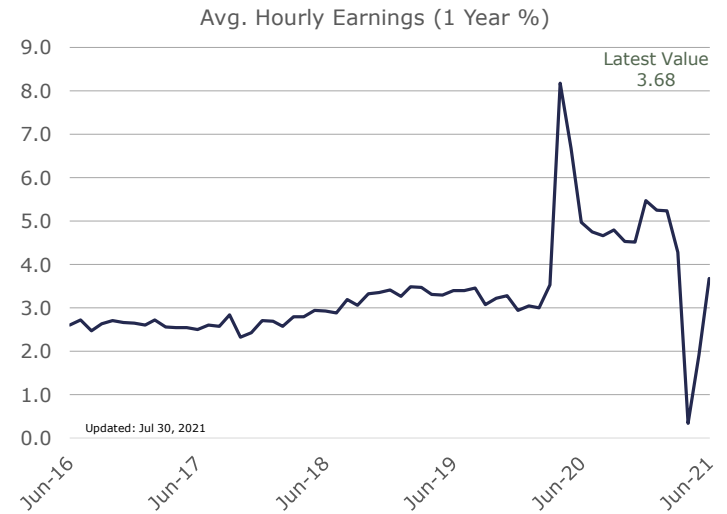
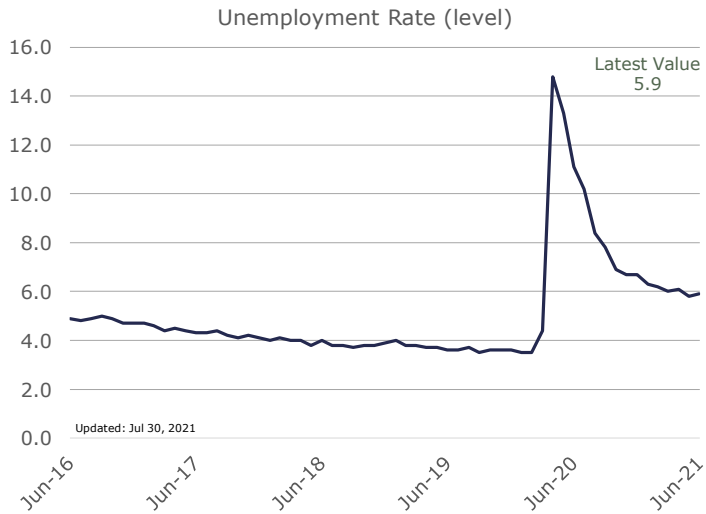
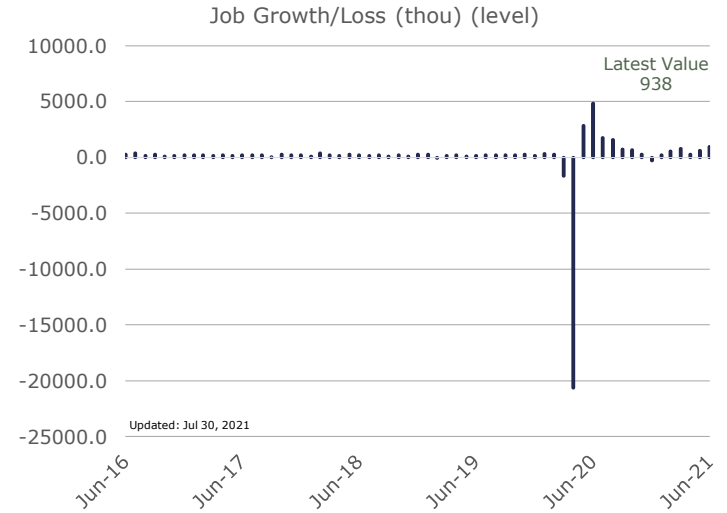
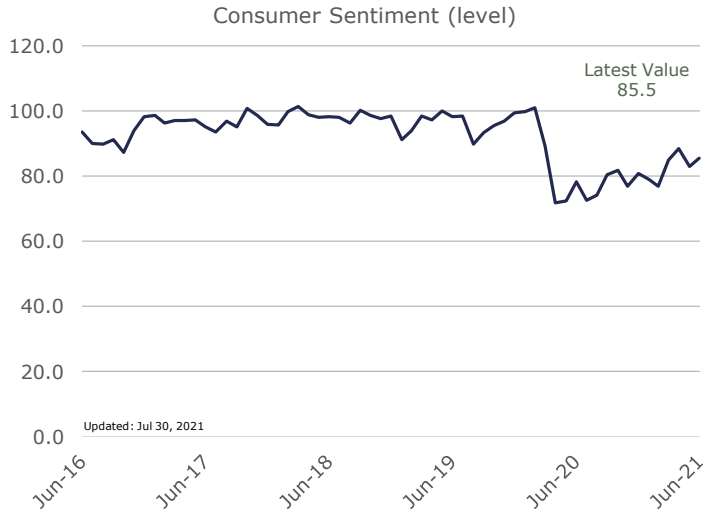
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Economic Growth



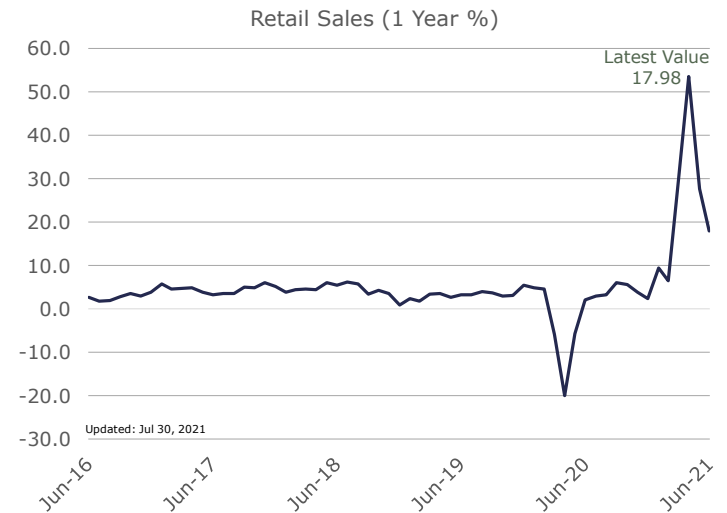
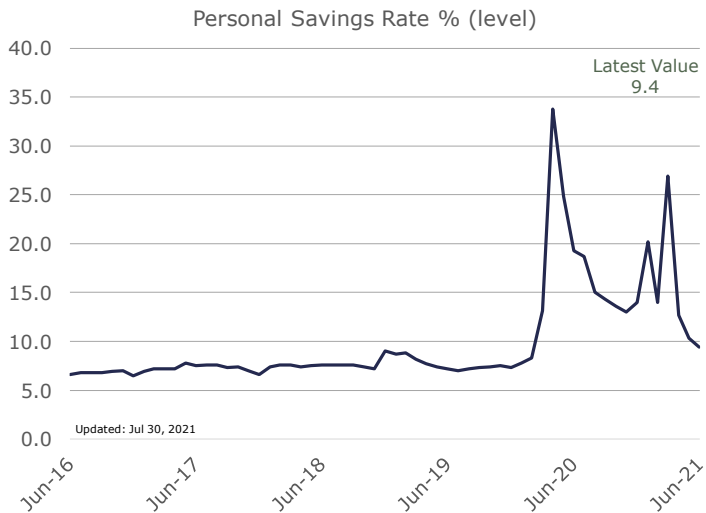
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Consumers & Employment



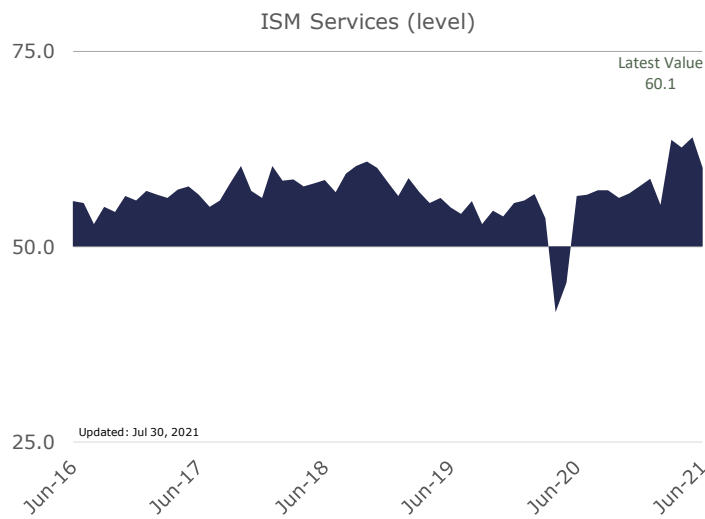
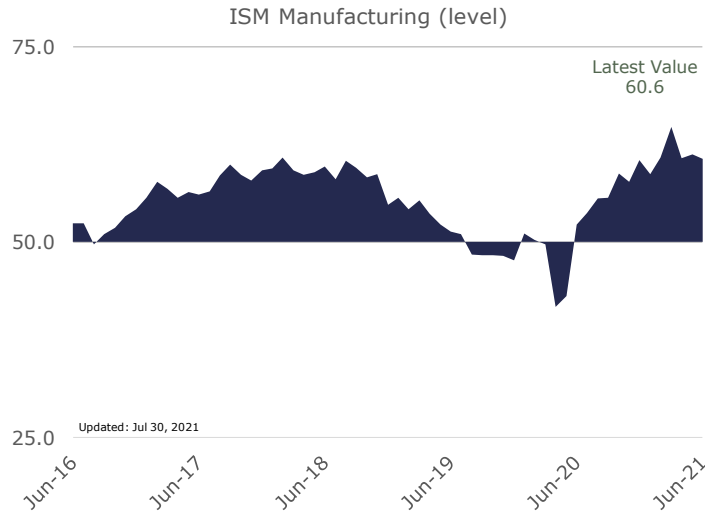
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Income & Spending



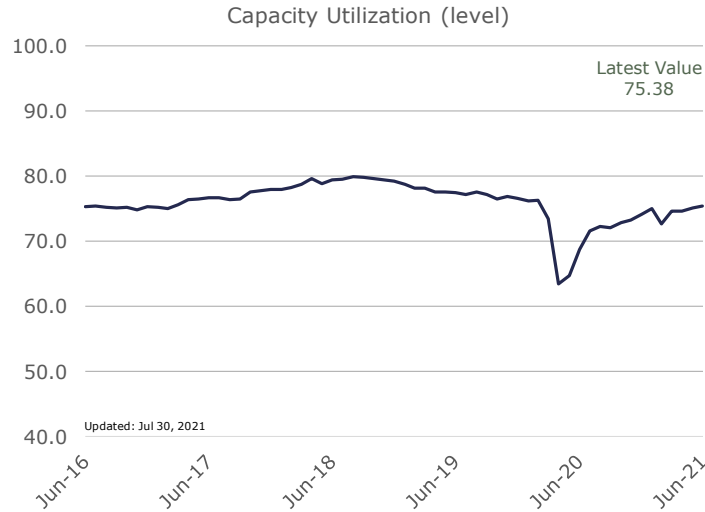
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ISM Surveys



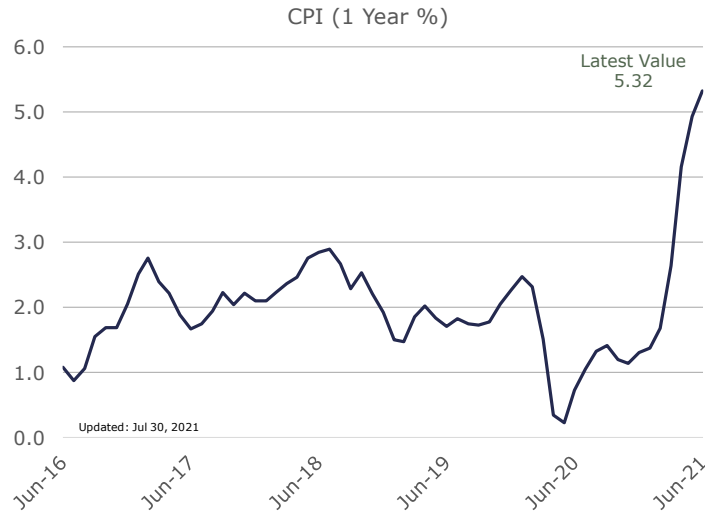
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Manufacturing Activity



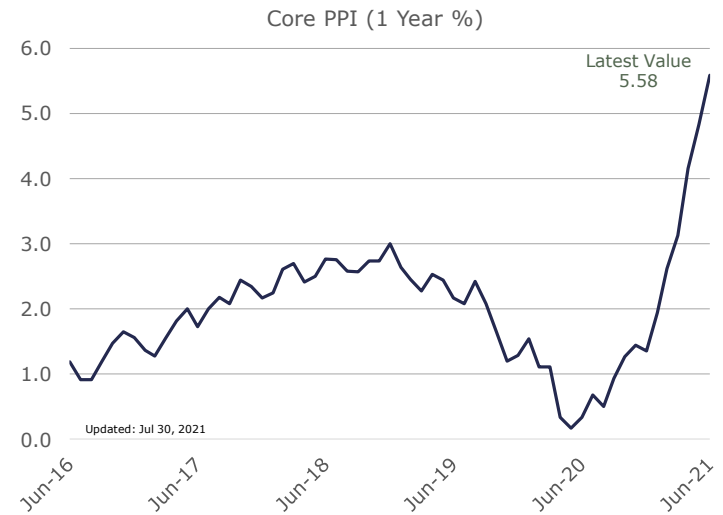
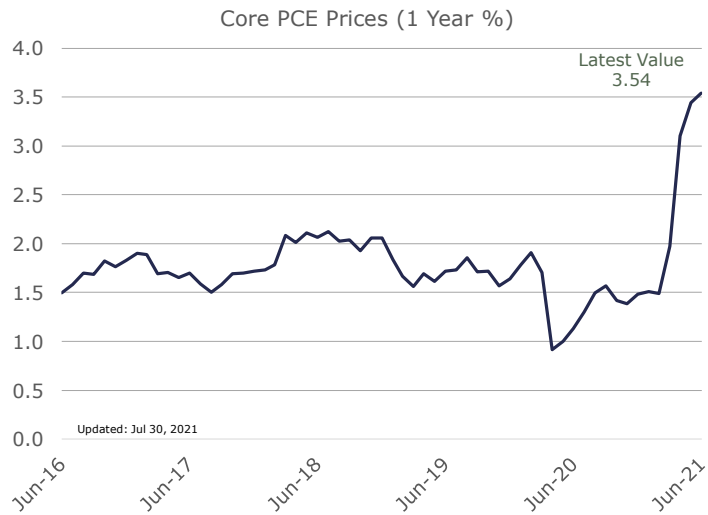
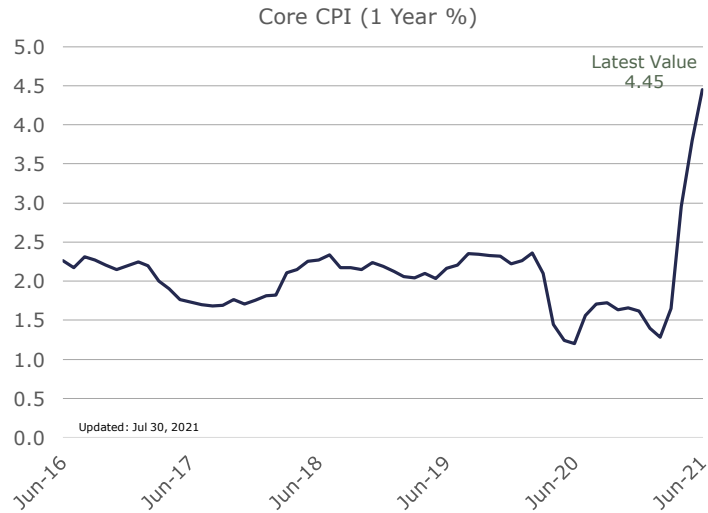
Data Sources: Bloomberg

Price Indexes



Data Sources: Bloomberg

Core Price Indexes



Data Sources: Bloomberg

IMRF Performance

Wilshire

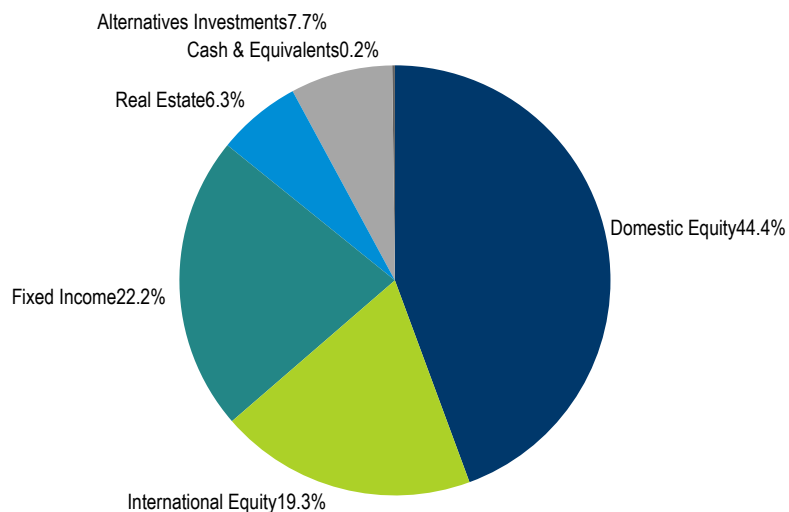
Wilshire Consulting

Asset Allocation

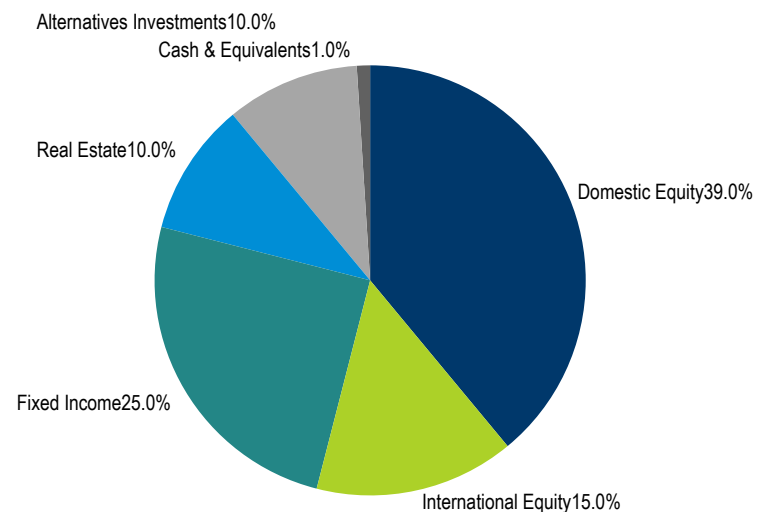
Total Fund

Periods Ended As of July 31, 2021

Actual Allocation



Target Allocation



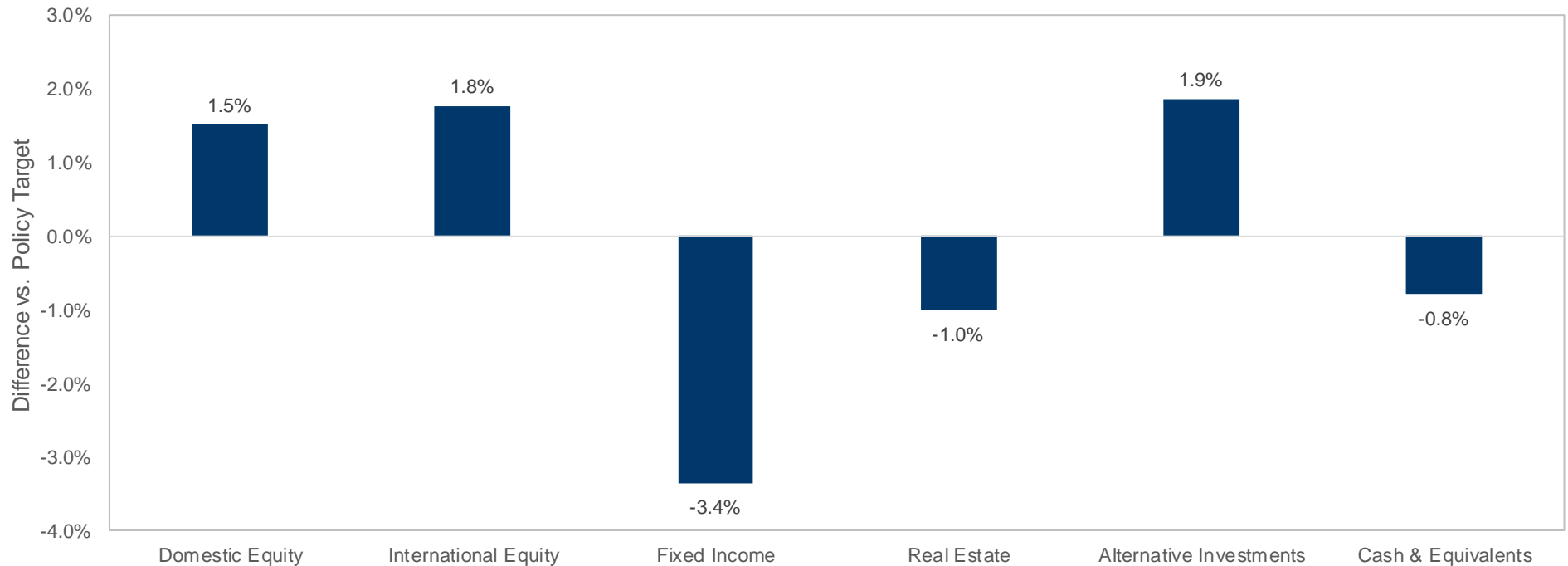
■ Domestic Equity
 ■ International Equity
 ■ Fixed Income
 ■ Real Estate
 ■ Alternatives Investments
 ■ Cash & Equivalents

	Actual Allocation \$Millions	Actual Allocation %	Target Allocation %	Differences %	Differences \$Millions
Total Fund	54,840	100.0	100.0	0.0	
Domestic Equity	24,339	44.4	39.0	5.4	2,951
International Equity	10,561	19.3	15.0	4.3	2,335
Fixed Income	12,167	22.2	25.0	-2.8	-1,543
Real Estate	3,452	6.3	10.0	-3.7	-2,032
Alternatives Investments	4,207	7.7	10.0	-2.3	-1,277
Cash & Equivalents	114	0.2	1.0	-0.8	-435

Projected Deviation From Benchmark

Period Ending July 31, 2021

Projected Asset Allocation Difference vs. Target



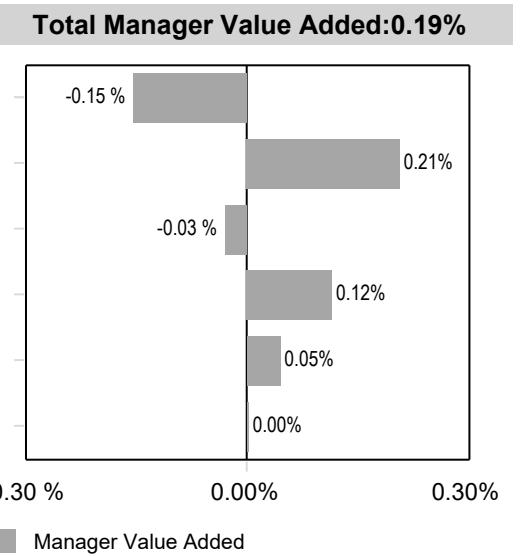
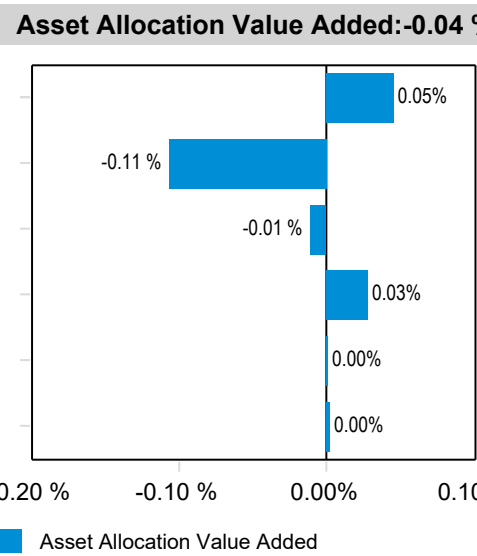
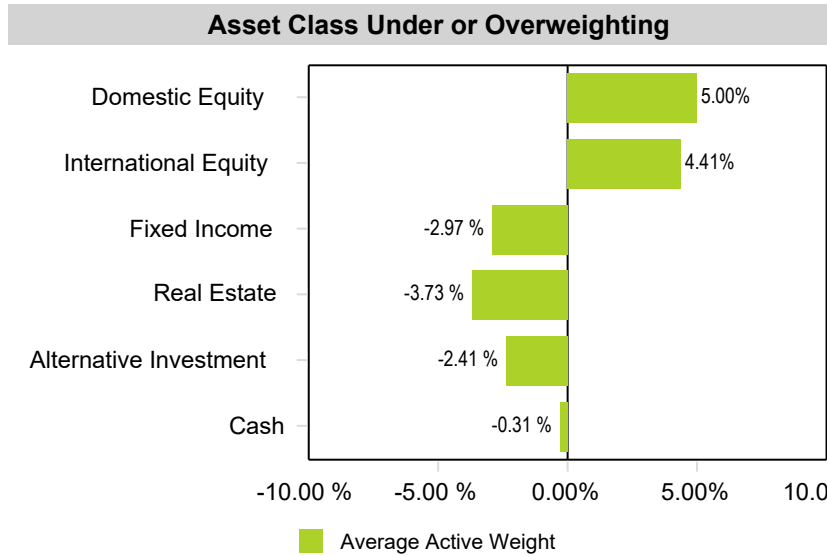
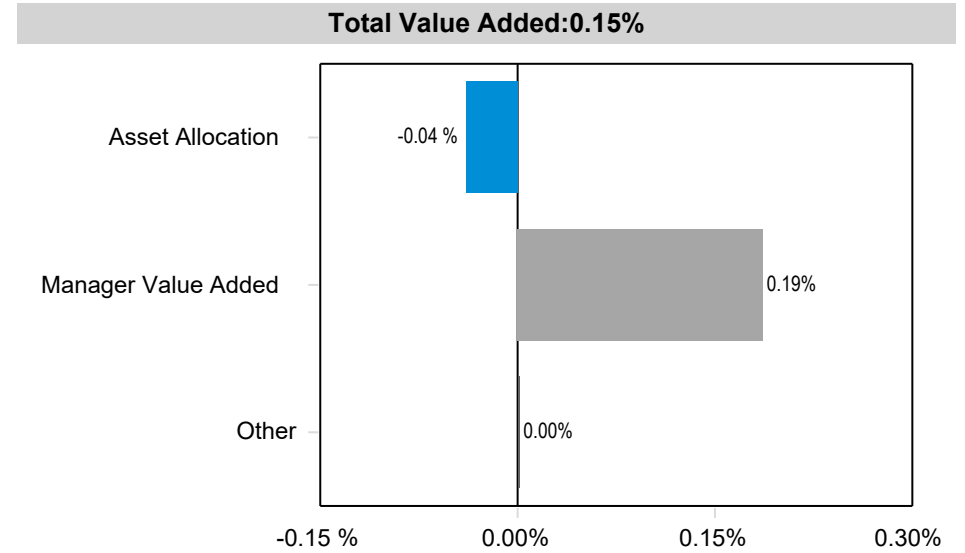
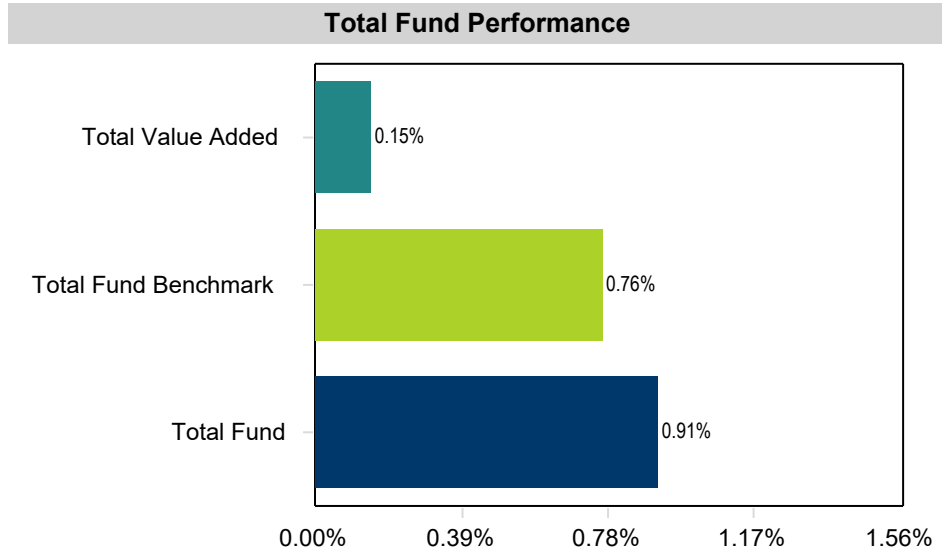
- Includes committed, but unfunded amounts for real estate (\$1,480.9 million) and alternatives (\$2,297.1 million). Assumes real estate and alternatives allocations are fully funded as of month's end.
- Assumes that outstanding commitments are funded from a basket of public markets asset classes (domestic equity, international equity and/or fixed income) that best reflects the expectations of risk, yield and regional allocations of the asset class

Private Equity Proxy: 60% domestic equity, 40% international equity
 Real Estate Proxy: 50% domestic equity, 30% international equity, 20% fixed income

Total Fund Attribution

Total Fund

1 Month Ending July 31, 2021



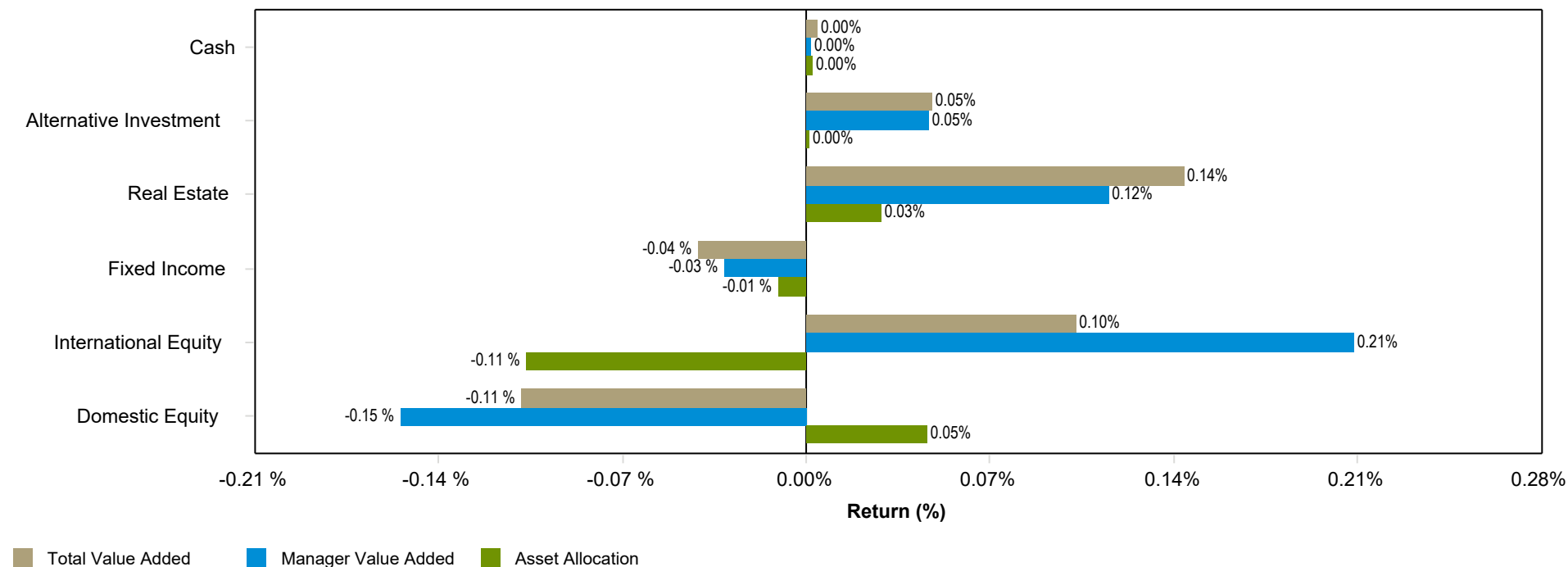
Total Fund Benchmark = 39.0% Russell 3000 Index, 25.0% Blmbg Aggregate, 15.0% MSCI ACWI ex US, 10.0% NCREIF NFI-ODCE Val Wt Nt, 10.0% 9% Annually and 1.0% 3-month Treasury Bill.

Total Fund Attribution

Total Fund

1 Month Ending July 31, 2021

Relative Attribution by Asset Class



Relative Attribution Effects

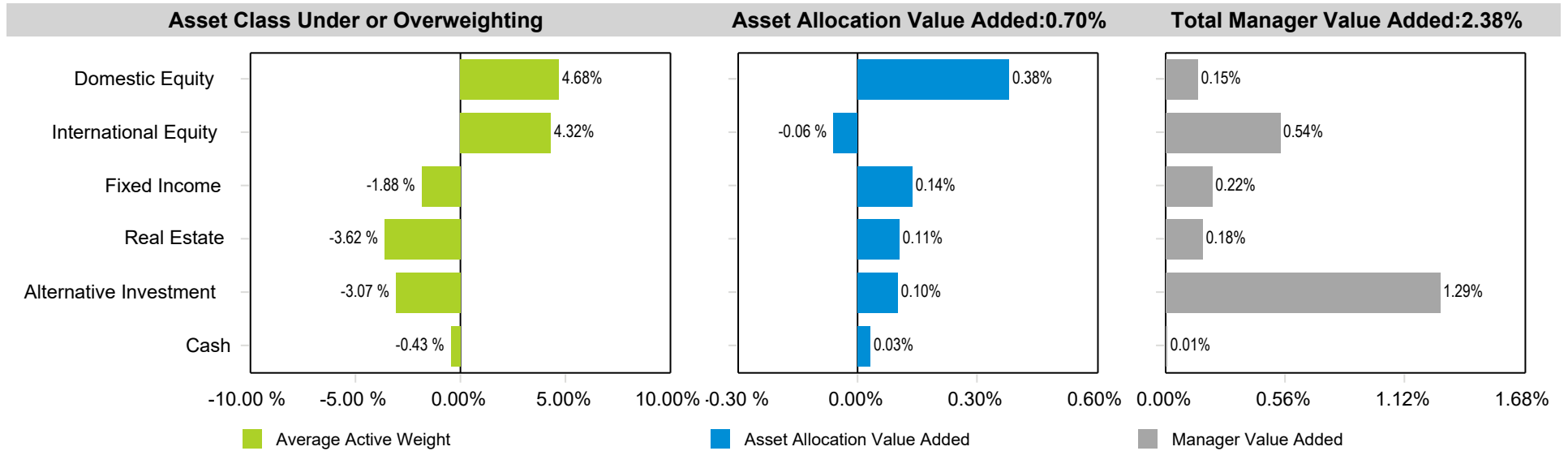
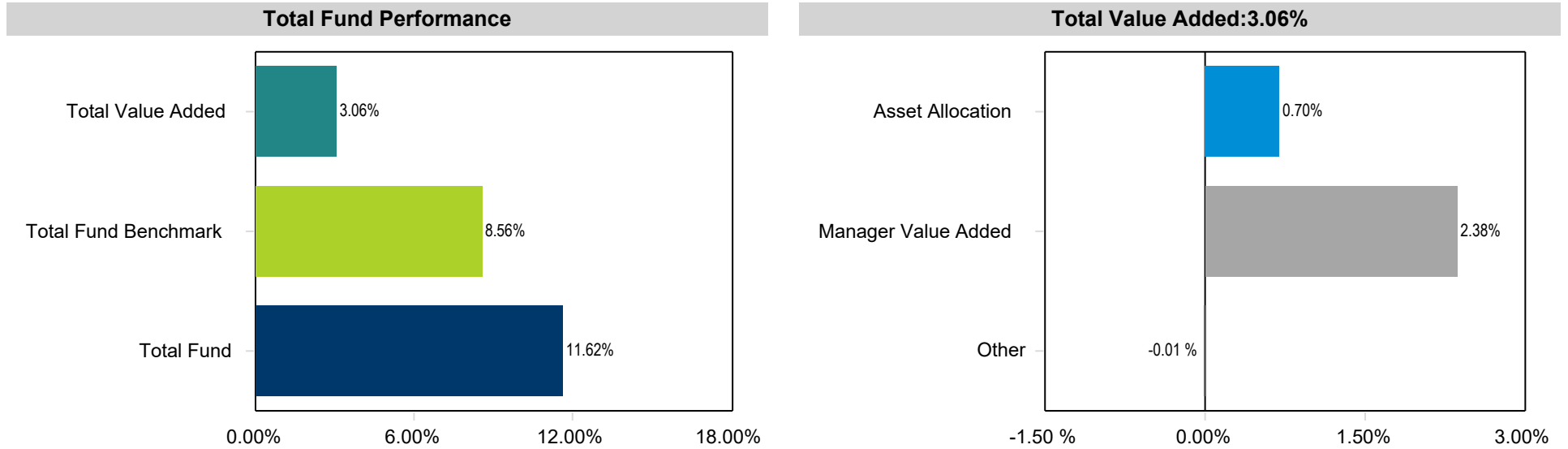
	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	44.0	39.0	1.34	1.69	-0.15	0.05	-0.11
International Equity	19.4	15.0	-0.57	-1.65	0.21	-0.11	0.10
Fixed Income	22.0	25.0	0.98	1.12	-0.03	-0.01	-0.04
Real Estate	6.3	10.0	1.84	0.00	0.12	0.03	0.14
Alternative Investment	7.6	10.0	1.34	0.72	0.05	0.00	0.05
Cash	0.7	1.0	0.29	0.01	0.00	0.00	0.00
Total Fund	100.0	100.0	0.91	0.76	0.19	-0.04	0.15

Total Fund Benchmark = 39.0% Russell 3000 Index, 25.0% Blmbg Aggregate, 15.0% MSCI ACWI ex US, 10.0% NCREIF NFI-ODCE Val Wt Nt, 10.0% 9% Annually and 1.0% 3-month Treasury Bill.

Total Fund Attribution

Total Fund

Year To Date Ending July 31, 2021



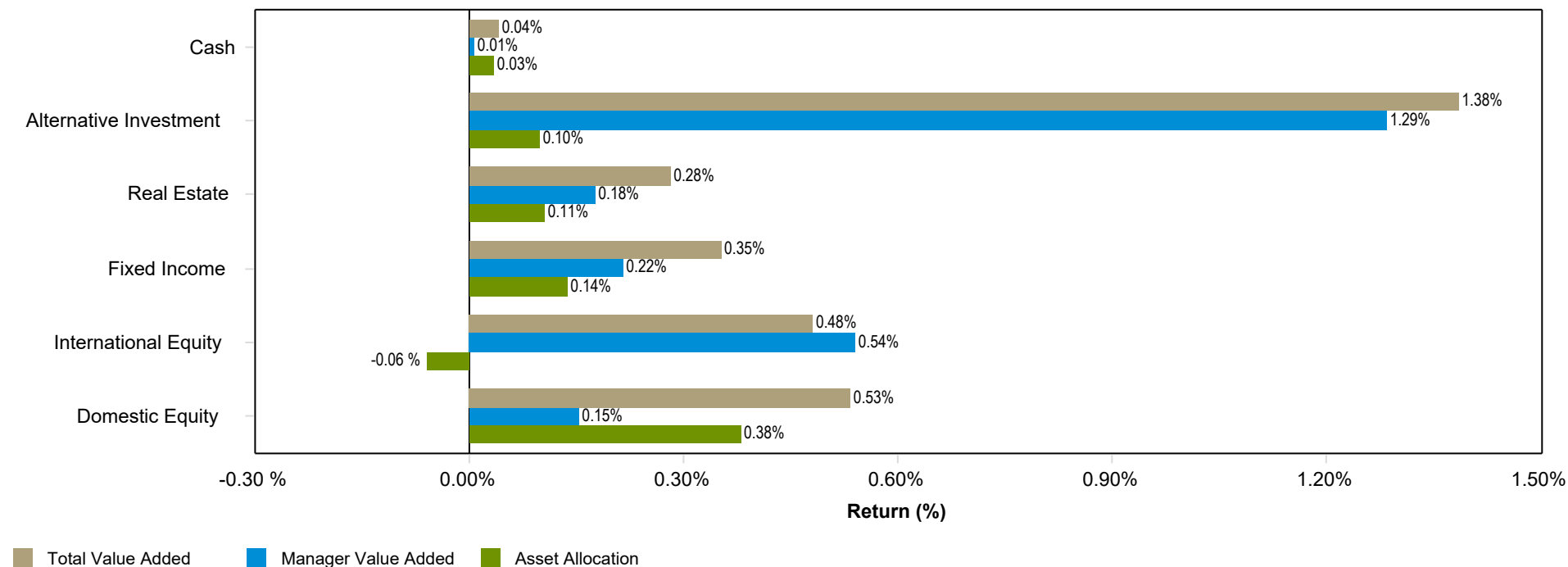
Total Fund Benchmark = 39.0% Russell 3000 Index, 25.0% Blmbg Aggregate, 15.0% MSCI ACWI ex US, 10.0% NCREIF NFI-ODCE Val Wt Nt, 10.0% 9% Annually and 1.0% 3-month Treasury Bill.

Total Fund Attribution

Total Fund

Year To Date Ending July 31, 2021

Relative Attribution by Asset Class



Relative Attribution Effects							
	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	43.7	39.0	17.46	17.06	0.15	0.38	0.53
International Equity	19.3	15.0	10.14	7.36	0.54	-0.06	0.48
Fixed Income	23.1	25.0	0.34	-0.51	0.22	0.14	0.35
Real Estate	6.4	10.0	8.44	5.64	0.18	0.11	0.28
Alternative Investment	6.9	10.0	24.27	5.16	1.29	0.10	1.38
Cash	0.6	1.0	1.27	0.03	0.01	0.03	0.04
Total Fund	100.0	100.0	11.62	8.56	2.38	0.70	3.06

Total Fund Benchmark = 39.0% Russell 3000 Index, 25.0% Blmbg Aggregate, 15.0% MSCI ACWI ex US, 10.0% NCREIF NFI-ODCE Val Wt Nt, 10.0% 9% Annually and 1.0% 3-month Treasury Bill.

Asset Class Returns

Periods Ended July 31, 2021

	Performance (%)									
	1 Month	YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	Since Inception	Inception Date
Total Fund	0.93	11.73	27.06	12.55	11.95	9.94	8.12	8.96	10.18	1/1/1982
Total Fund - Net	0.91	11.62	26.84	12.36	11.74	9.72				
Total Fund Benchmark	0.76	8.56	19.96	11.26	10.42	9.15				
Domestic Equity	1.36	17.58	42.33	17.33	17.48	14.83	9.48	11.21	12.19	1/1/1982
Domestic Equity - Net	1.34	17.46	42.09	17.12	17.25	14.58				
Blended Benchmark (U.S. Equity)	1.69	17.06	38.73	18.10	17.36	15.14	9.29	10.79		
U.S. Equity IMRF Custom Benchmark	1.43	16.79	38.76	16.18	16.00					
International Equity	-0.55	10.34	34.06	10.20	11.26	7.42	7.66	7.85	8.19	9/1/1986
International Equity - Net	-0.57	10.14	33.58	9.83	10.88	7.07				
MSCI AC World ex USA (Net)	-1.65	7.36	27.78	7.92	9.65	5.42	6.49			
International Equity IMRF Custom Benchmark	-1.66	7.26	28.29	8.00	9.73					
Fixed Income	1.00	0.40	1.69	6.15	4.01	4.22	5.33	6.32	8.07	1/1/1982
Fixed Income - Net	0.98	0.34	1.58	6.03	3.88	4.07				
Blmbg. Barc. U.S. Aggregate	1.12	-0.51	-0.70	5.73	3.12	3.35	4.51	5.64	7.53	
Fixed Income IMRF Custom Benchmark	0.99	-0.06	0.53	5.77	3.48					
Real Estate	1.85	8.49	11.70	9.12	8.95	10.39	7.54	5.41	5.67	5/1/1985
Real Estate - Net	1.84	8.44	11.61	9.08	8.92	10.37				
Blended Benchmark (Real Estate)	0.00	5.64	7.09	4.38	5.50	8.72	7.08	7.25	7.52	
Alternatives Investments	1.34	24.28	40.16	19.15	16.10	11.52	8.52	12.70	11.39	2/1/1986
Alternatives Investments - Net	1.34	24.27	40.12	19.09	15.97	11.28				
Alternatives Custom Benchmark	0.72	5.16	9.00	9.00	9.00	9.00	10.58	12.04	12.49	
Private Equity	1.55	28.83	46.90	22.91	19.77	14.11	10.24	15.46	13.70	2/1/1986
Alternatives Custom Benchmark	0.72	5.16	9.00	9.00	9.00	9.00	10.58	12.04	12.49	
Agriculture	-0.02	-1.90	-1.66	-0.02	-1.70	8.03	6.96		6.60	10/1/1997
NCREIF Farmland Index	0.00	2.34	4.97	4.82	5.51	10.24	12.09		11.23	

Benchmark definitions on next page.

Asset Class Returns

Periods Ended July 31, 2021

	Performance (%)									
	1 Month	YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	Since Inception	Inception Date
Timberland	-0.14	-7.49	-8.10	-1.65	0.10	1.77	2.96		6.80	10/1/1992
NCREIF Timberland Index	0.00	2.47	3.10	2.12	2.65	4.66	5.78		8.25	
Unlisted Infrastructure	0.00	6.66	25.78	13.08					12.16	4/1/2018
Alternatives Custom Benchmark	0.72	5.16	9.00	9.00					9.00	
Cash	0.29	1.27	1.76	2.85	2.36	1.29	1.49	3.07	3.76	7/1/1986
90 Day US Treasury Bill	0.01	0.03	0.08	1.29	1.16	0.62	1.32	2.50	3.16	

Benchmark Definitions

Account Name	From Date	To Date	Benchmark
Domestic Equity Blended	1/1/2015	Present	100% Russell 3000 Index
Benchmark	1/1/1982	12/31/2014	100% Dow Jones US Total Stock Market Index
Real Estate Blended	1/1/2013	Present	100% NCREIF Fund Index-ODCE (VW) (Net)** 100%
Benchmark	1/1/2007	12/31/2012	100% NPI + 1%
	1/1/2005	12/31/2016	100% Consumer Price Index + 5%
Alternatives Custom	7/1/2010	Present	100% Annualized rate of 9.0%
Benchmark	1/1/2004	6/30/2010	100% Annualized rate of 12.0%
	1/1/2003	12/31/2003	100% Annualized rate of 13.0%
	2/1/1986	12/31/2002	100% Annualized rate of 15.0%
U.S. Equity IMRF Custom Benchmark			Blend of the U.S. Equity Style benchmarks returns, dollar weighted by the actual allocation at pervious month end.
International Equity IMRF Custom Benchmark			Blend of the the International Equity Style benchmarks returns, dollar weighted by the actual allocation at previous month end.
Fixed Income IMRF Custom Benchmark			Blend of the the Fixed Income Style benchmarks returns, dollar weighted by the actual allocation at previous month end.

**ODCE returns are updated quarterly.

Benchmark Definitions

Account Name	From Date	To Date	Benchmark
Total Fund Benchmark	1/1/2021	Present	The total fund benchmark is a blend of the asset class benchmark returns weighted by the target allocation for each asset class: 39% Russell 3000 Index, 25% Blmbg. Barc. U.S. Aggregate, 15% MSCI AC World ex USA (Net), 10% NCREIF Fund Index-ODCE (VW) (Net), 10% Alternatives Custom Benchmark, 1% 90 Day US Treasury Bill.
	3/1/2018	12/31/2020	37% Russell 3000 Index, 28% Blmbg. Barc. U.S. Aggregate, 18% MSCI AC World ex USA (Net), 9% NCREIF Fund Index-ODCE (VW) (Net), 7% Alternatives Custom Benchmark, 1% 90 Day US Treasury Bill.

Investment Manager Asset Allocation

Periods Ended July 31, 2021

	Jun-2021		Jul-2021	
	\$	%	\$	%
Domestic Equity	24,069,084,986	44.00	24,338,829,856	44.38
Large Cap Growth	9,133,053,519	16.70	9,413,085,044	17.16
NTGI S&P 500 Growth	3,690,513,569	6.75	3,830,016,284	6.98
Sands Capital	3,264,374,903	5.97	3,333,152,318	6.08
Xponance Russell 1000 G	2,178,165,047	3.98	2,249,916,442	4.10
Large Cap Value	4,821,809,911	8.81	4,808,325,238	8.77
Dodge & Cox	1,826,952,979	3.34	1,813,414,505	3.31
LSV Asset	1,496,173,585	2.74	1,484,102,163	2.71
NTGI S&P 500 Value	1,498,683,347	2.74	1,510,808,570	2.75
Large Cap Pass. Core	3,398,577,933	6.21	3,457,019,579	6.30
NTGI MarketCap Idx.	3,398,577,933	6.21	3,457,019,579	6.30
Factor Diversity Strategies	1,255,998,413	2.30	1,283,832,335	2.34
U.S. Large Cap FDP-GSAM	1,255,998,413	2.30	1,283,832,335	2.34
Quantitative Factor Strategies	1,209,996,999	2.21	1,232,319,450	2.25
Quantitative US Equity - SciBeta	1,209,996,999	2.21	1,232,319,450	2.25
Small Cap Growth	1,160,293,183	2.12	1,143,542,749	2.09
Frontier Capital	964,847,439	1.76	947,704,860	1.73
FIAM Small Cap	195,445,744	0.36	195,837,889	0.36
Small Cap Value	2,114,919,967	3.87	2,071,217,793	3.78
Channing	333,057,183	0.61	332,416,875	0.61
DFA Small Cap Val.	827,658,649	1.51	808,944,990	1.48
Inv. Couns. Maryland	954,204,135	1.74	929,855,928	1.70

Investment Manager Asset Allocation

Periods Ended July 31, 2021

	Jun-2021		Jul-2021	
	\$	%	\$	%
Micro Cap	224,891,761	0.41	169,770,110	0.31
DFA Micro Cap (9-10)	224,891,761	0.41	169,770,110	0.31
Public Real Assets	749,543,302	1.37	759,717,558	1.39
Brookfield	181,944,002	0.33	182,056,278	0.33
Cohen & Steers	567,599,300	1.04	577,661,280	1.05
International Equity	10,620,150,178	19.41	10,561,394,227	19.26
Intl Large Cap Growth	1,838,913,514	3.36	1,864,710,609	3.40
EARNEST Part. Intl	627,836,196	1.15	627,834,067	1.14
William Blair	1,211,077,317	2.21	1,236,876,542	2.26
Intl Large Cap Value	1,415,007,681	2.59	1,389,787,648	2.53
Brandes Investment	615,028,051	1.12	605,743,474	1.10
Mondrian	655,567,379	1.20	640,119,093	1.17
Lazard	144,412,250	0.26	143,925,081	0.26
Intl Large Cap Core	4,943,885,212	9.04	4,968,537,377	9.06
Arrowstreet Capital	1,125,244,504	2.06	1,111,676,661	2.03
Brown Capital	650,536,026	1.19	671,797,677	1.23
GlobeFlex Capital	884,712,321	1.62	884,264,711	1.61
Xponance Intl EQ	107,482,445	0.20	107,935,908	0.20
Progress Intl Equity	846,696	0.00	851,008	0.00
Transition Account	119,718	0.00	119,718	0.00
NTGI MSCI EAFE	2,174,943,503	3.98	2,191,891,695	4.00
Intl All Cap Developed	170,019,885	0.31	173,540,660	0.32
Ativo International	170,019,885	0.31	173,540,660	0.32

Investment Manager Asset Allocation

Periods Ended July 31, 2021

	Jun-2021		Jul-2021	
	\$	%	\$	%
International Small Cap	706,538,238	1.29	724,961,936	1.32
Franklin Templeton	259,693,686	0.47	261,365,944	0.48
William Blair IntSC	446,844,552	0.82	463,595,993	0.85
Emerging Mkt Equity	1,545,785,649	2.83	1,439,855,997	2.63
Genesis Asset Mngrs.	1,545,785,649	2.83	1,439,855,997	2.63

Investment Manager Asset Allocation

Periods Ended July 31, 2021

	Jun-2021		Jul-2021	
	\$	%	\$	%
Fixed Income	12,052,637,222	22.03	12,167,412,856	22.19
Domestic Fixed Core	3,827,438,231	7.00	3,872,014,622	7.06
Attucks Fixed Income	99,648,372	0.18	100,886,810	0.18
Brandes FI Core	373,691,110	0.68	377,915,055	0.69
EARNEST Partners	1,025,034,588	1.87	1,038,211,109	1.89
Garcia Hamilton	1,087,003,802	1.99	1,098,994,899	2.00
Ramirez Asset Management	132,789,313	0.24	134,406,783	0.25
Xponance Yield Advantage Agg.	1,109,271,045	2.03	1,121,599,967	2.05
Domestic Fixed Passive Core	3,653,581,639	6.68	3,694,659,160	6.74
NTGI Blmbg Agg.	1,816,156,108	3.32	1,836,448,848	3.35
BlackRock US Debt I	1,837,425,530	3.36	1,858,210,313	3.39
Domestic Fixed Core Plus	2,939,767,840	5.37	2,971,675,160	5.42
LM Capital Group FI	964,191,576	1.76	972,934,204	1.77
Progress Inv. FI	1,721	0.00	1,707	0.00
BMO - TCH	660,429,037	1.21	667,710,942	1.22
Western Asset	1,129,386,459	2.06	1,143,264,607	2.08
Longfellow Core Plus	185,759,048	0.34	187,763,701	0.34
Bank Loans	574,216,967	1.05	568,622,865	1.04
Barings Global Loan Fund	574,216,967	1.05	568,622,865	1.04
Emerging Markets Debt	232,656,510	0.43	232,360,920	0.42
Standish-Mellon EMD	232,656,510	0.43	232,360,920	0.42
High Yield	824,976,036	1.51	828,080,128	1.51
MacKay Shields	824,955,304	1.51	828,059,396	1.51
FIAM High Yield	20,732	0.00	20,733	0.00

Investment Manager Asset Allocation

Periods Ended July 31, 2021

	Jun-2021		Jul-2021	
	\$	%	\$	%
Real Estate	3,429,574,704	6.27	3,451,866,751	6.29
Real Estate Core Cmp	1,836,015,652	3.36	1,863,618,431	3.40
TA Assoc. Buckhead	659,233,580	1.21	659,233,580	1.20
Barings Euro Core Property	141,713,875	0.26	141,701,927	0.26
Blackstone Property Euro	158,726,776	0.29	158,713,394	0.29
INVESCO Core Real Estate	203,919,196	0.37	213,718,886	0.39
INVESCO European real estate	63,343,340	0.12	59,292,913	0.11
AEW Core Property Tr	235,414,221	0.43	245,120,642	0.45
CBRE Core Partners	217,552,560	0.40	229,724,994	0.42
JPM Strategic Property Fund	156,112,104	0.29	156,112,094	0.28
RE Non-Core Cmp	1,593,559,052	2.91	1,588,248,320	2.90
Artemis MWBE Spruce	241,674,333	0.44	241,681,714	0.44
Franklin T. EMREFF	6,865,209	0.01	6,865,209	0.01
Security Capital	66,614,519	0.12	69,640,085	0.13
Dune II	8,810,759	0.02	8,810,759	0.02
Non-Core Real Estate Funds	1,052,149,698	1.92	1,047,743,685	1.91
Non-Core Intl Real Estate	217,346,608	0.40	213,408,943	0.39
Almanac ARS V	97,925	0.00	97,925	0.00
Alternatives Investments	4,150,572,118	7.59	4,206,721,294	7.67
Absolute Return	138,938	0.00	112,300	0.00
Aurora Investment	138,938	0.00	112,300	0.00
Private Equity	3,589,198,550	6.56	3,645,201,462	6.65
Abbott S/A Comp.	490,816,756	0.90	496,513,891	0.91

Investment Manager Asset Allocation

Periods Ended July 31, 2021

	Jun-2021		Jul-2021	
	\$	%	\$	%
Muller Monroe MPEFF	557,400	0.00	522,930	0.00
Pantheon S/A Comp.	333,814,055	0.61	333,813,683	0.61
Private Equity Fund - Domestic	2,157,588,556	3.94	2,214,267,370	4.04
Private Equity Fund - International	547,493,829	1.00	531,008,164	0.97
Oakbrook Opportunities Fund	58,927,953	0.11	69,075,423	0.13
Private Credit	199,180,246	0.36	197,492,408	0.36
Private Credit Fund - Domestic	199,180,246	0.36	197,492,408	0.36
Agriculture	212,042,460	0.39	211,999,925	0.39
Premiere Partners IV	212,042,460	0.39	211,999,925	0.39
Timberland	67,469,042	0.12	67,372,317	0.12
Forest Investment	67,469,042	0.12	67,372,317	0.12
Unlisted Infrastructure	82,542,882	0.15	84,542,882	0.15
Unlisted Infrastructure Funds	82,542,882	0.15	84,542,882	0.15
Cash & Equivalents	379,519,222	0.69	113,617,449	0.21
Total Fund	54,701,538,430	100.00	54,839,842,433	100.00

Wilshire Consulting Performance



Periods Ended July 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Total Fund	54,839,842,433	0.93	11.73	27.06	12.55	11.95	9.94	10.18	1/1/1982
Total Fund - Net		0.91	11.62	26.84	12.36	11.74	9.72		
Total Fund Benchmark		0.76	8.56	19.96	11.26	10.42	9.15		
Domestic Equity	24,338,829,856	1.36	17.58	42.33	17.33	17.48	14.83	12.19	1/1/1982
Domestic Equity - Net		1.34	17.46	42.09	17.12	17.25	14.58		
Blended Benchmark		1.69	17.06	38.73	18.10	17.36	15.14		
Russell 3000 Index		1.69	17.06	38.73	18.10	17.36	15.16	12.08	
U.S. Equity IMRF Custom Benchmark		1.43	16.79	38.76	16.18	16.00			
Large Cap Equity	18,962,262,196	1.93	17.21	40.27	18.89	18.45	15.61	11.95	1/1/1982
Large Cap Equity - Net		1.92	17.15	40.15	18.79	18.33	15.46		
Russell 1000 Index		2.08	17.34	37.97	18.63	17.60	15.39	12.23	
Large Cap Growth	9,413,085,044	3.07	15.13	38.32	26.41	24.63	18.34	13.06	1/1/1982
Large Cap Growth - Net		3.06	15.08	38.20	26.30	24.50	18.19		
LCG Blended Benchmark		3.30	16.71	36.68	25.29	23.32	18.37		
Russell 1000 Growth Index		3.30	16.71	36.68	25.29	23.32	18.37	12.20	
NTGI S&P 500 Growth	3,830,016,284	3.78	18.63	37.11	23.19	21.59	17.79	10.07	8/1/2001
NTGI S&P 500 Growth - Net		3.78	18.62	37.10	23.18	21.58	17.78		
S&P 500 Growth		3.79	18.64	37.13	23.22	21.63	17.79	10.05	
Xponance Russell 1000 G	2,249,916,442	3.29	16.70	36.66				24.33	10/1/2018
Xponance Russell 1000 G - Net		3.29	16.69	36.63				24.31	
Russell 1000 Growth Index		3.30	16.71	36.68				24.35	
Sands Capital	3,333,152,318	2.11	10.76	39.53	30.32	28.77	20.56	15.37	11/1/2003
Sands Capital - Net		2.11	10.64	39.26	30.05	28.50	20.30		
LCG Blended Benchmark		3.30	16.71	36.68	25.29	23.32	18.37	12.41	
Russell 1000 Growth Index		3.30	16.71	36.68	25.29	23.32	18.37	12.45	

Benchmark definitions in glossary.

Periods Ended July 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Large Cap Value	4,808,325,238	-0.15	21.98	45.75	11.64	13.29	13.25	10.62	10/1/1982
Large Cap Value - Net		-0.19	21.85	45.54	11.47	13.11	13.06		
LCV Blended Benchmark		0.80	17.98	39.32	11.27	11.41	12.08		
Russell 1000 Value Index		0.80	17.98	39.32	11.27	11.41	12.08	11.97	
Dodge & Cox	1,813,414,505	-0.56	25.44	53.52	13.79	16.03	14.50	10.69	9/1/2003
Dodge & Cox - Net		-0.61	25.26	53.22	13.53	15.78	14.26		
LCV Blended Benchmark		0.80	17.98	39.32	11.27	11.41	12.08	9.02	
Russell 1000 Value Index		0.80	17.98	39.32	11.27	11.41	12.08	9.17	
LSV Asset	1,484,102,163	-0.62	22.62	48.08	9.86	12.40	13.15	11.30	2/1/2003
LSV Asset - Net		-0.68	22.41	47.72	9.59	12.13	12.87		
LCV Blended Benchmark		0.80	17.98	39.32	11.27	11.41	12.08	9.83	
Russell 1000 Value Index		0.80	17.98	39.32	11.27	11.41	12.08	9.83	
NTGI S&P 500 Value	1,510,808,570	0.81	17.19	35.63	12.03	12.23	12.43	6.71	8/1/1999
NTGI S&P 500 Value - Net		0.81	17.19	35.62	12.02	12.22	12.43		
S&P 500 Value		0.79	17.22	35.68	11.94	12.11	12.35	6.68	
Large Cap Pass. Core	3,457,019,579	1.72	17.26	38.91	18.08	17.39	15.19	11.83	1/1/1985
Large Cap Pass. Core - Net		1.72	17.25	38.90	18.07	17.38	15.18		
Dow Jones US Total Stock Market Index		1.72	17.26	38.93	18.06	17.34	15.12		
NTGI MarketCap Idx.	3,457,019,579	1.72	17.26	38.91	18.08	17.39	15.19	11.62	2/1/1985
NTGI MarketCap Idx. - Net		1.72	17.25	38.90	18.07	17.38	15.18		
Dow Jones US Total Stock Market Index		1.72	17.26	38.93	18.06	17.34	15.12		
Factor Diversity Strategies	1,283,832,335	2.22	16.91	33.02				33.02	8/18/2020
U.S. Large Cap FDP-GSAM	1,283,832,335	2.22	16.91	33.02				33.02	8/18/2020
U.S. Large Cap FDP-GSAM - Net		2.21	16.87	32.93				32.93	
Solactive GBS U.S. 1000 Index		2.15	17.31	33.17				33.17	
GSAM Active Beta US. Large Cap FDC Index		2.21	16.92	32.86				32.86	

Benchmark definitions in glossary.

Wilshire Consulting Performance



Periods Ended July 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Quantitative Factor Strategies	1,232,319,450	1.84	17.79	33.49				17.15	9/17/2019
Quantitative US Equity - SciBeta	1,232,319,450	1.84	17.79	33.49				17.15	9/17/2019
Quantitative US Equity - SciBeta - Net		1.84	17.75	33.28				16.86	
SciBeta US Hi-Fctr-Intst Div Multi-Beta Multi-Strat Index		1.62	16.69	32.69				16.08	
Small Cap	3,384,530,652	-1.88	20.78	62.85	12.82	14.87	12.78	12.63	7/1/1988
Small Cap Composite - Net		-1.92	20.34	61.89	12.18	14.25	12.18		
Russell 2000 Index		-3.61	13.29	51.97	11.49	14.28	12.34	10.03	
Small Cap Growth	1,143,542,749	-1.44	14.65	59.10	20.54	19.38	15.09	13.90	7/1/1988
Small Cap Growth - Net		-1.57	13.85	57.81	19.64	18.63	14.43		
Russell 2000 Growth Index		-3.64	5.01	41.00	13.87	16.40	13.56	8.98	
Frontier Capital	947,704,860	-1.78	14.58	60.66	22.85	23.45	16.06	14.30	8/1/1988
Frontier Capital - Net		-1.91	13.72	59.26	21.73	22.50	15.32		
Russell 2000 Growth Index		-3.64	5.01	41.00	13.87	16.40	13.56	9.06	
FIAM Small Cap	195,837,889	0.20	14.95	53.37	15.14	15.07	13.85	13.95	8/1/1988
FIAM Small Cap - Net		0.10	14.47	52.58	14.74	14.65	13.33		
Russell 2000 Index		-3.61	13.29	51.97	11.49	14.28	12.34	10.09	
Russell 2000 Growth Index		-3.64	5.01	41.00	13.87	16.40	13.56	9.06	
Small Cap Value	2,071,217,793	-2.07	24.13	64.95	8.98	12.64	11.92	12.08	9/1/1989
Small Cap Value - Net		-2.07	23.89	64.17	8.45	12.07	11.37		
Russell 2000 Value Index		-3.58	22.16	63.70	8.30	11.61	10.82	10.36	
Channing	332,416,875	-0.19	16.85	56.88	10.45	12.58	12.47	12.12	7/1/2011
Channing - Net		-0.19	16.61	56.20	9.95	12.06	11.88	11.53	
Russell 2000 Value Index		-3.58	22.16	63.70	8.30	11.61	10.82	10.36	
DFA Small Cap Val.	808,944,990	-2.26	29.69	74.45	8.37	11.80	11.53	12.32	2/1/1996
DFA Small Cap Val. - Net		-2.26	29.41	73.70	7.86	11.24	11.00		
Russell 2000 Value Index		-3.58	22.16	63.70	8.30	11.61	10.82	9.98	

Benchmark definitions in glossary.

Periods Ended July 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Inv. Couns. Maryland	929,855,928	-2.55	22.29	60.30	9.00	13.46	12.57	11.92	5/1/1999
Inv. Couns. Maryland - Net		-2.55	22.09	59.47	8.44	12.85	12.04		
Russell 2000 Value Index		-3.58	22.16	63.70	8.30	11.61	10.82	9.62	
Micro Cap	169,770,110	-2.39	23.68	63.65	9.76	12.77	11.07	11.85	7/1/1984
Micro Cap - Net		-2.39	23.34	62.78	9.20	12.17	10.39		
Russell Microcap Index		-5.51	21.90	64.32	12.35	15.62	12.75		
DFA Micro Cap (9-10)	169,770,110	-2.39	23.68	63.65	9.86	14.01	13.09	11.56	8/1/1987
DFA Micro Cap (9-10) - Net		-2.39	23.34	62.78	9.30	13.43	12.53		
Russell 2000 Index		-3.61	13.29	51.97	11.49	14.28	12.34	9.44	
Public Real Assets	759,717,558	1.36	11.14	18.18	8.78			7.62	8/1/2017
Public Real Assets - Net		1.36	10.93	17.72	8.32			7.19	
Public Real Assets Benchmark		1.05	10.61	17.67	7.10			5.73	
Brookfield	182,056,278	0.06	13.70	21.35	6.23			5.04	8/1/2017
Brookfield - Net		0.06	13.42	20.73	5.67			4.53	
Dow Jones Brookfield Global Infrastructure Composite Index		0.53	14.94	19.62	5.96			4.66	
Cohen & Steers	577,661,280	1.77	10.36	17.22	10.04			8.90	8/1/2017
Cohen & Steers - Net		1.77	10.16	16.80	9.61			8.50	
FTSE Global Core Infrastructure 50/50 Index (Net)		1.31	8.49	16.66	7.64			6.24	

Benchmark definitions in glossary.

Periods Ended July 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
International Equity	10,561,394,227	-0.55	10.34	34.06	10.20	11.26	7.42	8.19	9/1/1986
International Equity - Net		-0.57	10.14	33.58	9.83	10.88	7.07		
MSCI AC World ex USA (Net)		-1.65	7.36	27.78	7.92	9.65	5.42		
International Equity IMRF Custom Benchmark		-1.66	7.26	28.29	8.00	9.73			
Intl LargeCap Equity	8,223,035,634	0.31	12.24	36.14	10.06	11.19	7.49	8.19	9/1/1986
Intl LargeCap Equity - Net		0.29	12.10	35.74	9.76	10.88	7.20		
MSCI AC World ex USA (Net)		-1.65	7.36	27.78	7.92	9.65	5.42		
Intl Large Cap Grwth	1,864,710,609	1.40	11.58	39.08	14.00	13.97	8.41	9.74	9/1/2002
Intl Large Cap Grwth - Net		1.39	11.41	38.68	13.72	13.68	8.07		
MSCI AC World ex USA (Net)		-1.65	7.36	27.78	7.92	9.65	5.42	7.83	
MSCI AC World ex USA Growth (Net)		-1.52	4.90	23.29	12.01	11.96	7.18	8.55	
EARNEST Part. Intl	627,834,067	0.00	13.56	48.04	8.92	11.20	6.04	9.68	10/1/2004
EARNEST Part. Intl - Net		-0.05	13.40	47.69	8.72	10.99	5.75		
MSCI AC World ex USA (Net)		-1.65	7.36	27.78	7.92	9.65	5.42	6.65	
MSCI AC World ex USA Growth (Net)		-1.52	4.90	23.29	12.01	11.96	7.18	7.83	
William Blair	1,236,876,542	2.13	10.60	34.93	17.41	15.73	10.44	11.33	10/1/2002
William Blair - Net		2.13	10.43	34.51	17.01	15.35	10.04		
MSCI AC World ex USA (Net)		-1.65	7.36	27.78	7.92	9.65	5.42	8.51	
MSCI AC World ex USA Growth (Net)		-1.52	4.90	23.29	12.01	11.96	7.18	9.12	
Intl Large Cap Val.	1,389,787,648	-1.78	10.51	33.22	5.27	7.58	5.62	8.66	10/1/1995
Intl Large Cap Val. - Net		-1.85	10.27	32.77	4.93	7.21	5.25		
MSCI AC World ex USA (Net)		-1.65	7.36	27.78	7.92	9.65	5.42	5.76	
MSCI AC World ex USA Value		-1.73	10.12	33.03	4.14	7.71	4.11		
Brandes Investment	605,743,474	-1.51	14.12	39.83	4.15	7.73	5.84	8.80	1/1/1996
Brandes Investment - Net		-1.56	13.94	39.53	3.92	7.46	5.59		
MSCI AC World ex USA (Net)		-1.65	7.36	27.78	7.92	9.65	5.42	5.67	
MSCI AC World ex USA Value		-1.73	10.12	33.03	4.14	7.71	4.11		

Benchmark definitions in glossary.

Periods Ended July 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Mondrian	640,119,093	-2.36	8.32	28.47	6.21	7.39		6.14	4/1/2012
Mondrian - Net		-2.46	8.00	27.84	5.71	6.88		5.63	
MSCI AC World ex USA (Net)		-1.65	7.36	27.78	7.92	9.65		6.55	
MSCI AC World ex USA Value		-1.73	10.12	33.03	4.14	7.71		5.07	
Lazard	143,925,081	-0.33	5.95	27.48	8.06	8.61		7.41	4/1/2012
Lazard - Net		-0.33	5.82	27.18	7.79	8.34		6.92	
MSCI AC World ex USA (Net)		-1.65	7.36	27.78	7.92	9.65		6.55	
MSCI AC World ex USA Value		-1.73	10.12	33.03	4.14	7.71		5.07	
Intl Large Cap Active Core	2,776,645,682	0.28	15.55	39.33	12.07	12.84	9.12	6.86	2/1/2008
Intl Large Cap Active Core - Net		0.28	15.36	38.61	11.52	12.27	8.57		
MSCI AC World ex USA (Net)		-1.65	7.36	27.78	7.92	9.65	5.42	3.76	
Arrowstreet Capital	1,111,676,661	-1.20	18.56	50.15	16.81	15.69	10.53	7.90	3/1/2008
Arrowstreet Capital - Net		-1.20	18.31	49.51	16.28	15.17	10.01	7.40	
MSCI AC World ex USA (Net)		-1.65	7.36	27.78	7.92	9.65	5.42	3.56	
Brown Capital	671,797,677	3.27	9.58	26.46	13.13	12.72	10.03	9.34	10/1/2004
Brown Capital - Net		3.27	9.45	25.39	12.61	11.96	9.21		
MSCI AC World ex USA (Net)		-1.65	7.36	27.78	7.92	9.65	5.42	6.65	
GlobeFlex Capital	884,264,711	-0.05	17.70	38.98	7.48	10.28	7.50	6.01	3/1/2006
GlobeFlex Capital - Net		-0.05	17.50	38.48	7.04	9.85	7.07	5.56	
MSCI AC World ex USA (Net)		-1.65	7.36	27.78	7.92	9.65	5.42	4.80	
Xponance Intl EQ	107,935,908	0.42						12.53	2/1/2021
Xponance Intl EQ - Net		0.42						12.38	
MSCI EAFE Index (Net)		0.75						10.83	
Progress Intl Equity	851,008								

Benchmark definitions in glossary.

Periods Ended July 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Intl Large Cap Passive Core	2,191,891,695	0.78	9.88	31.08	8.05	9.76	6.54	4.60	2/1/2000
Intl Large Cap Passive Core - Net		0.78	9.87	31.07	8.04	9.76	6.54		
MSCI EAFE Index (Net)		0.75	9.65	30.31	7.66	9.35	6.14	4.20	
NTGI MSCI EAFE	2,191,891,695	0.78	9.88	31.08	8.05	9.76	6.54	4.59	2/1/2000
NTGI MSCI EAFE - Net		0.78	9.87	31.07	8.04	9.76	6.54		
MSCI EAFE Index (Net)		0.75	9.65	30.31	7.66	9.35	6.14	4.20	
Intl All Cap Developed	173,540,660	2.07	12.93	27.36				12.59	2/1/2019
Intl All Cap Developed - Net		1.95	12.52	26.75				12.06	
MSCI EAFE + Canada (Net)		0.66	10.65	31.00				13.12	
Ativo International	173,540,660	2.07	12.93	27.36				12.59	2/1/2019
Ativo International - Net		1.95	12.52	26.75				12.06	
MSCI EAFE + Canada (Net)		0.66	10.65	31.00				13.12	
Intl Small Cap Eqty	724,961,936	2.61	13.50	40.75	13.77	13.46	9.64	6.95	12/1/2005
Intl Small Cap Eqty - Net		2.54	13.04	39.78	12.90	12.63	8.83		
MSCI AC World ex USA Small Cap (Net)		0.80	13.14	41.16	9.81	10.94	7.10	7.42	
Custom Benchmark (Intl Small Cap)		0.80	13.14	41.16	9.81	10.94	7.10	6.76	
Franklin Templeton	261,365,944	0.64	14.61	41.93	9.46	11.72	8.18	8.18	8/1/2011
Franklin Templeton - Net		0.47	14.04	40.97	8.59	10.87	7.39	7.39	
MSCI AC World ex USA Small Cap (Net)		0.80	13.14	41.16	9.81	10.94	7.10	7.10	
William Blair IntSC	463,595,993	3.75	12.88	40.09	16.55	14.39	10.61	12.28	9/1/2010
William Blair IntSC - Net		3.75	12.48	39.11	15.67	13.58	9.76	11.44	
MSCI AC World ex USA Small Cap (Net)		0.80	13.14	41.16	9.81	10.94	7.10	8.80	
Custom Benchmark (Intl Small Cap)		0.80	13.14	41.16	9.81	10.94	7.10	9.07	
Emerging Mkt Equity	1,439,855,997	-6.81	-0.90	21.37	10.71	11.35	5.70	9.32	2/1/1992
Emerging Mkt Equity - Net		-6.85	-1.22	20.71	10.08	10.71	5.09		
MSCI Emerging Markets Index		-6.67	0.41	21.00	8.31	10.77	3.97	7.43	

Benchmark definitions in glossary.

Periods Ended July 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Genesis Asset Mngrs.	1,439,855,997	-6.81	-0.90	21.37	10.71	11.35	5.70	11.38	5/1/2004
Genesis Asset Mngrs. - Net		-6.85	-1.22	20.71	10.08	10.71	5.09		
MSCI Emerging Markets Index		-6.67	0.41	21.00	8.31	10.77	3.97	9.29	

Periods Ended July 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Fixed Income	12,167,412,856	1.00	0.40	1.69	6.15	4.01	4.22	8.07	1/1/1982
Fixed Income - Net		0.98	0.34	1.58	6.03	3.88	4.07		
Blmbg. Barc. U.S. Aggregate		1.12	-0.51	-0.70	5.73	3.12	3.35	7.53	
Fixed Income IMRF Custom Benchmark		0.99	-0.06	0.53	5.77	3.48			
Active Fixed Core	3,872,014,622	1.16	0.14	0.60	5.95	3.56	3.91	4.63	4/1/2001
ActiveCore Fixed Inc - Net		1.14	0.06	0.48	5.83	3.45	3.76		
Blmbg. Barc. U.S. Aggregate		1.12	-0.51	-0.70	5.73	3.12	3.35	4.57	
Attucks Fixed Income	100,886,810	1.24						0.94	2/1/2021
Attucks Fixed Income - Net		1.24						0.87	
Blmbg. Barc. U.S. Aggregate		1.12						0.21	
Brandes FI Core	377,915,055	1.13	-0.35	-0.50	5.31	2.94		3.30	3/1/2016
Brandes FI Core - Net		1.13	-0.35	-0.50	5.31	2.94		3.30	
Blmbg. Barc. U.S. Aggregate		1.12	-0.51	-0.70	5.73	3.12		3.59	
EARNEST Partners	1,038,211,109	1.29	0.87	1.08	6.24	3.58	4.03	4.67	5/1/2005
EARNEST Partners - Net		1.25	0.78	0.95	6.10	3.44	3.85	4.47	
Blmbg. Barc. U.S. Aggregate		1.12	-0.51	-0.70	5.73	3.12	3.35	4.20	
Garcia Hamilton	1,098,994,899	1.10	-1.04	-0.87	5.40	3.33		3.71	6/1/2015
Garcia Hamilton - Net		1.08	-1.09	-0.97	5.31	3.24		3.62	
Blmbg. Barc. U.S. Aggregate		1.12	-0.51	-0.70	5.73	3.12		3.42	
Ramirez Asset Management	134,406,783	1.22	1.10	2.05				5.87	5/1/2020
Ramirez Asset Management - Net		1.22	1.00	1.87				5.72	
Blmbg. Barc. U.S. Aggregate		1.12	-0.51	-0.70				1.51	
Xponance Yield Advantage Agg.	1,121,599,967	1.11	0.62	1.78	6.24	3.78	3.90	4.51	6/1/2005
Xponance Yield Advantage Agg. - Net		1.08	0.52	1.62	6.09	3.64	3.74	4.33	
Blmbg. Barc. U.S. Aggregate		1.12	-0.51	-0.70	5.73	3.12	3.35	4.16	

Benchmark definitions in glossary.

Periods Ended July 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Pass. Core Fixed Inc	3,694,659,160	1.12	-0.51	-0.67	5.79	3.18	3.41	5.85	1/1/1990
Pass. Core Fixed Inc - Net		1.12	-0.51	-0.68	5.79	3.17	3.40		
Blmbg. Barc. U.S. Aggregate		1.12	-0.51	-0.70	5.73	3.12	3.35	5.83	
BlackRock US Debt I	1,858,210,313	1.13	-0.49	-0.63	5.82	3.22		3.68	10/1/2013
BlackRock US Debt I - Net		1.13	-0.49	-0.63	5.81	3.22		3.68	
Blmbg. Barc. U.S. Aggregate		1.12	-0.51	-0.70	5.73	3.12		3.56	
NTGI Blmbg Agg.	1,836,448,848	1.12	-0.53	-0.72	5.76	3.14	3.38	5.90	2/1/1990
NTGI Blmbg Agg. - Net		1.12	-0.54	-0.72	5.76	3.13	3.38		
Blmbg. Barc. U.S. Aggregate		1.12	-0.51	-0.70	5.73	3.12	3.35	5.89	
Core Plus Fixed Income	2,971,675,160	1.09	0.05	1.81	6.88	4.31	4.44	7.98	1/1/1982
Core Plus Fixed Inc. - Net		1.06	-0.03	1.65	6.69	4.13	4.25		
Blmbg. Barc. U.S. Aggregate		1.12	-0.51	-0.70	5.73	3.12	3.35	7.53	
LM Capital Group FI	972,934,204	0.91	-0.07	2.03	6.81	4.07	4.18	5.05	5/1/2005
LM Capital Group FI - Net		0.87	-0.19	1.83	6.65	3.90	4.01	4.88	
Blmbg. Barc. U.S. Aggregate		1.12	-0.51	-0.70	5.73	3.12	3.35	4.20	
Progress Inv. FI	1,707								
BMO - TCH	667,710,942	1.10	0.45	1.28	6.28	4.43	4.56	5.10	5/1/2005
BMO - TCH - Net		1.10	0.38	1.14	6.14	4.29	4.43	4.97	
Blmbg. Barc. U.S. Aggregate		1.12	-0.51	-0.70	5.73	3.12	3.35	4.20	
Western Asset	1,143,264,607	1.23	-0.20	1.89	7.41	4.76	4.93	5.59	11/1/2001
Western Asset - Net		1.20	-0.26	1.75	7.29	4.63	4.79		
Blmbg. Barc. U.S. Aggregate		1.12	-0.51	-0.70	5.73	3.12	3.35	4.33	
Longfellow Core Plus	187,763,701	1.08	0.85	2.37				5.18	5/1/2020
Longfellow Core Plus - Net		1.08	0.75	2.18				5.02	
Blmbg. Barc. U.S. Aggregate		1.12	-0.51	-0.70				1.51	

Benchmark definitions in glossary.

Wilshire Consulting Performance



Periods Ended July 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Bank Loans	568,622,865	-0.04	4.57	12.59	4.24	5.16		4.56	8/1/2014
Bank Loans - Net		-0.04	4.57	12.59	4.10	4.85		4.16	
Custom Benchmark		0.02	3.47	9.61	4.33	4.92		4.23	
Barings Global Loan Fund	568,622,865	-0.04	4.57	12.59	4.24	5.16		4.56	8/1/2014
Barings Global Loan Fund - Net		-0.04	4.57	12.59	4.10	4.85		4.16	
Custom Benchmark		0.02	3.47	9.61	4.33	4.92		4.23	
Emerging Markets Debt	232,360,920	-0.13	-2.23	5.35	5.13	4.54		3.16	8/1/2014
Emerging Markets Debt - Net		-0.13	-2.40	4.99	4.77	4.18		2.82	
Custom Benchmark		-0.18	-2.10	3.67	4.98	4.03		2.61	
Standish-Mellon EMD	232,360,920	-0.13	-2.23	5.35	5.13	4.54		3.16	8/1/2014
Standish EM MRK - Net		-0.13	-2.40	4.99	4.77	4.18		2.82	
Custom Benchmark		-0.18	-2.10	3.67	4.98	4.03		2.61	
High Yield	828,080,128	0.38	5.03	9.80	8.01	7.58	6.99	9.47	4/1/1986
High Yield - Net		0.30	4.86	9.45	7.66	7.22	6.63		
ICE BofAML US High Yield, Cash Pay Index		0.37	3.97	10.61	6.86	6.82	6.39	8.24	
MacKay Shields	828,059,396	0.38	5.03	9.81	8.02	7.65	7.25	8.78	11/1/2000
MacKay Shields - Net		0.30	4.86	9.46	7.67	7.29	6.88		
ICE BofAML US High Yield, Cash Pay Index		0.37	3.97	10.61	6.86	6.82	6.39	7.52	

Benchmark definitions in glossary.

Benchmark History

Periods Ended January 31, 2021

Account Name	From Date	To Date	Benchmark
Total Fund			The total fund benchmark is a blend of the asset class benchmark returns weighted by the target allocation for each asset classes:
	1/1/2021	Present	39% Russell 3000 Index, 25% Blmbg. Barc. U.S. Aggregate, 15% MSCI AC World ex USA (Net), 10% NCREIF Fund Index-ODCE (VW) (Net), 10% Alternatives Custom Benchmark, 1% 90 Day US Treasury Bill
	3/1/2018	12/31/2020	37% Russell 3000 Index, 28% Blmbg. Barc. U.S. Aggregate, 18% MSCI AC World ex USA (Net), 9% NCREIF Fund Index-ODCE (VW) (Net), 7% Alternatives Custom Benchmark, 1% 90 Day US Treasury Bill
Domestic Equity	1/1/2015	Present	100% Russell 3000 Index
	1/1/1982	12/31/2014	100% Dow Jones US Total Stock Market Index
Large Cap Growth	1/1/2006	Present	100% Russell 1000 Growth Index
	11/1/2003	12/13/2005	100% S&P 500 Growth
Large Cap Value	1/1/2006	Present	100% Russell 1000 Value Index
	2/1/2001	12/31/2005	100% S&P 500 Value
Public Real Assets	8/1/2017	Present	33.3% Dow Jones Brookfield Global Infrastructure Composi, 66.7% FTSE GLOBAL CORE INFRASTRUCTURE 50/50 INDEX (Net)

Benchmark History

Account Name	From Date	To Date	Benchmark
Intl Small Cap Eqty	6/1/2011	Present	100% MSCI AC World ex USA Small Cap (Net)
	12/1/2005	5/31/2011	100% S&P Developed Ex-U.S. SmallCap (Net)
Barings Global Loan Fund	8/1/2014	Present	Comprised of the Credit Suisse US Leveraged Loan Index and the Credit Suisse Western European Leveraged Loan Index, weighted by the portfolio's market value to each sector.
Standish-Mellon EMD	4/1/2020	Present	50% JPM GBI-EM Global Diversified ex-CNY, 25% JPM EMBI Global (USD), 25% JPM CEMBI Broad Index
	8/1/2014	3/31/2020	50% JPM GBI-EM Global Diversified, 25% JPM EMBI Global (USD), 25% JPM CEMBI Broad Index