



Public Fund Universe Analysis

City of Milwaukee Employees' Retirement System

Period Ending June 30, 2023

Fund Number: 105



OVERVIEW

RVK, Inc. (RVK) was founded in 1985 and is one of the largest independent and employee-owned investment consulting firms in the world, as reported by *Pensions & Investments Special Report – Consultants*. We provide strategic investment advice to institutional investors with pension plans, defined contribution plans, endowments & foundations, insurance pools, and special purpose funds. RVK is the *only* firm to receive a *Coalition Greenwich Quality Leader Award* for a sixth consecutive year. (Coalition Greenwich issued the award on April 25, 2023 based on their February through November 2022 study. No direct or indirect compensation has been paid by RVK in connection with obtaining or using this award).

MISSION STATEMENT

To provide unbiased investment advice and long-term solutions to institutional investors, based on our cornerstones of trust, client service, and professional expertise.

STRATEGIC INVESTMENT ADVICE AND EXPLICIT NO-CONFLICTS-OF-INTEREST POLICY

RVK has built its investment consulting practice on the principles of integrity, investment expertise, client service, and our no-conflicts-of-interest policy. We are exclusively focused on strategic investment consulting services and solely owned by active employees, enabling us to offer advice that is not influenced by other business activities. As a privately-held firm with no affiliates or parent company, we are in control of our business policy, providing firm stability for clients. We offer an extensive slate of consulting services and produce deliverables fully customized to meet clients' needs.

KEY TENETS OF OUR CULTURE



RVK BY THE NUMBERS

- **37** Years of Business
- **4** Offices—Portland, Boise, Chicago, New York
- **\$1** Trillion Full-Retainer Assets Under Advisement
- **100+** Investment Professionals
- **50+** Advanced Degrees and Certifications
- **100%** Employee Ownership
- **100%** Revenue Derived from Client Fees
- **100%** Non-Discretionary Services

GENERAL CONSULTING SERVICES

- Plan Evaluation
- Strategic Asset Allocation
- Investment Policy Development & Review
- Investment Manager Search & Selection
- Performance Analysis & Reporting
- Manager Structure Analysis
- Risk Monitoring and Management
- ESG / Impact Investing Advice
- Client Education
- Special Projects

SPECIALTY CONSULTING SERVICES

- Custody, Recordkeeper, Third-Party Administrator Searches
- Asset/Liability Studies
- Endowment Spending Policy Studies
- Securities Lending Reviews
- Pacing Studies
- Strategic Planning Reviews
- Outsourced CIO (OCIO) Searches, Evaluation, and Ongoing Monitoring
- Directed Consulting Services
- Fee Reviews
- Defined Contribution Solutions Services
- Investment Operations Solutions
- Board and Investment Program Operational Reviews

FOR MORE INFORMATION ABOUT OUR SERVICES, PLEASE CONTACT:

Business.Development@RVKInc.com 503-221-4200

Alameda County Employees' Retirement Association
 Arlington County Employees' Retirement System
 Chicago Teachers' Pension Fund
 City of Fresno Employees Retirement Systems
 City of Jacksonville Police and Fire Retirement Fund
City of Milwaukee Employees' Retirement System (Fund No. 105)
 City of Plano Retirement Security Plan

Contra Costa County Employees' Retirement Association
 Fire and Police Pension Association of Colorado
 Gila River Indian Community Retirement Plan
 Kansas City, Missouri Employees' Retirement System
 Kern County Employees' Retirement Association
 Los Angeles Fire and Police Pension System
 Marin County Employees' Retirement Association
 Merced County Employees' Retirement Association
 Montana Teachers' Retirement System
 Nevada Public Employees' Retirement System
 North Carolina Retirement System
 Oklahoma Firefighters Pension and Retirement System
 Oklahoma Police Pension and Retirement System
 Oklahoma Teachers' Retirement System
 Orange County Employees' Retirement System
 Police Retirement System of Kansas City, Missouri
 Public School and Education ERS of Missouri
 San Diego City Employees' Retirement System
 San Diego Transit Corporation Employees Retirement
 Santa Barbara County Employees' Retirement System
 South Dakota Retirement System
 State of New Jersey Pension Fund

Anchorage Police & Fire Retirement System
 California State Teachers' Retirement System
 City of Austin Employees' Retirement System
 City of Fresno Fire & Police Retirement System
 City of Jacksonville Retirement System
 City of Plano Other Post-Employment Benefits Trust
 Civilian Employees' Retirement System of the Police Department of Kansas City, Missouri
 Employees Retirement System of Texas
 Fresno County Employees' Retirement Association
 Iowa Public Employees' Retirement System
 Kansas Public Employees' Retirement System
 Los Angeles City Employees' Retirement System
 Los Angeles Water & Power Employees Retirement Plan
 Mendocino County Employees' Retirement Association
 Montana Public Employees' Retirement System
 Municipality of Anchorage Pre-Funding Program
 New York State Common Retirement Fund
 Ohio Public Employees' Retirement System
 Oklahoma Law Enforcement Retirement System
 Oklahoma Public Employees Retirement System
 Oklahoma Wildlife Conservation Retirement System
 Pennsylvania State Employees' Retirement System
 Public Employees Retirement Association of New Mexico
 San Bernardino County Employees' Retirement Association
 San Diego County Employees Retirement Association
 San Mateo County Employees' Retirement Association
 Sonoma County Employees' Retirement Association
 State of Michigan Retirement Systems



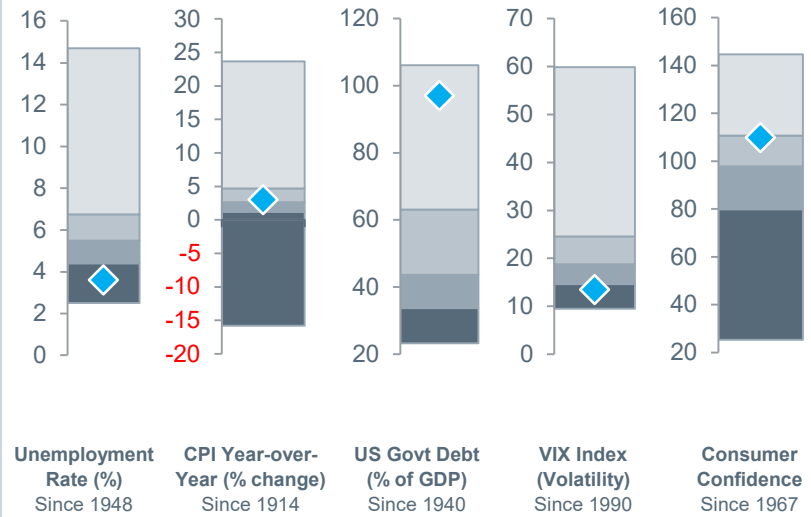
Teachers' Retirement System of the State of Illinois
Ventura County Employees' Retirement Association
Virginia Retirement System
Wyoming Retirement System

State Teachers Retirement System of Ohio
The Navajo Nation Retirement Plan
Vermont Pension Investment Committee
West Virginia Investment Management Board

Second Quarter Economic Environment

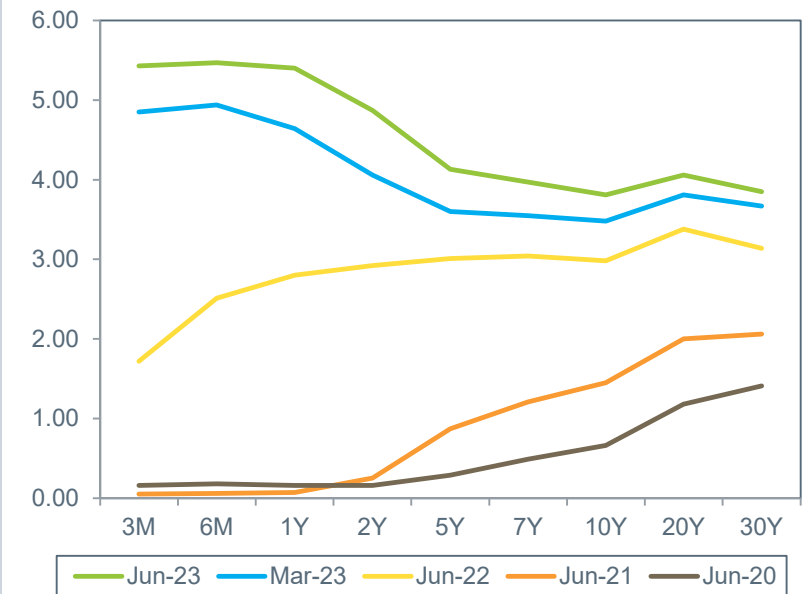
During Q2, investors focused on the uncertainty of the future interest rate path and timing of further actions by the US Federal Reserve and other global central banks. At the start of 2023, the combination of rate hikes and quantitative tightening kept expectations for a near-term US recession embedded in many market forecasts. However, the continued strength of certain indicators, such as consumer spending and job growth, has altered the expected timing of a recession for some market participants. Mid-quarter forecasts and market outlooks were further complicated by the US debt ceiling debate, raising concerns regarding a potential default on the national debt. Ultimately, a deal was struck that suspended the ceiling until 2025. In the June data release, the Consumer Price Index (CPI) slowed to a 3.0% year-over-year rate, its lowest since March 2021. Recent job growth reports in the US provided mixed signals. US equity markets delivered strong results in Q2, primarily driven by the largest growth-oriented companies. US fixed income markets broadly posted negative returns in Q2, as the yield curve inverted further. The economic outlook in China, and its impact on global growth, continued to be a significant topic for investors. As concerns about China have grown, more investors are starting to view India and other south-east Asia countries as the drivers of growth in the region. The World Bank released its 2023 Global Economic Prospects report in June, forecasting subdued global GDP growth of 2.1% in 2023 and 2.4% in 2024, caused by tightening financial conditions and decreases in demand due to continued elevated inflation.

Key Economic Indicators

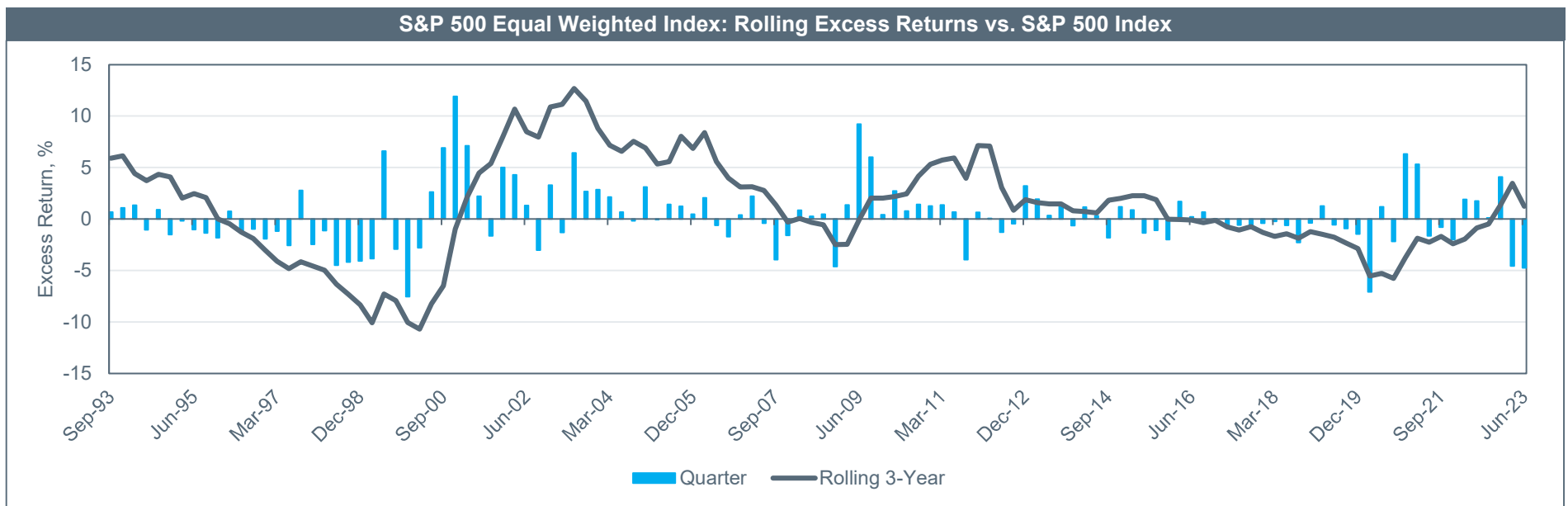
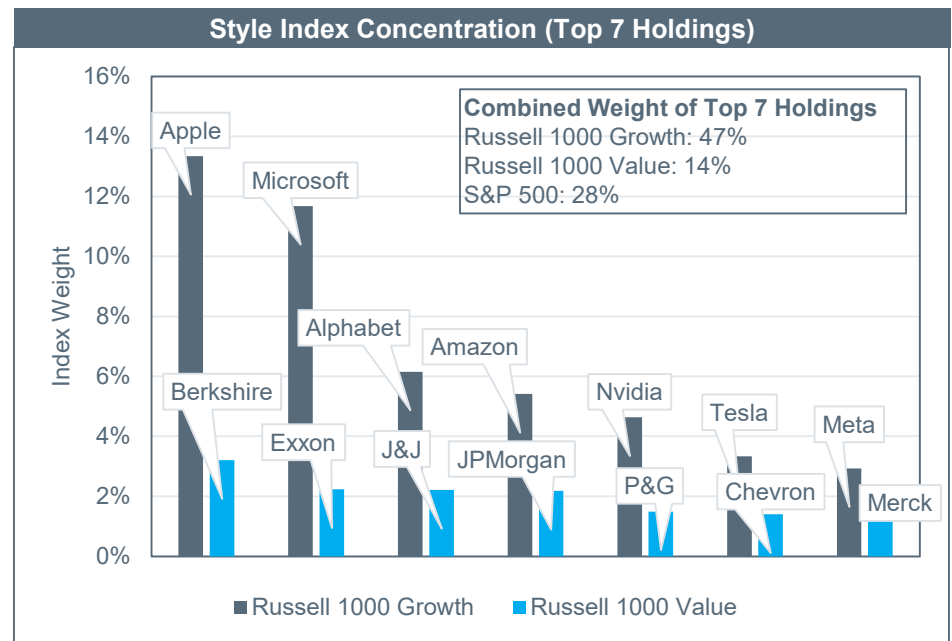
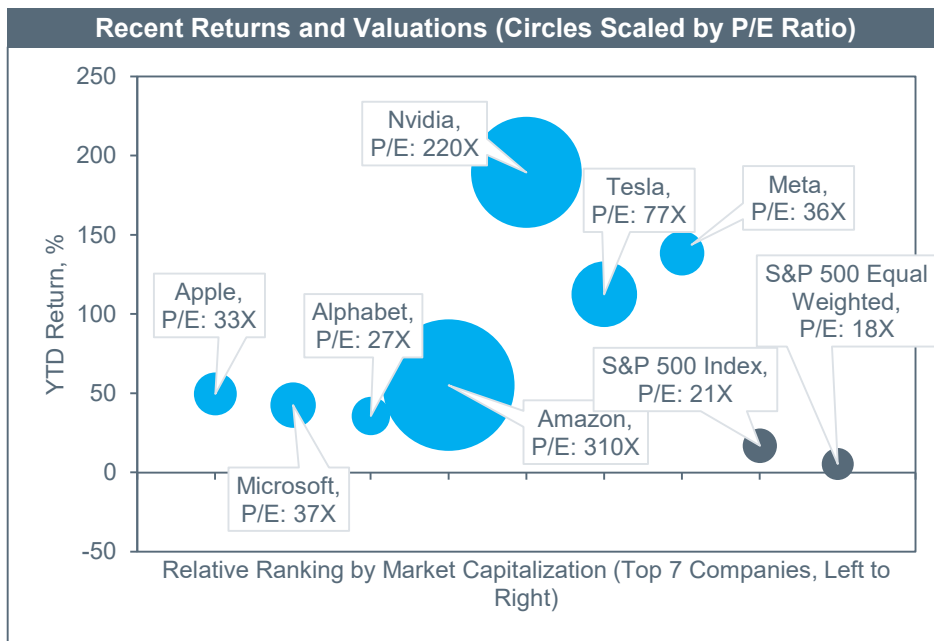


Economic Indicators	Jun-23	Mar-23	Jun-22	Jun-20	20 Yr
Federal Funds Rate (%)	5.08 ▲	4.83	1.58	0.08	1.39
Breakeven Infl. - 5 Yr (%)	2.17 ▼	2.47	2.62	1.17	1.94
Breakeven Infl. - 10 Yr (%)	2.21 ▼	2.33	2.34	1.34	2.09
CPI YoY (Headline) (%)	3.0 ▼	5.0	9.1	0.6	2.6
Unemployment Rate (%)	3.6 ▲	3.5	3.6	11.0	5.9
Real GDP YoY (%)	N/A —	1.8	1.8	-8.4	2.0
PMI - Manufacturing	46.0 ▼	46.3	53.0	52.4	53.6
USD Total Wtd Idx	119.89 ▲	119.48	121.05	120.49	103.57
WTI Crude Oil per Barrel (\$)	70.6 ▼	75.7	105.8	39.3	69.0
Gold Spot per Oz (\$)	1,906 ▼	1,979	1,807	1,781	1,199

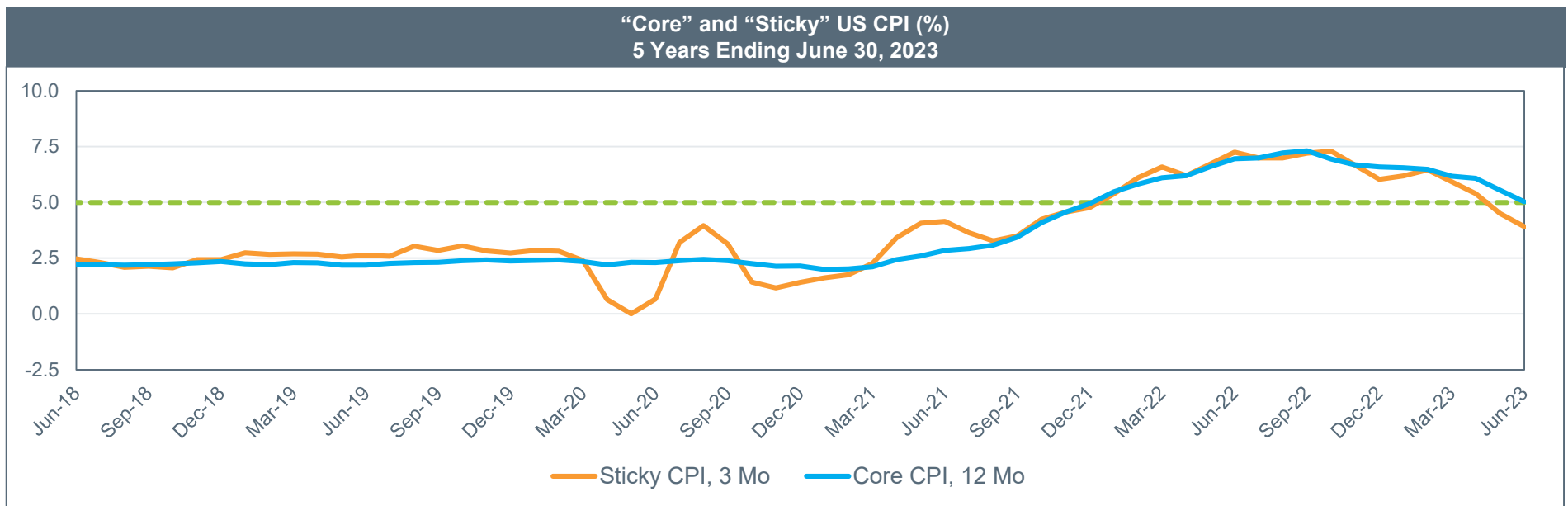
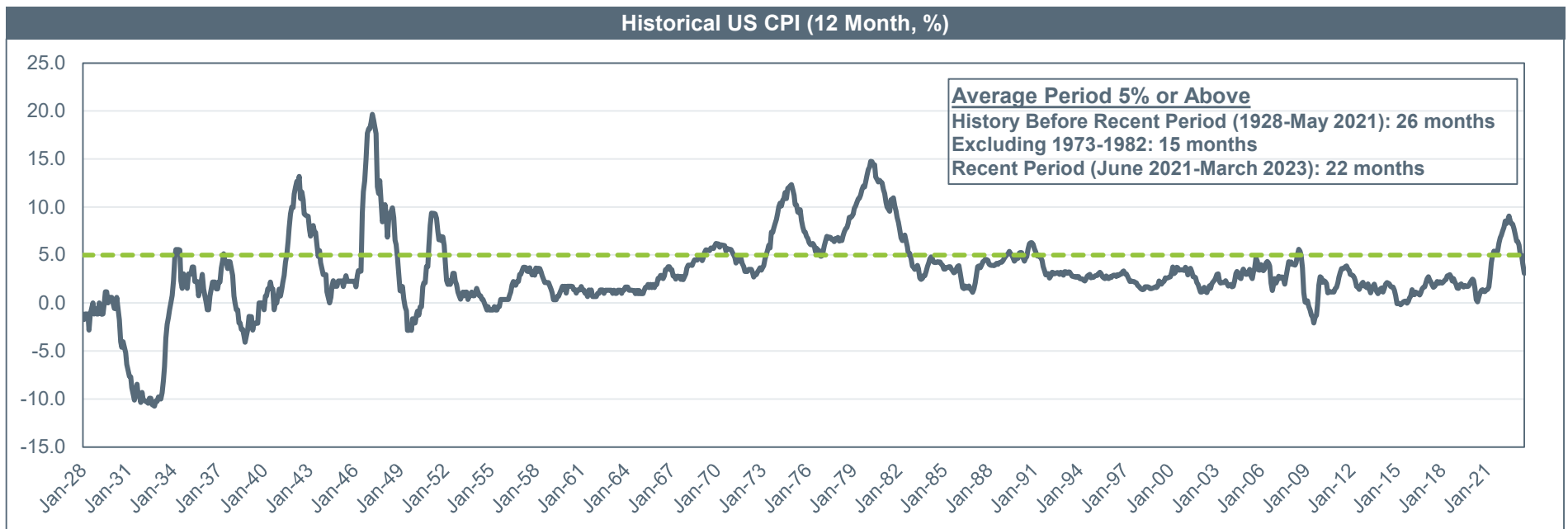
Treasury Yield Curve (%)



Market Performance (%)	QTD	CYTD	1 Yr	5 Yr	10 Yr
S&P 500 (Cap Wtd)	8.74	16.89	19.59	12.31	12.86
Russell 2000	5.21	8.09	12.31	4.21	8.26
MSCI EAFE (Net)	2.95	11.67	18.77	4.39	5.41
MSCI EAFE SC (Net)	0.58	5.53	10.18	1.30	6.19
MSCI Emg Mkts (Net)	0.90	4.89	1.75	0.93	2.95
Bloomberg US Agg Bond	-0.84	2.09	-0.94	0.77	1.52
ICE BofAML 3 Mo US T-Bill	1.17	2.25	3.59	1.55	0.98
NCREIF ODCE (Gross)	-2.68	-5.77	-9.98	6.50	8.74
FTSE NAREIT Eq REIT (TR)	2.62	5.37	-0.13	4.55	6.42
HFRI FOF Comp	1.43	2.18	3.58	3.30	3.38
Bloomberg Cmdty (TR)	-2.56	-7.79	-9.61	4.73	-0.99



Sources: Morningstar, Bloomberg, FTSE Russell, and Standard & Poors.



Sources: US Bureau of Labor Statistics, Federal Reserve Bank of Cleveland, and Federal Reserve Bank of Atlanta.
 Core CPI is represented by the Revised FRB Cleveland Trimmed Mean, 12-month. Sticky CPI is represented by the FRB Atlanta Sticky-Price Index, 3-month.

Second Quarter Review

Broad Market

US equity markets continued their recovery in Q2 primarily driven by a handful of mega-cap growth stocks. While all sectors, excluding energy and utilities, in the Russell 1000 Index were positive, roughly half of its returns came from the information technology sector driven by optimism around advancements in artificial intelligence (AI) and related technology. Further, roughly two-thirds of the Russell 1000 Q2 returns can be attributed to the 10 largest companies in the index.

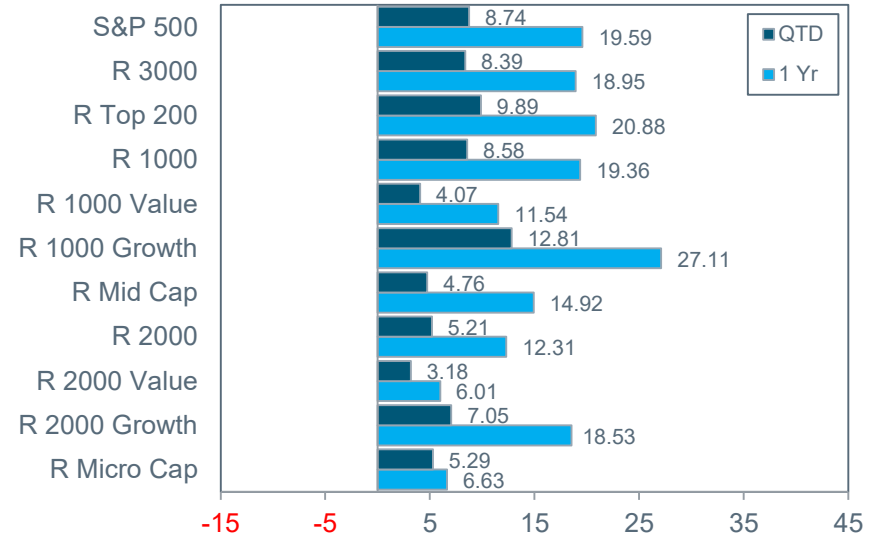
Market Cap

Active large-cap managers continued to struggle to generate excess returns as index concentration rises. Mid-cap managers generally performed well in Q2 while a majority of active small-cap managers failed to outpace their respective benchmarks.

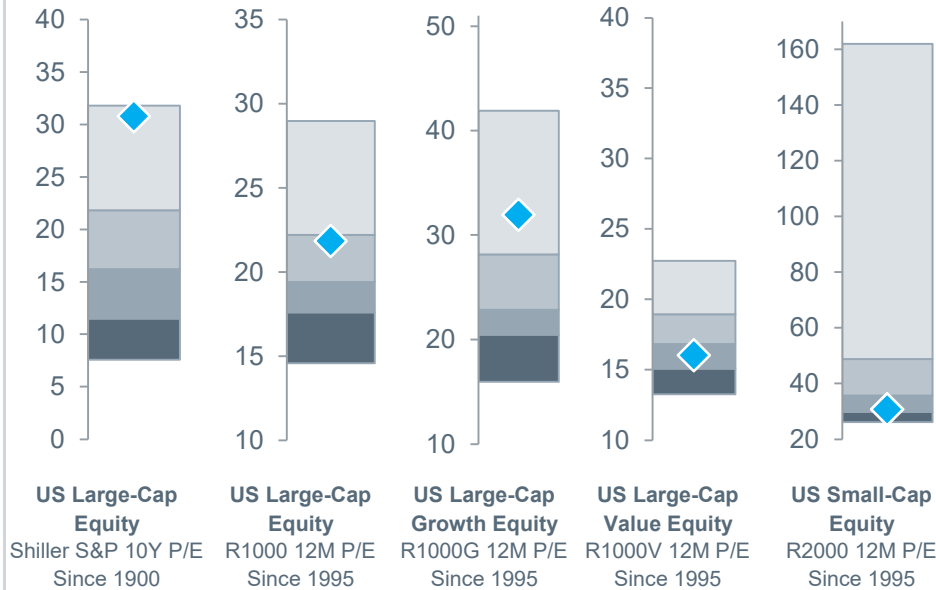
Style and Sector

Growth outperformed value by a significant margin across market caps for the second consecutive quarter. The return spread of the Russell 1000 and Russell 2000 Growth and Value Indexes were 8.7% and 3.9%, respectively. Additionally, the MSCI USA Cyclical Index continued to outperform the MSCI USA Defensive Index by 27.6% year-to-date, indicating improving economic sentiment from investors despite continued near-term uncertainty around inflation and interest rates.

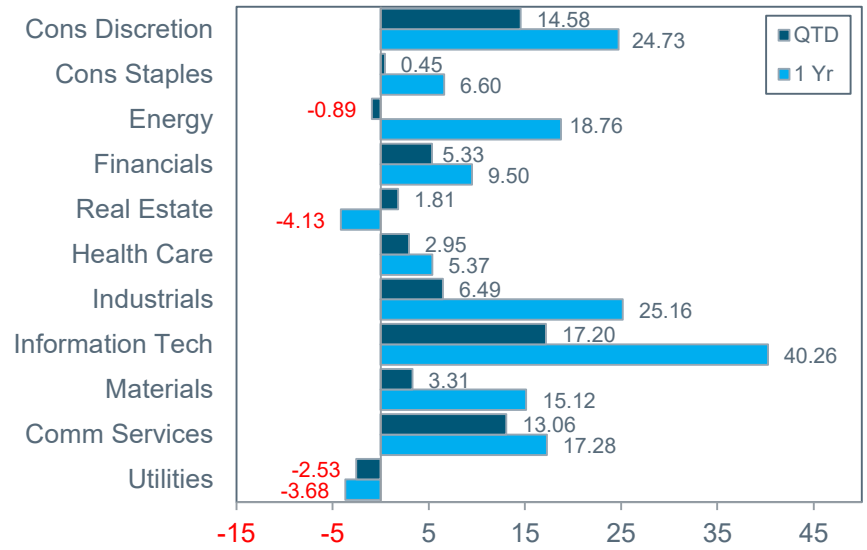
Style and Capitalization Market Performance (%)



Valuations



S&P 500 Index Sector Performance (%)



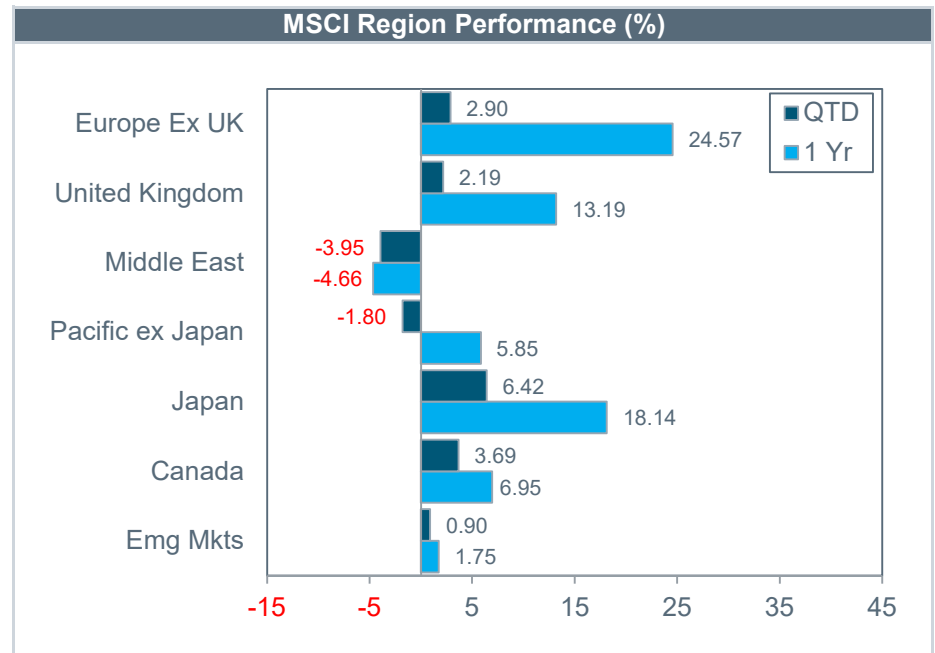
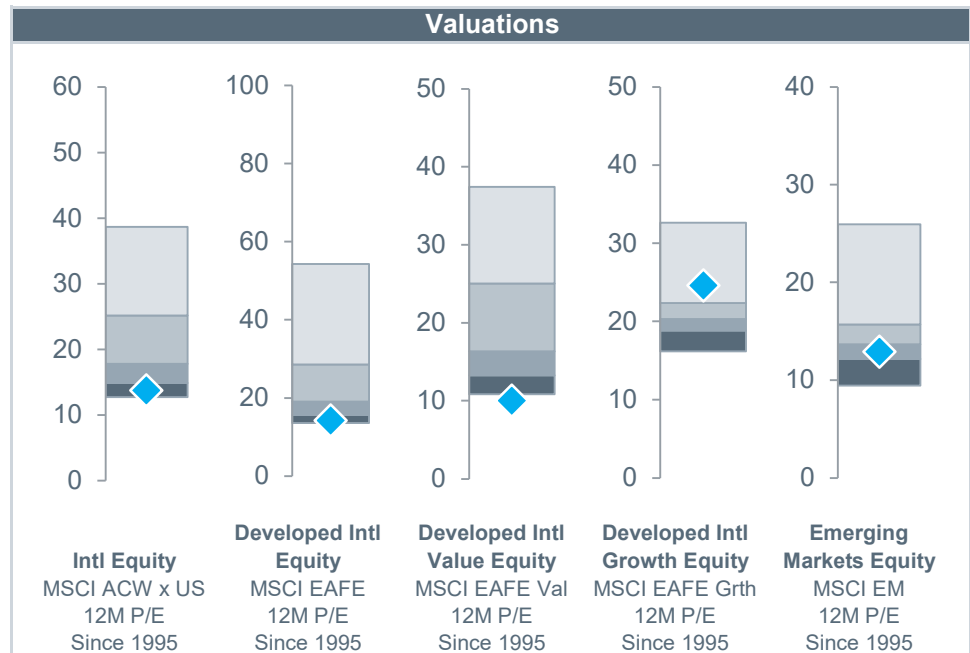
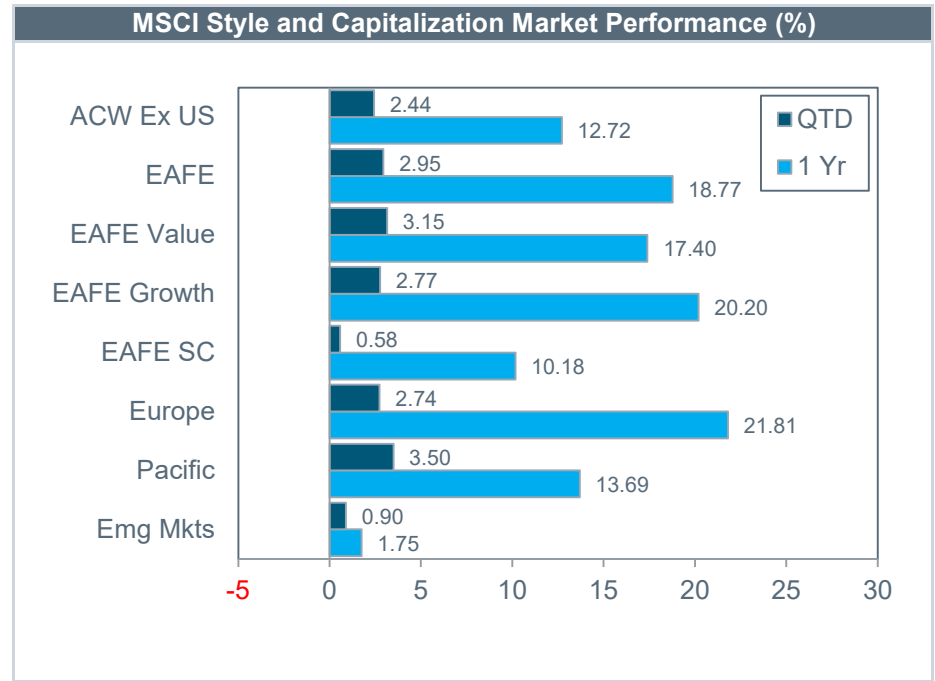
Valuation data courtesy of Bloomberg Professional Service and Robert J. Shiller, Irrational Exuberance, Second Edition. P/E metrics shown represent the 5th through 95th percentiles to minimize the effect of outliers.

Second Quarter Review

Developed Markets
 Following two consecutive quarters of outperformance, developed equity underperformed the US in Q2, with the MSCI EAFE returning 3.0%. Value stocks outperformed growth stocks, while developed large-cap stocks outperformed small-cap stocks. While most active large-cap managers outperformed the MSCI EAFE Index, small-cap managers broadly underperformed the MSCI EAFE Small Cap Index.

Emerging Markets
 Emerging markets lagged developed markets in Q2, with the MSCI Emerging Market Index returning 0.9% as value outperformed growth and small-cap stocks outperformed large-cap stocks. The majority of active emerging market managers outperformed in Q2.

Market Cap & Style
 While inflation in the US began to show signs of abatement, inflation continued to climb in Europe. Persistent above-target headline inflation combined with a tight labor market led the ECB to raise interest rates to 3.5%, its highest level in over 20 years.



Valuation data courtesy of Bloomberg Professional Service.

P/E metrics shown represent the 5th through 95th percentiles to minimize the effect of outliers. All returns are shown net of foreign taxes on dividends.



Second Quarter Review

Broad Market

In Q2, the Fed maintained its interest rate range, breaking the streak of consecutive rate hikes. However, Fed Chair Powell noted that future rate hikes could still occur based on economic conditions. Treasury yields rose across maturities, with the 10-year yield reaching 3.85%. The yield curve inversion between the 2-year and 10-year yields deepened in Q2, nearing the peak observed in March prior to the bank failures. Against this backdrop, the Bloomberg US Aggregate Bond Index posted a return of -0.84%.

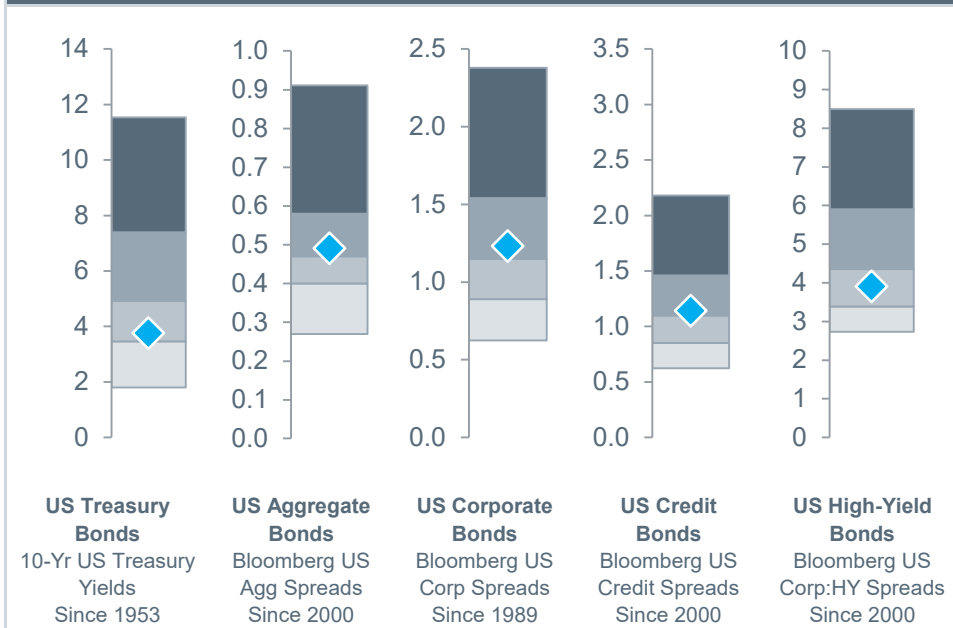
Credit Market

One trend observed in Q1 persisted, with lower-rated bonds delivering better performance. The Bloomberg US Corporate Investment Grade Index returned -0.29% in Q2, lagging the Bloomberg US Corporate High Yield Index return of 1.75%

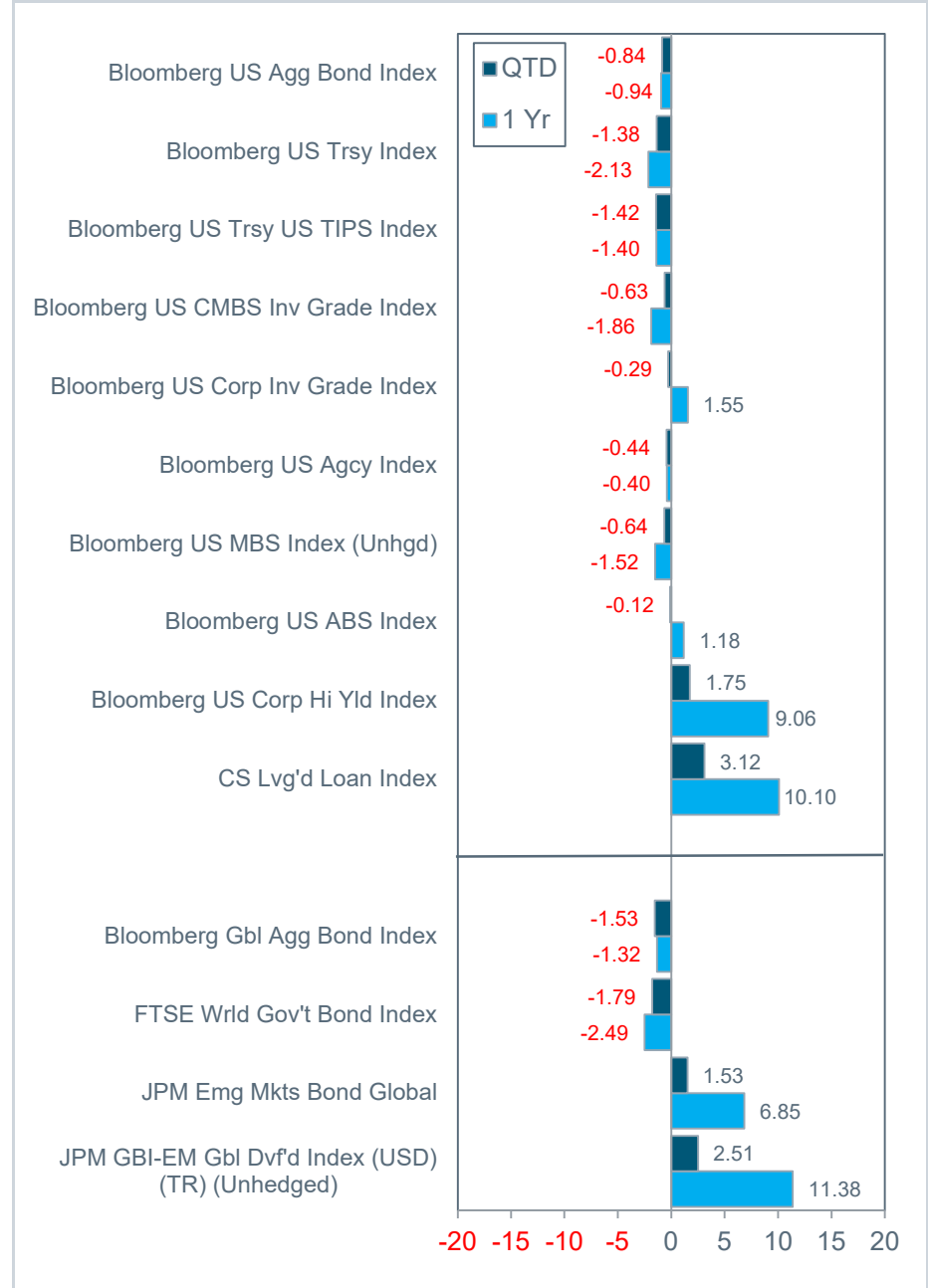
Emerging Market Debt

Emerging markets debt provided positive returns in Q2, with the JPMorgan EMBI Global Diversified Index returning 2.19%. Yields on emerging market sovereign and corporate bonds decreased, while high-yield issuers outperformed investment-grade issuers due to a risk-on environment. Local emerging markets outperformed hard currency, with the JPMorgan GBIEM Global Diversified Index returning 2.51%.

Valuations



Fixed Income Performance (%)



Valuation data courtesy of Bloomberg Professional Service. Valuations shown represent the 5th through 95th percentiles to minimize the effect of outliers.



Second Quarter Review - Absolute Return

General Market - Hedge Funds

In Q2, hedge funds delivered a second straight quarter of positive results. The HFRI Fund-Weighted Composite Index reported a net return of 2.2%, highlighted by mixed results from commodity and macro-oriented managers amidst the Fed's slowing interest rate trajectory and cooling inflation data. While the dispersion of return among strategies has been wide in Q2, market-neutral strategies focusing on relative value, dispersion, and volatility trading have been able to benefit from turbulence caused by the regional banking crisis fallout. However, most have struggled to generate short alpha in technology-oriented industries that have been broadly rallying in recent months.

General Market - Global Tactical Asset Allocation (GTAA)

Global Tactical Asset Allocation (GTAA) strategies that RVK follows closely generally posted positive returns during Q2 with moderate dispersion. However, a US-centric blend of 60% equity and 40% fixed income outperformed most diversified active managers due to larger allocations to mega-cap equity holdings.

Second Quarter Review - Real Assets

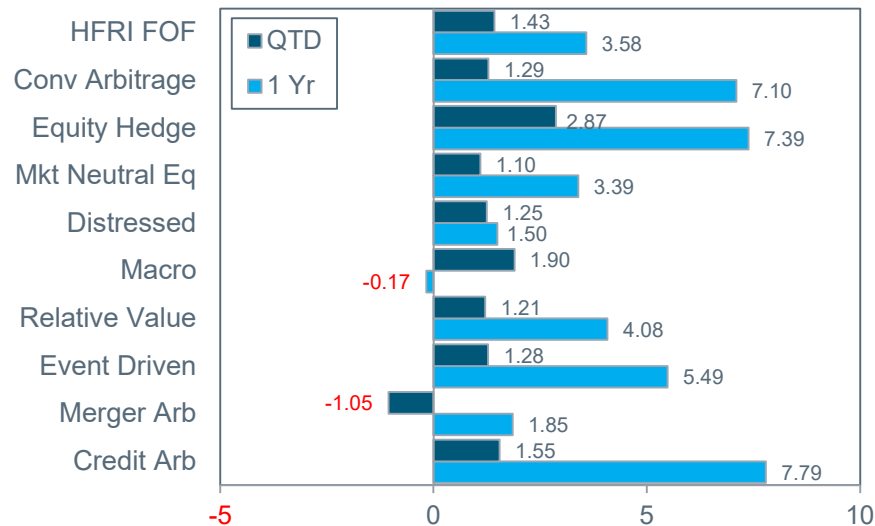
General Market - Diversified Inflation Strategies (DIS)

Diversified Inflation Strategy (DIS) managers tracked closely by RVK broadly underperformed a US-centric blend of 60% equity and 40% fixed income during the quarter. Managers with larger exposures to commodities and TIPS lagged peers most significantly while those with larger REIT and Global Listed Infrastructure allocations tended to outperform peers.

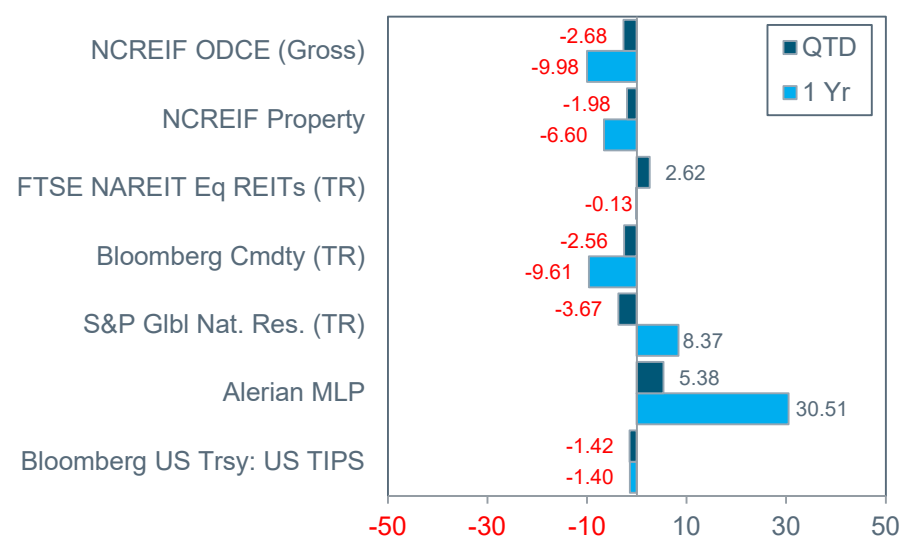
General Market - Real Estate

Core private real estate generated a -2.7% in Q2 (on a preliminary and gross-of-fee basis), as reported by the NFI-ODCE Index, with the total return comprising 0.9% from income and -3.6% from price appreciation. Income returns continue to trend at the lower end of historical levels while price appreciation continues to remain negative. Investors of publicly traded real estate significantly outperformed their private market counterparts by a meaningful margin, with publicly traded real estate delivering a Q2 total return of 1.6%, as measured by FTSE NAREIT All REIT Index. In Q2, private real estate markets continued to experience similar trends as the prior three quarters. Significant headwinds persisted as a direct result of disruptions in the capital markets from 2022.

HFRI Hedge Fund Performance (%)



Real Asset Performance (%)



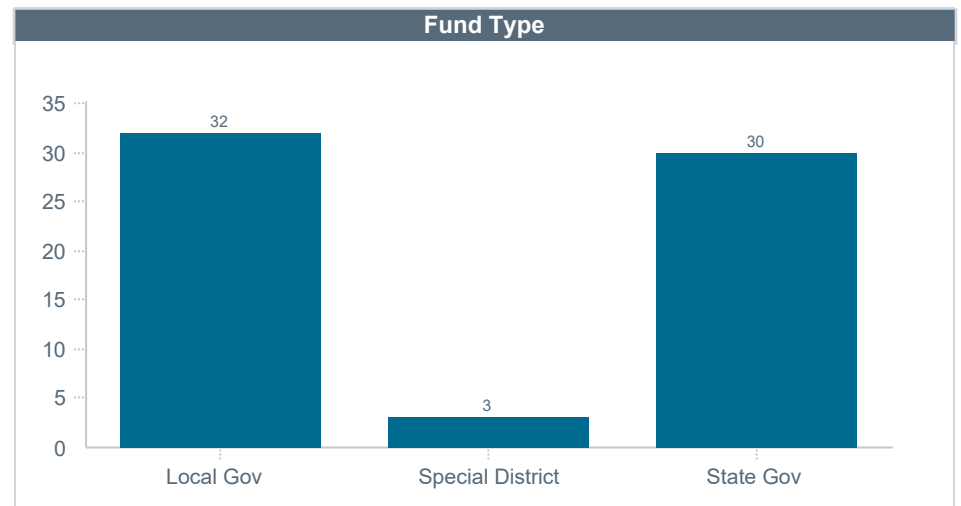
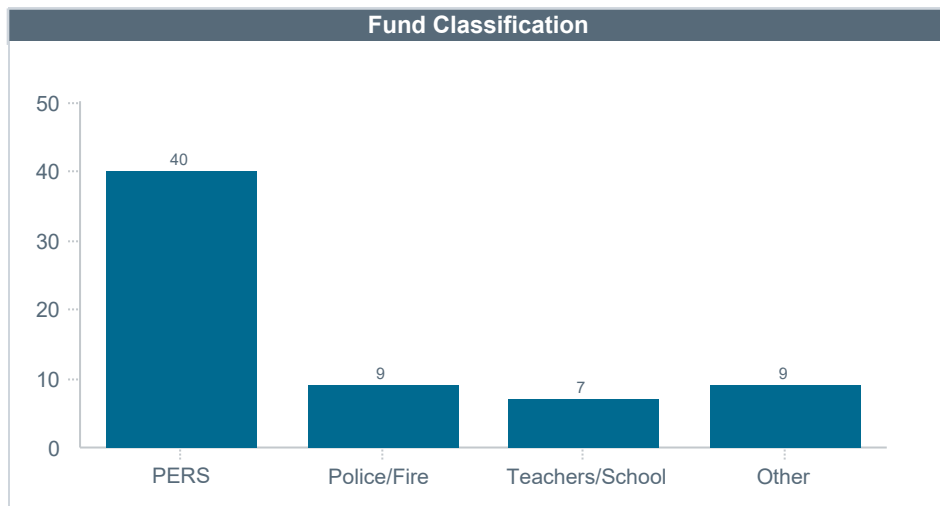
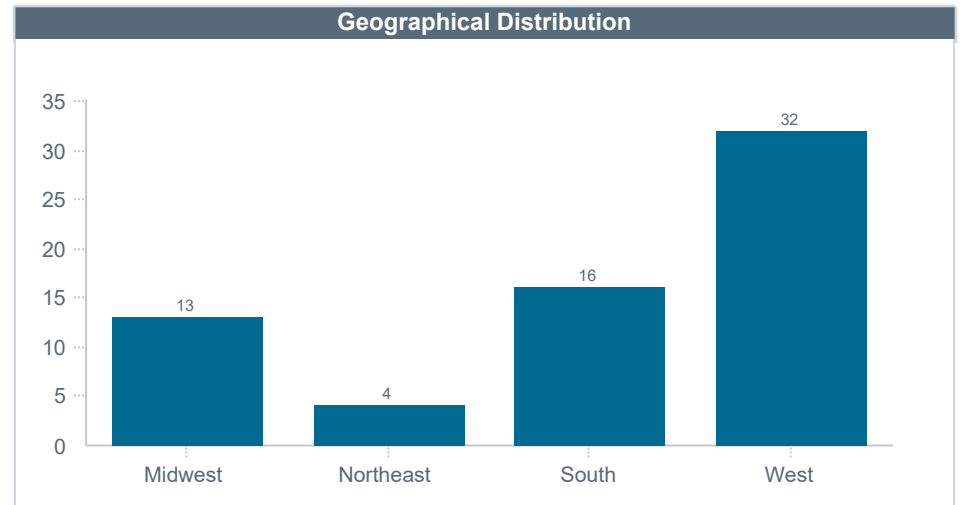
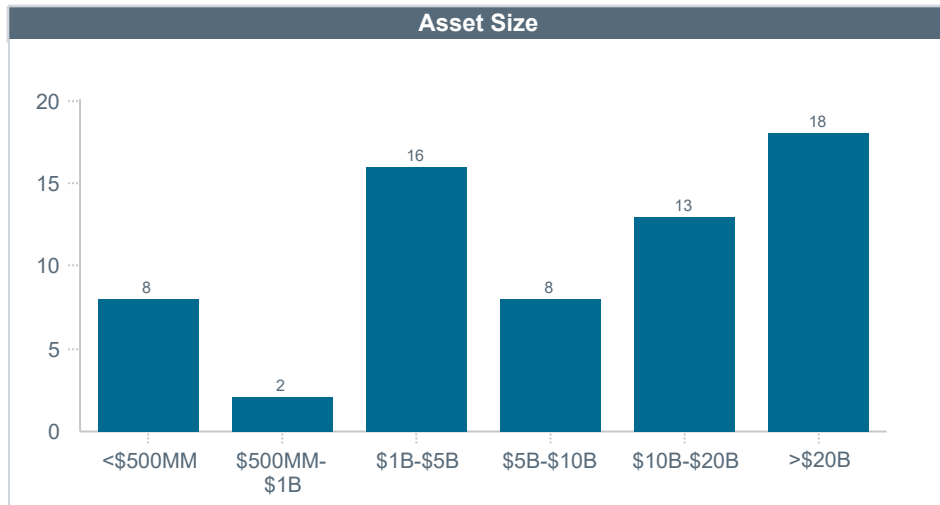
Annual Asset Class Performance

As of June 30, 2023

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	YTD
Best	78.51	27.94	22.49	20.00	38.82	30.14	15.02	21.31	37.28	8.35	31.49	19.96	43.24	16.09	16.89
	58.21	26.85	15.99	18.23	32.39	19.31	9.59	17.13	33.01	1.87	26.00	18.40	28.71	7.47	11.67
	46.78	22.04	13.56	18.06	29.30	13.69	3.20	11.96	25.03	0.01	25.53	18.31	27.11	1.46	8.09
	31.78	18.88	8.29	17.32	22.78	12.50	1.38	11.77	21.83	-1.26	24.96	16.12	22.17	-5.31	5.53
	28.01	16.83	7.84	16.35	13.94	5.97	0.55	11.19	14.65	-2.08	22.01	12.34	14.82	-11.19	5.38
	27.17	16.36	4.98	16.00	8.96	4.89	0.05	8.77	10.71	-4.02	19.59	10.99	11.26	-11.85	5.37
	26.46	15.12	2.11	15.81	7.44	3.64	-0.27	8.52	7.77	-4.38	18.42	10.88	10.10	-13.01	4.89
	18.91	15.06	0.10	10.94	2.47	3.37	-0.81	6.67	7.62	-4.62	14.32	7.82	6.17	-14.45	4.39
	11.47	10.16	-4.18	8.78	0.07	2.45	-1.44	4.68	7.50	-4.68	8.72	7.51	5.96	-18.11	2.27
	11.41	7.75	-5.72	6.98	-2.02	0.04	-3.30	2.65	5.23	-11.01	8.43	7.11	5.28	-20.09	2.25
	5.93	6.54	-12.14	4.79	-2.60	-2.19	-4.41	2.18	3.54	-11.25	8.39	1.19	0.05	-20.44	2.09
	1.92	6.31	-13.32	4.21	-8.61	-4.90	-4.47	1.00	3.01	-13.79	7.69	0.67	-1.55	-21.39	1.87
	0.21	5.70	-15.94	0.11	-8.83	-4.95	-14.92	0.51	1.70	-14.57	5.34	-3.12	-2.52	-24.37	-5.77
Worst	-29.76	0.13	-18.42	-1.06	-9.52	-17.01	-24.66	0.33	0.86	-17.89	2.28	-8.00	-2.54	-27.09	-7.79
	S&P 500 - US Large Cap	R 2000 - US Small Cap	MSCI EAFE (Net) - Int'l Dev.	MSCI EAFE SC (Net) - Int'l SC	MSCI EM (Net) - Int'l Emg Mkts	Bloombrg US Agg Bond - FI	Bloombrg US Corp Hi Yield - FI	Bloombrg US Trsy US TIPS - FI	Bloombrg US Gov Credit Lng - FI	NCREIF ODCE (Gross) - Real Estate	FTSE NAREIT Eq REITs Index (TR)	HFRI FOF Comp Index - ARS	Bloombrg Cmdty (TR) - Commod.	ICE BofAML 3 Mo T-Bill - Cash Equiv	

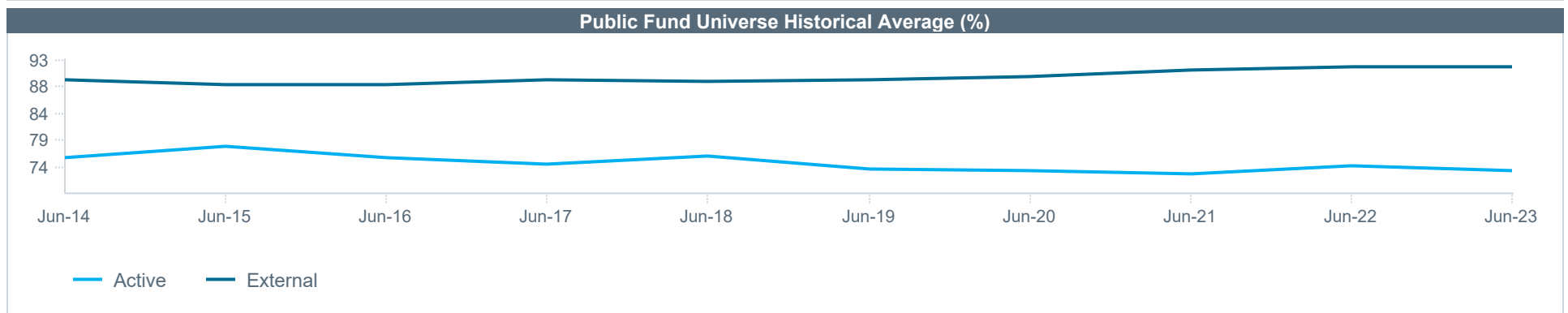
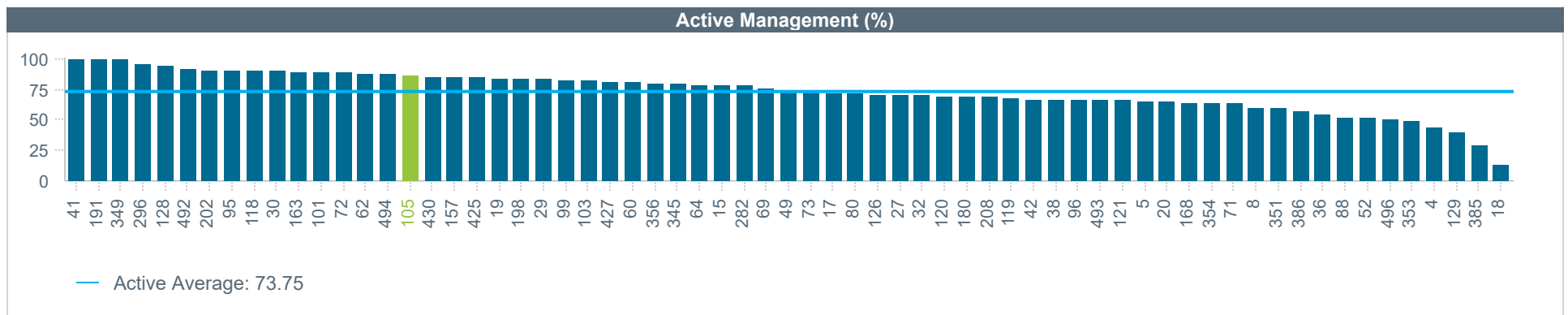
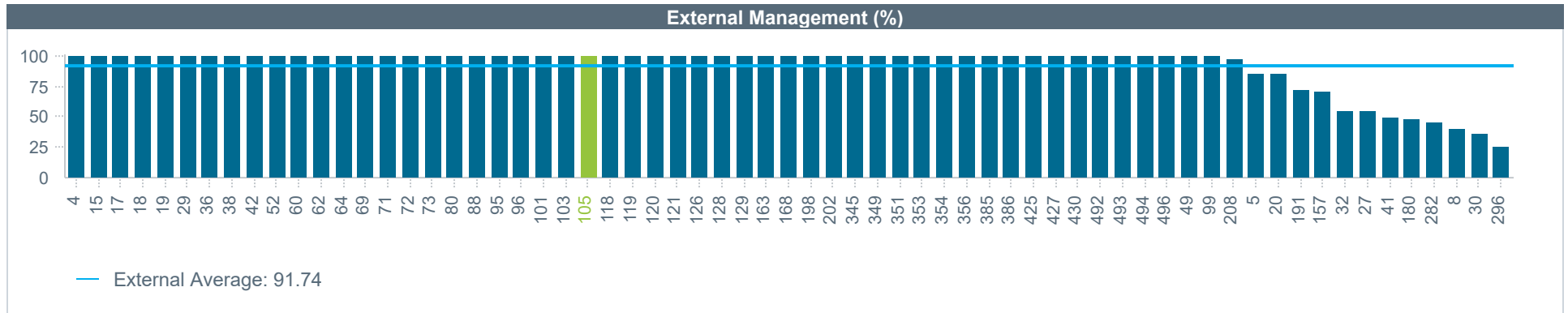
NCREIF ODCE (Gross) performance is reported quarterly; performance is shown N/A in interim-quarter months.





■ Universe: 65 funds





■ Fund No. 105

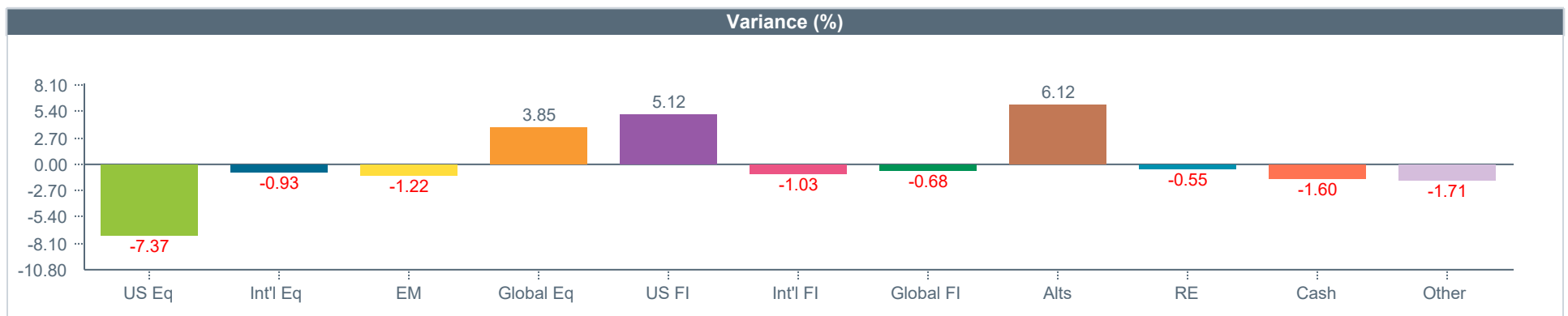
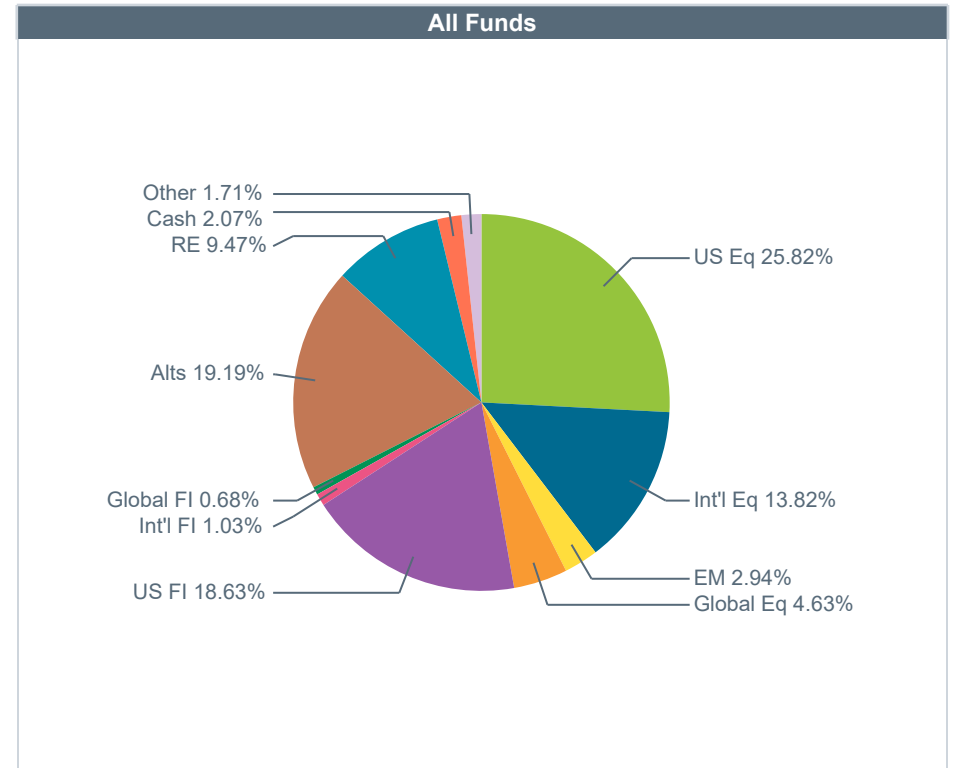
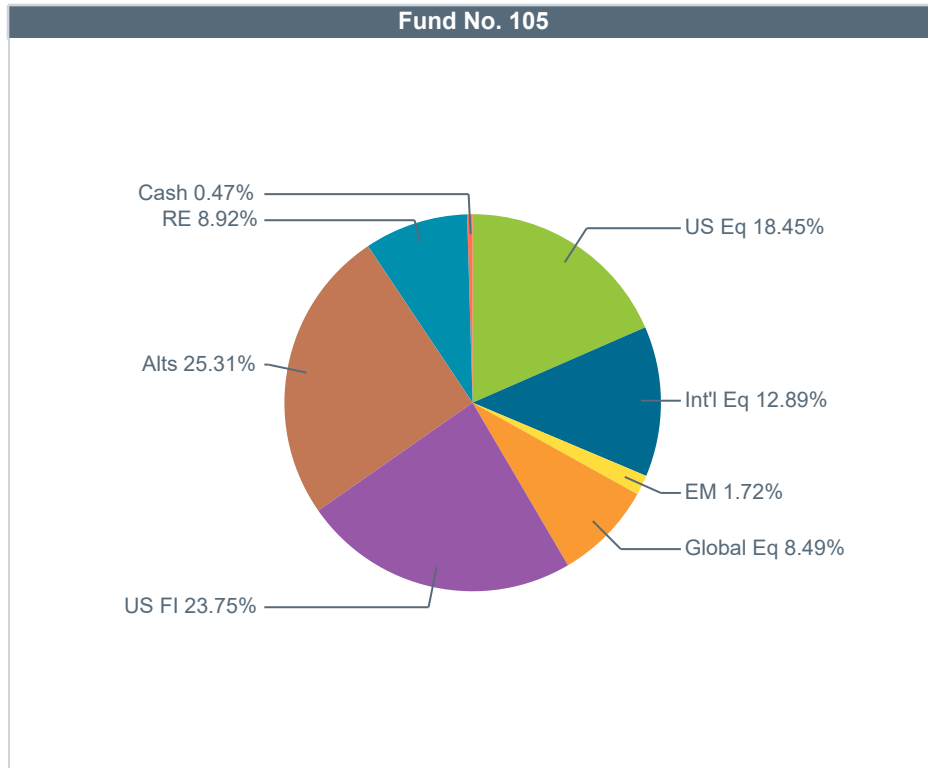


Asset Range	Actively Managed (%)	Passively Managed (%)	Externally Managed (%)	Internally Managed (%)
Over \$20B	70.95	29.05	76.13	23.87
\$10B-\$20B	72.80	27.20	94.05	5.95
\$5B-\$10B	69.36	30.64	98.15	1.85
\$1B-\$5B	77.36	22.64	99.06	0.94
\$500MM-\$1B	82.29	17.71	99.95	0.05
Under \$500MM	76.63	23.37	100.00	0.00
Fund No. 105	87.22	12.78	100.00	0.00

Percentages shown for asset ranges are representative of the average allocation.

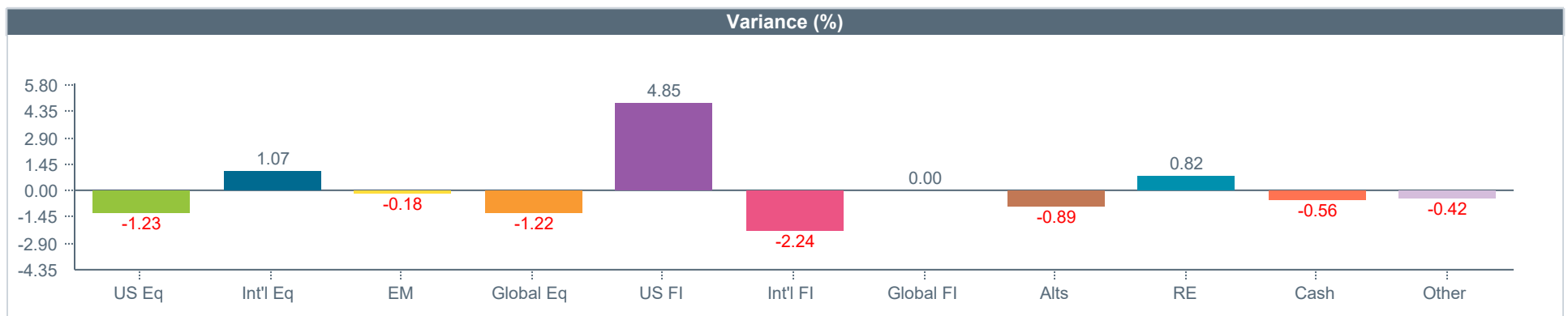
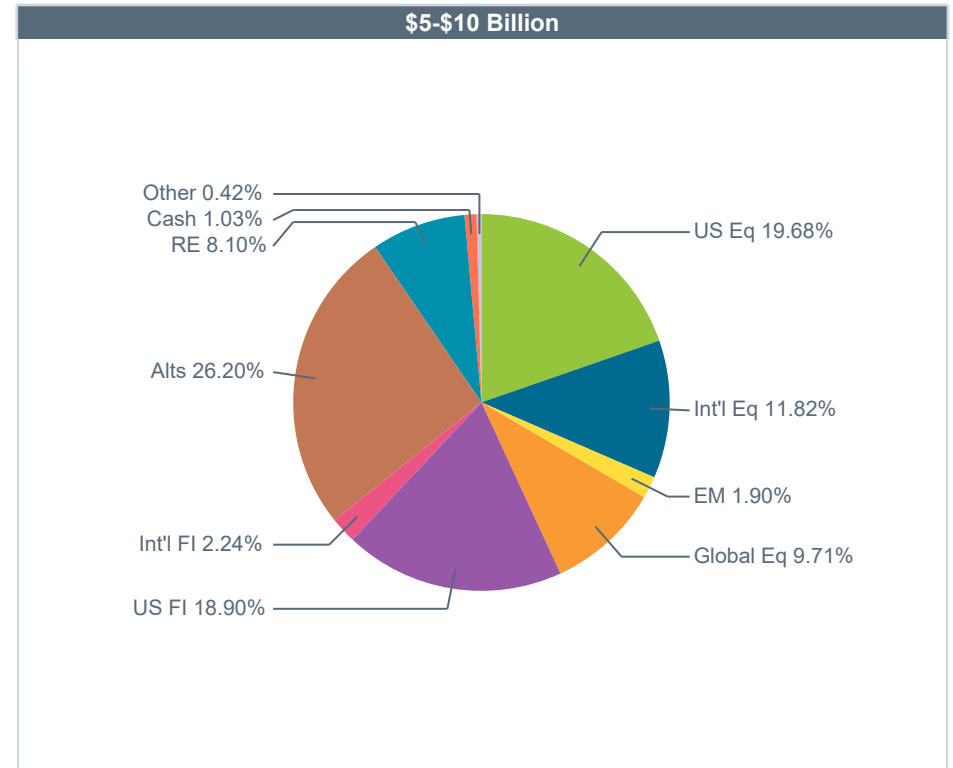
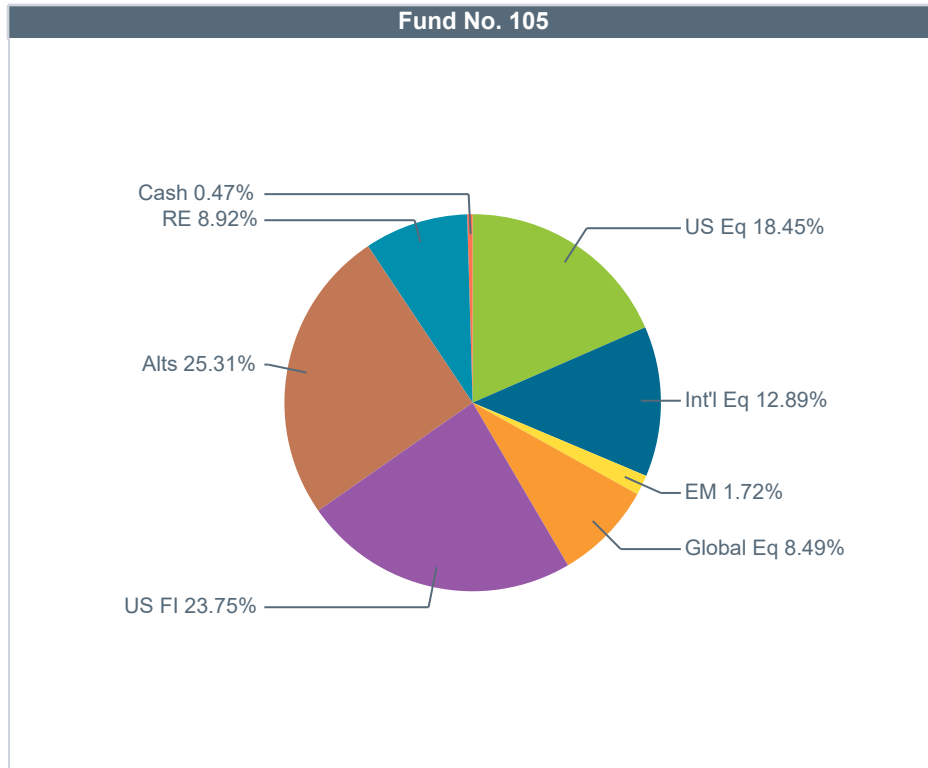
Portfolio (%)	Active Management		External Management	
	Public Fund Universe	Fund No. 105	Public Fund Universe	Fund No. 105
90 to 100	10	0	53	1
50 to 89	50	1	6	0
10 to 49	5	0	6	0
Less than 10	0	0	0	0
Total Funds Reporting	65	1	65	1





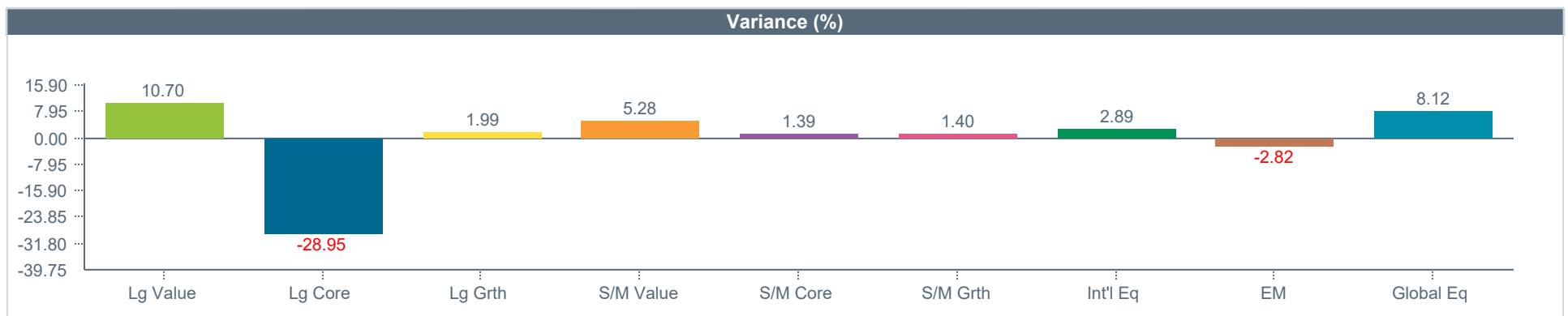
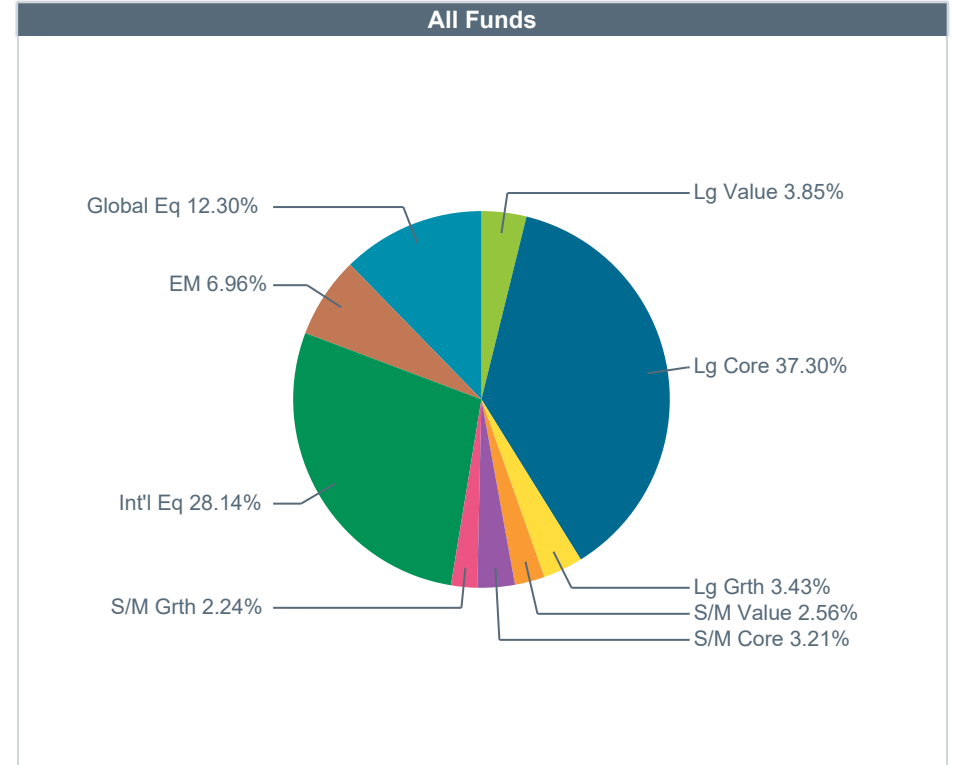
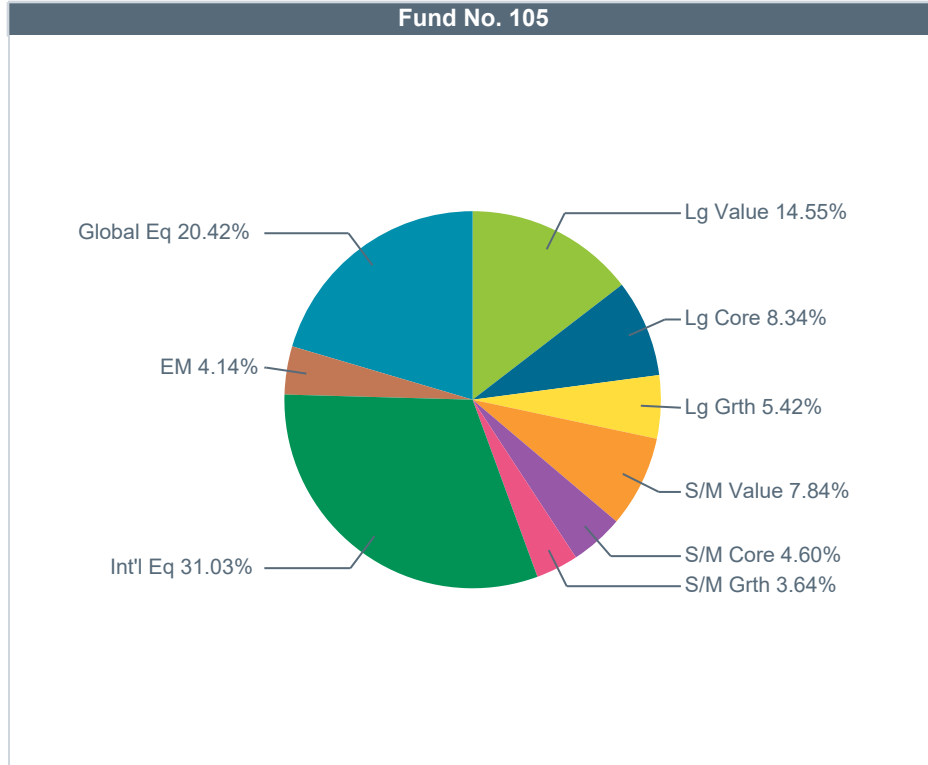
Allocations shown may not sum up to 100% exactly due to rounding.





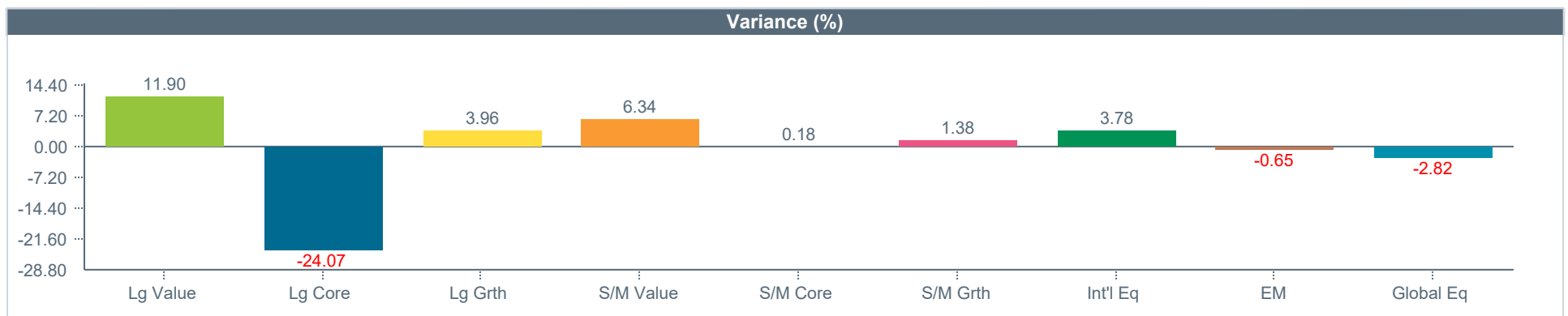
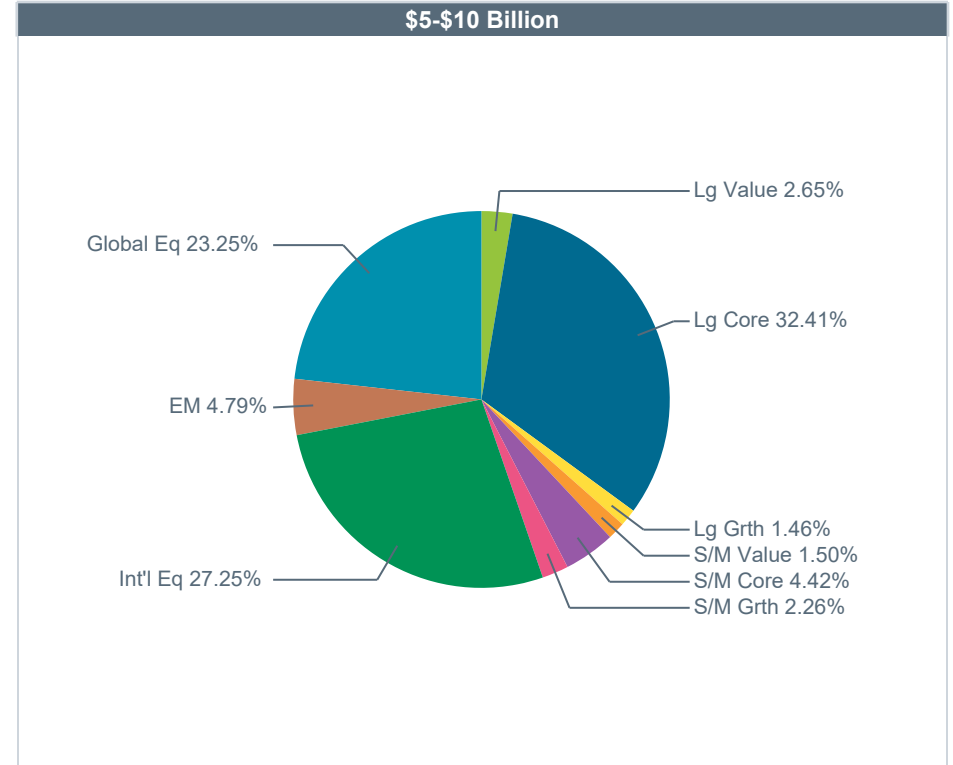
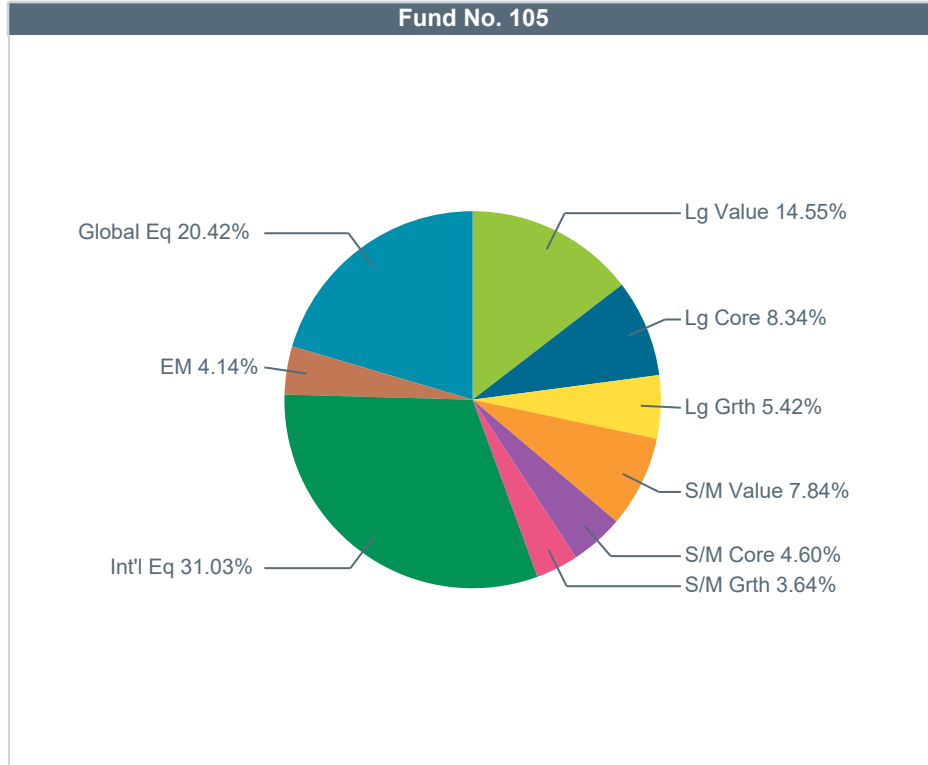
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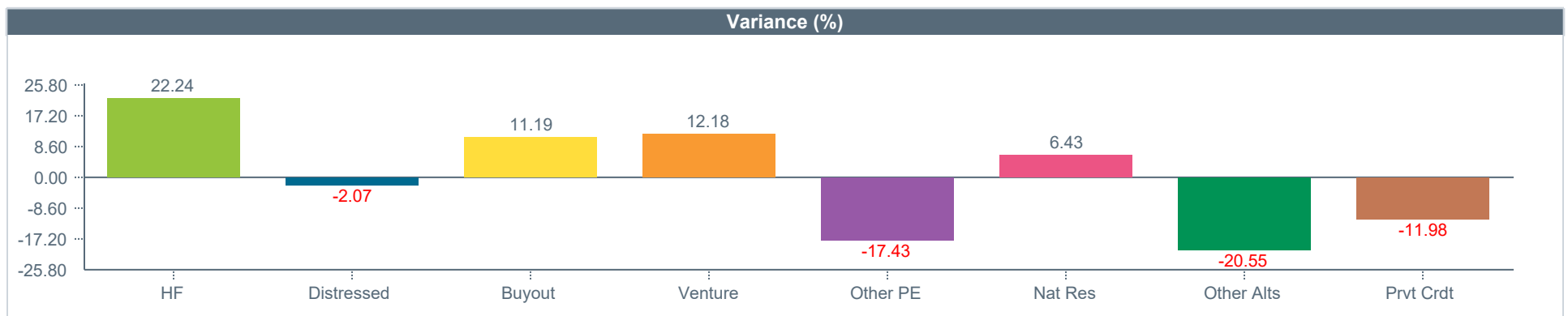
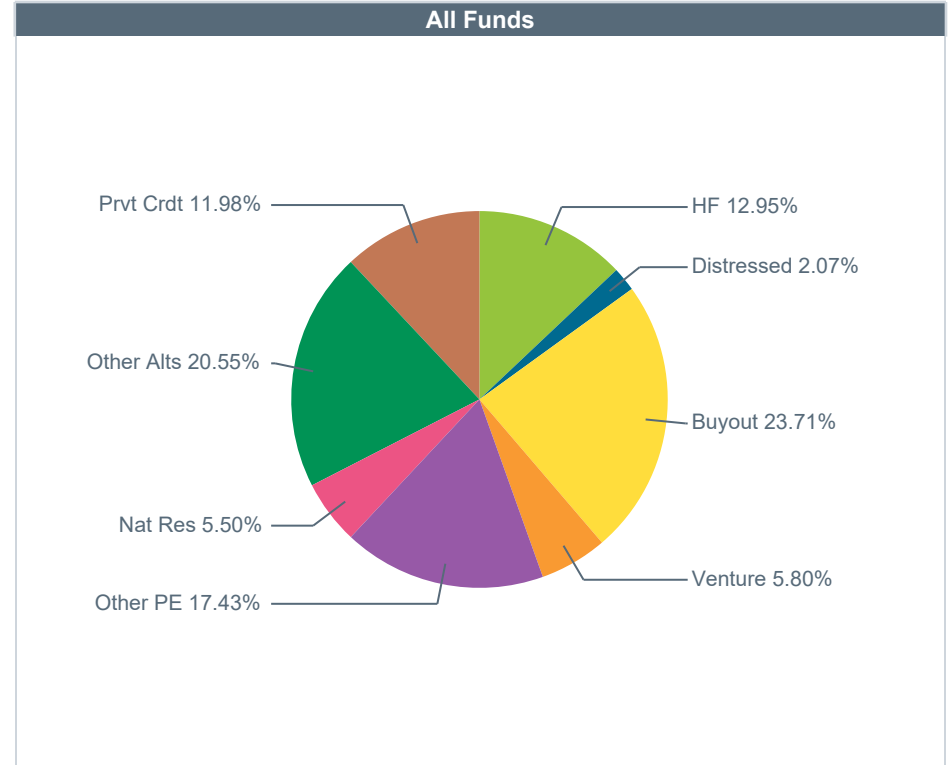
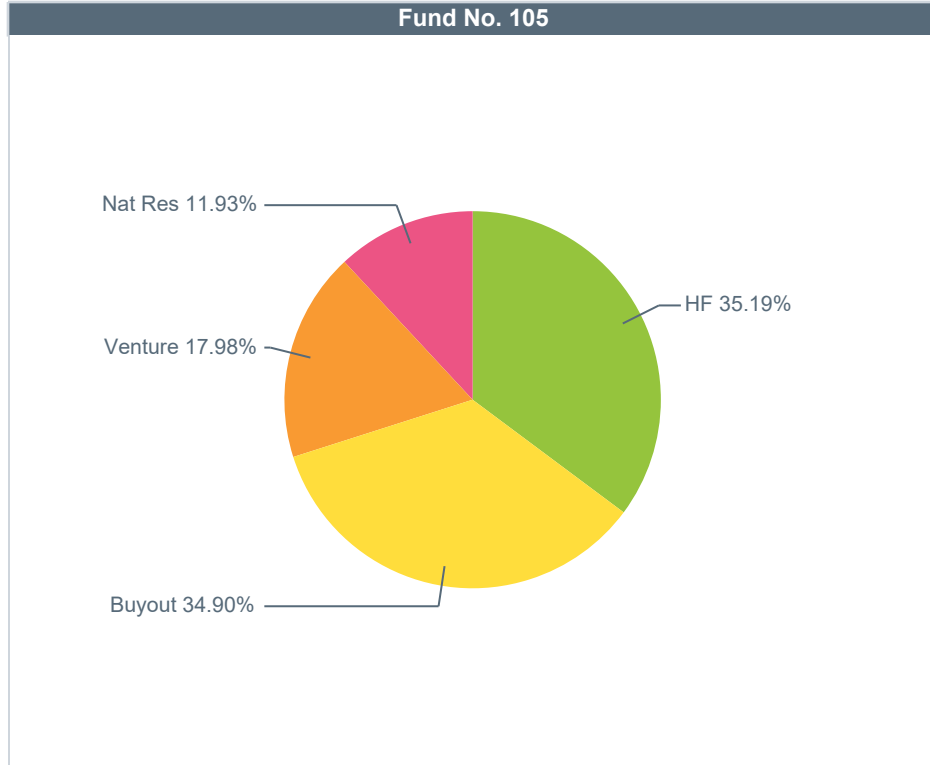
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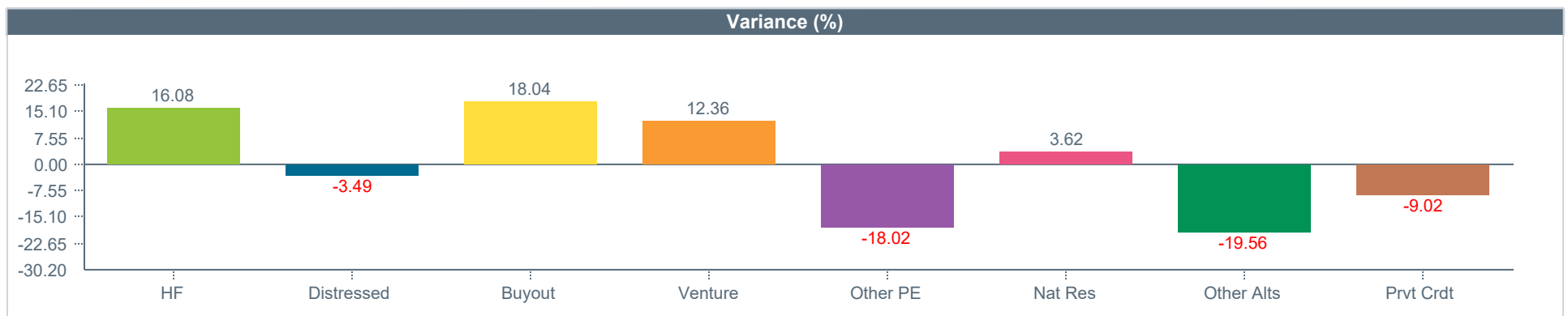
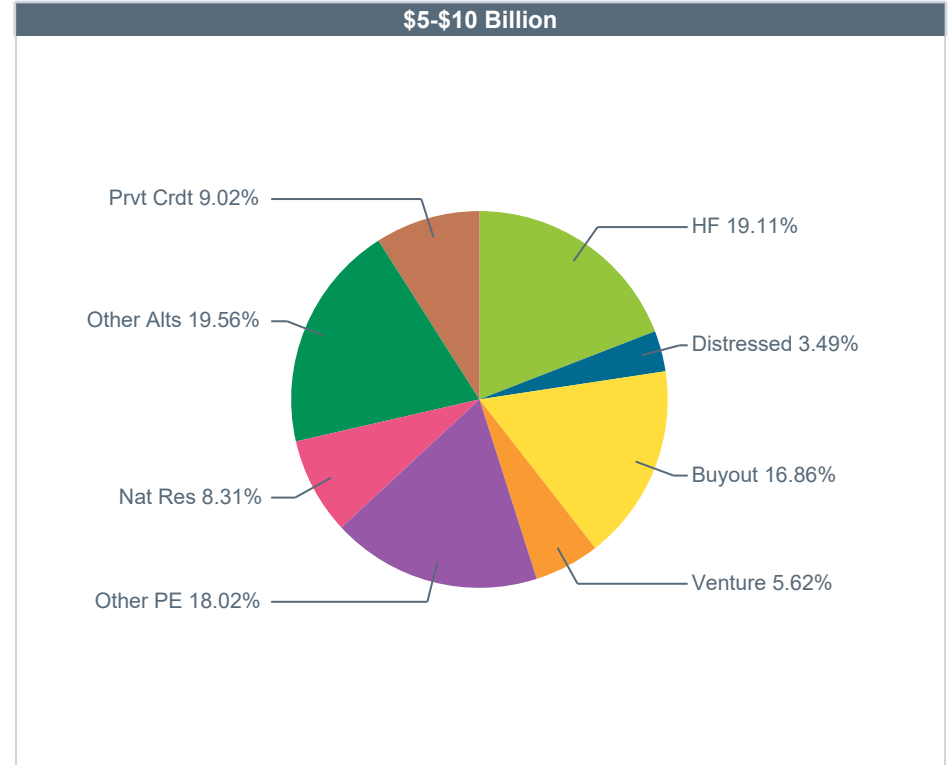
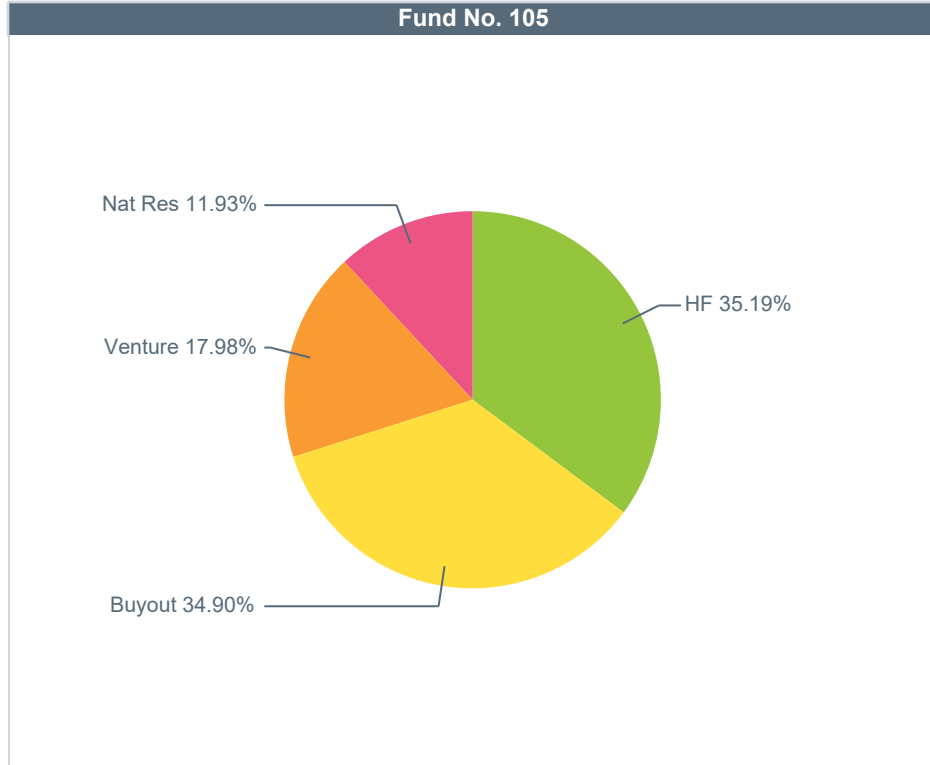
Allocations shown may not sum up to 100% exactly due to rounding.





Allocations shown may not sum up to 100% exactly due to rounding.

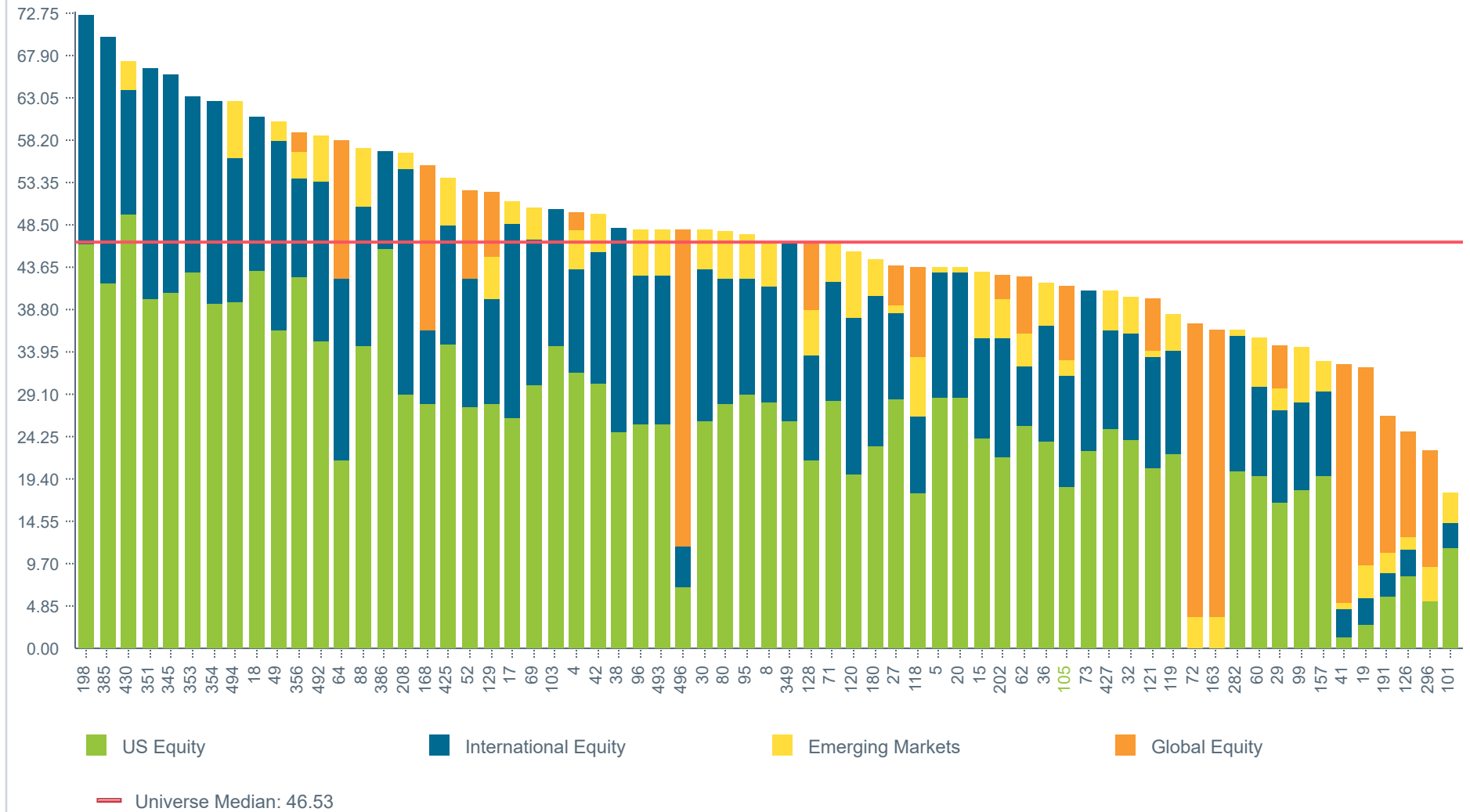


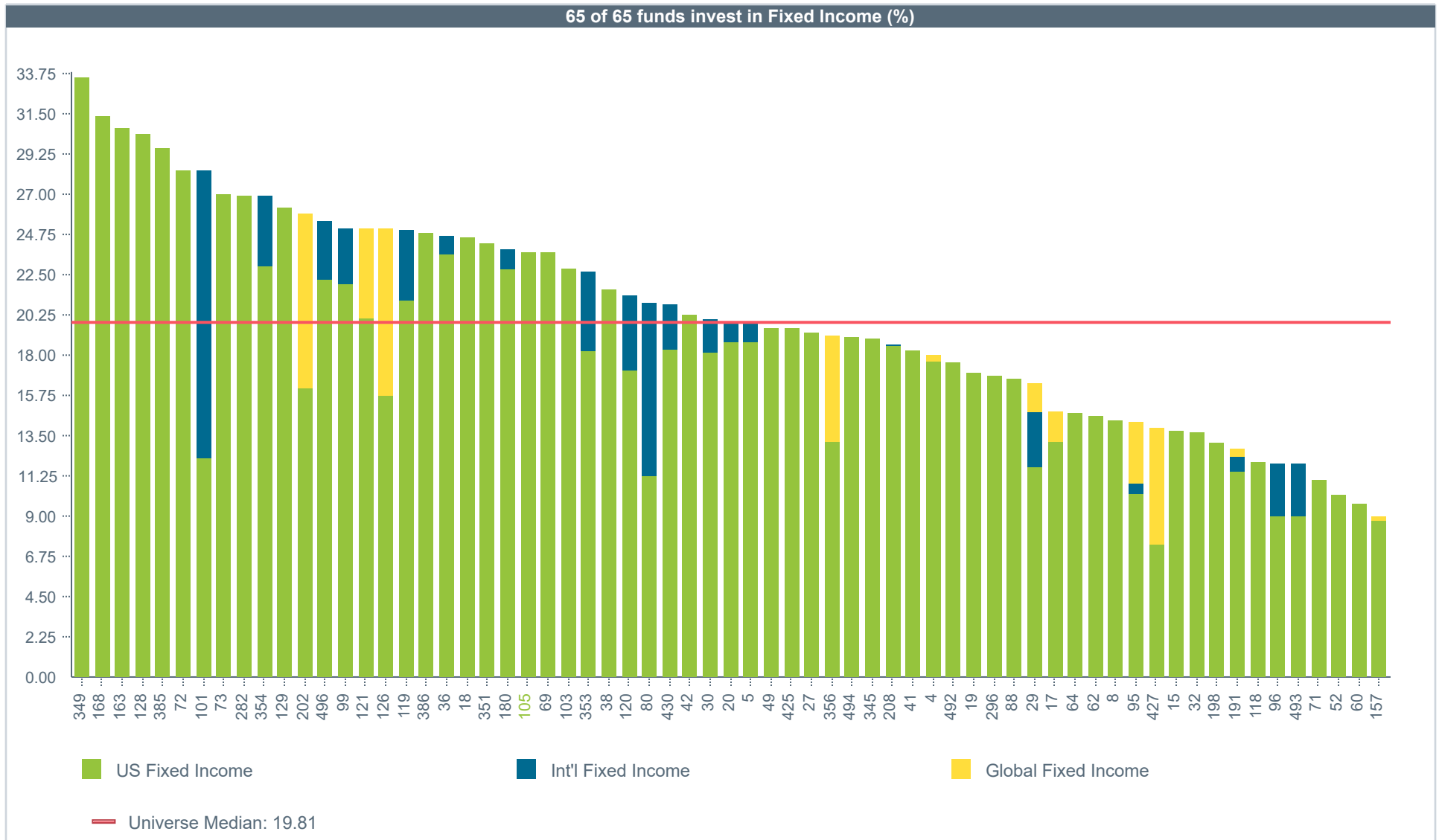


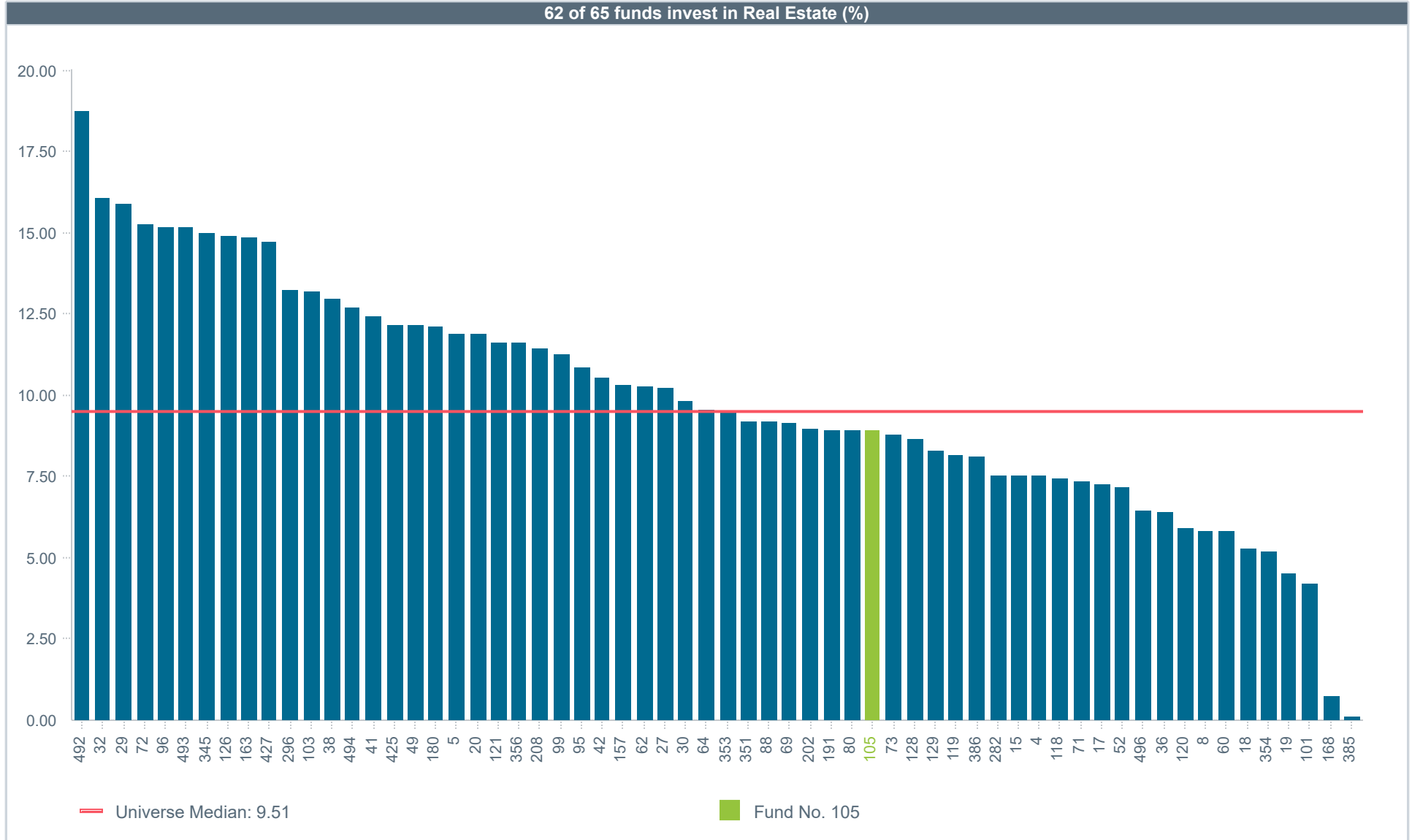
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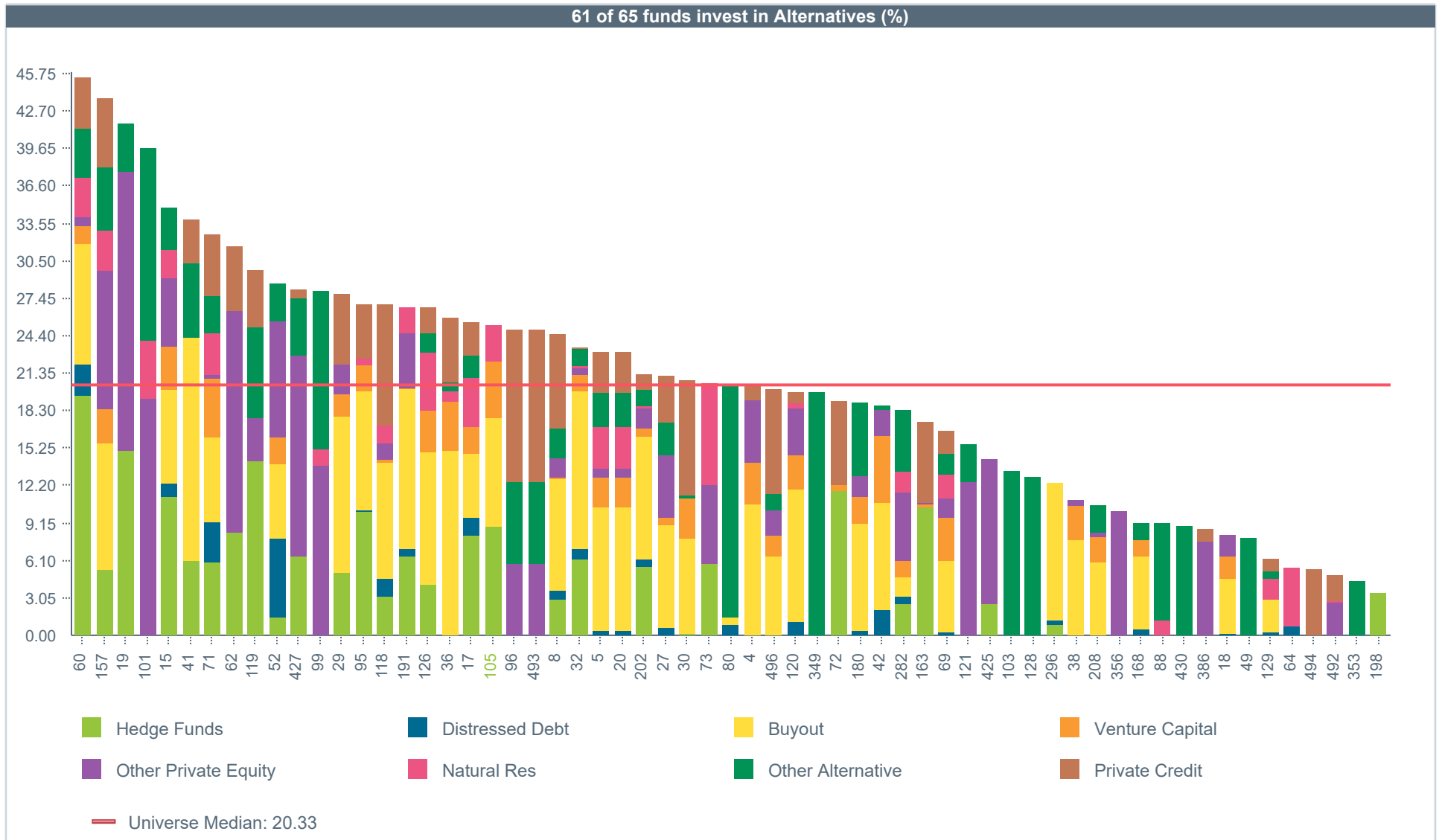


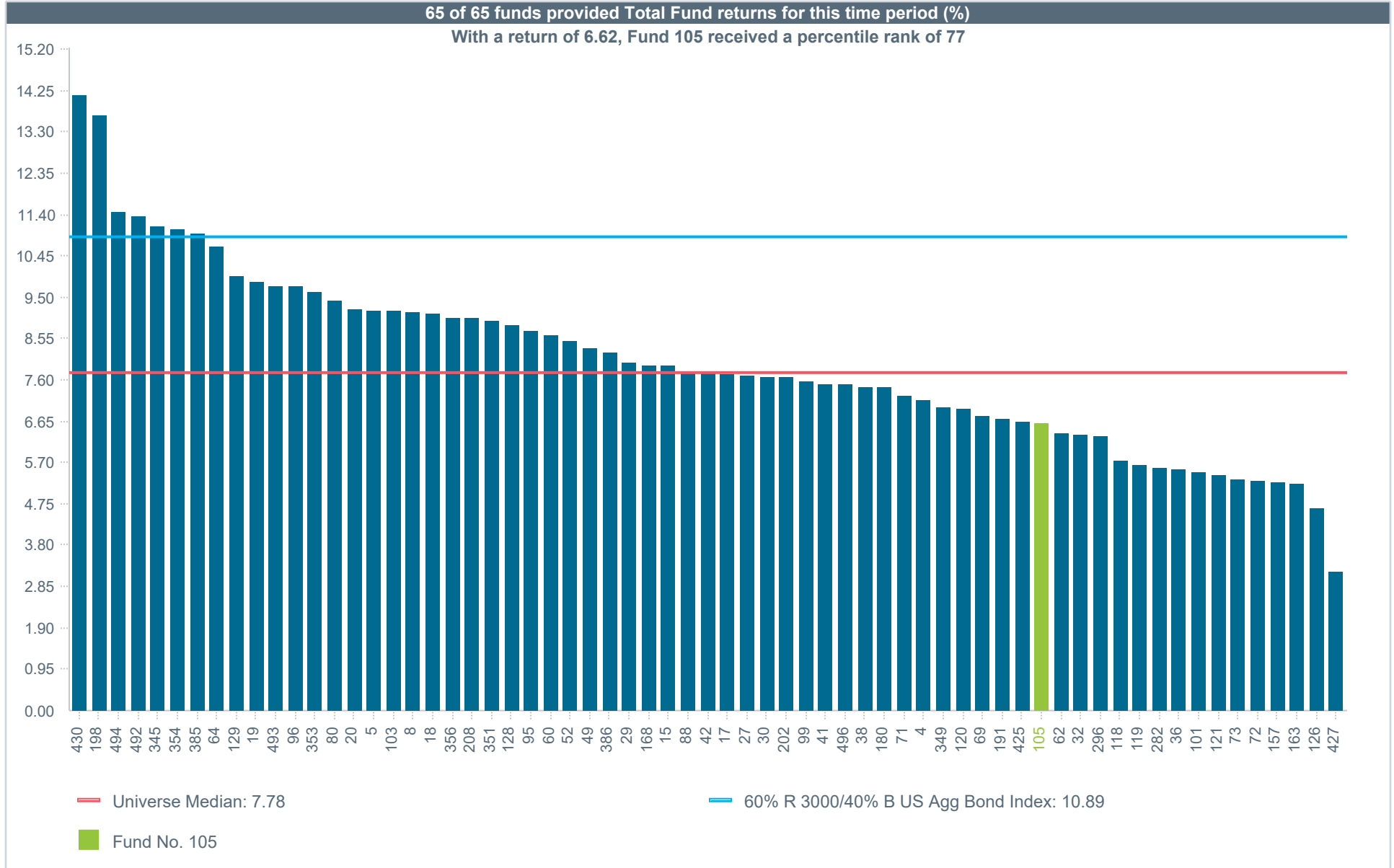
65 of 65 funds invest in Equity (%)





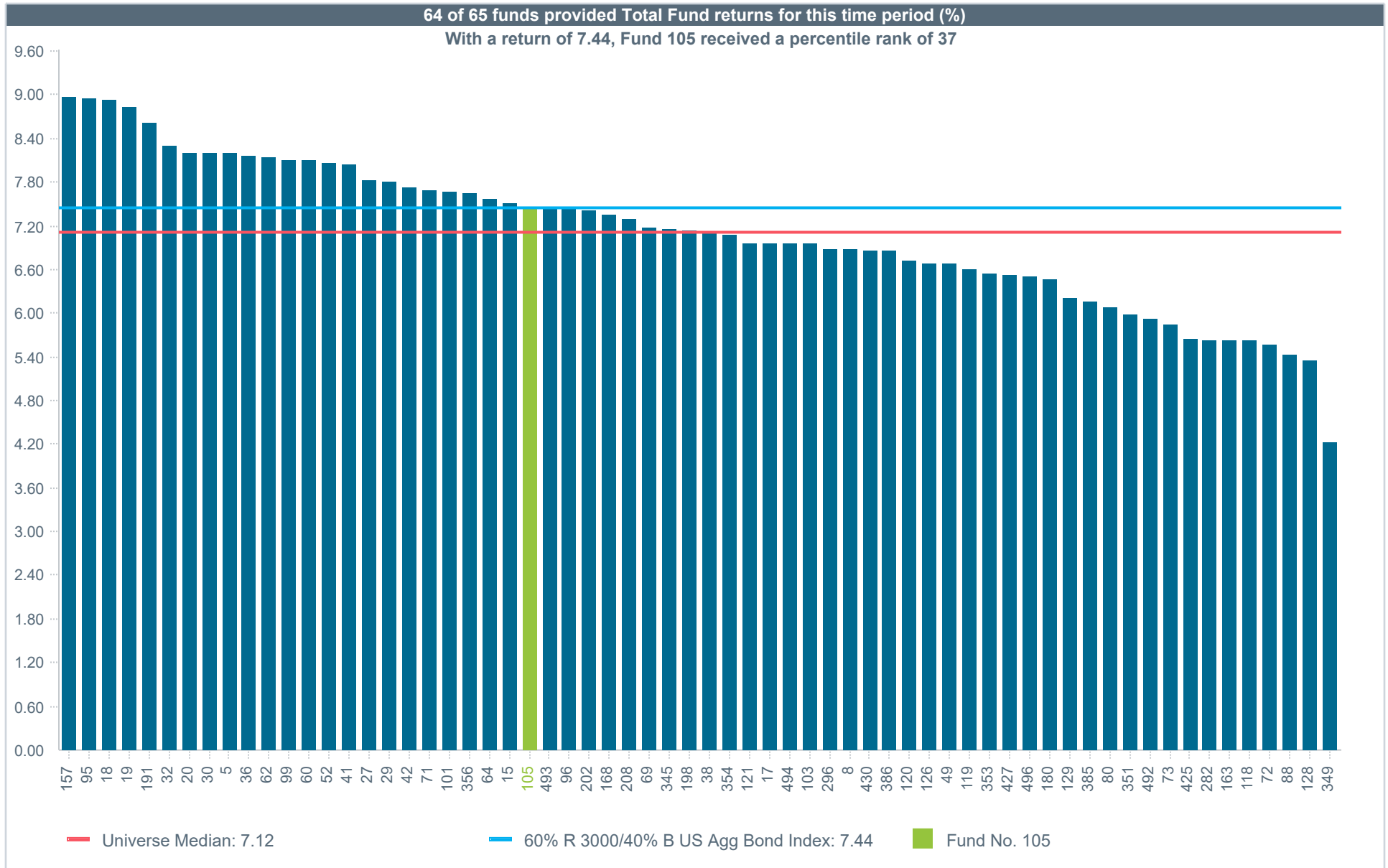






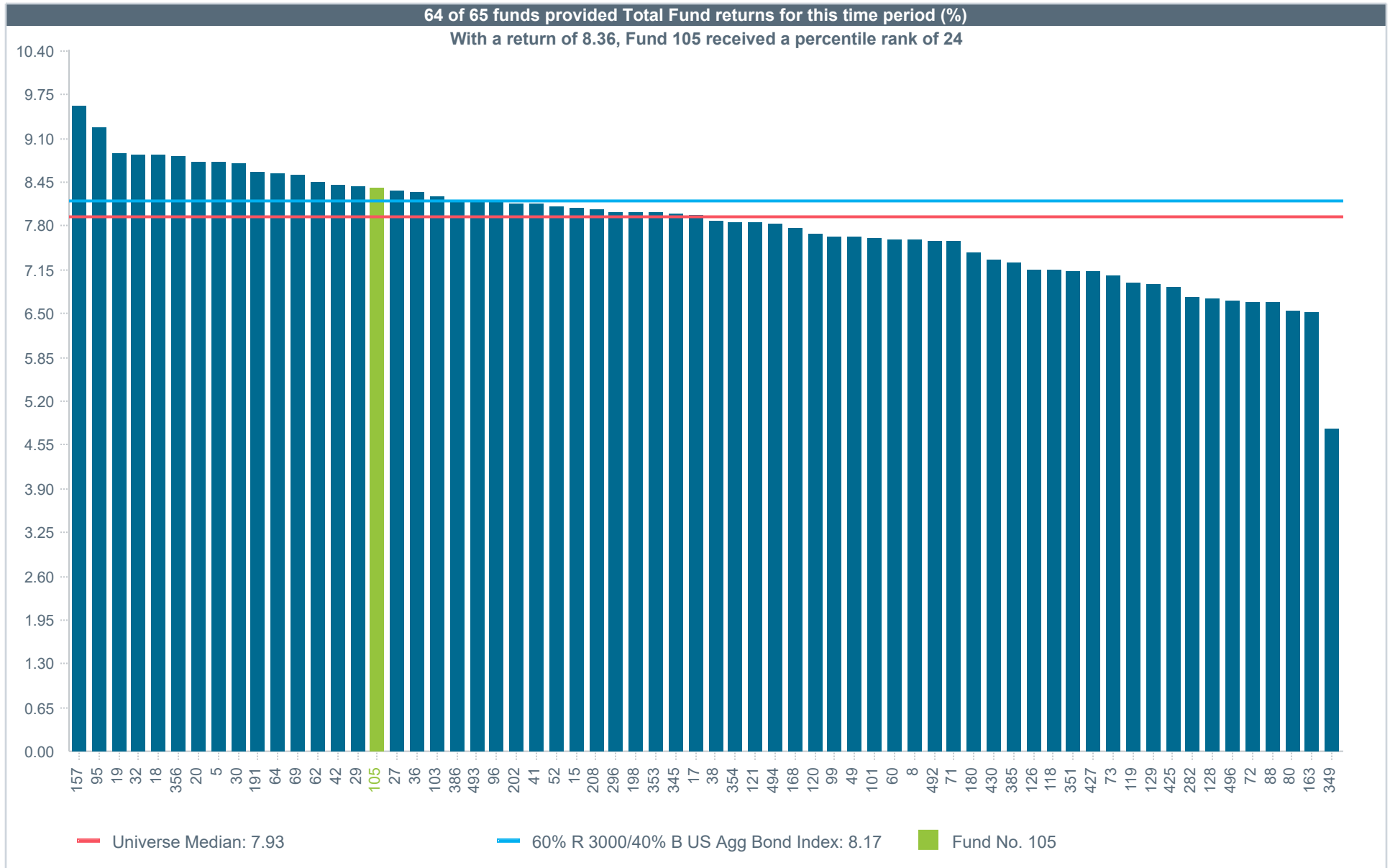
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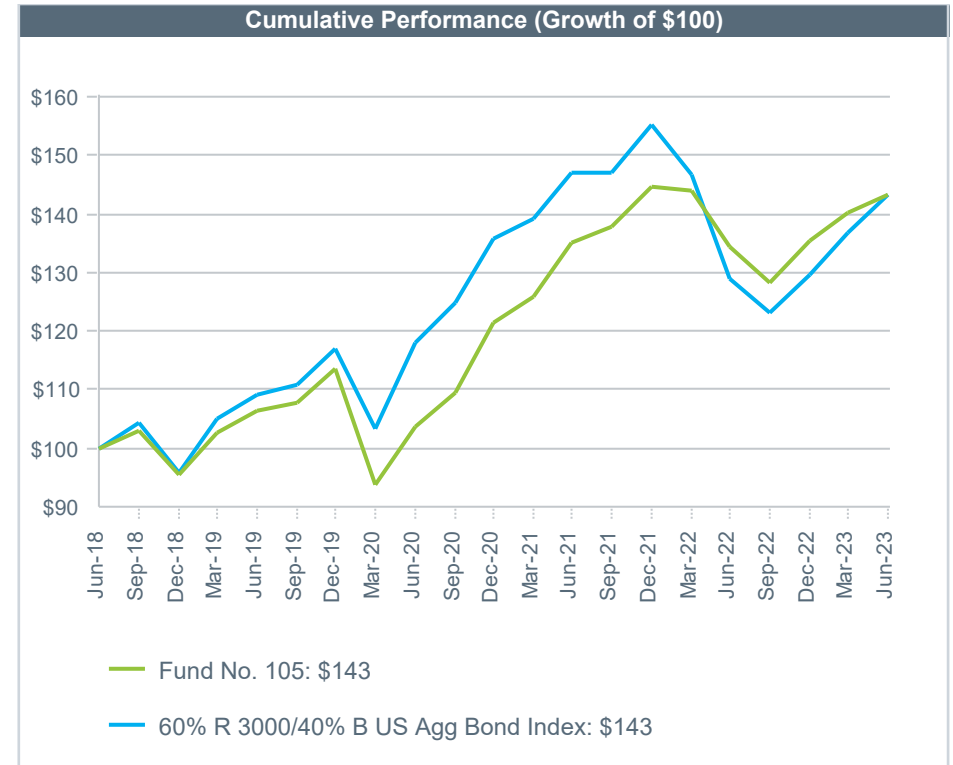
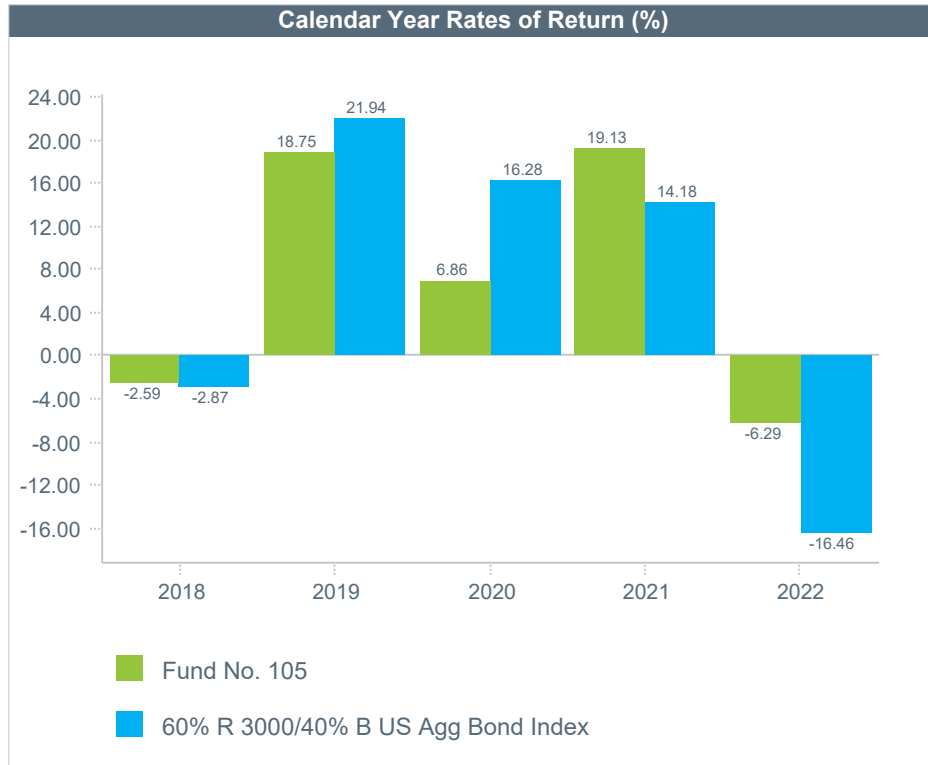


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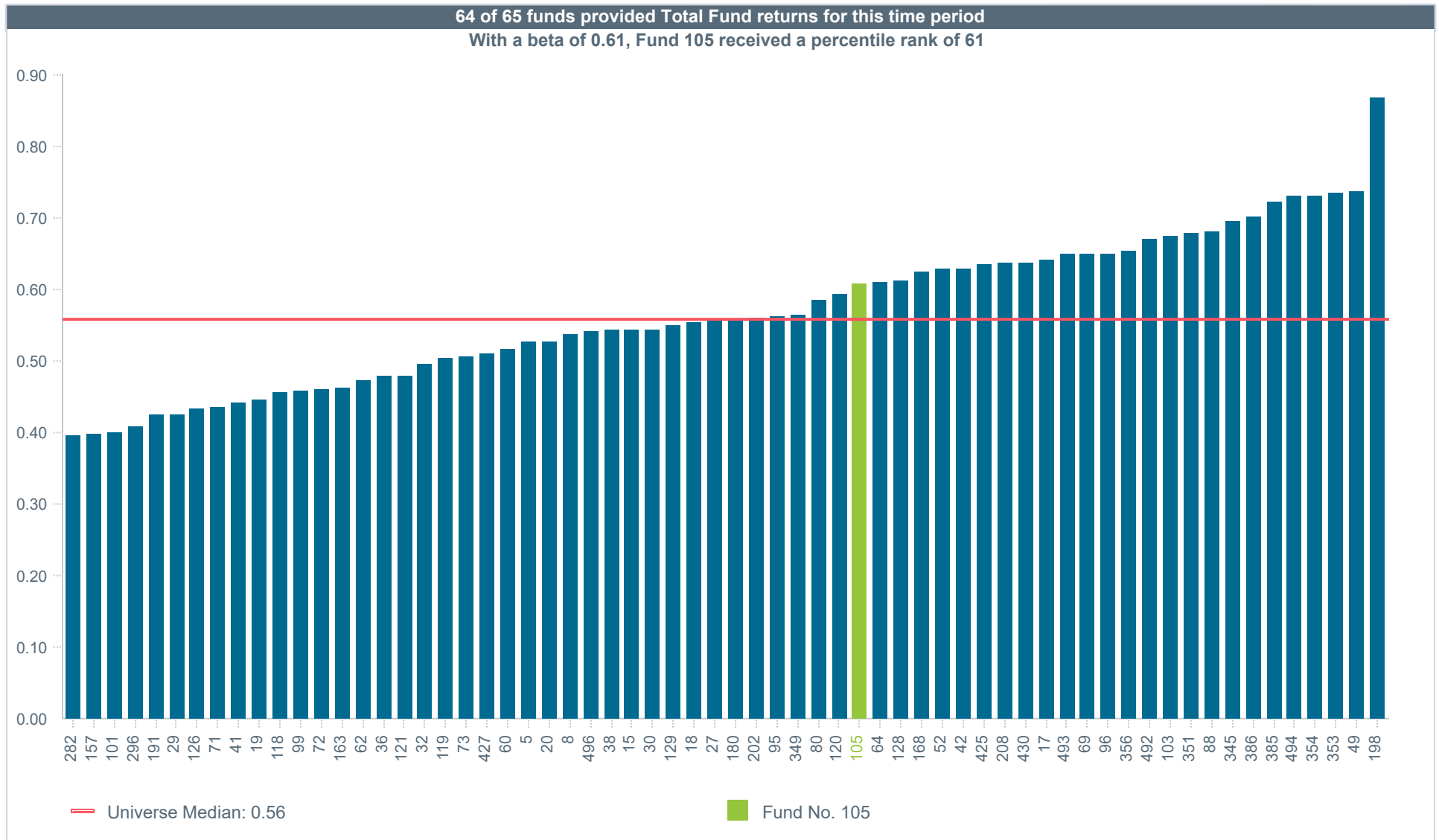
Total Return - Total Fund
Fund No. 105 vs. 60% R 3000/40% B US Agg Bond Index

As of June 30, 2023



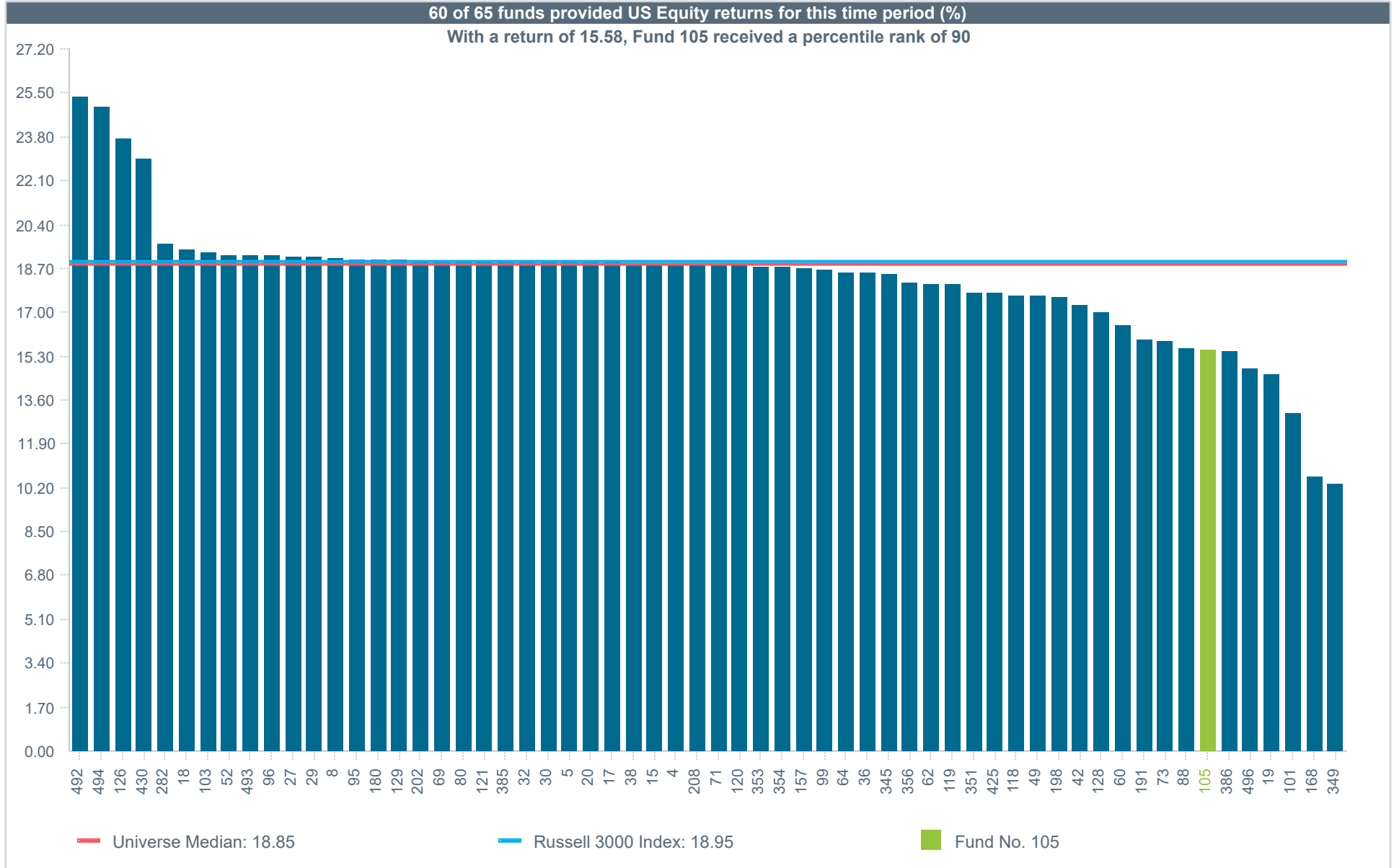
Annualized Returns (%)			
	1 Year	3 Years	5 Years
Fund No. 105	6.62	11.42	7.44
60% R 3000/40% B US Agg Bond Index	10.89	6.70	7.44
Variance	-4.27	4.72	0.00





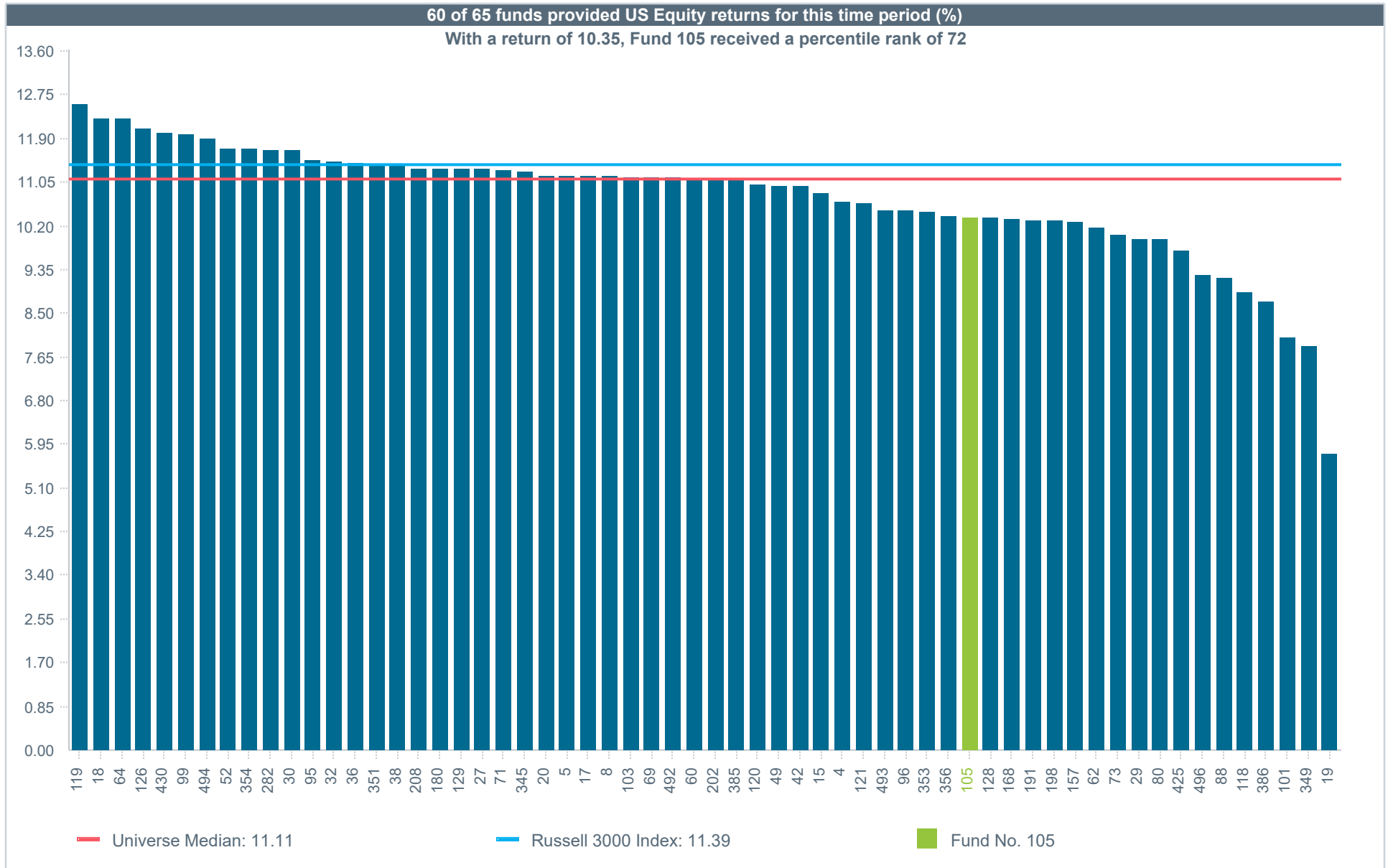
Funds with less history than the specified time period will not appear in the chart. Benchmark used is the S&P 500 Index (Cap Wtd).





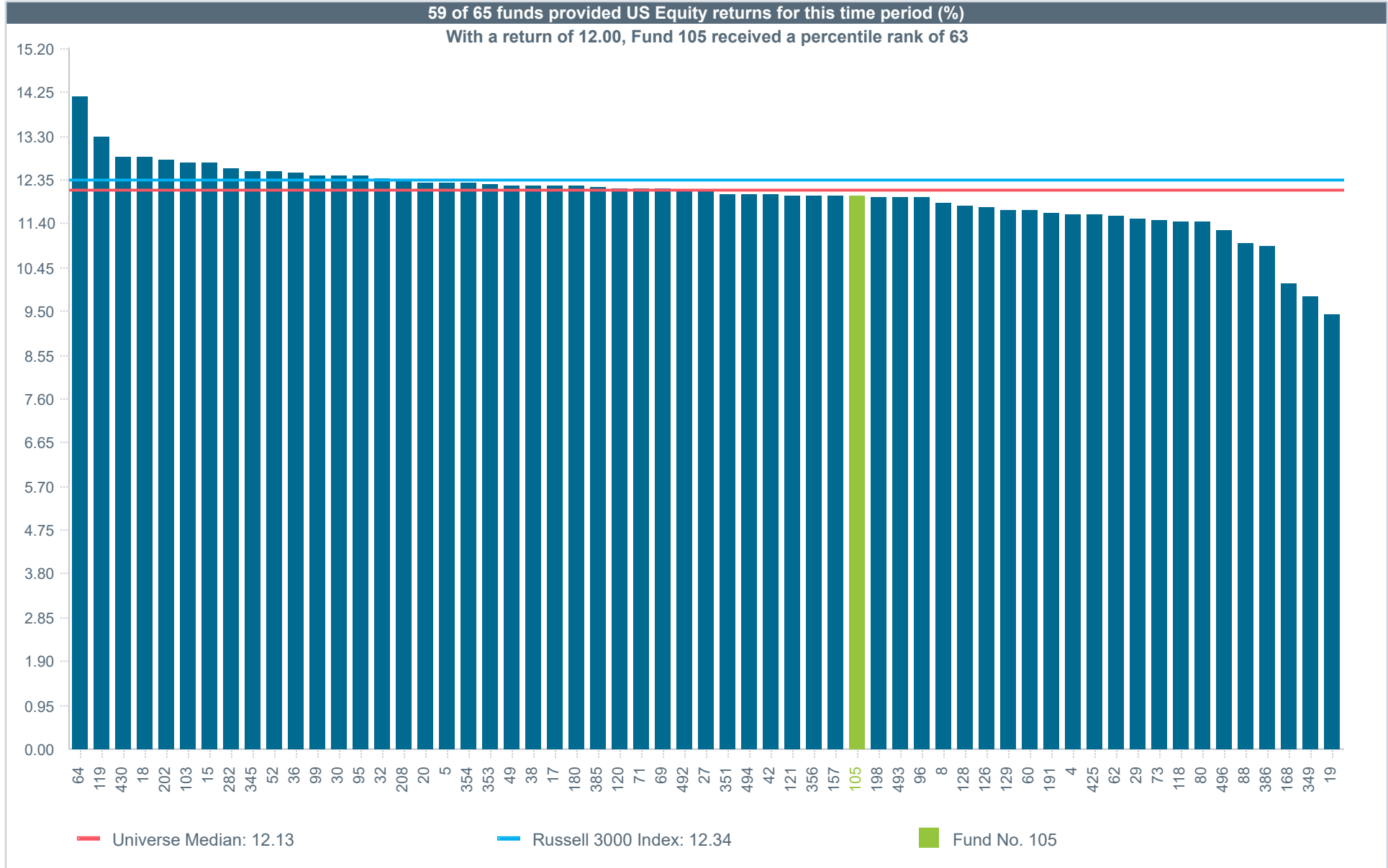
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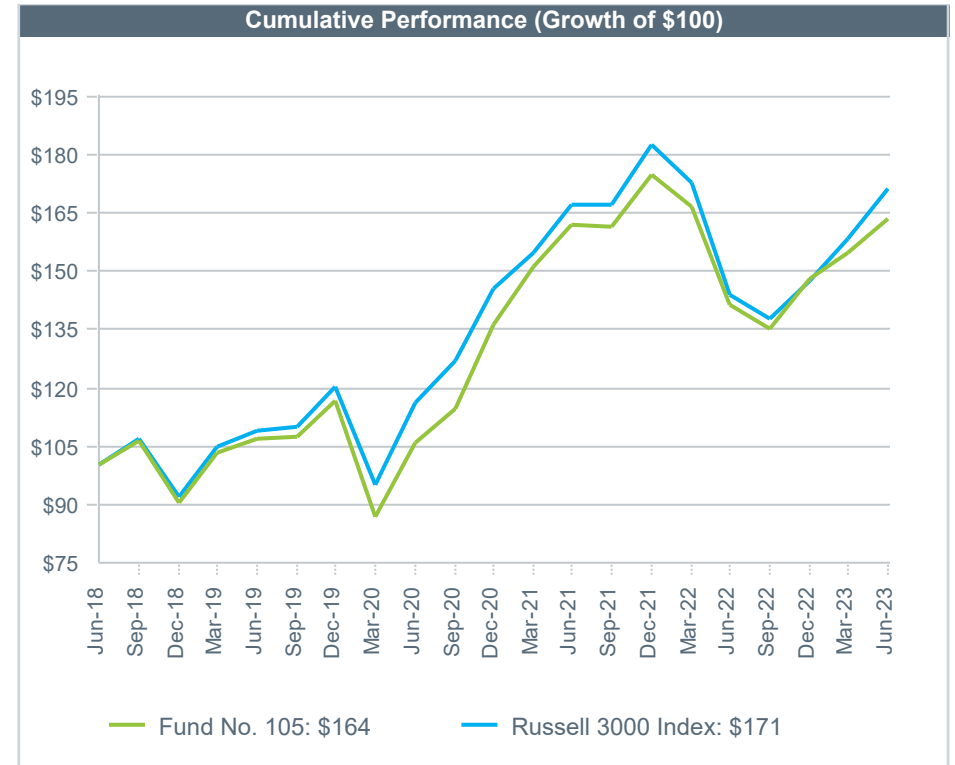
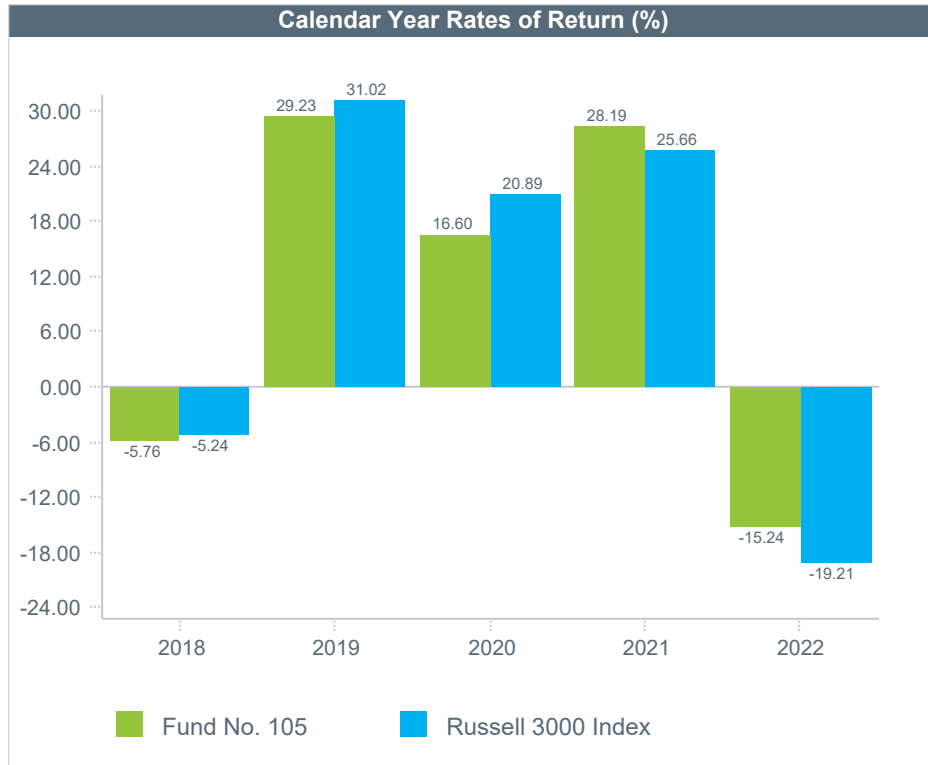
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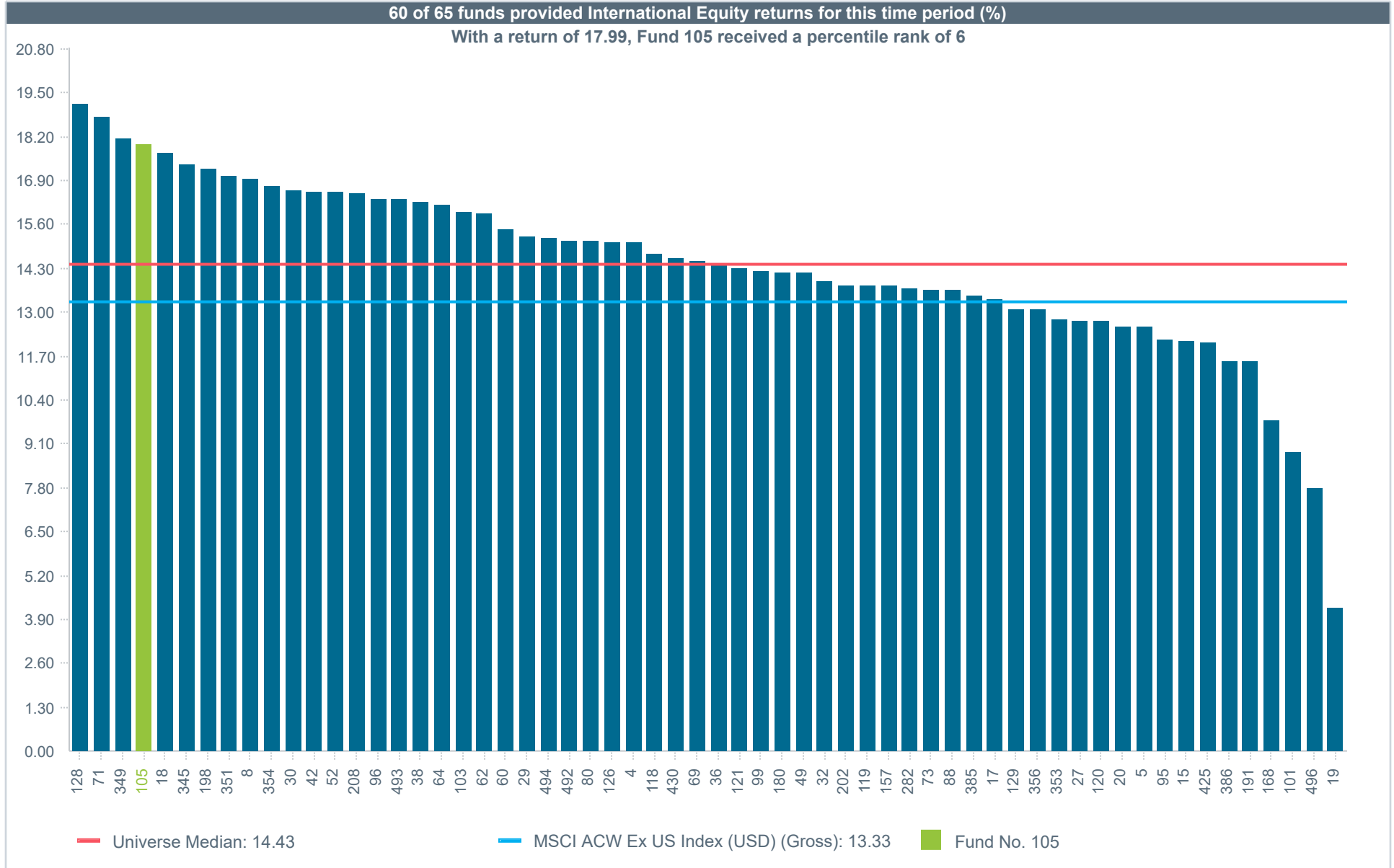




Annualized Returns (%)

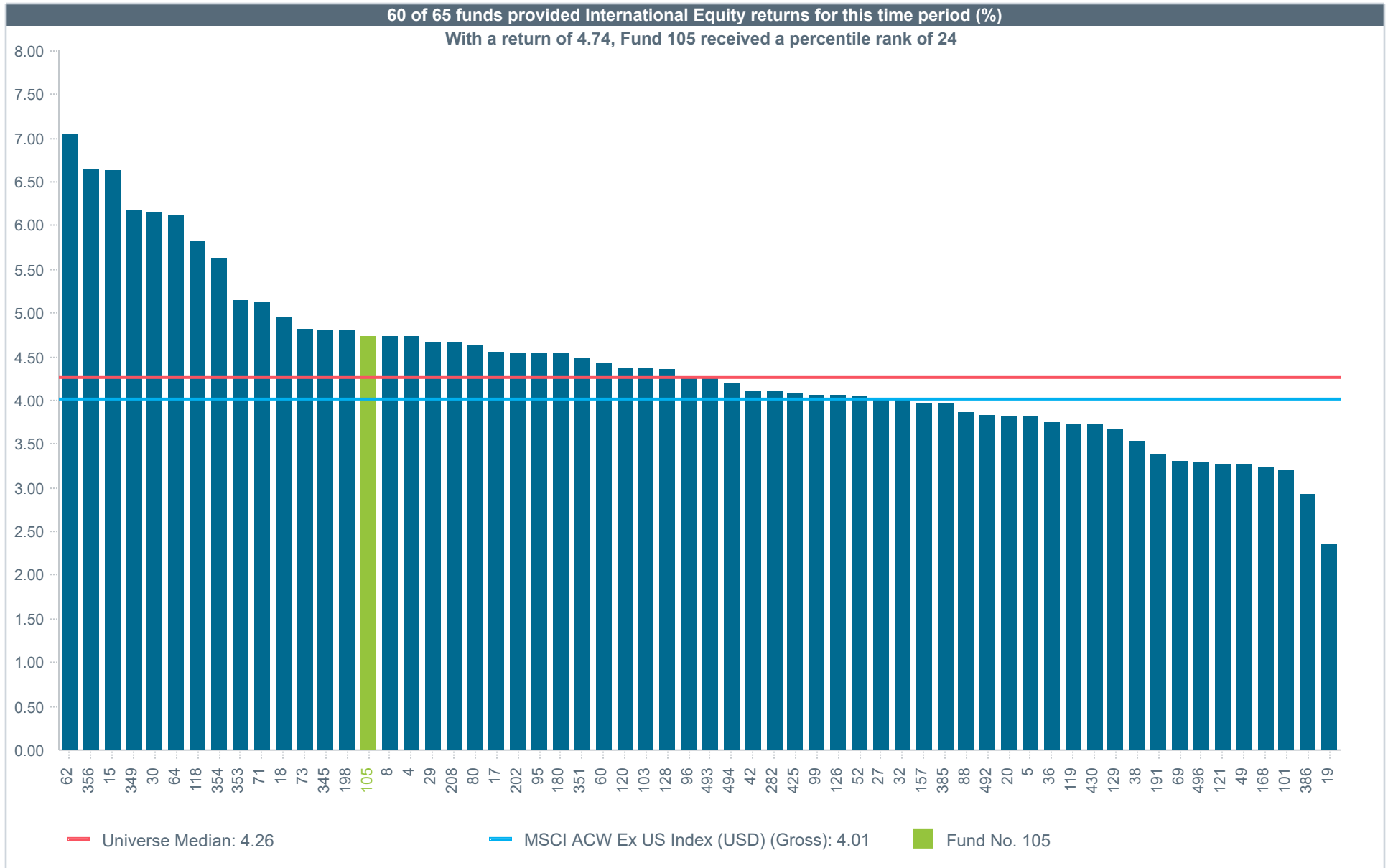
	1 Year	3 Years	5 Years
Fund No. 105	15.58	15.52	10.35
Russell 3000 Index	18.95	13.89	11.39
Variance	-3.37	1.63	-1.04





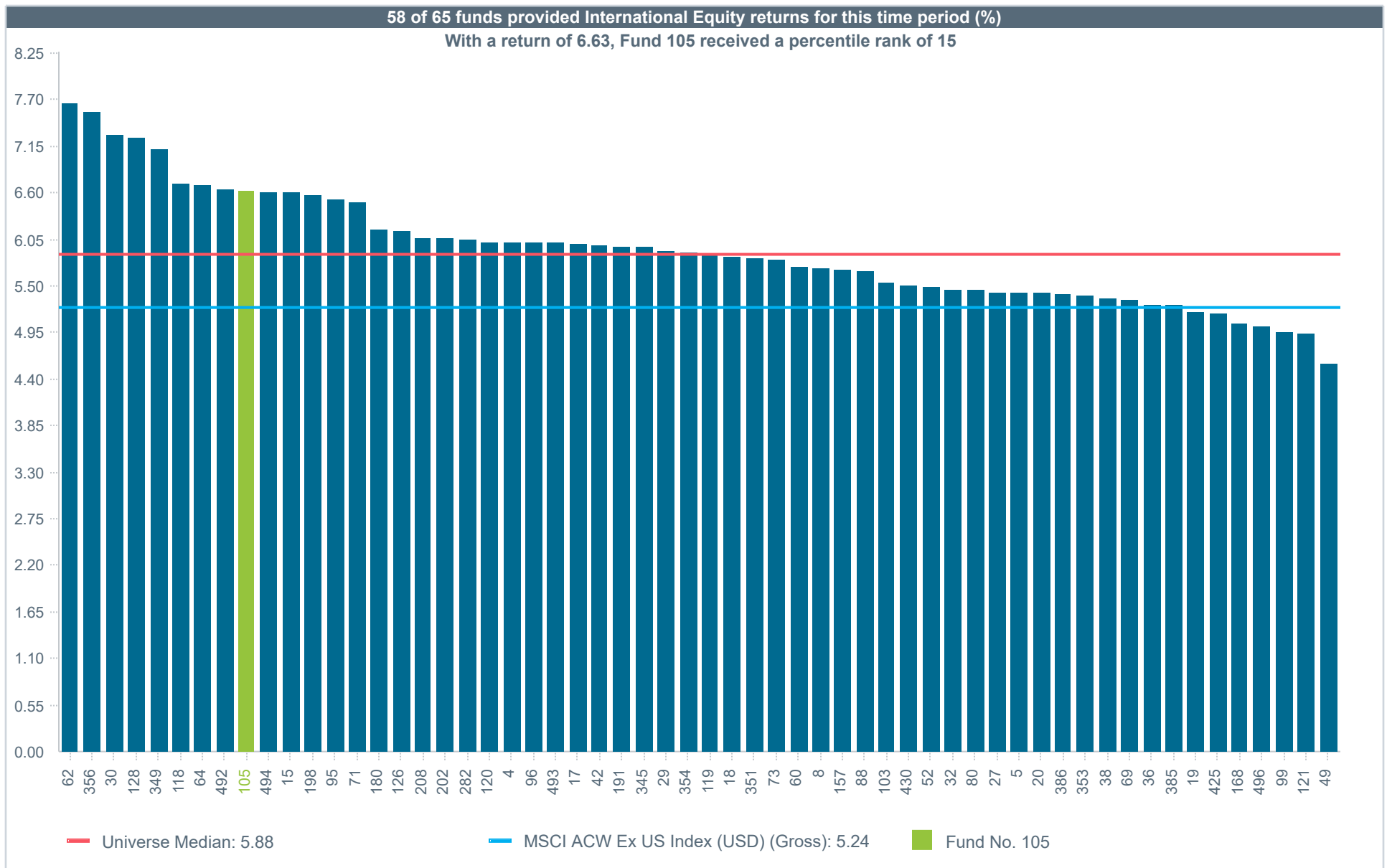
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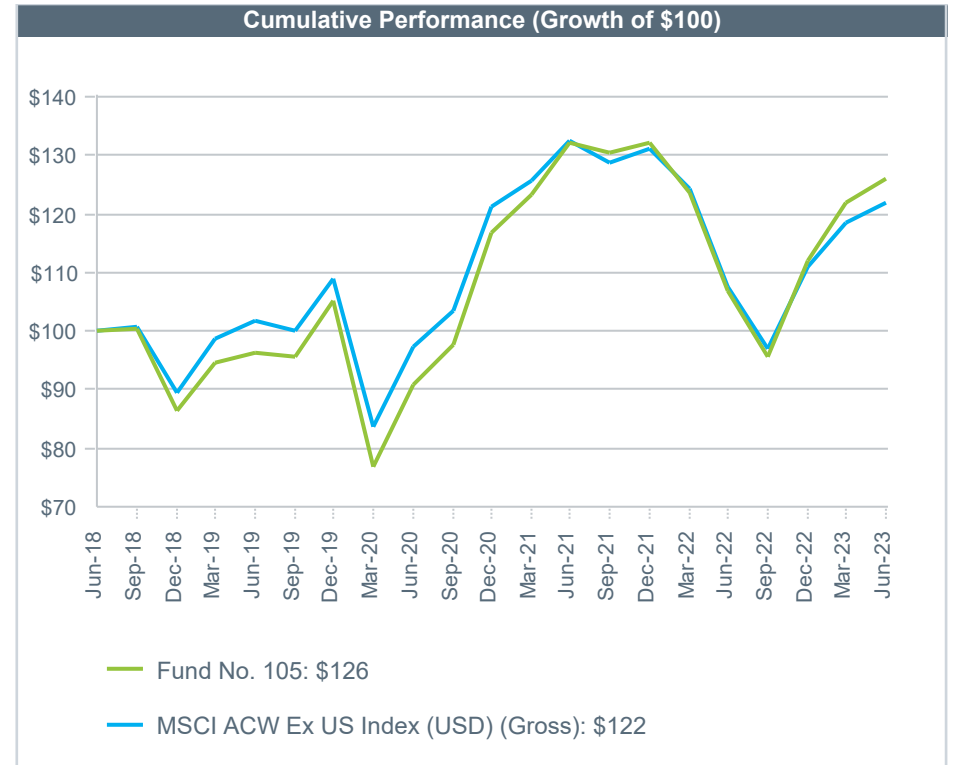
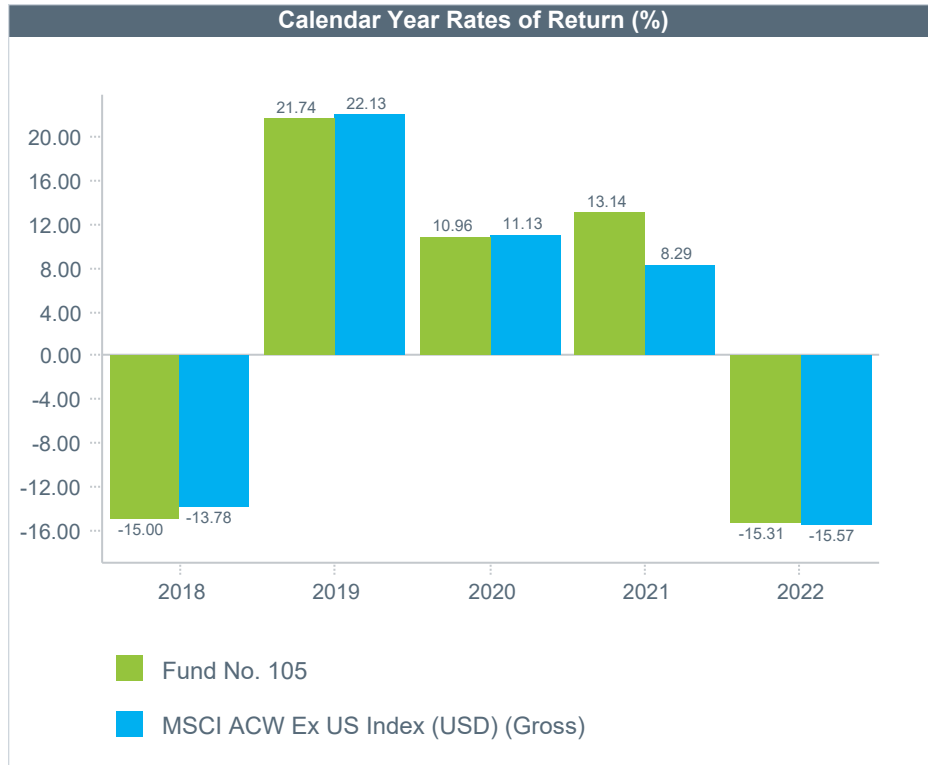


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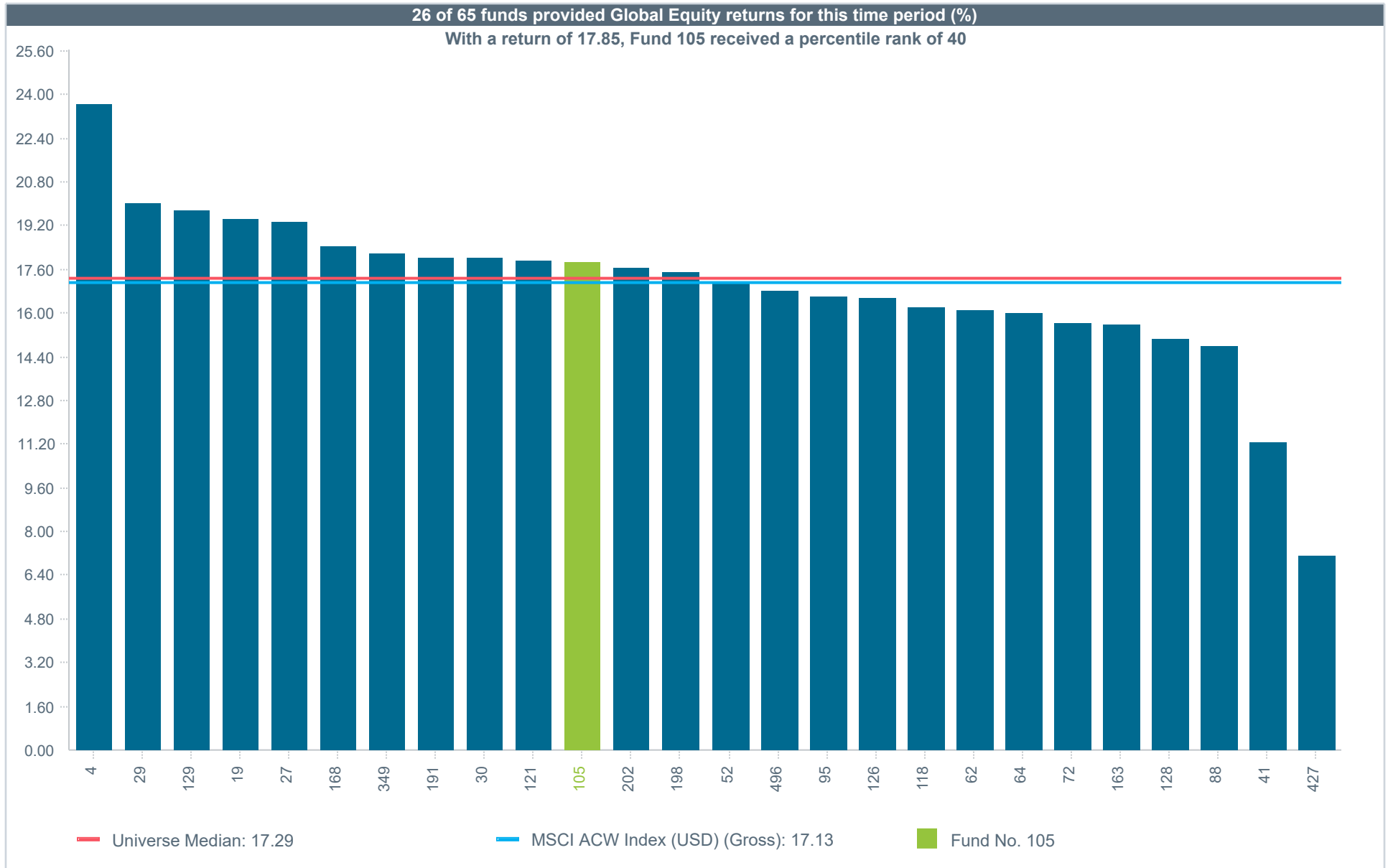
Total Return - International Equity
Fund No. 105 vs. MSCI ACW Ex US Index (USD) (Gross)

As of June 30, 2023



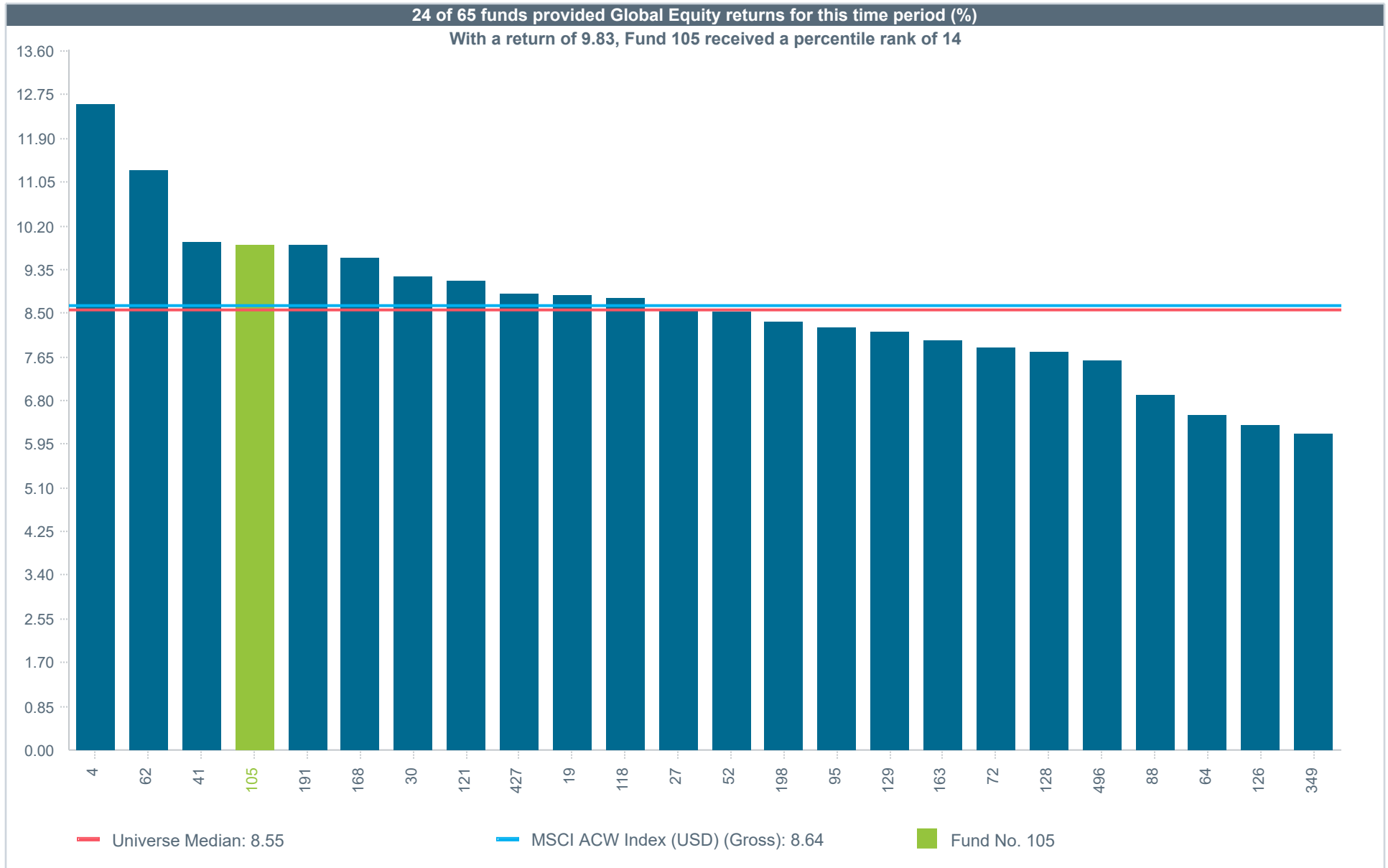
Annualized Returns (%)			
	1 Year	3 Years	5 Years
Fund No. 105	17.99	11.58	4.74
MSCI ACW Ex US Index (USD) (Gross)	13.33	7.75	4.01
Variance	4.66	3.83	0.73





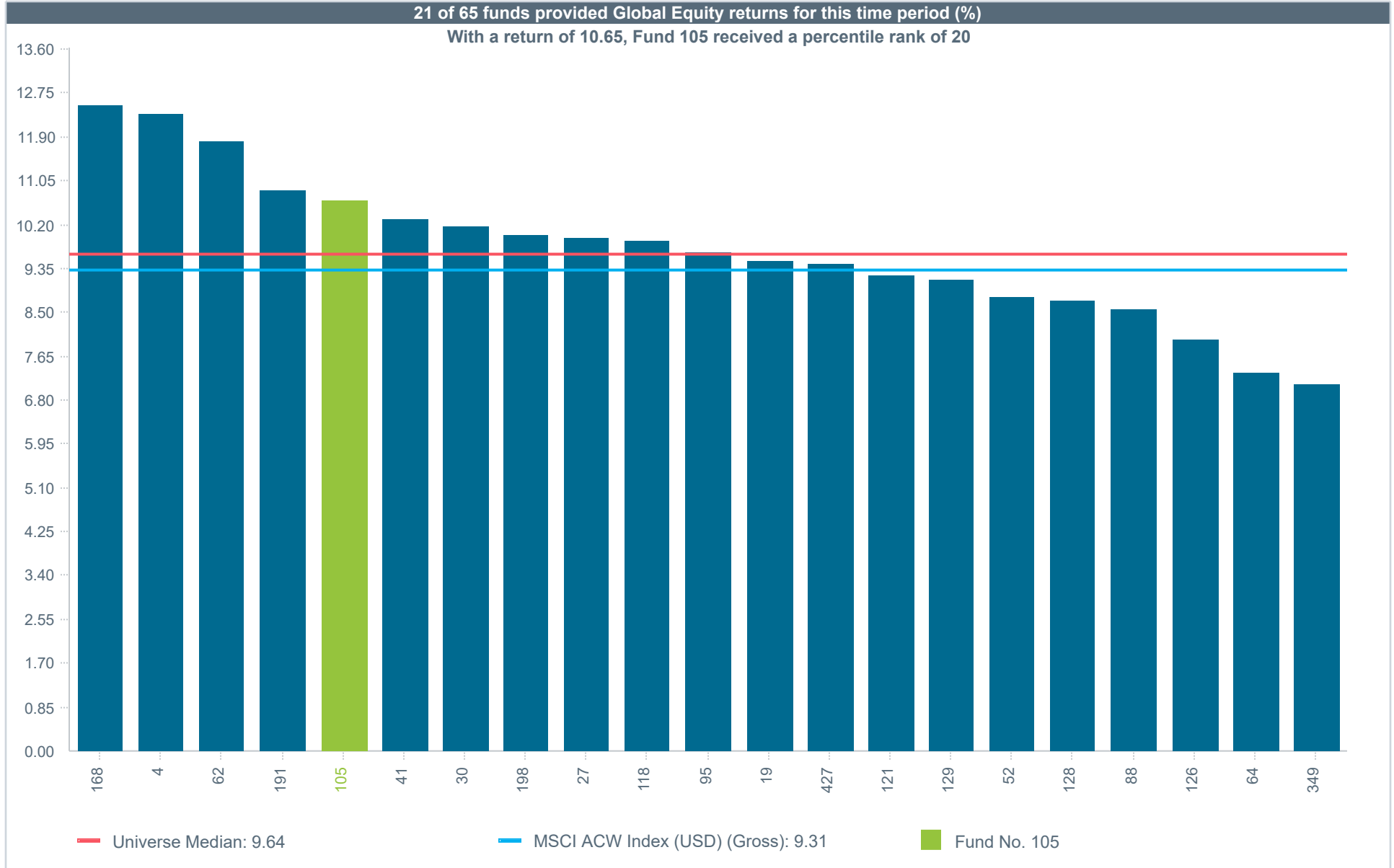
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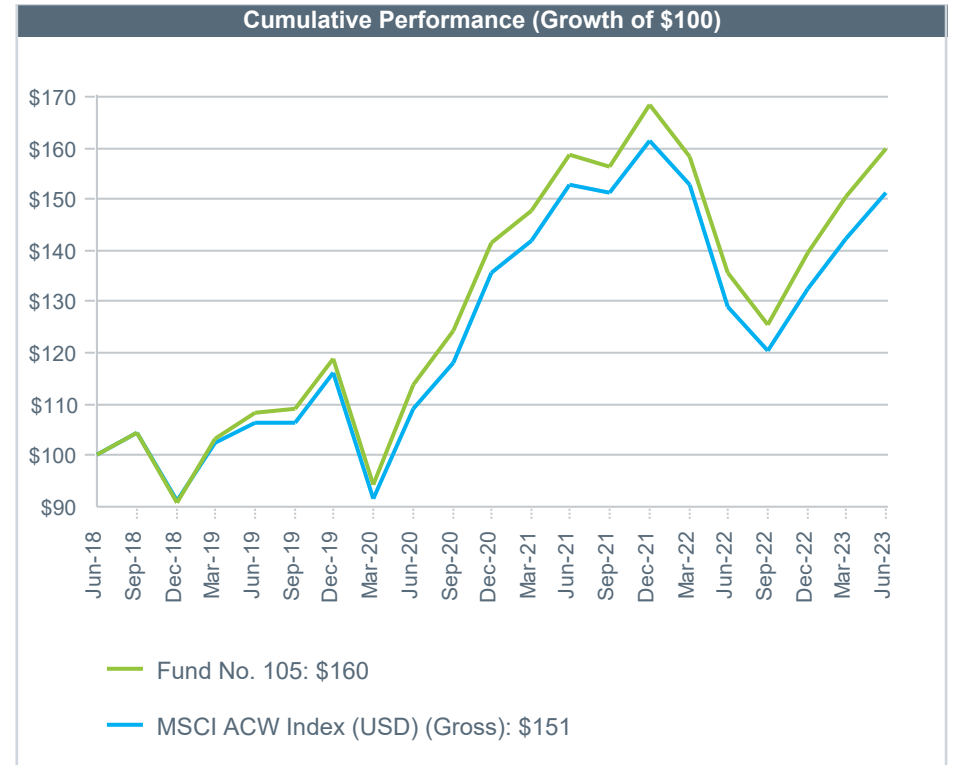
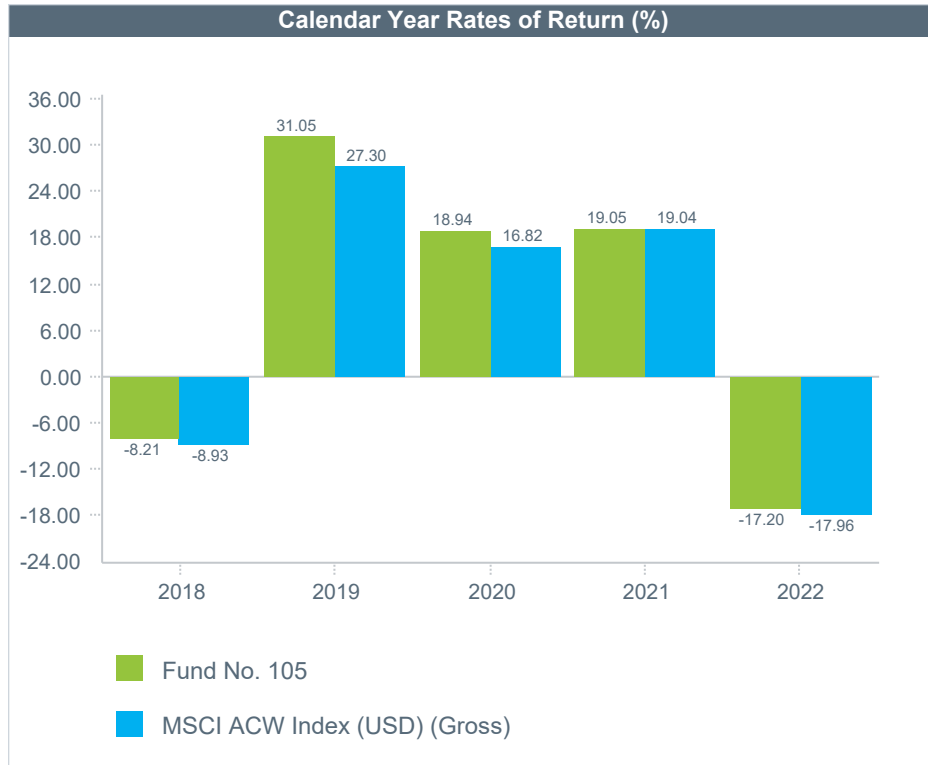


Funds with less history than the specified time period will not appear in the chart.



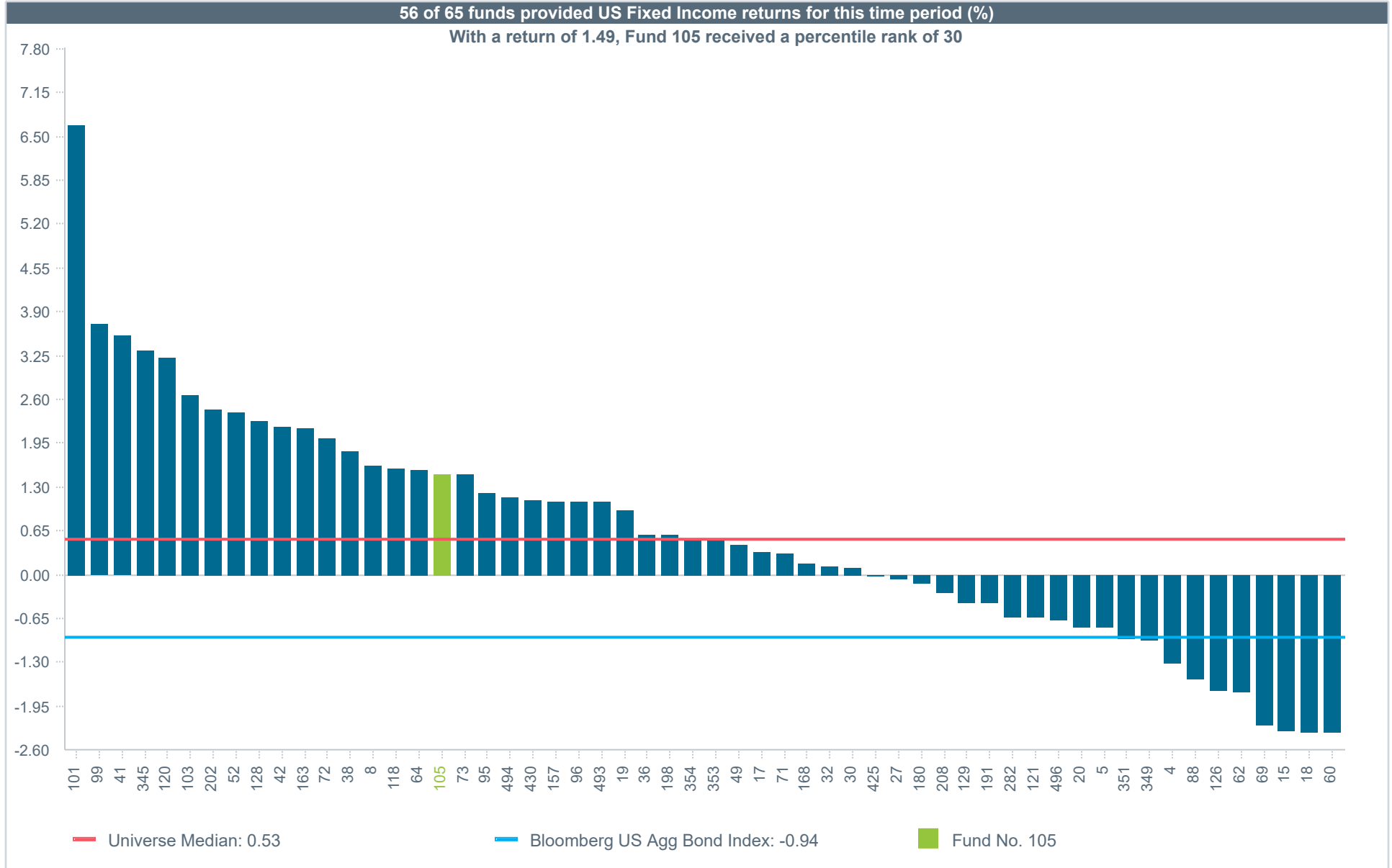
Total Return - Global Equity
Fund No. 105 vs. MSCI ACW Index (USD) (Gross)

As of June 30, 2023



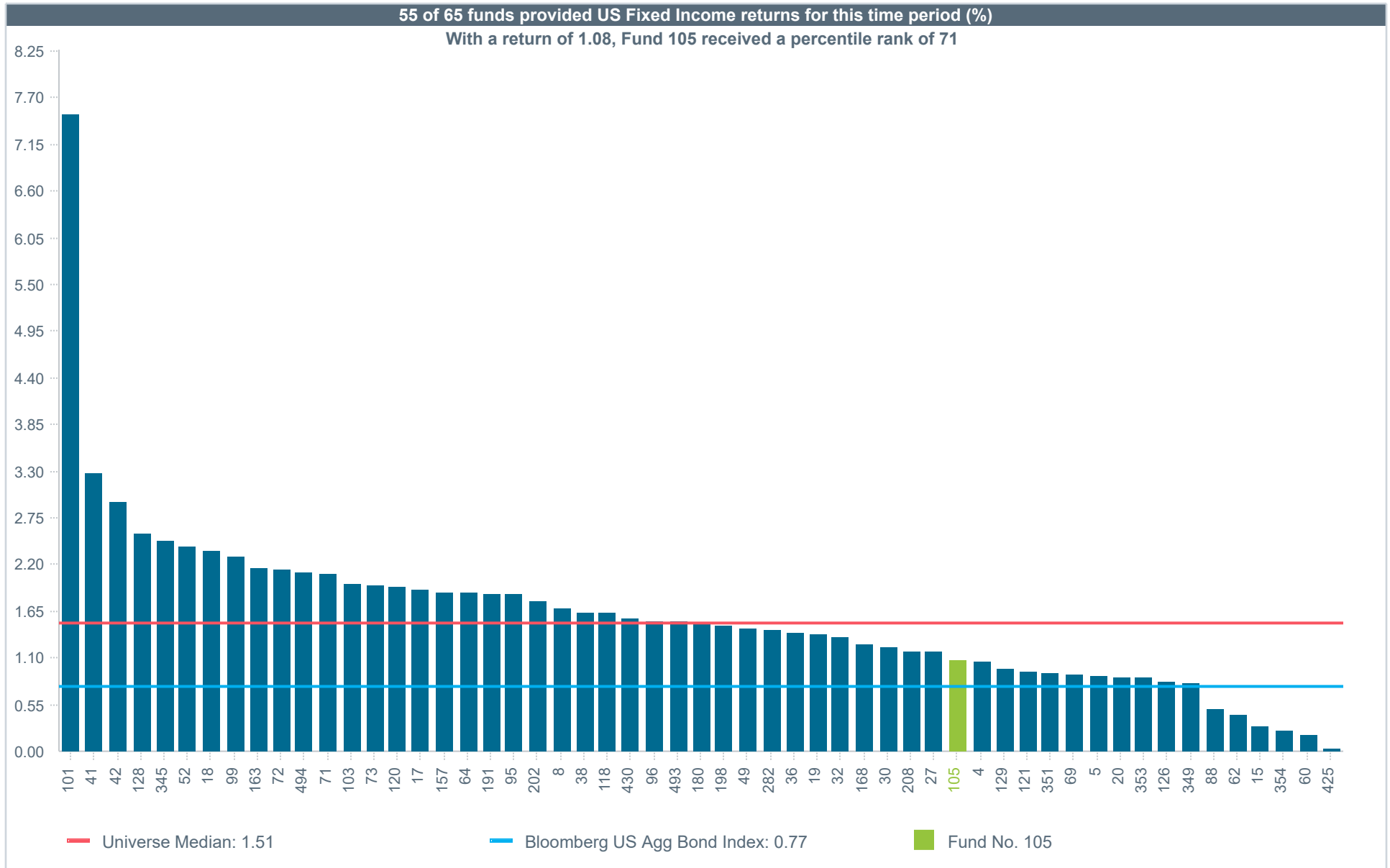
Annualized Returns (%)			
	1 Year	3 Years	5 Years
Fund No. 105	17.85	12.00	9.83
MSCI ACW Index (USD) (Gross)	17.13	11.51	8.64
Variance	0.72	0.49	1.19





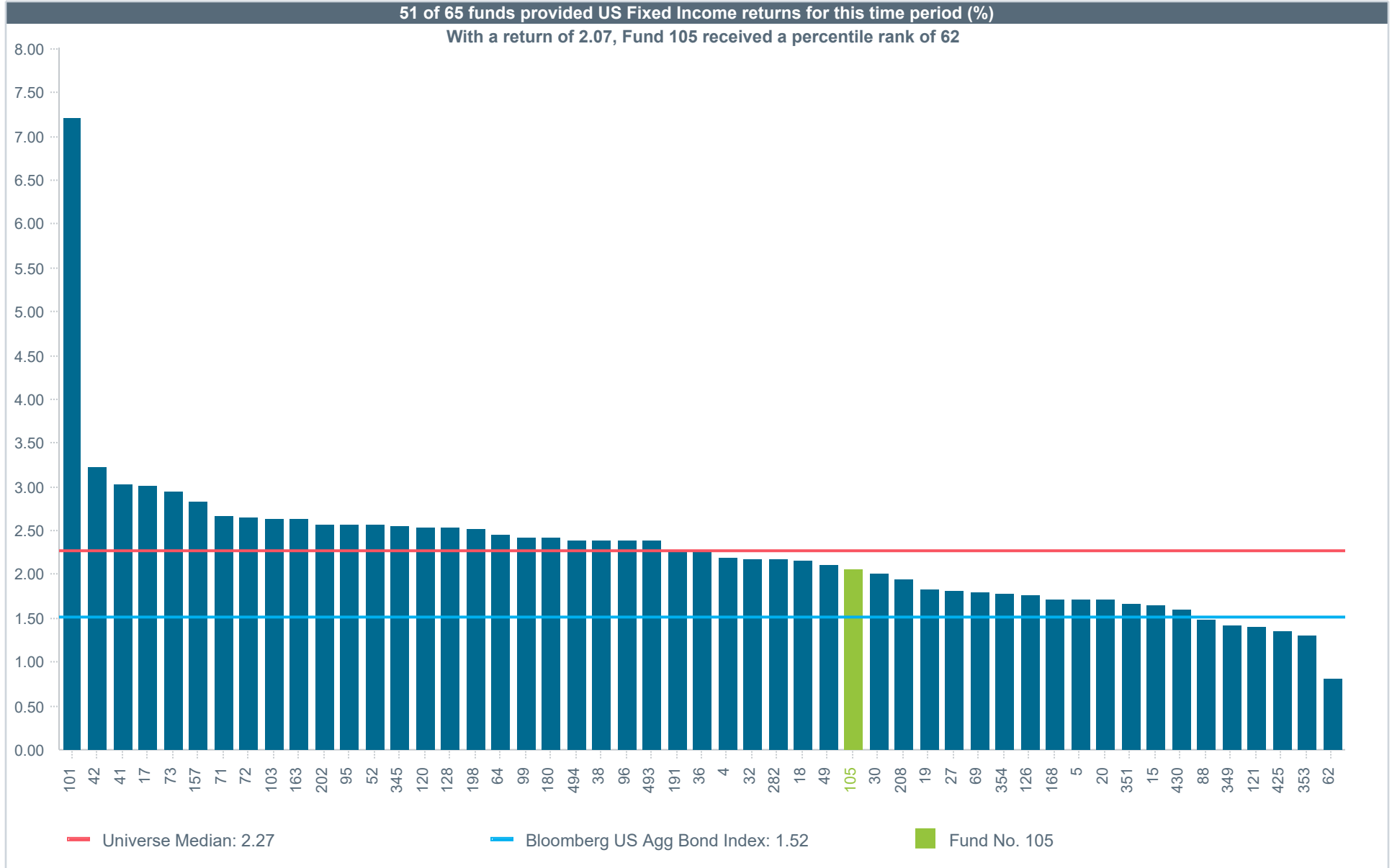
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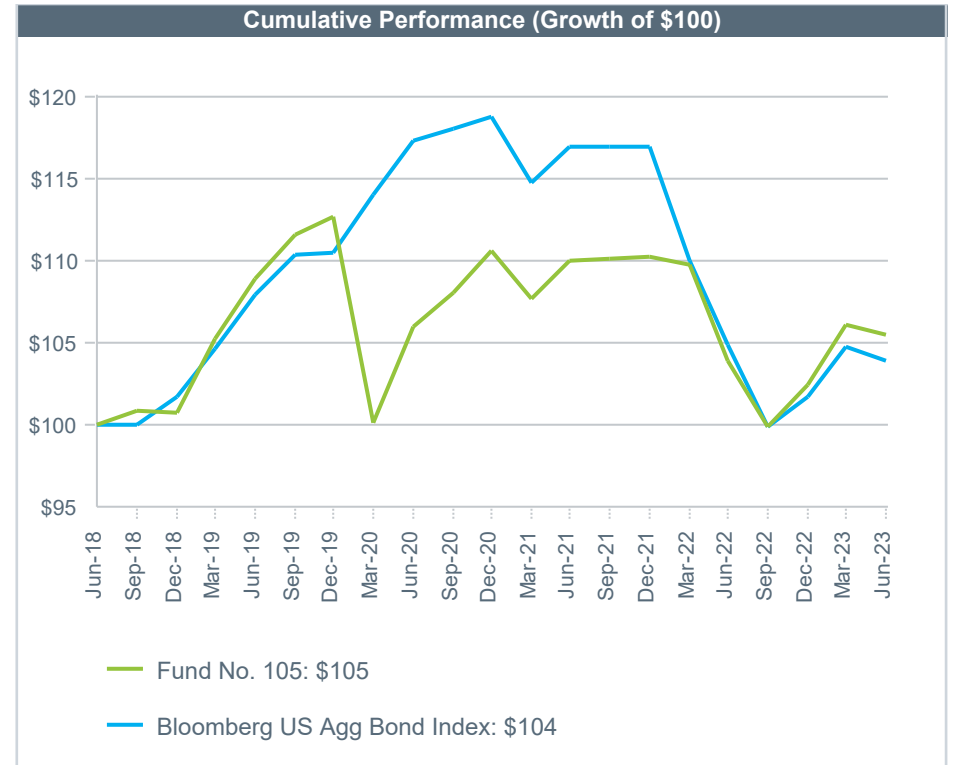
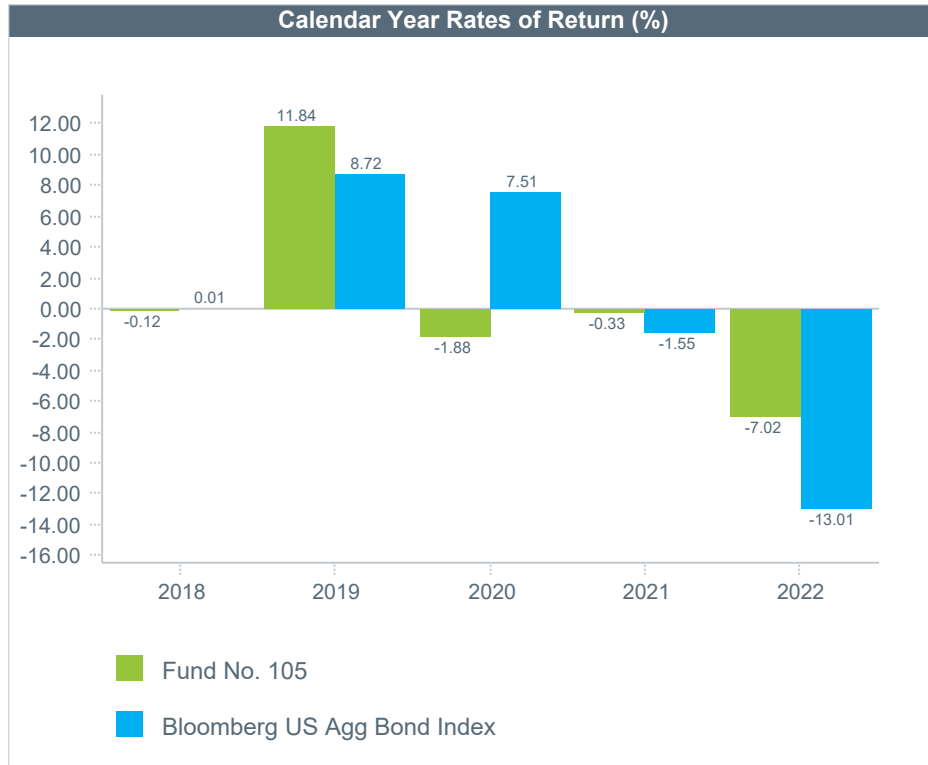


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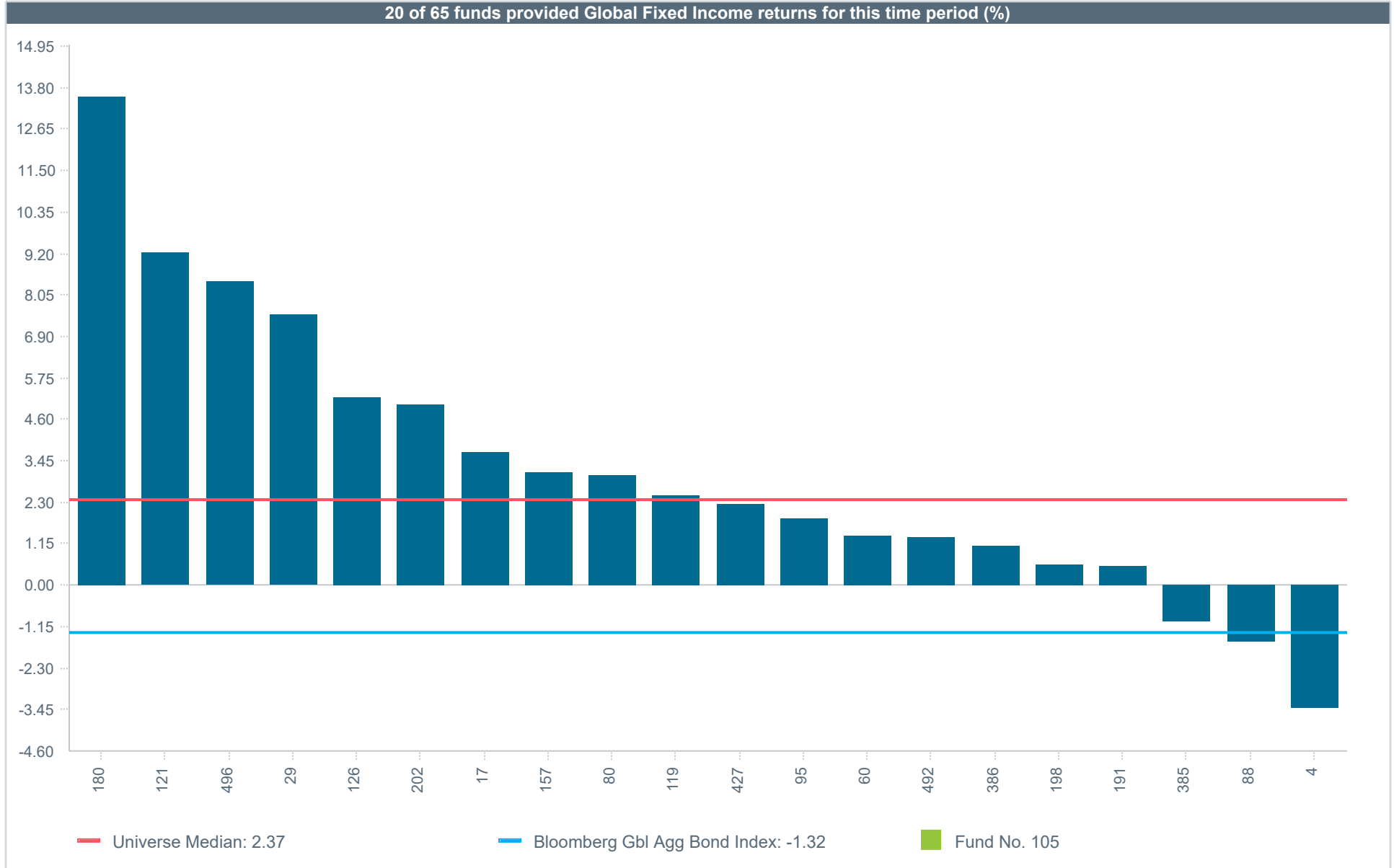
Total Return - US Fixed Income
Fund No. 105 vs. Bloomberg US Agg Bond Index

As of June 30, 2023



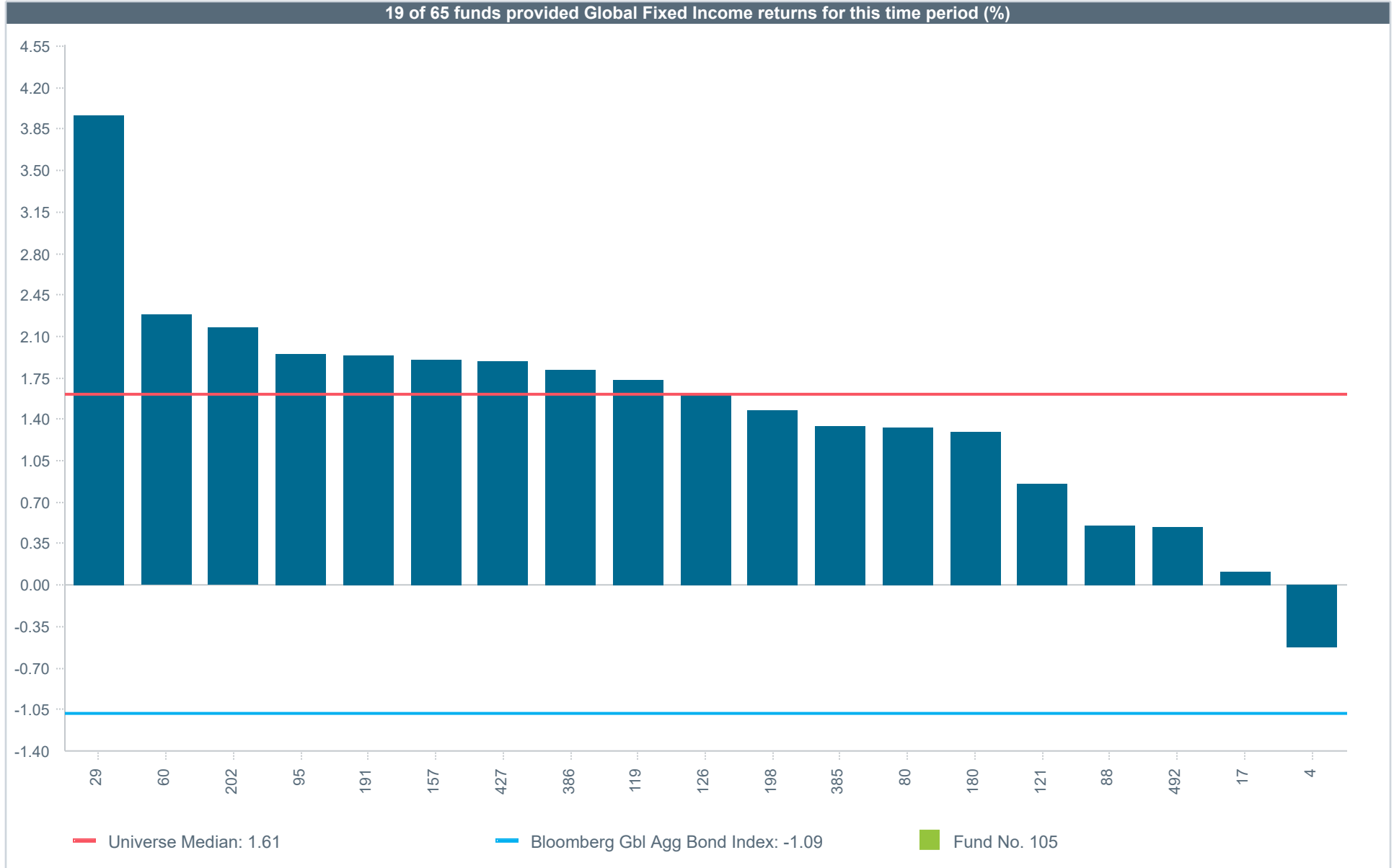
Annualized Returns (%)			
	1 Year	3 Years	5 Years
Fund No. 105	1.49	-0.13	1.08
Bloomberg US Agg Bond Index	-0.94	-3.97	0.77
Variance	2.43	3.84	0.31





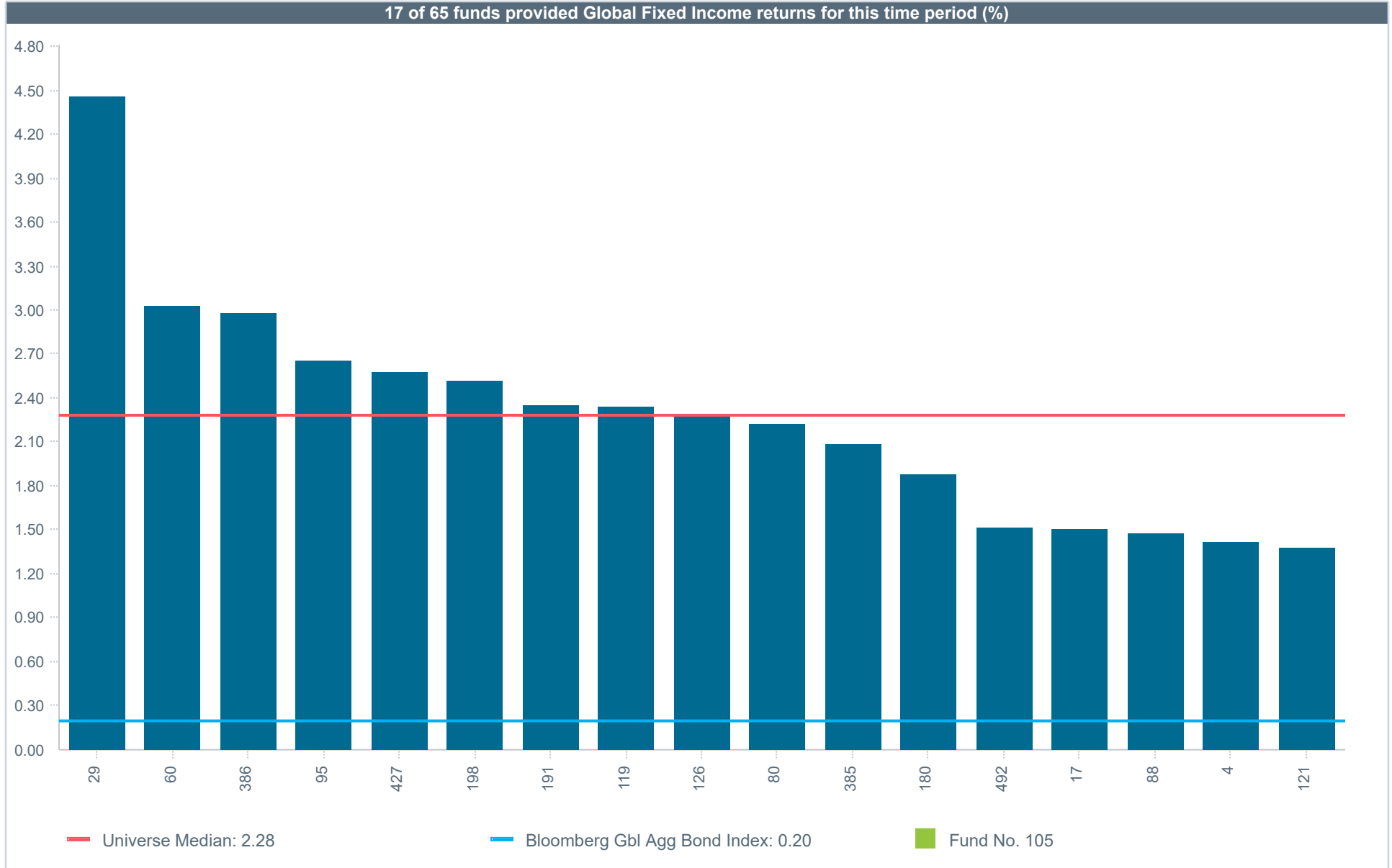
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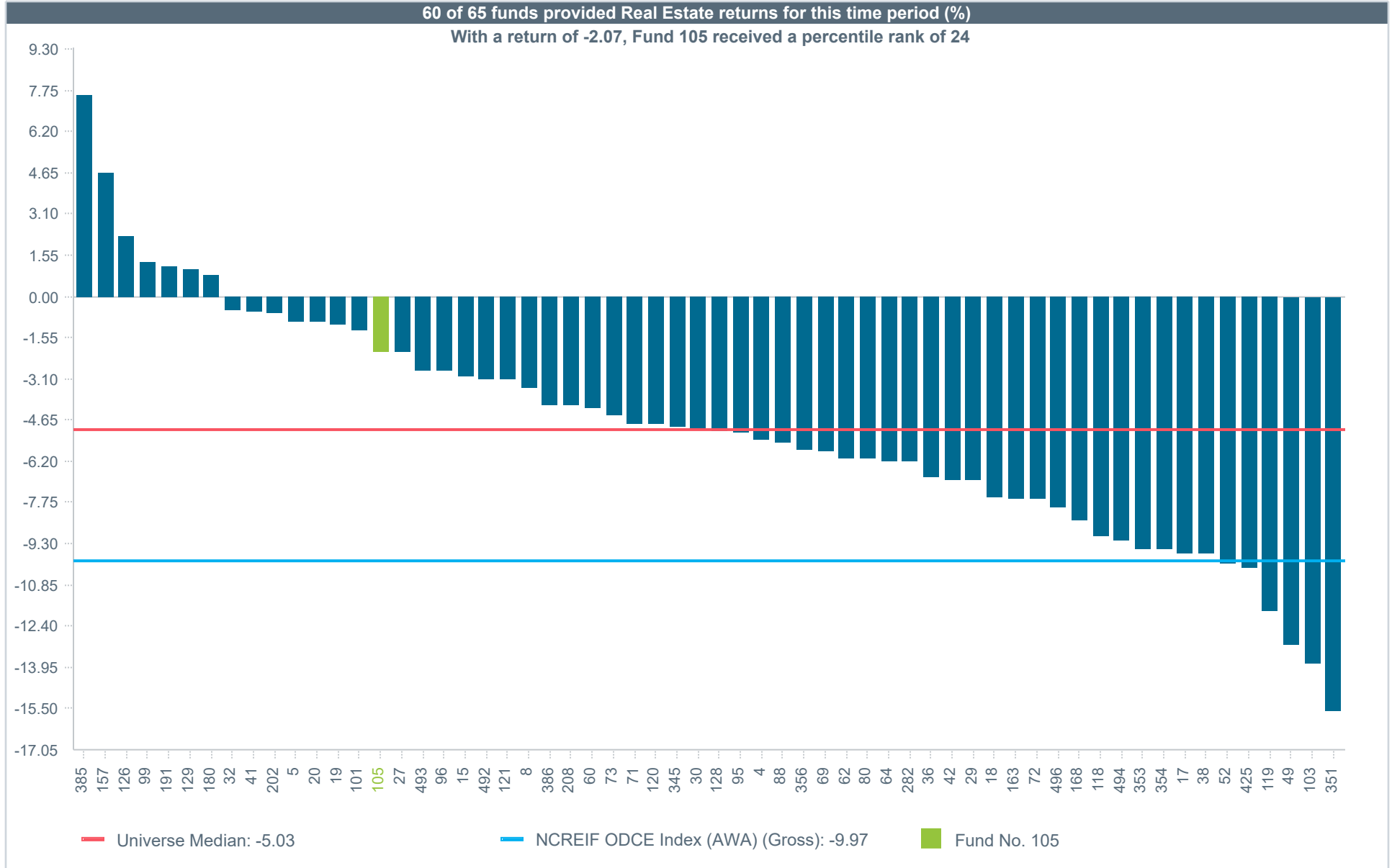
Funds with less history than the specified time period will not appear in the chart.



Calendar Year Rates of Return (%)	Cumulative Performance (Growth of \$100)
<p>Fund No. 105 does not have return data for Global Fixed Income</p>	

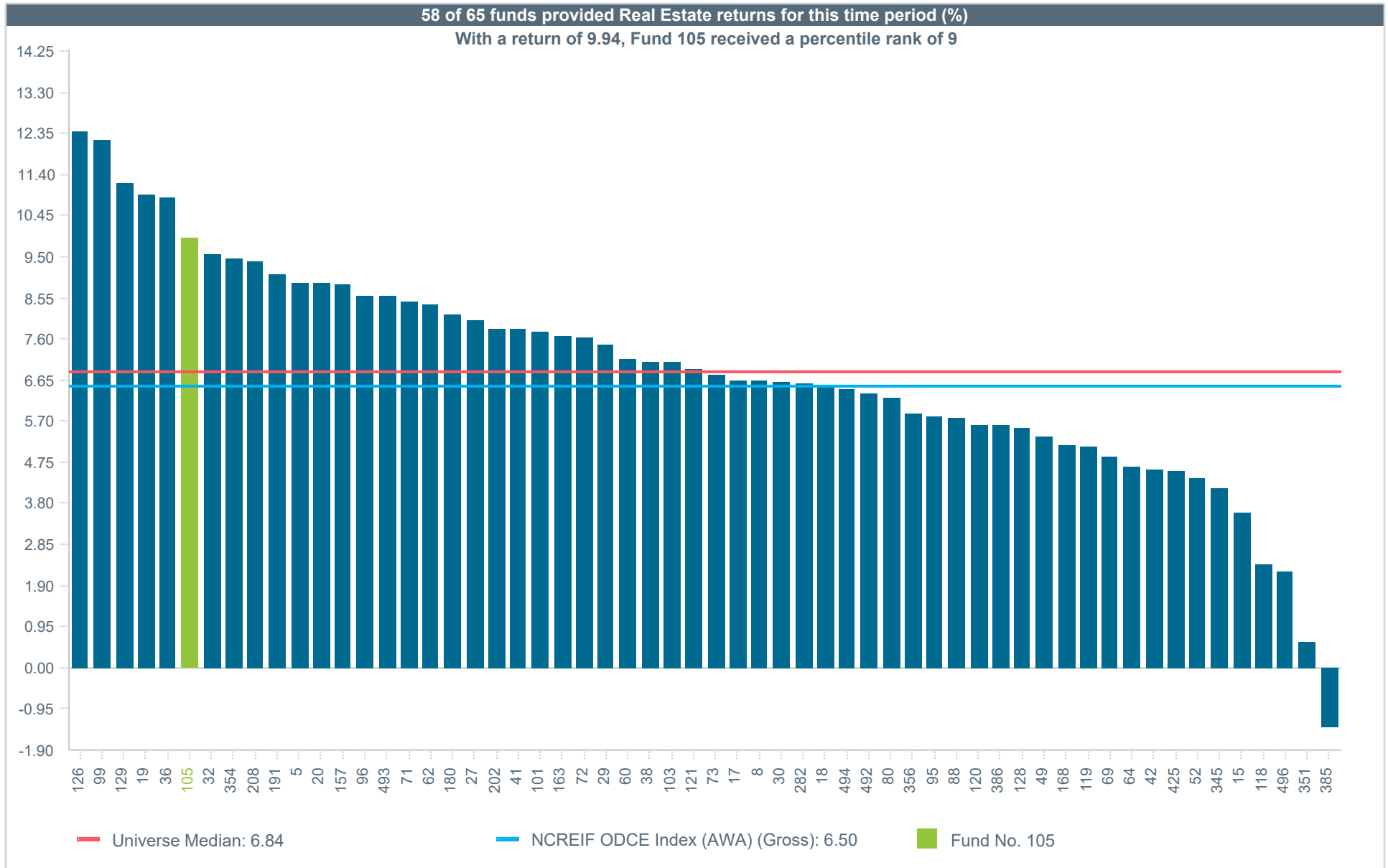
Annualized Returns (%)			
	1 Year	3 Years	5 Years
Fund No. 105	N/A	N/A	N/A
Bloomberg Gbl Agg Bond Index	N/A	N/A	N/A
Variance	N/A	N/A	N/A





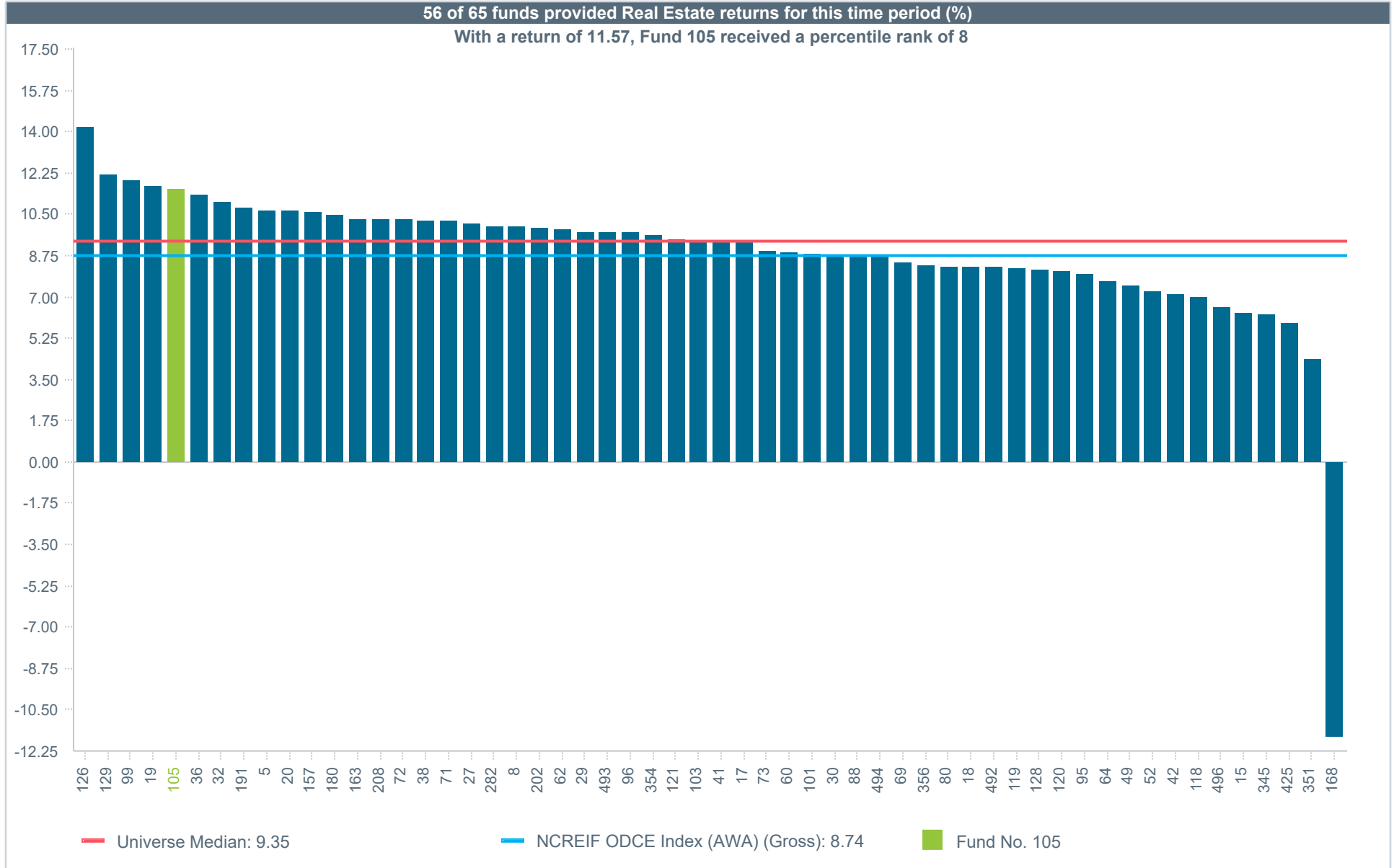
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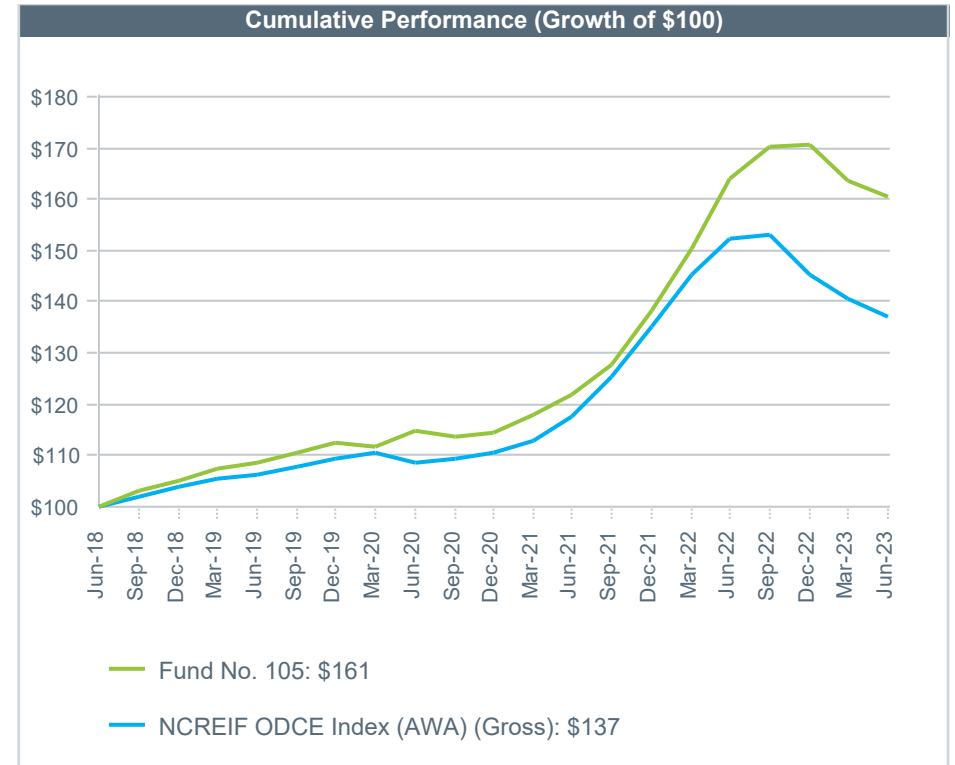
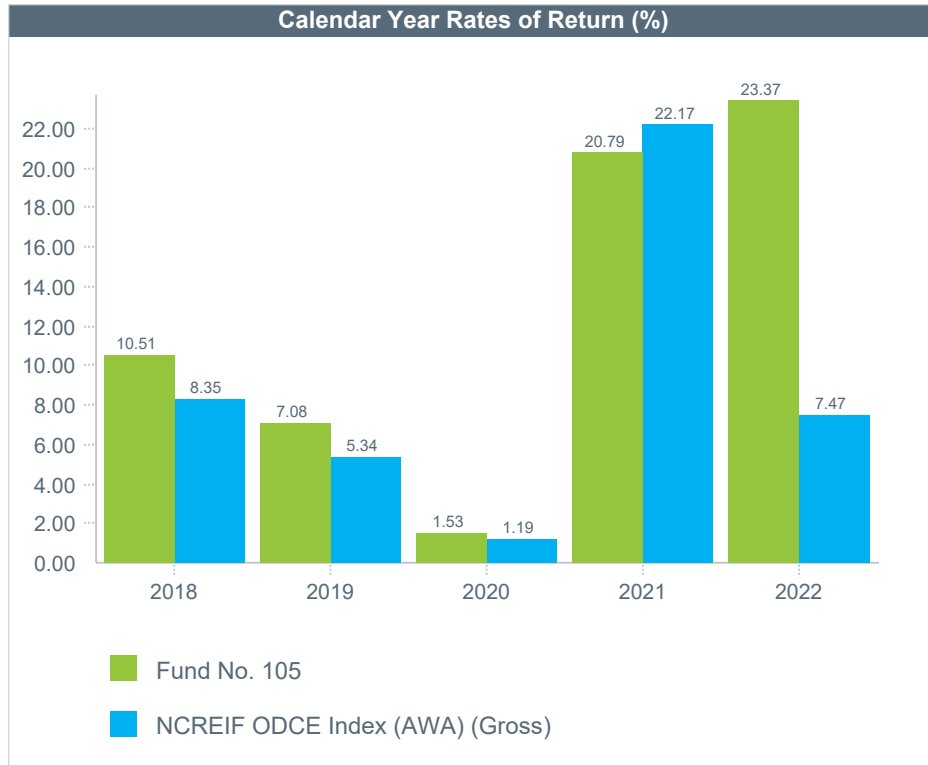
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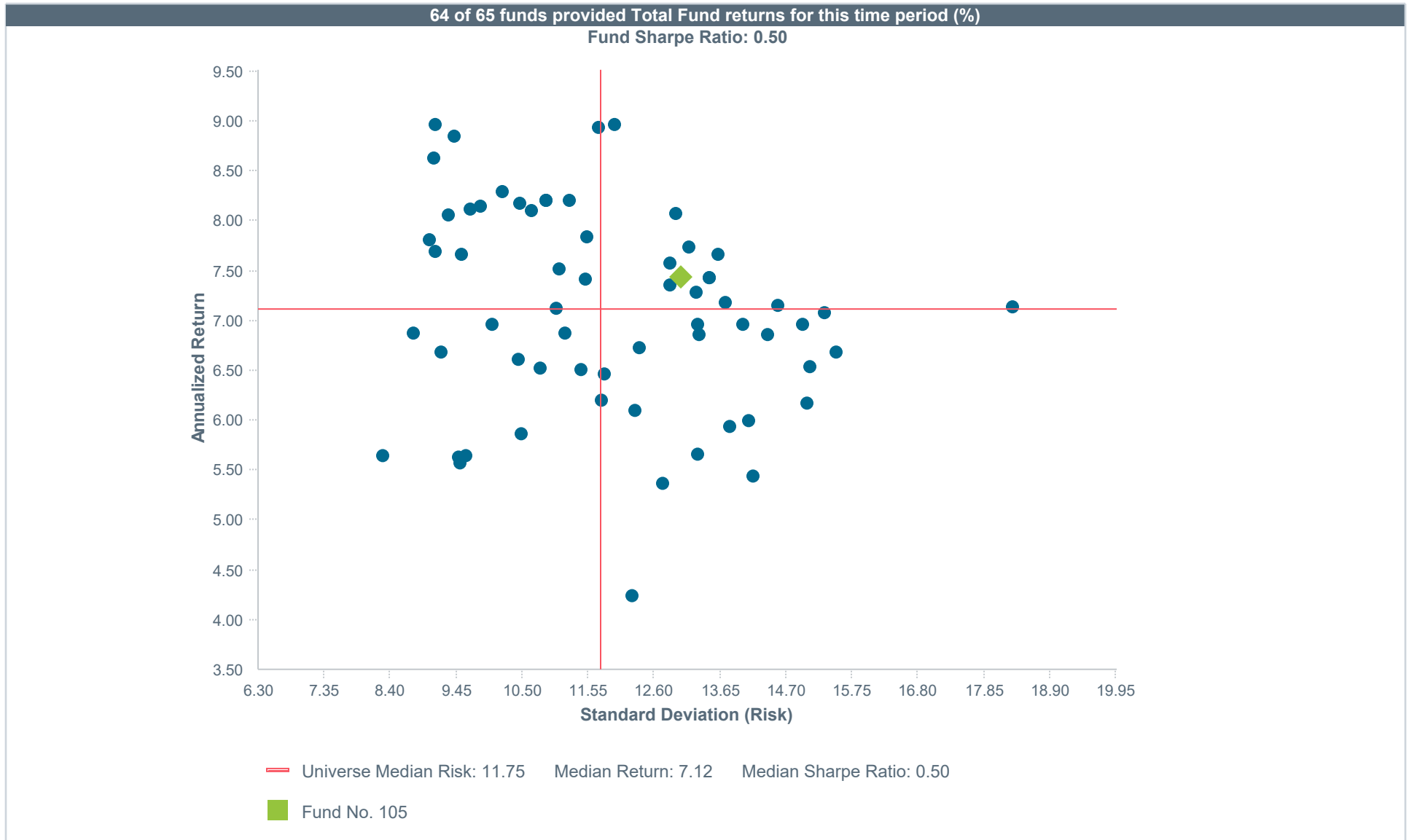


Annualized Returns (%)

	1 Year	3 Years	5 Years
Fund No. 105	-2.07	11.79	9.94
NCREIF ODCE Index (AWA) (Gross)	-9.97	7.99	6.50
Variance	7.90	3.80	3.44

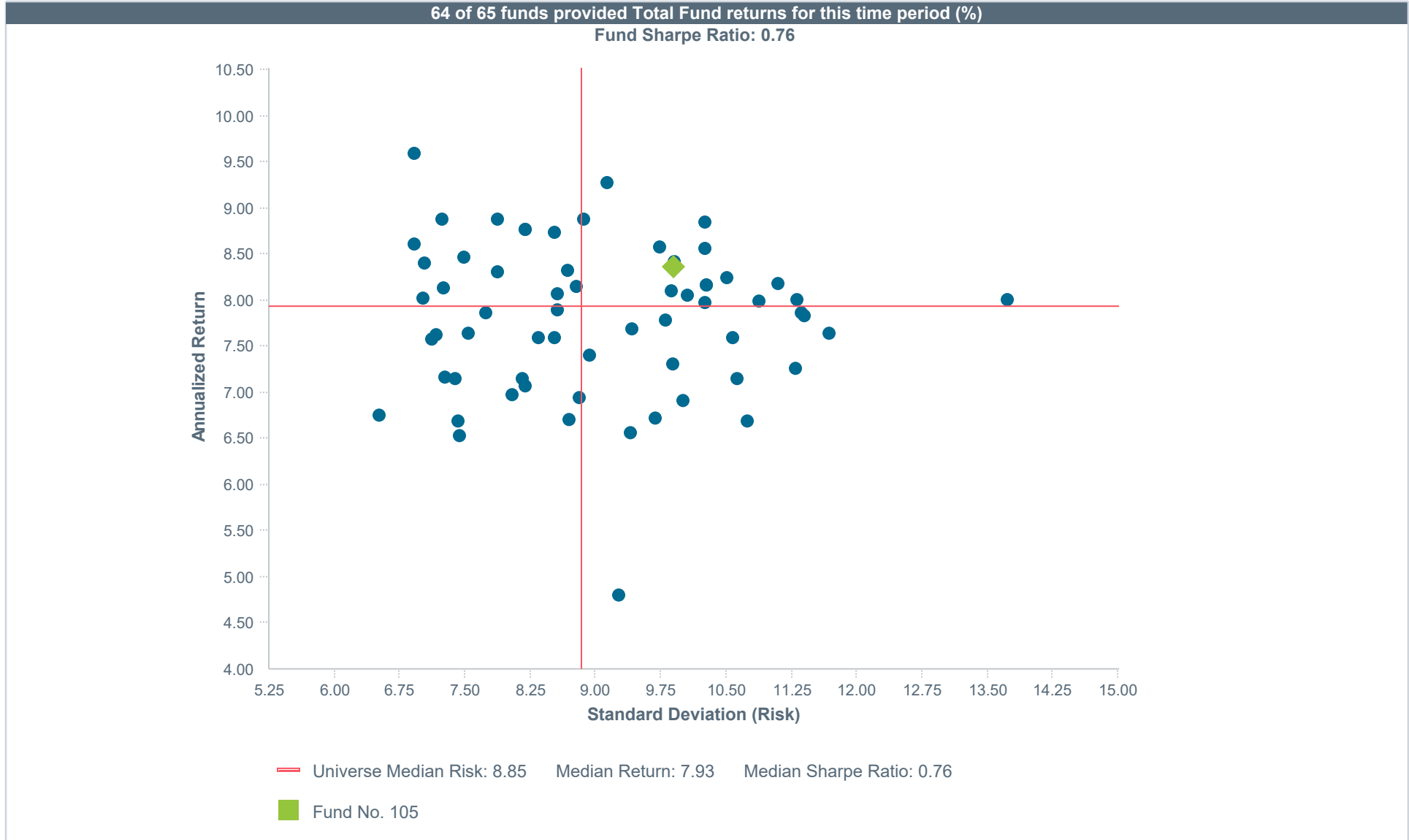


5 Year Annualized Total Fund Returns vs. Standard Deviation



Funds with less history than the specified time period will not appear in the chart.





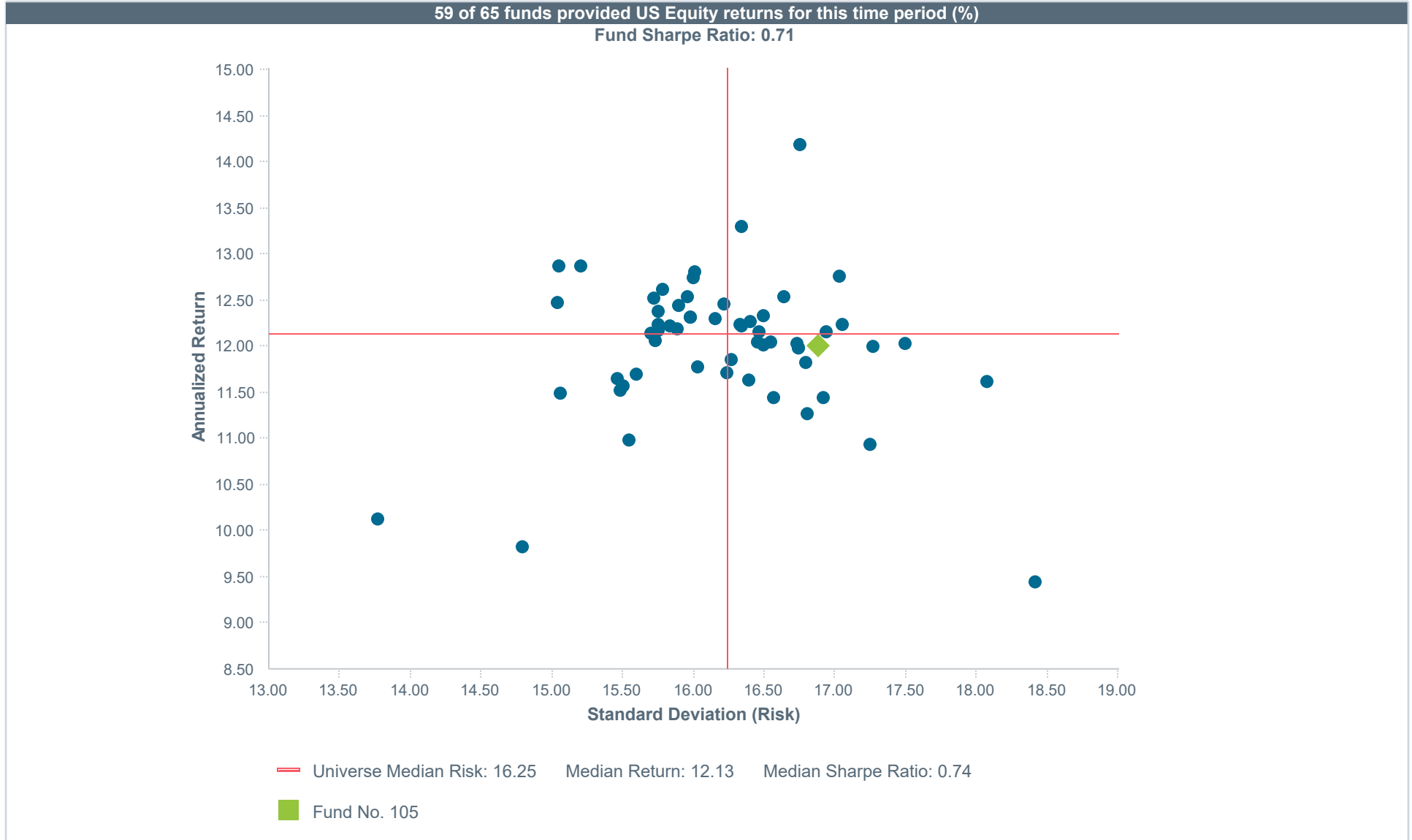
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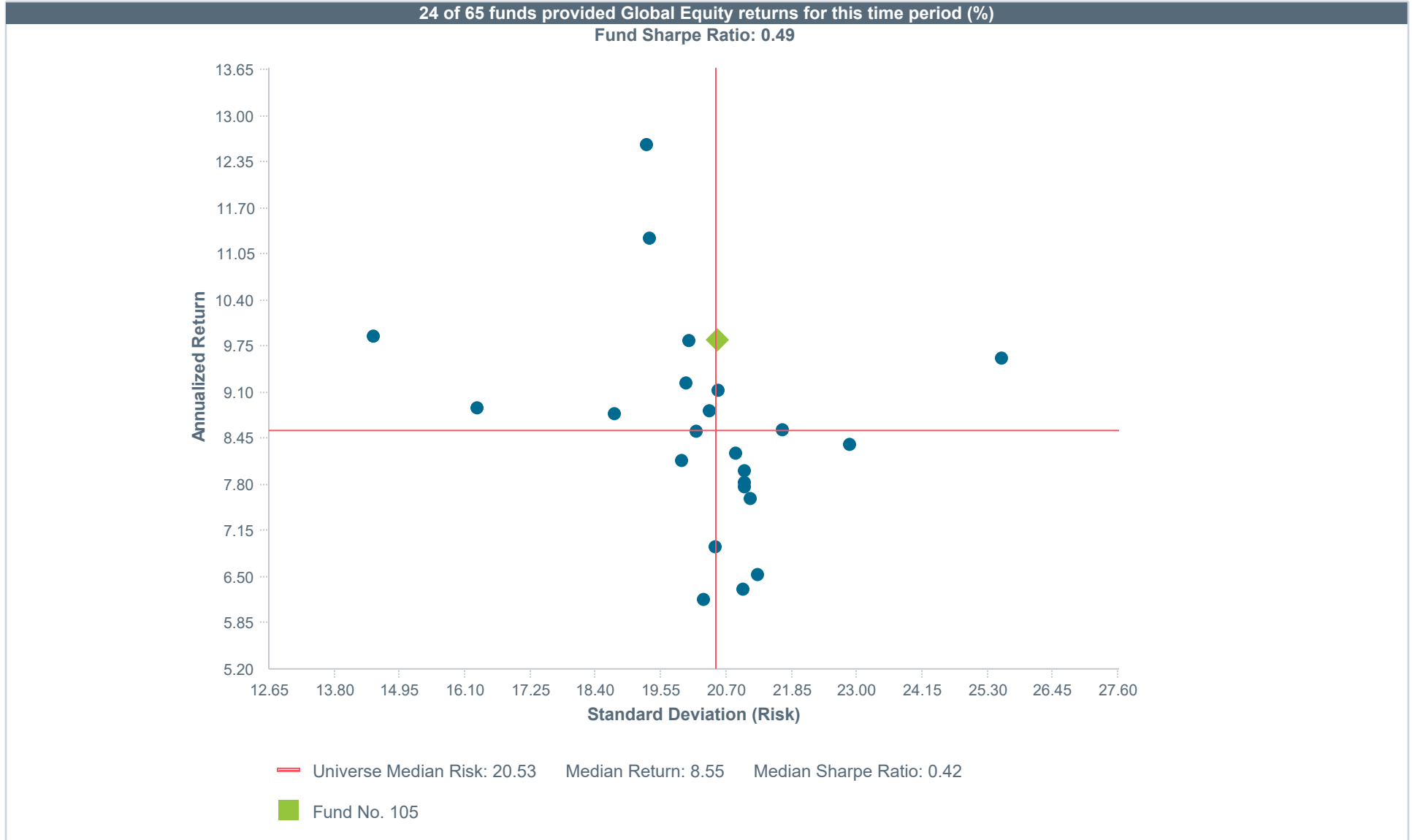
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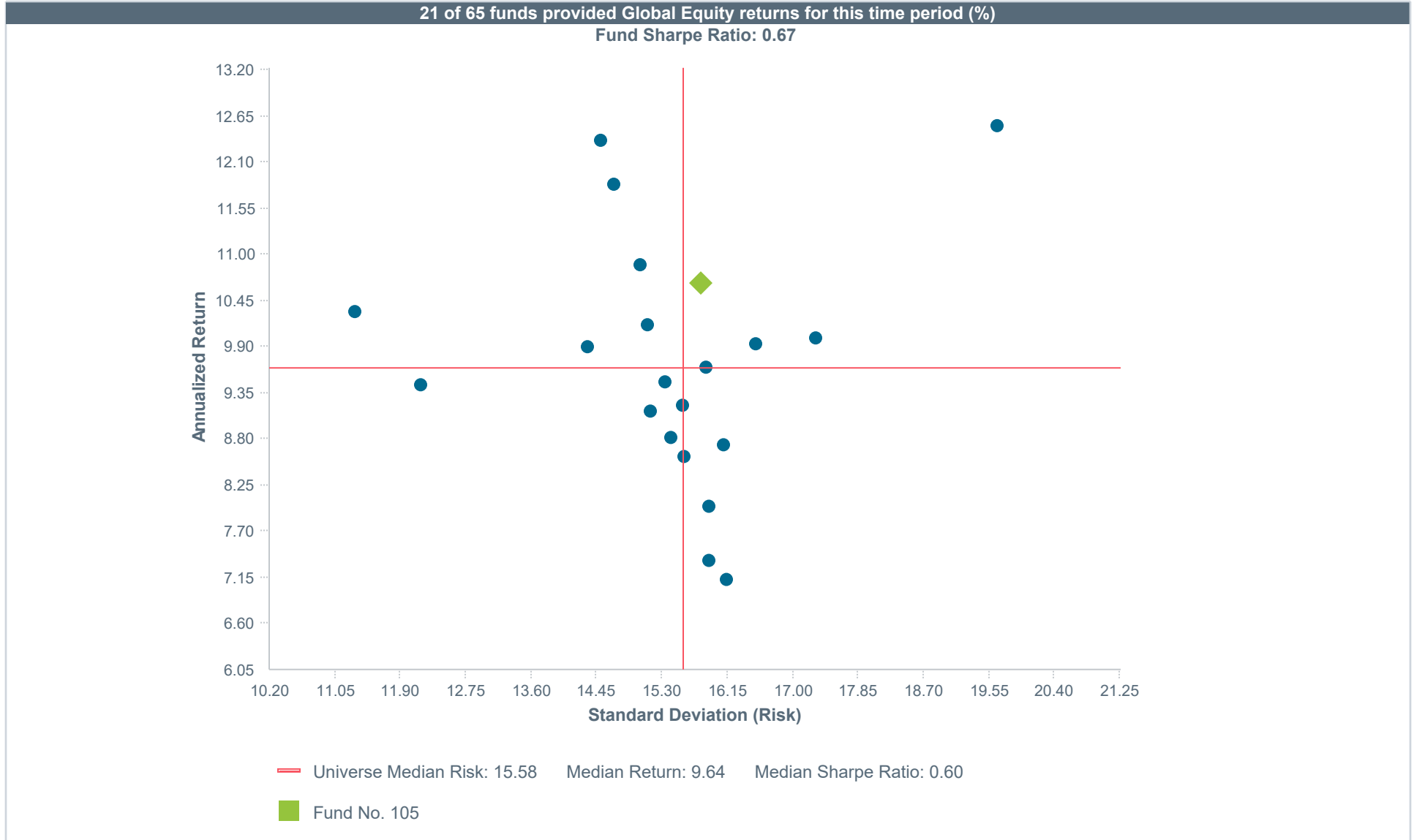
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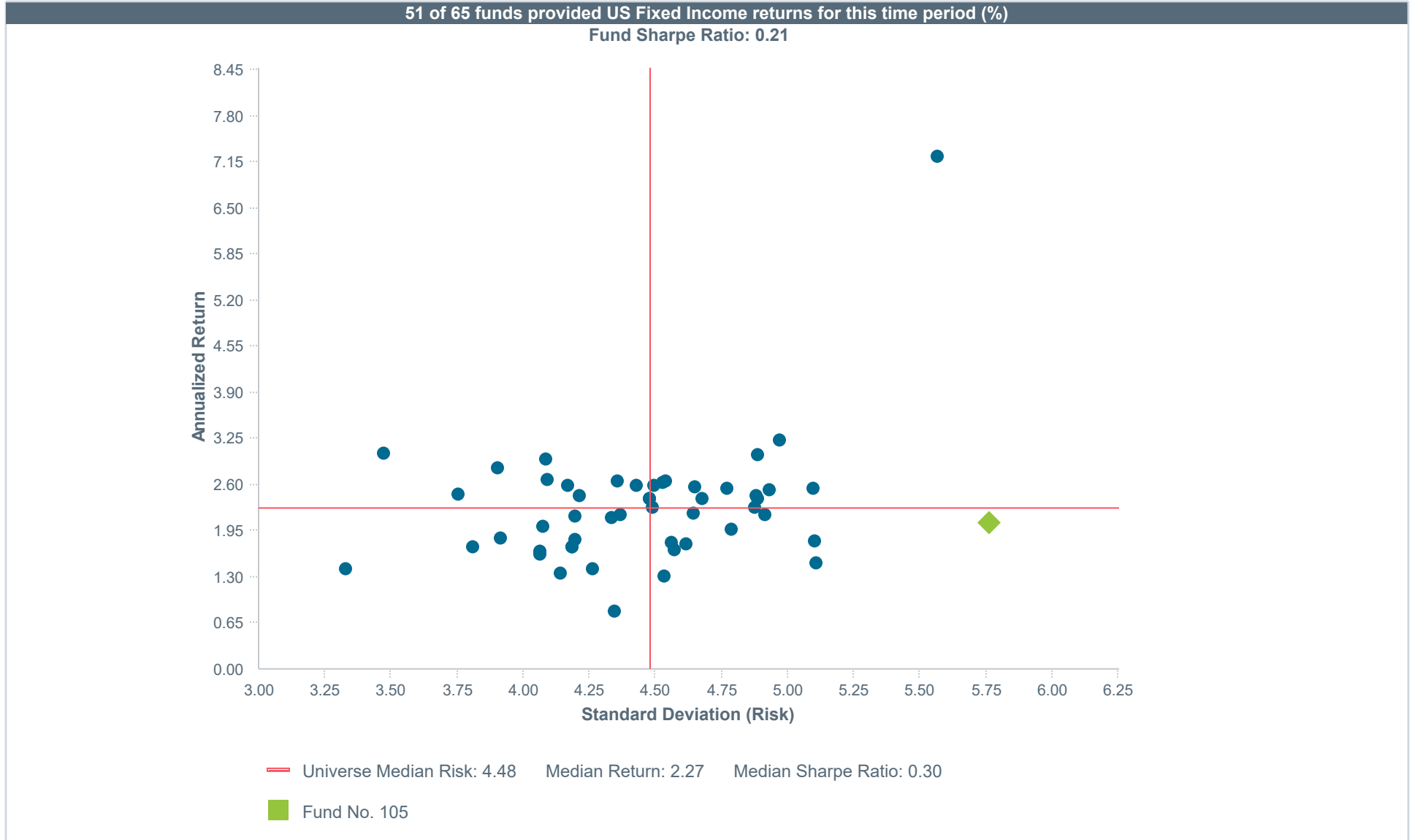
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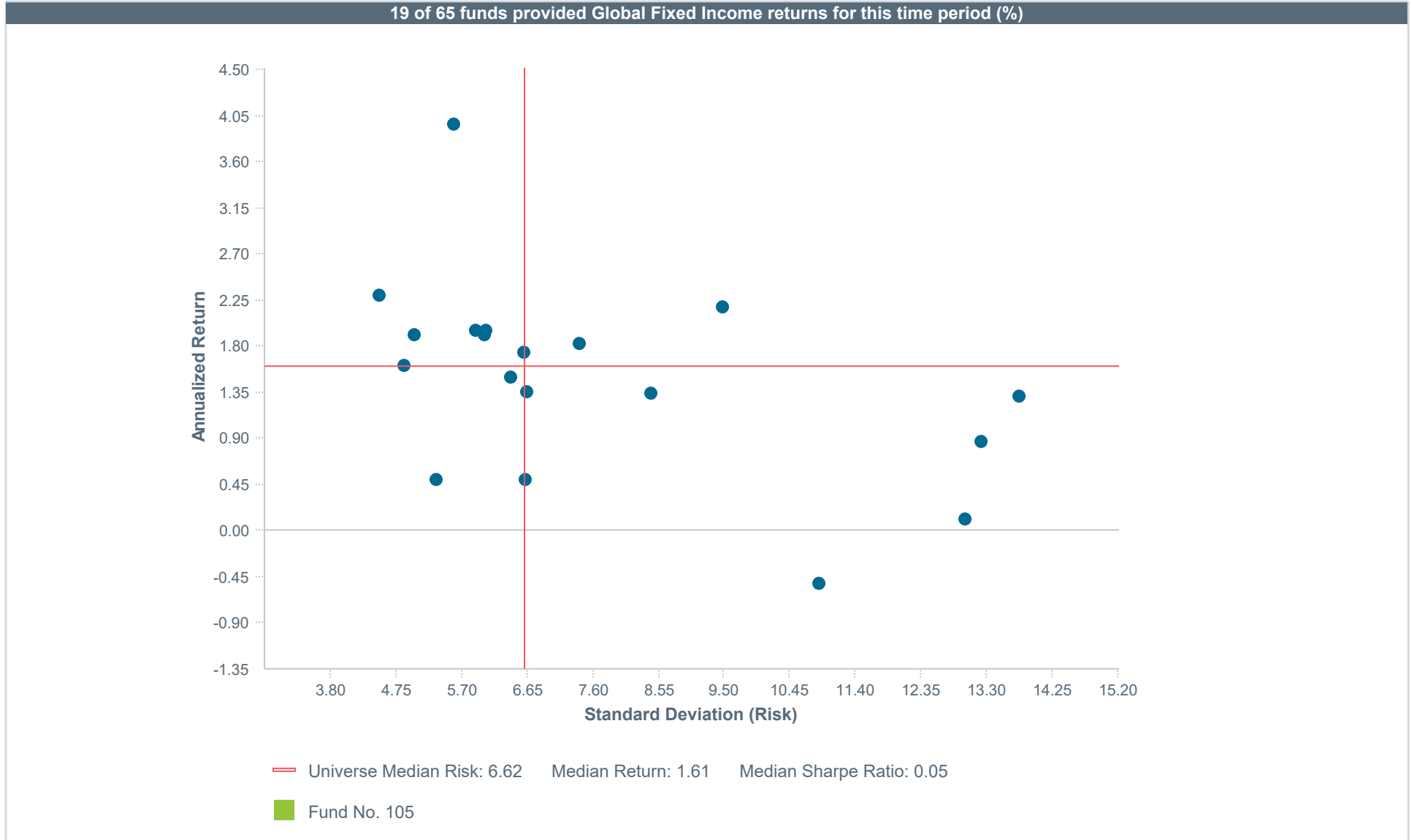
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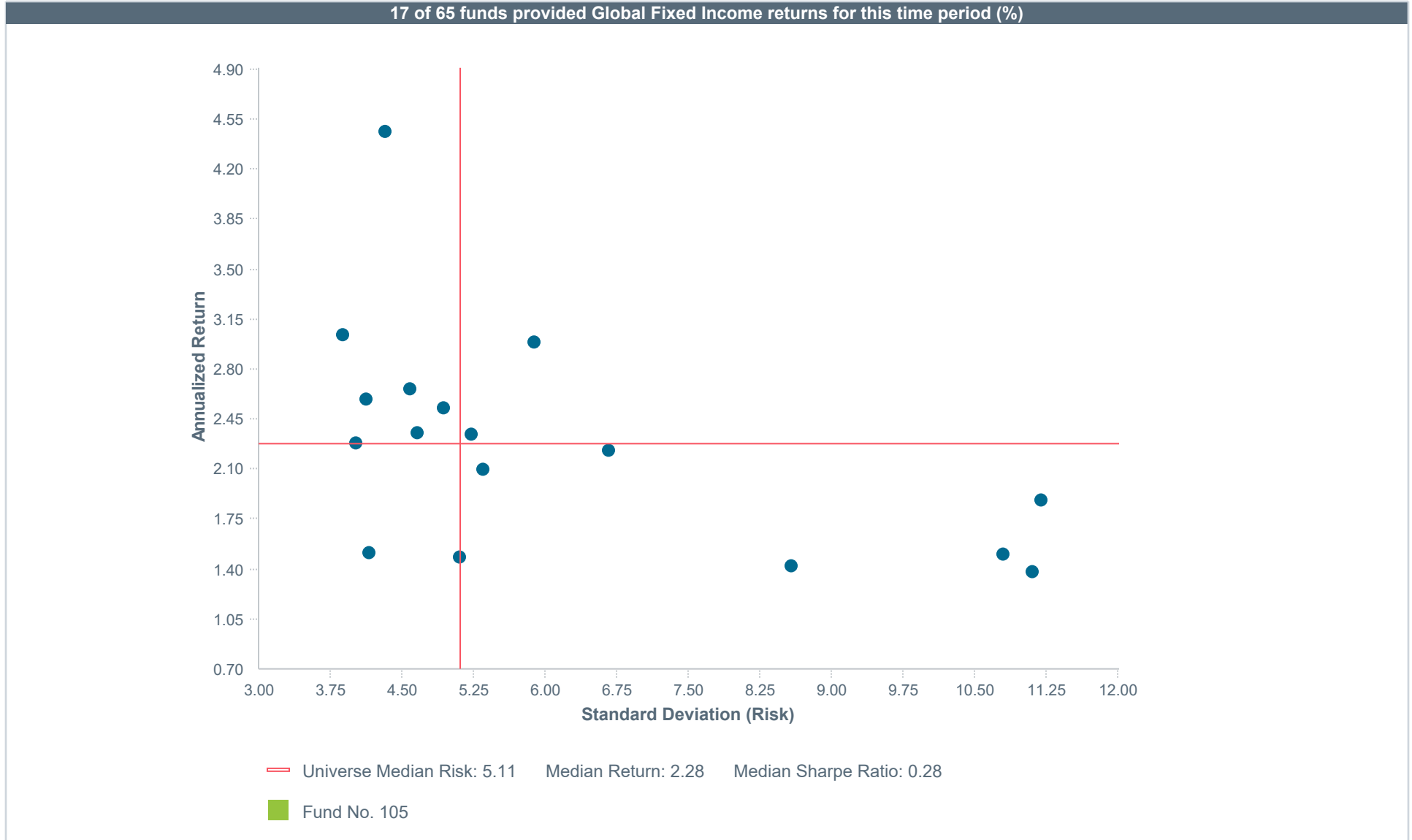
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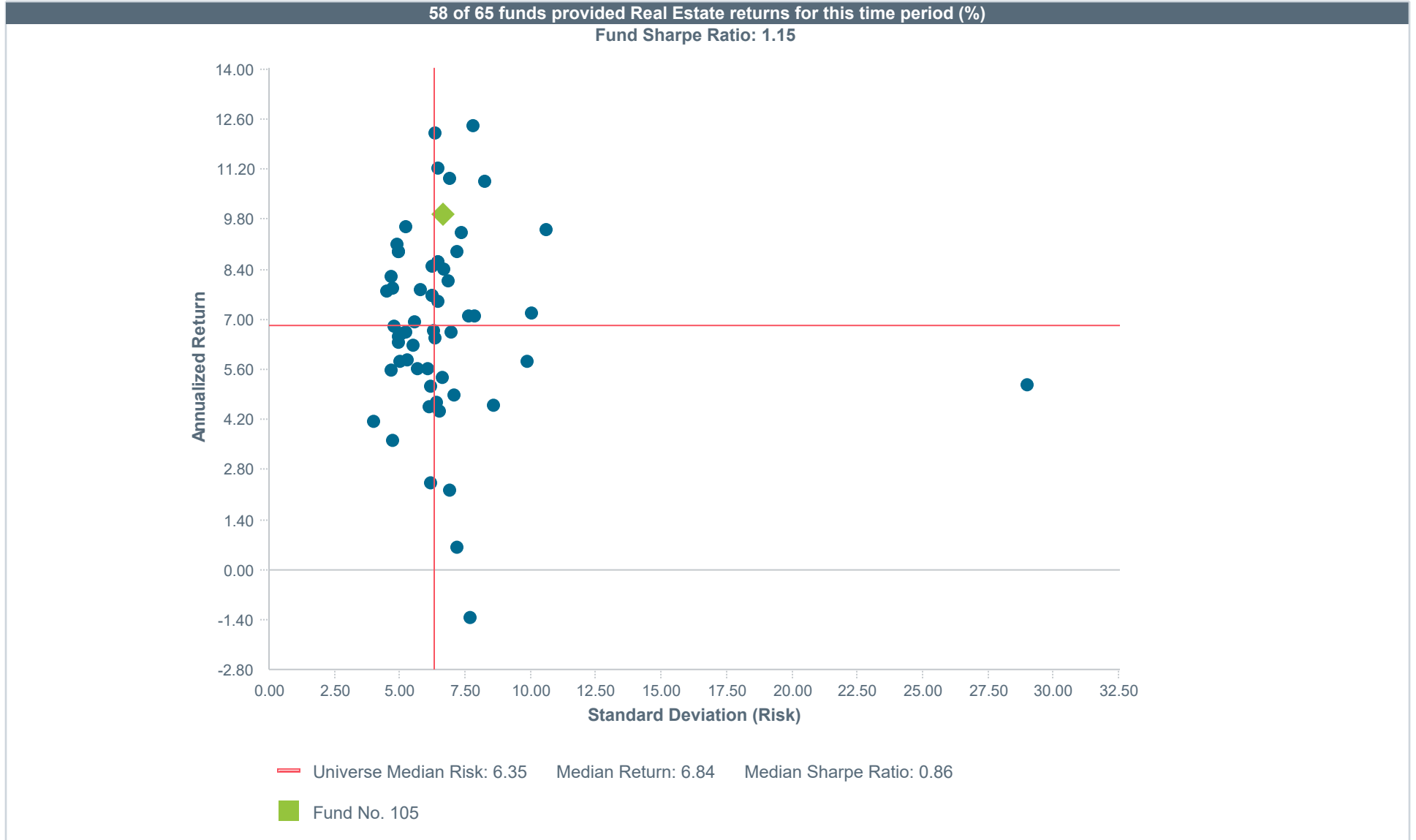
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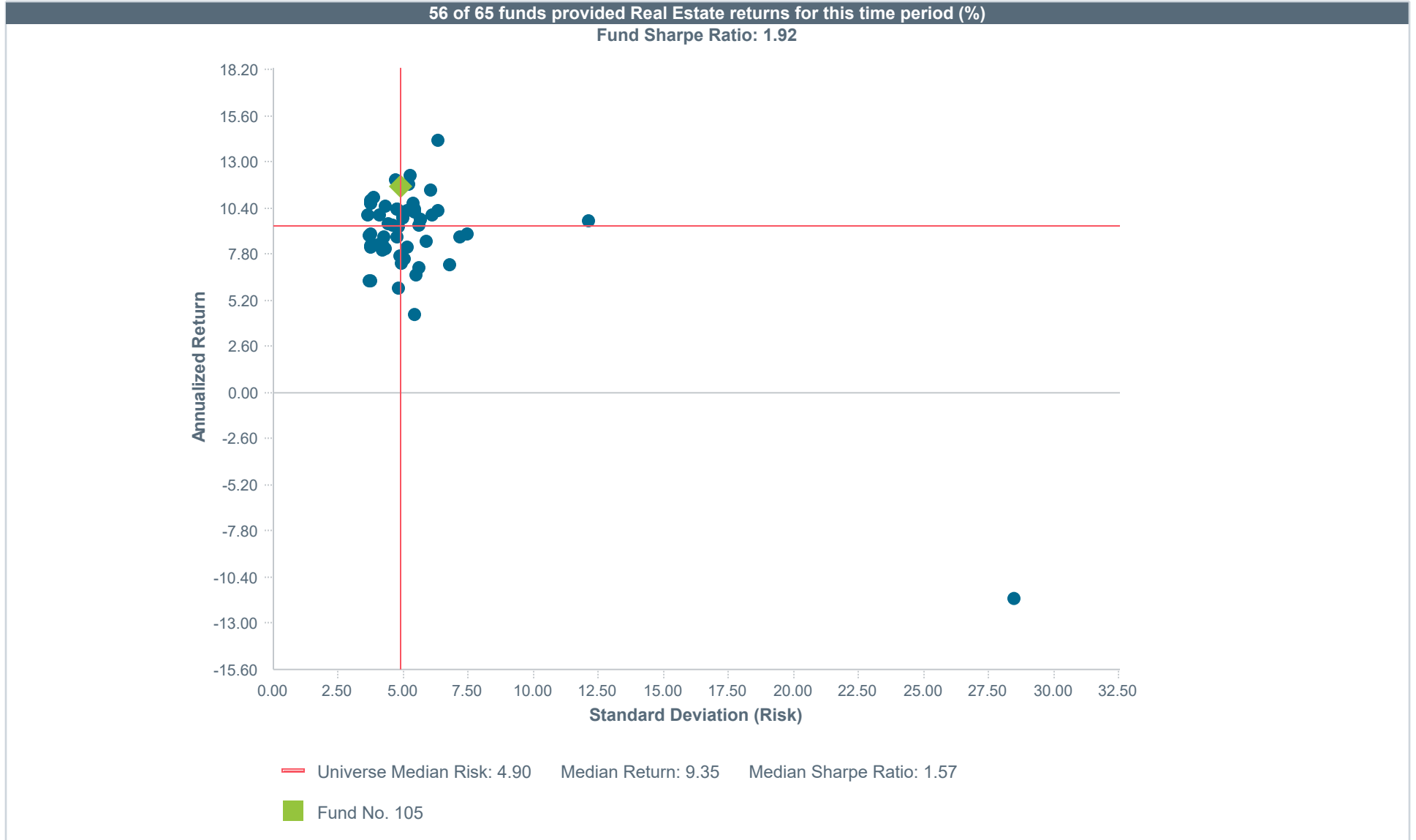
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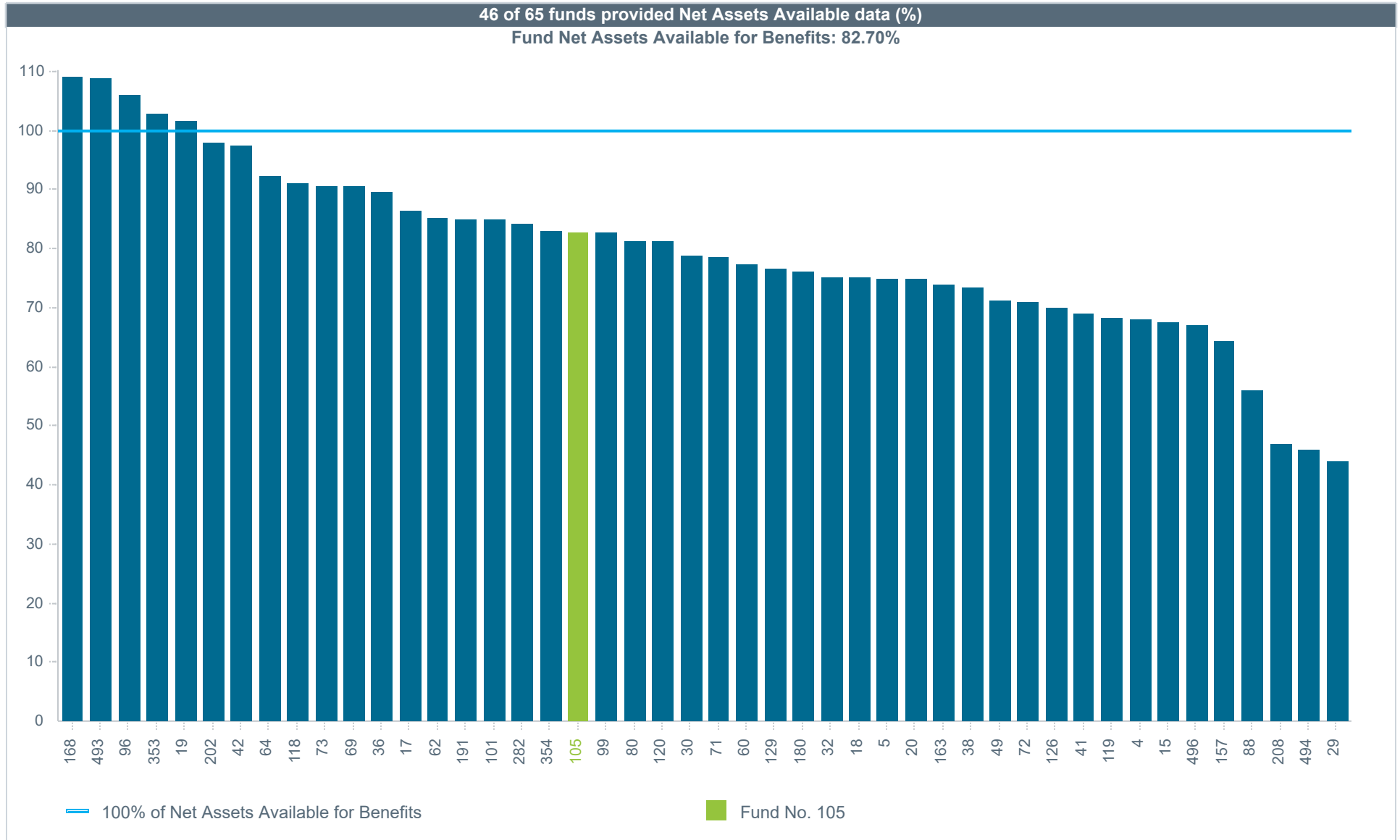


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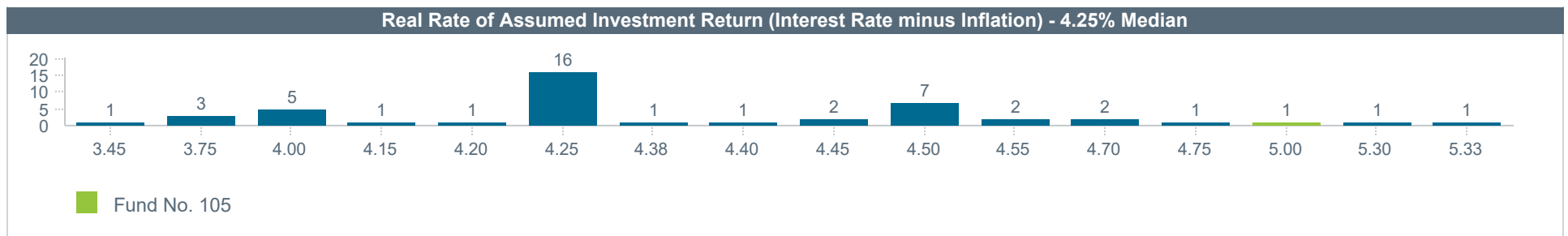
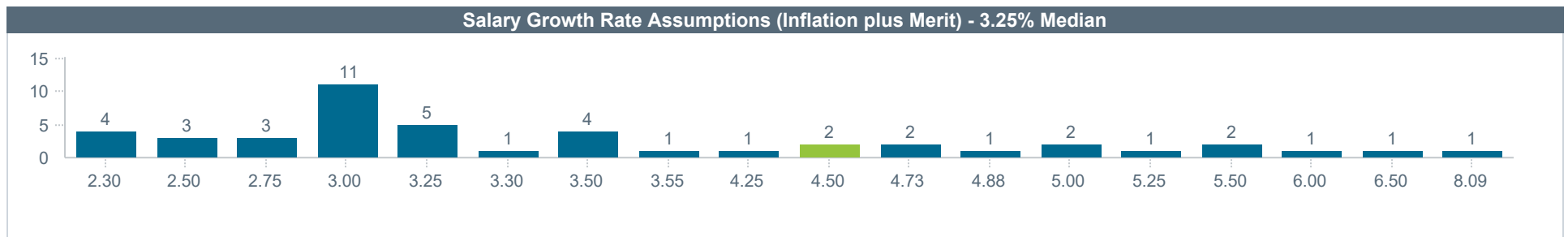
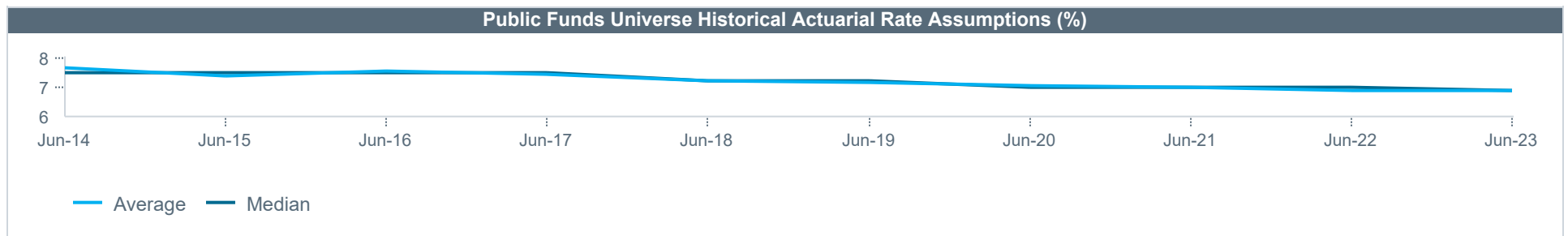
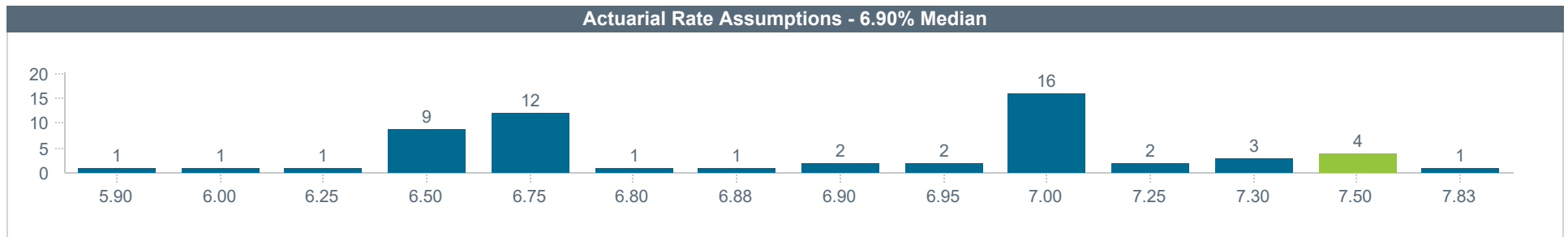
Net Assets Available For Benefits
Expressed as a Percentage of the Pension Benefit Obligation

As of June 30, 2023



Funds that did not provide data will not appear in the chart.





Funds that did not provide data will not appear in the chart.



Overlay Survey Summary

Q1. Of the 65 participants in the 2023 Q2 Public Fund Report, 49 participants provided a response to the Overlay Survey. Of those participants, 21 are currently using a form of overlay, 1 is considering evaluating a form of overlay, and 27 are not currently using or considering evaluating any form of overlay.

Q2. Of the 20 participants that provided a response to the Overlay Survey and have exposure to an overlay manager or managers, the purposes of the overlay programs are distributed as follows:

- 25 % Manage foreign currency risk
- 25 % Generate alpha
- 0 % Match Plan liabilities more closely (either as part of an explicit or conceptual framework)
- 0 % Express a view on US Dollar
- 0 % Manage market risk within an LDI construct
- 30 % Tactical asset allocation
- 60 % Cash equitization
- 50 % Rebalancing management
- 35 % Transition management
- 15 % Other

Q3. Of the 9 participants that provided a response to the Overlay Survey and have exposure to a currency manager or managers, the program structures are distributed as follows:

- 33 % Static hedge ratio
- 33 % Dynamic hedging program where manager varies the hedge ratio
- 44 % Alpha generating currency manager focused on absolute return

Q4. Of the 4 participants that provided a response to the Overlay Survey and indicated use of a hedge ratio on a currency program, the responses are distributed as follows:

- 1 response indicated 50 % hedge on All foreign currency exposure in the Fund
- 3 responses indicated 50 % hedge on Developed Equity exposure
- 1 response indicated 65 % hedge on Developed Equity exposure
- 2 responses indicated 50 % hedge on International Equity exposure
- 1 response indicated 65 % hedge on International Equity exposure
- 1 response indicated 50 % hedge on Other



Supplemental Questions

Q1. Of the 43 respondents, the methods of Private Equity reporting are distributed as follows:

- 44 % Valuations and cash flows are updated and reflected as received by custodian
- 5 % Reported on a 1 month lag to account for additional valuations and cash flow activity
- 51 % Reported on a 1 quarter lag to account for most all valuations and cash flow activity

Q2. Of the 48 respondents, the methods of Private Real Estate reporting are distributed as follows:

- 52 % Valuations and cash flows are updated and reflected as received by custodian
- 6 % Reported on a 1 month lag to account for additional valuations and cash flow activity
- 42 % Reported on a 1 quarter lag to account for most all valuations and cash flow activity

Q3. Of the 48 respondents, the responses to whether or not Private Equity and/or Private Real Estate valuations are restated once final valuations are received from the managers are distributed as follows:

- 27 % Answered 'Yes' - valuations are restated
- 73 % Answered 'No' - valuations are not restated

Q4. Of the 47 respondents, the responses to whether or not a third party risk software provider is used are distributed as follows:

- 34 % Answered 'Yes'
- 66 % Answered 'No'

Miscellaneous Comments

- Performance shown is gross of fees, with the exception of the following:
 - Funds 8, 31, 49, 60, 350, and 351: Performance shown is net of fees.
 - Funds 4, 55, 75, and 85: Performance shown for Real Estate is net of fees.
- Performance shown is calculated using quarterly performance provided by participating public funds.
- Performance shown may differ from a fund's actual performance due to rounding.
- Net Assets Available for Benefits includes funding percentage valuation as of dates between June 2022 and June 2023.
 - Fund 96: Net Assets Available for Benefits shown is the higher funded ratio for one of two commingled systems reported by the fund.
- Allocations shown reflect dedicated managers/mandates rather than actual exposure, with the exception of the following:
 - Funds 29, 86, and 119: Performance shown for Global Fixed Income includes US and Non-US Fixed Income funds.
 - Fund 121: Performance shown for Global Fixed Income includes Non-US Fixed Income funds.
 - Funds 4, 42, 64, 99, 202, and 240: Performance shown for US Fixed Income includes US and Non-US Fixed Income funds.

Glossary of Terms

Beta - A measure of the sensitivity of a portfolio to the movements in the market. It is a measure of a portfolio's non-diversifiable or systematic risk. Calculation is based on quarterly periodicity.

Return - Compounded rate of return for the period.

% Return - The time-weighted rate of return of a portfolio for a given period.

Sharpe Ratio - Represents the excess rate of return over the risk-free return (i.e., ICE BofAML 3 Mo US T-Bill Index unless specified otherwise), divided by the standard deviation of the excess return to the risk free asset. The result is the absolute rate of return per unit of risk. The higher the value, the better the product's historical risk-adjusted performance. Calculation is based on quarterly periodicity.

Standard Deviation - A statistical measure of the range of a portfolio's performance. The variability of a return around its average return over a specified time period. Calculation is based on quarterly periodicity.

PORTLAND

BOISE

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