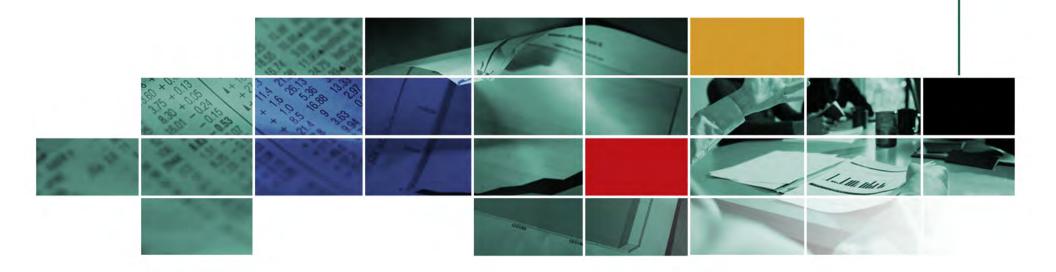


# Milwaukee Employes' Retirement System

**Public Fund Universe Analysis** 

Period Ending December 31, 2013



# **Report and Firm Summary**

The following report is a compilation of data provided to RVK, Inc. by 79 public funds throughout the United States. We are a registered investment advisor with the Securities Exchange Commission under the Investment Advisors Act of 1940. Our firm provides investment consulting services to 199 clients across 480 plans with total assets in excess of \$1.23 trillion. The confidentiality of participants is maintained by revealing the fund name only to each individual fund. For more information about services provided by RVK please visit our website at www.RVKuhns.com.



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# **Participants**

As of December 31, 2013

Alameda County Employees' Retirement Association Arlington County Employees' Retirement System

Big Spring Firemen's Relief & Retirement Fund

California Public Employees' Retirement System

California State Teachers' Retirement System

Chicago Teachers' Pension Fund

City of Fresno Retirement Systems

City of Phoenix Employees' Retirement System

Civilian Employees' Retirement System of the Police Department of Kansas Colorado Public Employees' Retirement Association

City, Missouri

Contra Costa County Employees' Retirement Association

County Employees' Annuity & Benefit Fund of Cook County

District of Columbia Retirement Board Educational Employees' Supplementary Retirement System of Fairfax

County

Employees Retirement System of Texas Fire & Police Employees' Retirement System of Baltimore

Fire and Police Pension Association of Colorado Florida State Board of Administration

Fort Worth Employees' Retirement Fund Fresno County Employees' Retirement Association

Georgia Division of Investment Services

Gila River Indian Community Retirement Plan

Illinois Municipal Retirement Fund Illinois State Board of Investment

Imperial County Employees' Retirement System

Iowa Public Employees' Retirement System

Kansas Public Employees' Retirement System

Kentucky Retirement Systems

Kentucky Teachers' Retirement System

Kern County Employees' Retirement Association

Los Angeles City Employees' Retirement System

Los Angeles County Employees Retirement Association

Los Angeles Fire and Police Pension System

Los Angeles Water & Power Employees Retirement Plan

Marin County Employees' Retirement Association

Mendocino County Employees' Retirement Association

Merced County Employees' Retirement Association Metro Water Reclamation District Retirement Fund

Milwaukee Employes' Retirement System (105)

Montana Public Employees' Retirement System

Montana Teachers' Retirement System

Municipal Employees' Annuity and Benefit Fund of Chicago

Navajo Nation Retirement Plan Nevada Public Employees' Retirement System

New York State Common Retirement Fund

North Carolina Retirement System

RVKuhns

& ASSOCIATES, INC.

## **Participants**

As of December 31, 2013

Ohio Public Employees' Retirement System

Pennsylvania Municipal Retirement System

Pennsylvania State Employees' Retirement System

Public Employees Retirement Association of New Mexico

Sacramento County Employees' Retirement System

San Diego City Employees' Retirement System

San Joaquin County Employees' Retirement Association

San Jose Police and Fire Department Retirement Plan

Santa Barbara County Employees' Retirement System

South Dakota Retirement System

State of Michigan Retirement Systems

State Retirement and Pension System of Maryland

Teachers' Retirement System of Louisiana

Texas Municipal Retirement System

**Utah Retirement Systems** 

Virginia Retirement System

Wyoming Retirement System

Orange County Employees' Retirement System

Pennsylvania Public School Employees' Retirement System

Police Retirement System of Kansas City, Missouri

Public School and Education Employee Retirement Systems of Missouri

San Bernardino County Employees' Retirement Association

San Diego County Employees Retirement Association

San Jose Federated City Employees' Retirement System

San Mateo County Employees' Retirement Association

Sonoma County Employees' Retirement Association

Stanislaus County Employees' Retirement Association

State of New Jersey Pension Fund

State Universities Retirement System of Illinois

Teachers' Retirement System of the State of Illinois

Tulare County Employees' Retirement Association

Ventura County Employees' Retirement Association

West Virginia Investment Management Board



#### **Capital Markets Review** As of December 31, 2013

#### **Fourth Quarter Economic Environment**

In spite of a sixteen-day federal shutdown in early October and the accompanying fiscal uncertainty, stock markets and the greater U.S. economy improved during Q4 after Congress reached agreement on appropriations and postponed the debt ceiling until February 2014. The headline unemployment rate decreased from 7.2% to 6.7% during the quarter, a positive sign tempered by a persistently low participation rate that suggests the job market has yet to fully recover. Additionally, final GDP figures for Q3 were revised upward from an initial reading of 2.8% to 4.1%, in part due to stronger consumer spending and increased private inventory growth. In light of positive economic news, the Federal Reserve decided to modestly reduce its quantitative easing (QE) purchases from \$85 to \$75 billion per month, to begin in January 2014. Domestic equity markets delivered relatively higher returns on the quarter, while international markets also posted gains. Yields continued to increase, as the Fed's stated intent to taper OE purchases had investors looking to exit the bond markets before bond purchases are wound down; the steepening yield curve suggests the market has already priced in the substantial rate increases expected in 2014.

Internationally, the majority of top-performing developed market sectors were cyclical in nature, indicating continued improvement in global investor confidence. The European Central Bank announced its "Single Resolution Mechanism" policy, which will ensure consistent supervision among Eurozone members and provide guidelines for dissolving failed banks. In Japan, stocks delivered positive returns, but concerns surrounding the efficacy of Shinzo Abe's economic policies slowed the Nikkei's gains. Meanwhile, Europe experienced limited growth, as its economy remains stunted by pervasive unemployment.

#### Domestic Equities

- U.S. equity markets exhibited strong performance for the fourth quarter. The S&P 500 returned 10.51% on the quarter and 32.39% for the year ended 2013, its highest annual return since 1997.
- Growth again outperformed value stocks, as the Russell 3000 Growth returned 10.25%, while the Russell 3000 Value earned 9.95% for the quarter.
- · Large cap outperformed small cap stocks for the first time in four quarters, with the Russell 1000 returning 10.23% and the Russell 2000 returning 8.72%.
- All sectors recorded gains for the quarter, though defensive sectors such as telecom services and utilities trailed, with returns of 5.47%

#### **International Equities**

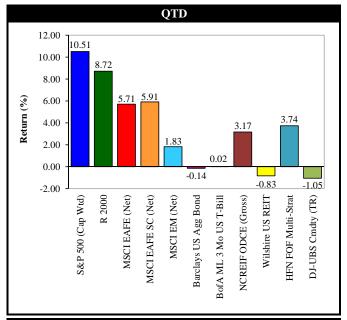
- International markets were positive for the quarter, though developed and emerging markets trailed domestic markets for both the quarter and calendar year.
- Developed markets outperformed emerging markets for the fifth quarter in a row, with the MSCI EAFE returning 5.71% and the MSCI Emerging Markets returning 1.83%.

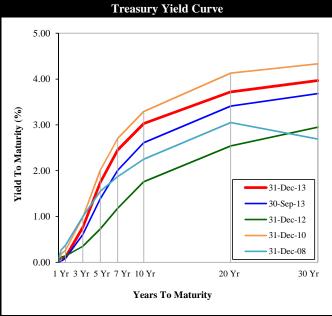
#### Fixed Income

• Fixed income markets ended the year on a subdued note, with the Barclays US Aggregate Bond Index returning -0.14% on the quarter and -2.02% for the year.

Trailing-Period Performance										
	Mth End Oct-2013	Mth End Nov-2013	MTD	QTD	CYTD	1 Year	2 Years	3 Years	5 Years	10 Years
S&P 500 (Cap Wtd)	4.60	3.05	2.53	10.51	32.39	32.39	23.93	16.18	17.94	7.41
R 2000	2.51	4.01	1.97	8.72	38.82	38.82	27.09	15.67	20.08	9.07
MSCI EAFE (Net)	3.36	0.77	1.50	5.71	22.78	22.78	20.02	8.17	12.44	6.91
MSCI EAFE SC (Net)	3.04	0.43	2.34	5.91	29.30	29.30	24.57	9.26	18.50	9.53
MSCI EM (Net)	4.86	-1.46	-1.45	1.83	-2.60	-2.60	7.31	-2.06	14.79	11.17
Barclays US Agg Bond	0.81	-0.37	-0.57	-0.14	-2.02	-2.02	1.05	3.26	4.44	4.55
BofA ML 3 Mo US T-Bill	0.00	0.01	0.01	0.02	0.07	0.07	0.09	0.10	0.12	1.68
NCREIF ODCE (Gross)	N/A	N/A	N/A	3.17	13.94	13.94	12.43	13.60	3.68	7.16
Wilshire US REIT	4.06	-5.27	0.61	-0.83	1.86	1.86	9.44	9.37	16.69	8.38
HFN FOF Multi-Strat	1.37	1.19	1.14	3.74	9.10	9.10	6.93	2.60	4.42	3.12
DJ-UBS Cmdty (TR)	-1.48	-0.80	1.24	-1.05	-9.52	-9.52	-5.38	-8.11	1.51	0.87

• Investor demand for higher-yielding sectors made it difficult for and 2.79%, respectively. investment grade credit to keep up with high yield bonds and bank loans, though all posted gains.

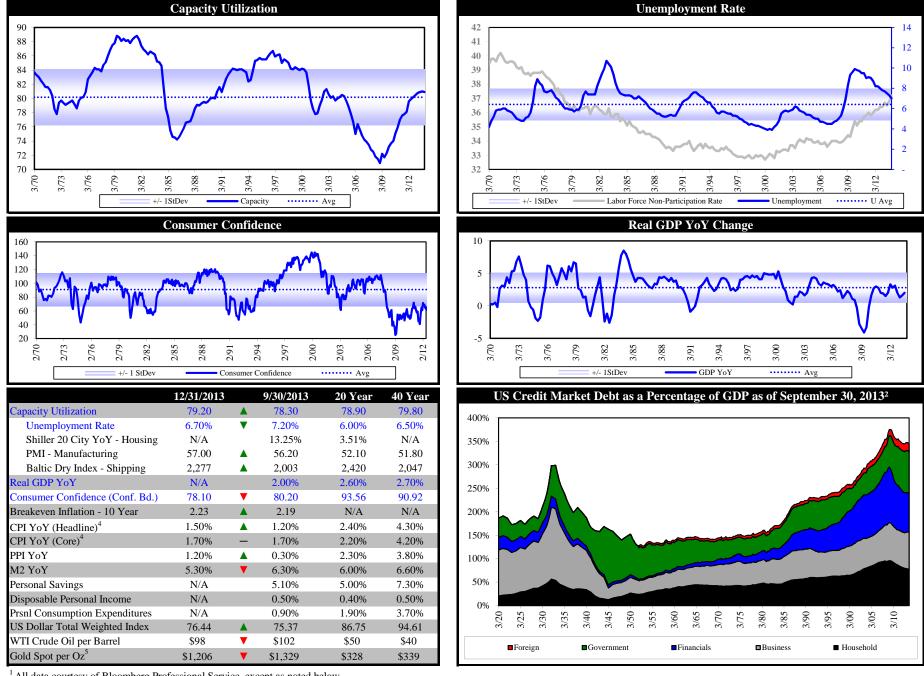








#### Economic Measures 1 As of December 31, 2013



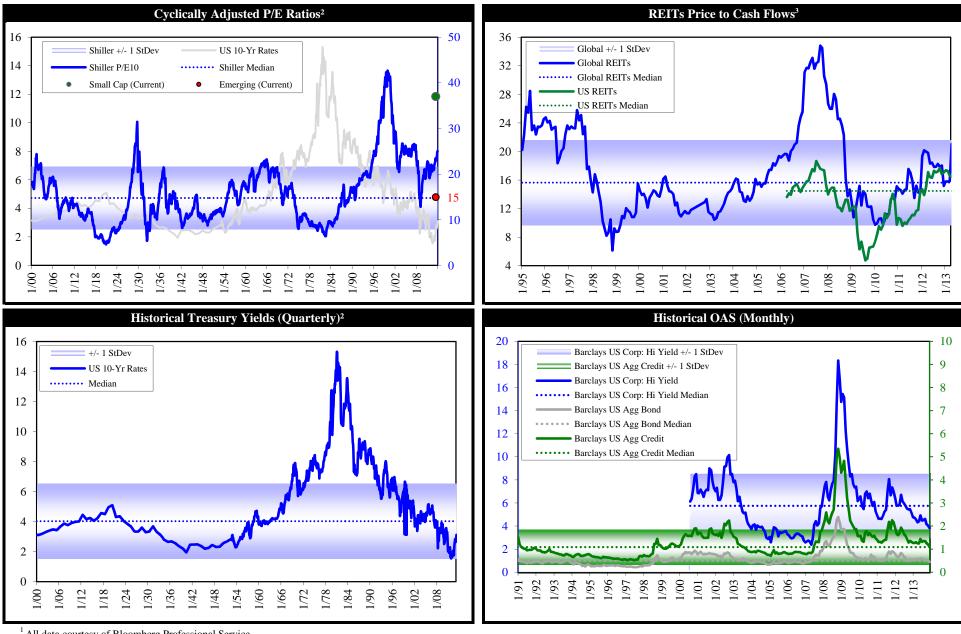
<sup>&</sup>lt;sup>1</sup> All data courtesy of Bloomberg Professional Service, except as noted below.



<sup>&</sup>lt;sup>2</sup> Data prior to 1952 is from "The Statistical History of the United States, From Colonial Times to the Present", by Ben Wattenberg, Morgan Stanley Research.

<sup>&</sup>lt;sup>3</sup> "N/A" is shown for data that is not yet available. <sup>4</sup> CPI figures are cyclically adjusted. <sup>5</sup> 20- and 40-year average Gold spot prices are adjusted for inflation.

#### Valuation Metrics 1 As of December 31, 2013

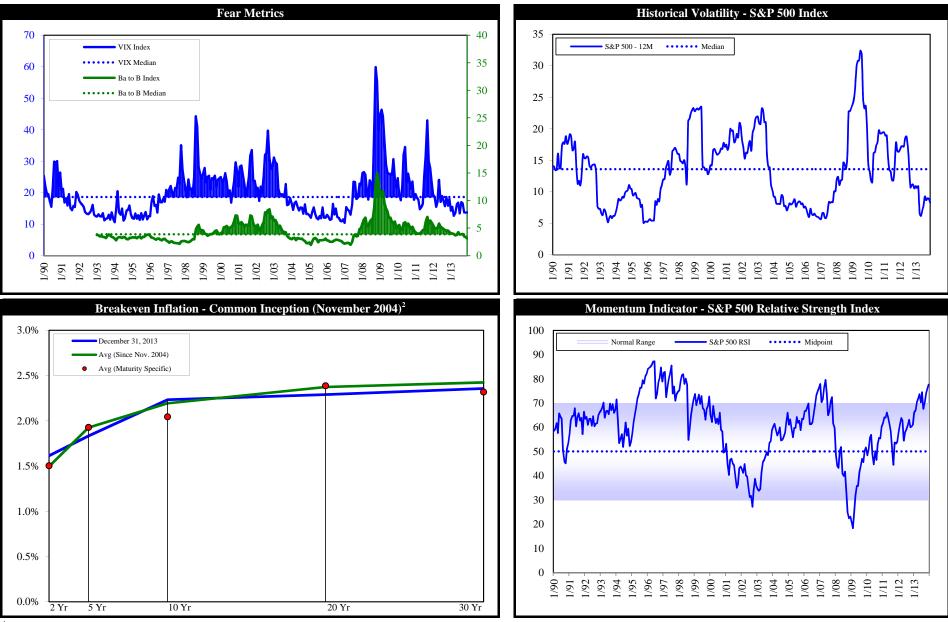


<sup>&</sup>lt;sup>1</sup> All data courtesy of Bloomberg Professional Service.

<sup>&</sup>lt;sup>2</sup> Source: Bloomberg and Robert J. Shiller, Irrational Exuberance, Second Edition. P/E for the S&P 500 Index is based on 10-year trailing real earnings. Small Cap is represented by the S&P 600 Small Cap Index, and Emerging is represented by the MSCI Emerging Markets Index. Due to limited history, only the current 10-year P/E is shown for Small Cap and Emerging.

<sup>&</sup>lt;sup>3</sup> US REITs is represented by the MSCI US REITs Index and Global REITs is represented by the MSCI World Real Estate Index.

#### Risk Metrics <sup>1</sup> As of December 31, 2013

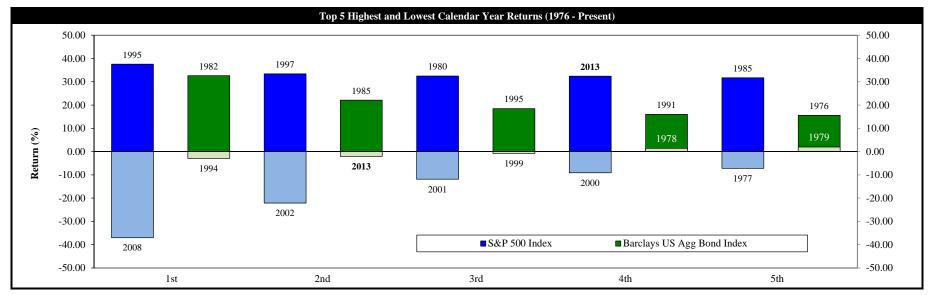


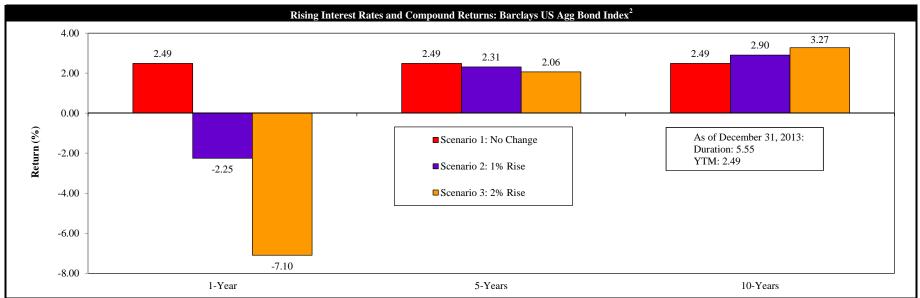
<sup>&</sup>lt;sup>1</sup> All data courtesy of Bloomberg Professional Service.



<sup>&</sup>lt;sup>2</sup> Common inception of November 2004 is based on historical data availability. Specific inception dates are as follows: 2- and 20-year (2004), 5-year (2002), 10- and 30-year (1998).

# Historical Performance and Interest Rate Scenarios <sup>1</sup> As of December 31, 2013





<sup>&</sup>lt;sup>1</sup> Data courtesy of Bloomberg, Federal Reserve Economic Data, and RVK Calculations.

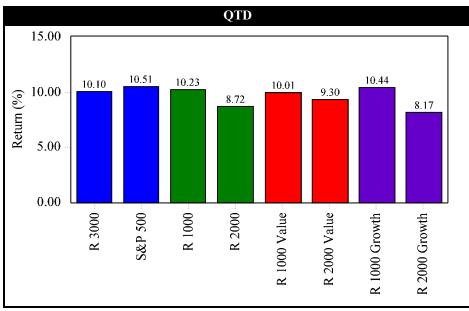


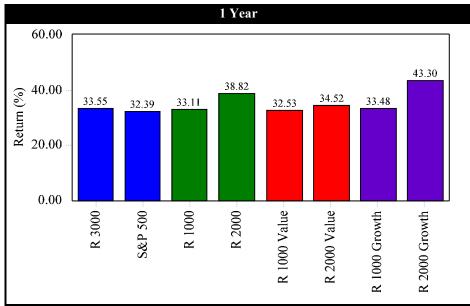
<sup>&</sup>lt;sup>2</sup> Interest rate scenarios are hypothetical and shown for illustrative purposes. Barclays US Agg Bond Index data as of December 31, 2013 used in each scenario assumes an interest rate change on day 1 that remains constant over the time periods.

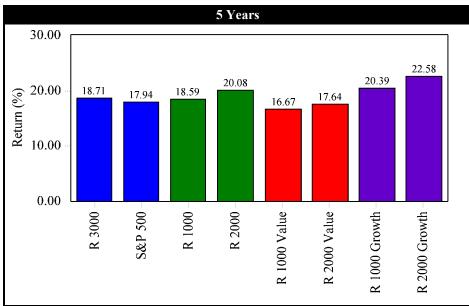
# Annual Asset Class Performance As of December 31, 2013

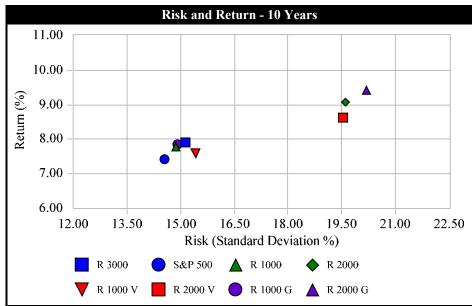
	1999	2000	2001	2002	2003	2004	2005	2006	200	7 20	08	2009	2010	2011	2012	2013
Best	66.42	31.84	12.35	25.91	62.14	33.16	34.54	35.97	39.7	8 8.	14	79.02	28.60	22.49	20.42	38.82
$\uparrow$	27.31	31.04	8.44	16.56	56.28	31.27	26.65	32.59	16.2	3 5.2	24	58.21	26.86	15.99	18.64	32.39
	24.69	16.16	7.89	14.81	47.25	25.95	21.39	26.86	15.9	7 2.0	)6	47.32	22.40	13.56	17.90	29.69
	24.34	14.28	7.28	10.25	39.17	20.70	21.36	19.67	11.6	3 -2.	35	32.46	19.20	9.24	17.59	23.29
	21.26	13.15	6.61	5.54	36.18	18.33	14.02	18.37	11.6	3 -10	.01	28.60	16.83	7.84	16.34	13.94
	21.04	12.40	5.64	3.58	28.97	13.06	13.82	16.32	9.9	-20	.47	27.18	16.36	4.98	16.00	9.10
	20.19	11.63	5.28	3.12	28.68	11.13	6.75	15.79	6.9	-26	.16	26.46	15.12	2.11	15.81	7.44
	13.17	6.18	4.42	1.78	23.93	10.88	5.33	11.85	6.60	-33	.79	18.91	15.06	0.10	10.94	1.86
	4.85	-3.02	2.49	-1.41	11.93	9.15	4.91	9.85	5.49	-35	.65	11.41	10.16	-4.18	8.82	0.07
	2.40	-5.86	-2.37	-6.00	9.28	8.56	4.55	4.85	5.00	-37	.00	9.72	8.21	-5.55	6.98	-2.02
	2.39	-7.22	-11.89	-7.44	8.39	8.46	3.07	4.33	1.8	-39	.20	5.93	6.54	-11.73	4.80	-2.27
	-0.82	-9.10	-12.11	-15.66	5.87	6.79	2.84	2.71	1.79	-43	.06	1.92	6.31	-13.32	4.21	-8.61
<b>+</b>	-2.58	-13.96	-19.51	-20.48	4.10	4.34	2.74	2.07	-1.5	7 -46	.78	0.21	4.77	-15.66	0.11	-8.83
Worst	-7.65	-30.61	-21.21	-22.10	1.15	1.33	2.43	0.41	-17.5	-53	.18	-29.76	0.13	-18.17	-1.06	-9.52
Ī		·														
	S&P 500 - US Large Cap	R 2000 - US Small Cap	MSCI EAFE (Gross) - Int'l Dev.	MSCI EAFE SC (Gross) - Int'l SC		Barcla	I US C	orp: US	arclays S Trsy: S TIPS - FI	Barclays US Gov/Credit Lng - FI	(Gi	ross) -	REIT -	HFN FOF Multi-Strat (Net) - ARS	DJ-UBS Cmdty (TR) - Commod.	BofA ML 3 Mo T-Bill - Cash Equiv

#### Domestic Equity Market Performance and Risk As of December 31, 2013





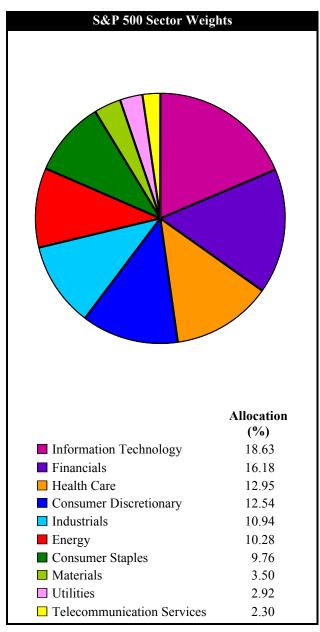


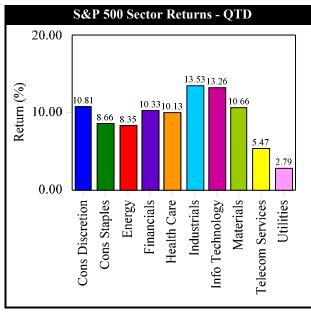


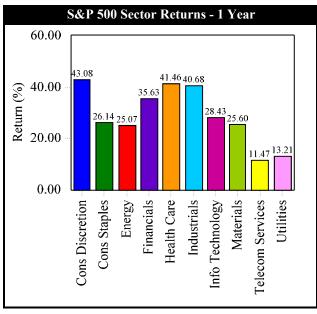
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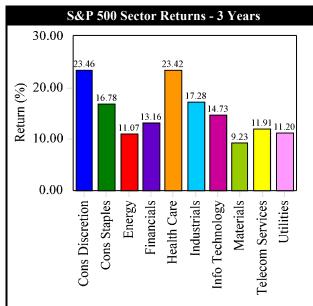


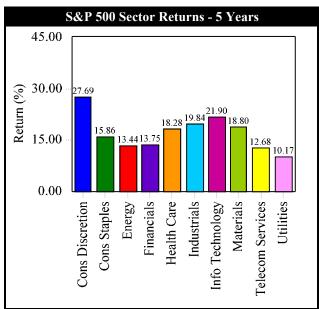
#### Domestic Equity Sector Weights and Returns As of December 31, 2013







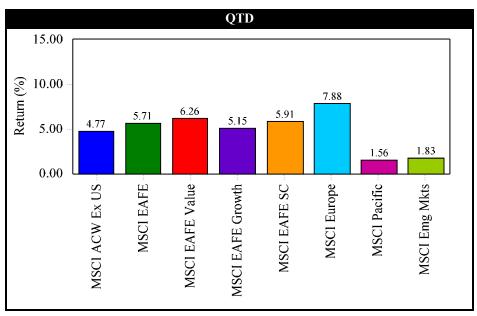


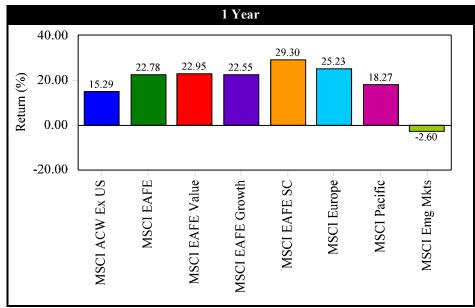


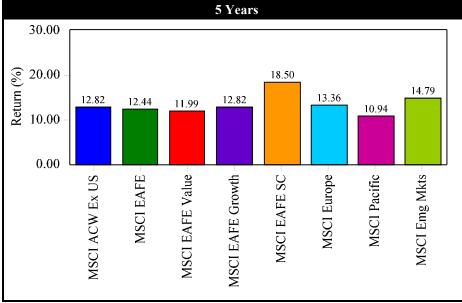
Allocations shown may not sum up to 100% exactly due to rounding. Allocations provided by Standard & Poor's.

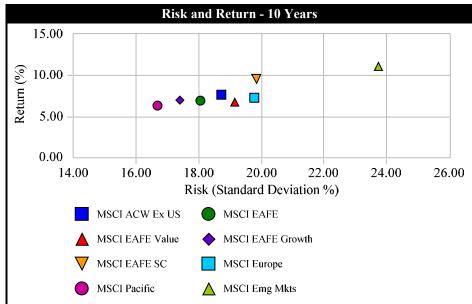


# International Equity Market Performance and Risk As of December 31, 2013





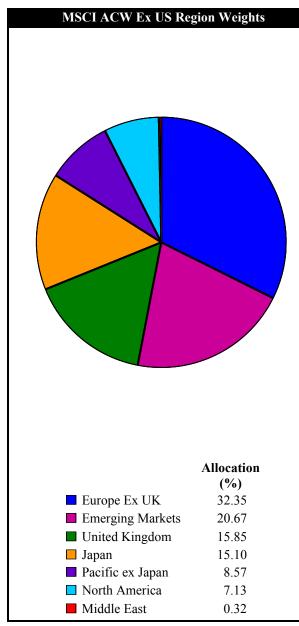


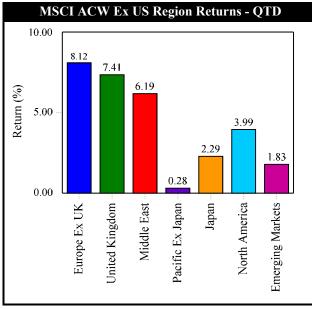


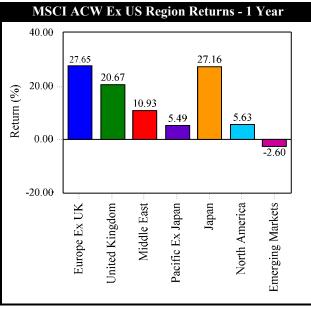
Calculation is based on monthly periodicity. All returns are shown net of foreign taxes on dividends.

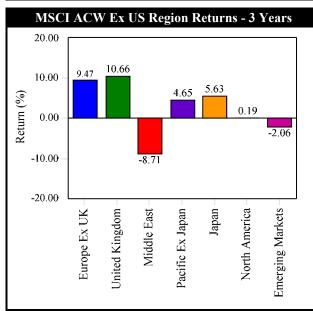


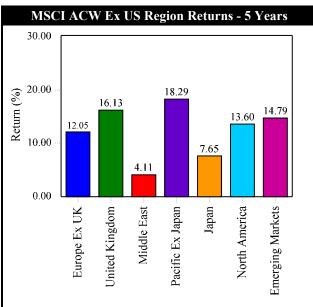
# International Equity Region Weights and Returns As of December 31, 2013







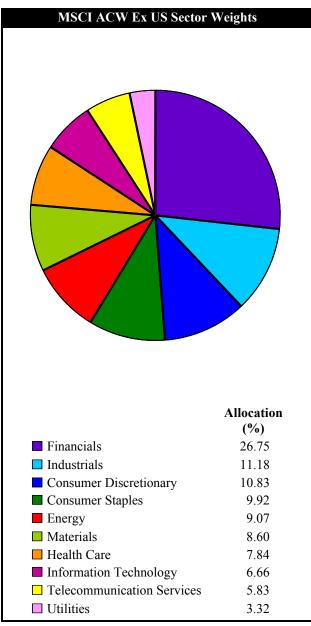


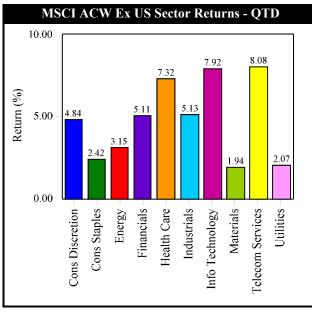


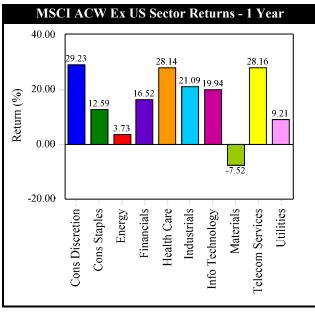
Allocations shown may not sum up to 100% exactly due to rounding. Allocations provided by MSCI Barra. All returns are shown net of foreign taxes on dividends.

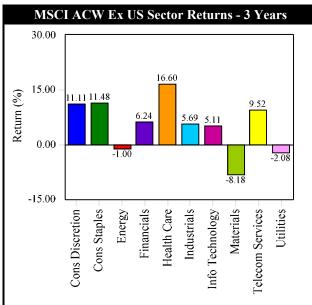


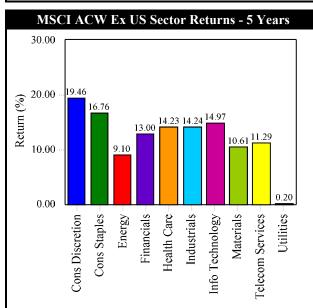
# International Equity Sector Weights and Returns As of December 31, 2013







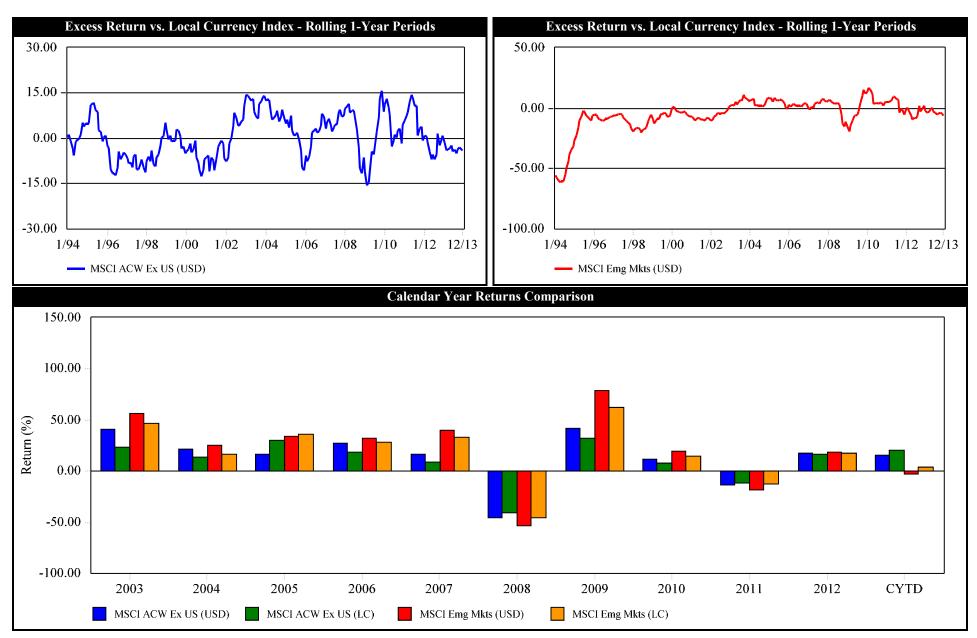


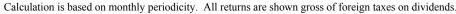


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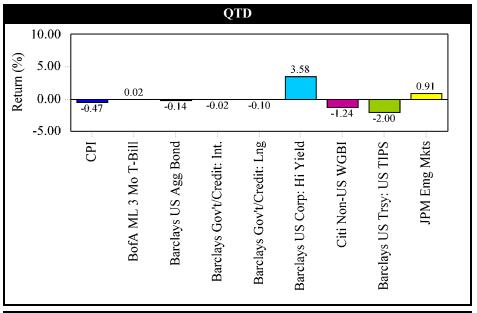
# Effect of Currency on International Equity Performance As of December 31, 2013

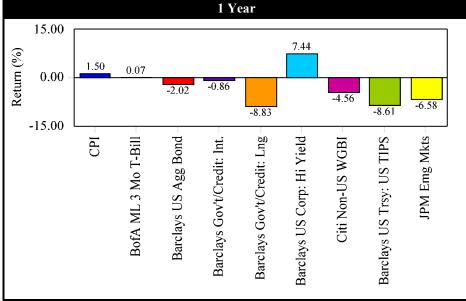


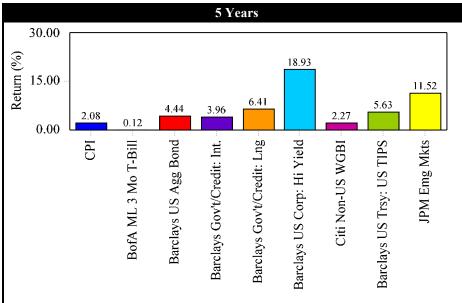


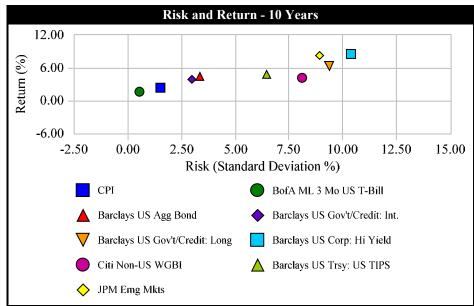


#### Fixed Income Market Performance and Risk As of December 31, 2013





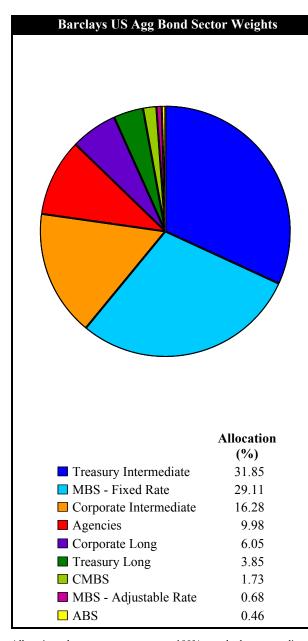


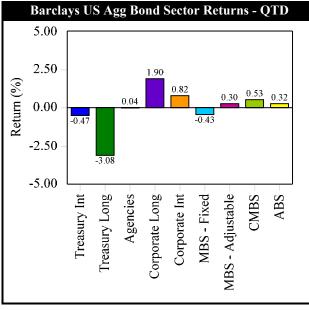


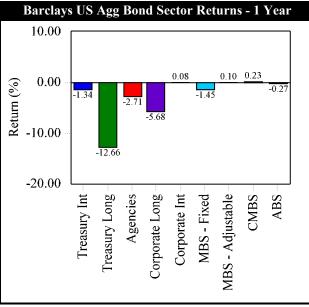
Calculation is based on monthly periodicity.

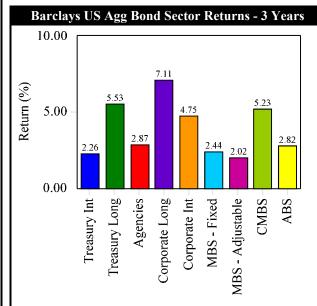


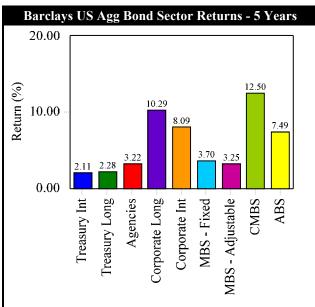
# Domestic Fixed Income Sector Weights and Returns As of December 31, 2013

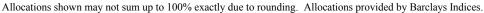






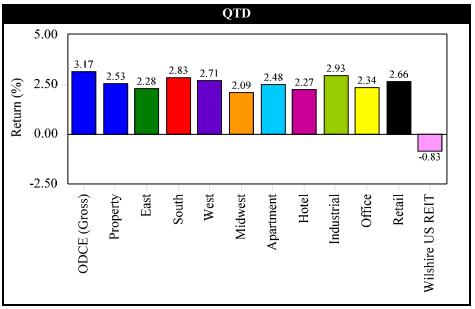


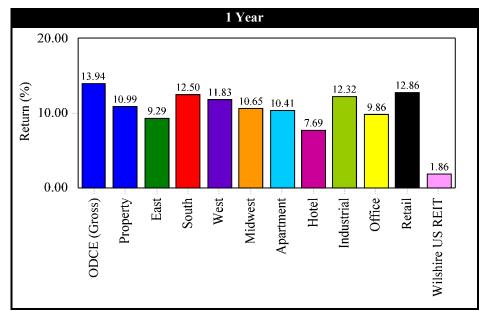


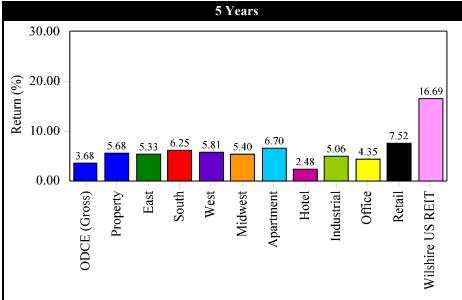


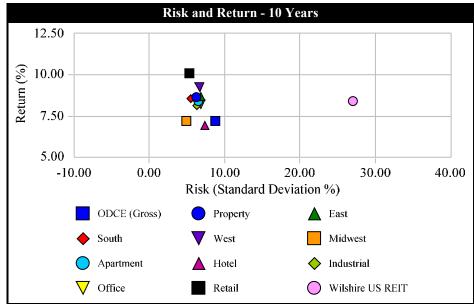


#### Real Estate Market Performance and Risk As of December 31, 2013





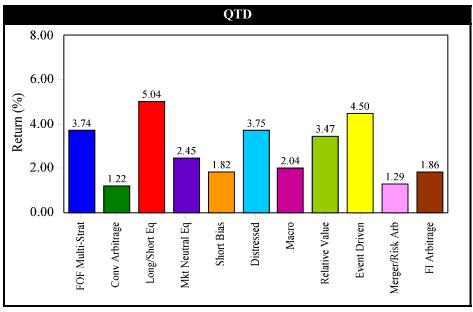


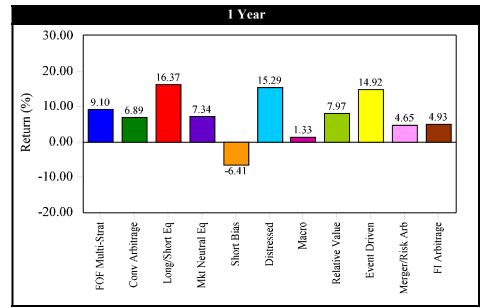


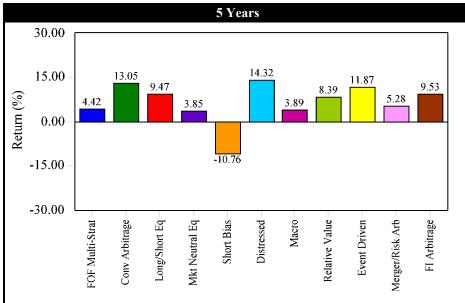
Calculation is based on quarterly periodicity. All data shown represent NCREIF indices unless otherwise noted. Region and sector data represent the Property Index.

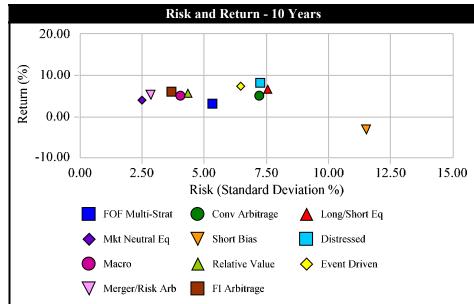


# Hedge Fund Market Performance and Risk As of December 31, 2013









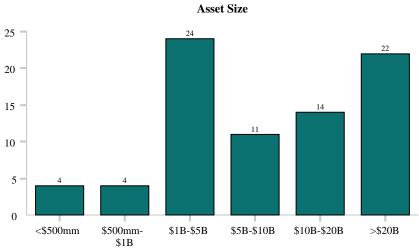
Calculation is based on monthly periodicity. All data shown represent HFN indices, net of fees. Values are preliminary and subject to change.

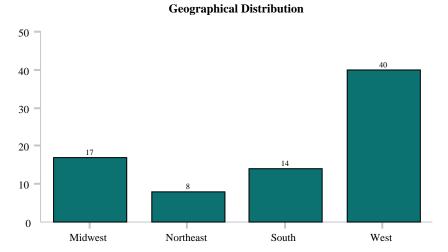


# **Universe Characteristics**

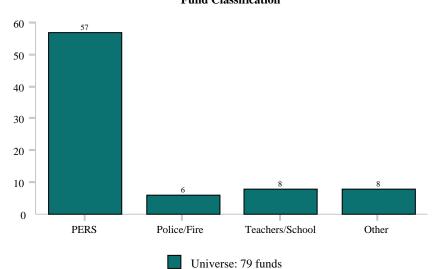
## As of December 31, 2013







#### **Fund Classification**



# Fund Type 50 40 40 35 30 10 Local Gov Special District State Gov

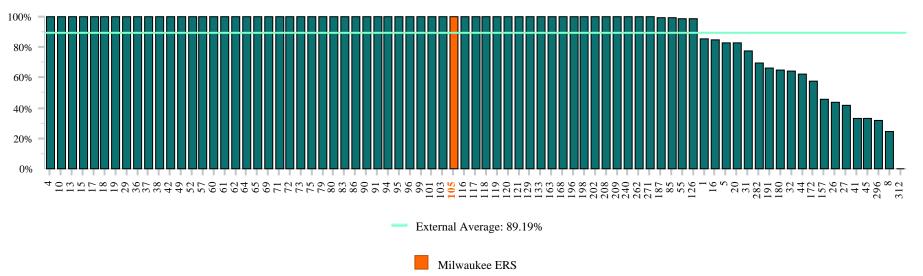


# Portfolio Management

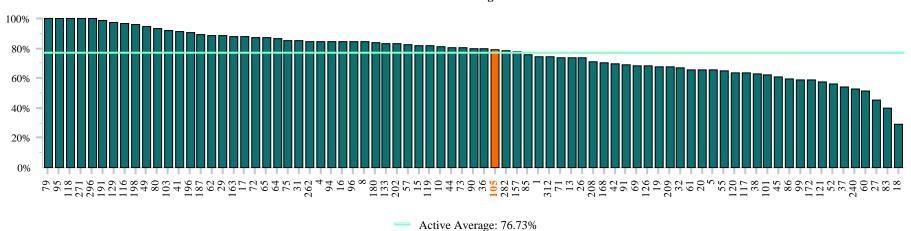
# Percentage Externally Managed & Percentage Actively Managed As of December 31, 2013

Fund Number: 105

#### **External Management**



#### **Active Management**





# **Portfolio Management Statistics**

# As of December 31, 2013

Asset Range	Percentage Actively Managed	Percentage Passively Managed	Percentage Externally Managed	Percentage Internally Managed	
Over \$20B	73.98%	26.02%	72.92%	27.08%	
\$10B-\$20B	74.08%	25.92%	88.98%	11.02%	
\$5B-\$10B	75.55%	24.45%	93.81%	6.19%	
\$1B-\$5B	77.55%	22.45%	98.54%	1.46%	
\$500mm-\$1B	81.67%	18.33%	99.66%	0.34%	
Under \$500mm	94.55%	5.45%	100.00%	0.00%	
Milwaukee ERS	78.78%	21.22%	100.00%	0.00%	

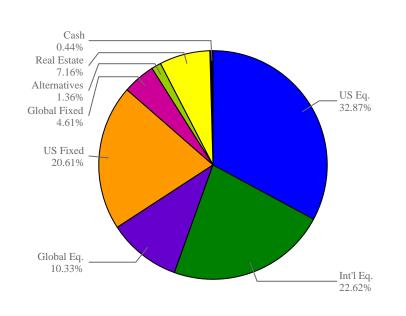
	Active Ma	anagement	External Management			
Percentage of Portfolio	Public Fund Universe  Milwaukee ERS		Public Fund Universe	Milwaukee ERS		
90% to 100%	14	0	60	1		
50% to 89%	62	1	11	0		
10% to 49%	3	0	7	0		
Less than 10%	0	0	1	0		
<b>Total Funds Reporting</b>	79	1	79	1		

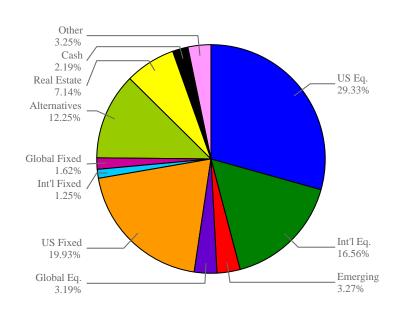


## **Asset Allocation**

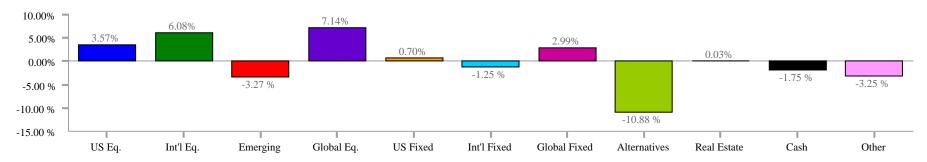
# Milwaukee ERS vs. Average of All Funds As of December 31, 2013

#### Milwaukee ERS All Funds





#### Variance



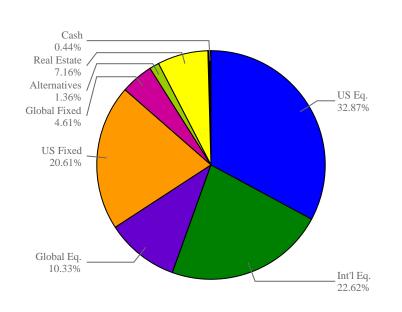
Allocations shown may not sum up to 100% exactly due to rounding.

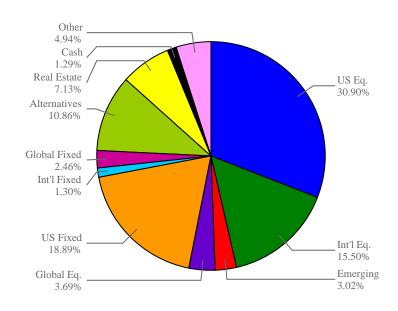


## **Asset Allocation**

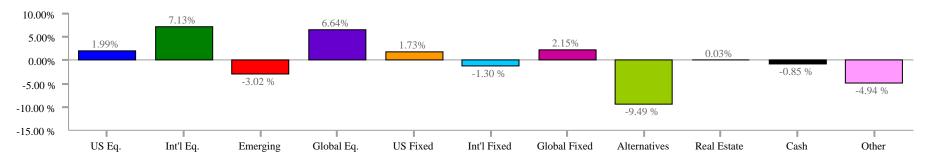
# Milwaukee ERS vs. Average of Similar Size Funds As of December 31, 2013

#### Milwaukee ERS \$1-\$5 Billion





#### Variance



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

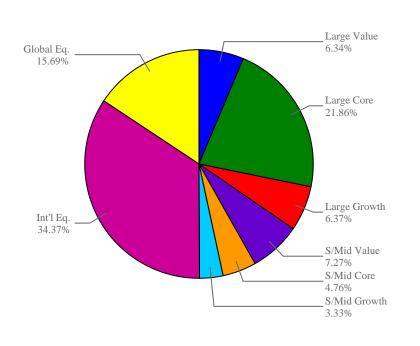


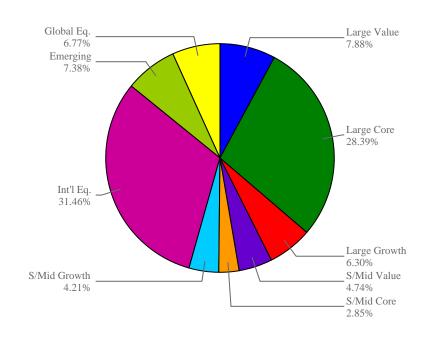
# **Equity Style Allocation**

# Milwaukee ERS vs. Average of All Funds As of December 31, 2013

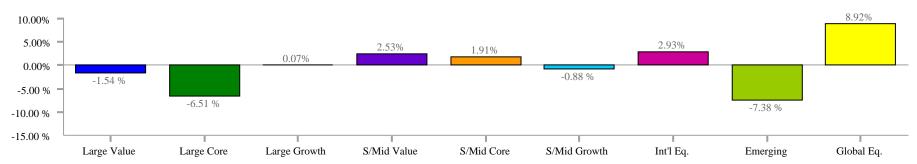
Fund Number: 105

#### Milwaukee ERS All Funds





#### Variance



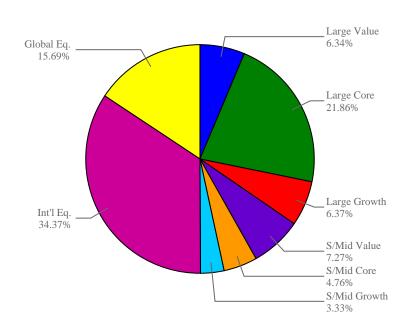


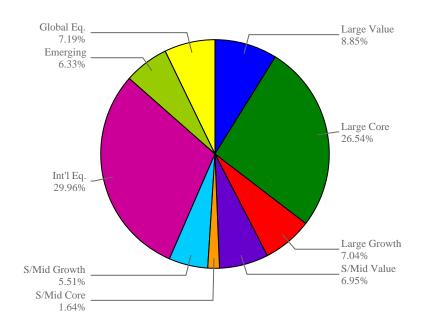
# **Equity Style Allocation**

## Milwaukee ERS vs. Average of Similar Size Funds As of December 31, 2013

Fund Number: 105

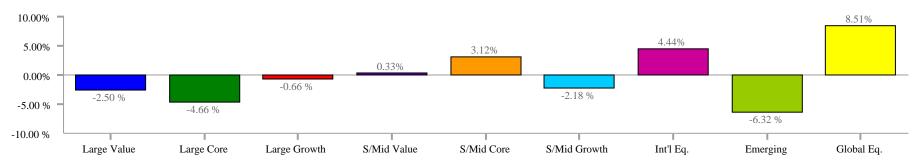
#### Milwaukee ERS





\$1-\$5 Billion

#### Variance



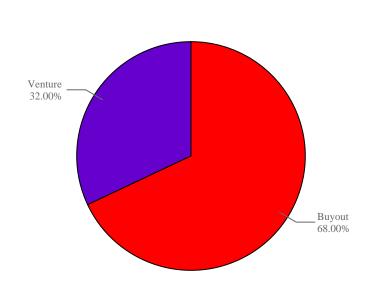


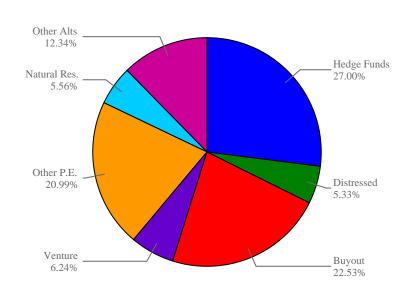
# **Alternatives Style Allocation**

# Milwaukee ERS vs. Average of All Funds As of December 31, 2013

Fund Number: 105

#### Milwaukee ERS All Funds





#### Variance 60.00% 45.48% 45.00% 25.76% 30.00% 15.00% 0.00% -5.33 % -5.56 % -15.00 % -12.33 % -20.98 % -30.00 % -26.98 % -45.00 % Hedge Funds Distressed Buyout Venture Other P.E. Natural Res. Other Alts

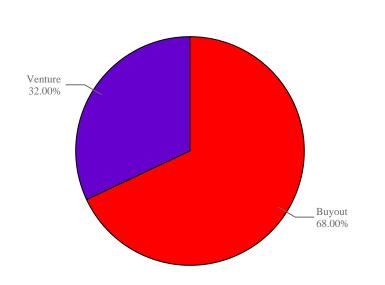


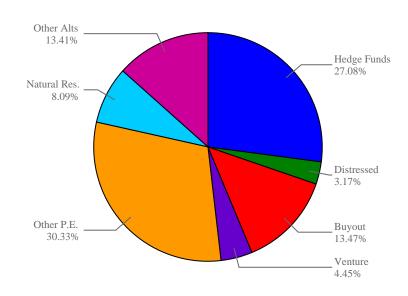
# **Alternatives Style Allocation**

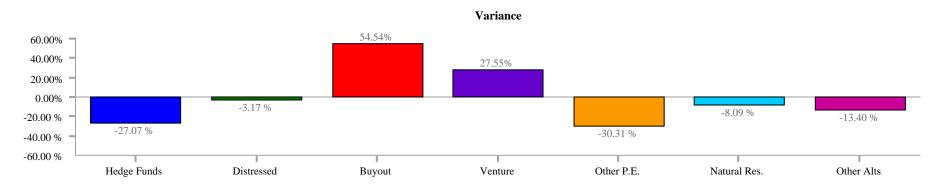
# Milwaukee ERS vs. Average of Similar Size Funds As of December 31, 2013

Fund Number: 105

#### Milwaukee ERS \$1-\$5 Billion





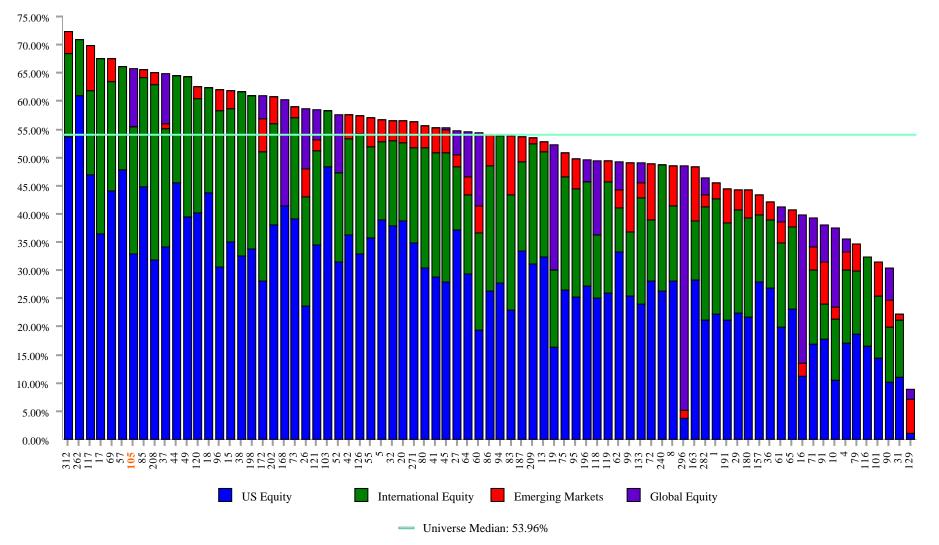




# **Equity Style Allocation**

As of December 31, 2013

79 of 79 funds invest in Equity

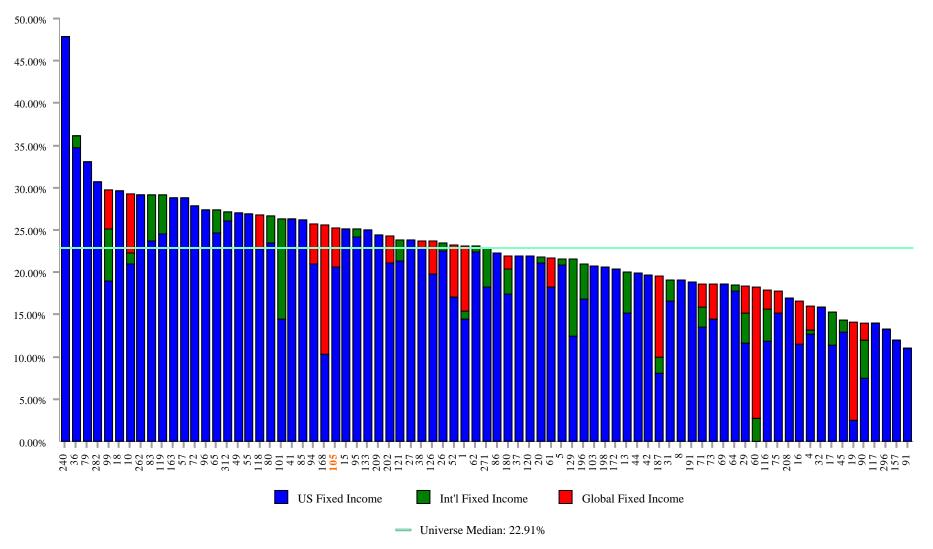




# **Fixed Income Style Allocation**

As of December 31, 2013

79 of 79 funds invest in Fixed Income

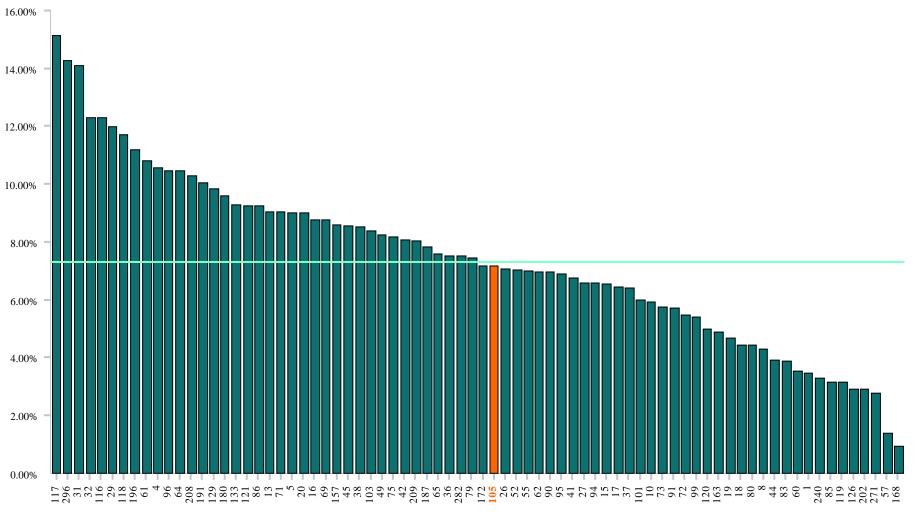




# **Real Estate Allocation**

## As of December 31, 2013

76 of 79 funds invest in Real Estate



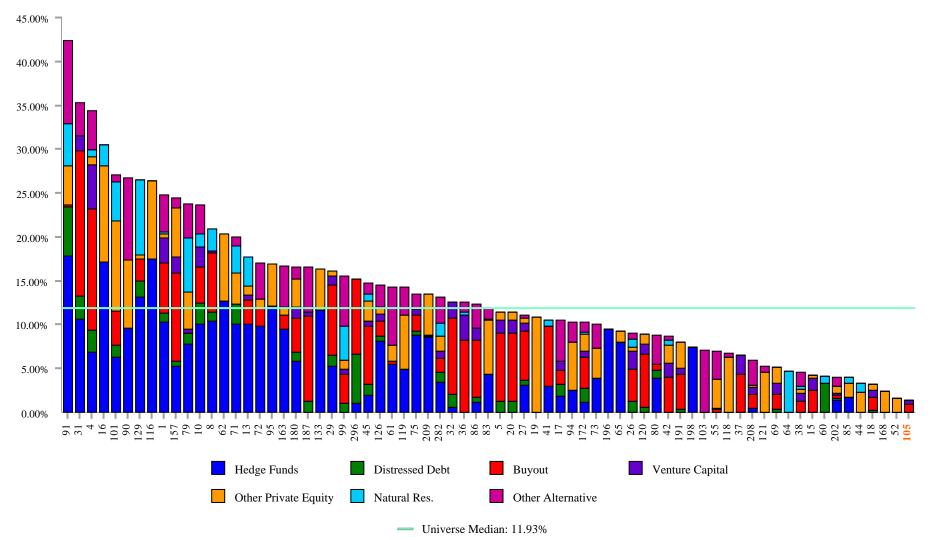
Universe Median: 7.31%



# **Alternatives Style Allocation**

## As of December 31, 2013

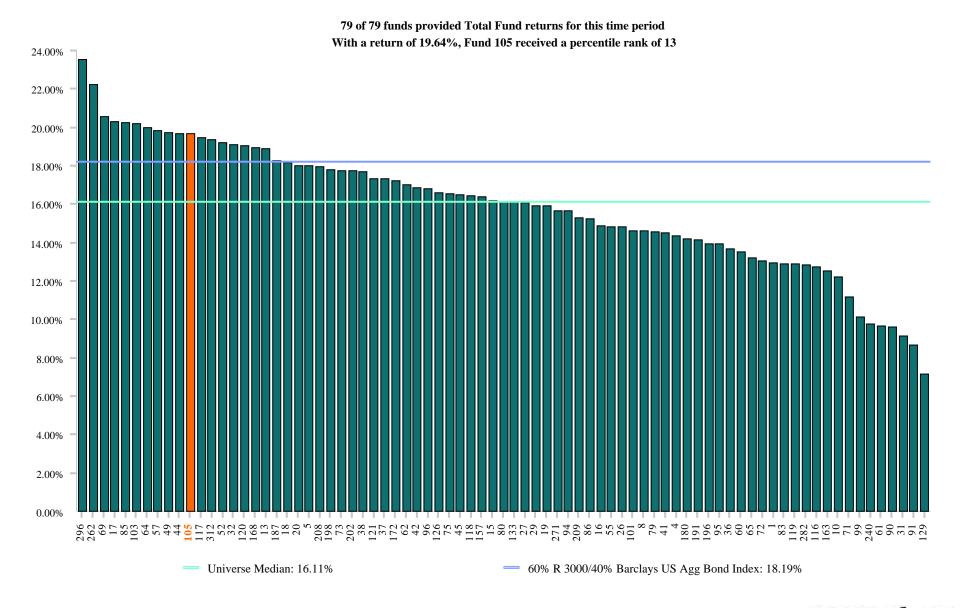
71 of 79 funds invest in Alternatives

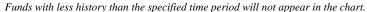




## 1 Year Annualized Total Fund Returns

As of December 31, 2013



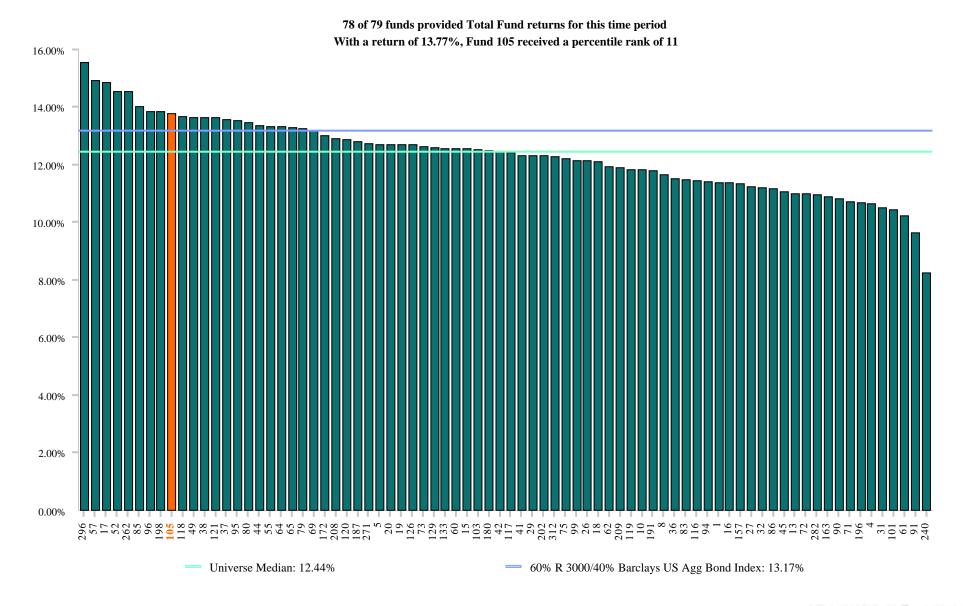




## **5 Year Annualized Total Fund Returns**

As of December 31, 2013

Fund Number: 105



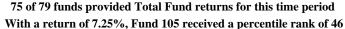
Funds with less history than the specified time period will not appear in the chart.

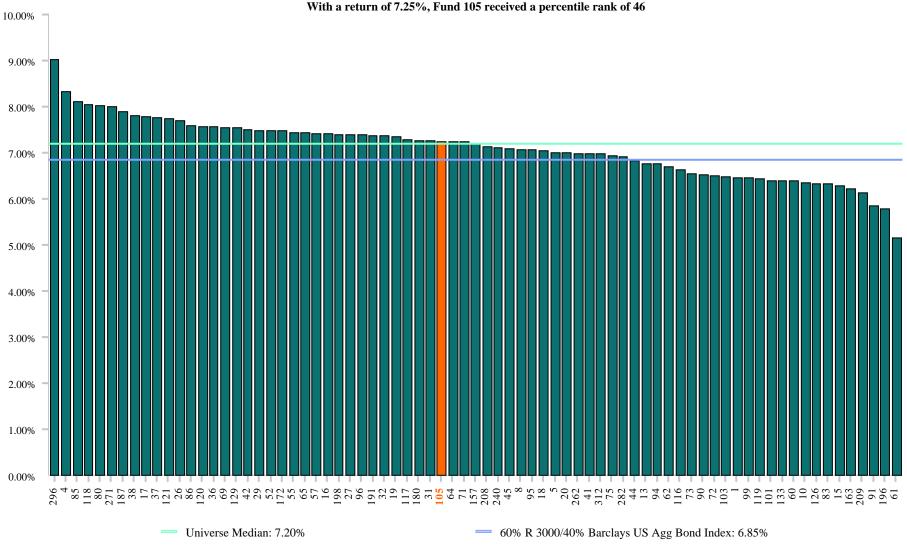


#### 10 Year Annualized Total Fund Returns

As of December 31, 2013

Fund Number: 105



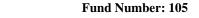


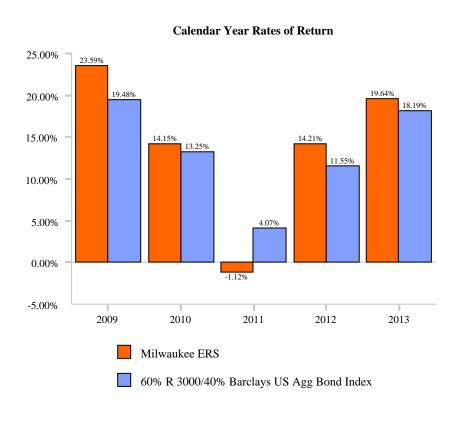


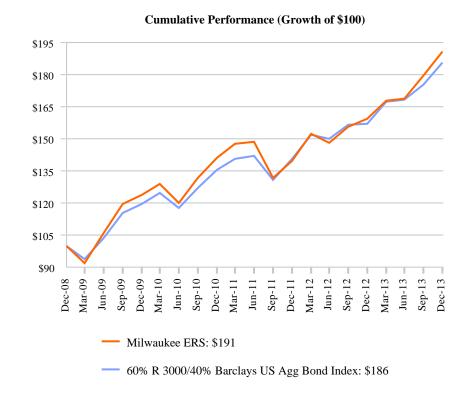
#### **Total Return - Total Fund**

# Milwaukee ERS vs. 60% R 3000/40% Barclays US Agg Bond Index

As of December 31, 2013







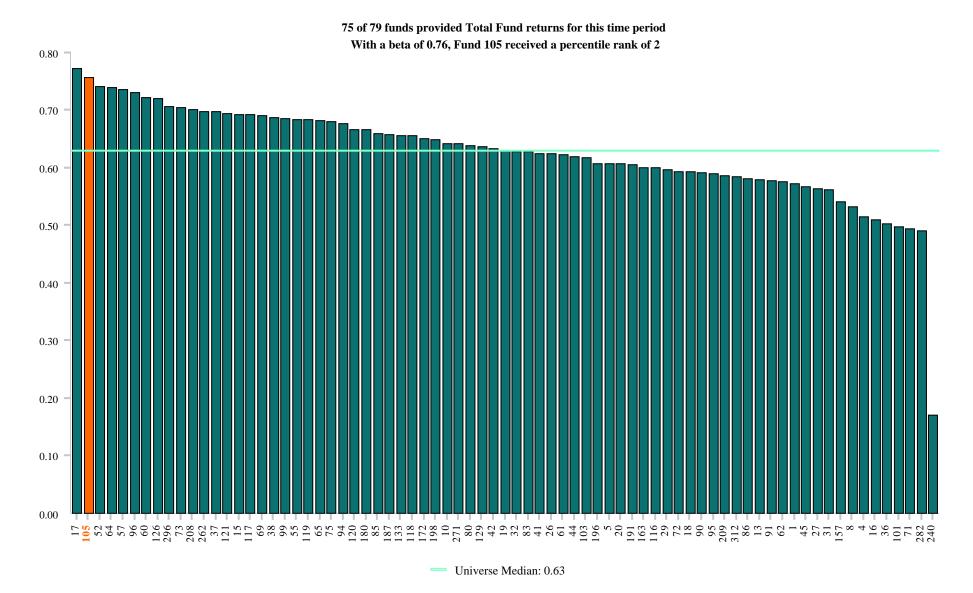
Annualized Returns:	<u>1 Year</u>	3 Years	<u>5 Years</u>
Milwaukee ERS	19.64%	10.55%	13.77%
60% R 3000/40% Barclays US Agg Bond Index	18.19%	11.12%	13.17%
Variance	1.45%	-0.57%	0.60%



#### 10 Year Total Fund Beta

As of December 31, 2013

Fund Number: 105



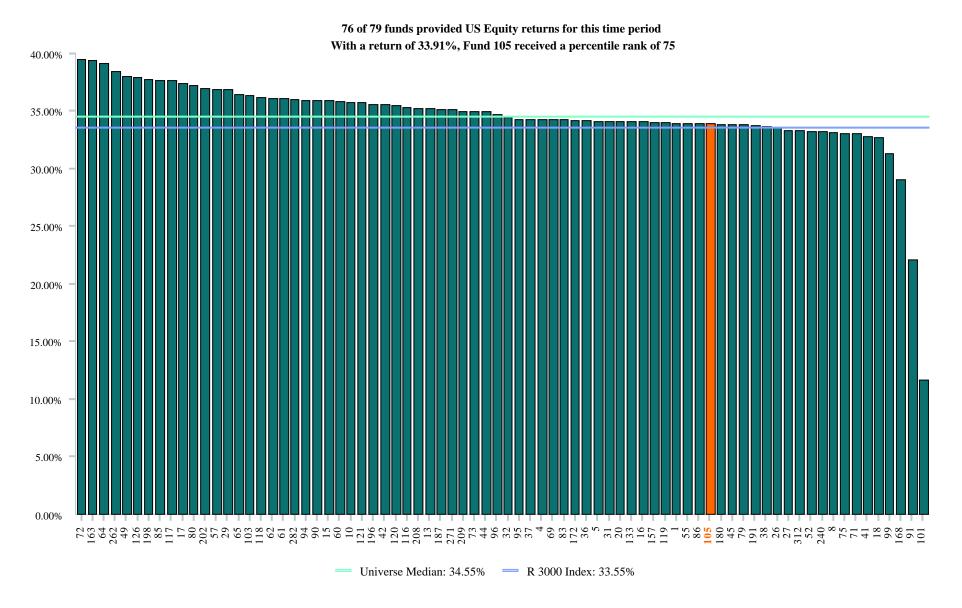
Funds with less history than the specified time period will not appear in the chart. Benchmark used is the S&P 500 Index (Cap Wtd).



# 1 Year Annualized US Equity Returns

As of December 31, 2013

Fund Number: 105

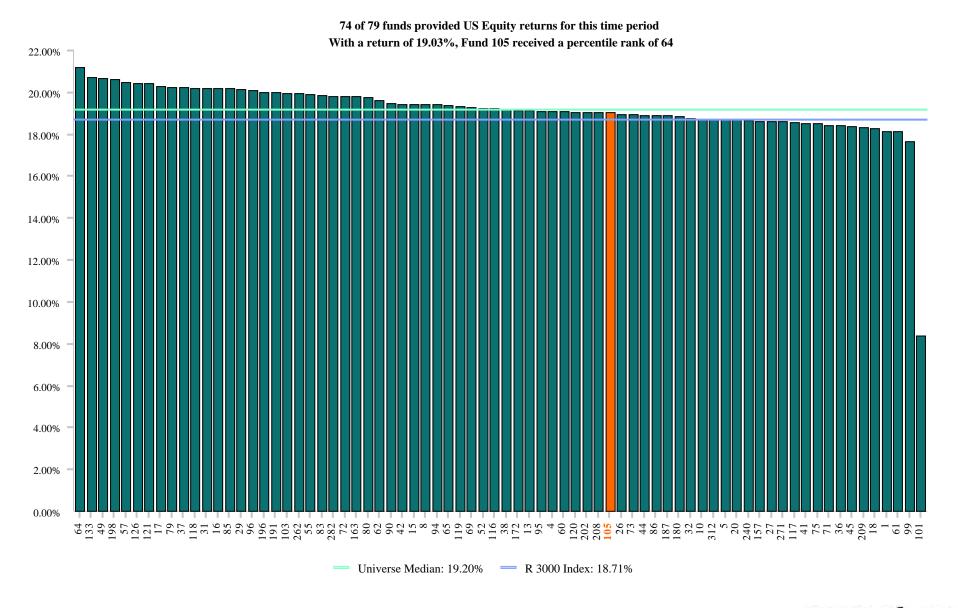




# **5 Year Annualized US Equity Returns**

As of December 31, 2013

Fund Number: 105



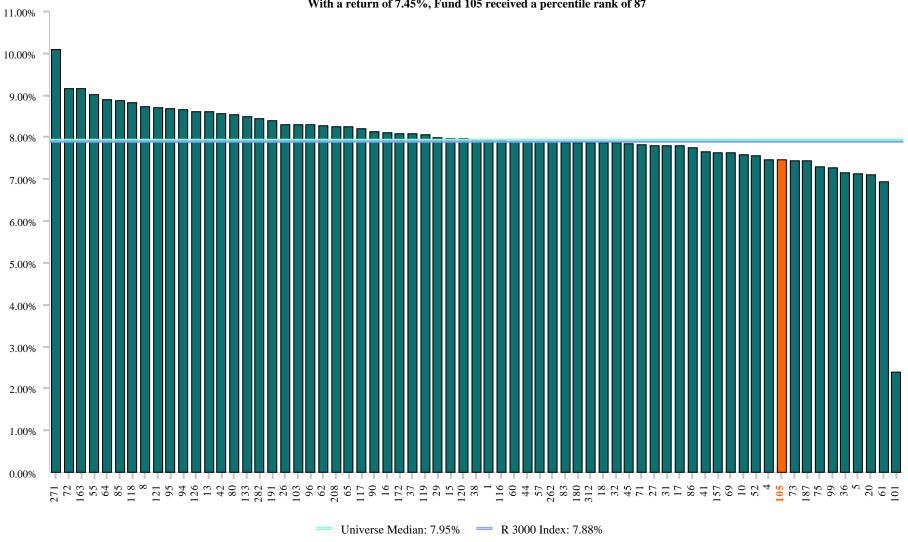


# **10 Year Annualized US Equity Returns**

As of December 31, 2013

Fund Number: 105

67 of 79 funds provided US Equity returns for this time period With a return of 7.45%, Fund 105 received a percentile rank of 87

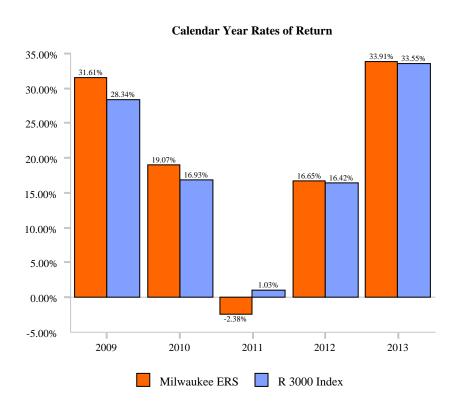


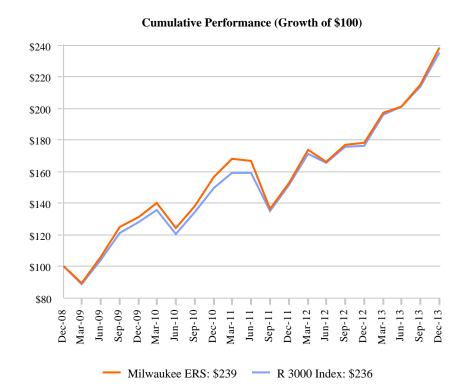


# **Total Return - US Equity**

# Milwaukee ERS vs. R 3000 Index

As of December 31, 2013





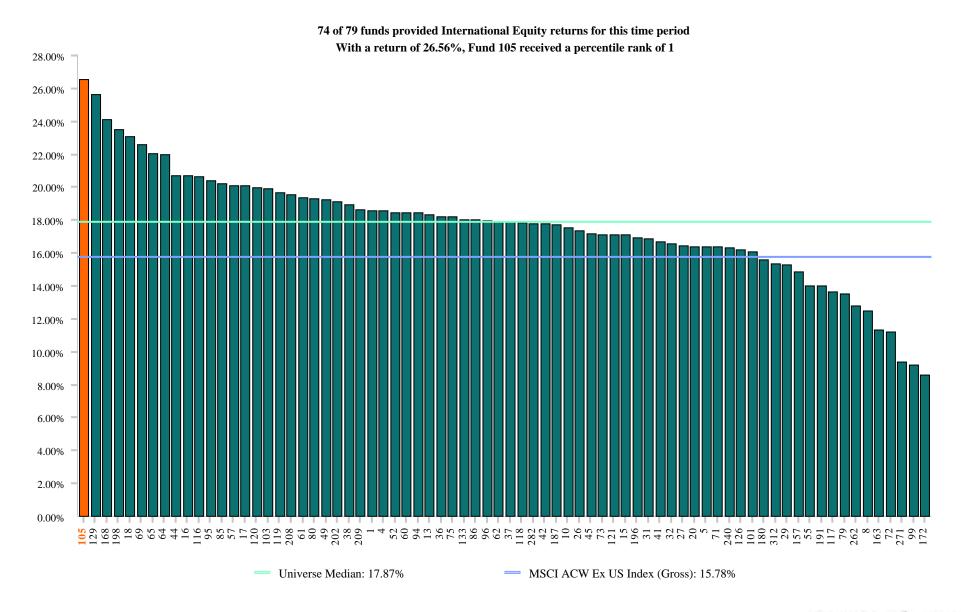
Annualized Returns:	<u>1 Year</u>	3 Years	<u>5 Years</u>
Milwaukee ERS	33.91%	15.10%	19.03%
R 3000 Index	33.55%	16.24%	18.71%
Variance	0.36%	-1.14%	0.32%



# 1 Year Annualized International Equity Returns

As of December 31, 2013

Fund Number: 105

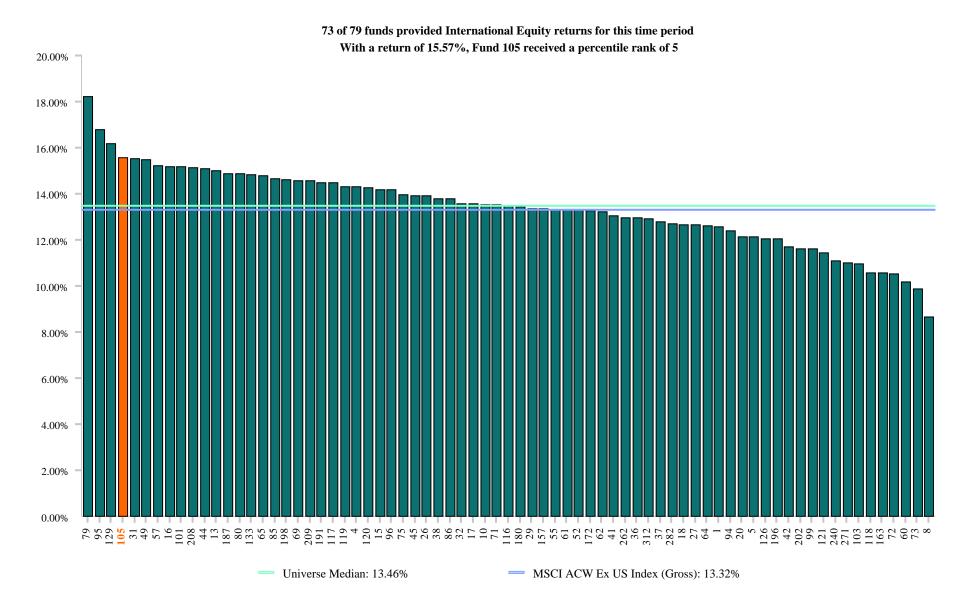




# **5 Year Annualized International Equity Returns**

As of December 31, 2013

Fund Number: 105



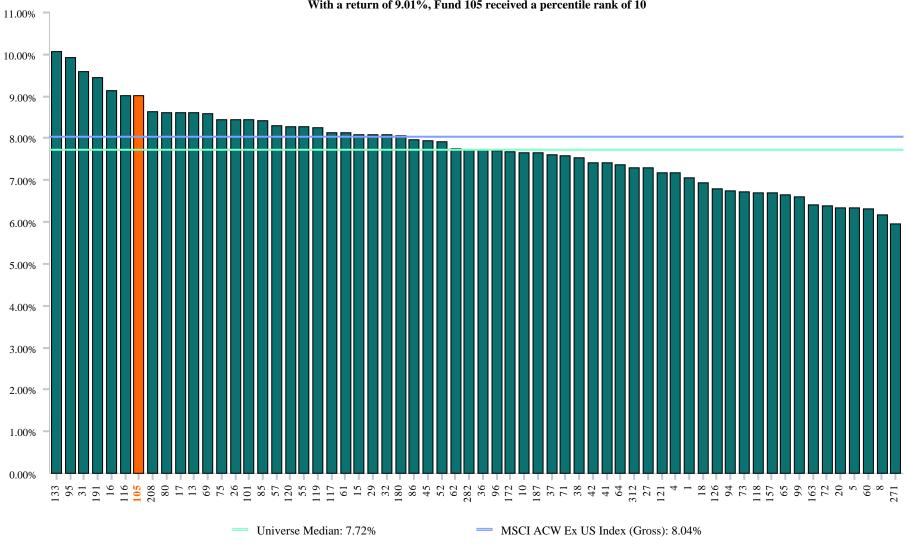


# 10 Year Annualized International Equity Returns

As of December 31, 2013

Fund Number: 105

62 of 79 funds provided International Equity returns for this time period With a return of 9.01%, Fund 105 received a percentile rank of 10



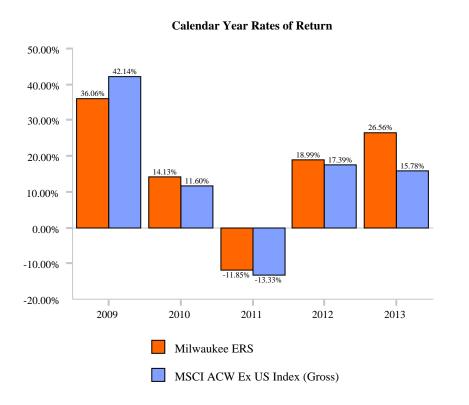


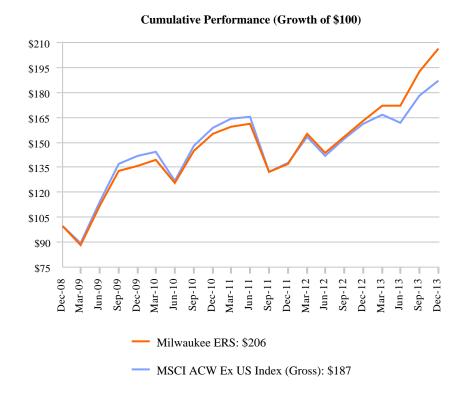
# **Total Return - International Equity**

# Milwaukee ERS vs. MSCI ACW Ex US Index (Gross)

As of December 31, 2013







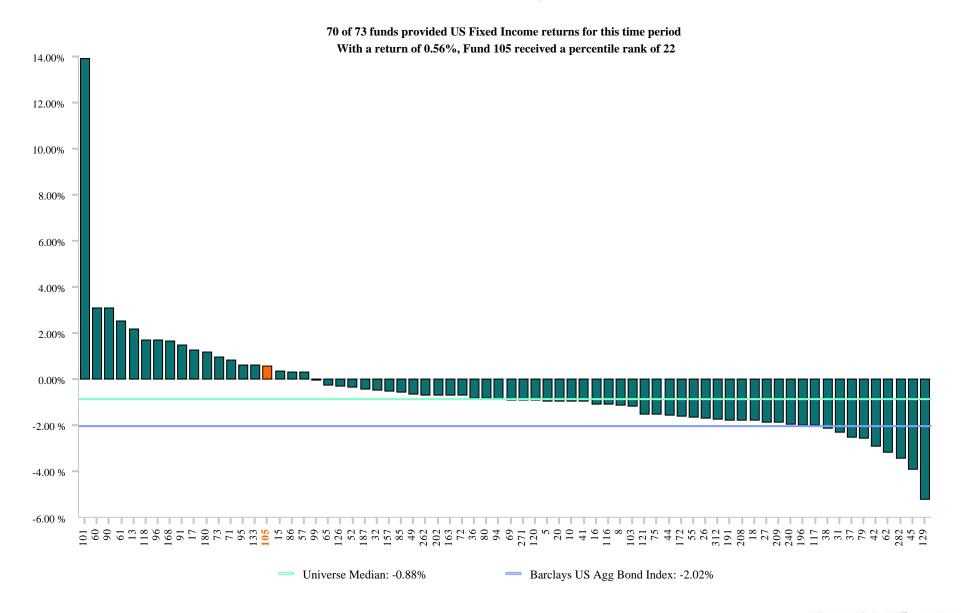
Annualized Returns:	<u>1 Year</u>	3 Years	<u>5 Years</u>
Milwaukee ERS	26.56%	9.90%	15.57%
MSCI ACW Ex US Index (Gross)	15.78%	5.61%	13.32%
Variance	10.78%	4.29%	2.25%



#### 1 Year Annualized US Fixed Income Returns

As of December 31, 2013

Fund Number: 105



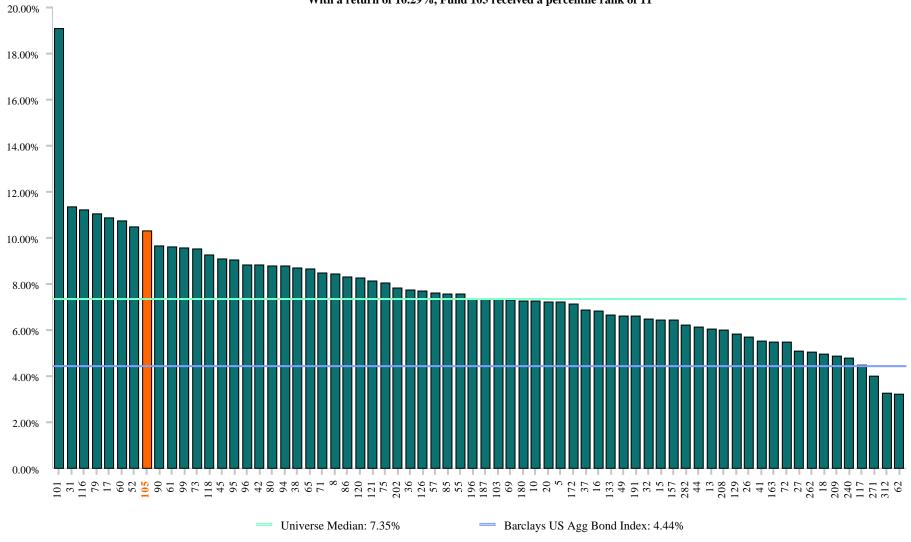


#### **5 Year Annualized US Fixed Income Returns**

As of December 31, 2013

Fund Number: 105

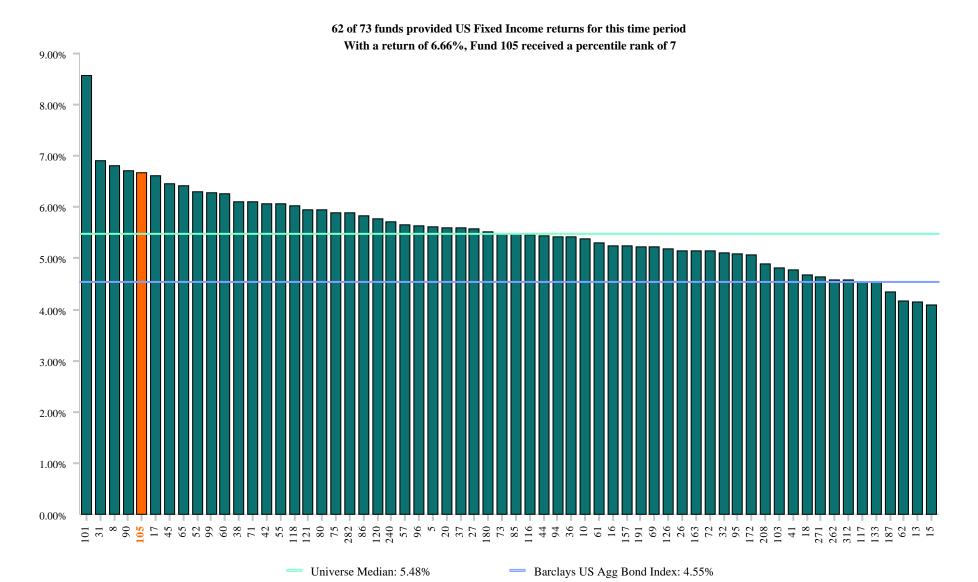
68 of 73 funds provided US Fixed Income returns for this time period With a return of 10.29%, Fund 105 received a percentile rank of 11

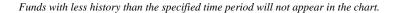




#### 10 Year Annualized US Fixed Income Returns

As of December 31, 2013

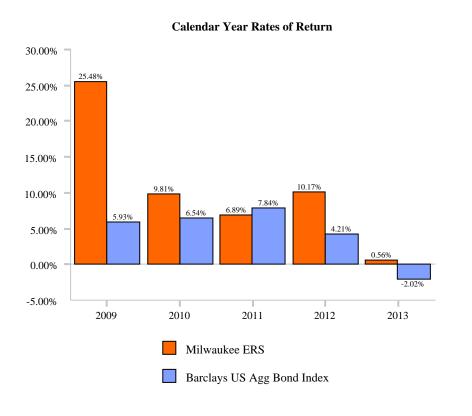


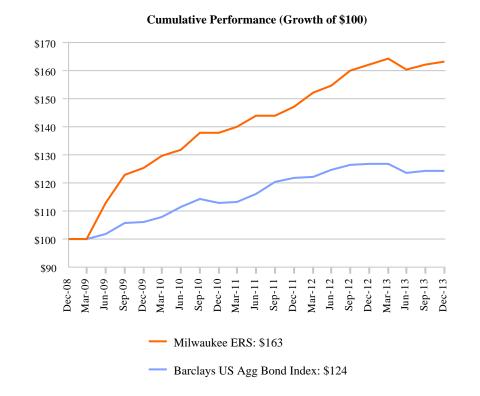




#### **Total Return - US Fixed Income**

#### Milwaukee ERS vs. Barclays US Agg Bond Index As of December 31, 2013



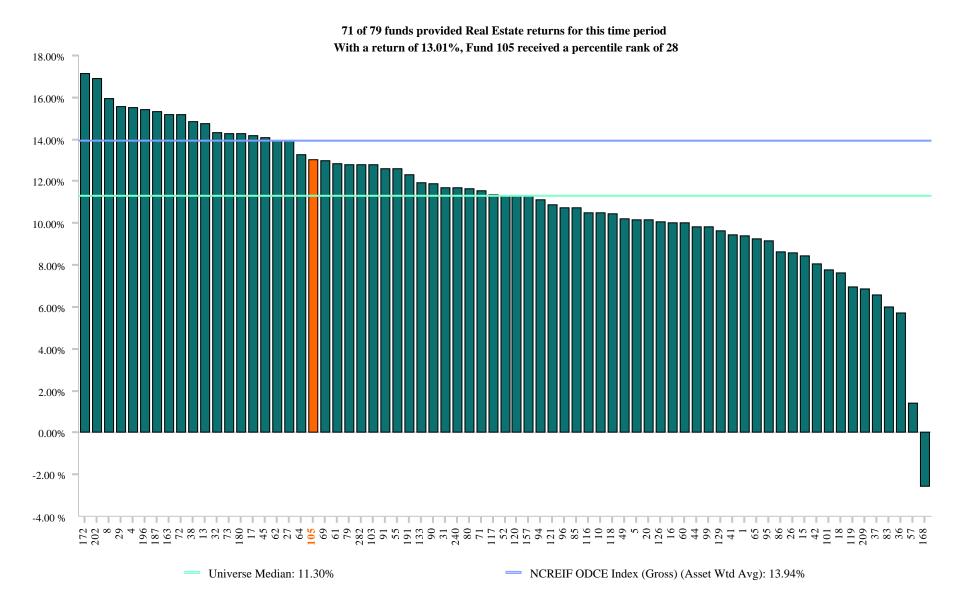


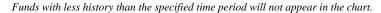
Annualized Returns:	<u>1 Year</u>	3 Years	<u>5 Years</u>
Milwaukee ERS	0.56%	5.80%	10.29%
Barclays US Agg Bond Index	-2.02%	3.26%	4.44%
Variance	2.58%	2.54%	5.85%



#### 1 Year Annualized Real Estate Returns

As of December 31, 2013



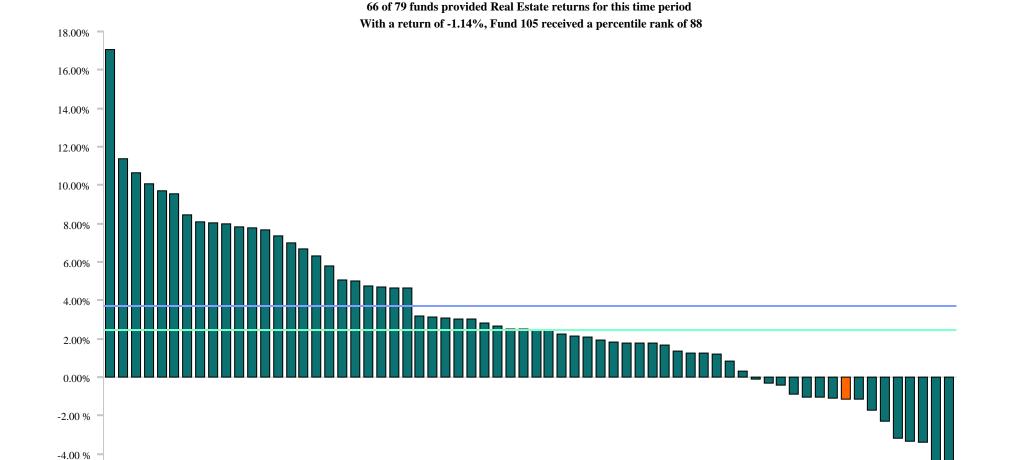




#### **5 Year Annualized Real Estate Returns**

As of December 31, 2013

Fund Number: 105



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

Universe Median: 2.47%

-6.00 %

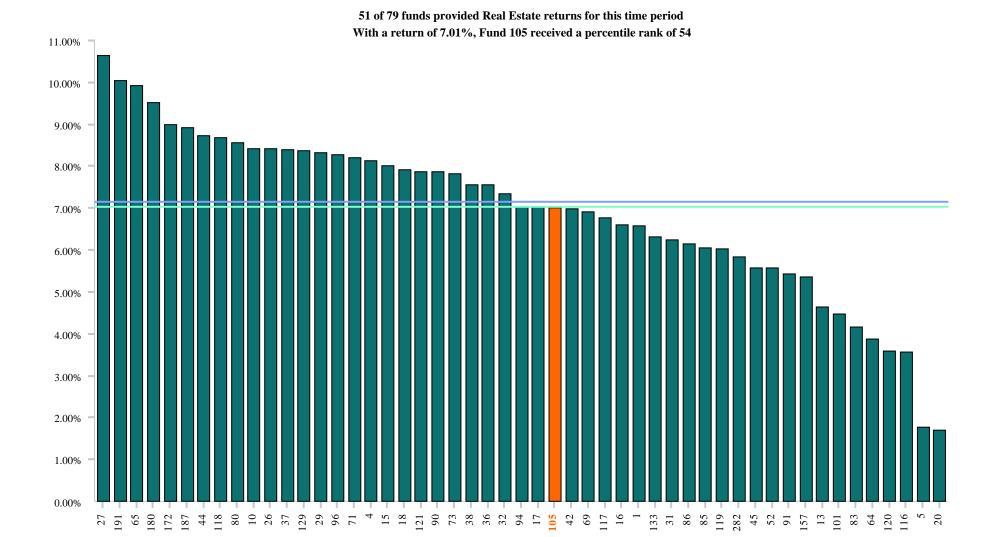


— NCREIF ODCE Index (Gross) (Asset Wtd Avg): 3.68%

#### 10 Year Annualized Real Estate Returns

As of December 31, 2013

Fund Number: 105



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

Universe Median: 7.04%

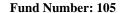


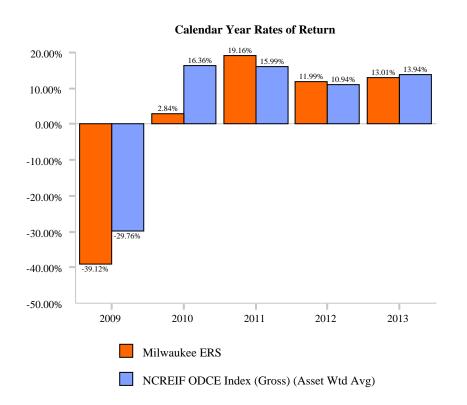
NCREIF ODCE Index (Gross) (Asset Wtd Avg): 7.16%

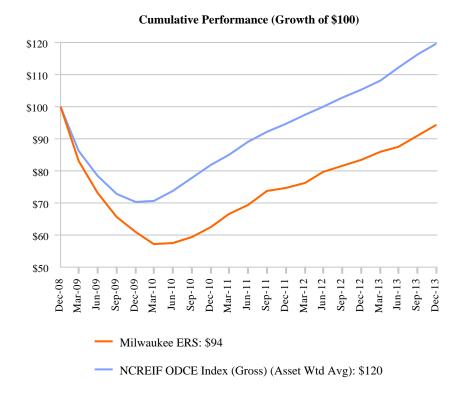
#### **Total Return - Real Estate**

# Milwaukee ERS vs. NCREIF ODCE Index (Gross) (Asset Wtd Avg)

As of December 31, 2013





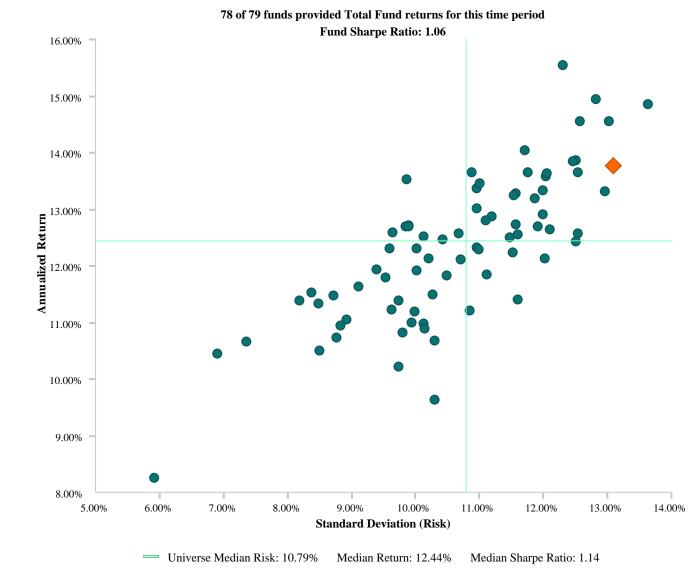


Annualized Returns:	<u>1 Year</u>	3 Years	<u>5 Years</u>
Milwaukee ERS	13.01%	14.68%	-1.14%
NCREIF ODCE Index (Gross) (Asset Wtd Avg)	13.94%	13.60%	3.68%
Variance	-0.93%	1.08%	-4.82%



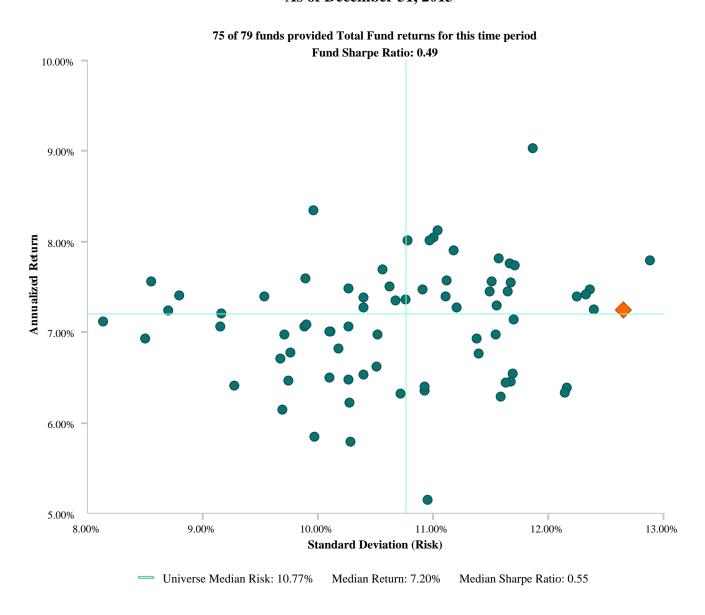
# 5 Year Annualized Total Fund Returns vs. Standard Deviation

As of December 31, 2013





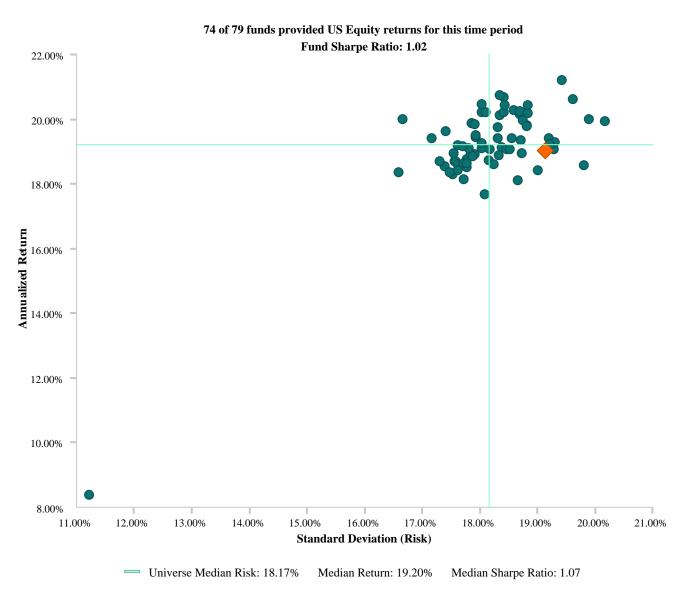
#### 10 Year Annualized Total Fund Returns vs. Standard Deviation As of December 31, 2013





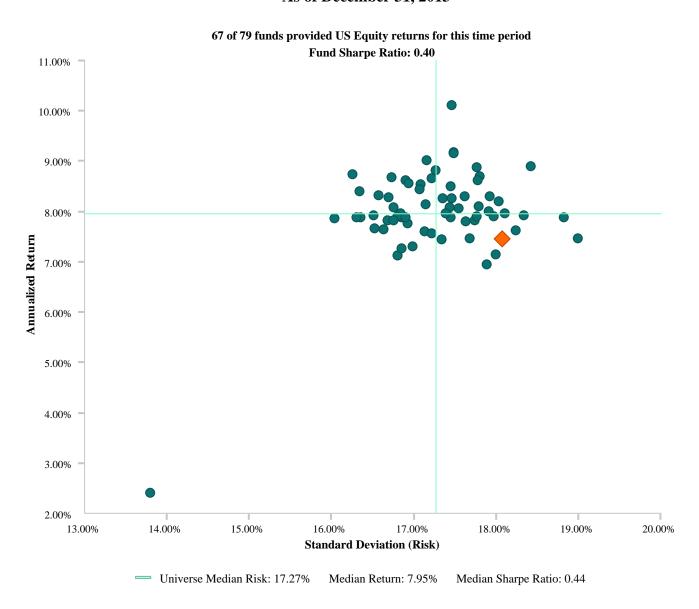
#### 5 Year Annualized US Equity Returns vs. Standard Deviation As of December 31, 2013

ecember 31, 2013 Fund Number: 105



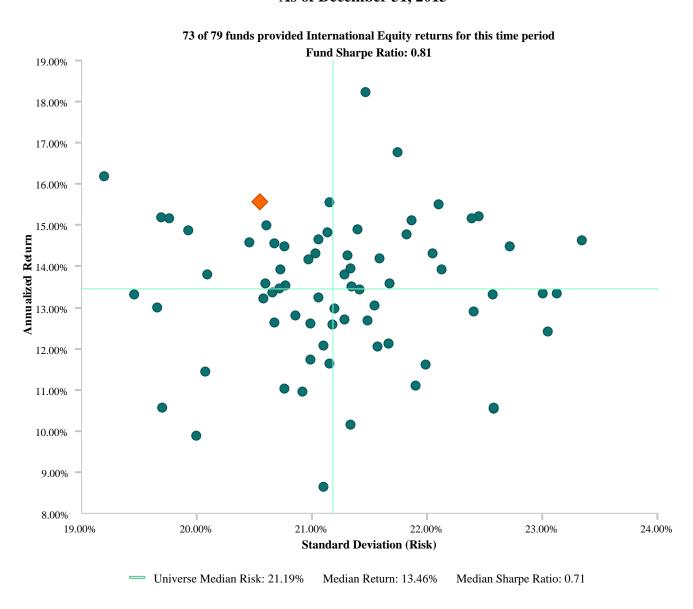


# 10 Year Annualized US Equity Returns vs. Standard Deviation As of December 31, 2013



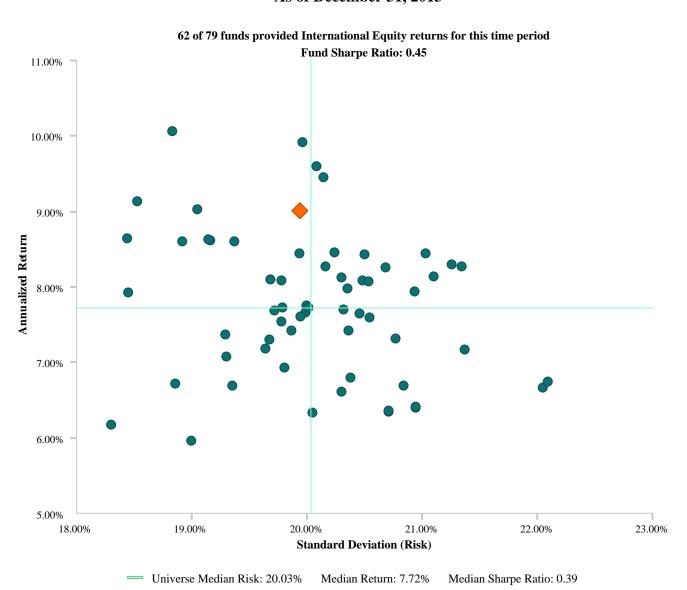


#### 5 Year Annualized International Equity Returns vs. Standard Deviation As of December 31, 2013



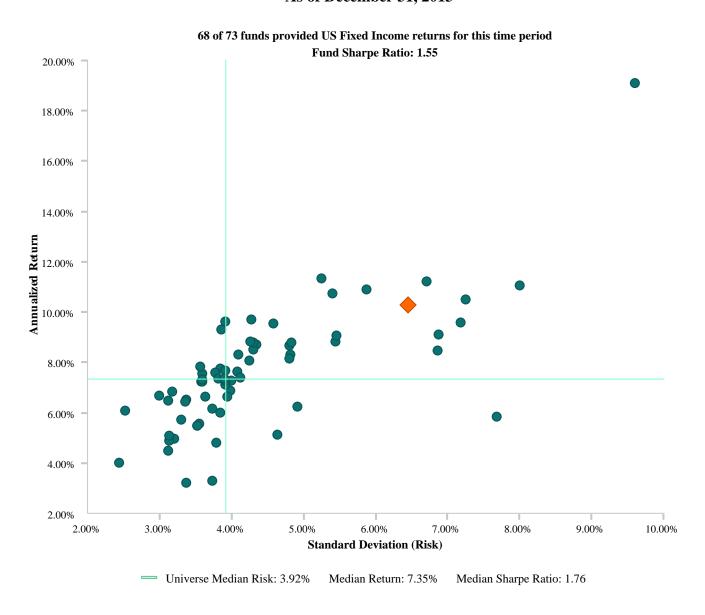


#### 10 Year Annualized International Equity Returns vs. Standard Deviation As of December 31, 2013



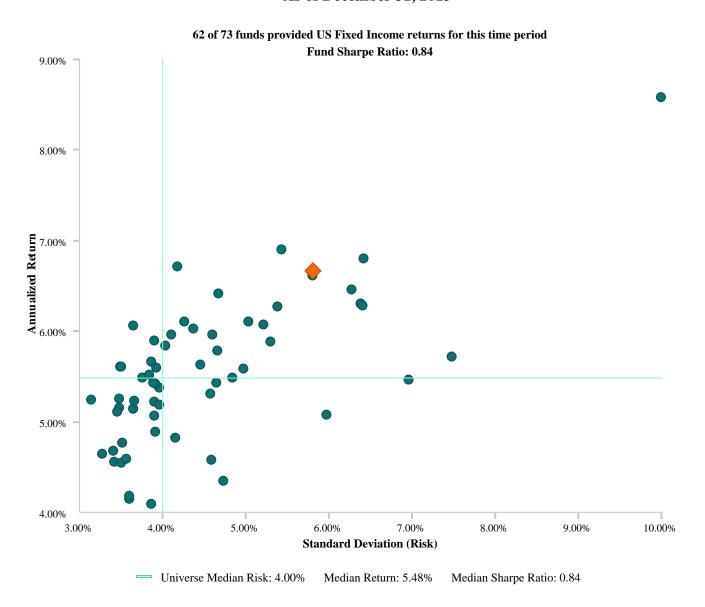


#### 5 Year Annualized US Fixed Income Returns vs. Standard Deviation As of December 31, 2013





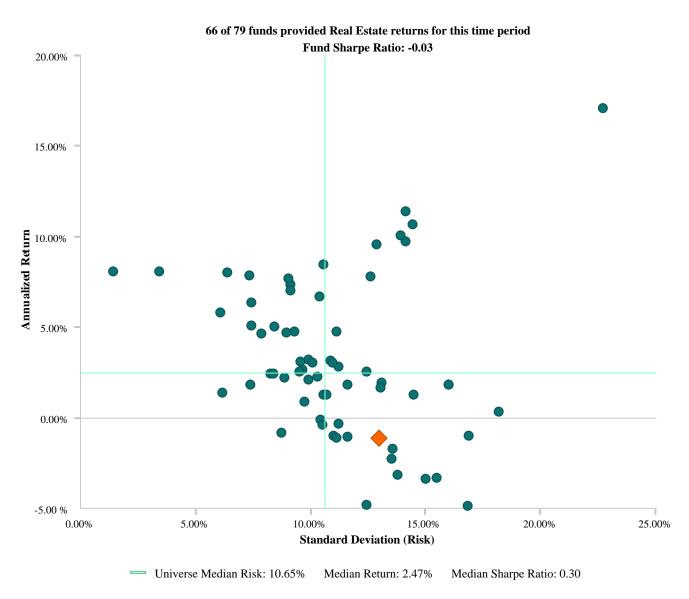
#### 10 Year Annualized US Fixed Income Returns vs. Standard Deviation As of December 31, 2013





#### 5 Year Annualized Real Estate Returns vs. Standard Deviation As of December 31, 2013

r 31, 2013 Fund Number: 105

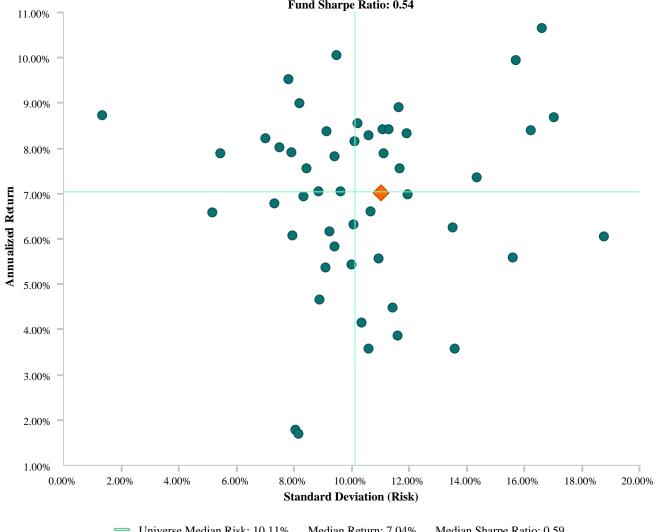




# 10 Year Annualized Real Estate Returns vs. Standard Deviation

As of December 31, 2013

51 of 79 funds provided Real Estate returns for this time period **Fund Sharpe Ratio: 0.54** 



— Universe Median Risk: 10.11% Median Sharpe Ratio: 0.59 Median Return: 7.04%

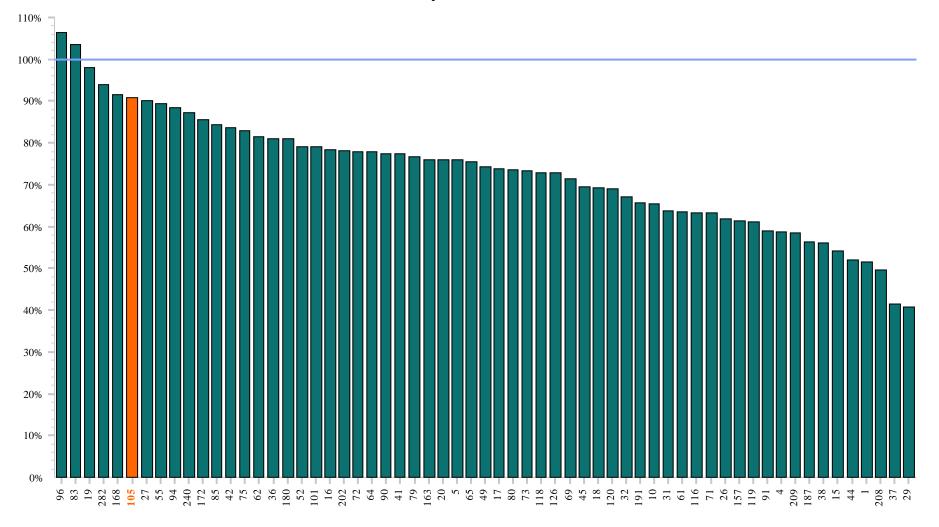


#### **Net Assets Available For Benefits**

# Expressed as a Percentage of the Pension Benefit Obligation As of December 31, 2013

Fund Number: 105

61 of 79 funds provided Net Assets Available data



= 100% of Net Assets Available for Benefits

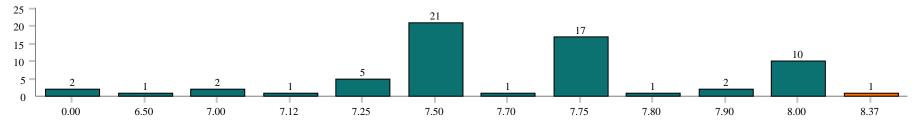


# **Actuarial Assumption Rates**

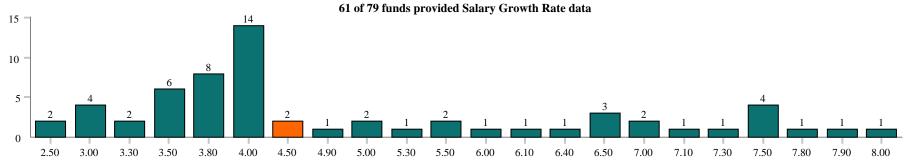
#### As of December 31, 2013

Fund Number: 105

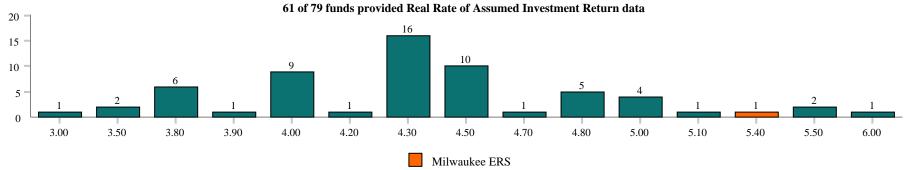
# Actuarial Rate Assumptions - 7.50% Median 64 of 79 funds provided Actuarial Rate data



### Salary Growth Rate Assumptions (Inflation plus Merit) - 4.00% Median



#### $Real\ Rate\ of\ Assumed\ Investment\ Return\ (Interest\ Rate\ minus\ Inflation)\ -\ 4.25\%\ Median$



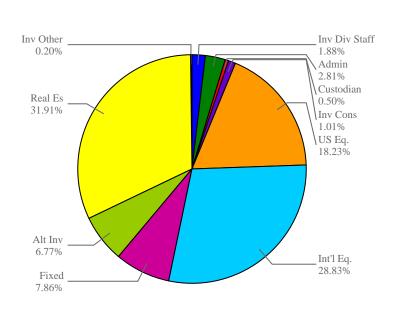


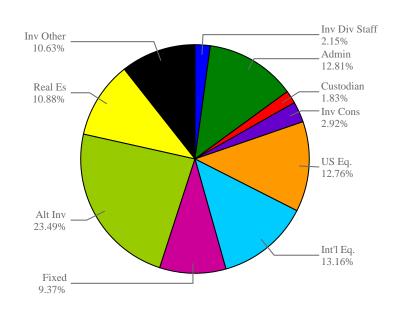
#### **Total Administrative and Investment Fees**

#### Milwaukee ERS vs. All Funds As of December 31, 2013

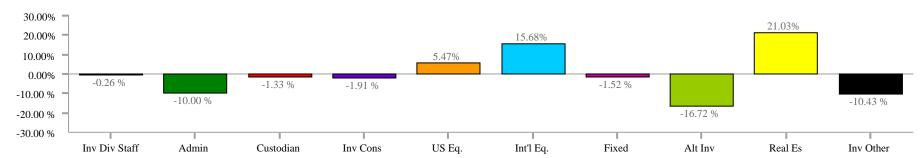
Fund Number: 105

#### Milwaukee ERS All Funds





#### Variance



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



# **Total Fund Fee Summary in Basis Points**

#### Milwaukee ERS vs. Average by Asset Range As of December 31, 2013

#### 64 of 79 funds provided fee data for this time period

<b>Administrative Expenses</b>	Milwaukee ERS	Under \$500 Million	\$500mm - \$1 Billion	\$1 - \$5 Billion	\$5 - \$10 Billion	\$10 - \$20 Billion	Over \$20 Billion
Internal Inv. Div. Staff	0.77	0.00	0.00	1.45	0.80	0.62	1.24
Actuary	0.35	2.33	1.00	0.51	0.33	0.15	0.13
Legal	0.24	1.33	0.51	1.29	1.01	0.28	0.16
Consultant	0.00	0.12	0.10	0.25	0.48	0.18	0.19
Audit	0.14	0.53	0.52	0.19	0.08	0.08	0.06
Other Professional	0.12	0.00	0.32	0.62	0.05	0.11	0.67
General Administrative	0.30	6.23	9.93	6.25	4.81	2.92	1.67
<b>Total Administrative Expenses</b>	1.91	10.53	12.38	10.57	7.57	4.33	4.12

Investment Expenses	Milwaukee ERS	Under \$500 Million	\$500mm - \$1 Billion	\$1 - \$5 Billion	\$5 - \$10 Billion	\$10 - \$20 Billion	Over \$20 Billion
Custodial	0.20	2.34	2.14	1.50	0.62	0.43	0.24
Investment Consulting	0.41	5.33	1.82	1.88	1.90	0.73	0.37
Domestic Equity	7.43	11.58	6.50	8.57	6.39	4.75	3.21
International Equity	11.75	8.75	6.51	6.63	6.72	6.33	4.78
Fixed Income	3.20	4.91	5.38	5.09	5.24	3.40	3.80
Real Estate	13.00	3.93	3.40	4.84	6.55	3.36	6.40
Other Investment Management	0.08	30.16	0.00	2.99	6.85	3.77	4.86
Total Investment Expenses (ex. Alt Inv)	36.08	67.00	25.75	31.50	34.27	22.77	23.67
Alternative Investments	2.76	5.20	8.80	7.28	10.18	9.51	17.74
Total Investment Expenses	38.84	72.20	34.55	38.78	44.45	32.27	41.41

Total Expenses	40.75	82.74	46.93	49.35	52.02	36.60	45.53
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#### **Addendum and Glossary**

#### As of December 31, 2013

#### **Miscellaneous Comments**

- Performance shown is gross of fees, with the exception of the following:
  - Funds 36, 49, 127 and 128: Performance shown is net of fees.
  - Funds 5 and 20: Performance shown is net of fees, except for Total Fund performance.
- 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 Benefit includes funding percentage valuation as of dates between June 2012 and June 2013.
- Allocations shown reflect dedicated managers/mandates rather than actual exposure.

#### **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.

**Return** - Compounded rate of return for the period.

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

**Sharpe Ratio** - Represents the excess rate of return over the risk-free return (i.e., BofA ML 3 Mo US T-Bill Index), divided by the standard deviation of the excess return. 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.

**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.

