



WILSHIRE ASSOCIATES

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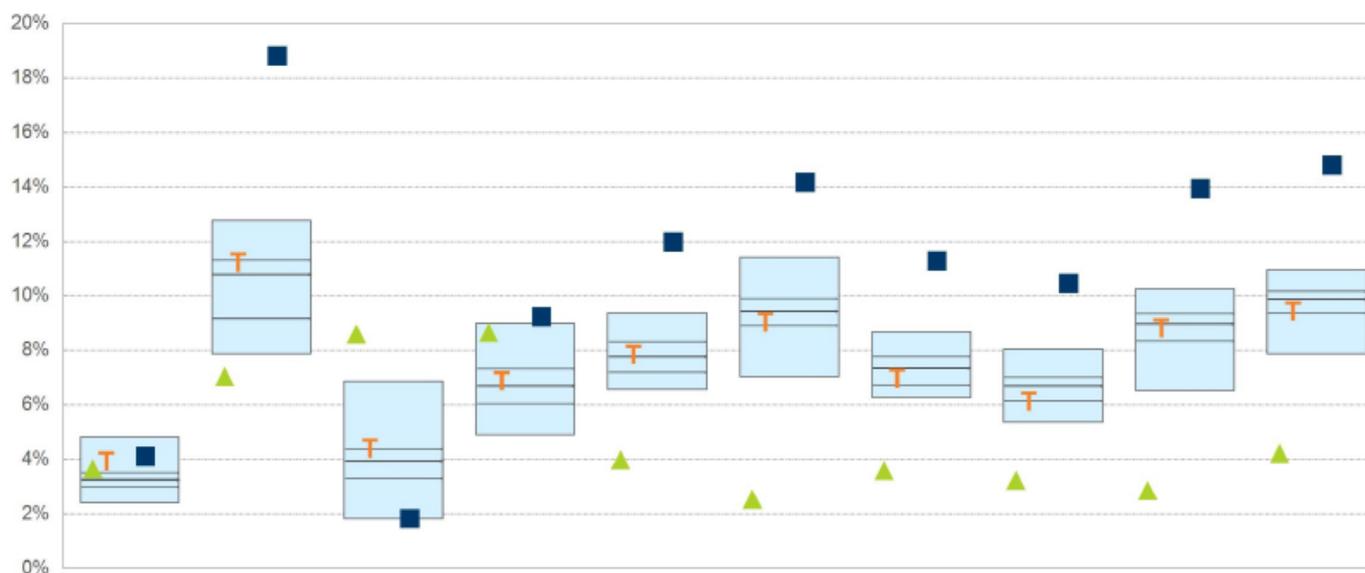


California Public Employees' Retirement System
Universe Comparison Report – June 30, 2019

Total Fund – Universe Comparison

California Public Employees Retirement Performance Comparison

Total Returns of Public Funds > \$10 Billion
Cumulative Periods Ending : June 30, 2019



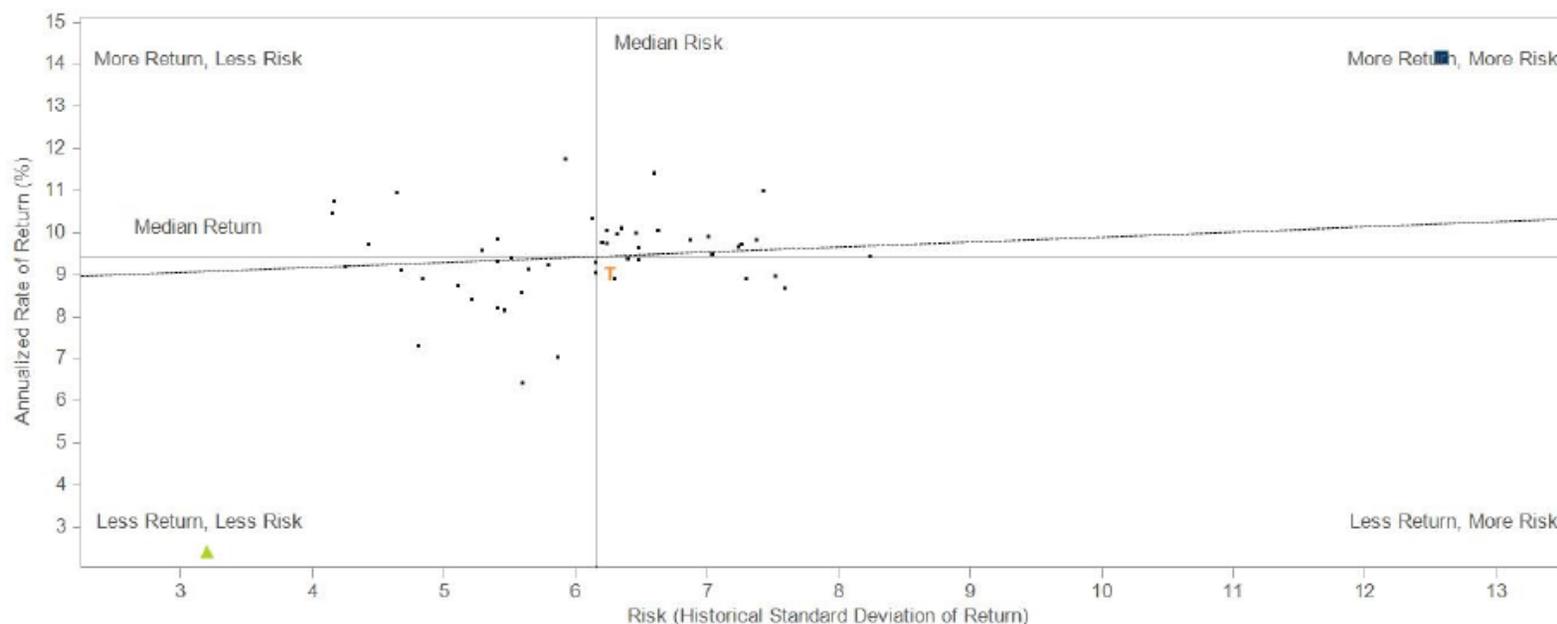
Percentile Rankings	1 Qtr	2 Qtrs	3 Qtrs	1 Year	2 Years	3 Years	4 Years	5 Years	7 Years	10 Years
5th	4.82	12.76	6.86	9.00	9.36	11.41	8.68	8.06	10.24	10.95
25th	3.50	11.31	4.37	7.31	8.30	9.90	7.78	7.01	9.35	10.16
50th	3.25	10.78	3.94	6.89	7.78	9.43	7.34	6.69	8.98	9.89
75th	3.00	9.17	3.29	6.05	7.20	8.92	6.71	6.16	8.34	9.36
95th	2.42	7.88	1.83	4.90	6.57	7.04	6.26	5.35	6.53	7.87
No. Of Obs	49	49	49	49	49	49	49	49	49	45
T Total Plan - Composite	3.82 (12)	11.11 (35)	4.29 (31)	6.77 (45)	7.72 (54)	8.92 (77)	6.85 (72)	6.00 (77)	8.69 (60)	9.33 (77)
■ Wilshire 5000	3.99 (9)	18.66 (1)	1.70 (96)	9.10 (1)	11.84 (1)	14.03 (1)	11.16 (1)	10.33 (1)	13.81 (1)	14.66 (1)
▲ Barclays Govt/Credit	3.53 (23)	6.90 (99)	8.46 (1)	8.52 (11)	3.85 (100)	2.41 (100)	3.46 (100)	3.11 (100)	2.73 (100)	4.09 (100)



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Total Fund – Risk and Returns

California Public Employees Retirement
 Risk vs Total Returns of Public Funds > \$10 Billion
 3 Years Ending June 30, 2019



Alpha: 8.69
 Beta: 0.12
 R-Squared: 0.02

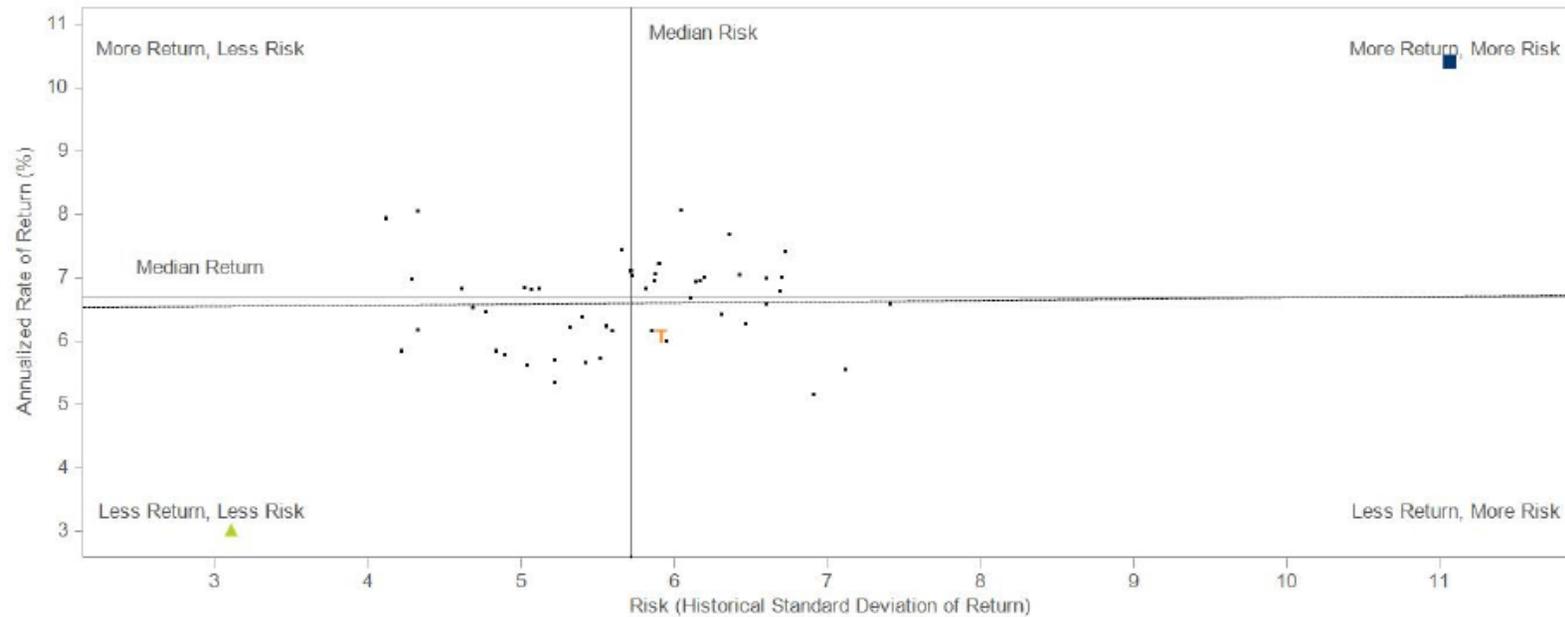
	Risk Value	Risk Rank	Return Value	Return Rank
■ Total Plan - Composites	6.30	39	8.92	77
■ Wilshire 5000	12.62	1	14.03	1
▲ Barclays Aggregate	3.24	100	2.31	100
■ Median	6.18		9.43	



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Total Fund – Risk and Returns

California Public Employees Retirement
 Risk vs Total Returns of Public Funds > \$10 Billion
 5 Years Ending June 30, 2019

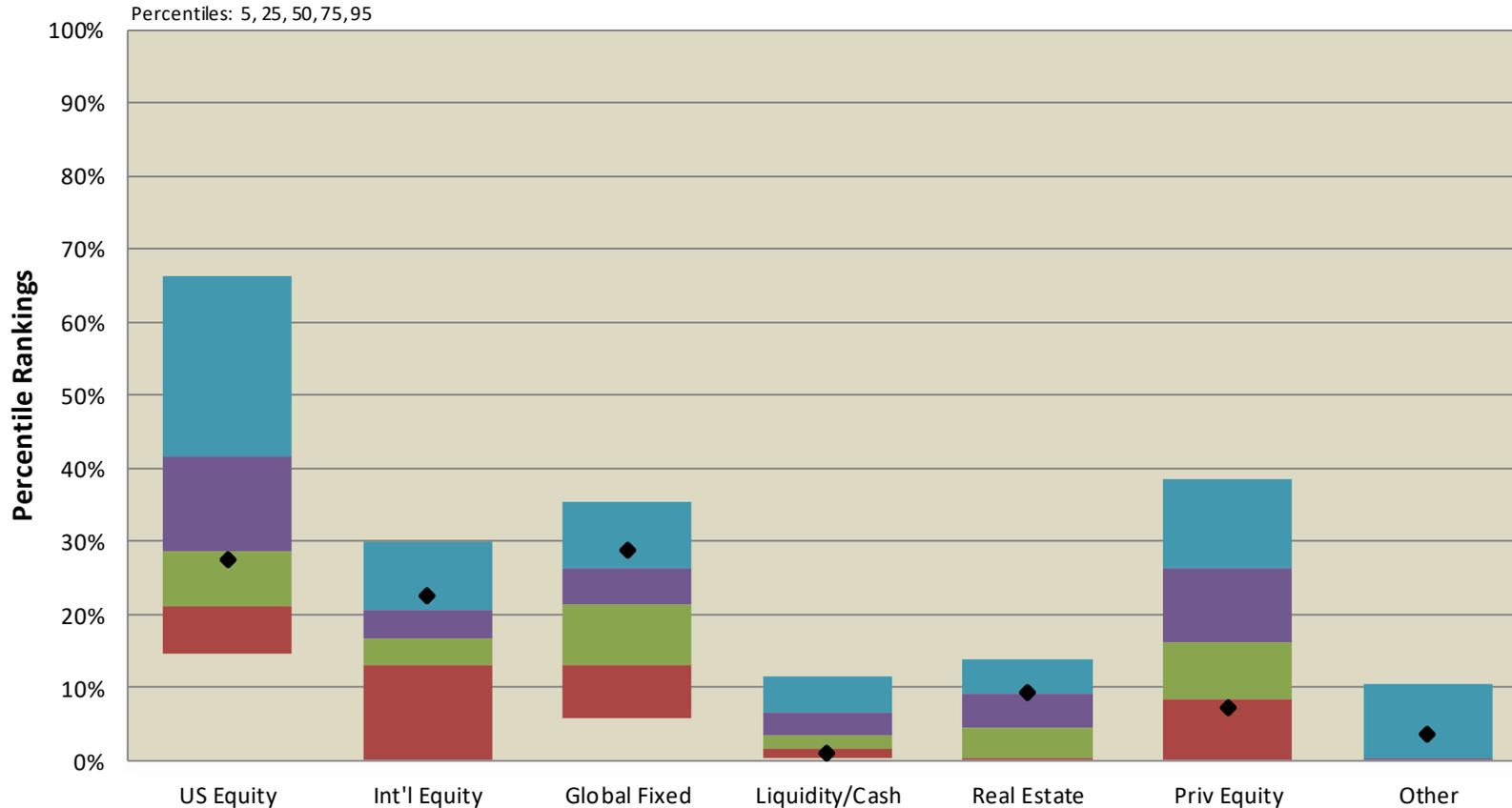


Alpha: 6.49
 Beta: 0.02
 R-Squared: 0

	Risk Value	Risk Rank	Return Value	Return Rank
■ Total Plan - Composites	5.95	35	6.00	77
■ Wilshire 5000	11.10	1	10.33	1
▲ Barclays Aggregate	3.14	100	2.95	100
■ Median	5.72		6.69	

Asset Allocation Ranking – Universe Analysis

Asset Allocation Ranking of Public Funds > \$10 Billion

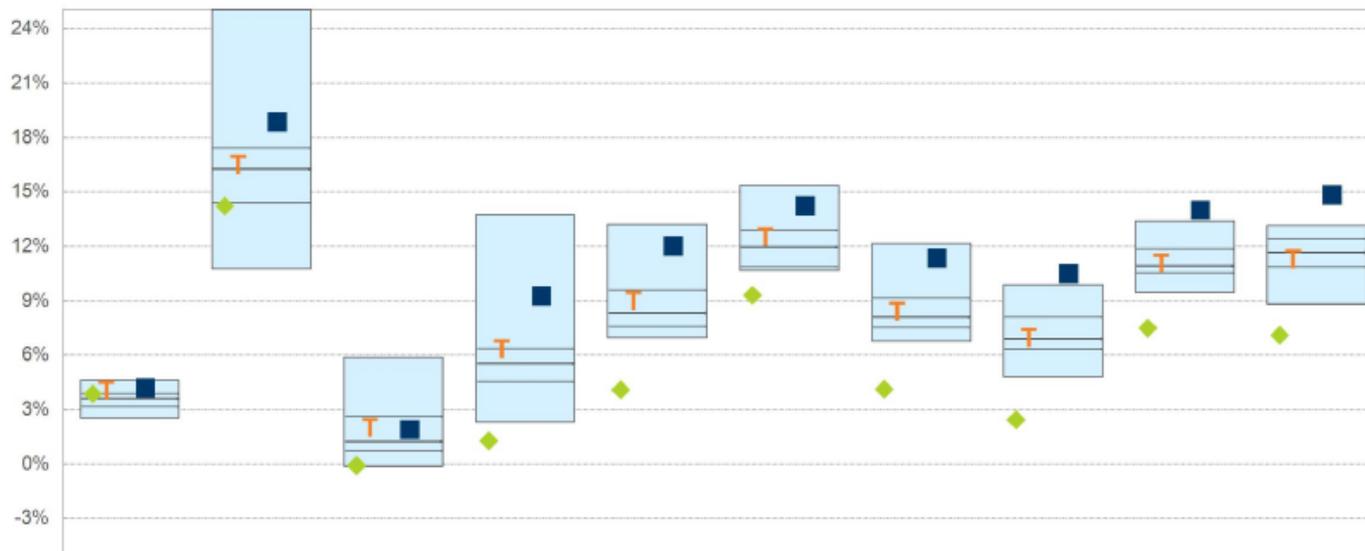


Percentile Rankings	US Equity	Int'l Equity	Global Fixed	Liquidity/Cash	Real Estate	Priv Equity	Other
5th	66.38%	29.82%	35.38%	11.47%	13.72%	38.57%	10.45%
25th	41.65%	20.55%	26.24%	6.47%	9.13%	26.34%	0.36%
50th	28.59%	16.73%	21.31%	3.38%	4.45%	16.06%	0.00%
75th	21.21%	13.16%	13.17%	1.66%	0.33%	8.31%	0.00%
95th	14.51%	0.01%	5.72%	0.36%	0.00%	0.00%	0.00%
CalPERS	27.49% (50)	22.66% (14)	28.71% (15)	1.00% (87)	9.39% (22)	7.15% (81)	3.60% (9)

Growth: Public Equity – Universe Comparison

California Public Employees Retirement Performance Comparison

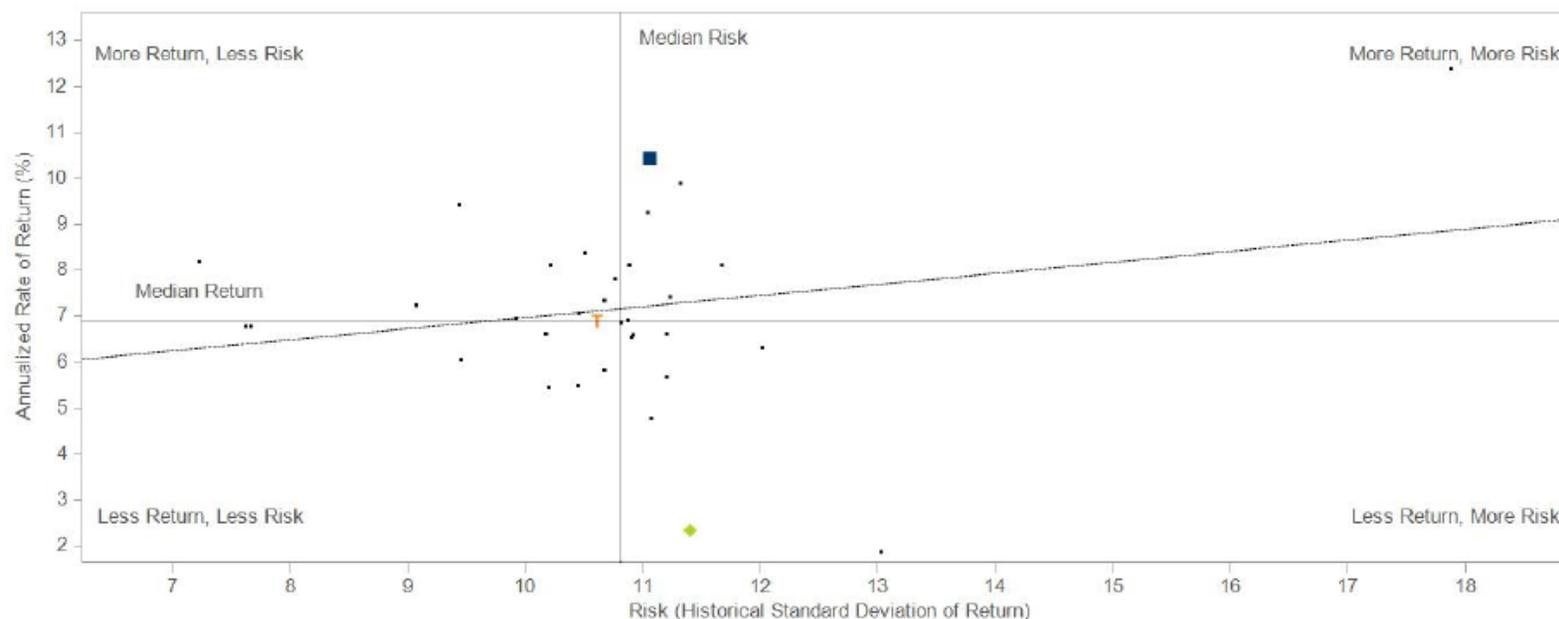
Total Equity Returns of Public Funds > \$10 Billion
Cumulative Periods Ending : June 30, 2019



Percentile Rankings	1 Qtr	2 Qtrs	3 Qtrs	1 Year	2 Years	3 Years	4 Years	5 Years	7 Years	10 Years
5th	4.61	25.08	5.89	13.74	13.23	15.38	12.17	9.91	13.39	13.15
25th	3.90	17.44	2.63	6.38	9.59	12.91	9.14	8.12	11.87	12.43
50th	3.62	16.26	1.25	5.56	8.34	11.98	8.11	6.90	10.93	11.67
75th	3.15	14.44	0.73	4.56	7.61	10.88	7.53	6.32	10.53	10.87
95th	2.53	10.76	-0.11	2.32	6.99	10.66	6.80	4.80	9.48	8.81
No. Of Obs	35	35	34	34	33	33	33	32	30	25
T Total Plan - Composite	3.86 (25)	16.35 (47)	1.82 (34)	6.18 (28)	8.84 (37)	12.36 (37)	8.23 (40)	6.77 (59)	10.89 (50)	11.14 (70)
■ Wilshire 5000	3.99 (14)	18.66 (8)	1.70 (37)	9.10 (5)	11.84 (8)	14.03 (8)	11.16 (5)	10.33 (1)	13.81 (1)	14.66 (1)
◆ MSCI EAFE (Net)	3.68 (41)	14.03 (84)	-0.27 (96)	1.08 (99)	3.92 (100)	9.11 (100)	3.93 (99)	2.25 (95)	7.31 (99)	6.90 (99)

Growth: Public Equity – Risk and Returns

California Public Employees Retirement Risk vs Total Equity Returns of Public Funds > \$10 Billion 5 Years Ending June 30, 2019



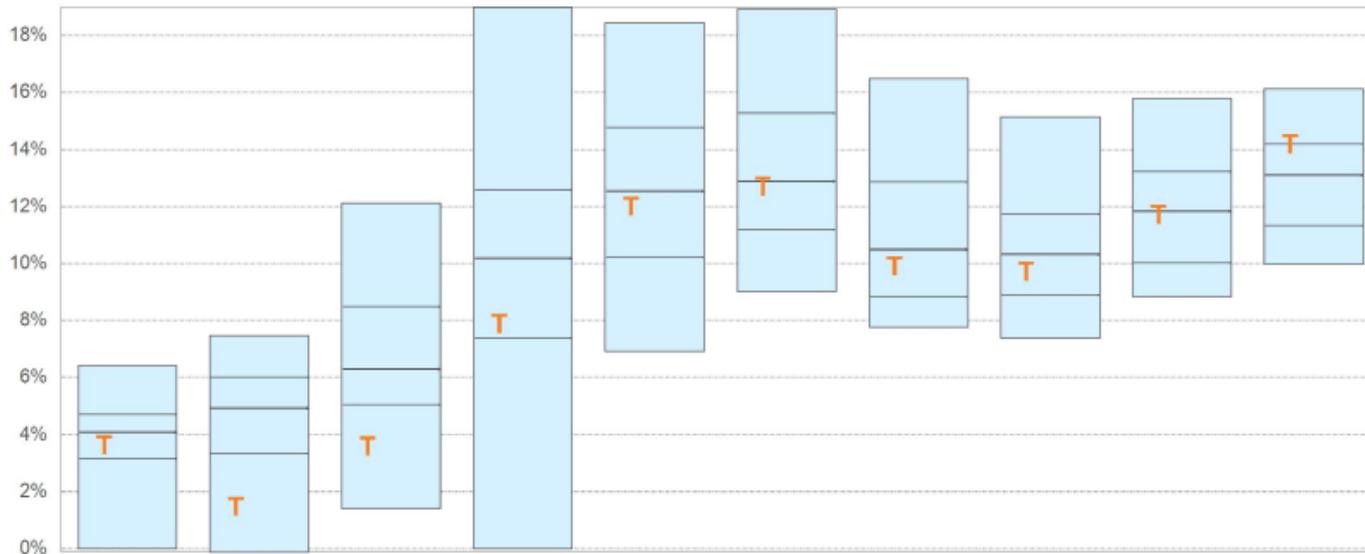
Alpha: 4.58
Beta: 0.24
R-Squared: 0.06

	Risk Value	Risk Rank	Return Value	Return Rank
T Total Plan - Composites	10.66	59	6.77	59
■ Wilshire 5000	11.10	28	10.33	1
◆ MSCI EAFE (Net)	11.44	15	2.25	95
Median	10.82		6.90	

Growth: Private Equity – Universe Comparison

California Public Employees Retirement Performance Comparison

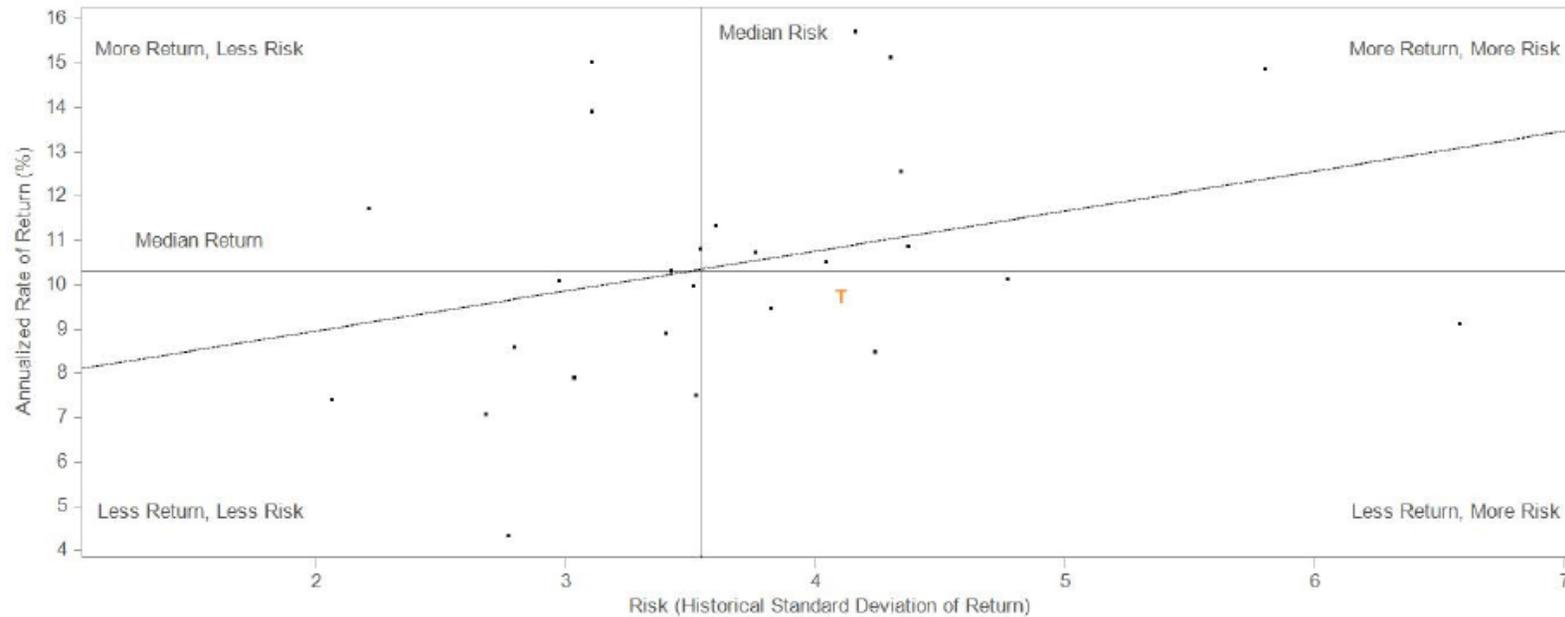
Total Private Equity Returns of Public Funds > \$10 Billion
Cumulative Periods Ending : June 30, 2019



Percentile Rankings	1 Qtr	2 Qtrs	3 Qtrs	1 Year	2 Years	3 Years	4 Years	5 Years	7 Years	10 Years
5th	6.42	7.47	12.11	18.99	18.43	18.93	16.49	15.15	15.79	16.13
25th	4.71	6.00	8.49	12.58	14.77	15.26	12.85	11.73	13.24	14.20
50th	4.07	4.91	6.29	10.18	12.53	12.88	10.49	10.32	11.83	13.10
75th	3.15	3.33	5.05	7.38	10.22	11.20	8.82	8.90	10.03	11.33
95th	0.00	-0.12	1.41	0.00	6.92	9.01	7.76	7.39	8.83	9.97
No. Of Obs	32	32	31	31	28	28	28	26	26	23
T Total Plan - Composite	3.52 (65)	1.36 (81)	3.49 (78)	7.78 (71)	11.89 (57)	12.59 (57)	9.79 (60)	9.62 (62)	11.61 (58)	14.07 (29)

Growth: Private Equity – Risk and Return

California Public Employees Retirement
 Risk vs Total Private Equity Returns of Public Funds > \$10 Billion
 5 Years Ending June 30, 2019



Alpha: 7.17
 Beta: 0.9
 R-Squared: 0.1

	Risk Value	Risk Rank	Return Value	Return Rank
T Total Plan - Composites	4.12	29	9.62	62
Median	3.54		10.32	

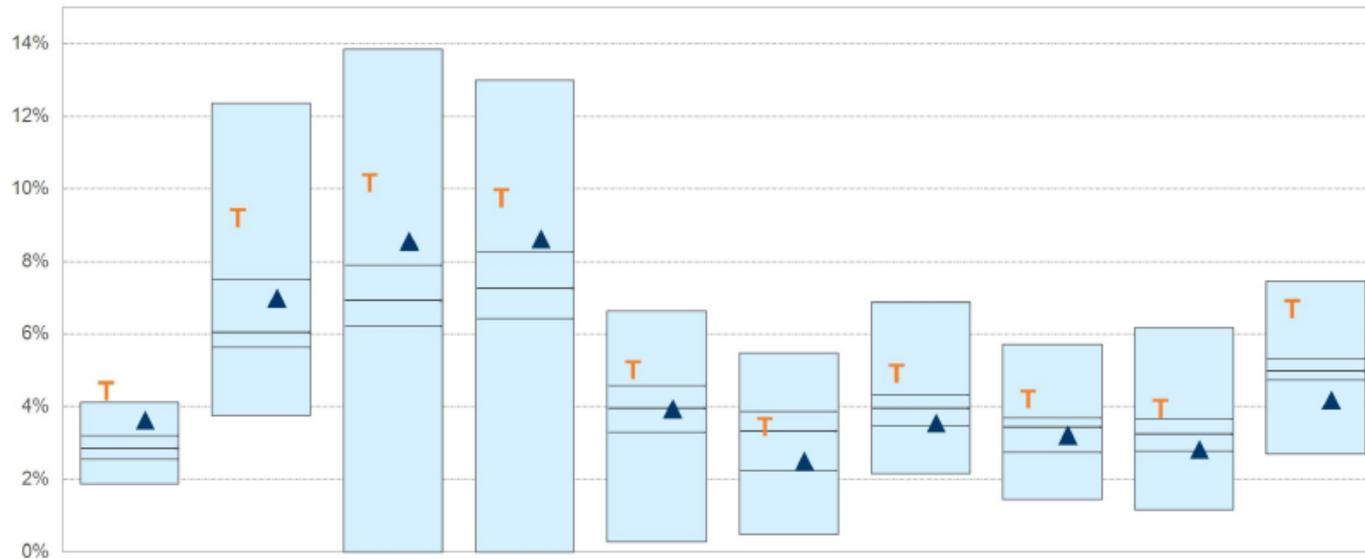


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Income – Universe Comparison

California Public Employees Retirement Performance Comparison

Total Fixed Income Returns of Public Funds > \$10 Billion
Cumulative Periods Ending : June 30, 2019



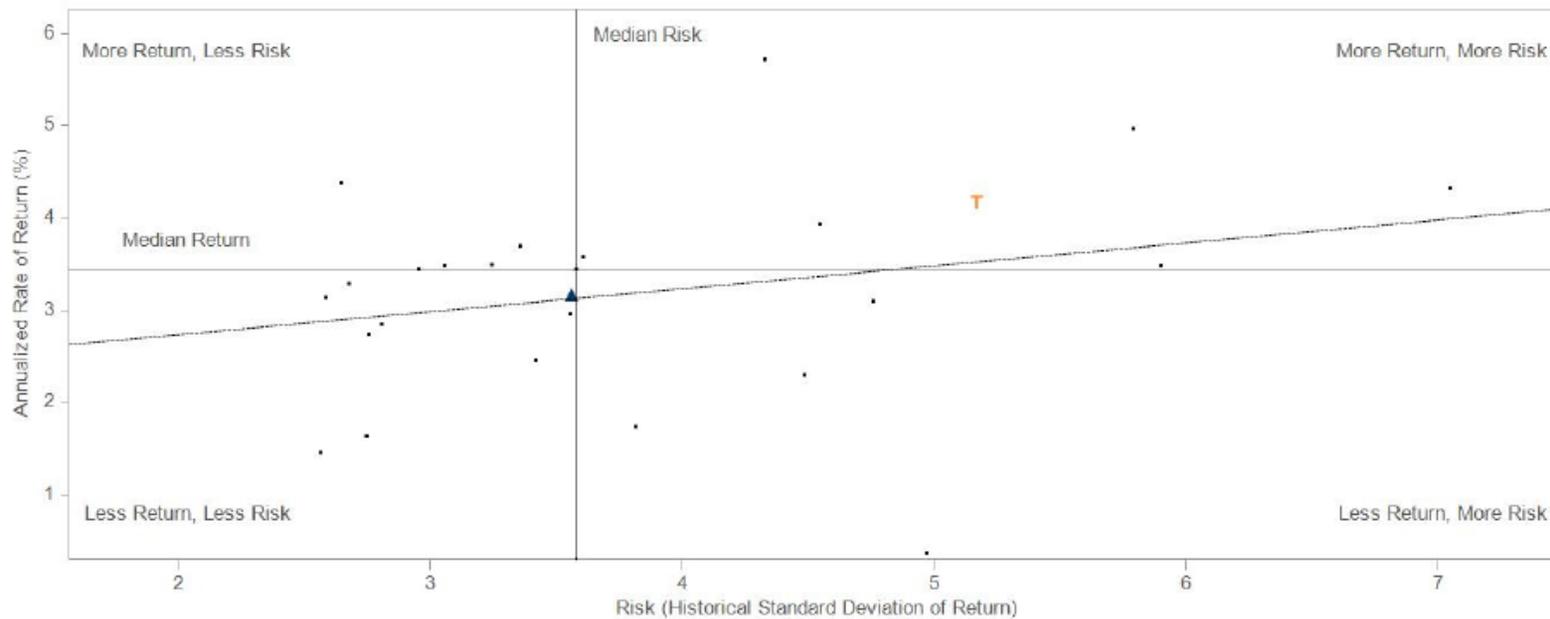
Percentile Rankings	1 Qtr	2 Qtrs	3 Qtrs	1 Year	2 Years	3 Years	4 Years	5 Years	7 Years	10 Years
5th	4.11	12.35	13.83	12.98	6.64	5.48	6.88	5.71	6.16	7.46
25th	3.19	7.51	7.90	8.26	4.59	3.87	4.32	3.70	3.66	5.33
50th	2.85	6.06	6.93	7.27	3.95	3.33	3.96	3.44	3.24	4.99
75th	2.55	5.64	6.21	6.43	3.30	2.25	3.47	2.74	2.78	4.73
95th	1.88	3.76	0.00	0.00	0.28	0.48	2.17	1.46	1.17	2.70
No. Of Obs	34	34	33	32	30	30	28	26	25	22
T Total Plan - Composite	4.34 (1)	9.10 (5)	10.07 (8)	9.65 (5)	4.92 (12)	3.36 (42)	4.82 (17)	4.11 (17)	3.86 (21)	6.61 (10)
▲ Barclays Govt/Credit	3.53 (14)	6.90 (28)	8.46 (14)	8.52 (18)	3.85 (57)	2.41 (71)	3.46 (75)	3.11 (58)	2.73 (75)	4.09 (84)



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Income – Risk and Returns

California Public Employees Retirement
 Risk vs Total Fixed Income Returns of Public Funds > \$10 Billion
 5 Years Ending June 30, 2019



Alpha: 2.23
 Beta: 0.25
 R-Squared: 0.07

	Risk Value	Risk Rank	Return Value	Return Rank
T Total Plan - Composites	5.19	13	4.11	17
▲ Barclays Govt/Credit	3.58	50	3.11	58
Median	3.58		3.44	

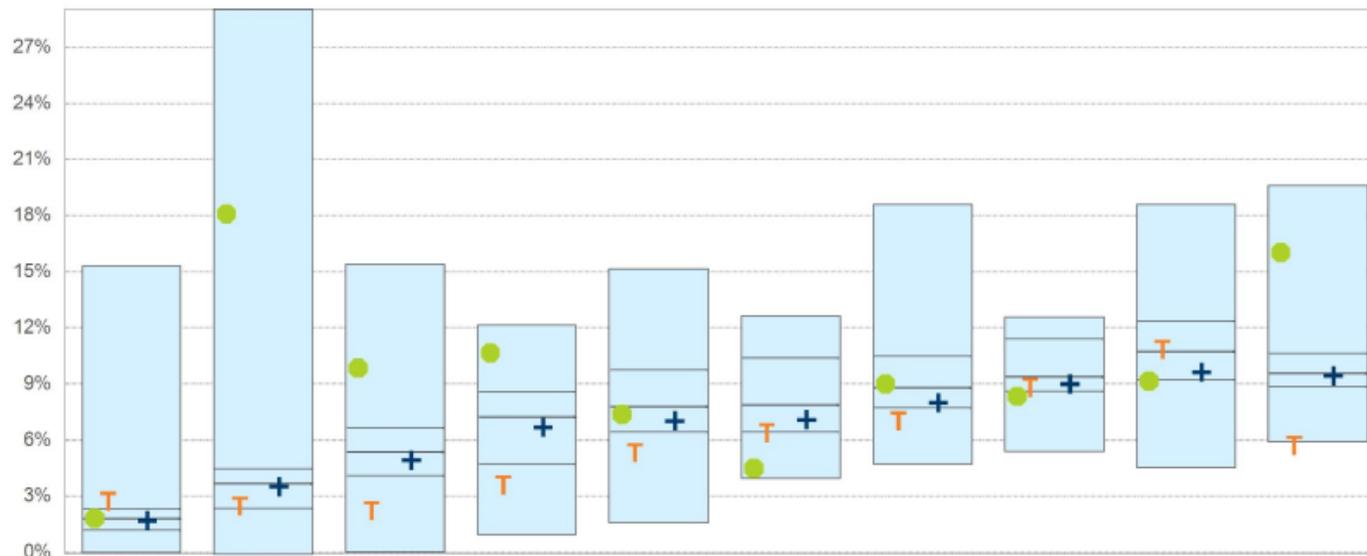


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Real Estate – Universe Comparison

California Public Employees Retirement Performance Comparison

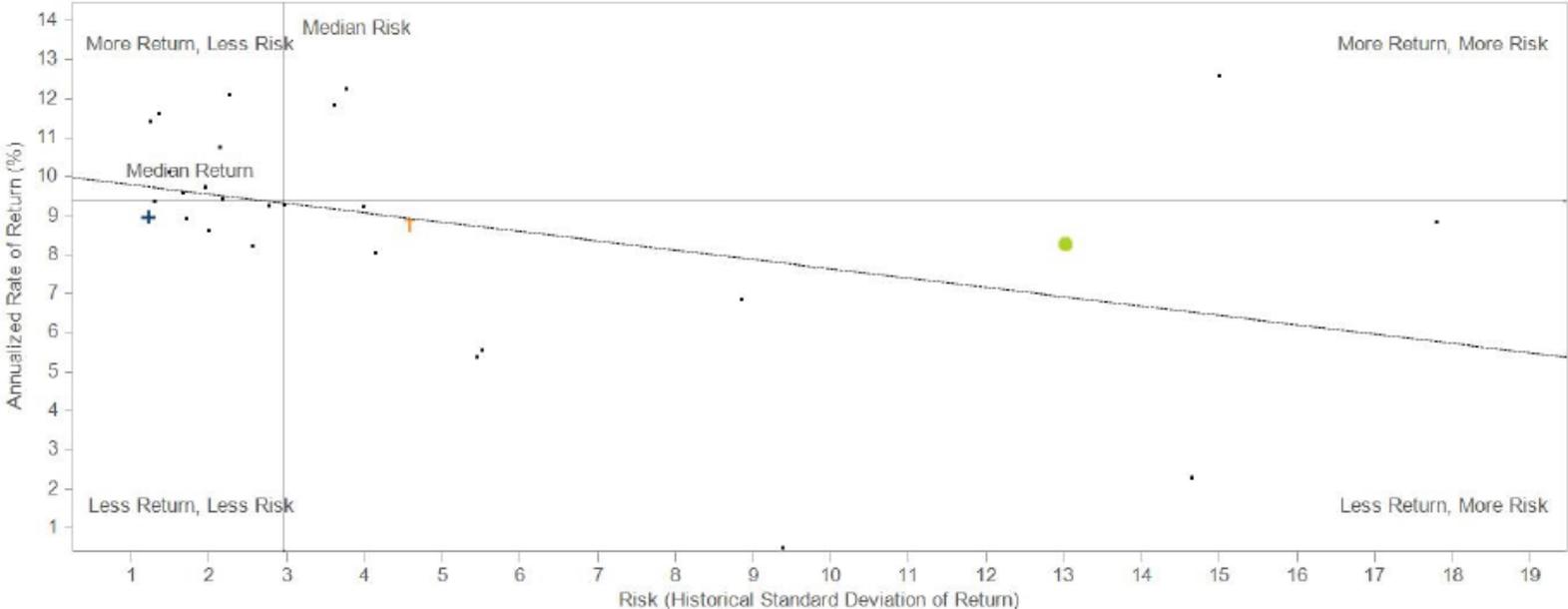
Total Real Estate Returns of Public Funds > \$10 Billion
Cumulative Periods Ending : June 30, 2019



Percentile Rankings	1 Qtr	2 Qtrs	3 Qtrs	1 Year	2 Years	3 Years	4 Years	5 Years	7 Years	10 Years
5th	15.30	29.04	15.40	12.14	15.16	12.64	18.59	12.58	18.60	19.59
25th	2.33	4.50	6.65	8.61	9.75	10.39	10.49	11.43	12.37	10.62
50th	1.80	3.68	5.36	7.25	7.79	7.87	8.82	9.39	10.72	9.58
75th	1.18	2.35	4.11	4.72	6.43	6.43	7.72	8.62	9.21	8.89
95th	0.00	-0.09	0.04	0.95	1.61	3.94	4.72	5.39	4.55	5.93
No. Of Obs	30	30	29	29	28	28	28	26	24	21
T Total Plan - Composite	2.55 (15)	2.30 (75)	2.04 (83)	3.43 (91)	5.15 (83)	6.21 (79)	6.83 (83)	8.62 (75)	10.65 (50)	5.53 (99)
+ NCREIF Property Indx	1.51 (87)	3.34 (80)	4.75 (87)	6.50 (84)	6.85 (84)	6.89 (87)	7.82 (71)	8.83 (70)	9.43 (86)	9.25 (80)
● Wilshire RESI	1.62 (64)	17.90 (5)	9.66 (5)	10.47 (9)	7.18 (57)	4.30 (91)	8.81 (50)	8.16 (79)	8.98 (84)	15.84 (5)

Real Estate – Risk and Returns

California Public Employees Retirement Risk vs Total Real Estate Returns of Public Funds > \$10 Billion 5 Years Ending June 30, 2019



Alpha: 10.05
Beta: -0.24
R-Squared: 0.15

	Risk Value	Risk Rank	Return Value	Return Rank
T Total Plan - Composites	4.64	29	8.62	75
+ NCREIF Property Indx	1.29	99	8.83	70
● Wilshire RESI	13.09	13	8.16	79
Median	2.97		9.39	



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