Equities, Real Estate, Farmland & Infrastructure, and Commodities

Arizona State Retirement System

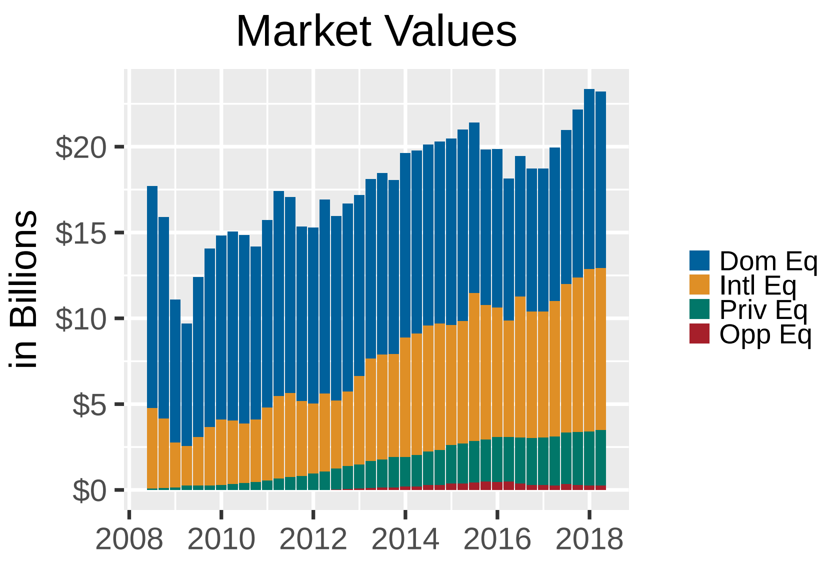
June 22, 2018

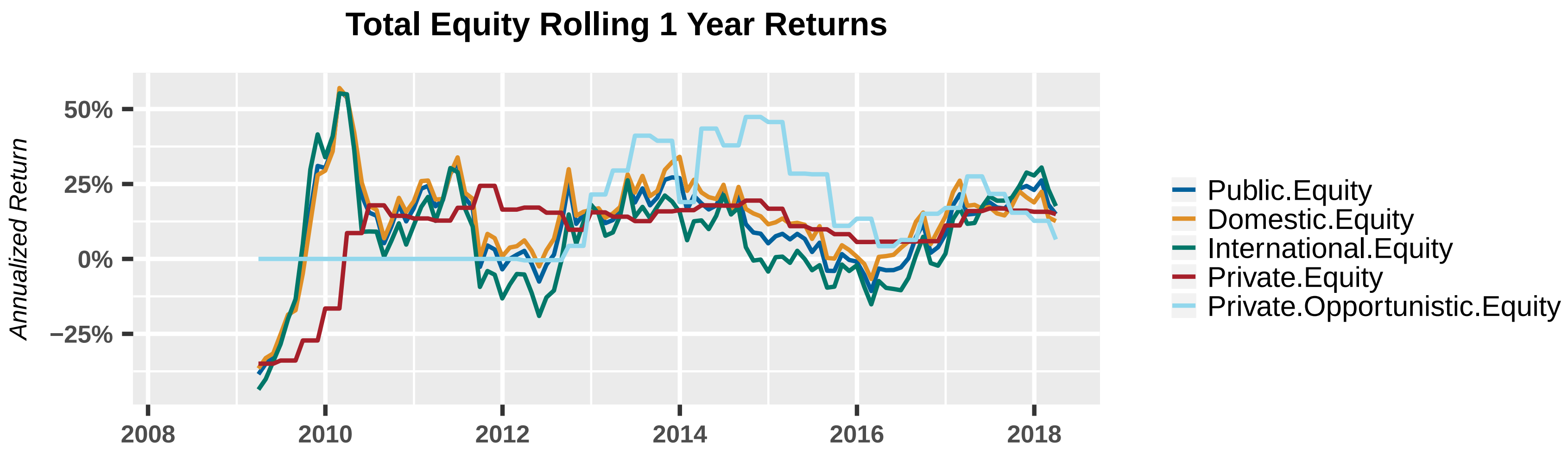
Outline

Total Equities

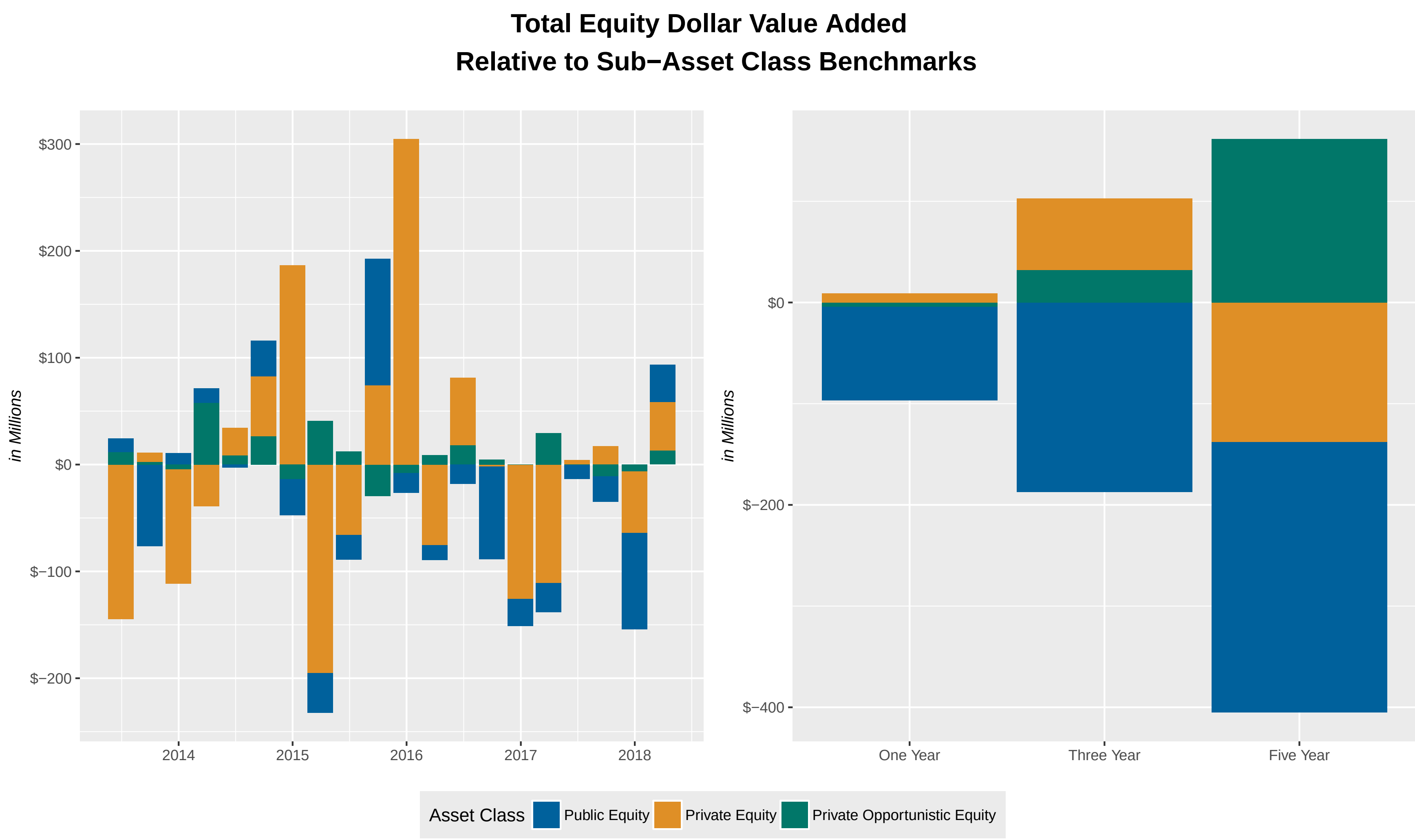
Annualized Returns

Composite	One Year	Three Year	Five Year	Ten Year
Domestic Equity	12.61%	10.1%	12.75%	10.06%
Benchmark	13.55%	10.62%	13.24%	9.99%
Excess	-0.95%	-0.52%	-0.49%	0.07%
International Equity	17.62%	6.77%	6.27%	3.25%
Benchmark	17.59%	6.85%	6.55%	3.42%
Excess	0.03%	-0.09%	-0.28%	-0.17%
Private Equity	14.94%	12.13%	13.01%	6.98%
Benchmark	14.65%	9.96%	14.12%	8.71%
Excess	0.29%	2.17%	-1.11%	-1.73%
Private Opportunistic Equity	6.49%	12.3%	21.15%	NA%
Benchmark	8%	8%	8%	NA%
Excess	-1.51%	4.3%	13.15%	NA%





Total Equity Dollar Value Added



Update: Transitions

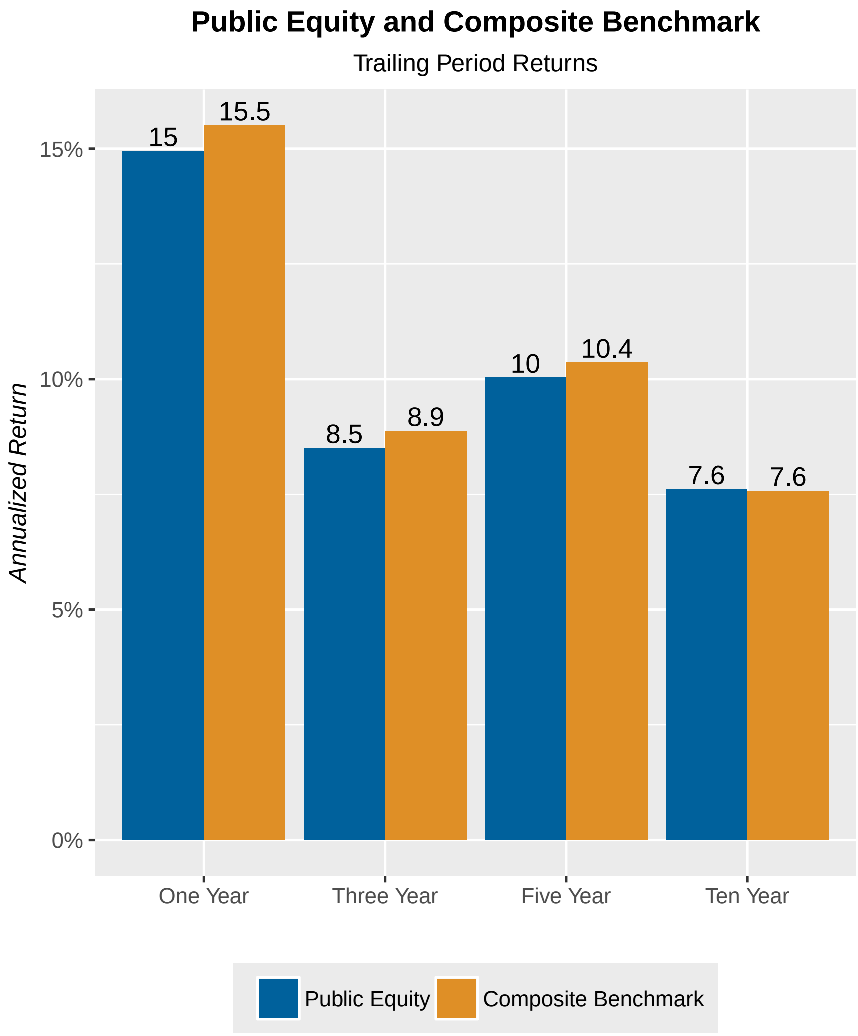
Transition Event	Date	Amount	Total Cost (bps)	Market Avg Cost (bps)	Net $ vs. Avg	# of Weeks
US LC Factors	July 2017	$1,670 MM	+5	-23	$4.7 M	1
US MC Active	Sep 2017	$240 MM	-35	-42	$0.2 M	1
US SC Actives	Sep 2017	$650 MM	-51	-57	$0.4 M	4
EAFE SC Actives	Oct 2017	$400 MM	-69	-76	$0.3 M	4
US LC Active	Nov 2017	$760 MM	-25	-23	-$0.2 M	1
EM/EM Factors	Apr 2018	$1,500 MM	-18	-92	$11.1	6
EAFE LC/EAFE LC Factors	Apr 2018	$2,350 MM	-26	-54	$6.6 M	4

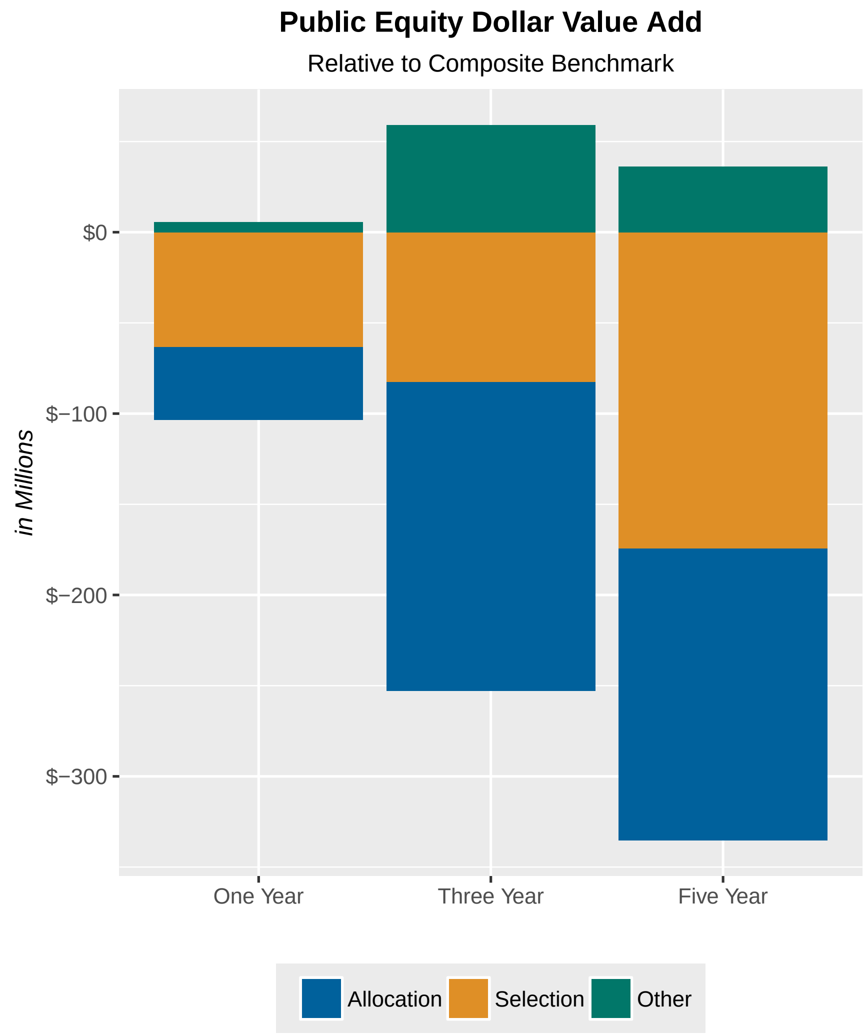
- Transitions are complete: net total savings versus market average cost is $23.1 M for completed transitions

Allocation: Public Equity

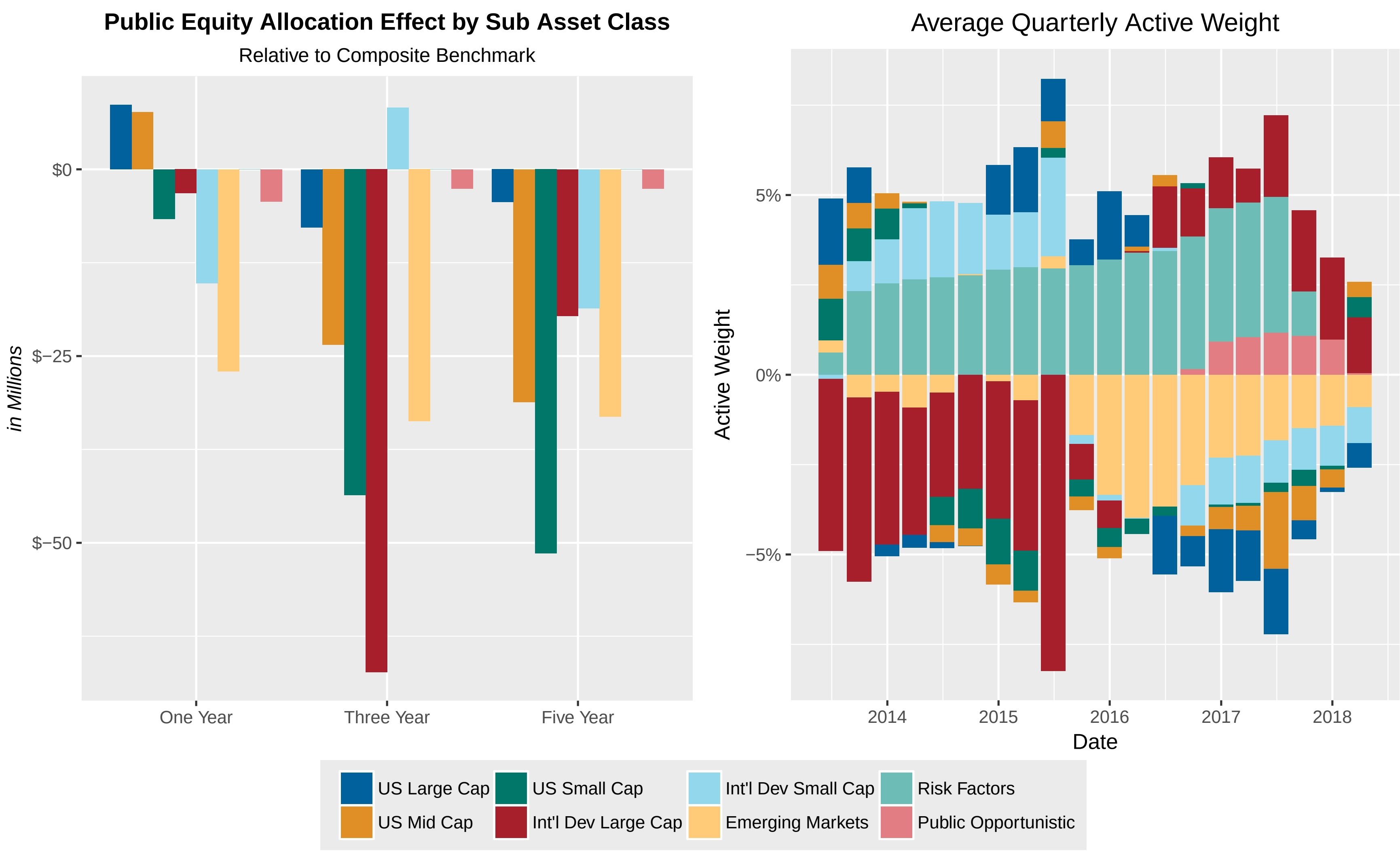
Sub-asset class	Benchmark	Actual	SAA Target	Interim SAA	Over/Under Interim SAA	Enhanced Index	Factors	Active
US LC	S&P 500	19.3%	20%	20%	-0.7%	75%	25%	0%
US MC	S&P 400	3.0%	3%	3%	0.0%	100%	0%	0%
US SC	S&P 600	3.0%	3%	3%	0.0%	100%	0%	0%
Int'l Developed LC	MSCI EAFE	15.6%	17%	17%	-1.4%	75%	25%	0%
Int'l Developed SC	MSCI EAFE SC	1.8%	2%	2%	-0.2%	100%	0%	0%
Emerging Markets	MSCI EM	4.8%	5%	5%	-0.2%	75%	25%	0%

Public Equities Returns & DVA

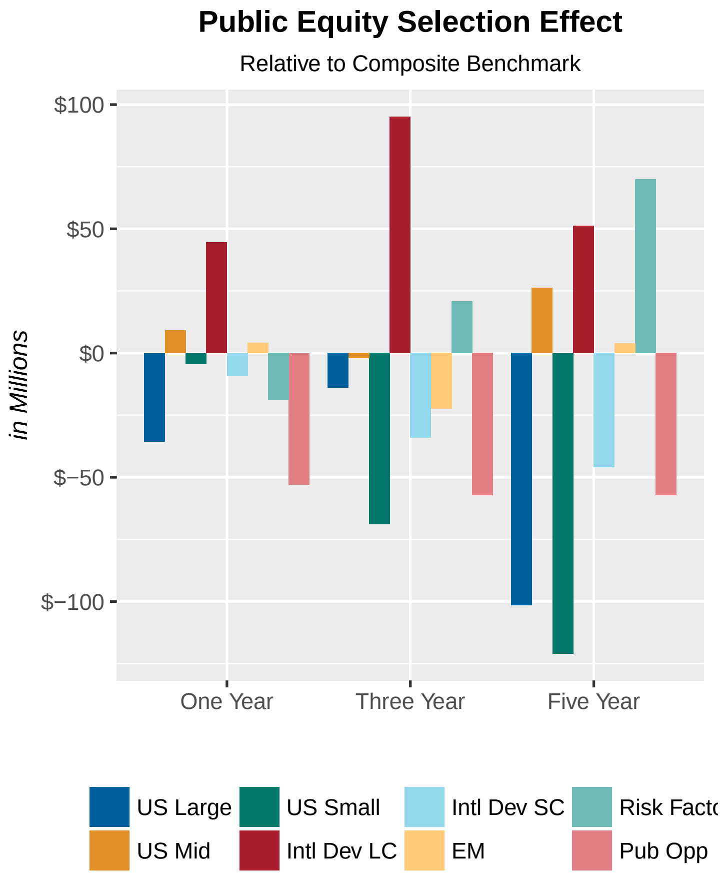




Allocation Effect



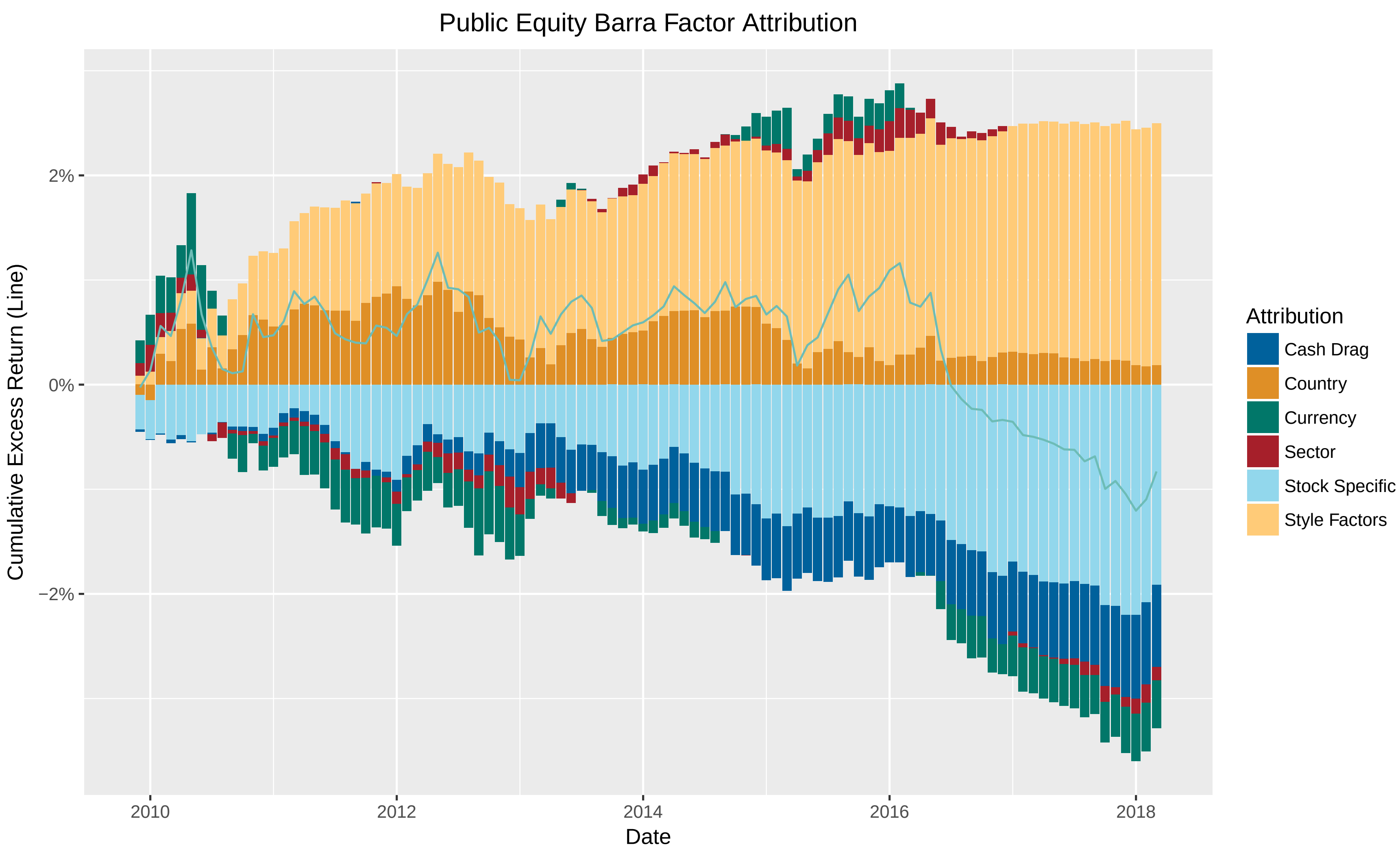
Selection Effect



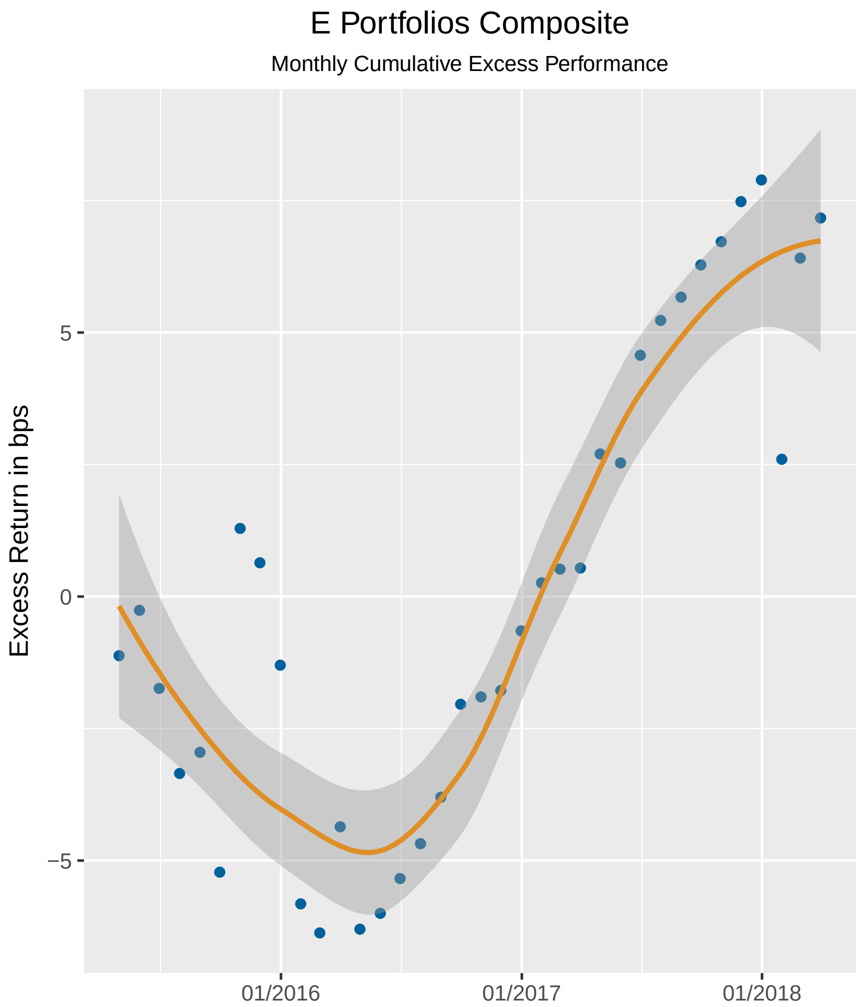
Annualized Returns

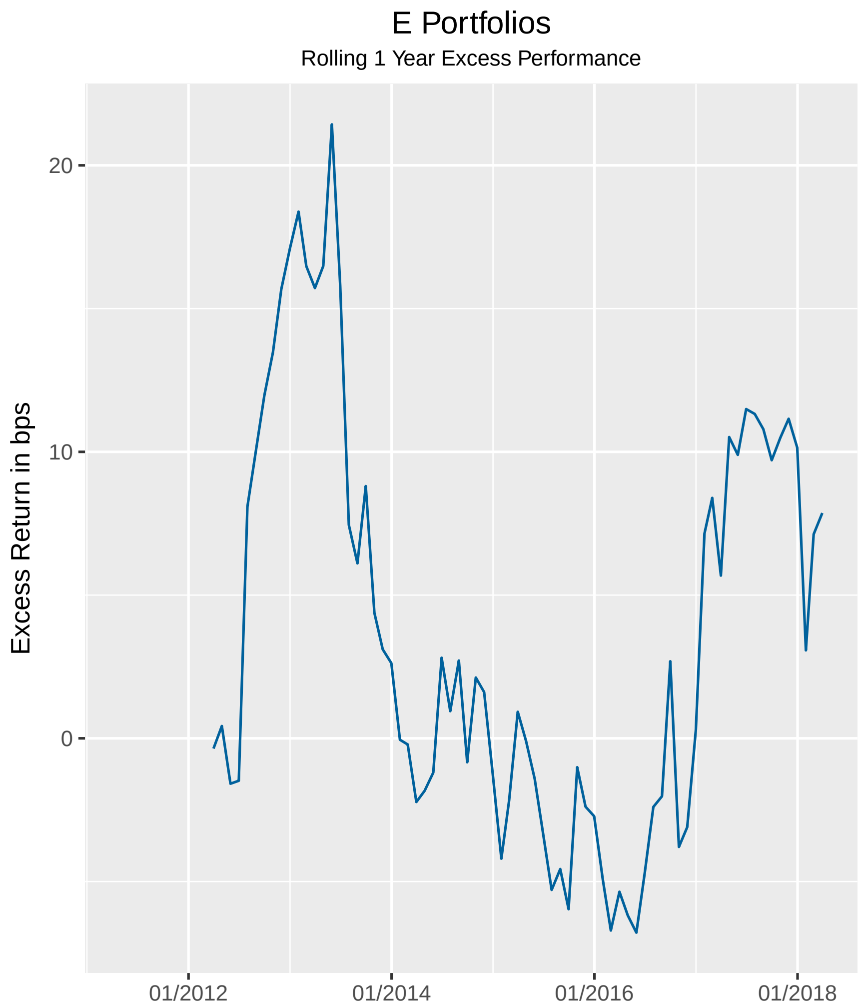
Composite	One Year	Three Year	Five Year	Ten Year
US Large Cap	13.48%	10.72%	13.07%	9.56%
Benchmark	13.99%	10.78%	13.31%	9.49%
Excess	-0.51%	-0.06%	-0.23%	0.07%
US Mid Cap	12.14%	8.9%	12.2%	10.82%
Benchmark	10.97%	8.96%	11.97%	10.9%
Excess	1.16%	-0.06%	0.23%	-0.08%
US Small Cap	12.27%	8.43%	11.59%	10.95%
Benchmark	12.68%	10.76%	13.56%	11.35%
Excess	-0.41%	-2.33%	-1.97%	-0.41%
Int'l Dev Large Cap	15.53%	6.05%	6.67%	NA%
Benchmark	14.8%	5.55%	6.56%	NA%
Excess	0.73%	0.5%	0.11%	NA%
Int'l Dev Small Cap	21.5%	10.74%	10.18%	NA%
Benchmark	23.49%	12.25%	11.15%	NA%
Excess	-2%	-1.51%	-0.97%	NA%
Emerging Markets	25.34%	8.31%	4.97%	NA%
Benchmark	24.93%	8.81%	5.05%	NA%
Excess	0.41%	-0.5%	-0.08%	NA%
Public Opportunistic	-19.55%	NA%	NA%	NA%
Benchmark	13.55%	NA%	NA%	NA%
Excess	-33.11%	NA%	NA%	NA%

Holdings Based Performance Attribution



Internal Portfolios

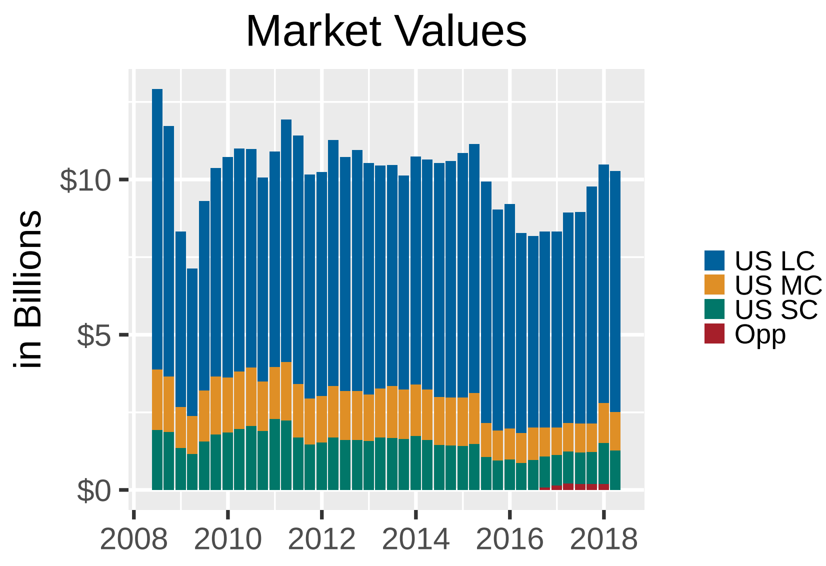


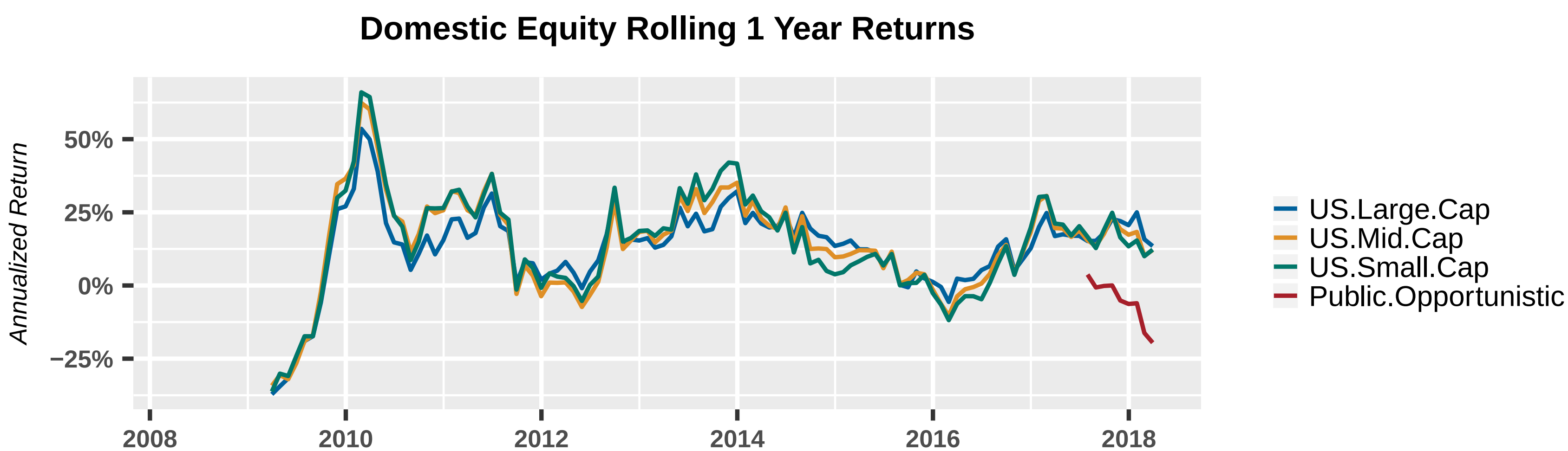


Domestic Equity

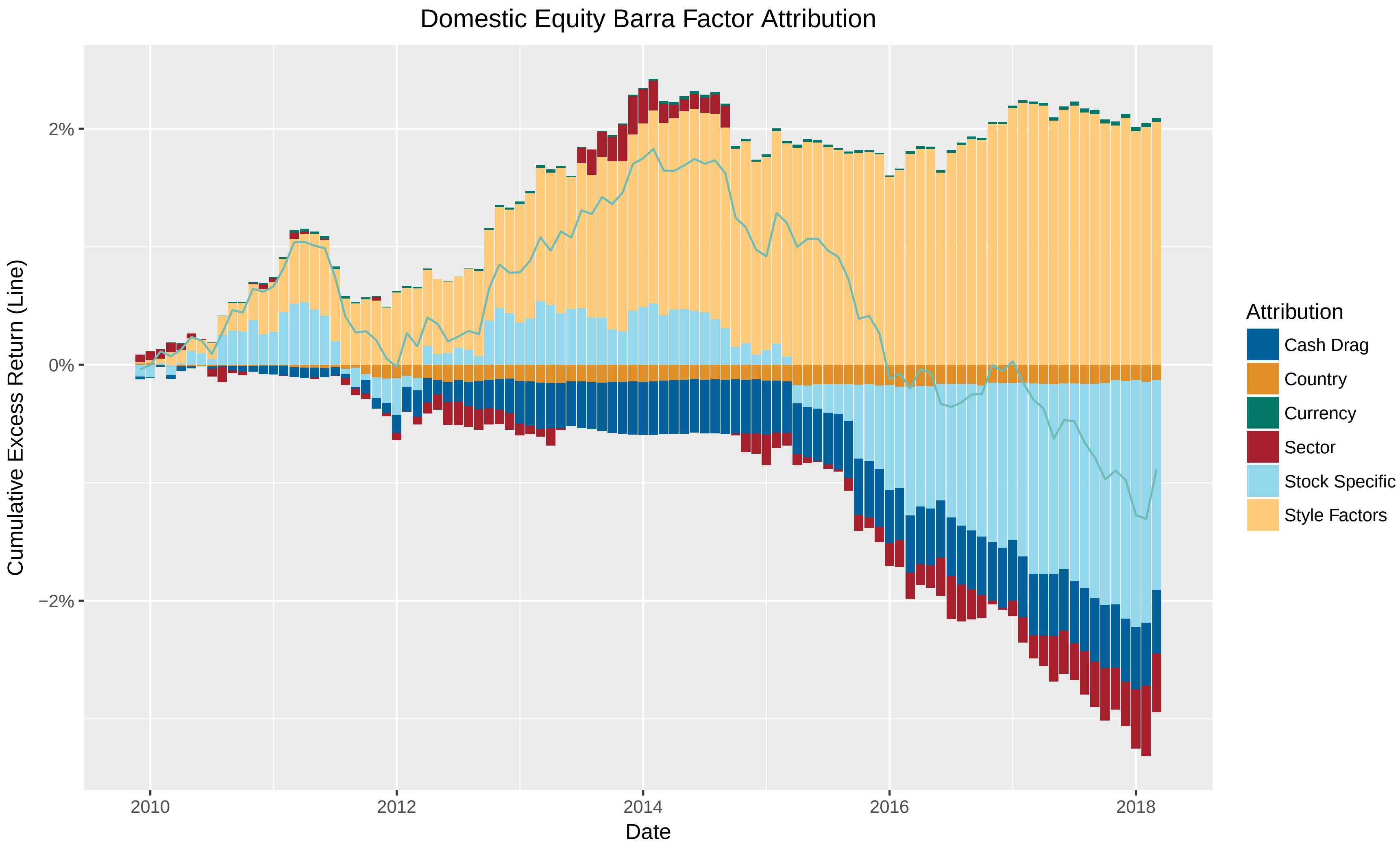
Annualized Returns - TWRs

Composite	One Year	Three Year	Five Year	Ten Year
US Large Cap	13.48%	10.72%	13.07%	9.56%
Blended Benchmark	13.99%	10.78%	13.31%	9.49%
Excess	-0.51%	-0.06%	-0.23%	0.07%
US Mid Cap	12.14%	8.9%	12.2%	10.82%
Blended Benchmark	10.97%	8.96%	11.97%	10.9%
Excess	1.16%	-0.06%	0.23%	-0.08%
US Small Cap	12.27%	8.43%	11.59%	10.95%
Blended Benchmark	12.68%	10.76%	13.56%	11.35%
Excess	-0.41%	-2.33%	-1.97%	-0.41%
Public Opportunistic	-19.55%	NA%	NA%	NA%
Blended Benchmark	13.55%	NA%	NA%	NA%
Excess	-33.11%	NA%	NA%	NA%

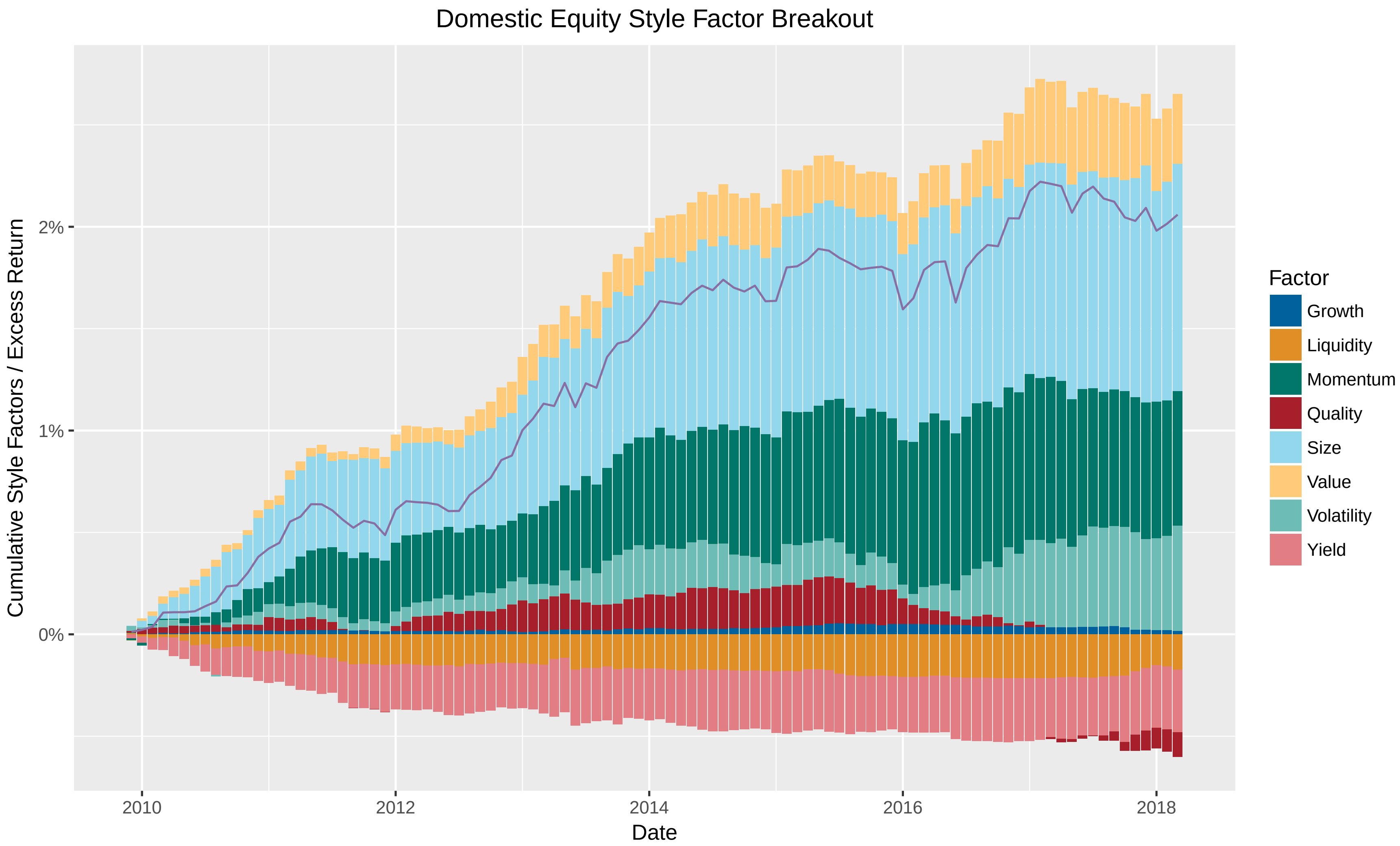




Domestic Equity: Barra Attribution

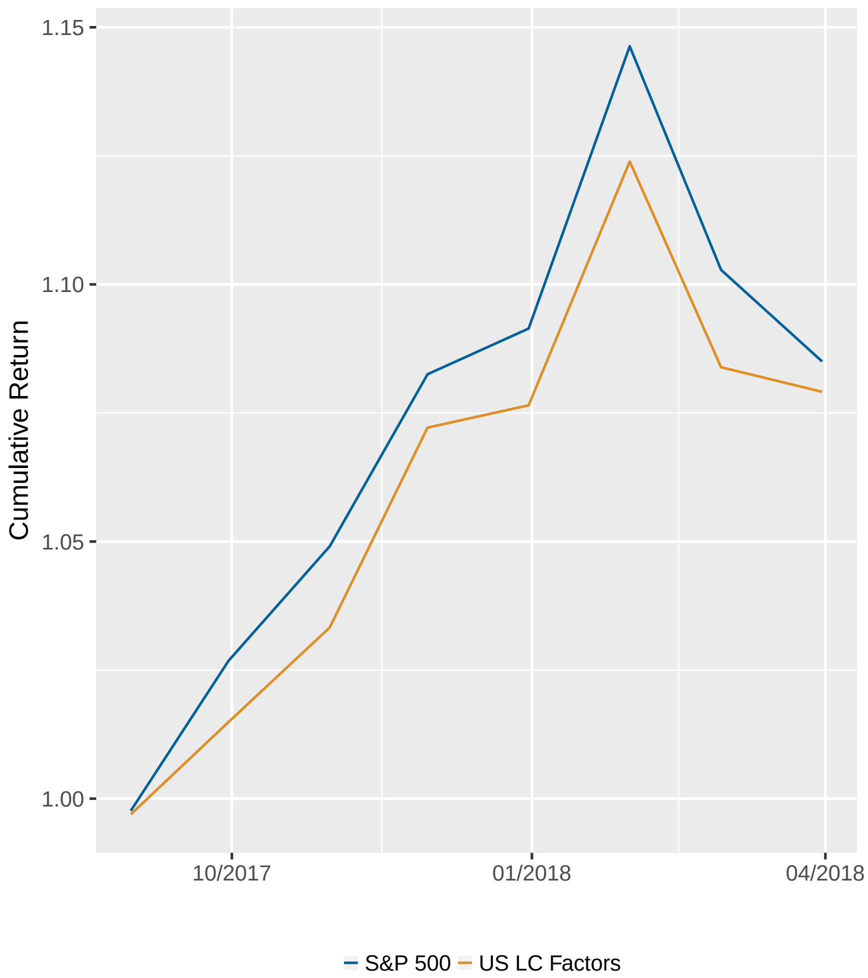


Domestic Equity: Style Factors

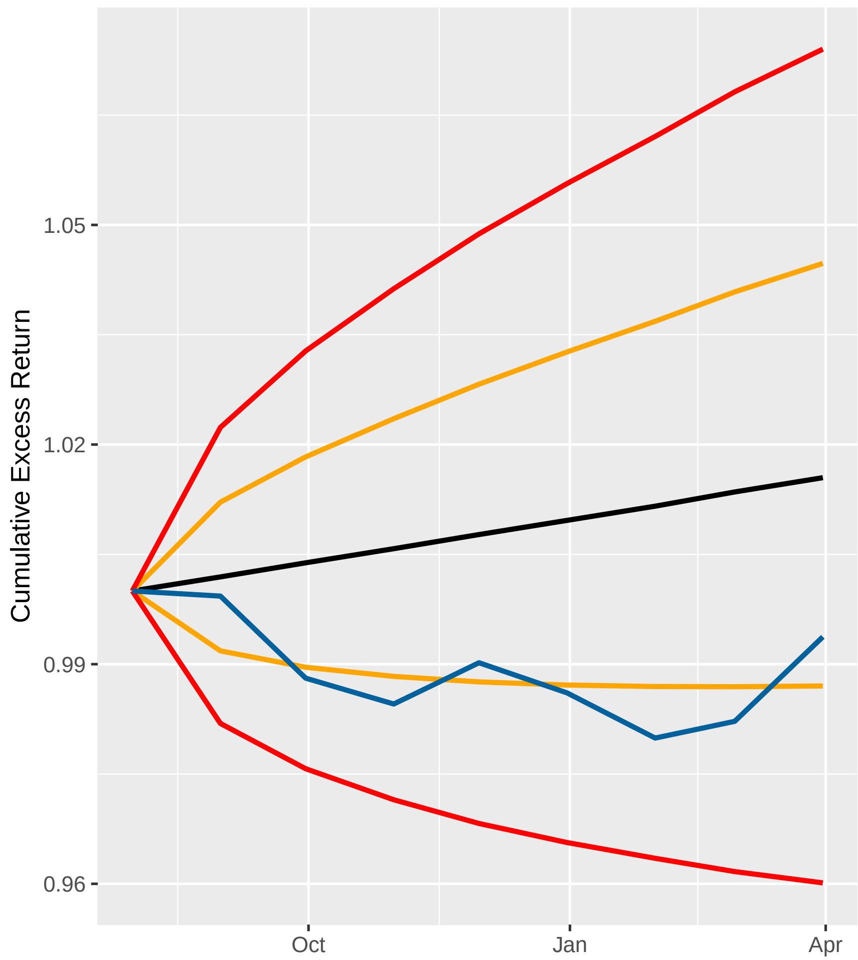


US Large Cap Factor Portfolio Performance Summary

US Large Cap Factor Portfolio Performance



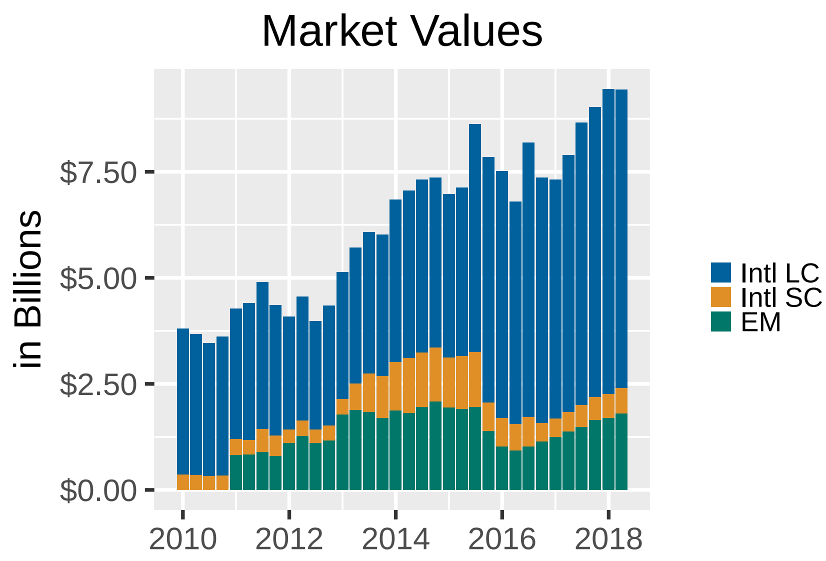
Actual Excess vs Expected Excess +/−1 & 2 Std Dev

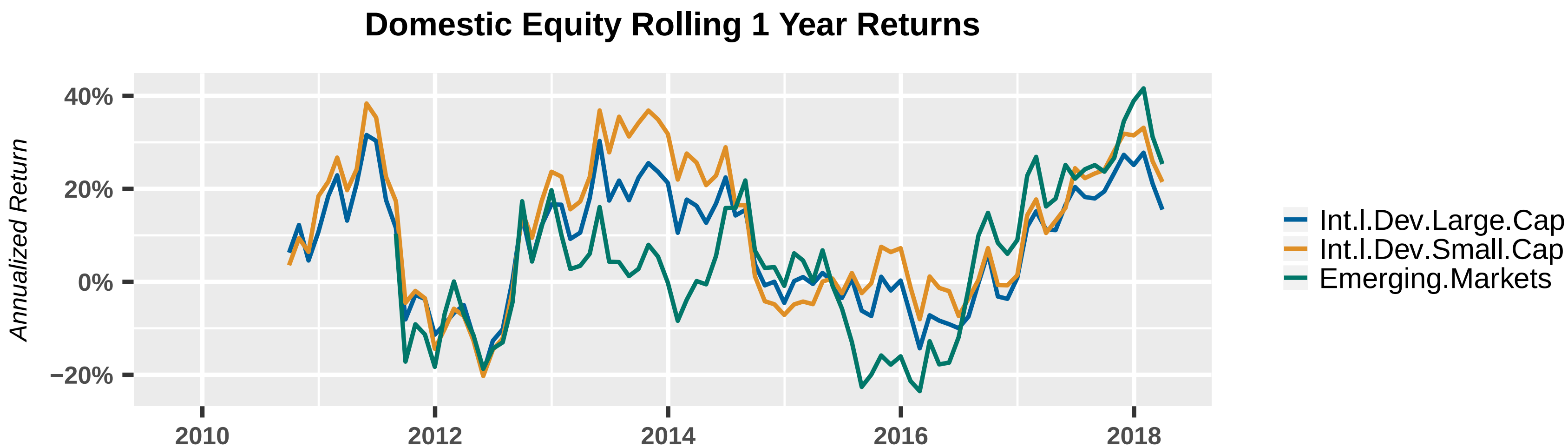


International Equity

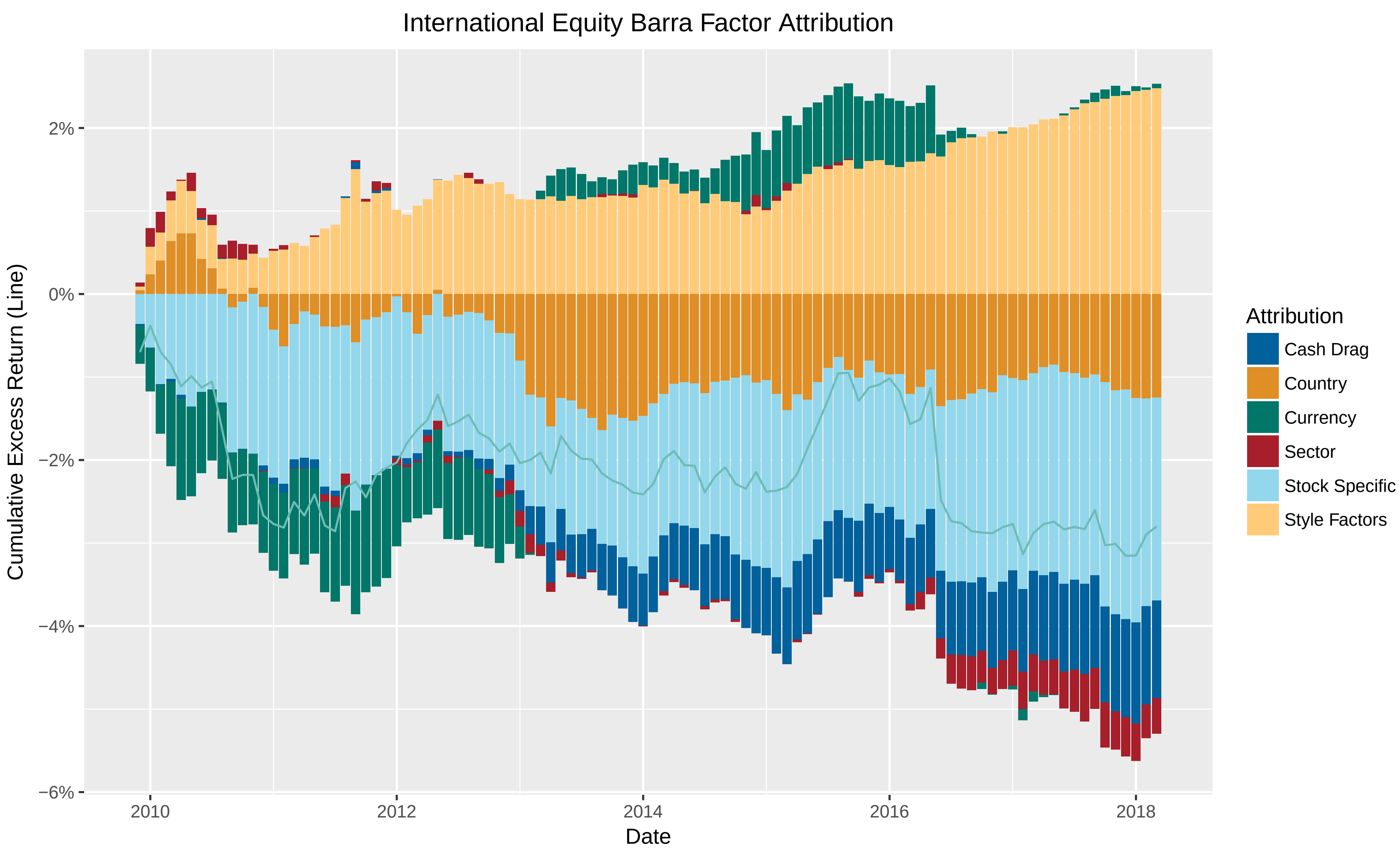
Annualized Returns - TWRs

Composite	One Year	Three Year	Five Year
Int'l Dev Large Cap	15.53%	6.05%	6.67%
Blended Benchmark	14.8%	5.55%	6.56%
Excess	0.73%	0.5%	0.11%
Int'l Dev Small Cap	21.5%	10.74%	10.18%
Blended Benchmark	23.49%	12.25%	11.15%
Excess	-2%	-1.51%	-0.97%
Emerging Markets	25.34%	8.31%	4.97%
Blended Benchmark	24.93%	8.81%	5.05%
Excess	0.41%	-0.5%	-0.08%

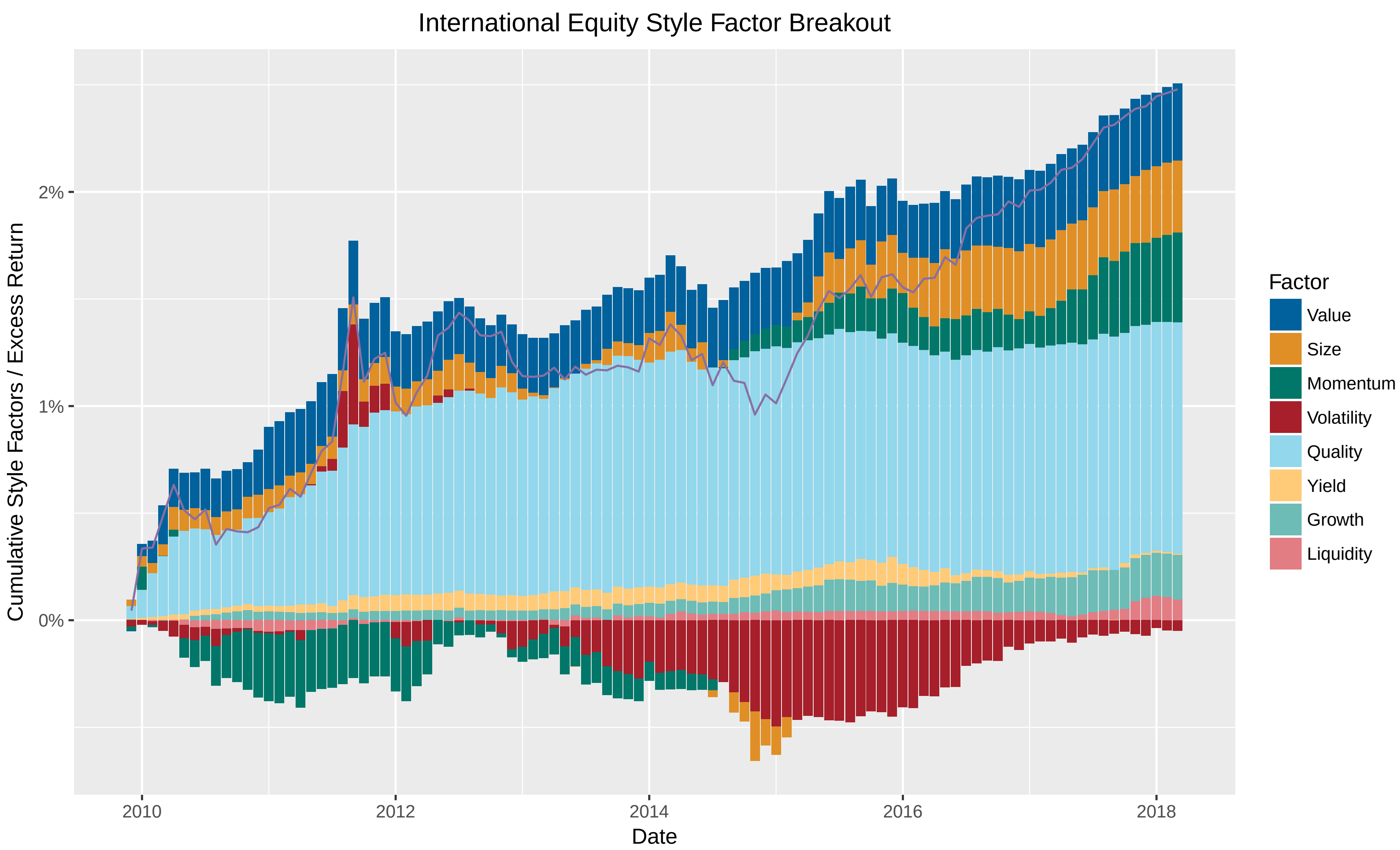




International Equity: Barra Attribution



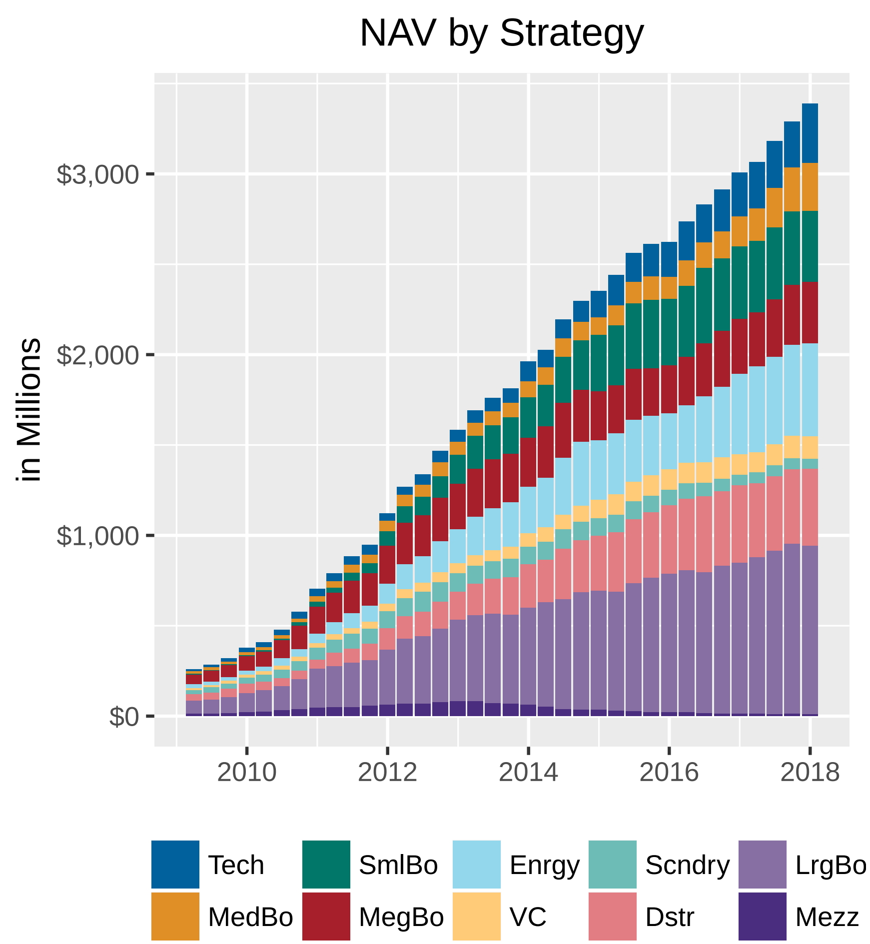
International Equity: Style Factors



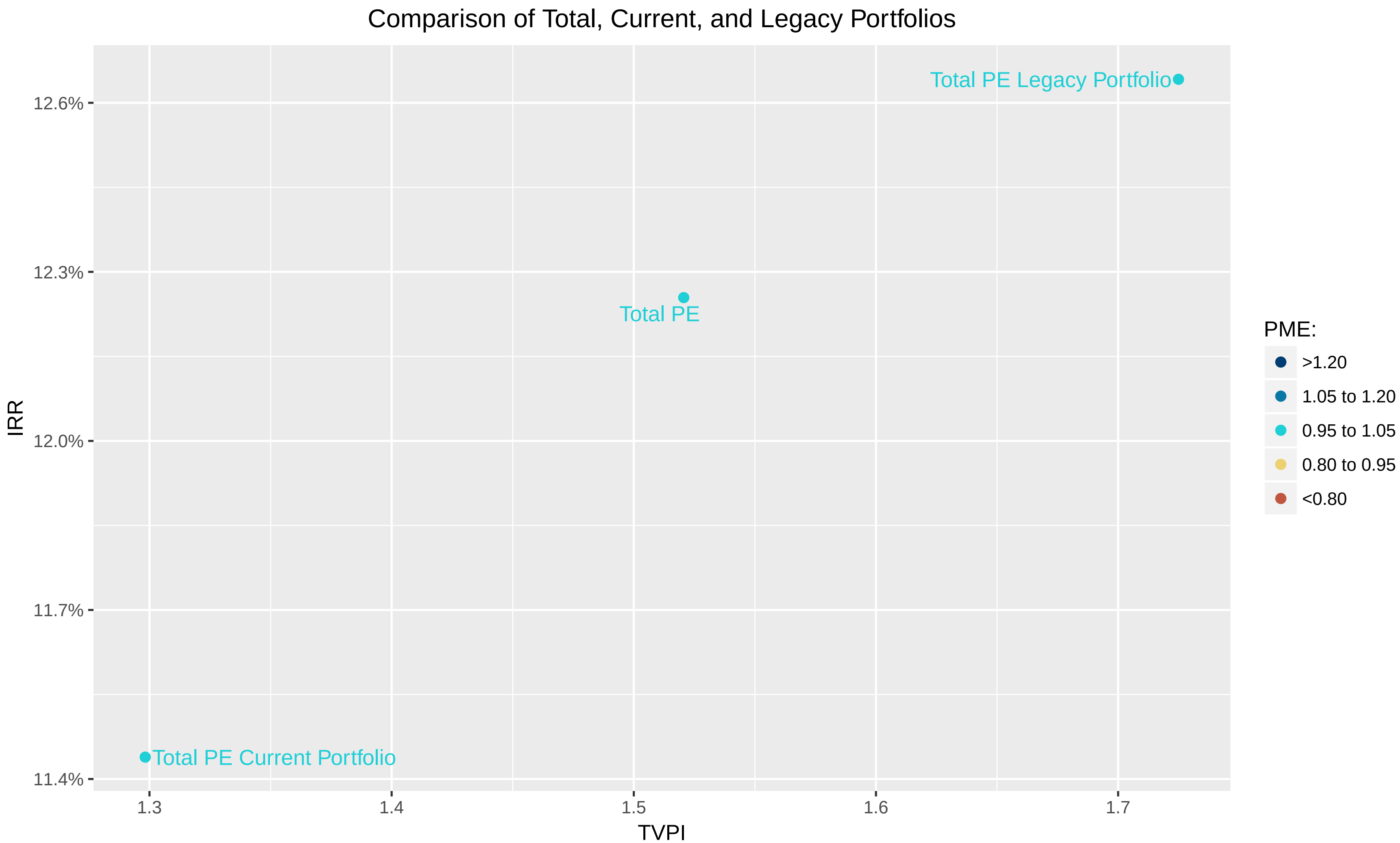
Performance Overview & Allocation

Private Equity IRRs

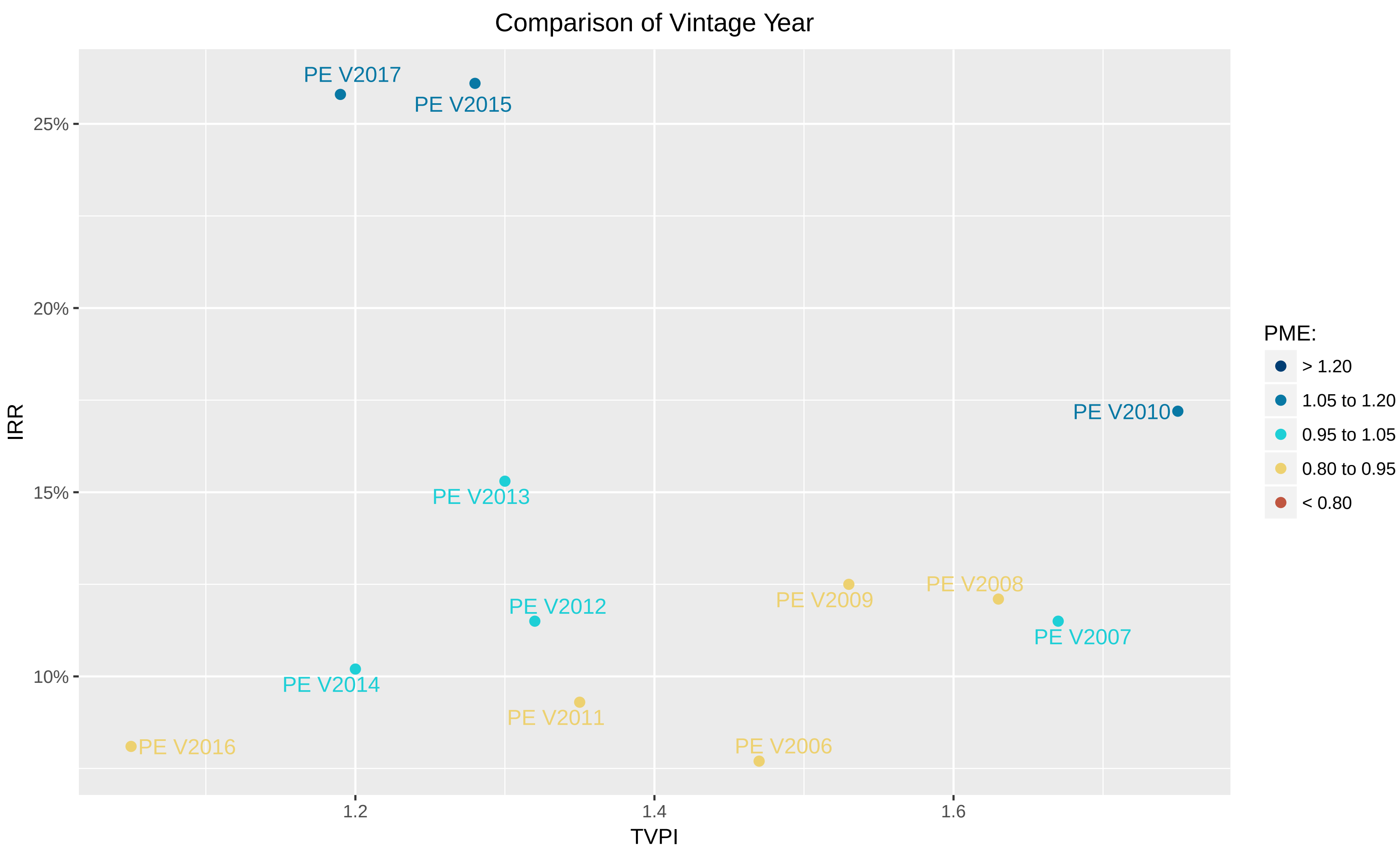
Category	Qtr	1 Year	3 Year	5 Year	ITD
Private Equity	4.86%	15.1%	12%	12.8%	12.3%
Russell 2000	3.39%	15%	10.2%	13.9%	13.2%
Excess	1.47%	0.1%	1.8%	-1.1%	-1%
Tech	7.91%	23.4%	17.9%	19%	17.5%
MedBo	7.84%	17.4%	20.8%	19.9%	15.4%
SmlBo	1.42%	9.8%	17.8%	16.5%	13.7%
MegBo	5.94%	24%	16.3%	16%	13%
Enrgy	4.19%	9.6%	5.3%	7%	8%
VC	2.85%	12.2%	10.9%	14.1%	10.8%
Scndry	2.39%	17.5%	4.9%	8.8%	9.6%
Dstr	4.35%	5.4%	3.8%	6.3%	8.5%
LrgBo	5.28%	19.7%	13.7%	13.8%	13.8%
Mezz	3.75%	12.2%	8.4%	8.8%	9.6%



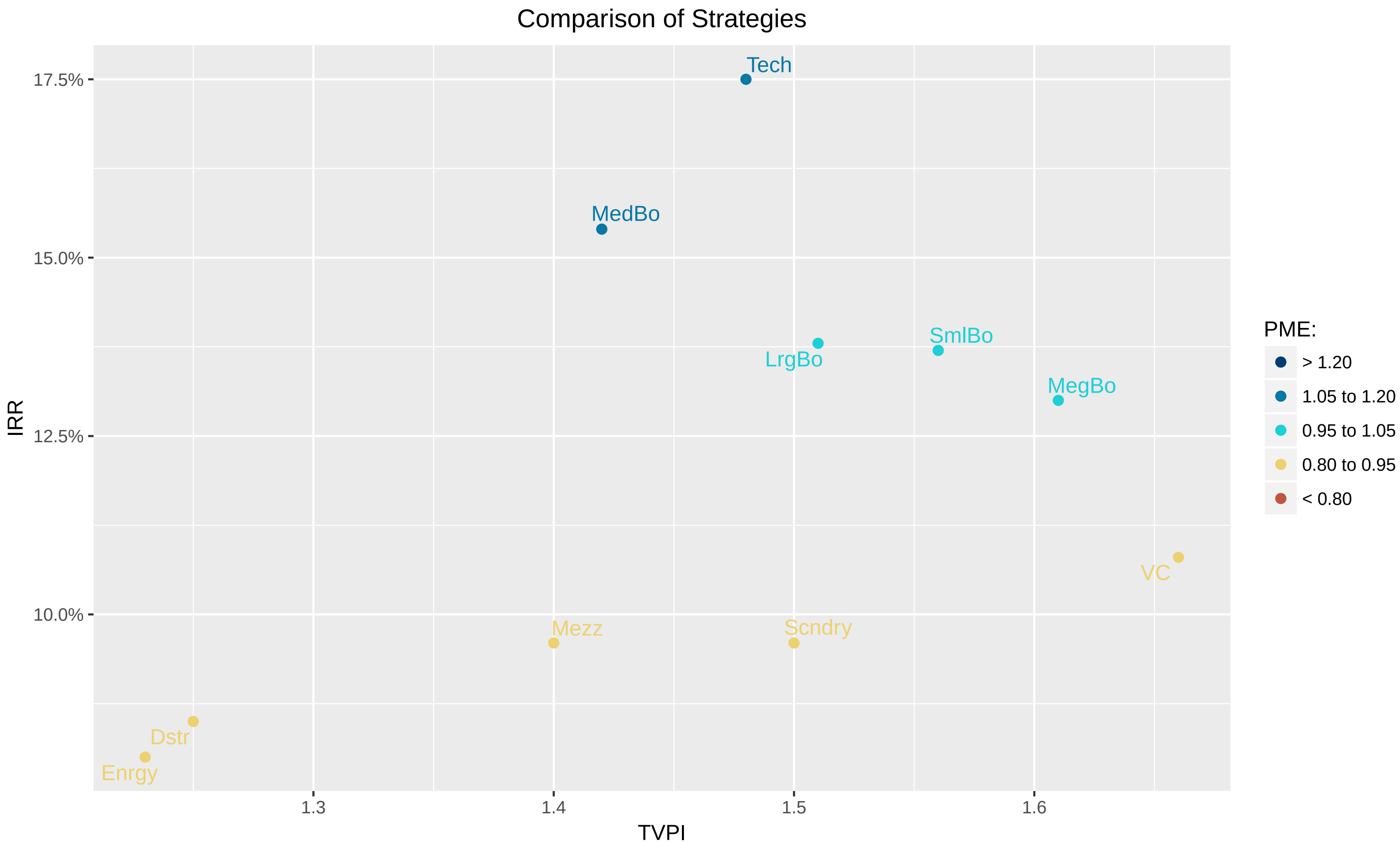
Performance by Total



Performance by Vintage



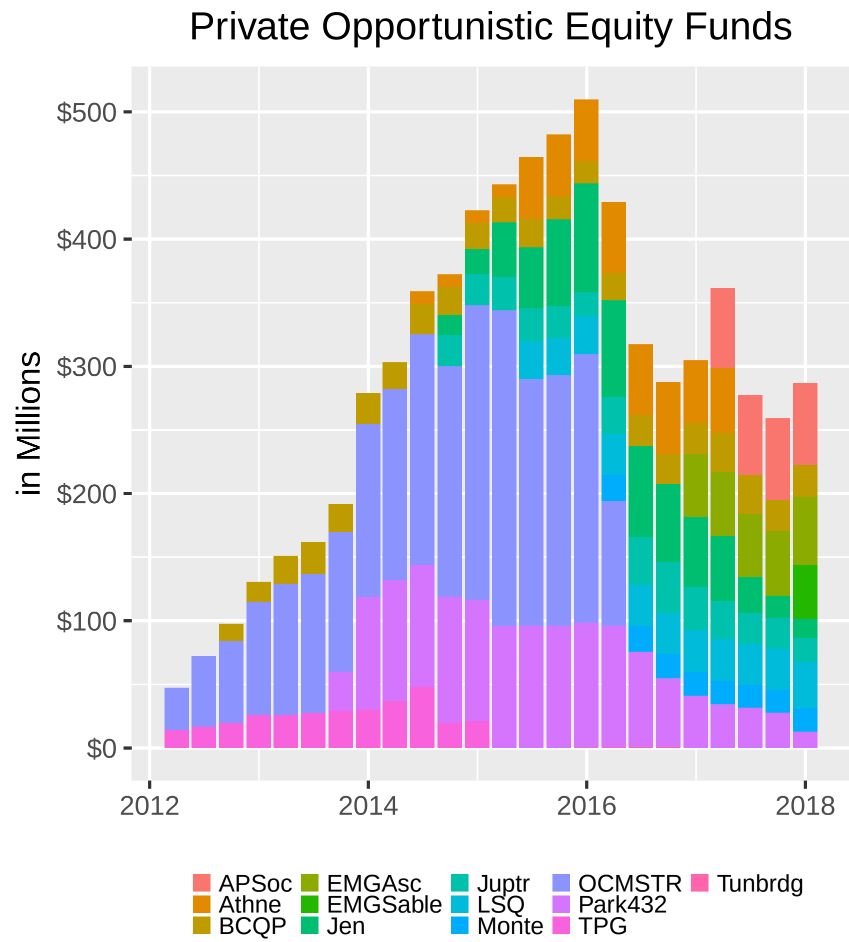
Performance by Category



Private Opportunistic Equity

Private Opportunistic Equity IRRs

Category	Qtr	1 Year	3 Year	5 Year	ITD
Private Opportunistic Equity	6.7%	5.5%	11.1%	20.6%	21.4%
Absolute 8%	2%	8%	8%	8%	8%
Excess	4.8%	-2.5%	3.1%	12.6%	13.4%

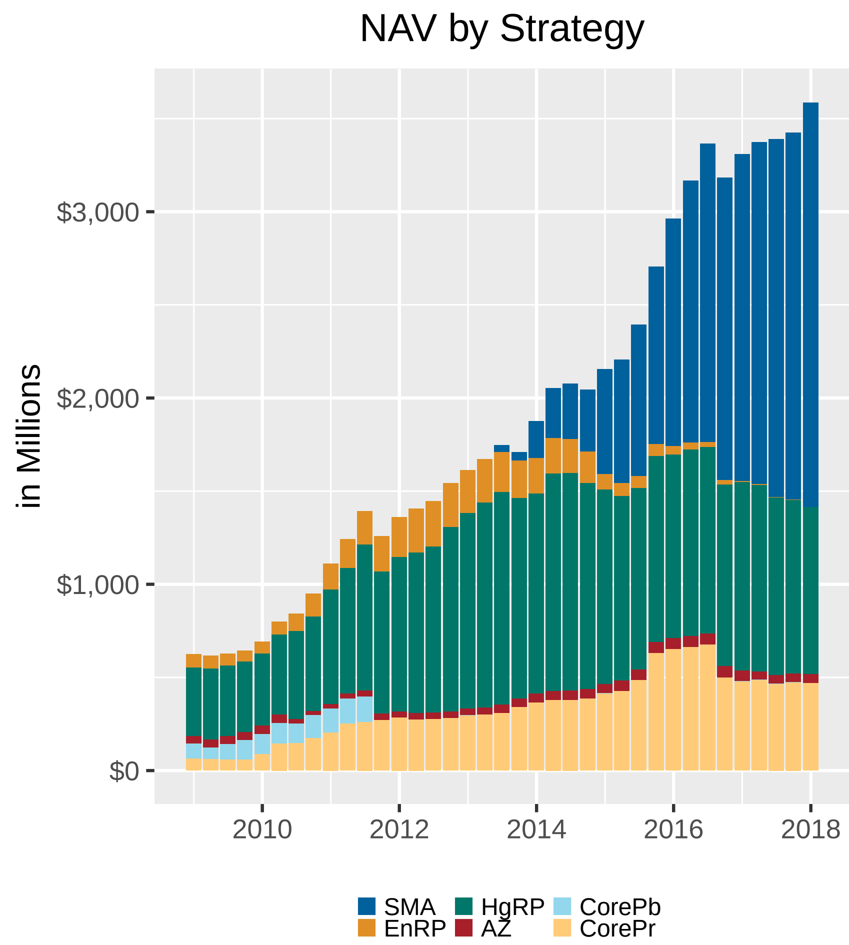


- While we customarily compare opportunistic investments to an absolute return benchmark
  - The inception to date dollar matched IRR for an investment in Russell 2000 would have been 10.64%

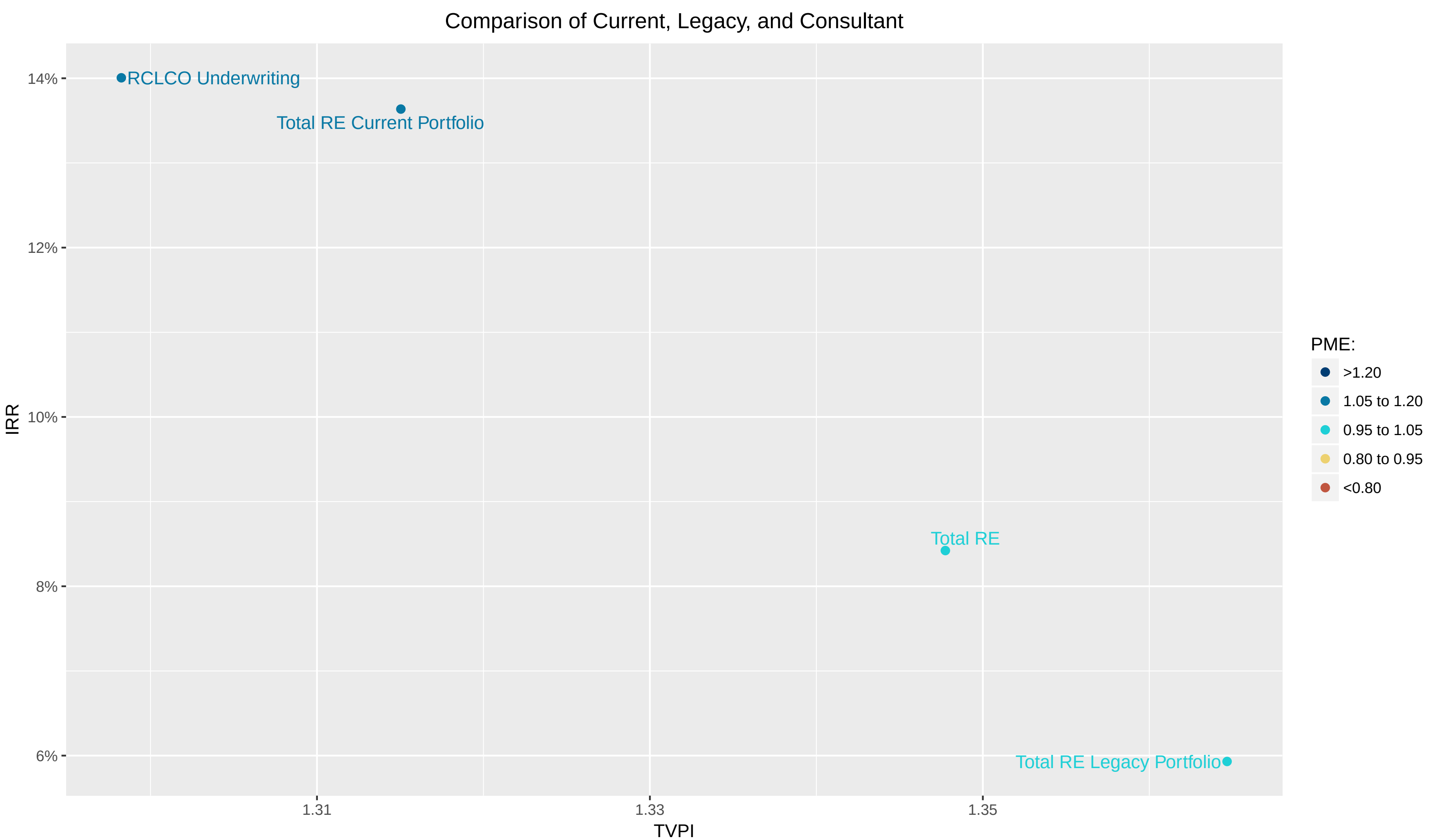
Performance Overview & Allocation

Real Estate IRRs

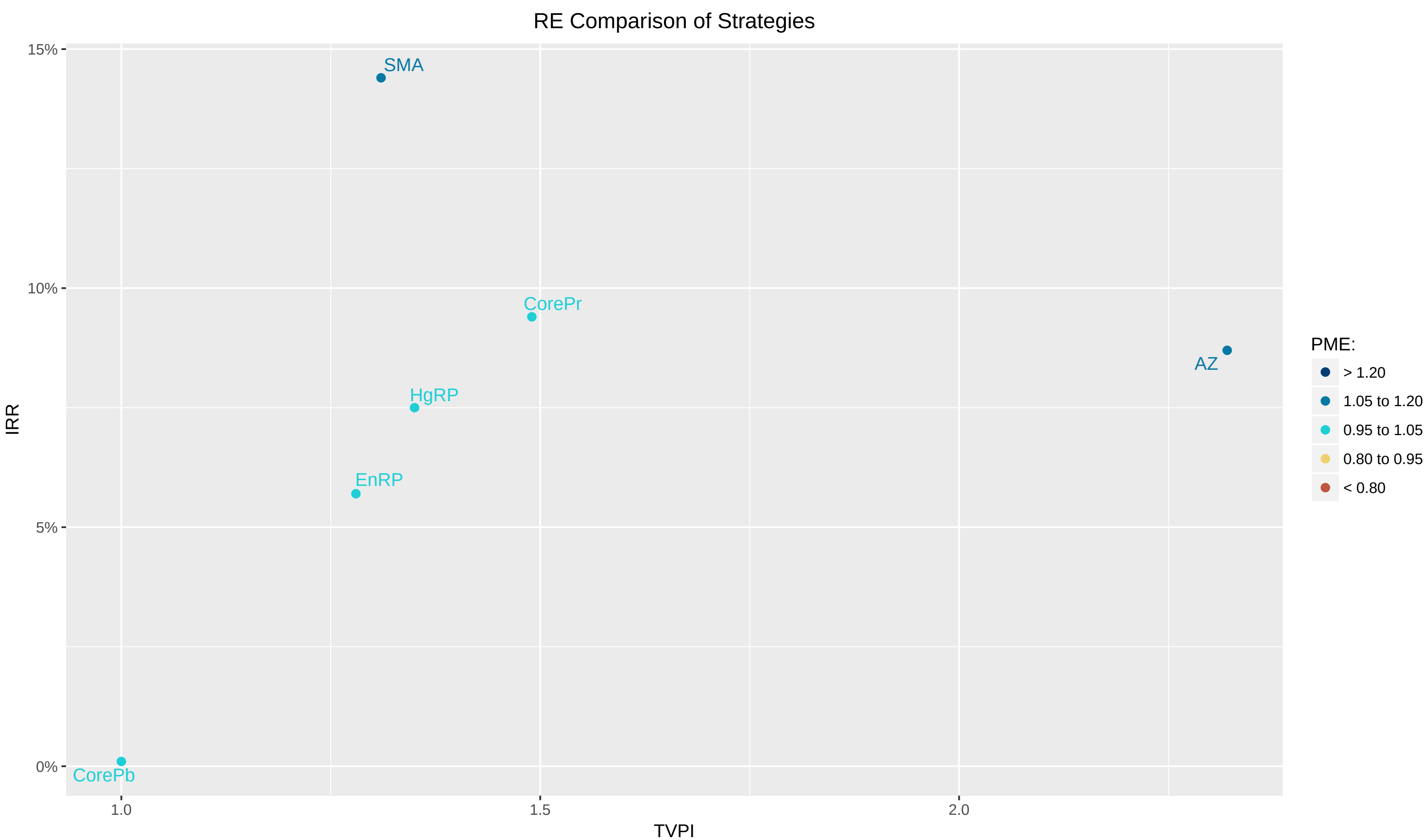
Category	Qtr	1 Year	3 Year	5 Year	ITD
Real Estate	2%	7.8%	11%	12.1%	8.4%
ODCE Net	1.6%	6.7%	9.8%	10.7%	7.2%
Excess	0.4%	1.1%	1.2%	1.5%	1.2%
EnRP	7.1%	-10.7%	15.4%	14.7%	5.7%
HgRP	1%	7.7%	8.8%	11.5%	7.5%
CorePb	0%	0%	NA%	NA%	0.1%
CorePr	2.2%	7.1%	9.1%	9.6%	9.4%
AZ	1%	-18.5%	-1.2%	7.4%	8.7%
Strat	2.5%	9%	13.7%	14.4%	14.4%



Total Performance



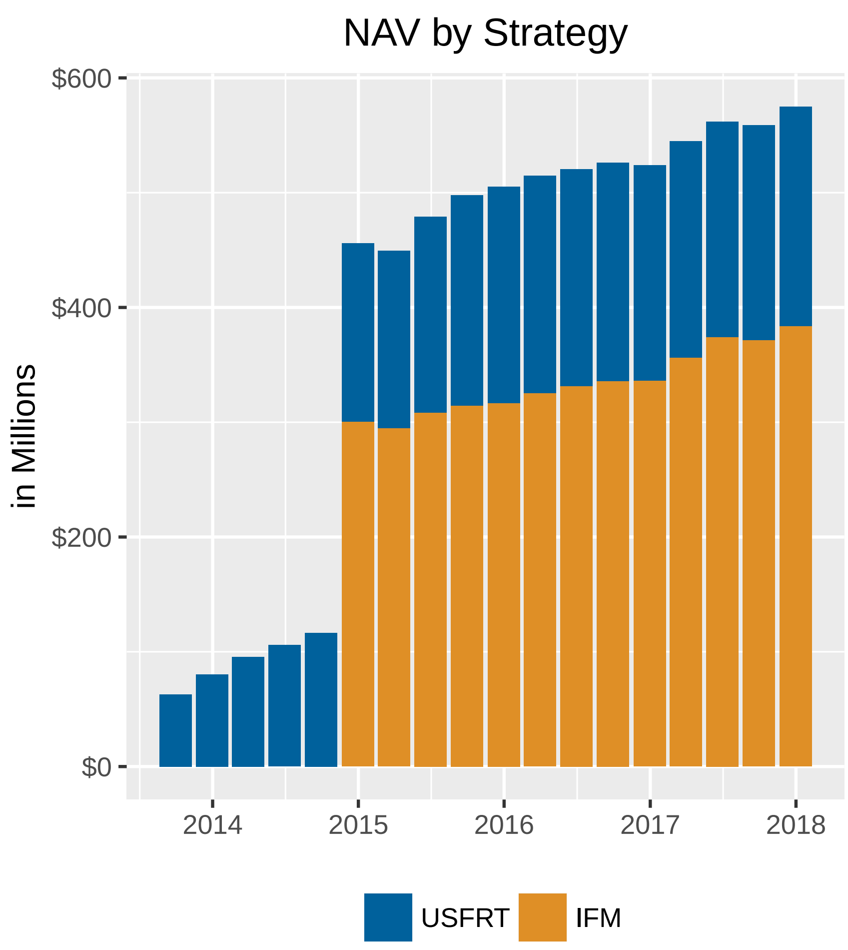
Performance by Strategy



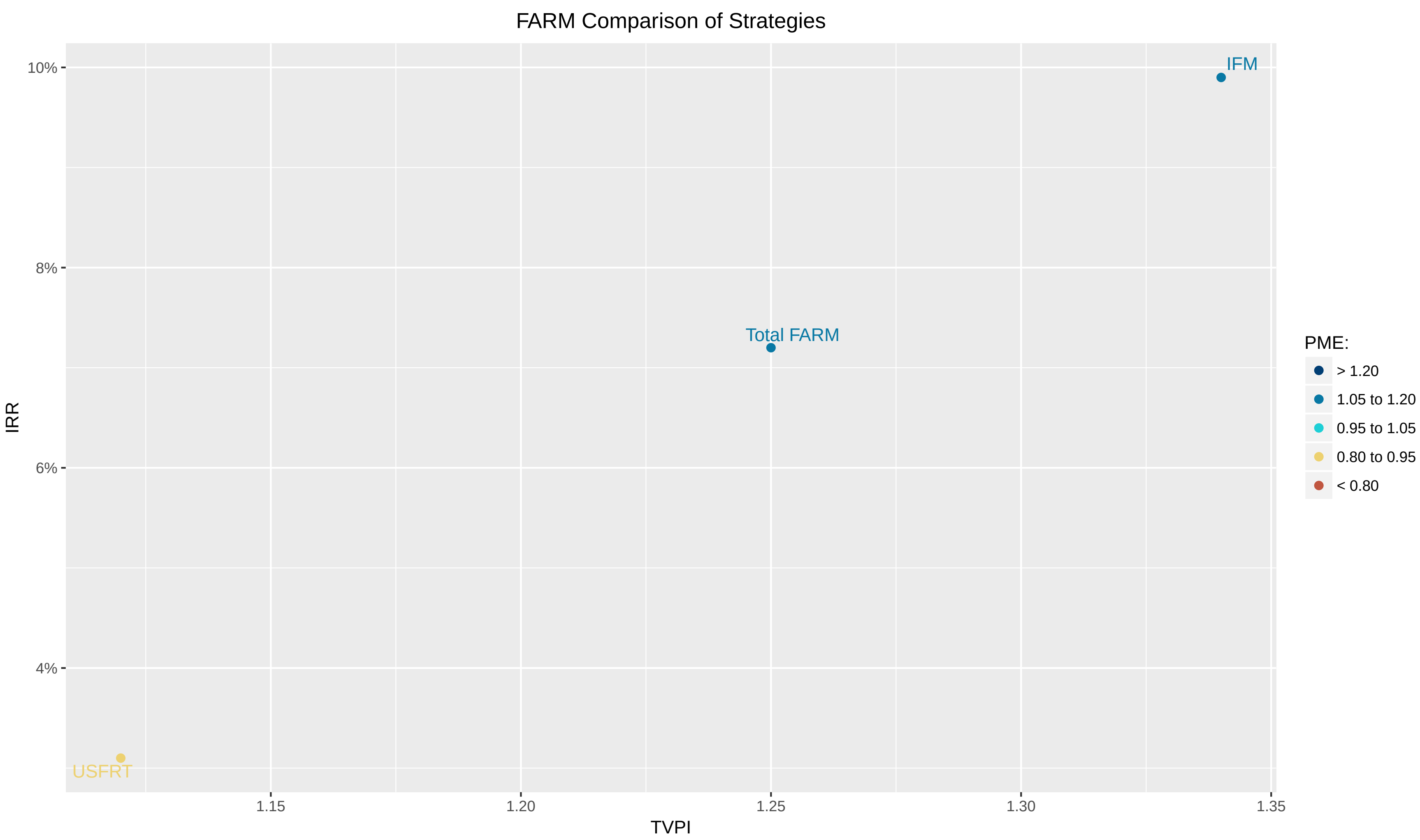
Performance Overview & Allocation

Farmland & Infrastructure IRRs

Category	Qtr	1 Year	3 Year	5 Year	ITD
Farmland	3.3%	13.4%	7.5%	7.2%	7.2%
Core CPI + 350 Bps	1.4%	5.3%	5.6%	5.5%	5.5%
Excess	1.9%	8.1%	2%	1.6%	1.6%
IFM	4%	19.5%	10.1%	9.9%	9.9%
USFRT	2.1%	2.7%	2.9%	3.1%	3.1%



Total Performance



Commodities Performance

Portfolio	Benchmark	3M	Fiscal YTD	1Y	3Y	5Y	ITD
		alpha (bps)	alpha (bps)	alpha (bps)	alpha (bps)	alpha (bps)	alpha (bps)
Gresham	B'berg Commod Tot Ret	+19	+382	+362	+92	+100	+140