

PLAN INVESTMENT REVIEW | PERFORMANCE SUMMARY  
 THE UNIVERSITY OF NORTH CAROLINA  
 FOR THE PERIOD ENDING 03.31.19

INVESTMENT NAME	PROVIDER	Q1'19	1 YEAR*	3 YEAR*	5 YEAR*	10 YEAR*	Exp Ratio	
<b>MONEY MARKET</b>								
Fidelity Government Money Market	Fidelity	0.52%	1.73%	0.84%	0.51%	0.27%	0.42	
CREF Money Market R3	TIAA-CREF	0.54%	1.78%	0.87%	0.52%	0.26%	0.24	
Vanguard Federal Money Market	TIAA-CREF	0.57%	2.03%	1.13%	0.70%	0.37%	0.11	
BofA Merrill Lynch 3-month U.S. T-Bill	Benchmark	0.60%	2.12%	1.19%	0.74%	0.43%		
<b>STABLE VALUE</b>								
Fidelity Managed Income Portfolio	Fidelity	0.46%	1.68%	1.42%	1.30%	1.26%	0.77	
Lincoln Fixed Account*	Fidelity	0.52%	2.02%	2.07%	2.14%	2.48%	0.35	
TIAA Traditional Annuity - GRA	TIAA-CREF	Current Rate is 4.00%						
TIAA Traditional Annuity - GSRA	TIAA-CREF	Current Rate is 3.25%						
Hueler Stable Value Index (gross)	Peer Group	0.60%	2.12%	1.19%	0.74%	0.43%		
BofA Merrill Lynch 3-month U.S. T-Bill	Benchmark	0.60%	2.26%	2.00%	1.89%	2.25%		
<b>SHORT TERM BOND</b>								
Vanguard Short Term Bond Index I	Fidelity/TIAA-CREF	1.64%	3.56%	1.37%	1.51%	2.08%	0.05	
Short Term Bond Universe	Peer Group	1.21%	3.03%	1.32%	1.22%	1.59%		
Barclays Government/Credit 1-3 Yr	Benchmark	1.71%	2.90%	1.81%	1.39%	2.73%		
<b>INTERMEDIATE TERM BOND</b>								
JPMorgan Core Bond R5	Fidelity	2.92%	4.40%	2.18%	2.76%	4.08%	0.45	
Vanguard Total Bond Mkt Index Inst	TIAA-CREF/Fidelity	2.95%	4.47%	2.00%	2.68%	3.71%	0.04	
MetWest Total Return Bond	TIAA-CREF/Fidelity	3.15%	4.80%	2.32%	2.77%	5.98%	0.38	
JPMorgan Core Bond R6	TIAA-CREF	2.94%	4.49%	2.28%	2.84%	4.16%	0.35	
Intermediate Term Bond Universe	Peer Group	3.17%	3.94%	2.38%	2.51%	4.71%		
Barclays Aggregate Bond Index	Benchmark	2.94%	4.48%	2.03%	2.74%	3.77%		
<b>ALLOCATION--50% TO 70% EQUITY</b>								
Fidelity Balanced K	Fidelity	10.70%	6.17%	9.89%	7.65%	12.09%	0.46	
Allocation-50% to 70% Equity Universe	Peer Group	-8.49%	-5.75%	4.73%	3.80%	8.42%		
60% S&P 500 40% BC Agg	Benchmark	-7.56%	-2.35%	6.50%	6.24%	9.42%		
<b>WORLD ALLOCATION</b>								
CREF Social Choice Account R3	TIAA-CREF	8.74%	4.81%	7.91%	5.86%	10.07%	0.27	
World Allocation Universe	Peer Group	8.23%	0.51%	6.12%	3.03%	8.31%		
60% MSCI World 40% BC Agg Index	Benchmark	8.73%	4.82%	7.65%	5.66%	9.48%		
<b>ALLOCATION--85%+ EQUITY</b>								
CREF Stock R3	TIAA-CREF	13.22%	2.73%	11.26%	7.52%	13.49%	0.31	
Allocation--85%+ Equity Universe	Peer Group	12.17%	2.28%	9.61%	6.00%	12.39%		
85% S&P 500, 15% BBgBarc Agg	Benchmark	13.04%	9.23%	12.78%	10.38%	14.77%		
<b>LARGE COMPANY VALUE</b>								
JHancock Disciplined Value R6	TIAA-CREF	9.31%	0.76%	10.59%	6.77%	14.27%	0.70	
JHancock Disciplined Value R5	Fidelity	9.36%	0.75%	10.52%	6.73%	14.24%	0.75	
Large Value Universe	Peer Group	11.29%	4.08%	9.93%	7.03%	13.51%		
Russell 1000 Value	Benchmark	11.93%	5.67%	10.45%	7.72%	14.52%		
<b>LARGE COMPANY BLEND</b>								
Vanguard Instl Index Pl Fund	TIAA-CREF/Fidelity	13.65%	9.48%	13.50%	10.90%	15.93%	0.02	
Large Blend Universe	Peer Group	12.88%	6.60%	11.78%	8.84%	14.50%		
S&P 500 Index	Benchmark	13.65%	9.50%	13.51%	10.91%	15.92%		
<b>LARGE COMPANY GROWTH</b>								
Vanguard FTSE Social Index I	Fidelity	13.76%	10.73%	14.92%	11.47%	17.20%	0.12	
Fidelity Contrafund K	Fidelity	14.54%	8.83%	15.99%	12.30%	16.34%	0.65	
T Rowe Price Instl Large Cap Gr	TIAA-CREF/Fidelity	14.68%	13.98%	21.92%	15.19%	19.60%	0.56	
Large Growth Universe	Peer Group	16.10%	12.75%	16.53%	13.50%	17.52%		
Russell 1000 Growth	Benchmark	15.97%	10.81%	15.52%	11.36%	15.97%		
<b>MEDIUM COMPANY VALUE</b>								
MFS Mid Cap Value R4	Fidelity	14.56%	3.46%	8.72%	6.77%	16.20%	0.86	
MFS Mid Cap Value R6	TIAA-CREF	14.60%	3.60%	8.89%	6.92%	16.17%	0.71	
Mid Value Universe	Peer Group	13.50%	0.41%	8.41%	5.67%	14.27%		
Russell MidCap Value	Benchmark	14.37%	2.89%	9.50%	7.22%	16.39%		

Shading highlights performance at or above median for peer group if available, otherwise at or above benchmark.

\*403(b) Plan only

CONTINUED

PLAN INVESTMENT REVIEW | PERFORMANCE SUMMARY

INVESTMENT NAME	PROVIDER	Q1'19	1 YEAR*	3 YEAR*	5 YEAR*	10 YEAR*	Exp Ratio
<b>MEDIUM COMPANY BLEND</b>							
<b>Vanguard Ext Mkt Idx Instl Plus</b>	<b>TIAA-CREF/Fidelity</b>	<b>15.98%</b>	<b>4.98%</b>	<b>13.32%</b>	<b>7.90%</b>	<b>16.58%</b>	0.05
Mid Blend Universe	Peer Group	14.50%	2.16%	9.43%	6.00%	14.40%	
Russell MidCap	Benchmark	16.54%	6.47%	11.82%	8.81%	16.88%	
<b>MEDIUM COMPANY GROWTH</b>							
<b>MassMutual Sel Mid Cap Gr Eq II</b>	<b>TIAA-CREF/Fidelity</b>	<b>17.31%</b>	<b>9.79%</b>	<b>14.81%</b>	<b>11.77%</b>	<b>17.94%</b>	0.72
Mid Growth Universe	Peer Group	18.67%	8.95%	14.72%	9.40%	15.92%	
Russell MidCap Growth	Benchmark	19.62%	11.51%	15.06%	10.89%	17.60%	
<b>FOREIGN LARGE VALUE</b>							
<b>MFS International Value R4</b>	<b>Fidelity</b>	<b>12.17%</b>	<b>2.80%</b>	<b>9.63%</b>	<b>7.72%</b>	<b>13.12%</b>	0.76
<b>MFS International Value R6</b>	<b>TIAA-CREF</b>	<b>12.18%</b>	<b>2.92%</b>	<b>9.74%</b>	<b>7.84%</b>	<b>13.16%</b>	0.66
Foreign Large Value Universe	Peer Group	8.64%	-8.13%	5.19%	0.49%	7.75%	
MSCI EAFE	Benchmark	10.13%	-3.22%	7.80%	2.81%	9.47%	
<b>FOREIGN LARGE BLEND</b>							
<b>Amer Funds EuroPac R6</b>	<b>TIAA-CREF</b>	<b>13.20%</b>	<b>-4.66%</b>	<b>9.33%</b>	<b>4.27%</b>	<b>9.94%</b>	0.49
<b>Amer Funds EuroPac R4</b>	<b>Fidelity</b>	<b>13.12%</b>	<b>-4.99%</b>	<b>8.94%</b>	<b>3.90%</b>	<b>9.56%</b>	0.83
<b>Vanguard Total Intl Stock Index Inst</b>	<b>TIAA-CREF/Fidelity</b>	<b>10.26%</b>	<b>-5.18%</b>	<b>8.08%</b>	<b>2.79%</b>	<b>8.93%</b>	0.09
Foreign Large Blend Universe	Peer Group	10.46%	-5.83%	6.42%	1.95%	8.51%	
MSCI EAFE	Benchmark	10.13%	-3.22%	7.80%	2.81%	9.47%	
<b>FOREIGN SMALL/MID GROWTH</b>							
<b>T Rowe Price International Discovery</b>	<b>Fidelity</b>	<b>12.04%</b>	<b>-9.66%</b>	<b>9.71%</b>	<b>6.72%</b>	<b>14.56%</b>	1.19
<b>T Rowe Price International Discovery I</b>	<b>TIAA-CREF</b>	<b>12.09%</b>	<b>-9.52%</b>	<b>9.85%</b>	<b>6.81%</b>	<b>14.61%</b>	1.07
Foreign Small/Mid Growth Universe	Peer Group	12.06%	-9.80%	7.36%	4.12%	13.01%	
MSCI World ex USA Smid Cap USD	Benchmark	11.06%	-6.81%	7.32%	3.91%	11.57%	
<b>SMALL COMPANY VALUE</b>							
<b>Goldman Sachs Small Value Inst</b>	<b>Fidelity</b>	<b>12.49%</b>	<b>-1.26%</b>	<b>10.51%</b>	<b>6.15%</b>	<b>15.35%</b>	0.95
<b>Goldman Sachs Small Value R6</b>	<b>TIAA-CREF</b>	<b>12.50%</b>	<b>-1.27%</b>	<b>10.52%</b>	<b>6.05%</b>	<b>15.06%</b>	0.94
Small Value Universe	Peer Group	12.37%	-2.70%	8.27%	4.25%	14.00%	
Russell 2000 Value	Benchmark	11.93%	0.17%	10.86%	5.59%	14.12%	
<b>SMALL COMPANY GROWTH</b>							
<b>Eagle Small Cap Growth R5</b>	<b>Fidelity</b>	<b>17.65%</b>	<b>4.04%</b>	<b>14.28%</b>	<b>8.49%</b>	<b>16.70%</b>	0.77
<b>Eagle Small Cap Growth R6</b>	<b>TIAA-CREF</b>	<b>17.69%</b>	<b>4.15%</b>	<b>14.41%</b>	<b>8.62%</b>	<b>16.68%</b>	0.66
Small Growth Universe	Peer Group	17.72%	8.22%	16.29%	8.69%	16.45%	
Russell 2000 Growth	Benchmark	17.14%	3.85%	14.87%	8.41%	16.52%	
<b>SPECIALTY-REAL ESTATE</b>							
<b>Cohen &amp; Steers Realty Shares</b>	<b>Fidelity</b>	<b>17.20%</b>	<b>20.27%</b>	<b>6.97%</b>	<b>9.61%</b>	<b>18.25%</b>	0.97
<b>Cohen &amp; Steers Instl Realty Shares</b>	<b>TIAA-CREF</b>	<b>17.15%</b>	<b>20.37%</b>	<b>7.21%</b>	<b>9.84%</b>	<b>18.51%</b>	0.75
Specialty-Real Estate Universe	Peer Group	16.34%	16.85%	5.46%	8.26%	17.27%	
Dow Jones US Select REIT	Benchmark	15.72%	19.73%	5.29%	8.93%	18.50%	
<b>SPECIALTY-REAL ESTATE</b>							
<b>TIAA Real Estate Account</b>	<b>TIAA-CREF</b>	<b>1.71%</b>	<b>5.58%</b>	<b>4.73%</b>	<b>6.78%</b>	<b>5.65%</b>	0.89
Specialty-Real Estate Universe	Peer Group	16.34%	16.85%	5.46%	8.26%	17.27%	
NCREIF Property Index	Benchmark	1.80%	6.82%	7.07%	9.12%	8.50%	
<b>TARGET DATE</b>							
<b>Vanguard Target Retire Inc Tr Plus</b>	<b>TIAA-CREF/Fidelity</b>	<b>5.58%</b>	<b>4.02%</b>	<b>4.96%</b>	<b>4.22%</b>	-	0.06
Retirement Income Moderate	Peer Group	5.95%	3.16%	4.72%	3.56%	6.49%	
Morningstar Lifetime Moderate Income Inde	Benchmark	6.03%	4.06%	5.21%	3.77%	6.79%	
<b>Vanguard Target Retire 2015 Tr Plus</b>	<b>TIAA-CREF/Fidelity</b>	<b>6.50%</b>	<b>3.89%</b>	<b>6.33%</b>	<b>5.05%</b>	-	0.06
2015 Moderate	Peer Group	7.01%	3.38%	6.04%	4.25%	8.79%	
Morningstar Lifetime Moderate 2015 Index	Benchmark	7.44%	4.41%	6.42%	4.62%	9.05%	
<b>Vanguard Target Retire 2020 Tr Plus</b>	<b>TIAA-CREF/Fidelity</b>	<b>7.88%</b>	<b>3.93%</b>	<b>7.48%</b>	<b>5.76%</b>	-	0.06
2020 Moderate	Peer Group	7.68%	3.12%	6.71%	4.67%	9.70%	
Morningstar Lifetime Moderate 2020 Index	Benchmark	8.13%	4.50%	7.08%	5.00%	9.99%	
<b>Vanguard Target Retire 2025 Tr Plus</b>	<b>TIAA-CREF/Fidelity</b>	<b>8.84%</b>	<b>3.92%</b>	<b>8.28%</b>	<b>6.18%</b>	-	0.06
2025 Moderate	Peer Group	8.52%	3.17%	7.61%	5.17%	10.63%	
Morningstar Lifetime Conservative 2025 Ind	Benchmark	8.96%	4.52%	7.94%	5.47%	11.00%	
<b>Vanguard Target Retire 2030 Tr Plus</b>	<b>TIAA-CREF/Fidelity</b>	<b>9.57%</b>	<b>3.81%</b>	<b>8.96%</b>	<b>6.49%</b>	-	0.06
2030 Moderate	Peer Group	9.71%	3.19%	8.59%	5.78%	11.47%	
Morningstar Lifetime Conservative 2030 Inc	Benchmark	9.93%	4.42%	8.96%	5.95%	11.88%	

Shading highlights performance at or above median for peer group if available, otherwise at or above benchmark.

CONTINUED

PLAN INVESTMENT REVIEW | PERFORMANCE SUMMARY

INVESTMENT NAME	PROVIDER	Q1'19	1 YEAR*	3 YEAR*	5 YEAR*	10 YEAR*	Exp Ratio
<b>Vanguard Target Retire 2035 Tr Plus</b>	<b>TIAA-CREF/Fidelity</b>	<b>10.29%</b>	<b>3.68%</b>	<b>9.62%</b>	<b>6.80%</b>	-	0.06
2035 Moderate	Peer Group	10.55%	2.97%	9.25%	6.13%	11.91%	
Morningstar Lifetime Conservative 2035 Index	Benchmark	10.88%	4.18%	9.87%	6.33%	12.46%	
<b>Vanguard Target Retire 2040 Tr Plus</b>	<b>TIAA-CREF/Fidelity</b>	<b>11.01%</b>	<b>3.49%</b>	<b>10.28%</b>	<b>7.07%</b>	-	0.06
2040 Moderate	Peer Group	11.22%	2.90%	9.62%	6.35%	12.14%	
Morningstar Lifetime Moderate 2040 Index	Benchmark	11.58%	3.87%	10.44%	6.51%	12.70%	
<b>Vanguard Target Retire 2045 Tr Plus</b>	<b>TIAA-CREF/Fidelity</b>	<b>11.53%</b>	<b>3.35%</b>	<b>10.51%</b>	<b>7.18%</b>	-	0.06
2045 Moderate	Peer Group	11.59%	2.70%	9.81%	6.31%	12.22%	
Morningstar Lifetime Moderate 2045 Index	Benchmark	11.92%	3.59%	10.65%	6.53%	12.74%	
<b>Vanguard Target Retire 2050 Tr Plus</b>	<b>TIAA-CREF/Fidelity</b>	<b>11.52%</b>	<b>3.35%</b>	<b>10.51%</b>	<b>7.17%</b>	-	0.06
2050 Moderate	Peer Group	11.66%	2.85%	9.90%	6.43%	12.31%	
Morningstar Lifetime Moderate 2050 Index	Benchmark	12.00%	3.39%	10.66%	6.46%	12.69%	
<b>Vanguard Target Retire 2055 Tr Plus</b>	<b>TIAA-CREF/Fidelity</b>	<b>11.52%</b>	<b>3.35%</b>	<b>10.52%</b>	<b>7.15%</b>	-	0.06
2055 Moderate	Peer Group	11.55%	2.28%	9.76%	6.43%	-	
Morningstar Lifetime Moderate 2055 Index	Benchmark	12.01%	3.22%	10.65%	6.38%	12.61%	
<b>Vanguard Target Retire 2060 Tr Plus</b>	<b>TIAA-CREF/Fidelity</b>	<b>11.51%</b>	<b>3.35%</b>	<b>10.52%</b>	<b>7.17%</b>	-	0.06
<b>Vanguard Target Retire 2065 Tr Plus</b>	<b>TIAA-CREF/Fidelity</b>	<b>11.55%</b>	<b>3.42%</b>	-	-	-	
2060+ Moderate	Peer Group	11.95%	2.88%	10.09%	6.77%	-	
Morningstar Lifetime Moderate 2060 Index	Benchmark	11.99%	3.06%	10.61%	6.29%	-	

Shading highlights performance at or above median for peer group if available, otherwise at or above benchmark.