
DECEMBER 19, 2019

**AGENDA ITEM 7
INFORMATION ITEM**

SCHOLARSHARE INVESTMENT BOARD

Review of 2020 Asset Allocation Recommendation for ScholarShare 529

Background

Each year, the ScholarShare Investment Board (SIB or Board) and the program manager, TIAA-CREF Tuition Financing, Inc. (TFI), review the asset allocation of the investment portfolios for ScholarShare 529 (Plan) to determine if any changes are necessary to continue to meet its investment objectives.

For 2020, TFI has provided its “2020 Asset Allocation Recommendation” (Exhibit A), which highlights the analysis completed for their recommendation, which includes:

- the revalidation of the enrollment date glide path recommendation;
- a review of asset classes, allocations and underlying funds;
- an evaluation of fund fees as discussed at the September 2019 Board meeting, and
- an update to the simulated probabilities of outpacing tuition inflation for the enrollment date glide path.

The Board’s investment consultant, Meketa Investment Group, Inc. (Meketa), has reviewed and analyzed TFI’s recommendation and has provided a memo (Exhibit B) concurring with TFI’s recommendation. Meketa and SIB staff have reviewed and concur with TFI’s recommendation for no additional changes in 2020 to the asset allocation of the investment portfolios for the Plan.

In addition, as a follow-up to the discussion at the September 2019 Board meeting, SIB’s independent consultants reviewed the Plan’s fees and provided analyses about their findings.

- Included in Meketa’s memo (Exhibit B referenced above) is an analysis of the underlying fund fees in the Plan’s investment portfolios. Meketa concluded that each of these funds has fees that are below median and that the majority of these funds have fees that fall in the first quartile.
- The Board’s 529 industry consultant, AKF Consulting Group (AKF), reviewed 529 plan participant fees and has provided an overview (Exhibit C) that outlines 529 fee fundamentals and a comparison of the Plan’s fees with other 529 plans. AKF concluded that the Plan’s fees compare favorably and that it is critical to review all fee components together when making comparisons.

Presenters

Jeremy Thiessen, Senior Director, Institutional Investment Strategist,
TIAA-CREF Tuition Financing, Inc.

Glenn Friedman, Director, Asset Allocation and Investments, TIAA-CREF Tuition Financing, Inc.

Eric White, Principal, Meketa Investment Group, Inc.

Andrea Feirstein, Managing Director, AKF Consulting Group



2020 Asset Allocation Recommendation

Prepared by TIAA-CREF Tuition Financing, Inc.
December 19, 2019



BUILT TO PERFORM.

CREATED TO SERVE.

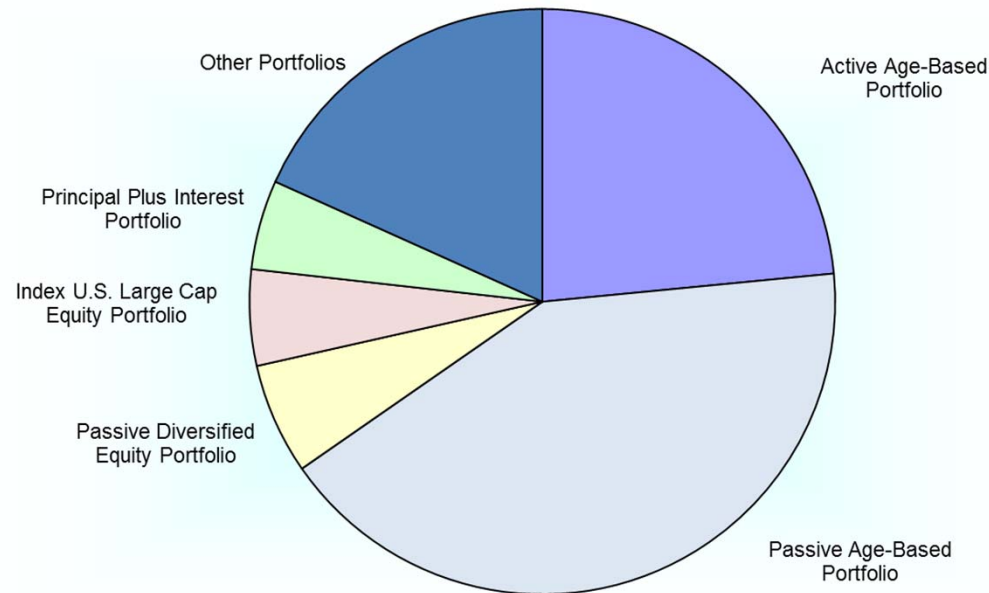
FOR INSTITUTIONAL INVESTOR USE ONLY. NOT FOR USE WITH OR DISTRIBUTION TO THE PUBLIC.

Topic	Page
Executive Summary	3
Assets by Investment Option	4
Approved Enrollment Date Glide Path	5
Asset Class, Allocation, and Fund Review	13
Fee Evaluation	22
Appendix and Supporting Data	27
Asset Class Quilt	28
Monte Carlo Process and Results	30
Asset Allocation Tables	43

- TFI has completed this year's asset allocation study to evaluate the overall investment strategy for ScholarShare 529
- This year's asset allocation study focused on:
 - Revalidating the enrollment date glide path recommendation
 - A review of asset classes, allocations, and underlying funds
 - Evaluating fund fees as discussed at the September Board Meeting and Fiduciary Training
 - Updating the simulated probabilities of outpacing tuition inflation for the Enrollment Date glide path
- Based on this review, TFI
 - Continues to recommend the approved glide path change to an enrollment date model
 - Recommends no other investment changes at this time

Assets by Investment Option as of Q3 2019

Total Assets: \$9.39 Billion



Portfolio	% of Assets	\$ Millions	Portfolio	% of Assets	\$ Millions
Passive Age-Based Portfolio	41.87%	\$ 3,933	Index U.S. Large Cap Equity Portfolio	5.31%	\$ 498
Active Age-Based Portfolio	23.46%	\$ 2,204	Principal Plus Interest Portfolio	4.95%	\$ 465
Passive Diversified Equity Portfolio	6.13%	\$ 576	Other Portfolios (see below)	18.28%	\$ 1,716

Other Portfolios

Index U.S. Equity Portfolio	4.87%	\$ 457	Active Moderate Growth Portfolio	0.69%	\$ 65
Active Diversified Equity Portfolio	2.84%	\$ 267	Passive Moderate Growth Portfolio	0.65%	\$ 61
Social Choice Portfolio	1.92%	\$ 180	Passive Conservative Portfolio	0.55%	\$ 52
Active Growth Portfolio	1.89%	\$ 178	Active Conservative Portfolio	0.43%	\$ 41
Passive Growth Portfolio	1.42%	\$ 134	Active Diversified Fixed Income Portfolio	0.31%	\$ 29
Index International Equity Portfolio	1.31%	\$ 123	Active International Equity Portfolio	0.30%	\$ 28
Index Bond Portfolio	0.83%	\$ 78	Passive Diversified Fixed Income Portfolio	0.26%	\$ 25



Approved Enrollment Date Glide Path

BUILT TO PERFORM.

CREATED TO SERVE.

Implementation Date: 1/24/20

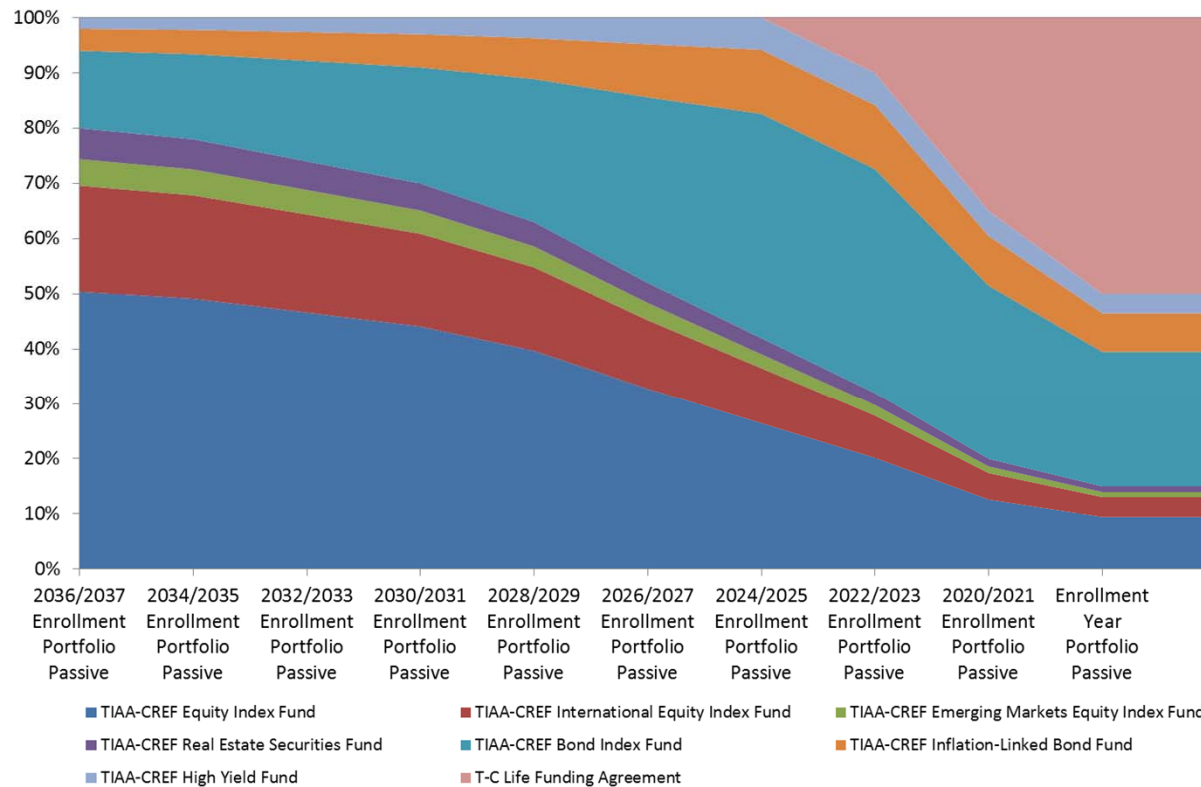
We will be converting the age-based structure to an enrollment-based structure

- Participants will be grouped within an enrollment date fund, or cohort, for example, Enrollment 2036-2037, and remain in this cohort throughout their investment timeframe
- Instead of moving the participant between age bands, the participant will remain in the same enrollment date fund, and the fund will change asset allocations over time
- The glide path for each enrollment date fund is predetermined and based on the current glide path, which will minimize any disruption in the participant's investment experience upon conversion to this new structure
- While each model accomplishes similar goals, there are a few additional benefits to using a enrollment date model

Glide Path Structure



- Participants stay in the same enrollment date fund as asset allocations shift quarterly
- At the end of the glide path, enrollment date funds will enter the Enrollment stage, which is the final, destination portfolio with a static investment allocation for use during expected payouts
- Below is an illustrative example of the glide path displaying all enrollment date funds today



Current vs. Approved Glide Path (Passive)



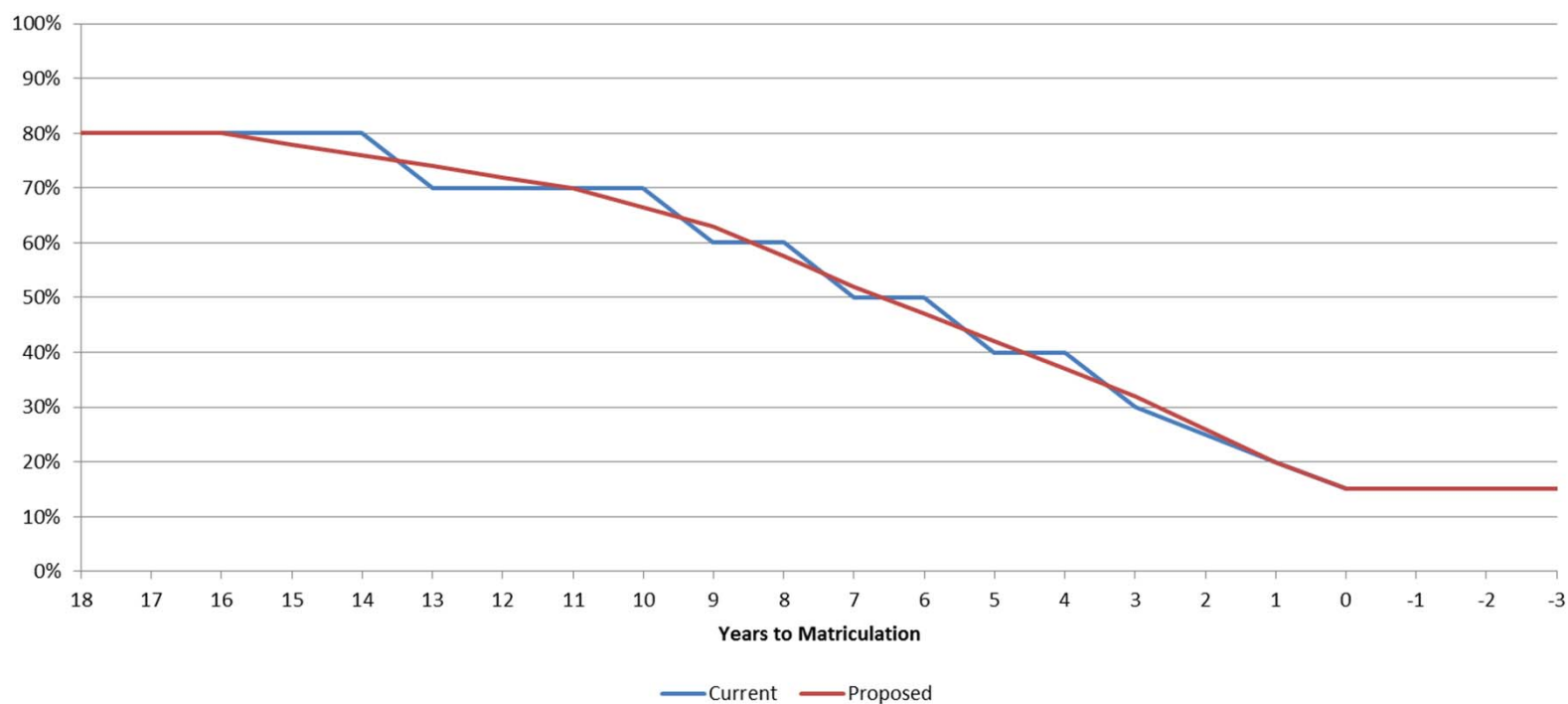
Age of Beneficiary	TIAA-CREF Equity Index Fund	TIAA-CREF International Equity Index Fund	TIAA-CREF Emerging Markets Equity Index Fund	TIAA-CREF Real Estate Securities Fund	TIAA-CREF Bond Index Fund	TIAA-CREF Inflation-Linked Bond Fund	TIAA-CREF High Yield Fund	T-C Life Funding Agreement
0 - 4	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%
5 - 8	44.10%	16.80%	4.20%	4.90%	21.00%	6.00%	3.00%	0.00%
9 - 10	37.80%	14.40%	3.60%	4.20%	28.00%	8.00%	4.00%	0.00%
11 - 12	31.50%	12.00%	3.00%	3.50%	35.00%	10.00%	5.00%	0.00%
13 - 14	25.20%	9.60%	2.40%	2.80%	42.00%	12.00%	6.00%	0.00%
15	18.90%	7.20%	1.80%	2.10%	42.00%	12.00%	6.00%	10.00%
16	15.75%	6.00%	1.50%	1.75%	38.50%	11.00%	5.50%	20.00%
17	12.60%	4.80%	1.20%	1.40%	31.50%	9.00%	4.50%	35.00%
18 +	9.45%	3.60%	0.90%	1.05%	24.50%	7.00%	3.50%	50.00%

Asset allocation adjustments occur via band rolls and move participant accounts to the next static portfolio

Enrollment Year	TIAA-CREF Equity Index Fund	TIAA-CREF International Equity Index Fund	TIAA-CREF Emerging Markets Equity Index Fund	TIAA-CREF Real Estate Securities Fund	TIAA-CREF Bond Index Fund	TIAA-CREF Inflation-Linked Bond Fund	TIAA-CREF High Yield Fund	T-C Life Funding Agreement
2036/2037 Enrollment Portfolio Passive	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%
2034/2035 Enrollment Portfolio Passive	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%
2032/2033 Enrollment Portfolio Passive	47.90%	18.20%	4.60%	5.30%	16.80%	4.80%	2.40%	0.00%
2030/2031 Enrollment Portfolio Passive	45.40%	17.30%	4.30%	5.00%	19.60%	5.60%	2.80%	0.00%
2028/2029 Enrollment Portfolio Passive	42.80%	16.30%	4.10%	4.80%	22.40%	6.40%	3.20%	0.00%
2026/2027 Enrollment Portfolio Passive	37.80%	14.40%	3.60%	4.20%	28.00%	8.00%	4.00%	0.00%
2024/2025 Enrollment Portfolio Passive	30.20%	11.50%	2.90%	3.40%	36.40%	10.40%	5.20%	0.00%
2022/2023 Enrollment Portfolio Passive	22.70%	8.60%	2.20%	2.50%	37.80%	10.80%	5.40%	10.00%
2020/2021 Enrollment Portfolio Passive	15.70%	6.00%	1.50%	1.80%	28.00%	8.00%	4.00%	35.00%
Enrollment Year Portfolio Passive	9.40%	3.60%	0.90%	1.10%	24.50%	7.00%	3.50%	50.00%

Asset allocation adjustments occur more frequently within each enrollment date fund for a more gradual shift

Glide Path Equity Comparison



Current 9 Age-Band Model

- Equity step downs run from 10% in the early years to 5% in the later years
- While an improvement over earlier models using only 5 or 6 bands, still has room to smooth outcomes and reduce the range of investor experiences

Approved Enrollment-Based Model

- Equity step downs are much smaller because of more frequent rebalancing
- In line with the industry trend to utilize progressive glide paths to streamline investor outcomes and remove arbitrary band roll timing

- The approved smooth glide path was designed by using the current stepped glide path as a template, so
 - there are virtually no changes in asset allocations among underlying funds across the investment horizon
 - **there are no changes to participant costs**
- The operational costs associated with the transition will be absorbed by TFI
- Progressive glide paths are viewed positively by external parties
 - Morningstar recently called it an “industry best practice”
- Other 529 plans that currently use an enrollment date model:

Program Manager	Plan
Fidelity	U. Fund College Investing Plan
	UNIQUE College Investing Plan
	Delaware College Investment Plan
	Fidelity Arizona College Savings Plan
Invesco	CollegeBound 529 Plan (Advisor)
BlackRock	BlackRock CollegeAdvantage 529 (Advisor)
T. Rowe Price	T. Rowe Price College Savings Plan
	Maryland College Investment Plan
Sunday/BNY Mellon	Oregon College Savings Plan

- Participants in the Active and Passive tracks will be mapped to the enrollment date fund that matches the age of the beneficiary at the time of conversion

CURRENT		NEW
Age-Based Investment Portfolio*	Beneficiary Age on January 24, 2020	Enrollment Year Portfolio (Effective January 27, 2020)
Ages 0-4	0-1	2036 / 2037 Enrollment Year
	2-3	2034 / 2035 Enrollment Year
	4	2032 / 2033 Enrollment Year
Ages 5-8	5	2030 / 2031 Enrollment Year
	6-7	2028 / 2029 Enrollment Year
	8	2026 / 2027 Enrollment Year
Ages 9-10	9	2024 / 2025 Enrollment Year
	10	2022 / 2023 Enrollment Year
Ages 11-12	11	2020 / 2021 Enrollment Year
	12	Enrollment Year Portfolio
Ages 13-14	13	2024 / 2025 Enrollment Year
	14	2022 / 2023 Enrollment Year
Age 15	15	2020 / 2021 Enrollment Year
Age 16	16	Enrollment Year Portfolio
Age 17	17	Enrollment Year Portfolio
Ages 18+	18+	Enrollment Year Portfolio

*The last band roll will occur on 12/20/19.

Advantages to an enrollment date glide path

- Smoother transitions
 - Less market timing risk
 - Smaller range of potential investor outcomes
- Flexibility in glide path shape
 - Potential for further customization down the road based on demographics and investment experiences
- K-12 accommodation
 - Catering to a wider audience of education savers who look for a glide path solution for K-12 expenses
- Improved performance reporting
 - Reporting on portfolios rather than age bands: more applicable to investors' true experience
- Supported by Monte Carlo Simulations

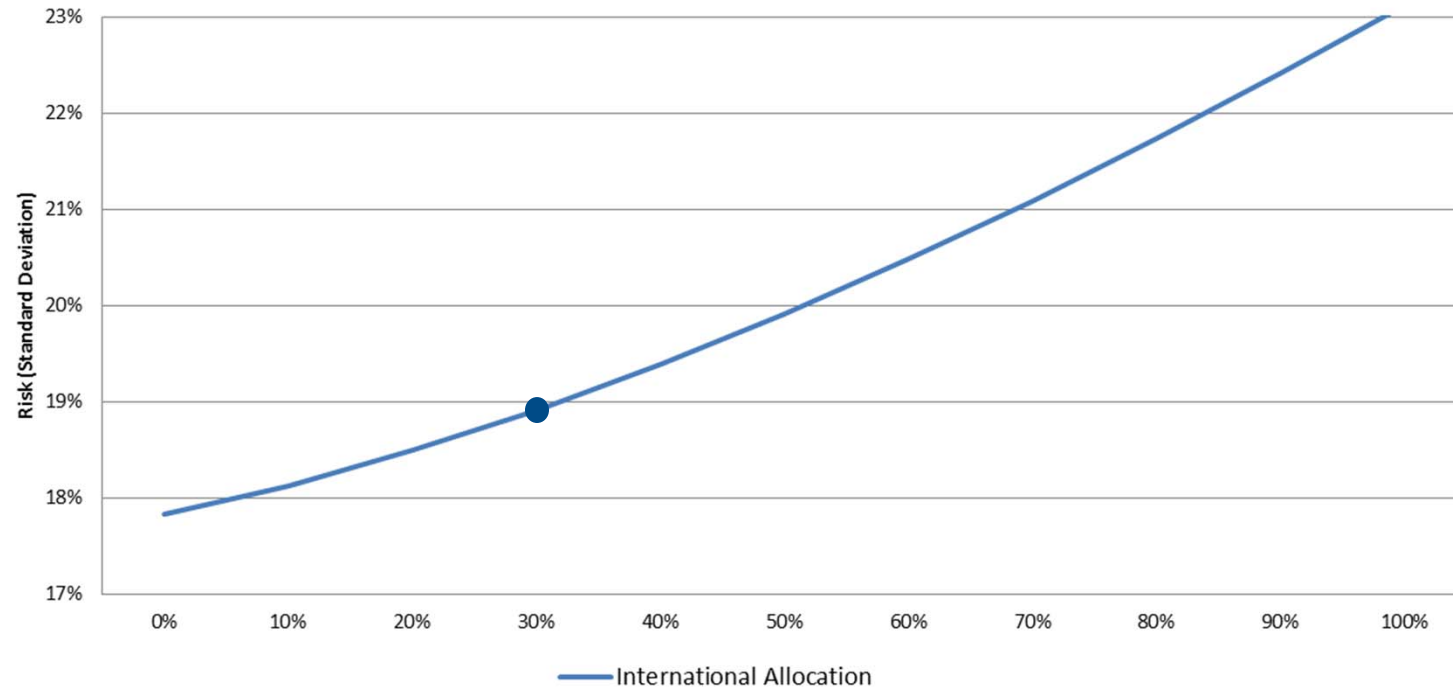


Asset Class, Allocation, and Fund Review

BUILT TO PERFORM.

CREATED TO SERVE.

Portfolio Risk as a Function of International Equity Allocation
1999 - 2018



* Russell 3000 for domestic equity, MSCI EAFE for international developed markets equity, and MSCI EM for emerging markets equity (80% developed markets and 20% emerging markets, in line with the current allocation in ScholarShare).

- An international equity allocation of 20%-40% will help achieve the benefits of global diversification without significantly increasing portfolio risk

Duration by Passive Enrollment Date Fund



Interest Rate Sensitivity of Fixed Income and Short-Term Investments					
Beneficiary's Age	TIAA-CREF Bond Index Fund	TIAA-CREF Inflation-Linked Bond Fund	TIAA-CREF High Yield Fund	TC Life Funding Agreement	Weighted Average Duration (Years)
Option-Adjusted Duration (in years, 9/30/19)	5.72	5.06	2.97	0.00	
2036/2037 Enrollment Portfolio Passive	70.00%	20.00%	10.00%	0.00%	5.31
2034/2035 Enrollment Portfolio Passive	70.00%	20.00%	10.00%	0.00%	5.31
2032/2033 Enrollment Portfolio Passive	70.00%	20.00%	10.00%	0.00%	5.31
2030/2031 Enrollment Portfolio Passive	70.00%	20.00%	10.00%	0.00%	5.31
2028/2029 Enrollment Portfolio Passive	70.00%	20.00%	10.00%	0.00%	5.31
2026/2027 Enrollment Portfolio Passive	70.00%	20.00%	10.00%	0.00%	5.31
2024/2025 Enrollment Portfolio Passive	70.00%	20.00%	10.00%	0.00%	5.31
2022/2023 Enrollment Portfolio Passive	59.06%	16.88%	8.44%	15.63%	4.48
2020/2021 Enrollment Portfolio Passive	37.33%	10.67%	5.33%	46.67%	2.83
Enrollment Year Portfolio Passive	28.82%	8.24%	4.12%	58.82%	2.19

- Starting duration ranges from about 5.3 years in the youngest portfolio to 2.2 years in the oldest
- This allocation
 - Is consistent with best practices for reducing interest rate sensitivity over time
 - Maintains a conservative stance against a broad-based benchmark (Bloomberg Barclays U.S. Aggregate Bond Index: duration of 5.78 years)
 - Is well-positioned for an uncertain interest rate environment going forward

Duration by Active Enrollment Date Fund



Interest Rate Sensitivity of Fixed Income and Short-Term Investments						
Beneficiary's Age	MetWest Total Return Bond Fund	PIMCO Real Return Instl Fund	PIMCO Income Instl Fund	T. Rowe Price Instl Floating Rate Fund	TC Life Funding Agreement	Weighted Average Duration (Years)
Option-Adjusted Duration (in years, 9/30/19)	5.75	7.63	0.41	0.33	0.00	
2036/2037 Enrollment Portfolio Active	50.00%	20.00%	20.00%	10.00%	0.00%	4.52
2034/2035 Enrollment Portfolio Active	50.00%	20.00%	20.00%	10.00%	0.00%	4.52
2032/2033 Enrollment Portfolio Active	50.00%	20.00%	20.00%	10.00%	0.00%	4.52
2030/2031 Enrollment Portfolio Active	50.00%	20.00%	20.00%	10.00%	0.00%	4.52
2028/2029 Enrollment Portfolio Active	50.00%	20.00%	20.00%	10.00%	0.00%	4.52
2026/2027 Enrollment Portfolio Active	50.00%	20.00%	20.00%	10.00%	0.00%	4.52
2024/2025 Enrollment Portfolio Active	50.00%	20.00%	20.00%	10.00%	0.00%	4.52
2022/2023 Enrollment Portfolio Active	42.19%	16.88%	16.88%	8.44%	15.63%	3.81
2020/2021 Enrollment Portfolio Active	26.67%	10.67%	10.67%	5.33%	46.67%	2.41
Enrollment Year Portfolio Active	20.59%	8.24%	8.24%	4.12%	58.82%	1.86

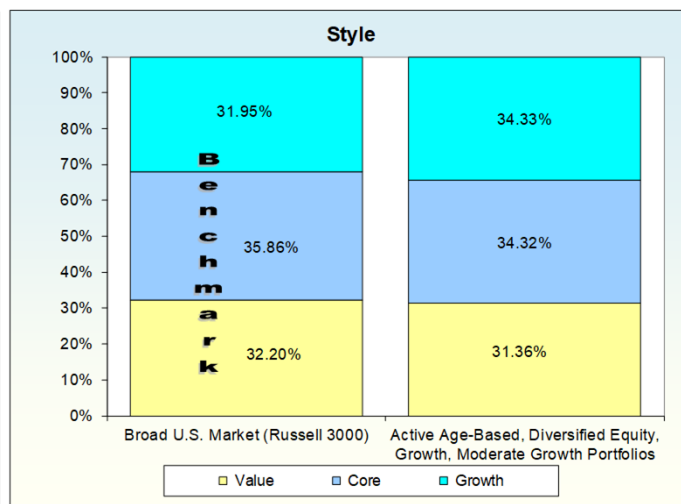
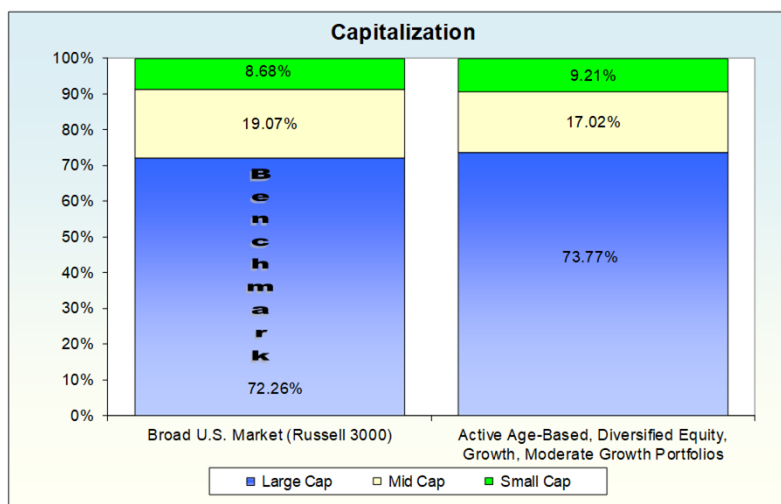
- Starting duration ranges from about 4.5 years in the youngest portfolio to 1.9 years in the oldest
- This allocation
 - Skews a bit lower than the durations in the Active portfolios, but is in line with expectations
 - Maintains a conservative stance against a broad-based benchmark (Bloomberg Barclays U.S. Aggregate Bond Index: duration of 5.78 years)
 - Is well-positioned for an uncertain interest rate environment going forward

- TFI reviewed the current domestic equity allocation compared to each of the Morningstar 9 Style categories in relation to the broad domestic equity index (Russell 3000 Index).
- TFI's philosophy in developing a domestic equity strategy is to maintain a neutral and balanced position in both style (growth vs. value) and capitalization (large cap, mid cap, and small cap) to the Russell 3000 Index.
- The style and capitalization weightings for the domestic equity component of the Active Age-Based Portfolio and Active Multi-Fund Portfolios with U.S. equity exposure are in line with those of the Russell 3000 Index.

Domestic Equity Composition: Market Cap and Style



Benchmarks	Asset Allocation	Capitalization Analysis				Style Analysis			
	Active Age-Based, Diversified Equity, Growth, Moderate Growth Portfolios	Large Cap	Mid Cap	Small Cap	Total	Value	Core	Growth	Total
Russell 1000 Value Index	45.00%	76.78%	21.47%	1.76%	100.00%	54.23%	36.71%	9.06%	100.00%
Russell 1000 Growth Index	45.00%	87.16%	12.63%	0.21%	100.00%	9.63%	31.29%	59.08%	100.00%
Russell Mid Cap Value Index	0.00%	31.24%	63.55%	5.21%	100.00%	47.66%	40.63%	11.72%	100.00%
Russell Mid Cap Growth Index	0.00%	38.38%	60.64%	0.98%	100.00%	6.56%	24.35%	69.09%	100.00%
Russell 2000 Index	10.00%	0.00%	16.77%	83.23%	100.00%	26.25%	37.17%	36.58%	100.00%
S&P 500 Index	0.00%	89.90%	10.09%	0.01%	100.00%	32.22%	34.53%	33.25%	100.00%
Russell 3000 Index	0.00%	76.91%	16.97%	6.12%	100.00%	31.25%	34.16%	34.59%	100.00%
Total Blended Portfolio	100.00%								
Broad U.S. Market (Russell 3000)		72.26%	19.07%	8.68%	100.00%	32.20%	35.86%	31.95%	100.00%
Active Age-Based, Diversified Equity, Growth, Moderate Growth Portfolios		73.77%	17.02%	9.21%	100.00%	31.36%	34.32%	34.33%	100.00%



Domestic Equity Composition: Style Box Comparison



Benchmarks	Asset Allocation	Morningstar 9 Style Categories									
	Active Age-Based, Diversified Equity, Growth, Moderate Growth Portfolios	Large Value	Large Core	Large Growth	Mid Value	Mid Core	Mid Growth	Small Value	Small Core	Small Growth	Total
Russell 1000 Value Index	45.00%	43.16%	27.63%	5.98%	10.07%	8.52%	2.88%	1.01%	0.56%	0.20%	100.00%
Russell 1000 Growth Index	45.00%	8.48%	27.94%	50.74%	1.09%	3.30%	8.25%	0.06%	0.05%	0.09%	100.00%
Russell Mid Cap Value Index	0.00%	14.88%	13.76%	2.61%	29.80%	25.22%	8.53%	2.98%	1.64%	0.58%	100.00%
Russell Mid Cap Growth Index	0.00%	1.07%	8.27%	29.05%	5.21%	15.82%	39.60%	0.28%	0.26%	0.44%	100.00%
Russell 2000 Index	10.00%	0.00%	0.00%	0.00%	3.52%	6.58%	6.68%	22.73%	30.60%	29.90%	100.00%
S&P 500 Index	0.00%	28.31%	30.68%	30.91%	3.91%	3.85%	2.33%	0.00%	0.00%	0.01%	100.00%
Russell 3000 Index	0.00%	23.95%	26.05%	26.91%	5.38%	5.91%	5.67%	1.92%	2.20%	2.01%	100.00%
Total Blended Portfolio	100.00%										

Broad Market (Russell 3000)	23.95%	26.05%	26.91%	5.38%	5.91%	5.67%	1.92%	2.20%	2.01%	100.00%
Active Age-Based, Diversified Equity, Growth, Moderate Growth Portfolios	23.24%	25.01%	25.52%	5.37%	5.97%	5.68%	2.75%	3.33%	3.12%	100.00%

Difference in Portfolios vs. Broad Market			
Active Age-Based, Diversified Equity, Growth, Moderate Growth Portfolios	Value	Core	Growth
Large Cap	-0.71%	-1.04%	-1.39%
Mid Cap	-0.01%	0.06%	0.01%
Small Cap	0.83%	1.13%	1.11%

Underlying Funds as of 9/30/19



Asset Class	Ticker	Active Fund	Overall Status
Domestic Equity	TRLGX	T. Rowe Price Instl Large Cap Growth	POSITIVE
	TILCX	T. Rowe Price Instl Large Cap Value	POSITIVE
	TISEX	TIAA-CREF Quant Small-Cap Equity Instl	POSITIVE
	TISCX	TIAA-CREF Social Choice Eq Instl	ACCEPTABLE
	TIREX	TIAA-CREF Real Estate Sec Instl	POSITIVE
International Equity	DFALX	DFA Large Cap International I	ACCEPTABLE
	DFCEX	DFA Emerging Markets Core Equity I	ACCEPTABLE
	MWTSX	Metropolitan West Total Return Bond I	POSITIVE
Fixed Income	PIMIX	PIMCO Income Instl	ACCEPTABLE
	PRRIX	PIMCO Real Return Instl	ACCEPTABLE
	RPIFX	T. Rowe Price Instl Floating Rate	ACCEPTABLE
	TILX	TIAA-CREF Inflation Link Bd Instl	ACCEPTABLE
	TIHYX	TIAA-CREF High-Yield Inst	ACCEPTABLE

- All active funds in ScholarShare maintain either a Positive or Acceptable rating in our performance monitor, which evaluates rolling returns relative to benchmark over 1, 3, and 5 years

Underlying Funds as of 9/30/19: Passive



	Average Annual Total Return				5-Yr. Avg.		3-Yr Std. Dev.	Fund Incept.
	1 Year	3 Year	5 Year	Life	Fee	Sec Lending Income		
T-C Bond Index Fund	10.19%	2.74%	3.25%	3.61%	0.11%	N/A	3.36%	09/14/2009
Bloomberg Barclays U.S. Aggregate Bond Index	10.30%	2.93%	3.38%	3.80%			3.35%	
Difference	-0.11%	-0.19%	-0.13%	-0.19%				
T-C Emerging Markets Equity Index Fund*	-1.66%	5.75%	2.35%	2.51%	0.20%	0.045%	14.20%	08/31/2010
MSCI Emerging Markets® Index	-2.02%	5.98%	2.33%	2.82%			14.04%	
Difference	0.36%	-0.23%	0.02%	-0.31%				
T-C Equity Index Fund	2.89%	12.80%	10.42%	6.18%	0.05%	0.034%	12.53%	07/01/1999
Russell 3000 Index	2.92%	12.84%	10.45%	6.25%			12.54%	
Difference	-0.03%	-0.04%	-0.03%	-0.07%				
T-C International Equity Index Fund*	-1.00%	6.54%	3.47%	7.39%	0.06%	0.061%	11.14%	10/01/2002
MSCI EAFE Index	-1.34%	6.48%	3.27%	7.33%			11.07%	
Difference	0.34%	0.06%	0.20%	0.06%				
T-C S&P 500 Index Fund	4.22%	13.33%	10.77%	9.81%	0.05%	0.005%	12.18%	10/01/2002
S&P 500 Index	4.25%	13.40%	10.84%	9.89%			12.18%	
Difference	-0.03%	-0.07%	-0.07%	-0.08%				

* For funds holding securities traded on foreign exchange that close before the U.S. market, fair value pricing creates tracking error relative to a benchmark index that uses foreign closing prices.

- All passive funds in ScholarShare maintain a tight tracking error, low fee, and volatility that is very similar to their benchmarks
- Passive equity funds also include a securities lending program that adds incremental returns to shareholders



Fee Evaluation

BUILT TO PERFORM.

CREATED TO SERVE.

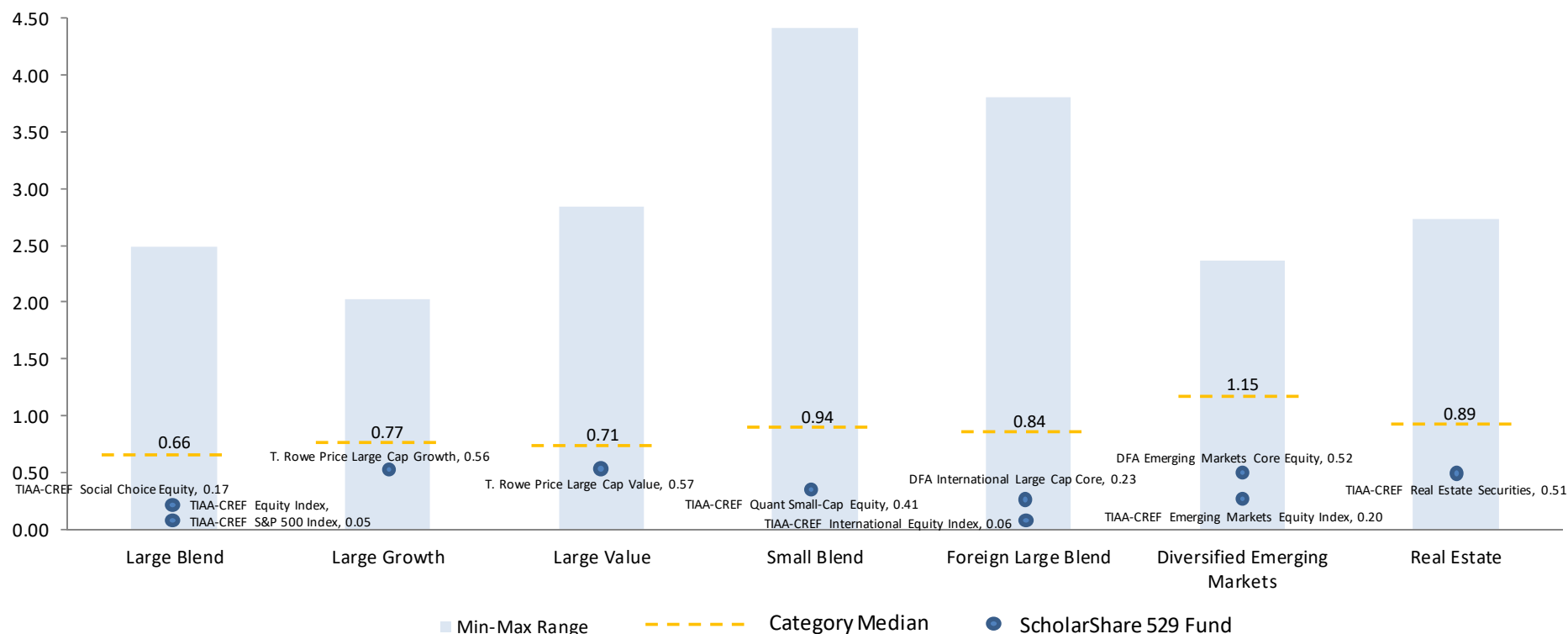
Introduction

- In response to discussion at September's Fiduciary Training and Board meeting, TFI performed a fee comparison for the underlying funds used in ScholarShare 529.
- Each fund's expense ratio was compared to those in its Morningstar peer universe to determine how competitive the underlying fund fees are

Results

- The expense ratios for all funds in the program are at or below peer median
- The vast majority of funds have fees that are **well below** peer median, often placing in the bottom (lowest-cost) quartile in each respective category

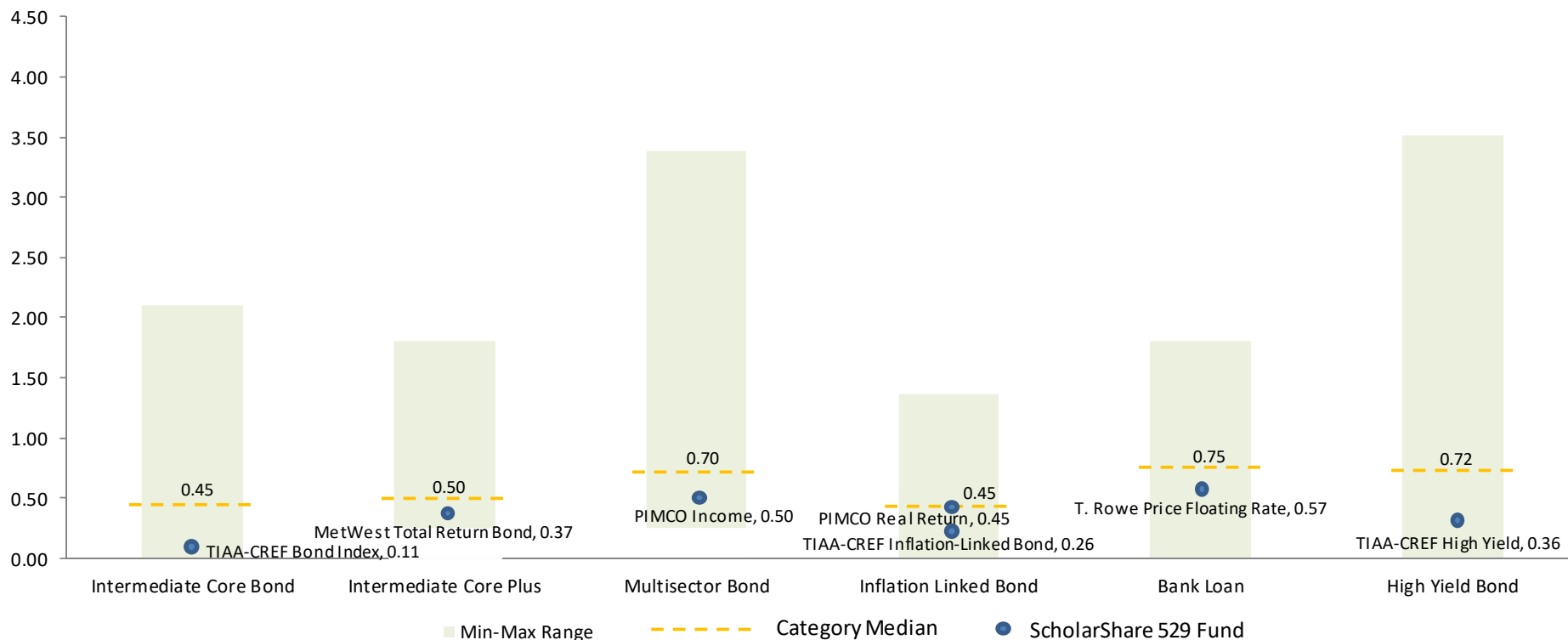
Fee Comparison for Equity Funds



Source: Morningstar

All numbers are listed as a percent. The max-min range and category median refer to the institutional share class in each respective Morningstar peer universe. In keeping with Morningstar's schema, each category may contain both active and index funds. There are no separate categories for ESG Funds. The TIAA-CREF Quant Small-Cap Blend Fund was reclassified from small cap growth to small cap blend because it is utilized for small cap blend exposure - either category produces similar results. Fees are exclusive of interest expense not paid to the fund company.

Fee Comparison for Fixed Income Funds



Source: Morningstar

All numbers are listed as a percent. The max-min range and category median refer to the institutional share class in each respective Morningstar peer universe. In keeping with Morningstar's schema, each category may contain both active and index funds. Fees are exclusive of interest expense not paid to the fund company. The MetWest Total Return Bond Fund uses the Plan share class, which is cheaper than the institutional class.

Fee Comparison: Peer Rankings



Equity

	Large Blend			Large Growth	Large Value	Small Blend	Foreign Large Blend		Diversified Emerging Markets		Real Estate
Fund >>	TIAA-CREF Equity Index Instl	TIAA-CREF S&P 500 Index Instl	TIAA-CREF Social Choice Eq Instl	T. Rowe Price Instl Large Cap Growth	T. Rowe Price Instl Large Cap Value	TIAA-CREF Quant Small-Cap Equity Instl	DFA Large Cap International I	TIAA-CREF International Eq Idx Instl	DFA Emerging Markets Core Equity I	TIAA-CREF Emerging Markets Eq Idx Instl	TIAA-CREF Real Estate Sec Instl
Numer of Funds in Category >>	359	359	359	332	313	202	200	200	237	237	73
Fund Rank in Category (the lower, the better) >>	14	14	40	36	66	28	19	4	13	7	9
Percentile Rank (1-100): the lower, the better >>	4	4	11	11	21	13	9	2	5	3	11

Fixed Income

	Intermediate Core Bond	Intermediate Core Plus	Multisector Bond	Inflation Linked Bond		Bank Loan	High Yield Bond
Fund >>	TIAA-CREF Bond Index Institutional	Metropolitan West Total Return Bd Plan	PIMCO Income Instl	TIAA-CREF Inflation Link Bd Instl	PIMCO Real Return Instl	T. Rowe Price Instl Floating Rate	TIAA-CREF High-Yield Inst
Numer of Funds in Category >>	118	162	88	55	55	67	194
Fund Rank in Category (the lower, the better) >>	16	12	3	12	28	3	5
Percentile Rank (1-100): the lower, the better >>	13	7	2	20	50	3	2

Source: Morningstar.

In keeping with Morningstar's schema, each category may contain both active and index funds. There are no separate categories for ESG Funds. The TIAA-CREF Quant Small-Cap Blend Fund was reclassified from small cap growth to small cap blend because it is utilized for small cap blend exposure - either category produces similar results. Fees are exclusive of interest expense not paid to the fund company. The MetWest Total Return Bond Fund uses the Plan share class, which is cheaper than the institutional class.



Appendix

BUILT TO PERFORM.

CREATED TO SERVE.

The Importance of Diversification



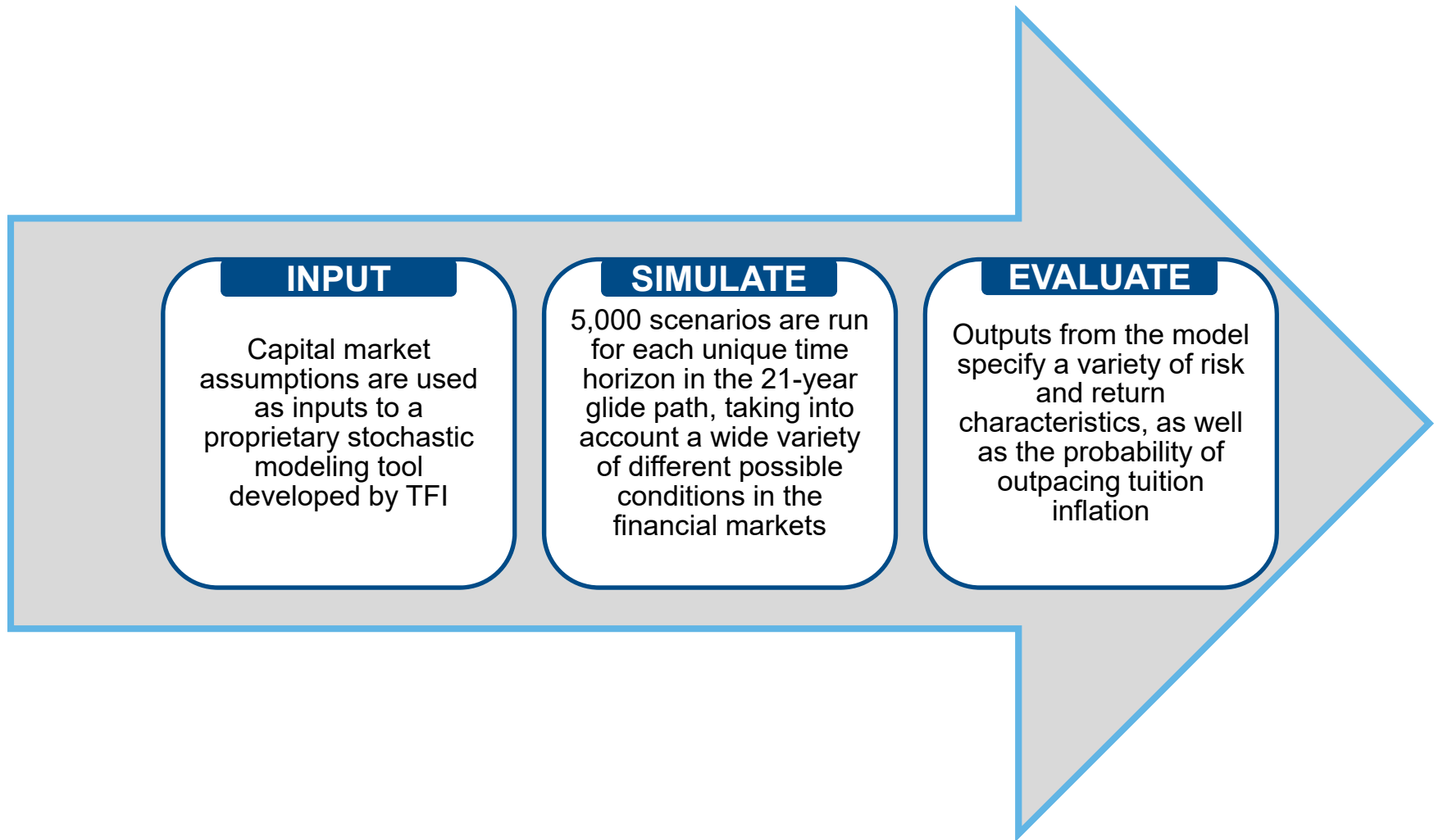
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Highest	78.5 EM Stocks	27.9 Real Estate	13.6 TIPS	19.7 Real Estate	33.6 US Stocks	28.0 Real Estate	2.8 Real Estate	14.8 HY Bond	37.3 EM Stocks	1.6 ST Bond
	52.5 Bank Loan	18.9 EM Stocks	8.3 Real Estate	18.2 EM Stocks	22.8 Intl Stocks	12.6 US Stocks	0.7 ST Bond	12.7 US Stocks	25.0 Intl Stocks	1.4 MM
	46.0 HY Bond	16.9 US Stocks	7.8 Bond	17.3 Intl Stocks	6.3 HY Bond	6.0 Bond	0.6 Bond	11.2 EM Stocks	21.1 US Stocks	0.6 Bank Loan
	31.8 Intl Stocks	14.3 HY Bond	6.4 Global Bond	16.4 US Stocks	5.4 Bank Loan	3.6 TIPS	0.5 US Stocks	10.4 Bank Loan	8.7 Real Estate	0.0 Bond
	28.3 US Stocks	10.4 Bank Loan	5.4 HY Bond	14.6 HY Bond	2.9 Real Estate	3.5 HY Bond	0.1 Bank Loan	8.6 Real Estate	7.5 Global Bond	-0.8 Global Bond
	28.0 Real Estate	7.8 Intl Stocks	1.6 ST Bond	9.8 Bank Loan	0.6 ST Bond	1.8 Bank Loan	0.0 MM	4.7 TIPS	7.0 HY Bond	-1.3 TIPS
	11.4 TIPS	6.5 Bond	1.5 Bank Loan	7.0 TIPS	0.0 MM	0.8 ST Bond	-0.8 Intl Stocks	2.7 Bond	4.3 Bank Loan	-2.0 HY Bond
	5.9 Bond	6.3 TIPS	1.0 US Stocks	4.2 Bond	-2.0 Bond	0.0 MM	-1.4 TIPS	1.6 Global Bond	3.5 Bond	-4.0 Real Estate
	3.8 ST Bond	5.2 Global Bond	0.0 MM	1.6 Global Bond	-2.6 EM Stocks	-0.5 Global Bond	-2.8 HY Bond	1.3 ST Bond	3.0 TIPS	-5.2 US Stocks
	2.6 Global Bond	2.8 ST Bond	-12.1 Intl Stocks	1.3 ST Bond	-4.0 Global Bond	-2.2 EM Stocks	-3.6 Global Bond	1.0 Intl Stocks	0.8 ST Bond	-13.8 Intl Stocks
Lowest	0.2 MM	0.0 MM	-18.4 EM Stocks	0.0 MM	-8.6 TIPS	-4.9 Intl Stocks	-14.9 EM Stocks	0.1 MM	0.5 MM	-14.6 EM Stocks

The Importance of Diversification: Notes



Bond	uses the Bloomberg Barclays US Aggregate Bond Index, which measures the performance of the U.S. investment-grade, fixed-rate bond market, including government and credit securities, agency mortgage pass through securities, asset-backed securities and commercial mortgage-backed securities.
TIPS	uses the Bloomberg Barclays US TIPS Index, which measures the performance of fixed-income securities with fixed-rate coupon payments that adjust for inflation as measured by the Consumer Priced Index for All Urban Consumers.
HY Bond	uses the ICE BofAML US HY Cash Pay BB-B Constrained Index, which measures the performance of securities that pay interest in cash and have a credit rating of BB or B.
Real Estate	uses the FTSE NAREIT All Equity REITs Index, which is an unmanaged, market capitalization weighted index of all publicly-traded REITs that invest predominantly in the equity ownership of real estate. The index is designed to reflect the performance of all publicly-traded equity REITs as whole.
Intl Stocks	uses the MSCI EAFE Index, which is a free-float-adjusted market capitalization index designed to measure developed market equity performance, excluding the United States and Canada.
EM Stocks	uses the MSCI Emerging Markets Index, which tracks the performance of the leading stocks in 23 MSCI emerging countries in the following areas: Europe, Asia, Africa, Latin America and the Middle East.
US Stocks	uses Russell 3000 Index, which measures the performance of 3,000 of the largest publicly traded U.S. companies, based on market capitalization, and it measures the performance of about 98% of the total market capitalization of the publicly traded U.S. equity market.
Bank Loan	uses the S&P/LSTA Performing Loan Index, which is a subset of the S&P/LSTA Leveraged Loan Index, and comprises non-investment-grade and non-rated loans. Tracking only performing loans, unlike its parent index, it removes defaulted issues at the price they reach directly following the default.
Global Bond	uses the Citigroup World Government Bond Index, which comprises sovereign debt from over 20 countries, denominated in a variety of currencies.
ST Bond	uses the Bloomberg Barclays US Govt/Credit 1-3 Yr Index, which measures all medium and larger issues of U.S. government, investment-grade corporate, and investment-grade international dollar-denominated bonds that have maturities of between 1 and 3 years and are publicly issued.
MM	uses the iMoneyNet Fund Averages - All Government, which is the average of all major government money market mutual fund yields published weekly for 7- and 30-day simple and compound yields.

- The following asset allocation study uses the most recent capital market assumptions to evaluate prospective outcomes for the glide path models
- This year, the models included the current age-based glide paths as well as the recommended enrollment date glide paths
- The glide paths seek to achieve a reasonable rate of expected return and high probability of outperforming tuition inflation while minimizing the potential shortfalls between expected returns and tuition inflation over the expected investment horizons



2019 Asset Allocation Assumptions: Return and Volatility

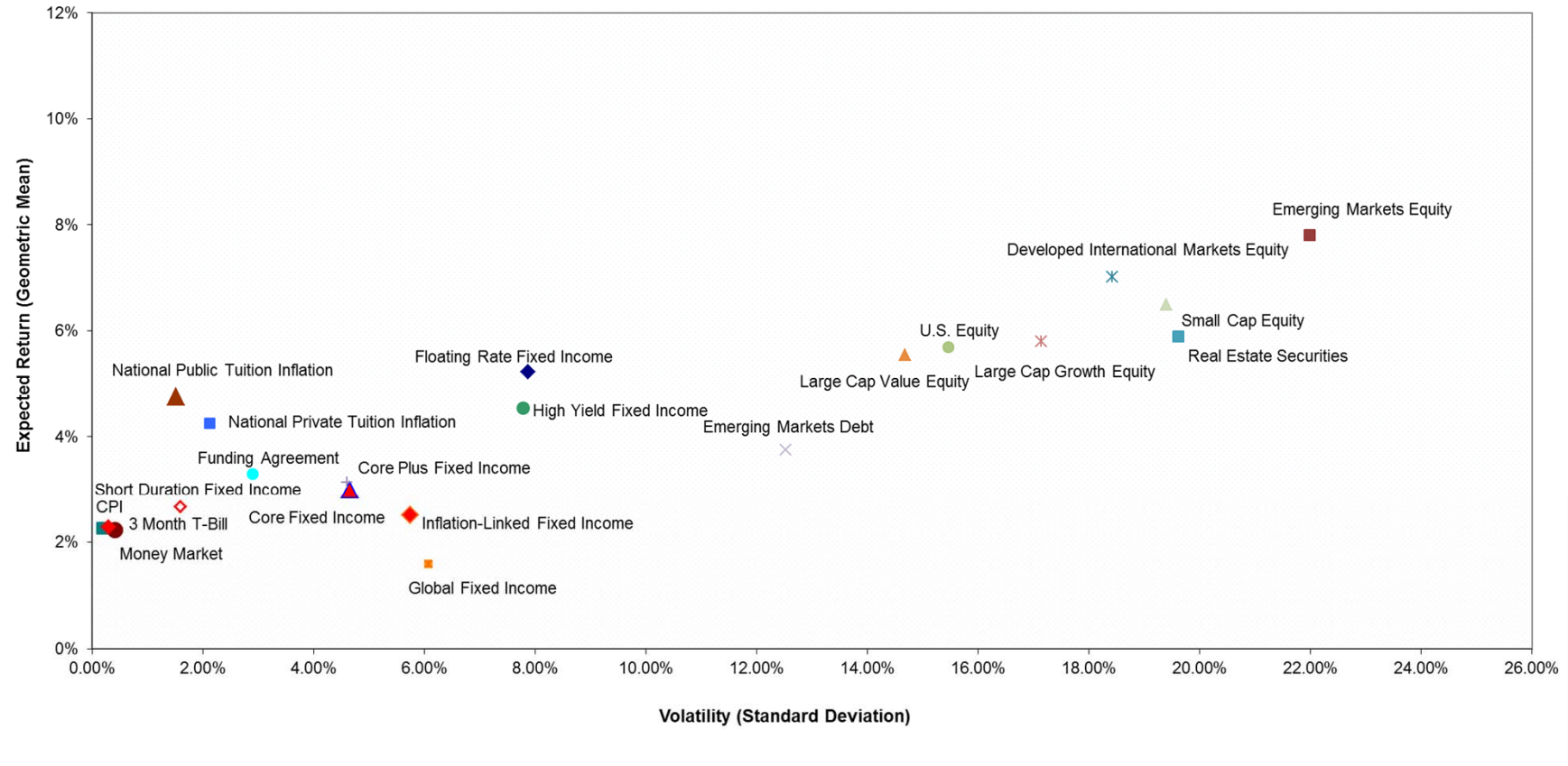


Variables	Benchmarks	Capital Market Assumptions (source: Nuveen Solutions)	
		Returns (Long-Term Average)	Volatility (Standard Deviation)
U.S. Equity	Russell 3000 Index	5.69%	15.46%
Large Cap Growth Equity	Russell 1000 Growth Index	5.80%	17.14%
Large Cap Value Equity	Russell 1000 Value Index	5.55%	14.68%
Small Cap Equity	Russell 2000 Index	5.89%	19.61%
Developed International Equity	MSCI EAFE Index	7.02%	18.42%
Emerging Markets Equity	MSCI Emerging Markets Index	7.81%	21.98%
Core Fixed Income	Bloomberg Barclays U.S. Aggregate Bond Index	2.99%	4.66%
Core Plus Fixed Income	Bloomberg Barclays U.S. Universal Index	3.13%	4.61%
Floating Rate Fixed Income	Credit Suisse Leveraged Loan Index	5.22%	7.87%
Global Fixed Income	FTSE World Government Bond Index	1.59%	6.08%
Emerging Markets Debt	JPM EMBI Global Diversified Index	3.75%	12.52%
High Yield Fixed Income	BofAML US HY BB/B Cash Pay Index	4.54%	7.79%
TIPS	Bloomberg Barclays Inflation-Linked U.S. TIPS Index	2.51%	5.74%
Intermediate-Term TIPS	Bloomberg Barclays Inflation-Linked 1-10 Year U.S. TIPS Index	2.57%	5.29%
Short-Term Fixed Income	Bloomberg Barclays U.S. 1-3 Year Government/Credit Bond Index	2.67%	1.59%
Real Estate Securities	FTSE NAREIT All Equity REITs Index	6.49%	19.40%
CPI	Consumer Price Index - All Urban Consumers	2.26%	0.20%
3 Month T-Bill	BofAML US Treasury Bill 3 Month Index	2.29%	0.30%
Money Market	iMoneyNet Money Fund Report Averages All Taxable	2.23%	0.42%
TIAA Life Funding Agreement	Funding Agreement	3.30%	2.90%
Additional Variables (sources: The College Board and TIAA-CREF Tuition Financing, Inc.)			
	National Private Tuition Inflation	4.25%	2.13%
	National Public Tuition Inflation	4.76%	1.52%

2019 Asset Allocation Assumptions



Return/Risk Profile for Capital Market Assumptions



2019 Asset Allocation Assumptions: Correlations



	TC Life Funding Agreement	BofAML U.S. 3-Month Treasury Bill / iMoneyNet	FTSE World Gov't Bond Index	JPM EMBI Global Diversified Index	BBarclays U.S. Aggregate Bond Index	BBarclays U.S. Universal Index	BBarclays U.S. TIPS Year Index	BBarclays U.S. TIPS 1-10 Year Index	BBarclays U.S. 1-3 Year Gov't / Credit Bond Index	BBofAML US HY BB/B Cash Pay Index	Credit Suisse Leveraged Loan Index	FTSE NAREIT All Equity REITs Index	Russell 3000 Index	Russell 1000 Value Index	Russell 1000 Growth Index	Russell 2000 Index	MSCI EAFE Index	MSCI Emerging Markets Index
TC Life Funding Agreement	1.00																	
BofAML U.S. 3-Month Treasury Bill / iMoneyNet	0.33	1.00																
FTSE World Gov't Bond Index	0.61	0.01	1.00															
JPM EMBI Global Diversified Index	0.44	0.00	0.29	1.00														
BBarclays U.S. Aggregate Bond Index	0.85	0.02	0.47	0.43	1.00													
BBarclays U.S. Universal Index	0.85	0.01	0.40	0.74	0.90	1.00												
BBarclays U.S. TIPS Year Index	0.60	0.04	0.31	0.42	0.57	0.89	1.00											
BBarclays U.S. TIPS 1-10 Year Index	0.60	0.10	0.47	0.74	0.71	0.86	0.96	1.00										
BBarclays U.S. 1-3 Year Gov't / Credit Bond Index	0.76	0.19	0.49	0.32	0.88	0.27	0.27	0.23	1.00									
BBofAML US HY BB/B Cash Pay Index	0.43	0.03	0.29	0.56	0.29	0.58	0.62	0.61	0.17	1.00								
Credit Suisse Leveraged Loan Index	-0.16	0.01	0.19	0.38	0.05	0.47	0.56	0.56	0.09	0.78	1.00							
FTSE NAREIT All Equity REITs Index	0.18	-0.02	0.19	-0.03	-0.14	0.46	0.33	0.30	-0.14	-0.09	0.62	1.00						
Russell 3000 Index	0.10	0.01	0.05	0.52	-0.02	0.24	0.25	0.20	-0.08	0.59	0.45	0.11	1.00					
Russell 1000 Value Index	0.08	0.01	0.05	0.43	-0.02	0.23	0.19	0.07	-0.08	0.56	0.43	0.11	0.95	1.00				
Russell 1000 Growth Index	0.04	0.00	0.05	0.44	-0.02	0.25	0.29	0.26	-0.08	0.57	0.43	0.11	0.97	0.92	1.00			
Russell 2000 Index	0.08	0.00	0.04	0.41	-0.02	0.23	0.21	0.16	-0.08	0.52	0.40	0.10	0.89	0.85	0.86	1.00		
MSCI EAFE Index	0.18	0.01	0.04	0.42	-0.01	0.28	0.35	0.31	-0.06	0.58	0.43	0.07	0.78	0.74	0.76	0.70	1.00	
MSCI Emerging Markets Index	-0.05	0.02	0.04	0.56	-0.01	0.54	0.63	0.60	-0.06	0.57	0.47	0.03	0.72	0.69	0.70	0.64	0.80	1.00

Tuition data are sourced from the 2018 College Board Trends in Tuition Pricing.

Private 4-year Tuition Inflation:

$$T(t) = 0.02231 + i(t) + 0.01197 * S(t-1) + 0.16757 * B(t) + 0.24701 * R(t-1) - 0.20081 * GDP + e1(t)$$

Expected Value = 4.25%

Public Tuition Inflation:

$$T(t) = 0.04264 + i(t) - 0.00834 * S(t-1) + 0.24219 * B(t) + 0.18385 * R(t-1) - 0.92545 * GDP + e2(t)$$

Expected Value = 4.76%

where $T(t)$ is the tuition inflation rate in year t ,

$i(t)$ is the CPI inflation rate in year t ,

$S(t)$ is the real stock total return (Russell 3000 Index) in year t ,

$B(t)$ is the real core fixed income total return (Barclays Capital U.S. Aggregate Bond Index) in year t ,

$R(t)$ is the 3 Month T-Bill real return in year t ,

GDP is the expected real GDP percent change (2.07%) for the next 10 years (source: Federal Reserve Bank of Philadelphia),

$e1(t)$ is the random error term following a logistic distribution (0%, 0.01%) with a zero mean and standard deviation of 1.98%,

$e2(t)$ is the random error term following a lognormal distribution (-0.01%, 0.01%) with a zero mean and standard deviation of 2.26%

Regression is based on data from 1977-2018.

For 2018-2019 school year, average tuition and fees were: \$10,230 for all in-state public colleges and \$35,830 for private 4-year colleges; based on most recent data 70% enrolled in public colleges and 30% enrolled in private colleges. The enrollment-weighted average tuition and fees for all colleges were \$17,910 = \$10,230* 70% + \$35,830 * 30%. The forecasted enrollment-weighted average tuition and fees for year 1 are \$18,707.36 = \$10,230 * (1+4.76%) * 70% + \$35,830* (1 + 4.25%) * 30%. Therefore, the public / private enrollment weighted tuition inflation rate for year 1 is: 4.45% = \$18,707.36 / \$17,910 - 1

Current Active Age-Based Portfolio Results



Bene's Age	Asset Allocations										Investment Horizon (in years)	(1) Average Annual Return over Investment Horizon	(2) Standard Deviation of Returns over Investment Horizon	(3) Average Annual Tuition Inflation over Investment Horizon	(4) Probability of Exceeding Tuition Inflation	(5) Probability of Achieving 90 cents per Dollar of Future Tuition	(6) Probability of Non-Negative Return	(7) Annualized Shortfall
	Large Cap Growth	Large Cap Value	Small Cap Equity	Real Estate Securities	Int'l Equities	Emerging Market Equities	Core Fixed Income	Inflation-Linked Bond	Floating Rate	Funding Agreement								
0	22.68%	22.68%	5.04%	5.60%	19.20%	4.80%	14.00%	4.00%	2.00%	0.00%	21	4.40%	1.94%	4.45%	49.30%	60.28%	98.98%	-2.20%
1	22.68%	22.68%	5.04%	5.60%	19.20%	4.80%	14.00%	4.00%	2.00%	0.00%	20	4.37%	1.94%	4.45%	49.68%	60.90%	98.66%	-2.17%
2	22.68%	22.68%	5.04%	5.60%	19.20%	4.80%	14.00%	4.00%	2.00%	0.00%	19	4.35%	1.95%	4.45%	49.36%	61.50%	98.76%	-2.16%
3	22.68%	22.68%	5.04%	5.60%	19.20%	4.80%	14.00%	4.00%	2.00%	0.00%	18	4.34%	1.95%	4.45%	50.12%	62.48%	98.54%	-2.14%
4	22.68%	22.68%	5.04%	5.60%	19.20%	4.80%	14.00%	4.00%	2.00%	0.00%	17	4.31%	1.94%	4.45%	48.08%	61.20%	98.62%	-2.09%
5	19.85%	19.85%	4.40%	4.90%	16.80%	4.20%	21.00%	6.00%	3.00%	0.00%	16	4.26%	1.89%	4.45%	46.78%	61.18%	98.72%	-2.06%
6	19.85%	19.85%	4.40%	4.90%	16.80%	4.20%	21.00%	6.00%	3.00%	0.00%	15	4.24%	1.90%	4.45%	45.72%	60.78%	98.64%	-2.02%
7	19.85%	19.85%	4.40%	4.90%	16.80%	4.20%	21.00%	6.00%	3.00%	0.00%	14	4.18%	1.93%	4.45%	44.64%	61.76%	98.50%	-2.04%
8	19.85%	19.85%	4.40%	4.90%	16.80%	4.20%	21.00%	6.00%	3.00%	0.00%	13	4.15%	1.88%	4.45%	43.36%	62.12%	98.60%	-1.95%
9	17.01%	17.01%	3.78%	4.20%	14.40%	3.60%	28.00%	8.00%	4.00%	0.00%	12	4.10%	1.83%	4.45%	42.36%	63.40%	98.58%	-1.90%
10	17.01%	17.01%	3.78%	4.20%	14.40%	3.60%	28.00%	8.00%	4.00%	0.00%	11	4.08%	1.84%	4.45%	41.88%	63.52%	98.54%	-1.90%
11	14.18%	14.18%	3.14%	3.50%	12.00%	3.00%	35.00%	10.00%	5.00%	0.00%	10	4.00%	1.83%	4.45%	40.42%	64.70%	98.48%	-1.89%
12	14.18%	14.18%	3.14%	3.50%	12.00%	3.00%	35.00%	10.00%	5.00%	0.00%	9	3.95%	1.82%	4.45%	38.94%	66.06%	98.20%	-1.85%
13	11.34%	11.34%	2.52%	2.80%	9.60%	2.40%	42.00%	12.00%	6.00%	0.00%	8	3.91%	1.76%	4.45%	38.26%	69.10%	98.64%	-1.80%
14	11.34%	11.34%	2.52%	2.80%	9.60%	2.40%	42.00%	12.00%	6.00%	0.00%	7	3.86%	1.78%	4.45%	36.54%	72.58%	98.48%	-1.76%
15	8.51%	8.51%	1.88%	2.10%	7.20%	1.80%	42.00%	12.00%	6.00%	10.00%	6	3.82%	1.73%	4.45%	34.34%	77.20%	98.52%	-1.69%
16	7.09%	7.09%	1.57%	1.75%	6.00%	1.50%	38.50%	11.00%	5.50%	20.00%	5	3.82%	1.76%	4.45%	35.44%	82.96%	98.46%	-1.69%
17	5.67%	5.67%	1.26%	1.40%	4.80%	1.20%	31.50%	9.00%	4.50%	35.00%	4	3.77%	1.84%	4.45%	35.22%	88.48%	98.04%	-1.76%
18	4.25%	4.25%	0.95%	1.05%	3.60%	0.90%	24.50%	7.00%	3.50%	50.00%	3	3.78%	2.01%	4.45%	35.52%	94.46%	97.54%	-1.82%
19	4.25%	4.25%	0.95%	1.05%	3.60%	0.90%	24.50%	7.00%	3.50%	50.00%	2	3.82%	2.49%	4.45%	38.90%	98.22%	94.14%	-2.13%
20+	4.25%	4.25%	0.95%	1.05%	3.60%	0.90%	24.50%	7.00%	3.50%	50.00%	1	3.83%	3.47%	4.45%	41.60%	99.90%	86.94%	-2.76%

*Annualized Shortfall is the expected annual percentage difference between tuition inflation and returns among all scenarios that fail to exceed tuition inflation.

Recommended Active Enrollment Year Results



Bene's Age	Asset Allocations										Investment Horizon (in years)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Large Cap Growth	Large Cap Value	Small Cap Equity	Real Estate Securities	Int'l Equities	Emerging Market Equities	Core Fixed Income	Inflation-Linked Bond	Floating Rate	Funding Agreement		Average Annual Return over Investment Horizon	Standard Deviation of Returns over Investment Horizon	Average Annual Tuition Inflation over Investment Horizon	Probability of Exceeding Tuition Inflation	Probability of Achieving 90 cents per Dollar of Future Tuition	Probability of Non-Negative Return	Annualized Shortfall
0	22.70%	22.70%	5.00%	5.60%	19.20%	4.80%	14.00%	4.00%	2.00%	0.00%	21	4.41%	1.94%	4.45%	49.34%	60.12%	98.96%	-2.19%
1	22.70%	22.70%	5.00%	5.60%	19.20%	4.80%	14.00%	4.00%	2.00%	0.00%	20	4.39%	1.96%	4.45%	48.78%	60.16%	98.42%	-2.18%
2	22.70%	22.70%	5.00%	5.60%	19.20%	4.80%	14.00%	4.00%	2.00%	0.00%	19	4.38%	1.91%	4.45%	48.26%	61.10%	98.70%	-2.13%
3	22.70%	22.70%	5.00%	5.60%	19.20%	4.80%	14.00%	4.00%	2.00%	0.00%	18	4.36%	1.90%	4.45%	47.16%	60.24%	98.76%	-2.07%
4	21.60%	21.60%	4.80%	5.30%	18.10%	4.60%	16.80%	4.80%	2.40%	0.00%	17	4.39%	1.96%	4.45%	47.58%	60.62%	98.38%	-2.11%
5	21.60%	21.60%	4.80%	5.30%	18.10%	4.60%	16.80%	4.80%	2.40%	0.00%	16	4.28%	1.91%	4.45%	46.40%	60.52%	98.74%	-2.07%
6	20.40%	20.40%	4.50%	5.10%	17.30%	4.30%	19.60%	5.60%	2.80%	0.00%	15	4.27%	1.93%	4.45%	46.78%	62.44%	98.58%	-2.04%
7	20.40%	20.40%	4.50%	5.10%	17.30%	4.30%	19.60%	5.60%	2.80%	0.00%	14	4.26%	1.91%	4.45%	45.66%	62.48%	98.68%	-1.99%
8	19.30%	19.30%	4.30%	4.80%	16.30%	4.00%	22.40%	6.40%	3.20%	0.00%	13	4.16%	1.88%	4.45%	44.20%	62.30%	98.84%	-1.98%
9	19.30%	19.30%	4.30%	4.80%	16.30%	4.00%	22.40%	6.40%	3.20%	0.00%	12	4.14%	1.86%	4.45%	43.20%	63.14%	98.60%	-1.92%
10	17.00%	17.00%	3.80%	4.20%	14.40%	3.60%	28.00%	8.00%	4.00%	0.00%	11	4.14%	1.83%	4.45%	43.24%	64.82%	98.88%	-1.87%
11	17.00%	17.00%	3.80%	4.20%	14.40%	3.60%	28.00%	8.00%	4.00%	0.00%	10	4.02%	1.77%	4.45%	40.66%	65.22%	98.68%	-1.84%
12	13.60%	13.60%	3.00%	3.40%	11.50%	2.90%	36.40%	10.40%	5.20%	0.00%	9	3.99%	1.72%	4.45%	39.22%	67.80%	98.66%	-1.77%
13	13.60%	13.60%	3.00%	3.40%	11.50%	2.90%	36.40%	10.40%	5.20%	0.00%	8	3.97%	1.72%	4.45%	38.46%	70.42%	98.92%	-1.74%
14	10.20%	10.20%	2.30%	2.50%	8.60%	2.20%	37.80%	10.80%	5.40%	10.00%	7	3.90%	1.71%	4.45%	36.94%	74.06%	98.84%	-1.71%
15	10.20%	10.20%	2.30%	2.50%	8.60%	2.20%	37.80%	10.80%	5.40%	10.00%	6	3.91%	1.68%	4.45%	37.38%	79.46%	99.22%	-1.64%
16	7.10%	7.10%	1.50%	1.80%	6.00%	1.50%	28.00%	8.00%	4.00%	35.00%	5	3.87%	1.74%	4.45%	35.68%	83.90%	99.00%	-1.66%
17	7.10%	7.10%	1.50%	1.80%	6.00%	1.50%	28.00%	8.00%	4.00%	35.00%	4	3.83%	1.84%	4.45%	35.08%	90.00%	98.40%	-1.68%
18	4.20%	4.20%	1.00%	1.10%	3.60%	0.90%	24.50%	7.00%	3.50%	50.00%	3	3.78%	2.01%	4.45%	35.52%	94.46%	97.54%	-1.82%
19	4.20%	4.20%	1.00%	1.10%	3.60%	0.90%	24.50%	7.00%	3.50%	50.00%	2	3.82%	2.49%	4.45%	38.90%	98.22%	94.14%	-2.13%
20+	4.20%	4.20%	1.00%	1.10%	3.60%	0.90%	24.50%	7.00%	3.50%	50.00%	1	3.83%	3.47%	4.45%	41.60%	99.90%	86.94%	-2.76%

*Annualized Shortfall is the expected annual percentage difference between tuition inflation and returns among all scenarios that fail to exceed tuition inflation.

Current Passive Age-Based Portfolio Results



Bene's Age	Asset Allocations								Investment Horizon (in years)	(1) Average Annual Return over Investment Horizon	(2) Standard Deviation of Returns over Investment Horizon	(3) Average Annual Tuition Inflation over Investment Horizon	(4) Probability of Exceeding Tuition Inflation	(5) Probability of Achieving 90 cents per Dollar of Future Tuition	(6) Probability of Non-Negative Return	(7) Annualized Shortfall
	Domestic Equities	Int'l Equities	Emerging Market Equities	Real Estate Securities	Core Fixed Income	Inflation-Linked Bond	High Yield Fund	Funding Agreement								
0	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%	21	4.37%	1.94%	4.45%	48.72%	59.78%	98.80%	-2.22%
1	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%	20	4.38%	1.93%	4.45%	49.50%	60.60%	98.82%	-2.18%
2	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%	19	4.34%	1.95%	4.45%	49.10%	61.30%	98.44%	-2.16%
3	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%	18	4.31%	1.95%	4.45%	47.64%	60.06%	98.48%	-2.15%
4	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%	17	4.31%	1.94%	4.45%	46.62%	60.72%	98.38%	-2.06%
5	44.10%	16.80%	4.20%	4.90%	21.00%	6.00%	3.00%	0.00%	16	4.24%	1.88%	4.45%	45.00%	60.34%	98.60%	-2.02%
6	44.10%	16.80%	4.20%	4.90%	21.00%	6.00%	3.00%	0.00%	15	4.20%	1.95%	4.45%	45.88%	59.72%	98.42%	-2.13%
7	44.10%	16.80%	4.20%	4.90%	21.00%	6.00%	3.00%	0.00%	14	4.15%	1.91%	4.45%	43.86%	60.04%	98.38%	-2.04%
8	44.10%	16.80%	4.20%	4.90%	21.00%	6.00%	3.00%	0.00%	13	4.10%	1.92%	4.45%	43.02%	60.34%	97.98%	-2.04%
9	37.80%	14.40%	3.60%	4.20%	28.00%	8.00%	4.00%	0.00%	12	4.07%	1.84%	4.45%	41.92%	62.06%	98.60%	-1.93%
10	37.80%	14.40%	3.60%	4.20%	28.00%	8.00%	4.00%	0.00%	11	4.01%	1.86%	4.45%	41.00%	62.24%	98.36%	-1.95%
11	31.50%	12.00%	3.00%	3.50%	35.00%	10.00%	5.00%	0.00%	10	3.96%	1.79%	4.45%	39.44%	64.28%	98.58%	-1.87%
12	31.50%	12.00%	3.00%	3.50%	35.00%	10.00%	5.00%	0.00%	9	3.88%	1.81%	4.45%	36.90%	65.58%	98.32%	-1.84%
13	25.20%	9.60%	2.40%	2.80%	42.00%	12.00%	6.00%	0.00%	8	3.92%	1.77%	4.45%	37.96%	69.22%	98.66%	-1.78%
14	25.20%	9.60%	2.40%	2.80%	42.00%	12.00%	6.00%	0.00%	7	3.86%	1.78%	4.45%	36.54%	72.58%	98.48%	-1.76%
15	18.90%	7.20%	1.80%	2.10%	42.00%	12.00%	6.00%	10.00%	6	3.81%	1.73%	4.45%	34.66%	76.92%	98.54%	-1.71%
16	15.75%	6.00%	1.50%	1.75%	38.50%	11.00%	5.50%	20.00%	5	3.80%	1.81%	4.45%	34.54%	82.16%	98.42%	-1.71%
17	12.60%	4.80%	1.20%	1.40%	31.50%	9.00%	4.50%	35.00%	4	3.76%	2.12%	4.45%	34.16%	88.56%	97.90%	-1.74%
18	9.45%	3.60%	0.90%	1.05%	24.50%	7.00%	3.50%	50.00%	3	3.77%	2.05%	4.45%	34.98%	94.80%	97.22%	-1.81%
19	9.45%	3.60%	0.90%	1.05%	24.50%	7.00%	3.50%	50.00%	2	3.75%	2.52%	4.45%	36.94%	98.42%	93.98%	-2.12%
20+	9.45%	3.60%	0.90%	1.05%	24.50%	7.00%	3.50%	50.00%	1	3.67%	3.54%	4.45%	40.08%	99.88%	85.08%	-2.87%

*Annualized Shortfall is the expected annual percentage difference between tuition inflation and returns among all scenarios that fail to exceed tuition inflation.

Recommended Passive Enrollment Year Results

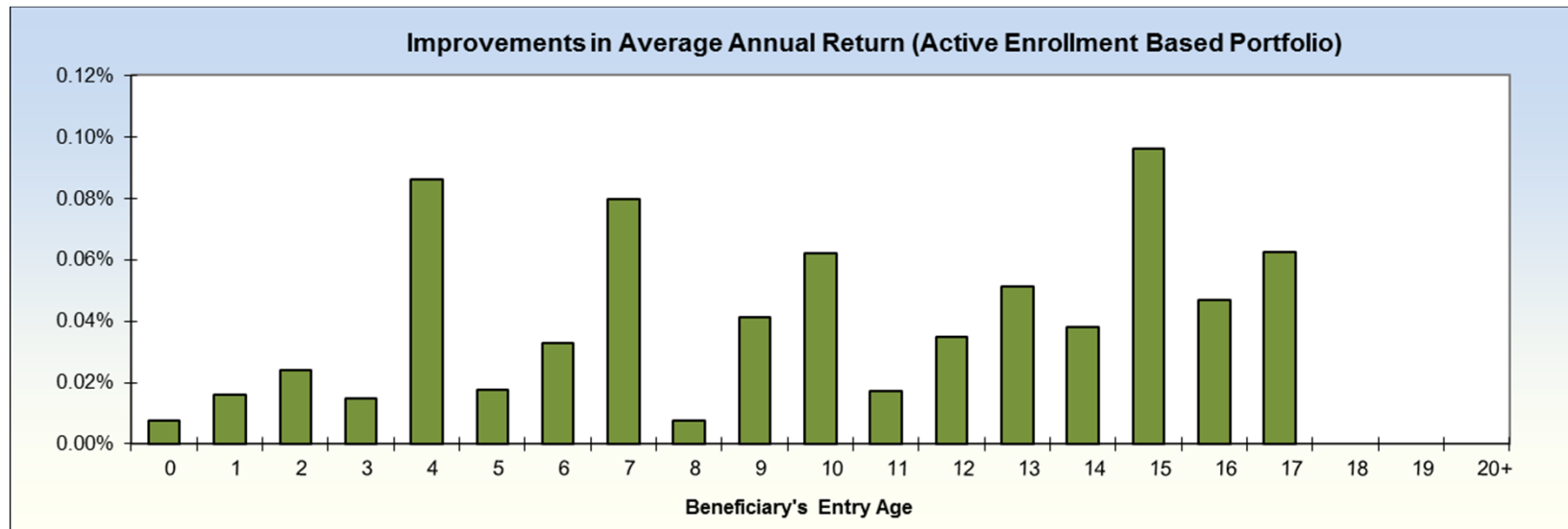


Bene's Age	Asset Allocations							
	Domestic Equities	Int'l Equities	Emerging Market Equities	Real Estate Securities	Core Fixed Income	Inflation-Linked Bond	High Yield Fund	Funding Agreement
0	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%
1	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%
2	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%
3	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%
4	47.90%	18.20%	4.60%	5.30%	16.80%	4.80%	2.40%	0.00%
5	47.90%	18.20%	4.60%	5.30%	16.80%	4.80%	2.40%	0.00%
6	45.40%	17.30%	4.30%	5.00%	19.60%	5.60%	2.80%	0.00%
7	45.40%	17.30%	4.30%	5.00%	19.60%	5.60%	2.80%	0.00%
8	42.80%	16.30%	4.10%	4.80%	22.40%	6.40%	3.20%	0.00%
9	42.80%	16.30%	4.10%	4.80%	22.40%	6.40%	3.20%	0.00%
10	37.80%	14.40%	3.60%	4.20%	28.00%	8.00%	4.00%	0.00%
11	37.80%	14.40%	3.60%	4.20%	28.00%	8.00%	4.00%	0.00%
12	30.20%	11.50%	2.90%	3.40%	36.40%	10.40%	5.20%	0.00%
13	30.20%	11.50%	2.90%	3.40%	36.40%	10.40%	5.20%	0.00%
14	22.70%	8.60%	2.20%	2.50%	37.80%	10.80%	5.40%	10.00%
15	22.70%	8.60%	2.20%	2.50%	37.80%	10.80%	5.40%	10.00%
16	15.70%	6.00%	1.50%	1.80%	28.00%	8.00%	4.00%	35.00%
17	15.70%	6.00%	1.50%	1.80%	28.00%	8.00%	4.00%	35.00%
18	9.40%	3.60%	0.90%	1.10%	24.50%	7.00%	3.50%	50.00%
19	9.40%	3.60%	0.90%	1.10%	24.50%	7.00%	3.50%	50.00%
20+	9.40%	3.60%	0.90%	1.10%	24.50%	7.00%	3.50%	50.00%

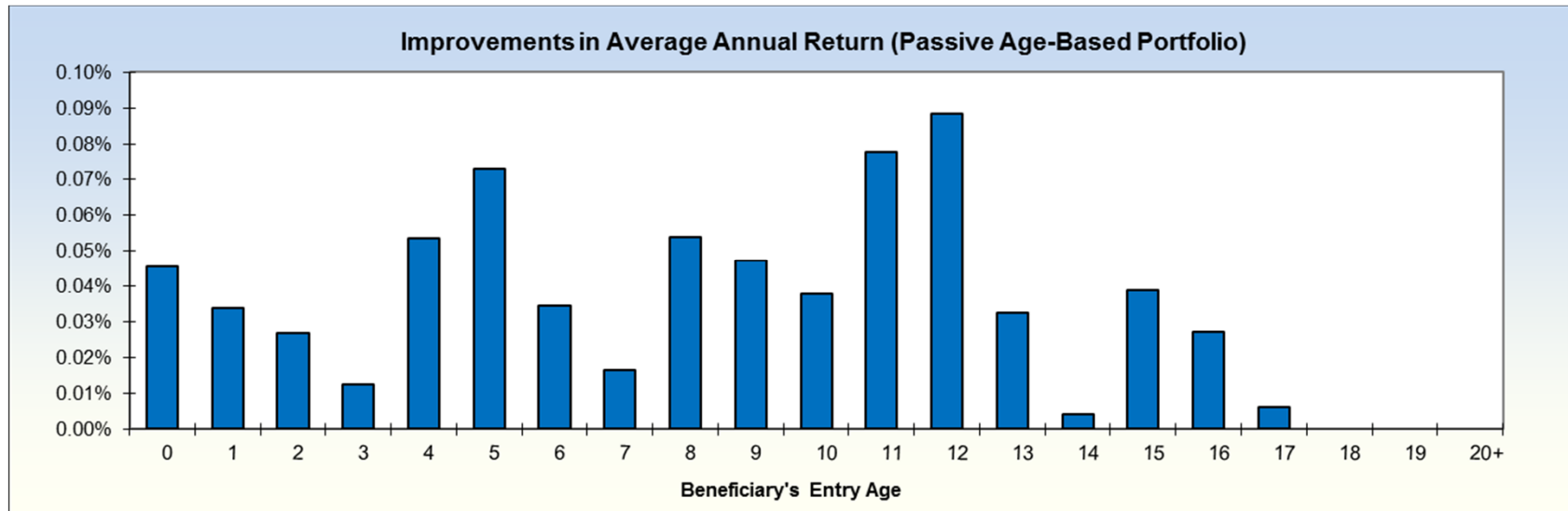
Investment Horizon (in years)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Average Annual Return over Investment Horizon	Standard Deviation of Returns over Investment Horizon	Average Annual Tuition Inflation over Investment Horizon	Probability of Exceeding Tuition Inflation	Probability of Achieving 90 cents per Dollar of Future Tuition	Probability of Non-Negative Return	Annualized Shortfall
21	4.42%	1.92%	4.45%	48.56%	60.04%	98.90%	-2.15%
20	4.41%	1.93%	4.45%	48.52%	60.04%	98.80%	-2.17%
19	4.37%	1.94%	4.45%	48.40%	59.50%	98.86%	-2.18%
18	4.33%	1.94%	4.45%	48.96%	60.72%	98.64%	-2.17%
17	4.36%	1.92%	4.45%	47.52%	61.30%	98.86%	-2.05%
16	4.31%	1.91%	4.45%	48.24%	62.02%	98.38%	-2.08%
15	4.24%	1.93%	4.45%	45.64%	60.74%	98.70%	-2.06%
14	4.17%	1.89%	4.45%	43.56%	60.46%	98.58%	-2.02%
13	4.15%	1.91%	4.45%	44.30%	61.90%	98.36%	-2.01%
12	4.12%	1.85%	4.45%	43.06%	62.38%	98.58%	-1.94%
11	4.05%	1.84%	4.45%	42.08%	63.86%	98.72%	-1.92%
10	4.04%	1.77%	4.45%	40.86%	65.50%	98.84%	-1.83%
9	3.97%	1.79%	4.45%	39.16%	66.24%	98.60%	-1.82%
8	3.95%	1.74%	4.45%	38.60%	70.36%	98.66%	-1.74%
7	3.86%	1.73%	4.45%	36.26%	72.26%	98.72%	-1.75%
6	3.85%	1.70%	4.45%	35.56%	78.42%	98.84%	-1.66%
5	3.83%	1.76%	4.45%	35.26%	82.86%	98.76%	-1.71%
4	3.77%	1.85%	4.45%	34.14%	88.28%	98.30%	-1.73%
3	3.77%	2.05%	4.45%	34.98%	94.80%	97.22%	-1.81%
2	3.75%	2.52%	4.45%	36.94%	98.42%	93.98%	-2.12%
1	3.67%	3.54%	4.45%	40.08%	99.88%	85.08%	-2.87%

*Annualized Shortfall is the expected annual percentage difference between tuition inflation and returns among all scenarios that fail to exceed tuition inflation.

- **(1) Expected Return.** The average of a distribution of possible annualized investment returns over an investment horizon of n years generated by Monte Carlo simulation. The returns are based on the assumption that each year money will be invested according to the asset class allocation assigned to the beneficiary's age.
- **(2) Standard Deviation of Returns.** A statistic used as a measure of the dispersion or variation in the distribution of annualized investment returns over an investment horizon of n years generated by Monte Carlo simulation, equal to the square root of the arithmetic mean of the squares of the deviations from the expected return. A higher standard deviation indicates a higher volatility.
- **(3) Average Annual Tuition Inflation.** The average of a distribution of possible annualized tuition inflation rates over an investment horizon of n years generated by the Monte Carlo simulation.
- **(4) Probability of Exceeding Tuition Inflation.** The likelihood that the annualized investment return exceeds the average tuition inflation rate over an investment horizon of n years, out of all the possible trials simulated by the Monte Carlo simulation.
- **(5) Probability of Achieving 90 Cents per Dollar of Future Tuition.** The likelihood that each dollar of investment today will grow to cover at least 90% of future tuition based on one dollar of today's tuition rising with tuition inflation over an investment horizon of n years.
- **(6) Probability of Non-negative Return.** The likelihood that the investment will achieve at least 0% of annualized return (preserving principal) over an investment horizon of n years.
- **(7) Annualized Shortfall.** The average of a distribution of the differences (shortfalls) between annualized investment returns and annualized tuition inflation rates over an investment horizon of n years among those scenarios that have annualized investment return failing to keep pace with tuition inflation.



- Simulations show a modest improvement in average annual returns across the glide path that has been smoothed
- There are no changes to asset allocations for the school enrollment years, and therefore no change to returns



- Similar to the Active track, simulations show a modest improvement in average annual returns across the glide path that has been smoothed
- There are no changes to asset allocations for the school enrollment years, and therefore no change to returns

Current Passive Age-Based Portfolio



Underlying Fund Fee	0.05%	0.06%	0.20%	0.51%	0.11%	0.26%	0.36%	N/A*	
Age of Beneficiary	TIAA-CREF Equity Index Fund	TIAA-CREF International Equity Index Fund	TIAA-CREF Emerging Markets Equity Index Fund	TIAA-CREF Real Estate Securities Fund	TIAA-CREF Bond Index Fund	TIAA-CREF Inflation-Linked Bond Fund	TIAA-CREF High Yield Fund	T-C Life Funding Agreement	Weighted Average Fund Fee**
0 - 4	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%	0.11%
5 - 8	44.10%	16.80%	4.20%	4.90%	21.00%	6.00%	3.00%	0.00%	0.12%
9 - 10	37.80%	14.40%	3.60%	4.20%	28.00%	8.00%	4.00%	0.00%	0.12%
11 - 12	31.50%	12.00%	3.00%	3.50%	35.00%	10.00%	5.00%	0.00%	0.13%
13 - 14	25.20%	9.60%	2.40%	2.80%	42.00%	12.00%	6.00%	0.00%	0.14%
15	18.90%	7.20%	1.80%	2.10%	42.00%	12.00%	6.00%	10.00%	0.13%
16	15.75%	6.00%	1.50%	1.75%	38.50%	11.00%	5.50%	20.00%	0.11%
17	12.60%	4.80%	1.20%	1.40%	31.50%	9.00%	4.50%	35.00%	0.09%
18 +	9.45%	3.60%	0.90%	1.05%	24.50%	7.00%	3.50%	50.00%	0.07%

*The T-C Life Funding Agreement is not a retail mutual fund, and as such, has no explicit fee.

**Includes a 0.00% underlying fund fee for the T-C Life Funding Agreement.

Recommended Passive Enrollment Year Portfolio



Underlying Fund Fee	0.05%	0.06%	0.20%	0.51%	0.11%	0.26%	0.36%	N/A*	
Enrollment Year	TIAA-CREF Equity Index Fund	TIAA-CREF International Equity Index Fund	TIAA-CREF Emerging Markets Equity Index Fund	TIAA-CREF Real Estate Securities Fund	TIAA-CREF Bond Index Fund	TIAA-CREF Inflation-Linked Bond Fund	TIAA-CREF High Yield Fund	T-C Life Funding Agreement	Weighted Average Fund Fee**
2036/2037 Enrollment Portfolio Passive	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%	0.11%
2034/2035 Enrollment Portfolio Passive	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%	0.11%
2032/2033 Enrollment Portfolio Passive	47.90%	18.20%	4.60%	5.30%	16.80%	4.80%	2.40%	0.00%	0.11%
2030/2031 Enrollment Portfolio Passive	45.40%	17.30%	4.30%	5.00%	19.60%	5.60%	2.80%	0.00%	0.11%
2028/2029 Enrollment Portfolio Passive	42.80%	16.30%	4.10%	4.80%	22.40%	6.40%	3.20%	0.00%	0.12%
2026/2027 Enrollment Portfolio Passive	37.80%	14.40%	3.60%	4.20%	28.00%	8.00%	4.00%	0.00%	0.12%
2024/2025 Enrollment Portfolio Passive	30.20%	11.50%	2.90%	3.40%	36.40%	10.40%	5.20%	0.00%	0.13%
2022/2023 Enrollment Portfolio Passive	22.70%	8.60%	2.20%	2.50%	37.80%	10.80%	5.40%	10.00%	0.12%
2020/2021 Enrollment Portfolio Passive	15.70%	6.00%	1.50%	1.80%	28.00%	8.00%	4.00%	35.00%	0.09%
Enrollment Year Portfolio Passive	9.40%	3.60%	0.90%	1.10%	24.50%	7.00%	3.50%	50.00%	0.07%

* The T-C Life funding Agreement is not a retail mutual fund, and as such, has no explicit fee.

** Includes a 0.00% underlying fund fee for the T-C Life Funding Agreement.

Current Passive Static Options (No Changes)



Underlying Fund Fee	0.05%	0.06%	0.20%	0.51%	0.11%	0.26%	0.36%	N/A*	
Age of Beneficiary	TIAA-CREF Equity Index Fund	TIAA-CREF International Equity Index Fund	TIAA-CREF Emerging Markets Equity Index Fund	TIAA-CREF Real Estate Securities Fund	TIAA-CREF Bond Index Fund	TIAA-CREF Inflation-Linked Bond Fund	TIAA-CREF High Yield Fund	T-C Life Funding Agreement	Weighted Average Fund Fee**
Passive Diversified Equity Portfolio	63.00%	24.00%	6.00%	7.00%					0.09%
Passive Growth Portfolio	44.10%	16.80%	4.20%	4.90%	21.00%	6.00%	3.00%		0.12%
Passive Moderate Growth Portfolio	25.20%	9.60%	2.40%	2.80%	42.00%	12.00%	6.00%		0.14%
Passive Diversified Fixed Income Portfolio					70.00%	20.00%	10.00%		0.17%
Passive Conservative Portfolio					35.00%	10.00%	5.00%	50.00%	0.08%
Index International Equity Portfolio		80.00%	20.00%						0.09%

Passive Single Fund Investment Portfolios

Investment Portfolios	Percent Allocation	Underlying Mutual Fund	Fund Fee
Index Bond Portfolio	100.00%	TIAA-CREF Bond Index Fund	0.11%
Index U.S. Large Cap Equity Portfolio	100.00%	TIAA-CREF S&P 500 Index Fund	0.05%
Index U.S. Equity Portfolio	100.00%	TIAA-CREF Equity Index Fund	0.05%

*The T-C Life Funding Agreement is not a retail mutual fund, and as such, has no explicit fee.

**Includes a 0.00% underlying fund fee for the T-C Life Funding Agreement.

Current Active Age-Based Portfolio



Underlying Fund Fee	0.56%	0.57%	0.41%	0.51%	0.23%	0.52%	0.37%	0.45%	0.50%	0.57%	N/A*	
Active Age-Based Portfolio Age of Beneficiary	T. Rowe Price Instl Large Cap Growth Fund	T. Rowe Price Instl Large Cap Value Fund	TIAA-CREF Quant Small Cap Equity Fund	TIAA-CREF Real Estate Securities Fund	DFA Large Cap International Portfolio	DFA Emerging Markets Core Equity I Portfolio	MetWest Total Return Bond Fund	PIMCO Real Return Instl Fund	PIMCO Income Instl Fund	T. Rowe Price Instl Floating Rate Fund	T-C Life Funding Agreement	Weighted Average Fund Fee**
0 - 4	22.68%	22.68%	5.04%	5.60%	19.20%	4.80%	10.00%	4.00%	4.00%	2.00%	0.00%	0.46%
5 - 8	19.85%	19.85%	4.40%	4.90%	16.80%	4.20%	15.00%	6.00%	6.00%	3.00%	0.00%	0.46%
9 - 10	17.01%	17.01%	3.78%	4.20%	14.40%	3.60%	20.00%	8.00%	8.00%	4.00%	0.00%	0.45%
11 - 12	14.18%	14.18%	3.14%	3.50%	12.00%	3.00%	25.00%	10.00%	10.00%	5.00%	0.00%	0.45%
13 - 14	11.34%	11.34%	2.52%	2.80%	9.60%	2.40%	30.00%	12.00%	12.00%	6.00%	0.00%	0.45%
15	8.51%	8.51%	1.88%	2.10%	7.20%	1.80%	30.00%	12.00%	12.00%	6.00%	10.00%	0.40%
16	7.09%	7.09%	1.57%	1.75%	6.00%	1.50%	27.50%	11.00%	11.00%	5.50%	20.00%	0.35%
17	5.67%	5.67%	1.26%	1.40%	4.80%	1.20%	22.50%	9.00%	9.00%	4.50%	35.00%	0.29%
18 +	4.25%	4.25%	0.95%	1.05%	3.60%	0.90%	17.50%	7.00%	7.00%	3.50%	50.00%	0.22%

*The T-C Life Funding Agreement is not a retail mutual fund, and as such, has no explicit fee.

**Includes a 0.00% underlying fund fee for the T-C Life Funding Agreement.

Recommended Active Enrollment Year Portfolio



Underlying Fund Fee	0.56%	0.57%	0.41%	0.51%	0.23%	0.52%	0.37%	0.45%	0.50%	0.57%	N/A*	
Enrollment Year	T. Rowe Price Instl Large Cap Growth Fund	T. Rowe Price Instl Large Cap Value Fund	TIAA-CREF Quant Small-Cap Equity Instl	TIAA-CREF Real Estate Securities Fund	DFA Large Cap Intl Portfolio	DFA Emerging Markets Core Equity I Portfolio	MetWest Total Return Bond Fund	PIMCO Real Return Instl Fund	PIMCO Income Instl Fund	T. Rowe Price Instl Floating Rate Fund	T-C Life Funding Agreement	Weighted Average Fund Fee**
2036/2037 Enrollment Portfolio Active	22.70%	22.70%	5.00%	5.60%	19.20%	4.80%	10.00%	4.00%	4.00%	2.00%	0.00%	0.46%
2034/2035 Enrollment Portfolio Active	22.70%	22.70%	5.00%	5.60%	19.20%	4.80%	10.00%	4.00%	4.00%	2.00%	0.00%	0.46%
2032/2033 Enrollment Portfolio Active	21.60%	21.60%	4.80%	5.30%	18.10%	4.60%	12.00%	4.80%	4.80%	2.40%	0.00%	0.46%
2030/2031 Enrollment Portfolio Active	20.40%	20.40%	4.50%	5.10%	17.30%	4.30%	14.00%	5.60%	5.60%	2.80%	0.00%	0.46%
2028/2029 Enrollment Portfolio Active	19.30%	19.30%	4.30%	4.80%	16.30%	4.00%	16.00%	6.40%	6.40%	3.20%	0.00%	0.46%
2026/2027 Enrollment Portfolio Active	17.00%	17.00%	3.80%	4.20%	14.40%	3.60%	20.00%	8.00%	8.00%	4.00%	0.00%	0.45%
2024/2025 Enrollment Portfolio Active	13.60%	13.60%	3.00%	3.40%	11.50%	2.90%	26.00%	10.40%	10.40%	5.20%	0.00%	0.45%
2022/2023 Enrollment Portfolio Active	10.20%	10.20%	2.30%	2.50%	8.60%	2.20%	27.00%	10.80%	10.80%	5.40%	10.00%	0.40%
2020/2021 Enrollment Portfolio Active	7.10%	7.10%	1.50%	1.80%	6.00%	1.50%	20.00%	8.00%	8.00%	4.00%	35.00%	0.29%
Enrollment Year Portfolio Active	4.20%	4.20%	1.00%	1.10%	3.60%	0.90%	17.50%	7.00%	7.00%	3.50%	50.00%	0.22%

* The T-C Life funding Agreement is not a retail mutual fund, and as such, has no explicit fee.

** Includes a 0.00% underlying fund fee for the T-C Life Funding Agreement.

Current Active Static Options (No Changes)



Underlying Fund Fee	0.56%	0.57%	0.41%	0.51%	0.23%	0.52%	0.37%	0.45%	0.50%	0.57%	N/A*	
Active Age-Based Portfolio Age of Beneficiary	T. Rowe Price Instl Large Cap Growth Fund	T. Rowe Price Instl Large Cap Value Fund	TIAA-CREF Quant Small Cap Equity Fund	TIAA- CREF Real Estate Securities Fund	DFA Large Cap International Portfolio	DFA Emerging Markets Core Equity I Portfolio	MetWest Total Return Bond Fund	PIMCO Real Return Instl Fund	PIMCO Income Instl Fund	T. Rowe Price Instl Floating Rate Fund	T-C Life Funding Agreement	Weighted Average Fund Fee**
Active Diversified Equity Portfolio	28.35%	28.35%	6.30%	7.00%	24.00%	6.00%						0.47%
Active Growth Portfolio	19.85%	19.85%	4.40%	4.90%	16.80%	4.20%	15.00%	6.00%	6.00%	3.00%		0.46%
Active Moderate Growth Portfolio	11.34%	11.34%	2.52%	2.80%	9.60%	2.40%	30.00%	12.00%	12.00%	6.00%		0.45%
Active Diversified Fixed Income Portfolio							50.00%	20.00%	20.00%	10.00%		0.43%
Active Conservative Portfolio							25.00%	10.00%	10.00%	5.00%	50.00%	0.22%
Active International Equity Portfolio					80.00%	20.00%						0.29%

Active Single Fund Investment Portfolios

Investment Portfolios	Percent Allocation	Underlying Mutual Fund	Fund Fee
Social Choice Portfolio	100.00%	TIAA-CREF Social Choice Equity Fund	0.17%
Principal Plus Interest Portfolio	100.00%	TIAA-CREF Life Co. Funding Agreement	N/A*

*The T-C Life Funding Agreement is not a retail mutual fund, and as such, has no explicit fee.

**Includes a 0.00% underlying fund fee for the T-C Life Funding Agreement.



CREATED TO SERVE.

BUILT TO PERFORM.



MEMORANDUM

To: ScholarShare Investment Board (SIB)
From: Meketa Investment Group
Date: November 22, 2019
Re: 2019 Annual Review

Summary

Meketa reviewed TIAA-CREF Tuition Financing, Inc.'s (TFI) annual review and recommendation for the 2020 asset allocation for the ScholarShare College Savings Plan (Plan) which highlighted their analysis behind the recommendation for no changes. Overall, Meketa concurs with TFI's analysis and believes the current glidepath is well optimized. *Meketa recommends the SIB accept TFI's recommendation of no changes to the asset allocation.*

Background

SIB Staff requested that Meketa review TFI's annual review and recommendation for the 2019 asset allocation for the ScholarShare College Savings Plan (Plan) which highlighted their analysis behind the recommendation for no changes.

Asset Allocation

TFI reviewed the planned asset allocation evolution from an Age-based methodology to an Enrollment-based methodology. Meketa continues to hold the opinion that the Enrollment-based methodology represents a best-practices approach to glidepath construction. We believe moving to an enrollment-based framework makes sense for several reasons: 1) the proposal preserves current risk profile over investment period, 2) provides more frequent rebalancing which should improve participants' results during periods of market stress, 3) each enrollment-based fund's performance reflects the participant's experience over the life of the investment, and 4) creates framework to implement TFI's best thinking on a go forward basis (e.g. rebalancing on a more frequent basis).

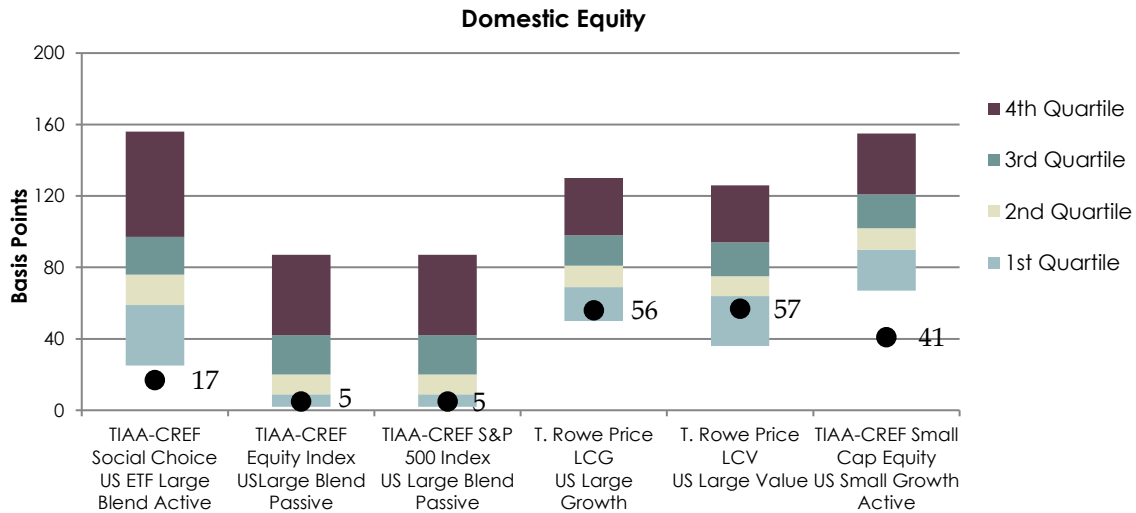
In addition to reviewing the planned transition to an enrollment-based framework, TFI also reviewed the underlying asset allocation of the glidepaths used within the Age-based and soon to be Enrollment-based options. TFI believes their current glidepaths are sound and that they should meet TFI's expectation for a reasonable rate of expected return while minimizing the potential "shortfalls" between expected returns and tuition inflation over the investment horizons.

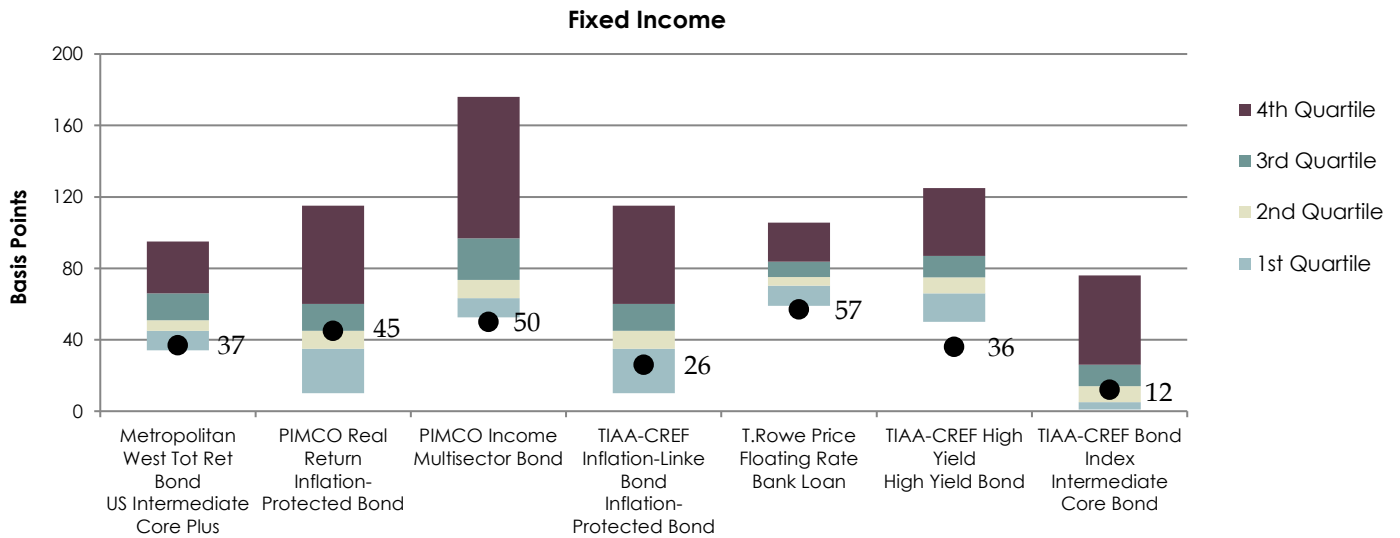
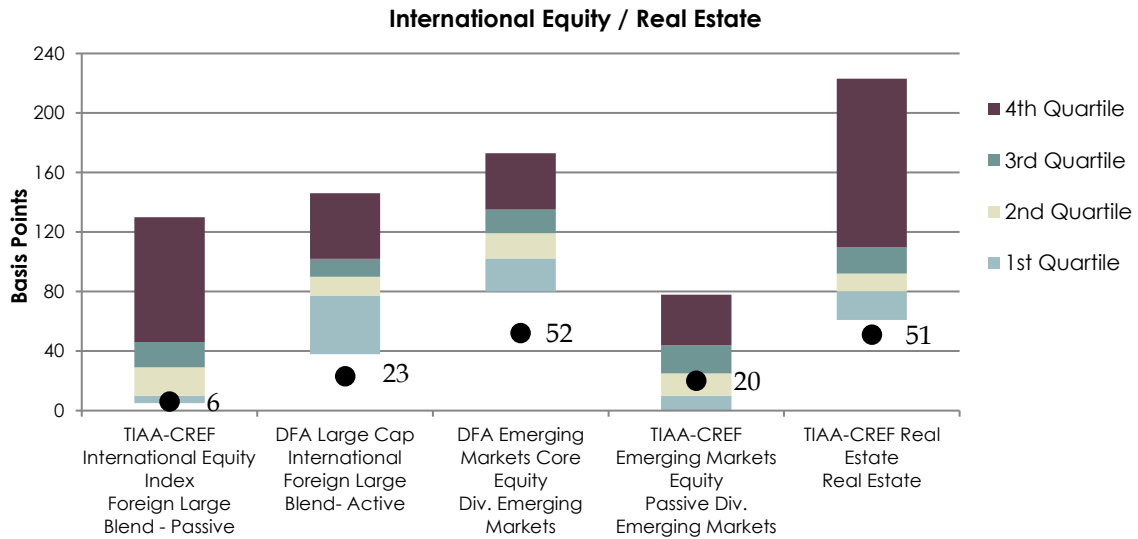
Within the Appendix to TFI's presentation they provided a detailed summary of their analysis for both the actively managed and passively managed age-based portfolios. The analysis showed the expected return and standard deviation of the different portfolios, as well as the likelihood of the portfolios' returns falling short of the rate of tuition inflation.

In analyzing TFI's modeling methodology and results we looked at the reasonableness of TFI's capital market assumption as well as the simulations' results. Since capital market assumptions underpin all simulation analysis the reasonableness of the assumptions used ultimately determines the usefulness of the analysis. Meketa found TFI's assumptions to be reasonable and to be in-line with industry averages and Meketa's own assumptions. Given the reasonableness of TFI's assumptions and sound modelling methodology we have a high degree of confidence in the results of TFI's analysis.

Underlying Fund Fee Review

Based on the discussion of underlying fund fees at the September SIB meeting we analyzed the fund fees of the underlying investment options within the Program. Meketa compared each underlying fund's expense ratio to its Morningstar category and created custom passive and active peer groups for a more relevant comparison. Meketa found that each underlying fund in the program has fees that are below median and that the majority of funds have fees that fall within or below the first quartile.





Conclusion

Meketa finds TFI's analysis of their glidepaths to be comprehensive and insightful, and uses consistent and reasonable inputs in developing their conclusions. In addition, we believe the underlying fund fees are highly competitive relative to peers. Meketa, therefore, concurs with TFI's analysis and recommendation.

ScholarShare Investment Board

Overview of 529 Participant Fees

December 19, 2019

Today's Discussion

	<u>Slide</u>
• 529 Fee Fundamentals	3
• ScholarShare Fee Comparison	8
• Observations	16

Section 1.

529 Fee Fundamentals

Discussion Points

- Fees are a barometer for Direct Plan competitiveness:
 - Cost-conscious investors prefer lower-cost Direct Plans
 - Morningstar Plan ratings recognize continual fee enhancements
 - States exhibit good governance when they regularly review factors impacting fees
- “Total fees” provide a meaningful comparison across Direct Plans:
 - Wholistic evaluation provides insight into the interplay between fee components
 - Helps identify sources for future reductions
- ScholarShare Age-based Fee components today:

Underlying Fund Expense	State Administration Fee	Program Management Fee	Total Fee
0.08% - 0.14% Passive 0.23% - 0.48% Active	0% Passive 0.05% Active	0.03%	0.11% - 0.17% Passive 0.31% - 0.56% Active

- ScholarShare Total Fee observations:
 - Total Fees position Plan well against other highly rated Plans today
 - Program Management Fee will decrease to 0.01% when AUMs reach \$10 billion
 - Other future reductions will depend upon lower cost underlying funds or a reduced State Administration Fee in the Active Option

Types of Participant Fees

	Fee Component	In California, Equivalent to:
Asset-Based Fees	Underlying Fund Expense	Estimated Expenses of an Investment Portfolio's Underlying Investments
	State Administration Fee	Board Administrative Fee
	Program Management Fee	Plan Manager Fee
Dollar-Based Fees	Annual Account Maintenance Fee	None
	Transaction-Based Fees, e.g.: Paper Statements Rollovers Electronic transfers	\$15 to overnight redemption checks No other fees

Asset-Based Fee Specifics

	Underlying Fund Expenses	State Administration Fees	Program Management Fees
Typically Covers Cost of	Underlying Investments	Plan Administration and Oversight	Recordkeeping Compliance Customer Service Portfolio Expenses Marketing Distribution
Paid To	Investment Manager(s)	State Administrator	Program Manager
In California, Paid To:	DFA MetWest PIMCO TIAA-CREF T. Rowe Price	ScholarShare Investment Board	TFI

Factors Influencing Fees

	State Administration Fees	Program Management Fees
Higher AUMs	Lower	Lower
Proprietary Funds	No Impact	Lower
Open Architecture	No Impact	Higher
Longer Contract Term	No Impact	Lower
Exclusivity with State	No Impact	Lower
State Subsidy	Lower	No Impact

Section 2.

ScholarShare Fee Comparison

Comparative Direct Plans

	Reasons for Inclusion
Illinois	<p>Gold Plan - Morningstar Asset size (\$6,408,677,717) Union Bank & Trust as Program Manager Management style (Index and Blend)</p>
Kansas Schwab	<p>Neutral Plan - Morningstar High California concentration Management style (Index and Active)</p>
Michigan	<p>Silver Plan - Morningstar Most comparable TFI Plan by asset size (\$5,856,627,005)</p>
Nevada Vanguard	<p>Silver Plan - Morningstar Ascensus as Program Manager</p>
New Hampshire	<p>Silver Plan - Morningstar Fidelity as Program Manager Management style (Index and Active)</p>

Comparative Plan Details

	Program Manager	AUMs	Age-Based Management Style	Morningstar Rating
Nevada Vanguard	Ascensus	\$20,428,513,397	Index	Silver
New Hampshire	Fidelity	\$13,683,383,397	Index / Blend / Active	Silver
California	TFI	\$9,359,464,203	Passive / Blend	Gold
Illinois	UBT	\$6,408,677,717	Index / Blend	Gold
Michigan	TFI	\$5,856,627,005	Passive	Silver
Kansas Schwab	American Century	\$4,704,130,489	Index / Active	Neutral

Sources: Program Disclosure Statements available as of November 8, 2019; AUMs from College Savings Plans Network as of June 30, 2019

Note: Plans are shown in descending order of AUMs

Comparative Fees: Passive Age-Based Options

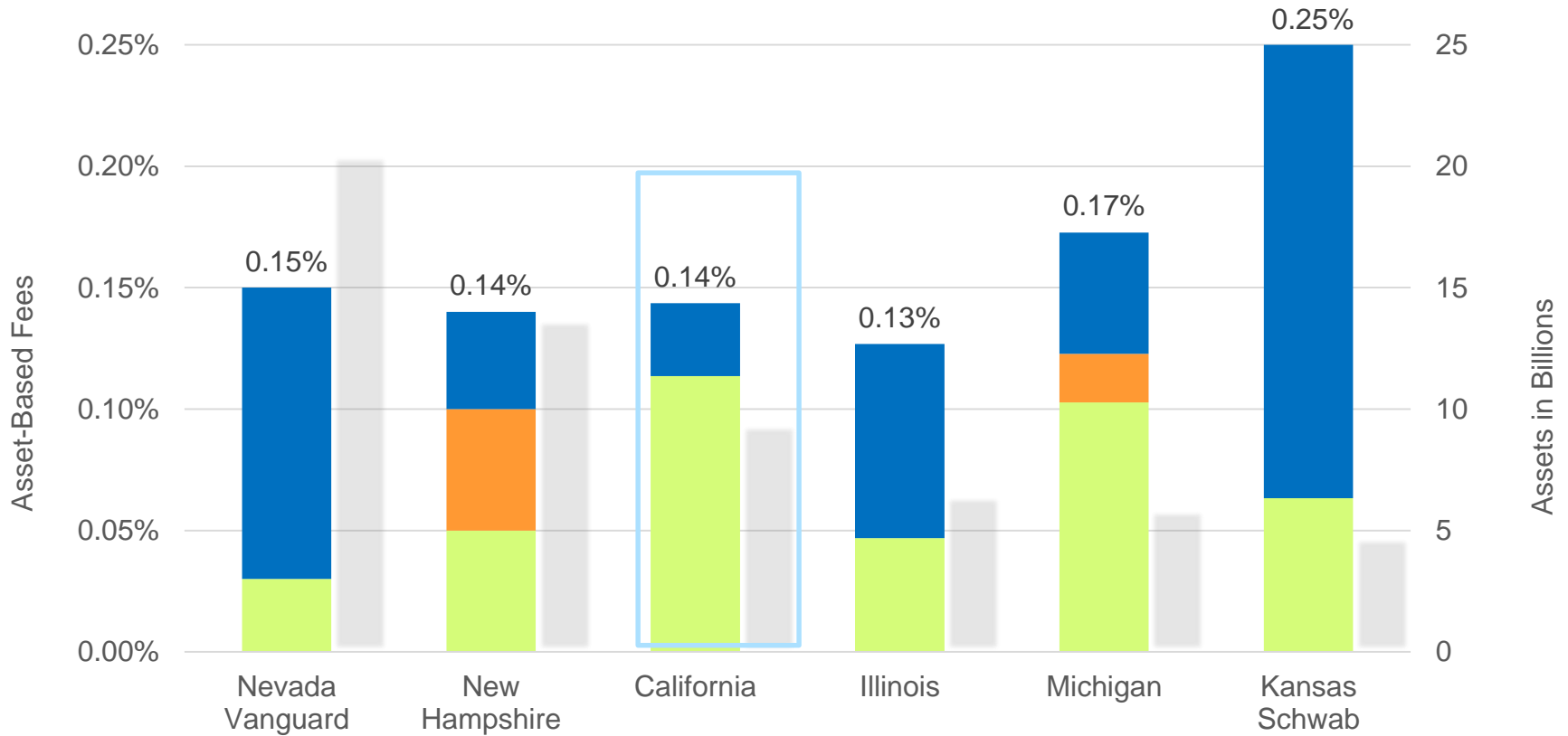
	Underlying Fund Expense		State Administration Fee	Program Management Fee	Total Fee
	Age-Weighted Fee	Age-Based Option			
Nevada Vanguard	0.03%	Vanguard Moderate Age-Based	None	0.12%	0.15%
New Hampshire	0.05%	Fidelity Index	0.05%	0.04%	0.14%
California	0.11%	Passive Age-Based	0%	0.03%	0.14%
Illinois	0.05%	Index Moderate Age-Based	0%	0.08%	0.13%
Michigan	0.10%	Moderate Age-Based Allocation	0.02%	0.05%	0.17%
Kansas Schwab	0.06%	Index Moderate Age-Based Track	None	0.19%	0.25%

Source: Program Disclosure Statements available as of November 8, 2019

Notes:

- (i) In Plans where multiple passive age-based options are offered (e.g., Illinois, Michigan and Nevada), we have selected the moderate option for comparison
- (ii) Age-Weighted Fee represents the average underlying fund expenses over a 22-year investment period for the specified age-based option
- (iii) Kansas charges an all-in fee of 0.25%, without specifying the breakdown of underlying fund expenses and program management fees. The State does not charge a state administration fee but receives an annual \$435,000 from the Program Manager. For purposes of this analysis, we have estimated the Age-Weighted Fee based upon net expense ratios for underlying funds available on the Charles Schwab website and Mornignstar.com as of November 12, 2019. We assumed the institutional share class for the Vanguard Total Bond Market Index (VBTIX); the Age-Weighted Fee increases to 0.07% with the Admiral share class (VBTIX) and 0.11% for the Investor share class (VBMFX).
- (iv) Nevada does not charge a state administration fee but receives an undisclosed amount from the Program Manager

Passive Age-Based Fee Comparison



Proprietary Funds	No	Yes	Yes	No	Yes	No
M* Rating	Silver	Silver	Gold	Gold	Silver	Neutral

■ Underlying Fund Expense
 ■ State Administration Fee
 ■ Program Management Fee
 ■ AUMs

Source: Program Disclosure Statements available as of November 8, 2019

Notes: See page 11

Comparative Fees: Blended and Active Age-Based Options

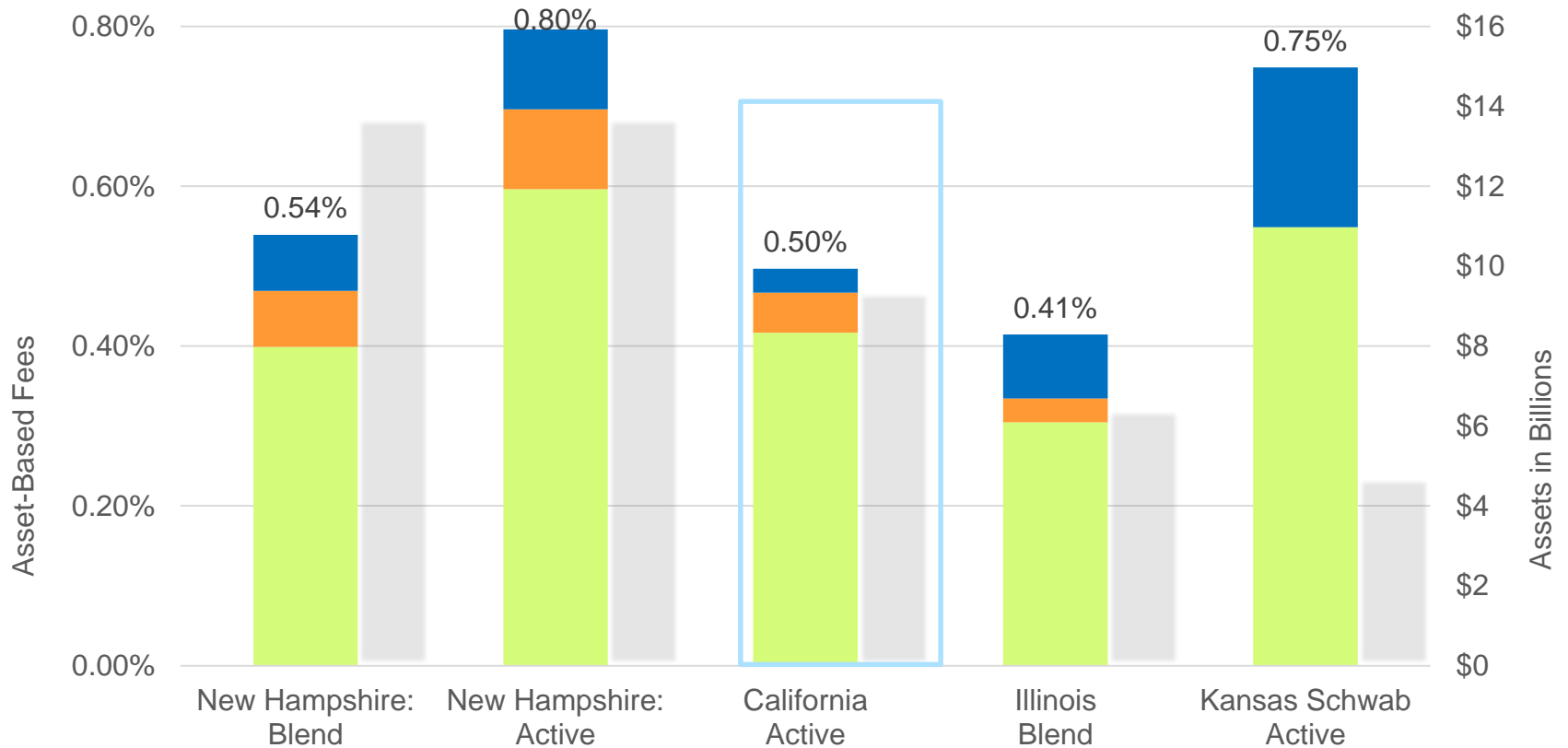
	Underlying Fund Expense		State Administration Fee	Program Management Fee	Total Fee
	Age-Weighted Fee	Age-Based Option			
New Hampshire	0.40% 0.60%	Fidelity Blend Fidelity Funds	0.07% 0.10%	0.07% 0.10%	0.54% 0.80%
California	0.42%	Active Age-Based	0.05%	0.03%	0.50%
Illinois	0.30%	Multi-Firm Moderate Age-Based	0.03%	0.08%	0.41%
Kansas Schwab	0.55%	Active Moderate Age-Based Track	None	0.20%	0.75%

Source: Program Disclosure Statements available as of November 8, 2019

Notes:

- (i) In Plans where multiple blended or active age-based options are offered (e.g., Illinois and Kansas), we have selected the moderate option for comparison
- (ii) Age-Weighted Fee represents the average underlying fund expenses over a 22-year investment period for the specified age-based option

Blended and Active Age-Based Fee Comparison



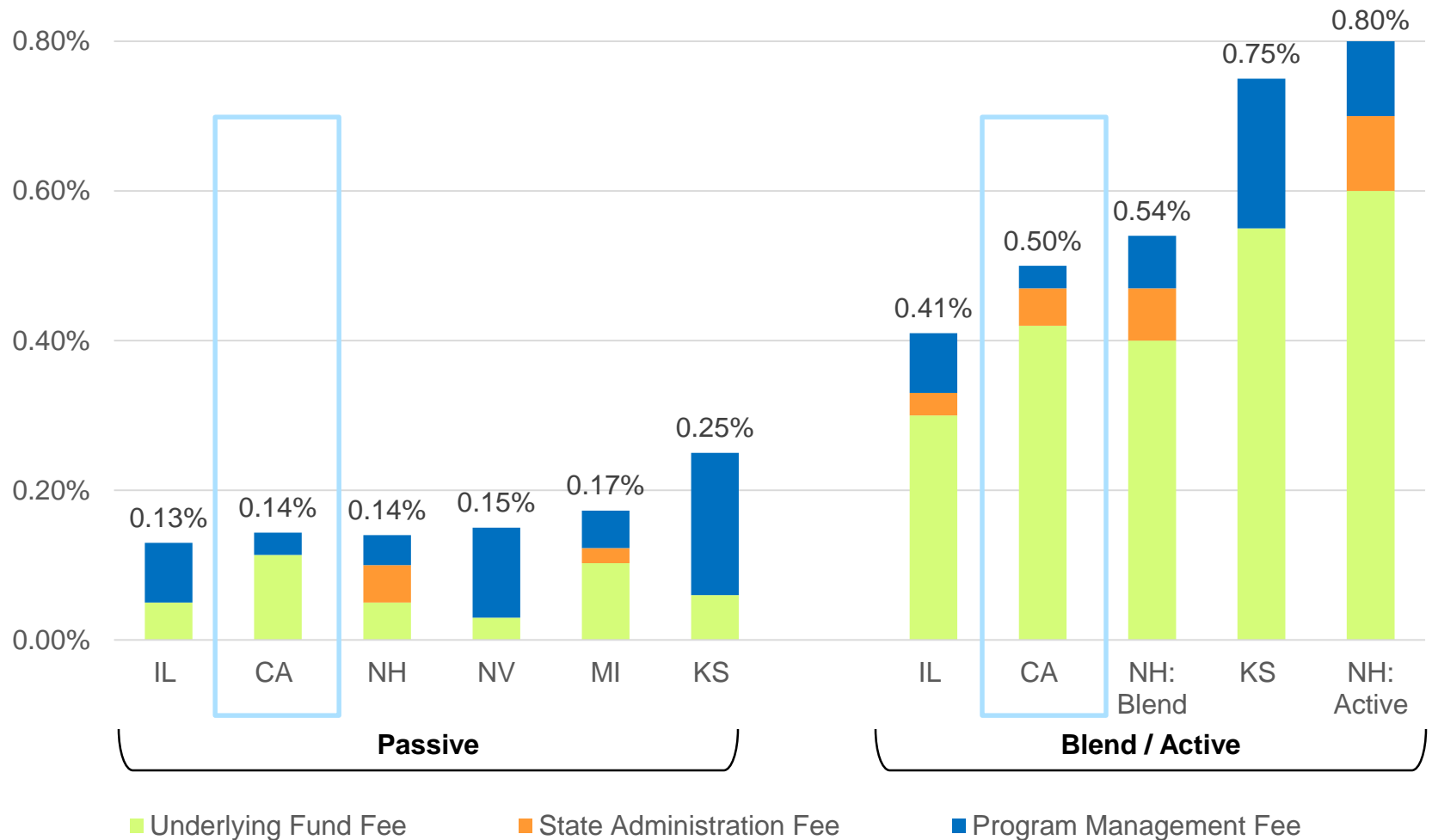
Proprietary Funds	Yes	Only partially	No	No
M* Rating	Silver	Gold	Gold	Neutral

■ Underlying Fund Expenses
 ■ State Administration Fee
 ■ Program Management Fee
 ■ AUMs

Source: Program Disclosure Statements available as of November 8, 2019

Notes: See page 13

Another View of Age-Based Fees



Source: Program Disclosure Statements available as of November 8, 2019

Notes: See pages 11 and 13

Section 3.

Observations

Concluding Observations

- **Total fees provide a wholistic view:**
 - **Critical to look at all three fee components together when making comparisons**
 - **ScholarShare Plan Review assesses total fees on an annual basis**
- **ScholarShare fees for Active and Passive options compare favorably:**
 - **Extremely competitive on a Total Fee basis – surpassed by Illinois only**
 - **Low Program Management Fee offsets higher underlying fund expenses**
 - **Zero State Administration Fee on Passive option enhances competitiveness**
- **Fee component considerations:**
 - **Program Management Fee (0.03%) is currently lowest among all identified Plans**
 - **Will be reduced to 0.01% upon achieving \$10 billion in AUMs¹**
 - **State Administration Fee at 0.05% for Active Option may present future fee savings**
 - **Underlying fund expenses**
 - **All proprietary line-up in Passive Option presents trade-off for low Program Management Fee**
 - **Active Option uses mostly non-proprietary funds**

¹ ScholarShare AUMs were \$9.66 billion as of the week of November 4, 2019

Appendix

Comparative Age-Based Fees

	Underlying Fund Expense	State Administration Fee	Program Management Fee	Total Fee
California	0.08% - 0.14% Passive 0.23% - 0.48% Active	0% Passive 0.05% Active	0.03%	0.11% - 0.17% Passive 0.31% - 0.56% Active
Illinois	0.04% - 0.07% Index 0.15% - 0.35% Blend	0.00% Index 0.03% Blend	0.08%	0.12% - 0.15% Passive 0.26% - 0.46% Blend
Kansas Schwab	Not specified for Index 0.29% - 0.80% Active	None	Not specified for Index 0.20% Active	0.25% Index 0.49% - 1.00% Active
Michigan	0.07% - 0.13%	0.02%	0.05%	0.14% - 0.20%
Nevada Vanguard	0.03% - 0.04%	None	0.12%	0.15%
New Hampshire	0.05% Index 0.29% - 0.51% Blend 0.43% - 0.76% Active	0.05% Index 0.07% Blend 0.10% Active	0.04% Index 0.07% Blend 0.10% Active	0.14% Index 0.43% - 0.65% Blend 0.63% - 0.96% Active

Source: Program Disclosure Statements available as of November 8, 2019

Notes:

(i) Kansas charges an all-in fee of 0.25%, without specifying the breakdown of underlying fund expenses and program management fees. The State does not charge a state administration fee but receives an annual \$435,000 from the Program Manager.

(ii) Nevada does not charge a state administration fee but receives an undisclosed amount from the Program Manager

AKF Legal Disclosure

Pursuant to Municipal Securities Rulemaking Board (“MSRB”) Rule G-42, on Duties of Non-Solicitor Municipal Advisors, Municipal Advisors are required to make certain written disclosures to clients and potential clients which include, among other things, Conflicts of Interest and Legal or Disciplinary events of AKF and its associated persons.

Conflicts of Interest

Compensation

AKF represents that in connection with the issuance of municipal fund securities, AKF receives compensation from its client issuers for services rendered on an hourly, retainer or fixed fee basis. Consistent with the requirements of MSRB Rule G-42, AKF hereby discloses that such forms of compensation may present a potential conflict of interest regarding AKF’s ability to provide unbiased advice regarding a municipal fund security transaction. This potential conflict of interest will not impair AKF’s ability to render unbiased and competent advice or to fulfill its fiduciary duty.

Other Municipal Advisor Relationships

AKF serves a wide variety of clients that may from time to time have interests that could have a direct or indirect impact on the interests of other AKF clients. For example, AKF serves as Municipal Advisor to other municipal fund securities clients and, in such cases, owes a regulatory duty to such clients just as it will with the entity receiving this presentation, if hired. These other clients may, from time to time and depending on the specific circumstances, have competing interests. In acting in the interests of its various clients, AKF could potentially face a conflict of interest arising from these competing client interests. AKF fulfills its regulatory duty and mitigates such conflicts by dealing honestly and with the utmost good faith with all clients.

If AKF becomes aware of any potential or actual conflicts of interest after this disclosure, AKF will disclose the detailed information in writing to the client or obligated person in a timely manner.

Legal or Disciplinary Events

AKF does not have any legal events or disciplinary history on its Form MA and Form MA-I, which includes information about any criminal actions, regulatory actions, investigations, terminations, judgments, liens, civil judicial actions, customer complaints, arbitrations and civil litigation. You may electronically access AKF’s most recent Form MA and each most recent Form MA-I filed with the Securities and Exchange Commission at the following website: www.sec.gov/edgar/searchedgar/companysearch.html. If any material legal or regulatory action is brought against AKF, AKF will provide complete and detailed disclosure to its clients, thereby allowing each client to evaluate AKF, its management and personnel.