

Nebraska Investment Council Capital Market Assumptions

September 2020

Capital Market Assumptions

- What are they?
 - Aon's asset class return, volatility and correlation assumptions
 - Long-term; based on 10-year and 30-year projection periods
 - Forward looking assumptions
 - Best estimate assumptions (50/50 better or worse)
 - Market returns; i.e., no manager alpha (other than hedge funds and private equity which are entirely actively managed)
 - Global geographic coverage
 - Updated quarterly

Current Assumptions (10-Year): Expected Returns and Volatility (as of June 30, 2020)

Asset Class	Expected Nominal Return	Expected Risk (Volatility)
U.S. Equity	6.0%	17.4%
Global Equity (Developed & Emerging)	6.8	18.5
International Equity (Developed)	7.2	20.0
Emerging Markets Equity	7.7	27.0
TIPS	1.4	4.5
Core Fixed Income (Market Duration)	1.2	4.0
High Yield Bonds	3.8	12.0
Bank Loans	4.0	7.0
Non-US Developed Bonds (Unhedged)	1.0	10.0
Emerging Market Bonds (USD)	4.0	13.0
Hedge Funds (FoF)	2.9	9.0
Real Estate (Total Market)	6.0	17.4
Private Equity	8.4	25.0
U.S. Inflation (CPI)	2.0	--

Current Assumptions (30-Year): Expected Returns and Volatility (as of June 30, 2020)

Asset Class	Expected Nominal Return	Expected Risk (Volatility)
U.S. Equity	6.6%	17.4%
Global Equity (Developed & Emerging)	7.4	18.5
International Equity (Developed)	7.5	20.0
Emerging Markets Equity	8.1	27.0
TIPS	2.0	4.5
Core Fixed Income (Market Duration)	2.0	5.0
High Yield Bonds	4.1	12.0
Bank Loans	4.3	7.5
Non-US Developed Bonds (Unhedged)	2.0	11.0
Emerging Market Bonds (USD)	4.0	14.0
Hedge Funds (FoF)	3.3	9.5
Real Estate (Total Market)	6.3	17.5
Private Equity	9.5	25.0
U.S. Inflation (CPI)	2.1	--

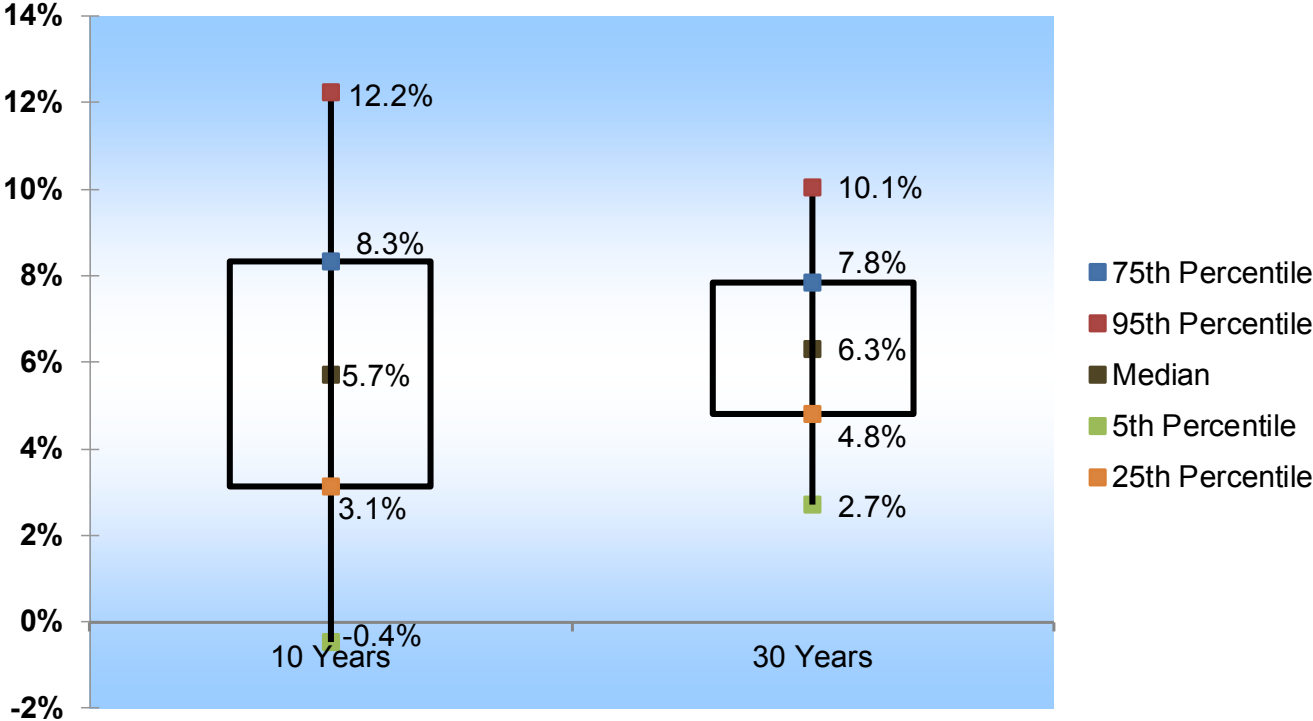
DB Plan -- Projected Returns

	Long-Term Policy Allocation	Annualized Return (10 Year Forecast)	Standard Deviation (10 Year Forecast)	Annualized Return (30 Year Forecast)	Standard Deviation (30 Year Forecast)
U.S. Equity	27.0%	6.0%	17.4%	6.6%	17.4%
Non-U.S. Equity	11.5	7.6	20.5	7.9	20.5
Global Equity	19.0	6.8	18.5	7.4	18.5
Fixed Income*	30.0	2.1	4.2	2.8	4.8
Private Equity	5.0	8.4	25.0	9.5	25.0
Real Estate	7.5	6.0	17.4	6.3	17.5
Total Fund	100.0%	5.7%	12.3%	6.3%	12.4%

- Assumed rates for the Nebraska DB Plans, CBB Plans, and OSERS = 7.5%
- Given existing market conditions, meeting or exceeding 7.5% is likely to prove challenging

*Modeled as 20% core bonds, 1.5% international bonds, 3.5% high yield bonds, and 5% bank loans

DB Plan -- Projected Returns (cont'd)



- Based on our capital market assumptions and the defined benefit plans' asset allocation targets, the defined benefit plans have a roughly 30% chance of meeting or exceeding the assumed rate of return of 7.5% over the next 10-to-30 years

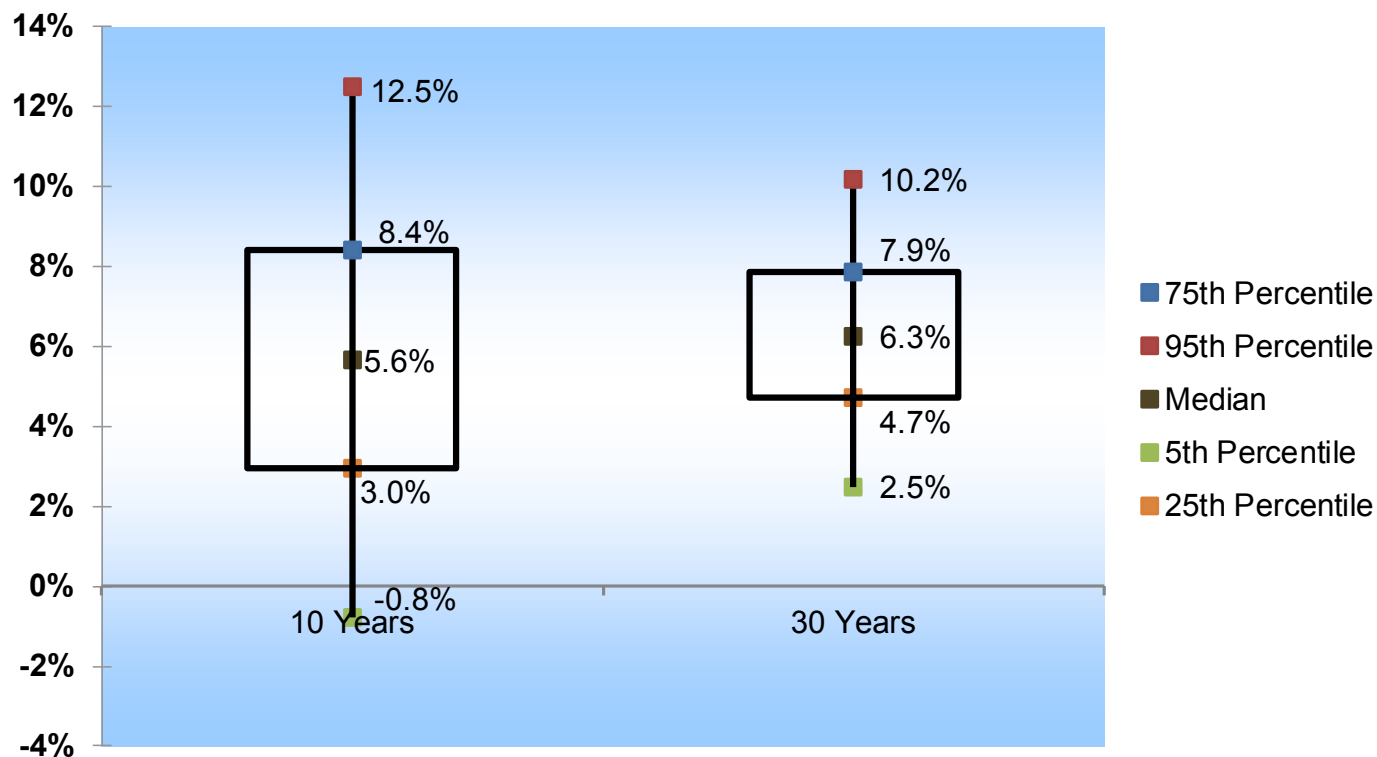
Health Care Endowment -- Projected Returns

	Long-Term Policy Allocation	Annualized Return (10 Year Forecast)	Standard Deviation (10 Year Forecast)	Annualized Return (30 Year Forecast)	Standard Deviation (30 Year Forecast)
U.S. Equity	30.5%	6.0%	17.4%	6.6%	17.4%
Non-U.S. Equity	13.0	7.6	20.5	7.9	20.5
Global Equity	21.5	6.8	18.5	7.4	18.5
Fixed Income*	25.0	0.9	2.5	1.6	3.5
Private Equity	5.0	8.4	25.0	9.5	25.0
Real Estate	5.0	6.0	17.4	6.3	17.5
Total Fund	100.0%	5.6%	12.9%	6.3%	12.9%

- The table above presents our median return and volatility forecasts for the Health Care Endowment over 10 and 30 year periods

*Modeled as 22.5% Intermediate G/C Bonds, 2.5% Cash

Health Care Endowment -- Projected Returns (cont'd)



- The chart above presents a forecasted distribution of outcomes for the Health Care Endowment over 10 and 30 year periods

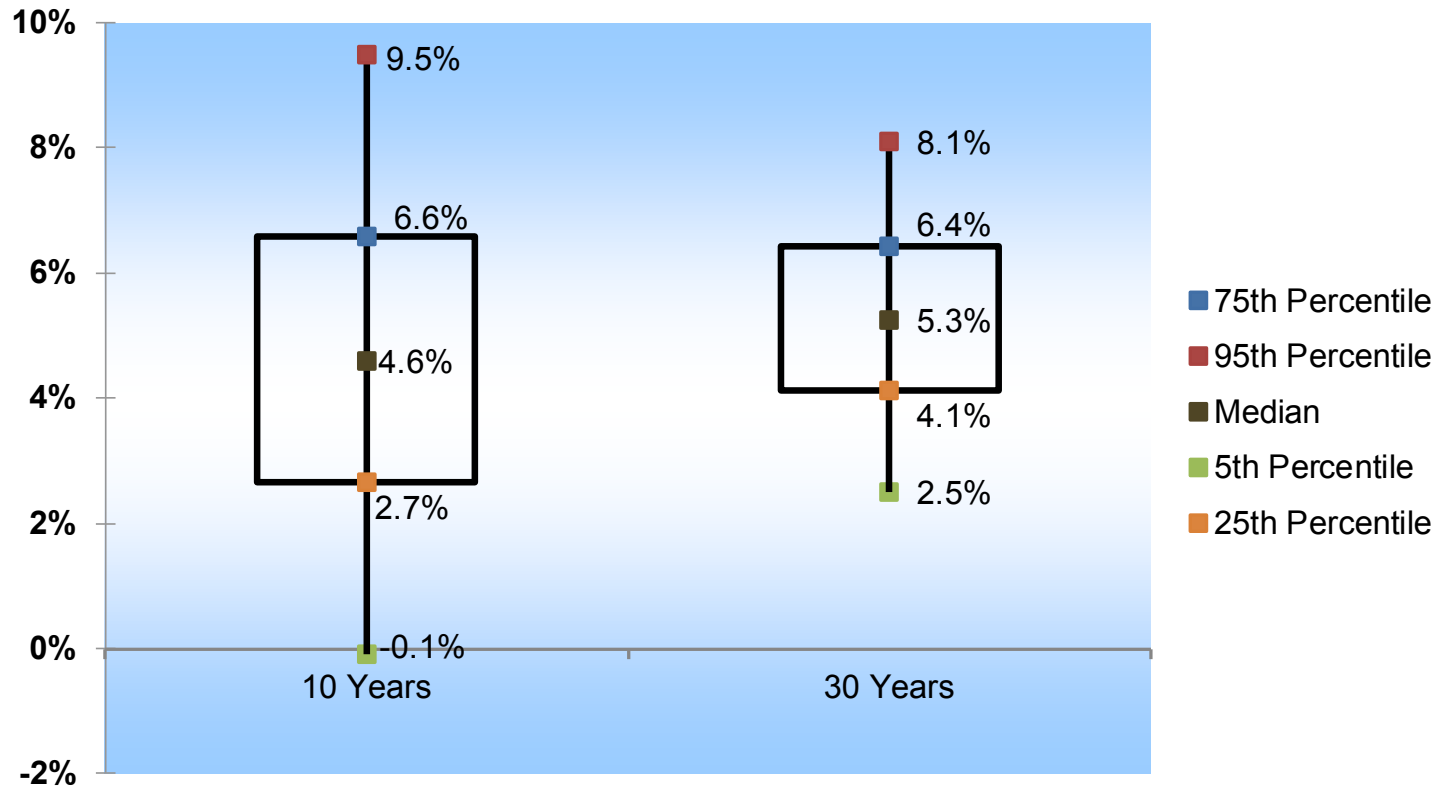
50/50 Endowments -- Projected Returns

	Long-Term Policy Allocation	Annualized Return (10 Year Forecast)	Standard Deviation (10 Year Forecast)	Annualized Return (30 Year Forecast)	Standard Deviation (30 Year Forecast)
U.S. Equity	19.0%	6.0%	17.4%	6.6%	17.4%
Non-U.S. Equity	8.0	7.6	20.5	7.9	20.5
Global Equity	13.0	6.8	18.5	7.4	18.5
Fixed Income*	50.0	1.6	4.3	2.3	5.1
Private Equity	5.0	8.4	25.0	9.5	25.0
Real Estate	5.0	6.0	17.4	6.3	17.5
Total Fund	100.0%	4.6%	9.3%	5.3%	9.4%

- The table above presents our median return and volatility forecasts for the 50/50 Endowments over 10 and 30 year periods

*Modeled as 43.75% Core U.S. Fixed Income, 6.25% HY Bonds

50/50 Endowments -- Projected Returns (cont'd)



- The chart above presents a forecasted distribution of outcomes for the 50/50 Endowments over 10 and 30 year periods

AHIC 10-Year Assumptions: How Expected Returns Have Evolved Over the Past Decade

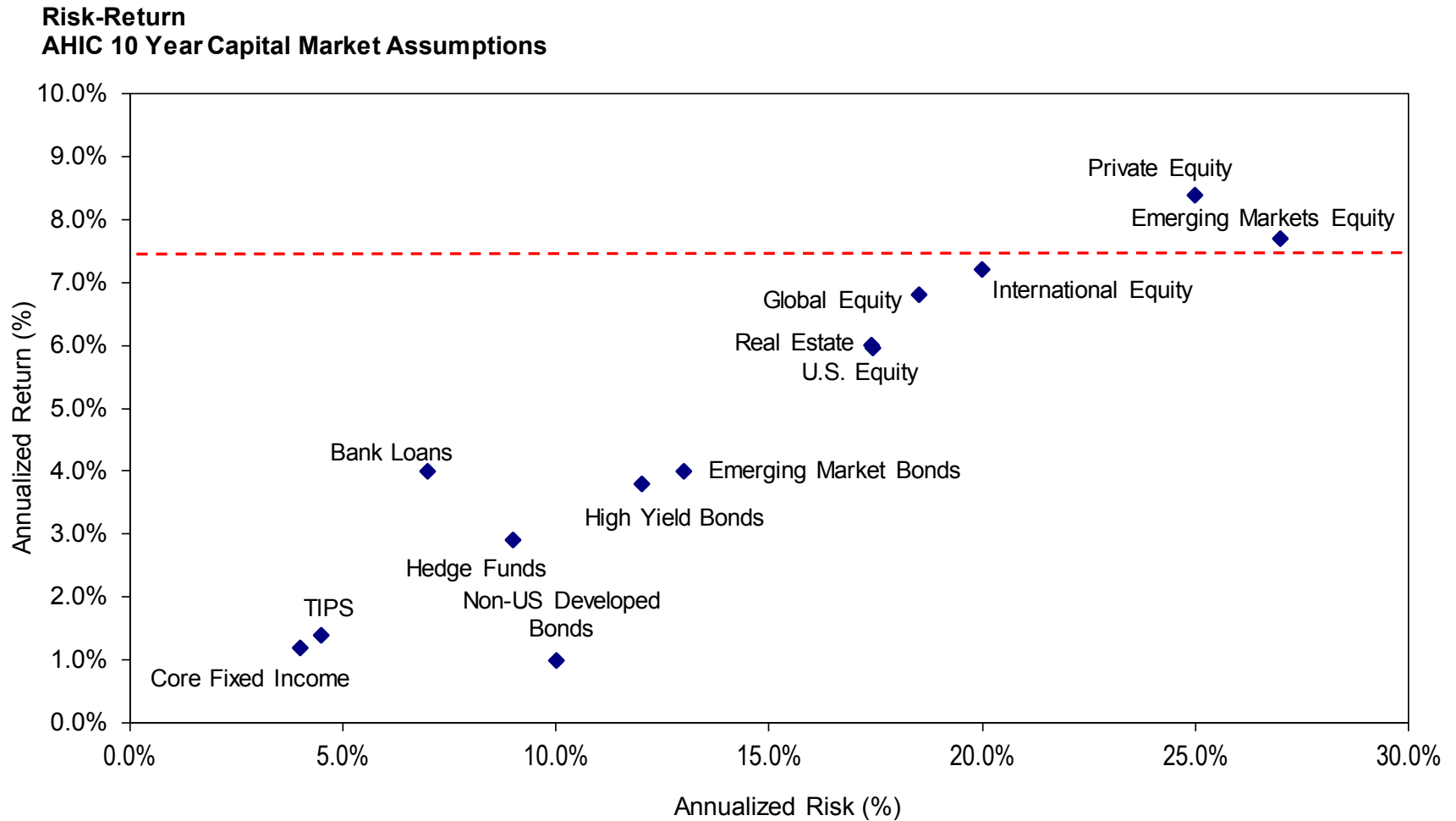
Asset Class	Expected Nominal Return									
	6/30/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
Large Cap U.S. Equity	5.9%	6.2%	6.2%	6.3%	6.2%	6.6	6.7%	7.1%	7.5%	8.0%
Small Cap U.S. Equity	6.1	6.4	6.4	6.5	6.4	6.8	6.9	7.3	7.7	8.2
Global Equity	6.8	7.0	7.2	7.1	7.0	7.1	7.1	7.5	8.3	8.9
International Equity (Developed)	7.2	7.0	7.3	7.2	7.0	7.1	7.2	7.3	8.4	9.1
Emerging Markets Equity	7.7	7.9	8.1	7.6	7.4	8.4	8.4	8.9	9.4	9.8
Cash (Gov't)	0.5	1.4	2.8	2.0	1.3	1.8	2.2	2.5	1.3	1.5
Core Fixed Income (Market Duration)	1.2	2.2	3.5	2.7	2.1	2.7	2.9	3.3	1.9	2.6
High Yield Bonds	3.8	3.6	4.0	3.6	4.1	5.9	4.2	4.6	3.9	5.9
Hedge Funds Universe ¹	2.9	3.3	4.2	3.7	3.4	3.8	5.0	5.2	5.2	5.7
Real Estate (Broad Market)	6.0	6.1	5.9	6.0	5.4	6.6	7.0	7.2	7.4	7.3
Private Equity	8.4	8.6	8.2	8.7	8.2	9.0	9.0	9.3	9.7	9.8
Inflation	2.0	2.1	2.3	2.3	2.1	2.0	2.2	2.1	2.3	2.1

¹ Hedge Fund Universe assumptions are capital market assumptions for fund of hedge funds

- Our return expectations have decreased over the past several years

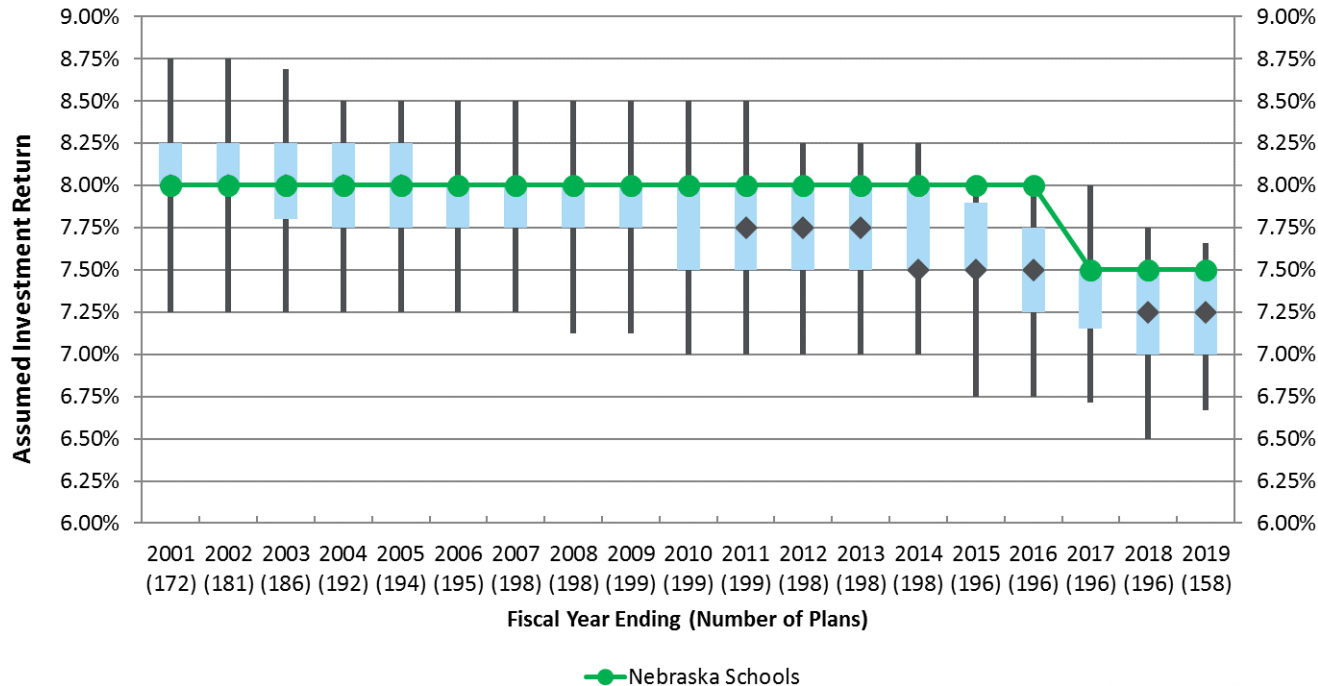
Color Key
Increased from 2011
No Change from 2011
Decreased from 2011

Appendix I: AHIC Forward Looking Return Expectations by Asset Class



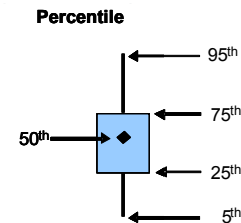
Appendix II: Peer Public Fund Assumed Rates¹

Distribution of U.S. Public Pension Investment Return Assumptions



Key Takeaways:

- The public pension peer median actuarial assumption for investment return has declined from 8.00% from 2001-2010 to 7.25% based on the latest survey data
- NPERS' assumption for FYE 2019 (7.50%) fell at the 75th percentile relative to its peers
- If NPERS exceeds (or falls short of) the actuarial return assumption, lower (or higher) funding will be needed in future years



Source: Public Plans Data (publicplansdata.org) as of July 2020; Expected Returns are the assumptions made by the plans included in the data set.

¹ Peers defined as public funds published within publicplansdata.org as of July 2020; Number of plans per year are shown in parentheses

Appendix III: Endowment -- Estimated Yields*

HealthCare 6/30/2020		
	Policy	Policy Yield
Total U.S. Equity	30.5%	1.9%
Non-U.S. Equity	13.0%	2.9%
Global Equity	21.5%	2.3%
Fixed Income	25.0%	0.6%
Real Estate	5.0%	4.2%
Private Equity	5.0%	0.0%
Total Yield	100.0%	1.8%
50/50 6/30/2020		
	Policy	Policy Yield
Total U.S. Equity	19.0%	1.9%
Non-U.S. Equity	8.0%	2.9%
Global Equity	13.0%	2.3%
Fixed Income	50.0%	1.8%
Real Estate	5.0%	4.2%
Private Equity	5.0%	0.0%
Total Yield	100.0%	2.0%

*Estimates utilize dividend yield for stock indices, yield-to maturity for bond indices, income component of real estate index

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