

Nebraska Investment Council

Capital Market Assumptions

September 2023

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Capital Market Assumptions

- What are they?
 - Aon's asset class return, volatility, and correlation assumptions Ο Long-Term; based on 10-year and 30-year projection periods Ο
 - - Forward looking assumptions
 - \succ 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 Ο
 - Updated quarterly Ο



Current Assumptions (10-Year): Expected Returns and Volatility (as of June 30, 2023)

U.S. EquityGlobal Equity (Developed & Emerging)International Equity (Developed)Emerging Markets EquityTIPSCore Fixed Income (Market Duration)High Yield BondsBank LoansEmerging Market Bonds (USD)Emerging Market Bonds (LC)Hedge Funds (FoF)Real Estate (Total Market)Private EquityU.S. Inflation (CPI)	Asset Class	Expe
International Equity (Developed)Emerging Markets EquityTIPSCore Fixed Income (Market Duration)High Yield BondsBank LoansEmerging Market Bonds (USD)Emerging Market Bonds (LC)Hedge Funds (FoF)Real Estate (Total Market)Private Equity	U.S. Equity	
Emerging Markets EquityTIPSCore Fixed Income (Market Duration)High Yield BondsBank LoansEmerging Market Bonds (USD)Emerging Market Bonds (LC)Hedge Funds (FoF)Real Estate (Total Market)Private Equity	Global Equity (Developed & Emerging)	
TIPSCore Fixed Income (Market Duration)High Yield BondsBank LoansEmerging Market Bonds (USD)Emerging Market Bonds (LC)Hedge Funds (FoF)Real Estate (Total Market)Private Equity	International Equity (Developed)	
Core Fixed Income (Market Duration)High Yield BondsBank LoansEmerging Market Bonds (USD)Emerging Market Bonds (LC)Hedge Funds (FoF)Real Estate (Total Market)Private Equity	Emerging Markets Equity	
High Yield BondsBank LoansEmerging Market Bonds (USD)Emerging Market Bonds (LC)Hedge Funds (FoF)Real Estate (Total Market)Private Equity	TIPS	
Bank Loans Emerging Market Bonds (USD) Emerging Market Bonds (LC) Hedge Funds (FoF) Real Estate (Total Market) Private Equity	Core Fixed Income (Market Duration)	
Emerging Market Bonds (USD) Emerging Market Bonds (LC) Hedge Funds (FoF) Real Estate (Total Market) Private Equity	High Yield Bonds	
Emerging Market Bonds (LC) Hedge Funds (FoF) Real Estate (Total Market) Private Equity	Bank Loans	
Hedge Funds (FoF) Real Estate (Total Market) Private Equity	Emerging Market Bonds (USD)	
Real Estate (Total Market) Private Equity	Emerging Market Bonds (LC)	
Private Equity	Hedge Funds (FoF)	
	Real Estate (Total Market)	
U.S. Inflation (CPI)	Private Equity	
	U.S. Inflation (CPI)	



cted Nominal Return	Expected Risk (Volatility)
6.3%	17.5%
6.7	18.1
6.8	20.3
7.1	24.0
4.0	4.3
4.5	5.0
5.9	10.5
6.6	7.0
6.9	11.0
5.7	13.0
4.7	9.0
6.4	17.4
8.8	25.0
2.3	





Current Assumptions (30-Year): Expected Returns and Volatility (as of June 30, 2023)

Asset Class	Expe
U.S. Equity	
Global Equity (Developed & Emerging)	
International Equity (Developed)	
Emerging Markets Equity	
TIPS	
Core Fixed Income (Market Duration)	
High Yield Bonds	
Bank Loans	
Emerging Market Bonds (USD)	
Emerging Market Bonds (LC)	
Hedge Funds (FoF)	
Real Estate (Total Market)	
Private Equity	
U.S. Inflation (CPI)	



cted Nominal Return	Expected Risk (Volatility)
6.9%	17.9%
7.4	18.6
7.3	20.8
7.7	24.5
3.8	4.4
4.1	5.2
5.9	10.3
6.0	7.5
6.1	11.5
5.7	13.3
4.6	9.6
6.2	17.8
9.8	25.6
2.3	







DB Plans – Projected Returns

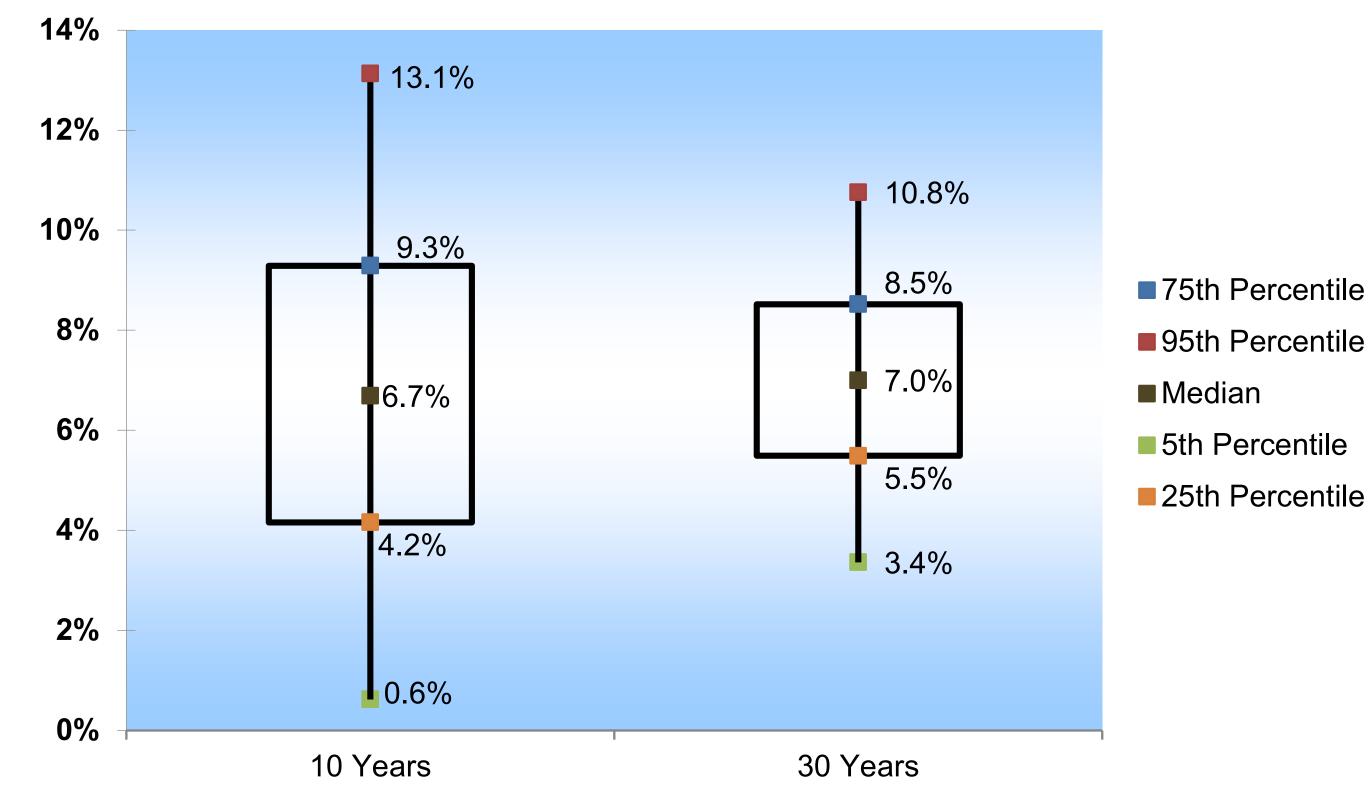
	Long-Term Policy Allocation	Annualized Return (10 Year Forecast)	Standard Deviation (10 Year Forecast)	Annualized Return (30 Year Forecast)	Standard Deviation (30 Year Forecast)
U.S. Equity	24.0%	6.3%	17.5%	6.9%	17.9%
Non-U.S. Equity	11.5	7.1	20.1	7.6	20.6
Global Equity	22.0	6.7	18.1	7.4	18.6
Private Equity	5.0	8.8	25.0	9.8	25.6
Real Estate	7.5	6.4	17.4	6.2	17.8
RS Fixed Income*	10.0	6.1	6.9	5.7	7.2
RR Fixed Income	20.0	4.5	5.0	4.1	5.2
Total Fund	100.0%	6.7%	12.1%	7.0%	12.4%

- Current assumed rate for the Nebraska DB Plans and CBB Plans = 7.1%
 - Assumed rate will step down to 7.0% next year Ο
- Current assumed rate for OSERS (FY 2024) = 7.2%

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Assumed rate will step down to 7.0% in FY 2025 Ο

DB Plans – Projected Returns (Cont'd)



- exceeding the assumed rate of return of 7.1% over the next 10-to-30 years
- OSERS' chances of meeting or exceeding its assumed rate of 7.2% are similar



Based on our capital market assumptions and the defined benefit plans' asset allocation targets, the NPERS defined benefit / cash balance benefit plans have a roughly 50/50 chance of meeting or



Healthcare 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	27.5%	6.3%	17.5%	6.9%	17.9%
Non-U.S. Equity	13.0	7.1	20.1	7.6	20.6
Global Equity	24.5	6.7	18.1	7.4	18.6
Private Equity	5.0	8.8	25.0	9.8	25.6
Real Estate	5.0	6.4	17.4	6.2	17.8
Fixed Income*	25.0	4.0	3.7	3.6	4.0
Total Fund	100.0%	6.5%	12.8%	6.9%	13.1%

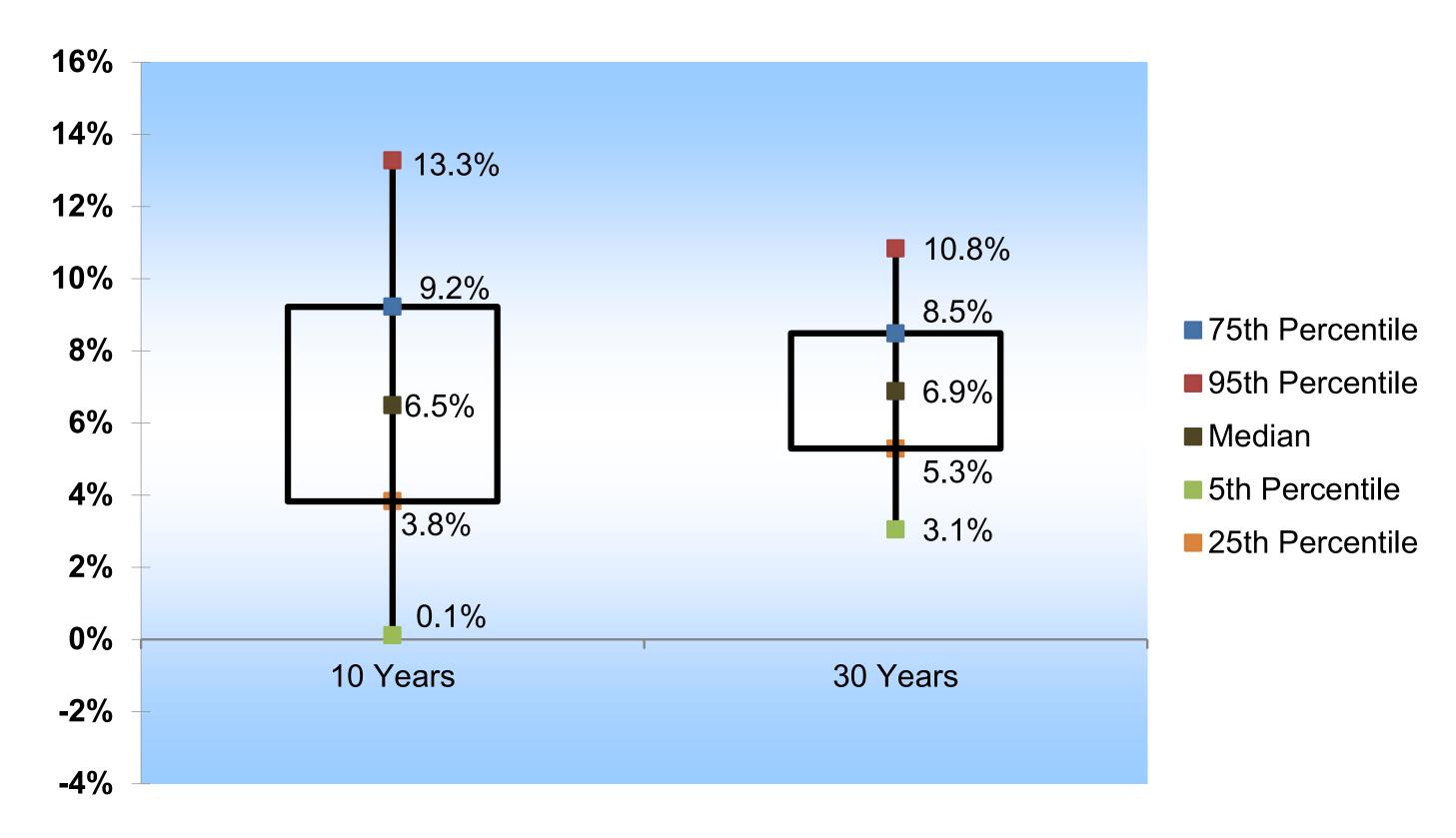
 The table above presents our median return ar 10- and 30-year periods



The table above presents our median return and volatility forecasts for the Health Care Endowment over



Healthcare Endowment – Projected Returns (cont'd)



 The chart above presents a forecasted distribution and 30-year periods



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

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	17.0%	6.3%	17.5%	6.9%	17.9%
Non-U.S. Equity	8.0	7.1	20.1	7.6	20.6
Global Equity	15.0	6.7	18.1	7.4	18.6
Private Equity	5.0	8.8	25.0	9.8	25.6
Real Estate	5.0	6.4	17.4	6.2	17.8
RS Fixed Income*	15.0	5.5	6.3	5.3	6.6
RR Fixed Income	35.0	4.5	5.0	4.1	5.2
Total Fund	100.0%	6.3%	9.2%	6.4%	9.4%

and 30-year periods

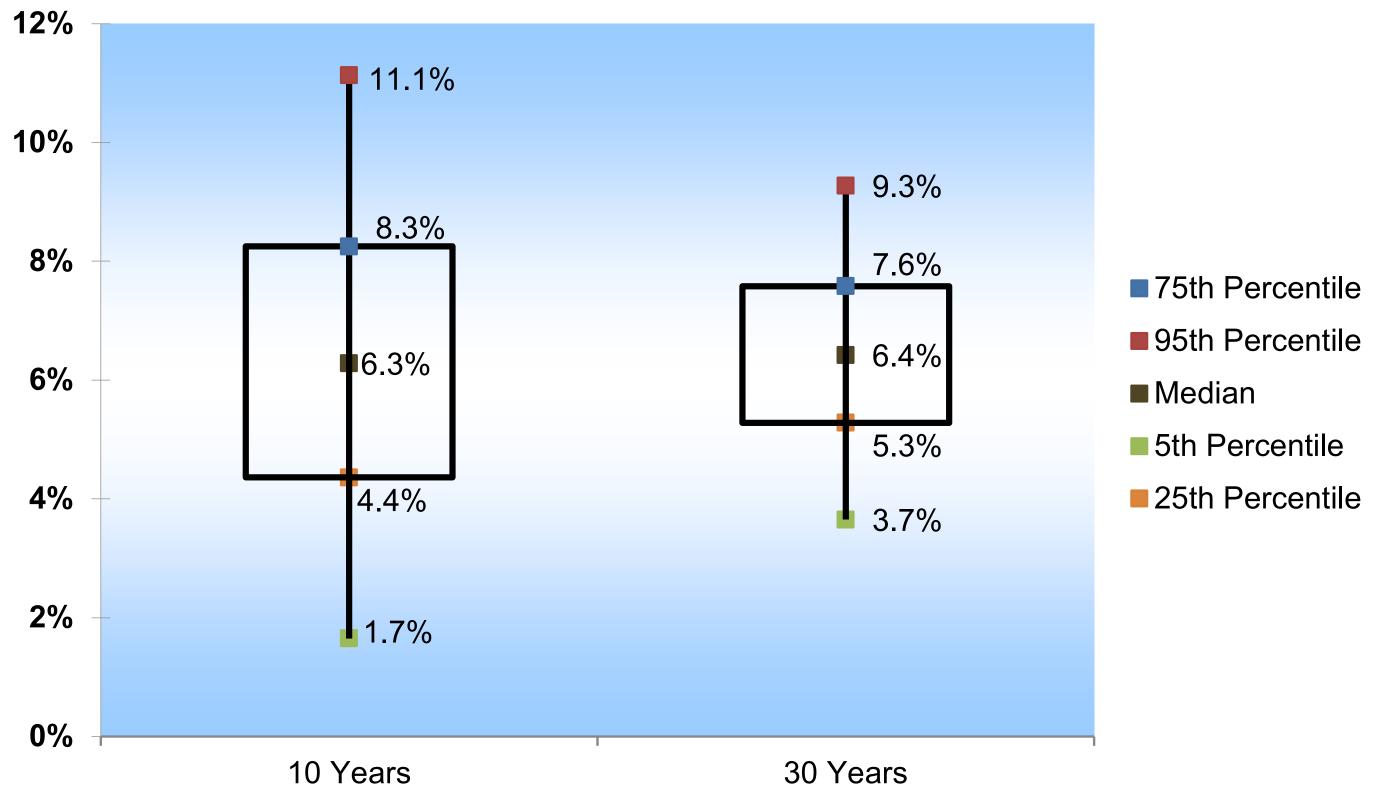


*Modeled as 7.5% U.S. IG Credit, 4.5% HY Credit, 3% EMD USD

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

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



10 Years

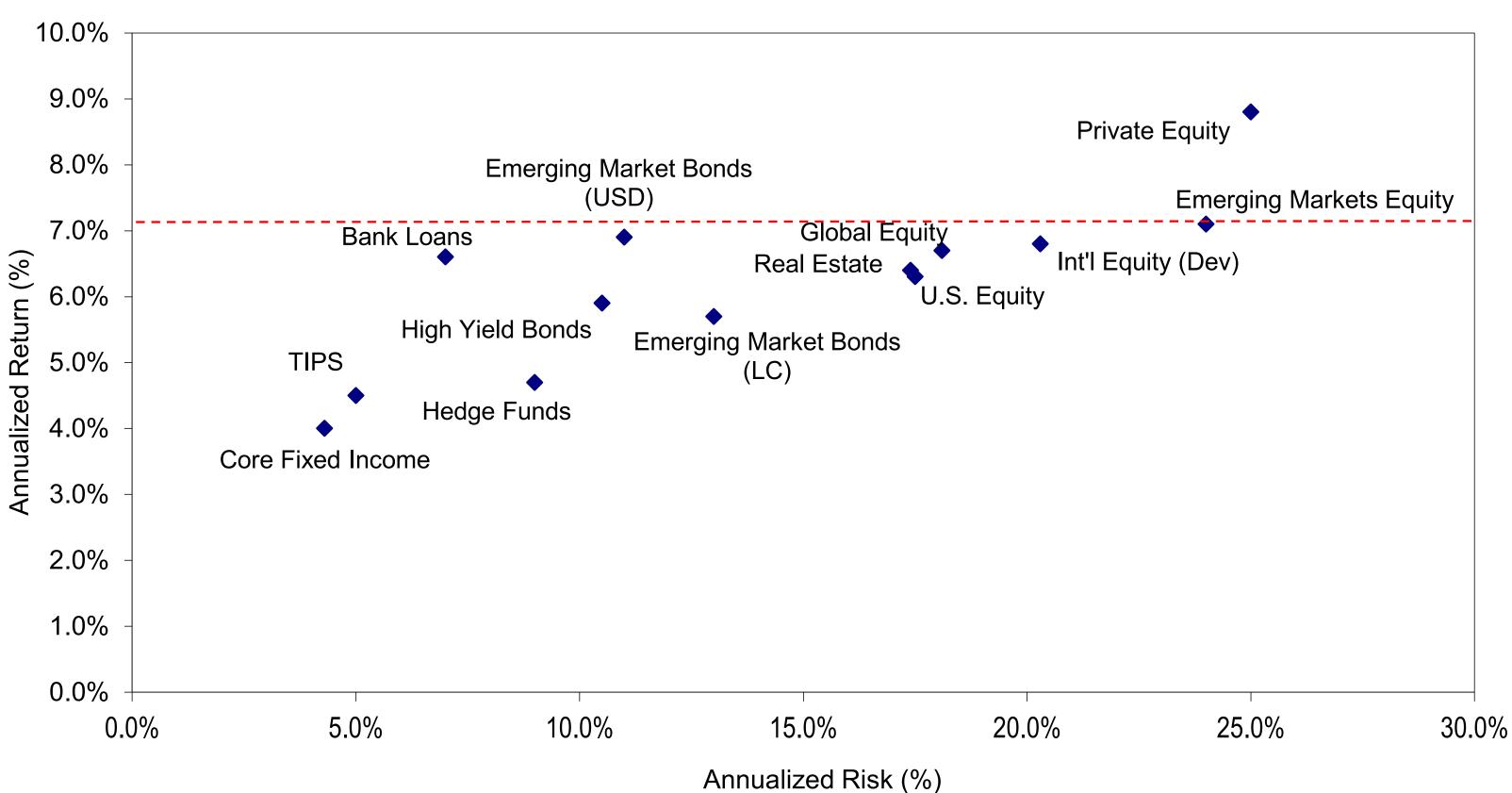
30-year periods



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



Appendix I: Aon Forward Looking Return / Volatility Expectations by Asset Class



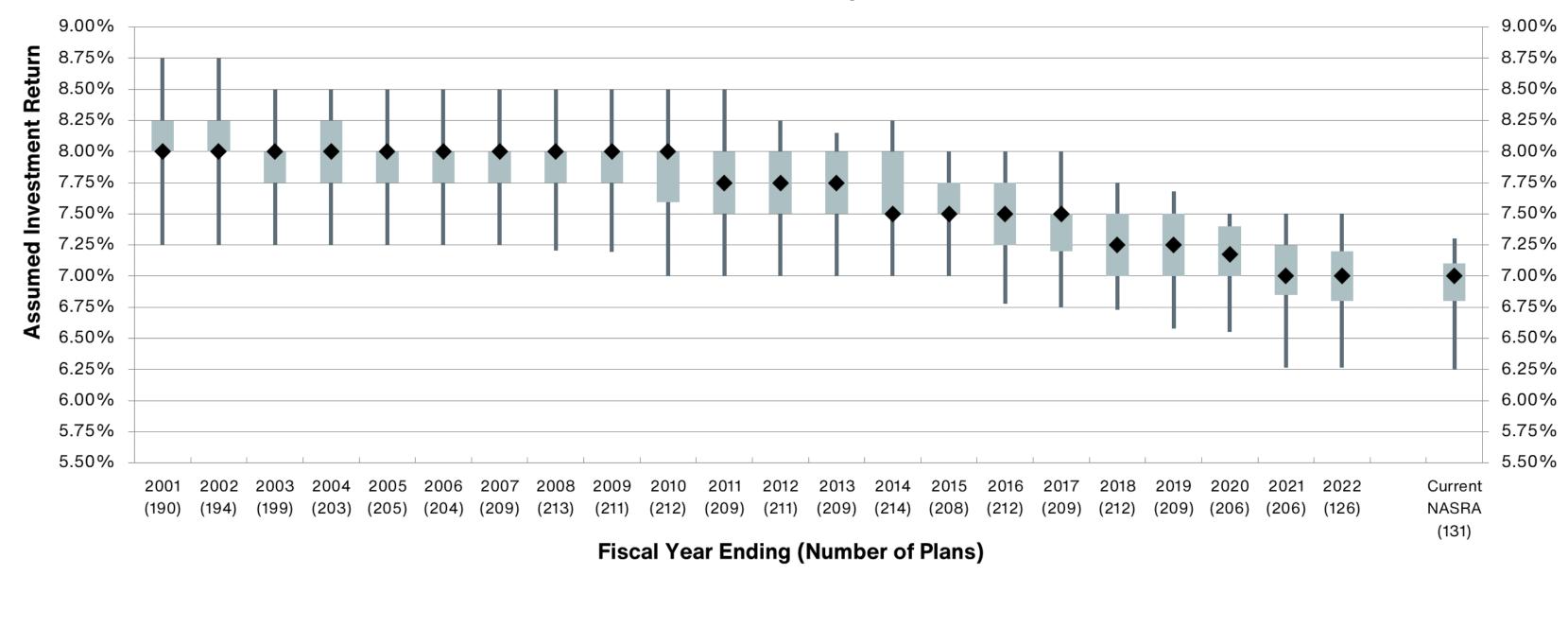
Risk-Return Aon 10 Year Capital Market Assumptions





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Appendix II: Distribution of Investment Return Assumptions U.S. Public Pension Plans¹



Distribution of U.S. Public Pension Investment Return Assumptions

Source: Public Pensions Data

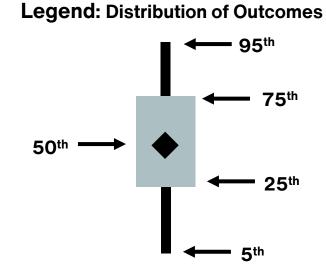
Sources: Public Plans Data (publicplansdata.org) as of June 2023; NASRA downloadable investment return assumptions as of June 2023 ¹ Peers defined as public funds published within publicplansdata.org as of June 2023; Number of plans per year are shown in parentheses



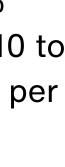


Key Takeaways:

- The historical actuarial assumption trend for investment returns has declined from an 8.00% median in FYE 2001-2010 to 7.00% as of FYE 2022, per Public Plans Data¹
- Current actuarial assumptions, as tracked by NASRA as of June 2023, have a median actuarial assumption of 7.00%



Source: NASRA





Appendix III: Endowment -- Estimated Yields

Health Care Endo	owments	
	Policy Target	Yield*
U.S. Equity	27.5%	1.5%
Non-U.S. Equity	13.0%	3.1%
Global Equity	24.5%	2.1%
Fixed Income	25.0%	3.2%
Real Estate	5.0%	3.5%
Private Equity	5.0%	0.0%
Total Fund	100.0%	2.3%
50/50 Endowmen	ts	
	Policy Target	Yield*
U.S. Equity	17.0%	2.3%
Non-U.S. Equity	8.0%	3.1%
Global Equity	15.0%	2.1%
RS Fixed Income	15.0%	4.7%
RR Fixed Income	35.0%	2.9%
Real Estate	5.0%	3.5%
Private Equity	5.0%	0.0%
Total Fund	100.0%	2.8%



*Based on Index information as of most recent month-end available. Estimates utilize dividend yield for stock indices, wtd. avg. coupon for bond indices, income component of real estate index.

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