Keeping Healthy Plans Healthy

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Segal Consulting

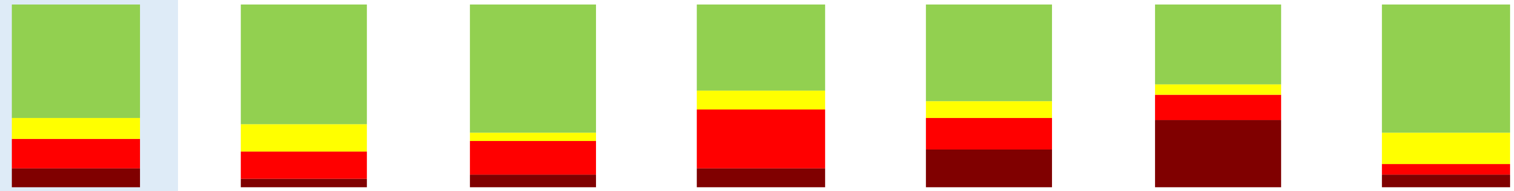
Discussion Topics

- The Multiemployer Pension Plan Universe
- Assessing a Plan's Health
- Strategies for Healthy Plans

The Multiemployer Pension Plan Universe

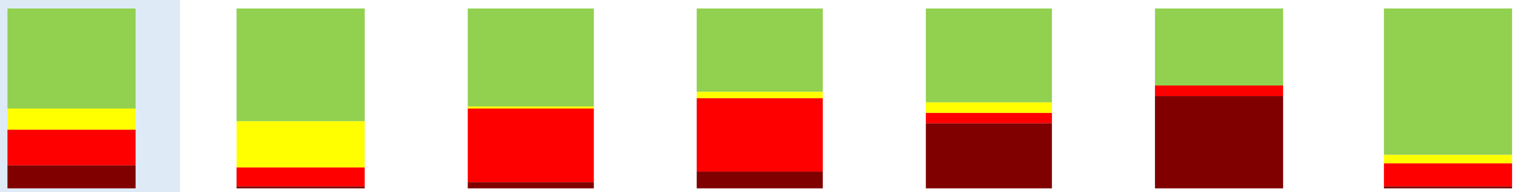
Zone Status: Industry Comparison

Plans



	All Industries	Construction	Service	Retail/Food	Transportation	Manufacturing	Entertainment
Total Plans	1,242 Plans	758 Plans	95 Plans	67 Plans	173 Plans	101 Plans	48 Plans
Green Zone	62%	66%	71%	48%	53%	44%	71%
Endangered	12%	14%	4%	10%	10%	6%	17%
Critical	16%	16%	19%	31%	17%	14%	6%
Declining	10%	4%	6%	10%	20%	37%	6%

Participants



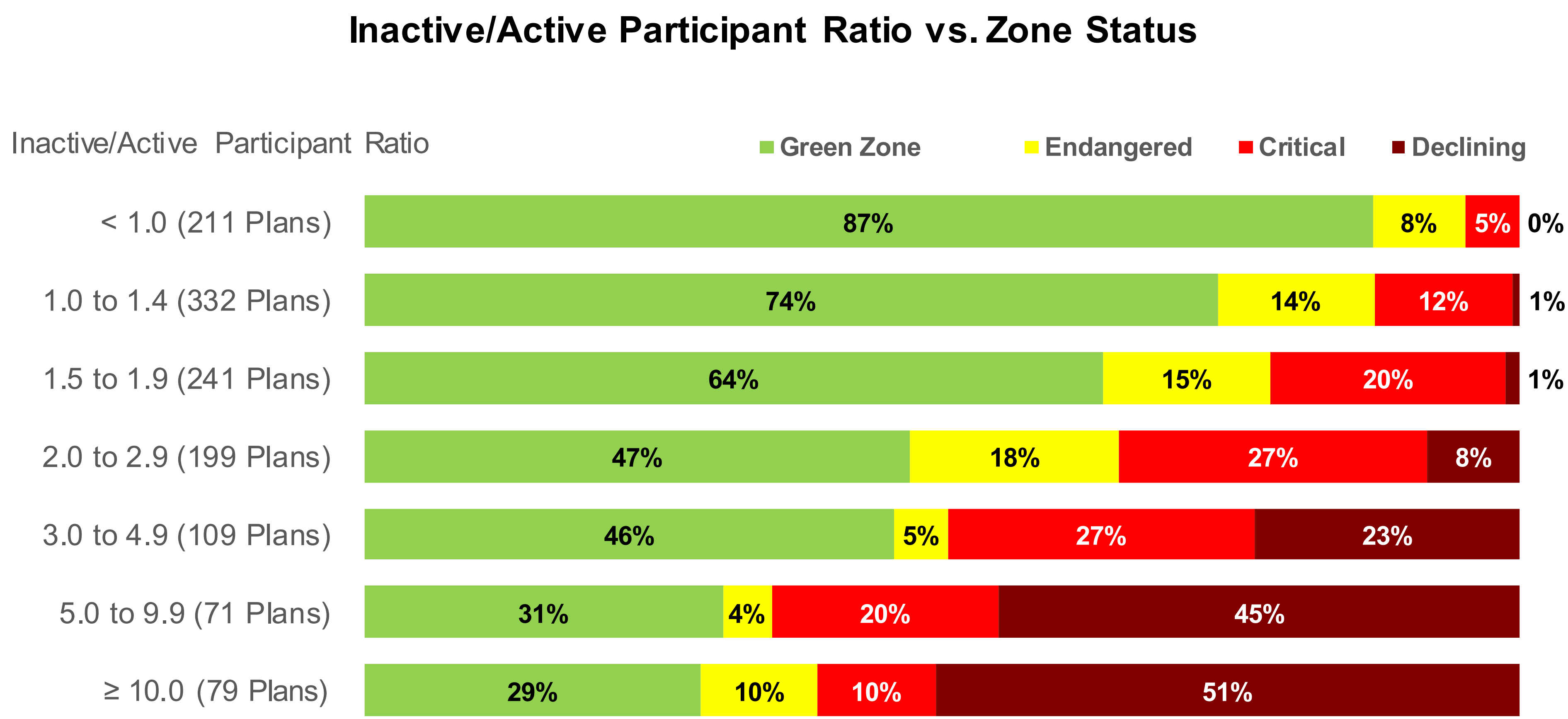
	All Industries	Construction	Service	Retail/Food	Transportation	Manufacturing	Entertainment
Total Participants	10.7 Million	4.1 Million	1.9 Million	1.7 Million	1.7 Million	1.0 Million	0.4 Million
Green Zone	56%	64%	55%	47%	52%	43%	81%
Endangered	12%	25%	1%	4%	6%	1%	5%
Critical	20%	11%	40%	41%	5%	5%	13%
Declining	12%	1%	3%	9%	36%	51%	0%

Percentages may not add, due to rounding.

For simplicity, certain industries and trades are grouped as follows:
- Transportation includes trucking and freight, warehouse workers, bakery drivers, and maritime
- Manufacturing includes bakery workers, printing, energy, mining, and agriculture
- Service includes hospitality, healthcare, education, and communications

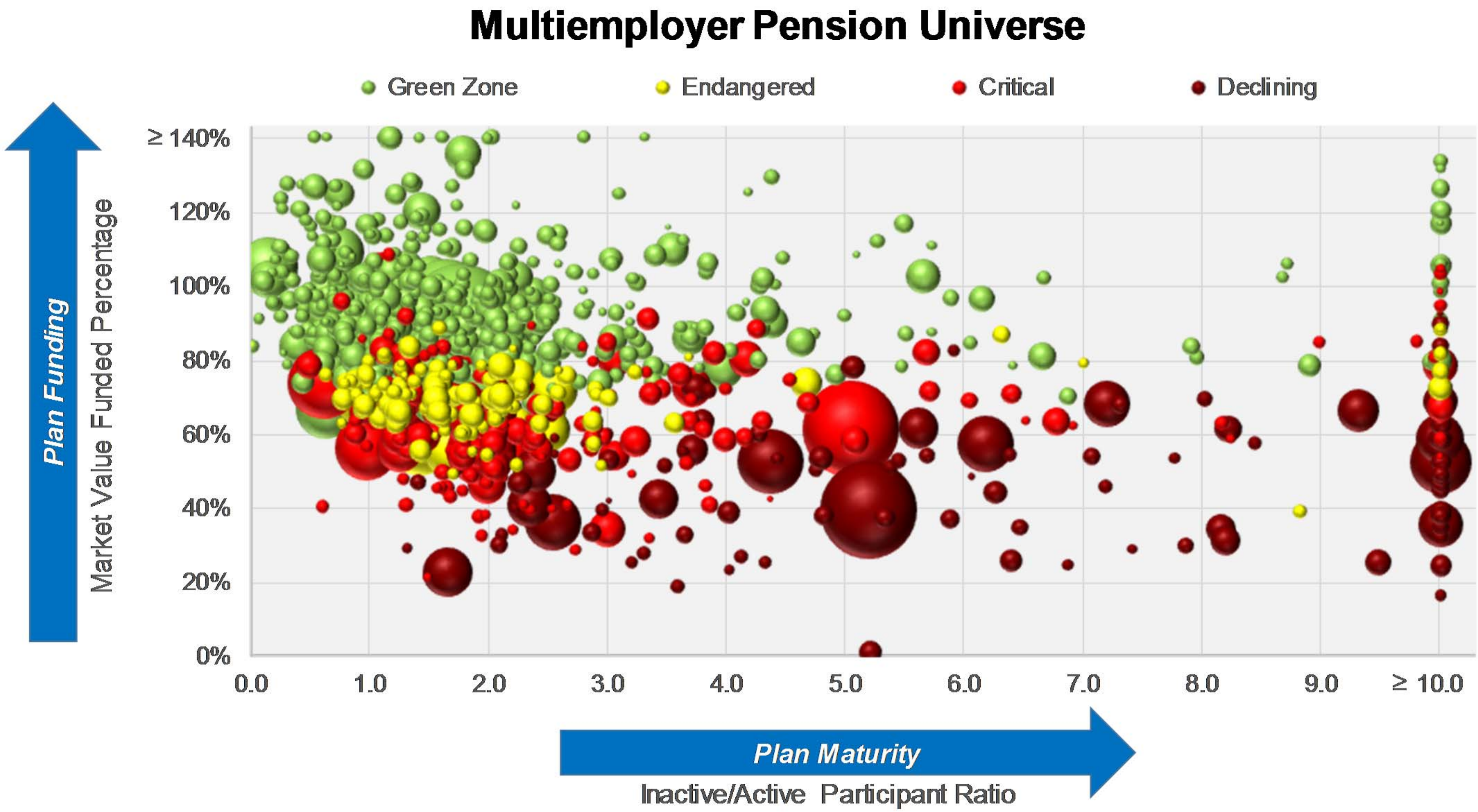
Source: Segal Consulting analysis of Form 5500 data for plan years ending in 2016. Zone status applies to plan years ending in 2017.

Plan Maturity vs. Zone Status



Source: Segal Consulting analysis of Form 5500 data for plan years ending in 2016. Zone status applies to plan years ending in 2017.

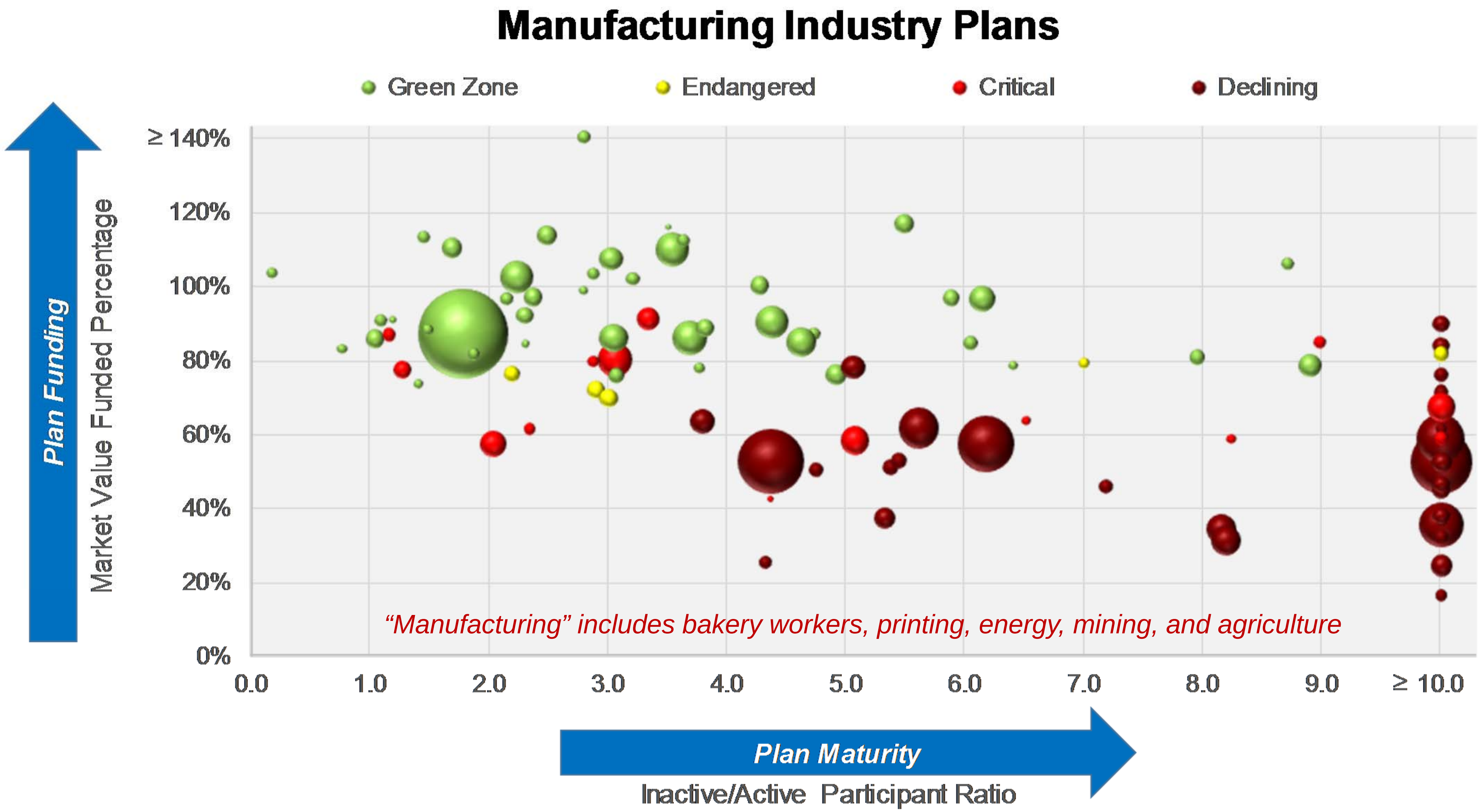
Multiemployer Universe: All Plans



Plan Count: 1,242

Source: Segal Consulting analysis of Form 5500 data for plan years ending in 2016. Zone status applies to plan years ending in 2017.

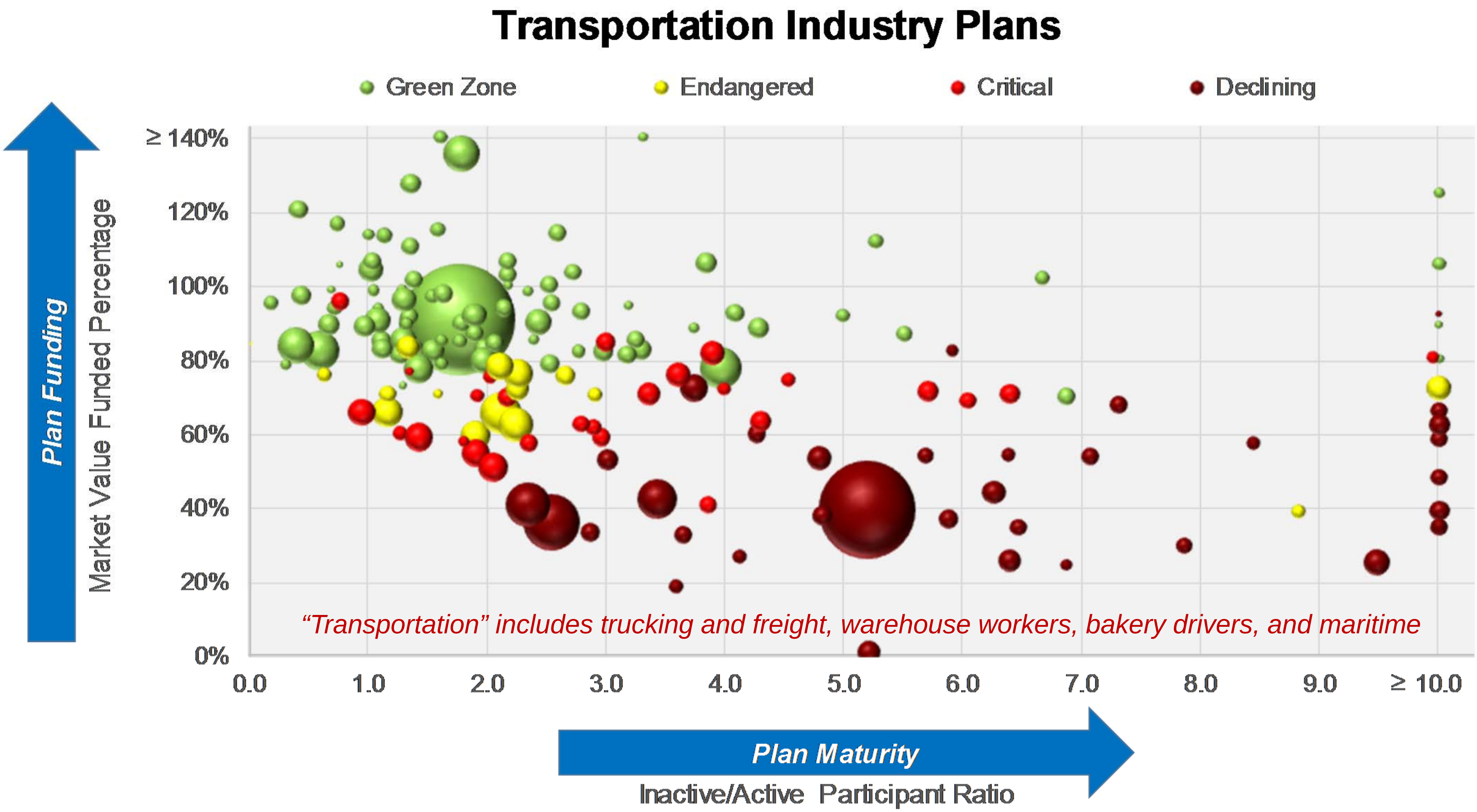
Multiemployer Universe: Manufacturing Industry



Plan Count: 101

Source: Segal Consulting analysis of Form 5500 data for plan years ending in 2016. Zone status applies to plan years ending in 2017.

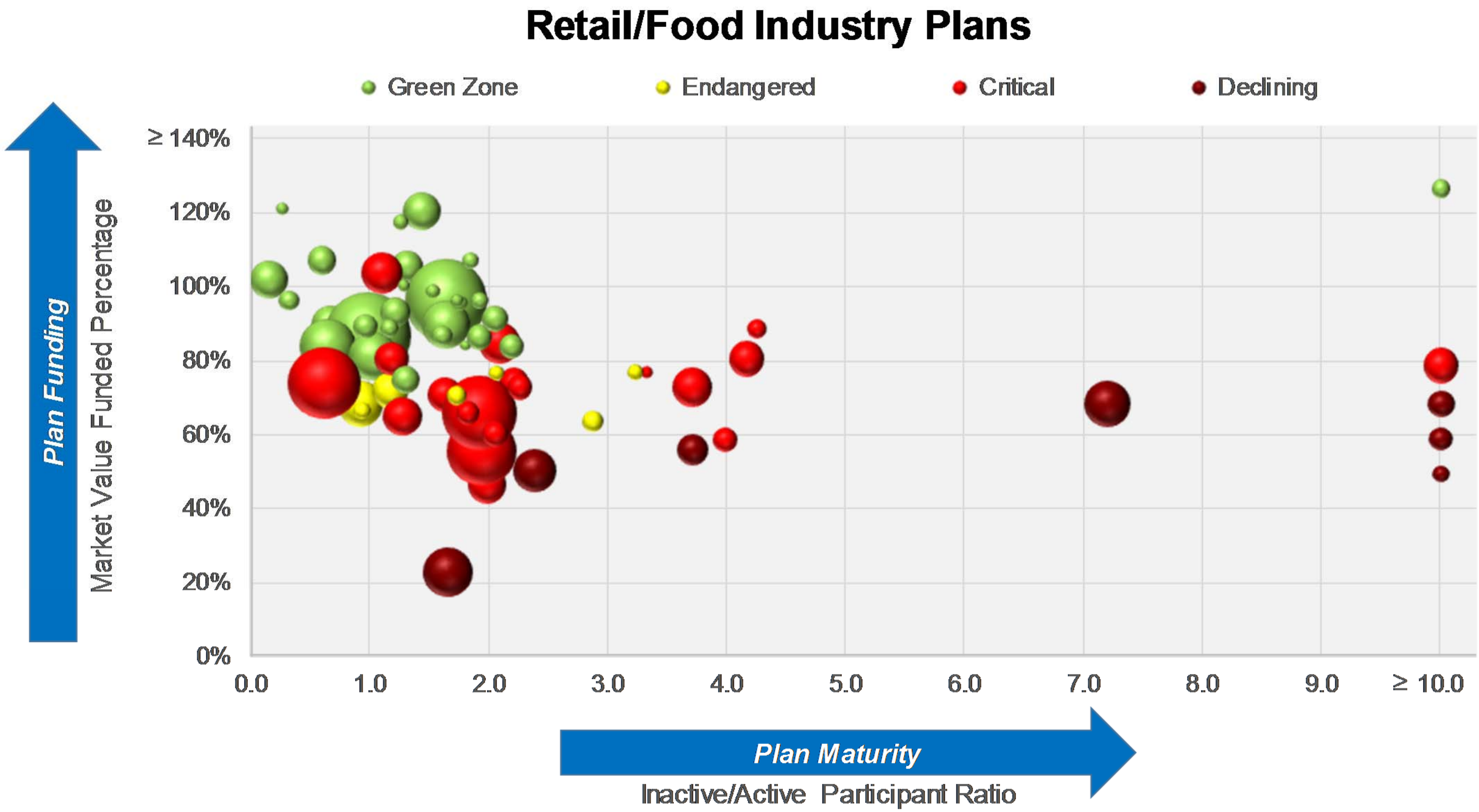
Multiemployer Universe: Transportation Industry



Plan Count: 173

Source: Segal Consulting analysis of Form 5500 data for plan years ending in 2016. Zone status applies to plan years ending in 2017.

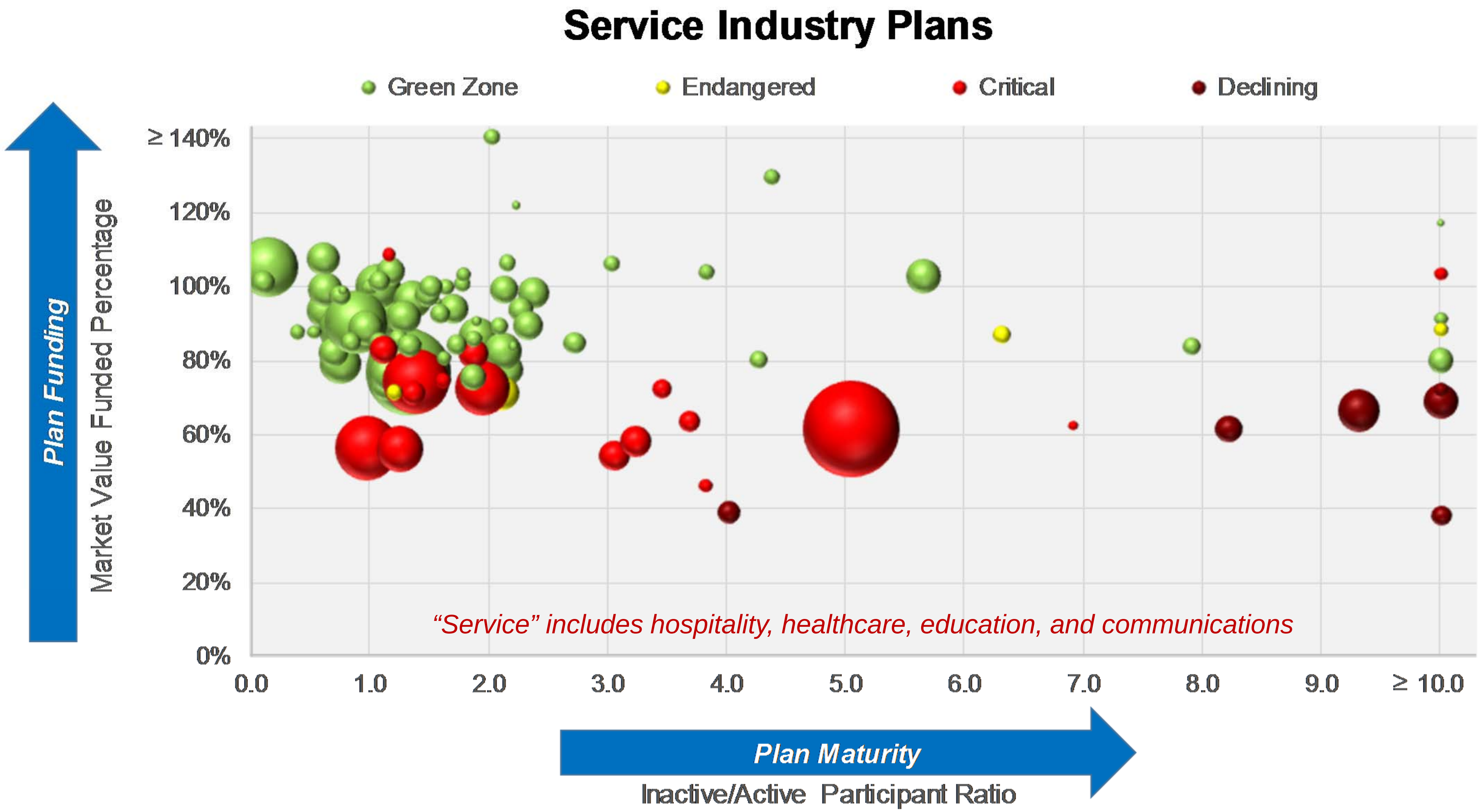
Multiemployer Universe: Retail/Food Industry



Plan Count: 67

Source: Segal Consulting analysis of Form 5500 data for plan years ending in 2016. Zone status applies to plan years ending in 2017.

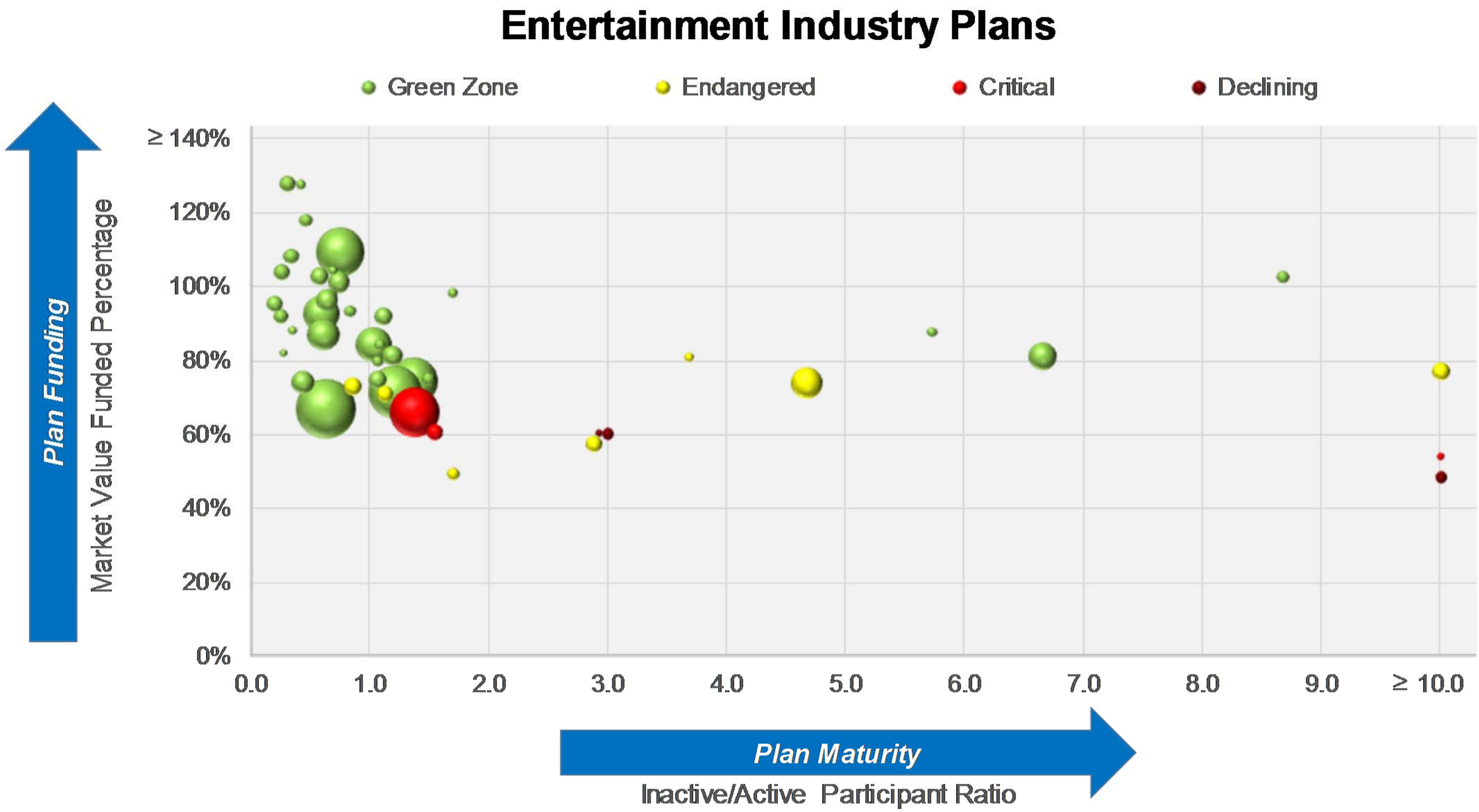
Multiemployer Universe: Service Industry



Plan Count: 95

Source: Segal Consulting analysis of Form 5500 data for plan years ending in 2016. Zone status applies to plan years ending in 2017.

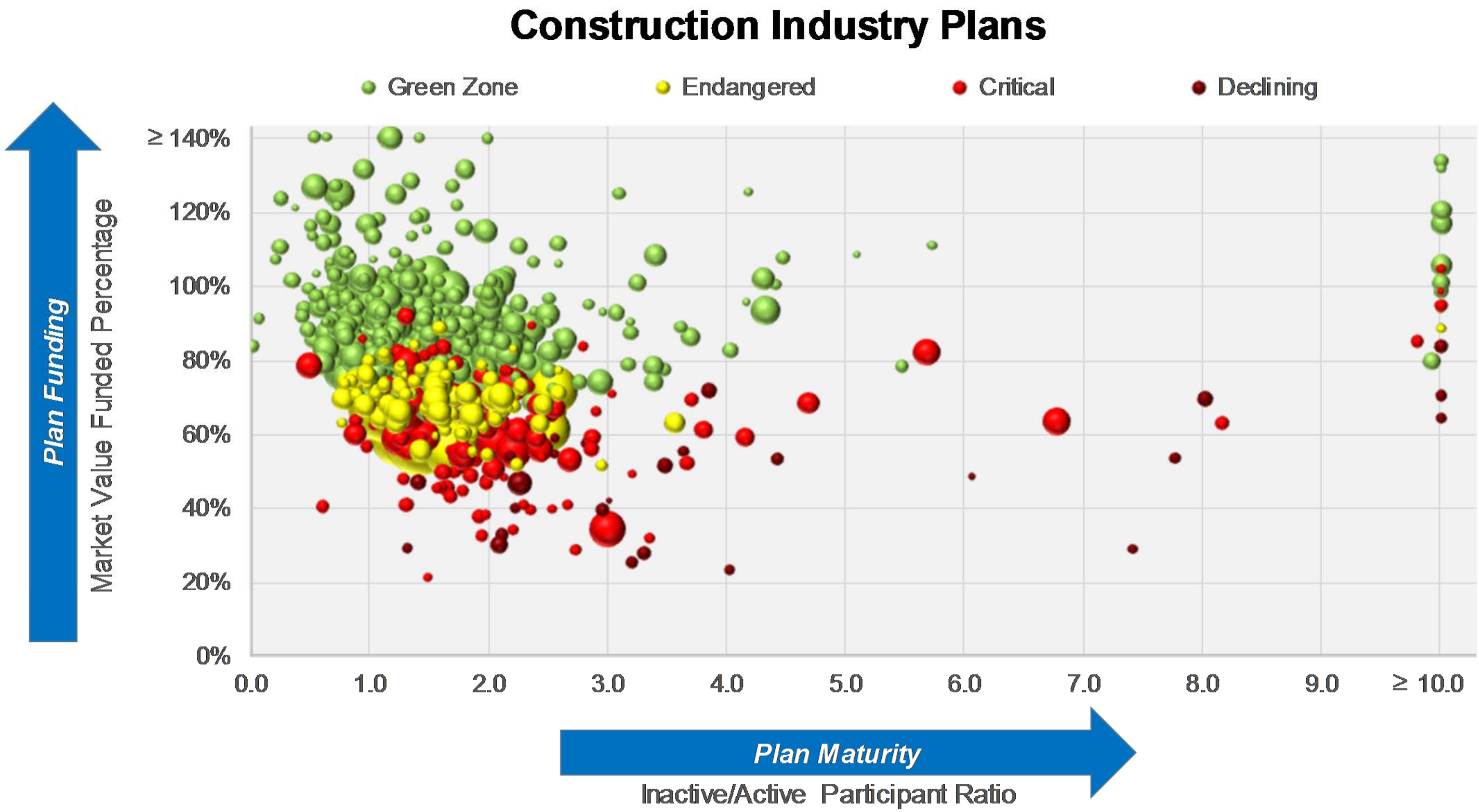
Multiemployer Universe: Entertainment Industry



Plan Count: 48

Source: Segal Consulting analysis of Form 5500 data for plan years ending in 2016. Zone status applies to plan years ending in 2017.

Multiemployer Universe: Construction Industry



Plan Count: 758

Source: Segal Consulting analysis of Form 5500 data for plan years ending in 2016. Zone status applies to plan years ending in 2017.

Technical Notes

- Results are based on publicly-available Form 5500 data for plan years ending in 2016
  - Results exclude plans that are terminated, insolvent, or missing data
  - Funded percentage is estimated and based on market value of assets
  - Zone status is based on published notices or may be estimated based on trends
- Certain industries and trades are grouped for simplicity:
  - “Transportation” includes trucking, warehouse workers, bakery drivers, and maritime
  - “Manufacturing” includes bakery workers, printing, energy, mining, and agriculture
  - “Service” includes hospitality, healthcare, education, and communications
- “Bubble” graphs show distribution of plans by size, zone status, funding, and plan maturity
  - Each multiemployer pension plan is represented by a “bubble”
  - Size of bubble corresponds to number of participants covered under plan
  - Color of bubble corresponds to zone status for plan year ending 2017
  - The higher the bubble, the better funded the plan is
  - The farther to the right the bubble, the more mature the plan is
  - Plan maturity is represented by ratio of inactive participants to active participants
  - Plans over 140% funded or with inactive/active participant ratios over 10.0 are grouped

Assessing a Plan's Health

Assessing a Plan’s Health

What are current and projected funding levels?

- PPA zone status
- Projected funded percentage

Are current actuarial assumptions reasonable?

- Investment returns / valuation interest rate
- Mortality, other demographic assumptions
- Administrative expenses / PBGC premium increases

How resilient is the plan to adverse experience?

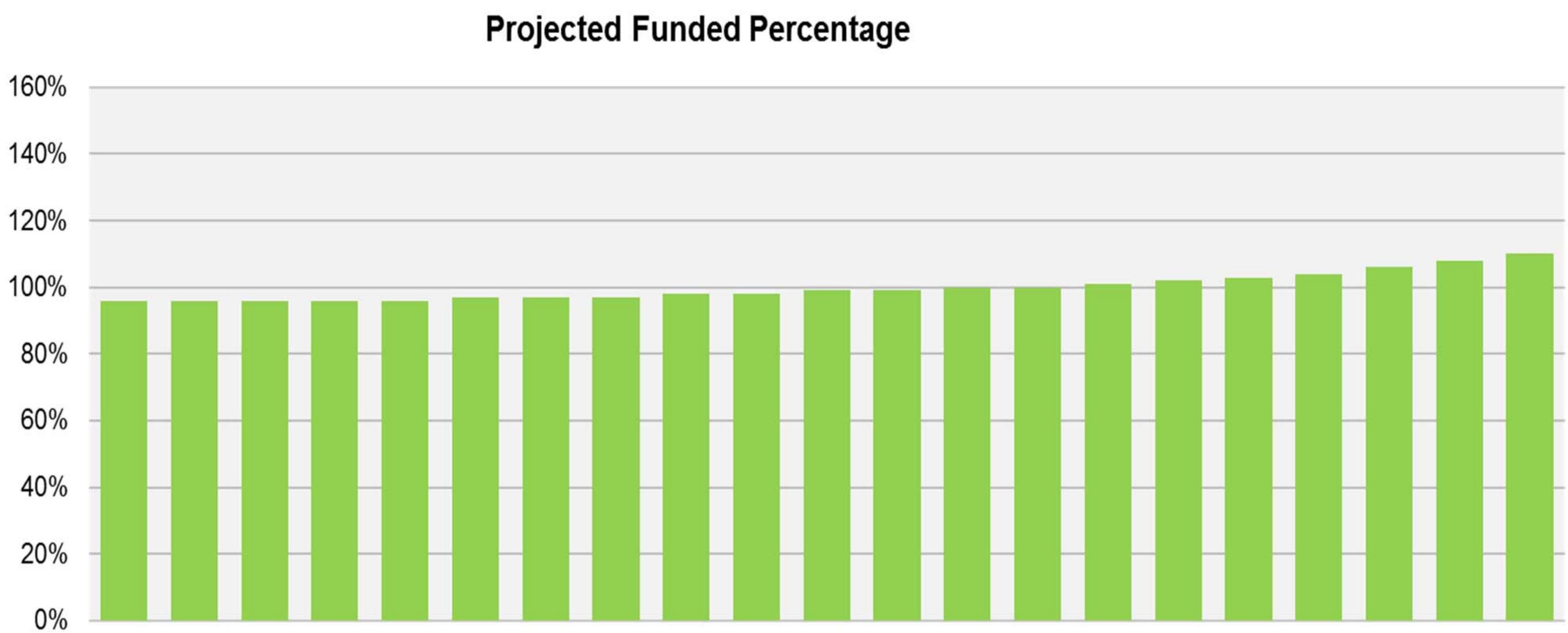
- In other words, how highly leveraged is the plan?
- Following high-level analysis focuses on investment return sensitivities
  - Also worth considering contribution rates, work levels, expenses, etc.

Case Study: Two Plans

Key Results at 1/1/2018	Plan A	Plan B
Zone Status	**Green Zone**	**Green Zone**
Valuation Interest Rate	7.5%	7.5%
Funded Percentage	96%	82%
Inactive/Active Participant Ratio	2.2	1.4
Contributions/Assets	2.0%	6.2%

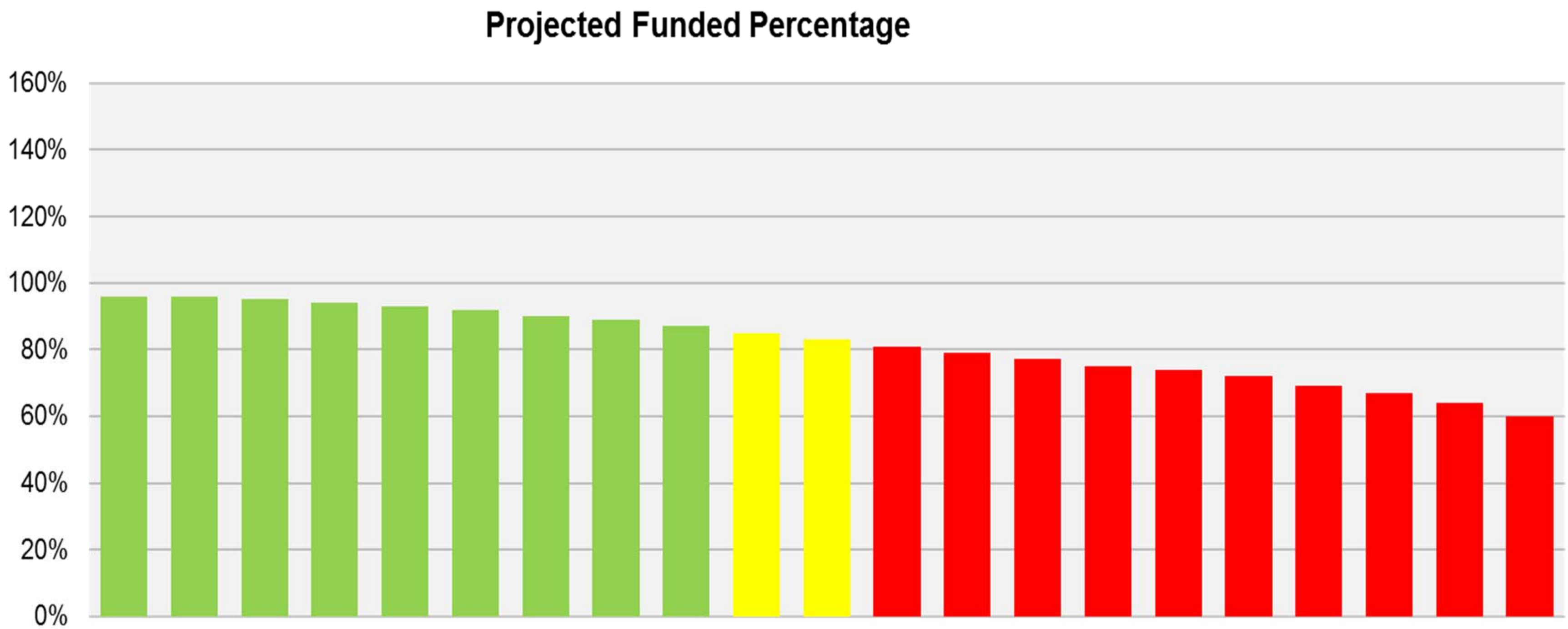
- **Anecdotal history**
  - Plan A: “Green zone” since 2008; some corrective action taken in recent years; contributions barely cover normal cost; some work level declines in recent years (trustees believe they have stabilized)
  - Plan B: Recently emerged from endangered status; significant increases to contributions in recent years; reduced future accrual rate; relatively stable work levels in recent years

Plan A: 7.5% Returns in All Future Years



Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Assumed Return	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%
Funded Percentage	96%	96%	96%	96%	96%	97%	97%	97%	98%	98%	99%	99%	100%	100%	101%	102%	103%	104%	106%	108%	110%

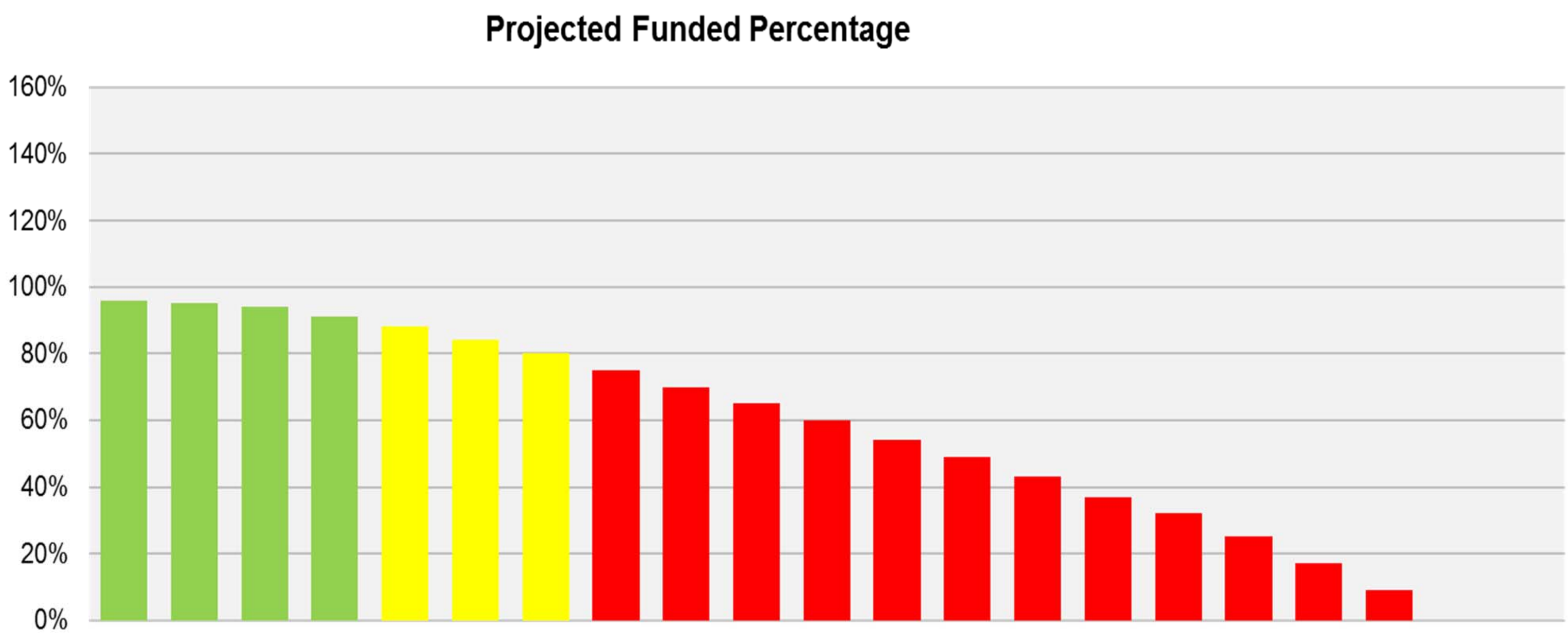
Plan A: 50th Percentile Returns for Next 10 Years



Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Assumed Return	6.2%	6.2%	6.2%	6.2%	6.2%	6.2%	6.2%	6.2%	6.2%	6.2%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%
Funded Percentage	96%	96%	95%	94%	93%	92%	90%	89%	87%	85%	83%	81%	79%	77%	75%	74%	72%	69%	67%	64%	60%

6.2% = 50th percentile expected returns over next 10 years for this plan's asset allocation, considering capital market assumptions of plan's investment consultant and the 2017 survey of capital market assumptions by Horizon Actuarial Services, LLC

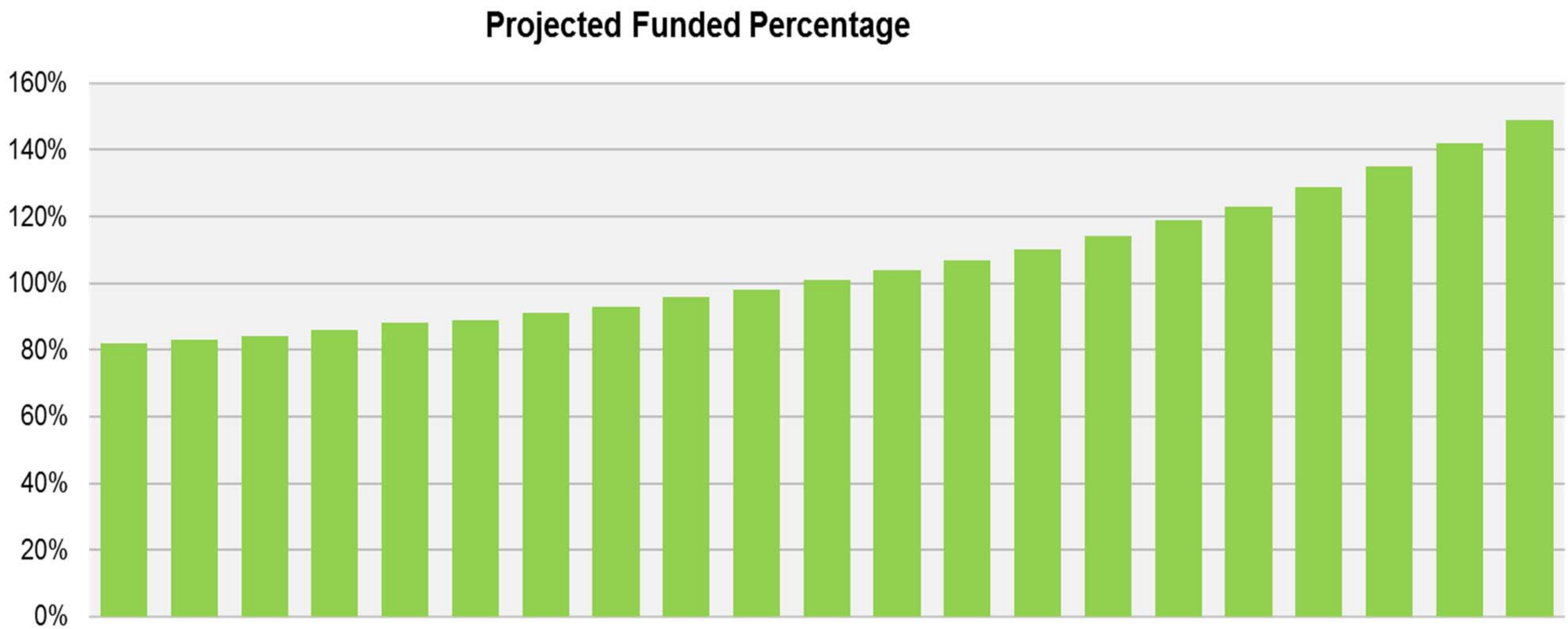
Plan A: 25th Percentile Returns for Next 10 Years



Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Assumed Return	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%
Funded Percentage	96%	95%	94%	91%	88%	84%	80%	75%	70%	65%	60%	54%	49%	43%	37%	32%	25%	17%	9%	0%	0%

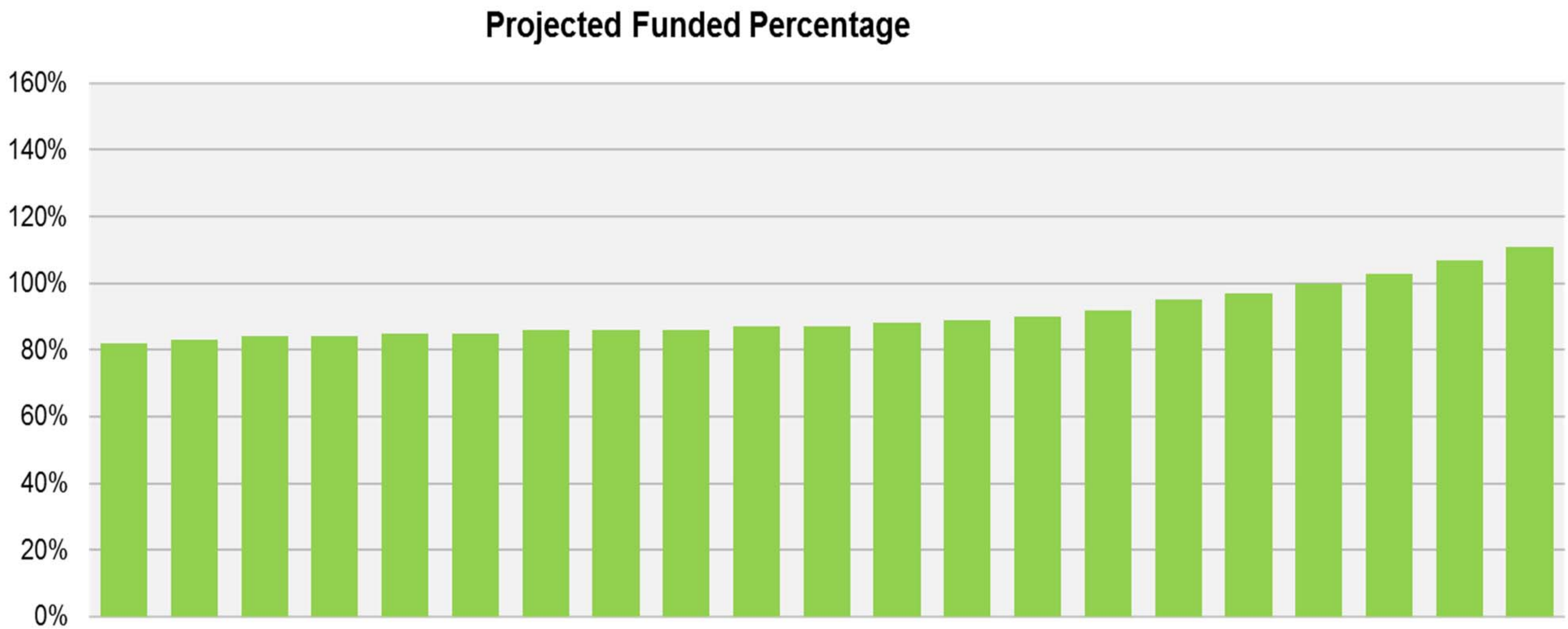
3.9% = 25th percentile expected returns over next 10 years for this plan's asset allocation, considering capital market assumptions of plan's investment consultant and the 2017 survey of capital market assumptions by Horizon Actuarial Services, LLC

Plan B: 7.5% Returns in All Future Years



Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Assumed Return	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%
Funded Percentage	82%	83%	84%	86%	88%	89%	91%	93%	96%	98%	101%	104%	107%	110%	114%	119%	123%	129%	135%	142%	149%

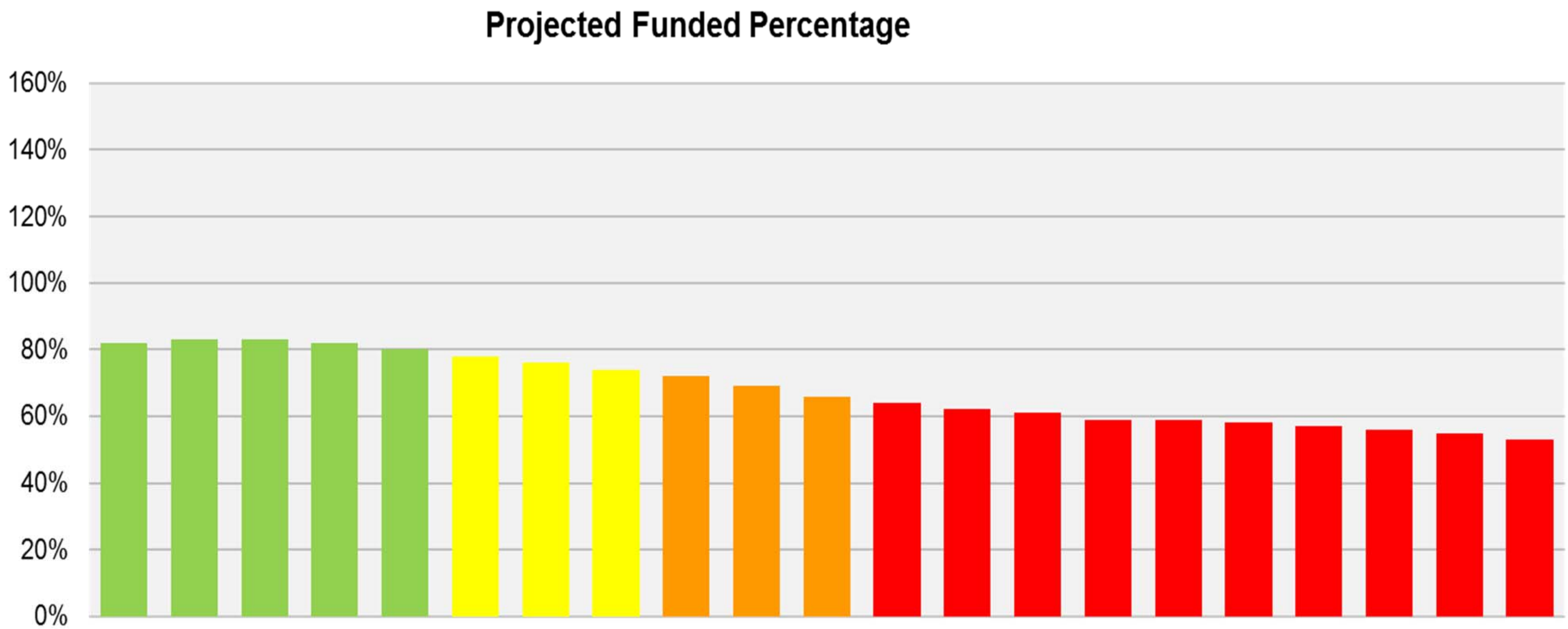
Plan B: 50th Percentile Returns for Next 10 Years



Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Assumed Return	6.2%	6.2%	6.2%	6.2%	6.2%	6.2%	6.2%	6.2%	6.2%	6.2%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%
Funded Percentage	82%	83%	84%	84%	85%	85%	86%	86%	86%	87%	87%	88%	89%	90%	92%	95%	97%	100%	103%	107%	111%

6.2% = 50th percentile expected returns over next 10 years for this plan’s asset allocation, considering capital market assumptions of plan’s investment consultant and the 2017 survey of capital market assumptions by Horizon Actuarial Services, LLC

Plan B: 25th Percentile Returns for Next 10 Years



Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Assumed Return	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%
Funded Percentage	82%	83%	83%	82%	80%	78%	76%	74%	72%	69%	66%	64%	62%	61%	59%	59%	58%	57%	56%	55%	53%

3.9% = 25th percentile expected returns over next 10 years for this plan's asset allocation, considering capital market assumptions of plan's investment consultant and the 2017 survey of capital market assumptions by Horizon Actuarial Services, LLC

Case Study: Summary

Projected Funded Percentage and Zone Status			
Plan Year	**2018** Year 0	**2028** Year 10	**2038** Year 20
Plan A: 7.5% in all future years (baseline)	**96%**	**99%**	**110%**
50th Percentile Returns (6.2%) for 10 Years	**96%**	**83%**	**60%**
25th Percentile Returns (3.9%) for 10 Years	**96%**	**60%**	**0%**
Plan B: 7.5% in all future years (baseline)	**82%**	**101%**	**149%**
50th Percentile Returns (6.2%) for 10 Years	**82%**	**87%**	**111%**
25th Percentile Returns (3.9%) for 10 Years	**82%**	**66%**	**53%**

Strategies for Healthy Plans

Strategies for Healthy Plans

Strengthen funding policy?

- Set limits on when benefits can be improved
- Set triggers for when corrective action must be taken
- Build up a cushion to protect against possible adverse experience

Realign assets with liabilities?

- Coordinate investment policy with maturing plan liabilities
- Immunize (de-risk) portions of the investment portfolio
- More attainable as funding levels improve and interest rates rise

Implement a variable plan design?

- Vary benefit levels based on investment experience
- Can significantly reduce investment risk (which increases as plans mature)
- Variable plan design is prospective only; legacy funding obligations remain

Funding Policies

All plans must have a funding policy

- Written agreement to meet funding objectives
- Under ERISA, must be reported on annual funding notice

Funding policy considerations

- Can help plan sponsors manage risk, achieve funding stability
- Removes subjectivity from benefit/funding decisions
- Each benefit change requires a plan amendment
- Does not completely eliminate risk

Funding Policies: Sample Provisions
Must meet ERISA minimum requirements
Reduce future accrual rate if projected to be less < 100% funded in 15 years
Cannot improve benefits unless projected to be ≥ 120% funded in 15 years

Liability Immunization

Illustrative examples for two sample plans

- Immunize either 50% or 100% of retiree liabilities
- Evaluate different market immunization rates: 3.00%, 4.50%, 6.00%
- Immunization “cost” is percentage points of actuarial accrued liability at 7.50% interest rate

Immunization Strategy		Scenario A		Scenario B		Scenario C	
Immunization Interest Rate	N/A	3.0%		4.5%		6.0%	
% of Retiree Liability	None	50%	100%	50%	100%	50%	100%
Plan #1	*Normalized Actuarial Liability*						
Active	27.1	27.1	27.1	27.1	27.1	27.1	27.1
Inactive Vested	23.4	23.4	23.4	23.4	23.4	23.4	23.4
Retired	49.4	58.7	67.9	56.2	62.9	53.9	58.3
Total	100.0	109.2	118.4	106.7	113.5	104.4	108.8
Immunzation "Cost"	**N/A**	**9.2**	**18.4**	**6.7**	**13.5**	**4.4**	**8.8**
Plan #2	*Normalized Actuarial Liability*						
Active	36.0	36.0	36.0	36.0	36.0	36.0	36.0
Inactive Vested	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Retired	57.0	71.1	85.2	66.9	76.8	63.1	69.1
Total	100.0	114.1	128.2	109.9	119.7	106.1	112.1
Immunzation "Cost"	**N/A**	**14.1**	**28.2**	**9.9**	**19.7**	**6.1**	**12.1**

Variable Plan Designs: An Overview

- Variable plans provide lifetime income to participants, while reducing risk to plan sponsor
- Legacy plan benefits are protected and must still be funded
- No free lunch: benefit protections and reduced volatility come with higher costs
- Various transition considerations (e.g., one plan or two, coordination with legacy benefits)
- “Composite plan” is not yet permitted under current U.S. law; other options are

Plan Design	Key Features
Variable Accrual	• Traditional defined benefit plan with variable ***future*** accrual rate • Accrual rate adjusts each year, usually based on asset returns • Benefits are fixed once they have been accrued • Funding risk increases over time as more benefits become fixed
Variable Annuity	• Hybrid defined benefit plan with variable ***total*** benefit • Benefit often defined as units; unit value changes based on asset returns • Caps and floors can reduce benefit volatility (but increase risk to plan) • Benefit at retirement can be fixed (more risk) or remain variable (less risk)
Composite	• Technically not a defined benefit plan; not yet permitted under U.S. law • Mandatory ***realignment program*** if projected funding < 120% in 15 years • Possible corrective measures grouped into tiers; retiree benefits cut as last resort • Legacy plan funding requirements are clearly defined • No withdrawal liability, no PBGC guarantees, no PBGC premiums

Variable Accrual Plan: Overview

- **Future benefit accrual rate adjusts each year**
  - Usually based on asset returns for prior year(s)
- **Benefits are fixed once they have been accrued**
  - Total benefit is sum of each year's accrual
  - Benefit remains fixed in retirement
- **Illustrative example:**

Prior Year Investment Return	Prior Plan Accrual Rate for Year	Variable Accrual Rate for Year
< 0.0%	$100	$0
0.0% to 2.9%	$100	$30
3.0% to 5.9%	$100	$70
6.0% to 8.9%	$100	$100
≥ 9.0%	$100	$140

Variable Annuity Plan: Overview

Basic design considerations

- What is hurdle rate?
- Is there a floor benefit?
- Are retiree benefits fixed or variable at retirement?
  - If variable, is there a cap on annual increases to buffer against decreases?
  - Note: variable benefit will likely provide inflation protection
- How to coordinate with legacy benefits ("A+B" or wear-away)?

Annual adjustment = (1 + actual rate) / (1 + hurdle rate)

- Illustrative example: hurdle rate = 5.0%

Year 1 Unit Value	Year 1 Asset Return	Year 2 Unit Value
$100.00	**10.0%**	$100.00 x (1.10/1.05) = $104.76
	5.0%	$100.00 x (1.05/1.05) = $100.00
	0.0%	$100.00 x (1.00/1.05) = $95.24

Questions?