



IT TAKES VISION

Variable Benefit Plans in Depth

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Agenda

- The case for variable plans
- How variable plans work
- Smoothing variable benefits
- Regulatory situation
- How to explore variable plans



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The case for variable plans

Both predominant designs have fatal flaws

- Traditional defined benefit plans
 - Pros
 - Provide lifelong benefits
 - Cues participants to retire
 - Cons
 - Vulnerable to underfunding, especially once mature
 - Has resulted in massive intergenerational risk transfer
 - Has resulted in plan failures (with more to come)
- Defined contribution plans
 - Pros
 - Stable contributions
 - Cons
 - Difficult to provide lifelong income
 - Difficult for individuals to manage lump sums
 - Participants may delay retirement

Challenges facing defined benefit plans

- The 2000's revealed some systemic issues with “mature” DB plans.
- Similar to individuals, plans are less able to absorb investment losses as they mature.
 - Easy to deal with investment losses when assets are smaller and contributions are large relative to assets and benefit payments.
 - Difficult to deal with investment losses when contributions are smaller relative to assets and benefit payments.
- Problems occur when Plans are less than 100% funded.

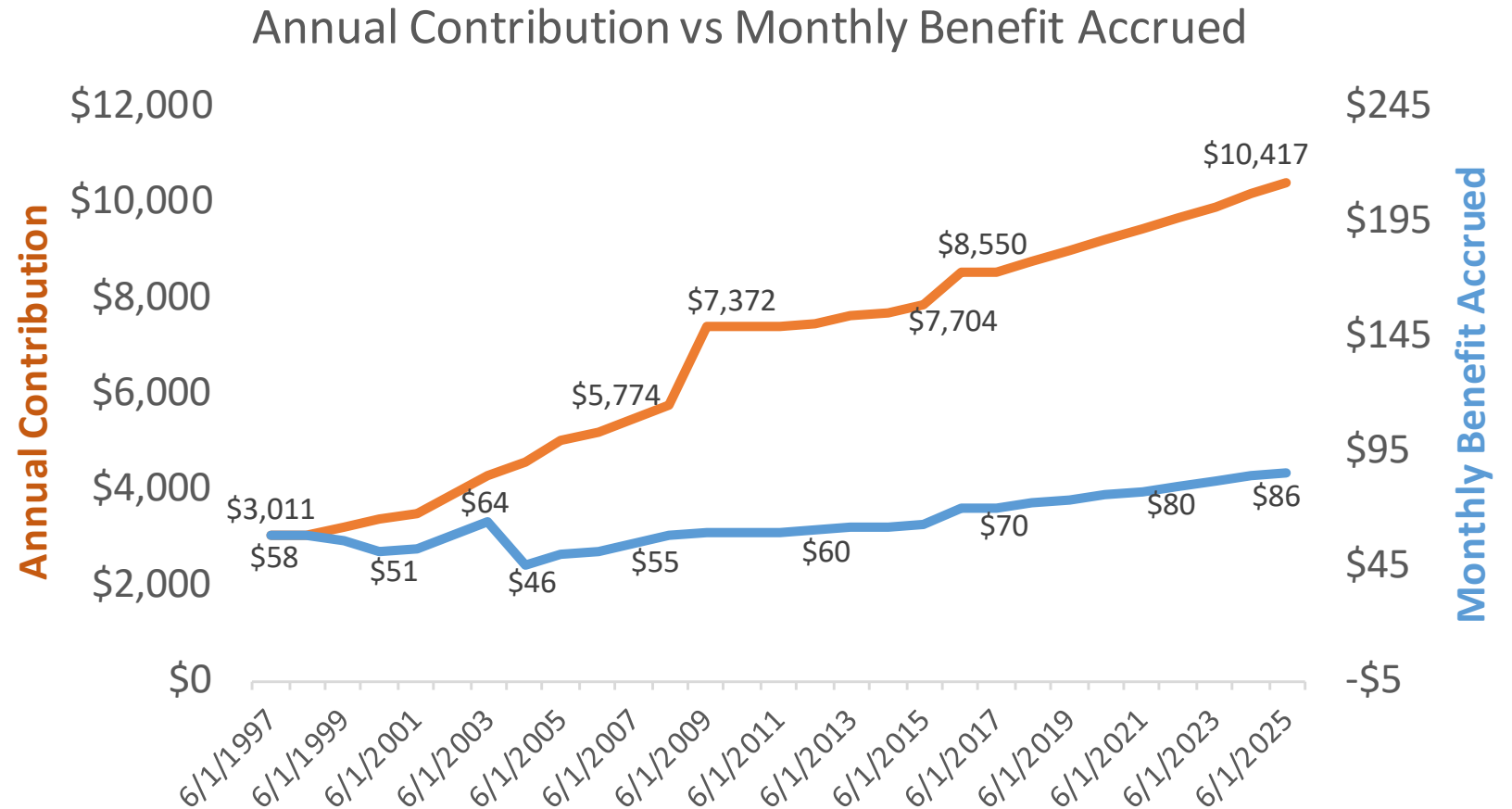
Challenges facing defined benefit plans

- Not all plans will recover.
- And recovery didn't come without.
 - Significant contribution increases.
 - Significant benefit decreases through much of the system.
- Because the major levers have all been pulled, the system is more vulnerable to future downturns than before 2008.
- The following is true over the life of a Plan:

$$\text{Contributions} + \text{Investment Earnings} = \text{Benefits} + \text{Expenses}$$

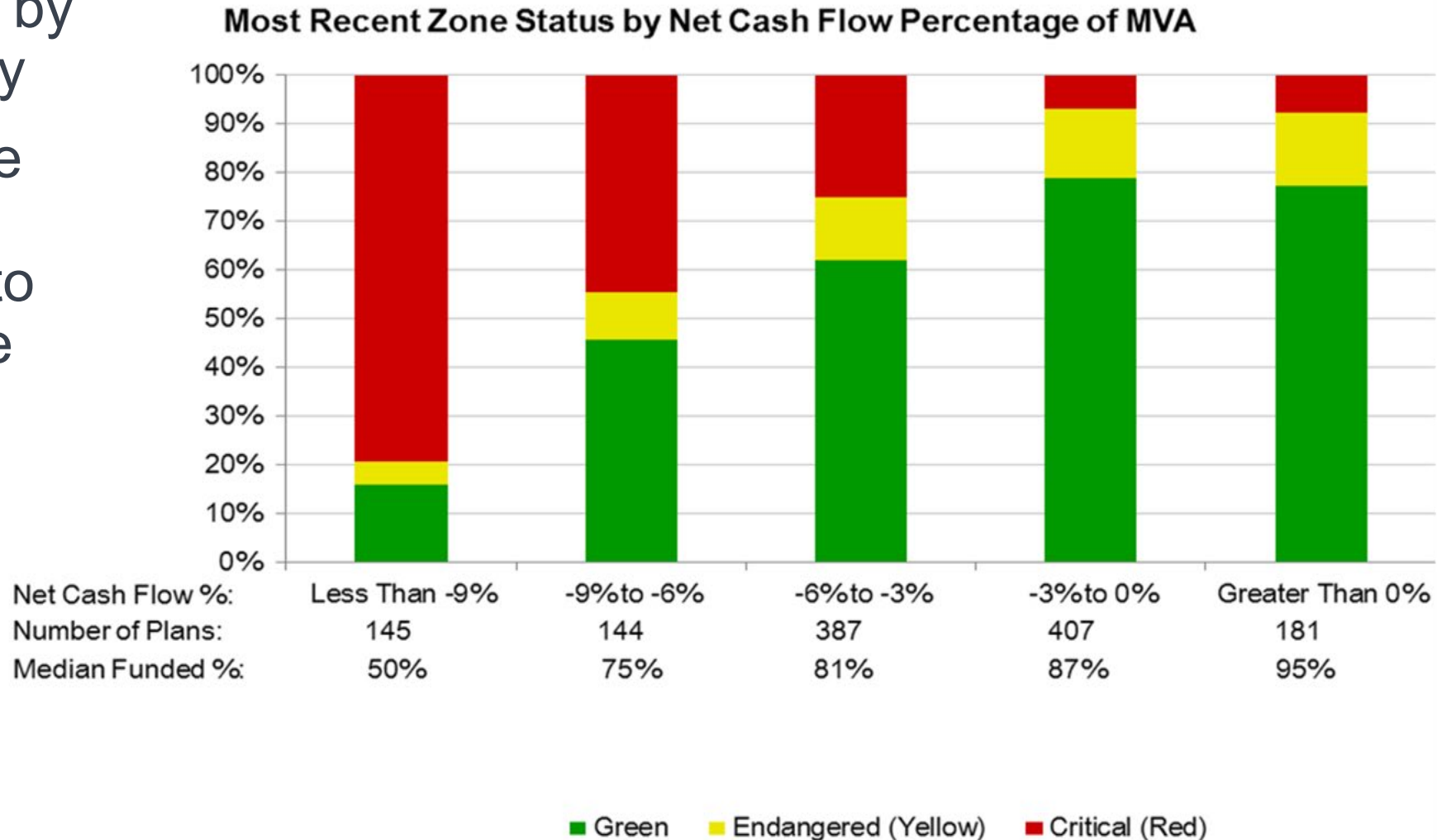
Challenges facing defined benefit plans

- Intergenerational risk transfer
- Example green plan (see graph): Contributions 2.3 times larger per dollar of benefit than in the past
- Example all reasonable measure plan: 24 times larger than in the past



Challenges facing defined benefit plans

- Zone status by plan maturity
- More mature plans much more likely to be in trouble

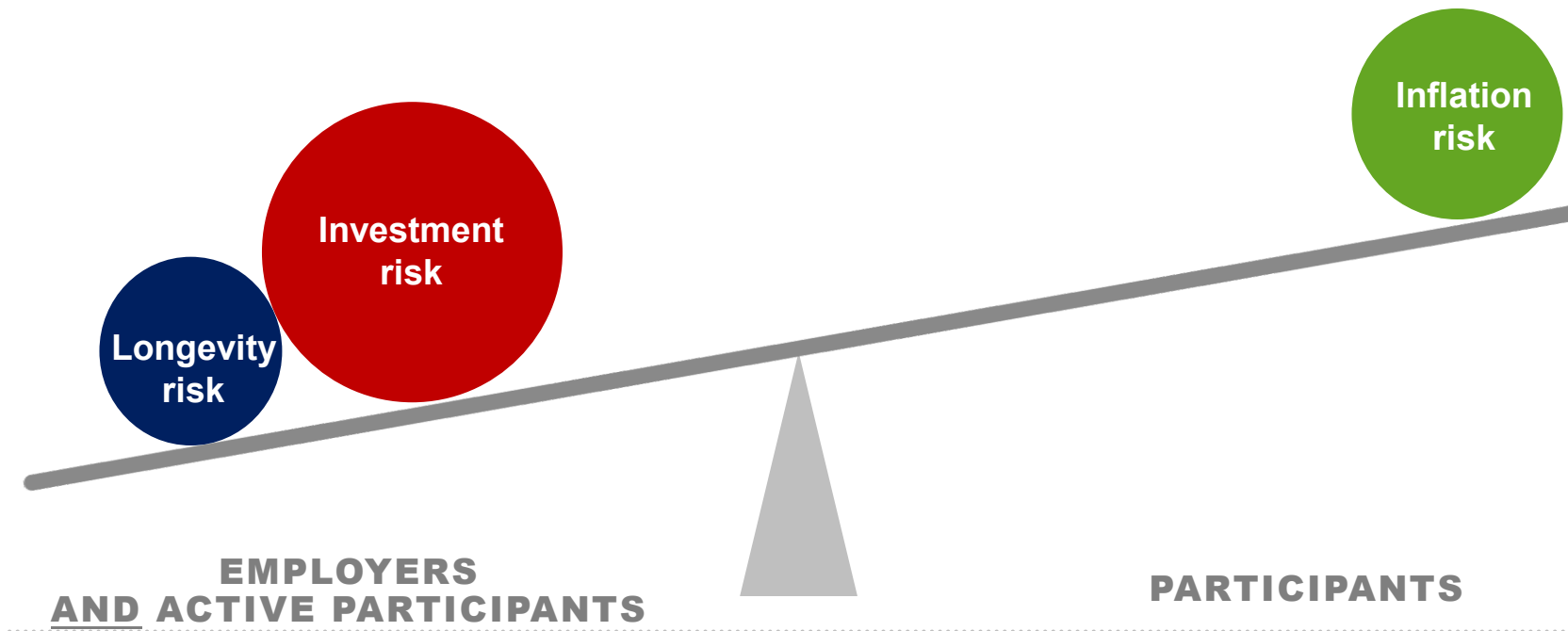


Retirements risks

Risk sharing in traditional DB plan, **current funding rules**

Plan Sponsor bears **most** of the risks.

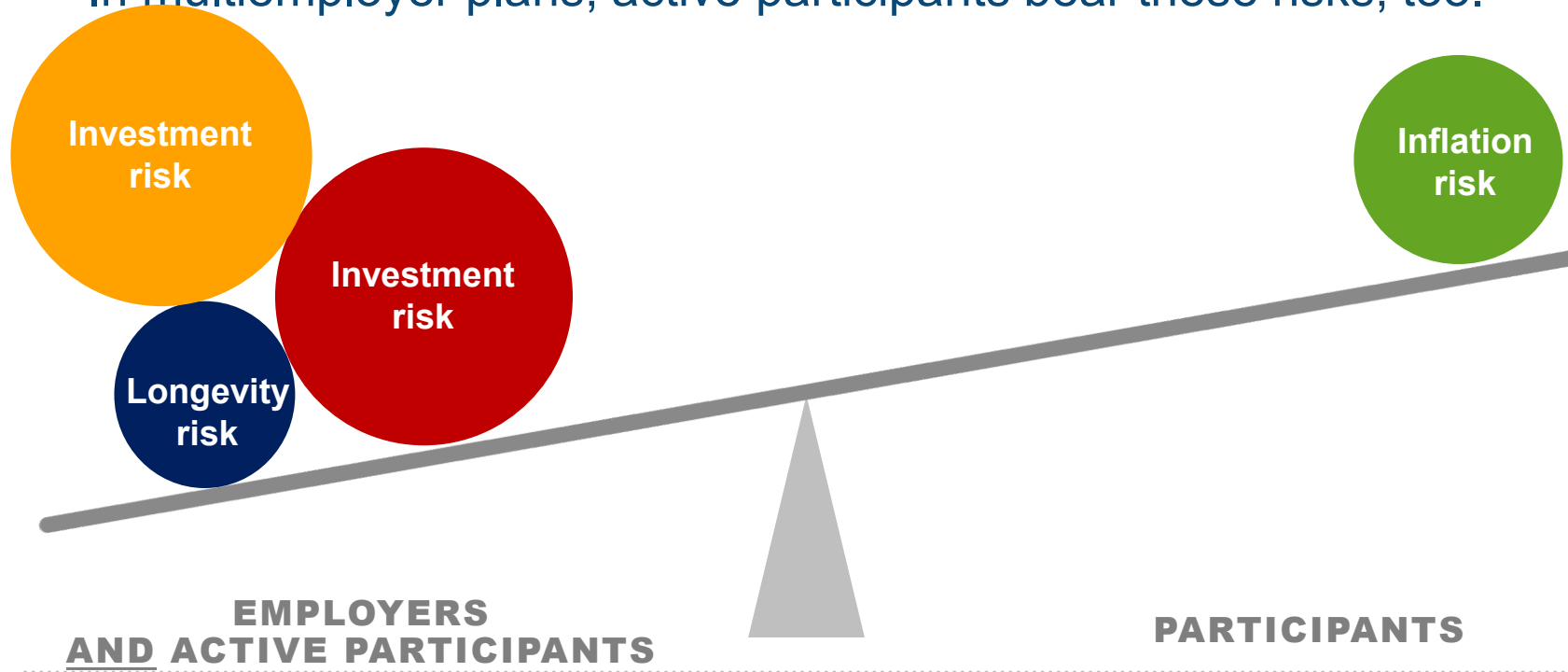
- In multiemployer plans, active participants bear these risks, too.



Retirements risks

Risk sharing in traditional DB plan, **funding rules like single employer plans**

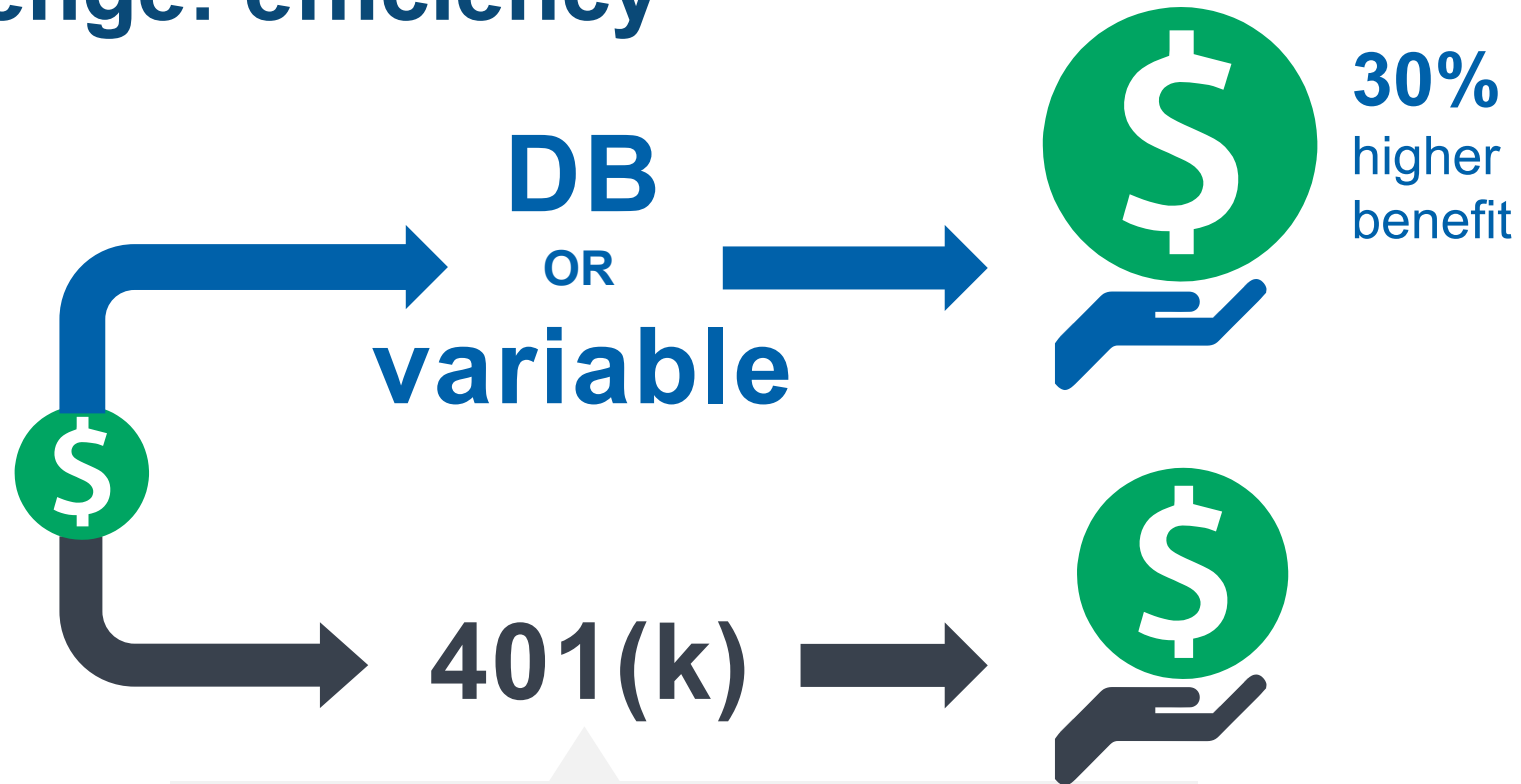
- Plan Sponsor bears most of the risks.
- In multiemployer plans, active participants bear these risks, too.



Challenges facing defined contribution plans

- Difficult to produce lifelong income
- Behavioral economics
 - We are bad at investing
 - We are bad at managing a lump sum
- Lack of longevity pooling
 - Longevity risk is difficult for individuals (over-spend or under-spend)
 - Annuitization is expensive
- If trustees do investing
 - Investment decisions are good
 - Risk profile (asset allocation) doesn't meet all participants needs

DC challenge: efficiency



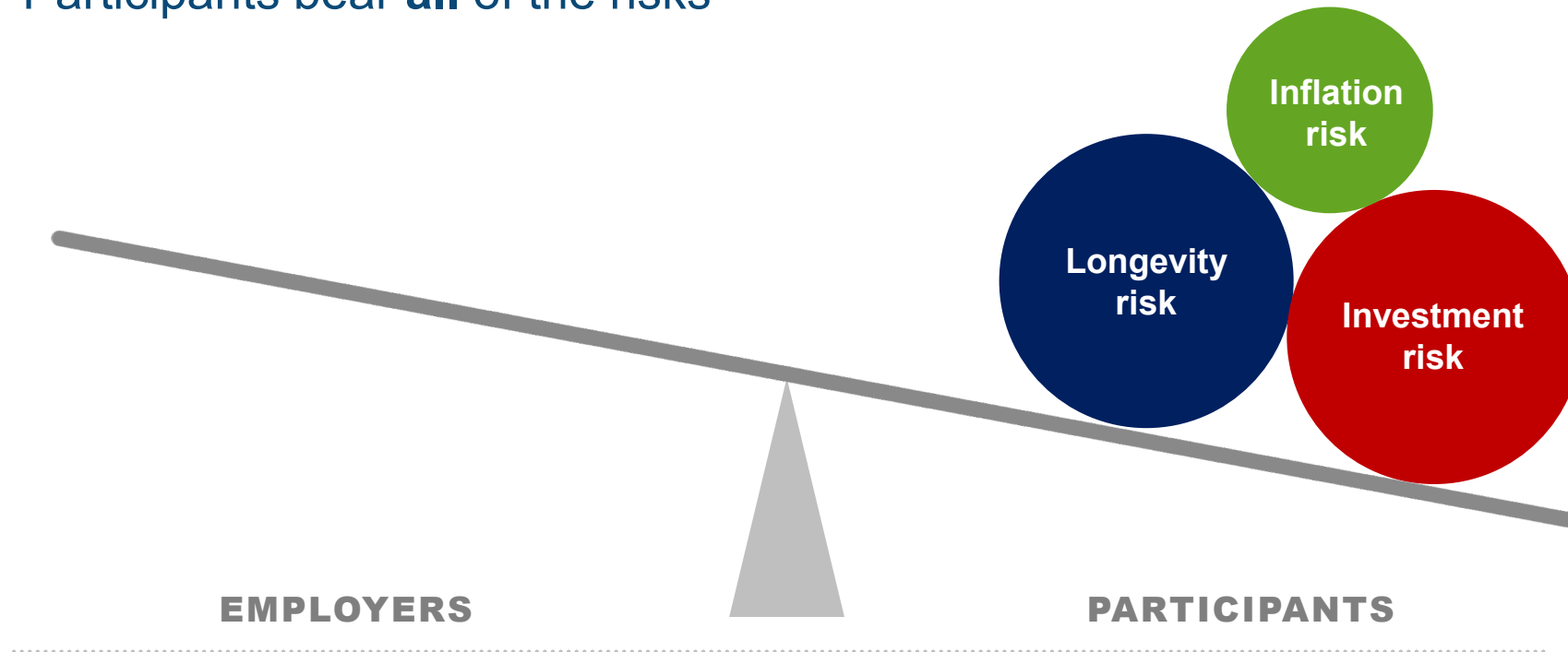
Value of 401(k) benefits is eroded by:

- Higher fees in retirement
- Lack of longevity pooling
- Lack of professional management
- Invest conservatively as we age

Retirements risks

Risk sharing in DC plan

- Plan Sponsor bears **none** of the risks
- Participants bear **all** of the risks



What if “DB or DC” is a false choice?

Rethinking retirement plans

What would we want if we could start from scratch? A plan that:

- Stays fully funded in all market conditions
- Has predictable contributions
- Provides benefits with lifelong income and inflation protection
- Facilitates an orderly exit from the workforce

What if “DB or DC” is a false choice?

Rethinking retirement plans

What about a plan that offers:

- Stable, predictable contributions for the employers, like a DC plan
- Lifelong retirement income for participants, like a DB plan, plus inflation protection



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How variable plans work

The basic variable annuity design

- Variable Annuity Plan (basic VAP) legal since 1953
- It is not an insurance product
- Plan stays funded in all market environments

Basic variable annuity overview

- Participant earns a benefit for each year of service
- Employer funds the benefit earned
- Benefit paid in retirement as an annuity (either participant only or joint and survivor with spouse)
- Accruals go up AND down based on the Fund's actual return on assets for actives AND retirees
- Plan stays funded in all market conditions (maturity doesn't matter)
- Keeps assets liabilities in balance by adjusting benefits and therefore liabilities
- Basic VAPs are fully exposed to market volatility

Basic variable annuity—How it works

- Career average or flat dollar accumulation
- **Hurdle rate**, usually set between 4% and 5%
- Liabilities calculated at hurdle rate
- Contributions must be at least as large as normal cost, plus expenses
- Earned benefits fluctuate annually based on investment return

Return = Hurdle Rate: **accrued benefits do not change**

Return > Hurdle Rate: **accrued benefits increase by excess**

Return < Hurdle Rate: **accrued benefits decrease by shortfall**

Basic variable annuity—Example

- Suppose a retiree's benefit is \$1,000/month
- The plan has a 4% **hurdle rate** and gets a -1% return
- The new monthly benefit amount under the basic VAP is \$952

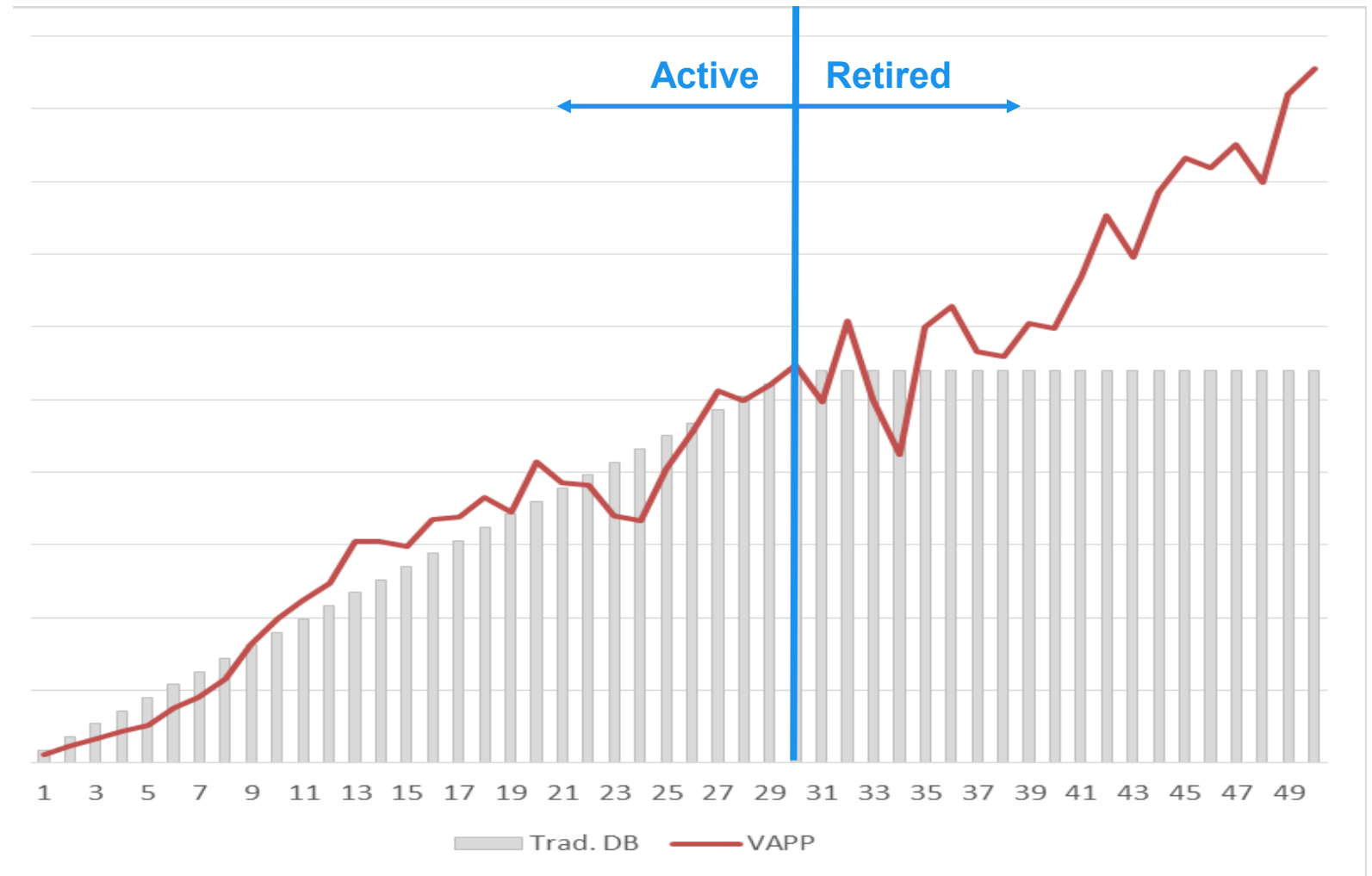
$$\$1,000 * (1-0.01) / (1+0.04) = \$952$$

- The next year, the plan's return is 16%
- The monthly benefit amount changes to \$1,062

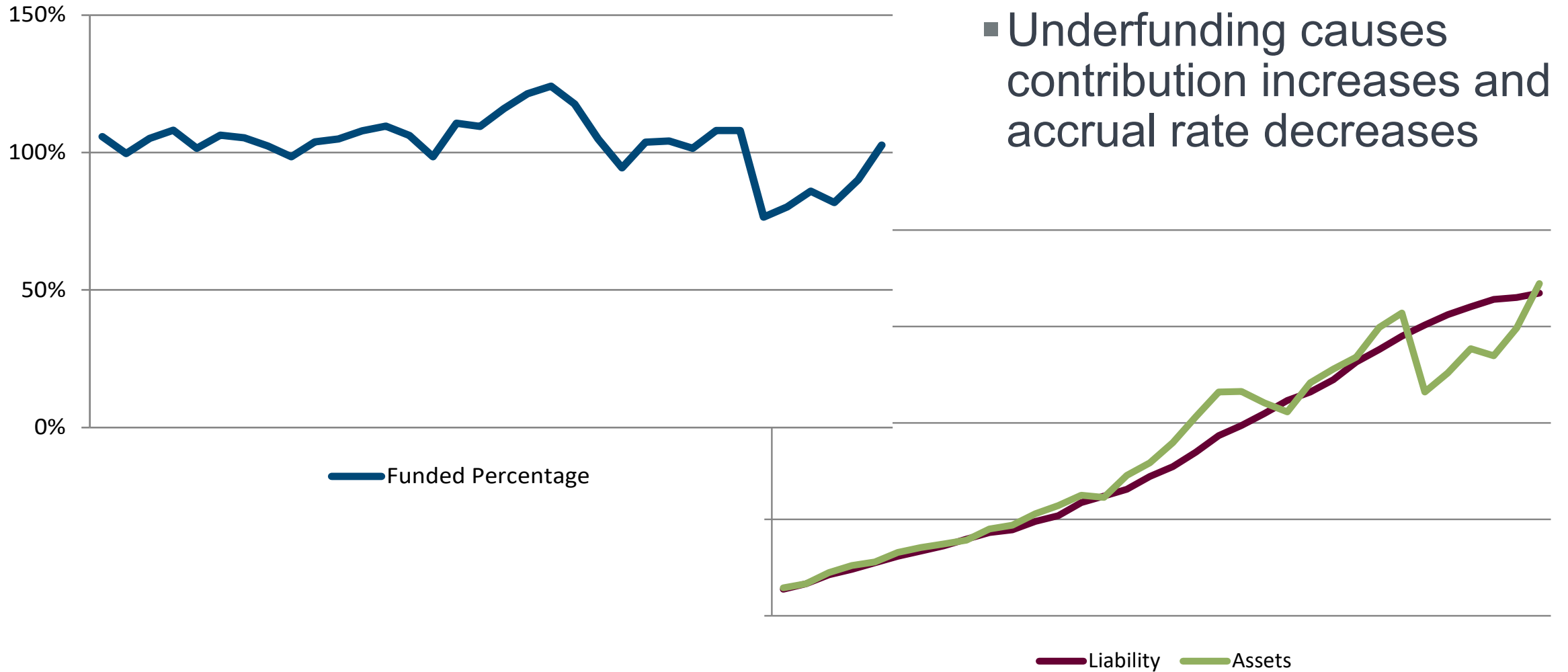
$$\$952 * (1+0.16) / (1+0.04) = \$1,062$$

Basic variable annuity—benefit over career

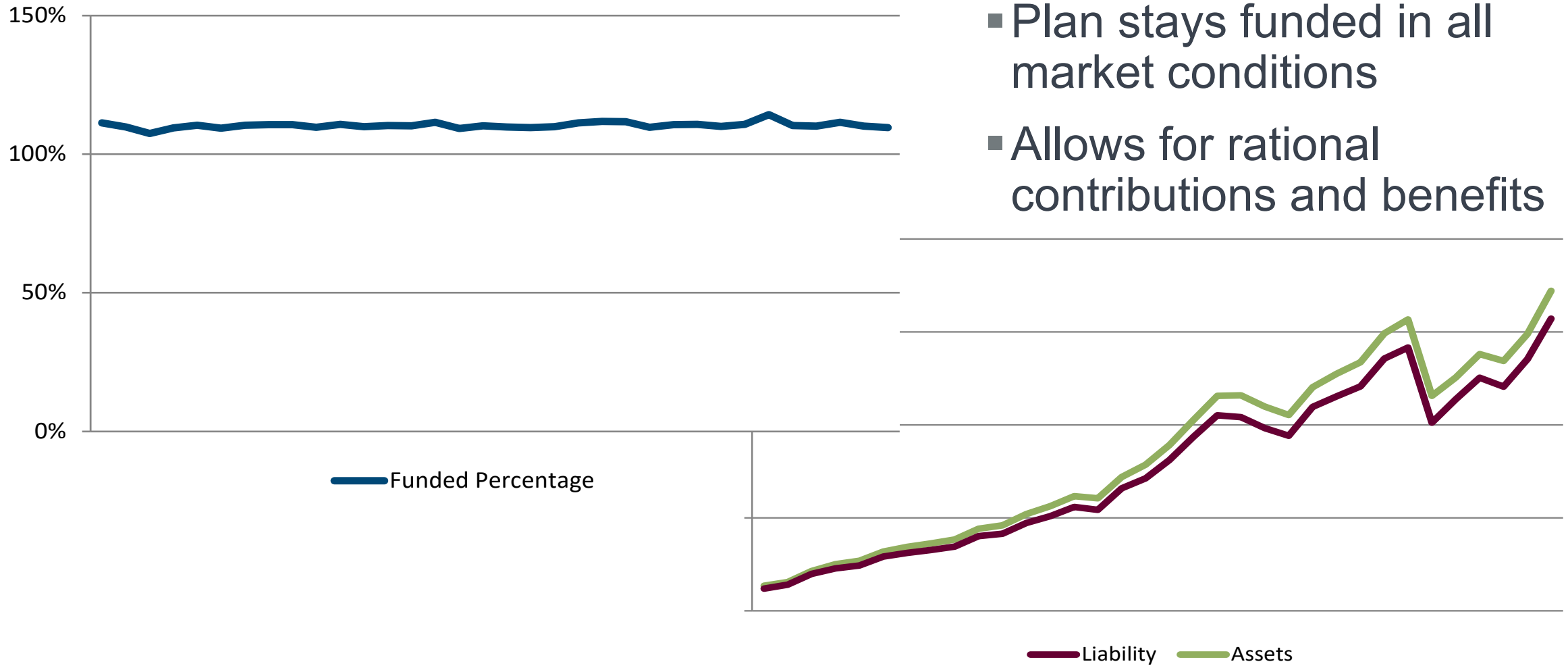
- Provides lifelong benefits that rise over time
- Benefits are volatile



Traditional plan funding



Variable plan funding



- Plan stays funded in all market conditions
- Allows for rational contributions and benefits

How liabilities and assets stay in balance

- Imagine a Plan with a \$10,000 liability with no cashflows (no contributions nor benefit payments).
- Suppose the plan gets a 9% return the first year and a 2% return the following year.
- Imagine that the Plan is a traditional plan with an asset return assumption of 7% OR a variable plan with a 4% hurdle rate

How liabilities and assets move separately

■ Traditional Plan Funding

Point in Time	Return for Prior Year	Assets	Traditional Liability (7% assumption)	Funded Percentage
Year 0	N/A	\$10,000	\$10,000	100%
Year 1	9%	\$10,900 ¹	\$10,700 ³	102%
Year 2	2%	\$11,118 ²	\$11,449 ⁴	97%

- ¹\$10,900 = \$10,000 x 1.09
- ²\$11,118 = \$10,900 x 1.02
- ³\$10,700 = \$10,000 x 1.07
- ⁴\$11,449 = \$10,700 x 1.07

How liabilities and assets move together

- Variable Plan Funding

Point in Time	Return for Prior Year	Assets	Traditional Liability (4% hurdle rate)	Funded Percentage
Year 0	N/A	\$10,000	\$10,000	100%
Year 1	9%	\$10,900 ¹	\$10,900 ³	100%
Year 2	2%	\$11,118 ²	\$11,118 ⁴	100%

- ³4% adjustment to end of year $\$10,000 \times 1.04 = \$10,400$, then adjust benefits and liabilities for actual return $\$10,900 = \$10,400 \times 1.09 / 1.04$
- ⁴4% adjustment to end of year $\$10,900 \times 1.04 = \$11,336$, then adjust benefits and liabilities for actual return $\$11,118 = \$11,336 \times 1.02 / 1.04$

Variable plan pros and cons

- Pros

- Plan stays funded in all market conditions
- Benefits are expected to rise over time (as actual returns exceed the hurdle rate)

- Cons

- Benefits move up and down with investment returns, for all participants, even for retirees
- For the same cost, initial accruals are lower
 - Because benefits rise over time, they must start lower, if the cost is going to be the same
 - Liabilities are calculated at the hurdle rate



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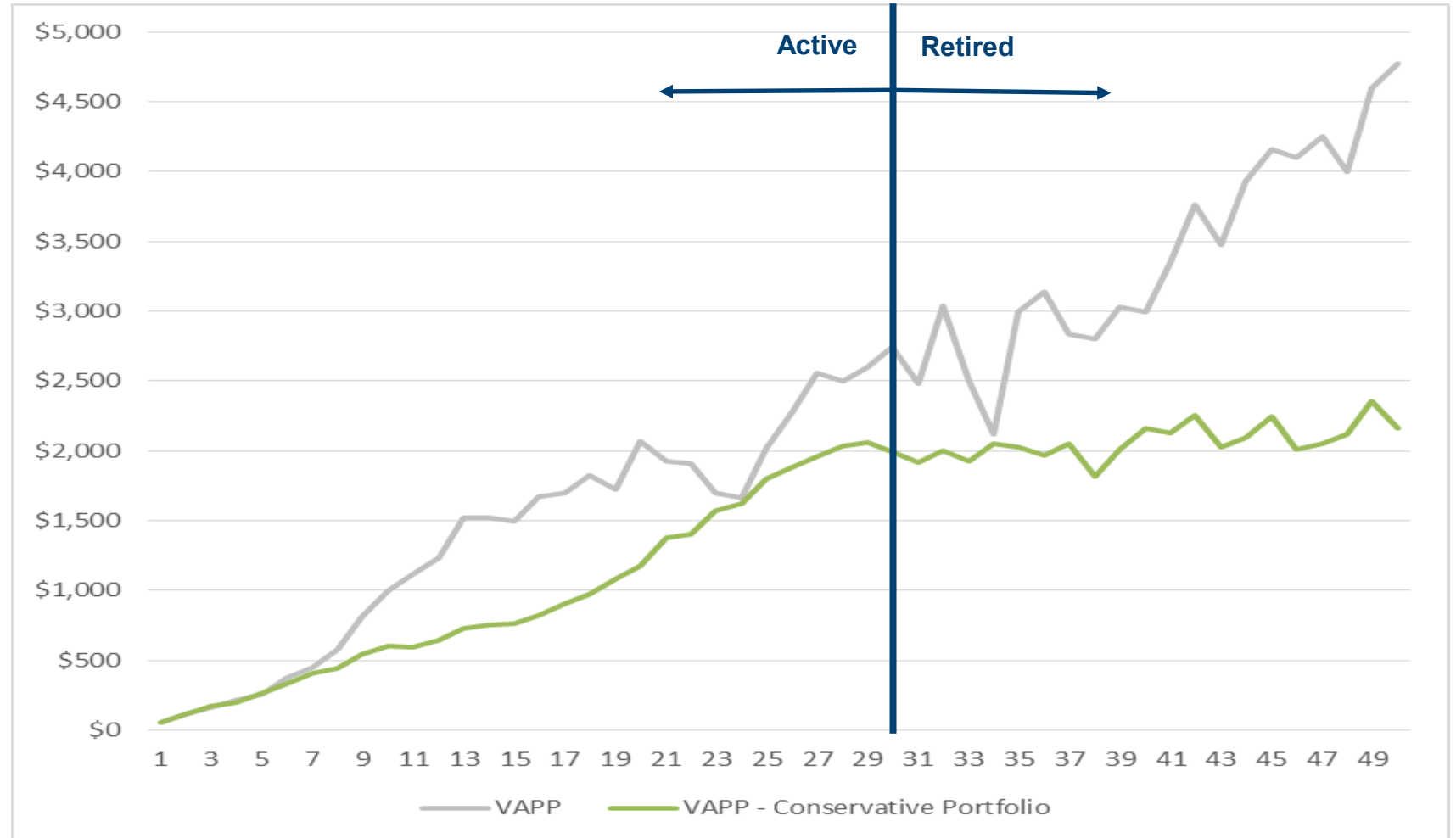
Smoothing variable benefits

Modifications to variable design

- Basic variable design not popular due to routine benefit declines, even for retirees
- 2014 regulations issued allowing for creation of modifications
- A lot of activity now in modifying this design
 - Want to avoid benefit volatility for retirees
 - While keeping that makes variable plans work
- Solutions to benefit volatility
 - Reduce benefit levels to varying degree
 - May reintroduce risks resulting in potential underfunding

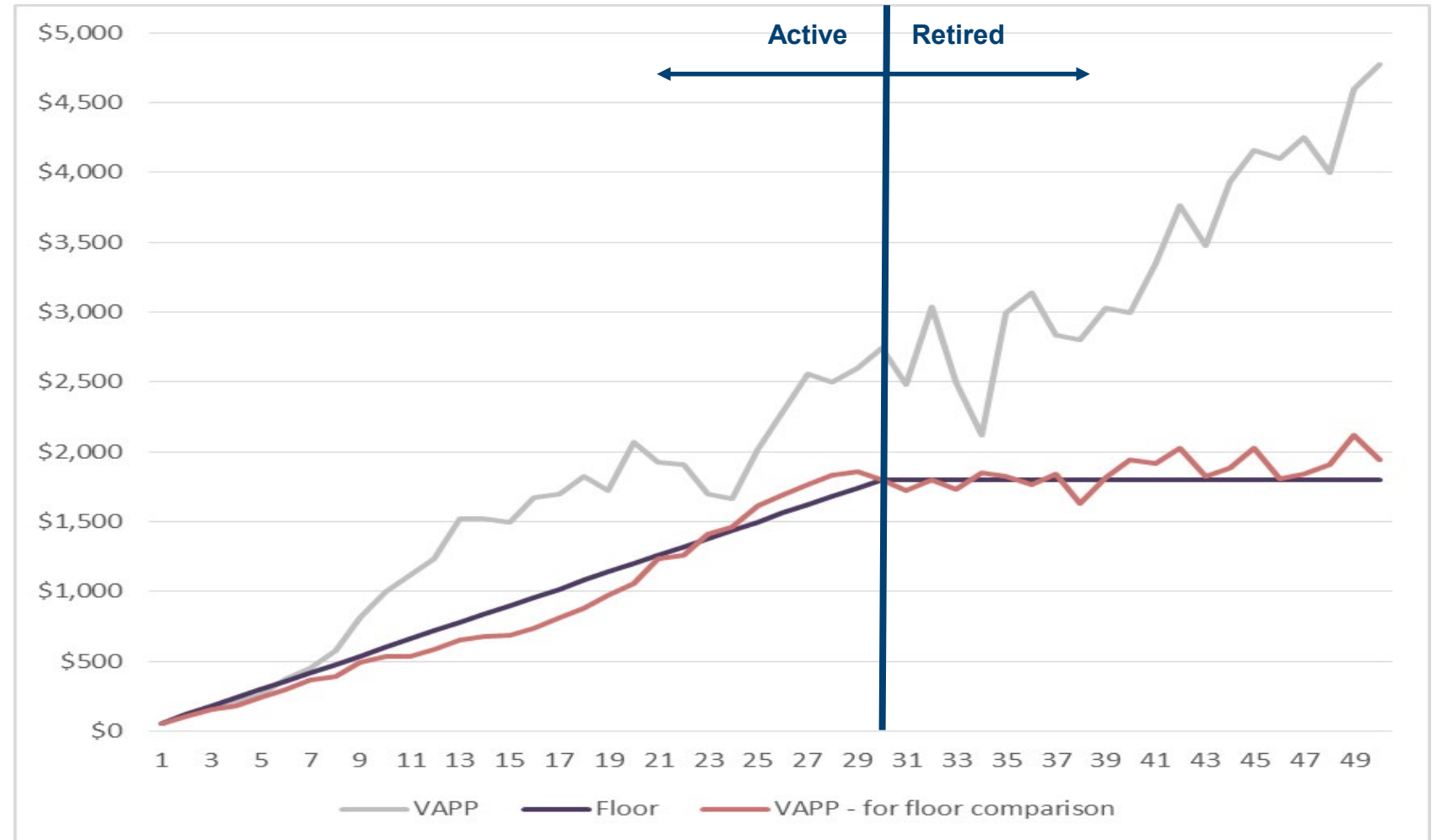
Conservative asset allocation

- Doesn't eliminate volatility but minimizes it
- Reduces benefits over time



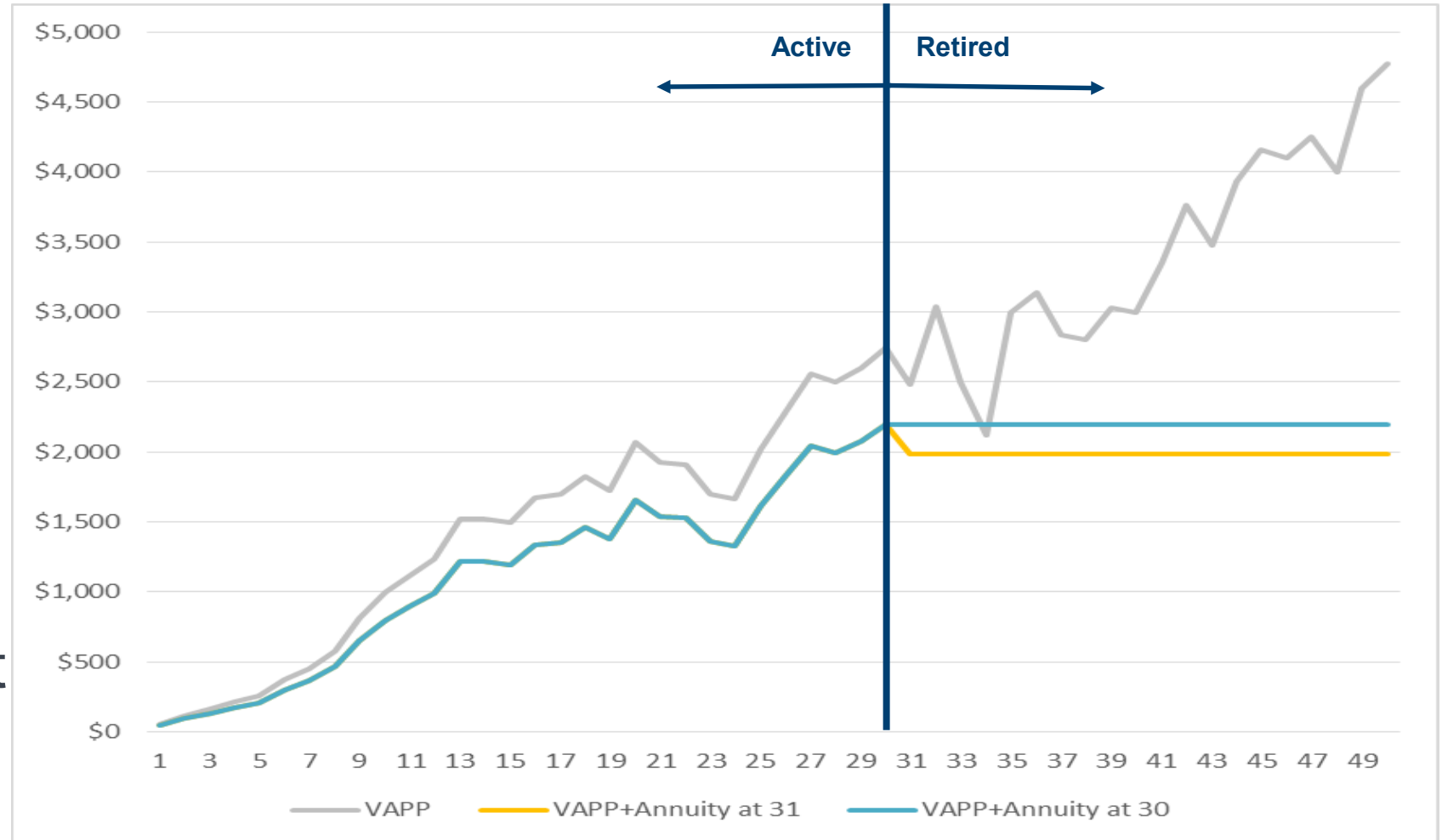
Floor benefit

- Doesn't eliminate volatility (but reduces)
- Reintroduces interest rate risk
- Possibility of underfunding



Lock in benefits at retirement

- Requires retiree benefits invested in bonds or annuitized
- Introduces interest rate risk
- Possibility of underfunding
- Creates participant inequity

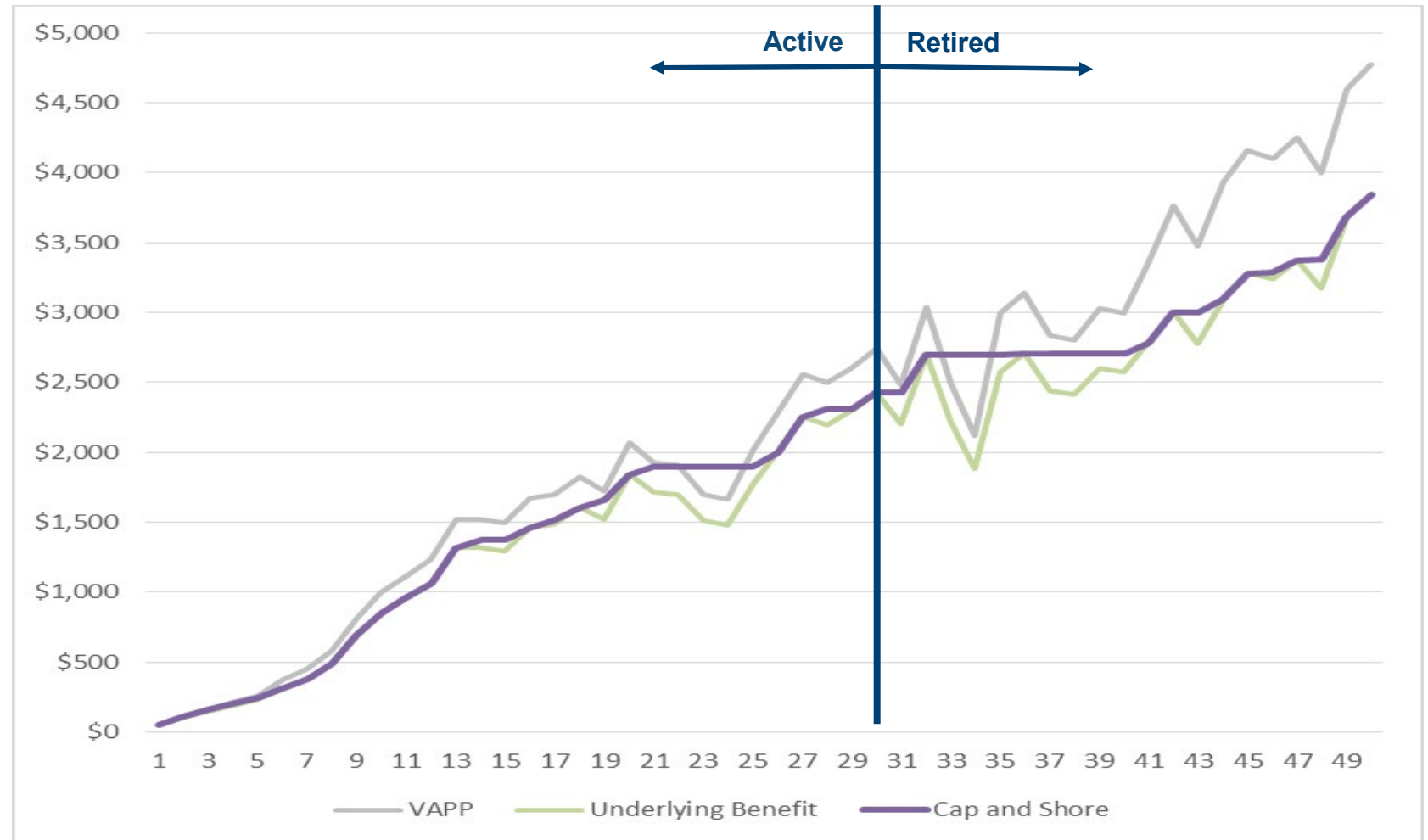


Combinations

- Some plans employ more than one strategy
 - Cap, to limit upside on benefits to help fund smoothing mechanism
 - Floor
 - Locking-in
 - Conservative allocation

Cap and shore, Sustainable Income Plan

- Reserve built from cap on benefit upside plus some contributions
- Reserve spent to protect highest benefit paid to date
- Benefit stability does not jeopardize funding—benefits can go down, but very unlikely



Public Plans

- Typically traditional DB an DC
- Some are trying variable type plans
 - Usually benefit levels are modified if funding gets outside a funded percentage range
 - Participants experience ups and downs

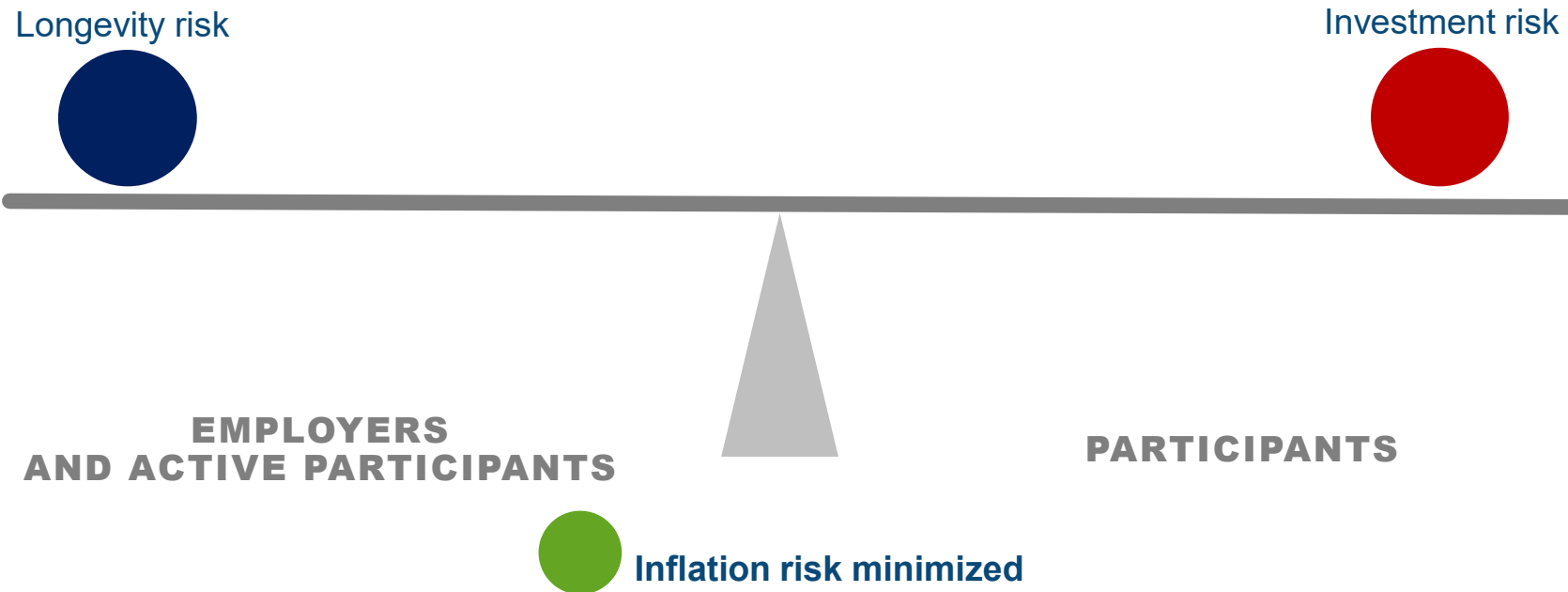
How many variable plans are there?

- There is no good way to track publically
- Some single employer plans since the 1950s or 1960s
- Handful of public plans that have made changes in this direction
- There are likely a 20+ modified variable plans in the multiemployer space
 - We will have 15+ Sustainable Income Plans by 2020
 - More plans are studying this
 - Interest is increasing

Variable plan risk profile: the goal

Risks sharing:

- Longevity risk is predictable and manageable when grouped
- Investment risk is shared equitably across all participants instead of just actives
- Inflation protection is expected (but not guaranteed)





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Regulatory Situation

Variable plans are defined benefit plans

- Basic variable plans are legal since 1953
- Many modifications are legal since 2014
- Plans can apply for determination letter now and until September 2020 for statutory hybrids (hurdle rate under 5%)
- Accruals plus expenses plus what the traditional plan needs must be less than or equal to the contribution
- Pay PBGC premiums
- Pays forms of payment just like traditional plan: Single life annuity, 50% or 75% or 100% joint and survivor, 5 year certain and life, etc.

Variable plans are defined benefit plans

- Hurdle rate
 - Can't be higher than expected returns (can't plan for benefits to go down)
 - Are statutory hybrids if hurdle rate is less than 5% (must use 3 year vesting)
 - Can't be lower than 3%
 - A lower hurdle rate results in lower initial accrual that rise more over time
 - A higher hurdle rate results in higher initial accruals with less increase over time



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How to explore variable plans

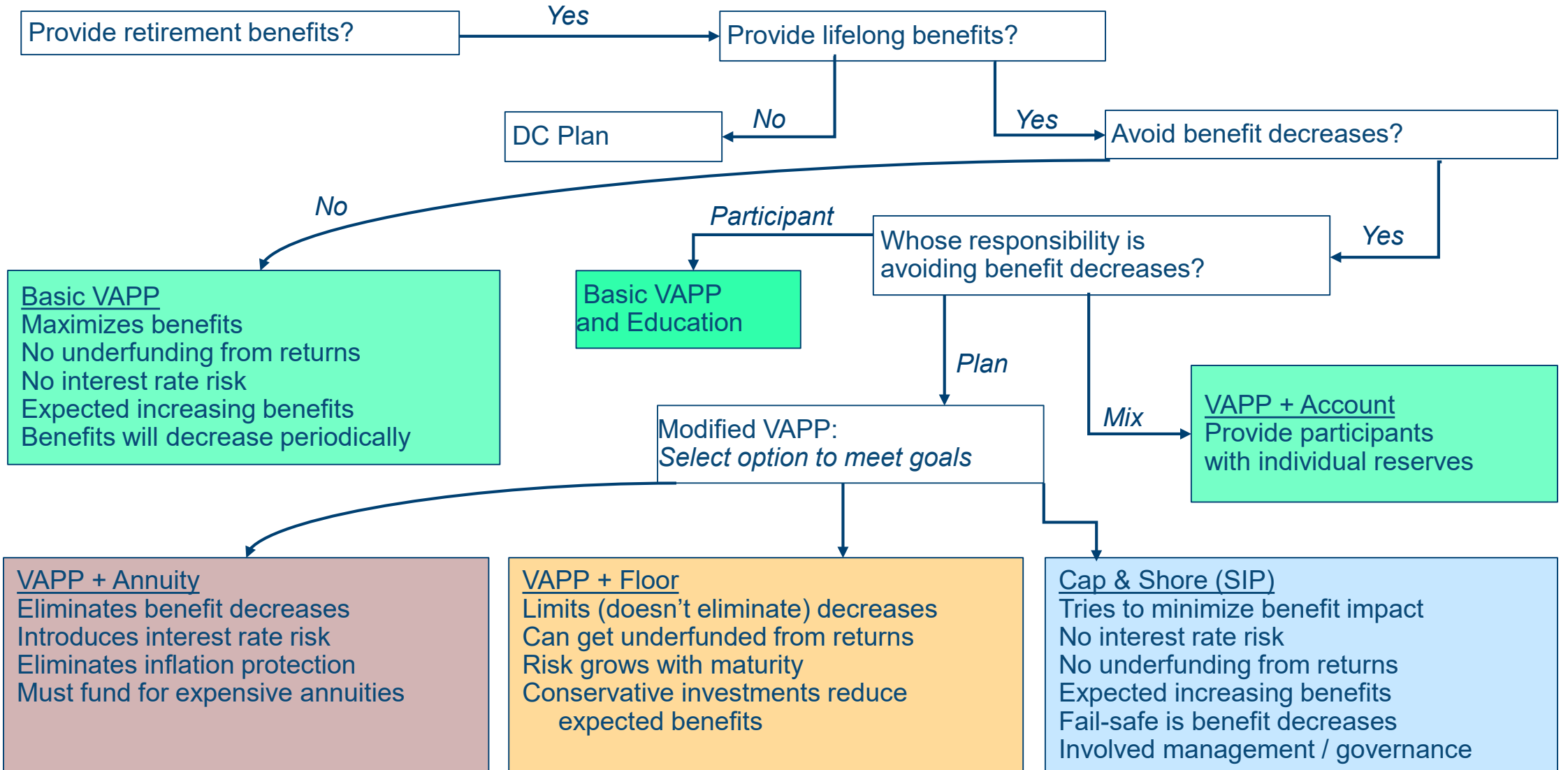
Plan design is about trade-offs

- Benefit certainty
- Plan security
- Fairness between generations
- Downside protection
- Benefit level
- Inflation protection
- There is no single “correct” answer
- Trustees must identify objectives and determine the features that best fits those objectives

Plan design is about trade-offs

- Not all modified variable plan designs are equivalent. They are different with respect to:
 - Probability and amount of benefit smoothing
 - Level of benefits provided per \$1 of contribution
 - Reintroduction of risks in order to smooth benefits

Values flow chart

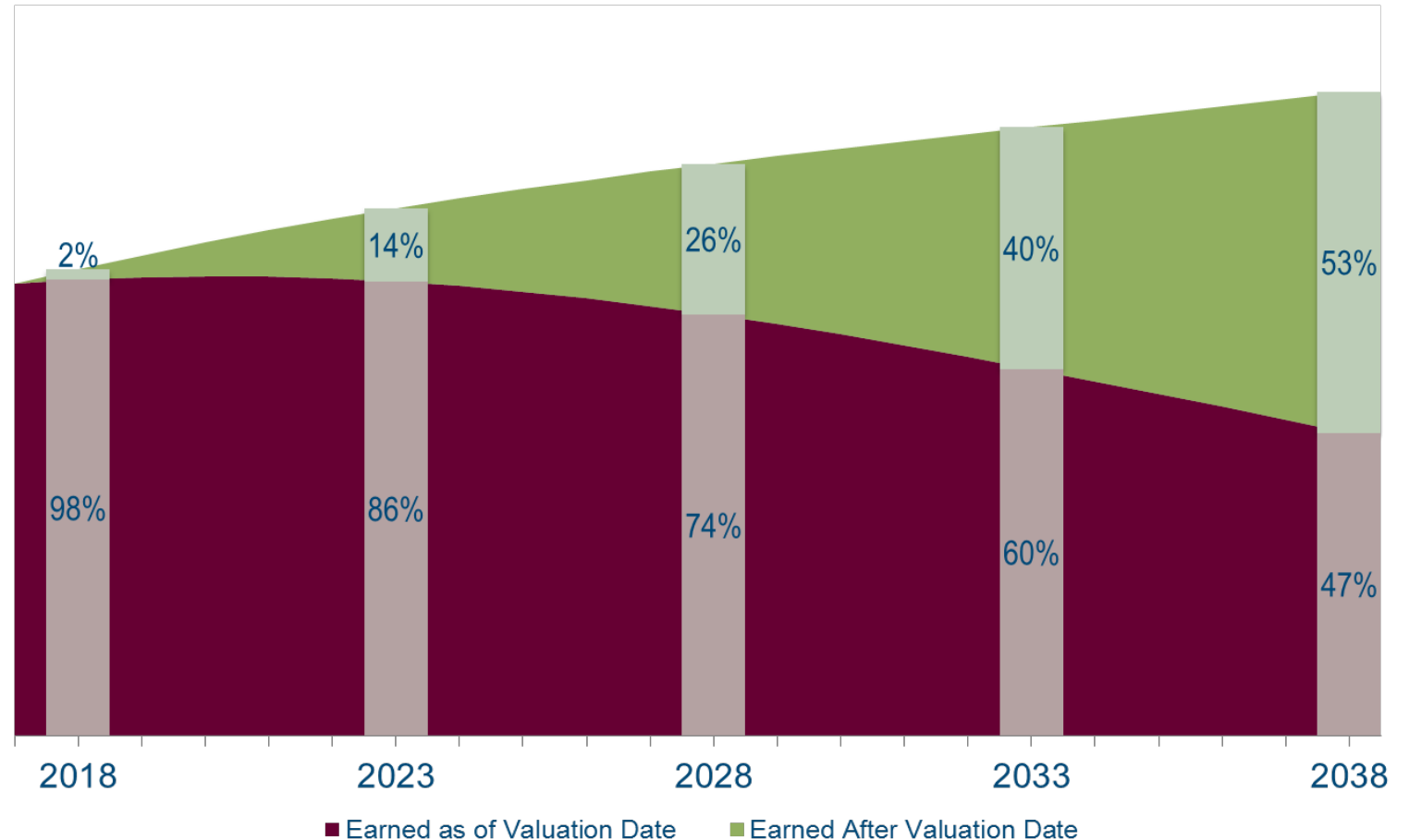


Which plans are candidates for transition?

- Not all plans are good candidates for transition to alternative design.
- Two key questions when considering transition within the current plan:
 1. Is the plan likely to “solve” its legacy liability funding issues?
 2. Will the plan’s risk profile change materially over time?
- If the answer to both question are yes, transition is an option financially
- Some groups are considering starting new plans

Changing the risk profile, question 2

- “Walls off” benefits that can get underfunded (doesn’t fix legacy funding)
- Eventually results in stable plan regardless of investment returns or maturity
- Long-term focus – takes decades to get all the way there



Understand risks and rewards

- Work with service providers with experience in alternative design
- Do stochastic modeling of design—really test it
 - Test ability to stay funded
 - Expected benefit escalation
 - Probability of benefit decline
- Be aware of risks you are adding back (and their implications)
- Understand what scenarios will be difficult for the Plan
- Ask the circumstances under which different designs struggle or fail

Communication

- Transitions always have “winners” and “losers”
 - For those close to retirement, limited impact on benefit but plan is more secure
 - For newer hires, variable plans are often expected to be a positive change
- Transition is hardest on participants who are mid-career at transition.
 - Often did not get the good benefits of the 1990s
 - May not have enough time before retirement for expected increases in a variable plan to have a large impact
 - Ultimate impact is very dependent on returns

Communication

- Communicate early and often
 - Plan is a big change for participants
- For variable plans, benefits are expected to increase after they are earned
 - Means the current accrual rate costs more in a variable plan, or ...
 - For a cost-neutral change, the current accrual rate must be reduced.
 - Focus needs to be on expected benefits received as opposed to benefit when earned.

Summary

- Most traditional DB plans that are struggling simply had unfavorable returns at the wrong time in their life cycle.
- All plans mature and become more susceptible to market downturns.
- Traditional DB plans, by design, must make up for investment performance below expectations through contribution increases and adjustments to future benefit accruals.
 - Can become an overwhelming burden for actives in a mature plan.
- Variable annuity plans can help create a sustainable path forward.
 - Each potential modification presents trade-offs.
 - Each group of Trustees may view these trade-offs differently.



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Thank you