

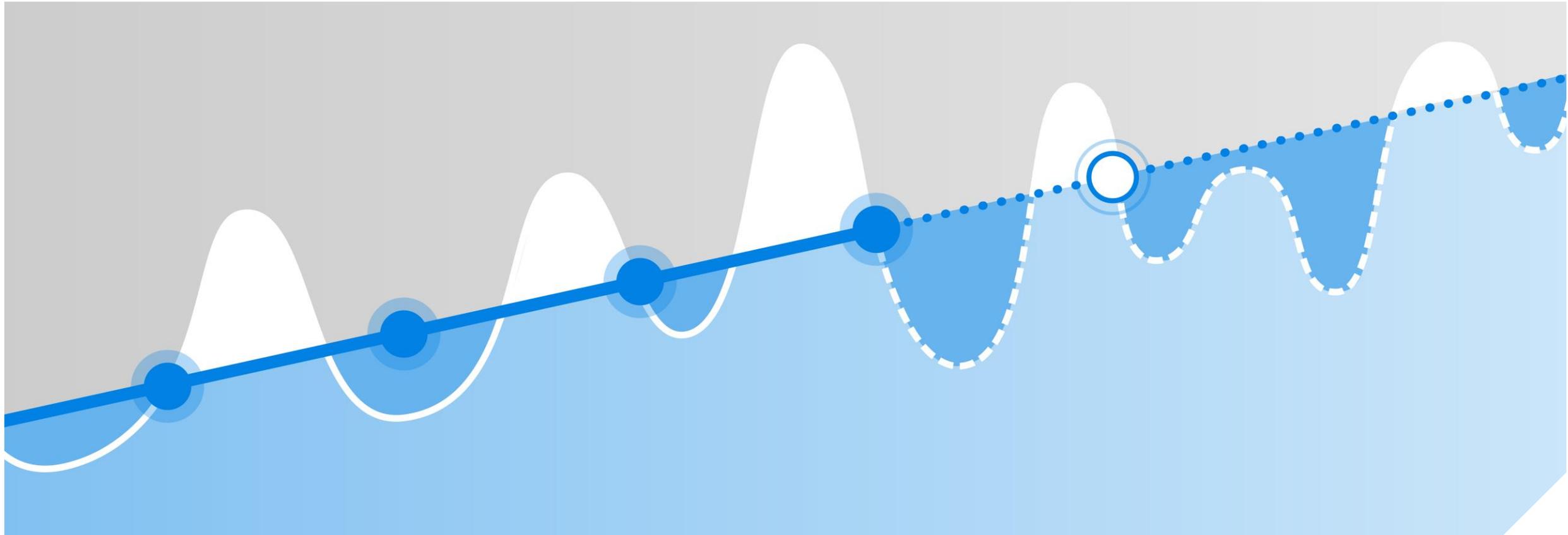
Participant Protections in Variable Benefit Plans



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Conclusion

- There is a fairer way to deliver life-long income in retirement than traditional defined benefit (DB) plans.
- Variable annuity plans (VAP or VAPP) with or without modification provide a reliable and sustainable path forward.

How we talk about the 1980s and 1990s in the 21nd century

- Maximum deductible limits diminished our ability to build a reserve to save for a rainy day.
- Excess contributions had to be spent to maintain qualification
- Benefits were improved
 - 13th checks
 - Improving benefits retroactively, actives and retirees
 - Improving benefit prospectively, increased accrual rates
 - Improving early retirement factors
 - Others

The result on benefits generationally

	1980	1990	2010	VAP now	VAP future
Contribution per hour	\$1.00	\$1.60	\$3.50	\$6.50	\$6.50
Typical benefit accrual	\$38	\$72	\$42	\$66	\$98
Ad hoc benefit increases	46%	29%	0%	0%	0%
Ultimate benefit	\$55	\$93	\$42	Dependent on returns*	
Benefit at age 60	\$55	\$93	\$42	\$95	\$142
Benefit at age 75	\$55	\$93	\$42	\$138	\$206
Benefit/\$1 of annual contribution rate					
At age 60	\$55	\$58	\$12	\$14	\$22
At age 75	\$55	\$58	\$12	\$21	\$32

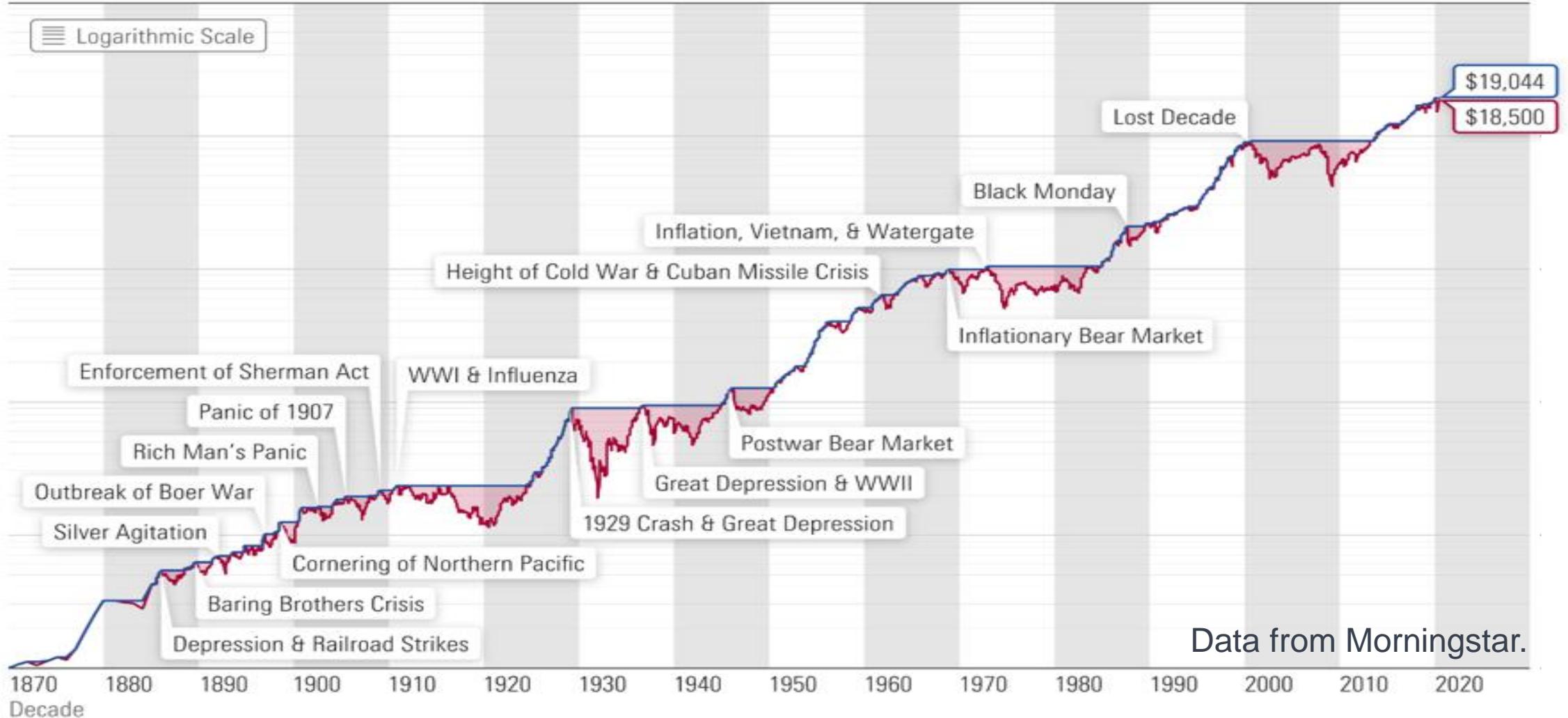
*Assumes 6.5% annual returns in a variable plan with a 4% hurdle rate, for a participant that hires at 40, retires at 60

Let's get back to the 1990s?

- Sometimes there is a desire to improve current benefits
 - When can we get back to a higher accrual rate, like the 1990s?
 - When can we improve past benefits?
- We run the risk of creating this situation for another generation
- The large benefits of the 1980s and 1990s came from spending surplus
 - A surplus we needed in the 2000s
 - We just didn't know it yet

The lost decades

— Cumulative Real Wealth — Peak Cumulative Value ■ Market Crash Episode

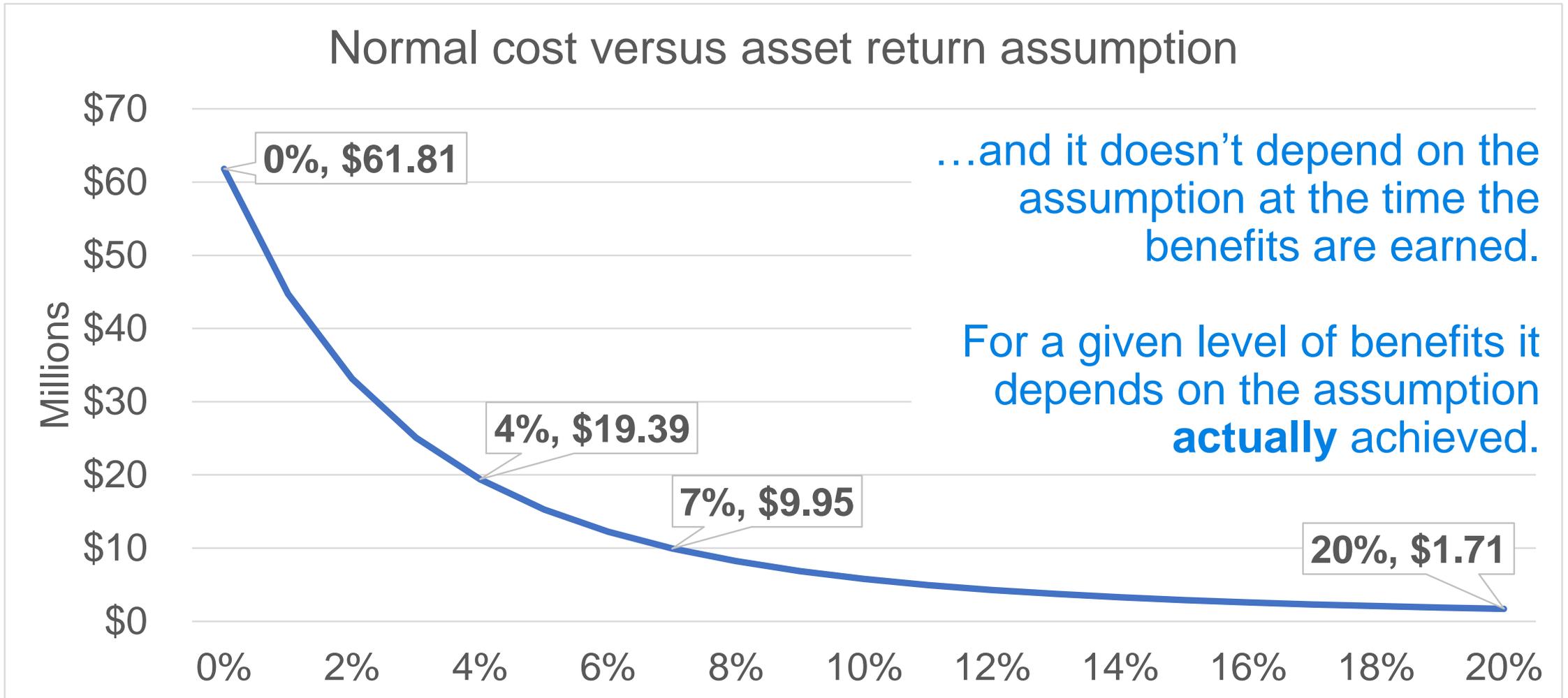


Data from Morningstar.

The normal cost

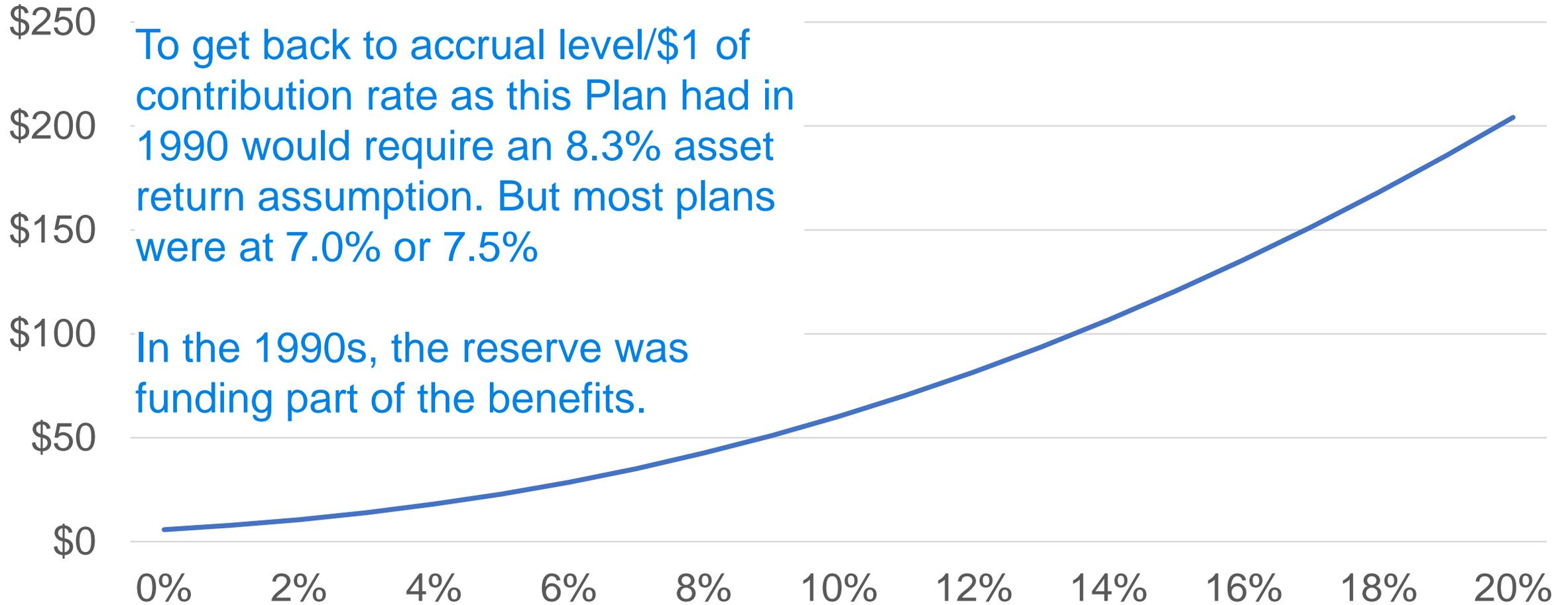
- It is the cost of benefits that are earned in a year
- It is the new liability added to the Plan for the year
- It should be funded at what assets will actually do over the next 80-90 years
- If we could do that, Plan's would stay funded and we would not have underfunding problems

What do traditional DB benefits really cost? It depends.



How do we determine level of benefits?

Benefit accrual/\$1 of contrib rate v. asset return assumption



Many actuary's lowering asset return assumptions

- When we get poor asset returns
 - We lower accrual rates going forward
 - We increase contributions
- As we lower assumptions now, it makes all benefits, past and future more expensive.
 - The liability goes up
 - The future normal costs go up
- The result is the same: lower benefits for higher contributions

Are pension plans like large ships?

- We hear this sometimes: A pension plan is like a large ship
 - It takes a long time for the action we take now to fix the problem.
 - Indeed, we are slowly getting many of our plans back on track.
- But it didn't take many years for them to develop the problem
 - It took one bad year or returns
 - Or a decade of flat returns

Are pension plans like large ships?

- Pension plans are easy to damage and hard to fix.
- It is a bad combination.
- It is not good for the Plans or participants in the long run.



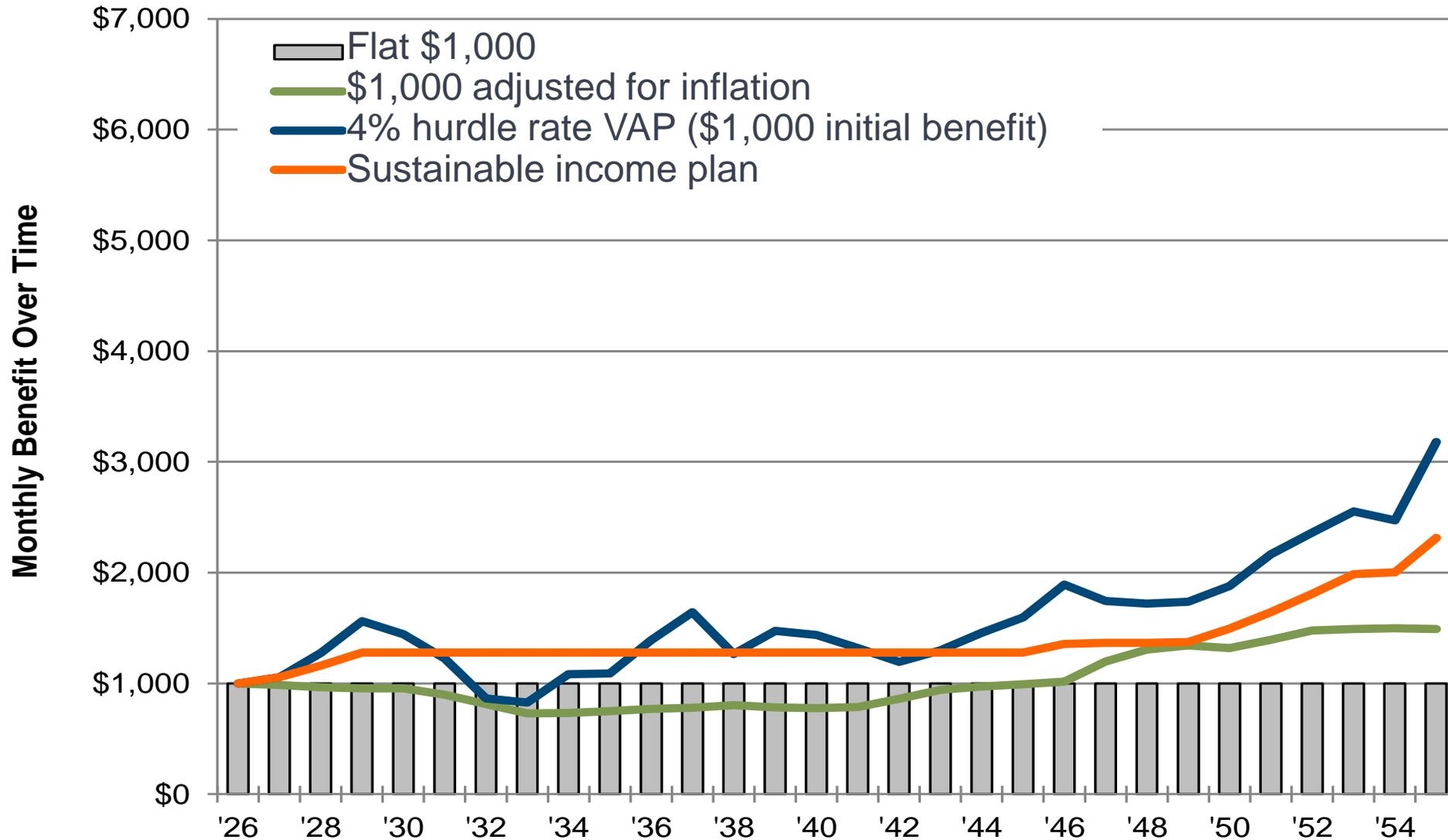
Variable plans are very good choice

- The contribution pays full price for the benefits at a hurdle rate
- Then benefits adjust as actual asset returns happen to keep the assets and liabilities 100%+ funded
 - No decreased accrual rates
 - No increase contributions, except when increasing benefit level
 - No withdrawal liability
- The benefits for a given year paid out over time equal the normal cost contribution for that year plus earnings on that contribution
- The trade-off is benefit volatility

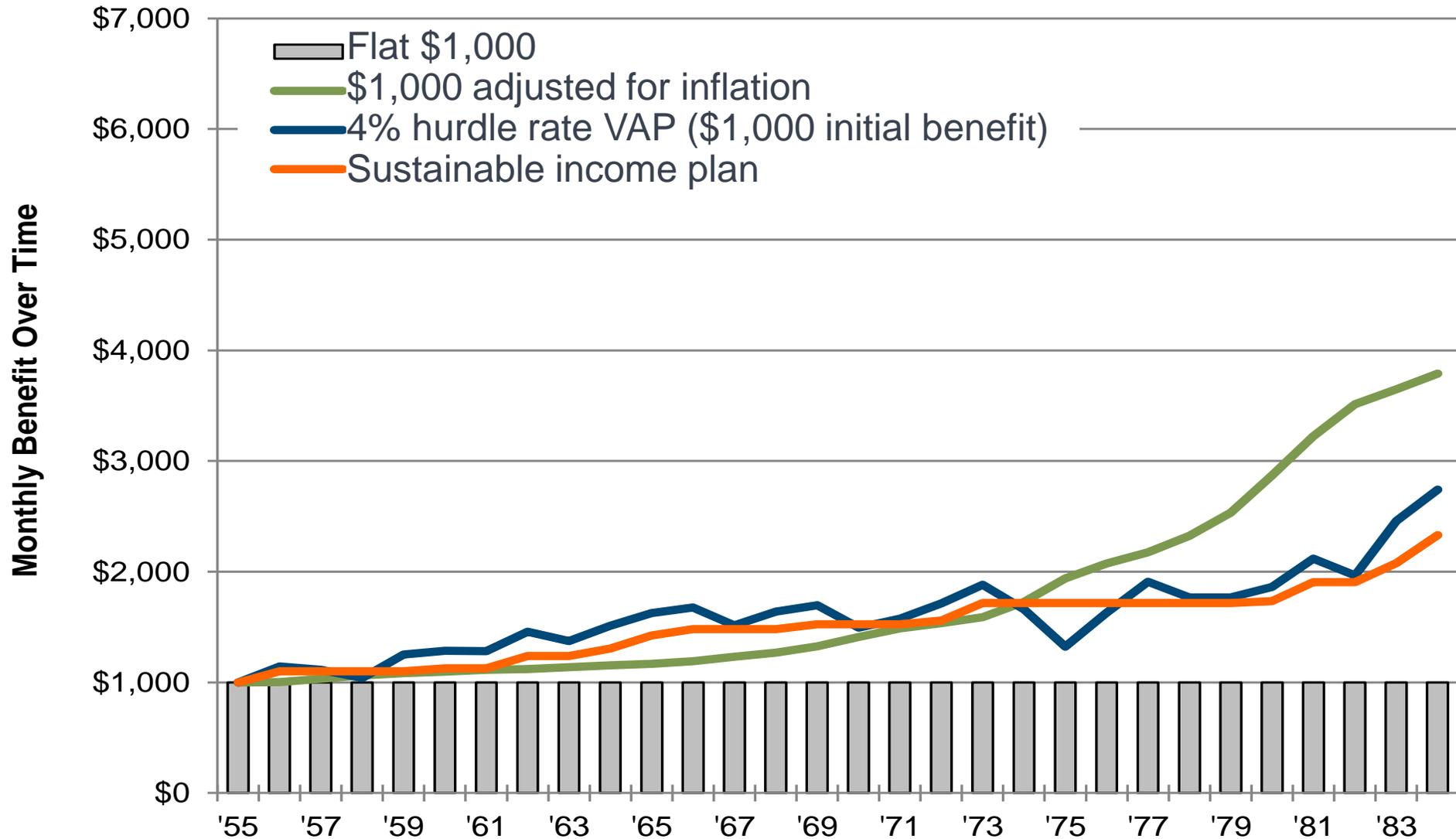
Isn't this a DC plan?

- This is not a defined contribution (DC) plan
- Longevity is pooled; lifelong benefits are paid from the plan
- Participants don't have individual account balances
- The benefits are earned like a DB plan. They just adjust thereafter.

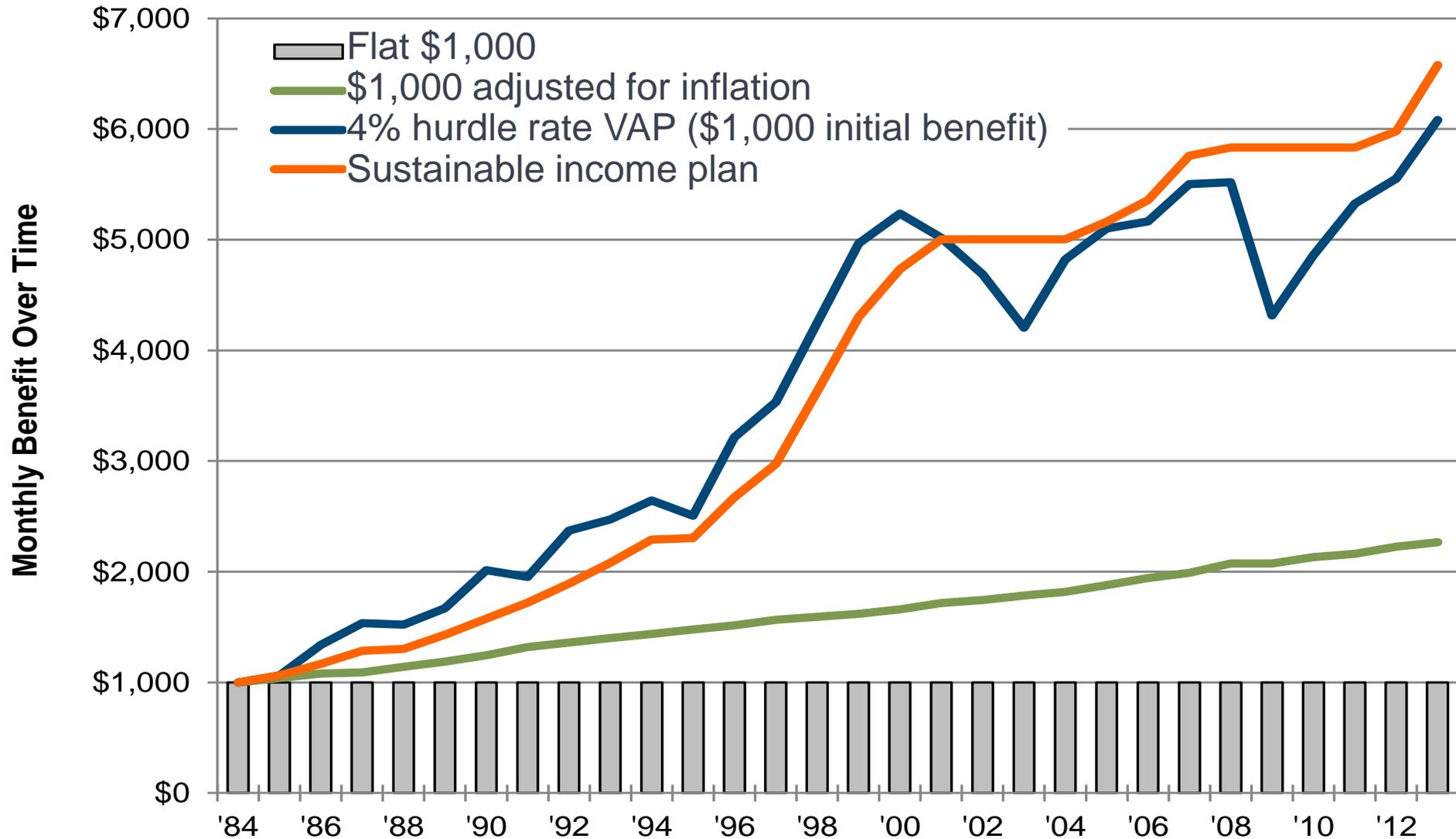
Benefit volatility: the Great Depression



Benefit volatility: mid-century

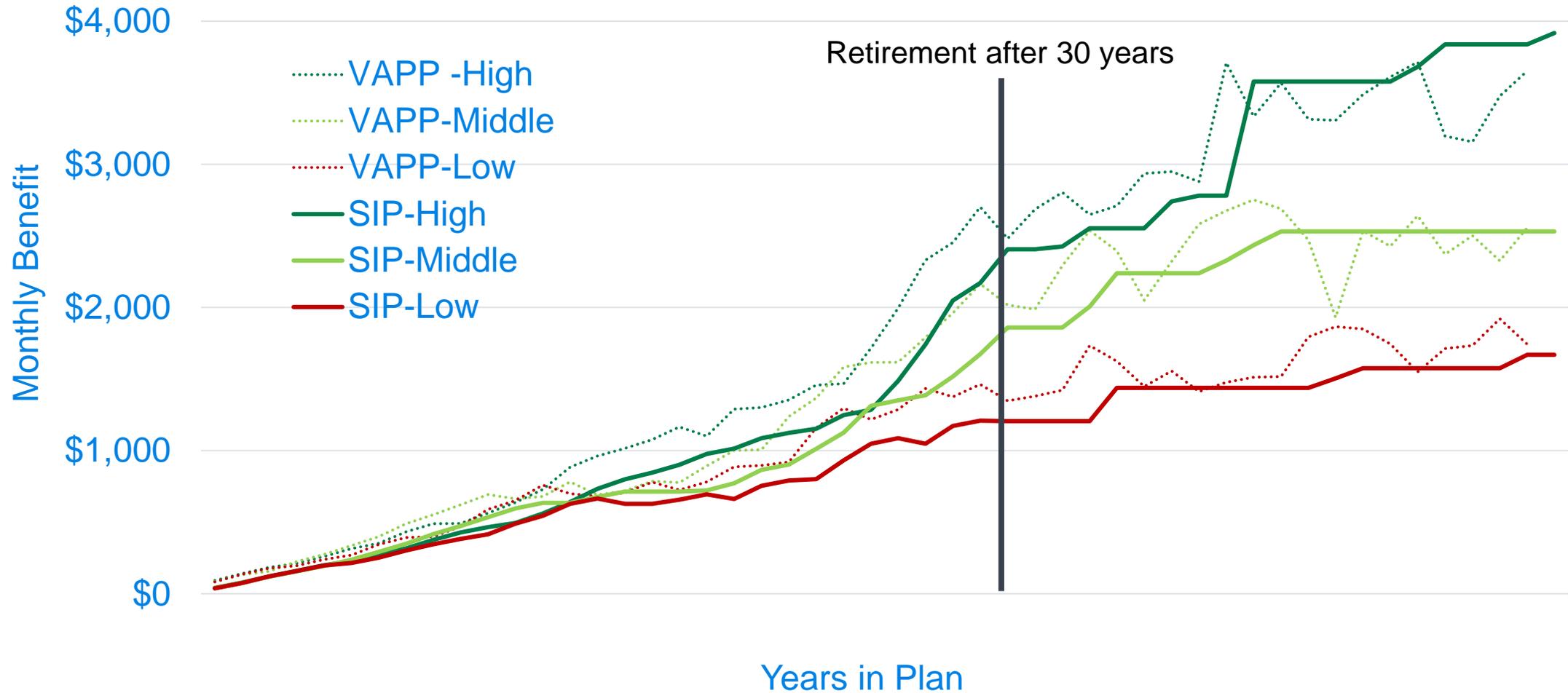


Benefit volatility: the 1980s and 1990s



Benefit variability, recent capital market assumptions

Projected Benefits – Basic VAPP vs. SIP



Benefit variability 20 years into retirement

- The 20th century returns for variable
 - Depression is \$1,300, mid-century is \$1,800, 1980s/90s is \$5,000
 - This is a **factor of 3.8** for “haves” vs “have nots”
- Hypothetical returns going forward for variable
 - Low (25%ile) is \$1,700, middle (median) is \$2,600, high (75%ile) is \$3,800
 - This is a **factor of 2.2** for “haves” vs “have nots”
- In a healthy traditional plan (example from beginning of this deck) **factor is 4.8**. I work on a plan with a **factor of 24**.

Benefit variability 20 years into retirement

- In a healthy traditional plan from beginning has a “haves” vs “have nots” **factor of 4.8**.
- I work on a plan with a **factor of 23**. (prior accrual was \$135 for a \$1.00/hour contribution rate, now \$18 accrual on a \$3.00/hour contribution rate)
- Overall there is less intergenerational inequity in variable plans
- No generation has to pay for another’s benefits
- The Plan is funded and paying lifelong income
- But benefits are volatile

Basic VAP

- The benefits are earned just like in a traditional plan (no final average earnings)
- **Hurdle rate**, typically set between 3% and 5%
- Liabilities calculated at hurdle rate
- Contributions must be at least as large as normal cost, plus expenses

Basic VAP

- 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**

- Benefits are volatile, but expected to grow over time
- Plan provides the benefit that can be afforded based on actual plan returns

Basic VAP

- 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 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 VAP

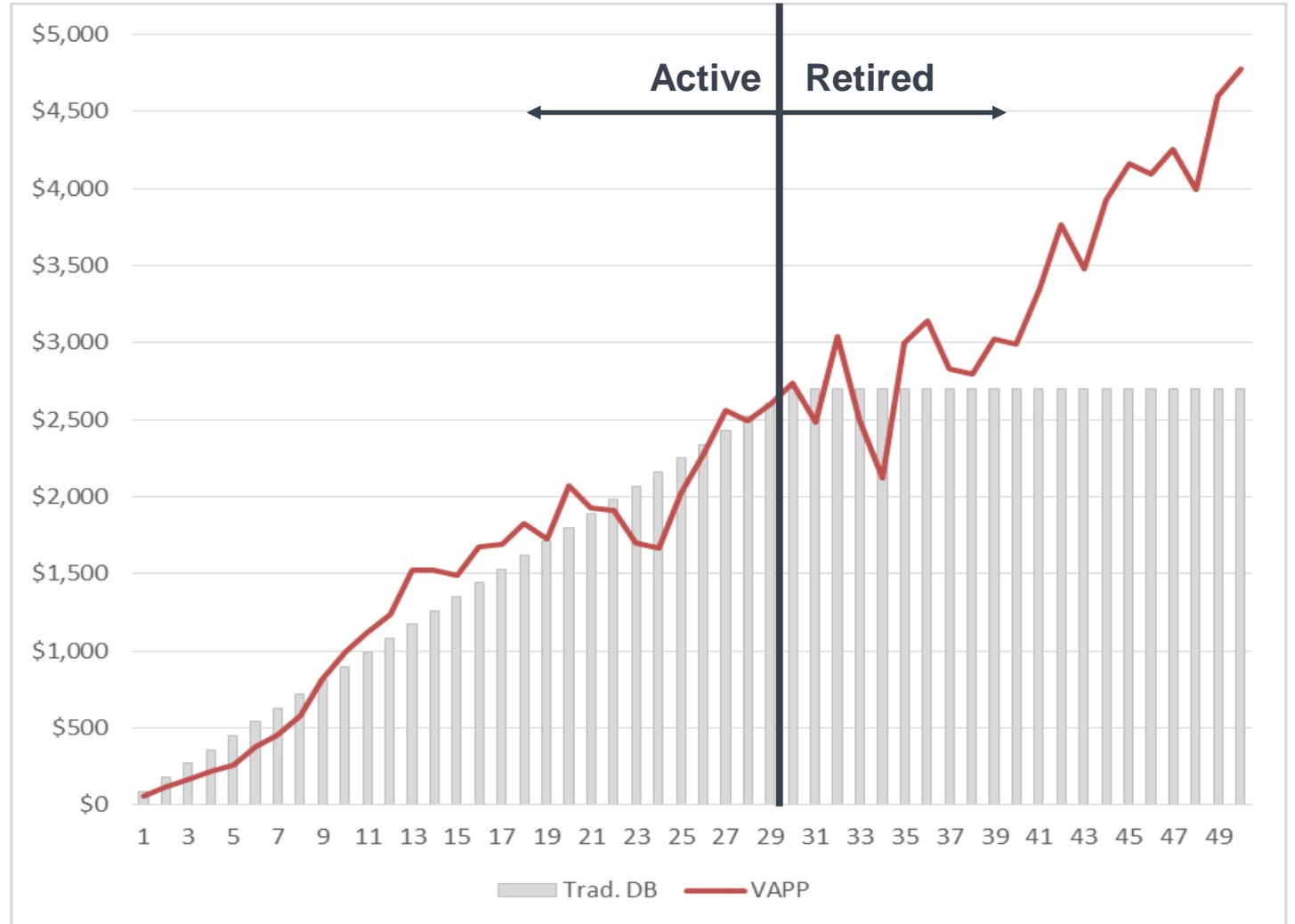
- Participant earns a benefit for each year of service
- Employer funds the benefit earned
- Accruals go up AND down based on the Fund's actual return on assets for actives AND retirees
- Plan stays funded in all market conditions
- Keeps assets and liabilities in balance by adjusting liabilities

Modifications to variable design

- Most modifications to the variable designed to help smooth out unwanted benefit volatility
- A number of strategies have been considered and implemented
- Plan design is about trade-offs
- To reduce volatility, benefits have to be smaller, so all modifications provide smaller benefits than the basic variable design

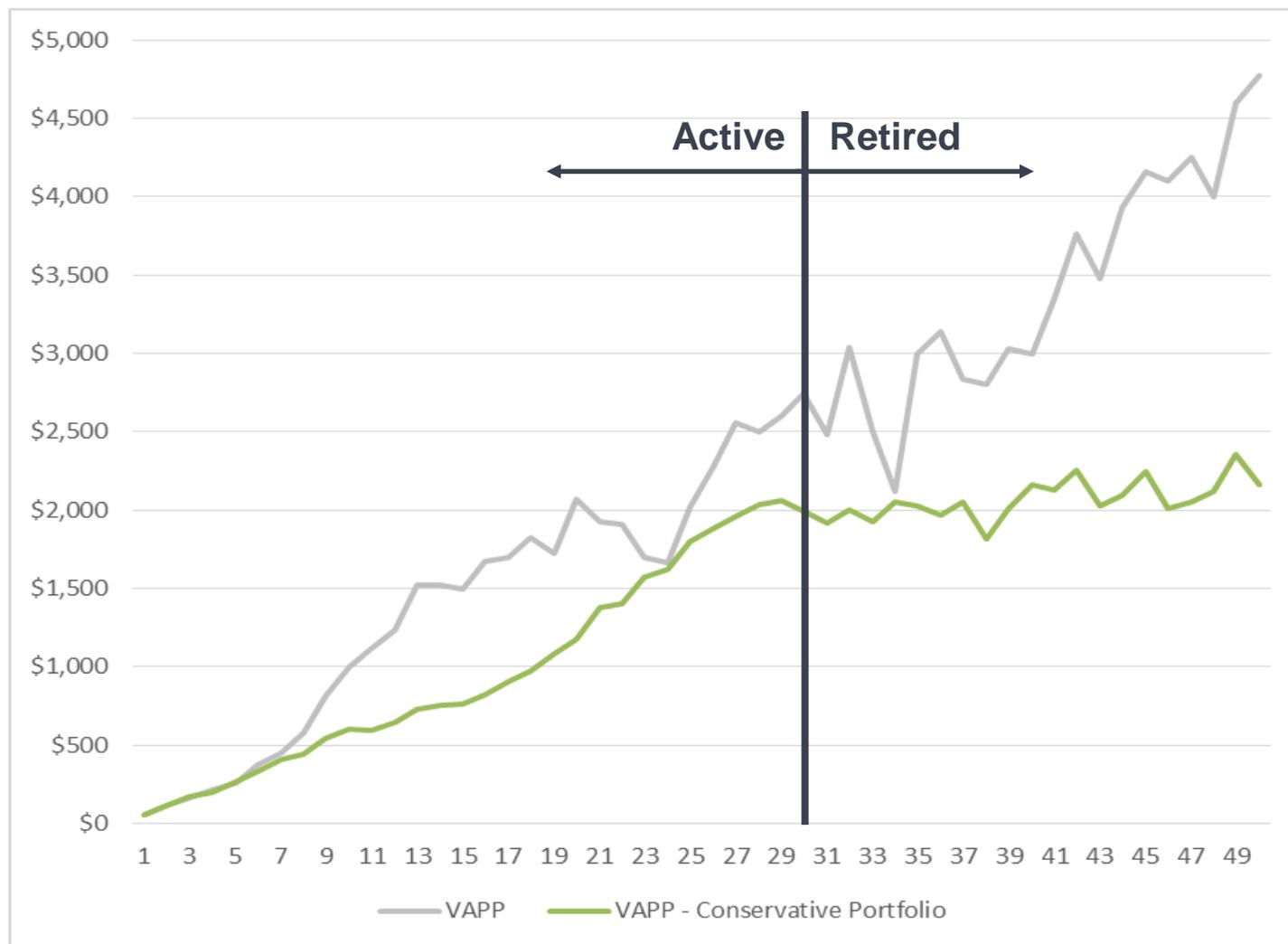
Traditional vs basic variable

- Variable (red) accruals smaller initially and grow over time compared to traditional (grey)
- Benefits are volatile
- Typically provide career participants larger benefits than traditional plan, especially later in retirement



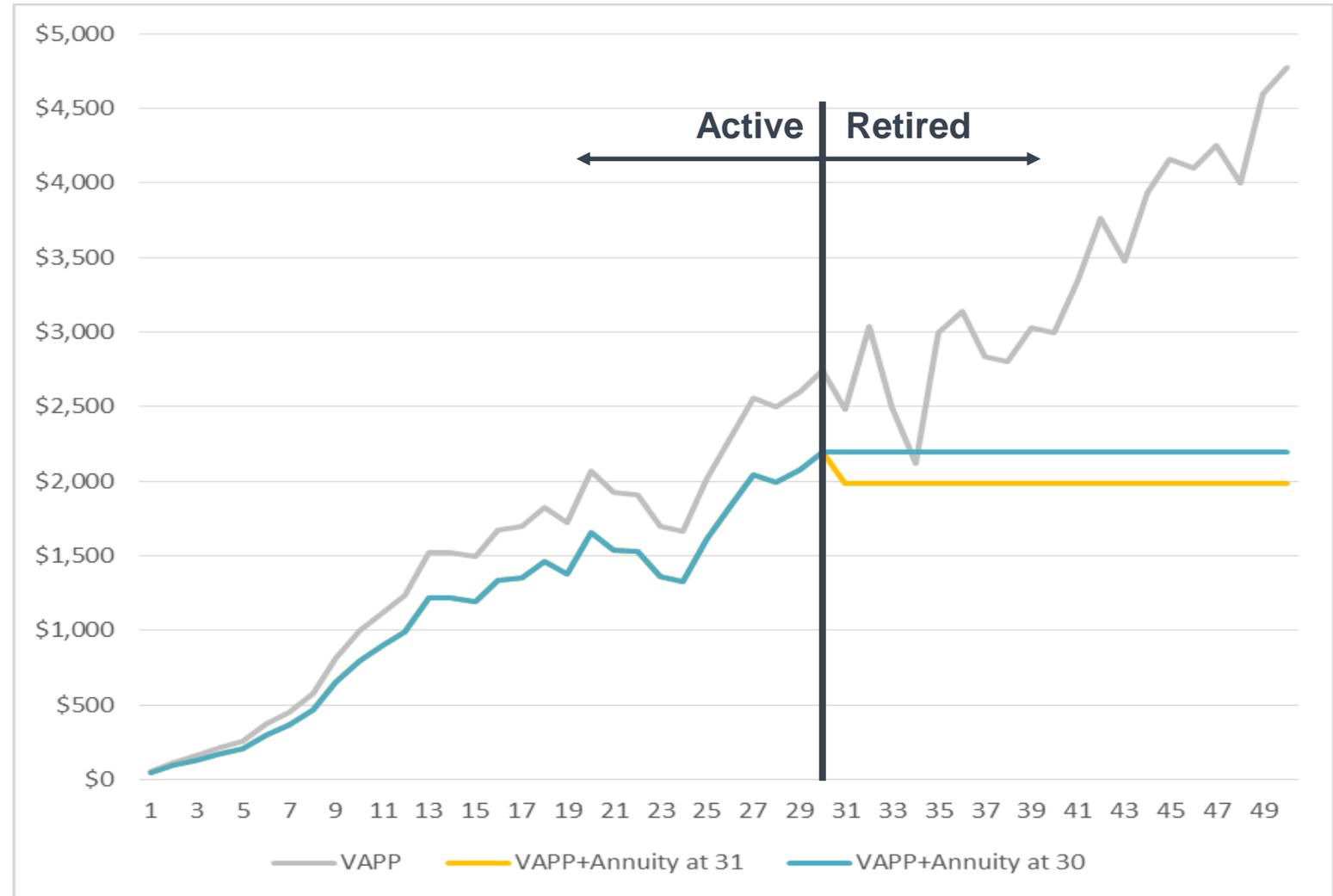
Basic variable vs conservative allocation

- Conservative allocation (green)
- Retiree benefits less volatile, but still bumpy
- Benefits are smaller because cumulative returns are smaller



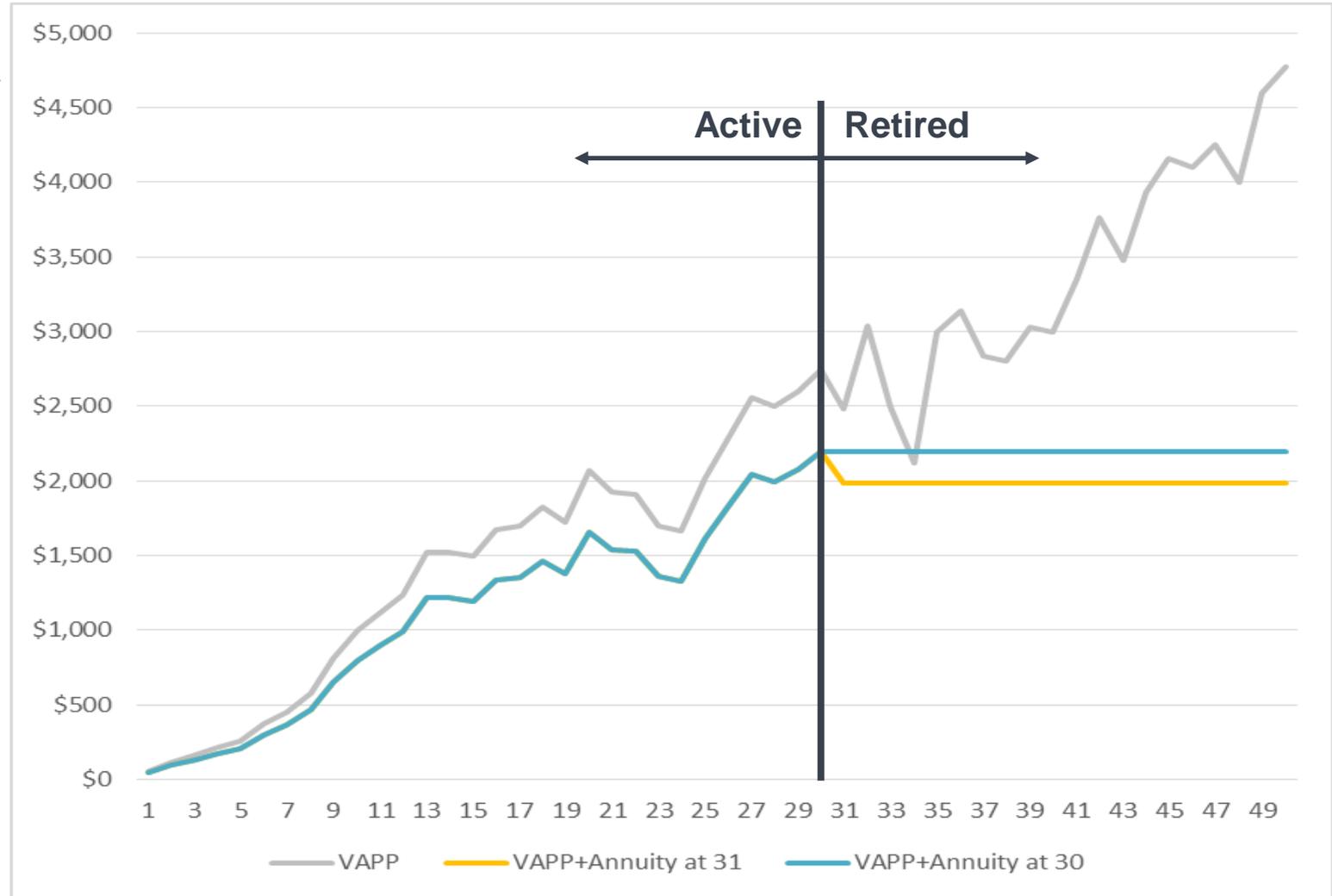
Basic variable vs locking in benefits in retirement

- Locking in benefits at retirement adds back contribution risk
- Often the Plan, or at least assets backing retiree liability invested in bonds
- Can result in underfunding if bond rates get too low



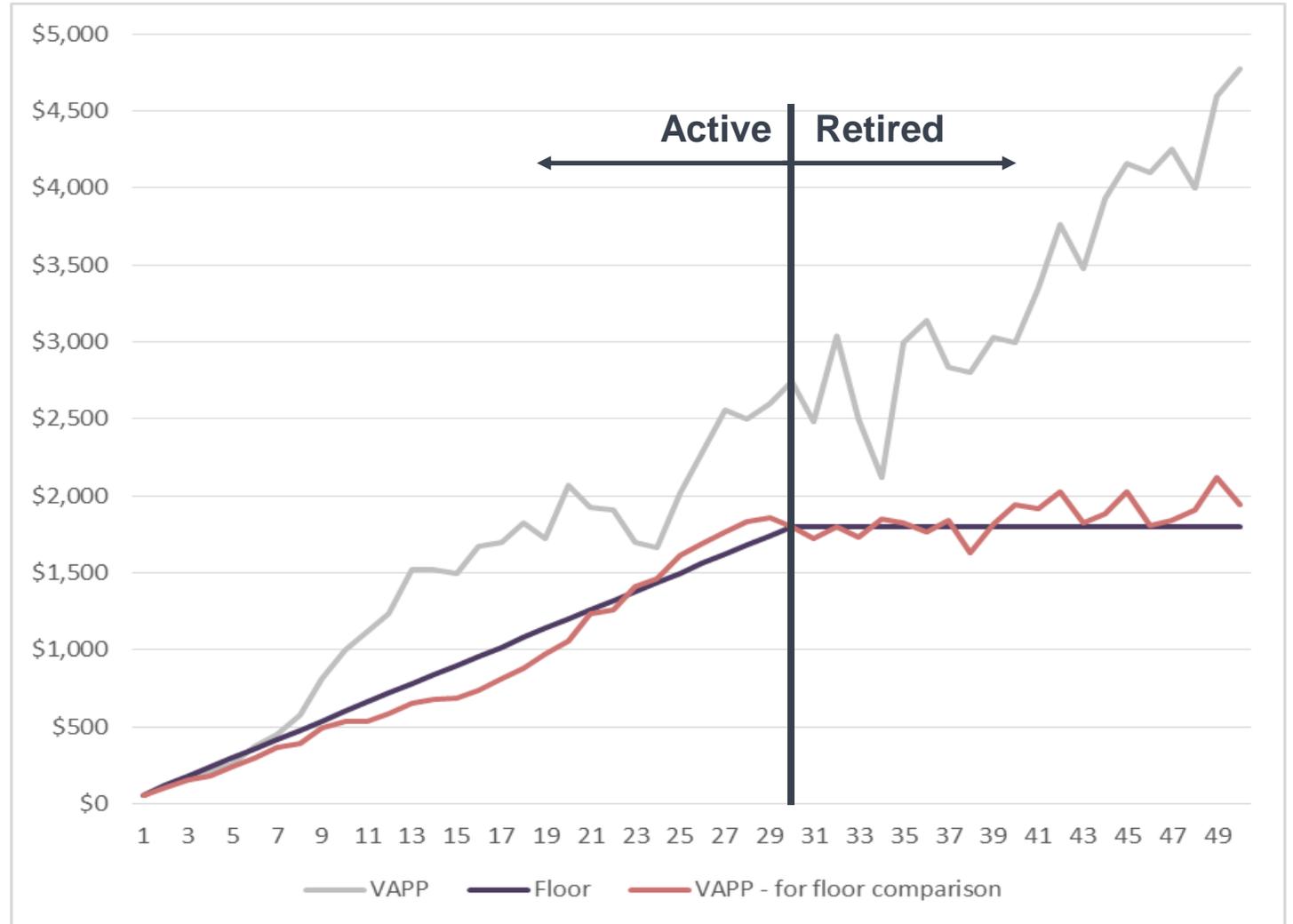
Basic variable vs locking in benefits in retirement

- Creates benefit inequity depending on year of retirement
- May modify retirement behavior



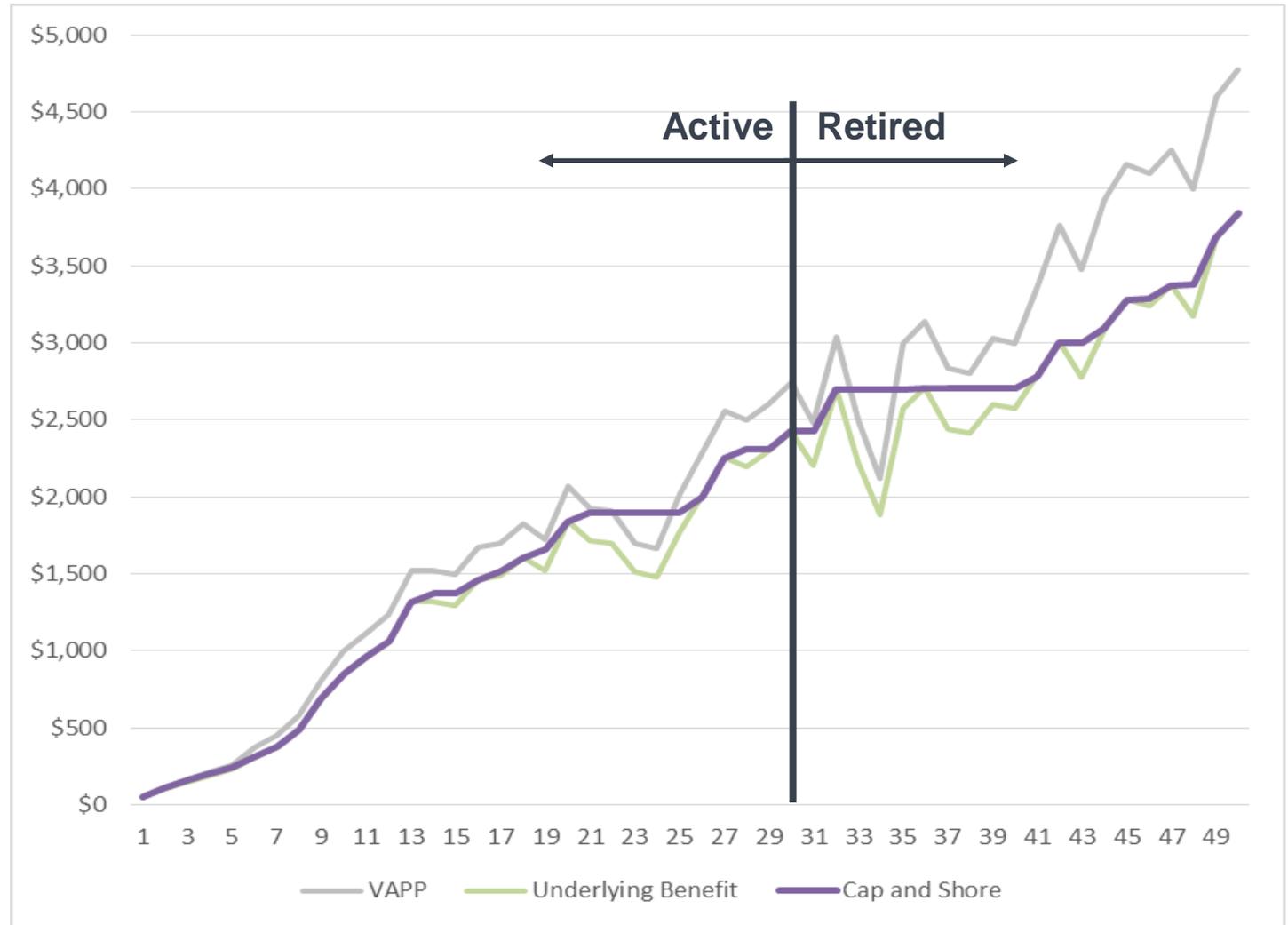
Basic variable vs floor benefit in retirement

- Floor (purple) often funded conservatively, so less benefit comes from returns, more from contributions
- Floor may not eliminate volatility, gives retirees piece of mind
- Depending on structure, could get underfunded



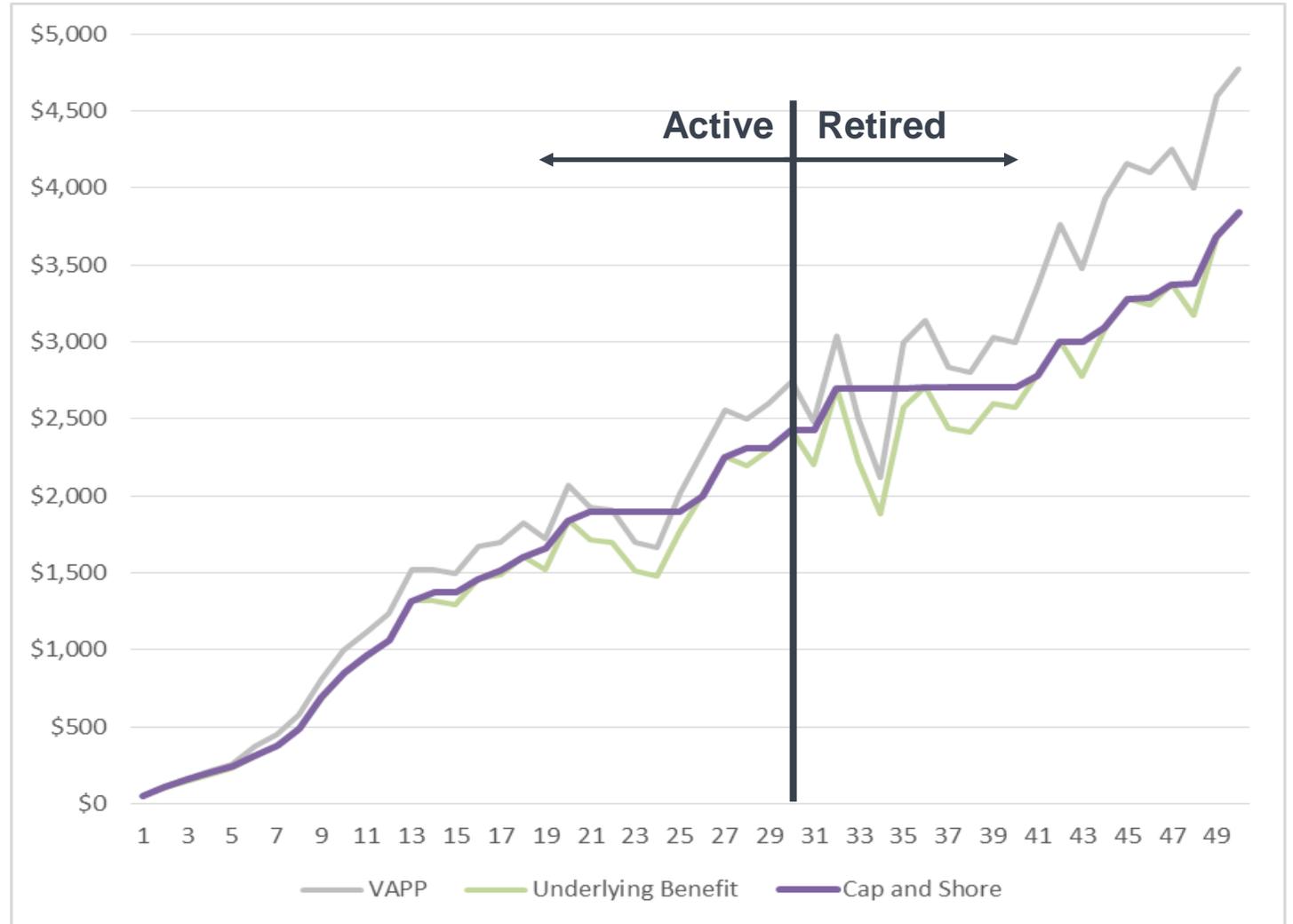
Basic variable vs sustainable income plan (cap and shore)

- A reserve is funded at about 15% of normal cost
- Benefit adjustments limited to an annual increase, called the cap, usually 6-8%, excess goes to reserve
- Reserve is spent in down markets to prevent benefit declines



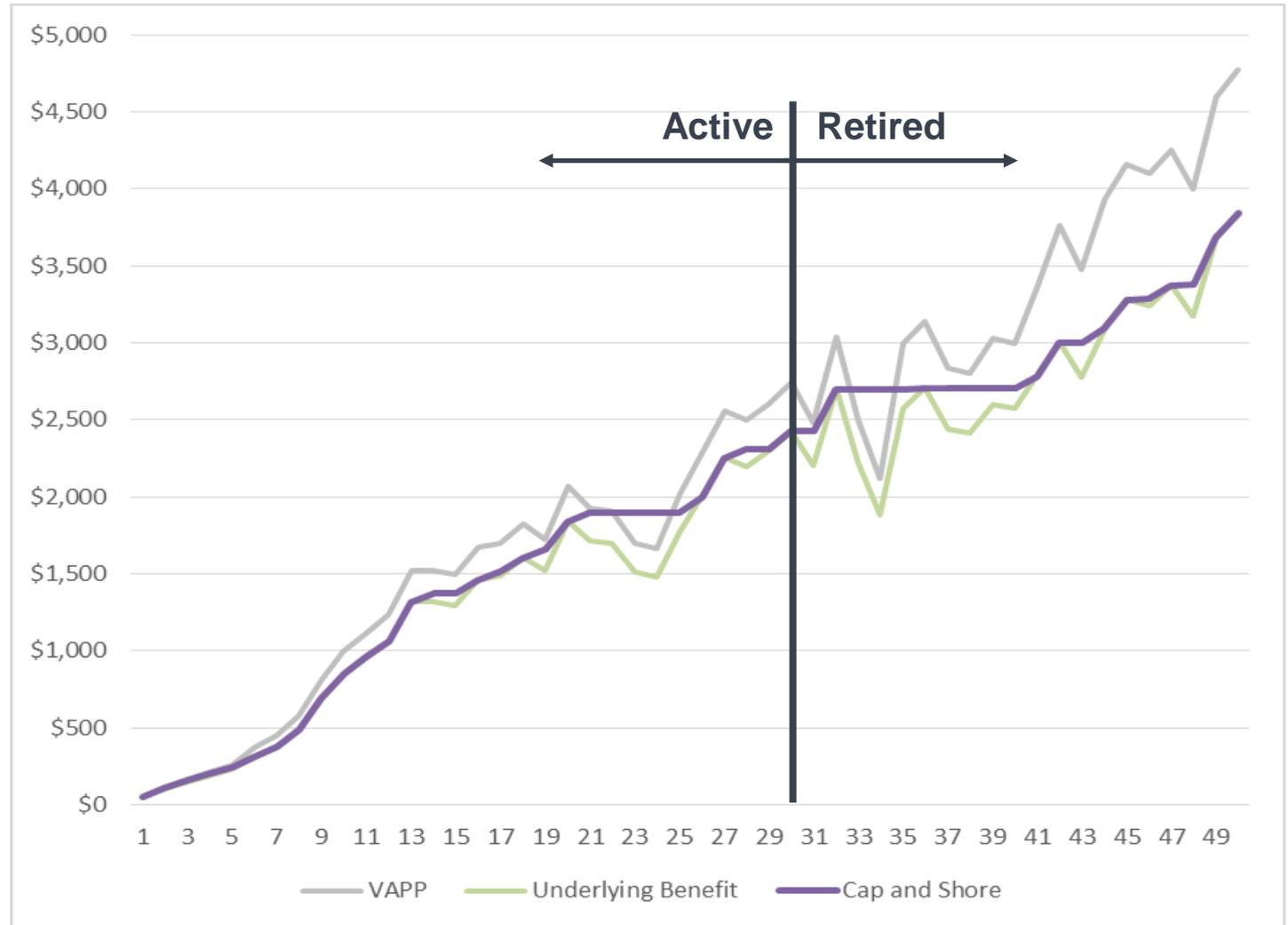
Basic variable vs sustainable income plan (SIP)

- SIP benefits smaller than traditional because of the reserve
- Plan can spend returns in excess of 130% funded (or similar) on benefit increases, like improving past SIP benefits



Basic variable vs sustainable income plan (SIP)

- Excess reserves could be spent to provide cost of living adjustments when returns are not cooperating
- Excess reserves could be used to minimize intergenerational risk transfer, keep as much equity as possible



Sustainable Income Plan (SIP)

Stores excess returns for use when needed

- Improves on basic VAP
- Has a **cap**, which limits benefit increases in years with particularly high returns
- **Stabilization reserve**, which is built in years when the **cap** is reached, is used to “shore-up” benefits when returns are less than the **hurdle rate**
- **High-water-mark** is highest benefit level ever paid, and is paid as long as there are sufficient stabilization reserves

SIP Example

Downside volatility management

- Suppose a retiree's benefit is \$1,000/month in a plan with a 4% **hurdle rate**
- The plan gets a -1% return
- The new **underlying benefit** is **\$952**, which is fully funded

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

- The retiree receives the \$952 **underlying benefit** plus a \$48 “shore-up” from the **stabilization reserve**, so the **high-water-mark** benefit of \$1,000 is preserved

SIP Example

Harvesting the upside

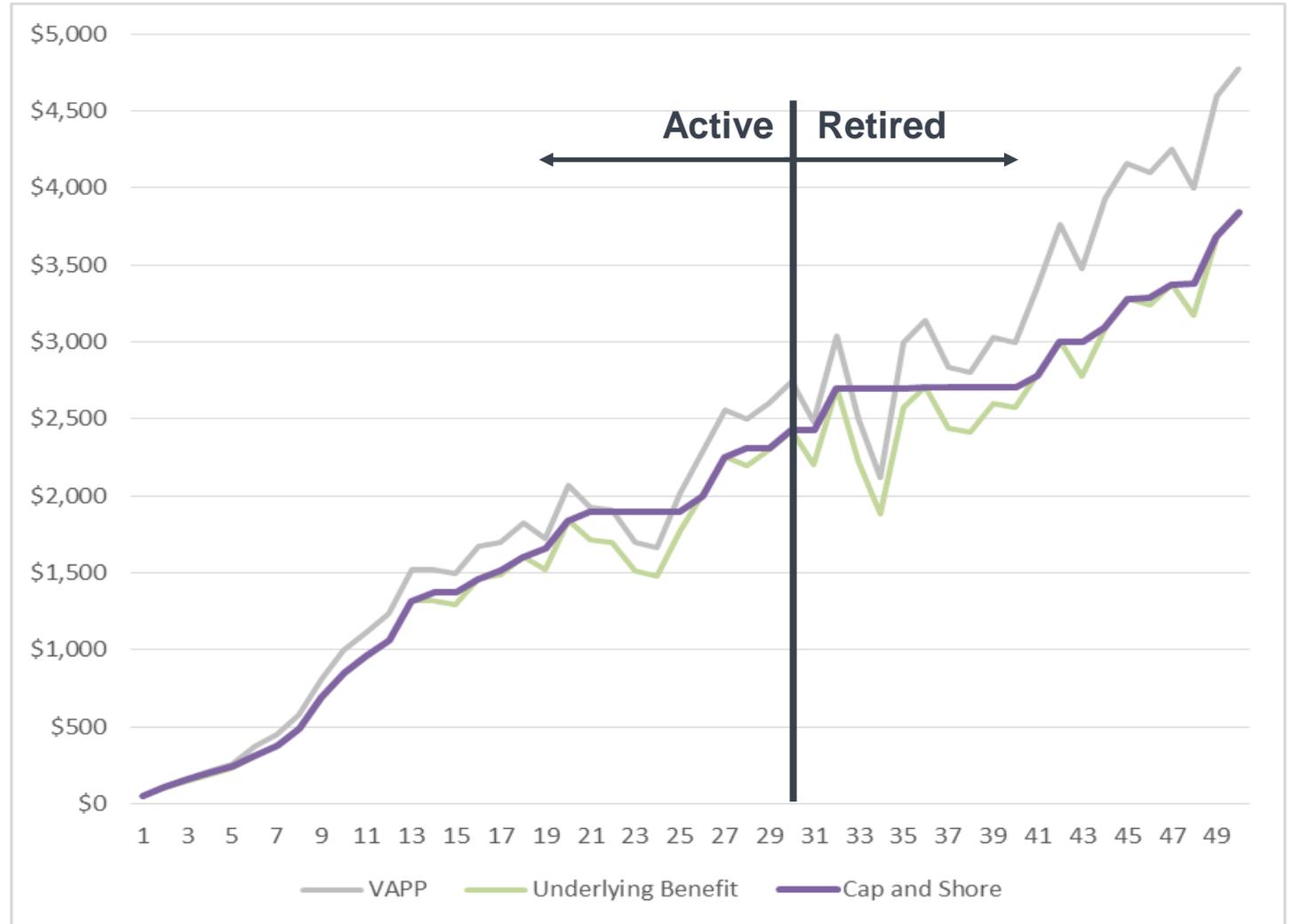
- The next year, the adjustment is applied to the **underlying benefit** of \$952

$$(1+0.16) / (1+0.04) - 1 = 11.5\%$$

- The plan's return is 16%, which would result in a basic VAP increase of 11.5%, to \$1,062, BUT, the SIP has a **cap**, so benefit increases are limited to 8%
 - The monthly benefit amount changes to **\$1,028**
- $$\$952 * 1.08 = \$1,028$$
- The excess between 11.5% and 8.0% builds the **stabilization reserve** to “shore-up” benefits for future downturns
 - New **high-water mark** of \$1,028 to be protected

SIPs

- The underlying benefit is in green
- The shored-up benefit is purple
- It's the “underlying” benefit (without any shore up) that is adjusted each year



SIP reserves

- In the unlikely event the stabilization reserve runs out, benefits would be reduced to the underlying benefit
- Benefit stabilization does not jeopardize funding
- Most plans are structured to avoid reserves running out in all but 1% of 20 year scenarios

Legislative certainties

- 2014 hybrid regulations clearly paved the way for modifications to basic VAPP design
- Over 20 plans have adopted the SIP design
 - About half applied for determination letters under the opening for hybrid plan design
 - Favorable determination letters are coming in, finalized for 7+ plans
- Presumably, many modified variables are getting determination letters

Legislative certainties

- Variable plans roll market returns into benefits
- Relaxing the definitely determinable rules (which the following break because they are dependent on actuarial assumptions)
 - It would be even better to roll demographic gains and losses and assumption changes into benefits also
 - In the SIP it would be nice to automate shore-ups (each requires an amendment)
- Confirmation that routine shore-ups don't constitute a permanent promise (for SIPs)

Modified and basic variable plans

- Pay lifelong benefits
- Reduce intergenerational inequity
- Indifferent to maturity
- Indifferent to whether industry is declining
- Make sure you understand any contribution risks you are adding back in
 - Due to interest rate changes
 - Due to conservative asset allocation

Conclusion

- There is a fairer way to deliver life-long income in retirement than traditional defined benefit (DB) plans.
- Variable annuity plans (VAP or VAPP) with or without modification provide a reliable and sustainable path forward.

Questions?