Sequence Of Return Risk & Safe Withdrawal Rates

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Basics of Safe Withdrawal Rates

- Fundamental client questions:
  - How much can I safely spend from this portfolio without needing to worry about the markets?
  - If I want to spend $XXX, how much money do I need in the account to safely retire?

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Linear Projections & Safe Spending

- Case example:
  - 65-year-old retiree for 30-year retirement
  - Inflation assumed to be 3%
  - 60% stocks, 40% bonds (rebalanced annually)
  - Stocks assumed to earn 10% (real 7%)
  - Bonds assumed to earn 5% (real 2%)
  - Average portfolio return 8% (real 5%)
  - Initial portfolio of $1,000,000

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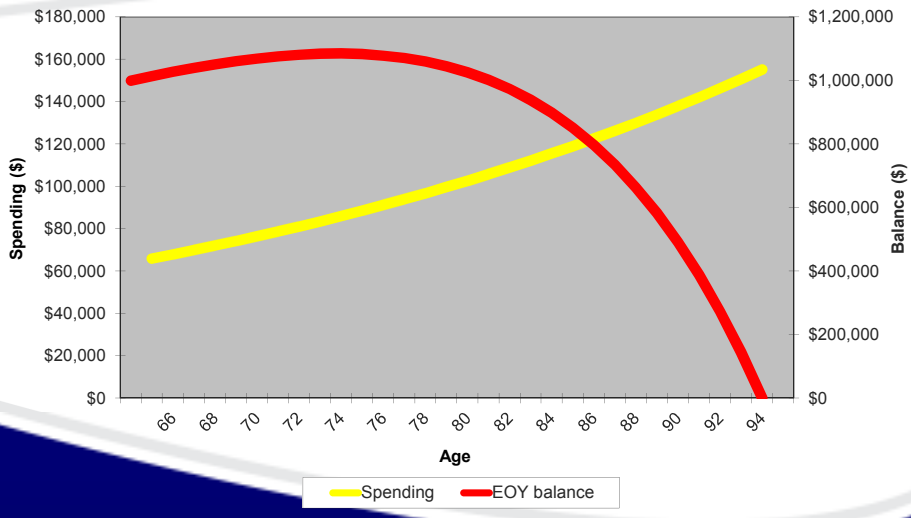
Linear Projections & Safe Spending



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Linear Projections & Safe Spending

Year	Initial Balance	Portfolio Growth	Portfolio Withdrawal	End of Year Balance
1	$1,000,000	$80,000	($65,895)	$1,014,105
2	$1,014,105	$81,128	($67,872)	$1,027,362
3	$1,027,362	$82,189	($69,908)	$1,039,643
4	$1,039,643	$83,171	($72,005)	$1,050,810
5	$1,050,810	$84,065	($74,165)	$1,060,709
6	$1,060,709	$84,857	($76,390)	$1,069,176
7	$1,069,176	$85,534	($78,682)	$1,076,028
8	$1,076,028	$86,082	($81,042)	$1,081,068
9	$1,081,068	$86,485	($83,474)	$1,084,080
10	$1,084,080	$86,726	($85,978)	$1,084,828
11	$1,084,828	$86,786	($88,557)	$1,083,057
12	$1,083,057	$86,645	($91,214)	$1,078,488
13	$1,078,488	$86,279	($93,950)	$1,070,817
14	$1,070,817	$85,665	($96,769)	$1,059,714
15	$1,059,714	$84,777	($99,672)	$1,044,819
16	$1,044,819	$83,586	($102,662)	$1,025,742
17	$1,025,742	$82,059	($105,742)	$1,002,060
18	$1,002,060	$80,165	($108,914)	$973,311
19	$973,311	$77,865	($112,181)	$938,994
20	$938,994	$75,120	($115,547)	$898,567
21	$898,567	$71,885	($119,013)	$851,439
22	$851,439	$68,115	($122,584)	$796,970
23	$796,970	$63,758	($126,261)	$734,466
24	$734,466	$58,757	($130,049)	$663,175
25	$663,175	$53,054	($133,951)	$582,278
26	$582,278	$46,582	($137,969)	$490,891
27	$490,891	$39,271	($142,108)	$388,054
28	$388,054	$31,044	($146,371)	$272,727
29	$272,727	$21,818	($150,763)	$143,783
30	$143,783	$11,503	($155,285)	$0

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Linear Projections & Safe Spending

- Question: How much can be safely spent?
- Answer: $65,895, or about 6.6%

- Is 6.6% the “safe withdrawal rate”?
  - Safe withdrawal rate versus Initial withdrawal rate

- Primary Challenge:
  - Assumes returns are the same each and every year

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Return Sequencing

- Consequences of return sequencing:
  - What happens if the *average* return of stocks is 10%, but the returns vary from year to year?
  - What if the first two years are 0%, and the last two are 20%?
  - What if the first two years are 20%, and the last two are 0%?

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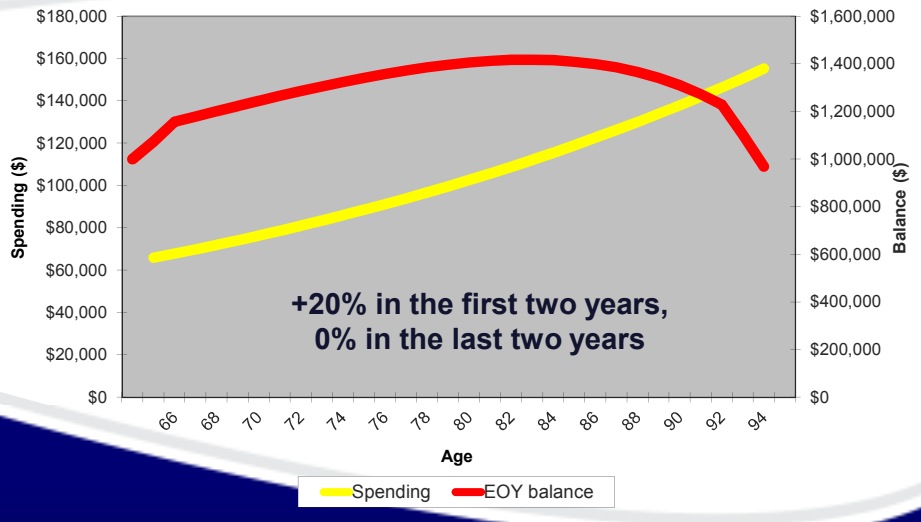
Linear Projections & Safe Spending



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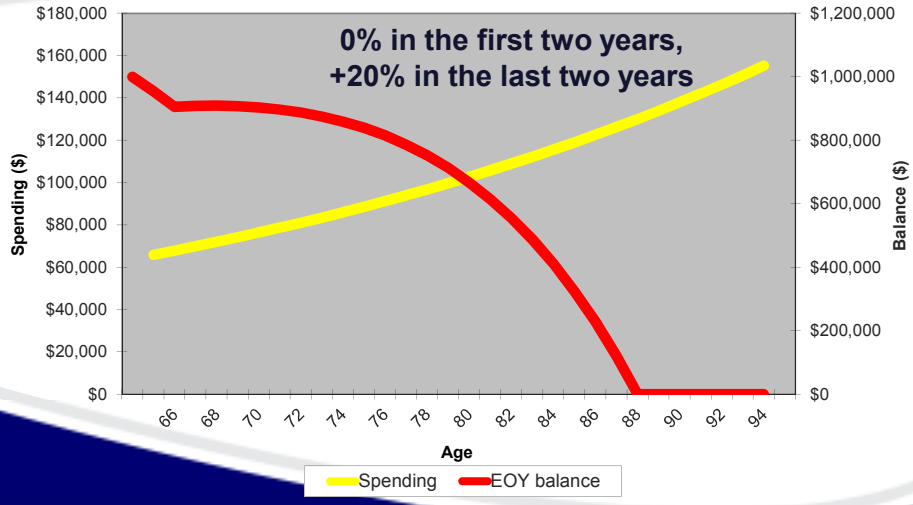

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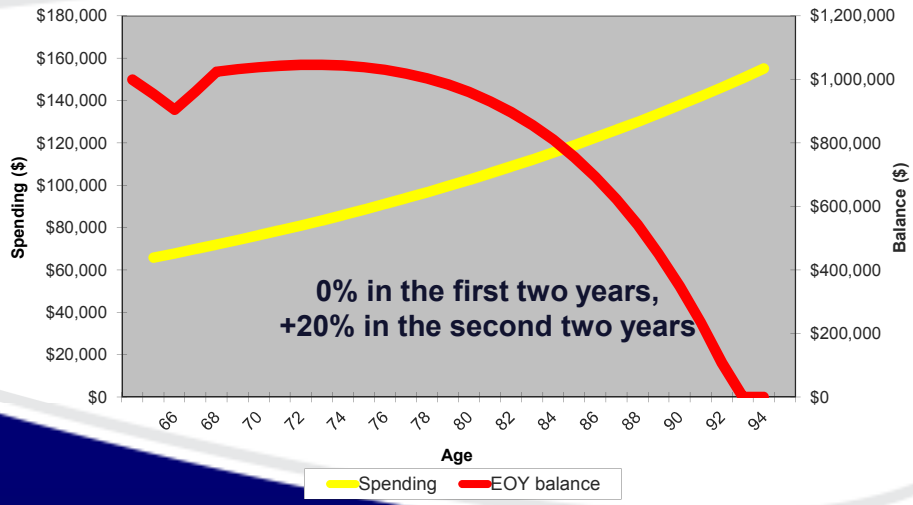

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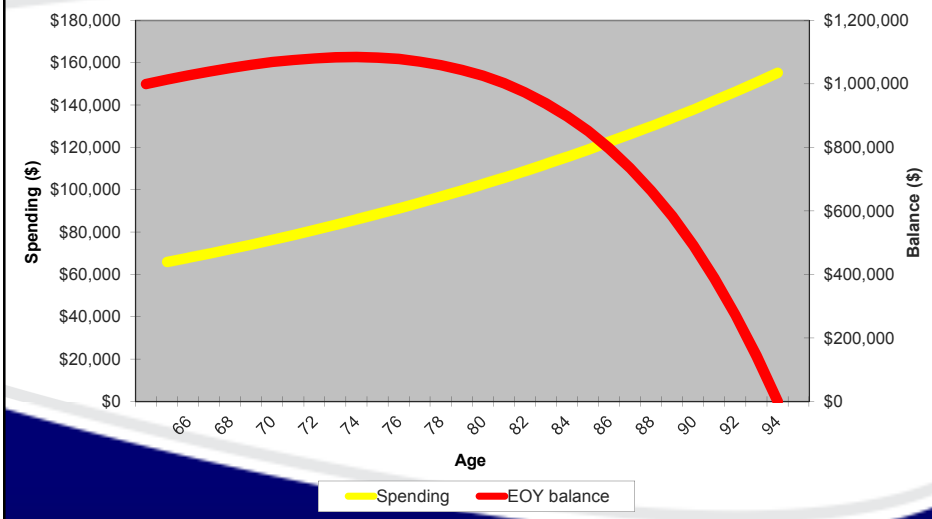

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Return Sequencing

- Consequences of return sequencing:
  - What happens if inflation varies as well?
  - What if inflation is 3.5% instead of only 3%?
    - Funds are extinguished in only 26 years!
  - What if inflation is 2.5% instead of 3%?
    - Funds last for 35 years instead!
  - A 1% fluctuation in inflation can shift a 30-year target by 9 years!

- The combined effect of both can be especially severe…

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Return Sequencing

- Retiree environment from 1969 to 1999
  - Inflation: 5.33%
  - Equities (S&P 500): 13.39% (8.06% real)
  - Bonds (5-year Treas.): 8.62% (3.29% real)
- What is the (linear) safe withdrawal rate?
  - 60% equities, 40% fixed portfolio
  - Average portfolio return: 11.48%

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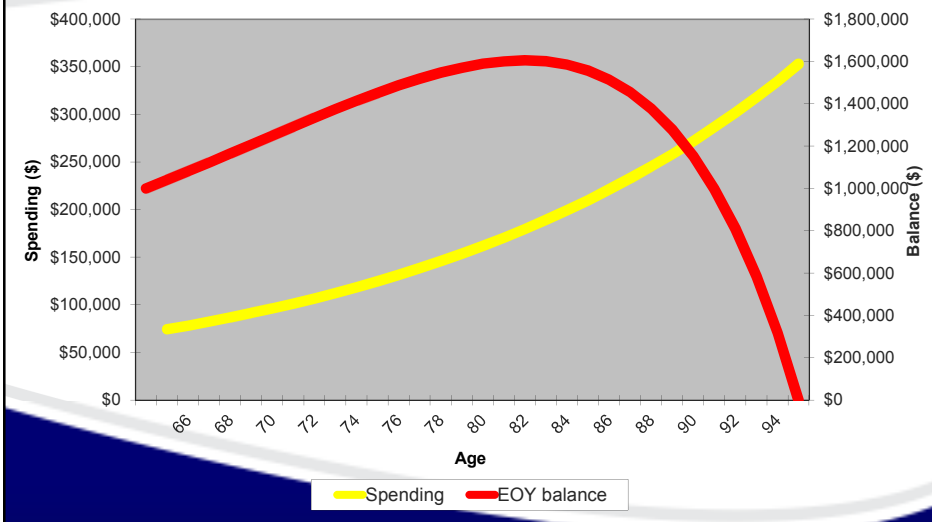
Linear Projections & Safe Spending



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Linear Projections & Safe Spending

- Question: How much can be safely spent with 1969-1999 returns?
- Answer: $74,308, or about 7.4%!
- What happens when we take into account the order of returns and inflation?

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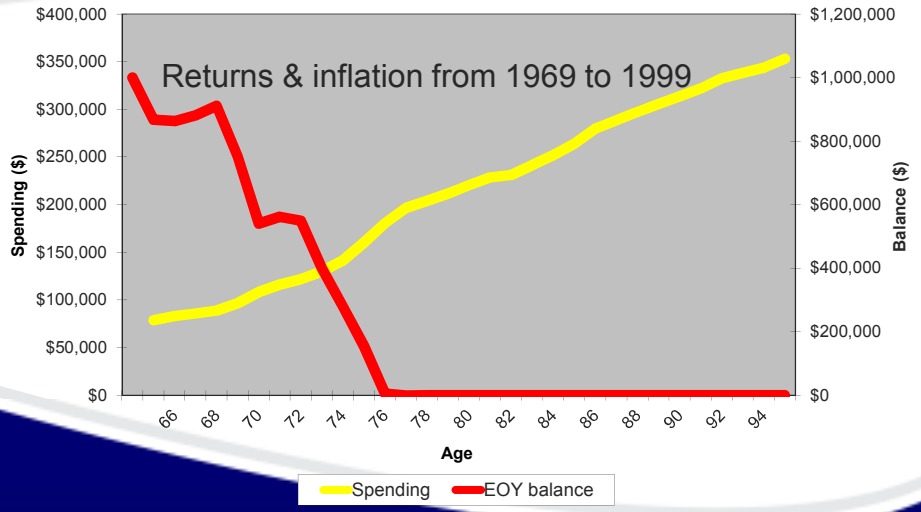
Linear Projections & Safe Spending



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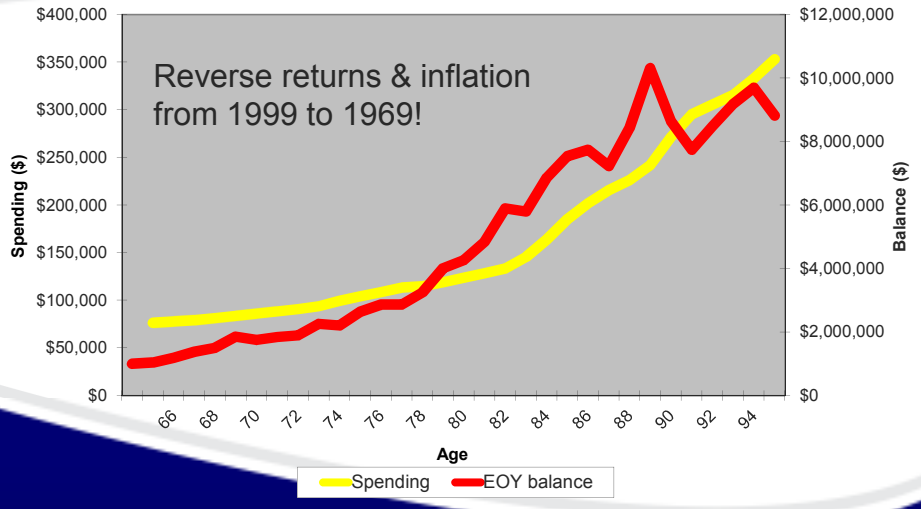

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Return Sequencing

- The sequences of returns matter, a lot!
- Disparities in the early years have a magnified effect over time!
- The extent of volatility matters too!

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Current Research on Safe Withdrawal Rates

- The challenge of safe withdrawal rates:
  - Given the impact of volatility, how much of a "safety margin" is necessary?
  - Given historical market returns, how high of a withdrawal rate would have survived any historical market scenario?
  - What is the optimal portfolio allocation to survive the volatility?
- Research:
  - Determine which portfolio mixes sustained what maximum withdrawal rates over rolling historical time periods or using Monte Carlo analysis

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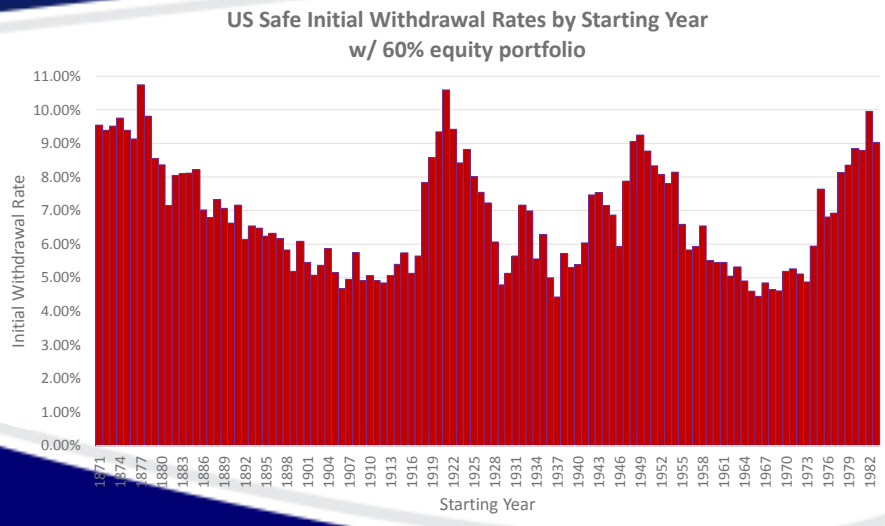
Current Research on Safe Withdrawal Rates



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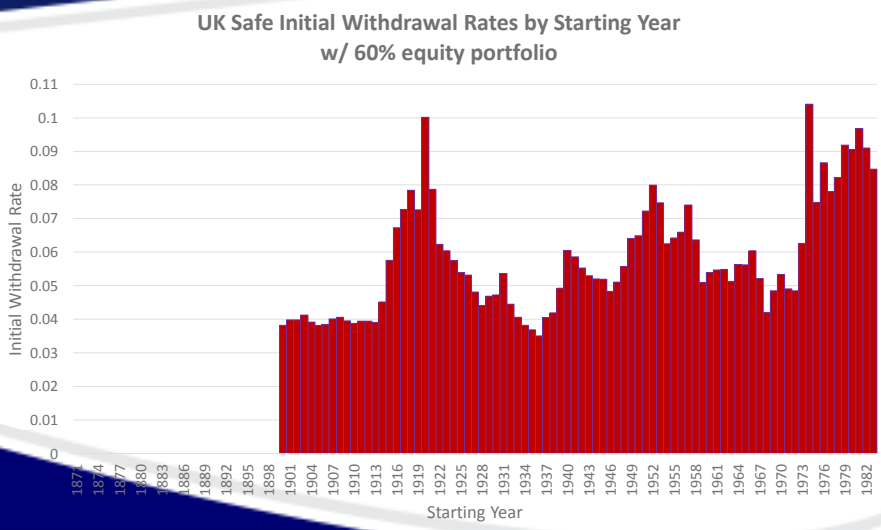

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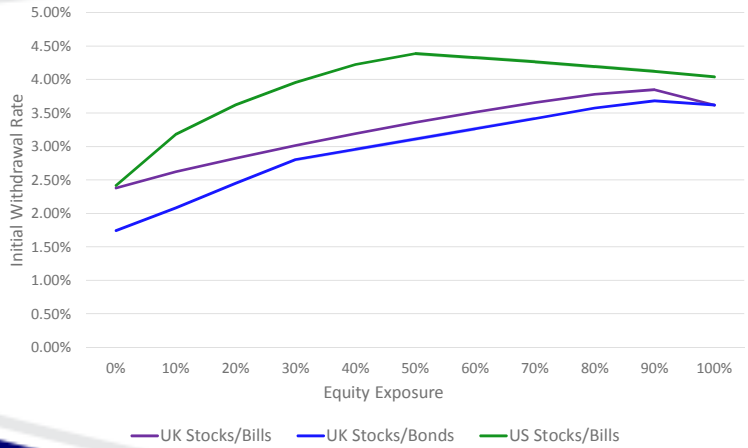

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Current Research on Safe Withdrawal Rates

- The challenge of safe withdrawal rates:
  - Given the impact of volatility, how much of a "safety margin" is necessary?
    - ~2% less than the historical average
  - Given historical market returns, how high of a withdrawal rate would have survived any historical market scenario?
    - ~4% - 4.5% of the initial account balance (3.5% in UK?)
  - What is the optimal portfolio allocation to survive the volatility?
    - ~60% in equities (varying from 40%-70% in some studies)
    - Higher in the UK?

Safe Withdrawal Rates

- Adjustments to Safe Withdrawal Rates
  - Fees / Alpha
  - Taxes
  - Time Horizon
  - Diversification
  - Spending Flexibility
  - Risk Tolerance
  - Valuation & Tactical Shifts
  - Legacy/Longevity Hedging

Safe Withdrawal Rates

- Current research summary:

Base Withdrawal Rate	4.0% - 4.5%
Adjustments	
Fees/Alpha	-1% to 1%
Taxes	-0.25% to -0.75%
Legacy/Longevity Hedge	0% to -0.4%
Time Horizon	-0.5% to 1%
Diversification	0.5% to 1%
Spending Flexibility	0% to 1%
Risk Tolerance	0% to 1%
Valuation Environment	0% to 1%
Tactical Asset Allocation	0% to 0.2%
Final Withdrawal Rate	**Sum Total of Adjustments**

Safe Withdrawal Rates

- Managing Sequence Of Return Risk
  - Setting spending "low enough" to survive
    - Safe withdrawal rates approach
  - Spending adjustments
    - Rules-based spending
    - Withdrawal policy statements
  - Asset allocation adjustments
    - Liquidation strategies & equity glidepaths
    - Dynamic (valuation-based) asset allocation

Safe Withdrawal Rates

- Important Caveats
  - Unclear whether all factors are additive
    - May be some interaction effects?
  - The future can always be different…
    - But at what point do you simply adjust as it comes?
  - Some clients have materially uneven spending
    - Monte Carlo ultimately necessary for such scenarios

Safe Withdrawal Rates

- Summary
  - Crucial to be aware of sequence of return risk and how to manage it
  - Safe withdrawal rate research provides a framework for setting 'conservative' spending in retirement
    - Alternative paths include dynamic spending and dynamic asset allocation
  - Monte Carlo analysis and other tools may still be necessary for further refinement for client-specific circumstances

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