

UNDERSTANDING 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?

LINEAR PROJECTIONS & SAFE SPENDING

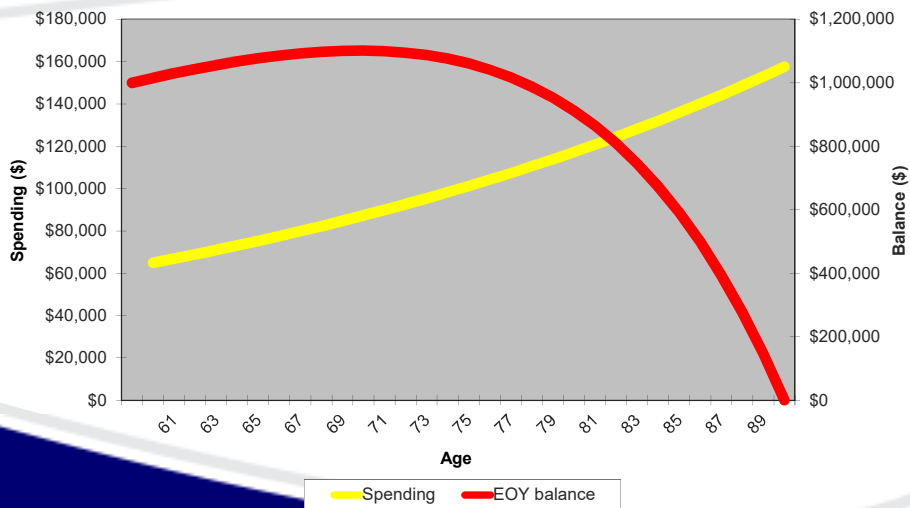
- Case example:
 - 60-year-old retiree for 30-year retirement
 - Inflation assumed to be 3%
 - 60% stocks, 40% bonds (rebalanced annually)
 - Stocks assumed to earn 10% (real 7%)
 - Bonds assumed to earn 5% (real 2%)
 - Average portfolio return 8% (real 5%)
 - Initial portfolio of \$1,000,000

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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

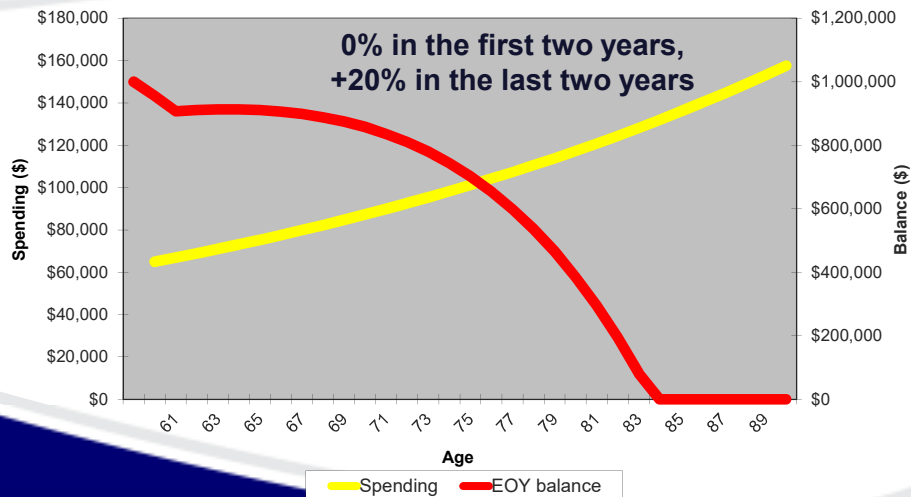
- Consequences of return sequencing:
 - What happens if the *average* return of stocks is 10%, but the returns vary from year to year?
 - What if the first two years are 0%, and the last two are 20%?
 - What if the first two years are 20%, and the last two are 0%?

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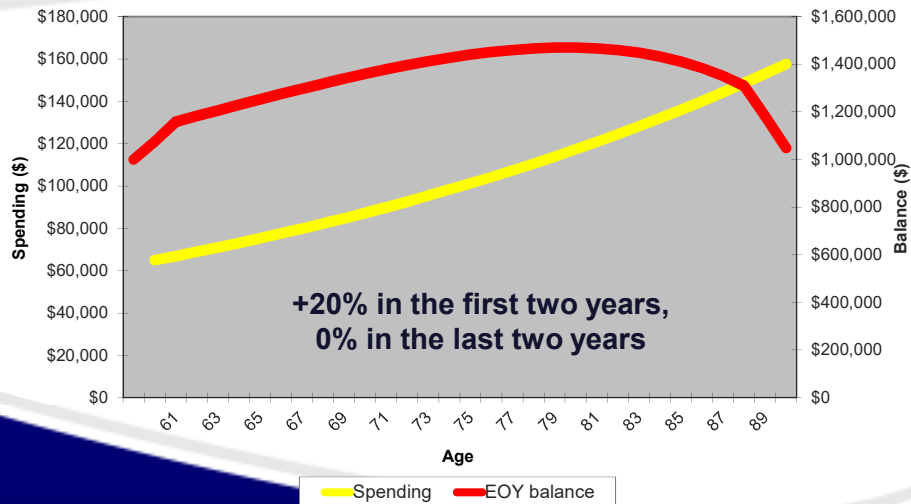


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RETURN SEQUENCING

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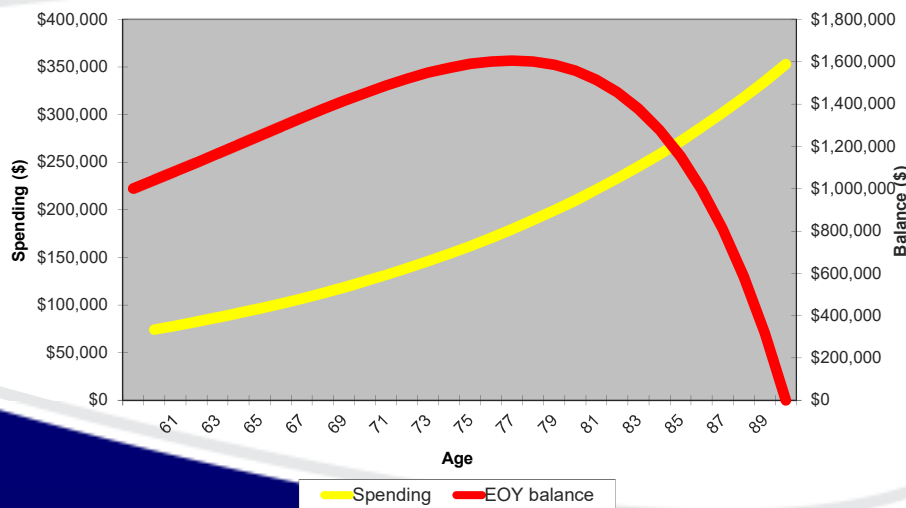
- Retiree environment from 1969 to 1999
 - Inflation: 5.33%
 - Equities (S&P 500): 13.39% (8.06% real)
 - Bonds (5-year Treas.): 8.62% (3.29% real)
- What is the (linear) safe withdrawal rate?
 - 60% equities, 40% fixed portfolio
 - Average portfolio return: 11.48%

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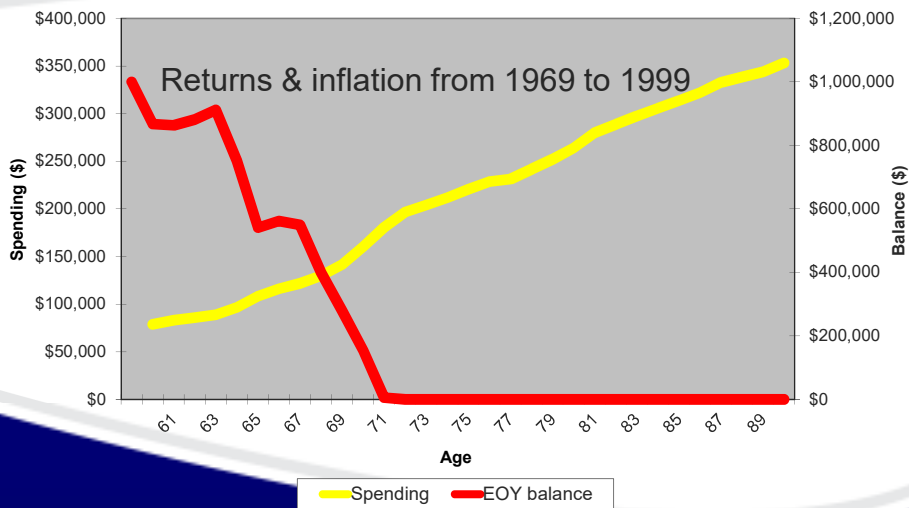
- Question: How much can be safely spent with 1969-1999 returns?
- Answer: \$74,308, or about 7.4%!
- What happens when we take into account the order of returns and inflation?

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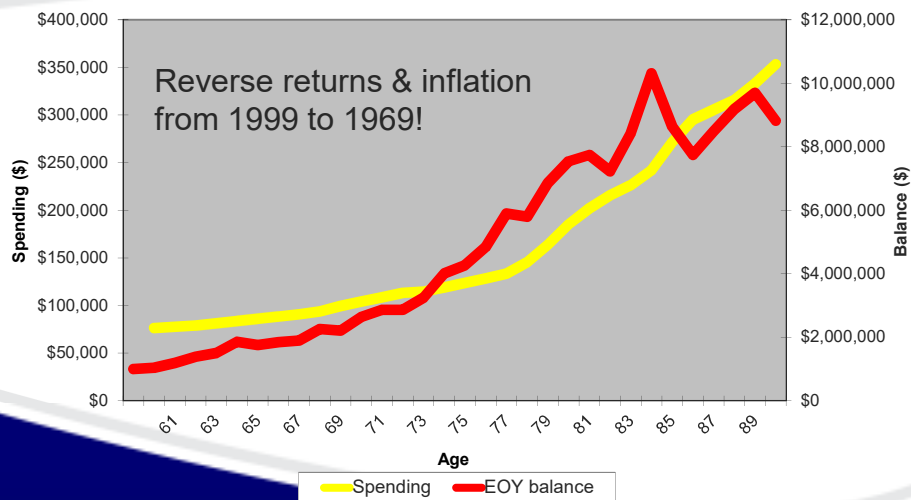


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RETURN SEQUENCING

- 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

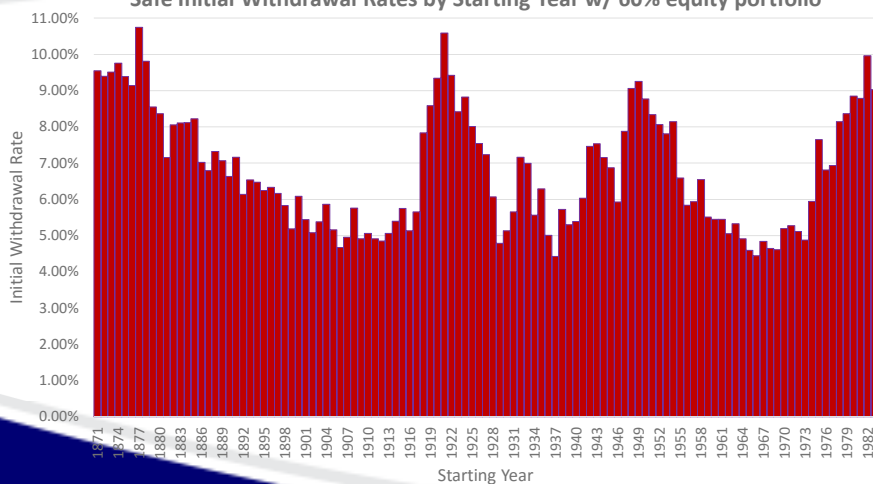
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CURRENT RESEARCH ON SAFE WITHDRAWAL RATES

Safe Initial Withdrawal Rates by Starting Year w/ 60% equity portfolio



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CURRENT RESEARCH ON SAFE WITHDRAWAL RATES

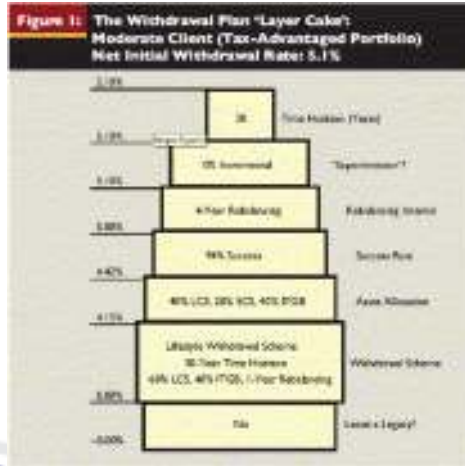
- The challenge of safe withdrawal rates:
 - Given the impact of volatility, how much of a “safety margin” is necessary?
 - ~2% less than the historical average
 - Given the historical returns of the markets, how high of a withdrawal rate would have survived any historical market scenario?
 - ~4% - 4.5%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

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

- Baking the SWR “layer cake”
 - Bengen (2006): Withdrawal rate factors can be stacked to adjust overall SWR
 - May be positive or negative adjustments



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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

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SAFE WITHDRAWAL RATES

- Sample scenario:
 - Conservative client couple
 - Pays fees of 1.2%
 - Assuming no alpha creation
 - Moderate tax rate of 15% on capital gains and 25% on ordinary income; all taxable accounts
 - Couple is already late 60s; planning 25-year time horizon
 - Extensive diversification across asset classes

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SAFE WITHDRAWAL RATES

- Sample scenario (con't):
 - Couple has some spending flexibility in discretionary expenses if market declines
 - But doesn't want to increase likelihood of spending adjustments even further
 - Valuation environment and interest rates are moderate relative to historical standards
 - Couple is willing to make tactical adjustments to protect against high-risk environments
 - Couple would like to leave at least full principal as legacy (and to serve as safety margin)

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SAFE WITHDRAWAL RATES

- Sample client couple scenario:

Base Withdrawal Rate	4.0%
Negative Adjustments	
1.2% fees	-0.4%
Moderate Taxes	-0.5%
Legacy/Longevity Hedge	-0.25%
Positive Adjustments	
25-year Time Horizon	0.5%
Significant Diversification	0.75%
Some Spending Flexibility	0.5%
Moderate Valuation/Rates	0.5%
Tactical Asset Allocation	0.2%
Final Withdrawal Rate	5.3%

SAFE WITHDRAWAL RATES

- Important Caveats
 - Unclear whether all factors are additive
 - May be some interaction effects?
 - Not all factors have been fully tested
 - The future can always be different?
 - Some clients have materially uneven spending
 - E.g., onset of Social Security for an age-55 retiree?
 - Monte Carlo ultimately necessary for such scenarios

SAFE WITHDRAWAL RATES

- Summary
 - Safe withdrawal rate research has been expanded significantly over the past 20 years
 - Adjusting factors based on client-specific circumstances can greatly refine recommendations
 - Can be an effective anchor for setting reasonable client expectations
 - Monte Carlo analysis and other tools may still be necessary for further refinement for unusual situations
 - In many situations, though, safe withdrawal rates with adjustments may be more than accurate enough!

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