

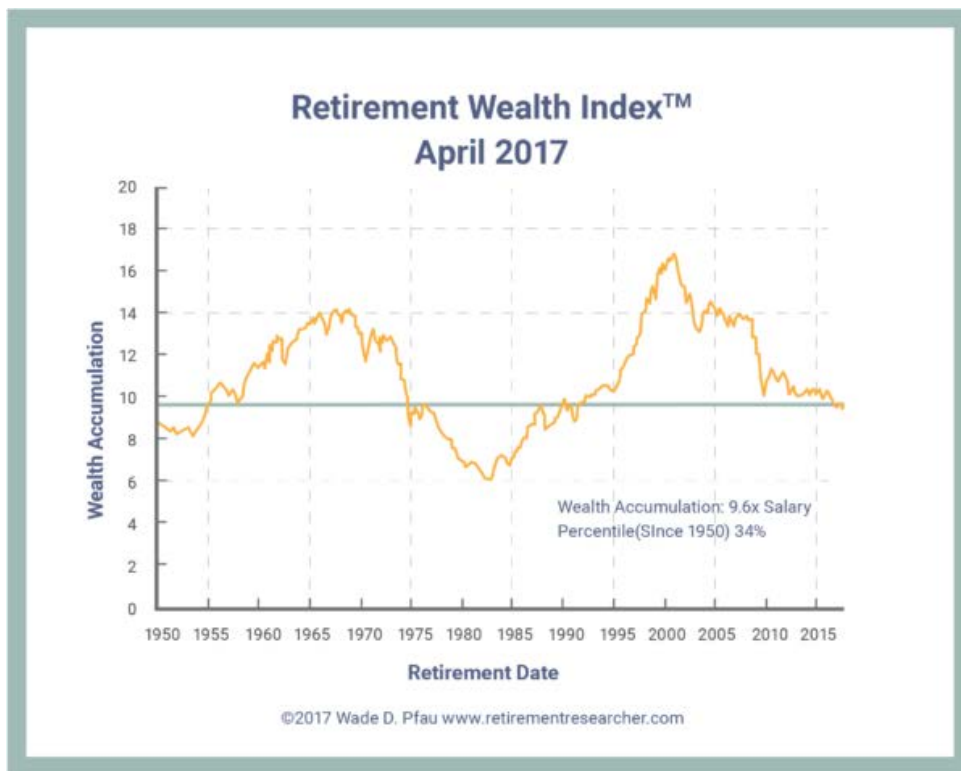
The Retirement Income Dashboard

For a Benchmark Couple Both Turning 65 in April 2017

Individuals who save in a very responsible way can end up experiencing very different retirement outcomes on account of the market returns they experienced during the specific years of work and retirement. Through no fault of their own, some people will be saving at a good time (strong market returns in the years just before and after their retirement, which impacts wealth accumulations and sustainable spending rates), while others will not be so lucky.

Is now a good time to retire? My Retirement Dashboard aims to help answer this question by tracking the situation of a hypothetical benchmark retiree couple reaching age 65.

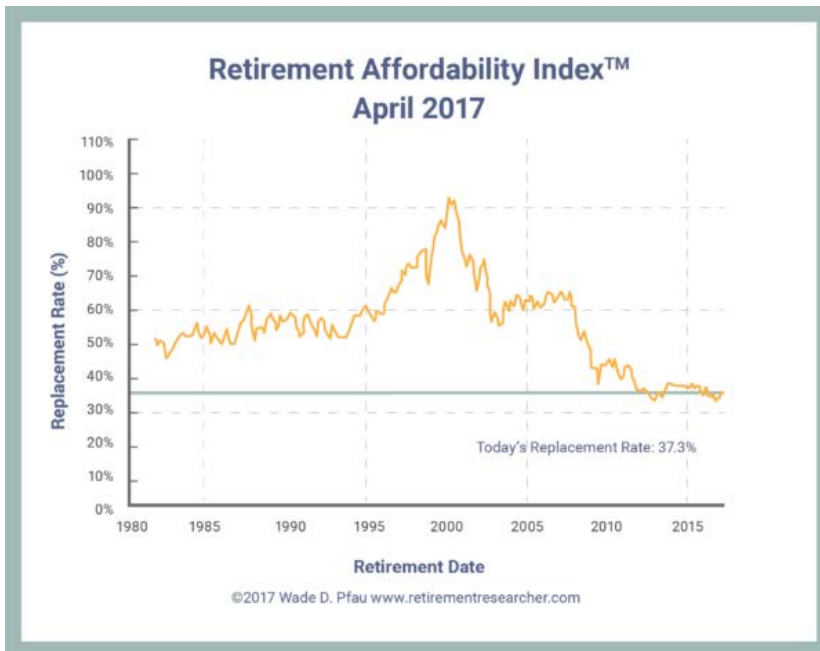
First, the Retirement Wealth Index™ shows the accumulated wealth (as a multiple of salary in the final working years) for someone saving 15% of salary each year over a 30-year period from age 35 until retirement at age 65.



The next chart shows the cost for this couple to buy \$1 of inflation-adjusted joint lifetime income based on real interest rates and Society of Actuaries longevity estimates for each month since 1982.



Next, the Retirement Affordability Index™ incorporates current market conditions to determine the gross replacement rate from pre-retirement salary which can be sustained with the accumulated retirement wealth. Calculations are based on supporting an inflation-adjusted spending stream over a lifetime using the cost of retirement income shown in the previous chart.



As an example for how these indices work, a retiree whose final salary was \$100,000 would have accumulated \$957,000. Given current interest rates and longevity, the cost of a real dollar of lifetime income for the couple is \$26.74. Retirement savings could purchase of \$35,800 of inflation-adjusted lifetime income. This represents at 35.8% replacement rate from pre-retirement salary.

The next table provides information about sustainable spending using bond ladders and income annuities in the present interest rate environment.

(1) Sustainable Spending from Dedicated Income Sources

Spending Rates Obtainable for 65-Year Old Couple, April 2017

Income Growth Factor	30-Year Bond Ladder	SPIA (Life-Only)	SPIA (Cash Refund)
Fixed (No Growth)	4.85%	5.63%	5.44%
2% COLA	3.76%	4.42%	4.26%
CPI-U Adjusted	3.69%	3.62%	3.60%

Notes: SPIA rates are based on the average of top three quotes from immediateannuities.com using \$100,000 of non-qualified funds for a joint and 100% survivors annuity. Bond ladders are based on Treasury strips (fixed and 2% growth) and TIPS (CPI-U adjusted) using wholesale prices from Wall Street Journal.

Next, I estimate sustainable spending rates with specified allowances for portfolio depletion using volatile investment portfolios (stock and bond funds). These strategies have greater downside risk which is why the sustainable spending rate can potentially be less than found with dedicated income. However, these strategies also have greater upside growth potential to allow for more future spending or to provide a greater legacy. Upside potential is not reflected in the table.

(2) Sustainable Spending from Volatile Portfolios

Sustainable Spending Rates from an Investment Portfolio, April 2017

Spending Strategy	Conservative	Moderate	Aggressive
Fixed Spending (No Growth)	3.29%	4.35%	5.66%
Spending with 2% COLA	2.44%	3.41%	4.64%
Inflation (CPI-U) Adjusted Spending (i.e. "the 4% rule")	1.77%	2.82%	4.16%
Guyton and Klinger Decision Rules	3.00%	4.47%	5.73%
David Zolt's Target Percentage Adjustment: No CPI Increase	1.79%	3.31%	5.51%

Notes: The conservative couple uses a 25% stock allocation and seeks a 95% chance that real wealth will not fall below 20% of its initial level by year 35 of retirement. The moderate couple uses a 50% stock allocation and seeks a 90% chance that real wealth will not fall below 15% of its initial level by year 30 of retirement. The aggressive couple uses a 75% stock allocation and seeks an 80% chance that real wealth will not fall below 10% of its initial level by year 25 of retirement. Analysis assumes that withdrawals are made at the start of each year, retirees earn the underlying indexed market returns, and market return simulations are based on capital market assumptions starting from today's level of interest rates.

Underlying Market Assumptions Table

U.S. Government Yield Curve

Constant Maturity Bonds

(April 3, 2017)

Maturity	Treasury Yield	TIPS Yield	Implied Breakeven Inflation Rate
1 Year	1.02%	-0.71%	1.73%
5 Years	1.88%	0.15%	1.73%
10 Years	2.35%	0.39%	1.96%
20 Years	2.71%	0.67%	2.04%
30 Years	2.98%	0.91%	2.07%

Source: US Department of Treasury