

# Integrating Home Equity and Retirement Savings through the “Rule of 30”

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# History: The Retirement Income Crisis

- ▶ Beginning in the 1980's most large companies discontinued their traditional Pension Plans
- ▶ By the 1990s: Defined Contribution Programs (e.g. 401(k) Plans) became dominant. Most future retirees will have only their 401(k) and other savings, plus Social Security, to use for income during retirement.
- ▶ Regardless of the size, turning a lump sum into lifetime income poses a challenge for any retiree
- ▶ Risk of exhaustion before the end of retirement is significant.

# History (cont'd): Securities Portfolios

- ▶ Beginning in the early 90's financial advisors began to address the problem: 1994 Bengen study addressed how to maximize annual inflation-adjusted (constant purchasing power) withdrawal from securities portfolio while minimizing risk of exhaustion of the portfolio, throughout a 30-year retirement.
- ▶ Result: The “4% Rule.” Current economic environment would imply a 3% to 3.25% Rule.
- ▶ Many variants on the 4% Rule have been proposed (e.g. Guyton 2004)

- History (cont'd): Securities Portfolios
  - ▶ From 2000–2017 Defined Contribution Plans have evolved considerably (e.g. auto-enrollment, target date funds, installment/annuity options and “QLAC’s”)
  - ▶ Prior to 2012, efforts to address retirement income adequacy largely focused on ways to boost accumulations and maximize investment returns with little attention to the payout period of a retiree’s life.
  - ▶ Retirement Income strategies still primarily considered withdrawals from securities portfolios and maximizing Social Security benefits

- History (cont'd): Securities Portfolios
  - ▶ In the last 5 years the industry has recognized that two main issues still needed to be addressed.
  - ▶ The first is continued insufficiency of 401(k) and other savings to provide an adequate level of life income for most retirees.
  - ▶ The second is that even with adequate savings, investment volatility and uncertain mortality creates a serious risk of exhaustion regardless of the retirement income strategy adopted.

# History (cont'd): How to address Retirement Income Crisis – Use Home Equity in a *Strategic Way*

- ▶ The effect of volatility and longevity is manifested in what is called the “Adverse Sequence of Returns.”
- ▶ The effect of inadequate retirement resources has been well documented and discussed at great length in the mainstream media.
- ▶ The answer to both problems:
  - Don't withdraw from the portfolio when it is down.
  - Use Home Equity to supplement retirement savings.
- ▶ 2012: The first realization that home equity could be used to good effect to offset the Adverse Sequence of Returns. (Sacks and Sacks 2012; Salter et al 2012).

# History (cont'd): Use of Home Equity –

- ▶ Home equity has long been recognized as a potential “buffer” to the retirement income crisis, but until recently, biases and the lack of efficient drawdown mechanisms has limited its utility as a retirement income generator.
- ▶ 2012 through 2016: Many researchers and industry experts (e.g. the Society of Actuaries) recognized that new strategies using Home equity needed to be developed, and a new framework emerged after the Sacks and Salter papers, but utility seemed limited to a narrow group of retirees (“mass affluent” retirees with high savings/home equity ratios).
- ▶ 2017: A new idea, to be discussed here, applies existing concepts to a wide range of ratios of home values/savings extending the effectiveness of the strategy considerably.

# Types of Retirees Considered

- ▶ 4 different “archetypical” retirees considered
- ▶ Chosen to represent a cross-section of a large percentage of the wealthiest 50% of retirees (50<sup>th</sup>–90<sup>th</sup> percentile by assets)
- ▶ Takes account of the variance in the proportion of assets that home equity represents for retirees in different geographical and socio-economic environments

# Types of Retirees Considered

- ▶ Retiree #1 – The “mass-affluent” retiree
- ▶ Assumed home equity of \$400,000 and retirement savings of \$800,000
- ▶ Is typical of a retiree at the 80<sup>th</sup> percentile of wealth
- ▶ Is essentially the type of retiree considered by Sacks, Pfau, Salter and others in pre-2016 studies

# Types of Retirees Considered

- ▶ Retiree #2 – The “house rich mass-affluent” retiree
- ▶ Assumed home equity of \$800,000 and retirement savings of \$400,000
- ▶ represents a retiree at the 80<sup>th</sup> percentile of wealth, but with a disproportionate amount of home equity (relative to retirement savings)
- ▶ Representative of retirees on east and west coasts where real estate prices are high

# Types of Retirees Considered

- ▶ Retiree #3 – The “almost affluent” retiree
- ▶ Assumed home equity of \$150,000 and retirement savings of \$300,000
- ▶ represents a retiree at the 60<sup>th</sup> percentile of wealth with a somewhat higher than average amount of retirement savings
- ▶ This type of retiree has never before been considered in the literature, but as we will see can benefit significantly from a strategic use of a HECM

# Types of Retirees Considered

- ▶ Retiree #4 – The “house rich almost affluent” retiree
- ▶ Assumed home equity of \$300,000 and retirement savings of \$150,000
- ▶ Also represents a retiree at the 60<sup>th</sup> percentile of wealth but with a more typical ratio of home equity/savings
- ▶ As will be seen this type of retiree can benefit dramatically from a strategic use of a HECM

# Assumptions and Methodology

- ▶ In conducting this study, authors considered how to reflect how the 2017 economic environment differed from 2012 when the original HECM drawdown strategy was developed by Sacks, Salter and others
- ▶ Considered both the difference in environments themselves (e.g. interest rates are approximately 1% lower in 2017 vs 2012) and how “expert opinion” on future long term investment returns had changed in 5 years (e.g. lower expectations on future stock market returns)
- ▶ Authors chose to use the same basic assumptions for this study as those used in Sacks 2012, but ran additional “sensitivity testing” on assumptions based on more conservative and “current” view of the economy
- ▶ Decision to use “old” assumptions with sensitivity testing was based on the benefit of consistency with findings of prior studies (e.g. “4% rule”), and the value of measuring the robustness of results in differing economic environments

# The Analysis: Two Strategies Compared

- ▶ The analysis in this work is based on essentially the same strategy for the use of home equity that was used in the Sacks & Sacks article (2012). The strategy, a very simple one, is the following:
- ▶ In the first year of retirement: Establish a reverse mortgage credit line, but withdraw from the securities portfolio;
- ▶ In each subsequent year: If the portfolio's investment performance in the previous year was positive, withdraw from it. (Why? “To harvest the winnings!”) If negative, withdraw from the reverse mortgage credit line. (Why? “To allow the portfolio to recover.”)

# The Analysis: Two Strategies Compared (cont'd)

- ▶ Each year's withdrawal is the same as the previous year's withdrawal, adjusted only for inflation. (Why? To maintain constant purchasing power.) The withdrawals are independent of the investment performance.
- ▶ This strategy was originally labeled as the “coordinated strategy” and in the 2017 article is labeled “Strategy No. 1.”
- ▶ The Other Strategy: The “other strategy” is based on the “conventional wisdom.” In the conventional wisdom, the retiree withdraws only from the portfolio unless and until it is exhausted, and only then establishes a reverse mortgage credit line and withdraws from it. This has been called the “last resort strategy,” and in the 2017 article is labeled “Strategy No. 2.”

# The Analysis: Two Strategies Compared (cont'd)

- ▶ The Model: The model used spreadsheet analysis with Monte Carlo simulation, running two worksheets simultaneously. The two were identical in all respects (including the investment performance of the portfolio, the rate of inflation, and the amount drawn by the retiree) except for the strategy for determining whether retirement income was withdrawn from the portfolio or the credit line (i.e., Strategy No. 1 or Strategy No. 2.)
- ▶ The Input Parameters: The input parameters to the model are: (a) Initial Value of Portfolio; (b) Initial value of retiree's home; and (c) Initial withdrawal rate (as a percentage of portfolio value). The portfolio was assumed to be 60/40 stocks/bonds, with annual re-balancing.

# The Analysis: Two Strategies Compared (cont'd)

- ▶ Focus: The focus of the analysis is on cash flow to the retiree, at constant purchasing power, throughout a 30-year retirement.
- ▶ Results: Based on 10,000 Monte Carlo simulation runs of the 30-year sequence of investment returns and withdrawals. In a certain number of those repetitions, the cash flow was shown to survive for 30 years, and in others it did not.
- ▶ A set of input parameters that resulted in 90% of the repetitions yielding cash flow survival for 30 years was considered a successful set of parameters.

# Key Findings

The key findings from performing the analysis are the following:

**a. First Key Finding:** Strategy No. 1 improves over Strategy No. 2.: Strategy No. 1 generally provides greater probability of cash flow survival than Strategy No. 2.

**b. Second Key Finding:** Results apply across a Range of Retirees: If a particular initial withdrawal amount (as a fraction of **total assets** (home plus portfolio value)) results in a 90% probability of 30-year cash flow survival, that same fraction will result in a 90% probability across a broad range of both levels of total assets and ratios of home value to portfolio value.

## Key Findings (cont'd)

**Example of the Second Key Finding:** If a \$15,000 initial distribution (i.e. 1/30 of total assets) results in a 90% survival probability when the home value is \$150,000 and the portfolio value is \$300,000 (i.e., total of \$450,000), then the same \$15,000 initial distribution also results in a 90% survival probability when the home value is \$300,000 and the portfolio value is \$150,000, and when the home value is \$225,000 and the portfolio value is \$225,000, and other combinations in between, adding up to the same total of home plus portfolio. This would also be the case if total assets were \$1.2 million and the withdrawal was \$40,000 (i.e. 1/30 x \$1.2 million)

## Key Findings (cont'd)

This key finding is that the “safe” withdrawal amount can always be determined as a fraction of the total of home value plus portfolio value. When the investment returns used in the Monte Carlo simulation are consistent with historical averages, the fraction is 1 / 30, hence the name “Rule of 30” given to this finding. When currently projected investment return figures (more conservative than historical figures) and recently revised HECM parameters are used, the result is a “Rule of 38.”

# Observations Regarding Cashflow

- ▶ Our most important finding is that retirees with only modest retirement savings who own a home (e.g. retiree #4) can dramatically increase their retirement income without risking exhausting their resources by using the “Rule of 30” and Strategy 1 for managing the source of income
- ▶ For retiree #4 this approach would produce more than twice the initial retirement income as using the “4% rule” and 29% more TOTAL cash flow over a 30 year period
- ▶ For retiree #4 the approach would allow this income to be maintained with only a 10% probability of exhausting assets (after 30 years) compared to a 70% probability of running out of money if similar income was drawn using Strategy 2
- ▶ Results for retirees #1 –3 are similar but not as dramatic

# Comparisons Rule of 30 v. 4%

	Home Value/Portfolio/ Total	Draw Using 4% Rule	Draw Using Rule of 30
#1	400/800/1200K	32,000	40,000
#2	800*/400/1200K	16,000	34,500
#3	150/300/450 K	12,000	15,000
#4	300/150/450 K	6,000	15,000



\* Use 636,150 HECM Max

# Observations Regarding Cashflow

- ▶ Part of the reason the “rule of 30” is so effective is the impact of HUD/FHA guarantees that ensure retirement income continues even after HECM loan balance exceeds the value of the home.
- ▶ The above phenomenon is most pronounced at long durations (25+ years) and for retirees with home equity below the FHA maximum and a high ratio of home equity/retirement savings (e.g. retiree #4)
- ▶ Combining “Rule of 30” with Strategy 1 provides significantly higher cash flow without risk of exhaustion than using Strategy 2 for all retirees, again due to both the mitigation of the risk of “adverse sequence of returns” AND the more pronounced impact of HUD/FHA guarantees

# Observations Regarding Cashflow

- ▶ As noted earlier, the results just described are remarkably robust across a variety of economic assumptions and for retirees with differing ratios of home equity/retirement savings
- ▶ Combining “Rule of 30” with Strategy 1 has been shown to be optimum under all home equity/retirement savings ratios from 0.5 to 2.0

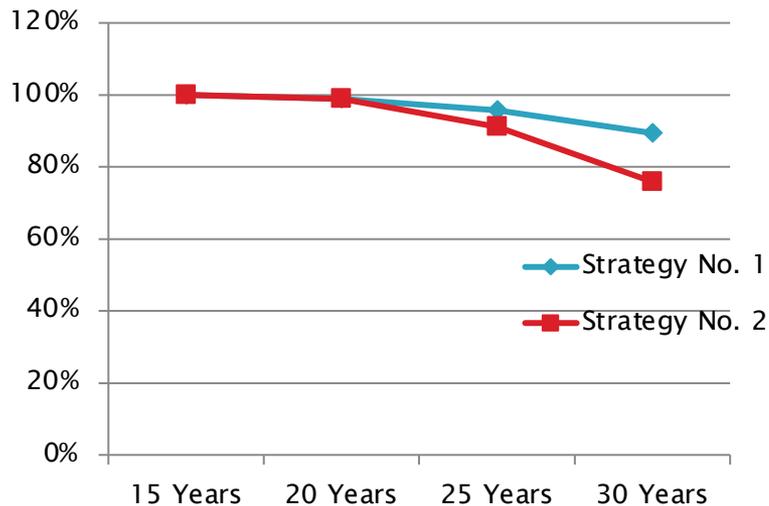
# Implications of Recent Rule and Economic Changes on “Rule of 30”

- ▶ Effective October 2, 2017 HUD changed the parameters under which future HECM’s may be issued. Such changes included a new insurance premium structure somewhat lower plf’s
- ▶ In addition, since the “rule of 30” was developed, interest rates and general expectations of future investment returns have declined
- ▶ Reflecting the new HUD rules as well as lower interest rates overall future investment returns, the “rule of 30” becomes a “rule of 38” but the strategy of drawing retirement income under strategy 1 as a fixed fraction of TOTAL resources (retirement savings plus home equity) provides for 90% probability of 30 year inflation adjusted cashflow survival.
- ▶ Under the new HUD rules and lower interest rate/investment return assumptions it is also demonstrable that strategy 1 is superior to other strategies like Strategy 2 or the 4% rule (which becomes a “3.2% rule” under lower investment return assumptions)

# Some Detailed Results (rule of 30)

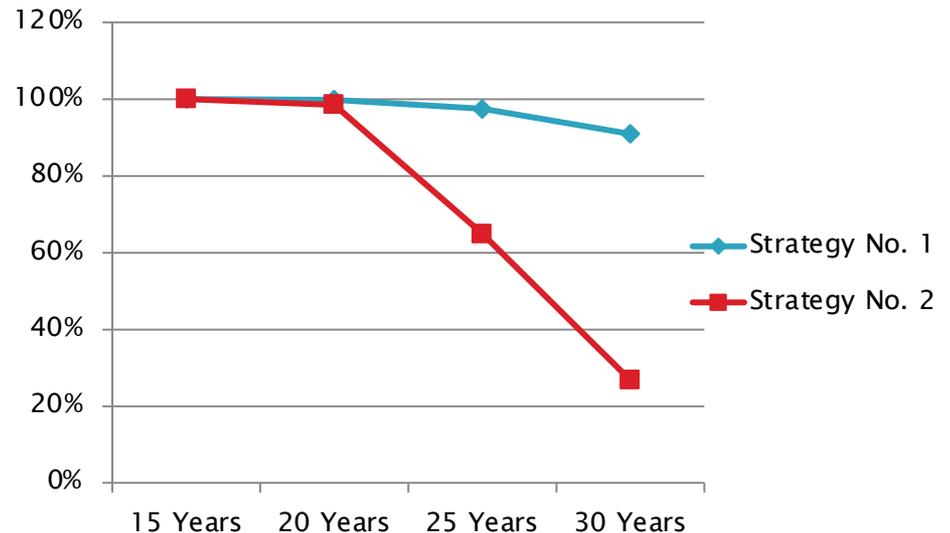
## Probability of Cash Flow Survival

### Retiree No. 1



Home Value                    \$400,000  
 Initial Portfolio Value    \$800,000  
 Total                            \$1,200,000  
 $1/30 \times \$1,200,000 = \underline{\$40,000}$

### Retiree No. 2

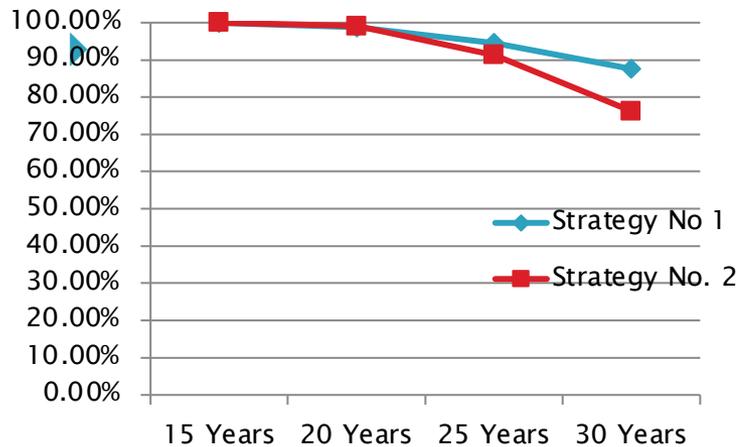


Home Value                    \$800,000  
 Initial Portfolio Value    \$400,000  
 Total                            \$1,036,150  
 (because of limit  
 of \$636,150)  
 $1/30 \times \$1,036,150 = \underline{\$34,500}$

# Some Detailed Results (rule of 30)

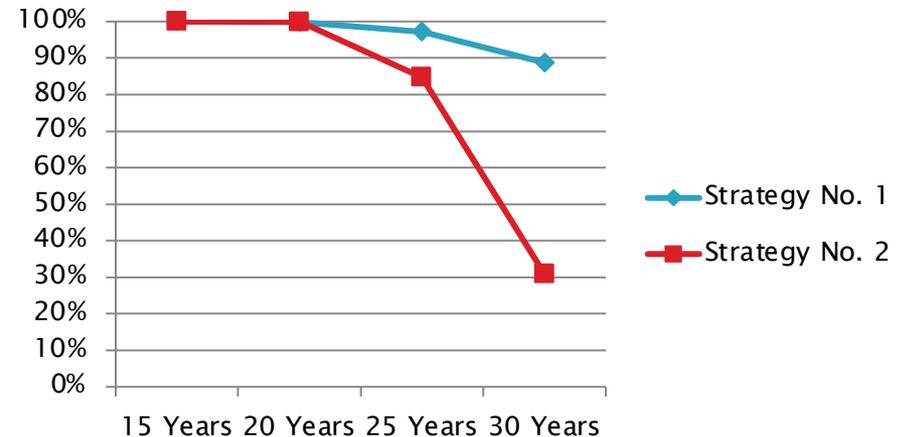
## Probability of Cash-Flow Survival

### Retiree No. 3



Home Value                    \$150,000  
 Initial Portfolio Value    \$300,000  
    Total        \$450,000  
 $1/30 \times \$450,000 = \$15,000$

### Retiree No. 4

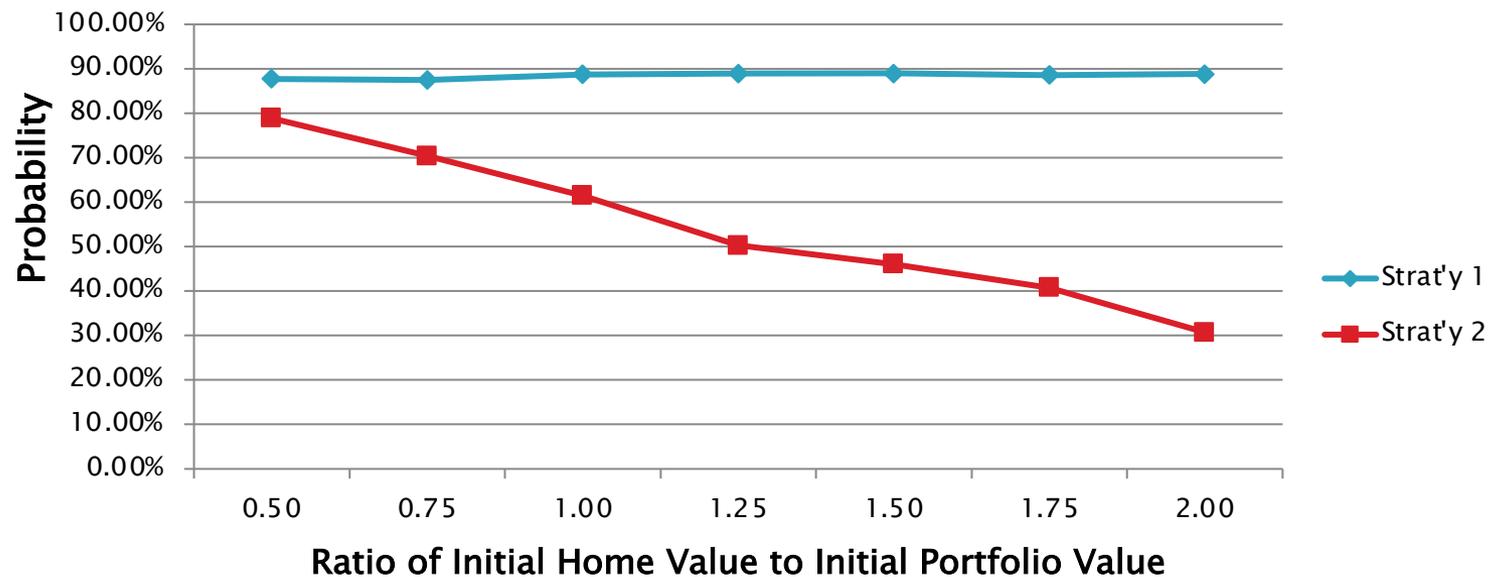


Home Value                    \$300,000  
 Initial Portfolio Value    \$150,000  
    Total        \$450,000  
 $1/30 \times \$450,000 = \$15,000$

# Some More Detailed Results (rule of 30)

Probability as a function of Ratio of Home value to Portfolio

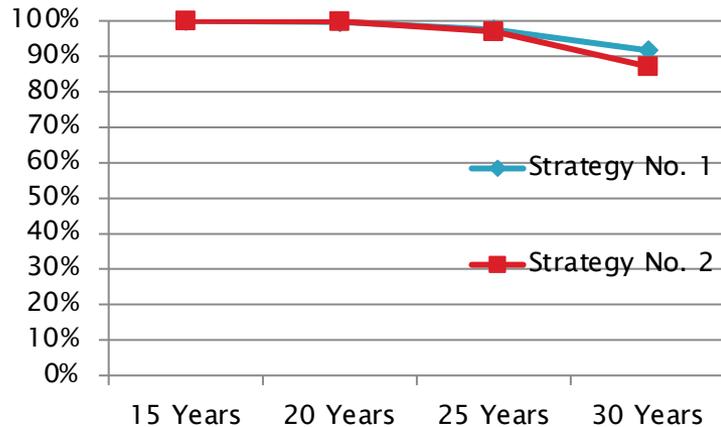
## Probability of 30-Year (InflationAdjusted) Cash Flow Survival



# Some Detailed Results (rule of 38)

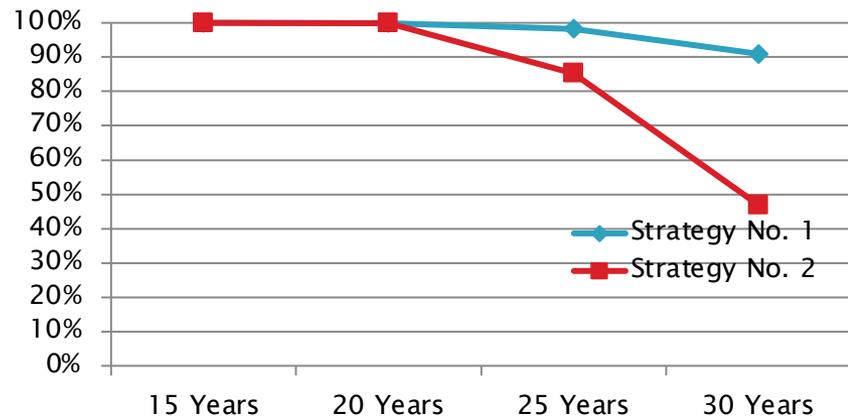
## Probability of Cash Flow Survival

### Retiree No. 1



Home Value                    \$400,000  
 Initial Portfolio Value    \$800,000  
 Total                            \$1,200,000  
 $1/38 \times \$1,200,000 = \underline{\$31,580}$

### Retiree No. 2

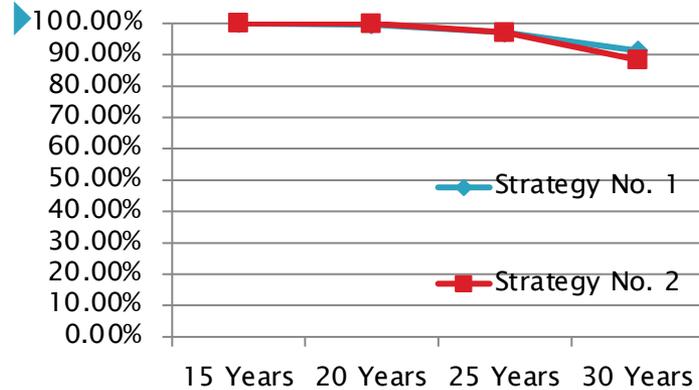


Home Value                    \$800,000  
 Initial Portfolio Value    \$400,000  
 Total                            \$1,079,650  
    (because of limit  
    of \$679,650)  
 $1/38 \times \$1,079,650 = \underline{\$28,410}$

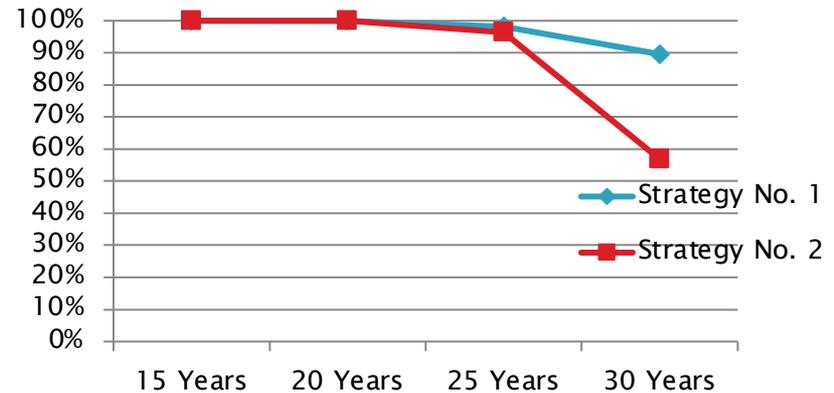
# Some Detailed Results (rule of 38)

## Probability of Cash-Flow Survival

### Retiree No. 3



### Retiree No. 4



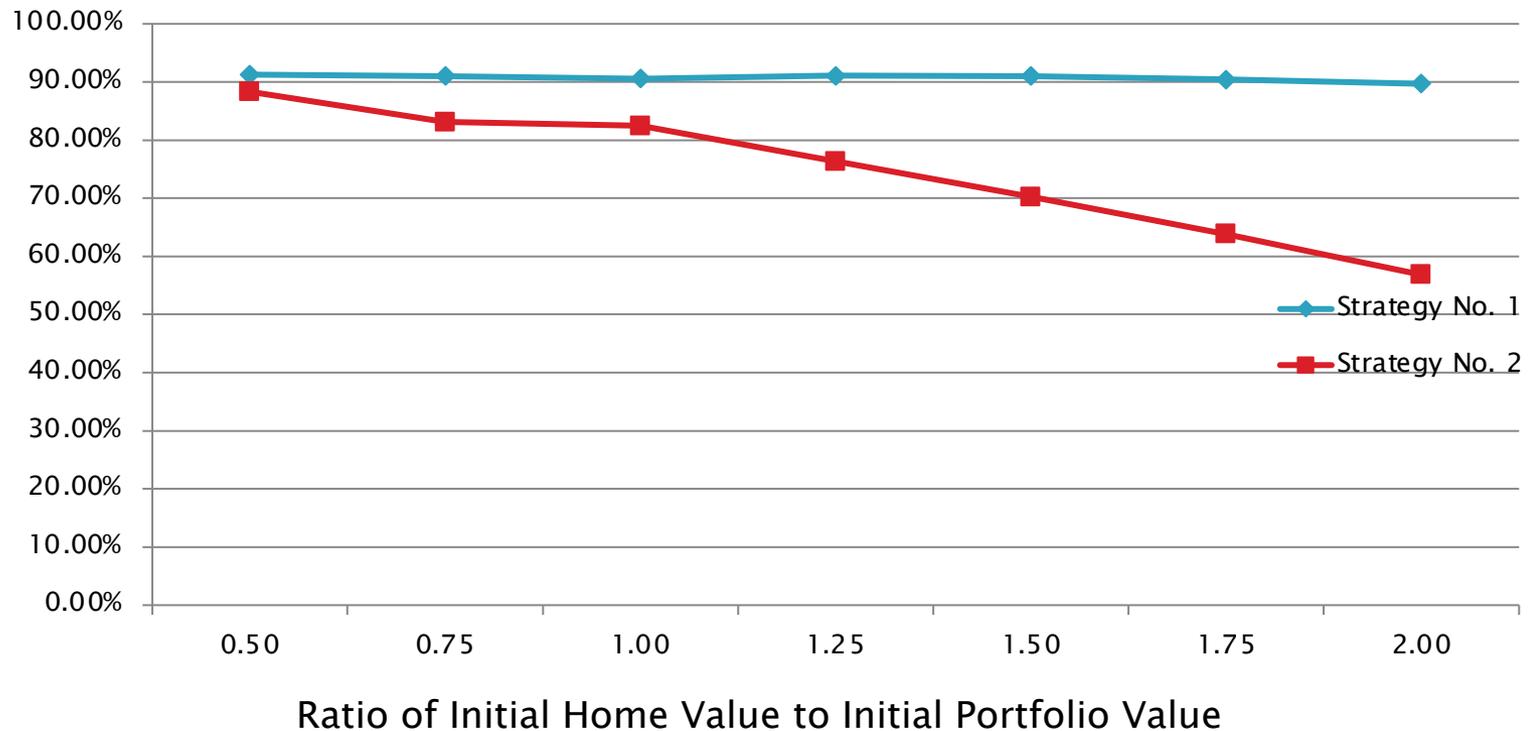
Home Value                    \$150,000  
 Initial Portfolio Value    \$300,000  
    Total        \$450,000  
 $1/38 \times \$450,000 = \$11,840$

Home Value                    \$300,000  
 Initial Portfolio Value    \$150,000  
    Total        \$450,000  
 $1/38 \times \$450,000 = \$11,840$

# Some More Detailed Results (rule of 38)

Probability as a function of Ratio of Home Value to Portfolio

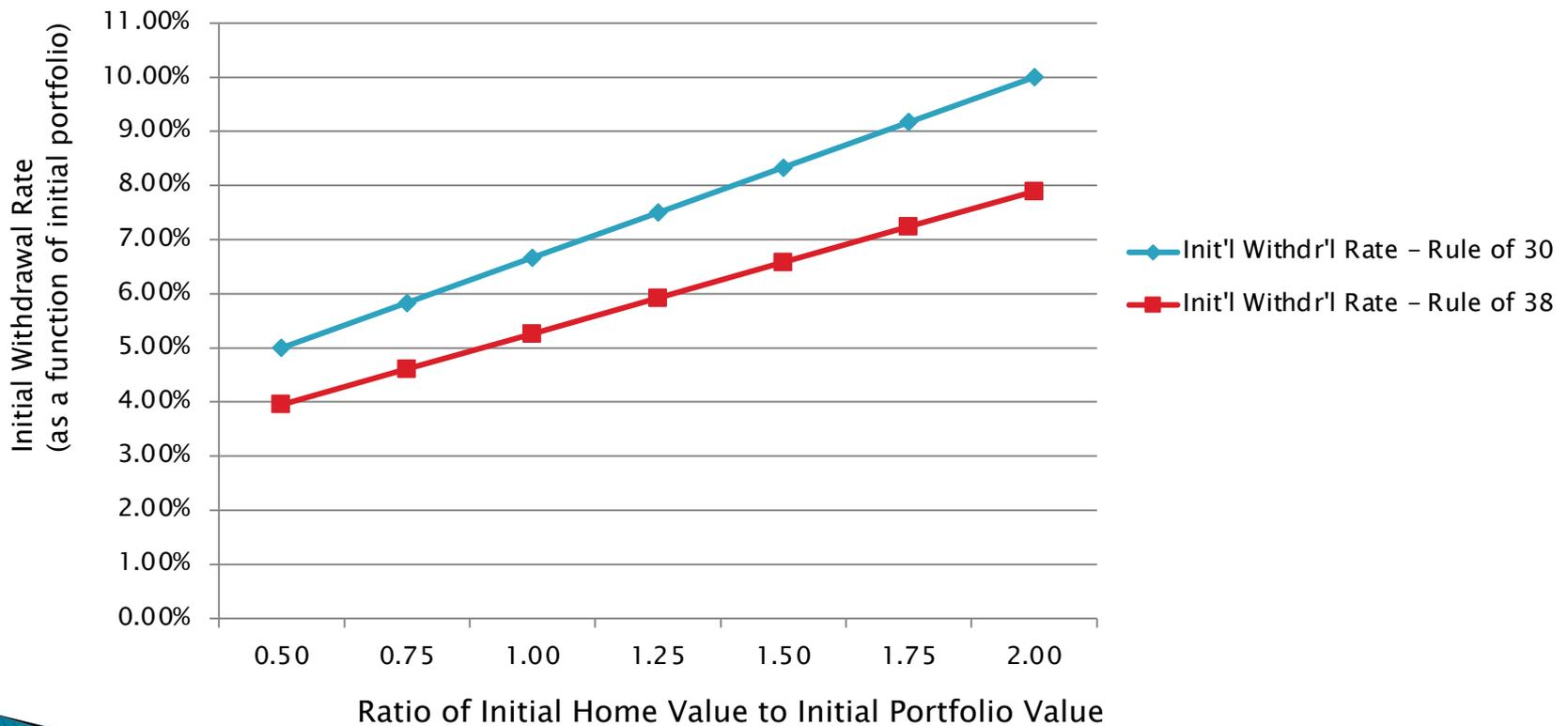
Probability of 30-Year (Inflation-Adjusted) Cash Flow Survival



# Last Item of Detailed Results

Another way to view the results shown on the previous slide:

Initial Withdrawal Rates Resulting in 90% Probability of 30-Year (Inflation-Adjusted) Cash Flow Survival  
Rule of 30 and Rule of 38



# Concluding Thoughts

- ▶ We believe that our research shows that vastly greater numbers of retirees can benefit from the use of HECM's and a coordinated drawdown strategy (i.e. Strategy 1) than previously assumed.
- ▶ While results are robust and consistent across different economic environments and for retirees with different ratios of home equity/retirement savings, the INITIAL rate of withdrawal is sensitive to economic assumptions.
- ▶ In addition to Strategy 1, there are other recently developed strategies for the use of home equity in the context of retirement that are not addressed here. These include hybrids of Strategies 1 and 2, the reverse mortgage "tenure payment" approach, as well as the use of a reverse mortgage credit line as a form of long-term care insurance. These other strategies may merit further exploration for application to certain subsets of the retirees considered in this presentation.

# Concluding Thoughts

- ▶ The role of HUD/FHA guarantees is critical and to date very little long term analysis of this aspect of HECM's has been conducted.
- ▶ In addition to the economic environment, the use and effectiveness of HECM's will also be impacted by HUD regulations and the evolution of the HECM market.
- ▶ In particular, the recent changes in HECM rules implemented by HUD may generate responses by the HECM lenders which will need to be tracked and taken into account in future research studies.