

THE NATIONAL RETIREMENT RISK INDEX: AN UPDATE FROM THE 2019 SCF

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Introduction

The National Retirement Risk Index (NRRI) measures the share of American households that are at risk of being unable to maintain their pre-retirement standard of living in retirement. The NRRI compares households' projected replacement rates – retirement income as a percentage of pre-retirement income – with target rates that would allow them to maintain their living standard and then calculates the percentage falling short. Since the Great Recession, the NRRI has shown that even if households work to age 65 and annuitize all their financial assets, including the receipts from reverse mortgages on their homes, roughly half of households are at risk.

The NRRI was originally constructed using the Federal Reserve's 2004 *Survey of Consumer Finances* (SCF) and has been updated every three years with the release of this triennial survey. The 2019 SCF offers, once again, an opportunity to take stock of retirement security. The three years from 2016 to 2019 were a period of solid economic growth accompanied by strong stock and housing markets, suggesting that the NRRI may have improved in this span.

Of course, since 2019, the world has changed dramatically, so the question is what the NRRI would look like today had the SCF been conducted in 2020. While financial and housing markets have actually seen continued growth in the wake of the COVID-19

pandemic, the crisis created an enormous spike in unemployment – particularly among lower-paid workers – during last spring, from which the labor market is still recovering. Therefore, a full assessment of the NRRI in 2020 requires accounting for all of these factors.

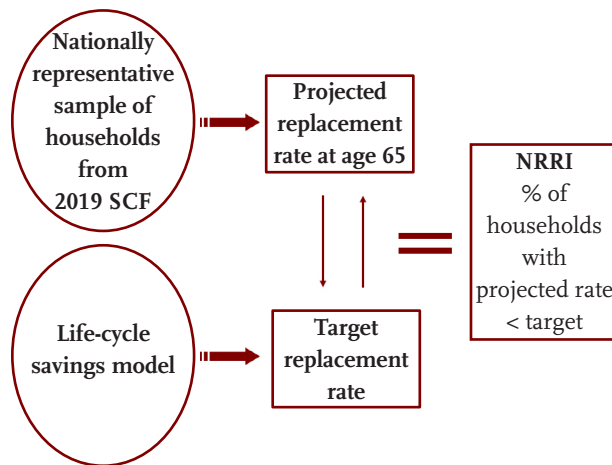
As a prelude to the updates, the first section reviews the nuts and bolts of constructing the NRRI. The second section provides a standard update of the NRRI, replacing the 2016 SCF households with those from the 2019 SCF and updating the economic assumptions. The results show that the NRRI did improve, but only slightly, declining from 50 percent of households at risk in 2016 to 49 percent in 2019. The reason for this modest change was that the positive impacts of rising stock and house prices were partially offset by a decline in interest rates and in expected replacement rates from Social Security for lower-income workers who experienced income gains. The third section then estimates what the NRRI would have looked like had the SCF been conducted in the third quarter of 2020, suggesting that the share of households at risk has increased modestly to 51 percent in the wake of the pandemic. The final section concludes that the NRRI confirms what we already know – namely that today's workers face a major retirement income challenge.

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Nuts and Bolts of the NRRI

Constructing the NRRI involves three steps: 1) projecting a replacement rate – retirement income as a share of pre-retirement income – for each member of a nationally representative sample of U.S. households; 2) constructing a target replacement rate consistent with maintaining a pre-retirement standard of living in retirement; and 3) comparing the projected and target replacement rates to find the percentage of households at risk (see Figure 1).¹

FIGURE 1. OVERVIEW OF THE NATIONAL RETIREMENT RISK INDEX



Source: Authors' illustration.

Retirement income at age 65 is defined broadly to include all of the usual suspects plus housing. Assets at retirement are projected based on the stable relationship between age and wealth-to-income ratios from the 1983-2019 SCF. The NRRI assumes that, at retirement, households annuitize all their assets – including financial assets, 401(k)/IRA balances, and money from a reverse mortgage on their homes.

Sources of retirement income that are not derived from reported wealth in the SCF are estimated directly. Specifically, Social Security benefits are calculated based on estimated earnings histories for each member of the household.

A calculation of projected replacement rates also requires income prior to retirement. The items that comprise pre-retirement income include earnings, the return on financial assets, and imputed rent from housing. Average lifetime income then serves as the denominator for each household's replacement rate.

Determining the share of the population at risk requires comparing projected replacement rates with the appropriate target rates. Target replacement rates are estimated for different types of households assuming that households spread their income so as to have the same level of consumption in retirement as they had before they retired. The NRRI is simply the percentage of all households that fall more than 10 percent short of their target.

This update of the NRRI also incorporated several methodological improvements to enhance the estimations and projections used for assessing retirement preparedness (see Box).

Box. Under-the-Hood Improvements to the NRRI

The largest change to the NRRI is shifting the wealth-to-income projections for each household from mean to median values for 2019 and all prior years. Specifically, determining the retirement income replacement rates requires using a household's current wealth to project its wealth at retirement. Given high wealth inequality, the previous method that relied on average wealth was biased toward the wealth accumulation patterns of the richest households. Thus, this method tended to overestimate the wealth of middle- and lower-income households. In contrast, the new method uses median values (for several different percentile breakdowns) to project current growth rates, resulting in a more accurate pattern for each household.

A second change is that the NRRI numbers from prior years are now reported using the most current economic data, allowing an apples-to-apples comparison over time. For example, in 2016, the NRRI projected wage growth to 2019 but the actual data for wage growth for 2016-2019 are now available. So, updating past NRRI calculations using the most recent data from the latest SCF allows for a more consistent comparison.

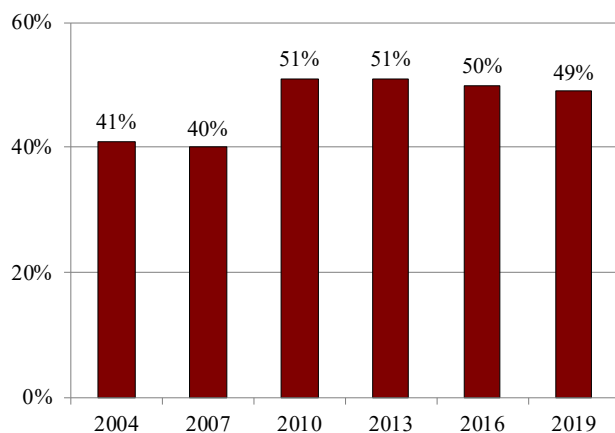
Finally, as part of long-term code maintenance efforts, parts of the NRRI codebase were moved out of Microsoft Excel spreadsheets into Python. This upgrade to an advanced, flexible, and powerful programming language allows for improved computation in the target rates (e.g. a richer matching to observed households) and for the correction of bugs in the code.

The NRRI in 2019

Updating the NRRI to 2019 involves several steps. First, households from the 2019 SCF replace households from the 2016 SCF. Next, 2019 data are incorporated in the equation used to predict financial and housing wealth at age 65. Finally, annuity income is re-estimated based on any changes in reverse mortgage and interest rates.

Our expectation pre-COVID was that the NRRI would decline in 2019 – that is, fewer households would be at risk. After all, the stock market and house prices were up. On the other hand, interest rates have continued to decline, which means that people will get less income from their accumulated wealth. And the rise in wage growth for lower-income groups, which is good news generally, is accompanied by lower projected Social Security replacement rates. The net effect is that the NRRI did decline, but only slightly – from 50 percent in 2016 to 49 percent in 2019 (see Figure 2).

FIGURE 2. THE NATIONAL RETIREMENT RISK INDEX, 2004-2019



Note: Historical data for the NRRI may not precisely match earlier published numbers due to recent methodological changes, as described in the Box.

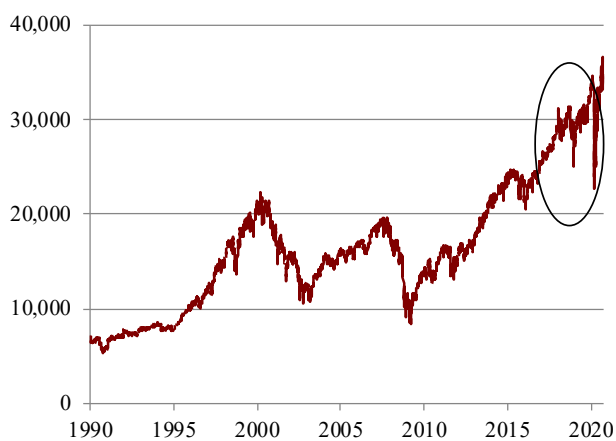
Source: Authors' calculations.

A Closer Look at the 2019 NRRI

As noted, in 2019 two factors improved the NRRI – higher equity prices and higher house prices coupled with slightly broader homeownership – while two other factors partially offset the improvement – interest rates and Social Security.

Equity Prices. Between the third quarter of 2016, which marks the previous NRRI baseline, and the third quarter of 2019, equity prices increased by about 25 percent after adjusting for inflation (see Figure 3).

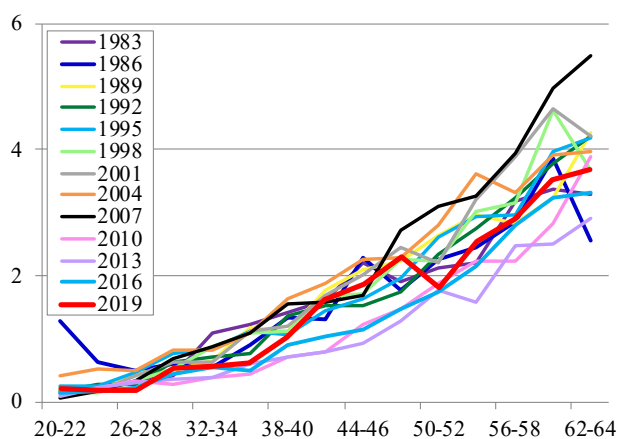
FIGURE 3. DOW JONES WILSHIRE 5000 (REAL), JANUARY 1990-SEPTEMBER 2020



Sources: Wilshire Associates (2020) and U.S. Bureau of Labor Statistics (2020).

While the rise in equity prices had a positive effect on the NRRI, its impact was small because equities are largely concentrated among wealthy households who are already well prepared for retirement. As a result, even with the growth in the stock market, the median wealth-to-income ratio, which underlies the NRRI calculations, did not increase significantly (see Figure 4 on the next page).

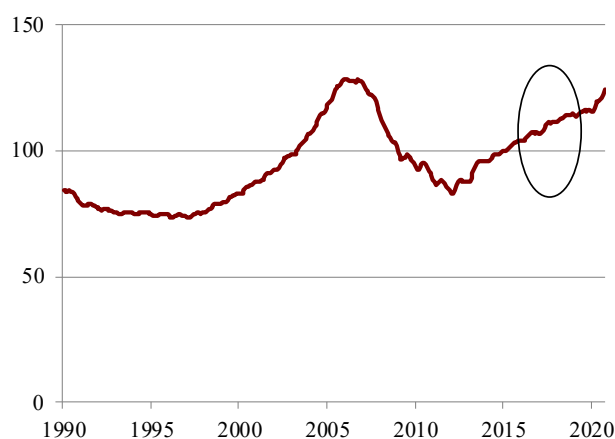
FIGURE 4. RATIO OF WEALTH TO INCOME BY AGE FROM THE SURVEY OF CONSUMER FINANCES, 1983-2019



Source: Authors' calculations based on U.S. Board of Governors of the Federal Reserve System, *Survey of Consumer Finances* (1983-2019).

House Prices. In contrast to equities, housing is important for a majority of households. During the three-year period between SCF surveys, house prices continued to rebound from the collapse that began in 2006 (see Figure 5). Moreover, the percentage of households owning a primary residence either held steady or ticked up across age groups. In the NRRI, homeownership and house prices have a significant

FIGURE 5. INDEX OF AVERAGE U.S. HOUSE PRICES (REAL), JANUARY 1990-OCTOBER 2020

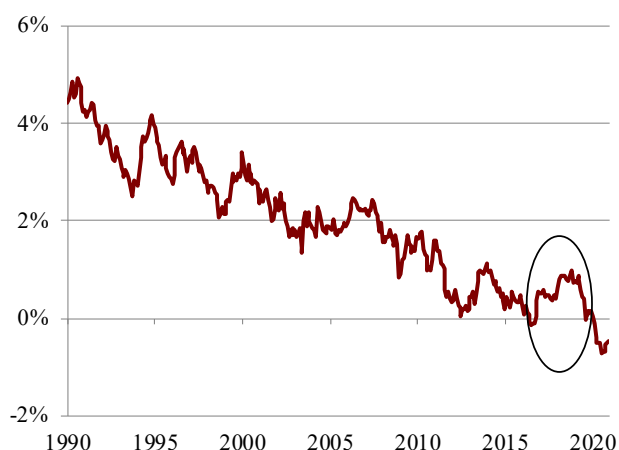


Sources: S&P Global (2020) and U.S. Bureau of Labor Statistics (2020).

impact, because households are assumed to access their home equity at retirement by taking out a reverse mortgage. The higher the home value, the more a household can extract in cash and turn into a stream of income through annuitization.

Interest Rates. Between the 2016 and 2019 SCF, the real interest rate declined slightly from 0.6 percent to 0.2 percent (see Figure 6). Lower interest rates mean that older households get less income from annuitizing their assets, which include 401(k)/IRA balances, other financial assets, and money received from a reverse mortgage; this reduction in income increases the NRRI. The NRRI tapers the effect of an interest rate decline, which limits the principal impact to just those nearing retirement.

FIGURE 6. REAL 10-YEAR INTEREST RATE, JANUARY 1990-DECEMBER 2020



Note: Real interest rates equal the 10-year Treasury bond interest rate minus anticipated 10-year inflation.
Sources: Authors' calculations based on U.S. Board of Governors of the Federal Reserve System (2020) and Federal Reserve Bank of Cleveland calculations based on Haubrich, Pennacchi, and Ritchken (2012).

Social Security. Higher wage growth among lower-income groups reduced Social Security replacement rates by 1 percentage point due to the program's progressive benefit formula. Specifically, the strong wage growth for lower-income workers moved a larger portion of their total earnings from the bottom bracket, which replaces 90 percent of earnings, to the middle bracket, which replaces 32 percent.²

The gradual increase in Social Security's Full Retirement Age from 65 to 67, which lowers benefits and has been important in earlier updates, is now virtually complete and therefore does not materially affect the NRRI's overall outcome.

Patterns of the 2019 NRRI

Identifying the primary levers affecting the NRRI makes it possible to understand the pattern of change by age group and wealth level.

When viewed by age, the improvement in the NRRI occurred among households in their 40s (see Table 1). They saw large gains in retirement preparedness from the housing market. Young people entered the 2016-2019 period with little wealth and were mostly left out of the increases in stock and house prices. On the other side, households in their 50s had less asset accumulation than those in their 40s and were also affected by the low interest rate, which limited their income from annuitized assets.³

TABLE 1. PERCENTAGE OF HOUSEHOLDS "AT RISK" AT AGE 65 BY AGE GROUP, 2016 AND 2019

Age group	2016	2019
All	50%	49%
30-39	57	58
40-49	54	48
50-59	40	42

Source: Authors' calculations.

From the perspective of wealth groups, the middle third saw an improvement in retirement security. This group, which largely saves through housing, saw the largest increase in housing wealth. The richest third, which has a similar ratio of housing wealth to income as the middle third, is subject to a cap on the wealth they can take out through reverse mortgages. The poorest third generally does not own homes and was shut out of the appreciation of house prices (see Table 2).

TABLE 2. PERCENTAGE OF HOUSEHOLDS "AT RISK" AT AGE 65 BY WEALTH GROUP, 2016 AND 2019

Wealth group	2016	2019
All	50%	49%
Low	73	73
Middle	49	45
High	28	29

Source: Authors' calculations.

The NRRI in 2020

While the update for 2019 is useful and provides a benchmark for future surveys, it does not tell us about retirement security in 2020. COVID-19 and the ensuing recession have inevitably made the situation worse. To date, the problems have not involved the stock market – except for a sharp, but brief, decline in last February and March – or the housing market. Rather, the pandemic has led to substantial job loss. Thus, the main question is how to incorporate unemployment into the NRRI.

The analysis proceeds in three steps. The first is to estimate how many workers could be affected by COVID-19-induced unemployment. The second step is to randomly assign employment shocks to workers in the NRRI, based on the unemployment rate change from February to October 2020 experienced by people with their demographic characteristics – such as age, gender, race, education, and marital status.⁴ The final step is to project how a job loss reduces the future earnings of each impacted worker based on a prior study.⁵ We assume that households that were only briefly unemployed, due to the temporary pandemic-related shutdowns in the spring, experienced no long-lasting negative effects on their wages, but the remaining unemployed are long-term unemployed. Overall, this unemployment estimation, by itself, increased the NRRI by 3 percentage points.

In addition, the analysis also incorporated changes in the other factors discussed above that might have influenced the NRRI during this period (see Table 3 on the next page). On balance, these factors – particularly the robust growth in house prices, which affected a large share of NRRI households – partially offset the impact of the rise in unemployment.

TABLE 3. IMPACT OF VARIOUS FACTORS ON THE NRRI IN 2020

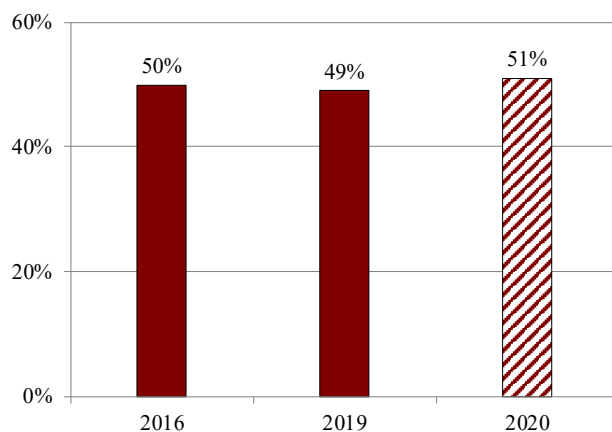
Factor	Development (2019-2020)	Impact on NRRI (%-point change)
Unemployment		+3.0%
Equity prices	Stock market rose by 10.7%	-0.2%
House prices	Housing market rose by 4.8%	-0.8
Interest rates (real)	Rates fell from 0.2 to -0.5%	+0.0
Social Security	Wages fell by 4.2%	^a
Net impact		+2.1%

^a The impact of Social Security on the NRRI is incorporated in the impact of unemployment.

Source: Authors' calculations.

Overall, including unemployment and all other factors, the results suggest that if the SCF had been conducted in 2020 instead of 2019, the NRRI would have been 2 percentage points higher (see Figure 7).

FIGURE 7. THE NATIONAL RETIREMENT RISK INDEX, 2016, 2019, AND 2020 PROJECTED



Source: Authors' calculations.

A 2-percentage point increase in the NRRI may seem modest for the most calamitous economic event since the Great Depression. Indeed, two factors are at play here. First, the rise in house and stock prices, an unusual occurrence during a recession, partially blunted the impact of unemployment. Second, the NRRI only measures whether a household is at risk, not the increase in the “savings gap” – the gap between actual and adequate savings. For example, an already at-risk renter who faces an unemployment shock will be less prepared for retirement, but this impact will not show up in the NRRI. So, many households who were already at risk have become increasingly worse off.

Conclusion

Between 2016 and 2019, the NRRI dropped slightly – from 50 to 49 percent. This improvement reflected solid gains in the stock market and, particularly, continuing growth in the housing market. The modest nature of the improvement, though, was due to the partially offsetting impact of lower interest rates and lower Social Security replacement rates.

Since 2019, the economy has been hit by the fallout of the pandemic, which has primarily been reflected in higher unemployment. At the same time, this negative impact was partially offset by other factors. On balance, the NRRI rose modestly to 51 percent in 2020. While this effect is small, it does not capture the increasing savings gap among households already at risk.

The bottom line is that half of today's households will not have enough retirement income to maintain their pre-retirement standard of living, even if they work to age 65 and annuitize all their financial assets, including the receipts from a reverse mortgage on their homes. This analysis clearly confirms that we need to fix our retirement system so that employer plan coverage is universal. Only with continuous coverage will workers be able to accumulate adequate resources to maintain their standard of living in retirement.

Endnotes

1 Target rates are calculated using a lifecycle model rather than a household's actual, but unobserved, consumption history. For details, see Center for Retirement Research (2006).

2 The bottom bracket covers monthly earnings of up to \$996 in 2021, while the middle bracket covers monthly earnings between \$996 and \$6,002. Monthly earnings over \$6,002 are replaced at a 15-percent rate (up to the program's annual earnings cap).

3 In addition, the increase in Social Security's Full Retirement Age does affect the NRRI slightly for this oldest group.

4 Some people have left the labor force as well, making the measured decline in the unemployment rate an overstatement. Our analysis includes both outcomes as unemployment. The data source is the Census Bureau's *Current Population Survey*, accessed through the University of Minnesota's IPUMS-CPS database.

5 See Cooper (2013), which showed that unemployment initially reduces wages by 25 percent for short-term spells (up to six months) and by 69 percent for long-term spells. After the initial drop, wages return slowly to their former trajectory. For the sample as a whole, the pace of recovery was about 2 percent a year, with a somewhat faster pace for the long-term vs. short-term unemployed. This approach was used in a previous NRRI study conducted last spring (Munnell, Chen, and Hou 2020).

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