

The Great Retirement? Or the Great Sabbatical?

- Since the start of the COVID pandemic, “quit rates”—the Bureau of Labor Statistics’ measure of employee-initiated job separations—have surged, a phenomenon dubbed the “Great Resignation.” Many of these workers will remain in the labor force. Some won’t. Among older workers, the Great Resignation is more likely to be the Great Retirement.
- We explore the Great Retirement by comparing retirement patterns pre- and post-pandemic. We also use a prototype of the Vanguard Retirement Readiness Model¹ to provide perspective on the retirement security implications of an earlier-than-expected exit from the workforce.
- Our analysis helps investors and advisors gauge the financial resources necessary for an unanticipated retirement. Those who can rely on defined benefit (DB) pensions are in good shape. Those who can’t will need liquid assets in the top deciles of the national wealth distribution to finance life after labor. Their Great Retirement may become the Great Sabbatical.

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¹ The Vanguard Retirement Readiness Model uses the Federal Reserve Board’s Survey of Consumer Finances (SCF)—a nationally representative survey of household demographics, income, and balance sheets—to calibrate income and assets for different cohorts. It uses these inputs, along with historical asset returns and return forecasts from the Vanguard Capital Markets Model, to estimate retirement readiness for these groups. See the Appendix for asset allocation assumptions. Tan, Khang, and Clarke (2022) provide more detail on the model and its capabilities in forthcoming research.

In March 2022, the U.S. unemployment rate dipped to 3.6%, down from its pandemic peak of 14.7%. The number of job openings for each unemployed worker reached 1.7, an all-time high. Wages surged.

The red-hot labor market reflected both the U.S. economy's strong recovery from its pandemic lows and a post-COVID decline in labor force participation. In January 2020, 63.4% of the population worked or was looking for work. Today, that figure is 62.2%, a decline of roughly 2.6 million workers, a phenomenon dubbed the "Great Resignation" (Mena, 2022). As COVID-19 risks and disruptions recede, some of these workers will return.

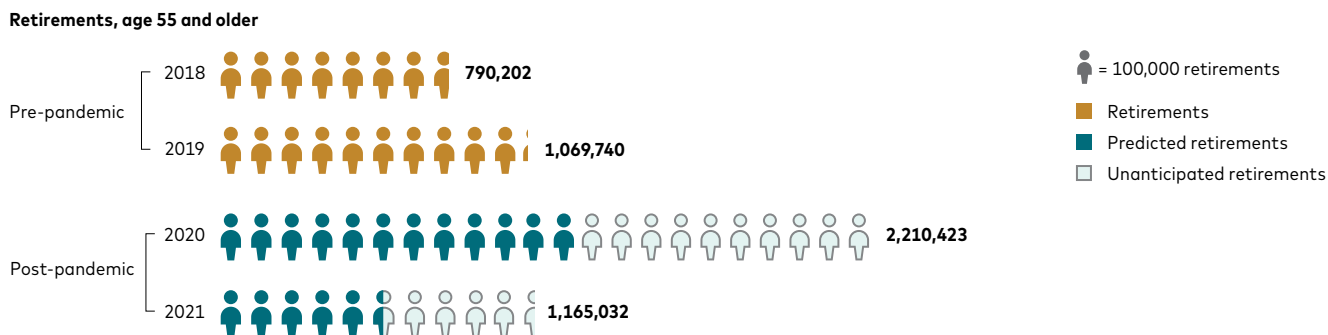
Some won't. The pandemic produced a spike in unanticipated retirements. **Figure 1** compares the annual number of retirements among workers 55 and older in the two years before the pandemic and the two years since. The chart also displays Vanguard's pre-pandemic predictions for worker

retirements. We estimate that the pandemic prompted an additional 1.6 million workers 55 and older to retire. Domash and Summers (2022) produce a similar estimate.

These late-career workers, by some measures the most productive (Burtless, 2013), are less likely to return to the labor force. The physician who planned to retire at 67 hung up her stethoscope at 63. The high school art teacher who expected to work until 65 retired at 62, unwilling to teach sculpture over Zoom.

We explore the Great Retirement from two perspectives. First, we compare retirement patterns for this cohort pre- and post-pandemic. Second, we produce estimates of the wealth these new retirees will need to finance their unexpected exit from the workforce. These workers generally earned higher incomes and had accumulated more assets than the broader population. An unanticipated retirement can nevertheless impose significant costs.

FIGURE 1.
In 2020–2021, the pandemic prompted an unanticipated 1.6 million retirements



Note: "Retirements" refers to workers 55 and older who are not in the labor force because of retirement.

Sources: Vanguard calculations based on data from the Federal Reserve Board of Atlanta.

The COVID-19 recession and retirement: A change in the pattern

The U.S. economy's contraction in the second quarter of 2020 marked its deepest downturn since the Great Depression. Layoffs were legion. Even so, retirement patterns during the pandemic differed from those in previous economic contractions, as shown in **Figure 2**.

In 2000–2002, as the dot.com crash precipitated a recession, older workers delayed retirement. This pattern repeated in the 2008 global financial crisis. In 2020, by contrast, older-worker retirements increased. The difference most likely reflects COVID's disproportionate threat to older workers and the surprising surge in stock and housing prices since the 2020 downturn.

In the dot.com crash, the S&P 500 Index declined by 40% from 2000 to 2002 (Figure 2 presents S&P 500 Index total return figures over a different time frame, consistent with the dates we use to measure retirements). In the 2008 global financial crisis, the S&P 500 Index lost half its value. National home prices fell by more than 25%, their deepest decline in history. As asset values plunged, older workers sought to fortify household balance sheets with another few years of labor.

In 2020, asset markets surged. Despite a sharp decline in the first half of 2020, the S&P 500 Index returned more than 18% for the year. The S&P/Case-Shiller U.S. National Home Price Index rose by 10.8%. Surging asset prices facilitated perhaps 1.4 million unanticipated retirements (Faria e Castro, 2021).

FIGURE 2.
Earlier economic downturns prompted workers to delay retirement. The pandemic prompted them to accelerate it



Notes: Early 2000s recession retirements are measured from 4Q 2000 to 4Q 2001. Great Recession retirements are measured from 4Q 2007 to 4Q 2009. COVID-19 recession retirements are measured from 4Q 2019 to 3Q 2020. Total returns of the S&P 500 Index are measured over the same periods.

Sources: Vanguard calculations based on data from the Federal Reserve Bank of Atlanta and the Federal Reserve Bank of St. Louis.

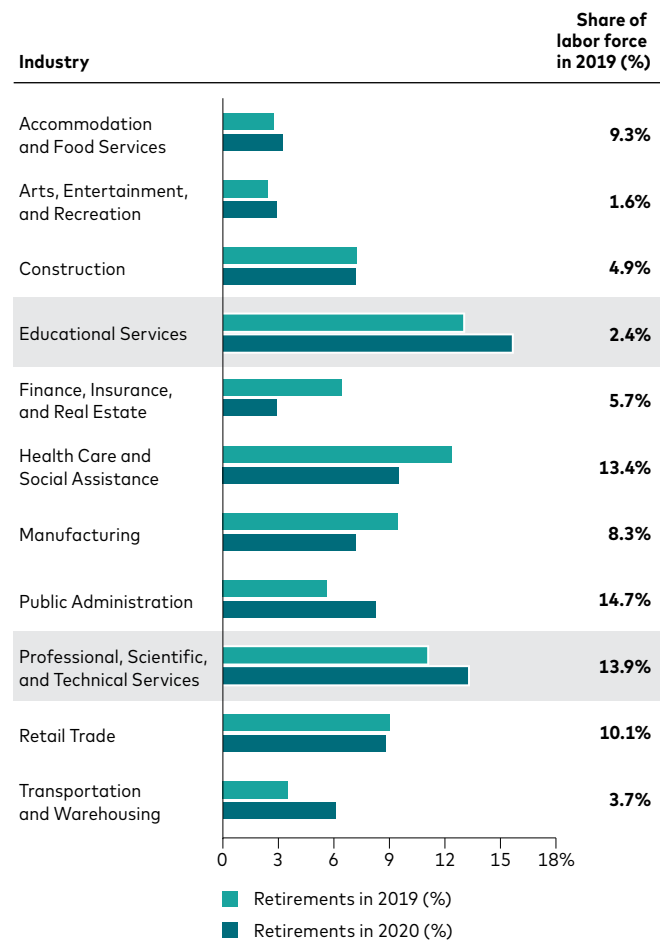
Educators and professional services lead the exodus

The uptick in retirements has been pronounced in two employment sectors: educational services (15.6% of all retirements) and professional, scientific, and technical services (13.3%). **Figure 3** displays three statistics for all U.S. employment sectors: each sector's share of the labor force in 2019, each sector's share of 2019 (pre-pandemic) retirements, and each sector's share of 2020 (post-pandemic) retirements.

The educational services numbers are striking. In 2019, these jobs accounted for 2.4% of the U.S. labor force, but they represented 15.6% of exits from the working population in 2020, a 20% increase from their 2019 levels. Educators have typically accounted for a disproportionate share of retirements. These workers tend to be older. Many also have access to defined benefit (DB) plans (guaranteed income) that can simplify retirement planning.² Even so, their pandemic retirements spiked.

Retirements in the professional services sector—lawyers, engineers, and managers—also rose by about 20% from their 2019 levels. DB plans are less common in this sector, though these workers are among the highest paid, putting them in a position to accumulate the wealth necessary for an earlier-than-expected exit from the workforce.

FIGURE 3.
Retirements in the educational and professional services sectors spiked during the pandemic



Notes: Annual retirements are measured from March of each year because of Current Population Survey (CPS) timing (that is, 2020 retirements occurred between March 2020 and March 2021). The percentages do not add up to 100 because certain industries (Agriculture, Information, Other Services, Utilities, Mining, and Wholesale Trade) were excluded from the visual to improve readability. "Retirements" include anyone 55 or older who switched from employed to retired.

Sources: Vanguard calculations based on data from IPUMS CPS.

² In 2019, according to the Bureau of Labor Statistics, about 90% of public school educators had access to a defined benefit pension.

What does an unanticipated retirement mean for financial security?

Even among highly paid workers, an unanticipated exit can put pressure on retirement security. Although pandemic retirements increased across all income levels, the rate (though not the absolute number) was highest among upper-income workers. The uptick also depended on age. The difference between pre- and post-pandemic retirements was highest for workers ages 65 to 74 (Rodgers III and Ricketts, 2022). U.S. Census data indicates that the average age of 2020 retirees was 66, ranging from 60 to 72 by industry.

We use the 2019 Federal Reserve Board's Survey of Consumer Finances (SCF)—a nationally representative survey of household demographics, income, and balance sheets—to develop two higher-income personas consistent with retirement patterns during the pandemic. We assess their potential outcomes with a prototype of the Vanguard Retirement Readiness Model, a framework for evaluating an individual's or generational cohort's prospects for retirement security. Tan, Khang, and Clarke (2022) provide a comprehensive overview of this model in forthcoming research.

- **Earlier-than-expected retirees.** These workers intended to retire at age 67. Instead, they retired at 65 in 2020. Before retirement, these workers had household incomes of \$124,000, the top 25% of households for this age group. Their retirement income depends solely on Social Security and portfolio withdrawals. Utkus and Madamba (2019) dub them the "new retirees."
- **Earlier-than-expected pensioners.** Like the upper-income new retirees, these workers expected to retire at 67 but exited at 65. Unlike the other personas, these workers will depend more on a defined benefit (DB) pension than an investment portfolio to finance retirement. The pensioners had preretirement household income

similar to that of the earlier-than-expected retirees, \$125,000. Utkus and Madamba (2019) refer to this group as "traditional retirees."

For each persona, we assume that the retirees hope to replace 79% of their pre-retirement income until at least age 84.³ We estimate their ability to meet this target at different levels of wealth and spotlight the impact of an earlier-than-expected retirement on this objective.

Earlier-than-expected retirees

These workers retired at age 65. They hope to generate \$97,000 per year in income with a combination of portfolio withdrawals and Social Security. They claim Social Security at 67, the full retirement age.⁴ These "new" retirees have no access to DB pensions.

Figure 4 displays the wealth (as a multiple of final income) that these retirees would need to meet this income target through at least age 84 in 90% of our simulations.⁵ Note: Our wealth excludes home equity. If retirees were able to convert home equity into income, their ability to meet their income target would improve. But research (Sass, 2017) finds that retirees are reluctant to tap home equity for income.

In 90% of our simulations, these earlier-than-expected new retirees would need about \$870,000 in stocks, bonds, and cash, 7 times their final income, to meet this income target through at least age 84. This figure puts them in the 90th percentile of the household financial asset distribution for their age group in 2019. If they had worked an additional two years, they could meet this income target until at least age 89. For those with less wealth—5 and 6 times their final salary—unanticipated retirement could be the difference between reliably meeting the income target through age 84 and a rising chance of falling short.

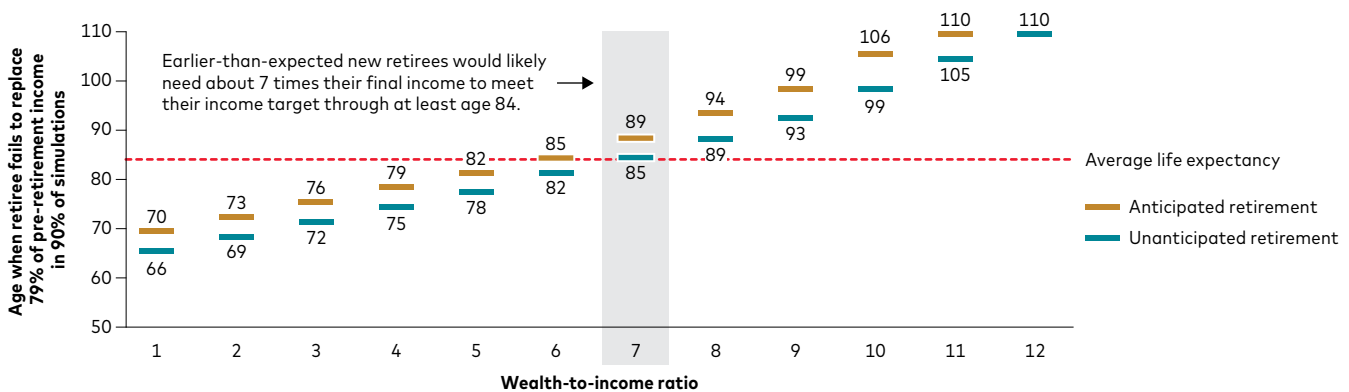
³ This figure is consistent with Vanguard (Lobel, Jaconetti, and Cuff, 2019) and industry (Aon, 2008) research on replacement rates.

⁴ Quinby, Rutledge, and Wettstein (2021) find that even as earlier-than-expected retirements have increased during the pandemic, Social Security claiming rates have remained flat. These retirees seem to be drawing on portfolio assets and postponing Social Security claims as they finance an early exit from the labor force.

⁵ According to the Social Security Administration, 84 is the average conditional life expectancy for men and women aged 65 in 2022.

FIGURE 4.

Unanticipated retirement puts pressure on income replacement



Notes: This analysis is based on the Vanguard Retirement Readiness Framework, which incorporates income data from the SCF, historical returns from 2019 through 2021, and capital market return projections from the Vanguard Capital Markets Model from 2022 onward. The bars depict the relationship between wealth as a multiple of pre-retirement income and the age when a retiree is unable to replace 79% of this income in 90% of our simulations.

IMPORTANT: The projections and other information generated by the VCMM regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not guarantees of future results. Distribution of return outcomes from VCMM are derived from 10,000 simulations for each modeled asset class. Simulations are as of May 16, 2022. Results from the model may vary with each use and over time. For more information, please see the appendix.

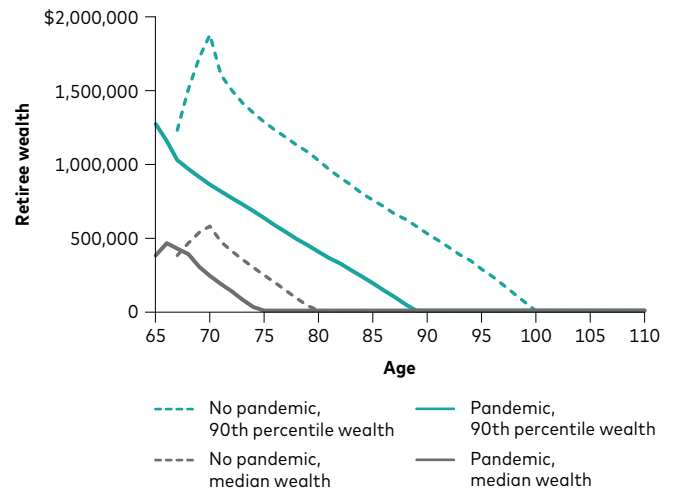
Sources: Vanguard calculations, based on the 2019 Survey of Consumer Finances.

What about the median-wealth worker who earns a late-career high salary? These workers retire at 65, two years earlier than expected, with wealth equal to three times their pre-retirement income, roughly \$372,600. Figure 4 shows that they would have little chance of meeting the income target through age 84, unanticipated retirement or not. In fact, they could exhaust their portfolio about a decade after leaving the workforce and then rely solely on Social Security.

Figure 5 compares the expected age of portfolio depletion for those who retire with 50th and 90th percentile levels of wealth-to-income. We also illustrate how these depletion ages would change with an additional two years of labor.

FIGURE 5.

For all but the wealthiest, unanticipated retirement can put target income at high risk



Notes: This analysis is based on the Vanguard Retirement Readiness Framework, which incorporates income data from the SCF, historical returns from 2019 through 2021, and capital market return projections from the Vanguard Capital Markets Model from 2022 onward. The lines depict an estimation of the age at which financial assets will be exhausted in 90% of our simulations.

Sources: Vanguard calculations, based on the 2019 Survey of Consumer Finances.

Earlier-than-expected pensioners

Our second case study investigates workers with DB pensions, a shrinking proportion of the workforce but a significant proportion of early retirees. Like the conventional retiree, these workers intended to retire at 67. When the pandemic struck, they retired at 65.

Their guaranteed income enhances their ability to replace 79% of their wages, even with modest net worth, as shown in **Figure 6**. Our analysis of the SCF suggests that these workers can expect inflation-adjusted pensions equal to 46% of their pre-retirement salary. If they retire with wealth of just \$250,000, two times their final salary, they can meet their spending target through at

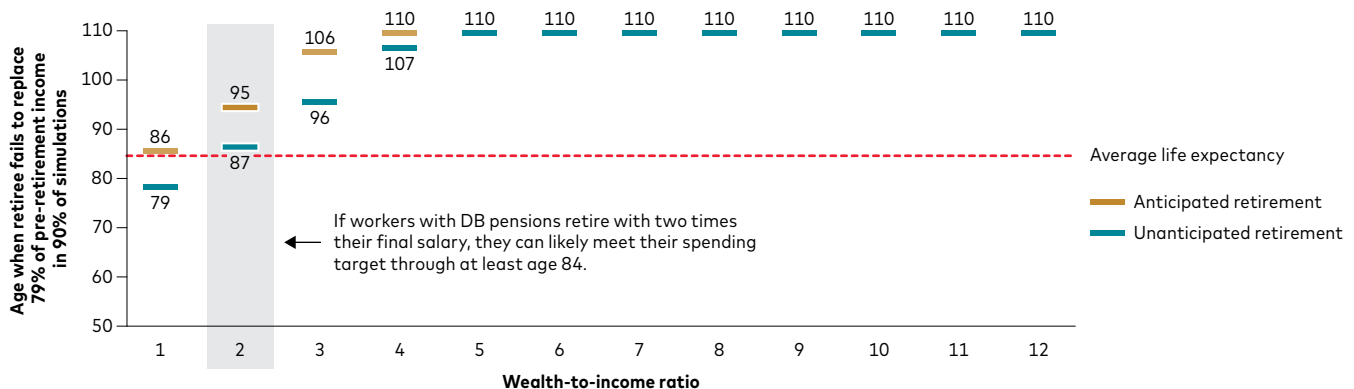
least age 84 in 90% of our simulations. The earlier exit threatens their security only if household net worth approaches \$125,000.

The results are unsurprising. A pension is an alternative form of wealth. Assuming that the retiree receives this pension for 25 years, the present value of this guaranteed income is roughly \$900,000.⁶ DB beneficiaries have resources comparable to generational peers in the 85th-percentile-plus of the financial assets distribution.

Unlike their counterparts, however, these pensioners are unable to use the present value of future pension payments to address financial shocks such as a costly home repair or to fund a bequest.

FIGURE 6.

A DB pension eliminates the need to accumulate significant wealth for an unanticipated retirement



Notes: This analysis is based on the Vanguard Retirement Readiness Framework, which incorporates income data from the SCF, historical returns from 2019 through 2021, and capital market return projections from the Vanguard Capital Markets Model from 2022 onward. The bars depict the relationship between wealth as a multiple of pre-retirement income and the age when a retiree is unable to replace 79% of this income in 90% of our simulations.

Sources: Vanguard calculations, based on the 2019 Survey of Consumer Finances.

⁶ This figure depends on assumptions about the assumed return on the assets used to finance the pension payout (the discount rate) and the worker's life expectancy. We assume a discount rate of 4% and payments until age 90 for the 65-year-old retiree.

Unanticipated retirement: significant resources required

The Great Retirement raises questions about the retirement readiness of those who have put in their papers sooner than expected. Our analysis of higher-income retirees reveals unsurprising but essential insights: Retirement is expensive; early retirement is more expensive. We show that higher-income workers who left the workforce during the pandemic need significant resources to finance their departure.

Some Great Retirees have these assets. Some don't. In the next few years, less wealthy pandemic retirees may need to return to the workforce, easing labor shortages and recasting the Great Retirement as the Great Sabbatical.

References

- Aliaga-Díaz, Roger, Harshdeep Ahluwalia, Victor Zhu, Scott Donaldson, Ankul Daga, and David Pakula, 2021. *Vanguard's Life-Cycle Investing Model (VLCM): A General Portfolio Framework for Goals-Based Investing*. Valley Forge, Pa.: The Vanguard Group.
- Aon Consulting and Georgia State University, 2008. *Replacement Ratio Study: A Measurement Tool for Retirement Planning*. Chicago, Ill.: Aon Consulting.
- Bureau of Labor Statistics, 2019. *Retirement Benefits: Access, Participation, and Take-up Rates, State and Local Government Workers*; available at [Employee Benefits in the United States, March 2019 \(bls.gov\)](https://www.bls.gov/news.release/empire/20190301.pdf).
- Burtless, Gary 2013. *Is an Aging Workforce Less Productive?* available at [brookings.edu/blog/up-front/2013/06/10/is-an-aging-workforce-less-productive/](https://www.brookings.edu/blog/up-front/2013/06/10/is-an-aging-workforce-less-productive/).
- Davis, Joseph, Roger A. Aliaga-Díaz, Peter Westaway, Qian Wang, Andrew J. Patterson, Kevin DiCiurcio, Alexis Gray, Jonathan Lemco, and Joshua M. Hirt, 2020. *Vanguard Economic and Market Outlook for 2021: Approaching the Dawn*. Valley Forge, Pa.: The Vanguard Group.
- Domash, Alex, and Lawrence H. Summers, 2022. *How Tight Are U.S. Labor Markets?* available at [nber.org/system/files/working_papers/w29739/w29739.pdf](https://www.nber.org/system/files/working_papers/w29739/w29739.pdf).
- Faria e Castro, Miguel, 2021. *The COVID Retirement Boom*; available at [research.stlouisfed.org/publications/economic-synopses/2021/10/15/the-covid-retirement-boom](https://www.research.stlouisfed.org/publications/economic-synopses/2021/10/15/the-covid-retirement-boom).
- Lobel, Hank, Colleen Jaconetti, and Rebecca Cuff 2019. *The Replacement Ratio: Making it Personal*. Valley Forge, Pa.: The Vanguard Group.
- Mena, Bryan, 2022. *Workers Quit Jobs at a Record Level in November*; available at [wsj.com/articles/job-openings-us-growth-01-04-2022-11641256945#](https://www.wsj.com/articles/job-openings-us-growth-01-04-2022-11641256945#).
- Quinby, Laura D., Matthew S. Rutledge, and Gal Wettstein, 2021. *How Has COVID-19 Affected the Labor Force Participation of Older Workers?* Boston, Mass.: Boston College Center for Retirement Research; available at [Panel-1_Quinby_Rutledge_Wettstein.pdf \(wisc.edu\)](https://www.bostoncollege.edu/centers/retirement-research/research-panels/panel-1-quinby-rutledge-wettstein.pdf).
- Rodgers, William M., III, and Lowell Ricketts, 2022. *The Great Retirement: Who Are the Retirees?* available at [stlouisfed.org/on-the-economy/2022/january/great-retirement-who-are-retirees](https://www.stlouisfed.org/on-the-economy/2022/january/great-retirement-who-are-retirees).
- Sass, Steven A., 2017. *Is Home Equity an Underutilized Retirement Asset?* Boston, Mass.: Boston College Center for Retirement Research; available at [crr.bc.edu/wp-content/uploads/2017/02/IB_17-6.pdf](https://www.crr.bc.edu/wp-content/uploads/2017/02/IB_17-6.pdf).
- Tan, Fu, Kevin Khang, and Andrew S. Clarke, 2022. *Vanguard's Retirement Readiness Model: A General Framework for Retirement Readiness*, Vanguard Working Paper. Valley Forge, Pa.: The Vanguard Group.
- Utkus, Stephen P., and Anna Madamba, 2019. *Withdrawals from Financial Accounts in Retirement*. Valley Forge, Pa.: The Vanguard Group.

Appendix

Our simulations of retirement outcomes depend on income and wealth figures derived from the SCF; an assumed asset allocation of roughly 50% stocks and 50% bonds at age 65, which gradually shifts to 30% stocks and 70% bonds at age 72 (the stock sub-asset allocation is 60% U.S./40% non-U.S. and the bond sub-asset allocation is 70% U.S. 30% non-U.S.); and return forecasts for these asset/sub-asset classes from the Vanguard Capital Markets Model.

The Vanguard Capital Markets Model

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