How Will Retirement Saving Change by 2050? Prospects for the Millennial Generation

William G. Gale

Hilary Gelfond

Jason Fichtner

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Contents

STATEMENT OF INDEPENDENCE

ABOUT THE AUTHORS

William Gale is the Arjay and Frances Fearing Miller Chair in Federal Economic Policy and a senior fellow in the Economic Studies Program at the Brookings Institution, as well as the director of the Retirement Security Project. Hilary Gelfond is a graduate student at the Kennedy School of Government, Harvard University. Jason Fichtner is a Senior Lecturer at the Johns Hopkins University School of Advanced International Studies (SAIS) and a fellow with the Bipartisan Policy Center.

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ABSTRACT

We consider prospects for retirement saving for members of the millennial generation, who will be between ages 54 and 69 in 2050. Adequacy of retirement saving preparation among current and near-retirees is marked by significant heterogeneity, a characteristic that will likely hold for Millennials as well. In preparing for retirement, Millennials will have several advantages relative to previous generations, such as more education, longer working lives, and more flexible work arrangements, but also several disadvantages, including having to take more responsibility for their own retirement plans and marrying and bearing children at later ages. The millennial generation contains a significantly higher percentage of minorities than previous generations. We find that minority households have tended to accumulate less wealth than whites in the past, even after controlling for income, education, and marital status, and the difference appears to be growing over time for black households relative to whites. Whether these trends persist is central to understanding how the Millennials will fare in retirement.

I. Introduction

How will changing demographic and economic factors affect households' ability to accumulate adequate resources for retirement over the next 30 years? Because the answers to such a question are necessarily speculative, our goal in this paper is to provide different forms of evidence that can help frame thinking about this issue. In particular, we (1) review what is known about the adequacy of retirement saving among current generations of retirees and near-retirees, (2) examine how economic factors that affect retirement saving seem likely to differ between prior generations and the Millennials (who will be aged 54 to 69 in 2050), and (3) consider how the changing minority composition of the population will affect retirement saving.

Section II discusses previous findings on the adequacy of retirement saving among current retirees or near-retirees. We highlight the conceptual issues in determining whether people are saving adequately and review previous studies. We document significant heterogeneity in how well people have saved for retirement among Generation Xers and Baby Boomers. This heterogeneity is not surprising given the widening income distribution of the last several decades and the uneven retirement preparation and plan participation shown in the data. In particular, the literature suggests that several significant subgroups of the population—including racial and ethnic minorities, women, those with income between the poverty level and the median, those with less than a college degree, individuals in poor health, and workers without a pension—are more vulnerable to retirement saving shortfalls than are others.

In Section III, we explore a variety of issues that differentially affect the millennial generation relative to prior generations. The Millennials have certain advantages over previous generations in terms of retirement saving; for example, they are the most educated generation in history. Furthermore, because of the evolution of the pension system toward defined contribution (DC) plans, they may well work longer than any previous generation, giving them additional years to save.

However, Millennials also face numerous disadvantages. Their careers have gotten off to a rocky start because of the financial crisis and Great Recession in 2007-9 and the ensuing slow (but steady) recovery over the subsequent few years. They will be employed in contingent workforce jobs (which have weaker retirement benefits than traditional jobs) to a greater extent than previous generations. They have lower net worth and higher student debt burdens than earlier generations at the same age, and they are marrying, buying homes, and having children later. They will be required to manage and navigate their own retirement plans to a greater extent than previous generations, while also likely having longer lifespans.[1]

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[1] While living longer is obviously a good thing, having a longer retirement period (defined as the difference between life span and retirement age) makes it harder, other things equal, to finance adequate living standards in retirement.

They will face increased burdens from any eventual resolution of the government's long-term fiscal short-falls in general, and the financial imbalances in Social Security and Medicare in particular. They face an economic future with projections of lower rates of return and economic growth than in the past. These factors make accumulating sufficient funds for retirement more difficult for Millennials relative to previous generations.

Section IV examines the effects of the projected changes in the racial and ethnic composition of the population. The United States will be a "majority-minority" country by 2050, where minority is defined as any race other than non-Hispanic white. All races and ethnicities other than white are expected to grow as a share of the population. Using cross-section and pooled regressions from the 1989-2016 Surveys of Consumer Finances, we show that minority status is negatively associated with net worth, controlling for other household characteristics. The difference in wealth between blacks and whites is growing over time, controlling for other factors.

These results have implications for Millennials. The set of economic and social conditions that racial and ethnic minorities experience by 2050 will likely be different from those experienced by previous generations – including family and marital status, education, neighborhoods, discrimination, and job markets. Such differences in the future could serve either to raise or reduce wealth gaps between whites and minorities. That said, minorities in recent years faced different economic and social conditions than did minorities 30 years ago, yet wealth differences between whites and minorities, controlling for observable characteristics, have grown rather than fallen over time. If this trend continues, wealth inequality will continue to grow, which will make it that much harder for minorities to save adequately for retirement.

Section V concludes. Ensuring the adequacy of saving presents enormous challenges and risks for individuals, government, and businesses. However, it also generates unique opportunities for creative public policies and innovative private markets to greatly improve people's lives.

II. The Adequacy of Retirement Saving[2]

Whether households are saving adequately for retirement is often addressed as a yes/no question. But even a moment's reflection will reveal that, instead, more interesting questions consider the share and characteristics of households who are and are not preparing adequately, as well as the extent to which they are undersaving. Framing the topic in this way inevitably leads to an emphasis on the importance of differences across people and groups in terms of retirement preparation. A "one-size-fits-all" answer to

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[2] Much of this section and the following section are based on Fichtner and Gale (2017).

the question of how well people are doing is unlikely to characterize the problems clearly.

A. Conceptual Issues

The first issue is to define the concept of adequate saving, which is surprisingly controversial.[3] For purposes of this paper, we define adequate saving as sufficient to provide a household with an expected standard of living in retirement that is commensurate with its standard of living during its working years. This definition has the advantage of conforming to people's "common sense" views of how they would like to live their lives.

But it comes with an important caveat. Our definition focuses on *expected* retirement living standards relative to pre-retirement living standards. Many things can go wrong between saving the right amount to maintain living standards on an expected basis and being able to maintain living standards in actuality. Individuals face numerous risks in preparing for retirement. Disability or layoffs may stop people from working as long as they had planned and hence reduce their ability to accumulate wealth. Assets may accrue less than the expected rate of return over time. A household may face disproportionate uninsured health care costs, including those associated with long-term care. People may face mental or physical declines that require expensive daily assistance. Household members may live longer than expected, which, while generally a good thing, has the side effect of generating higher saving needs to maintain pre-retirement living standards. Alternatively, a person may become widowed and thus lose important sources of income in retirement. Children may present unexpected financial burdens.

Many of these concerns relate to adequate *insurance* (for example, against risks associated with disability, rate of return, inflation, health care costs, health status, lifespan, and children's circumstances) as opposed to adequate saving, but the two issues are related and both are part of retirement *preparation*. Social Security, of course, is intended to cover only a portion of adequate retirement income, not all of it. In the absence of well-functioning insurance markets, people will to some extent need to save more in order to partially self-insure and be in a position to mitigate the negative consequences of adverse outcomes.

A definition of adequate *saving* that allows people to *self-insure* against *all* risks is probably an excessively high standard for all but the super-rich. But the distinction between saving enough to maintain expected living standards in retirement and saving enough to insure against all risks helps explain why there are different standards for "adequate saving."

One approach to measuring whether people are saving adequately is to compare their wealth accumulation behavior to that implied by an economic model that prescribes that people save optimally.[4] The standard economic approach is to equate the household's discounted marginal utility of consumption in

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[3] For a recent review of the literature on the adequacy of retirement saving, see Mackenzie (forthcoming).

[4] Engen, Gale, and Uccello (1999); Gale, Scholz, and Seshadri (2009); Scholz, Seshadri, and Khitatrakun (2006).

each period. This approach has the advantage of being fully consistent with economic theory, but it is not always easy for people to translate this approach into practical advice, or to see where their preparations land them relative to the benchmark. And the results are sensitive to model specification, especially in the presence of major changes, such as those that occur in family size, marital status, or work status.[5]

A more common, intuitive, and flexible approach focuses on replacement rates. A replacement rate is a ratio of post-retirement income to pre-retirement income. The *target* replacement rate that a household should aim for is one that will allow it to replicate its pre-retirement living standards in retirement. It is essential to emphasize that 100 percent is not a natural benchmark for an adequate replacement. The typical advice of financial planners is to target a replacement rate of between 70 and 85 percent and some evidence suggests this is consistent with optimal models of saving.[6]

Table 1 provides an extremely stylized example of how target replacement ratios in this range might come about. Suppose a worker earns $100 in gross wages, and has $62 remaining after work expenses, mortgage costs, retirement saving contributions, health insurance premiums, payroll taxes, and federal and state income taxes. Suppose the worker reaches age 65, pays off the mortgage, and retires. The payments for work expenses, the mortgage, 401(k) contributions, payroll taxes, and health insurance stop (the last because the worker becomes eligible for Medicare) and let's say taxes fall by one-third (because income declines and because there are currently benefits in the tax code for the elderly). That means the worker would only need $70 per year in retirement to replace the living standard that $100 provided during working years, or a 70 percent replacement rate.

This stylized example serves to show that adequate retirement income need not replace 100 percent of pre-retirement income and that there may be a sizable difference between saving enough and saving "a lot." For example, in the scenario above, if Social Security and a defined benefit plan replaced two-thirds of the worker's wages in retirement, very little additional saving would be required to maintain pre-retirement living standards in retirement.

Several qualifications are crucial. First, it is not clear what the "right" pre-retirement wage should be for purposes of the calculation. Oft-used measures include final earnings, an average of the highest three or five years of earnings, or average lifetime earnings. Empirical measures of the target replacement rate are sensitive to which measure is used as the denominator. Second, different households will have different target replacement rates. Factors such as the presence of children during working years or increased health needs during retirement years will influence how much spending is needed in retirement to maintain pre-retirement living standards. The target replacement rate would be higher to the extent that pre-retirement expenses on mortgages, health insurance, retirement contributions, and taxes were lower, or to the extent that post-retirement health care needs or bequest motives were stronger. Third, different

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[5] Dushi et al. (2016).

[6] Scholz and Seshadri (2009); Engen, Gale, and Uccello (1999).

households may want to include varying measures of assets as sources of available retirement income. Some might want to tap housing equity, while others may choose not to do so. For all of these reasons, the replacement rate needed to maintain pre-retirement living standards in retirement will vary across households.

B. Evidence

Previous studies tend to focus on current retirees and older workers, rather than the members of the younger generations, and have reached a wide variety of conclusions about the adequacy of saving. Many of these differences are traceable to different underlying assumptions regarding precisely the conceptual issues raised above.[7] Specifically, studies are likely to find a larger undersaving problem to the extent that they: use a target replacement rate based on the highest three-year earnings a worker achieved as opposed to career average earnings; minimize consumption needs during working years (for example, by excluding the role of children in household consumption); maximize consumption needs during retirement (for example, by expecting the household to self-insure against all risks); or assume that only narrow measures of net worth (for example, excluding housing wealth) can be used to fund retirement income.[8]

For example, to calculate the National Retirement Risk Index (NRRI), researchers at Boston College first estimate the projected replacement rate (with average lifetime income as the denominator) for each household in a nationally representative sample. They then calculate a target replacement rate (the rate necessary to maintain pre-retirement living standards in retirement) for each household and a projected actual replacement rate. The NRRI is the share of households whose projected actual replacement rates are more than 10 percent (not percentage points) below their target rates. In 2016, the most recent year for which the NRRI was calculated, 50 percent of working-age households were classified as being at risk.[9]

In contrast, Scholz, Seshadri, and Khitatrakun (2006) develop an optimal savings model that compares households' optimal and actual wealth in order to ascertain whether they are saving enough for retirement. These authors implicitly use a measure of lifetime earnings, adjusted for family size, in the denominator of the replacement rate ratio. They find that most households are saving adequately for retirement, with only 15.6 percent having wealth that is less than their optimal targets.

Although previous research efforts reach different conclusions on the overall status of retirement saving adequacy, two robust conclusions emerge. First, retirement saving status varies across different groups. Members of racial and ethnic minorities tend to be less likely to be saving adequately, as well as single-

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[7] Congressional Budget Office (2017).

[8] Aon Hewitt (2012); Munnell, Hou, and Sanzenbacher (2016); Rhee (2013b).

[9] For details of these calculations, see Munnell, Hou, and Sanzenbacher (2018a).

headed households, younger workers, those with fewer years of formal education, those without a retirement plan, and those with lower incomes.[10]

Second, while many households appear to be saving enough to *expect* to maintain pre-retirement living standards in retirement, virtually no one claims that many households are well-insured against *all* risks. For example, Hurd and Rohwedder (2012) find that the risk of a health shock reduces the share of the population that is adequately prepared for retirement (by their definition) by 3 to 13 percentage points, depending on marital status and educational attainment. Poterba, Venti, and Wise (2015) find that even among those who amass significant wealth, a large health shock or death of a spouse can result in a significant decline in assets. VanDerhei (2014) cites longevity risk and health care costs as significant threats to retirement saving.[11]

III. Intergenerational Comparisons

The millennial generation includes individuals born between 1981 and 1996.[12] Members of this group are between the ages of 22 and 37 as of 2018. By 2050, they will be between the ages of 54 and 69. In 2019, Millennials will become the largest living generation in the US, overtaking the Baby Boomers, and will make up about a quarter of the population.[13] They are also more racially diverse than prior generations: 44 percent of Millennials identify as a minority (a race or ethnicity other than non-Hispanic white), compared to 25 percent of individuals aged 21 to 36 in 1985.[14] Given the experience of prior generations, documented above, we now turn to examining how cross-generational differences affect Millennials' retirement prospects.

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[10] See, for example, Butricia, Iams, and Smith (2012), Engen, Gale, and Uccello (1999), Hurd and Rohwedder (2012), John (2010), Pang and Warshawsky (2014), Rhee (2013a), Scholz, Seshadri, and Khitatrakun (2006), VanDerhei (2014), VanDerhei and Copeland (2010).

[11] Studies that use administrative data often tend to find more income among retirees than studies that employ survey data with self-reported income. For example, based on a comparison of responses to the Current Population Survey Annual Social and Economic Supplement (CPS ASEC) and information from administrative records on earnings and income from Social Security and the Internal Revenue Service, Bee and Mitchell (2017) show that individuals underreport their income from defined benefit plans and retirement account withdrawals. Brady et al. (2017) use Internal Revenue Service Statistics of Income panel data, supplemented by information returns, to show that individuals do not experience a reduction in disposable income after beginning to receive Social Security. However, Chen, Munnell, and Sanzenbacher (2018) find that the extent of understatement of wealth is minimal in the Health and Retirement Study and the Survey of Consumer Finances.

[12] Dimock (2018). Various definitions of the millennial generation include those born between the early 1980s and the early 2000s. The Census Bureau (unofficially) defines Millennials as the cohort born between 1982 and 2000 (US Census Bureau 2015).

[13] Fry (2017a). The Baby Boomers are generally considered to include those born between 1946 and 1964.

[14] Fry, Igielnik, and Patten (2018).

A. Current Status

Focusing first on their *current* status, today's young adults have accumulated less wealth than most previous generations at the same age. Figure 1 shows tabulations of Federal Reserve Board data from the triennial Survey of Consumer Finances (SCF), spanning the period 1989 to 2016. In the latter year, Millennials were between the ages of 20 and 35. We examine net worth accumulation among 20-35 year olds in each of the previous SCF years (with all wealth data reported in 2016 dollars). Because wealth accumulation patterns may not be particularly informative for people who are still in college, we also examine wealth patterns among 25-35 year olds in each year.

The figure shows that, using either age-group comparison, median wealth among Millennials in 2016 was lower than among similarly aged cohorts in any year from 1989 to 2007. The Great Recession in 2007-9 significantly reduced household wealth, which has been slowly recovering since then. Median wealth among Millennials was about 25 percent lower in 2016 than among similarly-aged households in 2007. The percentage declines in mean wealth are even larger.[15]

Considering components of wealth (not shown), Millennials had more debt than similarly aged people in 1989 but have about the same level as the 2001 cohort. The latter result may be surprising, given the well-publicized growth of student loans, but Millennials have less credit card and other debt than prior generations.[16]

Focusing on retirement wealth specifically, Figure 2 shows that, relative to similarly aged people, Millennials have about the same coverage rate for defined benefit pensions (DB) and defined contribution plans from 2004 on, but lower DC coverage than the 1995-2001 cohort and sharply lower DB coverage relative to that in the late 1980s. Median DC balances among account holders has fallen since 2007.[17]

All of the results above likely overstate the relative wealth position of Millennials because of the interaction of three factors. First, the SCF does not survey dependent members of households, including Millennials who live with their parents. Second, the share of Millennials living with their parents is higher than the share of similarly aged people in prior generations. Among 25-34 year olds, 16 percent lived with their parents in 2016, compared to 11 percent in 1990 and 10 percent in 2000.[18] Third, some formal evidence (as well as casual observations) suggests that young adults who are living at their parents' home are doing less well economically than other young adults. Among those aged 25-34 and living at home in 2016, 26

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[15] Dettling, Hsu, and Llanes (2018) provide further detail on wealth accumulation trends between 2007 and 2016.

[16] Looney and Yannelis (2018).

[17] Dettling and Hsu (2014) examine retirement saving trends for people aged 18-31 in the successive SCFs. They find that Millennials in 2013 were just as likely to have a defined contribution retirement account as similarly aged people in 2001. Millennials had higher median balances, conditional on ownership (by about $2,000), but they had lower participation in defined benefit plans.

[18] Fry (2017b).

percent were neither employed nor attending school.[19] Less educated people are less likely to live independently and those with higher wages are more likely to do so.

Between 1989 and 2016, the distribution of wealth widened significantly (Figure 3). For example, for 25-35 year olds, average net worth in the bottom 25 percent of the distribution fell from about -$1,200 in 1989 to -$5,000 in 2007 and to -$20,000 in 2016. Over the same period, average wealth in the top 10 percent of the distribution skyrocketed, rising from $1.9 million in 1989 to $3.3 million in 2007 to $4.8 million in 2016. These patterns are consistent with the heterogeneity in preparation for retirement seen for other generations and noted above.

B. Future Status

Understanding the *future* saving behavior of the millennial generation will prove essential for addressing future retirement saving adequacy issues. Looking forward, Millennials face a distinctive set of issues and circumstances that will affect their ability to save for retirement, including both advantages and disadvantages compared to prior generations.

1. Advantages

a. Education

Millennials start out with the advantage of having the most formal education of any generation in history. Over 60 percent of adult Millennials have attended at least some college, compared to 46 percent of the Baby Boomer generation when they were the same age.[20] Rising educational attainment among women drives this difference.[21]

Having more education will make it easier to save for retirement. First, the higher wages that come with higher education will give households more opportunities to save. Second, people with more education tend to save more of their income, controlling for income.[22] Third, people with higher education levels tend to have later retirement ages since they tend to have less physically demanding jobs, are healthier, and receive fringe benefits in addition to wages that may incentivize them to stay in the labor force.[23] The overarching societal trend towards white- collar work may further increase average retirement ages for similar reasons. Good health status is also highly correlated with decisions to work longer. [24] Working

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[19] Fry (2017b).

[20] Council of Economic Advisers (2014).

[21] Johnson et al. (2017).

[22] Dynan, Skinner, and Zeldes (2004).

[23] Burtless (2013).

[24] Munnell (2015).

longer, of course, makes it easier to finance adequate retirement saving.

On the other hand, higher education and income may make adequate saving more difficult to achieve in some ways. For example, Social Security benefits are progressive—replacing a smaller amount of average lifetime earnings as average lifetime earnings rise. And those who are better educated, and in better health, tend to live longer, meaning that they have a longer retirement period to finance, holding retirement age constant.

b. Longer careers due to change in type of retirement plan

Since the 1980s, the share of people participating in defined benefit (DB) plans has decreased while participation in defined contribution plans (DC) has increased (Figure 2). At the same time, the overall share of the workforce participating in any plan has remained relatively constant.[25]

This trend is expected to continue, implying that today's younger workers will have higher DC coverage than previous generations and lower DB coverage. This will likely lead to later retirement for Millennials relative to previous generations, which would make it easier to accumulate funds necessary to finance retirement. Evidence suggests that DB plans often encourage comparatively early retirement through built-in incentives that maximize pension wealth at relatively early retirement ages.[26] Since the 1980s the average retirement age has risen after decades of decline, consistent with the decline of DB plans and rise of DC plans.[27]

As with better education, however, the shift to DC is not an unambiguous gain for retirement saving adequacy. Greater DC coverage and less DB coverage shifts much of the planning burden and investment risk from the employer to the employee, as discussed further below.

2. Disadvantages

Despite having some advantages relative to previous generations, the Millennials face a variety of obstacles and concerns that increase their chances—in absolute terms and relative to previous generations—of saving too little.

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[25] Gale and John (2017).

[26] Kotlikoff and Wise (1984); Stock and Wise (1990).

[27] Hou et al. (2017); Morisi (2016); Munnell (2015). The rise in the average retirement age is also consistent with the gradual increase in the full retirement age in Social Security that was enacted in 1983 (Song and Manchester 2007) and more generally with the evolution of retirement incentives embedded in social security and private retirement plans (Coile 2018).

a. Early-career labor market

The early-career labor market experienced by many of the Millennials has been dominated by the Great Recession and the tepid pace of recovery for several years after. The growth path of GDP has never recovered to the full-employment trend that existed before the Great Recession.[28] The weak job market and low overall labor force participation that existed at the beginning of their careers has probably adversely affected Millennials' career earnings paths. Research shows that entering the labor force during an economic downturn depresses long-run earnings.[29] Evidence from the Great Depression further reveals that those who experience poor macroeconomic trends while they are young are less likely to take on significant financial risk, invest in the stock market, or own bonds.[30]

b. The rise of contingent jobs

The evolution of the labor force towards contingent jobs will also complicate retirement saving for Millennials.[31] In traditional employer-employee relationships, workers earn a salary or wage and receive fringe benefits, potentially including employer contributions to retirement plans. Contingent workers, on the other hand, work on an ad hoc basis and are paid based on the service or good they provide. They may or may not work full-time. Examples include Uber drivers, consultants, and contractors. Using a broad definition, there could be almost 20 million contingent workers in the United States.[32] Among full-time workers, these individuals have median weekly earnings about 30 percent lower than traditional workers and face a variety of barriers to retirement saving. Conventional retirement savings mechanisms, such as payroll deductions and employer matching contributions, are not readily available. As a result, they are half as likely to have access to a work-provided retirement plan.[33] While non-employer based retirement options such as IRAs are available to this group, only a small percentage participate.[34] Although a recent survey suggests that contingent work is not rising as fast as some had thought, it is nevertheless the case that Millennials face higher probabilities of doing contingent work than previous generations.[35]

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[28] Congressional Budget Office (2018).

[29] Welch (1979); Kahn (2010).

[30] Malmendier and Nagel (2011).

[31] Gale, Holmes, and John (2018); Harris and Krueger (2015); Katz and Krueger (2016).

[32] Gale, Holmes, and John (2018).

[33] Gale, Holmes, and John (2018).

[34] Government Accountability Office (2015).

[35] US Bureau of Labor Statistics (2018).

c. The added risks and responsibility of defined contribution plans

As noted above, participants in DC plans tend to work longer than participants in DB plans; other things equal, longer working careers should improve the adequacy of retirement saving. But other structural features of DC plans may lead to lower retirement incomes. First, to set up a DC plan, employees must make significantly more decisions regarding contribution levels, asset allocations, and asset drawdown. This freedom may actually serve to undermine retirement security if poor decisions are made.[36] Automatic mechanisms that govern enrollment, escalation of contributions, investment allocation, and rollovers can reduce these problems. Second, workers bear all of the investment risk in most DC plans.

d. Delayed life decisions

Compared to previous generations, Millennials are more likely to delay homeownership, marriage, and child bearing. Young adults currently have the lowest homeownership rate of any similarly aged generation since at least 1989 (Figure 4). The average age of first marriage has increased from age 21 for women (24 for men) in 1975 to age 27 (29) in 2016 (Figure 5).[37] The age at which parents have their first child has increased over time as well, from 22 in 1975 to 26 in 2014.[38] The changes in these behavioral patterns are so large that there is debate over whether to label "emerging adulthood" as a new stage of life between childhood and adulthood.[39] These trends, in turn, may delay the onset of retirement saving if people feel the need to "get settled" by purchasing a house and raising children before beginning to think about saving for retirement.

e. Increasing lifespan

Just as delayed life choices may postpone substantial retirement saving, increasing lifespans make it harder to maintain standards of living in retirement, other things equal. Over the past five decades, the average life expectancy at birth has increased from 67 to 76 for males and from 73 to 81 for females. These increases are not borne equally, however. Those at the top of the income distribution have received almost all of the increase, while life expectancy for those at the bottom has remained constant or has possibly even declined slightly.[40] If households live longer and plan to maintain their pre-retirement standard of living in retirement, they will either need to work longer or save more.

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[36] Poterba (2014).

[37] United States Census Bureau (2017).

[38] Matthews and Hamilton (2016); United States Census Bureau (2017).

[39] Vespa (2017).

[40] National Academy of Sciences (2015).

f. Addressing long-term federal fiscal imbalances

The federal government faces a long-term debt problem that will create pressure to cut spending and raise taxes. By the end of 2018, federal public debt will be 78 percent as large as gross domestic product (GDP), more than twice as large as the average ratio for the 50 years before the Great Recession. Under current policy assumptions, the public debt-GDP ratio will exceed 106 percent by 2028 and 200 percent by 2048. Just to keep the debt-GDP ratio in 2048 at its current level would require a combination of immediate and permanent spending cuts or tax increases totaling 4.2 percent of GDP. This is equivalent to a 22 percent cut in non-interest spending or a 25 percent increase in tax revenue relative to current levels.[41] Even greater cuts would be required to lower the ratio to its 50-year average rate. The longer policymakers wait to institute fiscal adjustments, the larger the adjustments will have to be in each given year, and the greater sacrifices Millennials will have to make. Changes to Social Security, Medicare, and taxes will be particularly relevant to addressing the long-term fiscal imbalance. If such fiscal adjustments are made over the next few decades, it seems highly likely that Millennials, who will then be in their prime earning years, will bear a significant amount of the burden.

g. Low rates of return

Real interest rates fell steadily from the mid-1990s, though they have risen slightly in the last few years. Many reasons have been put forward for the decline, and most of them suggest the low rates will persist somewhat.[42] One explanation, popularized by former Treasury Secretary Larry Summers, involves a lack of aggregate demand due to the Great Recession and secular stagnation post-recession.[43] Other explanations include a worldwide savings glut and a flight to safety.[44]

To the extent that such trends continue or do not reverse, and display themselves in lower overall asset returns, it will prove harder for Millennials to accumulate sufficient retirement wealth.[45] With a given pattern of retirement contributions over time, a lower rate of return will result in a smaller accumulation of balances during the accumulation phase of retirement saving. With a given balance at the point of retirement, lower interest rates will result in smaller feasible payouts—for example, through an annuity—during the withdrawal phase of retirement saving.

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[41] Auerbach, Gale, and Krupkin (2018).

[42] Elmendorf and Sheiner (2016).

[43] Summers (2016).

[44] Bernanke (2007, 2015).

[45] Fichtner and Seligman (2017); Mitchell, Clark, and Maurer (2018).

C. Evidence

One early assessment (Johnson et al. 2017) attempts to project future retirement income for older Millennials and Generation Xers. The authors find that median income at age 70 for members of these groups will be higher than that of prior generations, though a smaller share of individuals will have enough to maintain their pre-retirement standard of living. These results, as the authors describe, are uncertain, given that today's young adults still have decades of work until their retirement.

IV. Wealth Accumulation and Racial and Ethnic Minorities

A. Projected Population Trends

Table 2 shows U.S. Census Bureau (2018) projections of the composition of the future population. The United States will be a "majority-minority" country by 2050, where minority is defined as any race other than non-Hispanic white. The share of the population identifying as white only is projected to fall from 61.3 to 47.8 percent. As a share of the population, all races other than white are projected to grow or remain the same. The share of the population identifying as Hispanic is projected to rise from increase from 17.8 to 25.7 percent. The black-only share of the population is projected to increase from 12.4 to 13.3 percent; the American Indian and Alaska Native share is expected to stay relatively stable around 0.7 percent; the Asian share is expected to grow from 5.5 to 8.2 percent; the Native Hawaiian and Pacific Islander share is projected to stay steady around 0.2 percent; and the share of people of two or more races is projected to increase from 2.1 to 4.1 percent.[46]

The projected growth of the minority population relative to the U.S. population as a whole will present new challenges and opportunities for retirement saving. As discussed above, the literature on the adequacy of retirement saving shows significant intragenerational heterogeneity in preparation for retirement. Within generations, minorities appear to be at a disadvantage with regard to saving adequately for retirement compared to their non-minority counterparts. We provide further evidence on these issues below.

B. Descriptive data

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[46] By 2050, the foreign-born share of the population will increase from 13.6 to 16.8 percent. The share of the population 65 and older will rise from about 15.2 percent to 22.1 percent. The share of the population under 18 will decrease from 22.8 to 20.1 percent, and the share between 18 and 64 will decrease from 62 to 57.9 percent (United States Census Bureau 2018).

Appendix Table 1 reports characteristics of various racial and ethnic groups surveyed in the Federal Reserve's Survey of Consumer Finances. In general, the data show that whites have higher incomes than blacks or Hispanics, who have roughly similar incomes on average. Whites have higher rates of college graduation than blacks, who in turn have higher rates than Hispanics. Marriage is more prevalent among whites and Hispanics than blacks. In the samples, whites tend to be somewhat older on average than blacks, who in turn are older than Hispanics.

Whites are more likely than other groups to have a retirement account.[47] As of 2016, 65.9 percent of whites have an account, compared with 37.8 percent of blacks, 34.1 percent of Hispanics of any race, and 59.6 percent of people of other races. Overall, 56.5 percent of the population has a retirement plan.[48] Controlling for observable characteristics, Hasler, Lusardi, and Oggero (2018) show that whites are less likely to be "financially fragile," as they define it.

C. Regression specification

We estimate regression of the form

$$W = \alpha + \beta X + \gamma R + \varepsilon$$

Where W is a measure of wealth, X is a vector of household characteristics, including education, marital status, sex (for singles), income and age categories, and R is a series of racial/ethnic indicators (black, Hispanic, and non-white other, with white as the omitted category).[49] We employ cross-section data from each of the ten survey years the SCF has been administered (triennially from 1989 to 2016) and estimate least squares (LS) and median (Least Absolute Deviation, or LAD) regressions, each with robust estimation techniques. Thompson and Suarez (2015) examine similar issues and provide wealth decompositions using the 1989-2013 SCFs.[50]

In the text, we present regressions using the level of wealth as the dependent variable. In the Appendix,

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[47] The working age population is defined as those aged 25 to 64. Ownership of a retirement account includes having a nonzero balance in any of the following, as defined by the SCF: IRAs, Keoghs, thrift-type accounts, and future and current account-type pensions. See also Rhee (2013b).

[48] Harvey (2017). Statistics are for workers aged 18 to 64 who work in the private sector. In this case, CPS data is used as an illustrative example of disparities in retirement saving by demographics. Studies linking CPS survey data with administrative data find that Americans tend to underestimate their retirement income (Bee and Mitchell 2017). Many who receive such income fail to report it. Other studies suggest that self-reports of retirement plan participation are underestimated as well (Dushi and Honig 2015). Thus, the estimates presented here may represent a lower bound of access to and participation in retirement plans.

[49] Regressions using a variable called "normal income" instead of income yielded similar results.

[50] Other studies of racial wealth gaps include Altonji and Doraszelski (2005), Barsky et al. (2002), Masterson et al. (2009), Pew (2011), Scholz and Levine (2003), and Shapiro, Meschede, and Osoro (2013).

we present results that use the inverse hyperbolic sine of wealth as the dependent variable. We emphasize that the coefficient on race shows differences in wealth accumulation after controlling for various factors but should not be interpreted as an estimate of the impact of racial discrimination.

The LS regressions in Table 3 show that black households tend to have lower net worth than white households, controlling for other factors.[51] In the 2016 SCF, controlling for other factors, black households had on average $124,000 less net worth than white households. This difference may have increased over time. The black-white differences in wealth in the 1989, 1992, and 1995 cross-sections are smaller than the 2016 difference, with p-values ranging from .035 to .105.

This finding should be qualified carefully. Certainly, reductions in black-white differences over time in educational attainment and in wages should serve to *reduce* black-white wealth differences. Our results address a different point. We show that—*controlling for* any changes in education, wages, and other household characteristics—the difference in wealth between blacks and whites may well have increased over time. Additional results presented below support this conclusion.

Households where the head is of Hispanic origin do not generally have statistically significantly different net worth from whites, controlling for other factors.

Other non-white individuals, on average, had significantly lower net worth than whites in three of the SCF years (2004, 2010, and 2016). This difference appears to have increased over time, with the coefficients on the 1989, 1992, 1995 regressions significantly smaller (in absolute value) than the coefficient in the 2016 regression.

In all of these regressions, however, the relevant sample sizes are fairly small, so precise estimation is difficult. To help address the concern with sample size, we also pool the data across survey years, adding a control for the survey year, with results shown in Table 4.

As in the cross-section results, blacks have lower net worth, controlling for other factors. The coefficients are larger in absolute value in the 2010-2016 specification than in the 1989-2007 specification, confirming the finding above about widening black-white wealth differences, controlling for other factors.

Households where the head is of Hispanic origin do not have a significantly different net worth in any of the specifications. Those who do not identify as white, black, or Hispanic have significantly lower net worth than whites in each specification and the difference has grown over time.

Since wealth tends to be distributed in a skewed manner, we also report LAD regressions to remove the impact of outliers. The regressions yield similar results to the LS findings, though of a smaller magnitude.

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[51] This finding is consistent with Emmons and Ricketts (2017), who show that differences in observable variables cannot fully explain minorities' wealth accumulation relative to whites.

In cross-section results reported in Table 5, the typical black household had $43,262 less in wealth than the typical white household, controlling for other factors. The difference in wealth has increased over time, again conditional on observable factors.

The LAD regressions also show that the typical household with a head of Hispanic origin has less net worth than white households in several of the survey years, particularly in 2013 and 2016. The results suggest that wealth differences between whites and Hispanics may be increasing over time. Results are mixed for other non-white individuals, but the sample size for this group is relatively small, so precise estimation is difficult.

Table 6 reports LAD regressions using data pooled across survey years. The results are qualitatively similar to earlier findings. Black households have less wealth than white households and the difference has grown over time, although it is smaller in the LAD regressions than in LS regressions.

D. Discussion

Our finding that differences in wealth between whites and minorities appears to have increased over time is consistent with a substantial body of literature.[52] The increase in the gap, at least over the past decade, appears to be due to the decline in housing wealth during the Great Recession, which impacted low-wealth households more than high-wealth households.[53]

The implications of the results for the Millennial generation are concerning. Chetty et al. (2018) find that black households have lower income, on average, than white households. Moreover, given parental income, they find that black children have lower rates of upward mobility and higher rates of downward mobility than white children. Rates of upward mobility for Hispanics are lower than for whites but higher than for black households. Their results suggest that closing the *income* gap over time between whites and minorities will be difficult. Building off those results, our findings imply that minorities that have less wealth than whites, *even after controlling for income* (and education, age, and marital status). Therefore, our results suggest that, even if the income gap between groups were eventually reduced or eliminated, that would not in itself be sufficient to ensure the adequacy of saving for minority households—there would still be a retirement saving gap between whites and minorities.

It is unclear, however, to what extent the wealth accumulation patterns of minorities in the past provides

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[52]See, for example, Taylor et al. (2011), Kochhar and Fry (2014), McKernan et al. (2014), Shapiro, Meschede, and Osoro (2014), Thompson and Suarez (2015), and Wolff (2018). Munnell, Hou, and Sanzenbacher (2018b) show that differences in the proportion of households saving adequately for retirement (a different measure than the "Wealth gap" measures used in the studies cited above) fell for blacks relative to whites from 2007 to 2016, but rose for Hispanics relative to whites. Hispanics were particularly hard hit by declines in housing prices in the Great Recession.

[53] McKernan et al. (2014); Shapiro, Meschede, and Osoro (2014); Wolff (2018).

a reliable guide to their wealth accumulation patterns in the future. As the economy evolves, one can expect the economic experience of minorities to change. For example, relative to minorities in the past, minorities in the future may well live in neighborhoods with different characteristics, go to different types of schools, and have different experiences with mentors, discrimination, marriage, child bearing and so on. This could, in principle, help minorities accumulate more wealth relative to whites than in the past. However, the results above show that over the past 30 years, the results the gap has widened, after controlling for observable characteristics.

V. Conclusion

Predicting retirement saving patterns as of 2050 is an exercise in uncertainty. There is clearly cause for concern. First, many members of the current generation of retirees and near-retirees are not saving very much. Second, Millennials will face a number of "headwinds" in accumulating enough saving to finance adequate retirement. Third, the projected rise in the minority population will reduce retirement saving adequacy, if current trends persist. On the other hand, Millennials possess a few major advantages over previous generations in preparing for retirement and it is not at all clear that the wealth accumulation patterns of minority households will remain constant if their economic situation changes.

Tables and Figures

Table 1. Calculating a Target Replacement Rate

	Pre-Retirement	Post-Retirement
Wages	$100	0
Health Insurance	$6	0
401(k) Contributions	$5	0
Mortgage Payment	$5	0
Work Expenses	$2.35	0
Payroll Taxes	$7.65	0
Federal and State Taxes	$12	$8
Other Consumption	$62	$62
Target Replacement Rate	**--**	**$70**

Source: Authors' calculations.

Table 2. Projected Share of Population by Race and Hispanic Origin by Year (%)

	White	Hispanic	Black	Asian	2+ races	AIAN*	NHPI**
2016	61.3	17.8	12.4	5.5	2.1	0.7	0.2
2020	59.7	18.7	12.5	5.8	2.3	0.7	0.2
2030	55.8	21.1	12.8	6.7	2.8	0.7	0.2
2040	51.7	23.5	13.0	7.5	3.4	0.7	0.2
2050	47.8	25.7	13.3	8.2	4.1	0.7	0.2

Source: Author's calculations using U.S. Census Bureau (2018).

Note: All percentages for a given race represent the share of that race that is not Hispanic. All Hispanics are captured in the Hispanic column.

* American Indian/Alaska Native

** Native Hawaiian/Pacific Islander

Table 3. Net Worth Regressions (Least Squares)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
Black	-42,109*	-40,433***	-56,846***	-66,146***	-96,659***	-97,979***	-78,393***	-141,470***	-83,542***	-124,142***
	(23,206)	(13,804)	(18,309)	(19,132)	(31,543)	(27,485)	(29,495)	(26,428)	(23,857)	(37,193)
P- value, coefficient = 2016 value	0.061	0.035	0.105	0.166	0.573	0.572	0.335	0.704	0.358	N.A.
Hispanic	-6,333	23,809	-34,760	29,801	-5,895	-25,377	70,958*	-58,587**	1,298	42,575
	(26,919)	(24,879)	(28,864)	(26,233)	(38,400)	(40,387)	(42,880)	(29,682)	(28,004)	(37,425)
P-value, coefficient = 2016 value	0.289	0.676	0.102	0.780	0.366	0.217	0.618	0.034	0.377	N.A.
Non-White other	48,796	21,532	-20,803	-66,383	-160,583	-229,736***	-147,826	-279,171***	-69,021	-255,881**
	(89,674)	(49,493)	(50,361)	(91,136)	(134,387)	(86,197)	(115,956)	(87,955)	(88,076)	(105,779)
P-value, coefficient = 2016 value	0.028	0.018	0.045	0.175	0.577	0.848	0.491	0.866	0.175	N.A.
N	3,143	3,906	4,299	4,305	4,442	4,519	4,417	6,482	6,015	6,248
R-squared	0.114	0.084	0.088	0.094	0.131	0.102	0.104	0.099	0.093	0.071

Source: Board of Governors of the Federal Reserve (2017).

Control variables: Education level category (Less than high school diploma, high school diploma, some college, bachelor's degree, graduate degree); Marital status; Sex of single heads of household; Income category ($0-19,999, $20,000-49,999, $50,000-99,999, $100,000-199,999, $200,000+); Age category (0-24, 25-34, 35-44, 45-54, 65-74, 75+).

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4. Pooled Net Worth Regressions (Least Squares)

	(1)	(2)	(3)
	1989-2016	1989-2007	2010-2016
Black	-90,972***	-71,877***	-117,903***
	(8,626)	(9,386)	(17,292)
P-value, coefficient = 2016 value	N.A.	0.012	N.A.
Hispanic	-7,845	3,575	-7,399
	(11,002)	(13,499)	(18,635)
P-value, coefficient = 2016 value	N.A.	0.303	N.A.
Non-White Other	-112,807***	-70,197**	-199,954***
	(29,078)	(33,546)	(54,600)
P-value, coefficient = 2016 value	N.A.	0.045	N.A.
N	47,776	29,031	18,745
R-squared	0.091	0.102	0.082

Source: Board of Governors of the Federal Reserve (2017).

Control variables: Same as in Tables 3 and 5, plus year effects.

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5. Net Worth Regressions (Least Absolute Deviations)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
Black	-29,966***	-20,971***	-21,259***	-19,532***	-22,585***	-31,104***	-23,935***	-21,602***	-36,176***	-43,262***
	(4,534)	(3,181)	(3,719)	(3,123)	(3,890)	(6,478)	(5,844)	(4,480)	(2,927)	(3,019)
P-value, coefficient = 2016 value	0.019	<0.001	<0.001	<0.001	<0.001	0.113	0.010	<0.001	0.088	N.A.
Hispanic	-25,656***	-8,703	-14,384***	-9,866	-9,010*	-5,346	-3,439	-6,724	-13,124***	-23,161***
	(9,338)	(5,808)	(5,113)	(6,065)	(5,043)	(5,973)	(6,960)	(4,466)	(3,823)	(4,457)
P-value, coefficient = 2016 value	0.665	0.028	0.237	0.053	0.024	0.017	0.025	0.004	0.069	N.A.
Non-White other	-12,710	-11,955***	-23,216***	-23,200	-523.9	-25,554	-34,624***	-32,870***	-23,177	-8,501
	(9,025)	(3,212)	(6,717)	(17,139)	(30,931)	(19,163)	(11,401)	(9,290)	(15,789)	(6,512)
P-value, coefficient = 2016 value	0.786	0.611	0.052	0.438	0.741	0.287	0.192	0.049	0.382	N.A.

N	3,143	3,906	4,299	4,305	4,442	4,519	4,417	6,482	6,015	6,248
Pseudo R-squared	.180	.184	.143	.167	.166	.163	.158	.163	.168	.160

Source: Board of Governors of the Federal Reserve (2017).

Control variables: Education level category (Less than high school diploma, high school diploma, some college, bachelor's degree, graduate degree); Marital status; Sex of single heads of household; Income category ($0-19,999, $20,000-49,999, $50,000-99,999, $100,000-199,999, $200,000+); Age category (0-24, 25-34, 35-44, 45-54, 65-74, 75+).

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6. Pooled Net Worth Regressions (Least Absolute Deviations)

|	(1)	(2)	(3)
	1989-2016	1989-2007	2010-2016
Black	-26,419***	-23,339***	-33,809***
	(1,171)	(1,394)	(1,714)
P-value, coefficient = 2016 value	N.A.	<0.001	N.A.
Hispanic	-12,422***	-10,292***	-14,670***
	(1,553)	(1,706)	(2,521)
P-value, coefficient = 2016 value	N.A.	0.129	N.A.
Non-White Other	-17,827***	-18,695***	-17,158***
	(3,185)	(2,621)	(5,705)
P-value, coefficient = 2016 value	N.A.	0.643	N.A.
N	47,776	29,031	18,745
Pseudo R-squared	0.160	0.161	0.163

Source: Board of Governors of the Federal Reserve (2017).

Control variables: Same as in Tables 3 and 5, plus year effects.

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

**Figure 1. Median Net Worth Among Young Households
(1989-2016)**
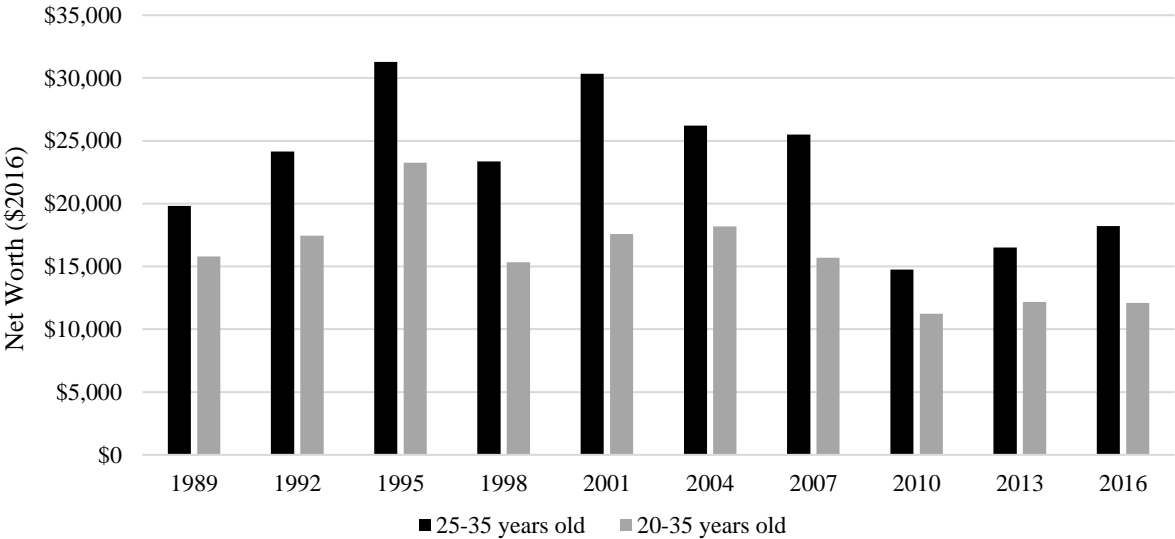
Source: Board of Governors of the Federal Reserve System (2017).

Figure 2. DB and DC Plan Ownership Among 25 to 35 Cohort (1989-2016)
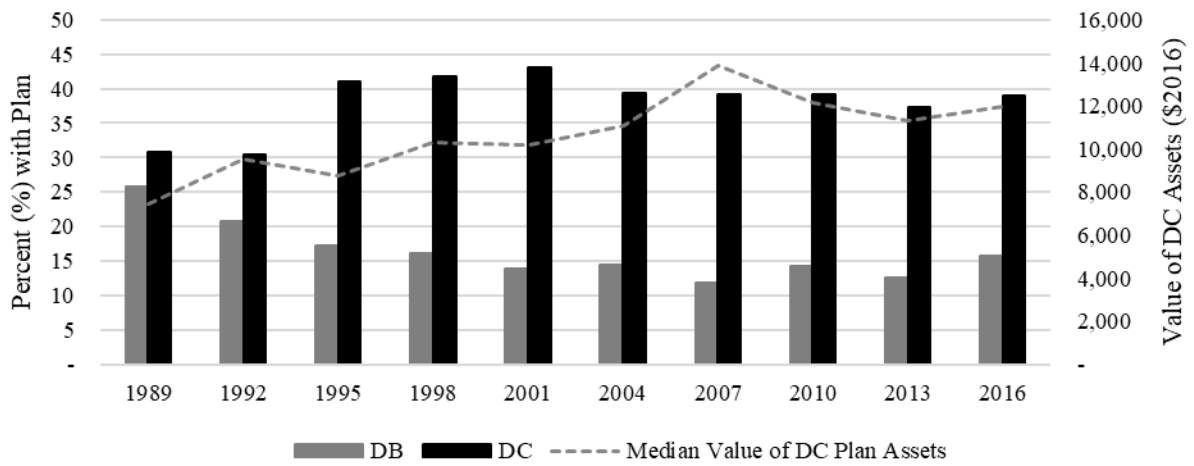
Source: Board of Governors of the Federal Reserve System (2017).
Retirement account assets include the value of IRAs, Keoghs, thrift-type accounts, and future and current account-type pensions.

Figure 3. Mean Net Worth by Percentile (ages 25-35)
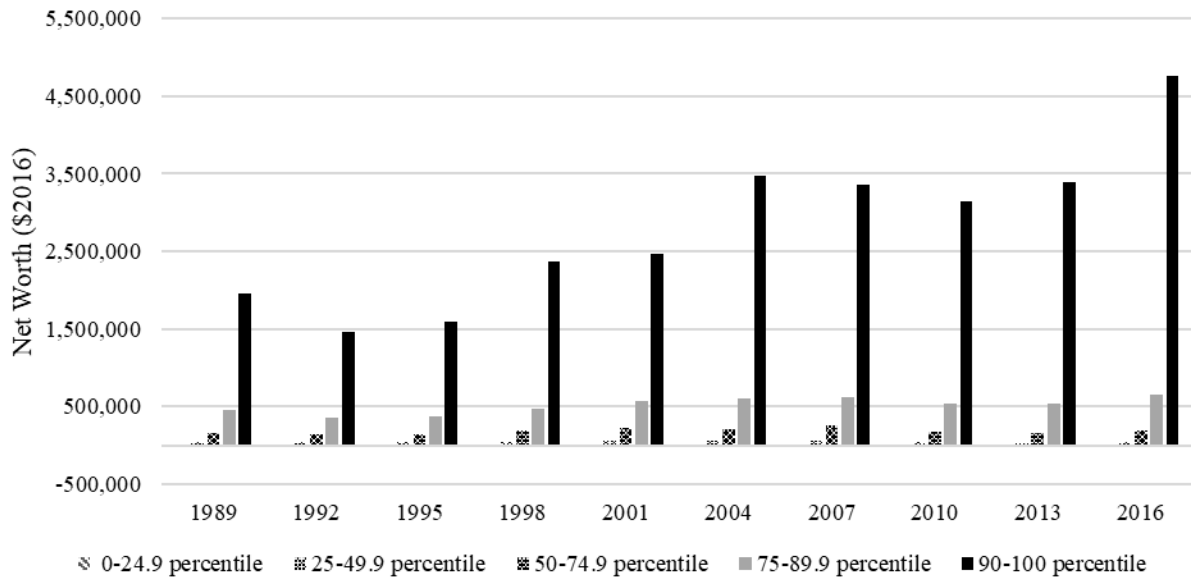
Source: Board of Governors of the Federal Reserve System (2017).

Figure 4. Share of Young Households Owning a Home (1989-2016)
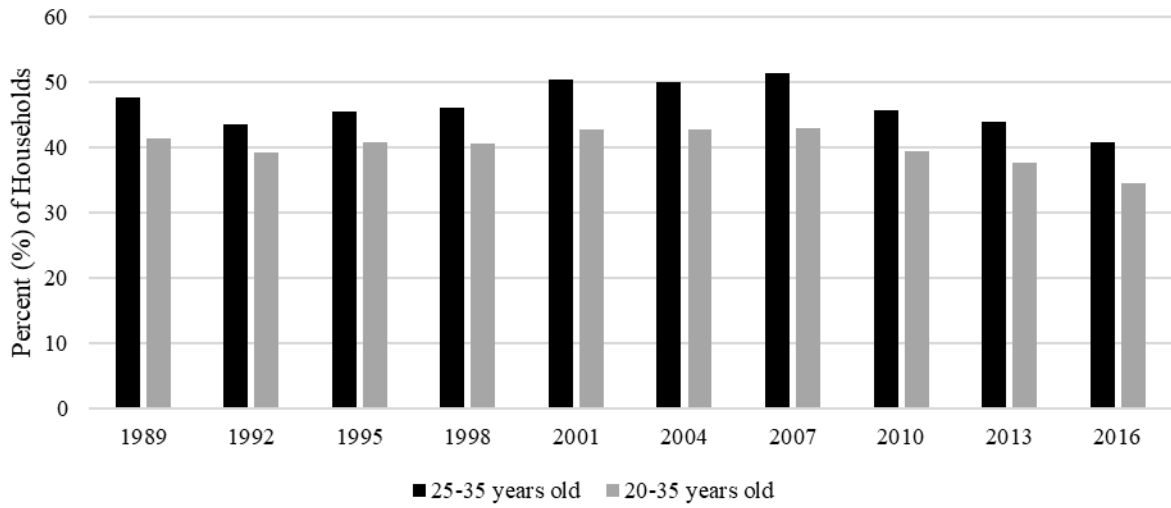
Source: Board of Governors of the Federal Reserve System (2017).
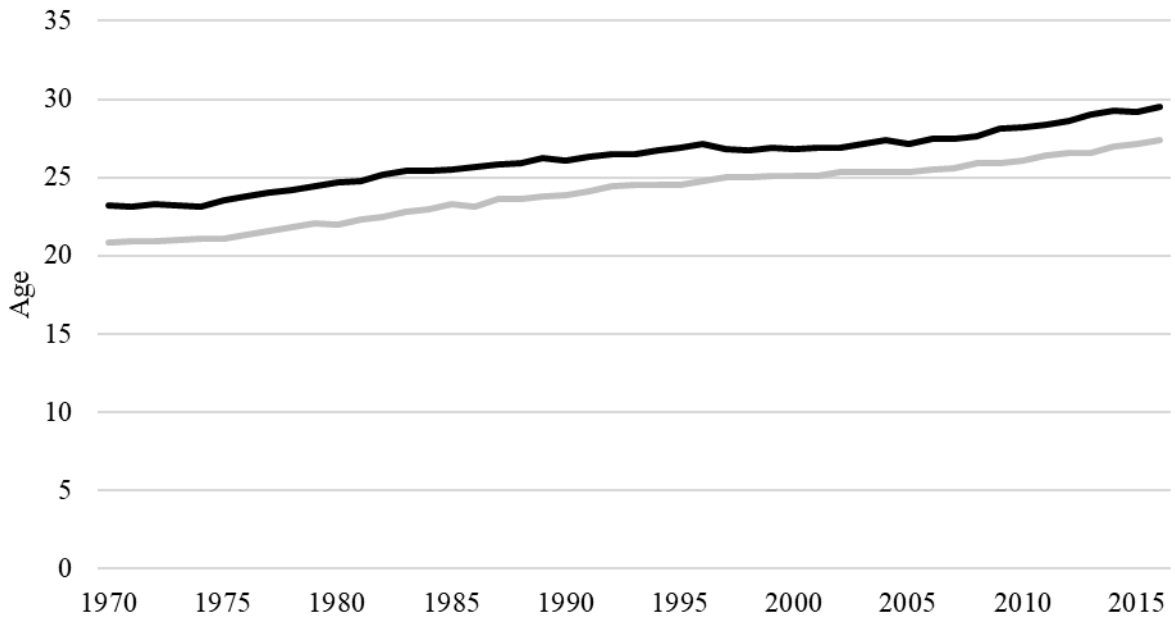
Figure 5. Median Age at First Marriage (1970-2016)

Source: US Census Bureau (2017).

Appendix

While the regressions in the text use the level of wealth (in 2016 dollars) as the dependent variable, the regressions in the Appendix employ the inverse hyperbolic sine (IHS) of wealth. This transformation has been used in previous literature (for example, Gale and Pence 2006, Pence 2006, Thompson and Suarez 2015). The transformation approximates the logarithm of wealth for large positive values of wealth and is also able to address zero or negative values of wealth, which occur frequently in the data. The IHS transformation yields estimates of proportional differences in wealth, rather than the differences in levels generated by the regressions in the main text.

More formally, if θ is a scaling parameter and w is a measure of wealth, the inverse hyperbolic sine of wealth can be written as $\theta^{-1} \sinh^{-1}(\theta w) = \theta^{-1} \ln[\theta w + (\theta^2 w^2 + 1)^{1/2}]$. This symmetric function is linear around the origin but approximates the logarithm for larger values of wealth. To see this, note that if w is large, $\ln[\theta w + (\theta^2 w^2 + 1)^{1/2}] \approx \ln 2\theta + \ln w$, which is simply a vertical displacement of the logarithm. Following previous research, we set $\theta = 0.0001$.[54] When multiplied by this scaling parameter, coefficients from an inverse hyperbolic sine specification, like coefficients from a logarithmic specification, can be interpreted as the effect of a change in a given variable on the percentage change in wealth, for wealth values that are sufficiently large.[55]

Appendix Tables 2-5 provide regression results using the IHS transformation of wealth that parallel Tables 3-6 in the main text. Several patterns in the IHS estimates merit attention. First, controlling for demographic factors, black-white wealth differences are large. In 2016, for example, controlling for other factors, blacks had more than 50 percent less wealth than whites at the mean and the median of the distribution. The estimates provide marginal support for the idea that the differences have grown over time in Appendix Tables 2 and 4 and strong support for the view in Appendix Tables 3 and 5. Second, the effects for Hispanics are smaller than for blacks but the Hispanic coefficients under the IHS transformation are much more precisely estimated than under the level-of-wealth regressions in the main text. Third, the effects for "other" groups are smaller than for blacks and Hispanics and are not precisely estimated.

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[54] Using maximum likelihood, Burbidge, Magee, and Robb (1988) find that 0.0000872 (or 0.0001, rounded) is the optimal value for the scaling parameter for net worth in their ordinary least squares specification; Pence (2002) finds that 0.0001 is the optimal value for her median regression specification. Kennickell and Sundén (1997) also use this parameter value for net worth.

[55] See Pence (2006) for further exposition of this result and Burbidge, Magee, and Robb (1988) for more information on this transformation.

Appendix Table 1. Demographic Characteristics by Year and Race/Ethnicity

A. Average Age

	Black	His-panic	Other	White
1989	47.3	42.5	41.9	49
1992	45.8	41.6	44.8	49.8
1995	45.8	40.2	45.4	49.7
1998	46	40.7	43.7	50.1
2001	45.4	40.7	45.5	50.6
2004	47.7	42.2	45.8	51
2007	45.7	41.3	44.4	52.2
2010	48.1	42.4	48.4	52.4
2013	48.8	44.2	45.9	53.1
2016	49.4	45.8	45	53.7

B. Share Who Are College Grads (%)

	Black	His-panic	Other	White
1989	11.0	6.5	34.1	26.3
1992	17.0	6.5	31.6	30.8
1995	12.4	9.4	32.9	27.9
1998	14.0	12.1	32.7	29.9
2001	13.7	12.5	49.1	32.0
2004	20.1	8.9	51.6	34.0
2007	19.6	12.1	54.7	31.4
2010	19.9	15.3	48.6	34.1
2013	21.6	11.8	53.2	35.9
2016	22.1	17.2	54.3	38.1

C. Share Who Are Married (%)

	Black	His-panic	Other	White
1989	28.0	60.5	57.9	63.0
1992	35.7	59.6	54.8	61.2
1995	35.8	69.7	62.0	61.3
1998	36.0	69.8	66.6	60.7
2001	38.2	61.8	61.7	64.1
2004	33.6	67.7	68.5	60.6
2007	41.3	68.4	66.4	60.2
2010	39.4	61.6	63.6	60.8
2013	36.6	63.0	63.6	60.1
2016	36.4	59.6	60.1	60.8

D. Average Income (2016$)

	Black	His-panic	Other	White
1989	36,815	39,742	58,884	86,229
1992	39,948	38,383	71,891	74,108
1995	36,206	47,993	72,883	77,506
1998	41,577	47,620	83,136	86,656
2001	50,495	52,716	83,761	105,968
2004	49,326	50,540	98,618	101,369
2007	53,087	55,349	104,161	110,394
2010	46,871	55,366	107,399	97,553
2013	43,785	47,123	95,831	105,203
2016	54,949	57,396	112,310	119,842

	E. Share with Retirement Accounts (%)					**F. Share of Population (%)***			
	Black	His-panic	Other	White		Black	His-panic	Other	White
1989	16.5	16.1	25.0	43.3	1989	12.8	8	4.4	74.8
1992	24.2	19.2	28.5	45.2	1992	12.7	7.4	4.5	75.3
1995	27.8	31.9	40.2	49.3	1995	12.8	5.7	4	77.6
1998	34.5	22.4	46.0	54.3	1998	11.8	7.1	3.3	77.8
2001	39.7	31.8	48.2	58.0	2001	13	7.9	2.8	76.3
2004	32.3	25.7	51.7	55.9	2004	13.6	9.2	3.6	73.6
2007	37.0	32.0	63.7	57.5	2007	12.6	9.4	4.1	73.9
2010	32.6	27.8	51.9	57.3	2010	13.8	10.7	4.6	70.8
2013	34.0	26.0	49.4	56.0	2013	14.6	10.6	4.7	70.1
2016	34.0	31.2	55.6	59.6	2016	15.8	11.3	4.8	68

Source: Authors' calculations using Board of Governors of the Federal Reserve System (2017).

* Share of population is estimated by calculating the weighted share of observations in the SCF for each race in each year.

Appendix Table 2. Net Worth Regressions (Least Squares, Inverse Hyperbolic Sine Transformation)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
Black	-0.452***	-0.402***	-0.435***	-0.352***	-0.445***	-0.452***	-0.413***	-0.453***	-0.552***	-0.537***
	(0.107)	(0.078)	(0.077)	(0.079)	(0.077)	(0.086)	(0.086)	(0.071)	(0.072)	(0.068)
P-value, coefficient = 2016 value	0.185	0.014	0.052	0.001	0.076	0.120	0.029	0.090	0.746	N.A.
Hispanic	-0.481***	-0.343***	-0.322***	-0.310***	-0.364***	-0.284***	-0.147	-0.292***	-0.323***	-0.322***
	(0.119)	(0.110)	(0.120)	(0.103)	(0.091)	(0.089)	(0.097)	(0.080)	(0.084)	(0.0766)
P-value, coefficient = 2016 value	0.059	0.818	0.996	0.886	0.596	0.644	0.064	0.702	0.991	N.A.
Non-White other	-0.128	-0.102	-0.360***	-0.133	-0.335**	-0.156	0.047	-0.237**	0.009	0.051
	(0.149)	(0.113)	(0.139)	(0.165)	(0.202)	(0.135)	(0.124)	(0.123)	(0.113)	(0.116)
P-value, coefficient = 2016 value	0.322	0.330	0.006	0.341	0.050	0.218	0.983	0.059	0.802	N.A.
N	3,143	3,906	4,299	4,305	4,442	4,519	4,417	6,482	6,015	6,248

| R-squared | 0.548 | 0.509 | 0.490 | 0.499 | 0.555 | 0.528 | 0.523 | 0.454 | 0.501 | 0.522 |

Source: Board of Governors of the Federal Reserve (2017).

Coefficients have been multiplied by the scaling parameter for the inverse hyperbolic sine, 0.0001, and then transformed with $e^{\beta} - 1$. Statistical significance is calculated from the untransformed coefficients and standard errors.

Control variables: Education level category (Less than high school diploma, high school diploma, some college, bachelor's degree, graduate degree); Marital status; Sex of single heads of household; Income category ($0-19,999, $20,000-49,999, $50,000-99,999, $100,000-199,999, $200,000+); Age category (0-24, 25-34, 35-44, 45-54, 65-74, 75+).

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 3. Pooled Net Worth Regressions (Least Squares, Inverse Hyperbolic Sine Transformation)

	(1)	(2)	(3)
	1989-2016	1989-2007	2010-2016
Black	-0.462***	-0.424***	-0.518***
	(0.025)	(0.032)	(0.040)
P-value,			
coefficient =			
2016 value	N.A.	<0.001	N.A.
Hispanic	-0.323***	-0.326***	-0.315***
	(0.030)	(0.039)	(0.046)
P-value,			
coefficient =			
2016 value	N.A.	0.855	N.A.
Non-White	-0.124***	-0.160***	-0.064
other	(0.042)	(0.054)	(0.068)
P-value,			
coefficient =			
2016 value	N.A.	0.203	N.A.
N	47,776	29,031	18,745
R-squared	0.508	0.521	0.492

Source: Board of Governors of the Federal Reserve (2017).

Coefficients have been multiplied by the scaling parameter for the inverse hyperbolic sine, 0.0001, and then transformed with $e^{\beta} - 1$. Statistical significance is calculated from the untransformed coefficients and standard errors.

Control variables: Same as in Appendix Tables 2 and 4, plus year effects.

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 4. Net Worth Regressions (Least Absolute Deviations, Inverse Hyperbolic Sine Transformation)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
Black	-0.418***	-0.393***	-0.461***	-0.376***	-0.486***	-0.409***	-0.462***	-0.483***	-0.558***	-0.559***
	(0.122)	(0.082)	(0.068)	(0.084)	(0.094)	(0.096)	(0.146)	(0.082)	(0.082)	(0.077)
P-value, coefficient = 2016 value	0.068	0.002	0.025	0.003	0.204	0.018	0.231	0.129	0.984	N.A.
Hispanic	-0.529***	-0.365***	-0.385***	-0.286**	-0.395***	-0.330***	-0.065	-0.286***	-0.394***	-0.398***
	(0.155)	(0.128)	(0.132)	(0.151)	(0.088)	(0.103)	(0.091)	(0.073)	(0.091)	(0.093)
P-value, coefficient = 2016 value	0.142	0.761	0.877	0.292	0.960	0.408	0.001	0.136	0.961	N.A.
Non-White other	-0.122	-0.167	-0.329***	-0.252	-0.318*	-0.071	0.045	-0.279**	-0.108	0.066
	(0.164)	(0.157)	(0.152)	(0.185)	(0.228)	(0.128)	(0.152)	(0.132)	(0.105)	(0.134)
P-value, coefficient = 2016 value	0.256	0.216	0.049	0.133	0.056	0.459	0.912	0.027	0.249	N.A.

N	3,143	3,906	4,299	4,305	4,442	4,519	4,417	6,482	6,015	6,248
Pseudo R-squared	.377	.353	.320	.341	.381	.362	.360	.336	.365	.368

Source: Board of Governors of the Federal Reserve (2017).

Coefficients have been multiplied by the scaling parameter for the inverse hyperbolic sine, 0.0001, and then transformed with $e^{\beta} - 1$. Statistical significance is calculated from the untransformed coefficients and standard errors.

Control variables: Education level category (Less than high school diploma, high school diploma, some college, bachelor's degree, graduate degree); Marital status; Sex of single heads of household; Income category ($0-19,999, $20,000-49,999, $50,000-99,999, $100,000-199,999, $200,000+); Age category (0-24, 25-34, 35-44, 45-54, 65-74, 75+).

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 5. Pooled Net Worth Regressions (Least Absolute Deviations, Inverse Hyperbolic Sine Transformation)

	(1)	(2)	(3)
	1989-2016	1989-2007	2010-2016
Black	-0.464***	-0.416***	-0.533***
	(0.030)	(0.038)	(0.045)
P-value,			
coefficient =			
2016 value	N.A.	<0.001	N.A.
Hispanic	-0.367***	-0.367***	-0.349***
	(0.034)	(0.047)	(0.050)
P-value,			
coefficient =			
2016 value	N.A.	0.928	N.A.
Non-White	-0.138**	-0.174***	-0.116**
Other	(0.058)	(0.069)	(0.062)
P-value,			
coefficient =			
2016 value	N.A.	0.491	N.A.
N	47,776	29,031	18,745
Pseudo			
R-squared	0.355	0.356	0.356

Source: Board of Governors of the Federal Reserve (2017).

Coefficients have been multiplied by the scaling parameter for the inverse hyperbolic sine, 0.0001, and then transformed with $e^\beta - 1$. Statistical significance is calculated from the untransformed coefficients and standard errors.

Control variables: Same as in Appendix Tables 2 and 4, plus year effects.

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

References

Altonji, Joseph and Ulrich Doraszelski. 2005. "The Role of Permanent Income and Demographics in Black/White Differences in Wealth." *Journal of Human Resources*. 40(1): 1-30. Winter 2005.

Aon Hewitt. 2012. "The Real Deal: 2012 Retirement Income Adequacy at Large Companies." Aon Hewitt.

Auerbach, Alan, William Gale, and Aaron Krupkin. 2018. "The Federal Budget Outlook: We Are Not Winning." *Tax Notes*. 617-628. July 30.

Barsky, Robert, John Bound, Kerwin Charles, and Joseph Lupton. 2002. "Accounting for the Black-White Wealth Gap." *Journal of the American Statistical Association*. 97:459, 663-673.

Bee, Adam and Joshua Mitchell. 2017. "Do Older Americans Have More Income than we Think?" SESHD Working Paper No.2017-39. US Census Bureau: Washington, DC.

Bernanke, Ben. 2007. "Global Imbalances: Recent Developments and Prospects." Speech at the Bundesbank Lecture. September 11.

Bernanke, Ben. 2015. "Why are interest rates so low, part 3: The Global Savings Glut." Ben Bernanke Blog, the Brookings Institution: April 1.

Board of Governors of the Federal Reserve System. 2017. "Survey of Consumer Finances 2016." Board of Governors of the Federal Reserve System: Washington, DC.

Burbidge, John B., Lonnie Magee, and A. Leslie Robb. 1988. "Alternative Transformations to Handle Extreme Values of the Dependent Variable." *Journal of the American Statistical Association*. 83(401): 123-27.

Burtless, Gary. 2013. "Can Educational Attainment Explain the Rise in Labor Force Participation at Older Ages?" Center for Retirement Research at Boston College: Chestnut Hill, MA.

Butricia, Barbara, Howard Iams, and Karen Smith. 2012. "This Is Not Your Parents' Retirement: Comparing Retirement Income Across Generations." *Social Security Bulletin*. 72(1):37-58.

Chen, Anqi, Alicia H. Munnell, and Geoffrey T. Sanzenbacher. 2018. "How Much Income do Retirees Actually Have?" Center for Retirement Research at Boston College: Chestnut Hill, MA.

Chetty, Raj, Nathaniel Hendren, Maggie R. Jones, and Sonya R. Porter. 2018. "Race and Economic Opportunity in the United States: An Intergenerational Perspective." NBER Working Paper No. 24441.

Coile, Courtney. 2018. "Working Longer in the U.S.: Trends and Explanations." NBER Working Paper No. 24576.

Congressional Budget Office. 2017. "Measuring the Adequacy of Retirement Income: A Primer." Congressional Budget Office, Washington, DC.

Congressional Budget Office. 2018. "The Budget and Economic Outlook: 2018 to 2028." Congressional Budget Office: Washington, DC.

Council of Economic Advisers. 2014. "15 Economic Facts about Millennials." The White House: Washington, DC.

Dettling, Lisa and Joanne Hsu. 2014. "The State of Young Adults' Balance Sheets: Evidence from the Survey of Consumer Finances." *Federal Reserve Bank of St. Louis Review, Fourth Quarter, 2014.* (96)4:305-330.

Dettling, Lisa, Joanne Hsu, and Elizabeth Llanes. 2018. "A Wealthless Recovery? Asset Ownership and the Uneven Recovery from the Great Recession." FEDS Notes. Board of Governors of the Federal Reserve System: Washington, DC.

Dimock, Michael. 2018. "Defining Generations: Where Millennials End and Post-Millennials Begin." Pew Research Center: Washington, DC.

Dushi, Irena and Marjorie Honig. 2015. "How Much do Respondents in the Health and Retirement Study Know About Their Contributions to Tax-Deferred Contribution Plans? A Cross-Cohort Comparison." *Journal of Pension Economics and Finance.* 14(3):203-239.

Dushi, Irena, Alicia H. Munnell, Geoffrey T. Sanzenbacher, Anthony Webb, and Anqi Chen. 2016. "Do Households Save More When the Kids Leave Home?" Center for Retirement Research at Boston College: Chestnut Hill, MA.

Dynan, Karen, Jonathan Skinner, and Stephen Zeldes. 2004. "Do the Rich Save More?" *Journal of Political Economy.* 112(2): 397-444.

Elmendorf, Douglas and Louise Sheiner. 2016. "Federal Budget Policy with an Aging Population and Persistently Low Interest Rates." Hutchins Center Working Paper #18.

Emmons, William and Lowell Ricketts. 2017. "College Is Not Enough: Higher Education Does Not Eliminate Racial and Ethnic Wealth Gaps." *Federal Reserve Bank of St. Louis Review, First Quarter, 2017.* 99(1): 7-39.

Engen, Eric, William Gale, and Cori Uccello. 1999. "The Adequacy of Household Saving." *Brookings Papers on Economic Activity.* 2(1999): 65-187.

Fichtner, Jason and William Gale. 2017. "Economic and Political Consequences of Inadequate Retirement Saving for the Millennial Generation."

Fichtner, Jason and Jason Seligman. 2017. "Retirement Saving and Decumulation in a Persistent Low-Return Environment." Pension Research Council Working Paper, Pension Research Council, University of Pennsylvania.

Fry, Richard. 2017a. "5 Facts About Millennial Households." Pew Research Center: Washington, DC.

Fry, Richard. 2017b. "It's Becoming More Common for Young Adults to Live at Home—and for Longer Stretches." Pew Research Center: Washington, DC.

Fry, Richard, Ruth Igielnik, and Eileen Patten. 2018. "How Millennials Today Compare with Their Grandparents 50 Years Ago." Pew Research Center: Washington, DC.

Gale, William and David John. 2017. "State Sponsored Retirement Savings Plans: New Approaches to Boost Retirement Plan Coverage." Pension Research Council Working Paper, The Wharton School, University of Pennsylvania.

Gale, William and Karen M. Pence. 2006. "Are Successive Generations Getting Wealthier, and If So, Why? Evidence from the 1990s." *Brookings Papers on Economic Activity.* 1(2006): 155-234.

Gale, William, John Karl Scholz, and Ananth Seshadri. 2009. "Are All Americans Saving 'Optimally' for Retirement?"

Gale, William, Sarah Holmes, and David John. 2018. "Retirement Plans for Contingent Workers: Issues and Options." The Brookings Institution: Washington, DC.

Government Accountability Office. 2015. "Contingent Workforce: Size, Characteristics, Earnings, and Benefits." US Government Accountability Office: Washington, DC.

Harris, Seth and Alan Krueger. 2015. "A Proposal for Modernizing Labor Laws for Twenty-First Century Work: The 'Independent Worker.'" The Brookings Institution: Hamilton Project.

Harvey, Catherine. 2017. "Access to Workplace Retirement Plans by Race and Ethnicity." Fact Sheet. AARP Public Policy Institute: Washington, DC.

Hasler, Andrea, Annamaria Lusardi, and Noemi Oggero. 2018. "Financial Fragility in the US: Evidence and Implications." Global Financial Literacy Excellence Center, The George Washington University School of Business: Washington, DC.

Hou, Wenliang, Alicia Munnell, Geoffrey Sanzenbacher, and Yinji Li. 2017. "Why are US Households Claiming Social Security Later?" Boston College Center for Retirement Research Working Paper 2017-3.

Hurd, Michael and Susann Rohwedder. 2012. "Economic Preparation for Retirement." *Investigations in the Economics of Aging*. Ed. David Wise. University of Chicago Press: Chicago, Illinois.

John, David. 2010. "Disparities for Women and Minorities in Retirement Saving." Retirement Security Project, The Brookings Institution: Washington, DC.

Johnson, Richard, Karen Smith, Damir Cosic, and Claire Wang. 2017. "Retirement Prospects for the Millennials: What is the Early Prognosis?" WP 2017-17. Center for Retirement Research at Boston College: Chestnut Hill, Massachusetts.

Kahn, Lisa. 2010. "The Long-Term Labor Market Consequences of Graduating from College in a Bad Economy." *Labor Economics*. 17(2):303-316.

Katz, Lawrence and Alan Krueger. 2016. "The Rise and Nature of Alternative Work Arrangements in the United States, 1995-2015." NBER Working Paper No. 223667.

Kennickell, Arthur B. and Annika Sundén. 1997. "Pensions, Social Security, and the Distribution of Wealth." Finance and Economics Discussion Series Paper 1997-55. Board of Governors of the Federal Reserve System: Washington, DC.

Kochhar, Rakesh and Richard Fry. 2014. "Wealth Inequality Has Widened Along Racial, Ethnic Lines Since End of Great Recession." Pew Research Center: Washington, DC.

Kotlikoff, Laurence and David Wise. 1984. "The Incentive Effects of Private Pension Plans." *Issues in Pension Economics*. 283-336. Ed. Zvi Bodie, John Shoven and David Wise. University of Chicago Press, Chicago, Illinois.

Looney, Adam and Constantine Yannelis. 2018. "Borrowers with Large Balances: Rising Student Debt and Falling Repayment Rates." The Brookings Institution: Washington, DC.

Mackenzie, George A. (forthcoming). "Does the United States Face a Retirement Crisis?" Pew Research: Washington, DC.

Malmendier, Ulrike and Stefan Nagel. 2011. "Depression Babies: Do Macroeconomic Experiences Affect Risk-Taking?" *Quarterly Journal of Economics*. 126(1):373-416.

Masterson, Thomas, Ajit Zacharias, and Edward Wolff. 2009. "Has Progress Been Made in Alleviating Racial Economic Inequality?" Levy Economics Institute Working Paper. Levy Economics Institute: Annandale-on-Hudson, New York.

Matthews, TJ and Brady Hamilton. 2016. "Mean Age of Mothers is on the Rise: United States, 2000-2014." NCHS Data Brief No. 32. US Department of Health and Human Services, National Center for Health Statistics.

McKernan, Signe-Mary, Caroline Ratcliffe, Eugene Steuerle, and Sisi Zhang. 2014. "Impact of the Great Recession and Beyond: Disparities in Wealth Building by Generation and Race." Urban Institute: Washington, DC.

Mitchell, Olivia S., Robert Clark, and Raimond Maurer, eds. 2018. *How Persistent Low Returns Will Shape Saving and Retirement*. Oxford University Press.

Morisi, Teri. 2016. "Why More People Ages 55+ are Working." US Department of Labor Blog. (November 18).

Munnell, Alicia H. 2015. "The Average Retirement Age—An Update." Center for Retirement Research at Boston College: Chestnut Hill, MA.

Munnell, Alicia H., Wenliang Hou, and Geoffrey T. Sanzenbacher. 2016. "How Much does Housing Affect Retirement Security? An NRRI Update." Center for Retirement Research at Boston College: Chestnut Hill, MA.

Munnell, Alicia H., Wenliang Hou, and Geoffrey T. Sanzenbacher. 2018a. "National Retirement Risk Index Shows Modest Improvement in 2016." Center for Retirement Research at Boston College: Chestnut Hill, MA.

Munnell, Alicia H., Wenliang Hou, and Geoffrey T. Sanzenbacher. 2018b. "Trends in Retirement Security by Race/Ethnicity." Center for Retirement Research at Boston College: Chestnut Hill, MA.

National Academy of Sciences. 2015. "The Growing Gap in Life Expectancy by Income: Implications for Federal Programs and Policy Responses." Committee on the Long-Run Macroeconomic Effects of the Aging US Population. National Academies Press: Washington, DC.

Pang, Gaobo and Mark Warshawsky. 2014. "Retirement Savings Adequacy of US Workers." *Benefits Quarterly*. 2014(First Quarter).

Pence, Karen M. 2002. "401(k)s and Household Saving: New Evidence from the Survey of Consumer Finances." Finance and Economics Discussion Series Working Paper 2002-06. Board of Governors of the Federal Reserve System: Washington, DC.

Pence, Karen M. 2006. "The Role of Wealth Transformations: An Application to Estimating the Effect of Tax Incentives on Saving." *Contributions to Economic Analysis and Policy*. 5(1).

Pew Research Center. 2011. "Twenty-to-One: Wealth Gaps Rise to Record Highs Between Whites, Blacks, and Hispanics." Pew Research Center: Washington, DC (July 26).

Poterba, James. 2014. "Retirement Security in an Aging Society." NBER Working Paper No. 19930. Cambridge, MA.

Poterba, James, Steven Venti, and David Wise. 2015. "What Determines End-of-Life Assets? A Retrospective View." NBER Working Paper No. 21682. Cambridge, MA.

Rhee, Nari. 2013a. "Race and Retirement Insecurity in the United States." National Institute on Retirement Security: Washington, DC.

Rhee, Nari. 2013b. "The Retirement Savings Crisis: Is it Worse than we Think?" National Institute on Retirement Security: Washington, DC.

Scholz, John Karl and Kara Levine. 2003. "U.S. Black-White Wealth Inequality: A Survey." Institute for Research on Poverty, University of Wisconsin – Madison: Madison, Wisconsin.

Scholz, John Karl and Ananth Seshadri. 2009. "What Replacement Rates Should Households Use?" Michigan Center for Retirement Research Paper No. 2009-214.

Scholz, John Karl, Ananth Seshadri, and Surachai Khitatrakun. 2006. "Are Americans Saving Optimally for Retirement?" *Journal of Political Economy*. 114(4): 607-643.

Shapiro, Thomas, Tatjana Meschede, and Sam Osoro. 2013. "The Roots of the Widening Racial Wealth Gap: Explaining the Black-White Economic Divide." Institute on Assets and Social Policy Research Brief. Brandeis University: Waltham, Massachusetts.

Shapiro, Thomas, Tatjana Meschede, and Sam Osoro. 2014. "The Widening Racial Wealth Gap: Why Wealth Is Not Color Blind." *The Assets Perspective*. Eds. Reid Cramer and Trina R. Williams Shanks. Palgrave Macmillan: New York.

Song, Jae and Joyce Manchester. 2007. "Have People Delayed Claiming Retirement Benefits? Responses to Changes in Social Security Rules." Social Security Bulletin. 67(2): 1-23.

Stock, James and David Wise. 1990. "Pensions, the Option Value of Work and Retirement." *Econometrica*. 58(5):1151-1180.

Summers, Lawrence H. 2016. "The Age of Secular Stagnation: What It Is and What to Do About It." *Foreign Affairs*, February 15.

Taylor, Paul, Rakesh Kochhar, Richard Fry, Gabriel Velasco, and Seth Motel. 2011. "Wealth Gaps Rise to Record Highs Between Whites, Blacks, and Hispanics." Pew Social & Demographic Trends. Pew Research Center: Washington, DC.

Thompson, Jeffrey P. and Gustavo A. Suarez. 2015. "Exploring the Racial Wealth Gap Using the Survey of Consumer Finances." Finance and Economics Discussion Series 2015-076, Board of Governors of the Federal Reserve System: Washington, DC.

US Bureau of Labor Statistics. 2018. "Contingent and Alternative Employment Arrangements—May 2017." US Department of Labor: Washington, DC.

US Census Bureau. 2015. "Millennials Outnumber Baby Boomers and Are Far More Diverse Census Bureau Reports." Release Number CB15-113. US Census Bureau: Washington, DC.

US Census Bureau. 2017. "Table MS-2. Estimated Median Age at First Marriage, by Sex: 1890 to the Present." US Department of Commerce: Washington, DC.

US Census Bureau. 2018. "2017 National Population Projections Datasets." US Department of Commerce: Washington, DC.

VanDerhei, Jack. 2014. "What Causes EBRI Retirement Readiness Ratings to Vary: Results from the 2014 Retirement Security Projection Model." Employee Benefit Research Institute Issue Brief No. 396.

VanDerhei, Jack and Craig Copeland. 2010. "The EBRI Retirement Readiness Rating: Retirement Income

Preparation and Future Prospects." Employee Benefit Research Institute Issue Brief No. 344.

Vespa, Jonathan. 2017. "The Changing Economics and Demographics of Young Adulthood: 1975-2016." Current Population Reports: US Census Bureau.

Welch, Finis. 1979. "Effects of Cohort Size on Earnings: The Baby Boom Babies' Financial Bust." *Journal of Political Economy*: 87(S65–S97).

Wolff, Edward N. 2018. "The Decline of African-American and Hispanic Wealth since the Great Recession." NBER Working Paper No. 25198.

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