Center for American Progress

Keep Calm and Muddle Through

Ignoring the Retirement Crisis Leaves Middle-Class Americans with Little Economic Control in Their Golden Years

By Christian E. Weller and David Madland August 2014

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Introduction and summary

Every American has his or her own vision of what retirement should look like.[1] It is clear, however, that everyone shares one view in common: They all want to control their own economic destinies when retired. They want to remain productive in some form as they age. They want to continue to work, albeit with more flexible schedules and possibly for different employers. They want to volunteer; they want to take care of family members and friends who need help, such as aging parents, grandchildren, and sick relatives or neighbors; and they want to start their own businesses, an action that would give their tremendous experience a new platform for innovation and economic activity.[2] These hopes and aspirations require a lot of savings, as people of retirement age typically also want to stop working full time for an employer and a regular paycheck—the stage known as career employment.

However, people want to be sure that they can pay their bills before they pursue their aspirations and goals. They still need to pay for housing, health care, utilities, food, and other necessities after their paychecks stop coming, often for uncertain and potentially extended periods of time. One estimate suggests that people will need hundreds of thousands of dollars in savings just to pay for health care.[3] Most people find daunting the amount of savings necessary to maintain just their standards of living in retirement, never mind the extra money they would need to save to start a business.

The academic research on retirement income adequacy—whether people have enough money to retire—comes to varied conclusions. Much of it finds that a large minority, and possibly even a majority, of households will not have enough money set aside for retirement.[4] That is, people will have to cut back on their dreams, their consumption, and their time in retirement, perhaps by working in their current jobs longer than they had anticipated. In fact, studies that conclude that the overwhelming share of households are adequately prepared for retirement rest heavily on the assumption that retirees can and will make adjustments to their

standards of living by working longer, spending less, and gaining access to public assistance.[5] Put differently, assuming that households want to be in economic control of their retirement identifies a serious savings shortfall, while elevating "muddling through" as a guiding principle for retirement policy leaves only a small share of retirees with serious savings shortfalls.

Unsurprisingly, retirement worries rank as one of Americans' top economic concerns.[6] This suggests that people prefer to have a good sense of financial control over how their retirement will look than to muddle through by relying on government assistance and help from friends and family members, working odd jobs, and cutting back on critical consumption such as health care. Policymakers have recently taken notice, putting forward proposals to improve retirement income security by, for example, boosting Social Security benefits. This would make it easier for people to save, as well as lower the costs of saving.[7]

A review of the research reveals the following:

- **Muddling through retirement papers over a growing crisis.** Older households use a number of different approaches to compensate for inadequate savings. They rely on public assistance programs; benefit from the generosity of family and friends; stay in unsuitable jobs due to ailing health and other reasons; and cut their consumption of basic necessities, leading to hardships. These approaches allow older households to make ends meet, but they also do nothing to address the growing shortfalls of retirement savings.

- **Inadequate savings could slow economic growth.** Inadequate savings could translate into less consumption and contribute to slower economic growth. If older workers get locked into unsuitable jobs, productivity may be lowered to the extent that it is below where it otherwise would be for employers. Lower productivity growth also means less economic growth. Moreover, by getting locked into unsuitable jobs, older workers are not pursuing employment and volunteer opportunities better suited to their needs and skills. These unpursued opportunities are losses to the economy and society and possibly slow economic growth even further.

- **Wealth growth has not kept pace with the need for more wealth.** Wealth-to-income ratios—which set the amount of total household assets minus debt relative to households' current income and are key indicators of retirement preparedness—have not markedly risen over the past three decades. The need

for wealth, meanwhile, has clearly grown. People are expected to live longer, Social Security benefits are scheduled to grow more slowly as the full-benefit age rises from age 65 to age 67, and financial and labor-market risks have increased. Households need more money than in the past to cover these additional costs and maintain their standards of living in retirement, but wealth-to-income has not noticeably and consistently grown along with household incomes during this time. That is, today's near retirees will likely have to make more ad hoc adjustments, muddling through their retirement more than previous generations of near retirees.

- **Few people feel confident about their retirement prospects.** Most people do not feel very confident about their ability to maintain a previous standard of living in retirement or to pay for basic expenses for more than two decades. In 2014, only 18 percent of preretirees felt very confident that they would have the resources necessary to maintain their standards of living after they retired. This lack of confidence indicates that many households worry about losing control over their economic security in retirement.

- **Most households are at risk of having to scale back their living expenses in retirement.** Under somewhat optimistic assumptions, an estimated 53 percent of working-age households in 2010 were not expected to have enough future income from Social Security; defined benefit, or DB, pensions; and private savings to maintain their standards of living in retirement. This calculation, however, assumes that retirees will convert all of their home equity to cash through reverse mortgages. Allowing for more realistic, pessimistic assumptions quickly increases the shortfalls in retirement savings.

- **Retirement savings shortfalls vary expectedly across subpopulations.** Nonwhite households, single women, and households with less education are much more likely than whites, single men, and households with more education to be inadequately prepared for retirement.

- **Painting a much rosier picture of retirement preparedness assumes that retirees will somehow muddle through retirement.** Much smaller retirement income shortfalls typically assume that workers will somehow cut spending when retired, that people will delay or abandon their retirement plans, and that many households will rely on public assistance and help from friends and family members.

- **Policy can strengthen retirement preparedness.** Previous generations were better prepared for retirement than current generations in part because today's working-age households have not increased their savings enough to compensate for slower growth in Social Security benefits, disappearing defined benefit pension, or DB pensions, and rising financial risk exposure. Policymakers should make it easier for people to save, strengthen savings incentives, and help households better manage their investments.

The share of inadequately prepared households rose from 31 percent of working-age households in 1983 to 53 percent in 2010. This again reflects the fact that wealth to income has not measurably increased as the costs of retirement have gone up for all households. Indeed, the data show that most households struggle with and worry about getting ready for a retirement that allows them to retain economic control over their lives. Giving up that control and instead deciding to rely on public assistance, delay or abandon postretirement plans, and curtail living standards is one option to make the retirement crisis disappear. However, a preferable alternative first step would be to help more people save more money and keep more of that money for retirement. CAP has already proposed a number of ways this could happen in previous work, including through more efficient tax incentives,[8] new low-cost, low-risk savings vehicles,[9] and better disclosure of the fees and risks associated with retirement savings.[10] Although the growing retirement crisis requires large, decisive, and comprehensive efforts, each small step taken will help address the crisis. Hoping that future retirees will somehow manage to muddle through is not an acceptable path forward.

Being in control during retirement

Broadly speaking, researchers use two separate measures to assess whether people are sufficiently prepared for retirement.[11] One approach attempts to capture people's ability to cover basic expenses by estimating whether their projected future retirement income will be greater than the federal poverty line or a multiple of it, such as twice the poverty line.[12] The poverty line serves as a proxy for sufficient income to avoid economic hardships.[13] In 2010, for instance, 12.1 percent of households between age 47 and age 64 were not expected to have retirement income that was at least equal to the poverty line.[14] This measure defines retirement income adequacy as an absolute standard independent of people's preretirement earnings. It is based on the principle that all retirees should have enough resources available to pay for life's basic necessities—indeed, that society will not accept that people who contributed productively to the economy during their careers will suffer hardships in old age. For some people, this means they will have higher incomes in retirement than during their working careers. This approach also accepts, however, that retirees cannot make the same adjustments working people can by, for example, working longer, gaining new skills, or moving across the country for a new job. Providing a basic minimum income is therefore an important step to help retirees remain economically in control of their lives.

The important policy question is whether this minimum income should come from the three main retirement income sources—Social Security, defined benefit pensions, and private savings—or whether it should come from public assistance programs for the elderly. Knowing who is unable to reach this retirement income standard is a necessary first step to design the requisite policy interventions to help people save more money or to develop the appropriate public assistance programs. Importantly, the share of people whose retirement income does not allow them a basic standard of living make up part of the retirement crisis policymakers need to address.

The second, more common measurement approach[15] defines retirement income adequacy as a standard relative to people's preretirement earnings.[16] Retirement income adequacy is then defined as a minimum threshold—such as 75 percent—of the ratio of potential retirement income from Social Security, DB pensions, and all private savings—including retirement savings accounts, nonretirement accounts, and housing—to preretirement earnings.[17] This ratio of retirement income to preretirement earnings is also known as the replacement rate, since it measures how much of their preretirement earnings households can replace with expected income from Social Security, DB pensions, and private savings.[18] Defining retirement income adequacy as a minimum ratio of retirement income to preretirement earnings explicitly states that retirees should be able to maintain their standards of living in retirement. This point is returned to below.

These two measures are not mutually exclusive, but they play different roles in informing public policy. The first, principle-based set of measures tells policymakers which households are likely to fall short when paying for basic necessities in retirement; it can therefore help policymakers design targeted public programs to help people cover those costs. Medicare, Medicaid, and a range of other public programs are rooted in this approach. The second relative measure tells policymakers which households will likely have to cut back on consumption in retirement and where to target policy interventions. Such interventions are typically a mixture of public programs and savings incentives aimed at helping people get the future retirement income they will need to maintain their living standards in retirement. Employment-based retirement benefits such as DB pensions and 401(k) plans are anchored in this approach since they tie savings to earnings.

Importantly, Social Security's retirement benefits present a combination of the two approaches by giving relatively generous benefits to people with relatively low earnings and by tying retirement benefits to people's lifetime earnings. Any discussion about Social Security reform will consequently and inevitably touch on both retirement income standards—an absolute one to meet basic necessities and a relative one to allow retirees to maintain their standards of living. Both retirement income adequacy standards find their application in public policy, but policymakers need to understand which households fall short of which standards to efficiently target policy interventions.[19]

The replacement rate approach—the approach that aims to maintain living standards—will generally indicate higher retirement income needs for the vast majority of households than the basic-necessities, or principle-based, approach.

Typically, about one-sixth of people live in poverty, and about one-third of households have incomes that are less than twice the poverty line during their working years. Similarly, less than one-sixth of households are in danger of retiring in poverty, and roughly one-third of households are expected to have retirement income less than twice the poverty line, reflecting the persistence of low incomes over many people's lifetimes.[20] That is, having a relatively high share of preretirement income—75 percent, for example—implies target retirement incomes well above these minimum thresholds for the vast majority of households. For most households, 75 percent of their income is a target retirement income that is greater than income at the poverty line—or greater, even, than income at twice the poverty line. Therefore, the rest of this report focuses on the evidence related to replacement rates as the retirement income adequacy standard. Many points also apply to the absolute retirement income adequacy standard.

The concept that retirees want and need to be economically in control of their retirement also implies that retirement income adequacy needs to focus on estimating how much income households may get from Social Security, DB pensions, and private savings. Research that looks at how much retirees actually consume offers less value as an indicator of retirees' economic control over their lives than estimates of future retiree income. Retiree consumption includes support from others—public programs, charities, family, and friends—and thus captures key aspects of "muddling through" retirement in addition to available household income.[21]

A number of other income sources finance retiree consumption as well. These additional sources can include public cash transfers such as Temporary Assistance for Needy Families; in-kind transfers such as Medicaid; housing vouchers; support from the Supplemental Nutrition Assistance Program, or SNAP, formerly known as food stamps; gifts from family members and charities; and earnings from work. Retiree consumption reflects metrics that highlight how much economic control retirees have over their lives, as well as how much retirees muddle through retirement with help from others. Saying that retiree consumption mirrors preretirement earnings, even when estimates of retirement income show that large shares of households are unable to maintain their consumption in retirement, simply illustrates that many retirees manage to muddle through retirement by getting outside help.

Retirement savings shortfalls will prove detrimental to people, governments, and the economy

A large minority, or perhaps even a majority, of households are inadequately prepared for retirement. But what does a lack of sufficient retirement funds actually mean for people, governments, and society? In short, it means that people will need to make ad hoc adjustments to their retirement plans and living standards and that the economy will likely grow more slowly than otherwise would be the case. All of these challenges will become greater over time. Even if the share of retirees with insufficient retirement savings stays constant, the number of retirees will continue to increase in an aging society.

Muddling through retirement papers over a growing crisis

Older households will have to make ad hoc adjustments, or muddle through retirement if they have insufficient retirement resources. Older households that do not have enough resources to retain economic control rely on a number of other resources to make ends meet, such as public assistance and resources from family members. People may also continue working in unsuitable jobs and cut their consumption, even if it means encountering economic and physical hardships.

Allowing many older households to muddle through retirement papers over the growing strains on public and private resources and thus masks a looming crisis. At some point, governments, charities, family members, and friends will reach a breaking point from the demands that the muddling through approach poses. They will no longer be able to support an aging population to the same degree they do today. For instance, family members trying both to help their aging parents live in dignity and put their children through college will have to make increasingly painful choices. They may have to choose between moving their parents into lower-quality housing and saddling their children with extraordinary amounts of student loans. Similarly, governments will have to substantially

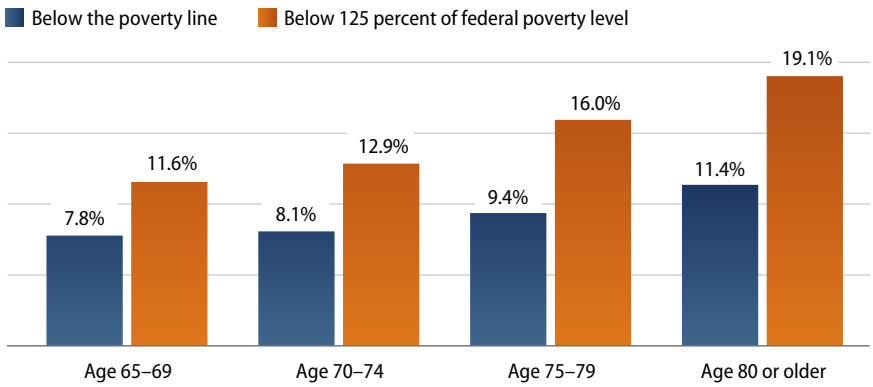
raise taxes to continue to pay for the support for children and older households, especially in the face of rising health care costs. The adverse outcomes of insufficient resources, described in the next section, will become a reality for a growing number of older households and thus for governments and the economy. The retirement crisis will become more readily apparent, but by then it may be too late for large-scale and impactful interventions. Ignoring the looming crisis by overlooking the fact that older households are currently muddling through retirement will eventually make everybody worse off.

There are four main ways that older households are muddling through retirement. The first is the growing reliance on public assistance programs. If the demand on these programs becomes too great, retirees are at risk of receiving insufficient funds. And insufficient funds increase retirees' risk of living in poverty, especially at very old ages. Most public assistance programs are tied to the federal poverty line, meaning that people who live below the poverty line qualify for public assistance. Demands on public assistance programs will increase even if poverty rates among older households stay relatively stable. This will occur because poverty increases with age and because the fastest population growth is expected to happen among the very old in the coming decades. The data for 2012, the most recent data available, show that 7.8 percent of people between ages 65 and 69 lived below the poverty line that year, but 11.4 percent of people 80 years old and older were poor. (see Figure 1) The Census Bureau projects that the share of the population between ages 80 and 84 will grow from 1.8 percent in 2012 to 3.2 percent in 2050 and that the share of the population 85 years old and older will grow from 1.9 percent in 2012 to 4.5 percent in 2050—showing larger growth than any other population segment.[22] That is, the total number of people older than age 65 and living in poverty will rise simply because society is aging, even if the poverty rates remain the same. Even more older households will have to rely on public assistance in the future if saving shortfalls increase, as has been the case in recent decades.

FIGURE 1

Poverty status of aged population, 2012

Share of population, in percent



Note: All figures are percent of the relevant population. Poverty line refers to the federal poverty line for the aged population.

Source: Social Security Administration, *Income of the Population 55 and Older – 2012* (2013), available at http://www.socialsecurity.gov-/policy/docs/statcomps/income_pop55/index.html.

Many older households already rely on a wide range of public assistance programs, such as Social Security Insurance, Medicaid, the Supplemental Nutrition Assistance Program, Meals on Wheels, housing assistance, and fuel assistance, in addition to earned benefits from Social Security and Medicare. In fact, average public benefits were much larger for older households with incomes at or below 150 percent of the federal poverty line in 2004 than was the case for younger households.[23] The average monthly benefit for a household 65 years old or older with income between 50 percent and 100 percent of the poverty line was $1,388 in 2007 dollars in 2004, compared with $832 in 2007 dollars for single parents.[24] More than half—53 percent—of all public program dollars supported people 65 years old and older in 2011.[25] Public assistance to older households has remained stable as a share of the economy prior to the onset of the Baby Boomers' retirement.[26] Many older households already receive public support beyond Social Security, and this support has increased with the size of the economy. Indeed, it increased even before the number of people with inadequate retirement savings grew. Demand on public programs will increase sharply as the population ages and as the share of older households with expected incomes below the poverty line grows.

Second, older people also rely on support from family members to make ends meet. They may, for example, choose to move in with relatives. About 7 percent of all extra adults in households—people in addition to the core family—were 65 years old and older in both 2008 and 2010,[27] suggesting that moving in with relatives is not uncommon among older adults. It also appears to be related to economic hardships,

with financial struggles leading more people to move in with others.[28] Furthermore, older households receive financial and in-kind assistance, such as caregiving from their relatives.[29] Families will face growing demands on their finances and time as the number of older households with insufficient savings rises.

Third, people may have to delay their retirement plans and keep working if they have insufficient retirement savings. But they may find that only their current jobs pay well enough and offer sufficient benefits to allow them to save more for retirement; consequently, they may keep working in jobs for which they are not particularly well suited. Older workers can thus get locked into jobs that may prove detrimental to their physical and mental well being.

Fourth, insufficient retirement savings means that many retirees will have to cut their consumption, often in painful ways that put them at risk of encountering hardships. For example, they may not be able to pay utility bills, have three meals a day, or go to a doctor when necessary. Research shows that older people need income well above the poverty line to pay for basic necessities such as housing and health care.[30] But a large share of people older than age 65 already tends to have incomes of less than 125 percent of the poverty line (see Figure 2), which is generally too low to avoid economic hardships.[31] For instance, 11.6 percent of people between ages 65 and 69 had income below 125 percent of the poverty line in 2012, and almost 1-in-5 people 80 years old and older had even less income.

Some studies that argue that households generally save enough for retirement assume that households should and will cut their consumption.[32] The specific assumption is that households will cut consumption as spouses die and, to a lesser degree, as children move out.[33] But savings based on this assumption leave the remaining household members with very little room to make foreseeable adjustments to their future spending. For instance, people would have to curtail their energy consumption even if they were to stay in the same house. They would also have to make severe cuts to non-health care consumption to afford rising health care costs as they age.[34]

The bottom line is that retirees will have to make potentially painful cuts to their consumption, and such cuts could be detrimental to their economic and physical well being. This may even mean that their life expectancies are shortened.[35] Ironically, premature death among older people translates into more economic security from a data standpoint—people die before they run out of money—even though it is clearly a burden on surviving family members.

Muddling through retirement may help older households meet their consumption needs, but it means that older households lose control over their economic lives. These approaches likely face limits because public finances are constrained, family resources are limited, and job opportunities are scarce. Muddling through retirement by employing a combination of these approaches will become increasingly difficult as the population ages and as the share of households with insufficient savings grows.

Inadequate savings could slow economic growth

The economy could also suffer from slowing growth as retirement income adequacy decreases. First, low savings for many retirees could slow economic growth by slowing consumption. People with insufficient savings will have to curtail their consumption, thus slowing demand for goods and services. This will become a growing problem as the share of older people out of the entire population who have to cut back on consumption will grow as the population ages. Consumption constitutes the largest share of the U.S. economy by far, making up more than three-quarters of gross domestic product, or GDP. Even a small slowdown in consumption can quickly put a damper on economic growth.

Second, getting locked into a job can have two adverse economic effects. Employers may end up with older workers who do not perform at their highest productivity levels due to deteriorating health or other issues.

There are also economic opportunity costs from older workers getting locked into their career jobs or into jobs taken out of need and not want. People want to remain productive as they age, but they want to do so on their own terms. Older households want to find jobs that are better suited to their skills and interests and that allow them to work more flexible hours than their career jobs did. People are also interested in starting their own business at older ages. In fact, from 1998 to 2010, entrepreneurship grew faster among older households than among younger ones.[36] People also want to volunteer to help their families, friends, and communities, providing critical social services at little-to-no cost to society. Older workers who get locked into their career jobs or into other jobs they do not desire will not find work better suited to their skills, start a business, or volunteer. Not doing these things poses a potential economic and social loss to society. Having to give up their aspirations means that older households do not contribute as much to society as they perhaps hoped they would.

Wealth growth has not kept pace with the need for more wealth

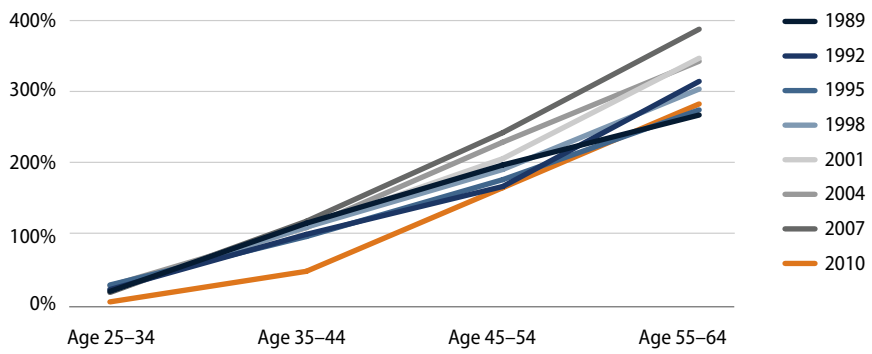
Wealth is the store of income that households can draw upon to replace their income when it shrinks due to retirement or other circumstances.[37] Therefore, researchers typically report wealth relative to income to capture trends of average economic security over time.[38] This ratio gives a sense of how wealth has changed relative to what it is meant to replace: current income, or household purchasing power.

The ratio of household wealth to income should have trended up over time as retirees faced increasing additional costs, including longer life expectancies and the subsequently longer time spent in retirement, the slowing growth of Social Security benefits due to a rising normal retirement age, and the increasing financial and labor-market risks.[39]

Figure 2 shows the median wealth-to-income ratio for four different age groups from 1989 to 2010 based on data from the Federal Reserve's Survey of Consumer Finances. Half of all households in each age group have wealth-to-income ratios that are below the median, and the other half have wealth-to-income ratios above it. There is no clear upward shift in the wealth-to-income ratios over time, which we would expect to see if households saved more to adequately prepare for retirement amid rising costs. The implication, then, is that retirement income adequacy has likely declined over time.

FIGURE 2

Median wealth-to-income ratios, by age and year



Note: All figures in percent. The sample includes only households under the age of 65, who indicate that they are not yet retired.

Source: Authors' calculations based on Board of Governors, Federal Reserve System in various years. Board of Governors of the Federal Reserve System, "Research Resources: Survey of Consumer Finances," available at http://www.federalreserve.gov/econresdata/scf/scfindex.htm (last accessed July 2014).

The wealth-to-income ratio should have also risen because more people save with defined contribution, or DC, retirement accounts such as 401(k) plans and Individual Retirement Accounts, or IRAs. DC accounts are included in household wealth, while DB pensions are not.[40] The wealth-to-income ratio should have gone up simply because DC accounts have become more popular.

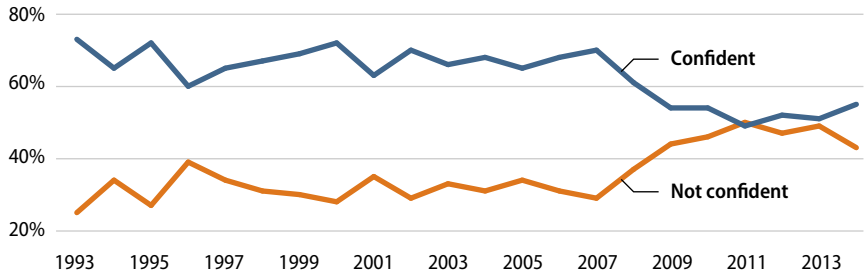
Few people feel confident about their retirement prospects

Unsurprisingly, most workers considering the wealth trends over the past 30 years are not very confident they will have the resources to retire comfortably. The Employee Benefits Research Institute, or EBRI, has conducted an annual Retirement Confidence Survey since 1993; their latest survey, for 2014, found that only 18 percent of workers feel very confident that they will be able to live comfortably in retirement. Twenty-nine percent of workers indicated that they feel very confident that they will be able to pay for basic expenses in retirement. In comparison, more than one-quarter of workers do not have much confidence, or have no confidence at all, that they will even be able to pay for basic expenses in retirement. More than 40 percent are not confident that they will live comfortably in retirement.

FIGURE 3

Workers' retirement confidence, 1993 to 2013

Share of workers, in percent



Note: We combine responses to avoid making the graph too confusing. The trends in the subcategories largely mirror each other so that the combination of responses into two larger categories does not lead to a loss of information. "Confident" includes those survey respondents who indicate that they are very confident and those who say they are somewhat confident. "Not confident" combines those respondents who are not too confident and those who are not confident at all.

Source: Employee Benefits Research Institute, "Retirement Confidence Survey," available at http://www.ebri.org/surveys/rcs/ (last accessed April 2014).

The trend lines in Figure 3 show that confidence generally has not risen over time. Retirement confidence remained relatively stable from 1993 to 2007, sharply dropping throughout the Great Recession of 2007 to 2009 and its aftermath. It has only started to recover somewhat this year. But even in the years after the Great Recession, confidence levels stayed well below where they were prior to the economic crisis.

Most households are at risk of having to cut back on their living expenses in retirement

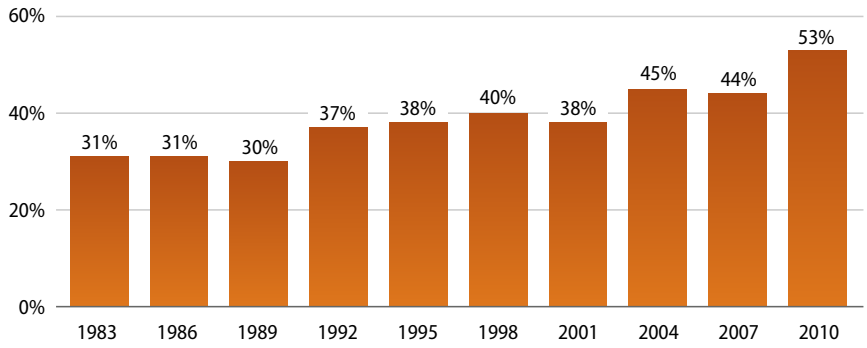
Economists and other social scientists have written a lot about retirement income adequacy over the past two decades. Summarized here are the main findings from the Center for Retirement Research at Boston College, or CRR. The focus is specifically on their work on the National Retirement Risk Index, or NRRI.[41] This index offers reliable comparisons over time, relies on very detailed wealth and income calculations for each household, and generally errs on the side of overstating retirement preparedness when making methodological decisions. For instance, CRR assumes that households will liquidate all of their home equity by taking out a reverse mortgage to pay for all types of consumption, including nonhousing consumption.

The NRRI measures the share of working-age households younger than age 65 who are unlikely to maintain their standards of living in retirement based on their expected income from Social Security, DB pensions, and individual savings, including money in 401(k) plans, IRAs, and home equity.

Figure 4 summarizes the NRRI from 1983 to 2010. The trend shows a growing share of preretirees who are inadequately prepared for retirement, or those not expected to be able to maintain their standards of living in retirement. An estimated 31 percent of preretirees were at risk of not being able to maintain their standards of living in retirement in 1983. This share grew to 53 percent in 2010.

FIGURE 4

Share of preretiree households expected to be unable to maintain their standard of living in retirement, 1983 to 2010



Note: All data are in percent, showing the share of households, not yet retired and younger than 65 years, who are expected to be unable to maintain their standard of living in retirement.

Source: Alicia Munnell, Anthony Webb, and Francesca Golub-Sass, "The National Retirement Risk Index: An Update" (Boston, MA: Center for Retirement Research at Boston College, 2012), available at http://crr.bc.edu/briefs/the-national-retirement-risk-index-an-update/.

The NRRI data show a growing trend toward less retirement income adequacy over time, unlike the data on retirement confidence. They also show much higher shares of people at risk of having to cut their standards of living than shares of people who do not feel confident about paying for retirement.[42] Typically, behavioral economic factors can partially explain these two differences—confidence is more subjective than risks taken, and there is no decline in confidence when compared with increased risks.

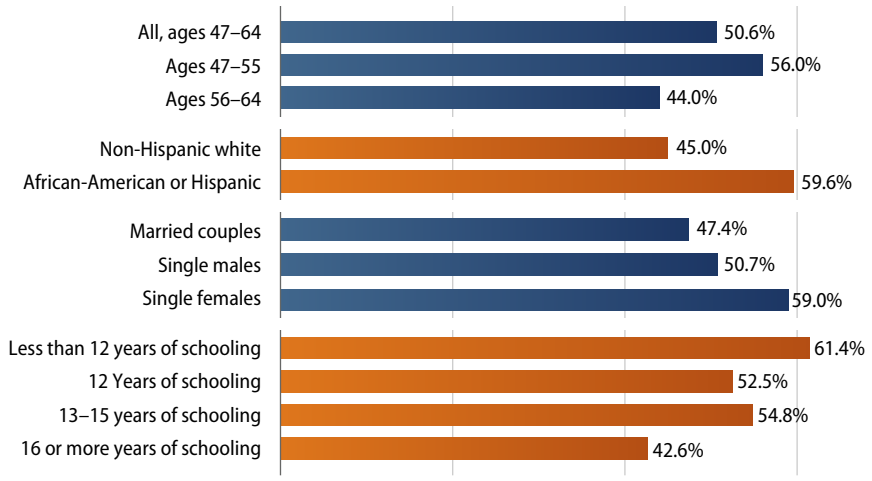
First, people tend to systematically underestimate the costs of large-scale, distant future events such as retirement and to overestimate their ability to plan for such events. We would hence expect people's subjective retirement confidence levels to be higher than their objective retirement preparedness, as is indeed the case.[43] Second, younger people may undervalue DB pension benefits from their employers and prefer DC plans, such as 401(k)s. We should hence expect growing or at least not declining retirement confidence as DC accounts replace DB pensions.[44] The differences in retirement confidence levels and retirement income adequacy trends should not come as a surprise and suggest that the NRRI is indeed reflective of people's real-life experiences. Households face a growing retirement savings shortfall as the population ages, posing serious challenges for people, governments, and the economy.

Retirement savings shortfalls vary expectedly across subpopulations

Estimated retirement income adequacy varies according to demographic and economic characteristics. Communities of color, single women, and those with less education tend to have much larger chances of falling short of the resources necessary to maintain their standards of living in retirement than white households, single men, and households with more education. Since the NRRI is not broken down by demographics, this section summarizes the research of New York University Professor Edward Wolff.[45]

FIGURE 5

Population shares unable to replace 75 percent of preretirement income in retirement, by household characteristics, 2010



Note: All figures in percent. All shares, other than those broken down by age, are calculated for households between the ages of 47 and 64.

Source: Authors' calculations based on Edward Wolff, "Household Wealth Inequality, Retirement Income Security, and Financial Market Swings 1983 to 2010." In Christian Weller, ed., *Financial market developments and labor relations* (Ithaca: Cornell University Press).

Wolff calls only households between ages 47 and 64 near-retirees. He finds that 50.7 percent of households between these ages in 2010 were unable to replace 75 percent of their preretirement income in retirement. The relevant share for non-Hispanic whites is 46.5 percent, compared with 58.5 percent for non-whites and Hispanics. Fifty-six percent of single women can expect to have to cut back in retirement, while only 42.8 percent of single men will have to do so, based on 2010 data. (see Figure 5) Finally, households with less than 12 years of schooling—those without a high school diploma or GED—have an estimated

65.4 percent chance of falling short of maintaining their standards of living in retirement. For households with 16 years or more of schooling—those with at least a college degree— only 38.6 percent may have to cut back on consumption in retirement.[46] Obviously, retirement income inadequacy poses a much larger challenge for some household groups than for others.

Painting a much rosier picture of retirement preparedness assumes that retirees will somehow muddle through retirement

Some studies find much smaller retirement shortfalls than do CRR and Wolff. CRR already errs on the side of more optimistic assumptions than Wolff, This is discussed in the Appendix.

Home equity tends to be one of the largest, if not the largest, store of private savings for most households. Assumptions about what households will do with their home equity in retirement have substantial consequences on the conclusions about households' retirement preparedness. Both CRR and Wolff likely overstate households' retirement preparedness, as they assume that households will liquidate their home equity in retirement, presumably through reverse mortgages, to pay for nonhousing consumption. Reverse mortgages are not widespread and can be costly; therefore, not many households currently use them. But not liquidating home equity leaves much less money in people's pockets for other consumption necessities, such as health care.

However, this still leaves room to be optimistic about people's retirement prospects. Most notably, assuming that households should and will cut their consumption in retirement improves the outlook for retirement preparedness, as does the assumption that retirees will in fact receive the average public assistance to which they are entitled. Both assumptions, however, elevate a process of ad hoc income adjustments to guiding principles of sound retirement policy, and muddling through appears to run contrary to people's desire to be in control of their economic well being in retirement. It seems clear, therefore, that CRR's and Wolff's research reflect people's aspirations for retirement savings.

Policy can strengthen retirement preparedness

Widespread retirement income adequacy has grown alongside three key trends, all related to the three sources of retirement income—Social Security, DB pensions, and private savings.

Social Security benefits have been growing more slowly and will continue to grow more slowly as scheduled increases in the age at which beneficiaries receive full benefits—from 65 years old to 67 years old—take effect. All households will have to save more to compensate for this slowdown in Social Security benefit growth. Retirement income adequacy will decrease if households do not save more.

DB pensions have also become less prevalent over time. DB pensions offer a few key benefits that help households prepare for retirement. They are financed through professionally managed, pooled asset funds, which can keep costs and financial risks within limits, and they also offer guaranteed lifetime benefits, which prevent people from running out of money in retirement. Households that in the past would have had DB pensions from their employers now need to save more on their own than similarly situated households to achieve the same level of retirement income security as previous generations.

People need to save more on their own, but individual savings come with additional obstacles that make it difficult for households to save more. First, a lot of people do not have a retirement plan at work, and even fewer participate in such plans. Slightly more than half of all private-sector workers have access to a retirement plan—either a DB pension or a DC account—at work, one of the most effective ways to save. Fewer than half of all private-sector workers participate in retirement plans at work.

Second, many people do not save enough, even if they participate in a retirement plan. Existing savings incentives in the tax code are skewed toward higher-income earners, so that low-income and middle-income earners receive little-to-no help saving for retirement.[47]

Third, people incur high fees and excessive risks with their savings, thereby lowering household wealth. Individual savings often come with myriad fees that can substantially lower household savings over extended periods of time.[48] Furthermore, households often fail to avoid excessive market risk exposure

with their savings because they invest too much in risky assets, such as stocks and housing. They may also owe large amounts of debt relative to their assets.[49] Moreover, many households fail to protect themselves against longevity risk, or the chance of running out of money in retirement. Under reasonable assumptions, households have to save close to an extra 50 cents for each dollar they save during their earnings years to pay for their retirement income and to protect themselves from longevity risk.[50]

The data also show that communities of color and single women tend to be in worse positions to prepare for retirement than white households and single men. Only 32 percent of African Americans and 28 percent of Latinos had retirement accounts in 2010, compared with 58 percent of whites.[51] Similarly, only 32.6 percent of single women, compared with 35.4 percent of single men and 59.3 percent of married couples, had any retirement accounts in 2010, the most recent year for which data are available.[52] Overall, African Americans and Latinos tend to have much lower earnings than whites; this is also the case for women compared with men. This means tax incentives that gain value as income increases are less valuable for communities of color than for whites and for single women than for single men.[53] Finally, communities of color and single women tend to have a lot more risk in their savings as they near retirement because they have less savings outside of their homes and because they owe more debt than white households and single men do.[54]

This leads to several broad policy goals. First, policymakers should make it easier for people to save. Policymakers can encourage more savings through a number of mechanisms. For instance, regulations can encourage more employers to provide options to save at work, such as by automating enrollment in 401(k) type plans and by automatically escalating employees' contributions to their retirement accounts. Congress could require all employers that do not offer an employment-based retirement plan to at least automatically enroll their employees into direct deposits in an IRA.

Second, Congress should strengthen savings incentives through the tax code to better target those households that need extra help the most.[55]

Third, policymakers should help households better manage their investments to lower the chance of excessive risk exposure. For example, federal regulations could encourage safe and automatic default investment options in employment-

based DC accounts. Policymakers should also encourage households to buy more lifetime payout products—either existing ones such as life insurance annuities or newly developed ones such as CAP's Secure, Accessible, Flexible, and Efficient, or SAFE, Retirement Plan.[56] This could happen through federal regulations that encourage more annuity offerings in existing 401(k) plans and through federal and state lawmakers creating new savings vehicles that automatically include lifetime payout options.[57]

Conclusion

An aging population faces increasing retirement savings shortfalls, which can prove detrimental to people's economic and physical well being in retirement. Policymakers have their work cut out for them to help people gain the resources they need to stay economically in control during retirement. The alternative to comprehensive and expedient policy interventions is to expect that older households will somehow muddle through by delaying or abandoning their retirement plans, relying on public assistance beyond Social Security and Medicare, and cutting their spending, especially for health care. Muddling through, however, should not be a guiding principle for retirement policy designed to help generations of workers who helped create the world's richest economy. Indeed, it is not the way to ensure that these workers enter and experience their retirement with the dignity they deserve.

Appendix: Measuring retirement income adequacy

Researchers have studied people's retirement preparedness for many years now, as saving for retirement dwarfs all other reasons for saving and as retirement comes at the end of people's lives. Insufficient savings could have long-lasting, potentially harmful effects on people's quality of life in their golden years.

The question of whether people will have enough money for retirement is straightforward enough, but it is also very broad, leading to a multitude of approaches and research findings. Most research on retirement income adequacy typically finds that between 30 percent and 50 percent of U.S. workers are insufficiently prepared for retirement.

This variation depends on a number of methodological issues, which are briefly discussed below. We make specific references in this discussion to the research of the Center for Retirement Research and the research of New York University Professor Edward Wolff; their results are cited in the main text. Both CRR and Wolff offer consistent retirement income adequacy trends that date back almost 30 years. CRR, though, makes somewhat optimistic assumptions in its calculations, potentially understating retirement income shortfalls. Wolff chooses to make somewhat more realistic—but possibly more pessimistic—assumptions that could overstate the problem. The bottom line is that the data show worsening trends in retirement income adequacy and that some populations, especially communities of color, single women, and households with less education, will likely face larger shortfalls than whites, single men, and households with more education.

All serious research on retirement income adequacy follows a similar overarching approach, although there are differences in the underlying details and definitions. Each research study lays out a target for retirement income adequacy as a minimum standard for each household's ability to maintain its living expenses in retirement. Researchers then compare actual or estimated retirement income to actual or estimated preretirement income for a nationally representative sample of households. Some researchers combine nationally representative datasets using

accepted statistical techniques, but the core analyses of each research study on retirement income adequacy tend to rest on a single dataset. Put differently, there are well-established parameters for studying retirement income adequacy that give researchers some room to define key input variables—savings targets, retirement income, and preretirement income chief among them—to best fit their theoretical models. The discussion in this Appendix offers some description of the varied approaches that people have taken, the rationales for the different approaches, and the implications that choosing one approach over another has for retirement income adequacy findings.

Target replacement rates

The text discusses two separate retirement adequacy measures. One is an absolute, income-independent, principle-based standard that looks at multiples of the federal poverty line. The other is a target replacement rate of what the expected ratio of retirement income to workers' preretirement income should be. Researchers use a wide range of target replacement rates. It can range from as low as 70 percent to as high as 80 percent. Most studies use a rate above 70 percent but below 80 percent.[58] A higher replacement rate correlates with a larger share of households that is inadequately prepared, while a lower target replacement rate shows smaller shares of households that are inadequately prepared for retirement.

The important point to keep in mind, however, is the distribution of households around target replacement rates. A large shortfall—many households below the target replacement rate—is easy to address if a lot of households are just slightly below the target rate. But it is a much heavier policy lift if a lot of people are relatively far off from the target replacement rate. The evidence suggests a somewhat bifurcated distribution below target replacements: A substantial share of households are just below the target replacement rate, while a substantial share of households are also far away from any reasonable target replacement rate. That is, a substantial share of households can expect replacement rates between 70 percent and 80 percent or close to that range. Moving the threshold just a little—from 75 percent to 70 percent, for example—can quickly reduce the share of households inadequately prepared for retirement.[59] However, households' expected replacement rates drop off quickly, and research typically finds substantial shares of households with very low replacement rates.[60]

CRR's National Retirement Risk Index uses a varying replacement rate that averages to 73 percent for all working-age households. It is higher for lower-income households and single earners to account for fixed costs in retirement, particularly health care costs.[61] Wolff uses a replacement rate of 75 percent for all households.[62] The research cited in the text falls into the lower part of the ranges for replacement rates, making us confident that this research possibly overstates retirement income adequacy and hence presents a cautious assessment of retirement preparedness.

Projecting future sources of retirement income

All measures of retirement income preparedness need to project expected future retirement income preparedness for individual households. There is some variation in measuring the sources of future retirement income, with especially large differences in valuing private savings in retirement accounts such as 401(k)s and Individual Retirement Accounts.

Researchers generally agree that future retirement income will come from Social Security, DB pensions, and the liquidation of private savings.

Researchers typically measure future Social Security and DB pension benefits in comparable ways. Future Social Security will depend on a household's preretirement earnings. Researchers use some variation of a statistical method known as regression analysis to forecast households' earnings into the future up to their retirement age.[63] Calculating future DB pension benefits also depends on people's preretirement earnings, but it depends on the details of a particular DB pension plan as well, since benefits can vary across plans.[64] The calculations, then, show the future income retirees can expect from Social Security and DB pensions.

Private individual retirement savings include home equity, bank accounts, and retirement savings accounts such as 401(k)s and IRAs.

There is some debate over whether home equity should be part of retirement income adequacy calculations. The fundamental question is how future retirees will use their home equity. One study includes a simple sensitivity analysis that highlights the importance of housing wealth for households in meeting their optimal wealth target.[65] It only counts half of a household's housing wealth—rather than all of its housing wealth—as available for retirement consumption. When half of home equity is included, only 61.2 percent of households meet their wealth target, instead of 84.4 percent of households.[66]

Treating home equity just like other savings that can be used to pay for anything from light bulbs to health care—even though most people will only use it to pay for housing by living in their home rent free—likely overstates future retirement income. Including home equity in the calculation of future retirement income assumes that retirees will take out reverse mortgages to liquidate their home equity. But few people take out reverse mortgages, resulting in an overstatement of retirement income.[67]

Expected retirement income is understated when research excludes home equity from retirement income calculations. Most people will stay in their homes for long periods of time, receiving some value from living in them. Excluding home equity from the retirement income calculation ignores this implicit income.[68]

CRR and Wolff include home equity in their calculations, potentially overstating retirement income adequacy.

This leaves the biggest bone of contention: calculating the DC plan account balances. Researchers can take the DC account balances as they are at the time of the survey, just as they do with other parts of household wealth, or they can project growing account balances and make some assumptions about future growth.

Most researchers, including Wolff, take as given the existing DC account balances and the current debt levels and do not project them into the future.[69] This likely understates future wealth as people earn returns on their savings, save more, and pay down debt. This particular understatement should be comparatively small, since Wolff focuses on older households near retirement.

Alternatively, some researchers, including CRR, project the account balances forward to retirement, making assumptions about future savings rates and future rates of return on both current and future account balances.[70]

This will lead to overstating DC account balances upon retirement if future rates of return and future savings rates are lower than past rates of return and past savings rates. The most recent rates of return, from the early 1980s to 2010—which form the basis of current projections—tend to be rather high due to substantial stock market booms and thus could overstate the estimated amount in people's accounts upon retirement. Similarly, projected account balances are too high if households do not save at the same rate as they did in the past. They may lower their future savings rates compared with past rates if employers cut back on match-

ing contributions to retirement accounts and if households continue to focus on repaying massive amounts of household debt. Thus, current projections of DC account balances most likely overstate retirement income, especially for younger households that are still decades away from retirement. In 2006, CRR estimated that saving less—specifically, 3 percent of pay—in DC accounts than in their base case would raise the share of Gen Xers at risk of not being able to maintain their standards of living in retirement to 57 percent. The base case stated 49 percent. The impact of less savings is smaller for early Baby Boomers, raising the share of households at risk from the base case's 43 percent to 47 percent.[71]

The error in projecting future account balances may be relatively small if it is done for people who are not very far away from retirement and cannot greatly change their amount of wealth. Wolff focuses mainly on near-retirees, while CRR projects future retirement income security for relatively young households.

Knowing how much money people will have available in individual savings by the time they retire is just one part of the calculation. It is common to assume that retirees will annuitize all of their savings—that they will convert all their assets into lifetime streams of income so that they do not run out of income before they die. However, few households actually annuitize their savings or buy reverse mortgages, as CRR's calculations assume. Consequently, some researchers, including Wolff, assume that households self-manage the withdrawal from their assets over their maximum life expectancies as insurance against running out of money in retirement.

The difference in expected retirement income that a given amount of assets can generate under the two scenarios—full annuitization and self-management—means about one-fifth less monthly retirement income for those who manage their own withdrawals relative to those who annuitize.[72] This difference occurs because those who annuitize all of their assets share the risk of outliving their savings with other retirees and thus have to plan only for an average life expectancy. Those who self-manage their withdrawal need to plan to live for the maximum life expectancy to avoid running out of income. Self-management means stretching income over much longer periods of time than would be the case with annuitization. Again, CRR errs on potentially overstating the available retirement income, while Wolff makes somewhat more realistic assumptions.

Modeling income and consumption growth before and in retirement

Retirement income adequacy studies also vary depending on how they handle preretirement income. Lower preretirement income increases the replacement ratio of retirement income to preretirement income—assuming everything else stays the same—while higher preretirement income lowers the replacement rate.

Researchers average preretirement income over a certain period of time. This period of time can be relatively short, encompassing only the final few years of a person's life, or it can be rather long, encompassing people's entire careers. Final earnings will be higher than average lifetime incomes, since incomes tend to go up over a household's life cycle. CRR uses average lifetime income, whereas Wolff uses final earnings.[73] Again, CRR errs on the side of potentially overstating retirement preparedness, while Wolff paints a somewhat more realistic picture.

Preretirement average income increases with two additional key factors. First, preretirement income is greater if researchers include all forms of income–such as capital gains, interest and dividend income, and business income, among others—in their income calculations. CRR slightly broadens preretirement income beyond wage and salary earnings to include an assumed rate of return on capital, as long as people have capital. Wolff, meanwhile, uses estimated family income near the time of retirement, which excludes capital income in defined contribution accounts.[74] In this instance, CRR uses a broader definition of income than Wolff does. Others use only wage and salary earnings, a choice that likely understates how much people actually live on and how much they need to replace in retirement.[75] Second, preretirement income is adjusted for either inflation or wage growth prior to retirement to make income during those years comparable with one another. Wage adjusting preretirement income implies that retirees should benefit in retirement from their average productivity gains during their lifetimes.[76] Adjusting preretirement income only for inflation does not make this assumption; it assumes that the living standards 40 years before retirement are as good a comparison point for retiree living standards as the ones recorded just one year before retirement.

Since wages typically rise faster than inflation, wage adjustments are greater than price adjustments. Greater preretirement adjustments, however, increase all recorded incomes before retirement and hence raise average preretirement income.[77] CRR wage adjusts income in its preretirement income calculation,

while Wolff and others do not. This leads CRR to generate a potentially overstated retirement income inadequacy that could offset other more optimistic assumptions in its calculation.

Preretirement earnings also decrease in more detailed models if future earnings are uncertain. People's incomes have a predictable, stable part and a variable part.[78] As the variable part goes up, the stable part goes down, keeping average incomes relatively constant. The variable part of incomes increases due to longer unemployment spells, higher unemployment rate fluctuations, larger wage cuts during recessions, and more contingent pay—such as bonuses and overtime pay—during economic recoveries. Economic theory predicts that retirees should only need to replace the predictable, stable part of their earnings, since they cannot count on the variable part on a regular basis. Therefore, more uncertainty lowers the amount of income that households will need to replace with retirement savings.[79]

The target replacement rate is also lower when households are expected to spend less money in retirement. It is easier for households to save enough for a secure retirement if it is assumed that their retirement consumption declines over time, compared with a situation that assumes constant consumption expenditures.

In fact, most studies assume some consumption cut in retirement. Replacement rates of less than 100 percent already reflect less retirement consumption than preretirement consumption in part because people no longer have to bear the costs associated with labor-force participation, such as commuting. But some studies also assume a gradual consumption decline beyond this retirement-related cut as the share of widows and widowers increases. The rate at which consumption is expected to decline explains a large share of the difference in retirement adequacy findings.[80]

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Endnotes

1 There is no one-size-fits-all transition for American workers into retirement. Rather, people transition in many different ways, depending on their abilities, desires, and socioeconomic backgrounds. See F. Tang and J. Burr, "Revisiting the pathways to retirement: A latent structure model of the dynamics of late-life labor force behavior," *Ageing and Society*, forthcoming.

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4 See discussion on existing research further below and in the appendix.

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12 See, for instance, Butrica, Murphy, and Zedlewski, "How many struggle to get by in retirement?"; Center for Retirement Research at Boston College, "Retirements at Risk"; Haveman and others, "Assessing the Maintenance of Savings Sufficiency over the First Decade of Retirement."; Love, Smith, and McNair, "A New Look at the Wealth Adequacy of Older U.S. Households."; Weller and Wolff, "Retirement Security."

13 See, for instance, L.H. Russell, E.A. Bruce, and J. Conahan, "A Methodology to Determine Economic Security for Elders" (Gerontology Institute and Wider Opportunities for Women, 2006).

14 Edward Wolff, "Household Wealth Inequality, Retirement Income Security, and Financial Market Swings 1983 to 2010." In Christian Weller, ed., *Financial market developments and labor relations* (Ithaca: Cornell University Press, forthcoming).

15 There is substantial variation in researchers' definitions of preretirement earnings as discussed in the Appendix.

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17 See, for instance, Ameriks and Utkus, "Vanguard Retirement Outlook 2006."; D.B. Bernheim, "The Adequacy of Personal Retirement Saving: Issues and Options," In David A. Wise, ed., *Facing the Age Wave* (Stanford, CA: Hoover Institute Press, 1997); A. Gustman and T.L. Steinmeier, "Effects of Pensions on Savings: Analysis With Data From the Health and Retirement Study," *Carnegie-Rochester Conference Series on Public Policy* 50 (99) (1999): 271–324; P. Henle, "Recent Trends in Retirement Benefits Related to Earnings," *Monthly Labor Review* 95 (6) (1972): 12–20; Engen, Gale, and Uccello, "The Adequacy of Household Saving"; Annamaria Lusardi and Olivia S. Mitchell, "Financial Literacy and Planning: Implications for Retirement Wellbeing" (Hanover, NH: Dartmouth, 2006), available at http://www.dartmouth.edu/--alusardi/Papers/FinancialLiteracy.pdf; J.F. Moore and O.S. Mitchell, "Projected Retirement Wealth and Saving Adequacy." In *Forecasting Retirement Needs and Retirement Wealth*; A. Munnell, F. Golub-Sass, and A. Webb, "What Moves the National Retirement Risk Index? A Look Back and an Update" (Boston: Center for Retirement Research at Boston College, 2007); RETIRE Project, "2001 RETIRE Project Report" (Atlanta: Georgia State University, 2001); Warshawsky and Ameriks, "How Prepared are Americans for Retirement?"; Olivia S. Mitchell, P. Brett Hammond, and Anna M. Rappaport, "Forecasting Retirement Needs and Retirement Wealth," *Journal of Economic Literature* 40 (1) (2002): 33–67.; Weller and Wolff, "Retirement Security"; The replacement—retirement income to preretirement income—is less than 100 percent since the income needs of retirees are likely to be lower than those of workers since they no longer need to save for retirement, pay fewer taxes, have no work related expenses, have smaller families, and do not have mortgages.

18 See the Appendix for a detailed discussion of the empirical methodologies in estimating replacement rates.

19 At least one study on retirement income adequacy implicitly combines the two approaches by assuming that Americans will receive all public transfer payments that they qualify for in its determination of optimal wealth targets. This approach somewhat reduces the policy insights, although this particular paper offers sufficient details to highlight the value of public transfers for particular groups in avoiding shortfalls in retirement. See Scholz, Seshradi, and Khitatakrun, "Are Americans Saving "Optimally" for Retirement?"

20 See, for instance, Weller and Wolff, "Retirement Security: The Particular Role of Social Security"; Russell, Bruce, and Conahan, "A Methodology to Determine Economic Security for Elders"; Wolff, "Household Wealth Inequality, Retirement Income Security, and Financial Market Swings 1983 to 2010."

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27 Laryssa Mykyta and Suzanne Macartney, "The Effects of Recession on Household Composition: 'Doubling Up' and Economic Well-Being." Working Paper 2011-4 (Bureau of the Census, 2011).

28 F. Eggers and F. Moumen, "Analysis of Trends in Household Composition Using American Housing Survey Data" (Bethesda, MD: Econometrica and Dade, 2010); Corey Dade, "For Many Families, Bad Times Require 'Doubling Up,'" National Public Radio, September 30, 2010, available at http://www.npr.org/2011/04/06/130190814/for-many-families-bad-times-require-doubling-up.

29 M. Szinovacz and A. Davey, "Stability and Change in Financial Transfers from Adult Children to Older Parents," *Canadian Journal on Aging* 31 (4) (2012): 367–378; Marilyn Werber Sarafini, "The Parent Trap: Adult Children Care for Elderly Parents," Kaiser Health News, March 1, 2012, available at http://www.kaiserhealthnews.org/stories/2012/march/01/parent-trap.aspx.

30 See, for instance, Russell, Bruce, and Conahan, "A Methodology to Determine Economic Security for Elders"; Frank Porell, "Poverty Rate Nearly Doubles for Americans Lacking Pensions" (Washington: National Institute on Retirement Security, 2012), available at http://www.nirsonline.org/index.php?option=content&task=view&id=714.

31 Ibid.

32 See, for instance, Scholz, Seshradi, Khitakrun, "Are Americans Saving 'Optimally' for Retirement?"

33 Some retirement income adequacy calculations are done only for households nearing retirement, where children have often already left the home and are thus not part of the calculation to begin with.

34 Retirees in 2010 spent about 8 percent of their income on health care, while future retirees are expected to spend about 18 percent of their household income on health care costs. For details, see Harriet Komisar, "The Effects of Rising Health Care Costs on Middle-Class Economic Security" (Washington: AARP Public Policy Institute, 2013).

35 Researchers have found that lifetime earnings correlate with life expectancy, presumably because of the cumulative effect of worse health outcomes over time. It stands to reason that retirees who cannot afford to pay for all of the necessary health care will see worse health outcomes and shorter life expectancies than those retirees who can pay for the required health care. See, for instance, Amal N. Trivedi, Husein Moloo and Vincent Mor, "Increased Ambulatory Care Copayments and Hospitalizations among the Elderly," *New England Journal of Medicine* 362 (2010): 320–328; For a discussion of the link between lifetime income and life expectancy, see Barry P. Bosworth and Kathleen Burke, "Differential Mortality and Retirement Benefits in the Health and Retirement Study" (Washington: The Brookings Institution, 2014).

36 C. Weller, J. Wenger, and B. Lichtenstein, "The growth of entrepreneurship among older households." Unpublished paper (Boston: University of Massachusetts Boston); K. Cahill, M. Giandrea, and J. Quinn, "New evidence on self-employment transitions among older Americans with career jobs." Working Paper 463 (Bureau of Labor Statistics, 2013); E. Reedy, "The Coming Entrepreneurship Boom." Paper presented at the annual meeting of the Eastern Economic Association (Boston, MA, 2014).

37 For a summary of the basic theoretical literature on consumption and saving, see Martin Browning and Annamaria Lusardi, "Household saving: Micro theories and macro facts," *Journal of Economic Literature* 34 (4) (1996): 1797–1855.

38 Using wealth to estimate households' future retirement income and thus their retirement income security also has a methodological advantage over using some income statistics to measure how much income retirees have. Income statistics for older households often rely on the Bureau of Labor Statistics' Current Population Survey, or CPS—for example, the Social Security Administration's Income of the Population 55 and Older. The CPS is nationally representative and has a long track record so that researchers can compare trends over time. It suffers from some necessary methodological shortcomings that tend to understate retirement income. The CPS does not count withdrawals from IRAs and 401(k)s as income, but it counts regular benefits from DB pensions as income. So as households increasingly pay for their retirement with withdrawals from their individual accounts and have fewer DB pension benefits than in the past, the CPS tends to miss a growing share of many retirees' income. Wealth measures used in retirement income adequacy studies, however, capture all forms of future income from Social Security, DB pensions, and private savings in housing; DC accounts; and other individual forms of savings. For a discussion of the importance of IRA withdrawals, see B.J. Miller and S. Schieber, "Employer Plans, IRAs and Retirement Income Provision: Making a Molehill Out of a Mountain" (New York: TowersWatson Insider, 2013); More importantly, all data sources tend to vastly undercount public transfer income that retirees get since they do not account for in-kind transfers, such as Medicare and Medicaid. That is, including IRA withdrawals as income sources should be offset to some degree by the comparatively fast growth of health care costs, which are covered in large part by public programs for retirees.

39 Christian Weller, "Making Sure Money is Available When We Need It: Protecting Household Assets Must Become an Integral Part of U.S. Savings Policies" (Washington: Center for American Progress, 2013); C. Weller and S. Bernardo, "How Does Labor Market Risk Exposure Relate to Wealth Inequality?" (Boston: Eastern Economic Association, 2014); C. Weller and S. Bernardo, "Putting Retirement at Risk: Has Financial Risk Exposure Grown Faster for Older Households than Younger Ones?" (Boston: University of Massachusetts Boston, 2014).

40 See our detailed discussion in the Appendix on calculating future retirement income.

41 The Appendix discusses in great detail our reasons for selecting this particular measure over others in the literature. We should note, however, that all measures find substantial shares of households with insufficient savings. Moreover, few researchers provide trend data and those who do find stable trends prior to the Great Recession, followed by a sharp drop off in retirement income security during and after the Great Recession.

42 Edward Wolff, a professor at New York University and an expert on wealth inequality, relies on the same data as the National Retirement Risk Index but uses a somewhat different methodology to calculate retirement income adequacy in his research. His calculations also show a trend toward less retirement income adequacy over time and larger shares of households being inadequately prepared for retirement than feel confident about retirement. See Christian Weller and Edward Wolff, "Retirement Income Security: The Crucial Role of Social Security" (Washington: Economic Policy Institute, 2005).

43 For a discussion of possible alternative, rational explanations, and why they do not hold, see B. Douglas Bernheim, Jonathan Skinner, and Steven Weinberg, "What Accounts for the Variation in Retirement Wealth among U.S. Households?," *The American Economic Review* 91 (4) (2001): 832–857.

44 The absence of rising confidence may suggest some factors that could dampen people's confidence such as rising risk exposure and growing wealth inequality, which also contribute to growing objective risks. For a discussion of risk exposure and risk tolerance among older non-retirees, see Christian Weller, "Protecting Retirement Wealth: Better Risk Management of Household Assets Must Become an Integral Part of U.S. Savings Policies," *Challenge* 56 (4) (2013): 1–38. The data suggest that older households have become more risk averse as their risk exposure has increased.

45 Professor Wolff's research relies on the same data as the Center for Retirement Research, or CRR, but there are some key methodological differences as we discuss in the Appendix.

46 All data in this paragraph are taken from Wolff, "Household Wealth Inequality, Retirement Income Security, and Financial Market Swings 1983 to 2010."

47 Christian Weller and Sam Ungar, "Overhauling Federal Savings Incentives. Tax Notes Special Report," *Tax Notes* 142 (9) (2014): 1–9.

48 Erickson and Madland, "Fixing the Drain on Retirement Savings."

49 Weller, "Making Sure Money is Available When We Need It."

50 Beth Almeida and William B. Fornia, "A Better Bang for the Buck, The Economic Efficiencies of Defined Benefit Plans" (Washington: National Institute on Retirement Security, 2008), available at http://ucrpfuture.universityofcalifornia.edu/files/2010/08/peb_ax_k-4_overview-discussion-db-dc-plans.pdf.

51 Rebecca Tippett and others, "Beyond Broke: Why Closing the Racial Wealth Gap is a Priority for National Economic Security" (Washington: Global Policy Solutions, 2014).

52 Authors' calculations based on Federal Reserve System, "Survey of Consumer Finances 2010" (2013).

53 Weller and Ungar, "Overhauling Federal Savings Incentives"; Jeremie Greer and Ezra Levin, "Upside Down: Tax Incentives to Save & Build Wealth" (Washington: Corporation for Enterprise Development, 2014), available at assets/pdfs/Policy_Brief_-_Tax_Incentives.pdf.

54 Weller, "Making Sure Money is Available When We Need It."

55 Weller and Ungar, "Overhauling Federal Savings Incentives"; Joe Valenti and Christian Weller, "Creating Economic Security: Using Progressive Savings Matches to Counter Upside-Down Tax Incentives" (Washington: Center for American Progress, 2013), available at http://cdn.americanprogress.org/wp-content/uploads/2013/11/ProgressiveMatches.pdf.

56 Davis, and Madland, "American Retirement Savings Could be Much Better."

57 Christian Weller and Amy Helburn, "States to the Rescue: Policy Options for State Government to Promote Private Sector Retirement Savings," *Journal of Pension Benefits* 18 (1): 37–47; Davis and Madland, "American Retirement Savings Could Be Much Better."

58 The replacement—retirement income to preretirement income—is less than 100 percent since retirees' income needs of are likely to be lower than those of workers since they no longer need to save for retirement, pay fewer taxes, have no work related expenses, have smaller families, and do not have a mortgage.

59 See the detailed discussion in Engen, Gale, and Uccello, "The Adequacy of Household Saving."

60 Ibid.

61 Center for Retirement Research at Boston College, "Retirements at Risk: A New National Retirement Risk Index" (2006), available at http://crr.bc.edu/wp-content/uploads/2011/09/NRRI1.pdf.

62 Wolff, "Household Wealth Inequality, Retirement Income Security, and Financial Market Swings 1983 to 2010."

63 See, for instance, Center for Retirement Research at Boston College, "Retirements at Risk"; For two examples of calculating age-earnings profiles that underlie the calculations of projected future Social Security benefits, see Christian Weller and Edward Wolff, *Retirement Security: The Particular Role of Social Security.*

64 Only the Federal Reserve's Survey of Consumer Finances regularly asks households for the relevant details, while other household surveys such as the University of Michigan's Health and Retirement Survey only ask whether a household is covered under a DB pension. These are household surveys, where workers and not employers, describe DB pension benefit calculations. This description can be fraught with some error since households may fail to disclose critical details of this calculation or simply do not understand how their DB pension benefits will be calculated in the future. But researchers have shown that people do not make systematic mistakes when describing their pension benefits; for example, for every household that overestimates their DB pension, another one underestimates their future DB pension. Average and median retirement income calculations of future DB pension benefits for the entire population or even subpopulations should consequently not suffer from a bias toward understatement or overstatement of future retirement income. Researchers then typically take the information provided in surveys or from employers on people's DB pensions to calculate expected future pension benefits based on each household's estimated preretirement earnings. See, for instance, Gustman and Steinmeier, "Effects of Pensions on Savings"; For a discussion of the errors associated with self-reported DB pension benefits, see Richard Johnson, Usha Sambamoorthi, and Stephen Crystal, "Pension Wealth at Midlife: Comparing Self-reports with Provider Data," *Review of Income and Wealth* 46 (2000): 59–83. Moreover, Scholz, Seshradi, and Khitatakrun, "Are Americans Saving "Optimally" for Retirement?" use a different approach to calculating DB pensions, by extrapolating the probability of having a DB pension and the level of future DB pensions for each households based on current DB pension recipients. There is some difference in the way CRR and Edward Wolff calculate DB pension benefits. CRR, for instance, uses some approximation of future DB pension benefit coverage and benefit levels even for a small share of households, which do not yet have DB pension coverage. Professor Wolff, on the other hand, only calculates the value of future DB pensions only for households that already have a DB pension. This difference stems from the fact that CRR considers younger households, as well as older households, so that things can change during their careers and people can still gain a DB pension during their careers, while Wolff includes only older households, where career-related changes in benefits are much less likely than among younger households. That is, the methodological difference will have no real effect on retirement income adequacy calculations for the respective populations that are being studied since the same share of households should enter retirement with a DB pension in each calculation.

65 Scholz, Seshradi, and Khitatakrun, "Are Americans Saving "Optimally" for Retirement?"

66 Ibid.

67 See, for instance, Center for Retirement Research at Boston College, "Retirements at Risk"; Gustman and Steinmeier, "Effects of Pensions on Savings."

68 Some studies exclude home equity in their calculation. See, for instance, Gustman and Steinmeier, "Effects of Pensions on Savings"; Steven Venti and David A. Wise, 2004. "Aging and Housing Equity: Another Look." In David A. Wise, ed., *Perspectives on the Economics of Aging* (Chicago: University of Chicago Press, 2004) also argue against using home equity in estimates of possible future non-housing consumption. See also Skinner, "Are You Sure You're Saving Enough for Retirement?"

69 Wolff, "Household Wealth Inequality, Retirement Income Security, and Financial Market Swings 1983 to 2010."

70 See Center for Retirement Research at Boston College, "Retirements at Risk."

71 Ibid.

72 For a discussion of the costs of longevity risk, see Beth Almeida and William B. Fornia, "A Better Bang for the Buck, The Economic Efficiencies of Defined Benefit Plans" (Washington: National Institute on Retirement Security, 2008), available at http://ucrpfuture.universityofcalifornia.edu/files/2010/08/peb_ax_k-4_overview-discussion-db-dc-plans.pdf.

73 Center for Retirement Research at Boston College, "Retirements at Risk"; Wolff, "Household Wealth Inequality, Retirement Income Security, and Financial Market Swings 1983 to 2010."

74 Ibid.

75 Scholz, Seshradi, and Khitatakrun, "Are Americans Saving "Optimally" for Retirement?"

76 Wage adjusting preretirement income also means that incomes in different years are truly comparable to each other. The Social Security Administration typically uses wage-adjusted or wage-indexed preretirement income in its replacement rate calculation. For an explanation and some robustness tests—the results do not change much with slightly different indexation methods—see S. Goss, "Strengthening Social Security to Meet the Needs of Tomorrow's Retirees," Testimony before the Subcommittee on Social Security, Pensions, and Family Policy of the Senate Committee on Finance, May 21, 2014.

77 Center for Retirement Research at Boston College, "Retirements at Risk"; Wolff, "Household Wealth Inequality, Retirement Income Security, and Financial Market Swings 1983 to 2010."

78 See, for instance Engen, Gale, and Uccello, "The Adequacy of Household Saving"; Scholz, Seshradi, and Khitatakrun, "Are Americans Saving "Optimally" for Retirement?"

79 It also increases the amount of precautionary savings that households will need during their working careers.

80 For a study that assumes substantial and systematic consumption cuts, see Scholz, Seshradi, and Khitatakrun, "Are Americans Saving "Optimally" for Retirement?"; The same authors extended their analysis to include data for additional cohorts of households born before 1954. See William Gale, John Karl Scholz, and Ananth Seshadri, "Are All Americans Saving 'Optimally' for Retirement? "(The Brookings Institution and University of Wisconsin, Madison, 2009). This later study finds a total share of households inadequately prepared for retirement of 25.6 percent as compared to 15.6 percent in the earlier study. The later study also finds a growing expected shortfall with younger ages. We discuss the earlier study throughout the paper since it lays out methodology and data in great detail, appeared in a highly ranked economics journal, and has the lower bound of all estimates reporting a retirement savings shortfall. For a discussion of the factors that determine differences in retirement income adequacy findings, including consumption cuts, see Skinner, "Are You Sure You're Saving Enough for Retirement?"

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