

## Elderly Entitlements and Wealth Inequality

### Abstract

By most measures, wealth inequality has grown significantly over the last three decades, and many express growing concerns about the diminishing wealth share of the middle class. Standard wealth definitions require that individuals possess a legal claim to assets included as wealth, and this has led many prior studies to exclude accrued Social Security benefits from measures of wealth, on the ground that workers and retirees lack a legal claim to the receipt of those benefits. However, accrued benefits are large and their existence has affected the lifecycle savings behavior of current recipients and current workers. Like other asset accumulations, accrued Social Security benefits meet the economic, if not legal, definition of wealth.

This study identifies Social Security wealth as accrued benefits based on past participation in the program. This definition is similar to measures of accrued pension wealth associated with defined benefit plans and is applied here to calculate both Social Security wealth and defined benefit pension wealth. Accrued Social Security benefits are found to be much more equally distributed than are the conventional measures of wealth. From 1989 to 2019, the top 10% of families held a relatively stable share of about 17.8% of accrued Social Security benefits. In contrast, these families saw their share of conventionally measured net worth grow from 63.1% to 70.8% or by 7.7 percentage points. When Social Security is included, the share of total wealth held by the top 10% was 54.0% in 1989 and 57.3% in 2019. Using this more comprehensive wealth measure that includes Social Security benefits results in a lower measure of wealth inequality and a lower growth over time in that measure of inequality. By our measure, the wealth share of the top ten percent grew by 3.3 percentage points between 1989 and 2019, less than half of the 7.7 percentage point growth calculated using the less comprehensive ‘conventional’ measure of wealth.

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## **Introduction**

There is a widespread understanding that wealth inequality and income inequality have been rising in the United States. This is often coupled with the concern, explicit or implicit, that observed inequality is too high and should be addressed by policymakers. Given the magnitude of the measured wealth inequality and the difficulty and potential invasiveness of actions that might be needed to address said inequality, it is vital to get the measurements correct and to understand just what these measures are telling us.

This paper focuses on wealth inequality, and specifically on the impact of including Social Security in the measure of wealth. As such, this paper complements and extends prior work on wealth inequality by pointing out the value of Social Security wealth, how it changes across the wealth distribution, and examines the impact of Social Security wealth on measured wealth inequality.

Social Security involves a government commitment to provide income payments in retirement. This is a valuable benefit, and one that can be priced by comparing it to an annuity. There are special features to the Social Security annuity, one of which is indexation to inflation. Regardless, identifying the wealth equivalent of Social Security benefits is analogous to valuing an annuity with specific characteristics.

As to the argument that Social Security is not formally or legally wealth, because individuals have no legal claim to Social Security payments and certainly cannot sell their claim to Social Security, the economic approach must surely consider that Social Security payments impact the lifecycle consumption and savings decisions of households, both current recipients and current workers. The economic approach might risk-adjust the value of the promised Social Security payments to include some discount for the risk of changes to the program, but there seems little, if any, economic justification to exclude Social Security from a measure of wealth.

This paper is most closely related to two recent papers that also include Social Security in considerations of wealth inequality. One is a paper by Catherine, Miller and Sarin (2020), who find that after incorporating their measure of Social Security wealth, there has been no increase in wealth inequality in the last three decades. Their work calculates Social Security wealth net of Social Security taxes and uses risk-free and risk-adjusted discount rates based on the yield curve in their calculation of Social Security wealth. The second paper is by Jacobs, Llanes, Moore, Thompson and Volz (2022), who include estimates of the wealth embodied in defined benefit

pension plans and in Social Security. They find that this reduces the measure of wealth inequality, and moderates – but does not eliminate – the upward trend in wealth inequality over time. They, too, use net Social Security benefits, but use a constant discount rate in each period to calculate their Social Security wealth measure.

What is the contribution of this paper? First and foremost, this paper uses an accrued benefits concept and calculates the value of Social Security wealth (and the value of defined benefit pension wealth) at a point in time as the value of benefits accrued up to that point in time. These include benefits to current Social Security recipients, or those receiving payments and having an expected lifespan depending on age and lifetime income. They also include benefits accrued up to the date of the calculation (the Survey of Consumer Finances (SCF) survey year) for those still working. This accrued benefit concept is similar to accrued pension benefits that are associated with defined benefit pension plans. The accrued benefit concept also meets the definition of a liability of the federal government. It is sometimes labeled the maximum transition cost.<sup>1</sup>

There are several other features of this paper. The estimates used here are based on past earnings and do not require forecasting future earnings or future tax bills. In addition, the estimates are based on income-adjusted mortality tables. These are tailored to every year of the SCF. That said, the results here do assume that the Social Security benefit formula remains in its current form with updates that follow the projections from the Social Security Trustees Reports.

Finally, the results in this paper focus on the use of a particular discount rate, a market rate based on 20-year forward TIPs from Federal Reserve yield curve estimates. This rate is lower than the real rates that have appeared in the Social Security Trustees Reports in recent years and have generally declined over time the 30-year period spanned by the SCF, leading to an increased value of Social Security wealth – and defined benefit pension wealth – relative to values based on the discount rate assumptions for the Trustees Reports. The paper compares results from using these two alternative real rate assumptions.

It should be clear that falling real rates are one explanation for the increased value of financial wealth over time. To the extent that the falling market rates have led to falling discount

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<sup>1</sup> From the Social Security Administration Office of the Chief Actuary: “The maximum transition cost is equivalent to the unfunded accrued obligation of a plan designed to be fully advance funded at the time of plan termination and would be an appropriate calculation to evaluate the actuarial status of an ERISA plan. However, this concept may be applied when a continuing plan that has been financed on a pay-as-you-go basis is being converted abruptly to a new form that will apply not only for future participants but also with respect to all future taxes or premiums of current participants.” <https://www.ssa.gov/oact/NOTES/ran1/an2022-1.pdf>.

rates in the valuation of equities and other financial assets, the decline in market rates is already incorporated, automatically, in many of the wealth categories included in studies of wealth inequality. The use of a market value in calculating a measure of Social Security wealth, and of the wealth embodied in defined benefit pension promises, is in this sense just putting Social Security wealth and defined benefit pension wealth on an equal footing with these other measures of wealth.

Our conclusion is that estimates of the wealth share that include Social Security show less inequality, and less of an increase in inequality over time, than do wealth share measures that exclude Social Security. Furthermore, estimates using a market yield curve instead of the Trustees Report assumptions yield much lower increases in inequality over time. Our preferred measure has the share of total wealth held by the top 10% of families rising from 54% in 1989 to 57.3% in 2019, a much smaller change in wealth concentration than one would learn from prior papers that exclude Social Security wealth from consideration.

## **Background**

In a widely cited study, Saez and Zucman (2016) report increasing wealth inequality in the U.S. In their work, the authors attribute aggregate wealth to families through capitalized income tax data. Net worth is defined as the sum of a family's assets, at market value, less any liabilities. These assets are identified at market value and the family must possess a legal claim to the assets. Such assets include the market value of a family's home, less the outstanding mortgage amount, as well as the value of proprietorships and partnerships, and financial instruments such as stocks and bonds held outside of retirement accounts. Wealth also includes the value of defined contribution retirement accounts and the accrued value of defined benefit pensions.

The authors identify the changes in the wealth distribution by allocating aggregate measures on national wealth from the Federal Reserve to taxpaying units via income reported on tax returns. The authors' "capitalization" method allows them to examine the distributions of wealth since 1913. They find that wealth inequality has risen since the late 1970s with the share of wealth owned by the top 0.1% of families equal to 22% in 2012. This share is almost as high as in the 1916 and 1929 peaks, and three times higher than in the late 1970s. They also find that the wealth share of the bottom 90 percent increased from 20% in the 1920s to 35% by the mid-1980s but has declined to 23% in 2012. The authors attribute the decline in the bottom 90% share to the fall in the middle-class saving rate and to rising income inequality.

Other authors have studied wealth inequality based on the Federal Reserve's Survey of Consumer Finances (SCF). With each release of the SCF, conducted every third year from 1989 to 2019, the Federal Reserve Bulletin provides a summary of changes in the distribution of net worth by family income, family wealth, and by the age, education, and race of the respondent. The most recent edition is by Bhutta et al. (2020). However, the base SCF does not include several key wealth components, namely estimates of the expected present values of pensions. Bricker, Henriques, Kimmel, and Sabelhaus (2016), using augmented SCF estimates, find that the top wealth shares have not increased to the same degree suggested by Saez and Zucuman (2016). Other studies, Batty et al. (2019), Bricker et al. (2020) and the Congressional Budget Office (2022), all based on the SCF, also report lower wealth concentration at the top of the distribution since 1989 than suggested by Saez and Zucman (2016).

Smith, Zidar and Zwick (2021) also examine the top wealth shares in the United States. They find that wealth shares at the very top of the wealth distribution, the top 1% and above, grew between 1989 and 2016, but by less than other authors. They also find less concentration of wealth, though like other authors, the top 1% is found to drive the estimates of wealth concentration and its trend.

Absent from these measures are accrued Social Security and Medicare benefits, based on the argument that individuals do not have a legal claim to the receipt of those benefits. In Saez and Zucman (2016), accrued pensions and other retirement benefits payable to federal civilian and military personnel are also excluded because receipt of those benefits relies on current and future tax funding rather than private market financial assets. But this is not an obvious decision; accrued Social Security benefits and accrued pension benefits payable to federal employees and retirees are substantial. As of 2019, the Social Security Administration estimated that accrued benefits came to \$41 trillion. To put this amount in perspective, the net worth of all households in the Federal Reserve's Distributional Financial Accounts was \$106 trillion in 2019. Thus, accrued Social Security benefits were 39% of the size of the conventional measure of wealth. Additionally, state and local public sector pensions are also not fully funded, and the receipt of those benefits also relies in part on political decisions.

Though they might fail to meet the formal definition of wealth, the existence of Social Security benefits has affected the lifecycle savings behavior of current recipients and the savings behavior of current workers. While it is true that Social Security benefits are not formally

recognized as either liabilities of the federal government or as assets of current or future beneficiaries, this does not excuse economists from considering their impact on household lifecycle behavior. Households treat Social Security promises akin to wealth, any legal definition notwithstanding. It is true that Congress can unilaterally change the programs, but Congress can unilaterally change many aspects of the economy, including property rights defining ownership of other assets as they currently exist in the legal system.

Economists have examined how Social Security impacts lifecycle behavior, and how it impacts the economy including aggregate saving and investment behavior. Feldstein's (1974) early estimates that Social Security wealth reduced savings and the capital stock by over 30 percent spawned a large literature. Barro (1974) suggests that Social Security and government debt are not *net* wealth, given that families are linked through intergenerational exchanges. These exchanges may cancel one another such that national wealth is unaffected. Because Social Security is financed through taxes, children can respond to an increase in Social Security benefits by making fewer transfers to parents, and conversely parents can respond to any increase in the tax burden on their children by making more financial transfers to their children.<sup>2</sup> If, however, generations are only weakly linked, Social Security may indeed reduce savings.<sup>3</sup>

The present analysis focuses on how the distribution of accrued Social Security benefits are related to the annual distributions of wealth based on standard measures. We also relate how Social Security wealth affects the concentration of and time trend of the wealth at the top of the distribution. Saez and Zucman (2016) include as assets "all the non-financial and financial assets over which ownership rights can be enforced and provide economic benefits to their owners."<sup>4</sup> As already mentioned, this wealth definition does not include accrued pension benefits payable to federal civilian and military personnel nor other accrued post-employment benefits, primarily health care, payable to these federal workers, because they are unfunded. The unfunded portions of state and local defined benefit pensions are also not included as wealth. Similarly, accrued Social Security benefits and Medicare benefits are not included as wealth both because they are

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<sup>2</sup> See Felstein's (1976) comment on Barro (1974) and Barro's (1976) response. See Liemer and Lesnoy (1982), and Feldstein (1982) for further comments on Feldstein (1974).

<sup>3</sup> Accrued Social Security wealth as used here differs from the gross and net Social Security wealth measures suggested by Feldstein (1974). His gross measure was the present value of expected retirement benefits, and his net measure subtracted the present value of lifetime taxes from the present value of lifetime benefits.

<sup>4</sup> Saez and Zucman (2016) p.5.

not funded and, more importantly, because workers do not have ownership rights to the receipt of the benefits.

Discussions of workers' legal claims to Social Security benefits typically reference two Supreme Court rulings from 1937 and 1960. The 1937 case, *Helvering v. Davis*, basically found that "The proceeds of both taxes [employer and employee] are to be paid into the Treasury like internal-revenue taxes and payroll taxes generally and are not earmarked in any way."<sup>5</sup> Consequently, payment of these taxes did not convey a property right to Social Security benefits. The 1960 case, *Flemming vs. Nestor*, further confirmed this reasoning. In this case, Nestor challenged a 1954 law that terminated Social Security benefits for "persons deported for, among other things, having been a member of the communist party."<sup>6</sup> Nestor, a Bulgarian immigrant, had been a member of the Communist Party from 1933 to 1939, paid Social Security taxes for 19 years, and was deported in 1956 after having already begun to receive benefits in 1955. The Supreme Court ruled that Nestor did not have a property right to his Social Security benefits. This ruling was in opposition to Nestor's claim that the denial of his benefits violated the takings clause of the Fifth Amendment. Writing for the majority, Justice Harlan wrote, "We must conclude that a person covered by the Act has not such a right in benefit payments as would make every defeasance of "accrued" interests violative of the due process clause of the Fifth Amendment."<sup>7</sup>

The following statement from the 2010 *Analytical Perspectives* summarizes the logic of the Nestor decision: "Future Medicare, Medicaid, and Social Security benefits may be considered as obligations of the Federal Government, but these benefits are not a liability in a legal or accounting sense. The Government has unilaterally decreased as well as increased these benefits in the past, and future reforms could alter them again."<sup>8</sup> This statement notes that Social Security benefits are "obligations" but not "liabilities" of the federal government. The government's ability to unilaterally change benefits thus makes Social Security benefits "obligations" not "liabilities" and if they are not liabilities of the government, they are not assets to the beneficiaries. By this reasoning, anticipated Social Security benefits are not legal liabilities of the federal government

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<sup>5</sup> From Social Security History Archives, "Justice Cardozo – *Helvering vs. Davis*" [www.ssa.gov/history/supreme1.html](http://www.ssa.gov/history/supreme1.html).

<sup>6</sup> From Social Security History Archives, "Supreme Court Case: *Flemming vs. Nestor*" [www.ssa.gov/history/nestor.html](http://www.ssa.gov/history/nestor.html).

<sup>7</sup> From Social Security History Archives, "Supreme Court Case: *Flemming vs. Nestor*" [www.ssa.gov/history/nestor.html](http://www.ssa.gov/history/nestor.html).

<sup>8</sup> *Analytical Perspectives, Budget of the U.S. Government, Fiscal Year 2010*, p.186.

nor are they assets to workers or retirees. However, while paying Social Security taxes does not endow workers with a legal claim, the expectation of benefits does affect workers' savings behavior and wealth accumulation. In an economic analysis it is the impact on this behavior that is the vital point.

In any analysis of wealth inequality, some estimate of the size of accrued Social Security and Medicare benefits is critical. This is particularly true in considering policy proposals designed specifically to address wealth inequality. Importantly, the federal government does include the accrued pension and post-employment benefits of federal workers as liabilities in its financial statements, even though they are not prefunded. The accrued liability payable to federal employees including pensions and post-employment benefits, primarily health insurance, was \$8.4 trillion in 2019. While not included as liabilities in the Financial Report of the US Government (FRUSG), the accrued Social Security and Medicare benefits payable to current retirees are reported in the FRUSG's Statement of Social Insurance. Together, the present value of Social Security and Medicare net benefits payable to current retirees totaled \$25.2 trillion in 2019.<sup>9</sup> In addition to the Social Security and Medicare benefits payable to current retirees, near-term retirees and younger workers have accrued considerable benefits in the programs. The closer workers are to retirement age, the more likely they are to receive the full, anticipated benefit.

This paper estimates the degree to which Social Security wealth reduces wealth inequality in the U.S. Throughout this paper, accrued Social Security benefits serve as the estimate of Social Security wealth. Accrued Social Security benefits are conceptually similar to accrued pension benefits from a defined benefit plan. Accrued Social Security benefits are based on past participation in the program, not on the expectation of continued participation. Apart from the lack of an enforceable claim to the future receipt of the benefits, accrued benefits meet the definition of an asset from the perspective of workers and the definition of a liability from the perspective of the federal government. This is particularly true with respect to the accrued benefits of near-term retirees and the ongoing monthly benefits paid to current retirees.

Several recent studies have estimated how Social Security affects the distribution of wealth and how it affects the changes in the concentration of wealth at the top of the distribution over time. Jacobs, Llanes, Moore, Thompson, and Volz (2022), and Catherine, Miller, and Sarin (2020)

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<sup>9</sup> See the 2019 Financial Report of the U.S. Government for the estimate of federal employees' accrued retirement benefits for the estimates of Social Security and Medicare benefits expected by current retirees.



were mentioned above. Sabelhaus and Volz (2019) also present estimates of Social Security wealth by netting out future taxes from expected future benefits. These three papers require estimates of future earnings and expected future tax payments to arrive at their measure of net benefits. Given that Social Security is underfunded at current tax rates, reforms will be necessary or once the Trust Fund is exhausted, tax rates must rise or benefit payments must fall. Jacobs et al. (2022) and Catherine, Miller, and Sarin (2020) consider how closing the funding gap impacts their baseline estimates.

The use of accrued Social Security benefits in the present paper avoids the necessity of forecasting future earnings profiles, tax schedules, benefit cuts, or the range of combinations that would affect the size and distribution of future benefits and their present values. Accrued benefits are used here because of their similarity to measures of pension wealth associated with defined benefit programs, they approximate relative wealth from the vantage point of workers, they meet the definition of a liability to the Federal Government, and they can be calculated solely based on past participation in the program.

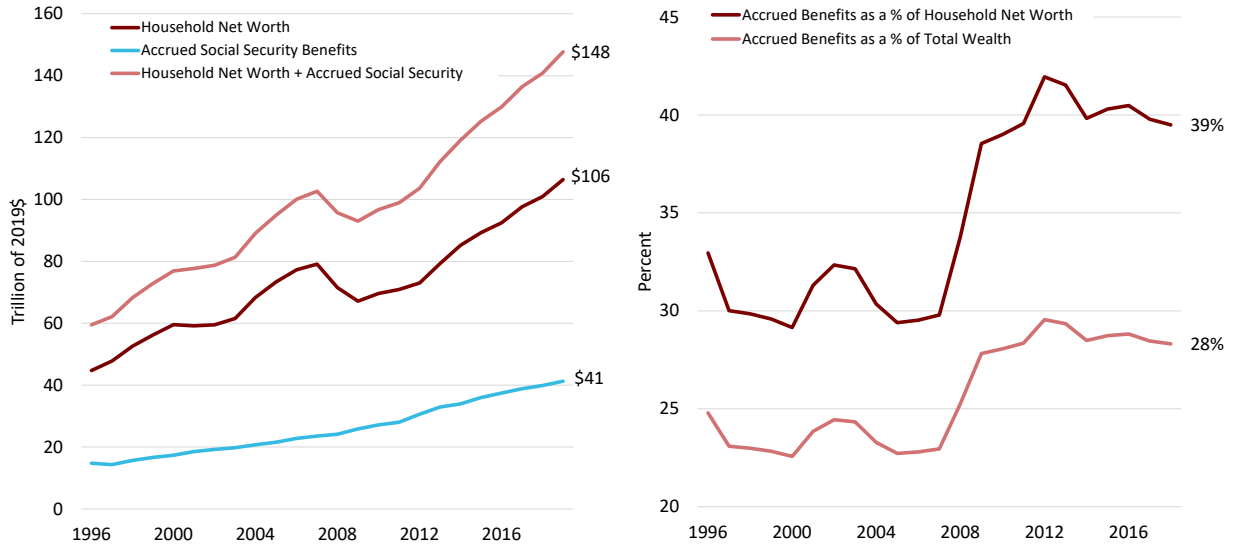
### **Household Net Worth and Accrued Social Security Benefits**

The left-hand panel in Figure 1 depicts the traditionally measured total net worth of households in the U.S. along with an estimate of total accrued Social Security benefits for the years 1996 to 2019. The household net worth estimates are from the Distributional Accounts of the United States produced by the Federal Reserve.<sup>10</sup> The distributional accounts allocate the Federal Reserve's estimates of aggregate household wealth to families using the distribution of wealth from the Survey of Consumer Finances. The distributional accounts provide quarterly estimates of household net worth held by groups of households based on their location in the wealth distribution. The four groups are: the top 1%, the 90<sup>th</sup>-99<sup>th</sup> percentiles, the 50<sup>th</sup>-90<sup>th</sup> percentiles, and households below the 50<sup>th</sup> percentile. The household net worth amounts in Figure 1 are indexed to 2019 dollars using the Personal Consumption Expenditures price index. As the figure indicates, the conventional measure of real household net worth rose from about \$45 trillion in 1996 to almost \$80 trillion in 2007. During the Great Recession, it fell over 16% to \$67 trillion in 2009, and by 2019 it had risen to \$106 trillion.

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<sup>10</sup> The Distributional Financial Accounts are available at: <https://www.federalreserve.gov/releases/efa/efa-distributional-financial-accounts.htm>

Figure 1. Household Wealth and Accrued Social Security Benefits



Sources: Federal Reserve, Distributional Financial Accounts of the United States, and Social Security Administration, Office of the Actuary, Actuarial Note, Numbers 2022.1 and 2009.1.

The annual accrued Social Security benefits, or maximum transition cost, including the offsetting effect of the Trust Fund, are reported in Nickerson and Burkhalter (2022). The Social Security actuaries’ estimates are available from 1996 to 2022, but the series in the figure ends in 2019 because that is the year of the most recent Survey of Consumer Finances, relied on here as a primary data source. New estimates are reported each year in an Actuarial Note published following the release of the annual Trustees Report.<sup>11</sup> The series shown as Accrued Social Security Benefits in Figure 1 adds the Trust Fund amount in January of each year to the maximum transition costs from the actuarial note to arrive at the total amount of accrued Social Security benefits. Real accrued benefits grew steadily from \$15 trillion in 1996 to \$41 trillion in 2019. The top series in this panel simply adds the accrued Social Security benefits to the household net worth amounts, and by 2019 the total had risen to \$148 trillion, up from \$60 trillion in 1996.

The right-hand panel depicts the ratios of accrued Social Security benefits to the conventional total household net worth measure and to the combined measure of total net worth including Social Security wealth. Accrued Social Security benefits grew from 33% of net worth in 1996 to 39% by 2019. During the recession, as net worth fell, the relative size of accrued Social Security benefits grew about 9 percentage points. Relative to total net worth, accrued benefits grew

<sup>11</sup> See Nickerson and Burkhalter (2022) Table 3, Actuarial Note, Number 2022.1.

from 25% in 1996 to 28% in 2019. Accrued Social Security benefits are thus both large relative to net worth and as a share of the inclusive measure of total household net worth. Between 1996 and 2019, the real value of the traditional wealth measure increased 135% while accrued Social Security wealth grew 173%.

The annual FRUSG identifies the accrued benefits that are payable to workers who have reached Social Security's age of eligibility, 62. The amounts for the participants aged 62 and above have been reported since 2000 in the FRUSG's Statements of Social Insurance. Of the \$41.3 trillion in accrued Social Security benefits in 2019, \$15.3 trillion, or 37%, were payable to participants 62 years of age and above with the remaining \$26 trillion, or 63%, accrued by the current participants 61 and younger. The share of total accrued benefits payable to the participants who have reached the age of eligibility has grown in recent years as a result of the aging Baby Boom generation.

Accrued Social Security benefits are large in comparison to household net worth and as of 2019, 37% were payable to program participants who had reached Social Security's early retirement age. As will be seen, the distribution of accrued Social Security benefits across households significantly reduces measured wealth inequality and these benefits are a substantial share of middle-class wealth.

## **Data**

This study relies on the Survey of Consumer Finances (SCF) 1989 to 2019 to estimate how accrued Social Security benefits affect the distribution of household wealth and uses the public use data set linked to the summary extract of the public data.<sup>12</sup> The survey is conducted every three years, so eleven separate surveys cover the thirty-year span. The summary extract of the public data includes estimates of household's net worth and its components. In the tables and figures that follow, net worth is divided into the following components: employer sponsored retirement plans, stocks and bonds, other financial assets, home equity, and other non-financial assets.<sup>13</sup> The wealth variables used are those available in the summary extract file, except for the employer-sponsored retirement plans category. The employer-sponsored retirement plans category adds the values of the defined contribution plan variables in the summary file to estimates of accrued pensions for

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<sup>12</sup> These data sets are available at: <https://www.federalreserve.gov/econres/scfindex.htm>.

<sup>13</sup> Debt is netted out of Non-financial Assets.

current workers, accrued benefits for families currently receiving benefits, and accrued benefits expected from future pensions as described below.<sup>14</sup>

Accrued Social Security benefits are imputed to respondents and their spouses in the SCF based on their age, sex, reported earnings, current work status, and work history. The accrued Social Security benefits are derived from a Social Security Administration (SSA) public use data file. The 2006 Earnings Public-Use File (EPUF) includes annual earnings records between 1951 and 2006 for a 1 percent sample of individuals who were issued Social Security numbers prior to January 1, 2007. There are 4,384,254 unique individuals in the EPUF sample, 3,131,424 of which have earnings greater than zero in at least one year between 1951 and 2006, producing 60,326,474, annual earnings records.<sup>15</sup>

The EPUF data are delivered in two files: the demographic and the annual earnings file. The two are linkable by unique individual identification numbers. The demographic file includes the following variables in addition to the identification number year of birth, sex, total earning credits between 1937 and 1950, total credits combined for 1951 and 1952, and aggregate earnings for the years 1937 to 1950. The annual earnings file includes these variables: year, annual quarters of Social Security coverage, and annual earnings capped at the Social Security taxable maximum.

While the SCF does not include earnings histories for the respondents and their spouses, it does include reported earnings for their main jobs, their current work status (full-time, part-time, or not working) and the number of full-time years of work from the age of 18 to their age in the survey year. This last response is collected for full- and part-time workers as well as for respondents and spouses who are not working. This set of parameters are linked to similarly constructed parameters from the EPUF file.

Accrued Social Security benefits are calculated for each worker in the EPUF file based on their earnings histories. The accrued Social Security benefits are then linked to the workers in the SCF based on their reported earnings in each survey year, their work status (full-time, part-time, or not working), and their years of full-time work since the age of 18. Given the EPUF's large

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<sup>14</sup> See the SAS macro available at <https://www.federalreserve.gov/econres/scfindex.htm>, for the variables used to estimate the value of defined contribution plans. Specifically, the variables from the extract public use file are the values of individual retirement accounts, (variable IRAKH) plus thrift savings plans (variable THRIFT).

<sup>15</sup> The documentation and the Earnings Public Use data files are available on the Social Security Administration's webpage at: <https://www.socialsecurity.gov/policy/docs/microdata/epuf/>. See Compson (2011) for a description of the EPUF data. Kopczuk, Saez, and Song (2010) use lifetime Social Security earnings histories to identify income inequality and mobility since 1937. More recently, Guvenen et. al. (2017) have also used Social Security earnings histories to study lifetime income inequality.

sample size, accrued benefits are calculated by age in the survey year, sex, earnings cells, work status, and years of full-time work from the age of 18 to the survey year.<sup>16</sup>

The EPUF's longitudinal earnings records are available from 1951 to 2006. For the survey years 1989 to 2004, the accrued Social Security benefits derived from the earnings histories are directly matched to the labor market responses in the SCF for respondents and spouses. To utilize the earnings histories from the EPUF data for the survey years 2007 to 2019, the earnings histories from 2004 are converted to the future years by adjusting each year's earnings by the respective growth in the Social Security average wage. Separate retrospective work history files for workers at each age 25 to 70 for the SCF survey years 2007, 2010, 2013, 2016, and 2019 are then built and used to estimate the accrued Social Security benefits.<sup>17</sup>

### **Estimating Accrued Social Security Benefits**

Estimates of the accrued benefits for the workers in EPUF follow the methodology described in Goss (1999) and Nickerson and Burkhalter (2022).<sup>18</sup> This benefit calculation is restricted to workers' past earnings; no projection of future earnings is required for this estimate. Calculating accrued benefits begins with estimating individuals' primary insurance amounts (PIAs), or its equivalent for workers younger than the normal retirement age, based on workers' past earnings up to each survey year. The PIA is a worker's monthly benefit should he or she begin receiving benefits at the normal retirement age (NRA) for the worker's birth year.<sup>19</sup> The PIA formula is a stepwise function that translates the worker's average indexed monthly earnings (AIME) into a base benefit amount. In the case of a worker retiring at the NRA, the AIME is calculated by wage indexing past earnings, determining the highest 35 years of indexed earnings,

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<sup>16</sup> See the Appendix for further details and example earning histories, by age, sex, earnings categories, work status, and years of full-time work.

<sup>17</sup> For the survey years after 2004, the earnings histories matched to the 2004 SCF are updated using the year-to-year growth in the Social Security average wage. This means that the work histories by age, sex, earnings cells, work status, and years of full-time work remain the same apart from the across-the-board wage growth. However, as the earnings histories and associated estimates of accrued benefits are matched to the workers' labor market responses in the SCF, any growth in wage inequality is taken into account by the changing distribution of wages in the SCF.

<sup>18</sup> Both Goss (1999) and Nickerson and Burkhalter (2022) provide a full discussion of the Maximum Transition Cost.

<sup>19</sup> The NRA is the age at which workers receive 100 percent of their primary insurance amount. Between the start of the program and 2002 the NRA was 65 for workers born in 1937 and earlier. For worker born in 1938 to 1942 the NRA rose 2 months per year until it reached 66 for workers born in 1943. For birth years 1943 to 1954 the NRA is 66 but beginning with birth year 1955 the NRA will again rise 2 months per year until it reaches 67 for birth year 1960. Workers who retire early between ages 62 and the NRA receive reduced benefits relative to their PIA while workers who delay receiving benefits up to the age of 70 receive higher benefits relative to their PIA. For example, workers born in 1949 who first claimed benefits at age 62 receive 75% of their PIA, but those who wait until age 70 to claim benefits receive 132% of their PIA.

and then dividing those highest earnings by 420 ( $35 \times 12$ ).<sup>20</sup> The wage index is based on the Social Security Average Wage series maintained by the Social Security Administration.

In 2019, these average indexed earnings were translated into the PIA using the benefit formula that replaced 90% of indexed earnings up to the first bend point in the formula, \$926, 32% of any additional monthly earnings between \$926 and \$5,583 were added to the benefit, and then 15% of any earnings beyond \$5,583 were added to determine the PIA. The first and second bend points are adjusted each year by wage growth. In a given year, as average indexed wages rise, the replacement rate declines, indicating the progressive nature of the benefit formula. Workers with higher AIMEs receive higher benefits than do workers with lower AIMEs, though their replacement rate is lower. Another factor that limits the dispersion of Social Security benefits is the taxable maximum. Social Security benefits are effectively capped at the PIA resulting from the wage indexed taxable maximum. For workers turning 65 in 2019, the maximum annual benefit was \$35,355.

The computation of workers' PIAs is straightforward for workers at or above the age of eligibility, 62. For workers between the ages of 22 and 62 in the SCF survey year, an AIME and the associated PIA is calculated based on the benefit formula in the survey year. However, the number of months in the elapsed years since the age of 22 are adjusted if the years of potential work are less than 35. These workers' AIMEs are then converted to their PIAs based on the benefit formula parameters in the SCF survey year. The calculated amount is further adjusted by a factor that identifies a portion of their benefits to be received once they reach the normal retirement age for their birth year,  $NRA_{by}$ . For these workers, the factor applied to their calculated benefit is  $(age - 22)/40$ . Thus, for workers younger than 62, their PIAs are proportional to their years in the program between 22 and the NRA. However, their proportional PIAs will be received beginning in the year they reach the NRA. The benefit is adjusted to that year by the ratio of the Social Security average wage in the year the worker attains the NRA to the wage in each SCF survey year.<sup>21</sup>

Once the full or proportional PIAs are determined for each worker between the ages of 22 to 70 in each SCF survey year, the present values as of the survey year are calculated. Because

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<sup>20</sup> This description simplifies the details of the actual calculation. For workers retiring at age 62 and above, past earnings are wage indexed to age 60 based on the Social Security average wage, any earnings after age 60 up to the NRA are also included in nominal dollars in the determination of the 35 highest earnings years

<sup>21</sup> Here the benefit is adjusted by the ratio of the Social Security average wage (including only the effects of real wage growth) in the year the worker attains the NRA to the wage in each SCF survey year because the future benefits are discounted back to the survey year by the real discount rate.

Social Security benefits are inflation adjusted, the present values are calculated using the long-run real rate of return. The main results use a real rate based on the 20-year forward TIPs yield from the Federal Reserve's yield curve estimates.<sup>22</sup> An alternative, considered in the appendix, is the real rate assumed by the Social Security Trustees in producing the Trustees Report in each of the SCF survey years.

Separate income-adjusted mortality assumptions for men and women begin with the cohort life tables produced by the Social Security and are based on mortality ratios from Bosley, Morris, and Glenn (2018).<sup>23</sup> For workers younger than the NRA, the stream of future Social Security benefits is treated as a deferred annuity with no payments received between the worker's age in survey year and their cohort's NRA. All workers are assumed to begin receipt of their retirement benefits at the NRA for their birth year. This abstracts from the actual experience of different workers that include the benefit reductions for earlier retirement ages and the delayed credits for later retirements ages, however, these adjustments are roughly actuarially fair, so the assumptions used here produce a reasonable approximation.

Average accrued benefits, by age, sex, income cell, work status in the survey year, and the number of full-time work years are calculated after the accrued Social Security benefits for each worker in the EPUF are estimated. The income cells are based on the workers' incomes in the survey year. The income cells span each \$2,000 increment between 0 and the taxable maximum in each survey year. Separate averages are also made for the workers reporting no earnings and the workers reporting taxable maximum earnings each survey year. These estimates are then linked

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<sup>22</sup> Long-run real interest rate and inflation rate are from Table II.C1 in the annual Social Security Trustees Report. The Federal Reserve's nominal yield curve data are available at: <https://www.federalreserve.gov/data/nominal-yield-curve.htm> and its TIPs Yield curve data are available at: <https://www.federalreserve.gov/data/tips-yield-curve-and-inflation-compensation.htm>. See the appendix for the nominal and real interest rate assumptions used for each SCF survey year.

<sup>23</sup> See the appendix for a discussion of how the income adjusted birth cohort mortality tables were estimated based on the relative mortality ratios from Bosley, Morris, and Glenn (2018). The period life and cohort life tables compatible with each Trustees Report are available at: <https://www.ssa.gov/oact/HistEst/PerLifeTablesHome.html> and <https://www.ssa.gov/oact/HistEst/CohLifeTablesHome.html>, respectively. To arrive at the expected value of each worker's accrued benefits, the present value of a series of their benefit payments from the NRA to each age between the NRA and 119 is multiplied by the conditional probability of death at each age. The income adjusted conditional probabilities of death at each age between the workers' age in the survey year and 119 are derived from the income-adjusted cohort life tables. The Social Security benefits are thus treated as a deferred annuity with no payments received between the worker's age in survey year and their cohort's NRA.

to workers in the SCF by age, sex, and the identical income cells as used to summarize the EFUF results, their work status, and their years of full-time work from 18 to their current age.<sup>24</sup>

Ultimately, accrued Social Security benefits are assigned to households in the SCF as follows. For respondents and their spouses who report the current receipt of Social Security benefits in the SCF, the present values of their benefits are calculated using the income-adjusted birth cohort mortality tables and the 20-year forward yield curve real discount rate in the survey year. Households in which either the respondent or spouse or both do not report receipt of benefits are assigned the imputed estimates based on the EPUF data.

### **Estimating Accrued Pension Benefits**

The SCF provides information on pension plans associated with current employment, on pension benefits respondents and their spouses are currently receiving, and on future pension benefits expected from past employment relationships other than one's current employer. However, the pension wealth associated with these three categories of pensions is not included in the public use SCF, nor are they available in the summary extract file. Estimates of expected pension wealth for each category are calculated based on survey responses as outlined below.

Accrued defined benefit pension wealth for current workers is estimated if workers said they had a traditional defined benefit pension plan. The workers also identify their years of work with the employer, their current earnings from their main job, when they expect to begin receiving their pension benefits, and the benefit amount they expect to receive. An annual retirement benefit is calculated based on workers' reported years of work with the employer, a multiple for each year of service and their current earnings from their main job.<sup>25</sup> If, however, the worker is within five years of the retirement age identified in the SCF, their annual benefit is set to the benefit amount identified in the survey. Benefit payments are assumed to begin at the retirement age identified in the survey, in cases in which the survey benefit amount is used, or at 65 if the calculated amount is used. The annual future benefits are discounted to the present using the nominal discount rate which is the 20 year forward nominal interest rate from the Federal Reserve's nominal yield curve estimates averaged for each SCF survey year. As with the Social Security benefits, the expected present values are calculated using the income adjusted cohort life tables.

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<sup>24</sup> Finally, if there was no match between workers in the SCF based on their age, earnings cell, current work status, and years of full-time work, accrued Social Security benefits were predicted based on regression results from within age, sex, work status, and survey year regressions. See appendix for additional details.

<sup>25</sup> For the estimates in this study, the multiple is set to 2.3% for each year of work with the current employer.



This calculation relies on past information and does not project possible future earnings and continued participation in the pension plan. This valuation concept applied to a pension plan is known as the pension's Accumulated Benefit Obligation (ABO). If the pension plan is shut down immediately, or terminated, the ABO is an estimate of the amount it would owe its current participants. This is the same accrued concept used in calculating accrued Social Security benefits.<sup>26</sup>

Expected present values of pension benefits for respondents and their spouses who are currently receiving benefits are estimated similarly to the way expected Social Security benefits for current recipients are estimated. The SCF asks whether current benefit payments are inflation protected. For cases in which the benefits are inflation protected, the stated benefit payments are discounted to the present using the real discount rate. The nominal discount rate based on the SCF survey year is used in the cases in which benefits are not inflation protected.

Calculating the present value of expected future pension payments follows the same method used for valuing the pension benefits expected from current employment. The SCF provides information on the amounts respondents and their spouses expect to receive from the pension and at what age they plan to begin receipt of the payments. Here, the nominal discount rate is used to calculate the present value because no information about inflation protection for future pensions is provided in the SCF. As with the other annuity payments, the expected present values of currently received pensions and future pensions are calculated using the income adjusted cohort life tables.

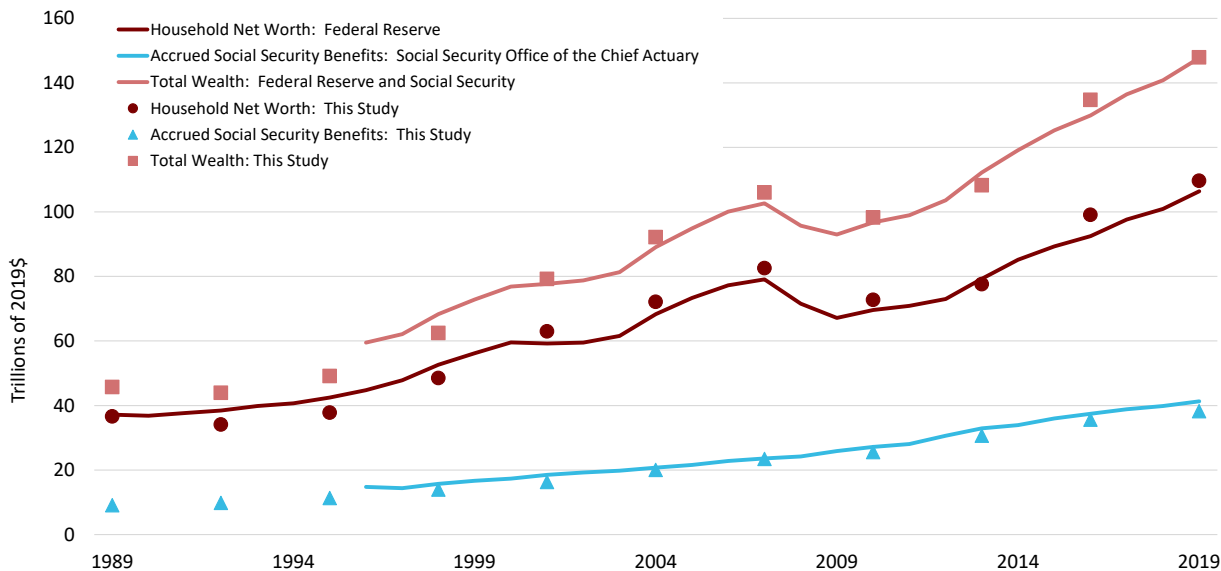
## **Results**

Figure 2 provides a comparison of the aggregate net worth and the accrued Social Security benefits based on the previously described methods and respective series presented in Figure 1 from the Federal Reserve's distributional accounts and from the Social Security Administration. The calculated net worth amounts combine the three categories of defined benefit wealth with the values of defined contribution accounts, stocks and bonds, other financial assets, home equity, and other non-financial assets. Debt is netted out of the non-financial asset amount. Applying the weights from the SCF to individual household responses yield the aggregate calculated net worth and accrued Social Security benefits.

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<sup>26</sup> See Novy-Marx and Rauh (2011) for a discussion of different pension obligation concepts and calculations.

Figure 2. Estimates Comparison: Total Wealth, Net Worth, and Accrued Social Security Benefits



Sources: Federal Reserve, Distributional Financial Accounts of the United States, and Social Security Administration, Office of the Actuary, Actuarial Notes, Numbers 2022.1 and 2009.1. “Calculated” net worth, accrued Social Security, and total wealth from Survey of Consumer Finances. Employer Sponsored Retirement plans include estimated accrued defined benefit amounts for current workers who have traditional pensions and estimated accrued benefits based on current and future pensions. Accrued Social Security benefits estimated from SCF responses and estimates based on Social Security earnings histories. The PCE price deflator is used to adjust the two accrued Social Security benefit series and calculated defined benefits.

The figure illustrates that the calculated net worth and accrued Social Security benefit series are similar in size and trend to the series from the Federal Reserve and from the Social Security Actuarial publication. However, the two accrued Social Security benefit series are not directly comparable for two primary reasons. First, the benefits calculated for this study do not include disability or survivors’ benefits. Second, the discount rate used here is the 20-year forward rate from the TIPs yield curve while the rate used by the Social Security Actuaries is based on the assumptions in the Trustee Reports. The real discount rates from the TIPs yield curve are higher than the real discount rates assumed in the Trustees Reports in the early years of our study period and are lower than the rates assumed in the Trustees Reports in later years. This secular decline in the real interest rates has been widely noted in various commentary and studies of financial markets. The impact of this decline in real discount rates (relative to the Trustees’ assumptions) is to increase the growth rate in accrued benefits compared to estimates using the Trustees’ assumptions.<sup>27</sup> The estimated accrued benefits here grew 174% between 1998 and 2019 compared

<sup>27</sup> Prior to 1999 the real discount rates are estimated. See appendix A-4.

to 163% based on the actuaries' estimates.<sup>28</sup> The calculated net worth amounts for the eleven survey years from 1989 to 2019 are on average only 0.2% lower than the values from the Federal Reserve's distributional accounts and range from 7.2% higher in 2016 to 11.2% lower in 1992.

Table 1. Average Wealth Components by Net Worth Categories in 1989, 2004, and 2019 in 2019\$  
Households sorted by Net Worth

Age of Head	Net Worth Percentiles	Accrued Social Security	Employer-Sponsored Retirement	Stocks and Bonds	Other Financial	Home Equity	Other Non-Financial	Net Worth	Total Wealth
<b>1989</b>									
25+	All	103,571	72,466	32,452	71,957	98,446	142,728	418,049	521,620
25+	>0 & <90	95,568	41,413	5,186	29,192	67,895	27,593	171,278	266,846
25+	>=90	175,517	351,635	277,578	456,421	373,103	1,177,811	2,636,548	2,812,065
<b>2004</b>									
25+	All	189,627	161,295	57,839	114,155	149,394	199,200	681,883	871,510
25+	>0 & <90	173,223	92,225	6,440	39,154	92,635	39,150	269,604	442,827
25+	>=90	337,202	782,678	520,248	788,896	660,022	1,639,088	4,390,933	4,728,134
<b>2019</b>									
25+	All	312,609	247,917	62,116	178,073	154,179	253,678	895,962	1,208,571
25+	>0 & <90	282,076	126,690	5,818	38,636	90,768	28,758	290,670	572,746
25+	>=90	587,370	1,338,824	568,733	1,432,849	724,813	2,277,703	6,342,922	6,930,292

The composition of net worth and total wealth for all households headed by respondents 25 years of age and older for the survey years 1989, 2004, and 2019 are presented in Table 1. The composition for all households is further divided into those that fall into the net worth percentiles up to the 90<sup>th</sup> percentile and those that make up the top 10% of households. Average real net worth across all households, not including Social Security, grew 114% from 1989 and 2019. For households below the 90<sup>th</sup> percentile, net worth grew 70% and for households in the top 10% of the net worth distribution, it grew 141%. Average accrued Social Security benefits grew 202% for all households, 195% for households up to the 90<sup>th</sup> percentile and 235% for households in the top 10%. The importance of Social Security varies considerably across the net worth distribution. In 2019, average accrued Social Security benefits comprised 26% of average total wealth, including Social Security, for all families, but were 49% of the total wealth for the bottom 90% of families, and only 8% of total wealth for the top 10% of families. Total wealth, including Social

<sup>28</sup> See appendix A-4 for a comparison of the aggregate accrued Social Security benefits based on discounting using the 20-year forward yield curve estimates and discounting using the assumptions in the Trustee Reports.

Security, grew 132% for all households from 1989 to 2019, 115% for the bottom 90% of households, and 146% for the top 10% of households.

Table 2 presents the average wealth components by age groups and by net worth percentiles for 1989 and 2019. The first three rows in the top and bottom panel again reflect the results for all households headed by individuals aged 25 and above. For families headed by individuals in their prime earnings years, 25 to 54, net worth, excluding Social Security, grew 70% between 1989 and 2019, but by only 20% for families below the 90% percentile, and by 100% for families in the top 10%. Though net worth only grew 20% for families below the 90% percentile, real accrued Social Security benefits grew by 182%, resulting in an 78% increase in total wealth. In 2019, accrued Social Security benefits for families below the 90<sup>th</sup> percentile were 29% greater than their net worth position. Among the four age groups, this group had the lowest growth in real net worth and total wealth between 1989 and 2019.

For all families headed by individuals nearing retirement age, those 55 to 64, net worth grew 102% from 1989 to 2019 and by 138% for families in the top 10%. Real accrued Social Security benefits grew 173% for all families in this age group and by 210% for families in the top 10%. For families headed by a near-term retiree in the bottom 90% of the distribution, accrued Social Security benefits are about the same size as the conventional measure of net worth and are half of their total wealth in 2019. For this age group, Social Security benefits were 7% of the total wealth for the top 10%, 40% the size of employer sponsored retirement plans, and were the smallest asset category among those listed as of 2019.

In 2019, families headed by a respondent between 65 and 74 years of age had net worth and total wealth positions comparable to near-term retirees. Social Security was a smaller share of total wealth, at 23%, for all families in this age group compared to 28% for the near-term retirees. Relative to the other age groups, this group had the highest growth in net worth and total wealth, growing by 125% and 138%, respectively. This group's growth in accrued Social Security benefits at 191% was the same as the growth for families headed by individuals 25-54 years of age.

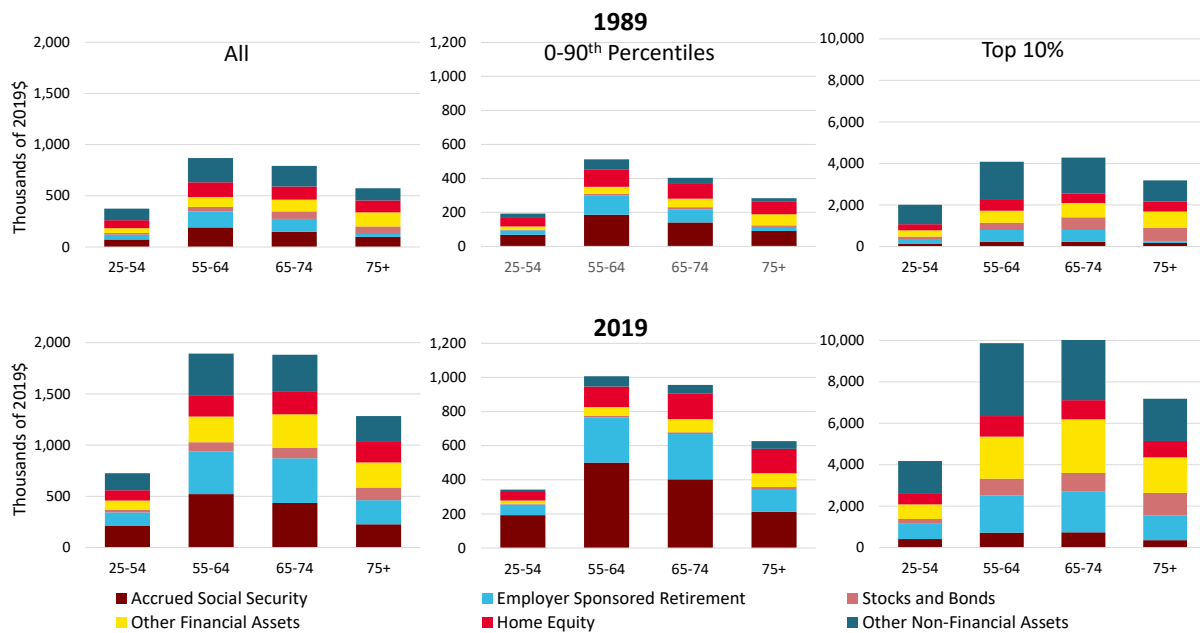
Families headed by a respondent 75 years of age or above had, on average, a real net worth position of over \$1 million in 2019, 2.24 times the amount held by this age group in 1989. In 2019, Social Security was 21% the size of net worth and comprised 18% of total wealth for all families in this group. It was 34% of total wealth for the families below the 90<sup>th</sup> percentile and 5% of total wealth for the top 10% of families.

Table 2. Average Wealth Components by Age Group and Net Worth Categories in 1989 and 2019 in 2019\$  
Households sorted by Net Worth

<b>1989</b>									
Age of Head	Net Worth Percentiles	Accrued Social Security	Employer-Sponsored Retirement	Stocks and Bonds	Other Financial	Home Equity	Other Non-Financial	Net Worth	Total Wealth
25+	All	103,571	72,466	32,452	71,957	98,446	142,728	418,049	521,620
25+	>0 & <90	95,568	41,413	5,186	29,192	67,895	27,593	171,278	266,846
25+	>=90	175,517	351,635	277,578	456,421	373,103	1,177,811	2,636,548	2,812,065
25-54	All	73,822	47,882	14,926	47,444	78,500	111,944	300,697	374,519
25-54	>0 & <90	68,470	26,258	3,510	19,217	54,929	20,599	124,513	192,983
25-54	>=90	121,941	242,282	117,556	301,214	290,406	933,148	1,884,606	2,006,547
55-64	All	191,190	157,677	43,410	95,752	144,055	236,601	677,496	868,686
55-64	>0 & <90	186,587	112,307	9,755	41,714	102,746	58,674	325,196	511,782
55-64	>=90	232,617	565,954	346,262	582,030	515,784	1,837,724	3,847,754	4,080,372
65-74	All	150,023	124,595	73,510	114,301	128,838	200,786	642,030	792,053
65-74	>0 & <90	141,412	75,409	13,420	50,246	91,985	31,284	262,344	403,756
65-74	>=90	227,416	566,655	613,575	689,997	460,058	1,724,205	4,054,491	4,281,907
75+	All	98,679	28,967	73,687	137,761	116,751	118,518	475,684	574,363
75+	>0 & <90	90,897	23,386	9,918	65,057	76,180	18,085	192,626	283,523
75+	>=90	168,431	78,992	645,316	789,488	480,426	1,018,799	3,013,021	3,181,453
<b>2019</b>									
Age of Head	Net Worth Percentiles	Accrued Social Security	Employer-Sponsored Retirement	Stocks and Bonds	Other Financial	Home Equity	Other Non-Financial	Net Worth	Total Wealth
25+	All	312,609	247,917	62,116	178,073	154,179	253,678	895,962	1,208,571
25+	>0 & <90	282,076	126,690	5,818	38,636	90,768	28,758	290,670	572,746
25+	>=90	587,370	1,338,824	568,733	1,432,849	724,813	2,277,703	6,342,922	6,930,292
25-54	All	215,011	129,063	26,036	89,451	99,501	166,910	510,960	725,971
25-54	>0 & <90	193,391	61,832	3,103	20,240	55,144	9,099	149,419	342,810
25-54	>=90	409,512	733,898	232,347	712,102	498,550	1,586,652	3,763,550	4,173,062
55-64	All	522,281	417,042	89,787	249,922	208,045	406,280	1,371,076	1,893,357
55-64	>0 & <90	500,205	264,514	9,535	52,202	120,478	60,188	506,917	1,007,122
55-64	>=90	720,899	1,789,377	811,831	2,028,864	995,907	3,520,170	9,146,148	9,867,047
65-74	All	435,942	436,003	99,568	329,753	226,282	354,784	1,446,390	1,882,332
65-74	>0 & <90	402,517	265,843	9,632	77,653	148,502	51,886	553,516	956,033
65-74	>=90	735,590	1,961,442	905,815	2,589,757	923,561	3,070,180	9,450,754	10,186,344
75+	All	226,524	235,616	124,652	244,013	208,147	245,249	1,057,677	1,284,201
75+	>0 & <90	212,497	127,872	17,225	80,801	143,017	45,206	414,120	626,617
75+	>=90	352,396	1,202,425	1,088,625	1,708,553	792,578	2,040,285	6,832,467	7,184,864

Figure 3 depicts the values from Tables 2 grouped by net worth percentiles within the age groups. The middle panel illustrates the importance of Social Security wealth for the bottom 90 percentiles within each age group. While home equity and employer sponsored retirement plans are also large wealth components at ages 55 and above, Social Security is the dominant wealth category for households in the bottom 90 percentiles who are approaching retirement or are in the first decade of retirement. As indicated in the panel for the top 10% of households in each age group, Social Security is a relatively small component of their total wealth. At the top of the wealth distribution, other non-financial assets, net of debt, is the largest wealth component. Among the top net worth families in the 65-74 age group, other non-financial assets, primarily business equity and nonresidential real estates, comprise a third of their wealth in 2019. Other financial assets also account for a substantial share of net worth for these families at 27% in 2019.

Figure 3. Mean Wealth Components by Age of Household Head and Net Worth Percentiles in 1989 and 2019

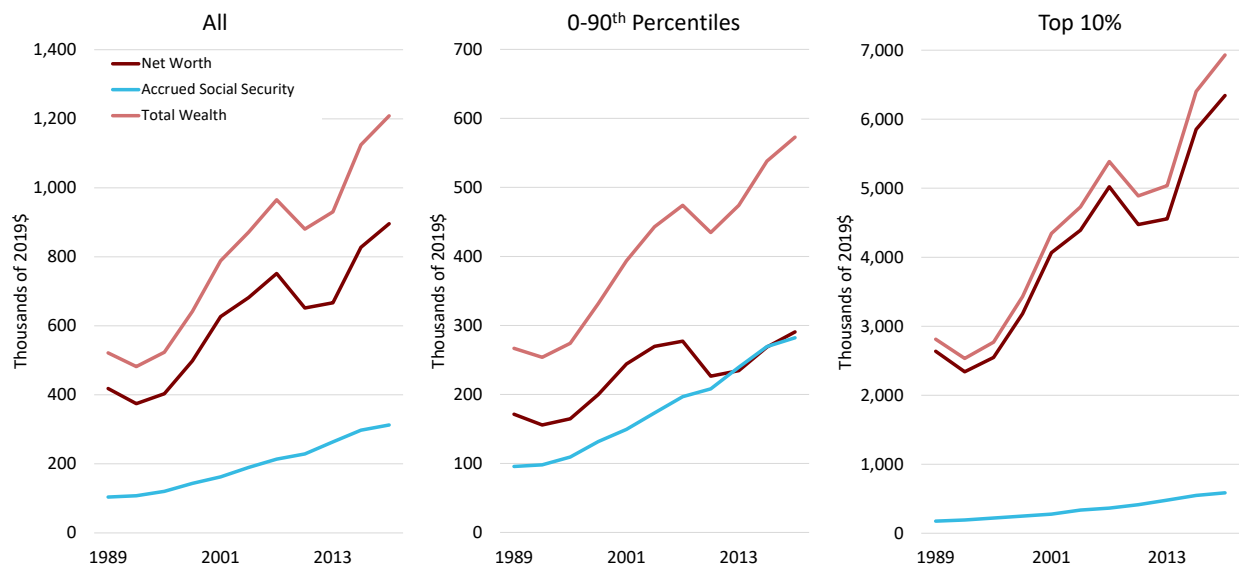


Sources: Survey of Consumer Finances. Employer Sponsored Retirement plans include estimated accrued defined benefit amounts for current workers who have traditional pensions and estimated accrued benefits based on current and future pensions. Accrued Social Security benefits estimated from SCF responses and estimates based on Social Security earnings histories. Percentiles are based on net worth.

Figure 4 summarizes the real average net worth, accrued Social Security benefits, and total wealth series for all families and by wealth categories from 1989 to 2019. As has been established already, Social Security wealth has become the dominant wealth component for families below

the 90<sup>th</sup> percentile in the wealth distribution. For this group of families, accrued Social Security benefits grew from 36% to 51% of their total wealth between 1989 and 2013. In 2016 and 2019 they remained close to half of these families’ total wealth. For all families, accrued Social Security benefits were 20% of total wealth in 1989 and 26% in 2019. Among families in the top 10% of the wealth distribution, accrued Social Security benefits were 6% of total wealth in 1989 and 8% in 2019.

Figure 4. Average Net Worth, Accrued Social Security Benefits, and Total Wealth



Sources: Survey of Consumer Finances. Net worth includes estimated accrued defined benefit amounts for current workers who have traditional pensions and estimated accrued benefits based on current and future pensions. Accrued Social Security benefits estimated from SCF responses and estimates based on Social Security earnings histories. Total wealth is the sum of net worth and accrued Social Security benefits. Percentiles are based on net worth.

As the results in this section make clear, real net worth, accrued Social Security benefits, and total wealth grew across these wealth categories over the past 30 years, but the growth has been higher at the top of the distribution. The results also indicate that accrued Social Security benefits, owing to its faster growth, have grown as a share of wealth for all wealth categories. Additionally, accrued Social Security benefits, while higher at the top of the net worth distribution, are less dispersed than are the other forms of wealth. Including Social Security in a comprehensive measure of wealth will therefore reduce total wealth inequality relative to inequality based on net worth alone. This next section identifies the degree by which accrued Social Security benefits decrease wealth inequality in each survey year and over time.

## **Social Security and Wealth Inequality**

Table 3 provides evidence of how Social Security affects the distribution of household wealth. The top panel presents the shares of net worth and total wealth held by the top 10% of households within each age group, where households are again sorted by the conventional measure of net worth. Across all households, the share of net worth held by the top 10% of families grew from 63.1% in 1989 to 70.8% in 2019, or 7.7 percentage points. However, once accrued Social Security benefits are included, their share of total wealth in 1989 dropped to 54.0% and to 57.3% in 2019, for 3.3 percentage points. Including Social Security in the wealth concept in 2019 reduces the wealth share of the top 10% by 13.5 percentage points and from 1989 to 2019, the increase in the wealth share is less than half of the increase in the wealth share based on net worth alone.

The remaining columns indicate that wealth concentration based on net worth grew the most for the prime working-age population and for the families headed by someone nearing retirement. Among families headed by individuals 25 to 54 years of age including Social Security benefits in the comprehensive wealth measure reduces the share of wealth held by the top 10% from 73.7% to 57.5%, or 16.2 percentage points in 2019. In all age groups and in each year, the concentration of wealth is substantially reduced when accrued Social Security benefits are included in the total wealth measure, as is the growth in wealth concentration over time.

The bottom panel of the table identifies the shares of net worth and total wealth held by the top 5% of families based on their net worth. The top 5% of families hold the bulk of the net worth and total wealth at and above the 90<sup>th</sup> percentile. In 2019, these families held 58.4% of total net worth and 45.7% of total wealth. This means that the families from the 90<sup>th</sup> to just below the 95<sup>th</sup> percentile held 12.4% and 11.6% of net worth and total wealth respectively. Between 1989 and 2019, the percentage of net worth held by the top 5% of families grew from 49.8% to 58.4% or 8.6 percentage points. The percentage of total wealth held by the top 5% of families grew from 41.7% to 45.7% or 4.0 percentage points. The inclusion of Social Security again reduces both the concentration of wealth and the growth in wealth concentration over time. As in the top panel, wealth concentration has grown the most for the families headed by individuals in their prime earning years followed by families headed by someone nearing retirement age.



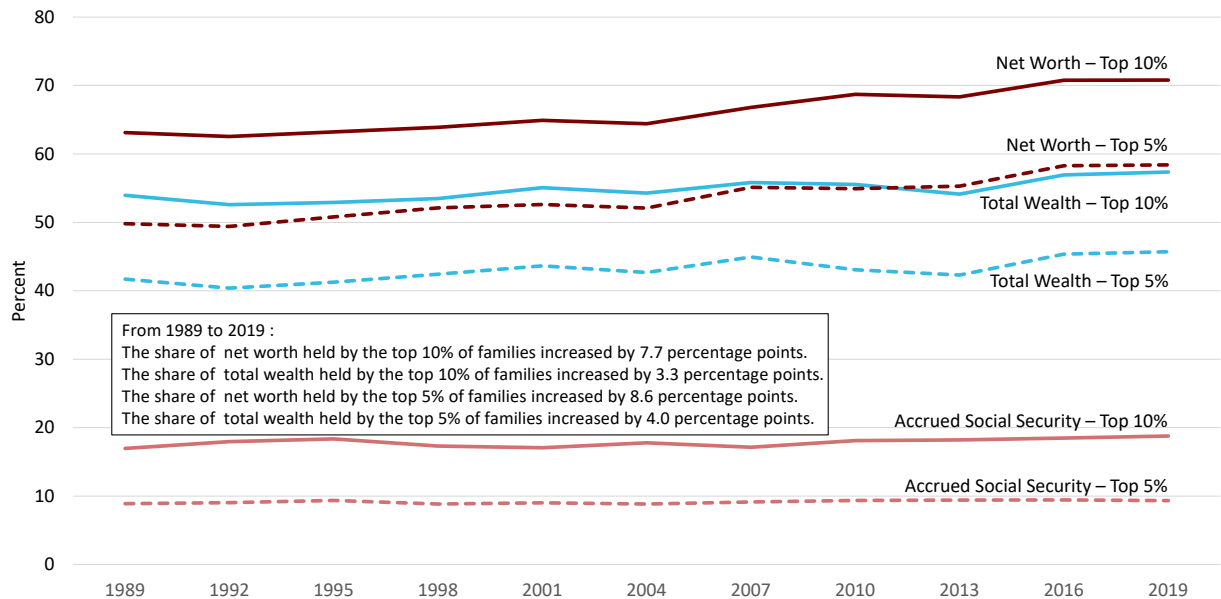
Table 3. Top 10% and Top 5% of Net Worth and Total Wealth  
Households sorted by Net Worth

Top 10%										
Year	25+		25-54		55-64		65-74		75+	
	Net Worth	Total Wealth	Net Worth	Total Wealth	Net Worth	Total Wealth	Net Worth	Total Wealth	Net Worth	Total Wealth
1989	63.1	54.0	62.7	53.6	56.9	47.0	63.2	54.1	63.6	55.6
1992	62.6	52.6	64.6	54.5	56.8	46.1	58.5	48.4	55.7	47.9
1995	63.2	52.9	63.9	53.1	57.5	46.3	61.8	51.7	59.8	51.8
1998	63.9	53.5	63.9	52.9	63.9	52.1	59.5	50.1	56.5	49.2
2001	64.9	55.1	65.1	54.4	63.7	52.8	61.7	52.8	58.5	52.7
2004	64.4	54.3	67.1	55.6	58.8	48.6	59.2	49.7	57.0	50.2
2007	66.8	55.8	67.0	55.1	63.5	51.6	64.8	54.2	61.9	55.4
2010	68.7	55.5	73.3	57.3	61.8	48.9	61.0	49.7	60.5	52.5
2013	68.3	54.1	72.3	54.9	62.1	46.9	61.4	50.7	62.7	53.5
2016	70.8	56.9	74.3	56.3	66.9	52.6	62.6	50.8	64.8	56.9
2019	70.8	57.3	73.7	57.5	66.7	52.1	65.5	54.3	64.8	56.1
Δ 1989-2019	7.7	3.3	11.0	3.9	9.8	5.1	2.3	0.2	1.2	0.5
Top 5%										
1989	49.8	41.7	48.9	40.8	43.4	35.2	49.9	41.9	51.7	44.4
1992	49.4	40.4	51.6	42.2	44.3	35.1	46.2	37.4	43.9	36.9
1995	50.8	41.3	50.8	41.0	46.9	36.6	50.5	41.2	48.8	41.3
1998	52.1	42.4	51.5	41.4	52.1	41.6	48.2	39.6	45.2	38.6
2001	52.6	43.6	52.1	42.5	51.0	41.4	49.9	42.0	46.8	41.2
2004	52.1	42.7	55.0	44.3	46.8	37.9	48.8	40.0	44.9	39.0
2007	55.1	44.9	55.1	44.1	50.9	40.4	51.6	42.3	52.0	45.8
2010	54.9	43.1	60.2	45.3	47.8	36.9	49.0	38.9	48.9	41.8
2013	55.3	42.3	59.2	43.1	48.8	35.7	48.8	39.3	52.6	43.8
2016	58.3	45.4	62.1	45.0	54.2	41.5	50.4	39.8	53.3	46.2
2019	58.4	45.7	62.2	46.7	52.7	40.0	53.6	43.2	52.8	45.0
Δ 1989-2019	8.6	4.0	13.3	5.9	9.3	4.8	3.7	1.3	1.1	0.6

The net worth and total wealth shares for the top 10% and top 5% of all families along with their respective shares of accrued Social Security benefits are graphed in Figure 5. The solid lines depict the three series for the top 10% while the dotted lines depict the series for the top 5%. The two total wealth series have lower slopes than do the net worth series as has been noted from the Table 3 results. As expected, the shares of Social Security wealth held by the top 10% and top 5% of families were quite stable over time. The share held by the top 10% grew from 17.0% in 1989

to 18.8% in 2019 or 1.8 percentage points and averaged 17.8%. The share of accrued benefits held by the top 5% grew from 8.9% to 9.3%, 0.4 percentage points, and averaged 9.2%.

Figure 5. Shares of Net Worth, Accrued Social Security Benefits, and Total Wealth Held by the Top 10% and Top 5% of Families



Sources: Survey of Consumer Finances. Net worth includes estimated accrued defined benefit amounts for current workers who have traditional pensions and estimated accrued benefits based on current and future pensions. Accrued Social Security benefits estimated from SCF responses and estimates based on Social Security earnings histories. Total wealth is the sum of net worth and accrued Social Security benefits. Percentiles are based on net worth.

## Conclusion

Social Security is an essential component of most families’ retirement plans, comprising a substantial share of the anticipated resources on which they will rely as they age. However, Social Security is not included in conventional wealth measures, based on the idea that workers do not have a legal claim to the receipt of the benefits. The legal claim criterion is appropriate in a strict legal accounting of wealth, but not in a decision on the economic idea of wealth. The economic discussion of wealth inequality requires the consideration of how the anticipated benefits from Social Security and Medicare impact workers’ lifecycle savings decisions, how they are distributed across different wealth categories, and how the distribution of these benefits has changed overtime.

This study examines the role of Social Security benefits in any discussion of wealth inequality. As pointed out above, the Social Security wealth measure adopted here is based on workers’ accrued benefits from past participation in the program, a measure comparable in concept

to accrued pension wealth of defined benefit plans. This measure of wealth as the value of accrued Social Security benefits follows the methodology described for the calculation of the Social Security Actuaries' annual estimates of the maximum transition costs. Pension benefits for workers in the SCF covered by a defined benefit plan, for current pensioners, as well as workers expecting future pensions other than the pension from their current jobs, are also based on the accrued benefit concept.

Inclusion of accrued Social Security benefits in a comprehensive wealth measure substantially reduces the concentration of top wealth shares relative to the concentration based on conventional wealth measures. This occurs because accrued Social Security benefits are much more evenly distributed than are conventional components of families' net worth. For families below the 90<sup>th</sup> percentile in the net worth distribution, accrued Social Security benefits are comparable in size to the conventional measure of net worth, and accounted for 49% of their total wealth in 2019. But for families in the top 10%, accrued Social Security benefits only accounted for 8% of their total wealth in 2019.

Families in the top 10% of the conventionally measured wealth distribution (based on their net worth) saw their share of wealth grow from 63.1% to 70.8%, or by 7.7 percentage points, between 1989 and 2019. In contrast, these families held a much lower share of accrued Social Security benefits, growing modestly from 17.0% to 18.8%, over the same period. When these accrued benefits are included in the comprehensive wealth measure used here, the share of total wealth held by the top 10% declines markedly, to 54.0% in 1989 and to 57.3% in 2019. Further, while the concentration of total wealth did grow over this period, the wealth share of the top 10% only grew 3.3 percentage points, or by less than half of the growth in inequality calculated from the less comprehensive conventional wealth measure. Consideration of Social Security clearly reduces the measured concentration of wealth at the top of the distribution at a point in time and the growth in top wealth shares over time.

These results point to the importance of accrued Social Security wealth in understanding the distribution of total wealth. Incorporating Medicare "wealth" would further reduce measures of wealth concentration and its growth, given the size of Medicare benefits and their rapid growth over the past 30 years. While accrued Social Security and Medicare benefits are not assets in the legal sense, they certainly qualify as assets in the economic sense. It is critical that policy

interventions aimed at addressing wealth inequality recognize the role these programs have played in producing the evolving wealth distribution.

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## Appendix

### A-1. Income Adjusted Life Tables

Numerous studies have identified and quantified the relationship between income and longevity. In general, the studies have found that higher income is associated with longer lives, that longevity gains for men have outpaced the longevity gains for women even as women's conditional longevity at each age remains above the longevity for men. Additionally, the relationship between income and longevity is stronger for men than it is for women. Some of the studies have found that the longevity differential between higher and lower income individuals has grown over time and with successive birth cohorts.<sup>29</sup>

Prominent among recent studies is Chetty et. al. (2016). The authors link tax return data to Social Security Administration death records for the years 1999 to 2014 to identify how death rates are related to income. Given that the authors can link 1.4 billion tax returns to death records, their study provides reliable estimates of the overall relationship between income and longevity, as well as estimates for geographic locations. The study is widely cited, and its results have been incorporated into a range of studies. Their study identifies the conditional life expectancy age 40 separately for men and women by household income percentiles for the years 2001 to 2014.

The authors find that for both men and women, higher income is positively related to longer life expectancies. They also find that the gradient in the relationship between location in the income distribution and life expectancy is steeper for men than it is for women. Between 2001 and 2014, the authors find that longevity inequality grew. They found that the longevity of low-income individuals and changes in longevity varied by geography. Longevity of low-income individuals was also negatively associated with smoking behavior in the geographic area, but positively related to the fraction of immigrants and college graduates and higher government expenditures.

Two studies by researchers at the Social Security Administration provide estimates of how the relationship between income and longevity has changed over time. Waldron (2007) estimated how life expectancy changed over time for male workers born between 1912 and 1941 based on whether they were in the top or bottom half of the earnings distribution, where earnings are based on Social Security covered earnings at ages 45 to 55. Waldron found that the longevity gains for workers in the top half of the earnings distribution rose more rapidly than the gains for those in the

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<sup>29</sup> See Goda, Shoven, and Nataraj (2011) for estimates of the effects of income on the progressivity of Social Security.

lower half of the distribution. She estimated that life expectancy at age 60 for men in the top half of the income distribution grew from 18.9 years for workers born in 1912 to 25.4 years for workers born in 1941, or 6.5 years. However, for the men in the bottom half of the income distribution, life expectancy at age 60 grew from 17.7 years for workers born in 1912 to 19.6 years for workers born in 1941, or only 1.9 years. For male workers born in 1912, the longevity gap between workers in the top and bottom halves of the income distribution was 1.2 years but rose to 5.8 years for the workers born in 1941.

Bosley, Morris, and Glenn (2018) track the income/longevity relationship by age groups for the 5-year intervals from 1995 to 2015. They identify the relative mortality ratios by quintiles in the distribution of workers' average indexed monthly earnings, or AIMEs. A worker's AIME is based on the average of wage-indexed earnings over the worker's 35 highest earnings years, thus measuring workers' lifetime earnings. The authors identify the relative mortality ratios for five age groups, 62-64, 65-69, 70-74, 75-79, and 80-84. The authors find that longevity increases with one's lifetime income and that this relationship is more pronounced for male workers than it is for female workers. Mortality ratios based on AIME quintile are found to narrow at higher ages. They also find that while the time trend in the mortality ratios remains relatively constant over the 20 years they consider, some of the longevity advantages of the higher quintiles are lessened and that the mortality ratios for the bottom quintiles increase in recent years.

Here, the Bosley, Morris, and Glenn (2018) estimates are used to income-adjust the Social Security Administration's life tables to produce income-adjusted cohort life tables.<sup>30</sup> The mortality ratios from Bosley, Morris, and Glenn (2018) for the five age groups and quintiles are projected back to 1970 and forward to 2100. The mortality ratios by age are also projected forward to age 119, assuming convergence in the income adjustment by age 90, and back to age 20 assuming convergence at the outset of workers' years in the workforce. The respective adjusted survival curves are assigned to individuals in the EPUF earnings file extract for each survey based on their location in the distribution lifetime earnings within their age group. Lifetime earnings are proxied by the estimate of their accrued Social Security wealth estimated using the unadjusted cohort life tables.

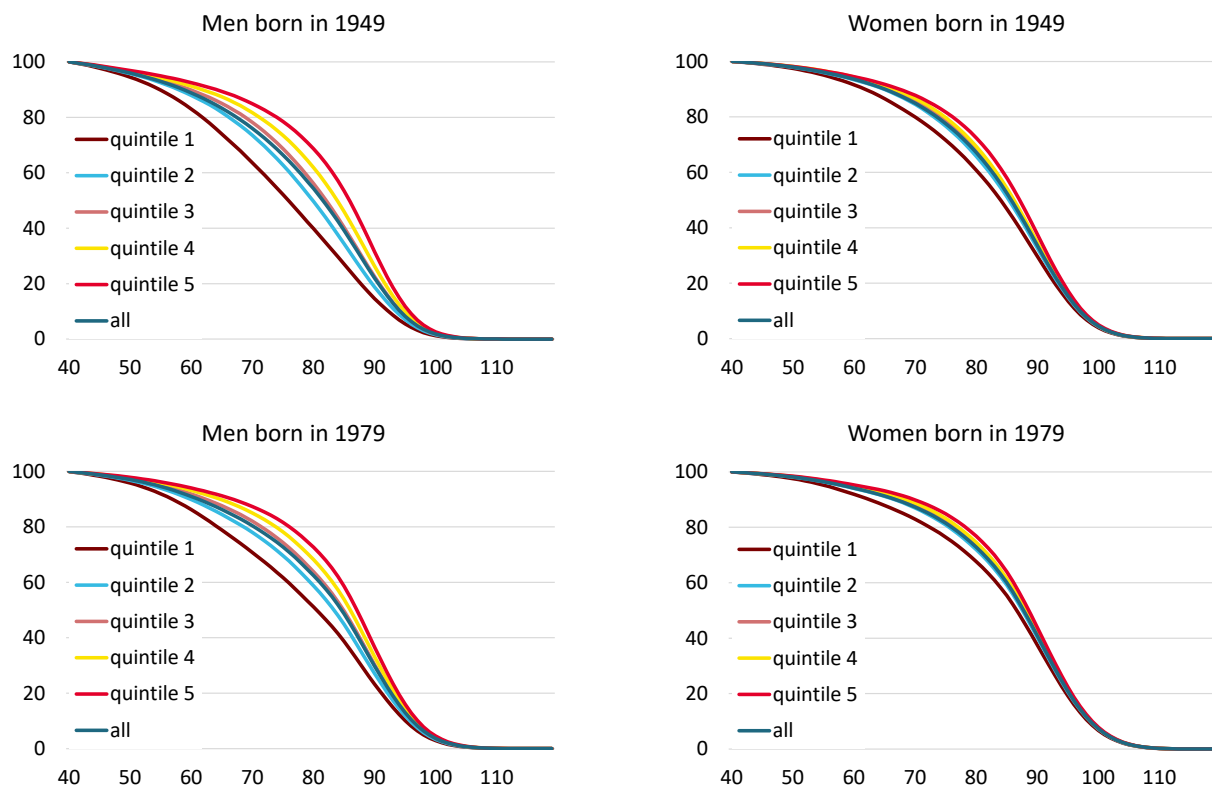
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<sup>30</sup> The Social Security Office of the Chief Actuary publish period life and cohort life tables compatible with each Trustees Report are available at: <https://www.ssa.gov/oact/HistEst/PerLifeTablesHome.html> and <https://www.ssa.gov/oact/HistEst/CohLifeTablesHome.html>, respectively.



As examples of the income adjusted life tables, the four graphs in Figure A-1 present the cohort life survival curves for 40-year-old men and women in 1989 and 2019 (birth cohorts 1949 and 1979). Women’s survival probabilities to higher ages are greater than men’s and the dispersion in women’s survival based on their earnings histories is less than the dispersion for men. The survival probabilities for each quintile for men and women increase from the 1949 to 1979 birth year given that increased longevity is forecasted in the Social Security actuaries’ baseline cohort life table projections. The gradual narrowing in the dispersion based on income seen in the estimates for the 1979 birth year follows from the narrowing found by Bosley, Morris, and Glenn (2018) and assumed continued narrowing in later years.

Figure A-1. Income-Adjusted Cohort Survival Curves for 40-Year-Old Men and Women in 1989 and 2019



## **A-2. Accrued Social Security Benefits by Age, Sex, and by Income, Work Status and Work History in Survey Year**

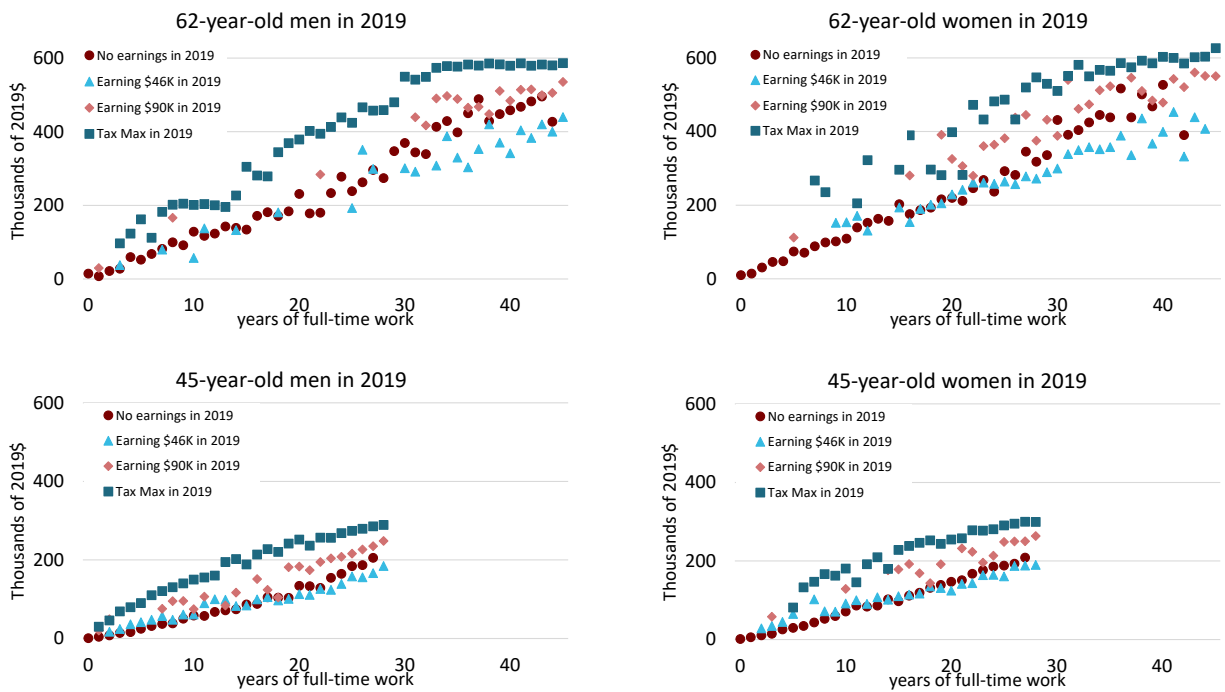
The expected net present value of accrued Social Security benefits is calculated for each worker in the EPUF for earnings up to each SCF survey year. These expected accrued benefits are then matched to the workers in the SCF based on parameters available in both data files: age, sex, current earnings, current work status, and years of full-time work since the age of 18. The earnings histories in the EPUF are available for the years 1951 to 2006. For the SCF survey years 1989-2004, the earnings histories and the associated estimates of accrued Social Security benefits are taken directly from the EPUF. For each survey year 1989, 1992, 1995, 1998, 2001, and 2004 a separate extract file from the EPUF is built. Expected accrued benefits are estimated for the workers, from 25 to 70 years of age, in each extract file corresponding to the SCF survey years.

For the SCF survey years 2007 to 2019, the EPUF earnings histories used for the 2004 match are inflated using the respective growth in the Social Security average wage. The 2004 earnings histories from 1951 to 2004 are inflated by adjusting each year's earnings by the respective growth in the Social Security average wage. Separate retrospective work history files for workers at each age 25 to 70 for the SCF survey years 2007, 2010, 2013, 2016, and 2019 are then built and used to estimate the accrued Social Security benefits. For these survey years after 2004, the earnings histories matched to the 2004 SCF are updated using the year-to-year growth in the Social Security average wage. This means that the work histories by age, sex, earnings cells, work status, and years of full-time work remain the same apart from the across-the-board wage growth. However, as the earnings histories and associated estimates of accrued benefits are matched to the workers' labor market responses in the SCF, any growth in wage inequality is taken into account by the changing distribution of wages in the SCF.

After calculating accrued Social Security benefits for each worker in the EPUF, for each SCF survey, the results are averaged for matching to the SCF. Accrued benefits are averaged by age, sex, income cell, work status in the survey year, and the number of full-time work years. The income cells are based on the workers' incomes in the survey year. The income cells span each \$2,000 increment between 0 and the taxable maximum each survey year. Separate averages are also made for the workers reporting no earnings and the workers reporting taxable maximum earnings each survey year.

Figure A-2 presents the estimated accrued benefits in 2019 by years of prior full-time work for 62- and 45-year-old men and women. Accrued benefits for four example income cells as of 2019 illustrate how accrued benefits increase as the years of full-time work from the age of 18 to either the age of 62 or 45 increase. The values by years of prior full-time work for three of the income cells, income at the taxable maximum of \$132,900, income above \$88,000 to \$90,000, and income above \$44,000 to \$46,000 are based on full-time workers, where full-time indicates that the worker had four quarters of Social Security covered employment in 2019.

Figure A-2. Accrued Social Security Benefits by Earnings Categories in 2019 and Years of Full-Time Work for 62-Year-Old and 45-Year-Old Men and Women



The fourth income cell is for workers with zero earnings as of 2019 and whose work status was not in the labor force. As seen in each of the graphs, workers who have taxable maximum earnings in 2019 have the highest calculated accrued Social Security benefits and are higher the greater are the years of prior work. Workers who were in the \$90K income cell based on their earnings in 2019 generally had higher accrued benefits than the workers in the \$46K income cell. However, the workers who had no earnings in 2019 had accrued benefits similar in size, by years

of prior work, to the workers in the \$46K income cell, indicating that their prior earnings were similar for the same years of prior full-time work.<sup>31</sup>

The accrued benefit estimates are then linked to workers in the SCF. They are linked to the workers – respondents and spouses – by age, sex, and the identical income cells based on their reported annual earnings from their main job, their work status, and their years of full-time work from 18 to their current age. As seen in the figure, there are missing values for some income categories, by age in 2019, and by years of prior work cells. If there was no match between a worker in the SCF based on his or her age, earnings cell, current work status, and years of full-time work and the summarized results from the EPUF accrued Social Security benefits were estimated based on within age, sex, and work status regressions for each SCF survey year. The estimated accrued benefits are based regressions using the EPUF data where the dependent variable is the calculated accrued benefit amount and the independent variables are current earnings and years of full-time work.

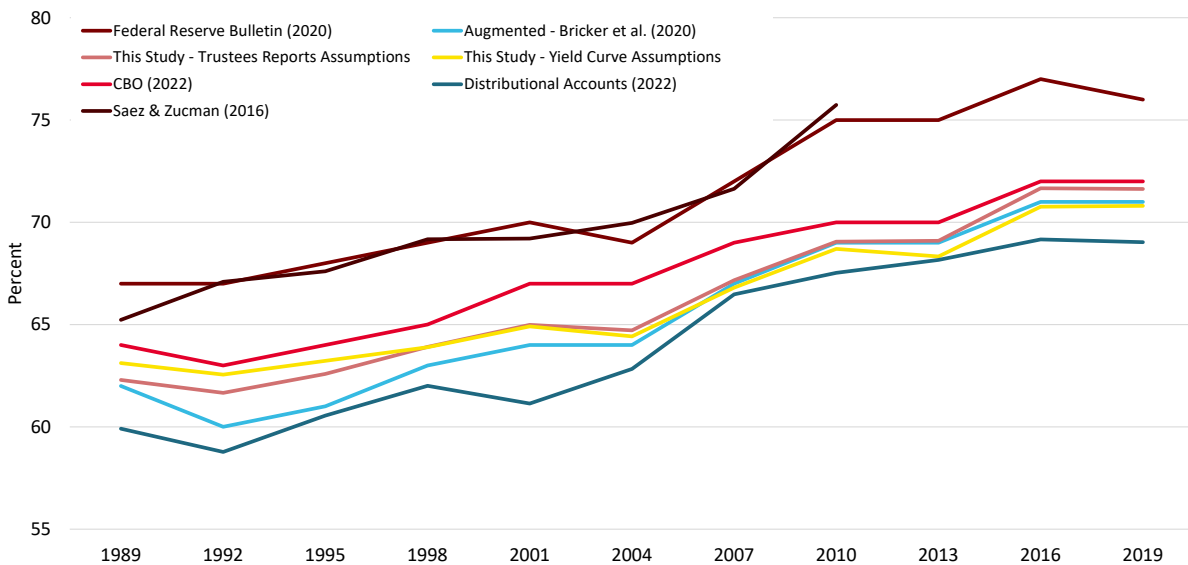
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<sup>31</sup> Years of full-time work are defined as years in which the worker had four quarters of covered employment from the age of 18 to the age in the SCF survey year. Accrued benefits for part-time workers in each of the SCF are also calculated by age, sex, the same income cells as of the survey year, and years of prior full-time work, where part-time status is defined as having 1-3 quarters of work in covered employment in the survey year.

### A-3. Comparison of Shares of Net Worth Held by the Top 10% of Families

Figure A-3 compares seven estimates of the shares of net worth held by the top 10% of families. The two estimates based on the present study identified as “This Study – Trustees Reports Assumptions” and “This Study – Yield Curve Assumptions” fall between the other estimates. The net worth estimates are affected by the discount rate assumptions through the valuing of the pension wealth for current workers who participation in a pension plan, the pension wealth for current pensioners, and the pension wealth expected from future pensions other than those associated with workers’ current employment. The preferred estimates based on the yield curve assumptions are most similar to the Augmented Federal Reserve estimates from Bricker, Goodman, Moore, and Henriques Volz(2020) and estimates from the CBO, CBO(2022).

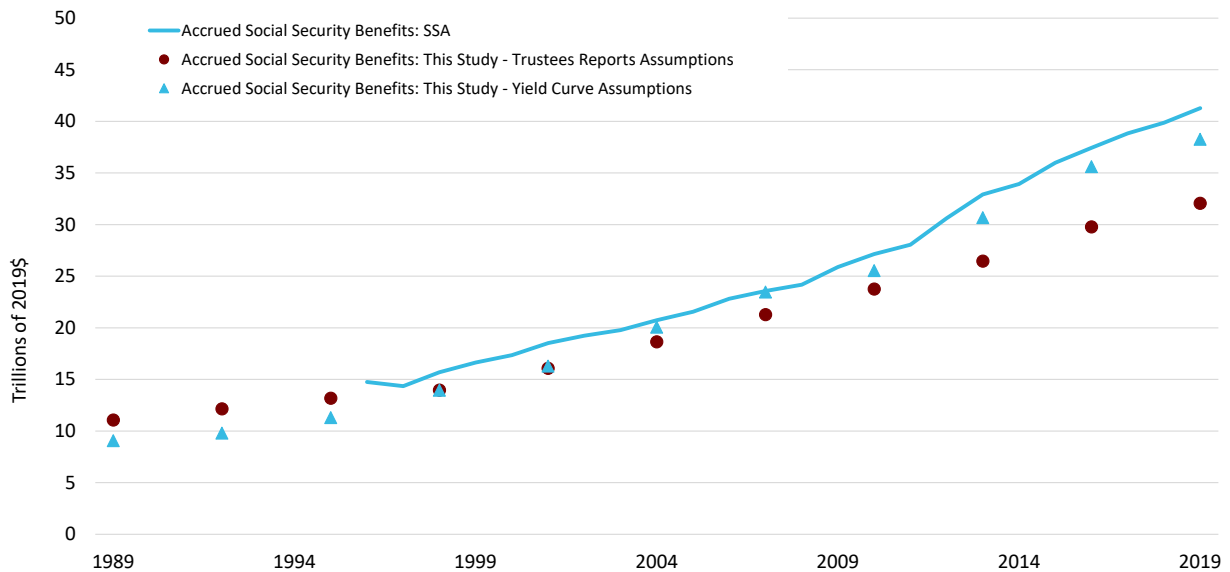
Figure A-3. Estimates of the Share of Net Worth Held by the Top 10% of Families



#### A-4. Aggregate Accrued Social Security Benefits with Alternative Discount Rate Assumptions

Figure A-4 compares the estimated accrued benefits using the Trustees Reports’ real discount rate and inflation rate assumptions and the accrued benefits based on the real discount rate and implied inflation rate based on the nominal and real 20-year forward yield curve estimates. The series based on the Trustees Report Assumptions uses the real and nominal discount rates the Trustees Reports corresponding to the SCF survey year. The Yield Curve Assumptions series is estimated using the 20-year forward nominal and real discount rates estimated by the Federal Reserve.

Figure A-4. Accrued Social Security Benefit Estimates Based on Alternative Discount Rates



Sources: Federal Reserve, Distributional Financial Accounts of the United States, and Social Security Administration, Office of the Actuary, Actuarial Notes, Numbers 2022.1 and 2009.1. The two calculated accrued Social Security series are estimated from SCF responses and estimates based on Social Security earnings histories using two different sets of long run real discount rate assumptions. The Trustees Reports series are estimated using the real rates of returns series for the Trustees Reports corresponding with the SCF survey years and the Yield Curve assumption series are estimated using the 20-year forward TIPs return from the Federal Reserve’s yield curve estimates averaged for the SCF survey years.

Note that the estimates based on the assumptions in the Trustees Reports are lower than the estimates from the Social Security Actuaries. This is primarily a result of not estimating accrued disability estimates that are included in the Social Security Actuaries’ maximum transition cost estimates. On average, for the eight SCF survey years from 1998 to 2019 for which a comparison is possible, the estimated accrued benefits using the Trustees assumptions are 14.8%

lower than the values from the Social Security Actuarial publication. Over these years, annual disability benefits as a percentage of total Social Security benefits averaged 15.9%.

Prior to 2001, the 20-year forward real discount rates from the Federal Reserve’s yield curve estimates were higher than the real discount rates from the Trustees Reports, resulting in lower accrued benefit estimates. After 2001, the real rates have been lower, producing higher accrued benefit estimates.

The table below presents the real and nominal interest rates used to produce the main results in this paper along with the rates from the Trustees Reports.

Nominal and Real Interest Rates Used to Estimate Annuity Values in Each Survey Year

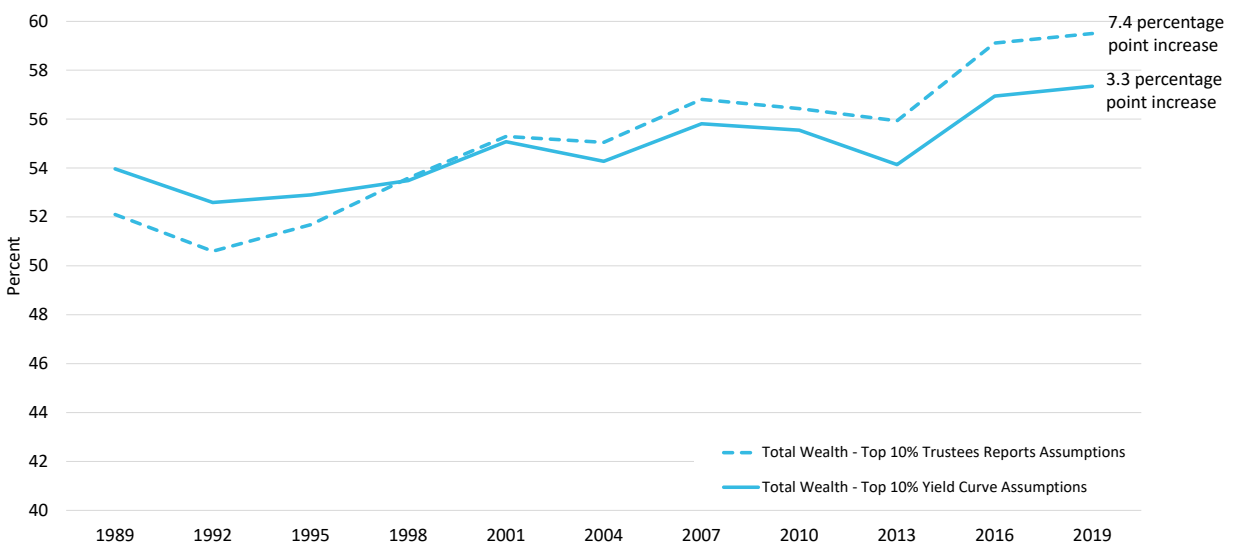
Year	20-year Forward TIPs Yield Curve		Trustees Reports	
	Real Interest Rate	Nominal Interest Rate	Real Interest Rate	Nominal Interest Rate
1989	5.36*	8.10	3.00	6.00
1992	5.29*	8.21	2.30	6.30
1995	4.84*	7.47	2.30	6.30
1998	3.55*	6.02	2.80	6.30
2001	3.50	5.92	3.00	6.30
2004	2.51	4.98	3.00	5.80
2007	2.04	4.74	2.90	5.70
2010	2.37	4.87	2.90	5.70
2013	1.69	4.18	2.90	5.70
2016	1.26	3.45	2.70	5.30
2019	1.09	3.30	2.50	5.10

**Source:** The Federal Reserve’s nominal yield curve data are available at: <https://www.federalreserve.gov/data/nominal-yield-curve.htm> and its TIPs Yield curve data are available at: <https://www.federalreserve.gov/data/tips-yield-curve-and-inflation-compensation.htm>. The Federal Reserve’s TIPs yield curve estimates begin in 1999. The prior year values were estimated based on the relationship between the breakeven inflation compensation rates and actual inflation rates and lags of the inflation rate. The Trustee Reports real and nominal rates (real rate + inflation rate) are from Table II.C1 for years 201-2019, Table I.E1 in 1998, Table II.D.1 in 1992 and 1995, and Table 10 in 1989.

## A.5 Shares of Total Wealth Held by the Top 10% of Families

Two estimates of the shares of total wealth, including accrued Social Security benefits, held by the top 10% of families are presented in Figure A-5 based on the alternative discount rate assumptions. For the earlier SCF survey years, the 20-year forward yield curve discount rates are lower than the long-run discount rates from the Trustees Reports but in the later years they are substantially lower. The yield curve discount rates produce lower accrued Social Security benefits and defined benefit estimates than do the Trustees Reports discount rates at the beginning of the 30-year period, but higher relative estimates later. The different assumptions lead to markedly different rates of increase in the concentration of wealth at the top of the distribution. Based on the Trustees' assumptions, the wealth share of the top 10% increased 7.4 percentage points from 1989 to 2019 but based on the preferred yield curve discount rates the increase on the top 10% wealth share from 1989 to 2019 only increases 3.3 percentage points.

Figure A-5. Shares of Total Wealth Held by the Top 10% of Families  
Trustees Reports Assumptions vs Yield Curve Assumptions



Sources: Survey of Consumer Finances. Employer Sponsored Retirement plans include estimated accrued defined benefit amounts for current workers who have traditional pensions and estimated accrued benefits based on current and future pensions. Accrued Social Security benefits estimated from SCF responses, and estimates based on Social Security earnings histories. See text for discussion of accrued defined benefits and accrued Social Security estimates.