A Day in the Life Cycle: Using Tax Data to Measure Changes in Income by Age

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Abstract

This paper uses administrative tax data to build a representative sample of the entire US population in tax year 2016, inclusive of both tax filers and dependents identified on tax returns and nonfilers identified using information returns. We examine differences in the amount and composition of income by single year of age and, within each birth-year cohort, by income. The analysis in this paper complements Brady and Bass (2023a), which used panel data to follow individuals from age 55 through age 72. Consistent with the panel data analysis, we do not find a drop in spendable income at the ages normally associated with the transition from work to retirement. In fact, from age 61 through age 70, we find an increase in both the share of the population with income and the median amount of spendable income that those individuals have. We also document the shift with age from relying primarily on labor income to relying primarily on Social Security and retirement income (income from DB pensions, DC pensions, and IRAs). Own labor income incidence peaks in the mid-20s, although the share who work or who have a working spouse remains fairly steady through the mid-40s. As the share with labor income declines, the share with Social Security and (non-Social-Security) retirement income increases, but during the transition into retirement the changes by single year of age are not highly correlated. Some stop working before claiming Social Security while others continue working after claiming, suggesting that, for many individuals, retirement is a transitional process rather than a single point in time. After age 70, most individuals rely on a combination of Social Security benefits and retirement income. Consistent with previous research using tax data, we find much higher incidence of income from employer plans and IRAs than reported in household survey data, with 70 percent or more of the population receiving retirement income directly or through a spouse from age 71 through age 91.

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1. Introduction

This study uses administrative tax data to answer two questions about retirement in America. First, how does spendable income change across the life cycle as individuals move from working into retirement? Second, how does the composition of income change over the life cycle as workers move from relying primarily on earnings from labor to relying primarily on Social Security benefits, retirement plan distributions, and other income? In addition, we investigate how the answers to these questions differ based on income.

The motivation for trying to answer these questions is that proposals to overhaul the US Social Security system and the taxation of retirement plans are ubiquitous. We think such proposals to change the current system should be based on an accurate assessment of how the current system is performing.

Many proposals are motivated by a belief that the current system provides inadequate resources to retirees and that the voluntary component of our retirement system—employer-sponsored defined benefit (DB) and defined contribution (DC) plans and individual retirement arrangements (IRAs)—is primarily responsible for that failing.[1] The belief that the US retirement system produces inadequate retirement resources is based largely on research projecting that most Americans will not accumulate enough resources for retirement (see, for example, Munnell, Chen, and Siliciano 2021; and VanDerhei 2019). The belief that employer plans and IRAs are not doing enough to help workers prepare for retirement is based largely on analyses of household survey data that claim too few workers have access to retirement plans (see, for example, Munnell and Bleckman 2014) and too few retirees receive income from employer plans (see, for example, Social Security Administration 2016).

There is other research, however, that challenges these beliefs. Both Scholz, Sheshadri, and Khitatrakun (2006) and Hurd and Rohwedder (2015) conclude that most—though not all—American households appear to be adequately preparing for retirement. Further, studies that

[1] See, for example, a series of editorials in *Bloomberg News* in early 2022 (*Bloomberg News*. America's Retirement Crisis Is a Financial Crisis Too, March 28, 2022; Saving for Retirement Is Harder Than It Needs to Be, April 4, 2022; Piecemeal Reform Won't Solve the U.S. Retirement Crisis, April 11, 2022; and How to Fix the Broken U.S. Retirement-Savings System, April 18, 2022).

compare tax data to household survey data (Brady and Pierce 2012; Bee and Mitchell 2017; Brady and Bass 2021; Dushi and Trenkamp 2021; and Bee, et al. 2024) show that household surveys undercount retirement income—that is, distributions from employer-sponsored DB and DC retirement plans, IRAs, and annuities. These studies indicate that many more workers accumulate resources from employer plans and IRAs during their working career and many more retirees receive income from retirement plans than is indicated in household surveys.

The approach taken to answer these questions is most closely related to Brady, et al. (2017) and Brady and Bass (2023a), which used panel data to follow individuals through the transition into retirement. In particular, Brady and Bass (2023a) used administrative tax data to follow individuals from age 55, before they are eligible to claim Social Security retirement benefits and when retirement plan distributions are generally subject to an early withdrawal penalty, until age 72, after the ages at which delaying Social Security claiming no longer increases monthly benefits and required minimum distributions (RMDs) from IRAs and DC plans begin.

As a complement to Brady and Bass (2023a), this paper analyzes income differences by age using cross-sectional data. This paper expands the analysis in two ways. First, by looking over the entire life cycle, we can examine changes in income before age 55 and after age 72. Second, we utilized a newly available tax form, Form 1095 (which reports coverage by health insurance), to identify individuals otherwise untouched by the federal tax system, including those whose only income is from public assistance.[2] This allowed us to better reflect the full population and more accurately measure the incidence of income. Relative to Brady and Bass (2023a), this change reduces our income incidence measures, for both total income and its components, but otherwise the results of the two studies are consistent.

Examining a cross-section of the population by age, we do not find a drop in spendable income at the ages normally associated with the transition from work to retirement. In fact, from age 61 through age 70, we find an increase in both the share of the population with income and the median amount of spendable income that those individuals have.

[2] We wish to acknowledge and thank Ithai Lurie and James Pearce for providing us with the data they processed and analyzed in Lurie and Pearce (2021). Form 1095 data are complex and require careful processing to be usable. See Lurie and Pearce (2021) for a description of how they identified individuals with health insurance coverage using Form 1095.

More broadly looking over the entire life cycle, spendable income typically follows a hump-shaped pattern with age. Median spendable income peaks at age 46 and declines by 10 percent of the peak by age 61. After age 70, median spendable income declines by 1.0 percent per year, on average, through age 90.

The age profile of spendable income is flatter than that of total income because of changes in effective tax rates over the life cycle. In particular, median total federal tax rates were lower for retirees than they were for any other adults, with the largest tax rate declines experienced in the middle of the income distribution.

Throughout their lifetimes, most Americans get most of their income from three sources ultimately derived from work—labor, Social Security, and (non-Social Security) retirement income. Among those with income, the typical individual gets 100 percent of their total income from labor from age 16 through age 54, but has no labor income beginning at age 68.

The data suggest that retirement is better thought of as a period of transition rather than an event that occurs at a single point in time. For many, the transition from relying primarily on labor income to relying primarily on retirement and/or Social Security income occurs over a number of years. Further, when the transition occurs varies by income, with much of the transition away from labor income occurring prior to age 62 for the lowest income groups.

Most retirees receive both Social Security and retirement income. Consistent with previous research using tax data, we find much higher incidence of income from employer plans and IRAs than reported in household survey data, with 70 percent or more of the population receiving retirement income directly or through a spouse from age 71 through age 91.

Income composition varies considerably across the income distribution, with lower income retirees typically getting all their income from Social Security and retirement income increasing in importance as total income increases. Despite being more reliant on Social Security, however, the spendable income of the lowest income groups falls the least in retirement—relative to both those in their mid-40s and those aged 61.

The paper is organized as follows. Section 2 describes the data we use in our analysis. Section 3 examines changes in spendable income by age. Section 4 analyzes changes in the composition of income by age. Section 5 concludes the analysis.

2. Description of Data

This study uses US Internal Revenue Service (IRS) administrative tax data from the 2016 tax year. These data include information from both federal individual income tax returns filed by taxpayers and information returns issued by third parties and sent to both taxpayers and the IRS. Information returns are used to report income (such as Form W-2, which reports wages), expenses (such as Form 1098, which reports mortgage interest expense), and other tax-relevant information (such as Form 1099-Q, which reports distributions from qualified education savings plans).[3] We also incorporate Social Security Administration (SSA) data on gender, date of birth, and date of death (if applicable).

Our overall population of interest is US citizens and resident aliens[4] who—provided their gross income exceeded the filing thresholds—would have been required to file a 2016 Form 1040 (inclusive of Form 1040, Form 1040A, and Form 1040EZ), excluding residents of US territories.[5] This includes US citizens and resident aliens living in a state (inclusive of the 50 states and the District of Columbia), living outside the US, or living overseas as a member of the US armed forces. We exclude residents of US territories because bona fide residents of US territories generally do not file a Form 1040 with the IRS.[6]

Our method for deriving our representative sample from tax data differs from the typical approach because we sample individuals rather than tax returns. We use the individual as our unit of observation because the focus of our research—using both cross-sectional data as in this study and panel data in related studies—is measuring changes in the amount and composition

[3] For a full listing of information returns used in this study and their description, see Appendix Table A.1.

[4] Resident aliens include individuals with a green card or who had a "substantial presence" in the US—inclusive of the 50 US states and the District of Columbia. For more information on US income tax treatment of both resident and nonresident aliens, see Internal Revenue Service (2017a).

[5] For more information on filing requirements, see Internal Revenue Service (2016a) and Internal Revenue Service (2016b).

[6] US citizens and resident aliens who are bona fide residents of Guam, the US Virgin Islands, and the Northern Mariana Islands are not required to file a Form 1040 with the IRS. US citizens and resident aliens who are bona fide residents of American Samoa and Puerto Rico are only required to file a Form 1040 if they received income from a source outside of the territory. For the definition of a bona fide resident and more information on filing requirements for individuals with income from US possessions, see Internal Revenue Service (2017b).

of income over the life cycle. It would be difficult, if not impossible, to use any other of unit of analysis to study differences in income by age.

Another difference with many past studies using tax data is that—following Lurie and Pearce (2021), and using the data collected and processed by the authors of that study—we include individuals identified on Form 1095 (inclusive of Forms 1095-A, 1095-B, and 1095-C), which provides information on health insurance coverage. Studies that use tax data typically do not include individuals solely dependent on public assistance because the benefit payments are not reported to the IRS—neither on tax returns nor on information returns. Although our income measure will not include benefit payments from public assistance programs, our population counts should include most, if not all, individuals who rely solely on public assistance because they typically are covered by government provided health insurance.

Our method of estimating the US population from tax data builds on the work of many at the US Department of the Treasury Office of Tax Analysis (OTA), the Joint Committee on Taxation (JCT), and the Internal Revenue Service Statistics of Income Division (SOI)—in particular Cilke (2014) and Lurie and Pearce (2021).[7] A more complete description of our method and the resulting sample is provided in Brady and Bass (2023b).

2.1 Creating the Representative Sample

We create a representative sample of the US population in 2016 by combining three separate subsamples: one for filers (primary or secondary taxpayers listed on a return), inclusive of both non-dependent and dependent filers; one for dependent nonfilers; and one for non-dependent nonfilers. Tax returns allow us to identify filers and the dependents they claim. Information returns allow us to identify non-dependent nonfilers.

For analysis of annual income, we include in our population only those individuals who survived through December 31, 2016.

[7] Early work trying to measure the nonfiling population include Cilke (1998), Sailer and Weber (1998), Mortenson et al. (2009), and Lawrence et al. (2011). Examples of other recent studies using tax data to represent the US population include Saez (2016) and Larrimore et al. (2019).

The composition of the 2016 population varies with age (Figure 1). Dependent nonfilers (individuals identified as a dependent on Form 1040 and who do not file a dependent return) represent most of the population at younger ages, with their share falling rapidly after age 15, remaining low through middle age, and then increasing again at older ages. Largely mirroring the decline in dependent nonfilers, filers (individuals who are primary or secondary taxpayers on Form 1040) increase rapidly as a share of the population after age 15 and the share remains high for those from their mid-20s through early 60s before falling off at older ages. Non-dependent nonfilers (individuals not identified on a tax return but who receive at least one information return) increase as a share of the population with age, with their share growth accelerating after age 60.

As illustrated by their share of the population, the inclusion of nonfilers in the sample is critical for measuring the income of the elderly. The nonfiler share of the population—inclusive of both dependent nonfilers and non-dependent nonfilers—increases from 18 percent of individuals aged 60 to 37 percent of individuals aged 80.

2.2 Marital Status

Individuals are categorized as either **joint** or **non-joint**. For individuals who file a return, married individuals filing a joint return are categorized as joint and all other filers (single, head of household, qualified widow[er], and married filing separately) are categorized as non-joint. We do not attempt to impute marital status for nonfilers, so all dependent nonfilers and non-dependent nonfilers are categorized as non-joint.

The joint share of the population in 2016 follows a hump-shaped pattern by age (Figure 2). The joint population share increases rapidly after age 18, hitting one-quarter of the population at age 27 and half of the population at age 37 before peaking at 56 percent at age 62. After age 62, the joint population share falls—at first slowly and then at an accelerated rate. In addition to spousal death, a portion of the decline in the joint population share after age 62 may be attributable to a falling share of the population filing a return. Among filers, the share filing a joint return peaks at age 69, where it reaches 71 percent.

2.3 Income and Tax Measures

We derive our total income measure from tax data, but it differs from the tax code's definition of income because we are primarily focused on measuring income available to spend after paying taxes and saving for retirement. As such, we include some types of income excluded from taxable income—such as tax-exempt interest and the nontaxable portion of Social Security benefits. To the extent possible, we exclude from income all retirement plan contributions and include in income all non-rollover retirement plan distributions—regardless of whether contributions were from an employer or an employee, and regardless of their tax treatment.[8] This means we exclude from income not only tax-deferred employee contributions to employer plans and IRAs, but also Roth contributions and non-Roth after-tax contributions. It also means we include in income not only taxable non-Roth distributions, but also Roth distributions and the portion of non-Roth distributions that represents basis. Finally, because our spendable income measure does not account for state income taxes, we exclude from income taxable state income tax refunds.

The income and taxes of filers are primarily derived from tax returns while the income and taxes of nonfilers are derived solely from information returns. Table A.2 describes in detail how we calculate our income and tax measures for both filers and nonfilers.

Note that we do not impute taxes. For filers, income taxes are based on the tax amounts reported on Form 1040, and payroll taxes are based on both the amounts reported as withheld on Form W-2 and amounts reported on Form 1040 (for self-employment taxes, taxes on unreported tips, and uncollected payroll tax on wages). For nonfilers, both income and payroll taxes are based on the amounts reported as withheld on information returns.

Our measure of **total income** is the sum of six types of income: **labor** (wage and salary, self-employment earnings, unemployment compensation), **Social Security** (disability benefits and retirement benefits), **retirement** (IRA distributions and income from pensions and annuities),[9] **investment** (taxable interest, tax-exempt interest, dividends, gains/losses), **business/farm/rents/royalties** (business and farm income in excess of self-employment

[8] See Brady and Bass (2020b) for a description of how we identify rollover distributions.

[9] Pension income includes income from both DB and DC pensions.

earnings; income from rents, royalties, partnerships, S-corps, and trusts), and **other** (net alimony [alimony received less alimony paid] and other income).[10]

Our measure of total income already accounts for all the savings we can identify using tax data. Neither employer nor employee contributions to pensions are included in our measure of total income.

As such, our measure of **spendable income** is calculated as total income less **total federal taxes**. Total federal taxes are comprised of **federal income taxes** and the employee share of **payroll taxes**. For filers, federal income taxes are taken from Form 1040 and payroll taxes are based on a combination of amounts withheld on information returns and Form 1040. For nonfilers, both federal income and payroll taxes are based on the amount withheld on information returns. We do not attempt to estimate state and local taxes. We also do not impute federal excise or corporate income tax burdens.

The primary measure of income we use to analyze the incidence and amount of income, in total and by type, is **per capita income**, which allocates the joint income of married couples equally to each spouse. For a primary or secondary taxpayer on a joint return, per capita income is the income derived from the tax return divided by two. For a primary taxpayer on a non-joint tax return, per capita income is simply the income derived from the tax return. Similarly, for nonfilers (who are all assumed to be non-joint), per capita income is simply the income derived from the individual's information returns.

In addition to per capita income, we also report **own income** for labor, Social Security, and retirement income. For individuals with joint marital status, we use information returns to allocate income to the spouse who received the income. For individuals with a non-joint marital status (inclusive of filers with a non-joint return and all non-filers), there is no difference between own income and per capita income.

Importantly, neither per capita income nor own income adjusts for family or household size. All income reported on a tax return is allocated to filers—the primary taxpayer in the case

[10] Our income measure does not include public assistance income because benefit payments from such programs as Temporary Assistance to Needy Families (TANF), Supplemental Security Income (SSI), and Veteran Affairs (VA) are not reported to the IRS—neither on tax returns nor on information returns.

of non-joint returns and the primary and secondary taxpayers in the case of joint returns. The number of dependents claimed on a tax return has no impact on either measure, as no filer income is allocated to dependents. Dependents have income only if they file their own return or have income reported on their own information returns.

2.4 Tax Rates

For individuals who have income, we calculate average effective tax rates. We categorize individuals as having income if they have nonzero per capita total income in any of our six broad income categories (labor, Social Security, retirement, investment, business/farm/rents/royalties, and other) or in any of the components of investment income (taxable interest, tax-exempt interest, dividends, and gains/losses). An individual's average effective tax rate is calculated as taxes paid divided by total income, with both taxes and income measured on a per capita basis. Average effective tax rates are reported for federal income taxes, payroll taxes, and total federal taxes.

2.5 Medians and Percentile Measures

The medians presented in this study are approximate, as true medians could represent disclosure of an individual's tax data. To calculate approximate medians, we average the 48th, 49th, 50th, 51st, and 52nd percentile values and then round that average (to the nearest dollar for amounts less than $100, the nearest $10 for amounts from $100 to less than $10,000, the nearest $100 for amounts of $10,000 or more, and two decimal places for percentages). We then only report these approximate medians for groups with 100 or more observations. We use the same method to report other percentile measures.

3. Changes in Spendable Income over the Life Cycle

In this section, we examine differences in 2016 income by age. Differences reflect both age-related differences (that is, changes in income that individuals typically experience with age) and cohort differences (that is, differences caused by the unique historical experience of each birth-year cohort).

We also examine changes in income by age controlling for income rank within each age cohort. This can provide some insights into income dynamics across the income distribution provided the income ranking of individuals within their age group is somewhat stable over time.

Some caution is warranted when interpreting the cross-sectional results as representing the typical life cycle experience. That said, we are encouraged that the results for those aged 55 through 72 are consistent with those of Brady and Bass (2023), which analyzed panel data, and we believe examining the full 2016 cross-section provides additional insights into income dynamics both before and after the transition into retirement.

Although we report changes in total income, we are primarily focused on changes in spendable income—that is, income available to spend after paying taxes and saving for retirement. Economic theory predicts that individuals generally attempt to maintain steady consumption over the life cycle.[11] We cannot measure consumption or spending with the tax data, but we can measure income available to spend.

[11] Optimization over the life cycle generally requires that the marginal utility of consumption be equal in each time period. If certain other conditions are met, this would also imply that an individual would prefer to smooth consumption over time. See Engen, Gale, and Uccello (2005) and Scholz, Seshadri, and Khitatrakun (2006) for a more formal description of life-cycle models and for a discussion of retirement savings adequacy. To the extent that some spending—such as a portion of spending on clothing and travel—are properly characterized as a cost of working rather than consumption, and to the extent retirees substitute home production for market production—for example, preparing lunch at home versus purchasing lunch at a fast food establishment or cafeteria, consumption can be maintained even if spending declines at older ages. See Hurst (2008) for a discussion of consumption changes in retirement. In addition, retired people may maintain their marginal utility by diminishing their consumption and increasing their time devoted to leisure. At younger ages, life-cycle models typically predict that workers will take on debt because, to the extent earnings typically increase early in a worker's career, they may be able to finance consumption in every year of their life that is higher than what they earn early in their career. One reason younger workers may not borrow is that they lack access to credit (see Deaton 1991 for a discussion of liquidity constraints and their effect on life-cycle models). Another reason is that, although workers can expect earnings to increase, on average, future earnings are too uncertain for them to want to risk taking on debt (see Carroll 1997 for a discussion of "buffer-stock" savings and its effect on life-cycle models).

To calculate spendable income, we subtract total federal taxes (payroll taxes plus individual income taxes) from total income. Our measure of total income already adjusts for retirement savings—it excludes all contributions to qualified retirement plans (inclusive of both tax-deferred and taxable contributions) and includes all non-rollover distributions from qualified plans (inclusive of both taxable and non-taxable distributions).

We find that spendable income varies less over the life cycle than does total income because of the impact of taxes. Total federal taxes are a function of both the amount and the composition of income. Spendable income typically increases by less than total income early in life, as effective income tax rates generally increase with total income. Later in life, spendable income typically decreases by less than total income as effective tax rates fall. Payroll tax rates fall as the share of total income derived from labor declines. Income tax rates fall both because total income is lower and because only a portion of Social Security benefits are included in taxable income.

The extent to which taxes vary over the life cycle differs based on where individuals fall in the income distribution. Controlling for income rank within each age cohort, the sharpest drops in tax rates during the transition into retirement are experienced by those in the middle of the income distribution.

Encompassing both differences in total income and differences in taxes, the age profile of median spendable income is flatter for lower income groups. The highest income groups experience the largest declines in spendable income during the transition into retirement. Median spendable income actually increases for the bottom 60 percent of the income distribution between age 61 and age 70.

3.1 Incidence and Amounts of Income by Age

The share of the 2016 population with income remains consistently high throughout adulthood, and even increases slightly for those older than age 61 (Figure 3).[12] The share of the

[12] Individuals are categorized as having income if they have nonzero per capita income in any of our six broad income categories (*labor*, *Social Security*, *retirement*, *investment*, *business/farm/rents/royalties*, and *other)* or in any of the components of *investment* income (taxable interest, tax-exempt interest, dividends, and gains/losses). For the derivation of these income measures, see Table A.2.

population with income—inclusive of both filers and nonfilers with income—was very low for young children but increases rapidly for teenagers and young adults, hitting 93 percent by age 26. The share generally remains steady for those older than age 26, albeit increasing slightly for those older than age 61. On average, 94 percent of the population had income—either directly or through a spouse—from age 27 through age 61, and 96 percent of the population had income from age 62 through age 90.

Conditional on having income, median per capita total income follows a hump-shaped pattern with age in 2016 (Figure 4, blue line). Children 15 or younger with income typically have small amounts, with median total income ranging from $50 for those younger than one year of age to $1,200 at age 15.[13] Median total income increases rapidly early in adulthood to $30,000 at age 30 and then continues to increase with age but at a slower rate, peaking at $41,000 at age 46. Income declines with age for individuals older than 46—to $37,000 at age 61 and $34,000 at age 70.[14] After age 70, median total income falls by about 1.1 percent per year of age, on average, through the late-90s.[15]

The age profile of median spendable income in 2016 (Figure 4, orange line) is flatter than that of total income—particularly between age 61 and age 70—because of changes in taxes paid over the life cycle. Prior to age 46, the growth in taxes paid results in spendable income increasing less with age than total income. From age 46 to age 61, both total and spendable median income falls roughly proportionately, with both declining by about 10 percent. The largest difference in the two series was between age 61 and age 70, with median spendable income $500 higher at age 70 ($32,800 versus $32,300 at age 61) despite median total income being $2,900 lower ($34,300 versus $37,200 at age 61). After age 70, median spendable income

[13] For ease of exposition, dollar amounts reported in the text are generally rounded to two significant digits. The values plotted in the figures are available in an accompanying Excel spreadsheet.

[14] Unlike the decline from age 46 to age 61, the decline in median per capita total income between age 61 and age 70 was associated with increased incidence. The share of the population with income increased 3.3 percentage points between age 61 and age 70, from 93.7 percent to 97.0 percent.

[15] Median total income declines 2.0 percent per year of age, on average, from age 70 through age 80, and 0.7 percent per year of age, on average, from age 70 through age 98. Over the entire period from age 70 through age 98, median spendable income falls by 1.1 percent per year of age, on average.

declines a bit more slowly than total income, falling by about 1.0 percent per year of age, on average, through the late-90s.[16]

3.2 Changes in Federal Taxes Over the Life Cycle

Median total federal taxes in 2016—the sum of payroll and income taxes—increases rapidly through age 46 and remains high before beginning to edge down for individuals older than age 55 and then falling rapidly after age 61 (Figure 4, green line). As with income, median taxes increase with age through age 46, but then taxes remain high even at ages where median total income begins to decline, peaking for individuals in their early 50s. After age 61, taxes begin to decline rapidly, and by age 84 more than half of individuals with income paid no federal tax—neither payroll tax nor income tax.

As a share of total income, total federal taxes are lower for retirees than they were for any other adults (Figure 5, top panel). From individuals in their late 20s to those in their early 60s, the combination of payroll and income tax typically exceeds 12.0 percent of total income, with median total federal tax rates peaking above 15.0 percent at age 55. For those older than age 60, median total tax rates fall quickly over the ages individuals typically transition into retirement, falling below 5.0 percent by age 68 and below 2.0 percent by age 74.

Payroll tax rates vary little with age for the typical individual in their prime working ages but decline rapidly over the ages individuals typically transition into retirement (Figure 5, middle panel). Median payroll tax rates are close to 7.65 percent from age 16 through age 55, with the typical individual getting nearly all their income from labor. For individuals older than age 55, median payroll tax rates edge down before falling rapidly for individuals older than age 61, as an increasing share of income is derived from sources—such as Social Security benefits and retirement plan distributions—not subject to payroll taxes. By age 68, more than half of individuals with income pay no payroll tax—either directly or through a spouse.

[16] Median spendable income declines 1.8 percent per year of age, on average, from age 70 through age 80, and 0.6 percent per year of age, on average, from age 70 through age 98. Over the entire period from age 70 through age 98, median spendable income falls by 1.0 percent per year of age, on average.

In contrast to payroll tax rates, income tax rates vary more with age and peak much closer to retirement (Figure 5, bottom panel). By single year of age, more than half of individuals with income pay no income tax until age 19. The median income tax rate increases to nearly 5.0 percent for individuals aged 29 and remains about the same through age 37. For those older than age 37, median income tax rates again increase with age and continue to increase even after age 46, peaking above 7.8 percent from age 53 through age 61 despite declining median income. For individuals older than age 61, median income tax rates decline sharply with age. By age 81, more than half of individuals with income pay no federal income tax.

Family dynamics affect the income tax rates of younger individuals. Presumably, income tax rates plateau from age 29 through age 37—despite total income increasing—because of individuals purchasing homes and starting families at those ages, both of which typically reduce income taxes for any given level of total income.[17, 18] Conversely, income tax rates continue to increase with age after age 46—despite total income decreasing—presumably because of children getting older and eventually leaving the household and mortgage interest expense declining as share of total income.[19]

Income tax rates fall late in life because of changes in both the amount and the composition of income.[20] Income tax rates typically decline at older ages because (1) total income generally declines with age, and (2) only a portion of Social Security benefits are included in taxable

[17] Filers who itemize can deduct their property taxes and mortgage interest expense.

[18] In 2016, there were four tax provisions that provided tax benefits to filers with dependent children. A personal exemption was allowed for qualifying dependents who were younger than 19 years of age or who were full-time students younger than 24 years of age or who were permanently and totally disabled regardless of age (see Internal Revenue Service 2016b). A non-refundable Child and Dependent Care Credit was available to offset work-related care expenses for a dependent child younger than 13 years of age or for a disabled child or spouse (see Internal Revenue Service 2016c). A partially refundable Child Credit was available for dependent children younger than 17 years of age (see Internal Revenue Service 2016d). A fully refundable Earned Income Credit (EIC) was available to lower income filers but was considerably more valuable for filers with dependents (see Internal Revenue Service 2016e).

[19] For the ages at which tax credits and exclusions for dependent children end, see note 18. With traditional fixed-rate self-amortizing mortgages, mortgage interest expenses typically decline with age as the portion of the monthly payments that represent mortgage interest declines over time. In addition, monthly payments are fixed in nominal dollars with such mortgages and, thus, likely decline as a percentage of income over time.

[20] For a more detailed discussion of why income taxes typically decline in retirement, see Brady (2016).

income.[21] In combination, these two changes reduce the share of total income subject to income tax and reduce the share of taxable income subject to higher marginal tax rates.

3.3 Income and Taxes Controlling for Income Rank within Age Group

To examine how changes in income differ by the amount of total income individuals have, we rank individuals by income within their single-year birth cohort. We then split those with positive total income into **ventiles** (20 equally sized groups), with ventile 1 having the lowest income and ventile 20 having the highest income. Those with non-positive total income, representing 0.7 percent of those with income in 2016, are included in our income tabulations for the entire sample but are not reported separately in the ventile tabulations.[22]

Examining changes in income by age controlling for income rank can provide some insights into income dynamics provided the income ranking of individuals within their age group is somewhat stable over time.

That said, some caution is warranted in interpreting the results. One reason is that income rank is endogenous—that is, how an individual's income changes with age will impact the ventile into which they are categorized. Another reason is the composition of the population with income changes with age, which can affect an individual's rank even if they do not experience large relative changes in income.

Two issues may be of particular importance at older ages that may have (at least partially) offsetting effects. First, those with higher income are more likely to survive from year to year. All else equal, this would shift some individuals into lower income ventiles with age. Second, there is an increase in the share of the population with income after age 61. All else equal, and

[21] The percentage of Social Security benefit payments included in gross income is based on a taxpayer's modified adjusted gross income (MAGI), which includes half of Social Security benefit payments plus other income included in gross income. For single, head of household, and qualifying widow(er) returns: if MAGI is $25,000 or less, no Social Security benefit payments are included in gross income; if MAGI is between $25,000 and $34,000, the lesser of 50 percent of Social Security benefit payments or 50 percent of MAGI in excess of $25,000 is included in gross income; if MAGI is in excess of $34,000, the lesser of 85 percent of Social Security benefit payments or 85 percent of MAGI in excess of $34,000 plus $4,500 [=50%*($34,000-$25,000)] is included in gross income. For joint returns, the MAGI thresholds are $32,000 and $44,000, respectively. These thresholds are not indexed for inflation. For more information on the taxation of Social Security benefits, see Internal Revenue Service (2017c).

[22] See note 12 for an explanation of how we categorize individuals as having income.

assuming those who had no income when aged 61 or younger also typically have relatively low income when they are older than 61, this would tend to shift some individuals into higher income ventiles with age.

3.3.1 Total Income by Ventile

Controlling for income rank within each single-year birth cohort, median total income is typically hump shaped over the life cycle, with declines at older ages generally larger for higher income ventiles (Figure 6).

Focusing on the top 15 ventiles (the highest 75 percent of the income distribution), higher income ventiles generally experience larger declines after the age at which peak income is reached, particularly from age 61 through age 70. For all 15 ventiles, total income increases rapidly with age through the mid-40s, with income growing relatively more quickly for the lower income ventiles before age 30 and then growing relatively more quickly for the higher income ventiles after age 30. From peak income through age 61, all 15 ventiles experience similar drops in median total income, with declines ranging from 8 percent to 10 percent. From age 61 to age 70, however, higher income ventiles experience sharper drops in median total income, ranging from no change for ventile 6 up to a 17 percent decline for ventile 20. After age 70, declines with age are a bit more rapid in the middle of the income distribution.

The age patterns differ somewhat for the bottom five ventiles (the lowest 25 percent of the income distribution), with age 70 income higher than age 46 income for the bottom three ventiles and higher than age 61 income for all five ventiles. After age 70, median total income remains higher than age 61 income for the bottom two ventiles and is either flat or declines modestly for ventiles 3 through 5.

3.3.2 Federal Tax Rates by Ventile

Combining both income and payroll taxes, the middle-income ventiles have the sharpest percentage point declines in federal total tax rates during the transition into retirement (Figures 7a and 7b).

Relative to the middle-income ventiles, taxes fall less sharply for the lowest income ventiles despite paying little or no taxes in retirement because they paid little or no taxes—or even

received a net refund—prior to retirement. For example, while the typical individual in ventile 4 of their age group pays no federal taxes at ages 62 or higher, median total tax rates are negative from age 27 through age 45 and are 2.0 percent or lower from age 46 through age 61.

Relative to the middle-income ventiles, total tax rates fall relatively less sharply for the highest income ventiles both because income tax rates decline more gradually with age and because payroll taxes represent a smaller share of their total income prior to retirement. For example, median total tax rates for ventile 10 fall from a peak of 16 percent (from age 54 through age 57) to 3 percent by age 70, a drop of 13 percentage points. By comparison, median total tax rates for ventile 20 fall from a peak of 28 percent (from age 42 through age 56) to 21 percent by age 70, a drop of 7 percentage points. Even though tax rates continue to decline with age for the higher income ventiles after age 70, they do not match the percentage point declines of the middle-income ventiles until after age 90.

Across income groups, median payroll taxes typically remain near 7.65 percent during working years before declining rapidly as workers transition into retirement (Figure 7c).[23] One exception to that rule is that payroll taxes represent more than 7.65 percent of total income at certain ages for the typical individuals in the top 11 income ventiles (ventiles 10 through 20), presumably because employee retirement contributions are subject to payroll tax but are not included in our measure of total income. Another exception is that median payroll tax rates fall well below 7.65 percent at younger ages for the top 5 income ventiles (ventiles 16 through 20), both because a worker's labor earnings above $118,500 were not subject to the 6.2 percent Social Security payroll tax in 2016 and because, with age, more of total income for these income groups comes from sources not generally subject to payroll tax—such as interest, dividends, and capital gains.

At older ages, the higher income ventiles are more likely to be subject to payroll taxes. Median payroll taxes are zero for the bottom three ventiles (ventiles 1 through 3) by age 62, for

[23] Although we do not plot data prior to age 20, the middle-income ventiles are more likely to be subject to payroll taxes at younger ages. Children younger than 15 typically pay no payroll tax, regardless of income, with the highest income ventiles typically getting their income from Social Security benefits and the lowest income ventiles getting de minimis amounts from interest, dividends, and other income not subject to payroll tax. Median payroll tax rates are positive for the middle income ventiles starting at age 15 and are positive for all ventiles by age 19.

the two middle ventiles (ventiles 10 and 11) by age 68, and for the top ventile (ventile 20) by age 75.

Median income tax rates follow considerably different patterns by age when controlling for individuals' income rank within their age group (Figure 7d). For the top two income ventiles (ventiles 19 and 20), median income tax rates peak at age 48—the same age at which median total income peaks. The tax benefits of children and, for filers who itemize, home ownership can be seen more clearly in the age profile of the other income ventiles, as median income tax rates plateau or decline in the late-20s or early-30s despite median total income generally increasing, and then continue to increase even after median total income peaks.

Median income taxes for the seven lowest income ventiles (ventiles 1 through 7) are negative—that is, taxpayers get refunds in excess of income taxes paid—beginning at age 25. Median income taxes are negative for the lowest seven ventiles through age 40, for the lowest four ventiles through age 50, and for ventile 2 through age 57. Net refunds are highest—both as a percentage of total income and in absolute dollars—for ventile 4, peaking at 20 percent of income, or $2,940 per capita, at age 35. Median income taxes are never positive for the lowest four ventiles and remain low for ventiles 5 through 7, with ventile 7 peaking at 5.7 percent of income at age 55. Median income taxes fall quickly after age 60 for ventiles 5, 6, and 7—falling to zero by age 62, 64, and 66, respectively.

Median income tax rates are never negative for the next nine income ventiles nearer the middle of the income distribution (ventiles 8 through 16), but they do decline beginning in the mid- to late-20s before increasing again and peaking at age 55 or older. Peak median income tax rates from the middle income ventiles range from 7.2 percent at age 55 for ventile 8 to 13 percent at age 60 for ventile 16. After age 60, median income tax rates decline sharply through age 68 and then more slowly thereafter.

Median income taxes for the four highest income ventiles (ventiles 17 through 20) follow more of a hump-shaped pattern with age, increasing with age initially and then declining. Peak median income tax rates range from 14 percent at age 60 for ventile 17 to 24 percent at age 48 for ventile 20. After age 60, median income tax rates typically decline more slowly than they do for the middle-income ventiles.

3.3.3 Spendable Income by Ventile

The impact of taxes varies considerably across income ventiles, but the end result is that median spendable income generally has a flatter age profile than median total income (Figure 8). The lone exception is ventile 1, for whom there is little difference between total and spendable income at any age. For the lowest income ventiles, the primary impact of the federal tax system is that spendable income exceeds total income at younger ages when they benefit from child-related refundable credits. For the rest of the population, federal taxes generally cause spendable income to increase more slowly than total income at younger ages and decline more slowly as they transition into retirement.

Encompassing both differences in total income and differences in taxes, the age profile of median spendable income is flatter for lower income ventiles. Lower income ventiles are closer to their peak spendable income in their 30s, with median spendable income at age 35 representing 95 percent of the peak for ventile 5, 85 percent for ventile 15, and 67 percent for ventile 20. After peaking, spendable income declines for all but the lowest income ventile through age 61, but then increases for the bottom 12 ventiles between age 61 and age 70. In contrast, median spendable income declines by 11 percent for the top ventile over those same ages. Relative to peak spendable income, higher income ventiles experience larger declines in median spendable income from their peak to age 70. This remains true until after age 80, at which point median spendable income continues to decline slowly with age near the middle of the income distribution but declines more slowly—or even increases—for the bottom and top of the income distribution.

3.4 Summary of Changes in Spendable Income over the Life Cycle

Examining a cross-section of the population by age, we do not find a drop in spendable income at the ages normally associated with the transition from work to retirement. In fact, from age 61 through age 70, we find an increase in both the share of the population with income and the median amount of spendable income that those individuals have. Controlling for income rank within each age cohort, the highest income ventiles experience the largest declines

in spendable income over these ages, with median spendable income actually increasing for the bottom 12 income ventiles.

More broadly looking over the entire life cycle, most adults have income with the median amount of spendable income typically hump shaped over the life cycle. The share of the population with income was 94 percent, on average, from age 27 through age 61, and was 96 percent, on average, from age 62 through age 90. Among those with income, median spendable income peaks at age 46 and falls by 10 percent of the peak by age 61. Despite the increase in the share of the population with income, median spendable income remains roughly flat from age 61 through age 70. On average from age 70 through age 90, median spendable income declines by 1.0 percent per year.

The age profile of spendable income is flatter than that of total income because of changes in effective tax rates over the life cycle. In particular, median total federal tax rates were lower for retirees than they were for any other adults. Controlling for income rank within each age cohort, tax rates decline the most immediately after age 61 for those in the middle of the income distribution.

4. Changes in the Composition of Income over the Life Cycle

Throughout their lifetimes, most Americans get most of their income from three sources—labor income (wages, self-employment earnings, and unemployment compensation), Social Security income (disability, retirement, and survivor benefits), and retirement income (IRA distributions and pension and annuity income). All three of these income sources are ultimately derived from work—either as current compensation (labor income), deferred compensation (retirement income), or government benefits based on a worker's earnings history (Social Security income). The only groups that typically get more than a de minimis amount from other sources are older individuals in the highest income ventiles.

Broadly over the life cycle, there is a decline in the importance of labor income with age and an increase in the importance of Social Security and retirement income. From age 16 through age 55, the typical individual derives 100 percent of their income from labor. By age 68, the typical individual derives none of their income from labor.

The data suggest, however, that the transition from work to retirement typically does not occur at a single point in time. The data also show that the relative importance of Social Security benefits and retirement plan distributions varies considerably across the income distribution.

As with previous work using tax data, we find that retirement income is much more prevalent than reported in household survey data. Consistent with the findings of Brady and Bass (2023a)—which followed individuals from age 55 through age 72 using panel data—we find that more than 70 percent of individuals receive retirement income at age 72, either directly or through a spouse. The cross-section data we analyze here further shows that age 72 is not an outlier: own or spouse retirement income incidence is 70 percent or higher from age 71 through age 91.

4.1 Income Sources and Amounts by Age

For analysis, we separate income into two broad categories. The first category includes labor, Social Security, and retirement income—which, for brevity and clarity, we refer to as **Labor+SS+Retire** income. The second category includes all other sources of income (including taxable interest, tax-exempt interest, dividends, gains/losses, rents, royalties and income from

partnerships and S-corporations)—which, for brevity, we refer to as **non-Labor+SS+Retire** income.[24]

Few children aged 13 or younger have any income and those who do typically have small amounts (Figure 9). Median total income ranges from $50 for the 1.1 percent of children younger than one year of age who have income to $900 for the 13 percent of children aged 13 who have income. Initially most children get all their income from non-Labor+SS+Retire income—primarily de minimis amounts of interest and dividends. Although the median amount of non-Labor+SS+Retire income changes little with age for children, the share of children with Labor+SS+Retire income—primarily Social Security benefits—increases, pulling up the median amount of total income.

Beginning at age 14, the share of the population with Labor+SS+Retire income follows a similar age profile as the share with total income. The share of the population with Labor+SS+Retire income increases rapidly, hitting 90 percent at age 26 and remaining around that level through age 61 (figure 9, top panel). After age 61, the share increases again, averaging 96 percent from age 65 through age 90.

Beginning at age 18, per capita median Labor+SS+Retire income follows a hump-shaped pattern with age similar to that of median total income (Figure 9, bottom panel).

The incidence of non-Labor+SS+Retire income increases with age, with at least half of the population having the income beginning at age 42, but the income amounts are typically low. Conditional on having the income, median non-Labor+SS+Retire income declines with age after the early 20s as the incidence of the income increases, and then, around age 40, it begins to increase with age. That said, the median amounts were $250 or less through age 61. After age 61, the median amount continues to increase, hitting $500 at age 72 and $1,000 at age 82.

From age 18 through age 61, 3.5 percent of the population, on average, has only non-Labor+SS+Retire income. That share falls to less than 0.5 percent from age 70 through age 94.

[24] When choosing our shorthand for these broad income categories, we admittedly prioritized clarity over eloquence. This is because our previous attempts to create an eloquent shorthand for Labor+SS+Retire income (such as "work-related income" and "income derived from work") caused considerable confusion among readers.

The remainder of this discussion will focus on income from labor, Social Security, and retirement. More detailed information on non-Labor+SS+Retire income is available in a supplemental appendix.

4.1.1 Labor Income

Incidence of own labor income peaks in the mid-20s then declines slowly with age before dropping more rapidly as individuals transition into retirement (Figure 10, top left panel, dark orange line). Own labor incidence increases rapidly after age 15, peaking at 86 percent from age 23 through age 27. The share of the population working then declines with age—at first slowly and then accelerating beginning in the late 40s. The sharpest declines in work occur in the 60s and early 70s, with own labor income incidence falling from 63 percent at age 61 to 17 percent at age 75.

Compared with own incidence, own or spouse labor income incidence peaks later, remains steadier through middle age, and then declines more slowly with age until later in life (Figure 10, top left panel, light orange line). This is because the share of the population who only receive labor income through a spouse increases with age, peaking above 13 percent from age 65 through age 67. As a result, own or spouse labor incidence peaks at 90 percent from age 27 through age 37 and remains above 88 percent through age 46. As with own incidence, own or spouse labor income incidence declines sharply in the 60s and early 70s, falling from 75 percent at age 61 to 25 percent at age 75.

For those with the income, the median amount increases rapidly from the mid-teens through the late-30s, remains fairly steady through the late 50s, and then begins to decline at an accelerating rate (Figure 10, top right panel, dark orange line). Median own labor income is $40,000 or higher from age 40 through age 58, with peak earnings of $42,500 at age 46. As own labor incidence declines at older ages, the median income of those who continue to work also falls, from just over $37,000 at age 61 to $11,000 at age 75. Median per capita labor income follows a similar path as own income through age 46 but then declines more rapidly through age 61, as the share of married individuals with only spousal labor income increases (Figure 10, top right panel, light orange line).

4.1.2 Social Security Income

Own incidence of Social Security income follows different patterns for three different groups: children, disabled adults, and retirees (Figure 10, middle left panel, dark green line).[25]

Among children, own Social Security incidence peaks at 10 percent of the population at age 18. Children generally receive benefits if they have a parent who either receives Social Security benefits or is deceased. To receive benefits, children need to be either (a) younger than age 18, (b) younger than age 19 and still attending primary or secondary school, or (c) any age with a disability that began before age 22.[26] The share of children receiving benefits increases with age to 10 percent at age 18 and then declines rapidly, hitting 0.6 percent at age 21. Children with Social Security are about evenly split between those receiving disability benefits and those receiving retirement or survivor benefits.[27]

In the early-20s, the share of the population directly receiving Social Security benefits begins to grow again with age, albeit slowly, hitting 12 percent at age 59. Nearly all the growth in own Social Security incidence over these ages represents individuals receiving disability benefits. At age 59, 93 percent of Social Security beneficiaries receive disability payments.

After age 59, growth in own Social Security income incidence accelerates—first at age 60, when individuals with a deceased spouse can generally first claim survivor benefits, and again at age 62, the early claiming age for retirement benefits.[28] At age 72, 94 percent of the population receives their own Social Security income. By single year of age, the largest percentage point increases in own incidence occur at age 62 (when it increases from 15 percent to 33 percent) and the full benefit retirement age of 66 (when it increases from 60 percent to 81 percent).[29]

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[25] In this paper, own Social Security income refers to any benefits sent directly to an individual and which would be reported as being sent to the individual on Form SSA-1099. These would include an individual's own benefits—that is, disability and retirement benefits to which the individual is entitled based on their own work history. It would also include benefits paid to children or spouses (including survivors) based on the work history of a parent or spouse.

[26] For a more detailed discussion of benefit eligibility for children, see https://www.ssa.gov/pubs/EN-05-10085.pdf.

[27] The tax data allow us to identify disability benefits but do not allow us to distinguish between retirement and survivor benefits.

[28] Disabled widows/widowers and those with a child younger than age 16 can claim survivor benefits before age 60.

[29] Age 66 was the full benefit retirement age for individuals born from 1943 through 1954 (age 73 through age 62 in 2016). The full benefit retirement age increases ratably to age 67 for those born in 1960 or later (aged 56 or younger in 2016).

When looking more broadly at the share of the population who received Social Security either directly or through a spouse, we see a similar pattern of incidence by age except during middle age (Figure 10, middle left panel, light green line). Through age 43, less than 1.0 percent of the population did not receive Social Security benefits but had a spouse who did—either because the spouse received disability benefits or because the spouse was older and had already claimed retirement benefits. After age 43, spousal only Social Security income incidence increases with age, peaking at 12 percent of the population at age 61. This share then declines with age as the share of married individuals with their own Social Security benefits increases. After age 70, less than 1.0 percent of the population receives Social Security income only indirectly through a spouse.

For those receiving Social Security benefits, median Social Security income generally increases with age, with median own income peaking just below $17,000 and median per capita income peaking just above $16,000 from age 70 through age 76 (Figure 10, middle right panel). Median own Social Security income is substantially lower at ages when incidence either drops rapidly (age 19 through age 21) or increases rapidly (age 62 through age 66), as at those ages many of the individuals exiting or entering the benefit rolls would have received less than a full year of benefits. This effect is less notable for median per capita income during the 60s because some individuals claiming benefits mid-year had a spouse who was already receiving Social Security income. After age 76, both own and per capita median Social Security income decline only modestly with age.

4.1.3 Retirement Income

Incidence of retirement income (IRA distributions plus pension and annuity income) increases with age, with 70 percent or more of the population receiving retirement income directly or through a spouse from age 71 through age 91 (Figure 10, bottom left panel).

Growth in own retirement income incidence increases with age—at first slowly and then more quickly, particularly beginning at age 55 (Figure 10, bottom left panel, dark red line). The largest percentage point increases in incidence were at certain ages related to pension rules. The first of these ages was age 60, immediately following the elimination of the early withdrawal penalty at age 59½ (when own incidence increases from 19 percent to 25 percent). The second

was age 65, the normal retirement age for many DB pensions (when own incidence increases from 37 percent to 43 percent). And the final big increase was from age 69 to age 71, around age 70½, after which distributions generally are required from IRAs and DC plans (when own incidence increases from 52 percent to 63 percent).[30] From age 72 through age 95, 64 percent or more of the population received retirement income directly.

When looking more broadly at the share of the population who received retirement income either directly or through a spouse, incidence was higher, particularly for individuals in their 60s. For example, own or spouse retirement income incidence at age 43 was 10 percent, including 3 percent of the population who only had spousal retirement income. The share with only spousal retirement income increases with age, peaking at 12 percent at age 69—prior to the age at which distributions are required from most IRAs and DC plans. The share with only spousal retirement income then drops to 7 percent at age 71 and continues to decline with age thereafter. Nevertheless, from age 71 through age 91, 70 percent or more of the population receives retirement income directly or through a spouse.

For those with the income, median retirement income grows slowly with age after age 20 but remains fairly modest at younger ages (Figure 10, lower right panel). For example, median own retirement income is just over $2,300 at age 30 and is $4,500 at age 40.

Growth in median amounts with age begins to accelerate around age 50, with median per capita retirement income peaking at $15,200 at age 71. Own retirement income actually peaks at $17,200 at age 68 and age 69, prior to required distributions from most IRAs and DC plans, and then falls to $15,800 by age 71. Both own and per capita income then decline slowly with age thereafter.

4.1.4 Transition into Retirement

The age patterns of income receipt suggest that, for many, retirement is more of a transitional period than it is an event that occurs at a single point in time. Although we observe a decline in the incidence of own labor income and an increase in the incidence of both own

[30] In 2016, starting in the tax year an individual turns aged 70½ distributions were required from (i) traditional IRAs and (ii) defined contribution plans after separation from employment. Distributions were not required for those aged 70½ or older from (i) Roth IRAs or (ii) defined contribution plans prior to separation from employment.

Social Security and own retirement income over the life cycle, the year-to-year changes are not highly correlated immediately after age 61—the ages at which many workers transition into retirement (Figure 11, top left panel). For example, own Social Security incidence increased by 71 percentage points from age 61 to age 67, but incidence of own labor income declined by only 30 percentage points from age 61 to age 68.[31]

One reason the annual incidence changes were not highly correlated is that some individuals may not have had their own labor income in the year (or years) before they first received their own Social Security income. Indeed, the increased share of the population who received their own Labor+SS+Retire income after age 61 suggests that some individuals had neither their own labor income nor their own retirement income prior to claiming Social Security benefits. In addition, another 7 percent of the population was not working and only had own retirement income at age 61 (Figure 11, bottom left panel).

Another reason the annual incidence changes were not highly correlated is that some individuals may have continued to work after claiming Social Security or after beginning to receive retirement income (Figure 11, bottom left panel). For example, of those with their own retirement income, 85 percent at age 50 and 68 percent at age 60 also had their own labor income. Of those aged 66 who received their own Social Security income, 38 percent also received their own labor income. For both groups, the share with labor income remained above 30 percent through age 68.

4.1.5 Labor+SS+Retire Income

When the incidence and amounts of labor, Social Security, and retirement income are examined separately, it may be difficult to make sense of the results—especially during the transition into retirement.

A more coherent picture emerges when looking at the share of the population with income from at least one of these three sources: incidence is high and fairly stable during prime working years and then increases further in retirement (Figure 12, left panel).

[31] Because we observe annual income, we extend the labor calculation to age 68 to account for work prior to claiming during the year the individual reaches age 67.

The share of the population with their own income from at least one of these three sources is much higher after age 61. Own Labor+SS+Retire income incidence peaks at 87 percent in the mid-20s and then declines slowly with age to 82 percent at age 61. Associated with claiming of Social Security benefits, own incidence increases sharply after age 61, averaging 95.4 percent from age 66 through age 90.

In contrast, the share of the population receiving this income either directly or through a spouse increases much less dramatically after age 61. Own or spouse Labor+SS+Retire income incidence is more stable than own incidence during prime working years, equal to 90 percent or more of the population from age 26 through age 61 and averaging 91 percent. Own or spouse incidence also increases after age 61, albeit less dramatically than own incidence, averaging 95.7 percent from age 66 through age 90.

Although the decline in own Labor+SS+Retire income prior to age 61 is largely accounted for by those who have a spouse with the income, the data indicate that some portion of the population has only intermittent work prior to claiming Social Security or receiving retirement income. In particular, Social Security benefits are only available to those who have worked, or had a spouse who worked, long enough to qualify for benefits. In the case of Social Security retirement benefits, the equivalent of 10 years of work is required. The increased incidence in Labor+SS+Retire income after age 61 indicates that some individuals/couples worked long enough to be eligible for benefits but were not employed consistently prior to claiming those benefits.

Median own and per capita Labor+SS+Retire income follow a similar path through age 61 (Figure 12, right panel). Prior to age 14, when most with Labor+SS+Retire income are receiving Social Security benefits, median amounts increase slowly with age to just over $5,000 at age 13. As the share with labor income then increases with age, median amounts decline to just under $2,200 at age 16 and then increase with age, with both own and per capita median Labor+SS+Retire income peaking at over $41,000 at age 46. Median amounts then decline slowly until age 61, to just under $37,000.

Immediately after age 61, per capita amounts of Labor+SS+Retire income decline more slowly with age than own amounts because the share of two-income married couples increases.

The sharp increase in own Labor+SS+Retire income incidence after age 61 is associated with a sharp decline in own median amounts—which is consistent with individuals who previously had no income beginning to receive relatively low amounts. But because many of those without own Labor+SS+Retire income at age 61 were married individuals who had a spouse with the income, the decline in per capita amounts is much less dramatic.

4.2 Income Sources and Amounts by Age and Income

The transition from relying primarily on labor income to relying primarily on retirement and/or Social Security income tends to occur at younger ages for lower-income individuals. For the lowest income ventiles, a good deal of this transition occurs prior to the early claiming age for Social Security retirement benefits (age 62). For example, at age 61 fewer than half of individuals in ventile 2 and ventile 3 receive labor income either directly or through spouse while more than half receive Social Security income. More generally, higher income individuals are more likely to work longer and to delay claiming Social Security benefits.

In retirement, the relative importance of Social Security and retirement income varies considerably across the income distribution. Individuals in the lowest income ventiles are much less likely to have retirement income and those who do generally have small amounts. The importance of retirement income, however, increases rapidly with income. At age 72, for example, 90 percent of individuals in ventile 10 receive retirement income either directly or through a spouse, with the median amount per capita equal to $12,000.

4.2.1 Labor Income

Perhaps not surprisingly, the lowest income ventiles are much less likely to have labor income during typical working years (Figure 13). Most individuals have their own labor income in their early to mid-20s regardless of income rank. At age 25, own labor income incidence ranges from 77 percent for the lowest-income ventile to 97 percent for the eight highest-income ventiles. Long before typical retirement ages, however, labor income becomes much less prevalent for the lowest income ventiles

Through age 50, ventiles 11 through 19 all have similar age patterns of labor income incidence (Figure 13, top panel). For this group as a whole, own labor incidence is 97 percent at

age 25, falls modestly through the early 30s, and then stabilizes, averaging 92 percent from age 33 through age 50. This decline in own incidence is largely attributable to married individuals with working spouses, as the share who receive labor income either directly or through a spouse averages 99 percent from age 25 through age 50

For the lower income ventiles (Figure 13, bottom panel), the drop in own labor income incidence after the mid-20s is progressively more pronounced as income-rank falls, although it only translates into a fall in own or spouse incidence for the lowest income ventiles. For example, own or spouse labor income incidence for ventile 5 is 93 percent from age 33 through age 42—the same as it was at age 25—and is 90 percent or more until age 50. In contrast, own or spouse incidence falls consistently over these ages for the bottom three ventiles, with only about two-thirds receiving labor income, either directly or through a spouse, at age 50.

The highest income ventile has a unique age profile (Figure 13, top panel). Like the lower income ventiles, own labor income incidence falls substantially with age—from 97 percent at age 25 to just over 80 percent at age 50. Like the higher income ventiles, however, own or spouse labor income incidence remains high and stable, remaining at 98 percent from age 25 through age 44, and is still at 97 percent at age 50.

After age 50, labor income incidence falls across all ventiles with declines accelerating after age 61, but the declines typically occur at younger ages in the lower income ventiles (Figure 13). For example, by age 61, own labor incidence is 40 percent or less for the three lowest income ventiles, and own or spouse labor incidence is below 50 percent. In contrast, own labor incidence for ventile 11 is just over 75 percent at age 61 and own or spouse labor incidence is nearly 90 percent. Own labor incidence for ventile 11 does not fall to 40 percent until age 67 and own or spouse labor incidence does not fall below 50 percent until age 69.

Once again, the highest income ventile has a unique age profile after age 50. Compared with the rest of the top half of the income distribution, the top ventile has much lower own—and slightly lower own or spouse—labor income incidence through the late 50s but has the highest incidence of both at ages 64 and older. At age 75, more than half of the top income ventile receives labor income, either directly or through a spouse.

Conditional on working, own and per capita labor income generally peaks in the mid- to late-40s, declines modestly through the early to mid-60s, and then declines more rapidly (Figure 14). The lone exception is the lowest income quintile, where median labor income tends to drift upward with age even as the share working declines.

Labor income is relatively modest for most workers (Figure 14). At age 46, both own and per capita median labor income peak around $20,000 for ventile 5 and below $40,000 for ventile 10. Peak median labor income exceeds $100,000 only for the top two ventiles.

Labor income follows a similar pattern by age for ventiles 3 through 18 (the middle 80 percent of the income distribution). For these ventiles, both own and per capita median labor income peak in the mid- to late-40s and are 95 percent or more of the peak amounts from age 43 through age 55. The decline in earnings with age accelerates after age 61, albeit more quickly for the lower income ventiles. At age 73, both own and per capita median labor income are less than 30 percent of the peak amounts for ventiles 3 through 18.

Compared with the middle income ventiles, earnings initially fall more quickly with age after reaching their peak for the top two income ventiles, but then fall more slowly after age 61. For example, median own labor income at age 61 is only 77 percent of peak earnings for ventile 20, compared with an average of 89 percent for ventiles 3 through 18. At age 73, however, median earnings for ventile 20 are still 38 percent their peak, compared with 26 percent of their peak, on average, for ventiles 3 through 18.

The importance of labor income thus declines at older ages both because fewer individuals work (or have a spouse who does) and because those who continue to work typically earn less than younger workers. For those with income from work at age 75, for example, median per capita labor income is below $10,000 for the bottom 14 ventiles and below $20,000 for the bottom 18 ventiles.

4.2.2 Social Security and Retirement Income

For those younger than age 60—when own Social Security income primarily represents disability benefits—Social Security incidence generally declines with income (Figure 15, left panels). At these younger ages, incidence is typically highest among individuals in the second

and third ventiles, with about one-in-four individuals in these income groups already receiving their own Social Security benefits by age 50 and about four-in-ten receiving it by age 59.

For those aged 60 or older, lower income is associated with earlier claiming of Social Security retirement benefits (Figure 16, left panel).[32] Of the increase in own Social Security income incidence observed between age 59 and age 72, 60 percent occurred by age 63 for the lowest five ventiles, on average, whereas only about 20 percent occurred at age 66 (the full benefit age) or older.[33] In contrast, only 20 percent of the increase in own Social Security incidence occurred by age 63 for the top five ventiles, on average, while 65 percent occurred at age 66 or older.

At age 70, nearly all received Social Security benefits either directly or through a spouse (Figure 16, right panel), and incidence remains high at older ages (Figure 15, right panels). At age 72, for example, ventile one has the lowest own or spouse Social Security incidence at 90 percent. Incidence for the other ventiles ranges from 97 percent for ventiles 18 and 19 up to 99 percent for ventiles 4 through 12.

Consistent with Social Security's progressive benefit formula, median Social Security income for those aged 70 or older differs more among the bottom five ventiles than it does among the top 15 ventiles (Figure 17). Social Security benefits are designed to replace a high share of wages for workers with low lifetime earnings but increase more slowly as lifetime earnings increase.

Controlling for income rank among those aged 70 or older, median Social Security income has a relatively flat age profile for the bottom income ventiles but is typically higher for younger cohorts in the top income ventiles (Figure 17).[34] For all but the lowest three ventiles, median

[32] The figure reports any Social Security (retirement, survivor, or disability) receipt, but after age 60, the largest incidence changes are from retirement or survivor claims.

[33] Age 66 is the full benefit age for individuals aged 62 through 73 at year-end 2016 (see note 29).

[34] There are multiple, possibly offsetting, reasons median own Social Security income would differ by age. First, younger higher earners would have higher benefits because the maximum amount of annual earnings on which taxes were collected—and, thus, the maximum amount of annual earning on which benefit calculations were based—increased substantially in the 1970s and early 1980s, from roughly 125 percent of the average wage index (AWI) in 1972 to roughly 235 percent of AWI in 1983. All else equal, this would increase benefits for those earning above 125 percent of AWI but would not impact other workers. Second, average real earnings have increased over time

own income is at least modestly higher for younger cohorts. Median per capita Social Security income, however, is consistently higher for younger cohorts only for those in the top of the income distribution.

Incidence of income from pensions, annuities, and IRAs generally increases with income for both the young and the old, although incidence peaks below the top ventile for those older than age 35 (Figure 18). Retirement income incidence for ventile 20 is lowest relative to the rest of the top half of the income distribution for individuals in their 60s, who are not yet required to take retirement plan distributions (Figure 18, top panels). Much of that difference disappears between age 69 and age 72, however, when incidence increases most sharply for the top income ventile.

Controlling for individuals' income rank within their birth cohort, retirement income incidence generally follows a similar pattern by age—increasing most rapidly from the late 50s through the early 70s and then remaining about the same at older ages. The lowest income ventile is an exception to this rule, with incidence peaking for those aged 61.

Among individuals aged 70 or older, incidence of retirement income increases rapidly with income for the bottom half of the income distribution, while nearly all in the top half of the income distribution receive the income. At age 72, for example, 90 percent of ventile 10 received retirement income either directly or through a spouse, compared with 54 percent of ventile 5. For the top half of the income distribution, own or spouse incidence at age 72 ranges from 91 percent for ventile 11 up to 94 percent for ventiles 17 through 19.

Among those aged 70 or older with the income, median retirement income varies much more across income ventiles than does median Social Security income (Figures 17 and 19). Within each birth cohort aged 70 or older, median retirement income for ventile 10 is more than

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which, all else equal, would result in younger cohorts having higher benefits across the income distribution. Counteracting these two changes, the full benefit age increased from age 65 for those born in 1937 or earlier (aged 79 or older in 2016) to age 66 for those born from 1943 to 1954 (aged 62 to 73 in 2016). For those claiming at age 65, this change would have reduced benefits by 6.7 percent. In addition, differential mortality can affect median benefits. Differential mortality by income would tend to increase median benefits for older individuals, as those with higher lifetime earnings—and, thus, higher Social Security benefits—would be more likely to survive to older ages. Differential mortality by gender could also affect median benefits, but the availability of survivor benefits makes it unclear what that impact would be.

triple that of ventile 5, and median retirement income for ventile 15 is more than twice that of ventile 10. At age 72, for example, median per capita retirement income is $3,350 for ventile 5, $12,000 for ventile 10, and $26,000 for ventile 15.

Controlling for income rank among those aged 70 or older, median retirement income is typically higher for younger cohorts (Figure 19). The exceptions are the two highest income ventiles, with median retirement income having a relatively flat age profile for ventile 19 and increasing with age for ventile 20. Retirement income declines with age for the other ventiles, with the largest declines near the middle of the income distribution. For example, median per-capita retirement income of ventile 10 is 40 percent higher for those in their early 70s (averaging just over $12,000) than for those in their late 80s (averaging $8,700).

To better illustrate how the relative importance of Social Security and retirement income varies with total income, Figure 20 shows the incidence and conditional median amounts of those two income sources for all 20 ventiles among individuals for a single birth-year cohort—those aged 72 in 2016.

Regardless of income, nearly all received Social Security benefits—either directly or through a spouse—at age 72 (Figure 20, top panel). Most of those without Social Security who have lower income in retirement presumably did not work long enough to qualify for benefits, nor did they have a spouse who did.[35] Those without Social Security who have higher income in retirement were most likely former government workers who, because they were covered by an alternative pension system, were not required to participate in Social Security.

In contrast to Social Security income, the share who received retirement distributions at age 72 varied considerably across the income distribution. Individuals in the lowest income ventiles were unlikely to have retirement income but incidence increases sharply with income, with own or spouse retirement income incidence greater than 50 percent for ventile 5 and higher, 75 percent or more for ventile 7 and higher, and 90 percent or more for ventile 10 and higher.

[35] Individuals are required to have the equivalent of 10 years of covered employment to qualify for Social Security benefits. Individuals who do not qualify based on their own work history, however, would be eligible to receive spousal or survivor benefits if they were married, for 10 years or longer, to a worker who qualified for Social Security benefits. See note 25 for a further explanation of how we measure receipt of own Social Security income.

Median retirement income also varies more by income ventile than does median Social Security income (Figure 20, bottom panel). Not only are those with lower income less likely to have retirement income, but those who do typically receive modest amounts. Median per capita retirement income increases rapidly as total income increases, however, and is greater than median Social Security benefits for ventile 13 and higher (representing the top 40 percent of the population).

4.2.3 Labor+SS+Retire Income

For most income ventiles, the share of working-age individuals with own Labor+SS+Retire income peaks for those in their late teens or early 20s, declines with age through the early to mid-30s, and then remains fairly stable through age 61 (Figure 21, left panels). For ventiles 9 through 19, for example, own Labor+SS+Retire income incidence is 98 percent or higher at age 19 (not shown on the chart) and remains 90 percent or higher through age 61.

This pattern differs for both the lowest income ventile and the highest income ventile. For ventile 1, own Labor+SS+Retire income incidence falls fairly steadily with age, from 80 percent in the late 20s to only 63 percent at age 61. For ventile 20, own Labor+SS+Retire income incidence is 97 percent from age 20 through age 25, but then declines to 90 percent at age 35 and is 85 percent or less from age 43 through age 61.

Among higher income ventiles, most without their own Labor+SS+Retire income have a spouse with the income. For ventiles 9 through 19, for example, own or spouse Labor+SS+Retire income incidence is 98 percent or higher from age 24 through age 61. At 98 percent from age 24 through age 48, own or spouse incidence is also high for ventile 20, but it falls to 96 percent from age 59 through age 61—which is lower incidence at those ages than all but ventiles 1 through 4.

Although many in the lowest income ventiles without their own Labor+SS+Retire income also have a spouse with the income, there are more individuals in these ventiles who receive, either directly or through a spouse, only non-Labor+SS+Retire income.[36] For ventile 4, for

[36] Note that only individuals with positive per capita total income are included in the ventiles, so those included in a ventile without own or spouse Labor+SS+Retire income have own or spouse income from some other source. As

example, own or spouse Labor+SS+Retire income incidence is 90 percent or less from age 32 through age 39 but increases back up to 95 percent or more from age 54 through age 61. For ventile 1, own or spouse incidence falls from 82 percent at age 30 to 73 percent from age 57 through age 61.

After age 61, own Labor+SS+Retire income incidence increases sharply across all ventiles and own or spouse incidence increases among the lower income ventiles. By age 72, essentially all have Labor+SS+Retire income in the top 19 income ventiles. Ventile 1 has the lowest incidence at age 72, with 94 percent having their own Labor+SS+Retire income and 95 percent receiving the income directly or through a spouse.

Labor+SS+Retire income is more evenly distributed at older ages than it is at younger ages (Figure 22). Conditional on having the income, the amount of median Labor+SS+Retire income follows a hump-shaped pattern with age for all but the lowest income ventiles—which have flat or increasing income at older ages. As was the case with total income, median Labor+SS+Retire income typically peaks in the mid- to late-40s, with the largest declines at older ages occurring in the highest income ventiles. Unlike total income, however, Labor+SS+Retire income continues to decline more rapidly with age for the highest income ventiles even after age 70. After age 70 median per capita Labor+SS+Retire income changes little with age at the bottom of the income distribution, declines about 1 percent per year in the middle, and declines by about 2 percent per year at the top.

4.3 Income Shares

To better quantify the importance of different types of income, this section analyzes the share of total income from different sources. These measures capture both the likelihood that individuals have a particular source of income—either directly or through a spouse—and the amount received by those who have the income.

For each individual we calculate income shares as:

noted earlier in the text, 3.5 percent of the population, on average, has only non-Labor+SS+Retire income from age 18 through age 61, with that share falling to less than 0.5 percent from age 70 through age 94.

$$S_i = \frac{X_i}{Z_i}$$

Where S = share of per capita total income from a given source[37]
X= per capita income from a given source,
Z = per capita total income, and
i indexes individuals

4.3.1 Labor+SS+Retire Income Share

Regardless of age, most individuals received most of their income from some combination of labor, Social Security, and retirement income (that is, IRA distributions and pension and annuity income). The median share from Labor+SS+Retire income was 100 percent from age 20 through age 71 and remained 99 percent or higher after age 71 (Figure 23, orange line). The 25th percentile of the Labor+SS+Retire income share declines with age but was below 99 percent only for individuals older than age 52 and was below 95 percent only for individuals older than age 73 (Figure 23, lower blue line).

It is only in the highest income ventiles at older ages where the typical individual received more than a de minimis share of their total income from non-Labor+SS+Retire income (Figure 24). At age 50, for example, the median Labor+SS+Retire income share was 95 percent for ventile 20 and either 100 percent or slightly below for the other 19 ventiles. The importance of non-Labor+SS+Retire income generally increases with age, especially for the highest income ventiles. At age 75, for example, the median Labor+SS+Retire income share was just under 70 percent for ventile 20 and a bit over 90 percent for ventile 19.

4.3.2 Labor Income Share

The typical individual gets 100 percent of their total income from labor from age 16 through the mid-50s but gets no labor income at age 68 (Figure 25, top panel, orange line). The 25th percentile (lower blue line) and the 75th percentile (higher blue line) illustrate the range of

[37] For individuals with positive source income and negative total income, the income share from that source is set to 100 percent. For individuals with negative source income—which can only occur in the case of non-Labor+SS+Retire income and some of its components—the income share from that source is set to zero. Because both negative total income and negative source income are uncommon, individuals to whom these income shares are assigned are unlikely to determine the 25th percentile, median, or 75th percentile.

experience across the population. For example, while the typical individual got nearly all their income from labor at age 55, 25 percent received 68 percent or less of their income from labor. Conversely, while the typical individual had no labor income at age 68, 25 percent received 40 percent or more of their income from labor.

Across the income distribution we see a similar age pattern in the labor income share but the shift away from labor income typically occurs at younger ages for lower income ventiles (Figure 26).

There is not much variation in the age pattern of labor income across, or within, the middle income ventiles. For ventiles 7 through 15, the median labor income share is 100 percent from age 20 through age 55, does not fall below 95 percent until age 60, and hits zero at age 67 or older.

For the highest income ventiles, the age pattern is similar to that of the middle income ventiles, but the rapid declines in labor income shares tend to occur at slightly older ages. For example, the median labor income share for the highest income ventile does not hit zero until age 76.

For lowest income ventiles, in contrast, the transition away from labor income occurs at younger ages. In the case of the three lowest income ventiles, the transition largely occurs before the early claiming age for Social Security benefits. For example, the median labor income share for ventile 2 falls below 95 percent at age 52 and hits zero at age 61.

4.3.3 Social Security and Retirement Income Shares

As labor income declines during the transition into retirement, Social Security and retirement income increase in importance (Figure 25, middle and bottom panels) although the relative importance of those two income sources varies considerably across the population (Figures 27 and 28).

The share of income from Social Security increases rapidly in the 60s and early 70s and then remains fairly steady through the mid-80s (Figure 25, middle panel). By age 75, the typical individual gets just over half of their total income from Social Security. That share varies considerably across the population, however, with 25 percent getting 85 percent or more of their income from Social Security at age 75 and 25 percent getting one-third or less.

The retirement income share follows a similar pattern by age as Social Security—increasing in the 60s and early 70s and remaining fairly steady through the mid-80s—but the share of total income is typically lower (Figure 25, bottom panel). By age 75, the median retirement income share is 27 percent, with 25 percent of the population getting more than half of their income from retirement plans and 25 percent getting little to no retirement income.

Much of the variation in Social Security and retirement income shares across the population is related to income.

Although few get Social Security income before age 60, disability benefits represent a large share of income for a substantial minority of individuals in some of the lower income ventiles (Figure 27). One-quarter of individuals in ventiles 2 and 3, for example, get all their income from Social Security at age 55.

Reflecting the progressive benefit formula, Social Security income is more important in retirement for lower income individuals (Figure 27). The median Social Security income share increases more sharply and at younger ages for those in the lowest income ventiles. At age 75, the median share of income from Social Security was 100 percent for the three lowest income ventiles, was below 50 percent by ventile 12, and was below 33 percent for the highest four income ventiles.

Consistent with having lower Social Security income shares, retirement plan distributions were most important for retirees with moderate to moderately high income (Figure 28). At age 75, the median retirement income share was zero for the four lowest income ventiles, rises above 30 percent for ventile 9, and peaks above 50 percent for ventiles 15 through 19. Retirement income is less important for the highest income ventile, with the median retirement income share below that of ventile 9 at age 75 and generally below that of ventile 11 throughout retirement.

Those in their 70s and early 80s are less reliant on Social Security than older cohorts, with the median Social Security income share increasing, and the median retirement income share decreasing, after age 85 (Figure 25, middle and bottom panels). The reduced reliance on Social Security among more recent retiree cohorts is most prominent among the middle- and lower-middle income ventiles (Figure 27). The largest increases in median Social Security income

shares at older ages occur in ventiles 6 through 12. In contrast, the lowest income ventiles are heavily reliant on Social Security regardless of age and the age profile of the Social Security income share is relatively flat for the highest income ventiles.

4.4 Summary of Changes in the Composition of Income over the Life Cycle

Throughout their lifetimes, most Americans get most of their income from three sources ultimately derived from work—labor, Social Security, and retirement income. Older individuals in the highest income ventiles were the only groups who typically received more than a de minimis amount income from other sources.

For many individuals, retirement is a transitional period, taking place over a number of years rather than at a single point in time. Some stop working prior to claiming Social Security, others continue working after claiming Social Security. Some begin receiving retirement income before claiming Social Security, with the majority of those continuing to work. Others claim Social Security benefits but delay drawing down retirement accounts until required to do so by law.

This finding has two implications for those studying retirement. First, changes in income should be analyzed over a period of years rather than attempting to define retirement as an event that occurs at a single point in time and looking at changes in income around that event. Second, analysis of retirement should analyze comprehensive measures of income rather than, say, comparing labor income immediately before a retirement event to Social Security or retirement income immediately after the event.

This transition from relying primarily on labor income to relying primarily on retirement and/or Social Security income tends to occur at younger ages for lower-income individuals. For the lowest income ventiles, a good deal of this transition occurs prior to the early claiming age for Social Security retirement benefits (age 62). For example, at age 61 fewer than half of individuals in ventile 2 and ventile 3 received labor income either directly or through a spouse while more than half received Social Security income. For the typical individual in the middle and upper income ventiles, this transition takes place after age 61, with higher income workers more likely to delay claiming Social Security benefits and work longer.

After age 70, most retirees receive both Social Security and retirement income. From age 71 through age 91, own or spouse incidence was 93 percent or higher for Social Security income and 70 percent or higher for retirement income. Over this same age range, the share of the population with both sources of income ranged from 68 percent to 70 percent.

Among those over age 70, the relative importance of Social Security and retirement income varies considerably by income. Regardless of income, most receive Social Security income, and, because of the progressive benefit formula, the amounts received vary only modestly with income. In contrast, the lowest income ventiles are much less likely to receive retirement income, and those who do receive fairly modest amounts. Further, while most in the middle and upper income ventiles have retirement income, the amounts vary more with income than do the amounts of Social Security income. As a result, the share of income that retirees get from Social Security falls rapidly as income rank increases. At age 75, for example, the median share of income from Social Security was 100 percent for the three lowest income ventiles, was below 50 percent by ventile 12, and was below 33 percent for the highest four income ventiles.

As with previous work using tax data, we find that retirement income—that is, IRA distributions plus pension and annuity income—is much more prevalent than reported in household survey data. We also show that, other than retirees in the lowest income ventiles, retirement income is both common and substantial. At age 72, for example, 90 percent of individuals in ventile 10 received retirement income either directly or through a spouse, with the median amount per capita equal to $12,000.

5. Conclusion

In this study, we use administrative tax data to build a unique cross-sectional data set that is representative of the 2016 US population. These data allow us to observe changes in the amount and composition of individuals' income by single year of age and, within each age cohort, by income. By looking over the entire life cycle, this study complements Brady and Bass (2023a), which used panel data to follow individuals from age 55 to age 72.

Throughout their lifetimes, most Americans get most of their income from three sources: labor income (wage and salary, self-employment earnings, and unemployment compensation), Social Security income (disability and retirement benefits), and retirement income (IRA distributions and income from pensions and annuities). Among those with income, the typical adult gets 100 percent of their income from labor prior to age 55 but has no labor income after age 67.

The data suggests that retirement is better thought of as a transitional process rather than a single point in time. The transition from relying primarily on labor income to relying primarily on retirement and/or Social Security income often occurs over a number of years and typically occurs at younger ages for lower-income individuals. For the bottom 15 percent of the population, much of the transition away from labor income occurs prior to age 62.

After age 70, most retirees receive both Social Security and retirement income. Consistent with previous research using tax data, we find much higher incidence of income from employer plans and IRAs than reported in household survey data. From age 71 through age 91, own or spouse incidence was 93 percent or higher for Social Security income and 70 percent or higher for retirement income.

Income composition varies considerably across the income distribution, with lower income retirees typically getting all their income from Social Security and retirement income increasing in importance as total income increases. The typical individual in their 70s got about half their income from Social Security.

We do not find a drop in spendable income at the ages normally associated with the transition from work to retirement. In fact, from age 61 through age 70, we find an increase in both the share of the population with income and the median amount of spendable income that

those individuals have. More broadly looking over the entire life cycle, spendable income typically follows a hump-shaped pattern with age, peaking at age 46.

Despite relying more on Social Security in retirement, the age profile of spendable income is much flatter for lower income groups. Comparing individuals with the same income rank within their age group, the spendable income of the lowest income groups falls the least in retirement—relative to both those in their mid-40s and those aged 61.

The results of this study challenge two widely held beliefs about the US retirement system. The data show that spendable income does not decline rapidly at older ages, and—when compared to those of similar income rank within their age groups—falls the least at the bottom of the income distribution. The data also show that most retirees rely on a combination of Social Security benefits and retirement plan distributions in retirement.

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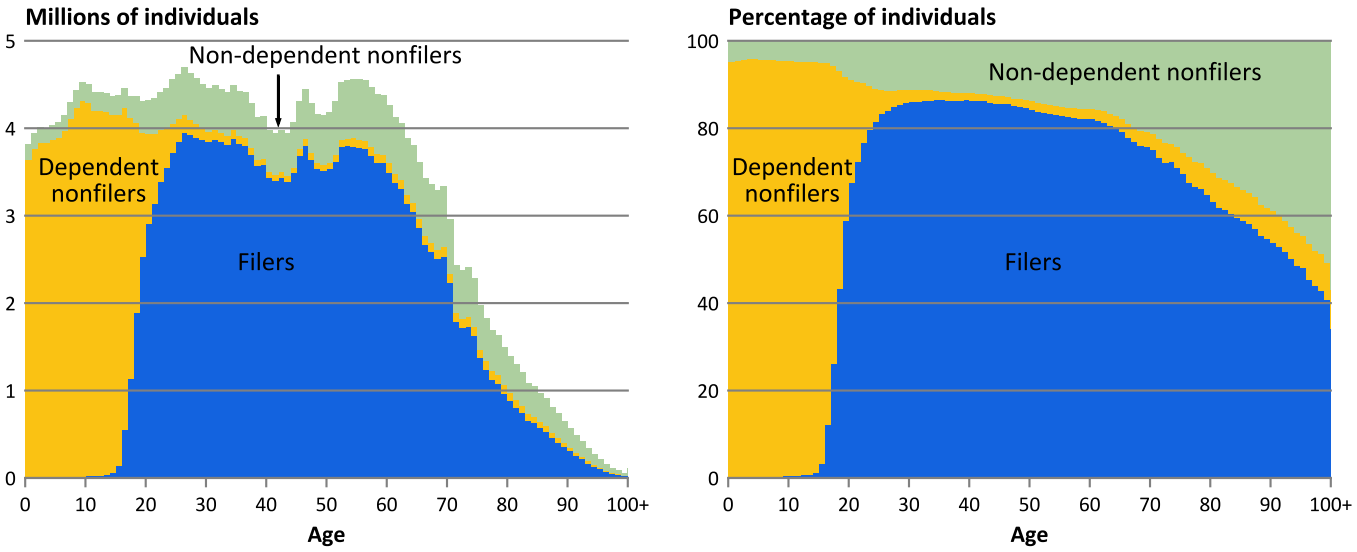
Figure 1

Share of Population Identified on Tax Returns Declines with Age

Population by sample component, 2016

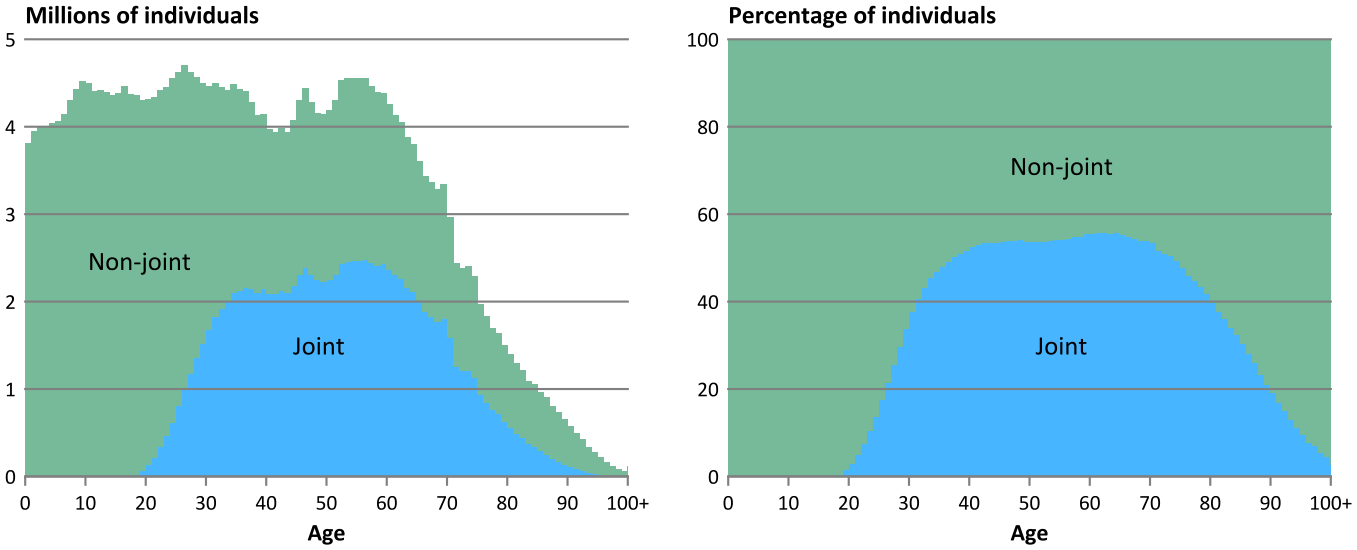


Source: Authors' tabulation of IRS data

Figure 2

Joint Share of the Population Changes over the Lifecycle

Population by filing type, 2016

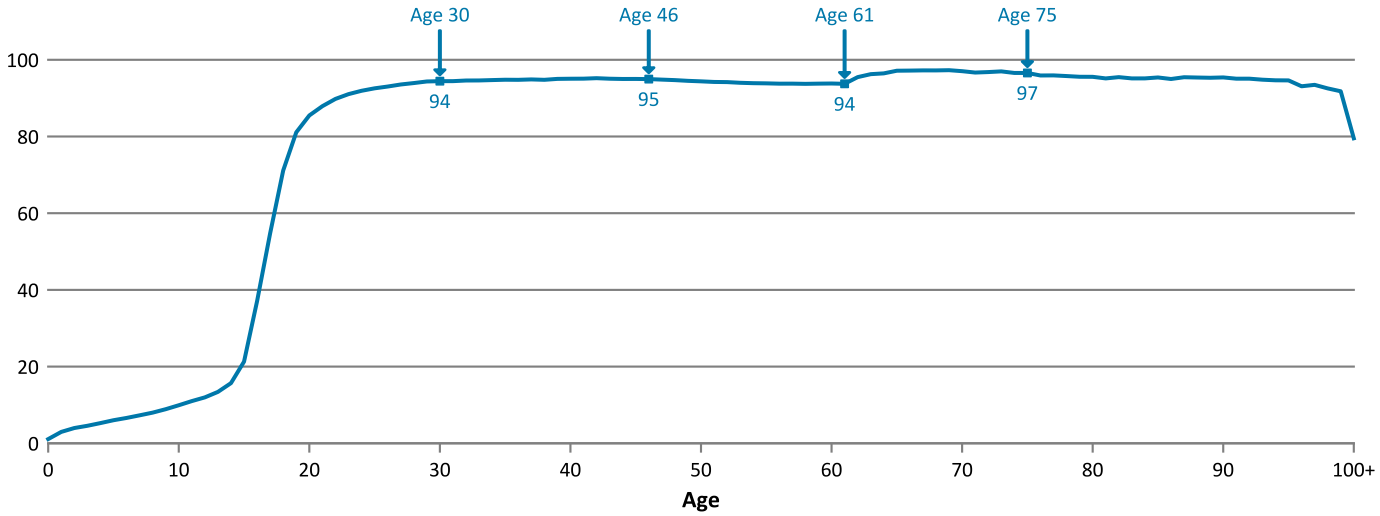


Source: Authors' tabulation of IRS data

Figure 3

Total Income Incidence Increases Slightly After Age 61

Share of population with total income* by age, 2016 (percentage)



*Individuals are categorized as having total income if they have non-zero per capita income in at least one of six broad income categories (labor, Social Security, retirement, investment, business/farm/rents/royalties, or other) or in any of the components of investment income (taxable interest, tax-exempt interest, dividends, or gains/losses).

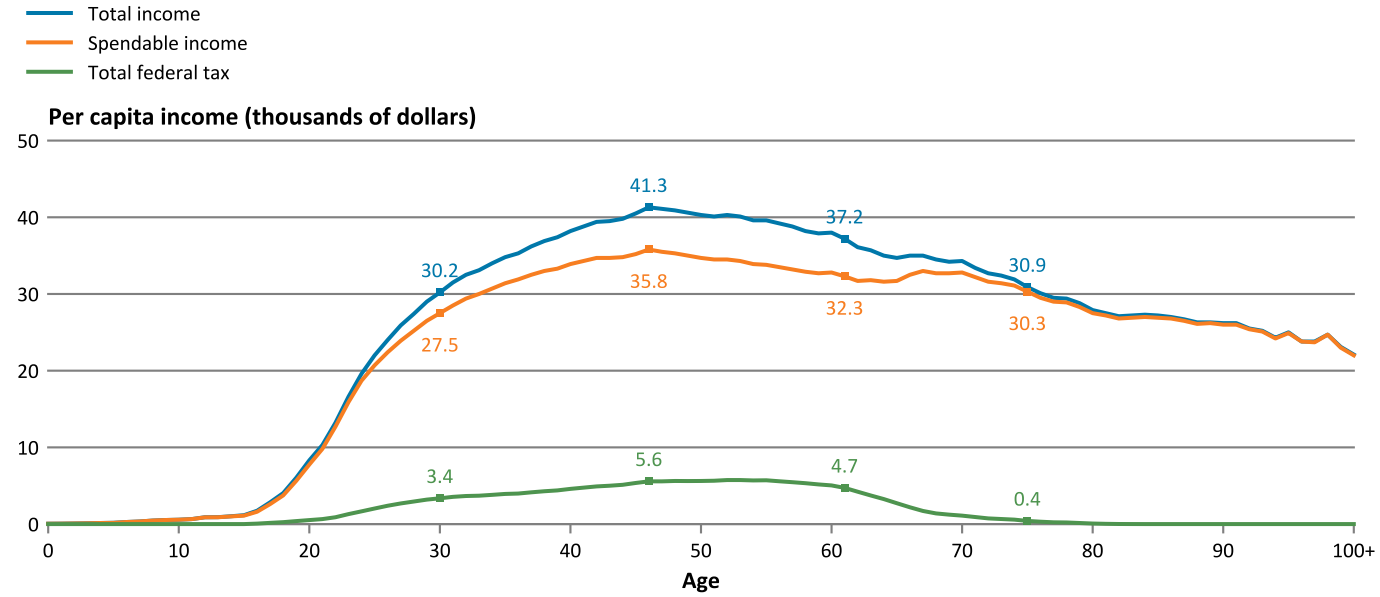
Note: Values are labeled at ages 30, 46, 61, and 75.

Source: Authors' tabulation of IRS data

Figure 4

Taxes Flatten the Age Profile of Spendable Income Relative to Total Income

Median* per capita income and taxes for those with total income by age, 2016 (thousands of dollars)



*Medians are calculated for individuals with total income, regardless of whether they have spendable income or taxes.

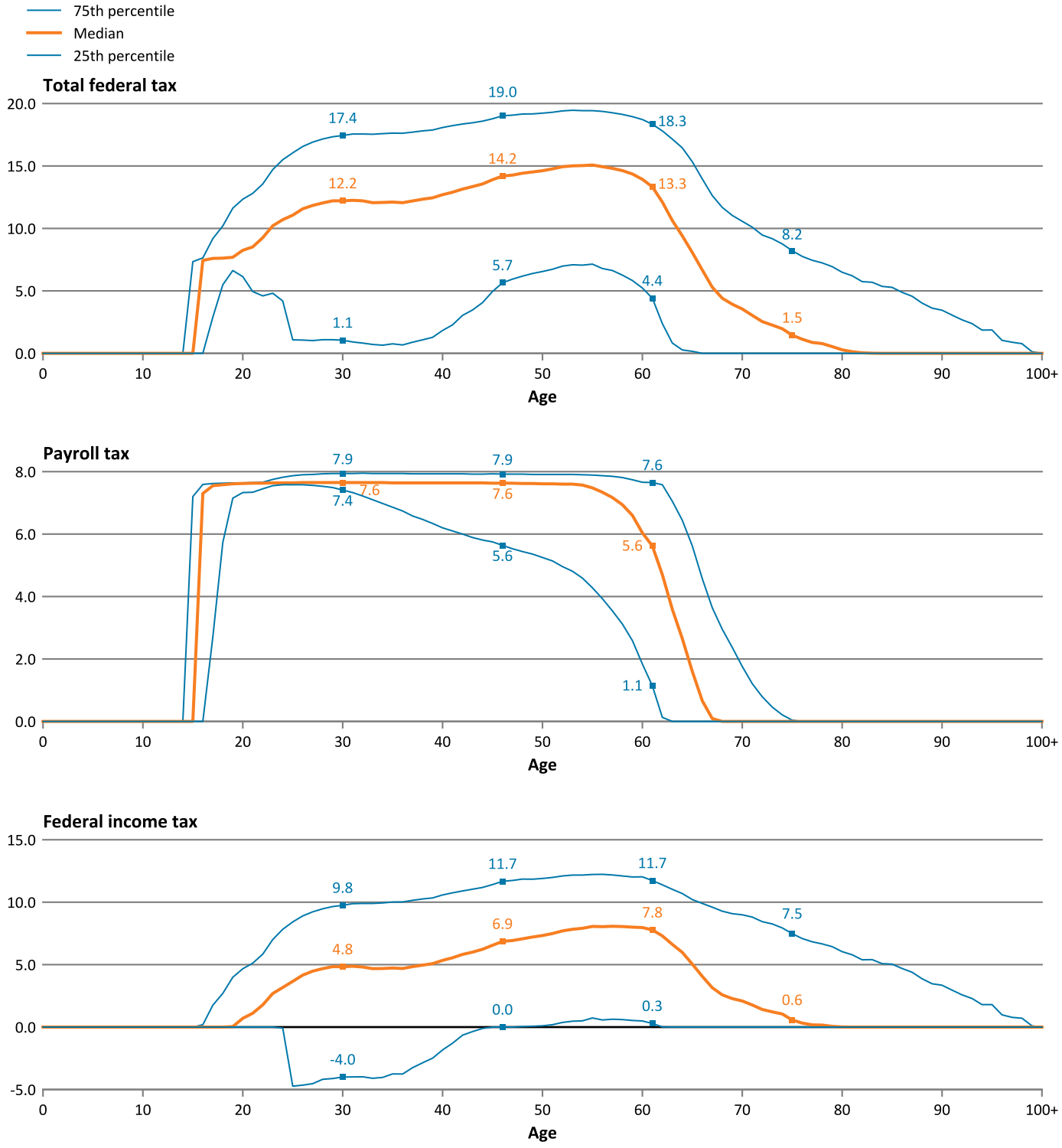
Note: Values are labeled at ages 30, 46, 61, and 75.

Source: Authors' tabulation of IRS data

Figure 5

Federal Tax Rates Decline Rapidly During the Transition into Retirement

Federal tax rates* for those with total income by age, 2016 (percent)



*Tax rates are calculated for each individual as their average effective tax rate—that is, the rates are calculated as taxes paid divided by total income. Medians are the median rate across individuals with total income, regardless of whether they have federal income or payroll taxes.

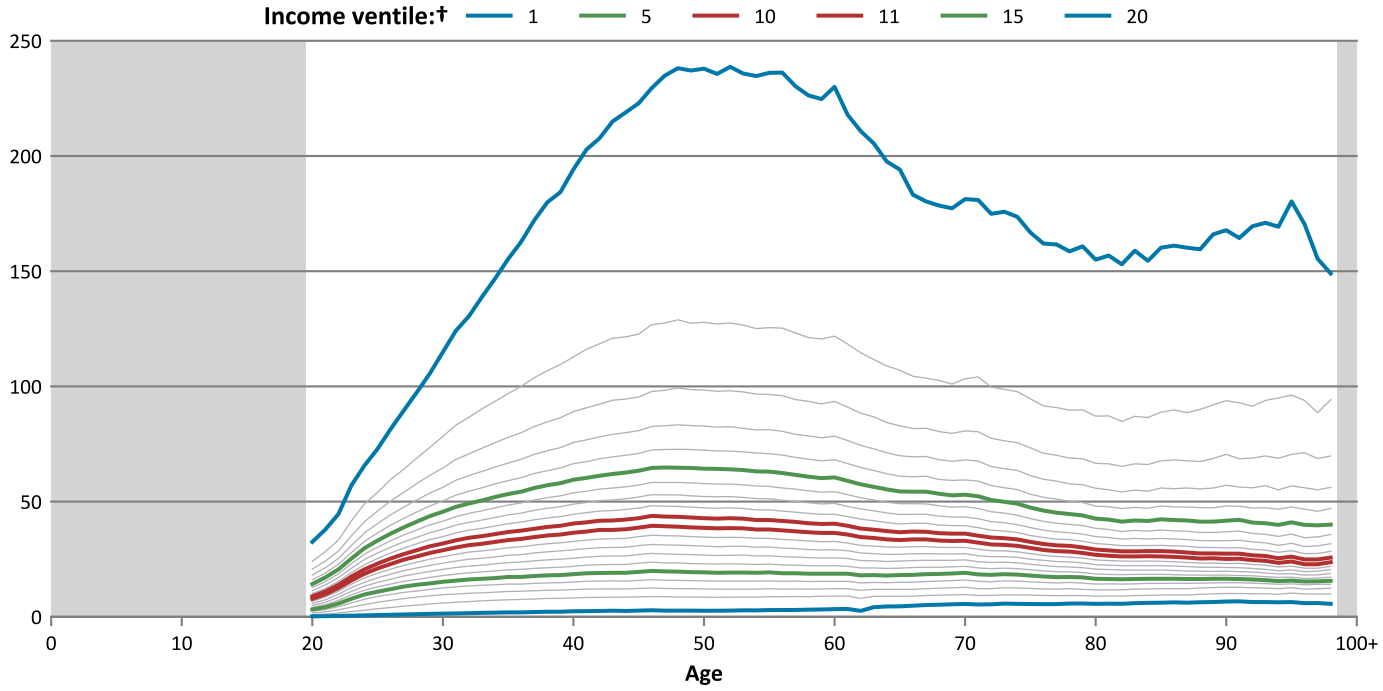
Note: Values are labeled at ages 30, 46, 61, and 75.

Source: Authors' tabulation of IRS data

Figure 6

Total Income Falls More Quickly After Age 61 for Higher Income Ventiles

Median per capita total income* by age† and income ventile‡, 2016 (thousands of dollars)



*Medians are calculated for individuals with total income.

†Because of sample size limitations, this chart presents data from age 20 to age 98.

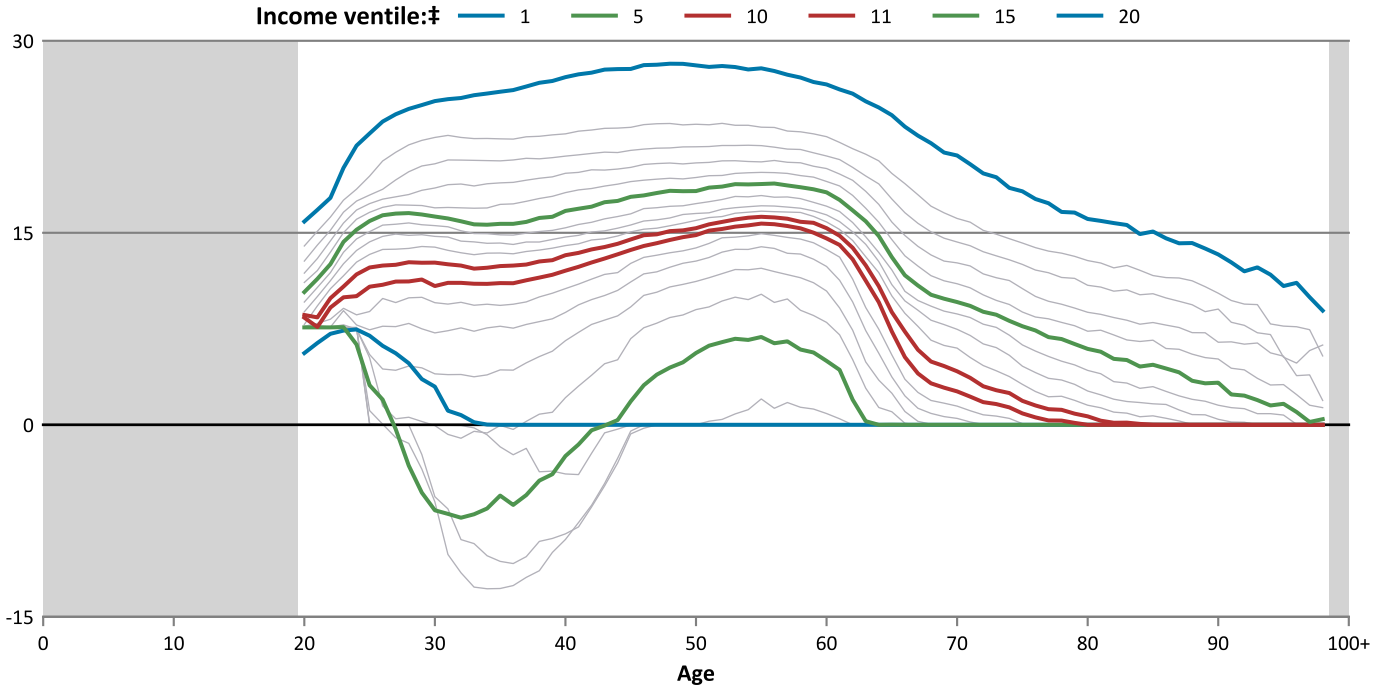
‡Individuals are ranked by their total income. Individuals with positive total income are split into 20 equally sized groups or "ventiles" with ventile 1 having the lowest income and ventile 20 having the highest income. The 0.7 percent of the sample with non-positive total income are included in the totals but not presented separately here.

Source: Authors' tabulation of IRS data

Figure 7a

Middle Income Ventiles Experience the Sharpest Drop in Tax Rates After Age 61

Median total federal tax rates* by age† and income ventile,‡ 2016 (percentage)



*For a description of the tax rate calculation, see the note on Figure 5. Medians are among individuals with total income.

†Because of sample size limitations, this chart presents data from age 20 to age 98.

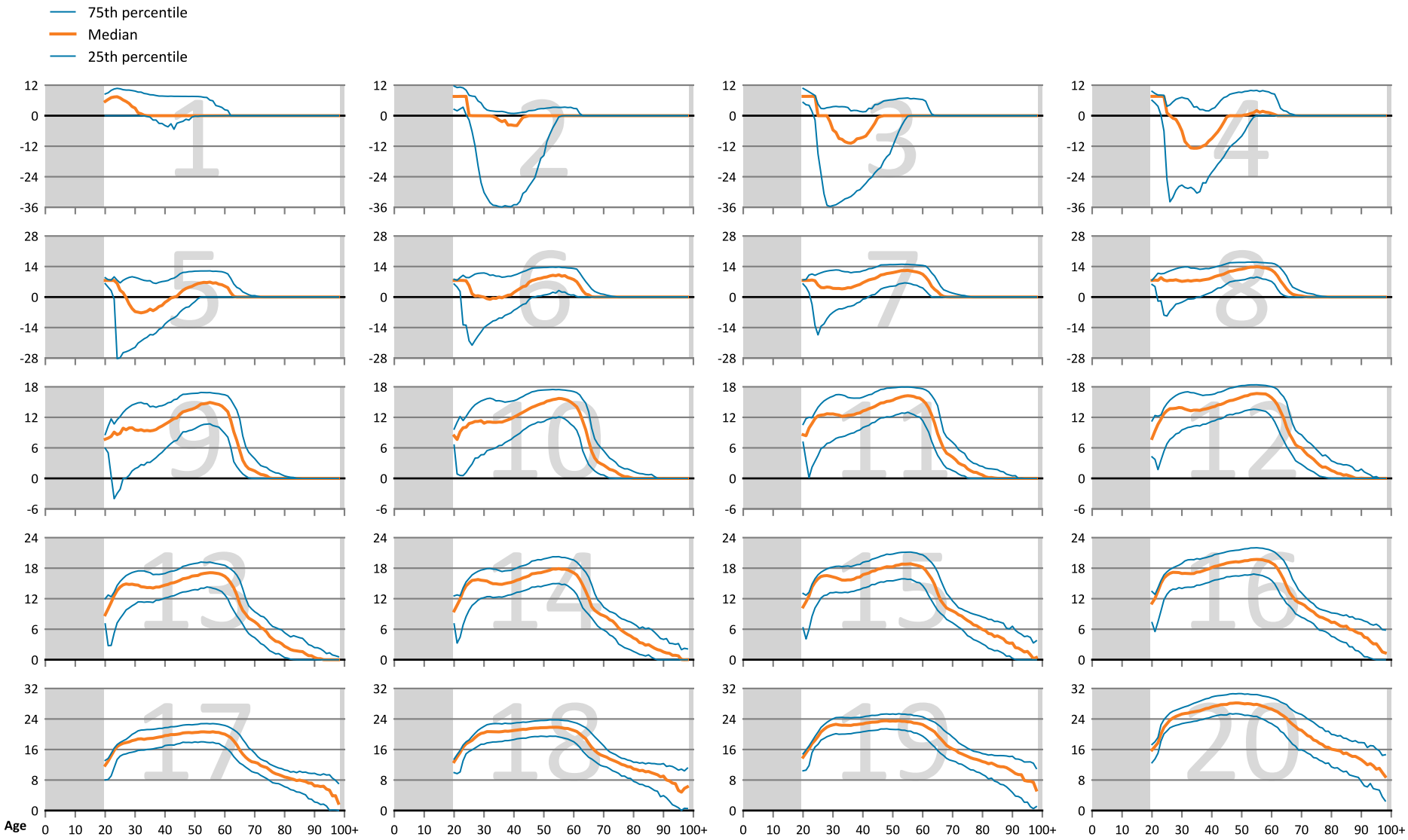
‡For a description of the income ventiles, see the note on Figure 6.

Source: Authors' tabulation of IRS data

Figure 7b

Middle Income Ventiles Experience the Sharpest Drop in Tax Rates After Age 61 (continued)

Total federal tax rates* by age† and income ventile,‡ 2016 (percentage)

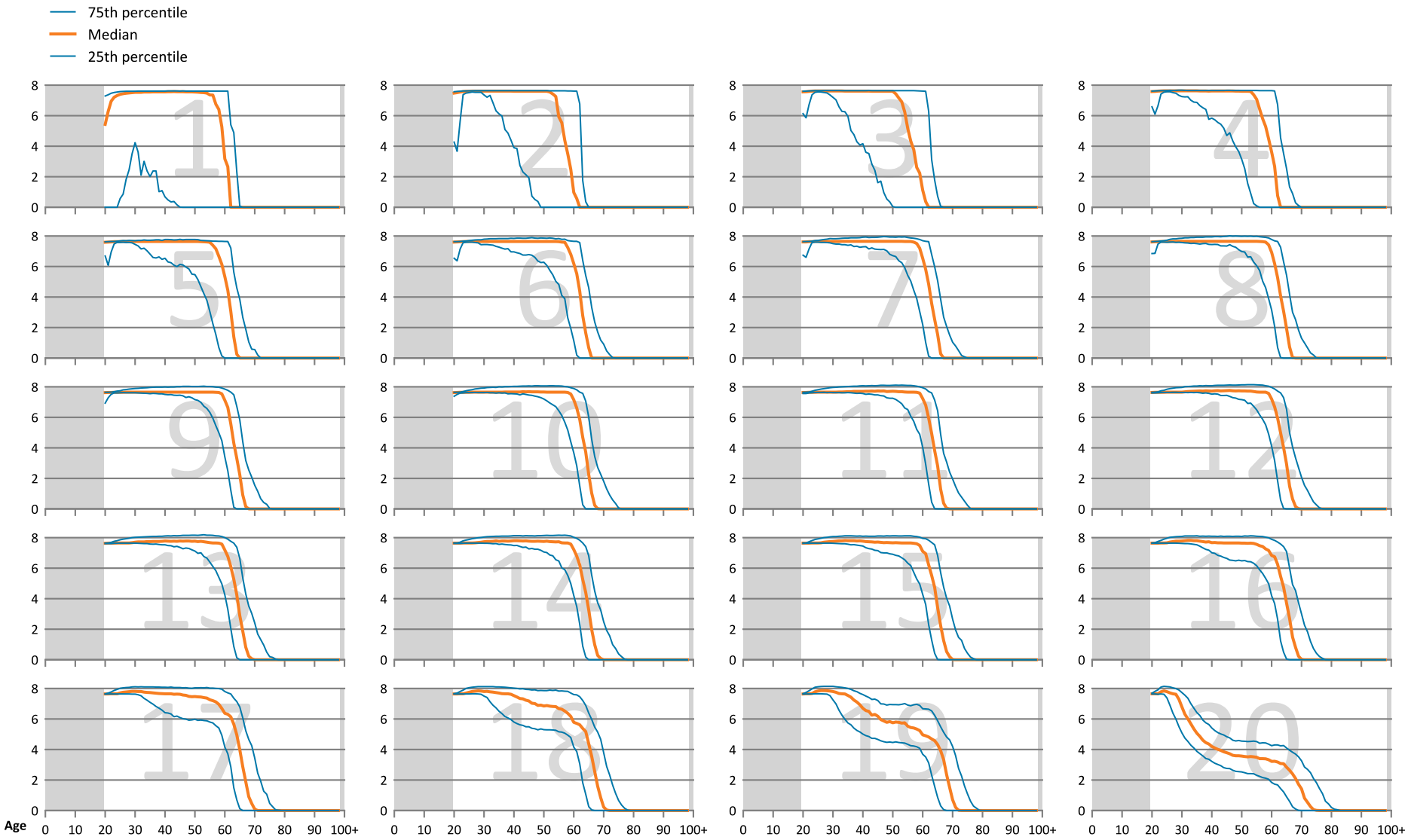


*For a description of the tax rate calculation, see the note on Figure 5. Medians and percentiles are among individuals with total income.
†Because of sample size limitations, this chart presents data from age 20 to age 98.
‡For a description of the income ventiles, see the note on Figure 6.
Source: Authors' tabulation of IRS data

Figure 7c

Middle Income Ventiles Experience the Sharpest Drop in Tax Rates After Age 61 (continued)

Payroll tax rates* by age† and income ventile,‡ 2016 (percentage)

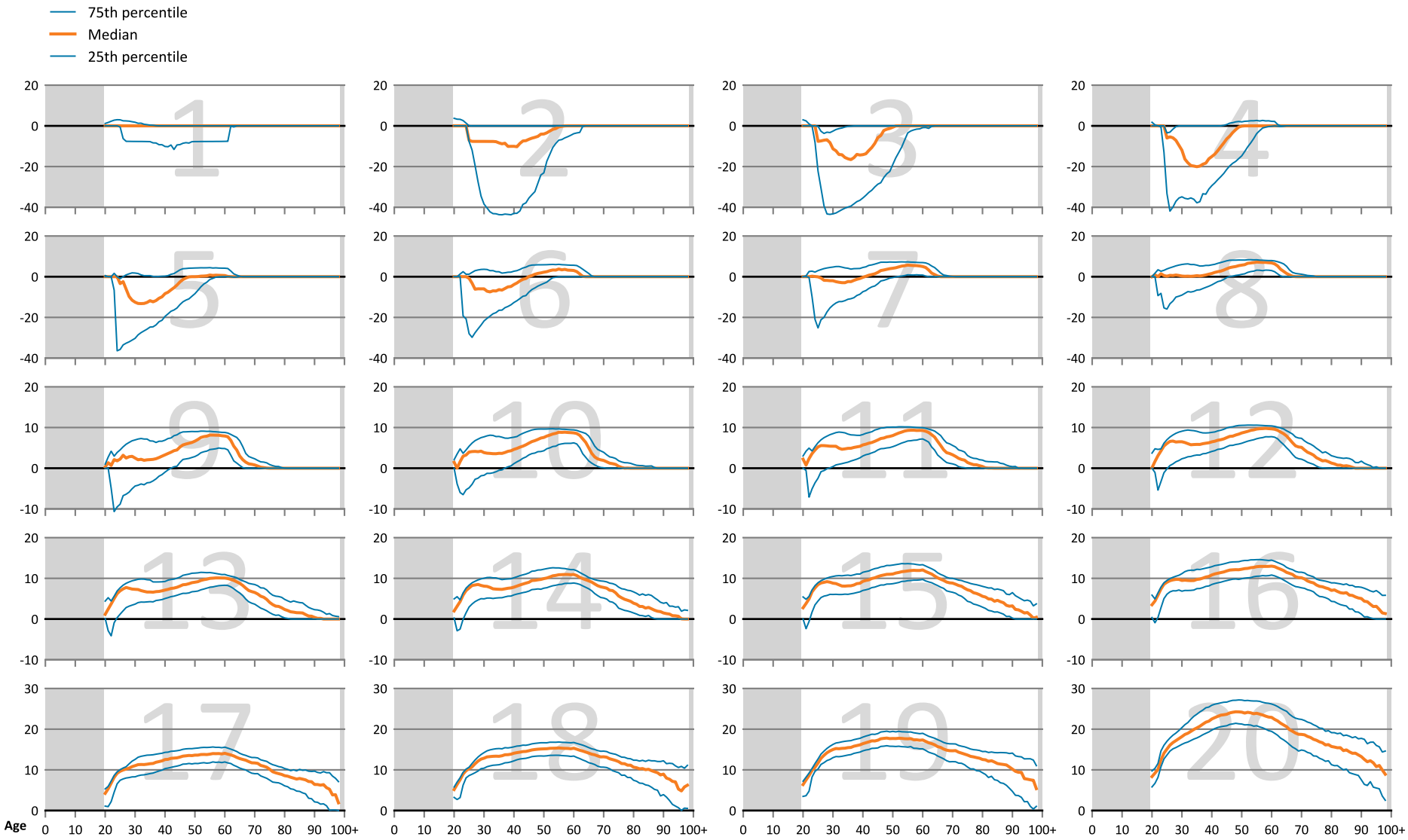


*For a description of the tax rate calculation, see the note on Figure 5. Medians and percentiles are among individuals with total income.
†Because of sample size limitations, this chart presents data from age 20 to age 98.
‡For a description of the income ventiles, see the note on Figure 6.
Source: Authors' tabulation of IRS data

Figure 7d

Middle Income Ventiles Experience the Sharpest Drop in Tax Rates After Age 61 (continued)

Federal income tax rates* by age† and income ventile,‡ 2016 (percentage)

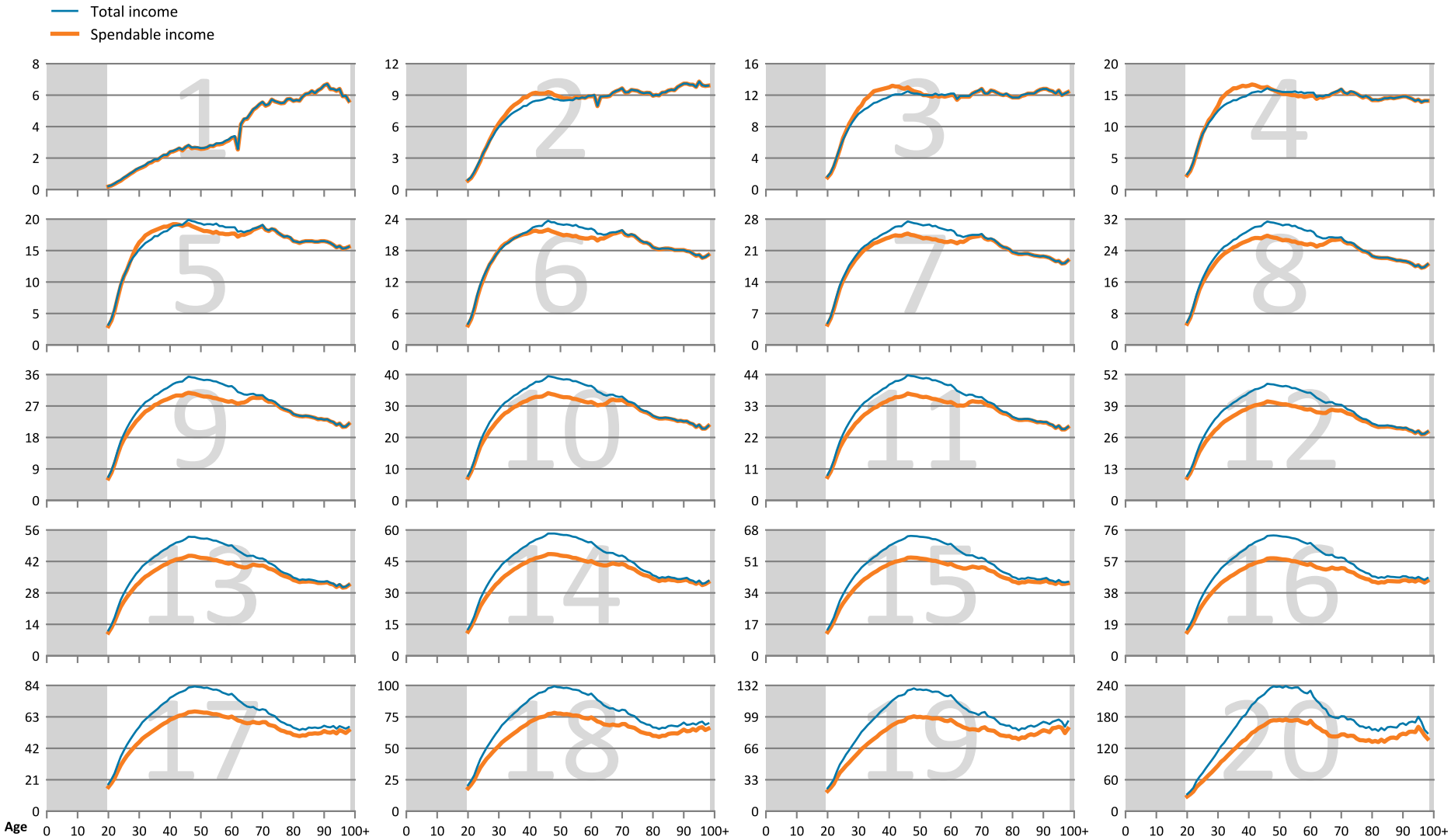


*For a description of the tax rate calculation, see the note on Figure 5. Medians and percentiles are among individuals with total income.
†Because of sample size limitations, this chart presents data from age 20 to age 98.
‡For a description of the income ventiles, see the note on Figure 6.
Source: Authors' tabulation of IRS data

Figure 8

Largest Spendable Income Declines Among Highest Income Despite Reduction in Taxes

Median per capita income* by age† and income ventile,‡ 2016 (thousands of dollars)

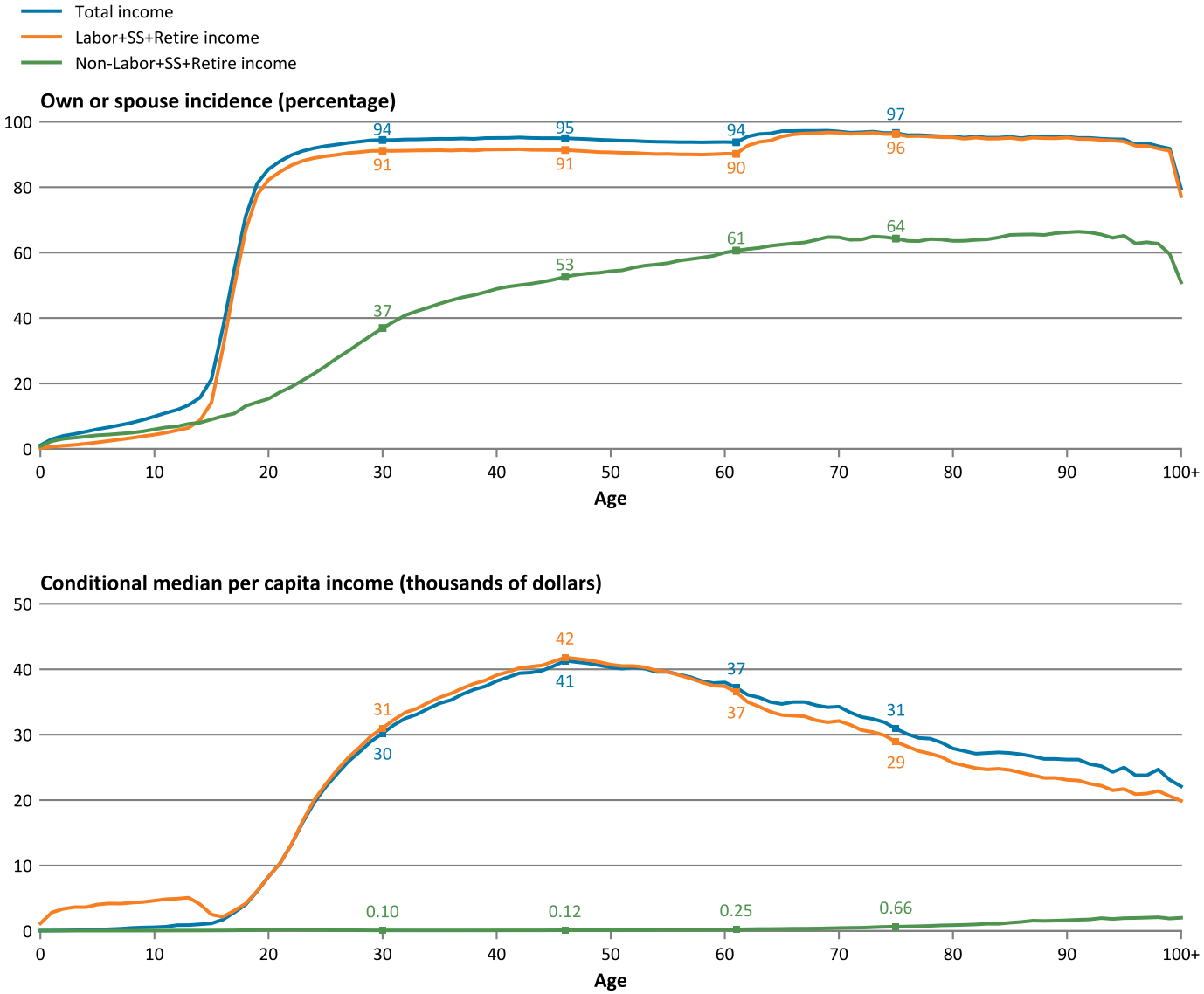


*Medians are among individuals with total income.
†Because of sample size limitations, this chart presents data from age 20 to age 98.
‡For a description of the income ventiles, see the note on Figure 6.
Source: Authors' tabulation of IRS data

Figure 9

Incidence of Non-Labor+SS+Retire Income Increases with Age, Amounts Typically Modest

Incidence and conditional median income by age, 2016

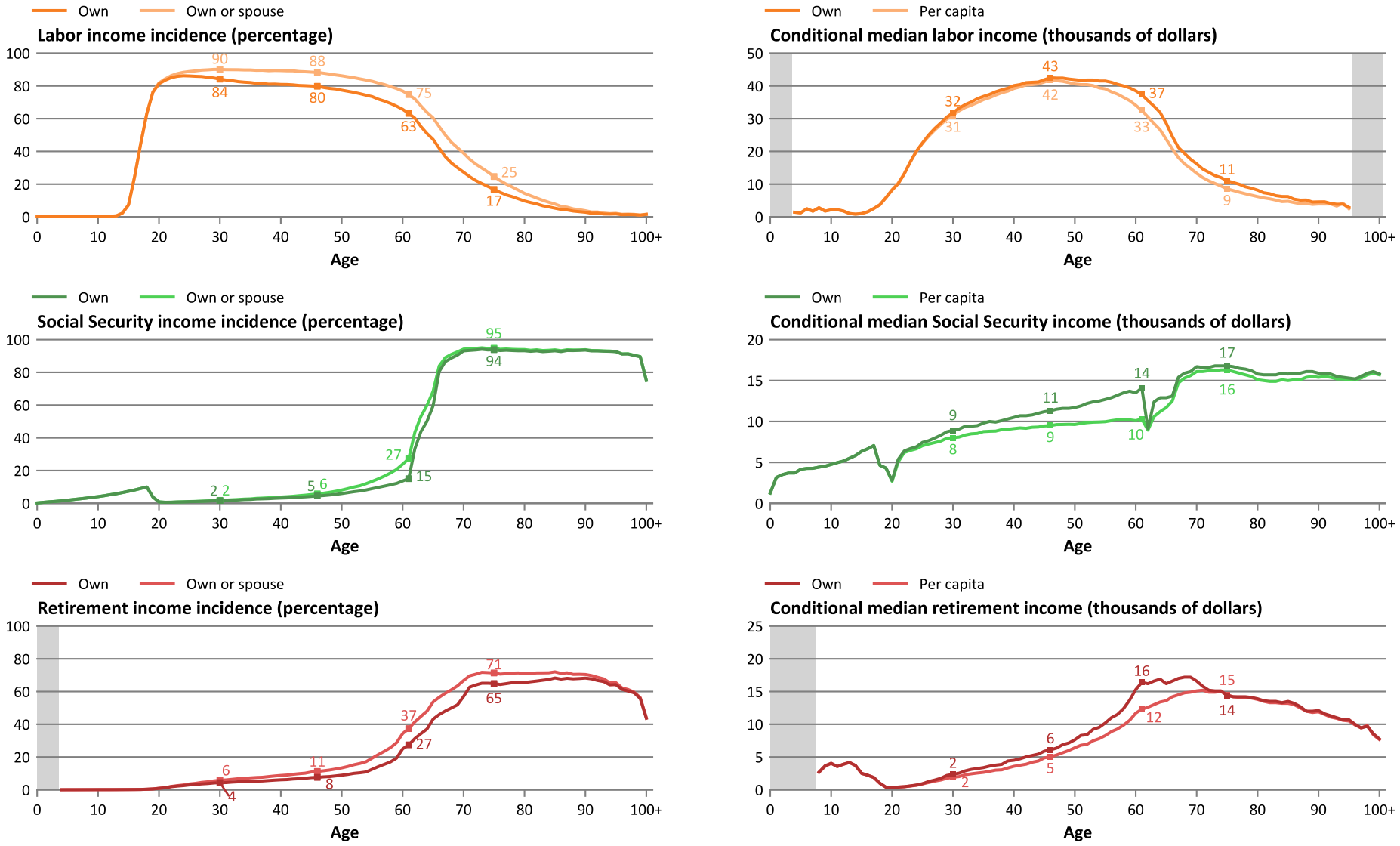


Note: Values are labeled at ages 30, 46, 61, and 75.
Source: Authors' tabulation of IRS data

Figure 10

Transition from Labor to Social Security and Retirement Occurs over the Life Cycle

Incidence and conditional median income by age,* 2016



*Because of sample size limitations, median labor income is presented from age 4 to age 95, retirement income incidence is presented beginning at age 4, and median retirement income is presented beginning at age 8.

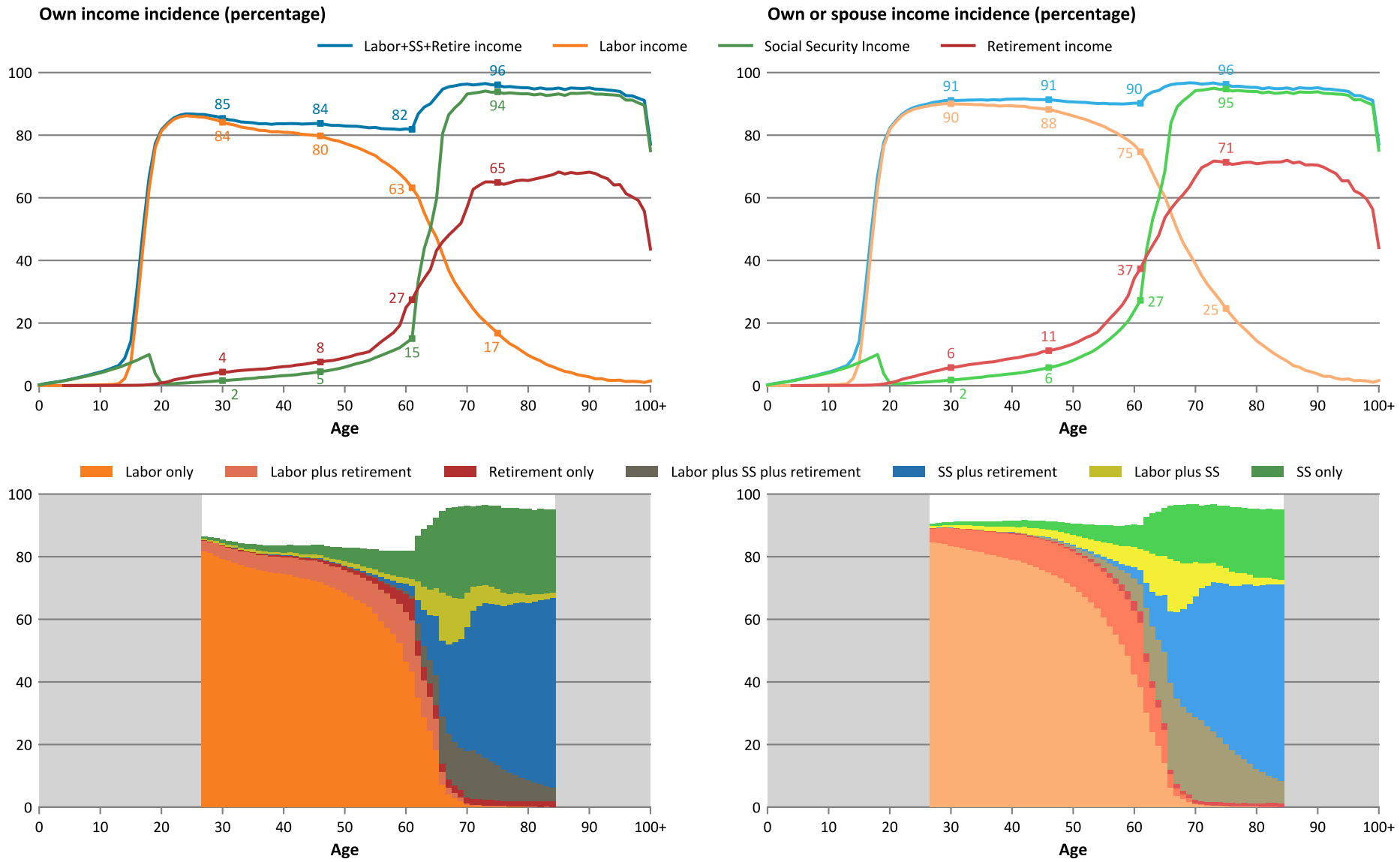
Note: Values are labeled at ages 30, 46, 61, and 75.

Source: Authors' tabulation of IRS data

Figure 11

Claiming of Social Security Not Always Associated with Stopping Work

Incidence of income by age,* 2016 (percentage)



*Because of sample size limitations, the lower panels present data from age 27 to age 84.

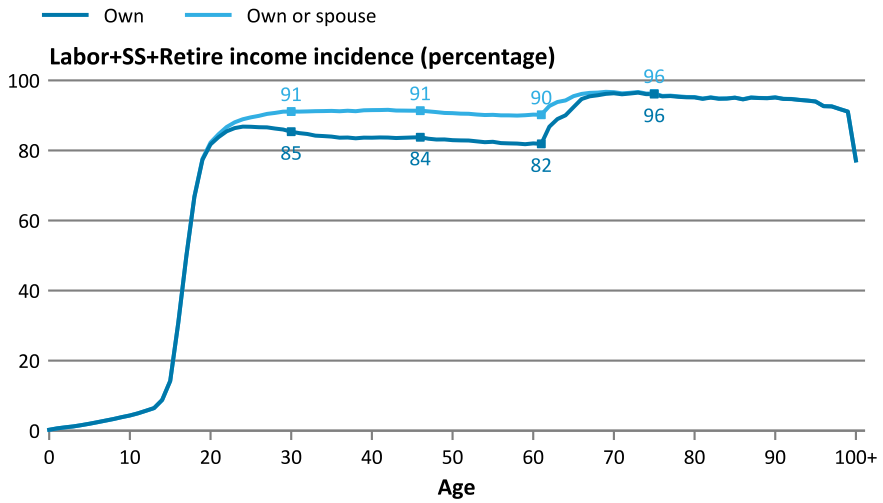
Note: Values are labeled at ages 30, 46, 61, and 75.

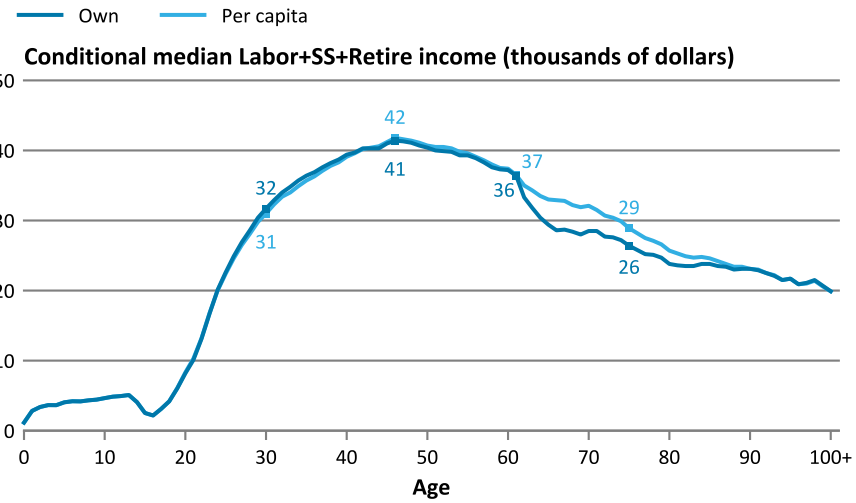
Source: Authors' tabulation of IRS data

Figure 12

Most Adults Receive Labor+SS+Retire Income Either Directly or Through a Spouse

Incidence and conditional median income by age, 2016



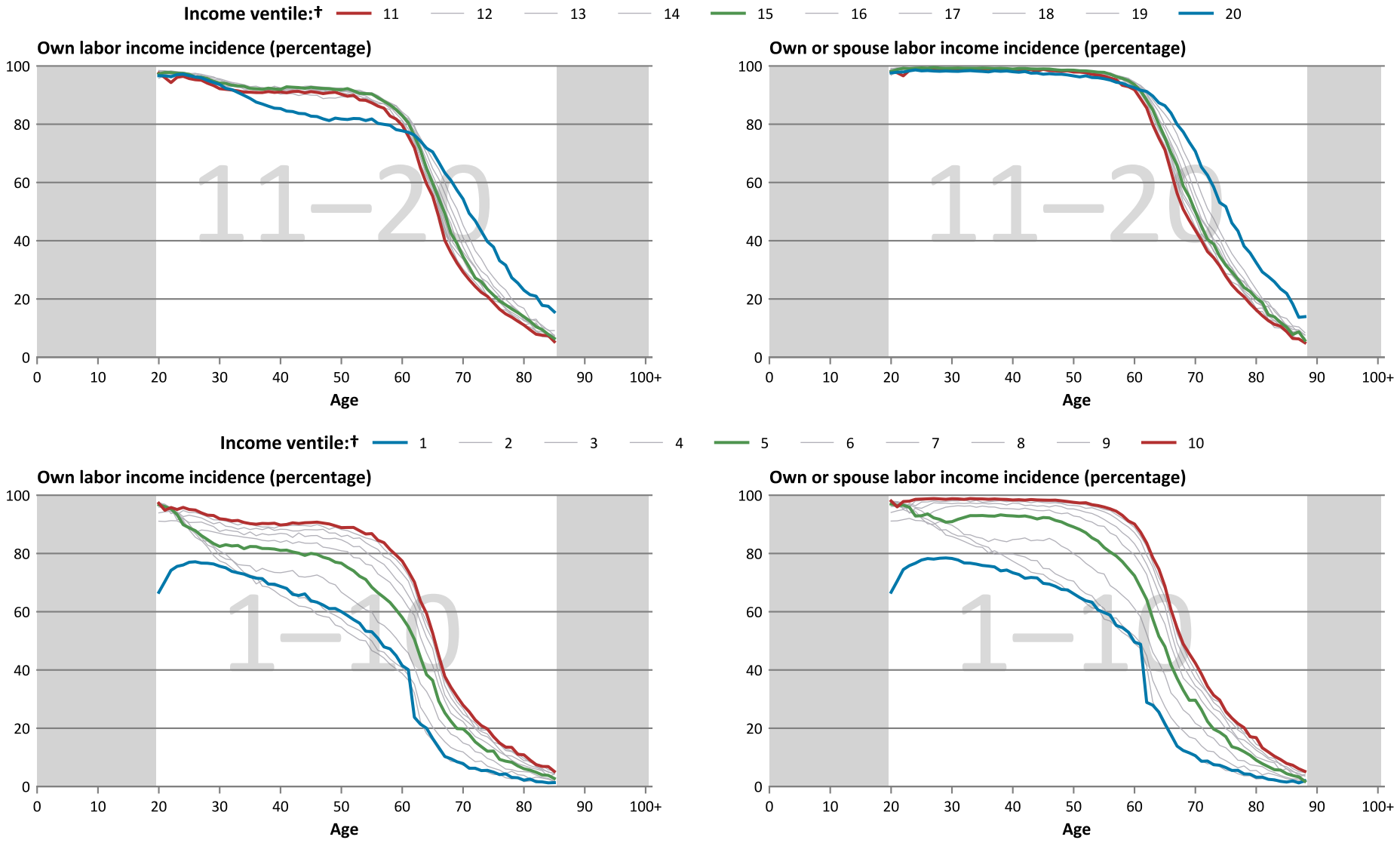


Note: Values are labeled at ages 30, 46, 61, and 75.
Source: Authors' tabulation of IRS data

Figure 13

Higher-Income Are More Likely to Work at Older Ages

Incidence of labor income by age* and income ventile,† 2016 (percentage)

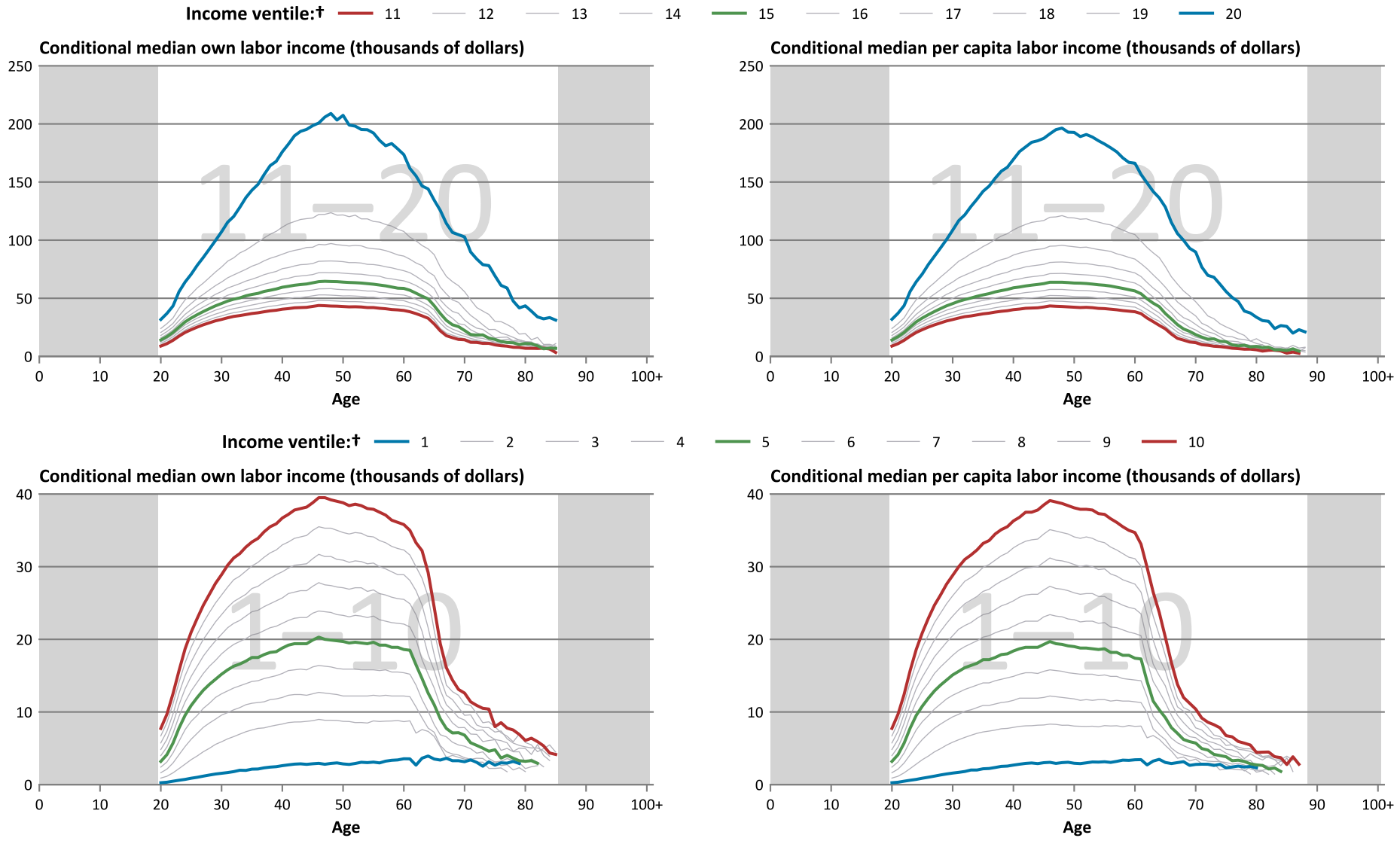


*Because of sample size limitations, this chart presents own data from age 20 to age 85 and own or spouse data from age 20 to age 88.
†For a description of the income ventiles, see the note on Figure 6.
Source: Authors' tabulation of IRS data

Figure 14

Median Labor Income Typically Declines with Age for Those Who Continue to Work

Conditional median labor income by age* and income ventile,† 2016 (thousands of dollars)



*Because of sample size limitations, this chart presents own data from age 20 to age 85 and per capita data from age 20 to age 88. Medians are not available for all ventiles in the age range.

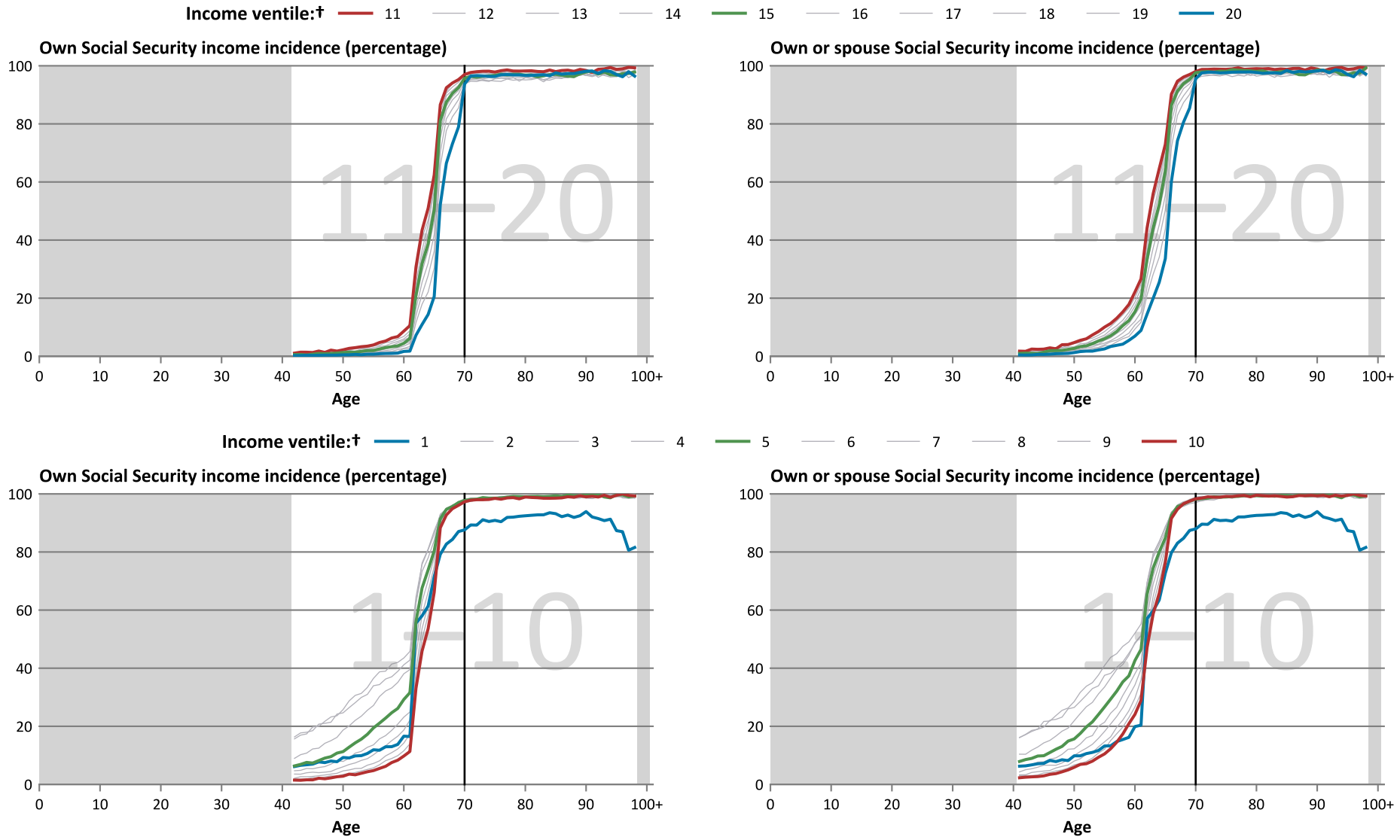
†For a description of the income ventiles, see the note on Figure 6.

Source: Authors' tabulation of IRS data

Figure 15

Higher-Income Tend to Claim Social Security Later

Incidence of Social Security income by age* and income ventile,† 2016 (percentage)

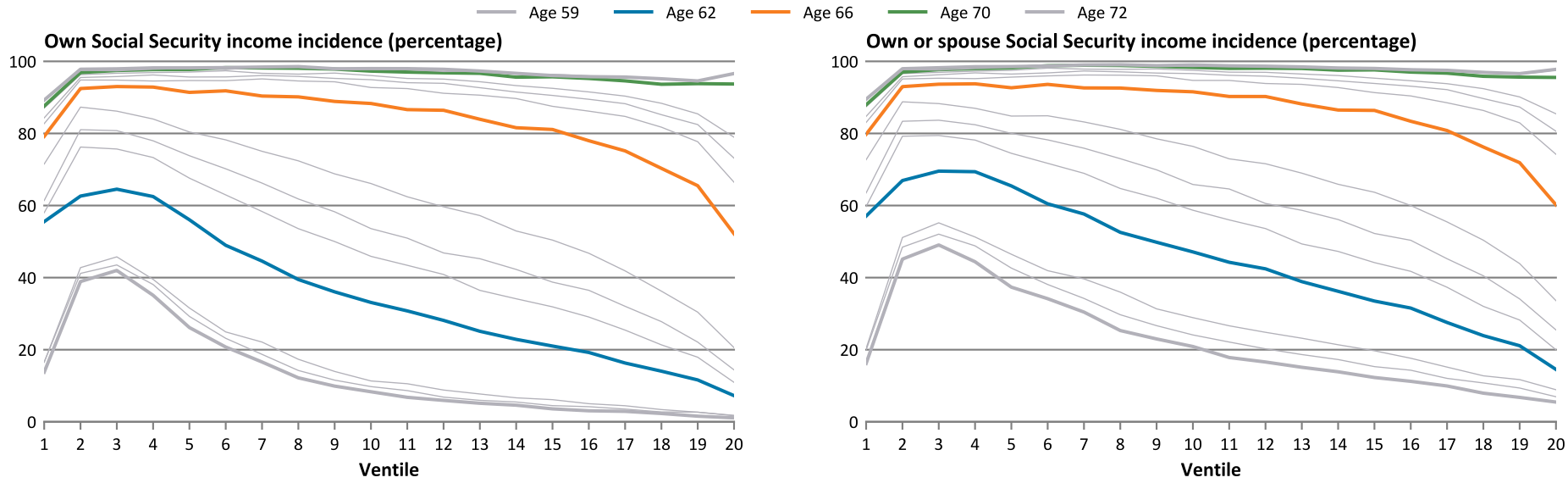


*Because of sample size limitations, this chart presents own data from age 42 to age 98 and own or spouse data from age 41 to age 98.
†For a description of the income ventiles, see the note on Figure 6.
Source: Authors' tabulation of IRS data

Figure 16

Lower Income More Likely to Have Social Security Benefits at Younger Ages

Social Security income incidence by income ventile,* ages 59 through 72, 2016 (percentage)



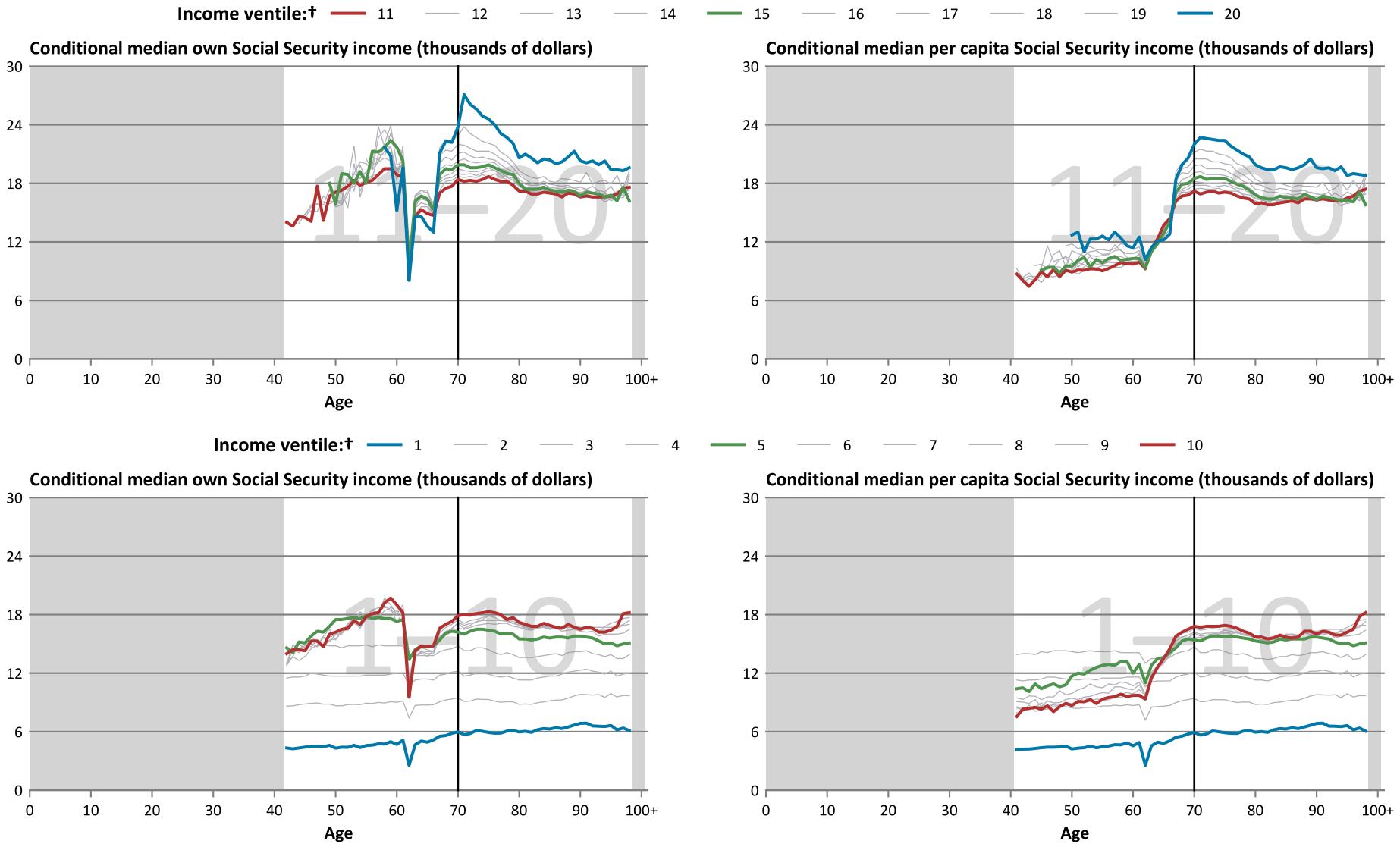
*For a description of the income ventiles, see the note on Figure 6.

Source: Authors' tabulation of IRS data

Figure 17

Social Security Income Is Substantial for Older Individuals

Conditional median Social Security income by age* and income ventile,† 2016 (thousands of dollars)



*Because of sample size limitations, this chart presents own data from age 42 to age 98 and per capita data from age 41 to age 98. Medians are not available for all ventiles in the age range.

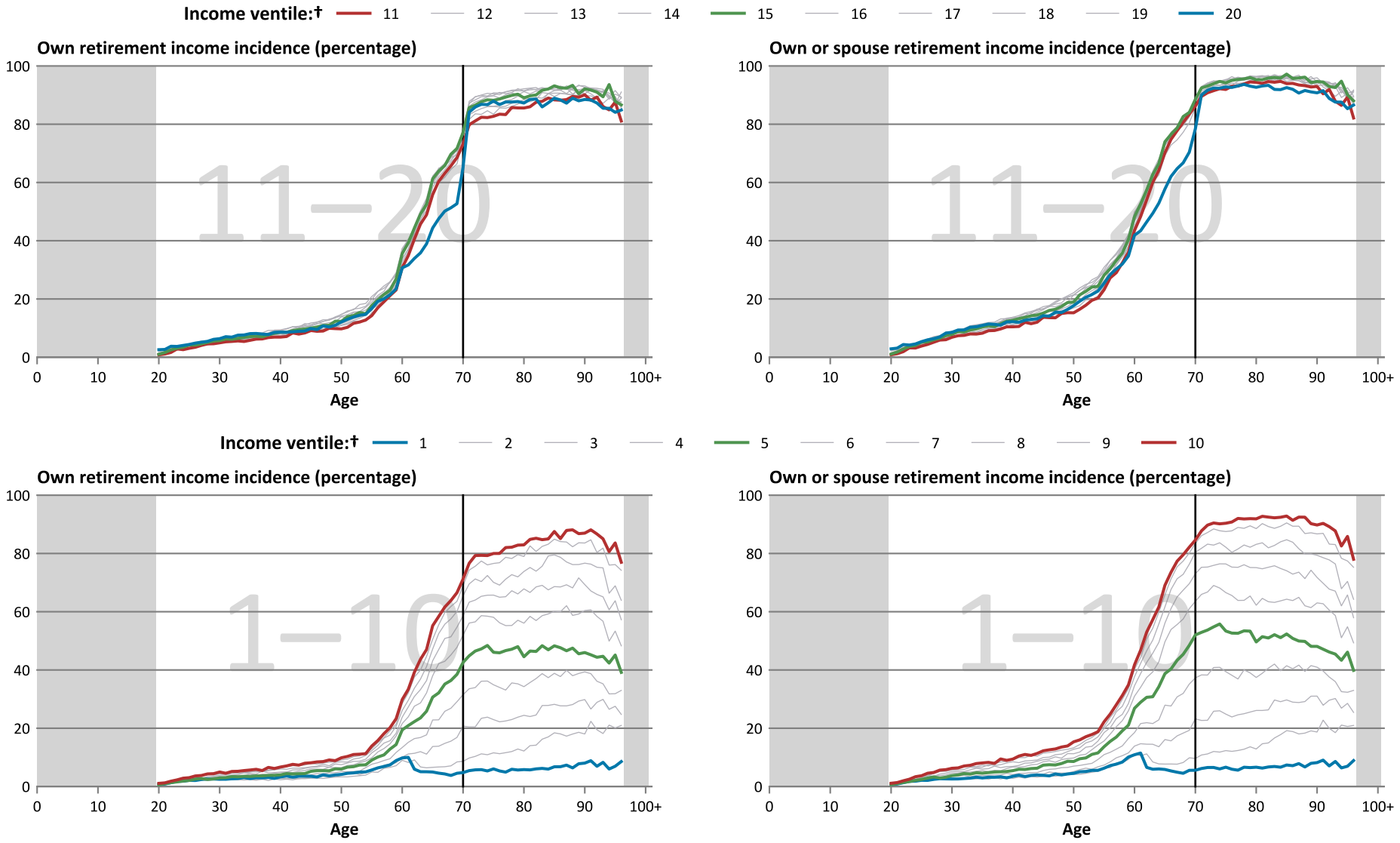
†For a description of the income ventiles, see the note on Figure 6.

Source: Authors' tabulation of IRS data

Figure 18

Retirement Income Incidence High for All but Lowest Income After Age 70

Incidence of retirement income by age* and income ventile,† 2016 (percentage)

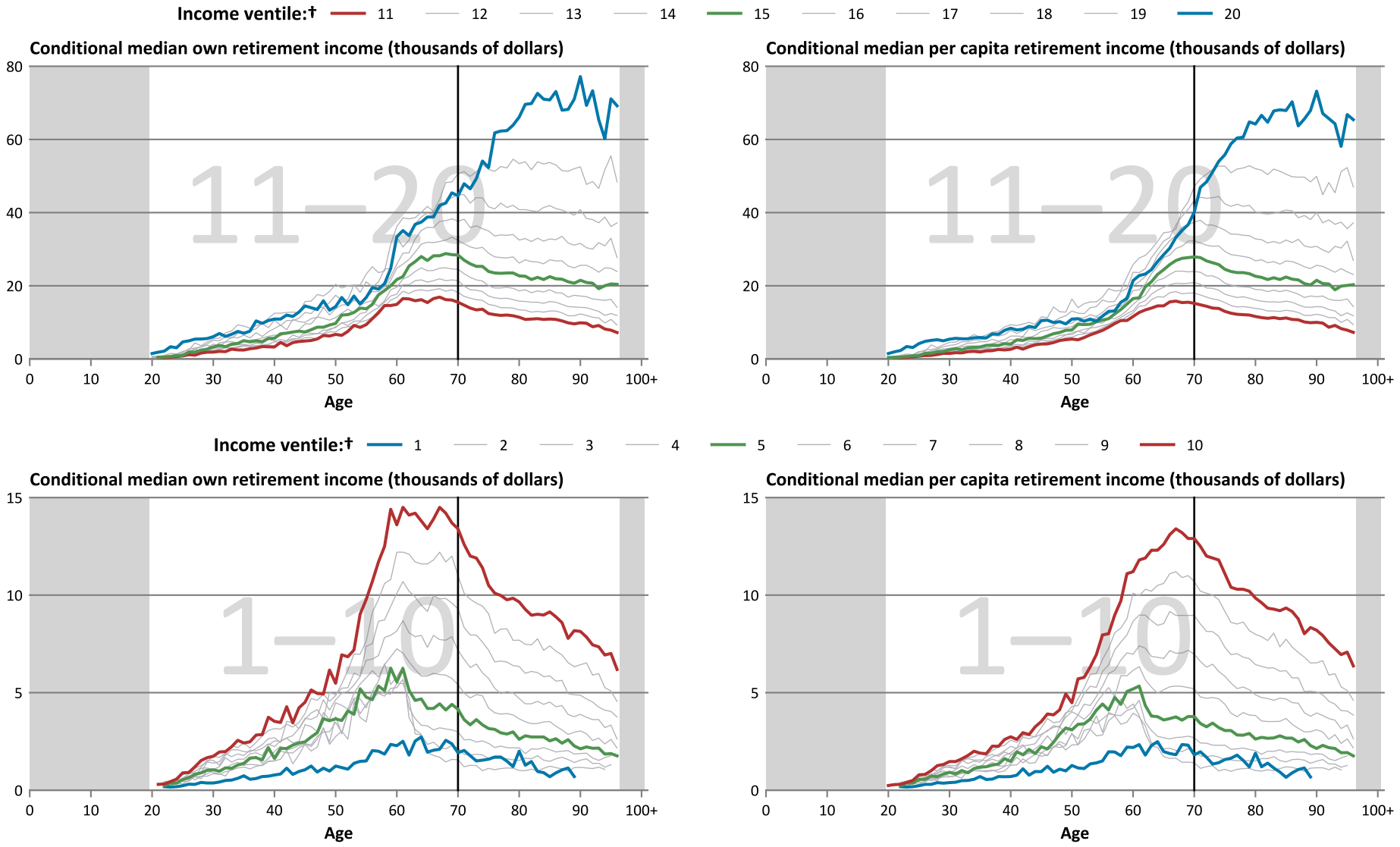


*Because of sample size limitations, this chart presents data from age 20 to age 96.
†For a description of the income ventiles, see the note on Figure 6.
Source: Authors' tabulation of IRS data

Figure 19

Younger Cohorts Tend to Have More Retirement Income, Especially Among Lower-Income

Conditional median retirement income by age* and income ventile,† 2016 (thousands of dollars)



*Because of sample size limitations, this chart presents data from age 20 to age 96. Medians are not available for all ventiles in the age range.

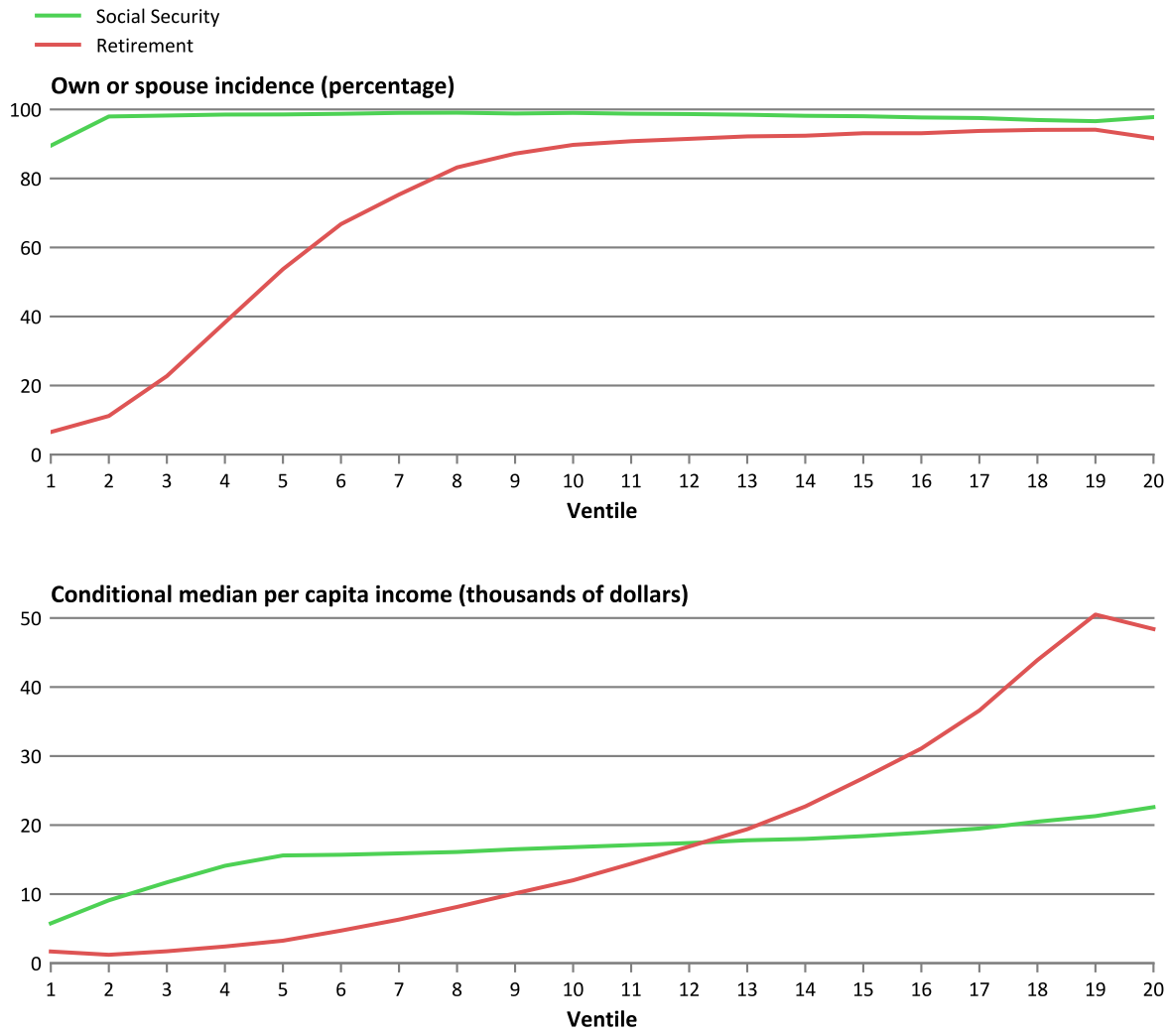
†For a description of the income ventiles, see the note on Figure 6.

Source: Authors' tabulation of IRS data

Figure 20

Importance of Non–Social Security Retirement Income Increases with Total Income Rank

Own or spouse incidence and per capita conditional median income at age 72 by income ventile,* 2016



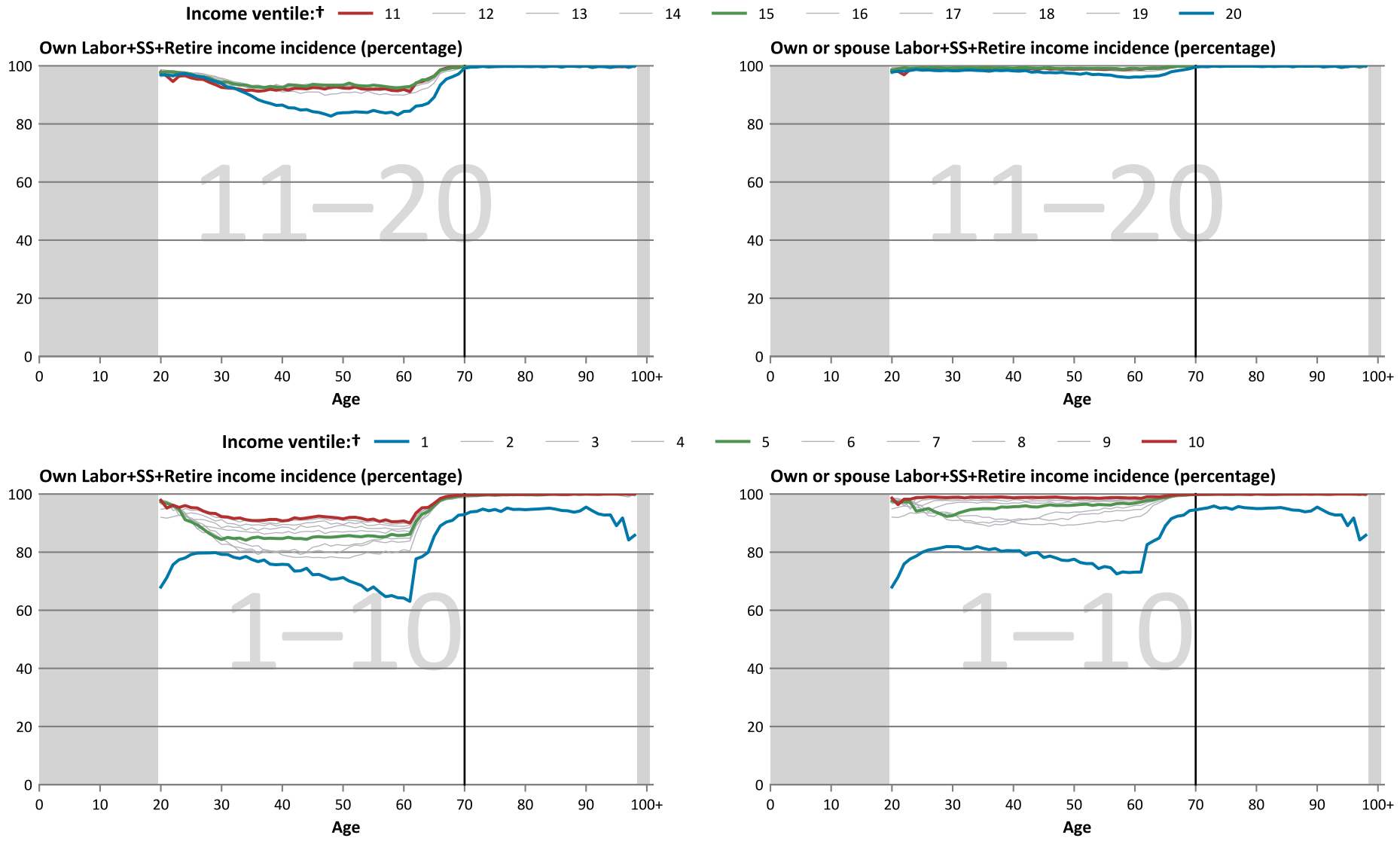
*For a description of the income ventiles, see the note on Figure 6.

Source: Authors' tabulation of IRS data

Figure 21

Those with Lower Total Income Less Likely to Have Labor+SS+Retire Income During Prime Working Years

Incidence of Labor+SS+Retire income by age* and income ventile,† 2016 (percentage)

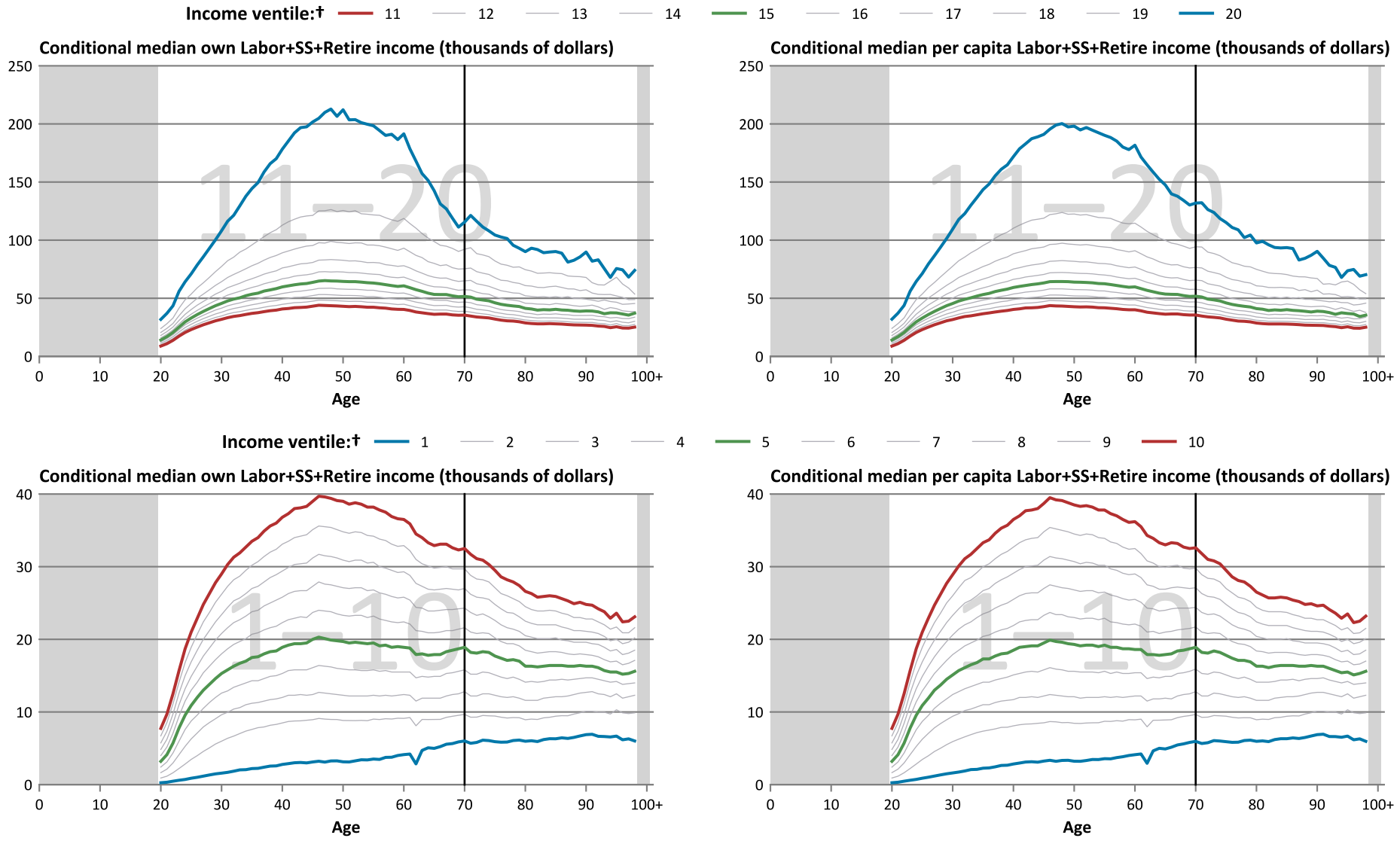


*Because of sample size limitations, this chart presents data from age 20 to age 98.
†For a description of the income ventiles, see the note on Figure 6.
Source: Authors' tabulation of IRS data

Figure 22

Labor+SS+Retire Income More Evenly Distributed at Older Ages

Conditional median Labor+SS+Retire income by age* and income ventile,† 2016 (thousands of dollars)

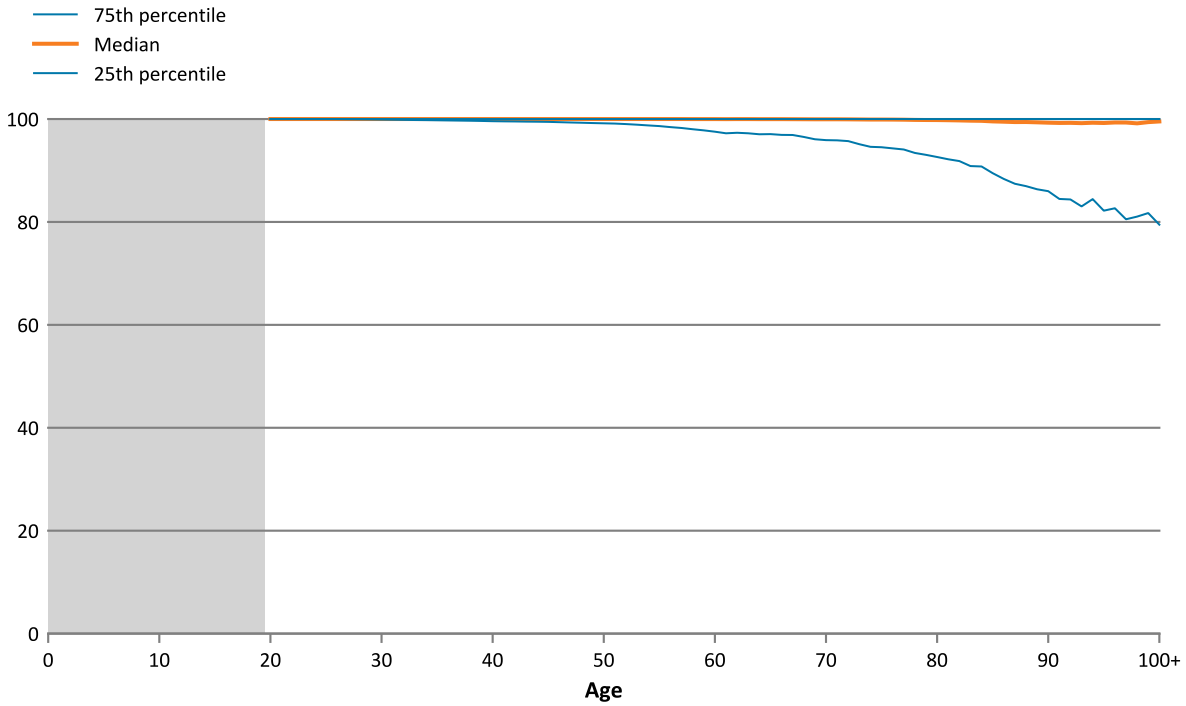


*Because of sample size limitations, this chart presents own and per capita data from age 20 to age 98.
†For a description of the income ventiles, see the note on Figure 6.
Source: Authors' tabulation of IRS data

Figure 23

Most Get Nearly All Their Income from Labor, Social Security, and Retirement Income

Per capita labor+SS+Retire share of total income* by age,† 2016 (percentage)



*For individuals with non-positive total income, the income share is set to 0 for individuals with no source income, and 100 for individuals with positive source income. Medians and percentiles are for individuals with total income.

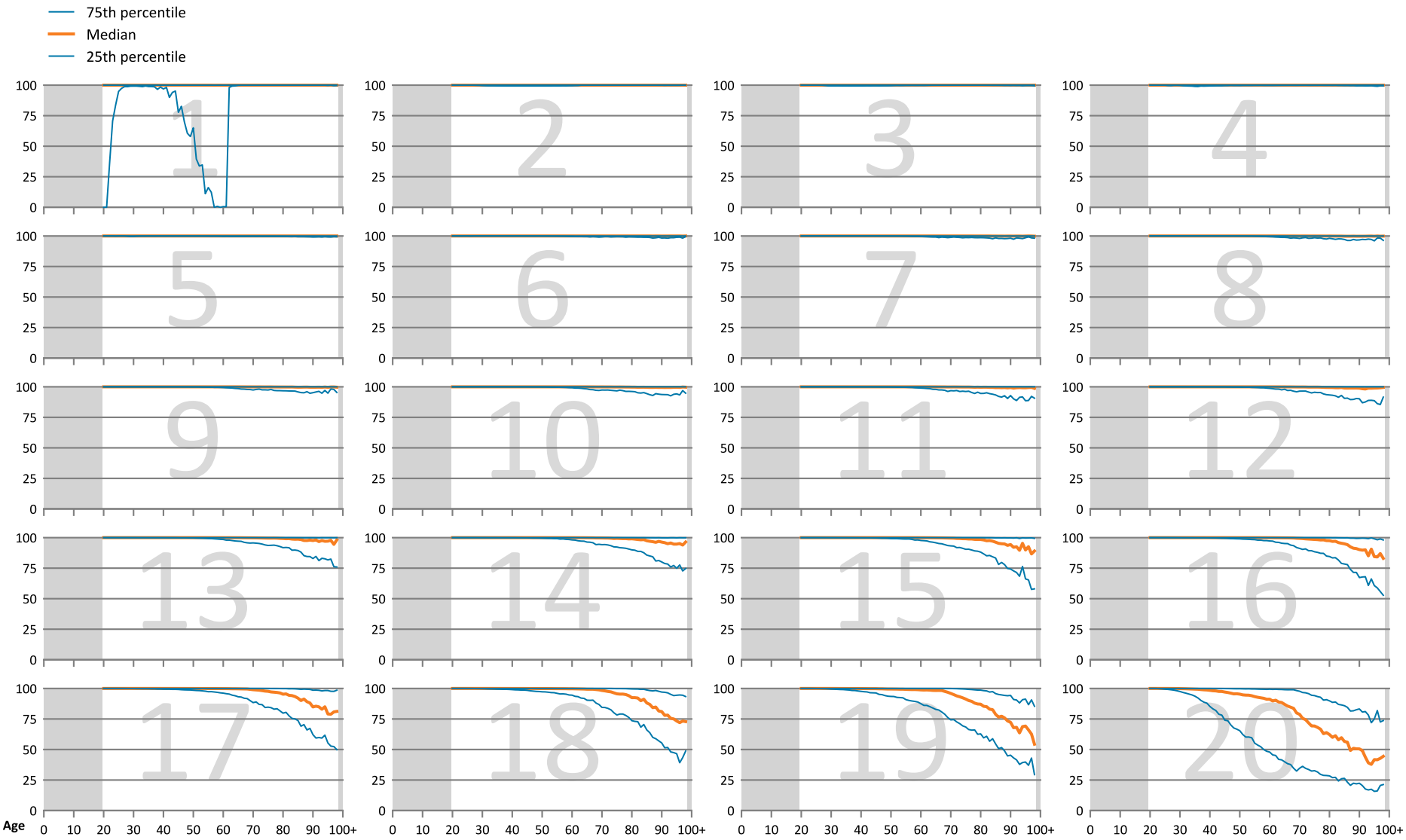
†This chart presents data beginning at age 20.

Source: Authors' tabulation of IRS data

Figure 24

Nearly All Income Is Labor+SS+Retire Income Except for the Highest-Income Elderly

Per capita Labor+SS+Retire share of total income* by age† and income ventile,‡ 2016 (percent)

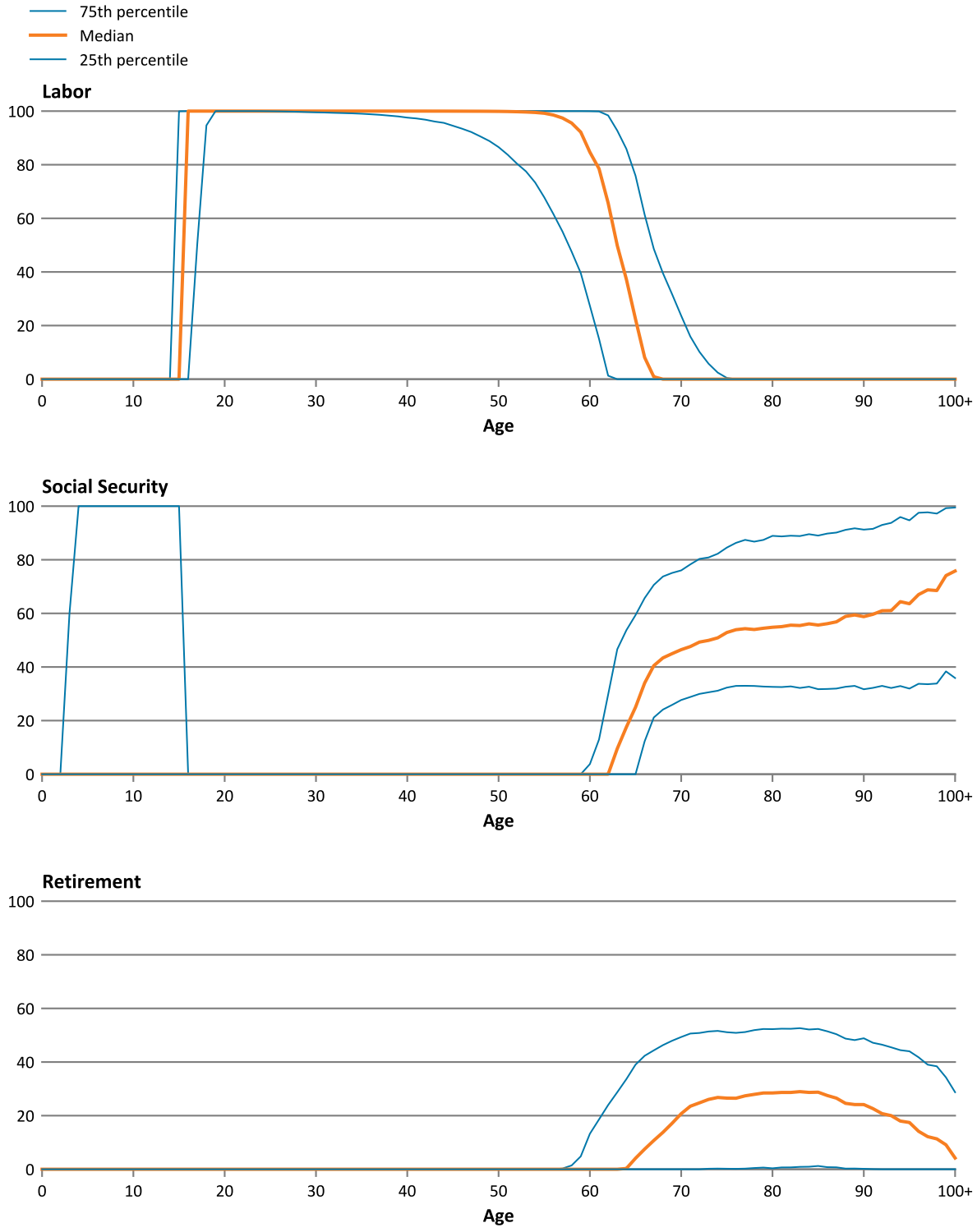


*For a description of the income share calculation, see the note on Figure 23. Medians and percentiles are among individuals with total income.
†Because of sample size limitations, this chart presents data from age 20 to age 98.
‡For a description of the income ventiles, see the note on Figure 6.
Source: Authors' tabulation of IRS data

Figure 25

Typical 72 Year-Old Gets About Half of Their Income from Social Security

Per capita share of total income,* 2016 (percentage)



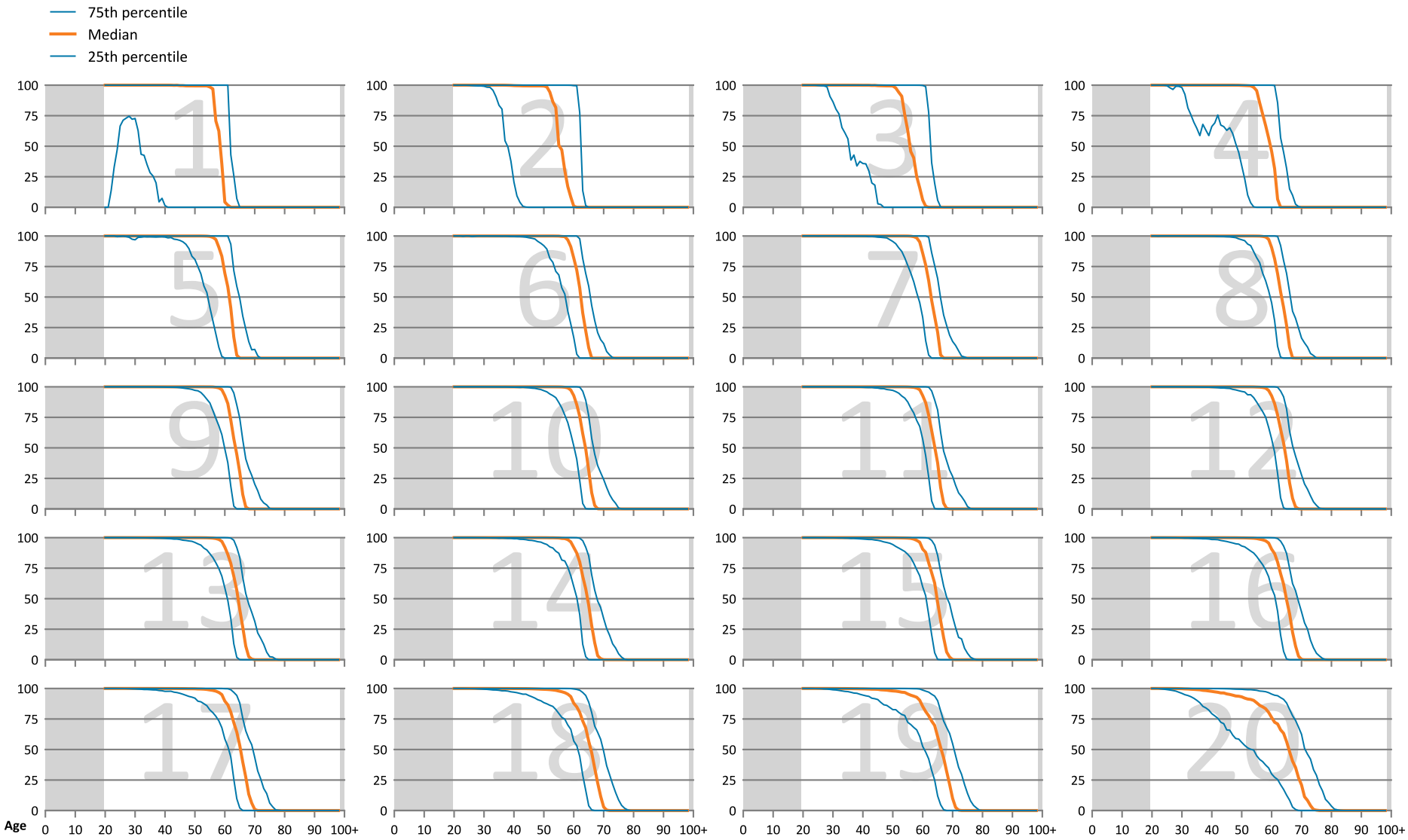
*For a description of the income share calculation, see the note on Figure 23. Medians and percentiles are among individuals with total income.

Source: Authors' tabulation of IRS data

Figure 26

Decline in Importance of Labor Income Occurs at Older Ages for Higher-Income

Per capita labor share of total income* by age† and income ventile,‡ 2016 (percent)

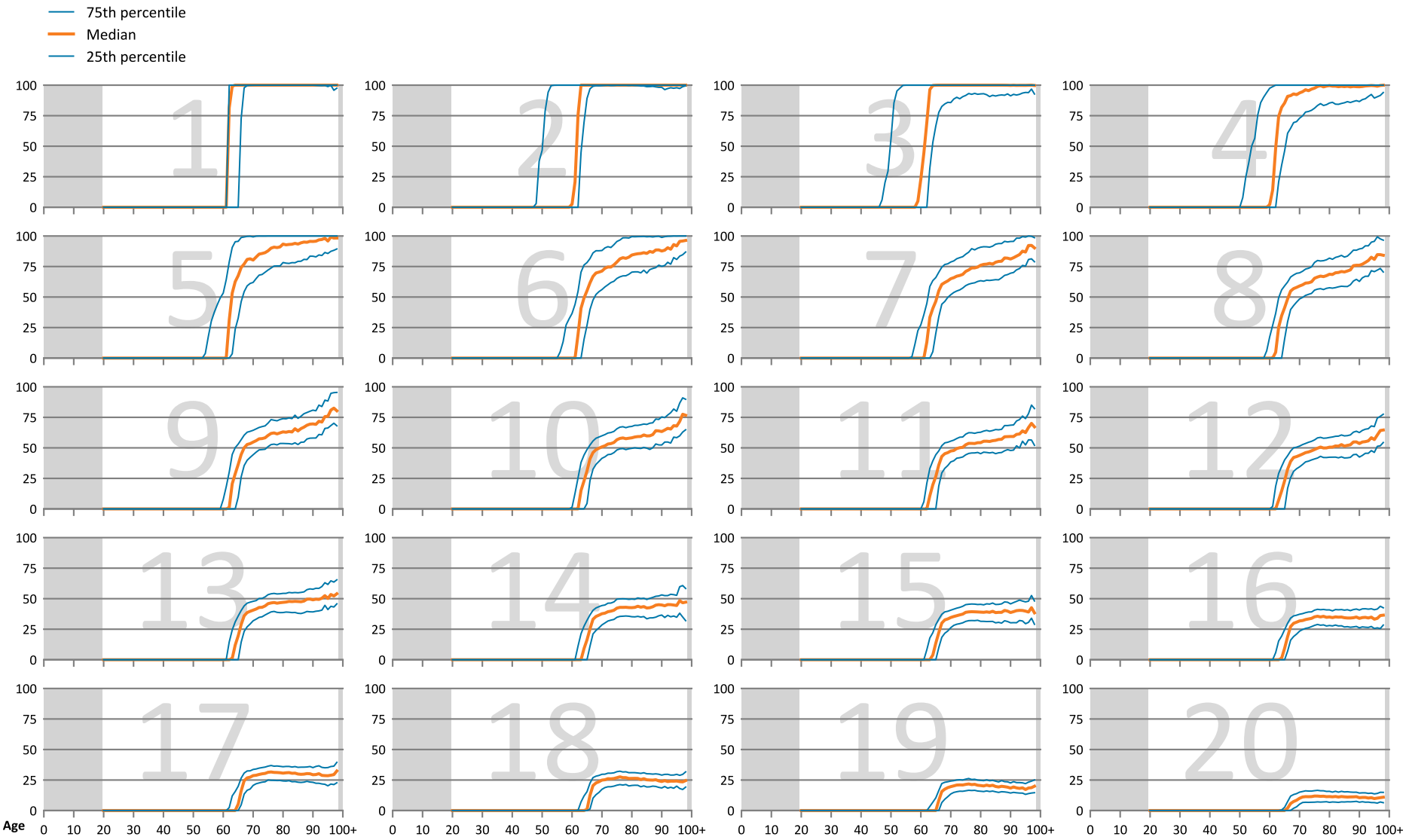


*For a description of the income share calculation, see the note on Figure 23. Medians and percentiles are among individuals with total income.
†Because of sample size limitations, this chart presents data from age 20 to age 98.
‡For a description of the income ventiles, see the note on Figure 6.
Source: Authors' tabulation of IRS data

Figure 27

Lower-Income Elderly Get Most of Their Income from Social Security

Per capita Social Security share of total income* by age† and income ventile,‡ 2016 (percent)

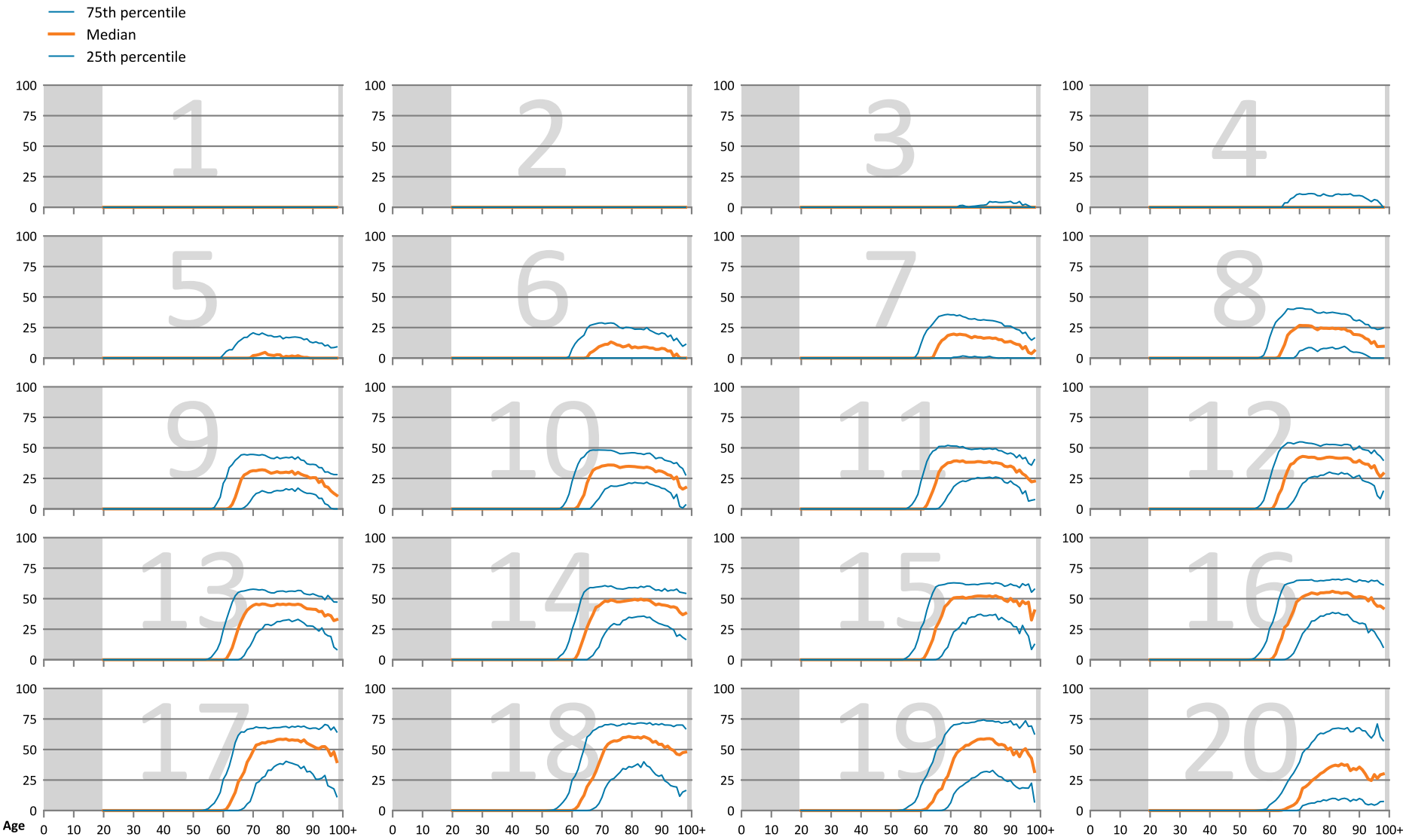


*For a description of the income share calculation, see the note on Figure 23. Medians and percentiles are among individuals with total income.
†Because of sample size limitations, this chart presents data from age 20 to age 98.
‡For a description of the income ventiles, see the note on Figure 6.
Source: Authors' tabulation of IRS data

Figure 28

Retirement Income is Substantial for Middle- and Higher-Income Elderly

Per capita retirement share of total income* by age† and income ventile,‡ 2016 (percent)



*For a description of the income share calculation, see the note on Figure 23. Medians and percentiles are among individuals with total income.
†Because of sample size limitations, this chart presents data from age 20 to age 98.
‡For a description of the income ventiles, see the note on Figure 6.
Source: Authors' tabulation of IRS data

Appendix

Table A.1

List of Information Returns Used to Identify Nonfilers

Form number	Form name
Forms used to identify nonfilers and measure nonfiler income	
Income reporting forms	
	Wage and Tax Statement
Form W2-G	Certain Gambling Winnings
Form SSA-1099	Social Security Benefit Statement
Form 1065	Partner's Share of Income, Deductions, Credits, etc.
Form 1099-DIV	Dividends and Distributions
Form 1099-G	Certain Government Payments
Form 1099-INT	Interest Income
Form 1099-MISC	Miscellaneous Income
Form 1099-R	Distributions From Pensions, Annuities, Retirement or Profit-Sharing Plans, IRAs, Insurance Contracts, etc.
Form 1120-S	Shareholder's Share of Income, Deductions, Credits, etc.
Qualified account contribution reporting forms	
Form 5498	IRA Contribution Information
Forms used to identify nonfilers but not used to measure nonfiler income	
Income reporting forms	
Form 1041	Beneficiary's Share of Income, Deductions, Credits, etc.
Form 1042-S[a]	Foreign Person's U.S. Source Income Subject to Withholding
Form 1099-C	Cancellation of Debt
Form 1099-OID	Original Issue Discount
Form 1099-PATR	Taxable Distributions Received From Cooperatives
Form 8805[a]	Foreign Partner's Information Statement of Section 1446 Withholding Tax
Expenses and charitable contribution reporting forms	
Form 1098	Mortgage Interest Statement
Form 1098-T	Tuition Statement
Form 1098-E	Student Loan Interest Statement
Form 1098-C	Contributions of Motor Vehicles, Boats, and Airplanes
Transaction and financial account reporting forms	
Form 1099-A	Acquisition or Abandonment of Secured Property
Form 1099-B	Proceeds From Broker and Barter Exchange Transactions
Form 1099-CAP	Changes in Corporate Control and Capital Structure
Form 1099-K	Payment Card and Third Party Network Transactions
Form 1099-S	Proceeds From Real Estate Transactions
Form 8288-A[a]	Statement of Withholding on Dispositions by Foreign Persons of U.S. Real Property Interests
Form 8300	Report of Cash Payments Over $10,000 Received in a Trade or Business
FinCEN Form 103	Currency Transaction Report by Casinos
FinCEN Form 104	Currency Transaction Report
FinCEN Form 105	Report of International Transportation of Currency or Monetary Instruments

FinCEN Form 114	Report of Foreign Bank and Financial Accounts (FBAR)

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Table A.1 (continued)

List of Information Returns Used to Identify Nonfilers

Form number	Form name
Forms used to identify nonfilers but not used to measure nonfiler income (continued)	
Qualified account distribution, transaction, and contribution reporting forms	
Form 1099-Q	Payments From Qualified Education Programs Under Sections 529 and 530
Form 1099-SA	Distributions From an HSA, Archer MSA, or Medicare Advantage MSA
Form 3921	Exercise of an Incentive Stock Option Under Section 422 (b)
Form 3922	Transfer of Stock Acquired Through an Employee Stock Purchase Plan Under Section 423 (c)
Form 5498-ESA	Coverdell ESA Contribution Information
Form 5498-SA	HSA, Archer MSA, or Medicare Advantage MSA Information
Other forms	
Form DS-11	Application for a US Passport
Form 1097-BTC	"Bond Tax Credit"
Form 1098-Q	"Qualifying Longevity Annuity Contract Information")
Form 1099-H	"Health Coverage Tax Credit (HCTC) Advance Payments"
Form 1099-LTC	"Long-Term Care and Accelerated Death Benefits"
Form 8596	"Information Return for Federal Contracts"
SCIR	State Corporate Information Return
SIIR	State Individual Information Return
SSSTIR	State, Sales, Service or Transaction Information Return
SWIP	State Withholding Information Return

[a] Other nonfilers with Form 1042-S, Form 8805, or Form 8288-A are assumed to be foreign citizens and excluded from the other nonfiler sample.

Table A.2

Definitions of Income and Tax Measures

Income/tax type	Definition for filers[a]	Definition for nonfilers[a]
Total income	***Labor* + *Social Security* + *retirement* + *business/farm/rents/royalties* + *investment* + *other***	
Positive total income	Calculated as total income above, with any income component that is negative set equal to zero	
Income originating from work	***Labor* + *Social Security* + *retirement***	
Total spendable income	**Total income – total taxes**	
Spendable income originating from work	**Income originating from work – total taxes on income originating from work**	
Components of Income		
Labor	Wage and salary + self-employment + unemployment compensation – health savings account deduction reported on Form 1040 (line 25) – self-employed health insurance deduction reported on Form 1040 (line 29) – self-employed SEP, SIMPLE, and qualified plans deduction reported on Form 1040 (line 28) – IRA deduction reported on Form 1040 (line 32) – Form 5498 Box 1 (IRA contributions) to traditional IRAs in excess of IRA deduction reported on Form 1040 – Form 5498 Box 1 (IRA contributions) to Roth IRAs	Wage and salary + self-employment + unemployment compensation – Form 5498 Box 1 (IRA contributions) to traditional IRAs – Form 5498 Box 1 (IRA contributions) to Roth IRAs
Wage and salary	Wages, salaries, tips, etc. reported on Form 1040 (line 7) – Roth contributions reported in Form W-2 Box 12	Form W-2 Box 1 (wages, tips, other compensation) + Form W-2 Box 8 (allocated tips) – Roth contributions reported in Form W-2 Box 12
Self-employment	Net self-employment earnings from Schedule SE (Section A line 4 or Section B Part I line 4a).	Business and farm * 92.35%
Unemployment compensation	Unemployment compensation reported on Form 1040 (line 19)	Form 1099-G Box 1 (unemployment compensation)

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Table A.2 (continued)

Definitions of Income and Tax Measures

Income/tax type	Definition for filers[a]	Definition for non-filers[a]
Social Security	The greater of: • Social Security benefits reported on Form 1040 (line 20a), or • Form SSA-1099 Box 5 (net benefits)	Form SSA-1099 Box 5 (net benefits)
Retirement	IRA distributions + pensions and annuities	
IRA distributions	Non-rollover IRA distributions reported on Form 1040 (lines 15a and 15b)[b]	Non-rollover IRA distributions reported on Form 1099-R[b]
Pensions and annuities	Non-rollover distributions from pensions and annuities reported on Form 1040 (lines 16a and 16b)[b]	Non-rollover distributions from pensions and annuities reported on Form 1099-R[b]
Investment	Taxable interest + tax-exempt interest + dividends + gains (or losses)	
Taxable interest	Taxable interest reported on Form 1040 (line 8a) – penalty on early withdrawal of savings reported on Form 1040 (line 30)	Form 1099-INT Box 1 (interest income) + Form 1099-INT Box 3 (interest on US Savings Bonds and Treas. obligations) + Form 1120-S Box 4 (interest income) + Form 1065 Box 5 (interest income) – Form 1099-INT Box 2 (early withdrawal penalty)
Tax-exempt interest	Tax-exempt interest reported on Form 1040 (line 8b)	Form 1099-INT Box 8 (tax-exempt interest) + Form 1099-DIV Box 10 (exempt-interest dividends)
Dividends	Ordinary dividends reported on Form 1040 (line 9a)	Form 1099-DIV Box 1a (total ordinary dividends) + Form 1120-S Box 5a (ordinary dividends) + Form 1065 Box 6a (ordinary dividends)
Gains (or losses)	Capital gain (or loss) reported on Form 1040 (line 13) + other gains reported on Form 1040 (line 14)	Form 1099-DIV Box 2a (total capital gain distr.)
Business/farm/ rents/royalties	Business and farm + rents, royalties, etc. – self-employment – deductible portion of self-employment tax reported on Form 1040 (line 27)	Business and farm + rents, royalties, etc. – self-employment – 0.5*self-employment tax

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Table A.2 (continued)

Definitions of Income and Tax Measures

Income/tax type	Definition for filers[a]	Definition for non-filers[a]
Business and farm	Business income on Form 1040 (line 12) + farm income on Form 1040 (line 18)	Form 1099-MISC [Boxes: 5 (fishing boat proceeds); 6 (medical and health care payments); 7 (nonemployee compensation); 10 (crop insurance proceeds); 14 (gross proceeds paid to an attorney)] + Form 1099-G [Boxes: 6 (taxable grants); 7 (agriculture payments); 9 (market gain)] + Form 1065 Box 4 (guaranteed payments)
Rents, royalties, etc.	Rental real estate, royalties, partnerships, S corporations, trusts, etc. on Form 1040 (line 17)	Form 1099-MISC Box 1 (rents) + Form 1099-MISC Box 2 (royalties)
Other	Other income reported on Form 1040 (line 21) + alimony received reported on Form 1040 (line 11) – alimony paid reported on Form 1040 (line 31a)	Form 1099-MISC Box 3 (other income) + Form 1099-MISC Box 8 (substitute payments in lieu of dividends or interest) + Form 1099-G Box 5 (RTAA payments) + Form W2-G Box 1 (gross winnings)
Taxes		
Total taxes	***Payroll taxes* + *federal income taxes***	
Total taxes on income originating from work	***Payroll taxes* + *federal income taxes on income originating from work***	
Payroll taxes	OASDI tax on wages + HI tax on wages + (0.5 * self-employment tax)	
OASDI tax on wages	Form W-2 Box 4 (Social Security tax withheld) + (6.2% * unreported tips reported on Form 4137 line 6) + (6.2% * wages reported on Form 8919 line 6), subject to maximum withholding ($7,347 in 2016)	Form W-2 Box 4 (Social Security tax withheld), subject to maximum withholding ($7,347 in 2016)
HI tax on wages	Form W-2 Box 6 (Medicare tax withheld) + (1.45% * unreported tips reported on Form 4137 line 6) + (1.45% * wages reported on Form 8919 line 6)	Form W-2 Box 6 (Medicare tax withheld)
Self-employment tax	Deductible portion of self-employment tax reported on Form 1040 (line 27) * 2	Minimum of 15.3% * self-employment or federal income tax withheld on Form 1099-MISC and Form 1099-G

Continued next page (notes at end of table)

Table A.2 (continued)

Definitions of Income and Tax Measures

Income/tax type	Definition for filers[a]	Definition for non-filers[a]
Federal income taxes	Total tax reported on Form 1040 (line 63) – self-employment tax – payroll taxes on wages not reported on Form W-2 – credits treated as tax payments[c]	Sum of federal income tax withheld on Form W-2, Form SSA-1099, Form 1099-R, Form 1099-INT, and Form 1099-DIV + federal income tax withheld on Form 1099-MISC and Form 1099-G in excess of self-employment tax + Form W-2 Social Security tax withheld in excess of OASDI tax on wages
Federal income taxes on income originating from work	*Federal income taxes* * (**income originating from work** / **total income**)	

Notes

[a] The line numbers referenced in the definitions refer to form for tax year 2016.

[b] Non-rollover distributions exclude rollovers, Roth conversions, and Section 1035 exchanges of annuity contracts. In addition, we exclude from retirement income any amounts attributable to the recharacterization of IRA contributions, the return of excess contributions, or distributions related to prohibited transactions. For a detailed explanation of how we reconcile information reported by taxpayers on Form 1040 and associated Forms and Schedules with information reported by recordkeepers on Form 1099-R and Form 5498, see Brady and Bass (2020a).

[c] In 2016, credits treated as tax payments included the earned income credit (Form 1040 line 66a), additional child tax credit (line 67), American opportunity credit (line 68), and the net premium tax credit (line 69).