Comparing the Current Population Survey to Income Tax Data

Peter J. Brady
Steven Bass
Investment Company Institute*
1401 H St. NW
Washington, DC 20005
pbrady@ici.org

March 17, 2021

Abstract

This paper compares measures of 2010 annual income from the Current Population Survey (CPS) with those derived from IRS Statistics of Income Division (SOI) administrative tax data and finds that the CPS vastly understates the income of the elderly. We focus on four types of income found to be accurately reported on income tax returns and which represent the vast majority of income for most Americans: wages and salaries, Social Security benefits, retirement income (distributions from pensions, annuities, and IRAs) and investment income (taxable interest, tax-exempt interest, and dividends). The CPS appears to accurately measure wage and salary and Social Security income, but it misses more than half of retirement income and more than one-third of investment income. Differences exist regardless of age and, within age groups, persist even after accounting for nonfilers and controlling for other income. These differences translate into larger differences in more comprehensive measures of income—in both amount and composition—for older individuals, who get a much larger share of their income from retirement and investment income. Despite the fact that nearly one-in-four individuals age 70 or older do not file a tax return, aggregate income is nearly one-third higher in the SOI. The tax data also show that, as a group, individuals age 70 or older get more income from pensions, annuities, and IRAs than they get in Social Security benefits. The tax data only allow us to definitively identify two broad categories of retirement income: IRA distributions and income from pensions and annuities. Combining SOI-derived estimates with aggregated plan-level data on pension distributions, we estimate that traditional private-sector DB pension plans accounted for, at most, 19 percent of pension and annuity income in 2010—or about 14 percent of all retirement income, inclusive of IRA distributions. Government employee DB pensions accounted for a much larger share: up to 45 percent of pension and annuity income—or nearly one-third of all retirement income.

*This research was conducted as part of the Statistics of Income Joint Research Program. Views presented are those of the authors and do not necessarily represent the views of the Internal Revenue Service or the views of the Investment Company Institute or its members. We thank Kevin Pierce for his assistance with this project.

1. Introduction

This paper compares income measures derived from household survey data collected by the U.S. Census Bureau's Current Population Survey (CPS) with income measures derived from administrative tax data compiled by the Internal Revenue Service Statistics of Income Division (SOI). We find that the CPS substantially undercounts retirement income (distributions from pensions, annuities, and IRAs) and investment income (taxable interest, tax-exempt interest, and dividends). Although differences exist regardless of age, they translate into larger differences in more comprehensive measures of income for older individuals. For example, for individuals age 70 or older in 2010, retirement income and investment income reported on tax returns are both more than twice the amounts reported in the CPS. Comparing a broader measure of income for this age group that also includes Social Security benefits and wages, taxpayers report nearly one-third more income in the SOI than is reported by all individuals—including both filers and nonfilers—in the CPS.

This study relates to the broader literature which compares household surveys to other data sources. The US Census Bureau periodically assesses the quality of the income data obtained from the CPS by comparing the estimates to other data sources.[1] Both the US Census Bureau and the US Social Security Administration have matched survey data to administrative records and these data have been used to assess survey quality for certain types of income, including wage and salary income,[2] Social Security benefits,[3] transfer payments,[4] and elective deferrals in retirement plans.[5]

The fact that the CPS underreports income has long been noted in the literature. For example, Rector, Johnson, and Youssef (1999) compares the CPS to the Bureau of Economics (BEA) National Income and Product Accounts (NIPA) and concludes that the CPS understates income and overstates poverty. Comparing household survey data to administrative data on 10

[1] See, for example, Coder and Scoon-Rogers (1996), and Roemer (2000). For a general discussion of the issue of data quality and its implications, see Weinberg (2006).

[2] See, for example, Bound and Krueger (1991) and Roemer (2002).

[3] See, for example, Sears and Rupp (2003); Huynh, Rupp, and Sears (2002); Koenig (2003); and Fisher (2005).

[4] See, for example, Nichols and Wiseman (2009) and Meyer and Mittag (2019).

[5] See, for example, Dushi and Iams (2010); and Dushi, Iams, and Tamborini (2011).

transfer programs, Meyer, Mok, and Sullivan (2009) finds the CPS suffers from misclassification of income, underreporting of income, and underreporting of enrollment in means-tested government programs. Underreporting of retirement income was noted as far back as Schieber (1995), which compares CPS data to both NIPA estimates and published tabulations of SOI data and found that retirement income was much more prevalent and more evenly distributed across income classes than estimated using the CPS.

This paper is most closely related to two more recent papers—Brady and Pierce (2012) and Bee and Mitchell (2017)—which found both retirement and investment income of older individuals was underreported in the CPS. Brady and Pierce (2012) compares CPS and SOI measures of 1999 annual income from the combination of four sources—wage and salary, Social Security, retirement, and investment income—for near-retirees and for individuals age 65 or older. Bee and Mitchell (2017) uses CPS data matched to administrative data to compare measures of 2012 annual income, from the same four sources plus self-employment income and Supplemental Security Income (SSI) benefits, for individuals age 65 or older.

This paper expands the comparison of CPS and SOI income measures by examining individuals of all ages split into four age groups related to the tax treatment of retirement income: younger than age 50, age 50 to 58, age 59 to 69, and age 70 or older. We compare 2010 annual income measures focusing on the four types—wage and salary, Social Security, retirement, and investment income—used by both earlier papers. Retirement income includes distributions from pensions, annuities, and IRAs. Pensions include both defined benefit (DB) plans and defined contribution (DC) plans and include both pensions for private-sector workers and pensions for government workers. Investment income includes interest (both taxable and tax-exempt) and dividends.

As we do not have matched survey and administrative data, we compare groups by age and, within age groups, by income. We compare SOI data on primary and (for joint returns) secondary taxpayers age 15 or older to CPS data on individuals 15 or older with income (or loss). The SOI comparison group represents 10 percent fewer individuals than the CPS, with the ratio of taxpayers in the SOI to total population in the CPS ranging from 93 percent for those younger than age 50 to 76 percent for those age 70 or older.

Consistent with the existing literature, we find that the CPS measures wage and salary income and Social Security benefits reasonably well but misses a considerable amount of retirement and investment income. For the population as a whole, the CPS misses more than half of aggregate retirement income and more than one-third of aggregate investment income. Although both retirement and investment income are lower in the CPS across all age groups, these translate into substantial differences in more comprehensive measures of income only for older individuals—both because the absolute differences are larger and because individuals younger than age 59 get the vast majority of their income from wages and salaries.

For individuals age 70 or older, differences between SOI and CPS measures of both retirement and investment income are substantial and found across the income distribution. It is not simply that a higher share of taxpayers has the income. Compared with SOI taxpayer counts, the CPS estimates 36 percent fewer individuals in the age group receive retirement income and 13 percent fewer individuals receive investment income. And, despite the fact that non-filers represent nearly one-quarter of individuals age 70 or older and receive nearly one-fifth of Social Security benefits paid to the group, taxpayers in the SOI report nearly one-third more income from the combination of the four sources than the CPS estimates for all individuals.

In addition to differences in the amount of income, the tax data show that the composition of elderly income is much different than previously thought. For example, based on CPS data, Social Security benefits paid to individuals age 70 or older are estimated to be twice as much, in aggregate, as the income they receive from pensions, annuities, and IRAs. Based on SOI data, we now know that individuals age 70 or older actually get more income from pensions, annuities, and IRAs than they get from Social Security.

We estimate that traditional private-sector DB pension plans accounted for, at most, 19 percent of pension and annuity income (or about 14 percent of all retirement income, inclusive of IRA distributions) in 2010. The tax data only split retirement income into two categories: IRA distributions and all other retirement income. In this paper, we provide bounded estimates of the underlying source of pension and annuity income by combining estimates from the tax data with other sources of data on pension distributions. Specifically, we

derive an upper-bound estimate of income-share by assuming all distribution from traditional private-sector DB plans represent retirement income—that is, we assume no workers roll over lump-sum distributions of plan benefits when they separate from employment.

The rest of the paper proceeds as follows. Section 2 describes the data used in the study. Section 3 describes and compares the different populations represented by the CPS and SOI data. Section 4 compares differences between CPS and SOI measures of the four income types we analyze. Section 5 discusses how those differences by type translate into differences in more comprehensive measures of income. Section 6 combines tax data with other data on aggregate pension distributions to provide upper-bound estimates of the share of retirement income attributable to DB plans. Section 7 summarizes our results.

2. Description of the Data

The data we use come from two sources: administrative tax data from the SOI and household survey data from the CPS.

The SOI data combine two components: (1) tax return data and (2) information return data.

The tax return data are from the 2010 Individual and Sole Proprietor (INSOLE) file. The INSOLE is used by the SOI to produce its annual *Individual Income Tax Returns Complete Report* publication. It is also used by the Joint Committee on Taxation (JCT) and the Department of Treasury Office of Tax Analysis (OTA) as the basis for their microsimulation models.

The 2010 INSOLE is a probability sample of individual income tax returns (Forms 1040, 1040A, and 1040EZ, hereafter simply referred to as *Form 1040*) filed in 2011.[6] The data include information reported on Form 1040, as well as information from associated schedules (such as Schedule SE, which is used to calculate self-employment tax) and forms (such as Form 6251, which is used to calculate the alternative minimum tax).

In addition to the 2010 INSOLE, we incorporate data from various information returns. The information returns used in this study include Form W-2 ("Wage and Tax Statement"), Form SSA-1099 ("Social Security Benefit Statement"), and Form 1099-R ("Distributions From

[6] The 2010 INSOLE sample consists of 308,946 tax returns. For a more complete description of the sample, see Section 2 of Internal Revenue Service, Statistics of Income Division (2012).

Pensions, Annuities, Retirement or Profit-Sharing Plans, IRAs, Insurance Contracts, etc."). The information returns allow us to allocate some types of income reported by married couples on joint tax returns—wages and salary, Social Security benefits, and distributions from pensions, annuities, and IRAs—to the spouse who received it. Form 1099-R also provides information about retirement distributions not reported on Form 1040.[7]

The CPS is a monthly survey of US households conducted by the Census Bureau for the Bureau of Labor Statistics (BLS).[8] The survey is one of the most widely used sources for data on unemployment, employment, hourly and weekly earnings, job characteristics, and worker demographic information such as race and ethnicity.[9]

Every March, in addition to the typical monthly survey, respondents are asked detailed questions about the sources and amounts of income received in the prior year.[10] This special survey, referred to as the Annual Social and Economic Supplement (ASEC), is the source for many commonly used income statistics, such the official poverty rate.[11] It has also been widely used in studies of the elderly.[12]

The CPS data we use are from the March 2011 ASEC, which asks about income received in 2010.[13] The ASEC is a probability sample of US households in the 50 states and the District of Columbia and contains income information on all household members age 15 or older. The

[7] 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).

[8] The monthly CPS sample consists of nearly 60,000 interviewed units. For more information on sample construction and data collection, see https://www.census.gov/programs-surveys/cps/technical-documentation/methodology.html.

[9] For more information on the CPS and the statistics it generates, see https://www.bls.gov/cps/.

[10] Information on previous year income is reported for all individuals age 15 or older who reside in a household at the time of the interview. Current residents are included even if they did not reside in the household during the previous year. Conversely, no data are collected on individuals who are not current residents even if they resided in the household during all or part of the previous year.

[11] See, for example, DeNavas-Walt, Proctor, and Smith (2011) and Semega, et al. (2019).

[12] See, for example, Social Security Administration (2012) and Social Security Administration (2016). The Social Security Administration, however, has suspended its publication of this report series due to concerns about "the measurement of certain sources of income reported in the CPS," according to a note posted on https://www.ssa.gov/policy/docs/statcomps/income_pop55/2014/index.html.

[13] The ASEC sample is larger than the typical monthly CPS sample. The 2011 ASEC sample consists of 75,188 interviewed units. For more detailed information on the 2011 ASEC, see U.S. Census Bureau (2011).

sample represents the US civilian non-institutional population plus members of the US Armed Forces who live with at least one other civilian adult.

3. Comparison of SOI and CPS Populations

Both the SOI data and the CPS data are generally representative of the US resident population, but the populations differ slightly. Each exclude a portion of the resident population. The SOI data exclude low-income US residents who do not file a tax return. The CPS data exclude certain members of the US armed forces and individuals living in institutions. In addition, the SOI data include some individuals who reside outside the US.

The SOI data represent all taxpayers who filed a Form 1040.

In general, US citizens and resident aliens[14] are required to file a Form 1040 if their gross income—inclusive of both US-source and foreign-source income—is above a certain threshold.[15] The filing requirement applies even if a US citizen or resident alien lives outside the US during the tax year.[16] US citizens or resident aliens who are bona fide residents of US possessions are generally not required to file a US tax return, however, and instead file a return with their territory's tax authority.[17]

[14] 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. Nonresident aliens who were engaged in a trade or business in the US or who had US-source income are also required to file a US tax return but use Form 1040-NR rather than Form 1040 and are, thus, not included in the sample. For more information on US income tax treatment of aliens, see Internal Revenue Service (2011e).

[15] Gross income includes all income not exempt from tax. For self-employed individuals providing services, gross income includes the gross receipts of the business. The gross income filing thresholds vary based on filing status, age, blindness, and whether a parent (or another taxpayer) can claim the individual as a dependent. For example, the 2010 filing thresholds for non-dependent single individuals younger than age 65 was $9,350 and the threshold for a non-dependent married couple filing a joint return with both spouses younger than 65 was $18,700. The threshold was $1,400 higher for single individuals age 65 or older and $2,200 higher for joint filers with both spouses age 65 or older, respectively. See note 19 for the gross income filing threshold for dependents. For more information on filing requirements, see Internal Revenue Service (2011a) and Internal Revenue Service (2011d).

[16] For filing requirement for US citizens and resident aliens living abroad, see Internal Revenue Service (2010).

[17] US citizens and resident aliens who are bona fide residents of the Northern Mariana Islands, Guam, and the US Virgin Islands are not required to file a US income tax return. US citizens and resident aliens who are bona fide residents of American Samoa and Puerto Rico are only required to file a US return if they received income from a source outside of the territory. This would include US government employees, as their wages are considered US source income. 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 (2011b).

Taxpayers with gross income below the filing thresholds may also file a Form 1040. Regardless of gross income, filing is required for individuals who received any advance earned income tax credit (EITC), who owe payroll taxes that were not withheld, or who owe special taxes (such as the alternative minimum tax). In addition, although not required to file, individuals with gross income below the thresholds can only receive refunds of withheld taxes or refundable tax credit payments if they file a return.

The CPS data represent most US households. The sample represents US residents, including both aliens and US citizens living in the 50 US states and the District of Columbia. The sample excludes individuals living in institutions, such as prisons, nursing homes, and long-term care facilities. It also excludes individuals living in households without a civilian adult. For example, a housing unit occupied by a married couple would be included if only one spouse served in in the US armed forces but would be excluded if both spouses did.

Overall, the SOI data represent 6 percent fewer individuals than the CPS data.[18] The SOI 2010 INSOLE sample represents 142.9 million 2010 Form 1040 tax returns with information on 287.7 million unique individuals, inclusive of taxpayers and dependents. These returns include 7.9 million returns filed by individuals claimed as dependents by other taxpayers.[19] The CPS 2011 ASEC sample represents 118.7 million civilian non-institutional US households made up of 306.1 million individuals.

3.1 Subsamples Used for Comparison

For comparison to the CPS data we analyze a subsample of the SOI data representing 196.0 million taxpayers.[20] Taxpayers include primary and secondary taxpayers on joint returns and primary taxpayers on non-joint returns. We exclude 91.2 million dependents who did not file

[18] See Appendix Tables A.1 through A.3 for more detailed description of the two populations by household type and filing status.

[19] Dependent single individuals younger than 65 are generally required to file a return if they have earned income greater than $5,700 or unearned income greater than $950. Under certain conditions, children with income above these thresholds may not be required to file if their parents elect to include the child's income on their tax return (see Internal Revenue Service 2011d).

[20] Appendix Table A.4 also explains the relationship between the two populations and the two comparison groups.

their own tax return, for whom the INSOLE does not have income information. To match the age ranges included in the CPS data, we also exclude 0.4 million taxpayers younger than age 15.

For comparison to the SOI data, we analyze a subsample of the CPS data representing 217.7 million individuals. We exclude 62.2 million individuals younger than age 15, for whom the CPS does not collect income data. We also exclude 24.0 million who report no CPS income (or loss) of any kind and another 2.3 million who report income from only educational assistance or financial assistance from friends or relatives.[21] Of those excluded based on income, just over 70 percent were age 15 to age 25.

Overall, the SOI comparison group represents 10 percent fewer individuals than the CPS comparison group (Figure 1). The difference between the comparison groups is larger than the difference between the overall populations because, in addition to nonfilers and their dependents, the SOI comparison group excludes individuals claimed as a dependent who have income and are age 15 or older, but who are not required to file a separate return.[22]

For expositional ease, in the remainder of the paper we attribute differences between the two comparison groups to (primarily lower-income) US residents who are not required to file a tax return. Differences between the two comparison groups caused by nonfilers, however, will be offset to some extent by individuals who file a tax return but who are not represented by the CPS—that is, Form 1040 filers who live abroad, live in an institution, or live in a household without a civilian adult.

3.2 Comparison Groups by Age

This paper examines differences between CPS and SOI income measures for four age groups:

- Younger than age 50
- Age 50 to age 59
- Age 59 to 69
- Age 70 or older

[21] For a full listing of the components of CPS income not reported on Form 1040, see first paragraph of Section 4.

[22] See note 19 for the gross income filing threshold for dependents.

We chose age categories related to the tax treatment of retirement income because, as shown in Section 4, retirement income measures represent the largest difference between the two data sources.[23] Retirement distributions taken by individuals younger than age 59½ generally are considered early distributions and are subject to a 10 percent penalty but, as shown in Brady and Bass (2020b), the share of distributions exempt from penalty—such as regular pension payments made to retired military or public safety officers—increases substantially starting at age 50. Distributions taken by individuals from age 59½ through age 70½ are typically neither penalized nor required. Beginning around age 70½, distributions are generally required from DC plans and traditional IRAs.

The share of individuals who file a tax return falls with age (Figure 1). The ratio of SOI taxpayers to individuals in the CPS falls from 93 percent for those younger than age 50 to 76 percent for those age 70 or older.

Two tax code provisions can explain at least a portion of the decline in the share who file with age. First, the gross income filing threshold is higher for individuals age 65 or older.[24] Second, Social Security benefits are either fully or partially excluded from gross income.[25]

3.3 Comparison Groups by Age and Income

This paper also examines differences by income groups within age categories. Controlling for income is one method we use to address the issue of nonfilers. Individuals who do not file a tax return should be predominantly lower income, so the importance of nonfilers should fall as income rises. As a result, observed differences for higher-income groups should be primarily related to measurement error rather than sample selection.

[23] See Brady and Bass (2020b) for a more detailed discussion of the rationale for choosing these age categories.

[24] See note 15 for the gross income filing thresholds for taxpayers age 65 or older.

[25] 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. For more information on the taxation of Social Security benefits, see Internal Revenue Service 2011d.

Complicating this exercise are the very differences in measured income that we are attempting to disentangle. As illustrated in Section 4, the CPS substantially understates retirement income for all age groups, and both overestimates investment income incidence and median amounts for younger individuals and underestimates them for older individuals.

To help address the selection issue, we create income groups based on two types of income the CPS appears to measure accurately: wage and salary income and Social Security benefits.[26] To rank individuals, we use a per capita measures of this income, which means that amounts reported by married couples are split equally between spouses. We use this measure because tax filing thresholds for married couples are based on joint income and the thresholds are roughly twice of those for single filers.[27]

We tabulate both the CPS data and the SOI data using the same fixed-dollar classes of wage plus Social Security income. Five fixed-dollar income classes were created for each age group by ranking individuals in the CPS by their per capita wage plus Social Security income and using the highest dollar values included in the 20th, 40th, 60th, and 80th percentiles of the income distribution.[28] For expositional ease, we will refer to these fixed-dollar income classes as *quintiles*, although they are roughly equal in size only for the CPS.

The ratio of individuals in the SOI comparison group to individuals in the CPS comparison group generally increases with wage plus Social Security income (Figure 2). For the two age groups younger than age 59, SOI taxpayers represent 85 percent of CPS individuals in quintile one, and about 95 percent, on average, in quintiles two through five. For those age 59 to 69, taxpayers represent 73 percent of CPS individuals, on average, in quintiles one and two, and 96 percent, on average, in quintiles three through five. For those age 70 or older, taxpayers represent 55 percent of CPS individuals, on average, in quintiles one and two, 70 percent in quintile three, and 99 percent, on average, in quintiles four and five.

[26] See discussion in Section 4.

[27] See note 15 for the gross income filing thresholds for joint and non-joint returns.

[28] The highest amounts of per capita wage plus Social Security income for the first through fourth quintiles in the CPS are: $7,000, $18,250, $31,001, and $50,000, respectively, for taxpayers younger than age 50; $11,000, $24,500, $38,500, and $60,000, respectively, for taxpayers age 50 to 58; $8,267, $14,769, $23,700, and $42,848, respectively, for taxpayers age 59 to 69; and $8,700, $11,753, $14,157, and $17,939, respectively, for taxpayers age 70 or older.

4. Comparison of SOI and CPS Measures by Income Type

The definitions of income used by the SOI and the CPS differ.[29] SOI income includes some types of income—capital gains, other gains, and taxable refunds of state and local income tax—which are not included in the National Income and Product Accounts (NIPA) definition of income used by the CPS. Conversely, CPS income includes some types of income—public assistance, SSI, Veterans Affairs (VA) benefits, workers' compensation, educational assistance, child support, and financial assistance from friends or relatives—which are not included in the Internal Revenue Code definition of income.[30]

We focus our comparison on four types of income captured in both data sources:[31]

- Wage and salary
- Social Security (including old age [OA], survivors [S], and disability insurance [DI])
- Retirement (including distributions from DB plans, DC plans, IRAs, and annuities)
- Investment (taxable interest, tax-exempt interest, and dividends)

One reason we focus on these four types of income is because they are common. Among all taxpayers in 2010, 97 percent filed returns that reported income from at least one of these sources. Further, 75 percent of taxpayers received at least 95 percent of the income reported on their tax return from these four sources.[32,33]

[29] For a comparison of the income concepts used by the SOI and the CPS, see Henry and Day (2006). For a list of the types of income measured in the SOI and the CPS, see Appendix Table A.5.

[30] Workers' compensation is generally not included in the Internal Revenue Code definition of income. However, if the receipt of workers' compensation benefits reduces Social Security benefits, then those benefits are treated as Social Security benefits. See Internal Revenue Service (2011c).

[31] Appendix Table A.6 explains how these measures were derived from the SOI data and from the CPS data. Brady and Pierce (2012) also compares SOI and CPS measures of these four types of income. Bee and Mitchell (2017) compare these four types of income plus self-employment income and SSI benefits.

[32] The measure used for the denominator in the income share calculation is total positive income. Total income includes the types: wage and salary; retirement; investment; Social Security; alimony (received); business; capital gains; other gains; income from rental real estate, royalties, partnerships, S corporations, trusts, etc.; farm; unemployment compensation; and other income. Total positive income is calculated as the sum of positive income by type. That is, if a negative amount was reported for an income types, income for that category was set to zero.

[33] In the CPS comparison group, 95 percent had income from at least one of the four sources, with 77 percent receiving at least 95 percent of their income (calculated as the sum of positive income by type for all CPS income categories except educational assistance and financial assistance from non-household members) from them.

The other reason we focus on these four types is that taxpayers are likely to report this income accurately. All are subject to a high degree of third-party information reporting, and Erard and Feinstein (2012) finds that less than 2 percent of such income that should be reported on Form 1040 is misreported. In contrast, the study estimates misreporting represents nearly 30 percent of rent and royalty income and over 50 percent of both business income and farm income.

By far the largest differences between the two data sources are their measures of retirement income. It is not simply that those who file a return are more likely to have retirement income than the population as a whole: There are nearly twice as many filers with retirement income in the SOI than there are among filers and nonfilers combined in the CPS, and they have more than twice the amount of retirement income. Differences are largest in percentage terms for younger age groups, but absolute differences increase with age—with individuals age 59 or older accounting for 76 percent of the difference in aggregate retirement income. And, within age groups, more retirement income is reported in the tax data across the income distribution.

There are also differences in measures of investment income, although those differences are smaller in both percentage terms and absolute amounts. Compared with the CPS, there are fewer individuals with investment income in the SOI, but they report over 50 percent more investment income. SOI estimates of the number of individuals with and the aggregate amount of investment income, however, increase with age relative to CPS estimates.

For individuals age 70 or older, differences in both retirement income and investment income are substantial. For this age group, the CPS estimate of retirement income is 54 percent lower than the SOI—with 36 percent fewer individuals having retirement income, average amounts 28 percent lower, and median amounts 25 percent lower. And the CPS estimate of investment income is 53 percent lower than the SOI—with 13 percent fewer individuals having investment income, average amounts 46 percent lower, and median amounts 41 percent lower.

4.1 Differences in Aggregate Income Measures

Consistent with earlier analysis,[34] comparison with tax data suggests that the CPS does reasonably well at measuring wage and salary income and Social Security benefits (Figure 3).

SOI estimates of the number of workers with, and the aggregate amount of, wage and salary income were slightly below those of the CPS in 2010—suggesting that nearly all such workers file a tax return (Figure 3). For all but the age 70 or older group, SOI estimates of the number of workers and the amount of wages are within a few percent of the CPS estimates (Figure 4, top panel). For the age 70 or older group, the aggregate amounts are similar, but the number of taxpayers reporting wage and salary income in the SOI is nearly one-third higher than the CPS estimate for all individuals in the age group.

The SOI estimates for Social Security benefits are considerably below those of the CPS, but the differences are generally consistent with the share of individuals with Social Security who do not file a tax return (Figure 3). For individuals age 59 or older, the ratio of individuals in the SOI with Social Security benefits to the number of individuals in the CPS with Social Security benefits is roughly proportional to the share of the population filing a tax return: 91 percent for those age 59 to 69—compared with 87 percent filing; and 75 percent for those age 70 or older—compared with 76 percent filing (Figure 4, second panel). For younger individuals, the ratio is well below the filing share, which would be consistent with younger individuals who receive Social Security benefits being less likely to file a tax return than others in their age group.[35]

In contrast, but also consistent with earlier analysis,[36] the comparison suggests that the CPS misses a considerable amount of retirement and investment income (Figure 3).

By far the biggest differences between the two data sources—in both percentage terms and absolute differences—are in measures of retirement income (IRA distributions and income from pensions and annuities). Despite representing a smaller population than the CPS, nearly twice as many individuals in the SOI received retirement income and, in aggregate, they received

[34] See Atrostic and Kalenkoski (2002); Koenig (2003); Brady and Pierce (2012); and Bee and Mitchell (2017).

[35] Although individuals generally must be age 62 or older to claim Social Security retirement benefits, younger individuals may receive disability or survivor benefits.

[36] See Brady and Pierce (2012), and Bee and Mitchell (2017).

more than twice as much (Figure 3). SOI estimates of retirement income are substantially higher across all age groups, with percentage differences greatest for the two youngest age groups (Figure 4, third panel).

Although percentage differences in retirement income are smaller for older age groups, absolute differences are greater (Figure 5). For example, SOI retirement income is $49 billion higher for individuals younger than age 50 ($62 billion versus $13 billion in the CPS) but is $178 billion higher for individuals age 70 or older ($330 billion versus $152 billion in the CPS).

Overall, individuals age 59 or older account for more than half of the SOI-CPS difference in the number of individuals receiving retirement income and more than three-quarters of the difference in the aggregate amount (Figure 5).[37] Among individuals age 59 or older, the SOI estimates 10 million more individuals (27 million versus 17 million in the CPS) receive $323 billion more retirement income ($638 billion versus $315 billion in the CPS).

SOI taxpayers had 55 percent more investment income (interest and dividends) than CPS respondents, although slightly fewer individuals had investment income in the SOI (Figure 3). SOI-CPS investment income differences are not consistent across age groups: even though the share of the population filing a tax return declines with age, SOI estimates increase with age relative to CPS estimates (Figure 4, bottom panel).

Compared with the CPS, the SOI estimates fewer individuals younger than age 59 receive investment income, but more individuals age 59 and older do (Figure 6, top panel). For example, among individuals younger than age 50, 20 percent fewer report investment income in the SOI (39 million versus 48 million in the CPS). In contrast, among individuals 70 or older, 15 percent more report investment income in the SOI (16 million versus 14 million in the CPS).

Estimates of investment income in the SOI are higher than in the CPS across all age groups, but differences increase with age (Figure 6, bottom panel). For example, investment income in the SOI is nearly 20 percent higher for individuals younger than age 50 ($73 billion versus $62 billion in the CPS) but is more than twice as high for individuals age 70 or older ($144 billion versus $67 billion in the CPS).

[37] Individuals age 59 or older represent about one quarter of the population of the comparison groups—27 percent in the CPS and 24 percent in the SOI.

4.2 Incidence and Typical Amounts of Retirement and Investment Income

This section illustrates how aggregate differences between the SOI and CPS data translate into differences in population estimates of retirement and investment income incidence and typical amounts received.[38] For expositional ease, dollar amounts in the text are rounded.[39]

One way we address the issue of nonfilers is to present both an upper-bound and a lower-bound estimate of population incidence from the SOI data. The number of nonfilers is estimated as the difference between the number of individuals in the CPS and SOI comparison groups.[40] The actual incidence among SOI taxpayers serves as an upper-bound estimate of population incidence—that is, this would represent population incidence if both filers and nonfilers were equally likely to receive the income. The lower-bound estimate of population incidence assumes that no nonfiler receives the income. The true incidence presumably lies between the two.

A second way we address the issue of nonfilers is by controlling for income. Individuals who do not file a tax return should be predominantly lower income, so the importance of nonfilers should fall as income rises. As a result, observed differences for higher-income groups should be primarily related to measurement error rather than sample selection. As explained in Section 3, we group individuals in both data sources into five fixed-dollar categories of wage plus Social Security income—which we refer to as *quintiles*, although they are roughly equal in size only for the CPS.[41]

[38] As already illustrated, there are smaller differences between CPS and SOI measures of wage and salary income and Social Security income. Measures of wage and salary income incidence (adjusted for nonfilers) and average amount received differ by less than 1.0 percent overall, and—controlling for age—are very similar for all but the age 70 or older group. As noted in the text, the CPS and SOI measures of the aggregate amount of wage and salary income are similar for the age 70 or older group, but the number of working individuals is nearly one-third higher in the SOI. As a result, wage and salary income incidence for this age group is lower in the CPS and average amounts are higher. Social Security income incidence is higher in the CPS than in the SOI for individuals younger than 59, but (without adjusting for non-filers) is similar for individuals age 59 or older. Across all age groups, typical amounts of Social Security income are slightly lower in the CPS than in the SOI, which would be consistent with nonfilers having lower average benefits than filers. See supplemental tables for details.

[39] See supplemental tables for unrounded average and median amounts. To avoid disclosure of any amount reported by an individual taxpayer, both the rounded medians presented in the text and the unrounded medians reported in the supplemental tables are approximate. Approximate medians are calculated as the average of values in the middle decile (from the 45th to 55th percentiles) for a given category.

[40] See Figure 1 and Figure 2.

[41] See note 28 for the dollar ranges of the categories.

4.2.1 Retirement Income

Across individuals of all ages, the CPS could be interpreted as missing (at least) half of those receiving retirement income but getting the typical amounts about right (Figure 7). The CPS estimates 9.1 percent of all individuals in the comparison group received retirement income—less than half of the incidence among taxpayers (20 percent) and about half of the lower-bound estimate that assumes no nonfilers receive retirement income (18 percent).[42] Among those with retirement income, however, the typical amounts received are similar: average retirement income in the CPS is 9 percent lower ($19,000 versus $21,000 in the SOI), but median retirement income is 7 percent higher ($13,000 versus $12,000 in the SOI).

This comparison, however, masks important differences by age.

The CPS substantially understates retirement income incidence for individuals younger than 59, but substantially overstates typical amounts (Figure 7). For example, among individuals age 50 to 58, retirement income incidence in the CPS (4.9 percent) is nearly two-thirds lower than in the SOI—either the actual incidence among taxpayers (14 percent) or the lower-bound estimate of incidence (13 percent). The typical amounts of retirement income are higher in the CPS, however, with the average amount 20 percent higher ($23,000 versus $19,000 in the SOI) and the median amount a bit more than 70 percent higher ($17,000 versus $10,000 in the SOI).

Controlling for wage plus Socials Security income, the CPS still substantially understates retirement income incidence and (generally) overstates typical amounts for individuals younger than 59 (Figure 8, left two panels). For example, among individuals age 50 to 58, retirement income incidence in the CPS falls from 7.5 percent for quintile one to 3.1 percent for quintile five. For the same age group in the SOI, incidence among taxpayers falls from 16 percent for quintile one to 13 percent for quintile five, and the lower-bound estimate falls from 14 percent to 13 percent. For all income groups but quintile one, however, typical amounts are considerably higher in the CPS. For quintile one, the average amount in the CPS is 19 percent

[42] Although nonfilers are not examined in this study, analysis the authors did related to Brady, et al. (2017) revealed that a substantial minority of older nonfilers received distributions from retirement plans (which we could observe because they were reported to the IRS on Form 1099-R).

lower ($22,000 versus $27,000 in the SOI) and the median amount is 14 percent lower ($16,000 versus $19,000 in the SOI). For the other quintiles, average amounts in the CPS range from 25 percent higher for quintile two ($21,000 versus $17,000 in the SOI) to 62 percent higher for quintile five ($31,000 versus $19,000 in the SOI); and median amounts in the CPS range from about two-thirds higher for quintile two ($16,000 versus $9,500 in the SOI) to two times higher for quintile five ($25,000 versus $8,400 in the SOI).

In contrast with younger individuals, the CPS understates both retirement income incidence and typical amounts for individuals age 59 or older (Figure 7). For example, among those age 70 or older, retirement income incidence is 36 percent in the CPS, which is about half of the 75 percent incidence rate in the SOI among taxpayers and more than one-third less than the 56 percent lower-bound estimate. In addition, the typical amounts reported in the CPS are lower, with the average amount 28 percent lower ($16,000 versus $22,000 in the SOI) and the median amount 25 percent lower ($11,000 versus $14,000 in the SOI).

Even controlling for wage plus Socials Security income, the CPS substantially understates retirement income incidence and (generally) typical amounts received for individuals age 59 or older (Figure 8, right two panels). For example, among individuals age 70 or older, retirement income incidence averages 30 percent over the first two quintiles in the CPS compared with 69 percent in the SOI, and peaks at 44 percent for quintile four in the CPS compared with 83 percent in the SOI. Not only is incidence higher among taxpayers, the lower bound SOI estimate—which is derived assuming no nonfilers have retirement income—is higher for all income groups. Further, among those with retirement income, the typical amounts received in the CPS are substantially lower for all quintiles, with average amounts in the CPS ranging from 20 percent lower for quintile one ($23,000 versus $28,000 in the SOI) to 34 percent lower for quintile four ($14,000 versus $21,000 in the SOI); and median amounts ranging from 20 percent lower for quintile one ($18,000 versus $23,000 in the SOI) to 34 percent lower for quintile four ($9,300 versus $14,000 in the SOI).

Another difference between the two data sources is that the correlation of retirement income with wage plus Social Security income differs for individuals younger than age 59 (Figure 8, left two panels). For example, among individuals younger than age 50, retirement

income incidence is negatively correlated with wage plus Social Security income in the CPS (falling from 0.9 percent for quintile one to 0.6 percent for quintile three, and then ticking up to 0.7 percent for quintile five), whereas it is positively correlated in the SOI (increasing from 3.5 percent for quintile one to 7.5 percent for quintile five). In addition, among individuals age 50 to 58, typical amounts are positively correlated with wage plus Social Security income in the CPS (for example, median amounts increase from $16,000 for quintile one to $25,000 for quintile five), but negatively correlated in SOI (for example, median amounts fall from $19,000 for quintile one to $8,400 for quintile five).

In contrast with younger individuals, the correlations between retirement income and wage plus Social Security income are more similar in the two data sources for individuals age 59 or older (Figure 8, right two panels). For example, in both the CPS and the SOI, retirement income incidence peaks in quintile three for individuals age 59 to 69 and peaks in quintile four for individuals age 70 or older. In addition, the two data sources show that quintile one has the highest median and average retirement income for both age groups.

4.2.2 Investment Income

Across individuals of all ages, the CPS could be interpreted as getting the incidence of investment income about right but getting the typical amounts wrong (Figure 9). Forty-six percent of the CPS comparison group report investment income—below the 47 percent of taxpayers who receive it and above the SOI lower-bound estimate of 43 percent. Among those with investment income, however, the CPS both underestimates the average amount by 40 percent ($2,600 versus $4,300) and overestimates the median amount by 34 percent ($230 versus $170).

As with retirement income, such a comparison masks important differences by age.

The CPS overstates incidence for individuals younger than age 50 but understates incidence for individuals age 59 or older (Figure 9, top panel). Among individuals younger than age 50, investment income incidence in the CPS (39 percent) is higher than both the incidence among taxpayers (34 percent) and the SOI lower-bound estimate (31 percent). For individuals 50 to 58, investment income incidence in the CPS (53 percent) falls between the incidence among

taxpayers (57 percent) and the SOI lower-bound estimate (52 percent). For taxpayers age 59 or older, investment income incidence in the CPS is lower than both SOI incidence measures. For example, for individual age 70 or older, investment income incidence in the CPS is 53 percent, compared with 81 percent incidence among taxpayers and the SOI lower-bound estimate of 61 percent among all individuals.

Controlling for wage plus Social Security income, the CPS and SOI show a similar pattern of incidence across quintiles for individuals younger than age 59 (Figure 10, top panel). For example, among individuals younger than age 50, investment income incidence in the CPS is higher than both SOI measures across all quintiles, but the increase in incidence by quintile in the CPS (from 24 percent for quintile one to 72 percent for quintile five) is similar to the increase for taxpayers (from 21 percent for quintile one to 68 percent for quintile five).

In contrast, for individuals age 59 or older, investment income incidence among taxpayers is considerably higher than in the CPS across all quintiles, although the SOI lower-bound estimates are not (Figure 10, top panel). For example, among individuals age 70 or older, investment income incidence for taxpayers is considerably higher than in the CPS across all quintiles, but the SOI lower-bound estimates are substantially higher only for the highest two quintiles.

Differences in typical amounts of investment income also vary by age, with the CPS understating both average and median amounts for individuals age 70 or older (Figure 9, two bottom panels). For individuals younger than age 70, the CPS understates average investment income but overstates median amounts. For example, for individuals age 50 to 58, the average amount in the CPS was 30 percent lower ($2,800 versus $3,900 in the SOI), but the median amount was more than twice as high ($320 versus $150 in the SOI). In contrast, for those age 70 or older, both CPS average and median investment income ($4,800 and $740, respectively) were more than 40 percent below the SOI measures ($8,900 and $1,260, respectively).

Controlling for wage plus Social Security income, the relationship between CPS and SOI measures of typical amounts varies considerably across quintiles for the three youngest age groups (Figure 10, two bottom panels). For these age groups, investment income is more positively correlated with wage plus Social Security income in the CPS than it is in the SOI.

For the three youngest age groups, average investment income is generally lower in the CPS than in the SOI, but differences vary considerably by quintile. CPS average amounts are substantially lower only for: quintile one and two of the younger than age 50 group; quintile one, two, and five of the age 50 to 58 group; and quintile one and five of the age 59 to 69 group. For other quintiles, CPS average amounts are either higher or only slightly lower.

For the three youngest age groups, median investment income is generally higher in the CPS than in the SOI, but differences are most pronounced for higher quintiles. For example, for individuals younger than age 50, CPS median amounts are substantially lower for quintile one ($44 versus $100 in the SOI) but increase more quickly with income, reaching 2.5 times the SOI median amount for quintile five ($300 versus $120 in the SOI). For individuals age 50 to 58, CPS median amounts are a bit higher for quintile one ($250 versus $220 in the SOI), but differences increase with income and are substantially higher for quintile five ($830 versus $310 in the SOI).

Compared with the younger age groups, the relationship between CPS and SOI measures varies less with wage plus Social Security income for individuals age 70 or older, with both average and median investment income typically lower in the CPS. Specifically, CPS average amounts are substantially lower across all income quintiles, and CPS median amounts are substantially lower for all but quintile five.

Looking across both incidence and amounts, the CPS understates the importance of investment income for individuals age 70 or older for all fixed-dollar categories of wage plus Social Security income. Even if the SOI lower bound estimates accurately reflect investment income incidence for quintiles one through three of the age 70 or older group (which would mean the CPS did not undercount incidence for these groups), the CPS would still substantially understate the typical amounts received. And the CPS substantially understates both incidence and average amounts for quintiles four and five.

5. How Differences by Type Affect Comprehensive Measures of Income

This section examines how differences between the CPS and SOI measures of the various types of income translate into differences in estimates of household resources. For this purpose, we examine the sum of wage and salary, Social Security, retirement, and investment income. As

noted earlier, 97 percent of SOI taxpayers reported income from at least one of these sources and 75 percent got 95 percent or more of their income from these four income types. For expositional ease, this measure will be referred to in this section as simply *income*.

Compared with CPS data, SOI data paint a much different picture of the income of the elderly—in both amount and composition. Not only is aggregate income nearly one-third higher than in the CPS for individuals age 70 or older, the tax data also show that this age group gets more income from retirement plans than from Social Security. Further, average and median income is higher across the income distribution, with the differences too large to be explained by nonfilers.

5.1 Comparing Aggregate Income Estimates

Looking at income from all four sources, differences between the SOI and CPS measures of aggregate income increase with age (Figure 11). SOI income is about 1 percent lower than CPS income for individuals younger than age 50 but is higher for all other age groups. Despite the share of the population who file a tax return falling with age, differences are greatest for the age 70 or older group—with SOI income nearly one-third higher. For this age group, higher retirement and investment income in the SOI more than offsets the fact that a sizeable share of Social Security benefits is paid to nonfilers.

The impact of retirement and investment income underreporting in the CPS grows with age both because the absolute difference between SOI and CPS measures increases and because retirement and investment income make up an increasing share of total income. Individuals younger than age 59 get the vast majority of their income from wages and salaries.

Overall, the SOI data paint a substantially different picture of the income of the elderly—not just the amount of income, but also its composition. For individuals age 70 or older as a group, the CPS estimates that aggregate retirement income is less than half of aggregate Social Security benefits. The SOI data show that, not only did taxpayers age 70 or older report more retirement income than Social Security benefits, they reported more retirement income than the CPS estimates all individuals in the age group—inclusive of both filers and nonfilers—received in Socials Security benefits.

5.2 Comparing Median and Average Income Estimates

To examine differences between CPS and SOI estimates of typical household resources, we compare measures of per capita income. For single individuals in the CPS and non-joint returns in the SOI, per capita income equals individual income. For married couples in the CPS and joint returns in the SOI, half of the total income of the couple is allocated to each spouse.

We do not compare estimates of typical income for the age groups as a whole because the SOI data include only those who file a tax return, whereas the CPS data include both filers and non-filers. Instead we compare median and average per capita income for fixed-dollar categories of wage plus Social Security income within each age group. As was illustrated in Section 3, non-filers are more likely to be in the lower quintiles.

Controlling for wage plus Social Security income, the two data sources produce similar estimates of household resources for individuals younger than age 59 (Figure 12, top two panels). For individuals younger than age 50, median income differs by less than 2 percent for quintile two through quintile five, as does average income for quintile two through quintile four. For individuals age 50 to 58, median income differs by less than 3 percent for quintile three through quintile five, and average income differs by less than 5 percent for quintiles three and four.

For individuals age 59 to 69, income in the CPS is lower than in the SOI across all quintiles, and substantially lower for quintile one through quintile three (Figure 12, third panel). For quintile three, both average and median income per person in the CPS ($27,000 and $22,000, respectively) are 21 percent lower than in the SOI ($34,000 and $27,000, respectively). Percentage differences are larger for quintiles one and two—who get a higher percentage of their income from retirement and investment income—and smaller for quintiles four and five—who get a higher percentage of their income from wage and salary income.

The observed differences in average income are too large to be explained by nonfilers. For example, among individuals age 59 to 69, average income per person in the CPS is 45 percent lower than the SOI for quintile one, and 31 percent lower for quintile two. Even if we assume nonfilers only have wage plus Social Security income equal to the minimum amount included in their quintile—that is, $0 for quintile one and $8,267 for quintile two—and we assume they

have no retirement or investment income, average income remains roughly 20 percent lower in the CPS for both quintiles.

The largest differences in household resource estimates are among individuals age 70 or older, with income in the CPS substantially lower than in the SOI across all quintiles of wage plus Social Security income (Figure 12, bottom panel). For example, median income per person in the CPS is 62 percent lower for quintile one ($8,300 versus $22,000 in the SOI), 40 percent lower for quintile three ($15,000 versus $25,000 in the SOI), and 22 percent lower for quintile five ($32,000 versus $41,000 in the SOI). Differences in average income are similar, with the CPS 51 percent lower for quintile one, 37 percent lower for quintile three, and 30 percent lower for quintile five.

Once again, the observed differences in average income for the lower-income quintiles are too large to be explained by nonfilers. For example, even if we assume nonfilers only have wage plus Social Security income equal to the minimum amount included in their quintile and we assume they have no retirement or investment income, average income in the CPS for those age 70 or older would remain 16 percent lower for quintile one and 23 percent lower for quintile three.[43]

Differences in average income measures translate into different estimates of income composition, with the CPS substantially understating the share of elderly income from retirement and investment income and overstating the extent to which the elderly rely on Social Security benefits (Figure 13). Largely by construction, differences between the SOI and CPS estimates of average income by quintile are attributable to differences in retirement and investment income. Regardless of age, the CPS and SOI measures of wage plus Social Security income differ by 2 percent or less for the middle three quintiles. In contrast, there are

[43] Assuming nonfilers have income equal to the minimum amount of wage plus Social Security income included in their quintile means that we assume quintile one nonfilers have no income. Note that all US residents age 65 or older are eligible for means-tested benefits. In 2010, eligible single individuals with no other income would have received $10,488 in federal transfer payments—$8,088 in SSI benefits and $2,400 in SNAP benefits (food stamps). Eligible married couples with no other income would have received $16,536 in federal transfer payments—$12,132 in SSI benefits and $4,404 in SNAP benefits. If we instead assume nonfilers have $6,066 in income (the per person federal SSI benefit for a married couple with no income) and we compare that to CPS income (sum of wage and salary, Social Security, retirement, and investment income) plus cash transfer payments (SSI benefits, VA benefits, and public assistance), then CPS average income would be 20 percent lower for quintile one.

considerable differences in retirement and investment income across all age and income groups. For younger individuals, however, the impact of these differences on total income is muted because they get a much smaller share of income from these sources.

For the age 70 and older group, there are significant differences in income composition even for the higher income quintiles, for whom nonfilers are presumably less of an issue. For example, both the CPS and SOI estimate average Social Security income is about $15,000 per person for quintile four. In contrast, average retirement income per person in the CPS is nearly two-thirds less ($5,700 versus $16,000 in the SOI) for this group, and average investment income per person is less than half ($3,000 versus $6,400 in the SOI). As a result, Social Security benefits represent 62 percent of quintile four income in the CPS, but only 39 percent in the SOI.

6. What Do We Know About the Source of Retirement Income?

One question prompted by this research is: "What is the source of retirement income?" There is particular interest in the share of retirement income coming from DB plans and the share coming from DC plans and IRAs. This is because of the shift among private-sector employers from traditional DB pensions to DC plans (such as a 401(k) plan) or, to a lesser extent, to so-called hybrid DB plans (such as a cash balance plan). Some are concerned that the income of current retirees may not be particularly relevant for predicting the experience of today's workers because these new plans will not generate as much income as traditional pensions.

Unfortunately, the tax data only split retirement income into two categories: IRA distributions and all other retirement income. On Form 1040, taxpayers report IRA distributions on line 15 and all other retirement income as "pensions and annuities" on line 16. Similarly, the information reported by entities disbursing the retirement income on Form 1099-R can be used to identify the same split of the data. Note that pensions include both DB plans and DC plans, and both government employee pensions and private-sector pensions. Further, pension and annuities include not only distributions from pensions and non-qualified annuities, but also

from employee stock ownership plans (ESOPs),[44] modified endowment contracts,[45] certain other life insurance products, and structured settlements (Brady and Bass, 2020b).

Another complication is that we do not know the ultimate source of IRA distributions. IRA assets may have been generated from contributions made directly into an IRA. A large portion of IRA assets, however, are the result of rollovers from employer plans—either from DC plans or lump sum distributions from DB plans. There is no way to identify whether IRA distributions are ultimately attributable to direct contributions, assets accumulated in DC plans, or benefits accrued in a DB plan.

In this section we use a novel approach to identify the source of retirement income. Combining individual income tax data with data reported by pension plans, we determine that traditional private-sector DB pension plans accounted for, at most, 19 percent of pension and annuity income in 2010. Traditional DB pensions for federal, state, and local government workers—which to date have largely not been replaced by DC plans—accounted for up to 45 percent of pension and annuity income. We also provide evidence that, rather than being attributable to private-sector employers shifting away from traditional DB pensions, government-employee pensions have always represented the bulk of DB plan income.

6.1 Previous Estimates of DB Plan Share of Retirement Income

Previous studies have used different approaches to get an estimate of the share of pension and annuity income from DB plans.

Brady et al. (2017) investigates imputing the source of pensions and annuities based on the persistence of the income. The study uses panel data covering 1999 to 2010 to look at individuals who received pension and annuity in two consecutive years—two years and three years, respectively, after claiming Social Security benefits. Specifically, if individuals experienced a modest increase in pension and annuity income from one year to the next (by

[44] ESOP dividends and proceeds from ESOP stock sales (other than unrealized appreciation of ESOP shares, which is reported as capital gains on Form 1040 line 13) are reported on Form 1040 line 16.

[45] To be considered life insurance for tax purposes, the cash value of a policy is limited relative to the death benefit provided. If a life insurance contract exceeds this limit (determined by means of a seven-part test), it is considered to be a modified endowment contract and it is taxed much the same as a nonqualified annuity contract.

between 1.0 percent and 5.0 percent), then the income was classified as coming from a government employee (federal, state, and local) DB plan because these pensions are typically adjusted for cost of living. If pension and annuity income was roughly the same from year to year (within 1.0 percent), then the income was classified as coming from a private-sector DB plan because private-sector pensions typically pay out the same amount every year.

Using this method, Brady et al. (2017) provides an upper-bound estimate that, among those who received pension and annuity income in both years, 64 percent of individuals and 62 percent of the dollars would be classified as coming from DB plans. By employer type, 23 percent of individuals and 29 percent of the dollars were classified as coming from government employee DB plans and 41 percent of individuals and 33 percent of the dollars were classified as coming from private-sector DB plans.

These estimates are considered upper-bound estimates because Brady et al. (2017) tests the method by applying it to individuals who received IRA distributions in the same two consecutive years and finds that a large percentage of IRA distributions would be incorrectly classified as coming from private-sector DB plans. Using the same method to classify IRA distributions, government employee DB plans would be (incorrectly) classified as the source of IRA distribution for only 3 percent of individuals and 2 percent of dollars. In contrast, private-sector DB plans would be (incorrectly) classified as the source for 21 percent of individuals and 20 percent dollars. That is, a sizeable portion of those with IRA distributions withdrew roughly the same amount in both years.

In contrast, Bee and Michell (2017) estimate a much higher percentage of pension and annuity income—nearly 90 percent for individuals aged 55 to 64 and over 90 percent for individuals aged 65 to 74—is from DB plans. The study uses Form 1099-R data to impute the source of all non-IRA distributions. This is done by grouping all distributions by the "Payer's TIN" (taxpayer identification number) reported on Form 1099-R and examining the number of forms issued by age around age 70-1/2 (when taxpayers with DC plans are required to begin taking minimum distributions). Based on this analysis, all non-IRA Form 1099-Rs issued by a given payer are categorized as being from a DB plan, a DC plan, or an unknown source.

6.2 Using Plan Data to Estimate Income Shares

In this paper, we take yet another approach to answer the question: we combine estimates from income tax data with other sources of aggregate data on pension distributions (Figure 14). This exercise allows us to place some bounds on the share of pension and annuity income from DB plans generally, and from traditional private-sector DB pension plans specifically.

We can identify the source of 85 percent of gross distributions made in 2010. There were $1.2 trillion in gross retirement distributions in 2010 (Brady and Bass 2020b). From the tax data, we know that IRA distributions accounted for $294 billion (or 24 percent) of gross retirement distributions. We can also identify the source of another 61 percent of gross retirement distributions using other data sources: 23 percent were from DC plans,[46] 23 percent were from government employee DB plans,[47] and 14 percent were from private-sector DB plans—with cash balance plans accounting for 4 percent and other DB plans (which are, presumably, traditional DB pensions) accounting for 10 percent.[48] The remaining 15 percent are pension and annuity distributions that we cannot identify—which would include distributions from: pensions for which we have no data, such as governmental 403(b) and 457(b) plans; non-qualified annuities; and other non-pension sources.

About 30 percent of gross distributions, or $363 billion, are rollover-type distributions, which simply transfer money from one type of retirement vehicle to another. These include rollovers, Roth conversions, and Section 1035 exchanges of annuity contracts.[49] The tax data

[46] Identified DC plan distributions include those reported by private-sector plans on Form 5500 (U.S. Department of Labor, Employee Benefits Security Administration 2012) and the Federal Thrift Savings Plan (TSP) (Federal Retirement Thrift Investment Board 2011).

[47] Identified government employee DB plans include the Federal Civil Service (CSRS and FERS) plans (Isaacs 2020), and state and local DB plans (U.S. Census Bureau 2010 and 2011b).

[48] Identified private-sector DB plans include those reported by private-sector plans on Form 5500 (U.S. Department of Labor, Employee Benefits Security Administration 2012). Although technically a DB plan, cash balance plan benefits are expressed in terms of a (notional) account balance, with the account balance based on (notional) contributions that are a percentage of an employee's earnings grown at a specified rate of return. As is often the case with traditional private-sector DB plans, cash balance plans typically offer separating employees the choice of taking benefits as a single lump-sum payment or as periodic annuity payments in retirement.

[49] Section 1035 exchanges are exchanges of one insurance product (annuity contracts, life insurance policies, or modified endowment contracts) for a newer, or otherwise different, version of the same product.

allow us to identify the source of rollovers and Roth conversions, with $68 billion from IRAs and $272 billion from pensions. The remaining $23 billion are Section 1035 exchanges.

Combining the information on gross and rollover-type distributions, we can identify the source of the $856 billion of non-rollover distributions in 2010. We do this by subtracting: the IRA component of rollovers and Roth conversions from IRA gross distributions; the pension component of rollovers and Roth conversions from identified pension gross distributions; and Section 1035 exchanges from unidentified pension and annuity gross distributions. The results show that 26 percent of non-rollover distributions are from IRAs, 55 percent are from identified pensions, and 19 percent from unidentified pensions and annuities.

From this exercise, we derive an upper-bound estimate that 19 percent of pension and annuity income in 2010—or 14 percent of all retirement income, inclusive of IRA distributions—was from traditional private-sector DB pension plans.[50] The upper bound estimates of DB plan income share are derived by assuming no workers roll over lump-sum distributions of benefits when they separate from their employers. Under this assumption, identified DB plans would account for 72 percent of non-rollover distributions from pensions and annuities, with 45 percent from government employee DB pensions and 28 from private-sector DB plans.[51] Nearly one-third of distributions from private-sector DB plans, however, were from cash balance plans rather than traditional DB pension plans.

Compared with previous estimates, the upper-bound estimate that 72 percent of non-rollover pension and annuities are from DB plans is higher than Brady et al. (2017) but lower than Bee and Mitchell (2017). The upper-bound estimate that 19 percent are from traditional private-sector DB pensions, however, is considerably lower than in Brady et al. (2017).

[50] Distributions from non-cash-balance private-sector DB plans were $121 billion in 2010. Assuming none of these distributions were rolled over, $121 billion would represent: 19 percent of the $631 billion (=$472 billion of identified pensions plus $159 billion of unidentified pensions and annuities) of non-rollover distribution from pensions and annuities; and 14 percent of the $856 billion of total non-rollover distributions.

[51] Distributions from government employee DB plans were $282 billion and distributions from private-sector DB plans were $175 billion (=$54 billion from cash balance plans plus $121 billion from other DB plans) in 2010. Assuming none of these distributions were rolled over, $282 billion would represent 45 percent of the $631 billion of non-rollover distribution from pensions and annuities, and $175 billion would represent 28 percent.

It is unlikely that the share of non-rollover distributions from DB plans is as high as these upper-bound estimates, especially for private-sector DB plans. While the assumption that DB plan participants do not roll over lump sum distributions of accrued benefits may be fairly accurate for government employee DB plans, private-sector DB plans offer a much different choice to separating employees. The lump sum payment offered to separating government employees is only a fraction of the present value of their vested pension benefits—typically representing the return of employee contributions only, possibly credited with a small amount of interest. In contrast, private-sector DB plans are required to offer separating employees a lump sum payment based on the present value of their vested benefits.

It should also be noted that if the upper-bound estimates of the share of pension and annuity distributions attributable to DB plans were correct—that is, if it were true that no separating employees rolled over lump sum distributions of accrued benefits from private-sector DB plans—it would imply that nearly all DC plan gross distributions were rolled over in 2010. That is, it would imply that there was little or no pre-retirement "leakage" from DC plans, and little or no post-retirement DC plan withdrawals.

The fact that government employee DB plans account for a large portion of DB plan benefits is neither surprising nor a recent development. Looking at aggregate DB plan entitlements (that is, vested benefits) from 1974 to 2019, private-sector DB plans accounted for 27 percent of the total, on average, and never exceeded 32 percent (Figure 15).

7. Conclusion

Comparing 2010 annual income measures derived from the SOI and the CPS, we find that the CPS vastly understates the income of the elderly. The differences between the two data sources are substantial, exist across the income distribution, and are too large to be explained by nonfilers.

For the groups compared in this study, individuals who file a tax return represent 90 percent of the total population. The share of the population who file a return falls from 93 percent for individuals younger than age 50 to 76 percent for individuals age 70 or older.

We focus on four types of income that are reported on tax returns and measured in the CPS: wage and salary, Social Security, retirement (IRA distributions and income from pensions and annuities), and investment (taxable interest, tax-exempt interest, and dividends) income. All four have been found to be accurately reported on tax returns and 75 percent of taxpayers received at least 95 percent of their 2010 annual income from them.

Consistent with the existing literature, we find that the CPS measures Social Security benefits and wages and salaries reasonably well but substantially underestimates retirement and investment income. Compared with estimates from the CPS, nearly twice as many taxpayers report retirement income and they report more than twice the amount. Fewer taxpayers receive interest income in the SOI data than estimated in the CPS, but the amount taxpayers report is more than 50 percent higher.

This study expands the literature by examining measurement of retirement and investment income across the entire population, and we find important differences by age. The CPS undercounts aggregate retirement and investment income for all age groups, but the relationship between SOI and CPS estimates of incidence and typical amounts varies by age.

Among individuals younger than age 59, the CPS underestimates the number of individuals receiving retirement income but overestimates the typical amounts received, whereas it underestimates both the incidence and the typical amounts for individuals age 59 or older. For example, for individuals age 50 to 58, fewer than 2 million individuals (or 5 percent of the population) receive retirement income in the CPS with a median amount of $17,200, compared with nearly 5 million taxpayers in the SOI with a median amount of $10,000. For individuals age 70 or older, fewer than 10 million (or 36 percent of the population) receive retirement income in the CPS with a median amount of $10,600, compared with nearly 15 million taxpayers in the SOI with a median amount of $14,000.

The CPS overestimates the incidence and typical amounts of investment income for younger individuals, but underestimates incidence and typical amounts for older individuals. For example, for individuals younger than age 50, 48 million individuals (or 39 percent of the population) receive investment income in the CPS with a median amount of $105, compared with 39 million taxpayers in the SOI with a median amount of under $70. For individuals age 70

or older, 14 million (or 53 percent of the population) receive investment income in the CPS with a median amount of $740, compared with 16 million taxpayers in the SOI with a median amount of $1,260.

Within age groups differences persist even after accounting for nonfilers and controlling for other income, but the correlation between other income and retirement and investment income often differs across data sources. For individuals with investment income, typical amounts in the CPS are much more positively correlated with wage plus Social Security income than is the case in the SOI, especially for younger individuals. For retirement income, correlations with wage plus Social Security income differ for younger individuals, with typical amounts received more positively correlated in the CPS for individuals age 50 to 58, and incidence more positively correlated in the SOI for individuals younger than age 50.

Although differences between SOI and CPS income measures exist across all groups, they translate into larger differences in more comprehensive measures of income for older individuals. Differences grow with age both because absolute differences between SOI and CPS measures increase and because retirement and investment income make up an increasing share of total income. Withing age groups, these differences are found across the income distribution and are too large to be explained by non-filers.

Comparing the combined income from all four income types, the largest differences between the SOI and CPS measures—in both amount and composition—are for individuals age 70 or older. Despite the fact that nearly one-in-four individuals in the group do not file a tax return, aggregate income is nearly one-third higher in the SOI. The SOI data also show that, as a group, individuals age 70 or older get more income from pensions, annuities, and IRAs than they get in Social Security benefits.

Across the income distribution, SOI data show individuals age 70 or older have substantially more household resources than estimated in the CPS. Controlling for wages plus Social Security income, differences in income are too large to be explained by nonfilers and, indeed, exist for groups with few nonfilers. For example, for individuals in quintile four of the age 70 or older group, median income per person is 41 percent lower ($18,700 compared with

$31,600 in the SOI) and average income per person in the CPS is 37 percent lower ($24,500 compared with $38,700 in the SOI).

In addition to having more income, the SOI data paint a much different picture of income composition for individuals age 70 or older. For example, for individuals in quintile four of the age 70 or older group in the CPS, Social Security benefits account for more than 60 percent of income, on average, and retirement income less than 25 percent. In contrast, the SOI data show this group gets similar amounts of income from both sources: Social Security benefits account for just under 40 percent of their income and retirement income just over 40 percent.

We combine our estimates from the income tax data with aggregated plan-level data on pension distributions to provide some upper-bound estimates of the share of retirement income from DB pension plans. The tax data only allow us to definitively identify two broad categories of retirement income: IRA distributions and all other retirement income. Our upper-bound estimates assume that all distributions reported by DB plans result in income reported on individual income tax returns—that is, we assume no workers roll over lump-sum distributions of benefits when they separate from employment.

We estimate that traditional private-sector DB pension plans accounted for, at most, 19 percent of income from pensions and annuities—or about 14 percent of all retirement income—in 2010. Overall, up to 72 percent of pension and annuity income could be from DB plans, with up to 45 percent coming from government employee DB pensions, and up to 9 percent from private-sector cash balance plans.

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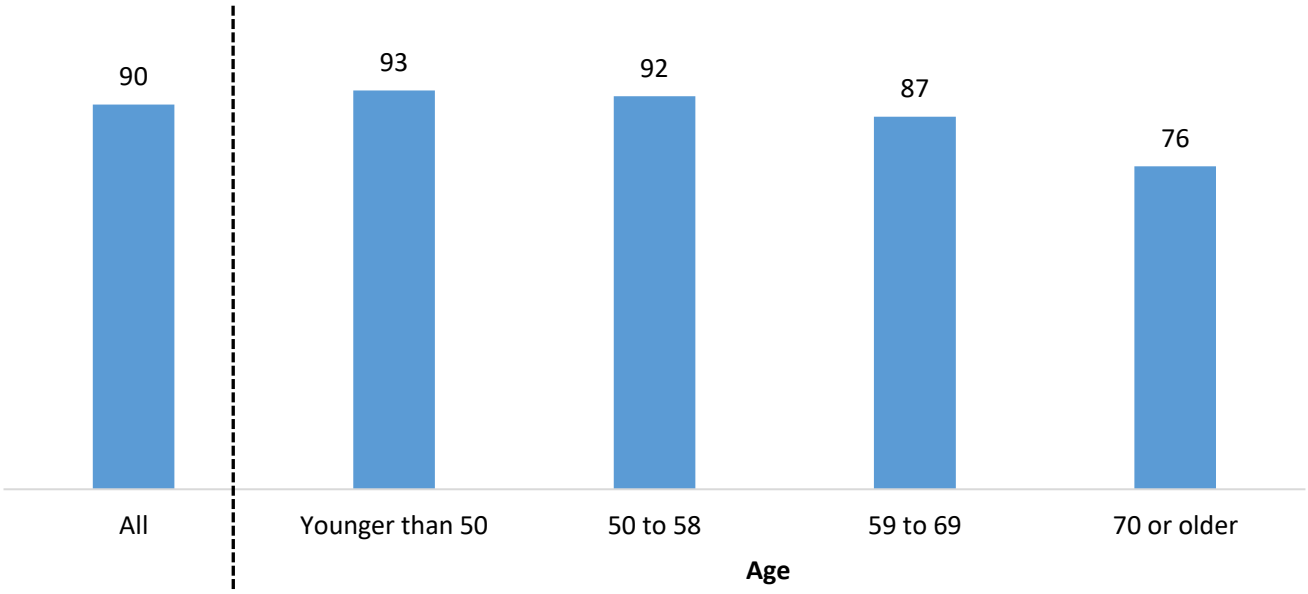
Figure 1

Taxpayers as a Share of CPS Population Estimates Decline with Age

Ratio of SOI to CPS comparison groups by age, 2010, percentage*



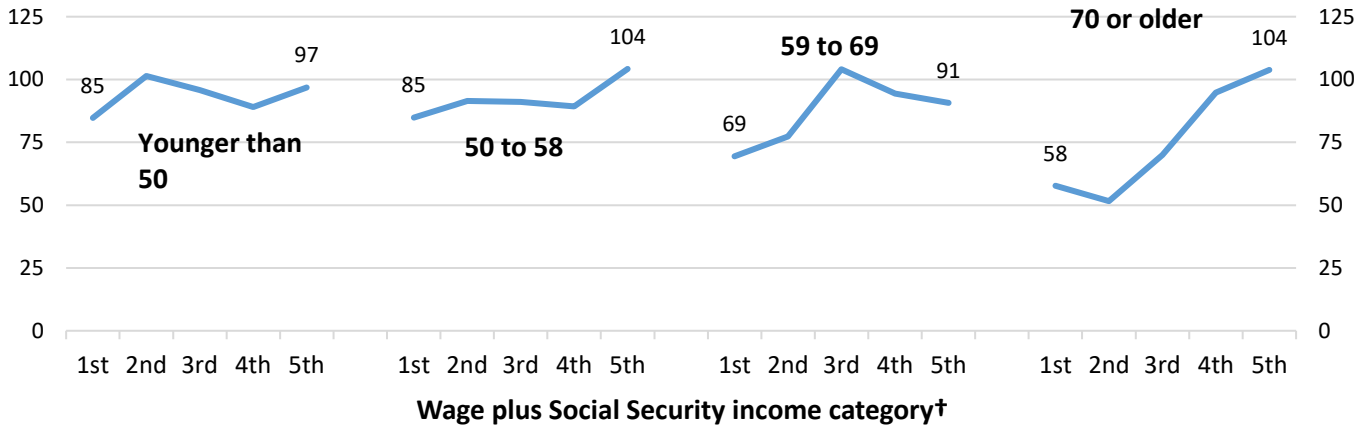
*The CPS group includes individuals who report any income or loss (either their own or received through a spouse) from sources other than financial or educational assistance. The SOI group includes individuals age 15 or older who file a tax return as either the primary taxpayer or spouse, including dependent returns.

Sources: Internal Revenue Service Statistics of Income Division data and U.S. Census Bureau Current Population Survey data

Figure 2

Taxpayers as a Share of CPS Population Generally Increase with Income

Ratio of SOI to CPS comparison groups by age and fixed income categories,† 2010, percentage*



*The CPS group includes individuals who report any income or loss (either their own or received through a spouse) from sources other than financial or educational assistance. The SOI group includes individuals age 15 or older who file a tax return as either the primary taxpayer or spouse, including dependent returns.

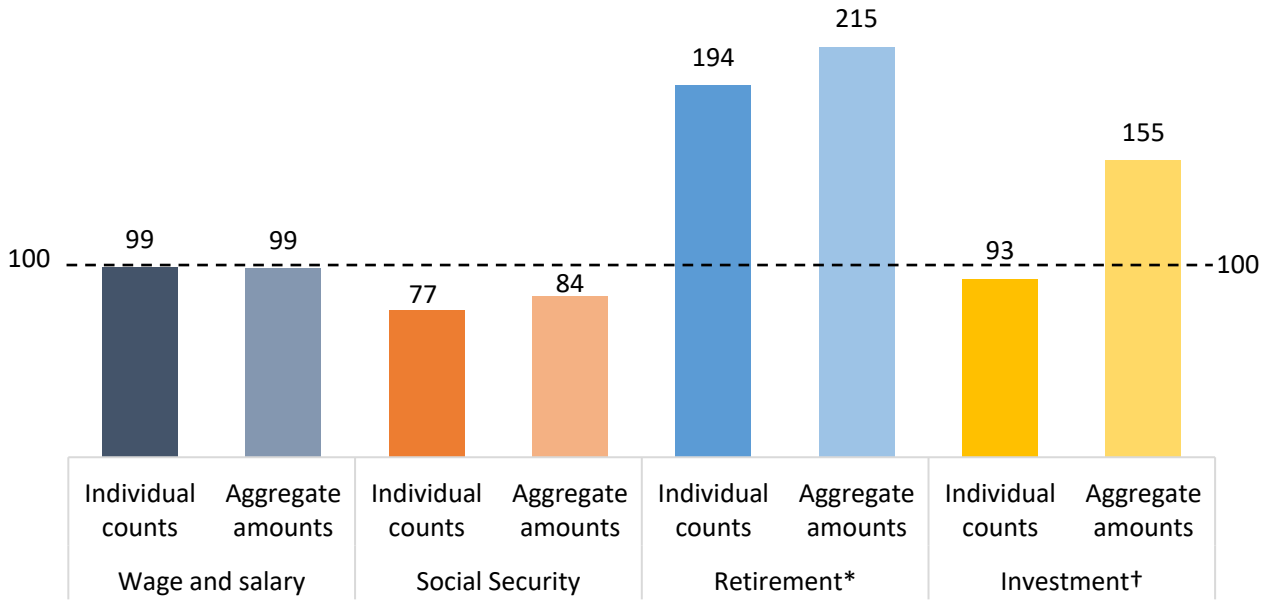
†Fixed income categories are calculated for each age group by ranking individuals in the CPS by their per capita wage plus Social Security income and using the highest dollar values included in the 20th, 40th, 60th, and 80th percentiles of the income distribution. The highest amounts of per capita wage plus Social Security income for the first through fourth quintiles in the CPS are: $7,000, $18,250, $31,001, and $50,000, respectively, for taxpayers younger than age 50; $11,000, $24,500, $38,500, and $60,000, respectively, for taxpayers age 50 to 58; $8,267, $14,769, $23,700, and $42,848, respectively, for taxpayers age 59 to 69; and $8,700, $11,753, $14,157, $17,939, respectively, for taxpayers age 70 or older.

Sources: Internal Revenue Service Statistics of Income Division data and U.S. Census Bureau Current Population Survey data

Figure 3

More Investment and Retirement Income Reported on Tax Returns Despite Nonfilers

Ratio of SOI measure to CPS measure by income type, 2010, percentage



*Retirement income is income from DB and DC pensions, annuities, and IRAs.

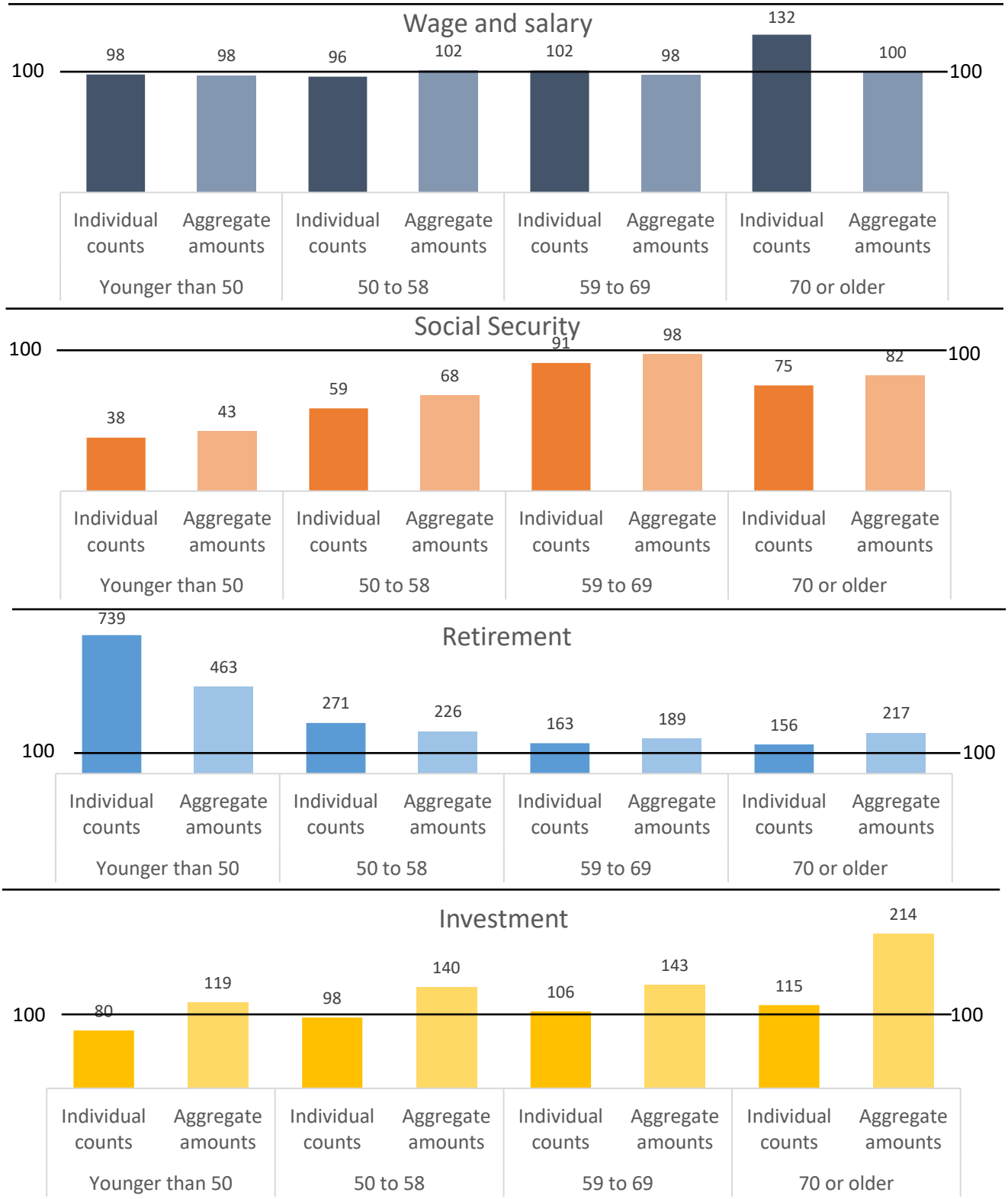
†Investment income includes interest and dividends.

Sources: Internal Revenue Service Statistics of Income Division data and U.S. Census Bureau Current Population Survey data

Figure 4

Differences Between CPS and SOI Measures Vary by Age

Ratio of SOI measure to CPS measure of income by type and age, 2010, percentage



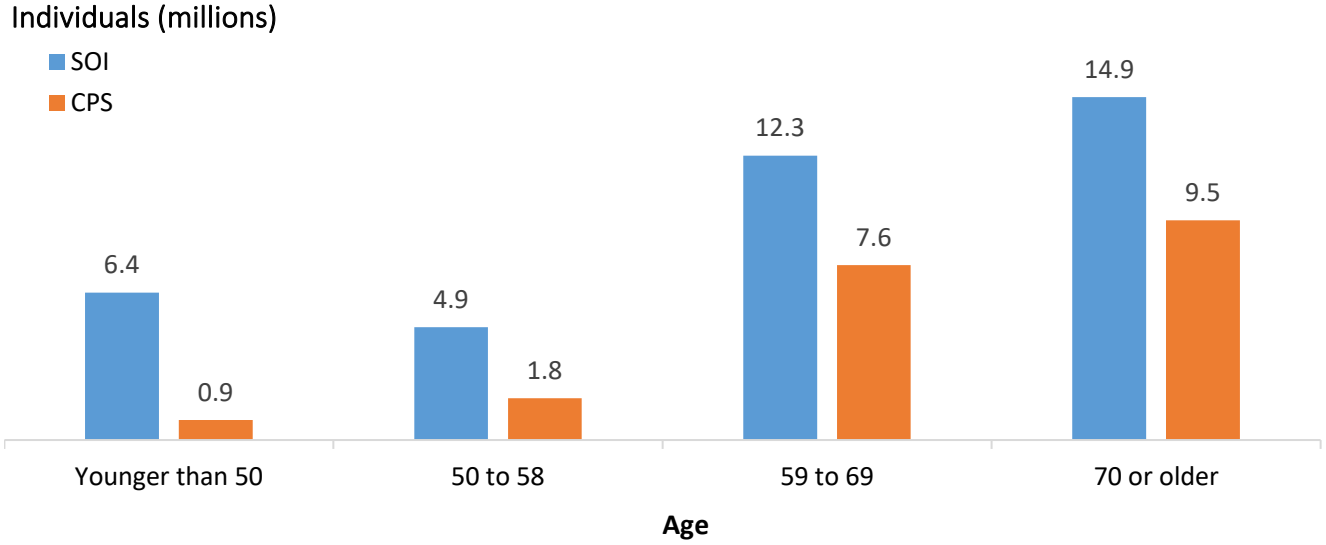
*Investment income includes interest and dividends.

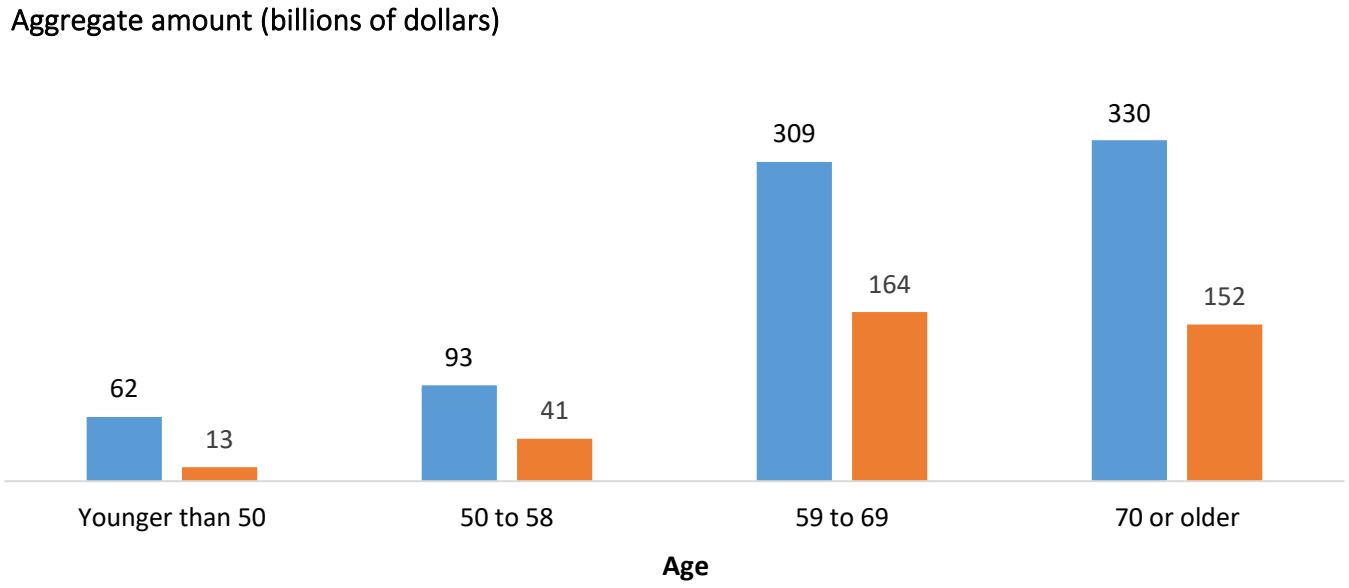
Sources: Internal Revenue Service Statistics of Income Division data and U.S. Census Bureau Current Population Survey data

Figure 5

Absolute Differences in Retirement Income Greater for Older Individuals

Number of individuals receiving and aggregate amount of retirement income by age, 2010*





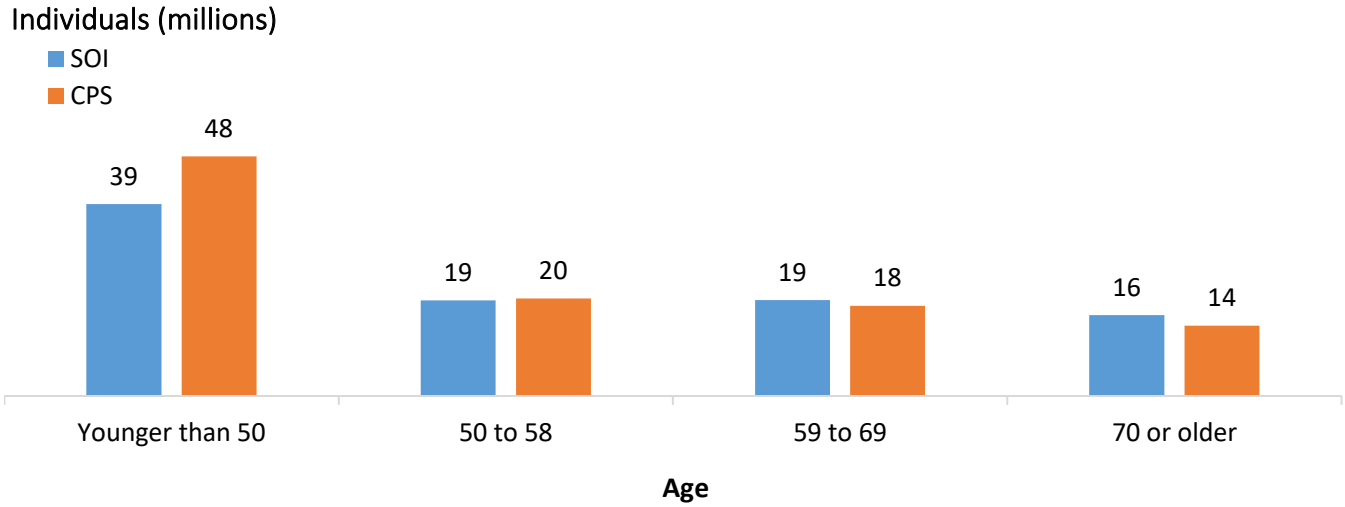
*Retirement income is income from DB and DC pensions, annuities, and IRAs.

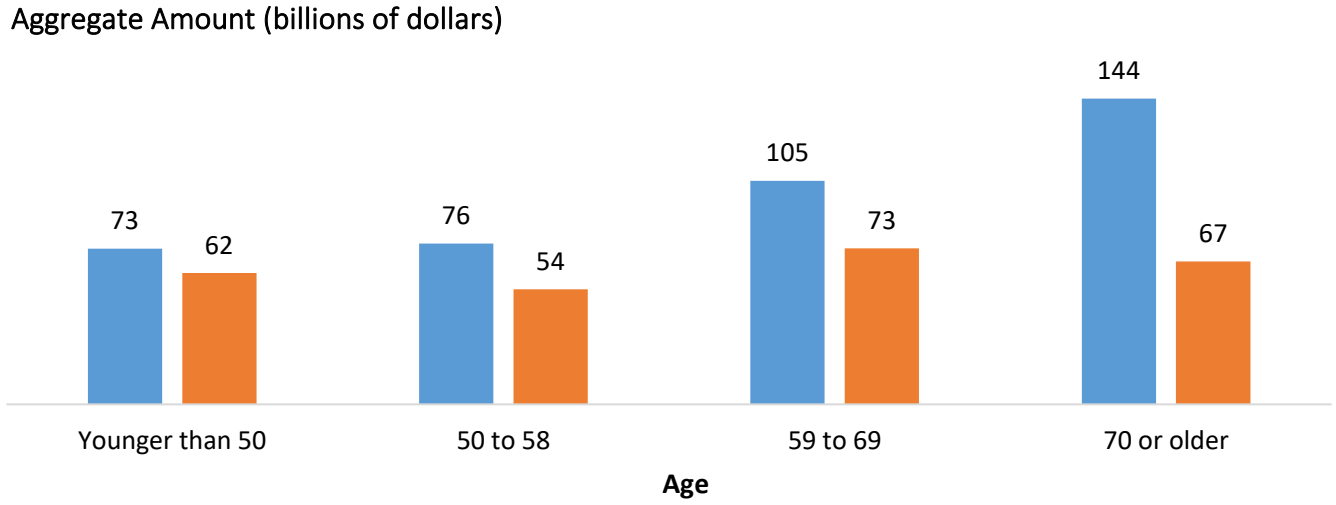
Sources: Internal Revenue Service Statistics of Income Division data and U.S. Census Bureau Current Population Survey data

Figure 6

Investment Income of the Elderly Substantially Underreported in CPS

Number of individuals receiving and aggregate amount of investment income by age, 2010*





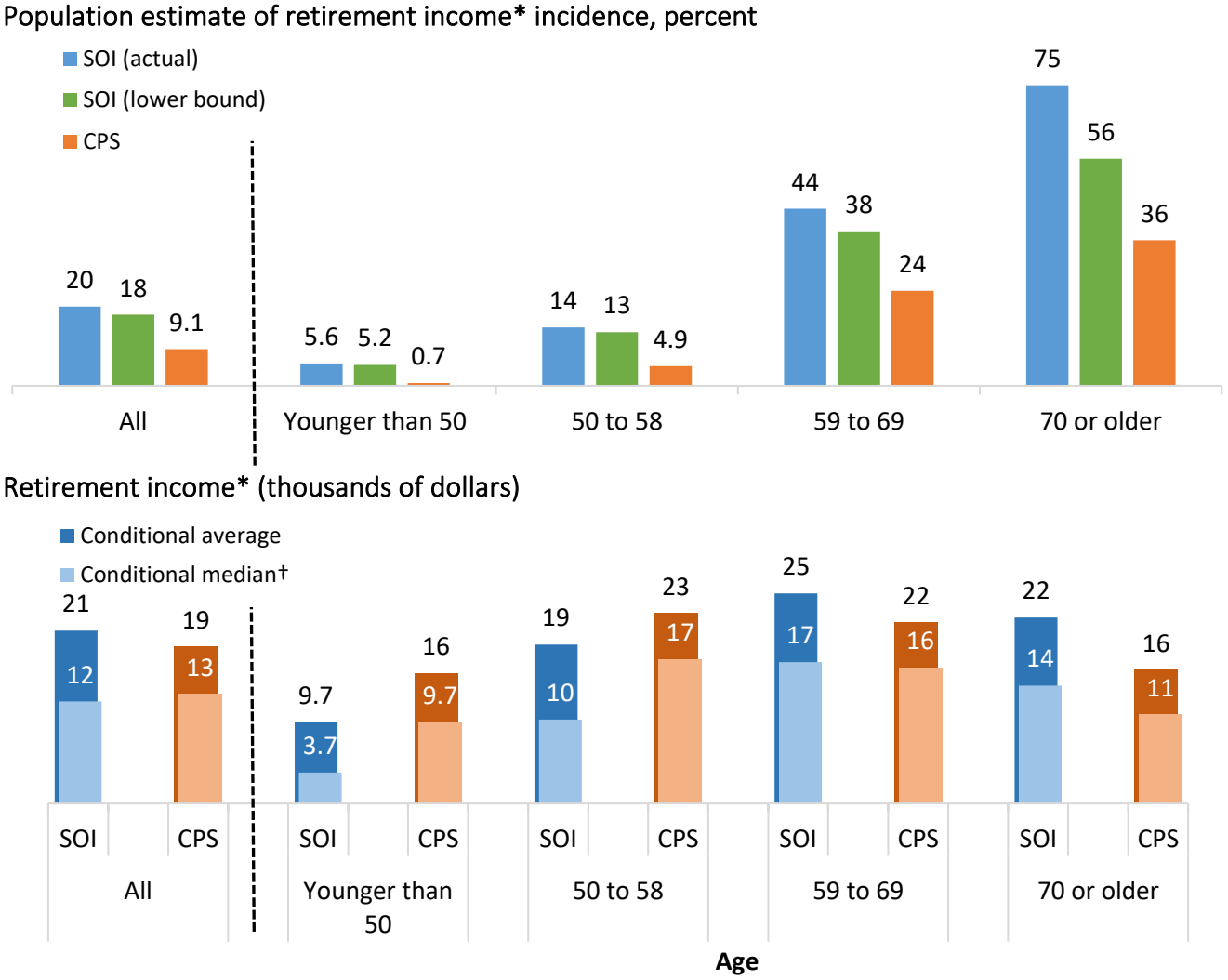
*Investment income includes interest and dividends.

Sources: Internal Revenue Service Statistics of Income Division data and U.S. Census Bureau Current Population Survey data

Figure 7

CPS Understates Both Incidence and Typical Amounts of Retirement Income for the Elderly

Comparison of SOI and CPS measures of retirement income, 2010*



*Retirement income is income from DB and DC pensions, annuities, and IRAs.

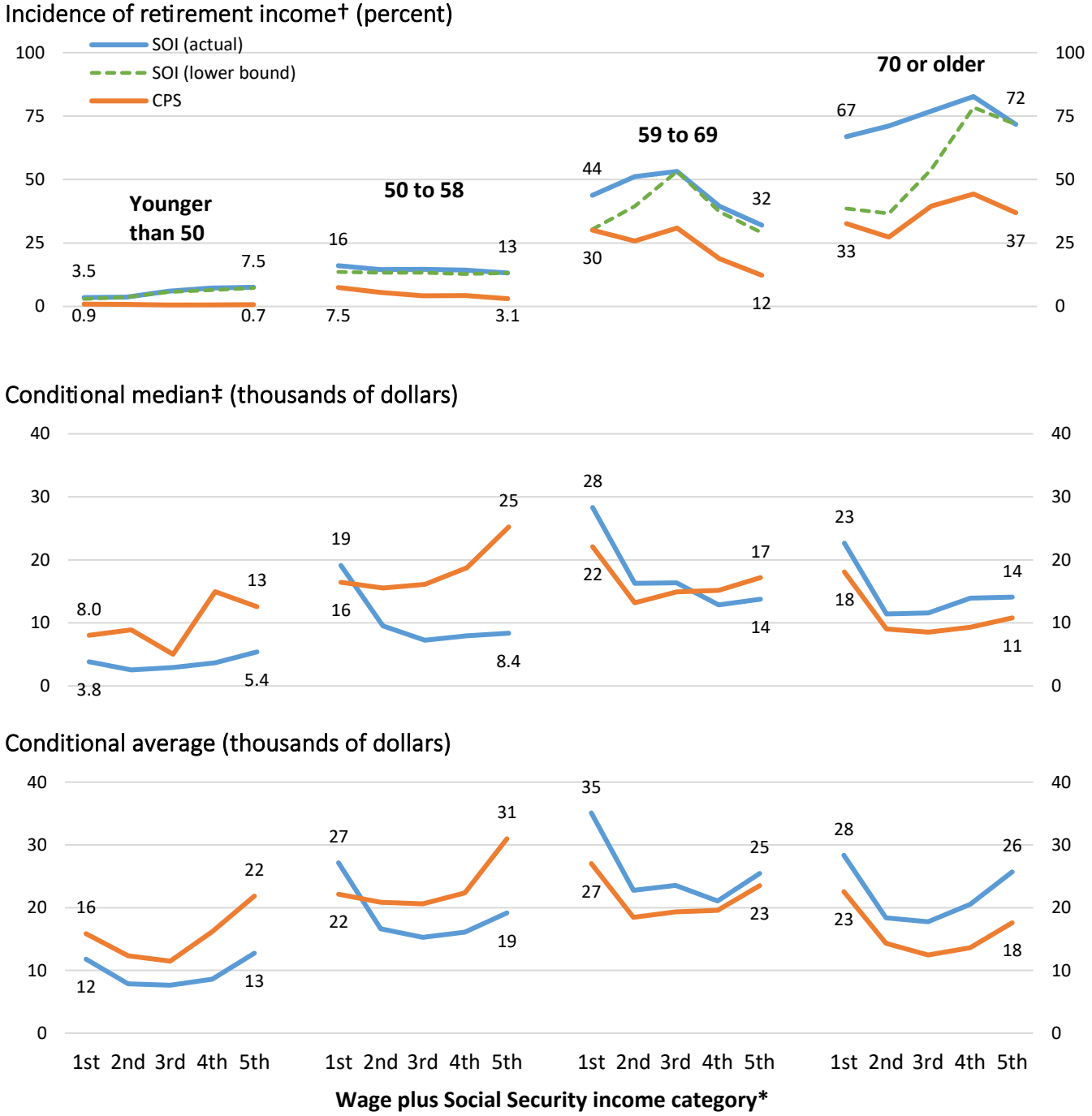
†Medians presented in this paper are approximate to avoid disclosure of individual taxpayers. Approximate medians are calculated as the average of values in the middle decile (from the 45th to 55th percentiles) for a given category.

Sources: Internal Revenue Service Statistics of Income Division data and U.S. Census Bureau Current Population Survey data

Figure 8

CPS Understates Retirement Income of the Elderly Across Income Groups

Comparison of SOI and CPS data, by fixed income categories, 2010*



*For the definition of the income categories, see note on Figure 2.

†Retirement income is income from DB and DC pensions, annuities, and IRAs.

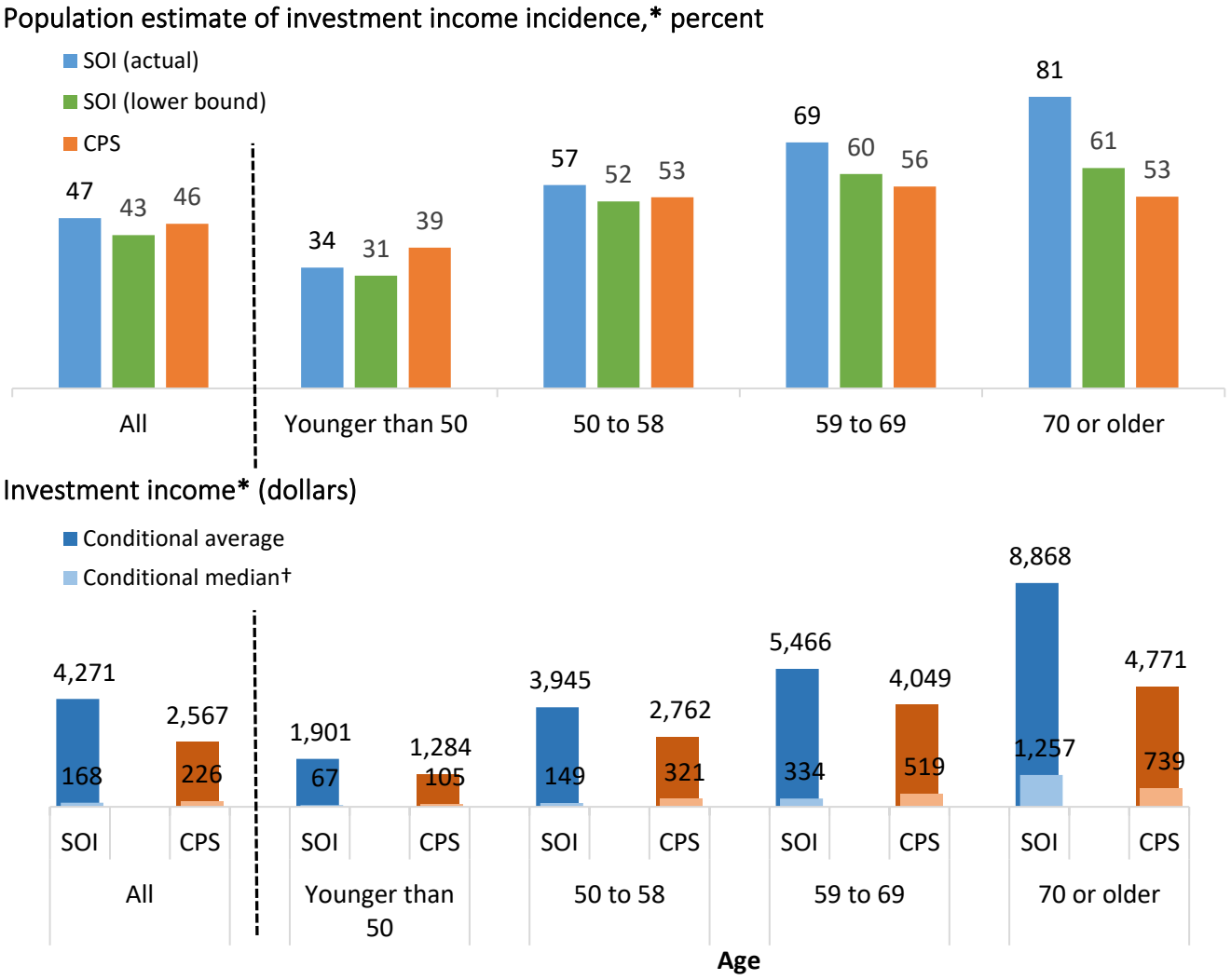
‡Medians presented in this paper are approximate to avoid disclosure of individual taxpayers. Approximate medians are calculated as the average of values in the middle decile (from the 45th to 55th percentiles) for a given category.

Sources: Internal Revenue Service Statistics of Income Division data and U.S. Census Bureau Current Population Survey data

Figure 9

CPS Understates Incidence and Typical Amounts of Investment Income for Oldest Age Group

Comparison of SOI and CPS measures of investment income, 2010*



*Investment income includes interest and dividends.

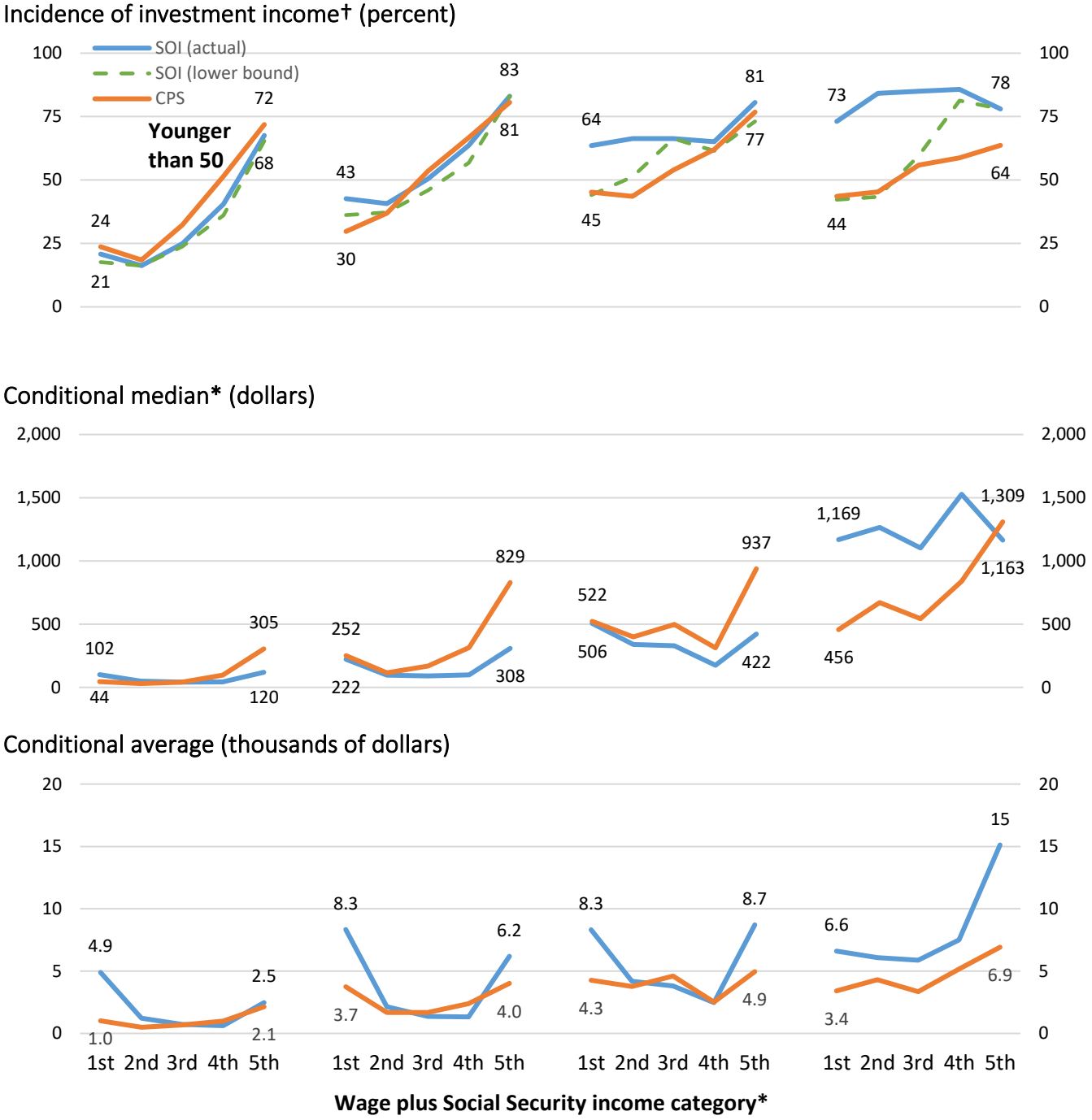
†Medians presented in this paper are approximate to avoid disclosure of individual taxpayers. Approximate medians are calculated as the average of values in the middle decile (from the 45th to 55th percentiles) for a given category.

Sources: Internal Revenue Service Statistics of Income Division data and U.S. Census Bureau Current Population Survey data

Figure 10

Data Sources Differ in Correlation of Investment Income and Wages plus Social Security

Comparison of SOI and CPS data, by amount of wages plus Social Security benefits, 2010



*For the definition of the income categories, see note on Figure 2.

†Investment income includes interest and dividends.

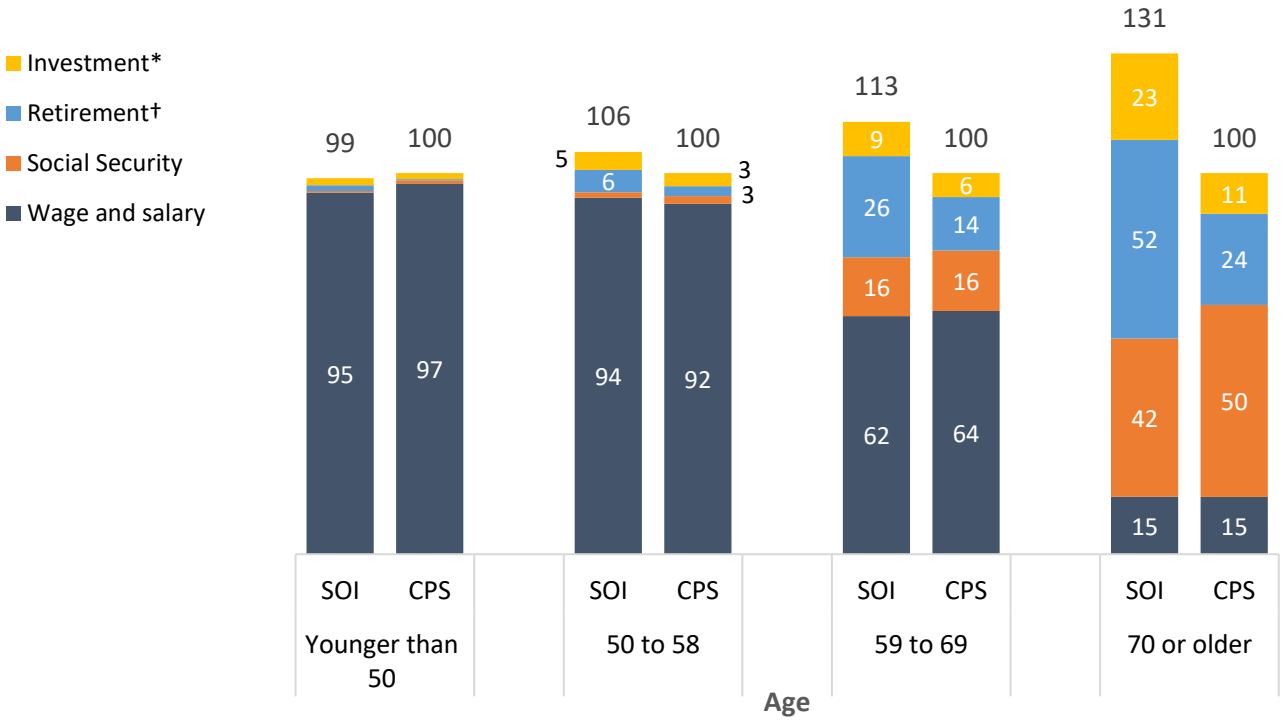
‡Medians presented in this paper are approximate to avoid disclosure of individual taxpayers. Approximate medians are calculated as the average of values in the middle decile (from the 45th to 55th percentiles) for a given category.

Sources: Internal Revenue Service Statistics of Income Division data and U.S. Census Bureau Current Population Survey data

Figure 11

Elderly Report Nearly One-Third More Income on Tax Returns Than in CPS

Income from source as percentage of CPS total income from sources by age group, percentage, 2010



*Investment income includes interest and dividends.

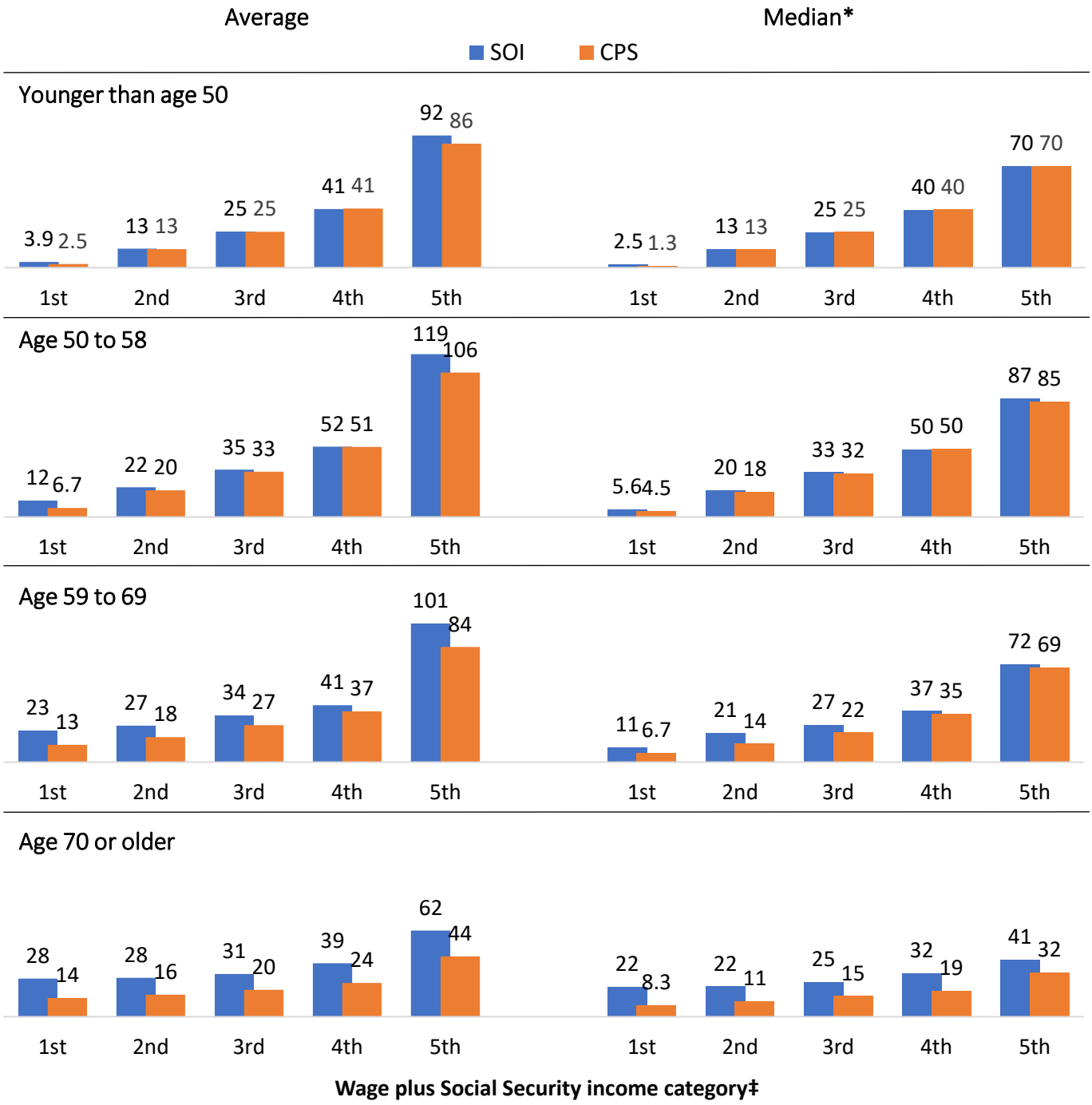
†Retirement income is income from DB and DC pensions, annuities, and IRAs.

Sources: Internal Revenue Service Statistics of Income Division data and U.S. Census Bureau Current Population Survey data

Figure 12

Difference in Income Measures Are Greatest for Individuals Age 70 or Older

Average and median per capita annual income† by age and fixed income categories‡, 2010, thousands of dollars*



*Medians presented in this paper are approximate to avoid disclosure of individual taxpayers. Approximate medians are calculated as the average of values in the middle decile (from the 45th to 55th percentiles) for a given category.

†Income is the sum of wage and salary, Social Security, retirement, and investment income. For married couples, income is split equally between the spouses.

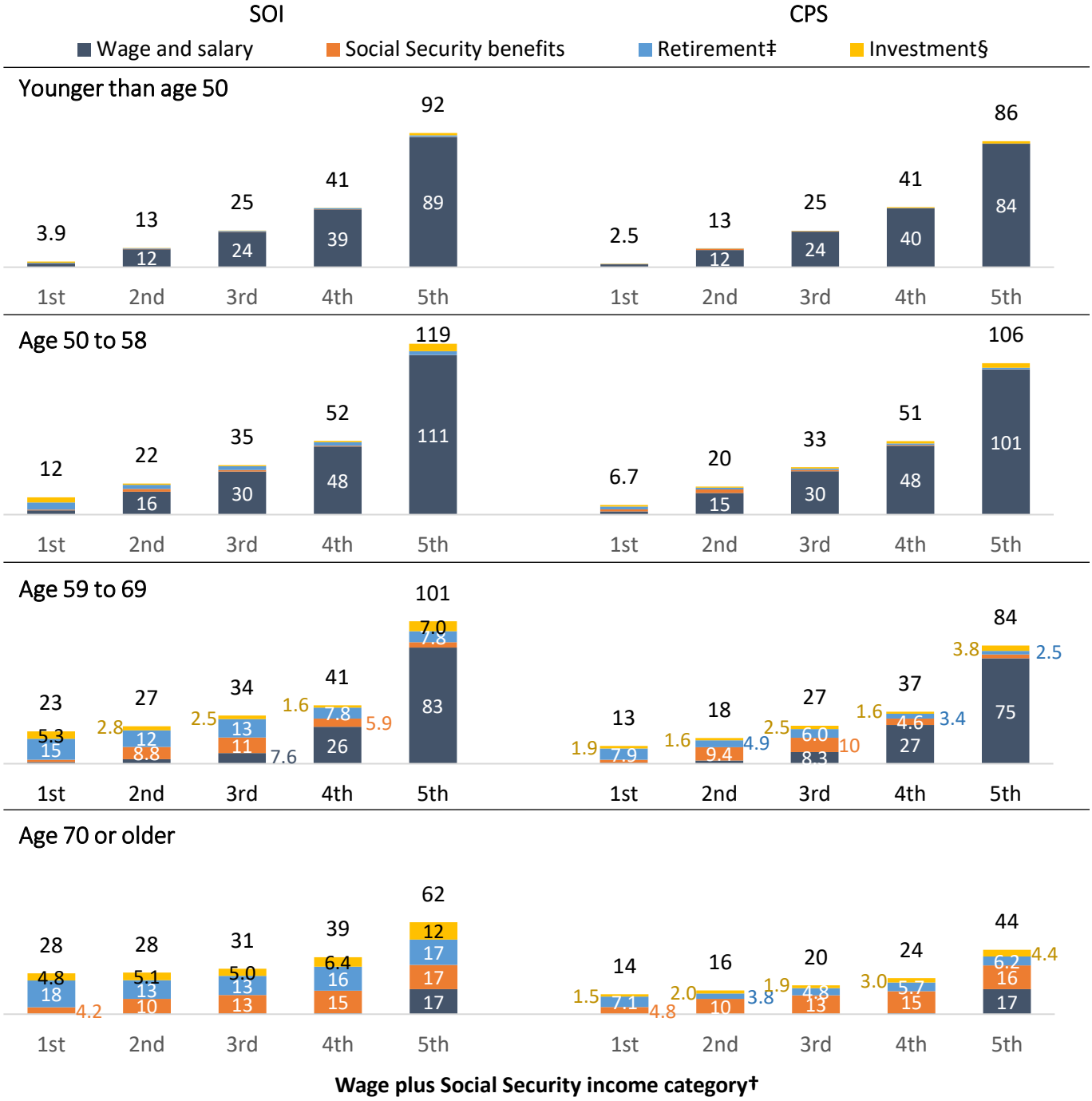
‡For the definition of the income categories, see note on Figure 2.

Sources: Internal Revenue Service Statistics of Income Division data and U.S. Census Bureau Current Population Survey data

Figure 13

Tax Data Show Considerably Different Composition of Elderly Income

Average per capita annual income by age, source, and fixed income categories,† 2010, thousands of dollars*



*Income is the sum of wage and salary, Social Security, retirement, and investment income. For married couples, income is split equally between the spouses.

†For the definition of the income categories, see note on Figure 2.

‡Retirement income is income from DB and DC pensions, annuities, and IRAs.

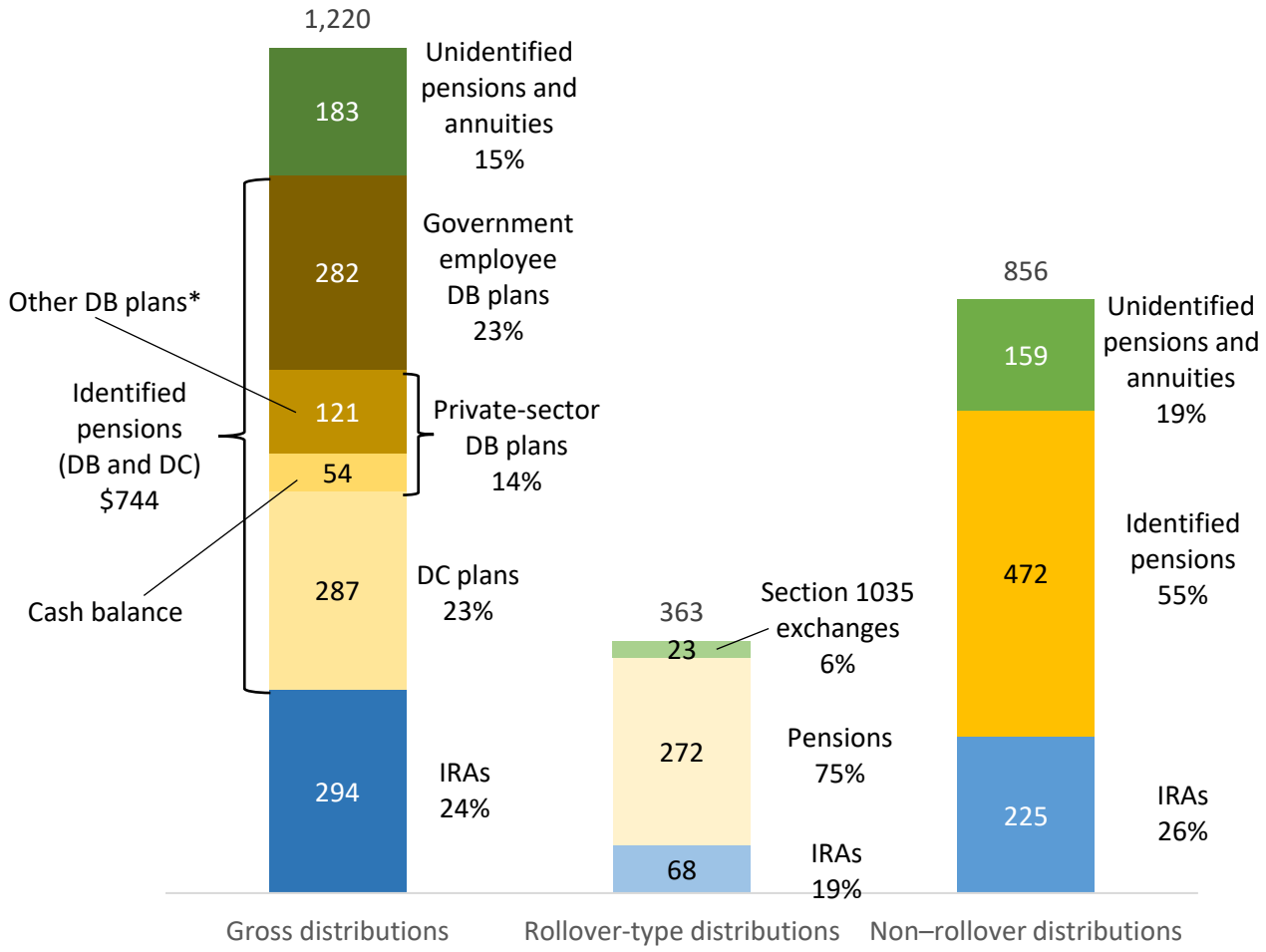
§Investment income includes interest and dividends.

Sources: Internal Revenue Service Statistics of Income Division data and U.S. Census Bureau Current Population Survey data

Figure 14

Up to 19 Percent of Pensions and Annuities May Be From Traditional Private-Sector Pensions

Distributions from pensions, annuities, and IRAs, 2010, billions of dollars

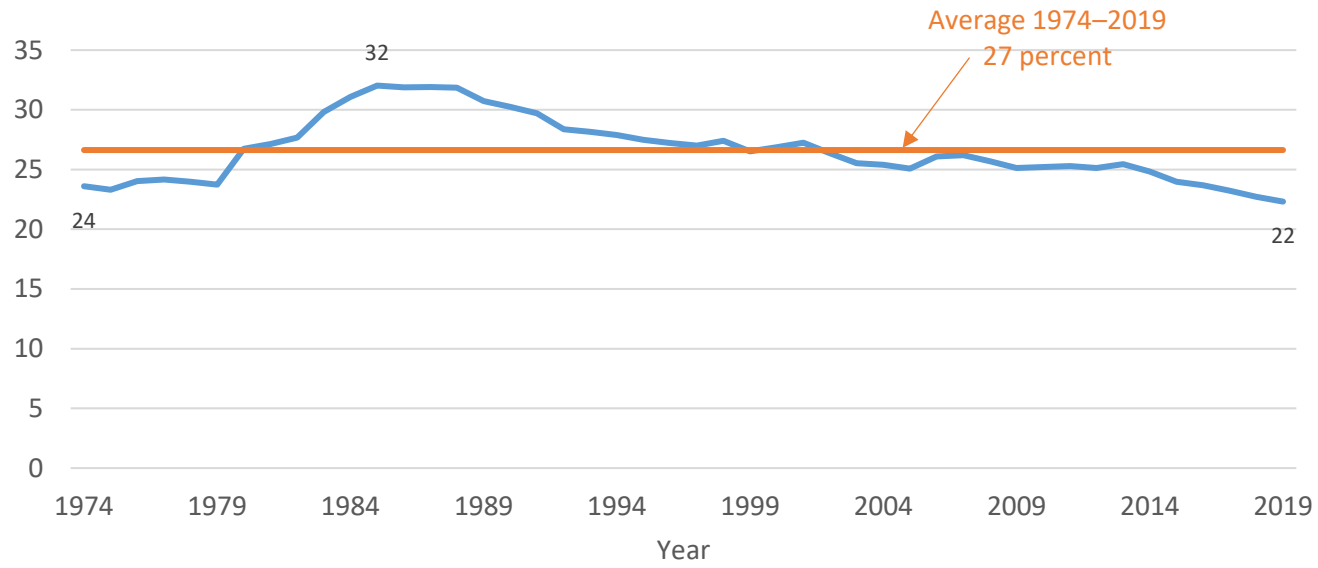


*Other private-sector DB plan distributions include payments to plan participants from the Pension Benefit Guaranty Corporation.
Sources: US Census Bureau, Congressional Research Service, Department of Labor, Pension Benefit Guaranty Corporation, Federal Retirement Thrift Investment Board, and authors' tabulations of IRS data

Figure 15

Around One-Quarter of Accrued DB Plan Benefits Are from Private-Sector DB Plans

Private-sector DB plan entitlements as a share of total DB plan entitlements, 1974 to 2019, percent



Sources: Investment Company Institute and Federal Reserve Board

Appendix

Table A.1

Population of Tax Returns by Filing Status

Millions of tax returns and people, 2010

	Returns			Taxpayers	Individuals on non-dependent returns		
	Total	Non-dependent	Dependent		Total	Non-dependents	Dependents
Total	142.9	135.0	7.9	196.4	287.7	188.6	99.1
Married filing jointly	53.5	53.5	0.0	107.1	163.5	107.1	56.5
Married filing separately	2.5	2.5	0.0	2.5	3.5	2.6	0.9
Head of household / qualifying widow(er)	22.0	22.0	0.0	22.0	58.4	22.0	36.4
Single	64.8	57.0	7.9	64.8	62.3	57.0	5.3

Source: Internal Revenue Service, Statistics of Income Division

Table A.2

Population of US Residents by Type of Household Head

Millions of households and individuals, 2010

		Individuals		
	Households	Total	Head (plus spouse)	Other
Total	118.7	306.1	176.7	129.4
Married	58.0	188.4	116.0	72.4
Single with family	20.6	67.3	20.6	46.7
Single without family	40.1	50.3	40.1	10.2

Source: U.S. Census Bureau Current Population Survey data

Table A.3

Comparison of CPS and SOI Populations by Marital Status

Millions, 2010

	CPS (by household head)				SOI (by filing status)			
	Households	Individuals			Non-dependent units*	Individuals		
		Total	Heads plus spouses	Other		Total	Non-dependents	Dependents
Married	58.0	188.4	116.0	72.4	54.8	167.0	109.6	57.4
Not married	60.7	117.6	60.7	56.9	79.0	120.7	79.0	41.7

*This measure is equivalent to the number of tax returns, except in the case of married couples where both spouses file separately, in which case it is the number of returns divided by two.

Sources: Internal Revenue Service Statistics of Income Division data and U.S. Census Bureau Current Population Survey data

Table A.4

Groups Used for Comparison of CPS and SOI

Millions, 2010

CPS		SOI		Memo: SOI/CPS
All individuals	306.1	All individuals	287.7	94%
– Younger than 15	62.2	– Dependent nontaxpayers	91.2	
– No CPS income (or loss)	24.0	– Taxpayers younger than 15	0.4	
– Only income from educational assistance or financial assistance from friends or relatives	2.3			
Comparison group	217.7	Comparison group	196.0	90%

Sources: Internal Revenue Service Statistics of Income Division data and U.S. Census Bureau Current Population Survey data

Table A.5

Categories of Income Included in SOI Data and CPS Data

SOI Data	CPS Data
Wages, salaries, tips, etc. Business income or (loss) Farm income or (loss)	Earnings (including both wage and salary income and net earnings from business/farm after expenses) Workers' compensation[a,b]
Taxable interest Tax-exempt interest Ordinary dividends	Interest Dividends
Taxable refunds, credits, or offsets of state and local income tax[c]	
Alimony received	Alimony Child support[a]
Capital gain or (loss)[c] Other gains or (losses)[c]	
IRA distributions Pensions and annuities	Retirement income (not Social Security or VA)[d] Survivor benefits (not Social-Security or VA) Disability benefits (not Social-Security or VA)
Rental real estate, royalties, partnerships, S corporations, trusts, etc.	Rents, royalties, estates, and trusts
Unemployment compensation	Unemployment compensation
Social Security benefits	Social Security benefits
	Supplemental Security Income benefits[a] Public assistance[a] Veterans' Administration benefits[a]
	Educational assistancea[e]
	Financial assistance from friends or relatives not in the household[a]
Other income	Other income

[a] Not included in SOI measure of income.

[b] Workers' compensation is generally not included in the Internal Revenue Code definition of income. However, if the receipt of workers' compensation benefits reduces Social Security benefits, then those benefits are treated as Social Security benefits. See Internal Revenue Service (2011c).

[c] Not included in CPS measure of income.

[d] CPS retirement income includes distributions from pensions (both DB plans and DC plans), annuities, and IRAs.

[e] Educational assistance is assistance for higher education, including Pell Grants, scholarships, and assistance from employers. It excludes assistance from household members or the VA.

Table A.6
Definition and Derivation of Income Variables

Type of Income	SOI data	CPS data
Wage and salary	Form 1040 line 7 ("Wages, salaries, tips etc.") plus difference between Medicare wages and Federal taxable wages from Form W-2; income allocated to taxpayers on joint returns based on primary and secondary filers' Form W-2, as well as unreported tips on Form 4237 and Form 8919	Wage-and-salary earnings[a] plus disability income[b] paid by government plans to individuals younger than 55 and paid by private-sector plans to individuals were younger than 60[c]
Social Security	Form 1040 line 20a ("Social Security benefits"[d]); income allocated to taxpayers on joint returns based on primary and secondary filers' Form SSA-1099	Social Security benefits[e] —inclusive of retirement benefits, survivors benefits, and disability benefits
Retirement	Form 1040 line 15a ("IRA distributions") plus line 16a ("Pensions and annuities"), less certain distributions that would not be reported in the CPS data;[f] income allocated to taxpayers on joint returns based on primary and secondary filers' Form 1099-R	Retirement income[g] plus survivors income[h] plus disability income[b] paid by government plans to individuals age 55 or older or paid by private-sector plans to individuals age 60 or older[c]
Investment	Form 1040 line 8a ("Taxable interest") plus line 8b ("Tax-exempt interest") plus line 9a ("Ordinary dividends"); income split equally between taxpayers on joint returns	Interest income plus dividends income;[i] income of married couples split equally between spouses

[a] Wage-and-salary earnings includes the variables *ern_val* where *ern_src* is equal to 1 (wage and salary), *oi_val* where *oi_off* is equal to 15 (longest job) or 16 (wages and salary), and *ws_val*.

[b] Disability income includes the variables *dis_val1* or *dis_val2* where *dis_sc1* or *dis_sc2* is equal to 2 (company or union disability), 3 (federal government civil service disability), 4 (US military retirement disability), 5 (state and local government employee disability), or 6 (US railroad retirement).

[c] For federal income tax purposes, disability benefits reported on Form 1099-R should be reported on Form 1040 line 7 "... if you have not reached the minimum retirement age set by your employer." Otherwise, they should be reported on Form 1040 line 16. See Internal Revenue Service (2011a).

[d] The amount reported on Form SSA-1099 (or, for joint filers, the sum of the amounts reported for the primary and secondary filer on Form SSA-1099) is used if it is greater than the amount reported on Form 1040 line 20a.

[e] Social Security benefits include the variables *ss_val,* and *oi_val* where *oi_off* is equal to 1 (Social Security).

[f] The types of distributions that would not be reported in the CPS data are rollovers (including taxable Roth rollovers), Section 1035 exchanges of annuity contracts, Roth conversions, recharacterizations, prohibited transactions, return of excess contributions, and unidentified nontaxable distributions. See Brady and Bass (2020) for a description of the method used to categorize Form 1040 retirement distributions using information reported on Form 1099-R.

[g] Retirement income includes any pension or retirement income other than Social Security benefits or Veteran Administration benefits. It includes the variables *ret_val1* or *ret_val2* where *ret_sc1* or *ret*_sc2 is equal to 1 (company or union pension), 2 (federal government retirement), 3 (US military retirement), 4 (state or local government retirement), 5 (US railroad retirement), 6 (regular payments from annuities or paid insurance policies), 7 (regular payments from IRA, Keough, or 401(k) accounts), or 8 (other sources or don't know). It also includes the variable *oi_val* where *oi_off* is equal to 2 (private pensions) or 13 (annuities or paid up insurance policies).

[h] Survivor's income includes the variables *sur_val1* or *sur_val2* where *sur_sc1* or *sur_sc2* is equal to 1 (company or union survivor pension), 2 (federal government), 3 (US military retirement survivor pension), 4 (state or local government survivor pension), 5 (US railroad retirement survivor pension), or 9 (regular payments from annuities or paid-up life insurance).

[i] Interest income includes the variable *int-val* and the variable *oi_val* where *oi_off* is equal to 5 (interest). Dividends income includes the variable *div_val* and the variable *oi_val* where *oi_off* is equal to 6 (dividends).