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Social Security Benefit Formula and Payroll Taxes: Potential Impacts of Policy Changes on Selected Worker Groups

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SUMMARY

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Social Security Benefit Formula and Payroll Taxes: Potential Impacts of Policy Changes on Selected Worker Groups

The Social Security program has long been an area of high congressional interest. Because of the number of people receiving benefits, the number of people expected to receive benefits, and the program's projected long-term financial imbalance, there are many proposals put forth each Congress to amend the Social Security benefit formula and the associated payroll tax (which is the program's primary source of revenue). Some proposals are seen as a means to strengthen benefit levels for persons with relatively low and medium earnings histories or to correct a perceived gap in the program's protections either in the level of benefits or coverage of certain groups, whereas other proposals seek to avoid or defer the program's projected financial shortfall. Other proposals combine approaches and seek to strengthen both the program's benefits and its financial status.

Over time, the Social Security–covered population and the program itself have changed. For instance, on average, increases in life expectancy have allowed current Social Security beneficiaries to collect benefits for a longer period of time relative to previous beneficiaries. In 1945, shortly after Social Security began regular monthly payments, the *average* male was expected to live 12.6 years after reaching full retirement age (i.e., 65 at the time) and the *average* female was expected to live 14.4 years after reaching full retirement age. In 2020, the *average* male and female born in 2020 can expect to live an additional 17.0 and 19.5 years, respectively, after reaching age 65. (Under current law the full retirement age for those born in 1960 and later is 67.) Because of changes like this—among other demographic and economic changes—past Congresses have changed the program's benefit formula and the payroll tax. For instance, past amendments have changed the benefit formula in response to higher-than-anticipated inflation and increased payroll taxes to avoid financial imbalances. However, Congress has not significantly altered the Social Security benefit formula or program financing since the Social Security Amendments of 1983.

Lawmakers have a wide variety of options to address issues facing the Social Security program to strengthen either benefits or the program's finances. Changes in the program's benefit formula or payroll tax could affect those of different earnings levels and from different birth cohorts in different ways. For example, some benefit-strengthening provisions, such as an increase in cost-of-living adjustments, would be more advantageous to future beneficiaries (i.e., younger birth cohorts) as they would enjoy higher adjustments for the entirety of their benefit-collecting periods. Conversely, some provisions aimed at strengthening the program's finances, such as a gradual increase in the payroll tax rate, would be more advantageous to current beneficiaries as they are already collecting benefits and less likely to have earnings subject to an increased payroll tax rate. Provisions can also have varying effects on beneficiaries of different earnings levels. For example, an increase of the first replacement factor in the benefit formula would result in a benefit increase for all beneficiaries but a higher initial replacement rate for relative low earners. Conversely, changing the third replacement factor would affect only relative high earners. Still, other changes in the benefit formula can have compounded effects over time. For instance, the cumulative nature of cost-of-living adjustments would favor beneficiaries with relatively higher career-average earnings.

This report examines the effects of commonly proposed changes to the Social Security benefit formula on the retirement benefits and payroll tax for a set of hypothetical earners of varying earnings levels and birth cohorts. The effects of proposed changes are demonstrated on an individual and combined basis. In doing so, the report highlights the complexity of the benefit formula: A combination of changes may have different effects as a whole than compared to changes taken on an individual basis.

Proposals to amend the benefit formula and payroll tax can also be structured to target the current or future beneficiaries of different earnings levels. This can be important to lawmakers who would like to maintain the progressive nature of the benefit formula while not compounding the somewhat regressive nature of the payroll tax. Thus, this report concludes with a look at the distribution and characteristics of current U.S. workers. Distributional analyses of U.S. workers show that women and Black and Hispanic workers are concentrated in lower earnings groups, while men and White and Asian workers are concentrated in the higher earnings groups. The higher earnings groups were also more likely to have higher educational attainment, have health insurance coverage, and be above the poverty threshold.

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Introduction

Social Security is a social insurance program—administered by the Social Security Administration (SSA)—that protects insured workers and their family members against loss of income due to old age, disability, or death. The program is composed of Old-Age and Survivors Insurance (OASI) and Disability Insurance (DI) and is commonly referred to on a combined basis as OASDI. Most Social Security beneficiaries are retired workers. In 2022, the 47.6 million retired workers who collected OASI benefits accounted for 72.7% of all Social Security beneficiaries.[1] Retired workers' benefits are based on their past earnings, the age when they claim benefits, and other factors.[2]

Given the program's substantial impact on retired beneficiaries' financial security,[3] the targeting and adequacy of benefits and solvency[4] of the Social Security program are of ongoing interest to lawmakers. The projected funding shortfall facing the system could impact the program's ability to pay full benefits on time.[5] Under current law, Social Security's revenues and asset reserves are projected to be insufficient to pay full scheduled benefits after 2034. Proposed legislation to change Social Security has taken many forms. Some proposals focus on eliminating the projected funding shortfall, whereas others aim to fundamentally reform the program (e.g., pay higher benefits for certain levels of earnings, benefit categories, or ages). Most proposals to change Social Security would change the benefit computation rules, the Social Security payroll tax, or some combination of both.

This report examines how changes in retirement benefit formula parameters and the payroll tax rate would affect benefit amounts, initial replacement rates, and effective tax rates for selected worker groups.[6] Specifically, the report presents the changes for very low, low, medium, high, and maximum lifetime hypothetical earners—as developed by SSA—in four birth cohorts (1960, 1980, 2000, and 2020).[7] The report first provides a brief explanation of how benefits are computed and financed under current law. It then presents the effects of the selected retirement

[1] Another 14% were DI beneficiaries, and 9% received survivor benefits; the remaining beneficiaries were spouses or children of retired workers. SSA, "Monthly Statistical Snapshot, February 2022," Table 2. See the latest edition of the Monthly Statistical Snapshot at https://www.ssa.gov/policy/docs/quickfacts/stat_snapshot/.

[2] Benefits that are paid to workers' dependents and survivors are also based on the earnings of the insured workers.

[3] Research suggests that Social Security benefits accounted for most of the decline in poverty from 1967 through 2000. For more information, see CRS Report R45791, *Poverty Among the Population Aged 65 and Older*.

[4] Under current law, Social Security's revenues are projected to be insufficient to pay full scheduled benefits after 2034 under intermediate assumptions. SSA, Office of the Chief Actuary (OCACT), *The 2021 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*, August 31, 2021, https://www.ssa.gov/OACT/TR/2021/tr2021.pdf (hereinafter cited as "2021 Annual Report"). Under current law, the OASI and DI trust funds are distinct entities and cannot borrow from each other when faced with a funding shortfall. In the past, Congress has authorized temporary interfund borrowing. As such, analysts often treat the two trust funds collectively on a hypothetical basis as the combined OASDI trust funds. For more information see CRS Report RL33514, *Social Security: What Would Happen If the Trust Funds Ran Out?*. The 2021 intermediate assumptions reflect the trustees' understanding of the status of the Social Security trust funds at the start of 2021.

[5] For more information on the projected funding shortfall, see CRS Report RL33514, *Social Security: What Would Happen If the Trust Funds Ran Out?*.

[6] This report focuses solely on retired-worker benefits. Retired workers constitute the largest share of OASDI beneficiaries (see footnote 1).

[7] Hypothetical earners groups are discussed in the "Hypothetical Earners" section of this report. Wages for hypothetical earners are expressed at each age as a percent of the SSA's Average Wage Index (AWI). A maximum earner is a worker who has earnings at or above the contribution and benefit base for each year starting at age 22 through the year prior to retirement (2021 Annual Report, p. 156).

benefit calculation and payroll tax changes on the worker groups considered in this report. In particular, the report examines the effect of changes in computation years, primary insurance amount (PIA) replacement factors, the full retirement age (FRA), cost of living adjustment (COLA), and the Social Security payroll tax rate and examines the effect of selected combinations of these changes.

Social Security Benefit Formula Under Current Law

The Social Security benefit formula uses both worker-specific information, such as past earnings history and the age at which benefits are claimed, and birth-cohort-specific parameters (average economy-wide wages in the year a worker turns 60) to derive an individual's monthly benefit amount. For this reason, changes to the formula can have different consequences for workers with relatively low career earnings and those with relatively high career earnings, and the range of earnings-specific outcomes can vary by birth cohort.

This section provides a high-level description of the benefit formula.[8] It briefly describes benefit eligibility (insured status) conditions, the key components of the Social Security benefit formula, and the Social Security payroll tax. The effects of changes to the benefit formula components and payroll tax are illustrated in subsequent sections of the report.

Eligibility and Insured Status

Generally speaking, about 94% of workers earn wages or self-employment income in Social Security–covered employment.[9] While working in covered employment, workers earn *quarters of coverage* (QCs), or credits. The level of earnings needed for a QC generally increases annually with growth in average earnings in the national economy, as measured by SSA's Average Wage Index (AWI) (see **Table B-1**).[10] In 2022, a worker will earn one credit or QC for every $1,510 of covered earnings, up to four credits per year. Therefore, a worker earning $6,040 in covered employment at any point in the calendar year would be credited with the maximum number (i.e., four) of QCs for that year.

To be eligible for most benefits, workers must be *fully insured*, which requires one QC for each year elapsed after the worker turns 21 years old and the year before the worker attains age 62, the year before the worker dies, or the year before the worker becomes disabled, with a lifetime minimum of six QCs and a maximum of 40 QCs. A worker is first eligible for Social Security retirement benefits at 62, so to be eligible for retirement benefits, a worker must generally have worked for 10 years.[11] Workers are *permanently insured* when they are fully insured and will not

[8] For a more detailed description of the current-law benefit formula, see CRS Report R46658, *Social Security: Benefit Calculation*.

[9] OCACT, "Social Security Program Fact Sheet," June 2021, https://www.ssa.gov/oact/FACTS/index.html. Covered employment is employment for which earnings are creditable for Social Security purposes (2021 Annual Report, p. 243). The roughly 6% of workers who are not covered by Social Security are certain state and local government workers, certain workers employed by religious groups, and certain noncitizen workers. See 26 U.S.C. §3121(b). For more information on the 6% of workers not covered by Social Security, see CRS In Focus IF11824, *Social Security: Who Is Covered Under the Program?*

[10] The AWI is the average of all workers' wages subject to federal income taxes and contributions to deferred compensation plans. It is calculated using some wages that are not subject to the Social Security payroll tax.

[11] Benefits may be paid to eligible survivors of a deceased worker who was fully insured at the time of death. Some dependents are also eligible for survivors benefits if the deceased worker was *currently insured*, which requires earnings six QCs in the 13 quarters ending with the quarter of death. For more information on survivors benefits, see CRS Report RS22294, *Social Security Survivors Benefits*.

lose fully insured status when they stop working under covered employment—for example, if a worker has earned the maximum 40 QCs.

Average Indexed Monthly Earnings

The first step of computing a Social Security benefit is determining a worker's *average indexed monthly earnings* (AIME), a measure of a worker's career-average covered earnings.

Covered Earnings

A worker's Social Security benefit is based on his or her earnings during covered employment. Earnings that were not covered (i.e., not subject to the Social Security payroll tax) are not included in the calculation. Under current law, the Social Security payroll tax is applied to covered earnings up to an annual limit, or taxable maximum. The taxable maximum is indexed to national average wage growth for years in which a COLA is payable (see **Table B-1)**. The taxable maximum in 2022 is $147,000. This level of earnings is both the contribution base (i.e., amount of covered earnings subject to the Social Security payroll tax) and the benefit base (i.e., amount of covered earnings used to determine benefits). In this context, the taxable maximum is referred to as the contributions *and* benefits base, or CBB. Earnings in excess of the taxable maximum are not subject to the Social Security payroll tax and are not factored into benefit calculations.

Indexation of Past Earnings

Rather than using the nominal amounts earned in the past years directly, the AIME computation process first updates past covered earnings by indexing them to near-current wage levels to account for the growth in overall economy-wide earnings. That is done by adjusting each year of a worker's taxable earnings after 1950 by the growth in the national average wage, as measured by the AWI, between the year of earnings until two years prior to eligibility for benefits, which for retired workers is at age 60.[12] For instance, the national average wage grew from $32,155 in 2000 to $41,674 in 2010, a 29.6% cumulative increase. If a worker earned $20,000 in 2000 and turned 60 in 2010, the *indexed* wage for 2000 would be $20,000 × ($41,674/$32,155), or $25,921.[13] Earnings received at ages 60 or older are not indexed.

Computation Years: The Highest 35 Years of Indexed Earnings

For retired workers, the AIME equals the average of the highest 35 years of indexed earnings divided by 12 (to change the annual average career earnings to monthly averaged career earnings). Those 35 years of earnings are known as *computation years*. If the person worked fewer than 35 years in employment subject to Social Security payroll taxes, the computation includes those as years of zero earnings. The number of computation years for disabled or deceased workers may be fewer than 35 years.[14]

[12] For details, see "Index Earnings Used to Compute Initial Benefits" in OCACT, "National Average Wage Index," https://www.ssa.gov/oact/COLA/AWI.html.

[13] More explicitly, the adjustment is to $20,000 in earnings in 2000 is: $20,000 × ($41,674/$32,155) = ($20,000 × 100%) + ($20,000 × 29.6%) = $25,921.

[14] In the case of workers who die before turning 62 years old, the number of computation years is generally reduced below 35 by the number of years until they would have reached 62. For disabled workers, the number of computation years depends on the age at which they become disabled.

Primary Insurance Amount

The next step in determining the Social Security benefit amount is to compute the PIA. To do this, the AIME is sectioned into three brackets (or segments) of earnings, which are separated by dollar amounts known as bend points. In 2022, the bend points are $1,024 and $6,172. The bend point amounts are indexed to the AWI, so they generally increase each year.[15]

Three replacement factors—fixed in law at 90%, 32%, and 15%—are applied to the three brackets of AIME. The PIA is the sum of the three factors multiplied by the portion of the worker's AIME that falls within each respective bracket. **Table 1** shows this process for a worker who first becomes eligible for benefits in 2022.

Table 1. Social Security Benefit Formula for Workers Who First Become Eligible in 2022

Factor	Average Indexed Monthly Earnings (AIME)
90%	of the first $1,024, plus
32%	of AIME over $1,024 and through $6,172 (if any), plus
15%	of AIME over $6,172 (if any)

Source: CRS, based on Social Security Administration (SSA), Office of the Chief Actuary (OCACT), "Benefit Formula Bend Points," https://www.ssa.gov/oact/cola/bendpoints.html.

The formula results in a *progressive* replacement rate as measured by the percent of AIME that is replaced by the PIA. The replacement rate is higher for relatively low earners (e.g., 83% for very low earners) than for relatively high earners (i.e., 37% for high earners). The formula also results in *individual equity*: The more a worker earns (and pays in payroll tax), up to the taxable maximum, the higher the PIA.

Other Adjustments

An adjustment may be made based on the age at which a beneficiary chooses to begin receiving benefits. For retired workers who claim benefits at the FRA, the monthly benefit equals the PIA increased annually by any payable COLAs (COLAs are applied beginning in the second year of eligibility).[16] Under current law, the FRA for all workers born in 1960 and later is 67. Retired workers who claim benefits earlier than the FRA receive monthly benefits lower than the PIA (i.e., an actuarial reduction). Retired workers may first claim (reduced) benefits at age 62, the early eligibility age (EEA). Those who claim later than the FRA receive benefits higher than the PIA (i.e., a delayed retirement credit or DRC).[17]

In certain situations, other adjustments may apply. For example, the *windfall elimination provision* may reduce benefits for worker beneficiaries with pensions from noncovered Social Security employment. The *government pension offset* may reduce spousal benefits for spouses with government pensions from noncovered Social Security employment. The *retirement*

[15] Bend points are indexed to the AWI and can decrease when AWI decreases (42 U.S.C. §415(a)(1)(B)).

[16] COLAs are intended to help protect Social Security beneficiaries from the effects of inflation.

[17] For more information on actuarial reductions and retirement ages, see CRS Report R44670, *The Social Security Retirement Age*.

earnings test may result in a temporary withholding of benefits for early claimants (younger than FRA) with earnings above a certain level.[18]

Social Security Payroll Tax

Social Security is funded by a tax of 6.2% of covered wages imposed on employees and employers (12.4% combined).[19] Self-employed workers pay 12.4% of their net self-employment earnings (business earnings minus the costs of doing business) toward Social Security as a portion of their self-employment taxes. The Social Security payroll tax applies only to wages paid up to the Social Security wage base limit for the year ($147,000 in 2022, adjusted annually for the growth in average wages). The employee portion of the Social Security tax is directly withheld from wages paid to an employee. The withheld employee portion and the employer portion are deposited to the IRS by employers, generally monthly or semi-weekly, when the employer processes payroll.[20] As mentioned above, only earnings on which Social Security payroll taxes were paid are used in the benefit formula.

Social Security payroll tax rates have largely remained the same since 1990 (outside of the 2011-2012 Social Security payroll tax holiday, provided as a temporary relief from the Great Recession of 2007-2009 and its recovery), as shown in **Figure 1**.[21] The recent period of steady rates follows a period of regular rate increases. The first Social Security tax was a 1% levy on employees on wages earned starting in 1937, with employers also paying the same amount.[22] Combined Social Security payroll tax rates rose from 2% in 1949 to 12.4% in 1990. The last Social Security tax rate increase was part of the Social Security Amendments of 1983 (P.L. 98-21). **Figure 1** shows the employee payroll tax rate and the CBB (i.e., taxable maximum) from 1951 to 2022.[23]

[18] For more information on these potential adjustments, see CRS In Focus IF10203, *Social Security: The Windfall Elimination Provision (WEP) and the Government Pension Offset (GPO)* and CRS Report R41242, *Social Security Retirement Earnings Test: How Earnings Affect Benefits*.

[19] Generally, the tax base for the Social Security payroll tax is all compensation for employment. There are several exceptions. The full list of exceptions is at 26 U.S.C. §3121. The tax applies to compensation paid to employees in "covered employment." See above for more information about covered employment.

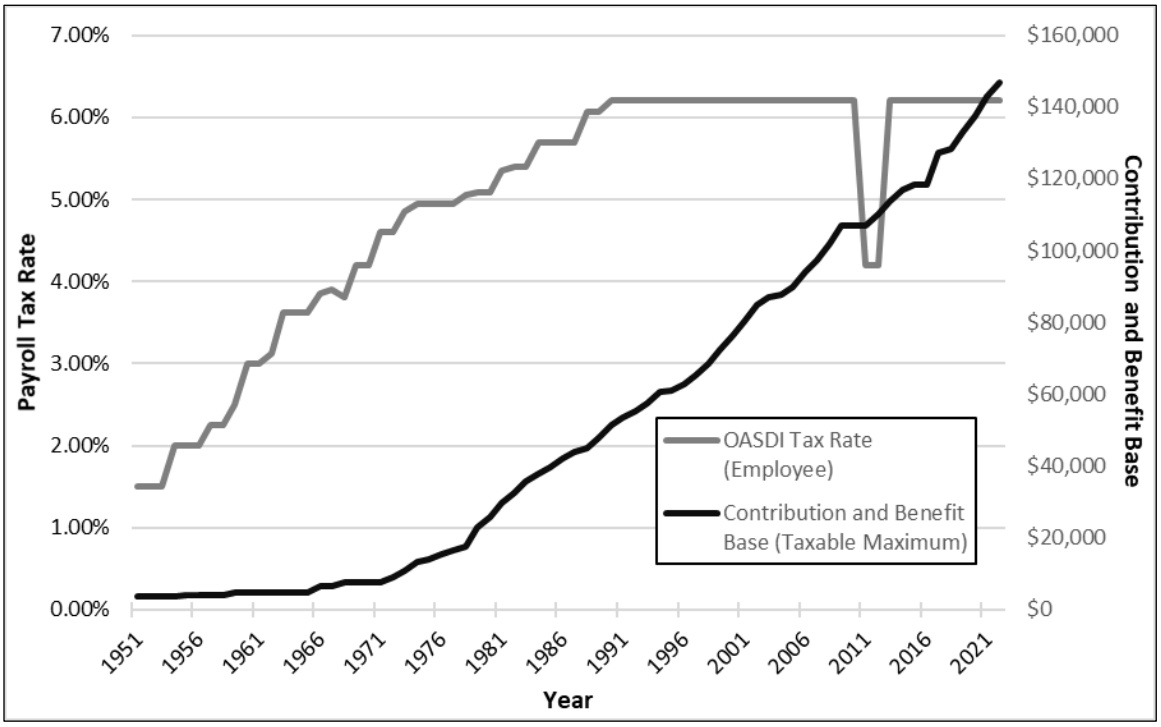
[20] Semi-weekly deposits are generally made every two weeks. See 26 C.F.R. §31.6302-1.

[21] The payroll tax holiday included a transfer of funds from general revenue to the Social Security trust funds. For more information, see "Employee Payroll Tax Holiday" in CRS Report R47062, *Payroll Taxes: An Overview of Taxes Imposed and Past Payroll Tax Relief*.

[22] The Federal Insurance Contribution Act (26 U.S.C. §3101 et seq.) moved the tax provisions to the Internal Revenue Code in 1954 and prescribed further increases. See CRS Report R42035, *Social Security Primer*.

[23] Automatic indexation of the CBB was established as part of the 1972 Amendments to the Social Security Act (P.L. 92-336), effective in 1975, at the same time automatic COLAs were established. Prior to 1975, increases in the CBB were legislated on an ad hoc basis. See CRS Report RL32896, *Social Security: Raising or Eliminating the Taxable Earnings Base*.

Figure 1. Social Security Employee Payroll Tax and Contribution and Benefit Base, 1951-2022



Source: Figure created by CRS using data from Social Security Administration, "Social Security and Medicare Tax Rates," https://www.ssa.gov/oact/progdata/taxRates.html and https://www.ssa.gov/OACT/COLA/cbb.html.

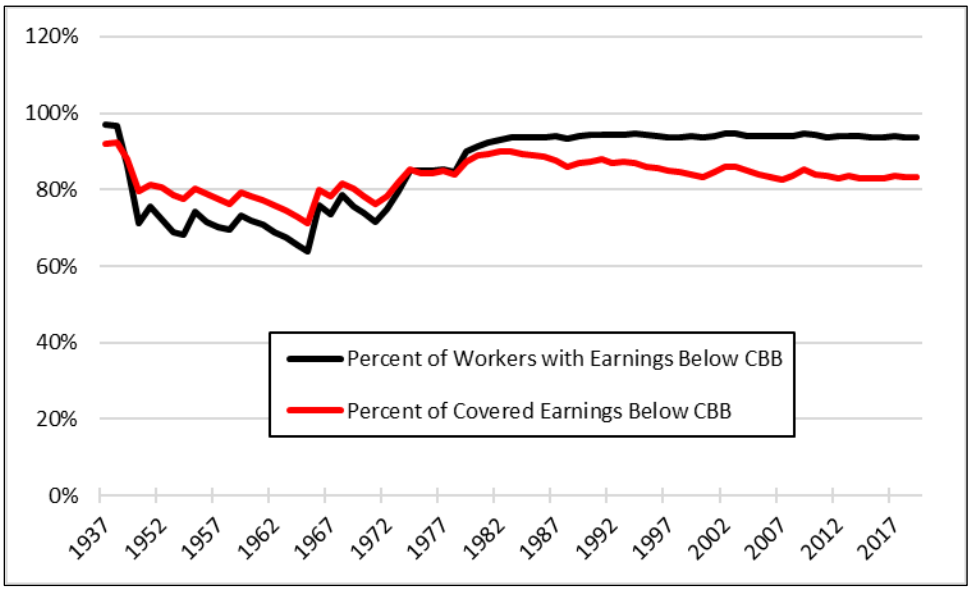
Notes: Rates are for the Social Security employee payroll tax on covered earnings. Employers pay an equal tax on covered earnings (i.e., 6.2% on covered earnings in 2022). Employers did not receive an equal reduction in the payroll tax rate during the temporary 2011-2012 employee rate reduction, meaning employers continued to pay a tax of 6.2% of covered wages during those years.

The combined payroll tax rate multiplied by the contribution and benefit base (i.e., taxable maximum) results in payroll tax revenues for the program, its largest source of revenue.[24] As **Figure 1** suggests, total payroll tax revenue has increased over time. This is because of the generally increasing CBB, since the payroll tax rate is fixed under current law. However, since the 1980s, increasing earnings inequality has resulted in the percentage of economy-wide earnings subject to the payroll tax declining, as seen in **Figure 2**. Thus, although the current-law payroll tax rate is applying to a larger amount of covered earnings over time (i.e., wages over time have generally increased), the current-law payroll tax is applying to a smaller percentage of overall earnings.

[24] For other sources of revenue, see CRS In Focus IF11939, *Social Security: Selected Findings of the 2021 Annual Report*.

Figure 2. Percentage of Workers with Earnings Below the Contribution and Benefit Base (CBB) and the Percentage of Covered Earnings Below the CBB

1951-2019



Source: Social Security Administration, *Annual Statistical Supplement, 2021*, December 2021, Table 4.B1, https://www.ssa.gov/policy/docs/statcomps/supplement/.

Hypothetical Earners

This report presents the effects of given changes in the benefit formula and payroll tax on a set of five *hypothetical earners*—as defined by SSA—whose career earnings range from *very low earnings* to *maximum earnings* and vary across birth cohorts. Hypothetical earners are used to illustrate how the benefit formula works and how changes to the benefit formula could affect workers of different earnings levels and different ages.

In brief, the career earnings profiles for hypothetical earners are calculated using an age-specific, scaled factor developed by SSA's Office of the Chief Actuary (OCACT). The scaled factor conveys, for each age, individuals' average earnings as a share of AWI in the year that the individual was that age.[25] Earnings profiles are then calculated by birth cohort. For persons in a given cohort, estimated earnings for a given year and age are calculated as the product of the scaled factor and the AWI for that year. These estimated earnings are then indexed to the AWI for the year in which the cohort turns 64.[26] Finally, estimated earnings are used to create four hypothetical worker profiles, such that career-average estimated earnings are 25% (*very low* hypothetical earners), 45% (*low* hypothetical earners), 100% (*medium* hypothetical earners), and 160% (*high* hypothetical earners) of AWI in the year prior to entitlement. A fifth category of hypothetical earner (*maximum* hypothetical earner) is assumed to earn at least the taxable

[25] OCACT applies additional adjustments to the scaled factor for ages 62 and older. OCACT, *Scaled Factors for Hypothetical Earnings Examples Under the 2021 Trustees Report Assumptions*, August 2021, Table 1, https://www.ssa.gov/OACT/NOTES/ran3/an2021-3.pdf.

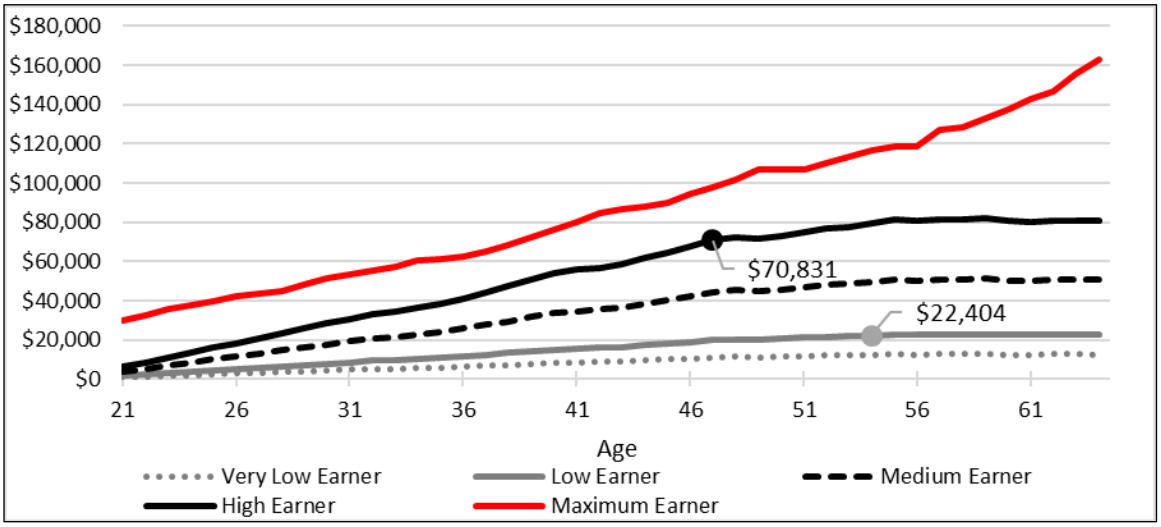
[26] Methods used in the previous source to calculate indexed career-average earnings differ from those used to calculate the AIME. The method used in the actuarial note indexes earnings prior to the year of entitlement rather than two years prior to eligibility as would be done under the current-law benefit formula.

maximum (i.e., CBB) in each year from age 21 to 64. Based on these SSA methods, hypothetical workers are assumed to have long and consistent earnings histories at their respective levels.[27]

Figure 3 shows the result of this process for the 1960 birth cohort. As can be seen, hypothetical low earners are expected to consistently earn *low* wages throughout their careers, whereas hypothetical high earners consistently earn *high* wages throughout their careers. For example, the hypothetical high earner who at age 47 earned at about 175% of the AWI is shown to have earnings of $70,831, whereas the hypothetical low earner at age 54 is shown to have earnings of $22,404.[28] **Figure 3** also displays the earnings level for a hypothetical *maximum* worker, which is simply the taxable maximum for that year.

Figure 3. Hypothetical Earnings for the 1960 Birth Cohort

In Nominal Dollars



Source: CRS.

Notes: The 1960 birth cohort turned 47 in 2007. A hypothetical high earner, at age 47, is estimated to have earned at 175% of the average wage index (AWI), or $70,831 in 2007. Similarly, the 1960 birth cohort turned 54 in 2014. A hypothetical low earner, at age 54, is estimated to have earned at 27% of the AWI, or $22,404 in 2014.

Appendix A provides analysis of hypothetical earners' demographic and other characteristics based on SSA-provided information and using cross-sectional data from a large national household survey. This analysis reveals that some demographic groups are more concentrated in certain hypothetical worker groups than in others, suggesting that the effects of certain benefit formula changes may not be experienced uniformly by workers with a different gender, race, or ethnicity.

[27] This assumption does not always reflect reality. One study shows that in a sample of workers born between 1926 and 1960, the average worker had 5.7 years of zero earnings within their highest 35 years of earnings. The distribution of zero earnings in this sample was highly skewed (i.e., 60% of workers had no years of zero earnings while 7% had more than 25 years of zero earnings). Women were estimated have more years of no earnings as compared to men, and years of no earnings were negatively correlated to earnings level (i.e., workers with lower earnings were estimated to experience a larger number of years of no earnings than workers with higher earnings). See Chad Newcomb, *Distribution of Zero-Earning Years by Gender, Birth Cohort, and Level of Lifetime Earnings*, SSA, https://www.ssa.gov/policy/docs/rsnotes/rsn2000-02.html#mt2.

[28] For instance, the 1960 birth cohort was 47 in 2007. A hypothetical high earner at age 47 earns at 175.3% of AWI. The AWI in 2007 was $40,405.58, and 175.3% of $40,405.58 is $70,830.98.

Hypothetical Earners Across Birth Cohorts

As discussed, the benefit formula also uses some birth-cohort-specific parameters in its calculation. For instance, the bend points used to section a worker's AIME into three brackets are indexed to the AWI. Given this, and the tendency of the AWI to increase each year, these dollar amounts generally increase. As a result, two workers born in different years with identical earnings history will likely have different benefit amounts. Said differently, a worker who consistently earned *medium* wages born in 1980 will likely have higher benefits than does a worker who consistently earned *medium* wages and was born in 1960, because wage growth over this timespan (i.e., 1960-1980) was positive. However, as will be shown in **Table 2**, the initial replacement rate for a hypothetical medium earner is consistent across birth cohorts.

For this reason, the ensuing analysis presents results for hypothetical earners in four birth cohorts: 1960, 1980, 2000, and 2020. In each case, the same set of SSA-developed scaled factors are used to define earner groups, but the earnings thresholds for these groups differ because the scaled factors are applied and indexed to age-specific AWIs.[29]

Benefit Statistics for Hypothetical Earners Across Birth Cohorts

Table 2 displays several commonly used measures to describe the benefits and taxes for Social Security beneficiaries: AIME, PIA, monthly benefit amounts at age 70,[30] initial replacement rates, and effective tax rates. The AIME and PIA are two of the major calculations performed in the benefit formula. Monthly benefit amounts at age 70 reflect how the PIA is affected by COLAs from age 62 to age 70. In all examples, workers are assumed to begin collecting benefits at the worker's FRA. The initial replacement rate describes the share of a worker's earnings (as measured by AIME) that is replaced by benefits (as measured by the PIA) in the year the worker begins collecting monthly benefits (i.e., assumed in this report at age 67, FRA). The effective tax rate highlights how much a worker paid into the system (total taxes paid in nominal dollars) as a percentage of his or her total career-covered earnings (in nominal dollars), up to the taxable maximum if applicable.

Table 2 shows how these measures vary by hypothetical earnings category and birth cohort for birth years 1960, 1980, 2000, and 2020. As discussed earlier, the AIME, PIA, and benefits at age 70 are higher for relatively high career-averaged earners than for relatively low career-averaged earners. This pattern is consistent within the birth cohorts considered and demonstrates the benefit formula's *individual equity*. Additionally, because these measures are linked to growth in the AWI—which tends to increase each year—they will generally increase over time and, therefore, across birth cohorts.

Furthermore, because a worker's earnings and the bend points used in the formula are indexed to growth in the AWI, the initial replacement rates—the portion of earnings replaced by benefits—shown in **Table 2** are stable. That is, from year to year, the average benefits that *new* beneficiaries receive increase at approximately the same rate as average earnings in the economy. The initial replacement rates illustrate the benefit formula's *progressivity*: A higher share of earnings is replaced for workers with lower career earnings than for those with higher career earnings.

[29] For some younger cohorts, not all program factors are known. In this case, this methodology uses the intermediate assumptions published in the 2021 Annual Report. The intermediate set of assumptions represents the trustees' best estimate of likely future conditions.

[30] Age 70 was chosen as an age that would allow for age-specific comparisons among birth cohorts after changes in COLA calculations and increases in FRA.

Lastly, **Table 2** shows the effective employee tax rate on covered earnings experienced by workers paying into the system. This rate differs from the current payroll tax rate for some workers because the rate has changed over time. A hypothetical earner born in 1960 entered the workforce in 1981 at age 21. In 1981, the payroll tax rate for employees was 5.35%. The payroll tax rate gradually increased until it reached 6.2% in 1990. Thus, for several years the 1960 birth cohort paid into the system at a lower tax rate than subsequent birth cohorts did. Additionally, in the aftermath of the 2007-2009 recession, Congress passed temporary reductions on the employee payroll tax rate. The employee tax rate was reduced by 2 percentage points in 2011 (by P.L. 111-312) and in 2012 (by P.L. 112-78 and P.L. 112-96). These temporary employee payroll tax decreases included provisions for the Social Security trust funds to be "made whole."[31]

For most taxpayers, payroll tax burdens are proportional to earnings.[32] This in contrast to the progressive initial replacement rates, as seen in **Table 2**.

Toward the top of the income distribution, due to the cap on earnings subject to the payroll tax, payroll taxes are regressive, meaning that as taxpayers' earnings increase, the share of earnings paid in payroll taxes decreases.[33] Also important is that Social Security tax is levied only on wage income. Taxpayers with higher incomes, such as a hypothetical maximum earner, are more likely to have income that is not subject to the Social Security tax (i.e., income that is not taxable nor creditable for program purposes), such as income from dividends, capital gains, interest, or rent.[34]

[31] See footnote 21.

[32] In **Table 2**, for the 1960 and 1980 birth cohorts, the effective payroll tax rate for the hypothetical maximum earners is slightly lower relative to other hypothetical earners. This is due to rounding from whole dollar values. Under current law, the CBB is a whole dollar value, so maximum earner's earnings are whole dollar values as well (i.e., $137,300.00 in 2020). Conversely, the other hypothetical earner's earnings are expressed as a percentage of AWI, a value including cents (i.e., $55,628.60 in 2020). This characteristic, and its interaction with a varying payroll tax rate, resulted in a slightly lower effective payroll tax. That is, the younger cohorts worked for several years under a payroll tax rate lower than 6.2% of covered earnings. This results in the effective tax rate over their careers to be less than 6.2%. Under current law, the younger cohorts will experience a 6.2% payroll tax over their entire careers.

[33] According to estimates from the Congressional Budget Office (CBO), in 2018, households in the lowest quintile (earning an average of $22,500) paid 9.5% of their income in payroll taxes, whereas households in the highest quintile (earning an average of $321,700) paid 6.4% of their income in payroll taxes. These figures include all federal payroll taxes, such as the (smaller) federal Medicare Hospital Insurance tax and federal unemployment taxes. In FY2020, the Social Security tax raised 74% of all federal payroll tax receipts. For distribution figures, see CBO, *The Distribution of Household Income, 2018*, supplemental data tables 3 and 9 (published August 4, 2021), https://www.cbo.gov/publication/57061.

[34] According to CBO analysis of incomes in 2018, labor income (i.e., wage and salary) made up at least 62% of average market income for households in the lower 95% of the income distribution. Labor income comprised nearly 57% of market income for households in the 96th-99th percentiles. At almost 31%, labor earnings make up a lower, but still significant, share of household income among the top 1%. CBO defines *market income* as labor income, business income, capital gains realized from the sale of assets, capital income excluding capital gains, and income received in retirement for past services or from other sources. Conceptually, these percentages underestimate labor income because they exclude business income, and some business owners contribute labor to their firms and are compensated in the form of business income in lieu of wages. CBO, *The Distribution of Household Income and Federal Taxes*, 2018, August 2021, supplementary data, https://www.cbo.gov/publication/57061.

Table 2. Average Indexed Monthly Earnings (AIMEs), Primary Insurance Amounts (PIAs), Benefits at Age 70, Initial Replacement Rates, and Effective Tax Rates for Hypothetical Earners by Birth Cohort

Scheduled Under Intermediate Assumptions and Current Law

	Very Low Earner	Low Earner	Medium Earner	High Earner	Maximum Earner
Birth Cohorts			**AIME**		
1960	$1,156.00	$2,081.00	$4,624.00	$7,400.00	$11,430.00
1980	2,427.00	4,368.00	9,707.00	15,532.00	24,169.00
2000	4,847.00	8,725.00	19,386.00	31,019.00	47,908.00
2020	9,741.00	17,534.00	38,959.00	62,338.00	96,298.00
			PIA		
1960	$963.80	$1,259.80	$2,073.60	$2,753.10	$3,357.60
1980	2,027.00	2,641.80	4,350.30	5,777.10	7,072.60
2000	4,026.40	5,267.40	8,678.90	11,526.30	14,059.70
2020	8,081.90	10,575.60	17,431.60	23,151.70	28,245.70
			Benefits at Age 70		
1960	$1,165.00	$1,523.00	$2,506.00	$3,328.00	$4,059.00
1980	2,442.00	3,193.00	5,259.00	6,984.00	8,550.00
2000	4,867.00	6,367.00	10,492.00	13,934.00	16,997.00
2020	9,770.00	12,785.00	21,073.00	27,988.00	34,146.00
			Initial Replacement Rate		
1960	83%	61%	45%	37%	29%
1980	83%	60%	45%	37%	29%
2000	83%	60%	45%	37%	29%
2020	83%	60%	45%	37%	29%
			Effective Tax Rate		
1960	6.03%	6.03%	6.03%	6.03%	6.02%
1980	6.14%	6.14%	6.14%	6.14%	6.13%
2000	6.20%	6.20%	6.20%	6.20%	6.20%
2020	6.20%	6.20%	6.20%	6.20%	6.20%

Source: Congressional Research Service (CRS) calculations based on hypothetical earner profiles developed by SSA.

Notes: Figures in the table reflect calculations for scheduled amounts under current law. AIMEs are rounded down to the nearest dollar (see 20 C.F.R. §404.211), PIAs are rounded down to the nearest dime (42 U.S.C. §415(a)(1)(A)), and monthly benefit amounts are rounded down to the nearest dollar (42 U.S.C. §415(g)). Initial replacement rates are calculated as PIA divided by AIME. Effective tax rates are calculated as nominal taxes paid from ages 21-61 divided by nominal wages earned from ages 21-61. Calculations shown in this table are shown under current law and using the intermediate assumptions from OCACT, *The 2021 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*, August 31, 2021, https://www.ssa.gov/OACT/TR/2021/tr2021.pdf (see **Table B-1**).

Commonly Proposed Changes

Congress has a wide range of policy options at its disposal to address the issues facing the Social Security system.[35] Several proposals considered by Congress seek to address the projected funding shortfall, while others address issues of benefit adequacy (i.e., targeting benefit increases to low earners). The "Social Security Benefit Formula Under Current Law" section of this report outlines various worker-dependent factors (e.g., wages) and program-specific factors (e.g., PIA replacement factors) that comprise the existing benefit formula. Congress can adjust each of these factors to achieve certain policy outcomes. Congress is not limited to a single change to the benefit formula (or financing). In fact, some bills have proposed a combination of changes.

This section examines the effect of commonly proposed changes on the retirement benefits and payroll tax for hypothetical earners (described earlier in this report) in four birth cohorts. Specifically, it illustrates the effect of changes in computation years, PIA replacement factors, the FRA, the COLA, and the Social Security payroll tax rate. Given the complexity of the benefit formula, the effect of each change is first considered separately, and the analysis assumes that workers do not change employment or make personal decisions in response to the policy change. Changes in the benefit formula and payroll taxes were selected to highlight how modifying the benefit formula and payroll taxes at different *steps* in the process would affect hypothetical workers across various earnings levels and birth years. The section concludes by exploring the effect of several selected changes considered together. Most Social Security proposals include numerous provisions that would change the current-law benefit formula and payroll tax. A combination of changes may have different effects as a whole than compared to changes taken on an individual basis.

Changes examined in this report are assumed to be effective for newly eligible beneficiaries starting in 2024—such as a change in computation years—*or* applicable in 2024—such as a change in COLA. An implication of this assumption is that not all birth cohorts are affected in the same way (or at all) by a given policy change. For instance, under a change in computation years effective for newly eligible beneficiaries in 2024, the 1960 birth cohort would not be affected, as they become eligible for benefits in 2022 (age 62), whereas most younger cohorts would be affected by the change. However, under a change in COLA applicable in 2024, the 1960 birth cohort would experience the effects of the change, albeit to a lesser degree than younger cohorts would.

Changes in Computation Years

The first step in calculating an eligible worker's retirement benefits is to calculate the AIME. As such, it is one of the first points at which lawmakers could make changes to affect workers' benefits. One approach to changing a worker's AIME is to increase the number of computation years.[36] For instance, an increase in computation years would better reflect a workers' complete earnings history, whereas a decrease in computation years might take into account a worker's fewer years of earnings (e.g., years used for caregiving). **Table 3** and **Table 4** show how a

[35] OCACT routinely updates commonly proposed provisions. Using the 2021 intermediate assumptions, OCACT updated 140 different provisions. Many of these proposals are variations on a common theme (e.g., adjustments in COLA calculations or increases in the payroll tax rate). For more information, see OCACT, "Office of the Chief Actuary's Estimates of Individual Changes Modifying Social Security," https://www.ssa.gov/OACT/solvency/provisions/index.html.

[36] See OCACT, "B4: Computation Year Changes," https://www.ssa.gov/OACT/solvency/provisions/benefitlevel.html.

worker's AIME, and other measures, would change with an increase or decrease in the number of computation years (for those becoming eligible for benefits starting in 2024) used in benefit calculations, respectively.

As can be seen in **Table 3**, an increase in the number of computation years (from 35 to 40 in this instance) would decrease the AIME relative to estimates under current law (**Table 2**) for most earners in the 1980, 2000, and 2020 birth cohorts. Under such a scenario, those in the 1960 birth cohort would not be affected, as their AIMEs would have been calculated in 2022 (at age 62).[37] Furthermore, the decrease in AIME for the younger cohorts would result in lower PIAs and benefits at age 70 (two measures that use AIME in their calculations). The AIME, and subsequent calculations, would fall with additional computation years because it would include additional years of lower annual earnings (see **Figure 2**).[38] Under current law, AIMEs are computed using a worker's highest 35 years of indexed earnings. Increasing the number of computation years, which for the average hypothetical worker would include years of lower earnings, would lower the AIME.

For very low, low, medium, and high earners in the younger three cohorts, increasing the number of computation years by five years would result in a 6% lower AIME. Compared to those earners, the maximum earners would be impacted to a much lesser degree or not at all (i.e., maximum earners in the 2020 birth cohort). These earners always earn at the contributions and benefit base (i.e., taxable maximum), a number that cannot decrease.[39] That is, for maximum earners, the increase in computation years would not include additional years of lower earnings in the calculation, because those workers are assumed to earn at least the taxable maximum every year (an amount that is projected to increase under the intermediate assumptions).[40] Other hypothetical earners earn at a percentage of AWI.

The hypothetical workers whose AIME would decrease would actually have a higher initial replacement rate, measured as the percentage of AIME (career-averaged earnings) that PIA would replace. This would not reflect an increase in future benefits but rather a decrease in AIME that would be larger than the decrease in PIA.

[37] Congress could enact provisions that would recalculate benefit amounts for people already collecting benefits. That is, provisions to change the benefit formula could be enacted retroactively. In the scenarios shown here, changes in future years (e.g., 2024) are used to highlight changes in the future. It has generally been the practice of Congress to amend benefits for future beneficiaries, giving them time to adjust their retirement plans. Under this practice, current beneficiaries (i.e., those already collecting benefits) would be held harmless as their ability to react to changes would be diminished.

[38] Seemingly, this would increase the probability that years of zero earnings would be included in the calculation. See footnote 27.

[39] The formula for determining the CBB is set by law (42 U.S.C. §430(b)). For any year after 1994, the formula states that the CBB is equal to the base for 1994 ($60,600) multiplied by the ratio of the AWI for two years before the year for which the amount is being calculated to that for 1992 (i.e., 1994 *minus* 2), with the result rounded to the nearest multiple of $300. If the result is less than the current base, then the base is not reduced. Because of the rounding rule, it is possible for the CBB to remain the same as the prior year with a very small increase in the AWI, provided that the COLA is payable. This situation has never occurred.

[40] This results from the basic definition of the hypothetical maximum worker. The maximum worker earns at the taxable maximum level in *all* years (i.e., from age 22 through 64). In reality, this may be unlikely. As shown in **Table A-3**, most workers who would meet the definition of *maximum worker* in any year would have many years of advanced education where earning at the taxable maximum level in those years would be difficult.

Table 3. Computation Years Increase: Change in Average Indexed Monthly Earnings (AIMEs), Primary Insurance Amounts (PIAs), Benefits at Age 70, Initial Replacement Rates, and Effective Tax Rates for Hypothetical Earners by Birth Cohort

Under Intermediate Assumptions with a Change from 35 to 40 Computation Years for Those Becoming Eligible in 2024 or Later

	Very Low Earner	Low Earner	Medium Earner	High Earner	Maximum Earner
Birth Cohorts			**Percent Change in AIME**		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	-6.0%	-6.0%	-6.0%	-6.0%	-0.3%
2000	-6.0%	-6.0%	-6.0%	-6.0%	-0.1%
2020	-6.0%	-6.0%	-6.0%	-6.0%	0.0%
			Percent Change in PIA		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	-2.3%	-3.2%	-4.3%	-2.4%	-0.1%
2000	-2.3%	-3.2%	-4.3%	-2.4%	0.0%
2020	-2.3%	-3.2%	-4.3%	-2.4%	0.0%
			Percent Change in Benefits at Age 70		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	-2.3%	-3.2%	-4.3%	-2.4%	-0.1%
2000	-2.3%	-3.2%	-4.3%	-2.4%	0.0%
2020	-2.3%	-3.2%	-4.3%	-2.4%	0.0%
			Percentage Point Change in Initial Replacement Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	3.3	1.8	0.8	1.4	0.0
2000	3.3	1.8	0.8	1.4	0.0
2020	3.2	1.8	0.8	1.4	0.0
			Percentage Point Change in Effective Tax Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0
2020	0.0	0.0	0.0	0.0	0.0

Source: CRS calculations based on hypothetical earner profiles developed by SSA.

Note: Figures in the table reflect calculations for scheduled amounts under current law.

The analysis presented in **Table 3** is supported by SSA's analysis using the Modeling Income in the Near Term (MINT) microsimulation model. A 2008 version of the model found that increasing the number of computation years to 40 would negatively affect all workers.[41] More recent (i.e., 2021) MINT analysis also showed that some demographic groups would be affected by such a change more than others would. For instance, workers who are non-white, workers with

[41] Workers with lower lifetime earnings typically have more years of zero earnings. Mark Sarney, *Distributional Effects of Increasing the Benefit Computation Period*, SSA, August 2008, https://www.ssa.gov/policy/docs/policybriefs/pb2008-02.html.

less than a high school education, and workers not born in the United States are more likely to see a benefit reduction as a result of such a policy change. Overall, such a change would slightly increase poverty, but the lower program costs would help reduce the projected financial shortfall.[42]

Table 4 shows the opposite modification to the benefit formula: The number of computation years has decreased from 35 to 30. For instance, if a bill wanted to take into account a worker's years of zero earnings (e.g., caregiving), the number of computation years could be decreased so as to not include those years in the calculations. As compared to **Table 2** (i.e., base case), most earners in the 1980, 2000, and 2020 birth cohorts would have a higher AIME, higher PIA, and higher benefits at age 70 if computation years decreased to 30 years. This follows because instead of the benefit formula using a worker's highest 35 years to compute the AIME, it is now using the highest 30 years. (Five years of relatively lower earnings have been removed from the calculation, resulting in a higher average.) The result is about a 3.3% increase in AIME for very low, low, medium, and high earners in the younger three cohorts. Similar to the previous example, maximum earners are for the most part unaffected by this change. Also, although most workers would receive higher benefits at age 70, their initial replacement rate would decrease as a result of now having higher career-averaged earnings.

[42] See SSA, "Projected Effects of a Proposal to Increase the Computation Period," https://www.ssa.gov/policy/docs/projections/policy-options/increase-comp-years-to-40.html.

Table 4. Computation Years Decrease: Change in Average Indexed Monthly Earnings (AIMEs), Primary Insurance Amounts (PIAs), Benefits at Age 70, Initial Replacement Rates, and Effective Tax Rates for Hypothetical Earners by Birth Cohort

Under Intermediate Assumptions with a Change from 35 to 30 Computation Years for Those Becoming Eligible in 2024 or Later

	Very Low Earner	Low Earner	Medium Earner	High Earner	Maximum Earner
Birth Cohorts			**Percent Change in AIME**		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	3.3%	3.3%	3.3%	3.3%	0.2%
2000	3.2%	3.3%	3.3%	3.3%	0.0%
2020	3.3%	3.3%	3.3%	3.3%	0.0%
			Percent Change in PIA		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	1.3%	1.7%	2.3%	1.3%	0.1%
2000	1.2%	1.7%	2.3%	1.3%	0.0%
2020	1.3%	1.7%	2.3%	1.3%	0.0%
			Percent Change in Benefits at Age 70		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	1.3%	1.8%	2.3%	1.3%	0.1%
2000	1.3%	1.7%	2.3%	1.3%	0.0%
2020	1.3%	1.7%	2.3%	1.3%	0.0%
			Percentage Point Change in Initial Replacement Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	-1.6	-0.9	-0.4	-0.7	0.0
2000	-1.6	-0.9	-0.4	-0.7	0.0
2020	-1.6	-0.9	-0.4	-0.7	0.0
			Percentage Point Change in Effective Tax Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0
2020	0.0	0.0	0.0	0.0	0.0

Source: CRS calculations based on hypothetical earner profiles developed by SSA.

Note: Figures in the table reflect calculations for scheduled amounts under current law.

Changes in PIA Replacement Factors

Congress could also change the benefit formula by altering the replacement factors.[43] This section illustrates two ways this could be done: the first by increasing the first replacement factor by 3

[43] See OCACT, "B1: PIA bend point and factor changes, adjusting for inflation," "B2: PIA bend point and factor changes, adjusting for longevity," and "B3: PIA bend point and factor changes, other adjustments," at https://www.ssa.gov/OACT/solvency/provisions/benefitlevel.html.

percentage points (from 90% to 93%, **Table 5**) and the second by decreasing the third replacement factor by 10 percentage points (from 15% to 5%, **Table 6**). The former might be proposed as a means to improve benefit adequacy for all beneficiaries, whereas the later would be a means to control program costs by reducing benefits for career-high earners. **Table 5** demonstrates how a change in the first replacement factor could result in higher PIA (and benefits) for earners of *all* levels. **Table 6** shows how changes in the third replacement factor would affect benefits of some earners (i.e., only high and maximum earners have earnings in the third bracket).

Table 5 shows how benefit measures would change if the first replacement factor were changed to 93% (from 90%) for those newly eligible for benefits starting in 2024. Unlike changes to computation years (in the preceding section), this would leave AIME unchanged and would result in higher PIAs, higher benefits at age 70, and higher initial replacement rates for earners of *all* levels in the three younger cohorts. As the scenario demonstrated here would first apply to those becoming eligible for benefits in 2024, PIAs for the 1960 birth cohort would be unaffected.

As can be seen in **Table 5**, the percent change in PIA would be most pronounced for very low earners and least pronounced for maximum earners. The hypothetical very low earners are those with all earnings in the *first* bracket of replaced earnings and thus would show the largest percentage increase in PIA. That is, all of their earnings would be replaced at 93% versus 90%. Higher earners, who may have a greater portion of their benefit driven by the *second and third* brackets of the formula, would see a smaller percentage increase relative to their larger benefit amounts.

For all earner groups in the younger three cohorts, the higher PIAs would lead to higher benefit amounts at age 70 and higher initial replacement rates. As opposed to change in computation years, the initial replacement rate would increase because of higher PIA, not because of changes in calculations of career-averaged earnings (AIME).

Table 5. First Replacement Factor Increased: Change in Average Indexed Monthly Earnings (AIMEs), Primary Insurance Amounts (PIAs), Benefits at Age 70, Initial Replacement Rates, and Effective Tax Rates for Hypothetical Earners by Birth Cohort

Under Intermediate Assumptions with an Increase in First Replacement Factor from 90% to 93% for Those Becoming Eligible in 2024 and Later

	Very Low Earner	Low Earner	Medium Earner	High Earner	Maximum Earner
Birth Cohorts			**Percent Change in AIME**		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	0.0%	0.0%	0.0%	0.0%	0.0%
2000	0.0%	0.0%	0.0%	0.0%	0.0%
2020	0.0%	0.0%	0.0%	0.0%	0.0%
			Percent Change in PIA		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	3.2%	2.4%	1.5%	1.1%	0.9%
2000	3.2%	2.4%	1.5%	1.1%	0.9%
2020	3.2%	2.4%	1.5%	1.1%	0.9%
			Percent Change in Benefits at age 70		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	3.2%	2.4%	1.5%	1.1%	0.9%
2000	3.2%	2.4%	1.5%	1.1%	0.9%
2020	3.2%	2.4%	1.5%	1.1%	0.9%
			Percentage Point Change in Initial Replacement Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	2.6	1.5	0.7	0.4	0.3
2000	2.6	1.5	0.7	0.4	0.3
2020	2.6	1.5	0.7	0.4	0.3
			Percentage Point Change in Effective Tax Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0
2020	0.0	0.0	0.0	0.0	0.0

Source: CRS calculations based on hypothetical earner profiles developed by SSA.

Note: Figures in the table reflect calculations for scheduled amounts under current law.

Table 5 shows how changes in the first replacement factors would affect PIA of all earners (i.e., all earners have earnings in the *first bracket*). **Table 6** shows how changes in the third replacement factors would affect benefits of only high and maximum earners (i.e., those with earnings in the *third bracket*). The **Table 6** scenario shows changes in the benefit measures if, for those newly eligible for benefits starting in 2024, the third replacement factor were reduced from 15% to 5%.

Once again, as this change would first affect those eligible for benefits in 2024, the 1960 birth cohort would be unaffected. As only hypothetical high and maximum earners have earnings in the third bracket, only earners in those groups who are in the three younger cohorts would be affected. For them, the decrease in PIA leads to lower benefits at age 70 and lower initial replacement rates (as compared to the base case in **Table 2**).

Table 6. Third Replacement Factor Decreased: Change in Average Indexed Monthly Earnings (AIMEs), Primary Insurance Amounts (PIAs), Benefits at Age 70, Initial Replacement Rates, and Effective Tax Rates for Hypothetical Earners by Birth Cohort

Under Intermediate Assumptions with a Decrease in Third Replacement Factor from 15% to 5% for Those Becoming Eligible in 2024 and Later

	Very Low Earner	Low Earner	Medium Earner	High Earner	Maximum Earner
Birth Cohorts			**Percent Change in AIME**		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	0.0%	0.0%	0.0%	0.0%	0.0%
2000	0.0%	0.0%	0.0%	0.0%	0.0%
2020	0.0%	0.0%	0.0%	0.0%	0.0%
			Percent Change in PIA		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	0.0%	0.0%	0.0%	-4.5%	-15.8%
2000	0.0%	0.0%	0.0%	-4.5%	-15.7%
2020	0.0%	0.0%	0.0%	-4.5%	-15.7%
			Percent Change in Benefits at Age 70		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	0.0%	0.0%	0.0%	-4.5%	-15.8%
2000	0.0%	0.0%	0.0%	-4.5%	-15.7%
2020	0.0%	0.0%	0.0%	-4.5%	-15.7%
			Percentage Point Change in Initial Replacement Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	-1.7	-4.6
2000	0.0	0.0	0.0	-1.7	-4.6
2020	0.0	0.0	0.0	-1.7	-4.6
			Percentage Point Change in Effective Tax Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0
2020	0.0	0.0	0.0	0.0	0.0

Source: Congressional Research Service (CRS) calculations based on hypothetical earner profiles developed by SSA.

Note: Figures in the table reflect calculations for scheduled amounts under current law.

Changes in FRA and EEA

The FRA—the age at which a worker can receive the full PIA, increased by any COLAs—was last changed as part of the Social Security Amendments of 1983 (P.L. 98-21). At the time, many argued the FRA should increase because of increases in life expectancy. The 1983 amendments did not change the EEA, the age at which a retired worker can first claim (reduced) benefits.[44] Since the early 1960s, the EEA has been set at 62 even though the FRA has been increased. Proposals to increase the EEA and FRA by one or two years are common proposals.[45]

Table 7 demonstrates a scenario in which the FRA and EEA would be increased by one year each for those becoming eligible starting in 2024 such that for the 1980 and younger cohorts, the FRA would be 68 and the EEA would be 63. As with the previous scenarios, the implementation date of this theoretical change would not affect the 1960 birth cohort. The benefit measures for the younger three cohorts would be affected for earners of all levels as AIMEs, and PIAs would be calculated one year *later*.

First, workers in all earnings groups would have a higher AIME. This would result from the wage-indexation process (i.e., earnings from all computation years would be indexed for growth over a period that is longer by one additional year). For example, a worker born in 2000 with earnings at age 30 (in 2030) would now have his or her earnings indexed at age 61 (in 2061), not age 60 (in 2060) under current law. Assuming that national wages grew, on average, between 2061 and 2060 (and all else held constant), this necessarily would result in higher AIMEs for all workers. Second, the higher AIMEs would result in higher PIAs. However, workers in all earnings groups in the younger three cohorts would have lower initial replacement rates (as measured by PIA as a percent of AIME), because PIA would increase less than AIME would.[46] One caveat however, is that the indexing process and progressive replacement factors results in medium earners in the younger cohorts having slightly higher benefit amounts at age 70. That said, their initial replacements rate would still be lower relative to current law.

Although these workers would have higher AIMEs and PIAs, they would have lower benefits at age 70. COLAs are applied to a worker's PIA starting in the second year of eligibility. Thus, birth cohorts subject to an increase in one year for both EEA (the point at which AIMEs and PIAs are calculated) and FRA would receive one less COLA before age 70 than would birth cohorts not subject to the change. For example, under this scenario, at age 70 the 1960 birth cohort would receive eight adjustments for inflation (from age 63 to age 70), whereas the 2000 birth cohort would receive seven adjustments for inflation (from age 64 to age 70).

As discussed, the use of benefit amount at age 70 is to demonstrate how changes in the benefit formula would affect workers of different birth cohorts at the same relative age. However, under an increase in EEA and FRA, beneficiaries may experience a change in total expected lifetime benefits. For instance, **Table 7** shows how an increase in EEA and FRA would result in lower benefits. Assuming no change in life expectancy, workers affected by such a change would also be collecting the benefits for one fewer year. Moreover, beneficiaries attempting to take

[44] Workers claiming benefits before reaching FRA would be subject to actuarial reduction. For more information on how this would impact benefits, see CRS Report R46658, *Social Security: Benefit Calculation*.

[45] See OCACT, "Provisions Affecting Retirement Age," https://www.ssa.gov/OACT/solvency/provisions/retireage.html. Most proposals would increase the EEA and/or FRA by two-month increments until a new EEA and/or FRA is reached.

[46] A given percentage change in AIME translates into a lower percentage change in PIA, because each of the replacement factors applied at each of the three segments in the PIA calculation is set in law to be less than 100%.

advantage of DRCs (i.e., delay claiming of benefits to earn delayed retirement credits) would also receive less of a benefit increase than under current law.

Table 7. Full Retirement Age (FRA) Increased to 68 and Early Eligibility Age (EEA) Increased to 63: Change in Average Indexed Monthly Earnings (AIMEs), Primary Insurance Amounts (PIAs), Benefits at Age 70, Initial Replacement Rates, and Effective Tax Rates for Hypothetical Earners by Birth Cohort

Under Intermediate Assumptions with a Change in EEA to 63 and FRA to 68 for Those Becoming Eligible in 2024 or Later

	Very Low Earner	Low Earner	Medium Earner	High Earner	Maximum Earner
Birth Cohorts			**Percent Change in AIME**		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	3.8%	3.9%	3.9%	3.9%	3.6%
2000	3.9%	3.9%	3.9%	3.9%	3.6%
2020	3.8%	3.8%	3.8%	3.8%	3.5%
			Percent Change in PIA		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	1.5%	2.0%	2.8%	1.6%	1.8%
2000	1.5%	2.1%	2.8%	1.6%	1.8%
2020	1.5%	2.0%	2.8%	1.6%	1.8%
			Percent Change in Benefits at Age 70		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	-0.9%	-0.3%	0.3%	-0.8%	-0.6%
2000	-0.9%	-0.3%	0.4%	-0.8%	-0.6%
2020	-0.9%	-0.4%	0.3%	-0.8%	-0.6%
			Percentage Point Change in Initial Replacement Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	-1.9	-1.1	-0.5	-0.8	-0.5
2000	-1.9	-1.1	-0.5	-0.8	-0.5
2020	-1.9	-1.0	-0.5	-0.8	-0.5
			Percentage Point Change in Effective Tax Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0
2020	0.0	0.0	0.0	0.0	0.0

Source: CRS calculations based on hypothetical earner profiles developed by SSA.

Note: Figures in the table reflect calculations for scheduled amounts under current law.

Table 8 demonstrates a scenario in which the FRA and EEA would be gradually increased by two years each for those first eligible for benefits in 2024 such that for the 1980 cohort the FRA would be 68 and EEA would be 63, and for younger cohorts the FRA would be 69 and the EEA would be 64. Compared to the base case (**Table 2**), the 1960 cohort would be unaffected by this

theoretical policy change. Also, because of the gradual implementation of increase in FRA and EEA, changes in the benefit measures for the 1980 birth cohort would be the same as in **Table 7**. For the 2000 and 2020 birth cohorts, earners at all levels would receive higher AIMEs and PIAs than if the FRA and EEA had been increased by only one year. Similarly, they would receive lower benefits at age 70 as they would now receive six adjustments for inflation at age 70 (one fewer than the 1980 birth cohort and two fewer than the 1960 birth cohort). As in the previous table, the combined effects of the hypothetical medium earner's work history with the indexing process and progressive replacement rates actually result in a slight increase in benefit amounts at age 70. That said, the hypothetical medium earners in the younger cohorts would still see an estimated decrease in their initial replacement rate.

Table 8. Full Retirement Age (FRA) Increased to 69 and Early Eligibility Age Increased to 64: Change in Average Indexed Monthly Earnings (AIMEs), Primary Insurance Amounts (PIAs), Benefits at Age 70, Initial Replacement Rates, and Effective Tax Rates for Hypothetical Earners by Birth Cohort

Under Intermediate Assumptions with a Gradual Change in EEA to 64 and FRA to 69 for Those Becoming Eligible in 2024 or Later

	Very Low Earner	Low Earner	Medium Earner	High Earner	Maximum Earner
Birth Cohorts			**Percent Change in AIME**		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	3.8%	3.9%	3.9%	3.9%	3.6%
2000	7.7%	7.7%	7.7%	7.7%	7.3%
2020	7.6%	7.6%	7.6%	7.6%	7.2%
			Percent Change in PIA		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	1.5%	2.0%	2.8%	1.6%	1.8%
2000	3.0%	4.1%	5.5%	3.1%	3.7%
2020	2.9%	4.0%	5.4%	3.1%	3.7%
			Percent Change in Benefits at Age 70		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	-0.9%	-0.3%	0.3%	-0.8%	-0.6%
2000	-1.8%	-0.8%	0.6%	-1.7%	-1.1%
2020	-1.8%	-0.8%	0.6%	-1.7%	-1.1%
			Percentage Point Change in Initial Replacement Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	-1.9	-1.1	-0.5	-0.8	-0.5
2000	-3.6	-2.0	-0.9	-1.6	-1.0
2020	-3.6	-2.0	-0.9	-1.6	-1.0
			Percentage Point Change in Effective Tax Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0

	Very Low Earner	Low Earner	Medium Earner	High Earner	Maximum Earner
2020	0.0	0.0	0.0	0.0	0.0

Source: CRS calculations based on hypothetical earner profiles developed by SSA.

Note: Figures in the table reflect calculations for scheduled amounts under current law.

SSA's MINT analysis in 2021 found that the percentage of a population facing benefit reductions under an FRA and EEA increase rises for subsequent birth cohorts.[47] That is, younger cohorts are more likely to face benefit reductions. Additionally, those with relatively more education (e.g., graduate degree holders) and higher incomes in the younger cohorts are more likely to experience benefit reductions with increases in the FRA.[48]

Changes in COLA

Social Security beneficiaries usually receive an annual COLA to compensate for the effects of inflation.[49] SSA uses the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) as produced by the Bureau of Labor Statistics to measure the change in cost of living over a one-year period. Proposals to adjust the benefit formula include changing the price index used in calculations to be more or less advantageous to beneficiaries. For instance, some lawmakers favor using the Consumer Price Index for the Elderly (CPI-E), because retired workers have a different "basket" of goods than workers.[50] Others favor using a chain-weighted version of the Consumer Price Index for All Urban Consumers (C-CPI-U) as a means to reduce program costs.[51]

Table 9 shows how using the CPI-E to calculate COLAs starting in 2024 would change benefit measures. SSA's OCACT estimates using the CPI-E would increase the annual COLA by about 0.2 percentage points on average.[52] This change in the price index would not alter the AIME, PIA, or initial replacement rates for any earners of any birth cohort. Changing the COLA price index from the CPI-W to the CPI-E would, however, raise benefit amounts received at age 70. Only some of the COLAs received by the 1960 birth cohort at age 70 would be affected by the estimated increase from using CPI-E, so their benefits at age 70 would not have increased as much as those for the younger cohorts would. All the COLAs received by the younger cohorts would be calculated using the CPI-E.

[47] See SSA, "Projected Effects of a Proposal to Increase the Early Eligibility Age (EEA) and Full Retirement Age (FRA)," https://www.ssa.gov/policy/docs/projections/policy-options/increase-eea-and-fra.html

[48] Since COLAs are applied as a percentage increase to benefit amounts, a decrease in the number of adjustments affects higher earners (who have higher benefit amounts) disproportionately.

[49] For more background on COLAs, see CRS Report 94-803, *Social Security: Cost-of-Living Adjustments*.

[50] The Bureau of Labor Statistics (BLS) refers to this index as a research price index, or R-CPI-E. The bureau highlights several limitations in using this index. See BLS, "R-CPI-E Homepage," https://www.bls.gov/cpi/research-series/r-cpi-e-home.htm.

[51] See OCACT, "Provisions Affecting Cost-of-Living Adjustment," https://www.ssa.gov/OACT/solvency/provisions/cola.html. For more information on the CPI-E and C-CPI-U, see CRS Report R43363, *Alternative Inflation Measures for the Social Security Cost-of-Living Adjustment (COLA)*.

[52] Letter from Stephen Goss, Chief Actuary, SSA, to Representative Al Lawson, November 9, 2021, https://www.ssa.gov/OACT/solvency/ALawson_20211109.pdf. It is important to note that this estimate is on average. In fact, it may be possible for a change to the CPI-E to result in a smaller COLA.

Table 9. Cost-of-Living Adjustment Projected Increase: Change in Average Indexed Monthly Earnings (AIMEs), Primary Insurance Amounts (PIAs), Benefits at Age 70, Initial Replacement Rates, and Effective Tax Rates for Hypothetical Earners by Birth Cohort

Under Intermediate Assumptions with a Change to Consumer Price Index for the Elderly (CPI-E) for Cost-of-Living Adjustments (COLAs) Starting in 2024

	Very Low Earner	Low Earner	Medium Earner	High Earner	Maximum Earner
Birth Cohorts			**Percent Change in AIME**		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	0.0%	0.0%	0.0%	0.0%	0.0%
2000	0.0%	0.0%	0.0%	0.0%	0.0%
2020	0.0%	0.0%	0.0%	0.0%	0.0%
			Percent Change in PIA		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	0.0%	0.0%	0.0%	0.0%	0.0%
2000	0.0%	0.0%	0.0%	0.0%	0.0%
2020	0.0%	0.0%	0.0%	0.0%	0.0%
			Percent Change in Benefits at Age 70		
1960	1.4%	1.3%	1.4%	1.4%	1.4%
1980	1.6%	1.6%	1.6%	1.6%	1.6%
2000	1.6%	1.6%	1.6%	1.6%	1.6%
2020	1.6%	1.6%	1.6%	1.6%	1.6%
			Percentage Point Change in Initial Replacement Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0
2020	0.0	0.0	0.0	0.0	0.0
			Percentage Point Change in Effective Tax Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0
2020	0.0	0.0	0.0	0.0	0.0

Source: CRS calculations based on hypothetical earner profiles developed by SSA.

Notes: Figures in the table reflect calculations for scheduled amounts under current law. The CPI-E is projected to increase COLAs by 0.2 percentage points, on average, above current law projections. See letter from Stephen Goss, Chief Actuary, SSA, to Representative Al Lawson, November 9, 2021, https://www.ssa.gov/OACT/solvency/ALawson_20211109.pdf.

The analysis presented in **Table 9**, showing the estimated effects of using the CPI-E for COLA calculations, is also supported by SSA's MINT microsimulation analysis. If the CPI-E were applied to Social Security benefits effective in 2022, MINT analysis shows a benefit increase for almost all beneficiaries. The younger cohorts are more likely to experience higher-than-current-law COLAs for the entirety of their benefit collection periods. Since such a change would be

applied uniformly, it would affect most demographic groups in a similar manner (i.e., in percentage change of benefits).[53] However, since COLAs are applied as a percentage increase to benefit amounts, higher earners would receive a larger dollar increase in benefit amounts.

Table 10 shows how using the C-CPI-U to calculate COLAs starting in 2024 would change benefit measures. Whereas OCACT estimates that using CPI-E would increase the COLA by 0.2 percentage points on average, it estimates that using the C-CPI-U would *decrease* the COLA by 0.3 percentage points on average.[54] Consequently, changing the price index to the C-CPI-U would reduce benefits at age 70 (whereas such benefits would increase if the CPI-E were to be used to make COLA adjustments). As in **Table 9**, AIME, PIA, and initial replacement rates would not change relative to the base case (**Table 2**). Under a theoretical change to the C-CPI-U, the 1960 birth cohort would be the least negatively affected of the four cohorts, as some of their COLAs would have been calculated under the current law CPI-W. Under such a change, the COLAs received by the younger cohorts would all be calculated using the less advantageous (on average) C-CPI-U.

[53] See SSA, "Projected Effects of a Proposal to Increase the Cost-of-Living Adjustment (COLA)," https://www.ssa.gov/policy/docs/projections/policy-options/increase-COLA-with-CPI-E.html.

[54] Letter from Stephen Goss, Chief Actuary, SSA, to Representative Reid Ribble, July 16, 2016, https://www.ssa.gov/OACT/solvency/RRibble_20160713.pdf.

Table 10. Cost-of-Living Adjustment Projected Decrease: Change in Average Indexed Monthly Earnings (AIMEs), Primary Insurance Amounts (PIAs), Benefits at Age 70, Initial Replacement Rates, and Effective Tax Rates for Hypothetical Earners by Birth Cohort

Under Intermediate Assumptions with a Change to Chained Consumer Price Index for All Urban Consumers (C-CPI-U) for Cost-of-Living Adjustments (COLAs) Starting in 2024

	Very Low Earner	Low Earner	Medium Earner	High Earner	Maximum Earner
Birth Cohorts			**Percent Change in AIME**		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	0.0%	0.0%	0.0%	0.0%	0.0%
2000	0.0%	0.0%	0.0%	0.0%	0.0%
2020	0.0%	0.0%	0.0%	0.0%	0.0%
			Percent Change in PIA		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	0.0%	0.0%	0.0%	0.0%	0.0%
2000	0.0%	0.0%	0.0%	0.0%	0.0%
2020	0.0%	0.0%	0.0%	0.0%	0.0%
			Percent Change in Benefits at Age 70		
1960	-2.1%	-2.0%	-2.0%	-2.0%	-2.0%
1980	-2.3%	-2.3%	-2.3%	-2.3%	-2.3%
2000	-2.3%	-2.3%	-2.3%	-2.3%	-2.3%
2020	-2.3%	-2.3%	-2.3%	-2.3%	-2.3%
			Percentage Point Change in Initial Replacement Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0
2020	0.0	0.0	0.0	0.0	0.0
			Percentage Point Change in Effective Tax Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0
2020	0.0	0.0	0.0	0.0	0.0

Source: CRS calculations based on hypothetical earner profiles developed by SSA.

Notes: Figures in the table reflect calculations for scheduled amounts under current law. The C-CPI-U is projected to decrease COLAs by 0.3 percentage points, on average, below current law projections. See letter from Stephen Goss, Chief Actuary, SSA, to Representative Reid Ribble, July 16, 2016, https://www.ssa.gov/OACT/solvency/RRibble_20160713.pdf.

The analysis presented in **Table 10** showing the changes from using a C-CPI-U, is supported by SSA's MINT microsimulation analysis as well. A 2008 policy brief reported, "The effect of the COLA reductions would be cumulative over time, causing benefit reductions to increase the longer benefits are received. Therefore, certain groups of beneficiaries who tend to receive benefits longer than average would experience larger benefit reductions. These groups include

older beneficiaries, women, whites, those with higher levels of education, those with higher income, widow(er)s, and retired disabled individuals."[55] Under such a change, a reduction in COLAs would help alleviate some of the projected financial shortfall but also increase poverty rates. Updated (i.e., 2021) MINT analysis shows that, like the change to using CPI-E, a change to using a C-CPI-U would affect almost all beneficiaries.[56] That is, most demographic groups—by race, marital status, income, and education—would face similar percentage changes in benefits. However, since COLAs are cumulative in nature, this would affect lower income workers and younger workers more, as those already collecting benefits would have some years of higher COLAs applied as under current law.

Changes in the Social Security Payroll Tax Rate

Changes to the Social Security payroll tax rate would ostensibly not change the benefit measures. Those measures are largely dependent on the worker's wages and wage- and price-indexed parameters. However, many lawmakers have proposed amending Social Security by changing workers' payments into the system.[57] An increase in program revenues—by an increase in the payroll tax rate, the portion of earnings subject to the payroll tax, or some combination of both—would improve the financial position of the program.[58]

Table 11 shows the effects of one theoretical change in the payroll tax. Under current law, the combined 12.4% Social Security payroll tax is evenly paid by employees and employers (i.e., employees and employers each pay 6.2% on covered earnings).[59] In this scenario, the payroll tax rate would be increased by 0.2 percentage points each year until 2035 (the employee payroll tax rate would increase by 0.1 percentage point each year), at which point the combined payroll tax would be 14.8%. The employee (and employer) payroll tax would thus be 7.4% in 2035.[60] Under such a scenario, there would be no change in the effective tax rate for the hypothetical earners in the 1960 birth cohort who have retired and are collecting benefits. Some of the increased tax burden would be absorbed by the 1980 birth cohort as they would experience higher payroll tax rates starting at age 44. The 2000 birth cohort would experience a higher payroll tax rate at age 24 (presumably for most of their active work years), and the 2020 birth cohort would experience the higher rate for all of their working years.

[55] Anya Olsen, *Distributional Effects of Reducing the Cost-of-Living Adjustments*, SSA, November 2008, https://www.ssa.gov/policy/docs/policybriefs/pb2008-03.html.

[56] See SSA, "Projected Effects of a Proposal to Reduce the Cost-of-Living Adjustment (COLA)," https://www.ssa.gov/policy/docs/projections/policy-options/reduce-COLA-with-chained-CPI.html.

[57] See SSA, "Provisions Affecting Payroll Taxes," https://www.ssa.gov/OACT/solvency/provisions/payrolltax.html.

[58] A change in the payroll tax rate is one option available for lawmakers to adjust the payroll tax. Other options include changing the current-law taxable maximum dollar threshold or applying the payroll tax rate on a certain portion of all wages such that 90%, for example, of all earnings would be subject to the payroll tax.

[59] The payroll tax burden is often believed to fall on workers, as the employer's share of payroll taxes is passed on to employees in the form of lower wages. See "Distribution of Payroll Tax Burden" in CRS Report R47062, *Payroll Taxes: An Overview of Taxes Imposed and Past Payroll Tax Relief* for more information.

[60] An increase of 2.4 percentage points in the payroll tax would improve the financial position of the program but not avoid a funding shortfall at which point the program could no longer pay full benefits on time. In the 2021 Annual Report, the trustees estimate that a 3.36 percentage point increase in the payroll tax (to 15.76%) would eliminate the funding shortfall (2021 Annual Report, p. 5).

Table 11. Payroll Tax Rate Increase: Change in Average Indexed Monthly Earnings (AIMEs), Primary Insurance Amounts (PIAs), Benefits at Age 70, Initial Replacement Rates, and Effective Tax Rates for Hypothetical Earners by Birth Cohort

Under Intermediate Assumptions, Starting in 2024 Gradually Increase Employee Payroll Tax Rate by 0.1 Percentage Point per Year Until 2035

	Very Low Earner	Low Earner	Medium Earner	High Earner	Maximum Earner
Birth Cohorts			**Percent Change in AIME**		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	0.0%	0.0%	0.0%	0.0%	0.0%
2000	0.0%	0.0%	0.0%	0.0%	0.0%
2020	0.0%	0.0%	0.0%	0.0%	0.0%
			Percent Change in PIA		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	0.0%	0.0%	0.0%	0.0%	0.0%
2000	0.0%	0.0%	0.0%	0.0%	0.0%
2020	0.0%	0.0%	0.0%	0.0%	0.0%
			Percent Change in Benefits at Age 70		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	0.0%	0.0%	0.0%	0.0%	0.0%
2000	0.0%	0.0%	0.0%	0.0%	0.0%
2020	0.0%	0.0%	0.0%	0.0%	0.0%
			Percentage Point Change in Initial Replacement Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0
2020	0.0	0.0	0.0	0.0	0.0
			Percentage Point Change in Effective Tax Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	0.6	0.6	0.6	0.6	0.5
2000	1.1	1.1	1.1	1.1	1.1
2020	1.2	1.2	1.2	1.2	1.2

Source: CRS calculations based on hypothetical earner profiles developed by SSA.

Note: Figures in the table reflect calculations for scheduled amounts under current law.

Table 12 demonstrates changes under a scenario with a higher ultimate tax rate but with increases starting at a later date and accruing more gradually. In this scenario, the combined payroll tax rate would increase by 0.15 percentage points each year starting in 2034 until it reaches 16.4% in 2061 (the employee payroll tax rate would increase by 0.075 percentage point each year). The employee (and employer) payroll tax would thus be 8.2% in 2061. Such a change would effectively remove some of the burden of a tax increase off of the 1980 birth cohort. The 2000 birth cohort would pay a higher effective tax rate than in the base case (**Table 2**) but about the same as in the scenario presented in the previous example (**Table 11**). Those in the 2020 birth

cohort, though, would be subject to an increase in the payroll tax rate each year from when they enter the workforce until age 41 (2061) and would experience a higher payroll tax rate (relative to current law) for their entire working lives.

Table 12. Payroll Tax Rate Increase: Change in Average Indexed Monthly Earnings (AIMEs), Primary Insurance Amounts (PIAs), Benefits at Age 70, Initial Replacement Rates, and Effective Tax Rates for Hypothetical Earners by Birth Cohort

Under Intermediate Assumptions, Starting in 2034 Gradually Increase Employee Payroll Tax Rate by 0.075 Percentage Point per Year Until 2060

	Very Low Earner	Low Earner	Medium Earner	High Earner	Maximum Earner
Birth Cohorts			**Percent Change in AIME**		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	0.0%	0.0%	0.0%	0.0%	0.0%
2000	0.0%	0.0%	0.0%	0.0%	0.0%
2020	0.0%	0.0%	0.0%	0.0%	0.0%
			Percent Change in PIA		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	0.0%	0.0%	0.0%	0.0%	0.0%
2000	0.0%	0.0%	0.0%	0.0%	0.0%
2020	0.0%	0.0%	0.0%	0.0%	0.0%
			Percent Change in Benefits at Age 70		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	0.0%	0.0%	0.0%	0.0%	0.0%
2000	0.0%	0.0%	0.0%	0.0%	0.0%
2020	0.0%	0.0%	0.0%	0.0%	0.0%
			Percentage Point Change in Initial Replacement Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0
2020	0.0	0.0	0.0	0.0	0.0
			Percentage Point Change in Effective Tax Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	0.1	0.1	0.1	0.1	0.1
2000	1.1	1.1	1.1	1.1	1.0
2020	1.9	1.9	1.9	1.9	1.8

Source: CRS calculations based on hypothetical earner profiles developed by SSA.

Note: Figures in the table reflect calculations for scheduled amounts under current law.

A 2010 policy brief by SSA came to many of the same conclusions as the analysis presented above. Although an increase in the payroll tax (i.e., program revenues) would put the program in a more financially stable position, it would affect some workers more than others. First, the longer an increase is delayed, the fewer the number of workers (in the current workforce) would

be affected.[61] Second, younger workers (and future generations of workers) would be affected more by a delayed change in the tax rate and by gradual changes.[62] A 2021 MINT analysis looked at the distributional analysis of an increase in the payroll tax rate to a combined 15.9% in 2033 and a further increase to a combined 19.45% in 2063. The analysis found that older cohorts were generally unaffected by the payroll tax increase as they were more likely to be retired and already collecting benefits. All workers in younger cohorts would face a tax increase, and the net effect would be larger for those starting work in later years, as all years of covered earnings would face the higher tax rate. As a result, the younger cohorts would generally experience a lower benefit-to-tax ratio.[63] That is, the younger cohorts would generally receive the same amount in benefits (relative to current law) over their lifetimes but would have paid higher taxes over their lifetimes.[64]

Combining Several Changes

Congress can package together any number and combination of provisions to achieve their desired policy goals. For instance, some Members might propose changing the benefit formula to provide larger benefits and help offset some increase in the associated program costs with a relatively modest payroll tax increase. Others might propose a package of cost-reduction and revenue-increasing measures to help avoid the projected funding shortfall that may include decreased benefits for lifetime high earners and a relatively high payroll tax increase. The past two chairs of the House Ways and Means Subcommittee on Social Security used the approach of combining numerous provisions into their bills. Then-Chair Johnson's proposal, the Social Security Reform Act of 2016 (H.R. 6489; 114th Congress), included 14 individual provisions that focused mainly on reducing program costs. Chair Larson's proposal, the Social Security 2100: A Sacred Trust (H.R. 5723; 117th Congress), includes 17 provisions that focused on both benefit adequacy and revenue increases.[65]

Table 13 presents an example of a combination of program changes that would result in higher benefits for all beneficiaries and a higher payroll tax for most workers. Under this scenario, the first replacement factor would increase to 93%, and the COLA calculations would use the CPI-E starting in 2024 (originally presented in **Table 5** and **Table 9**, respectively). To help pay for the increase in program cost, the employee payroll tax rate would increase by 0.1 percentage points each year from 2024 to 2035 (originally presented in **Table 11**).[66]

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[61] Dave Shoffner, *Distributional Effects of Raising the Social Security Payroll Tax*, SSA, April 2010, https://www.ssa.gov/policy/docs/policybriefs/pb2010-01.html.

[62] It can be argued that younger workers also have more to lose should the trust fund become depleted as they would experience more years of reduced benefits.

[63] The benefit-to-tax ratio is the lifetime present value of benefits divided by the lifetime present value of payroll taxes. It measures how much in benefits an individual received for every dollar of payroll taxes paid. See SSA, "Table User Guide—Modeling Income in the Near Term (MINT) 8," https://www.ssa.gov/policy/docs/projections/user-guide.html.

[64] See SSA, "Projected Effects of a Proposal to Increase Payroll Tax Rate," https://www.ssa.gov/policy/docs/projections/policy-options/increase-payroll-tax-rate.html.

[65] In December 2020, the Urban Institute published a report highlighting how each bill would affect the median annual Social Security benefits and provided some distribution analysis (Richard W. Johnson and Karen E. Smith, *Comparing Democratic and Republican Approaches to Fixing Social Security*, Urban Institute, December 2020, p. 15, https://www.urban.org/sites/default/files/publication/103288/comparing-democratic-and-republican-approaches-to-fixing-social-security_0.pdf).

[66] Lawmakers have a wide variety of options to address issues facing the Social Security program to strengthen either benefits or the program's finances. As such, there is an even larger number of *combinations* of options. The two combinations selected for this report are just two examples of such options. They were chosen to highlight the

The change in the first replacement factor and to the CPI-E combine to give a larger percent change in benefits than each change did individually. The combined effect is larger for the younger three cohorts because they receive the advantage of both (benefit-enhancing) changes, whereas the 1960 birth cohort would experience only higher COLAs. That is, some combinations of proposals can result in interactions among the individual provisions and can result in a larger (i.e., multiplicative) effect. However, the 1960 birth cohort would not be affected by the increase in the payroll tax rate.

variability in combinations of options and to demonstrate the capacity of CRS to estimate the effects of combinations of proposals on benefit and payroll tax measures across earnings levels and birth cohorts.

Table 13. Combination of Selected Program Changes: Change in Average Indexed Monthly Earnings (AIMEs), Primary Insurance Amounts (PIAs), Benefits at Age 70, Initial Replacement Rates, and Effective Tax Rates for Hypothetical Earners by Birth Cohort

Under Intermediate Assumptions with an Increase in First Replacement Factor from 90% to 93% for Those Becoming Eligible in 2024 and Later, a Change to Use Consumer Price Index for the Elderly (CPI-E) for Cost-of-Living Adjustments (COLAs) Starting in 2024, and a Gradual Increase in the Employee Payroll Tax Rate by 0.1 Percentage Point per Year Starting in 2024 Until 2035

	Very Low Earner	Low Earner	Medium Earner	High Earner	Maximum Earner
Birth Cohorts			**Percent Change in AIME**		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	0.0%	0.0%	0.0%	0.0%	0.0%
2000	0.0%	0.0%	0.0%	0.0%	0.0%
2020	0.0%	0.0%	0.0%	0.0%	0.0%
			Percent Change in PIA		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	3.2%	2.4%	1.5%	1.1%	0.9%
2000	3.2%	2.4%	1.5%	1.1%	0.9%
2020	3.2%	2.4%	1.5%	1.1%	0.9%
			Percent Change in Benefits at Age 70		
1960	1.4%	1.3%	1.4%	1.4%	1.4%
1980	4.8%	4.1%	3.1%	2.7%	2.5%
2000	4.8%	4.1%	3.1%	2.7%	2.5%
2020	4.8%	4.0%	3.1%	2.7%	2.5%
			Percentage Point Change in Initial Replacement Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	2.6	1.5	0.7	0.4	0.3
2000	2.6	1.5	0.7	0.4	0.3
2020	2.6	1.5	0.7	0.4	0.3
			Percentage Point Change in Effective Tax Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	0.6	0.6	0.6	0.6	0.5
2000	1.1	1.1	1.1	1.1	1.1
2020	1.2	1.2	1.2	1.2	1.2

Source: CRS calculations based on hypothetical earner profiles developed by SSA.

Note: Figures in the table reflect calculations for scheduled amounts under current law.

Table 14 presents an example of a combination of program changes that would reduce benefits for all earner groups (with larger effects for lifetime maximum earners) and birth cohorts and an increase in the payroll tax rate for all groups and cohorts (with larger effects for the 2020 cohort). Under this scenario, the third replacement factor would decrease from 15% to 5%, and the COLA calculations would use the C-CPI-U starting in 2024 (originally presented in **Table 6** and **Table**

10, respectively). To help raise revenues, this scenario uses the payroll tax increase presented in **Table 12**.

The change in the third replacement factor specifically targets the PIA of hypothetical high and maximum earners. Although earners at all levels would experience lower benefits at age 70 due to the change in COLA calculation (from CPI-W to C-CPI-U), the combination of lower PIA and lower COLAs would be more pronounced at the higher income levels.

Similar to the previous example, the combination shown in **Table 14** also shows how individual changes can interact to result in combined effects that are larger than changes taken on an individual basis. In this case, the decrease in the third replacement factor and the change in COLA calculation combine to lower benefits for high and maximum earners in the younger cohorts more than either change did on an individual basis.

Table 14. Combination of Selected Program Changes: Change in Average Indexed Monthly Earnings (AIMEs), Primary Insurance Amounts (PIAs), Benefits at Age 70, Initial Replacement Rates, and Effective Tax Rates for Hypothetical Earners by Birth Cohort

Under Intermediate Assumptions with a Decrease in the Third Replacement Factor from 15% to 5% for Those Becoming Eligible in 2024 or Later, a Change to Use Chained Consumer Price Index Wage and Salary Workers (C-CPI-U) for Cost-of-Living Adjustments (COLAs) Starting in 2024, and a Gradual Increase in the Employee Payroll Tax Rate by 0.075 Percentage Point per Year Starting in 2034 Until 2060

	Very Low Earner	Low Earner	Medium Earner	High Earner	Maximum Earner
Birth Cohorts			**Percent Change in AIME**		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	0.0%	0.0%	0.0%	0.0%	0.0%
2000	0.0%	0.0%	0.0%	0.0%	0.0%
2020	0.0%	0.0%	0.0%	0.0%	0.0%
			Percent Change in PIA		
1960	0.0%	0.0%	0.0%	0.0%	0.0%
1980	0.0%	0.0%	0.0%	-4.5%	-15.8%
2000	0.0%	0.0%	0.0%	-4.5%	-15.7%
2020	0.0%	0.0%	0.0%	-4.5%	-15.7%
			Percent Change in Benefits at Age 70		
1960	-2.1%	-2.0%	-2.0%	-2.0%	-2.0%
1980	-2.3%	-2.3%	-2.3%	-6.7%	-17.8%
2000	-2.3%	-2.3%	-2.3%	-6.7%	-17.6%
2020	-2.3%	-2.3%	-2.3%	-6.7%	-17.6%
			Percentage Point Change in the Initial Replacement Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	-1.7	-4.6
2000	0.0	0.0	0.0	-1.7	-4.6
2020	0.0	0.0	0.0	-1.7	-4.6
			Percentage Point Change in Effective Tax Rate		
1960	0.0	0.0	0.0	0.0	0.0
1980	0.1	0.1	0.1	0.1	0.1
2000	1.1	1.1	1.1	1.1	1.0
2020	1.9	1.9	1.9	1.9	1.8

Source: CRS calculations based on hypothetical earner profiles developed by SSA.

Note: Figures in the table reflect calculations for scheduled amounts under current law.

Appendix A. Estimated Characteristics of Hypothetical Workers

This report examines how changes in the benefit formula would affect AIMEs, PIAs, monthly benefits at age 70, initial replacement rates, and effective tax rates for a set of SSA-defined *hypothetical earners* in selected birth cohorts.[67] This appendix examines hypothetical earners' demographic and other characteristics based on SSA analysis of administrative records and CRS analysis of cross-sectional data from the 2019 American Community Survey (ACS), a large-scale nationally representative household survey. These analyses reveal that some demographic groups are more concentrated in certain hypothetical worker groups than in others, suggesting that the effects of certain benefit formula changes may not be experienced uniformly by workers with a different gender, race, or ethnicity.

Gender Distribution of Retiring Workers over SSA's Hypothetical Earners Categories

SSA publishes the distribution of women and men retiring in the 2015-2020 period across its hypothetical earner categories (**Table A-1**) based on data for *actual workers* from a sample of Social Security administrative records.[68] In the SSA analysis, the hypothetical medium-scaled worker retiring at age 62 in 2020 had career average annual earnings of $53,892 (in 2019 dollars). Of actual workers retiring in the 2015-2020 period, 56.2% had AIMEs less than that of the hypothetical medium earner (who had $53,892 in career-average earnings).

The SSA analysis indicates that, of workers retiring in the 2015-2020 period, larger shares of men were in the higher earnings groups and larger shares of women were in the lower groups. This might suggest that benefit formula changes (such as an increase in the first PIA replacement factor) that would raise benefits for lower earners relative to higher earners may contribute to a narrowing of the gender gap in income security during retirement. Among actual workers retiring in the 2015-2020 period, 70.6% of retiring women and 42.3% of retiring men had AIMEs less than the hypothetical medium earner.

[67] As discussed in the "Hypothetical Earners" section of the report, initial values for these amounts and rates (i.e., before benefit formula changes) and their values under various scenarios considered in the report are based on the estimated career earnings profiles of hypothetical earners using SSA-developed methods. The SSA hypothetical earner profiles are created such that selected career-average estimated earnings are 25%, 45%, 100%, and 160% of AWI in the year prior to entitlement for very low, low, medium, and high earners, respectively. A fifth category of hypothetical earner (maximum hypothetical earner) is assumed to earn at least the taxable maximum in each year from age 21 to age 64.

[68] Specifically, the data describe actual workers who retired in 2015-2020 and are from a 1% sample of Social Security administrative records.

Table A-1. Distribution of Average-Indexed Monthly Earnings (AIMEs) of Actual Workers Retiring in Years 2015-2020, Relative to AIMEs for Hypothetical Workers Retiring in 2020

	Hypothetical Worker[a] (Career-Average Earnings)[b]				
Percent with AIME Less Than AIME for Hypothetical Case	Very Low **($13,473)**	Low **($24,252)**	Medium **($53,892)**	High **($86,228)**	Maximum **($132,868)**
All Males	7.8%	16.3%	42.3%	71.4%	100.0%
All Females	15.8%	32.0%	70.6%	91.5%	100.0%
All Workers	11.8%	24.0%	56.2%	81.2%	100.0%

Source: OCACT, *Scaled Factors for Hypothetical Earnings Examples Under the 2021 Trustees Report Assumptions*, August 2021, Table 1, https://www.ssa.gov/OACT/NOTES/ran3/an2021-3.pdf.

Notes: Worker distributions include individuals who are dually entitled or may become dually entitled to higher benefits in the future based on other workers' earnings records. For more information on dual entitlement, see CRS In Focus IF10738, *Social Security Dual Entitlement*.

a. A hypothetical worker is assumed to have a long and consistent career with earnings at each age from 21 through age 64.

b. Career-average earnings of hypothetical scaled workers retiring at age 62 in 2020. Earnings are wage-indexed to 2019 in this calculation.

CRS Estimates of Hypothetical Earner Characteristics in 2019

This section expands upon the SSA analysis of earners' characteristics (i.e., distribution of workers by gender as shown in **Table A-1**) to examine additional demographic and other information using data from the 2019 ACS. In addition to demographic data (e.g., age, gender, race), ACS data contains information on employment (e.g., employment status, usual weekly hours, annual weeks of work, and annual earnings) and family characteristics (e.g., poverty status). The 2019 ACS data are used to describe the distribution of workers in that year over the set of hypothetical earner groups defined by SSA and the characteristics of workers within those earner groups.[69]

It is critical to note that CRS analysis of hypothetical workers in ACS data is not directly comparable to SSA analysis of retiring workers in its administrative records for several reasons. CRS analysis uses SSA-defined parameters and concepts to sort workers in the ACS data into hypothetical worker groups but uses a different type of data and different sample criteria. Notably, ACS data are cross-sectional—that is, workers of different ages are observed in only one year, whereas SSA had access to workers' career earnings (i.e., earnings over multiple years for the same workers). SSA compared career earnings of retiring workers to career average earnings of hypothetical workers. CRS does not have access to such longitudinal data and instead assigns workers between the ages of 25 and 62 to SSA hypothetical earner categories using SSA's age-specific scaling factors. For example, based on SSA methods, a worker who is age 25 in 2019

[69] Census Bureau information about the ACS is at https://www.census.gov/programs-surveys/acs/about.html. CRS used the public use microdata sample data, which includes a subsample (approximately two-thirds of responses collected in a given calendar years) of the full ACS microdata. The ACS public use files contain information from about 1% of the U.S. population in each survey year. CRS downloaded selected variables from the public use microdata sample from the IPUMS-USA database on February 24, 2022. For more information, see Steven Ruggles et al., IPUMS USA: Version 11.0 [dataset]. Minneapolis, MN: IPUMS, 2021, https://doi.org/10.18128/D010.V11.0.

with annual earnings of about $8,124 would be categorized as a very low earner, whereas a worker with earnings of $51,297 would be categorized as a high earner. A worker who is age 46 in 2019 with annual earnings of about $14,801 ($94,604) would be categorized as a very low earner (high earner). A potential drawback of these methods is that they overlook the potential for workers to "jump" career paths, such that a worker who meets the SSA threshold for a very low earner (high earner) at age 25 in 2019 may over time increase (decrease) earnings such that he or she would be moved to a higher (lower) hypothetical earner category as her career progresses.

In addition, SSA data contains information on *covered earnings*, while ACS data describe wage and salary income, a potentially broader concept.[70] CRS analysis is limited to persons between the ages of 25 and 62 who were employed at the time of the survey and reported earnings in the 12 months preceding the survey interview.[71]

Despite data differences, the overall distribution of workers and the distribution of employed men and women in 2019 (**Table A-2**, based on ACS data) is similar to those calculated by SSA based on administrative records for workers retiring in the 2015-2020 period.[72] In particular, ACS data indicate that larger shares of men were in the higher earnings groups and large shares of women were in the lower earnings groups in 2019. The distribution of workers also varied by race, Hispanic ethnicity, and educational attainment. White, Asian, and non-Hispanic workers were more concentrated in higher income groups, whereas Black and Hispanic workers were concentrated in lower earnings groups. For example, about 30% of Black workers had earnings above the medium earner threshold, whereas about 54% of Asian workers and 45% of White workers had earnings in the top earnings groups. Workers who had completed at least a bachelor's degree were considerably more concentrated in the higher earner groups relative to those without bachelor's degrees.

[70] ACS wage and salary income includes wages, salary, Armed Forces pay, commissions, tips, piece-rate payments, and cash bonuses earned before deductions (e.g., for taxes, pensions, union dues). Census Bureau, *ACS 2019 Subject Definitions*, https://www2.census.gov/programs-surveys/acs/tech_docs/subject_definitions/2019_ACSSubjectDefinitions.pdf.

[71] Workers younger than age 25 are not included because CRS analysis includes the distribution of workers by highest level of educational attainment. Age 25 was selected as a cutoff to allow the distribution of workers with bachelor's degrees to include those old enough to complete the degrees.

[72] As a sensitivity check, CRS limited analysis to workers in the ACS sample who were ages 57-62 at the time of the interview and calculated their distribution over the SSA hypothetical earners categories. The patterns were similar to those produced by analysis of the full ACS sample: Women were more concentrated in then lower earning group than were men. For example, in the restricted sample, 11.5% of women and 5.5% of men were in the very low earner group, and 83.3% of women and 66.4% of men had earnings at or below the high earner threshold (i.e., 16.7% of women and 33.6% of men had earnings above the high earner threshold).

Table A-2. Cumulative Distribution of Selected Worker Groups over SSA Hypothetical Earner Categories in 2019

	Hypothetical Earner Category				
	Very Low	**Low**	**Medium**	**High**	**Maximum**
Overall	8.6%	20.4%	57.2%	80.0%	100.0%
Female	11.7%	26.6%	65.5%	86.3%	100.0%
Male	5.8%	14.8%	49.6%	74.4%	100.0%
Black	10.9%	26.4%	70.1%	89.8%	100.0%
Asian	8.2%	19.1%	46.7%	66.8%	100.0%
White	8.0%	18.7%	54.5%	78.6%	100.0%
Non-Hispanic	8.3%	18.8%	54.1%	78.0%	100.0%
Hispanic	10.1%	27.8%	71.8%	89.8%	100.0%
Less Than an Bachelor's Degree	10.8%	26.7%	71.5%	91.0%	100.0%
Bachelor's Degree or Higher Education	5.2%	10.8%	35.4%	63.4%	100.0%

Source: CRS calculations using ACS data. Hypothetical earnings groups are defined by applying age-specific SSA scaled factors to the AWI in 2019 ($54,099.99).

Notes: All incomes above the maximum (taxable) earnings level of $132,868 (2019) are included in the maximum earner category. The sample comprises individuals who were ages 25-62, were employed at the time of the survey, and reported wage and salary earnings over the 12 months that preceded the survey interview.

Table A-3 presents estimated characteristics of workers in 2019 in each hypothetical worker category. Worker groups in this table are non-overlapping. The earnings span for each group is bounded above by the age-specific earnings threshold for the given group and bounded below by the earnings threshold for the next lower group. (For example, workers are placed in the low workers group if they reported earnings of at least $1 above the age-specific earnings for the *very low* earner group and earnings of no more than the age-specific earnings threshold for the *low* earner group.) The table includes one additional hypothetical earner category called *maximum plus*, which contains workers with earnings above the taxable maximum.

When compared to all workers in the sample (last column in **Table A-3**), a relatively high share of women, Black workers, and Hispanic workers are in the lowest earnings categories. Similarly, a relatively high share of workers without a bachelor's degree are in the lowest earnings categories. Workers in lower earnings groups had lower work hours and were more likely to work less than 27 weeks per year than workers in the higher earnings group were.[73] Workers in the highest earnings groups were predominantly covered by health insurance policies offered by an employer or union, whereas such coverage rates for lower earners were below the overall rate. Lower earners were in households and families with lower incomes and greater use of public assistance and were more likely to reside in non-metro areas.

[73] The data suggest that a significant group of workers who are retired from career jobs but working in bridge employment in 2019 may be in the very low earners groups. For example, this group reported higher average retirement earnings than those in the low earners group. This may also partially explain why workers in the very low earner group had higher shares of college degree holders than workers in the low earners group did.

Table A-3. Selected Characteristics of Workers in 2019 by Hypothetical Earners Categories

	Very Low	Low	Medium	High	Maximum	Maximum Plus	Total
			Demographic and Characteristics				
Mean age (in years)	42.4	42.8	41.8	42.0	42.2	46.6	42.4
Share of workers who are:							
Female	65%	60%	50%	43%	36%	27%	48%
White	68%	65%	70%	76%	77%	79%	72%
Black	16%	16%	15%	11%	7%	5%	12%
Hispanic (can be of any race)	21%	26%	21%	14%	10%	7%	18%
Married	49%	48%	52%	61%	65%	78%	57%
Educational Attainment (share of workers)							
Less than a bachelor's degree	75.9%	81.4%	73.4%	51.4%	32.6%	17.4%	60.3%
Bachelor's degree or higher	24.1%	18.6%	26.6%	48.6%	67.4%	82.6%	39.7%
			Employment Characteristics				
Mean usual hours worked per week	28.2	36.3	41.1	43.7	44.9	47.7	41.0
Weeks worked in the last 12 months (share of workers)							
1 to 26 weeks	29.1%	5.2%	1.5%	0.8%	0.6%	0.6%	4.0%
27 to 52 weeks	70.9%	94.8%	98.5%	99.2%	99.4%	99.4%	96.0%
Health insurance coverage through an employer or union	42%	51%	74%	87%	90%	91%	75%
			Household Characteristics, Family Characteristics, and Resources				
Median Individual wage and salary income	$7,500	$19,200	$36,000	$65,000	$100,000	$180,000	$45,000
Median total household income	$50,300	$55,300	$77,000	$110,000	$149,000	$261,200	$96,200
Share of workers							
Family income within 200% of the poverty threshold	54%	49%	16%	1%	0%	0%	17%
Family receives Supplemental Nutrition Assistance Program benefits	21%	16%	8%	3%	2%	1%	8%
Resides in non-metro area	8%	9%	8%	6%	4%	2%	7%
Estimated population (in thousands)	10,217	14,024	43,739	27,149	15,156	8,553	118,837

Source: CRS calculations using ACS data. Hypothetical earnings groups are defined by applying age-specific SSA scaled factors to the AWI in 2019 ($54,099.99).

Notes: Groups are mutually exclusive and are bounded from above by the age-specific income level used to define the SSA hypothetical earner groups and below by the age-specific income level (plus one dollar) used to define the next lowest hypothetical earner group.

Appendix B. Historical and Projected Parameters Used in Baseline Benefit Calculations

Table B-1. Historical and Projected Social Security Program Factors Used in Baseline Benefit Calculations (1981-2090)

Projected Parameters Under the 2021 Intermediate Assumptions Are in **Bold**

Year	Average Wage Index (AWI)	AWI Annual Change	Cost-of-Living Adjustment (COLA)	Contribution and Benefit Base (Taxable Maximum)	First Primary Insurance Amount (PIA) Bend Point	Second Primary Insurance Amount (PIA) Bend Point	Employee Payroll Tax Rate
1981	$13,773.10	10.07%	14.3%	$29,700	$211	$1,274	5.35%
1982	14,531.34	5.51	11.2	32,400	230	1,388	5.40
1983	15,239.24	4.87	7.4	35,700	254	1,528	5.40
1984	16,135.07	5.88	3.5	37,800	267	1,612	5.70
1985	16,822.51	4.26	3.5	39,600	280	1,691	5.70
1986	17,321.82	2.97	3.1	42,000	297	1,790	5.70
1987	18,426.51	6.38	1.3	43,800	310	1,866	5.70
1988	19,334.04	4.93	4.2	45,000	319	1,922	6.06
1989	20,099.55	3.96	4.0	48,000	339	2,044	6.06
1990	21,027.98	4.62	4.7	51,300	356	2,145	6.20
1991	21,811.60	3.73	5.4	53,400	370	2,230	6.20
1992	22,935.42	5.15	3.7	55,500	387	2,333	6.20
1993	23,132.67	0.86	3.0	57,600	401	2,420	6.20
1994	23,753.53	2.68	2.6	60,600	422	2,545	6.20
1995	24,705.66	4.01	2.8	61,200	426	2,567	6.20
1996	25,913.90	4.89	2.6	62,700	437	2,635	6.20
1997	27,426.00	5.84	2.9	65,400	455	2,741	6.20
1998	28,861.44	5.23	2.1	68,400	477	2,875	6.20
1999	30,469.84	5.57	1.3	72,600	505	3,043	6.20
2000	32,154.82	5.53	2.5	76,200	531	3,202	6.20
2001	32,921.92	2.39	3.5	80,400	561	3,381	6.20
2002	33,252.09	1.00	2.6	84,900	592	3,567	6.20
2003	34,064.95	2.44	1.4	87,000	606	3,653	6.20
2004	35,648.55	4.65	2.1	87,900	612	3,689	6.20
2005	36,952.94	3.66	2.7	90,000	627	3,779	6.20
2006	38,651.41	4.60	4.1	94,200	656	3,955	6.20
2007	40,405.48	4.54	3.3	97,500	680	4,100	6.20
2008	41,334.97	2.30	2.3	102,000	711	4,288	6.20
2009	40,711.61	-1.51	5.8	106,800	744	4,483	6.20
2010	41,673.83	2.36	0.0	106,800	761	4,586	6.20

Year	Average Wage Index (AWI)	AWI Annual Change	Cost-of-Living Adjustment (COLA)	Contribution and Benefit Base (Taxable Maximum)	First Primary Insurance Amount (PIA) Bend Point	Second Primary Insurance Amount (PIA) Bend Point	Employee Payroll Tax Rate
2011	42,979.61	3.13	0.0	106,800	749	4,517	4.20
2012	44,321.67	3.12	3.6	110,100	767	4,624	4.20
2013	44,888.16	1.28	1.7	113,700	791	4,768	6.20
2014	46,481.52	3.55	1.5	117,000	816	4,917	6.20
2015	48,098.63	3.48	1.7	118,500	826	4,980	6.20
2016	48,642.15	1.13	0.0	118,500	856	5,157	6.20
2017	50,321.89	3.45	0.3	127,200	885	5,336	6.20
2018	52,145.80	3.62	2.0	128,400	895	5,397	6.20
2019	54,099.99	3.75	2.8	132,900	926	5,583	6.20
2020	55,628.60	2.83	1.6	137,700	960	5,785	6.20
2021	**59,064.67**	**6.30**	1.3	142,800	996	6,002	6.20
2022	**61,600.90**	**4.30**	5.9	147,000	1,024	6,172	6.20
2023	**63,849.67**	**3.70**	**2.4**	**156,000**	**1,087**	**6,553**	6.20
2024	**66,000.86**	**3.40**	**2.4**	**162,900**	**1,134**	**6,834**	6.20
2025	**68,383.15**	**3.60**	**2.4**	**168,600**	**1,175**	**7,084**	6.20
2026	**70,873.78**	**3.60**	**2.4**	**174,300**	**1,215**	**7,323**	6.20
2027	**73,475.22**	**3.70**	**2.4**	**180,300**	**1,259**	**7,587**	6.20
2028	**76,170.31**	**3.70**	**2.4**	**187,200**	**1,304**	**7,863**	6.20
2029	**78,951.37**	**3.70**	**2.4**	**194,100**	**1,352**	**8,152**	6.20
2030	**81,801.34**	**3.60**	**2.4**	**201,300**	**1,402**	**8,451**	6.20
2031	**84,770.73**	**3.63**	**2.4**	**208,800**	**1,453**	**8,763**	6.20
2032	**87,856.38**	**3.64**	**2.4**	**216,300**	**1,505**	**9,078**	6.20
2033	**91,071.93**	**3.66**	**2.4**	**224,100**	**1,559**	**9,407**	6.20
2034	**94,396.05**	**3.65**	**2.4**	**232,200**	**1,615**	**9,749**	6.20
2035	**97,832.07**	**3.64**	**2.4**	**240,600**	**1,674**	**10,105**	6.20
2036	**101,383.37**	**3.63**	**2.4**	**249,300**	**1,735**	**10,473**	6.20
2037	**105,063.59**	**3.63**	**2.4**	**258,300**	**1,798**	**10,854**	6.20
2038	**108,856.38**	**3.61**	**2.4**	**267,600**	**1,863**	**11,248**	6.20
2039	**112,786.10**	**3.61**	**2.4**	**277,200**	**1,930**	**11,656**	6.20
2040	**116,835.12**	**3.59**	**2.4**	**287,100**	**1,999**	**12,076**	6.20
2041	**120,982.77**	**3.55**	**2.4**	**297,600**	**2,071**	**12,511**	6.20
2042	**125,229.26**	**3.51**	**2.4**	**308,400**	**2,145**	**12,960**	6.20
2043	**129,612.29**	**3.50**	**2.4**	**319,200**	**2,221**	**13,420**	6.20
2044	**134,148.72**	**3.50**	**2.4**	**330,300**	**2,298**	**13,891**	6.20
2045	**138,830.51**	**3.49**	**2.4**	**342,000**	**2,378**	**14,377**	6.20
2046	**143,661.81**	**3.48**	**2.4**	**354,000**	**2,461**	**14,880**	6.20

Year	Average Wage Index (AWI)	AWI Annual Change	Cost-of-Living Adjustment (COLA)	Contribution and Benefit Base (Taxable Maximum)	First Primary Insurance Amount (PIA) Bend Point	Second Primary Insurance Amount (PIA) Bend Point	Employee Payroll Tax Rate
2047	**148,646.87**	**3.47**	**2.4**	**366,300**	**2,546**	**15,399**	6.20
2048	**153,834.65**	**3.49**	**2.4**	**378,900**	**2,634**	**15,934**	6.20
2049	**159,234.25**	**3.51**	**2.4**	**392,100**	**2,725**	**16,486**	6.20
2050	**164,839.29**	**3.52**	**2.4**	**405,900**	**2,820**	**17,061**	6.20
2051	**170,658.12**	**3.53**	**2.4**	**420,000**	**2,918**	**17,659**	6.20
2052	**176,682.35**	**3.53**	**2.4**	**434,700**	**3,020**	**18,280**	6.20
2053	**182,901.57**	**3.52**	**2.4**	**450,000**	**3,126**	**18,925**	6.20
2054	**189,339.70**	**3.52**	**2.4**	**465,900**	**3,236**	**19,593**	6.20
2055	**196,004.46**	**3.52**	**2.4**	**482,400**	**3,349**	**20,282**	6.20
2056	**202,923.42**	**3.53**	**2.4**	**499,500**	**3,466**	**20,995**	6.20
2057	**210,106.91**	**3.54**	**2.4**	**517,200**	**3,588**	**21,734**	6.20
2058	**217,565.70**	**3.55**	**2.4**	**535,500**	**3,714**	**22,501**	6.20
2059	**225,311.04**	**3.56**	**2.4**	**554,400**	**3,845**	**23,297**	6.20
2060	**233,332.12**	**3.56**	**2.4**	**574,200**	**3,981**	**24,124**	6.20
2061	**241,638.74**	**3.56**	**2.4**	**594,600**	**4,122**	**24,982**	6.20
2062	**250,241.08**	**3.56**	**2.4**	**615,900**	**4,268**	**25,871**	6.20
2063	**259,149.66**	**3.56**	**2.4**	**637,800**	**4,419**	**26,792**	6.20
2064	**268,375.39**	**3.56**	**2.4**	**660,600**	**4,576**	**27,745**	6.20
2065	**277,929.55**	**3.56**	**2.4**	**684,000**	**4,738**	**28,732**	6.20
2066	**287,823.84**	**3.56**	**2.4**	**708,300**	**4,906**	**29,754**	6.20
2067	**298,070.37**	**3.56**	**2.4**	**733,500**	**5,080**	**30,813**	6.20
2068	**308,681.68**	**3.56**	**2.4**	**759,600**	**5,260**	**31,909**	6.20
2069	**319,670.75**	**3.56**	**2.4**	**786,600**	**5,447**	**33,044**	6.20
2070	**331,051.02**	**3.56**	**2.4**	**814,500**	**5,640**	**34,220**	6.20
2071	**342,836.44**	**3.56**	**2.4**	**843,600**	**5,840**	**35,438**	6.20
2072	**355,007.13**	**3.55**	**2.4**	**873,600**	**6,047**	**36,699**	6.20
2073	**367,609.89**	**3.55**	**2.4**	**904,800**	**6,262**	**38,005**	6.20
2074	**380,660.04**	**3.55**	**2.4**	**936,900**	**6,484**	**39,354**	6.20
2075	**394,135.40**	**3.54**	**2.4**	**970,200**	**6,714**	**40,751**	6.20
2076	**408,087.80**	**3.54**	**2.4**	**1,004,700**	**6,952**	**42,197**	6.20
2077	**422,534.11**	**3.54**	**2.4**	**1,040,400**	**7,198**	**43,690**	6.20
2078	**437,491.81**	**3.54**	**2.4**	**1,077,300**	**7,452**	**45,236**	6.20
2079	**452,935.27**	**3.53**	**2.4**	**1,115,400**	**7,715**	**46,837**	6.20
2080	**468,923.89**	**3.53**	**2.4**	**1,155,000**	**7,988**	**48,495**	6.20
2081	**485,476.90**	**3.53**	**2.4**	**1,195,800**	**8,269**	**50,206**	6.20
2082	**502,614.24**	**3.53**	**2.4**	**1,238,100**	**8,560**	**51,978**	6.20
2083	**520,306.26**	**3.52**	**2.4**	**1,281,900**	**8,862**	**53,812**	6.20

Year	Average Wage Index (AWI)	AWI Annual Change	Cost-of-Living Adjustment (COLA)	Contribution and Benefit Base (Taxable Maximum)	First Primary Insurance Amount (PIA) Bend Point	Second Primary Insurance Amount (PIA) Bend Point	Employee Payroll Tax Rate
2084	**538,621.04**	**3.52**	**2.4**	**1,327,200**	**9,174**	**55,711**	6.20
2085	**557,634.36**	**3.53**	**2.4**	**1,374,000**	**9,496**	**57,672**	6.20
2086	**577,374.62**	**3.54**	**2.4**	**1,422,300**	**9,830**	**59,702**	6.20
2087	**597,813.68**	**3.54**	**2.4**	**1,472,400**	**10,176**	**61,809**	6.20
2088	**618,976.28**	**3.54**	**2.4**	**1,524,600**	**10,536**	**63,997**	6.20
2089	**640,888.04**	**3.54**	**2.4**	**1,578,600**	**10,908**	**66,262**	6.20
2090	**663,575.48**	**3.54**	**2.4**	**1,634,400**	**11,294**	**68,607**	6.20

Source: OCACT, *The 2021Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*, August 31, 2021, https://www.ssa.gov/OACT/TR/2021/tr2021.pdf. Historical and projected AWI values can be found in Table V.C1. Annual and projected changes in the AWI can be found in Table V.B1. Annual and projected COLAs can be found in Table V.C1 and V.B1. Historical and projected values for the contribution and benefit base and PIA bend points can be found in Table V.C2. (Values outside the projection period are calculated using the projected annual change in AWI in Table V.B1.)

Notes: Under current law, the employee payroll tax rate is set at 6.2% (26 U.S.C. §3103(a) and 26 U.S.C. §3111(a)). The employee tax rate will not change without congressional action. P.L. 111-312 and P.L. 112-96 reduced the employee tax rate by 2 percentage points for 2011 and 2012.

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