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INDIVIDUAL EQUITY AND SOCIAL ADEQUACY IN THE U.S. SOCIAL SECURITY SYSTEM

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Contents

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Introduction and Purpose of this Monograph

The Old Age, Survivors and Disability Insurance (OASDI) program, commonly known as Social Security, is a social insurance program funded by a tax on the earnings of covered workers split equally between employers and employees (with the self-employed paying both the employer and employee portions). Social Security provides monthly income to retired and disabled workers and eligible family members and survivors. Social Security taxes and benefits are described below.

From its inception, Social Security has included elements of individual equity and social adequacy. In this context,

- **Individual equity** refers to the degree to which covered workers' benefits are related to the workers' contributions to the program, a relationship that varies by income level.
- **Social adequacy** refers to the degree to which benefits of covered workers and eligible family members and survivors meet their deemed financial needs—beneficiaries defined in the law do not need to demonstrate financial need to receive their full scheduled benefits.

These dual principles provide the foundation on which the program has been built. The basis upon which these principles are established is explored in greater depth below.

Overview of Social Security's Financial Status

Each year, the Social Security trustees publish a report showing the estimated financial status of the program over the next 75 years. Social Security comprises separate programs for Old Age and Survivors Insurance (OASI) benefits and for Disability Insurance (DI) benefits, and the trustees' annual report includes results for each separately and for both combined. According to the 2023 Trustees Report, the current trust fund balance plus projected income for the combined OASDI program will fall short of projected expenses over the 75-year valuation period, using the trustees' intermediate assumptions. (See the Academy's issue brief *An Actuarial Perspective on the 2023 Social Security Trustees Report*.)

The OASI Trust Fund accounts for the entire long-term deficit, as the DI Trust Fund is projected to remain solvent through the valuation period. This monograph focuses on the benefits payable from the OASI Trust Fund, which includes all benefits except those paid to disabled workers and their dependents.

The OASI Trust Fund reserves are currently projected to be drawn down to zero in 2033; from that point, income from the OASI portion of the Social Security payroll tax and other sources will be sufficient to pay 77% of scheduled OASI benefits, declining to 71% by 2097, the last year of the valuation period. Remedying this actuarial imbalance may require increasing the combined employer and employee OASI payroll tax, reducing promised benefits, or some combination of tax increases and benefit reductions.

Office of the Chief Actuary Analysis of Reform Proposals

Some members of Congress, government commissions, and public policy think tanks have put forward a wide variety of proposals to bring Social Security back into actuarial balance. The Office of the Chief Actuary of the Social Security Administration (OCACT) has provided actuarial analyses of many of these proposals showing the estimated effect on the financial status of the program, levels of future benefits and taxes, and implications for the federal budget. These analyses are provided in letters to the originators of the proposals, which can be found on the OCACT website.[1]

Each letter includes a summary of the provisions included in the proposal; a detailed explanation of how the provisions were interpreted for purposes of the analysis; graphs showing the long-range financial effects of the proposal; tables showing these financial effects in greater detail, including a breakdown of the effects of the individual provisions; and tables showing the effect of the proposal on the benefits of hypothetical workers at a range of ages and with different earnings patterns at retirement at age 65 and at 10-year age intervals thereafter. The OCACT letters provide objective and comprehensive analyses of major Social Security reform proposals. Members of Congress and their staffs use these analyses to help develop formal legislative proposals or further develop proposals based on prior legislation.

1 Office of the Chief Actuary's Estimates of Proposals to Change the Social Security Program or the SSI Program.

Purpose of this Monograph

Given the complexity of the Social Security program and the technical nature of the OCACT analyses under which members of Congress formulate legislation, it can be difficult for the public to make informed judgments on these proposals. The Social Security Committee of the American Academy of Actuaries (the committee) has prepared this monograph to provide the public and public policymakers with a more accessible analysis of a sample of proposals that incorporate commonly discussed reform provisions, with an emphasis on how each proposal would affect the balance between individual equity and social adequacy compared to the current benefit and tax schedule. This analysis is summarized in a series of graphs at the end of the monograph. Much of the following material explains how these graphs are constructed and how they should be interpreted. The committee hopes that this analysis will provide useful information on the merits of the proposals.

The Principles of Individual Equity and Social Adequacy

Individual Equity

Three features of Social Security incorporate the principle of **individual equity**:

- Benefits are paid regardless of need.
- Payroll tax rates are a flat percentage of income up to a maximum annual amount ($160,200 in 2023), so that workers at all income levels pay the same rate.
- Benefits are determined by a formula that provides higher amounts for workers who have contributed more to the program.

These three features are sometimes characterized by the terms "universality" and "earned right." Universality means that Social Security covers nearly all workers, across the entire earnings spectrum and everyone contributes toward those benefits at the same rate. The fact that even the very wealthy receive Social Security helps prevent benefits to the less well off from being stigmatized as welfare payments. Earned right means that a worker's entitlement to a Social Security benefit derives from the worker's employment and from the payroll taxes paid on earnings rather than from financial need. Together, the concepts of universality and an earned right to a benefit distinguish the program from needs-based programs such as Medicaid and SNAP (Supplemental Nutrition Assistance Program, formerly known as Food Stamps), thereby contributing to more widespread and enduring public support for Social Security.

Social Adequacy

Social Security adheres to the principle of **social adequacy** in the following ways:

- Replaces a portion of a worker's income from employment when the worker either retires due to age or is deemed unable to work due to a qualified disability.
- Pays benefits to others previously dependent on the worker's employment income, such as the worker's spouse and, in some circumstances, children and parents, both while the worker is still living and after the worker has died, provided the beneficiary is not eligible for higher benefits based on his or her earnings history.
- Replaces a higher portion of pre-retirement income for lower-income workers and their dependents than for higher-income workers and their dependents.
- Provides a minimum benefit for certain workers whose benefits under the regular formula are deemed inadequate, although the minimum seldom applies.
- These social adequacy features further the essential goal of providing a floor of protection for covered workers and their eligible family members against the contingencies of old age and premature death and disability.

The Trade-off Between Individual Equity and Social Adequacy

Both individual equity and social adequacy are essential to the success of Social Security, by sustaining public support, and by providing a minimum level of income for covered workers and eligible family members. The mix of features that make up the program represents a trade-off between the principles of individual equity and social adequacy. The resulting balance has changed as the program has evolved. For example, spouse, survivor, and disability benefits, as well as benefits for non-spouse family members, were added and expanded at various times over Social Security's history. The last amendment to the Social Security Act that resulted in a material benefit change was adopted in 1983. There is no theoretically correct balance between individual equity and social adequacy in Social Security. The current mix is the product of many legislative compromises that are incorporated into the current version of the Social Security Act.

Criteria for Selecting Proposals

The committee applied three criteria when choosing which proposals to include in this monograph:

- The committee chose only proposals under which the current trust fund balance plus future income is projected to be sufficient to cover expenses over the 75-year valuation period and beyond. Some proposals include changes that only extend the projected trust fund depletion date without removing the entire long-term deficit, with the expectation that further changes will be adopted well before the new depletion date. When the program has a long-term deficit, benefits in excess of the level supportable by projected income must be funded by some combination of larger tax increases or greater benefit cuts in the future. Put another way, maintaining a long-term deficit acts as a subsidy that allows for higher current benefit payments, making a proposal look more favorable than it actually is. Variations in the degree of subsidy from one proposal to the next would make the proposals difficult to compare, hindering the committee's ability to provide a meaningful analysis.
- The committee chose only proposals that preserve the current defined benefit structure of the program. This criterion removed from consideration proposals that divert a portion of payroll tax revenue to individual accounts, and proposals that fund a portion of the program by taxing non-wage income or drawing on general revenue. The former would tip the current balance between individual equity and social adequacy toward individual equity, because individual accounts represent individual equity in its purest form; while the latter would tip that balance away from individual equity, by weakening the perception of benefits as an earned right and strengthening the perception of benefits as a transfer of wealth from high- to low-income workers.
- The committee chose proposals that are ideologically distinct. The three proposals chosen are :
    - Bipartisan Policy Center Commission on Retirement Security and Personal Savings, October 2016.
    - Former U.S. Rep. Sam Johnson (then-chair of the House Social Security Subcommittee), H. R. 6489, December 2016.
    - U.S. Rep. John Larson (current ranking member and former chair of the House Social Security Subcommittee) and U.S. Sens. Richard Blumenthal and Chris Van Hollen, January 2019. (Rep. Larson's more recent proposals, introduced in October 2021 and July 2023, were not selected because they do not eliminate the 75-year deficit and thus do not meet the committee's criteria.)

Methodology and Assumptions

The Model

This analysis uses a simplified model for calculating Social Security benefits and contributions for a sample of workers in various age and earnings history groups developed by the committee. Much of what follows describes how the model simplifies, and in some cases ignores, certain features of the program. Nevertheless, the committee has validated its results by comparing them to results from the more sophisticated model developed and used by OCACT, finding close agreement.

Selection of Representative Workers

Workers covered by Social Security belong to families that vary in size and in the number of family members in the labor force. Workers have a wide range of earnings histories. They have different current ages, they retire at different ages, and they receive benefits after retirement for different periods. Some die or become disabled before retirement. Thus, there is no typical worker, and no small sample of representative workers can encompass all possible circumstances. Nevertheless, changes to Social Security usually affect broad categories of workers similarly. This makes it possible to illustrate the effects of changes with a manageable sample of representative workers. The sample we selected for modeling comprises workers born in 1960, 1975, and 1995, with benefit commencement at ages 62, 67, and 70. Their ages in 2023 are 63, 48, and 28, thus showing the impact of the various proposals on three generations of workers.

A worker's current age and benefit commencement age are both important factors in determining the worker's benefit amount for the following reasons:

- Non-disabled workers may begin receiving benefits as early as age 62. The full formula benefit is paid to workers who begin receiving benefits at the normal retirement age (NRA), which has increased over time to age 67 for workers born in 1960 or later. Benefits are reduced by 5/9 percent per month for the first 36 months and 5/12 percent per month for each additional month (up to 24 months) that the benefit commencement age precedes the NRA. Benefits are increased by 2/3 percent per month up to age 70 for each month the benefit commencement age is delayed beyond the NRA (maximum 36 months). Therefore, benefits commencing at age 62 would be reduced by 30 percent, and benefits commencing at age 70 would be increased by 24 percent, compared to the benefit amount commencing at age 67, the NRA.

- Many proposals would phase in changes over time, so that the changes would have a lesser effect on older workers who will retire in the near future than on younger workers who will not retire until the changes are fully phased in.
- Under the current program with no changes, OCACT projects (under the intermediate assumptions) that OASI Trust Fund reserves will be depleted in 2033, at which time benefits would have to be reduced by 23 percent to bring trust fund expenses into line with income. This benefit reduction will affect all benefit payments for workers who commence old age benefits in 2033 or later, but workers whose benefits commence earlier will receive their full formula benefits until 2033.
- The formula for calculating initial benefits at retirement is adjusted over time so that benefits increase at the same rate as increases in the national average wage (NAW), which reflects both increases in the cost of living, as measured by the consumer price index (CPI) and increases in real wages that exceed increases in the CPI. Thus, initial benefits incorporate improvements in living standards during a worker's career. After commencement, benefits are adjusted to reflect only increases in the cost of living, and do not reflect any further increases in real wages. Increases in the NAW historically have exceeded increases in the cost of living and are projected to continue doing so in the future.

Transition From Current Law to Proposals

The impact of proposed program changes can be illustrated either by using the actual history of the OASI tax and benefit structure and the transition provisions specified in each proposal or by assuming the current OASI tax and benefit structure and the ultimate provisions in each proposal have always been in effect. The latter approach simplifies the analysis because it eliminates a worker's current age as a factor. However, the following considerations argue against this approach. Current program income does not cover expenses, and the program is projected to pay full benefits until 2033 only because significant trust fund reserves were accumulated during the period from 1983 through 2008 when income exceeded expenses. If the current tax and benefit structure had always been in effect, the program would already be unable to pay all the scheduled benefits. Even proposals that eliminate the long-term deficit rely on the current trust fund accumulation to pay a portion of future benefits and would be otherwise non-viable. Further, illustrating the effects of changes on workers in the real world rather than in a hypothetical world that may never come to pass is of greater utility for the reader. For this reason, the model incorporates actual program history and each proposal's transition provisions.

Using this historical approach, a problem arises because the proposals were made at different times. Had the proposals been adopted when made, some provisions would have already gone into effect. Simply delaying these changes to the present would reduce their effect, so that a proposal that provided long-term solvency when first proposed may no longer achieve this goal. To solve this problem, for each proposal, benefits and revenues from the year the proposal was made to the present are modified to reflect any changes that would have occurred had the proposal been adopted in the year it was first proposed. Appendix 1 includes an example that illustrates the transition method.

Components of the Benefit Formula: AIME and Primary Insurance Amount (PIA)

The most important determinant of a worker's benefit is the worker's Average Indexed Monthly Earnings, or AIME. The AIME is based on the average of the worker's indexed annual earnings for the 35 highest years. Earnings in years before age 60 are indexed to age 60 by multiplying by the ratio of the NAW in the year the worker attains age 60 over the average national wage in the year earned. There is no indexing after age 60. This average using annual earnings is converted to a monthly amount by dividing by 12. The AIME is then input into the formula that determines a worker's Primary Insurance Amount, or PIA, the monthly amount paid to the worker, excluding dependents, if the worker retires at the NRA, with no adjustment for early or late retirement.

Because the PIA formula is skewed to provide higher benefits relative to the AIME for lower-paid workers than for higher-paid workers, the illustrations show benefits for workers across the entire range of possible AIMEs. As described in more detail below, the model calculates benefits using 10 representative AIMEs, one for each of the 10 deciles of workers grouped by AIME. OCACT provided the 10 AIMEs applicable for the year 2019 based on the earnings records of workers who retired during the period 2016 to 2021, with appropriate adjustments for workers retiring before or after 2019 based on the NAW index. The model recalculates these 10 AIMEs for each calendar year after 2019 assuming they increase from year to year at the same rate as the maximum AIME—that is, they remain a constant percentage of the maximum AIME.

Earnings History Assumption

Many different earnings histories can produce the same AIME, because AIME is an average. The model assumes that workers' earnings increase year by year at the same rate as the NAW, the index used to adjust earnings for calculating the AIME. Under this assumption, the adjusted monthly earnings are constant up to age 60, because the adjustment exactly offsets decreases in unadjusted earnings going back in time from age 60. However, the taxes paid on

the worker's earnings are based on unadjusted earnings and, therefore, decrease going back in time. If a worker's earnings, and hence taxes, are more concentrated earlier in the worker's career than under the assumption, the actual accumulated value of the taxes will be higher than under the assumption, because interest on the higher earlier taxes will accumulate over a longer period than interest on the later lower taxes. Conversely, if a worker's earnings are more concentrated later in the worker's career, the actual accumulated value of the taxes will be lower than under the assumption. Given the impossibility of illustrating the broad range of possible earnings histories, this assumption was chosen as closely representing the highest proportion of workers.

Only Old Age Worker Benefits Included

As previously noted, Social Security covers several categories of beneficiaries: workers retired due to age (including disabled workers who have reached the NRA), disabled workers who have not yet reached NRA, spouses and other eligible dependents of living workers receiving benefits, and spouses and other eligible dependents of deceased workers. To simplify the illustrations, the model only includes benefits paid to workers retired due to age. Because all benefits are calculated using the same formula, the results would be similar for the other beneficiary categories.

No tax or other income to the OASI Trust Fund is explicitly allocated to fund retired worker benefits separate from spouse and survivor benefits. According to Social Security Administration data, retired worker benefits comprised about 83.3% of the benefits paid from the OASI Trust Fund in 2022 with the remaining benefits paid to spouses, children and survivors.[2] This percentage has been increasing in recent years as more married couples receive two retired worker benefits based on each spouse's work history, and fewer receive retired worker and spouse benefits based on just one spouse's work history. This trend is expected to continue. Over the 75-year valuation period, retired worker benefits are expected to approach 90% of all OASI benefits on a present value basis. No one percentage can apply to all possible retirement years. In our illustrations, measurements of individual equity assume 86.8% of the OASI taxes paid by and on behalf of the workers fund retired worker benefits. This figure represents the approximate average over the 75-year valuation period.

These illustrations assume full-career workers who survive to retirement age. In particular, workers who die prior to retirement age and disabled workers who transition to old-age benefits are excluded from the model.

2 Social Security benefit payments, retirement & survivors insurance; Social Security Administration; 2024.

Exclusion of Supplemental Security Income

The Supplemental Security Income (SSI) program, which is funded by general revenues rather than the dedicated payroll taxes, provides additional income for persons who are age 65 or over, disabled or blind and who meet eligibility requirements based on income and resources. The maximum resources allowed to qualify for an SSI benefit have not been updated since 1989: $2,000 for a single person or $3,000 for a couple, excluding a primary residence, an automobile valued up to $4,500, household goods valued up to $2,000 and a life insurance policy with a face value not exceeding $1,500. As a result of these limits on resources and limits on income that vary by state, only about 2% of recent non-disabled retired workers and their dependents qualify for SSI benefits. (The percentage is much higher for those disabled or blind.) The model does not include SSI benefits.

Exclusion of Income Tax on Social Security Benefits

In addition to the payroll tax, Social Security receives income from regular income taxes paid by beneficiaries attributable to their Social Security benefits. Currently, single taxpayers with incomes up to $25,000 and married taxpayers with incomes up to $32,000 pay no income tax on Social Security benefits. Higher-income taxpayers pay taxes on a portion of their Social Security benefits that increases with income, up to a maximum of 85%. The Social Security trust funds receive income tax revenue on the first 50% of Social Security benefits, and Medicare's Hospital Insurance Trust Fund receives the remainder. The thresholds are not indexed for inflation, so the portion of Social Security benefits subject to income taxation increases over time. This tax comprised about 4.5% of OASI income in 2022 and, although this percentage is expected to increase somewhat as the portion of earnings in excess of the income thresholds increases, the tax on benefits will remain a small part of income. All three of the proposals illustrated make changes to this income tax provision. However, given the complexities in modeling this tax and its small impact on program finances, the committee elected not to include revenue from taxation of Social Security benefits in the model. OCACT's more comprehensive analysis referred to below also excludes this feature for similar reasons.

Allocation of Proposed Payroll Tax Increases

Two of the proposals in this study include an increase in the combined OASI and DI payroll tax rate, but do not state how the increase is allocated between the OASI and DI trust funds. Due to recent decreases in the assumed disability incidence rates, reflecting actual declines in disability incidence over the past decade, taxes currently allocated to the DI trust fund are projected to maintain the solvency of that program over the valuation period. For these illustrations, the model assumes Congress will allocate any increase in the tax rate entirely to the OASI program.

Assumptions Used in the Model

The model depends on assumptions about future economic and demographic trends, because the future cannot be known. (See the Academy's issue brief *Assumptions Used to Evaluate Social Security's Financial Condition*.) The committee has chosen, with one exception described below, to use the intermediate assumptions from the 2023 Social Security Trustees Report. The effects of the COVID-19 pandemic have been fully integrated into these assumptions. The committee will update the model periodically to reflect the most recent trustees report available.

Alternative sets of assumptions are possible. For example, the trustees report also includes projections using separate sets of high-cost and low-cost assumptions, and the Congressional Budget Office (CBO) publishes its own Social Security projections using a different set of assumptions. Although the committee has selected the trustees' intermediate assumptions as the basis for this model, sensitivity testing has shown that using other reasonable assumptions does not significantly change the results. The principal assumptions used include:

- The annual rate of increase in the NAW, used to project workers' future earnings and benefit formula parameters;
- The annual rate of increase in the cost of living, used to project post-retirement benefit increases;
- The rate of return on trust fund assets, used to accumulate payroll taxes before retirement and to discount benefit payments after retirement; and
- Worker mortality, used to discount future benefit payments after retirement.

Worker mortality is the one assumption that does not correspond exactly to the trustees' intermediate assumption. A 2018 study by OCACT,[3] as well as other published research, shows that mortality is higher among lower-paid than among higher-paid workers. In their annual report, the trustees use the same mortality assumption for workers at all income levels, varying the assumption only by age and sex. They take into account differences in mortality by income level, as well as other factors correlated with mortality such as marital status and education level, implicitly by tracking changes in average benefits as workers age. Higher mortality causes low-income workers, who have lower benefits, to drop out of the payment pool earlier on average than high-income workers, causing average benefits to increase more rapidly than the cost of living alone.

3 Mortality By Career-Average Earnings Level; Social Security Administration; 2018.

The OCACT study divides workers into five age ranges—62-64, 65-69, 70-74, 75-79, and 80-84—and five quintiles by AIME as well as by sex. The study assigns to each group of workers thus defined, 50 in all, a factor equal to the ratio of mortality for workers in that group to average mortality for workers at all AIME levels in the same age and sex group. A factor greater than 1 indicates higher mortality than the average, and a factor less than 1 indicates lower mortality. The study calculates these factors at five-year intervals from 1995 to 2015 based on data from Social Security records for the pertinent years, disclosing any trends in the factors during this time period. As expected, for each age and sex group, the factors are greater than 1 for the lower AIME quintiles and less than 1 for the higher AIME quintiles although, as explained in the study, the factors vary considerably across age and sex groups. The committee has chosen to apply the 2015 male factors from this OCACT study to the male mortality rates from the trustees' intermediate assumption for purposes of its analysis, thereby taking into account explicitly mortality differences by income level.

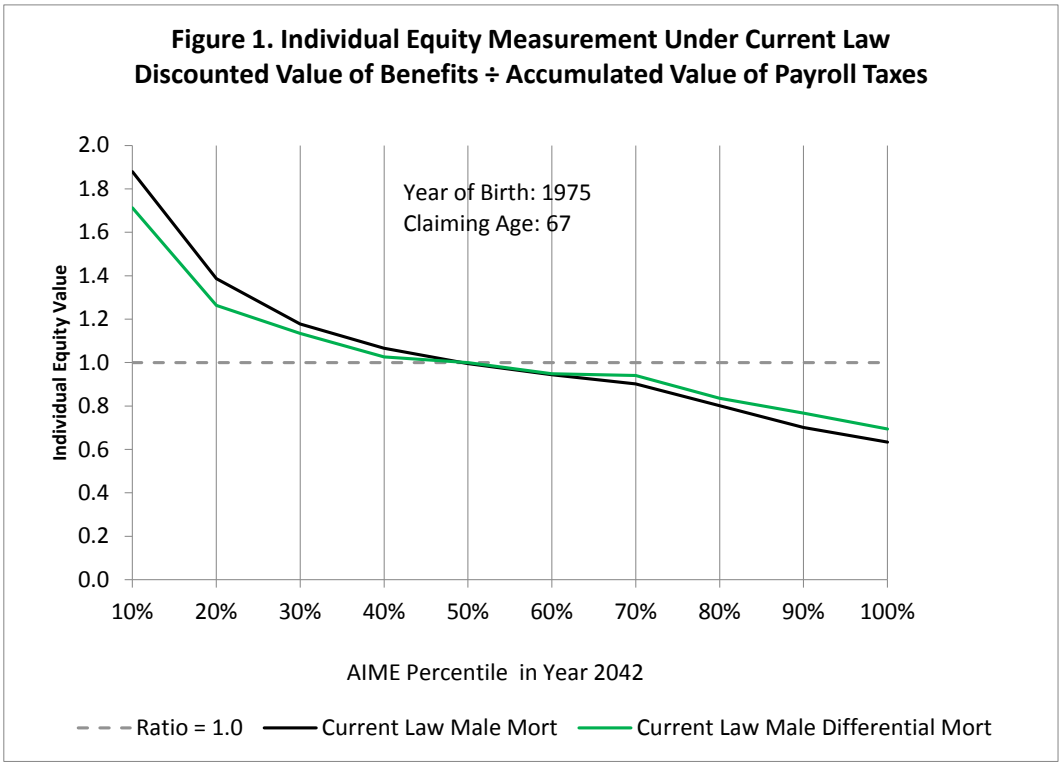
Table 1 shows how using mortality tables differentiated by earnings affects expected lifetime benefits for each of the 10 AIME deciles when compared to using the same mortality table for all workers.

Table 1. Expected Lifetime Benefits (Differentiated by Earnings) by AIME Decile

AIME Decile	Expected lifetime benefits using mortality adjusted for income level vs unadjusted mortality
10%	91%
20%	91%
30%	96%
40%	96%
50%	100%
60%	100%
70%	104%
80%	104%
90%	109%
100%	109%

The effect is to lower expected lifetime benefits by about 9% at the low end of the AIME range and increase expected lifetime benefits by 9% at the high end. Figure 1 uses as an example a worker born in 1975 who claims Social Security benefits at age 67. The black line shows the ratio of expected future benefits over past tax payments under the current law formula using uniform male mortality, while the green line shows this same ratio using mortality differentiated by earnings, thus providing a visual display of the effect of using differential mortality.

Figure 1.



All of the graphs referred to later in this monograph use differential mortality.

The committee also performed an analysis using the 2015 female factors and female mortality rates to ensure there is no material difference.

Appendix 2 provides additional details about these assumptions. Some provisions included in the proposals require additional assumptions. These additional assumptions are included in the descriptions of the applicable proposals.

Measurement of Individual Equity and Social Adequacy

As described above, Social Security taxes and benefits strike a certain balance between the principles of individual equity and social adequacy. The committee's analysis measures how each of the proposed changes would affect this balance between individual equity and social adequacy.

Background on Measurement of Individual Equity

As described above, individual equity in the context of Social Security refers to the relationship between a worker's benefit and the contributions made to the program on the worker's behalf. Thus, measuring individual equity involves assessing the degree to which the benefit of a representative worker is based on his or her contributions. To better understand this concept, it is helpful to examine individual equity in the context of other common financial arrangements.

When an individual investor opens an account at a financial institution, whether specifically to save for retirement or for another purpose, deposits to the account plus investment returns, positive or negative, less expenses belong exclusively to the investor. This is an example of perfect equity, because the benefits paid stem directly from the contributions. At the other end of the spectrum, in a needs-based public safety-net program such as Medicaid or SNAP, the taxpayers funding the program may receive no direct benefits, and the benefit recipients may pay none of the taxes that support the programs. The program's funding and benefit payments are entirely independent of each other. Thus, there is no equity.

Insurance arrangements fall between these two extremes. While such arrangements may include an investment element, their primary purpose is to mitigate the financial risk associated with the peril insured. There are two types of insurance arrangement—private sector insurance and social insurance. Absent regulatory prescription or prohibitions, private sector insurance policies generally are structured so that policyholders assumed to have a similar level of risk pay similar premiums. For instance, older people generally pay more for the same amount of life insurance because they are at greater risk of dying, and people living in areas prone to flood or wildfire generally pay more for homeowners insurance. In these cases, there is equity within classes of policyholders with similar levels of risk, but not at the level of the individual policyholder. The degree of individual equity is less than for an investment account, but still sufficient that people are willing to purchase insurance in an open market.

Social insurance programs such as Social Security do not have separate classes of participants, and in this respect provide less individual equity than private insurance. For this reason, participation in such programs must be mandatory for those eligible. Two key features of Social Security affect the degree of individual equity compared with typical private sector insurance policies:

- The premium—that is, the tax rate—is the same for all workers and is not adjusted for an assumed level of risk.
- Benefits, while payable to all participants, are based in part on need and are therefore not directly proportional to funding on an individual basis, although the dollar amount of benefits does reflect to an extent the dollar amount of taxes paid—more taxes paid generally results in greater benefits at retirement.

The model does not measure the equity effects of the first difference, although it is well known that characteristics such as sex, marital status, race, educational attainment, and income level contribute to an individual's level of risk. The model focuses instead on the effect on individual equity due to Social Security's graduated benefit formula, under which lower-wage workers receive proportionately higher benefits relative to the taxes paid on their behalf than higher-wage workers.

Measurement of Individual Equity

For this purpose, the effect on individual equity is measured by comparing the discounted present value of representative workers' expected retirement benefit payments to the accumulated value of payroll taxes at benefit commencement (including payroll taxes paid by both employers and workers, but only the portion assumed to provide for retirement benefits), in both cases using the assumed interest rate. For this purpose, the discounted present value is the sum of all potential payments to the worker, with each payment amount reduced to take into account interest at the assumed rate from the commencement date to the payment date and the probability the worker will die before the payment is due. The ratios thus calculated provide a common scale for making relative comparisons among representative workers and various program designs. A ratio of 1 does not necessarily mean "perfect equity." This is because, in addition to its savings element, Social Security includes an insurance element whose value is difficult to measure and differs for workers in different circumstances. Because the payroll tax rate is uniform across the earnings spectrum but benefits are higher relative to earnings for lower-paid workers than for higher-paid workers, the ratios for lower-income AIMEs are greater than those for higher-income AIMEs.

As noted above, this analysis includes only old age benefits paid to workers and excludes spouse and survivor benefits. For consistency, the analysis includes 86.8% of the OASI payroll tax, the projected average portion assumed to fund retired worker benefits. The analysis takes the perspective of a worker at the time benefits commence, looking back at the payroll taxes paid on the worker's behalf and forward at the benefits expected to be received. In reality, payroll taxes paid into the OASI Trust Fund are not allocated separately between worker benefits and spouse and survivor benefits. Further, under the program's modified pay-as-you-go financing model, most payroll taxes paid on a worker's behalf financed prior years' benefits for other retirees, and most Social Security benefits a retiree receives will be financed by future years' payroll taxes paid on behalf of other workers. Nevertheless, the comparison of past payroll taxes paid on a worker's behalf to expected future benefits for the worker—across the income spectrum—provides a useful measure of the degree to which Social Security incorporates the principle of individual equity. A similar analysis applied to the other types of benefits under the program would yield similar results. A more comprehensive analysis by OCACT can be found here.[4]

The graph for each proposal compares the ratio of the discounted value of expected retirement benefit payments to the accumulated value of assumed retirement payroll taxes at benefit commencement across the range of AIMEs under the current and proposed tax and benefit schedules. The graphs in this monograph illustrate how each proposal would affect individual equity.

Background on Measurement of Social Adequacy

The social adequacy of the retirement income provided by Social Security can be measured in two ways: by comparing Social Security income to pre-retirement income (a relative measure), or by comparing Social Security income to a fixed threshold (an absolute measure).

Replacement ratio refers to a worker's initial retirement benefit divided by some measure of pre-retirement income. The denominator is often total income in the year immediately preceding retirement or an average over a small number of years preceding retirement. In the case of Social Security, the AIME, a measure of income over a worker's entire career, is often used as the denominator. A replacement ratio is a relative measure of income adequacy, in that the level of retirement income deemed adequate depends on the level of pre-retirement income. However, the social adequacy goal of Social Security—providing a

4 Moneys Worth Ratios Under the OASDI Program for Hypothetical Workers; Social Security Administration, 2022.

floor of protection for covered workers and eligible family members—is independent of a worker's pre-retirement income. Although a worker may desire to maintain his or her pre-retirement standard of living into retirement, this is beyond the social adequacy goal of the program.

For a replacement ratio to be meaningful, it must include all sources of both pre-retirement and post-retirement income. Lower-income workers receive a higher proportion of their pre-retirement income from covered earnings and a higher proportion of their post-retirement income from Social Security compared to higher-income workers. Thus, using the AIME in the denominator and the Social Security benefit in the numerator of a replacement ratio calculation provides a more useful measure of income adequacy for lower-income workers than for higher-income workers, who usually have additional sources of both pre- and post-retirement income. For these reasons, the committee has decided that comparing benefits to fixed-dollar thresholds provides a better measure of income adequacy than the replacement ratio.

Measurement of Social Adequacy

The graphs compare benefits to three commonly used thresholds: the poverty threshold for a household comprising one person age 65 and over published by the United States Census Bureau; 150% of this threshold; and 25% of the NAW. The poverty threshold, used by the Census Bureau to count households living in poverty, has many deficiencies that are widely recognized. The threshold was originally defined in 1963 as three times the cost of a minimum food diet in that year, on the assumption that food represents a third of the cost of a minimum standard of living. Since 1963, this threshold has been updated only by applying annual increases in the CPI. Thus, the threshold does not take into account changes since 1963 in the relative contributions of the various categories of goods and services to a minimum standard of living or in their relative costs. Also, the threshold does not take into account geographical variations in the cost of living. In 2021, the annual poverty threshold for single persons aged 65 and over was $12,996.[5]

Despite the known deficiencies in the poverty threshold as a measure of income adequacy, there is no generally recognized alternate measure that can apply across the wide variety of individual circumstances of retired workers. The 150% threshold, $19,494 in 2021, is included to provide a more conservative measure of poverty that takes into account a broader range of individual circumstances of retired workers.

5 Poverty Thresholds; U.S. Census Bureau; 2023.

The NAW for 2021 used in the illustrations in this monograph is $58,743; 25% of this amount is $14,686, about 13% above the poverty threshold for single persons. As noted above, wages are projected to grow more rapidly than the cost of living. This means the NAW will increase over time relative to the poverty threshold, which is adjusted by the CPI. Although the excess of wage growth over the CPI results in a gradual improvement in the standard of living for workers, this improvement is not reflected in the poverty threshold. The 25% of the NAW threshold gives a rough indication of how the poverty threshold would need to change to incorporate improvements in workers' living standards.

No single number can define social adequacy for Social Security beneficiaries in all possible circumstances. Therefore, receiving a Social Security benefit greater than one of the three poverty thresholds used in the graphs is not a guarantee that a beneficiary does not experience poverty. Conversely, a beneficiary may have other income sources, including need-based programs such as SSI, described above, that can boost the beneficiary out of poverty even if Social Security alone is not sufficient for this purpose. The three thresholds, while based on widely used measures of poverty, should be viewed as providing points of comparison only.

The Proposals

As noted, the committee chose three proposals representative of the spectrum of political thought for this analysis, from the Bipartisan Policy Center, former Rep. Johnson, and Rep. Larson. The following summarizes and explains the important points of these three proposals:

Bipartisan Policy Center

The Bipartisan Policy Center (BPC) is a Washington think tank whose purpose is to develop solutions to the problems facing the nation that combine ideas from both the major political parties. The Center established a Commission on Retirement Security and Personal Savings which, in June 2016, issued a report titled *Securing Our Financial Future*.[6] The report makes recommendations in six policy areas, including strengthening Social Security's finances and modernizing the program. Provisions specific to Social Security include:

1. *Making the benefit formula more progressive.* The monthly benefit formula for 2023 under current law is 90% of the AIME up to $1,115, 32% of the AIME from $1,115 to $6,721, and 15% of the AIME in excess of $6,721. The dollar thresholds where the

6 *Securing Our Financial Future*; Bipartisan Policy Center; 2016.

formula percentages change, called bend points, increase each year according to the NAW index. The BPC proposal would raise the first bend point by about 28% and create a new second bend point (with the current second bend point becoming the third) at about 63% of the way from this new first bend point to the third. The formula percentages would be 95% up to the first bend point, 32% from the first to the second, 15% from the second to the third, and 5% above the third. Thus, if the BPC proposal had been adopted in 2017 the formula for 2023 would be approximately as follows: 95% of the AIME up to $1,427; 32% of the AIME from $1,427 to $4,762; 15% of the AIME from $4,762 to $6,721; and 5% of the AIME in excess of $6,721. This new formula would be phased in over 10 years beginning for workers attaining age 62 in 2022.

2. *Applying the benefit formula annually.* The BPC proposal would eliminate the AIME and, instead, apply the benefit formula separately to earnings in each year, adjusted according to the NAW index to age 60 as described above, and totaling the amounts so calculated, thus eliminating the 35-year average.
3. *Providing a minimum benefit for workers earning low wages who have attained the NRA.* The minimum benefit is in the form of an addition to the formula benefit described above. The additional benefit for 2023 used in our illustrations is equal to a base amount, $855 (assuming an unmarried beneficiary), reduced by 70 cents for each dollar of benefit derived from the formula described above. The minimum applies to the benefit payable and is not reduced or increased for benefit commencement ages before or after the NRA. Workers with low Social Security benefits but significant income from other sources would repay all or part of this additional benefit through income taxes.
4. *Increasing the normal retirement age.* The BPC proposal would increase the NRA by one month every two years starting in 2022 until the NRA reaches 69 for those attaining age 62 in 2070. This rate of increase approximates the expected rate of increase in life expectancy for the covered population. The proposal would leave the early retirement age unchanged.
5. *Adopting the "chained CPI."* The benefit amounts of all beneficiaries and of workers beginning at age 62 are adjusted annually according to the consumer price index (CPI) calculated by the Bureau of Labor Statistics (BLS). Since August 2002, BLS has also published a "chained CPI," which is intended to better take into account consumers' tendency to change their buying habits when the prices of some goods increase more rapidly than others. Neither the current nor the chained CPI takes into account the particular buying patterns of the elderly, who comprise most Social Security beneficiaries. The BPC proposal would change the index for the annual benefit adjustment to the chained CPI.

6. *Limiting the spouse benefit.* Currently, the spouse of a worker beneficiary can receive a benefit based on one-half of the worker's PIA if this is larger than the benefit based on the spouse's own work history. The BPC proposal would limit this benefit starting in 2022 to the amount based on one-half the PIA of a hypothetical worker whose career earnings are at the 75th percentile of all workers in 2022. This amount would be indexed thereafter to the CPI. The benefits of widows and widowers would not be affected.
7. *Changing survivor benefits.* Currently, a worker's widow or widower can receive a benefit based on the worker's full PIA if this is larger than the benefit based on the spouse's own work history. The BPC proposal would reduce this to a benefit based on 75% of the worker's PIA but allow the spouse to receive the full benefit based on the spouse's own work history in addition.
8. *Increasing the taxable wage base.* The taxable wage base is the maximum amount of earnings subject to the Social Security payroll tax and the maximum amount taken into account in the benefit formula. The wage base was originally set so that covered earnings represented 90 percent of all earnings. Over the years, increases in the disparity of earnings have caused this percentage to slip, and on several occasions, most recently in 1977, the wage base was increased by legislation to restore the 90% coverage ratio. The ratio has slipped to 82 to 83% and is projected to remain relatively stable in the future. The BPC proposal includes a series of four specified increases in the taxable wage base which would increase the amount from $127,200 in 2017, to $203,700 in 2021, followed each year by increases according to the NAW index plus 0.5 percentage points.
9. *Increasing the payroll tax rate.* Currently, employers and employees pay into the Social Security trust funds a combined 12.4% of earnings up to the taxable wage base. The BPC proposal would increase this percent by 0.1 percentage points each year from 2017 through 2026, until the rate reaches 13.4%, an 8% increase.
10. *Increasing income taxes on benefits for high-income beneficiaries.* The BPC proposal would eliminate the 15% exclusion starting in 2022 for single taxpayers with incomes over $250,000 and married taxpayers with incomes over $500,000. Both of these thresholds would increase according to the NAW index. All of the additional revenue would go toward funding Social Security, while revenue allocated to Medicare remains unchanged.

Assumptions Specific to the BPC Proposal

Because the illustrations assume workers' wages will increase at the same rate as the NAW, applying the benefit formula annually does not change the result, so the illustrations don't show any impact from this provision.

The model assumes that the chained CPI will be 0.3% less than the CPI intermediate assumption, the same assumption used by OCACT for valuing this provision change.

The model assumes that the payroll tax increase is allocated entirely to the OASI Trust Fund and is not split between the OASI and DI trust funds.

Former Representative Sam Johnson Proposal (114th Congress, H. R. 6489, Social Security Reform Act of 2016)

Representative Johnson's December 8, 2016 proposal[7] includes changes to the benefit formula, cost of living adjustment, and NRA, which together provide net benefit increases to roughly 40% of workers at the low end of the income spectrum and net benefit decreases to roughly 50% of workers at the high end of the spectrum. The proposal would achieve long-term solvency with no increase in revenue. Unless otherwise noted, the changes are phased in 10% per year from 2023 to 2032. Provisions include:

1. *Making the benefit formula more progressive.* The Johnson proposal defines three new bend points that replace the current two, set at 25%, 100%, and 125% of the NAW two years before initial benefit eligibility. The formula percentages would be 95% up to the first bend point, 27.5% from the first to the second, 5% from the second to the third, and 2% above the third. This formula provides a significant benefit increase for the lowest-paid workers, but a significant benefit reduction for those at the high end of the earnings spectrum.
2. *Applying the new benefit formula annually.* This change is the same as that described above in the BPC proposal.
3. *Increasing the NRA.* The Johnson proposal would increase the NRA by three months every year beginning in 2023, until it reaches age 69 in 2030.
4. *Eliminating the COLA for high-income beneficiaries and adopting the chained CPI for other beneficiaries.* The Johnson proposal would eliminate the COLA beginning in 2018 for beneficiaries in pay status whose modified adjusted gross income (MAGI) exceeds $85,000 if single and $170,000 if married, both thresholds adjusted thereafter according to the NAW index. COLAs from age 62 to the start of benefit payments would not be affected. For all beneficiaries, the COLA, when applicable, would be calculated using the chained CPI described above.

7 H.R.6489—Social Security Reform Act of 2016.

5. *Limiting the spouse benefit.* The Johnson proposal would limit this benefit to the amount based on one-half the PIA of a hypothetical worker of the same age, but whose earnings equaled the NAW in all years. Unlike the similar provision in the BPC proposal, the initial spouse benefit would continue to be adjusted by the NAW index. The benefits of widows and widowers would not be affected.
6. *Providing a minimum benefit for low-wage workers.* The minimum benefit would be a percentage of the NAW two years before initial benefit eligibility. The percentage would be based on a worker's years of work, defined as years the worker earned an amount at least equal to $10,875 in 2017, adjusted thereafter according to the NAW index. The percentage would be 0% for 10 or fewer years of work, increasing 3% per year to 15% for 15 years, then increasing 1% per year to 19% for 19 years, jumping to 25% for 20 years, and then increasing ⅔ percent per year to 35% for 35 or more years.
7. *Eliminating the personal income tax on benefits.* Beginning in 2045 until 2053, the thresholds for taxation of benefits would be increased by $7,500 per year for single beneficiaries and $15,000 per year for married beneficiaries, and then in 2054 the tax would be eliminated altogether. This change would not affect taxes directed to the Medicare Trust Fund.
8. *Providing a benefit increase to beneficiaries 20 years after initial eligibility for low-income workers.* The increase would be limited to workers whose modified adjusted gross income is below $25,000 if single and $50,000 if married in 2023, adjusted thereafter according to the chained CPI. The amount of the increase would be a percentage of the PIA at initial benefit eligibility of a hypothetical worker of the same age whose earnings equaled the NAW in all years. For this purpose, initial eligibility would be age 62 for non-disabled workers and the age at benefit commencement for disabled workers. The percentage would be 1% in the 20th year of eligibility, increasing 1% per year to 5% in the 24th year and thereafter. For workers born before 1957, these percentages would be multiplied by the number of years the chained CPI has been applied to the worker's benefit divided by 24. For this purpose, the hypothetical worker's PIA would be adjusted by the same early or late retirement factor applied to the worker's PIA and by all COLAs since initial benefit eligibility.

Assumptions Specific to the Johnson Proposal

- Because the illustrations assume workers' wages will increase at the same rate as the NAW, applying the benefit formula annually does not change the result, so the illustrations don't show any impact from this provision.
- The model assumes that the chained CPI will be 0.3 percent less than the CPI intermediate assumption, the same assumption used by OCACT for valuing this provision change.
- The model assumes that retirees whose AIMEs are at the 80th percentile or higher have MAGIs that exceed the threshold for not receiving post-retirement COLAs.
- The model assumes that only retirees whose AIMEs are at the 10th percentile or lower qualify as low-income beneficiaries for receiving the benefit increase after 20 years.

Representative John Larson, et al., (116th Congress, H.R. 860, Social Security 2100 Act)

1. Representative Larson's proposal[8] contains no benefit reductions and includes four modest benefit enhancements. Solvency is achieved entirely through revenue increases. Provisions include:
2. *Increasing the benefit.* The Larson proposal includes an increase in the PIA formula percentage applied to the portion of the AIME up to the first bend point from 90% to 93%. This benefit increase would become effective in 2020 and apply to both current and future beneficiaries.
3. *Adopting the CPI-E.* The Consumer Price Index for the Elderly (CPI-E), also calculated by the BLS, measures increases in prices weighted according to the buying patterns of households in which either the head of household or that person's spouse is age 62 or over.
4. *Providing a minimum benefit for low-wage workers.* Effective in 2020, the minimum monthly benefit for workers with at least 30 years (120 quarters) of covered employment would be set at one-twelfth of 125% of the annual poverty guideline for single persons in 2019, increasing each year thereafter according to the NAW index. The amount would be reduced proportionately for workers with at least 10 but fewer than 30 years of covered employment. (Quarters of coverage are calculated by dividing a worker's annual wage by a dollar amount and rounding down to the next lower integer, with a maximum of four quarters of coverage in any year. This dollar amount, the amount of earnings needed to earn one-quarter of coverage, is indexed to the NAW, and was $1,640 in 2023.)

8 H.R.860—Social Security 2100 Act.

5. *Increasing the income thresholds for taxation of Social Security benefits.* As noted above, these thresholds are currently $25,000 for single taxpayers and $32,000 for married taxpayers. The Larson proposal would raise these thresholds in 2020 to $50,000 and $100,000, respectively, so that fewer beneficiaries would pay income tax on their Social Security benefits. The new thresholds would not be indexed for inflation.
6. *Introducing a new payroll tax for high-wage workers.* The Larson proposal would apply the payroll tax rate to earnings in excess of $400,000 beginning in 2020. The $400,000 threshold would not be adjusted for inflation, so that ultimately the current maximum taxable wage base, adjusted for inflation, would exceed this threshold and all income would be taxed equally. Earnings above the current wage base subject to taxation would be used to calculate a second AIME, and a worker's benefit would increase by 2% of this second AIME. Because of this low percent, nearly all of the additional revenue from this new payroll tax would go toward funding benefits under the current formula.
7. *Increasing the payroll tax rate.* The Larson proposal would increase the combined employer/employee tax rate, currently 12.4%, by 0.1 percentage point each year from 2020 through 2043, until the rate reaches 14.8%.

Assumptions Specific to the Larson Proposal

- The model assumes that CPI-E index will be 0.2% greater than the CPI intermediate assumption, the same assumption used by OCACT for valuing this provision change.
- For calculating the minimum benefit, the proposal uses the annual poverty guideline for 2019 for a one-person household published by the U.S. Department of Health and Human Services (HHS). The model assumes the level for the 48 contiguous states and the District of Columbia, which was $12,490 in 2019.

Description of the Graphs

Construction of the Graphs

The graphs show the calculated benefits and the ratios of benefits to taxes for 10 AIMEs. The first of these is the 10th percentile AIME—10% of retirees in 2023 have AIMEs no higher than this amount; the second is the 20th percentile AIME; and so on, until the 10th, or highest possible, AIME, which equals or exceeds the AIME of all 2023 retirees. The table below shows, for each of these percentiles, the AIME associated with that percentile in 2023 both as a dollar amount and as a percent of the maximum AIME. Dollar amounts applicable to 2019 were provided by OCACT. The committee updated the values to 2023 using the NAW index.

Table 2. AIMEs (Dollar Amount and as a Percent of the Maximum AIME)

Percentile	10th	20th	30th	40th	50th	60th	70th	80th	90th	100th
Dollar Amount of 2023 AIME	$1,236	$2,117	$3,023	$3,934	$4,859	$5,859	$7,020	$8,528	$10,806	$13,423
Percent of Maximum 2023 AIME	9.2%	15.8%	22.5%	29.3%	36.2%	43.6%	52.3%	63.5%	80.5%	100.0%
Percent Range of AIME	9.2%	6.6%	6.8%	6.8%	6.9%	7.5%	8.7%	11.2%	17.0%	19.5%

The BPC proposal would increase the maximum taxable wage base. This would have the effect of increasing the maximum AIME. However, it would not affect any of the AIMEs at lower percentiles, because all affected workers already have AIMEs in the top 10%. The model takes into account the higher maximum AIME when calculating the maximum PIA, but the labels across the bottom of the graphs do not reflect this change. The Larson proposal would apply the payroll tax to earnings in excess of $400,000 and provide a small additional benefit based on these earnings. The model does not take these provisions into account because very few workers are affected.

In each of the graphs, dollar amounts have been adjusted from the base year to the year of retirement corresponding to a particular birth year and retirement age combination. Per the assumption described above, the AIMEs, expressed as a percentage of the maximum AIME, remain unchanged from graph to graph. For each of these 10 AIMEs, the graphs show the direction and magnitude of the effects of the various proposals for workers with the corresponding AIME. The graphs also provide a rough approximation of the proportion of the workers affected in different ways by the benefit and tax changes in the proposals, since the interval between each consecutive pair of AIMEs represents 10% of retirees whose benefits commence in a given year.

The last row of the table above shows the range of AIMEs measured as percent of the maximum AIME for each population percentile. A range less than 10% means the AIMEs of the retirees in that percentile are concentrated in a smaller-than-average dollar range of AIMEs, while a range greater than 10% means the AIMEs of the retirees are spread over a greater than average range. The table shows that the range of AIMEs is about average in the lowest percentile, is most concentrated in the second percentile, and gradually expands until reaching the broadest range of AIMEs in the ninth and tenth percentiles. Thus, retirees' AIMEs tend to be concentrated toward the lower end of the range of AIMEs, but not at the extreme low end. More than 60% of retirees have AIMEs which are less than half of the maximum AIME for 2023.

Limitations of Graphs

It should be emphasized here, once again, that the measurements of individual equity and social adequacy described above do not take into account all the myriad circumstances of workers and their families. The graphs include only nine combinations of birth year and retirement age and show only 10 AIMEs. The analyses provided by OCACT go into more detail on how the various proposals would affect workers in different circumstances, although their analyses are not exhaustive. The purpose of this monograph is to provide a summary analysis in graphical form of how particular reform proposals would affect workers in a representative sample of circumstances across the income spectrum. The effect on workers in most other circumstances would be sufficiently similar so as not to distort the analysis.

Results Illustrated in the Graphs

Current Benefit and Tax Structure

The results for the current benefit and tax structure are represented by the black line in each of the graphs. Three features of the current program stand out.

Looking first at the nine graphs illustrating the **individual equity** metric, the black line slopes continually downward from the vicinity of 1.75 at the low-wage end of the spectrum to about 0.6 at the high-wage end. This illustrates the fact, already noted above, that, although the PIA increases as the AIME increases, the PIA increases more slowly than the AIME so that it decreases as a percentage of the AIME. The slope is steeper at the low-wage end, because Social Security pays 90% of the entire AIME for only a small portion of workers with the very lowest AIMEs. These workers have the highest benefits relative to AIME and, likewise, relative to taxes, which are a level percentage of earnings. As AIME increases, the 32% factor applies to an increasing portion of the AIME, so that the benefit continues to decrease relative to the AIME, but at a gradually slower rate. The slope of the line flattens further as the 15% factor comes into play at around the 60th percentile, because the difference between 15% and 32% is much less than the difference between 32% and 90%.

Turning to the nine graphs illustrating the **social adequacy** metric, the black line is remarkably straight in all nine graphs. The AIMEs corresponding to the 10 percentiles are not evenly spaced, but are more concentrated near the low end of the earnings scale. In contrast, the PIAs are more evenly spaced; the differences between the PIAs at consecutive percentiles are roughly the same across the earnings scale. This means that the benefit

increase from percentile to percentile is uniform across the earnings spectrum, even though the AIME increase from percentile to percentile is smaller at the low end of the earnings spectrum than at the high end. This is not an intentional result of the formula design, but an unintended result of the interaction between the benefit formula and the distribution of earnings among covered workers.

Finally, in all individual equity graphs for birth years 1975 and 1995, the black line is roughly parallel to the black line from the corresponding graph for birth year 1960, but at a lower level. Workers born in 1960 retire before 2033, and workers born in 1975 and 1995 retire after 2033. As explained above, 2033 is the year the OASI Trust Fund reserve is expected to be depleted according to the trustees' latest projection. With no payroll tax increase, retirees after that year will receive only 77% of the scheduled benefits that are defined in the current Social Security law. As a result, in the individual equity graphs, the black line crosses the 1.0 threshold further to the left (at a lower AIME) in the 1975 and 1995 graphs. In the social adequacy graphs, the black line crosses the three illustrated poverty thresholds further to the right (at higher AIMEs). Thus, fewer workers receive Social Security benefits whose value exceeds the value of payroll taxes paid on their behalf, and fewer workers have Social Security benefits that exceed the illustrated poverty levels.

BPC Proposal

The four-tiered benefit formula in the BPC proposal would provide a small increase relative to current law to low- and middle-wage workers, while reducing benefits for workers whose AIME exceeds the third bend point. The benefit decreases are not as large as in the Johnson proposal and, hence, would not reduce program expenditures as much. The BPC proposal would also increase the NRA from age 67 to 69, but much more slowly than the Johnson proposal, again not reducing expenditures as much. The proposal compensates by including increases in both the payroll tax rate and the taxable wage base, but neither tax increase is as large as in the Larson proposal. In this respect, the BPC proposal could be characterized as "splitting the difference" between the Johnson and Larson proposals, and this is readily apparent in the graphs.

Both the BPC and Johnson proposals include a provision for applying the benefit formula annually. Under the committee's assumption that each worker's earnings increase at the same rate as the NAW, this provision has no effect in our model. This provision would reduce benefits for workers with fewer than 35 years of covered earnings or whose compensation varies markedly from year to year, especially those with periods of unemployment or non-covered employment, relative to workers with the same AIME

whose earnings follow our assumption. Low-wage workers are more likely to have periods of unemployment, as shown in an Urban Institute study.[9] As a result, this provision has the effect of reducing benefits more for low-wage than for high-wage workers, but this effect is not captured in our graphs.

Certain provisions in the BPC proposal are not reflected in the model, including limiting the spouse benefit, changing the survivor benefit, and increasing the taxes on benefits for high income beneficiaries. Again, these provisions would have only a minor impact on program cost.

Johnson Proposal

The Johnson proposal includes no payroll tax increase. This means that to achieve long-term solvency, benefits must be reduced by the same degree as under the current benefit and tax structure. Rather than an across-the-board 23% benefit reduction in 2033, the Johnson proposal includes a combination of benefit increases and reductions that have the same net financial impact on the trust fund over the long term.

The provision with the greatest impact on benefits is the increase in the NRA from 67 to 69. Under the current benefit structure, a worker who delays retirement until age 69 has a late retirement adjustment of 16% applied to the benefit. Taking away this adjustment would reduce the benefit by slightly less than 14%. Because this provision would be fully phased in before 2033, it would achieve a significant portion of the savings from the across-the-board 23% benefit reduction in 2033 under the current program.

The Johnson proposal would modify this benefit reduction in several ways. The combination of the 95% factor applied to AIMEs up to 25% of the NAW and the minimum benefit based on the NAW would more than offset the effect of increasing the NRA for workers at the low end of the AIME scale. The lower factors applied to AIMEs over 25% of the NAW would reduce benefits still further for workers at the high end of the AIME scale. This would make the benefit formula more progressive than the current formula: the benefits of low-wage workers relative to AIME, and hence to their employer and worker payroll taxes, are higher than for high-wage workers to an even greater degree than under the current formula. This effect can be seen in the **individual equity** graphs for birth years 1975 and 1995, where the red line representing the Johnson proposal starts out much higher than the black line at the low-wage end of the spectrum, crosses the black line in the 50 to 60 percentile range and ends lower at the high-wage end. The line flattens out at the highest AIMEs because we

9 *Who Are the Long-Term Unemployed?*; Urban Institute; 2013.

have assumed workers in the top two percentiles have MAGIs that disqualify them from post-retirement cost-of-living increases under this proposal. In the **social adequacy** graphs, benefits—while still increasing from left to right—start out higher than under the current formula and end up lower. Benefits under this proposal exceed all three example poverty thresholds for all AIMEs for workers who claim benefits at age 70, and fall only slightly short of this target at age 67. The effect is not as great for birth year 1960 because the proposal is not fully phased in.

Three other provisions in the Johnson proposal are not included in the model: applying the benefit formula annually, eliminating the income tax on benefits, and limiting the spouse benefit. Together these provisions would have only a minor impact on program cost compared to the provisions discussed above. The benefit increase to low-income beneficiaries payable 20 years after initial eligibility is included in the individual equity metric but not in the social adequacy metric.

Larson Proposal

The Larson proposal includes a significant increase in the payroll tax rate as well as an expansion of the wages subject to taxation. These tax increases are more than sufficient to eliminate the current long-term deficit. The proposal uses the excess to fund several small benefit increases: increasing the 90% factor in the PIA formula to 93%, introducing a minimum benefit for low-wage workers, and providing a small additional benefit based on taxable earnings over the current program's maximum taxable wage.

In the **individual equity** graphs for the 1995 birth year, when all provisions are fully phased in, the ratio of benefits to taxes under the Larson proposal is lower than for the Johnson proposal for the lowest paid workers, because the Johnson proposal includes no tax increase, but overtakes the Johnson proposal ratios around the 25th percentile. In the **social adequacy** graphs for birth year 1960, the blue line representing the Larson proposal tracks the Johnson proposal at the low end of the AIME scale and the current benefit structure at the middle and the high end. In the individual equity graphs for the 1975 and 1995 birth years, where the current formula benefits fall away due to the 23% across-the-board reduction in 2033, the Larson proposal benefits remain at roughly the same relative level as the graph for the 1960 birth year. In effect, the Johnson proposal removes the current deficit and pays for benefit increases for low-wage workers by means of benefit decreases for middle- and high-wage workers, while the Larson proposal removes the current deficit and pays for benefit increases for low-wage workers through payroll tax increases that fall primarily on middle- and high-wage workers.

Two provisions in the Larson proposal are not included in our model: including annual wages over $400,000 in the payroll tax and benefit formulas, and increasing the income thresholds for taxation of Social Security benefits. These provisions would have a minor impact on program cost compared to the provisions discussed above.

Conclusion

The graphs in this monograph compare the current Social Security program to the reform proposals of the Bipartisan Policy Center, former Rep. Johnson, and Rep. Larson using metrics that highlight how each of these proposals would change the balance between individual equity and social adequacy. In the committee's model on which the graphs are based, current law benefits will be reduced by a considerable amount beginning in 2033, when the OASI Trust Fund is projected to be depleted, to the level that can be paid from current income thereafter. This makes the current law program comparable to the three proposals, each of which finances benefits from income over the 75-year valuation period and beyond.

The committee has pointed out some of the salient features of the graphs. The graphs themselves provide much more information about how these four benefit and tax structures combine the elements of individual equity and social adequacy for workers in various situations. In the end, it is up to each reader to form a judgment regarding which of the reform proposals would best address the continued success of Social Security in achieving its purpose of providing retirement security for covered workers, their dependents, and their survivors.

While the three reform proposals analyzed in this monograph represent a wide range of approaches, each is a specific package of provisions chosen by its originators. Many factors affect the determination of Social Security benefits and taxes, including, but not limited to, the benefit formula, the NRA, dependent benefit percentages, cost-of-living adjustments, the payroll tax rate, and the taxable wage base. These factors can be varied and combined in a variety of ways when designing a reform proposal intended to eliminate Social Security's long-term deficit. Readers who want to explore other pathways toward reform are invited to take the American Academy of Actuaries' Social Security Challenge.[10]

Please note that these are not precise benefit determinations and should not be relied on as such.

10 The Social Security Challenge.

Appendix 1

Example Illustrating Transition Provisions

The following example illustrates the transition approach under the Bipartisan Policy Center (BPC) Proposal. The BPC's Social Security Proposal was released in June 2016 with an initial implementation date of 2023 and full implementation by 2032. The committee uses the absolute dates provided in the proposal for the transition.

The illustration is for a worker born in 1960 and retiring at age 67 in 2026. The BPC benefit at commencement is determined in three steps:

1. A benefit is calculated (at age 62) by applying the proposed four-tiered structure to average indexed wages (subject to the **proposed** wage base, averaged for the highest 35 years). Then increasing that benefit with the **proposed** CPI scale for the years from age 62 to 67.
2. A current law benefit is calculated (at age 62) by applying the current three-tiered structure to average indexed wages (subject to the **current** wage base, averaged for the highest 35 years), then increasing that benefit with the **current** CPI scale for the years from 62 to 67.
3. A weighted transition benefit is calculated representing the benefit payable under the BPC proposal at commencement for this case. The initial implementation date for the proposal is 2023 and the full implementation date is 2032 for a transition period of 10 years. The benefit is given the weight of four years and the current law benefit is given the weight of six years (because there are six years until full implementation). The benefit payable is 40% of (1) and 60% of (2).

The individual equity measurement for the BPC proposal for this example assumes that the revised tax rate begins with an increase of 0.1% in 2018 with additive increases each year until 2027 when the full increase is in effect. Prior to 2018, we use the actual current law tax rates.

Appendix 2

Assumptions Used in Modeling Proposals[11]

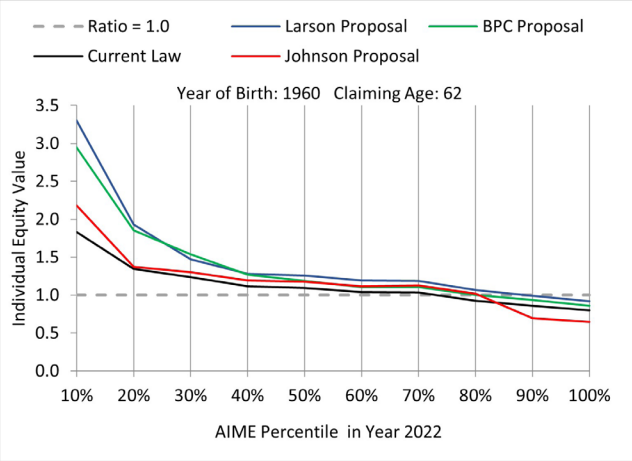
Assumption	Values Needed	Scale/Values Used
Mortality	Male	SSA 2023 Tables[12]
	Mortality Improvement	SSA 2023 Tables[13]
Cost of Living Increases	2023 2024–2098	3.3% 2.40%
Nominal Interest Rates for Accumulating taxes and Discounting Benefits	Prior to 2023 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032–2098	[14] 3.5% 3.5% 3.6% 3.7% 3.9% 4.2% 4.4% 4.6% 4.6% 4.7%[15]
Increase in NAW	2023 2024 2025 2026 2027 2028 2029 2030 2031 2032–2098	4.15% 3.76% 4.06% 4.10% 4.08% 4.01% 4.03% 4.01% 3.98% 3.57% average[16]
Retired Worker Benefit Percentage of Taxes	All years	86.8%[17]

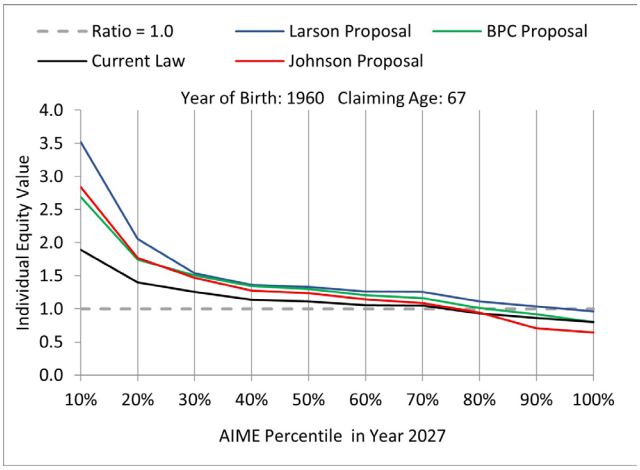
11 The assumptions for price inflation, interest rates, and wage growth listed above are the intermediate assumptions used in the 2023 Trustees Report.
12 Mortality rates are available by age and calendar year at the Death Probabilities webpage on the Social Security Administration website.
13 Mortality improvement is incorporated into the 2023 Tables referenced above.
14 Historical values by year are available in Table V.B2 in the supplemental single-year tables included in the 2023 OASDI Trustees Report.
15 The same value of 4.7% is used in every year during the period.
16 3.57% is the average over the period 2032–2098 as reported in Table V.B1 of the supplemental single-year tables to the 2023 Trustees Report. However, the actual assumptions used by the trustees vary by year during that period ranging from 3.55% to 3.76%. The actual year-by-year values are included.
17 The approximate average portion of benefits paid from the OASI Trust Fund to other than retired workers, *i.e.*, to spouses and survivors, over the 75-year valuation period.

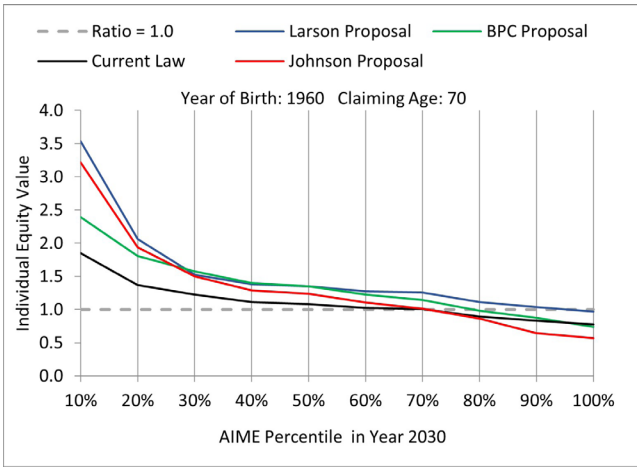
Graphs

Year of Birth = 1960

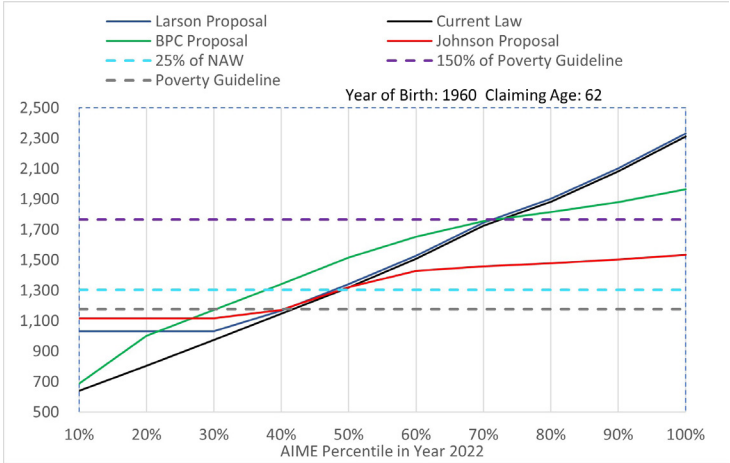
Individual Equity Meaurement†
Discounted Value of Benefits ÷ Accumulated Value of Payroll Taxes

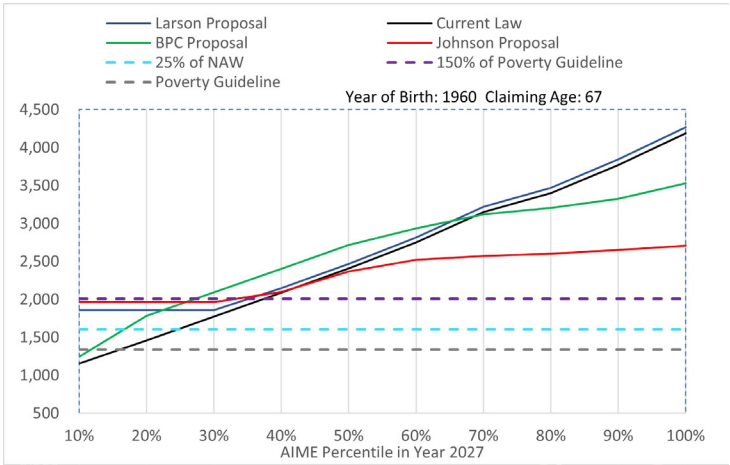


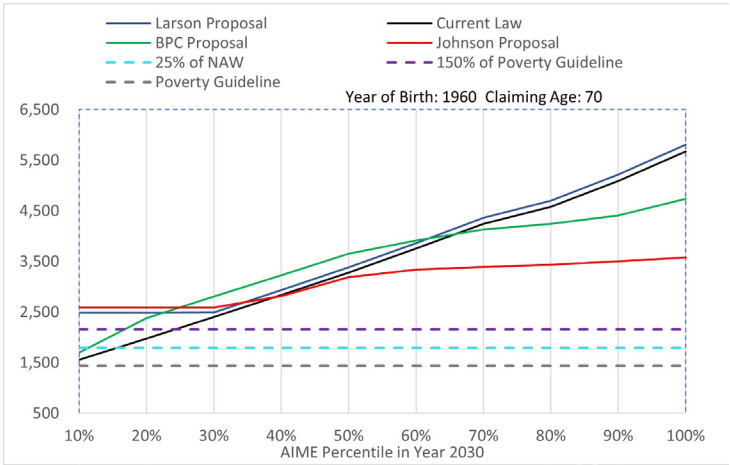




Social Adequacy Measurement‡
Social Security Monthly Benefits Compared to Three Benchmarks





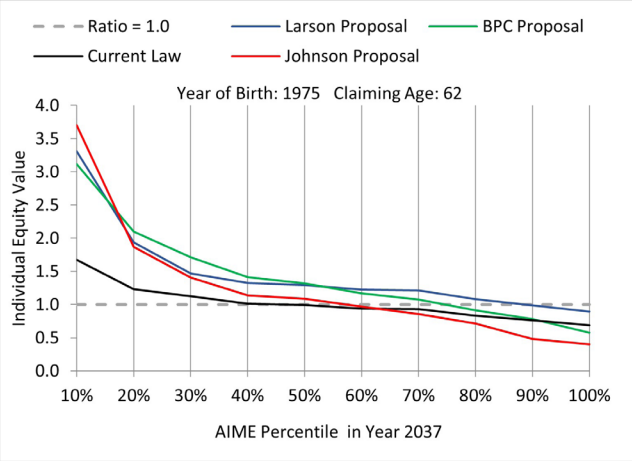


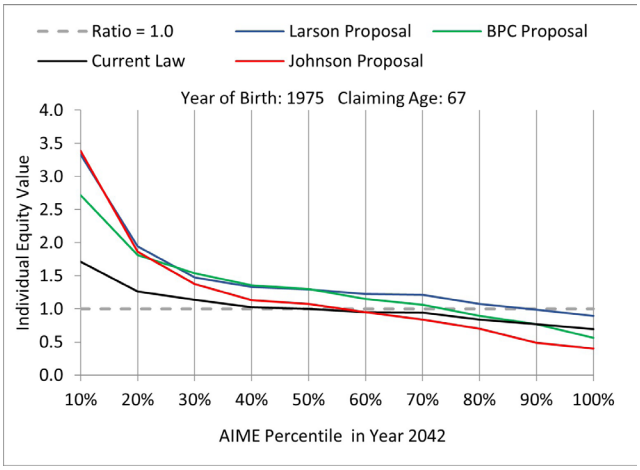
† Individual Equity is measured by comparing the discounted value of the representative workers' expected retirement benefits to the accumulated value of payroll taxes deemed to fund those benefits (86.8% of OASI taxes) at benefit commencement. See Measurement of Individual Equity on page 15.

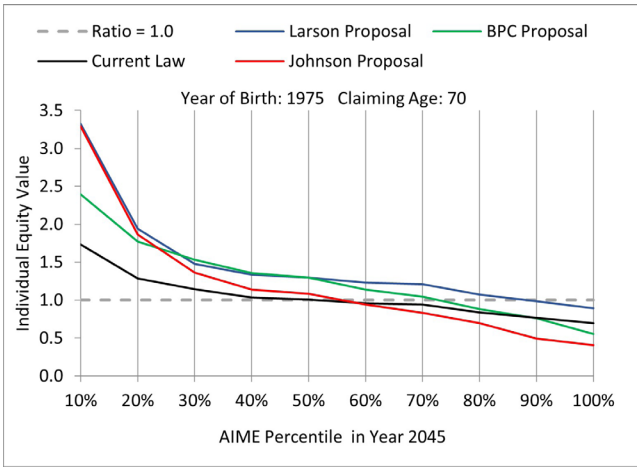
‡ Social Adequacy is measured by comparing the values of benefit commencement of the representative workers' benefit to three income thresholds—the poverty guideline, 150% of the poverty guideline, and 25% of the National Average Wage. See Measurement of Social Adequacy on page 17.

Year of Birth = 1975

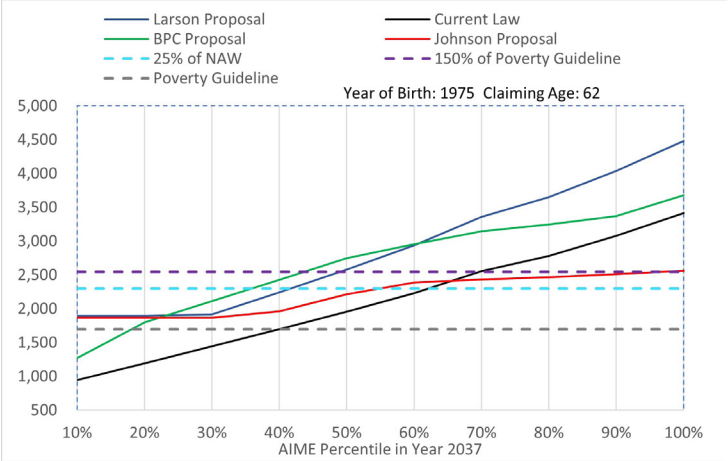
Individual Equity Meaurement†
Discounted Value of Benefits ÷ Accumulated Value of Payroll Taxes

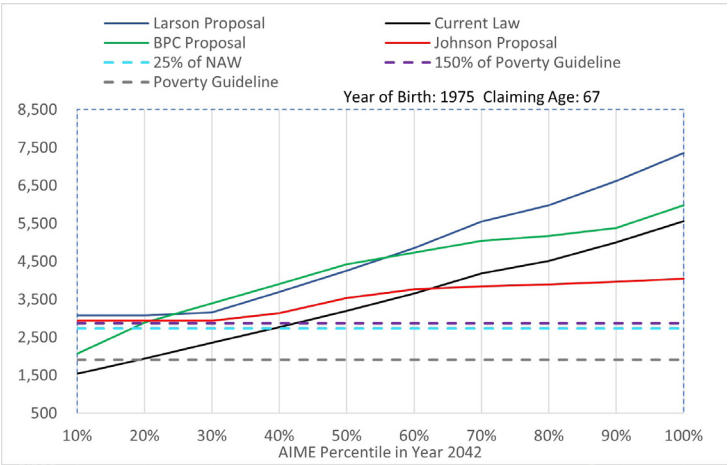


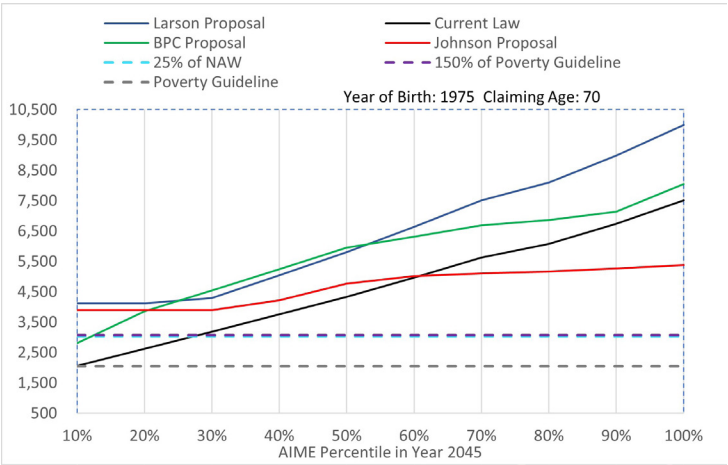




Social Adequacy Measurement‡
Social Security Monthly Benefits Compared to Three Benchmarks

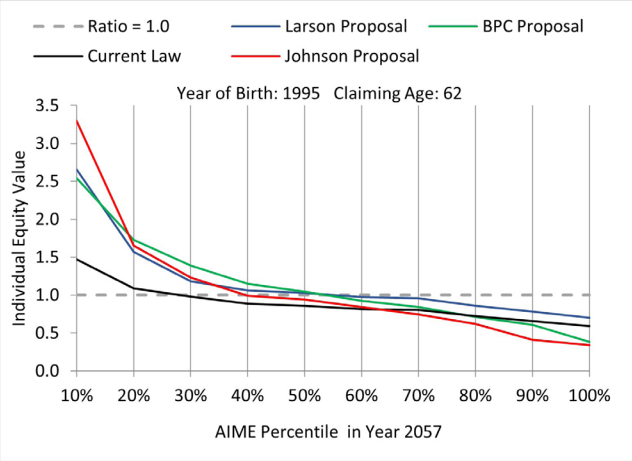


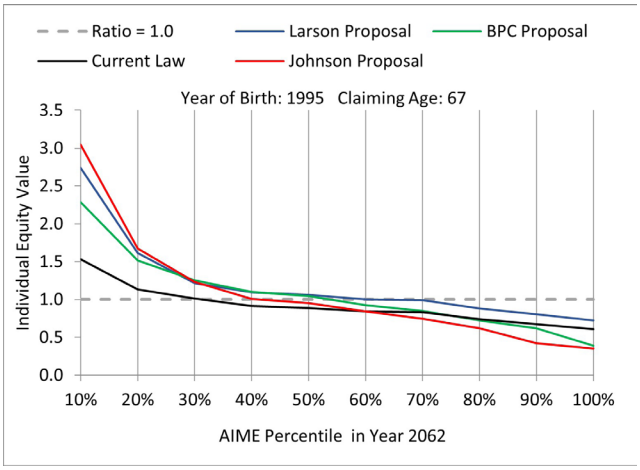


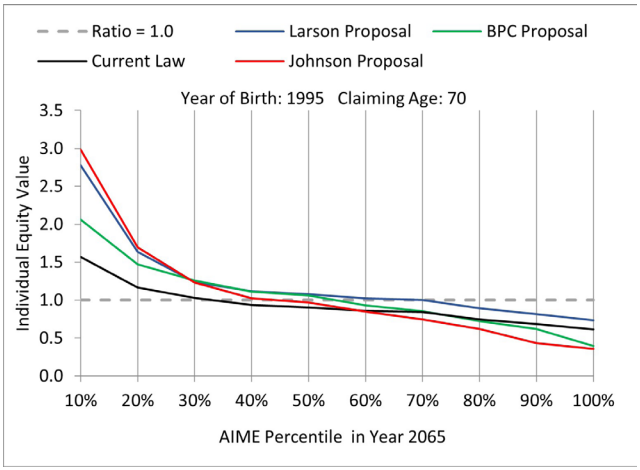


Year of Birth = 1995

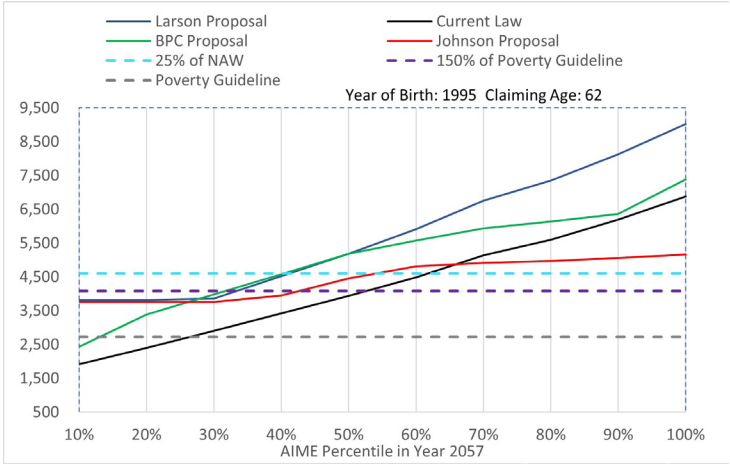
Individual Equity Meaurement†
Discounted Value of Benefits ÷ Accumulated Value of Payroll Taxes

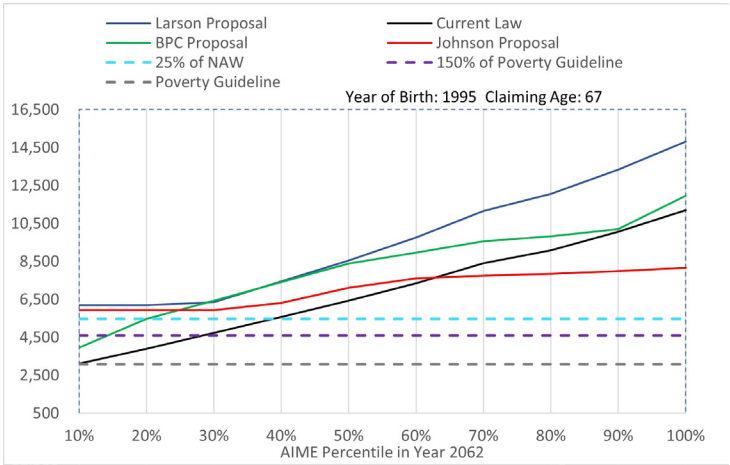


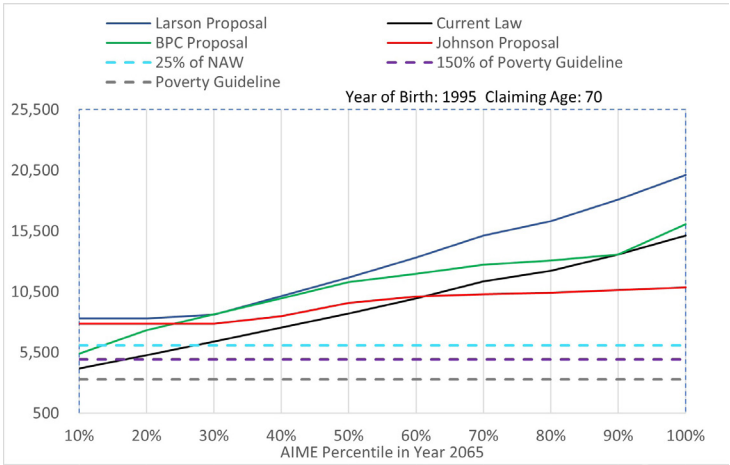




Social Adequacy Measurement‡
Social Security Monthly Benefits Compared to Three Benchmarks







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