United States General Accounting Office

GAO

Report to the Chairman, Subcommittee on Social Security, Committee on Ways and Means, House of Representatives

November 2001

SOCIAL SECURITY

Program's Role in Helping Ensure Income Adequacy

GAO

Accountability * Integrity * Reliability

GAO-02-62

Contents

Letter 1

Results in Brief 3
Background 6
Social Security Has Focused on Reducing Dependency From its Inception 7
No Single Measure Gives Complete Picture of Income Adequacy 11
Adequacy of Beneficiaries' Total Income Has Generally Increased Over Time 14
Income Adequacy in the Future Will Depend on Extent and Nature of Program Changes 24
Concluding Observations 36
Agency Comments 39

Appendix I **Descriptions of Adequacy Measurement Methods** 40

Current Poverty Thresholds 46
Experimental Poverty Thresholds 48
Family Budgets 50
Family Expenditures 54
Material Hardship 55
Median Family Income 57
One-Half Median Family Income 57
Per Capita Personal Income 58
Public Assistance 60
Public Opinion 62
Earnings Replacement Rates 64

Appendix II **Characteristics of Adequacy Measures Used in Our Analyses** 67

Current Poverty Thresholds 67
Median Family Income and 50 Percent of Median Family Income 70
Public Assistance 71
Earnings Replacement Rates 72

Appendix III **Defining Benchmarks for Analysis of Future Benefits** 73

Criteria 73
Tax-Increase-Only Benchmark Policies 74
Benefit-Reduction-Only Benchmark Policies 74

Appendix IV **Description of Approaches Used to Forecast Future Benefits** 80

MINT 80
GEMINI 81
Brief Comparison of the Models 83
Illustrative Workers 84

Appendix V **GAO Contacts and Staff Acknowledgments** 87

GAO Contacts 87
Acknowledgments 87

Tables

Table 1: Summary of Benchmark Policy Scenarios 26
Table 2: Overview of the Purpose, Construction, and Other Dimensions of 11 Methods To Measure Income Adequacy 42
Table 3: Summary of Benchmark Policy Scenario Parameters 79
Table 4: Comparison of GEMINI Data to Published Social Security Data 83
Table 5: Median Annual Social Security Income for Individuals in 2020 for the 1955 Cohort Only by Marital Status: A Comparison of MINT and GEMINI 84
Table 6: Distribution of Actual Workers Retiring in 1999 by Level, Relative to PIA Levels for Hypothetical Steady Earnings Cases Retiring in 1999 86

Figures

Figure 1: Dependence of Elderly on Federal Means-Tested Cash Benefits Has Declined as More Receive Social Security 15
Figure 2: Poverty Rates for Elderly Have Declined Faster Than for Other Groups 16
Figure 3: Median Income of the Elderly Has Grown Faster Than the Poverty Threshold But Not Faster Than the One-Half Median Income Threshold (Single Person Households Aged 65 and Older) 17
Figure 4: Historical Social Security Replacement Rates for Illustrative Workers 19
Figure 5: Share of Elderly Receiving Other Sources of Retirement Income Has Also Grown 21

Figure 6: Certain Subgroups of the Elderly More Likely to be in Poverty (1999) 23
Figure 7: Increasing Retirement Age Diminishes Replacement Rates Under Current Law 28
Figure 8: Adequacy Outlook Depends on Adequacy Standard Used (Retired Workers, All Retiring at Age 62, Under Tax-Increase Only Benchmark) 30
Figure 9: Adequacy of Income in Future Depends on Benefit Reduction Approach (Retired Workers, All Retiring at Age 62) 32
Figure 10: Benefit Reduction Approaches Have Different Effects on Different Benefit Levels (Retired Workers Born in 1985, All Retire at Age 62) 34
Figure 11: Effects of Benefit Reductions on Various Groups Reflect Varying Effects by Income Levels 35

Abbreviations

AIME	Average Indexed Monthly Earnings
BLS	Bureau of Labor Statistics
CEX	Consumer Expenditure Survey
CPS	Current Population Survey
GAO	General Accounting Office
HEW	Health, Education, and Welfare
MBR	Master Beneficiary Records
MINT	Model of Income in the Near-Term
MTR	Maintain Tax Rates
NAS	National Academy of Science
NIPA	national income and product accounts
OAA	Old-Age Assistance
OAI	Old-Age Insurance
OASDI	Old-Age, Survivors, and Disability Insurance
PIA	Primary Insurance Amount
PENSIM	Pension Policy Simulation Model
PSG	Policy Simulation Group
SSA	Social Security Administration
SSI	Supplemental Security Income

G A O
Accountability * Integrity * Reliability

United States General Accounting Office
Washington, DC 20548

November 30, 2001

The Honorable E. Clay Shaw, Jr.
Chairman
Subcommittee on Social Security
Committee on Ways and Means
House of Representatives

Dear Mr. Chairman:

Before Social Security was enacted in 1935, at least half of those 65 and older in the United States were financially dependent upon others, including family members and public assistance.[1] Today, dependency on public assistance has dropped to a fraction of its depression-era levels, and poverty rates among the elderly[2] are now lower than for the population as a whole. At the same time, Social Security has become the single largest source of retirement income and provides income for over 90 percent of those 65 and older. However, in the future, Social Security's role could change. Reductions in promised benefits and/or increases in program revenues will be needed to restore the long-term solvency and sustainability of the program. Within the program's current structure, possible benefit changes might include changes to the benefit formula or reductions in cost-of-living increases, among other options; revenue increases might include increases in payroll taxes or transfers from the Treasury's general fund.[3] The various approaches to restoring solvency and sustainability will have different effects on benefit levels.

To gain a better understanding of how Social Security benefits help ensure adequate income, you asked us to address: (1) how concern over income adequacy has shaped the Social Security program; (2) what measures help to examine income adequacy; (3) how income adequacy has changed over

[1] S. Rep. No. 74-628 at 4 (1935).

[2] In this report, we use "elderly" to refer to persons aged 65 and older.

[3] Also, some proposals would change the structure of the program to incorporate a system of individual accounts. Many such proposals would reduce benefits under the current system and make up for those reductions to some degree with income from the individual accounts. Individual account proposals also try to increase revenues, in effect, by providing the potential for higher rates of return on account investments than reserve funds would earn under the current system.

time, especially for different groups of beneficiaries; and (4) under the current system, how Social Security benefit levels and adequacy might change in the future.

To assess how concern over income adequacy has shaped Social Security, we examined the legislative history, reviewed the applicable literature, and interviewed key individuals familiar with the program's history. To identify measures that help examine income adequacy, we reviewed literature and interviewed experts. (See app. I and II.) To examine historical adequacy trends, we analyzed published government data on historical income and benefits, examined benefits for illustrative workers, and examined detailed data for the current population. To illustrate the range of potential future benefit levels under the current system, we developed and used alternative benchmark policies that achieve 75-year solvency either by only increasing payroll taxes or by only reducing promised benefits. Our tax-increase-only benchmark uses a one-time permanent increase in payroll taxes beginning in 2002, though any policy that achieved solvency only by increasing taxes would have identical effects on adequacy. Our benefit-reduction-only benchmarks gradually phase in reductions from 2005 to 2035; the reductions are accomplished by changing the parameters of the benefit formula in various ways to achieve either proportional or progressive reductions. (See app. III.) As we agreed, we did not examine any reforms that would restructure the current system, for example by creating a new system of individual accounts. Also, we did not report on any measures of individual equity, which measure the relationship between contributions and benefits, such as rates of return. Any of our benchmarks would have effects on individual equity as well as income adequacy. With our benchmarks, we used two models to simulate benefit levels for future populations of beneficiaries, using the 2001 Social Security Trustees' intermediate assumptions.[4] At our request, the Social Security Administration's (SSA) Office of Policy applied our benchmark policies to its Model of Income in the Near-Term (MINT); and under contract to us, the Policy Simulation Group applied our benchmark policies to its GEMINI model. Both models are designed to examine a representative sample of future beneficiaries. (See app. IV.) We conducted

[4] For the annual report of the Board of Trustees for the Social Security Trust Funds, SSA actuaries project future revenues and benefits. For these projections, they use alternative assumptions regarding economic and demographic trends, including average earnings, mortality, fertility, and immigration. The intermediate assumptions represent the board's best estimate of future trends.

our review from March through November 2001 in accordance with generally accepted government auditing standards.

Results in Brief

From Social Security's inception, one of its fundamental objectives has been to reduce the extent of dependency on public assistance programs, and the program's design has reflected that objective as it has evolved. Over time, public discussion has included the role that Social Security play in as helping to ensure adequate incomes for the beneficiary population. According to our analysis of the program's history, "adequacy" was never explicitly defined, although the Congress expected that benefits would eventually provide more than a minimal subsistence in retirement for full-time, full-career workers. Benefits were set in a way that focused especially on replacing some portion of pre-retirement earnings. In 1950, the first benefit increases were enacted since benefits had first been paid; government reports had called for increases, partly out of concern that inflation had eroded the purchasing power of benefits. Then, for more than 20 years, benefits were increased periodically but on an ad hoc basis reflecting judgments of how high they should be and taking into account economic and fiscal conditions. In 1972, automatic adjustments were introduced to reflect increases in the cost of living. Other program changes expanded the number of people receiving Social Security benefits, such as gradually increasing coverage to larger portions of the workforce and extending eligibility to family members and disabled workers. Other benefit programs such as Supplemental Security Income (SSI), Medicare, and Medicaid, were instituted that were also intended to help cover costs of living for the aged and disabled. Also, as House and Senate reports from 1939 noted, individual savings and other resources were also expected to play a significant role.[5]

With regard to measuring income adequacy, various measures help examine different aspects of this concept, but no single measure can provide a complete picture. Three examples illustrate the variety of approaches.

- Dependency rates measure what proportion of the population depends on others for income support, or more specifically on government income support programs such as SSI. Such rates reflect Social Security's goal of reducing dependency on public assistance.

[5] H.R. Rep. No. 76-728 at 5 (1939); S. Rep. No. 76-734 at 5 (1939).

- Poverty rates measure what proportion of the population have incomes below the official poverty threshold, which is just one of many adequacy standards used in similar rate calculations. The poverty threshold provides a minimal standard of adequacy, but moderate standards have also been developed over the years for similar rate calculations, such as moderate family budgets for elderly couples. Each standard reflects a different outlook on what adequacy means.
- Earnings replacement rates measure the extent to which retirement income replaces pre-retirement income for particular individuals and thereby helps them maintain a pre-retirement standard of living. This measure reflects the way Social Security's benefit formula is designed to replace earnings, and financial advisors commonly use it for individual retirement planning. Still, a very low earner could have a high replacement rate and still have very low income, while a high earner could have a low replacement rate and live quite comfortably.

For any of these measures, the meaning of a given value of the measure is not clear. For example, what value of a dependency or poverty rate is considered low enough and what replacement rate is considered high enough are quite subjective. Moreover, all of these types of measures depend significantly on what types of income are counted, such as before- or after-tax income or noncash benefits such as Medicare and Medicaid. As a result, the measures are most useful for making comparisons, whether over time, across different subpopulations, or across different policy scenarios.

The adequacy of income for the elderly has increased substantially by several measures. For example, since 1940, the percentage of the elderly receiving public income support has fallen from 22 to 9 percent, and since 1959, poverty rates for the elderly have fallen from 35 to 10 percent. However, the greatest changes occurred in the first 20 to 40 years of the program. In the last 20 years, the extent of any change depends on the measure used; change has slowed or even stopped according to some measures. Coinciding with these changes have been changes in the various sources of retirement income. Most notably, Social Security is now the largest single source of retirement income, providing more than 40 percent of aggregate income to more than 90 percent of elderly households. Also, coverage under employer pensions has increased, retirement savings have increased, work patterns of the elderly have changed, and major noncash benefits have become widely available, such as Medicare. For various subgroups of beneficiaries that tend to have lower lifetime earnings, poverty rates have also declined considerably. However, high proportions of such beneficiary groups continue to have incomes below the poverty

threshold. For example, poverty among blacks aged 65 and older has fallen from over 50 percent to just over 20 percent, but at that level, it remains more than twice as high as for all the elderly. While the Social Security benefit formula favors lower lifetime earners, their lower earnings and work histories nevertheless can leave them with incomes below poverty when they retire or become disabled.

As our analysis illustrates, the outlook for future Social Security benefit levels and income adequacy generally will depend on how the program's long-term financing imbalance is addressed, as well as on the measures used. Even without reductions in currently promised benefits, monthly benefit levels could decrease as the program's full retirement age increases under current law, depending on the retirement decisions of future retirees. Still, in that same case, the outlook varies for different adequacy measures. For example, using adequacy measures that reflect wage increases, such as median family incomes, adequacy should not change markedly from today because the current benefit formula is also designed to reflect wage increases.[6] In contrast, using measures that reflect only price increases such as the official poverty threshold, adequacy would appear to improve considerably if wages increase faster than prices on average, as the Social Security trustees' report assumes they will. In that case, benefits would in turn increase faster on average than the threshold.[7] Moreover, the outlook would depend on how any benefit reductions might be made. As our analysis illustrates, benefit reductions that do more to protect lower earners would increase the risk of poverty less than ones that do not. In turn, such progressive benefit reduction approaches would increase the risk of poverty less for beneficiary groups that tend to have low earnings, such as minorities and women. Finally, the adequacy of total incomes will depend on what happens to other sources of income, such as employer-sponsored pensions, individual savings, employment earnings, SSI, and noncash benefit programs such as Medicare.

[6] Some reform proposals would revise the benefit formula to reflect price increases instead of wage increases.

[7] The outlook would also depend on how workers respond to policy changes. For example, faced with increased Social Security taxes, workers might save less and have less retirement income from saved assets as a result.

Background

Title II of the Social Security Act, as amended, establishes the Old-Age, Survivors, and Disability Insurance (OASDI) program, which is generally known as Social Security. It provides cash benefits to retired and disabled workers and their dependents and survivors. Workers become eligible when they have enough years of earnings covered under Social Security; they and their employers pay payroll taxes on those covered earnings. In 1999, about 96 percent of all U.S. jobs are covered , and over 40 million people received $386 billion in benefits, which averaged about $800 per month or $9600 per year. The benefit formula takes into account the lifetime history of earnings and replaces a higher percentage of earnings for lower earners than for higher earners.

In contrast, the Supplemental Security Income (SSI) program provides income support to eligible aged and disabled persons regardless of their earnings history. Funds for SSI benefits come from general revenues, not payroll taxes. Persons with income or assets that exceed certain thresholds are not eligible for SSI. In 2001, the maximum federal SSI monthly benefit is $531 for an individual and $796 for a couple and is reduced to reflect receipt of other income, including OASDI benefits. In December 1999, over 6.5 million people received federally-administered SSI benefits; of these about 6.3 million received a federal benefit and about 2.4 million received an SSI state supplemental benefit. In December 1999, the average monthly federal benefit was $342; the average monthly federally-administered state supplement was $111.

Medicare's Hospital Insurance benefits are generally provided automatically and free of premiums to persons aged 65 or older who are eligible for Social Security or Railroad Retirement benefits. Similarly, individuals who have been entitled to Social Security or Railroad Retirement disability benefits for at least 24 months are entitled to such benefits. In addition, Supplementary Medical Insurance benefits are available on a voluntary basis with a monthly premium to cover doctors' services, tests, and a variety of over medical services. In 1999, Medicare paid a total of $210 billion in benefits and covered nearly 40 million enrollees. According to current estimates, the Hospital Insurance trust fund will be exhausted in 2029.

Medicare beneficiaries and others who have low incomes and limited resources may also receive help from the Medicaid program. In 1998, Medicaid made $142 billion in payments for medical services for 41 million recipients, of which about 4 million were aged 65 or older and 6.6 million were disabled. Average payments were about $10,200 for the aged and $9,100 for the disabled. Roughly $32 billion was paid for nursing facilities.

According to the OASDI Trustees' 2001 intermediate, or best-estimate, assumptions, Social Security's cash flow is expected to turn negative in 2016. In addition, all of the accumulated Treasury obligations held by the trust funds are expected to be exhausted by 2038. Social Security's long-term financing shortfall stems primarily from the fact that people are living longer while having fewer children. As a result, the ratio of workers paying into the system to beneficiaries has been falling and is projected to decline from 3.3 today to about 2 by 2030.[8]

To address the program's long-term financing shortfall, a variety of proposals have been offered. In choosing among proposals, we have suggested that policymakers should consider three basic criteria:

- the extent to which the proposal achieves sustainable solvency and how the proposal would affect the economy and the federal budget;
- the balance struck between the twin goals of individual equity[9] (rates of return on individual contributions) and income adequacy (level and certainty of benefits); and
- how readily such changes could be implemented, administered, and explained to the public.

Moreover, as we have said, reform proposals should be evaluated as packages that strike a balance among individual reform elements and important interactive effects. Overall evaluation of each proposal depends on the weight individual policymakers place on each criterion.[10]

Social Security Has Focused on Reducing Dependency From its Inception

From its inception, Social Security was intended to help reduce the extent of dependency on public assistance programs. As it has evolved, the program's design has reflected that objective. Over time, that objective has come to be stated more broadly as helping ensure adequate incomes. While the Congress has never explicitly defined what constitutes an adequate level of benefits, it stated as early as 1939 that its objective was

[8] See *Retirement Income: Implications of Demographic Trends for Social Security and Pension Reform* (GAO/HEHS-97-81, July 11, 1997).

[9] For a discussion of individual equity, see *Social Security: Issues in Comparing Rates of Return with Market Investments* (GAO/HEHS-99-110, Aug. 5, 1999).

[10] See *Social Security: Criteria for Evaluating Reform Proposals* (GAO/T-HEHS-99-94, Mar. 25, 1999) and *Social Security: Evaluating Reform Proposals* (GAO/AIMD/HEHS-00-29, Nov. 4, 1999).

to "afford more adequate protection." However, individual savings and other resources were also expected to play a significant role.

Social Security Intended to Insure Against Lost Wages

In response to the grave economic problems of the Great Depression, President Franklin Roosevelt created the Committee on Economic Security in 1934 to study the economic insecurity that individuals faced and to make recommendations on how to address it. The committee's recommendations became the basis of the Social Security Act of 1935, which created several programs to meet the needs of different population groups, including the aged. Two programs specifically addressed the aged population—Title I's Old-Age Assistance (OAA) program and Title II's Old-Age Insurance (OAI) program.[11] OAA benefits, administered by the states with both state and federal funds, were intended to provide immediate cash income for millions of elderly persons without sufficient income for a decent subsistence. OAI benefits, administered by the federal government and funded by equal contributions from both employees and employers, were designed for younger workers to build up their rights to annuities in old age gradually. In effect, the contributions would purchase insurance to protect workers against lost wages when they became too old to work.

In debating the creation of OAI, proponents made a variety of arguments in its favor and mentioned several objectives that it would serve. Of these, helping reduce dependency on public assistance was arguably the most fundamental. The Congress was clearly concerned that an increasing number of people were becoming dependent upon the public for their well-being; Social Security would eventually provide benefits that workers and their employers would pay for. Other objectives that were discussed in the debate included stimulating the economy by providing cash income that people would spend and opening up jobs for younger workers by freeing older workers to retire.

Implicitly, the Congress designed Social Security benefits with a focus on replacing lost wages. The original formula computed benefits as a percentage of lifetime wages covered under the program in a way that favored lower earners, reflecting a special concern for their benefit levels.[12] Social Security's framers had targets in mind for benefit levels, but

[11] In the act, Title I was named "Grants to States for Old-Age Assistance," and Title II was named "Federal Old-Age Benefits."

[12] When the formula was changed in the 1939 amendments to replace monthly wages instead of lifetime wages, the new formula was also progressive.

these targets did not appear to be based on any type of scientific research or data analysis. While the Congress made no assertions concerning whether the resulting benefits would be adequate, Senate and House reports stated respectively that under Social Security it would be possible to provide "more than reasonable subsistence" and "not merely subsistence but some of the comforts of life." The House report also noted that the "benefits provided for workers who have been employed during substantially all their working life will probably be considerably larger than any Federal-aided State pensions could be."

Various Program Changes Have Been Related to Income Adequacy

As time passed, the Social Security program grew and evolved. Even before the first monthly benefits were paid in 1940, the Congress enacted amendments in 1939 to "afford more adequate protection to more of our people," as House and Senate committee reports put it. Changes to benefit levels, coverage of earnings, and eligibility are especially relevant to the program's adequacy goals. In addition, the introduction of new programs addressed specific needs, such as covering health care costs, promoting retirement saving, and promoting and protecting employer-sponsored pensions.

Changes to monthly benefit levels came in different forms at different times. From 1939 until 1950, there were no changes to the benefit formula, and benefit levels, after adjusting for inflation, fell as a result.[13] The 1948 Trustees' Report expressed concern that inflation was diminishing the adequacy of Social Security benefits and presented a chart showing the decline in inflation-adjusted benefit levels. The 1950 amendments to the Social Security Act increased benefit levels substantially. Then, until 1972, periodic amendments made various ad hoc adjustments to benefit levels. Economic prosperity, along with actuarial methods that often left the Trust Funds with substantial surpluses, facilitated gradual growth of Social Security benefit levels through these ad hoc adjustments.

In light of the steady growth of benefit levels, the 1972 amendments instituted automatic adjustments to constrain the growth of benefits as well as to ensure that they kept pace with inflation. Parameters of the

[13] Each year's group of new retirees would generally have higher average wages than the previous years' groups (even though the maximum covered earnings level did not change). Initial benefit levels increased somewhat as a result, but with the tilt in the benefit formula, a larger and larger portion of those wages were replaced at a lower marginal rate, and on net, inflation eroded the purchasing power of those initial benefit levels.

benefit formula were automatically adjusted to reflect inflation, and the adjustments affected levels of benefits for both existing and new beneficiaries. However, wages grew more slowly and prices grew more quickly in the 1970s than they had historically. As a result, initial benefit levels grew faster than intended.[14] The program's first benefit reductions in 1977 attempted to correct for those unintended consequences of the 1972 amendments, and the resulting pattern of increasing and then declining benefit levels has become known as the "notch."[15] In the process, the benefit formula was redesigned so that initial benefits would generally increase with wages for each new group of beneficiaries. As individuals aged, annual cost-of-living adjustments would then increase benefits to keep pace with inflation. In effect, the new formula's design would generally replace pre-retirement wages for similar individuals at a consistent rate across age groups. Implicitly, this episode illustrates the focus of the Congress on replacing wages and also identifies benefit levels that the Congress considered higher than they intended. The only other significant benefit reductions came in 1983 when the Congress delayed cost-of-living adjustments primarily to address short-term financing problems and gradually increased the retirement age to address long-term financing problems.[16]

In addition, a variety of other types of program changes had effects on the extent to which the program helped ensure income adequacy. As amendments extended Social Security coverage to more jobs, more workers would eventually receive benefits. Initially, Social Security only covered the roughly 60 percent of workers in "commerce and industry" whose wages could most easily be taxed and tracked. As the program matured, coverage was gradually extended to new groups of workers, such as farm workers, domestic workers, self-employed workers, and

[14] This unintended benefit growth occurred because larger and larger portions of slower-growing average monthly wages were replaced at a higher marginal rate, which was intended to benefit lower earners but increased with faster-growing prices.

[15] See *Social Security: GAO's Analysis of the Notch Issue* (GAO/T-HEHS-94-236, Sept. 16, 1994).

[16] Increasing the retirement age might not be considered a benefit reduction because individuals are living longer and therefore collecting benefits for more years. However, for a person retiring at a given age, benefit levels are reduced because the actuarial reduction for early retirement is larger. See *Social Security Reform: Implications of Raising the Retirement Age* (HEHS-99-112, Aug. 27, 1999). Also, there have been changes that tightened eligibility standards for disability benefits, but for those who are eligible, benefit levels were not affected.

some federal and state government workers. Today, Social Security covers about 96 percent of all U.S. jobs .

Moreover, various amendments extended eligibility to more types of beneficiaries. Under the 1935 act, only some retired workers were to receive benefits. The 1939 amendments extended benefit eligibility to wives, widows, children, and dependent parents age 65 and older. The 1956 amendments extended eligibility to disabled workers, and the 1958 amendments extended eligibility to their dependents.[17] In addition, the 1956 and 1961 amendments extended eligibility to women and men, respectively, at age 62 for retired workers, spouses, and widow(er)s, though worker and spouse benefits taken before the full retirement age were reduced to take account of the longer period over which they would be paid.

Outside Social Security, other legislation also addressed income adequacy in various ways. Other benefit programs were created and changed to help ensure adequate incomes. In 1965, Medicare and Medicaid were created to alleviate the historically increasing strains on incomes from paying for health care. In 1972, Title XVI's Supplemental Security Income replaced Title I's Old-Age Assistance.

Moreover, as both House and Senate reports noted in 1939, "individual savings and other resources must continue to be the chief reliance for security." Over the years, the Congress has enacted legislation to promote employer-sponsored pensions and make them more secure. The Congress has also enacted legislation to promote individual retirement savings and encourage greater work-force participation by the aged and disabled.

No Single Measure Gives Complete Picture of Income Adequacy

Various measures have been developed to examine different aspects of income adequacy, but no single measure offers a complete picture. A universally accepted definition of "income adequacy" does not exist; focusing on a single measure would implicitly endorse the concept of adequacy it measures while dismissing other concepts. Several examples of three broad types of measures illustrate the range of relevant measures. Each measure has characteristics that reflect different outlooks on the issue, including how it is calculated, how it accounts for different types of

[17] Other types of eligibility expansions included dependent parents, disabled widows, and divorced spouses.

households, how it accounts for geographic variations, and how it is updated over time. In addition, for any type of measurement, what types of income are counted presents a key issue.

The first type of measure includes variations of dependency rates. Dependency rates speak to Social Security's fundamental objective of reducing dependence on public assistance programs, such as SSI or state and local general assistance programs. Some sources have reported dependency rates over the years that reflect a wide variety of sources of income support while other sources report rates that only reflect federal income support programs. For example, as cited by congressional reports, the dependency rate of over 50 percent of the elderly in the 1930s reflected dependence on family members and private charities as well as public assistance. Moreover, public assistance includes a variety of federal, state, and local programs in addition to OAA and SSI. As a result of the extensive effort required to identify all sources of support, the most readily available annual dependency rate data reflects only dependency on OAA and SSI. Accounting for different types of households, geographic variations, and changes over time are not critical concerns in calculating the rates because the rates simply measure whether individuals or households receive public assistance, wherever they are, and whatever the eligibility criteria happen to be. However, the issues of geography and eligibility do raise questions about how to interpret the rates because benefit standards and eligibility provisions for public assistance programs have varied considerably by location and over time.

The second type of measure includes rates that express the percentage of the population that has incomes below a given adequacy standard. For example, the poverty rate shows the percentage of individuals whose household income falls below the official poverty thresholds, which attempt to specify an income that would afford a minimal standard of living. Different thresholds apply for different types and sizes of households but are the same for every location in the country. The official poverty thresholds were originally developed in 1963 and were built upon a government family food plan. Initially, the thresholds were updated to reflect the change in the cost of the food plan, but since 1969, they have been updated annually to reflect changes in the Consumer Price Index (CPI). In 1969, the Bureau of the Budget established the thresholds as the official definition of poverty for statistical use in all executive departments.

The poverty threshold is only one of many adequacy standards that have been developed over the years. Moreover, various government programs

and descriptive statistics use different percentages of the poverty threshold, for example, 125 or 150 percent of poverty in determining benefits or eligibility.[18] Some standards focus on determining the income level needed for a moderate subsistence, not merely a minimal one. The bases of the various standards include government-developed family budgets, expenditure data, income data, and even public opinion polls. The various adequacy standards have also used different approaches to capture household and geographic variations and to reflect changes over time. A variety of studies have evaluated the poverty threshold and explored possible changes to it. (See app. II.)

The third type of measure, the replacement rate, speaks to Social Security's objective of replacing lost wages, which is implicit in the program's benefit formula. In contrast to other types of measures, it focuses on whether retirement income is sufficient to maintain the standard of living a given household enjoyed before retirement, not just meet some socially defined standard of adequacy. Generally, it is calculated as the ratio of retirement income in the first year of retirement to household income in the year immediately preceding retirement.[19] However, the actual experience of a given household could easily involve phased-in retirement or situations where one spouse retires while the other continues to work. Such irregularities present problems in interpreting replacement rates for actual households. Still, these rates can be useful for demonstrating the effects of program changes by focusing on illustrative workers with standardized work experiences. With replacement rates, geographic variations and updating the measure over time are not relevant issues because the household's own experience is the basis for the measure regardless of location or year.

All of these types of measures depend significantly on what types of income are counted. Some dependency rates look only at specific sources of public assistance, while others attempt to reflect all types of public assistance and some even try to reflect dependency of private charities and family members. In the case of poverty rates, one criticism has been

[18] See *Means-Tested Programs: Determining Financial Eligibility Is Cumbersome and Can Be Simplified* (GAO-02-58, Nov. 2, 2001).

[19] SSA typically calculates replacement rates as the ratio of initial Social Security benefits to pre-retirement covered earnings. However, pension analysts typically calculate replacement rates as the ratio of total retirement income to total pre-retirement income. Total retirement income would include sources such as employer-sponsored pensions and income from saved assets.

that before-tax income is compared with thresholds based on after-tax income. In the case of replacement rates, researchers have noted that the measures of retirement and pre-retirement incomes should be consistent, especially with respect to before- or after-tax status. Finally, a wide range of noncash benefit programs, notably Medicare and Medicaid, also support the standards of living of their beneficiaries though such benefits are not always reflected in measures of income adequacy. For example, replacement rates typically only consider cash income before and after retirement. Also, noncash benefits are not included as income in determining poverty status, and the living costs they support are not explicitly reflected in the poverty threshold against which income is compared. In particular, considerable debate surrounds how to treat medical care needs and resources in measuring adequacy.

Adequacy of Beneficiaries' Total Income Has Generally Increased Over Time

The adequacy of income for the elderly has generally increased since the 1930s, according to various measures. For example, dependence on public assistance has fallen, as have poverty rates for the elderly. The largest changes occurred in the first few decades of the program's history; improvements in the past 20 years have slowed or even stopped, depending on the measure used. At the same time, Social Security has become the most important source of income for the elderly and disabled. Savings and other assets, employer-sponsored pensions, and earnings have also increased as sources of income. Still, relatively high poverty rates remain for subgroups that typically have low life-time earnings, whether for old-age or disabled beneficiaries.

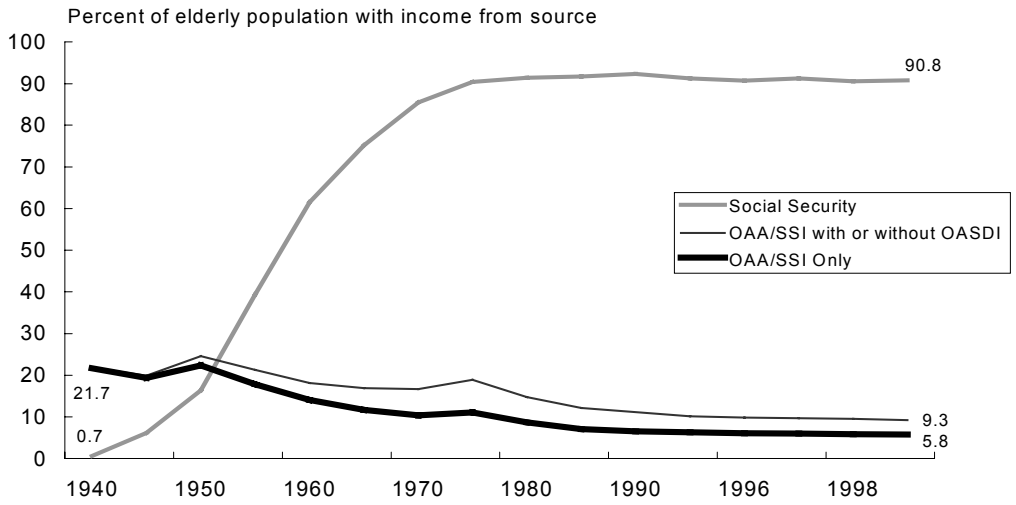
Two Measures Show Increased Income Adequacy for the Elderly

The dependency rate for the elderly has fallen from almost 22 percent in 1940 to about 6 percent in 1999, using a rate that only reflects OAA or SSI benefits[20] and does not include dependency on relatives and friends. Meanwhile, receipt of Social Security benefits among the elderly has grown significantly from less than 1 percent to over 90 percent. (See fig. 1.) A 1938 Social Security Bulletin reported a dependency rate of 65 percent, which included assistance to those who were totally or partially dependent on friends and relatives. Among the elderly, OASDI beneficiaries outnumbered OAA beneficiaries for the first time between 1950 and 1955 and, by 1960, a majority received Social Security benefits.

[20] In 1974, the federally administered Supplemental Security Income (SSI) program replaced the state run OAA program.

Since 1980, roughly 90 percent of the elderly have received benefits. The rapid increase in the percentage receiving benefits and the eventual leveling off illustrates the natural maturing of the Social Security system. When monthly benefits were first paid in 1940, only those just turning 65 received benefits; older individuals were not eligible. As each year passed, one additional age group was added to the beneficiary rolls, and more individuals from the earlier, ineligible age groups died.

Figure 1: Dependence of Elderly on Federal Means-Tested Cash Benefits Has Declined as More Receive Social Security



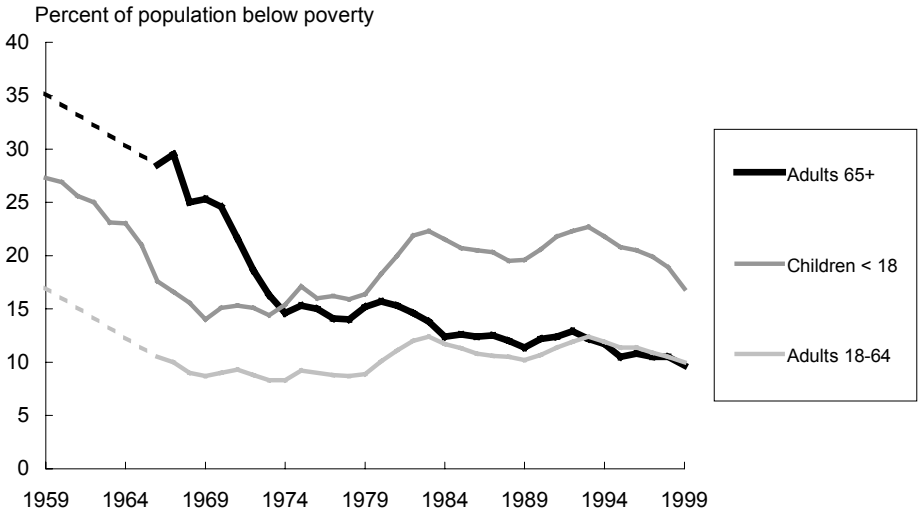
Note: Effective in 1974, SSI replaced OAA. SSI is a federal-state income support program for the needy aged, blind, and disabled, as was OAA for the aged. State and local governments also provide other forms of public assistance.

Source: Annual Statistical Supplement to the Social Security Bulletin, 2000, SSA.

Poverty rates for the elderly have also declined, from 35 percent in 1959 to about 10 percent in 1999. (See fig. 2.) Since 1959, the elderly population has experienced the greatest reduction in poverty rates, compared with children 18 years and younger and adults aged 18 to 64.[21]

[21] Near poverty rates, which measure the percentage of the elderly whose income falls between 100 and 125 percent of the poverty threshold, show another important aspect of well-being. In 1999, 6 percent of the elderly were near-poor.

Figure 2: Poverty Rates for Elderly Have Declined Faster Than for Other Groups



Note: Data for years indicated by dashed lines were not available but are available for 1959.

Source: U.S. Bureau of the Census.

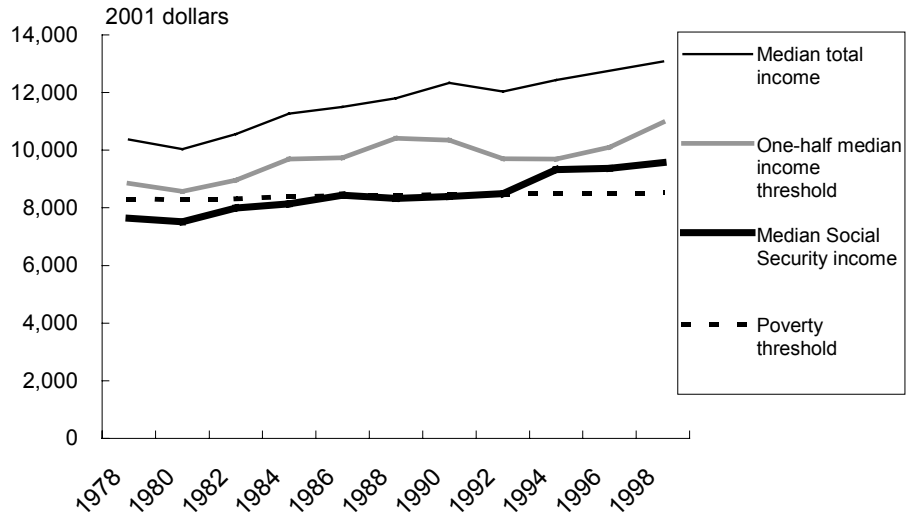
Extent of More Recent Changes Depends on Measure Used

Examination of dependency and poverty rates for the elderly reveal that much of the improvements occurred during the early decades of the program. (See figs. 1 and 2.) The dependency rate declined at a much faster rate in the early years until about 1965 when declines slowed to a more level trend. Declines in the poverty rate for the elderly were most dramatic from 1959 to 1974 (more than 1 percent per year on average) and have continued since then, but at a slower rate.

Using a different adequacy standard than the official poverty threshold, adequacy appears to have changed little in recent years, using the difference between median incomes and two alternative thresholds to examine adequacy. For example, figure 3 shows the median total income and median Social Security income for single persons aged 65 and older. It also shows the official poverty threshold for such persons and one-half median income for all single person households, which some researchers have used as an alternative adequacy standard. The figure shows that the gap between median total income and the poverty threshold consistently widens over the years shown and widens more than the gap relative to the one-half median income threshold. Moreover, median Social Security income is lower than the poverty threshold in 1978 and higher by 1998

while it is consistently lower than the one-half median income threshold.[22] The primary difference between the two adequacy standards is that the official poverty threshold is updated annually to reflect inflation while median income grows at a rate similar to wage growth because wages are the largest component of family income. Initial Social Security benefits, and other sources of retirement income as well, also tend to grow at a rate closer to wages than to prices. Historically, wages have generally grown faster than prices, especially when their respective rates of change are averaged over long periods of time.

Figure 3: Median Income of the Elderly Has Grown Faster Than the Poverty Threshold But Not Faster Than the One-Half Median Income Threshold (Single Person Households Aged 65 and Older)



Note: The official poverty threshold increases each year to reflect inflation. Median income increases roughly by the rate of wage growth, which has generally been faster than inflation.

Source: Income of the Population 55 and Older, 1998, 2000 Annual Statistical Supplement, 1999 Money Income in the United States.

[22] We use a single person household for illustration because most elderly households are single person households. A similar pattern applies for two-person households.

Social Security and Other Types of Retirement Income Have Grown Over Time

Over the same period that the income adequacy has increased for the elderly, Social Security has become the single largest source of retirement income. As discussed below, program changes have increased the real value of benefits, and more and more elderly have received benefits as the program has matured. Other sources of retirement income have also grown. Periods of economic prosperity have contributed to the growth of all sources of retirement income.

Social Security's benefit levels have generally increased over the years. Replacement rates for illustrative workers with steady lifetime earnings histories show how changes in the benefit formula have affected benefit levels because using such workers holds other factors equal that might also have an effect.[23] (See fig. 4.) For example, using illustrative workers filters out the effects of changes in the covered population or changes in work and retirement patterns. The declining replacement rates during the early years reflect that no benefit increases were enacted until 1950; fig. 4 also shows a sharp increase in replacement rates that coincides with the 1950 amendments. From 1950 until the early 1970s, replacement rates fluctuated noticeably more from year to year than over other periods; this pattern reflects the ad hoc nature of benefit increases over that period. The rapid increases in the 1970s and the rapid decline in the early 1980s reflects the effects of the notch and efforts to correct it.[24] The smoother pattern that appears since that time reflects the automatic indexing of benefits as enacted in 1977.[25] While there have been many changes in the program for many reasons at different points in time, the replacement rates experienced by today's new retirees are notably consistent with the

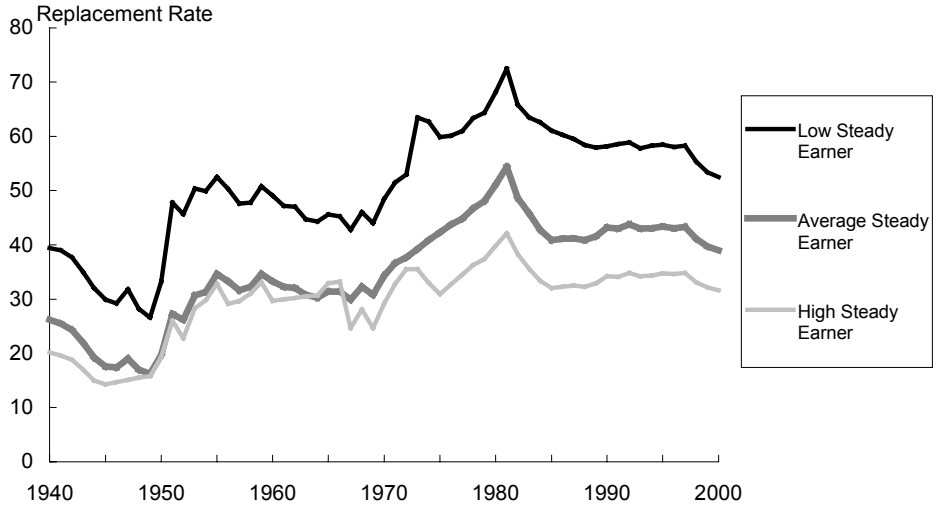
[23] We used the Social Security Administration's low, average, and high steady earners as our illustrative workers. Steady earners have earnings equal to a constant percentage of Social Security's Average Wage Index in every year of their careers. Those percentages are 45, 100, and 160 respectively for low, average, and high earners. See appendix IV for further discussion.

[24] As discussed earlier, the 1972 amendments created automatic adjustments to the Social Security benefit formula, but initial benefit levels grew faster than intended. The 1977 amendments created a new formula and reduced benefits to correct for those unintended consequences, and the resulting pattern of increasing and then declining benefit levels has become known as the "notch."

[25] While this replacement rate analysis captures the effects of many program changes, some of the patterns result from irregularities in the growth rates of wages, which help determine the earnings histories of the illustrative workers. Such irregularities are primarily responsible for the dip in the late 1990s, which reflects the unusually high growth in wages during that period.

levels that Social Security's designers envisioned for a fully mature system over 60 years ago.

Figure 4: Historical Social Security Replacement Rates for Illustrative Workers



Notes: Replacement rates are the annual retired worker benefits at age 65 divided by the earnings in the previous year. Steady earners have earnings equal to a constant percentage of Social Security's Average Wage Index in every year of their careers. Those percentages are 45, 100, and 160, respectively for low, average, and high earners. Some fluctuations in the graph do not result from program changes but rather from fluctuations in the growth rate of wages, which helps determine the earnings histories of the illustrative steady earners.

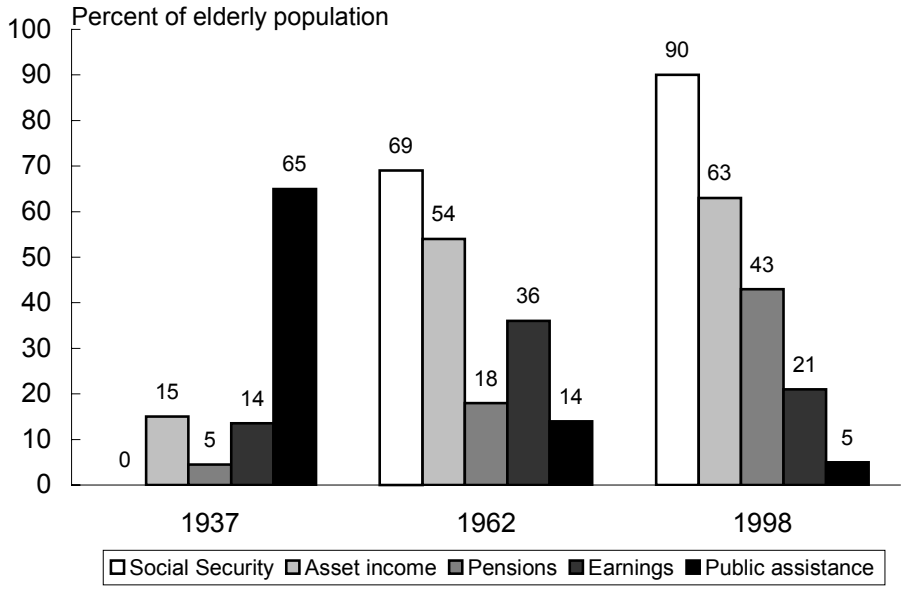
Source: SSA Office of the Chief Actuary.

At the same time that benefit levels have increased, so has the share of elderly receiving benefits. This is also true of employer-sponsored pensions, earnings, and income from saved assets. Like figure 1, figure 5 shows that the percentage of the elderly receiving Social Security benefits has increased as dependence on public assistance has declined. Figure 5 also shows that Social Security provides income to more elderly households than any other source of retirement income, although other sources have also increased in importance. The percentage of the elderly who receive income from employer pensions increased from 5 percent in

1937 to 43 percent in 1998.[26] The percentage receiving income from saved assets increased from about 15 percent to over 60 percent. The percentage receiving earned income increased from 1937 to 1962 but dropped from 1962 to 1998. In addition to sources of cash income, noncash benefit programs that did not exist in the 1930s now play a major role in supporting the standards of living of Social Security beneficiaries. For example, Medicare is available to all Social Security beneficiaries aged 65 and older and all disabled beneficiaries after 24 months, among others.

[26] While there have been significant improvements in pension receipt for retired workers, pensions have failed to reach a significant portion of the elderly. In 1998, 48 percent of retired persons reported that they had no pension income of their own or from a spouse. Retired persons without pension income were more likely to be single, female, less educated, minority, and poor. About 21 percent of retired persons without pension income had incomes below the federal poverty threshold, compared with 3 percent with pension income. They were also less likely than retired persons with pension income to have income from other sources, except SSI and other public assistance programs. For example, persons without pension income were less likely to have income from assets (51 percent) than those with pension income (78 percent). See *Pension Plans: Characteristics of Persons in the Labor Force Without Pension Coverage* (GAO/HEHS-00-131, Aug. 22, 2000).

Figure 5: Share of Elderly Receiving Other Sources of Retirement Income Has Also Grown



Note: 1962 and 1998 data indicated above represent aged unit income that is either the income of nonmarried persons or the sum of income within a married couple.

Source: Income of the Aged ChartBook, 1998, "Economic Status of the Aged." Social Security Bulletin, March 1938.

In addition to providing some income to nearly all elderly persons, Social Security is the largest source of income for most. In 1998, Social Security provided more than 50 percent of total income for 63 percent of aged beneficiaries, and it was the only source of income for about 18 percent of aged beneficiaries. Still, other sources of retirement income largely determine who will have the highest retirement incomes. Elderly households with the highest levels of income tend to have substantial income from employer pensions, earnings from employment, and saved assets, while those with the lowest incomes do not. For example, in 1996, 18 percent of all aged beneficiary units without earnings from employment were poor as compared with only 2 percent who received earnings.[27]

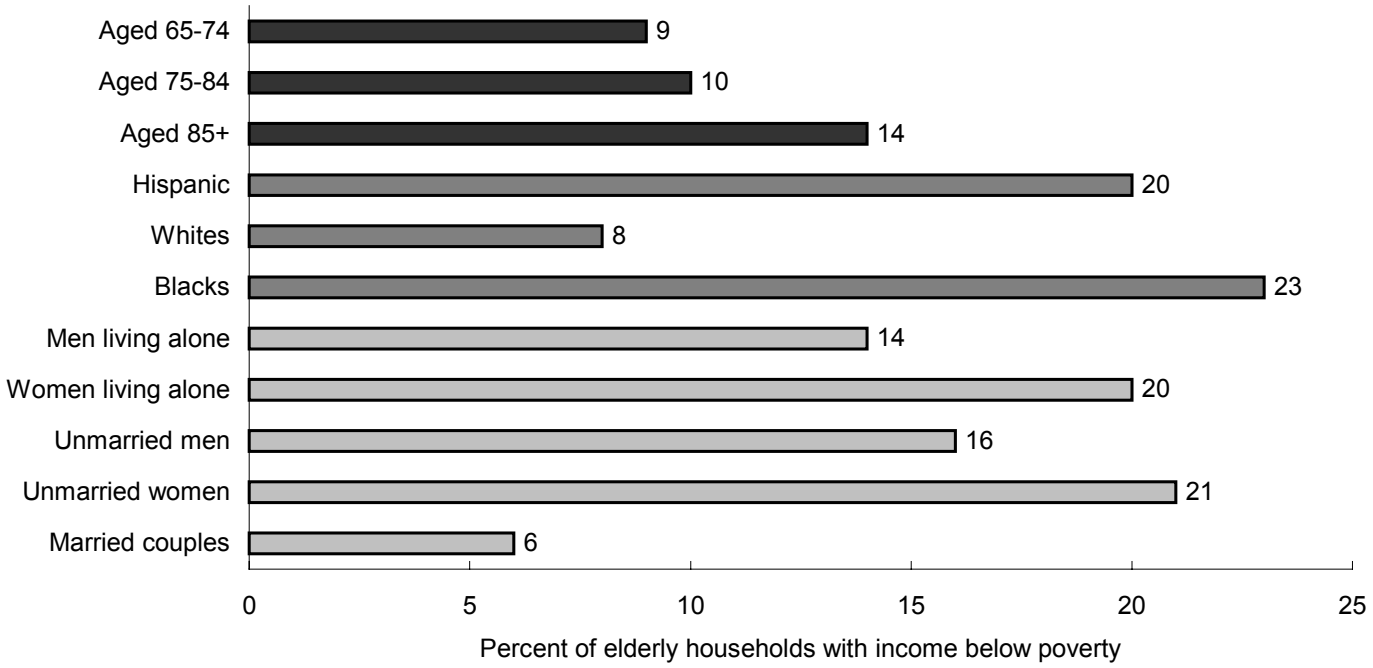
[27] See *Retirement Income: Implications of Demographic Trends for Social Security and Pension Reform* (GAO/HEHS-97-81, July 11, 1997).

Subgroups With Lower Lifetime Earnings Remain Vulnerable

Income adequacy has also improved substantially for specific subgroups of beneficiaries, such as the very old (85+ years of age), minorities, women, singles, widows, and the disabled. However, even with those improvements, significant levels of poverty remain. This fact largely reflects that lifetime earnings and access to other sources of retirement income tend to be lower among such groups. Social Security is a major component of retirement income for these sub-populations. For example, in 1998, when we exclude Social Security income from total income, 67 percent of unmarried women aged 85 and over have income that falls below the poverty line.

As figure 6 shows, poverty rates are higher than average for older age groups, for women, for minorities, and those living alone. Those individuals in older age groups are less likely to have pension benefits or income from saved assets. Women also experience high rates of poverty as compared to men. Of the 3.2 million aged persons who were poor in 1999, 2.2 million were women. Minorities such as Hispanics and blacks experience higher levels of poverty than their white counterparts, as do unmarried women and women living alone.

Figure 6: Certain Subgroups of the Elderly More Likely to be in Poverty (1999)



Note: In 1999, the poverty rate for all those aged 65 and older was 10 percent.

Source: Current Population Survey, 2000.

Poverty rates also vary by living situation. In 1999, elderly persons living alone were more likely to be poor (14 percent of men and 20 percent of women) than married couple families (6 percent). Of the 1.8 million elderly poor who lived alone in 1999, about 1.5 million were women. Aged African-Americans and Hispanics females living alone are most at risk for living in poverty. In 1999, almost 58 percent of aged Hispanic females living alone were in poverty, while 44 percent of aged African-American females were in poverty.

Individuals who fall into more than one group with higher poverty rates are especially at risk of poverty. For example, in 1998, 56 percent of unmarried black females aged 85 and older were poor. Over 60 percent of unmarried Hispanic females aged 75 to 84 were poor. In contrast, 21 percent of white females aged 65 to 74 were poor, and poverty rates for the male counterparts for each category were either less or there were too few cases available to make an assessment.

Social Security provides an important source of income for the disabled. In 1999, disabled workers made up 11 percent of all OASDI beneficiaries. As with the elderly, Social Security is a major component (38 percent) of family income for disabled worker families. Also, 48 percent of disabled worker families get half of their income or more from Social Security, while 6 percent have no other income. Unlike the elderly, however, earnings are an equally large source of family income (38 percent) for disabled worker families.[28]

At 19 percent, poverty rates are nearly twice as high for the disabled as for the elderly. Still, like the elderly, poverty rates for disabled workers are higher for women, minorities, unmarried persons, and those living alone. Of all disabled beneficiaries, 23 percent of females were poor compared with 15 percent of men. Fifteen percent of disabled beneficiaries were white, 31 percent were black, and 26 percent were Hispanic. Only 12 percent of the disabled who lived with relatives lived in poverty, compared with 35 percent who did not. Ten percent of disabled workers who were married lived in poverty, compared with 27 percent who were not. Disabled workers who were widowed, never married or divorced experienced poverty rates of 30, 25, and 24 percent, respectively.

Income Adequacy in the Future Will Depend on Extent and Nature of Program Changes

The outlook for future Social Security benefit levels and thus their effect on income adequacy generally will depend on how the program's long-term financing imbalance is addressed, as well as on the measures used. To illustrate the range of possible outcomes, we developed benchmark policy scenarios that either only increase taxes or only reduce benefits. Even without new benefit reductions, our analysis shows that replacement rates could decrease as the program's full retirement age gradually continues to increase under current law, depending on the retirement decisions of future retirees. However, even with those reductions, our analysis shows that the adequacy of retirement income would improve markedly using one adequacy standard but change very little using another. Future benefit levels will also depend on the extent and nature of any benefit reductions. More progressive approaches to benefit reductions would result in greater adequacy for lower-earning beneficiaries. In turn, adequacy for various subgroups of beneficiaries would depend in turn on the earnings levels typical of those subgroups. Moreover, the adequacy of

[28] As a source of income, pensions make up only 7 percent of income for disabled worker families.

total incomes will depend on how individuals adjust their retirement planning in reaction to any program changes[29] and on what happens to other sources of cash and noncash income. In particular, Medicare also faces serious long-term financing problems. However, our analysis does not reflect interactions with other income sources but focuses on the effects of changes in Social Security benefits, holding all else equal.

Benchmark Policy Scenarios Illustrate Range of Possible Outcomes

To illustrate a full range of outcomes that might result from alternative approaches to restoring long-term solvency, we developed hypothetical benchmark policy scenarios that would restore solvency over the next 75 years either by only increasing payroll taxes or by only reducing benefits. Our tax-increase-only benchmark simulates "promised benefits," or those benefits defined under current law, while our benefit-reduction-only benchmarks simulate "funded benefits," or those benefits for which currently scheduled revenues are projected to be sufficient. These benchmarks used the program's current benefit structure and the 2001 OASDI Trustees' intermediate, or best-estimate, assumptions. The benefit reductions are phased in between 2005 and 2035 to strike a balance between the size of the incremental reductions each year and the size of the ultimate reduction. At our request, SSA actuaries scored our benchmark policies and determined the parameters for each that would achieve 75-year solvency. Table 1 summarizes our benchmark policy scenarios. For our benefit reduction scenarios, the actuaries determined these parameters assuming that disabled and survivor benefits would be reduced on the same basis as retired worker and dependent benefits. If disabled and survivor benefits were not reduced at all, reductions in other benefits would be deeper than shown in this analysis. (See app. III for more on our benchmark policy scenarios.)

[29] However, it is difficult to anticipate how individual behavior would change in response to policy changes, and none of our modeling approaches were equipped to do so. For example, in response to benefit reductions, workers could increase their retirement savings, depending on their capacity to do so. On the other hand, in response to payroll tax increases, workers might decrease retirement saving in the face of lower disposable incomes. Still, those retirees with the lowest retirement incomes already receive virtually no income from saved assets. It should also be noted that tax increases would have effects on both the standard of living enjoyed during working years and on the individual equity of benefits, or how benefits relate to contributions.

Table 1: Summary of Benchmark Policy Scenarios

Benchmark policy scenario	Description	Phase-in period	Ultimate new benefit reductions[a] (percent) Minimum	Maximum
Tax-increase-only	Increases payroll taxes in 2002 by amount necessary to achieve 75-year solvency (0.95 percent of payroll each for employees and employers)[b]	Immediate	0	0
Proportional benefit reduction	Reduces benefit formula factors proportionally across all earnings levels	2005-2035	24	24
Progressive benefit reduction	Reduces benefit formula factors by smaller proportion for lower earners	2005-2035	11	33
Limited proportional benefit reduction	Does not reduce benefit formula factor at all for lowest earners (below first formula bendpoint) and reduces them proportionally for earnings above that level	2005-2035; with smaller reduction in first 10 years	0	34

[a]These benefit reduction amounts do not reflect the implicit reductions resulting from the gradual increase in the full retirement age that has already been enacted.

[b]Any policy scenario that achieves 75-years solvency only by increasing revenues would have the same effect on the adequacy of future benefits in that promised benefits would not be reduced.

Source: GAO's analysis.

We then modeled future benefit levels with these benchmarks and calculated a variety of measures to look at income adequacy. However, we did not examine any measures of individual equity, such as rates of return, which any of our benchmark policies would also affect. We examined adequacy measures for illustrative workers with different steady lifetime earnings histories, for the entire beneficiary population, and also for different subgroups. To look at representative samples for the beneficiary population and subgroups, we used both SSA's MINT model and the Policy Simulation Group's GEMINI model. The MINT model allows us to look at total retirement income in 2020 across different age groups and races while the GEMINI model allows us to focus on specific birth cohorts reaching age 62 in various years, which we selected to look at long-term trends. As with any such simulation models, these models simulate income using a combination of historical data from small samples of the population and a variety of assumptions about future trends.[30] At their best, such models can only provide very rough estimates of future incomes. Still, they can provide valuable comparisons over time and

[30] While these models use sample data, our report, like others using these models, does not address the issue of sampling errors. The results of the analysis reflect outcomes for individuals in the simulated populations and do not attempt to estimate outcomes for an actual population.

across alternative policy scenarios, holding all else equal. Thus, any analysis should focus on such comparisons rather than on the literal values of the estimates. (See app. IV for more on our modeling analyses.)

Monthly Benefits Could Be Lower Even Without Benefit Reductions

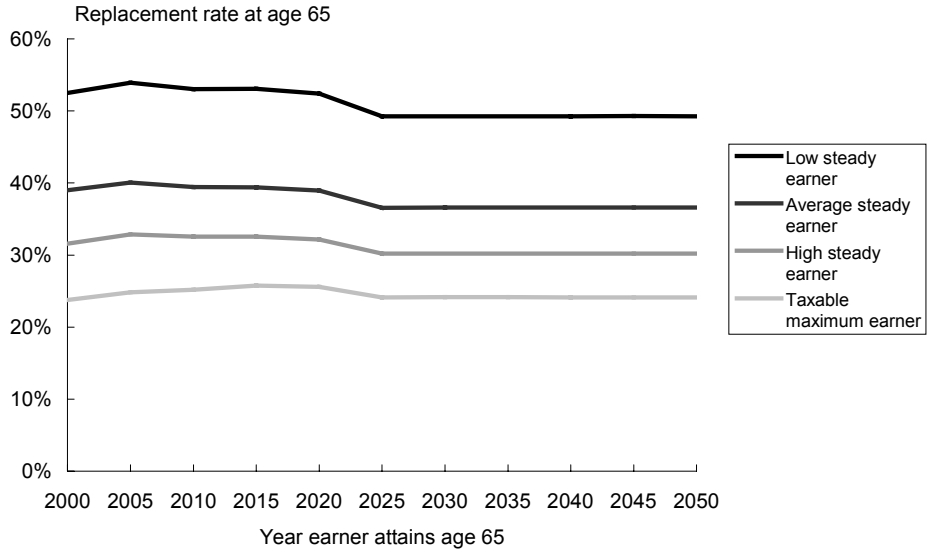
Our tax-increase-only benchmark illustrates that monthly benefit levels could already decrease as the program's full retirement age increases under current law, depending on the retirement decisions of future retirees. In turn, replacement rates would decrease by the same proportion because they are defined as the annual benefit amount divided by the last year of earnings. Figure 7 shows future replacement rates under our tax-increase-only benchmark for a range of illustrative retired workers. The full retirement age is the age at which full benefits are paid and historically has been age 65. Under current law, the full retirement age is gradually increasing, beginning with retirees born in 1938, and will reach 67 for those born in 1960 or later. For workers who retire at a given age, an increase in the full retirement age reduces monthly benefits because the actuarial reduction for early retirement increases. For example, for workers who will face a full retirement age of 67 and retire early at 65, monthly benefits will be reduced actuarially by 13.3 percent while their benefits would not have been reduced at all if the full retirement age had been kept at 65.[31] Moreover, the 13.3 percent reduction applies to such workers equally at all earnings levels. As a result, increasing the full retirement age from 65 to 67 implies that replacement rates for illustrative low earners would decline from 57 to 49 percent while for illustrative high earners they would decline from 35 to 30 percent.[32] Therefore, under such a proportional reduction, lower earners face a larger percentage-point reduction than higher earners. Still, the effect of such reductions would be

[31] Compared with earlier retirees, beneficiaries affected by the higher full retirement age are expected to live longer on average. Therefore, on average, they will collect benefits longer, and the reduction in their lifetime benefits will not be as high as the reduction in their monthly benefit amount. Still, the adequacy of income depends on how much people have to spend on a monthly or annual basis, not on a lifetime basis, because the longer individuals live, the longer they will need income to cover the costs of living. Nevertheless, workers will have the ability to avoid the monthly benefit reductions by waiting until their full retirement age to retire. Such behavioral responses to program changes make it especially difficult to anticipate future income adequacy, which such responses would affect directly.

[32] We use the illustrative steady earners defined by SSA's Office of the Chief Actuary; these steady earners have earnings equal to a constant percentage of average wages in every year of their careers. Those percentages are 45, 100, and 160, respectively, for low, average, and high earners. See appendix IV for more on our illustrative steady earner analysis.

diminished to the extent that workers choose to retire later than today's workers do.

Figure 7: Increasing Retirement Age Diminishes Replacement Rates Under Current Law



Notes: Replacement rates are the annual retired worker benefits at age 65 divided by the earnings in the previous year. Steady earners have earnings equal to a constant percentage of Social Security's Average Wage Index in every year of their careers. Those percentages are 45, 100, and 160, respectively, for low, average, and high earners. Taxable Maximum Earners have earnings equal to the maximum earnings taxable under OASDI in each year. Annual benefits at age 65, and replacement rates in turn, decline as the full retirement age increases because actuarial reductions for early retirement become higher as the gap between the actual retirement age and the full retirement age increases. As shown in figure 7, the slight increases in replacement rates from 2000 to 2005 do not result from any program changes but rather from short-term fluctuations in the growth rate of wages which helps determine the earnings histories of the illustrative steady earners.

Source: GAO's analysis using SSA's ANYPIA program.

Different Measures Suggest Different Outlooks

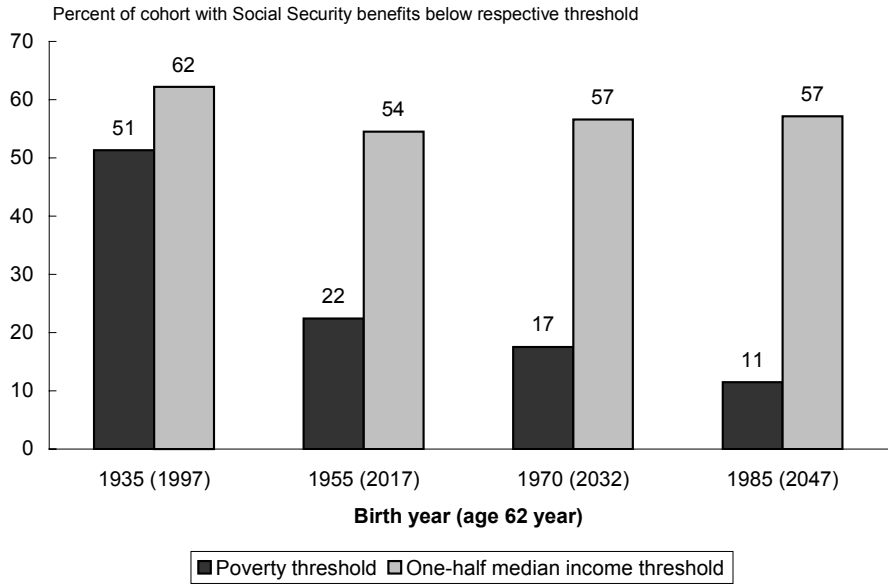
While replacement rate analysis suggests that income adequacy will decline in the future, other ways of assessing adequacy suggest that it will change little or even improve dramatically. The GEMINI model allows us to illustrate this point best by showing changes over long periods of time. Using our tax-increase-only benchmark policy, we calculated the percentage of retired workers with Social Security benefits that fall below two different adequacy standards—the official poverty threshold and one-

half median income.[33] The official poverty threshold is adjusted each year to reflect inflation. In contrast, our simulation assumes that the one-half median income threshold will grow at the same rate as Social Security's Average Wage Index, since wages are the largest component of family income. Figure 8 shows that the percentage of retired workers[34] with benefits below the poverty threshold drops dramatically over time while the percentage with benefits below one-half median income changes very little. The difference in these percentage measures simply reflects differences in the assumptions underlying each adequacy standard. Since initial Social Security benefits are designed to increase with wages, and wages are assumed to grow faster than prices, benefit levels will grow faster than an adequacy standard that grows only by prices. In contrast, benefits will grow at roughly the same rate as a standard that grows by wages. In a fashion similar to poverty rates, dependency rates would also decline relatively rapidly because they focus on SSI benefit standards that increase with prices, not wages.

[33] Using the poverty threshold with the GEMINI model does not allow us to calculate a simulated "poverty rate" because a poverty rate would reflect total income, not just Social Security benefits, and our GEMINI analysis only simulated future Social Security benefits and not total retirement income. In contrast to GEMINI, the MINT model does simulate total income, but only in the near term. However, the sensitivity of adequacy measures to the standard used is greater over longer periods of time. Given the various limitations of both models, the focus should not be on the specific estimates of adequacy measures but rather the differences between them across types of measures, across beneficiary groups, and across policy scenarios.

[34] Here, we used retired workers for simplicity. Our focus is on illustrating the effect of using alternative adequacy standards holding everything else equal; our focus is not on the type of beneficiary. We use age 62 as the retirement age because most retired worker beneficiaries retire at that age, and our GEMINI analysis required that we use a single retirement age. Since spouses receive a benefit equal to 50 percent of the retired workers benefit (unless they are entitled to a higher retired worker benefit on their own earnings record), the percentage of spouse beneficiaries below each adequacy standard would be much higher than for retired workers. Moreover, the value of an adequacy standard differs for different household types, so ideally benefit levels for retired workers, their spouses, and all other types of beneficiaries would be compared to the standard appropriate for their household type. However, this more complex analysis is not necessary to illustrate the point about how the choice of the adequacy standard itself drives the results. The complexities concerning beneficiary and household type are yet another reason that our estimates should not be interpreted as poverty rates.

Figure 8: Adequacy Outlook Depends on Adequacy Standard Used (Retired Workers, All Retiring at Age 62, Under Tax-Increase Only Benchmark)



Notes: The rates shown in the graph are not poverty rates because they reflect only Social Security income, not total income. Also, if we had assumed that all workers retired at a higher age, the reduction for early retirement would be lower, their Social Security benefits would be higher, and each of the percentages in this chart would unambiguously be lower. Still, the focus should not be on the specific values from the simulation but on the difference in the pattern over time between the two thresholds, which would not be notably different with other retirement age assumptions. The official poverty threshold increases each year to reflect inflation. We projected future poverty lines using OASDI Trustees' intermediate assumptions for inflation. One-half median family income has been used as an alternative adequacy threshold. It increases each year roughly by the rate of wage growth. We projected future values of this threshold using the OASDI Trustees' intermediate assumptions for the Average Wage Index.

Source: GAO's analysis using the GEMINI model.

Effects of Different Benefit Reduction Approaches Would Vary By Earnings Levels

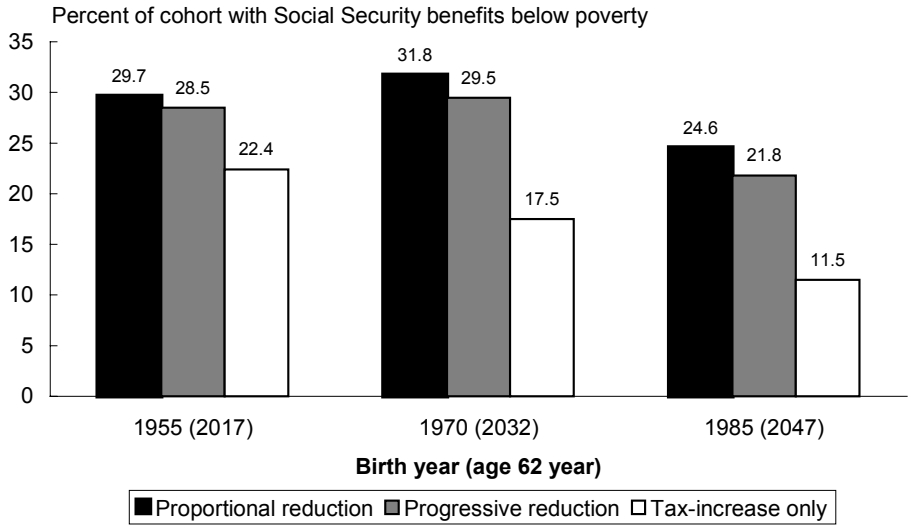
Future benefit levels and income adequacy will also depend considerably on how any benefit reductions are made. Figure 9 shows that the percentage of retired workers[35] with Social Security benefits below the official poverty threshold would be greater under a proportional benefit reduction approach than under a progressive benefit reduction approach.

[35] Here again, we used retired workers for simplicity. In this case, our focus is on the difference between benefit reduction approaches, holding everything else equal. See footnote 26.

The difference between the two approaches grows slightly over time.[36] The proportional benefit-reduction-only benchmark would reduce benefits by the same proportion for all beneficiaries born in the same year. The progressive benefit-reduction-only benchmark would reduce benefits by a smaller proportion for lower earners and a higher proportion for higher earners. Both benefit reductions benchmark policies would be phased in gradually from 2005 to 2035. The tax-increase-only (no benefit reduction) benchmark estimates are shown for reference. Also, the figure shows that percentage of workers with benefits below the poverty threshold would be slightly higher in our simulations for those retiring in 2032 rather than 2017. This reflects primarily that the benefit reductions in our benchmarks are more fully phased in for the 2032 group. The declines in the percentages from the 2032 to 2047 retirement years largely reflects the effects of the disparity between growth in wages and prices, as illustrated earlier; since the benefit reductions are fully phased in by 2035, the last two age groups experience nearly the same benefit reductions.

[36] In contrast to using the poverty threshold, for our 1970 and 1985 birth cohorts, Social Security benefits fall below 50 percent of median family incomes for nearly all retired workers under our proportional benefit-reduction benchmark and for all of them under our more progressive benefit-reduction benchmarks.

Figure 9: Adequacy of Income in Future Depends on Benefit Reduction Approach (Retired Workers, All Retiring at Age 62)



Notes: The rates shown in the graph are not poverty rates because they reflect only Social Security income, not total income. For the 1935 birth cohort, which reached age 62 in 1997, 51 percent of our simulated sample had Social Security benefits below poverty, as shown in figure 8. Also, if we had assumed that all workers retired at a higher age, the reduction for early retirement would be lower, their Social Security benefits would be higher, and each of the percentages in this chart would unambiguously be lower. Still, the focus should not be on the specific values from the simulation but on the difference in the pattern among the benchmarks, which would not be notably different with other retirement age assumptions. Under the proportional reduction approach, all beneficiaries in a given birth year are subject to a benefit reduction that is a constant proportion of their benefits. Under the progressive reduction, beneficiaries with lower benefits receive a smaller proportional reduction than those with higher benefits. See appendix III for more details on the alternative benefit reduction benchmarks.

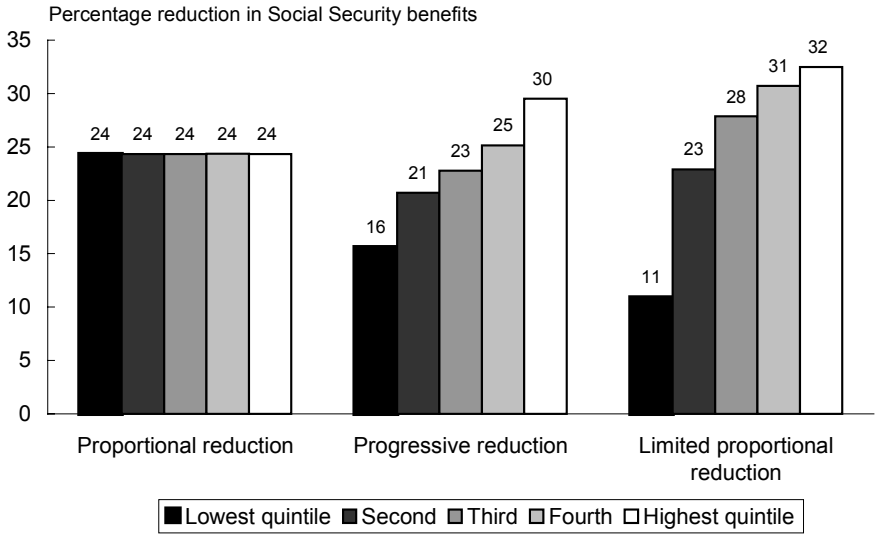
Source: GAO's analysis using the GEMINI model.

The differences in adequacy estimates across benefit-reduction scenarios reflect how different benefit reduction approaches will have different effects on workers with different earnings. Lower earners have benefits that are closer to the poverty threshold than higher earners, so a progressive approach to reducing benefits would decrease the chances that lower earners' benefits fall below that threshold. Figure 10 illustrates how different benefit reduction approaches would produce benefit

reductions that would vary by benefit levels.[37] The proportional benefit-reduction benchmark results in identical percentage benefit reductions, while two alternative, progressive benefit-reduction benchmarks would result in smaller reductions for lower earners and larger reductions for higher earners. The so-called "limited-proportional" benefit-reduction benchmark would be even more progressive than the progressive benefit-reduction benchmark because a portion of benefits below a certain level are protected from any reductions while reductions above that level are proportional. The 1985 birth cohort will be subject to the largest benefit reductions of the four cohorts we simulated; therefore, it best illustrates the potential disparity in benefit reductions by benefit level.

[37] In this case, we used retired workers not only for simplicity but also because we explicitly wanted to examine the distribution of benefit reductions across earnings levels. Spousal benefits equal 50 percent of the retired worker benefit, therefore including them would bias the distribution. In any event, the percentage reduction would be the same for a spouse as for his or her retired worker spouse.

Figure 10: Benefit Reduction Approaches Have Different Effects on Different Benefit Levels (Retired Workers Born in 1985, All Retire at Age 62)



Notes: Quintiles are by benefit levels. Percentage reductions are calculated for beneficiaries closest to the median of each quintile that appear in each scenario's sample. For the 1985 birth cohort, all benefit reductions are fully phased-in under our benchmark scenarios. Under the proportional reduction approach, all beneficiaries in a given birth year are subject to a benefit reduction that is a constant proportion of their benefits. Under the progressive reduction, beneficiaries with lower benefits receive a smaller proportional reduction than those with higher benefits. Under the limited proportional reduction, a portion of benefits below a certain level are protected from any reductions while reductions above that level are proportional. See appendix III for more details on the alternative benefit reduction benchmarks.

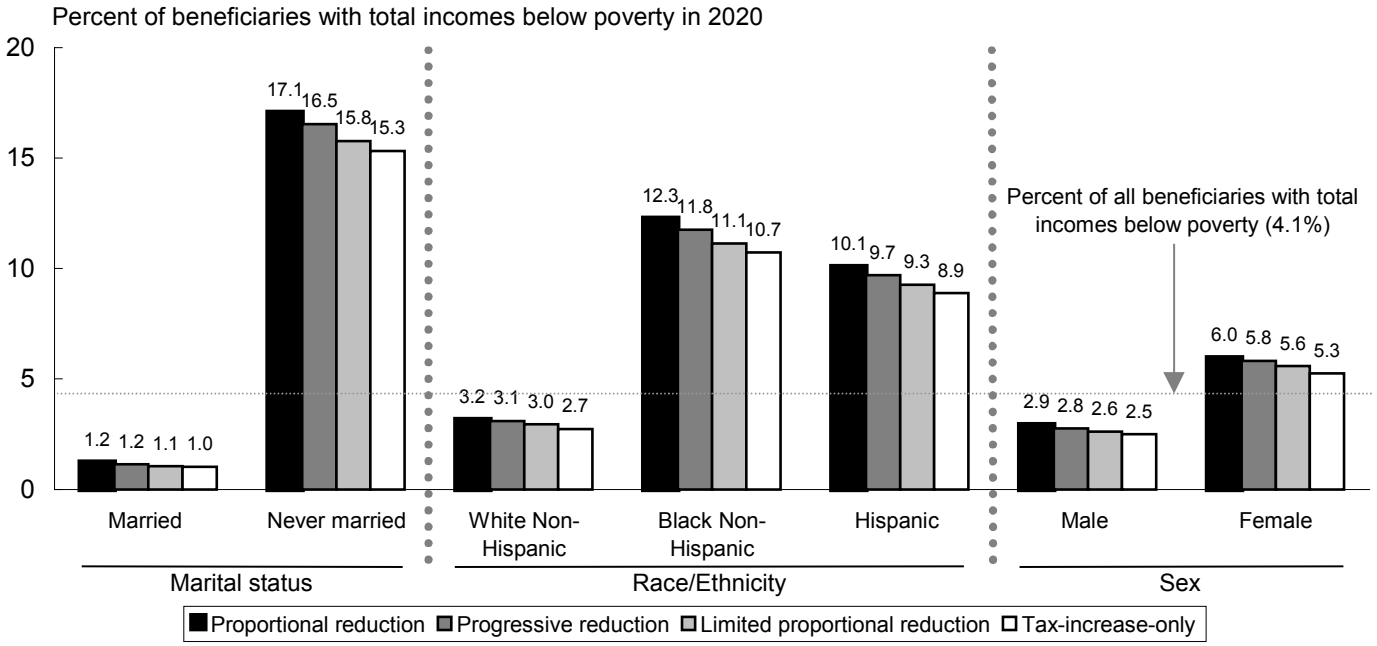
Source: GAO's analysis using the GEMINI model.

Effects on Different Subgroups Reflect Varying Effects by Earnings Level

The different benefit reduction approaches would have different effects on various subgroups of beneficiaries because of the differences in the lifetime earnings levels that are typical of those groups. Women, minorities, and never married individuals all tend to have lower lifetime earnings than men, whites, and married beneficiaries, respectively. Figure 11 shows how future poverty rates mirror these patterns. Moreover, it illustrates again how more progressive benefit-reduction approaches would result in lower poverty rates for these groups in particular. In this case, we present our analysis using SSA's MINT model because it allows us to examine different races. However, these estimates for the year 2020 reflect benefit reductions that are not fully phased in as well as benefits for beneficiaries from many birth cohorts who will be subject to various

levels of the phased-in benefit reductions.[38] For later beneficiaries with fully phased-in benefit reductions, poverty rates could be higher.

Figure 11: Effects of Benefit Reductions on Various Groups Reflect Varying Effects by Income Levels



Notes: We looked at data for 2020 because it provides the most complete data for the elderly population, given the cohorts represented in the MINT. In the MINT model, total incomes do not include means-tested benefits, while the official poverty rate does reflect such benefits. In addition, MINT uses income data from the Survey of Income and Program Participation (SIPP) while official poverty rates use income data from the Current Population Survey (CPS). According to CPS data for 1999, which accounts for means-tested benefits, 10 percent of the elderly had incomes below the poverty threshold. According to SSA analysts, poverty rates calculated using SIPP data are generally lower than those using CPS data. Groups shown are not all the groups for marital status or race; groups for one characteristic overlap groups for another. Under the proportional reduction approach, all beneficiaries in a given birth year are subject to a benefit reduction that is a constant proportion of their benefits. Under the progressive reduction, beneficiaries with lower benefits receive a smaller proportional reduction than those with higher benefits. Under the limited proportional reduction, a portion of benefits below a certain level are protected from any reductions. See Appendix III for more detail on the alternative benefit reduction benchmarks.

Source: GAO's analysis using SSA's MINT model.

[38] We looked at data for 2020 because it provides the most complete data for the elderly population, given the cohorts represented in the MINT.

Very old beneficiaries are another subgroup that has tended to be at higher than average risk of poverty. Several factors relating to multiple sources of income have contributed to this risk, and many of these factors can be expected to have similar effects in the future. As people get older, they may spend down their retirement savings, especially as health and long-term-care costs mount up, and they are less likely to work. Also, they are more likely to be widowed. For a couple receiving one retired worker benefit and one spouse benefit, the household's Social Security benefits would fall by 33 percent when either is widowed. For a couple in which both spouses receive retired worker benefits on their own earnings records, household benefits could fall by as much as 50 percent when either is widowed. In addition, widows might lose employer-sponsored pension benefits, which would happen if their spouse elected a self-only annuity instead of a joint-and-survivor annuity.[39] Also, while Social Security benefits increase each year to reflect inflation, not all employer-sponsored pension benefits do. Of these various factors, all could affect future retirees, though employer pensions have been changing in design.[40]

Concluding Observations

Based on our review, reducing dependency on public assistance appears to have been the primary objective of the Social Security program. While many have noted the importance that Social Security plays in helping ensure adequate incomes for its beneficiaries, the Congress has never explicitly defined the term "adequacy." In the end, setting benefit levels to address the adequacy issue will always be, as it has always been, a policy decision for the Congress. Still, income adequacy is only one of several criteria to consider in an overall evaluation of comprehensive Social

[39] The 1984 Retirement Equity Act made the joint-and-survivor benefit the default option for married workers retiring on an employer-sponsored pension. Under the joint-and-survivor option, a surviving spouse will continue to receive pension benefits once the pension beneficiary dies. To waive this option, both the retiring worker and his or her spouse must sign a waiver form. Prior to this law, waivers from spouses were not required, and few retiring workers selected the joint-and-survivor option. As a result, many spouses were left without pension benefits when the retiree died first.

[40] Neither our analysis with the MINT model nor with the GEMINI model were well suited to analyze the outlook for the very old. The very old in the MINT model are beneficiaries who have already begun their retirements and will not be subject to any of the benefit reductions in our benchmark policy scenarios. Our GEMINI analysis was not able to examine other sources of retirement income, which relate to many of the most significant poverty risks for the very old. Nevertheless, with GEMINI we were able to examine patterns in Social Security benefits for people in given cohorts as they age through retirement. See appendix IV.

Security reform proposals.[41] Specifically, income adequacy should be balanced against individual equity, or the extent to which benefits are proportional to contributions. Other criteria include the extent to which proposals achieve sustainable solvency, how they would affect the economy and the federal budget, and how readily changes could be implemented, administered, and explained to the public.

Current demographic trends confront us with a reality that cannot be ignored. If people will be living longer, then maintaining today's levels of monthly benefits for all beneficiaries would require either more revenues, from whatever sources, or would require that workers wait longer to collect them. The other alternative of reducing monthly benefits would tend to diminish income adequacy for beneficiaries. However, our analysis shows that more progressive approaches to reducing monthly benefits would have a smaller effect on poverty rates, for example, than less progressive approaches. Also, reductions that protect benefits for survivors, disabled workers, and the very old would help minimize reductions to income adequacy, though they would place other beneficiaries at greater risk of poverty.

More broadly, the choices the Congress will make to restore Social Security's long-term solvency and sustainability will critically determine the distributional effects of the program, both within and across generations. In turn, those distributional effects will determine how well Social Security continues to help ensure income adequacy across the population.

As our analysis has also shown, the effects of some reform options parallel those of benefit reductions made through the benefit formula, and those parallels provide insights into the distributional effects of those reform options. For example, if workers were to retire at a given age, an increase in Social Security's full retirement age results in a reduction in monthly benefits; moreover, that benefit reduction would be a proportional, not a progressive reduction. Another example would be indexing the benefit formula to prices instead of wages. Such a revision would also be a proportional reduction, in effect, because all earnings levels would be treated the same under such an approach. In addition, holding all else

[41] See *Social Security: Criteria for Evaluating Reform Proposals* (GAO/T-HEHS-99-94, Mar. 25, 1999) and *Social Security: Evaluating Reform Proposals* (GAO/AIMD/HEHS-00-29, Nov. 4, 1999).

equal, such an approach would implicitly result in future poverty rates that would be close to today's rates instead of falling as they would with the current benefit formula.

Therefore, in finding ways to restore Social Security's long-term solvency and sustainability, the Congress will address a key question, whether explicitly or implicitly:

What purpose does it want Social Security to serve in the future?

- to minimize the need for means-tested public assistance programs;
- to minimize poverty; using what standard of poverty;
- to replace pre-retirement earnings;
- to maintain a certain standard of living; or
- to preserve purchasing power?

The answer to this question will help identify which measures of income adequacy are most relevant to examine. It will also help focus how options for reform should be shaped and evaluated. Our analysis has illustrated how the future outlook depends on both the measures used and the shape of reform. While the Congress must ultimately define Social Security's purpose, our analysis provides tools that inform its deliberations.

Still, changes to benefit levels would typically only be part of a larger reform package, and Social Security is only one part of a much larger picture. As we have said in the past, reform proposals should be evaluated as packages that strike a balance among their component parts. Furthermore, Social Security is only one source of income and only one of several programs that help support the standard of living of our retired and disabled populations. All sources of income and all of these programs should be considered together in confronting the demographic challenges we face. For example, changes to Social Security could potentially affect SSI benefits, employer-sponsored pensions, retirement savings, and the work and retirement patterns of older workers. Such interactions should actively be considered. Moreover, several programs provide noncash benefits that also play a major role in sustaining standards of living for their beneficiaries.

Importantly, examining the adequacy of cash income alone would ignore the major role of noncash benefits and the needs they help support. This is especially critical in the case of Medicare beneficiaries. Considering these important noncash benefits in any adequacy analysis could have a very

material effect on both the absolute and relative positions of senior citizens as compared to other groups of Americans.

Agency Comments

We provided a draft of this report to SSA. SSA provided a number of technical comments, which we have incorporated where appropriate.

We are sending copies of this report to the Commissioner of the Social Security Administration and other interested parties. We will also make copies available to others on request. If you or your staff have any questions concerning this report, please call me on (202) 512-7215. Key contributors are listed in appendix V.

Sincerely yours,

Barbara D. Bovbjerg, Director
Education, Workforce, and
Income Security Issues

Appendix I: Descriptions of Adequacy Measurement Methods

Several methods have been used to measure the level of adequate income—what it costs to live. We identified 11 methods that have been used to develop measures against which income from Social Security benefits might be compared for determining adequacy.[1] These methods include the current poverty thresholds, experimental poverty thresholds, family budgets, family expenditures, material hardship, median family income, one-half median family income, per capita personal income, public assistance, public opinion, and earnings replacement rates.

These methods vary along a number of dimensions. These include their purpose, features of their construction, years for which they measure adequacy, and frequency of publication. In some instances where the method has been used to develop more than one measure, we selected one of the measures as an example of the method and used it for the description of the method.

The methods also vary in whether they are absolute or relative. Absolute measures are derived from a fixed bundle of goods and services that does not vary in mix, quantity, or quality regardless of when or where it is applied. For example, an absolute measure would be one based on a list of goods and services that are judged to be necessary for a family to meet its basic needs. The list of goods and services would need to be changed periodically to reflect changes in living standards over time. In contrast, relative measures change with current income or consumption. Measurement experts who have served on various panels to study the issue have not agreed on which is more appropriate to determine how much it costs to live. Table 2 provides an overview of the 11 methods with regard to several dimensions.

[1] Two of these measures are nonmonetary and therefore cannot be used in direct comparison with a monetary amount.

Table 2 is followed by a fuller description of each method, with particular attention to how each is constructed, its uses, and issues that panels and experts have raised regarding the measure.

Table 2: Overview of the Purpose, Construction, and Other Dimensions of 11 Methods To Measure Income Adequacy

Measurement method	Purpose of measure	Absolute or relative measure[a]
Current poverty thresholds	Determine whether persons living in a family are officially poor.	Absolute
Experimental poverty thresholds	Provide reasonable thresholds to derive poverty statistics.	Relative
Family budgets	Estimate what it costs a working family of four to live.	Absolute
Family expenditures	Describe consumer spending and determine cost-of-living indexes.	Relative
Material hardship	Identifies individuals who do not consume minimal levels of goods and services.	[b]
Median family income	Estimates the income of the family at the middle of the income distribution.	Relative

Construction of measure						
Basis of measurement	**Family unit**	**Geographic unit**	**Method of updating**	**Observation about the measure**	**Years of measure**	**Frequency of publication**
1964 cost of a food plan for the family multiplied by three	By age of family head, family size, and number of children under 18 years	[b]	Increased annually by the Consumer Price Index (CPI)	(See app. II)	1959 through present	Annually
Median expenditures in specific categories adjusted for other necessities, family size, and cost of housing	By family size and number of children under 18 years[c]	41 geographic areas based on area and population size	Median expenditures in the specific categories are re-estimated	Lacks scientific basis to support the use of median level of expenditures.	1990 to 1997	Initially in 1995; Census published additional years of thresholds in 1999.
The total costs of a list of items associated with a specific level of living	Separate budgets specified for a family of four and a retired couple[d]	Urban United States, 40 metropolitan areas, and 4 nonmetropolitan regions	In addition to revising the lists of goods and service, (1) the lists were periodically repriced; or (2) previous costs increased annually by the CPI	Expert panel recommended methodology be changed; found subjective judgment used in developing lists of items.	1946 to 1951, 1959, and 1966 to 1981	Periodically; no longer published
Consumer expenditures as reported in a national survey	By various family characteristics	By type of area (urban and rural) and 4 regions	Data are collected quarterly; prior to 1980, data collected about every 10 years	Averages may not represent expenditures made by families with specified characteristic.	1980 through present	Annually
Self-assessment on specific events, such as not having enough to eat	By various family characteristics	[b]	[b]	Measure is not in monetary terms.	1992 and 1995; Chicago residents in the mid-1980s	Census published reports for 1992 and 1995.
Money income as reported in a national survey	By various family characteristics	4 regions and by type of residence—inside or outside metropolitan areas	Money income data are collected annually	(See app. II)	1947 through present	Annually

Measurement method	Purpose of measure	Absolute or relative measure[a]
One-half median family income	Provides a means for comparative analysis of poverty status.	Relative
Per capita personal income	Presents the nation's personal income on a per person basis.	Relative
Public assistance	Determines whether a person is financially dependent.	[b]
Public opinion	Tracks the size of groups of people at different standards of living.	[b]
Earnings replacement rates	Determine extent that individuals can maintain pre-retirement standard of living.	Relative

Construction of measure						
Basis of measurement	Family unit	Geographic unit	Method of updating	Observation about the measure	Years of measure	Frequency of publication
50 percent of median family income as reported in a national survey	By various family characteristics	[b]	Money income data are collected annually	No standard method for which family type or proportion of income to use as adequacy measure.	[b]	[b]
Total of various sources of personal income in the nation divided by the population of the nation	[b]	By nation, state, region, county, and metropolitan areas	Comprehensive revisions about every 5 years;	Includes income of nonprofit institutions and pension plans.	1929 through present	Monthly at the national level; quarterly at the state level; and annually at the county and metropolitan area
Participation in a welfare program	Programs vary, e.g., Supplemental Security Income (SSI) benefit amounts vary by family composition	Programs vary, e.g., number of SSI recipients published nationally and by state	Programs vary, e.g., SSI benefit levels are increased annually by the CPI	Measure is not in monetary terms (see app. II).	Programs vary, e.g., 1974 through present for SSI	Programs vary, e.g., number of SSI recipients published quarterly and annually
Subjective estimates of what it costs to get along in the community	[b]	[b]	[b]	Wording may be ambiguous to respondent.	Selected years from 1946 through 1992	Periodically; Gallop measure no longer collected
Retirement income relative to pre-retirement income	May be computed for individuals or households but most meaningful for households	[b]	[b] Measure calculated for specific individuals	Measure is not a standard of adequacy but a benchmarking tool.	[b] Measure determinable for any year. Estimates for illustrative workers available from 1940	[b]

[a]An absolute measure is a fixed bundle of goods and services that does not vary in mix, quantity, or quality regardless of when or where it is applied. A relative measure changes directly with current income or consumption.

[b]None or not applicable.

[c]One of the experts who recommended these thresholds proposed another adjustment for families headed by a single adult.

[d]In 1960 and 1968, the Bureau of Labor Statistics (BLS) published equivalence scales that could be used to adjust the costs by family composition.

Source: GAO's analysis of the relevant literature.

Current Poverty Thresholds

The poverty thresholds are a measure that attempts to specify the minimum money income that could support an average family of a given composition at the lowest level of living consistent with a country's prevailing standards of living.

Purpose and Uses

The poverty thresholds are an absolute measure whose initial purpose was to measure year-to-year changes in the number and characteristics of poor people.

The poverty thresholds, as originally published by the Social Security Administration (SSA) in 1963, represent a minimal amount of funds a family needed to rear its children, what the author termed "crude indexes" of poverty. Later the crude indexes were extended to families without children. If a family's total money income is less than the poverty threshold for that family's composition, which is based on family size, age of the family's head, and number of children under 18 years old, then that family, and every individual in it, is considered poor.

In 1965, the Office of Economic Opportunity adopted the thresholds for statistical and program planning purposes. The Bureau of the Budget established the thresholds as the official definition of poverty for statistical use in all executive departments in 1969. This definition was reconfirmed in Statistical Policy Directive No. 14, after the bureau became the Office of Management and Budget.

Poverty thresholds are used mainly for statistical purposes, such as estimating the number of Americans in poverty each year.[2] This official measure of poverty is used to measure the nation's progress in reducing the extent of poverty and is used to allocate funds and to identify target populations for various public assistance programs. Policymakers use trends in poverty rates—the proportion of persons whose family income is below the poverty threshold—over time and across population groups to make judgments about particular policies. Poverty statistics are also used to evaluate government programs for low-income persons and the effects of policies on the distribution of income.

[2] Poverty guidelines, a simplification of the poverty thresholds, are used for administrative purposes, such as determining financial eligibility for a federal program. Such means-tested programs include food stamps, low-income home energy assistance, and legal services for the poor. See *Means-Tested Programs: Determining Financial Eligibility Is Cumbersome and Can Be Simplified* (GAO-02-58, Nov. 2, 2001).

Construction of the Measure

SSA's 1963 publication based the poverty thresholds on information from a 1955 food consumption survey and the 1964 costs of a food plan. The author determined from U.S. Department of Agriculture's (USDA) 1955 Household Food Consumption Survey that families of three or more people spent approximately one-third of their after-tax money income on food. The author then tripled the 1964 costs of USDA's economy food plan for various compositions of families. Different procedures were used to calculate poverty thresholds for two-person families and single individuals.[3] Separate thresholds were estimated for single individuals and 2-person families headed by an individual 65 years and over, as well as an individual under 65 years old.[4] There were separate sets of thresholds for farm and nonfarm families, as well as thresholds by sex of the head of the family. The thresholds that were based on the sex of the family's head and by farm residence were eliminated in 1981.

There is no geographic variation of the poverty thresholds. Although there were regional costs for the USDA food plan, they were not used to account for regional variation when the poverty thresholds were developed.[5]

Two methods have been used to update the original poverty thresholds. Initially, the change in the cost of USDA's economy food plan was used to annually update the poverty thresholds. In 1969, the method of updating the thresholds was changed to price changes of all items in the Consumer Price Index (CPI).[6] The poverty thresholds are increased each year by the

[3] The author used a different multiplier of the food costs for 2-person families and then calculated the single-person thresholds as 80 percent of the 2-person thresholds.

[4] The term "equivalence scales" is used in reference to an index that is calculated from the resulting family size and age of head distinctions embedded in the 1963 methodology. In one such scale, the individual is the base and other family compositions are in relation to it. For example, a 4-person family's equivalence scale is 2.01, indicating that it is equivalent to 2 individuals.

[5] Only the poverty guidelines differentiate by geographic area. Separate guideline amounts are published for the 48 contiguous states and the District of Columbia, Alaska, and Hawaii.

[6] Poverty thresholds for 1959 to 1967 were recalculated on this basis.

same percentage as the annual average CPI for all Urban Consumers (CPI-U).[7] The Census Bureau annually updates and publishes the poverty thresholds.[8]

Experimental Poverty Thresholds

Numerous alternative poverty thresholds have been proposed since the official adoption of the measure developed in 1963. One such alternative is the experimental thresholds recommended by a Committee on National Statistics of the National Academy of Science (NAS) study panel in 1995.[9]

Purpose and Uses

The NAS poverty threshold is a relative measure whose stated purpose was "to lead to an initial threshold that is reasonable for purposes of deriving poverty statistics."

The NAS poverty thresholds have been solely used for research. Census published a report in 1999 to provide information for evaluating the implications of many of the NAS panel's recommendations for a new poverty measure. To do so, Census reported how estimated levels of poverty for 1990 through 1997 differed from official levels as specific recommendations of the NAS panel are implemented individually and how estimated trends differed when many recommendations are implemented simultaneously.

Construction of the Measure

The NAS poverty thresholds represent a dollar amount for basic goods and services—food, clothing, shelter (including utilities)—and a small additional amount to allow for other common, everyday needs (e.g., household supplies, personal care, and nonwork-related transportation).[10]

[7] BLS publishes the CPI-U and the CPI for Urban Wage Earners and Clerical Workers (CPI-W). According to BLS, the CPI-U represents about 87 percent of the U.S. population, and the CPI-W represents about 32 percent of the U.S. population. BLS began publishing the CPI-U in 1978. Until then, it published only the CPI-W.

[8] For example, see *Poverty in the United States: 2000*, U.S. Census Bureau, Current Population Reports: Consumer Income, P60-214, (Washington: 2001).

[9] Constance F. Citro and Robert T. Michael, eds., *Measuring Poverty: A New Approach* (Washington: National Academy Press, 1995).

[10] To determine a family's poverty status, the NAS panel recommended that family resources—the measure that is compared to the thresholds—include money and near-money income, minus expenses, such as child care, that divert money away from the basic goods and services.

First, to develop a threshold for a reference family, a specified percentage of median annual expenditures from the Consumer Expenditure Survey (CEX) data is used to determine an amount of food, clothing, shelter expenditures.[11] The reference family consists of two adults and two children. The median annual expenditure amount is next increased by a modest additional amount to allow for other necessities. An equivalence scale is then applied to the reference family threshold to adjust for families of different sizes and composition.

Further adjustments are made to account for geographic differences in the cost of housing. The NAS panel developed an index of 41 geographic areas that is presented by area and population size. These index values are applied to the thresholds to adjust for differences in the cost of housing.

The NAS panel also recommended a method for updating the initial threshold that would reflect changes in nominal growth in food, clothing, housing, and shelter expenditures. To do so, 3 years of the most recent data from the CEX would be used to determine the threshold for the reference family. The CPI-U would be used to update these expenditure data to the current period. Then, the procedures as outlined above are followed to estimate thresholds for families of other sizes by geographic areas.[12]

The NAS panel said that its method of updating the thresholds represented a middle ground between an absolute approach of simply updating the thresholds for price changes, which ignores changes in living standards over time, and a relative approach of updating the thresholds for changes in total consumption.

Observations About the Measure

One of the NAS panel members dissented from the panel because the major recommendations and conclusions for changing the measurement of poverty were the "outcome of highly subjective judgments" and were not based on scientific evidence. In his dissent, the member said that there was no scientific basis to support the use of food, clothing, and shelter

[11] Actually, the panel did not use a single percentage of the median. It concluded that the reference family threshold be from 78 to 83 percent of the median expenditures of the basic goods and services.

[12] The NAS panel recommended that the index used to make housing costs adjustments be updated every 10 years as new decennial census data become available.

expenditures upon which to develop the thresholds. He also objected to using the median level of expenditures of these items rather than the CPI to update the poverty thresholds; he said to do so would change the measure from an absolute to a relative measure. He had two other objections in that the NAS panel did not treat medical care as basic service and that the panel suggested that the poverty line fell within a range of values, of which he stated did not have the scientific community's consensus.

Family Budgets

Family budgets are an income adequacy measure that dates back to the 19th century. The measure described in this appendix is for the city worker's family budget,[13] whose origins closely relate to the budgets that the Works Progress Administration constructed in 1935 for a urban family of four.

The city worker's family budget represents the estimated cost of a list of goods and services that the 4-person family would need to live at a designated level of well-being.[14] The level designated in the city worker's family budget for 1946 was intended to represent a modest but adequate standard of living.[15] The same level of well-being was used in the interim city worker's family budget with 1959 costs. In the mid-1960s, two levels of well-being were added—lower and higher—and the name of the modest but adequate level was changed to intermediate. Also, the name of the city worker's family budget was changed to family budgets.

Purpose and Uses

The city worker's family budget was an absolute measure that was used to determine the adequacy of income—what it costs to live—for a city worker's family who was defined as a husband, aged 38 and employed full

[13] See *City Worker's Family Budget for a Moderate Living Standad*, Bureau of Labor Statistics, Bulletin 1570-1 (Washington: 1967). BLS' first publication of a budget was in 1911 for the measurement of the adequacy of family incomes of textile workers.

[14] The elderly couple's budget was developed by SSA to parallel the city worker's family budget.

[15] The level designated in SSA's elderly couple's budget was intended to represent a modest but adequate mode of living, which allowed normal participation in the life of the community in accordance with current American standards. The level was above subsistence level in that it provided for more than physical needs or what would be necessary to carry families through a limited period of stringency.

time; a wife who did not work outside the home; a boy aged 13; and a girl aged 8.[16]

The city worker's family budgets were used as benchmarks in determining individual family needs, establishing interarea differences in living costs, and documenting changes in living standards over time. The budget cost levels were used by federal, state, and local governments as thresholds for eligibility in administrative programs. The city worker's family budgets were widely used in employment compensation determinations, such as wage negotiations and geographic wage adjustments. Since the costs of the budgets were city specific, the budgets were also used to construct indexes of living costs. These indexes showed interarea variations in living costs and individuals and financial planners used them to examine interarea cost-of-living differences. The budgets were also used in private and public legal actions. Researchers continue to construct family budgets to examine the adequacy of Social Security benefits,[17] as well as the adequacy of wages paid to single parents. [18]

In a number of countries, budget standards are used as reference points in devising or monitoring income maintenance programs. For example, the Commonwealth Department of Social Security commissioned the development of a set of budget standards for Australia. Published in 1998, the budget standards are expected to inform future Australian governments in relation to adequacy standards.[19]

[16] The purpose of SSA's elderly couple's budget was to measure the adequacy of income for a retired couple who was defined as a husband about 65 years of age or over and the wife a few years, if at all, younger.

[17] For example, Joseph White in *False Alarm: Why the Greatest Threat to Social Security and Medicare Is the Campaign to "Save" Them* (Baltimore: Johns Hopkins University Press, 2001), used an abbreviated method to calculate 1996 costs of an elderly couple's budget in 14 nonrandom counties. From the budget amounts, he then estimated the amounts that retired couples would need in Social Security benefits to meet the costs of the rudimentary budgets that he constructed.

[18] Family budgets have been calculated for a single-parent with two children. Wages of the single parent are then compared to the budget amount to determine if families are provided adequate compensation to meet their basic needs. For example, see Jared Bernstein, Chauna Brocht, and Maggie Spade-Aguilar, *How Much Is Enough? Basic Family Budgets for Working Families* (Washington: Economic Policy Institute, 2000).

[19] Peter Saunders, et al., *Development of Indicative Budget Standards for Australia*, Social Policy Research Centre, University of New South Wales, Policy Research Paper No. 74 (Mar. 1998).

Construction of the Measure

The measure involved the formulation of a budget, listing the items and their quantities that comprised the level of well-being chosen, the pricing of these items, and computing the aggregate annual cost of the budget. A group of experts developed a list of goods and services using scientific standards of requirements, such as the recommendations of the Committee on Nutrition of the National Research Council for the food segment of the budget.[20] Where standards had not been developed for the various segments of the budget, records of family expenditures by 4-person families were used. These data were studied to determine the level of purchases in expenditure categories where the families began to purchase higher quality items in the same expenditure category of items or started to save their income.

BLS published the costs of the city worker's family budget for 34 cities for 1946, 1947, 1949, 1950, and 1951. The cost of the interim city worker's family budget was published for 20 cities for 1959. The family budgets at three cost levels were published for 1967 through 1981 (the cost of the intermediate level was also published for 1966) for urban United States, 40 individual metropolitan areas, and 4 nonmetropolitan regions.[21]

The early city worker's family budgets could not be used for families other than those consisting of a husband, wife, and two young children. In 1960, BLS published equivalence scales that could be used to adjust the costs by family composition. BLS updated the equivalence scales in 1968.

The city work's family budgets are no longer published. With the release of the 1981 budget costs, BLS terminated the family budgets program because funding was not available for a revision.

In addition to re-specifying the lists of items in a revision, two methods were used to update the city worker's family budget costs. The first method recollected price data for the individual items on the budget list and then aggregated those costs for an annual amount. The other method, which was used to estimate the 1949 through 1951 and the 1969 through

[20] Scientific standards for housing were also used. Provisions of the Medicare program were used for the medical segment of the retired couple's budgets.

[21] The costs of the elderly couple's budget were published initially for 8 cities and later for 13 cities. The 1950 costs were published for 34 cities. The 1959 interim retired couple's budget was published for 20 cities. The retired couple's budget costs were published for urban United States, metropolitan and nonmetropolitan areas, 40 individual metropolitan areas, and 4 nonmetropolitan regions.

1981 costs, was to use the CPI's component index numbers to update the costs for the segments of the budgets. [22] Revisions of the budgets occurred in 1959 and 1966 when the lists of goods and services were re-specified by experts to account for changes in the modest but adequate standard of living.

Observations About the Measure

In response to a congressional mandate and in recognition that the family budgets needed to be improved, in the 1970s, BLS contracted with the Wisconsin Institute for Research on Poverty to recommend revisions in the Family Budgets program. In 1980, the Expert Committee on Family Budget Revisions recommended that the methodology be changed and that scientific standards no longer be used.[23] The committee asserted that a scientific basis does not exist by which to develop commodity-based lists for the budgets.

One of the reasons the Expert Committee on Family Budget Revisions recommended a change in methodology was that it found that large elements of relativity and subjective judgment entered into the development of the lists of goods and services, including those for which scientific standards were used. The committee recommended that actual overall levels of expenditures be used to measure adequacy. Specifically, it recommended that median expenditure of two-parent families with two children be used to develop the "prevailing family standard" budget and that three other standard budgets be developed as proportions of the prevailing family standard budget amount.[24] In a dissent, a committee member said that a measure of well-being that uses an average (or median) of total family expenditures, which is obtained from a consumer expenditure survey, does not take into consideration the specifics of what that amount will buy or whether the actual quantities of goods and services available within the amount are enough to supply what is needed.

[22] The two methods were compared for differences between 1946 and June 1947 elderly couple's budget costs. In this comparison the actual costs of the budgets rose less rapidly than when the budgets were updated with the CPI. However, this finding could not be applied to periods outside these 2 years.

[23] Expert Committee on Family Budget Revisions, *New American Family Budget Standards*, Working Paper, Institute for Research on Poverty, University of Wisconsin-Madison (May 1980).

[24] BLS researchers recently implemented the committee's recommendations with consumer expenditure data for 1989, 1994, and 1998. See David S. Johnson, John M. Rogers, and Lucilla Tan, "A Century of Family Budgets in the United States," *Monthly Labor Review*, Vol. 124, No. 5 (May 2001) pp. 28-45.

Family Expenditures

Family expenditures are the averages of consumer purchases that are recorded in survey data arrayed by family characteristics, such as age of reference person.

Purpose and Uses

Family expenditures is a relative measure whose purpose is to describe consumer spending and to determine cost-of-living indexes. The basic premise is that the living standards of society can be measured with current consumption expenditure levels and patterns. The early family expenditure surveys, which were conducted in the late 19th century, were concerned with the cost of living of the "working man" and his family, that is the amount of dollars a family needed to live.

Family expenditure data are used by government and private agencies to study the welfare of particular segments of the population. The data are used by economic policymakers interested in the effects of policy changes on various groups.

Construction of the Measure

CEX data are used to estimate aggregate family expenditures. There are three basic methods to measure family expenditures: current consumption, used in the CEX before 1980; total expenditures, used in the CEX since 1980; and current outlays, an alternative measure used to approximate out-of-pocket expenditures, which is also used in the CEX since 1980.

Current consumption expenditures method includes the transaction costs of goods and services, excise and sales taxes, the price of durables (e.g., vehicles) at the time when the purchased, and home mortgage interest payments. It excludes the payment of principal on loans, gifts to persons outside the family, personal insurance, and retirement and pension payments.

The total expenditures method is the same as the current consumption expenditures method, except it includes gifts, personal insurance, and retirement and pension payments.

The total outlays method differs from total expenditures in that payments of principal for home mortgages and financed vehicles are included and the purchase price of vehicles is excluded.

Data from the continuing CEX have been collected quarterly on an ongoing basis since 1980. Prior to the continuing CEX, the survey was conducted periodically about once every 10 or so years. BLS annually publishes average annual expenditures from the continuing CEX for consumer units.[25] Expenditure data are published by type of area (urban and rural) and for four regions of residence.[26]

Observations About the Measure

According to BLS, the published expenditure amounts are averages for consumer units with specified characteristics, regardless of whether or not a particular consumer unit purchased an item in the expenditure category during data collection. Therefore, the average expenditure for an item may be considerably lower than the average for those who actually purchased the item. Also, the average may differ from those who purchased the item as a result of frequency of purchase or the characteristics of the consumer units that purchased the item. For example, since all consumer units do not purchase a new vehicle every year, the average expenditure for new vehicles will be lower than the average for those who actually purchased a new vehicle because the average expenditure includes those who did not purchase a new vehicle that year. Even among those who purchase the item, consumer units may have dissimilar demographic characteristics.

Material Hardship

Material hardship measures identify individuals who do not consume minimal levels of goods and services, such as food, housing, clothing, and medical care. The material hardship measure presented here is one developed in the 1980s by Susan Mayer and Christopher Jencks in their study of Chicago residents.[27] This material hardship measure focused on the following hardships: hunger, cut off of utilities to the home, living in crowded or dilapidated housing, eviction, inadequate health care, and unmet needs for dental care.

[25] A consumer unit is the members of a household related by blood, marriage, adoption, or other legal arrangement; a single person living alone or sharing a household with others but is financially independent; or two or more persons living together who share some major expenses.

[26] For example, see *Consumer Expenditures in 1999*, BLS Report 949, (Washington: 2001).

[27] Susan E. Mayer and Christopher Jenks, "Poverty and the Distribution of Material Hardship," *The Journal of Human Resources*, Vol. XXIV, (Winter 1989), pp. 88-113.

Purpose and Uses

Material hardship is a measure whose purpose is to provide a means for policymakers to measure the goal of reducing specific forms of material hardship.[28]

Researchers have used material hardship measures to supplement traditional measures of poverty, such as to provide a nonmonetary perspective of those who are experiencing economic difficulties. The measures are used by researchers to create point-in-time estimates of hardship, describe trends in hardship, identify predictors of hardship, and develop hardship indicators to evaluate welfare reform.

Construction of the Measure

Respondents are asked to make self-assessments of specific events in their lives. For example, they are asked if there was a time in the previous year when they needed food but could not afford to buy it or could not get out of the home to get food. Generally asked in a yes/no format, these indicators are reported individually but are then summed into a composite deprivation index. In some instances, respondents are asked to report the hardship on the basis of a scale. For example, respondents might be asked to categorize the food eaten in their household as (1) having enough of the kinds of food they want, (2) enough but not always the kinds they want, (3) sometimes not enough to eat, or (4) often not having enough to eat. Other than periodically conducting the surveys, there is no method to update the material hardship measure.

Until Census began collecting data from a nationally representative sample, data had been collected of single mothers in Chicago, Illinois, and of selective populations in other cities.[29]

[28] Material hardship measures are neither absolute nor relative. They examine the extent or lack thereof the consumption of a specific good or service. They do not change with current income or consumption.

[29] Material hardship data are collected in selected nationwide surveys. The Survey of Income and Program Participation (SIPP) and the National Survey of America's Families (NSAF) collect data for multiple indicators of material hardship. Census conducts the SIPP and the Urban Institute in partnership with Child Trends administers NSAF. Census published extended measures of well-being from the SIPP for 1992 and 1995. Other data sources are available for specific material hardship measures. For example, food insecurity data were collected in the Third National Health and Nutrition Survey, supplements to the Current Population Survey, and the Longitudinal Study of Aging.

Median Family Income

Median income is the amount which divides an income distribution into two equal groups, half having incomes above the median and half having income below the median. The concept of using the midpoint of the income distribution as an adequacy measure is that people are social beings and that full participation within society requires that they "fit in" with others. Individuals are not able to participate fully in society if their resources are significantly below the resources of their members of society, even if they are able to eat and physically survive.

Purpose and Uses

Median family income is a relative measure whose purpose is to estimate the income of the family at the middle of an income distribution. Researchers, analysts, and policymakers use median family income to follow historical trends and annual changes in income. A relative measure, such as median family income, is used to provide a perspective of an adequacy measure that keeps up to date with overall economic changes in the society.

Construction of the Measure

Current Population Survey (CPS) data are used to calculate median family income. The measure is updated annually through data collection. The median is based on money income before taxes and does not include the value of noncash benefits, such as food stamps, Medicare, Medicaid, public or subsidized housing, and employment-based fringe benefits. The Census Bureau has annually published median family income since 1947.[30]

Median family income data are published by various family characteristics. The data are also presented by four regions of residence and by type of residence—inside or outside metropolitan areas. The metropolitan areas are further broken down by over or under 1 million in population and by inside or outside central cities.

One-Half Median Family Income

One-half of median family income (see the previous method for description of median family income) is a relative poverty standard.

[30] For example, see *Money Income in the United States: 2000*, U.S. Census Bureau, Current Population Reports: Consumer Income, P60-213, (Washington: 2001).

Purpose and Uses

One-half median family income is a relative measure that researchers use to demonstrate the absolute nature of the official poverty thresholds.[31] One-half of median income for four-person families is also used in comparative analyses of poverty across nations.

Construction of the Measure

Researchers use one-half of the value of median family income as the measure.

Observations About the Measure

No standard method is used to establish the measure of a minimal level of adequacy with median family income. The most commonly proposed measure used for poverty determination is 50 percent of the median. The standard could be implemented in several ways, for example, one-half of the median for each family size. However, median income by family size is bell shaped with the peak at the four-person family.

Per Capita Personal Income

Per capita personal income is the amount of personal income from the U. S. national income and product accounts (NIPA) that would be available to each individual if all income received by persons was distributed equally among all people in the nation.

Purpose and Uses

Per capita personal income is a relative measure whose purpose is to present a measure of a nation's personal income on a per person basis.

Government and private decision makers, researchers, and the public at large who need timely, comprehensive, and reliable estimates use per capita personal income as a measure of the value of and changes in average income at the national and regional level. Because per capita personal income is conceptually and statistically consistent with the official measure of output (Gross Domestic Product), productivity, and other key economic indicators, national estimates of per capita personal income are key inputs to the formulation and monitoring of economic activity by the Federal Reserve Board and to the preparation of projections of federal receipts by the Congressional Budget Office.

[31] For example, see Denton R. Vaughan, "Exploring the Use of the Public's Views to Set Income Poverty Thresholds and Adjust Them Over Time," *Social Security Bulletin*, Vol. 56, No. 2 (Summer 1993) pp. 22-46.

Regional level estimates, which are consistent with the national estimates, also are used by state governments for similar purposes and are used in the allocation of federal funds for key programs.

Per capita personal income data are used as a measure of the economy's capacity to pay. For example, the Medicaid funding formula uses state per capita personal income to provide higher matching percentages for states that have more limited resources to finance program benefits and more low-income people to serve.

Construction of the Measure

Personal income is calculated as the sum of incomes received by persons from production and from transfer payments from government and business. "Persons" consists of individuals, nonprofit institutions that primarily serve individuals, private noninsured welfare funds, and private trust funds.

Wage and salary disbursements, other labor income,[32] proprietors' income, rental income, dividend income, interest income, and transfer payments to persons, less personal contributions for social insurance are summed to calculate personal income. In most cases, only market transactions are used. In a few cases, nonmarket transactions are used in personal income. These transactions include home ownership, financial services furnished without direct payment, and employer contributions for health and life insurance. The summation of the personal income components is then divided by the nation's population to provide per capita personal income. Population is the total population of the United States, including military personnel.

Each component of personal income is prepared independently using the most up-to-date and reliable source data. The Commerce Department's Bureau of Economic Analysis prepares the estimates of personal income and calculates per capita personal income. Per capita personal income estimates are released monthly at the national level, quarterly at the state level, and annually at the county and metropolitan area levels. Per capita

[32] Other labor income consists primarily of employer payments to private pension and profit-sharing plans, publicly administered government employee retirement plans, private group health and life insurance plans, and privately administered workers' compensation plans.

personal income is published at both the national and regional—state, county, and metropolitan area—levels.[33]

The base of per capita personal income, personal income, is updated on a regularly scheduled basis, where the schedule of updates are timed to incorporate newly available and revised source data. Comprehensive revisions are carried out at about 5-year intervals.[34] Population estimates are revised to reflect the results of the latest decennial census of population.

Observations About the Measure

The definition of personal income, which is based on the NIPA definition, is not what one usually equates to family or household income. For example, it includes income of "persons" as defined for the NIPAs, which includes income of individuals as well as income of nonprofit institutions serving individuals and the investment income of pension plans. It excludes realized capital gains or losses and incomes that reflect transfers from other individuals, such as alimony or gifts. Although, in general, incomes are recorded when received, benefit payments from pension plans are not included when the benefits are actually paid. Instead, employer contributions to these plans are recorded as income to employees when the contributions are made and the investment income of the plans is recorded when earned. Also, although Social Security benefit payments are included in personal income, total personal income is reduced by personal contributions to Social Security.

Public Assistance

If an individual is dependent upon others for cash assistance, then the individual has inadequate income. Since data about sources of income provided by others is difficult to obtain, statistical indicators of such dependency often resort to administrative data from public assistance programs. As used in this appendix, the receipt of public assistance is a measure to denote individuals who meet program eligibility criteria and

[33] For example, see table J.3 Per Capita Personal Income and Disposable Personal Income and table K.1 Personal Income and Per Capita Personal Income by Metropolitan Area in Section D of *Survey of Current Business*.

[34] Comprehensive revisions update the NIPAs to portray more accurately the evolving U.S. economy, to reflect the introduction of new and improved methodologies, and to incorporate newly available and revised major source data. Revisions are carried back in time to maintain a consistent time series of data.

have resources below a level that is specified by a state (or federal government) for its public assistance program.

The dependency on others appears to be the basis on which President Roosevelt's Committee on Economic Security made its recommendations in 1935. Supporting materials prepared for the committee indicate that it used a "danger line" amount that was used in some of the states for their old-age public assistance programs. The danger line was an amount ($300 per year) that placed older persons in a dependent class. As an example of this adequacy measurement method we use the Supplement Security Income (SSI) program and its predecessor the old-age assistance program.

The federal SSI program was created to provide a positive assurance that the nation's aged, blind, and disabled people would no longer have to subsist on below poverty-level incomes. SSI was conceived as a guaranteed minimum income for the aged, blind, and disabled. It was to supplement the Social Security program and to provide for those who were not covered or minimally covered under Social Security or who had earned only a minimal entitlement under the program. In 1972, SSI replaced the federal-state old-age assistance programs in which state benefit amounts were matched by the federal government up to a specified monthly amount. Under those programs the states were able to set benefit amounts and the basis for those amounts was unclear.

Purpose and Uses

The purpose of a measure that examines the receipt of public assistance is to determine if the person is dependent upon others for his/her economic well-being.[35]

In staff reports prepared for the 1934 Committee on Economic Security, the dependency on others is used as a measure of inadequate income. For example, Edwin Witte, executive director for the committee, estimated that 2.7 million of the 6.5 million persons 65 and older were supported by others, including those who obtained public assistance.

The National Resources Planning Board in 1942 used the receipt of public assistance to determine whether old-age and survivors benefits that were

[35] Public assistance measures are neither absolute nor relative. They do not involve a list of necessary goods and services that has been identified by experts or scientific standards, nor do they change with current income or consumption.

payable in 1940 were adequate for the needs of the recipients. The board said that a large volume of supplementation of social insurance benefits by other forms of aid would lead it to conclude that insurance payments were not adequate for a considerable proportion of qualified workers.

Construction of the Measure

The measure is simply the number of persons who receive public assistance. SSA administrative data are used to determine the number of persons who receive federally administered SSI benefits. The number of SSI recipients is continually updated with administrative data. SSA publishes the data quarterly and annually. The data are published for the United States and by state.[36]

By the nature of SSI's benefit structure and eligibility criteria, administrative data can be used to identify the type of family unit, or lack of, in which the recipients live. For example, there are different benefit levels for couples, individuals living alone, recipient living in someone's household, or individuals in a Medicaid facility.

Public Opinion

Public opinion polls have been used to solicit subjective estimates from individuals on the amount of income that one needs to live. The concept underlying a public opinion poll to ascertain a subjective measure of adequacy is that individuals are able to tell a pollster what the minimum amount of income (or consumption) is that people need to maintain a minimally adequate level of living. Subjective measures of adequacy are grounded in the everyday and necessarily subjective perceptions of typical individuals as to the material requirements associated with differing levels of economic well-being. The direct question approach is based on the assumption that people are the experts on the needs of their families and/or those living in their communities.

The only relatively consistent series of money amounts corresponding to a living-standard threshold based on judgment of representative samples of the public is one developed by the Gallup polling organization.[37] The

[36] For example, *Annual Statistical Supplement, 1999, to the Social Security Bulletin*, Social Security Administration.

[37] The following study, which used the Gallop data, is often cited: Denton R. Vaughan, "Exploring the Use of the Public's Views to Set Income Poverty Thresholds and Adjust Them Over Time," *Social Security Bulletin*, Vol. 56, No. 2 (Summer 1993) pp. 22-46.

subjective measure presented here is the "get-along" measure that was collected by the Gallop Organization.

Purpose and Uses

The purpose of a subjective measure of well-being that has been obtained through a public opinion poll is to track the size of groups enjoying different standards of living.[38] To do so, the societal views about the income levels required to support alternative living levels are compared with average levels of family economic resources.

The primary use of the subjective measure has been to demonstrate the absolute nature of the official poverty thresholds. For example, the Committee on National Statistics of the National Academy of Science study panel and researchers compared trends in the official poverty threshold, one-half of family median income, and the get-along amount to document that the official poverty measure is no longer consistent with the society's definition of measures of need. Subjective measures have also been used to produce subjective minimum income thresholds.

Construction of the Measure

The responses to the following question are used as the subjective measure: "What is the smallest amount of money a family for four (husband, wife, and two children) needs each week to get along in this community?" The response when converted into an annual amount is generally referred to as the "get along" amount. The Gallup Organization queried samples of adults about the get-along amount 38 times from 1946 through 1992. There was no regular publication of the data.

Although the get-along question was asked in the context of the respondent's community, no presentation has been made of geographic differences among the values reported.

Other than periodically making an inquiry through a poll or survey, there is no method to update the public opinion measure.

[38] Subjective measures are neither absolute nor relative. They are not lists of goods and services identified by experts or with scientific standards. Neither do they change with current income or consumption.

Observations About the Measure

As part of a study of subjective assessments of economic well-being, researchers at the Bureau of Labor Statistics found that respondents have definite emotional reactions to their financial situations and are willing and able to discuss them. [39] They also found that the terms used in subjective questions were ambiguous. In addition, if the respondent was the designated bill payer, the person's responses were found to differ from those in the family who did not pay the bills.

Earnings Replacement Rates

One common measure of retirement income adequacy is the replacement rate, which represents the income in retirement for a single worker or household in relation to a measure of pre-retirement earnings, such as earnings in the year before retirement.

Purpose and Uses

The purpose of the earnings replacement rate is to compare the level of retirement income with the level of pre-retirement income to help illustrate the extent to which pre-retirement standards of living can be sustained in retirement for particular individuals or households. The replacement rate is a relative measure in that it is relative to an individual's or household's own income, not to some absolute standard of adequacy.

The earnings replacement rate has been used both with respect to Social Security and to employer-sponsored pensions. As noted in this report, the Social Security benefit formula is defined in a way that focuses on replacing earnings. When calculating replacement rates, SSA typically uses the ratio of initial Social Security benefits to pre-retirement covered earnings. A number of researchers have used replacement rates in analyzing Social Security benefits for many years. Also, an SSA actuarial note observes that "policymakers are interested in replacement ratios: (1) as a means of communicating to prospective beneficiaries approximately how much they can expect to receive from Social Security, relative to their earnings; and (2) as a means of deciding if and how the Social Security program should be changed to meet the needs and desires of the public…"[40]

[39] This study was not of the Gallup get-along question. It examined four self-assessment questions that had been used in other research.

[40] Joseph A. Applebaum and Joseph F. Faber. "The Concept of Replacement Ratios Under Social Security." SSA Actuarial Note No. 96, July 1979.

Replacement rates have also been used with respect to employer-sponsored pensions and retirement income more broadly, using total income amounts in the ratio. For example, available data suggest that typical pension replacement rates for a 30-year career worker have been in the 20- to 40-percent range across the earnings distribution and that lower earners have received slightly higher replacement rates than higher earners.[41] More generally, many benefit professionals currently consider a 70 to 80 percent replacement rate as adequate to preserve the pre-retirement living standard. In contrast, Social Security replacement rates for workers who retired in 2001 at age 65 with a history of average earnings had a replacement rate of roughly 40 percent.

Construction and Updating the Measure

Construction of replacement rates raises a variety of methodological issues, most notably, how retirement income is measured, how pre-retirement income is measured, how the two are compared, and for whom. How these issues are addressed depends on the purpose at hand. For example, in measuring retirement income, some researchers feel that income in the first year of retirement should be used, rather than trying to reflect changes in retirement income over time. In measuring pre-retirement income, some researchers use income in the year immediately before retirement. In comparing the two, the two measures should be consistent with one another, for example, with respect to before- or after-tax status. For whom the comparison is made might include specific individuals or households for their own retirement planning purposes, illustrative workers such as the steady-earners used in figures 4 and 7 of this report, or some sample of individuals or households in the population. If the purpose of the analysis is to isolate the effects of certain program changes, then the use of illustrative steady earners in which all are assumed to retire at a given age might be appropriate. In contrast, if the purpose is to describe the experience of a population, then using a sample might be appropriate.

The issues of updating and geographic variation are not especially applicable to the replacement rate by its nature. It is a ratio that is relative to the earnings of the individuals or households examined, which themselves change across cohorts.

[41] Olivia S. Mitchell, "New Trends in Pension Benefit and Retirement Provisions," Working Paper No. 7381 (Cambridge, Mass.: National Bureau of Economic Research, Oct. 1999).

Observations About the Measure

While replacement rates can be useful for some purposes, such as illustrating the effects of program changes over time, the meaning of a specific value of a replacement rate is not clear. For example, a very low earner could have a high replacement rate and still have very low income, while a high earner could have a low replacement rate and live quite comfortably. Thus, desired or target replacement rates can vary significantly by income level and other factors.[42] Also, the standard that pension professionals consider an adequate replacement rate has changed over the years. While a 50 percent replacement rate might have been considered adequate in the 1930s, when Social Security was instituted, many benefit specialists and researchers would apply a higher standard today.[43] Moreover, the actual experience of a given household could easily involve phased-in retirement or situations where one spouse retires while the other continues to work. Such irregularities present problems in interpreting replacement rates for actual households.

[42] See Bruce A. Palmer, "Retirement Income Replacement Ratios: An Update," Benefits Quarterly, 2nd Quarter, 1994.

[43] See Sylvester J. Schieber, "The Employee Retirement Income Security Act: Motivations, Provisions, and Implications for Retirement Income Security," paper presented at "ERISA After 25 Years: A Framework for Evaluating Pension Reform," Washington, D.C., Sept. 17, 1999, pp. 8-9.

Appendix II: Characteristics of Adequacy Measures Used in Our Analyses

We examined the characteristics of the 11 measures, which are described in appendix I, that might help examine income adequacy. Through this examination, we determined that each had limitations that precluded using any single measure by itself for our analyses. Given these limitations, we selected four measures that would, as a group, be more appropriate measures for our analyses. These are the current poverty thresholds, median family income, public assistance, and earnings replacement rates. Public assistance and earnings replacement rates reflect the concern that the framers of the Social Security Act had about dependency on others and a means to support people who no longer worked. The current poverty thresholds and median family income, respectively, provide a lower and upper bounds of the congressional expectation for Social Security to provide more than a minimal subsistence level, which is at a level above that estimated by the current poverty thresholds.

We decided not to use three measures—family budgets, material hardship, and per capita personal income—because they were outdated or because they did not allow us to make the comparisons our analyses required. We elected not to use the family budgets measure because the database on which it was constructed was 40 years old and because it was no longer officially published. We elected not to use the material hardship measure because it produced a nonmonetary value that could not be compared to Social Security benefit amounts or income dollar amounts. We chose not to use per capita personal income because by definition it includes income other than that held by people, specifically, money income held by nonprofit institutions and pension plans.

In examining the four measures we used, we determined that each had limitations that precluded using any single measure by itself. Below, we document the recognized limitations of each for use in our analyses.

Current Poverty Thresholds

Several limitations have been identified regarding the use of current poverty thresholds for estimating the number of people who live in poverty each year. Some of these limitations were identified as a result of two federally sponsored studies in the 1970s and 1990s. Although these studies did not assess the thresholds as an adequacy measure, the limitations they identified shed light on the thresholds' ability to identify those whom do not have the resources to meet subsistence or minimal needs. We also include concerns expressed by the developer of the current poverty thresholds.

A 1976 Department of Health, Education, and Welfare (HEW) mandated study of poverty measures noted that several limitations stemmed from the fact that the current thresholds were based on one needs standard—food—and its costs in relation to other nonfood expenditures. The HEW study stated that other than food there were no other commonly accepted standards of need. In addition, it noted that the amount of money a family spends on food was only an approximation of a family's food needs. The report also stated that the multiplier that was applied to the food costs was a rough measure of nonfood requirements.

According to two federally sponsored studies, some of the limitations of the current poverty thresholds relate directly to their inability to reflect changes in living standards. The poverty thresholds are an absolute measure in which the mix of goods and services the thresholds represent has not been changed for nearly 40 years and, therefore, are not consistent with prevailing American standards of living. Although the current poverty thresholds are updated by price changes as reflected in the Consumer Price Index (CPI), as indicated in these two studies, the items that are updated reflect a mid-20th century mix in terms of quality and quantity of goods and services.

The current poverty thresholds do not reflect how the proportion of income dedicated to food has changed with rising living standards, according to a 1995 study panel of Committee on National Statistics of the National Academy of Science (NAS). A research study illustrates how living standards based on food rise over time—as the population becomes more prosperous, on average, it devotes a smaller proportion to food expenditures and larger proportions to nonfood expenditures. The study recalculated the poverty thresholds using USDA's 1965 Household Survey to determine the portion of family income dedicated to food purchases and USDA's 1975 Thrifty Food Plan to approximate the cost of food. The thresholds re-estimated for 1977 were about 40 percent higher for the 1-person households and about 20 percent higher for 4-person families. A recent study estimated that the poverty thresholds for 4-person families would have been 68 percent higher in 1987 if they had been recalculated with methodology similar to that used to develop the current poverty thresholds.

The 1976 HEW study and the 1995 NAS study panel noted that, although the current poverty thresholds are updated by changes in prices paid by consumers, they do not change with the standard of living. The 1995 NAS study panel said that the thresholds do not incorporate changes in total consumption that include spending on luxuries, as well as necessities, or

declines in the standard of living. The 1976 HEW study noted, however, that the current poverty thresholds were updated using a relative means—changes in prices—using the CPI. However, the developer of the current poverty thresholds voiced concern about updating the thresholds with the CPI. She noted the uncertainty about the appropriateness of the CPI as a measure of price changes for the poor. She doubted that one price index could capture how families at different income levels adjust their spending to accommodate to price changes. For example, poor families may react to a 10 percent increase in the price of utilities by reducing expenses in other essential consumption areas; whereas wealthy families would have more options and could address the increase in a different manner.

Another limitation of the current poverty thresholds identified by the 1995 NAS study panel is that the thresholds do not account for the fact that working families pay taxes on their earnings and families on public assistance do not pay taxes on the cash assistance they receive. According to the NAS panel, this occurs because the determination of whether or not a family is poor is based on a comparison of before-tax income with thresholds based on after-tax income. This comparison ignores the fact that payment of taxes lowers disposable income. As a result, the comparison of before-tax income with the current poverty thresholds can make it appear as if low-income working families are better off than poor families receiving public assistance. The NAS study panel indicated that this limitation might affect the manner in which policymakers view the poverty population. For example, because of the comparison of before-tax income with an after-tax poverty measure, the adverse effects of tax policy changes for low-income working families are not captured in the resulting poverty statistics.

The NAS panel identified another limitation of the current poverty thresholds in that the value of noncash benefits, such as housing subsidies, are not included as income in the determination of poverty status. According to the panel, the extent of poverty among the recipients of such benefits is overstated and the efficacy of government income-support measures is understated because the current poverty thresholds do not take into account the receipt of noncash public benefits.

According to the developer of the current poverty thresholds, the thresholds are inappropriately applied to all types of families. The developer stated that a major limitation of the thresholds was the failure to differentiate between a social minimum appropriate for a worker and his family and a more stringent standard appropriate for a family dependent

on public assistance. She indicated that the same standard was inappropriately applied to both types of families.

Furthermore, the developer and the NAS study panel said the current poverty thresholds inability to address needs that are specific to families with different living situations was a limitation. The NAS panel stated that the thresholds do not accurately portray the relative poverty status of working families with childcare expenses and those without such expenses. The developer also voiced concern about the tradeoffs that families make and cited the limitation of the thresholds to address, for example, how higher expenditures in health care affect other areas of family living. The NAS panel also said that the thresholds do not distinguish among the health care needs of different kinds of families or reflect the role of insurance coverage in reducing families' medical care expenditures.

According to the studies, the current poverty thresholds have limitations in the manner in which they differentiate for family size and do not account for geographic differences in the cost of living. The NAS panel questioned the equivalence scale adjustments for family size—especially thresholds for single persons and those for aged individuals and couples—because the composition of families and households has changed since the 1960s. Both the 1976 HEW study and the 1995 NAS report state that the thresholds are limited in that they do not adjust for interarea price differences and therefore do not incorporate geographic differences in the cost of living.

Median Family Income and 50 Percent of Median Family Income

Median family income has not been used in any official capacity. Therefore, only general observations have been documented about its limitations as an adequacy measure. Limitations are generally expressed in terms of using 50 percent of family median income as a measure of poverty status.

According to one researcher in the field, one limitation concerns the public's ability to understand the measure's income base when it is accustomed to a measure based on basic needs. The researcher noted that an income-based measure was less closely linked to the basic concept of minimum adequacy than an absolute measure. In other words, the public would have difficulty grasping how it could be a measure of adequacy if it was not linked to one's basic needs for food, clothing, and shelter.

According to the NAS study panel, another limitation is that median family income changes directly with aggregate income and is difficult for people to understand its movement when the economy changes. One researcher said that a relative measure like median family income would fall in real terms during a recession and that this was less than ideal because the needs of the poor do not fall similarly. The 1995 NAS study panel also noted the behavior the measure would demonstrate during recessions and economic upturns and said it would be hard to explain and justify changes in the measure that are not simply a reflection of price changes. The researcher noted that opponents of a relative adequacy measure, such as median family income, say it presents too much of a moving target for policy assessment purposes and that it is unreasonable to judge the effectiveness of antipoverty efforts against such a measure.

Limitations also revolve around how to implement median family income as an adequacy measure, according to the NAS panel. It noted the problems in selecting the median family income for a particular family size. The panel discussed several approaches that have been used to develop an adequacy measure and limitations of these approaches. For example, it noted that one approach is to apply an equivalence scale to the income amounts in order to develop a per capita equivalent income for the reference family. The panel noted that this approach was sensitive to the particular equivalence scale that was used. In this report, we used median family incomes by family size as published by the Census Bureau. For single individuals we used one-person household median income; for two persons we used two-person family median income. As noted in Ruggles, this approach also has its limitations in that median family income has a bell-shaped distribution peaking at the four-person family size.

Another limitation the NAS panel identified concerned the definition and sources of income that are used to produce median family income. The NAS panel noted conceptual problems in using median income as an adequacy measure because it does not reflect disposable income in the way it handles taxes, childcare expenses, and other work-related expenses. The NAS panel also said that median family income does not include noncash benefits, such as food stamps, but said that is not much of a problem since families at the median do not generally receive such benefits.

Public Assistance

The receipt of public assistance has not been recently reviewed by a group of experts as an adequacy measure. Therefore, the limitations identified for this measure are those applicable to the federal-state old-age

assistance program. The National Resources Planning Board said, in 1941, that using the receipt of public assistance as an indicator of whether Social Security beneficiaries had adequate income had several limitations. It stated that some of the states, in 1940, were providing a level of living considerably lower than that provided by Social Security. The board also reported that some states did not have funds to provide for all of their needy applicants and chose not to supplement those who received Social Security benefits.

We used administrative data to report the proportion of the elderly who received old-age assistance or SSI benefits. We note that some Social Security beneficiaries who may meet all eligibility criteria may not receive benefits.

Earnings Replacement Rates

The chief limitation of replacement rates is that the meaning of a specific value of a replacement rate is not clear. A very low earner could have a high replacement rate and still have very low income, while a high earner could have a low replacement rate and live quite comfortably. Also, the standard that pension professionals consider an adequate replacement rate has changed over the years. Another important limitation arises in trying to define replacement rates for actual households. For example, the actual experience of a given household could easily involve phased-in retirement or situations where one spouse retires while the other continues to work.

Appendix III: Defining Benchmarks for Analysis of Future Benefits

According to current projections of the Social Security trustees for the next 75 years, revenues will not be adequate to pay full benefits as defined under current law. Therefore, estimating future Social Security benefits should reflect that actuarial deficit and account for the fact that some combination of benefit reductions and revenue increases will be necessary to restore long-term solvency. To illustrate a full range of possible outcomes, we developed benchmark policy scenarios that would achieve 75-year solvency either by only increasing payroll taxes or only reducing benefits. In developing these benchmarks, we identified criteria to use to guide their design and selection. We also identified key parameters that could be used to describe and calibrate the policies to achieve 75-year solvency. We asked SSA's Office of the Actuary to score the policies and determine the precise parameter values that would achieve 75-year solvency in each case. Once we defined and fully specified our benchmark policies, we used them to estimate the range of potential future benefit levels using two representative sample microsimulation models as well as an SSA benefit calculator for illustrative workers. (See app. IV.)

Criteria

According to our analysis, appropriate benchmark policies should ideally be evaluated against the following criteria:

1. "*Distributional neutrality*": the benchmark should reflect current law as closely as possible while still restoring solvency. In particular, it should try to reflect the goals and effects of current law with respect to redistribution of income. However, there are many possible ways to interpret what this means, such as

   a) producing a distribution of benefit levels with a shape similar to the distribution under current law (as measured by coefficients of variation, skewness, kurtosis, etc.);
   b) maintaining a proportional level of income transfers in dollars;
   c) maintaining proportional replacement rates; and
   d) maintaining proportional rates of return.

2. *Demarcating upper and lower bounds* within which the effects of alternative proposals would fall. For example, one benchmark would reflect restoring solvency solely by increasing payroll taxes and therefore maximizing benefit levels while another would solely reduce benefits and therefore minimize payroll tax rates.

3. *Ability to model*: the benchmark should lend itself to being modeled within the GEMINI and MINT models.

4. *Plausibility:* the benchmark should be politically within reason as an alternative; otherwise, the benchmark could be perceived as a strawman.

5. *Transparency:* the benchmark should be readily explainable to the reader.

Tax-Increase-Only Benchmark Policies

We used only one tax-increase-only benchmark policy scenario because policies that only increase payroll tax rates have no effect on benefits. Our tax-increase-only benchmark would raise payroll taxes once and immediately (in the next calendar year) by the amount of the OASDI actuarial deficit as a percent of payroll. It results in the smallest ultimate tax rate of those we considered and spreads the tax burden most evenly across generations; this is the primary basis for our selection. The later that taxes are increased, the higher the ultimate tax rate needed to achieve solvency, and in turn the higher the tax burden on later taxpayers and lower on earlier taxpayers. We consider this policy to be plausible because it would involve less than a 1 percentage point increase on employers and employees each. Still, any policy scenario that achieves 75-years solvency only by increasing revenues would have the same effect on the adequacy of future benefits in that promised benefits would not be reduced. Nevertheless, alternative approaches to increasing revenues could have very different effects on individual equity.

Benefit-Reduction-Only Benchmark Policies

We developed three benefit-reduction benchmarks for our analysis. For ease of modeling, all benefit-reduction benchmarks take the form of reductions in the PIA formula factors; they differ in the relative size of those reductions across the three factors, which are 90, 32, and 15 percent under current law. Each benchmark has three dimensions of specification: scope, phase-in period, and the factor changes themselves.

Scope

For our analysis, we want the benefit reductions in our benchmarks to apply very generally to all types of benefits, including disability and survivors benefits as well as old-age benefits. Our objective is to find policies that achieve solvency while reflecting the distributional effects of the current program as closely as possible. Therefore, it would not be appropriate to reduce some benefits and not others. If disabled and survivor benefits were not reduced at all, reductions in other benefits would be deeper than shown in this analysis.

Phase-in Period

We selected a phase-in period that begins with those reaching age 62 in 2005 and continues for 30 years. We chose this phase-in period to achieve a balance between two competing objectives: 1) minimizing the size of the ultimate benefit reduction and 2) minimizing the size of each year's incremental reduction to avoid notches and unduly large incremental reductions. Since later birth cohorts are generally agreed to experience lower rates of return on their contributions already under current law, minimizing the size of the ultimate benefit reduction would minimize further reductions in later cohorts' rates of return. The smaller each year's reduction, the longer it will take for benefit reductions to achieve solvency and in turn, the deeper the eventual reductions will have to be. However, the smallest possible ultimate reduction would be achieved by reducing benefits immediately for all new retirees by over 10 percent; this would create a huge notch, that is, creating some marked inequities between beneficiaries close in age to each other.

Our analysis shows that a 30-year phase-in should produce incremental annual reductions that would be of palatable size and avoid significant notches. Therefore it would be preferable to longer phase-in periods, which would require deeper ultimate reductions.

In addition, we feel it is appropriate to delay the first year of the benefit reductions for a few years because those within a few years of retirement would not have adequate time to adjust their retirement planning if the reductions applied immediately. The Maintain Tax Rates (MTR) benchmark in the 1994-96 Advisory Council Report also provided for a similar delay.[1]

Defining the PIA Formula Factor Reductions

When workers retire, become disabled, or die, Social Security uses their lifetime earnings records to determine each worker's Primary Insurance Amount (PIA), on which the initial benefit and auxiliary benefits are based. The PIA is the result of two elements—the Average Indexed Monthly Earnings (AIME) and the benefit formula. The AIME is determined by taking the lifetime earnings earnings record, indexing it, and taking the average. To determine the PIA, the AIME is then applied to a step-like formula, shown here for 2001.

[1]Advisory Council on Social Security. *Report of the 1994-1996 Advisory Council on Social Security*, Vols. 1 and 2. Washington, D.C.: Jan. 1997.

$$PIA = 90\% \bullet (AIME_1 \leq \$561)$$

$$+ 32\% \bullet (AIME_2 > \$561 \text{ and} \leq \$3381)$$

$$+ 15\% \bullet (AIME_3 > \$3381)$$

where $AIME_i$ is the applicable portion of AIME.

All three of our benefit-reduction benchmarks are variations of changes in PIA formula factors and all are special cases of the following generalized form, where F^i represents the 3 PIA formula factors, which are 90, 32, and 15 percent under current law.

$$F^i_{t+1} = F^i_t - (F^i_{2001} \bullet x \bullet \text{weight}_x) - y \bullet \text{weight}_y$$

where

t = the year of the factor,

x = constant proportional benefit reduction,

y = constant "subtractive" benefit reduction, and

weight_x and weight_y determine the relative effects of x and y and sum to 1.

Our three potential benchmarks can now be described as follows:

Proportional Offset: $\text{weight}_x = 1$ and $\text{weight}_y = 0$. The value of x is calculated to achieve 75-year solvency, given the chosen phase-in period and scope of reductions.

The formula specifies that the proportional reduction is always taken as a proportion of the base year factor value rather than the prior year. This maintains a constant rate of benefit reduction from year to year. In contrast, taking the reduction as a proportion of the prior year's factor value implies a decelerating of the benefit reduction over time because the prior year's factor gets smaller with each reduction. To achieve the same level of 75-year solvency, this would require a greater proportional reduction in earlier years because of the smaller reductions in later years.

The proportional offset hits lower earners especially hard because the constant x percent of the higher formula factors results in a larger percentage reduction over that segment of the formula, while the higher

formula factors apply to the lower earnings segments of the formula. For example, in a year when the cumulative size of the proportional reduction has reached 10 percent, the 90 percent factor would then have been reduced by 9 percentage points, the 32 percent factor by 3.2 percentage points, and the 15 percent factor by 1.5 percentage points. As a result, earnings below the first bendpoint would be replaced at 9 percentage points less than current law, while earnings above the second bendpoint would be replaced at only 1.5 percentage points less than current law. Still, the proportional offset is easily described as a constant percentage reduction of current law benefits for everyone. In the example, beneficiaries of all earnings levels would have their benefits reduced by 10 percent.

Progressive Offset: $\text{weight}_x = 0$ and $\text{weight}_y = 1$. The value of y is calculated to achieve 75-year solvency, given the chosen phase-in period and scope of reductions.

This offset results in equal percentage point reductions in the formula factors, by definition, and subjects earnings across all segments of the PIA formula to the same reduction. Therefore, it avoids hitting lower earners especially hard as the proportional offset does.

As it happens, this offset produces exactly the same effect as the offset we used in our 1990 analysis of a partial privatization proposals.[2] In that analysis, we were charged with finding a benefit reduction that would leave the redistributive effects of the program unchanged while allowing a diversion of 2 percentage points of contributions into individual accounts. We calculated these benefit reductions by computing the Social Security annuity value of the balance of a hypothetical account that earned interest on the diverted contributions at the rate of return for each individual's cohort as a whole. We demonstrated the distributional neutrality of this benefit reduction by showing that if all individuals earned exactly the cohort rate of return on their individual accounts, then their income under the proposal from Social Security and the new accounts would be exactly the same as under current law.

The hypothetical account approach to reducing benefits translates into our PIA factor changes because such a reduction is proportional to the AIME,

[2]*Social Security: Analysis of a Proposal to Privatize Trust Fund Reserves.* GAO/HRD-91-22, Dec. 12, 1990.

not to the PIA. The contributions to a hypothetical account are proportional to earnings. Therefore, a benefit reduction based on such an account would also be proportional to earnings; that is

$$\text{Benefit reduction} = y \bullet \text{AIME}$$

Therefore, the new PIA would be

$$\text{PIA}_{new} = 90\% \bullet \text{AIME}_1 + 32\% \bullet \text{AIME}_2 + 15\% \bullet \text{AIME}_3 - y \bullet \text{AIME}_T$$

Where AIME_i is the applicable portion of AIME and AIME_T is the total AIME. In turn,

$$\text{PIA}_{new} = (90\% - y) \bullet \text{AIME}_1 + (32\% - y) \bullet \text{AIME}_2 + (15\% - y) \bullet \text{AIME}_3$$

Thus, the reduction from a hypothetical account can be translated into a change in the PIA formula factors.

Because this offset can be described as subtracting a constant amount from each PIA formula factor, it is reasonably transparent, especially in comparison to describing it as a hypothetical account offset.

Limited Proportional Offset: Other analyses have addressed the concern about the effect of the proportional offset on low earners by modifying that offset to apply only to the 32 and 15 percent formula factors. The MTR policy in the 1994 to 1996 Advisory Council Report used this approach, which in turn was based on the Individual Account (IA) proposal in that report. However, the MTR policy also reflected other changes in addition to PIA formula changes. Our recent report on disability and Social Security reform also used this "limited proportional" approach but using PIA formula changes alone to achieve solvency.[3] In addition, both the Advisory Council and our analysis favored those closer to retirement by having a smaller percentage reduction for the first several years and a reduction that was 1 percentage point higher after those several years and until the end of the phase in. For simplicity, we apply the first percentage reduction for the first 10 years of the phase-in.

[3]Advisory Council on Social Security. *Report of the 1994-1996 Advisory Council on Social Security*, Vols. 1 and 2. Washington, D.C.: Jan. 1997. *Social Security Reform: Potential Effects on SSA's Disability Programs and Beneficiaries* (GAO-01-35, Jan. 24, 2001).

Using the generalized form above, this can be expressed as

$\text{weight}_x = 1$, $\text{weight}_y = 0$

$$F^{90}_{t} = F^{90}_{2001} \text{ for all } t$$

$$F^{i}_{t+1} = F^{i}_{t} - (F^{i}_{2001} \bullet x_p \bullet \text{weight}_x) - y \bullet \text{weight}_y$$

$$\text{for } i = \{32,15\},$$

where x_p differs for the first 10 and second 20 years of the phase-in period and is 1 percentage point higher in the second part than in the first.

Table 3 summarizes the features of our four benchmarks.

Table 3: Summary of Benchmark Policy Scenario Parameters

		Annual PIA factor reduction (percentage point)			Ultimate PIA factor (2035) (percent)		
Benchmark policy scenario	**Phase-in period**	**90 percent factor**	**32 percent factor**	**15 percent factor**	**90 percent factor**	**32 percent factor**	**15 percent factor**
Tax-increase-only	2002	0.00	0.00	0.00	90.00	32.00	15.00
Proportional benefit reduction	2005-2035	0.71	0.25	0.12	68.10	24.21	11.35
Progressive benefit reduction	2005-2035	0.32	0.32	0.32	80.11	22.11	5.11
Limited proportional benefit reduction	2005-2014	0.00	0.27	0.13	90.00	16.95	7.94
	2015-2035	0.00	0.59	0.28			

Source: GAO's analysis as scored by SSA actuaries.

Appendix IV: Description of Approaches Used to Forecast Future Benefits

For our analysis of future Social Security benefits, we used two alternative policy microsimulation models and illustrative worker analysis. We used the MINT (Modeling Income in the Near Term) model, developed and used by the Social Security Administration's Office of Policy, and the GEMINI model, developed by the Policy Simulation Group. For both models the developers produced multiple output data sets based on the PIA formula changes specified by the policy benchmarks.[1] This appendix will briefly describe the two models and the illustrative worker analysis and illustrate their different characteristics for analysis of future benefits. While all methods of analysis were carefully chosen for their unique qualities, presenting results using three different analytical tools allows for different perspectives on the uncertainty of the future.

MINT

MINT is a detailed microsimulation model developed and used by the Social Security Administration's Office of Policy. The MINT model projects demographic changes, retirement income, and Social Security benefits for the cohort of persons born between 1926 and 1965. It provides SSA with the capability to assess the distributional impact of changes to the Social Security program. The base data sets used in the model are 1990-93 panels of the Census Bureau's Survey of Income and Program Participation (SIPP), matched to Social Security Earnings Records (SER) and Master Beneficiary Records (MBR). The SERs give earnings histories for the years 1951 to 1998. MINT uses data on the matched files for individuals in the 1931 to 1960 birth cohorts to project their incomes. In some cases, additional data are used to project income and demographic characteristics.[2]

MINT estimates earnings histories for persons in the sample who have not yet completed their careers. MINT also projects the year of initial receipt of Social Security benefits and benefit amounts, in addition to the other sources of retirement income including pensions, asset income, and earnings of working Social Security beneficiaries. MINT does not estimate any interactions between changes in Social Security and other income

[1] See appendix III for more information on the policy benchmark results.

[2] For a complete description of the MINT model and projections see The Urban Institute, Final Report: Modeling Income in the Near Term - Projections of Retirement Income Through 2020 for the 1931-1960 Birth Cohorts, 1999, and RAND, Final Report: Near Term Model Development Part II, 1999 (http://www.ssa.gov/policy/policyareas/evaluation/MINT/UI/).

sources. For example, assuming no change in consumption during working years, our tax increase benchmark may overestimate total retirement income because no provision is made to decrease income from saved assets that might diminish as higher payroll taxes reduce disposable income before retirement.

The MINT model has not been well validated against other micro or macroeconomic projection models. However, SSA analysts note that there are not many models against which to validate MINT. Moreover, they note a panel of demographers, economists, and outside experts oversaw the development of MINT. Additionally, the 1990 to 1993 SIPP data are the most recent available SIPP data for most income sources other than earnings. In short, more recent nonearnings income data would be ideal. Nevertheless, the intention of this report is to present comparisons of distributions between policy benchmarks. Thus, income-related MINT point estimates should not be considered as literally as differences between the policy benchmarks.

Methodologically we chose MINT for this report for

- its capability to project total income and therefore permit analysis of the adequacy of total income;
- its ability to prospectively assess and model various Social Security programmatic alternatives;
- its ability to examine a large portion (those age 60 to 89) of the Social Security population at a point in time;
- its ability to examine various subgroups, notably by race and ethnicity; and
- its use as a policy tool already employed by SSA.

GEMINI

GEMINI[3] is a policy microsimulation model developed by the Policy Simulation Group (PSG). For our report, PSG produced simulated samples, sometimes called synthetic samples, of lifetime histories, including earnings, marriage, disability, death, and Social Security benefits, for the cohorts born in 1935, 1955, 1970, and 1985. Key descriptive statistics for each of the four birth cohorts are identified through a variety of sources. These statistics describe life expectancy, educational attainment, employment patterns, and marital status at age 60. Where possible these targets are set to be consistent with the 2001 Trustees' Report or generally available methodologies from the SSA's

[3] For more information on GEMINI go to http://www.polsim.com/GEMINI.html.

Office of the Chief Actuary. After the calibration targets are determined, complete life histories for each birth cohort are produced that match the targets. These life histories are produced by the Pension Policy Simulation Model (PENSIM), a complementary PSG model integrated with GEMINI.

Once the cohort samples have been generated, each sample is input into GEMINI, a microsimulation model that has the same Social Security benefit calculation capabilities as the microsimulation model of SSASIM, which past GAO reports have used to analyze Social Security reforms. Each sample is run twice through each of the our benchmark policies and produces output files that contain detailed information on each member of the sample, including Social Security benefits for sample individuals and their spouses. Because GEMINI cannot yet stochastically determine the age at which a member of the sample applies for benefits, one output file assumes that the all workers retire at age 62 and the other assumes that they retire at age 65.

Table 4 shows results for GEMINI compared to the 1998 *Annual Statistical Supplement to the Social Security Bulletin*. Average benefits are high by only 0.9 percent for men and high by only 1.6 percent for women. However this comparison may suffer from a selectivity problem caused by the fact that, in the actual data, not everyone eligible to apply for retired worker benefits does so at age 62. If the propensity to retire early at age 62 varies by lifetime earnings level, then the fact that only about sixty percent actually apply at 62 will complicate the comparison with statistics from the GEMINI simulation, which assumes everyone applies at age 62. After adjusting for the selectivity problem we find that benefits are low by 0.4 percent for men and are low by 4.6 percent for women.

Table 4: Comparison of GEMINI Data to Published Social Security Data

1935 Birth cohort statistic	GEMINI value (retiring at age 62)	Social Security Bulletin (1998)
Gender composition of awardees in percent:		
Men	53.4	53.7
Women	46.6	46.3
Average initial monthly benefit of awardees in dollars:		
Men	802	795 (805)
Women	517	509 (541)

Note: The GEMINI column represents an output run which assumes everyone born in 1935 retires in 1997 at age 62, for retired-worker and spouse beneficiaries who are dually entitled. The Social Security Bulletin Annual Statistical Supplement column represents actual data on initial retired-worker awards for those born in 1935 retiring at age 62 in 1997 from Tables 6.B1 and 6.B2 in the Social Security Bulletin's 1998 Annual Statistical Supplement. The number in parenthesis represents the selectivity-adjusted amount. This amount adjusts the amount to reflect the fact that persons retiring at age 62 have lower PIAs than the average of the age 62 to 65 population by sex.

Methodologically, we chose GEMINI for this report for

- its ability to examine the effect of Social Security programmatic changes on a cohort population and
- its ability to project cohorts and examine policy effects well out into the 75 year actuarial period (the year 2050).

Brief Comparison of the Models

The MINT takes real people and projects their behavior out into the future while GEMINI develops a synthetic sample and validates it to recent data. While these models were developed separately and take somewhat different modeling approaches, we can see that actual results compare somewhat favorably. Table 5 compares median annual Social Security benefit income for the 1955 cohort by marital status for both models. For married and divorced individuals, the results compare very favorably as the MINT results fall within the same range as the GEMINI results. The results for never married and widowed individuals do not align as nicely, though they are within 8.9 percent and 9.4 percent, respectively, of the lower bound of GEMINI benefits. However, the intent of the report is not to focus on actual values produced by the models, but how values change across benchmark scenarios.

Table 5: Median Annual Social Security Income for Individuals in 2020 for the 1955 Cohort Only by Marital Status: A Comparison of MINT and GEMINI

	Median annual Social Security income		
		GEMINI	
Marital Status	MINT	Retiring at age 62	Retiring at age 65
Married[a]	$20,456	$19,281	$20,514
Widowed	$13,803	$15,242	$16,948
Never married	$11,745	$12,891	$15,950
Divorced	$12,597	$12,030	$14,849

[a] Benefits for married persons in the MINT model are equivalence-adjusted to facilitate comparisons between nonmarried persons and married persons, whose household income includes income from both spouses that can vary significantly between them. An equivalence scale is used to adjust married individuals' income. MINT's equivalence scale is the ratio of the 1998 poverty threshold for households with two persons aged 65 and older divided by the threshold for households with one person aged 65 and older. The benefits for the couple are then divided by this ratio (1.26) to arrive at a constructed individual benefit amount. To compare like amounts among married individuals across models, we also equivalence-adjusted GEMINI median benefits in the same manner.

Note: In the MINT model, workers retire at different ages, while in the GEMINI model, all workers retire at a fixed age. For this analysis, the marital status definitions are constructed to be consistent across models. The distribution of marital status (rounded percentages in parenthesis) for the MINT sample is married (61.3), widowed (18.0), never married (5.0), and divorced (15.8). The distribution of marital status for the GEMINI samples are married (64.0), widowed (11.2), never married (9.6), and divorced (15.2).

Source: GAO's analysis of the MINT and GEMINI models.

Illustrative Workers

For analysis of future replacement rates, we use four illustrative workers. These illustrative workers are constructed according to the methodology employed for steady workers by SSA's Office of the Chief Actuary. Additionally, our analysis of future steady workers assumes that the average wage increases according to Alternative II assumptions of the 2001 Trustees Report.

As defined by SSA's Office of the Chief Actuary, the steady earnings pattern assumes that the worker is a steady full-time employee with no interruption in employment. The steady worker begins working in covered employment at age 22, and the worker's earnings increase each year at the same rate as Social Security's Average Wage Index. For our analysis, workers are continuously employed between the ages of 22 and 62 (i.e., they do not experience a period of disability or die). For the steady earnings pattern, the following four levels of earnings are used: low (annual earnings equal to 45 percent of the average wage), average (annual earnings equal to the average wage), high (annual earnings equal to

160 percent of the average wage[4]), and maximum (annual earnings equal to the OASDI Contribution and Benefit Base). To calculate the worker's monthly Social Security benefit, we used SSA's Office of the Chief Actuary's ANYPIA program.[5] Finally, to calculate replacement rates, we annualized the monthly benefit and divided the result by the worker's age 64 earnings.

In actuality, the year-to-year earnings of most workers do not follow steady earnings patterns. However, illustrative steady workers offer the advantage of showing programmatic variation by utilizing a consistent worker profile. More realistic lifetime earnings profiles would be more significant if timing of payroll contributions are important to the worker, such as a policy of contributing a portion of payroll taxes to individual accounts. The most important metric of adequacy for a life time earner is the workers' PIA, which can be arrived from any number of different earnings patterns. Examination of actual workers PIAs to the illustrative steady worker types shows that women and men are "best represented"[6] by different worker types. Table 6 shows that in 1999 the low earner "best represents" female workers as 71.7 percent fall closest to that category and the high earner best represents male workers as 41.1 percent fall closest to that category.

[4] For certain historical years (1944-1973), earnings of 160 percent of the Average Wage Index would exceed the OASDI contribution and benefit base. Any earnings that exceed this base are thus censored at the base. For all steady workers retiring in 2017 or later, all earnings for our illustrative workers are below the OASDI contribution and benefit base.

[5] Here again, we used assumptions consistent with the 2001 Trustees' Report. For more information about the ANYPIA program, see http://www.ssa.gov/retire2/anypia1.htm.

[6] For purposes of this discussion, an actual worker is "best represented" by a particular hypothetical worker if that hypothetical worker's PIA is closest to the actual worker's PIA. As an illustration, table 6 shows that 44.0 percent of actual retirees have a PIA that is closer to the PIA of the low-earning worker than to any other, and are thus said to be best represented by the low-earning worker.

Table 6: Distribution of Actual Workers Retiring in 1999 by Level, Relative to PIA Levels for Hypothetical Steady Earnings Cases Retiring in 1999

Hypothetical case	Percent with PIA[a] less than PIA for hypothetical case			Percent with PIA closest to PIA for hypothetical case[b]		
	Male	Female	Total	Male	Female	Total
Low	10.0	48.4	27.8	20.0	71.7	44.0
Average	33.9	86.5	58.3	28.5	21.7	25.3
High	75.2	98.6	86.0	41.1	6.2	24.9
Maximum	100.0	100.0	100.0	10.4	0.3	5.7

[a]Primary Insurance Amount. The PIA is the full (i.e., unreduced) monthly benefit level, which is payable to disabled workers and to retired workers who become entitled at normal retirement age

[b]May not add to 100 percent due to rounding.
Source: Orlo R. Nichols, Michael D. Clingman, and Milton P. Glanz. "Internal Real Rates of Return under the OASDI Program for Hypothetical Workers." SSA Actuarial Note #144, June 2001.

Percentages indicated above reflect the status of workers retiring in 1999. These percentages would likely be different for workers retiring in earlier or later years. For instance, the increasing employment rates for women over the last several decades is expected to result in relatively greater increases in career-average earnings for women than for men in the future. Thus, the difference in the distributions of male and female retired workers by benefit levels is expected to diminish in the future.

Appendix V: GAO Contacts and Staff Acknowledgments

GAO Contacts

Barbara D. Bovbjerg, (202) 512-7215
Charles A. Jeszeck, (202) 512-7036

Acknowledgments

In addition to those named above, Ken Stockbridge, Kimberly Granger, Charles Ford, Brendan Cushing-Daniels, Nila Garces-Osorio, Kim Reniero, Daniel Schwimer, and Kathleen Scholl made key contributions to this report.

GAO's Mission

The General Accounting Office, the investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

Obtaining Copies of GAO Reports and Testimony

The fastest and easiest way to obtain copies of GAO documents is through the Internet. GAO's Web site (www.gao.gov) contains abstracts and full-text files of current reports and testimony and an expanding archive of older products. The Web site features a search engine to help you locate documents using key words and phrases. You can print these documents in their entirety, including charts and other graphics.

Each day, GAO issues a list of newly released reports, testimony, and correspondence. GAO posts this list, known as "Today's Reports," on its Web site daily. The list contains links to the full-text document files. To have GAO E-mail this list to you every afternoon, go to our home page and complete the easy-to-use electronic order form found under "To Order GAO Products."

Order by Mail or Phone

The first copy of each printed report is free. Additional copies are $2 each. A check or money order should be made out to the Superintendent of Documents. GAO also accepts VISA and Mastercard. Orders for 100 or more copies mailed to a single address are discounted 25 percent. Orders should be sent to:

U.S. General Accounting Office
P.O. Box 37050
Washington, D.C. 20013

To order by phone:	Voice:	(202) 512-6000
	TDD:	(301) 413-0006
	Fax:	(202) 258-4066

Visit GAO's Document Distribution Center

GAO Building
Room 1100, 700 4th Street, NW (corner of 4th and G Streets, NW)
Washington, D.C. 20013

To Report Fraud, Waste, and Abuse in Federal Programs

Contact:

Web site: www.gao.gov/fraudnet/fraudnet.htm,
E-mail: fraudnet@gao.gov, or
1-800-424-5454 (automated answering system).

Public Affairs

Jeff Nelligan, Managing Director, NelliganJ@gao.gov (202) 512-4800
U.S. General Accounting Office, 441 G. Street NW, Room 7149,
Washington, D.C. 20548

PRINTED ON RECYCLED PAPER