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The Sensitivity of Proposed Social Security Benefit Formula Changes to Lifetime Earnings Definitions

by Hilary Waldron*

Several Social Security proposals have included benefit formula changes that apply to earners above a specified percentage of the combined male and female (unisex) lifetime earnings distribution. The unisex distribution is an average of two disparate groups with large lifetime differences in labor market participation. This study finds that if Social Security's median unisex average indexed monthly earnings (AIME) amount is used to define an earnings threshold below which benefits will be held roughly unreduced, the percentage of fully insured men subject to benefit reductions (70 percent) exceeds the unisex estimate of the population subject to benefit reductions (50 percent) by 20 percentage points. If policymakers wish to adjust future benefits and focus benefit reductions on middle or high primary or full-time wage earners in a household, the male, rather than unisex, AIME would come closer to achieving such a goal.

Introduction

Several Social Security proposals have included benefit formula changes that apply to earners above a specified percentage of the combined male and female (unisex) lifetime earnings distribution. Because this unisex distribution is an average of two disparate groups with large lifetime differences in labor market participation, the definition of a "high, middle, or low earner" derived from such an average can be difficult to interpret. For example, while women with historically low labor force participation and hours worked may have low lifetime earnings, they may not have low household income if they are married to a man with a lifetime of full-time employment at a high wage. When such women are averaged into a combined earnings distribution, the workers who are defined as *high, middle, and low earners* will differ from the workers who would have been so defined under a definition based on the earnings of the primary wage earner in a household. In other words, a man working full time at a low wage (as measured against other full-time workers) could be classified as a "middle lifetime earner" by virtue of the fact that his total number of years and hours worked is much larger than that of his female counterpart. His female counterpart, on the other hand, could be classified as a "low lifetime earner" even though her low lifetime earnings may be due to years of zero earnings in nonmarket work such as childcare (during which her spouse participated full time in the labor force), rather than actually being a low-wage earner at an equivalent full-time job to that of her male middle-lifetime-earner counterpart. In terms of lifetime income, the female "low earner" could be wealthier than the male "middle earner."

This study finds that if the median unisex average indexed monthly earnings (AIME) amount is used

Selected Abbreviations

AIME	average indexed monthly earnings
AWI	average wage index
CWHS	Continuous Work History Sample
DI	Disability Insurance
MBR	Master Beneficiary Record
MEF	Master Earnings File

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Selected Abbreviations—*Continued*

OASDI	Old-Age, Survivors, and Disability Insurance
PIA	primary insurance amount
SSA	Social Security Administration

to define an earnings threshold below which benefits would be held roughly unreduced, approximately 70 percent of male workers newly eligible for retired-worker benefits in 2007 would have had their benefits reduced. The percentage of fully insured males subject to benefit reductions exceeded the unisex estimate of the population subject to benefit reductions (50 percent) by 20 percentage points. This result is driven by large differences in the number of lifetime hours worked and therefore lifetime earnings between men and women for birth cohorts that have recently reached age 61. In 2007, for example, while 46 percent of men would have had some earnings replaced at the current-law top primary insurance amount (PIA) factor of 15 percent, only 10 percent of women would have had any earnings replaced at the top bend point factor. A difference of 36 percentage points by sex at the top bend point implies that statistics reported at the unisex level have the potential to be misunderstood.

Some policymakers or analysts, for example, may have a goal of adjusting future benefit levels and may be interested in the effects of those adjustments at different levels of the earnings distribution. If benefit adjustments are based on observable unisex earnings-distribution levels, the distributional effects of those benefit adjustments will vary among workers with different lifetime histories of labor force attachment and hours worked. For example, if policymakers were to have a goal of focusing benefit adjustments, relative to those scheduled under current law, on middle- and high-earning Social Security–covered workers engaged in full-time work in the economy, a unisex median would overshoot that goal and expose full-time workers with more modest lifetime hourly wages to benefit changes as well. If policymakers were to design benefit adjustments based on observable data in Social Security's administrative files, the male AIME distribution, rather than the unisex AIME distribution, would come much closer to approximating such a hypothetical group of workers. Similarly, if policymakers were to identify workers by their position in the household income distribution and were using the AIME distribution as an approximation of that income distribution, the male AIME distribution would come much closer to approximating a household income distribution than the unisex AIME distribution. Both in the past and present, men are more likely to contribute the greater share of paid market hours worked and therefore are more likely to be the primary earner in the household. Regardless of the policy goal, large differences in labor market experience by sex imply that a sensitivity test of unisex distribution levels by sex has the potential to enhance the understanding of the public and policymakers.

Background

Several recommendations for achieving long-range solvency of the Social Security Trust Fund adjust the percent PIA factors of Social Security's PIA. The PIA is the amount from which all Social Security benefits payable on a worker's earnings record are based (SSA 2010a, Appendix D, D.2). As explained on the Social Security Administration (SSA) website,[1] to compute a PIA for a fully insured worker eligible for a retired-worker benefit, SSA takes the highest of up to 35 years of earnings of an individual,[2] indexes those earnings to general wage levels (as measured by the average wage index (AWI[3])), and divides by up to 35 years, resulting in an AIME amount. The PIA is calculated as the sum of three separate percentages of portions of the AIME.[4] The percentages of the PIA formula are fixed by law at 90 percent, 32 percent, and 15 percent (referred to here as PIA factors), while the dollar amounts (or bend points) in the formula are indexed to the AWI and adjust annually with changes in the AWI. For purposes of discussion, the AIME will also be referred to as a lifetime earnings measure in this article because it represents earnings averaged over a career.

Over the years, several Social Security solvency proposals have included provisions that adjust either the percent PIA factors or the bend points of the PIA formula. Those proposals have often been designed to reduce scheduled Social Security benefits while protecting low earners from reductions and/or apply benefit reductions exclusively to high earners. Typically, authors of those proposals have used the unisex earnings distribution to define a middle or high earner when explaining to the public the reasoning behind their choice of bend points. In other words, the definition of middle or high earners used in those provisions has been male and female insured workers with lifetime earnings replaced at or above either the 32 percent PIA factor or the 15 percent PIA factor,

or male and female earners with lifetime earnings above the median AIME, in the case of a proposal that introduces a new bend point.

For example, some members of the 1994–1996 Advisory Council on Social Security (1997) proposed that the 32 percent PIA factor and 15 percent PIA factor be gradually lowered to 22.4 percent and 10 percent, respectively. That option was described as slowing the growth of basic benefits, "mainly for middle- and high-wage workers." Similarly, the National Commission on Retirement Policy (1999) recommended that the 32 percent and 15 percent PIA factors be reduced by 2 percent a year from 2001 to 2020. In support of that reform, the commission writes, "this change reflects a belief, first, that the changes to the benefit level to accommodate the carve out of an individual account should be confined to the top two bend points in order to minimize the impact on low-income retirees."

Diamond and Orszag in their 2004 Social Security reform proposal described the highest tier of the PIA calculation as being "relevant only for relatively high earners" and recommended gradually reducing the top PIA factor from 15 percent to 10 percent. In a similar fashion, a proposal from the Debt Reduction Task Force (2010) reduced the top PIA factor from 15 percent to 10 percent over a 30-year period. According to the task force, "this proposal will affect only about the top 25% of beneficiaries…This moderate reform is a particularly progressive change to the benefit structure, and will hold harmless approximately the bottom 75 percent of beneficiaries." Also in 2010, authors of the report of the National Commission on Fiscal Responsibility and Reform recommended "gradually transitioning to a four-bracket formula by breaking the middle bracket [second bend point] in two at the median income level ($38,000 in 2010, $63,000 in 2050), and then gradually changing the replacement rates [PIA factors] from 90 percent, 32 percent, and 15 percent to 90 percent, 30 percent, 10 percent, and 5 percent." That change is described by the authors of the commission report as "gradually moving to a more progressive benefit formula that slows future benefit growth, particularly for higher earners."

Analytically, one difficulty with using a lifetime unisex distribution to define low, middle, and high earners involves a potentially large cohort effect, which, because of substantial changes in female labor force participation over time, would apply disproportionately to the lifetime earnings of women in the unisex distribution. For example, for the most recent solvency proposals, earnings data that SSA could have observed empirically ended in roughly 2010. Therefore, a worker eligible for retirement benefits at the early entitlement age (62) in 2010 would have been born roughly around 1948. Such a worker would have potentially entered the workforce at age 18 around 1966.

Labor force participation of females aged 16 or older was about 40 percent in 1966 and about 60 percent in 2008, compared with 80 percent and 73 percent for their male counterparts, respectively.[5] Even more important to the calculation of the unisex AIME distribution, labor force participation of workers during their prime earnings ages (25–54) was 45.2 percent in 1965 and 75.3 percent in 2005 for women and 96.7 percent and 90.5 percent for men, respectively. The gap between the male and female participation rates at those prime ages has been roughly constant since the mid-1990s.[6] Under current Social Security law, a worker needs 40 quarters of coverage (equivalent to 10 years of work) to be fully insured for retired-worker benefits. Because the AIME calculation averages the top 35 years of earnings, at one extreme, workers with just 10 years of earnings will have 25 years of zeroes averaged into their AIME. In contrast, workers with earnings credits for each year from ages 18 to 61 will have 8 years of low earnings dropped from their AIME. Lower labor force participation rates for women over their lifetime suggest more zeroes will be averaged into their AIME. Because the unisex AIME combines men and women, it follows that a unisex median number based on birth cohorts recently eligible for retired-worker benefits will include many years of zeroes, reflecting the many years of low labor force participation of women observed in the historical time series.

In addition to changes in the number of women participating in the labor force over time, there have been changes to differences in earnings levels between men and women over time. The female-to-male earnings ratio for full-time, year-round workers was about 0.58 in 1966 and 0.77 in 2008 (Denavas-Walt, Proctor, and Smith 2010, Table A-4). In other words, female birth cohorts currently reaching Social Security's early retirement age with a lifetime of full-time participation in the labor force will have had a larger part of their lifetime earnings depressed than cohorts who have not yet reached retirement because younger birth cohorts have had the benefit of greater equality of opportunity for women. Some of that difference

in equality of opportunity may be reflected in an increase in the number of college-educated women over the period. For example, at age 30 the percentage of women with a college education was 8 percentage points below that of men in 1968, about equal to men by around 1990 (this convergence included a decline for men from a Vietnam draft deferral-induced peak), and 8 percentage points above that of men in 2008 (Appendix, Chart A-1). Because a large part of a worker's wage reflects returns to experience, improvement in the full-time, female-to-male earnings ratio may also reflect stronger labor force attachment over a lifetime for women, independent of any improvements in gender discrimination in the workplace or trends in educational attainment.[7]

In addition to differences in earnings levels between male and female full-time workers, differences in the number of hours worked or in the number of full-time versus part-time workers by sex can also be an important contributor to differences in the level of AIMEs by sex. To understand why this would be true, it is necessary to understand how a worker earns Social Security coverage. In 2011, the amount of earnings needed to earn one quarter of coverage (sometimes referred to as a "Social Security credit") was $1,120. A maximum of four quarters could be earned a year at a minimum level of $4,480 in earnings in 2011. At the federal minimum wage rate of $7.25, approximately 154 hours of work or 19 days of full-time work would garner a worker an earnings credit. To earn the maximum of four earnings credits a year, a minimum-wage worker would need to work about 154 hours times 4 or 616 hours, or for a little less than 3 months at 40 hours per week. Halving the number of hours worked per week from 40 to 20 would mean that a 20-hour-a-week worker could reach four quarters of coverage in about 6 months. Clearly, many part-time workers will become fully insured for retired-worker benefits by the time they reach age 61 and thus will be included in a median unisex AIME estimate. If more women than men work part time, that would lower the female AIME and unisex AIME relative to the male AIME. If there are larger numbers of women working part time, as well as larger numbers of women with many zeroes in their earnings record who do not have low household income relative to their male counterparts, those two effects alone would also cause the unisex AIME to provide a poor mechanism for reducing benefits for middle- and high-income workers, *regardless of differences in earnings levels between women and men working full time.*

Trends in the average number of hours worked per week by sex indicate that the average hours worked for women aged 25–54 grew from about 16 hours in 1968 to about 25 hours in 1988, after which growth slowed and has hovered around 26 average hours per week since the mid-1990s (Chart 1). In contrast, the average hours worked for men aged 25–54 gradually declined from 40 hours per week in 1968 to 36 hours in the mid-1980s and has fluctuated around that level through the 1990s and 2000s.

Trends in the share of different types of male and female workers by year (Chart 2) also show large changes for women aged 25–54 in contrast to only small changes for men in the same age range from 1975 through 2006. The percentage of women working full time, all year rose about 20 percentage points from 1975 through 2006. However, since 1999 there has been no increase, and women are still 23 percentage points below men in the share of the population working year round, full time. The percentage of women working part time declined by about 2 percentage points from 1976 through 2007 and remains a sizeable 16 percent of the female population aged 25–54 compared with a smaller 4.5 percent of the male population.

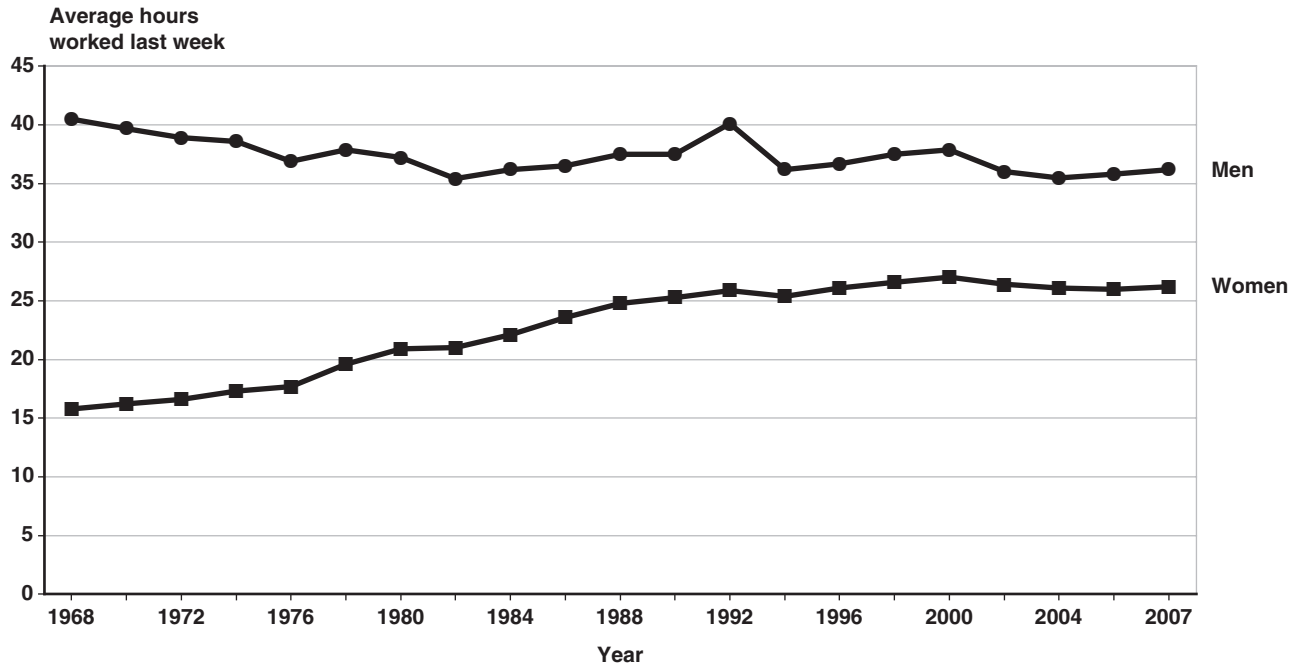
Given lifetime differences in number of hours worked between men and women, one can reasonably expect that the median unisex AIME for a birth cohort currently at the age of eligibility for Social Security retired-worker benefits is likely to inadequately represent either the median male AIME or the median female AIME, if one were to calculate them separately. In other words, we would expect the median female AIME to fall well below the male AIME, thus creating a unisex AIME that is not very close to either group's AIME. Thus, it is not clear how informative the unisex AIME is for policy evaluation. It may be difficult for both policymakers and the public to understand proposals in the context of an average lifetime measure that inadequately represents the labor market experience women or men have had historically or are likely to have in the future.

An additional analytical difficulty with using the unisex distribution to define low and high earners is the presence of couples in which the female worker has lower earnings from market work (often combined with higher hours of nonmarket work such as child rearing), and the male worker has higher earnings from market work. In this case, the couple as a unit is a "middle" or "high" earning household, but the woman is not herself a "high earner." Such

a woman would not be analytically equivalent to a single household low earner, even though her AIME would identify her as such. The presence of that type of household arrangement would lower the unisex AIME relative to the male AIME, independent of any cohort effects. Because under current law Social Security pays spouse and survivor benefits based in part on the PIA of the higher earner in either a current marriage of at least a year or a marriage that lasts at least 10 years in the case of divorce, benefit reductions for some women will occur more through the position their husbands hold in the male earnings distribution, rather than the position they hold in the unisex distribution. The extent to which those women are likely to be affected by benefit reductions that apply to their husband's PIA depends on the size of future female-to-male earnings ratios and gaps between the number of lifetime male and female hours worked, assuming women continue to live longer than men, on average (that is, thereby disproportionately qualifying women for the survivor's benefit).[8] There may be a mismatch between the current design of Social Security, which pays many spouse and survivor benefits based in part on the AIME of the highest earner, ostensibly recognizing the nonmarket contributions of the low-earner spouse and the use of the unisex distribution to define lifetime earnings, which ignores the nonmarket work performed disproportionately by women.

For example, when analyzing male earnings, labor economists tend to think of a male, part-time worker as a low-income worker who may not be able to participate in full-time work because of either weak labor demand for his skills or health issues. Such a worker would have a low AIME relative to other men and would appear at the low end of the male AIME distribution. Evidence from the American Time Use Survey indicates that such a story may not hold for many women working part time. As shown in Table 1, Krantz-Kent (2009) found that 93 percent of fathers with two children younger than age 18 living in their household were employed compared with 68 percent of mothers, a difference of 25 percentage points. Of employed fathers and mothers, only 3 percent of fathers were part-time workers compared with 22 percent of mothers. Finally, Krantz-Kent found a clear division of labor between fathers and mothers. While fathers spent 21.8 hours on nonmarket work and 43.8 hours on market work, mothers spent 39.5 hours on nonmarket work and 22.7 hours on market work. Those differences are far too stark to be explained by

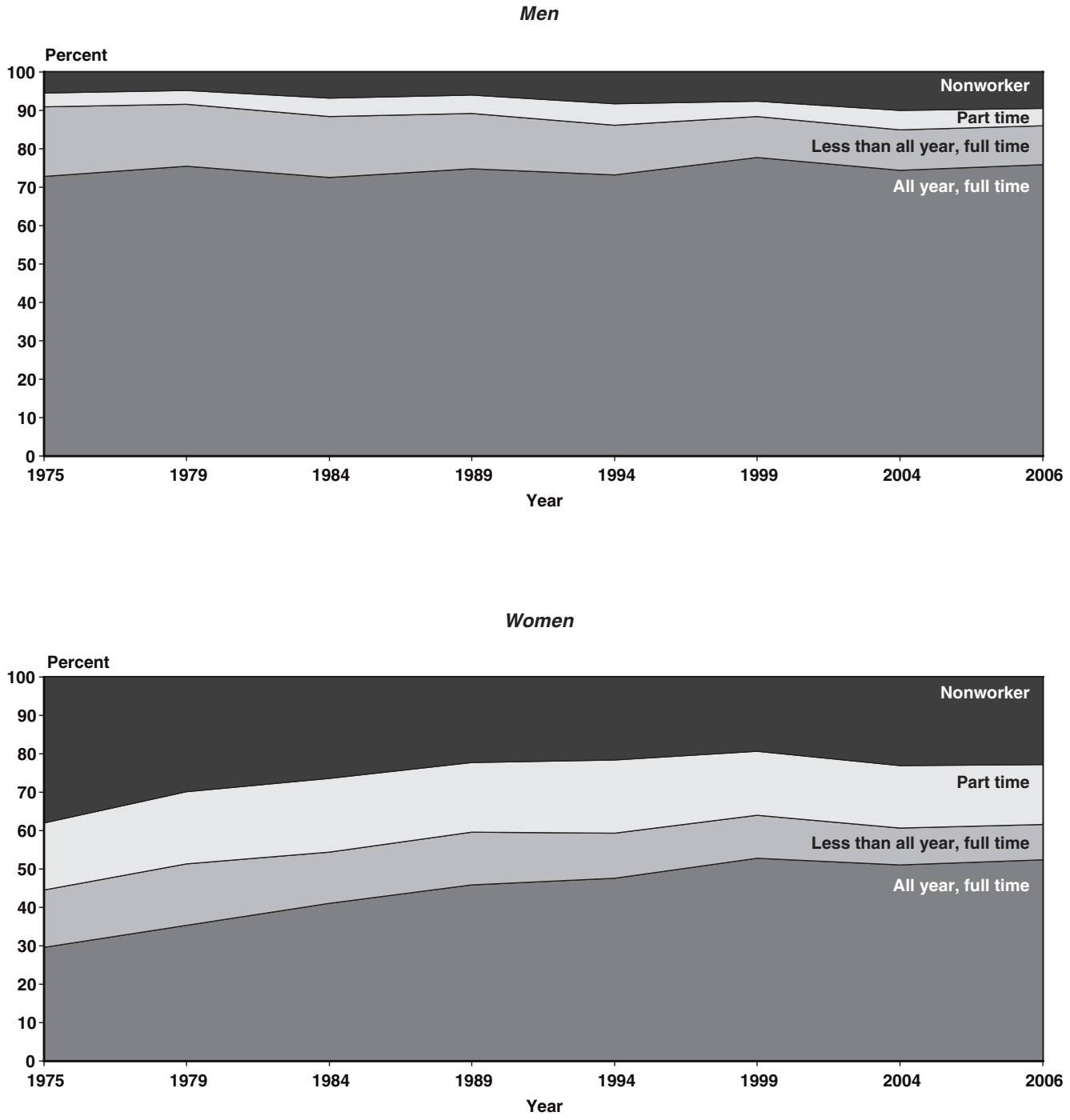
Chart 1.
Average number of hours worked "last week" for persons aged 25–54, by sex, selected years 1968–2007



SOURCES: Author's calculations based on selected years of the Census Bureau's March Supplement to the Current Population Survey (CPS), using Unicon Research Corporation's CPS utilities (2009), http://www.unicon.com.

NOTES: Average hours include zero hours of work. *Last week* refers to the week prior to the week in which the CPS respondent participated in the March Supplement to the CPS.

Chart 2.
Share of type of male and female workers aged 25–54, selected years 1975–2006



SOURCES: Author's calculations based on selected years of the Census Bureau's March Supplement to the Current Population Survey (CPS), using Unicon Research Corporation's CPS utilities (2009), http://www.unicon.com.

NOTES: The CPS "weeks worked last year recode" variable used here is derived from self-reports on the number of weeks worked "last year" and the number of hours usually worked last year. *Last year* refers to the year prior to the year in which the CPS respondent participated in the March Supplement to the CPS.

differences in health or labor demand between men and women. Rather, the authors (ibid., 56) attributed those differences in hours of market and nonmarket work between men and women to the prevalence of traditional gender roles in American households from 2003 through 2007. In other words, lower earnings for women than men do not directly translate into lower income for women than men if a large number of women are performing nonmarket work such as childcare and have access to the higher earnings of a current or former spouse. In fact, a female "low earner," as defined by the unisex distribution, may be of higher income than a male "middle earner," given the higher likelihood that the female earner is married to someone who works more hours than she does. Thus, the combining of two disparate groups into one earnings category will tend to underestimate the extent to which proposed benefit reductions affect low-earning primary wage earners and to overestimate the progressivity of those reductions with regard to the household income distribution.

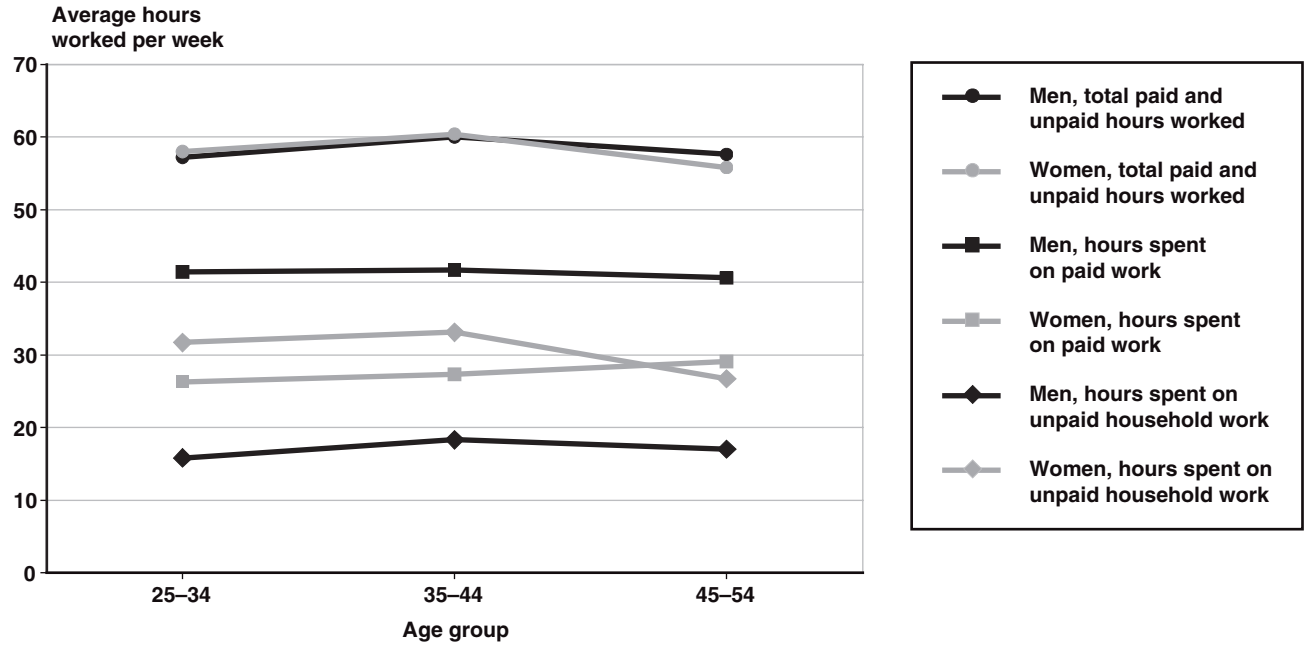
The persistence of traditional gender roles between husbands and wives may explain why increases in educational attainment for women have not translated into convergence in the number of hours spent on market work by sex. For example, the percentage of women completing at least 16 years of school (that is, a bachelor's degree) by age 30 has been trending upward and averaged about 5.5 percentage points higher than men during the 2002–2007 period (see the Appendix, Chart A-1). Over that same period, hours spent on paid work for women were 15 hours below those for men, at 26.3 hours per week (Chart 3). In contrast, hours spent on unpaid work for women were 15.9 hours above those for men, at 31.7. Overall, total hours of work for both men and women were roughly equal at around 60 hours for those aged 25–54; the difference was in the division between paid and unpaid work.

Table 1.
Employment characteristics of fathers and mothers with two children younger than age 18 living in the same household, 2003–2007

Characteristic	Fathers	Mothers
Percentage employed—		
Full time	90.0	46.0
Part time	3.0	22.0
Average number of weekly hours spent on—		
Unpaid household work	21.8	39.5
Paid work	43.8	22.7

SOURCE: Krantz-Kent (2009, Tables 1 and 3).

Chart 3.
Total paid and unpaid hours worked, by sex and age group, 2003–2007



SOURCE: Krantz-Kent (2009, Table 1).

Because only paid market work is observed and included in a unisex AIME calculation and the youngest birth cohorts measured in the American Time Use Survey from 2002 through 2007 were born in the 1970s, we may observe differences between male and female AIMEs for birth cohorts in generations born at least 20 years after the first baby boomers. Although trends in education appear to be moving toward more years of schooling for women than for men, which could theoretically reduce the prevalence of men as the primary earner in a household in the future, the division of household labor between men and women has not yet moved in that direction.[9]

In addition, tastes and preferences for number of hours worked do not appear to match upward trends in educational attainment for women over the past 10 years. For example, the percentage of working mothers with children younger than age 18 who said full-time work was the ideal situation for them declined from 32 percent in 1997 to 21 percent in 2007, while the percentage who preferred to work part time increased from 48 percent to 60 percent, respectively (Pew Research Center 2007). The percentage of women preferring not to work at all was fairly steady at about 20 percent. The percentage of nonworking mothers preferring full-time work also declined from 24 percent to 16 percent, and the percentage preferring not to work at all increased from 39 percent to 48 percent. Of mothers working part time, 80 percent preferred to work in that capacity, 15 percent preferred not to work at all, and only 5 percent preferred full-time work. Preferences for part-time work differed little by education or income level among women (ibid., 3). In addition, only 11 percent of working mothers and 10 percent of at-home mothers said a mother working full time is the ideal situation for children, and those views did not vary by education level (ibid., 5). Only 29 percent of mothers employed full time said that full-time work was the ideal situation for them, with 49 percent preferring part-time work and 21 percent preferring not to work at all (ibid., 3). If the tastes and preferences of women remain heavily in favor of part-time work and the real wage increases in the future, then an income effect could cause childbearing women to reduce hours of work in the future, even as their level of education increases. Tastes and preferences for full-time work between fathers and mothers differ by a wide margin. For example, 72 percent of fathers with children younger than age 18 preferred to work full time, 16 percent preferred not working at all, and only 12 percent preferred part-time work. This preference for full-time work among fathers exceeded that of mothers by 52 percentage points (ibid., 3).

One alternative to a unisex median AIME that would more closely match current Social Security law would be to calculate a median AIME that would be based on either (1) the highest AIME of a currently married couple or a divorced couple in which the marriage lasted 10 years or (2) on a worker's own AIME, in the case of a worker ineligible for benefits based on another worker's record. Unfortunately, such a measure cannot be calculated with Social Security administrative data for a risk pool consisting of fully insured workers newly eligible for retired-worker benefits at age 62. From the analyst's perspective, a severe drawback to Social Security administrative data is that earnings are reported annually to SSA's Master Earnings File on an individual basis with no marital information attached, but that Social Security benefits are payable based, in part, on marital status. From Social Security administrative data, one can only calculate the highest AIME of a couple for which there has been an auxiliary (or dependent) claim based on the earnings of the primary (or highest) earner. Such a sample would be skewed because an appropriate risk group should include all couples *eligible* to claim at a given age, not only all couples who have *already* claimed by a given age.

As discussed, historical data on number of hours worked by sex clearly shows men working more hours than women. Combining that fact with the inability to observe couples, rather than individuals, newly eligible for retired-worker benefits in Social Security's earnings records, we arrive at the conclusion that the closest approximation to the highest median AIME of the primary wage earner in a household in observable Social Security administrative data is much more likely to be the male, rather than the unisex, median AIME. In other words, if policymakers were to have a goal of adjusting future benefits by focusing PIA factor reductions on middle and high earners engaged in full-time work in the economy who have strong labor force attachment and perhaps private pensions and personal savings in addition to Social Security, using a unisex AIME distribution as a tool to achieve that end may result in a high likelihood of benefit formula proposals missing the goal for which they were theoretically designed. It follows that if one were to design a proposal to only affect the top half of the distribution of full-time primary wage earners in a household (of which the male earnings distribution is the best

available representation in Social Security administrative data), the reductions to the percent factors in the PIA formula and/or the new bend point(s) would have to be set at higher AIME levels than those used under a unisex definition.[10] Of course, mathematically, the estimate of the reduction in the actuarial deficit under such a prime wage-earner design would be less than the reductions scored when a unisex distribution is used to set new bend point levels and/or PIA factors because a smaller number of workers would reach the higher AIME levels.

For illustrative purposes, this analysis refers to a recently proposed benefit formula change analyzed by SSA's Office of the Chief Actuary.[11] In describing the proposal, the office writes, "This provision would introduce a new bend point at the 50th percentile level of AIME for newly eligible beneficiaries, starting in 2017. (The new bend point would be 61.5 percent of the way up from BP1 to BP2, or at a level equivalent to about $3,000 for workers newly eligible in 2010.)" Because the proposed new bend point is roughly set at the unisex median AIME observed for a recently eligible cohort of fully insured workers, the proposal lends itself well to a sensitivity test of alternative lifetime earnings measures.

The analysis performed in this article does not follow the phase-in provisions of the proposed new bend point provision and applies only to data currently observable in Social Security administrative data files. Conceptually, this analysis looks at what percentile of the male earnings distribution would have been affected by proposed changes to the PIA factors of the current-law bend point formula, if the reductions to those factors were effective immediately and applied to birth cohorts who attained age 62 in the 1999–2007 period and who survived to at least age 63. (The survival restriction ensures that all workers had an equal chance of claiming at age 62, the early entitlement age for Social Security retired-worker benefits.) This type of static analysis is intended to help inform policymakers and the public on the effects of a benefit formula change when it is fully phased in, while avoiding the uncertainty inherent in using projected earnings data. The use of the lifetime earnings of fully insured men is intended to provide an upper bound for the estimates. The estimate is an upper bound because the male estimate will exclude the earnings of women who are the prime earners in their households. Because earnings have been historically lower for women than for men for an equivalent number of hours worked, the exclusion of women with the highest AIME in their households (for example, single women) may cause the proxy for the prime earner distribution (that is, the male earnings distribution) to skew higher than it would if we could include those female, primary AIMEs in the average. The Social Security benefit formula is gender neutral; however, for the majority of couples that would appear in Social Security administrative data (unobserved) and who were fully insured at age 61 in 2010, the man is strongly expected to be the higher earner and the likeliest prime earner in the household.

Methodology

The data set used in this analysis merges several internal Social Security research files, all of which contain individuals selected based on SSA's Continuous Work History Sample (CWHS) selection criteria. The 1 percent CWHS sample "may be described as a stratified cluster probability sample of all possible SSN's [Social Security numbers]" (Smith 1989). To create the data set, a 2008 active[12] CWHS extract was merged with a 2010 Master Beneficiary Record (MBR) extract, 2009 Numident extract, and 2009 Master Earnings File (MEF) extract. When the files were matched, an individual had to appear on both the active CWHS extract and Numident extract and be born from 1937 through 1945 to be included in the data set (N = 272,234). For this study, the CWHS provides annual Social Security taxable earnings data and quarters of coverage information from 1951 through 2008. The MEF provides annual earnings reported to the Internal Revenue Service (IRS), including earnings in employment not covered by Social Security and earnings in Social Security–covered employment that exceeded the Social Security taxable maximum from 1982 through 2008.[13] The MBR is used to identify Social Security disabled-worker beneficiaries and as a source of demographic data. The MBR contains records of individuals who have filed Social Security Old-Age, Survivors, and Disability Insurance (OASDI) claims. The Numident is used as a source of demographic data and is the primary source of death data for individuals who do not have an MBR record.

In general, the legislative intent of policy options of the type examined in this article is to target the retired-worker risk pool. To create the final data set, Disability Insurance (DI) beneficiaries were deleted (N = 42,114) to match the specific option examined in this article, and, as described by SSA's Office of the Chief Actuary, which "create[s] a new bend point in the PIA formula at the AIME for the 50th percentile

of new retired worker awards."[14] Note that if a fully insured worker is receiving disabled-worker benefits when he or she reaches aged 62, that worker will not then receive a new retired-worker award (or be "newly eligible"[15]) because the retired-worker award would be lower than the disabled-worker award because of the early retirement reduction at age 62 for retired-worker awards. Administrative conversions of disabled-worker awards to retired-worker awards occur at the full retirement age—an age at which there is no benefit reduction for the beneficiary. Insured status at age 61 was calculated for the remaining individuals in birth cohorts 1937–1945, and only those fully insured for retired-worker benefits were included (N = 179,886).[16] Those individuals were newly eligible for retired-worker benefits at age 62 in the 1999–2007 period. Individuals had to live until at least age 63 to be included in the final data set, so that all workers had an equal opportunity to claim Social Security retired-worker benefits at the current-law early entitlement age of 62 (N = 164,777). That survival restriction does not match the Office of the Chief Actuary's methodology, but rather is employed so that the results from this article can be more easily compared with a companion article examining mortality differences by earnings decile. Sensitivity tests indicate that restricting survival to age 62 rather than age 63 results in only slight changes in the AIME distributions by decile (results available upon request).

To conduct the analysis, a new bend point is set at the median unisex AIME for workers first eligible for retired-worker benefits at age 62 during the 1999–2007 period (see the Appendix, Table A-1). That new bend point is about 52.7 percent of the way up from bend point 1 to bend point 2 in 1999 and about 57.2 percent of the way up from bend point 1 to bend point 2 in 2007. The median male AIME was about 94 percent of the way up from bend point 1 to bend point 2 during the 1999–2007 period, while the median female AIME grew from about 22.2 percent to 31.7 percent of the way up from bend point 1 to bend point 2 in the same period. To provide further information on the difference in earnings levels between men and women in the recent historical data, tabulations of AIMEs by percentile and sex are presented in the Appendix, Table A-2.

In addition to the main analysis in this article, which uses the AIME as a measure of lifetime earnings, this study also includes an alternative lifetime measure to provide policymakers and the public with an additional tool in which to evaluate the distributional impact of Social Security law changes. Classification of workers by AIME percentile, while informative given that the AIME is the number upon which retired-worker benefits are based, can be difficult to interpret analytically because earnings averaged into the AIME are censored at the Social Security taxable maximum. It seems entirely possible that the public is less than intimately familiar with all the intricacies of the retired-worker benefit formula. Thus, communication with the public may be difficult because the public may interpret "high earnings" to include all economy-wide earnings, not just Social Security taxable earnings. (For example, median earnings for both the 9th and 10th deciles (the top 20 percent of the male earnings distribution) for men born in 1945 at age 50 were over the Social Security taxable maximum.) Given the inherent ambiguity of the term *high earnings*, there is considerable advantage to providing readers with a detailed distributional estimate finely divided by earnings deciles so that policymakers and the public can reach their own conclusions as to the impact of a policy option on low, medium, and high earners.

Because the AIME is a lifetime measure, its interpretation is further complicated by large changes in the level of the Social Security taxable maximum over time. The Social Security taxable maximum was close to the average wage in the 1950s and 1960s and was not continuously indexed to the national average wage index until 1982 (see the Appendix, Chart A-2). The birth cohorts analyzed in this article (comprising persons aged 18 in the 1955–1963 period) experienced large growth in the taxable maximum relative to the national average wage index over their lifetimes. While a censor on earnings amounts will not affect a median, as long as the median is below the censor level, the censor will affect deciles above the median if the censor (that is, taxable maximum) is below the uncensored level of earnings for that decile. Accordingly, this article includes an alternative lifetime earnings measure that takes advantage of uncensored earnings data available in Social Security's MEF. While, under current law, Social Security's AIME is calculated based on Social Security taxable earnings, which are taxed only up to the OASDI taxable maximum ($106,800 in 2010), SSA's MEF contains earnings data on all earnings reported to the IRS, including earnings in OASDI-covered employment over the OASDI taxable maximum and earnings in employment not covered under OASDI from 1982 to the present.[17] Because earnings over the OASDI

taxable maximum are only observable beginning in 1982, a top 35-year measure more comparable to the AIME but including earnings above the taxable maximum cannot be calculated using Social Security administrative data for birth cohorts recently reaching age 61 without substantial imputation of earnings capped at the taxable maximum. Imputation techniques, by their nature, add more uncertainty to the data and are unlikely to achieve the precision needed to divide the earnings distribution into deciles, particularly at the upper end of the distribution and in years when the Social Security taxable maximum was low relative to the average wage. Results could also be sensitive to the choice of imputation technique to an unsatisfactory degree.

In order to create earnings deciles roughly based on all earnings in the economy, ages 45–55 are chosen as a proxy for lifetime earnings because those ages occur at the peak of the earnings distribution.[18] Peak earnings are a strong proxy for lifetime earnings because earnings at the peak will capture fulfilled earnings potential.[19] Earnings at ages 45–55 for each individual are measured relative to the national average wage index that corresponds to the year the earnings are recorded in the administrative earnings records. The earnings are then averaged over ages 45–55. To avoid unintended interactions between year of birth and earnings level, the percentile of the earnings distribution in which an individual falls is based on the distribution of average earnings for that individual's year of birth. Because average relative peak earnings are used to place workers into deciles, the peak measure would be most likely to differ from an uncensored top-35 measure (could one be calculated) in terms of assignment of workers to earnings deciles if an individual had high earnings at younger ages and low earnings in middle ages. Because an individual's wage reflects returns to experience, such a scenario is not representative of the typical age-earner profile, which tends to be hump shaped. Thus, in general, a peak lifetime earnings measure would be expected to be strongly correlated with a top-35 lifetime earnings measure, with workers who have high relative peak earnings also having high relative AIMEs. However, because of changes in Social Security coverage over time, certain groups, such as some state and local workers and federal employees hired before 1983, will have low AIMEs from Social Security–covered wages (that is, from jobs held when young) and high peak earnings from earnings not covered under Social Security (that is, from their primary non-Social Security–covered job). In addition, foreign-born workers who immigrate to the United States at older ages may have low AIMEs and high peak earnings because of a large number of zeroes in their earnings record at younger ages. To address these problems, this study shows results both with and without including these groups.

Results

As expected from known differences in female labor force participation and earnings levels, the percentage of workers newly eligible for retired-worker benefits in 2007 at current-law bend points varied by sex.[20] These differences can lead to substantial differences in the interpretation of earnings relative to the PIA bend points.

For example, consider a recent proposal to insert a new bend point at the "median income level."[21] In 2007, approximately half (46 percent) of male workers were already at the upper bracket (or at the 15 percent current-law replacement rate) and only about 6 percent of male workers were at the lowest bracket (or at the 90 percent current-law replacement rate); see Table 2.

Table 2.
Percentage of workers newly eligible for retired-worker benefits at age 62 with AIMEs at current-law bend points, by sex, 2007

Sex	N	AIME ≤ bend point 1 (90% PIA factor)	AIME > bend point 1 and AIME ≤ bend point 2 (32% PIA factor)	AIME > bend point 2 (15% PIA factor)
All	20,190	10.9	60.4	28.7
Men	10,365	5.7	48.2	46.1
Women	9,825	16.3	73.3	10.4

SOURCES: Author's calculations using Social Security administrative data files (1 percent 2008 active CWHS, 1 percent 2010 MBR, and 1 percent 2009 Numident).

NOTES: Sample consists of birth cohort 1945, newly eligible for retired-worker benefits in 2007. Sample excludes DI beneficiaries; survival to age 63 required.

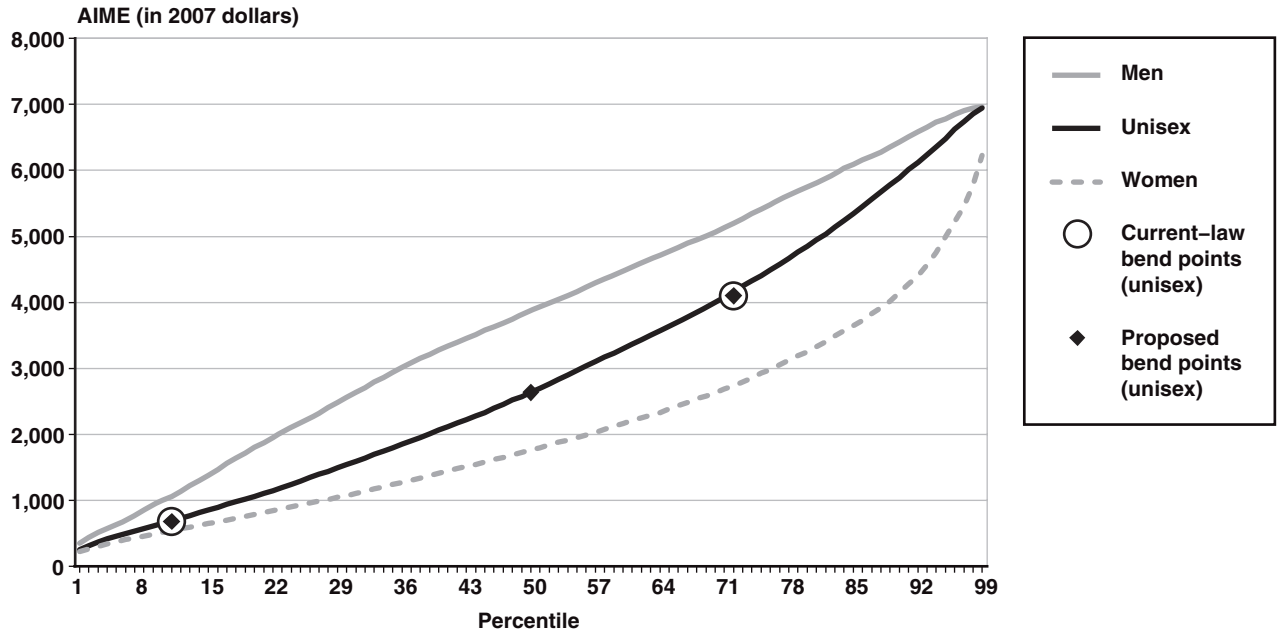
In other words, in 2007 the *upper* bend point under current law at the 54th percentile of the male earnings distribution was already close to the median for men (50 percent). For 50 percent of male earners to be unaffected by the proposed benefit formula change, a new bend point would have had to be introduced just below the current-law top bend point at about the 68th percentile of the unisex distribution (Chart 4).

As another example, consider a proposal that aims to leave the bottom 75 percent of earners unaffected by reducing the percent PIA factor at the current-law top bend point. Such a proposal appears to achieve its target under the unisex definition of lifetime earnings (where about 28 percent of all eligible workers were at the top bend point in 2007). On the other hand, for 75 percent of male earners in 2007 to be unaffected by the proposed change in the benefit formula, a new bend point would have had to be created *above* the current-law top bend point at about the 86th percentile of the unisex distribution (Chart 4).

In addition, while a proposal to create a new bend point at the unisex median AIME would have reduced the PIA factor for roughly the top half of unisex earners by 22 to 32 percentage points in 2007, about 69 percent of male workers would have faced those PIA factor reductions compared with only about 30 percent of female workers (Table 3). As discussed previously, some of the female workers facing cuts would not actually be paid on their own AIME, but rather on their husband's AIME. Therefore, the 16 percent of females at the first bend point could represent an overestimate of the number of female workers hypothetically protected from proposed PIA factor reductions in 2007, as could the 54 percent of female workers at the new 30 percent PIA factor bend point.

As expected, differences by sex in the number of years of Social Security–covered earnings accrued by age 61 were observed in 2007. Recall that the AIME formula averages the top 35 years of Social Security–covered earnings, but only 10 years of taxable earnings are required for fully insured status. In other words, women who have had zero years of earnings from nonmarket work such as childcare could easily have had enough earnings to qualify for retired-worker benefits, thus lowering the unisex average number of Social Security–covered work years, which would have put downward pressure on the unisex AIME relative to the male AIME. As shown in Table 4, men have had more work years than women at every percentile of the covered-work-year distribution measured; the gap was about 10 years at the median. At the median, women would have had five zeroes averaged into their AIME and, in contrast, men would have had 4 low-earnings years dropped from their AIME

Chart 4.
AIME distribution, by sex (2007), with current-law and proposed bend points



SOURCES: Author's calculations using Social Security administrative data files (1 percent 2008 active CWHS, 1 percent 2010 MBR, and 1 percent 2009 Numident).

computation. Because a worker's wage is partly based on labor market experience, diminished labor force participation would be expected to have a powerful effect on female wages relative to male wages over an individual's lifetime.[22]

Because Table 4 highlights an important link between years of Social Security–covered earnings and AIME levels, a tabulation of the median number of Social Security–covered work years at ages 14–61, by AIME decile[23] and sex, is presented in Table 5. As expected because of the link between labor market experience and wages, there is a strong positive correlation between years of Social Security–covered work and AIME levels for both men and women.[24]

While combining male and female earnings distributions has the advantage of greater brevity, these results suggest that the qualitative conclusions stemming from such an analysis may deviate from the actual effect on future beneficiaries of the change under consideration to a degree to which policymakers and the public may be currently unaware. To further enhance that understanding, I next examine the implications of the creation of a new bend point at the median unisex AIME using a definition of

Table 3.
Percentage of workers newly eligible for retired-worker benefits at age 62 with AIMEs at current-law and proposed new bend points, by sex, 2007

Sex	N	AIME ≤ current-law bend point 1 (90% PIA factor)	AIME > bend point 1 and AIME ≤ bend point 2A (proposed) (32% current-law factor reduced to 30% PIA factor)	AIME > bend point 2A (proposed) and AIME ≤ current-law bend point 2 (32% current-law factor reduced to 10% PIA factor)	AIME > current-law bend point 2 (15% current-law factor reduced to 5% PIA factor)	PIA factor reductions of 22–32 percentage points
All	20,190	10.9	39.2	21.3	28.7	50.0
Men	10,365	5.7	25.3	23.0	46.1	69.1
Women	9,825	16.3	53.8	19.5	10.4	29.9

SOURCES: Author's calculations using Social Security administrative data files (1 percent 2008 active CWHS, 1 percent 2010 MBR, and 1 percent 2009 Numident).

NOTES: Sample consists of birth cohort 1945, newly eligible for retired-worker benefits in 2007. Sample excludes DI beneficiaries; survival to age 63 required. Proposed new bend point is described in SSA (2010b), http://www.socialsecurity.gov/oact/solvency/index.html. PIA factors are those proposed for the benefit formula under fully phased-in conditions.

Table 4.
Distribution of the number of Social Security–covered work years for persons aged 14–61, by sex

Distribution	Unisex	Men	Women
10th	15.8	18.5	14.5
25th	24.8	31.0	21.3
Median	34.5	39.3	29.8
75th	40.8	42.5	36.5

SOURCES: Author's calculations using Social Security administrative data files (1 percent 2008 active CWHS, 1 percent 2010 MBR, and 1 percent 2009 Numident).

NOTES: Sample consists of birth cohort 1945, newly eligible for retired-worker benefits in 2007. Sample excludes DI beneficiaries; survival to age 63 required. An upward trend was observed in the number of work years at every percentile for women over birth years 1937–1945. Men experienced a slight downward trend in the number of work years over birth years 1937–1945 at the 10th and 25th percentiles, but not at higher percentiles.

Table 5.
Median number of Social Security–covered work years for persons aged 14–61, by AIME decile and sex

AIME decile	Unisex	Men	Women
1	14.0	15.3	13.3
2	20.0	25.0	18.3
3	26.3	34.0	22.5
4	30.8	39.0	26.5
5	34.3	40.8	29.5
6	37.5	41.3	32.0
7	39.5	41.5	34.0
8	40.3	41.3	36.3
9	41.0	41.8	37.0
10	41.6	41.8	38.9

SOURCES: Author's calculations using Social Security administrative data files (1 percent 2008 active CWHS, 1 percent 2010 MBR, and 1 percent 2009 Numident).

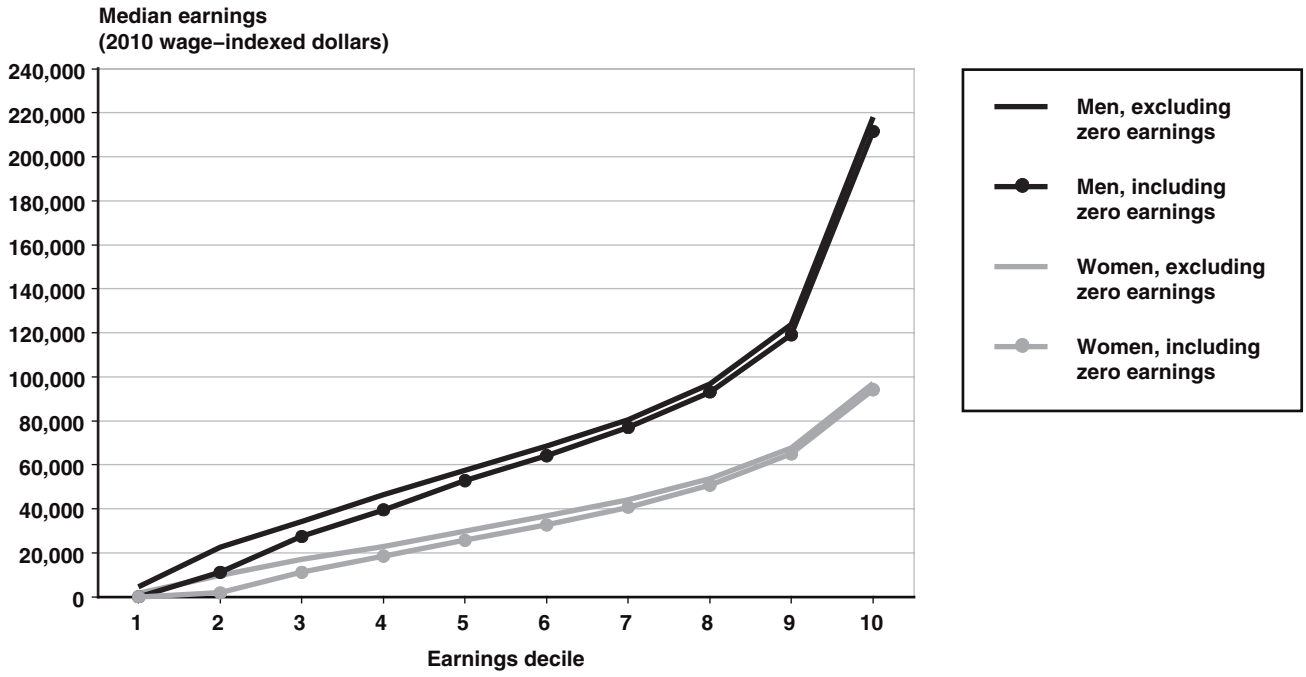
NOTES: Sample consists of birth cohort 1945, newly eligible for retired-worker benefits in 2007. Sample excludes DI beneficiaries; survival to age 63 required. Decile 1 = the 0–10th percentile of the sex-specific earnings distribution, decile 2 = the 11th–20th, and so forth; decile 10 = the 91st–100th percentile.

lifetime earnings perhaps more intuitive than Social Security's AIME. As discussed in the Methodology section, that alternative definition uses average earnings at ages 45–55 as a proxy for lifetime earnings—determined by an individual's relative position in the earnings distribution when in their peak earnings years. To provide an understanding of the differences in earnings amounts at the peak earnings age of 50, median earnings in 2010 wage-indexed dollars are presented for both men and women in Chart 5. To test the sensitivity of the earnings measure, the average was calculated both with and without zero earnings. Chart 5 shows that for the 1945 birth cohort, the median earnings for the male 5th decile were a little above median earnings for the female 8th decile. Median earnings for the female 5th decile were somewhat below the male 3rd decile median amount.

At the top of the gender-specific earnings distributions, median earnings of the female top decile were equivalent to median earnings of about the male 8th decile, and median male earnings in the top decile were above the 2010 current-law Social Security taxable maximum of $106,800 at $211,521.[25] Because women had lower earnings than men, 90 percent of the total earnings of the unisex distribution at age 50 in 1995 (wage indexed to 2010) would have been equivalent to roughly 83 percent of the male earnings distribution and 97.5 percent of the female earnings distribution.

Next, to proxy for prime wage earners, I examine how proposed changes to the PIA formula would have affected men who attained age 62 in 2007 and who were newly eligible for Social Security retired-worker benefits, by lifetime earnings decile. In Chart 6, the two gray sections of each bar in the chart add up to current-law bend point 2 and reflect the splitting in two of the 2nd bracket of the benefit formula at the new bend point 2A, created at the unisex median AIME.[26] At the 5th decile, only about 10 percent of men would have been excluded from large PIA factor reductions, and about 90 percent would have faced a factor reduction of at least 22 percentage points. In fact, at the 3rd decile, about 40 percent of men would have faced large reductions, and by the 4th decile the vast majority of men would have experienced large reductions. The 1st decile of men is the only decile for which more than 90 percent would have been held relatively harmless under the fully phased in proposal that is simulated

Chart 5.
Median earnings at age 50 for the 1945 birth cohort, by lifetime earnings decile and sex



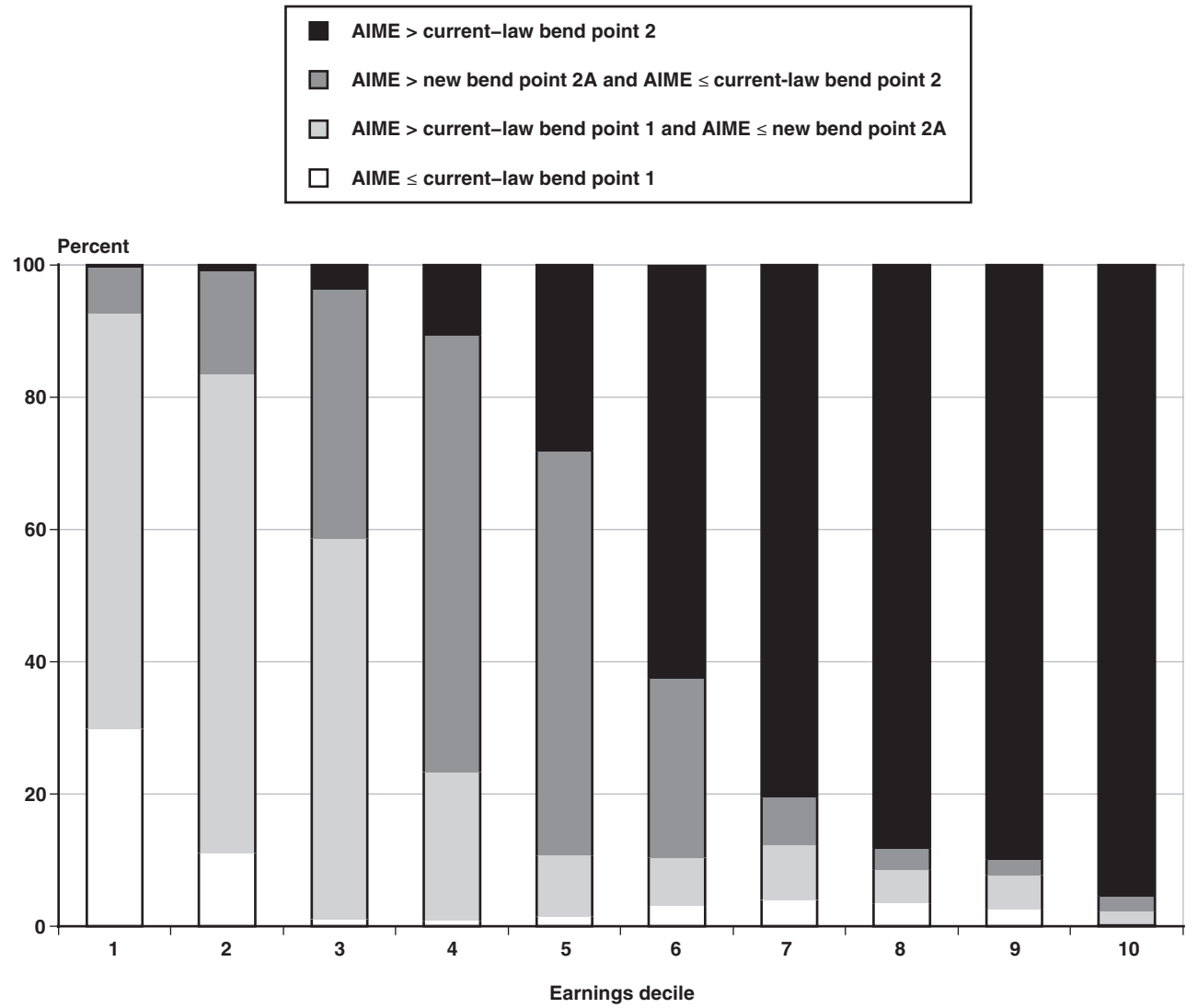
SOURCES: Author's calculations using Social Security administrative data files (1 percent 2008 active CWHS, 1 percent 2010 MBR, and 1 percent 2009 Numident).

NOTES: Sample consists of birth cohort 1945, newly eligible for retired-worker benefits in 2007. Sample excludes DI beneficiaries; survival to age 63 required.

here, with PIA factor reductions of about 2 percent for the vast majority of that decile.[27]

There are several cases in which prime-earning men may have low AIMEs, but may still be considered high earners. Recall that the lifetime earnings measure used in Chart 6 does not distinguish between earnings at ages 45–55 in Social Security–covered employment and earnings in noncovered employment. Therefore, workers with high uncovered earnings and low Social Security–covered earnings (perhaps from jobs held at younger ages), could have low AIMEs, but appear in higher earnings deciles under the alternative lifetime earnings measure used here. Some of those workers will not actually receive a 90 percent PIA factor on their Social Security taxable earnings, but will instead be subject to the Windfall Elimination Provision and Government Pension Offset provision of current law. In addition, foreign-born workers who enter the country at older ages could have high earnings in Social Security–covered employment, but have a large number of zeroes averaged into their AIME amount and hence a low AIME. Accordingly, a more analytically clean sample is displayed in Chart 7, in which the foreign born and workers who had mostly non-Social Security taxable earnings for at least 5 years from ages 45 through 55 are eliminated from the sample.

Chart 6.
Percentage of men at the current-law and proposed PIA bend points, by male earnings deciles



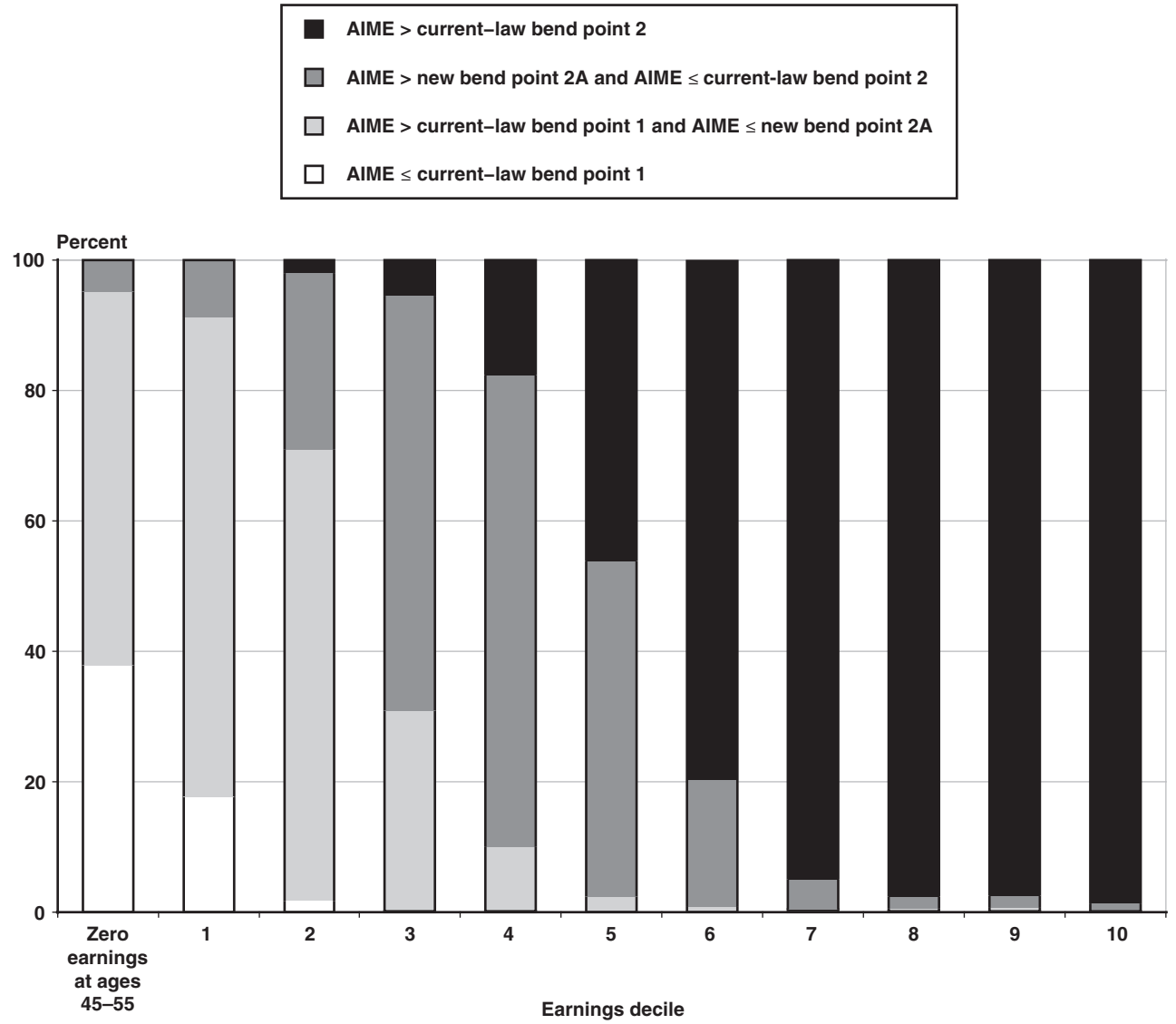
SOURCES: Author's calculations using Social Security administrative data files (1 percent 2008 active CWHS, 1 percent 2010 MBR, and 1 percent 2009 Numident).

NOTES: Sample consists of birth cohort 1945, newly eligible for retired-worker benefits in 2007. Sample excludes DI beneficiaries; survival to age 63 required. Male earnings deciles show relative average earnings from ages 45 through 55, with zeroes included in the average.

The sample is further restricted through the use of a lifetime earnings average that excludes zeroes that occur from ages 45 through 55, out of concern that some of the zeroes could represent early retirement.

The more restrictive sample used in Chart 7 eliminates the presence of men at low bend points at higher earnings deciles observed in Chart 6. It is also observed that when men with zero earnings from ages 45 through 55 (about 2.7 percent of the total sample) are removed, the proposed PIA factor reductions are more severe for those who remain—men with some earnings at ages 45–55. Almost all men in deciles 4–10 would be affected by PIA factor reductions of at least 22 percentage points in the more restrictive sample. In addition, at the 3rd decile, roughly 70 percent of men would now face large reductions, rather than the 40 percent observed under the less restrictive sample. Moreover, about 30 percent of the 2nd decile would face large reductions. Thus, the empirical data observed here suggests

Chart 7.
Percentage of men at current-law and proposed PIA bend points, by male earnings deciles: Restricted analytical sample



SOURCES: Author's calculations using Social Security administrative data files (1 percent 2008 active CWHS, 1 percent 2010 MBR, and 1 percent 2009 Numident).

NOTES: Sample consists of birth cohort 1945, newly eligible for retired-worker benefits in 2007. Sample excludes DI beneficiaries, the foreign born, and workers with mostly non–Social Security taxable earnings; survival to age 63 required. Male earnings deciles show relative average earnings from ages 45 through 55, with zeroes included in the average.

that reductions in the OASDI actuarial shortfall that are the result of benefit formula changes above either the median unisex AIME or at the middle or highest current-law PIA factors may be achieved through the application of the reductions toward a larger percentage of the prime full-time working population than may be apparent when one parses the data by the unisex distribution.

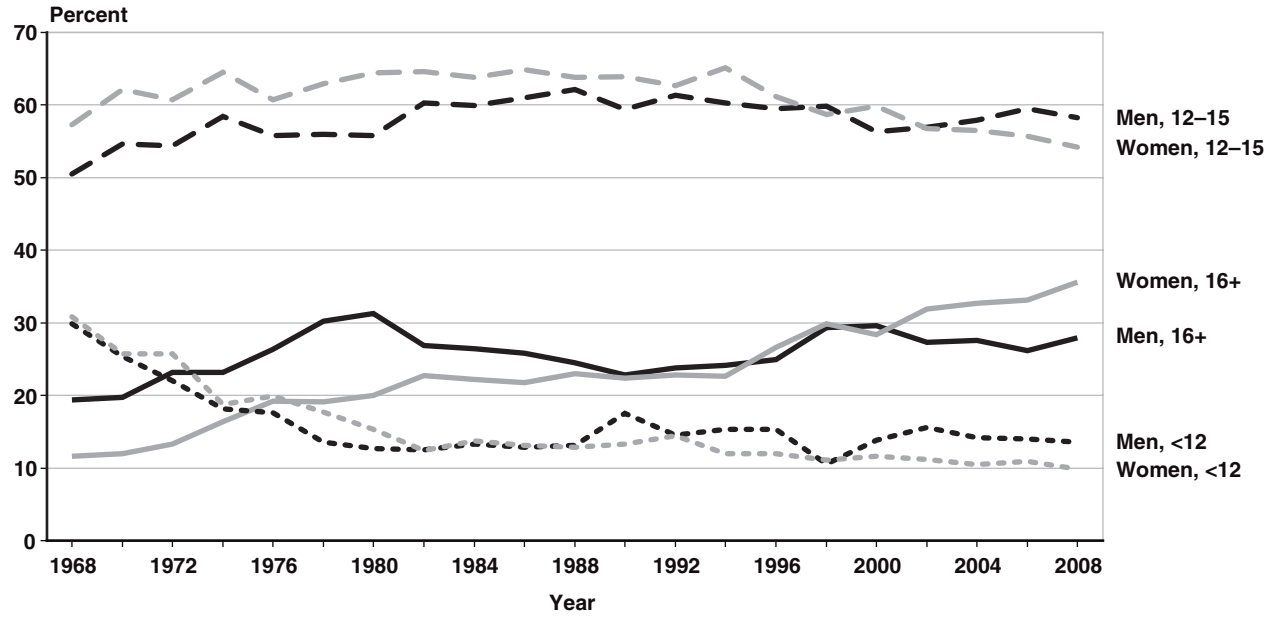
Conclusion

In policy debates, the terms "low earner" and "low income" are often used interchangeably. However, the continued presence of traditional gender roles in the division of labor between market and nonmarket hours of work suggests that for both birth cohorts currently reaching retirement and those currently of childbearing age, a sizeable number of women may have low earnings without actually being of low-income. While the number of women participating full time, all year in the labor force has increased greatly since the 1960s, men still outnumber women by about 23 percentage points at the prime earnings ages, and the trend has been flat for the past 10 years.

If policymakers wish to adjust future benefits by reducing them and focus those benefit reductions on middle or high primary wage earners in a household using lifetime earnings estimates available in Social Security administrative data, the male average indexed monthly earnings (AIME) amount, rather than the unisex AIME, would come closer to achieving such a goal. The male AIME distribution would be an upper bound because of the inability of researchers to separate primary female wage earners from secondary female wage earners in Social Security earnings data. Because Social Security earnings records lack information on both marital status and number of hours worked, the best available proxy for a prime wage earner is a male worker. That may cause the male AIME to be somewhat higher than it would be if female prime earners had been included because women earn less than men for an equivalent number of hours of work. In any case, sensitivity tests of unisex distributional levels by sex have the potential to enhance the understanding of policymakers and the public regarding the distributional effects of proposed Social Security benefit formula changes.

Appendix

Chart A-1.
Percentage of population at age 30 with various years of school completed, by sex, selected years 1968–2008



SOURCES: Author's calculations based on selected years of the Census Bureau's March Supplement to the Current Population Survey (CPS), using Unicon Research Corporation's CPS utilities (2009), http://www.unicon.com.

Table A-1.
Median AIME for workers newly eligible for retired-worker benefits at age 62, by sex, 1999–2007

Year	Current-law bend point 1	Current-law bend point 2	New bend point = median unisex AIME	Median male AIME	Median female AIME	Percent of the way up from current-law bend point 1 to current-law bend point 2		
						Median unisex AIME [a]	Median male AIME	Median female AIME
1999	505	3,043	1,844	2,840	1,069	52.7	92.0	22.2
2000	531	3,202	1,951	3,018	1,193	53.2	93.1	24.8
2001	561	3,381	2,073	3,191	1,244	53.6	93.2	24.2
2002	592	3,567	2,202	3,349	1,341	54.1	92.7	25.2
2003	606	3,653	2,282	3,490	1,412	55.0	94.7	26.5
2004	612	3,689	2,378	3,587	1,486	57.4	96.7	28.4
2005	627	3,779	2,475	3,653	1,561	58.6	96.0	29.6
2006	656	3,955	2,533	3,750	1,663	56.9	93.8	30.5
2007	680	4,100	2,635	3,878	1,763	57.2	93.5	31.7

SOURCES: Author's calculations using Social Security administrative data files (1 percent 2008 active CWHS, 1 percent 2010 MBR, and 1 percent 2009 Numident). Current-law bend points are available at http://www.socialsecurity.gov/OACT/COLA/bendpoints.html.

NOTE: Sample excludes DI beneficiaries; survival to age 63 required.

a. To calculate: (median unisex AIME − current-law bend point 1) / (current-law bend point 2 − current-law bend point 1).

Table A-2.
AIME for workers newly eligible for retired-worker benefits at age 62, by sex-specific AIME percentile, 1999–2007

Year	10	20	30	40	50	60	70	80	90
					Unisex				
1999	468	739	1,054	1,419	1,844	2,299	2,807	3,358	3,962
2000	493	793	1,138	1,522	1,951	2,441	2,997	3,582	4,271
2001	518	839	1,200	1,615	2,073	2,594	3,196	3,835	4,502
2002	543	881	1,258	1,708	2,202	2,754	3,354	4,049	4,854
2003	560	907	1,302	1,767	2,282	2,855	3,514	4,192	5,017
2004	592	958	1,380	1,862	2,378	2,949	3,596	4,332	5,198
2005	609	1,001	1,437	1,925	2,475	3,072	3,723	4,470	5,378
2006	631	1,030	1,492	1,999	2,533	3,123	3,834	4,654	5,628
2007	652	1,063	1,542	2,063	2,635	3,298	4,000	4,851	5,890
					Men				
1999	866	1,497	2,036	2,458	2,840	3,200	3,530	3,886	4,284
2000	885	1,543	2,099	2,579	3,018	3,411	3,792	4,189	4,597
2001	924	1,625	2,230	2,745	3,191	3,597	4,006	4,426	4,880
2002	956	1,669	2,328	2,874	3,349	3,816	4,270	4,769	5,257
2003	965	1,728	2,408	2,962	3,490	3,960	4,413	4,922	5,461
2004	995	1,823	2,478	3,059	3,587	4,077	4,566	5,101	5,634
2005	1,014	1,826	2,542	3,134	3,653	4,161	4,684	5,254	5,828
2006	1,003	1,799	2,510	3,146	3,750	4,295	4,904	5,511	6,160
2007	999	1,803	2,561	3,280	3,878	4,472	5,065	5,757	6,431

(Continued)

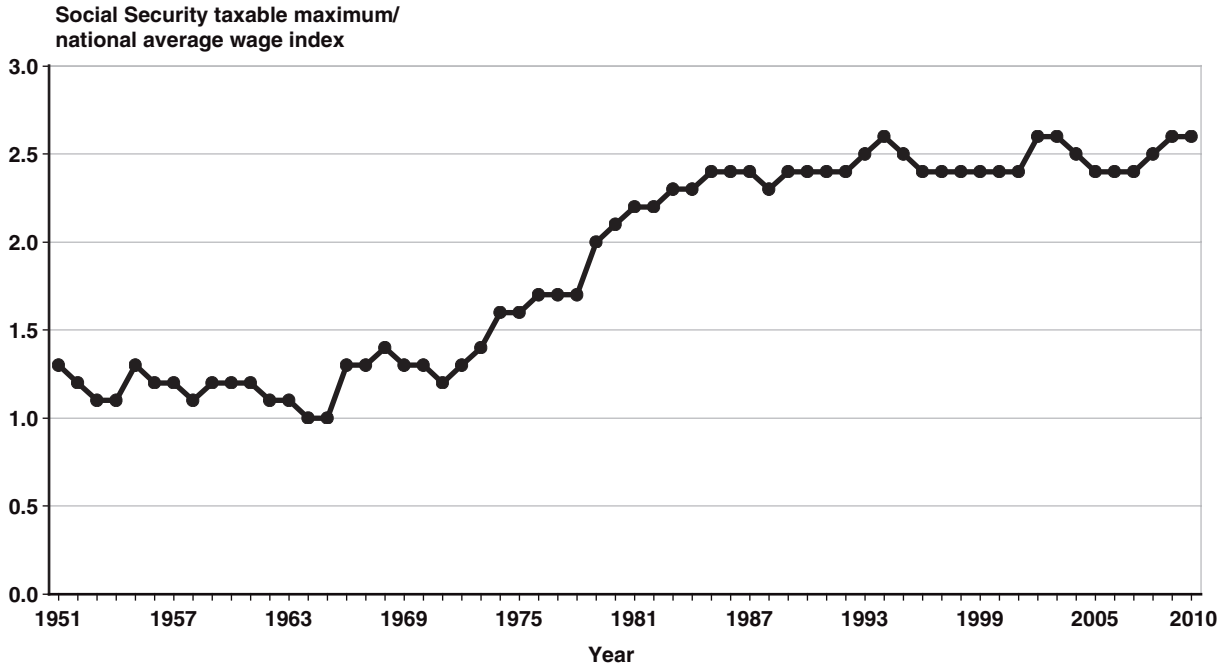
Table A-2.
AIME for workers newly eligible for retired-worker benefits at age 62, by sex-specific AIME percentile, 1999–2007—*Continued*

Year	10	20	30	40	50	60	70	80	90
					Women				
1999	352	514	684	872	1,069	1,324	1,604	1,989	2,549
2000	380	546	745	963	1,193	1,450	1,766	2,160	2,762
2001	397	577	791	1,003	1,244	1,527	1,862	2,262	2,951
2002	405	607	825	1,074	1,341	1,653	2,010	2,481	3,149
2003	437	639	866	1,121	1,412	1,738	2,132	2,629	3,400
2004	459	687	928	1,193	1,486	1,822	2,212	2,714	3,469
2005	463	696	966	1,243	1,561	1,901	2,322	2,871	3,674
2006	486	749	1,022	1,332	1,663	2,048	2,485	3,008	3,891
2007	514	787	1,073	1,412	1,763	2,168	2,630	3,253	4,155

SOURCES: Author's calculations using Social Security administrative data files (1 percent 2008 active CWHS, 1 percent 2010 MBR, and 1 percent 2009 Numident).

NOTE: Sample excludes DI beneficiaries; survival to age 63 required.

Chart A-2.
Ratio of the Social Security taxable maximum to the national average wage index, 1951–2010



SOURCE: Author's calculations using SSA's Office of the Chief Actuary historical series, http://www.socialsecurity.gov/OACT/COLA/wageindexed.html.

Notes

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[1] See http://www.socialsecurity.gov/oact/COLA/Benefits.html#aime.

[2] Under current law, the minimum number of years of earnings required to become fully insured for Social Security retired-worker benefits for persons born in 1929 or later is 10 years (40 quarters of coverage).

[3] As described in the Social Security *Trustees Report* (Board of Trustees 2010), the AWI is "a series that generally increases with the average amount of total wages for each year after 1950, including wages in non-covered employment and wages in covered employment in excess of the OASDI contribution and benefit base." Wage indexing brings nominal wages in a person's earnings record up to near-current wage levels. Wages are always indexed to the average wage level 2 years before the year of first eligibility. For example, for a worker retiring in 2011, wages would be indexed to the AWI for 2009. As described by the Office of the Chief Actuary, a factor will always equal 1 for the year in which the person attains age 60 and all subsequent years, http://www.socialsecurity.gov/OACT/ProgData/retirebenefit1.html. The indexing factor for a prior year *Y* is the result of dividing the AWI for the year in which the person attains age 60 by the AWI for year *Y*.

[4] For example, for an individual who first becomes eligible for Old-Age and Survivors Insurance benefits or Disability Insurance benefits in 2011, his or her PIA will be the sum of (a) 90 percent of the first $749 of his or her AIME, plus (b) 32 percent of the next $3,768 of his or her AIME, plus (c) 15 percent of his or her AIME above $4,517.

[5] See the Bureau of Labor Statistics website, http://www.bls.gov/data/.

[6] See Mosisa and Hipple (2006, Table 1).

[7] "Returns to experience" is a term used by economists that describes the fact that workers tend to achieve wage increases as they gain more on-the-job skills and establish a track record of competency at various on-the-job tasks. Workers who drop out of the labor force for long periods of time will be at a competitive disadvantage compared with those who have remained in the workforce because employers will have less observable information regarding the competency and job skills of less-attached workers. Thus, the wages those less-attached workers can demand will be lower than those of more-attached workers. In a similar way, young workers are less able to demand high wages than mid-career workers because young workers lack observable on-the-job experience and skills.

[8] In 2008, 40 percent of all female retired workers were dually entitled retired-worker beneficiaries (meaning they were receiving a secondary benefit based on their husbands' PIA). Overall, 97.8 percent of all dually entitled workers were women in 2008 (SSA 2010a, Tables 5.G1 and 5.G2). Note that the 40 percent dually entitled figure includes both spouse (wife) benefits and survivor (widow) benefits. The wife benefit will top off the retired-worker benefit payable on a women's own record if one-half of the husband's PIA is greater than the retired-worker benefit payable on her record. The survivor's benefit equals 100 percent of the husband's PIA and would top off the retired-worker benefit payable on a women's record if that benefit is less than the husband's PIA. Reductions for an early retirement claim of a husband (or wife or surviving widow) will lower the amount payable on spouse and survivor benefits (see http://www.socialsecurity.gov for more details).

[9] Empirically, this observation highlights the need for users of projections produced by microsimulation models to understand the assumptions that are being made about future female earnings trajectories. In other words, for younger birth cohorts, modelers cannot yet observe a full lifetime of earnings and so must project those earnings. Typically, those earnings are projected roughly based on the earnings patterns of observable (older) birth cohorts. For women, this cannot be done without adjustment because of the large increase in labor force participation between older female birth cohorts and younger female birth cohorts. If microsimulation modelers continue to project the differences in hours worked between men and women observed since the mid-1990s, men would be the primary earners in the majority of projected married couples. In such a case, a projected unisex distributional estimate of retired-worker benefits would be as uninformative as a unisex estimate based on recently eligible birth cohorts. On the other hand, microsimulation modelers may project that female earnings and number of hours worked will increase above what has been observed historically, so that for birth cohorts for whom retired-worker benefits are being estimated, earnings and number of hours worked are projected to be equal by sex. In that case, a projected unisex distributional estimate would be appropriate to the underlying assumptions of the model.

[10] Because the full-time, female-to-male earnings differential is presently less than 1, if we assume that the differential does not converge to 1, then the male earnings distribution proxy will produce a higher median for men than for their female counterparts. In other words, median earnings of a man will not necessarily proxy for an identical woman in terms of labor force attachment, occupation, and number of hours worked, if wage discrimination persists. Of course, the full-time, female-to-male earnings differential does not speak to the degree to which the gap between full-time male and female earnings reflects differences in total years of experience in the workforce versus pay differences based solely on sex and the extent to which

differences in total years of work experience are correlated with marital status and nonmarket work, such as child rearing. See Juhn and Potter (2006), Hoffman (2009), and Macunovich (2010) for a discussion of labor force trends by marital status and decade. Trends have not been stable over time for women. Favreault and Steuerle (2008) found that having a child reduced the average number of work years for women born between 1935–1958.

[11] SSA (2010b, 7), http://www.socialsecurity.gov/oact/solvency/index.html. Estimates are based on the intermediate assumptions of the Board of Trustees (2010), http://www.socialsecurity.gov/oact/TR/2010/index.html.

[12] The term "active" means that an individual had to have at least one earnings report from 1951 through 2008 to be included in the 2008 active CWHS.

[13] Technically, this type of earnings data exists in the MEF beginning in 1978, but non–Old-Age, Survivors, and Disability Insurance taxable earnings data from 1978 through 1981 are subject to reporting errors and are not used in this analysis.

[14] SSA (2010b, 2), http://www.socialsecurity.gov/oact/solvency/index.html.

It is possible that a worker becomes entitled to disability, recovers, and then later becomes "newly eligible" for a retired-worker award. That population, which is expected to be small, is deleted under my methodology.

[15] Ibid.

[16] Under current law, DI beneficiaries are fully insured for retired-worker benefits because of the disability freeze provision of the Social Security Act (Title II). Therefore, *fully insured* as used in this article is more restrictive than the legal definition in the Social Security Act.

[17] See note 13.

[18] Before calculating average earnings, the sample is restricted to individuals who survived to at least age 63, so that each decile contains 10 percent of the sample in the year individuals are newly eligible for Social Security retired-worker benefits. (The force of differential mortality will cause the number of people in deciles calculated at any given age to eventually decline more at the bottom than the top of the deciles, as the sample population ages.) Earnings censored at the Social Security taxable maximum from 1982 through 1993 (ranging from 0.45 percent of the sample in 1982 to 2.2 percent in 1990 to 0.6 percent in 1993) are imputed with a tobit regression before averaging. While wage earnings are reported over the OASDI taxable maximum beginning in 1982, self-employment earnings are reported only up to the Hospital Insurance (HI) taxable maximum prior to 1994. See Pattison and Waldron (2008) for more details on MEF earnings. For further discussion on the tobit regression, see Waldron (2004, Appendix).

[19] For example, it is not clear that a college student working part time is a *low earner* in the same way that a man with low earnings at age 50 is a *low earner*. Many young workers may have high earnings potential; in contrast, by the peak of the age-earner profile, adult socioeconomic status is essentially set, on average. Earnings after the peak are problematic because some workers may retire early with pensions and still be healthy and of high-income status. A zero in the earnings record because of voluntary retirement would not be equivalent to a zero resulting from unemployment or a health shock, but there is no way of distinguishing between the two zeroes in Social Security data.

[20] Changes in the percentage of workers at bend points from 1999 through 2007 ranged from 1 to 5 percentage points. Women experienced a decline in the percentage at the bottom two brackets and a 5 percentage point increase at the upper bracket, reflecting growing earnings for female birth cohorts over birth years 1937–1945. Men experienced a 3 percentage point decline at the 2nd bracket, split between a 1.4 percentage point increase in the proportion at the 1st bracket and a 1.6 percentage point increase in the proportion at the top bracket. The combined (unisex) measure showed a decrease in the percentage of workers at the bottom two brackets and a 3 percentage point increase in the proportion of workers in the top bracket between 1999 and 2007.

[21] Authors of the report of the National Commission on Fiscal Responsibility and Reform (2010) proposed to "break the middle bracket in two at the median income level."

[22] An upward trend was observed in the number of work years at every percentile measured for women born over birth years 1937–1945. On the other hand, men experienced a downward trend in the number of work years over the same birth cohorts at the 10th percentile, but not at higher percentiles measured in Table 4. The strong trend in number of female work years over time highlights the problems with trying to use a distribution that is moving over time and for which the future is uncertain, as female cohorts for whom societal changes have most fully applied have not yet reached the peak earnings ages. Favreault and Steuerle (2008) found an upward trend in average covered work years for females in birth cohorts 1935–1965 and no trend in average covered work years for men over the same birth cohorts.

[23] Decile 1 = the 0–10th percentile of the sex-specific earnings distribution, decile 2 = the 11th–20th, decile 3 = the 21st–30th, decile 4 = the 31st–40th, decile 5 = the 41st–50th, decile 6 = the 51st–60th, decile 7 = the 61st–70th, decile 8 = the 71st–80th, decile 9 = the 81st–90th, and decile 10 = the 91st–100th percentile.

[24] Favreault and Steuerle (2008, Figures 8 and 9, 25) found a similar positive correlation between cumulative Social Security–covered work years and earnings levels.

[25] This figure includes years of zero earnings in the average lifetime earnings measure. If zeroes are excluded, the corresponding figure is $217,995.

[26] The new bend point is described in SSA (2010b), http://www.socialsecurity.gov/oact/solvency/index.html.

The simulation in this article does not follow the phase-in provisions of the plan, but instead represents the effect of the benefit formula change if it had been fully phased in by 2007.

[27] In general, percent PIA factor reductions would have been deeper to deciles 1–3 for birth year 1937 than for birth year 1945 (depicted in Chart 6). This result is driven by a decline in lifetime earnings at the lowest deciles for men over the period observed.

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The Implications of Marital History Change on Women's Eligibility for Social Security Wife and Widow Benefits, 1990–2009

by Howard M. Iams and Christopher R. Tamborini*

Social Security retirement benefits in the United States (US) reflect marital histories and lifetime earnings of current and former married couples. Focusing on the link between marital history and benefit eligibility, this article examines women's marital patterns over the past two decades. Using the 1990 and 2009 Marital History Modules to the Census Bureau's Survey of Income and Program Participation, descriptive/regression analysis reveals substantial changes in women's marital patterns among baby boomers and generation Xers. Those changes have prompted a decline in qualifying marital histories for Social Security spouse and widow benefits. The findings also reveal substantial variation by race/ethnicity. Black women are significantly more likely to be potentially ineligible for a marriage-based benefit than white women, particularly in more recent cohorts. Hispanic women's marriage-based eligibility is between that of black and white women. US-born Hispanic women had higher shares without a qualifying marital history compared with the foreign born.

Introduction

Over the six decades following World War II, major sociodemographic changes occurred in the American family. An important research and public policy subject is to document those changes and their implications for retirement outcomes, particularly for the baby boom generation now entering retirement. In this article, we examine the change in women's marital patterns at different stages of the life course over the past two decades and its implications for women's eligibility status for Social Security spouse and survivor benefits at retirement age.

Women's financial circumstance in old age is a longstanding concern among policymakers and researchers (Ekerdt 2010; Favreault and Steuerle 2007; Government Accountability Office 2007; Holden and Fontes 2009; Lusardi and Mitchell 2008; Weaver 1997, 2010). Although the retirement security of women has improved significantly over the past 30 years, women have higher poverty rates in old age than men, in large part because they earn less over a lifetime and live longer (Blau and Kahn 2006; Weinberg 2007; Bureau of Labor Statistics 2010). Greater longevity also means that many women will spend some time during their life course as widows. Estimates from the Current Population Survey show that the poverty rate for women aged 65 or older in 2008 was almost double (11.9 percent) that of men (6.7 percent), with the unmarried group being particularly vulnerable to poverty (16.9 percent of single women compared with 5.0 percent of married women); see SSA (2010, Table 11.1).

Selected Abbreviations

GenX	generation X
PIA	primary insurance amount
SIPP	Survey of Income and Program Participation

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A growing body of research has shown a connection between women's lifetime marital experiences and retirement outcomes (Couch and others 2011; Wilmoth and Koso 2002; Tamborini, Iams, and Whitman 2009; Zissimopoulos, Karney, and Rauer 2008). The main purpose of this study is to determine the implications of changing marital patterns on women's eligibility for Social Security marriage-based benefits at retirement. The Social Security program not only provides women with income as retired or disabled workers but also as spouses or widows of insured workers. Generally, a person must be currently married, widowed, or divorced from a 10-year marriage to qualify for a spouse or widow(er) benefit. This link between marital history and benefit eligibility means that the distribution of women who have the option of claiming spouse or widow benefits at retirement is subject to fundamental changes in marriage behavior.

In this article, we assess the evolution of women's potential eligibility for Social Security spouse and widow benefits over the past two decades. We draw from the 1990 and the recently released 2009 Marital History Modules to the Census Bureau's Survey of Income and Program Participation (SIPP). Our analysis compares the marital histories of women in their thirties, forties, and fifties in 2009 with similarly aged women in 1990 using descriptive and regression methods. Building on recent studies that have found declining eligibility for spouse and widow benefits because of changes in marriage patterns (Harrington Meyer, Wolf, and Himes 2006; Tamborini, Iams, and Whitman 2009), we consider how current marital trends may reshape women's potential eligibility for spouse or widow benefits and how those patterns vary across race and ethnic subgroups.

The results contribute to the literature in several ways. First, by using more recent nationally representative data than previously available, we provide up-to-date evidence indicating how women's eligibility for spouse and widow benefits is changing because of changes in marital patterns. Second, we offer insight into the early life marital experiences of the generation X (GenX) cohorts.[1] Research has just begun to consider family trends in postboomer cohorts (Tamborini and Iams 2011), and no studies to date have examined marital trends in GenX cohorts as they relate to Social Security marriage-based benefits.

A third contribution of the present study is that it advances understanding of how eligibility for Social Security marriage-based benefits varies across race and ethnic subgroups. Although the Social Security program is gender and race neutral and handles persons with identical earnings or marital histories in the same way, racial differences in marital patterns can result in differences in eligibility for marriage-based Social Security benefits. This article addresses whether the racial differentials in potential benefit eligibility resulting from differences in marital history have continued from those observed through 1995 by Harrington Meyer, Wolf, and Himes (2006) and those observed through 2004 by Tamborini, Iams, and Whitman (2009). We also estimate the eligibility patterns of Hispanic women, by nativity, which is a useful focus given the lack of research on this issue combined with their growing share of the population in the United States (US).

The next section elaborates on the background guiding this study. We then present the data and methods, followed by the empirical results. Finally, a conclusion is provided with a summary of the findings and their broader implications.

Background

Social Security benefits are an important source of retirement income for women. According to the Current Population Survey, Social Security made up at least half of the family income for 58 percent of women aged 65 or older in 2008 (SSA 2010, Table 9.B1). Benefits are particularly important to the financial security of the single, elderly population. Among women aged 65 or older in beneficiary families in 2008, Social Security accounted for at least 90 percent of the family income of 35 percent of unmarried women compared with 21 percent of married women (ibid., Table 9.B3).

Originally, Social Security benefits were based on a worker's own lifetime earnings covered by the program. In the 1939 Social Security Amendments, Congress established wife and widow benefits to provide monthly payments to qualified spouses and survivors of insured workers (Martin and Weaver 2005). As Berkowitz (2002) noted, the design of Social Security marriage-based benefits was essentially based on a family structure common to the Depression era, when the Social Security program began; see also Cherlin (2009, 69). Typical to that era would be a one-earner family with an employed husband supporting a wife and children in a marriage that continued until the

death of one of the spouses. Over time, those benefits were extended to divorced spouses and divorced surviving spouses with 10 years in the marriage and to children.[2]

Potential eligibility for Social Security spouse or widow(er) benefits reflects a person's past and present marital status. The amount reflects the work record of that person in relation to the record of their current or former spouse(s). In other words, the amount of Social Security spouse or widow(er) benefits is a function of the lifetime earnings of workers and their spouses (or former spouses), while eligibility is based on marital history. Table 1 provides a brief overview of current marital requirements.

Under current law, an aged individual who is currently married to an insured worker is eligible for a spouse benefit equal to a maximum of half of his or her spouse's primary insurance amount (PIA), beginning at the early retirement age of 62.[3] Eligible spouses generally must be married to the retiring worker for at least 1 continuous year before they can receive benefits based on their entitled spouse's record. An aged divorced person may be eligible for a divorced spouse benefit equal to up to half of his or her ex-spouse's PIA if the marriage was 10 years (120 months) in duration and the ex-spouse is alive. If the aged person qualifies for his or her own retired-worker benefit and a spouse or divorced spouse benefit, that person will receive the higher amount of the two benefits. If the spouse benefit exceeds one's own retired-worker benefit, that person becomes dually entitled and will receive his or her full retired-worker benefit with the spouse benefit supplementing the difference. If the retired-worker benefit is higher than the spouse benefit, then that person will receive only his or her own worker benefit.

Social Security also provides widow(er) benefits. If a surviving spouse begins to receive benefits at the full retirement age, the widow(er) benefit can equal up to 100 percent of a deceased spouse's PIA. A reduced benefit (from 71 percent to 99 percent of the deceased worker's PIA) is available as early as age 60 (age 50 if the survivor is disabled).[4] Divorced persons with a 10-year marriage may qualify for a surviving divorced spouse benefit if their ex-spouse dies. If the widow(er) benefit exceeds a person's own retired-worker benefit, that person is dually entitled and will receive his or her full retired-worker benefit with the widow(er) benefit supplementing the difference.[5] If the retired-worker benefit is larger than the widow(er) benefit, then that person would be eligible for only a retired-worker benefit.

Over the past five decades, women increasingly receive their own earned benefits, but spouse and survivor benefits still constitute a major part of the Social Security program. To illustrate, Chart 1 compares the distribution of benefits among aged female Social Security beneficiaries from 1960 through 2009. Several noteworthy trends emerge. First, the majority of aged women receive at least part of their Social Security benefit as a wife or widow. In 1960,

Table 1.
Entitlement to retired-worker and marriage-based (spouse and survivor) benefits at retirement age, by marital status and history

Marital status and history	Retired-worker benefit	Marriage-based benefit
Currently married or separated	Must have at least 40 quarters of covered employment.	Yes, up to 50 percent of the spouse's PIA if the spouse is still living.[a]
Widowed	Must have at least 40 quarters of covered employment.	Yes, up to 100 percent of the deceased spouse's PIA.[b]
Divorced with 10 years of marriage to an insured former spouse	Must have at least 40 quarters of covered employment.	Yes, if the spouse is living, benefits for married or separated women apply; if the spouse is deceased, widow benefits apply.
Divorced with less than 10 years of marriage	Must have at least 40 quarters of covered employment.	None.

SOURCE: Adapted from Tamborini, Iams, and Whitman (2009, Table 1.)

a. If the person is entitled to a spouse and retired-worker benefit, then that person is said to be dually entitled. If the spouse benefit exceeds the person's own retired-worker benefit, then the full retired-worker benefit is paid with the difference between the retired-worker and spouse benefit added to the benefit amount.

b. Widows can also be dually entitled. To qualify for a survivor benefit, a person must be unmarried or have remarried at or after age 60.

around 61 percent (4.1 million) of female beneficiaries aged 62 or older received some type of benefit as a wife or widow, and in 2009 this figure was 55 percent (12.9 million). Second, the share of retired-worker-only beneficiaries remained relatively constant over the period (at about 40 percent), until recently increasing in 2009 (to about 45 percent).

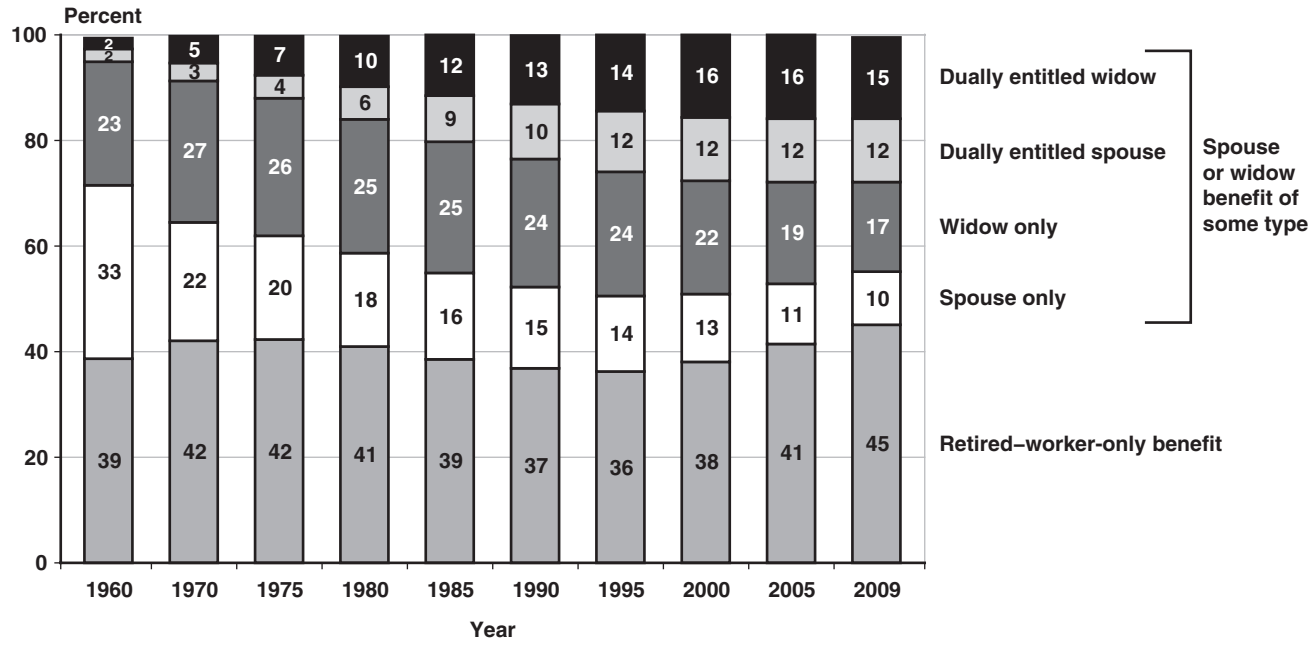
Third, there has been a shift away from women's entitlement based solely on their husband's record to dual entitlement—retired-worker benefits that are supplemented by a higher auxiliary spouse or survivor benefit. Thus, the share of dually entitled women rose from 5 percent in 1960 to 20 percent in 1985 and to 27 percent in 2009. Rising female labor force participation has largely driven this trend. Because women usually have lower lifetime earnings than their spouses, partly because of family responsibilities (for example, child rearing or caretaking of other family members), many women who qualify for their own retired-worker benefit also are dually entitled to a spouse, or more likely, a widow benefit (Butrica, Iams, and Sandell 1999; Kingson and O'Grady-LeShane 1993).

Marital Trends, Race and Ethnicity, and Social Security

The present study focuses on the link between marital trends and women's eligibility for marriage-based Social Security benefits, while recognizing that women's lifetime workforce attachment will also influence the benefits they receive. A focus on marital trends is valuable given that fundamental changes in marriage behavior in the United States over the past decades will have important implications for women's retirement experience, including their Social Security benefits (Couch and others 2011).

Briefly, recent analysis of marital history data has shown declining marriage rates after the mid-1970s to "the lowest level in recorded history" by 2004 (Stevenson and Wolfers 2007, 29; Goldstein and Kenney 2001; Tamborini 2007). Less than 90 percent of women were likely to ever marry among the late-1960s birth cohort, unlike women born in the late 1940s (Kreider and Ellis 2011, 6). The divorce rate increased dramatically in the 1970s, peaked in

Chart 1.
Percentage distribution of female Social Security beneficiaries aged 62 or older, by type of benefit and dual-entitlement status, selected years 1960–2009



SOURCE: Social Security Administration, Master Beneficiary Record (SSA 2011a, Table 5.A14).

NOTES: All data for 2005 and dual-entitlement data for 1995 and 2000 are based on a 10 percent sample of administrative records. All other years are 100 percent data. Benefits exclude special age-72 beneficiaries and disabled adult children. They include disabled workers. Widow-only beneficiaries include disabled widows and mothers. Totals may not sum to 100 because of rounding.

1981, and gradually decreased over the next 25 years (Stevenson and Wolfers 2007). Together, these trends have resulted in a sharp reduction in the percentage of currently married women between 1980 and 2009 (Kreider and Ellis 2011).

At the same time, empirical research has shown increasing heterogeneity in marital outcomes by race and ethnicity. Black women have had a "lower and slower" entry into marriage than white women, a reversal of previous patterns (Goldstein and Kenney 2001; Kreider and Ellis 2011, Table 1; Stevenson and Wolfers 2007). Research has also found black/white differentials in marital disruption (Sweeney and Phillips 2004). The trend for Hispanic women has been mixed; generally, the marital experiences of Hispanic women has been characterized as somewhere between those of black and white women (McNamee and Raley 2011). While Hispanic women's marriage rates were similar to those of white women, their divorce rates were closer to those of black women, depending on the cohort. Importantly, research has indicated substantial differences by nativity, with marriage rates being higher among foreign-born than US-born Hispanics (McNamee and Raley 2011; Oropesa and Landale 2004).[6]

Recent empirical work by Tamborini, Iams, and Whitman (2009) and Harrington Meyer, Wolf, and Himes (2006) showed that changes in marriage patterns among recent birth cohorts would lead to a decline in women's eligibility for spouse and widow benefits when those cohorts reach retirement age. A key finding in both analyses was that lower marriage rates among black women would result in sharper declines in their potential eligibility for spouse or widow benefits compared with white women. Harrington Meyer, Wolf, and Himes's (2006) projections also showed fairly similar trends in potential eligibility between white and Hispanic women using Current Population Survey marital history data through 1995.

Put together, prior research leads us to expect declines in potential eligibility for spouse or widow benefits among recent cohorts of women as a result of changing marital patterns. We also expect that the downward trend is sharper for black women than white women because of the widening racial gap in marriage rates among recent cohorts. Hispanic women are expected to show mixed patterns, with substantial differences by nativity.

Methods

The data for this analysis are from the 1990 and the recently released 2009 Marital History Topical Modules (Wave 2 of the 1990 and 2008 panels) to the Census Bureau's SIPP—a nationally representative household survey designed to measure program participation and the economic situation of persons, families, and households in the United States.

SIPP's Marital History Topical Module, implemented once within each panel, collects retrospective marital histories for every person in the household aged 15 or older. The data include information on marital transitions in months and years, which permit precise estimates of whether a respondent has a 10-year marriage. Because comprehensive marital history data are no longer collected by the National Center for Health Statistics and the Current Population Survey, the Marital History Module represents the best current data sources of marital history for the US population. Moreover, because the Census Bureau is redesigning the SIPP for 2014, the 2009 SIPP marital history data will be the most recent source for comprehensive marital histories of individuals for some time. The Social Security Administration (SSA) has funded a supplement to the redesigned SIPP to collect SIPP respondent's marital histories in the fall of 2014 and release data in 2015.

The current study relies on a restricted-use file of the 2009 SIPP Marital History Module. In contrast to 1990, marital transition dates in months are not provided in the 2009 public-use file. Because the inclusion of marital data in months allows for more precise estimates of length of marriage, particularly with respect to Social Security's 10-year marriage rule, we utilize a restricted-use file, which contains this information.[7] To protect respondent confidentiality, all users of restricted files must have authorization from the Census Bureau, and the data must be used only for research purposes. All statistics have also been reviewed by SSA's disclosure review board.

Analytic Approach

Our study sample consists of women aged 30–59 in the 1990 and 2009 Marital History Modules, corresponding to an unweighted sample size of 11,208 in 1990 and 20,936 in 2009. Descriptive statistics of the study sample appear in the Appendix, Table A-1.

A key aspect of our analytic approach is the stratification of the sample into three age groups: young adult (30–39), middle age (40–49), and late middle age (50–59). Comparing those age-specific groups across the two survey years permits us to identify differences across period and birth cohorts. Table 2 illustrates the birth cohorts represented for each age group in our analysis. As shown in the table, women in their forties and fifties in 2009 approximated the late baby boom/early GenX and middle baby boom birth cohorts, while women in their thirties represented the GenX birth cohort. By contrast, women in their fifties constituted the pre–baby boom cohorts in 1990, while women in their forties represented a mix of pre– and early baby boomers, and women in their thirties reflected the middle of the baby boom cohort. We recognize that younger women, particularly in their thirties, are far from finishing their marital histories. However, taking stock of women's marital experiences at the early to midlife stages of their life course across nearly two decades provides important insights into the broad direction of marital changes that may affect women's Social Security eligibility for marriage-based benefits in the future.

Table 2.
Relationship between study period, birth cohort, and age group for the sample population, 1990 and 2009

Age group	1990	2009
Young adult (30–39)	1950–1960 (middle baby boom)	1968–1978 (GenX)
Middle age (40–49)	1940–1950 (pre– and early baby boom)	1958–1968 (late baby boom/ early GenX)
Late middle age (50–59)	1930–1940 (pre–baby boom)	1948–1958 (middle baby boom)

SOURCE: Authors' calculations using 1990 and 2008 SIPP (Wave 2) data.

NOTES: Birth cohorts slightly overlap because of the month in which the data was collected relative to the respondent's birth date. The second wave of the SIPP was collected from June through September of 1990 and from February through May of 2009.

Our analysis uses descriptive and multivariate regression methods. Given prior research showing racial differences in eligibility for Social Security marriage-based benefits resulting from differential marital patterns, our analysis provides separate estimates by race and ethnicity. Among Hispanic women, we also consider outcomes between those who were born in the United States and those who were foreign born. Unless otherwise noted, descriptive differences discussed in the text are significant at the .05 level.

The multivariate regression analysis employs a probit model to examine the probability of not having eligibility for Social Security spouse or widow benefits based on marital history, holding important variables constant. We estimate separate probit regressions for the three age-specific groups in 1990 and 2009. This allows us to better identify differences in potential eligibility between 1990 and 2009 among women at the same stage of the life cycle. The general model can be expressed as follows:

$$Y = \alpha + \beta_1 RE + \beta_2 C + {}_E,$$

where Y is the estimated probability of having a marital history that would imply ineligibility for Social Security spouse or widow benefits net of other characteristics; α is the intercept, βs are the probit regression coefficients, and ${}_E$ is the error term. Vector RE reflects the dummy variables measuring race and ethnicity/nativity, and vector C refers to the control variables.

The dependent variable is a dichotomous measure denoting "ineligible" for Social Security spouse or widow benefits based on marital history (1 = yes, 0 = no). In this case, *ineligible* refers to those women who were never married or currently divorced without any 10-year marriage at the time of the survey.

The key independent variables are the set of five dummy variables indicating race and ethnicity/nativity for Hispanics: (1) white non-Hispanic, (2) black non-Hispanic, (3) US-born Hispanic, (4) foreign-born Hispanic, and (5) other. The omitted reference group is white non-Hispanic. When we use the identifier black or white, we refer to non-Hispanics. Comparing the marginal effects of the race and ethnicity dummy variables in the 1990 and 2009 estimates helps us to identify whether the association between potential eligibility and race and ethnicity has changed.

Control variables are educational attainment and age at the time of the survey. Education is measured by four dummy variables: less than high school graduate, high school graduate, some college, and bachelor's degree. High school graduate is the reference group. We measure the respondent's age in years. Income is not controlled for given that income measures in the SIPP reflect a woman's income status at the time of the survey rather than over her lifetime. Current marital status is quite likely to affect family income; for example, married couples tend to have higher family incomes than single persons. This relationship may result in biased estimators if income was included in the equation.

Throughout the analysis, we use Stata's *(SVY)* command to obtain standard error estimates that account for SIPP's complex survey design (StataCorp 2009).[8] Our analysis also applies the appropriate survey person weights. For the probit regression, we report the marginal effects, which can be interpreted as the probability of ineligibility for spouse or widow benefits because of marital history, holding the other variables in the model constant. For ease of presentation, we do not report the estimates for the control variables, which are available upon request.

Findings

We begin with the descriptive analysis. Table 3 reports the marital history measures for women in 1990 and 2009 by the three age groups: young adult (30–39), middle age (40–49), and late middle age (50–59). Separate estimates for white, black, and Hispanic women are provided.

Looking first at the late middle-aged group (50–59), the data show a trend away from marriage. Compared with 1990, late middle-aged women in 2009 were more likely to be never married, ever divorced, currently divorced, and currently divorced without a 10-year marriage. The growth in the never-married subgroup was substantial over the period, more than doubling from 4.5 percent to 9.1 percent. The increase was particularly sharp for black women (from 7.8 percent to 21.5 percent, compared with from 3.7 percent to 7.2 percent for white women and 7.4 percent to 11.0 percent for Hispanic women). The data show significant increases in the proportion of women who were currently divorced without a 10-year marriage, from 3.1 percent to 7.9 percent (among the ever married). By race and ethnicity, black women aged 50–59 had particularly sharp increases in the share who were divorced without a 10-year marriage (from 6.1 percent to 15.8 percent of ever-married black women, compared with from 2.7 percent to 7.1 percent for their white counterparts and from 3.8 percent to 7.0 percent for their Hispanic counterparts).

Among middle-aged women (40–49), substantial marital changes also occurred. Compared with 1990, middle-aged women in 2009 were more likely to be never married or currently divorced without a 10-year marriage. The percentage ever divorced remained roughly constant between 1990 and 2009, very likely reflecting the leveling of divorce rates since the 1970s.

The data reveal sharp differences among middle-aged women by race and ethnicity. Between 1990 and 2009, the percentage of ever-married black women decreased 16.3 percentage points (to 69.0 percent) compared with white women who experienced a decline of 4.7 percentage points (to 90.2 percent). The comparable figure for Hispanic women reflected a 2.4 percentage point decline (to 85.9 percent). In terms of divorce, a higher proportion of ever-married, black middle-aged women were currently divorced without a 10-year marriage than white women, but this gap narrowed between 1990 and 2009. For Hispanics, the percentage of currently divorced women without a 10-year marriage slightly declined. Thus, racial differences in ever-married women aged 40–49 seem to have expanded between 1990 and 2009, but those differences contracted in terms of the share currently divorced without a 10-year marriage.

The most substantial changes appear in the young-adult group (aged 30–39). A "retreat from marriage" was evident among all groups, but it was greatest for black women. Specifically, the percentage of never-married black women rose from 32.2 percent in 1990 to 47.3 percent in 2009, while the percentage currently married dropped from 52.4 percent to 41 percent. The proportion of ever-married black women currently divorced without a 10-year marriage also increased, from 15 percent in 1990 to 17.7 percent in 2009. Of course, women in their thirties are far from completing their lifetime marital histories, but the trend appears in the direction of less marriage and with increasing black/white disparities among more recent birth cohorts.

Table 3.
Marital status and history measures of women, by age group and race/ethnicity, 1990 and 2009 (in percent)

Marital status and history	1990				2009			
	All	White	Black	Hispanic	All	White	Black	Hispanic
				Young adult (30–39)				
Current status								
Married	72.0	74.7	52.4	72.7	67.6	71.0	41.0	71.0
Never married	15.3	12.9	32.2	16.0	21.8	17.6	47.3	21.0
Divorced	11.9	11.9	13.9	9.5	10.0	10.8	11.2	7.2
Widowed	0.9	0.6	1.5	1.8	0.6	0.6	0.5	0.9
Lifetime history—								
Among all women								
Ever married	84.7	87.1	67.8	84.0	78.2	82.4	52.7	79.0
Ever divorced	27.3	28.9	24.2	20.8	19.3	22.4	15.5	13.7
Currently divorced with less than 10 years in any marriage	8.6	8.6	10.2	7.1	8.0	8.6	9.4	5.3
Among ever-married women								
Divorced	32.2	33.2	35.7	24.8	24.6	27.2	29.5	17.3
Currently divorced with less than 10 years in any marriage	10.2	9.9	15.0	8.4	10.2	10.4	17.7	6.7
Unweighted N	4,802	3,487	620	522	6,469	4,051	837	993
				Middle age (40–49)				
Current status								
Married	74.2	76.8	57.2	66.4	68.8	71.2	48.5	71.5
Never married	6.6	5.1	14.7	11.7	13.0	9.8	31.0	14.1
Divorced	16.0	15.4	21.3	17.9	16.4	17.5	17.9	12.1
Widowed	3.3	2.7	6.8	4.0	1.8	1.5	2.6	2.4
Lifetime history—								
Among all women								
Ever married	93.4	94.9	85.3	88.3	87.0	90.2	69.0	85.9
Ever divorced	34.8	35.8	36.0	29.3	31.0	34.8	25.1	20.3
Currently divorced with less than 10 years in any marriage	6.3	5.8	9.6	7.9	9.0	9.8	9.9	6.1
Among ever-married women								
Divorced	37.3	37.7	42.2	33.1	35.6	38.6	36.4	23.7
Currently divorced with less than 10 years in any marriage	6.8	6.1	11.3	8.9	10.3	10.8	14.3	7.1
Unweighted N	3,832	2,835	471	386	7,304	4,987	911	816
				Late middle age (50–59)				
Current status								
Married	73.6	75.9	58.7	72.3	67.4	70.1	47.2	65.6
Never married	4.5	3.7	7.8	7.4	9.1	7.2	21.5	11.0
Divorced	12.1	11.6	17.9	11.7	18.6	18.3	24.8	17.4
Widowed	9.8	8.8	15.7	2.0	4.9	4.4	6.5	6.6
Lifetime history—								
Among all women								
Ever married	95.5	96.3	92.2	92.6	90.9	92.8	78.5	89.0
Ever divorced	28.7	29.3	30.4	24.5	37.3	39.3	38.2	26.9
Currently divorced with less than 10 years in any marriage	3.0	2.6	5.6	3.5	7.1	6.6	12.4	6.3
Among ever-married women								
Divorced	30.1	30.4	33.0	26.4	41.0	42.4	48.7	30.2
Currently divorced with less than 10 years in any marriage	3.1	2.7	6.1	3.8	7.9	7.1	15.8	7.0
Unweighted N	2,574	1,963	301	236	7,163	5,193	918	549

SOURCE: Authors' calculations using 1990 and 2008 SIPP (Wave 2) data.

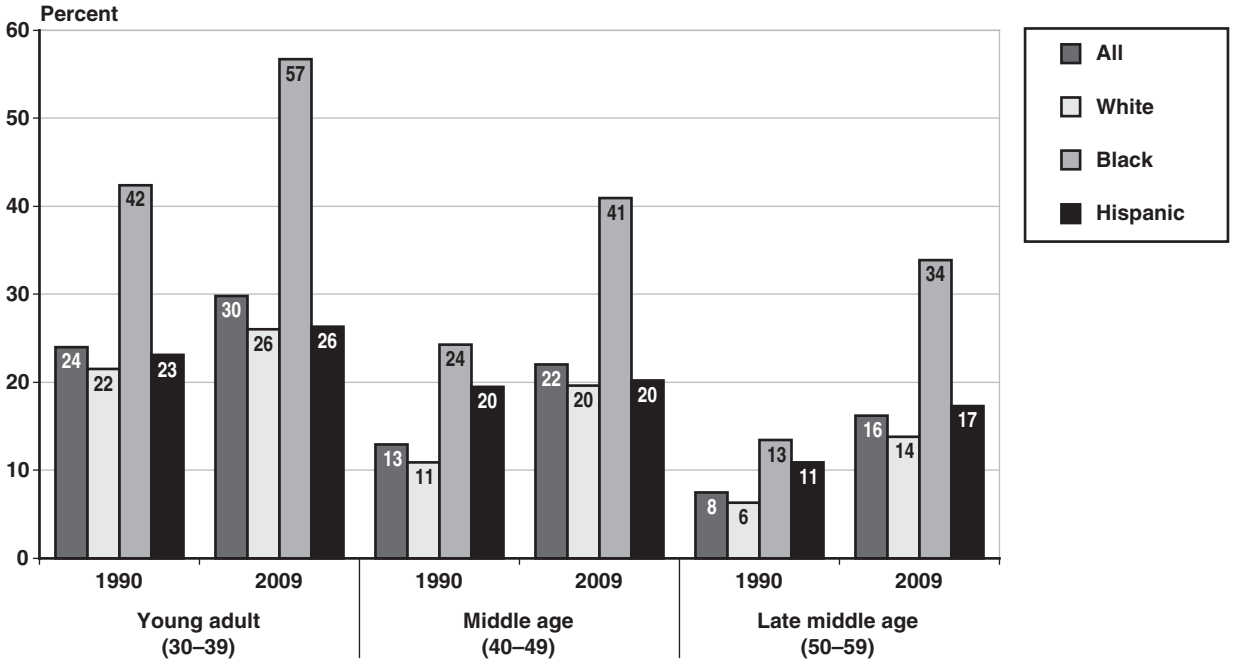
NOTE: Data are weighted.

Chart 2 presents a summary measure showing the share of women in each age cohort and race/ethnic subgroup who lacked marital histories required for Social Security spouse or widow benefits. As previously noted, *ineligible* reflects the sum of never-married women and currently divorced women without a 10-year marriage. Overall, the results show that well over half of all women in each age group had qualifying marital histories in 1990 and 2009, but at the same time, a larger proportion in each age-specific group would be ineligible for Social Security marriage-based benefits in 2009 relative to 1990.

Chart 2 also reveals important differences by race and ethnicity. Black women comprised the highest share ineligible for marriage-based benefits in all age groups. Moreover, black/white differences appear to have widened between 1990 and 2009. The percentage point difference between the share of black and white women who lacked potential eligibility in the middle-aged group was greater in 2009 (that is, the gap was about 21 percentage points in 2009, corresponding to 40.9 percent (black) and 19.6 percent (white); those figures are compared with about 13 percentage points in 1990, corresponding to 24.3 percent (black) and 10.9 percent (white)). Among the young-adult group, black/white differences in ineligibility grew because of the faster rate of increase in never-married black women.

Hispanic women's incidence of ineligibility because of marital history is more similar to white than black women (see Chart 2). However, thus far, we have discussed Hispanic women without distinguishing between those who were US born and foreign born, two subgroups thought to have differing marital behavior. To assess possible differences by nativity, Chart 3 shows the proportion of US- and foreign-born Hispanic women without a qualifying marital history for spouse or widow benefits. The results confirm clear differences in marriage-based eligibility by nativity, with US-born Hispanic women having higher proportions of ineligible marital histories than those born outside the United States. For example, the percentage of ineligible foreign-born Hispanic women in late middle age (50–59) in 2009 was 15 percent compared with 21 percent of those who were US born. Among the middle-aged group

Chart 2.
Percentage of women ineligible for Social Security spouse or widow benefits because of marital history, by age group and race/ethnicity, 1990 and 2009



SOURCE: Authors' calculations using 1990 and 2008 SIPP (Wave 2) data.

NOTE: Data are weighted.

(40–49), 28 percent of US-born Hispanic women did not have a qualifying marital history compared with 13 percent of those who were foreign born. Among the young-adult group (aged 30–39), 31 percent of US-born Hispanic women in 2009 had ineligible marital histories compared with 22 percent of those who were foreign born. These observed differences are driven by differences in marital patterns, which are shown in detail in the Appendix, Table A-2. Briefly, we find higher rates of ever marrying among foreign-born Hispanic women compared with their US-born counterparts, particularly in the young-adult group. In terms of marital dissolution, the likelihood of being divorced is substantially lower among foreign-born Hispanic women in the young-adult and middle-aged groups.

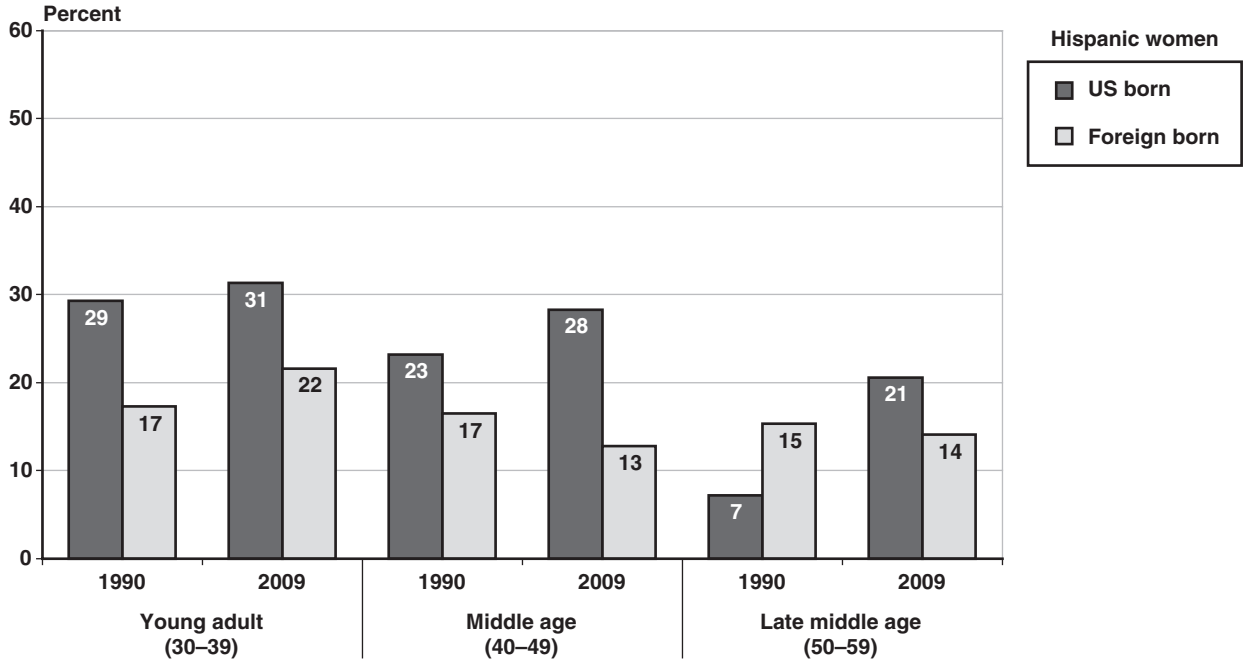
In sum, the descriptive data indicate substantial changes in the marital patterns of recent cohorts of women and in the distribution of women potentially eligible for Social Security spouse or widow benefits. There is significant differentiation by race, ethnicity, and nativity. The next section examines those trends in a multivariate context.

Probit Regression Results

Using probit regression, we estimated the probability of being ineligible for Social Security marriage-based benefits in the three age groups in 1990 and 2009. Our main focus was to determine whether women's likelihood of being ineligible for spouse or widow benefits based on marital history changed over time and how that pattern varied by race, ethnicity, and nativity among Hispanics, controlling for the variables in the model. Table 4 shows the results of separate regressions for 1990 and 2009 for the three age groups: young adult (30–39), middle age (40–49), and late middle age (50–59). We report the marginal effects, their significance level (two-tailed tests), and the standard errors, which account for SIPP's complex survey design.

Overall, the models indicate that women in 2009, across all three age groups, had a substantially higher predicted probability of not meeting the marital requirements for spouse or widow benefits than the comparable model in 1990, holding race and the other variables constant. These results capture cohort differences in marriage patterns at the same stage of life,

Chart 3.
Percentage of US-born and foreign-born Hispanic women ineligible for Social Security spouse or widow benefits because of marital history, by age group, 1990 and 2009



SOURCE: Authors' calculations using 1990 and 2008 SIPP (Wave 2) data.

NOTE: Data are weighted.

namely relative rises in never-married and currently divorced women without 10-year marriages.

In terms of race, being black was strongly and positively associated with higher probabilities of being ineligible for marriage-based benefits ($p < .001$) across all age groups in 1990 and 2009. The marginal effect of being black was higher in 2009 compared with 1990, across all age groups. In other words, black women in 2009, relative to comparable white women, had higher probabilities of being ineligible for marriage-based benefits than their age-specific counterparts in 1990, all else being equal. At ages 30–39, for example, the marginal effect of being black on the probability of not having a qualifying marital history, relative to being white, was 29 percent in 2009 compared with 22 percent in 1990. That pattern reflects the

Table 4.
Marginal effect estimates (probit) of the probability of women not being potentially eligible for Social Security spouse or widow benefits, by age group and race and ethnicity/nativity, 1990 and 2009

	1990		2009	
Race and ethnic origin	Marginal effect	Standard error	Marginal effect	Standard error
		Model 1: Young adult (30–39)		
White (reference group)				
Black	0.217***	0.023	0.293***	0.022
Hispanic				
US born	0.085*	0.034	0.033	0.023
Foreign born	-0.046	0.029	-0.077**	0.024
Other	-0.031	0.028	-0.048*	0.023
Observed probability	0.240	. . .	0.298	. . .
Predicted probability (at x-bar)	0.233	. . .	0.290	. . .
N of observations	4,802		6,469	
		Model 2: Middle age (40–49)		
White (reference group)				
Black	0.145***	0.030	0.206***	0.017
Hispanic				
US born	0.139***	0.032	0.083**	0.027
Foreign born	0.071*	0.028	-0.082**	0.025
Other	-0.022	0.033	-0.050**	0.016
Observed probability	0.129	. . .	0.220	. . .
Predicted probability (at x-bar)	0.122	. . .	0.214	. . .
N of observations	3,832		7,304	
		Model 3: Late middle age (50–59)		
White (reference group)				
Black	0.075**	0.025	0.204***	0.018
Hispanic				
US born	0.009	0.029	0.073*	0.032
Foreign born	0.100*	0.045	-0.001	0.027
Other	0.037	0.033	-0.041*	0.017
Observed probability	0.075	. . .	0.163	. . .
Predicted probability (at x-bar)	0.070	. . .	0.156	. . .
N of observations	2,574		7,163	

SOURCE: Authors' calculations using 1990 and 2008 SIPP (Wave 2) data.

NOTES: Estimates are from separate-year regressions. Reported estimates are weighted and correct for SIPP's complex survey design. The models also control for educational attainment and age (estimates are available upon request). The marginal effect indicates the discrete change in the probability of not being potentially eligible by the change in the dummy variable from 0 to 1.

. . . = not applicable.

* $p < .05$; ** $p < .01$; *** $p < .001$.

faster increase in never-married black women in the young-adult cohort from 1990 to 2009.

Among Hispanic women, we find sharp differences between those born in the United States and those who were not. US-born Hispanic women in the young-adult (survey year 1990), middle-aged (survey years 1990 and 2009), and late middle-aged (survey year 2009) models were significantly more likely to have a nonqualifying marital history than their white counterparts. By contrast, the results for foreign-born Hispanic women were more mixed, with some models (for example, models 1 and 2 in 2009) showing significantly lower probabilities of those women having a nonqualifying marital history. Overall, then, Hispanic women, namely those who were born in the United States, have ineligible probabilities resulting from marital history that appear to lie between those of white and black women. Thus, US-born Hispanic women were more likely to be ineligible because of marital history than white women in the middle- and late middle-aged groups in 2009, but the magnitude was less than black/white differentials at the same stage of life. Interestingly, the probability of ineligibility because of marital history appeared to decrease among foreign-born Hispanic women in the middle- and late middle-aged groups in 2009, shown by the changing sign in the marginal effect between 1990 and 2009. This outcome likely picks up, in part, different patterns of immigration waves over time (see note 6).

Conclusions

The majority of aged women currently receive a Social Security benefit at least partly based on the earnings record of a present or past spouse. The distribution of women's potential eligibility for Social Security spouse or widow benefits is, however, dynamic and subject to changes in marital trends. In this study, we used data from the Census Bureau's SIPP Marital History Modules in 1990 and 2009 to shed light on the implications of trends in women's lifetime marital experiences for Social Security spouse and widow benefit eligibility. Overall, we find that most women are approaching retirement age with marital histories that make them potentially eligible for spouse or widow benefits in the future. However, fundamental changes in marital patterns, starting with the leading edge of the baby boom cohort, will prompt a decline in the share of women potentially eligible to receive these benefits.

Our findings reveal considerable changes in the marital patterns of women aged 30–59 between 1990 and 2009. Those changes have been marked by increasing proportions of women who were never married, ever divorced, and currently divorced with shorter marriages (less than 10 years). Such patterns very likely reflect a mix of period and birth cohort effects as the sample moves from the large baby boom generation (born in the 1946–1964 period) through GenX (born in the 1968–1979 period). The results also indicate important differences by race, ethnicity, and nativity among Hispanic women. We find a sharper *retreat from marriage* for black women among more recent birth cohorts (Goldstein and Kenney 2001; Harrington Meyer, Wolf, and Himes 2006; Tamborini, Iams, and Whitman 2009). Consistent with the literature, the marital histories of Hispanic women lie somewhere between their white and black counterparts. We also find distinct marital patterns among US- and foreign-born Hispanic women.

The observed changes in women's marital histories are associated with an increase in the share without a qualifying marriage for Social Security spouse and widow benefits. Thus, the increase in women's ineligibility for Social Security spouse or widow benefits found in past research (Harrington Meyer, Wolf, and Himes 2006; Tamborini, Iams, and Whitman 2009) continues among recent cohorts of women, including those in GenX. In short, GenX women, although just in their thirties, appear to be continuing the *retreat from marriage*. Although the direction of marital patterns among those women could change as they age, the postboomer cohort appears to be following the trend of increasing proportions of women with nonqualifying marital histories for spouse or widow benefits, at least in an earlier stage of the adult life course.

The results also document sharp differences in benefit ineligibility by race and ethnicity. Across all of the age groups, black women had substantially higher proportions without a qualifying marital history for Social Security spouse or widow benefits than comparable white women. Moreover, we find

that the widening black/white differentials in potential ineligibility shown in previous studies (Tamborini, Iams, and Whitman 2009) continue in the young-adult (aged 30–39) cohorts. A key driver of this trend is the increase in never-married black women.

Among Hispanic women, a central finding is that eligibility for Social Security spouse and widow benefits based on marital history varies by nativity. The probability of not having a qualifying marriage was greater among US-born Hispanic women than their foreign-born counterparts, particularly among the younger cohorts. However, differences between US-born Hispanic women and comparable white women were not as wide as black/white differences. Hispanic women may assimilate over time to the increasing *retreat from marriage*, as suggested by Oropesa and Landale (2004), which may result in widening differences in the marital experiences between white and Hispanic women in future years. Complicating interpretation, Hispanic immigrants come from many countries with different cultures, and country of origin shifted across the time period examined in this study. Our sample size is not large enough to identify country of origin reliably for immigrants and parents of US-born Hispanics. We also did not consider differences among Hispanics in terms of their immigration history (that is, first generation US born versus second or greater generations).

Put together, the changing distribution of women potentially eligible for spouse or widow benefits can have important consequences for their retirement resources and for the Social Security program as a whole. Recent microsimulation projections based on the Modeling Income in the Near Term (MINT) data system have shown that women in the baby boom and GenX cohorts will be more likely to receive retired-worker benefits when their spouse is alive, but most will continue to take up widow benefits (dually entitled) if they outlive their husband because of lower lifetime earnings (Butrica and Smith 2012a). However, as this study suggests, a smaller share of future female retirees will have the option of augmenting their retirement benefit based on the work record of a deceased spouse because of shifts in marital patterns. That trend will be particularly pronounced among future black female retirees.[9] There is some reason for concern that those women may be at higher risk of economic vulnerability in old age. Microsimulation projections of the retirement-age population in 2030, for example, have suggested disproportionately high rates of poverty and near-poor status among divorced female retirees with less than 10 years of marriage (Tamborini and Whitman 2010) as well as the never married (Tamborini 2007).

Future empirical work could clarify the consequences of changing eligibility for Social Security spouse or widow benefits for women's retirement income security. For example, the extent to which declining eligibility is concentrated in minority or less-educated subgroups may influence the effect of those changes on economic outcomes. Additionally, a further *retreat from marriage* among GenX cohorts, if sustained over the life course, may have important consequences for women's retirement resources in future years. The relationship between marriage and retirement outcomes among Hispanic women may be a salient topic given the lack of research in this area.

Appendix

Table A-1.
Descriptive statistics for study sample: Women aged 30–59 in 1990 and 2009 (in percent)

Characteristic	1990	2009
Age (mean years)	42.3	44.6
Educational attainment		
Less than high school graduate	16.6	8.5
High school graduate	37.0	23.9
Some college	23.9	24.8
Bachelor's degree	21.5	31.8
Race/ethnicity		
White	78.4	66.8
Black	10.8	12.4
Hispanic		
US born	3.7	6.6
Foreign born	3.9	7.1
Other	3.3	7.1
Unweighted N	11,208	20,936

SOURCE: Authors' calculations using 1990 and 2008 SIPP (Wave 2) data.

NOTE: Data are weighted.

Table A-2.
Marital status and history measures of Hispanic women, by nativity (US born and foreign born) and age group, 1990 and 2009 (in percent)

Marital status and history	1990		2009	
	US born	Foreign born	US born	Foreign born
		Young adult (30–39)		
Current status				
Married	66.6	78.3	65.0	76.5
Never married	20.7	11.7	24.1	18.1
Divorced	11.9	7.3	9.8	4.7
Widowed	0.8	2.7	1.1	0.7
Lifetime history—				
Among all women				
Ever married	79.3	88.3	75.9	81.9
Ever divorced	28.6	13.6	18.4	9.4
Currently divorced with less than 10 years in any marriage	8.6	5.6	7.2	3.5
Among ever-married women				
Divorced	36.0	15.4	24.2	11.4
Currently divorced with less than 10 years in any marriage	10.9	6.3	9.5	4.3
Unweighted N	246	276	470	523
		Middle age (40–49)		
Current status				
Married	58.7	72.8	62.5	79.7
Never married	12.0	11.4	19.8	8.9
Divorced	24.6	12.4	15.9	8.5
Widowed	4.7	3.4	1.9	2.9
Lifetime history—				
Among all women				
Ever married	88.0	88.6	80.2	91.1
Ever divorced	36.0	23.7	24.7	16.3
Currently divorced with less than 10 years in any marriage	11.2	5.1	8.5	3.9
Among ever-married women				
Divorced	40.9	26.7	30.8	17.9
Currently divorced with less than 10 years in any marriage	12.7	5.8	10.6	4.3
Unweighted N	174	212	381	435
		Late middle age (50–59)		
Current status				
Married	76.6	67.3	60.9	69.9
Never married	5.5	9.6	13.3	8.8
Divorced	10.6	13.1	19.7	15.2
Widowed	7.3	10.0	6.1	6.1
Lifetime history—				
Among all women				
Ever married	94.5	90.4	86.7	91.2
Ever divorced	22.2	27.1	32.2	21.9
Currently divorced with less than 10 years in any marriage	1.6	5.7	7.4	5.3
Among ever-married women				
Divorced	23.5	30.0	37.1	24.1
Currently divorced with less than 10 years in any marriage	1.7	6.4	8.5	5.8
Unweighted N	119	117	257	292

SOURCE: Authors' calculations using 1990 and 2008 SIPP (Wave 2) data.

NOTE: Data are weighted.

Notes

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[1] GenX generally denotes persons born between 1968 and 1979.

[2] The length of marriage required among divorced spouses was reduced from 20 years to 10 years in 1977 (Tamborini and Whitman 2007).

[3] PIA is the monthly benefit a person would receive if he or she retires at the applicable full retirement age. For retirement benefits, PIA is a function of *average indexed monthly earnings* (AIME), which is a computation based on the highest 35 years of covered earnings (SSA 2011a, 4–16).

[4] A widow(er) benefit may be limited if the deceased spouse claimed early retirement benefits. The benefit is increased if the deceased spouse earned delayed retirement credits by waiting to collect his or her retirement benefit until after the applicable full retirement age.

[5] Qualifying widow(er)s must have been married to the deceased spouse for at least 9 months and have not remarried before age 60 (50 for disabled persons); see SSA (2011b).

[6] The Hispanic population is heterogeneous, and the composition of that population has changed greatly from 1990 through 2009 with recent waves of immigration. Part of this heterogeneity relates to differences between US- and foreign-born Hispanics. There is also diversity in socioeconomic outcomes by national origin (Martin 2007; Oropesa and Landale 2004).

[7] Thanks to an agreement with the Census Bureau, SSA has access to SIPP's restricted-use Marital History Module for the 2008 panel, which contains respondents' marital event dates in months.

[8] SIPP's sampling methodology follows a complex survey design, which uses stratification and clustering. We adjusted for this design in our data analysis because most statistical software packages assume a simple random sample for variance estimation as the default. Recent versions of Stata provide a series of commands that correct standard error estimates for complex survey design features. Using the SVY command in Stata, we identify the stratification, sampling weights, and sampling units (clustering) for the SIPP panels.

[9] Recent projections using MINT show rising ineligibility of divorced women for benefits as spouses and widows, particularly black divorced women (Butrica and Smith 2012b).

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Raising Household Saving: Does Financial Education Work?

by William G. Gale, Benjamin H. Harris, and Ruth Levine*

This article highlights the prevalence and economic outcomes of financial illiteracy among American households, and reviews previous research that examines how improving financial literacy affects household saving. Analysis of the research literature suggests that previous financial literacy efforts have yielded mixed results. Evidence suggests that interventions provided for employees in the workplace have helped increase household saving, but estimates of the magnitude of the impact vary widely. For financial education initiatives targeted to other groups, the evidence is much more ambiguous, suggesting a need for more econometrically rigorous evaluations.

Introduction

In a recent consumer survey, 21 percent of respondents—including 38 percent of those with income below $25,000—reported that winning the lottery was "the most practical strategy for accumulating several hundred thousand dollars" for their own retirement. In addition, 16 percent thought that winning the lottery was the best retirement strategy for all Americans, not just themselves (CFA & FPA 2006). This is far from the only recent example of limited financial understanding among American households. From 401(k) portfolios overly invested in company stock to depleted retirement account portfolios, a growing number of compelling examples suggest that many individuals make ill-advised financial decisions about retirement.

The low level of financial literacy among American adults suggests that better financial literacy could encourage greater personal saving and improve financial and economic security in retirement (Lusardi 2008a, 2008b). Efforts to improve financial literacy are now supported by a wide array of organizations, including private employers; federal, state, and local government agencies; commercial banks; consumer groups; community service organizations; and religious organizations. As interest in financial literacy grows, however, policymakers and interested organizations must understand the relative strengths and weaknesses of prior efforts and the importance of robust evaluations of financial education programs.

This article evaluates previous efforts to raise household saving through financial literacy initiatives.[1] We define financial literacy as the ability to make informed judgments and effective decisions regarding the use and management of money and wealth, as well as the ability and discipline to implement intended or desired saving behavior.[2]

In the background section, we summarize evidence of the extent of financial illiteracy and its financial outcomes. A significant proportion of American adults—particularly those with limited schooling, with lower income, or who are aged in their 20s or near retirement—do not understand basic financial concepts. Those individuals are more prone to making

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poor financial and saving choices than others, and may in effect subsidize those who understand personal finance better.

In the financial education initiatives section, we review research on the effects of traditional efforts to improve financial literacy on household saving. Findings are mixed and often are subject to a variety of potential econometric problems, notably the difficult task of disentangling the effects of a policy from the actions that a household would have taken in the policy's absence.[3] This is more than a narrow statistical concern; indeed, it is central to assessing the impact of financial literacy on saving. As one example, nonexperimental research often suggests that, among households at the lower end of the saving and wealth distribution, workplace financial education has helped raise retirement plan participation, contributions, and overall household saving. By contrast, in Duflo and Saez (2003), an experimental study resolves some of the key econometric problems of nonexperimental data and suggests smaller effects of workplace financial education on saving.

The final section offers concluding remarks.

Background

Numerous studies have documented that a significant proportion of Americans have limited financial knowledge (for example, Bernheim 1995 and 1998; Hilgert and Hogarth 2003). FINRA (2009) found that respondents correctly answered, on average, only three out of five questions on basic financial topics. Women, African Americans, Hispanics, less-educated individuals, and both the young (aged in their 20s) and the old (retirees and near-retirees) are consistently less likely to provide correct answers to questions about basic financial topics than members of other demographic groups (Agarwal and others 2009b; Lusardi and Mitchell 2006, 2008, 2009a, and 2009b; Lusardi, Mitchell, and Curto 2010).

Although the connection between financial illiteracy and financial mistakes may appear to be obvious, it is worth highlighting some of the abundant evidence relating the two. Studies employing differing measures and definitions of financial literacy have found that households or individuals who are less financially literate are also less likely to have a checking account, maintain an emergency fund, have a retirement plan, or hold stocks (Christelis, Jappelli, and Padula 2008; Hilgert and Hogarth 2003; van Rooij, Lusardi, and Alessie 2007). Such individuals are more likely to take payday loans, make only the minimum payment on a credit card balance, take on high-cost mortgages, have higher debt levels, and be delinquent on debt (Gerardi, Goette, and Meier 2010; Lusardi and Tufano 2008; Moore 2003; Stango and Zinman 2008). Minorities and those with less formal education—two of the groups identified by several studies noted above as having low levels of financial literacy—account for disproportionate shares of those who make three major financial mistakes: underparticipating in financial markets, inadequately diversifying their portfolios, and choosing mortgage contracts poorly (Campbell 2006). Individuals with fewer years of schooling often do not understand the terms of their mortgages, especially if the mortgages feature adjustable rates (Bucks and Pence 2006).

Just as low levels of financial literacy appear to lead households to poorer choices and financial outcomes, there is some evidence that financial planning—which is not exactly the opposite of financial illiteracy but implies the acquisition of at least some financial information—can lead households to better financial outcomes and more wealth accumulation. Recent evidence shows that only 42 percent of workers have *ever* calculated the level of resources necessary to live comfortably in retirement (EBRI 2011). Numerous studies have shown a positive correlation between planning and wealth accumulation (Lusardi 1999; Ameriks, Caplin, and Leahy 2003; Lusardi and Beeler 2006; Lusardi 2003).[4] The key question, of course, is whether the relationship between planning and wealth accumulation is causal. The primary challenge in determining this relationship is to account for the evidence that individuals with greater wealth are more likely to plan than are individuals with less wealth. The most credible evidence on this question is provided by Ameriks, Caplin, and Leahy (2003), who use specially constructed questions to generate a measure of a household's otherwise unobserved propensity to plan in general (for example, for vacations). The authors show that their measure is independent and significantly affects wealth accumulation.

Lusardi and Beeler (2006) take a different approach, positing that reverse causality—higher wealth affecting planning—does not occur. To test that hypothesis, they use changes in regional house prices to measure the effect of accumulated wealth on the propensity to plan. Changes in regional house prices serve as an appropriate measure of exogenous changes in wealth, because they are unlikely to affect unobserved planning preferences. However, households may view such changes as temporary and respond

differently (in terms of planning) to changes in other kinds of wealth—for example, an inheritance. Lusardi (2003) uses information on respondents' siblings as an instrumental variable for the degree of planning, and finds that planning significantly affects wealth. The validity of this approach, however, depends on whether the instrument is uncorrelated with tastes for saving and only influences saving through the planning variable.

Financial literacy affects not only individual welfare and saving behavior, but also the nature of products offered in financial markets. For example, less financially literate households may effectively subsidize financial products for more sophisticated investors. Woodward (2003) shows that college-educated borrowers (who are more likely to be financially literate) pay an average of $1,500 less in broker fees at mortgage origination than borrowers with only a high school education. Campbell (2006) speculates that this cross-subsidy may reduce the pace of innovation in financial products, because financially sophisticated households may prefer receiving the cross-subsidy to purchasing newer financial products.

The evidence from prior studies is also relevant to recent economic events. The finding that financial literacy is connected to behaviors associated with the causes of the housing crisis—such as high-cost mortgages, excessive debt, and debt delinquency—indicates that low levels of financial literacy may have contributed to the severity of the recent downturn. Also, concern over lower literacy among low-income individuals and minorities is heightened during an economic recession, as those households are more likely to experience unemployment and other economic hardships.

Financial Education Initiatives

In this section, we review evidence on the effects of financial literacy initiatives on household saving. Most of the programs we evaluate directly address saving or borrowing, but some are designed to influence behaviors that indirectly affect saving, such as minimizing credit card fees or balancing a checkbook. In order to break the substantial body of literature down into more easily interpretable components, we broadly categorize initiatives according to their targeted populations—workers, students, borrowers, and members of specific communities. We believe this categorization is useful for at least three reasons. First, it reflects a frequent policy concern—how to raise the financial literacy or affect saving outcomes within a particular group of individuals or households. Second, the focus of an intervention is generally consistent within each category and varies across the categories. For example, financial information provided by employers to workers typically focuses on retirement saving issues; high school classes typically address broad notions of financial literacy; and credit and mortgage counseling programs typically focus on borrowing behavior and bankruptcy issues. Third, such categorization is a natural outgrowth of the research literature, which has proceeded along similar paths.

However, there is nothing sacrosanct about this particular method of organizing the literature. Even interventions focused on a particular population can vary in delivery mechanisms (examples include one-on-one counseling and financial education seminars, among others), source of funding (public versus private), permanence of the literacy training program, and participant motivation (voluntary versus required). Thus, other ways of categorizing the literature would also yield interesting results, but we do not believe that different methods of organizing the literature review would lead to fundamentally different conclusions.

Sample selection (and the related issue of whether participation is voluntary or required) must be considered when interpreting research results. Rarely are participants randomly assigned; individuals typically receive financial education because of a circumstance (such as near-bankruptcy) or an underlying preference (such as valuing saving). As a result, it is often difficult to determine whether the effect observed in a study is due to the financial education provided or to the circumstance that led to being selected to participate. Although researchers have tried to address sample selection issues, these observations nevertheless suggest caution in interpreting some of the results and a particular focus on the complications that arise when financial education is not provided via random assignment.

Worker-Targeted Financial Education

As employers increasingly replace defined benefit retirement plans with defined contribution offerings, workers are more responsible for deciding contribution amounts, investment allocations, and withdrawal strategies. The worker's expanded role has heightened the need for workplace financial education. Employers have responded by providing such education in a variety of forms, including written materials, financial counseling, and seminars. By the mid-1990s, nearly

90 percent of large employers offered some form of financial education (Bernheim and Garrett 2003).

Using nonexperimental methods, some studies have found that workplace financial education can influence workers' saving behavior.[5] Bernheim and Garrett (2003) use data from a 1994 national telephone survey of 2,055 households with respondents aged 30–48, administered in conjunction with Merrill Lynch, to explore the effects of retirement seminars on household saving behavior. They find significant positive results among employees of firms that offer financial education, including higher 401(k) plan participation (by 12 percentage points), as well as higher contributions and account balances. Employees of the firms that offered seminars also reported significantly higher levels of overall saving. Importantly, higher saving was observed at both the median and the 25th percentile of the saving distribution.

The Bernheim and Garrett study raises several key econometric issues encountered in the nonexperimental research. First, the authors examine the effect of having an employer offer financial education, not the impact of actually participating in the program. This avoids the selection bias that arises if those who are personally motivated to save are also more likely to participate in financial education. Second, to the extent that firms with more and better benefits attract workers with longer-term horizons and more stable economic environments, the results will overstate the effects of the workplace seminars; in effect, the sample selection would occur at the hiring level rather than the participation level. Third, to the extent that firms offer workplace seminars on a remedial basis (that is, when retirement plan participation is for some reason unduly low at a particular firm at a particular time), the results will understate the net effects of workplace seminars. Fourth, the study shows the importance of examining the impact of financial education on different groups, rather than simply focusing on sample-wide effects.

Lusardi (2002) undertakes a similar analysis using data from the University of Michigan's Health and Retirement Study. She examines the effect of retirement seminar participation as opposed to seminar availability.[6] To help reduce the impact of the selection bias, she employs a wide range of explanatory variables including measures of households' preference for risk and propensity to discount the future. Like Bernheim and Garrett, Lusardi finds that participation in financial education classes raises total and financial wealth for savers at the 25th percentile of the saving distribution; however, she does not find the same result for the overall sample.

Muller (2002) analyzes Health and Retirement Study data to test the effects of financial education meetings on the rate of saving out of lump-sum pension distributions. Controlling for demographic, economic, and risk preference variables, she finds no significant effects. Muller does not estimate the effects for low-saving individuals, making her results difficult to compare with Lusardi's. Note that focusing on individuals who obtained financial education and those who received a lump-sum distribution may create sample selection biases.

Some analyses explore behavior at the firm level instead of surveying individual respondents. Because firm-level data do not contain information on employees' wealth outside of the pension or 401(k) plan, the results tend to focus more narrowly on retirement saving behavior. Bayer, Bernheim, and Scholz (2009) use benefit survey data for a cross-section of firms, and find that seminar-style financial education programs have a statistically and economically significant effect on retirement plan participation. Nonhighly compensated employees who worked for employers that offered frequent seminars participated at rates 11.5 percentage points higher than those whose employers offered no seminars. The frequency of seminars affected saving activity, too. By contrast, distributing written materials, such as newsletters or summary plan descriptions, had little effect, regardless of frequency.

In another firm-level study, Clark and d'Ambrosio (2003) conducted surveys 1 month before and immediately after a 1-hour retirement saving seminar, and again several months later.[7] The seminar was found to significantly affect workers' stated retirement goals, but behavior had changed only modestly several months after the seminar. These intriguing findings suggest that education itself may not be enough to change behavior, and that an additional device, perhaps automatic enrollment, would usefully supplement education efforts. However, the reliability of the results is not clear, in that the follow-up survey's response rate was far lower than those for the first two surveys.

With data for multiple years on employee participation rates and benefit offerings, Bayer, Bernheim, and Scholz (2009) show that employer-based financial education programs tend to be "remedial" in nature; that is, they tend to be offered in specific response to situations of relatively low employee retirement plan

participation. Some firms may do so to meet nondiscrimination rules regarding the provision of pension benefits. Regardless of the motivation, the result implies that all of the findings described above might understate the true effect of financial education (see also Clark and Schieber 1998).

Although the nonexperimental literature has found some significant effects of financial education on various dimensions of saving behavior, one experimental study suggests caution in interpreting those results. Using data from a university that invites all its employees to an annual information fair about its employer-sponsored retirement plan, Duflo and Saez (2003) sent letters to randomly selected employees in randomly selected departments offering $20 compensation for attending the fair. The payment significantly impacted attendance—28 percent of employees receiving the offer attended, compared with only 5 percent of workers in departments where no one received the offer. However, the overall impact on retirement plan participation was small—after 11 months, participation rates among those who received the offer were less than 1.5 percentage points higher than for the group not offered compensation (about one-tenth the difference found by Bernheim and Garrett 2003). Thus, Duflo and Saez find that even a large increase in participation in an employer-provided retirement fair had only a small impact on actual retirement plan participation.[8] Nevertheless, the impact was positive, and the authors conclude that the retirement plan contributions and savings generated by the experiment significantly exceed the cost of inducing participation.

Taking the studies of worker-targeted financial education together, there appears to be a substantial range of estimates across a variety of techniques. However, because the distribution of outcomes is virtually all positive, attention focuses not on the presence of any impacts, but on their magnitude.

Student-Targeted Financial Education

According to the Jump$tart Coalition for Personal Finance Literacy (2011), 20 states currently require the incorporation of financial education into another subject's high school curriculum,[9] and 4 other states require students to take at least one course independently devoted to financial education.[10] States' financial literacy curricula typically focus partly on saving and partly on topics related to saving, such as minimizing financial fees and managing credit card debt.

Bernheim, Garrett, and Maki (2001) investigate whether the state financial education requirements affect individual behavior later in life. The authors analyzed a specially commissioned wealth survey of individuals aged 30 to 49 that included data on the state and the years in which they attended high school. Matching those data with the historical record of when states adopted financial education requirements enabled the authors to determine whether each individual was subject to a financial or consumer education mandate in high school. The authors find that respondents who attended high school in states mandating financial education reported saving rates (as a share of income) 1.5 percentage points higher than those who did not. The authors also find that the magnitude of this effect increases with the number of years the mandate had been in place at the time the respondent was in high school.

Cole and Shastry (2008) examine the same issue using Census Bureau public use data. Using the specification used by Bernheim, Garrett, and Maki in their 2001 study, Cole and Shastry obtain similar results. However, Cole and Shastry also build upon the 2001 study's estimation strategy by including state-level fixed effects for birth-year cohorts and analyzing a substantially larger data set. Their augmented model finds that financial literacy mandates do not significantly affect saving behavior, suggesting that the earlier study's estimates may have been influenced by factors related to particular state or birth-year characteristics, rather than the financial literacy courses.

Several other studies explore the effects of high-school mandated financial education classes. Those studies examine the impact of financial literacy education not on saving behavior itself, but on behavior that may be related to higher saving, such as maintaining a checkbook, balancing a budget, and so on. The studies have produced mixed and inconclusive results.[11]

Borrower-Targeted Financial Education

Much of the financial education and financial literacy training takes the form of credit and mortgage counseling, perhaps because taking out a loan or trying to avoid bankruptcy provides "teachable" moments for households that are particularly eager to improve financial literacy. Credit and mortgage counseling is not meant to increase saving directly, but to better educate potential borrowers on the characteristics of loans they are considering (prepurchase counseling) and to assist existing borrowers with making payments on loans already undertaken (postpurchase counseling). Credit counselors may also advise consumers on bankruptcy proceedings. Mortgage and

prepurchase counseling for homeowners have become more prevalent since the recent housing market crash began and attention turned toward the role of uneducated homebuyers.

Research evaluating the efficacy of mortgage and credit counseling often suffers from the selection bias challenges discussed earlier. Individuals receiving credit counseling are generally in severe debt and motivated to avoid bankruptcy. Likewise, those seeking mortgage counseling are probably less financially literate and are thus considered less creditworthy than other homebuyers. Characteristics such as these make it difficult to construct a control group from which to compare the effect of the policy, because it is difficult to estimate precisely how participants would act in the absence of counseling.[12]

The most compelling study in this area is Agarwal and others (2009a), which takes advantage of legislation mandating counseling and third-party review of mortgage contracts in certain Chicago-area zip codes but not in others. The differences in mortgage regulation allow the creation of exogenous treatment and control groups based on geographic area, effectively limiting the selection bias discussed earlier. The authors note two possible sources of change in mortgage choice and default rates: direct information attributed to mortgage counseling and increased oversight of mortgage loan contracts. They find substantial evidence that the increased oversight affected the quality and quantity of mortgage lending, but little evidence that the counseling substantially affected borrower default rates.

Other analyses in this area face a variety of econometric issues that impede credible inference. For example, Mallach (2001) reviews the research on credit counseling, providing critical analysis of the 11 major mortgage-counseling studies published prior to his review.[13] Mallach questions the internal validity of the research, noting that "the outcome of the studies, taken as a whole, is highly ambiguous" and that "serious limitations with respect to the design and conduct of the studies severely compromise the value of such findings that can be derived from the research."[14]

Targeted-Community Financial Education

These initiatives target a local population through a community-based program. Sherraden and Boshara (2008) examine Individual Development Account (IDA) programs, which combine financial education with matched saving opportunities for low-income workers. The authors find that exposing participants to between 1 and 10 hours of financial education increased average IDA deposits by $1.16 per month for each hour. Clancy, Grinstein-Weiss, and Schreiner (2001) report similar results.

These results should be interpreted with caution. First, Sherraden and Boshara provide no analysis of whether the added contributions are net additions to saving. Second, there is no control group in the study, and IDA participants are typically highly motivated savers (Mills and others 2008). Third, it is not clear why some participants engaged in more hours of financial education than others. If the reason is correlated with tastes or desires for saving, the financial education variable is endogenous. Fourth, because IDAs offer a suite of benefits (financial education in addition to matched funds for particular uses such as homeownership), it is difficult to separate the relative contributions of financial education from the matching incentives.[15]

Mills and others (2008) examine the impact of IDA eligibility on household net worth using longitudinal results from a randomized experiment in Tulsa, Oklahoma, for 1998–2003. Extensive sensitivity tests of the IDA program's net impact on overall household wealth—and thus the extent to which the contributions on the whole represented net additions to saving—proved inconclusive. This was in part because there were few significant effects on subsidized categories of assets. Moreover, the underlying variation in net worth across sample members was enormous relative to the size of IDA contributions, making significant effects difficult to detect.

Conclusion

Low levels of financial literacy are prevalent among adults, particularly among disadvantaged groups, and are associated with poor financial choices that can lead to economic insecurity. Increased financial literacy could help individuals understand their saving situations better, save more, and attain higher economic status and more economic security. Widespread financial literacy might also provide broad social and economic gains as vulnerable households make better financial decisions, and possibly increase capital stock as saving rates increase.

For all of those reasons, the effect of financial education on household saving is an important topic. We draw several principal conclusions from the analysis of previous work. First, workplace financial education seminars positively affect household saving, although the magnitude of the impact varies widely across

evaluation studies. The effect of high school financial education curricula on household saving is less clear; the more sophisticated econometric studies suggest no significant effect. Second, serious and credible tests of the impacts of financial literacy on saving have not been performed in the areas of credit- and mortgage-based counseling or community-targeted programs. Third, many of the studies suffer from biases relating to sample selection, high attrition rates, and other econometric issues that preclude reliable inference.

Given these findings, one clear direction for future research would be to undertake more robust evaluation methodologies that rigorously separate the opportunity to receive financial education and improve financial literacy from observable and unobservable household characteristics. In particular, studies adopting an experimental design can help isolate the specific effects of financial literacy interventions and mitigate many of the biases that cloud interpretation of proliteracy policies.

Notes

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[1] Among earlier literature reviews, Braunstein and Welch (2002) focus on financial literacy from the consumer perspective; Martin (2007) provides a broad overview of financial literacy research; Hathaway and Khatiwada (2008) present a limited review of the effectiveness of prior financial education initiatives; and Knoll (2010) provides an extensive review of retirement saving in the context of behavioral economics.

[2] We mean to provide a plausible working definition of financial literacy for this article, not to redefine or somehow narrow the topic. Other commonly used definitions of financial literacy focus on similar themes, and would likely generate comparable conclusions.

[3] In econometrics, "bias" describes a condition under which repeated sampling will not produce an average estimate that is equal to the true value of a particular parameter. Omitted variables and problems with sample selection and simultaneity can lead to bias (Stock and Watson 2003), as can other causes. In the context of financial literacy, a significant bias is the omission of a worker's taste for saving (which is often unknown and unobservable). More motivated savers tend to be more likely to participate in financial education efforts. Experimental research, which randomly assigns a policy intervention to a treatment group, can alleviate this econometric bias.

[4] Hastings and Mitchell (2011) obtain similar results for Chilean households.

[5] Olsen and Whitman (2007) provide an extensive review of research concerning the efficacy of retirement plan design and workplace financial education.

[6] The study employs ordinary least squares analysis, rather than panel data analysis, to derive estimates. Thus, participation in a retirement saving seminar is essentially treated as a simultaneous observation with the stock of saving, rather than observing the stock of saving before and after participation in the seminar.

[7] This experiment is also central to Clark and others (2004, 2006).

[8] In their 2002 study, Duflo and Saez examine effects of peer and social networking in this experiment.

[9] For example, Tennessee requires "that the program of instruction for the public high schools on the essentials of the free enterprise system include elements of personal finance and financial literacy that, as a minimum, would include instruction on earning an income, money management, spending and credit, and saving and investing."

[10] For example, Virginia curriculum requirements state that "objectives for economics education and financial literacy at the middle and high school levels shall include, but not be limited to, personal living and finances; personal and business money management skills; opening an account in a financial institution and judging the quality of a financial institution's services; balancing a checkbook; completing a loan application; the implications of an inheritance; the basics of personal insurance policies; consumer rights and responsibilities; dealing with salesmen and merchants; debt management; managing retail and credit card debt; state and federal tax computation; local tax assessments; computation of interest rates by various mechanisms; understanding simple contracts; and learning how to contest an incorrect bill."

[11] Mandell (2009) and Mandell and Klein (2009) generally find no relation between high school financial education and financial literacy scores and related behavior. Gutter, Copur, and Garrison (2009) and Danes (2005) generally find positive effects, but the studies are marred by statistical concerns including low response rates, which might bias the results. Maki (2004) is probably the most methodologically sound study in this category. He uses data from the same survey as Bernheim, Garrett, and Maki (2001) to show that financially educated high school students are more likely as adults to correctly answer questions about the returns of stocks relative to those of bonds, and about the structure of their pension plans.

[12] Mortgage and credit counseling evaluations typically focus on programs offered by nonprofit or public agencies, although for-profit credit counselors do operate in the United States. For-profit credit counseling became more prevalent in the 1980s and 1990s but diminished in the past decade with more stringent regulation of such counselors.

[13] Quercia and Wachter (1996) provide an earlier and less critical review of homeownership counseling studies.

[14] Other work in this area produces mixed results and does not effectively address selection bias. Elliehausen, Lundquist, and Staten (2003) find that one-on-one credit counseling significantly raises creditworthiness and reduces debt and delinquency rates, with larger effects for individuals with lower initial credit scores. Hirad and Zorn (2001) find a significant effect of receiving any counseling on mortgage delinquency, with the most effective form being individual counseling, followed by classroom counseling (the effects of home study and telephone counseling are not statistically significant). Quercia and Spader (2008) find that prepurchase counseling does not reduce the rate of default. Ding, Quercia, and Ratcliffe (2008) find that postpurchase counseling during a spell of delinquency helps reduce late payments.

[15] Other studies of community-based initiatives have measured the programs' impacts on financial literacy rather than on saving. Anderson, Scott, and Zhan (2002, 2004) evaluate the effects of financial education provided through the Financial Links for Low-Income People (FLLIP) program. Through nonprofit community-based agencies, FLLIP provided 12 hours of financial education to individuals with income below 200 percent of the poverty line, then compared results of pre- and post-training tests. Follow-up test scores were somewhat higher, but only one-third of the original sample took the follow-up tests, so sample selection issues are again paramount.

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The Growth in Social Security Benefits Among the Retirement-Age Population from Increases in the Cap on Covered Earnings

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Analysts have proposed raising the maximum level of earnings subject to the Social Security payroll tax (the "tax max") to improve long-term Social Security Trust Fund solvency. This article investigates how raising the tax max leads to the "leakage" of portions of the additional revenue into higher benefit payments. Using Health and Retirement Study data matched to Social Security earnings records, we compare historical payroll tax payments and benefit amounts for Early Boomers (born 1948–1953) with tax and benefit simulations had they been subject to the tax max (adjusted for wage growth) faced by cohorts 12 and 24 years older. We find that 43.2 percent of the additional payroll tax revenue attributable to tax max increases affecting Early Boomers relative to taxes paid by the cohort 12 years older leaked into higher benefits. For Early Boomers relative to those 24 years older, we find 53.5 percent leakage.

Introduction

Raising the maximum earnings level subject to the payroll tax is one of the policies often suggested as a means of narrowing the financial gap facing the Social Security system (for example, Senate Special Committee on Aging 2010). Increasing the cap on taxable earnings would generate greater payroll tax revenues to reduce future Social Security Trust Fund shortfalls in the face of increasing benefit obligations. The Social Security Administration's (SSA's) Office of the Actuary, the Congressional Budget Office (CBO), and the Congressional Research Service (CRS), among others, have estimated the effects of increasing the taxable maximum (or "tax max").[1] Typically, they simulate the effects of changing the tax max under two polar assumptions about such a law—that either the increased taxes on earnings will result in higher benefit payments, or they will not.[2] The difference between these estimates indicates "leakage"—the additional payroll tax receipts that are used to pay higher benefits, rather than to shore up the Social Security trust funds—as those who pay additional taxes because of the higher tax max are in turn credited with additional benefits. The size of this potential leakage obviously concerns those who are contemplating changes in the Social Security tax and benefit structure.

The tax max has increased in the past, first on an ad hoc basis, and since 1982 as an annual automatic

Selected Abbreviations

AIME	average indexed monthly earnings
CBO	Congressional Budget Office
CRS	Congressional Research Service
EB	Early Boomer
HRS	Health and Retirement Study

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Selected Abbreviations—*Continued*

PIA	primary insurance amount
SSA	Social Security Administration

adjustment determined by wage indexing.[3, 4] In this article we use data from the University of Michigan's Health and Retirement Study (HRS) matched with data from Social Security administrative files to improve our understanding of how tax max changes have affected Social Security tax receipts and benefit payments. Using HRS data enables us to learn about changes in own benefits from increases in own earnings, as well as increases in spouse and survivor benefits due to increases in the taxable earnings of primary beneficiaries in couple households.[5]

To separate the effects of changes in the tax max from changes in earnings over time for members of a given cohort, we adjust the cap, reducing it to levels that applied to older cohorts, while holding earnings constant at the levels observed for the youngest cohort available. Because the calculation involves lowering the caps relative to actual values, we do not confront the absence of data on earnings above the taxable maximum. Thus, we avoid a problem faced by studies that project the effects of changing the tax max into the future. Moreover, if we chose to use the actual earnings of an older cohort as our base, and then to project earnings forward, we would face the further limitation of having the administrative data on earnings prior to 1978 censored by the earnings cap.

Using historical data provides another advantage. Projecting future earnings for each individual with earnings near the tax max is harder than it might first appear. Forecasting the effects of tax max increases on benefits and taxes paid is sensitive to the model underlying the projections. Analysts must project not only major trends, such as those in the wage structure and earnings of women in married and single-person households. Forecasts of benefits paid also depend on the projected share of earnings that will exceed the tax max over the course of each individual's lifetime. For any individual, the relation between actual earnings and the tax max may vary from year to year. Projecting the distribution of earnings around the tax max for any individual may require calculating not only the wage when fully employed, but also periods of layoff and turnover and their effect on covered earnings in years when jobs are changed. Long-term job attachment is becoming less common and the trend toward greater job turnover is expected to continue. Forecasting the relation between the tax max and actual earnings requires projecting many complex variables, such as the likelihood of job turnover among individuals, how turnover incidence and duration differ by wage, how the new wage compares with the previous wage for quits and layoffs, the earner's demographic characteristics (including educational attainment and differences by sex), and business cycles. Projecting these outcomes strains current analytical and forecasting capabilities. We avoid these issues by analyzing the effects of historical changes and using as a baseline the earnings observed for a single younger cohort. As mentioned earlier, our simulations effectively reduce the tax max. As a result, we observe the exact course of yearly earnings, uncensored by the lower cap that applied to older cohorts.

By using historical data, we can finesse the difficulties involved in making projections, especially those that have not yet been closely examined in the literature, such as the frequency with which each individual's earnings cross the tax max from year to year. Consequently, we can directly measure leakage to higher benefits without risking myriad other forecasting errors. We ask, what would be the total amount of benefits and taxes based on own earnings for individuals born from 1948 through 1953 (the Early Boomer cohort) if they had faced the tax maxes that applied to individuals who were 12 and 24 years older? Answering this question provides a new perspective on an important policy. Of course, it is also of interest to determine how past increases in the tax max have affected both payroll tax receipts and the leakage to benefit increases for those in the highest earnings brackets.

In this analysis, 2004 is the most recent year for which HRS data and matched Social Security earnings records are available for members of one of the HRS' youngest cohorts—the Early Boomers, who were aged 51–56 that year. Although the Early Boomer (EB) cohort includes 6 birth years, other HRS cohorts span different numbers of birth years. For consistency, we restrict our comparison cohorts (12 years and 24 years older than the Early Boomers) to those who were aged 51–56 in 1992 and in 1980, respectively. Thus, the cohort that is 12 years older than the Early Boomers, designated EB+12 in this

article, comprises only the youngest members (born 1936–1941) of the cohort identified in HRS simply as "the (original) HRS cohort." Likewise, the cohort born 1924–1929, herein called EB+24, is a subgroup of the HRS' Children of the Depression Age cohort (see Table 1).

A few words about the induced increase in spouse and survivor benefits are useful here. Many low earners, including those with a work history so sporadic they do not qualify for additional benefits based on their own earnings, may nevertheless have a spouse whose earnings exceed a previously specified cap. These low-earning spouses will enjoy higher benefits because of the increase in the earnings cap. To determine how spouse and survivor benefits change when the tax max changes, a data set such as the HRS conveniently permits the analysis of total benefits in each household.

Tax max policy affects Social Security's distributional properties.[6] In keeping with the program's redistributive motivation, each dollar increase in average indexed monthly earnings (AIME) for those very near the tax max is matched by an increase in benefits of only 15 cents. To enhance the system's redistributive effects, policymakers could increase the cap on covered earnings without raising Social Security benefits. However, some are loath to do that because it violates the insurance principle underlying Social Security and may undermine support for the system.

This article's next section discusses government forecasts of how changes in maximum covered earnings would affect benefits and taxes. Subsequent sections present the history of tax max changes, analyze how changes in the earnings cap have affected the Social Security benefits for individuals and households, and consider the effects of potential future tax max changes on household benefits and taxes. The final two sections discuss possible extensions of the analysis and conclude.

Available Estimates of the Effects of Increasing the Tax Max

Forward-looking estimates of the effect of raising the tax max are available from a number of sources. The typical approach takes a population base, ages it, and makes assumptions about the values of certain economic variables (often using the Social Security Trustees' intermediate assumptions for wage growth, interest rates, inflation, and other measures). Analysts using this approach then project or make assumptions about retirement age and the age at which benefits are claimed, condition their calculations on whether spouse and survivor benefits are included, perhaps also estimate behavioral responses, and then project the likely effects of changing the tax max. Estimated effects also depend on whether the analyst measures benefits and taxes using annual or present values, as changes in the share of payroll tax receipts induced by tax max changes, as amounts paid in a specified year, or with other measures. Outcomes also depend on the population subgroup analyzed—for example, a birth cohort, a demographic subgroup, or a group defined by its place in the income distribution.

Consider three different sets of results. First, in calculations for the Senate Committee on Aging (2010), SSA's Office of the Actuary estimated that eliminating the tax max without increasing benefits would decrease the 75-year actuarial deficit by 2.32 percent. On the other hand, if tax max increases were accompanied by a benefit increase that follows the current formula, the deficit would be reduced by 1.89 percent of taxable payroll. Thus, increasing benefits along with the tax max would raise total benefit payments by about 0.43 percent of the taxable payroll base.

CBO (2010, Table 2) analyzes the effects of increasing the tax max on the present values of revenues and outlays over a 75-year period. As a share of GDP, outlays would increase by 0.3 percentage points, while revenues would increase by 0.9 percentage points, so

Table 1.
Cohorts referenced in this study

Name	Birth years	Aged 51–56	Source in HRS
Early Boomers	1948–1953	2004	The *Early Boomers* comprise one of the HRS' full cohorts
EB+12	1936–1941	1992	Subsample (last 6 birth years) of the *Original HRS* cohort
EB+24	1924–1929	1980	Subsample of the *Children of the Depression Age* cohort

SOURCE: Author's derivation based on HRS.

that increased benefit payments would account for about one-third of the increased tax collections.

CRS estimates that removing the tax max in 2013 would mean that by 2035, 21 percent of beneficiaries would have paid some additional payroll taxes over the course of their lifetimes (Mulvey 2010). However, the average change in taxes and benefits would be small. Looking *only* at own taxes and benefits for individuals who would pay any additional taxes over the course of their work lives, median total lifetime tax payments would rise by 3 percent and benefits would increase by 2 percent relative to current law. (Note the CRS estimate does not consider spouse and survivor benefits, as the other estimates do.) Here, the estimated gain in benefits relative to taxes is even larger than that of the other studies. Although the exact ratio depends on rounding, the midrange estimate suggests a gain in benefits roughly equal to two-thirds the gain in taxes.

These estimates clearly vary according to the time period analyzed, the definition of the dependent variable measuring the leakage in tax receipts toward higher benefits, the many assumptions underlying the projections, the data used to make the estimates, the target population, and other factors. Each agency relies on its own simulation model or models. The Office of the Actuary and CBO rely on in-house models, while CRS uses the Urban Institute's Dynasim Model.[7] These models differ in many respects and can generate a very wide spread in estimated leakage of payroll tax revenues into higher benefits resulting from raising the tax max. Given this very wide variation in federal agencies' estimates of projected leakage from taxes to benefits, it is of interest to consider historical experience.

Historical Tax Max Changes

From 1937 through 1950, the maximum annual earnings subject to the payroll tax was $3,000. With a fixed taxable earnings cap, sustained growth in worker earnings over time meant that the share of total earnings covered by Social Security began to decline. Despite periodic ad hoc tax max increases beginning in 1951, that share continued to fall for decades. Annual tax max increases began in 1972, and in the years that followed, increasing the share of earnings covered by Social Security became a more prominent policy motivation. Since 1982, all annual tax max increases have been indexed to earnings.

From 1951 through 2004, maximum taxable earnings increased from $3,600 to $87,900, a multiple of 24.4. Over the same period, average annual earnings increased from $2,799 to $35,649, a multiple of 12.7 (SSA 2008, Table 2.A8). Thus, the rate of increase in maximum taxable earnings has been nearly twice that of average earnings.

To illustrate the effects of earnings cap changes, consider a member of the EB+12 cohort who worked in a single job from age 25 to age 60, which he reached in 1996. For simplicity, assume this individual's yearly earnings always increased over his lifetime, and his 1961 earnings are the lowest of those counted in computing his AIME. In 1961, the tax max was $4,800, which was about 17 percent greater than average annual wages. Earnings above the cap were not subject to the payroll tax and did not generate future benefits. Now consider a person from the Early Boomer cohort leaving a long-term job in 2008 at age 60. Assume that earnings in 1973 would be the lowest counted toward this person's AIME. In 1973, the tax max was $10,800. Because annual wages averaged about $7,580 that year, earnings as much as 42 percent above average were taxed (and generated benefits). Of course, many of those with relatively low earnings were not affected by the increase in maximum covered earnings; but the higher ceiling on covered earnings increased the AIME for many moderate or high earners.

For this analysis, we adjust any change in the tax max over time for changes in average earnings over that time. We base that adjustment on the calculated wage growth used to index covered earnings in the AIME calculation. Members of the Early Boomer cohort reached age 25 between 1973 and 1978, and members of the EB+12 cohort reached age 25 between 1961 and 1966. After indexing, the earnings cap for those aged 25 in 1961, $4,800, is equivalent to $8,880 in 1973. Thus, over the 12-year period, the real cap on earnings (as indexed by earnings growth and not by growth in consumer prices) increased by 21.6 percent, from $8,880 to $10,800. Similarly, adjusting the $6,600 cap on earnings in 1966 by the index applicable over the ensuing 12 years increases the real cap to $14,124. The actual ceiling for 1978 ($17,700) is 25.3 percent higher than the wage index-adjusted ceiling for 1966. Thus, the real earnings cap is higher for members of younger cohorts.

Now consider in more detail how the tax max has changed over time relative to the average annual Social Security–covered wage. Table 2 reports those data for 1951 through 2004. Policymakers have raised

maximum covered earnings more rapidly than average earnings have increased. In the 1950s and 1960s, the tax max was a bit higher than the average wage.[8] For those years, the ratios of maximum taxable earnings to average annual wages ranged between 1.03 and 1.40. In the early and mid-1970s, the tax max began to rise much more rapidly than the average wage. Beginning in 1983, after the introduction of indexing to set the annual cap, the ratio of maximum earnings to average earnings roughly stabilized.

Early Boomers whose 35 years of highest earnings occurred between ages 25 and 60 would have their AIMEs calculated based on covered earnings roughly between 1975 and 2010.[9] Thus, the AIME and primary insurance amount (PIA) calculations for this cohort would exclude the period before 1975, when the ratio of the cap to average earnings was 1.64 or lower.

For the EB+12 cohort, AIMEs would be determined by earnings from roughly 1963 to 1998. In contrast with the Early Boomers, this group's AIME calculation basis would exclude the 1999–2010 period, when the ratio of earnings cap to average wages was high (ranging from 2.37 to approximately 2.55), and replace it with the 1963–1974 period, when the cap-to-average earnings ratio ranges from 1.03 to 1.64.

The difference in the earnings caps experienced by the Early Boomers and the EB+24 cohort is even wider. Earnings in 1951 would be the earliest included in EB+24 members' AIME calculation, and from 1951 through 1963, the ratio of maximum covered earnings to average annual wage ranges from 1.09 to 1.29. Compared with the EB+12 cohort, the EB+24 cohort's 1951–1963 period replaces 1986–1998, eliminating a

Table 2.
Tax max and average annual wage, 1951–2004

Year	Tax max ($)	Average annual wage ($)	Tax max / average wage	Year	Tax max ($)	Average annual wage ($)	Tax max / average wage
1951	3,600	2,799	1.29	1978	17,700	10,556	1.68
1952	3,600	2,973	1.21	1979	22,900	11,479	1.99
1953	3,600	3,139	1.15	1980	25,900	12,513	2.07
1954	3,600	3,156	1.14	1981	29,700	13,773	2.16
1955	4,200	3,301	1.27	1982	32,400	14,531	2.23
1956	4,200	3,532	1.19	1983	35,700	15,239	2.34
1957	4,200	3,642	1.15	1984	37,800	16,135	2.34
1958	4,200	3,674	1.14	1985	39,600	16,823	2.35
1959	4,800	3,856	1.24	1986	42,000	17,322	2.42
1960	4,800	4,007	1.20	1987	43,800	18,427	2.38
1961	4,800	4,087	1.17	1988	45,000	19,334	2.33
1962	4,800	4,291	1.12	1989	48,000	20,100	2.39
1963	4,800	4,397	1.09	1990	51,300	21,028	2.44
1964	4,800	4,576	1.05	1991	53,400	21,812	2.45
1965	4,800	4,659	1.03	1992	55,500	22,935	2.42
1966	6,600	4,938	1.34	1993	57,600	23,133	2.49
1967	6,600	5,213	1.27	1994	60,600	23,754	2.55
1968	7,800	5,572	1.40	1995	61,200	24,706	2.48
1969	7,800	5,894	1.32	1996	62,700	25,914	2.42
1970	7,800	6,186	1.26	1997	65,400	27,426	2.38
1971	7,800	6,497	1.20	1998	68,400	28,861	2.37
1972	9,000	7,134	1.26	1999	72,600	30,470	2.38
1973	10,800	7,580	1.42	2000	76,200	32,155	2.37
1974	13,200	8,031	1.64	2001	80,400	32,922	2.44
1975	14,100	8,631	1.63	2002	84,900	33,252	2.55
1976	15,300	9,226	1.66	2003	87,000	34,065	2.55
1977	16,500	9,779	1.69	2004	87,900	35,649	2.47

SOURCE: SSA (2008), Table 2.A8.

NOTE: For 1937–1950, tax max was $3,000.

period in which the cap-to-average wage ratio ranged from 2.33 to 2.55.

Next, we examine how the fraction of workers with total earnings above or below the tax max has changed over time. Table 3 reports the share of the population with earnings below the taxable earnings cap, with detail by sex. In 1937, 96.9 percent of workers had earnings below the cap, so only 3.1 percent of workers had earnings at or above the cap. The fraction of workers with earnings at or above the cap rose until the 1960s, when it reached more than one-third, and then began to fall. By 1979, only 10.0 percent of workers had earnings at or above the cap. In the years that followed, the cap rose sharply enough that the earnings of only about 5–6 percent of workers met or exceeded it. We also see that male workers were more likely than female workers to have earnings at or above the cap. In 1950, about 40 percent of male workers and about 5 percent of female workers had earnings at or above the tax max. By 2004, 8.8 percent of men and 2.8 percent of women had earnings at or above the cap.

How Changes in the Social Security Earnings Cap Affect Monthly Benefits

Now we consider the relation of maximum taxable earnings to AIME and the PIA for a representative sample of the population. As a baseline sample, we use the Early Boomer cohort.

Individuals' Own Benefits

We begin with the calculation of monthly benefits from own earnings. We use HRS data matched with Early Boomers' earnings histories from Social Security administrative records together with projections

Table 3.
Percentages of all, male, and female workers with earnings below the tax max: Selected years 1937–2004

Year	All workers	Men	Women	Year	All workers	Men	Women
1937	96.9	95.8	99.7	1976	85.1	76.3	97.5
1940	96.6	95.4	99.7	1977	85.2	76.3	97.5
1945	86.3	78.6	98.9	1978	84.6	75.4	97.1
1950	71.1	59.9	94.6	1979	90.0	83.6	98.6
1951	75.5	64.6	96.7	1980	91.2	85.5	98.8
1952	72.1	60.0	95.4	1981	92.4	87.4	99.0
1953	68.8	55.5	93.8	1982	92.9	88.3	98.9
1954	68.4	55.4	93.0	1983	93.7	89.6	99.0
1955	74.4	63.4	95.9	1984	93.6	89.4	98.9
1956	71.6	59.7	94.5	1985	93.5	89.3	98.8
1957	70.1	58.7	93.1	1986	93.8	89.7	98.7
1958	69.4	58.4	91.8	1987	93.9	89.9	98.6
1959	73.3	62.7	94.3	1988	93.5	89.4	98.3
1960	72.0	60.9	93.5	1989	93.8	90.1	98.3
1961	70.8	59.6	92.4	1990	94.3	90.9	98.4
1962	68.8	57.1	91.1	1991	94.4	91.1	98.3
1963	67.5	55.5	90.0	1992	94.3	91.0	98.1
1964	65.5	53.1	88.5	1993	94.4	91.3	98.1
1965	63.9	51.0	87.3	1994	94.6	91.4	98.1
1966	75.8	64.4	95.6	1995	94.2	91.0	97.9
1967	73.6	61.5	94.2	1996	93.9	90.6	97.7
1968	78.6	68.0	96.3	1997	93.8	90.5	97.6
1969	75.5	62.8	96.0	1998	93.7	90.3	97.5
1970	74.0	61.8	93.5	1999	93.9	90.7	97.5
1971	71.7	59.1	91.7	2000	93.8	90.6	97.4
1972	75.0	62.9	93.9	2001	94.1	91.0	97.5
1973	79.7	68.9	96.2	2002	94.6	91.8	97.7
1974	84.9	76.2	97.8	2003	94.5	91.8	97.5
1975	84.9	76.4	97.5	2004	94.1	91.2	97.2

SOURCE: SSA (2008), Table 4.B4.

of their earnings, and compute their benefits using SSA's AnyPIA program. Please note that these results, and all results for individuals shown in the tables, apply only to insured individuals in the Early Boomer age range. Results for households, discussed later, will include benefits for individuals beyond this age range, as well as spouse and survivor benefits for those who are not insured based on their own earnings. All calculations assume benefits are claimed at normal retirement age and exclude public employees.

To simulate the effects of the lower tax max that applied to members of older cohorts, we simply truncate the earnings stream submitted to the AnyPIA program. For example, for covered earnings in 2004, a first calculation would use covered earnings up to the actual tax max in 2004, which is $87,900. Even if an HRS respondent had earnings higher than $87,900, the amount submitted to the benefit calculation is limited to the amount of the cap. When simulating the effects of the lower (nominal) cap faced by those born 12 years earlier, we would take the actual 2004 earnings for the members of the Early Boomer cohort, but subject them to the covered earnings cap that applied in 1992. The cap that applied to members of the older cohort was $55,500. Similarly, the cap that an Early Boomer would have faced 24 years before, in 1980, was $25,900.

The next step is to adjust the nominal cap from 12 years earlier for wage growth between 1992 and 2004. We use the data from Table 1 to calculate the growth in average wages, multiplying the nominal cap in place 12 years earlier by the growth in the average annual wage over the ensuing 12-year period. In the 1980s, caps and average wages grew at similar rates, so that a cap for any given year, adjusted for the change in average annual wages, does not differ much from the cap that applied 12 years later. Because of the lower caps in the 1970s, however, even after the wage-growth adjustment there is a substantial effect of the tax max changes on benefits in those years.

Earnings histories are imputed for the 37 percent of the Early Boomer cohort who do not have a matched Social Security earnings record. We use a nearest-neighbor approach to impute benefits for those individuals. A regression is run for those who have a matched earnings record, where the PIA computed from the earnings record is the dependent variable. Independent variables are taken from the respondent reports to the HRS.[10] The nearest neighbor is then selected on the basis of the predicted PIA, drawn from a sample that includes both those with and those without matched earnings records. We then replace the missing record with the entire Social Security record of the donor.

Table 4 shows a 5.2 percent increase in AIME (from $3,277 to $3,448) when we substitute the payroll tax cap that applied to the Early Boomer cohort for the adjusted cap that applied to the EB+12 cohort. Given

Table 4.
AIME and average PIA for all, male, and female individuals: Comparing effects of lifetime earnings cap for Early Boomers with real earnings caps experienced by the EB+12 and EB+24 cohorts (weighted estimates in dollars)

	Early Boomers		EB+12		EB+24	
Individuals	AIME	PIA	AIME	PIA	AIME	PIA
All	3,448	1,636	3,277	1,600	3,057	1,553
	(2,430)	(746)	(2,216)	(711)	(1,904)	(660)
Men	4,301	1,886	4,007	1,825	3,674	1,757
	(2,591)	(759)	(2,321)	(718)	(1,953)	(659)
Women	2,661	1,405	2,603	1,391	2,487	1,365
	(1,966)	(653)	(1,876)	(638)	(1,665)	(602)

SOURCE: Authors' calculations based on HRS data using SSA's AnyPIA program.

NOTES: Sample comprises 2,405 earnings records for Social Security–insured individuals aged 51–56 in 2004 (1,056 men and 1,349 women); values for 881 earning records (37 percent) are imputed.

Values for Early Boomers reflect the effects of lifetime earnings cap as of 2004, when cohort members were aged 51–56. Correspondingly, values for the EB+12 and EB+24 cohorts reflect lifetime earnings caps as of 1992 and 1980, respectively.

Estimates are weighted using the 2004 respondent-level weight. Nominal caps for 1980 and 1992 are respectively adjusted for 1980–2004 and 1992–2004 growth in wages.

Standard deviations shown in parentheses.

the progressivity of the benefit formula, the PIA is only 2.2 percent greater ($1,636 versus $1,600) when the Early Boomer cap is substituted for the adjusted EB+12 cap. For men, the difference in AIME under the Early Boomer and the adjusted EB+12 caps is 7.3 percent ($4,301 versus $4,007), wider than the 2.2 percent difference for women ($2,661 over $2,603). The corresponding effects of raising the earnings cap on benefits between the EB+12 and Early Boomer cohorts are 3.3 percent ($1,886 versus $1,825) for men and 1.0 percent ($1,405 versus $1,391) for women. As expected, women are much less likely to have earnings near the cap, thus their own benefits are much less likely to be affected by an increase in the cap. But, as we discuss later, their spouse and survivor benefits are affected by the relation between their husband's earnings and the cap.

Table 4 also makes the analogous calculations regarding the increase in the real earnings cap over 24 years, allowing us to compare the effects of the real caps in place for the Early Boomer cohort with those for the EB+24 cohort. For the entire population, the difference in benefits generated by raising the tax max is 5.3 percent (from $1,553 to $1,636). For men, raising the tax max between the EB+24 and Early Boomer cohorts causes benefits to increase 7.3 percent (from $1,757 to $1,886). For women, the difference is 2.9 percent (from $1,365 to $1,405).

Next, we examine benefits for Early Boomers according to AIME quartile. Table 5 presents results of the same analysis used for Table 4, restricted to individuals in the fourth (highest) AIME quartile. Those individuals experience most of the PIA growth attributable to earnings cap changes.

For both sexes combined, members of the Early Boomer cohort enjoy a PIA from own work 3.7 percent higher than the PIA they would receive if they were subject to the real caps imposed on the EB+12 cohort, and 9.9 percent higher than that of the EB+24 cohort.

The effects of raising the caps are much larger for men in the top AIME quartile of male earners than for women in the top AIME quartile of female earners. For example, raising the cap from the real level that applied to the EB+12 cohort to that of the Early Boomers effectively increased benefits for men by 4.4 percent, while women's benefits increased by only 2.0 percent. The corresponding change between the EB+24 cohort and the Early Boomers increased benefits for men in the top quartile by 10.9 percent and for women by 7.4 percent.

Total Benefits at the Household Level

Household benefits include own benefits for each spouse and any auxiliary benefits for the couple's lower earner (spouse benefits if the higher earner is

Table 5.
PIA in the highest AIME quartile for all, male, and female individuals: Comparing effects of lifetime earnings cap for Early Boomers with real earnings caps experienced by the EB+12 and EB+24 cohorts (weighted estimates)

Individuals	PIA for Early Boomers ($)	PIA for EB+12 cohort ($)	PIA for EB+24 cohort ($)	Percent difference in PIA between EB+12 and Early Boomer cohorts	Percent difference in PIA between EB+24 and Early Boomer cohorts
All	2,633	2,539	2,395	3.7	9.9
	(275)	(268)	(249)		
Men	2,658	2,546	2,396	4.4	10.9
	(277)	(276)	(258)		
Women	2,569	2,519	2,391	2.0	7.4
	(258)	(244)	(226)		

SOURCE: Authors' calculations based on HRS data using SSA's AnyPIA program.

NOTES: Sample comprises 537 earnings records for Social Security–insured individuals aged 51–56 in 2004 (365 men and 172 women).

Values for Early Boomers reflect the effects of lifetime earnings cap as of 2004, when cohort members were aged 51–56. Correspondingly, values for the EB+12 and EB+24 cohorts reflect lifetime earnings caps as of 1992 and 1980, respectively.

Estimates are weighted using the 2004 respondent-level weight. Nominal caps for 1980 and 1992 are respectively adjusted for 1980–2004 and 1992–2004 growth in wages.

Standard deviations shown in parentheses.

alive, survivor benefits if the higher earner has died). Own Social Security benefits are calculated with the AnyPIA program, and spouse and survivor benefits are derived from the own-benefits calculations. Earnings are imputed for divorced or deceased spouses with missing records. All benefits are determined using a life table adjusted for the relation between income and survival probability.[11]

Table 6 reports the effects of changing the cap over time on the benefits paid to households by AIME quartile. For two-earner households, the quartile is determined by summing AIME for both spouses. Values reflect the sum of all Old-Age and Survivors Insurance benefits received by the household, including spouse and survivor benefits. The PIA for households in the highest AIME quartile in 2004 is 3.5 percent higher than it would be if they were subject to the real caps imposed on households 12 years older, and their benefits are 9.2 percent higher than they would be if they were subject to the real caps imposed on households 24 years older. Members of other earnings quartiles are also affected by the change in the cap, but much less so.

Table 7 analyzes the effect of the difference in caps on benefits for two-earner and one-earner households. Given the lower covered earnings of members of one-earner households, fewer of them have earnings near the cap. Consequently, the effect of the increase in the cap is greater for members of two-earner households. Changes in the tax max occurring between the EB+12 and Early Boomer cohorts effectively increased benefits by 3.0 percent for Early Boomers in two-earner households and by 2.3 percent for those in one-earner households. The comparable figures are 6.9 percent and 5.2 percent for tax max increases that took place between the EB+24 and Early Boomer cohorts.

How Tax Max Changes Affect Lifetime Benefits and Taxes

The next analysis compares the effects of tax max changes on the present values of lifetime benefits and taxes. This allows us to determine the size of the leakage to benefits; that is, the increase in benefits received compared with the present value of taxes paid when the tax max increases. For simplicity, we report results of this analysis only at the household level.

We stress two important details about the tax rates used in this analysis. First, we focus on Old-Age and Survivors Insurance and omit disability benefits or taxes. Second, payroll tax rates have changed over time (see SSA 2008, Table 2.A3). To isolate the effects of tax max changes, we hold earnings and other

Table 6.
Present value of lifetime Social Security benefits by AIME quartile: Comparing effects of lifetime earnings cap for Early Boomer households with the real earnings caps experienced by EB+12 and EB+24 cohort households (weighted estimates)

AIME quartile	Early Boomers ($)	EB+12 ($)	EB+24 ($)	Percent difference in lifetime benefit between EB+12 and Early Boomer cohorts	Percent difference in lifetime benefit between EB+24 and Early Boomer cohorts
First (lowest)	117,354 (65,910)	115,707 (64,002)	114,385 (62,225)	1.4	2.6
Second	225,323 (60,695)	220,849 (58,313)	218,184 (57,409)	2.0	3.3
Third	349,174 (63,079)	338,663 (59,324)	327,636 (57,797)	3.1	6.6
Fourth (highest)	471,997 (65,999)	456,154 (65,090)	432,425 (63,314)	3.5	9.2

SOURCE: Authors' calculations based on HRS data using SSA's AnyPIA program.

NOTES: Sample comprises 2,286 households with at least one member aged 51–56 in 2004.

Values for Early Boomers reflect the effects of lifetime earnings cap as of 2004, when cohort members were aged 51–56. Correspondingly, values for the EB+12 and EB+24 cohorts reflect lifetime earnings caps as of 1992 and 1980, respectively.

Estimates are weighted using the 2004 respondent-level weight. Nominal caps for 1980 and 1992 are respectively adjusted for 1980–2004 and 1992–2004 growth in wages.

Standard deviations shown in parentheses.

aspects of the tax and benefit rules, such as the payroll tax rate, constant between cohorts.

Table 8 shows that the present value of lifetime benefits (including spouse and survivor benefits) for households with at least one Early Boomer ($290,849) exceeds the present value of taxes paid ($256,300) by 13.5 percent. Table 6 showed how, after adjusting the cap in real terms, the present value of benefits grows because of the tax max increase. Comparing the effect of the taxable maximum that applied for members of the EB+12 cohort with the tax max in place for the Early Boomers, Table 8 shows that benefits effectively increase from $282,735 to $290,849, or by 2.9 percent. The present value of payroll taxes paid increases much more with the increase in the tax max between the EB+12 and Early Boomer cohorts, from $237,527 to $256,300, or by 7.9 percent. Comparing the tax maxes experienced by the EB+24 and Early Boomer cohorts, the present value of benefits increases from $273,057 to $290,849, or by 6.5 percent. The increase in the present value of payroll taxes is much larger, from $223,039 to $256,300, or 14.9 percent.

Our results allow us to estimate the leakage to benefits created by the increase in the payroll tax cap. After adjusting tax maxes to account for growth in average wages, the change between the EB+12 and the Early Boomer cohorts in the present value of benefits divided by the change in the present value of taxes equals 43.2 percent. Between the EB+24 and Early Boomer cohorts, that measure is 53.5 percent. Thus, between 43 and 54 percent of the additional taxes collected because of tax max increases pay for increased benefits, reducing the incremental funds available for addressing the Social Security revenue shortfall by almost one-half.

Table 9 restricts the sample to households in the highest AIME quartile. For the Early Boomer cohort, benefits ($471,997) amount to about 97 percent of taxes paid ($484,775). Under the taxable maxima that applied to older cohorts, the present value of their benefits would slightly exceed the present value of their taxes. For those in the top AIME quartile, tax max increases are associated with a smaller leakage from taxes to benefits. The difference in tax payments resulting from changes in the tax max between the EB+12 and Early Boomer cohorts is associated with a leakage to benefits equal to 33.4 percent of taxes paid. Tax max changes between the EB+24 and Early Boomer cohorts are associated with 44.7 percent of the additional taxes paid leaking into higher benefits.

Table 7.
Present value of lifetime Social Security benefits for all, one-earner, and two-earner households: Comparing effects of lifetime earnings cap for Early Boomer households with real earnings caps experienced by EB+12 and EB+24 cohort households (weighted estimates)

Households	Early Boomers ($)	EB+12 ($)	EB+24 ($)	Percent difference in lifetime benefit between EB+12 and Early Boomer cohorts	Percent difference in lifetime benefit between EB+24 and Early Boomer cohorts
All	290,849 (147,429)	282,735 (141,556)	273,057 (133,285)	2.9	6.5
Two earners	373,146 (117,554)	362,132 (112,039)	349,025 (103,119)	3.0	6.9
One earner	168,080 (91,484)	164,291 (88,160)	159,731 (83,373)	2.3	5.2

SOURCE: Authors' calculations based on HRS data using SSA's AnyPIA program.

NOTES: Sample comprises 2,286 households with at least one member aged 51–56 in 2004 (1,348 two-member households and 938 one-member households).

Values for Early Boomers reflect the effects of lifetime earnings cap as of 2004, when cohort members were aged 51–56. Correspondingly, values for the EB+12 and EB+24 cohorts reflect lifetime earnings caps as of 1992 and 1980, respectively.

Estimates are weighted using the 2004 respondent-level weight. Nominal caps for 1980 and 1992 are respectively adjusted for 1980–2004 and 1992–2004 growth in wages.

Standard deviations shown in parentheses.

Table 8.

Present value of lifetime Social Security benefits and taxes: Comparing effects of lifetime earnings cap for Early Boomer households with real earnings caps for EB+12 and EB+24 cohort households (weighted estimates)

Lifetime value of Social Security	Early Boomers ($)	EB+12 ($)	EB+24 ($)	Ratio of change in benefits to change in taxes— Between EB+12 and Early Boomer cohorts	Between EB+24 and Early Boomer cohorts
Benefits[a]	290,849	282,735	273,057	0.432	0.535
	(147,429)	(141,556)	(133,285)		
Taxes[b]	256,300	237,527	223,039		
	(177,917)	(157,002)	(140,978)		

SOURCE: Authors' calculations based on HRS data using SSA's AnyPIA program.

NOTES: Sample comprises 2,286 households with at least one member aged 51–56 in 2004; earnings records for some households are imputed.

Values for Early Boomers reflect the effects of lifetime earnings cap as of 2004, when cohort members were aged 51–56. Correspondingly, values for the EB+12 and EB+24 cohorts reflect lifetime earnings caps as of 1992 and 1980, respectively.

Calculations use real interest rate when computing discounted present value of benefits as of normal retirement age; nominal interest rate when discounting that benefit from normal retirement age to 2004, when calculating present value of taxes paid before 2004, and when discounting taxes paid after 2004; and double the Social Security payroll tax rate for individuals, when calculating lifetime taxes paid.

Standard deviations shown in parentheses.

a. Present value of benefits at normal retirement age discounted to 2004 dollars.

b. Present value of taxes paid until the year prior to enrollment year, in 2004 dollars. Omits taxes paid by spouses who died before 2004.

Table 9.

Present value of lifetime Social Security benefits and taxes: Comparing effects of lifetime earnings cap for Early Boomer households in the highest AIME quartile with earnings caps for EB+12 and EB+24 cohort households (weighted estimates)

Lifetime value of Social Security	Early Boomers ($)	EB+12 ($)	EB+24 ($)	Ratio of change in benefits to change in taxes— Between EB+12 and Early Boomer cohorts	Between EB+24 and Early Boomer cohorts
Benefits[a]	471,997	456,154	432,425	0.334	0.447
	(65,999)	(65,090)	(63,314)		
Taxes[b]	484,775	437,367	396,327		
	(114,331)	(95,725)	(85,117)		

SOURCE: Authors' calculations based on HRS data using SSA's AnyPIA program.

NOTES: Reflects 509 households with at least one member aged 51–56 in 2004 and with matched Social Security records; missing records are imputed.

Values for Early Boomers reflect the effects of lifetime earnings cap as of 2004, when cohort members were aged 51–56. Correspondingly, values for the EB+12 and EB+24 cohorts reflect lifetime earnings caps as of 1992 and 1980, respectively.

Calculations use real interest rate when computing discounted present value of benefits as of normal retirement age; nominal interest rate when discounting that benefit from normal retirement age to 2004, when calculating present value of taxes paid before 2004, and when discounting taxes paid after 2004; and double the Social Security payroll tax rate for individuals, when calculating lifetime taxes paid.

Standard deviations shown in parentheses.

a. Present value of benefits at normal retirement age discounted to 2004 dollars.

b. Present value of taxes paid until the year prior to enrollment year, in 2004 dollars. Omits taxes paid by spouses who died before 2004.

Possible Extensions

In light of our findings, two avenues for further analysis present themselves.

Analyses Based on Historical Data Versus Projections

Using historical data, we have examined the effects of increasing the tax max on benefits and taxes. Others have projected the aging of selected population bases to estimate the effect of increasing the tax max, forecasting earnings with different degrees of sophistication. Our findings differ from those estimates for three reasons: The two sets of estimates refer to different periods; they employ different changes in the tax max; and the process of projecting earnings, including earnings above the tax max, can further affect the differences in earnings used in the two types of calculations.

With considerable additional work, it would be possible to modify our approach so as to project the effects of future changes in the tax max. Earlier, we discussed how important it would be for that particular exercise to project more than the average effect of the ongoing changes in the distribution of earnings. Forecasts depend on accurate modeling of the changing patterns of labor force participation by women over their life cycles, as well as fundamental changes in occupations, industries, skill mixes, and job attachment. In addition, projections are dependent on accurate forecasts of the variation in earnings in proximity to current and anticipated tax max levels.

Behavioral Responses to Tax Max Changes

Further analysis might also consider behavioral responses to changes in the taxable maximum. It is not clear how important behavioral responses would be. For example, Liebman and Saez (2006) found little evidence that either the labor supply or the earnings of high earners (or their spouses) respond to changes in the tax rate.

Conclusions

This article analyzes how changes in the tax max have affected Social Security benefits and taxes. For the Early Boomer cohort—those aged 51–56 in 2004—lifetime household benefits increased by 2.9 percent because of the increase in the real payroll tax ceiling compared with the cohort 12 years older, and by 6.5 percent compared with the cohort 24 years older. Tax receipts increased by 7.9 percent and 14.9 percent over those that would have been collected under the tax ceilings that applied to the cohorts 12 and 24 years older, respectively. Thus, about 43.2 percent of the additional tax revenues generated by increasing the tax max between the EB+12 and Early Boomer cohorts will ultimately be used to increase total benefits. Similarly, about 53.5 percent of the additional tax revenues created by the increase in the payroll tax cap between the EB+24 and Early Boomer cohorts will be used to increase total benefits.

The estimates closest to ours are those made by CBO (2010), who find that about one-third of additional revenues gained from abolishing the tax max would be paid out in the form of higher benefits. Our look at historical data for the three cohorts suggests that the changes in maximum covered earnings would result in higher leakage to increased benefits, between 43 percent and 54 percent.

The figures generated by CRS (Mulvey 2010) are further out of line with ours. Although CRS confined their analysis to individuals' own benefits and taxes and did not consider spouse and survivor benefits, they nevertheless estimated that around two-thirds of the additional taxes would be lost to higher benefits. That estimate far exceeds our calculations of historical experience.

To be sure, our estimates of the size of leakage of additional taxes into benefits are bracketed by the estimates of the CBO and CRS. However, the differences are substantial, with the CBO estimate of leakage at about one-third, the CRS estimate at about two-thirds, and ours falling between, at roughly one-half.

Notes

Acknowledgments: David Olson of SSA was extremely helpful to us in dealing with the AnyPIA program. Joyce Manchester of CBO provided helpful comments.

[1] To avoid excessive repetition, this article uses the terms "tax max," "cap," "maximum," and "ceiling" interchangeably.

[2] The extent to which these proposals would raise the tax max varies. For example, some proposals would abolish the cap entirely. Others would raise the tax max, but would not tax all earnings. See CBO (2010) for analysis of policies that would set a higher threshold without extending taxation to all earnings.

[3] Using wage indexing to set the annual tax max actually originated in 1975. However, the legislation authorizing

wage indexing also introduced a flaw in the benefit formula that required adding ad hoc increases to the wage indexed tax max increases during 1979–1981 (Whitman and Shoffner 2011).

[4] As reported by CRS, "Since 1982, the Social Security taxable earnings base has risen at the same rate as average wages in the economy. However, because of increasing earnings inequality, the percentage of covered earnings that are taxable has decreased from 90% in 1982 to 85% in 2005. The percentage of covered earnings that is taxable is projected to decline to about 83% for 2014 and later. Because the cap was indexed to the average growth in wages, the share of the population below the cap has remained relatively stable at roughly 94%. Of the 9.5 million Americans with earnings above the base, roughly 80% are men and only 9% had any earnings from self-employment income" (Mulvey 2010).

[5] Our analysis treats the household—a respondent and spouse (if present) who occupy a housing unit as their usual place of residence—as the unit of observation. Within a household, we restrict attention to retired-worker and auxiliary (dependent and survivor) benefits that are being paid or will be paid to age-eligible respondents and their spouses. We omit from consideration benefits paid to disabled workers and their dependents, child benefits, and all other benefits paid by the Social Security programs.

[6] For evidence on Social Security's redistributional effects at the individual and household levels, see Gustman and Steinmeier (2001) and Gustman, Steinmeier, and Tabatabai (2011). Coe and others (2011) conclude that the income tax on Social Security benefits has little effect on the distribution of benefits among households classified by earnings decile.

[7] Other SSA estimates rely on the Modeling Income in the Near Term (MINT) model, produced for SSA by the Urban Institute expressly for making short-run projections in which behavioral responses are limited.

[8] In the early years of Social Security, maximum taxable earnings exceeded the earnings of almost all workers. Ninety-seven percent of workers in 1937 and 1940 had earnings below the tax max. By 1945, 86 percent of workers had earnings below the cap (SSA 2008, Table 4.B4).

[9] Although Table 2 omits data for 2005–2010, the use of wage indexing to set the annual cap since 1982 has kept the cap-to-average wage ratio relatively stable.

[10] Covariates include annual earnings from current job, household income from last calendar year, demographic characteristics, marital status and history, age, work history (including reported work in each HRS wave, tenure on longest and current job, total number of years worked, number of jobs, number of jobs held for 5 or more years, industry and occupation of current job, and union membership), whether US-born, homeownership, number of children, labor force and disability status, self-employment status in 2004, and veteran status.

[11] See Gustman, Steinmeier, and Tabatabai (2011) for further details on the construction of measures of Social Security benefits at the household level and the distribution of benefits among households.

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NOTE

Introduction and Overview of the 2012 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds

I. INTRODUCTION

The Old-Age, Survivors, and Disability Insurance (OASDI) program makes monthly income available to insured workers and their families at retirement, death, or disability. The OASDI program consists of two parts. Retired workers, their families, and survivors of deceased workers receive monthly benefits under the Old-Age and Survivors Insurance (OASI) program. Disabled workers and their families receive monthly benefits under the Disability Insurance (DI) program.

The Social Security Act established the Board of Trustees to oversee the financial operations of the OASI and DI Trust Funds. The Board is composed of six members. Four members serve by virtue of their positions in the Federal Government: the Secretary of the Treasury, who is the Managing Trustee; the Secretary of Labor; the Secretary of Health and Human Services; and the Commissioner of Social Security. The President appoints and the Senate confirms the other two members to serve as public representatives. The Deputy Commissioner of the Social Security Administration (SSA) serves as Secretary of the Board.

The Social Security Act requires that the Board, among other duties, report annually to the Congress on the actuarial status and financial operations of the OASI and DI Trust Funds. The 2012 report is the 72nd such report.

Reprinted from *The 2012 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds.* The full report is available at http://www.socialsecurity.gov/OACT/TR/2012.

II. OVERVIEW

A. HIGHLIGHTS

This section summarizes the report's major findings.

In 2011

At the end of 2011, the OASDI program was providing benefits to about 55 million people: 38 million retired workers and dependents of retired workers, 6 million survivors of deceased workers, and 11 million disabled workers and dependents of disabled workers. During the year, an estimated 158 million people had earnings covered by Social Security and paid payroll taxes. Total expenditures in 2011 were $736 billion. Total income was $805 billion, which consisted of $691 billion in non-interest income and $114 billion in interest earnings. Assets held in special issue U.S. Treasury securities grew to $2.7 trillion.

Short-Range Results

In 2011, Social Security's cost continued to exceed both the program's tax income and its non-interest income, a trend that the Trustees project to continue throughout the short-range period and beyond. The 2011 deficit of tax income relative to cost was $148 billion, and the projected 2012 deficit is $165 billion. The sizes of these deficits are largely due to a temporary reduction in the Social Security payroll tax for 2011 and 2012. The legislation establishing the payroll tax reduction also provided for transfers from the General Fund of the Treasury to the trust funds to "replicate to the extent possible" revenues that would have occurred in the absence of the payroll tax reduction. Including these general revenue reimbursements, the 2011 deficit of non-interest income relative to cost was $45 billion, and the projected 2012 deficit is $53 billion.

The Trustees project that the assets of the OASI Trust Fund and of the combined OASI and DI Trust Funds will be adequate over the next 10 years under the intermediate assumptions. However, the projected assets of the DI Trust Fund decline steadily, fall below 100 percent of annual cost by the beginning of 2013, and continue to decline until the trust fund is exhausted in 2016. The DI Trust Fund does not satisfy the short-range test of financial adequacy because the test requires that the trust fund remain above 100 percent of annual cost throughout the short-range period.

The Trustees project that the combined assets of the OASI and DI Trust Funds will increase for the next several years, growing from $2,678 billion at the beginning of 2012 to $3,061 billion at the beginning of 2021. At the same

time, the ratio of assets to cost continues to decline, from 340 percent of annual cost for 2012 to 227 percent of annual cost for 2021. Assets increase because annual cost is less than total income for 2012 through 2020. Beginning in 2021, however, annual cost exceeds total income, and therefore assets begin to decline, reaching $3,053 billion at the beginning of 2022. Excluding interest earned on trust fund assets from the comparison, annual cost exceeds non-interest income in 2012 and remains higher throughout the remainder of the short-range period. For last year's report, the Trustees projected that combined assets would be 347 percent of annual cost at the beginning of 2012 and 272 percent at the beginning of 2021. Projected trust fund assets decline more quickly than in last year's report principally due to updated economic data and assumptions.

Long-Range Results

The Trustees project that annual cost will exceed non-interest income throughout the long-range period under the intermediate assumptions. The dollar level of the combined trust funds declines beginning in 2021 until assets are exhausted in 2033. Considered separately, the DI Trust Fund becomes exhausted in 2016 and the OASI Trust Fund becomes exhausted in 2035. The projected exhaustion date occurs two years earlier for the DI Trust Fund and three years earlier for the OASI Trust Fund and the combined OASI and DI Trust Funds.

Projected OASDI cost generally increases more rapidly than projected non-interest income through 2035 because the retirement of the baby-boom generation will increase the number of beneficiaries much faster than subsequent lower-birth-rate generations increase the number of workers. From 2035 to 2050, the cost rate declines due principally to the aging of the already retired baby-boom generation. Thereafter, increases in life expectancy cause OASDI cost to increase generally relative to non-interest income, but more slowly than prior to 2035.

The projected OASDI annual cost rate increases from 13.83 percent of taxable payroll for 2012 to 17.41 percent for 2035 and to 17.83 percent for 2086, a level that is 4.50 percent of taxable payroll more than the projected income rate for 2086. For last year's report, the Trustees estimated the OASDI cost for 2086 at 17.59 percent, or 4.28 percent of payroll more than the annual income rate for that year. Expressed in relation to the projected gross domestic product (GDP), OASDI cost rises from the current level of 5.0 percent of GDP to about 6.4 percent by 2035, then declines to 6.1 percent by 2055, and remains between 6.0 and 6.1 percent through 2086.

For the 75-year projection period, the actuarial deficit is 2.67 percent of taxable payroll, 0.44 percentage point larger than in last year's report. The open group unfunded obligation for OASDI over the 75-year period is $8.6 trillion in present value and is $2.1 trillion more than the measured level of a year ago. If the assumptions, methods, starting values, and the law had all remained unchanged, the unfunded obligation would have risen to about $7.0 trillion due to the change in the valuation date. The remaining increase in the unfunded obligation is primarily due to updated data and economic assumptions.

Conclusion

Under the long-range intermediate assumptions, the Trustees project that annual cost for the OASDI program will exceed non-interest income in 2012 and remain higher throughout the remainder of the long-range period. The projected combined OASI and DI Trust Fund assets increase through 2020, begin to decline in 2021, and become exhausted and unable to pay scheduled benefits in full on a timely basis in 2033. However, the DI Trust Fund becomes exhausted in 2016, so legislative action is needed as soon as possible. In the absence of a long-term solution, lawmakers could reallocate the payroll tax rate between OASI and DI, as they did in 1994.

For the combined OASI and DI Trust Funds to remain solvent throughout the 75-year projection period, lawmakers could: (1) increase the combined payroll tax rate for the period in a manner equivalent to an immediate and permanent increase of 2.61 percentage points (from its current level of 12.40 percent to 15.01 percent);[1] (2) reduce scheduled benefits for the period in a manner equivalent to an immediate and permanent reduction of 16.2 percent; (3) draw on alternative sources of revenue; or (4) adopt some combination of these approaches. Lawmakers would have to make significantly larger changes for future beneficiaries if they decide to avoid changes for current beneficiaries and those close to retirement age.

The Trustees recommend that lawmakers address the projected trust fund shortfalls in a timely way in order to phase in necessary changes and give workers and beneficiaries time to adjust to them. Implementing changes soon would allow more generations to share in the needed revenue increases or reductions in scheduled benefits. Social Security will play a critical role in the lives of 56 million beneficiaries and 159 million covered workers and their families in 2012. With informed discussion, creative thinking, and timely legislative action, Social Security can continue to protect future generations.

[1] The necessary tax rate increase of 2.61 percent differs from the 2.67 percent actuarial deficit for two reasons. First, the necessary tax rate is the rate required to maintain solvency throughout the period that does not result in any trust fund reserve at the end of the period, whereas the actuarial deficit incorporates an ending trust fund balance equal to 1 year's cost. Second, the necessary tax rate reflects a behavioral response to tax rate changes, whereas the actuarial deficit does not. In particular, the calculation of the necessary tax rate assumes that an increase in payroll taxes results in a small shift of wages and salaries to forms of employee compensation that are not subject to the payroll tax.

B. TRUST FUND FINANCIAL OPERATIONS IN 2011

Table II.B1 shows the income, expenditures, and assets for the OASI, the DI, and the combined OASI and DI Trust Funds in calendar year 2011.

Table II.B1.—Summary of 2011 Trust Fund Financial Operations
[In billions]

	OASI	DI	OASDI
Assets at the end of 2010	$2,429.0	$179.9	$2,609.0
Total income in 2011	698.8	106.3	805.1
Net payroll tax contributions	482.4	81.9	564.2
Reimbursements from General Fund of the Treasury	87.8	14.9	102.7
Taxation of benefits	22.2	1.6	23.8
Interest	106.5	7.9	114.4
Total expenditures in 2011	603.8	132.3	736.1
Benefit payments	596.2	128.9	725.1
Railroad Retirement financial interchange	4.1	.5	4.6
Administrative expenses	3.5	2.9	6.4
Net increase in assets in 2011	95.0	-26.1	69.0
Assets at the end of 2011	2,524.1	153.9	2,677.9

Note: Totals do not necessarily equal the sums of rounded components.

In 2011, net payroll tax contributions accounted for 70 percent of total trust fund income. Net payroll tax contributions consist of taxes paid by employees, employers, and the self-employed on earnings covered by Social Security. These taxes are paid on covered earnings up to a specified maximum annual amount, which was $106,800 in 2011. Table II.B2 shows the tax rates scheduled under current law for 2011.

In 2011, approximately 13 percent of OASDI Trust Fund income came from reimbursements from the General Fund of the Treasury. Public Law 111-312, the Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010, accounts for almost all of the reimbursement for the year. This act specified general fund reimbursement for temporary reductions in revenue due to reduced payroll tax rates for employees and for self-employed workers.

Three percent of OASDI Trust Fund income in 2011 came from subjecting up to 50 percent of Social Security benefits above specified levels to Federal personal income taxation, and 14 percent of OASDI income came from interest earned on investment of OASDI Trust Fund reserves. The Department of the Treasury invests trust fund assets in interest-bearing securities of the U.S.

Government. In 2011, the combined trust fund assets earned interest at an effective annual rate of 4.4 percent. Almost 99 percent of expenditures from the combined OASI and DI Trust Funds in 2011 were retirement, survivor, and disability benefits totaling $725.1 billion. The financial interchange with the Railroad Retirement program was the source of a net payment of $4.6 billion from the combined OASI and DI Trust Funds, which was about 0.6 percent of total expenditures. The administrative expenses of the Social Security program were $6.4 billion, which was about 0.9 percent of total expenditures.

Assets of the trust funds provide a reserve to pay benefits whenever total program cost exceeds income. Trust fund assets increased by $69.0 billion in 2011 because total income to the combined funds, including interest earned on trust fund assets, exceeded total expenditures. At the end of 2011, the combined assets of the OASI and the DI Trust Funds were 340 percent of estimated expenditures for 2012, down from an actual level of 354 percent at the end of 2010.

Table II.B2.—Payroll Tax Contribution Rates for 2011
[In percent]

	OASI	DI	OASDI
Payroll tax contribution rate for employees	3.59	0.61	4.20
Payroll tax contribution rate for employers	5.30	.90	6.20
Payroll tax contribution rate for self-employed persons	8.89	1.51	10.40

Note: Public Law 111-312 reduced the OASDI payroll tax rate for 2011 by 2 percentage points for employees and for self-employed workers. This law required that the General Fund of the Treasury reimburse the OASI and DI Trust Funds for these temporary reductions in 2011 payroll tax revenue.

C. ASSUMPTIONS ABOUT THE FUTURE

The future income and expenditures of the OASI and DI Trust Funds will depend on many factors, including the size and characteristics of the population receiving benefits, the level of monthly benefit amounts, the size of the workforce, and the level of covered workers' earnings. These factors will depend in turn on future birth rates, death rates, immigration, marriage and divorce rates, retirement-age patterns, disability incidence and termination rates, employment rates, productivity gains, wage increases, inflation, interest rates, and many other demographic, economic, and program-specific factors.

Table II.C1 presents key demographic and economic assumptions for three alternative scenarios. The intermediate assumptions reflect the Trustees' best estimates of future experience. Therefore, most of the figures in this overview depict only the outcomes under the intermediate assumptions. Any projection of the future is, of course, uncertain. For this reason, the Trustees also present results under low-cost and high-cost alternatives to provide a range of possible future experience. The actual future costs are unlikely to be as extreme as those portrayed by the low-cost and high-cost projections. A separate section on the uncertainty of the projections, beginning on page 16, highlights the implications of these alternative scenarios.

The Trustees reexamine the assumptions each year in light of recent experience and new information. This annual review helps to ensure that the Trustees' assumptions provide the best estimate of future possibilities.

Table II.C1.—Long-Range Values[a] of Key Demographic and Economic Assumptions for the 75-year Projection Period

Long-range assumptions	Intermediate	Low-cost	High-cost
Total fertility rate (children per woman), starting in 2036	2.0	2.3	1.7
Average annual percentage reduction in total age-sex-adjusted death rates from 2011 to 2086	.77	.39	1.18
Average annual net immigration (in thousands) for years 2012-86	1,080	1,375	790
Productivity (total U.S. economy), starting in 2024	1.68	1.98	1.38
Average annual percentage change in average wage in covered employment from 2021 to 2086	3.92	3.51	4.31
Consumer Price Index (CPI), starting in 2021	2.80	1.80	3.80
Average annual real-wage differential (percent) for years 2022-86	1.12	1.71	.51
Unemployment rate (percent), starting in 2021	5.5	4.5	6.5
Annual trust fund real interest rate (percent), starting in 2022	2.9	3.4	2.4

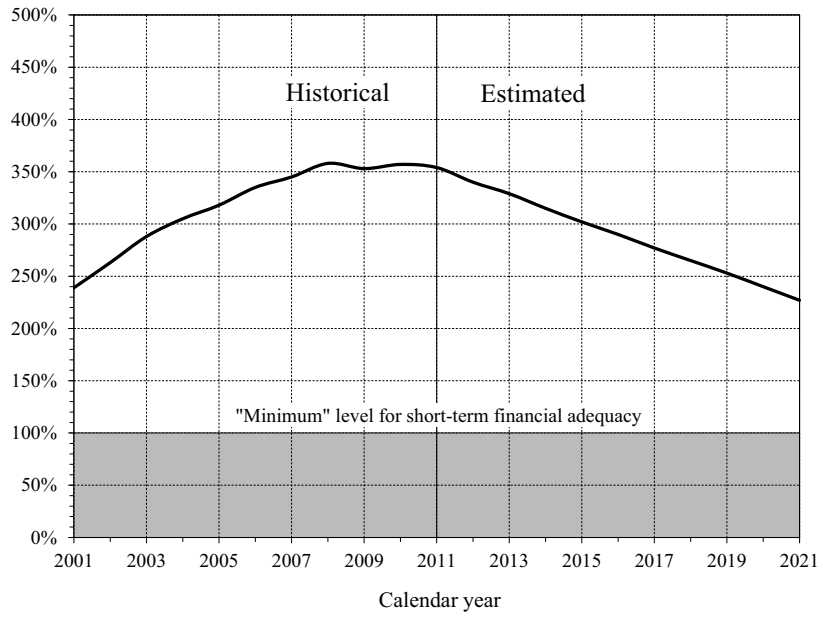
[a] See chapter V for details, including historical values and projected values.

D. PROJECTIONS OF FUTURE FINANCIAL STATUS

Short-Range Actuarial Estimates

For the short-range period (2012 through 2021), the Trustees measure financial adequacy by comparing projected assets at the beginning of each year to projected program cost for that year under the intermediate set of assumptions. A trust fund ratio of 100 percent or more—that is, assets at the beginning of each year at least equal to projected cost for the year—is a good indication that the trust fund can cover most short-term contingencies. The projected trust fund ratios under the intermediate assumptions for OASI alone, and for OASI and DI combined, exceed 100 percent throughout the short-range period. Therefore, OASI and OASDI satisfy the Trustees' short-term test of financial adequacy. However, the DI Trust Fund fails the Trustees' short-term test of financial adequacy. The Trustees project that the DI trust fund ratio will fall below 100 percent by the beginning of 2013. After 2013, the projected DI trust fund ratio continues to decline until the trust fund is exhausted in 2016. Figure II.D1 shows that the trust fund ratios for the combined OASI and DI Trust Funds decline consistently after 2010.

Figure II.D1.—Short-Range OASDI Trust Fund Ratio
[Assets as a percentage of annual expenditures]



As it has since 2010, projected cost exceeds non-interest income throughout the short-range period. Cost is less than total income until the last year of the short-range period (2021), when cost exceeds total income. While trust fund assets continue to grow through 2020, they grow more slowly than cost, causing the trust fund ratio to decline, as shown in figure II.D1.

Long-Range Actuarial Estimates

The Trustees use three types of measures to assess the actuarial status of the program over the next 75 years: (1) annual cash-flow measures, including income rates, cost rates, and balances; (2) trust fund ratios; and (3) summary measures such as actuarial balances and open group unfunded obligations. The Trustees most often express these measures as percentages of taxable payroll, but may also express the measures as percentages of gross domestic product (GDP) or in dollars. The Trustees also present summary measures over the infinite horizon.[1] The infinite horizon values provide an additional indication of Social Security's very-long-run financial condition, but are subject to much greater uncertainty.

Annual Income Rates, Cost Rates, and Balances

Figure II.D2 illustrates the year-by-year relationship among OASDI income (excluding interest), cost (including scheduled benefits), and expenditures (including payable benefits) for the full 75-year period. The figure shows all values as percentages of taxable payroll. Under the intermediate assumptions, demographic factors would by themselves cause the projected cost rate to rise rapidly for the next two decades before leveling off in about 2035. However, the recent recession led to a reduction in the tax base and a surge in beneficiaries, which in turn sharply increased the cost rate. This recession effect obscures the underlying rising trend in the cost rate for the next 5 years. The projected income rate is stable at about 13 percent throughout the 75-year period.

Annual OASDI cost exceeded non-interest income in 2010 for the first time since 1983. The Trustees project that cost will continue to exceed non-interest income throughout the 75-year valuation period. Nevertheless, total trust fund income, including interest income, is more than is necessary to cover costs through 2020, so trust fund assets continue to grow. Beginning in 2021, cost exceeds total income and combined OASI and DI Trust Fund assets diminish until they become exhausted in 2033. After trust fund exhaustion,

[1] The definition of infinite horizon appears in the Glossary.

continuing income is sufficient to support expenditures at a level of 75 percent of program cost for the rest of 2033, declining to 73 percent for 2086.

Figure II.D2.—OASDI Income, Cost, and Expenditures as Percentages of Taxable Payroll
[Under Intermediate Assumptions]

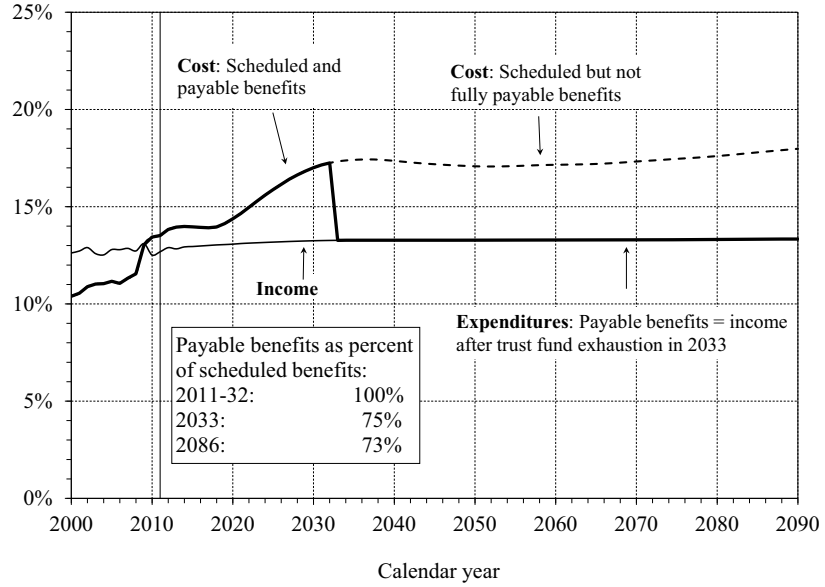
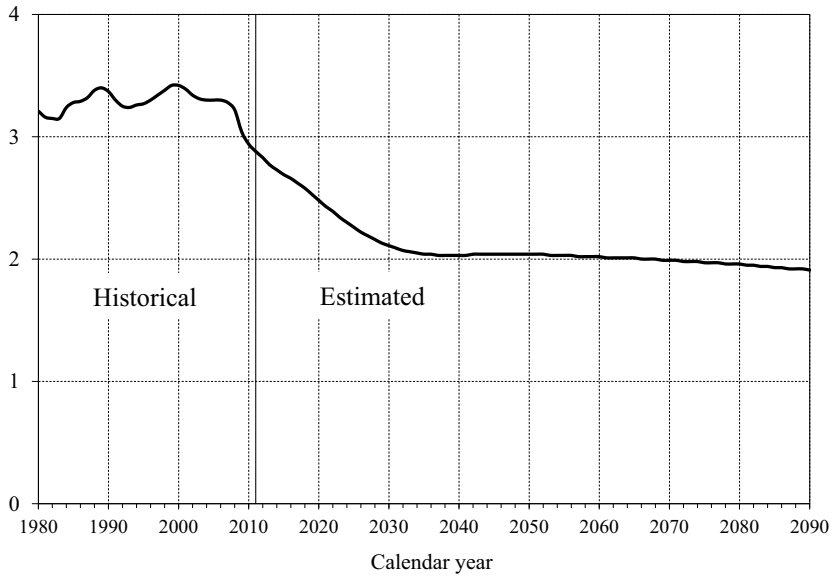


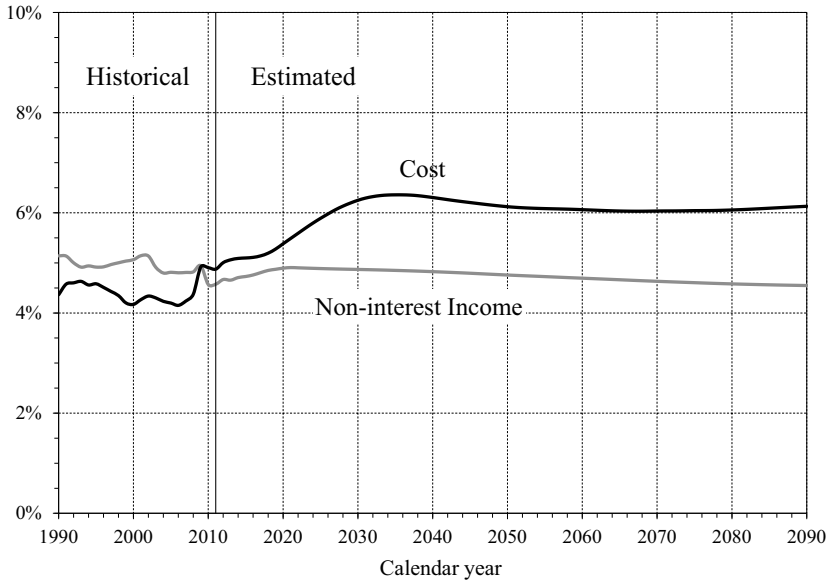
Figure II.D3 shows the estimated number of workers per beneficiary. Figures II.D2 and II.D3 illustrate the inverse relationship between cost rates and the number of workers per beneficiary. In particular, the projected future increase in the cost rate reflects a projected decline in the number of covered workers per beneficiary. There were about 2.9 workers for every OASDI beneficiary in 2011. This ratio had been extremely stable, remaining between 3.2 and 3.4 from 1974 through 2008, and has declined since then due to the economic recession and the beginning of the demographic shift that will drive this ratio over the next 20 years. The Trustees project that the ratio of workers to beneficiaries will continue to decline, even as the economy recovers, due to this demographic shift—as workers of lower-birth-rate generations replace workers of the baby-boom generation. The ratio of workers to beneficiaries reaches 2.0 by 2035 when the baby-boom generation will have largely retired, with a further gradual decline thereafter due to increasing longevity.

Figure II.D3.—Number of Covered Workers Per OASDI Beneficiary



Another important way to look at Social Security's future is to view its annual cost and non-interest income as a share of U.S. economic output. As shown in figure II.D4, the Trustees project that Social Security's cost as a percent of GDP will grow from 4.4 percent in 2008 to about 6.4 percent by 2035, then decline to 6.1 percent by 2055, and remain between 6.0 and 6.1 percent through 2086. As the economy recovers, Social Security's non-interest income, which reflects scheduled tax rates, increases from its current level of about 4.7 percent of GDP to about 4.9 percent of GDP for 2021. Thereafter, non-interest income as a percent of GDP declines gradually, to about 4.6 percent by 2086, because the Trustees expect the share of employee compensation provided in noncovered fringe benefits to increase gradually.

Figure II.D4.—OASDI Cost and Non-interest Income as a Percentage of GDP



Trust Fund Ratios

The trust fund ratio is defined as the assets at the beginning of a year expressed as a percentage of the cost during the year. The trust fund ratio thus represents the proportion of a year's cost which could be paid solely with the assets at the beginning of the year. Table II.D1 displays the projected maximum trust fund ratios during the long-range period for the OASI, DI, and combined funds. The table also shows the year of maximum projected trust fund ratio during the long-range projection period (2012-86) and the year of trust fund exhaustion. While the trust fund ratio for 2012 is the highest for this period, the trust fund ratio was higher for some earlier years.

Table II.D1.—Projected Maximum Trust Fund Ratios During the Long-Range Period and Trust Fund Exhaustion Dates
[Under the Intermediate Assumptions]

	OASI	DI	OASDI
Maximum trust fund ratio (percent)	390	109	340
Year attained	2012	2012	2012
Year of trust fund exhaustion	2035	2016	2033

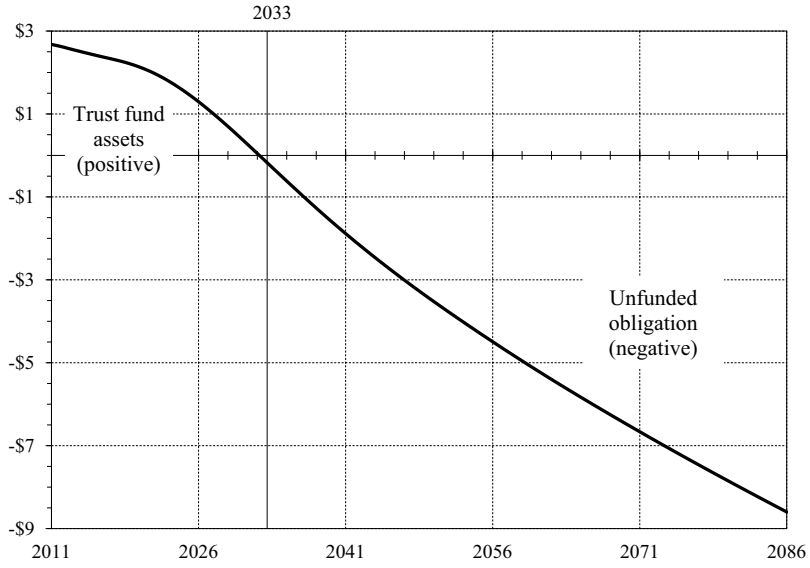
Summary Measures

The actuarial balance is a summary measure of the program's financial status through the end of the 75-year valuation period. The actuarial balance measure includes the trust fund assets at the beginning of the period, so it is essentially the difference between the income and cost from 1937 through the end of the valuation period. The Trustees express actuarial balance as a percentage of the taxable payroll for the valuation period, and refer to a negative actuarial balance as an actuarial deficit. In other words, the actuarial deficit is the percentage that could be added to the current-law income rate for each of the next 75 years, or subtracted from the cost rate for each year, to make the trust fund assets at the end of the period equal to the following year's projected cost. More generally, the actuarial deficit is the average amount of change in income or cost that is needed throughout the valuation period in order to achieve actuarial balance. In this report, the actuarial deficit for the combined OASI and DI Trust Funds under the intermediate assumptions is 2.67 percent of taxable payroll. The actuarial deficit was 2.22 percent in the 2011 report. If the assumptions, methods, starting values, and the law had all remained unchanged from last year, the actuarial deficit would have increased to 2.28 percent of payroll solely due to advancing the valuation period by 1 year.

Another way to illustrate the projected financial shortfall of the OASDI program is to examine the cumulative present value of scheduled income less cost. Figure II.D5 shows the present value of cumulative OASDI income less cost from the inception of the program through years 2011-86. A positive cumulative value represents the level of trust fund assets at the end of the selected year. A negative value is the unfunded obligation through the selected year. The balance of the combined trust funds was $2.7 trillion at the end of 2011. The trust fund assets decline on a present value basis after 2011, but remain positive through 2032. However, after 2032 this cumulative amount becomes negative, which means that the combined OASI and DI Trust Funds have a net unfunded obligation through each year after 2032. Through the end of 2086, the combined funds have a present-value unfunded obligation of $8.6 trillion. This unfunded obligation represents 2.52 percent of taxable payroll and 0.9 percent of GDP for the 75-year valuation period. The unfunded obligation as a share of taxable payroll (2.52 percent) and the actuarial deficit (2.67 percent) are similar measures, but differ because the actuarial deficit incorporates the cost of having an ending trust fund balance equal to 1 year's cost.

Figures II.D2, II.D4, and II.D5 show that the program's financial condition is worsening at the end of the projection period. Trends in annual balances and cumulative values toward the end of the 75-year period provide an indication of the program's ability to maintain solvency beyond 75 years. Consideration of summary measures alone for a 75-year period can lead to incorrect perceptions and to policy prescriptions that do not achieve sustainable solvency.[1]

Figure II.D5.—Cumulative Scheduled OASDI Income Less Cost, From Program Inception Through Years 2011-86
[Present value as of January 1, 2012, in trillions]



The Trustees also consider summary measures over the infinite horizon. The infinite horizon values provide an additional indication of Social Security's financial condition over a period extending indefinitely into the future, but results are subject to much greater uncertainty.

Extending the horizon beyond 75 years increases the measured unfunded obligation. Through the infinite horizon, the unfunded obligation, or shortfall, equals $20.5 trillion in present value, which represents 3.9 percent of future taxable payroll or 1.3 percent of future GDP. The summarized short-

[1] Sustainable solvency occurs when the program has positive trust fund ratios throughout the 75-year projection period that are either stable or rising at the end of the period.

falls for the 75-year period and through the infinite horizon both reflect annual cash-flow shortfalls for all years after trust fund exhaustion. The annual shortfalls after trust fund exhaustion rise slowly and reflect increases in life expectancy after 2033. The summarized shortfalls for the 75-year period, as percentages of taxable payroll and GDP, are lower than those for the infinite horizon principally because only about three-quarters of the years in the 75-year period have unfunded annual shortfalls.

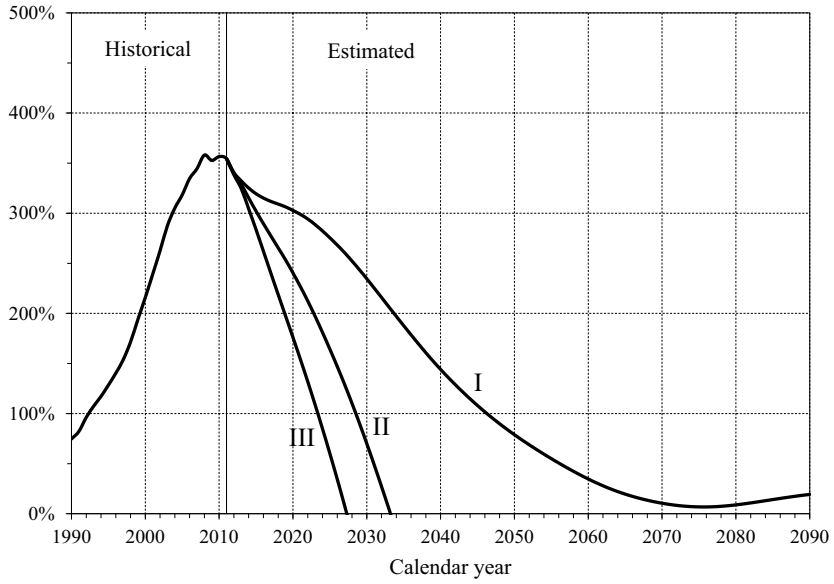
The measured unfunded obligation over the infinite horizon increased from $17.9 trillion in last year's report to $20.5 trillion in this year's report. If the assumptions, methods, starting values, and the law had all remained unchanged, the unfunded obligation over the infinite horizon would have risen to $18.7 trillion solely due to the change in the valuation date. Expressed as a percentage of taxable payroll, the measured unfunded obligation through the infinite horizon increased from 3.6 percent in last year's report to 3.9 percent in this year's report. As a percentage of GDP, the measured unfunded obligation through the infinite horizon increased from 1.2 percent in last year's report to 1.3 percent in this year's report.

Uncertainty of the Projections

Significant uncertainty surrounds the intermediate assumptions. The Trustees use several methods to help illustrate that uncertainty.

A first approach uses alternative scenarios reflecting low-cost (alternative I) and high-cost (alternative III) sets of assumptions. Figure II.D6 shows the projected trust fund ratios for the combined OASI and DI Trust Funds under the intermediate, low-cost, and high-cost assumptions. The low-cost alternative includes a higher ultimate total fertility rate, slower improvement in mortality, a higher real-wage differential, a higher ultimate real interest rate, and a lower unemployment rate. The high-cost alternative, in contrast, includes a lower ultimate total fertility rate, more rapid improvement in mortality, a lower real-wage differential, a lower ultimate real interest rate, and a higher unemployment rate. These alternatives are not intended to suggest that all parameters would be likely to differ from the intermediate values in the same direction, but are intended to illustrate the effect of clearly defined scenarios that are, on balance, very favorable or unfavorable for the program's financial status. Actual future costs are unlikely to be as extreme as those portrayed by the low-cost and high-cost projections. The method for constructing the low-cost and high-cost projections does not lend itself to estimating the probability that actual experience will lie within or outside the range they define.

Figure II.D6.—Long-Range OASDI Trust Fund Ratios Under Alternative Scenarios
[Assets as a percentage of annual cost]

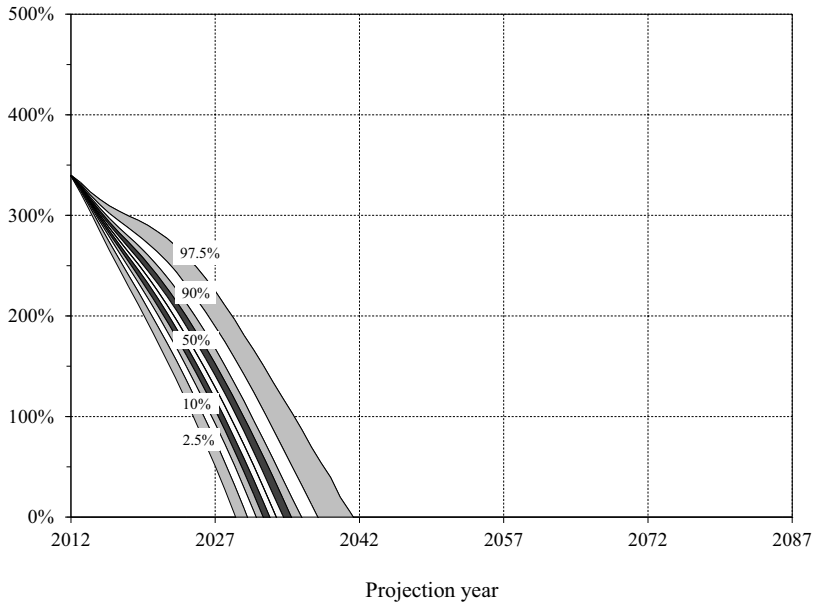


Appendix D of this report presents long-range sensitivity analysis for the OASDI program. By varying one parameter at a time, sensitivity analysis provides a second approach for illustrating the uncertainty surrounding projections into the future.

A third approach uses stochastic simulations that reflect randomly assigned annual values for each parameter. These simulations produce a distribution of projections and corresponding probabilities that future outcomes will fall within or outside a given range. The results of the stochastic simulations, discussed in more detail in appendix E, suggest that trust fund exhaustion (i.e. the point at which the trust fund ratio reaches zero) is likely by mid-century. In particular, figure II.D7 suggests that based on these stochastic simulations, trust fund assets will exhaust between 2029 and 2041 with a 95-percent probability.

The stochastic results suggest that trust fund ratios as high as the low-cost alternative are unlikely. The difference in the ranges of the projected trust fund ratios between two of the methods for illustrating uncertainty (alternative scenarios and stochastic simulations) is substantially due to the different assignment of real interest rates in these two methods. Appendix E includes an explanation of the different treatments.

Figure II.D7.—Long-Range OASDI Trust Fund Ratios From Stochastic Modeling



Changes From Last Year's Report

The projected long-range OASDI actuarial deficit increased from 2.22 percent of taxable payroll for last year's report to 2.67 percent of taxable payroll for this year's report. Changes in economic projections, due to new starting values and revised assumptions, are the most significant of several factors contributing to the increase in the deficit. For a detailed description of the specific changes identified in table II.D2, see section IV.B.7.

Table II.D2.—Reasons for Change in the 75-Year Actuarial Balance, Based on Intermediate Assumptions
[As a percentage of taxable payroll]

Item	OASI	DI	OASDI
Shown in last year's report:			
Income rate	12.11	1.91	14.02
Cost rate	14.04	2.21	16.25
Actuarial balance	**-1.92**	**-.30**	**-2.22**
Changes in actuarial balance due to changes in:			
Legislation / Regulation	.00	.00	.00
Valuation period[a]	-.05	-.01	-.05
Demographic data and assumptions	-.05	.00	-.05
Economic data and assumptions	-.20	-.01	-.21
Disability data and assumptions	.00	-.05	-.04
Methods and programmatic data	-.09	.00	-.08
Total change in actuarial balance	-.37	-.07	-.44
Shown in this report:			
Actuarial balance	**-2.30**	**-.37**	**-2.67**
Income rate	12.12	1.90	14.02
Cost rate	14.42	2.27	16.69

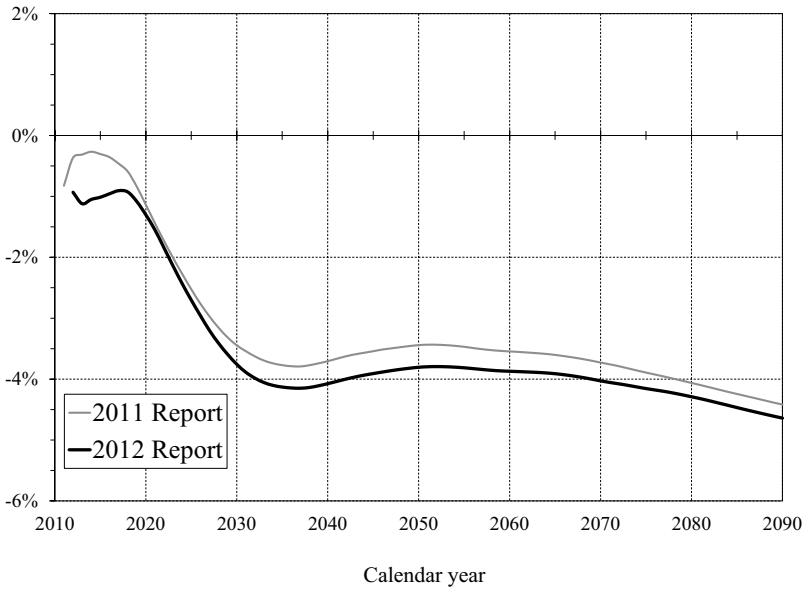
[a] The change in the 75-year valuation period from last year's report to this report means that the 75-year actuarial balance now includes the relatively large negative annual balance for 2086. This change in the valuation period results in a larger long-range actuarial deficit. The actuarial deficit includes the trust fund balance at the beginning of the projection period.

Note: Totals do not necessarily equal the sums of rounded components.

The open group unfunded obligation for the 75-year projection period increased from $6.5 trillion (present discounted value as of January 1, 2011) to $8.6 trillion (present discounted value as of January 1, 2012). The unfunded obligation increased by about $0.5 trillion solely due to advancing the valuation date by 1 year and including the year 2086. The combination of legislative changes, changes in methods, revisions in assumptions, and updated data increased the unfunded obligation by about $1.6 trillion.

This year's projections of annual balances (non-interest income minus cost) are lower than those in last year's report throughout the 75-year projection period. See figure II.D8.

Figure II.D8.—OASDI Annual Balances: 2011 and 2012 Trustees Reports
[As a percentage of taxable payroll, under the intermediate assumptions]



E. CONCLUSION

Under current law, the projected cost of Social Security generally increases faster than projected income because of the aging of the baby-boom generation, continuing low fertility since the baby-boom period, and increasing life expectancy. Based on the Trustees' best estimate, program cost exceeds non-interest income for 2012, as it did for 2010 and 2011, and remains higher than non-interest income throughout the remainder of the 75-year projection period. Social Security's combined trust funds increase with the help of interest income through 2020 and allow full payment of scheduled benefits on a timely basis until the trust funds become exhausted in 2033. At that time, projected continuing income to the trust funds equals about 75 percent of program cost. By 2086, continuing income equals about 73 percent of program cost.

The Trustees project that the OASI Trust Fund and the DI Trust Fund will have sufficient assets to pay full benefits on time until 2035 and 2016, respectively. Legislative action is needed as soon as possible to prevent exhaustion of the DI Trust Fund. In the absence of a longer-term solution, lawmakers could reallocate the payroll tax rate between OASI and DI, as they did in 1994.

The Trustees estimate that the 75-year actuarial deficit for the combined trust funds is 2.67 percent of taxable payroll—0.44 percentage point larger than the 2.22 percent deficit in last year's report. For the combined OASI and DI Trust Funds to remain solvent throughout the 75-year projection period, lawmakers could: (1) increase the combined payroll tax rate during the period in a manner equivalent to an immediate and permanent increase of 2.61 percentage points[1] (from its current level of 12.40 percent to 15.01 percent); (2) reduce scheduled benefits during the period in a manner equivalent to an immediate and permanent reduction of 16.2 percent; (3) draw on alternative sources of revenue; or (4) adopt some combination of these approaches.

If lawmakers do not take substantial action for several years, then changes necessary to maintain Social Security solvency will be concentrated on fewer years and fewer generations. Lawmakers will have to make large and sudden

[1] The necessary tax rate of 2.61 percent differs from the 2.67 percent actuarial deficit for two reasons. First, the necessary tax rate is the rate required to maintain solvency throughout the period that does not result in any trust fund reserve at the end of the period, whereas the actuarial deficit incorporates an ending trust fund balance equal to 1 year's cost. Second, the necessary tax rate reflects a behavioral response to tax rate changes, whereas the actuarial deficit does not. In particular, the calculation of the necessary tax rate assumes that an increase in payroll taxes results in a small shift of wages and salaries to forms of employee compensation that are not subject to the payroll tax.

changes if they defer action until the combined trust funds become exhausted in 2033. For example, either of the following two actions would eliminate the shortfall for the 75-year period as a whole by specifically eliminating annual deficits after trust fund exhaustion:

- Lawmakers could raise payroll taxes to finance scheduled benefits fully in every year starting in 2033. They could increase the payroll tax rate to about 16.7 percent at the point of trust fund exhaustion in 2033, with the rate reaching about 17.1 percent in 2086.
- Similarly, lawmakers could reduce benefits to the level that would be payable with scheduled tax rates in each year beginning in 2033. They could reduce scheduled benefits by 25 percent at the point of trust fund exhaustion in 2033, with reductions reaching 27 percent in 2086.

The illustrations above make the critical assumption that lawmakers would permit sudden changes in 2033 that would either increase tax rates substantially for all workers or reduce benefits substantially for all beneficiaries, regardless of their age or when they started to receive benefits.

If the life expectancy of the population continues to improve after the end of the 75-year period, Social Security's annual cost will very likely continue to grow faster than non-interest income after 2086. As a result, lawmakers would have to make significantly larger changes to ensure solvency of the system beyond 2086.

The Trustees recommend that lawmakers address the projected trust fund shortfalls in a timely way in order to phase in necessary changes and give workers and beneficiaries time to adjust to them. Implementing changes soon would allow more generations to share in the needed revenue increases or reductions in scheduled benefits. Social Security will play a critical role in the lives of 56 million beneficiaries and 159 million covered workers and their families in 2012. With informed discussion, creative thinking, and timely legislative action, Social Security can continue to protect future generations.

For further information related to the contents of this report, see the following websites:

- www.socialsecurity.gov/oact/tr/2012/index.html
- www.cms.gov/ReportsTrustFunds/
- www.treasury.gov/resource-center/economic-policy/ss-medicare/Pages/social_security.aspx

OASDI and SSI Snapshot and SSI Monthly Statistics

Each month, the Social Security Administration's Office of Retirement and Disability Policy posts key statistics about various aspects of the Supplemental Security Income (SSI) program at http://www.socialsecurity.gov/policy. The statistics include the number of people who receive benefits, eligibility category, and average monthly payment. This issue presents SSI data for March 2011–March 2012.

The Monthly Statistical Snapshot summarizes information about the Social Security and SSI programs and provides a summary table on the trust funds. Data for March 2012 are given on pages 86–87. Trust fund data for March 2012 are given on page 87. The more detailed SSI tables begin on page 88. Persons wanting detailed monthly OASDI information should visit the Office of the Chief Actuary's website at http://www.socialsecurity.gov/OACT/ProgData/beniesQuery.html.

Monthly Statistical Snapshot

The most current edition of Tables 1–3 will always be available at http://www.socialsecurity.gov/policy/docs/quickfacts/stat_snapshot. The most current data for the trust funds (Table 4) are available at http://www.socialsecurity.gov/OACT/ProgData/funds.html.

Table 1.
Number of people receiving Social Security, Supplemental Security Income, or both, March 2012 (in thousands)

Type of beneficiary	Total	Social Security only	SSI only	Both Social Security and SSI
All beneficiaries	61,273	53,111	5,384	2,778
Aged 65 or older	39,605	37,539	900	1,165
Disabled, under age 65 [a]	13,839	7,743	4,484	1,613
Other [b]	7,829	7,829	. . .	. . .

SOURCES: Social Security Administration, Master Beneficiary Record, 100 percent data. Social Security Administration, Supplemental Security Record, 100 percent data.

NOTES: Data are for the end of the specified month. Only Social Security beneficiaries in current-payment status are included.

. . . = not applicable.

a. Includes children receiving SSI on the basis of their own disability.

b. Social Security beneficiaries who are neither aged nor disabled (for example, early retirees, young survivors).

CONTACT: (410) 965-0090 or statistics@ssa.gov.

Table 2.
Social Security benefits, March 2012

Type of beneficiary	Beneficiaries		Total monthly benefits (millions of dollars)	Average monthly benefit (dollars)
	Number (thousands)	Percent		
All beneficiaries	55,889	100.0	62,881	1,125.10
Old-Age Insurance				
Retired workers	35,952	64.3	44,284	1,231.73
Spouses	2,289	4.1	1,393	608.71
Children	611	1.1	369	604.89
Survivors Insurance				
Widow(er)s and parents [a]	4,218	7.5	4,886	1,158.43
Widowed mothers and fathers [b]	150	0.3	131	873.93
Children	1,935	3.5	1,520	785.43
Disability Insurance				
Disabled workers	8,657	15.5	9,616	1,110.73
Spouses	164	0.3	49	298.40
Children	1,913	3.4	633	330.70

SOURCE: Social Security Administration, Master Beneficiary Record, 100 percent data.

NOTES: Data are for the end of the specified month. Only beneficiaries in current-payment status are included.

Some Social Security beneficiaries are entitled to more than one type of benefit. In most cases, they are dually entitled to a worker benefit and a higher spouse or widow(er) benefit. If both benefits are financed from the same trust fund, the beneficiary is usually counted only once in the statistics, as a retired-worker or a disabled-worker beneficiary, and the benefit amount recorded is the larger amount associated with the auxiliary benefit. If the benefits are paid from different trust funds the beneficiary is counted twice, and the respective benefit amounts are recorded for each type of benefit.

a. Includes nondisabled widow(er)s aged 60 or older, disabled widow(er)s aged 50 or older, and dependent parents of deceased workers aged 62 or older.

b. A widow(er) or surviving divorced parent caring for the entitled child of a deceased worker who is under age 16 or is disabled.

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Table 3.
Supplemental Security Income recipients, March 2012

Age	Recipients: Number (thousands)	Recipients: Percent	Total payments [a] (millions of dollars)	Average monthly payment [b] (dollars)
All recipients	8,162	100.0	4,507	518.60
Under 18	1,289	15.8	840	624.90
18–64	4,808	58.9	2,806	534.40
65 or older	2,065	25.3	861	415.70

SOURCE: Social Security Administration, Supplemental Security Record, 100 percent data.

NOTE: Data are for the end of the specified month.

a. Includes retroactive payments.

b. Excludes retroactive payments.

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Table 4.
Operations of the Old-Age and Survivors Insurance and Disability Insurance Trust Funds, March 2012 (in millions of dollars)

Component	OASI	DI	Combined OASI and DI
		Receipts	
Total	54,572	9,298	63,870
Net contributions [a]	45,496	7,769	53,265
Income from taxation of benefits	14	b	14
Net interest	25	36	61
Payments from the general fund	9,037	1,492	10,529
		Expenditures	
Total	53,083	11,803	64,885
Benefit payments	52,770	11,523	64,293
Administrative expenses	313	280	593
Transfers to Railroad Retirement	0	0	0
		Assets	
At start of month	2,531,232	148,755	2,679,987
Net increase during month	1,489	-2,505	-1,016
At end of month	2,532,721	146,250	2,678,972

SOURCE: Data on the trust funds were accessed on April 17, 2012, on the Social Security Administration's Office of the Chief Actuary's website: http://www.socialsecurity.gov/OACT/ProgData/funds.html.

NOTE: Totals may not equal the sum of the components because of rounding.

a. Includes transfers from the general fund of the Treasury under the provisions of P.L. 111-312, P.L. 112-78, and P.L. 112-96.

b. Between -$500,000 and $500,000.

The SSI Monthly Statistics are also available at http://www.socialsecurity.gov/policy/docs/statcomps/ssi_monthly/index.html.

SSI Federally Administered Payments

Awards of SSI Federally Administered Payments

Table 1.
Recipients (by type of payment), total payments, and average monthly payment, March 2011–March 2012

Month	Number of recipients				Total payments [a] (thousands of dollars)	Average monthly payment [b] (dollars)
	Total	Federal payment only	Federal payment and state supplementation	State supplementation only		
2011						
March	8,001,423	5,628,567	2,118,256	254,600	4,319,855	500.30
April	8,014,930	5,639,114	2,121,078	254,738	4,312,912	500.80
May	8,057,448	5,672,947	2,130,131	254,370	4,399,629	499.80
June	8,056,968	5,673,253	2,129,163	254,552	4,326,804	499.40
July	8,057,787	5,678,767	2,131,881	247,139	4,292,791	499.10
August	8,108,375	5,717,947	2,143,405	247,023	4,402,772	498.80
September	8,095,000	5,706,884	2,140,867	247,249	4,310,542	498.90
October	8,116,250	5,723,525	2,145,561	247,164	4,307,042	499.10
November	8,130,052	5,733,368	2,149,436	247,248	4,317,569	498.30
December	8,112,773	5,723,660	2,142,730	246,383	4,389,872	501.60
2012						
January	8,156,870	5,761,870	2,154,099	240,901	4,485,655	517.30
February	8,163,730	5,769,485	2,154,099	240,146	4,493,360	515.60
March	8,161,601	5,768,667	2,153,751	239,183	4,507,305	518.60

SOURCE: Social Security Administration, Supplemental Security Record, 100 percent data.

NOTE: Data are for the end of the specified month.

a. Includes retroactive payments.

b. Excludes retroactive payments.

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Table 2.
Recipients, by eligibility category and age, March 2011–March 2012

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2011						
March	8,001,423	1,186,985	6,814,438	1,257,045	4,695,846	2,048,532
April	8,014,930	1,187,848	6,827,082	1,257,359	4,707,744	2,049,827
May	8,057,448	1,187,588	6,869,860	1,269,853	4,737,116	2,050,479
June	8,056,968	1,186,668	6,870,300	1,268,840	4,738,185	2,049,943
July	8,057,787	1,185,550	6,872,237	1,266,495	4,741,273	2,050,019
August	8,108,375	1,187,881	6,920,494	1,277,109	4,775,507	2,055,759
September	8,095,000	1,187,576	6,907,424	1,268,821	4,769,477	2,056,702
October	8,116,250	1,187,884	6,928,366	1,279,042	4,777,386	2,059,822
November	8,130,052	1,189,695	6,940,357	1,280,341	4,784,690	2,065,021
December	8,112,773	1,182,106	6,930,667	1,277,122	4,777,010	2,058,641
2012						
January	8,156,870	1,184,674	6,972,196	1,291,217	4,801,122	2,064,531
February	8,163,730	1,182,828	6,980,902	1,293,648	4,806,424	2,063,658
March	8,161,601	1,158,789	7,002,812	1,288,548	4,807,814	2,065,239

SOURCE: Social Security Administration, Supplemental Security Record, 100 percent data.

NOTE: Data are for the end of the specified month.

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Table 3.
Recipients of federal payment only, by eligibility category and age, March 2011–March 2012

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2011						
March	5,628,567	600,628	5,027,939	1,009,961	3,473,468	1,145,138
April	5,639,114	600,780	5,038,334	1,009,818	3,483,783	1,145,513
May	5,672,947	600,406	5,072,541	1,020,116	3,507,222	1,145,609
June	5,673,253	599,687	5,073,566	1,019,432	3,508,722	1,145,099
July	5,678,767	600,361	5,078,406	1,016,992	3,514,277	1,147,498
August	5,717,947	601,403	5,116,544	1,025,435	3,541,759	1,150,753
September	5,706,884	601,053	5,105,831	1,018,213	3,537,525	1,151,146
October	5,723,525	600,768	5,122,757	1,026,735	3,544,200	1,152,590
November	5,733,368	601,716	5,131,652	1,027,626	3,550,053	1,155,689
December	5,723,660	597,588	5,126,072	1,025,120	3,546,247	1,152,293
2012						
January	5,761,870	600,105	5,161,765	1,036,990	3,567,409	1,157,471
February	5,769,485	599,410	5,170,075	1,039,029	3,572,976	1,157,480
March	5,768,667	598,700	5,169,967	1,034,850	3,575,124	1,158,693

SOURCE: Social Security Administration, Supplemental Security Record, 100 percent data.

NOTE: Data are for the end of the specified month.

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Table 4.
Recipients of federal payment and state supplementation, by eligibility category and age, March 2011–March 2012

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2011						
March	2,118,256	502,614	1,615,642	245,595	1,092,856	779,805
April	2,121,078	503,294	1,617,784	246,044	1,094,348	780,686
May	2,130,131	503,737	1,626,394	248,228	1,100,226	781,677
June	2,129,163	503,725	1,625,438	247,800	1,099,542	781,821
July	2,131,881	504,367	1,627,514	247,913	1,100,843	783,125
August	2,143,405	505,695	1,637,710	250,148	1,107,731	785,526
September	2,140,867	505,717	1,635,150	248,948	1,105,945	785,974
October	2,145,561	506,440	1,639,121	250,739	1,107,144	787,678
November	2,149,436	507,307	1,642,129	251,078	1,108,838	789,520
December	2,142,730	503,839	1,638,891	250,425	1,105,867	786,438
2012						
January	2,154,099	506,553	1,647,546	252,775	1,110,842	790,482
February	2,154,099	505,732	1,648,367	253,139	1,111,028	789,932
March	2,153,751	485,178	1,668,573	252,300	1,110,733	790,718

SOURCE: Social Security Administration, Supplemental Security Record, 100 percent data.

NOTE: Data are for the end of the specified month.

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Table 5.
Recipients of state supplementation only, by eligibility category and age, March 2011–March 2012

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2011						
March	254,600	83,743	170,857	1,489	129,522	123,589
April	254,738	83,774	170,964	1,497	129,613	123,628
May	254,370	83,445	170,925	1,509	129,668	123,193
June	254,552	83,256	171,296	1,608	129,921	123,023
July	247,139	80,822	166,317	1,590	126,153	119,396
August	247,023	80,783	166,240	1,526	126,017	119,480
September	247,249	80,806	166,443	1,660	126,007	119,582
October	247,164	80,676	166,488	1,568	126,042	119,554
November	247,248	80,672	166,576	1,637	125,799	119,812
December	246,383	80,679	165,704	1,577	124,896	119,910
2012						
January	240,901	78,016	162,885	1,452	122,871	116,578
February	240,146	77,686	162,460	1,480	122,420	116,246
March	239,183	74,911	164,272	1,398	121,957	115,828

SOURCE: Social Security Administration, Supplemental Security Record, 100 percent data.

NOTE: Data are for the end of the specified month.

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Table 6.
Total payments, by eligibility category, age, and source of payment, March 2011–March 2012
(in thousands of dollars)

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
			All sources			
2011						
March	4,319,855	474,564	3,845,290	794,225	2,694,737	830,892
April	4,312,912	474,653	3,838,258	794,140	2,687,773	830,998
May	4,399,629	475,958	3,923,671	808,858	2,757,773	832,999
June	4,326,804	474,311	3,852,493	793,566	2,702,297	830,942
July	4,292,791	470,353	3,822,438	794,632	2,672,452	825,708
August	4,402,772	472,258	3,930,513	813,172	2,759,910	829,690
September	4,310,542	471,167	3,839,376	793,350	2,688,691	828,502
October	4,307,042	470,973	3,836,069	796,666	2,680,977	829,400
November	4,317,569	472,085	3,845,483	794,923	2,690,450	832,195
December	4,389,872	471,847	3,918,025	812,295	2,744,100	833,478
2012						
January	4,485,655	485,641	4,000,013	834,560	2,791,400	859,695
February	4,493,360	483,930	4,009,431	829,122	2,805,835	858,403
March	4,507,305	473,861	4,033,444	840,343	2,805,783	861,179
			Federal payments			
2011						
March	4,007,692	395,013	3,612,678	780,683	2,520,109	706,900
April	4,001,584	395,132	3,606,452	780,620	2,513,975	706,989
May	4,083,720	396,268	3,687,452	794,941	2,580,100	708,678
June	4,014,482	394,933	3,619,549	780,001	2,527,457	707,024
July	3,996,318	394,926	3,601,392	781,114	2,507,445	707,759
August	4,101,172	396,512	3,704,661	799,301	2,590,777	711,095
September	4,013,322	395,621	3,617,701	779,836	2,523,297	710,189
October	4,010,102	395,379	3,614,723	783,169	2,515,977	710,956
November	4,019,326	396,275	3,623,051	781,365	2,524,690	713,271
December	4,090,280	396,173	3,694,107	798,660	2,577,066	714,555
2012						
January	4,188,344	410,163	3,778,181	820,942	2,626,465	740,937
February	4,195,576	408,576	3,787,000	815,496	2,640,350	739,730
March	4,209,479	400,765	3,808,714	826,685	2,640,451	742,343

(Continued)

Table 6.
Total payments, by eligibility category, age, and source of payment, March 2011–March 2012 (in thousands of dollars)—*Continued*

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
			State supplementation			
2011						
March	312,163	79,551	232,612	13,541	174,629	123,993
April	311,327	79,521	231,806	13,520	173,798	124,009
May	315,910	79,690	236,220	13,917	177,673	124,320
June	312,322	79,378	232,944	13,565	174,840	123,918
July	296,473	75,427	221,047	13,518	165,006	117,949
August	301,599	75,747	225,852	13,872	169,133	118,594
September	297,220	75,546	221,674	13,514	165,394	118,313
October	296,940	75,594	221,346	13,497	165,000	118,443
November	298,243	75,810	222,433	13,558	165,760	118,925
December	299,591	75,674	223,917	13,635	167,034	118,923
2012						
January	297,311	75,478	221,832	13,619	164,935	118,757
February	297,784	75,353	222,431	13,626	165,486	118,673
March	297,826	73,096	224,730	13,658	165,332	118,836

SOURCE: Social Security Administration, Supplemental Security Record, 100 percent data.

NOTE: Data are for the end of the specified month and include retroactive payments.

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Table 7.
Average monthly payment, by eligibility category, age, and source of payment, March 2011–March 2012 (in dollars)

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
			All sources			
2011						
March	500.30	398.30	518.10	599.80	515.70	403.90
April	500.80	398.50	518.60	601.80	516.00	404.00
May	499.80	398.60	517.40	596.20	515.50	404.10
June	499.40	398.50	516.90	595.10	515.10	404.00
July	499.10	395.90	517.00	600.20	514.30	401.70
August	498.80	396.10	516.50	597.60	514.20	401.90
September	498.90	396.20	516.60	597.20	514.80	401.90
October	499.10	395.70	516.90	597.70	514.80	401.70
November	498.30	395.90	515.80	592.60	514.70	401.80
December	501.60	397.60	519.40	601.40	517.40	403.20
2012						
January	517.30	408.90	535.70	620.20	533.50	415.20
February	515.60	408.10	533.80	613.60	532.50	414.60
March	518.60	407.90	536.90	624.90	534.40	415.70
			Federal payments			
2011						
March	478.50	356.90	498.80	590.60	495.30	365.90
April	479.00	357.10	499.30	592.50	495.60	366.00
May	478.10	357.20	498.10	587.00	495.10	366.00
June	477.70	357.00	497.60	585.90	494.80	365.90
July	478.80	357.00	498.90	591.00	495.40	365.90
August	478.40	357.10	498.40	588.50	495.20	366.00
September	478.60	357.20	498.60	588.10	495.80	366.10
October	478.80	356.70	498.80	588.50	495.90	365.80
November	477.90	356.80	497.70	583.40	495.70	365.90
December	481.30	358.50	501.30	592.30	498.50	367.30
2012						
January	497.10	369.80	517.80	610.90	514.80	379.50
February	495.40	368.90	515.90	604.30	513.80	378.80
March	498.40	369.00	519.00	615.60	515.70	379.90

(Continued)

Table 7.
Average monthly payment, by eligibility category, age, and source of payment, March 2011–March 2012 (in dollars)—*Continued*

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
			State supplementation			
2011						
March	124.70	134.30	121.50	50.90	131.30	135.90
April	124.60	134.20	121.50	50.90	131.20	135.90
May	124.50	134.20	121.40	50.90	131.10	135.80
June	124.40	134.10	121.30	50.90	131.00	135.80
July	118.60	127.70	115.60	50.60	124.40	129.50
August	118.50	127.80	115.50	50.50	124.30	129.60
September	118.60	127.80	115.50	50.50	124.30	129.60
October	118.40	127.70	115.40	50.40	124.20	129.40
November	118.40	127.70	115.30	50.30	124.10	129.50
December	118.60	128.00	115.50	50.30	124.30	129.70
2012						
January	118.40	127.90	115.30	50.20	124.10	129.70
February	118.30	127.90	115.20	50.20	124.00	129.70
March	118.40	129.30	115.10	50.20	124.10	129.80

SOURCE: Social Security Administration, Supplemental Security Record, 100 percent data.

NOTE: Data are for the end of the specified month and exclude retroactive payments.

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Table 8.
All awards, by eligibility category and age of awardee, March 2011–March 2012

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2011						
March	84,741	8,319	76,422	16,619	59,648	8,474
April	86,457	9,670	76,787	16,091	60,558	9,808
May	102,897	9,119	93,778	20,197	73,423	9,277
June	84,521	9,092	75,429	16,745	58,558	9,218
July	81,037	9,304	71,733	15,812	55,775	9,450
August	97,369	9,240	88,129	19,128	68,859	9,382
September	83,142	9,819	73,323	16,069	57,114	9,959
October	76,590	9,263	67,327	14,802	52,398	9,390
November	75,818	9,308	66,510	14,913	51,467	9,438
December	89,658	8,858	80,800	17,602	63,052	9,004
2012						
January	80,593	8,814	71,779	16,100	55,531	8,962
February [a]	77,887	9,351	68,536	15,383	53,029	9,475
March [a]	80,115	8,883	71,232	16,119	54,961	9,035

SOURCE: Social Security Administration, Supplemental Security Record, 100 percent data.

NOTE: Data are for all awards made during the specified month.

a. Preliminary data. In the first 2 months after their release, numbers may be adjusted to reflect returned checks.

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OASDI and SSI Program Rates and Limits, 2012

Old-Age, Survivors, and Disability Insurance

Tax Rates (percent)	
Social Security (Old-Age, Survivors, and Disability Insurance)	
Employers	6.20
Employees [a]	4.20
Medicare (Hospital Insurance)	
Employers and Employees, each [a]	1.45
Maximum Taxable Earnings (dollars)	
Social Security	110,100
Medicare (Hospital Insurance)	No limit
Earnings Required for Work Credits (dollars)	
One Work Credit (One Quarter of Coverage)	1,130
Maximum of Four Credits a Year	4,520
Earnings Test Annual Exempt Amount (dollars)	
Under Full Retirement Age for Entire Year	14,640
For Months Before Reaching Full Retirement Age in Given Year	38,880
Beginning with Month Reaching Full Retirement Age	No limit
Maximum Monthly Social Security Benefit for Workers Retiring at Full Retirement Age (dollars)	2,513
Full Retirement Age	66
Cost-of-Living Adjustment (percent)	3.6

a. Self-employed persons pay a total of 13.3 percent (10.4 percent for OASDI and 2.9 percent for Medicare).

Supplemental Security Income

Monthly Federal Payment Standard (dollars)	
Individual	698
Couple	1,048
Cost-of-Living Adjustment (percent)	3.6
Resource Limits (dollars)	
Individual	2,000
Couple	3,000
Monthly Income Exclusions (dollars)	
Earned Income [a]	65
Unearned Income	20
Substantial Gainful Activity (SGA) Level for the Nonblind Disabled (dollars)	1,010

a. The earned income exclusion consists of the first $65 of monthly earnings, plus one-half of remaining earnings.

Social Security Administration
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Office of Research, Evaluation, and Statistics
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