Social Security

Social Security Bulletin

Vol. 73, No. 1, 2013

IN THIS ISSUE:

The *Social Security Bulletin* (ISSN 0037-7910) is published quarterly by the Social Security Administration, 500 E Street, SW, 8th Floor, Washington, DC 20254-0001. First-class and small package carrier postage is paid in Washington, DC, and additional mailing offices.

The *Bulletin* is prepared in the Office of Retirement and Disability Policy, Office of Research, Evaluation, and Statistics. Suggestions or comments concerning the *Bulletin* should be sent to the Office of Research, Evaluation, and Statistics at the above address. Comments may also be made by e-mail at ssb@ssa.gov or by phone at (202) 358-6267.

Paid subscriptions to the *Social Security Bulletin* are available from the Superintendent of Documents, U.S. Government Printing Office. The cost of a copy of the *Annual Statistical Supplement to the Social Security Bulletin* is included in the annual subscription price of the *Bulletin*. The subscription price is $56.00 domestic; $78.40 foreign. The single copy price is $13.00 domestic; $18.20 foreign. The price for single copies of the *Supplement* is $49.00 domestic; $68.60 foreign.

Internet: http://bookstore.gpo.gov
Phone: toll free (866) 512-1800;
DC area (202) 512-1800
E-mail: contactcenter@gpo.gov
Fax: (202) 512-2104
Mail: Stop IDCC, Washington, DC 20402

Postmaster: Send address changes to *Social Security Bulletin*, 500 E Street, SW, 8th Floor, Washington, DC 20254-0001.

Social Security Bulletin

Vol. 73, No. 1, 2013

Social Security Administration
Office of Retirement and Disability Policy
Office of Research, Evaluation, and Statistics

Social Security Bulletin

Volume 73 • Number 1 • 2013

Articles

Research Summary

Other

Mortality Differentials by Lifetime Earnings Decile: Implications for Evaluations of Proposed Social Security Law Changes

by Hilary Waldron*

To evaluate the distributional effects of some proposed Social Security law changes, such as an increase in Social Security's early entitlement age, retirement policy analysts typically tabulate the number of workers who fall below a predetermined threshold of hardship. Analysts using this technique often implicitly assume that the insured population falls neatly into a low-earnings poor health group and a remaining good health group. If the hardship threshold assumption is correct, there should be no difference in mortality risk between lifetime earnings deciles above a hardship threshold. This study finds that the hardship threshold model is overwhelmingly rejected in US Social Security data, a result consistent with similar studies conducted in Canada, Germany, and England. The bottom 80–95 percent of the male lifetime earnings distribution exhibits an inverse correlation with regard to mortality risk (the higher the earnings, the lower the mortality risk) at ages 63–71.

Introduction

The distributional effects of some proposed Social Security law changes (for example, an increase in Social Security's early entitlement age (EEA)) are at least partially dependent on the distribution of health and mortality risk throughout the fully insured Social Security–covered worker population. To evaluate these types of proposals, retirement policy analysts typically tabulate the percentage of survey respondents who self-report poor (or fair) health or a work-limiting health condition and/or who score below a threshold of hardship, where the hardship level is specified by the analyst rather than estimated. By using a threshold model to evaluate these policy proposals, retirement analysts implicitly assume that only workers who fall below the threshold will be adversely affected by the proposed law change. However, in order for these analyses to accurately describe the distributional effects of proposed Social Security law changes, fully insured workers must be equal in their health, mortality risk, and "ability to work" above the threshold chosen by the analyst.

To test the hardship threshold assumption most commonly used by retirement analysts, this analysis estimates mortality differentials at ages 63–71 by lifetime earnings decile. If the hardship threshold assumption is correct, there should be no difference in mortality risk between lifetime earnings deciles above a poverty or hardship threshold. The study finds that the hardship threshold model is overwhelmingly rejected in data from the Social Security program in the United States, a result consistent with similar studies conducted in Canada, Germany, and England.

I find that the male population does not appear to be homogenous above a low poverty or hardship

Selected Abbreviations

AIME	average indexed monthly earnings
AWI	average wage index
CWHS	Continuous Work History Sample
EEA	early entitlement age
FRA	full retirement age

* *Hilary Waldron is an economist with the Division of Economic Research, Office of Research, Evaluation, and Statistics, Office of Retirement and Disability Policy, Social Security Administration.*

Selected Abbreviations—*Continued*

MBR	Master Beneficiary Record
MEF	Master Earnings File
OASDI	Old-Age, Survivors, and Disability Insurance
OECD	Organisation for Economic Co-operation and Development
PIA	primary insurance amount
SSA	Social Security Administration
tax max	taxable maximum

threshold. Instead, the point above which the male population of Social Security fully insured retired workers becomes statistically indistinguishable with respect to mortality risk at ages 63–71 ranges from the top 5 to top 20 percent of the lifetime earnings distribution. At least the bottom 80 percent of the male lifetime earnings distribution exhibits an inverse correlation with regard to mortality risk (the higher the earnings, the lower the mortality risk).

Under current law, the link between earnings and benefit levels and the equal application of age-of-entitlement rules, regardless of earnings levels, means that a worker is never penalized for additional work or thrift. Because the insured population does not fall neatly into a low-earnings poor health group and a remaining good health group, attempts to target a subset of badly disadvantaged workers by altering the benefit rules that apply equally to everyone could both miss the intended target and introduce work disincentives into a program currently designed to reward work. Analysts using a threshold model to predict the success of legislative attempts to target less-than-healthy workers may misestimate the targeting effects by a potentially large, unknown, and unmeasured margin.

Background

Mortality differentials by socioeconomic status have been documented since at least the seventeenth century (Antonovsky 1967). Throughout history, researchers have found that death rates are higher among individuals of lower socioeconomic status. The relationship between higher death rates and lower socioeconomic status might be a gradient in which mortality rates continue to decline as socioeconomic status increases, or it might take the form of a threshold in which the higher death rates are concentrated below some threshold, and above that threshold there are no differences in mortality by socioeconomic status. Studies that assume that adverse mortality is limited to individuals below a threshold often assume that the threshold is defined as being in a state of poverty or being in some other state of hardship. That assumption will therefore be referred to in this article as a *poverty threshold* or *hardship threshold* model. The alternative assumption that mortality declines more gradually with socioeconomic status, without a clear threshold above which the graded relationship between mortality and socioeconomic status disappears, will be referred to as the *gradient* model.

Among researchers using a poverty threshold model, the definition of "poverty" tends to vary; few restrict themselves to the Census Bureau definition of poverty that is used by many means-tested programs in the United States. Whatever the definition, those researchers assume that a line or threshold exists between individuals who are in adverse circumstances, with worse health and higher mortality, and those who are not, with better health and lower mortality. Although threshold models often assume a graded relationship below the threshold, with extremely adverse circumstances leading to higher mortality and reductions in mortality up to the threshold, the assumption is that over the threshold any further increases in status do not lead to additional improvements in death rates or health (Adler and Stewart 2010, 7). Another way of describing the assumption of the threshold model is that above the threshold, health and mortality are homogeneous, or equal, with regard to socioeconomic status, but below the threshold, health and mortality may be heterogeneous and is certainly worse than above the threshold.

Marmot (2004, 4) describes the threshold assumption as the idea that the "health gap is confined to poor health for the disadvantaged, 'them,' and good health for everybody else, 'us.'" He describes the alternative gradient model as implying that "wherever we are in the social hierarchy, our health is likely to be better than those below us and worse than those above us."

The threshold model can be assumed, rather than tested, or a threshold can be arbitrarily specified and tested by measuring mortality or health above and below that threshold. The data tend to support threshold models, tested in this way, against the alternative that there are no differences in mortality and health

between individuals above and below the threshold. Before the mid-1980s, as described by Adler and Stewart (2010, 7), a majority of research tended to follow this approach.

It is possible, however, to allow the empirical data to determine the shape of the relationship between socioeconomic status and mortality or health and to test the threshold assumption against the gradient assumption. Provided a researcher has enough detail in the underlying data, the threshold assumption can be tested with standard statistical techniques and then only used in a model if the population he or she is seeking to analyze truly demonstrates the threshold. As the data available to researchers have improved[1] and as a multitude of researchers have tested and rejected the threshold assumption against the observable data, the epidemiological and public health literature have moved strongly toward widespread acceptance of the idea that a gradient model best describes the pattern of health and mortality differentials observed in most wealthy, developed Organisation for Economic Co-operation and Development (OECD) countries, including the United States.

Although there were studies before the 1980s examining the possibility of a gradient (such as Kitagawa and Hauser (1973)), Adler and Stewart (2010) described the movement to gradient models in the public health field as occurring with the publication of results from the Whitehall study by Marmot, Shipley, and Rose (1984), which found a positive monotonic correlation between occupational grade and health and mortality. (The higher the occupational grade, the better the health and the lower the mortality). In part, the Whitehall study wielded such influence on the field because the data allowed the authors to cleanly test the gradient hypothesis. (The original Whitehall population consisted of men employed by the British civil service. All were above the poverty line and had access to health care.[2])

The retirement literature (in the United States), on the other hand, still tends to assume a poverty or hardship threshold model.[3] There are several possible reasons for this disconnect between public health researchers and retirement researchers. First, the public health literature is predominately concerned with differentials below age 65, while the retirement literature is concerned with differentials above age 65. The data available to adequately estimate mortality differentials at older ages are limited, and the data that do exist are generally not publicly available to a wide range of users because of data confidentiality and disclosure concerns. Second, because mortality differentials tend to narrow with age, there may be a tendency on the part of some researchers to assume mortality differentials are not important at older ages. Finally, the retirement literature often lacks an interdisciplinary focus and tends to suffer from a paucity of citations to noneconomic (that is—public health, epidemiological, or medical) journals. For these reasons, the poverty or hardship threshold model has been perpetuated in the retirement literature to the extent that at least one strand of the current retirement literature (in the United States) now lags current epidemiological literature by about 25 to 30 years in its analytical orientation.

Differences in analytical orientation often spill over into differences in interpretation of health trends. For example, while public health researchers have tended to focus on differences in health disaggregated by socioeconomic status and are generally concerned with a trend toward increased disparities (Adler and Stewart 2010, 1; National Center for Health Statistics 1998, 2012; Department of Health and Human Services 1999), retirement researchers have tended to focus on aggregate trends, and many are optimistic about those trends (Steuerle 2011; Burtless 1998; Shoven 2007).

The focus of this article is on the effects of differences in mortality risk by lifetime earnings deciles on proposals to change the EEA for Social Security retired-worker benefits in the United States. The dominant model used to evaluate the distributional effects of changes to the EEA is analytically very close to the poverty threshold model. Many analysts *assume* (without measuring) that the population of workers eligible for retirement benefits falls into two groups: (1) a group below some hardship threshold whose members cannot extend their working lives because of poor health and (2) a remaining group above the hardship threshold with no differentials in health or mortality. EEA proposals are evaluated under this assumption by counting the number of workers under the assumed threshold who have claimed benefits early, or more broadly, the number of fully insured workers who fall below the threshold criteria at a certain age or ages.

A central problem with this method of analysis is that the statistical technique does not allow the analyst to observe a gradient in workers' health and mortality risk above the predetermined threshold, *even if one*

actually exists in the underlying data. Additionally, there does not appear to be any clear way to estimate the uncertainty around a policy estimate based on a hardship threshold model because there is no clear and obvious way to calculate an error band around an analyst's judgment of what constitutes *hardship* or *ability to work*.

Some analysts define adverse circumstance as having an adverse health condition; others combine adverse health conditions with adverse financial conditions. Just as the definition of poverty can vary by analyst, so too can the definition of "adverse" or "poor" health. Adverse health is sometimes interpreted to mean a health condition that limits one's *ability to work*. The definition of the term *ability to work* can also vary by researcher as can the definition of a related concept—what set of job characteristics constitutes a "physically demanding job." The fact that empirical estimates can vary based on how poverty or hardship is defined (Kingson and Arsenault 2000; Smith 1999) creates an additional uncertainty for policymakers attempting to formulate proposals based on this method of research.

This study seeks to use a relatively simple and objective measure of health (mortality) and a more standardized measure of financial condition (position in the lifetime earnings distribution) to test the hypothesis that poor health and mortality among older men follow a threshold model.[4] By asking a policy question in terms of measurable mortality risk (either you are dead or you are not) rather than an amorphous, subjective *ability to work* or *hardship* criteria, we can apply more rigorous statistical techniques to the data and more accurately assess the effects (and the uncertainty surrounding those effects) of a proposed policy change on the underlying population of fully insured workers.

In this way, an examination of whether mortality risk follows a poverty threshold model at older ages can also be used as a test of whether common techniques used to evaluate changes to Social Security's first age of eligibility for retired-worker benefits (currently age 62)[5] are based on accurate assumptions regarding the distribution of health and mortality risk in the exposed (that is, fully insured) population. In other words, if the assumption of homogeneity above the threshold is rejected, then the actual distributional effects of a policy change could differ from the change predicted when using a threshold model by a potentially large, unknown and unmeasured margin.

After discussing previous literature estimating mortality gradients at older ages, I discuss the data and methodology used in this study, followed by estimates of male mortality risk by male lifetime earnings deciles. I then examine the implications of those results for the view that an increase in the EEA will increase the general revenue of the Treasury. Next, to further explore proposals that seek to target workers below a hardship threshold for protection from proposed increases in the EEA, I estimate female mortality risk by male lifetime earnings deciles and compare female death rates with male death rates at equivalent earnings deciles. Finally, to explore alternative ways of focusing on fairly long-lived individuals, I measure the distribution of workers at the Social Security—Old-Age, Survivors, and Disability Insurance (OASDI)—taxable maximum (tax max) by earnings decile and sex. I conclude with a brief discussion on the difficulty of targeting subgroups effectively through the retired-worker benefit, given the universality of the benefit's design.

Previous Literature

While the literature on mortality differentials is extremely large, the number of studies providing estimates of mortality gradients at older ages is smaller, and research providing estimates of mortality gradients throughout the entire income distribution at older ages is even smaller still. Unlike the United Kingdom, the United States (and many other OECD countries) has not traditionally collected socioeconomic data on death certificates.

Consequently, studies in wealthy, developed OECD countries testing mortality gradients along the entire earnings distribution at older ages using lifetime or "permanent" earnings measures have often relied on administrative data from national pension plans. Such pension plan data combine career earnings data from an individual's working years with mortality data from an individual's retirement years.

One strength of this type of analysis is that there is typically a gap between the career earnings measure and the ages over which death is observed, which eliminates the problem of a sudden health shock to earnings that would both place an individual in a low socioeconomic category (even if he or she had been a high earner prior to the shock) and increase the risk of death. In addition, even without a large gap between the last year of earnings and the observation of the year of death, mathematically, a sudden 1-year shock

to a high earner would not have so great an impact on a career average earnings measure that he or she would drop into the low-lifetime-earner category. Because a lifetime earnings measure will capture the influence of chronic poor health on hours worked and employment, such a measure may also have predictive power through the ability to capture causal effects running from both poor health to earnings and earnings to health.[6]

In the United States, Duleep (1986) was one of the first researchers to exploit Social Security administrative earnings and death data to estimate mortality differentials by income, although her focus was mainly below age 65.[7] At the time of her 1989 work, Duleep suggested using Social Security data to measure mortality rates over time using "constant income percentiles rather than constant income categories" (349). Taking up that suggestion, Waldron (2007) used the Social Security Administration's (SSA's) Continuous Work History Sample (CWHS)—capped Social Security earnings data that were then imputed by Waldron—and found male mortality differentials at older ages widening between the top and bottom half of the lifetime earnings distribution over the 1972–2001 period. Using a mix of capped and uncapped Social Security earnings data matched to the Survey of Income and Program Participation (SIPP), Cristia (2007) found some evidence of a mortality gradient by lifetime earnings quintile at ages 50–64 (the standard errors are large enough for the confidence intervals to cross, but the parameter estimates indicate a gradient), although, in an unusual result, found less evidence of a gradient between the bottom three deciles than between the top two quintiles at ages 65–75.

As described in the methodology section, this study further builds on the percentile technique suggested in Duleep (1989), by exploiting the availability of longitudinal earnings data over the OASDI tax max beginning in 1982. By using that data, one can test for mortality differences throughout the entire earnings distribution, free of any possible biasing effects caused by the capping of data at the OASDI tax max. Because the taxable maximum has changed over time, analyses that use capped (or imputed) earnings data will have problems estimating mortality differences accurately at the upper end of the career earnings distribution.

Studies most closely related to this analysis include those by Wolfson and others (1993) on the national Canadian pension plan data and Shkolnikov and others (2008) on the national German pension plan data. The measure of socioeconomic status used was earnings from ages 45 through 64 in the case of Wolfson and others (1993) and a measure roughly corresponding to earnings over an entire working lifetime in the case of Shkolnikov and others (2008).

In describing the shape of the relationship between mortality risk and earnings, with deaths observed from ages 65 through 70, Wolfson and others (1993, S175) noted that their results were "not consistent with a 'threshold' relationship where poverty is associated with poorer health and longevity, but that above some low income level, income and health are independent." Instead, they found that men in the 10th–82nd percentiles of the earnings distribution experience lower longevity at ages 65–70 than the top 18 percent of the earnings distribution. The authors also found that the gap between the other percentiles and the top was larger at the lower percentiles than the higher percentiles.[8]

Shkolnikov and others (2008) divided the male earnings distribution into quintiles and observed that a mortality gradient persisted from the 20th through 80th percentile of the earnings distribution beginning at age 65 and remained significant at ages 80 plus.[9] While the age standardized mortality ratio at ages 65 plus was 1.6 for quintile 2 versus quintile 5, the difference between quintile 4 and quintile 5 was still a statistically significant 1.24.

The persistence of mortality gradients high up the earnings distribution in the Canadian and German pension data matches British data from the Whitehall study—an analysis of a sample of British civil servants—in which the British civil service employment grade at ages 40–69 was found to predict mortality risk 25 years later (van Rossum and others 2000). In addition, although 81 percent of a Whitehall follow-up sample had been in the middle grades in contrast to 7 percent in high employment grades at ages 40–69, Breeze and others (2001) found that workers in the middle employment grades had a statistically significant risk of poor health and poor physical performance, roughly 30 years later, when compared with the high grades. As Marmot and Brunner (2005) wrote, "although early life determinants, life-course factors, and current circumstances all have effects on disease risk in older age, the preeminent determinants observed in the [Whitehall II] cohort are adult socioeconomic position and work-based determinants from mid-life."

Methodology

The data set used in this analysis was created by merging several internal SSA research files, all of which contain individuals selected based on Social Security's 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[10] CWHS extract was merged to a 2010 Master Beneficiary Record (MBR) extract, a 2009 Numident extract, and a 2009 Master Earnings File (MEF) extract. 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 OASDI taxable earnings data and quarters of coverage information from 1951 through 2008. The MEF provides annual earnings reported to the Internal Revenue Service, including earnings in employment not covered by Social Security and earnings in Social Security–covered employment that exceed the OASDI tax max from 1982 through 2008.[11] 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 (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.

Unlike some research in the public health field, this study is more narrowly focused on differential mortality as it relates to Social Security policy. For that reason, I make several restrictions to the sample, that, while relevant to proposals to change the law with regard to Social Security's retired-worker benefit, have the effect of biasing the sample toward healthier and longer-lived individuals. First, disabled-worker beneficiaries are deleted from the sample (N = 42,114) because, in theory, individuals who have been determined to be disabled under current-law definitions would not be affected by many legislative proposals that apply to the retired-worker population, such as proposals that increase Social Security's EEA.[12] Next, insured status at age 61 is calculated for the remaining individuals in birth cohorts 1937–1945, and only those fully insured for retired-worker benefits are included (N = 179,886). Those individuals were newly eligible for retired-worker benefits at age 62 in the 1999–2007 period. To be fully insured for retired-worker benefits, workers born in 1929 or later must have had 40 quarters of coverage or 10 years of work. From a public health perspective, the elimination of individuals who were not fully insured and Social Security disabled-worker beneficiaries would tend to eliminate those at the highest risk of death because of strong links between labor force attachment and health (particularly for men). Finally, individuals had to have lived until at least age 63 to be included in the final data set, so that all workers would have had an equal opportunity to claim Social Security retired-worker benefits at the age-62, current-law EEA (N = 164,777).[13] Of the total number of workers in the sample universe, 85,863 were men and 78,914 were women. My main analysis only examines mortality estimates for men because a woman's own earnings may be a poor proxy for her socioeconomic status or household income, given low rates of labor force participation for at least some part of the lifetime of the female birth cohorts under study. In a later section of this article, I conduct a sensitivity analysis that measures death rates for women by both male and female lifetime earnings deciles. Although my measure of female socioeconomic status is poor, the sensitivity analysis is conducted because some policy options seek to apply correlations between Social Security's average indexed monthly earnings (AIME) amount, income, health, and life expectancy for *men* toward *all* low-earning, retired-worker beneficiaries.

In order to classify workers into lifetime earnings groups, this analysis uses a definition of lifetime earnings expected to be highly correlated (for men) with the measure of lifetime earnings that Social Security uses to calculate retired-worker benefits. Under current law, Social Security's primary insurance amount (PIA) is the amount from which all Social Security benefits payable on a worker's earnings record are based.[14] As explained on Social Security's website,[15] 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,[16] indexes those earnings to general wage levels (as measured by the average wage index (AWI[17])), sums those indexed earnings, and divides the total amount 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.[18] These 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 differ annually with changes in the AWI.

Because Social Security's AIME is a lifetime measure, interpretation of the AIME is complicated by large changes in the level of the OASDI tax max over time. The OASDI tax max was close to the average wage in the 1950s and 1960s and was not continuously indexed to the national AWI until 1982. In this article, the birth cohorts I analyze (aged 18 in the 1955–1963 period) experienced large growth in the taxable maximum relative to the national AWI over their lifetimes. Although capping of the earnings amounts at the taxable maximum will not affect a median, as long as the median is below the capped level, the capping of earnings will affect deciles above the median if the cap (that is, taxable maximum) is below the uncapped level of earnings for that decile. Accordingly, this study uses an alternative lifetime earnings measure that takes advantage of uncapped earnings data available in Social Security's MEF. While, under current law, Social Security's AIME is calculated based on OASDI taxable earnings, which are taxed only up to the OASDI tax max ($106,800 in 2011), Social Security's MEF contains earnings data on all earnings reported to the Internal Revenue Service, including earnings in Social Security–covered employment over the OASDI tax max and earnings in employment not covered under Social Security from 1982 to the present time.[19] Because earnings over the OASDI tax max 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 fully insured for retired-worker benefits at 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 earnings distribution and in years when the OASDI tax max was low relative to the average wage. Results could also be sensitive to the choice of imputation technique.

In order to create earnings deciles roughly based on all earnings in the US economy, ages 45–55 are chosen as a proxy for lifetime earnings because those ages occur at the peak of the earnings distribution.[20] Peak earnings are a strong proxy for lifetime earnings because earnings at the peak will capture fulfilled earnings potential.[21] Earnings from ages 45 through 55 for each individual are measured relative to the national AWI 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 decile placement using the peak measure would most likely differ from an uncensored top-35 placement (could one be calculated) 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 with 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 and some employees of nonprofit organizations hired prior to 1984—will have low AIMEs from Social Security–covered wages (that is, from jobs held when young) and high peak earnings not covered by Social Security (that is, from their primary job). In addition, foreign-born workers who emigrate from their native countries 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 records at younger ages. To address these problems, this analysis shows results both with or without those groups (see the Appendix for the all inclusive and restricted samples).

In terms of mortality risk, groups not covered by Social Security—for example, federal employees hired prior to 1984 and some state and local workers—will be well captured by my age 45–55 measure because that measure will include their primary wages not covered by Social Security. The foreign born, on the other hand, may be selectively healthier than the native born, regardless of lifetime earnings decile. Such an effect would be observed if individuals who immigrate to the United States tend to have better health than others—that is, if it is more difficult to immigrate in poor health than good health. It is also not clear that the earnings patterns of the foreign born are analytically equivalent to the native born (Duleep and Dowhan 2008) so that a male immigrant falling

in the same earnings decile as a native-born man could be different from his native-born counterpart on many dimensions.

The main lifetime earnings measure used in this study includes years of zero earnings from ages 45 through 55. I have no information on the reason for a zero year of earnings in Social Security administrative data. A zero representing voluntary early retirement or a yearlong voluntary vacation, for example, would not necessarily be analytically equivalent to a zero representing a health shock, involuntary early retirement, or an unemployment spell. The former zero could be the result of an income (that is, wealth) effect and could potentially be either uncorrelated or negatively correlated with mortality risk, while the latter zero is more likely to be positively correlated with mortality risk. Therefore, the restricted sample is further limited through the use of a lifetime earnings average that excludes zeroes from ages 45 through 55 out of concern that some of the zeroes in the main measure could represent voluntary early retirement. A lifetime earnings average that includes zeroes that represent voluntary early retirement could potentially place some individuals in a lifetime earnings decile unrepresentative of (that is, lower than) their actual socioeconomic status.

While my all inclusive sample (Chart 1) is intended to depict the exposed population of fully insured workers, my restricted sample (Appendix, Chart A-1) is intended to bound the estimates, or test the sensitivity of the estimates to alternative definitions.

For the regressions results reported in this article, men are divided into deciles based on their position in the average relative earnings distribution from ages 45 through 55. Decile 1 is equal to the 0–10th percentile of the earnings distribution, decile 2 is equal to the 11th–20th percentile, and so on, so that decile 10 is equal to the 91st–100th percentile of the earnings distribution. Deciles 1 through 9 are modeled as dummy variables, with decile 10 modeled as the reference variable. To test the statistical significance of a possible mortality gradient by decile, each decile dummy variable is also tested against all other dummy variables. In other words, I measure the mortality risk of men in decile 1 against the risk of men in decile 2, decile 3, and so on. Then I measure the mortality risk of men in decile 2 against men in decile 3, decile 4, and so on. In this way, I can test the mortality threshold assumption. For example, if the sample is homogeneous with respect to mortality risk above the bottom 20 percent of the male lifetime earnings distribution, then the risk of death for men in decile 2 should be significantly higher than the risk of death for men in decile 3 by roughly the same magnitude as the risk of death for men in decile 2 relative to men in decile 10. Similarly, the risk of death for men in decile 3 should be equivalent to the risk of death for men at deciles 4, 5, 6, 7, 8, 9, and 10. In the middle of the distribution, the risk of death for men in decile 6 should be equivalent to the risk of death for men in deciles 3, 4, 5, 7, 8, 9, and 10. At the upper end of the distribution, the risk of death for men in decile 8 should be equivalent to the risk of death in decile 3, 4, 5, 6, 7, 9, and 10. In other words, we should see no evidence of a gradient, above, in this arbitrary example, decile 2. Empirically, the decile above which we cease to observe a gradient will serve as the estimated threshold decile. In this way, I use the observable data to determine a threshold as the point above which the data become homogeneous. In contrast, in much of the existing literature, the analyst makes a subjective assessment of what constitutes hardship and then measures what percentage of the exposed population falls below his or her predetermined level.

The model used to estimate mortality risk in this analysis is a discrete-time logistic regression, which is a type of survival model. Because survival time is measured in years for this study, the data include a large number of ties (that is, two or more events appearing to happen at the same time).[22] The discrete-time logistic regression model is equivalent to the discrete-time proportional odds model proposed by Cox when there are many ties in the data (Allison 1995, 212). The model employs the simplifying assumption that events (deaths) occur at discrete times.[23] The discrete-time logistic regression model allows for the incorporation of time-dependent variables, which for this analysis means that both age and year of birth can be included in the same regression, with age being measured as a time-dependent variable observed from the point of initial measurement until death or censoring.

Previous research that divided male Social Security–covered workers into the top and bottom half of the lifetime earnings distribution found that mortality differentials both narrowed by age and widened by birth cohort from ages 60 through 89 over birth cohorts 1912–1938 (Waldron 2007). The current study encompasses a narrower range of ages (63–71) and a narrower range of birth cohorts

(1937–1945). Nevertheless, in theory, age and year-of-birth interactions may be present in the data. Unfortunately, it is difficult to model interactions and mortality differentials by decile at the same time because interactions tend to increase multicollinearity between variables, which will increase standard errors. This problem is compounded by the fact that, with the sample divided into 10 groups, a relatively small number of deaths within each decile can lead to larger standard errors than would be observed if lifetime earnings categories were divided into only 2 groups, for example. Finally, given that I employ nine ages and 9 years of birth, there will be multicollinearity between the age and year-of-birth variables, which may obscure a precise estimate on either variable. To solve that problem, I estimate two regressions: one that predicts the risk of death at ages 63–66 (observed for birth cohorts 1937–1945) and another that predicts the risk of death at ages 67–71 (observed for birth cohorts 1937–1941). As shown in the Appendix (Table A-1), standard errors are larger at ages 67–71 than at ages 63–66. Because the sample is smaller at ages 67–71, one cannot conclude that this result reflects greater uncertainty at the older ages; greater standard errors may instead be a reflection of a smaller sample size. Dividing the sample by age before regressing can therefore be seen as a more conservative test of the gradient hypothesis, in the sense that the smaller sample sizes of the two samples (that is, less deaths per sample) make it more difficult to find a gradient, should one exist. In other words, with a reduced sample size, it will be more difficult to reject the null hypothesis that men at all earnings deciles are at equal risk of death.

To produce estimates of mortality differentials, observations begin in the year the individual turns age 63 (or 67) and end in whichever comes first—the year of death or the end of the observation period (2008). The dependent variable is equal to 1 in the year the worker dies and 0 in every year the worker survives. Counting all annual observations for the 85,863 (43,637) individuals in the sample at ages 63–66 (or at ages 67–71), there are 2,936 (1,934) person-years in which a worker died and 274,088 (118,269) person-years in which a worker survived, for a total of 277,024 (120,203) pooled observations at ages 63–66 (67–71), respectively. The model measures the logit or log-odds of dying on these pooled observations using the maximum likelihood method of estimation.

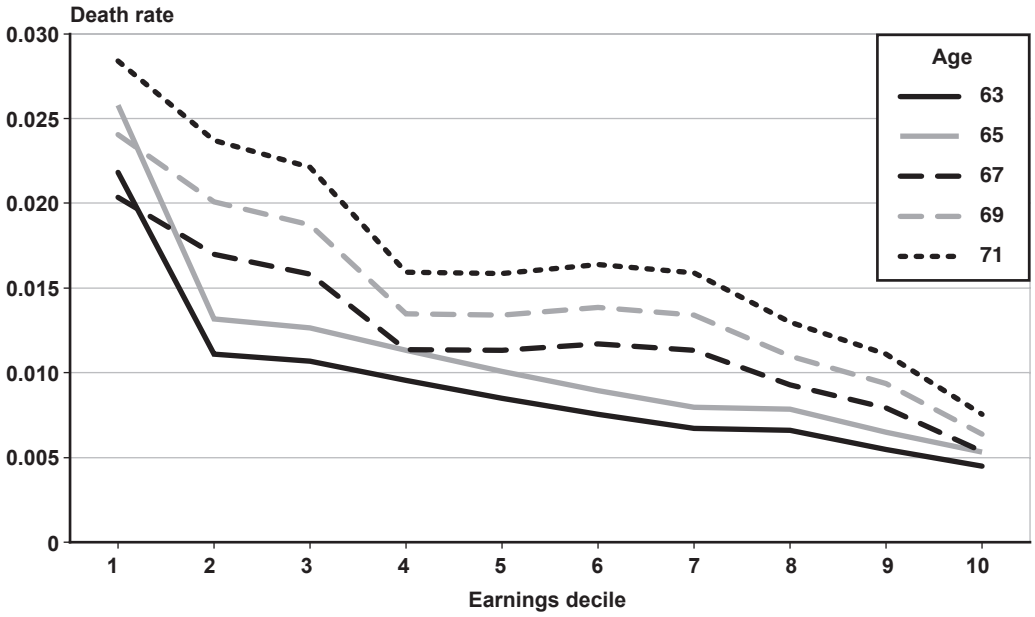
As an additional test of my regression specifications, I conducted several further sensitivity tests of potential age and year-of-birth interactions (results not shown). First, I tested the statistical significance of interactions of earnings decile dummies with age and with year of birth for both the age 63–66 and age 67–71 regressions. Neither interaction was significant for either age group. Because the age 63–66 regression includes more birth cohorts than the age 67–71 regression, I further separated the age 63–66 sample in the following two ways: (1) ages 63–66, years of birth 1937–1941 and (2) ages 63–66, years of birth 1942–1945. Although this regression pushes the ability to model both age and year of birth to the outer limit, the same general pattern with respect to a mortality gradient by decile was found in the parameter results, albeit with some loss in significance on some individual parameter estimates that are due to the increase in standard errors created by the smaller subsamples.

Results

Similar to the findings of Wolfson and others (1993) who used Canadian data, Shkolnikov and others (2008) who used German data, and van Rossum and others (2000) who used British data, the poverty threshold hypothesis is strongly rejected in US data. Like Wolfson and others (1993) before me, I simply find no evidence that, above a low level of earnings or a poverty threshold, the lifetime earnings of men are uncorrelated with mortality at older ages. Instead, results strongly support the abundance of evidence from the public health field (Adler and Stewart 2010) that health and socioeconomic status are positively correlated (the higher the lifetime earnings, the better the health) throughout the entire lifetime earnings distribution.

Empirically, the lifetime earnings decile above which we observe no difference in mortality risk among men is the 10th decile (or top 10 percent of the earnings distribution[24]) at ages 63–66 (Appendix, Table A-1) and the top 5 percent of the earnings distribution at ages 67–71 (Appendix, Table A-2).[25] Although the shape of the gradient is somewhat different at ages 63–66 than at 67–71, at all ages we see a clear inverse correlation between earnings decile and mortality risk (the higher the earnings decile, the lower the death rate). This is displayed in Chart 1, where I graph the death rates by decile that are predicted by the regressions results for ages 63–71 (see

Chart 1.
Death rates for fully insured males born in 1940, by age and male lifetime earnings decile



SOURCES: Social Security administrative data files (1 percent 2008 active CWHS, 1 percent 2009 MEF, 1 percent 2010 MBR, and 1 percent 2009 Numident). Author's calculations based on regressions estimating mortality risk by decile at ages 63–66 and ages 67–71 (see the Appendix, Table A-1).

NOTE: Sample consists of men who were fully insured for retired-worker benefits by age 61; disabled-worker beneficiaries are excluded.

the Appendix, Table A-1). At ages 63–66, we see a sharp decline in the death rate from decile 1 to decile 2, a plateau from decile 2 to 3, a gradual decline from deciles 4 through 7, a plateau from deciles 7 through 8, and a gradual decline from decile 8 through decile 10. At ages 67–71, the decline in the death rate from decile 1 to decile 2 is less stark, but the decline from decile 3 to 4 is steeper. Deciles 4 through 7 exhibit a plateau, after which death rates again decline fairly steeply from deciles 7 through 10.

Tests of statistical significance of the mortality gradients observed visually in Chart 1 are displayed in Table 1. In this table, the odds ratios measure the odds of dying for men in the variable (left most) column of earnings deciles relative to men in reference deciles 2, 3, 4, 5, 6, 7, 8, 9, and 10. For example, men in decile 1 are 1.98 times (98 percent) more likely to die than men in decile 2 and 4.91 times (391 percent) more likely to die than men in decile 10 at ages 63–66. Results provide strong evidence of a mortality gradient in that a man's risk of death is generally predicted to be closer to a man in an adjacent decile than to a man in the top decile. For some adjacent deciles, such as deciles 2 and 3, the difference in the risk of death between men in one decile and the adjacent decile is statistically indistinguishable at ages 63–71. In such a case, if policymakers were to try to implement a policy option that protected decile 2 and below, for example, men in decile 3 could be better off attempting to qualify for the protected option because they are likely to be in no better health and have no greater longevity prospects than their counterparts in decile 2. In this way, policies based on thresholds when the exposed population exhibits a gradient could be subject to unintended behavioral responses.

In addition, if policy analysts do not look for differences above a predetermined threshold when assessing specific proposals, policymakers using their analyses will be unaware of the distributional effects of policy options above the threshold. For example, in Table 1, men in deciles 3 and 4 at ages 63–66 are predicted to have a risk of death 2.38 and 2.12 times the risk of death of men in decile 10, respectively. In the middle of the distribution, men in deciles 5 and 6 are predicted to have a risk of death 1.89 and 1.68 times that of men in decile 10, while at upper end of the distribution, men in decile 9 are predicted to have a risk of death 1.22 times that of men in decile 10. This result

Table 1.
Odds of dying (confidence intervals) for fully insured men at ages 63–66 and 67–71 in variable deciles 1 through 9 relative to reference deciles 2 through 10: All inclusive sample

Variable	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10
					Fully insured men aged 63–66				
Decile 1	**1.98*** **(1.74–2.25)**	**2.06*** **(1.81–2.35)**	**2.31*** **(2.02–2.65)**	**2.60*** **(2.25–2.99)**	**2.92*** **(2.52–3.38)**	**3.29*** **(2.82–3.84)**	**3.34*** **(2.86–3.90)**	**4.04*** **(3.42–4.77)**	**4.91*** **(4.10–5.87)**
Decile 2		1.04 (0.90–1.21)	**1.17***** **(1.00–1.36)**	**1.31**** **(1.12–1.54)**	**1.47*** **(1.25–1.74)**	**1.66*** **(1.40–1.97)**	**1.68*** **(1.42–2.00)**	**2.04*** **(1.70–2.44)**	**2.48*** **(2.04–3.01)**
Decile 3			1.12 (0.96–1.31)	**1.26**** **(1.07–1.48)**	**1.41*** **(1.20–1.67)**	**1.60*** **(1.34–1.9)**	**1.62*** **(1.36–1.92)**	**1.96*** **(1.63–2.35)**	**2.38*** **(1.96–2.89)**
Decile 4				1.12 (0.95–1.33)	**1.26**** **(1.07–1.50)**	**1.43*** **(1.20–1.70)**	**1.45*** **(1.21–1.72)**	**1.75*** **(1.45–2.10)**	**2.12*** **(1.74–2.59)**
Decile 5					1.12 (0.94–1.34)	**1.27**** **(1.06–1.52)**	**1.29**** **(1.07–1.54)**	**1.55*** **(1.28–1.88)**	**1.89*** **(1.54–2.31)**
Decile 6						1.13 (0.94–1.36)	1.14 (0.95–1.38)	**1.38*** **(1.14–1.68)**	**1.68*** **(1.37–2.07)**
Decile 7							1.01 (0.84–1.23)	**1.23**** **(1.00–1.50)**	**1.49**** **(1.21–1.84)**
Decile 8								**1.21***** **(0.99–1.48)**	**1.47**** **(1.19–1.82)**
Decile 9									**1.22***** **(0.98–1.52)**
					Fully insured men aged 67–71				
Decile 1	**1.20**** **(1.02–1.42)**	**1.29*** **(1.09–1.53)**	**1.80*** **(1.50–2.17)**	**1.81*** **(1.50–2.18)**	**1.75*** **(1.46–2.10)**	**1.81*** **(1.50–2.18)**	**2.21*** **(1.82–2.70)**	**2.60*** **(2.10–3.19)**	**3.82*** **(3.02–4.84)**
Decile 2		1.07 (0.90–1.28)	**1.50*** **(1.24–1.81)**	**1.51*** **(1.25–1.82)**	**1.46*** **(1.21–1.76)**	**1.50*** **(1.25–1.82)**	**1.84*** **(1.51–2.25)**	**2.16*** **(1.75–2.67)**	**3.18*** **(2.50–4.05)**
Decile 3			**1.40*** **(1.15–1.69)**	**1.40*** **(1.16–1.70)**	**1.36*** **(1.12–1.64)**	**1.40*** **(1.16–1.70)**	**1.72*** **(1.40–2.10)**	**2.01*** **(1.63–2.49)**	**2.96*** **(2.33–3.78)**
Decile 4				1.00 (0.82–1.24)	0.97 (0.79–1.19)	1.00 (0.82–1.23)	**1.23***** **(0.99–1.53)**	**1.44**** **(1.15–1.81)**	**2.12*** **(1.65–2.73)**
Decile 5					0.97 (0.79–1.19)	1.00 (0.81–1.23)	**1.22***** **(0.98–1.52)**	**1.43*** **(1.14–1.80)**	**2.11*** **(1.64–2.72)**
Decile 6						1.03 (0.84–1.27)	**1.27**** **(1.02–1.57)**	**1.48*** **(1.19–1.86)**	**2.19*** **(1.70–2.81)**
Decile 7							**1.22***** **(0.99–1.52)**	**1.44*** **(1.15–1.80)**	**2.11*** **(1.64–2.72)**
Decile 8								1.17 (0.93–1.48)	**1.73*** **(1.33–2.24)**
Decile 9									**1.47**** **(1.13–1.93)**

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

NOTES: Sample consists of men born from 1937 through 1945 who were fully insured for retired-worker benefits; disabled-worker beneficiaries are excluded.

* = significant at the 1 percent level; ** = significant at the 5 percent level; *** = significant at the 10 percent level.

stands in stark contrast to a threshold assumption that anyone above the bottom 20 percent of the lifetime earnings distribution (in our hypothetical example) will be *equally* affected by a policy change. In other words, the overwhelming rejection of the threshold hypothesis in SSA empirical data (Table 1) implies that because the Social Security retired-worker benefit rules are currently applied universally to *all* fully insured workers, analysts evaluating policy changes relative to current law need to include distributional effects on workers at *all* levels of the earnings distribution. Given the presence of a mortality gradient in SSA data, a threshold model is perhaps best reserved for evaluations of changes to a means-tested program, such as the Supplemental Security Income (SSI) aged program because workers above the SSI threshold would be ineligible for benefits and thus unaffected by any program changes.

The confidence intervals (the numbers in parentheses) in Table 1 provide additional information about the uncertainty of the estimates. Continuing with our hypothetical example in which a policy option is designed to protect the bottom 20 percent of male earners, we see that, at ages 63–66, even though the risk of death for decile 2 is significantly higher than the risk of death for men in decile 4, the point estimate for decile 4 (1.17) is within the confidence interval on the estimate of the odds of death for men in decile 2 versus decile 3 (0.9–1.21). This means that there is a statistical chance that men in decile 4 are equal in health and longevity risk to men in decile 3. In other words, because men in deciles 2 and 3 are indistinguishable, there is a chance that a proposal designed to apply to the bottom 20 percent of the male lifetime earnings distribution could be off by 20 percentage points and actually apply to the bottom 40 percent.

Overall, the most accurate advice that can be given to policymakers is that a policy change related to health and mortality differences among fully insured male workers will affect the top lifetime earnings decile the least, with adverse effects increasing as one moves down the earnings distribution, with the bottom decile being the most severely affected by the change. In other words, we have more certainty about the general pattern of the relationship between lifetime earnings and mortality risk than about the precision of any single point estimate (as is evident from the confidence intervals). Thus, one strength of the type of analysis used in this study is that the uncertainty of the predictions is explicitly measured. In contrast, in the type of analysis frequently employed by analysts using a threshold model that incorporates health variables, the uncertainty of the predictions is unmeasured.

As discussed in the methodology section, for completeness I also perform an identical analysis for a restricted analytical sample. The restricted sample eliminates the foreign born and workers with mostly non-OASDI taxable earnings for at least 5 years at ages 45–55. The sample is further restricted through the use of a lifetime earnings average that excludes zeroes at ages 45–55, out of concern that some of the zeroes could represent early retirement. As indicated in the Appendix (Chart A-1, Tables A-3 and A-4), the general pattern of the mortality gradients by lifetime earnings decile changes little with the change in sample. Most noteworthy is that at ages 63–66, decile 9 does not display a significantly higher risk of death than decile 10. Because the significance of decile 9 is close to being marginal in the all inclusive sample (see note 24), this result highlights the fact that our most conservative interpretation of results would place the point or threshold above which the population is homogeneous at no lower than the 80th percentile of the lifetime earnings distribution for the male fully insured population at ages 63–66.

Some analysts have proposed linking or indexing increases in either the EEA or full retirement age (FRA) to improvements in *average* life expectancy (Advisory Council on Social Security 1997 (options II and III); National Commission on Retirement Policy 1999; Aaron and Reischauer 2001; National Commission on Fiscal Responsibility and Reform 2010; Committee for a Responsible Federal Budget 2010). When evaluating those indexed proposals, distributional analysis based on a threshold model may give policymakers an inaccurate picture of the spread in life expectancy around the average. In contrast, using a gradient model may allow policymakers to more accurately assess the distributional effects of such an index at a point in time.

For example, Waldron (2007) found that if differences in rates of mortality improvement between the top and bottom half of the male lifetime earnings distribution observed over the 1972–2001 period continue, men born in 1941 in the top half of the earnings distribution would be expected to live 5.8 years longer than men in the bottom half of the distribution, up from a difference of 1.2 years observed for men born in 1912. The birth cohorts observed in this analysis (1937–1945) are not yet old enough for us to observe

deaths at ages greater than 71. Therefore, there is not yet enough information available to replicate the trends analysis of Waldron (2007) with more detailed earnings categories. However, the results of this analysis do seem consistent with previous research that found that mortality risk has been greater for the bottom half of the male earnings distribution relative to the top half for at least 29 successive American birth cohorts whose members were born from 1912 through 1941.

Implications of the Gradient Model for Hypothesized Increases in General Revenue to the Treasury in Response to an Increase in the EEA

Many proponents of raising the EEA have argued that an increase in the EEA will increase the amount of tax money going to the general federal Treasury—that is, the amount of money available to be spent on the non-Social Security portion of the federal budget (Burkhauser 1996; Steuerle 2011; Aaron and Reischauer 2001; Biggs 2010; Johnson 2011). In the words of Johnson (2011), "It [an increase in the EEA] encourages people to work longer and earn more, easing pressure on both government and family budgets. Tax revenues increase when earnings rise, reducing the deficit and boosting funding for government programs." Aaron and Reischauer (2001) stated, "It [an increase in the EEA] would also enlarge the labor force, boost national production, and reduce the burden of supporting the economically inactive." The Committee for a Responsible Federal Budget (2010, 4) is even more enthusiastic, stating, "However, the earliest eligibility age is probably the most powerful lever we have to encourage longer working lives, which is critically important to increase economic growth."

The implicit assumption involved in this line of reasoning is that there will be an increase in general tax revenue coming to the Treasury from workers who would have stopped working at the current-law EEA of age 62 but who are induced to continue working until reaching the new, higher EEA, thereby continuing to pay federal income tax at, in theory, a higher rate than they would have paid if they had retired at age 62. Both the amount of new general revenue that analysts estimate will be raised through an increase in the EEA and the distributional incidence of what percentiles of the earnings distribution will contribute that new source of revenue to the federal Treasury depend on whether the population above the hardship threshold follows a gradient. In other words, under an assumption of homogeneity, all workers above the threshold will be equally affected by an increase in the EEA, relative to their current homogeneous behavior, and the incidence of the new source of revenue will be proportionately equal across the distribution of workers above the threshold.

However, in contrast to the underlying threshold assumption upon which hopes for new money appear to be based, several pieces of empirical evidence suggest that those hopes for new revenues could be overstated. In fact, existing empirical evidence suggests that the new revenues could be contributed roughly in reverse proportion to a worker's position in the earnings distribution (the higher the earnings decile, the less *new* money contributed). In other words, if higher earners are already the least likely to claim benefits at age 62 and the most likely to have private pension wealth with which they can offset an increase in the EEA, then any new monies not already being paid to the Treasury are likely to disproportionately come from lower earners who would prefer to retire at age 62, but who are liquidity constrained and cannot afford to retire without access to their retired-worker benefits. Although the terms "higher" and "lower" earners is used for ease of exposition, a key point is that existing empirical evidence suggests that any new revenues collected would follow a gradient (the higher the earnings, the less new revenue contributed), rather than a scenario in which those unable to work at all contribute no new money, and those able to work contribute new money in equal proportion to their position in the lifetime earnings distribution.

First, as shown in this study, the lifetime earnings of men are positively correlated with life expectancy, so that the higher the earnings the more incentive workers will have to remain in the workforce longer because of their longer expected lives, regardless of the EEA. Empirically, we also have evidence that higher earners and more educated workers *already* tend to disproportionately claim benefits at ages above the current-law EEA of 62 relative to lower-earning and lower-educated workers (Waldron 2001, 2004). In fact, Waldron (2004) found that workers in the high-earnings group claiming benefits at age 62 who were equal in health and mortality risk to those claiming later had private pension income in the top half of the earnings distribution. (Most men claiming benefits at age 62 in the high earnings group had health and mortality risk *worse* than those claiming later, *regardless*

of the lifetime earnings of those claiming later; however, men with high private pension income were an exception to this general rule.) Given that the Social Security bend point formula only has a replacement rate of 15 percent at the top bend point (which hits at about the median of the male lifetime earnings distribution (Waldron 2012)), for high earners, a private pension may be likely to weigh more heavily in the retirement decision than the availability of a retired-worker benefit. Such workers may also be employed in jobs with generous early pensions because of a taste and preference for early retirement. If policy analysts wish to influence labor force participation behavior for this group, the tax treatment of the private pension would seem to be the more relevant policy lever. Of course, the long-run ability of policymakers to influence behavior would be limited by the extent to which workers could offset the policymakers' goals (that is, by simply moving money to an unconstrained vehicle).

In addition, a simple tabulation of the Current Population Survey by education level, sex, and year shows that at age 62 the labor force participation of men (and somewhat less strongly of women) is positively correlated with education level—the higher the education level, the more likely the respondent is in the labor force (Table 2). For example, the percentage of men in the labor force at age 62 in the 2009–2011 period was about 88 percent for those with a professional or doctorate degree, 67 percent for those with a bachelor's degree, 53 percent for high school graduates, and 46 percent for men without a diploma.[26] The percentage of men who self-reported not being in the labor force at age 62 during the same period because of a disability was 27 percent for men without a diploma, 15 percent for high school graduates, 4 percent for those with a bachelor's degree, and 0 percent for those with a professional or doctorate degree (Table 2).

Thus, we see evidence indicative of a gradient in labor force participation and self-reported disability; if all workers were homogeneous above a hardship threshold on those two dimensions, we would not expect to see differences in labor force participation rates and disability rates between doctors, lawyers, and men with doctorates compared with college and high school graduates. Women exhibit a similar pattern, although the percentage of them in the labor force is generally below that of men at identical educational categories, and we see less of a difference between women at higher levels of education. Partly, results for women at higher education levels may be caused by smaller samples of women at the higher education categories for the birth cohorts measured.

Additionally, Pattison and Waldron (2008, Chart 7) found that among men with positive earnings, the percentage who had elective deferrals (earnings funneled into a 401(k)-type pension plan arrangement) increased almost monotonically by earnings decile. (In other words, the higher the earnings decile, the greater the percentage of men who had elective deferrals.) In general, few men below the 4th decile had any elective deferrals. The percentage of men with elective deferrals rose less steeply over the 1990–2001 observation period for men in the 4th–6th deciles than for men in the 7th–10th deciles (ibid., 9). Trends were similar for women. Note that the elective deferral pattern followed a *gradient*; if elective deferral behavior was homogeneous above the hardship threshold, the percentage of workers above the threshold who had elective deferrals would not vary by earnings decile.

Table 2.
Percentage of Current Population Survey respondents in and out of the labor force at age 62 from 2009 through 2011, by education level and sex

	Respondents in labor force		Respondents not in labor force because of a disability	
Education level	Men	Women	Men	Women
No high school diploma	46	32	27	24
High school graduate	53	45	15	13
Some college, no degree	57	51	12	9
Associate's degree	62	55	12	12
Bachelor's degree	67	61	4	4
Master's degree	73	60	1	1
Professional degree or doctorate	88	77	0	6

SOURCE: Author's tabulations based on selected years of the Census Bureau's March Supplement to the Current Population Survey.

Overall, from the existing empirical evidence, we can infer that the bulk of any additional revenues from an increase in the EEA would come from workers who cannot afford to offset the retirement-age change through increased contributions to private pensions and personal savings accounts and who are not already working past age 62, but are able to work past that age. Because the federal income tax brackets are designed to be progressive, workers unable to offset the EEA increase would be disproportionately at lower tax brackets than one might assume if one were to believe that an increase in the EEA would apply universally across the earnings distribution (that is, in a poverty threshold world). Thus, new revenues would be less than they would be if all current age-62 retirees were alike with regard to labor force participation, disability, claiming, and personal saving behavior. The new revenues, furthermore, could be both regressive with regard to a primary worker's position in the earnings distribution and less than anticipated under a poverty threshold assumption. Of course, the evidence presented here is not thorough enough to be conclusive on these points. However, there is certainly enough empirical data going in the opposite direction from the implicit poverty threshold assumption underlying the belief that raising the EEA would increase the general revenue of the Treasury by a "substantial" amount for policymakers to consider asking proponents to provide a more detailed analysis of tax incidence by earnings decile.

Differences by Sex in Mortality Risk by Lifetime Earnings: Implications for Proposals to Target Benefit Changes on Workers Below a Hardship Threshold

Some policy analysts have recommended that the EEA be raised, but that the increase be accompanied by some type of "targeted" benefit to help those workers below the hardship (as defined by the analyst) threshold (Johnson 2011; Steuerle 2011; Munnell 2008; Burtless 1998). Targeted benefits include the following:

- Designing retired-worker program benefits specifically for the lower-earning and/or lower-income worker (Munnell 2008; Steuerle 2011).
- Targeted liberalization of the Disability Insurance (DI) program for workers below the new EEA (Burtless 1998; Johnson 2011).
- Extending unemployment benefits at ages 55 or older (Johnson 2011).
- Devoting more resources to retraining older workers (Johnson 2011).
- Expanding the SSI aged program (Burkhauser 1996; Johnson 2011; Biggs 2010).

Aaron and Reischauer (2001) suggest nontargeted liberalization of the DI program for workers between the old EEA and the new EEA.

One example of a proposal targeting workers in hardship by earnings level that is fairly straightforward to evaluate is that of Zhivan and others (2008). They propose setting the EEA based on AIME level, with the lowest AIME level having an EEA of 62 and the highest AIME level having an EEA of 64. The authors note, "an elastic EEA could potentially raise the earliest claiming age for most workers while shielding those for whom a higher EEA would result in hardship or an unfair loss." In the context of their proposal, Zhivan and others define "hardship" as difficulty working from ages 62 through 64 (which they assume is correlated with AIME level) and "unfairness" as the lower value of lifetime benefits that would be received by workers with below average life expectancy. As they note (2008, endnote 17), their proposal does not address the adequacy of benefit levels at age 62 for workers who are deemed eligible to claim at age 62. For example, under current law, when the FRA reaches 67, benefits received at age 62 will be 70 percent of benefits received at age 67 (Goss 2010). To address that automatic actuarial reduction, Zhivan and others further note that one option would be to fix the EEA benefit at 80 percent of the FRA benefit.[27] In order to understand the distributional implications of their proposal, one must first understand differences in labor force participation between men and women and the limitations of Social Security's earnings data, which I review in the following section.

Differences in Hours Worked and Lifetime Earnings by Sex

The gradient analysis conducted on men in this article cannot be repeated for women because labor force attachment was not as strong for women as for men in the birth cohorts currently observable in Social Security data. For example, over the lifetime of these birth cohorts, average hours worked at the prime earnings ages of 25–54 grew from about 16 hours in 1968 to about 26 in the mid-1990s (and have since been steady) for women; those hours fell from about 40 in 1968 to 36 in the mid-1980s (and have since been steady) for men (Waldron 2012). As a result of differences in hours

worked by sex, the male fully insured worker population recently eligible for retired-worker benefits is predominately composed of primary, full-time workers, while the female fully insured population includes a mix of primary, full-time workers and secondary, part-time workers (including workers with a large number of zero earning years relative to primary workers).

Social Security has no information on number of hours worked per year, on the reason a worker has years of zero earnings in their earnings record, or on marital status by year. Earnings are reported annually to Social Security's MEF on an individual basis with no marital information attached. I can only observe the lifetime earnings of a fully insured worker's spouse if one member of the couple has claimed auxiliary (that is, spouse or survivor) benefits based on the record of the highest earner in the couple.[28] 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. Therefore, I am unable to create a measure of lifetime household earnings for fully insured workers using Social Security administrative data. For that reason, I cannot separate female primary earners from female secondary earners in my analysis. While as primary earners, men's lifetime earnings will be strongly correlated with their lifetime household income, and more broadly, their socioeconomic status, many female lifetime earners may have a weak correlation between their *own* lifetime earnings level and their lifetime *household* earnings and socioeconomic status.

As discussed, the lack of a household earnings measure is not a problem for men because, as the primary earner in the majority of households, their own earnings and their household earnings will be highly correlated in terms of their assignment to socioeconomic deciles. For women (particularly married women), their own lifetime earnings may serve as a poor proxy for their household earnings, so that the place of a woman in a socioeconomic decile based on her own earnings will not necessarily equal her place in a socioeconomic decile based on her household earnings. For example, Monk and others (2010) found that among individuals observed in the 1992–2006 Health and Retirement Survey, the highest AIME (a top 35-year lifetime earnings measure) in the household was a worker's own AIME for 97 percent of married men and only 15 percent of married women.

In addition, male lifetime earnings can capture causation running from poor health to lower earnings because low hours worked or periods of zero earnings are frequently correlated with a health shock or a chronic health problem for primary earners. For secondary earners (predominately women), zeroes and low hours worked can often signify participation in nonmarket work, such as childcare, for reasons uncorrelated with health. In other words, secondary earners with low hours worked and zero earnings for nonhealth reasons may be mixed in the same category with primary earners with low hours worked and zero earnings for health reasons to a much greater extent for women than for men, dampening the power of a lifetime earnings variable to explain mortality risk differences among women.

Recall that the AIME represents an average of a worker's top-35 years of *earnings*, while hardship is typically used to refer to the concept of *household income*, or the total resources available to an individual. As discussed, these two measures are unlikely to be as strongly correlated for women as for men because men work more market hours than women, on average, while women work more nonmarket hours than men, on average. Thus, while we would expect the female median AIME to move closer to the male AIME for more recent birth cohorts, given large increases in female labor force participation over time, it is not clear from the empirical data that the female AIME will equal the male AIME at the point at which a hypothetical proposed retired-worker law change is phased in. For example, women were still 23 percentage points below men in the number working full time, all year at the prime earnings ages in 2007 and were about 10 hours below men in average hours worked per week (Waldron 2012). Both of these trends have been flat for the past 10 years. From 2003 through 2007, among workers born in the 1970s, hours of paid work were about 41 for men and 26 for women, while hours of unpaid work were 16 for men and 32 for women (Krantz-Kent 2009), despite the fact that years of educational attainment were higher for women than for men in those birth cohorts. In addition, the Pew Research Center (2007) found that the preference for full-time work among fathers exceeded mothers by 50 percentage points in 2007, and that preference for part-time work differed little among mothers by education or income level. Finally, of people aged 15 or older who married during 2008 (the majority of whom were under age 35), 72 percent of men worked full time compared with only 50 percent of women (Kreider and Ellis 2011, Table 11).

Distributional Analysis of a Targeted Proposal by Sex

Although at various times throughout the history of the Social Security Act provisions have applied different rules to men and women, by 1983 the Social Security Act had once again been made gender neutral through both court decisions and legislative changes (Myers 1993).[29] Despite that current-law gender neutrality, Zhivan and others (2008) seek to exploit known links between low lifetime earnings and high mortality risk *for men* as a way to target for relief fully insured workers in poorer health,[30] if the EEA were to be increased. That proposal may miss its target by a wide margin if female life expectancy is *higher* than male life expectancy, but female lifetime earnings are *lower*. In the case of a policy option that links the EEA to AIME level, workers with higher life expectancy (women) could end up having a lower early retirement age than workers with lower life expectancy (men) by virtue of differences in earnings levels between men and women. In addition a secondary earner (such as a married women for whom hours of nonmarket work have exceeded hours of market work over a lifetime) could be more likely to qualify for a lower early retirement age based on her own retired-worker benefit than the equivalent primary earner who has worked full time at a modest hourly wage over a lifetime, even though her primary-earning counterpart could face a higher risk of death, be in poorer health, and have lower *household* income.[31]

Although this article examines the target efficiency of an EEA linked to AIME level by focusing on differences in lifetime earnings and mortality by sex, an additional concern discussed by Stapleton (2009, 25) is that an elastic EEA would not help workers who have high AIMEs but experience adverse health events. Support for that concern is found in Waldron (2004), where male Social Security retired-worker beneficiaries with earnings in the top quarter of the male lifetime earnings distribution who claimed at age 62 were found to have had poorer health and higher mortality risk than most men retiring at age 65, including those age-65 retirees with earnings in the lowest quartile. In other words, current-law equality in retirement ages by AIME provides insurance value against poor health at age 62, even for those at the top end of the earnings distribution, and there is evidence that some workers at the top end are making use of that insurance.

In order to examine the sensitivity of policy options that seek to mitigate the hardship caused by an EEA increase through the use of Social Security's AIME, I first tabulate relevant Social Security program variables by the male lifetime earnings deciles that I use to calculate mortality differentials in this analysis (Tables 3 and 4).[32] Because there are large differences in lifetime earnings by sex that would be obscured by a unisex tabulation, I tabulate program variables separately by sex and use the male earnings distribution to assign women to earnings deciles. By assigning women in this way, I seek to roughly proxy for a primary or full-time worker definition when forming the earnings deciles. Because women have lower earnings than men, about 45 percent of female fully insured workers are in the bottom two male earnings deciles (Table 4). At the opposite end of the earnings distribution, only 0.6 percent of women are in the top male lifetime earnings decile.

After tabulating the median AIMEs by male earnings decile, I then calculate the median reduced monthly benefit at age 62 for a worker by earnings decile and the percentage of the poverty line such a median benefit represents. Because I cannot observe couples in my data, the poverty measure I use is equivalent to what a single worker would have faced.[33] In reality, a married person could have received a spouse or widow benefit increment to the retired-worker benefit that is calculated in Tables 3 and 4 and that is payable on his or her own record).[34] Because the 1940 birth cohort had a FRA of 65 years and 6 months and the FRA is scheduled under current law to increase to age 67 for birth cohorts 1960 and later, I also calculate the age-62 benefit as a percentage of the 2002 poverty line for one person by decile if the 1940 birth cohort had faced the benefit reductions scheduled under current law for the 1960 and later birth cohorts.

Retired-worker benefits reduced for an age-62 claim would have been around 100 percent of the poverty level at around the median of the 3rd male earnings decile for men and around the median of the 4th male earnings decile for women under the actual retirement age for the 1940 birth cohort, or closer to the median of the 5th male earnings decile for women if the retirement age had been 67 (see Tables 3 and 4). Aggregating across deciles (that is, multiplying the percentage of men or women in each male earnings decile with benefits at or below poverty by the percentage of all men or women in the decile, and adding up across deciles), I find that among fully insured workers at an FRA of 67, about 25 percent of men and 75 percent of women would have had a benefit at 100 percent of the

poverty level or less. That difference by sex is driven by a lower median number of covered earnings years for women than men at every earnings decile. This does not mean that 75 percent of women in my sample are poor; such a conclusion is implausible and highlights the fact that female AIME levels are unlikely to correlate strongly with household income, poverty, or hardship measures for recently eligible birth cohorts.

We also see in Tables 3 and 4 that for both men and women there are smaller numbers of fully insured workers with AIMEs at or below the poverty level at higher earnings deciles. Some of those workers may have higher earnings that are not covered by Social Security and lower Social Security–covered earnings. Other workers may have emigrated from their native countries to the United States at later ages than the native born typically start working in covered employment.[35] As Olsen and Hoffmeyer (2001/2002, 12) noted, even though the special minimum benefit (a retired-worker benefit originally designed to increase the benefit level of workers with low AIMEs) required 23 years of coverage, in 2000, 12 percent of retired-worker special minimum beneficiaries had income from noncovered pensions. The authors discussed the history of the special minimum, and Schobel and McKay (1982) discussed its predecessor—the regular minimum (another retired-worker benefit originally designed to increase the benefit level of workers with low AIMEs).

As discussed by Olsen and Hoffmeyer (2001/2002), in 1972 Congress rejected raising the level of the regular minimum benefit (which had fallen below the poverty line) because of concerns of windfalls going to workers who were only intermittently in Social Security–covered employment. The authors reported that the chief groups named in a 1972 Senate Finance Committee report consisted of workers employed either in the federal service, or under a state retirement system not linked to Social Security, or as a policeman or fireman, and women who spent "most of [their] adult [lives] not working but…had some earnings under Social Security" (5).[36]

Table 3.
Social Security program variables that apply to retired-worker benefits for fully insured men born in 1940, by male lifetime earnings decile (amounts in 2002 dollars)

Male earnings decile	Median AIME	PIA [a]	Reduced monthly benefit amount at age 62 [a]	Benefit as a percentage of the 2002 poverty line for a one-person family		Percentage of men at or below 100 percent of the 2002 poverty line for a one-person family		Median years of Social Security–covered earnings at ages 14–61	Percentage of earnings decile with disability insured status at age 61
				Median age-62 benefit [a]	Median age-62 benefit, if FRA was 67 [a]	At FRA of 65(6) [b]	At FRA of 67		
1	1,008.00	665.92	516.09	70	63	87	92	21.0	25
2	1,667.50	876.96	679.64	92	83	62	76	32.3	73
3	2,259.50	1,066.40	826.46	112	101	31	48	38.5	88
4	2,821.00	1,246.08	965.71	131	118	10	16	40.8	89
5	3,304.00	1,400.64	1,085.50	147	133	7	8	41.3	89
6	3,704.00	1,505.35	1,166.65	158	143	10	11	41.5	88
7	4,173.00	1,575.70	1,221.17	165	149	10	11	41.3	86
8	4,653.00	1,647.70	1,276.97	173	156	8	8	41.8	89
9	5,100.00	1,714.75	1,328.93	180	163	7	8	41.5	91
10	5,366.00	1,754.65	1,359.85	184	166	3	4	40.8	95

SOURCES: Author's calculations based on the *Annual Statistical Supplement to the Social Security Bulletin, 2010* (Table 2.A17.1 and Table 3.E8.) and Social Security administrative data files (1 percent 2008 active CWHS, 1 percent 2009 MEF, 1 percent 2010 MBR, and 1 percent 2009 Numident).

NOTES: Sample consists of men born in 1940 who were fully insured for retired-worker benefits; disabled-worker beneficiaries are excluded. Retired-worker benefits are reduced for an age-62 claim, based on the 1940 birth cohort's FRA of 65 years and 6 months. Earnings deciles are based on average relative earnings from ages 45 through 55.

a. Author's calculations based on median AIME amount observed empirically.

b. Age given in years and (months).

Under the type of policy option we are analyzing here, workers with low Social Security–covered earnings and high earnings not covered by Social Security could be assigned an EEA of 62, while workers with a full employment history of lower Social Security–covered earnings could be assigned an EEA of 64, even though health and mortality risk may be expected to be worse for the latter group than for the former. In addition, the former group of workers may already have a state or local defined benefit pension plan with a low retirement age, while the latter may not.

Finally, we see in Tables 3 and 4 that if men with earnings in the bottom 30 percent of the male lifetime earnings distribution were assigned an EEA of 62 based on their AIME, about 64 percent of women would also have been assigned an EEA of 62. Conversely, many more men than women would have been assigned the highest EEA level designated in the policy option discussed by Zhivan and others (2008) by virtue of their higher AIMEs.

In order to test whether an EEA based on AIME level would correspond to observable differences in mortality risk between men and women by lifetime earnings decile, I calculate death rates for women classified by male earnings decile and compare them with male death rates classified by male earnings deciles (Chart 2). (The regression results from which the female death rates displayed in Chart 2 are calculated can be found in the Appendix (Tables A-5 and A-6).) If the policy option we are evaluating is designed to affect fully insured workers at a particular lifetime earnings level equally by sex, both men and women with equivalent lifetime earnings should have roughly equal death rates. As a further test, I also classify women into earnings deciles based on the female earnings distribution, although, as indicated in Chart 2, this results in little to no difference in the female death rates by decile. In neither case do we have a very strong measure of socioeconomic status for women; however, that is the point. SSA has never collected income data because income data is not used

Table 4.
Social Security program variables that apply to retired-worker benefits for fully insured women born in 1940, by male lifetime earnings decile (amounts in 2002 dollars)

Male earnings decile	Percentage of women in male earnings decile	Median AIME	PIA [a]	Reduced monthly benefit amount at age 62 [a]	Benefit as a percentage of the 2002 poverty line for a one-person family		Percentage of women at or below 100 percent of the 2002 poverty line for a one-person family		Median years of Social Security–covered earnings at ages 14–61	Percentage of earnings decile with disability insured status at age 61
					Median age-62 benefit [a]	Median age-62 benefit, if FRA was 67 [a]	At FRA of 65(6) [b]	At FRA of 67		
1	20.4	492.00	442.80	343.17	46	42	99	100	15.5	36
2	24.2	891.00	628.48	487.07	66	60	97	99	24.8	78
3	18.9	1,492.00	820.80	636.12	86	78	81	92	30.0	89
4	13.4	2,029.50	992.80	769.42	104	94	39	65	32.5	91
5	8.8	2,568.50	1,165.28	903.09	122	110	17	31	33.5	90
6	5.8	3,022.00	1,310.40	1,015.56	138	124	11	14	34.3	88
7	3.7	3,532.50	1,473.76	1,142.16	155	140	10	13	33.8	89
8	2.7	3,987.00	1,547.80	1,199.55	162	147	11	11	33.8	88
9	1.4	4,553.00	1,632.70	1,265.34	171	155	7	8	35.3	92
10	0.6	4,583.00	1,637.20	1,268.83	172	155	10	12	33.0	96

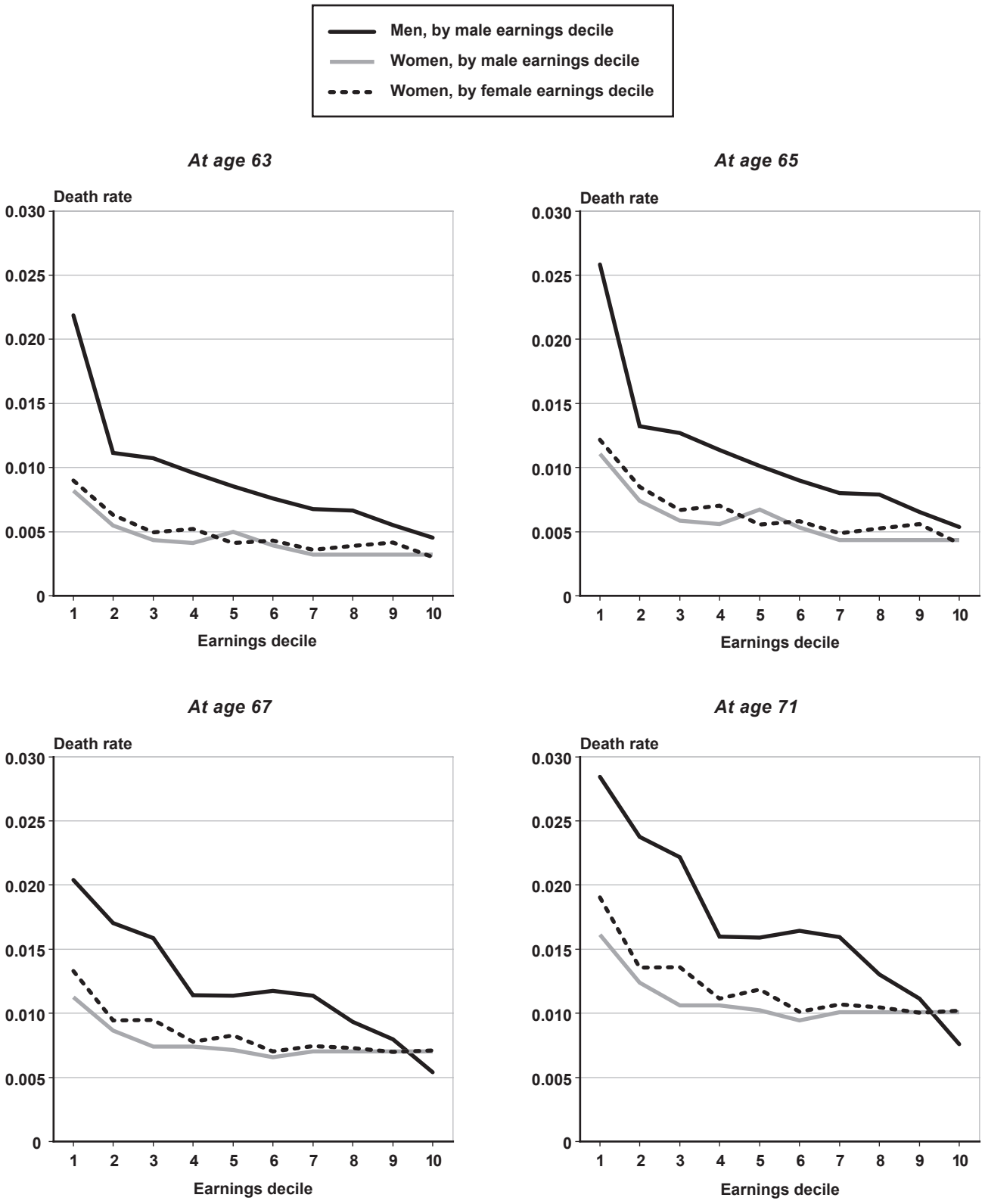
SOURCES: Author's calculations based on the *Annual Statistical Supplement to the Social Security Bulletin, 2010* (Table 2.A17.1 and Table 3.E8.) and Social Security administrative data files (1 percent 2008 active CWHS, 1 percent 2009 MEF, 1 percent 2010 MBR, and 1 percent 2009 Numident).

NOTES: Sample consists of women born in 1940 who were fully insured for retired-worker benefits; disabled-worker beneficiaries are excluded. Retired-worker benefits are reduced for an age-62 claim, based on the 1940 birth cohort's FRA of 65 years and 6 months. Earnings deciles are based on average relative earnings from ages 45 through 55.

a. Author's calculations based on median AIME amount observed empirically.

b. Age given in years and (months).

Chart 2.
Death rates by age, sex, and lifetime earnings deciles



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

to administer the OASDI program. Because the Social Security retired-worker benefit was designed to be universal, it is extremely difficult to target subgroups efficiently through the retired-worker benefit.

As indicated in Chart 2, deaths rates for women are well below comparable male death rates at deciles 1 through 8 at ages 63–71. Men do not get close to the lower death rates of women in deciles 3 through 10 until about decile 9. Because we do not have a measure of income for women, it could well be that high-income women are well above the top 20 percent of male lifetime earners in terms of longevity. Nevertheless, with this major caveat in mind, we do have some evidence from Chart 2 that the top 20 percent of male lifetime earners could be close to the average woman in terms of mortality risk.

Until this point, I have not placed fully insured workers into deciles based on percentiles that are defined by the unisex (male and female combined) earnings distribution. Interpretation of estimates based on the unisex earnings distribution can be difficult, given the difference in hours worked between men and women and the fact that secondary workers in either a current marriage or in a marriage that has lasted at least 10 years may be dually entitled to Social Security spouse and survivor benefits (see Waldron (2012) for details). Nevertheless, retirement analysts sometimes classify workers by the unisex earnings distribution when presenting distributional results of analyses of proposed changes to retired-worker benefits.

In Table 5, I show the percentage of men and women born in 1940 who would have been in earnings deciles 1 through 10, using three different methods of calculating the earnings deciles. The first method uses the male earnings distribution to define the earnings deciles and places women in the male earnings deciles, based on their own lifetime earnings. Under this method, 44.6 percent of women have earnings in the bottom 20 percent of the male earnings distribution. The second method uses the female earnings distribution to define the earnings deciles and calculates the number of men who are in each female decile, based on their own lifetime earnings. Under this method, 9.9 percent of men have earnings in the bottom 20 percent of the female earnings decile. The third method uses the unisex earnings distribution to define lifetime earnings deciles and calculates the percentage of men and women in each earnings decile based on their own respective lifetime earnings. Under this method, 12.9 percent of men and 27.8 percent of women are in the bottom 20 percent of the unisex earnings distribution.

Table 5 can be used to roughly assess the target efficiency of a policy proposal that attempts to use Social Security's AIME as a way to shield workers in poor health from an increase in the EEA. For example, suppose a policy was to be designed to shield the bottom 20 percent of the unisex earnings distribution. Such a policy would have protected roughly 12.9 percent of men and 27.8 percent of women born in 1940. Table 6 displays the death rates at age 63 for men and women by male earnings decile. If policymakers used the 20 percent unisex distribution, they would have shielded women with death rates that ranged

Table 5.
Percentage of workers by sex in male, female, and unisex lifetime earnings deciles

Lifetime earnings decile	Women in male earnings decile	Men in female earnings decile	Women in unisex earnings decile	Men in unisex earnings decile
1	20.4	5.7	13.3	7.0
2	24.2	4.2	14.5	5.9
3	18.9	3.9	14.3	6.2
4	13.4	4.4	14.0	6.4
5	8.8	4.4	12.4	7.8
6	5.8	5.3	11.1	9.0
7	3.7	6.7	8.5	11.4
8	2.7	8.4	6.4	13.3
9	1.4	13.9	3.9	15.5
10	0.6	43.2	1.7	17.5

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

NOTE: Sample consists of men and women born in 1940 who were fully insured for retired-worker benefits; disabled-worker beneficiaries are excluded.

Table 6.
Male and female death rates at age 63, by male lifetime earnings decile

Male earnings decile	Percentage of women in male earnings decile	Death rate for—	
		Men	Women
1	20.4	0.021871	0.008184
2	24.2	0.011152	0.005467
3	18.9	0.010720	0.004335
4	13.4	0.009585	0.004136
5	8.8	0.008537	0.004974
6	5.8	0.007601	0.003941
7	3.7	0.006743	0.003213
8	2.7	0.006652	0.003213
9	1.4	0.005510	0.003213
10	0.6	0.004537	0.003213

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

NOTE: Sample consists of men and women born in 1940 who were fully insured for retired-worker benefits; disabled-worker beneficiaries are excluded.

from roughly 0.008 to somewhere above 0.005. At that same point in the unisex distribution, they would have shielded men with death rates of roughly 0.022. The policy would have failed to shield men in deciles 2 through 5, all having higher death rates than the 27.8 percent of women who would have been shielded. In other words, at least 37 percent of men (50 minus 12.9) with death rates *exceeding* those of the women assigned the lowest EEA would have been assigned a higher EEA by the policy proposal.

Alternatively, suppose policymakers chose to shield the bottom 20 percent of the male earnings distribution, recognizing that women live longer than men. At that point in the male earnings distribution, approximately 60 percent of men (80 minus 20) with death rates no lower than 0.007 would have had a higher EEA than the 44.6 percent of women in the bottom 20 percent of the male earnings distribution who would have had death rates of approximately 0.005. This analysis is exaggerated because we can expect younger female birth cohorts to have higher labor force participation, and thus higher lifetime earnings, than the 1940 birth cohort. However, as discussed, women are still 23 percentage points below men in the number working full time. Mathematically, lifetime earnings cannot become equal between the sexes if hours worked are unequal. (If women's wages exceeded men's wages by an enormous amount, such a result could be feasible; however, that particular scenario would be well outside the bounds of all existing empirical wage data.) Furthermore, female life expectancy at age 60 has been higher than male life expectancy at age 60 for at least a century.

As illustrated in Chart 2 and Tables 5 and 6, it would be difficult to focus retired-worker benefit changes on low earners with low life expectancy through a worker's own AIME because many women with higher life expectancy will qualify because of their relatively low AIME levels. Monk and others (2010) found similar results by sex when using a worker's own AIME quintile as a measure of socioeconomic status in a Health and Retirement Survey sample matched to Social Security administrative data. Specifically, they found, "while individual life expectancy is strongly correlated with individual AIME for men, it is only weakly correlated for women, and when pooling the genders the correlation disappears" (1).

Thus, given the higher labor force participation of men and greater number of hours worked, if one uses the unisex earnings distribution to define a low earner, many men at fairly high mortality risk relative to the total fully insured population will have an AIME level exceeding the AIME level specified in the policy option. On the other hand, if one uses the male earnings distribution to define a low earner, low-earning women may meet the AIME level specified for a particular benefit option, even though they appear likely to be in better health and have higher life expectancy than many of their male counterparts *at equivalent or higher AIME levels*.[37]

Distribution of Workers at the OASDI Taxable Maximum by Earnings Decile and Sex

In lieu of varying the EEA by AIME level, one way policymakers could focus on workers expected to have high life expectancy, while simultaneously including high-income but low-earnings workers, would be to increase the OASDI tax max. Unfortunately, this discussion is necessarily speculative, as we are not able to calculate the marriage rate for workers with earnings over the taxable maximum using Social Security data.

In theory, a Social Security policy change of this nature could indirectly apply to low-earning spouses of high-earning workers through the shared reduction in disposable income the couple would have experienced during the years at which the higher earner was paying taxes on a larger amount of earnings, relative to current law. With regard to life expectancy correlations,

one advantage could be that, theoretically, low-earning, high-income workers could have fairly high life expectancy, perhaps even exceeding that of the higher earner in a high-income couple. An additional advantage could be that, under current law, unmarried workers are subject to the same payroll tax rate as married workers, but are not eligible for spouse or survivor benefits. While a universal tax rate applied to all Social Security–covered earnings hews to the universal principle underlying retired-worker benefit design, the payout of auxiliary benefits is not particularly progressive in outcome because married couples tend to have higher income than unmarried individuals.[38]

Gustman and Steinmeier (2001) and Gustman, Steinmeier, and Tabatabai (2011) observed within the Old-Age and Survivors Insurance system a large amount of redistribution from high-to-low-earning *individuals* and a much lesser amount of redistribution from high-to-low-earning *households*. In addition, for both men and women, marriage has been found to *lower* mortality risk, relative to the unmarried (Rendall and others 2011).

To examine the distributional effect of this hypothetical policy option, I next tabulate the percentage of men and women from ages 45 through 55 at the OASDI tax max (Table 7). At first glance, targeting the OASDI tax max for an increase appears to overshoot the target with regard to life expectancy for men and undershoot the target for women because about 35 percent of men had some earnings from ages 45 through 55 at the taxable maximum compared with only 7 percent of women.

However, if we examine the median number of years at the OASDI tax max (out of a possible 11) in Table 8, we see that the majority of the tax increase will fall on male earnings deciles 9 and 10. Decile 8 only has a median 2 years out of a possible 11 at the OASDI tax max, and all deciles below 8 had a median of zero years at the OASDI tax max. Thus, the majority of the tax increase is likely to fall on men closest to the observable threshold, the top 20 percent of the male earnings distribution. (Although, because, at least at ages 67–71, the threshold is actually at the top 5–10 percent of the male earnings distribution for men, this option may tend to hit the 9th decile harder than the 10th decile.)

On the other hand, there remains the problem of a potential undershooting of the target for women. In terms of a women's own earnings, death rates appear flat starting in the 3rd male lifetime earnings decile (or for the top 55 percent of female earners), and only 2 percent of women were in the top-two male earnings deciles in 2002. Even if we take the extreme assumption that 100 percent of men at the OASDI tax max are married, there may still be long-lived women married to men earning below the OASDI tax max who are not "paying" the full price of their longevity.

Table 7.
Percentage of fully insured workers at the OASDI tax max from ages 45 through 55, by number of years and sex

Number of years at OASDI tax max	Men	Women
0	65.0	93.0
1	5.7	2.2
2	3.1	0.9
3	2.5	0.6
4	2.2	0.5
5	2.0	0.4
6	1.9	0.4
7	1.9	0.3
8	1.9	0.3
9	1.9	0.3
10	2.3	0.3
11	9.7	0.8

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

NOTE: Sample consists of men and women born in 1940 who were fully insured for retired-worker benefits; disabled-worker beneficiaries are excluded.

Table 8.
Median number of years (out of 11 possible years) at the OASDI tax max, by male lifetime earnings decile and sex

Male earnings decile	Men	Women
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	2	2
9	9	8
10	11	11

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

NOTE: Sample consists of men and women born in 1940 who were fully insured for retired-worker benefits; disabled-worker beneficiaries are excluded.

If policymakers wish to "charge" these women, one option could be to focus on survivors benefits. In 2009, for example, 98.5 percent of nondisabled widow(er) benefits were paid to women (SSA 2011, Table 5.F8). On the other hand, while this type of target would be more directly aimed at the longest lived of fully insured workers, reductions to survivor benefits may also be more likely to increase the poverty rates of women at older ages, relative to current law. If we consider that the Social Security retired-worker benefit is intended to provide longevity insurance, then reducing the benefits of the longest-lived beneficiaries could be counterproductive.

For this reason, an increase in the OASDI tax max would tend to preserve longevity insurance more than a survivor or retired-worker benefit reduction,[39] while still focusing on fairly long-lived individuals relative to the total fully insured population. In other words, those fully insured (male) workers who are expected to collect Social Security benefits over a longer period of time, relative to other fully insured (male) workers, would be those asked to pay more for their insurance, relative to current law. However, a remaining empirical question concerns how fair such an option would be for unmarried men with earnings above the OASDI tax max, who might have higher mortality risk than some lower-earning women, but who would not have a spouse who would collect survivor's insurance on their earnings record upon their death. Those unmarried men would receive less insurance coverage for an equivalent level of tax contributions, relative to their married counterparts.

Conclusion

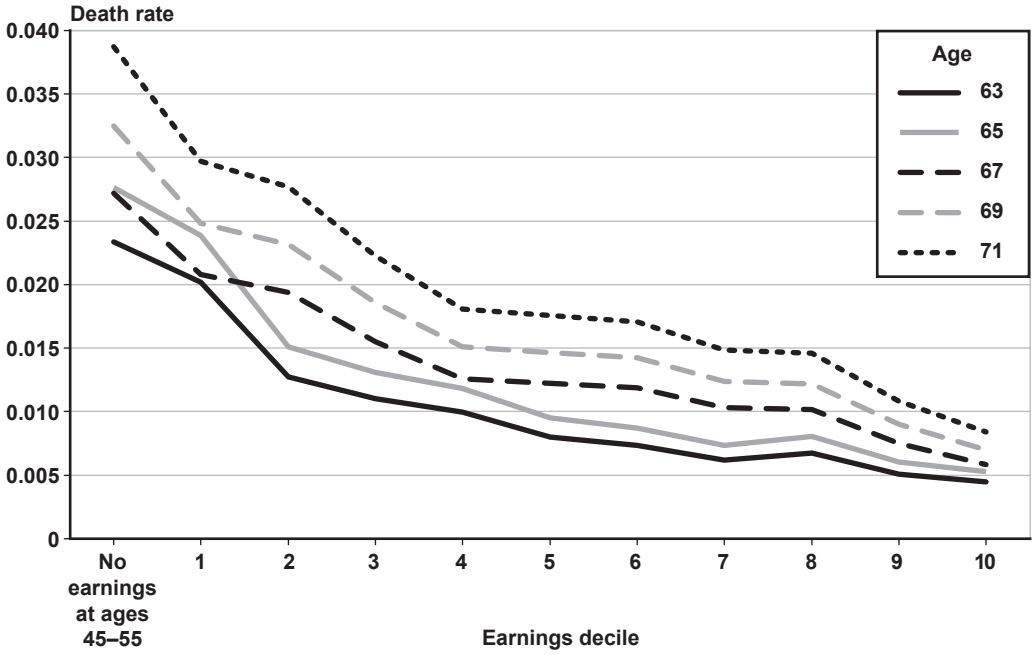
I have used a simple and clean measure of health (mortality) and a standardized measure of financial condition (position in the lifetime earnings distribution) to test the hypothesis that poor health and mortality among older men follows a poverty threshold model. Using Social Security administrative data, I found that among men ages 63–71 the point above which differences in mortality risk by earnings become undetectable is somewhere in the top 20 percent of the male lifetime earnings distribution. In other words, fully insured men in at least the bottom 80 percent of the lifetime earnings distribution exhibited a negative correlation with mortality (the higher the earnings, the lower the mortality risk).

The Social Security administrative data strongly reject the poverty threshold model, a result similar to results found for Canada, Germany, and England. Analyses using a threshold model, by assuming that everyone above some point low in the earnings distribution has equal health and mortality prospects, will produce distributional estimates that will vary from the true distributional effects by a potentially large, unknown, and unmeasured margin. In addition, policymakers may be unaware of the uncertainty inherent in estimates produced from hardship threshold models because there is no good way to calculate an uncertainty band around an analyst's judgment of what constitutes *hardship* for a fully insured worker. In contrast, with gradient models analysts can employ standard statistical techniques for estimating uncertainty around point estimates.

Because the Social Security retired-worker benefit was designed to be universal, it is extremely difficult to target subgroups effectively through the retired-worker benefit. For example, we have seen that, on average, the longest-lived workers (women) have the lowest earnings and hours worked. Thus, a worker's own AIME would be a poor target, if one's goal is to shield or protect those workers who are the most likely to have adverse health and mortality characteristics. Such a target could potentially shield more advantaged women, while failing to shield less advantaged men. More broadly, we have found that, among men, there is no statistically significant low hardship threshold that exists between those who are in adverse circumstances and those who are not, when mortality risk is used as a measure of hardship.

Under current law, the link between earnings and benefit levels and the equal application of age-of-entitlement rules, regardless of earnings levels, means that a worker is never penalized for additional work or thrift. Because the insured population does not fall neatly into a low-earnings poor health group and a remaining good health group, attempts to target a subset of badly disadvantaged workers by altering the benefit rules that apply equally to everyone could both miss the intended target and introduce work disincentives into a program currently designed to reward work.

Chart A-1.
Death rates for fully insured men born in 1940, by age and male lifetime earnings decile: Restricted analytical sample



SOURCES: Social Security administrative data files (1 percent 2008 active CWHS, 1 percent 2009 MEF, 1 percent 2010 MBR, and 1 percent 2009 Numident). Author's calculations based on regressions estimating mortality risk by decile at ages 63–66 and ages 67–71 (see the Appendix, Table A-3).

NOTE: Sample consists of men who were fully insured for retired-worker benefits by age 61; disabled-worker beneficiaries, the foreign born, and workers with mostly non–OASDI taxable earnings are excluded.

Table A-1.

Regression results for men when the reference variable is the 91st–100th percentile of the male lifetime earnings distribution; deaths observed at ages 63–66 and 67–71: All inclusive sample

	Ages 63–66		Ages 67–71	
Variable	Parameter estimate	Standard error	Parameter estimate	Standard error
Intercept	21.6142	16.7488	80.0712	43.1339***
Age	0.0856	0.0173*	0.0851	0.0210*
Year of birth	-0.0167	0.00847**	-0.0469	0.0219**
Decile				
1	1.5905	0.0919*	1.3410	0.1208*
2	0.9061	0.0990*	1.1572	0.1226*
3	0.8661	0.0996*	1.0862	0.1235*
4	0.7531	0.1013*	0.7522	0.1294*
5	0.6362	0.1032*	0.7473	0.1294*
6	0.5192	0.1054*	0.7816	0.1286*
7	0.3985	0.1078*	0.7486	0.1291*
8	0.3848	0.1081*	0.5459	0.1336*
9	0.1954	0.1125***	0.3870	0.1375**
-2Log likelihood	31885.038		19537.190	

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

NOTES: At ages 63–66, N = 277,024 pooled observations and 2,936 deaths. At ages 67–71, N = 120,203 pooled observations and 1,934 deaths.

Sample consists of men born from 1937 through 1945 who were fully insured for retired-worker benefits; disabled-worker beneficiaries are excluded. Reference variable is decile 10 (average relative earnings from ages 45 through 55 in the 91st–100th percentile of the earnings distribution).

* = significant at the 1 percent level; ** = significant at the 5 percent level; *** = significant at the 10 percent level.

Table A-2.

Regression results for men when the reference variable is the 96th–100th percentile of the male lifetime earnings distribution; deaths observed at ages 63–66 and 67–71: All inclusive sample

	Ages 63–66		Ages 67–71	
Variable	Parameter estimate	Standard error	Parameter estimate	Standard error
Intercept	21.6635	16.7490	79.8291	43.1355***
Age	0.0856	0.0173*	0.0852	0.0210*
Year of birth	-0.0167	0.00847**	-0.0469	0.0219**
Decile				
1	1.5414	0.1214*	1.6263	0.1816*
2	0.8570	0.1269*	1.4425	0.1828*
3	0.8170	0.1274*	1.3715	0.1834*
4	0.7040	0.1287*	1.0375	0.1874*
5	0.5871	0.1302*	1.0326	0.1874*
6	0.4701	0.1319*	1.0670	0.1869*
7	0.3494	0.1339*	1.0339	0.1873*
8	0.3357	0.1341**	0.8313	0.1904*
9	0.1463	0.1377	0.6723	0.1931*
91st–95th earnings percentile	-0.1005	0.1667	0.5082	0.2182**
-2Log likelihood	31884.674		19531.594	

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

NOTES: At ages 63–66, N = 277,024 pooled observations and 2,936 deaths. At ages 67–71, N = 120,203 pooled observations and 1,934 deaths.

Sample consists of men born from 1937 through 1945 who were fully insured for retired-worker benefits; disabled-worker beneficiaries are excluded. Reference variable is average relative earnings from ages 45 through 55 in the 96th–100th percentile of the earnings distribution.

* = significant at the 1 percent level; ** = significant at the 5 percent level; *** = significant at the 10 percent level.

Table A-3.
Regression results for men; deaths observed at ages 63–66 and 67–71: Restricted analytical sample

	Ages 63–66		Ages 67–71	
Variable	Parameter estimate	Standard error	Parameter estimate	Standard error
Intercept	22.7913	18.0482	82.0620	46.1325***
Age	0.0853	0.0186*	0.0914	0.0224*
Year of birth	-0.0173	0.00913***	-0.0481	0.0234**
No earnings at ages 45–55	1.6669	0.1251*	1.5527	0.1643*
Decile				
1	1.5166	0.1025*	1.2777	0.1298*
2	1.0514	0.1077*	1.2061	0.1303*
3	0.9062	0.1098*	0.9819	0.1339*
4	0.8042	0.1114*	0.7699	0.1379*
5	0.5867	0.1154*	0.7418	0.1383*
6	0.4975	0.1172*	0.7119	0.1388*
7	0.3260	0.1212*	0.5719	0.1420*
8	0.4165	0.1191*	0.5531	0.1426*
9	0.1284	0.1266	0.2506	0.1509**
-2Log likelihood	27280.045		16896.228	

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

NOTES: At ages 63–66, N = 230,586 pooled observations and 2,533 deaths. At ages 67–71, N = 99,504 pooled observations and 1,696 deaths.

Sample consists of men born from 1937 through 1945 who were fully insured for retired-worker benefits; disabled-worker beneficiaries, the foreign born, and workers with mostly non–OASDI taxable earnings are excluded. Reference variable is decile 10 (average relative earnings from ages 45 through 55 in the 91st–100th percentile of the earnings distribution). The age 45–55 measure includes nonzero earnings only.

* = significant at the 1 percent level; ** = significant at the 5 percent level; *** = significant at the 10 percent level.

Table A-4.
Odds of dying (confidence intervals) for fully insured men at ages 63–66 and 67–71 in variable deciles 1 through 9 relative to reference deciles 2 through 10: Restricted analytical sample

Variable	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10
					Fully insured men aged 63–66				
Decile 1	**1.59*** **(1.39–1.83)**	**1.84*** **(1.59–2.13)**	**2.04*** **(1.75–2.37)**	**2.53*** **(2.16–2.98)**	**2.77*** **(2.35–3.27)**	**3.29*** **(2.76–3.93)**	**3.00*** **(2.53–3.57)**	**4.01*** **(3.31–4.85)**	**4.56*** **(3.73–5.57)**
Decile 2		**1.16***** **(0.99–1.36)**	**1.28**** **(1.09–1.51)**	**1.59*** **(1.34–1.89)**	**1.74*** **(1.46–2.08)**	**2.07*** **(1.71–2.49)**	**1.89*** **(1.57–2.27)**	**2.52*** **(2.06–3.08)**	**2.86*** **(2.32–3.53)**
Decile 3			1.11 (0.94–1.31)	**1.38**** **(1.15–1.65)**	**1.50*** **(1.25–1.81)**	**1.79*** **(1.47–2.17)**	**1.63*** **(1.35–1.97)**	**2.18*** **(1.77–2.67)**	**2.48*** **(2.00–3.07)**
Decile 4				**1.24**** **(1.04–1.49)**	**1.36**** **(1.13–1.64)**	**1.61*** **(1.33–1.96)**	**1.47*** **(1.22–1.78)**	**1.97*** **(1.59–2.42)**	**2.24*** **(1.80–2.78)**
Decile 5					1.09 (0.90–1.33)	**1.30**** **(1.06–1.59)**	**1.19**** **(0.97–1.45)**	**1.58*** **(1.27–1.97)**	**1.80*** **(1.43–2.26)**
Decile 6						1.19 (0.97–1.46)	1.08 (0.88–1.33)	**1.45**** **(1.16–1.80)**	**1.65*** **(1.31–2.07)**
Decile 7							0.91 (0.74–1.13)	**1.22***** **(0.97–1.53)**	**1.39**** **(1.09–1.76)**
Decile 8								**1.33**** **(1.07–1.67)**	**1.52*** **(1.20–1.92)**
Decile 9									1.14 (0.89–1.46)
					Fully insured men aged 67–71				
Decile 1	1.07 (0.90–1.28)	**1.34*** **(1.11–1.62)**	**1.66*** **(1.36–2.03)**	**1.71*** **(1.40–2.09)**	**1.76*** **(1.44–2.16)**	**2.03*** **(1.64–2.50)**	**2.06*** **(1.67–2.55)**	**2.79*** **(2.21–3.53)**	**3.59*** **(2.78–4.63)**
Decile 2		**1.25**** **(1.04–1.51)**	**1.55*** **(1.27–1.89)**	**1.59*** **(1.30–1.95)**	**1.64*** **(1.34–2.01)**	**1.89*** **(1.53–2.33)**	**1.92*** **(1.55–2.38)**	**2.60*** **(2.06–3.28)**	**3.34*** **(2.59–4.31)**
Decile 3			**1.24**** **(1.00–1.52)**	**1.27**** **(1.03–1.57)**	**1.31**** **(1.06–1.62)**	**1.51*** **(1.21–1.88)**	**1.54*** **(1.23–1.92)**	**2.08*** **(1.63–2.64)**	**2.67*** **(2.05–3.47)**
Decile 4				1.03 (0.83–1.28)	1.06 (0.85–1.32)	**1.22***** **(0.97–1.53)**	**1.24***** **(0.99–1.56)**	**1.68*** **(1.31–2.16)**	**2.16*** **(1.65–2.83)**
Decile 5					1.03 (0.82–1.29)	1.19 (0.94–1.49)	1.21 (0.96–1.52)	**1.63*** **(1.27–2.10)**	**2.10*** **(1.60–2.75)**
Decile 6						1.15 (0.91–1.45)	1.17 (0.93–1.48)	**1.59*** **(1.23–2.04)**	**2.04*** **(1.55–2.67)**
Decile 7							1.02 (0.80–1.30)	**1.38**** **(1.06–1.79)**	**1.77*** **(1.34–2.34)**
Decile 8								**1.35**** **(1.04–1.75)**	**1.74*** **(1.31–2.30)**
Decile 9									**1.28***** **(0.96–1.73)**

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

NOTES: Sample consists of men born from 1937 through 1945 who were fully insured for retired-worker benefits; disabled-worker beneficiaries, the foreign born, and workers with mostly non-Social Security–covered work from ages 45 through 55 are excluded.

* = significant at the 1 percent level; ** = significant at the 5 percent level; *** = significant at the 10 percent level.

Table A-5.
Regression results for women with their own earnings classified by male lifetime earnings deciles; deaths observed at ages 63–66 and 67–71: All inclusive sample

Variable	Percentage of women in male earnings decile	Ages 63–66		Ages 67–71	
		Parameter estimate	Standard error	Parameter estimate	Standard error
Intercept	. . .	37.0857	23.4664	30.6624	56.0571
Age	. . .	0.1517	0.0239*	0.0910	0.0273*
Year of birth	. . .	-0.0270	0.0119*	-0.0215	0.0284
Male earnings decile					
1	21	0.9399	0.1215**	0.4744	0.1326*
2	24	0.5336	0.1241*	0.2091	0.1349
3	19	0.3004	0.1308**	0.0534	0.1415
4	13	0.2532	0.1387***	0.0502	0.1496
5	9	0.4386	0.1455*	0.0139	0.1660
6	6	0.2048	0.1693	-0.0648	0.1937
-2Log likelihood	. . .	18397.649		12628.908	

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

NOTES: At ages 63–66, N = 254,943 pooled observations and 1,519 deaths. Sample consists of women born from 1937 through 1945 who were fully insured for retired-worker benefits; disabled-worker beneficiaries are excluded.

At ages 67–71, N = 111,486 pooled observations and 1,137 deaths. Sample consists of women born from 1937 through 1941 who were fully insured for retired-worker benefits; disabled-worker beneficiaries are excluded.

Reference variable is average relative earnings from ages 45 through 55 in the 61^{st}–100^{th} percentile of the male earnings distribution (9.2 percent of the female sample).

. . . = not applicable.

* = significant at the 1 percent level; ** = significant at the 5 percent level; *** = significant at the 10 percent level.

Table A-6.
Regression results for women with their own earnings classified by female lifetime earnings deciles; deaths observed at ages 63–66 and 67–71: All inclusive sample

	Ages 63–66		Ages 67–71	
Variable	Parameter estimate	Standard error	Parameter estimate	Standard error
Intercept	53.3196	23.4372**	45.0153	56.0366
Age	0.1517	0.0239*	0.0912	0.0273*
Year of birth	-0.0354	0.0119*	-0.0289	0.0284
Female earnings decile				
1	1.0988	0.1191*	0.6336	0.1273*
2	0.7384	0.1252*	0.2878	0.1355**
3	0.4945	0.1306*	0.2905	0.1353**
4	0.5452	0.1294*	0.0898	0.1415
5	0.3100	0.1355**	0.1525	0.1394
6	0.3530	0.1342*	-0.00822	0.1446
7	0.1744	0.1395	0.0469	0.1425
8	0.2521	0.1371***	0.0274	0.1432
9	0.3162	0.1353**	-0.0145	0.1450
-2Log likelihood	18376.361		12619.283	

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

NOTES: At ages 63–66, N = 254,943 pooled observations and 1,519 deaths. Sample consists of women born from 1937 through 1945 who were fully insured for retired-worker benefits; disabled-worker beneficiaries are excluded.

At ages 67–71, N = 111,486 pooled observations and 1,137 deaths. Sample consists of women born from 1937 through 1941 who were fully insured for retired-worker benefits; disabled-worker beneficiaries are excluded.

Reference variable is decile 10 (average relative earnings from ages 45 through 55 in the 91st–100th percentile of the female earnings distribution).

* = significant at the 1 percent level; ** = significant at the 5 percent level; *** = significant at the 10 percent level.

Notes

Acknowledgments: The author thanks Harriet Duleep, Howard Iams, Javier Meseguer, and David Pattison for their helpful comments and suggestions.

[1] It is difficult to determine empirically if the underlying data itself changed from following a poverty threshold model to a gradient model or if the gradient model always existed, but was not observable because of a lack of detailed data. In other words, one cannot generally go back in time and replicate older studies using newer models because the older data are too heavily top coded, censored, or otherwise limited, compared with the more recent data. There may be some evidence for the idea that health and mortality have always followed a gradient in the writings of the 1935 Committee on Economic Security, who designed Social Security's old-age (retired worker) insurance benefit (Project on the Federal Social Role 1985). See this article's companion piece (Waldron, forthcoming) for details.

[2] Kitagawa and Hauser (1973) were unable to perform as strong a test of the gradient hypothesis because their data were more limited.

[3] The following discussion refers to studies that are limited to observable empirical data. Distributional evaluations of proposed Social Security law changes that are based on the projections of microsimulation models, such as the Social Security Administration's Modeling Income in the Near Term (MINT) and the Urban Institute's Dynasim model, regularly present results using a variety of quintile measures. For an example of a MINT evaluation of a proposed increase in Social Security's full retirement age, see Springstead (2011).

[4] For a review of 27 separate studies in which self-reported health is tested and found to be a predictor of mortality, see Idler and Benyamini (1997).

[5] Social Security's retired-worker benefit has three key ages: the age at which a worker is first eligible to claim retired-worker benefits (the EEA—currently age 62); the age at which a worker can claim retired-worker benefits without an actuarial reduction for early retirement (the full retirement age (FRA)—currently age 66, rising to age 67 under current law); and the age beyond which extra credits are not given to workers who claim after the FRA (the delayed retirement credit age—currently age 70). Under

current law, retired-worker monthly benefit amounts are reduced for retirement prior to the FRA. When the FRA reaches 67 as scheduled under current law for those born in 1960 or later, benefits received at age 62 will be 70 percent of benefits received at age 67 (Goss 2010). (See also http://www.socialsecurity.gov/retire2/agereduction.htm). Because benefits are actuarially reduced for workers who claim prior to the FRA, an increase in the EEA would cause a larger benefit to be available for a shorter period of time, rather than a smaller benefit to be available for a longer period of time, and, on average, such an increase would have no effect on the long-range financial status of the Social Security trust funds. In contrast, an increase in the FRA would be a reduction in future scheduled benefits relative to current law. Note that because benefits are actuarially reduced for early retirement, if the FRA is increased beyond age 67, benefits received at age 62 will be automatically reduced by an amount greater than the 30 percent reduction scheduled to take place when the retirement age reaches 67.

[6] I am measuring correlation, not causation in this article. From a life-course perspective, causation can flow from both health to earnings and earnings to health and may begin in childhood or even in utero based on the socioeconomic status of one's parents or guardians.

[7] Duleep (1986), in turn, was preceded by Caldwell and Diamond (1979) and Rosen and Taubman (1979). Those 1979 papers presented estimates at ages 65 plus, but the set up of the analyses with regard to the age of observation of the earnings and construction of the earnings categories precludes direct comparison with this work. More recently, Duggan, Gillingham, and Greenlees (2007) used the Continuous Work History Sample (capped taxable earnings and lump-sum earnings from 1937 through 1950) and found that mortality was negatively related to lifetime earnings (the higher the mortality, the lower the lifetime earnings) among Social Security retired-worker beneficiaries. However, they did not explicitly test the shape of the relationship between lifetime earnings and mortality, so results are not directly comparable to those found here.

[8] Wolfson and others (1993) found that the bottom earnings percentile (the bottom 9 percent of the earnings distribution) did not follow this pattern; mortality risk for this group was lower than for higher groups. The authors stated that individuals in this group may have had unobservable (non-Canadian Pension Plan contributable) income. The description of Wolfson and others (1993) results described in this study is based on a conservative interpretation of Figure 2 (S172) in their analysis. In the text (S171), Wolfson and others stated that they observed "higher income males experienced lower mortality all the way up to the top 2 percent of the population"; however, that result does not appear to be explicitly depicted in Figure 2.

[9] Quintile 1 experiences lower mortality risk than quintile 2, but the authors noted that this was due to low observed earnings and high unobserved earnings for many men in this category whose lifetime earnings were only partially covered under the German pension system (for example, civil servants).

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

[11] Technically, this type of earnings data exists in the MEF beginning in 1978, but non-OASDI taxable earnings data from 1978 through 1981 are subject to reporting errors and are not used in this analysis.

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

[13] In other words, all workers observed are equally exposed to the risk of claiming benefits at age 62. That restriction will be more important for future work examining benefit claiming by lifetime earnings decile. It is made here, in part, to enable easier comparisons across work. Workers who die in the year in which they attain age 62 can also be affected by proposals to raise the EEA, to the extent that they survive long enough to collect benefits for the months after their retired-worker claim but before death, although they are excluded from my sample. All workers who die at age 63 or later would be potentially affected by an increase in the EEA because they would have had at least 1 less year (that is, age 62) over which to collect their retired-worker benefits.

[14] SSA (2011, D.2).

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

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

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

[18] For example, for an individual who first becomes eligible for Old-Age Insurance benefits or Disability Insurance benefits in 2013, his or her PIA will be the sum of (a) 90 percent of the first $791 of his or her AIME; plus (b) 32 percent of his or her AIME over $791 and through $4,768; plus (c) 15 percent of his or her AIME over $4,768.

[19] See note 11.

[20] The sample is restricted to individuals who had survived to at least age 63 before calculating average earnings, so that each decile contains 10 percent of the sample in the year individuals were 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.) While wage earnings are recorded in the MEF over the OASDI taxable maximum beginning in 1982, self-employment earnings are reported only up to Medicare's Hospital Insurance (HI) taxable maximum prior to 1994. (The HI taxable maximum was the same as the OASDI taxable maximum from 1982 through 1990. Separate HI taxable maximums of $125,000; $130,200; and $135,000 applied from 1991 through 1993, respectively. The HI taxable maximum was eliminated in 1994.) A small number of individuals have earnings capped at the HI 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). Earnings for those individuals are imputed with a tobit regression prior to averaging. See Pattison and Waldron (2008) for more details on MEF earnings. For details on the tobit regression, see Waldron (2004, Appendix).

[21] 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. Earnings after the peak are problematic because some workers may retire early with pensions and still be healthy and of high income. A zero in the earnings record because of voluntary retirement would not be equivalent to a zero that is due to an unemployment or health shock, but we have no way of distinguishing between the two zeroes in Social Security data.

[22] Year of death is the most robust unit of measurement. Month and day of death are less reliable. Greater detail in the timing of death is not really necessary for the purposes of this analysis.

[23] The implication of this assumption is that when two or more events appear to happen at the same time (that is, are tied), there is no underlying ordering; rather, the events really happened at the same time (Allison 1995, 134).

[24] Although the point estimate on the odds ratio is statistically significant at the 10 percent level when we compare the odds of death for decile 9 with those for decile 10 at ages 63–66, note that the confidence interval crosses 1 (Table 1). On the other hand, the pattern of the decline in odds ratios follows a clear gradient for deciles 1 through 8 versus decile 10 (last column in Table 1), and the point estimate on decile 9 plausibly follows that pattern. In conclusion, the exact location of the threshold is somewhat ambiguous; the most conservative interpretation would be that the threshold is no lower than the 9th decile (the top 20 percent of the male lifetime earnings distribution).

[25] In results not shown, the 96th–97th percentile of the male lifetime earnings distribution did not have significantly higher mortality risk than the 98th–100th percentile of the earnings distribution at ages 67–71. As shown in the Appendix, Table A-2, the 91st–95th percentile of the earnings distribution had significantly higher mortality risk than the 96th–100th percentile of the earnings distribution at ages 67–71, but not at ages 63–66. Thus, the top 5 percent of the earnings distribution was homogenous with respect to mortality risk at ages 67–71.

[26] As a side note, some retirement researchers erroneously believe that because less-educated workers enter the labor force at younger ages, they are more likely to reach a given number of years of covered employment by age 62 than are higher-educated workers. That belief is false; the SSA data show the opposite—earnings are positively correlated with years of Social Security–covered earnings at age 62 (Waldron 2012, Tables 4 and 5). Note that because the wage reflects returns-to-work experience, variable labor force attachment because of health or labor demand problems is unlikely to be conducive to high earnings levels. Favreault and Steuerle (2008) found similar results with education levels; those with higher education levels generally had more years of Social Security–covered work than those with lower education levels.

[27] As Kingson and Brown (2009, 4) discuss, because of the automatic actuarial reduction for early retirement, "an EEA fixed at age 62 makes it more difficult to increase the FRA, since such increases would further erode the value of benefits for persons accepting them at age 62." For that reason, proposals to increase the FRA frequently include proposals to increase the EEA in tandem. As the authors note, "Thus, absent raising the EEA, it becomes increasingly difficult to justify an increase in the FRA, given the desire to maintain adequacy goals of Social Security" (23). Conversely, one less often sees policy proposals to increase the EEA without increasing the FRA. The reason for this is that the reduction in the projected OASDI actuarial shortfall comes from the increase in the FRA, not the increase in the EEA. An increase in the FRA is roughly equivalent to an across-the-board benefit cut in its impact on Social Security retired-worker benefits.

[28] For entitlement to spouse and survivor benefits, the term couple can include divorced workers who had a marriage that lasted at least 10 years.

[29] As reported in Myers (1993, Appendix 3-2), the original 1935 Social Security Act only included retirement benefits and was gender neutral, but the 1939 Act, which expanded the Social Security program to include benefits for auxiliaries (for example, spouses, survivors, and children), was not. Gender neutrality in the retired-worker program ended with the 1956 Act, in which the minimum retirement age was lowered to 62 for women but remained at 65 for men. The 1956 Act also changed the benefit formula for women to reflect the new lower age. In 1961, the age was lowered to 62 for men as well, but their benefit formula was calculated based on age 65 until the 1972 Act, which changed the male benefit formula to match the more generous female benefit formula beginning in 1975.

[30] Relief in this case refers to the authors' suggestion that some workers still be allowed to claim at ages 62 and 63. As already noted, without holding the benefit reduction for the age-62 claim to 80 percent of the FRA, however, that policy option would not actually prevent the reduction in the monthly benefit amount for a worker claiming before the FRA. Zhivan and others (2008, 6) state, "the purpose of raising the EEA is to assure retirees a more adequate guaranteed monthly income." "Assure," in this context, implies that workers above a certain AIME level are made better off if they are no longer allowed to choose to claim at age 62 with a reduced benefit. In utility terms, such a position assumes workers are currently behaving irrationally or are not currently maximizing their utility.

[31] Note that under the policy option suggested by Zhivan and others (2008) that would have held the benefit reduction for an age-62 claim to 80 percent of the FRA (as opposed to the 70 percent of the FRA scheduled under current law), this type of scenario would have represented a benefit increase for a higher-income individual relative to a lower-income individual.

[32] This section uses the inclusive sample for analysis.

[33] In the case of a couple, measured poverty would be lower, all other things equal, because household economies of scale are factored into the federal poverty line. In other words, the federal poverty line for a two-person family is not double the poverty line for a one-person family (SSA 2011, Table 3.E8).

[34] The age difference between the persons in the married couple would also matter. For example, if a husband claimed at age 62 and his wife was 2 years younger, she would have had to wait 2 years to claim her own retired-worker benefit and her spouse benefit.

[35] For comparison, refer to Waldron (2012, Charts 6 and 7) to see that eliminating both the foreign born and workers with mostly non-OASDI taxable earnings eliminates the presence of men with AIMEs at or below the current-law first bend point who have earnings from ages 45–55 in deciles 3 through 9.

[36] The first of these 1972 groups, federal workers, will eventually disappear from the groups not covered by Social Security because all federal government workers newly hired after 1983 are covered.

[37] For example, Schobel and McKay (1982) found that many workers eligible for the regular minimum were dually entitled, so that a decrease in the regular minimum would have been offset by an increase in the spouse benefit. In such a case, a regular minimum benefit would not have been costly, but only because the level of the benefit may have been set so low that full-time, year-round workers (for example, retired-worker primary-only beneficiaries) would have been unlikely to qualify.

[38] For example, in 2010, the median income for family households was $61,544. By type of family, the median income of married couples was $72,751; of female householders, $32,031; and of male householders, $49,718 (DeNavas-Walt and others 2011, Table A-1). Also by type of family, 6.2 percent of married couples, 31.6 percent of female householders, and 15.8 percent of male householders were below poverty in 2010 (DeNavas-Walt and others 2011, Table 4).

[39] Most proposals to increase the EEA are combined with proposals to increase the FRA. An increase in the FRA is a benefit reduction.

References

Aaron, Henry J., and Robert D. Reischauer. 2001. *Countdown to Reform: The Great Social Security Debate*. New York, NY: Century Foundation Press.

Adler, Nancy E., and Judith Stewart. 2010. "Health Disparities Across the Lifespan: Meaning, Methods, and Mechanisms." In *Annals of the New York Academy of Sciences*, Vol. 1186, 5–23.

Advisory Council on Social Security. 1997. *Report of the 1994–1996 Advisory Council on Social Security, Volume 1: Findings and Recommendations*. Washington, DC: 1994–1996 Advisory Council on Social Security. http://www.socialsecurity.gov/history/reports/adcouncil/report/toc.htm.

Allison, Paul D. 1995. *Survival Analysis Using the SAS System: A Practical Guide*. Cary, NC: SAS Institute.

Antonovsky, Aaron. 1967. "Social Class, Life Expectancy, and Overall Mortality." *Milbank Memorial Fund Quarterly* 45(2): 31–73.

Biggs, Andrew G. 2010. "The Case for Raising Social Security's Early Retirement Age." *Retirement Policy Outlook*, No. 3. Washington, DC: American Enterprise Institute for Public Policy Research (October). http://www.aei.org/article/economics/retirement/the-case-for-raising-social-securitys-early-retirement-age/.

[Board of Trustees] Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds. 2010. *The 2010 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*. Washington, DC: Government Printing Office. http://www.socialsecurity.gov/oact/TR/2010/index.html.

Breeze, Elizabeth, Astrid E. Fletcher, David A. Leon, Michael G. Marmot, Robert J. Clarke, and Martin J. Shipley. 2001. "Do Socioeconomic Disadvantages Persist Into Old Age? Self-Reported Morbidity in a 29-Year Follow-Up of the Whitehall Study." *American Journal of Public Health* 91(2): 277–283.

Burkhauser, Richard V. 1996. "Touching the Third Rail: Time to Return the Retirement Age for Early Social Security Benefits to 65." *Gerontologist* 36(6): 726–727.

Burtless, Gary. 1998. "Increasing the Eligibility Age for Social Security Pensions." Testimony for the Special Committee on Aging, United States Senate (July 15). http://www.brookings.edu/research/testimony/1998/07/15saving-burtless.

Caldwell, Steven, and Theodore Diamond. 1979. "Income Differentials in Mortality: Preliminary Results Based on IRS-SSA Linked Data." In *Statistical Uses of Administrative Records with Emphasis on Mortality and Disability Research*, edited by Linda Del Bene and Fritz Scheuren, 51–59. Department of Health, Education, and Welfare, Social Security Administration, Office of Research and Statistics, Washington DC: Government Printing Office.

Committee for a Responsible Federal Budget. 2010. "Let's Get Specific: Social Security." Let's Get Specific Paper Series (September). http://crfb.org/sites/default/files/Lets_Get_Specific_Social_Security.pdf.

Cristia, Julian P. 2007. "The Empirical Relationship Between Earnings and Mortality." Working Paper Series. Washington DC: Congressional Budget Office (August).

Denavas-Walt, Carmen, Bernadette D. Proctor, and Jessica C. Smith. 2011. *Income, Poverty, and Health Insurance Coverage in the United States: 2009*. Census Bureau, Current Population Reports, P60-239. Washington DC: Government Printing Office.

Department of Health and Human Services. 1999 (estimate). *Healthy People 2010: Understanding and Improving Health*. http://www.healthypeople.gov/2010/Document/pdf/uih/uih.pdf.

Duggan, James E., Robert Gillingham, and John S. Greenlees. 2007. "Mortality and Lifetime Income: Evidence from U.S. Social Security Records." IMF Working Paper WP/07/15 (January). Washington, DC: International Monetary Fund, Fiscal Affairs Department.

Duleep, Harriet Orcutt. 1986. "Measuring the Effect of Income on Adult Mortality Using Longitudinal Administrative Record Data." *Journal of Human Resources* 21(2): 238–251.

———. 1989. "Measuring Socioeconomic Mortality Differentials Over Time." *Demography* 26(2): 345–351.

Duleep, Harriet Orcutt, and Daniel J. Dowhan. 2008. "Research on Immigrant Earnings." *Social Security Bulletin* 68(1): 31–50.

Goss, Stephen C. 2010. "The Future Financial Status of the Social Security Program." *Social Security Bulletin* 70(3): 111–125.

Gustman, Alan L., and Thomas L. Steinmeier. 2001. "How Effective is Redistribution Under the Social Security Benefit Formula?" *Journal of Public Economics* 82(1): 1–28.

Gustman, Alan L., Thomas L. Steinmeier, and Nahid Tabatabai. 2011. "The Effects of Changes in Women's Labor Market Attachment on Redistribution Under the Social Security Benefit Formula." NBER Working Paper No. 17439. Cambridge, MA: National Bureau of Economic Research (September).

Idler, Ellen L., and Yael Benyamini. 1997. "Self-Rated Health and Mortality: A Review of Twenty-Seven Community Studies." *Journal of Health and Social Behavior* 38(1): 21–37.

Johnson, Richard W. 2011. "Raise the Retirement Age, but Protect Those Who Can't Work." Urban Institute Spotlight on Poverty and Opportunity (February 28). http://www.urban.org/publications/901411.html.

Kingson, Eric R., and Yvonne Arsenault. 2000. "The Diversity of Risk Among Age-62 Retired Worker Beneficiaries." CRR Working Paper No. 2000-08. Chestnut Hill, MA: Center for Retirement Research at Boston College (November).

Kingson, Eric R., and Maria T. Brown. 2009. Are Age-62/63 Retired Worker Beneficiaries at Risk? CRR Working Paper No. 2009-13. Chestnut Hill, MA: Center for Retirement Research at Boston College (April).

Kitagawa, Evelyn M., and Philip M. Hauser. 1973. *Differential Mortality in the United States: A Study in Socio-Economic Epidemiology*. Cambridge, MA: Harvard University Press.

Krantz-Kent, Rachel. 2009. "Measuring Time Spent in Unpaid Household Work: Results from the American Time Use Survey." *Monthly Labor Review* 132(7): 46–59.

Kreider, Rose M., and Renee Ellis. 2011. *Number, Timing, and Duration of Marriages and Divorces: 2009*. Census Bureau, Household Economic Studies, Current Population Reports, P70-125. Washington, DC: Government Printing Office (May).

Marmot, Michael. *The Status Syndrome: How Social Standing Affects Our Health and Longevity*. 2004. New York, NY: Time Books, Henry Holt and Company, LLC.

Marmot, Michael, and Eric Brunner. 2005. "Cohort Profile: The Whitehall II Study." *International Journal of Epidemiology* 34(2): 251–256.

Marmot, Michael G., Martin J. Shipley, and Geoffrey Rose. 1984. "Inequalities in Death—Specific Explanations of a General Pattern?" The *Lancet* 323(8384): 1003–1006. As cited in Adler, Nancy E., and Judith Stewart. 2010. "Health Disparities Across the Lifespan: Meaning, Methods, and Mechanisms." *Annals of the New York Academy of Sciences*. Vol. 1186, 5–23.

Monk, Courtney, John A. Turner, and Natalia A. Zhivan. 2010. "Adjusting Social Security for Increasing Life Expectancy: Effects on Progressivity." CRR Working Paper No. 2010-9. Chestnut Hill, MA: Center for Retirement Research at Boston College (August).

Munnell, Alicia H. 2008. "Changing Employment Incentives and Claiming Behavior." Prepared for *Policies to Facilitate Employment for Older Americans*. Social Security Advisory Board (January). http://www.ssab.gov/documents/Paper-1MunnellSSABForum1-18-08.pdf.

Myers, Robert J. 1993. *Social Security*, 4th ed. Philadelphia, PA: Pension Research Council and University of Pennsylvania Press.

National Center for Health Statistics. 1998. *Health, United States, 1998: With Socioeconomic Status and Health Chartbook*. Hyattsville, MD.

———. 2012. *Health, United States, 2011: With Special Feature on Socioeconomic Status and Health*. Hyattsville, MD.

National Commission on Fiscal Responsibility and Reform. 2010. *The Moment of Truth: Report of the National Commission on Fiscal Responsibility and Reform*. http://www.fiscalcommission.gov/sites/fiscalcommission.gov/files/documents/TheMomentofTruth12_1_2010.pdf.

National Commission on Retirement Policy. 1999. *The 21st Century Retirement Security Plan: Final Report of the National Commission on Retirement Policy*. Washington, DC: Center for Strategic and International Studies, 38 (March).

Olsen, Kelly A., and Don Hoffmeyer. 2001/2002. "Social Security's Special Minimum Benefit." *Social Security Bulletin* 64(2): 1–15.

Pattison, David, and Hilary Waldron. 2008. "Trends in Elective Deferrals of Earnings from 1990–2001 in Social Security Administrative Data." Research and Statistics Note No. 2008-03 (June). http://www.socialsecurity.gov/policy/docs/rsnotes/rsn2008-03.html.

Pew Research Center. 2007. *From 1997 to 2007: Fewer Mothers Prefer Full-Time Work*. A Social & Demographic Trends Report. http://www.pewresearch.org/assets/social/pdf/WomenWorking.pdf.

Project on the Federal Social Role. 1985. *The Report to the President of the Committee on Economic Security*. In *The Report of the Committee on Economic Security of 1935*: And Other Basic Documents Relating to the Development of the Social Security Act—With Essays by Wilbur Cohen and Robert Ball, Chapter 2, 15–72. Washington DC: National Conference on Social Welfare. http://www.socialsecurity.gov/history/reports/ces.html.

Rendall, Michael S., Margaret M. Weden, Melissa M. Favreault, and Hilary Waldron. 2011. "The Protective Effect of Marriage for Survival: A Review and Update." *Demography* 48(2): 481–506.

Rosen, Shirwin, and Paul Taubman. 1979. "Changes in the Impact of Education and Income and Mortality in the U.S." In *Statistical Uses of Administrative Records with Emphasis on Mortality and Disability Research*, edited by Linda Del Bene and Fritz Scheuren, 61–66. Department of Health, Education, and Welfare, Social Security Administration, Office of Research and Statistics. Washington DC: Government Printing Office.

Schobel, Bruce D., and Steven F. McKay. 1982. "Characteristics of Newly Awarded Recipients of the Social Security Regular Minimum Benefit." *Social Security Bulletin* 45(6): 11–19.

Shkolnikov, Vladimir R., Rembrandt Scholz, Dmitiri A. Jdanov, Michael Stegmann, Hans-Martin von Gaudecker. 2008. "Length of Life and the Pensions of Five Million Retired German Men." *European Journal of Public Health* 18(3): 264–269.

Shoven, John B. 2007. "New Age Thinking: Alternative Ways of Measuring Age, Their Relationship to Labor Force Participation, Government Policies, and GDP." NBER Working Paper No. 13476. Cambridge, MA: National Bureau of Economic Research (October).

Smith, Creston M. 1989. "The Social Security Administration's Continuous Work History Sample." *Social Security Bulletin* 52(10): 20–28.

Smith, Ralph. 1999. *Raising the Earliest Eligibility Age for Social Security Benefits*. Washington, DC: Congressional Budget Office.

Social Security Administration. 2011. *Annual Statistical Supplement to the Social Security Bulletin, 2010*. Washington, DC: Office of Retirement and Disability Policy, Office of Research, Evaluation, and Statistics.

Springstead, Glenn R. 2011. "Distributional Effects of Accelerating and Extending the Increase in the Full Retirement Age." Policy Brief No. 2011-01. Social Security Administration, Office of Retirement Policy, Office of Policy Analysis (January). http://www.socialsecurity.gov/policy/docs/policybriefs/pb2011-01.html.

SSA. *See* Social Security Administration.

Stapleton, David C. 2009. *Employment Support for the Transition to Retirement: Can a New Program Help Older Workers Continue to Work and Protect Those Who Cannot?* Washington, DC: AARP Public Policy Institute (April).

Steuerle, C. Eugene. 2011. "Restoring Solvency and Improving Equity in Social Security: Benefit Options." Statement before the Subcommittee on Social Security, Committee on Ways and Means, United States House of Representatives (July 8). http://www.urban.org/UploadedPDF/901435-Improving-Equity-in-Social-Security.pdf.

van Rossum, Caroline T. M., Martin J. Shipley, Hendrike van de Mheen, Diederick E. Grobbee, Michael G. Marmot. 2000. "Employment Grade Differences in Cause Specific Mortality: A 25 Year Follow Up of Civil Servants from the First Whitehall Study." *Journal of Epidemiological Community Health* 54(3): 178–184.

Waldron, Hilary. 2001. "Links Between Early Retirement and Mortality." ORES Working Paper Series No. 93. Washington, DC: Social Security Administration, Office of Policy, Office of Research, Evaluation, and Statistics (August). http://www.socialsecurity.gov/policy/docs/workingpapers/wp93.pdf.

———. 2004. "Heterogeneity in Health and Mortality Risk Among Early Retiree Men." ORES Working Paper Series No. 105. Washington, DC: Social Security Administration, Office of Policy, Office of Research, Evaluation, and Statistics (May). http://www.socialsecurity.gov/policy/docs/workingpapers/wp105.html.

———. 2007. "Trends in Mortality Differentials and Life Expectancy for Male Social Security–Covered Workers, by Socioeconomic Status." *Social Security Bulletin* 67(3): 1–28. http://www.socialsecurity.gov/policy/docs/ssb/v67n3/v67n3p1.html.

———. 2012. "The Sensitivity of Proposed Social Security Benefit Formula Changes to Lifetime Earnings Definitions." *Social Security Bulletin* 72(2): 1–22. http://www.socialsecurity.gov/policy/docs/ssb/v72n2/v72n2p1.html.

———. Forthcoming. "A Review of Research on the Distributional Effects of Raising Social Security's Early Entitlement Age."

Wolfson, Michael, Geoff Rowe, Jane F. Gentleman, and Monica Tomiak. 1993. "Career Earnings and Death: A Longitudinal Analysis of Older Canadian Men." *Journal of Gerontology* 48(4): S167–S179.

Zhivan, Natalia, Seven A. Sass, Margarita Sapozhnikov, and Kelly Haverstick. 2008. "An 'Elastic' Earliest Eligibility Age for Social Security." Issue in Brief No. 8-2. Chestnut Hill, MA: Center for Retirement Research at Boston College (February). http://crr.bc.edu/wp-content/uploads/2008/02/IB_8-2.pdf.

Modeling Behavioral Responses to Eliminating the Retirement Earnings Test

by Anya Olsen and Kathleen Romig*

The retirement earnings test (RET) is an often-misunderstood aspect of the Social Security program. Proposed RET reforms meant to encourage working at older ages could also cause earlier benefit claiming. We use Modeling Income in the Near Term data to analyze the complete repeal of the earnings test for beneficiaries aged 60 or older, first assuming no behavioral responses to repeal and secondly assuming changes to benefit claiming and workforce participation behaviors. We find that beneficiaries affected by RET repeal would generally receive significantly higher benefits when they are younger than the full retirement age (FRA), and somewhat lower benefits after reaching FRA. RET repeal would not significantly change individuals' lifetime benefits and we find no significant changes in the overall poverty rate under either scenario. We find that assumed behavioral responses—particularly the benefit claiming change—have a bigger effect on lifetime benefits than the RET policy change itself.

Introduction

The retirement earnings test (RET) is an often-misunderstood aspect of the Social Security program. Individuals who claim retirement benefits before they have reached full retirement age (FRA) and continue working may have some or all of their monthly Social Security benefits withheld if they earn more than the RET thresholds. Beneficiaries generally understand this aspect of the RET and it usually acts as a disincentive to work at older ages. Less understood is the fact that any benefits withheld under the RET are credited back once the beneficiary attains FRA, resulting in a permanent monthly increase in benefits. Policymakers have suggested reforming the RET to encourage continued workforce participation among older workers. However, changes to the RET could also cause early benefit claiming. Indeed, the literature suggests that eliminating the RET would likely result in three behaviors among older workers: increased earnings, longer labor force participation, and earlier benefit claiming. It is important for policymakers to understand how those effects could offset one another for the beneficiary population as a whole.

We fill a gap in the existing literature by using recent research to make assumptions about how beneficiaries' work and claiming behavior may respond to changing incentives. We model complete repeal of the RET and compare it to benefits scheduled to be paid under current law, first assuming no behavioral responses and secondly assuming changes to earnings, labor force participation, and claiming behavior. We base these assumptions on evidence of how individuals responded to the 2000 legislation that eliminated the earnings test for beneficiaries between FRA and age 70.

This article describes the RET, including its legislative history and the estimated number of beneficiaries it currently affects. The article then compiles evidence from the literature showing how the RET has historically affected older workers' earnings, labor force participation, and claiming behavior. Lastly, it includes distributional analysis for Social Security beneficiaries

Selected Abbreviations

FRA	full retirement age
MINT	Modeling Income in the Near Term
RET	retirement earnings test
SSA	Social Security Administration

* *The authors are with the Office of Retirement Policy, Office of Retirement and Disability Policy, Social Security Administration.*

aged 60 or older based on projections from the Modeling Income in the Near Term, version 6 (MINT6) model to show the effects of RET repeal under static and behavioral-response assumptions.

Description of the RET

The earnings test applies to beneficiaries who are younger than their FRAs—the ages at which they become eligible for unreduced retirement benefits. For every month before FRA that a beneficiary receives benefits, regardless of work status, the monthly benefit amount is subject to early retirement reduction factors, resulting in a lower benefit. The earliest eligibility age for retirement benefits is 62, and the FRA varies from 65 to 67 depending on the worker's year of birth.[1] The RET applies to individuals who are receiving Social Security retirement benefits (either as a retired-worker or an auxiliary beneficiary), working, and younger than their FRA.[2] Some individuals have part of their benefit withheld; those with higher earnings may have their entire benefit withheld.[3]

In 2013, if a beneficiary who remains younger than FRA throughout the year works and earns more than $15,120 (or $1,260 per month), then $1 in benefits is withheld for every $2 in earnings above the limit.[4] Table 1 shows how the RET affects two hypothetical beneficiaries in the first year they receive benefits with an equal starting monthly benefit amount and different monthly earnings.[5]

In the year during which an individual reaches FRA, he or she is subject to a separate earnings test, which applies only in the months prior to attaining FRA. This second earnings test threshold is higher and the offset is smaller.[6] If a beneficiary reaches FRA in 2013 and earns more than $40,080 (or $3,340 per month), then $1 in benefits is withheld for every $3 in earnings above the limit.[7] The earnings test no longer applies beginning with the month a beneficiary reaches FRA, at which point one can have unlimited earnings and still receive his or her full monthly benefit. Both earnings test limits automatically increase each year as determined by the change in the average wage index.[8]

The less well-understood aspect of the RET is that benefits are only temporarily withheld from the beneficiary.[9] As noted previously, early retirement reduction factors reduce benefit amounts for each month before the beneficiary reaches FRA, regardless of earnings. When a beneficiary reaches FRA, any benefits that were withheld under the RET are restored through a permanent increase in the monthly benefit for the retired-worker and any auxiliary beneficiaries. At FRA, the beneficiary is credited for the months in which the RET fully or partially affected benefits, and those months are subtracted from the number of early retirement reduction factors. That measure—the number of months credited to the beneficiary at FRA—is called an adjustment to reduction factors.[10] Table 2 shows how those adjustments can permanently increase monthly benefits at FRA for a hypothetical beneficiary who started receiving benefits at age 63, whose FRA is 66, and whose earnings exceeded the RET limit in 10 of the months before he or she reached FRA.

The RET also affects a retired worker's auxiliary beneficiaries, such as a spouse or child. For example, consider a spouse receiving a $500 monthly benefit based on the record of the hypothetical beneficiaries in Table 1. Beneficiary A's withheld amount ($1,870) is applied to the total family benefit of $1,500 ($1,000 worker benefit plus $500 spouse benefit), so neither the retired-worker beneficiary nor the spouse would receive a benefit for that month. Because a partial benefit is payable to Beneficiary B, the amount received by each beneficiary on the record is reduced by the withheld amount in proportion to his or her original benefit amounts. For auxiliary beneficiaries receiving a benefit based on their own records in addition

Table 1.
Illustrative effects of the RET for two hypothetical beneficiaries in the first year they receive benefits: 2013 (in dollars)

Factor	Beneficiary A	Beneficiary B
Monthly benefit amount before earnings test	1,000	1,000
Monthly earnings	5,000	2,500
Monthly RET limit	1,260	1,260
Earnings in excess of RET threshold	3,740	1,240
Amount of monthly benefits withheld	1,870	620
Monthly benefit paid	0	380

SOURCE: Authors' calculations based on SSA (2012b).

Table 2.
Illustrative effects of the RET credit for benefits withheld prior to FRA when a hypothetical beneficiary reaches FRA

Factor	At age 63	At FRA
Monthly benefit amount before earnings test	1,000	1,000
Number of months RET applied	…	10
Early retirement reduction factors	36	26
Early retirement reduction (%)	20.0	14.4
Monthly benefit ($)	800	856

SOURCE: Authors' calculations based on SSA (2003).

NOTES: Hypothetical beneficiary started receiving benefits at age 63, beneficiary's FRA is 66, and beneficiary's earnings exceeded the RET limit in 10 of the months between age 63 and the attainment of FRA.

… = not applicable.

to their spouses' records (that is, for dually entitled beneficiaries), their *own* worker benefit can also be subject to the RET based on their *own* earnings if they are younger than FRA.[11]

Legislative History

The RET provision of the original Social Security Act of 1935 required full retirement from gainful employment as a condition to receive benefits. The intent of the provision, which was enacted during the Great Depression, was to remove older workers from the labor force to make room for unemployed younger workers. That provision was consistent with the social-insurance nature of retirement benefits: Benefits would only replace earnings that were lost because of old age (DeWitt 1999).

The RET has been revised numerous times since 1935.[12] The 1939 Amendments to the Social Security Act defined retirement (and thus, eligibility for benefits) as receiving less than $15 a month from jobs covered by Social Security (DeWitt 2000). The 1950 Amendments increased the monthly earnings threshold and eliminated the RET for individuals aged 75 or older.[13] The 1954 Amendments eliminated the earnings test for individuals aged 72 or older and instituted an annual earnings limit in addition to the monthly earnings limit. The 1960 Amendments introduced the partial benefit offset ($1 withheld for every $2 over the limit). The 1972 Amendments indexed the annual exempt earnings amount to average wages. The 1977 Amendments eliminated the earnings test for individuals aged 70 or older (although the change did not take effect until 1983) and created the second RET used in the year a beneficiary attains FRA. The 1983 and 1996 Amendments liberalized the second RET by increasing the benefit offset ($1 for every $3 over the limit) and exempt earnings amount. The last change to the RET occurred in 2000, when the Senior Citizens Freedom to Work Act eliminated the earnings test for beneficiaries once they attained FRA.

Beneficiaries Affected by the RET

As shown in Table 3, among all retired-worker beneficiaries who either were younger than FRA or attained FRA in 2008, at least 5 percent were subject to the RET.[14] Among those with any earnings, about 15 percent were subject to the RET.[15] In 2008, about 37 percent of retired-worker beneficiaries who were younger than FRA throughout the year had some earnings. The substantial majority of those working beneficiaries earned less than the RET earnings limit that year ($13,560). For retired-worker beneficiaries who attained FRA in 2008, almost 94 percent of those with earnings earned less than their RET limit of $36,120.

Although the RET directly affects about 5 percent of retired-worker beneficiaries each year, its effect on auxiliary benefits increases its impact on the beneficiary population as a whole. Based on the SSA's Master Beneficiary Record 10 percent sample, the agency's Office of Quality Performance calculates that about 500,000 beneficiaries in all were affected by the RET in 2009; and of those, about 22 percent had their entire benefit withheld.

Literature Review

In addition to affecting benefits, the RET affects workforce participation and benefit-claiming behavior. Some older individuals who have started receiving benefits may reduce their earnings, while others may continue working and delay claiming benefits. The

Table 3.
Retired-worker beneficiaries with earnings, 2008

Earnings ($)	Younger than FRA throughout 2008		Attains FRA in 2008	
	Number	Percent	Number	Percent
Total with earnings	1,038,500	100.0	396,000	100.0
1–4,999	387,500	37.3	132,700	33.5
5,000–9,999	237,200	22.8	76,200	19.2
10,000–14,999	222,000	21.4	67,900	17.2
15,000–19,999	80,100	7.7	44,500	11.2
20,000–24,999	44,400	4.3	24,000	6.1
25,000–29,999	20,000	1.9	14,900	3.8
30,000–34,999	13,300	1.3	10,300	2.6
35,000–39,999	7,500	0.7	5,300	1.3
40,000–44,999	4,300	0.4	3,200	0.8
45,000–49,999	4,600	0.4	3,200	0.8
50,000–54,999	1,800	0.2	2,100	0.5
55,000–59,999	2,300	0.2	1,600	0.4
60,000–64,999	1,500	0.1	1,200	0.3
65,000–69,999	1,300	0.1	1,000	0.3
70,000–74,999	800	0.1	600	0.2
75,000–79,999	1,000	0.1	500	0.1
80,000–84,999	1,500	0.1	800	0.2
85,000–89,999	600	0.1	500	0.1
90,000–99,999	800	0.1	1,400	0.4
100,000 or more	6,000	0.6	4,100	1.0
Total beneficiaries	2,818,900	100.0	1,135,000	100.0
No earnings	1,780,400	63.2	739,000	65.1
Any earnings	1,038,500	36.8	396,000	34.9

SOURCE: SSA, Office of Research, Evaluation, and Statistics: Continuous Work History 1 percent sample—2009 Active File and 2008 Employee and Employer File.

NOTE: Earnings test amount for beneficiaries younger than FRA throughout 2008 was $13,560 annually ($1,130 monthly). Earnings test amount for beneficiaries attaining FRA during 2008 was $36,120 annually ($3,010 monthly).

RET can also distort the effect of other proposed Social Security reforms.[16] By itself, the RET is complicated, and the behavioral responses it produces increase the complexity. For those reasons, some policymakers have suggested liberalizing it (for example, by increasing the benefit offset rate or the earnings exempt amount) or eliminating it entirely.[17] Individuals might respond to such changes by working longer and earning more, or by claiming benefits earlier. It is important to examine how workers have responded to past changes to the RET to understand how future changes might help or hurt beneficiaries' retirement security.

Earnings Effects

One of the main rationales for liberalizing or eliminating the RET is to encourage older workers to stay in the labor force longer and earn more, and thereby increase their retirement income. There is evidence that some workers limit their earnings to avoid the RET. Friedberg (1998) examined the period between 1978 and 1990, when the earnings test changed three times, and found

> "a substantial number of workers with earnings clustered just at the earnings exempt amount. The clustering demonstrates that the earnings test leads some beneficiaries to hold down their labor supply. The clustering moves when the exempt amount moves, and disappears when the earnings test is eliminated. Therefore, many beneficiaries are reacting promptly and flexibly to the earnings test rules."

Many other studies have found similar clustering just under the RET exempt amount (for example, Haider and Loughran 2008, Friedberg 2000, Reimers

and Honig 1996, Leonesio 1990, and Burtless and Moffitt 1985), which suggests that beneficiaries work less than they would without the constraint of the earnings test. Table 3 shows a similar pattern.

As Friedberg (1998) noted, the clustering of earnings below the exempt amount moves as the limit increases. More recent empirical studies have shown a similar response to the 2000 legislation that removed the RET for beneficiaries at FRA.[18] Haider and Loughran (2008), using Current Population Survey data, estimated that working men aged 66–69 increased their earnings by 16 percent because they worked more hours per week after the RET repeal. Similarly, Figinski (2012) looked at beneficiaries aged 66–69 following the 2000 legislation, and found that men increased their earnings by about 20 percent, while female worker beneficiaries increased their earnings by 18 percent; meanwhile, female spousal beneficiaries did not have greater earnings. Song and Manchester (2007b) found that annual earnings increased by 10–19 percent among workers turning age 65 and by 4–10 percent among workers aged 65–69. Engelhardt and Kumar (2007) studied workers' hours and found that those at FRA or older increased their hours by 12 percent to 17 percent, with the effects concentrated among men with a high school degree and no postsecondary education.

Those behavioral responses depend on workers' earnings relative to the RET limit. Friedberg (1999) modeled the effect of removing the RET at ages 70–71 on working men in four earnings groups. She found that those with earnings below the RET exempt amount were projected not to change their earnings; those with earnings between 90 percent and 110 percent of the RET limit were projected to increase their earnings 50 percent; those with earnings between the exempt amount and the "breakeven point" (the amount at which all Social Security benefits are withheld because of the RET) were projected to increase their earnings 18 percent; and those with earnings above the breakeven point were projected to decrease their earnings 4 percent.

An earlier study (Honig and Reimers 1989) examined similar groupings and found similar patterns. Those groups' differing responses make sense given the RET's incentives. Workers in the first group are unaffected by the current-law RET and thus would not be expected to respond to changes. Workers in the second group have the most to gain (in the short term) from changes, while workers in the third group stand to gain somewhat less. Workers in the fourth, highest-earning group would receive Social Security benefits if the RET were repealed, so they could work less and still have more total income (earnings plus benefits).

More recent studies have also found that earnings changes were concentrated among workers with earnings near or above the threshold. Studying the effects of the RET repeal for beneficiaries older than FRA, Haider and Loughran (2008) estimated earnings growth of about 30 percentage points among men aged 69 with earnings just below the threshold. Song and Manchester (2007b) and Friedberg and Webb (2009) found that the earnings response was greatest among those whose earnings were near or above the RET threshold.

In addition to income level, age affects the magnitude of the response to changes to the RET. Haider and Loughran (2008) compared the effects of the 1983 elimination of the RET for people aged 70–71 with those of the 2000 elimination of the RET for beneficiaries beginning at FRA. They found no change in hours worked in response to the 1983 change and a robust response to the 2000 change, suggesting that younger workers are more likely to alter their work patterns in response to policy changes. The authors hypothesized that younger workers could more easily increase their labor supply.

Studies found little evidence of aggregate changes in earnings because of changes to the RET before the 2000 legislation (Gruber and Orszag 2000; Leonesio 1990), which is likely due to two factors: (1) the relatively small group of people whose behavior might change in response to RET changes—namely, working beneficiaries with earnings near the exempt amount—and (2) offsetting effects of changes to the RET, as some workers respond by increasing their earnings and others by decreasing earnings. However, analyses that examined the effects of the 2000 legislation did find some aggregate earnings effects. For example, Haider and Loughran (2008) used a combination of survey and administrative data to analyze the effects of the 2000 repeal of the RET at FRA. Their research showed a "consistent and substantial" response to RET changes, and estimated that at least 4.8 percent of workers in the affected age group adjusted their earnings.

Labor Force Participation Effects

The earnings test can also affect the labor force participation rate, which is the ratio of workers to the total number of people in a given age group. Researchers found that workers did not significantly extend their careers or return to work in response to legislation that

liberalized the RET prior to 2000 (for example, Engelhardt and Kumar 2007, Gruber and Orszag 2000, and Leonesio 1990).[19] However, analysts found evidence of workers extending their labor force participation in response to the 2000 legislation that repealed the RET for beneficiaries at FRA, with some even returning to the workforce. Friedberg and Webb (2009), using the Health and Retirement Study, found that employment increased by 3.5 percentage points at age 65, by about 2 percentage points at ages 66–69, and by about 1 percentage point among younger workers. They also found some people aged 66–69 returning to work, nearly doubling their participation rate from less than 1 percent in the late 1990s to 1.7 percent in 2000. Song and Manchester (2007b) found that workforce participation among those aged 65–69 increased between 0.8 and 2.0 percentage points after the 2000 legislation. Figinski (2012) found that female worker beneficiaries and men aged 66–69 increased their labor force participation after the 2000 legislation by 1.3 percentage points and 2.0 percentage points, respectively; female spousal beneficiaries' labor force participation did not change.

In general, any labor supply effects have been concentrated among current workers. Friedberg and Webb (2009) show that very few older workers return to work after a year out of the labor force. The employment effect of the 2000 legislation is concentrated among those already in the labor force (Song and Manchester 2007b; Haider and Loughran 2008). Those studies also show that the employment effect increases in the years following a policy change, likely because workers have had time to learn about the policy change and adjust their career plans.

Benefit Claiming Effects

The earnings test discourages workers from claiming benefits before FRA by temporarily withholding some or all of the benefits from affected beneficiaries. Eliminating or liberalizing the RET would therefore increase the incentives for early claiming. As noted earlier, claiming benefits before FRA permanently lowers benefits through early retirement reduction factors, regardless of whether the beneficiary continues to work. For some beneficiaries, the early retirement reduction could affect their own retirement security as well as that of auxiliaries who receive benefits based on their records. One study projected that eliminating the RET for beneficiaries younger than FRA could lead to greater poverty, particularly among widows who would claim benefits earlier (Anzick and Weaver 2000).

Research has examined how previous changes to the RET affected the timing of Social Security benefit claiming. There is evidence that the 2000 repeal of the RET at FRA led beneficiaries to claim benefits earlier than they would have without the repeal.[20] Song and Manchester (2007b) showed that benefit claims increased between 3 and 7 percentage points for those reaching age 65, and between 2 and 5 percentage points for those aged 65–69. It is important to note that very few beneficiaries claimed benefits after age 65. Before 2000, only 10 percent of those aged 65–69 had not yet claimed Social Security benefits, which means that a 2 to 5 percentage point increase represents a 20 percent to 50 percent change in benefit receipt among this group. Other studies found similar increases in benefit claiming (Song 2003/2004; Mastrobuoni 2006).

Benefit claiming in response to the 2000 RET legislation varied by sex and benefit type. Song and Manchester (2007a) showed that men are more likely to claim earlier in response to RET changes than are women. The authors found that at age 65, men increased their claiming rate by about 4 percentage points, while women increased their claiming rate by about 2 percentage points. Figinski (2012) found that among women between FRA and age 69, worker beneficiaries increased their claim rate by 2.8 percentage points, while spousal beneficiaries increased their claim rate by about 5 percentage points.

Table 4 summarizes the findings from several of the empirical studies described above. Those findings provide the basis for the behavioral-response assumptions used in our simulations.

Simulating Repeal of the RET

Two studies from the Urban Institute have examined the question of how beneficiaries might fare if the RET were eliminated. Ratcliffe and others (2003) found that eliminating the RET would increase the total income of those aged 62–64, mostly because of accelerated claiming of Social Security benefits. Those increases are concentrated among workers with high lifetime earnings, because those individuals are most likely to be affected by eliminating the RET. Although they did not simulate long-term effects, the authors hypothesized that earlier claiming of Social Security benefits could increase elderly poverty in the long run, particularly among widows. In general, the authors found that the Social Security claiming effects dominated the results. Similarly, Berk, Favreault, and Ratcliffe (2002) found that eliminating the RET resulted in higher total income for individuals who were younger than FRA,

Table 4.
Summary of findings from selected empirical studies on effects of the 2000 elimination of the RET for beneficiaries starting at FRA

Study	Dataset(s)	Period(s)	Behavioral effects on—		
			Earnings	Labor force participation	Claiming benefits
Engelhardt and Kumar (2007)	Health and Retirement Study (HRS)	1996–2004 waves	12–17% increase (in hours worked) among men	No evidence of increased labor force participation	Not examined
Figinski (2012)	SSA 2004 Benefit and Earnings Public Use File (BEPUF)	1951–2003 (for beneficiaries in 2004)	20% increase among men; 19% increase among female worker beneficiaries; no change among female spousal beneficiaries	1.3 percentage point increase for men; 2.0 percentage point increase for female worker beneficiaries; no change for female spousal beneficiaries	2.8 percentage points for female worker beneficiaries; 5.0 percentage points for female spousal beneficiaries
Friedberg and Webb (2009)	HRS; March Current Population Survey (CPS)	1992–2005; 1992–2004	Not examined	Increases of 3.5 percentage points at age 65, 2.0 percentage points at ages 66–69, and 1.0 percentage point at younger ages	Not examined
Haider and Loughran (2008)	March CPS; SSA New Beneficiary Data System (NBDS); 2004 BEPUF	1975–2004; 1951–1999 (for new beneficiaries in 1980–1981); 1951–2003 (for beneficiaries in 2004)	16% increase among men aged 66–69; 30% increase among men aged 69 with earnings just below limit	Not examined	Not examined
Song and Manchester (2007b)	SSA Continuous Work History Sample (CWHS)	1996–2003	Among those close to limit, 10–19% increase among those turning age 65 and 4–10% increase among ages 65–69	No effect at age 65; 0.8–2.0 percentage point increase at ages 65–69	3–7 percentage point increases at age 65; 2–5 percentage point increases at ages 65–69

SOURCES: Cited studies.

and lower income for beneficiaries at FRA or older, due to earlier benefit claiming. The larger the assumed claiming changes, the greater the loss of income. The authors found increases in the poverty rate of about 0.1 percentage point, with never-married and divorced individuals and spouse-only beneficiaries disproportionately likely to become poor under such a policy.

Methodology

We simulate the effects of eliminating the earnings test for retired-worker beneficiaries and their spouses and survivors aged 62 or older starting in 2012, using SSA's MINT6 model.[21] The MINT6 model is based on 2001 and 2004 Survey of Income and Program Participation panel data matched to Social Security administrative data. We compare the benefits under each reform option with the benefits scheduled to be paid under current law ("scheduled benefits") and project the results for Social Security beneficiaries aged 60 or older in 2050.[22] We chose 2050 to ensure that most beneficiaries in our analysis would have claimed benefits after 2012 and therefore would be subject to the RET repeal for the entire time they receive benefits.

Policymakers generally propose RET changes to provide incentives for individuals to change their behavior. Therefore, we compare the results of a static simulation (in which beneficiaries do not change their behavior in response to the policy change) to a behavioral-response simulation (in which we assume certain behavior changes). As discussed in the literature review, individuals have changed their earnings, labor force participation, and benefit claiming behavior in response to past changes in the RET. From the findings of that literature, we make one complete set of research-based assumptions about how individuals may change their behavior in response to eliminating the RET entirely. We use the same basic framework as the simulation by Berk, Favreault, and Ratcliffe (2002), who used MINT, version 3, to model RET elimination and incorporated behavioral response assumptions. However, we base our assumptions on more recent empirical studies analyzing the effects of the 2000 RET repeal at FRA, which were unavailable to Berk, Favreault, and Ratcliffe.

Earnings Response Assumptions

As discussed earlier, Song and Manchester (2007b), Haider and Loughran (2008), Figinski (2012), and Engelhardt and Kumar (2007) have found that some workers increased their earnings in response to changes to the RET. Taking a rough average of those findings, we assume a 15 percent increase in earnings starting in 2012. We apply that increase to nondisabled beneficiaries aged 62–66[23] with earnings near or above the RET threshold (specifically, between 90 percent and 200 percent of the earnings limit; individuals with earnings of twice the limit would have their entire benefit withheld under current law). We adjust affected beneficiaries' earnings each year through FRA, at which point we no longer apply a change to their earnings. Nonbeneficiaries and beneficiaries with earnings below and well above the limit would not have any reason to constrain their earnings under current law, so we would not expect them to change their earnings in response to reforms.

Labor Force Participation Assumptions

Recent studies have suggested that the labor force participation rate increased between 1.0 and 3.5 percentage points among beneficiaries aged 65–69 following the 2000 legislation that eliminated the RET at FRA (Friedberg and Webb 2009; Song and Manchester 2007b; Figinski 2012). We take a rough average of those findings (2.0 percentage points) and adjust for the differences between labor force participation among the older affected group in 2000 and that of the group aged 62–66 who would be affected by a full RET repeal. Reflecting that adjustment, we assume a 3.0 percentage point increase in the labor force participation rate among those aged 62–66 starting in 2012.[24] We assume that all changes in labor force participation will be concentrated among nondisabled Social Security beneficiaries who have stopped working.[25] We randomly select individuals who meet those criteria and assign one additional year of work at the end of their careers.[26] That additional year's earnings are assumed to equal the previous year's.

Benefit Claiming Assumptions

Recent studies have found that benefit claims increased 2–5 percentage points for individuals aged 65–69 following the 2000 legislation repealing the RET for beneficiaries at FRA (Song and Manchester 2007b; Song 2003/2004; Figinski 2012). Song and Manchester found that 10 percent of individuals in that age group had not claimed benefits, resulting in a 20 percent to 50 percent increase in claiming among nonbeneficiaries. Taking the average of those estimates, we change the claiming year for 35 percent of individuals aged 62–66 who have not yet claimed benefits, starting in 2012.[27] We concentrate the changes among nondisabled workers with earnings above the current-law RET limit. We assume that affected individuals start benefits one year earlier than they would under current law. Table 5 broadly summarizes the behavioral responses we assume for individuals in the MINT6 model by beneficiary status and earnings level.

Results

We first examine the proportion of current-law beneficiaries aged 60 or older who would be affected by RET repeal in 2050, under both our static and behavioral-response assumptions. In the static simulation (the policy change alone, with no behavioral response), 29 percent of those beneficiaries would be affected: 3 percent would have higher benefits and 26 percent would have lower benefits (Table 6).[28] Among beneficiaries younger than FRA, 16 percent would have higher benefits, because they would no longer have benefits withheld because of the RET. No beneficiaries younger than FRA would have lower benefits in the static simulation. Among beneficiaries at FRA or older in 2050, 33 percent would have lower benefits, because they would no longer receive adjustments to reduction

Table 5.
Assumed behavioral responses to an RET repeal, by beneficiary status and earnings level

Status	Earnings level	Assumption
	Earnings responses	
Beneficiary	No earnings	No change
	Earnings below threshold	CHANGE (only if within 10% of threshold)
	Earnings above threshold	CHANGE (up to 200% of threshold)
Nonbeneficiary	Any	No change
	Labor force participation responses	
Beneficiary	No earnings	CHANGE
	Earnings below threshold	No change (already working)
	Earnings above threshold	No change (already working)
Nonbeneficiary	Any	No change
	Benefit claiming responses	
Beneficiary	Any	No change (already claimed)
Nonbeneficiary	No earnings	No change
	Earnings below threshold	No change
	Earnings above threshold	CHANGE

SOURCE: Authors' assumptions based on earlier research.

NOTE: Individuals are assumed to be nondisabled and aged 62–66.

Table 6.
Percentage of beneficiaries aged 60 or older affected by RET elimination, by beneficiary characteristics: Static and behavioral-response simulations, 2050

	RET repeal alone (static)			RET repeal plus behavioral response		
Characteristic	Lower benefit	Higher benefit	Total affected	Lower benefit	Higher benefit	Total affected
Overall	26	3	29	34	5	39
Age						
Younger than FRA	0	16	16	6	18	24
FRA or older	33	0	33	40	2	42
Individual income quintile						
$118,629 or more	37	5	42	44	5	49
$63,323–$118,628	33	6	39	42	6	48
$38,865–$63,322	26	4	30	34	5	39
$23,280–$38,864	22	1	23	29	3	32
$0–$23,279	15	1	16	19	5	24
Benefit type						
Retired worker	33	4	37	41	7	48
Dual, spousal and worker	24	4	28	30	6	36
Spousal only	7	3	10	7	10	17
Dual, survivor and worker	26	1	27	34	2	36
Survivor only	14	2	16	20	7	27
Retired disabled	3	0	3	4	0	4
Disabled worker	1	0	1	0	1	1

SOURCE: Authors' calculations using MINT6 data.

NOTE: "Affected" is defined as having a benefit that differs by 1 percent or more from current law in the analysis year.

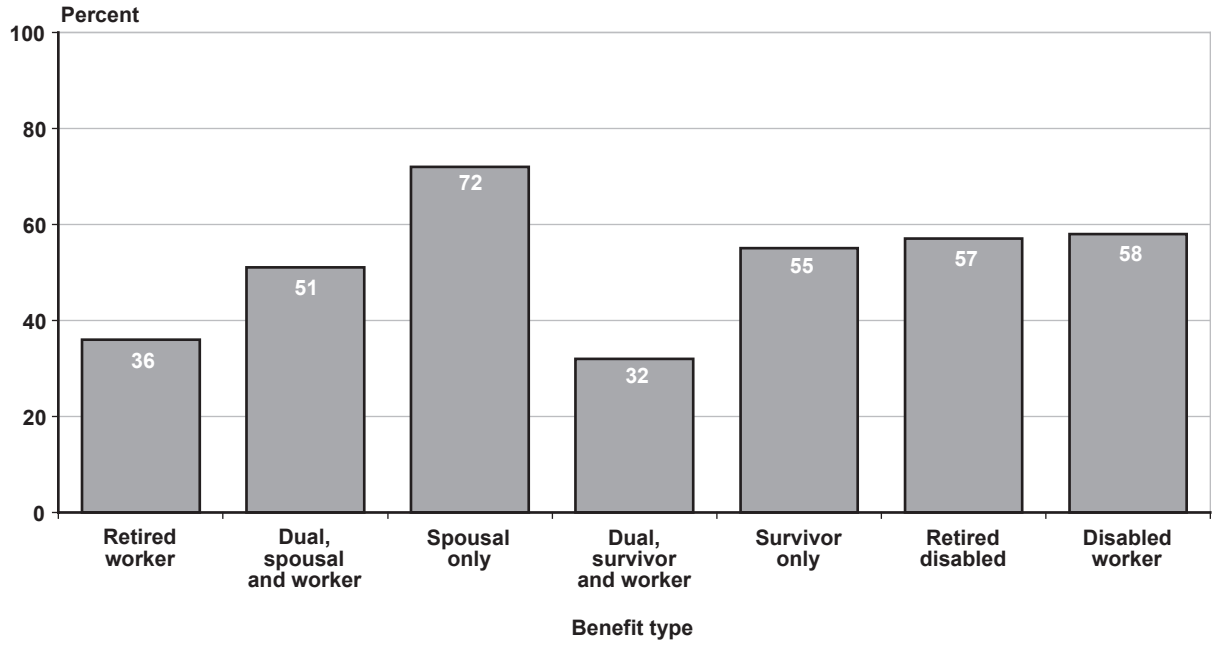
factors at FRA if the RET were repealed (as illustrated in Table 2). No beneficiaries at FRA or older would have higher benefits.

In the behavioral-response simulation, a greater proportion of beneficiaries—about 39 percent—would be affected by the RET repeal: 5 percent would have higher benefits and 34 percent would have lower benefits (Table 6). Among beneficiaries younger than FRA, 18 percent would have higher benefits, which is about the same proportion seen under our static scenario. However, about 6 percent of beneficiaries younger than FRA would receive lower benefits because they would respond to the RET elimination by claiming benefits one year earlier than under current law, thereby subjecting them to additional early retirement reduction factors. Similarly, among beneficiaries at FRA or older in 2050, about 40 percent would receive lower benefits in the behavioral-response scenario. However, unlike those in the static scenario, about 2 percent of beneficiaries older than FRA in 2050 would receive higher benefits, having responded to RET repeal by accruing higher earnings or an additional year of work to factor into their benefit calculation.

Because individuals with the highest incomes are more likely to be subject to the RET, those beneficiaries are most likely to be affected if the RET were repealed.[29] In our static scenario, 42 percent of beneficiaries in the highest individual income quintile would be affected in 2050, while 16 percent in the lowest quintile would be affected. When we incorporate our behavioral-response assumptions, a similar pattern emerges: 49 percent of beneficiaries in the highest quintile and 24 percent in the lowest quintile would be affected.

Individuals receiving benefits based entirely or partially on their own earnings records are more likely to be affected by RET repeal. Assuming no behavioral response, 37 percent of retired-worker beneficiaries, 28 percent of dual spousal and worker beneficiaries, and 27 percent of dual survivor and worker beneficiaries are affected; including behavioral responses increases those shares. Smaller proportions of spousal- and survivor-only beneficiaries are affected under both scenarios. Because those beneficiaries would be more concentrated in the lower individual income quintiles (Chart 1), fewer of them would be affected by RET repeal based on their own earnings. Disabled-worker benefits are not subject to the RET; therefore, most disabled beneficiaries would not be affected by its elimination.[30] However, disabled beneficiaries could be affected if they also receive auxiliary benefits as an aged spouse or survivor. For example, up to 4 percent

Chart 1.
Percentage of beneficiaries aged 60 or older who are in the two lowest individual income quintiles, by benefit type, 2050



SOURCE: Authors' calculations using MINT6.

of retired disabled beneficiaries would receive a lower benefit under RET elimination.[31]

Table 7 shows the distribution of beneficiaries according to their benefit changes under RET elimination. In both simulations, most of the affected beneficiaries have their benefits reduced by 1–9 percent. However, when behavioral responses are included, twice as many beneficiaries have their benefits reduced by 10–19 percent, reflecting the effects of claiming benefits earlier. Both scenarios result in a small percentage with benefit increases of at least 20 percent. Two percent of beneficiaries have their benefits increase by 1–9 percent when behavioral responses are included, which shows the effect of the additional year of work or increased earnings.

Because RET repeal would affect less than one-half of beneficiaries, we examine the median benefit changes among affected beneficiaries in Table 8. We define "affected" as having a benefit that differs by 1 percent or more from current law in the analysis year. For many of the changes we model, a change in one year means a change in all subsequent years.[32] In the static simulation, when affected beneficiaries are younger than FRA—and therefore receiving higher benefits under RET repeal than under current law—the median benefit increase is 71 percent. When affected beneficiaries are FRA or older—and therefore typically receiving lower benefits than under current law—the median benefit reduction is 6 percent. A small number of beneficiaries at FRA or older have higher benefits under RET repeal with no behavioral response; for those beneficiaries, benefits are based mostly on the earnings of a spouse, and the median increase is 12 percent.

In the behavioral-response simulation, however, some beneficiaries younger than FRA receive lower benefits in 2050 (as shown in Table 6); the median benefit reduction among this group is 7 percent (Table 8). Among beneficiaries younger then FRA who receive higher benefits, the median increase is 50 percent. At FRA or older, the median reduction in benefits among affected beneficiaries is 7 percent. The larger benefit reductions in the behavioral-response scenario result from the assumption that some beneficiaries claim benefits earlier than they would under current law.

Beneficiaries in the highest individual income quintiles would have the largest benefit increases under RET repeal (Table 8). The median benefit increase for this group is 100 percent assuming no behavioral response and 71 percent with the behavioral responses included. That pattern persists across the income scale: The higher the income quintile, the greater the benefit increase. All earnings above the RET thresholds are subject to withholding, so beneficiaries with higher earnings have higher withholdings (and thus a greater increase in benefits under RET repeal). However, the benefit reductions are consistent across all quintiles under both scenarios. The percentage value of one adjustment to reduction factors is consistent for all beneficiaries. Regardless of the amount of benefits withheld, an adjustment to reduction factors is given for any month that benefits were subject to the RET.

Tables 6 through 8 show the effects of RET repeal among individuals who are beneficiaries under current law in 2050. However, some beneficiaries subject to the RET would have their entire benefit withheld because their earnings were more than twice the lower earnings limits (when younger than FRA) or three times the higher earnings limit (in the year they attain FRA) under current law; obviously, such beneficiaries would predominantly fall in the higher income quintiles. With the RET eliminated, many of those beneficiaries would now receive benefits. As Table 9 shows, almost 281,000 individuals younger than FRA in 2050 would become beneficiaries if the RET were repealed (a 1.8 percent increase over current law), assuming

Table 7.
Percentage distribution of beneficiaries aged 60 or older by change in benefits resulting from RET elimination: Static and behavioral-response simulations, 2050

	Decline			No	Increase		
Simulation	≥20%	10–19%	1–9%	change	1–9%	10–19%	≥20%
RET repeal alone (static)	a	5	21	70	a	a	2
RET repeal plus behavioral response	1	10	23	61	2	a	3

SOURCE: Authors' calculations using MINT6 data.

NOTE: Rounded components of percentage distributions do not necessarily sum to 100.

a. Less than 0.5%.

Table 8.
Median percent change in benefits from scheduled benefits for beneficiaries aged 60 or older affected by RET elimination, by beneficiary characteristics: Static and behavioral-response simulations, 2050

	RET repeal alone (static)		RET repeal plus behavioral response	
Characteristic	Lower benefit	Higher benefit	Lower benefit	Higher benefit
Overall	-6	71	-7	20
Age				
Younger than FRA	a	71	-7	50
FRA or older	-6	12	-7	2
Individual income quintile				
$118,629 or more	-6	100	-7	71
$63,323–$118,628	-6	71	-7	50
$38,865–$63,322	-5	50	-7	23
$23,280–$38,864	-5	29	-7	2
$0–$23,279	-6	12	-7	2
Benefit type				
Retired worker	-6	71	-8	23
Dual, spousal and worker	-4	12	-6	6
Spousal only	-6	a	-6	9
Dual, survivor and worker	-5	33	-7	2
Survivor only	-6	a	-7	3
Retired disabled	-5	a	-7	a
Disabled worker	a	a	a	a

SOURCE: Authors' calculations using MINT6 data.

NOTE: "Affected" is defined as having a benefit that differs by 1 percent or more from current law in the analysis year.

a. Insufficient sample size.

Table 9.
Increase in number of beneficiaries aged 60 or older resulting from RET elimination, by beneficiary characteristics: Static and behavioral-response simulations, 2050

	RET repeal alone (static)		RET repeal plus behavioral response	
Characteristic	Number	Percent	Number	Percent
Overall	280,723	0.3	2,665,569	3.6
Age				
Younger than FRA	280,723	1.8	2,435,014	14.4
FRA or older	0	0.0	230,555	0.4
Individual income quintile				
$118,629 or more	83,727	0.5	1,119,100	7.1
$63,323–$118,628	107,089	0.7	677,020	5.2
$38,865–$63,322	77,637	0.5	409,440	2.8
$23,280–$38,864	6,839	a	148,730	1.0
$0–$23,279	5,430	a	218,276	1.5

SOURCE: Authors' calculations using MINT6 data.

NOTE: Totals do not necessarily equal the sum of rounded components.

a. Less than 0.05%.

no behavioral response. With behavioral responses assumed, over 2.4 million beneficiaries younger than FRA would be added in 2050 (a 14.4 percent increase compared with current law). Some would be individuals who previously delayed claiming benefits because of the RET and who now start benefits a year earlier, becoming beneficiaries in 2050. Individuals who increase their earnings or add one more year of work could, along with their auxiliaries, also become eligible for Social Security benefits earlier than under current law.

Disproportionate shares of new beneficiaries populate the higher income quintiles in both RET repeal simulations, particularly so in the behavioral-response scenario. Over 1 million individuals in the highest income quintile who would claim benefits later in the static simulation now claim benefits a year earlier. In 2050, among affected beneficiaries in the highest individual income quintile, the median age for starting benefits decreases from 65 under the static approach to 64 under the behavioral-response simulation.

Under either scenario, eliminating the RET would have no effect on overall poverty by 2050 (Table 10). As noted previously, eliminating the RET generally does not affect lower-income beneficiaries, who are more likely to have incomes near the poverty level. Among beneficiaries at FRA or older, the poverty rate would increase slightly under the static scenario. Among beneficiaries younger than FRA, the poverty rate would decrease slightly when behavioral responses are included. Poverty rates decline because some beneficiaries are assumed to have greater income from earnings or additional benefits for claiming a year earlier. Retired-worker beneficiaries would have a slightly higher poverty rate without behavior changes, because this group is most likely to be affected by eliminating the RET (see Table 6). In general, poverty will decline under current law by 2050 because the poverty threshold is indexed to prices, and over time, wage growth is expected to outpace price growth.[33]

To show projected changes in poverty that are more comparable to current rates, we analyze wage-indexed poverty rates in Table 11. Overall, the wage-indexed poverty rate increases 0.2 percentage points under both scenarios compared with current law. As with the traditional poverty rate shown in Table 10, the

Table 10.
Poverty rate effects of RET elimination for beneficiaries aged 60 or older, by beneficiary characteristics: Static and behavioral-response simulations, 2050

Characteristic	Projected poverty rate under current law	Poverty rate effect (percentage point change)	
		RET repeal alone (static)	RET repeal plus behavioral response
Overall	1.9	0.0	0.0
Age			
Younger than FRA	2.9	0.0	-0.1
FRA or older	1.6	+0.1	0.0
Individual income quintile			
$118,629 or more	0.0	0.0	0.0
$63,323–$118,628	0.0	0.0	0.0
$38,865–$63,322	0.0	0.0	0.0
$23,280–$38,864	0.0	0.0	0.0
$0–$23,279	9.4	+0.2	+0.1
Benefit type			
Retired worker	1.8	+0.1	0.0
Dual, spousal and worker	0.5	0.0	0.0
Spousal only	5.1	0.0	0.0
Dual, survivor and worker	0.5	0.0	0.0
Survivor only	7.0	0.0	0.0
Retired disabled	2.7	0.0	0.0
Disabled worker	4.3	0.0	0.0

SOURCE: Authors' calculations using MINT6 data.

Table 11.
Wage-indexed poverty rate effects of RET elimination for beneficiaries aged 60 or older, by beneficiary characteristics: Static and behavioral-response simulations, 2050

Characteristic	Projected wage-indexed poverty rate under current law	Wage-indexed poverty rate effect (percentage point change)	
		RET repeal alone (static)	RET repeal plus behavioral response
Overall	6.7	+0.2	+0.2
Age			
Younger than FRA	8.4	0.0	-0.3
FRA or older	6.4	+0.2	+0.3
Individual income quintile			
$118,629 or more	0.0	0.0	0.0
$63,323–$118,628	0.0	0.0	0.0
$38,865–$63,322	0.0	0.0	0.0
$23,280–$38,864	0.0	0.0	0.0
$0–$23,279	34.0	+0.8	+1.0
Benefit type			
Retired worker	6.0	+0.2	+0.3
Dual, spousal and worker	2.2	0.0	0.0
Spousal only	10.5	0.0	0.0
Dual, survivor and worker	4.9	+0.2	+0.3
Survivor only	19.6	0.0	+0.3
Retired disabled	11.3	0.0	0.0
Disabled worker	12.9	0.0	0.0

SOURCE: Authors' calculations using MINT6 data.

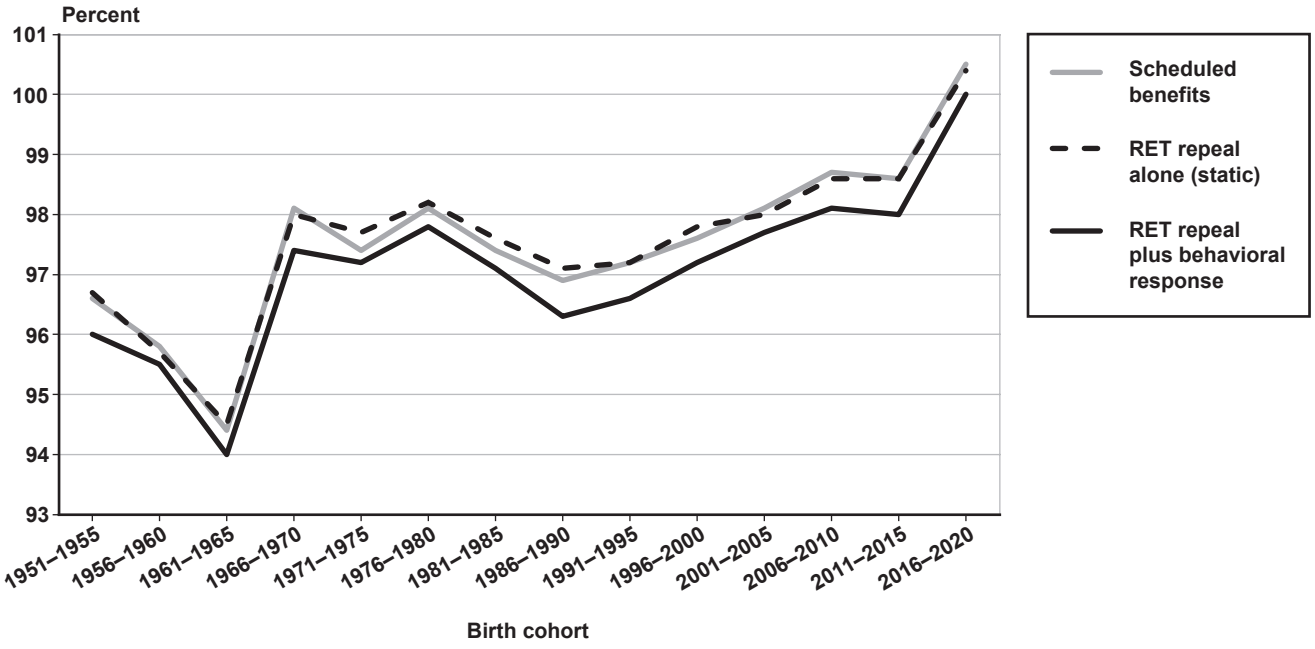
wage-indexed poverty rate decreases for beneficiaries younger than FRA after the RET repeal when behavioral responses are included. The wage-indexed poverty rate increases slightly among beneficiaries at FRA or older under both scenarios because they no longer receive adjustments to their reduction factors. Wage-indexed poverty also increases among retired-worker beneficiaries (who are more likely to be affected by RET repeal) and among survivor-only and dually entitled survivor beneficiaries when behavioral responses are included. Survivor beneficiaries are older than other beneficiary groups, and therefore are more likely to receive reduced benefits after reaching FRA (because of eliminated adjustments to reduction factors) than they are to receive increased benefits before FRA.[34]

Despite changes in individual benefits in a given year, the early retirement reduction factors and adjustments at FRA are roughly actuarially fair, so beneficiaries affected by the RET under current law should have similar lifetime benefits if the RET is eliminated. We examine that assumption with the benefit/tax ratio, which compares the lifetime value of Social Security benefits received with the lifetime value of taxes paid (Leimer 1995). As Chart 2 shows, the median lifetime benefit/tax ratio in the static repeal scenario would be comparable to scheduled benefits, although slightly lower for some cohorts. In the behavioral-response scenario, the median lifetime benefit/tax ratio is lower for all cohorts because we assume that some beneficiaries start benefits earlier, which leads to lower monthly benefits for life for both the retired workers and their auxiliaries. Our assumptions about continuing labor force participation do not offset that effect because one additional year of earnings produces low marginal returns (Reznik, Weaver, and Biggs 2009). Chart 2 shows that RET repeal itself would not change the lifetime value of Social Security benefits as much as the possible behavioral responses to the repeal.

Discussion

We simulate the elimination of the RET under both static and behavioral-response assumptions and analyze the impact on beneficiaries aged 60 or older in 2050. We find that more beneficiaries are affected when we include behavioral responses for earnings, labor force participation, and benefit claiming. We also find that benefit reductions are larger and benefit

Chart 2.
Median lifetime Social Security benefit/tax ratio for beneficiaries aged 60 or older



SOURCE: Authors' calculations using MINT6 data.

increases are smaller in the behavioral-response simulation. The increase in the number of beneficiaries in 2050 is much larger when behavioral responses are included, driven by individuals starting benefits earlier than they would under current law. Earlier claiming also results in a slightly lower median lifetime benefit tax/ratio compared with scheduled benefits.

The behavioral responses—particularly the benefit claiming change—have a bigger effect on lifetime benefits than the RET policy change itself. Absent the behavioral responses, Chart 2 shows that eliminating the RET produces almost no difference from current law over the median beneficiary's lifetime.[35] Without the earnings test, beneficiaries would receive a higher benefit before FRA and a lower benefit beginning at FRA. Those changes offset each other in the long run. However, accounting for behavioral responses lowers the lifetime/benefit tax ratio by about one-half of one percentage point compared to current law. The changes in claiming age are more important than the changes in earnings or labor force participation, because the claiming decision automatically lowers the Social Security benefit through additional early retirement reduction factors, while the earning and work decisions may or may not impact benefits. (However, those decisions will impact income temporarily for those who do change their work behavior.) Claiming earlier may negatively affect some individual beneficiaries, but as noted earlier, median lifetime benefits would not be significantly lower than current-law benefits.

In general, our overall findings closely match those of the previous Urban Institute studies. Like Berk, Favreault, and Ratcliffe (2002), we find benefit (and therefore, total income) increases for individuals younger than FRA, and benefit (and therefore, total income) decreases for beneficiaries at FRA or older when behavioral responses are assumed. In addition, like Ratcliffe and others (2003), we find that beneficiaries with higher lifetime earnings are more likely to start benefits earlier, resulting in higher total income.

We find lower poverty rates than earlier studies did. Anzick and Weaver (2000) projected that a complete repeal of the RET would increase the poverty rate by 0.4 to 1.9 percentage points, depending on the benefit-claiming assumptions used.[36] However, their simulation assumed that all beneficiaries were equally likely to claim earlier, including those without earnings or who earned less than the earnings test threshold, and that all early claiming would occur at age 62.[37] We assumed that people with earnings well below the threshold would have no incentive to claim earlier if the RET were repealed; those individuals

are more likely to be near poverty. In addition, we assumed beneficiaries would claim one year earlier instead of claiming at the earliest eligibility age (62). Like Anzick and Weaver, we find a disproportionately higher poverty rate increase among survivor beneficiaries using our wage-indexed poverty measure, although their estimate (3.7 percentage points) is much higher than ours (0.3 percentage points in the behavioral-response scenario). Using the standard poverty measure, we did not find higher poverty rates among survivor beneficiaries.

However, our overall poverty findings do match closely with those in Berk, Favreault, and Ratcliffe (2002), who found a 0.1 percentage point increase in poverty in 2022. Although they found poverty increases to be most pronounced for spousal-only beneficiaries, we found that wage-indexed poverty would increase for retired-worker and survivor beneficiaries when behavioral responses were included. Retired workers are more likely to be subject to the RET because of their higher earnings. Survivor beneficiaries are older than other types of beneficiaries, so a greater proportion of survivors are older than FRA and thus would have lower benefits under RET repeal.

We use more modest benefit-claiming assumptions than Berk, Favreault, and Ratcliffe (2002) and Ratcliffe and others (2003). Yet, like those authors, we find that benefit-claiming behavior is an important factor in the distributional analysis. Because Social Security benefits account for a significant share of income among the aged,[38] the benefit-claiming decision plays a crucial role in the retirement security of retired-worker beneficiaries and their spouses. Ratcliffe and others (2003) note that earlier benefit claiming reduces the net present value of benefits. Similarly, we find that our behavioral-response assumptions slightly reduce the median lifetime benefit/tax ratio.

Limitations

We used a number of simplifying assumptions in order to project behavioral responses to possible changes to the RET. First, we assumed that we could directly apply the experiences of older people (primarily aged 65–69) to the younger group (aged 62–66) who would be affected by the options we analyze. There are differences between those two groups, and reasons to believe their responses to RET changes would also differ.

We used empirical evidence from the partial repeal of the RET in 2000 to make predictions about responses to future changes (assumed to begin in 2012). Some behavioral changes seen since 2000 are unrelated to RET changes. For example, individuals are now more likely to defer claiming retired-worker benefits, which is consistent with increased labor force participation at older ages (Muldoon and Kopcke 2008) and the gradual increase in the FRA that began in 2000.

We also assumed uniform responses in each behavioral dimension: that all earlier claimers started benefits one year earlier; that all individuals who extended their labor force participation worked for one additional year; and that all individuals who increased their earnings did so by a fixed percentage until reaching FRA. Individuals' actual responses would be more varied—perhaps collecting benefits a few months earlier or working for a few months longer.

Solvency Effects

Repealing the RET would have a minimal impact on Social Security's long-term solvency because affected individuals' short-run benefit increases would be offset by long-run benefit reductions. SSA's Office of the Chief Actuary estimated that eliminating the RET starting in 2012 would improve the long-range Social Security actuarial balance by an estimated 0.01 percent of taxable payroll.[39] The Chief Actuary assumed, as we did, that some beneficiaries would no longer have their benefits withheld, some individuals would apply for benefits earlier, and some individuals currently subject to the RET would increase their earnings (Chaplain and Nickerson 2010). Those beneficiaries who no longer have their benefits withheld will not receive adjustments to reduction factors at FRA—increasing their benefits before FRA (and increasing short-run program costs),[40] but reducing their benefits beginning at FRA (and reducing long-run program costs). In addition, individuals who apply for benefits earlier will receive more early retirement reduction factors, which will permanently lower their monthly benefits.

Conclusion

Because the RET is a confusing aspect of the Social Security program, it is important to understand how its elimination may affect beneficiaries. We have presented distributional analysis showing both static and behavioral responses to RET repeal, highlighting how behavioral responses could affect benefits in the future. In our behavioral-response simulation, we model three distinct responses to RET

repeal—including earnings, labor force participation, and benefit claiming—and incorporate empirical findings from the latest research. Although eliminating the RET would have little effect on lifetime benefits and system solvency in the long run, we find that individual beneficiaries' behavior could affect their own retirement security and that of their family members. As such, this research highlights the importance of combining distributional analysis with potential behavioral responses when analyzing the impact of Social Security reforms on beneficiaries.

Notes

Acknowledgments: The authors thank Patrick Purcell, Melissa Favreault, Joyce Manchester, Mark Sarney, and Laura Haltzel for their helpful comments. They also thank Dave Shoffner and Gayle Reznik for their technical assistance.

[1] For the complete FRA chart, see http://www.socialsecurity.gov/retire2/agereduction.htm.

[2] Auxiliary retirement beneficiaries include spouses, children, and aged survivors. For more information on auxiliary benefits, see http://www.socialsecurity.gov/retire2/yourspouse.htm, http://www.socialsecurity.gov/retire2/yourchildren.htm, and http://www.socialsecurity.gov/survivorplan/onyourown2.htm, respectively.

[3] Any earnings, even those earned after benefits have begun, are incorporated into the benefit calculation through an automatic process each year and may result in higher benefits. For more information, see SSA (2013).

[4] As opposed to the annual earnings test, the monthly earnings test only applies in certain years, for example in the first year of benefit receipt. For RET exempt amounts from 1975 to 1999, see http://www.socialsecurity.gov/OACT/COLA/rteahistory.html. For exempt amounts for 2000 and later, see http://www.socialsecurity.gov/OACT/COLA/rtea.html.

[5] For more detailed examples of how the RET works, see Nuschler and Shelton (2010).

[6] For example, if Beneficiary A in Table 1 turned age 66 in February and earned $5,000 in January, his or her benefit for January would be reduced by only $553, instead of by $1,870.

[7] A special earnings test applies for individuals who retire midyear. For more information, see http://www.socialsecurity.gov/retire2/rule.htm.

[8] These increases are effective only in years where there is a cost-of-living-adjustment (COLA). For more information on the national average wage index, see http://www.socialsecurity.gov/OACT/COLA/AWI.html and for more information on the COLA, see http://www.socialsecurity.gov/cola/2011/factsheet.htm.

[9] Exceptions include spouses and survivors who receive benefits because they have minor or disabled children in their care. Although they too are subject to the earnings test if they work, they do not receive credit at FRA for the months that their benefits were fully or partially withheld. For more information, see SSA (2013).

[10] For the month shown in Table 1, both beneficiaries would receive one adjustment to reduction factors at FRA (even though Beneficiary B received a partial benefit payment for that month).

[11] For more detailed examples of how the RET works for auxiliary beneficiaries, see Nuschler and Shelton (2010).

[12] For the complete history of RET changes, see SSA (2012a, Table 2.A29).

[13] This change allowed newly covered self-employed workers to eventually receive a benefit. The self-employed tended to not retire from employment, so this provision was included to enable those workers, who had been contributing payroll taxes to the system, to receive a benefit (DeWitt 2000).

[14] To estimate this number, we included any beneficiary younger than FRA with earnings of $15,000 or more and any beneficiary attaining FRA with earnings of $40,000 or more, divided by the total number of beneficiaries in those age groups.

[15] To estimate this number, we included any beneficiary younger than FRA with earnings of $15,000 or more and any beneficiary attaining FRA with earnings of $40,000 or more, divided by the total number of beneficiaries with earnings in those age groups.

[16] The RET can either amplify the effects of a policy change that reduces benefits or appear to create a benefit increase relative to current law, depending on an individual's age relative to FRA. The reverse is true for reforms that increase benefits. For more information, see Haltzel and others (2007, Appendix C).

[17] Increasing the offset rate was proposed in a bill sponsored by Senator Lloyd Bentsen (D-TX) in 1989. For more information, see http://thomas.loc.gov/cgi-bin/query/z?c101:S.1192:. The Contract with America Advancement Act of 1996 instituted ad hoc increases in the earnings exempt amount for beneficiaries at FRA or older (DeWitt 1999). Several bills have been introduced in Congress to eliminate the RET, including the Social Security Earnings Limit Repeal Act of 2001 (http://thomas.loc.gov/cgi-bin/query/z?c107:H.R.1731:), and the Social Security Guarantee Plus Act of 2001 (http://thomas.loc.gov/cgi-bin/query/z?c107:H.R.3497:).

[18] When the British and Canadian public pension systems abolished their retirement earnings tests, workers there also increased earnings in response to the change. In the United Kingdom, affected beneficiaries increased their hours worked by about 20 percent (Disney and Smith 2002). In

Canada, workers were more likely to work full time for a full year rather than a partial year (Baker and Benjamin 1999).

[19] Similarly, studies on the British and Canadian repeal of retirement earnings tests did not find any increase in labor force participation (Disney and Smith 2002; Baker and Benjamin 1999).

[20] Research on the earnings test repeal in Canada also found a large increase in benefit claiming (Baker and Benjamin 1999). There is no actuarial adjustment for delayed claiming in Canada. However, research on the earnings test repeal in the United Kingdom (which has a relatively generous actuarial adjustment for delayed claiming) found no increase in claiming (Disney and Smith 2002).

[21] One limitation of the MINT model is that Social Security benefit calculations are done on an annual basis; therefore, we analyze only the RET used for those younger than FRA and omit the separate RET used in the year a beneficiary attains FRA.

[22] In the MINT6 model, work, marriage, retirement, and death are projected for real and imputed individuals based on real earnings, marital histories, and education levels. For more information, see http://www.socialsecurity.gov/retirementpolicy/projection-methodology.html.

[23] Although a small number of aged survivor beneficiaries are affected by the RET at ages 60 and 61, we assume no change in their behavior.

[24] The aggregate labor force participation and benefit claiming response could vary by year, but to simplify, we apply the same assumptions to each year.

[25] We assume an individual with earnings above four times the amount needed for one Social Security quarterly credit in one year and less than that amount in the following year has stopped working. In 2013, a worker receives one credit for each $1,160 of earnings.

[26] The additional year of work immediately follows the last year of each randomly selected worker's career. This is consistent with the literature, which shows that if a person has not worked in the previous year, he or she is very unlikely to return to work (Friedberg and Webb 2009).

[27] We only apply this response to those individuals whose current-law start age is greater than 62 and who are fully insured for retirement benefits. For more information on insured status, see http://www.socialsecurity.gov/OACT/ProgData/insured.html.

[28] To be considered affected, the difference from scheduled benefits must be equal to or greater than 1 percent. We consider those with differences of less than 1 percent to be unaffected.

[29] We sorted beneficiaries by individual income quintile because the RET is based upon beneficiaries' earnings in a given year. Individual income was the closest proxy.

[30] Disabled beneficiaries must be unable to engage in substantial gainful activity. For more information, see http://www.socialsecurity.gov/OACT/COLA/sga.html.

[31] Retired disabled beneficiaries are individuals who previously received disability benefits but were converted to retirement benefits at FRA.

[32] For example, if a beneficiary's claiming age has been changed, that beneficiary will likely be affected every year thereafter because the early retirement reduction is a permanent reduction. In addition, if a beneficiary was subject to the RET under current law, he or she is likely to be affected by eliminating the RET in all future years, because benefits are no longer withheld before FRA and because the adjustments to reduction factors permanently affect benefit amounts after FRA.

[33] For more information on poverty projections, see http://www.socialsecurity.gov/retirementpolicy/projections/poverty-decline.html.

[34] For 2050, MINT6 projects the median age of survivor and worker beneficiaries and survivor-only beneficiaries will be 83 and 80, respectively. In comparison, the median age of retired workers is projected to be 73.

[35] We define the median beneficiary as the individual with the median benefit/tax ratio.

[36] Anzick and Weaver did not include the 2000 repeal of the RET for beneficiaries aged 65–69 in their simulation, so it was based on a larger population than our analysis. They also acknowledge other possible sources of upward bias in their poverty estimates, including the fact that they do not assume any changes to labor force participation and they do not fully account for the interaction between Social Security and Supplemental Security Income.

[37] The authors used four sets of assumptions: a worst-case scenario in which all Social Security beneficiaries claim at age 62, a best-case scenario in which claiming behavior is unchanged, and two intermediate scenarios in which the poverty population increases by 20 percent and by 50 percent of the worst-case scenario's increase.

[38] Social Security accounted for 37 percent of aggregate income among units (which comprise either a married couple living together or a person who does not live with a spouse) aged 65 or older in 2010 (SSA 2012c, 16).

[39] Other research suggests that the long-term savings from full RET repeal would be significantly higher. Mastrobuoni (2006) finds that the 2000 repeal of the RET above FRA created trust fund savings starting in 2006, and argues that full repeal would save more money and produce larger increases in labor supply and contributions to the trust funds.

[40] The Chief Actuary estimates that the program cost for the first 5 years after repeal would be $59.6 billion.

References

Anzick, Michael A., and David A. Weaver. 2000. "The Impact of Repealing the Retirement Earnings Test on Rates of Poverty." *Social Security Bulletin* 63(2): 3–11. http://www.socialsecurity.gov/policy/docs/ssb/v63n2/v63n2p3.pdf.

Baker, Michael, and Dwayne Benjamin. 1999. "How Do Retirement Tests Affect the Labour Supply of Older Men?" *Journal of Public Economics* 71(1): 27–51.

Berk, Jillian, Melissa Favreault, and Caroline Ratcliffe. 2002. *Task 11.10 Simulation of the Distributional Consequences of Removing the Retirement Earnings Test before the Normal Retirement Age [NRA].* The Urban Institute Letter Report. Washington, DC: Urban Institute.

Burtless, Gary, and Robert A. Moffitt. 1985. "The Joint Choice of Retirement Age and Postretirement Hours of Work." *Journal of Labor Economics* 3(2): 209–236.

Chaplain, Chris, and Daniel Nickerson. 2010. "Estimated Long-Range OASDI Financial Effect of Repealing the Retirement Earnings Test at Ages 62 and Later." Memorandum to Stephen C. Goss, Chief Actuary, and Alice H. Wade, Deputy Chief Actuary (April 30).

DeWitt, Larry. 1999. "The History and Development of the Social Security Retirement Earnings Test." Social Security Administration Special Study #7. http://www.socialsecurity.gov/history/ret2.html.

———. 2000. "Brief Legislative History of the Retirement Earnings Test." Social Security Administration Research Note #7. http://www.socialsecurity.gov/history/ret.html.

Disney, Richard, and Sarah Smith. 2002. "The Labour Supply Effect of the Abolition of the Earnings Rule for Older Workers in the United Kingdom." *The Economic Journal* 112(478): C136–C152.

Engelhardt, Gary V., and Anil Kumar. 2007. "The Repeal of the Retirement Earnings Test and the Labor Supply of Older Men." CRR Working Paper No. 2007-1. Chestnut Hill, MA: Center for Retirement Research at Boston College. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1299703.

Figinski, Theodore F. 2012. "Women and the Social Security Earnings Test." Irvine, CA: University of California, Irvine. http://www.socsci.uci.edu/files/economics/docs/micro/s11/figinski.pdf.

Friedberg, Leora. 1998. "The Social Security Earnings Test and Labor Supply of Older Men." In *Tax Policy and the Economy, Volume 12,* edited by James M. Poterba, 121–150. Cambridge, MA: MIT Press. http://www.nber.org/chapters/c10915.

———. 1999. "The Labor Supply Effects of the Social Security Earnings Test." NBER Working Paper No. 7200. Cambridge, MA: National Bureau of Economic Research. http://www.nber.org/papers/w7200.

———. 2000. "The Labor Supply Effects of the Social Security Earnings Test." *The Review of Economics and Statistics* 82(1): 48–63.

Friedberg, Leora, and Anthony Webb. 2009. "New Evidence on the Labor Supply Effects of the Social Security Earnings Test." In *Tax Policy and the Economy, Volume 23,* edited by Jeffrey R. Brown and James M. Poterba, 1–35. Chicago, IL: University of Chicago Press. http://www.nber.org/chapters/c10570.

Gruber, Jonathan, and Peter Orszag. 2000. "Does the Social Security Earnings Test Affect Labor Supply and Benefits Receipt?" NBER Working Paper No. 7923. Cambridge, MA: National Bureau of Economic Research. http://www.nber.org/papers/w7923.

Haider, Steven J., and David S. Loughran. 2008. "The Effect of the Social Security Earnings Test on Male Labor Supply: New Evidence from Survey and Administrative Data." *Journal of Human Resources* 43(1): 57–87. https://www.msu.edu/~haider/Research/2008-jhr-published.pdf.

Haltzel, Laura, Dawn Nuschler, Kathleen Romig, Gary Sidor, Scott Szymendera, Mikki Devine Waid, and Debra Whitman. 2007. *Options to Address Social Security Solvency and Their Impact on Beneficiaries: Results from the Dynasim Microsimulation Model.* CRS Report No. RL33840. Washington, DC: Congressional Research Service. http://aging.senate.gov/crs/ss7.pdf.

Honig, Marjorie, and Cordelia Reimers. 1989. "Is It Worth Eliminating the Retirement Test?" *American Economic Review* 79(2): 103–107.

Leimer, Dean R. 1995. "A Guide to Social Security Money's Worth Issues." *Social Security Bulletin* 58(2): 3–20. http://www.socialsecurity.gov/policy/docs/ssb/v58n2/v58n2p3.pdf.

Leonesio, Michael V. 1990. "The Effects of the Social Security Earnings Test on the Labor-Market Activity of Older Americans: A Review of the Evidence." *Social Security Bulletin* 53 (5): 2–21. http://www.socialsecurity.gov/policy/docs/ssb/v53n5/v53n5p2.pdf.

Mastrobuoni, Giovanni. 2006. "The Social Security Earnings Test Removal. Money Saved or Money Spent by the Trust Fund?" Industrial Relations Section Working Paper No. 513. Princeton, NJ: Princeton University. http://dataspace.princeton.edu/jspui/bitstream/88435/dsp014f16c2818/1/513A.pdf.

Muldoon, Dan, and Richard W. Kopcke. 2008. "Are People Claiming Social Security Benefits Later?" CRR Policy Brief No. 8-7. Chestnut Hill, MA: Center for Retirement Research at Boston College. http://crr.bc.edu/wp-content/uploads/2008/05/ib_8-7.pdf.

Nuschler, Dawn, and Alison M. Shelton. 2010. *Social Security Retirement Earnings Test: How Earnings Affect Benefits.* CRS Report No. 7-5700. Washington, DC:

Congressional Research Service. http://www.aging.senate.gov/crs/ss25.pdf.

Ratcliffe, Caroline, Jillian Berk, Kevin Perese, and Eric Toder. 2003. "Impact of the Social Security Retirement Earnings Test on 62–64-year-olds." AARP Public Policy Institute Paper No. 2003-15. Washington, DC: American Association of Retired Persons. http://assets.aarp.org/rgcenter/econ/2003_15_ret.pdf.

Reimers, Cordelia, and Marjorie Honig. 1996. "Responses to Social Security by Men and Women: Myopic and Far-Sighted Behavior." *Journal of Human Resources* 31(2): 359–382.

Reznik, Gayle L., David A. Weaver, and Andrew G. Biggs. 2009. "Social Security and Marginal Returns to Work near Retirement." Issue Paper No. 2009-02. Washington, DC: Social Security Administration. http://www.socialsecurity.gov/policy/docs/issuepapers/ip2009-02.html.

Social Security Administration. 2003. "Adjustment of Reduction Factor at FRA." *Social Security Handbook, Section 728.* http://www.socialsecurity.gov/OP_Home/handbook/handbook.07/handbook-0728.html.

———. 2012a. *Annual Statistical Supplement of the Social Security Bulletin, 2011.* Washington, DC: SSA. http://www.socialsecurity.gov/policy/docs/statcomps/supplement/2011/index.html.

———. 2012b. "Fact Sheet: 2013 Social Security Changes." http://www.socialsecurity.gov/pressoffice/factsheets/colafacts2013.htm.

———. 2012c. *Income of the Aged Chartbook, 2010.* Washington, DC: SSA. http://www.socialsecurity.gov/policy/docs/chartbooks/income_aged/2010/index.html.

———. 2013. *How Work Affects Your Benefits.* SSA Publication No. 05-10069. Baltimore, MD: SSA. http://www.socialsecurity.gov/pubs/10069.html.

Song, Jae G. 2003/2004. "Evaluating the Initial Impact of Eliminating the Retirement Earnings Test." *Social Security Bulletin* 65(1): 1–15. http://www.socialsecurity.gov/policy/docs/ssb/v65n1/v65n1p1.html.

Song, Jae G., and Joyce Manchester. 2007a. "How Have People Responded to Changes in the Retirement Earnings Test in 2000?" *Social Security Bulletin* 67(1): 1–15. http://www.socialsecurity.gov/policy/docs/ssb/v67n1/v67n1p1.html.

———. 2007b. "New Evidence on Earnings and Benefit Claims Following Changes in the Retirement Earnings Test in 2000." *Journal of Public Economics* 91(3–4): 669–700.

SSA. *See* Social Security Administration.

Linking Youth Transition Support Services: Results from Two Demonstration Projects

by Christa Bucks Camacho and Jeffrey Hemmeter*

Many youths with disabilities, especially those receiving or potentially eligible for Social Security benefits, need assistance as they transition into adulthood. Upon completing secondary school, they face an abrupt end to provider-initiated public entitlement services. They often lack the knowledge and support to access and link fragmented adult support services. This article presents an overview of two projects in the Social Security Administration's Youth Transition Demonstration: California's Bridges to Youth Self-Sufficiency and Mississippi's Model Youth Transition Innovation. We report key outcomes and highlight the experience of one youth in each project who successfully completed the program.

Introduction

Many youths with disabilities, especially those receiving or potentially entitled to Social Security benefits, need transition assistance as they reach adulthood. Upon completing secondary school, they face an abrupt end to the publicly provided services they received through the education system. They are often not prepared to access adult services, such as vocational rehabilitation, if those services are not educational entitlements.[1] If transitioning youths desire support services after they begin higher education or go to work, they must identify themselves as having a disability, provide documentation of their disability, and formally request accommodations and services, often for the first time (GAO 2009). The Social Security Administration (SSA) designed the Youth Transition Demonstration (YTD) projects partly to link the fragmented support system currently in place. More broadly, YTD projects addressed low expectations about employment and self-sufficiency from the individual, his or her family, and society.

Over 1 million youths aged 14–25 receive Supplemental Security Income (SSI) payments, and approximately 2.2 million SSI recipients are younger than age 30 (SSA 2012). Presently, some young SSI recipients exit the program as a result of a continuing disability review or an age-18 redetermination.[2] Transition supports and services that enable workforce entry could keep many other youths from remaining dependent on SSI for the rest of their lives. Rupp and Scott (1995) estimated that SSI youth recipients remain in the program 27 years on average.[3] In 2010, SSI paid $7.8 billion to youths aged 13–25, or approximately $650 million a month (SSA 2012).

Selected Abbreviations

CDOR	California Department of Rehabilitation
DI	Disability Insurance
EN	employment network
GEIE	general earned income exclusion
IDA	individual development account

* *When this article was written, Christa Bucks Camacho was a social insurance specialist in the Office of Program Development and Research (OPDR), Office of Retirement and Disability Policy (ORDP), Social Security Administration (SSA). She is currently with the Office of Budget Finance Management, SSA. Jeffrey Hemmeter is an economist with OPDR, ORDP, SSA.*

A version of part of this article appeared as a case study in the Organisation for Economic Co-operation and Development (OECD) report Pathways for Disabled Students to Tertiary Education and Employment.

Selected Abbreviations—*Continued*

MDRS	Mississippi Department of Rehabilitation Service
MYTI	Model Youth Transition Innovation
SEIE	student earned income exclusion
SSA	Social Security Administration
SSN	Social Security number
YTD	Youth Transition Demonstration

For young SSI recipients, one of the most significant barriers to employment is that they do not know how earnings will affect their SSI payments. The youths, their families, and their teachers lack information on how to use the work incentives available to SSI recipients. Teachers and other potential information sources may not even know that the youth receives SSI. Less than one-quarter of young SSI recipients' families have discussed or even heard of SSA's work incentives (Loprest and Wittenburg 2005). The YTD projects sought to raise awareness of those incentives as part of their goal to provide youths and their families with the skills and knowledge necessary to achieve independence and self-sufficiency. In turn, participants would become less reliant on SSI and other assistance programs, such as Medicaid, thus lowering public costs.

For YTD participants who were SSI recipients or Social Security Disability Insurance (DI) beneficiaries, SSA waived certain rules that restrict program eligibility or limit payments for those with work earnings. Those waivers modified existing SSI or DI work incentives to allow YTD youths to retain more of their earnings so they could save or make work- and education-related investments. Table 1 describes the work incentives and the associated YTD waivers.

Ten YTD projects operated in eight states. This article examines two of them: California's Bridges to Youth Self-Sufficiency (Bridges) and Mississippi's Model Youth Transition Innovation (MYTI). Both projects assigned participants nonrandomly and developed services to help clients successfully transition into adulthood.[4] Each YTD project provided different combinations of services, but all 10 were designed to improve educational and work outcomes for participants. They generally targeted youths aged 14–25 who were potentially entitled to or already receiving SSI payments or DI benefits.[5] Bridges predominantly served youths aged 18 or older (68 percent of participants) while MYTI focused its efforts on younger clients (57 percent were aged 16 or younger).

All of the YTD projects sought to increase the self-sufficiency of transition-age youth with disabilities. That goal, which may not be realized until many years after YTD participation, generally takes the form of increased employment and decreased dependence on public benefits, along with improved quality of life. Bridges used a coordinated system of services and supports to help youths and their families achieve those ends. With the support of community and interagency collaborators, MYTI applied "discovery" techniques[6] and customized employment[7] to facilitate the transition from high school to work for students with significant disabilities.

Bridges served 504 youths and MYTI served 184 youths from December 2003 through September 2009. MYTI originally planned to serve 319 youths, but lowered its goal after Hurricane Katrina disrupted some of its operations. This article summarizes the Bridges and MYTI projects, reports some key outcomes, and highlights the experiences of one youth from each project who successfully completed the program. The information in this article comes from two primary sources. First, the management information system used by project staff to record their efforts provided aggregate information on the participants' profiles, services received, and outcomes. Second, interviews with staff, partners, and youths were rich sources of information, providing the stories of representative clients. Because Bridges and MYTI served different populations and provided different services, we discuss the projects separately under each of five topics: organization, services, statistics, case studies, and sustainability.

Organization

In this section, we describe the organization of the Bridges and MYTI projects, focusing on where services were provided and on project staffing structure.

Bridges

Bridges began as a YTD project funded by the SSA and the California Department of Rehabilitation (CDOR). The project operated in seven school districts chosen to reflect the state's geographic, industrial, cultural, ethnic, and socioeconomic diversity. Bridges' two key staff positions were benefits counselor and service coordinator. The benefits counselor educated

participants and their families about disability benefits from Social Security and other public programs, YTD waivers, and the effect of earnings on monthly SSI and DI payments. The service coordinator provided information on available school-based and adult services and supports. Additionally, a local project manager monitored YTD project activities, conducted bimonthly local advisory meetings, and facilitated partnerships with local agencies, community organizations, and businesses.

A state-level steering committee guided the project and provided an arena for collaboration and information sharing. The committee included the project managers and representatives from CDOR and other state agencies, the regional Social Security office, and the World Institute on Disability. The committee met twice yearly to provide oversight, evaluate progress, and offer suggestions for collaboration. The committee also helped with state-level system changes deemed necessary for a successful intervention.

Table 1.
SSA work incentives and the effects of YTD waivers

Work incentive	Description	Policy change under YTD waiver
	SSI	
Student Earned Income Exclusion (SEIE)	Enables recipients who are students to exclude a certain amount of earnings from countable income and thus avoid reductions in SSI payments. In 2009 and 2010 SSA excluded the first $1,640 of a student's earnings each month, to a maximum of $6,600 in a year. SEIE eligibility ends when a recipient attains age 22.	Age limit is waived for YTD participants for as long as they attend school regularly.
General Earned Income Exclusion (GEIE)	Enables most SSI recipients to exclude from countable income the first $65 of earnings plus one-half of additional earnings.	YTD participants can exclude from countable income the first $65 of earnings plus three-quarters of additional earnings.
Plan to Achieve Self-Support (PASS)	Enables SSI recipients to exclude from countable income and resources amounts paid for certain expenses, such as the cost of owning a car, pursuing an education, and purchasing assistive technology, to achieve a specific SSA-approved work goal.	YTD participants can also use a PASS to explore career options or pursue additional education.
Individual Development Account (IDA)	Provides a trust-like account for SSI recipients to save for a specific goal, such as purchasing a home, going to school, or starting a business. SSA matches earnings deposited in an IDA, often at $2 for every $1 deposited by the participant. The money accumulated in an IDA is excluded when determining SSI eligibility, and the earnings deposited during a month are excluded when determining the SSI payment amount.	A YTD participant may also use an IDA to save for other approved goals.
	SSI and DI	
Continuing Disability Reviews and Age-18 Redeterminations (Section 301)	Benefits based on disability may continue despite a negative Continuing Disability Review or age-18 medical redetermination if: • the beneficiary is participating in any of certain programs; and • SSA determines that continued participation will increase the likelihood that the individual will remain off the disability rolls permanently once benefits stop. These “likelihood” determinations normally must be made on a case-by-case basis.	If SSA determines that medical disability has stopped and the participant is no longer eligible for assistance, he or she can continue to receive both cash benefits and health care services while participating in YTD.

SOURCE: SSA.

NOTE: For full descriptions of these and other SSA work incentives, see http://www.socialsecurity.gov/redbook.

Given its organization within the school system, Bridges recruited youth primarily from the local school districts; however, referrals from community partners were also important. Although Bridges recruited youths with all disabilities within the project area, priority went to participants with multiple disabilities and barriers to employment. Bridges reached out to youths in and out of school, in the foster care system, in the juvenile justice system, and from diverse cultural backgrounds. Youths and their families received letters inviting them to attend an orientation workshop offering information on work incentives. They were also assured that Bridges staff would respond to questions about (and advocate as needed with) SSA, employers, community providers, and public agencies.

MYTI

MYTI was funded by SSA and the Mississippi Department of Rehabilitation Services (MDRS). Originally, MYTI was implemented in Gulfport Municipal and Harrison County School Districts, with MDRS serving as the lead agency. However, Gulfport's participation stopped after 3 years because damage from Hurricane Katrina obstructed efforts to provide the support required for the project interventions. In September 2006, Jackson County Public Schools replaced Gulfport. MYTI recruited youths with disabilities from within those school districts.

MYTI personnel worked directly in the schools. Teachers were trained to use individual discovery techniques and customized employment approaches in order to facilitate the transition from high school to work for students with significant disabilities. MYTI's key staff positions were classroom teacher, transition specialist, and benefits counselor. The classroom teacher facilitated the discovery process to determine each participant's interests, abilities, and vocational experiences. The transition specialist provided job development, customized planning, and portfolio development to help working-age participants use the customized employment process. The benefits counselor educated participants and their families about disability benefits from Social Security and other public programs, YTD waivers, and the effect of earnings on SSI and DI payments.[8]

MYTI emphasized person-centered planning and featured Individual Development Accounts (IDAs), an innovative approach to transition support. Customized employment was another key feature and many employers assisted the project by providing precareer development for participants.

Services

In this section, we provide a high-level description of the services provided by the Bridges and MYTI projects. For more details on the services provided, see CDOR (2009) and Martinez and others (2010).

Bridges

The project was designed to help youths "pursue their interests, goals, and dreams while living a happy and productive life" (CDOR 2009, 9). Specifically, Bridges provided interventions to promote personal and financial self-sufficiency, employment (whether full-time, part-time, or volunteer), and life quality (through employer relationships and community partners). The service delivery model emphasized self-determined goals, high expectations, a positive vision of the future, collaborative partnerships, and self-advocacy skills.

All YTD sites provided employment and benefit counseling services. Bridges also focused on work incentive and benefit advice, person-centered planning and early intervention, job development and placement, and intensive service coordination. Those services were built on transition initiatives already available to individuals in the same age range as Bridges participants. CDOR partnered with the California Department of Education, local school districts, and SSA field offices to assure service delivery. Bridges benefits counselors and service coordinators uniformly directed (or themselves provided) service delivery at all seven Bridges sites. That was accomplished through individual meetings and training workshops that accommodated the schedules of the participants and their families. In workshops on SSI and DI work incentives, for example, participants learned to manage a calendar and filing system to track correspondence and report earnings to SSA.

For youths and their caregivers who needed to better organize services and identify additional needs, benefits counselors and service coordinators developed an individualized "action plan." This dynamic plan documented all the needed services and over time, it helped youths and their families to coordinate current and upcoming services on their own.

Placing benefits counselors and service coordinators in the schools allowed Bridges participants to continue using their schools' career development programs. One such program coached participants in preemployment skills, career awareness, and planning for high school. A similar program emphasized

employment and independent living skills; it served youths aged 14–19 who attended high school and had individualized education plans. State agencies, employers, and local colleges collaborated to provide career exploration services, work readiness skills, work-based learning opportunities, paid and unpaid internships, entry-level employment, transition planning, and follow-up services.

High school students who had moderate or severe disabilities and met certain other conditions were also eligible for the Transition Partnership Project (TPP), jointly administered by the school districts and CDOR. That project worked with city governments, nonprofit groups, public transit agencies, adult service providers, community colleges, state agencies, and employers to provide career planning and employment services for youths who wanted a job. Clients also received additional career services (coordinated with CDOR) including career assessment, career planning, job-specific skills training, worksite evaluations, job coaching, specialized job development, job placement, and follow-up supports to ensure work retention.

Bridges also coordinated with several other CDOR programs for individuals aged 19 or older with moderate or severe disabilities. Those adult programs, run by the school districts or colleges in partnership with CDOR, focused on transition planning, emphasizing employment and independent living. Clients may have also received a modified education (via adult schools, regional occupational programs,[9] colleges, community-based instruction, and worksite training), transportation and mobility skills, independent living skills, job coaching, and Americans with Disabilities Act accommodation information.

Bridges staff helped coordinate those and other transition services (such as health care) for eligible youths. They coordinated benefits and services, held SSI and DI benefits counseling workshops, helped youths with their person-centered action plans, helped to establish family support networks, mentored clients, and trained community stakeholders about SSI program rules and how to advocate on behalf of the youths. The project model emphasized systems linkage. Collaboration enabled stakeholders to meet participants' diverse service needs. Bridges staff built partnerships with community providers to optimize service coordination. Benefits counselors and service coordinators completed Community Work Incentive Coordinator training from an SSA contractor to ensure that they understood and could effectively counsel individuals about SSI and DI work incentives. That knowledge helped build relationships throughout the community, as service providers were particularly interested in meeting with Bridges staff to learn about benefits counseling and how to apply SSA work incentive rules.

SSA participated in Bridges meetings. SSA's Area Work Incentive Coordinator answered technical and operational questions from Bridges staff. SSA field office personnel reported that Bridges staff knew the SSI and DI program rules, and that project participants showed more confidence, independence, and knowledge of SSI rules than they had in earlier contacts.

MYTI

MYTI relied on teachers to deliver services because schools are the institutions most responsible for working with youths aged 4–22 with disabilities. MYTI's use of school-based interventions minimized intrusions into students' and their families' time.

MYTI was divided into four phases in order to vary the focus of its services according to the age range of participants. For each phase, specific transition services helped participants prepare for or obtain employment.

- **Phase I** served participants aged 10–13. Teachers helped students with life portfolios and future plans, and referred students for benefits analysis and advice.
- **Phase II** served participants aged 14–18. Teachers helped students to develop employment and other plans, and referred students for benefits analysis and advice.
- **Phase III** served participants aged 19–21. Teachers and MYTI staff helped students to develop vocational profiles and create customized employment plans (including a budget for needed job supports). Staff also developed an initial benefits analysis and work incentives plan with the student, and arranged a One Stop Center visit.
- **Phase IV** served participants aged 22–25. MYTI staff continued to provide Phase I–III services as needed to youths who had exited school.

Each phase involved developing an individualized plan for targeted employment. In Phase I, participants developed a vision of future work and a vocational plan. In Phases II–IV, participants designed a plan to prepare for or obtain employment (or self-employment). The plan described needed services

and supports. It also identified desired employment outcomes that emerged from the discovery process, which explored the student's interests, preferred conditions of employment, and potential workplace contributions. The tasks that a student could offer an employer became the basis for customizing a potential job. Customized employment planning enabled MYTI staff to identify potential employers by matching the student's interests with the tasks required by the employer. MYTI staff also apprised participants of affiliated services from sources such as local One Stop Centers and assisted them in using such supports.

In Phase II, the student, family, and teacher shared in deciding which work preparation activities to pursue. In Phase III, the student devised a budget to identify supports, services, and expenses necessary to prepare for employment, as well as potential funding sources to help manage the costs. MDRS approved modest funding for participants' self-directed efforts to obtain uniforms, state picture identification cards, and birth certificates; develop visual, vocational, and representational profiles or portfolios; procure job development and coaching services; pay certain transportation, medical screening, and tuition costs; and purchase small business start-up supplies. Student budgets emphasized the shared role of government and personal resources.

In the fourth year of the project, MYTI participants enrolled in a program in which IDAs provided a savings incentive comprising a $4-for-$1 match (up to a maximum of $1,000) for personal savings dedicated to funding postsecondary education, self-employment, or a first-time home. Although MDRS administered the program, it included private-sector partners.

Statistics

In this section, we present statistics on the characteristics of the youth served by Bridges and MYTI and on the services provided by the projects. We also present statistics on earnings and SSI and DI program participation for up to 5 years after the youths enrolled in the projects.

Bridges

Although Bridges served over 500 youths from 2003 through 2009, only 495 of them had verifiable Social Security Numbers (SSNs).[10] Table 2 presents client characteristics. Bridges served more males than females (56 percent versus 44 percent). About 20 percent of the youths reported an intellectual disability as their primary disability; however, not all youths have a disability listed in SSA records. Most of the youths who consented to be in the program were aged 18 or older at enrollment.[11] When they first entered the Bridges program, most youths were in school (80 percent); by the time they exited Bridges, half of the youths were out of school (not shown).

Youths participating in Bridges received a variety of services, as shown in the tabulation below. Among the 81 percent of youths who received any of the 11 specific services identified in the data, the most common was job training (78 percent), followed by prevocational training (70 percent), living skills training (69 percent), and job placement services (59 percent). However, many youths received other services, ranging from legal aid (2 percent) to on-the-job support (47 percent).

Type of service	Clients served (%)
Any	80.6
Job training	78.3
Prevocational training	69.8
Living skills training	69.0
Job placement	58.5
On-the-job support or extra training	47.1
Testing or evaluation	46.3
Financial assistance	31.0
Health services	26.1
Counseling or therapy	23.9
Mental health services	16.3
Legal or advocacy services	2.0

SOURCE: Authors' calculations based on Social Security administrative record extracts and Bridges management files.

The majority of Bridges youth received either SSI payments (55 percent) or DI benefits (3 percent) at the time of enrollment (Table 3). Five years after enrollment, 70 percent of Bridges participants received SSI payments and 30 percent received DI benefits (18 percent received concurrent benefits). The increase in SSI receipt is common after age 18, when SSA treats parental income differently in determining countable income. Much of the increase in DI benefits resulted from youths becoming eligible for benefits on their own record as workers; two-thirds of those receiving DI did so as a worker. Although individuals younger than 31 have lower earnings requirements to qualify for DI worker benefits, this finding still demonstrates a positive step into the workforce for youths who otherwise would not have promising employment prospects.

Table 2.
Demographic characteristics of Bridges and MYTI participants

Characteristic	Bridges		MYTI	
	Percentage distribution	Standard error	Percentage distribution	Standard error
Sex				
Male	55.8	2.2	61.4	3.6
Female	44.2	2.2	38.6	3.6
Diagnosis				
Intellectual disabilities	20.2	1.8	26.6	3.3
Other mental disorders	12.7	1.5	12	2.4
Nervous system	5.7	1.0	9.2	2.1
Musculoskeletal system	0.2	0.2	0.0	0.0
Other [a]	16.2	1.7	17.9	2.8
Not identified on SSA records [b]	45.1	2.2	34.2	3.5
Age at enrollment				
15 or younger	8.5	1.3	47.8	3.7
16	8.9	1.3	9.2	2.1
17	15.2	1.6	14.7	2.6
18 or older	67.5	2.1	28.3	3.3
Number of participants	495		184	

SOURCE: Authors' calculations based on YTD project administrative records.

NOTE: Rounded components of percentage distributions do not necessarily sum to 100.

a. None of the other diagnoses comprised more than 6 percent of the sample.

b. The percentage with no disability is not the same as the percentage who were not receiving SSI or DI (Table 4), because some youths received DI as a dependent and thus would not have a disability listed in Social Security administrative records.

Table 3.
Percent of YTD clients receiving SSI payments or DI benefits at time of enrollment and 5 years later

Project, program type, and status	Month of enrollment		Five years after enrollment	
	Percent	Standard error	Percent	Standard error
Bridges				
SSI	54.9	2.2	70.3	2.4
DI	3.2	0.8	29.7	2.4
DI worker	1.0	0.4	20.0	2.1
DI child	2.2	0.7	9.7	1.6
Either SSI or DI	55.8	2.2	82.2	2.0
Both SSI and DI	2.4	0.7	17.8	2.0
Deceased	…	…	0.8	0.5
Number	495		360	
MYTI				
SSI	65.8	3.5	62.8	5.5
DI	10.3	2.2	24.4	4.9
DI worker	0.0	0.0	11.5	3.6
DI child	10.3	2.2	12.8	3.8
Either SSI or DI	68.5	3.4	71.8	5.1
Both SSI and DI	7.6	2.0	15.4	4.1
Deceased	…	…	5.1	2.5
Number	184		78	

SOURCE: Authors' calculations based on Social Security administrative record extracts.

NOTE: … = not applicable.

About 60 percent of participants had earnings in the years following their enrollment in Bridges (Table 4). The earnings rate peaked in the first year of participation (69 percent) then dropped in succeeding years because of staggered enrollment. This earnings pattern was not unexpected, given the participants' age range and the timing of program services. Five years after enrollment, almost one-half (44 percent) of clients earned at least $1,020.[12] Among those youths, average earnings 5 years after enrollment were over $9,300.

Among participants who received SSI or DI benefits, 56 percent reported earnings to SSA while enrolled in Bridges (Table 5). Additionally, 58 percent used SSA's work incentives or the YTD waivers. The number of clients using the work incentives could exceed that of clients reporting earnings because not all work incentives required actual work. Of all work incentives and waivers, the general earned income exclusion (GEIE) waiver was the most commonly used (39 percent), although a combined 42 percent used the student earned income exclusion (SEIE), either as the standard incentive (26 percent) or the YTD waiver (16 percent).

MYTI

MYTI originally proposed to serve 319 students, but the goal was adjusted after Hurricane Katrina hit the project area in August 2005; ultimately, MYTI served 184 youths with verified SSNs. MYTI served more males than females (Table 2), 61 percent versus 39 percent.

Participating schools were to provide transition services that included exposure to work experiences for special-education students. MYTI's objectives included enabling participants to reach short-term outcomes such as high school completion or enrollment in postsecondary education. Some students pursued a Mississippi "occupational diploma," which has employment requirements. Over the course of the project, 61 participants received a certificate of completion;[13] 20 received an occupational diploma; 3 pursued a general equivalency diploma (GED), which 2 had attained by the time we compiled our data; and 2 obtained certified nursing assistant certificates (not shown).

Table 4.
Clients with earnings, by project and years before or after enrollment

Project and years before or after enrollment	Clients with any earnings					Clients with earnings of $1,020 or more				
	Number	Percent	Standard error	Mean earnings [a]	Standard error	Number	Percent	Standard error	Mean earnings [a]	Standard error
Bridges										
-2	495	32.3	2.1	741	102	71	14.3	1.6	4,667	506
-1	495	43.6	2.2	1,063	114	101	20.4	1.8	4,782	375
0	495	60.4	2.2	1,561	128	158	31.9	2.1	4,500	282
1	494	69.2	2.1	2,247	185	170	34.4	2.1	6,183	385
2	494	65.4	2.1	2,440	214	171	34.6	2.1	6,769	462
3	423	57.0	2.4	3,029	251	169	40.0	2.4	7,383	455
4	357	60.8	2.6	1,658	253	57	16.0	1.9	10,064	1,018
5	248	58.5	3.1	4,127	413	108	43.5	3.2	9,358	670
MYTI										
-2	184	b	b	b	b	b	b	b	b	b
-1	184	b	b	b	b	b	b	b	b	b
0	184	15.2	2.7	216	76	10	5.4	1.7	3,236	1,023
1	184	23.4	3.1	441	160	16	8.7	2.1	4,747	1,495
2	184	26.1	3.2	746	176	26	14.1	2.6	5,129	841
3	132	19.7	3.5	555	141	16	12.1	2.9	4,212	635
4	77	28.6	5.2	786	393	b	b	b	b	b
5	36	30.6	7.8	664	260	b	b	b	b	b

SOURCE: Authors' calculations based on Social Security administrative record extracts.

NOTE: The $1,020 threshold represents the sum of earnings an individual can earn in a year, applying both the general ($20) and earned ($65) income exclusions, that can be disregarded from countable income under SSI program rules.

a. In 2010 dollars.

b. Suppressed because of small sample size (less than 2 percent of sample; fewer than 10 individuals).

Table 5.
YTD client use of SSA work incentives and waivers (in percent)

Incentive	Bridges	MYTI
Positive earnings (reported to SSA)	56.1	30.0
Any SSA work incentive or YTD waiver	57.8	38.8
SEIE (standard incentive)	25.7	15.0
SEIE (YTD waiver)	16.2	3.8
IDA	0.3	20.0
GEIE waiver	39.4	21.3
PASS (standard incentive)	2.2	0.0
PASS (YTD waiver)	30.0	0.0
Continuing Disability Review/Age-18 redetermination (Section 301)	2.2	8.8

SOURCE: Martinez and others (2010).

NOTES: The sample sizes are 358 for Bridges and 80 for MYTI. Because these samples comprise only SSI recipients and DI beneficiaries in 2003–2008, they differ from those in the article's other tables.

PASS = plan to achieve self-support.

MYTI staff helped youths obtain employment experiences as they moved through the project's four service phases. Overall, 27 percent of youths completed Phase I, as shown in the tabulation below; however, the majority of youths were served in Phase II (63 percent). About 20 percent of the youths were served in each of Phases III and IV.

MYTI phase	Clients served (%)
Phase I: ages 10–13	26.7
Phase II: ages 14–18	63.0
Phase III: ages 19–21 [a]	19.4
Phase IV: ages 22–25 [a]	20.0

SOURCE: MYTI management files.

NOTE: Youths advanced their career development by going to the next phase at the appropriate age. Because youths are counted in each phase of the project in which they participated, percentages sum to more than 100.

a. Phases II and IV represent community-based transition services.

The percentage of youths served by MYTI who were SSI or DI recipients was higher than that for Bridges (Table 3). At the time of enrollment, over 68 percent of MYTI participants received either SSI or DI. The majority of these youths (66 percent) received SSI, 10 percent received DI, and 8 percent received both. Twelve percent were receiving DI benefits on their own record as workers at the end of the project.

MYTI youths were less likely than Bridges clients to have positive earnings after enrollment (Table 4). In the year of enrollment, 15 percent of MYTI youths had earnings; after 5 years, 31 percent had earnings. Few youths earned more than $1,020 in any year, which is not surprising given that MYTI participants were generally younger than Bridges participants; however, among those who earned more than $1,020 three years after enrollment, average earnings exceeded $4,200.

As the first project to establish IDAs, MYTI provided a model for incorporating IDAs into other YTD projects (Martinez and others 2008). Twenty percent of MYTI youth receiving SSI or DI benefits enrolled in an IDA to either buy a home or start a business (Table 5). Participants with an IDA deposited their earnings in a savings account, met with a benefits counselor, and attended financial literacy classes. Overall, 39 percent of MYTI youths who were SSI recipients or DI beneficiaries used a work incentive or waiver between 2003 and 2008. The most commonly used was the GEIE waiver (21 percent), followed closely by IDAs.

Case Studies

The following case studies illustrate how Bridges and MYTI each helped one of their YTD participants achieve educational and employment outcomes, reducing reliance on disability benefits. Although all local sites within each project had successful participants, the highlighted youths come from the Whittier, California and Jackson County, Mississippi sites. Their names have been changed to preserve their anonymity.

Bridges

Roberto, who has cerebral palsy, enrolled in Bridges at age 24. A recent high school graduate, Roberto came to the Whittier Union High School District's

Employment Network (EN) because, as an SSI recipient, he had received a Ticket under the Ticket-to-Work program and hoped the EN could help him find a job.[14] Ultimately, the EN staff determined he was a good candidate for the Bridges project. Bridges staff met with Roberto and his family to identify his interests and the skills he could bring to a job. During a person-centered planning session, Roberto suggested seeking a job that would use his computer, organizational, and communication skills. To assist him, Bridges provided benefits counseling, job development and placement services, and intensive service coordination.

Bridges staff helped Roberto find a job as a customer service representative at a closet design company. His duties include receiving phone calls from customers who wish to place an order or schedule a renovation. Bridges staff explained to Roberto how earnings would affect his benefits and how to report wages to SSA. While he participated in Bridges, Roberto used the $3-for-$4 GEIE waiver to substantially reduce his countable earnings. He also attended a local community college where he took general education, computer science, and other courses.

Roberto continued receiving benefits counseling and employment services from Bridges staff after exiting the YTD program by assigning his Ticket to Bridges as his EN. He identified a teleservice center position at SSA as his employment goal in a follow-up person-centered planning session.

MYTI

Isabella, who has an intellectual disability, enrolled in MYTI at age 19. In a vocational class at her Jackson County high school, she exhibited strong interest and aptitude in industrial arts. Isabella developed a love for woodworking from industrial arts class and working after school in her uncle's workshop, where she helped him sand, stain, repair, and refinish cabinets. Her teacher and transition specialist met with Isabella and her family to develop customized employment opportunities that matched her interests and abilities. During a planning meeting, Isabella expressed interest in finding full-time work that involved tasks in woodworking or the building trades. In class and at her uncle's cabinet shop, she displayed cooperative work habits, a willingness to learn new tasks, dependability, punctuality, teamwork, and ability to follow rules.

MYTI's transition specialist presented Isabella's portfolio to a lumber and supply company that employed over 500 workers. She was hired for full-time work with benefits, and an experienced coworker trained her. In the first year of employment, MYTI staff assisted her in learning new job tasks, and helped her to complete continuing education courses and general activities at the community college. As a full-time student younger than 22, Isabella used the standard SEIE incentive to exclude her earnings from countable income. In addition, while enrolled in MYTI, Isabella used the GEIE $3-for-$4 waiver once her earnings exceeded the SEIE exclusion maximum; doing so substantially reduced her countable earnings.

With help from MYTI's benefits specialist, Isabella opened an IDA to save toward purchasing a home and began attending financial literacy classes. In addition, Isabella regularly talked with the benefits specialist about her finances. They discussed work incentives, YTD waivers, and monthly wage reporting. The benefits specialist also taught Isabella how to keep track of her paystubs and SSI payments. Because of her increase in earnings, her SSI payments stopped. Isabella achieved her goal of full-time employment.

Sustainability

Both projects continued to implement some aspects of their services after YTD funding ended. In this section we highlight select activities in each project that demonstrate the longer-term system changes made possible by YTD.

Bridges

SSA funding for Bridges as a YTD project ended in 2008.[15] Since then, Bridges has sought other funding to continue providing project services. Staff identified several potential resources and applied for multiple grants to ensure continued service. Several sites have also become private nonprofit agencies to increase the scope of grants for which they can compete. Their efforts have included participation in the 2009 American Recovery & Reinvestment Act's Summer Youth Employment Program in partnership with the local Workforce Investment Boards.

The Bridges YTD experience encouraged seven school districts in California to become ENs in the Ticket to Work program. The ENs can serve clients aged 18 and older. The EN income enables the sites to sustain the additional activities without YTD funds from SSA. For example, Career Connection, a part of the Whittier Union High School District, has been an EN since 2003. Since Bridges services ended, 22 YTD youths have assigned their Tickets to Career

Connection for additional employment supports at their former high school, enabling service continuity and uninterrupted partnerships with educators.

The Whittier Union High School District and a consortium comprising three other school districts have received Projects with Industry[16] grants to continue to provide some services to Bridges participants. The consortium districts have also received US Department of Transportation grants to provide transportation options in rural areas and at nontraditional public transportation hours. Each of the sites has also been able to expand its Transition Partnership Project to include benefits advice and service coordination for youths with mental health conditions.

MYTI

The MYTI project sought to identify post-YTD services to be sustained and to build skills related to employability. The local school districts adopted many of the interventions implemented in the project, such as the use of transition phases and customized employment strategies. Although the school districts and MDRS no longer have SSA funding, they still offer those services in different ways: Each MYTI staff member was either retained to provide ongoing project services within an agency or school, or was hired for other positions that would offer similar services.

Although other schools are using MYTI services, it has not yet been determined if they are including them in their performance standards. In conjunction with the University of Southern Mississippi, the Jackson County School District hosted a conference to share its transition services with approximately 20 other schools, mostly in Mississippi, but also from Kentucky and Florida.

In MYTI's last year, the Jackson County School District created a team of five transition specialists to provide MYTI-style services for both the school district and the vocational rehabilitation transition program. Transition team members were assigned to four geographic areas of the county; one person visited each high school while two of the transition specialists provided services in a MYTI-established "community classroom." After MYTI concluded, these services continued at local school districts and MDRS offices in a program jointly funded by MDRS and the state education department.

Local Workforce Investment Network (WIN) job centers offered youths a set of activities during teacher-led tours of the centers. Both the Pascagoula and Gulfport centers welcomed students during the years MYTI operated. This connection will continue while teachers have the funds to offer field trips for their students; however, job center usage will vary by school district. Mentoring, established in MYTI's final year in Jackson County, has been included in students' school plans, and availability has expanded to include students at risk of dropping out. At the superintendent's request, peer mentoring has continued in Jackson County using guidelines established under MYTI. The Harrison County School District also developed a mentoring program while participating in MYTI and has continued some form of mentoring through a new program in targeted schools that connects students with caring adults or peers.

Discussion and Conclusions

The Bridges and MYTI projects implemented enhanced transition services and used YTD waivers of SSA program rules to help youths achieve education and employment goals. From December 2003 to September 2009, Bridges and MYTI staff provided youths with (1) the support to find and keep a job; (2) information on employment's effects on Social Security benefits; and (3) first steps toward building the capacity for long-term competitive employment.

Bridges staff directly provided over 80 percent of the youth participants with employment services, service coordination, and benefits counseling. After 5 years, almost 60 percent of Bridges participants had earnings. MYTI served younger clients with more significant disabilities; 39 percent received community-based transition services (Phase III and IV) and 31 percent had earnings after 5 years.

Although the statistics reflect many successes, the projects were too short to yield long-term findings. The short-term accomplishments of Bridges and MYTI youths may lead them, perhaps many years later, to leave (or never enroll in) SSI or DI. SSA plans to follow YTD participants for longer periods to detect any lasting impacts on SSI or DI receipt and earnings. Over the next several years, SSA intends to publish reports on short- and long-term impacts.

To date, Bridges and MYTI have offered several lessons on successful service implementation. One lesson is that strong partnerships are instrumental in successfully serving youth in transition. The Bridges and MYTI projects built upon existing transition programs to demonstrate how a variety of services from multiple partners can effectively coalesce. Another lesson is

that intervention components should be clearly defined and linked to measurable outcomes, which should be monitored to ensure a consistent focus on program goals. At the outset of the Bridges and MYTI projects, staff used a management information system to record the demographics, services provided, and action plans for each youth; this system allowed staff to identify accomplishments incrementally. A third lesson is that support services (such as case management, benefits counseling, and self-determination) provided in conjunction with employment services can produce successful employment outcomes. Benefits counseling enabled MYTI participants to learn about the IDA and then, while in high school, use the IDA and attain financial literacy. In this regard, the YTD has confirmed how beneficial asset development accounts can be to low-income individuals.

Lastly, the YTD projects developed and implemented practices to support postsecondary education and employment. Apart from the waivers, which increased the incentives for employment and savings among SSI recipients, Bridges and MYTI created a system that provided direct delivery and service coordination in the school system. Although that change is directly attributable to the Bridges and MYTI projects, and can potentially eliminate a significant barrier to work for many young SSI recipients, it does not necessitate a change to SSA policy. By breaking down the silos in which different agencies work, SSA and its community partners in YTD sites were able to substantially change the transition process and dramatically affect beneficiaries' lives.

Although the outcomes reported in this article are not causal, they do suggest that youth with disabilities can enter the workforce and achieve some self-sufficiency. SSA continued the YTD project in six other sites that implemented a random-assignment research design. Youths participating in those sites receive the same waivers and similar services as those in Bridges and MYTI (for more information on those sites, see Fraker and Rangarajan 2009). The final results from those six sites, available in 2014, will provide a deeper context for the Bridges and MYTI results reported here.

Notes

Acknowledgments: The authors are grateful to Richard Balkus, Susan Wilschke, MJ Pencarski, Joyanne Cobb, and Rene Parent for their comments on earlier versions of this article. The authors thank the California Department of Rehabilitation and the Mississippi Department of Rehabilitation Services for providing us with the data we used in our analysis.

[1] Most youths are eligible for a variety of education-based disability services until they reach age 22 or receive a high school diploma.

[2] SSA redetermines SSI eligibility when a child recipient attains age 18. In addition, all recipients are subject to periodic continuing disability reviews to ensure they still meet the disability standards for eligibility.

[3] This estimate, although still the best available, is somewhat dated. The diagnosis mix for SSI child recipients has changed since the study was conducted and numerous policy changes, such as establishing age-18 redeterminations, have occurred. It is not clear how these and other changes may have affected average time on the program.

[4] See Martinez and others (2008) for information on the other YTD sites. We focus on Bridges and MYTI because six of the remaining eight projects used random-assignment designs and will be formally evaluated by Mathematica Policy Research, Inc.; see Fraker and Rangarajan (2009) for more information on that evaluation. The other two projects terminated before completion.

[5] SSI is a means-tested cash transfer program for the elderly and for individuals with disabilities. DI is an insurance program for individuals with disabilities and their dependents. SSI and DI use the same definitions of disability for adults: The individual must have a medically determinable disability that is expected to last (or has lasted) at least 12 continuous months or to result in death and prevents him or her from doing any substantial gainful activity. To be eligible for SSI if younger than 18, the individual's disability must result in marked and severe functional limitations (as opposed to preventing substantial gainful activity). To receive DI benefits, an individual must be insured by accumulating a certain level of lifetime earnings called quarters of coverage or be the dependent of someone who has accrued enough quarters or coverage. SSI has no work history requirement.

[6] Those techniques are used to help youths discover their interests. For example, a youth may create a portfolio with information and images about potential careers and other goals.

[7] MYTI participants and staff describe their experiences with customized employment at http://www.dol.gov/dol/media/webcast/20110610-odep-ce/.

[8] The benefits counselor was based at a local One Stop Service Center. Such centers were established under the Workforce Investment Act of 1998 to provide employers and job seekers with mutual access to workforce services.

[9] Regional occupational programs are public education programs that provide hands-on career preparation and skill training for particular jobs.

[10] The verification process involved checking the name, date of birth, sex, and SSN reported to the project. Unverified SSNs may still be legitimate, and having one did not disqualify a youth from participating in YTD. However, we excluded youths with unverified SSNs from this study because their SSNs would not match their actual program history or earnings. The youths also had to be enrolled in or after 2003 to be included in these analyses.

[11] Although most YTD projects are limited to youths aged 14–25, the earliest projects, such as Bridges, served a broader age range.

[12] The $1,020 threshold represents the sum of the monthly earnings an individual can earn in a year (applying both the $20 general and the $65 earned income exclusions in each of the 12 months) that can be disregarded from countable income under SSI program rules. Although the values relevant to calculating SSI payments can vary from month to month, extracts of earnings data are only available on a yearly basis. So, although this "annualized" amount does not directly correspond to any programmatic value, it provides a useful approximation of earnings received.

[13] The Mississippi Department of Education issued a special diploma stating that a client successfully completed an individualized education plan.

[14] The Ticket-to-Work program is a free, voluntary program for Social Security and SSI recipients with disabilities. Participants can assign their tickets to one of several types of approved organizations (including ENs) that have agreed with SSA to provide employment services. The EN receives payment from SSA when the beneficiary meets specific employment goals.

[15] Bridges operated under a no-cost extension through September 2009.

[16] Projects with Industry is a US Department of Education program that provides grants for job development, placement, career advancement, and training for individuals with disabilities.

References

[CDOR] California Department of Rehabilitation. 2009. *Bridges to Self-Sufficiency. Bridges Youth Transition Demonstration Grant Final Report.* Sacramento, CA: CDOR.

Fraker, Thomas, and Anu Rangarajan. 2009. "The Social Security Administration's Youth Transition Demonstration Projects." *Journal of Vocational Rehabilitation* 30(3): 223–240.

[GAO] Government Accountability Office. 2009. *Higher Education and Disability: Education Needs a Coordinated Approach to Improve Its Assistance to Schools in Supporting Students.* GAO-10-33. Washington, DC: GAO.

Loprest, Pamela J., and David C. Wittenburg. 2005. "Choices, Challenges, and Options: Child SSI Recipients Preparing for the Transition to Adult Life." Washington, DC: The Urban Institute.

Martinez, John, Thomas Fraker, Michelle Manno, Peter Baird, Arif Mamun, Bonnie O'Day, Anu Rangarajan, and David Wittenburg. 2010. *The Social Security Administration's Youth Transition Demonstration Projects: Implementation Lessons from the Original Projects.* Washington, DC: Mathematica Policy Research, Inc.

Martinez, John, Michelle S. Manno, Peter Baird, Thomas Fraker, Todd Honeycutt, Arif Mamun, Bonnie O'Day, and Anu Rangarajan. 2008. *The Social Security Administration's Youth Transition Demonstration Projects: Profiles of the Random Assignment Projects.* Washington, DC: Mathematica Policy Research, Inc.

Rupp, Kalman, and Charles G. Scott. 1995. "Length of Stay on the Supplemental Security Income Disability Program." *Social Security Bulletin* 58(1): 29–47.

[SSA] Social Security Administration. 2012. *SSI Annual Statistical Report, 2011.* SSA Publication No. 13-11827. Washington, DC: SSA.

Psychosocial Factors and Financial Literacy

by John L. Murphy*

This study uses data from the Health and Retirement Study (HRS) to analyze the psychological and social variables associated with financial literacy. The HRS is a nationally representative longitudinal survey of individuals older than age 50 and their spouses. An ordinary least squares linear regression analysis explores the relationship between financial literacy and several economic and psychosocial variables. After controlling for earnings, level of education, and other socioeconomic variables in this exploratory study, I find that financial satisfaction and religiosity are correlated with financial literacy.

Introduction

For much of the 20th century, most US pensions were defined benefit plans in which workers received retirement benefits based on a formula that included earnings, years of service, and final salary as inputs. However, over the last several decades, there has been a well-documented trend away from defined benefit plans toward defined contribution plans, in which an employee's retirement income depends on contributions to the plan along with the investment earnings on those contributions (Butrica and others 2009). Current workers increasingly must decide how much to contribute to retirement plans and how to invest plan contributions. Thus, today's workers require greater financial sophistication to manage their retirement savings. By understanding which personal characteristics are associated with financial literacy, policymakers may target limited education resources to individuals with psychosocial traits that indicate risk for low financial literacy and insufficient retirement planning.

Although financial literacy is vital to retirement preparation, a number of studies have shown that Americans generally lack adequate financial knowledge. The economic and demographic factors that influence financial well-being and sophistication have been relatively well studied (Ariel/Hewitt 2009; Lusardi 2008; Lusardi and Mitchell 2006, 2007a, 2007b, 2007c; Lusardi and Tufano 2009). However, few studies have looked beyond these characteristics to examine the correlation between psychosocial variables and financial literacy.

This study uses ordinary least squares (OLS) linear regression analysis to assess the correlation between financial literacy, as measured in the 2006 Health and Retirement Study (HRS), and variables representing financial satisfaction, hopelessness, and religiosity, while controlling for other important characteristics. Research has discovered theoretical associations between those variables and financial literacy but they remain underexplored. This study's results indicate financial satisfaction and religiosity are both significant independent predictors of financial literacy. Using these findings to target financial education may improve its efficacy and in turn improve long-term retirement security.

Background

The relationship between psychosocial factors and financial literacy is a promising research area. A growing body of literature suggests that these factors may explain a great deal of variation in other components

Selected Abbreviations

HRS	Health and Retirement Study
OLS	ordinary least squares

* *John Murphy is with the Office of Retirement Policy, Office of Retirement and Disability Policy, Social Security Administration.*

of financial well-being and behavior. For example, analyses have shown that variables such as future time perspective and retirement goal clarity may explain some of the variation in retirement preparation and security (Glass and Kilpatrick 1998; Groffen and others 2009; Hershey and others 2007; Hershey and Mowen 2000; Howlett, Kees, and Kemp 2008).

This article focuses on three psychosocial elements that can be examined in the HRS: financial satisfaction, hopelessness, and religiosity. Although research has seldom specifically addressed those variables in the context of financial literacy, previous work does illuminate several potential pathways through which those elements may interact. Although this article explores whether financial satisfaction, hopelessness, and religiosity are significantly related to financial literacy, causal directions are not examined.

Financial Satisfaction

Existing research generally hypothesizes that financial satisfaction is an outcome of financial literacy. In this construct, greater financial literacy improves financial satisfaction by helping individuals develop the skills necessary to meet large expenses, develop savings goals, save money, control finances, and estate-plan (Loibl and Hira 2005; Mezias 1994; Walker 1996).

However, some research suggests that financial dissatisfaction fosters greater financial literacy over time. Financial stressors can be psychologically deleterious and create financial dissatisfaction (Holmes and Rahe 1967; Krause, Jay, and Liang 1991; Price, Choi, and Vinokur 2002; Warr and Jackson 1985). The anxiety and trauma engendered by financial dissatisfaction takes a detrimental psychological toll and may, over time, encourage individuals to become more financially literate so that they can improve their financial and psychological situations (Folkman and others 1986; Liem and Liem 1988; Ullah 1990; Walker 1996).[1]

Hopelessness

Research on hopelessness has underscored its negative effects on various components of financial behavior and well-being. For example, Brown (2011) finds that persons with depression and feelings of hopelessness held more debt and had less wealth at retirement. Brown advises providing such persons with financial education to protect against retirement insecurity. Other work indicates depression and hopelessness diminish financial status (Montgomery and others 2007), retirement security (Lamberg and others 2010), and financial planning (Zivin and others 2009).

The Diagnostic and Statistical Manual of Mental Disorders (DSM IV-TR) defines several criteria for depression. They include depressed or hopeless mood, decreased interest in activities, and inability to concentrate or be decisive (APA 2000; Price, Choi, and Vinokur 2002). The inability to concentrate may impede financial literacy, which requires considerable thought and retention. In addition, those who feel that their retirement goals are beyond reach may have no incentive to work to become more financially knowledgeable.

The relationship between hopelessness and financial literacy may also run in the opposite direction, with poor financial literacy leading to an increased feeling of hopelessness. The theory of "learned helplessness" posits that inescapable events diminish people's motivation to change their situation (Dweck 1975; Diener and Dweck 1980; Hiroto and Seligman 1975; Maier and Seligman 1976). Learned helplessness has been widely studied and accepted, and although it has not been applied to retirement security or financial decision-making, one can reasonably assume that less financially literate individuals may have more difficulty advancing financially and may thus lose hope that they can affect their financial position.

Religiosity

Religion is a powerful influence on human behavior and previous research has identified a variety of factors associated with religiosity that may ultimately affect financial literacy. For example, Avants and others (2003) indicate that those who are more religious may be more likely to take risks, as they have a greater faith that a higher being will provide for them. In addition, some individuals, for cultural or religious reasons, may expect family support at retirement and thus feel less need to prepare for retirement (Barnes and Taylor 2006). These characteristics appear to reduce the perceived need for financial literacy among religious individuals.

However, other factors suggest that religiosity could positively affect financial literacy. Renneboog and Spaenjers (2009) find a positive relationship between religion and savings among the Dutch, and suggest that religious teachings encouraging thrift could be an important factor. Additionally, a number of churches have begun to provide financial education. They play

an important role in augmenting their members' financial literacy and self-management (*USA Today* 2010) and provide an informal source of financial information in their communities (Olsen and Whitman 2007). Thus, religiosity may be correlated with increased access to financial education.

Past research illustrates the theoretical basis for correlating financial satisfaction, hopelessness, and religiosity with financial literacy through multiple mechanisms. This article explores the linkages between the psychosocial variables and financial literacy. However, determining whether those relationships are positive or negative will require further work.

Data

This study uses data from the HRS, a nationally representative survey of individuals older than age 50 and their spouses. The HRS is funded primarily by the National Institute on Aging and the Social Security Administration and is conducted by the University of Michigan. It is an ongoing biennial longitudinal study that began in 1992. This article focuses on the 2006 wave, which represents the most recent year for which data on all psychosocial variables of interest are available.

Beginning in 2004, the HRS included a module focusing on respondents' psychological well-being called the Psychosocial Leave-Behind Questionnaire. The module was randomly administered to approximately half of the participants who completed a face-to-face core survey in that wave. For the 2006 wave, 8,568 respondents were eligible for the questionnaire and 7,635 completed it. The module measures constructs such as social support, sense of control, religiosity, personality, chronic stressors, and financial satisfaction. The module was merged with the HRS core data to produce results for a total of 7,521 respondents. That sample was then merged with the HRS financial literacy module, which consists of 1,155 respondents. Thus, the final sample comprises 1,155 respondents after merging all three data files. Analyses performed on the psychosocial module sample (7,521 respondents) and the financial literary sample (1,155 respondents) disclosed no significant demographic differences.

Table 1 describes the demographic characteristics of the sample. Women are a greater share of the sample than of the general population, likely because men older than 50 have higher mortality rates than women, and the HRS restricts its sampling frame to Americans older than 50.

Dependent Variable

This study's variable of interest is financial literacy. Researchers have yet to agree on a conceptual or operational definition of financial literacy (Hung, Parker, and Yoong 2009), and many studies have no conceptual definition at all (Huston 2010). This study defines financial literacy as "the ability to use knowledge and skills to manage one's financial resources effectively for lifetime financial security" (JumpStart 2007) and uses the HRS first generation financial literacy measure, which is based on responses to three questions that assess the respondent's knowledge of compound interest, inflation, and stock risk:

1. Do you think that the following statement is true or false?: Buying a single company stock usually provides a safer return than a stock mutual fund.
2. Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow: more than $102, exactly $102, less than $102?
3. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, would you be able to buy more than, exactly the same as, or less than today with the money in this account?

Table 1.
Sample characteristics

Variable	Number	Percent
Race		
White	933	81
Black	158	14
Other	64	5
Sex		
Women	696	60
Men	459	40
Hispanic origin		
Yes	100	9
No	1055	91
Marital status		
Single	454	39
Married	701	61

SOURCE: 2006 HRS.

NOTE: Sample size = 1,155.

The HRS first generation financial literacy measure has been used often in the literature (Lusardi and Mitchell 2006) and has an acceptable Cronbach Alpha reliability coefficient.[2] The scale is an ordinal-level index where each correct answer is scored as a single point. A respondent may receive a maximum of one point for each correctly answered question; thus, with three questions, the index ranges from 0 to 3, with higher values indicating greater financial literacy.

Independent Variables

This study employs eight independent variables.

Religiosity. A four-item ordinal-level scale measures religious beliefs and values. Respondents are asked the extent to which they agree with the following statements:

1. I believe in a God who watches over me.
2. The events in my life unfold according to a divine or greater plan.
3. I try hard to carry my religious beliefs over into all my other dealings in life.
4. I find strength and comfort in my religion.

Possible responses for each item range from 1 (strongly disagree) to 6 (strongly agree). The religiosity index is created by averaging the scores across all four items, with higher scores representing greater religiosity.[3]

Financial satisfaction. A two-item ordinal-level questionnaire measures respondents' financial satisfaction:

1. How satisfied are you with (your/your family's) present financial situation?
2. How difficult is it for (you/your family) to meet monthly payments on (your/your family's) bills?

The responses range from 1 to 5 with higher values indicating more financial satisfaction (less strain). For question one, possible responses range from 1 (not at all satisfied) to 5 (completely satisfied). For question two, possible responses range from 1 (not at all difficult) to 5 (completely difficult). In the first question, higher values represent greater satisfaction; however, for the second question, higher scores represent less satisfaction. Consequently, the second question is reverse-coded so both indicators are parallel. The financial satisfaction index is created by averaging the results for the two questions.[4]

Hopelessness. Four statements provide the basis for an ordinal-level self-reported index:

1. I feel it is impossible for me to reach the goals that I would like to strive for.
2. The future seems hopeless to me and I can't believe that things are changing for the better.
3. I don't expect to get what I really want.
4. There's no use in really trying to get something I want because I probably won't get it.

Possible responses for each statement range from 1 (strongly disagree) to 6 (strongly agree). The hopelessness scale is created by averaging responses to the four statements; higher values represent stronger feelings of hopelessness.[5]

Earnings. This continuous variable reflects self-reported total earnings in 2006 for respondents in the 2006 wave of the HRS.[6]

Age. This continuous variable is based on respondent self-reports.

Education. This continuous variable reflects the respondent's self-reported highest level of education. For example, 12 years means the respondent completed high school, and 14 years indicates that the person completed 2 years of postsecondary study.

Marital Status. For this categorical variable, a respondent is either single (comprising divorced, widowed, separated, and never married) or married and living together in 2006.

Work Status. This categorical variable, indicating whether the respondent was currently working in 2006, was used in part to control for persons who have zero earnings because of retirement as opposed to other reasons (such as child rearing or midcareer retraining).

Statistical Methods

This exploratory study uses an OLS linear regression analysis to explore the relationship between financial literacy and several economic and psychosocial variables. OLS analysis focuses on the effect of three independent variables (financial satisfaction, hopelessness, and religiosity) on a single outcome variable (financial literacy). Common demographic and economic variables (age, earnings, ethnicity, sex, marital status, race, and education) are included as controls.

Results

Table 2 presents the mean scores of variables of interest by demographic characteristics. In general, whites, men, non-Hispanics, and married people tended to have better economic and psychosocial outcomes than blacks, women, Hispanics, and single people. Those data parallel findings from other literature (Danigelis and McIntosh 2001; Dietz, Carrozza, and Ritchey 2003; Glass and Kilpatrick 1998; Lusardi 2008; Lusardi and Mitchell 2006, 2007a, 2007b; Lusardi and Tufano 2009).

The relationship between the independent variables and the dependent variable was investigated using the accepted statistical standard for the type of data used in this study, the Pearson product-moment correlation coefficient. Preliminary analyses ensured no violation of the assumptions of normality and linearity. As Table 3 shows, education had the highest correlation with financial literacy ($r = 0.35$, $p < .0001$), followed by age, earnings, hopelessness, religiosity, and financial satisfaction. Hopelessness was negatively and significantly correlated with years of education. In addition, older respondents felt more hopeless. Financial satisfaction was higher among persons with higher education and lower among those with less education. Financial satisfaction also correlated with age, as older respondents tended to have higher financial satisfaction than younger ones. Additionally, those with higher levels of education tended to be less religious, and education was negatively correlated with age.

The sample in the OLS regression model was initially restricted to persons with current work earnings; however, the limited number of respondents made the model too unstable. Because this sample is older and many respondents no longer have labor-market income, the work-status variable was added to determine if there are differences between respondents who work and those who do not.

Discussion

The regression results (Table 4) indicate that age, education, race, and sex were significant predictors of financial literacy. These results parallel the findings

Table 2.
Sample means and standard deviations

Characteristic	Age (years)	Education (years)	Earnings ($)	Financial satisfaction [a]	Hopelessness [b]	Religiosity [c]	Financial literacy [d]
Men	68.20	13	17,996	3.64	2.40	4.84	2.17
	(10.29)	(3)	(86,419)	(0.59)	(0.84)	(1.03)	(0.89)
Women	68.00	12	9,686	3.60	2.40	5.07	1.81
	(11.55)	(3)	(23,113)	(0.64)	(0.87)	(0.82)	(0.99)
Black	67.00	11	12,162	3.50	2.45	5.08	1.71
	(10.00)	(4)	(26,445)	(0.56)	(0.79)	(0.78)	(0.92)
White	68.60	13	18,744	3.66	2.38	4.80	2.25
	(10.23)	(3)	(94,707)	(0.59)	(0.85)	(1.07)	(0.86)
Hispanic	65.94	9	13,205	3.52	2.61	5.09	1.72
	(10.21)	(5)	(25,252)	(0.56)	(0.91)	(0.65)	(1.00)
Non-Hispanic	68.00	13	18,471	3.65	2.37	4.82	2.22
	(10.27)	(3)	(90,237)	(0.59)	(0.83)	(1.06)	(0.86)
Married	67.00	13	20,267	3.65	2.37	4.84	2.22
	(9.78)	(3)	(96,419)	(0.58)	(0.84)	(1.04)	(0.86)
Single	71.00	12	9,726	3.58	2.49	4.84	2.00
	(11.47)	(4)	(27,025)	(0.59)	(0.84)	(1.04)	(0.86)

SOURCE: Author's calculations based on 2006 HRS.

NOTE: Sample size = 1,155. Standard deviations shown in parentheses.

a. Index ranges from 1 to 5; higher scores indicate greater satisfaction (or less strain).

b. Index ranges from 1 to 6; higher scores indicate stronger feelings of hopelessness.

c. Index ranges from 1 to 6; higher scores indicate greater religiosity.

d. Index ranges from 0 to 3; higher scores indicate greater literacy.

Table 3.
Summary of correlations of study variables

Variable	Age	Earnings	Hopeless-ness	Religiosity	Financial satisfaction	Financial literacy	Mean [a]	Standard deviation [a]
Education	-0.22***	-0.21***	0.28***	-0.09***	0.06*	0.35***	12.40	3.25
Age	…	-0.35***	0.08*	0.05	0.14***	-0.22***	68.03	11.05
Earnings	…	…	-0.12***	-0.07*	0.03	0.20***	13,095	58,266
Hopelessness	…	…	…	0.01	-0.26***	-0.17***	2.34	0.85
Religiosity	…	…	…	…	-0.05	-0.12***	4.97	0.93
Financial satisfaction	…	…	…	…	…	0.07*	3.61	0.61
Financial literacy	…	…	…	…	…	…	1.96	0.97

SOURCE: Author's calculations based on 2006 HRS.

NOTE: Sample size = 1,155.

... = not applicable.

* = statistically significant at the 5 percent level; ** = statistically significant at the 1 percent level; *** = statistically significant at the .01 percent level.

a. Education and age values shown in years; earnings values shown in dollars. Hopelessness and religiosity indexes range from 1 to 6; higher values indicate stronger feelings of hopelessness and greater religiosity, respectively. Financial satisfaction index ranges from 1 to 5; higher values indicate greater satisfaction (or less strain). Financial literacy index ranges from 0 to 3; higher values indicate greater literacy.

Table 4.
Ordinary least square regression with financial literacy as dependent variable

Variable	Coefficient	Standard error	Mean [a]	Standardized coefficient
Intercept	3.35*	0.53	…	…
Age	b	b	68.03	-0.23
Education	0.02***	0.01	12.40	0.22
Sex	-0.07*	0.03	…	-0.12
Race	-0.06*	0.03	…	-0.14
Financial satisfaction	0.08**	0.03	3.61	0.10
Hopelessness	-0.09	0.02	2.34	-0.12
Religiosity	-0.03*	0.02	4.97	-0.09
Hispanic origin	0.13*	0.05	…	-0.15
Work status	b	0.04	…	0.01
Marital status	0.04	0.03	…	-0.02
Earnings	0.00	0.00	13,095	0.00

SOURCE: Author's calculations based on 2006 HRS.

NOTES: Sample size = 1,148.

... = not applicable.

* = statistically significant at the 5 percent level; ** = statistically significant at the 1 percent level; *** = statistically significant at the .01 percent level.

a. Continuous variables only. Age and education values shown in years; earnings value shown in dollars.

b. Between -0.005 and 0.005.

of many other researchers. However, two previously unexamined psychosocial variables were also found to correlate with financial literacy. Specifically, financial satisfaction and religiosity were both significant independent predictors of financial literacy even after controlling for other variables.

Financial satisfaction was positively correlated with financial literacy. Each one-unit increase in financial satisfaction (range of 1 to 6) was associated with a 0.08 increase in financial literacy (range of 0 to 3). By contrast, the impact of religiosity on financial literacy was negative and less pronounced. Each one-unit increase in religiosity (range of 1 to 6) was associated with a 0.03 decrease in financial literacy. Hopelessness was not significantly correlated with financial literacy.[7]

These findings have broad implications. Although this study makes no proclamation of causality, it does suggest financial literacy has some association with religiosity and financial satisfaction. As a practical matter, the findings may affect strategies for improving financial literacy. It is important to target financial literacy campaigns to maximize the impact of limited education resources.

Although this study offers theoretical frameworks to explain how financial satisfaction, religiosity, and hopelessness may impact financial literacy, it does not test those theoretical pathways unless those variables are significant. Future research should perform path modeling to determine the specific mechanism of significance. This study should also be replicated to determine if these findings hold across broad swaths of Americans. The study used the HRS because it is the only nationally representative sample that includes all of the variables of interest; however, it only surveys Americans older than age 50.

In addition, there is a need to test the effects of those psychosocial variables on savings. Although financial literacy serves as an important potential indicator of retirement security, it does not actually measure retirement security. This study's variables should be regressed on retirement savings to ascertain which ones better determine retirement security and thus, more accurately predict the practical impact of psychosocial constructs.

Notes

[1] Price, Choi, and Vinokur (2002) suggest that this effect may be moderated by locus of control. That is, persons with an external locus of control will take the steps necessary to remedy the financial strain, which could involve increasing their financial literacy. Persons with an internal locus of control may decide not to do so.

[2] The Cronbach Alpha is a widely accepted minimal standard for new measures that indicates an instrument's psychometric strength (Cronbach 1951; Santos 1999). This study's financial literacy measure achieves an acceptable Alpha coefficient level of 0.70.

[3] The Alpha coefficient calculated for religiosity in this study is 0.92.

[4] The Alpha coefficient calculated for financial satisfaction is 0.80.

[5] The Alpha coefficient calculated for hopelessness is 0.86.

[6] I considered using matched IRS data to increase the earnings data reliability in this study. However, using matched data would have significantly increased the amount of missing data, severely shrinking the sample size and reducing the statistical power.

[7] One of the included variables may act as a moderating or intervening variable, which could have implications for future research.

References

[APA] American Psychiatric Association. 2000. *Diagnostic and Statistical Manual of Mental Disorders: DSM-IV-TR*. Washington, DC: American Psychiatric Association.

[Ariel/Hewitt] Ariel Education Initiative and Hewitt Associates. 2009. *401(k) Plans in Living Color: A Study of 401(k) Disparities Across Racial and Ethnic Groups.* http://www.arielinvestments.com/images/stories/PDF/arielhewittstudy_finalweb_7.3.pdf.

Avants, S. Kelly, David Marcotte, Ruth Arnold, and Arthur Margolin. 2003. "Spiritual Beliefs, World Assumptions, and HIV Risk Behavior Among Heroin and Cocaine Users." *Psychology of Addictive Behaviors* 17(2): 159–162.

Barnes, Helen, and Rebecca Taylor. 2006. "Work, Saving and Retirement Among Ethnic Minorities: A Qualitative Study." Department for Work and Pensions Research Report No. 396. Leeds: Corporate Document Services.

Brown, Susan M. 2011. "Debt and Negative Net Worth Among Near Retirees." PhD dissertation, Utah State University. *All Graduate Theses and Dissertations* Paper 941. http://digitalcommons.usu.edu/etd/941.

Butrica, Barbara A., Howard M. Iams, Karen E. Smith, and Eric J. Toder. 2009. "The Disappearing Defined Benefit Pension and its Potential Impact on the Retirement Incomes of Baby Boomers." *Social Security Bulletin* 69(3): 1–27. http://www.socialsecurity.gov/policy/docs/ssb/v69n3/v69n3p1.html.

Cronbach, Lee J. 1951. "Coefficient Alpha and the Internal Structure of Tests." *Psychometrika* 16(3): 297–334.

Danigelis, Nicholas L., and Barbara R. McIntosh. 2001. "Gender's Effect on the Relationships Linking Older Americans' Resources and Financial Satisfaction." *Research on Aging* 23(4): 410–428.

Diener, Carol I., and Carol S. Dweck. 1980. "An Analysis of Learned Helplessness: II. The Processing of Success." *Journal of Personality and Social Psychology* 39(5): 940–952.

Dietz, Bernadette E., Mark Carrozza, and P. Neal Ritchey. 2003. "Does Financial Self-Efficacy Explain Gender Differences in Retirement Saving Strategies?" *Journal of Women & Aging* 15(4): 83–96.

Dweck, Carol S. 1975. "The Role of Expectations and Attributions in the Alleviation of Learned Helplessness." *Journal of Personality and Social Psychology* 31(4): 674–685.

Folkman, Susan, Richard S. Lazarus, Rand J. Gruen, and Anita DeLongis. 1986. "Appraisal, Coping, Health Status, and Psychological Symptoms." *Journal of Personality and Social Psychology* 50(3): 571–579.

Glass, J. Conrad, Jr., and Beverly B. Kilpatrick. 1998. "Gender Comparisons of Baby Boomers and Financial Preparation for Retirement." *Educational Gerontology* 24(8): 719–745.

Groffen, Daniëlle A. I., Hans Bosma, Marjan van den Akker, Gertrudis I. J. M. Kempen, and Jacques Th. M. van Eijk. 2009. "Personality and Health as Predictors of Income Decrease in Old Age: Findings from the Longitudinal SMILE Study." *European Journal of Public Health* 19(4): 418–423.

Hershey, Douglas A., Joy M. Jacobs-Lawson, John J. McArdle, and Fumiaki Hamagami. 2007. "Psychological Foundations of Financial Planning for Retirement." *Journal of Adult Development* 14(1–2): 26–36.

Hershey, Douglas A., and John C. Mowen. 2000. "Psychological Determinants of Financial Preparedness for Retirement." *The Gerontologist* 40(6): 687–697.

Hiroto, Donald S., and Martin E. Seligman. 1975. "Generality of Learned Helplessness in Man." *Journal of Personality and Social Psychology* 31(2): 311–327.

Holmes, Thomas, and Richard Rahe. 1967. "The Social Readjustment Rating Scale." *Journal of Psychosomatic Research* 11(2): 213–218.

Howlett, Elizabeth, Jeremy Kees, and Elyria Kemp. 2008. "The Role of Self-Regulation, Future Orientation, and Financial Knowledge in Long-term Decisions." *Journal of Consumer Affairs* 42(2): 223–242.

Hung, Angela A., Andrew M. Parker, and Joanne K. Yoong. 2009. "Defining and Measuring Financial Literacy." RAND Labor and Population Working Paper No. WR-708. Santa Monica, CA: RAND Corporation.

Huston, Sandra J. 2010. "Measuring Financial Literacy." *The Journal of Consumer Affairs* 44(2): 296–316.

[JumpStart] Jump$tart Coalition for Personal Financial Literacy. 2007. "National Standards in K–12 Personal Finance Education." http://www.jumpstart.org/national-standards.html.

Krause, Neal, Gina Jay, and Jersey Liang. 1991. Financial Strain and Psychological Well-Being Among the American and Japanese Elderly. *Psychology and Aging* 6(2): 170–181.

Lamberg, Tiina, Pekka Virtanen, Jussi Vahtera, Tiina Luukkaala, and Markku Koskenvuo. 2010. "Unemployment, Depressiveness and Disability Retirement: A Follow-Up Study of the Finnish HeSSup Population Sample." *Social Psychiatry and Psychiatric Epidemiology* 45(2): 259–264.

Liem, Ramsay, and Joan Huser Liem. 1988. "Psychological Effects of Unemployment on Workers and Their Families." *Journal of Social Issues* 44(4): 87–105.

Loibl, Cäzilia, and Tahira K. Hira. 2005. "Self-directed Financial Learning and Financial Satisfaction." *Financial Counseling and Planning* 16(1): 11–21.

Lusardi, Annamaria. 2008. "Household Saving Behavior: The Role of Financial Literacy, Information, and Financial Education Programs." NBER Working Paper No. 13824. Cambridge, MA: National Bureau of Economic Research.

Lusardi, Annamaria, and Olivia S. Mitchell. 2006. "Financial Literacy and Planning: Implications for Retirement Wellbeing." Pension Research Council Working Paper No. 2006-01. Philadelphia, PA: University of Pennsylvania.

———. 2007a. "Baby Boomer Retirement Security: The Roles of Planning, Financial Literacy, and Housing Wealth. *Journal of Monetary Economics* 54(1): 205–224.

———. 2007b. "Financial Literacy and Retirement Preparedness: Evidence and Implications for Financial Education." *Business Economics* 42(1): 35–44.

———. 2007c. "Financial Literacy and Retirement Planning: New Evidence from the Rand American Life Panel." Working Paper No. WP 2007-157. Ann Arbor, MI: University of Michigan Retirement Research Center.

Lusardi, Annamaria, and Peter Tufano. 2009. "Debt Literacy, Financial Experiences, and Overindebtedness." NBER Working Paper No. 14808. Cambridge, MA: National Bureau of Economic Research.

Maier, Steven F., and Martin E. Seligman. 1976. "Learned Helplessness: Theory and Evidence." *Journal of Experimental Psychology: General* 105(1): 3–46.

Mezias, Stephen J. 1994. "Financial Meltdown as Normal Accident: The Case of the American Savings and Loan Industry." *Accounting, Organizations and Society* 19(2): 181–192.

Montgomery, Scott M., Gopalakrishnan Netuveli, Zoe Hildon, and David Blane. 2007. "Does Financial Disadvantage at Older Ages Eliminate the Potential for Better Health?" *Journal of Epidemiology & Community Health* 61(10): 891–895.

Olsen, Anya, and Kevin Whitman. 2007. "Effective Retirement Savings Programs: Design Features and Financial Education." *Social Security Bulletin* 67(3): 53–72.

Price, Richard H., Jin Nam Choi, and Amiram D. Vinokur. 2002. "Links in the Chain of Adversity Following Job Loss: How Financial Strain and Loss of Personal Control Lead to Depression, Impaired Functioning, and Poor Health." *Journal of Occupational Health Psychology* 7(4): 302–312.

Renneboog, Luc, and C. Spaenjers. 2009. "Where Angels Fear to Trade: The Role of Religion in Household Finance." Tilburg Law and Economic Center Discussion Paper No. 2009-018. Tilburg: Tilburg University (Netherlands).

Santos, J. Reynaldo A. 1999. "Cronbach's Alpha: A Tool for Assessing the Reliability of Scales." *Journal of Extension* 37(2). http://www.joe.org/joe/1999april/tt3.php.

Ullah, Philip. 1990. "The Association Between Income, Financial Strain and Psychological Well-Being Among Unemployed Youths." *Journal of Occupational and Organizational Psychology* 63(4): 317–330.

USA Today. 2010. "Martin Luther King's Atlanta Church Adds Financial Literacy Training" (April 9). http://usatoday30.usatoday.com/news/religion/2010-04-09-kingchurch8_ST_N.htm.

Walker, Catherine M. 1996. "Financial Management, Coping and Debt in Households Under Financial Strain." *Journal of Economic Psychology* 17(6): 789–807.

Warr, Peter, and Paul Jackson. 1985. "Factors Influencing the Psychological Impact of Prolonged Unemployment and Re-employment." *Psychological Medicine* 15(4): 795–807.

Zivin, Kara, Mohammed U. Kabeto, Helen C. Kales, and Kenneth M. Langa. 2009. "The Effect of Depression and Cognitive Impairment on Enrollment in Medicare Part D." *Journal of the American Geriatric Society* 57(8): 1433–1440.

RESEARCH SUMMARY

Effects of Employer-Sponsored Health Insurance Costs on Social Security Taxable Wages

by Gary Burtless and Sveta Milusheva*

The increasing cost of employer contributions for employee health insurance reduces the share of compensation subject to the Social Security payroll tax. Rising insurance contributions can also have a more subtle effect on the Social Security tax base because they influence the distribution of money wages above and below the taxable maximum amount. This article uses the Medical Expenditure Panel Survey to analyze trends in employer health insurance contributions and the distribution of those costs up and down the wage distribution. Our analysis shows that employer health insurance contributions increased faster than overall compensation during 1996–2008, but such contributions grew only slightly faster among workers earning less than the taxable maximum than they did among those earning more. Because employer health insurance contributions represent a much higher percentage of compensation below the taxable maximum, health insurance cost trends exerted a disproportionate downward pressure on money wages below the taxable maximum.

Introduction

The increasing cost of employer contributions for employee health insurance reduces the percentage of labor compensation that is subject to the Social Security payroll tax. Rising health insurance contributions also have a more subtle effect on Social Security because they influence the distribution of money wages and the percentage of wages below the "taxable maximum," the earnings level at which the payroll tax is capped. Workers bear most of the burden of employer health insurance contributions through lower money wages, which implies that the distribution of money wages is directly affected by the distribution of employer health insurance contributions across wage levels. Any change in the average cost and in the wage-level distribution of the costs of employer-sponsored health insurance (ESHI) can affect both the distribution of wages and the percentage of wages subject to the payroll tax.

The tax base for the Social Security program consists of money wages and net self-employment income; in particular, earned incomes below an annual maximum taxable amount. Other components of compensation, including employer contributions for social insurance, private pensions, and employee health and other insurance benefits, are excluded from the tax base. Relative to total compensation, employer contributions for both private pensions and social insurance have declined since reaching peaks in 1980 and 1994, respectively. Contributions for

Selected Abbreviations

ACA	Affordable Care Act
CBO	Congressional Budget Office
CHIP	Children's Health Insurance Program
ESHI	employer-sponsored health insurance
MEPS	Medical Expenditure Panel Survey
NIPA	national income and product accounts
OASDI	Old-Age, Survivors, and Disability Insurance

* *Gary Burtless holds the Whitehead Chair in Economic Studies at the Brookings Institution and is an affiliate of the Retirement Research Center of Boston College; Sveta Milusheva is a graduate student in economics at Brown University.*

The research presented in this paper was supported by a grant (no. 5 RRC08098402-03-00) from the Social Security Administration through the Retirement Research Consortium (RRC) and by funding from the Rockefeller Foundation.

health insurance, however, have continued to rise, climbing from 3.7 percent of compensation in 1980 to more than 7.0 percent of compensation in 2010 (BEA 2012). As a result, the ratio of money earnings to total compensation reached an all-time low in 2009 and 2010.

The fraction of money earnings subject to Social Security taxes is also affected by the distribution of wages. With growing income inequality, the percentage of money wages above the taxable maximum increases, reducing the effective tax rate on aggregate wages. Earnings below the taxable maximum accounted for about 90 percent of total earnings in 1983; growing inequality reduced that share to 83 percent in 2006 (SSA 2007, 81). If employer contributions for health insurance were fully reflected as lower money wages, the rising cost of health insurance could, in principle, contribute to rising inequality. Most employer health plans cost as much for highly paid employees as they do for those earning a much lower wage, as long as the expected health reimbursement costs for both groups are approximately the same. When employer health insurance contributions per employee increase faster than average money wages, as has occurred for the past four decades, the effect in proportional terms can be greater for low-wage than for high-wage workers. The cost of the health plan represents a much larger share of the compensation for insured low-wage workers than for high-wage workers.

Of course, many workers are not covered by ESHI, and lack of coverage is particularly common among low-wage workers. Nonetheless, the rising cost of health insurance has an undeniable effect on the share of compensation subject to Social Security taxes and, because of the possible influence of earnings inequality, it may also reduce the fraction of aggregate money wages that falls below the taxable maximum amount. By changing employers' incentives to offer health plans and workers' incentives to participate in them, health insurance reform under the Patient Protection and Affordable Care Act (or simply the Affordable Care Act, ACA) of 2010, Public Law 111-148, may cause either the cost of employer-sponsored plans or the distribution of those costs across wage levels to shift. Either of those shifts can affect the percentage of compensation subject to Social Security taxes. This article estimates the effect of rising ESHI contributions on wage inequality and on the ratio of money wages to total compensation, and assesses how health insurance reform will affect those trends by changing health insurance costs and coverage rates.

We find that the combination of rising employer costs of providing health insurance and rising wage inequality significantly reduced the percentage of compensation subject to the Social Security tax during the period we analyzed. In a stylized model that tracks observed trends in employer health insurance contributions per worker and wage growth above and below the taxable earnings ceiling, we find that from 1996 to 2008, the proportion of compensation that consists of money wages fell 1.2 percent. In the same span, the proportion of compensation that consists of money wages subject to Social Security taxes fell 3.1 percent. Those declines were caused by the complicated interaction between rising health care costs, which in absolute terms are similar for workers above and below the taxable wage ceiling, and growing inequality in wages and compensation, which causes ESHI cost increases to have a much bigger proportional impact on wages below the taxable maximum. Our simulation suggests that from 1996 to 2008, rising employer health insurance costs for workers *below* the taxable wage ceiling caused the ratio of money wages to compensation to fall 1.8 percent. As a result, the share of total compensation paid to those workers that was taxed for Social Security also fell 1.8 percent. Among workers with wages *above* the wage ceiling, however, the growth in employer health insurance costs caused the proportion of compensation paid as wages to decline only 0.2 percent. The combined effect of increased wage inequality and rising employer costs of providing health insurance caused the share of compensation subject to Social Security taxes to fall 5.7 percent among high-wage workers. The ratio of taxable money wages to total compensation for all workers declined by 3.1 percent. Thus, the interaction between rising health insurance costs and growing wage inequality has produced notable erosion in the Social Security taxable wage base.

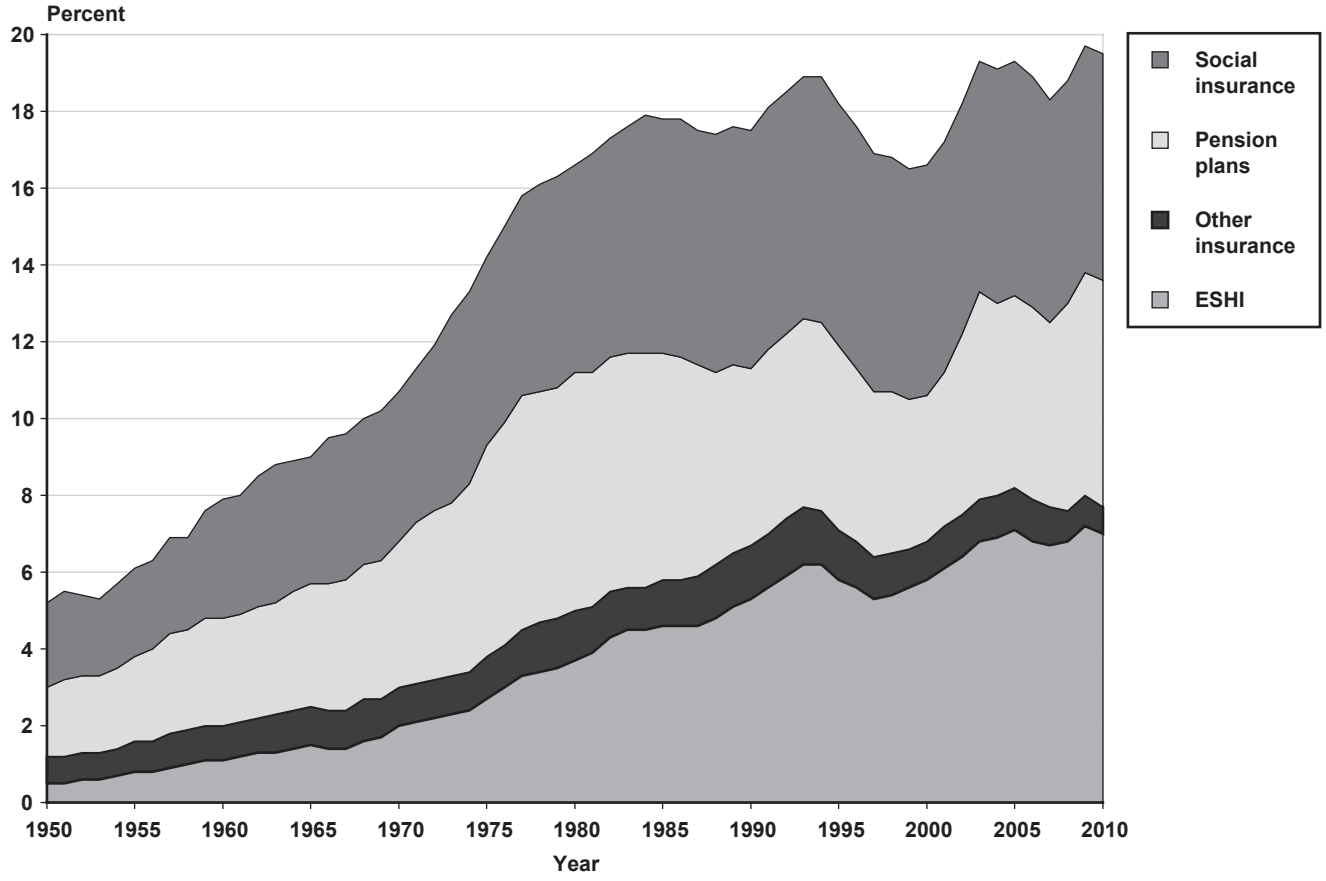
Our analysis of the ACA's impact on taxable earnings focuses on estimated changes in employer costs of providing health insurance that will occur as many workers change their source of coverage. Some previously uncovered workers will receive coverage from employers who are now induced to offer a health plan. Some workers previously insured by their employers' plans will switch to publicly subsidized plans that may be cheaper or provide more

comprehensive benefits. The first kind of change in coverage boosts employer costs of providing health insurance and is likely to lead to lower money wages. The second reduces employer costs and will likely result in higher money wages. Although many workers will change their coverage status or source, we find that the net effect of health insurance reform on the ratio of Social Security–taxed wages to total employee compensation is likely to be modest. Coverage changes that boost employer costs will probably be somewhat less costly to employers than changes that shift the burden of subsidizing insurance coverage from employers to the government. The main impact of health insurance reform on the share of worker compensation that is subject to Social Security taxes is likely to occur through a different channel, one that we do not analyze here. If reform affects the trend in health insurance costs—in particular, if it reduces the gap between the rates of growth in health insurance spending per person and in wages—the erosion of the Social Security tax base will slow down noticeably.

Background

The Social Security payroll tax is imposed on wage and salary income in jobs covered by the program and on net self-employment income. Wage and salary workers and their employers do not pay the Social Security tax on most supplements to money wages, which include employer contributions for purposes such as health and other group insurance plan premiums, social insurance, and worker retirement plans. If paid under a qualified cafeteria plan, the employee's share of the health insurance premium is also excluded from the Social Security tax base (Mulvey 2012). Over the past six decades, those forms of wage supplementation became increasingly important (Chart 1). Whereas nonwage components represented 5 percent of total compensation in 1950, they accounted for almost 20 percent of compensation by 2010. Most

Chart 1.
Employer nonwage contributions as percentages of employee compensation, by type, 1950–2010

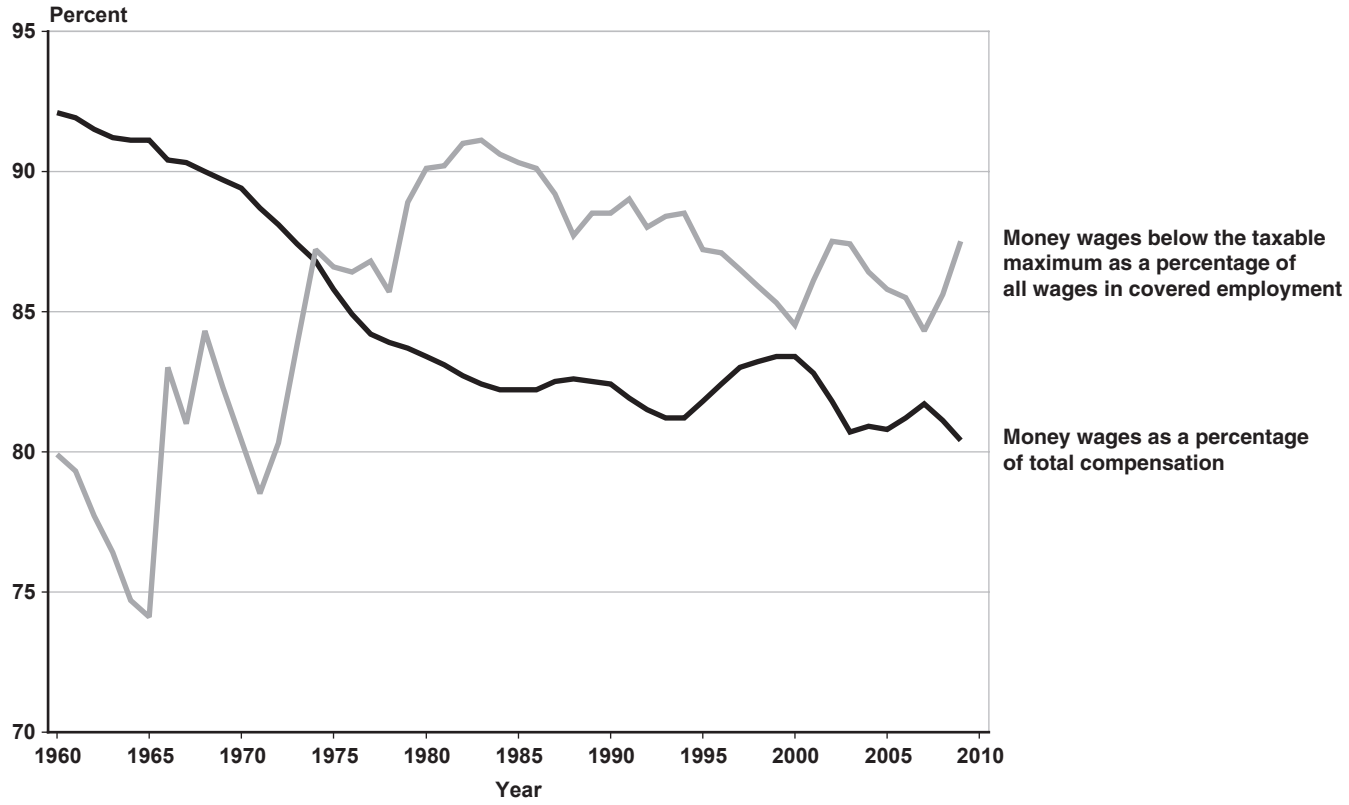


SOURCE: BEA (2012).

forms of nonwage compensation stabilized or even declined after reaching a peak sometime between 1975 and 1995. Employer contributions for employee health plans depart from that pattern; they have continued to increase, as a proportion of both wages and total compensation. From 1980 to 2010, the share of compensation paid as money wages fell 3.0 percentage points, while the share paid as employer contributions to employee health plans increased 3.3 percentage points. Thus, the entire decline in the money-wage share of compensation occurred because of the rapid growth in employer health insurance outlays. In fact, the growth in the health-insurance share was bigger than the decline in the money-wage share, causing slight declines in other component shares as well.

The increase in nonwage compensation is not the only development affecting the share of employee earnings subject to Social Security taxes. Two other important factors are the fraction of wage and salary employment covered by the Social Security program and the distribution of covered wages and self-employment income above and below the Social Security taxable maximum. In most of the postwar period, expansions in Social Security coverage typically increased the share of US wages that were subject to Social Security taxes, but in the past decade the percentage of wages covered by the program has edged down slightly. The percentage of covered earnings that are actually taxed has been more variable, however. In 2005, the maximum annual earnings subject to the Social Security payroll tax were $90,000. Data from W-2 wage reporting forms show that 94.1 percent of wage earners had annual earnings up to that amount. However, the 5.9 percent of workers earning more than the taxable maximum earned 30.0 percent of all reported wages, and nearly one-half of the wages they earned were above the taxable cap. As wages have grown more unequal, a rising percentage of covered earnings has exceeded the taxable maximum. The untaxed proportion of earnings is somewhat cyclical, because the wages of very high earners tend to be sensitive to the state of the economy (Chart 2).

Chart 2.
Underlying indicators of the proportion of total compensation subject to Social Security taxes, 1960–2009



SOURCE: BEA (2012); SSA (2009).

Most labor economists believe that in the long run, much or all of the burden of employer costs for fringe benefits falls on workers (Blumberg 1999; Gruber 2000; Jensen and Morrisey 2001). If employers are largely indifferent about the composition of pay they offer workers, the elements of the compensation package will be determined by legal requirements and workers' preferences. American employers are obliged to make social insurance contributions for Social Security, Medicare, and unemployment compensation, but they are not currently required to provide health insurance or retirement benefits to their employees. Because workers are free to work for employers that do not provide those benefits, it is widely assumed that the nonmandatory benefits provided to employees must be worth approximately as much to the workers who receive them as the net pay they give up in order to obtain them. Employer-sponsored health and retirement benefits provide a substantial income tax advantage. Many workers may prefer to receive compensation in the form of untaxed health benefits or lightly taxed retirement benefits, rather than as fully taxed money wage payments. The tax preference has more value to workers with higher pay, which helps account for the strong positive correlation between average workplace earnings and an employer's offer of tax-preferred fringe benefits. A second consideration also makes ESHI attractive to workers: Insurance is substantially less costly when purchased for a group than for an individual. Adverse selection is less a problem for large predefined groups than for individual workers seeking insurance on their own. Moreover, insurers realize sizable administrative and marketing savings, enabling them to charge lower premiums in the group market than for individual health insurance.

Assuming that workers ultimately pay for employer-provided health benefits, how has the distribution of these benefits across earnings levels affected the level and distribution of Social Security taxable wages? To answer this question precisely would require a model of the determinants of the distribution of compensation and detailed evidence on the statistical relationship between wages and health benefits, both at the firm level and for workers across the compensation distribution. We do not develop such a model in this article. Instead, we analyze evidence on the distribution of employer costs of providing health insurance across wage levels over a 13-year span ending in 2008. Employer costs of providing health insurance grew much faster than money wages over that period. Provisions of employer health plans did not appear to grow more generous, but charges by health care providers increased much faster than either consumer prices or labor compensation. Assuming that increasing employer costs of providing health insurance replaced wage increases they would otherwise have given to their workers, we can use detailed information about employer costs and employee coverage to determine the distribution of those foregone wage increases. Those same distributional analyses can also shed light on whether the missing wage increases had a larger impact on actual wage gains below or above the Social Security taxable maximum.

Data

Our data are from the Medical Expenditure Panel Survey (MEPS), conducted by the Department of Health and Human Services' Agency for Healthcare Research and Quality. The MEPS comprises surveys of representative households; of the medical providers who supply services to those households; and of public and private employers, covering the types and cost of employee health insurance offered.[1] We base our detailed analysis of the distribution of employer health insurance costs on microdata contained in household survey files and on averaged results from the employer survey.

The MEPS household and provider surveys offer unusually comprehensive health care and health insurance information. In addition, the household survey provides information on household cash income and its components (including wages) for a nationally representative sample of the noninstitutionalized population. For purposes of estimating the distribution of health care consumption and payments in the employed population, the depth and quality of the information from the household and medical provider surveys are unparalleled. In combination, the surveys give detailed information on workers' insurance coverage for themselves and their dependents, their premium costs, their utilization of health care providers, the cost of medical goods and services that providers supply, and the costs and the payment sources for the care they and their dependents receive. Because the reports of household respondents are cross-checked against the responses of providers, the MEPS files provide much more accurate information about the cost and sources of payment for medical services than would be possible in a survey aimed solely at households.

The household survey collects information from a given sample (or panel) of families in five separate interviews that cover 2 calendar years. The analysis reported here is based on MEPS panels covering calendar years 1996 to 2008. The household survey gives us information on wage earnings, health spending, and insurance coverage and reimbursement for a total of about 161,000 worker observation years, or approximately 12,500 worker observations per year. The survey files also provide information on the health spending, insurance coverage, and reimbursement for the workers' dependents.[2]

Although the household and provider surveys give extensive information on the types of providers who supply medical care to sample members, we focus on the employer cost of providing their insurance. Provider survey data do not address employer costs and are not used in our analysis. Likewise, household survey data, vital for other aspects of our analysis, have important limitations for assessing the employer cost and value of plans covering the respondents. For example, although the employer survey obtains extensive cost data directly from employers, those data are not linked to individual workers or to households in the household survey. As a result, we do not know the cost to employers of paying health insurance premiums on behalf of individual household sample respondents. Additionally, the household data file includes information on payments from ESHI plans to reimburse providers and households for the cost of medical care. It does not, however, contain any information about employers' costs of managing their plans or paying third parties to manage them. Thus, an important component of respondents' health consumption—the cost of health insurance administrative services for workers in employer-sponsored plans—is missing from the household survey files.

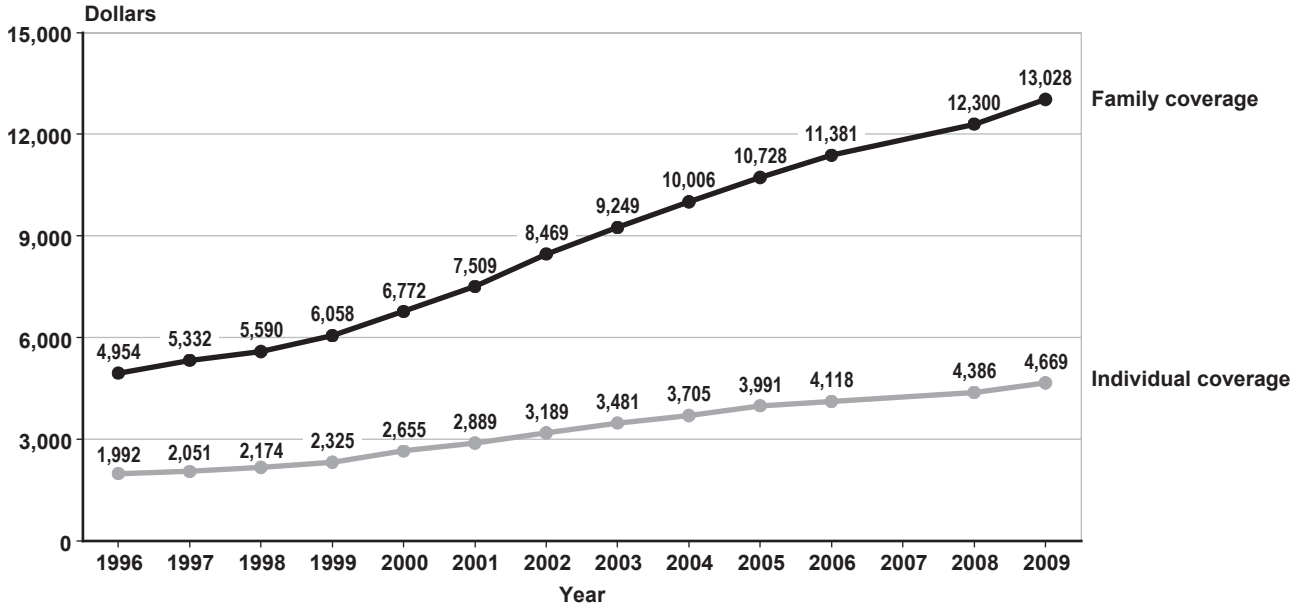
The employer survey provides much better information on employer insurance costs. Even though the information is not linked to the specific workers in the household survey, we can impute employer and employee premiums for workers in the household sample based on the averaged responses in the employer survey. We performed this imputation by dividing employer-insured workers in the household sample into 10 groups based on their industry of employment (9 standard private industry groups and government). Employees of private firms were subdivided into those working in establishments with fewer than 50 employees and those with 50 or more. The national average ESHI premium amounts within those categories, as determined in the employer survey, were then imputed for household survey respondents.[3] From 1996 through 2000, the employer survey provided data on premiums for individual employee coverage and for coverage under a family plan. For 2001–2006 and 2008, the employer survey provided additional detail on family premiums, enabling us to impute the premium payments for individual plans, plans covering the employee plus one dependent, and plans covering the employee plus two or more dependents. No MEPS employer survey was conducted in 2007, so we imputed employer and employee premiums based on the average of values within each category as reported in the 2006 and 2008 surveys.

Employer Costs of Providing Health Insurance and Employee Wages

Chart 3 shows estimated average premium costs for coverage of families and individual employees in private-sector ESHI plans, based on MEPS employer survey data (Crimmel 2009a, 2009b). From 1996 through 2009, the estimated average cost of a family plan increased at an annual compound rate of 7.7 percent, while the cost of individual plans increased 6.8 percent a year. By comparison, average earnings increased 3.5 percent a year and consumer prices increased 2.4 percent a year during that period.[4] Total premium costs are split between employers and employees. The employer survey shows little change in the percentage of the total premium cost of a family plan that is borne by employers. From 1996 through 2009, employers on average paid close to three-quarters of the total cost of health insurance premiums for a family plan (not shown). By contrast, the percentage of premiums paid by employers for individual plans shows a modest decline. In 1996–1997, employers covered 84 percent of the total cost of an individual plan premium; in 2008–2009, they paid 80 percent of the cost.

The cost of providing health insurance to employees depends not only on premiums but also on the proportions of workers who take the insurance offer and who enroll in individual versus family coverage. To determine the impact of health insurance costs on the distribution of compensation, we examine the important link between workers' wage levels and ESHI offer and take-up rates. Chart 4 shows evidence of this link.[5] The left-hand panel shows the percentage of wage and salary workers in each wage decile whose employers offer health insurance. Note that some

Chart 3.
Average private-sector ESHI premiums for individual and family coverage, 1996–2009 (in current dollars)



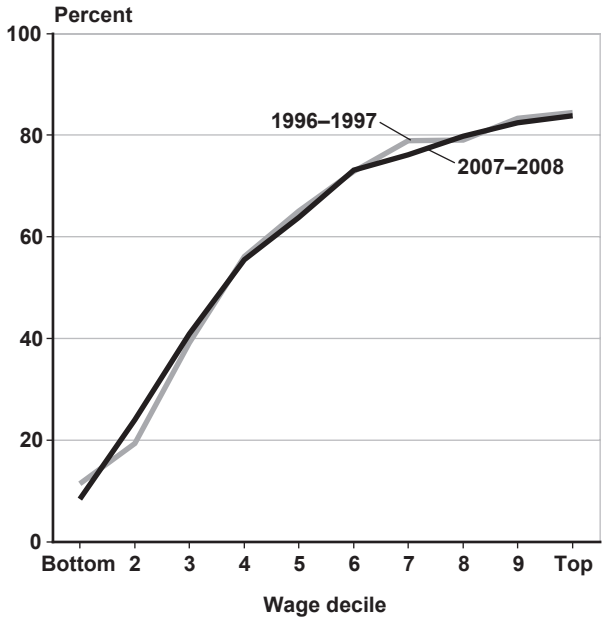
SOURCE: MEPS employer survey files.

NOTE: MEPS data not available for 2007.

Chart 4.
ESHI offer and participation rates by wage decile, 1996–1997 and 2007–2008

Percent of workers offered ESHI coverage

Percent of workers enrolled in an ESHI plan[a]



SOURCE: Authors' calculations based on MEPS household survey files.

a. Enrolled in either an individual or family plan as the principal insured person.

workers who are not offered health insurance by their own employers may obtain employer-sponsored insurance as a dependent under a spouse's or other family member's plan; nonetheless, we classify those workers as "not offered" an employer-sponsored plan.

The data cover offer rates at the start of the analysis period, in 1996–1997, and at the end, in 2007–2008. Perhaps surprisingly, the overall offer rate increased slightly over the period. In 1996–1997, 69 percent of all wage and salary workers in the MEPS household survey were offered a health plan. By 2007–2008, the share edged up to 70 percent. The offer rate increased most sharply in the 2nd and 3rd wage deciles. Offer rates declined slightly in the top half of the wage distribution. In both year ranges, the positive correlation between workers' wages and the likelihood that their employers offer health insurance is strong. In the bottom fifth of the wage distribution, far fewer than one-half of workers are offered health insurance, while in the top fifth about 90 percent are offered a plan.

Along with offer rates, Table 1 shows health insurance take-up rates, or the percentages of workers offered plans who actually enroll. Take-up rates generally decline over the analysis period, with the biggest declines occurring at the bottom of the wage distribution. In the bottom wage decile, only 37 percent of workers whose employers offered a plan accepted the offer in 2007–2008. In the earlier period, 58 percent of workers in the bottom decile took the offer. Take-up rates fell in the bottom half of the wage distribution while increasing slightly in the top half of the distribution. The drop in take-up rates toward the bottom of the wage distribution has been noted in earlier studies (Cunningham, Artiga, and Schwartz 2008; Fronstin 2012). That drop may be explained partly by liberalized eligibility rules for Medicaid and state Child Health Insurance Programs (CHIPs), which make ESHI relatively less attractive for some low-wage employees. The offsetting effects of higher offer rates and lower take-up rates produced small net effects on insurance enrollment rates over the analysis period (right-hand panel in Chart 4 and right-hand columns in Table 1). The most noticeable changes occurred in the bottom wage deciles. ESHI participation fell in the bottom tenth but increased in the next decile.

The cost to an employer if a worker enrolls in a family plan is more than twice the cost of the worker's enrollment in an individual plan (Chart 3). Furthermore, the cost ratio has been rising over time. Thus, the insurance cost burden on employers depends crucially on the proportions of participating workers who enroll in family and individual plans. The MEPS household survey shows that enrollment in more costly family plans has declined over time, and that pattern appears for both high- and low-wage workers (Chart 5). For employers, that trend has offset a small part of the rapid growth in health insurance premiums overall.

Table 1.
ESHI offer rates, take-up rates, and final participation rates, by wage decile, 1996–1997 and 2007–2008

	Offer rate		Take-up rate		Final participation rate	
Wage decile	1996–1997	2007–2008	1996–1997	2007–2008	1996–1997	2007–2008
Bottom	20	22	58	37	12	8
2	30	43	64	56	19	24
3	52	58	75	71	39	41
4	67	69	84	80	56	55
5	77	76	85	84	65	64
6	84	83	87	88	73	73
7	88	85	89	90	79	76
8	89	87	89	92	79	80
9	89	90	93	92	83	83
Top	92	90	92	93	85	84
All	69	70	86	84	59	59

SOURCE: Authors' tabulations based on MEPS household survey data.

NOTE: Offer rate is the percentage of workers who are offered enrollment in a health plan by their employers; take-up rate is the percent of workers offered enrollment who enroll in the plan; final participation rate is the percent of all workers in a decile that actually participates in their employer's plan.

Chart 5.
Percentage of workers enrolled in an ESHI family plan, by wage decile, 1996–1997 and 2007–2008

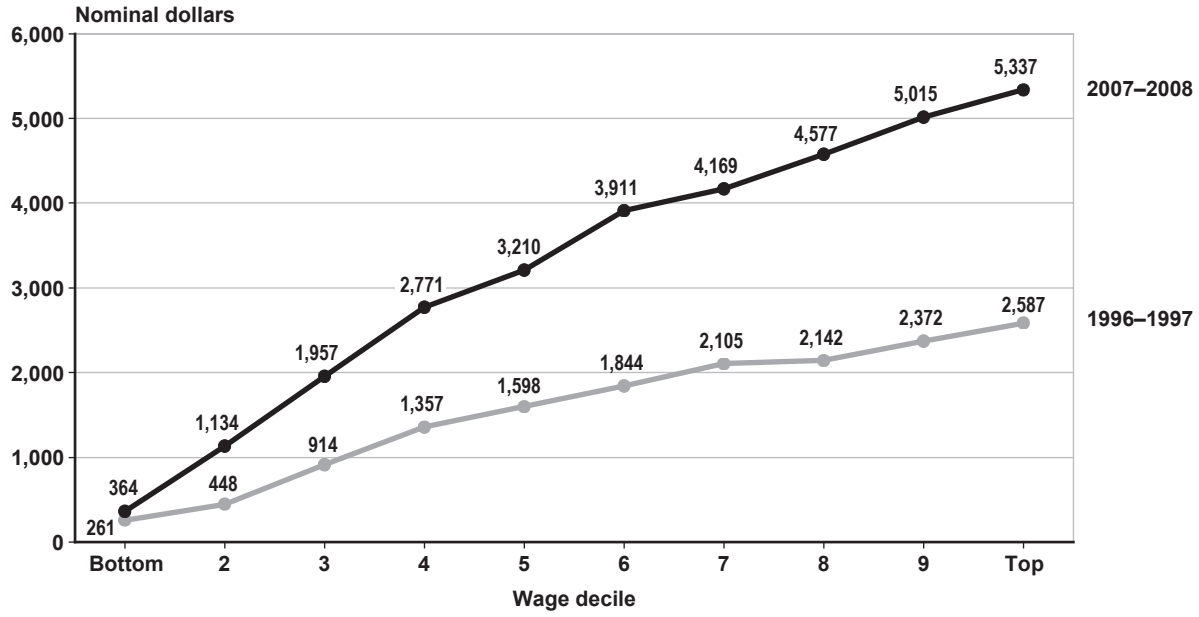
SOURCE: Authors' calculations based on MEPS household survey files.

NOTE: Includes coverage in family or employee-plus-one plans with employee as the principal insured person.

Combining the effects of the factors illustrated in Charts 3–5, Chart 6 shows the average employer cost of providing health insurance to all workers in a given wage decile (including workers not covered). For example, the average employer cost of health insurance for workers in the 6th wage decile was $1,844 in 1996–1997 and $3,911 in 2007–2008. Employees in the 6th decile who were not offered ESHI or who declined to enroll in their employer's plan imposed no health insurance costs on their employers. Slightly less than three-quarters of the wage and salary workers in the 6th decile participated in an employer-sponsored plan (Table 1); therefore, on average, the *participating* workers cost their employers about $2,500 in 1996–1997 and about $5,400 in 2007–2008.

With wage reports from a large sample of workers and plausible estimates of employer health insurance contributions for the same sample of workers, estimating the relationship between employer health insurance costs and worker wages (and the trend in that relationship over time) is straightforward. Chart 7 shows the relationship for the two pairs of years at the beginning and the end of our analysis period. Overall, average ESHI premium costs represented 6.1 percent of annual wages in 1996–1997 and increased to

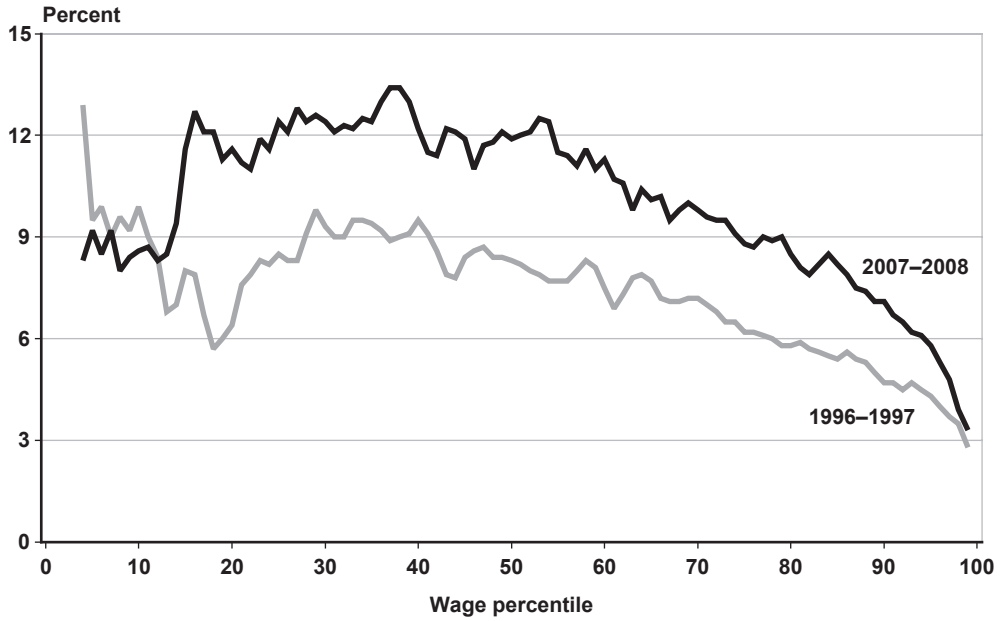
Chart 6.
Estimated annual employer cost of providing health insurance, by wage decile, 1996–1997 and 2007–2008 (in nominal dollars)



SOURCE: Authors' calculations based on MEPS employer and household survey files.

NOTE: Estimates represent average employer-paid premiums for all workers in each decile, including workers who decline or are not offered ESHI.

Chart 7.
Employer cost of providing health insurance as a percentage of average annual wage, by wage percentile, 1996–1997 and 2007–2008



SOURCE: Authors' calculations based on MEPS household and employer survey files.

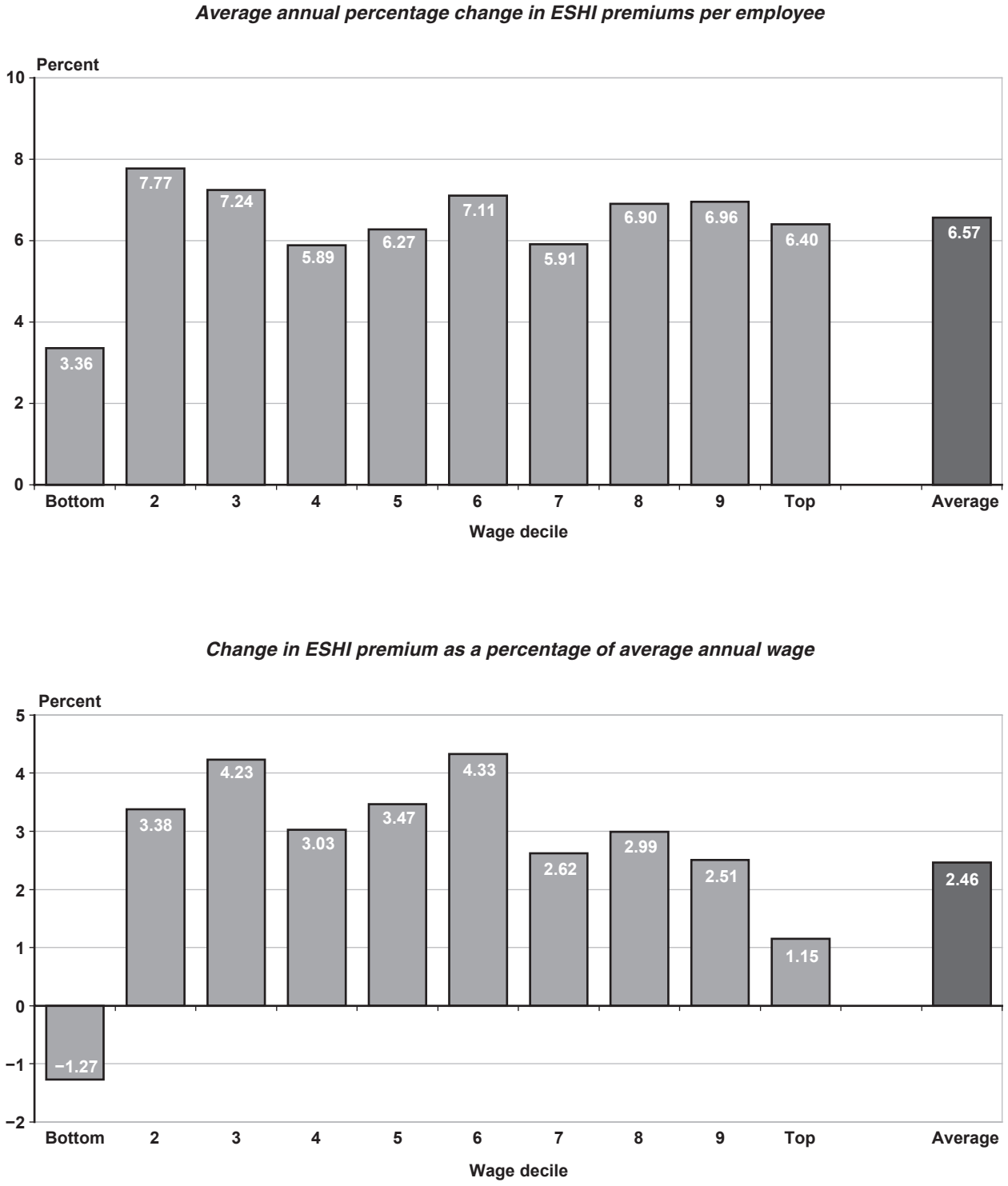
NOTE: Estimates represent average employer-paid premiums for all workers in each percentile, including workers who decline or are not offered ESHI.

8.5 percent of annual wages in 2007–2008 (not shown). In both periods, the ESHI-premium share of wages varied widely across the wage distribution. Not surprisingly, premiums are a small fraction of wages at the top wage percentiles. They tend to constitute the highest fraction of wages for workers between the 25th and 40th wage percentiles.

Chart 8 shows the change in average employer costs of providing health insurance from 1996 through 2008 by wage decile. The top panel shows the annual rate of change in employer outlays on employee health insurance, and the bottom panel shows the percentage-point change in employer costs as a percentage of employee wages. The slowest rate of growth in employer costs occurred in the bottom wage decile; the fastest was in the 2nd decile. As we have seen, the main factors behind the different rates of employer-cost growth between wage deciles were changes in employee participation rates across the wage distribution and changing patterns of enrollment in individual versus more costly family plans. On the whole, however, wage earners in the top 80 percent of the wage distribution saw similar rates of growth in employer contributions to their health plans. Only in the bottom two wage deciles did the rate of increase in employer costs differ noticeably from the mean.

Even if the ESHI premiums rose at similar rates across most of the wage distribution, those increases represented very unequal proportions of workers' annual wages. The bottom panel of Chart 8 shows that from 1996 through 2008, ESHI premiums as a percentage of wages climbed by an average of 3.69 percentage points in the 2nd through the 6th wage deciles. They increased more slowly in the upper part of the wage distribution, rising just 1.15 percentage point in the top decile. For the bottom decile, employer premium costs actually declined as a percentage of wages, primarily because of a drop in low-wage employee participation in ESHI, especially in the most costly plans. Thus, if compensation increased uniformly in all wage deciles, the rising cost of health insurance would have depressed that rate of money wage growth by the greatest proportions in the 2nd through the 6th wage deciles, and the smallest proportional effects would be in the top and bottom wage deciles.

Chart 8.
Employer cost of providing health insurance by employee wage decile, 1996–2008



SOURCE: Authors' calculations based on MEPS household and employer survey files.

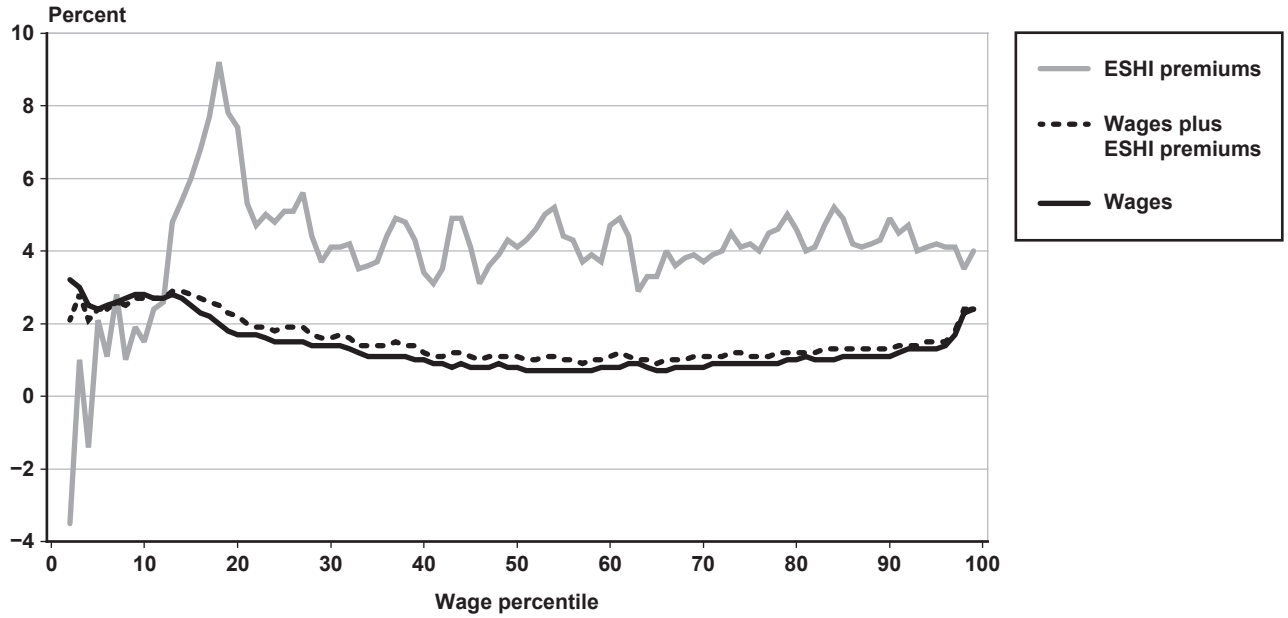
Chart 9 shows detailed estimates of the annual rates of growth in real wages, real ESHI premium costs, and the sum of wages plus ESHI premiums across the earnings distribution. We calculated annual rates of change from 1996–1997 through 2007–2008 after adjusting both wages and insurance premiums using the Consumer Price Index Research Series Using Current Research Methods deflator. Our wage gain tabulations show the familiar U-shaped pattern other analysts have uncovered when analyzing earnings gains since the early 1990s (for example, Autor 2010, 3). Money earnings have grown faster at the top and bottom of the wage distribution than in the middle. The varying growth in employer costs of providing health insurance for high-, middle-, and low-wage workers explains a small part of that pattern. At the very bottom of the wage distribution, workers are less likely to receive ESHI. That reduces the employer's cost of providing those benefits, which enhances the possibility that changes in real compensation will take the form of increases in money wages. At the top of the distribution, employer costs of providing health benefits increase as fast as they do for workers in the middle of the distribution. However, the employer cost of premiums for highly paid workers is only a very small part of their compensation. Consequently, the rapid growth in ESHI costs has little impact on employers' ability to give those workers large increases in money wages.

Implications for the Social Security Tax Base

The growth in employer health insurance premiums estimated from MEPS data follows a pattern similar to estimates based on data from the national income and product accounts (NIPA) (Chart 10). Both series show ESHI premiums were stable or declining in relation to money wages in the mid-1990s, rose steadily from the late 1990s through 2005, and then declined or stabilized relative to wages after 2005. The estimated growth in the ratio of ESHI premiums to wages is somewhat faster in the MEPS than in the NIPA, but from 2001 through 2008, the two series are very similar.

One reason for the close correspondence is the striking similarity between average wages as reported in the MEPS household survey and those reported on W-2 forms and reflected in the NIPA. Over the 13 years we analyze, the average annual MEPS wage was 100.0 percent of the NIPA average wage, with a standard deviation of 1.9 percentage points. The

Chart 9.
Average annual rates of change in real wages and employer cost of providing health insurance, by worker wage percentile, 1996–1997 to 2007–2008



SOURCE: Authors' calculations based on MEPS household and employer survey files.

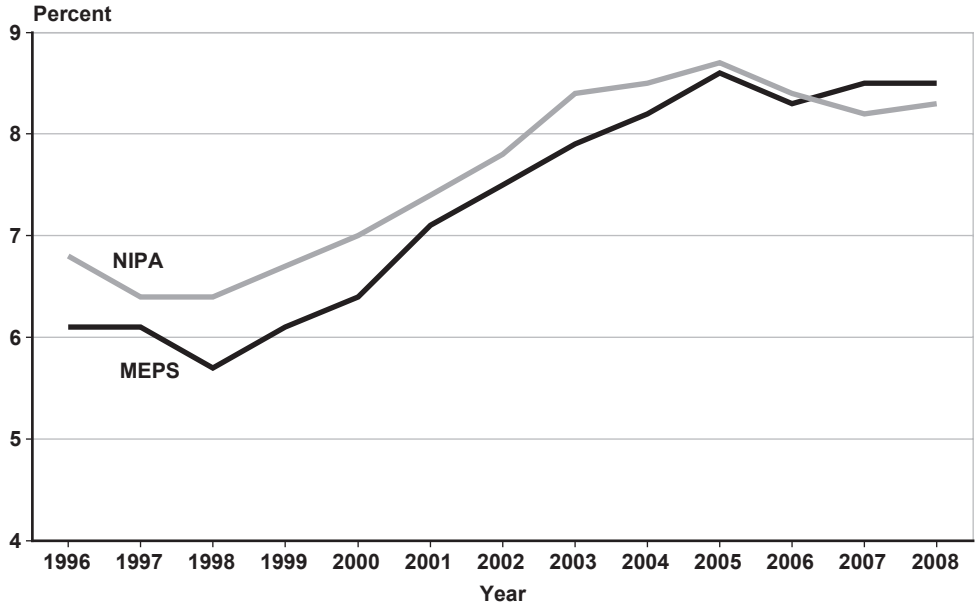
NOTE: Both wages and ESHI premiums are deflated using the CPI-U-RS to calculate annual percentage changes.

similarity of the average wage amounts is somewhat misleading. Like other public-use files released by government agencies, the MEPS household income data are top-coded. Thus, the file does not accurately report the wages of very high earners. If the wages of top earners are underreported, yet average wage estimates based on MEPS data are close to NIPA-based national average wages, it follows that many low or moderate wage earners must be overestimating their wage earnings or missing from the MEPS sample. Indeed, when comparing the earnings distribution in the household survey with the wage distribution implied by the W-2 forms for identical calendar years, it appears there are too few earners with low annual wage amounts. (This problem also afflicts the March Current Population Survey, the source of the Census Bureau's estimates of annual wages.) The MEPS wage reports and the W-2 wage distribution correspond reasonably closely from the middle of the wage distribution through the 90th percentile, but MEPS-reported wages above the 90th percentile fall increasingly below the wages reported in the W-2 records.

Chart 11 shows alternative estimates of ESHI premiums as percentages of wages for workers with wages above and below the Social Security taxable maximum. The solid lines show our basic estimates from the MEPS household survey, with imputed premium amounts based on averaged responses from the employer survey. The broken lines show our estimates after using W-2 data to adjust the household survey wage data to accurately reflect average earnings above and below the maximum taxable amount. Our adjustment is straightforward. We assume that household survey respondents have given wage reports that permit us to accurately determine their rank in the annual earnings distribution, even though reported earnings amounts tend to overstate actual earnings in lower ranks of the wage distribution and understate earnings at the top of the distribution. We then use workers' earnings ranks (rather than their exact reported earnings) to determine which respondents have earnings above and below the taxable maximum. That procedure permits us to use W-2 national wage data published by the Social Security Administration to determine average wage amounts above and below the taxable maximum, but to use MEPS estimates of employer contributions to determine the average health insurance premiums for workers with earnings above and below the taxable maximum.

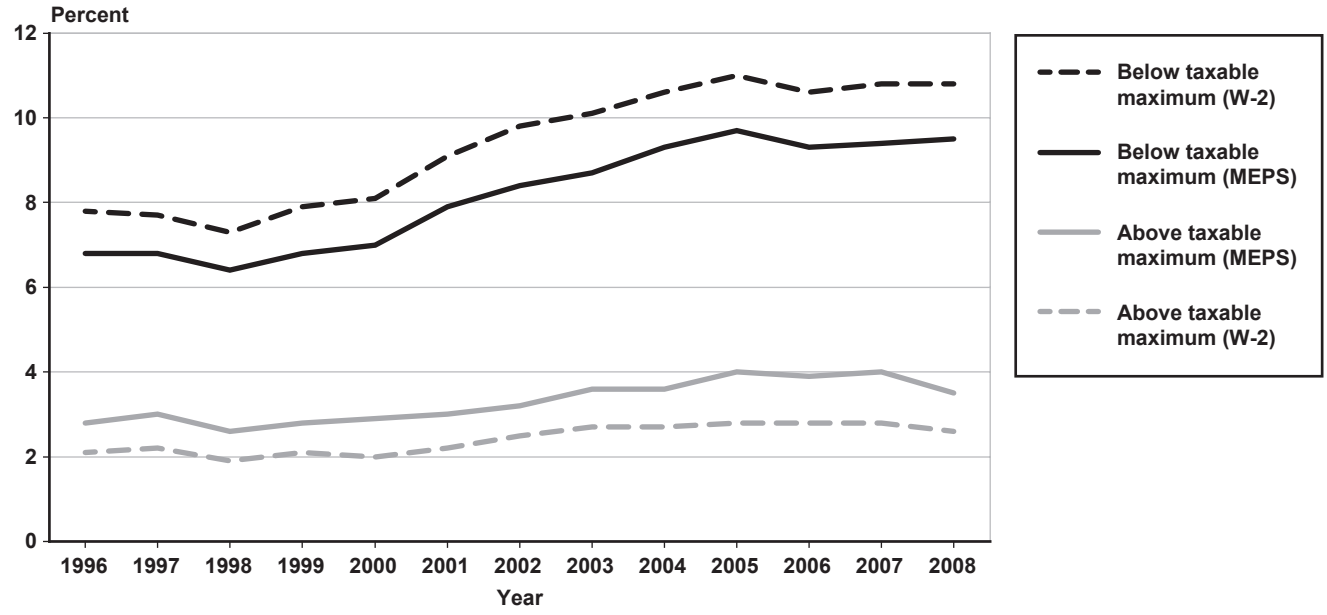
Although those adjustments have little effect on the overall average ratio of employer premium contributions to wages, they have a sizable effect on the estimated premium payments for workers who are above and below the maximum taxable wage level.

Chart 10.
Employer cost of providing health insurance as a percentage of average annual wages for US wage and salary workers: Estimates based on MEPS and NIPA wage data, 1996–2008



SOURCE: Authors' calculations based on MEPS household and employer survey files; BEA (2012).

Chart 11.
Estimated employer cost of providing health insurance as a percentage of average wages for workers with annual wages above and below the taxable maximum (MEPS and W-2 data), 1996–2008



SOURCE: Authors' calculations based on MEPS household and employer survey files; SSA (2009) and earlier editions.

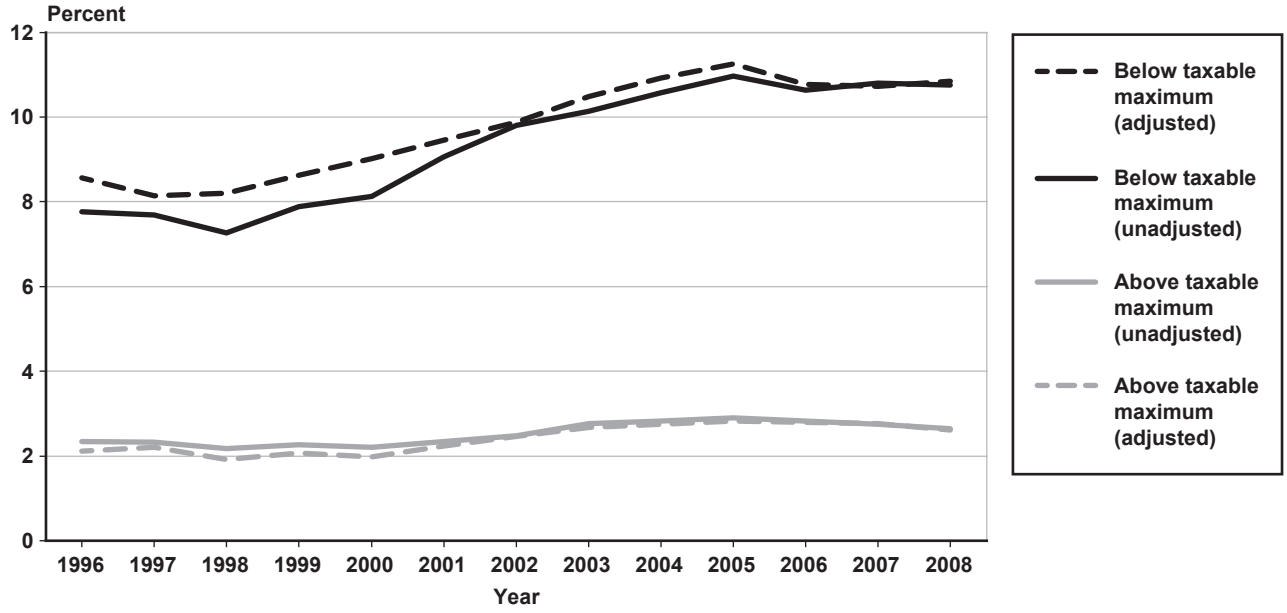
Because low-pay workers tend to overstate their wages, the adjustment increases our estimated average premium-to-wage ratio among the workers with wages below the taxable maximum. In the MEPS sample, that ratio averaged 8.2 percent from 1996 through 2008. The W-2 earnings adjustment increases the ratio to 9.3 percent. The adjustment has the opposite effect on the average premium-to-wage ratio among workers with earnings above the taxable maximum, lowering their average ratio for 1996–2008 from 3.3 percent in the MEPS data to 2.4 percent.

Chart 12 shows the MEPS tabulations adjusted for the apparent understatement of average ESHI premiums in the first few years of our analysis period. As displayed in Chart 10, our imputations of ESHI premiums appear somewhat lower than comparable estimates in the NIPA from 1996 to 2000. That may be because the MEPS data lead us to underestimate the proportion of workers who are enrolled in costly employer health plans, or because the imputed premium amounts are lower than those reflected in the NIPA. Whatever the reason for the discrepancy, Chart 12 shows the effect of adjusting the MEPS premium imputations to reflect NIPA wage data. The adjustments are very small in 2001 and later; their effect is somewhat larger for the first 5 years of the analysis period.

Our results can be used to assess the potential impact of increased employer health insurance costs on the share of compensation subject to the Social Security payroll tax. We first assume that the increase in health insurance costs does not affect the trend in employee compensation and its distribution across wage levels. Instead, we assume that the changing health insurance costs have affected only the components of taxed and untaxed compensation received by workers at different wage levels. Although employer-sponsored insurance, like all health insurance, certainly involves a cross-subsidy from the more healthy to the less healthy, we assume no systematic cross-subsidization from high- to low-wage workers or vice versa. Thus, the employer surveys accurately measure their cost of providing insurance to high- and low-wage workers. In turn, those costs are ultimately borne by insured workers in the form of lower money wage payments than they would receive if no health plans were provided. These assumptions seem plausible because net insurance reimbursements paid to workers in different parts of the earnings distribution are more or less proportional to the estimated employer cost of health insurance premiums.[6]

If there were no upper limit on wages subject to the Social Security payroll tax, as is true of the

Chart 12.
Employer cost of providing health insurance as a percentage of average annual wage for earners with wages above and below the taxable maximum (adjusted and unadjusted), 1996–2008



SOURCE: Authors' calculations based on MEPS household and employer survey files; SSA (2009) and earlier editions; BEA (2012).
NOTE: Adjusted data have been aligned to match NIPA trends.

Medicare tax, the analysis would be trivial. Excess growth in untaxed health benefits would simply slow the growth of other taxed and untaxed components of compensation. The question of interest is, to what extent have money wage payments declined, as opposed to other nonhealth insurance components of compensation? The presence of a cap on taxed earnings complicates efforts to assess the impact of higher health insurance premiums on Social Security taxable earnings. The impact clearly depends on the relative increase in premiums among workers with earnings above and below the taxable maximum and on the pattern of total compensation increases in different parts of the wage distribution. Our analysis focuses on ESHI premium costs. We also calculate employer costs for Social Security and Medicare contributions. Because we have not analyzed the distribution of other untaxed fringe benefits such as employee pensions, we cannot perform a detailed analysis of their impact and will assume that they will continue to rise proportionally with money wages. That assumption seems justified because the most important untaxed fringe benefit besides health insurance is a pension, and employer contributions to both defined benefit and defined contribution pensions are usually determined by employees' wages rather than total compensation.

To simplify the analysis, we categorize workers as either always having earnings below the taxable maximum or always having earnings above the maximum. That oversimplification is small, because the proportion of workers with wages above the taxable maximum has remained quite stable for a decade and a half. As noted above, we assume there is no cross-subsidization of health benefits between high- and low-wage workers. Over the period we analyzed, ESHI premiums increased 5.77 percent a year, while money wages increased by 3.93 percent a year among earners with wages below the taxable maximum and by 4.50 percent a year among earners with wages above the maximum.[7] Clearly, the different rates of increase in wages above and below the taxable maximum reduced the percentage of wages subject to the payroll tax, because a disproportionate percentage of wage increases were received by earners who did not pay taxes on their marginal wage gains. Regardless of where in the wage distribution earnings gains occur, however, they will be reflected in the average amount of wages earned in the economy. To perform our simulation, we compare the effects of two different

assumptions about the trend in ESHI premium costs. As a baseline, we assume that ESHI costs per worker increase 5.77 percent a year, the actual historical average from 1996 to 2008. The other components of wage and nonwage compensation grow proportionately more slowly in order to accommodate a growth in health care costs that substantially exceeds the growth in overall compensation. As an alternative scenario, we assume that employer health insurance contributions grow exactly as fast as overall compensation. That could occur because of slower growth in provider charges, faster growth in required premium contributions from employees, or faster growth in cost sharing required of employees.

Table 2 shows the percentage distribution of compensation by component under our baseline and alternative assumptions about the growth rate of employer costs of providing health insurance. We show results separately for workers with earnings below and above the taxable maximum, as well as for both groups combined. Along with simulations for 1996 and 2008 (the start and end dates of our historical data), we include projections for 2020.

In the top panel, the employer cost of providing health insurance increases from 6.97 percent of compensation in 1996 to 8.60 percent in 2008 and 10.62 percent in 2020 under our baseline assumption (employer health insurance costs per worker rise 5.77 percent a year versus total compensation growth of 3.93 percent a year). To accommodate the outsize gain in health insurance costs, wages must grow more slowly than total compensation; therefore, wages decline from 81.38 percent of compensation in 1996 to 79.95 percent in 2008 and 78.18 percent in 2020. Because the top panel examines earners with wages below the taxable maximum, those earners are subject to the full payroll tax rate of 6.2 percent for Old-Age, Survivors and Disability Insurance (OASDI) plus 1.45 percent for Medicare Hospital Insurance (HI), or 7.65 percent of money wages. (Note that the table shows the employer's estimated payroll tax contribution as a fraction of total compensation, and that values are shown both for total payroll taxes and for the OASDI subcategory.) The drop in the money-wage share of employee compensation in turn reduces the payroll tax contribution's share. Our alternative scenario assumes that all components of employee compensation keep pace with the employer cost of providing health insurance, so the shares do not change over time. Note the difference: Under the alternative scenario, the total payroll tax share increases 0.11 percent in 2008 and 0.24 percent in 2020 relative to the baseline assumptions.

The second panel, which covers workers with wages above the earnings cap, shows a more complicated picture. Under the baseline assumption, employer health insurance contributions increase 5.77 percent a year, and total compensation costs increase 4.50 percent a year. Health plan premiums represent 2.06 percent of total compensation costs for those high-wage workers in 1996, and rise to 2.38 percent in 2006 and to 2.76 percent in 2020. Both the OASDI and the total payroll tax shares of compensation shrink, in part because money wages are a declining percentage of compensation and also because rising wage inequality increases the fraction of money wages that exceed the taxable maximum. Under the alternative scenario, however, money wages grow slightly faster than total compensation. The reason is that payroll taxes increase *more slowly* than compensation, because a smaller percentage of high-wage earners' wage income is below the taxable maximum. Thus, even under the alternative assumption regarding health insurance costs, the percentage of compensation taxed by Social Security is expected to decline. In this case, however, the reason for the decline is the different rates of compensation growth for workers with earnings above and below the taxable maximum. Rising wage inequality causes a growing fraction of wage income to go untaxed because more of it exceeds the taxable maximum.

The bottom panel of Table 2 shows the results for all workers combined. Those figures reflect the weighted average results for the two groups of earners. Not surprisingly, both the OASDI and the total payroll taxes represent shrinking shares of employee compensation over time, even under the alternative assumption that ESHI costs rise in proportion with overall compensation costs. Rising wage inequality will reduce the payroll tax shares of compensation, even if ESHI costs do not increase any faster than compensation. If health insurance costs climb faster than overall compensation, the payroll tax shares of compensation will fall even faster. As more compensation will be attributable to untaxed employee compensation, less will be received as money wages below the taxable maximum. Compared with a labor market in which ESHI costs increase proportionately with total compensation, OASDI payroll tax revenues in a world with excess health insurance cost increases will be 1.64 percent lower in 2008 and 3.70 percent lower in 2020, assuming equal total compensation.

Table 2.
Effects of employer costs of providing health insurance on other components of compensation under two different assumptions about ESHI premium cost growth: 1996, 2008, and projected 2020 (in percent)

Year	Total compensation [a]	Wages	Health insurance	Employer portion of—		Other
				OASDI payroll tax	Total payroll tax	
			Workers earning less than the taxable maximum			
Baseline						
1996	100.00	81.38	6.97	5.05	6.23	5.42
2008	100.00	79.95	8.60	4.96	6.12	5.33
2020	100.00	78.18	10.62	4.85	5.98	5.22
Alternative						
1996	100.00	81.38	6.97	5.05	6.23	5.42
2008	100.00	81.38	6.97	5.05	6.23	5.42
2020	100.00	81.38	6.97	5.05	6.23	5.42
Difference [b]						
1996	…	0.00	0.00	0.00	0.00	0.00
2008	…	1.43	-1.63	0.09	0.11	0.09
2020	…	3.19	-3.65	0.20	0.24	0.20
			Workers earning more than the taxable maximum			
Baseline						
1996	100.00	87.89	2.06	2.91	4.18	5.87
2008	100.00	87.75	2.38	2.74	4.01	5.86
2020	100.00	87.55	2.76	2.58	3.85	5.84
Alternative						
1996	100.00	87.89	2.06	2.91	4.18	5.87
2008	100.00	88.02	2.06	2.77	4.05	5.87
2020	100.00	88.13	2.06	2.65	3.93	5.88
Difference [b]						
1996	…	0.00	0.00	0.00	0.00	0.00
2008	…	0.27	-0.32	0.03	0.03	0.01
2020	…	0.58	-0.70	0.07	0.08	0.04
			All earners			
Baseline						
1996	100.00	83.08	5.69	4.49	5.69	5.54
2008	100.00	82.09	6.90	4.35	5.54	5.47
2020	100.00	80.87	8.36	4.20	5.37	5.40
Alternative						
1996	100.00	83.08	5.69	4.49	5.69	5.54
2008	100.00	83.20	5.62	4.42	5.63	5.55
2020	100.00	83.32	5.56	4.36	5.57	5.55
Difference [b]						
1996	…	0.00	0.00	0.00	0.00	0.00
2008	…	1.11	-1.28	0.07	0.09	0.08
2020	…	2.44	-2.80	0.16	0.20	0.15

SOURCE: Authors' calculations based on MEPS household and employer survey data.

NOTES: The baseline assumption is that employer cost of providing health insurance continues the historical pattern of increasing more rapidly than other components of compensation. The alternative assumption is that employer cost of providing health insurance increases at the same rate as total compensation.

… = not applicable.

a. The sum of wages, health insurance, employer portion of total payroll tax, and other.

b. Calculated as "alternative" minus "baseline."

Effect of Health Insurance Reform on the Social Security Tax Base

We now assess how the ACA will affect average employer health insurance contributions and the distribution of those contributions across wage levels. The analysis focuses on shifts in the distribution of compensation by component that may result from reform, and in turn on the shifts in the amounts of wages covered by Social Security. The simulation results reflect the effects of the Supreme Court's June 28, 2012, ruling on the constitutionality of the ACA. As we discuss below, that decision affected the federal government's ability to compel states to expand their Medicaid programs in order to provide coverage to a larger fraction of low-income Americans.

Postreform Health Insurance Arrangements

The ACA, signed into law in March 2010, established a mandate for most legal US residents to obtain health insurance or pay a penalty if they fail to do so. Among other things, the law called for each state to create an insurance exchange in which individuals and small businesses can compare competing plans' premiums and purchase coverage. Eligible families and individuals can obtain publicly subsidized policies through the exchange. In addition, the law established financial penalties for large firms that do not offer affordable health insurance to their employees. Finally, the ACA significantly expanded eligibility for Medicaid, although the Supreme Court's June 2012 decision allowed states to choose not to liberalize their Medicaid eligibility rules to the extent originally intended by Congress.

The financial incentives for employers to offer health plans and for workers to enroll in them are expected to boost the percentage of the nonaged population covered by health insurance. The Congressional Budget Office (CBO) predicts that uninsured adults and children will decline from about 20 percent of the nonelderly population to about 11 percent after the major provisions of the ACA have been implemented (CBO 2012, Table 3). Many workers will change their source of coverage as some who are currently insured under an employer plan obtain coverage under Medicaid or through the exchanges while others, who are not currently insured under an employer plan, obtain ESHI made more attractive by the incentives in the new law. When those shifts occur, we assume affected employers will alter their compensation packages to reflect the increases or reductions in the cost of providing insurance to their workers. To estimate the impact of the changes on the wages of individual workers, we assume that the total compensation received by each worker will be unaffected by the reform. An increase in the cost of providing insurance to a worker, for either providing new coverage or paying a penalty for failing to offer affordable coverage, will result in an equivalent reduction in the amount of money wages paid to the worker. A reduction in the cost of providing insurance because a previously insured worker obtains subsidized insurance through the exchanges or Medicaid will increase the amount of compensation paid as money wages. Our assumption supposes, on average and in the long run, that those effects will approximately offset each other. The simulation does not attempt to model the impact of health insurance reform on underlying health care costs. Instead, it models changes in the source of employee insurance coverage and the impact of those changes on employee compensation packages, especially on wage compensation that is subject to Social Security taxes.

We estimate the effects of the ACA as of 2016, when most of the law's provisions will be implemented in their final form. We use data from the 2006 and 2008 MEPS household surveys. The survey sample weights are adjusted to reflect Census Bureau and Bureau of Labor Statistics projections of the gender and age group distributions in the civilian noninstitutionalized population in 2016.[8] We adjust wage and income values reported in the MEPS files to reflect predicted increases through 2016. We make similar adjustments for health insurance premiums.

Workers in the MEPS samples fall into one of four initial health insurance coverage categories. In the year of their interview, workers and their dependents can be covered by employer-provided insurance, by Medicaid or CHIP, or by nongroup and other insurance plans (including Medicare and Tricare); or they can be uninsured. CBO uses those four categories to estimate the cost and effects of the ACA.[9] As we intended, our simulation results closely match the CBO estimates of sources of insurance coverage both before and after ACA implementation (Table 3).

The first goal of the simulation is to determine the source of each worker's insurance after ACA implementation. We specify five postreform coverage categories. Workers and their dependents can be covered by ESHI, by Medicaid or CHIP, or by nongroup and other insurance plans (including Medicare and Tricare); they can obtain potentially subsidized insurance

Table 3.
Workers by health insurance status and source before and after ACA: CBO and MEPS-based estimates, 2016 (in millions)

Insurance status and source	Before ACA		After full ACA implementation		Change	
	CBO	MEPS	CBO	MEPS	CBO	MEPS
ESHI	159	161	154	156	-5	-5
Medicaid and CHIP	32	33	42	43	10	10
Nongroup and other insurance [a]	28	27	26	25	-2	-2
Uninsured	56	55	30	29	-26	-26
Policy obtained through state insurance exchange	…	…	23	23	23	23
Total	275	276	275	276	0	0

SOURCES: CBO (2012); authors' calculations based on MEPS household and employer survey data.

NOTE: … = not applicable.

a. Includes Medicare.

through a state insurance exchange; or they can become or remain uninsured. We assume that workers will ordinarily select the insurance option that is most financially advantageous for their families. Because employers heavily subsidize the coverage they offer, employees usually choose that option when available.

Medicaid and CHIP are free for many households, and by liberalizing the income eligibility limits to 138 percent of the federal poverty line for families and single adults, the ACA will increase the number of low-income working families qualifying for Medicaid. For workers and dependents who already receive insurance under the program, we assume their Medicaid coverage will continue because of an ACA provision prohibiting states from restricting Medicaid eligibility. In the case of uninsured workers' families, we assume that, if all states adopted the Medicaid expansions permitted by the ACA, 80 percent of newly eligible people would enroll in the program.[10] We designate new Medicaid enrollees at random from among the newly eligible. (Employees who were eligible for Medicaid before the ACA, but were observed to be enrolled in an employer-sponsored or other private plan, are assumed to remain in the employer or nongroup plan. We assume those employees will continue to prefer private insurance to Medicaid because the ACA did not make Medicaid any more attractive for those workers.)

The 2012 Supreme Court decision is expected to reduce the number of states that will adopt liberalized Medicaid eligibility rules, because states are no longer required to expand coverage to retain their current Medicaid funding. We follow CBO (2012) in assuming the ruling will reduce Medicaid enrollment in 2016 by about 7 million compared with the estimated enrollment if liberalized Medicaid eligibility rules were implemented nationwide. To account for that predicted loss of new Medicaid enrollees, we randomly selected a group of 7 million to lose their new Medicaid coverage. Curiously, workers with family incomes below the poverty line are not eligible to obtain government subsidies for insurance purchased through state exchanges. However, low- and moderate-income workers with incomes above the poverty line can qualify for such subsidies. The Supreme Court's decision, combined with the reluctance of many states to adopt a more liberal income cutoff for Medicaid eligibility, will deprive some workers with poverty-level incomes of the opportunity to enroll in an affordable health plan.

Employees who are not eligible for Medicaid (before or after the ACA) can be offered subsidized or unsubsidized coverage through a state insurance exchange. In principle, insurance obtained through an exchange could be less expensive than the insurance offered by their employers. We assume that some employer-insured workers will switch their coverage from a (more expensive) employer plan to a (less expensive, potentially subsidized) exchange policy. Note, however, that employees who are offered ESHI can only obtain *subsidized* insurance through an exchange if their ESHI plan is deemed unaffordable.

In order to compare net premiums between an employer-sponsored plan and a plan purchased

through an exchange, we calculate the subsidized premiums workers would pay for a policy obtained through an exchange. That requires calculating the likely cost of a group policy premium and the public subsidy for which the worker is eligible. The subsidy is determined by family income, as specified in the reform law. We assume that workers currently covered under ESHI would need net premium savings of at least 15 percent before choosing to switch to a policy obtained through an exchange. Although the assumption may seem arbitrary, it attempts to reflect the behavioral reality that inertia predisposes many workers to retain their current coverage even when a cheaper alternative is available.

For workers who reported their employers did not offer insurance in the initial MEPS data, we have to determine whether the employers would offer a group health plan after ACA implementation and, if so, the cost of the plan to employees. That determination depends on the penalties the employer would face if no plan were offered to a particular worker. We assume that private establishments with 50 or more workers will offer group insurance plans to all full-time workers, and to part-time workers only if they were previously insured by the employer. We assume establishments with fewer than 50 employees will offer insurance to an employee only if they did so before the reform. Further, even if a small employer offered an insurance plan to a part-time, seasonal, or temporary employee before the ACA, we assume that a certain percentage of those offers would be withdrawn after ACA implementation. Possible government penalties on large employers will persuade most of them to establish plans covering at least their full-time employees, defined in the new law as those who work 30 or more hours a week. We do not think the subsidies encouraging small employers to establish plans will materially change the percentage that offer a company health plan. In fact, we follow the CBO forecast and assume that, on balance, small employers are likely to withdraw insurance offers from some of the employees they currently cover. The appendix includes details about how we determine the source of employees' postreform insurance coverage.

After assigning workers to a postreform coverage category, we estimate how changes in insurance status affect employee wages. For each worker, we convert the annual wage reported in the MEPS to 2016 dollars to reflect the assumed growth of nominal wages (including some real wage growth). As noted earlier, we assume that any new employer-paid health insurance premium and any penalty for failure to offer an affordable plan will be subtracted from an employee's wage. On the other hand, any savings to employers because workers leave an employer-sponsored plan will result in an increase in the employees' money wages. Thus, we assume the total compensation of each employee remains the same, but the division of employee compensation between wages and insurance premiums or penalties can change. For workers who continue to be covered under their employer's old health plan, we assume no change in the employer's cost of providing coverage and hence no change in the wage. For workers with no employer-sponsored coverage before or after reform, employers' health insurance cost will rarely change. That change can only occur when a large employer declines to offer affordable health insurance and its employees receive subsidies for policies purchased through an exchange. In that instance, the employer must pay a financial penalty for failing to offer an affordable plan, and we subtract the penalty from the compensation paid to affected employees.[11] For workers who begin to receive health insurance coverage under an employer plan, the new employer health insurance contribution must be subtracted from the worker's wage. A worker who leaves an employer-sponsored plan can receive an increase in money wages equal to the reduction in employer health premiums minus any penalty the employer may have to pay if the employee receives publicly subsidized insurance.[12]

Results

We focus on Social Security–covered wages that are below the taxable wage ceiling, estimated to be $125,500 in 2016. Employees' wages will increase if they switch from ESHI to either Medicaid or an insurance plan obtained through a state exchange. Even if an employer penalty accompanies the employee's switch, our calculations suggest that the penalty is typically less than the employer would have spent on premiums for workers who switched out of the plan. Employees' wages will fall if they switch from uninsured status or from coverage under a nongroup plan into ESHI. Wages will also fall for previously uninsured workers who obtain subsidized insurance through an exchange, compelling the employer to pay a penalty. Our simulation model predicts which workers will switch coverage either to or away from an employer-provided plan, and we then calculate the resulting change in the employees' taxable wage.

Table 4 shows our estimates of average money wages and aggregate Social Security–covered wages, and the effects of the ACA, by wage decile. The table includes columns detailing, for the employees so affected, aggregate increases in wages (because employers make smaller contributions for employee health insurance) and decreases in wages (because employers either provide new coverage to their workers or pay penalties for failing to offer affordable coverage). Note that workers who lose money wages do not ordinarily suffer a loss in welfare. They are obtaining either employer-subsidized insurance or government-subsidized insurance purchased through an exchange. If they value this insurance highly, they will be better off.

We find that the ACA will lead to an increase in money wages for all deciles but the 8th, where wages fall slightly. The shift in compensation toward money wages occurs in part because some workers with modest earnings will become eligible for Medicaid. Workers who switch from an employer plan to Medicaid will no longer receive part of their compensation in the form of an employer health plan contribution. We assume that the part of compensation that formerly was allocated for insurance premiums is now added to workers' money wages.

Many employer-insured workers in the lower wage deciles are employed in small establishments. Small firms are not expected to pay penalties when employees switch from ESHI to coverage obtained through an exchange. For example, among earners in the bottom wage decile who are predicted to switch from ESHI to exchange-provided insurance, 50 percent work for small firms. Because those firms are unlikely to be penalized when their workers obtain insurance outside the employer plan, we add the full amount of the premium to the employee's wage. A smaller fraction of employer-insured workers in higher wage deciles are employed in small establishments. In the top decile, only 35 percent of workers who switch from ESHI to an exchange-provided policy work in small firms. Employers of the remaining 65 percent of top wage-decile workers will be subject to a penalty for each worker obtaining subsidized insurance through an exchange. Of course, high-wage employees are usually members of high-income households, very few of which would qualify for a subsidy if they purchased insurance through an exchange. If there is no public insurance subsidy to the employee, there is no employer penalty for failure to offer an affordable plan.

Many employees in the lower ranks of the wage distribution work part time. The employers of

Table 4.
Simulated effect of the ACA on Social Security–covered wages, by wage decile, projected 2016 (in 2016 dollars)

	Average covered wage—		Aggregate covered wages (in billions)					
Wage decile	Before ACA	After ACA	Before ACA	Gains among affected employees [a]	Losses among affected employees [b]	After ACA	Net change in covered wages (in billions)	Net change in covered wages (%)
1	4,082	4,167	60.4	1.5	-0.2	61.6	1.2	2.1
2	11,510	11,613	170.5	2.5	-1.0	172.0	1.5	0.9
3	18,475	18,727	274.6	5.4	-1.7	278.3	3.7	1.4
4	25,574	25,960	383.8	7.3	-1.5	389.6	5.8	1.5
5	32,620	32,884	471.2	5.5	-1.7	475.0	3.8	0.8
6	40,460	40,764	604.4	6.0	-1.4	609.0	4.5	0.8
7	49,596	49,615	726.0	2.9	-2.6	726.3	0.3	0.0
8	61,557	61,498	908.9	1.8	-2.7	908.1	-0.9	-0.1
9	80,278	80,282	1,186.4	1.4	-1.4	1,186.5	0.1	0.0
10	115,848	115,866	1,712.1	1.9	-1.1	1,712.4	0.3	0.0
Total	43,961	44,099	6,498.4	36.2	-15.4	6,518.8	20.4	0.3

SOURCE: Authors' calculations based on MEPS household and employer survey data.

a. Reflects employees switching out of ESHI as a result of ACA.

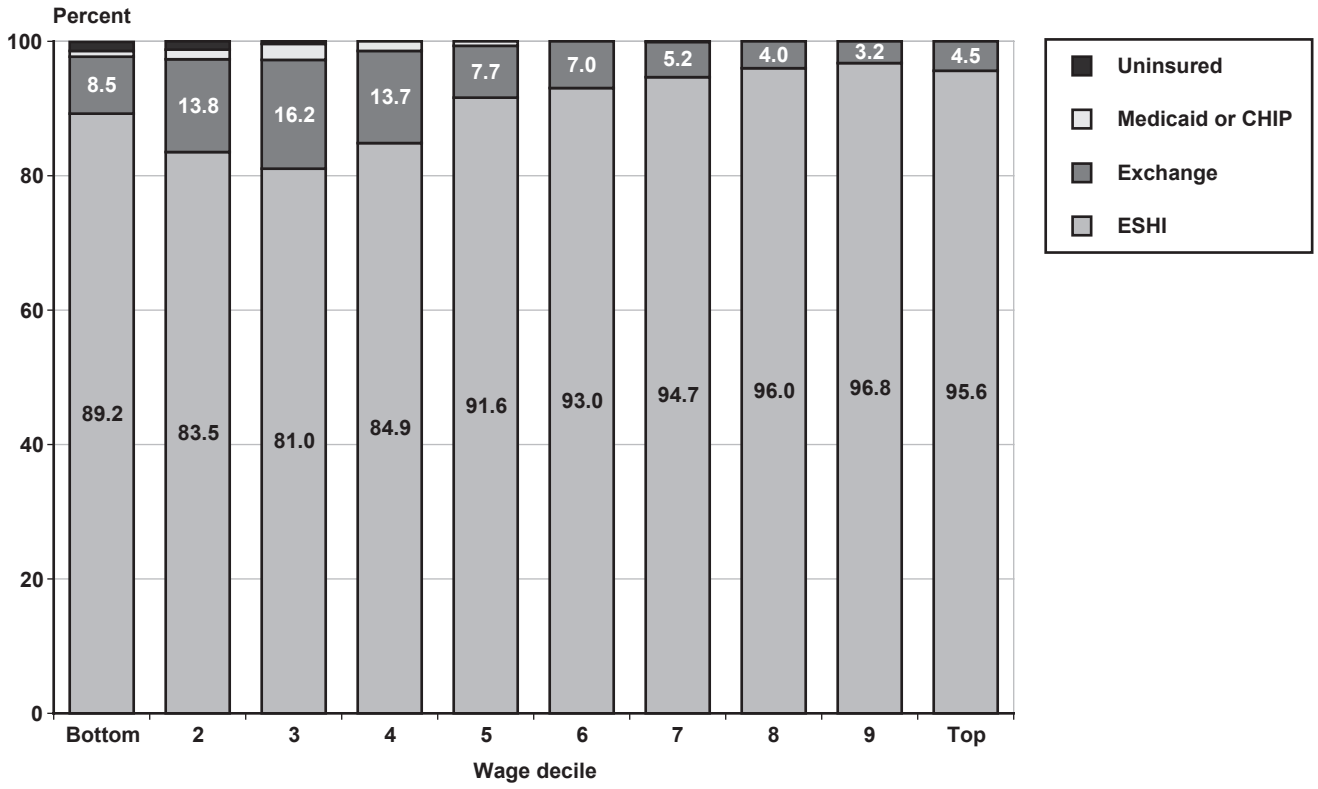
b. Reflects employees who obtain ESHI as a result of ACA or whose employer must pay a penalty when they obtain subsidized insurance through a state exchange.

part-time workers, whether large or small, do not pay penalties when their employees obtain subsidized health policies through an exchange. Because part-time work is much less common in the top wage deciles, it is less likely that employers of high-wage workers can avoid penalties in those rare instances when their workers switch to a subsidized exchange-provided plan.

In the top wage deciles, we predict virtually no change in the source of insurance coverage for workers who had ESHI before reform (Chart 13). Less than 5 percent of employer-insured workers in the top half of the wage distribution are predicted to switch to insurance obtained through an exchange. In some cases, the employer would be required to pay a penalty because of the switch, although those workers' high wages typically make them ineligible for the subsidies. For large firms, we assume employers will begin offering health plans and many high-wage workers will enroll in them. The employer cost for this new coverage would result in an equivalent reduction in wages. Because employee participation in ESHI changes little in the top wage deciles, the effect on workers' wages is small. Average money wages and aggregate Social Security–covered wages remain essentially unchanged in the top wage deciles.

The net predicted effect of the ACA is to boost total Social Security–covered wages by about 0.3 percent. The effects are concentrated, not surprisingly, in the bottom wage deciles, where current insurance coverage tends to be lower. On balance, health insurance reform's effects on the proportions of employee compensation paid as wages and as employer health insurance contributions would only slightly affect Social Security payroll tax receipts. From the earlier discussion it should be obvious that the reform's more important potential effect involves health insurance costs and hence ESHI premiums. The simulations in this section suggest that changes in compensation arising from changes in the source of employees' health insurance are likely to have only a small impact on the Social Security tax base.

Chart 13.
Postreform coverage status of employees covered by ESHI before reform, by wage decile, 2016



SOURCE: Authors' calculations based on MEPS household and employer survey files.

NOTE: "Exchange" comprises subsidized or unsubsidized insurance obtained through a state insurance exchange.

Conclusion

In the past six decades, health care costs have increased much faster than employee compensation and other consumer prices. Over that span, employers assumed a growing role in insuring their workers' health care expenses. The great majority of wage and salary workers and their dependents now receive health insurance through an employer-provided plan. Even when the expansion of employer coverage ended and the liberalization of employer health insurance coverage ceased, employer outlays on workers' health insurance continued to grow because of increases in health care prices and utilization. Those trends have important implications for the Social Security tax base. Money wages are included in taxable earnings, but employer contributions for health benefits are not. Assuming that workers ultimately bear the cost of employer-provided health benefits through lower wages, the continuing rapid growth in health insurance costs reduces the share of employee compensation included in the tax base. In recent decades the outsize growth of health insurance costs has been accompanied by a rise in wage and compensation inequality. Workers at the top of the wage distribution have seen faster increases in wages and compensation than workers in the middle and at the bottom of the distribution. Growing wage inequality also reduces the Social Security tax base as a fraction of compensation, because it increases the proportion of wages above the taxable earnings ceiling.

This article examined the relationship between rising ESHI costs and growing wage inequality using wage and insurance premium data from the MEPS household and employer surveys. During the years we analyze, 1996–2008, we find only modest changes in the insurance coverage of wage and salary workers and somewhat larger changes in the percentage of workers who opt for more costly family plans. The proportion of workers enrolling in more costly plans fell in every wage decile. Nonetheless, employer outlays on employee health plans rose considerably faster than wages in every part of the wage distribution except the bottom decile. Across the top 80 percent of the wage distribution, we find that employer contributions for employee health plans increased at approximately the same rate. However, ESHI premiums represent a larger percentage of total compensation in the middle and near the bottom of the wage distribution than they do at the top. Consequently, the growth in employer health insurance costs absorbed a larger percentage of compensation gains in the middle and at the bottom of the wage distribution—except at the very bottom—compared with those at the top of the distribution. Differences in the rate of growth of wages tended to reinforce this differential in rising health insurance costs. Wages grew faster at the top of the distribution, especially above the Social Security taxable wage ceiling, compared with the middle and bottom of the distribution. In simulations, we find that the combined effect of rising health insurance costs and increasing wage inequality was a significant reduction in the share of Social Security taxable wages in employee compensation. If employer costs of providing health insurance had increased at the same rate as overall compensation, the 2008 Social Security tax base would have been 1.7 percent larger. We project that the tax base would be 3.8 percent larger by 2020 if employer costs of providing health insurance grew between 1996 and 2020 at the same rate as employee compensation.

In estimating the potential effects of the ACA on money wages and the Social Security tax base, we ignore the potential effects of the law on overall health insurance costs. We take that trend as given, and instead estimate the impact of reform on the sources of employee health insurance coverage. Further assuming that total employee compensation will remain unchanged, we then trace the effects of changes in the source of health coverage on the division of employee compensation between money wages and employer contributions for health insurance. On balance, we find that health insurance reform is likely to increase employee compensation subject to Social Security taxes. The main reason is that some employers of low- and middle-wage workers are likely to see some of their employees switch from ESHI to subsidized insurance plans provided through state health insurance exchanges or, less often, to Medicaid. Because those employers will be relieved of some of the burden of contributing to their group health plans, they will be able to offer higher wages to affected employees. Of course, other employers will begin to offer health insurance. The net benefits to an employer of introducing a health plan, taking account of the penalties assessed for not offering affordable coverage, will exceed the net cost of providing coverage. Empirical evidence suggests that workers who enroll in ESHI plans place a high value on the benefits they receive under the plan (Kolstad and Kowalski 2012). That fact, combined with penalties for having workers obtain subsidized insurance through state insurance

exchanges, makes it cost effective for some employers to begin providing insurance to their workers. Those employers will likely reduce money wages to compensate for their higher health care costs. Overall, the money wage increases received by employees who impose lower health insurance costs on their employers are likely to more than offset the higher contributions for workers who gain access to an ESHI plan. The net effect on Social Security taxable wages is likely to be small.

The more profound effect of health insurance reform on taxable employee compensation is likely to occur through a different channel. If insurance reform leads to slower long-term growth in health care spending, then a larger fraction of future compensation will take the form of money wages.

Appendix

For this analysis, each worker must be assigned a source of insurance or to uninsured status in the postreform period. There are five possible categories: (1) Medicaid and CHIP; (2) ESHI; (3) nongroup and other insurance (including Medicare); (4) a policy obtained through a state insurance exchange; and (5) uninsured. Workers and worker dependents who were already enrolled in Medicaid or CHIP before reform were assumed to remain in Medicaid or CHIP. The new law effectively raises the income cutoff for Medicaid to 138 percent of the poverty line and states are required to maintain their current eligibility limits with the expansion, so any person currently covered by the program would be unlikely to lose eligibility. Among uninsured workers and worker dependents who are predicted to become newly eligible for Medicaid as a result of the higher income limit, we assume 80 percent will enroll in Medicaid. We use random assignment to determine which workers will enroll.

Workers covered by ESHI before reform will have four postrefrom coverage options: take up Medicaid, obtain insurance through a state exchange, remain in the employer-sponsored plan, or become uninsured. (Some workers had ESHI and were not eligible for Medicaid before reform, then enrolled in Medicaid after reform. We assume that ESHI was still offered to those workers after reform, except for a small number of part-time and seasonal or temporary employees at small firms.) To determine which of the four options a given worker would select, we first calculate the premium that each worker would have to pay if he or she obtained insurance through an exchange. The net premium depends on workers' family incomes and their eligibility for subsidies. We then compare that calculated premium with the amount the worker currently contributes toward ESHI coverage. We assume that the exchange premium must be at least 15 percent lower than the current premium before the worker switches out. Workers in families with incomes below the poverty line who lose an ESHI offer are not eligible for subsidies in an exchange. (However, if they live in a state that adopts liberalized Medicaid eligibility rules, they will be eligible for free health insurance under Medicaid.) We assume that very low-income workers who lose their offer of ESHI will become uninsured and will not have to pay a penalty for noncoverage. Without subsidies, an exchange-provided insurance plan is simply unaffordable for very low-income families.

Workers covered by a nongroup or other insurance plan before reform have four potential sources of coverage after reform: Medicaid, insurance purchased through a state exchange, ESHI, or their prereform nongroup or other insurance plan. We assign some workers newly eligible for Medicaid into that program using procedures already described. For the remainder, we calculate the premium that each worker would have to pay if he or she obtained insurance through an exchange. After reform, some employers will offer insurance that was not offered before reform. For workers whose employers will offer a group plan, we calculate their expected contribution as the national average premium for workers in an employer-sponsored plan.[13] We then compare the premiums individuals currently pay for nongroup insurance with the premiums they would pay under the exchange and if they were offered ESHI. Most workers are assigned to the least expensive option. However, we assume that workers will switch out of their present coverage only if the alternative is at least 30 percent less expensive than their current nongroup insurance plan.

For workers who are uninsured before reform, there are also four postreform coverage options: Medicaid, insurance through a state exchange, ESHI, or remaining uninsured. As before, we assign some of those workers to Medicaid based on their income, and calculate for each worker a potential exchange premium and a potential contribution toward ESHI if their employer is assumed to offer insurance.[14] In order to encourage health insurance take-up, the new law stipulates that workers who choose to remain uninsured must pay a penalty. Our simulation assigns to all workers the penalty they would have to pay if they chose to

remain uninsured. The penalty is based on family size and income. We compare this penalty with the net premium workers would pay for insurance obtained through an exchange and the predicted contribution toward ESHI (if it is offered). We assign workers to the coverage category with the lowest cost to the worker.

Notes

Acknowledgments: The authors are grateful to Kathleen Burke of the Brookings Institution for outstanding research help, to Amanda Kowalski for useful comments on an earlier version of the paper, and to referees for very helpful suggestions on an earlier draft.

[1] For a more detailed description of the MEPS program and its component surveys, see the introductory material in Bernard and Banthin (2007). For an analysis of the MEPS data files and a comparison of their estimates of health spending, health insurance, and income with those from other data sources, see Sing and others (2006) and Burtless and Svaton (2010).

[2] Because MEPS households are included in the sample for a 2-year period, it is possible that some household members who were present before December in a particular calendar year were absent from the household by December. Most of our analysis focuses on the wages, health insurance coverage, and health spending of workers in the sample and their dependents who were still present at the end of December in each calendar year.

[3] In cases where MEPS household respondents did not report the establishment size of their employers, we imputed the average premium in their industry, regardless of firm size. Where respondents failed to report the insured employee's industry, we imputed the average premium payment for all US employers. Clearly, imputing average ESHI premiums by industry and establishment size understates the amount of premium variation among all employees.

[4] Average annual wages are reported every year by the Social Security Administration based on data from a large sample of W-2 forms. We calculated the change in consumer prices using the Bureau of Labor Statistics' Consumer Price Index Research Series Using Current Research Methods (CPI-U-RS).

[5] We use a MEPS wage-earner sample that excludes all earners who identify themselves as self-employed. This sample restriction is necessary because the MEPS public-use file combines all of a respondent's labor income in a single variable, preventing us from distinguishing wage income from self-employment income when an earner has both.

[6] In an earlier version of this article we documented the close correspondence between employer-reported insurance premium payments and net insurance reimbursement payments reported by households and health care providers in the MEPS files (Burtless and Milusheva 2012, Table 2).

[7] Our analysis of the MEPS files suggests that ESHI premium costs increased slightly faster among workers with earnings below the taxable maximum than among their counterparts above the maximum, 5.8 percent versus 5.5 percent. Over a 13-year period, however, this small difference does not materially affect the simulation results, so we disregard it here.

[8] By using data from both the 2006 and 2008 MEPS panels, we effectively double the number of observations available for the analysis. There is no overlap in the two samples, because household panel participation is limited to 2 years.

[9] MEPS respondents reporting multiple sources of insurance are classified according to the source in effect during the longest portion of the year.

[10] After Massachusetts implemented health insurance reform, 80 percent of those without private insurance who became eligible for Medicaid enrolled in the program (Sommers and Epstein 2010).

[11] Our calculations exclude the effects of the ACA on 25 percent of public sector employees, selected at random from among the public employees in the MEPS household survey files. We make this exclusion because approximately one-quarter of public employees are not covered by Social Security.

[12] Employers with 50 or more full-time employees that offer health insurance coverage but have a full-time employee who obtains insurance through an exchange and receives a premium tax credit must pay the lesser of $3,000 for each employee receiving a premium credit or $2,000 for each full-time employee, excluding the first 30 employees from the assessment (Kaiser Family Foundation 2011). We assume that paying the $3,000-per-employee penalty is more economical for many firms than paying $2,000 for every full-time employee in the firm. In our simulation, we therefore subtract $3,000 whenever an employer must pay a penalty because a worker decides to obtain insurance through an exchange. Note that final rules for determining employer and individual penalties had not been determined when this article was completed. Our estimates were prepared using our best assessment of what the final rules would be.

[13] We assume that all full-time workers employed in large private establishments (50 or more workers) will be offered insurance. We also assume that ESHI will not be offered to workers in small private establishments unless their employers currently offer such plans. Until 2016, firms with fewer than 25 employees will be entitled to receive a subsidy for offering a plan. However, beginning in 2016 the subsidy will end. Our assumptions about large- and small-firm insurance offers are consistent with Urban Institute predictions about the effect of reform on employer insurance offers (Garrett and Buettgens 2011).

[14] Some of the uninsured were offered ESHI before and chose not to take it. We assume their employers still

offer that plan. Other uninsured workers were not offered an ESHI plan before reform. Again, we assume that all employees of private establishments with 50 or more employees will offer insurance coverage after reform, but the only small firms to offer insurance will be the ones that already did so.

References

Autor, David H. 2010. *The Polarization of Job Opportunities in the U.S. Labor Market: Implications for Employment and Earnings*. Washington, DC: Center for American Progress and Brookings Institution Hamilton Project.

BEA. *See* Bureau of Economic Analysis.

Bernard, Didem, and Jessica S. Banthin. 2007. "Family-Level Expenditures on Health Care and Insurance Premiums among the U.S. Nonelderly Population, 2004." Research Findings No. 26. Rockville, MD: Agency for Healthcare Research and Quality.

Blumberg, Linda J. 1999. "Perspective: Who Pays For Employer-Sponsored Health Insurance?" *Health Affairs* 18(6): 58–61.

Bureau of Economic Analysis. 2012. "National Income and Product Accounts." Washington, DC: Department of Commerce. http://www.bea.gov/iTable/.

Burtless, Gary, and Sveta Milusheva. 2012. "Effects of Employer Health Costs on the Trend and Distribution of Social-Security-Taxable Wages." CRR Working Paper No. 2012-11. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Burtless, Gary, and Pavel Svaton. 2010. "Health Care, Health Insurance, and the Distribution of American Incomes." *Forum for Health Economics & Policy* 13(1): 1–39.

[CBO] Congressional Budget Office. 2012. "Estimates for the Insurance Coverage Provisions of the Affordable Care Act Updated for the Recent Supreme Court Decision." Washington, DC: CBO.

Crimmel, Beth Levin. 2009a. "Premiums, Employer Costs, and Employee Contributions for Private Sector Employer-Sponsored Health Insurance, Family Coverage by Firm Size, 1996–2006." MEPS Statistical Brief No. 230. Rockville, MD: Agency for Healthcare Research and Quality.

———. 2009b. "Premiums, Employer Costs, and Employee Contributions for Private Sector Employer-Sponsored Health Insurance, Single Coverage by Firm Size, 1996–2006." MEPS Statistical Brief No. 231. Rockville, MD: Agency for Healthcare Research and Quality.

Cunningham, Peter J., Samantha Artiga, and Karyn Schwartz. 2008. "The Fraying Link Between Work and Health Insurance: Trends in Employer-Sponsored Insurance for Employees, 2000–2007." Kaiser Commission on Medicaid and the Uninsured Issue Paper No. 7840. Washington, DC: Henry J. Kaiser Family Foundation.

Fronstin, Paul. 2012. "Employment-Based Health Benefits: Trends in Access and Coverage, 1997–2010." EBRI Issue Brief No. 370. Washington, DC: Employee Benefit Research Institute.

Garrett, Bowen, and Matthew Buettgens. 2011. "Employer-Sponsored Insurance under Health Reform: Reports of its Demise are Premature." Washington, DC: Urban Institute Press.

Gruber, Jonathan. 2000. "Health Insurance and the Labor Market". In *Handbook of Health Economics, Volume 1*, edited by Anthony J. Culyer and Joseph Newhouse, 645–706. Amsterdam: Elsevier.

Jensen, Gail A., and Michael A. Morrisey. 2001. "Endogenous Fringe Benefits, Compensating Wage Differentials and Older Workers." *International Journal of Health Care Finance and Economics* 1(3/4): 203–226.

Kaiser Family Foundation. 2011. "Focus on Health Reform: Summary of New Health Reform Law." Publication No. 8061. Menlo Park, CA: Henry J. Kaiser Family Foundation. http://www.kff.org/healthreform/upload/8061.pdf.

Kolstad, Jonathan T., and Amanda E. Kowalski. 2012. "Mandate-Based Health Reform and the Labor Market: Evidence from the Massachusetts Reform." NBER Working Paper No. 17933. Cambridge, MA: National Bureau of Economic Research.

Mulvey, Janemarie. 2012. *Tax Benefits for Health Insurance and Expenses: Overview of Current Law.* CRS Report No. RL33505. Washington, DC: Congressional Research Service.

Sing, Merrile, Jessica S. Banthin, Thomas M. Selden, Cathy A. Cowan, and Sean P. Keehan. 2006. "Reconciling Medical Expenditure Estimates from the MEPS and NHEA, 2002." *Health Care Financing Review* 28(1): 25–40.

Social Security Administration. 2007. *Technical Panel on Assumptions and Methods Report to the Social Security Advisory Board*. Washington, DC: SSA.

———. 2009. *Annual Statistical Supplement of the Social Security Bulletin, 2008.* Washington, DC: SSA.

Sommers, Benjamin D., and Arnold M. Epstein. 2010. "Medicaid Expansion—The Soft Underbelly of Health Care Reform?" *New England Journal of Medicine* 363(22): 2085–2087.

SSA. *See* Social Security Administration.

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 December 2011–December 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 December 2012 are given on pages 110–111. Trust fund data for December 2012 are given on page 111. The more detailed SSI tables begin on page 112. 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 (SSI), or both, December 2012 (in thousands)

Type of beneficiary	Total	Social Security only	SSI only	Both Social Security and SSI
All beneficiaries	61,860	53,597	5,503	2,760
Aged 65 or older	40,447	38,365	916	1,166
Disabled, under age 65 [a]	14,067	7,886	4,587	1,594
Other [b]	7,346	7,346	. . .	. . .

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

NOTES: Social Security beneficiaries who are entitled to a primary and a secondary benefit (dual entitlement) are counted only once in this table. SSI counts include recipients of federal SSI, federally administered state supplementation, or both.

. . . = 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, December 2012

Type of beneficiary	Beneficiaries		Total monthly benefits (millions of dollars)	Average monthly benefit (dollars)
	Number (thousands)	Percent		
Total	56,758	100.0	65,430	1,152.79
Old-Age and Survivors Insurance	45,869	80.8	54,765	1,193.94
Retirement benefits	39,613	69.8	48,134	1,215.09
Retired workers	36,720	64.7	46,327	1,261.61
Spouses of retired workers	2,281	4.0	1,429	626.43
Children of retired workers	612	1.1	378	617.45
Survivor benefits	6,256	11.0	6,631	1,060.05
Children of deceased workers	1,907	3.4	1,524	799.08
Widowed mothers and fathers	154	0.3	138	900.32
Nondisabled widow(er)s	3,938	6.9	4,786	1,215.28
Disabled widow(er)s	255	0.5	182	711.47
Parents of deceased workers	1	(L)	2	1,072.76
Disability Insurance	10,889	19.2	10,665	979.42
Disabled workers	8,827	15.6	9,977	1,130.34
Spouses of disabled workers	163	0.3	49	303.82
Children of disabled workers	1,900	3.3	639	336.12

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

NOTE: (L) = less than 0.05 percent.

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

Table 3.
Supplemental Security Income recipients, December 2012

Age	Recipients: Number (thousands)	Recipients: Percent	Total payments [a] (millions of dollars)	Average monthly payment [b] (dollars)
All recipients	8,263	100.0	4,594	519.44
Under 18	1,312	15.9	856	620.79
18–64	4,869	58.9	2,867	536.08
65 or older	2,082	25.2	870	416.80

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

a. Includes retroactive payments.

b. Excludes retroactive payments.

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

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

Component	OASI	DI	Combined OASI and DI
		Receipts	
Total	92,492	10,045	102,537
Net contributions [a]	34,811	5,908	40,719
Income from taxation of benefits	14	b	15
Net interest	49,808	2,799	52,607
Payments from the general fund	7,859	1,338	9,196
		Expenditures	
Total	54,660	12,020	66,680
Benefit payments	54,384	11,789	66,172
Administrative expenses	276	232	508
Transfers to Railroad Retirement	0	0	0
		Assets	
At start of month	2,571,836	124,641	2,696,477
Net increase during month	37,832	-1,975	35,857
At end of month	2,609,668	122,666	2,732,334

SOURCE: Data on the trust funds were accessed on January 23, 2013, 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 reimbursements from the general fund of the Treasury and a small amount of gifts to the trust funds.

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, December 2011–December 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						
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
April	8,185,900	5,980,014	1,981,468	224,418	4,553,734	517.20
May	8,179,285	5,976,689	1,978,456	224,140	4,504,263	516.00
June	8,183,565	5,980,403	1,979,686	223,476	4,494,996	517.80
July	8,225,892	6,014,046	1,988,511	223,335	4,554,428	516.90
August	8,216,619	6,006,681	1,986,567	223,371	4,513,180	517.10
September	8,246,916	6,031,047	1,992,752	223,117	4,515,351	517.70
October	8,277,694	6,055,075	1,999,285	223,334	4,564,279	516.40
November	8,241,018	6,028,214	1,989,793	223,011	4,438,512	518.80
December	8,262,877	6,047,059	1,992,921	222,897	4,593,953	519.44

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.

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

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

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2011						
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
April	8,185,900	1,156,343	7,029,557	1,301,753	4,821,992	2,062,155
May	8,179,285	1,154,369	7,024,916	1,298,404	4,819,531	2,061,350
June	8,183,565	1,154,725	7,028,840	1,296,051	4,823,143	2,064,371
July	8,225,892	1,157,218	7,068,674	1,305,457	4,849,980	2,070,455
August	8,216,619	1,157,345	7,059,274	1,295,417	4,848,470	2,072,732
September	8,246,916	1,159,205	7,087,711	1,306,587	4,862,627	2,077,702
October	8,277,694	1,161,532	7,116,162	1,309,773	4,884,345	2,083,576
November	8,241,018	1,160,126	7,080,892	1,298,560	4,859,516	2,082,942
December	8,262,877	1,156,187	7,106,690	1,311,861	4,869,484	2,081,532

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

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

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

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

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2011						
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
April	5,980,014	620,759	5,359,255	1,069,225	3,705,532	1,205,257
May	5,976,689	619,756	5,356,933	1,066,607	3,705,111	1,204,971
June	5,980,403	619,848	5,360,555	1,064,382	3,709,041	1,206,980
July	6,014,046	620,828	5,393,218	1,072,114	3,731,551	1,210,381
August	6,006,681	620,777	5,385,904	1,063,477	3,731,443	1,211,761
September	6,031,047	621,710	5,409,337	1,072,574	3,743,796	1,214,677
October	6,055,075	623,096	5,431,979	1,075,224	3,761,557	1,218,294
November	6,028,214	622,423	5,405,791	1,066,370	3,743,731	1,218,113
December	6,047,059	619,717	5,427,342	1,077,393	3,752,922	1,216,744

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

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

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

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

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2011						
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
April	1,981,468	464,224	1,517,244	231,448	1,002,664	747,356
May	1,978,456	463,628	1,514,828	230,607	1,000,704	747,145
June	1,979,686	464,066	1,515,620	230,501	1,000,883	748,302
July	1,988,511	465,637	1,522,874	232,202	1,005,371	750,938
August	1,986,567	465,902	1,520,665	230,737	1,003,971	751,859
September	1,992,752	466,888	1,525,864	232,892	1,006,000	753,860
October	1,999,285	467,938	1,531,347	233,362	1,009,788	756,135
November	1,989,793	467,406	1,522,387	230,977	1,003,014	755,802
December	1,992,921	465,723	1,527,198	233,291	1,004,526	755,104

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

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

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

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

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2011						
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
April	224,418	71,360	153,058	1,080	113,796	109,542
May	224,140	70,985	153,155	1,190	113,716	109,234
June	223,476	70,811	152,665	1,168	113,219	109,089
July	223,335	70,753	152,582	1,141	113,058	109,136
August	223,371	70,666	152,705	1,203	113,056	109,112
September	223,117	70,607	152,510	1,121	112,831	109,165
October	223,334	70,498	152,836	1,187	113,000	109,147
November	223,011	70,297	152,714	1,213	112,771	109,027
December	222,897	70,747	152,150	1,177	112,036	109,684

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

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

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

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

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
			All sources			
2011						
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
April	4,553,734	472,480	4,081,255	854,246	2,841,246	858,242
May	4,504,263	471,239	4,033,025	836,006	2,810,846	857,411
June	4,494,996	471,148	4,023,848	840,932	2,795,762	858,301
July	4,554,428	472,715	4,081,712	852,177	2,840,430	861,821
August	4,513,180	472,021	4,041,159	835,979	2,815,453	861,748
September	4,515,351	472,969	4,042,382	843,315	2,808,071	863,966
October	4,564,279	474,596	4,089,683	845,219	2,851,487	867,573
November	4,438,512	472,718	3,965,794	828,040	2,745,321	865,150
December	4,593,953	474,585	4,119,368	856,447	2,867,264	870,242
			Federal payments			
2011						
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
April	4,269,524	401,949	3,867,575	841,922	2,683,065	744,536
May	4,221,716	400,877	3,820,839	823,837	2,654,041	743,838
June	4,213,739	400,817	3,812,922	828,851	2,640,199	744,689
July	4,270,575	402,084	3,868,490	839,883	2,682,980	747,711
August	4,230,637	401,471	3,829,166	823,909	2,659,044	747,684
September	4,233,203	402,282	3,830,921	831,161	2,652,419	749,624
October	4,279,425	403,684	3,875,742	832,942	2,693,769	752,715
November	4,160,172	402,204	3,757,968	816,241	2,593,035	750,897
December	4,309,965	403,733	3,906,233	844,166	2,710,549	755,250

(Continued)

Table 6.
Total payments, by eligibility category, age, and source of payment, December 2011–December 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						
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
April	284,211	70,531	213,680	12,324	158,181	113,705
May	282,547	70,362	212,185	12,169	156,804	113,574
June	281,258	70,331	210,927	12,082	155,563	113,613
July	283,853	70,631	213,222	12,294	157,450	114,109
August	282,543	70,550	211,993	12,070	156,410	114,063
September	282,148	70,687	211,461	12,154	155,651	114,342
October	284,854	70,912	213,941	12,277	157,718	114,858
November	278,339	70,514	207,826	11,800	152,286	114,253
December	283,988	70,852	213,136	12,281	156,714	114,992

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

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

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

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

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
			All sources			
2011						
December	501.60	397.60	519.40	601.40	517.50	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	532.60	414.60
March	518.60	407.90	536.90	624.90	534.40	415.70
April	517.20	406.90	535.40	621.90	533.00	414.60
May	516.00	407.10	534.00	615.90	532.60	414.70
June	517.80	407.30	535.90	623.70	533.40	414.90
July	516.90	407.20	534.90	619.70	532.80	414.80
August	517.10	407.40	535.20	619.80	533.50	415.00
September	517.70	407.60	535.80	621.30	533.80	415.20
October	516.40	407.50	534.20	614.70	533.30	415.20
November	518.80	407.90	537.00	624.60	534.90	415.60
December	519.44	409.31	537.38	620.79	536.08	416.80
			Federal payments			
2011						
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	604.40	513.90	378.80
March	498.40	369.00	519.00	615.70	515.70	379.90
April	498.10	369.10	518.50	613.70	515.20	380.00
May	496.80	369.10	517.00	607.70	514.80	380.10
June	498.60	369.30	519.00	615.60	515.70	380.30
July	497.70	369.10	517.90	611.50	515.10	380.10
August	497.90	369.20	518.20	611.70	515.80	380.30
September	498.50	369.40	518.80	613.20	516.10	380.50
October	497.10	369.20	517.20	606.60	515.50	380.40
November	499.60	369.60	520.10	616.50	517.20	380.80
December	500.30	371.17	520.49	612.70	518.40	382.15

(Continued)

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

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
			State supplementation			
2011						
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
April	121.90	130.40	119.10	49.00	129.80	131.30
May	121.80	130.40	119.10	49.00	129.70	131.30
June	121.80	130.40	119.10	49.00	129.70	131.30
July	121.70	130.40	119.00	48.90	129.60	131.30
August	121.80	130.30	119.00	48.90	129.60	131.30
September	121.70	130.40	118.90	48.70	129.50	131.30
October	121.70	130.40	118.90	48.70	129.50	131.40
November	121.80	130.40	119.00	48.70	129.60	131.40
December	121.79	130.66	118.95	48.61	129.58	131.56

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

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

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

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

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2011						
December	89,658	8,857	80,801	17,602	63,052	9,004
2012						
January	80,593	8,814	71,779	16,100	55,531	8,962
February	77,815	9,344	68,471	15,359	52,984	9,472
March	79,400	8,823	70,577	15,892	54,531	8,977
April	91,791	9,481	82,310	18,533	63,606	9,652
May	81,195	9,009	72,186	16,222	55,809	9,164
June	76,499	9,105	67,394	15,605	51,675	9,219
July	90,605	9,458	81,147	18,290	62,701	9,614
August	80,464	9,665	70,799	15,810	54,863	9,791
September	77,606	9,462	68,144	14,387	53,623	9,596
October	87,026	9,395	77,631	16,836	60,654	9,536
November [a]	58,378	9,346	49,032	10,874	38,066	9,438
December [a]	83,483	8,736	74,747	16,609	58,026	8,848

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.

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

Perspectives—Paper Submission Guidelines

The *Social Security Bulletin* is the quarterly research journal of the Social Security Administration. It has a diverse readership of policymakers, government officials, academics, graduate and undergraduate students, business people, and other interested parties.

To promote the discussion of research questions and policy issues related to Social Security and the economic well being of the aged, the *Bulletin* welcomes submissions from researchers and analysts outside the agency for publication in its Perspectives section.

We are particularly interested in papers that:

- assess the Social Security retirement, survivors, and disability programs and the economic security of the aged;
- evaluate changing economic, demographic, health, and social factors affecting work/retirement decisions and retirement savings;
- consider the uncertainties that individuals and households face in preparing for and during retirement and the tools available to manage such uncertainties; and
- measure the changing characteristics and economic circumstances of SSI beneficiaries.

Papers should be factual and analytical, not polemical. Technical or mathematical exposition is welcome, if relevant, but findings and conclusions must be written in an accessible, nontechnical style. In addition, the relevance of the paper's conclusions to public policy should be explicitly stated.

Submitting a Paper

Authors should submit papers for consideration via e-mail to Michael V. Leonesio, Perspectives Editor, at perspectives@ssa.gov. To send your paper via regular mail, address it to:

Social Security Bulletin
Perspectives Editor
Social Security Administration
Office of Research, Evaluation, and Statistics
500 E Street, SW, 8th Floor
Washington, DC 20254-0001

We regard the submission of a paper as your implied commitment not to submit it to another publication while it is under consideration by the *Bulletin*. If you have published a related paper elsewhere, please state that in your cover letter.

Disclosures—Authors are expected to disclose in their cover letter any potential conflicts of interest that may arise from their employment, consulting or political activities, financial interests, or other affiliations.

Copyright—Authors are responsible for obtaining written permission to publish any material for which they do not own the copyright.

Formatting Guidelines

To facilitate the editorial process, papers submitted for publication must be prepared in Microsoft Word (**except for tables and charts—see below**) and be formatted as outlined below.

- **Title Page**—Papers must include a title page with the paper's title, name(s) of author(s), affiliation(s), address(es), including the name, postal address, e-mail address, telephone and fax numbers of a contact person. Any Acknowledgments paragraph should also be on this page. In the Acknowledgments, reveal the source of any financial or research support received in connection with the preparation of the paper.
- **Synopsis**—For the *Bulletin's* table of contents include a separate synopsis, including the title of the paper along with one to three sentences outlining the research question.
- **Abstract**—Prepare a brief, nontechnical abstract of the paper of not more than 150 words that states the purpose of the research, methodology, and main findings and conclusions. This abstract will be used in the Bulletin and, if appropriate, be submitted to the Journal of Economic Literature for indexing. Below the abstract supply the JEL classification code and two to six keywords. JEL classification codes can be found at http://www.aeaweb.org/jel/guide/jel.php.
- **Text**—Papers should average 10,000 words, including the text, the notes, and the references (but excluding the tables and charts). Text is double-spaced, except notes and references, which are double spaced only after each entry. **Do not embed tables or charts into the text. Create separate files (in the formats outlined in "Tables/Charts" below) for the text and statistical material**. Tables should be in one file, with one table per page. Include charts in a separate file, with one chart per page.
- **End Notes**—Number notes consecutively in the text using superscripts. Only use notes for brief substantive comments, not citations. (See the *Chicago Manual of Style* for guidance on the use of citations.) All notes should be grouped together and start on a new page at the end of the paper.
- **References**—Verify each reference carefully; the references must correspond to the citations in the text. The list of references should start on a new page and be listed alphabetically by the last name of the author(s) and then by year, chronologically. Only the first author's name is inverted. List all authors' full names and avoid using *et al*. The name of each author and the title of the citation should be exactly as it appears in the original work.
- **Tables/Charts**—Tables must be prepared in Microsoft Excel. Charts or other graphics must be prepared in or exported to Excel or Adobe Illustrator. The spreadsheet with plotting data must be attached to each chart with the final submission. Make sure all tables and charts are referenced in the text. Give each table and chart a title and number consecutive with the order it is mentioned in the text. Notes for tables and charts are independent of Notes in the rest of the paper and should be ordered using lowercase letters, beginning with the letter a (including the Source note, which should be listed first). The sequence runs from left to right, top to bottom. The order of the notes as they appear below the tables or charts is (1) Source, (2) general notes to the table or chart, if any, and (3) letter notes.

For specific questions on formatting, use the *Chicago Manual of Style* as a guide for notes, citations, references, and table presentation.

Review Process

Papers that appear to be suitable for publication in Perspectives are sent to three reviewers who are subject matter experts. The reviewers assess the paper's technical merits, provide substantive comments, and recommend whether the paper should be published. An editorial review committee appointed and chaired by the Associate Commissioner, Office of Research, Evaluation, and Statistics, makes the final decision on whether the paper is of sufficient quality, importance, and interest to publish, subject to any required revisions that are specified in a letter to the author(s). The entire review process takes approximately 12 weeks.

Data Availability Policy

If your paper is accepted for publication, you will be asked to make your data available to others at a reasonable cost for a period of 3 years (starting 6 months after actual publication). Should you want to request an exception from this requirement, you must notify the Perspectives Editor when you submit your paper. For example, the use of confidential or proprietary data sets could prompt an exemption request. If you do not request an exemption, we will assume that you have accepted this requirement.

Questions

Questions regarding the mechanics of submitting a paper should be sent to our editorial staff via e-mail at ssb@ssa.gov. For other questions regarding submissions, please contact Michael V. Leonesio, Perspectives Editor, at perspectives@ssa.gov.

OASDI and SSI Program Rates and Limits, 2013

Old-Age, Survivors, and Disability Insurance

Tax Rates (percent)	
Social Security (Old-Age, Survivors, and Disability Insurance)	
Employers and Employees, each [a]	6.20
Medicare (Hospital Insurance)	
Employers and Employees, each [a,b]	1.45
Maximum Taxable Earnings (dollars)	
Social Security	113,700
Medicare (Hospital Insurance)	No limit
Earnings Required for Work Credits (dollars)	
One Work Credit (One Quarter of Coverage)	1,160
Maximum of Four Credits a Year	4,640
Earnings Test Annual Exempt Amount (dollars)	
Under Full Retirement Age for Entire Year	15,120
For Months Before Reaching Full Retirement Age in Given Year	40,080
Beginning with Month Reaching Full Retirement Age	No limit
Maximum Monthly Social Security Benefit for Workers Retiring at Full Retirement Age (dollars)	2,533
Full Retirement Age	66
Cost-of-Living Adjustment (percent)	1.7

a. Self-employed persons pay a total of 15.3 percent (12.4 percent for OASDI and 2.9 percent for Medicare).

b. Certain high-income taxpayers will be required to pay an additional Medicare tax beginning in 2013. For details, see the IRS information on this topic (http://www.irs.gov/Businesses/Small-Businesses-&-Self-Employed/Questions-and-Answers-for-the-Additional-Medicare-Tax).

Supplemental Security Income

Monthly Federal Payment Standard (dollars)	
Individual	710
Couple	1,066
Cost-of-Living Adjustment (percent)	1.7
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)	1,040

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

Social Security Administration
Office of Retirement and Disability Policy
Office of Research, Evaluation, and Statistics
500 E Street, SW, 8th Floor
Washington, DC 20254

SSA Publication No. 13-11700
February 2013

www.socialsecurity.gov/policy