Social Security

Social Security Bulletin

Vol. 71, No. 4, 2011

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. 71, No. 4, 2011

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

Social Security Bulletin

Volume 71 • Number 4 • 2011

Articles

Perspectives

Other

What Can We Learn from Analyzing Historical Data on Social Security Entitlements?

by Joyce Manchester and Jae G. Song*

We use data from Social Security administrative records to examine the lifetime patterns of initial entitlement to retired-worker and Disability Insurance (DI) benefits across cohorts born in different years. Breaking out age-at-entitlement patterns for different birth-year cohorts reveals close adherence in entitlement ages to changes in program rules, such as increasing the full retirement age. The proportion of a cohort that becomes newly entitled to DI benefits rises noticeably during recessions and at ages 50 and 55, and cumulative entitlement rate patterns show that more recent cohorts rely increasingly on DI benefits in their late 30s and 40s.

Introduction

The age at which people become entitled to Social Security benefits, both for retirement and for disability, affects not only individual benefit amounts but also the proportion of the population that depends on Social Security. Entitlement to a Social Security retirement or disability benefit implies that a person has met all the eligibility requirements and has applied for that benefit. One way of analyzing entitlement trends is from a cross-sectional perspective—comparing entitlement rates from one year to another. Another way, which receives much less attention, is to analyze age-at-entitlement trends across birth cohorts. Changes in entitlement rates over a birth cohort's lifetime yield information about the interaction of economic conditions, program rules, administrative leniency, societal attitudes toward public programs, and individual behavior. Analysis of age at entitlement also tells us about the share of a particular cohort that receives support from Social Security as that cohort ages. In addition, we can compare entitlement rates at particular ages across birth cohorts to see how dependence on Social Security changes over time.

Two recent developments underscore the importance of understanding rates of Social Security entitlement at different ages. First, the recent recession, with its attendant layoffs and scarcity of job vacancies, has likely led more individuals to apply for Social Security benefits. Decreasing employment opportunities together with the aging of the population have led to higher numbers of applications for both disability and early-retirement benefits (CBO 2010). The recession has also led to a decline in payroll tax revenue, and CBO (2011) projects that the Disability Insurance (DI) Trust Fund will be exhausted in 2016 without legislative action to change the program's finances.[1] Second, the DI program in particular has grown rapidly in recent decades, with notable expansions in the number of beneficiaries with low-mortality diagnoses (Autor and Duggan 2006).[2] Many of those beneficiaries will remain on the rolls for many years to come, drawing both DI and Medicare benefits.

We use data from Social Security administrative records to compare the lifetime patterns of initial

Selected Abbreviations

DI	Disability Insurance
FRA	full retirement age
MBR	Master Beneficiary Record
SSA	Social Security Administration

* *Joyce Manchester is with the Congressional Budget Office. Jae G. Song is with the Office of Quality Performance, Social Security Administration.*

entitlement to retired-worker and DI benefits across birth cohorts. Examining differences between cohorts, we find that age-at-entitlement patterns closely follow program rule changes, such as raising the full retirement age (FRA); the proportion of a cohort that becomes newly entitled to DI benefits rises noticeably during recessions and at ages 50 and 55; and more recent cohorts increasingly become entitled to DI benefits in their late 30s and 40s.

More than 54 million Americans received Social Security benefits at the end of December 2010. Over 37 million beneficiaries were retired workers and their dependents, more than 6 million were survivors of entitled workers, and over 10 million were disabled workers and their dependents (SSA 2011b). This article looks at how many individuals entered the rolls at each age, and for which program.

Data Description

The Social Security Administration (SSA) maintains benefit records in the electronic Master Beneficiary Record (MBR). A record is created for every person with a Social Security number at the time of initial application for benefits of any type. In addition to benefit information, the record includes the beneficiary's sex and date of birth. We use an extract of the MBR encompassing 100 percent of beneficiaries that was created in August 2009. Further details appear in the appendix.

The administrative data on entitlements are not complete for all birth cohorts and all types of benefits. When the MBR system was created in 1963, data for all previous retired-worker entitlements were entered into the system to produce complete retired-worker entitlement records throughout the history of the Social Security program. However, the records for DI benefits are not complete prior to 1964. We analyze cohorts born in 1944 and later for whom the data on retired-worker and DI entitlements are essentially complete. Unfortunately, recent MBR files may not reflect all entitlements because both retired-worker and DI entitlements can change retroactively. As a result, data are incomplete for some months. For this article we generally use data through 2008.

Some of the results presented here are compared with those from SSA's *Annual Statistical Supplement to the Social Security Bulletin*. Our data differ slightly because, in the interest of simplicity, we report only the first entitlement for any type of benefit recorded for each person.[3] If an individual becomes entitled to DI benefits at age 55 and later converts to retired-worker benefits at age 65, or if he or she leaves the DI rolls but subsequently claims retired-worker benefits at age 65, we count that person only once, at the DI entitlement date. Based on the data restrictions cited above, we present initial entitlements for retired-worker benefits for birth cohorts from as early as 1890 through 1942, using data through 2008. New DI entitlements shown here begin with the 1944 cohort for ages 21 through 61 and run through the 1954 cohort for ages 21 through 53.

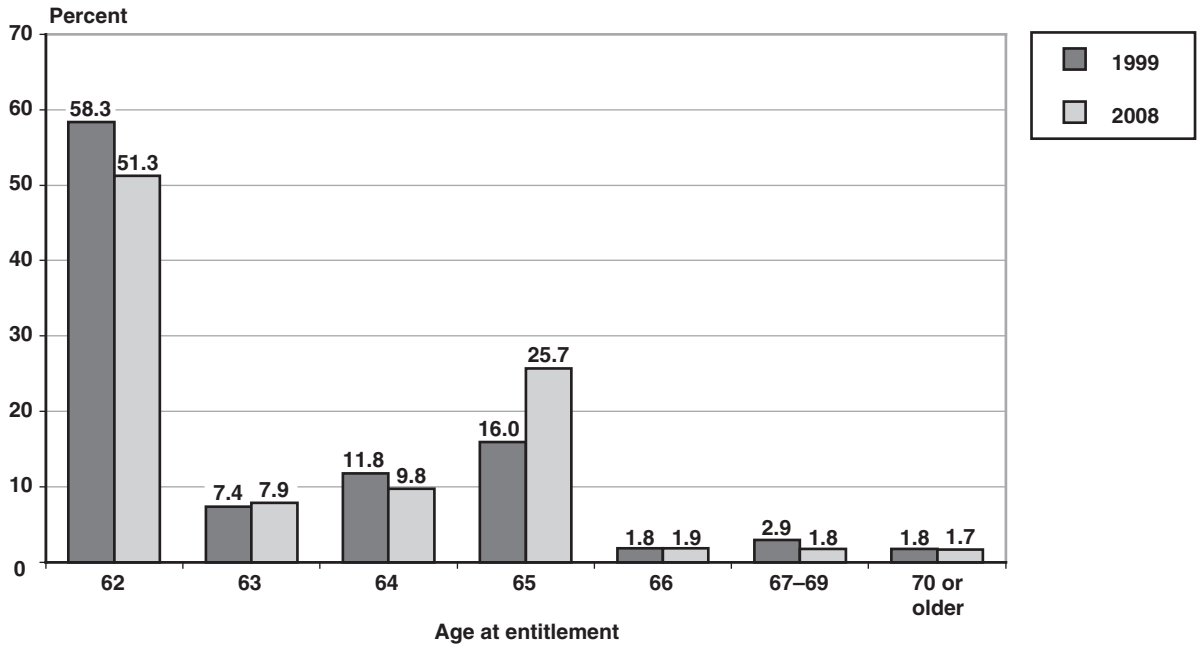
A Cross-Sectional Look at Initial Benefit Entitlements for Retired Workers

Analysts seeking a cross-sectional view examine the number of initial entitlements by age in a given year. Table 6.B5.1 of the 2011 *Annual Statistical Supplement* shows that benefit entitlements for new retired-worker beneficiaries in 1999 and 2008 spike at ages 62 and 65; our Chart 1, although it omits conversions from DI to retired-worker benefits and detail by sex, shows similar results.[4] In 1999, 58.3 percent of new entitlements went to people aged 62 and 16.0 percent went to people aged 65. In 2000, SSA eliminated the retirement earnings test for claimants at FRA or older;[5] and by 2008, the upward adjustment of the FRA implied a larger benefit reduction at age 62.[6] As a result, only 51.3 percent of new entitlements in 2008 went to people aged 62, and the proportion going to people aged 65 rose to 25.7 percent.

Of course, the proportions shown in cross-sectional data refer to all new entitlements in a particular year and do not reflect the distribution of entitlements within each birth cohort by age. The first wave of baby boomers, born in 1946, was eligible to claim retired-worker benefits in 2008 at age 62. Absent any changes to Social Security rules affecting that cohort, we would expect the proportion of entitlements going to claimants aged 62 to be higher in 2008 than in earlier years. In fact, the 2008 proportion was lower than that in 1999, probably due to the higher FRA for the 1946 cohort. The spike at age 65 remained large in 2008, as the FRA for the 1942 birth cohort was 65 years and 10 months, meaning that many in that group did not reach the FRA until 2008. Likewise, because the FRA for the 1943–1959 birth cohorts is 66, entitlements at that age spiked at 14.7 percent in 2009 (not shown).[7]

The newly published SSA data allow us to examine the age at new benefit entitlement in a particular year separately for men and women. The pattern of new entitlements by age and sex for 2008 (Chart 2) reveals that women are more likely than men to be newly entitled as retired-worker beneficiaries at age 62.

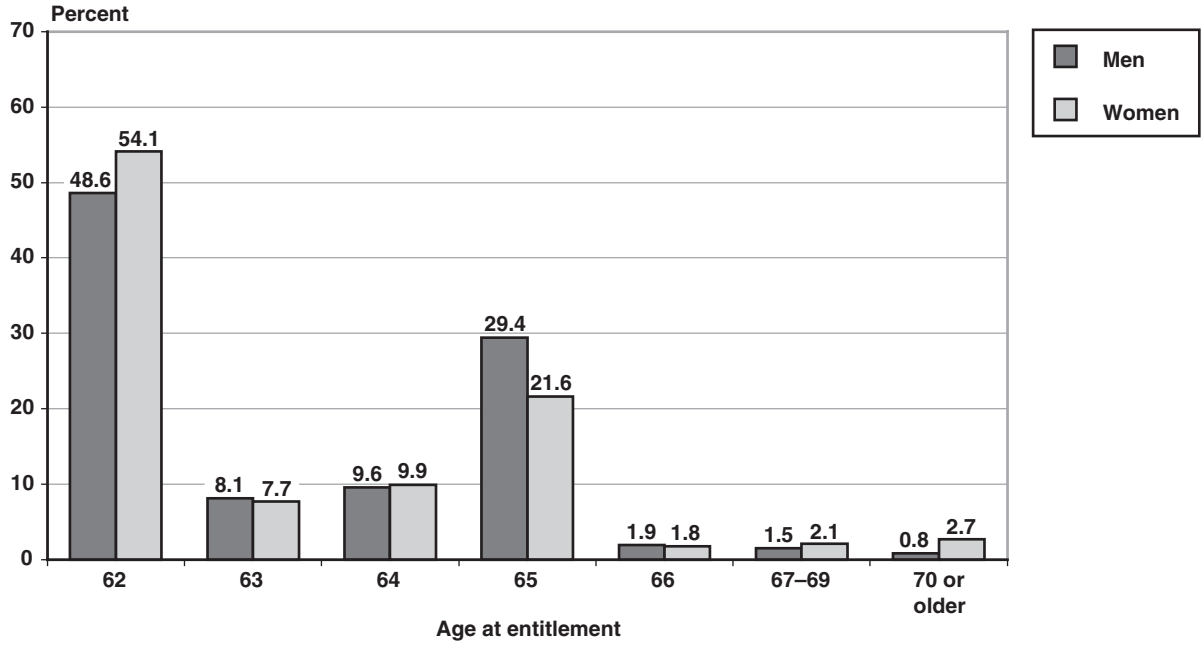
Chart 1.
Percentage distribution of new retired-worker beneficiaries by age at entitlement (excluding individuals automatically converted from DI to retirement benefits at FRA), 1999 and 2008



SOURCE: Authors' calculations based on SSA (2011a, Table 6.B5.1).

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

Chart 2.
Percentage distribution of new retired-worker beneficiaries by age at entitlement (excluding individuals automatically converted from DI to retirement benefits at FRA), by sex, 2008



SOURCE: Authors' calculations based on SSA (2011a, Table 6.B5.1).

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

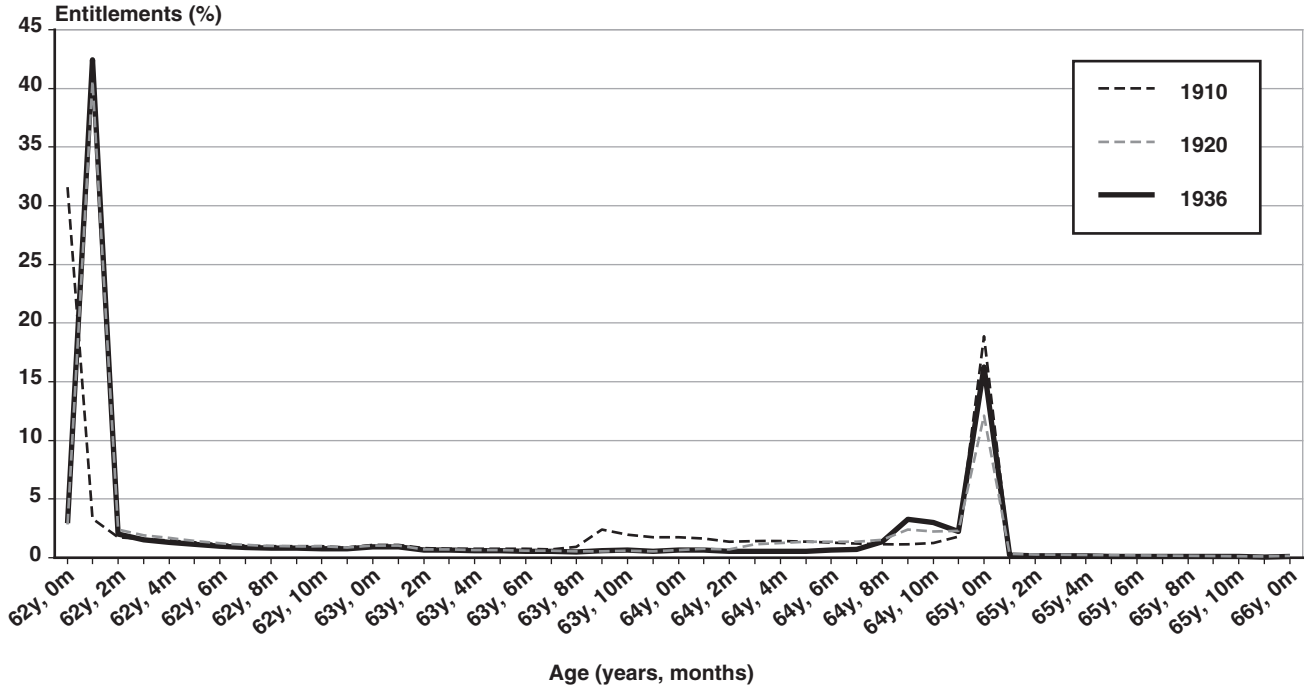
Initial Entitlement to Retired-Worker Benefits by Birth Cohort and Age

A different picture emerges when we examine the pattern of new entitlements to retired-worker benefits by age for each birth cohort. When particularly large or small cohorts reach the earliest Social Security eligibility ages, cohort outcomes differ noticeably from cross-section outcomes. Using the MBR, we examine the population within a particular birth cohort who became newly entitled to retired-worker benefits between ages 62 and 72, by age in years and months.[8] None of our new retired-worker beneficiaries was previously entitled to any other type of Social Security benefit. We compare the age-at-entitlement patterns of the 1910, 1920, and 1936 birth cohorts (Chart 3). The 1910 birth cohort shows a spike in entitlements for claimants in the month they reached age 62. The Social Security Amendments of 1981 changed the entitlement rules such that a person had to be age 62 for a full month to be eligible for retired-worker benefits. With the 1920 birth cohort, the spike in new entitlements moves to age 62 and 1 month. In each of the cohorts studied, between 31.6 percent and 44.5 percent of the workers became entitled to retired-worker benefits in their first month of eligibility.[9]

A smaller spike appears at age 65, the FRA for each of the cohorts studied. Between 11.3 percent and 18.9 percent of the retired-worker beneficiaries in each cohort was initially entitled to retired-worker benefits at age 65. A much smaller rise in initial entitlements occurs between age 64 and 9 months and age 65 for several of the cohorts. Three months prior to turning 65, individuals can sign up for Medicare at their Social Security office. While in the office, some individuals also sign up to become entitled to retired-worker benefits. The 1910 cohort also has a rise in entitlements at age 63 and 9 months, for reasons that are not clear.

Only a small percentage of people in each cohort become newly entitled to retired-worker benefits after age 65, although a small bump appears at age 70. Until a worker turns 70, the delayed retirement credit incrementally boosts the eventual benefit amount for every month past FRA that the person defers claiming. Instituted in 1973, the credit initially equaled 1 percent per year up to age 72. The credit rose to 3 percent per year for the 1917–1924 cohorts. The Social Security Amendments of 1983 reduced the maximum age to 70 and gradually raised the credit for later cohorts until it reached 8 percent per year beginning with the 1943 cohort.

Chart 3.
New retired-worker beneficiaries, by age in years and months at entitlement, 1910, 1920, and 1936 birth cohorts (in percent)



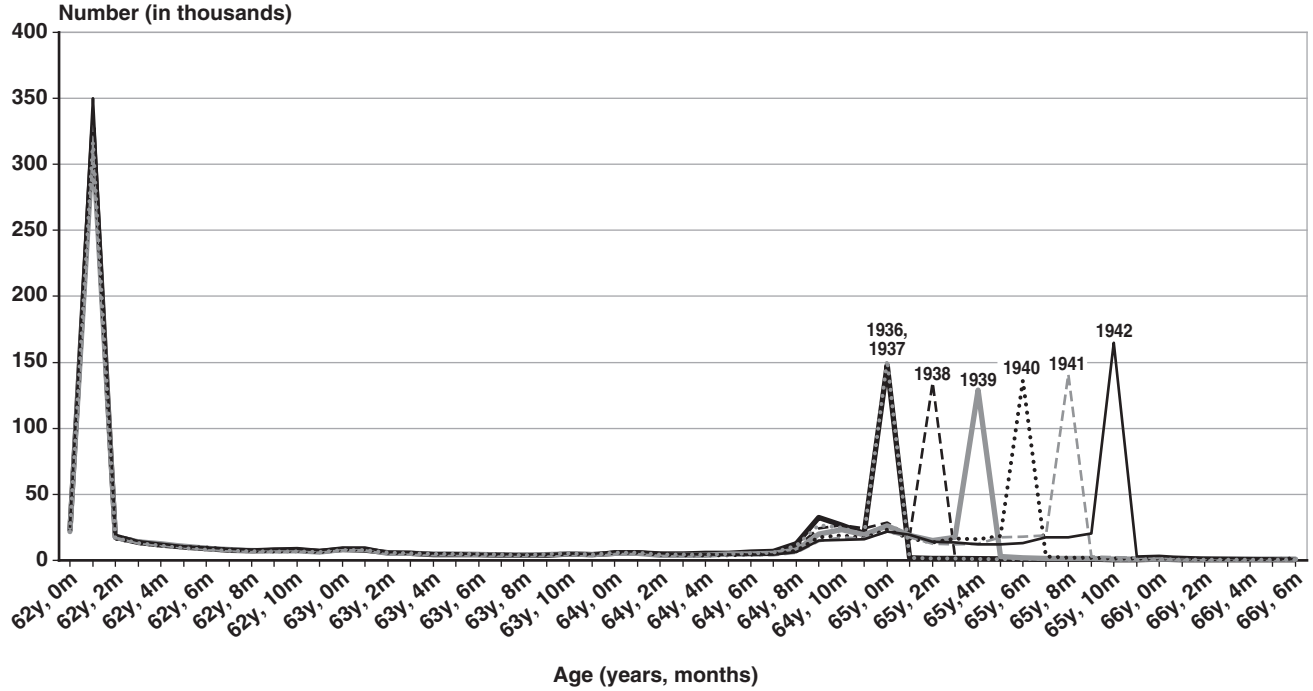
SOURCE: Authors' calculations based on SSA's MBR, 100 percent data.

Examining numbers of new entitlements by month of age for more recent cohorts reveals that age-at-entitlement patterns have paralleled FRA changes. As the FRA increased from 65 for the 1937 and prior cohorts to 65 and 2 months for the 1938 cohort, 65 and 4 months for the 1939 cohort, and so on up to 65 and 10 months for the 1942 cohort, the spike in entitlements for men at age 65 moved with it (Chart 4). The peaks move in step with the FRA increases for every cohort. The story is much the same for women (Chart 5), although the size of the peak at the FRA is smaller relative to the peak at age 62 and 1 month. When our MBR data extract was created in 2009, the numbers were not yet complete for the 1943 cohort, the first whose FRA is 66.

Another way to examine the patterns of entitlement for retired-worker benefits is to look at the cumulative percentage of retired-worker beneficiaries in a particular birth cohort who have become entitled by the time they attain various ages. Program rules prohibited workers born before 1892 from claiming retired-worker benefits before turning 65. However, growing shares of later cohorts did claim once retired-worker benefits became available to women aged 62–64 in 1956 and to men at those ages in 1961 (Chart 6). For example, of the retired-worker beneficiaries in the 1902 cohort, about 35 percent were entitled by age 62 ½. That percentage rose to 55 percent for the 1932 cohort before declining to 52 percent for the 1936 cohort.[10] About 75 percent of retired-worker benefit entitlements in the 1912 cohort had occurred by age 64 ½. That percentage gradually declined over subsequent cohorts, reaching 68 percent for the 1936 cohort.

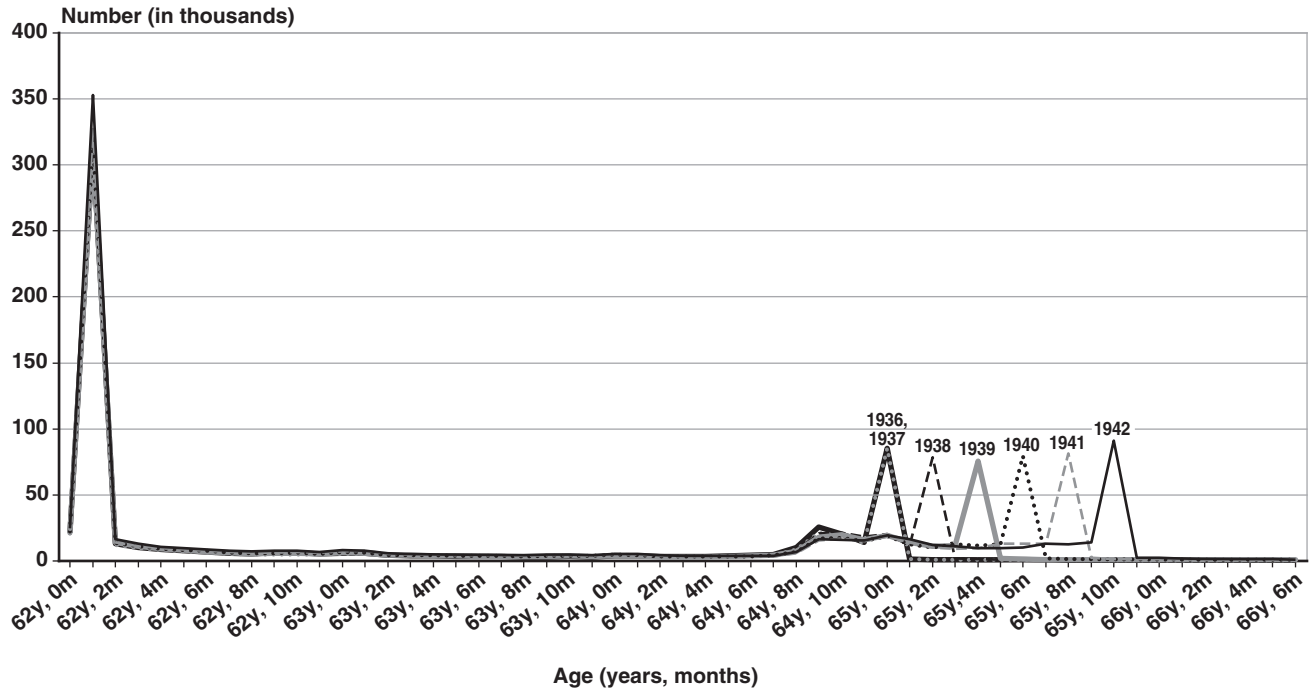
As the Social Security system matured in the middle decades of the 20th century and more groups of workers were covered, greater percentages of the population aged 65 or older became entitled to benefits. At the same time, people were becoming entitled to benefits at younger ages. Only 40 percent of retired-worker beneficiaries in the 1890 birth cohort were entitled by age 65 ½, but that percentage rose to about 93 percent for the 1900 birth cohort, coinciding with the enactment of Medicare in 1965. The percentage rose slightly for subsequent cohorts before declining slowly over time to 90 percent for the 1934 cohort. It then jumped to about 95 percent for the 1935 cohort, whose members reached age 65 in 2000 as the retirement earnings test was eliminated for claimants from FRA (then 65) through age 69 (Song and Manchester 2007, 2008). The percentage entitled by age 67 ½ has changed little across cohorts, at about 97 percent beginning with those born in 1898.

Chart 4.
Number of men initially entitled to retirement benefits by age in months, 1936–1942 birth cohorts



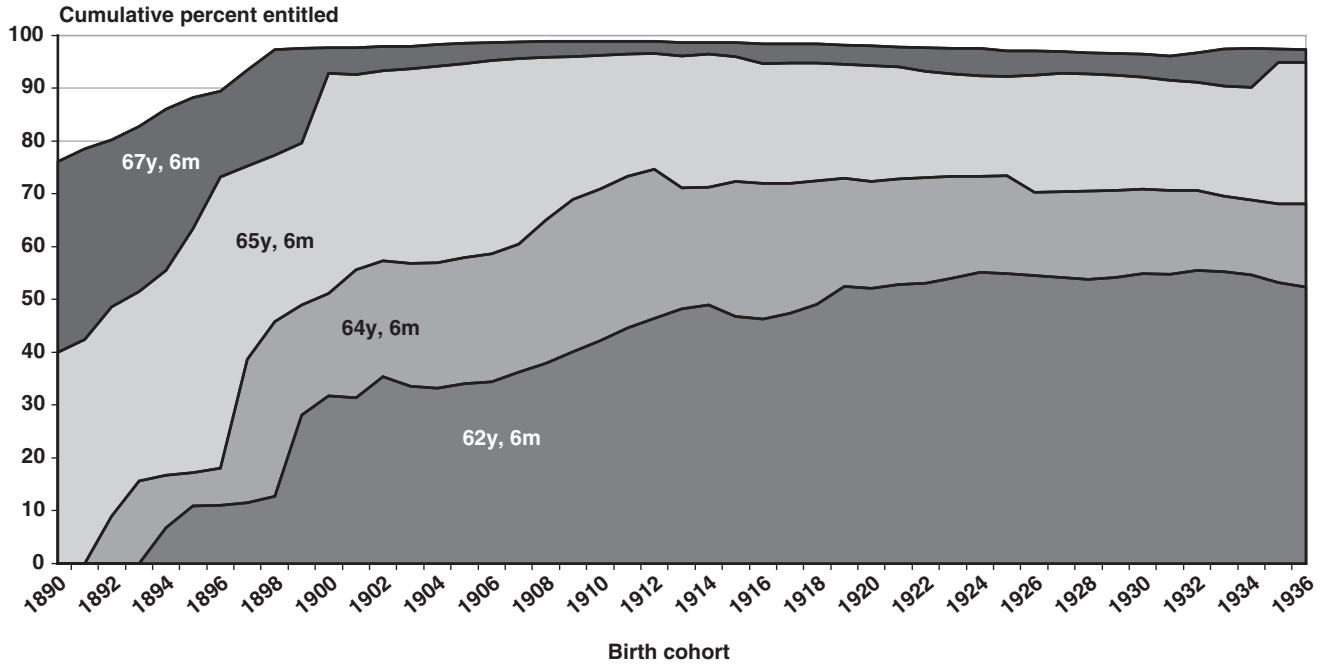
SOURCE: Authors' calculations based on SSA's MBR, 100 percent data.

Chart 5.
Number of women initially entitled to retirement benefits by age in months, 1936–1942 birth cohorts



SOURCE: Authors' calculations based on SSA's MBR, 100 percent data.

Chart 6.
Cumulative shares of each birth cohort entitled to retirement benefits by the time they reach selected ages, 1890–1936 cohorts



SOURCE: Authors' calculations based on SSA's MBR, 100 percent data.

NOTE: Retirement benefits for those aged 62–64 were first offered to women in 1956 and to men in 1961.

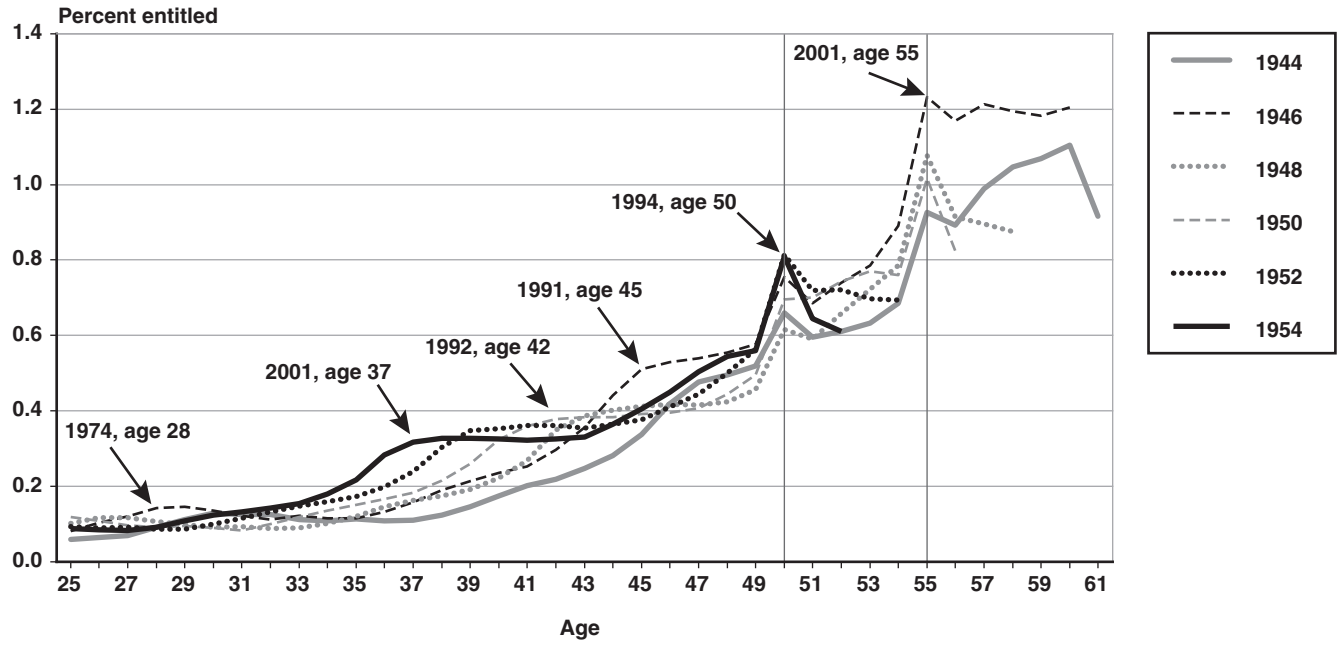
Initial Entitlement to DI Benefits by Birth Cohort and Age

In recent decades, increasing shares of cohorts have become entitled to DI benefits by the time they reach their early 50s.[11] Attention has focused on DI because of the growth in entitlements for that program (Autor and Duggan 2003, 2006). In particular, because the Social Security Disability Benefits Reform Act of 1984 expanded the list of mental and musculoskeletal impairments that qualify a claimant for benefits, the number of DI entitlements has grown rapidly. Moreover, the increase in the FRA and the larger benefit reductions for claiming retired-worker benefits prior to reaching FRA make DI more attractive for individuals born in 1938 or later (Duggan, Singleton, and Song 2007).

To illustrate the growth in preretirement benefit entitlements with an admittedly rough measure, we use the MBR to determine the percentage of a birth cohort that becomes newly entitled to DI benefits at each single year of age and for each birth cohort. We use the number of people in each birth cohort aged 50 as a scaling metric.[12] Part of the change we observe in entitlements by age stems from growing proportions of women who are eligible for DI benefits over time, both within a particular cohort and across successive cohorts. Eligibility rules require a claimant to have not only serious medical problems that prevent work but also a recent work history, with earnings above a minimum threshold in 5 of the last 10 years. Larger proportions of women have become eligible for DI over time as their labor force participation has increased.

We start by showing the percentages of a birth cohort who become initially entitled to DI benefits by single years of age between 25 and 61. We focus on the 1944, 1946, 1948, 1950, 1952, and 1954 birth cohorts (Chart 7), as the MBR contains complete data on entitlements for those cohorts.[13] We use data through 2006, the year in which information for the 1946 cohort at age 60 is complete. A couple of previously documented patterns in entitlement trends stand out. First, incidence rates peak at ages 50 and 55 for each cohort (Chen and van der Klaauw 2008). At both those ages, the vocational guidelines used in the DI screening process change, reflecting lower expectations for claimants to adjust to other work, particularly for individuals with little residual functional capacity, limited education, and a history of work providing no transferable skills.[14] Second, initial DI entitlements in each cohort generally rise during times of economic recession, as in 1974–1975, 1991–1992, and 2001–2002 (Autor and Duggan 2003, Rupp and Stapleton 1995).

Chart 7.
Shares of each birth cohort entitled to DI benefits by age, biennial cohorts 1944–1954



SOURCE: Authors' calculations based on SSA's MBR, 100 percent data.

NOTE: Percentages are scaled to each cohort's age-50 population.

To further investigate the effect of the economy and the stance of the DI program regarding new entitlements, we next examine the incidence of new entitlements by year, 1969–2006, for the same cohorts studied above. Chart 8 shows the effect of the 1974–1975 recession, with a modest increase in entitlement rates across all cohorts. The 1980–1982 double-dip recession is notable in that no increase in new entitlements occurred: Those years correspond to restricted allowance rates. However, the 1984 Social Security Amendments relaxed some of the prior restrictions and extended allowances to people with certain mental and musculoskeletal impairments. That legislation not only changed labor market conditions, it likely contributed to increases in new entitlements in the 3–4 years leading up to the recession of 1990–1991. We also see rising entitlements in the years leading up to 2000–2001. The slow pace of the economic recovery following the 2001 recession corresponds with the continued high incidence of new DI entitlements in 2002–2006.

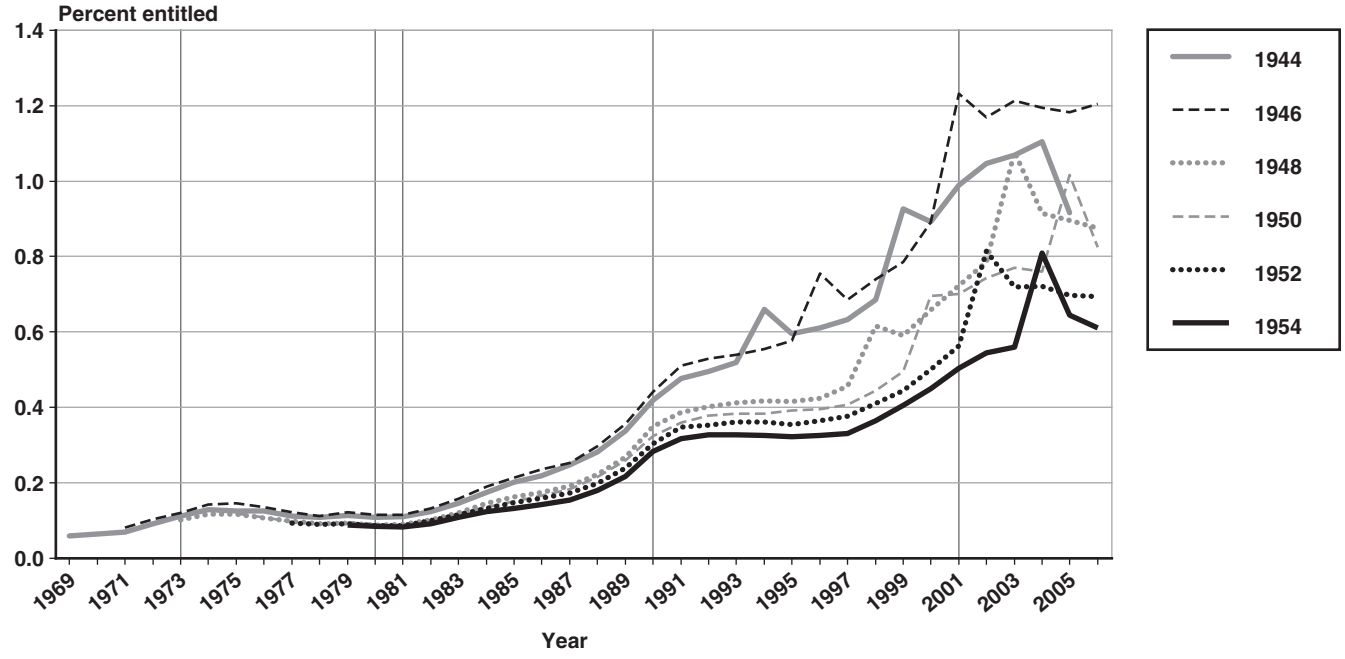
To determine the cumulative share of each birth cohort that becomes entitled to DI benefits by a given age, we divide the number of new entitlements for that age by the number of people in the birth cohort aged 50.[15] We separate the sexes when showing the share of a cohort that is entitled to benefits. In part, differences between men and women reflect the fact that a higher proportion of men are insured for disability benefits. Among men in the 1944 cohort, over 17 percent became entitled to DI benefits by age 61 (Chart 9). Among men born just 2 years later, 21 percent became entitled by age 61. More recent cohorts appear on track to reach similar percentages. Among women, 13 percent of the 1944 cohort became entitled to DI benefits by age 61, as did about 16 percent of the 1946 cohort (Chart 10). Of course, new DI entitlements can occur up to the FRA, so cumulative DI entitlement rates will ultimately exceed the percentages shown here.

Chart 11 highlights the differences between the 1944 and 1954 cohorts. For men the entitlement rate by age 52 rose from about 8 percent for the 1944 cohort to about 10 percent for the 1954 cohort. Among women, corresponding entitlement rates increased from about 5 percent to about 8 percent.

What Have We Learned?

Using administrative data to track initial Social Security benefit entitlements, we make three discoveries. First, age-at-entitlement patterns for particular

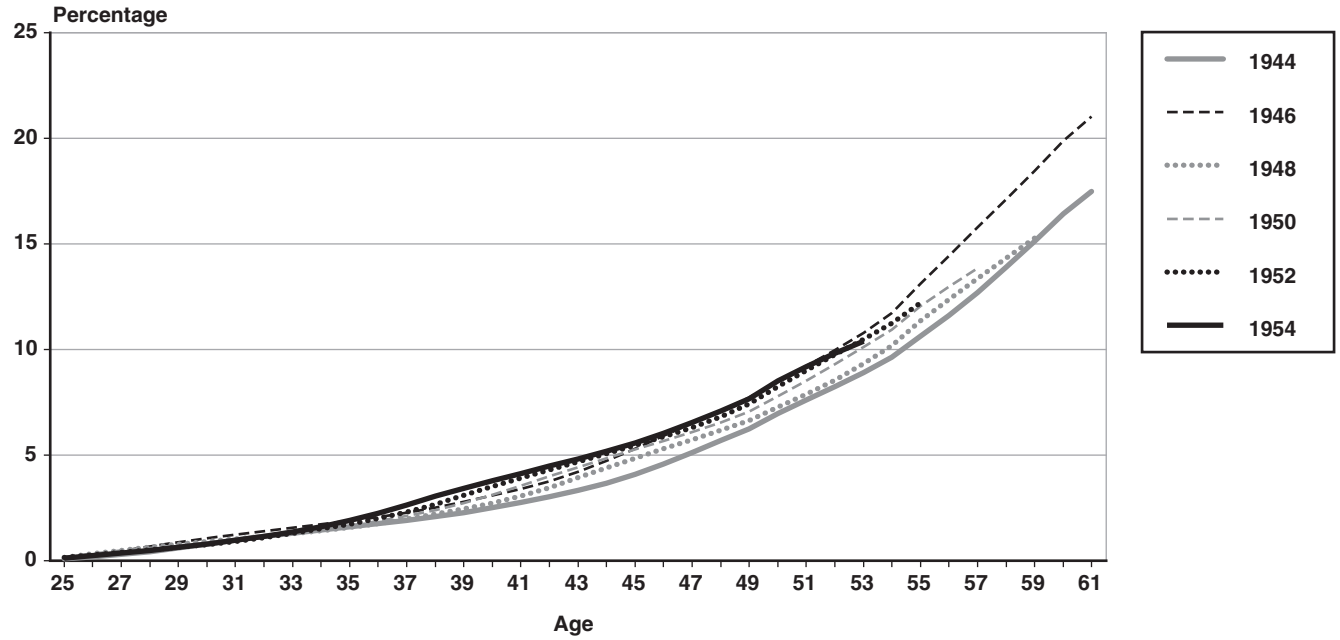
Chart 8.
Shares of each birth cohort entitled to DI benefits in 1969–2006, biennial cohorts 1944–1954



SOURCE: Authors' calculations based on SSA's MBR, 100 percent data.

NOTE: Percentages are scaled to each cohort's age-50 population.

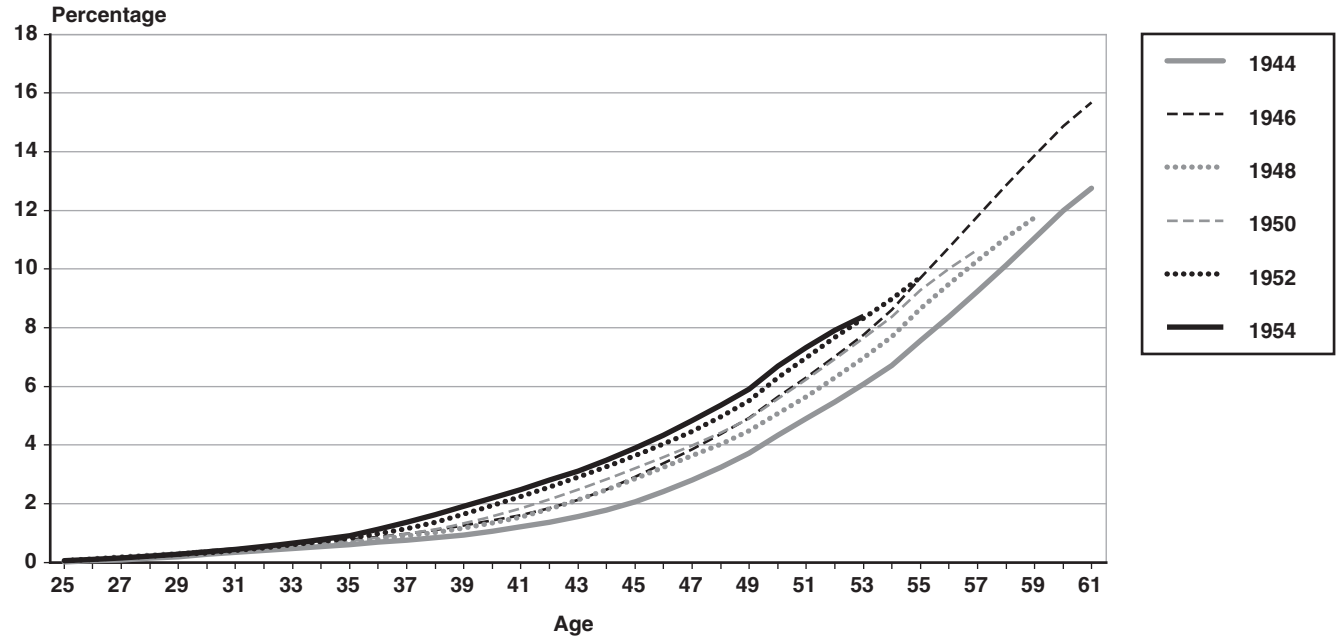
Chart 9.
Cumulative percentage of men entitled to DI benefits by age, biennial birth cohorts 1944–1954



SOURCE: Authors' calculations based on SSA's MBR, 100 percent data.

NOTE: Cumulative percentages are scaled against the cohort's age-50 population.

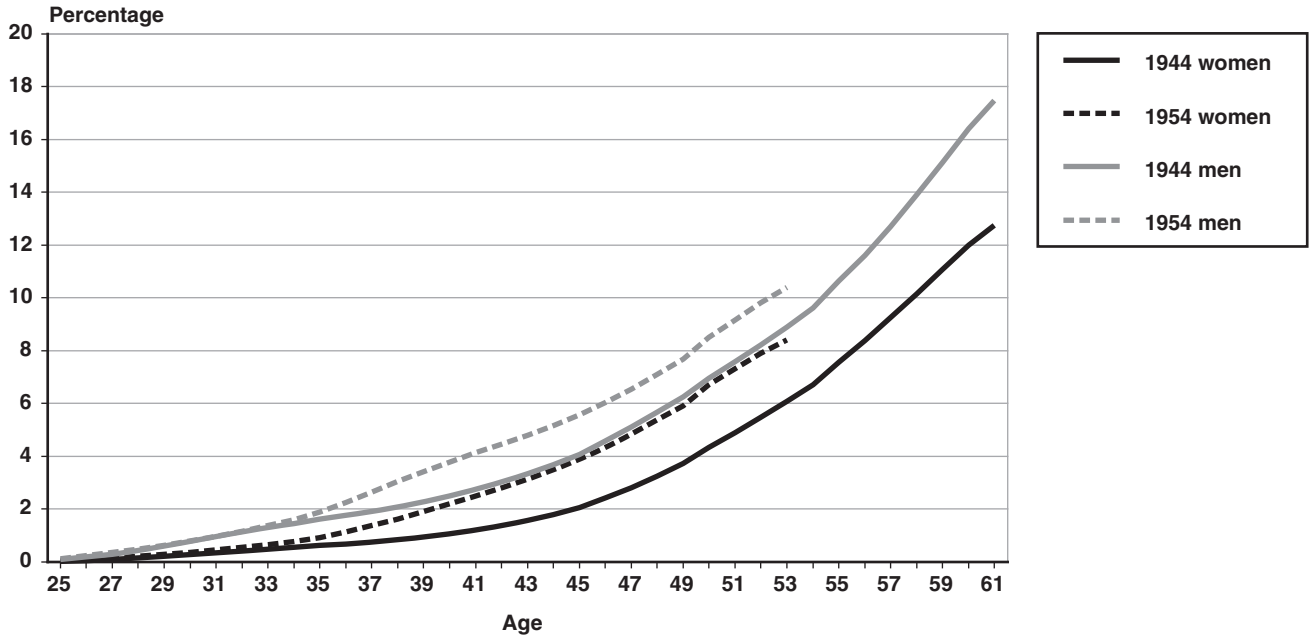
Chart 10.
Cumulative percentage of women entitled to DI benefits by age, biennial birth cohorts 1944–1954



SOURCE: Authors' calculations based on SSA's MBR, 100 percent data.

NOTE: Cumulative percentages are scaled against the cohort's age-50 population.

Chart 11.
Cumulative percentages of workers entitled to DI benefits by age and sex for the 1944 and 1954 cohorts



SOURCE: Authors' calculations based on SSA's MBR, 100 percent data.

NOTE: Cumulative percentages are scaled against the cohort's age-50 population.

birth cohorts offer insights that might be missed when looking only at cross-sectional data. Second, comparing patterns across cohorts furthers our understanding of entitlement trends. Third, we can see how people respond to changes in rules or procedures, such as the change in the FRA or the less stringent vocational guidelines in the disability decision process at ages 50 and 55, when we separate age and cohort characteristics.

As the United States faces the challenges of entitlement growth going forward, better understanding of why people seek Social Security benefits at different ages will help guide program changes. A first step in that process involves recognizing historical entitlement patterns. A second step for future research involves translating demographic and economic factors presently in transition—such as increasing longevity, higher incidence of diabetes or obesity, technological advances, and different skill requirements for jobs—into likely effects on entitlement patterns.

Appendix

This appendix describes the data sources and analytical methods used in this article.

Timing of Initial Entitlement

An extract from the MBR provides the entitlement data used here.[16] To find the age at initial entitlement to retired-worker or DI benefits, we use the following variables:

DOB = Date of birth (month, day, and year)

DOIE = Date of initial entitlement to retired-worker or DI benefits (month and year)

DOEDIB = Date of entitlement to DI benefits (month and year)

TOC = Type of claim (a numeric code, in which codes 6 and 7 denote DI benefits)

We also use the beneficiary identification code (BIC) to identify primary worker beneficiaries.[17] We then derive the age at DOIE, the primary variable of interest for this article, by comparing DOIE with DOB. We identify initially entitled retired-worker beneficiaries as those aged 62 or older at DOIE who have neither a DOEDIB nor a TOC of 6 or 7, or whose earliest instance of DOEDIB is after initial entitlement. We identify initially entitled DI beneficiaries as those aged younger than 62 at DOIE who have a DOEDIB or a TOC of 6 or 7. For individuals with multiple DI

entitlements, the MBR extract we used provides the three most recent DOEDIBs.

Population at Age 50

For each birth cohort we use the population at age 50 to scale the share of the cohort that obtains DI benefits at various ages. We chose population at age 50 because we wanted a denominator that does not shift with age. We use the total population, rather than the population insured for disability benefits, to capture the total increase in DI entitlement relative to the size of the cohort. We use population data from the Census Bureau, *Population Estimates*, Table 1: Annual Estimates of the Resident Population by Sex and Five-Year Age Groups for the United States: April 1, 2000, to July 1, 2008.[18] Those data give us the population aged 50–54. We take an average to get a rough estimate of the age-50 population and then adjust that value by the ratio of births in the cohort's birth-year to the annual average of births over the 5-year interval. Data on births by single year come from various editions of the Census Bureau's *Statistical Abstract of the United States*.

Benchmarking our Numbers against SSA's Published Numbers

The counts of initial entitlements by age will not correspond to published SSA counts of benefit entitlements because we look only at the date of initial entitlement and because the SSA data are generally not available by age in years and months. Counts of initial entitlements and all entitlements differ when, for example, a person becomes entitled to DI at age 45, leaves the rolls after medical recovery at age 55, and then becomes entitled to retired-worker benefits at age 62. We count only the initial entitlement to any Social Security program. In that case, we would report initial entitlement at age 45 but not the entitlement at age 62; SSA data would show both entitlements. Counts by age can differ because we know the age of beneficiaries in years and months at the time of entitlement, whereas the *Annual Statistical Supplement* generally reports age at entitlement only in years. In the *Annual Statistical Supplement,* a person born in January 1937 and entitled to retirement-worker benefits at 62 years and 8 months is entitled in 1999, yet a person born in September 1937 and entitled at 62 years and 8 months is entitled in 2000. Thus, our counts of entitlements by birth cohort do not match those in the *Annual Statistical Supplement*.

To check the numbers of initial entitlements used in this article against published SSA figures, we aggregate our counts of entitlements by age in months to counts by age in years, and compare them to counts in Table 6.B5.1 of the 2011 *Supplement*. For example, we can add the percentages of people in the 1937 birth cohort who became initially entitled to retired-worker benefits from age 62 through 62 and 11 months. We find that 56.4 percent of the 1937 birth cohort became entitled to retired-worker benefits at some time between their 62nd and 63rd birthdays. Some became entitled in 1999 and some became entitled in 2000. We also find that 56.3 percent of the 1936 birth cohort became entitled to retired-worker benefits between their 62nd and 63rd birthdays, some in 1998 and some in 1999. Based on data reported by SSA in *Supplement* Table 6.B5.1, adjusted to omit DI conversions at age 65 and to merge data for men and women, 58.3 percent of people who became entitled to retired-worker benefits in 1999 were aged 62. During 1998–2000, the annual average percentage of people who became entitled to retired-worker benefits at age 62 was 57.3 percent. Our 56.4 percent figure for entitlements at age 62 for the 1936 and 1937 birth cohorts resembles the 58.3 figure for entitlements in 1999 at age 62 (or the 57.3 percent annual average for 1998–2000), lending credibility to our approach. As expected, percentages reported by SSA are a bit higher because the underlying population includes some people who became entitled to retired-worker benefits after a previous entitlement to another type of Social Security benefit.

Notes

Acknowledgments: We thank Susan Grad, Aubrey Johnson, Steve McKay, Chris Motsiopoulos, Scott Muller, David Pattison, David Stapleton, Hilary Waldron, and David Weaver for helpful comments on an earlier draft; Richard Balkus for helpful discussions; and Sarah Axeen for assistance.

[1] The Social Security Board of Trustees (2011) projects that the DI Trust Fund will be exhausted in 2018.

[2] Increasing proportions of new beneficiaries in the 30–44 and 45–60 age groups are being diagnosed with nonlife-threatening musculoskeletal conditions and mental disorders (von Wachter, Song, and Manchester forthcoming, Appendix Table D).

[3] Initial entitlement can occur only after all eligibility requirements are met. The entitlement date often differs from the date of application or the date on which benefit payments actually begin for reasons such as retroactive payment provisions, applicant choice, and varying adjudication periods.

[4] Table 6.B5.1 appears for the first time in the 2011 *Annual Statistical Supplement,* available online at http://www.socialsecurity.gov/policy/docs/statcomps/supplement/2011/6b.html#table6.b5.1. The print edition is forthcoming.

[5] The term "retired-worker benefit" denotes the type of Social Security benefit but does not necessarily imply that the individual has stopped working for pay. It does imply that the benefit is based on the individual's prior earnings. Prior to 2000, the retirement earnings test withheld benefits for beneficiaries who had substantial earnings. For further details, see Song and Manchester (2007, 2008).

[6] Beginning with the 1938 birth cohort, the FRA rose from 65 years to 65 years and 2 months. It continued to rise in 2-month increments for those born each year thereafter until reaching 66 years for the 1943 birth cohort. When the FRA was 65, individuals who claimed retired-worker benefits at age 62 received 80 percent of their full benefit. For those whose FRA is 66, claimants aged 62 receive 75 percent of their full benefit.

[7] The new Table 6.B5.1 in the 2011 *Annual Statistical Supplement* shows entitlements at age 65 that occur before reaching FRA, at FRA, and after reaching FRA. Similarly, it shows entitlements at age 66 at FRA and after reaching FRA.

[8] A retired-worker beneficiary receives benefits based on his or her own earnings history. By contrast, an auxiliary beneficiary receives benefits based on another person's earnings history.

[9] For a comparison of data on initial entitlements by age and birth cohort with the entitlement data in the *Annual Statistical Supplement,* see the appendix.

[10] A similar analysis of claiming by cohort at age 62 appears in Muldoon and Kopcke (2008).

[11] Supplemental Security Income uses the same medical and vocational criteria as DI but is available only to people with low income and assets.

[12] An alternative scaling factor would be the number of people insured for disability benefits in each cohort by single year of age, but we wanted to capture the total growth in DI entitlement. The number of all people in each cohort by single year of age would adjust for changes in mortality at different ages over time, but we took the shortcut of using the population at age 50 for each birth cohort to keep the denominator stable. Consequently, the actual population is larger at ages below 50 and smaller at ages above 50, implying that the charts overstate the percentages at ages younger than 50 and understate them at older ages. See the appendix for further details.

[13] Entitlement rates were higher in the 1970s but especially low during the 1980s as the Reagan administration tightened allowance rates. Individuals in the 1944 cohort were only in their 30s in the 1970s, so we may not fully reflect the higher incidence rates of that decade. Unfortunately, the administrative data for earlier birth cohorts are incomplete.

[14] Individuals approaching advanced age (50–54) may be significantly limited in vocational adaptability if they are restricted to sedentary work. Individuals who have no past work experience or can no longer perform vocationally relevant work and have no transferable skills ordinarily obtain a disability finding (CFR 2010).

[15] We use a denominator that does not shift with age to capture the total increase in DI enrollment. Of course, some people who qualify for DI benefits die within a few years of entitlement, and some members of the birth cohort die prior to age 50 without ever being entitled to DI. In addition, changing shares of each cohort do not have sufficient recent work to be insured for DI.

[16] We used the annual MBR file of SSA's Office of Research, Evaluation and Statistics and examined primary benefits only.

[17] For additional detail, see Panis and others (2000). Primary workers receive benefits based on their own earnings record.

[18] See http://www.census.gov/popest/national/asrh/NC-EST2008-sa.html.

References

Autor, David H., and Mark G. Duggan. 2003. "The Rise in the Disability Rolls and the Decline in Unemployment." *Quarterly Journal of Economics* 118(1): 157–206.

———. 2006. "The Growth in the Social Security Disability Rolls: A Fiscal Crisis Unfolding." *Journal of Economic Perspectives* 20(3): 71–96.

[Board of Trustees] Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds. 2011. *The 2011 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.

CBO. See Congressional Budget Office.

CFR. See Code of Federal Regulations.

Chen, Susan, and Wilbert van der Klaauw. 2008. "The Work Disincentive Effects of the Disability Insurance Program in the 1990s." *Journal of Econometrics* 142(2): 757–784.

Code of Federal Regulations. 2010. *Appendix 2 to Subpart P of Part 404—Medical-Vocational Guidelines.* Title 20—Employees' Benefits, Chapter III: Social Security Administration, Part 404—Federal Old-Age, Survivors and Disability Insurance (1950–). 20 CFR §404P App 2. http://edocket.access.gpo.gov/cfr_2010/aprqtr/20cfr404PApp2.htm.

Congressional Budget Office. 2010. "Social Security Disability Insurance: Participation Trends and Their Fiscal

Implications." CBO Economic and Budget Issue Brief. Washington, DC: CBO. http://www.cbo.gov/ftpdocs/116xx/doc11673/07-22-SSDisabilityIns_Brief.pdf.

———. 2011. "Supplemental Data: Combined OASDI Trust Funds." Washington, DC: CBO. http://www.cbo.gov/budget/factsheets/2011c/OASDITrustFund.pdf.

Duggan, Mark, Perry Singleton, and Jae Song. 2007. "Aching to Retire? The Rise in the Full Retirement Age and Its Impact on the Social Security Disability Rolls." *Journal of Public Economics* 91(7–8): 1327–1350.

Muldoon, Dan, and Richard W. Kopcke. 2008. "Are People Claiming Social Security Benefits Later?" Center for Retirement Research at Boston College Issue Brief No. 8-7. Chestnut Hill, MA: Boston College. http://crr.bc.edu/briefs/are_people_claiming_social_security_benefits_later.html.

Panis, Constantijn, Roald Euller, Cynthia Grant, Melissa Bradley, Christine E. Peterson, Randall Hirscher, and Paul Steinberg. 2000. *SSA Program Data User's Manual.* Baltimore, MD: Social Security Administration.

Rupp, Kalman, and David Stapleton. 1995. "Determinants of the Growth in the Social Security Administration's Disability Insurance Programs—An Overview." *Social Security Bulletin* 58(4): 43–70.

[SSA] Social Security Administration. 2010. *Fast Facts & Figures about Social Security, 2010.* Washington, DC: SSA. http://www.socialsecurity.gov/policy/docs/chartbooks/fast_facts/2010/index.html.

———. 2011a. *Annual Statistical Supplement to the Social Security Bulletin, 2011.* http://www.socialsecurity.gov/policy/docs/statcomps/supplement/2011/index.html (Print edition forthcoming).

———. 2011b. "Beneficiary Data: Number of Social Security Beneficiaries." http://www.socialsecurity.gov/OACT/ProgData/icpGraph.html.

Song, Jae, and Joyce Manchester. 2007. "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.

———. 2008. "Have People Delayed Claiming Retirement Benefits? Responses to Changes in Social Security Rules." Congressional Budget Office Working Paper No. 2008-04. Washington, DC: CBO. http://www.cbo.gov/ftpdocs/90xx/doc9077/2008-04.pdf.

von Wachter, Till, Jae Song, and Joyce Manchester. Forthcoming. "Trends in Employment and Earnings of Allowed and Rejected Applicants to the Social Security Disability Insurance Program." *American Economic Review.*

Behavioral and Psychological Aspects of the Retirement Decision

by Melissa A. Z. Knoll*

The majority of research on the retirement decision has focused on the health and wealth aspects of retirement. Such research concludes that people in better health and those enjoying a higher socioeconomic status tend to work longer than their less healthy and less wealthy counterparts. While financial and health concerns are a major part of the retirement decision, there are other issues that may affect the decision to retire that are unrelated to an individual's financial and health status. Judgment and decision-making and behavioral-economics research suggests that there may be a number of behavioral factors influencing the retirement decision. The author reviews and highlights such factors and offers a unique perspective on potential determinants of retirement behavior, including anchoring *and* framing effects, affective forecasting, hyperbolic discounting, *and the* planning fallacy. *The author then describes findings from previous research and draws novel connections between existing decision-making research and the retirement decision.*

Introduction

Deciding when to retire may be one of the most important decisions an individual makes during his or her lifetime. Although the retirement decision occurs late in life, it can significantly affect an individual's well-being for many years. The majority of research about the retirement decision has explored the impact of health (for example, NIA (2007)) and economic status (for example, Gustman and Steinmeier (2002)) on individuals' decisions to retire.[1] Not surprisingly, research has indicated that individuals in poor health, or whose loved ones are suffering from negative health conditions, retire earlier than those in better health (McGarry 2002). Additionally, individuals who enjoy a higher socioeconomic status (SES) tend to work longer than lower SES individuals (Li, Hurd, and Loughran 2008).[2]

While financial and health concerns are a major part of the retirement decision, there are other issues that enter into the retirement decision that are unrelated to an individual's financial and health status. Research in the areas of judgment and decision making (JDM) and behavioral economics suggests that there may be a number of behavioral factors that influence the retirement decision as well. Findings from previous JDM and behavioral-economics research offer a new perspective on the motivations underlying the retirement decision and may help generate strategies for overcoming some cognitive and emotional factors that can lead individuals to make suboptimal retirement decisions. Therefore, it is crucial that, in addition to the financial and health aspects of the retirement decision, policymakers and those in the position to guide the choices of future retirees understand the possible behavioral and psychological features of the retirement decision. In this literature review, I outline findings from JDM and behavioral

Selected Abbreviations

EEA	earliest eligibility age
FRA	full retirement age
JDM	judgment and decision making
SES	socioeconomic status
SSA	Social Security Administration

* *Melissa Knoll is a research analyst with the Office of Retirement Policy, Office of Retirement and Disability Policy, Social Security Administration.*

economics research that can inform and broaden one's perspective on why individuals decide to retire when they do.

At age 62, the current earliest eligibility age (EEA) for receiving Social Security retirement benefits, life expectancy for the average man and woman is approximately 21.4 years and 23.8 years, respectively.[3] This means that many individuals will spend more years in retirement than they did in school, clearly a nontrivial amount of time. Retirement trends have indicated that many individuals do, in fact, claim Social Security benefits at the EEA, or at some point before their full retirement age (FRA). An important thread uniting many of the issues discussed in this article, then, is the tendency for individuals to retire early, that is, before their FRA. However, because delaying claiming benefits results in an increased monthly benefit amount for the remainder of one's life (and the remainder of the lives of family members receiving survivor benefits), many researchers have argued that *delaying* claiming is almost always the optimal decision economically (Coile and others 2002).[4] In fact, the National Commission on Fiscal Responsibility and Reform (2010) recently proposed that SSA provide information to the public "with an eye toward encouraging delayed retirement" (47). Further, in a book entitled *Working Longer,* Munnell and Sass (2008) suggested that prolonged workforce participation may be "the solution to the retirement income challenge." Retirement planners have also begun to endorse retiring at later ages (for example, Spiegelman (2009)). I make recommendations throughout this article regarding ways in which policymakers and retirement counselors can encourage future retirees to consider postponing retirement, if doing so proves to be financially feasible and beneficial to the individual and his or her family.

Moving forward, this literature review is organized into five sections. First, I discuss the relationship between leaving the workforce and claiming Social Security benefits, as this interaction may be important for understanding individuals' retirement decisions. In the second section, I describe ways in which the decision context, the factors that make up a particular decision and the way in which the decision is presented or *framed,* may affect the timing of one's retirement. The third section explores how individuals' (in)ability to accurately predict their future happiness may affect their expected and actual retirement decisions. The fourth section involves predictions about the future as well, but focuses specifically on predictions of future behavior and future events. Finally, I discuss the roles that emotions and information can play in the retirement decision. In the sections where I discuss contributions from JDM and behavioral economics, I review the current literature and then highlight possible policy implications and directions for future research where applicable.

The Big Issue

Before discussing the significance of the possible behavioral underpinnings of retirement, it is important to disentangle the different meanings of the term "retirement." That is, "retiring" may mean different things to different people. First, retiring can mean exiting the workforce; when individuals no longer want to or are no longer able to work, they may decide that it is time to leave the workforce. Second, retiring may refer to claiming Social Security benefits. For many retirees, those two events likely are one and the same, but those events do not always temporally coincide—individuals may claim benefits while continuing to work or they may stop working without claiming benefits.

When individuals decide to stop working, they must have a way to support themselves financially, as their income from work will no longer be available. Thus, the question of how to support oneself in retirement should be an important consideration in the retirement decision. Traditionally, income during retirement is thought to come from three main sources, or what is generally referred to as a "three-legged financial stool": Social Security benefits, pensions, and personal savings. Unfortunately, many individuals fail to consider the issue of financial well-being in retirement until retiring becomes imminent (EBRI 2008), which can mean that the "personal savings" leg of the stool is weaker than it should be. In addition, the number of workers who participate in an employer-sponsored defined benefit pension plan has decreased over the past two-to-three decades (Buessing and Soto 2006).[5] Individuals consequently may be left financially unprepared for retirement, leading them to rely heavily on Social Security benefits.

Indeed, Social Security comprises the majority of retirement income for many individuals (NIA 2007; SSA 2010), and this reliance on Social Security can have a major impact on the timing of one's exit from the workforce. For individuals for whom Social Security is the main or only source of income in retirement, exiting the workforce and claiming Social Security benefits likely occur concomitantly. On the other hand,

retirees who will receive a pension and/or who have personally saved for retirement may not need to claim Social Security benefits immediately upon exiting the workforce because other sources of income can fund their retirement, at least for some time.[6]

Coile and others (2002) highlighted a number of additional factors that may affect the relationship between retiring and benefit claiming, including life expectancy, age at retirement, and marital status. Importantly, however, the authors noted that many people may simply claim benefits immediately at age 62, without taking into account the far-reaching financial effects of this uptake decision. As such, the authors suggested that "claiming behavior should be better understood by those interested in Social Security" (384).

Related to the interaction between leaving the workforce and claiming Social Security benefits is the relationship between a retiree's claiming age and the resulting benefit amount. This relationship should also be an important consideration in the retirement decision. Briefly, individuals can choose to begin receiving retirement benefits at any age between 62 (that is, the EEA) and 70, and this choice affects the size of the benefit. At FRA, retirees receive 100 percent of their scheduled benefits. If an individual claims benefits before his or her FRA, reduction factors are applied, permanently reducing the monthly benefit amount. If an individual claims between his or her FRA and age 70, delayed retirement credits are applied, permanently increasing the monthly benefit amount. Unfortunately, research has indicated that many future retirees do not fully understand the interplay between claiming age and Social Security benefits (Benítez-Silva, Demiralp, and Liu 2009; Liebman and Luttmer 2009), and many simply do not know that such an interaction exists between claiming age and benefit amount (EBRI 2007). Such a lack of knowledge or understanding about claiming can lead individuals to claim Social Security benefits early, which may not be in their own best interest or in the best interest of their family members. Although informational constraints can certainly lead to suboptimal claiming decisions, JDM and behavioral economics research suggests that, even with complete knowledge of the claiming rules and their effects on benefit amounts, individuals may nevertheless decide to claim benefits when it is not economically advisable to do so.

While delaying claiming allows for permanently increased monthly Social Security benefits, more than half of retirees nevertheless claim benefits at the EEA (for example, Song and Manchester (2007)). That behavior may have multiple determinants. For example, there is, of course, a subgroup of retirement-age individuals who must leave the workforce at the EEA for health reasons. However, the Employee Benefit Research Institute (EBRI 2006) estimated that only about 15 percent of survey respondents reported retiring early because of health problems. Therefore, the number of retirees citing a health-induced exit from the workforce is not so large that it can explain all, or even the majority, of early retirement behavior. Likewise, some individuals may start to receive benefits as soon as possible because they have been "forced" into retirement, either as a result of a layoff or a buyout offer from their employer. While the number of individuals who retire as a result of a job cut has likely risen in recent years, these retirees represent only a small subset of the retirement population; EBRI (2006) found that approximately 11 percent of those retiring early reported doing so as a result of downsizing or closure.

The claiming decision for individuals who must leave the workforce early citing poor health or a layoff very likely depends entirely on their financial condition. For those retirees, choosing the option to delay claiming may not be possible if they do not have sufficient savings or an employee pension. In addition to those *needing* or *forced* to leave the workforce, a substantial number of retirees *choose* to stop working before reaching their FRA. According to EBRI's (2006) report, 38 percent of individuals reported retiring early; although 39 percent of early retirees surveyed said they did so because they could afford to, 24 percent reported that they wanted to do something else and 22 percent indicated that they retired early for family reasons. If individuals in those latter two groups have little personal retirement savings and no pension, they will quite likely claim Social Security benefits upon retiring.

Regardless of the specific financial needs of a potential retiree, if individuals work longer, they are less likely to claim benefits whether they have sources of retirement funding outside of Social Security or not (Gustman and Steinmeier 2002). That is, individuals who continue to earn wages through working are less likely to claim benefits, regardless of their personal savings or pensions.[7] Therefore, when encouraging individuals to delay claiming Social Security so that they receive a higher monthly benefit for the rest of their lives, it may behoove policymakers to shift their

focus from delaying claiming to encouraging prolonged labor force participation.[8] With this in mind, many of the issues raised later focus on behavioral and psychological impediments to working longer, and many of the suggested interventions focus on working longer and claiming later.

The Decision Context

As mentioned earlier, delaying the claiming of Social Security benefits is a widely publicized and popular strategy that financial planners, retirement counselors, policymakers, and the media suggest is critical for financial well-being in retirement (for example, Spiegelman (2009)). Individuals who claim at age 62 will receive reduced benefits (about a 25–30 percent reduction depending on their FRA) for the remainder of their lives, as will spouses eligible to receive survivor benefits (SSA 2009b). Why, then, is 62 the most popular age at which to start receiving benefits (Song and Manchester 2007)? As alluded to earlier, perhaps the more important question is why 62 is such a popular age at which to exit the workforce? One reason, which will underlie many of the JDM topics discussed herein, is that workers are simply "burnt out" or dissatisfied with their jobs. Indeed, previous research suggests that being tired of working is a main determinant of the preference for early retirement. Bidewell, Griffin, and Hesketh (2006) and Beehr and others (2000) found that being "tired of work" bore the strongest (negative) relationship to preferred retirement age in models including both work and nonwork predictors of retirement.[9] In addition, a July 2008 report from EBRI showed that respondents who reported retiring at earlier ages were more likely to indicate that they were dissatisfied with their jobs (Helman and others 2008).

It seems implausible that at exactly 62 years of age, the majority of individuals are fatigued or dissatisfied with their jobs to the point where they cannot bring themselves to work any longer in order to receive a significantly higher monthly benefit from Social Security. When factoring in that the EEA is 62 as well, it becomes apparent that the retirement spike at 62 (Song and Manchester 2007; Behaghel and Blau 2010) is not just a coincidence. In addition to the retirement spike at age 62, another wave of individuals tends to retire at age 65 (Song and Manchester 2007; Behagel and Blau 2010), which was the FRA until it was phased upward in the 1983 Social Security Amendments (SSA 2009a).[10] These retirement spikes, centered on ages relating to Social Security policy, are an example of how the decision context, or the way a decision is framed or presented, can affect individuals' preferences and behaviors. In this case, retirees appear to *anchor* (Tversky and Kahneman 1974) on ages that have some retirement significance, however arbitrary. That is, retirees tend to be influenced by particular numbers (ages) associated with specific aspects of Social Security policy. Brown (2006) studied a particular set of questions asked in the Health and Retirement Study and found that 62 and 65 are the ages most frequently reported as being the "usual retirement ages" (URAs). In fact, only about 13 percent of participants reported an age other than 62 or 65 as being the URA, or the age at which people "who work with you or have the same kind of job" retire.

In addition to the anchoring effect that appears to take place in the consideration of one's retirement age, there is also evidence that the ages on which people anchor serve as *reference points* (Kahneman and Tversky 1979b). Rather than considering options absolutely, people tend to evaluate options relatively, that is, as *gains* or *losses* from a specified reference point. JDM research dealing with the impact of expectations on individuals' judgments and decisions (for example, Lee, Frederick, and Ariely (2006)) may suggest that individuals' expectations about retirement can have important consequences for their retirement decisions (Lusardi 1999); among other things, expectations can lead to the establishment of reference points, or starting points, which may affect the decision of when to retire. If people are used to hearing that 62 is "the retirement age," as opposed to it being the "*early* retirement age," convincing them to wait past age 62 to claim benefits may be difficult, because 62 has come to serve as the expected retirement age—the reference point.

The following is an example of how the reference point might impact the retirement decision. Individuals are unlikely to evaluate the prospect of retiring at 64 by simply evaluating how it would feel to retire at this age. Instead, individuals may compare retiring at 64 with retiring at various older or younger ages. The significance of reference points in individuals' valuations of available options makes future retirees' perceptions of a *usual retirement age* important. If age 62 serves as a reference point, as previous research suggests it does (for example, Brown (2006)), individuals may view retiring at 64, for example, as a "loss." A loss, in this sense, is simply an outcome the decision maker perceives as negative in relation to the reference point (for example, "I could have had 2 more years of

'freedom' had I retired at age 62"). In the context of the retirement decision, the additional monthly income from Social Security one would receive if he or she postpones retirement is quite likely perceived as a "gain" associated with delaying benefit claiming. The monetary gain resulting from delaying retirement may be evaluated with respect to a reference point of age 62 as well. Waiting to retire until age 64, for example, would result in a monthly monetary gain as compared with the benefit that would be received at age 62. However, *loss aversion* (Tversky and Kahneman 1974), or the empirical finding that individuals weigh losses more heavily than they do equivalent gains, suggests that obtaining an increased monthly benefit may not be enough to compensate for the strong reluctance to work longer. Even though the gains and losses associated with the retirement decision are in different metrics (that is, losses are in terms of extra work and gains are in terms of extra monthly Social Security income), this scenario represents a potentially common trade-off individuals considering retirement may make. In essence, prospective retirees may envision the retirement decision as simply a question of whether working an extra year is worth an extra $50 a month in benefits.[11]

Over a decade ago, Fetherstonhaugh and Ross (1999) conducted one of the few experiments demonstrating the effects of reference points and loss aversion on the retirement decision.[12] Using the notion that individuals consider 65 to be the "default" retirement age, the authors suggested that individuals who expect to retire earlier or later than age 65 will view their resulting Social Security benefits as either a loss or a gain from this reference point. The authors further argued that simply altering the frame in which Social Security benefits are presented to future retirees may, in turn, alter their retirement preferences and behaviors. Such a result would be an example of a *framing effect* (Tversky and Kahneman 1981), which occurs when a change in the surface features of a decision problem leads individuals to make different judgments and decisions. Through experimentally manipulating the default retirement age to be 68 or 65, and framing retirement options as gains or losses from those different reference points, Fetherstonhaugh and Ross (1999) were able to demonstrate powerful framing effects. Specifically, the authors found that when the option to claim benefits at age 68 was framed as resulting in a monetary gain from an age-65 reference point, only 38 percent of survey respondents chose 68 as the preferred retirement age; on the other hand, 57 percent of respondents chose 68 as the preferred age when receiving benefits at age 65 was framed as resulting in a monetary loss from the age-68 reference point. This result is consistent with previous research on loss aversion, which suggests that losses hurt more than equivalent gains feel good. Behaviorally, loss aversion leads individuals to choose the option that allows them to avoid a loss—a later retirement date in this case.

Interestingly, Fetherstonhaugh and Ross (1999) found no similar framing effects when the options were presented with age-62 and age-65 as the reference points. The authors suggested that this null result may stem from the specific trade-off between enjoying an early retirement, along with the leisure opportunities that early retirement affords, and the slightly greater Social Security benefit that later retirement provides. This trade-off, the authors argued, is not as pronounced at later ages (that is, between ages 65 and 68) because retiring at either of those ages is not considered to be "retiring young." Taken together, these results underscore the significance of the decision context in the presentation of retirement-related information.

SSA's change in policy—from use of the "break-even age" in claims representatives' (CRs') discussions with prospective retirees[13]—is a clear example of the vast policy implications of JDM research regarding the decision context. Prior to 2008, when discussing claiming options with clients, CRs were instructed to use a break-even framework, which identifies the age at which the cumulative monetary value of claiming retirement benefits later will exceed the cumulative monetary value of claiming benefits earlier. By identifying a specific month in which an individual would "breakeven," potential retirees were able to decide if they wanted to claim early and be "ahead" *before* the break-even age, or claim later and be "ahead" *after* the break-even age. The notion of the break-even age highlights the fact that an individual will not make up the amount forfeited by delaying claiming unless they live at least as long as the break-even age (Brown, Kapteyn, and Mitchell 2010). While SSA is moving away from using break-even analyses, calculating the break-even age remains common practice in the private sector (for example, MetLife (2010)). However, recent decision-making research suggests that explaining the break-even age to prospective retirees may actually push them toward a preference for early benefit claiming. For example, Liebman and Luttmer (2009) found that presenting claiming information using a break-even frame led substantially more

respondents to favor retiring at an earlier age than did alternative frames not emphasizing the break-even age. Brown, Kapteyn, and Mitchell (2010) observed that presenting participants with break-even information led to preferred retirement ages that were approximately 1 year earlier than they were with other frames.

JDM and behavioral-economics researchers recognize the significance of the decision context on the choices individuals ultimately make, and the retirement decision is no different. Creating decision environments that lead individuals to make the best choices possible is the goal of careful *choice architecture,* which can be used to "nudge" (Thaler and Sunstein 2008) potential retirees toward retirement decisions that are more advantageous for them. As such, behavioral decision-making research can serve to guide the ways in which policymakers and retirement counselors communicate with potential retirees. For example, along with the annual Social Security Statement, in the summer of 2008 SSA began sending out a revised insert entitled "Thinking of Retiring?" to individuals aged 55 or older (SSA 2009b).[14] This insert contains a bar graph that shows how benefits increase as an individual's benefit-start age increases from 62 to 70. Because graphs typically are read from left to right, age 62 may serve as an implicit reference point, prompting individuals to think in terms of increases in benefits associated with delayed claiming rather than decreases in benefits associated with early claiming.[15] The aforementioned study by Fetherstonhaugh and Ross (1999) suggested that this presentation of benefits may actually impact prospective retirees' retirement decisions.

In addition to expounding on communication efforts, findings from behavioral decision-making research can also generate novel ways to approach issues surrounding the retirement decision. For example, Fetherstonhaugh and Ross (1999) suggested that providing prospective retirees with the option to receive a one-time, lump-sum retirement benefit could encourage delayed retirement. Citing a number of reasons, most grounded in behavioral economics and behavioral psychology, the authors hypothesized and found through survey research that a large majority of respondents think a one-time, lump-sum payment would provide a greater incentive to delay retirement than the standard Social Security annuity increase. As another example, previous research on a decision-making process called *query theory* (Johnson, Häubl, and Keinan 2007; Weber and others 2007) suggested that the order in which individuals entertain thoughts about different aspects of a particular decision can affect the ultimate choice those individuals make. Following this notion, urging individuals to first think about delaying retirement and *then* think about retiring early could shift claiming behavior to later ages.

Altering the decision context provides countless opportunities for policymakers, financial planners, retirement counselors, and prospective retirees themselves to improve retirement decision making. The research highlighted in this section demonstrates why it is important for policymakers to pay careful attention to the way choices are framed or presented, as these aspects of the decision are not inconsequential.

Predicting Future Happiness

In the previous sections, I described some potential trade-offs that individuals may make when thinking about the retirement decision—more leisure now, less money later; working longer now, a larger retirement benefit later. If those trade-offs do indeed approximate aspects of the retirement decision, this suggests that, when deciding when to retire, potential retirees actively compare what their lives would be like under different possible scenarios. That is, individuals deciding when to retire very likely compare what they imagine life would be like if they retired now with what they imagine life would be like if retirement was delayed. A necessary prerequisite of the retirement decision, then, is the accurate prediction of one's future emotions. Unfortunately, previous JDM research has demonstrated that individuals do not make accurate *affective forecasts* (see Wilson and Gilbert (2003) for a review of the literature). There are a number of strategies individuals use to help them make accurate predictions of their future well-being, but often cognitive biases lead to erroneous predictions (Hsee and Hastie 2006). For example, prediction errors can result from the *impact bias* (Wilson and Gilbert 2003), which broadly describes individuals' tendency to overestimate the intensity and duration of their emotions in reaction to positive and negative future events. Football fans tend to not be as happy for as long as they would expect after their favorite team wins a big game, nor do they tend to be as unhappy for as long as they would expect following their team's loss. Similarly, teachers who obtain or fail to obtain tenure report being equally as happy, even though both groups imagine that outcome will affect their happiness for years to come (Gilbert and others 1998).

Affective Forecasting

As mentioned earlier, being tired of work (Beehr and others 2000; Bidewell, Griffin, and Hesketh 2006) or dissatisfied with work (Helman and others 2008) are important determinants of preferred retirement age, suggesting that many potential retirees would quite likely consider additional years of working to be unpleasant. Put another way, many prospective retirees may think they would be happier if they left the workforce. Previous research has demonstrated that predictions of future happiness, referred to as *affective forecasting* (for example, Wilson and Gilbert (2003)), often lead individuals to imagine that the event in question would be better or worse (that is, more extreme) than it actually turns out to be. Affective forecasting is a crucial aspect of decision making because it allows individuals to anticipate how they would feel if they engage in one course of action or another. In turn, those anticipated emotions serve as information regarding which alternative from a variety of options to choose (Gilbert and Wilson 2007). As such, inaccurate affective forecasts can lead to suboptimal decisions.

Gilbert and Wilson (2007) suggested that inaccurate predictions of future happiness stem from imprecise mental simulations of future events. The authors argued that humans have the distinctive ability to "pre-experience" future events through mental simulation, and those *prospections* enable humans to make predictions about what choices would make them happy or unhappy. For example, when considering whether to make a doctor's appointment for a colonoscopy or mammogram, patients are likely to mentally simulate that event, resulting in a feeling of uneasiness about the procedure. This example highlights the importance of affective forecasting in the decision-making process because negative feelings generated from the mental simulation can cause some individuals to avoid getting those potentially life-saving examinations. The particularly troubling aspect of affective forecasting is that individuals' prospections are often inaccurate, but they drive behavior nonetheless. A colonoscopy or mammogram can produce stronger negative feelings in prospection than would the experience itself. Positive experiences are susceptible to the same forecasting errors. Imagining obtaining tenure (Gilbert and others 1998) or witnessing your favorite sports team win an important game (Wilson and others 2000) most likely produces stronger positive feelings than do the events themselves. Again, these exaggerated expectations can lead to certain behaviors, like skipping a child's recital to watch a football game, which the decision maker may later regret.

Recognizing the role that affective forecasting can play in the retirement decision may be important for understanding why individuals retire when they do. Just as potential patients mentally simulate the experience of getting a colonoscopy or mammogram before deciding whether to make an appointment, potential retirees very likely mentally simulate what retirement would be like before deciding to retire or not. Gilbert and Wilson (2007) described four characteristics typical of affective forecasts and explained why those features often lead to a mismatch between mental simulations and actual experiences. The authors argued that mental simulations are *unrepresentative, essentialized, abbreviated,* and *decontextualized.* Although previous research has not directly applied affective forecasting to the retirement decision, I suggest that the characteristics of affective forecasts may contribute to the decision by leading individuals to prefer retiring earlier rather than later.

First, mental simulations are *unrepresentative,* which means they are constructed from memories of past events that do not necessarily reflect how future events will unfold. Specifically, individuals tend to remember most vividly the best and worst aspects of an event (as well as the final moments of it), neglecting the instances that were simply average (for example, Kahneman, Wakker, and Sarin (1997)). As a result, when thinking about working additional years in order to secure a larger monthly Social Security benefit, individuals may construct mental simulations of future work experiences using their best and worst work-related memories. However, individuals typically display a *negativity bias* (see for example, Rozin and Royzman (2001)), whereby individuals are more sensitive to negative events than to positive events. When deciding whether to work extra years, then, mental simulations of such a future are likely to be negatively skewed, potentially leading individuals to leave the workforce sooner rather than later.

In addition to being unrepresentative, mental simulations are *essentialized,* which means that they only contain the main features of the event, but not the more minor details. Essentializing mental simulations of working longer may mean thinking about fundamental aspects of one's job, such as feeling undervalued by a boss, while omitting smaller details, such as interacting with coworkers. Although feeling undervalued is a valid reason for a lack of job satisfaction,

omitting more minor details of daily work activities from mental simulations means that individuals' prospections will not accurately reflect what it might be like to *actually* work longer. An individual's overall experience with an event takes into account major and minor factors that are both positive and negative, but mental simulations of future events take into account mostly the major events (Gilbert and Wilson 2007). Therefore, the major, sometimes negative, events that factor into individuals' mental simulations of future work will not be tempered by smaller, potentially positive factors that could make the actual experience of working longer not so bad. In addition, essentialized mental simulations of *retirement* may lead individuals to focus on the major aspects of leaving the workforce, such as large amounts of leisure time, to the exclusion of the seemingly smaller details, such as possibly having few retired friends with which to spend this newly acquired leisure time.

Mental simulations of future events are also *abbreviated,* that is, they are necessarily shorter than the actual event being simulated. Furthermore, abbreviated prospections generally contain representations of only the earliest moments of the event in question. Therefore, when mentally simulating how retirement might be, a potential retiree is quite likely to consider only the early stages of retirement. For example, an individual may imagine the first holiday season during which he or she will not have to work on Christmas Eve, or the first Memorial Day after which he or she will not have to return to the job. Particularly in the realm of the retirement decision, those early events tend to be mostly positive aspects of retiring. The notion that mental simulations are abbreviated suggests that retirees consider less, if at all, the lasting impacts of retiring early, namely reduced benefits for themselves and their surviving spouse. The abbreviated nature of mental simulations, then, may be extremely important for the retirement decision; if retirees do not consider what the state of their retirement and finances will be in their 80s and 90s (when perhaps their retirement savings accounts have been exhausted), they will not fully realize the importance of delaying benefit claiming as long as possible. Some retirees may also find themselves bored and disengaged from society (Nuttman-Shwartz 2007), conditions that normally present themselves further into retirement. These delayed effects of early retirement most likely are underrepresented in the mental simulations of retirement, even though they are experienced in actual retirement.

Finally, mental simulations are *decontextualized,* which means that the contextual factors that are present at the time an individual mentally simulates a future event may not be present at the time the event actually occurs. When the contexts in which prospections are generated and events are experienced are not equal, mental simulations are likely to differ from actual experiences. The notion that simulations are decontextualized may be important for the retirement decision for two reasons. First, when prospective retirees are deciding whether to leave the workforce, they do not have as much leisure time as they would in retirement. Potential retirees do not have a great deal of free time that they must fill with some sort of activity, so the context in which they mentally simulate retirement will lack the possible feelings of boredom some encounter in retirement. Second, when potential retirees decide that they want to retire, they are earning an income that will not exist once they leave the workforce. That is, potential retirees are not feeling the strain of limited income, and the context in which they mentally simulate retirement will not include the negative feelings associated with having inadequate funds. When individuals have the advantage of a bi-monthly paycheck that covers their living expenses, they may not consider what it would be like to receive only one monthly check that is less than their preretirement income. Unfortunately, a financially suffering 85-year-old retiree cannot make up for the inaccurate affective forecast of his or her 62-year-old, relatively wealthier self.

All of the aforementioned characteristics of mental simulations may contribute to potentially inaccurate affective forecasts of retirement. Individuals may choose to retire early both because they think working longer will be worse than it is and because they think life in retirement will be better than it is. While that notion is speculative at this point, it is easily testable. For example, a researcher could ask prospective retirees how they would feel if they delayed retirement past their expected retirement date and compare their responses to those of retirees who *did* postpone their retirement. Previous research employing this methodology in other domains has typically demonstrated that individuals who are asked to predict their future happiness make forecasts that are too extreme in the predicted direction (see for example, Gilbert and others (1998)). By using a "think-aloud" or "type-aloud" procedure, researchers could also assess the kinds of thoughts individuals consider when making those predictions about future happiness. For

example, consistent with the notion that prospections are essentialized, do prospective retirees overemphasize the fundamental (sometimes negative) aspects of their jobs and omit more minor details that make each workday manageable? Do they focus on events and emotions that might occur only shortly after retiring, consistent with the abbreviated nature of prospections? How do these types of thoughts compare with those of individuals who are actually working longer than they expected?

Demonstrating that affective forecasting errors occur when individuals are thinking about why they should retire at a given time could be useful in developing interventions for overcoming, or debiasing, such prediction errors. Previous research has provided examples of successful debiasing techniques aimed at making individuals' affective forecasts more accurate. In one experiment, Wilson and others (2000) asked participants to write down in a prospective "diary" how much time they might spend performing a number of everyday activities on a specific date in the future. Simply performing this task helped participants make more accurate affective forecasts of how they might feel after their team won or lost a football game that was to take place on a future date. In that case, the diary helped participants recognize that their attention would not be entirely focused on the outcome of the game, and their emotions following the game would therefore be less extreme than they would have otherwise predicted; effectively, the diary helped participants recognize that life would go on after the game, win or lose. A similar procedure may be useful in helping individuals generate retirement-related prospections that are less essentialized. Specifically, individuals considering retirement could be asked to write down what events might take place during a typical workday. This activity would likely lead prospective retirees to paint a more complete and accurate picture of what it would be like to work longer—without omitting the minor details of their job that may make each day somewhat enjoyable.

Impact Bias, the Psychological Immune System, and Immune Neglect

When attempting to predict future happiness, it is important to accurately predict both *how* one would feel (for example, happy, sad, angry, excited), as well as *how long* the predicted emotions would persist. *Impact bias* broadly describes individuals' tendency to overestimate both the intensity and the duration of emotions that may result from a particular future event (Wilson and Gilbert 2003). Impact bias is helpful in explaining how inaccurate affective forecasts may lead potential retirees to exit the workforce early. Specifically, when individuals consider the benefits of leaving the workforce, unrealistic expectations of the positive impact that retiring would have on their future happiness, as well as incorrect estimates of how long this enjoyment would be expected to last, may sway potential retirees toward early retirement. Of course, when considering when to leave the workforce, individuals quite likely focus not only on the advantages of retiring, but also on the disadvantages of continuing to work. An overemphasis on negative aspects of working longer might lead prospective retirees to convince themselves that they could not endure even 1 more year on the job. What individuals fail to realize, however, is that humans possess a remarkable ability to adapt to negative situations. As a result of what can be thought of as a *psychological immune system* (Gilbert and others 1998; Wilson and Gilbert 2003), humans are able to recover relatively quickly from events that threaten their happiness.

Importantly, individuals exhibit *immune neglect* (Gilbert and others 1998; Wilson and Gilbert 2003), which means that they do not appreciate the ability of their psychological immune systems to help them recuperate from negative events, nor do they appreciate that ability in others. Immune neglect becomes evident when friends are shocked to find that a recently divorced peer has started dating so quickly after the split. Often others look upon such behavior as insensitive or callous, but to the individual experiencing the situation, such actions are simply a result of the psychological immune system. The psychological immune system, and more importantly, immune neglect, are crucial aspects of the decision-making process. For example, an unhappy spouse may remain in a loveless marriage because he or she cannot imagine being able to recover after a divorce. Similarly, a potential retiree may leave the workforce earlier than necessary because he or she cannot imagine being able to get through each day feeling underappreciated. In either case, immune neglect impacts decision making because an individual may engage (or fail to engage) in a particular behavior for fear that the repercussions will be not only extremely negative, but exaggeratedly prolonged as well.

Once an individual turns age 62, receiving Social Security retirement benefits becomes an option that was not available before reaching that age.[16] Not only does this provide a temptation of sorts (that is,

receiving an income without having to work), but it also provides a "way out" of the workforce that did not exist prior to that point. A 60-year-old worker may think it unwise to leave an unpleasant job, as there is no guarantee of finding another job, and therefore no guarantee of an income. A 62-year-old worker, on the other hand, can leave an unpleasant job and still receive an income from Social Security.[17] Having little choice in the matter, the 60-year-old worker is more likely to try to adapt to a negative work situation than is the 62-year-old worker. Previous research suggests that the psychological immune system becomes activated only when there is no other *way out* (Wilson and Gilbert 2003). Furthermore, having the option to revoke one's decision (for example, to reverse the decision to continue working and instead retire at any point after reaching age 62), impedes the psychological immune system from restoring one's well-being. In a study exploring the effects of "keeping one's options open" on subsequent happiness, Gilbert and Ebert (2002) found that participants who were given a month to swap a poster they had chosen were less happy with their choices than were participants who were not given the option to switch their posters. Participants who were not given the option of changing their minds "made the best" (Wilson and Gilbert 2003, 387) of the choice they made, whereas those who had the option to change their minds were less satisfied with their choice. A similar effect could occur for individuals who continue working after age 62. For those workers, the option to stop working may hinder the psychological immune system from "making the best" of the situation, effectively confirming the workers' prediction that working longer would be highly unfavorable.[18]

Predicting Future Behavior and Future Events

I presented research in the previous section that dealt with individuals' propensity to inaccurately predict their future happiness. In addition to making erroneous predictions of happiness, individuals tend to be poor prognosticators of their future behavior as well. A recent report from EBRI (2009) highlights the discrepancy between *expected* and *actual* retirement behavior. For example, EBRI found that 28 percent of workers in the 2009 Retirement Confidence Survey (RCS) changed their expected retirement age within the past year (89 percent of those respondents said their expected retirement age increased); the median reported age of expected retirement was 65. Despite those lofty expectations, the median retirement age was actually 62, with 47 percent of respondents indicating that they retired sooner than they had planned. Additionally, about two-thirds of future retirees in the 2009 RCS expected to work for pay in retirement, while only about one-third of those who were actually retired reported working for pay.

Adding to the fact that individuals do not accurately predict their retirement behavior is the finding that future retirees do not consider the retirement decision for very long before deciding to retire. A 2008 report from EBRI (Helman and others 2008) shows that 22 percent of survey respondents indicated that they first began to think about the retirement decision a mere 6 months before they actually left their jobs. Another 22 percent spent only a year contemplating the retirement decision. These findings are somewhat disconcerting when considering the importance of the retirement decision for future financial well-being.

Hyperbolic Discounting

Although there is no *correct* amount of time that individuals should ponder the retirement decision, research in JDM and behavioral economics suggests that the amount of time individuals spend contemplating when to retire may actually affect the decision itself. This is because people tend to be *hyperbolic discounters,* meaning that they tend to overweight the value of rewards they can receive right away. Unlike more traditional models of discounting, which assume that individuals discount the future at a constant rate (Fishburn and Rubenstein 1982), hyperbolic discounting allows for impulsivity in the present (Kirby and Herrnstein 1995). EBRI's (2008) finding that just under half of retiree respondents spent less than a year considering the retirement decision indicates that individuals may be making this decision somewhat impulsively. Interestingly, that report also indicated that those who were "not at all satisfied" with their jobs were especially likely to have reported having only thought about the retirement decision for 6 months. After working for 30 years, for example, the prospect of leaving the workforce within a year is likely to be extremely tempting—especially if one's job is not satisfying.

Hyperbolic discounting helps to describe individuals' behavior in a variety of decision contexts in which a larger, later reward is pitted against a smaller, sooner reward. Research typically shows that when the opportunity to receive a reward (for example, money, a prize, improved health) is relatively far in

the future, people state their intentions to choose a larger, later reward (for example, weight loss) over a smaller, sooner reward (for example, a gooey brownie). However, as the reward opportunity moves closer to the present, individuals' preferences tend to reverse so that they prefer the smaller, sooner reward (Kirby and Herrnstein 1995). Hyperbolic discounting helps explain why it is often difficult for people to choose alternatives that foster long-term goals rather than opt for alternatives that simply satisfy in the short term. It seems possible that hyperbolic discounting can help to explain individuals' retirement preferences. When retirement is far in the future, workers may intend to retire later; but, as the time to retire approaches and the opportunity to stop working and obtain benefits immediately overwhelms the prospect of long-term financial well-being, those workers may end up opting to retire sooner. Indeed, 38 percent of respondents in an EBRI (2006) survey reported retiring earlier than planned, while only 5 percent reported retiring later than planned.

Bidewell, Griffin, and Hesketh (2006) found evidence supporting the notion that the closer individuals are to their preferred retirement age, the more future income they are willing to sacrifice in order to retire sooner. In other words, they become more impulsive as they approach retirement. The authors asked experiment participants to identify their preferred retirement age and subjected the participants to a "bargaining" task to determine the minimum benefit amount each participant would accept to retire early. Results showed that individual differences in discounting explained a significant amount of variability in participants' preferred retirement ages. Furthermore, consistent with hyperbolic discounting, participants with less time before their preferred retirement age were willing to sacrifice more future money to retire early. Additional results from that study (2006) demonstrated experimentally a potential problem with the way future retirees tend to consider retirement age: If individuals only consider the retirement decision shortly before they retire, they are quite likely to fall prey to impulsivity and sacrifice future financial well-being for immediate relief.

If individuals do, in fact, become more impulsive as retirement draws near, one obvious remedy to future retirees' potentially impulsive behavior is to urge them to start thinking about the retirement decision earlier. When retirement is sufficiently far in the future, individuals may be able to focus on critical aspects of the retirement decision without the influence of impulsivity. This is the crux of precommitment strategies so often used in situations requiring self-control. Dieters may purchase annual gym memberships, for example, as a way to obligate themselves to a year's worth of exercise. Although it is unrealistic to force individuals to precommit to a specific retirement age, the previous discussion about reference points suggests that simply having a retirement age in mind may affect retirement behavior. As hyperbolic discounting suggests, the farther in the future the retirement decision is when one begins to have a retirement age in mind, the more likely it is that this age will be older rather than younger.

SSA has attempted to address the issue of future retirees considering the retirement decision insufficiently far in the future. Specifically, the "Thinking of Retiring" insert described earlier contains, among other things, information on program rules regarding early and delayed retirement and working while receiving benefits. Receiving this insert each year for 7 years before the EEA may urge individuals to think more clearly about the most important aspects of retirement (for example, having enough money to live comfortably in one's older years), without allowing the fleeting excitement of retirement to cloud their judgment. Furthermore, as mentioned earlier, thinking about retirement for a relatively long period of time before it occurs may encourage individuals to envision a later retirement age, which could serve as an anchor in future considerations of retirement.

The Planning Fallacy

If individuals are indeed hyperbolic discounters and forfeit larger future benefits in the interest of instant gratification, retirees may find themselves without adequate money in their older years. Numerous reasons for such behavior have been delineated earlier, including prediction errors of both future happiness and future behavior. One more prediction error may prove important in explaining potential retirees' myopic retirement decisions: the misprediction of future events. Previous research on the *planning fallacy* (Buehler, Griffin, and Ross 1994) indicates that individuals often underestimate how long it will take them to complete projects, even if the time frame of similar projects has proven unrealistic in the past. Underestimates of project completion times have been shown to result from the mental construction of unrealistic scenarios people generate to foresee how a project will unfold. Those mentally constructed scenarios are often optimistic, "best-case" scenarios

(Newby-Clark and others 2000), which fail to include any unexpected problems that may arise during the project. Even when individuals are induced to consider the unexpected events that could potentially occur, they tend to disregard those possibilities as unlikely to happen to *them*.

While the planning fallacy traditionally has been studied in the context of task-completion times, it seems likely that it would generalize to the financial domain[19] and to the finances involved in the retirement decision in particular. In deciding when to retire, it is crucial that individuals understand the implications of having lower monthly benefits in their older years and essential for them to consider what unforeseen costs could potentially arise during retirement. It seems likely that, similar to what occurs with the traditional planning fallacy, individuals only envision the "best-case scenario" for retirement, where no major account-draining events take place (for example, an illness, a child's wedding, the need for long-term care, and so forth). If future retirees do not consider what costly events could take place in retirement, they may be more likely to decide that accepting reduced benefits in order to retire early is a sound idea.

Simply asking individuals to think about everything that could go wrong has not proven effective in debiasing the planning fallacy (see for example, Byram (1997); Newby-Clark and others (2000); Sanna and Schwarz (2004)); while people can identify possible setbacks, they nevertheless dismiss those potential catastrophes as being unlikely to happen to them. Often referred to as *optimistic bias* (Armor and Taylor 2002; Weinstein 1980), individuals' tendency to be overly optimistic about the outcome of future events can lead to poor choices, such as failing to engage in preventative health behaviors (Weinstein 1987). With regard to the retirement decision, undue optimism about what events are likely to take place in retirement may lead individuals to underestimate the importance of a larger monthly Social Security benefit.

Wilson and others (2000) suggested that urging individuals to think about events that are not "focal" to the event in question could help debias the planning fallacy. In the case of the retirement decision, retiring would be considered the focal event, and other events, such as the death of a spouse or the wedding of a child, would likely be nonfocal to the retirement decision. However, those nonfocal events are still important to consider when deciding when to retire because the retirement decision affects one's finances in retirement, and such events could require large amounts of money. As mentioned earlier, the planning fallacy is thought to result from individuals imagining *best-case scenarios* and failing to take into account unexpected events that could occur. Wilson and others (2000) argued that urging individuals to think about these nonfocal, unexpected events could help correct the planning fallacy.

Newby-Clark and others (2000), however, found that imagining a "worst-case scenario" has been an unsuccessful debiasing strategy for the planning fallacy. Instead, taking an *outside view* rather than an *inside view* (Kahneman and Tversky 1979a) when predicting one's task-completion times has been shown to help individuals make more realistic predictions (Buehler, Griffin, and Ross 1994). An inside view refers to the evaluation of a situation or project by taking into account aspects that are unique to the specific project under consideration. By contrast, taking an outside view means that the person considers other, similar projects, without taking into account the specific features of the particular project under consideration. Adopting an outside view eliminates the aforementioned optimistic bias thought to underlie the planning fallacy because it precludes individuals from thinking about why a particular project is bound to work better than others have in the past. However, the retirement decision *is*, in fact, unique. There are no examples of other decisions that are similar to retiring that an individual can use to assume an outside view, although potential retirees may have been in the position to observe the retirement of other people (for example, their parents, friends, or coworkers). Indeed, Buehler, Griffin, and Ross (1994) demonstrated that observers tend to take an outside view when predicting others' task-completion times. As such, future retirees may benefit from considering the experiences others have had in retirement and using these second-hand experiences as predictors of what events may occur in their own retirement.[20]

Along these lines, retirement advisors, and even SSA, may consider using testimonials or narratives, perhaps in the form of Web-based videos, from individuals who have already retired. Hearing what unexpected events others have encountered during retirement may urge prospective retirees to consider the possibility that similar events could happen during *their* own retirement. The use of testimonials and narratives could be one way to combat affective forecasting errors as well. Indeed, narratives have proven successful in the medical arena as a way to help individuals envision more realistically the impact of future

health-related procedures (Dillard and others 2010). In the case of the retirement decision, watching videos and hearing testimonials from individuals who have "made the best" of working longer may give potential retirees confidence that spending a few extra years in the workforce is a manageable undertaking. However, it should be noted that recent research exploring the use of narratives in medical decision making suggests that narratives sometimes may bias the decision process; that is, narratives may sway individuals to take one course of action over another, rather than simply provide individuals with more information to help them make better decisions (Winterbottom and others 2008). Therefore, providing individuals with testimonials of others whose postponement of retirement was generally positive (or at least not negative) could bias them toward delaying retirement, whether this is the best decision or not.

Emotions and Informational Concerns

Unlike traditional economic explanations of the retirement decision, research in JDM and behavioral economics points to the role emotions may play in the decision of when to retire. Thinking about one's retirement is likely bittersweet. While future retirees may be excited about life without work and the leisure opportunities retirement affords, contemplating retirement can introduce negative emotions as well. For example, potential retirees may fear that they will be bored after they retire, that they will miss the mentally stimulating discussions in which they often partook at work, or that they will slowly become less engaged in society (Nuttman-Shwartz 2007). As mentioned in the previous section, it is also crucial that individuals try to anticipate what events may occur during retirement; but often such events, like an illness or the death of a loved one, can be distressing. Individuals may try to avoid entertaining the idea that a spouse will develop a terminal disease or that a tragic accident might occur because such thoughts are likely to produce negative emotions. However, it is precisely this type of contingency planning in which individuals must engage in order to make the best retirement decision for themselves and their families. Along those lines, not discussing the relationship between a spouse's claiming age and what would happen if the spouse dies allows future retirees to avoid the negative emotions that could be associated with such a discussion. As such, many future retirees may never consider how their retirement age will affect their spouses' and other survivors' financial well-being after the retiree passes away.[21]

Previous research in the area of advance directive (that is, living will) completion suggests that individuals are willing to have discussions related to negative health events, especially once others, such as physicians, initiate those discussions (see for example, Gamble, McDonald, and Lichstein (1991); Johnston, Pfeifer, and McNutt (1995); Reilly and others (1994)). This research suggests that while discussing end-of-life scenarios may be emotionally painful, individuals recognize that plans must be arranged in the event a negative health state arises. Taken together, the tendency to want to avoid negative emotions, but the willingness to confront those emotions when encouraged to do so, suggests an opportunity for intervention. While prospective retirees may not take it upon themselves to consider future scenarios that could produce negative emotions, they are liable to be willing to consider such scenarios if prompted. As such, SSA, as well as financial advisers and retirement planners, is well-placed to provide information to future retirees about the effects of claiming age on the benefits their survivors will receive.

Some previous research has explicitly examined the effects of information on individuals' claiming behavior. For example, research exploring the claiming behavior of married men (Sass, Sun, and Webb 2007) has demonstrated not only that married men tend to claim benefits at age 62 or 63, but that such claiming behavior is related to levels of education. Specifically, married men who have obtained a college education, which the authors suggested may be a proxy for greater financial awareness, tend to claim Social Security benefits later than those with less education. The authors argued that the relationship between education and the early claiming behavior of married men may indicate that an increase in financial awareness could lead to more optimal claiming behavior.[22] As such, they suggested that SSA should consider increasing awareness of the effects of early claiming on survivors' benefits by specifically targeting this relationship. That is, in addition to presenting information about the increases and decreases in one's own benefits as a result of claiming at different ages, the authors proposed that SSA's informational inserts should explicitly include information about how survivors' benefits would be affected by the claimant's age.[23]

In addition, Sass, Sun, and Webb (2007) offered another suggestion for retirement policy based on their research: Perhaps spouses should be required to give consent for claims prior to the worker's FRA, similar to the spousal consent required for individuals

to waive a Qualified Joint and Survivor Annuity or a Qualified Pre-Retirement Survivor Annuity in defined contribution retirement plans (Internal Revenue Service 1997). The authors also noted that requiring spousal consent would force a discussion about future financial well-being for all parties involved in the claiming decision. The added benefit of a consent requirement could therefore help to combat individuals' tendency to want to avoid potentially important, but emotionally taxing, conversations about the aforementioned unexpected, negative events that could occur in retirement.

Conclusion

The question of when to retire is one laden with emotions, predictions, and ambiguous financial considerations. Leaving the workforce can be an exciting time in an individual's life, but the decision to do so does not come without consequences. Most notably, the decision to stop working is accompanied by the loss of a worker's preretirement income, leaving the retiree to garner funds from other sources. Some individuals have saved large sums of money by the time they retire, and others have workplace pensions from which to draw funds; some retirees have both sources of income, but some retirees have neither. Savings and pensions are but two legs of the *three-legged financial stool* on which individuals are expected to rely for income in retirement. For many Americans, those two legs are far too weak or are altogether nonexistent. The third leg of the stool, Social Security, therefore comprises the majority of retirement income for many retirees (NIA 2007).

Previous research has focused on the interplay between wealth and retirement behavior (see for example, Gustman and Steinmeier (2002)), as these matters are inextricably linked. Researchers have also acknowledged the impact of health-related concerns on retirement behavior (see for example, NIA (2007)). Throughout this article, I have identified a number of findings in the JDM and behavioral-economics literatures that can provide additional insight into what underlies individuals' retirement decisions. The JDM and behavioral-economics literatures not only shed light on some myopic retirement behaviors, but can also help to identify opportunities for improving individuals' retirement decisions. Much of the previous interaction between JDM research and the retirement literature has dealt with retirement savings (see for example, Madrian and Shea (2001); Thaler and Benartzi (2004); Knoll (2010)), but there are important implications of JDM findings for the retirement decision as well (that is, *when* to retire). I have outlined many of these findings throughout this literature review, but there are numerous applications of behavioral-economics and JDM research to the retirement decision that remain to be explored.

Notes

Acknowledgments: The author thanks Anya Olsen, Kirstin Appelt, Chris Anguelov, Kevin Whitman, John Phillips, and David Weaver for valuable comments on earlier versions of this article.

[1] However, see Burtless (2006), Behaghel and Blau (2010), Fetherstonhaugh and Ross (1999), and Loewenstein, Prelec, and Weber (1999) for discussions of behavioral dimensions of retirement.

[2] Higher SES individuals often work in less physically demanding jobs (Li, Hurd, and Loughran 2008) and may therefore have the ability to remain in the workforce longer. In addition, work stress and a lack of personal control on the job are more common among lower SES individuals (Christie and Barling 2009), and those factors can contribute to health problems over time.

[3] Life expectancies were calculated for individuals turning age 62 in April of 2011 (that is, born in April 1959) using the Social Security Administration's (SSA's) Life Expectancy Calculator, http://www.socialsecurity.gov/OACT/population/longevity.html.

[4] This argument is primarily founded on the specific rules defined by the Social Security law for determining retirees' monthly benefits at different ages and the fact that delayed claiming, in effect, purchases a form of longevity insurance. The adjustments to Social Security for delayed claiming of retirement benefits do not reduce the lifetime present value of benefits, and delayed claiming provides protection against low levels of consumption late in life, should other retirement resources be exhausted. This protective feature of delayed claiming has been found to be important in traditional economic models.

[5] See Dushi and Iams (2008) for a discussion of factors contributing to the decrease in defined benefit plans and how the shift may affect income security in retirement.

[6] If their employers allow it, individuals may also consider leaving their full-time status in the workforce, while continuing to retain part-time employment. This type of "phasing out" of the workforce has become increasingly popular in recent years (Chen and Scott 2006) and may allow individuals to delay claiming Social Security benefits while reducing, but not fully eliminating, labor force participation.

[7] An additional motivation for individuals to delay benefit claiming is the retirement earnings test (RET), if they are working between age 62 and their FRA. The RET requires that $1 in benefits be withheld for every $2 a beneficiary earns over the annual earnings limit. For an

in-depth explanation of the RET, see http://www.socialsecurity.gov/OACT/COLA/rtea.html.

[8] Prolonging labor force participation can increase an individual's monthly Social Security benefit in several ways. For example, an individual's monthly benefit is higher the longer he or she delays claiming benefits because of the specific rules defined by SSA for determining retirees' monthly benefits at different ages (see note 4). Further, an individual who works is less likely to collect Social Security benefits than an individual who has stopped working (Gustman and Steinmeier 2002). In addition, because one's Social Security benefit is based on his or her 35 highest-earning years, the additional years of work, which may include high-earning years, could increase the benefit amount. For additional reasons how prolonged workforce participation can improve retirement security, see Munnell and others (2006).

[9] While Bidewell, Griffin, and Hesketh (2006) and Beehr and others (2000) found that being tired of work was the strongest predictor of preferred retirement age, results from the 2007 Health and Retirement Study (HRS) showed that only about 10 percent of respondents indicated that not liking work was a "very important" motivator in their decision to retire. The discrepancy in those findings may be attributed to self-presentational concerns (see for example, Baumeister 1982) regarding appropriate reasons for retirement; such concerns may have existed in the HRS, but not in the other two studies. In the Bidewell, Griffin, and Hesketh (2006) study, for example, individuals were not asked why they did retire (they were still working when they participated in the study). Instead, participants were asked to report their preferred retirement age and separately answered a question regarding whether or not they were tired of work. It seems likely that individuals would not feel ashamed to admit that they are tired of working, but they may not want to admit that they actually retired because they were tired of working. This latter admission may be more socially unacceptable than the former.

[10] Pursuant to the 1983 Social Security Amendments, the FRA has increased based on birth cohort. See SSA's website for the FRA specific to each birth cohort, http://www.socialsecurity.gov/retire2/retirechart.htm.

[11] The actual additional amount a particular individual would receive in monthly benefits is a function of past earnings, date of retirement, and the Social Security benefit formula. For an explanation of how benefits are calculated, refer to SSA's website, http://www.socialsecurity.gov/OACT/COLA/Benefits.html.

[12] See also Behagel and Blau (2010) for a natural experiment.

[13] Claims representatives continue to calculate the break-even age if a claimant asks for a break-even calculation. For the entire Program Operations Manual System (POMS) description for explaining month of election options, see https://secure.ssa.gov/apps10/poms.nsf/lnx/0200204039.

[14] Only individuals in this age group who were not currently receiving Social Security benefits got this insert with their Social Security Statements. However, the annual statements have been suspended temporarily to conserve funds.

[15] Of course, as all of the ages and corresponding benefit amounts are displayed at once, individuals can read the graph however they choose.

[16] Widows are eligible to receive survivor benefits at age 60 based on the earnings record of a deceased spouse. For more information on survivor benefits, see http://www.socialsecurity.gov/pubs/10084.pdf.

[17] An individual must have worked in a job covered by Social Security for at least 10 years (40 quarters) to be eligible for reduced retirement benefits at age 62. For more information on Social Security retirement benefits, see http://www.socialsecurity.gov/pubs/10035.pdf.

[18] While this hypothesis has not been tested in the retirement domain, the fact that over 95 percent of individuals claim retirement benefits at or before their FRA (Song and Manchester 2007) may support the notion that it is psychologically difficult for individuals to remain in the workforce when there is a way out.

[19] See Peetz and Buehler (2009) for an example of the budget fallacy.

[20] Of course, such a strategy still does not prevent prospective retirees from optimistically believing that the unforeseen events that others have faced will not occur to them as well. Furthermore, potential retirees are likely only privy to the retirement experiences of those close to them. Therefore, future retirees who take an observer's perspective may actually have more inside information than the observers in Buehler, Griffin, and Ross' (1994) study. In that sense, prospective retirees may still take an inside view when thinking about the unexpected events that may occur during retirement.

[21] For information on the relationship of survivor benefits to retired-worker benefits, see http://www.socialsecurity.gov/pubs/10084.html and http://www.socialsecurity.gov/policy/docs/ssb/v70n3/v70n3p89.html.

[22] It is possible that there is a third factor driving the relationship between higher education and delayed claiming, namely SES. That is, those who have attained higher levels of education are likely to enjoy a higher SES, thereby making them more likely to be able to afford delaying claiming of Social Security benefits.

[23] Since the publication of Sass, Sun, and Web's (2007) paper, SSA began sending out "Thinking of Retiring"—a special insert that accompanied annual Social Security Statements to individuals aged 55 or older who were not yet receiving benefits (SSA 2009b). This insert does contain a brief explanation of "Rules that may affect your survivor." However, the annual statements have been suspended temporarily to conserve funds.

References

Armor, David A., and Shelley E. Taylor. 2002. "When Predictions Fail: The Dilemma of Unrealistic Optimism." In *Heuristics and Biases: The Psychology of Intuitive Thought,* edited by Thomas Gilovich, Dale Griffin, and Daniel Kahneman, 334–347. New York: Cambridge University Press.

Baumeister, Roy F. 1982. "A Self-Presentational View of Social Phenomena." *Psychological Bulletin* 91(1): 3–26.

Beehr, Terry A., Sharon Glazer, Norma L. Nielson, and Suzanne J. Farmer. 2000. "Work and Nonwork Predictors of Employees' Retirement Ages." *Journal of Vocational Behavior* 57(2): 206–225.

Behaghel, Luc, and David M. Blau. 2010. "Framing Social Security Reform: Behavioral Responses to Changes in the Full Retirement Age." IZA Discussion Paper No. 5310. http://ssrn.com/abstract=1708756.

Benítez-Silva, H., Berna Demiralp, and Zhen Liu. 2009. "Social Security Literacy and Retirement Well-Being." Working Paper No. WP 2009-210. Ann Arbor, MI: University of Michigan Retirement Research Center. http://www.mrrc.isr.umich.edu/publications/papers/pdf/wp210.pdf.

Bidewell, John, Barbara Griffin, and Beryl Hesketh. 2006. "Timing of Retirement: Including a Delay Discounting Perspective in Retirement Models." *Journal of Vocational Behavior* 68(2): 368–387.

Brown, Charles. 2006. "The Role of Conventional Retirement Age in Retirement Decisions." Working Paper No. WP 2006-120. Ann Arbor, MI: University of Michigan Retirement Research Center. http://www.mrrc.isr.umich.edu/publications/Papers/pdf/wp120.pdf.

Brown, Jeffrey R., Arie Kapteyn, and Olivia S. Mitchell. 2010. "Framing Effects and Expected Social Security Claiming Behavior." Paper presented at the Financial Literacy Research Consortium: Annual Conference, 2010, Washington, DC (November 19). http://www.financialliteracyfocus.org/files/c1pre/a12-3.pdf.

Buehler, Roger, Dale Griffin, and Michael Ross. 1994. "Exploring the 'Planning Fallacy': Why People Underestimate Their Task Completion Times." *Journal of Personality and Social Psychology* 67(3): 366–381.

Buessing, Marric, and Mauricio Soto. 2006. "The State of Private Pensions: Current 5500 Data." An Issue in Brief No. 42. Boston, MA: Center for Retirement Research at Boston College.

Burtless, Gary. 2006. "Social Norms, Rules of Thumb, and Retirement: Evidence for Rationality in Retirement Planning." In *Social Structures, Aging, and Self-Regulation in the Elderly,* edited by K. Warner Schaie, and Laura Carstensen, 123–160. New York: Springer Publishing Company.

Byram, Stephanie J. 1997. "Cognitive and Motivational Factors Influencing Time Prediction." *Journal of Experimental Psychology: Applied* 3(3): 216–239.

Chen, Yung-Ping, and John C. Scott. 2006. *Phased Retirement: Who Opts for It and Toward What End?* AARP Public Policy Institute Report. http://assets.aarp.org/rgcenter/econ/2006_01_retire.pdf.

Christie, Amy M., and Julian Barling. 2009. "Disentangling the Indirect Links Between Socioeconomic Status and Health: The Dynamic Roles of Work Stressors and Personal Control." *Journal of Applied Psychology* 94(6): 1466–1478.

Coile, Courtney, Peter Diamond, Jonathan Gruber, and Alain Jousten. 2002. "Delays in Claiming Social Security Benefits." *Journal of Public Economics* 84(3): 357–385.

Dillard, Amanda J., Angela Fagerlin, Sonya Dal Cin, Brian J. Zikmund-Fisher, and Peter A. Ubel. 2010. "Narratives that Address Affective Forecasting Errors Reduce Perceived Barriers to Colorectal Cancer Screening." *Social Science & Medicine* 71(1): 45–52.

Dushi, Irena, and Howard M. Iams. 2008. "Cohort Differences in Wealth and Pension Participation of Near-Retirees." *Social Security Bulletin* 68(3): 45–66.

[EBRI] Employee Benefit Research Institute. 2006. "How Many Retire Earlier than Planned? Why?" Fast Facts from EBRI No. 21. http://www.ebri.org/pdf/publications/facts/fastfacts/fastfact21RetireAge18Apr06.pdf.

———. 2007. *Attitudes about Social Security and Medicare*. 2007 Minority Retirement Confidence Survey Fact Sheet. http://www.ebri.org/pdf/surveys/rcs/2007/RCS07_FS_3_SS-Med.pdf.

———. 2008. "How Long do Workers Consider Retirement Decision?" Fast Facts from EBRI No. 91. http://www.ebri.org/pdf/fastfact07162008.pdf.

———. 2009. "The 2009 Retirement Confidence Survey: Economy Drives Confidence to Record Lows; Many Looking to Work Longer." Issue Brief No. 328. http://www.ebri.org/pdf/briefspdf/EBRI_IB_4-2009_RCS2.pdf.

Fetherstonhaugh, David, and Lee Ross. 1999. "Framing Effects and Income Flow Preferences in Decisions about Social Security." In *Behavioral Dimensions of Retirement Economics,* edited by Henry J. Aaron, 187–209. Washington DC: Brookings Institution Press and Russell Sage Foundation.

Fishburn, Peter C., and Ariel Rubenstein. 1982. "Time Preference." *International Economic Review* 23(3): 677–694.

Gamble, Elizabeth R., Penelope J. McDonald, and Peter R. Lichstein. 1991. "Knowledge, Attitudes, and Behavior of Elderly Persons Regarding Living Wills." *Archives of Internal Medicine* 151(2): 277–280.

Gilbert, Daniel T., and Jane E. J. Ebert. 2002. "Decisions and Revisions: The Affective Forecasting of Changeable Outcomes." *Journal of Personality and Social Psychology* 82(4): 503–514.

Gilbert, Daniel T., Elizabeth C. Pinel, Timothy D. Wilson, Stephen J. Blumberg, and Thalia P. Wheatley. 1998. "Immune Neglect: A Source of Durability Bias in Affective Forecasting." *Journal of Personality and Social Psychology* 75(3): 617–638.

Gilbert, Daniel T., and Timothy D. Wilson. 2007. "Prospection: Experiencing the Future." *Science* 317(5843): 1351–1354.

Gustman, Alan L., and Thomas L. Steinmeier. 2002. "Retirement and Wealth." *Social Security Bulletin* 64(2): 66–91.

Helman, Ruth, Craig Copeland, Jack VanDerhei, and Dallas Salisbury. 2008. "EBRI 2008 Recent Retirees Survey: Report of Findings." EBRI Issue Brief No. 319. http://www.ebri.org/pdf/briefspdf/EBRI_IB_07-2008.pdf.

Hsee, Christopher K., and Reid Hastie. 2006. "Decision and Experience: Why Don't We Choose What Makes Us Happy?" *TRENDS in Cognitive Sciences* 10(1): 31–37.

Internal Revenue Service. 1997. Bulletin No. 1997-2, Notice 97-10. http://www.irs.gov/pub/irs-irbs/irb97-02.pdf.

Johnson, Eric J., Gerald Häubl, and Anat Keinan. 2007. "Aspects of Endowment: A Query Theory of Value Construction." *Journal of Experimental Psychology: Learning, Memory, and Cognition* 33(3): 461–474.

Johnston, Sarah Coate, Mark P. Pfeifer, and Robert McNutt. 1995. "The Discussion about Advance Directives: Patient and Physician Opinions Regarding When and How It Should be Conducted." *Archives of Internal Medicine* 155(10): 1025–1030.

Kahneman, Daniel, and Amos Tversky. 1979a. "Intuitive Prediction: Biases and Corrective Procedures." *TIMS Studies in Management Science* 12, 313–327.

———. 1979b. "Prospect Theory: An Analysis of Decision under Risk." *Econometrica* 47(2): 263–292.

Kahneman, Daniel, Peter P. Wakker, and Rakesh Sarin. 1997. "Back to Bentham: Explorations of Experienced Utility." *The Quarterly Journal of Economics* 112(2): 375–405.

Kirby, Kris N., and Richard J. Herrnstein. 1995. "Preference Reversals Due to Myopic Discounting of Delayed Reward." *Psychological Science* 6(2): 83–89.

Knoll, Melissa A. Z. 2010. "The Role of Behavioral Economics and Behavioral Decision Making in American's Retirement Savings Decisions." *Social Security Bulletin* 70(4): 1–23.

Lee, Leonard, Shane Frederick, and Dan Ariely. 2006. "Try It, You'll Like It: The Influence of Expectation, Consumption, and Revelation on Preferences for Beer." *Psychological Science* 17(12): 1054–1058.

Li, Xiaoyan, Michael Hurd, and David S. Loughran. 2008. *The Characteristics of Social Security Beneficiaries Who Claim Benefits at the Early Entitlement Age.* AARP Public Policy Institute Research Report No. 2008-19. Washington, DC: AARP.

Liebman, Jeffrey B., and Erzo F. P. Luttmer. 2009. "The Perception of Social Security Incentives for Labor Supply and Retirement: The Median Voter Knows More than You'd Think." NBER Working Paper No. NB08-01. Cambridge, MA: National Bureau of Economic Research.

Loewenstein, Gorge, Drazen Prelec, and Roberto Weber. 1999. "What, Me Worry? A Psychological Perspective on Economic Aspects of Retirement." In *Behavioral Dimensions of Retirement Economic,* edited by Henry Aaron, 215–246. Washington DC: Brookings Institution Press and Russell Sage Foundation.

Lusardi, A. 1999. "Information, Expectations, and Savings for Retirement." In *Behavioral Dimensions of Retirement Economics,* edited by Henry Aaron, 81–115. Washington DC: Brookings Institution Press and Russell Sage Foundation.

Madrian, Brigitte. C., and Dennis F. Shea. 2001. "The Power of Suggestion: Inertia in 401(k) Participation and Savings Behavior." *The Quarterly Journal of Economics* 116(4): 1149–1187.

McGarry, Kathleen. 2002. "Health and Retirement: Do Changes in Health Affect Retirement Expectations?" NBER Working Paper No. 9317. Cambridge, MA: National Bureau of Economic Research.

MetLife. 2010. "Social Security Decision Tool." http://www.metlife.com/individual/financial-tools/social-security-tool/sscalc.swf.

Munnell, Alicia H., Marric Buessing, Mauricio Soto, and Steven A. Sass. 2006. "Will We Have to Work Forever?" An Issue in Brief (series 4). Boston, MA: Center for Retirement Research at Boston College. http://crr.bc.edu/images/stories/Briefs/wob_4.pdf.

Munnell, Alicia H., and Steven A. Sass. 2008. *Working Longer: The Solution to the Retirement Income Challenge.* Washington, DC: Brookings Institution Press.

National Commission on Fiscal Responsibility and Reform. 2010. *The Moment of Truth*. http://www.fiscalcommission.gov/news/moment-truth-report-national-commission-fiscal-responsibility-and-reform.

National Institute on Aging. 2007. *Growing Older in America: The Health & Retirement Study.* NIH Publication No. 07- 5757. http://www.nia.nih.gov/NR/rdonlyres/D164FE6C-C6E0-4E78-B27F-7E8D8C0FFEE5/0/HRS_Text_WEB.pdf.

Newby-Clark, Ian R., Michael Ross, Roger Buehler, Derek J. Koehler, and Dale Griffin. 2000. "People Focus on Optimistic and Disregard Pessimistic Scenarios While Predicting Their Task Completion Times." *Journal of Experimental Psychology: Applied* 6(3): 171–182.

NIA. *See* National Institute on Aging.

Nuttman-Shwartz, Orit. 2007. "Is There Life Without Work?" *International Journal of Aging and Human Development* 64(2): 129–147.

Peetz, Johanna, and Roger Buehler. 2009. "Is There a Budget Fallacy? The Role of Savings Goals in the Prediction of Personal Spending." *Personality and Social Psychology Bulletin* 35(12): 1579–1591.

Reilly, Brendan M., C. Richard Magnussen, James Ross, Jeffrey Ash, Louis Papa, and Michael Wagner. 1994. "Can We Talk? Inpatient Discussions about Advance Directives in a Community Hospital." *Archives of Internal Medicine* 154(20): 2299–2308.

Rozin, Paul, and Edward B. Royzman. 2001. "Negativity Bias, Negativity Dominance, and Contagion." *Personality and Social Psychology Review* 5(4): 296–320.

Sanna, Lawrence J., and Norbert Schwarz. 2004. "Integrating Temporal Biases: The Interplay of Focal Thoughts and Accessibility Experiences." *Psychological Science* 15(7): 474–481.

Sass, Steven A., Wei Sun, and Anthony Webb. 2007. "Why Do Married Men Claim Social Security Benefits So Early? Ignorance or Caddishness?" CRR Working Paper No. 2007-17. Boston, MA: Center for Retirement Research at Boston College. http://crr.bc.edu/working_papers/why_do_married_men_claim_social_security_benefits_so_early_ignorance_or_caddishness.html.

Social Security Administration. 2009a. *The Full Retirement Age is Increasing.* http://www.socialsecurity.gov/pubs/ageincrease.htm.

———. 2009b. *Thinking of Retiring?* Special insert that accompanies annual Social Security statements for older workers.

———. 2010. *Income of the Aged Chartbook, 2008.* http://www.socialsecurity.gov/policy/docs/chartbooks/income_aged/2008/iac08.html.

Song, Jae, and Joyce Manchester. 2007. "Have People Delayed Claiming Retirement Benefits? Responses to Changes in Social Security Rules." *Social Security Bulletin* 67(2): 1–23.

Spiegelman, Rande. 2009. "Social Security: Making the Most of Your Benefits." Research & Strategies: Retirement Planning Article. San Francisco, CA: Charles Schwab.

SSA. *See* Social Security Administration.

Thaler, Richard H., and Shlomo Benartzi. 2004. "Save More Tomorrow: Using Behavioral Economics to Increase Employee Savings." *Journal of Political Economy* 112(1): S164–S187.

Thaler, Richard H., and Cass R. Sunstein. 2008. *Nudge: Improving Decisions about Health, Wealth, and Happiness.* New Haven, CT: Yale University Press.

Tversky, Amos, and Daniel Kahneman. 1974. "Judgments under Uncertainty: Heuristics and Biases." *Science,* new series, 185(4157): 1124–1131.

———. 1981. "The Framing of Decisions and the Psychology of Choice." *Science,* new series, 211(4481): 453–458.

Weber, Elke U., Eric J. Johnson, Kerry F. Milch, Hannah Chang, Jeffrey Brodscholl, and Daniel G. Goldstein. 2007. "Asymmetrical Discounting in Intertemporal Choice." *Psychological Science* 18(6): 516–523.

Weinstein, Neil D. 1980. "Unrealistic Optimism about Future Life Events." *Journal of Personality and Social Psychology* 39(5): 806–820.

———. 1987. "Unrealistic Optimism about Susceptibility to Health Problems: Conclusions from a Community-Wide Sample." *Journal of Behavioral Medicine* 10(5): 481–500.

Wilson, Timothy D., and Daniel T. Gilbert. 2003. "Affective Forecasting." In *Advances in Experimental Social Psychology,* edited by M. P. Zanna, 345–411, Vol. 35. San Diego, CA: Academic Press.

Wilson, Timothy D., Thalia Wheatley, Jonathan M. Meyers, Daniel T. Gilbert, and Danny Axsom. 2000. "Focalism: A Source of Durability Bias in Affective Forecasting." *Journal of Personality and Social Psychology* 78(5): 821–836.

Winterbottom, Anna, Hilary L. Bekker, Mark Conner, and Andrew Mooney. 2008. "Does Narrative Information Bias Individual's Decision Making? A Systematic Review." *Social Science & Medicine* 67(12): 2079–2088.

The 2006 Earnings Public-Use Microdata File: An Introduction

by Michael Compson*

This article introduces the 2006 Earnings Public-Use File (EPUF) and provides important background information on the file's data fields. The EPUF contains selected demographic and earnings information for 4.3 million individuals drawn from a 1-percent sample of all Social Security numbers issued before January 2007. The data file provides aggregate earnings for 1937 to 1950 and annual earnings data for 1951 to 2006. The article focuses on four key items: (1) the Social Security Administration's experiences collecting earnings data over the years and their effect on the data fields included in EPUF; (2) the steps taken to "clean" the underlying administrative data and to minimize the risk of personal data disclosure; (3) the potential limitations of using EPUF data to estimate Social Security benefits for some individuals; and (4) frequency distributions and statistical tabulations of the data in the file, to provide a point of reference for EPUF users.

Introduction

This article introduces the 2006 Earnings Public-Use File (EPUF), a data file containing earnings records for individuals drawn from a 1-percent sample of all Social Security numbers (SSNs) issued before January 2007. EPUF is the latest public-use data file released by the Social Security Administration (SSA) to contain earnings data from its administrative files. EPUF comprises a much larger sample than previously released public-use files containing earnings histories, and significantly enhances the ability of researchers and policy analysts to analyze SSA programs.

EPUF consists of two linkable files. One contains selected demographic and aggregate earnings information for all 4,348,254 individuals in the file, and the second contains annual earnings records for the 3,131,424 individuals who had positive earnings in at least 1 year during 1951–2006. EPUF data reflect capped Social Security taxable earnings. As such, the earnings data contained in EPUF do not present complete measures of the number of workers or the amount of wage-and-salary and self-employment income in the US economy.

The data fields included in EPUF are nearly identical to those in SSA's most recent public-use file containing administrative earnings, the 2004 Benefits and Earnings Public-Use File (BEPUF). This was done (1) to address the critical need to meet data disclosure standards, (2) because of the complexity of the earnings data that SSA has collected over the life of the program, and (3) to maximize EPUF's timeliness. SSA plans to continue working on data disclosure standards for several key detailed earnings data fields from its administrative files. Combining this work with direct

Selected Abbreviations

BEPUF	Benefits and Earnings Public-Use File
EPUF	Earnings Public-Use File
IRS	Internal Revenue Service
MEF	Master Earnings File
QC	quarter of coverage
SSA	Social Security Administration
SSN	Social Security number
YOB	year of birth

* *Michael Compson is with the Division of Policy Evaluation, Office of Research, Evaluation, and Statistics, Office of Retirement and Disability Policy, Social Security Administration.*

feedback from EPUF users, SSA hopes to include new data fields in future releases.

This article informs potential users about the EPUF and provides background information about the data contained in the file. Specifically, the article discusses SSA's experiences collecting earnings data over the years and the effect of those experiences on the data fields included in EPUF; the steps taken to "clean" the data and to minimize the risk of personal data disclosure; and the potential limitations of using the data to estimate benefits for some individuals. Finally, the article presents frequency distributions and statistical tabulations of the data to provide points of reference for EPUF users.

Developing the Earnings Public-Use File

In 2006, SSA released BEPUF, a data file based on a systematic random 1-percent sample of all individuals who were receiving Social Security benefits in December 2004. The file contains benefit and earnings information for the 473,366 individuals in the sample. SSA and Internal Revenue Service (IRS) Data Review Boards reviewed the file to assess the risk of personal data disclosure before approving its release to the public.

The critical question in the initial EPUF development phase involved which data fields to include in the file. Users would undoubtedly like SSA to include all of the data fields from its administrative files. However, SSA has a legal obligation to protect the confidentiality of the individuals included in the file. This creates a tradeoff between the user's need for complete and accurate data and the need to ensure that the file's data fields do not disclose individual identities. Because BEPUF met the disclosure standards set by SSA and the IRS, its data fields served as a starting point for selecting fields for EPUF.

A second critical issue was the need to balance the desire to add data fields with the time needed to prepare the underlying data and conduct the required data-disclosure analysis. SSA originally hoped to include earnings data fields beyond those included in BEPUF. However, choosing fields to add to the file was complicated by more than data-disclosure limitations. Reconciling the types of earnings data in SSA's administrative files with the different data-collection timelines over the life of the program made seemingly simple choices fairly complicated.

To include new data fields would be much more complex because the additional fields would come from the detailed segment of the Master Earnings File (MEF).[1] For each individual, the detailed segment is likely to contain more than one earnings record in a given year. As a result, working with the detailed segment of the MEF is much more complicated and would take more time and effort than working with data fields from the summary segment of the MEF, as was done for BEPUF.

In addition, the only earnings data field that is available for all years from 1951 through 2006 is taxable earnings. Other fields of interest, such as noncovered earnings, covered earnings above the taxable maximum, and contributions to 401(k) retirement plans, are only available for selected years.[2] Consider self-employment income: From 1951 through 1977, self-employment income is included in the earnings data field only to the extent that it is covered under the Social Security program. If an individual had wage-and-salary earnings above the taxable maximum and also had self-employment income, none of the self-employment income would be included in the earnings record. This produces undercounts of both the number of individuals with self-employment income and the dollar amount of that income. From 1978 through 1993, the detailed segment of the MEF contains a separate value for covered self-employment income. However, the amount reported in this field is still limited to earnings covered under the program. The full amount of self-employment income does not appear in the MEF until 1994, when the cap for covered earnings subject to the Medicare Hospital Insurance payroll tax was eliminated. As a result, the administrative files do not contain a complete history of an individual's self-employment income.

After accounting for all of these considerations, SSA designed EPUF to contain nine data fields in two linkable data tables. The first linkable file contains a single record for each of the 4,348,254 individuals included in EPUF. Each record contains the following data fields:

- ID (a unique identification number)
- year of birth (YOB)
- sex
- aggregate capped Social Security taxable earnings from 1937 through 1950

- aggregate quarters of coverage (QCs) earned from 1937 through 1950
- aggregate QCs earned in 1951 and 1952

The second linkable file contains 60,326,474 earnings records with positive earnings values. There are 3,131,424 individuals in this file who had positive earnings for at least 1 year during 1951–2006. Each of the records in this file contains the following data fields:

- ID (a unique identification number)
- the year(s) when the individual had taxable Social Security earnings
- the amount of capped Social Security taxable earnings for each of those years
- the number of QCs earned for each year (except 1951 and 1952) based on the amount of capped Social Security taxable earnings

These data fields are identical to those included in the BEPUF with one minor exception. EPUF contains multiple data fields for the QCs: aggregate QCs earned 1937–1950 and aggregate QCs earned in 1951 and 1952 in the first linkable file; and annual QCs earned from 1953 through 2006 in the second linkable file. By contrast, the BEPUF contains a single aggregate value for QCs earned as of December 31, 2004. Because of this difference, an EPUF user can determine an individual's eligibility for retired-worker and disabled-worker benefits at any given time.

Overview of Earnings Records

SSA's primary objective in collecting earnings data is to meet the operational needs of the program.[3] As a result, the data contained in EPUF will be, in some aspects, somewhat limited from a researcher's perspective. However, the uniqueness of the data and the large sample size should outweigh these limitations in many cases.

To use EPUF appropriately, users must understand the nature of its earnings data. For example, analysts must be aware that the earnings data in EPUF do not reflect all workers in the US labor market, nor the aggregate earnings generated by those workers.[4] Putting the EPUF earnings data in their proper context requires an understanding of three measures of earnings distinct to the Social Security program: covered earnings, Social Security taxable earnings, and capped Social Security taxable earnings.

The first measure refers to earnings "covered" for purposes of determining eligibility for the Social Security program. The Social Security Act defines the types of employment covered under the program, and coverage has expanded significantly over the years.[5] Currently, nearly all types of employment are covered under Social Security. There are three primary exceptions: "state and local government employees whose employer has not elected to be covered under Social Security and who are participating in an employer-provided pension plan, current Federal civilian workers hired before 1984 who have not elected to be covered, and self-employed workers earning less than $400 in a calendar year" (Board of Trustees, 2010). "Covered earnings" has two components: wage-and-salary earnings from covered employment, and self-employment income covered under the program.

The second measure is called Social Security taxable earnings because it reflects all covered earnings that are subject to the payroll tax.[6] The annual earnings data in the MEF summary segment are a running total of an individual's taxable earnings up to the taxable maximum for each job in a given year, plus any taxable self-employment income. For the self-employed, "taxable earnings consists of net self-employment income which, when combined with any taxable wages for that individual, is at or below any applicable annual maximum taxable amount" (SSA 2009, G.17). If an individual has more than one employer, the amount of earnings in this data field may be greater than the taxable maximum in a given year.

EPUF uses the third measure, capped Social Security taxable earnings, defined as the total amount of a worker's taxable earnings (including any taxable self-employment income) up to the taxable maximum in a given year. It does not include any earnings beyond the taxable maximum, as the previous measure can when a worker has multiple employers. This measure allows an observer to determine total amounts contributed to the program by workers and self-employed individuals.[7] The primary reason EPUF uses this measure is that capped taxable earnings do not need to be top-coded for data disclosure purposes. Second, because the IRS and SSA approved BEPUF for release using capped taxable earnings, using the same measure in EPUF was deemed likely to expedite its approval.

Two adjustments were made in moving the taxable earnings data from the MEF summary segment to the capped taxable earnings information contained in

EPUF. First, all earnings values were top-coded at the taxable maximum in a given year. Second, any records with negative covered earnings were set to zero (this occurred very infrequently).

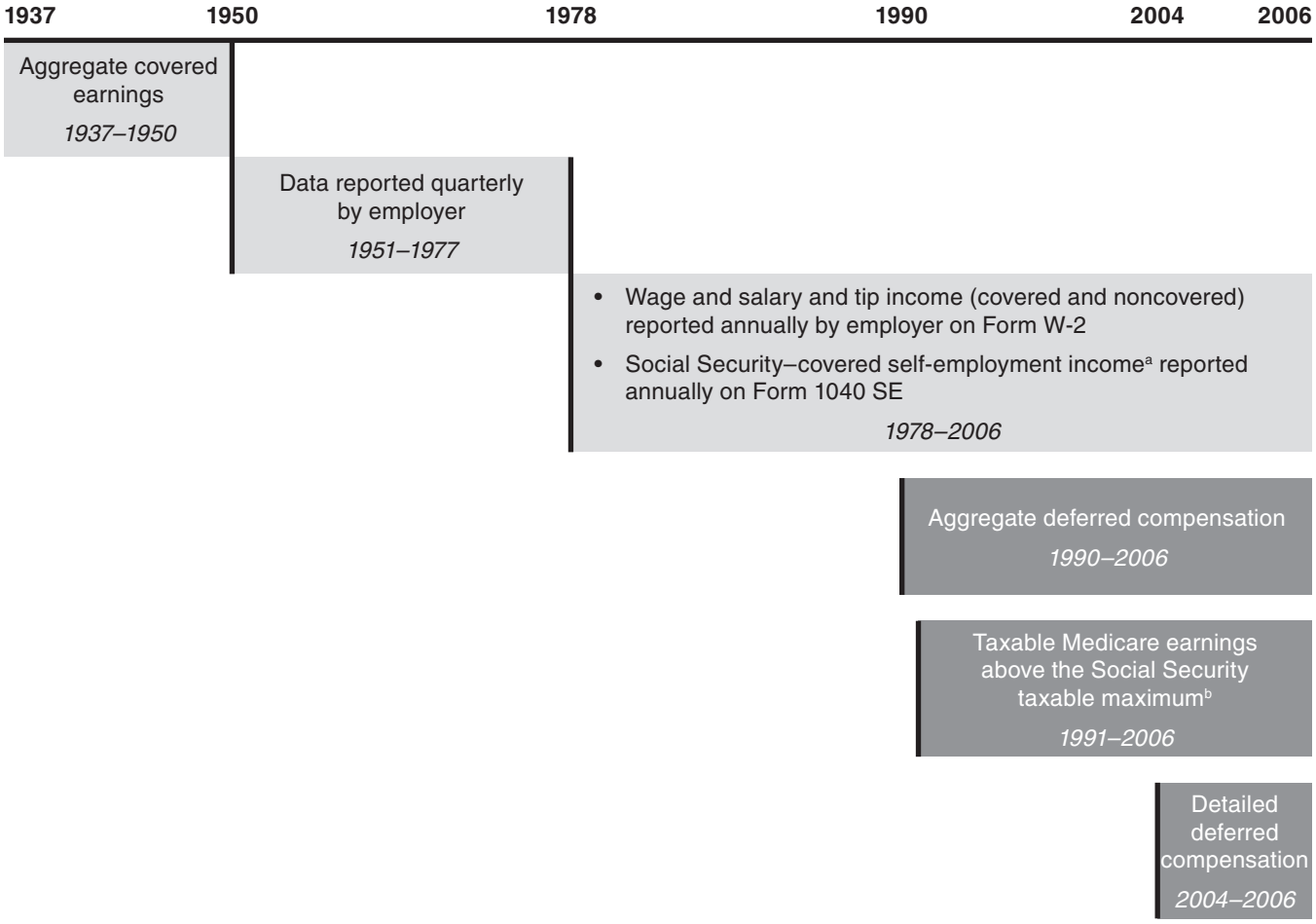
Through 2006, SSA used three distinct mechanisms to collect the earnings data required to administer its programs: (1) paper and microfilm records that yield an individual's total covered earnings from 1937 through 1950, (2) quarterly earnings data reported by the individual's employer from 1951 through 1977, and (3) annual earnings reported by the individual's employer on Form W-2 from 1978 through 2006 (Chart 1).

In the years since the adoption of Form W-2, three additional types of earnings data have been collected to reflect expanded data needs: (1) aggregate deferred compensation, used to calculate the national average wage index, beginning in 1990; (2) Medicare taxable wage-and-salary and self-employment income, beginning in 1991; and (3) detailed items for the deferred compensation field, beginning in 2004.[8] These changes are also reflected in Chart 1.

1937–1950 Earnings Data

Before the arrival of electronic data storage, SSA stored earnings data on either paper or microfilm.

Chart 1.
Types of earnings data available from Social Security administrative files, 1937–2006



SOURCE: SSA.

a. From 1978 to 1990, data for only that portion of self-employment income that it is taxable for Social Security purposes are available. In general, during this period there is no way to distinguish between amounts of covered earnings from wages and salary, self-employment income, and earnings from agriculture. Beginning in 1991, the taxable maximum earnings amounts for Social Security and Medicare differed. Beginning in 1994, the cap on taxable Medicare covered earnings was eliminated, and data on total earnings amounts from each source became available.

b. Beginning in 1991 the Medicare taxable maximum earnings amount exceeded the Social Security taxable maximum, until the Medicare taxable maximum was eliminated altogether in 1994.

Given the limited storage capacity of early computers and the prohibitive costs associated with converting these data to electronic format, the earnings data for 1937–1950 on the MEF summary segment are available only as an aggregate number. As a result, the data extract from which EPUF is drawn contains two data fields for aggregate taxable earnings—one for 1937–2006, and the other for 1951–2006. The EPUF data field for aggregate Social Security taxable earnings from 1937–1950 was generated by subtracting the 1951–2006 aggregate earnings from the 1937–2006 aggregate earnings.

Another data field of interest is the QCs earned during this period. An individual can earn up to four QCs in a year depending on his or her taxable earnings amount. QCs determine an individual's eligibility for retirement and disability benefits and a family's eligibility for survivor benefits. The MEF summary segment contains no annual values for QCs for 1937–1953. Instead, the extract contains data fields from the MEF that contain the "known" aggregate number of QCs earned during the following periods: 1947–2006, 1951–2006, 1947–1952, and 1953–2006. For EPUF, these data fields are manipulated to generate the aggregate number of QCs earned for the periods 1947–1950 and 1951–1952.

Because the MEF has no known values for QCs from 1937 through 1946, SSA devised a three-step method to estimate the aggregate number of QCs earned by individuals with covered earnings during these years.[9] The first step assigns one QC for each $500 of aggregate taxable earnings from 1937 through 1950. The second step subtracts the known sum of QCs earned from 1947 through 1950. (The QCs from 1947 through 1950 are generated by subtracting the known number of QCs earned from 1951 through 2006 from the known number of QCs earned from 1947 through 2006.) If the resulting number is positive, this value is assigned to the number of QCs earned from 1937 to 1946. If this number is negative, a value of 0 is assigned for the number QCs earned from 1937 to 1946. The final step adds the estimated QCs from 1937 to 1946 to the known QCs from 1947 to 1950 for the estimated number of QCs earned from 1937 to 1950.[10]

1951–1977 Earnings Data

From 1951 through 1977, the earnings data used to administer Social Security came from two sources: the individual's employer and the IRS. SSA required employers to report covered wage-and-salary income quarterly. For the self-employed, the IRS processed the annual Social Security taxable self-employment income reported on the individual's Form 1040 on Schedule C and Schedule SE and transferred the data to SSA. Values in these data fields were added together to create a single entry for taxable Social Security earnings, which is stored on the Summary Earnings Record. As a result, it is not possible to determine whether covered earnings in a given year are from wages and salaries or from self-employment income. The MEF also contains separate indicators for the presence of self-employment income (Schedule C) or agriculture income (Schedule F) in a given year. However, if there are combinations among salary and wages, self-employment income, and income from agriculture, the amounts attributable to each source cannot be determined. As a result, these flags were not included in EPUF.[11]

As previously noted, the MEF has no annual values for the number of QCs earned in 1951 and 1952. This value is estimated by manipulating data used to calculate QCs from 1937 through 1950. Beginning in 1953, the MEF contains annual QC values based on quarterly earnings data.

1978–2006 Earnings Data

In 1978, SSA earnings data underwent major changes involving sources, processing, and types of data collected. Because requiring quarterly earnings reports had led to processing delays and administrative burdens, new legislation required employers to report their employee's earnings annually on Form W-2. The legislation also made SSA responsible for processing the W-2 earnings data. The source for self-employed taxable earnings, Form 1040 Schedule SE, remained unchanged.

The move to annual collection of earnings data resulted in three significant changes in the types of data collected:

- The W-2 included earnings from employment that was not covered under Social Security. Prior to 1978, SSA was only concerned with taxable earnings from covered employment.
- The ability to store data electronically and the need for more detailed earnings information to administer the program led SSA to establish separate data fields for taxable wage-and-salary income and taxable self-employment income. Prior to 1978,

administrative data contained a single entry for all taxable earnings.

- The W-2 allowed SSA to capture covered wage-and-salary income above the taxable maximum. Earnings reported to SSA for all previous years were capped at the taxable maximum.

It is important to note that the inclusion of taxable self-employment income on an individual's earnings record reflects the reporting criteria used during two distinct periods. For 1978 through 1993, self-employment income appears on an individual's earnings record only when Social Security or Medicare taxes were due on that income. It was not until 1994, when the cap for taxable earnings subject to the Medicare payroll tax was eliminated, that SSA's earnings data began to include uncapped values for covered self-employment income.

Several examples illustrate how the amount of taxable self-employment income differs from the amount of self-employment income reported for federal income tax purposes across these two periods. Suppose an individual earned $25,000 in covered wages and $25,000 in self-employment income, and assume a taxable maximum of $40,000. Prior to 1994, the individual's earnings record for that year would contain $25,000 for wage-and-salary income and only $15,000 for self-employment income. Now consider an individual with self-employment income of $55,000 and no covered wages. In this example, the individual's earnings record would have $40,000 for taxable self-employment income. From 1994 onward, there is no cap on the amount of covered earnings subject to the Medicare payroll tax. As a result, the full amount of both wage-and-salary and self-employment income in the examples above would be included in the individual's earnings record on the MEF, but is not in EPUF.

The Revenue Act of 1978 also affected the earnings data collected by SSA by allowing the elective deferral of wage earnings.[12] Elective deferrals enabled individuals to postpone the receipt and the taxation of certain types of earnings. This led to the creation of 401(k) retirement plans, 403(b) plans for employees of nonprofit organizations, and 457 plans for state and local government employees. From 1978 through 1983, these elective deferrals were not covered under Social Security. As a result, the taxable earnings data in EPUF for these years do not include contributions to these plans.

Starting in 1984, elective deferrals are covered under the program and are reflected in the taxable earnings in EPUF (up to the taxable maximum). In 1990, SSA was required to include elective deferrals in the calculations of the average wage index, and created a separate data field in the MEF detailed section to capture this information.

Data on annual QCs earned during 1978–2006 are based on taxable earnings in a given year. As noted earlier, the MEF contains annual QC values after 1952.

Sample Selection, Data Cleaning, and Disclosure Protection

EPUF consists of earnings records drawn from a 1-percent sample of the MEF (the "underlying EPUF sample"). A series of data cleaning and disclosure protection procedures produced the final EPUF. This section describes the process of selecting the underlying EPUF sample, the data cleaning steps, and the disclosure protections that were applied to the data to produce the EPUF.

Sample Selection

The sample universe for the EPUF is all SSNs issued before January 2007. Thus, any individual who does not have an SSN cannot be included in the EPUF. The EPUF sample was created using a systematic sampling process that closely approximates a random sample. For each area-group combination, an algorithm selects 100 out of the possible 10,000 SSNs.[13] SSA then determines if the SSNs have been issued. The sampling algorithm is systematic in that it avoids any overlap between the BEPUF, EPUF, and any potential future public-use samples generated using the algorithm.[14] SSA has determined that the design effect for the systematic random sample is effectively equal to one.[15]

The SSNs generated using this algorithm were checked for inclusion in the Numident file to confirm their presence in the Social Security administrative files.[16] A final check verified that none of the SSNs in the sample overlapped those in the BEPUF. The individuals in the resulting underlying EPUF sample numbered 4,413,024.[17] Note that the sample is not strictly representative of the US population because the sampling universe (all SSNs issued) includes individuals in Puerto Rico and the US territories.

Data Cleaning

A number of analyses were undertaken to determine if there were any problems with the data and, if so, what to do about them. Three key issues were identified: (1) a coding error incorrectly assigned a YOB value equal to 1900 to many individuals, (2) some YOB values were missing, and (3) some extreme age values occurred for individuals who had taxable earnings (values ranged from -47 years to 179 years).[18] Several other smaller issues were discovered in the process of generating the EPUF and a number of steps were taken to "clean" the data before releasing the file to the public.

The first check involved graphing the distribution of individuals in the underlying sample by their YOB. This graph produced an abnormally large spike in the number of individuals with a YOB value equal to 1900. For these 24,843 individuals, a check against the Numident file confirmed a YOB value of 1900 on 21,269 records. There were 3,464 individuals whose YOB value was missing on the Numident file; these were removed from EPUF. This left 110 individuals with an alternative (non-1900) YOB value on the Numident file. The Numident's alternative value was assigned for those individuals.

The next data-cleaning issue involved the 13,405 individuals in the underlying sample whose MEF records had a missing value for YOB. The overwhelming majority (12,142) also had a missing value for YOB on the Numident file; these individuals were removed from EPUF. Of the remaining 1,263 individuals, 1,234 had a single YOB value on the Numident file; for them, the Numident YOB was used. This left 29 individuals who had multiple YOB values on the Numident file; for these, we assigned a "best" YOB value.

The analysis of the age at which an individual in the underlying sample recorded taxable earnings found 77,458 individuals who either had age values of less than 14 or greater than 79, or had earnings during 1937–1950 but a YOB value after 1950. Again, MEF records were validated against the Numident file. Records for 5,810 individuals were removed for one of the following reasons: there was no logical choice among multiple alternative YOB values on the Numident, age when recording taxable earnings was either negative or greater than 100, or the YOB value was after 1950 although earnings were recorded during 1937–1950.

The final adjustments included removing 5,935 individuals whose YOB value was before 1870, removing 1,096 individuals whose YOB value was equal to 2007, and removing 4 individuals who were assigned a missing YOB value. Individuals born before 1870 were removed because they were unlikely to have received Social Security benefits. The data for the underlying sample were extracted in 2007 and it is possible that a small number of individuals who were enumerated after December 31, 2006 were part of the sample.

Data "cleaning" procedures resulted in the removal of records for 28,451 individuals from the underlying sample. The effect of removing these individuals on the number of earnings records and on the amount of earnings by year is discussed later in conjunction with the effect of the data disclosure procedures.

Disclosure Protection

The most critical determinant of whether data fields can be included in the public-use file is disclosure risk. To protect confidentiality, SSA removes all identifying information, evaluates disclosure risk posed by administrative earnings data for individuals that overlap other public-use files,[19] and modifies any distinguishing characteristics that could identify individuals in the file. The data disclosure procedures applied to the EPUF fall into three broad categories: (1) removing any identifiable information from the file and evaluating the disclosure risk of public-use file overlap, (2) adjusting the earnings amounts to create a range of uncertainty between the amount of earnings reported to SSA and the amount released in EPUF, and (3) zeroing out earnings records because of age considerations. These categories are described in detail below.

Removing identifiable information and evaluating disclosure risk from public-use file overlap. To minimize disclosure risk, the following steps were taken:

- All SSNs were removed from the file.
- The records in the final EPUF were randomly sequenced.
- Where possible, EPUF sample records were checked for overlap with other public-use files.

As previously noted, there is no overlap between individuals in BEPUF and EPUF. There were 319 individuals in the underlying EPUF sample who were included in the New Beneficiary Data System (NBDS). These individuals were removed from the sample.[20]

PREVIOUS PUBLIC-USE DATA FILES WITH EARNINGS DATA

SSA has released a number of public-use microdata files that contain earnings data from its administrative files. The first six items listed below are products of two interagency studies undertaken in the 1970s and 1980s: the 1963 Pilot Link Study and the 1973 Exact Match Study, conducted by SSA, the Census Bureau, and the IRS. SSA produced items 7 and 8 independently.

1. The 1964 Current Population Survey—Administrative Record Pilot Link File
2. The 1973 Current Population Survey—Summary Earnings Record Exact Match File
3. The 1973 Current Population Survey—Administrative Record Exact Match File
4. The Social Security Longitudinal Earnings Exact Match Public Use File, 1937–1975
5. The 1972 Augmented Individual Income Tax Model Exact Match File
6. The Retirement History Longitudinal Survey, 1969–1973, and Summary of Social Security Earnings: Merged Data
7. The New Beneficiary Data System
8. The 2004 Beneficiary and Earnings Public-Use File

The 1963 Pilot Link Study matched data from Census Bureau's Current Population Survey with SSA and IRS administrative data files. The 1973 Exact Match Study refined the 1963 Pilot Link Study processes. The primary objective of both studies was to improve the quality of statistical output related to income distribution and redistribution.

The Retirement History Study matched survey data with Social Security administrative data to create public-use data files useful for researching retirement decisions and circumstances.

The New Beneficiary Data System consists of two separate surveys. The original survey was the New Beneficiary Survey, a nationally representative survey of beneficiaries who were in payment status during a 12-month period from mid-1980 to mid-1981. In 1992, SSA conducted the New Beneficiary Followup (NBF) survey and attached limited earnings data to all 18,599 individuals in the original survey.

The 2004 Beneficiary and Earnings Public-Use file, released in 2006, is a systematic random sample of individuals who were on the benefit rolls as of December 2004.

Although minimal overlap between individuals in EPUF and individuals in the Synthetic SIPP Beta files (SSB) is likely, the SSA and IRS have concluded that there is no disclosure risk because all of the earnings data in the SSB are synthetic.[21]

The number of individuals in EPUF who are potentially included in the public-use files created from the 1964 Pilot Link Study, the 1973 Exact Match Study, and the Retirement History Study is very small (see text box). SSA and the IRS have determined that disclosure resulting from overlap of these files is very unlikely.

Adjusting earnings to create a range of uncertainty and limit potential disclosure. With a few exceptions, the earnings amounts in EPUF were random-rounded to a base of $25, $100, or $1,000, depending on the amount of earnings reported to SSA.[22] Specifically,

- earnings greater than $100 and less than $1,000 were random-rounded to a base of $25;
- earnings greater than $1,000 and less than $50,000 were random-rounded to a base of $100; and
- earnings greater than $50,000 were random-rounded to a base of $1,000.

Using this process, earnings near the taxable cap could be rounded up to the taxable maximum, and very low earnings could be rounded down to zero. SSA was concerned that this could affect two key research issues: (1) analyses of the differences between workers and nonworkers (as defined in terms of covered employment) and (2) analyses comparing individuals with earnings above and below the taxable maximum in a given year. To maintain the integrity of the data in these two areas, and to eliminate the possibility of rounding down to zero or rounding up to the taxable maximum in a given year, the following steps were taken:

- All annual earnings values less than $100 were replaced with the average amount of all earnings less than $100 in a given year.

- All annual earnings within the random rounding base of the taxable maximum ($100 or $1,000, depending on the taxable maximum in a given year) were replaced by the average of all values within the rounding base for that year.
- Any values for the aggregate amount of earnings from 1937 to 1950 greater than $37,000 were replaced with $41,500 (the average value of all aggregate earnings amounts greater than $37,000).
- Any values for the aggregate amount of earnings from 1937 to 1950 that were less than $100 were replaced with $39 (the average dollar amount for all values of aggregate earnings less than $100).

These adjustments to the random-rounding process may reduce the amount of uncertainty between the earnings reported to SSA and those contained in EPUF for a select group of individuals. Consider an individual with $100 in earnings. We know that the actual value of earnings reported to SSA for this individual had to be between $100 and $124. This creates a range of uncertainty of only $25 instead of plus or minus $25. However, this limited range of uncertainty only occurs for the $100 value of earnings.

Second, consider an individual with earnings of $95,250 in a year when the taxable maximum was $96,000. This individual's earnings value was replaced with the average value for all individuals with earnings from $95,001 and $95,999. In this case, we know the actual value of earnings reported to SSA to within $1,000. This is a much smaller range of uncertainty than the difference of plus or minus $1,000 that applies to earnings greater than $50,000 and not within the random-rounding base of the taxable maximum.

Third, the random-rounding process may also affect the number of annual QCs included in EPUF for 1953–2006. On the MEF, QCs are calculated based on the quarterly earnings (1951 to 1977) and on annual earnings (1978 to 2006) recorded for a given year. However, the random-rounding process can change the value of earnings by plus or minus $25, $100, or $1,000, depending on the amount of taxable earnings in a given year. Thus, QCs based on randomly rounded earnings values may differ from those based on the MEF.

This potential discrepancy raises questions about the effectiveness of the random-rounding process. Consider a case in which the amount of earnings on the MEF is $735 and the rounded earnings value is $750 for a year in which $250 are needed to earn a QC. The QCs based on MEF earnings would be two, and the rounded-earnings QC value would be three. By using the MEF QC value in EPUF we would know that the actual earnings reported to SSA would be between $725 and $750. In addition to reducing the range of uncertainty for the individual's earnings, this could affect analyses of eligibility for benefits.

In this light, the question arises: What is the appropriate value for QCs to include in EPUF? A comparison of the QC measure on the MEF with that based on randomly rounded earnings found the following four items:

- Of 60,326,474 records with positive earnings, QC values differed on only 175,609 (0.29 percent).
- When records differed, the maximum difference was plus or minus one QC.
- The aggregate number of QCs based on randomly rounded earnings (213,915,632) was 39,389 fewer than the aggregate number of quarters on the MEF, a difference of only 0.018 percent.
- The net impact of random rounding on total QCs earned at the individual level was very small. Among those whose records were affected, nearly 97 percent had a net difference of plus or minus one quarter over their work histories.

Given the very small differences between the two QC measures, SSA included the MEF measure in EPUF because it reflects an individual's actual number of QCs earned.

Zeroing out earnings for certain ages. When the BEPUF was created, the IRS requested that SSA zero out all earnings for individuals born after 1937 who had earnings at ages 14 or younger to prevent disclosure of potentially identifiable data.

SSA applied these same data disclosure procedures to EPUF. In addition to zeroing out any earnings for individuals who were very young, SSA assigned a value of zero to any earnings records that had a positive value when the individual was aged 86 or older.

Table 1 shows the number of records that SSA either removed from the underlying EPUF sample because of data cleaning or assigned a value of $0 because of data disclosure procedures, along with the dollar value of earnings represented by these omitted records.[23] Table 2 shows the number of records and the value of earnings represented in the entire underlying EPUF sample, in the omitted records, and in the resulting final EPUF, revealing that the omitted records are a very small share of the original underlying sample.

Table 1.
Earnings records removed from underlying EPUF sample or with earnings values set to zero for data cleaning or disclosure protection procedures, 1951–2006

Year	Records removed for data cleaning		Records with earnings values set to zero for individuals aged—				Total	
			14 or younger		86 or older			
	Records	Dollar amount	Records	Dollar amount	Records	Dollar amount	Records	Dollar amount
1951	2,759	5,665,897	1,646	254,528	0	0	4,405	5,920,425
1952	2,829	5,941,257	1,793	283,133	0	0	4,622	6,224,390
1953	2,805	6,027,761	1,778	316,999	0	0	4,583	6,344,760
1954	2,712	5,880,985	1,216	211,168	0	0	3,928	6,092,153
1955	3,024	6,959,324	1,496	269,778	0	0	4,520	7,229,102
1956	3,113	7,458,390	1,560	298,590	56	77,183	4,729	7,834,164
1957	3,085	7,594,978	1,494	304,594	88	140,290	4,667	8,039,862
1958	3,032	7,390,087	1,036	235,218	115	179,890	4,183	7,805,195
1959	3,037	8,135,307	1,048	247,442	135	204,584	4,220	8,587,334
1960	2,997	8,186,207	1,129	246,054	148	273,315	4,274	8,705,575
1961	2,945	8,086,654	1,080	238,310	170	315,373	4,195	8,640,337
1962	2,937	8,339,769	1,022	241,864	173	340,236	4,132	8,921,869
1963	2,928	8,465,681	1,158	260,460	182	358,582	4,268	9,084,723
1964	2,919	8,789,314	1,208	286,514	181	397,263	4,308	9,473,091
1965	2,987	9,166,718	1,454	366,245	189	425,929	4,630	9,958,893
1966	3,035	11,318,086	1,963	477,524	210	506,443	5,208	12,302,053
1967	3,027	11,629,233	2,128	544,917	193	511,459	5,348	12,685,609
1968	3,071	13,106,921	2,459	707,891	212	549,174	5,742	14,363,986
1969	3,084	13,678,081	2,887	903,985	217	567,872	6,188	15,149,938
1970	3,084	13,777,730	2,758	987,296	225	563,126	6,067	15,328,153
1971	3,060	14,117,871	2,758	966,145	203	579,624	6,021	15,663,640
1972	3,069	15,613,850	3,224	1,254,230	234	680,321	6,527	17,548,401
1973	3,069	17,630,854	4,007	1,565,846	246	870,503	7,322	20,067,203
1974	3,096	19,670,766	4,083	1,828,581	258	950,736	7,437	22,450,084
1975	2,948	20,124,329	3,587	1,817,022	247	1,082,987	6,782	23,024,338
1976	2,965	21,504,597	3,606	2,023,184	270	1,142,883	6,841	24,670,664
1977	2,972	22,805,353	4,035	2,484,999	275	1,228,865	7,282	26,519,217
1978	2,948	24,277,547	4,569	3,479,281	299	1,459,620	7,816	29,216,447
1979	2,927	27,336,728	4,339	3,915,380	302	1,615,747	7,568	32,867,855
1980	2,852	28,188,933	3,754	4,130,883	296	1,694,111	6,902	34,013,927
1981	2,736	28,247,820	3,433	4,092,412	278	1,680,975	6,447	34,021,207
1982	2,557	28,006,503	3,019	4,123,014	320	1,963,325	5,896	34,092,842
1983	2,498	28,325,155	2,886	4,092,376	339	2,175,128	5,723	34,592,659
1984	2,525	29,220,576	3,474	4,682,009	325	2,140,629	6,324	36,043,213
1985	2,482	30,028,067	3,893	5,404,605	344	2,151,727	6,719	37,584,399
1986	2,452	30,415,341	3,593	5,086,159	358	2,245,808	6,403	37,747,309
1987	2,403	30,272,513	3,896	5,377,760	345	2,220,378	6,644	37,870,651
1988	2,410	30,171,045	4,402	4,589,446	324	2,461,835	7,136	37,222,326
1989	2,336	30,739,323	4,693	4,514,906	354	3,015,574	7,383	38,269,803
1990	2,293	30,787,395	4,039	4,082,369	337	3,115,513	6,669	37,985,278
1991	2,198	29,839,368	3,427	3,380,565	354	3,031,322	5,979	36,251,255
1992	2,151	30,622,053	3,444	3,320,321	385	3,233,655	5,980	37,176,029
1993	2,311	31,248,868	3,453	3,833,342	497	3,287,167	6,261	38,369,376
1994	2,331	32,203,088	3,847	4,116,755	554	3,072,048	6,732	39,391,891
1995	2,334	33,036,888	3,725	4,345,292	548	3,489,519	6,607	40,871,699

(Continued)

Table 1.
Earnings records removed from underlying EPUF sample or with earnings values set to zero for data cleaning or disclosure protection procedures, 1951–2006—*Continued*

Year	Records removed for data cleaning		Records with earnings values set to zero for individuals aged—				Total	
			14 or younger		86 or older			
	Records	Dollar amount	Records	Dollar amount	Records	Dollar amount	Records	Dollar amount
1996	2,318	33,864,278	3,868	4,744,775	553	3,596,750	6,739	42,205,802
1997	2,305	35,451,643	3,928	5,780,153	614	4,349,378	6,847	45,581,174
1998	2,308	37,255,636	4,126	6,576,731	638	4,517,465	7,072	48,349,833
1999	2,284	38,915,191	4,010	7,408,910	678	5,136,825	6,972	51,460,925
2000	2,250	40,225,040	4,122	7,885,400	751	5,085,548	7,123	53,195,988
2001	2,184	40,499,362	3,712	7,971,572	764	5,649,651	6,660	54,120,585
2002	2,078	40,125,933	3,271	7,919,378	733	6,126,470	6,082	54,171,781
2003	1,986	39,695,001	2,869	7,885,607	848	7,454,773	5,703	55,035,381
2004	1,936	40,701,220	2,686	8,262,664	933	8,533,980	5,555	57,497,864
2005	1,845	40,491,527	2,582	8,311,535	915	9,109,953	5,342	57,913,014
2006	1,759	40,382,967	2,584	8,320,514	999	9,476,470	5,342	58,179,951
Total	148,586	1,267,641,009	163,257	177,256,628	19,212	125,037,983	331,055	1,569,935,621

SOURCE: Author's calculations based on underlying EPUF sample.

Table 2.
Earnings records contained in the underlying EPUF sample, affected by data cleaning or disclosure protection procedures, and included in final EPUF, 1951–2006

Year	Records from the underlying EPUF sample with positive earnings		Records affected by data cleaning or disclosure protection procedures[a]		Final EPUF		Final EPUF as a percentage of underlying EPUF sample	
	Records	Dollar amount	Records	Dollar amount	Records	Dollar amount	Records	Dollar amount
1951	579,071	1,182,038,005	4,405	5,920,425	574,666	1,176,121,621	99.24	99.50
1952	595,005	1,256,504,791	4,622	6,224,390	590,383	1,250,218,697	99.22	99.50
1953	605,891	1,321,673,609	4,583	6,344,760	601,308	1,315,308,988	99.24	99.52
1954	594,469	1,301,518,421	3,928	6,092,153	590,541	1,295,436,078	99.34	99.53
1955	650,393	1,540,292,673	4,520	7,229,102	645,873	1,533,057,873	99.31	99.53
1956	675,958	1,667,196,602	4,729	7,834,164	671,229	1,659,358,545	99.30	99.53
1957	706,274	1,775,031,770	4,667	8,039,862	701,607	1,766,986,216	99.34	99.55
1958	699,009	1,760,718,703	4,183	7,805,195	694,826	1,752,916,336	99.40	99.56
1959	714,773	1,973,721,356	4,220	8,587,334	710,553	1,965,128,948	99.41	99.56
1960	724,277	2,023,372,141	4,274	8,705,575	720,003	2,014,641,299	99.41	99.57
1961	727,019	2,046,121,645	4,195	8,640,337	722,824	2,037,456,281	99.42	99.58
1962	742,198	2,133,834,749	4,132	8,921,869	738,066	2,124,909,855	99.44	99.58
1963	754,582	2,194,781,542	4,268	9,084,723	750,314	2,185,708,897	99.43	99.59
1964	773,598	2,292,872,077	4,308	9,473,091	769,290	2,283,413,867	99.44	99.59
1965	804,466	2,418,879,156	4,630	9,958,893	799,836	2,408,907,420	99.42	99.59
1966	845,200	3,053,032,399	5,208	12,302,053	839,992	3,040,762,112	99.38	99.60
1967	864,648	3,201,085,410	5,348	12,685,609	859,300	3,188,408,570	99.38	99.60
1968	891,688	3,677,060,356	5,742	14,363,986	885,946	3,662,694,039	99.36	99.61
1969	920,804	3,924,915,106	6,188	15,149,938	914,616	3,909,791,660	99.33	99.61
1970	926,593	4,047,308,546	6,067	15,328,153	920,526	4,031,955,717	99.35	99.62

(Continued)

Table 2.
Earnings records contained in the underlying EPUF sample, affected by data cleaning or disclosure protection procedures, and included in final EPUF, 1951–2006—*Continued*

Year	Records from the underlying EPUF sample with positive earnings		Records affected by data cleaning or disclosure protection procedures[a]		Final EPUF		Final EPUF as a percentage of underlying EPUF sample	
	Records	Dollar amount	Records	Dollar amount	Records	Dollar amount	Records	Dollar amount
1971	928,927	4,154,580,909	6,021	15,663,640	922,906	4,138,931,362	99.35	99.62
1972	957,932	4,725,131,546	6,527	17,548,401	951,405	4,707,580,541	99.32	99.63
1973	995,014	5,499,708,261	7,322	20,067,203	987,692	5,479,673,083	99.26	99.64
1974	1,010,681	6,266,031,784	7,437	22,450,084	1,003,244	6,243,556,827	99.26	99.64
1975	1,000,671	6,560,822,942	6,782	23,024,338	993,889	6,537,771,640	99.32	99.65
1976	1,025,235	7,272,380,800	6,841	24,670,664	1,018,394	7,247,765,424	99.33	99.66
1977	1,057,528	8,034,161,719	7,282	26,519,217	1,050,246	8,007,612,706	99.31	99.67
1978	1,091,783	9,003,657,698	7,816	29,216,447	1,083,967	8,974,444,824	99.28	99.68
1979	1,117,921	10,568,459,651	7,568	32,867,855	1,110,353	10,535,550,984	99.32	99.69
1980	1,123,641	11,588,053,871	6,902	34,013,927	1,116,739	11,553,996,366	99.39	99.71
1981	1,124,468	12,808,231,847	6,447	34,021,207	1,118,021	12,774,215,295	99.43	99.73
1982	1,109,975	13,447,471,166	5,896	34,092,842	1,104,079	13,413,406,844	99.47	99.75
1983	1,120,926	14,320,140,280	5,723	34,592,659	1,115,203	14,285,581,480	99.49	99.76
1984	1,164,250	15,733,184,777	6,324	36,043,213	1,157,926	15,697,179,349	99.46	99.77
1985	1,199,486	16,954,192,478	6,719	37,584,399	1,192,767	16,916,577,414	99.44	99.78
1986	1,222,942	18,072,210,162	6,403	37,747,309	1,216,539	18,034,475,665	99.48	99.79
1987	1,253,504	19,277,082,505	6,644	37,870,651	1,246,860	19,239,275,056	99.47	99.80
1988	1,293,120	20,699,177,394	7,136	37,222,326	1,285,984	20,661,907,215	99.45	99.82
1989	1,317,740	22,114,192,632	7,383	38,269,803	1,310,357	22,075,919,050	99.44	99.83
1990	1,327,049	23,320,377,715	6,669	37,985,278	1,320,380	23,282,326,410	99.50	99.84
1991	1,321,141	23,947,887,306	5,979	36,251,255	1,315,162	23,911,705,384	99.55	99.85
1992	1,329,671	25,038,192,482	5,980	37,176,029	1,323,691	25,000,961,124	99.55	99.85
1993	1,350,606	26,020,626,627	6,261	38,369,376	1,344,345	25,982,355,871	99.54	99.85
1994	1,379,206	27,519,441,609	6,732	39,391,891	1,372,474	27,480,153,319	99.51	99.86
1995	1,401,604	28,817,889,800	6,607	40,871,699	1,394,997	28,777,048,663	99.53	99.86
1996	1,424,677	30,325,434,565	6,739	42,205,802	1,417,938	30,283,145,483	99.53	99.86
1997	1,451,322	32,381,811,355	6,847	45,581,174	1,444,475	32,336,383,309	99.53	99.86
1998	1,479,545	34,688,002,415	7,072	48,349,833	1,472,473	34,639,656,847	99.52	99.86
1999	1,503,546	36,837,645,411	6,972	51,460,925	1,496,574	36,786,136,938	99.54	99.86
2000	1,529,060	39,253,537,670	7,123	53,195,988	1,521,937	39,200,496,095	99.53	99.86
2001	1,531,311	40,822,309,702	6,660	54,120,585	1,524,651	40,767,753,758	99.57	99.87
2002	1,525,643	41,636,130,619	6,082	54,171,781	1,519,561	41,581,840,812	99.60	99.87
2003	1,526,341	42,646,073,822	5,703	55,035,381	1,520,638	42,590,915,589	99.63	99.87
2004	1,541,064	44,453,363,308	5,555	57,497,864	1,535,509	44,395,547,826	99.64	99.87
2005	1,555,944	46,181,182,273	5,342	57,913,014	1,550,602	46,123,343,357	99.66	99.87
2006	1,568,139	48,431,660,720	5,342	58,179,951	1,562,797	48,373,174,994	99.66	99.88
Total	60,657,529	864,212,398,878	331,055	1,569,935,621	60,326,474	862,641,549,923	99.45	99.82

SOURCE: Author's calculations based on underlying EPUF sample.

a. Includes records removed because of data cleaning and records with earnings values set zero for indivudals with earnings at age 14 or younger or at age 86 or older.

After all of the data cleaning and data disclosure procedures were applied, several steps were taken to evaluate the validity of the data contained in EPUF. A forthcoming Research and Statistics Note compares the data in the underlying sample and the final EPUF with the earnings estimates published by SSA in the *Annual Statistical Supplement to the Social Security Bulletin*.

Caveats on Using EPUF Data

Any user should be fully aware of three caveats on using the EPUF: (1) earnings data in EPUF are capped taxable Social Security earnings, (2) EPUF does not contain all of the information needed to calculate benefits accurately for everyone in the file, and (3) there may be some errors in the administrative data underlying EPUF.

Capped Taxable Social Security Earnings

As previously noted, earnings data in EPUF are limited to capped taxable Social Security earnings. The file excludes data for workers whose only earnings are from noncovered employment. Additionally, the file does not contain covered earnings above the taxable maximum.

Table 3 compares the number of workers covered under the Social Security program with all US workers. Although the percentage working in covered employment has increased dramatically over time—from 55 percent in 1939 to nearly 94 percent in 2006—6 percent of the US workforce in 2006 still worked in noncovered employment.

Chart 2 shows that the amount of covered earnings expressed as a percentage of all earnings in the economy increased from approximately 70 percent in 1950 to nearly 85 percent in 2006. This represents a large increase in the share of earnings covered under the program, but it also reveals that approximately 15 percent of earnings in 2006 were not in covered employment.

However, noncovered earnings account for only part of the earnings "missing" from EPUF. Chart 2 also shows taxable Social Security earnings and the capped taxable Social Security earnings measure used in EPUF. As a percentage of total earnings in the economy, EPUF's capped taxable earnings ranges from around 55 percent in the early 1950s to 78 percent in 1986, then declines gradually to 70 percent by 2006.

The relatively large differences between covered and taxable earnings from 1951 through the mid-1970s stem from the low taxable maximum earnings amounts during those years. The jagged pattern of the differences results from ad hoc changes to the taxable maximum. Prior to the 1972 Social Security Amendments, the taxable maximum was set by statute. From 1937 to 1950, the taxable maximum was $3,000. The first increase in the taxable maximum, to $3,600, occurred in 1951, and it increased four more times through 1971. The 1972

Table 3.
Civilian workers covered by the Social Security system, selected years 1939–2006

Year	Paid civilian workers[a] (millions)	Workers in covered employment or self-employment	
		Number (millions)	As a percentage of paid civilian workers
1939	43.6	24.0	55.0
1944	51.2	30.8	60.2
1949	56.7	34.3	60.5
1955	62.8	51.8	82.5
1960	64.6	55.7	86.2
1965	71.6	62.7	87.6
1970	77.8	69.9	89.8
1975	86.0	77.9	90.6
1980	99.4	89.3	89.8
1985	107.7	100.0	92.9
1990	117.8	111.7	94.8
1991	117.1	110.3	94.2
1992	118.7	111.9	94.3
1993	121.3	114.6	94.5
1994	124.6	117.9	94.6
1995	125.0	118.1	94.5
1996	127.7	120.7	94.5
1997	130.6	123.4	94.5
1998	132.6	125.1	94.4
1999	134.6	127.0	94.4
2000	137.7	130.0	94.4
2001	136.1	128.2	94.1
2002	136.5	128.2	93.9
2003	138.4	129.9	93.9
2004	140.2	131.5	93.8
2005	142.8	133.8	93.7
2006	146.0	136.7	93.6

SOURCE: Unpublished data from SSA's Office of the Chief Actuary.

NOTE: Data for 1939, 1944, and 1949 are monthly averages; data for all other years are as of December.

a. Includes wage-and-salary earners and the self-employed.

amendments provided an automatic annual increase in the taxable maximum proportional to the increase in the national average wage. The key point for EPUF users is that using different methodologies for increasing the taxable maximum has affected the number (and proportion) of workers with earnings at or above the taxable maximum. For example, in 1951, nearly 25 percent of workers with covered earnings had earnings equal to or greater than the taxable maximum. In 1960 and 1970, the percentages of workers with earnings at or above the taxable maximum were 28 percent and 26 percent, respectively. In 1980, the percentage dropped to 9 percent and by 2006, it had dropped even further, to 6 percent (SSA 2009, Table 4.B4).[24]

Chart 2 reveals that the earnings in EPUF do not account for a significant portion of the total earnings in the economy from 1951 through 2006. Thus, using EPUF to analyze work patterns for individuals with a mix of covered and noncovered earnings may produce inaccurate results. Suppose an individual started working in a noncovered job in 1945 that was redefined as covered employment in 1955. This individual's work history in the EPUF would begin in 1955, with no indication that he or she really started working in 1945. Another example is an individual who worked in covered employment during high school and college and subsequently worked in a job that was not covered. This would result in a covered work history that starts in the individual's early work years and stops shortly thereafter.

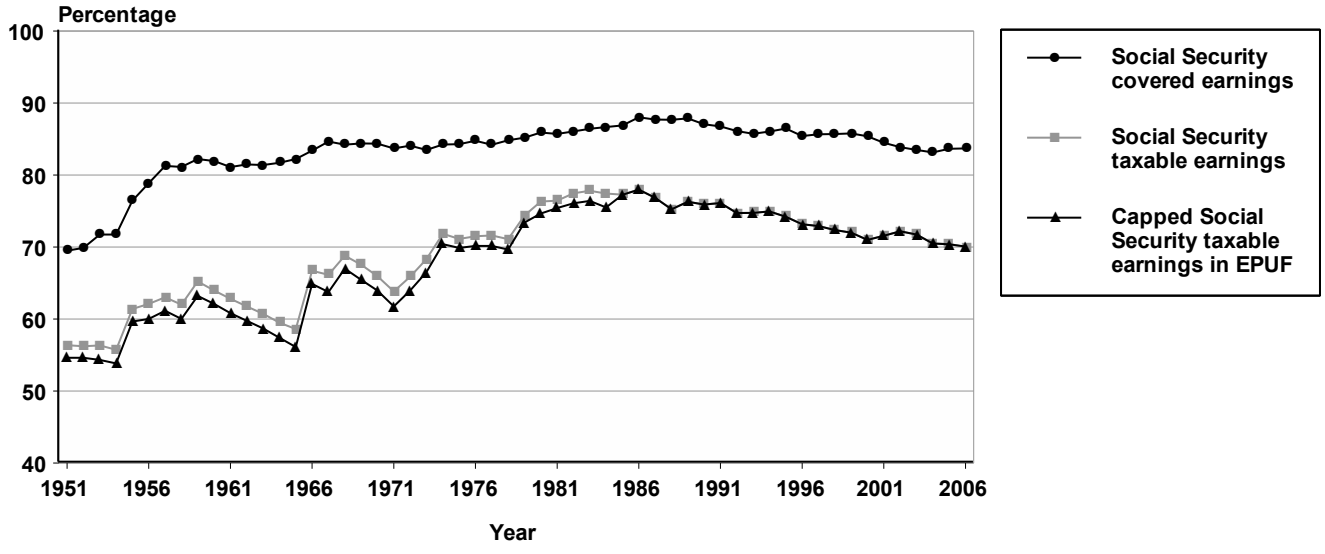
Limitations on Estimating Benefits

One expected use of EPUF is to evaluate how programmatic changes affect benefit amounts. However, such analysis is limited to estimating an individual's primary benefits; that is, benefits based on one's own earnings record. For example, auxiliary benefits—those to which individuals would be entitled based on their spouses' or parents' earnings record—cannot be estimated because there is no way to identify a spousal or parental link among individuals in EPUF.[25] This is problematic because many female beneficiaries receive part or all of their benefits based on a current or former spouse's higher earnings. Nevertheless, analysts can make reasoned assumptions about family size and estimate hypothetical family benefits based on an individual's own earnings records.

Analysts cannot use EPUF to estimate disability benefits because the file does not contain information about an individual's period(s) of disability. In addition, any calculation of retirement benefits for a disabled beneficiary would be inaccurate because it would exclude periods of disability. However, one can use EPUF to determine an individual's insured status in a given year and to estimate hypothetical disability benefits that could be awarded if an individual became disabled.

The EPUF does not contain a date of death for deceased individuals. As a result, one cannot determine if a string of years with zero earnings reflects that the individual has retired, become disabled, or died.

Chart 2.
Social Security earnings (weighted) as a percentage of all earnings



SOURCES: Bureau of Economic Analysis National Income and Product Account; SSA (2009a); 2006 EPUF.

The accuracy of estimates for primary benefits may be affected by the lack of detailed information for some individuals in the file. When calculating an individual's benefit amount, SSA uses the certified earnings record, which includes any ancillary earnings information such as military credits, railroad employment income, or having multiple SSNs.[26] Because EPUF omits this information, estimates of benefits for individuals who had these sources of income or had multiple SSNs are suspect. Although the number of individuals having multiple SSNs or railroad income is relatively small, accurate assessments of the effects of programmatic changes on these individuals would require such information. The number of individuals with military credits is likely to be much larger, but the impact on benefits is likely to be relatively small for those with limited military service.

Incomplete information in the EPUF also hinders accurate estimates of benefits for individuals with earnings during 1937–1950. Recall that SSA had to estimate the number of QCs associated with earnings from this period. Consider an individual who applies for benefits but is a couple of quarters short of being eligible. In such a case, SSA reviews the microfilm record to determine the individual's actual amount of covered earnings during the period. SSA posts this amount to the detailed segment of the MEF then determines the QCs earned using the usual procedures. However, EPUF does not include the information from the microfilm. Therefore, analysts should exercise caution when using EPUF data on QCs for this period, and should note this fact in any analysis using that data field.

The user should also note that precise computation of monthly benefits paid is not possible with the EPUF because age at entitlement, on which monthly benefit amounts are based, cannot be observed in the file. With EPUF, it is also not possible to adjust benefits for workers subject to the Windfall Elimination Provision, which reduces benefits of "individuals who have only minimal Social Security coverage and will receive a pension based on years of work in noncovered employment" (SSA 2009).

Errors in Underlying Earnings Data

SSA has been collecting data on individual workers covered under the program since its inception. The agency uses administrative files to determine eligibility for benefits, to determine benefit amounts, to estimate future benefit payments, and for a variety of other purposes.

Each year, capturing the earnings data reported on Form W-2 and used for program purposes is a massive undertaking. For earnings reported in tax year 2006, SSA processed W-2s for nearly 155 million workers and generated approximately 250 million wage items. SSA processed nearly 80 percent of the wage items reported on the W-2s electronically, and the remaining 20 percent were scanned using character recognition software or keyed in manually. In addition, SSA received information on self-employment income from the IRS based on data reported on Schedule SE. This information accounted for approximately 20 million items posted to the MEF. In total, SSA posted nearly 270 million earnings-related items for tax year 2006 to its MEF.

With so many items posted every year, the MEF is clearly susceptible to missing or erroneous earnings data. Each step of the process introduces potential errors. The employer may enter an incorrect amount for a given individual, or may put the correct information in the wrong box on the W-2. In addition, the SSN may not be valid or the name on the W-2 may not match the one to which the SSN was enumerated.[27] Errors can also arise as SSA posts the data in the MEF.

SSA has an elaborate set of checks to identify and correct improperly reported earnings information.[28] The agency verifies that the information on all the W-2s submitted by an employer corresponds to the amounts reported by the employer on Form W-3. SSA continuously updates the MEF as corrected W-2s (W-2c's) and delinquent W-2s stream in throughout the year. Workers may also file amended tax returns to correct errors reported in previous filings.

If SSA detects errors in a worker's earning record, it sends a letter to the employer seeking clarification. In response, the employer may file a W-2c. In some instances, an employer files a W-2c and the employee supplies information to correct the same error; the resulting double-correction also produces errors on the MEF.

Another opportunity to catch earnings-record errors arises when SSA mails out its annual Social Security statement to workers aged 25 or older. Errors detected by the worker can be resolved at any SSA field office.[29] Finally, workers can catch errors in their earnings data when they apply for benefits. Applicants see their complete earnings histories and can direct SSA to correct any verifiable errors they spot. Nevertheless, despite extensive efforts to ensure accurate earnings records, the EPUF may contain erroneous information.

Highlights from the EPUF

This section presents statistical highlights of the earnings data for the 4,384,254 individuals whose records are included in EPUF. Figures cited are unweighted.

Individuals by YOB

There are five distinct trends in the distribution of individuals by birth year in EPUF (Chart 3). The first is a steep increase in the number of individuals in the file, starting with 1,813 born in 1870 and peaking at 31,877 born in 1921. The second is a steady decline from 31,104 born in 1922 to 26,568 in 1933. The third trend is a dramatic increase to nearly 53,000 who were born in 1962, nearly doubling the number of individuals born in 1933. The fourth is a steep decline from 52,138 individuals born in 1963 to 41,792 born in 1975. The final trend reflects relatively flat numbers of individuals born from 1976 through 2006, from 41,822 to 41,241, respectively.

Chart 4 presents the distribution of individuals by YOB and sex.[30] For birth years from 1870 to about 1925, men outnumber women in EPUF. With a few exceptions, the numbers of women and men in the file are nearly the same for birth years from 1926 to 1947. The number of men born from 1948 to 2006 is consistently higher than the number of women, although not by very much.

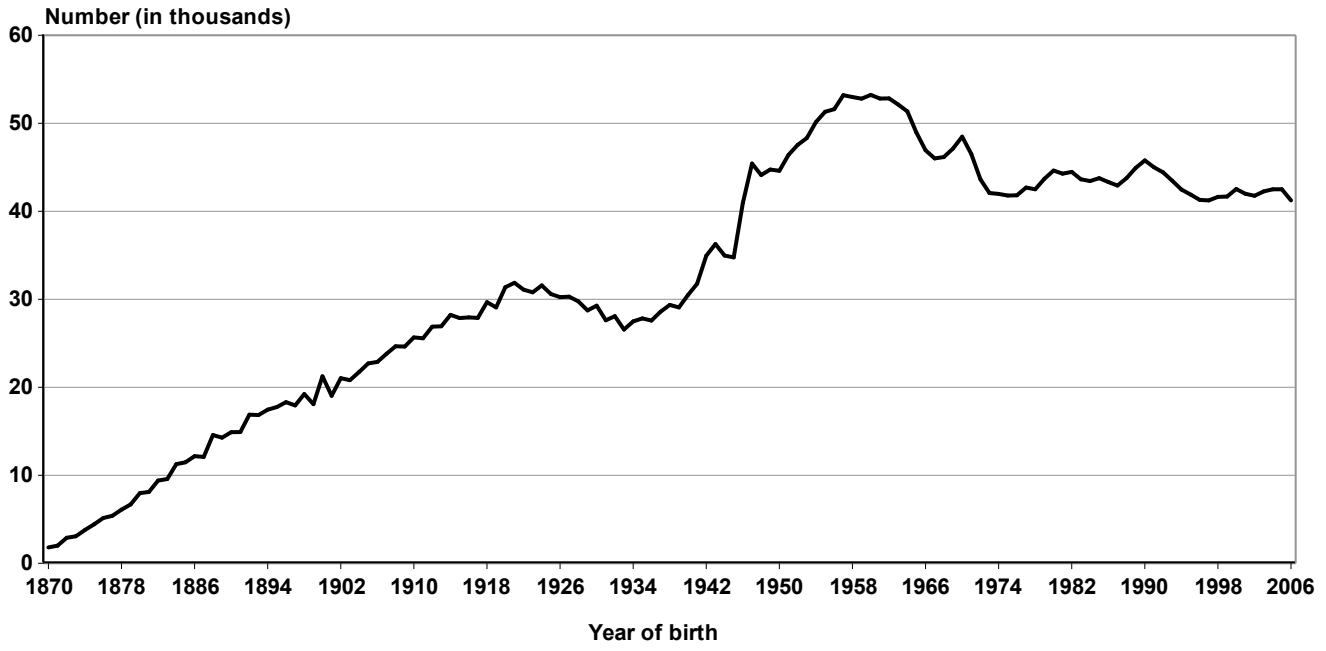
Workers and Nonworkers

There are four distinct categories of individuals in EPUF depending on whether they had any Social Security taxable earnings and, if so, the period in which they were earned. The four categories are nonworkers (individuals with no taxable earnings), workers with taxable earnings during 1937–1950 only, workers with taxable earnings during 1951–2006 only, and workers with taxable earnings in both periods. More than one-half of the individuals in EPUF had earnings during 1951–2006 only, about 4 percent had earnings only during 1937–1950, and 16 percent had earnings in both periods (Chart 5).

Initially, the 24.7-percent figure for individuals in EPUF who did not have any earnings seems very large. However, Chart 6 reveals that the bulk of these individuals (68 percent) were born after 1987. Thus, the main reason so many individuals in EPUF have no earnings is that most of them are not old enough to participate in the labor market.[31]

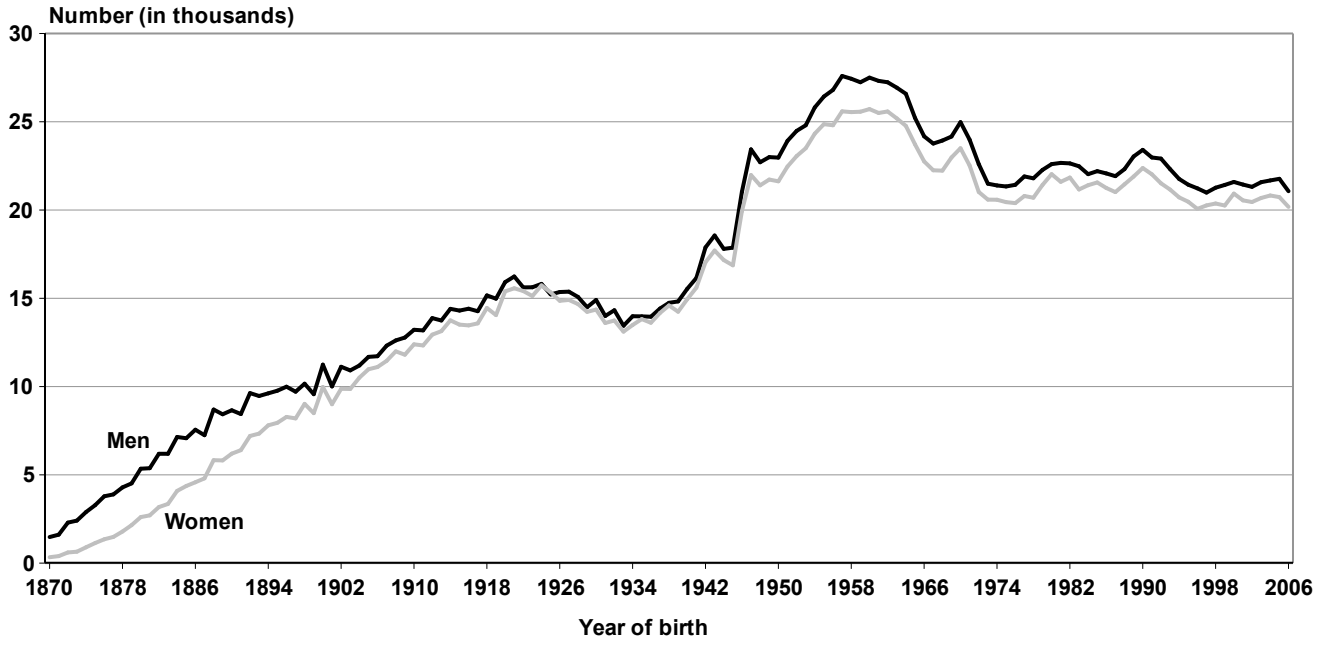
Chart 7 presents the distribution by sex of individuals in EPUF in each earner status. Women outnumber men among those who do not have any earnings

Chart 3.
Number of individuals in EPUF, by year of birth



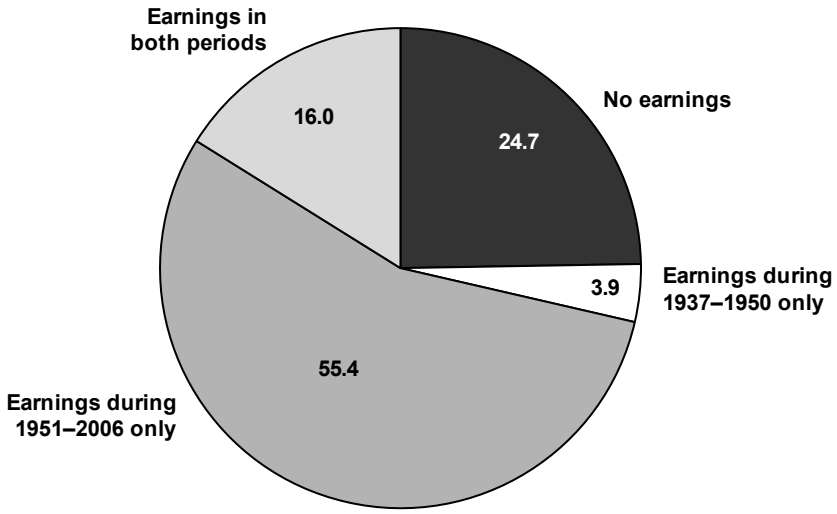
SOURCE: Author's calculations based on the 2006 EPUF.

Chart 4.
Number of individuals in EPUF, by year of birth and sex



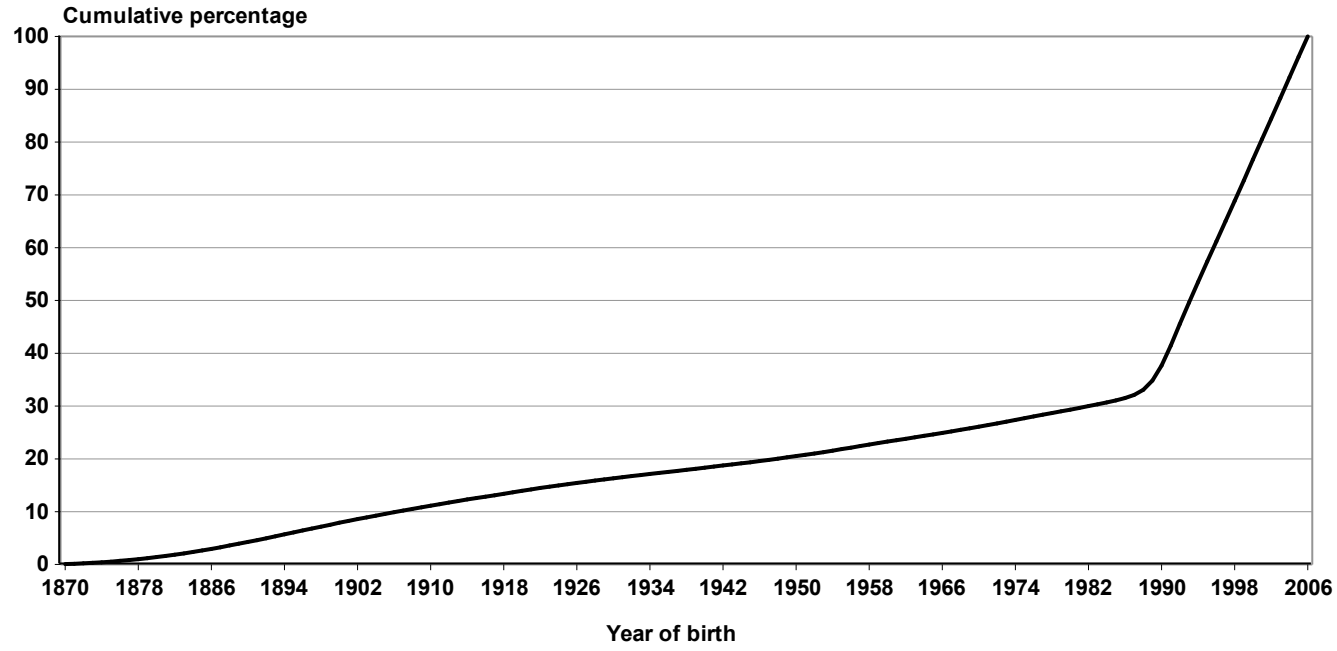
SOURCE: Author's calculations based on the 2006 EPUF.

Chart 5.
Percentage distribution of individuals in EPUF, by capped Social Security taxable earnings status



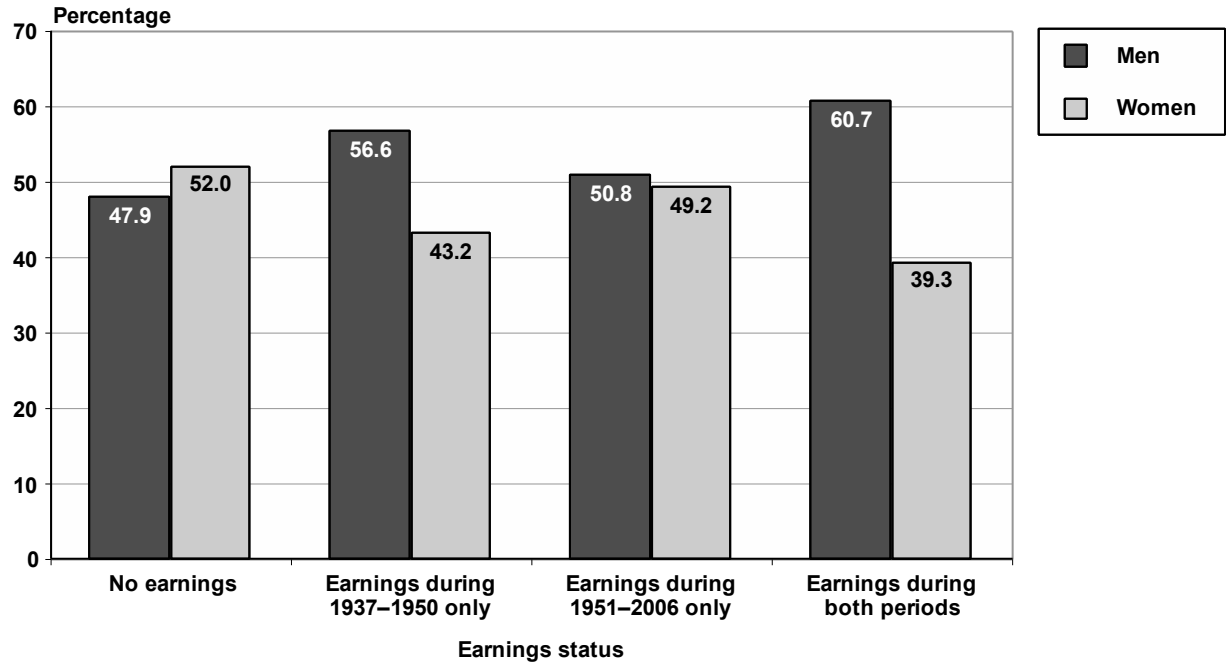
SOURCE: Author's calculations based on the 2006 EPUF.

Chart 6.
Cumulative distribution of individuals in EPUF with no capped Social Security taxable earnings, by year of birth



SOURCE: Author's calculations based on the 2006 EPUF.

Chart 7.
Percentage distribution of individuals in EPUF in each capped Social Security taxable earnings status, by sex



SOURCE: Author's calculations based on the 2006 EPUF.

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

(52 percent versus 48 percent). Among individuals with earnings during 1937–1950 only, a large majority are men (57 percent versus 43 percent). This result was expected because women were much less active in the labor market during that period. Individuals in EPUF with earnings during both periods skew even more towards men, 61 percent versus 39 percent. Individuals with earnings during 1951–2006 only are more evenly distributed between men (51 percent) and women (49 percent), reflecting women's substantial increases in labor force participation during the period.

Individuals in EPUF with any earnings during 1937–1950 number 874,287. Approximately 60 percent are men (523,465) and 40 percent are women (350,229). There are also records for 593 individuals whose sex is unknown and who had earnings during this period. Appendix Chart A1 presents the distribution of individuals with earnings during this period by YOB and sex. The average and median values for all earnings during this period are $9,106 and $4,600, respectively (not shown). The average earnings for men ($11,990) is much higher than that for women ($7,521). The median earnings for men and women diverge even more, at $7,900 and $1,800, respectively.

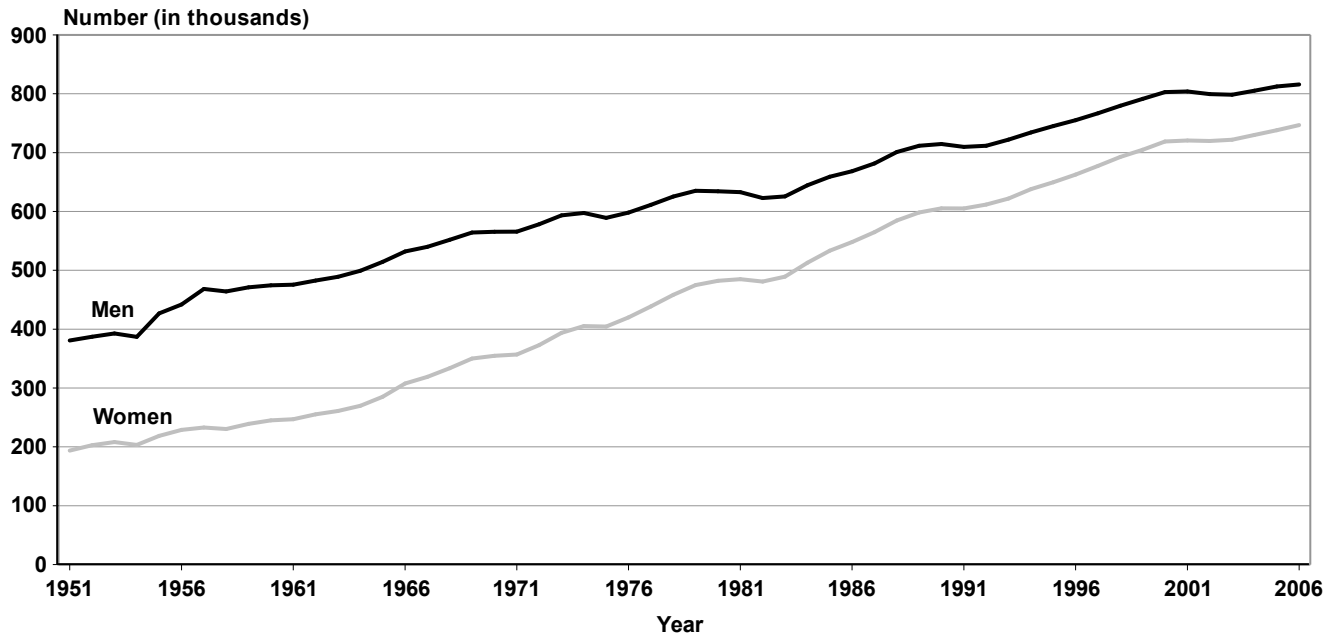
Earnings in EPUF

Chart 8 shows that the gap between the number of men and women with earnings in a given year has decreased significantly between 1951 and 2006. Chart 9 shows a slow but steady climb in aggregate earnings for men and women over the same period.[32] The difference between the total amount of earnings for men and women has been increasing over time. However, women's taxable earnings as a percentage of all taxable earnings has increased from 22.1 percent in 1951 to 39.7 percent in 2006 (see Table A2). Table 4 presents the average and median earnings of men, women, and individuals with unknown sex in the EPUF.

Summary

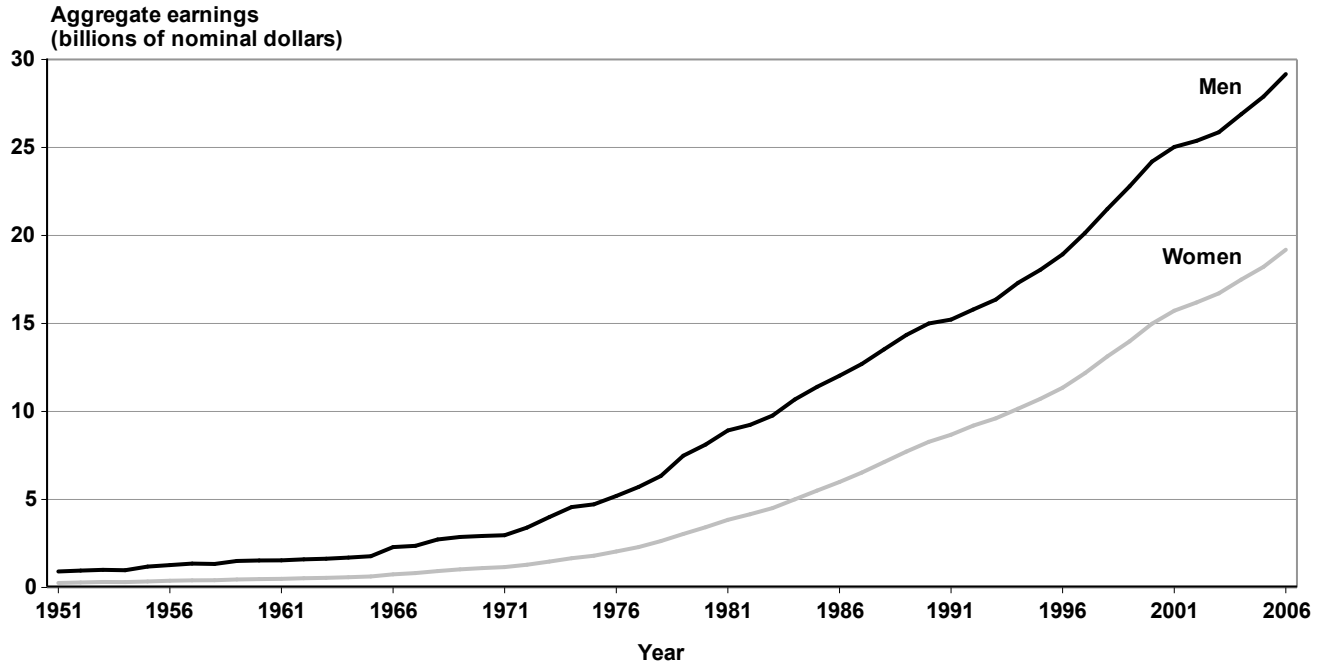
The 2006 EPUF contains earnings data for individuals drawn from a 1-percent sample of all SSNs issued before January 2007. The file contains limited demographic information and earnings data related to the Social Security program for 4,348,254 individuals. Although the file contains limited data fields, it is much larger than other public-use files with earnings histories. EPUF will provide policymakers and researchers with a unique tool to evaluate the Social Security programs and potential reforms.

Chart 8.
Number of individuals with capped Social Security taxable earnings in EPUF, by sex, 1951–2006



SOURCE: Author's calculations based on the 2006 EPUF.

Chart 9.
Aggregate amount of capped Social Security taxable earnings in EPUF, by sex of earner, 1951–2006



SOURCE: Author's calculations based on the 2006 EPUF.

Table 4.
Average and median Social Security taxable earnings in EPUF, by sex, 1951–2006 (in dollars)

	All workers		Men		Women		Sex unknown	
Year	Mean	Median	Mean	Median	Mean	Median	Mean	Median
1951	2,047	2,100	2,404	2,900	1,344	1,200	1,978	1,950
1952	2,118	2,300	2,482	3,100	1,423	1,300	1,904	1,950
1953	2,187	2,400	2,553	3,300	1,499	1,300	2,043	2,000
1954	2,194	2,400	2,544	3,300	1,527	1,400	1,886	1,700
1955	2,374	2,400	2,779	3,300	1,583	1,300	1,932	1,600
1956	2,472	2,600	2,884	3,500	1,678	1,500	1,897	1,400
1957	2,518	2,700	2,900	3,600	1,752	1,500	1,874	1,450
1958	2,523	2,700	2,881	3,500	1,801	1,600	1,914	1,500
1959	2,766	2,800	3,204	3,800	1,903	1,600	2,040	1,600
1960	2,798	2,900	3,239	3,900	1,945	1,700	2,161	1,800
1961	2,819	2,900	3,248	3,900	1,994	1,700	2,190	1,800
1962	2,879	3,100	3,313	4,100	2,059	1,800	2,439	2,100
1963	2,913	3,100	3,345	4,300	2,104	1,800	2,534	2,200
1964	2,968	3,300	3,402	4,500	2,166	1,900	2,717	2,700
1965	3,012	3,400	3,459	4,754	2,206	2,000	2,871	2,900
1966	3,620	3,600	4,312	5,000	2,424	2,000	3,548	3,300
1967	3,710	3,700	4,380	5,200	2,576	2,200	3,580	3,500
1968	4,134	4,000	4,944	5,600	2,796	2,400	4,099	3,800
1969	4,275	4,200	5,093	6,000	2,956	2,600	4,090	3,900
1970	4,380	4,400	5,175	6,200	3,113	2,700	4,214	4,200

(Continued)

Table 4.
Average and median Social Security taxable earnings in EPUF, by sex, 1951–2006 (in dollars)—*Continued*

Year	All workers		Men		Women		Sex unknown	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
1971	4,485	4,600	5,259	6,500	3,257	2,900	4,409	4,650
1972	4,948	4,900	5,893	7,000	3,482	3,000	5,067	5,100
1973	5,548	5,200	6,744	7,500	3,745	3,100	5,776	5,450
1974	6,223	5,500	7,653	8,000	4,115	3,400	6,572	5,950
1975	6,578	5,800	8,023	8,300	4,473	3,700	6,854	6,400
1976	7,117	6,300	8,693	8,900	4,870	4,100	7,806	6,950
1977	7,625	6,700	9,343	9,600	5,229	4,300	8,384	7,500
1978	8,279	7,300	10,132	10,400	5,750	4,900	8,816	8,200
1979	9,488	7,900	11,790	11,300	6,410	5,400	10,383	9,400
1980	10,346	8,600	12,804	12,000	7,112	6,000	11,052	9,600
1981	11,426	9,400	14,106	13,000	7,927	6,700	12,280	10,300
1982	12,149	9,900	14,844	13,300	8,659	7,200	13,362	10,950
1983	12,810	10,300	15,613	13,700	9,224	7,600	13,917	11,400
1984	13,556	10,900	16,572	14,500	9,766	7,900	14,365	11,300
1985	14,183	11,400	17,303	15,100	10,325	8,300	15,037	12,000
1986	14,824	11,900	18,002	15,600	10,948	8,800	16,204	12,950
1987	15,430	12,300	18,636	16,100	11,560	9,300	16,257	12,700
1988	16,067	12,900	19,304	16,600	12,186	9,800	16,943	13,250
1989	16,847	13,400	20,163	17,200	12,902	10,300	18,780	15,100
1990	17,633	14,000	20,990	17,800	13,669	10,900	19,937	16,500
1991	18,182	14,400	21,455	17,900	14,342	11,400	21,272	18,250
1992	18,887	14,900	22,199	18,400	15,034	11,900	22,037	18,800
1993	19,327	15,100	22,662	18,700	15,455	12,100	22,841	20,150
1994	20,022	15,600	23,576	19,400	15,930	12,400	23,137	18,700
1995	20,629	16,200	24,224	20,000	16,504	12,900	23,835	19,100
1996	21,357	16,800	25,066	20,800	17,129	13,400	24,950	20,200
1997	22,386	17,600	26,274	21,900	17,985	14,100	24,905	20,500
1998	23,525	18,600	27,582	23,100	18,958	14,900	26,290	21,800
1999	24,580	19,400	28,802	24,100	19,840	15,600	28,665	23,700
2000	25,757	20,300	30,149	25,200	20,851	16,400	30,797	25,450
2001	26,739	21,000	31,141	25,700	21,826	17,100	32,920	26,500
2002	27,364	21,300	31,743	25,900	22,499	17,500	33,686	26,800
2003	28,009	21,700	32,396	26,300	23,154	18,000	34,133	29,900
2004	28,913	22,500	33,396	27,200	23,965	18,500	34,542	29,100
2005	29,745	23,100	34,341	28,000	24,685	19,000	36,241	30,600
2006	30,953	24,000	35,764	29,100	25,696	19,700	36,799	32,500

SOURCE: Author's calculations based on the 2006 EPUF.

Table A1.
Number and percentage distribution of individuals with Social Security taxable earnings records in EPUF, by sex, 1951–2006

Year	All workers	Men		Women		Sex unknown	
		Number	Percentage of workers	Number	Percentage of workers	Number	Percentage +l41of workers
1951	574,666	380,673	66.2	193,655	33.7	338	0.1
1952	590,383	387,176	65.6	202,841	34.4	366	0.1
1953	601,308	392,710	65.3	208,254	34.6	344	0.1
1954	590,541	386,904	65.5	203,317	34.4	320	0.1
1955	645,873	426,862	66.1	218,624	33.8	387	0.1
1956	671,229	441,870	65.8	228,933	34.1	426	0.1
1957	701,607	468,328	66.8	232,861	33.2	418	0.1
1958	694,826	464,175	66.8	230,290	33.1	361	0.1
1959	710,553	471,169	66.3	239,044	33.6	340	a
1960	720,003	474,604	65.9	245,085	34.0	314	a
1961	722,824	475,513	65.8	247,008	34.2	303	a
1962	738,066	482,590	65.4	255,187	34.6	289	a
1963	750,314	488,952	65.2	261,077	34.8	285	a
1964	769,290	499,171	64.9	269,834	35.1	285	a
1965	799,836	514,368	64.3	285,184	35.7	284	a
1966	839,992	531,966	63.3	307,743	36.6	283	a
1967	859,300	540,003	62.8	319,006	37.1	291	a
1968	885,946	551,920	62.3	333,731	37.7	295	a
1969	914,616	564,231	61.7	350,067	38.3	318	a
1970	920,526	565,453	61.4	354,749	38.5	324	a
1971	922,906	565,675	61.3	356,911	38.7	320	a
1972	951,405	578,237	60.8	372,840	39.2	328	a
1973	987,692	593,494	60.1	393,844	39.9	354	a
1974	1,003,244	597,517	59.6	405,375	40.4	352	a
1975	993,889	589,138	59.3	404,403	40.7	348	a
1976	1,018,394	598,171	58.7	419,885	41.2	338	a
1977	1,050,246	611,288	58.2	438,619	41.8	339	a
1978	1,083,967	625,380	57.7	458,246	42.3	341	a
1979	1,110,353	635,128	57.2	474,898	42.8	327	a
1980	1,116,739	634,313	56.8	482,099	43.2	327	a
1981	1,118,021	632,816	56.6	484,894	43.4	311	a
1982	1,104,079	622,799	56.4	480,974	43.6	306	a
1983	1,115,203	625,683	56.1	489,213	43.9	307	a
1984	1,157,926	644,631	55.7	512,978	44.3	317	a
1985	1,192,767	659,120	55.3	533,338	44.7	309	a
1986	1,216,539	668,310	54.9	547,925	45.0	304	a
1987	1,246,860	681,710	54.7	564,843	45.3	307	a
1988	1,285,984	700,961	54.5	584,711	45.5	312	a
1989	1,310,357	711,727	54.3	598,334	45.7	296	a
1990	1,320,380	714,671	54.1	605,422	45.9	287	a
1991	1,315,162	709,678	54.0	605,204	46.0	280	a
1992	1,323,691	711,615	53.8	611,804	46.2	272	a
1993	1,344,345	722,012	53.7	622,065	46.3	268	a
1994	1,372,474	734,324	53.5	637,884	46.5	266	a
1995	1,394,997	745,091	53.4	649,650	46.6	256	a

(Continued)

Table A1.
Number and percentage distribution of individuals with Social Security taxable earnings records in EPUF, by sex, 1951–2006—*Continued*

Year	All workers	Men		Women		Sex unknown	
		Number	Percentage of workers	Number	Percentage of workers	Number	Percentage of workers
1996	1,417,938	755,129	53.3	662,564	46.7	245	a
1997	1,444,475	766,814	53.1	677,412	46.9	249	a
1998	1,472,473	779,589	52.9	692,640	47.0	244	a
1999	1,496,574	791,384	52.9	704,947	47.1	243	a
2000	1,521,937	802,776	52.7	718,923	47.2	238	a
2001	1,524,651	803,891	52.7	720,525	47.3	235	a
2002	1,519,561	799,527	52.6	719,799	47.4	235	a
2003	1,520,638	798,428	52.5	721,985	47.5	225	a
2004	1,535,509	805,264	52.4	730,008	47.5	237	a
2005	1,550,602	812,364	52.4	738,007	47.6	231	a
2006	1,562,797	815,763	52.2	746,806	47.8	228	a
Total	60,326,474	34,553,056	57.3	25,756,465	42.7	16,953	a

SOURCE: Author's calculations based on the 2006 EPUF.

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

a. Less than 0.05 percent

Table A2.
Dollar amount and percentage distribution of Social Security taxable earnings in EPUF, by sex of earner, 1951–2006

Year	Total Social Security taxable earnings ($)	Men		Women		Sex unknown	
		Dollar amount	Percentage of earnings	Dollar amount	Percentage of earnings	Dollar amount	Percentage of earnings
1951	1,176,121,621	915,224,528	77.8	260,228,626	22.1	668,467	0.1
1952	1,250,218,697	960,951,736	76.9	288,570,223	23.1	696,739	0.1
1953	1,315,308,988	1,002,401,906	76.2	312,204,394	23.7	702,689	0.1
1954	1,295,436,078	984,354,316	76.0	310,478,153	24.0	603,609	a
1955	1,533,057,873	1,186,138,562	77.4	346,171,624	22.6	747,687	a
1956	1,659,358,545	1,274,501,991	76.8	384,048,272	23.1	808,282	a
1957	1,766,986,216	1,358,130,591	76.9	408,072,212	23.1	783,413	a
1958	1,752,916,336	1,337,517,626	76.3	414,707,883	23.7	690,827	a
1959	1,965,128,948	1,509,520,746	76.8	454,914,691	23.1	693,511	a
1960	2,014,641,300	1,537,199,839	76.3	476,762,888	23.7	678,572	a
1961	2,037,456,281	1,544,306,338	75.8	492,486,504	24.2	663,439	a
1962	2,124,909,855	1,598,792,149	75.2	525,412,919	24.7	704,788	a
1963	2,185,708,897	1,635,775,204	74.8	549,211,363	25.1	722,331	a
1964	2,283,413,867	1,698,087,380	74.4	584,552,087	25.6	774,400	a
1965	2,408,907,420	1,779,058,958	73.9	629,033,153	26.1	815,308	a
1966	3,040,762,112	2,293,932,086	75.4	745,826,027	24.5	1,003,999	a
1967	3,188,408,570	2,365,472,074	74.2	821,894,805	25.8	1,041,691	a
1968	3,662,694,039	2,728,439,824	74.5	933,045,098	25.5	1,209,116	a
1969	3,909,791,660	2,873,795,305	73.5	1,034,695,870	26.5	1,300,485	a
1970	4,031,955,717	2,926,141,698	72.6	1,104,448,529	27.4	1,365,490	a

(Continued)

Table A2.
Dollar amount and percentage distribution of Social Security taxable earnings in EPUF, by sex of earner, 1951–2006—*Continued*

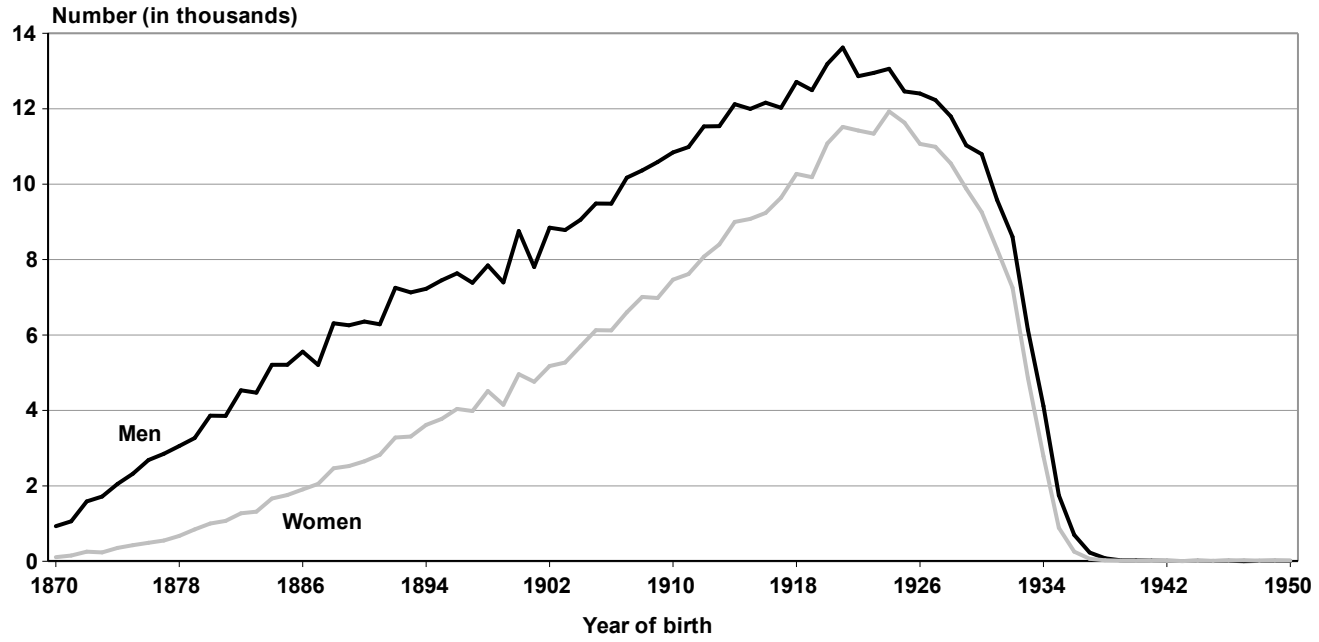
Year	Total Social Security taxable earnings ($)	Men		Women		Sex unknown	
		Dollar amount	Percentage of earnings	Dollar amount	Percentage of earnings	Dollar amount	Percentage of earnings
1971	4,138,931,362	2,975,093,757	71.9	1,162,426,686	28.1	1,410,920	a
1972	4,707,580,541	3,407,572,244	72.4	1,298,346,419	27.6	1,661,877	a
1973	5,479,673,083	4,002,814,306	73.0	1,474,814,111	26.9	2,044,666	a
1974	6,243,556,827	4,573,069,433	73.2	1,668,173,966	26.7	2,313,428	a
1975	6,537,771,640	4,726,502,691	72.3	1,808,883,849	27.7	2,385,100	a
1976	7,247,765,424	5,200,093,565	71.7	2,045,033,268	28.2	2,638,591	a
1977	8,007,612,706	5,711,058,117	71.3	2,293,712,581	28.6	2,842,008	a
1978	8,974,444,824	6,336,610,720	70.6	2,634,827,857	29.4	3,006,247	a
1979	10,535,550,984	7,488,124,641	71.1	3,044,030,994	28.9	3,395,348	a
1980	11,553,996,366	8,121,707,068	70.3	3,428,675,206	29.7	3,614,092	a
1981	12,774,215,295	8,926,653,455	69.9	3,843,742,790	30.1	3,819,050	a
1982	13,413,406,844	9,244,523,741	68.9	4,164,794,202	31.0	4,088,900	a
1983	14,285,581,480	9,768,685,099	68.4	4,512,623,779	31.6	4,272,602	a
1984	15,697,179,349	10,682,698,768	68.1	5,009,926,755	31.9	4,553,826	a
1985	16,916,577,414	11,405,063,900	67.4	5,506,867,114	32.6	4,646,400	a
1986	18,034,475,665	12,031,058,617	66.7	5,998,490,972	33.3	4,926,076	a
1987	19,239,275,056	12,704,633,159	66.0	6,529,650,970	33.9	4,990,927	a
1988	20,661,907,215	13,531,532,531	65.5	7,125,088,330	34.5	5,286,353	a
1989	22,075,919,050	14,350,553,706	65.0	7,719,806,564	35.0	5,558,780	a
1990	23,282,326,410	15,001,089,862	64.4	8,275,514,770	35.5	5,721,778	a
1991	23,911,705,385	15,225,958,913	63.7	8,679,790,242	36.3	5,956,230	a
1992	25,000,961,124	15,797,304,161	63.2	9,197,663,036	36.8	5,993,927	a
1993	25,982,355,871	16,362,219,545	63.0	9,614,015,049	37.0	6,121,278	a
1994	27,480,153,319	17,312,328,296	63.0	10,161,670,536	37.0	6,154,487	a
1995	28,777,048,662	18,048,809,034	62.7	10,722,137,749	37.3	6,101,879	a
1996	30,283,145,482	18,928,028,662	62.5	11,349,003,953	37.5	6,112,867	a
1997	32,336,383,309	20,147,226,145	62.3	12,182,955,785	37.7	6,201,379	a
1998	34,639,656,847	21,502,279,695	62.1	13,130,962,491	37.9	6,414,661	a
1999	36,786,136,937	22,793,062,944	62.0	13,986,108,356	38.0	6,965,637	a
2000	39,200,496,095	24,202,981,172	61.7	14,990,185,170	38.2	7,329,753	a
2001	40,767,753,758	25,034,170,600	61.4	15,725,846,857	38.6	7,736,301	a
2002	41,581,840,812	25,379,005,293	61.0	16,194,919,207	38.9	7,916,312	a
2003	42,590,915,589	25,866,065,725	60.7	16,717,169,849	39.3	7,680,015	a
2004	44,395,547,826	26,892,533,184	60.6	17,494,828,170	39.4	8,186,472	a
2005	46,123,343,358	27,897,078,736	60.5	18,217,892,871	39.5	8,371,751	a
2006	48,373,174,994	29,174,561,654	60.3	19,190,223,246	39.7	8,390,094	a
Total	862,641,549,921	554,262,495,993	64.3	308,177,569,073	35.7	201,484,854	a

SOURCE: Author's calculations based on the 2006 EPUF.

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

a. Less than 0.05 percent

Chart A1.
Number of individuals in EPUF with capped Social Security taxable earnings during 1937–1950, by year of birth and sex



SOURCE: Author's calculations based on the 2006 EPUF.

Notes

Acknowledgments: The author gratefully acknowledges the assistance of many individuals in the process of creating the 2006 Earnings Public-Use File and this article: John Hennessey, for graciously sharing his programming and methodological expertise; Russell Hudson, for his programming expertise and sharing his vast knowledge of the earnings data; Paul Davies, for his guidance and support throughout the project; Scott Muller, Greg Diez, and Bill Piet, for sharing programmatic and earnings knowledge; Sirisha Anne, Brenda South, Stu Friedrich, and Randall Miles, for their assistance in providing the data extracts used in the process of creating EPUF; Bill Davis and Justin Ronca, for their statistical expertise; and Susan Grad, Howard Iams, Hilary Waldron, and Anya Olsen, for their comments on previous drafts of the article.

[1] The MEF contains all of the earnings data collected to administer the Social Security programs.

[2] Noncovered earnings are wage and salary income not covered under the Social Security programs.

[3] For a discussion of SSA earnings data, see Olsen and Hudson (2009).

[4] This limitation is discussed later in the article.

[5] For historical changes in coverage, see SSA (2009, Table 2.A1).

[6] SSA's Office of Research, Evaluation, and Statistics uses this measure to generate its published estimates of earnings.

[7] Technically, this is not always correct because some earnings are reported on the Earnings Suspense File and not posted on the MEF. For a detailed discussion, see GAO (2005).

[8] The average wage index is calculated annually using wages subject to federal income taxes and contributions to deferred compensation plans. The index is used in determining an individual's retirement benefit amount as well as to determine several other key dollar amounts in the administration of the Social Security programs. For more detail, see SSA (2010).

[9] This process is done because of the prohibitive costs associated with going back to the microfilm to determine the exact number of QCs earned by individuals with earnings during the 1937–1946 period.

[10] For individuals with earnings during this period who did not meet program criteria for benefits or coverage (using this technique to estimate QCs), a detailed manual search of microfilm records determines if the individual was eligible for benefits and, if so, the benefit amount.

[11] Including these flags would have created serious data disclosure problems because they provide much more individually identifiable information.

[12] For a detailed discussion of deferred earnings in SSA data, see Pattison and Waldron (2008).

[13] For a description of the three components of the SSN (area, group, and serial number), see Puckett (2009).

[14] Nonoverlapping samples are important from a data disclosure perspective if SSA decides to release any additional public-use data files.

[15] The sample design is equal to the ratio of the variance of the systematic random sample for EPUF and the variance assuming a simple random sample without replacement.

[16] The Numident is a master file of all SSNs ever assigned. It contains the identifying information given when an individual applies for an SSN.

[17] This includes 319 individuals who were ultimately removed from the underlying EPUF sample because they were also in the New Beneficiary Data Systems (discussed in the data disclosure section of the article).

[18] The source for YOB data in EPUF is the MEF summary record, which may not contain the same value that appears in the Numident or Master Beneficiary Record files.

[19] See the text box for a brief description of the other public-use data files that contain earnings data from Social Security administrative files. To evaluate the disclosure risk for individuals in EPUF who are included in other publicly available data files, SSA considers four key points: the potential magnitude of the overlap between files, the possibility of matching records across files with any certainty, the additional information that would be revealed in the unlikely event that records could be matched with any certainty, and the ability to reidentify someone in EPUF based on publicly available data.

[20] Thus, the total number of individuals removed from the underlying EPUF sample because of data cleaning and data disclosure is 28,770.

[21] The SSB is a set of files containing individual-level data synthesized from Census Bureau's Survey of Income Program Participation (SIPP) results linked to various Social Security administrative files. The Census Bureau produces the SSB, which is the result of an interagency project that also includes SSA and IRS.

[22] Under random rounding, a multiple of the rounding base will not change, while a number that is not a multiple of the base will round to either of the two closest multiples of the base. For example, when random-rounding to a base of $25, the value $550 will not change. However, a value of $562 may round to either $550 or $575. The random-rounding process provides some uncertainty about the actual number reported on the individual's SSA earnings record. For example, if the earnings contained in EPUF are $550 we know the actual amount reported to SSA was between $526 and $574. The interval of uncertainty increases with the amount of earnings reported.

[23] Unless otherwise noted, the numbers of records and the amounts of earnings shown in the charts and tables are unweighted.

[24] Additionally, in many years, the percentage of individuals with earnings at or above the taxable maximum differs substantially by sex.

[25] SSA cannot determine married-couple or parent-child relationships in the file based on the information derived from the MEF. SSA establishes such linkages after an individual applies for benefits. In any event, linking currently or previously married individuals or indicating a familial relationship in EPUF would create serious data disclosure risks.

[26] An electronic folder (created when an individual applies for benefits) contains the certified earnings record, which summarizes all the earnings records from the MEF and provides the basis for computing an individual's benefits.

[27] Enumeration is the process by which SSA assigns a unique SSN for every person in order to create a work and benefit record for the Social Security program. SSA verifies all of the information on the SSN application.

[28] Earnings that cannot be properly assigned to an individual's earnings records on the MEF are placed on the Earnings Suspense File. The amount of earnings assigned to the Earnings Suspense File has grown dramatically over the past 20 years (GAO 2005).

[29] In March 2011, budget constraints led the SSA to suspend the production and mailing of printed statements. The agency is working toward developing an online alternative.

[30] This chart omits individuals whose sex is unknown. Appendix Table A-2 shows distributions by sex, including individuals of unknown sex.

[31] Recall that any earnings reported before the individual was 15 years old were assigned a value of zero for data disclosure reasons.

[32] Appendix Tables A1–A2 present the data underlying Charts 8–9.

References

[Board of Trustees] Board of Trustees of the Old-Age, Survivors, and Disability Insurance Trust Funds. 2010. *Annual Report of the Board of Trustees of the Old-Age, Survivors, and Disability Insurance Trust Funds, 2010.* Washington, DC: SSA.

[GAO] Government Accountability Office. 2005. *Better Coordination Among Federal Agencies Could Reduce Unidentified Earnings Reports.* Report no. GAO-05-154. Washington, DC: Government Printing Office.

Olsen, Anya, and Russell Hudson. 2009. "Social Security Administration's Master Earnings File: Background Information." *Social Security Bulletin* 69(3): 29–45.

Pattison, David, and Hilary Waldron. 2008. "Trends in Elective Deferrals of Earnings from 1990–2001 in Social Security Administrative Data." Research and Statistical Note No. 2008-03. Washington, DC: SSA.

Puckett, Carolyn. 2009. "The Story of the Social Security Number." *Social Security Bulletin* 69(2): 55–74.

[SSA] Social Security Administration. 2009. *Annual Statistical Supplement to the Social Security Bulletin, 2008*. Washington, DC: SSA.

———. 2010. "Automatic Increases: National Average Wage Index." http://www.socialsecurity.gov/OACT/COLA/AWI.html.

Caregiver Credits in France, Germany, and Sweden: Lessons for the United States

by John Jankowski*

Recently, analysts in the United States (US) have proposed adopting caregiver credits, or pension credits, provided to individuals for time spent out of the workforce while caring for dependent children and sick or elderly relatives. The primary objective of these credits, used in almost all public pension systems in the European Union, is to improve the adequacy of old-age benefits for women whose gaps in workforce participation typically lead to fewer years of contributions, lower lifetime average earnings, and consequently lower pensions. This article examines caregiver credits in the context of future reforms to the US Social Security system, with attention given to the adequacy of current spouse and survivor benefits and how changing marital patterns and family structures have increased the risk of old-age poverty among certain groups of women. It then analyzes caregiver credit programs in selected countries, with particular focus on design, administration, and cost.

Introduction

In recent years, analysts and policymakers have directed increasing attention to securing the future of Social Security's old-age social insurance program. To date, the majority of proposed reforms have focused almost exclusively on the long-term fiscal sustainability of the program, with measures that would reduce benefits (for example, through an increase in the full retirement age (FRA)), increase revenues (for example, through an increase in the payroll-tax ceiling), or a combination of both. At the same time, many scholars have argued for the need to complement any such reforms with measures that would improve the adequacy of benefits for certain groups, especially those that would be particularly vulnerable to benefit cuts (Reno and Lavery 2009; US Senate 2010). Among the most vulnerable of those groups is that of women aged 65 or older, a group with poverty rates almost twice that of men in the same age group. According to Social Security Administration (SSA) figures, 11.9 percent of women aged 65 or older fell below the poverty line in 2008 compared with 6.7 percent of men (SSA 2008). Poverty rates were even higher when looking at certain subgroups of women, especially among the nonmarried (16.9 percent), widowed (15.4 percent), and divorced (19.5 percent) categories. Although many factors have led to those high poverty rates, one significant factor is the substantial gap in the labor force participation of many women because of providing unpaid care to children and sick or elderly relatives. Those gaps often result in shorter work histories, lower average lifetime earnings, and consequently lower benefits at retirement than men. This is especially a concern for the significant number of women who are not eligible for current-law spouse or survivor benefits, often called auxiliary benefits, based on the contribution record of a spouse.

Selected Abbreviations

AVPF	*l'assurance vieillesse des parents au foyer* (France's first form of credit)
CNAV	*la Caisse Nationale D'Assurance Vieillesse* (National Old-Age Pension Insurance Fund)
DB	defined benefit
DC	defined contribution

* *John Jankowski is a research analyst with the Division of Program Studies, Office of Research, Evaluation, and Statistics, Office of Retirement and Disability Policy, Social Security Administration.*

Selected Abbreviations—*Continued*

DRV-Bund	*Deutsche Rentenversicherung Bund* (German statutory pension insurance scheme)
EU	European Union
FRA	full retirement age
MDA	*les majorations de durée d'assurance* (France's second form of credit)
NDC	notional defined contribution
OECD	Organisation for Economic Co-operation and Development
PIA	primary insurance amount
SSA	Social Security Administration
US	United States

This article focuses on an often-considered measure to improve the adequacy of Social Security's retirement benefits for women: the introduction of caregiver credits provided for time spent out of the workforce while caring for dependent children and sick or elderly relatives. Throughout the majority of European Union (EU) member states, caregiver credits have become an established component of public pension programs used by countries to pursue a number of objectives, including improving benefit adequacy for caregivers (primarily women but also men), promoting higher fertility rates, facilitating the return to the labor force following childbirth, and simply rewarding the act of providing unpaid care. Through an analysis of three of the longest running caregiver credit programs—in France, Germany, and Sweden—this article shows how these programs have been developed abroad. The article especially focuses on how these countries have addressed three key challenges: (1) the policy challenge of designing a program that targets a specific segment of the population, (2) the administrative challenge of determining an individual's eligibility for the credits, and (3) the financial challenge of funding the additional benefit.[1]

The article first provides background on auxiliary benefits under the current-law Social Security program and examines the adequacy of those benefits, given recent changes in marital patterns and family structures in the United States (US). It then profiles caregiver credit programs in France, Germany, and Sweden. Finally, it concludes by discussing whether the experience of these countries provides any insight into the potential adoption of caregiver credits into the US Social Security program.

Protection for Caregivers under the Current US Social Security System

Under current program rules, caregivers are covered only indirectly by Social Security through spouse and survivor benefits. This section describes the current program and analyzes its effectiveness in reducing the risk of poverty among older women.

Program Rules

Social Security provides auxiliary benefits to the spouses and survivors of retired, disabled, and deceased workers. Table 1 summarizes the eligibility requirements and amounts of those benefits. Under current law, the spouse of a retired worker is eligible to receive 50 percent of the retired worker's primary insurance amount (PIA) if claimed at the FRA. Individuals who are eligible for benefits based on their own work history and their spouse's work history—referred to as *dually entitled* individuals—receive the worker's benefit plus the difference between that amount and the benefit they would receive as a spouse. For example, if a woman was dually entitled, she would receive the full benefit based on her own earnings record plus the difference between that amount and the benefit she would receive as a spouse (that is, 50 percent of her husband's benefit). Spouse benefits are also paid to individuals who are divorced, provided they were married to an insured worker for at least 10 years and are currently unmarried.

Social Security also provides benefits to surviving spouses of deceased workers. A widow(er) retiring at the FRA is eligible to receive 100 percent of the deceased worker's PIA plus any additional amount the deceased worker was entitled to receive based on delayed retirement credits. A reduced benefit, ranging from 71.5 percent to 99.9 percent of the deceased worker's PIA, is paid as early as age 60 (age 50 if disabled). As with the spouse's benefit, a divorced widow(er) is eligible for this benefit if he or she was married to the deceased worker for at least 10 years. With the exception of a few specific circumstances, a widow(er) must have been married to the deceased worker for at least the 9 months immediately prior to the worker's death.

Social Security's auxiliary benefits have become more generous since first introduced in 1939. Under the 1939 Amendments to the Social Security Act, the wife of a retired worker was eligible to receive a benefit equal to 50 percent of her husband's PIA provided she was aged 65 or older, and a widow in the same age group was eligible to receive 75 percent of the deceased husband's PIA if benefits were claimed

Table 1.
Eligibility requirements and benefit amounts, by type of auxiliary benefit

Eligibility and benefit amount determinants	Spouse's benefit	Widow(er)'s benefit
	Eligibility	
Basic	Aged 62 or older	Aged 60 or older, or aged 50–59 and disabled
	Worker is entitled to retirement or disability benefits	Deceased worker died fully insured
	PIA is less than one-half of the retired worker's PIA	PIA is less than the deceased spouse's PIA
Marital status	Married	Unmarried, or remarried after age 60
		Was married to the deceased worker for at least the 9 months prior to the worker's death (with a few exceptions)
	If divorced, marriage duration of at least 10 years and currently unmarried	If divorced, marriage duration of at least 10 years and currently unmarried, or remarried after age 60
	Benefit amounts	
Benefit rate (as a percentage of PIA)	50 percent	100 percent
Other factors affecting benefit amounts	Reduced if claimed before the FRA	Reduced if claimed before the FRA
	Reduced if beneficiary is entitled to the benefit based on his or her own work history[a]	Limited to the higher of the amount the deceased worker would receive if alive, or 82.5 percent of his or her PIA
		Increased if the deceased worker earned delayed retirement credits

SOURCE: Author's compilation based on the *Social Security Handbook* (SSA 2007); Weaver (2010).

a. A person who is eligible for both a spouse benefit and a benefit based on his or her own work history is said to be dually entitled. If the spouse benefit exceeds the benefit based on the person's own work history, then the full retired-worker benefit is paid with the difference between the retired-worker benefit and the spouse benefit being paid as a "top up."

at the FRA by the widow or the worker. Eligibility for spouse and survivor benefits was subsequently extended to men in 1950; in 1965, eligibility was also extended to divorced spouses and divorced survivors with a 20-year marriage history. (The duration-of-marriage requirement was reduced to 10 years in 1977.) In addition, benefit levels for survivor benefits have increased significantly over time, from 75 percent to 82.5 percent of the deceased spouse's PIA in 1961, and to 100 percent in 1972, where it remains today. (By comparison, within the Organisation for Economic Co-operation and Development (OECD), the United States is the only country with survivor benefits equal to 100 percent of the deceased spouse's PIA; most countries offer benefits ranging from 50 percent to 80 percent of the spouse's benefit).

In short, under current program rules, auxiliary benefits are based entirely on marriage, with no direct compensation for unpaid caregiving. Unpaid caregivers are only compensated based on their marital status, which can lead to some caregivers (for example, those in traditional breadwinner families with a single high-earning spouse) receiving generous Social Security benefits and others (for example, those who have never been married or who divorced their spouse prior to meeting the 10-year length-of-marriage requirement) receiving no compensation for their caregiving activities.

The Adequacy of Current Law Auxiliary Benefits

Taking the population as a whole, Social Security has been extremely successful in reducing poverty rates

in the United States. As Table 2 shows, the percentage of persons aged 65 or older falling below the poverty line decreased from 28.5 percent in 1966 to 9.7 percent in 2008.[2] However, those broad trends obscure the significant variation that is evident when looking at the population by sex and marital status, as displayed in Table 3. In 2008, 11.9 percent of women aged 65 or older fell below the poverty line compared with 6.7 percent of men. In addition, there were significant differences across marital categories, with relatively low rates for all married persons aged 65 or older (4.9 percent) compared with the nonmarried (15.5 percent), widowed (14.4 percent), divorced (16.4 percent), and never-married (17.6 percent) categories. Furthermore, a higher percentage of women fell below the poverty line than men across all marital categories, especially in the nonmarried (16.9 percent of women compared with 11.6 percent of men), widowed (15.4 percent of women compared with 10.2 percent of men), and divorced (19.5 percent of women compared with 11 percent of men) categories.

This discrepancy in poverty rates between men and women, and the fact that the gap is wider for certain marital categories, has led many analysts to question the adequacy of auxiliary benefits in the current-law Social Security program. As those analysts note, marital patterns and the structure of the modern family are far different today than they were in the 1930s when Social Security was first enacted. For example, the traditional bread-winner model—consisting of a working husband and a stay-at-home wife—is no longer the norm in American society. This is manifest in the US divorce rate, which has risen dramatically since the 1970s; approximately a third of all marriages currently end within 10 years of marriage, and thus before the 10-year length-of-marriage requirement for auxiliary benefits has been met (Bramlett and Mosher 2001; Tamborini and Whitman 2007). The change in marital patterns is also observed in the percentage of individuals aged 65 or older who have never married (and are therefore by definition ineligible for spouse or survivor benefits), which is projected to increase from 2 percent (men) and 4 percent (women) in 1992 to around 6 percent (men and women) in 2040 (Favreault and Smith 2004).[3] Finally, the structure of the family has also changed in recent decades, with dramatic increases in childbearing among unmarried women—from 18 percent in 1980 to 40 percent in 2007—and in the number of single-parent households—from 5 percent in 1970 to 9 percent in 2006 (Ventura 2009; Census Bureau 2007).

Table 2.
Poverty status of persons aged 65 or older, selected years 1966–2008

Year	Total number (in thousands)	Number in poverty (in thousands)	Percentage in poverty
1966	17,929	5,114	28.5
1967	18,240	5,388	29.5
1968	18,559	4,632	25.0
1969	18,899	4,787	25.3
1970	19,470	4,793	24.6
1971	19,827	4,273	21.6
1972	20,117	3,738	18.6
1973	20,602	3,354	16.3
1974	21,127	3,085	14.6
1975	21,662	3,317	15.3
1976	22,100	3,313	15.0
1977	22,468	3,177	14.1
1978	23,175	3,233	14.0
1979	24,194	3,682	15.2
1980	24,686	3,871	15.7
1985	27,322	3,456	12.6
1990	30,093	3,658	12.2
1995	31,658	3,318	10.5
2000	33,566	3,323	9.9
2005	35,505	3,603	10.1
2008	37,788	3,656	9.7

SOURCE: DeNavas-Walt, Proctor, and Smith (2009).

While these changes have undoubtedly had the effect of reducing the number of women eligible for auxiliary benefits, they are offset by developments in the labor force that have led to more women being eligible for benefits based on their own work history. According to data from the Current Population Survey, the labor force participation rate of women has increased dramatically in recent decades, from approximately 34 percent in 1950 to 60 percent in 2008. During this same period, women's share of the labor force grew from only 30 percent to 46.5 percent. In addition, women's earnings have increased relative to those of men, from around 62 percent in 1979 (the first year for which comparable earnings data are available) to around 80 percent in 2009 (BLS 2010).

Table 3.
Poverty status of persons aged 65 or older, by sex and marital status, 2008

Sex and marital status	Number (thousands)	Percentage below poverty line
	All persons	
All	37,788	9.7
Men	16,308	6.7
Women	21,480	11.9
	Marital status	
Married		
All	20,711	4.9
Men	11,742	4.8
Women	8,969	5.0
Nonmarried		
All	17,077	15.5
Men	4,566	11.6
Women	12,511	16.9
Widowed		
All	10,972	14.4
Men	2,104	10.2
Women	8,868	15.4
Divorced		
All	3,646	16.4
Men	1,359	11.0
Women	2,287	19.5
Never married		
All	1,574	17.6
Men	710	16.8
Women	864	18.1

SOURCE: *Income of the Population 55 or Older, 2008* (SSA 2008, Table 11.1).

That said, women continue to be at a disadvantage in many respects despite these recent gains. For example, they continue to hold more part-time jobs than men, with approximately 25 percent of women usually working part time in 2008 compared with only 11 percent of men. (This figure has remained relatively constant since 1984, when 27 percent of women worked part time.) Furthermore, the enduring gap in women's earnings relative to those of men remains a concern, especially given that women's earnings have seemingly peaked at around 80 percent of men's earnings, with little movement in the past decade (BLS 2010). Because of these trends, women will continue to earn less throughout their lifetimes than men, leading to lower Social Security benefits (and a higher risk of poverty) at retirement.

Because of the higher risk of poverty among women (the data show that this risk is unlikely to diminish in the foreseeable future), significant attention has been directed by analysts and advocates at measures that would improve the adequacy of benefits for women. The rest of this article analyzes one such measure—the possible introduction of caregiver credits to compensate for unpaid caregiving to dependent children and sick or elderly relatives. Caregiver credits have long been an important part of European pension systems, representing one of a number of strategies used to combat poverty among certain vulnerable populations.[4]

Improving Benefit Adequacy through Caregiver Credits

In recent decades, caregiver credits have become a near-universal component of public pension systems in higher-income OECD countries.[5] As mentioned earlier, the primary objective of those systems is to improve benefit adequacy for women, whose separations from the labor force to provide care for dependent children and sick or elderly relatives often lead to lower average earnings and lower benefits at retirement. At the same time, caregiver credits are used for a number of secondary objectives, including promoting higher fertility rates, creating an incentive to return to work following childbirth, and simply rewarding the act of providing unpaid care. This mix of objectives has led to significant variation in the design of caregiver credit programs across Europe, as discussed later.

Although caregiver credit programs have been around as early as 1945, with the adoption of a child-care pension bonus in France, widespread adoption only started to gain momentum around the 1980s.

During that time, caregiver credit programs went into effect in Sweden (1970s), Germany (1986), Norway (1992), and Switzerland (1998), among others. A second wave of pension reforms in the early 2000s brought the introduction of caregiver credits in Luxembourg (2002), Austria (2005), and Finland (2005). Subsequent reforms in many of those countries have had the result of expanding and strengthening these benefits, for example by extending eligibility to men and by expanding the programs to include not only periods caring for dependent children, but also periods caring for sick or elderly relatives.

This widespread adoption of caregiver credits in almost all member states of the EU is the result of a number of factors, with a few of the most important being (1) the gradual reduction in recent decades in the generosity of survivor benefits and the resulting need for new ways to protect women; (2) the reduction in the generosity of public defined benefit (DB) programs and the adoption in some countries of mandatory defined contribution programs, which more closely link old-age benefits to a worker's lifetime earnings; (3) the increased emphasis in many countries on family friendly policies that aim at reconciling childcare with employment; and (4) the increased dialogue (and ultimately cross-national policy coordination) that takes place as a result of being a member of the EU.

First, largely as a cost-cutting measure, countries have gradually reduced the generosity of survivor benefits in recent years, opting in many cases to replace those benefits with other measures, such as caregiver credits and earnings sharing.[6] In Germany, for example, the benefit rate for widows was decreased in 2002 from 60 percent to 55 percent of the spouse's pension, and the indexation of survivor benefits was adjusted downward. In Sweden, the length of time survivors below the FRA could receive benefits was reduced. Reforms in other countries have replaced the payment method from a pension to a less generous lump-sum payment (for example, Denmark and the United Kingdom); made the benefit means tested (for example, Greece); or phased out the benefit for widows altogether (for example, Australia and Latvia). (For further discussion, see James (2009) and Monticone, Ruzik, and Skiba (2008).) In an attempt to lessen the impact of those reductions, countries have increasingly been turning to measures such as caregiver credits.

Second, to lessen the burden placed on public pension systems by demographic aging, many countries have implemented reforms to their pension systems in recent years, including reductions in the generosity of public DB pension benefits and the introduction of defined contribution (DC) pension programs to supplement, and in some cases replace, existing public DB programs.[7] France, for example, increased its legal retirement age from 60 to 62 in 2010 and is steadily increasing the number of contribution years required for a full pension from 40 years in 2003 to 41.5 years by 2020. To mitigate the potential impact those changes could have on women, the French government has implemented (or further expanded) a number of policies to increase women's eventual pension benefits.[8] In Sweden, a 1999 pension reform law replaced the former pay-as-you-go DB system with a pay-as-you-go notional defined contribution (NDC) system,[9] supplemented by privately managed individual accounts. Under that new system, caregiver credits—along with other measures, including unisex lifetables and a minimum pension guarantee—are utilized to ensure that women are not disproportionately hurt by the system's closer linkage of benefits to contributions.

Third, countries across the EU have been actively pursuing a number of family friendly policies that improve flexibility for working parents, remove barriers to employment (particularly for women), and reverse the decline in fertility and birth rates (currently below replacement levels in every EU member state except Ireland[10]). That process has led to the adoption of a number of programs in recent decades, including not only caregiver credits, but also parental leave, family allowances, and childcare services. For example, in 1992, an EU directive (92/85/EEC) was passed that obligates states to provide a minimum of 14 weeks of paid maternity leave for childbirth.[11] In practice, almost all EU member states have passed more generous national leave policies, including Italy (20 weeks of maternity leave), Ireland (26 weeks), and France (16 weeks for the first two children and 26 weeks for the third child and subsequent children); see SSA (2010b). In addition, countries have further attempted to remove disincentives to female labor force participation by improving childcare services. In 2002, the European Commission set the target of providing childcare to at least 90 percent of children from age 3 to the mandatory school age and to at least 33 percent of children younger than age 3, by 2010 (EC 2002). Similarly, the EU has also directly promoted the adoption of caregiver credits, with recent studies emphasizing the importance of those credits in improving benefit adequacy for unpaid caregivers (EC 2006a and 2006b). Viewed from this larger context of EU family policy, pension credits are one of

a number of tools used to reward the social contribution of women and to address the potential negative effects that childbirth can have on female labor force participation.

Finally, the EU has also arguably facilitated the expansion of caregiver credits simply by providing a forum for dialogue among the member states, many of which have long advocated the value of those programs. In the area of social protection, the formal manifestation of this repeated cross-national dialogue is the development of a common agenda—seen most recently in the so-called "Social Policy Agenda 2006–2010"—urging national governments to improve labor market conditions for women. At a more general level, the EU encourages an ongoing dialogue among policymakers in its member states through the "open method of coordination" (OMC), a framework for political cooperation that involves agreement on common objectives and common indicators to track member states' progress. The most recent objectives adopted in March 2006 include combating poverty and social exclusion, especially among the most vulnerable groups (including women). By creating a set of common goals and subsequently evaluating progress toward achieving them, the OMC allows EU member states to learn from each other, which can lead in many areas to a degree of policy convergence, with caregiver credits being just one example.

While caregiver credits have a long history in the EU, proposals to introduce credits in the United States have not met with success. To a large extent, this lack of US enthusiasm stems from three major concerns: (1) how to design a program that targets the credits to the correct population, (2) how to address the administrative challenges of such a program, and (3) how to pay for this new benefit. The rest of this section profiles France, Germany, and Sweden to examine how these countries have confronted those challenges.

Designing Caregiver Credit Programs

One of the main concerns voiced by many analysts looking at the possible introduction of caregiver credits in the United States is how to design those credits so that they reach the targeted population. Under certain designs, there is a danger that the credits would go to higher-income parents—those who can afford to take significant periods of time off from work—rather than to lower-income parents—who must combine caregiving with at least part-time work. That would be the case for one of the narrowest forms of caregiver credits, whereby credits are awarded only to parents who leave the workforce entirely. As this section shows, however, the three countries examined have all more precisely targeted benefits to certain types of caregivers.

When designing a program of caregiver credits, a number of issues must be addressed, including the following: (1) the number of years an individual will be eligible to receive the credits; (2) how the credits will be calculated; (3) who is eligible to receive the credits (that is, a mother, a father, or both); and (4) whether an individual has to leave the labor force completely to receive the credit. Table 4 provides a brief description of caregiver credit programs throughout Western Europe, showing a wide variation in the ways in which countries therein have confronted those issues. This variation is largely the result of the diverse goals these programs were designed to achieve, as is clear when looking more closely at some of the specific programs.

In France's general pension scheme—*le régime general d'assurance vieillesse des travailleurs salaries*[12]—there are three different forms of caregiver credits, each meant to achieve various objectives.[13] The first form of credit (*l'assurance vieillesse des parents au foyer*, or AVPF) was introduced in 1972 largely to improve benefit adequacy among lower-income parents who exit the labor force or significantly reduce working hours in order to provide childcare. Under this program, parents who receive certain family benefits (such as the family income supplement, young child allowance, or parental leave allowance) and whose individual earnings are below certain thresholds (17,600 euros or US$23,028 for the first child and 30 percent more for subsequent children) are credited as if they were earning the minimum wage for up to the first 3 years of childcare. The credits are subsequently used upon retirement when calculating the insured person's old-age benefit. Each parent receives the benefit, provided they both meet the eligibility conditions; in practice, however, the benefit is paid predominantly to women, with approximately 33 percent of all women who retired in 2004 receiving the credit compared with only 1.5 percent of men. (In 2004, nearly 2 million people received AVPF, of which 92 percent were women.) On average, women born after 1945 receive 3 years of these credits (Bonnet, Buffeteau, and Godefroy 2006).

The second form of credit (*les majorations de durée d'assurance*, or MDA) targets women who do not benefit from the means-tested AVPF, especially those who continue to work after childbirth. Under the MDA, which was also introduced in 1972, a parent caring for

Table 4.
Caregiver provisions under public pension programs in selected EU countries

Country	Description of program
Austria	Up to 4 years per child are credited as if earnings were equal to 1,350 euros (US$1,857) a month. In addition, 2 years per child can be used to meet the minimum contribution period for an old-age pension.
Belgium	All employees working for at least 1 year for the same employer are eligible for the so-called "time credit" ("tijdskrediet"), which can count up to 3 years of caring for children as gainful employment. The value of the time credit is the caregiver's earnings before exit from the labor market.
Denmark	Periods spent outside of the labor force providing unpaid care are automatically covered under the universal basic pension program, which awards benefits based on years of residence.
Finland	During paid parental leave periods (a maximum of 11 months), the pension accrues based on 1.17 times the salary on which the family benefit is based. In addition, parents receiving the child home-care allowance for unpaid care to a child younger than age 4 are credited as if earnings were equal to 556.60 euros (US$765.66) per month (in 2006) until the child reaches age 3.
France	A parent caring for a child younger than age 16 for at least 9 years receives up to 2 years of coverage, whether he or she left the workforce or not during that time. In addition, a parent caring for a child younger than age 3, with earnings below a certain threshold (17,600 euros, or US$23,028, for the first child and more for subsequent children) is credited as if he or she had received the minimum wage. Finally, a parent who has raised 3 or more children for at least 9 years before the children reach age 16 receives a 10 percent increase in his or her old-age benefit at retirement.
Germany	The parent who is mostly in charge of caregiving is credited with the equivalent of 1 pension point (equal to the pension entitlement a person with exactly the average income of all insured persons receives for contributions in 1 year) annually for the first 3 years of his or her child's life. Additional credits of up to 1 pension point are provided to parents who continue to work while raising a child up to age 10. In addition, parents who do not work but provide care to 2 or more children under the age of 10 generally receive a bonus of 0.33 pension points.
Luxembourg	A parent caring for a child aged 4 or younger is credited with up to 2 "baby years" for one child or up to 4 for two children (or for a severely disabled child). Baby years are considered as periods of employment and are calculated based on the caregiver's income prior to childbirth or adoption. The credits can be granted to one parent or split between both parents.
Netherlands	Periods spent outside of the labor force providing unpaid care are automatically covered in the basic old-age pension system, which awards benefits based on years of residence.
Norway	Caregivers (including parents providing unpaid care to children younger than age 7 and individuals providing care to disabled, sick, or elderly persons in the home) are credited with 3 pension points (equal to 291,524 kroner, or US$51,797) per year in the supplementary earnings-related pension program.
Spain	Up to 2 years spent outside of the labor force providing care for children count as years of coverage (to fulfill the minimum requirement of 15 years of coverage for an old-age pension).
Sweden	A parent caring for a child aged 4 or younger is credited with the most favorable of the following: (1) earnings the year before childbirth or adoption; (2) 75 percent of average earnings in Sweden; or (3) a fixed amount equal to one income base amount (52,100 kronor, or US$8,028, in 2011). In addition, a parent who has left the labor force to provide care for a disabled child can receive caregiver credits for up to 15 years.
Switzerland	Years of caregiving for children aged 16 or younger are credited as if earnings were equal to three times the minimum pension in the year in which the caregiving parent retires (38,700 francs, or US$36,894, in 2006). The credits can be granted to one parent or split between both parents.
United Kingdom	Periods of caregiving are covered under both pillars of the public pension system (basic state pension and state second pension). For the basic state pension, a parent or caregiver receives credit for each week in which he or she is (1) getting a child benefit for at least one child younger than age 12; (2) an approved foster caregiver, or (3) providing at least 20 hours of care per week for anyone who is receiving an attendance allowance, disability living allowance, or constant attendance allowance. For the second state pension, the caregiver receives entitlement equal to 13,900 pounds (US$22,538) per year if he or she is out of the labor force or earns less than 4,940 pounds (US$8,010) per year and meets one of the following conditions: (1) caregiver for a child younger than age 6; (2) caregiver for a sick or disabled person and receiving home responsibilities protection; or (3) entitled to a carer's allowance.

SOURCE: Author's compilation based on OECD (2009) and various country publications.

a child under age 16 for at least 9 years receives up to 8 quarters (2 years) of coverage per child.[14] (Under the French system, 40.5 years of coverage—increasing to 41 years by 2012 and to 41.5 years by 2020—are necessary to receive a full pension.) In other words, unlike the AVPF, the MDA does not credit a caregiver with a particular earnings level; rather, it simply reduces the number of total quarters MDA beneficiaries (including those with higher incomes) must work to receive a full benefit, allowing them to retire earlier than women without children. All quarters of coverage are generally granted to the mother; however, as of April 1, 2010, the second year of coverage can also be granted to the father or split between both parents upon request.[15] The credit is granted irrespective of the caregiver's work activity, which can lead to the caregiver receiving coverage through MDA and through their own work activity simultaneously.[16] According to the Pensions Advisory Council (*Conseil d'Orientation des Retraites*), more than 70 percent of women in the general scheme—and approximately 90 percent across all schemes—receive pension credits from the MDA upon retirement.

Finally, the third form of caregiver credits in France (*majoration de pension pour trios enfants et plus*) has the primary aim of increasing fertility rates by providing a pension bonus for parents with multiple children.[17] To be eligible, parents must have raised three or more children for at least 9 years prior to the children's attainment of age 16. The bonus, which has been in effect since 1945, is equal to 10 percent of an individual's old-age pension and is awarded to both parents. According to the Pensions Advisory Council, approximately 5.4 million people (or 42 percent of all pensioners) received this bonus in 2004, with the average bonus amounting to 89 euros (US$117) a month, or 1,068 euros (US$1,405) a year.[18]

In Germany and Sweden, caregiver credit programs have also been designed to pursue a number of objectives, including improving the adequacy of benefits for caregivers and increasing the incentives for them to continue working (or to return to work after a brief absence) following childbirth. Under Germany's caregiver credit program (*Kindererziehungszeiten*), the parent who is "mostly" responsible for childcare receives the equivalent of 1 pension point per year for the first 3 years of his or her child's life.[19] The credit is provided for children born after December 31, 1991, and is typically awarded to the mother; however, a father may also receive the credit upon written request to the German statutory pension insurance scheme (*Deutsche Rentenversicherung Bund*, or DRV-Bund). (Parents of children born from 1986—when the caregiver credit program was created—to December 31, 1991, receive credits for only the first year of their child's life.)

In addition, a 2001 pension reform law established additional credits—equal to one-half of the pension points a parent receives as a result of his or her work contributions, up to a maximum (own pension points plus bonus credit) of 1 pension point per year—for parents who continue to work while raising a child aged 3–10. In such a way, the credits provide an incentive for parents to return to work while providing childcare. (The law also provides parents who leave the labor force entirely to provide care for two or more children—one of which is younger than age 10—with an additional one-third of a pension point.)

In Sweden, caregivers are credited in the public pension system for any period of care for children aged 4 or younger. (Adoptive parents receive credits for the first 4 years the child is under their care, until the child reaches age 10.) The parent (mother or father) with the lowest earnings in the year prior to childbirth automatically receives the credit (called *Barnårsrätt*), unless they notify the Swedish Social Insurance Agency that the credits should be granted to the higher-earning spouse. There is no limit to the total number of years in which a parent can receive the credits throughout their lifetime; however, at retirement, benefits cannot be based only on those credits. (A parent must have at least 5 years of covered employment with an average income of at least two income base amounts[20] (102,200 kronor, or US$15,750 in 2010).) Additional requirements stipulate that the child must have been in the parent's custody and physically living with the parent for at least half the year, and both the child and parent must have been living in Sweden the entire year.

Swedish caregiver credits are calculated in three different ways, with each method targeted to specific types of caregivers. (The calculation method used is the one that is most beneficial to each individual caregiver.) Under the first calculation, the credit is equal to the caregiver's earnings in the year before the birth or adoption of the child. This calculation is beneficial for workers who had relatively high earnings in the year prior to childbirth or adoption and who significantly reduce work hours afterwards. Under the second calculation, the credit is equal to 75 percent of the average earnings in Sweden the year before childbirth or adoption. This calculation benefits workers who had

relatively low earnings prior to childbirth or adoption and who reduce work hours significantly. Finally, under the third calculation, the credit is equal to one income base amount (52,100 kronor, or US$8,028 in 2011). This calculation provides a bonus to workers who continue to work approximately the same number of hours as before childbirth or adoption. In addition, it ensures that caregivers who return to work relatively soon after childbirth or adoption are not penalized by that decision.

While caregiver credit programs for childcare have become almost universal across the EU, programs that award credits for time spent providing care to elderly or sick relatives are much less common. Of the three countries analyzed here, only Germany has a program of credits for this type of care.[21] In 1995, Germany introduced a new long-term care insurance program that specifically addressed the burdens placed on caregivers (particularly women) who often are forced to reduce the number of hours they work in order to provide unpaid home nursing care (Federal Ministry of Labour and Foreign Affairs 2009). Under that program, German caregivers receive pension credits for time spent providing unpaid care of at least 14 hours a week. To be eligible, a caregiver must work less than 30 hours a week and the person under care must receive benefits through the long-term care insurance program. The calculation of the credit is a factor of both the number of hours per week the caregiver spends providing unpaid care and the level of nursing care dependency.[22] The pension credits are paid by long-term care insurance and range from about 0.25 pension points to 0.8 pension points per year, with no lifetime limit.

In sum, countries in the EU have taken a variety of approaches in designing their caregiver credit programs. The different approaches have allowed these countries to target specific populations, depending on the objectives that the credits are meant to achieve. In the case of France, the multiple forms of caregiver credits for childcare are meant to achieve a number of objectives, including improving benefit adequacy among lower-income parents, allowing caregivers (including those with high incomes) to retire earlier, and increasing fertility rates. Similarly, that mix of objectives is also apparent in Germany and Sweden, where caregiver credit programs attempt to improve benefit adequacy while at the same time providing a bonus to those persons who combine work with childcare responsibilities. Through these more complex designs, all three countries aim at ensuring that caregiver credits target the intended populations.

Administering Caregiver Credits

In addition to the challenge of designing a caregiver credit program that successfully reaches its targeted population, a second challenge is the administration of the program. Determining an individual's eligibility can be extremely complex to administer, especially in the case of caregiver credits for care provided to sick or elderly relatives (where determining eligibility requires verification that care has been provided). As this section shows, however, the three countries surveyed have all developed the infrastructure necessary to make the administration of their caregiver credit programs virtually automatic.

In France, caregiver credits under the general scheme are administered by the National Old-Age Pension Insurance Fund (*la Caisse Nationale d'Assurance Vieillesse*, or CNAV). To determine an individual's eligibility, CNAV simply requires that parents produce the birth certificate or, in the case of adoption, the adoption certificate. Caregiver credits are automatically awarded to the mother, but a father may also receive the credits by notifying CNAV in writing as to how the credits will be split (up to 4 quarters, or 1 year, of credits can be given to the father). If there is disagreement as to who should receive the credits, CNAV makes a decision based on information provided by the parents. For example, in the case of divorce, CNAV uses the divorce judgment to determine which parent has guardianship of the child(ren) and bases their decision on how to divide the credits on this information.

Under the German system, caregiver credits are administered by the DRV-Bund. When a child is born in Germany, he or she is registered with the registry office, which immediately passes the information on to the DRV-Bund. The credits are then entered into the mother's social insurance record, unless there is a written request by the parents to give the credits to the father. Parents who share childcare responsibilities can also state in advance which months should be credited to each parent, as long as the maximum of 3 pension points (1 pension point per year), shared between both parents, is not exceeded. The process of administering caregiver credits that are provided to persons caring for sick or elderly relatives is equally straightforward. Under the long-term care insurance program,[23] a medical determination is made, on both the level of care dependency and the number of hours of care an individual requires, by the Medical Review Board of the Statutory Health Insurance Funds (*Medizinische Dienste der Krankenkassen*, or MDK), under the

supervision of the Ministry of Social Affairs in each province. Pension contributions are then transferred from long-term care insurance on behalf of the caregiver to the DRV-Bund. As such, the DRV-Bund has very little administrative role in the provision of those caregiver credits, and instead relies on the determination made under the long-term care insurance program by the MDK.

In Sweden, the administration of caregiver credits is also essentially automatic. All of the information needed to process the credits, including information on births, parental relations, custody, and place of residence, is contained in a civil registry maintained by the Swedish Tax Agency (*Skatteverket*). That data is transferred to the Swedish Pensions Agency (*Pensionsmyndigheten*) on a daily basis, along with earnings records, to determine which parent should receive the credits (absent a written request from the parents). As a result of this data exchange, the Swedish Pensions Agency has all the information needed to automatically award the credits, with very little additional effort needed by agency staff. The only administrative difficulties faced were at the program's initial implementation, when much of the information needed to award the credits was not yet computerized.[24]

Funding Caregiver Credits

The final challenge involved in the introduction of a caregiver credit program is how to fund the program. Unlike the other two challenges, which have been addressed in a wide variety of ways, almost all countries are similar in their response to the funding issue, choosing to pay for caregiver credits out of general revenues or other taxes. In France, for example, both the MDA and the pension bonus are paid for by a public fund financed through a variety of earmarked taxes, including taxes on alcohol (D'Addio and Whitehouse 2009). Contributions for the AVPF are paid by the Family Allowance Agency (*Caisse d'allocations familiales*), which transfers the funds directly to CNAV.

Similarly, in both Germany and Sweden, the federal government finances caregiver credits for unpaid childcare through transfers from the state budget to the social security system.[25] In Germany, however, the government has gradually moved from transferring the entire value of the credits to transferring a fixed amount annually, an amount that falls well below the actual cost of the credits (Fultz 2011). Finally, and like the AVPF in France, credits for unpaid care of sick or elderly relatives are paid for by Germany's long-term care insurance program, which transfers the full value of the credits directly to the DRV-Bund.

Naturally, the cost of caregiver credits varies significantly across the countries surveyed depending on the generosity of the individual program. In 2006, France's expenditures were relatively high, with the MDA, the AVPF, and the pension bonus for multiple children representing approximately 13 percent of total pension expenditures in the public pension system. (Of this, 7.4 percent was for the MDA, 1.7 percent was for the AVPF, and 3.9 percent was for the pension bonus.) To put this in perspective, total pension expenditures amounted to approximately 183 billion euros (US$237 billion) in 2006, while the cost for the three credits was approximately 24 billion euros (US$31 billion). Furthermore, the cost of those programs is projected to increase dramatically in coming years, especially that for the AVPF, as more eligible workers reach retirement and claim benefits. (To date, only a small fraction of AVPF-credit beneficiaries has reached retirement age.) According to CNAV, the cost of the AVPF is projected to double between 2004 and 2015.

In Germany, the cost of the childcare credit is also significant, albeit much less than that of France. In 2010, caregiver credits cost the government approximately 12 billion euros (US$16 billion), compared with total pension expenditures of 238 billion euros (US$313 billion). In other words, caregiver credits represented approximately 5 percent of total pension expenditures. That said, the actual cost of the program is projected be much higher in coming decades, as many of the beneficiaries of the credits have not yet reached retirement age.

Finally, the cost of Sweden's caregiver credit program in 2008 was relatively modest compared with the other countries surveyed, making up only 2 percent of total pension expenditures. In 2008, caregiver credits cost the government approximately 5 billion kronor (US$709 million), compared with total pension expenditures at around 234 billion kronor (US$33 billion). That relatively low cost was likely the result of a number of possible factors, including the design of the program; characteristics of the beneficiaries (for example, how they were distributed among the three calculation methods and how quickly they returned to work); and the program's interaction with Sweden's parental leave policy, under which beneficiaries continue to contribute 7 percent of wages for old-age insurance.

Discussion and Conclusion

The extensive experience with caregiver credits in the three countries profiled provides a number of insights with respect to the potential use of credits in the United States. First, all three countries have caregiver credit programs, which are designed to reach specific target populations. In France, caregiver credits pursue a number of different objectives, which has led to the development of three forms of credits aimed primarily at caregivers with low income, caregivers who continue to work after childbirth, and parents of three or more children. A similar mix of objectives applies to Germany and Sweden, where credits are designed to benefit not only women (and increasingly men) who leave the workforce entirely, but also those who combine unpaid caregiving with at least part-time work. It is precisely this mix of objectives that has led to the existence of such varied forms of caregiver credits in these countries, and throughout the EU more broadly.

For the United States, the mix of objectives suggests that any consideration of caregiver credits should begin by focusing on the policy objectives the credits are meant to achieve—whether it is improving benefit adequacy for caregivers (especially those who lack coverage under Social Security's current auxiliary benefits), increasing equity among men and women, or to pursue some other objective or mix of objectives—and then designing a program that pursues those objectives by targeting the intended vulnerable populations. As the European cases show, this targeting can be achieved fairly simply through the qualifying conditions and the calculation method chosen for the credits.

Second, the administration of caregiver credits has not presented any major difficulties in any of the countries profiled. For childcare credits, administration typically involves the parents supplying a birth or adoption certificate to prove guardianship. In Sweden, the process is fully automated, with the government being alerted automatically of births on a daily basis. In the case of the AVPF in France, the administrative process is also simplified by linking eligibility to the receipt of other family benefits.[26] The challenge is certainly greater for caregiver credits provided for unpaid care of sick or elderly relatives, given the need for more detailed information, including proof that a certain number of hours of care has been provided and that an individual is in need of such care. In Germany, however, this process can also be simplified by basing eligibility on the receipt of benefits by the core recipient, benefits that are determined on the basis of the degree of dependency for daily living.

While France, Germany, and Sweden have had remarkably little difficulty administering caregiver credits, the challenges would potentially be greater in the United States, at least initially. For example, much of the data that SSA would require to automate the administration of caregiver credits is either not immediately available or not complete. At present, SSA lacks birth records for all but the youngest generation, and the cost and difficulty of acquiring older records (held in most cases by individual cities or counties) would likely be prohibitive. In addition, the birth records of children are not always linked in SSA files to the records of their parents, a situation that would inevitably lead to many women not automatically getting the credits that they are eligible to receive. That said, the administrative burden could be reduced by simplifying the requirements at the beginning of the program's implementation; for example, by requiring parents, in order to receive the credits, to present a birth certificate at the time that they claim Social Security retirement benefits. (As noted earlier, a similar situation faced Sweden at the implementation of their caregiver credit program, leading the country to simplify the award process.)

Third, the cost of caregiver credits varies considerably across the countries surveyed depending on the design of the specific program, showing that there is nothing inherent in caregiver credit programs that makes them cost prohibitive. In a country such as France, the cost is expectedly high (and is projected to grow rapidly in coming decades) because of having three very generous programs that cover significant proportions of the population. As in Sweden, however, the cost of caregiver credits can be kept relatively low. These examples suggest that the cost of a US caregiver credit program would depend entirely on the specific design that was chosen and the generosity of the new benefit. However, an additional policy issue to keep in mind for the United States is that any new costs associated with caregiver credits would have to be funded in a program that has historically been reluctant to rely on general revenue financing.

While the near-universal adoption of caregiver credit programs across the EU suggests that the challenges of design, administration, and cost are not insurmountable, what is surprising is how little attention has been given to the issue of the effectiveness of those programs. To date, there have been very few studies analyzing the effectiveness of caregiver credit programs, and the studies that do evaluate those programs show mixed results. In their study on Sweden, for example,

Stahlberg and others (2006) found that women have a higher return on their lifetime contributions than men because of caregiver credits, unisex lifetables, and the guaranteed minimum pension. Of those measures, caregiver credits were found to have the least impact on replacement rates, primarily because the other tools have been so effective. (According to Zaidi (2007), the average Swedish woman can expect to have her benefits increased by about 10 percent from childcare credits.) In France, the effect of caregiver credit programs on benefit adequacy is unknown, although the Pensions Advisory Council has noted that the absence of those programs would undoubtedly lead to women having lower retirement benefits and would probably force many of them to work more years to receive a full benefit, than at present.

In the only cross-national study to date that analyzes the effectiveness of childcare credits, D'Addio and Whitehouse (2009) found that credits do unquestionably improve pension entitlements for women. According to their simulations, the absence of caregiver credits in the countries where they now exist would lead to a 3 to 7 percentage point drop in gross replacement rates (for career interruptions between 3 and 15 years). However, there is significant cross-country variation, with credits having relatively little effect on replacement rates in some countries (for example, Denmark, Hungary, and Sweden), and large effects in others (for example, France, Germany, and Luxembourg). This variation is largely the result of the design of pension systems and the presence of other tools (for example, residency-based benefits, minimum income guarantees, and so forth) that mitigate the relative importance of the credits. It should be noted, however, that the study examined replacement rates of women as a whole; further dividing the populations into subgroups of women (particularly by income) would very likely show the impact of credits to be stronger on some subgroups rather than others.

Despite the relative lack of studies on the effectiveness of caregiver credits in the EU, credits appear to have at least a modest impact on improving benefit adequacy for many women across the region. The question to be explored and answered, however, is whether a similar effect would occur if caregiver credits were adopted in the United States. In the international literature on this defining issue, studies considering the impact of caregiver credits in the United States have also produced mixed results, largely as a result of the assumptions used and the specific form of credits used. Favreault and Sammartino (2002), for example, considered the potential impact of adding caregiver credits (specifically, crediting parents with half of the average wage for up to 5 total years in which they provide care to a child younger than age 6) as a supplement to current auxiliary benefits. The authors found that while the credits would have modest effects overall, they would be particularly well-targeted to women at the bottom of the lifetime earnings distribution (see also Favreault and Steuerle (2007)). Similar results are shown in studies that consider caregiver credits in a situation where current spousal benefits are eliminated; it was found that those credits would be more effective than current spousal benefits at reducing poverty for low-income groups and minorities (Herd 2006).

In contrast, other studies have been more pessimistic on the potential impact of credit proposals. Iams and Sandell (1994), for example, considered the poverty-reducing effect of dropout years—where up to 5 years of unpaid caregiving are excluded from the benefit calculation—and found that credits had very little impact and were targeted primarily at higher-income women. According to the authors' results, most potential beneficiaries will receive auxiliary benefits at retirement, thus mitigating the need for caregiver credits. What these studies suggest is that the effectiveness of caregiver credits on old-age poverty rates will vary significantly depending on the design of the credits (including whether a parent is awarded a fictional salary for years of caregiving, or if those years are simply excluded from the benefit calculation) and on how the credits would fit into the current Social Security system (that is, as a replacement or as a supplement to current-law auxiliary benefits).

In short, the EU experience shows that caregiver credits can be designed in multiple ways and often for multiple objectives, including improving benefit adequacy for caregivers (primarily women), promoting higher fertility rates, facilitating the return to the labor force following childbirth, and rewarding the act of providing unpaid care. The specific caregiver credit design chosen has a direct impact on how many individuals are eligible for the credits and, consequently, how much the credits cost. In addition, while this article has focused specifically on caregiver credits in the EU, it bears repeating that these credits are only a small part of a larger set of measures undertaken in these countries to protect women. Other measures, such as minimum pension guarantees and a broad range of family benefits, are used alongside caregiver credits to protect the most vulnerable populations.

Notes

Acknowledgments: The author is grateful to Dalmer Hoskins for his thorough review of many drafts of the article and to Elaine Fultz, Howard Iams, and Kathleen Romig for their helpful comments and suggestions. Thanks is also given to Cyril Cosme, Dina Frommert, and Arne Paulsson for the invaluable information they provided on the caregiver credit programs in France, Germany, and Sweden, respectively.

[1] These challenges were highlighted in a report by the Government Accountability Office (2009) that considered various measures to improve the adequacy of benefits among certain vulnerable populations.

[2] Evaluating the causal relationship between Social Security and poverty is difficult, as lower Social Security benefits would quite likely induce individuals to save more of their private income for retirement. However, Engelhardt and Gruber (2004) have shown that Social Security has been the dominant factor in lowering poverty rates across the US population.

[3] See also Smith and Toder (2005) and Tamborini (2007).

[4] It must be emphasized that caregiver credits are only a part of the full package of programs utilized across the EU to reduce poverty and to meet other social insurance goals. Other programs that are used to increase benefit adequacy among women (including those affecting women without children, who are ineligible for caregiver credits) include minimum benefit guarantees, pension splitting, and joint pensions.

[5] Among the OECD countries with earnings-related public pension programs, only the United States, Portugal, and Turkey have programs that do not either implicitly—that is, through generous residency-based, first-pillar benefits that cover periods spent outside of the workforce for the purpose of caregiving—or explicitly acknowledge years of unpaid caregiving (D'Addio and Whitehouse 2009).

[6] With earnings sharing (often called "pension splitting"), pension credits earned throughout marriage can be equally shared by both spouses. Pension splitting is often mandatory in the case of divorce (for example, in Canada and Germany).

[7] Under DC programs, the amount of a worker's pension is directly dependent on the amount of contributions made throughout the worker's career. As a result, women tend to reach retirement with much lower resources than men.

[8] The 2010 reform helps women earn higher pensions by fully taking into account cash maternity benefits as earnings when calculating entitlement to retirement benefits (SSA 2010a). This is in addition to the multiple forms of caregiver credits already in place, as discussed elsewhere in this article.

[9] NDC schemes are variants of contributory social insurance programs that tie benefit entitlements more closely to contributions. A hypothetical account is created for each insured person, which comprises all contributions during the person's working life. A pension is calculated by dividing the contribution amount by the average life expectancy at the time of retirement and indexing it to various economic factors. When benefits are due to be paid, the individual's notional account balance is converted into a periodic pension payment (SSA 2010b).

[10] According to data from Eurostat (2010), the statistical office of the EU, the average fertility rate across the 27 EU member states was only 1.6 in 2008, well below the 2.1 replacement level. The countries with the highest fertility rates were Ireland (2.10), France (2.01), the United Kingdom (1.96), and Sweden (1.91). For more information, see http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Fertility_statistics.

[11] By comparison, in the United States the Family Medical Leave Act (FMLA) allows eligible employees to take up to 12 weeks of unpaid leave for the birth or adoption of a child.

[12] The French pension system includes a large number of separate pay-as-you-go programs. The general scheme is the largest, covering the vast majority of workers in the private sector and approximately 72 percent of the entire labor force. In comparison, the second largest scheme in the country (for public-sector workers) covers approximately 18 percent of the labor force.

[13] The objectives of caregiver credits are not always explicitly stated at their adoption. Often, they are meant to achieve a mix of objectives simultaneously.

[14] Adoptive parents are also eligible for MDA.

[15] The extension of eligibility to men was the direct result of a ruling of the European Court of Justice that found France to be in violation of the EU's gender discrimination laws. Those laws have led to many countries adopting gender-neutral caregiver credits, whereby the credit is available to either parent. (In practice, however, the credits predominantly benefit women.)

[16] Individuals who are part of multiple pension schemes only receive caregiver credits from one of the schemes.

[17] France currently has the highest total fertility rate in Western Europe, with an average of 1.97 children per woman. In comparison, the total fertility rate is 1.67 in Sweden and 1.42 for Germany (Central Intelligence Agency 2010). While a number of variables have an impact on those rates, generous family benefits have likely had some impact on France's comparatively high fertility rate.

[18] See Conseil d'Orientation Des Retraites (2008).

[19] In Germany, retirement benefits are based on a point system, with 1 pension point equal to the pension entitlement a person with exactly the average income of all insured persons would receive for his or her contributions in 1 year. A worker's pension is equal to his or her total lifetime individual earnings points multiplied by a

pension factor of 1.0 and the pension value (currently set at 27.20 euros, or US$37).

[20] Income base amounts are set each year by the government, based on income trends.

[21] The United Kingdom and Norway also award credits for care provided to sick or disabled relatives. The Swedish pension system provides caregiver credits to parents who provide care to a disabled child, but not to a disabled or sick elder relative. To receive credit for the care of a disabled child, the parent must have fully exited the labor force to take care of the child. Those credits are awarded up to a maximum of 15 years.

[22] There are three levels of nursing care dependency, based on the severity of needs.

[23] Long-term care insurance was introduced into Germany's social insurance system in 1995 and covers almost the entire population. In 2006, the program was financed on a pay-as-you-go basis by employee/employer contributions of 1.7 percent of gross earnings (split equally between the employer and employee), up to an income ceiling of 3,562.50 euros (US$4,976.10) per month (see Arntz and others (2007)).

[24] To address this situation, the requirements for the program were initially simplified to suit the information that was available.

[25] For Sweden, this only applies to the caregiver credit discussed earlier. However, under Sweden's parental leave policy, parental benefits are treated as covered earnings for pension purposes. Beneficiaries of parental benefits continue to contribute the 7 percent that is normally withheld from their wages for old-age insurance, while the social insurance agency pays the employers' share of 10.2 percent from general revenues (Fultz 2011).

[26] In Sweden, there is a similar linking of benefits under the parental leave policy.

References

Arntz, Melanie, Ralf Saccheto, Alexander Spermann, Susanne Steffes, and Sarah Widmaier. 2007. "The German Social Long-Term Care Insurance: Structure and Reform Options." IZA Discussion Paper Series No. 2625. Bonn, Germany: Institute for the Study of Labor.

BLS. *See* Bureau of Labor Statistics.

Bonnet, Carole, Sophie Buffeteau, and Pascal Godefroy. 2006. "Effects of Pension Reforms on Gender Inequality in France." *Population* 61(1): 41–70.

Bramlett, Matthew, and William Mosher. 2001. "First Marriage Dissolution, Divorce, and Remarriage: United States." Advance Data from Vital and Health Statistics No. 323. Hyattsville, MD: National Center for Health Statistics.

Bureau of Labor Statistics. 2010. *Highlights of Women's Earnings in 2009*. Report 1025. Washington, DC: BLS.

Census Bureau. 2007. "Single-Parent Households Showed Little Variation Since 1994." Census Bureau Reports. Press release (March 27). Washington, DC: Census Bureau.

Central Intelligence Agency. 2010. *The World Factbook 2010*. Washington, DC: CIA. https://www.cia.gov/library/publications/the-world-factbook/index.html.

Conseil d'Orientation des Retraites. 2008. *Retraites: Droit Familiaux et Conjugaux*. http://www.cor-retraites.fr/IMG/pdf/doc-1052.pdf.

D'Addio, Anna, and Edward Whitehouse. 2009. "Pension Entitlements of Women with Children: The Role of Credits within Pension Systems in OECD and EU Countries." Draft paper. OECD Social, Employment and Migration Working Paper Series. Paris, France: OECD.

DeNavas-Walt, Carmen, Bernadette Proctor, and Jessica Smith. 2009. *Income, Poverty, and Health Insurance Coverage in the United States: 2008*. US Census Bureau, Current Population Reports, P60-236. Washington, DC: US Government Printing Office.

[EC] European Commission. 2002. *Presidency Conclusions*. Report presented at the Barcelona European Council (March 15 and 16). Barcelona, Spain: EC.

———. 2006a. *Joint Report on Social Protection and Social Inclusion*. Luxembourg: Publications Office of the European Union.

———. 2006b. "Minimum Pensions and Older Women's Poverty." Peer Review and Assessment in Social Inclusion Discussion Paper. Belgium: EC.

Englehardt, Gary, and Jonathan Gruber. 2004. "Social Security and the Evolution of Elderly Poverty." NBER Working Paper No. 10466. Cambridge, MA: NBER.

Eurostat. 2010. *Fertility Statistics*. Luxembourg: Publications Office of the European Union. http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Fertility_statistics.

Favreault, Melissa, and Frank Sammartino. 2002. *The Impact of Social Security Reform on Low-Income and Older Women*. Washington, DC: Urban Institute.

Favreault, Melissa, and Karen Smith. 2004. "A Primer on the Dynamic Simulation of Income Model (DYNASIM3)." The Retirement Project Discussion Paper Series No. 02-04. Washington, DC: Urban Institute.

Favreault, Melissa, and C. Eugene Steuerle. 2007. "Social Security Spouse and Survivor Benefits for the Modern Family." The Retirement Project Discussion Paper Series No. 07-01. Washington, DC: Urban Institute.

Federal Ministry of Labour and Foreign Affairs. 2009. *Social Security at a Glance*. http://www.bmas.de/EN/Service/Publications/social-security-at-a-glance-365.html.

Fultz, Elaine. 2011. *Noncontributory Pension Crediting for Caregivers: Policy in Finland, France, Germany, Sweden, the United Kingdom, Canada, and Japan*. Washington, DC: Institute for Women's Policy Research.

Government Accountability Office. 2009. *Social Security: Options to Protect Benefits for Vulnerable Groups When Addressing Program Solvency.* Report no. GAO-10-101R. Washington, DC: GAO.

Herd, Pamela. 2006. "Crediting Care or Marriage? Reforming Social Security Family Benefits." *Journals of Gerontology, Series B: Psychological and Social Sciences* 61(1): S24–S34.

Iams, Howard, and Steven Sandell. 1994. "Changing Social Security Benefits to Reflect Child-Care Years: A Policy Whose Time Has Passed?" *Social Security Bulletin* 57(4): 10–24.

James, Estelle. 2009. "Rethinking Survivor Benefits." SP Discussion Paper No. 0928. Washington, DC: World Bank.

Monticone, Chiara, Anna Ruzik, and Justyna Skiba. 2008. *Women's Pension Rights and Survivors' Benefits: A Comparative Analysis of EU Member States and Candidate Countries*. ENEPRI Research Report No. 53. Brussels: European Network of Economic Policy Research Institutes.

[OECD] Organisation for Economic Co-operation and Development. 2009. *Pensions at a Glance 2009: Retirement-Income Systems in OECD Countries*. Paris, France: OECD.

Reno, Virginia, and Joni Lavery. 2009. *Fixing Social Security: Adequate Benefits, Adequate Financing.* Washington, DC: National Academy of Social Science.

Smith, Karen, and Eric Toder. 2005. "Changing Demographics of the Retired Population." Older Americans' Economic Security Series Brief No. 5. Washington, DC: Urban Institute.

[SSA] Social Security Administration. 2007. *Social Security Handbook*. Washington, DC: Government Printing Office. http://www.socialsecurity.gov/OP_Home/handbook/.

———. 2008. *Income of the Population 55 or Older, 2008*. Washington, DC: Government Printing Office. http://www.socialsecurity.gov/policy/docs/statcomps/income_pop55/2008/index.html.

———. 2010a. "Focus on France." *International Update* (December). http://www.socialsecurity.gov/policy/docs/progdesc/intl_update/2010-12/index.html.

———. 2010b. *Social Security Programs Throughout the World: Europe, 2010*. Washington, DC: Government Printing Office. http://www.socialsecurity.gov/policy/docs/progdesc/ssptw/2010-2011/europe/index.html.

Stahlberg, Ann-Charlotte, Marcela Cohen Birman, Agenta Kruse, and Annika Sunden. 2006. "Pension Reforms and Gender: The Case of Sweden." In *Gender and Social Security Reform: What's Fair for Women,* edited by Neil Gilbert, 175–205. Geneva, Switzerland: International Social Security Association.

Tamborini, Chris. 2007. "The Never-Married in Old Age: Projections and Concerns for the Near Future." *Social Security Bulletin* 67(2): 25–40.

Tamborini, Chris, and Kevin Whitman. 2007. "Women, Marriage, and Social Security Benefits Revisited." *Social Security Bulletin* 67(4): 1–20.

[US Senate] Special Committee on Aging, United States Senate. 2010. *Social Security Modernization: Options to Address Solvency and Benefit Adequacy*. Washington, DC: Government Printing Office. http://aging.senate.gov/letters/ssreport2010.pdf.

Ventura, Stephanie. 2009. "Changing Patterns of Nonmarital Childbearing in the United States." NCHS Data Brief No. 18. Hyattsville, MD: National Center for Health Statistics.

Weaver, David. 2010. "Widows and Social Security." *Social Security Bulletin* 70(3): 89–109.

Zaidi, Asghar. 2007. "Challenges in Guaranteeing Adequate Incomes for Women." Policy Brief drawn from the author's presentation at the Joint Meeting of the Task Force Monitoring RIS and the Expert Group for the UNECE Conference on Ageing. Vienna, Austria: European Centre for Social Welfare Policy and Research.

How Common is "Parking" among Social Security Disability Insurance Beneficiaries? Evidence from the 1999 Change in the Earnings Level of Substantial Gainful Activity

by Jody Schimmel, David C. Stapleton, and Jae G. Song*

Fewer Social Security Disability Insurance (DI) beneficiaries have their earnings suspended or terminated because of work than those who are actually working, partly because beneficiaries "park" earnings at a level below substantial gainful activity (SGA) to retain benefits. We assess the extent of parking by exploiting the 1999 change in the SGA earnings level from $500 to $700 monthly for nonblind beneficiaries using a difference-in-difference analysis that compares two annual cohorts of beneficiaries who completed their trial work period, one that was affected by the SGA change and one that was not. Our impact estimates, along with results from other sources, suggest that from 0.2 to 0.4 percent of all DI beneficiaries were parked below the SGA level in the typical month from 2002 through 2006. The SGA change did not yield any difference in mean earnings, although it did result in a small reduction in months spent off of the rolls because of work.

Introduction

The Social Security Disability Insurance (DI) program was designed to support qualified individuals who are unable to engage in "substantial gainful activity" (SGA) because of a medically determinable physical or mental impairment that is expected to result in death or last for at least 1 year.[1] Growth in the DI rolls in recent decades has been substantial; from 2000 through 2007 alone, the number of disabled-worker beneficiaries increased by approximately 2 million, to more than 7 million beneficiaries (SSA 2008). Autor and Duggan (2006) documented some of the reasons for this rapid expansion: aging of the labor force, growing percentages of women who meet the program's work history requirements, changing eligibility criteria, rising value of the Medicare benefits for which DI beneficiaries attain eligibility after 24 months on the rolls, and rising after-tax DI replacement rates for low-wage workers.

In addition to the rising number of people who receive DI benefits, employment rates among beneficiaries have been declining over the years. Employment among working-age people with disabilities is significantly lower than that for those without disabilities; in 2008, 39 percent of those with disabilities worked, compared with 77 percent of those without disabilities (Census Bureau 2009). This differential has not improved in recent decades, and in fact, seems

Selected Abbreviations

AWI	average wage index
DD	difference in difference
DI	Disability Insurance
EPE	extended period of eligibility
MEF	Master Earnings File

* *Jody Schimmel is a senior researcher at Mathematica Policy Research; David C. Stapleton directs Mathematica's Center for Studying Disability Policy; and Jae G. Song is an economist with the Social Security Administration's Office of Quality Performance.*

This article is based on work supported by a grant (no. 10-M-98362-5-01) from the Social Security Administration through the Michigan Retirement Research Center.

Selected Abbreviations—*Continued*

NSTW	nonpayment status following suspension or termination for work
SGA	substantial gainful activity
SSA	Social Security Administration
TRF	Ticket Research File
TWP	trial work period

to have worsened (Weathers and Wittenburg 2009). Further, relative to other workers, those with disabilities are increasingly likely to be employed on a part-time rather than full-time basis (Hotchkiss 2004). It appears that employment rates for successive cohorts of DI entrants after program entry were quite stable for those who entered from the mid-1980s through the 2000s (Von Wachter, Song, and Manchester, forthcoming), but it also appears that there was a decline in employment for those entering the DI program during and after the 2001 recession (Liu and Stapleton 2011).

Once workers enter the DI program, a substantial minority returns to work, but a much smaller share leaves the rolls because of work. In each year, the number who leaves the rolls is minimal, but over time, more beneficiaries do ultimately have their benefits terminated because they are working. For instance, of those who received their DI awards in 1996, 28 percent had annual earnings of at least $1,000 in 1 or more of the next 10 years, but only 6.5 percent had their benefits suspended for at least 1 month because of work, and only 3.7 percent had their benefits terminated because of work (Liu and Stapleton 2011).

One reason that the percentage of beneficiaries who have their earnings suspended or terminated because of work is far lower than the percentage who return to work might be because of "parking." Parking occurs when beneficiaries intentionally keep their earnings at a level below SGA to avoid loss of their DI benefits. If beneficiaries engage in SGA—in essence, earn more than $1,000 a month for nonblind and $1,640 for blind beneficiaries in 2010—for a sustained period of time, they risk losing their DI benefits (described in more detail later). Unless the earnings increase is large enough to more than make up for the benefit loss at the point of this "cash cliff," total income from earnings plus benefits actually declines. Hence, there is a strong incentive to "park"—to intentionally keep earnings just below the SGA level. Anecdotes about this behavior are widespread, but no statistics on the extent of this phenomenon are available.

If parking is widespread, then policy reforms designed to increase work incentives for DI beneficiaries capable of SGA could potentially increase beneficiary earnings and reduce reliance on benefits. A $1-for-$2 benefit offset for earnings above the SGA level, currently being tested by the Social Security Administration (SSA), is an important example of such a reform. Widespread parking might also explain why so few beneficiaries have exited the rolls under the Ticket to Work program (Stapleton and others 2008). This phenomenon might also suggest that increases in the SGA earnings level could induce increases in DI entry by those able to engage in SGA. If, instead, parking is fairly rare, then efforts to address only the work-incentive issue would not very likely have large impacts on earnings and benefits, parking would not be an important reason for low exit rates under the Ticket to Work program, and DI entry would likely not be very sensitive to modest increases in the SGA level.

It is possible to count the number of beneficiaries with annual earnings at a level that is just below 12 times the relevant SGA earnings level, but not all of such beneficiaries are parked; some are quite likely earning as much as they can, and some are likely temporarily protected from benefit loss because of earnings. Hence, any such count would overstate the number of parkers, as defined in this article. Our approach to estimating the number of beneficiaries purposefully keeping earnings below the SGA level in order to retain their benefits is to infer it from observed changes in earnings when the SGA level increases.

In this article, we investigate the extent to which a large change in the nonblind SGA earnings level induced nonblind DI beneficiaries to park. Specifically, we estimate the impact of the change on the distribution of annual earnings for a beneficiary group directly affected by the change, as well as the impact on the number of months in which those beneficiaries were in nonpayment status following suspension or termination because of work (NSTW). In July 1999, the SGA earnings level for nonblind beneficiaries increased from $500 per month to $700 (SSA 2011; Social Security Advisory Board 2009). Before that time, the nonblind SGA level had been nominally set at $500 since 1990. After the 1999 increase, the nonblind SGA level was indexed to the average wage index (AWI), and, as a result, has increased nominally in every subsequent year except 2010. While the SGA level for nonblind beneficiaries increased substantially in 1999, the higher SGA level for the small share of statutorily

blind beneficiaries increased only because of the small AWI adjustment (Table 1).

To our knowledge, there have been no rigorous studies of parking behavior and relatively few studies that assess the impact of SGA changes on earnings and benefits. Work from the 1970s found that the SGA earnings-level increases in 1966, 1968, and 1974 had no measurable effects on labor force participation rates or earnings among beneficiaries (Franklin 1976; Franklin and Hennessey 1979). A more recent report by the Government Accountability Office (GAO 2002) found that SGA-level increases affect the earnings of only a small portion of beneficiaries. Examining the period from 1985 through 1997, the report found that only 1 percent of all beneficiaries and only 7.4 percent of beneficiaries who worked in a given year had earnings greater than 75 percent of the level of SGA (annualized). In other words, modest changes in SGA were irrelevant for a vast majority of beneficiaries. The GAO report found that those who earned near the SGA level in a given year were very likely to experience substantial declines in earnings in the following years. In addition, the report also found that about 13 percent of beneficiaries who had earnings near the SGA level in 1985 had earnings close to that level a decade later, providing some evidence that some workers with earnings just below SGA might respond to increases in the SGA level and might engage in parking behavior. However, this evidence is not definitive—it is not known what share of those earning close to the SGA level would have had higher earnings if the SGA level had been higher. Recognizing the limitations of the data in measuring the effect of the SGA level on earnings, the GAO report called for more research before drawing conclusive findings.

Table 1.
SGA earnings levels for blind and nonblind DI beneficiaries, 1995–2006 (in dollars)

Year	Nonblind SGA earnings level	Blind SGA earnings level
1995	500	940
1996	500	960
1997	500	1,000
1998	500	1,050
1999	[a] 500/700	1,110
2000	700	1,170
2001	740	1,240
2002	780	1,300
2003	800	1,330
2004	810	1,350
2005	830	1,380
2006	860	1,450

SOURCE: SSA (2011).

a. Nominal nonblind SGA earnings level increased from $500 to $700 on July 1, 1999.

There are three reasons why the previous studies might not have found a significant impact of the change in the SGA level on individual employment and earnings, even if the true impact was substantial. First, earlier studies did not distinguish between blind and nonblind beneficiaries, even though the earnings level of SGA faced by each is different. Second, and perhaps more importantly, the earlier studies did not distinguish between those beneficiaries who had completed the trial work period (TWP) and those who had not. The TWP consists of 9 months (not necessarily consecutive) over a rolling 60-month period during which the beneficiary can earn any amount without loss of benefits. We address the two limitations of earlier studies by using longitudinal Social Security administrative data on annual cohorts of nonblind TWP completers, focusing on the years just after they complete the TWP. The third limitation of previous studies is that they did not allow for the disparate effects of an increase in the SGA earnings level on beneficiaries earning below the old SGA level and on those who earned more than the old SGA and, consequently, had foregone their benefits for work, at least temporarily. In theory, an increase in the SGA level could induce some beneficiaries in this high-earnings group to reduce their earnings, countering any positive impact of the SGA increase on the earnings of those with lower earnings. Those offsetting effects might account for the absence of a substantial impact on the average earnings of beneficiaries in earlier studies. We address that limitation by studying changes in earnings of individuals grouped by the level of their earnings during the year in which they completed the TWP.

Specifically, we exploit the change in the nonblind SGA earnings level in 1999 to determine the extent to which the higher SGA level induced additional individuals to engage in parking behavior. Our analysis compares the longitudinal earnings and NSTW months of the cohort that completed its TWP in 1998 with corresponding outcomes for the 1996 TWP cohort. Those two cohorts faced the same nominal SGA level in the year they completed the TWP, but the nominal value for the 1998 cohort increased by $200 halfway through the first year after TWP completion, whereas it remained the same for the 1996 cohort until halfway through the third year after TWP completion.

Our difference-in-difference (DD) methodology compares changes from the TWP completion year with changes in the second year after TWP completion for the 1998 cohort (spanning the increase in the SGA level) with corresponding changes for the 1996 cohort. The effect of the increase in the SGA earnings level is clearly evident, but its size is not very large.

In the Background section, we describe the "work-incentive" features of the DI program, which were designed to provide beneficiaries with an opportunity to test their ability to engage in SGA without immediate loss of benefits, and consider the theoretical impacts of an increase in the SGA level on earnings and benefit receipt. In the section that follows, we describe our data and sample and then detail the DD methodology used to identify the impact of the increase in the SGA earnings level. To justify the suitability of the DD approach, we then present earnings distributions of successive TWP cohorts. The next section highlights the results of our DD estimates and summarizes our findings from alternative specifications and robustness checks. The Conclusion and Discussion provides estimates of the extent to which beneficiaries overall engage in parking and a discussion of policy implications.

Background and Conceptual Discussion

The SGA earnings level is closely tied to the statutory definition of disability for adults, as described in the Introduction. SSA considers a person to be engaged in SGA, and therefore not disabled by the statutory definition, if unsubsidized earnings, net of any impairment-related work expenses, exceed the SGA level. Hence, beneficiaries may work, as long as the work is not considered to be SGA. The TWP was designed to encourage beneficiaries to return to SGA, by giving them a chance to test their ability to do so without benefit loss. An individual's TWP lasts for 9 (not necessarily consecutive) months in a rolling 60-month period, meaning that over the course of any 5-year period, a beneficiary can earn as much as he or she would like for up to 9 months and still remain on the DI rolls.

Months with sufficiently low earnings do not count toward the 9-month TWP. The TWP minimum earnings amount from 1990 through 2000 was $200 per month (or 40 hours of self-employment); it was increased to $530 per month (or 80 hours of self-employment) in 2001 and has been indexed to the AWI in each year since. In 2009, the monthly TWP minimum earnings amount was $700. In other words, only months in which a beneficiary earned more than $700 in 2009 counted toward his or her TWP; months in which earnings were below $700 did not affect completion of the TWP. The TWP limit is the same for both blind and nonblind DI beneficiaries. Because of the change in the TWP limit in 2001, we restrict our analysis to cohorts of TWP completers prior to that year because the earnings distributions of cohorts that completed the TWP before and after that change could be substantially different.

After exhausting the TWP, the beneficiary enters the extended period of eligibility (EPE), and benefits continue indefinitely if the beneficiary does not engage in SGA. If he or she does have earnings above the SGA level, benefits are paid for 3 additional grace period (GP) months. After that point, benefits are suspended in full during each month in which the beneficiary engages in SGA, but otherwise are paid in full until the 36th EPE month. If earnings are above SGA in the 36th month, benefits are terminated; otherwise full benefits continue until the first month of SGA after completing the GP, at which point they are terminated. This structure of benefits explains why at least some fraction of beneficiaries may engage in parking behavior. During the TWP and GP, beneficiaries have little incentive to restrain earnings, as benefits continue regardless of the amount of earnings in those months. After finishing the TWP and GP, however, there is strong incentive to restrain earnings below the SGA level.

Among beneficiaries who have completed their TWP and are in their EPE, the expected effect of an SGA increase on earnings and NSTW months depends on what their earnings would have been in the absence of the increase. First, beneficiaries who would have had earnings below the initial SGA level might increase their earnings by up to $200 because they could do so without exceeding the new, higher SGA level. For example, someone who kept his or her monthly earnings at $475 to stay below an SGA level of $500 might now earn $675 if the SGA level was increased to $700. For those individuals, we would expect to see higher average annual earnings, but no change in the number of months spent off the rolls for work because these beneficiaries would continue to receive benefits in each month they worked.

Second, beneficiaries who would have earned above the new SGA level and thus lost their benefits might make an effort to earn less than the new level to retain benefits. Consider, for example, someone with a DI benefit of $600 per month who has the potential to

earn $1,200. With an SGA level of $500, the beneficiary could retain benefits by keeping earnings just below $500, for total monthly income of just under $1,100, or could forego benefits and increase income to $1,200. Under an SGA level of $700, that same individual could retain benefits by keeping earnings just below $700, for total monthly income of just under $1,300—more than the beneficiary would earn if he or she were to forego benefits. This individual has a stronger incentive to keep earnings below the new SGA level than below the initial level and is therefore more likely to reduce earnings and retain benefits under the new level. More generally, we would expect beneficiaries who would have earned above $700 under the old SGA level to decrease their earnings under the new SGA level because the required reduction in earnings to keep benefits is lower, and therefore they would have fewer months with cash benefits suspended.

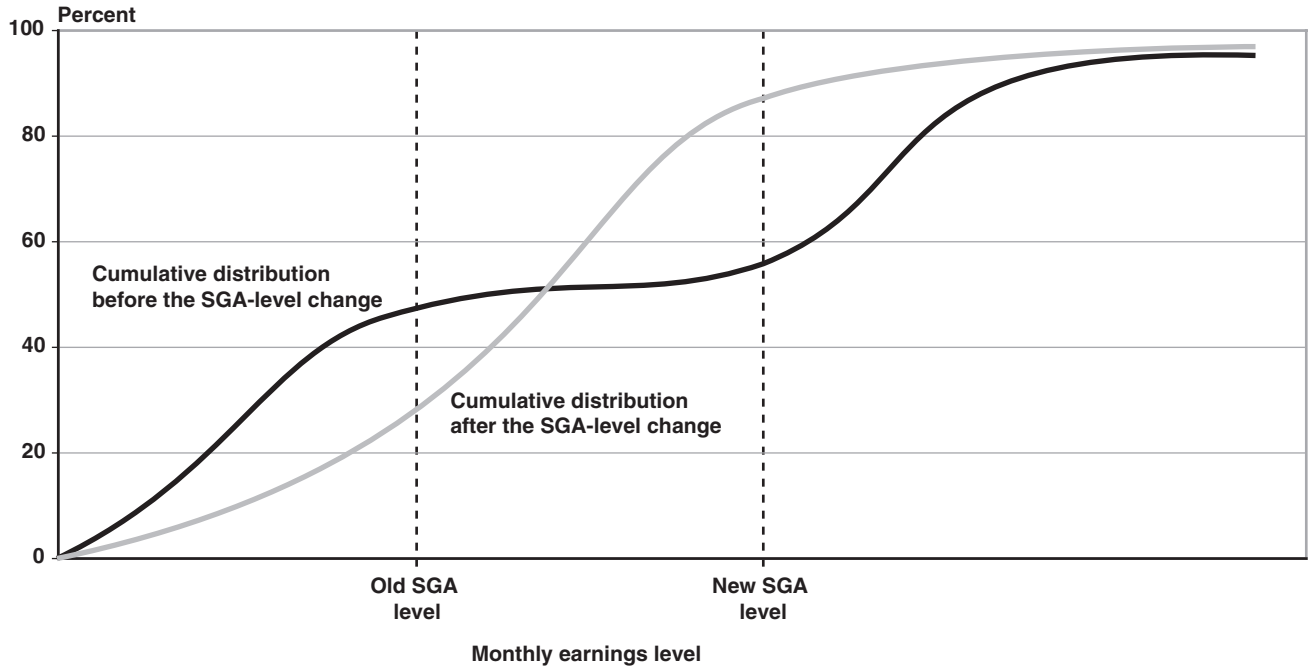
Third, beneficiaries who would have earned an amount between the initial $500 SGA level and the new $700 level, and thus would have left the rolls, are not likely to change the amount they earn by much but will be able to retain their benefits. Those individuals would have left the rolls under the initial SGA level despite the strong incentive to restrain their earnings and remain on the rolls.

Given the relationship between earnings in the absence of the SGA increase and the effect of the SGA increase on earnings, we would expect to see a change in the cumulative distribution of earnings for TWP completers much like the stylized change displayed in Chart 1, assuming that all else is held constant. The percentage of beneficiaries with earnings below the initial SGA level is expected to fall, as the percentage with earnings above the new SGA level is also expected to fall, and the old and new cumulative distributions will cross at some level of earnings between the old and new SGA levels.

Data and Sample Description

Our analysis sample was drawn from the 2007 Ticket Research File (TRF).[2] It consists of longitudinal Social Security administrative data on all working-age beneficiaries who participated in the DI or Supplemental Security Income (SSI) programs for at least 1 month between January 1996 and December 2007. The TRF contains demographic information about beneficiaries, as well as a monthly history of their DI and SSI benefit receipt, any time spent off of the disability rolls, use of work incentives (including the month of TWP completion), and many other variables generated from Social Security administrative records. Data from the TRF were merged with annual

Chart 1.
Stylized shift in the earnings distribution of TWP completer cohorts after an SGA earnings-level increase



SOURCE: Authors' illustration of the hypothetical effect of an SGA earnings-level change on the distribution of earnings.

earnings records contained in SSA's Master Earnings File (MEF) for several years before and after TWP completion.

Using the TRF, we identified 138,142 DI beneficiaries who completed their TWP: 61,953 in 1996 and 76,189 in 1998. We excluded those whose birth date indicated they were younger than age 18 or older than age 59 at the end of the calendar year during which they completed their TWP, who had died within the 5 calendar years following TWP completion, or who had inconsistent data related to their initial DI entitlement and TWP completion date. Finally, we excluded beneficiaries who were determined to be blind, as they were subject to the SGA level for blind individuals, which did not change during this time.[3] That process left a final sample of 116,965 DI beneficiaries (52,490 in 1996 and 64,475 in 1998), or 85 percent of all TWP completers in those 2 years. Those beneficiaries include a small number of disabled adult children and disabled adult widow(er)s of Social Security beneficiaries. While those two subgroups must meet the same disability criteria as DI beneficiaries, most of the children and all of the widow(er)s are technically Old-Age and Survivors Insurance program beneficiaries, rather than DI beneficiaries, because they are receiving benefits as a dependent of a retired or deceased Social Security beneficiary. For simplicity of exposition, we refer to all of the TWP completers as DI beneficiaries in the remainder of this article.

Understanding differences in the demographics of TWP completer cohorts is important in assessing the extent to which observed changes in outcomes might reflect compositional differences in the cohorts as opposed to impacts of the SGA increase. The demographic profile of TWP completer cohorts in 1996 and 1998 was quite similar, suggesting that changes we observe are unlikely to solely reflect changing demographics of TWP completers (Table 2). Education data is missing for a substantial proportion of both cohorts, which is unfortunate because it is likely a strong predictor of work activity and earnings. However, the proportion with missing data is similar across cohorts, and we control for it in our regression models. The later cohort, however, was somewhat more likely to be older than age 40, female, nonwhite, and have certain primary disabling conditions, such as back problems and major affective disorders. This generally mirrors the changing demographic profile of all DI beneficiaries during this period (SSA 1997 and 2001).

The key outcomes in our analysis are nominal annual earnings and percentage of months in a calendar year spent off the DI rolls for work. Unfortunately, monthly data on earnings are not available, even though they would have been ideal for assessing earnings relative to the monthly SGA level. Instead, we converted annual earnings to mean monthly earnings

Table 2.
Demographic profile of nonblind TWP completers, 1996 and 1998 cohorts (in percent)

Characteristic	1996	1998
Sample size	52,490	64,475
Age		
Under 30	21.1	19.3
30–39	32.9	31.0
40–49	29.1	30.2
50–59	16.9	19.5
Sex		
Male	57.4	55.5
Female	42.6	44.5
Race		
White	71.7	70.3
Black	20.0	21.0
Hispanic	3.9	4.4
Other	2.5	2.6
Missing	1.9	1.7
Primary disabling condition		
Schizophrenia or psychoses; anxiety and neurotic disorders; other mental disorders	14.1	13.5
Major affective disorders	11.9	13.3
Mental retardation	10.4	10.4
Musculoskeletal system and back disorders	8.9	9.7
Injuries	4.4	4.2
Nervous system	4.1	4.2
Circulatory system	3.1	3.2
Neoplasms	2.2	2.3
Endocrine/nutritional	2.2	2.7
Other (known)	38.4	36.3
Other (unknown)	0.3	0.2
Education (years)		
0–8	3.7	3.8
9–11	9.3	9.3
12	28.9	27.8
13–15	8.2	8.3
16 or more	5.8	5.6
Missing	44.1	45.2
Concurrent (DI and SSI) beneficiary	10.2	10.2

SOURCE: SSA's 2007 TRF.

NOTES: Other known primary disabling conditions include visual impairments, disorders and diseases of the genitourinary system, severe hearing impairment, HIV/AIDS, digestive system, respiratory system, blood/blood-forming diseases, and infectious/parasitic diseases. Each of these categories included fewer than 2 percent of TWP completers in 1996.

for the year by dividing the annual amount by 12, for purposes of comparison with the monthly SGA amount. Because earnings might vary from month to month, a value of mean monthly earnings greater than (less than) the SGA amount does not imply that earnings in all months are above (below) the SGA amount. We also note that annual earnings reported in the MEF do not always accurately represent a beneficiary's earnings from all paid work during the year. In some cases, earnings are not reported by the employer. In other cases, the reported earnings might be in the form of delayed compensation of some sort from an earlier year. There is no reason to think that such errors will bias the results. It seems likely that earnings not reported in the MEF account for the fact that a small share of TWP completers has no MEF-reported earnings in their TWP completion year.

We also examine the impact of an SGA earnings-level increase on a monthly measure: the number of months that beneficiaries forego benefits because they are working. This measure is based on a variable contained in the TRF, an indicator for NSTW months (Schimmel and Stapleton 2011). That variable identifies months in which cash benefits were suspended or terminated because of earnings above the SGA level. While the measure includes both suspensions and terminations, the latter are irrelevant in our case because we are focusing on the year of TWP completion and 2 years later, when benefits can only be suspended for work, not terminated.

Methodology

This section begins by describing the rationale for using selected TWP completion cohorts for our DD analysis. It then describes our dependent variables, model specification, and predictions for key parameter estimates. It concludes with a discussion of the role of confounding factors on our estimator and the reasoning for using nominal as opposed to real earnings in our estimation.

Selection of TWP Completer Cohorts Suitable for DD Analysis

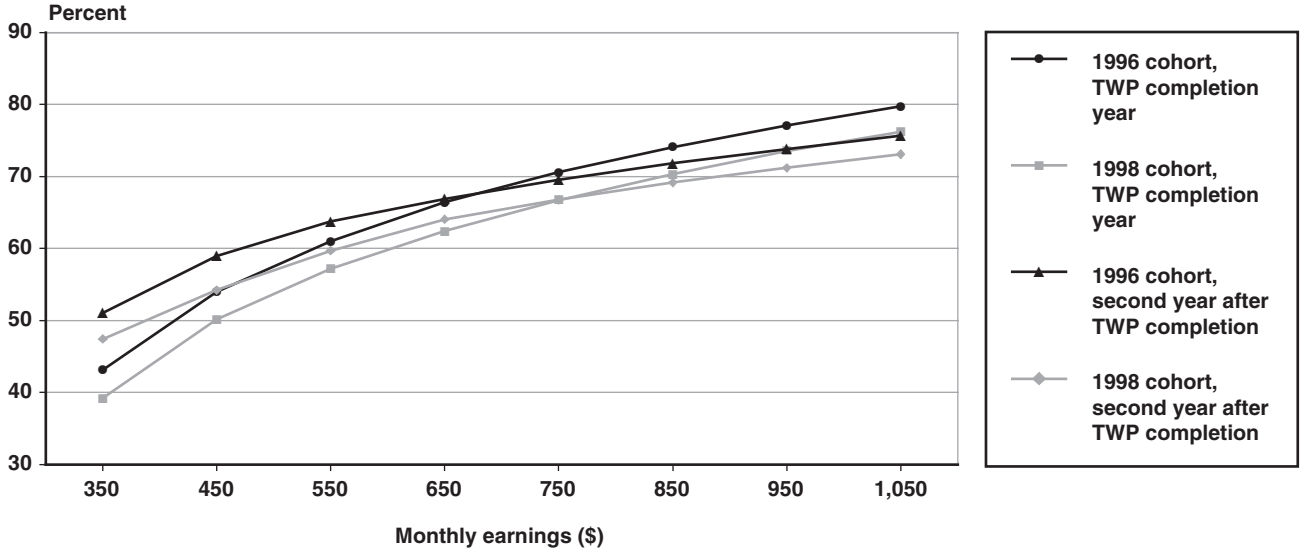
Like other DD estimators, the validity of our analysis relies on the assumption that the cohort subject to the change in the earnings level of SGA would have behaved similarly to the cohort not subject to the change, and that the trend in outcomes across those cohorts would have been the same if not for the change in SGA (Imbens and Wooldridge 2007). Because of that assumption, we ultimately selected the 1996 and 1998 TWP completer cohorts for our analysis. The 1996 cohort—the earliest cohort for which we had complete data—was not affected by the change in the SGA earnings level until after the first 36 EPE months; the 1997 cohort experienced the SGA earnings-level increase in the middle of the second calendar year after TWP completion; the 1998 cohort experienced it in the first calendar year after TWP completion; the 1999 cohort experienced it during the TWP calendar year; and all cohorts from 2000 onward were subject to the higher SGA earnings level in the entirety of their TWP year and all subsequent years. By comparing the 1998 cohort with the 1996 cohort, we consider one cohort that did not experience an SGA earnings-level change from the TWP year to 2 years later (the 1996 cohort, using data from 1996 and 1998) with a cohort that did experience the SGA change during a similar period (the 1998 cohort, using data from 1998 and 2000).

The 2000 and later cohorts were also candidates for comparison groups, but we elected not to use them because of two external factors that quite likely had a substantial effect on their outcomes (Liu and Stapleton 2011). The first factor is the 2001 recession, and the second is the 2001 increase in the minimum earnings amount for a TWP month. Both of those factors would substantially bias any estimates that used the 2000 cohort, or any later cohort, as the comparison cohort.

Chart 2 shows the cumulative distribution of average monthly earnings (annual earnings divided by 12) for the 1996 and 1998 completer cohorts in the TWP completion year as well as in the second year following TWP completion year.[4] We conclude that the TWP-year distributions for the 1996 and 1998 cohorts are quite comparable, apart from a small rightward shift from 1996 to 1998 that could reasonably be attributed to wage growth. Differences in the second year after the TWP completion year presumably reflect comparable wage growth, as well as the effects of the 1999 SGA earnings-level increase.

Visual inspection of the cumulative distributions in Chart 2 does not reveal any obvious effect of the SGA earnings-level increase. The effect can be seen, however, by adjusting the earnings distribution for the 1998 cohort in the second post-TWP year for the difference between the TWP-year distributions for the 1998 and 1996 cohorts and comparing the result with the second post-TWP year distribution for the 1996 cohort (Chart 3). The adjusted distribution for the 1998 cohort in the second post-TWP year is the actual

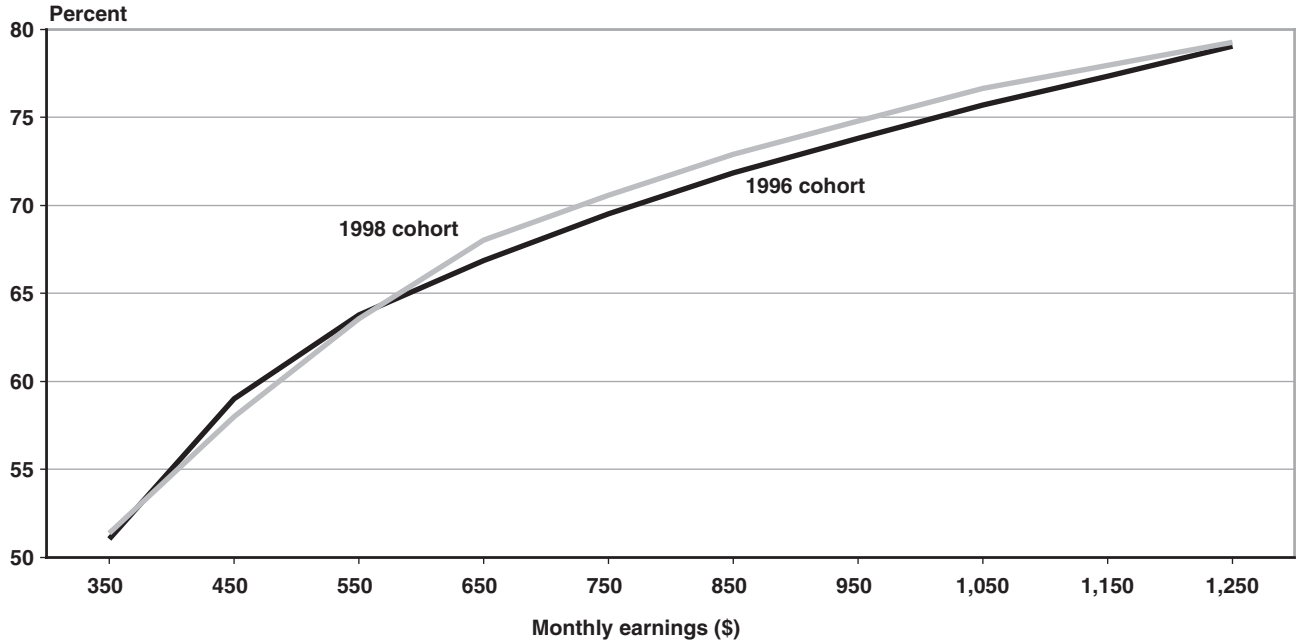
Chart 2.
Cumulative distribution of monthly earnings in the TWP completion year and in the second year after TWP completion, 1996 and 1998 cohorts



SOURCE: SSA's 2007 TRF data merged with MEF data.

NOTES: Nominal earnings are in $100 intervals; the dollar value denoted is the midpoint of the interval. Level differences across the cohorts reflect our use of nominal earnings; when earnings were adjusted by the contemporaneous AWI, those level differences disappeared.

Chart 3.
Cumulative distribution of monthly earnings in the second year after TWP completion, 1996 cohort (actual earnings) and 1998 cohort (adjusted earnings)



SOURCE: SSA's 2007 TRF data merged with MEF data.

NOTES: The 1998 cohort distribution has been shifted upward by the vertical distance between the TWP-year distribution for the two cohorts. Nominal earnings are in $100 intervals; the dollar value denoted is the midpoint of the interval.

earnings distribution shifted upward by the vertical difference between the TWP-year distributions for the two cohorts, as shown in Chart 2.

What emerges is a pattern that matches the exaggerated stylized pattern of Chart 1. The adjusted distribution for the 1998 cohort, subject to the higher SGA, crosses the distribution for the 1996 cohort between the old and new SGA values ($500 and $700). That is, the comparison is consistent with the prediction that the increase in the SGA level increased the earnings of some who would otherwise have had earnings below $500 and reduced the earnings of some who would otherwise have had earnings above $700. The difference-in-difference estimates presented in the next section provide a more rigorous assessment of the extent of those visible changes.

Turning to NSTW months during the TWP completion year, the values for the 1996 and 1998 cohorts were also similar (Chart 4). The pattern for both cohorts was in line with expectations; as average monthly earnings during a year increased, the mean NSTW months increased, reflecting more months with earnings above SGA. There were small differences within earnings categories, which might reflect wage growth or other factors. The largest difference, for those with average monthly earnings in excess of $1,000, was only 0.2 months. Hence, we conclude that NSTW months during the TWP year are a strong base for the DD estimator of the impact of the SGA earnings-level increase on time off of the rolls for work.

Model Specification

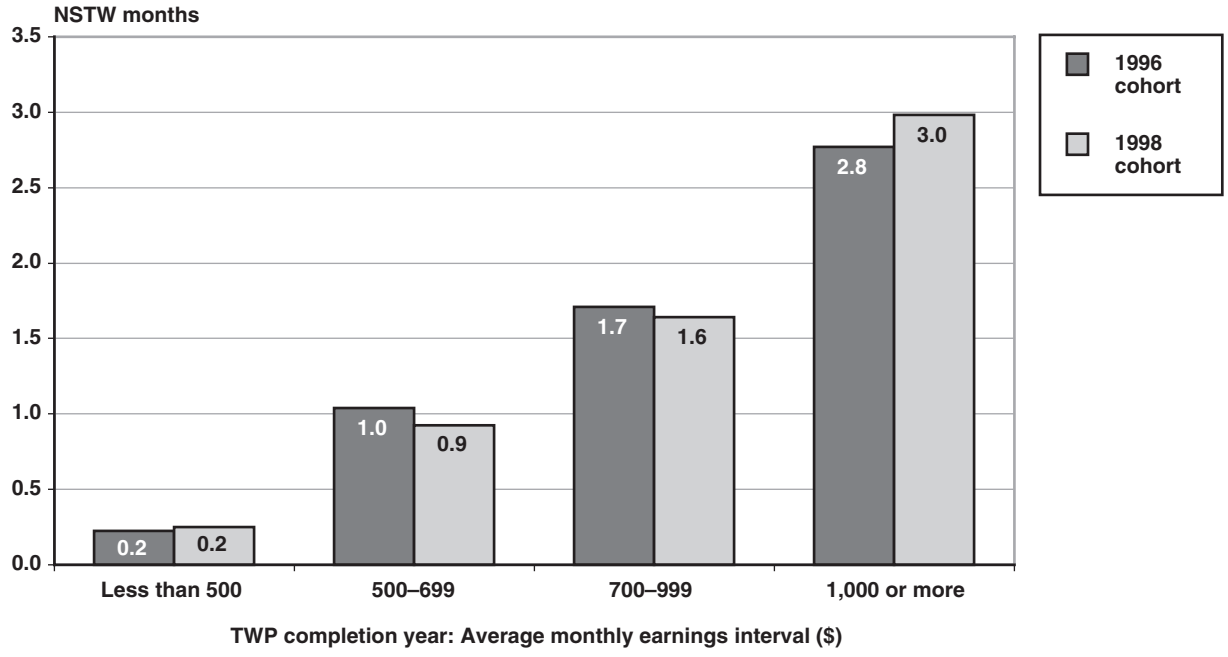
We use a DD strategy to estimate the impact of the SGA increase on the earnings distribution, as well as on monthly earnings and NSTW months in the second year after TWP completion. That is, we compare changes in outcome variables for the 1996 and 1998 cohorts from the TWP year with those in the second year after the TWP completion year. As discussed earlier, the 1998 cohort experienced a large increase in its nonblind SGA earnings amount during its first post-TWP year, whereas the 1996 cohort did not.

We used a regression-based DD estimator to control for the possible effects of observable differences in the characteristics of the two cohorts. The estimator is based on the following standard model:

$$Y_{it} = \alpha + \beta D_t + \delta C_i + \gamma C_i D_t + \pi' X_i + \varepsilon_{it},$$

where Y_{it} is the dependent variable for beneficiary i in the tth year after TWP completion ($t = 0$ or 2, depending on the application); D_t is an indicator variable for the second year after TWP completion; C_i is an

Chart 4.
Mean number of NSTW months in the TWP completion year, by TWP-year average monthly earnings interval, 1996 and 1998 cohorts



SOURCE: SSA's 2007 TRF data merged with MEF data.

indicator for the 1998 cohort; X_i is a column vector of control baseline characteristics; α, β, δ, γ, and π are parameters (π is a column vector), and ε_{it} is an independent disturbance.

Three definitions are used for Y_{it}: (1) an indicator for one of five average monthly earnings categories[5] ($0–$199; $200–$499; $500–$699; $700–$999; and $1,000 or more); (2) the dollar value of average monthly earnings; and (3) the number of NSTW months. The coefficient of interest is γ, the DD estimate of the difference between the mean change for the 1998 cohort from the TWP year to the second post-TWP year and the corresponding mean change for the 1996 cohort, adjusted for differences in baseline characteristics, X_i. The baseline characteristics include individual characteristics as of the year of TWP completion, plus a set of indicator variables for the calendar month of TWP completion. As detailed in Table 2, individual characteristics include age, sex, race, educational attainment, and primary disabling condition (as determined by SSA).[6] We estimated each model by using ordinary least squares and corrected the standard errors for heteroskedasticity.[7]

The model was estimated for each dependent variable (Y_{it}) using the full samples for the 1996 and 1998 TWP cohorts. For the five categorical average monthly earnings variables, theory predicts positive impacts on the percentage with earnings in the $500–$699 category (that is, between the old and new SGA) and negative impacts on the percentages in all other categories. The theoretical prediction for the impact on average monthly earnings is ambiguous in sign because of countervailing predictions for those with high and low counterfactual earnings. The theoretical prediction for the impact on the number of NSTW months is negative.

In addition to the full-sample models, we estimated models for average monthly earnings and NSTW months using each of four subsamples, defined by their average monthly TWP-year earnings ($0–$499; $500–$699; $700–$999; and $1,000 or more) because of the expectation that the impact of the SGA increase on those outcomes would vary by earnings level. Those models assume that TWP-year earnings are a predictor of the level of earnings in the second post-TWP year; that is, all else being equal, TWP-year earnings and post-TWP earnings are positively correlated. We expect the SGA earnings-level increase to have the largest positive impact on the mean earnings of beneficiaries with average monthly TWP-year earnings in the $0–$499 range and the largest negative impact on those with average monthly TWP-year earnings in the $1,000 or more range. We expect the SGA earnings-level increase to have negative impacts on the number of NSTW months for all earnings categories, but especially for those with average monthly TWP-year earnings of $500 or more.

We present the estimates from each of those models, as well as one that aggregates across the models using weights for the percentage of the 1998 cohort in each of the TWP-year earnings categories. The weighted total estimate differs from the total estimate based on the full-sample regression because the percentage of the 1996 cohort in each TWP-year earnings category differs from the corresponding percentage for the 1998 cohort. Thus, the weighted total estimate is an estimate of the total impact after controlling for the change in the TWP-year earnings distribution from the 1996 cohort to the 1998 cohort.

All of the impact estimates reported are for the second year after TWP completion. In each case, we present unadjusted means or percentages for each cohort in the TWP year and the second post-TWP year, plus the regression-adjusted DD estimates and their t-statistics. Unadjusted DD estimates (not reported) can be calculated from the reported means. They differ from the regression-adjusted estimates in only minor ways (never more than in the second significant digit), implying that differences in the observable characteristics of the 1996 and 1998 cohorts did not substantially affect differences in their mean outcomes.

A Test for the Effects of Confounding Factors

The DD methodology would fail if confounding factors (that is, factors other than the SGA earnings-level increase) affected changes in outcomes from the TWP year to the second post-TWP year for the 1998 cohort relative to the corresponding changes for the 1996 cohort. Wage growth driven by external market forces is possibly an important example. If, however, the effect of wage growth on earnings from the TWP year to the second post-TWP year is comparable across the entire earnings range, and especially the range around the old and new SGA levels, the DD estimator will successfully control for it.

To test whether the DD estimator might produce spurious results because of wage growth or other potentially confounding factors, we compared changes in the annual earnings distribution from the TWP completion year with the year after TWP completion for the 1996 and 1997 cohorts. Neither of those cohorts

experienced an increase in the SGA earnings level from the TWP year to the next year. Thus, we used the DD methodology to test whether "no change in the SGA earnings level" for the 1997 cohort had an impact on the earnings in the year after TWP completion; the finding of a statistically significant effect would imply that our estimation strategy is flawed.

The results are summarized in Table 3. The point estimates for effect of *no change in the SGA earnings level* on the percentage with earnings in each earnings interval in the year after TWP completion are small, not statistically significant, and unrelated to the level of earnings. The point estimate for the interval from $200–$499 is largest in magnitude (-0.2), but has a t-statistic of just -0.6. The point estimate in the critical range between the old and new SGA levels is 0.00 and has a t-statistic that is less than 0.01. This test of the DD estimator increases our confidence that the estimator applied to outcomes for the 1996 and 1998 cohorts in the TWP completion year and the second year after TWP completion adequately controls for the effect of wage growth and other potentially confounding factors.

Explicit Adjustment for Exogenous Wage Growth

An alternative way to address the possibly confounding effects of exogenous wage growth is to explicitly adjust earnings by an index of wage growth. The AWI is the obvious choice, although we note that Autor and Duggan (2006) reported that wage growth in the types of relatively low-wage jobs that most incoming DI beneficiaries have had was lower than the average wage growth during the period under study.

To test this approach, we applied the DD estimator to AWI-adjusted earnings for the 1996 and 1997 cohorts and repeated the test for the effect of *no change in the SGA earnings level*. The AWI-adjusted estimator failed that test. Specifically, we found a negative, marginally significant "impact" on the percentage with AWI earnings between $200 and $499. This strongly suggests that the application of the DD estimator to AWI-adjusted earnings for the 1996 and 1998 cohorts would lead to a negatively biased estimate of the impact of the SGA earnings-level increase on the percentage of the 1998 cohort with earnings in the same interval during the second year after TWP completion. Hence, we only report findings for the DD estimators applied to nominal earnings.[8]

Results

The estimated impact of the $200 SGA increase on the distribution of earnings for the 1998 cohort in the second post-TWP year is strongly consistent with theoretical predictions (Table 4). The DD estimates for the percentage with monthly earnings within intervals indicate that, as expected, the SGA-level increase raised the percentage with earnings between $500 and $700 (that is, between the old and new SGA), by an amount that is very statistically significant: 2.2 percentage points (95 percent confidence interval: 1.7 to 2.7). Those additional 2.2 percentage points came partly from beneficiaries who would otherwise have had earnings below $500 (an estimated 1.0 percentage points) and partly from those who would have had earnings above $700 (an estimated 1.2 percentage points). The estimated 1.0 percentage point decline in beneficiaries who would otherwise have had earnings above $1,000 is especially notable and statistically significant. It strongly suggests that the SGA increase induced some beneficiaries to keep their earnings low enough to retain their benefits. Estimates for the other

Table 3.
DD estimates for the impact of "no change in the SGA earnings level" from the TWP completion year to the first post-TWP year for the 1996 and 1997 TWP completer cohorts

Average monthly earnings ($)	Percentage of cohort with earnings in category				DD estimate for the impact of the SGA earnings-level increase			
	Year of TWP completion		First post-TWP year		Point estimate	t-statistic	95 percent confidence interval	
	1996	1997	1996	1997				
0–199	17.43	16.22	30.37	29.39	0.22	-0.62	0.21	0.23
200–499	36.58	35.74	26.89	25.80	-0.24	-0.64	-0.25	-0.23
500–699	12.38	12.46	9.18	9.27	0.00	<0.01	-0.01	0.01
700–999	10.74	10.86	8.02	8.20	0.07	0.30	0.07	0.07
1,000 or more	22.87	24.72	25.53	27.33	-0.05	-0.15	-0.06	-0.04

SOURCE: SSA's 2007 TRF data merged with MEF data.

NOTE: DD estimates are regression-adjusted to control for differences in the 1996 and 1997 cohorts.

intervals are not statistically significant at the 5 percent level, although the point estimates are all of the expected sign. Further, by construction, the sum of the four point estimates for the two lowest and two highest intervals is equal to the negative of the estimate for the middle interval, and is statistically significant.

Turning to the results for the impact on mean earnings in the second year after TWP completion, we find a small and statistically insignificant positive effect of less than $4 per month (Table 5). This unweighted total estimate reflects the effects of any changes in the distribution of TWP-year earnings from 1996 through 1998, which could not be caused by the SGA increase, and may also mask predicted countervailing impacts on the earnings of those with high and low TWP-year earnings. We also show a weighted total estimate, based on DD estimates, for the four TWP-year earnings intervals, weighted by the percent of the 1998 cohort in that interval. The weighted total estimate is somewhat larger, but still small—$10 per month—and still not statistically significant. But there are statistically significant, although small, positive impacts for the 50 percent of beneficiaries with TWP-year earnings below $500. The estimated effect in that range is about $16 per month (95 percent confidence interval: $5 to $27), or 6.3 percent of average monthly earnings in that range. Point estimates for the other intervals are not statisti-

Table 4.
DD estimates for the impact of the 1999 SGA earnings-level increase on average monthly earnings from the TWP completion year to the second post-TWP year for the 1996 and 1998 completer cohorts

Average monthly earnings ($)	Percentage of cohort with earnings in category				DD estimate for the impact of the SGA earnings-level increase			
	Year of TWP completion		Second post-TWP year		Point estimate	t-statistic	95 percent confidence interval	
	1996	1998	1996	1998				
0–199	17.43	16.23	30.37	35.0	-0.54	-1.52	-1.24	0.16
200–499	36.58	34.02	26.89	19.32	-0.48	-1.31	-1.19	0.23
500–699	12.38	12.16	9.18	9.79	2.20	8.64	1.71	2.69
700–999	10.74	11.13	8.02	7.13	-0.22	-0.92	-0.69	0.25
1,000 or more	22.87	26.46	25.53	28.8	-0.96	-2.73	-1.65	-0.27

SOURCE: SSA's 2007 TRF data merged with MEF data.

NOTE: DD estimates are regression-adjusted to control for differences in the 1996 and 1998 cohorts.

Table 5.
DD estimates for the impact of the 1999 SGA earnings-level increase on mean monthly earnings from the TWP completion year to the second post-TWP year, by earnings interval in the TWP completion year, for the 1996 and 1998 TWP completer cohorts

Average monthly earnings in the TWP year ($)	Percentage of cohort in category		Change in mean monthly earnings of cohort ($)		DD estimate for the impact of the SGA earnings-level increase				
	1996	1998	1996	1998	Point estimate	t-statistic	95 percent confidence interval		Percentage estimate
Total	100.0	100.0	44.04	47.92	3.89	0.33	-18.96	26.74	0.5
Weighted total	100.0	100.0	37.70	47.84	10.14	0.96	-8.94	29.22	1.3
Less than 500	54.01	50.25	98.61	114.60	15.99	2.97	5.46	26.52	6.3
500–699	12.38	12.16	29.28	46.54	17.25	1.46	-5.84	40.35	2.9
700–999	10.74	11.13	36.29	54.78	18.49	1.07	-15.41	52.39	2.2
1,000 or more	22.87	26.46	-73.23	-80.92	-7.69	-0.19	-85.61	70.22	-0.3

SOURCE: SSA's 2007 TRF data merged with MEF data.

NOTES: The change in monthly earnings is calculated from the TWP completion year to 2 years later. DD estimates are regression-adjusted to control for differences in the 1996 and 1998 cohorts. Within each group, the percentage estimate is the DD estimate divided by the mean earnings in the second post-TWP year (2000) of the 1998 TWP completers, net of the DD estimate for the group.

cally significant, reflecting high standard errors and wide confidence intervals within those intervals.

Consistent with expectations, the results show a significant negative effect of the SGA earnings-level increase on the number of NSTW months during the second year after TWP completion (Table 6). The weighted total DD estimate shows a statistically significant but small mean negative impact of 0.24 months (95 percent confidence interval: -0.30 to -0.18), or 6.4 percent of the average number of months spent off the rolls for work by the 1998 cohort in the second year after TWP completion. The weighted total estimate was more than twice as large as the unweighted estimate, reflecting variation in the magnitude of the effect within TWP-year earnings intervals and differences between the TWP-year earnings distributions for the 1996 and 1998 cohorts. As expected, the point estimate is largest for beneficiaries with TWP-year earnings in the range between the old and new SGA levels: -0.6 months, or 17.1 percent of the months in which their counterparts in the 1998 TWP cohort were off the rolls in the second year after TWP completion. The point estimate for those with earnings under $500 in the TWP year is negative and half as large, but statistically significant and almost as large in percentage terms (16.2 percent). The estimate for the interval from $700 to $999 is also negative and statistically significant, but smaller still, and the estimate for the highest earnings interval is very close to zero and insignificant.

Conclusion and Discussion

For a number of reasons described earlier, we limit our analysis to examining the impact of the increase in the SGA level on earnings and number of NSTW months for the 1998 TWP completer cohort in the second year after TWP completion. Using our preferred estimates (based on nominal earnings), we find statistically significant impacts that are consistent with theoretical predictions: a decrease in the percentage with earnings below the old SGA level, a decrease in the percentage with earnings above the new level, and an increase in the percentage with earnings between the old and new levels.

We did not find statistically significant positive effects on mean monthly earnings, but the estimate for all beneficiaries disguises a small ($16 per month) statistically significant positive effect on mean monthly earnings for those with TWP-year earnings below $500. Point estimates for other TWP-year earnings categories are not statistically significant, reflecting high standard errors within each category. We find statistically significant negative effects on NSTW months; our preferred estimate is an average reduction of one-quarter of a month, or 6.4 percent of our estimated number of NSTW months in the absence of the SGA earnings-level increase (that is, the estimated counterfactual). Effects are especially large for those with earnings between $500 and $699 in the TWP completion year: six-tenths of a month, or over 17 percent of the estimated counterfactual.

Table 6.
DD estimates for the impact of the 1999 SGA earnings-level increase on the number of NSTW months from the TWP completion year to the second post-TWP year, by earnings interval in the TWP completion year, for the 1996 and 1998 TWP completer cohorts

Average monthly earnings in the TWP year ($)	Percentage of cohort in category		Change in mean number of NSTW months of cohort		DD estimate for the impact of the SGA earnings-level increase				
	1996	1998	1996	1998	Point estimate	t-statistic	95 percent confidence interval		Percentage estimate
Total	100.0	100.0	2.62	2.49	-0.13	-4.15	-0.19	-0.07	-3.5
Weighted total	100.0	100.0	2.73	2.49	-0.24	-8.42	-0.30	-0.18	-6.4
Less than 500	54.01	50.25	1.58	1.28	-0.29	-9.44	-0.36	-0.23	-16.2
500–699	12.38	12.16	2.79	2.16	-0.63	-7.36	-0.80	-0.46	-17.1
700–999	10.74	11.13	3.59	3.36	-0.22	-2.18	-0.43	-0.02	-4.3
1,000 or more	22.87	26.46	4.53	4.56	0.03	0.38	-0.11	0.16	0.4

SOURCE: SSA's 2007 TRF data merged with MEF data.

NOTES: The change in the NSTW months is calculated from the TWP completion year to 2 years later. DD estimates are regression-adjusted to control for differences in the 1996 and 1998 cohorts. Within each group, the percentage estimate is the DD estimate divided by the mean NSTW months in the second post-TWP year (2000) of the 1998 TWP completers, net of the DD estimate for the group.

Overall, the estimates provide strong evidence of parking, as we have defined it—intentional restraint of earnings to maintain DI benefits. The effect is stronger than that found in other studies, but the magnitude of the parking identified is not very large relative to the number of beneficiaries in the 1998 TWP cohort. We infer that between 1.2 and 2.2 percent of those beneficiaries—774 to 1,418—parked their earnings in the $500–$699 interval during the second year after TWP completion (that is, in 2000). Both bounds include the estimated 1.2 percent of beneficiaries who were induced to reduce their earnings from more than $700 to less than $700. The upper bound assumes that the estimated 1.0 percent induced to increase their earnings above $500 by the SGA-level increase were still restraining their earnings because of the now higher SGA amount, while the lower bound assumes that none of them were doing so (that is, that they would not have increased their earnings further even if the SGA amount was increased further).

Note that the percentage of beneficiaries in the 1998 cohort with earnings in the $500–$699 range during their second year after TWP completion is considerably larger than the maximum point estimate for parkers: 9.8 percent versus 2.2 percent (Table 4). We do not count 7.6 percent of those beneficiaries as parkers, even under the maximum estimate, because we do not have evidence suggesting that they adjusted their earnings to keep the level below the new SGA earnings level. It might seem odd that some individuals would choose to have earnings in this range if it meant complete loss of benefits prior to the SGA earnings-level change. Several possible explanations other than simply choosing to have lower income follow: an expectation of earnings growth; high variability in earnings over the year so benefits are suspended in some months, but not others; impairment-related work expenses that are used as offsets to earnings; and less knowledge of the rules. With respect to the last explanation, some beneficiaries who engage in SGA later find that their benefits have been suspended or terminated retroactively and could also be asked to reimburse SSA for overpayments. Perhaps they would have restrained their earnings had they understood the relationship between SGA and benefits, but the analysis does not provide evidence on this point.

To be consistent with our conceptual definition of parking, we count as parkers only those in the 1998 cohort who were induced by the SGA-level increase to earn in the range between the old and new SGA levels 2 years after completing their TWP. The total number of beneficiaries who parked below the SGA level in that same year, 2000, was almost certainly much larger, however, because presumably many beneficiaries from other TWP completer cohorts were also parked.

The impact estimates can be used to make back-of-the-envelope inferences about the number of parkers in the average month of any year after 1999, provided that (1) an estimate of the number of beneficiaries who were off the rolls for work in the average month of that year is available, (2) the impact of the 1999 SGA earnings-level increase had the same percentage impact on months with benefits suspended for work for all beneficiaries in the later years, and (3) the ratio of the upper bound number of parkers to the lower bound for the later year is the same as the ratio among the 1998 TWP cohort in 2000. Schimmel and Stapleton (2011) found that approximately 200,000 DI beneficiaries were off the rolls because of work in the average month for each year from 2002 through 2006. Based on their estimates and the estimated impacts of the 1999 SGA earnings-level increase on months with benefits suspended for work, we arrive at a range of 14,000 to 25,000 parkers in the typical month over this 4-year period.[9] That range is equivalent to 0.2 to 0.3 percent of the average number of beneficiaries on the rolls in December of those years. Although this number is small relative to the total number of beneficiaries, it is large relative to the percentage whose benefits are suspended because of work in a typical month (about 0.5 percent) or who are terminated in a typical year (also about 0.5 percent).[10]

There are numerous reasons why the number of parkers might be larger than our estimates indicate, even by our definition. One is the strength of the economy. Presumably, the number of parkers during the early part of the 2002–2006 period was reduced by the weak economy. Hence, in a stronger economy, the number of parkers might be larger than those estimates suggest. Another reason is that the 1998 cohort might not have had sufficient time to fully adjust to the higher SGA earnings level by 2000. A third reason is that the impact of the SGA earnings-level increase might have been larger for those who had completed the first 36 months following their TWP completion than for those in the second year following TWP completion (that is, the period we focus on). Because the benefits of such beneficiaries are terminated if they engage in SGA, not just suspended, and because during this period it is was much harder to return to DI after termination for work than after suspension

for work, their incentive to avoid engaging in SGA is stronger than the corresponding incentive for those who have not completed the 36-month EPE.[11]

A final reason that the number of parkers might be larger than our estimate is related to induced entry. Some workers with disabilities who have entered the DI program since the SGA earnings-level increase might not have entered if the SGA amount had remained the same. It is the opportunity to park at a level of earnings between the old and new SGA that induced such workers to enter DI, so it seems quite likely that many would.

We do not know if the increase in the SGA earnings level induced any workers to enter the DI program. Given the length and uncertain outcome of the DI application process, we would not expect workers to be induced to leave their jobs and apply for benefits because of the increase in the SGA earnings level. Workers who have lost their jobs for other reasons (for example, during a recession) might, however, find application for DI a more attractive alternative because of the SGA increase, and some might successfully apply. "Reduced exit" might be a much a more important phenomenon than reduced entry. That is, workers who have lost their jobs for other reasons and would have entered the DI program even in the absence of the SGA increase are now less likely to leave the rolls for work than they were before the increase.

It should also be noted that the increase in the level of SGA earnings might have increased the extent to which beneficiary earnings are reported to SSA (via the Internal Revenue Service). Some beneficiaries who earned above the old SGA level prior to 1999 might have failed to report at least some of their earnings to avoid benefit loss, but revealed more of their earnings after the SGA increase. To the extent that such reporting changes occurred, some beneficiaries we have counted as parkers under the new SGA earnings level are beneficiaries who were hiding at least some of their earnings under the old SGA level, and the impact on mean actual earnings is even smaller than the impact on mean reported earnings.

SSA's use of the AWI to adjust the SGA earnings level since 2000 might have increased or reduced the number of parkers. If AWI growth has been more rapid than wage growth in the jobs that beneficiaries typically obtain, it would seem quite likely to have further reduced the number of beneficiaries who have their benefits suspended, and eventually terminated, for work. That does not imply that the percentage of beneficiaries who are parked is increasing, however, because some who might have restricted their earnings had the SGA level grown more slowly since 2000 might not do so under the current SGA level. Note that, by our definition, parking could be eliminated by increasing the SGA earnings level to a sufficiently large amount.

Our findings imply that policy reforms designed to increase work incentives for DI beneficiaries capable of SGA could potentially increase the earnings of the small share of beneficiaries who are parked, but might also reduce the earnings of the even smaller share who leave the rolls because of work under current law. SSA's test of the $1-for-$2 benefit offset for earnings above the SGA level might show increases in earnings for beneficiaries who are parked under current law, but declines for those who would have left the rolls for work.

Notes

Acknowledgments: We gratefully acknowledge the work of Natalie Hazelwood at Mathematica Policy Research, who provided programming support for this article. Arif Mamun, also with Mathematica, provided helpful comments on an earlier draft of this article. We also wish to acknowledge helpful comments received from participants at the 2009 and 2010 Michigan Retirement Research Center annual research meetings, as well as anonymous reviewers of this journal.

[1] Individuals who qualify based on their own earnings record must have worked in a Social Security–covered position for 5 of the past 10 years.

[2] The TRF was created by Mathematica Policy Research under contract with SSA and is housed on SSA's mainframe. SSA grants access to researchers to use the data on a case-by-case basis.

[3] To identify blind individuals, we used a variable in the administrative records indicating the date a person was determined to be blind by SSA for purposes of determining SGA. It is possible that some of those classified as nonblind for our analysis were blind but had not been determined to be blind for SGA purposes. SSA does not determine the blind status of a beneficiary unless there is an administrative reason to do so. Determination of the SGA amount provides a reason for those who work, so our expectation is that there are few blind beneficiaries among the nonblind TWP completers.

We considered using contemporaneous blind TWP completer cohorts as comparison groups for the TWP completer cohorts, but comparisons of earnings for the blind and nonblind cohorts prior to the increase in the nonblind SGA earnings level demonstrated that blind cohorts were an inadequate comparison group. We also found substantive differences in the demographic characteristics of the blind and nonblind cohorts.

[4] Approximately 8 percent of each TWP cohort did not have earnings in the TWP completion year, likely a data anomaly or earnings reporting error. Approximately 15 percent did not have earnings in the year after TWP completion and 22 percent did not have earnings in the second year after TWP completion. This pattern was nearly identical in the 1997 and 1998 cohorts.

[5] We initially consider earnings in these five categories when exploring changes in the distribution of earnings across the cohorts. When we consider changes in mean earnings and NSTW months, we collapse the lowest earnings into a single category, from $0 to $499.

[6] The age variable is the actual age in the identified year. All other variables are categorical.

[7] Regression results corresponding to Tables 4–6 are available in the online version of this article (Appendix Tables A-1 through A-3).

[8] Analogous AWI-adjusted results to those contained in this article are available in the online version of the article (Appendix Tables A-4 through A-6).

[9] The lower bound is obtained by assuming that beneficiaries were parked only in the months represented by this impact and that the same percentage reduction applied to all beneficiaries off the rolls for work after TWP completion in other years. If N is the number of beneficiaries off the rolls in the typical month of year *t,* then we estimate the lower bound for the number of parkers is $P_L = 0.064N / (1.0 - 0.064) = 0.068N$ and the upper bound is $P^U = 2.2P_L / 1.2 = 1.83P_L = 0.125N$.

[10] In December 2006, the benefits of 33,613 disabled-worker beneficiaries were suspended because of work, representing 0.49 percent of all beneficiaries on the rolls in that month. During that entire year, 36,242 beneficiaries had their benefits terminated because of work, or 0.53 percent of the number of beneficiaries in December (SSA 2008).

[11] More recently, SSA has implemented an expedited reinstatement process for those whose benefits have been terminated for work.

References

Autor, David H., and Mark G. Duggan. 2006. "The Growth in the Social Security Disability Rolls: A Fiscal Crisis Unfolding." *Journal of Economic Perspectives* 20(3): 71–96.

Census Bureau. 2009. 2008 American Community Survey. Table B18120. Accessed using American Fact Finder 8.

Franklin, Paula A. 1976. "Impact of Substantial Gainful Activity Level on Disabled Beneficiary Work Patterns." *Social Security Bulletin* 39(8): 20–29.

Franklin, Paula A., and John C. Hennessey. 1979. "Effect of Substantial Gainful Activity Level on Disabled Beneficiary Work Patterns." *Social Security Bulletin* 42(3): 3–17.

[GAO] General Accountability Office. 2002. *SGA Levels Appear to Affect the Work Behavior of Relatively Few Beneficiaries, but More Data Needed*. Report to the Committee on Finance, US Senate and the Committee on Ways and Means, House of Representatives (January).

Hotchkiss, Julie L. 2004. "Growing Part-Time Employment among Workers with Disabilities: Marginalization or Opportunity." Federal Reserve Bank of Atlanta, *Economic Review* (3rd Quarter): 25–40.

Imbens, Guido, and Jeff Wooldridge. 2007. "What's New in Econometrics: Difference-in-Differences Estimation." Lecture Notes 10. Cambridge, MA: National Bureau of Economic Research.

Liu, Su, and David C. Stapleton. 2011. "Longitudinal Statistics on Work Activity and Use of Employment Supports for New Social Security Disability Insurance Beneficiaries." *Social Security Bulletin* 71(3): 35–59.

Schimmel, Jody, and David C. Stapleton. 2011. "Disability Benefits Suspended or Terminated Because of Work." *Social Security Bulletin* 71(3): 83–103.

Social Security Administration. 1997. *Annual Statistical Supplement to the Social Security Bulletin*. Baltimore, MD: SSA.

———. 2001. *Annual Statistical Report on the Social Security Disability Insurance Program*, *2000.* Baltimore, MD: SSA.

———. 2008. *Annual Statistical Report on the Social Security Disability Insurance Program, 2007.* Baltimore, MD: SSA.

———. 2011. *The Red Book—A Guide to Work Incentives*. Baltimore, MD: SSA.

Social Security Advisory Board. 2009. "Disability Programs in the 21st Century: Substantial Gainful Activity." Social Security Advisory Board Issue Brief Series 1(3): April.

SSA. *See* Social Security Administration.

Stapleton, David, Gina Livermore, Craig Thornton, Bonnie O'Day, Robert Weathers, Krista Harrison, So O'Neil, Emily Sama Martin, David Wittenburg, and Debra Wright. 2008. "Ticket to Work at the Crossroads: A Solid Foundation with an Uncertain Future." Washington, DC: Mathematica Policy Research.

Von Wachter, Til, Jae Song, and Joyce Manchester. Forthcoming. "Trends in Employment and Earnings of Allowed and Rejected Applicants to the Social Security Disability Insurance Program." *American Economic Review.*

Weathers, Robert R. II, and David C. Wittenburg. 2009. "Employment." In *Counting Working-Age People with Disabilities: What Current Data Tell Us and Options for Improvement*, edited by Andrew Houtenville, David C. Stapleton, Robert R. Weathers II, and Richard V. Burkahuser, chapter 4. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

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 September 2010–September 2011.

The Monthly Statistical Snapshot summarizes information about the Social Security and SSI programs and provides a summary table on the trust funds. Data for September 2011 are given on pages 94–95. Trust fund data for September 2011 are given on page 95. The more detailed SSI tables begin on page 96. Persons wanting detailed monthly OASDI information should visit the Office of the Chief Actuary's website at http://www.socialsecurity.gov/OACT/ProgData/beniesQuery.html.

Monthly Statistical Snapshot

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

Table 1.
Number of people receiving Social Security, Supplemental Security Income, or both, September 2011 (in thousands)

Type of beneficiary	Total	Social Security only	SSI only	Both Social Security and SSI
All beneficiaries	60,403	52,308	5,334	2,761
Aged 65 or older	38,850	36,793	896	1,161
Disabled, under age 65 [a]	13,706	7,668	4,438	1,601
Other [b]	7,847	7,847	. . .	. . .

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

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

. . . = not applicable.

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

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

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

Table 2.
Social Security benefits, September 2011

Type of beneficiary	Beneficiaries		Total monthly benefits (millions of dollars)	Average monthly benefit (dollars)
	Number (thousands)	Percent		
All beneficiaries	55,069	100.0	59,583	1,082.00
Old-Age Insurance				
Retired workers	35,411	64.3	41,890	1,183.00
Spouses	2,298	4.2	1,343	584.30
Children	583	1.1	338	579.80
Survivors Insurance				
Widow(er)s and parents [a]	4,254	7.7	4,740	1,114.40
Widowed mothers and fathers [b]	156	0.3	133	853.50
Children	1,877	3.4	1,415	754.20
Disability Insurance				
Disabled workers	8,496	15.4	9,094	1,070.40
Spouses	164	0.3	47	288.50
Children	1,831	3.3	582	318.10

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

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

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

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

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

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

Table 3.
Supplemental Security Income recipients, September 2011

Age	Recipients: Number (thousands)	Recipients: Percent	Total payments [a] (millions of dollars)	Average monthly payment [b] (dollars)
All recipients	8,095	100.0	4,311	498.90
Under 18	1,269	15.7	793	597.20
18–64	4,769	58.9	2,689	514.80
65 or older	2,057	25.4	829	401.90

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 4.
Operations of the Old-Age and Survivors Insurance and Disability Insurance Trust Funds, September 2011 (in millions of dollars)

Component	OASI	DI	Combined OASI and DI
		Receipts	
Total	49,796	8,482	58,279
Net contributions [a]	41,819	7,103	48,922
Income from taxation of benefits	14	b	14
Net interest	59	39	98
Payments from the general fund [c]	7,905	1,340	9,245
		Expenditures	
Total	50,266	11,131	61,396
Benefit payments	49,911	10,819	60,730
Administrative expenses	355	311	666
Transfers to Railroad Retirement	0	0	0
		Assets	
At start of month	2,492,124	164,330	2,656,454
Net increase during month	-469	-2,648	-3,118
At end of month	2,491,654	161,682	2,653,336

SOURCE: Data on the trust funds were accessed on November 1, 2011, on the Social Security Administration's Office of the Chief Actuary's website: http://www.socialsecurity.gov/OACT/ProgData/funds.html.

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

a. Includes transfers from the general fund of the Treasury under the provisions of the HIRE Act (P.L. 111-147).

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

c. Includes reimbursements from the general fund of the Treasury under the provisions of the Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010 (P.L. 111-312).

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, September 2010–September 2011

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		
2010						
September	7,898,515	5,513,288	2,128,504	256,723	4,256,062	498.30
October	7,905,492	5,518,761	2,129,769	256,962	4,237,780	499.70
November	7,947,752	5,551,970	2,138,811	256,971	4,296,554	499.30
December	7,912,266	5,526,333	2,129,334	256,599	4,273,680	500.70
2011						
January	7,956,362	5,592,029	2,109,226	255,107	4,235,824	499.70
February	8,002,032	5,627,081	2,119,585	255,366	4,342,633	497.60
March	8,001,423	5,628,567	2,118,256	254,600	4,319,855	500.30
April	8,014,930	5,639,114	2,121,078	254,738	4,312,912	500.80
May	8,057,448	5,672,947	2,130,131	254,370	4,399,629	499.80
June	8,056,968	5,673,253	2,129,163	254,552	4,326,804	499.40
July	8,057,787	5,678,767	2,131,881	247,139	4,292,791	499.10
August	8,108,375	5,717,947	2,143,405	247,023	4,402,772	498.80
September	8,095,000	5,706,884	2,140,867	247,249	4,310,542	498.90

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, September 2010–September 2011

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2010						
September	7,898,515	1,191,611	6,706,904	1,235,499	4,616,558	2,046,458
October	7,905,492	1,190,909	6,714,583	1,233,911	4,624,389	2,047,192
November	7,947,752	1,192,920	6,754,832	1,245,812	4,650,603	2,051,337
December	7,912,266	1,183,853	6,728,413	1,239,269	4,631,507	2,041,490
2011						
January	7,956,362	1,188,872	6,767,490	1,249,294	4,657,382	2,049,686
February	8,002,032	1,189,858	6,812,174	1,258,533	4,691,651	2,051,848
March	8,001,423	1,186,985	6,814,438	1,257,045	4,695,846	2,048,532
April	8,014,930	1,187,848	6,827,082	1,257,359	4,707,744	2,049,827
May	8,057,448	1,187,588	6,869,860	1,269,853	4,737,116	2,050,479
June	8,056,968	1,186,668	6,870,300	1,268,840	4,738,185	2,049,943
July	8,057,787	1,185,550	6,872,237	1,266,495	4,741,273	2,050,019
August	8,108,375	1,187,881	6,920,494	1,277,109	4,775,507	2,055,759
September	8,095,000	1,187,576	6,907,424	1,268,821	4,769,477	2,056,702

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, September 2010–September 2011

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2010						
September	5,513,288	600,397	4,912,891	987,846	3,387,950	1,137,492
October	5,518,761	599,866	4,918,895	986,399	3,394,511	1,137,851
November	5,551,970	600,942	4,951,028	996,244	3,415,567	1,140,159
December	5,526,333	595,546	4,930,787	990,701	3,401,733	1,133,899
2011						
January	5,592,029	602,169	4,989,860	1,003,631	3,442,049	1,146,349
February	5,627,081	602,354	5,024,727	1,011,085	3,468,989	1,147,007
March	5,628,567	600,628	5,027,939	1,009,961	3,473,468	1,145,138
April	5,639,114	600,780	5,038,334	1,009,818	3,483,783	1,145,513
May	5,672,947	600,406	5,072,541	1,020,116	3,507,222	1,145,609
June	5,673,253	599,687	5,073,566	1,019,432	3,508,722	1,145,099
July	5,678,767	600,361	5,078,406	1,016,992	3,514,277	1,147,498
August	5,717,947	601,403	5,116,544	1,025,435	3,541,759	1,150,753
September	5,706,884	601,053	5,105,831	1,018,213	3,537,525	1,151,146

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, September 2010–September 2011

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2010						
September	2,128,504	506,017	1,622,487	246,130	1,098,554	783,820
October	2,129,769	505,882	1,623,887	245,967	1,099,625	784,177
November	2,138,811	507,046	1,631,765	248,043	1,104,651	786,117
December	2,129,334	503,206	1,626,128	246,936	1,100,080	782,318
2011						
January	2,109,226	502,505	1,606,721	244,118	1,085,752	779,356
February	2,119,585	503,286	1,616,299	245,874	1,092,963	780,748
March	2,118,256	502,614	1,615,642	245,595	1,092,856	779,805
April	2,121,078	503,294	1,617,784	246,044	1,094,348	780,686
May	2,130,131	503,737	1,626,394	248,228	1,100,226	781,677
June	2,129,163	503,725	1,625,438	247,800	1,099,542	781,821
July	2,131,881	504,367	1,627,514	247,913	1,100,843	783,125
August	2,143,405	505,695	1,637,710	250,148	1,107,731	785,526
September	2,140,867	505,717	1,635,150	248,948	1,105,945	785,974

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, September 2010–September 2011

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2010						
September	256,723	85,197	171,526	1,523	130,054	125,146
October	256,962	85,161	171,801	1,545	130,253	125,164
November	256,971	84,932	172,039	1,525	130,385	125,061
December	256,599	85,101	171,498	1,632	129,694	125,273
2011						
January	255,107	84,198	170,909	1,545	129,581	123,981
February	255,366	84,218	171,148	1,574	129,699	124,093
March	254,600	83,743	170,857	1,489	129,522	123,589
April	254,738	83,774	170,964	1,497	129,613	123,628
May	254,370	83,445	170,925	1,509	129,668	123,193
June	254,552	83,256	171,296	1,608	129,921	123,023
July	247,139	80,822	166,317	1,590	126,153	119,396
August	247,023	80,783	166,240	1,526	126,017	119,480
September	247,249	80,806	166,443	1,660	126,007	119,582

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, September 2010–September 2011 (in thousands of dollars)

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
			All sources			
2010						
September	4,256,062	476,375	3,779,687	774,470	2,652,224	829,369
October	4,237,780	475,525	3,762,255	775,508	2,633,294	828,978
November	4,296,554	477,366	3,819,188	788,199	2,676,221	832,135
December	4,273,680	474,932	3,798,748	780,109	2,663,101	830,470
2011						
January	4,235,824	474,261	3,761,563	778,155	2,628,084	829,584
February	4,342,633	474,776	3,867,857	792,430	2,718,994	831,209
March	4,319,855	474,564	3,845,290	794,225	2,694,737	830,892
April	4,312,912	474,653	3,838,258	794,140	2,687,773	830,998
May	4,399,629	475,958	3,923,671	808,858	2,757,773	832,999
June	4,326,804	474,311	3,852,493	793,566	2,702,297	830,942
July	4,292,791	470,353	3,822,438	794,632	2,672,452	825,708
August	4,402,772	472,258	3,930,513	813,172	2,759,910	829,690
September	4,310,542	471,167	3,839,376	793,350	2,688,691	828,502
			Federal payments			
2010						
September	3,943,345	396,051	3,547,294	760,966	2,477,787	704,592
October	3,926,458	395,225	3,531,233	762,067	2,460,186	704,205
November	3,982,863	396,728	3,586,135	774,563	2,501,419	706,882
December	3,960,438	394,865	3,565,573	766,520	2,488,151	705,767
2011						
January	3,927,074	394,809	3,532,265	764,861	2,456,382	705,830
February	4,028,230	395,072	3,633,159	778,788	2,542,525	706,918
March	4,007,692	395,013	3,612,678	780,683	2,520,109	706,900
April	4,001,584	395,132	3,606,452	780,620	2,513,975	706,989
May	4,083,720	396,268	3,687,452	794,941	2,580,100	708,678
June	4,014,482	394,933	3,619,549	780,001	2,527,457	707,024
July	3,996,318	394,926	3,601,392	781,114	2,507,445	707,759
August	4,101,172	396,512	3,704,661	799,301	2,590,777	711,095
September	4,013,322	395,621	3,617,701	779,836	2,523,297	710,189

(Continued)

Table 6.
Total payments, by eligibility category, age, and source of payment, September 2010–September 2011 (in thousands of dollars)—*Continued*

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
			State supplementation			
2010						
September	312,717	80,324	232,393	13,503	174,437	124,777
October	311,323	80,301	231,022	13,441	173,109	124,773
November	313,691	80,638	233,053	13,636	174,802	125,253
December	313,242	80,067	233,175	13,588	174,950	124,703
2011						
January	308,749	79,451	229,298	13,294	171,701	123,754
February	314,403	79,704	234,699	13,642	176,469	124,292
March	312,163	79,551	232,612	13,541	174,629	123,993
April	311,327	79,521	231,806	13,520	173,798	124,009
May	315,910	79,690	236,220	13,917	177,673	124,320
June	312,322	79,378	232,944	13,565	174,840	123,918
July	296,473	75,427	221,047	13,518	165,006	117,949
August	301,599	75,747	225,852	13,872	169,133	118,594
September	297,220	75,546	221,674	13,514	165,394	118,313

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, September 2010–September 2011 (in dollars)

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
			All sources			
2010						
September	498.30	398.60	516.00	594.20	514.60	403.90
October	499.70	398.40	517.70	600.20	515.50	403.80
November	499.30	398.40	517.10	596.90	515.30	403.90
December	500.70	399.80	518.50	596.70	517.20	405.10
2011						
January	499.70	398.00	517.60	598.30	515.50	403.70
February	497.60	396.80	515.20	590.80	514.10	402.80
March	500.30	398.30	518.10	599.80	515.70	403.90
April	500.80	398.50	518.60	601.80	516.00	404.00
May	499.80	398.60	517.40	596.20	515.50	404.10
June	499.40	398.50	516.90	595.10	515.10	404.00
July	499.10	395.90	517.00	600.20	514.30	401.70
August	498.80	396.10	516.50	597.60	514.20	401.90
September	498.90	396.20	516.60	597.20	514.80	401.90
			Federal payments			
2010						
September	476.20	357.00	496.40	584.80	493.80	365.70
October	477.70	356.80	498.20	590.80	494.80	365.60
November	477.30	356.80	497.60	587.50	494.60	365.70
December	478.70	358.30	498.90	587.30	496.50	367.00
2011						
January	477.90	356.80	498.30	589.00	495.10	365.80
February	475.90	355.50	495.90	581.60	493.60	364.90
March	478.50	356.90	498.80	590.60	495.30	365.90
April	479.00	357.10	499.30	592.50	495.60	366.00
May	478.10	357.20	498.10	587.00	495.10	366.00
June	477.70	357.00	497.60	585.90	494.80	365.90
July	478.80	357.00	498.90	591.00	495.40	365.90
August	478.40	357.10	498.40	588.50	495.20	366.00
September	478.60	357.20	498.60	588.10	495.80	366.10

(Continued)

Table 7.
Average monthly payment, by eligibility category, age, and source of payment, September 2010–September 2011 (in dollars)—*Continued*

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
			State supplementation			
2010						
September	124.30	134.70	120.90	50.80	130.40	136.10
October	124.30	134.80	120.90	50.80	130.40	136.10
November	124.20	134.70	120.70	50.70	130.30	136.00
December	124.30	134.90	120.80	50.80	130.40	136.20
2011						
January	124.70	134.30	121.60	50.90	131.40	135.90
February	124.50	134.20	121.40	50.80	131.10	135.80
March	124.70	134.30	121.50	50.90	131.30	135.90
April	124.60	134.20	121.50	50.90	131.20	135.90
May	124.50	134.20	121.40	50.90	131.10	135.80
June	124.40	134.10	121.30	50.90	131.00	135.80
July	118.60	127.70	115.60	50.60	124.40	129.50
August	118.50	127.80	115.50	50.50	124.30	129.60
September	118.60	127.80	115.50	50.50	124.30	129.60

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, September 2010–September 2011

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2010						
September	85,258	9,288	75,970	16,220	59,626	9,412
October	81,317	8,727	72,590	15,697	56,771	8,849
November	91,006	8,958	82,048	18,426	63,450	9,130
December	84,592	8,446	76,146	16,851	59,146	8,595
2011						
January	73,722	8,141	65,581	14,320	51,139	8,263
February	95,679	9,069	86,610	18,895	67,560	9,224
March	84,741	8,319	76,422	16,619	59,648	8,474
April	86,457	9,670	76,787	16,091	60,558	9,808
May	102,897	9,119	93,778	20,197	73,423	9,277
June	84,521	9,092	75,429	16,745	58,558	9,218
July	81,037	9,304	71,733	15,812	55,775	9,450
August [a]	97,455	9,238	88,217	19,153	68,923	9,379
September [a]	83,855	9,878	73,977	16,250	57,588	10,017

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. Because papers undergo blind review, the title page will be removed from referee copies. Eliminate all other identifying information from the rest of the paper before it is submitted. Once papers are accepted for publication, authors are responsible for reinserting self-identifying citations and references during preparation of the paper for final submission.
- **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 www.aeaweb.org/journal/jel_class_system.html.
- **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 anonymously 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.

Title and Author Index for Volume 71, 2011

Titles

Authors

OASDI and SSI Program Rates and Limits, 2012

Old-Age, Survivors, and Disability Insurance

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

a. Self-employed persons pay a total of 15.3 percent—12.4 percent for OASDI and 2.9 percent for Medicare.

Supplemental Security Income

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

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

Social Security Administration
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
November 2011

www.socialsecurity.gov/policy