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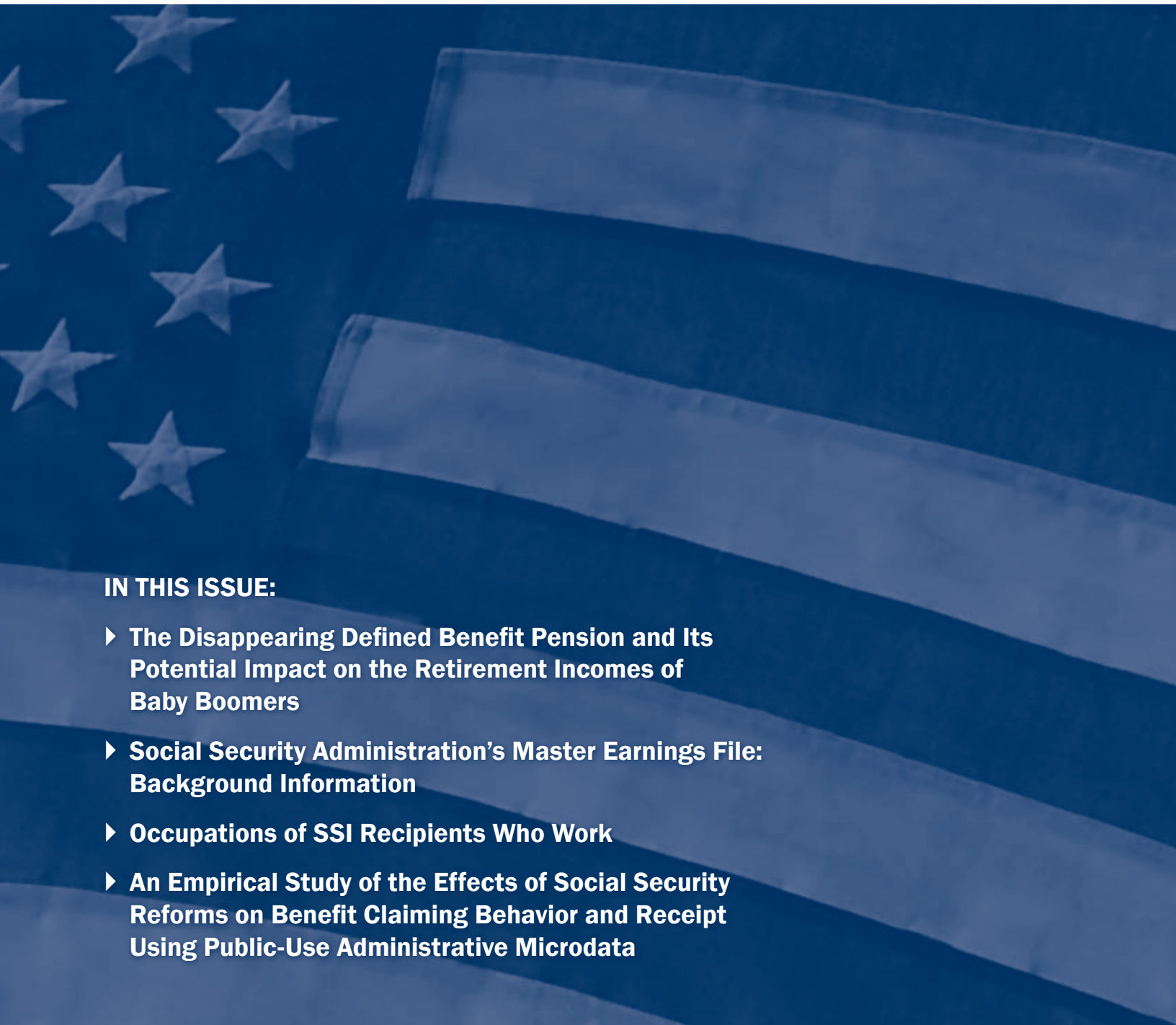

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The Disappearing Defined Benefit Pension and Its Potential Impact on the Retirement Incomes of Baby Boomers

by Barbara A. Butrica, Howard M. Iams, Karen E. Smith, and Eric J. Toder*

This article uses a microsimulation model to estimate how freezing all remaining private-sector and one-third of all public-sector defined benefit (DB) pension plans over the next 5 years would affect retirement incomes of baby boomers. If frozen plans were supplemented with new or enhanced defined contribution (DC) retirement plans, there would be more losers than winners, and average family incomes would decline. The decline in family income would be much larger for last-wave boomers born from 1961 through 1965 than for those born from 1946 through 1950, because younger boomers are more likely to have their DB pensions frozen with relatively little job tenure. Higher DC accruals would raise retirement incomes for some families by more than their lost DB benefits. But about 26 percent of last-wave boomers would have lower family incomes at age 67, and only 11 percent would see their income increase.

Introduction

The percentage of workers covered by a traditional defined benefit (DB) pension plan that pays a lifetime annuity, often based on years of service and final salary, has been steadily declining over the past 25 years. From 1980 through 2008, the proportion of private wage and salary workers participating in DB pension plans fell from 38 percent to 20 percent (Bureau of Labor Statistics 2008; Department of Labor 2002). In contrast, the percentage of workers covered by a defined contribution (DC) pension plan—that is, an investment account established and often subsidized by employers, but owned and controlled by employees—has been increasing over time. From 1980 through 2008, the proportion of private wage and salary workers participating in only DC pension plans increased from 8 percent to 31 percent (Bureau of Labor Statistics 2008; Department of Labor 2002). More recently, many employers have frozen their DB plans (Government Accountability Office 2008; Munnell and others 2006). Some experts expect that most private-sector plans will be frozen in the next few years and eventually terminated (Aglira 2006; Gebhardtsbauer 2006; McKinsey & Company 2007). Under the typical DB plan freeze, current participants will receive retirement benefits based on their accruals up to the date of the freeze, but will not accumulate any additional benefits; new employees will not be covered. Instead, employers will either establish new DC plans or increase contributions to existing DC plans.

Selected Abbreviations

CB	cash balance
COLA	cost-of-living adjustment
DB	defined benefit
DC	defined contribution
DI	Disability Insurance

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Selected Abbreviations—*continued*

MINT	Modeling Income in the Near Term
PBGC	Pension Benefit Guaranty Corporation
PIMS	Pension Insurance Modeling System
SIPP	Survey of Income and Program Participation
SOI	Statistics of Income
SSA	Social Security Administration
SSI	Supplemental Security Income
U.K.	United Kingdom

These trends threaten to shake up the American retirement system as we know it because of vast differences between DB and DC pension plans, including differences in coverage rates within a firm, timing of accruals, investment and labor market risks, forms of payout, and effects on work incentives and labor mobility. DB pensions are tied to employers who, consequently, bear the responsibility for ensuring that employees receive pension benefits. In contrast, DC retirement assets are owned by employees who, therefore, bear the responsibility for their own financial security.

This article simulates how the shift from DB to DC pensions might affect the distribution of retirement income among boomers under two different pension scenarios: one that maintains current DB pensions, and one that freezes all remaining DB plans in addition to a third of all state and local plans over the next 5 years. The analysis uses the Social Security Administration's (SSA's) Modeling Income in the Near Term (MINT) microsimulation model to describe the potential impact of the pension shift on boomers at age 67. The article examines both changes in retirement income and the numbers of winners and losers, and it compares these outcomes among individuals grouped by sex, educational attainment, marital status, race/ethnicity, years of paid employment, and quintiles of lifetime earnings and retirement income. Of principal concern is whether income from increased DC plan coverage will compensate for the loss of DB plan benefits.

Background

There are two general types of pensions: DC plans and traditional DB plans. In DC plans—which include 401(k) plans—employers, employees, or both employers and employees make tax-deferred contributions to a retirement account in the employee's name. The contribution amount can be set either as a particular share of salary or a given dollar amount. At retirement, workers receive the funds that have accumulated in their accounts, generally as lump-sum distributions (Johnson, Burman, and Kobes 2004), although they can also use the proceeds to purchase annuities in the marketplace.

Traditional DB plans provide workers with guaranteed lifetime annuities that begin at retirement and promise benefits that are typically expressed as a multiple of years of service and earnings received near the end of one's career (for example, 1 percent of average salary received during the final 3 years on the job, multiplied by the number of years of service). Plan participants cannot collect benefits until reaching the plan's retirement age, which varies among employers. Some plans allow workers to collect reduced benefits at specified early retirement ages.

The value of future retirement benefits from DC plans increases each year by the value of employee and employer contributions to the plan plus any investment returns earned on the account balance. As long as market returns are relatively stable and participants and their employers contribute consistently over time, account balances will increase steadily each year until retirement. Because equity returns are volatile in the long run as well as the short run (Stambaugh 2009), the expected income from DC retirement accounts of those reaching retirement age can vary greatly over different time periods (Burtless 2009). But the plans themselves are not designed to produce age-varying growth rates.[1]

In contrast, the growth pattern of future benefits by design varies by age in DB plans. Pension wealth—the present discounted value of the stream of future expected benefits—grows slowly in typical DB plans for young workers, increases rapidly once workers approach the plan's retirement age, but then levels off or can even decline at older ages. Pension wealth is minimal at younger ages because junior employees typically earn low wages and have completed only a few years of service. In addition, if a worker terminates employment with the firm, benefits at retirement are based only on earnings to date, and their present value is low because the worker receives them many years in the future. The present value of DB benefits rises rapidly as workers increase tenure with their current employer, as their earnings increase through real wage growth and inflation and as they approach the time when they can collect benefits. Workers in

traditional DB plans often lose pension wealth, however, if they stay on the job beyond a certain age or seniority level. Growth in promised annual retirement benefits typically slows at older ages as wage growth declines. Some plans also cap the number of years of service that workers can credit toward their pensions, and others cap the share of preretirement earnings that the plan will replace in retirement. In addition, pension wealth can decline for workers who remain on the job past the plan's retirement age if the increase in annual benefits from an additional year of work is insufficient to offset the loss caused by a reduction in the number of pension installments. As a result, traditional DB plans often create a strong disincentive to continue working for the same employer at older ages.

Historical Trends

For the last quarter of a century, the occupational pension structure in the United States has been shifting from DB to DC plans (Buessing and Soto 2006; Copeland 2006; Wiatrowski 2004). Analysts have attributed the trend to a number of factors. First, government regulations have tended to favor DC plans over DB plans (Gebhardtsbauer 2004; Ghilarducci 2006). This began in the early 1980s after Internal Revenue Service regulations implemented a provision of the 1978 Revenue Act, which allowed employees to make voluntary contributions to employer-sponsored retirement plans with pretax dollars.[2] Subsequent tax legislation enacted in the 1980s, including the Tax Equity and Fiscal Responsibility Act of 1982 and the Tax Reform Act of 1986, reduced incentives for employers to maintain their DB plans (Rajnes 2002). Since then, the adoption of DB pension plans by new businesses has virtually halted and has been replaced by the adoption of 401(k)-type pension plans that permit voluntary employee contributions (Munnell and Sunden 2004). One study found that increased government regulation was the major factor in 44 percent of DB plan terminations in the late 1980s (Gebhardtsbauer 2004). Another study noted that from 1980 through 1996, government regulation increased the administrative costs of DB plans by twice as much as those of similar-sized DC plans (Hustead 1998).

Second, the employment-sector shift away from manufacturing toward service and information technology decreased the availability of DB plans, as new firms in growing sectors of the economy adopted DC plans instead (Wiatrowski 2004). These structural changes in the economy are estimated to explain from 20 percent to 50 percent of the decline in DB pension plans (Clark, McDermed, and Trawick 1993; Gustman and Steinmeier 1992).

Finally, some analysts suggest that worker demand has partly contributed to the popularity of DC plans over DB plans (Aaronson and Coronado 2005; Broadbent, Palumbo, and Woodman 2006). They assert that employees prefer DC plans because these plans are portable across jobs, balances are more transparent, and assets are managed by employees themselves (Broadbent, Palumbo, and Woodman 2006; Munnell and Soto 2007).

The Pension Protection Act of 2006 may fuel the trend away from DB plans and toward DC plans by increasing DB plan reporting and disclosure rules, requiring stricter DB funding rules, making permanent the increases in DC contribution limits in the 2001 tax cuts, and facilitating the use of default participation rules in DC plans (AARP 2007; Center on Federal Financial Institutions 2006). Beyond this, the financial situation in 2008 resulted in at least a one trillion dollar loss in the value of assets held in private-sector DB plans (Munnell, Aubrey, and Muldoon 2008a) and another trillion dollar loss in state and local plans (Munnell, Aubrey, and Muldoon 2008b). Although the economic crisis has hurt the funding status of DB plans, legislation signed on December 23, 2008, will provide some pension funding relief (Groom Law Group 2008; Klose and Tooley 2009).

The Future of Pensions

The future of pensions remains uncertain as even employers with financially healthy DB plans consider whether to eliminate them over time. By December 2006, many American companies had instituted "freezes" in their DB pensions and replaced them with new or enhanced DC pensions (Smith and others 2007; VanDerhei 2007). In its survey of single-employer DB sponsors, the Government Accountability Office (2008) found that about half had one or more frozen plans; 23 percent of plan sponsors had completely frozen their plans with no further benefit accruals (hard freezes), and 22 percent had frozen either the years of service or the salary pension base. In 2007, a survey of private-sector DB plan sponsors by Mercer and the Employee Benefits Research Institute found that over a third of DB sponsors had recently frozen their DB pension plans, and a third of the remaining employers expected to freeze or close their plans in the next 2 years (Vanderhei 2007). Some experts expect that most private-sector plans will be frozen or terminated

within the next few years (Aglira 2006; Gebhardtsbauer 2006; McKinsey & Company 2007).

This is essentially what happened in the United Kingdom (U.K.) with private-sector DB pensions. When the British adopted transparent financial accounting standards and the government taxed pension plan accumulations it deemed to be excessive, the percent of assets "in terminated or frozen status" increased from 35 percent in 1998 to 70 percent in 2006 (Munnell and Soto 2007). A Towers Perrin 2008 survey of private employers in the United Kingdom documented the shift away from DB pensions through plan freezes and found that the percentage of new employees able to join a DB plan declined from 67 percent in 2002 to only 11 percent in 2008. Almost half of employers surveyed expected to make further changes to their pension schemes in the next 5 years, partly in response to personal account legislation proposed to become effective in 2012 (Towers Perrin 2008).

The future prospects for DB pension plans in the public sector are more favorable. Very little of the shift from DB to DC plans has occurred in the public sector (Anderson and Brainard 2004; Broadbent, Palumbo, and Woodman 2006; Munnell, Haverstick, and Soto 2007; Turner and Hughes 2008). Although some state and local governments in the United States have introduced DC plans in some form or another, only Michigan and Alaska have primary plans that require new employees to join a DC plan. Other states that have introduced DC plans have maintained their DB plans (Munnell and others 2008). Additionally, unlike in the private sector where the primary motivation for establishing DC plans is economic, in the public sector the primary motivation appears to be political (Munnell and others 2008).

Nonetheless, public-sector DB pension plans may also face increasing stress in future years. About a third of state and local government pension plans were less than 80 percent funded in 2006, and the share of underfunded plans increased to 46 percent with the 2008 stock market crash (Munnell, Aubry, and Muldoon 2008b). Correcting the funding deficit in the current recession may be particularly difficult as state and local tax revenues plummet. Financial and political pressures may push some of these government plans to freeze along with private-sector plans.

Methodology

Our analysis is based on projections of the major sources of retirement income from SSA's MINT microsimulation model, which was developed by the agency's Office of Research, Evaluation, and Statistics with substantial assistance from the Brookings Institution, RAND Corporation, and Urban Institute. Starting with data from the 1990–1993 and 1996 panels of the Census Bureau's Survey of Income and Program Participation (SIPP) matched to SSA's earnings and benefit records through 2004, MINT projects the future life course of persons born from 1926 through 1965. MINT independently projects each person's marital changes, mortality, entry to and exit from Social Security Disability Insurance (DI) rolls, and age of first receipt of Social Security and pensions benefits. It also projects family income including Social Security benefits, pension income, asset income, earnings, Supplemental Security Income (SSI), income from nonspouse co-resident family members, and imputed rental income.[3]

MINT directly measures the experiences of survey respondents as of the early 1990s—representing the first third to the first half of the lives of boomers—and changes in earnings and Social Security benefits through 2004 using SSA administrative records. MINT then projects individuals' characteristics and incomes into the future until death, accounting for major changes in the growth of economy-wide real earnings, the distribution of earnings both between and within birth cohorts, and the composition of the retiree population. All of these factors will affect the retirement income of future boomer retirees.[4] The projections in this article are based on MINT5.[5] More detail on MINT can be found in Appendix A and in Smith and others (2007).

Projecting Pensions in MINT

MINT projects employer-sponsored DB, DC, and cash balance (CB) pension plans.[6] Pension benefits are based on an individual's entire work history (real and simulated) up to the projected retirement date. SIPP self-reported data provide baseline information about pension coverage on current and past jobs. The MINT baseline was recently updated to reflect pension plan structures through December 2006, including DB pension plan freezes and conversions to CB plans. The pension module uses data from the PENSIM[7] model to impute future job changes and pension coverage on future jobs from the time of the SIPP interview through age 50. After age 50, the pension module assumes that no further job changes take place.

With each job separation, MINT projects that some workers cash out their accumulated DC balances.

The probability of cashing out is higher for younger workers than for older workers and higher for those with low account balances than for those with high account balances. Vested workers take-up DB benefits at the latter of the plan's early retirement age or projected retirement age. Workers selecting a joint and survivor pension receive a reduced benefit with a 50 percent survivor annuity. MINT assigns a cost-of-living adjustment (COLA) to pensions based on sector prevalence.[8] See Toder and others (2002) for more details about the treatment of COLAs in the MINT pension module.

MINT projects DC pension participation and contributions using the 1996 SIPP matched to SSA's Detailed Earnings Records.[9] DC pension participation is estimated using a logit model. Separate models of the probability of participation are estimated for those who contributed to a plan in the previous year and those who did not contribute. DC contributions are estimated using a random-effects Tobit model. This model allows for both an individual permanent and random error. It also controls for the statutory annual contribution limit.

The share of account balances and contributions allocated to stocks and bonds varies by age on the basis of Employee Benefits Research Institute and Investment Company Institute data. Every 5 years, the model rebalances the portfolios according to the allocation strategy for the individual's attained age category. Subsequent contributions match the allocation strategy of the attained age, if different.

The MINT model accumulates DC account balances from the time of the SIPP survey to 2005 using historical price changes and historical returns for stocks, long-term corporate bonds, and long-term government bonds. MINT assumes a real rate of return for stocks of 6.5 percent, a real rate of return for corporate bonds of 3.5 percent, and a real rate of return for government bonds of 3.0 percent. Rates of return for individuals are varied assuming a standard deviation of 17.28 percent for stocks and 2.14 percent for bonds. In every year, 1 percent is subtracted from each of the stock and bond real rates of return to reflect administrative costs.

MINT projects DB pensions using the Pension Benefit Guaranty Corporation's (PBGC's) Pension Insurance Modeling System (PIMS). DB plan formulas, which are randomly assigned to DB participants, are based on broad industry, union status, firm size categories, and whether the firm offers dual (DB and DC) coverage.[10] MINT uses actual benefit formulas to calculate benefits for federal government workers and military personnel, and uses tables of replacement rates from the Bureau of Labor Statistics to calculate replacement rates for state and local government workers. The model projects conversions of pension plan type (from DB to CB or DB to DC) using actual plan change information for plans included in the PIMS data.

If a worker is assigned to a plan that freezes, DB pension accruals stop as of the freeze date. The pension module assumes that all firms with jointly offered DB and DC plans increase the employer-match provisions of the existing plan and that all firms with stand-alone plans offer a substitute DC plan.[11] In the first year of a DB plan freeze, DC pension participation is estimated using the model for those who contributed to a DC pension in the previous year. That is, the pension module treats workers in the first year of the freeze as though they had previously contributed to a DC pension and maintains their tenure. After the first year of the freeze, DC pension participation is estimated using either the model for those who contributed to a DC pension in the previous year or the model for those who did not contribute. Workers are assigned to one of these two models based on their predicted participation status in a DC pension in the first year of the freeze.

MINT uses the 1997 to 2003 Form 5500 public-use data to identify DB plans that converted to CB plans over that time period. Workers are assigned CB plans based on the transition provisions described in the summary plan description. If a worker is grandfathered into the DB plan, the worker retains the existing DB plan. If a worker is offered a choice, the pension module calculates the expected DB and CB benefit at the date of the conversion and assigns the worker the plan type that offers the higher expected benefit. Workers who join the firm after the conversion date are assigned the CB plan. At retirement, all CB accruals are paid out as a lump sum, which is added to other retirement account assets.

Our analysis focuses on how a more rapid substitution of DC for DB plans would affect incomes of boomers at age 67 and therefore how it would affect the living standards of current workers in their retirement years. But the changes could also affect workers' living standards before age 67 through changes in wages and employee saving. For example, employers may increase wages when they freeze DB plans. If DB plan freezes represent a net reduction in total compensation for mid-career workers, employers may

keep them whole by increasing wages. Alternatively, employers may use DB plan freezes, instead of wage cuts, as a way to reduce compensation. Either way, employers may prefer to reduce DB plan obligations as a share of total compensation for the reasons discussed above. In addition, when employers introduce new DC plans, the funding of employees' retirement changes from total employer funding (under DB plans) to mixed employee and/or employer funding. Employees' contributions reduce current consumption and workers' current living standards. These two effects of the substitution of new or enhanced DC plans for DB accruals—higher wages and higher employee contributions—have offsetting effects on workers' current living standards, but may not offset each other exactly. A more complex model of wage determination would be needed to simulate the total effects of DB plan freezes on worker well-being over a lifetime.

Measuring Income in Retirement from DB Pension Plans and DC Retirement Accounts

MINT computes income from financial assets by determining the real (price-indexed) annuity a family could buy if it annuitized 80 percent of the total savings amount. The annuity value calculated is used for that year's imputation of income from financial assets only. The annuity is recalculated each year to reflect changes in wealth amounts, based on the model of wealth spend-down, and changes in life expectancy, given that the individual lived another year. For married couples, MINT assumes a 50 percent survivor annuity.

We measure income from financial wealth and DC retirement accounts as annuities in order to ensure comparability with DB pensions and Social Security benefits, which are also annuities. Without this adjustment, MINT would overstate the loss in retirement well-being because of the shift from DB pension income to DC assets; one dollar in DB pension wealth produces more measured income than one dollar in DC wealth. This happens because measured DB income includes both a return on accumulated assets and some return of principal, whereas measured financial wealth and retirement account income includes only the return on accumulated assets. We do, however, discount the annuity return by 20 percent to reflect the fact that people cannot necessarily purchase actuarially fair annuities and, if they choose to spend-down their wealth outside of annuities based on life expectancy, they run the risk of depleting their assets if they live longer than expected.

This income measure differs conceptually from asset income as measured by the Census Bureau and other analysts, which includes only the rate of return on assets (interest, dividends, and rental income) and excludes the potential consumption of capital that could be realized if a person spent down his or her wealth. The Census Bureau and many analysts include this consumption of capital from DC retirement accounts only if people choose regularly to withdraw money from their accounts. MINT treats 80 percent of the annuity value as income without regard to how much is actually withdrawn.

Pension Simulations

We test whether the distribution of economic well-being at age 67 significantly differs between the MINT baseline and an alternate DB pension scenario that significantly increases the share of frozen DB plans as has happened in the United Kingdom.

The "baseline scenario" represents the pension structure in the United States, including known pension plan freezes as of the end of 2006.[12] It maintains current employer plans, but permits DB and DC coverage to evolve over time with changes in the composition of employment and in factors influencing workers' DC plan participation and contribution rates. The alternative scenario, which we refer to as the "U.K. scenario" uses the same methodology as the MINT baseline pension scenario, but assumes that all private-sector DB pensions and a third of public-sector DB pensions will be frozen with no further benefit accruals (hard freeze) within 5 years. In each year from 2007 through 2011, an additional 20 percent of firms are randomly simulated to freeze their DB plans. Although this is more extreme than what has occurred in the United Kingdom, particularly with respect to public-sector DB pensions, it serves as an upper bound for what might happen to the pension structure in the United States. We assume that employers who freeze their plans will either establish a DC plan, if none exists, or increase contributions to their existing plan.

The U.K. scenario will have little effect on boomer DB coverage, but will affect DB accruals. Current employees will not lose their DB coverage, but will have less pension wealth at retirement because their pensions will be based on their accruals only up to the time of the freeze. Because frozen plans are closed to new employees, however, workers who are projected to start new jobs with DB pensions under the baseline will lose DB coverage under the simulated pension freezes. For the most part, only these job

changers will see their DB coverage status change under the option. (Some existing employees who are not vested in a plan, however, gain DB coverage they otherwise would not have because we assume that all existing employees become vested at the time of the pension freeze.)

We analyze the characteristics and family income of individuals born in the boomer cohorts when they reach age 67 (the age by which most people will have retired). We assume husbands and wives share resources within the family. All reported income projections are in annual per capita (per person) 2007 dollars. Our sample sizes are large (over 100,000 records), therefore differences between most variables in the simulations will be statistically significant.

Because the boomer cohort includes individuals born over a 19-year period, the pension freezes will affect its members differently. The oldest boomers, who were at or near retirement age when the first new plan freezes occurred in 2007, will have their DB pensions frozen with lengthy job tenures causing them to lose only a few high benefit-accrual years, but will also have relatively few years to boost their DC account balances before retirement. The youngest boomers, who will be under age 50 when the last projected new plan freezes occur in 2011, will have their DB pensions frozen with relatively little job tenure and lose many years of DB wealth accrual, but will also have relatively more years to accumulate DC pension wealth before retirement. To better understand the differential impact of DB pension freezes on the retirement incomes of boomers, we report results separately for four waves of boomers born from 1946 to 1950 (first-wave boomers), from 1951 to 1955 (second-wave boomers), from 1956 to 1960 (third-wave boomers), and from 1961 to 1965 (last-wave boomers).[13]

Boomers in the last wave are nearly twice as likely as their earlier counterparts to be Hispanic and are less likely to be college educated (Table 1). For example, 14 percent of last-wave boomers are Hispanic, compared with only 8 percent of first-wave boomers; only 28 percent of last-wave boomers are college graduates, compared with 32 percent of first-wave boomers. Relative to first-wave boomers, last-wave boomers are also less likely to be married at age 67 and more likely to be never married or divorced. Because pension

Table 1.
Percentage distribution of selected characteristics projected for individuals at age 67

Characteristic	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
All	100	100	100	100
Sex				
Women	52	52	53	53
Men	48	48	47	47
Marital status				
Never married	5	6	7	8
Married	67	65	63	62
Widowed	10	10	10	10
Divorced	18	19	20	21
Race/ethnicity				
Non-Hispanic white	77	74	72	69
Non-Hispanic black	9	10	10	10
Hispanic	8	10	12	14
Other	6	6	6	7
Education				
High school dropout	11	11	11	13
High school graduate	57	60	61	60
College graduate	32	30	27	28
Labor force experience				
Less than 20 years	13	12	12	11
20 to 29 years	10	11	11	12
30 or more years	77	77	77	77

SOURCE: Authors' computations of MINT5 (see text for details).

coverage varies significantly by race/ethnicity, education, and other characteristics, differences in the composition of cohorts may mitigate or exacerbate the impact of the pension shift on retirement outcomes.

Results

We begin by looking at the level and composition of retirement income under the baseline and U.K. scenarios. An assessment is then made on how the accelerated decline in DB coverage will affect different demographic groups. Next we examine numbers and characteristics of winners and losers from the change in pension coverage. What might be driving the projected outcomes is then discussed. We end with reporting mean per capita family income at age 67 in 2007 dollars. Because the mean statistic is not representative when the data are skewed, we exclude individuals with family wealth in the top 5 percent of the distribution.

Projected Sources of Retirement Incomes Under the Baseline and U.K. Scenarios

Among the first wave of boomers, 85 percent are expected to have income from financial assets, and 48 percent will have earnings, either their own or their spouses' (Table 2). Only 3 percent of individuals are projected to receive SSI payments, but 85 percent will have imputed rental income from homeownership and 94 percent will receive Social Security benefits. Under the baseline scenario, 50 percent of first-wave boomers are projected to have family DB pension benefits and 76 percent are projected to have DC retirement accounts. Pension coverage does not change under the U.K. scenario for first-wave boomers because no one who had DB coverage before the freeze loses their coverage (although, as we show below, their benefits are reduced), and because first-wave boomers are near or at retirement age and are less likely than younger workers to take-up DC pensions when newly offered.

Compared with the first wave of boomers, the last wave of boomers is equally likely to have income from assets (86 percent versus 85 percent), but less likely to have earnings (42 percent versus 48 percent). Under the baseline, last-wave boomers are 6 percentage points less likely than first-wave boomers to have DB pension benefits (44 percent versus 50 percent), but are equally likely to have DC retirement accounts (77 percent versus 76 percent). The U.K. scenario accelerates the shift from DB to DC pensions, reducing the share of last-wave boomers with DB pensions by an additional 2 percentage points and increasing the share with DC retirement accounts by 2 percentage points, compared with the baseline. Freezing more DB plans does not cause many boomers to lose DB coverage because all workers with existing DB plans retain them, even though they stop accruing benefits, and some workers who are not vested gain coverage. The only workers who lose coverage under the U.K. scenario are those who started a new job that provides a DB pension subject to a hard freeze. The U.K. scenario also increases the numbers with DC coverage only slightly because many of the affected workers already had DC coverage from their prior or current jobs.

Table 2.
Percent of individuals with family income at age 67, by scenario and income source (in percent)

Scenario and income source	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
Baseline				
Income from assets	85	86	86	86
Earnings	48	44	42	42
SSI payments	3	2	2	2
Imputed rental income	85	85	84	83
Social Security benefits	94	94	95	94
DB pension benefits	50	48	46	44
Retirement accounts	76	76	77	77
Total income	100	100	100	100
United Kingdom				
DB pension benefits	50	48	46	42
Retirement accounts	76	77	78	79
Total income	100	100	100	100

SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Projections exclude individuals with family wealth in the top 5 percent of the distribution.

Under the baseline, average per capita family DB pension benefits are projected to decline over time from $5,100 for first-wave boomers to $3,000 for last-wave boomers, and income from DC retirement accounts is projected to increase over time from $6,200 for first-wave boomers to $7,700 for last-wave boomers (Table 3). For boomers in the first wave, average per capita family DB pension benefits are expected to be only about $200 lower under the U.K. scenario than under the baseline, and average income from DC retirement accounts increases by less than $100. For boomers in the last wave, average per capita family DB pension benefits are expected to be about $1,100 lower under the U.K. scenario than under the baseline, and average income from DC retirement accounts is projected to be about $300 higher. Over time, the declines in DB pension benefits and the increases in income from DC retirement accounts are greater under the U.K. scenario than under the baseline. Furthermore, under both scenarios, the decline in DB benefits is greater than the increase in income from DC retirement accounts. As a result, per capita family income at age 67 is about $100 lower for first-wave boomers and about $700 lower for last-wave boomers under the U.K. scenario than under the baseline.[14] On average, the additional income from DC retirement accounts under the U.K. scenario replaces only part of the lost income from DB pensions. This is largely because the pension freezes deprive boomers, especially those in the last wave, of their high accrual years for DB pension wealth; and the replacement DC plan does not generate assets large enough to replace the lost DB wealth.

Subgroup Differences in Projected Retirement Outcomes

The impact of the simulations on different demographic groups will depend on whether they typically have pension benefits. Individuals who are married,

Table 3.
Mean family income per person at age 67, by scenario and income source (in thousands of 2007 dollars)

Scenario and income source	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
Baseline				
Income from assets	7.1	7.3	7.0	6.9
Earnings	10.7	9.6	9.2	9.5
SSI payments	0.1	0.1	0.1	0.1
Imputed rental income	3.0	3.0	2.8	2.8
Social Security benefits	12.7	13.1	13.1	13.1
DB pension benefits	5.1	4.1	3.4	3.0
Retirement accounts	6.2	6.8	7.5	7.7
Total income	45.0	44.0	43.2	43.0
United Kingdom				
Income from assets	7.1	7.2	6.9	6.8
Earnings	10.8	9.6	9.3	9.6
SSI payments	0.1	0.1	0.1	0.1
Imputed rental income	3.0	3.0	2.8	2.8
Social Security benefits	12.7	13.1	13.1	13.1
DB pension benefits	4.8	3.5	2.6	2.0
Retirement accounts	6.2	6.9	7.6	8.0
Total income	44.8	43.5	42.5	42.3
Difference between baseline and U.K. scenarios				
Income from assets	0.0	0.0	0.0	0.0
Earnings	0.0	0.0	0.0	0.1
SSI payments	0.0	0.0	0.0	0.0
Imputed rental income	0.0	0.0	0.0	0.0
Social Security benefits	0.0	0.0	0.0	0.0
DB pension benefits	-0.2	-0.6	-0.9	-1.1
Retirement accounts	0.0	0.1	0.2	0.3
Total income	-0.1	-0.5	-0.7	-0.7

SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Because of rounding, income components may not sum to total.

non-Hispanic white, and college educated have more experience in the labor force and are in the highest shared lifetime earnings and retirement income quintiles; they are also most likely to have DB pensions and DC retirement accounts (Table 4).[15]

Demographic groups most likely to have pensions also have higher average family incomes and are projected to be most affected by the pension shift. Under the baseline, mean family income per person is highest for men, married adults, non-Hispanic whites, college graduates, those with 30 or more years of labor force experience, and those in the top quintile of shared lifetime earnings—in every boomer wave (Table 5). Both the absolute and percentage declines in average family income per person between the baseline and U.K. scenarios are largest for many of these

Table 4.
Percent of individuals with family pensions at age 67 under the baseline scenario, by selected characteristics and pension type

	DB benefits				Retirement accounts			
Characteristic	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
All	50	48	46	43	75	75	76	76
Sex								
Women	51	49	47	44	74	74	74	75
Men	49	48	46	42	76	77	78	78
Marital status								
Never married	36	35	31	30	55	61	61	63
Married	54	53	51	48	81	82	83	83
Widowed	43	44	41	39	60	63	64	64
Divorced	42	38	39	36	65	64	66	67
Race/ethnicity								
Non-Hispanic white	52	50	49	46	80	80	81	81
Non-Hispanic black	49	48	45	40	60	64	65	67
Hispanic	38	39	37	35	51	58	61	65
Other	37	38	34	37	63	64	66	71
Education								
High school dropout	29	29	29	28	40	44	48	49
High school graduate	50	48	47	43	75	75	76	77
College graduate	58	55	53	51	88	88	88	89
Labor force experience								
Less than 20 years	27	24	23	22	38	37	39	41
20 to 29 years	39	37	35	34	58	60	61	59
30 or more years	55	53	51	48	83	83	84	85
Shared lifetime earnings								
Bottom quintile	24	25	24	23	32	35	37	39
2nd quintile	47	44	42	39	70	71	71	72
3rd quintile	56	54	52	48	85	86	86	86
4th quintile	62	62	57	55	93	92	92	93
Top quintile	62	58	57	56	96	96	96	96
Income quintile								
Bottom quintile	21	23	23	22	36	38	40	43
2nd quintile	46	47	44	40	69	71	73	73
3rd quintile	61	56	52	49	85	85	85	85
4th quintile	61	59	58	54	93	92	92	92
Top quintile	62	59	57	54	96	95	95	95

SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Shared lifetime earnings is the average of wage-indexed shared earnings between ages 22 and 62, where shared earnings are computed by assigning each individual half the total earnings of the couple in the years when the individual is married and his or her own earnings in years when nonmarried.

Table 5.
Mean family income per person at age 67, by selected characteristics (in thousands of 2007 dollars)

Characteristic	Baseline				Difference between baseline and U.K. scenarios			
	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
All	45.0	44.0	43.2	43.0	-0.1	-0.5	-0.7	-0.7
Sex								
Women	42.8	41.9	41.4	40.8	-0.1	-0.4	-0.6	-0.7
Men	47.4	46.3	45.1	45.6	-0.2	-0.6	-0.7	-0.7
Marital status								
Never married	39.4	41.1	38.0	38.3	0.0	-0.6	-0.7	-0.7
Married	46.7	45.3	44.1	44.3	-0.1	-0.5	-0.7	-0.7
Widowed	40.3	41.6	40.8	39.7	-0.2	-0.4	-0.6	-0.7
Divorced	42.7	41.8	43.1	42.4	-0.2	-0.5	-0.8	-0.8
Race/ethnicity								
Non-Hispanic white	49.1	48.6	48.0	47.6	-0.2	-0.6	-0.8	-0.8
Non-Hispanic black	31.3	32.2	31.3	31.2	0.0	-0.5	-0.5	-0.8
Hispanic	26.3	26.3	27.6	29.2	-0.1	-0.1	-0.4	-0.2
Other	40.3	38.0	39.1	46.1	-0.1	-0.3	-0.4	-0.6
Education								
High school dropout	19.2	19.0	20.1	21.0	-0.1	-0.1	-0.2	-0.3
High school graduate	38.4	37.9	37.6	36.5	-0.1	-0.4	-0.6	-0.6
College graduate	68.2	67.6	68.2	69.8	-0.2	-0.8	-1.2	-1.2
Labor force experience								
Less than 20 years	22.2	20.7	21.8	22.0	-0.1	-0.1	-0.2	-0.2
20 to 29 years	32.0	31.3	30.6	29.6	0.0	-0.1	-0.3	-0.3
30 or more years	50.7	49.4	48.3	48.5	-0.2	-0.6	-0.8	-0.8
Shared lifetime earnings								
Bottom quintile	16.8	16.9	16.9	16.9	0.0	0.0	-0.1	-0.1
2nd quintile	29.3	27.4	27.5	26.9	-0.1	-0.1	-0.2	-0.3
3rd quintile	41.4	39.7	37.7	38.0	-0.1	-0.4	-0.5	-0.6
4th quintile	56.5	56.1	53.5	52.9	-0.2	-0.7	-0.8	-0.8
Top quintile	85.8	87.5	88.1	90.0	-0.3	-1.3	-2.0	-2.0
Income quintile								
Bottom quintile	11.0	10.9	10.7	10.7	0.0	0.0	0.0	0.0
2nd quintile	23.3	22.6	22.1	21.8	0.0	-0.1	-0.1	-0.2
3rd quintile	36.6	35.5	34.7	33.8	-0.1	-0.3	-0.4	-0.4
4th quintile	58.0	56.9	55.3	55.0	-0.2	-0.8	-0.9	-0.9
Top quintile	110.3	111.0	110.0	112.9	-0.5	-1.5	-2.3	-2.5

SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Shared lifetime earnings is the average of wage-indexed shared earnings between ages 22 and 62, where shared earnings are computed by assigning each individual half the total earnings of the couple in the years when the individual is married and his or her own earnings in years when nonmarried.

same groups (Table 6). For the last-wave boomers, however, non-Hispanic blacks experience the largest percentage decline in income among race/ethnicity groups, nonmarried individuals experience greater percentage declines in income than married individuals, and women experience a slightly larger percentage decline in income than men. Blacks and nonmarried individuals have lower DC participation rates than non-Hispanic whites and married individuals and are less likely to voluntarily contribute enough to the substitute DC plan to make up for the lost DB benefits. The loss is greater for last-wave boomers who have more years of lower contributions. Still, the overall percentage declines in income are greater in the highest than in the lowest quintiles of individuals ranked either by shared lifetime earnings or retirement income at age 67.

Table 6.
Percent change in mean family income per person at age 67 between the baseline and U.K. scenarios, by selected characteristics

Characteristic	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
All	-0.3	-1.1	-1.6	-1.6
Sex				
Women	-0.3	-1.0	-1.5	-1.7
Men	-0.3	-1.2	-1.7	-1.6
Marital status				
Never married	0.0	-1.5	-2.0	-1.8
Married	-0.3	-1.1	-1.5	-1.5
Widowed	-0.4	-0.9	-1.4	-1.8
Divorced	-0.5	-1.2	-1.8	-1.8
Race/ethnicity				
Non-Hispanic white	-0.3	-1.1	-1.6	-1.7
Non-Hispanic black	-0.1	-1.6	-1.5	-2.6
Hispanic	-0.3	-0.4	-1.4	-0.8
Other	-0.3	-0.8	-1.1	-1.2
Education				
High school dropout	-0.3	-0.5	-0.8	-1.6
High school graduate	-0.3	-1.1	-1.5	-1.6
College graduate	-0.3	-1.2	-1.8	-1.7
Labor force experience				
Less than 20 years	-0.3	-0.4	-0.7	-1.0
20 to 29 years	0.0	-0.4	-1.1	-0.9
30 or more years	-0.3	-1.2	-1.7	-1.8
Shared lifetime earnings				
Bottom quintile	0.0	-0.2	-0.5	-0.9
2nd quintile	-0.3	-0.5	-0.7	-1.1
3rd quintile	-0.3	-0.9	-1.4	-1.6
4th quintile	-0.4	-1.3	-1.5	-1.4
Top quintile	-0.4	-1.5	-2.3	-2.2
Income quintile				
Bottom quintile	0.0	0.0	-0.1	-0.1
2nd quintile	0.2	-0.4	-0.6	-0.8
3rd quintile	-0.3	-0.7	-1.2	-1.2
4th quintile	-0.4	-1.4	-1.7	-1.6
Top quintile	-0.5	-1.4	-2.1	-2.2

SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Shared lifetime earnings is the average of wage-indexed shared earnings between ages 22 and 62, where shared earnings are computed by assigning each individual half the total earnings of the couple in the years when the individual is married and his or her own earnings in years when nonmarried.

Who Are the Winners and Losers?

The accelerated switch from DB to DC plans illustrated in the U.K. scenario produces both losers and winners. Many boomers will lose under the U.K. scenario, particularly mid- and late-career employees whose pension benefits will be frozen before reaching their highest accrual rate, those who contribute little or nothing to DC plans, and those who have lower than average market returns. Others, however, may gain from the shift from DB to DC plans, especially those who currently fare poorly under DB plans because they have intermittent work histories or change jobs frequently and those with high rates of return on their retirement account investments.

Our simulations show that the losers greatly outnumber the winners (Table 7).[16] When the shift

Table 7.
Percent of individuals who win and lose at age 67 between the baseline and U.K. scenarios, by selected characteristics

	Winners				Losers			
Characteristic	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
All	7	8	9	11	12	18	22	26
Sex								
Women	6	7	9	10	10	17	21	25
Men	9	9	10	12	14	20	23	27
Marital status								
Never married	4	4	6	7	6	14	17	20
Married	9	9	11	13	13	20	24	28
Widowed	4	5	7	9	8	14	16	22
Divorced	5	5	7	8	9	14	18	24
Race/ethnicity								
Non-Hispanic white	8	8	10	11	13	20	24	28
Non-Hispanic black	5	6	8	10	10	16	18	22
Hispanic	5	6	7	9	8	11	17	18
Other	5	7	9	9	10	14	15	23
Education								
High school dropout	3	4	5	6	6	8	11	14
High school graduate	7	8	9	11	12	18	21	24
College graduate	10	9	11	12	15	22	28	34
Labor force experience								
Less than 20 years	2	2	3	4	3	5	6	9
20 to 29 years	4	7	7	9	5	9	14	16
30 or more years	9	9	11	12	14	21	25	30
Shared lifetime earnings								
Bottom quintile	1	2	4	6	2	4	6	9
2nd quintile	5	7	8	10	8	12	15	21
3rd quintile	8	9	10	12	13	19	23	26
4th quintile	10	10	12	13	16	25	28	30
Top quintile	13	11	12	13	20	31	37	44
Income quintile								
Bottom quintile	1	2	4	6	2	3	6	8
2nd quintile	5	8	8	10	6	11	15	19
3rd quintile	7	10	10	12	13	19	23	25
4th quintile	11	9	12	13	18	26	29	30
Top quintile	13	11	12	12	20	32	38	48

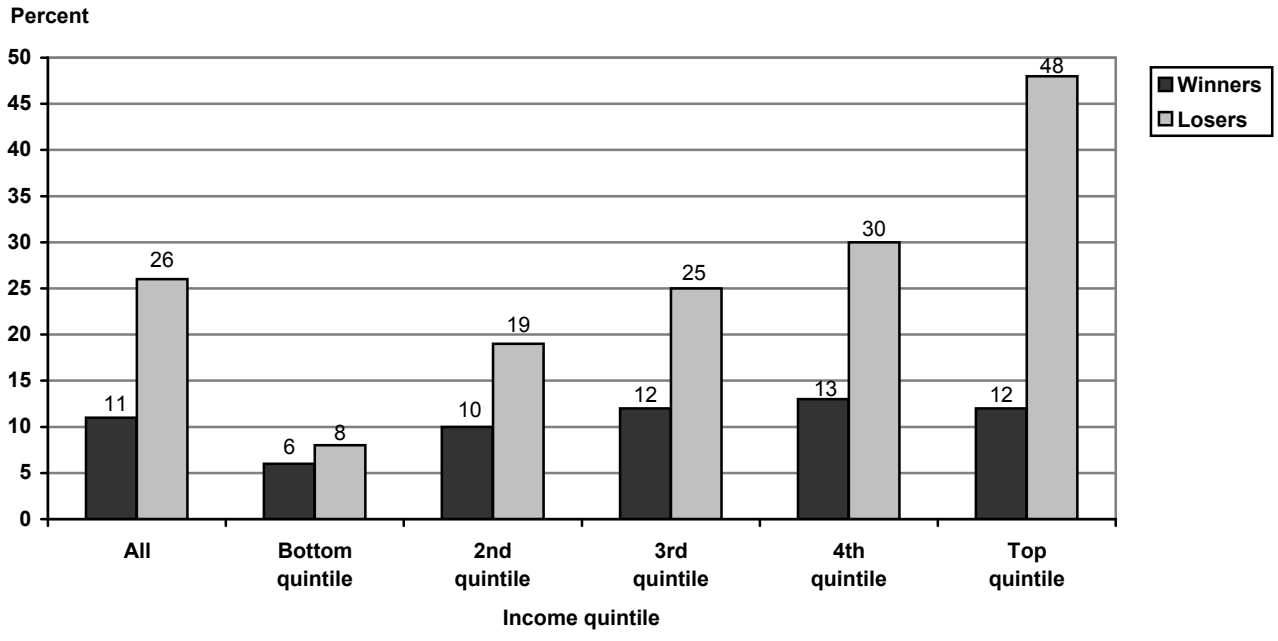
SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Shared lifetime earnings is the average of wage-indexed shared earnings between ages 22 and 62, where shared earnings are computed by assigning each individual half the total earnings of the couple in the years when the individual is married and his or her own earnings in years when nonmarried. Winners and losers are defined as having at least a $10 change in income between the baseline and U.K. scenarios.

from DB to DC pensions is accelerated under the U.K. scenario, only 7 percent of first-wave boomers, 8 percent of second-wave boomers, 9 percent of third-wave boomers, and 11 percent of last-wave boomers would see their retirement incomes increase. There are many more who would lose under the U.K. scenario—12 percent of first-wave boomers, 18 percent of second-wave boomers, 22 percent of third-wave boomers, and 26 percent of last-wave boomers. Boomers in high socioeconomic groups are most likely to win and lose because they are the people with pension benefits in the baseline scenario that may potentially be frozen. For example, 12 percent of last-wave boomers in the highest income quintile are projected to be winners, compared with only 6 percent of their counterparts in the lowest income quintile; and 48 percent of last-wave boomers with the highest incomes are projected to be losers, compared with only 8 percent of those with the lowest incomes (Chart 1). All in all, 60 percent of last-wave boomers in the highest income quintile will experience a change (either positive or negative) in their per capita family income because of the change in pension schemes. Note that the percentage affected is higher than the 54 percent of last-wave boomers in the highest income quintile who are projected to have family DB pension benefits in the baseline scenario (see Table 4). This apparent discrepancy occurs because some individuals (especially those with higher income) wait until after age 67 to retire and collect their DB pensions. These individuals will appear as winners in Table 7 because the increase in DC retirement account income has not yet been offset by the lower future DB pension income. Also, we assume workers who are not vested under the baseline scenario become immediately vested under a pension freeze, thereby gaining DB pension income. Many of the people who would gain pension coverage as a result of the freeze under the U.K. scenario may have previously changed jobs or dropped out of the labor force at a relatively young age because of a disability and have not become vested under the baseline.

It is also worth noting that among last-wave boomers, there are about four times as many losers than winners in the highest income quintile, but only slightly more losers than winners in the lowest quintile. High-income workers are significantly more likely than low-income workers to lose under the U.K. scenario because they are more likely to be

Chart 1.
Percent of last-wave boomers who win and lose income at age 67 between the baseline and U.K. scenarios, by income quintile



SOURCE: Authors' computations of MINT5 (see text for details).

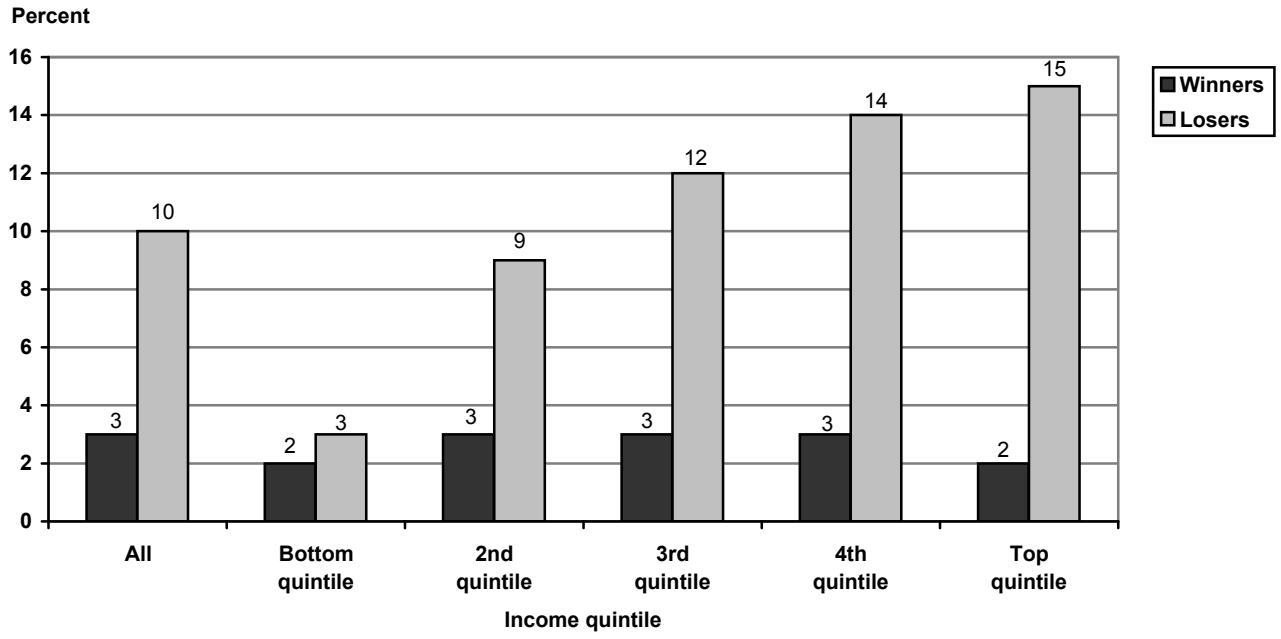
NOTE: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Winners and losers are defined as having at least a $10 change in income between the baseline and U.K. scenarios.

constrained by the statutory contribution thresholds in 401(k) plans, which limit their ability to replace lost DB pension wealth. These thresholds will increase in the future with changes in prices per the Pension Protection Act of 2006. Because wages are projected to increase faster than prices, later cohorts of workers will be more constrained by the statutory contribution thresholds in 401(k) plans than earlier cohorts, and these constraints will mostly affect higher-income workers who are the ones far most likely to contribute the maximum. Furthermore, many DB plans provide higher accrual rates for workers with earnings above the Social Security taxable maximum, so the loss of DB benefits is also especially high for some high-income workers. These highly compensated workers who are affected by DB pension freezes replace their relatively generous DB plan with a more constrained DC plan.

The percentage of those who lose relatively large amounts of income under the U.K. scenario is also concentrated among the highest income quintiles. The U.K. scenario reduces income at age 67 by 5 percent or more for 15 percent of last-wave boomers in the top income quintile, but by only 3 percent of those in the bottom quintile (Chart 2). In contrast, the share of large winners is fairly evenly distributed among income quintiles. The population subgroups least likely to gain large amounts of income under the U.K. scenario are high school dropouts, those with less than 20 years of labor force experience, and those in the bottom quintile of lifetime earnings (Table 8).

The amounts that winners gain and losers lose at age 67 are generally greater for last-wave boomers than those in the first-wave because last-wave boomers have more years to compound gains or loses in DC accounts and accrue benefits in DB accounts before reaching age 67. The differences do not monotonically rise by cohort because of the nonlinear DB accrual patterns by age. Among winners, average per capita family incomes are projected to increase by $2,100 for first-wave boomers and by $2,800 for last-wave boomers (Table 9). Among losers, average per capita family incomes are projected to decline by $2,600 for first-wave boomers and by $4,200 for last-wave boomers (Table 9). Boomers in high socioeconomic groups, who are most likely to have pensions and who have the most benefits at risk, are projected to experience the largest absolute gains and losses, although

Chart 2.
Percent of last-wave boomers who win and lose 5 percent or more income at age 67 between the baseline and U.K. scenarios, by income quintile



SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Sample includes individuals with a change of $10 in per person family income at age 67 between the baseline and U.K. scenarios. Projections exclude individuals with family wealth in the top 5 percent of the distribution. Winners and losers are defined as having a 5 percent or more change in income between the baseline and U.K. scenarios.

Table 8.
Percent of individuals who win and lose 5 percent or more of income at age 67 between the baseline and U.K. scenarios, by selected characteristics

Characteristic	Winners				Losers			
	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
All	1	1	2	3	3	7	9	10
Sex								
Women	1	1	2	2	3	7	9	11
Men	1	1	2	3	3	8	10	10
Marital status								
Never married	1	1	2	3	1	7	8	8
Married	1	1	2	3	3	8	10	11
Widowed	1	1	1	3	2	6	7	9
Divorced	1	1	2	2	3	6	9	11
Race/ethnicity								
Non-Hispanic white	1	1	2	3	3	8	10	11
Non-Hispanic black	1	1	2	3	3	7	10	12
Hispanic	1	1	2	2	3	3	7	7
Other	0	1	2	2	1	5	5	7
Education								
High school dropout	0	1	1	1	1	2	4	6
High school graduate	1	1	2	3	3	7	10	11
College graduate	1	1	2	3	4	8	10	12
Labor force experience								
Less than 20 years	0	0	1	1	1	1	2	4
20 to 29 years	1	1	1	2	2	3	6	6
30 or more years	1	1	2	3	4	9	11	12
Shared lifetime earnings								
Bottom quintile	0	0	1	1	1	1	2	3
2nd quintile	1	1	2	3	2	4	6	8
3rd quintile	1	1	2	3	3	8	10	12
4th quintile	1	1	3	4	4	11	13	13
Top quintile	2	2	2	3	5	12	15	16
Income quintile								
Bottom quintile	0	1	1	2	1	1	2	3
2nd quintile	1	1	2	3	2	4	7	9
3rd quintile	1	1	2	3	4	8	11	12
4th quintile	1	1	2	3	4	12	15	14
Top quintile	1	1	1	2	5	10	12	15

SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Sample includes individuals with a change of $10 in per person family income at age 67 between the baseline and U.K. scenarios. Projections exclude individuals with family wealth in the top 5 percent of the distribution. Shared lifetime earnings is the average of wage-indexed shared earnings between ages 22 and 62, where shared earnings are computed by assigning each individual half the total earnings of the couple in the years when the individual is married and his or her own earnings in years when nonmarried. Winners and losers are defined as having a 5 percent or more change in income between the baseline and U.K. scenarios.

Table 9.
Change in mean family income per person at age 67 for winners and losers between the baseline and U.K. scenarios, by selected characteristics (in thousands of 2007 dollars)

Characteristic	Winners				Losers			
	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
All	2.1	1.8	1.8	2.8	-2.6	-3.7	-4.2	-4.2
Sex								
Women	2.0	2.1	1.7	3.0	-2.6	-3.6	-4.0	-4.2
Men	2.1	1.5	1.8	2.5	-2.5	-3.9	-4.3	-4.3
Marital status								
Never married	3.8	1.4	2.7	4.7	-2.5	-5.3	-6.2	-6.1
Married	2.1	1.5	1.5	2.3	-2.4	-3.3	-3.5	-3.8
Widowed	1.3	4.8	1.8	4.1	-3.0	-4.7	-4.8	-5.5
Divorced	1.7	1.9	2.9	3.6	-3.3	-4.7	-5.9	-5.0
Race/ethnicity								
Non-Hispanic white	2.1	1.9	1.7	3.0	-2.7	-3.8	-4.3	-4.5
Non-Hispanic black	3.2	1.5	3.3	1.6	-1.8	-3.9	-4.2	-4.6
Hispanic	1.6	1.1	1.2	2.7	-2.2	-1.6	-2.9	-2.6
Other	0.8	2.0	2.0	1.7	-1.6	-4.2	-4.3	-3.2
Education								
High school dropout	1.0	1.3	1.1	1.0	-1.5	-1.7	-2.1	-2.8
High school graduate	1.4	1.6	1.3	2.1	-1.9	-3.0	-3.3	-3.4
College graduate	3.1	2.2	2.9	4.7	-3.8	-5.6	-6.7	-6.1
Labor force experience								
Less than 20 years	0.9	1.3	1.3	1.1	-3.1	-2.5	-3.3	-3.3
20 to 29 years	2.5	1.4	0.8	1.4	-2.2	-2.6	-3.1	-2.6
30 or more years	2.1	1.8	1.9	3.0	-2.6	-3.8	-4.3	-4.4
Shared lifetime earnings								
Bottom quintile	1.9	0.5	0.5	0.7	-1.5	-1.2	-1.6	-2.2
2nd quintile	0.8	0.6	1.2	1.3	-1.5	-1.6	-1.8	-2.0
3rd quintile	1.6	1.1	1.1	1.4	-1.8	-2.5	-2.8	-3.1
4th quintile	1.8	2.2	2.5	3.1	-2.5	-3.8	-4.0	-4.0
Top quintile	3.1	3.1	2.7	6.4	-3.9	-6.1	-7.5	-7.6
Income quintile								
Bottom quintile	0.9	0.7	0.7	0.8	-0.6	-0.7	-0.6	-0.7
2nd quintile	2.1	0.6	1.1	1.4	-1.0	-1.2	-1.6	-1.6
3rd quintile	1.3	1.7	1.4	2.2	-1.5	-2.2	-2.5	-2.7
4th quintile	1.7	1.7	2.3	3.1	-2.2	-3.7	-4.2	-4.4
Top quintile	3.1	3.3	2.5	5.8	-4.6	-6.8	-8.2	-8.0

SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Shared lifetime earnings is the average of wage-indexed shared earnings between ages 22 and 62, where shared earnings are computed by assigning each individual half the total earnings of the couple in the years when the individual is married and his or her own earnings in years when nonmarried. Winners and losers are defined as having at least a $10 change in income between the baseline and U.K. scenarios.

not necessarily the largest gains and losses as a share of income.[17] For example, average per capita family income among winners in the last wave of boomers is projected to increase by about $5,800 for those with the highest incomes, but by only about $800 for those with the lowest incomes. In comparison, average per capita family income among losers in the last wave of boomers is projected to decline by about $8,000 for those with the highest incomes, but by only about $700 for those with the lowest incomes.

What is Driving the Outcomes?

Retirement incomes may increase under the U.K. scenario for several reasons. First, some workers may increase their DC contributions or earn above average returns on their DC retirement accounts, boosting their wealth relative to what they would accrue in DB plans. Second, some workers increase accruals in DB accounts because they become vested when plans are frozen.[18] Third, some workers whose DB plans are frozen or who never acquire DB coverage may delay retirement and work longer because DC pensions, unlike DB pensions, do not encourage early retirement (Butrica and others 2006). Indeed, we find that winners are projected to have higher per capita family earnings and slightly higher Social Security benefits under the U.K. scenario than under the baseline because of delayed retirement (Table 10).

Overall, winners among first- and second-wave boomers experience increases in income from both DB pensions and DC retirement accounts. In contrast, winners among third- and last-wave boomers experience losses in their DB pensions and increases in their DC retirement accounts, with income losses in DB pensions being much smaller than income gains in DC retirement accounts.

For those whose family incomes decline under the U.K. scenario, the reduction is driven almost totally by a reduction in DB benefits. Losers experience much larger DB pension losses under the U.K. scenario than winners, but have very modest increases in income from retirement account balances, compared with winners. Losers, compared with winners, also have much more retirement wealth under the baseline and thus have much more to lose from a change in pension coverage. Their average per capita family DB pensions range from 1.4 to 2.5 times higher than those of

Table 10.
Mean family income per person at age 67 for winners and losers, by income source (in thousands of 2007 dollars)

	Baseline				Difference between baseline and U.K. scenarios			
Income source	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
Winners								
Income from assets	8.6	7.9	7.9	7.3	0.0	0.0	-0.1	-0.1
Earnings	19.4	14.1	11.8	13.3	0.5	0.5	0.6	1.3
SSI payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imputed rental income	3.7	3.5	3.2	2.9	0.0	0.0	0.0	0.0
Social Security benefits	14.4	14.4	13.9	13.7	0.0	0.0	0.1	0.1
DB pension benefits	8.3	4.9	4.1	2.9	1.1	0.5	-0.1	-0.6
Retirement accounts	9.4	9.1	9.7	9.5	0.4	0.8	1.3	2.1
Total income	63.9	53.8	50.6	49.5	2.1	1.8	1.8	2.8
Losers								
Income from assets	7.6	8.0	8.4	9.4	0.0	0.0	0.0	-0.1
Earnings	14.8	11.0	10.7	11.3	0.0	-0.1	-0.1	-0.1
SSI payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imputed rental income	3.7	3.5	3.4	3.6	0.0	0.0	0.0	0.0
Social Security benefits	15.4	15.8	15.3	15.3	0.0	0.0	0.0	0.0
DB pension benefits	11.6	10.2	8.4	7.2	-2.6	-3.8	-4.3	-4.3
Retirement accounts	11.3	11.8	12.1	12.1	0.1	0.2	0.3	0.2
Total income	64.4	60.3	58.3	58.9	-2.6	-3.7	-4.2	-4.2

SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Winners and losers are defined as having at least a $10 change in income between the baseline and U.K. scenarios.

winners, but they are also projected to have average per capita family DC retirement accounts that are 1.2 to 1.3 times higher than those of winners. For all boomers projected to lose income, the increase in DC retirement accounts offsets less than 6 percent of the decline in DB pension benefits. This huge ratio of DB benefit losses to DC benefit gains could occur for a variety of reasons, including the loss of high-accruing years in DB plans, low participation or contribution rates in the new DC retirement accounts, or lower than average investment returns on retirement account assets.[19]

Conclusions

In recent years, the United States has seen a significant shift away from DB pension plans to DC plans. This shift may accelerate rapidly as more large companies, even those with financially solvent plans, freeze their DB plans and replace them with new or enhanced DC plans. A dramatic shift away from DB plans, as has happened among private-sector DB plans in the United Kingdom, would produce both losers and winners among future boomer retirees. On balance, there would be more losers than winners and average family incomes would decline. The decline in family income is expected to be much larger for last-wave boomers born from 1961 to 1965 than for first-wave boomers born from 1946 to 1950, because last-wave boomers are more likely to have their DB pensions frozen with relatively little job tenure. We project that 26 percent of last-wave boomers would have lower family incomes at age 67, and 10 percent of them would experience at least a 5 percent decline. Although retirement incomes would increase for some families under the alternative pension scenario, only 11 percent of the last-wave boomers would see their incomes increase, and only 3 percent would experience a gain of 5 percent or more.

Demographic groups most likely to have pensions under the baseline scenario are projected to be those most affected by the accelerated freezing of DB plans, namely non-Hispanic whites, college graduates, those with many years of work experience, and those in the highest lifetime earnings and retirement income quintiles. Because the groups most likely to have DB plans have the most income at risk but also the largest potential gains from substituting DB pensions with additional DC wealth, they are projected to experience both the largest losses and the largest gains from the pension transition. For example, average per capita family income among losers in the last wave of boomers is projected to decline by $8,000 for those with the highest incomes, compared with only $700 for those with the lowest incomes. Also, average per capita family income among winners in the last wave of boomers is projected to increase by $5,800 for those with the highest incomes, but by only $800 for those with the lowest incomes.

Last-wave boomers are more likely than their predecessors to be high school dropouts, minority, and unmarried—characteristics that are associated with low earnings during working years and economic vulnerability in retirement. But these groups are less likely to have pensions in any form and therefore are much less affected by the shift from DB to DC plans. It is likely, however, that a future with fewer DB plans will generate a new class of economically vulnerable retirees among formerly better-off retirees who were relying on their DB pension income but now, through either bad luck or poor planning, will end up with insufficient resources in retirement.

The net decline in retirement income among boomer cohorts that results from substituting ongoing DB plans with frozen DB plans combined with improved DC plans is to some degree a transitory phenomenon. If people are to participate in DB and DC plans at different times during their working careers, the worst scenario for them is to hold a DB plan early in their career and a DC plan late in their career. When workers switch from DB to DC plans in midcareer, they lose the high-accrual years in their DB plans and have fewer years to accumulate DC wealth. Compared with retirement outcomes under this scenario, most workers would be better off participating in either a DB or DC plan during their entire career. More than any other birth cohort, the boomer cohorts will experience the transition from DB to DC plans in midcareer and, as our simulations show, on average suffer declines in their projected retirement incomes. Generation-Xers and those who come later may fare better depending on participation rates, contribution rates, and market returns.

The build-up of retirement assets is a complex process that varies with earnings, family changes, job changes, health status, individual choices, and fluctuations in housing and stock prices, among other factors. Policymakers need to know the impact of significant shifts in pension provisions on retirement well-being so that they can assess the alternative policy options of

shoring-up DB plans before those plans disappear or letting them slowly fade away, while focusing on ways to encourage higher participation rates and sounder investment choices within DC plans. In particular, if stock market declines close to retirement age cause significant losses in DC retirement accounts for some investors, policymakers may want to develop mechanisms to reduce risk in retirement assets. As more workers enter retirement with assets held outside of annuities, policymakers could also develop options to encourage people to use their increased retirement wealth to purchase annuities instead of spending it down rapidly. Finally, as policymakers consider proposals to improve the solvency of the Social Security system, they must recognize that the shift from DB to DC pensions means that Social Security will increasingly become the only source of guaranteed lifetime benefits of which most retirees can rely.

Appendix A

MINT begins with pooled SIPP data from 1990 to 1996. The 1990 to 1993 panels include individuals born from 1926 to 1965. The 1996 panel includes individuals born from 1926 to 1972. Using a cloning process, MINT also creates individuals born from 1973 to 2018 and immigrants that arrive after 1996.

The SIPP data include numerous demographic characteristics, including marriage history, migration history, health and disability status, and the number and relationships of people in the household. The SIPP also contains detailed income and wealth characteristics such as home equity, financial assets, pension characteristics and assets, Social Security benefits and SSI payments, and income from wages and salaries, self-employment, and pensions.

MINT uses earnings from Social Security administrative data for the years 1951 through 2004 for individuals with a valid Social Security number, matched to the 1990–1993 and 1996 SIPP panels. The model statistically imputes an earnings record for all nonmatched respondents by selecting a similar respondent with a valid match. Matching variables in this imputation include age, sex, education, self-reported SIPP earnings, immigration age, and deferred contribution pension status.

MINT then projects annual earnings and disability onset through age 67 using a "nearest neighbor" matching procedure. The model starts with a person's own SSA-recorded earnings from 1951 to 2004. The nearest neighbor procedure statistically assigns to each "recipient" worker the next 5 years of earnings and DI entitlement status, based on the earnings and DI status of a "donor" MINT observation born 5 years earlier with similar characteristics. The splicing of 5-year blocks of earnings from donors to recipients continues until earnings projections reach age 67. A number of criteria are used to match recipients with donors in the same age interval. These criteria include sex, minority group status, education level, DI entitlement status, self-employment status, average earnings over the prior 5-year period, presence of earnings in the 4th and 5th years of the prior 5-year period, and age/sex group quintile of average prematch period earnings. An advantage of this approach is that it preserves the observed heterogeneity in age/earnings profiles for earlier birth cohorts in projecting earnings of later cohorts.

In a subsequent process, for all individuals who never become DI recipients, MINT projects earnings, retirement, and benefit take-up from age 55 until death. These earnings replace the earnings generated from the splicing method from age 55 until retirement. This postprocess allows the model to project behavioral changes in earnings, retirement, and benefit take-up in response to policy changes. MINT then calculates Social Security benefits based on earnings histories and DI entitlement status of workers, marital histories, and earnings histories of current and former spouses.

Social Security benefits in MINT are calculated using a detailed Social Security benefit calculator. MINT's calculated benefits use earnings from the Summary Earnings Record and should generate actual benefits from the Master Beneficiary Record. Calculated and actual benefits will not match in cases when the benefits are based on a former spouse. MINT selects former spouses (where earnings histories are available), and to ensure consistency in benefits with earnings and spouse characteristics, it uses calculated Social Security benefits. MINT's benefits are based on full-year values even in the first year of benefit take-up. The actuarial reduction factor accounts for the age in months at take-up, but there is no adjustment in annual benefits for part-year receipt.

MINT projects pension coverage and benefits starting with the self-reported pension coverage information in the SIPP. It then links individuals to pension plans and simulates new pension plans along with job changes. Pension accruals depend on the characteristics of individuals' specific pension plan parameters and simulated job tenure. The model also projects wealth from DC retirement accounts (that is—defined contribution plans, individual retirement accounts, and Keogh plans) to the retirement date based on initial account balances and projected new contributions and investment earnings.

This simulation model also projects housing equity and nonpension, nonhousing wealth (that is—vehicle, other real estate, and farm and business equity; stock, mutual fund, and bond values; checking, saving, money market, and certificate of deposit account balances—less unsecured debt). These projections are based on random-effects models of wealth accumulation estimated from the Panel Survey of Income Dynamics, the Health and Retirement Study, and the Survey of Income and Program Participation. Explanatory variables include age, recent earnings and present value of lifetime earnings, number of years with earnings above the Social Security taxable maximum, marital status, sex, number and age of children, education, race, health and disability status, pension coverage, self-employment status, and last year of life.

In addition, MINT also projects living arrangements, SSI payments, and income of nonspouse co-residents from age 62 until death. Living arrangements depend on marital status, age, sex, race, ethnicity, nativity, number of children ever born, education, income and assets of the individual, and date of death. For those projected to co-reside, MINT uses a "nearest neighbor" match to assign the income and characteristics of the other family members from a "donor" file of co-resident families from pooled 1990 to 1993 SIPP panels. After all incomes and assets are calculated, MINT calculates SSI eligibility and projects participation and payments for eligible participants.

Finally, MINT calculates annual state and federal income taxes from federal and state tax calculators and additional data from a statistical match with an enhanced Statistics of Income (SOI) file. The statistical match uses a minimum distance function. The key match variables are filing status, age of family head, wage and salary earnings, self-employment earnings, pension income, Social Security benefits, home equity, and financial assets. The enhanced SOI is used as the data source for interest, dividends, rental income, and itemized deductions; these variables are needed to calculate income tax liabilities.

The enhanced SOI file used with MINT is based on the 2001 SOI file that is statistically matched to the 1996 SIPP to add home equity, financial assets, and age. This match uses a minimum distance function that includes filing status, state, number of exemptions, wage and salary income, self-employment income, Social Security income, pension income, individual retirement account distributions, interest, dividends, rental income, alimony, and unemployment compensation.

This report calculates asset income based on the annuity that families could purchase from 80 percent of financial assets. MINT uses this annuity income to calculate retirement income; not the SOI imputed interest, dividends, and rental income. The model uses the potential annuity instead of capital income from assets as an income measure to treat families with DC pensions in a manner comparable to that of families with DB pensions. The potential annuity amount will exceed the return on capital—interest, dividends, and rental income—because the annuity includes repayment of principal in addition to capital income. This places the measured income from DC accounts on an equivalent scale with reported DB pension income, which includes both the return on assets and repayment of principal.

Finally, MINT projects income and demographic transitions annually from the SIPP interview year until the earlier of emigration, institutionalization, death, or 2099. The earnings and benefit status come directly from the administrative data through 2004. Per capita income and assets depend on economic and demographic variable (marriage, divorce, and death) changes over the period.

Appendix B

Table B-1 expresses the average change in mean per person family income as a percent rather than as a dollar value for winners and losers. Tables B-2 and B-3 estimate the income levels and amount of change for winners and losers, respectively, by the level of percent change in income.

Table B-1.
Percent change in mean per person family income at age 67 for winners and losers between the baseline and U.K. scenarios, by selected characteristics

Characteristic	Winners				Losers			
	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
All	3.2	3.3	3.5	5.6	-4.0	-6.1	-7.1	-7.2
Sex								
Women	3.3	4.1	3.5	6.3	-4.1	-6.2	-7.0	-7.6
Men	3.1	2.7	3.5	5.0	-3.9	-6.1	-7.2	-6.9
Marital status								
Never married	4.0	2.8	5.1	8.2	-4.4	-7.7	-9.6	-8.9
Married	3.3	2.8	2.9	4.8	-3.8	-5.7	-6.4	-6.7
Widowed	1.8	8.6	3.2	8.3	-4.4	-7.3	-7.7	-9.5
Divorced	2.9	3.9	6.2	7.2	-4.9	-7.0	-8.9	-7.6
Race/ethnicity								
Non-Hispanic white	3.1	3.2	3.1	5.7	-4.0	-6.1	-7.0	-7.3
Non-Hispanic black	5.9	4.0	8.5	5.1	-4.2	-7.8	-9.4	-10.2
Hispanic	3.4	3.1	3.1	6.3	-5.0	-3.9	-7.3	-6.4
Other	1.5	4.1	4.0	2.9	-2.5	-6.1	-6.6	-4.4
Education								
High school dropout	3.0	4.6	3.6	4.4	-3.8	-5.2	-6.8	-8.8
High school graduate	2.7	3.5	3.1	5.2	-3.6	-5.8	-6.7	-7.5
College graduate	3.7	3.0	4.0	6.1	-4.4	-6.6	-7.8	-6.8
Labor force experience								
Less than 20 years	1.8	2.8	3.4	4.0	-5.1	-5.7	-8.8	-8.5
20 to 29 years	4.4	3.4	2.1	4.3	-4.3	-5.2	-7.0	-6.9
30 or more years	3.2	3.3	3.6	5.7	-4.0	-6.2	-7.1	-7.2
Shared lifetime earnings								
Bottom quintile	7.7	2.1	2.5	3.3	-5.5	-5.5	-7.6	-10.1
2nd quintile	2.4	2.3	4.2	4.6	-4.1	-4.8	-5.8	-6.9
3rd quintile	3.4	2.8	2.6	3.7	-3.9	-5.8	-6.9	-7.2
4th quintile	2.9	3.8	4.5	5.5	-3.9	-6.3	-6.8	-6.9
Top quintile	3.4	3.5	3.1	7.0	-4.0	-6.4	-7.7	-7.3
Income quintile								
Bottom quintile	6.4	5.9	5.8	6.8	-4.6	-5.3	-5.0	-6.0
2nd quintile	8.7	2.5	5.0	6.4	-4.3	-5.2	-7.0	-7.2
3rd quintile	3.5	4.8	4.0	6.6	-4.2	-6.1	-7.0	-8.1
4th quintile	2.9	3.1	4.3	5.7	-3.8	-6.6	-7.5	-7.9
Top quintile	2.8	3.0	2.4	4.9	-4.0	-6.0	-7.0	-6.8

SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Shared lifetime earnings is the average of wage-indexed shared earnings between ages 22 and 62, where shared earnings are computed by assigning each individual half the total earnings of the couple in the years when the individual is married and his or her own earnings in years when nonmarried. Winners and losers are defined as having at least a $10 change in income between the baseline and U.K. scenarios.

Table B-2.
Percent of individuals who win, mean family income per person (in thousands of 2007 dollars), and percent change in family income at age 67 for winners, by income source and level of income change

	Baseline				Difference between baseline and U.K. scenarios			
	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
Less than 2% change in family income								
Winners (%)	5.0	5.0	6.0	5.0	. . .	. . .	. . .	. . .
Income source ($)								
Income from assets	9.2	8.9	9.1	8.2	0.0	0.0	-0.1	-0.1
Earnings	22.5	16.1	14.6	16.5	0.0	0.0	0.0	0.0
SSI payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imputed rental income	3.9	3.6	3.5	3.2	0.0	0.0	0.0	0.0
Social Security benefits	14.3	14.1	13.7	13.4	0.0	0.0	0.0	0.0
DB pension benefits	7.2	4.3	3.7	2.2	0.0	0.0	-0.2	-0.3
Retirement accounts	10.1	9.7	10.7	10.5	0.4	0.4	0.6	0.8
Total income	67.2	56.7	55.3	54.0	0.4	0.4	0.4	0.4
2% to less than 5% change in family income								
Winners (%)	1.0	1.0	2.0	3.0	. . .	. . .	. . .	. . .
Income source ($)								
Income from assets	8.7	5.3	6.1	7.0	0.0	-0.1	-0.1	-0.2
Earnings	11.7	9.9	8.6	12.6	0.0	0.1	0.0	0.1
SSI payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imputed rental income	3.2	3.5	2.7	2.6	0.0	0.0	0.0	0.0
Social Security benefits	14.5	14.7	14.2	13.6	0.0	0.0	0.0	0.0
DB pension benefits	11.0	5.4	4.8	2.8	1.1	0.2	-0.1	-0.4
Retirement accounts	6.9	7.8	9.0	10.0	0.7	1.2	1.6	2.1
Total income	56.0	46.6	45.3	48.6	1.8	1.5	1.4	1.6
Greater than or equal to 5% change in family income								
Winners (%)	1.0	1.0	2.0	3.0	. . .	. . .	. . .	. . .
Income source ($)								
Income from assets	5.3	5.8	6.3	6.0	0.0	0.1	0.0	0.0
Earnings	11.5	9.4	6.7	7.3	3.6	3.7	3.4	5.0
SSI payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imputed rental income	3.5	3.0	2.8	2.7	0.0	0.0	0.0	0.0
Social Security benefits	14.8	15.3	14.4	14.2	0.2	0.3	0.4	0.3
DB pension benefits	11.7	7.1	4.7	4.3	6.4	3.5	0.0	-1.4
Retirement accounts	8.4	7.8	7.3	6.9	0.6	2.1	3.0	4.6
Total income	55.2	48.4	42.1	41.5	10.7	9.6	6.8	8.6

SOURCE: Authors' computations of MINT5 (see text for details).

NOTES: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Winners are defined as having at least a $10 increase in income between the baseline and U.K. scenarios.

. . . = not applicable.

Table B-3.
Percent of individuals who lose, mean family income per person (in thousands of 2007 dollars), and percent change in family income at age 67 for losers, by income source and level of income change

	Baseline				Difference between baseline and U.K. scenarios			
	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
Less than 2% change in family income								
Losers (%)	5.0	7.0	8.0	11.0	. . .	. . .	. . .	. . .
Income source ($)								
Income from assets	9.4	9.8	11.4	13.4	0.0	0.0	0.0	0.0
Earnings	17.9	14.8	15.1	17.1	0.0	0.0	0.0	0.0
SSI payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imputed rental income	4.0	3.7	4.0	4.4	0.0	0.0	0.0	0.0
Social Security benefits	14.9	14.9	14.7	15.6	0.0	0.0	0.0	0.0
DB pension benefits	6.0	4.7	3.0	3.1	-0.4	-0.5	-0.5	-0.5
Retirement accounts	13.8	12.9	12.1	12.9	-0.1	0.0	0.1	0.2
Total income	66.0	60.8	60.3	66.5	-0.6	-0.5	-0.4	-0.3
2% to less than 5% change in family income								
Losers (%)	4.0	4.0	4.0	4.0	. . .	. . .	. . .	. . .
Income source ($)								
Income from assets	7.0	8.0	7.8	7.9	0.0	0.0	0.0	0.0
Earnings	12.2	9.6	8.7	10.0	0.0	0.0	0.0	0.0
SSI payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imputed rental income	3.8	3.5	3.3	2.7	0.0	0.0	0.0	0.0
Social Security benefits	15.9	15.9	15.3	14.3	0.0	0.0	0.0	0.0
DB pension benefits	12.5	8.0	5.4	4.2	-2.1	-1.8	-1.9	-1.9
Retirement accounts	10.7	12.3	12.9	11.2	0.1	-0.1	0.1	0.2
Total income	62.1	57.3	53.4	50.2	-2.0	-1.9	-1.8	-1.7
Greater than or equal to 5% change in family income								
Losers (%)	3.0	7.0	9.0	10.0	. . .	. . .	. . .	. . .
Income source ($)								
Income from assets	5.5	6.7	6.5	6.5	0.0	-0.1	-0.1	-0.1
Earnings	13.1	8.9	8.3	6.8	-0.1	-0.1	-0.1	-0.2
SSI payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imputed rental income	3.4	3.5	3.1	3.3	0.0	0.0	0.0	0.0
Social Security benefits	15.7	16.3	15.8	15.5	0.0	0.0	0.0	0.0
DB pension benefits	18.8	15.6	13.4	11.9	-6.4	-7.6	-8.1	-8.5
Retirement accounts	8.4	10.6	11.9	11.7	0.3	0.5	0.4	0.3
Total income	64.9	61.6	58.9	55.8	-6.2	-7.2	-7.8	-8.6

SOURCE: Authors' computations of MINT5 (see text for details).

NOTES: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Losers are defined as having at least a $10 decrease in income between the baseline and U.K. scenarios.

. . . = not applicable.

Notes:

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[1] The 2008 stock market crash will have little impact on the relative results in this study as most of the shift in DB pension accruals and new contributions to DC plans are projected to occur after the stock market crash. Siegel (2007), based on over 200 years of financial data, found that markets fluctuate around a mean trend. This "mean reversion" implies that one could reasonably expect the market to at least partially recover after the 2008 market crash. If the stock market does partially recover, Butrica, Smith, and Toder (2009) project that future retirees will lose very little retirement income and those that continue to invest in stocks after the crash can actually benefit from buying stocks on sale that subsequently grow at above average market returns.

[2] Before 1978, employees could make voluntary contributions to thrift saving plans established by employers; interest accruals within the plans were tax-free until withdrawal, but the contributions were not deductible. Contributions by employers to DC plans were tax-exempt, but employees did not have the option of making voluntary tax-deductible contributions.

[3] Imputed rental income is the return that homeowners receive from owning instead of renting, in the form of reduced rent, less costs of homeownership. It is estimated as a 3.0 percent real return on home equity (the difference between the house value and the remaining mortgage principal).

[4] MINT5 uses projections by SSA's Office of the Chief Actuary of net immigration, disability prevalence through age 65, mortality rates, and the growth in average economy-wide wages and the consumer price index from the intermediate cost scenario in the 2008 Old-Age, Survivors, and Disability Insurance Trustees Report (Board of Trustees 2008).

[5] Updated with Board of Trustees (2008) assumptions and technical corrections, November 2008 (MINT5exV5HIGH and MINT5exV5LOW).

[6] CB plans are a hybrid type of pension plan in which employers guarantee rates of return, as in a DB plan, but the employee receives a separate account that increases in value from both employer contributions and the plan rate of return, as in a DC account.

[7] PENSIM is a microsimulation model developed by Martin Holmer of the Policy Simulation Group. This model is used for the analysis of the retirement income implications of government policies affecting employer-sponsored pensions. The PENSIM projections of employee pension coverage are calibrated by worker age, broad industry group, union status, and firm size to the 2008 National Compensation Survey (http://www.bls.gov/ncs/ebs/benefits/2008/benefits_retirement.htm).

[8] COLAs are more prevalent in public-sector plans than in private-sector plans.

[9] The DER includes longitudinal values for taxable and deferred earnings based on IRS W-2 Forms from 1992 to 2004.

[10] PIMS is a model developed by the PBGC. It contains data for a sample of over 600 DB plans. The model estimates future pension costs that must be borne by PBGC as a result of the bankruptcies of firms with DB plans.

[11] The pension module assigns the actual DC provisions of the plan if they are known. Otherwise, DC plan parameters are imputed based on the distribution of known plans.

[12] See Smith and others (2007, Table 8.9) for a list of the 25 baseline frozen pension plans and characteristics of the replacement DC plans.

[13] Boomers are typically represented as those born from 1946 to 1964. For analytical purposes, however, we define the boomer cohort as those born from 1946 to 1965.

[14] Income components may not sum to the total because of rounding.

[15] Our earnings measure is "shared lifetime earnings"—the average of wage-indexed shared earnings from ages 22 to 62, where shared earnings are computed by assigning each individual half the total earnings of the couple in the years when the individual is married and his or her own earnings in years when unmarried.

[16] We define winners and losers as those with at least a $10 change in their per capita family income at age 67 between the baseline and U.K. scenarios.

[17] Table B-1 shows the percent change in per capita income for winners and losers for the same subgroups as shown in Table 9.

[18] Some workers may also receive higher DB benefits after the freeze because of an increase in the earnings the plan replaces. This can happen if the pension replaces the average of the last 5 years of covered earnings and a higher-earning year before the freeze substitutes for a lower-earning year after the freeze.

[19] Table B-2 shows mean family income at age 67, by income source for individuals that gain less than 2 percent, 2 percent to 5 percent, and 5 percent or more. Table B-3 shows the same information for losers.

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Social Security Administration's Master Earnings File: Background Information

By Anya Olsen and Russell Hudson*

The Social Security Administration (SSA) receives reports of earnings for the U.S. working population each year. Earnings data are used to administer the Social Security programs and to conduct research on the populations served by those programs. The administrative needs of SSA and other agencies have changed over time and, as a result, there have been numerous changes to the main source of SSA's earnings data, which is known as the Master Earnings File (MEF). By documenting the history, content, limitations, complexities, and uses of the MEF (and data files derived from the MEF), this article serves as a resource for researchers who use earnings data to study work patterns and their implications. It is also a resource for policymakers and administrators who must understand the data used in administering current-law programs and the data available to inform potential changes to those programs.

Introduction

Each year employers and the Internal Revenue Service (IRS) send information to the Social Security Administration (SSA) on the earnings of the U.S. working population. SSA uses this information to calculate benefit amounts for all types of beneficiaries, including retired workers, spouses, widow(er)s, children, and the disabled. SSA stores this earnings information as the Master Earnings File (MEF) and because it comprises IRS tax data, it is subject to IRS disclosure rules.[1] This file contains data derived from IRS Form W-2, quarterly earnings records, and annual income tax forms. These data include regular wages and salaries, tips, self-employment income, and deferred compensation (contributions or distributions). In addition to calculating Social Security benefits, MEF data are used for policy analysis and research both within and outside SSA. This article is primarily for researchers interested in using data derived from the MEF to better understand the past and present U.S. working population.[2] It is also of use to policymakers and administrators who must understand the underlying data used in administering current-law programs and the data available to inform potential changes to those programs. This article examines the history of the data, how the data are collected and entered into the SSA computer systems, the information contained in the data, some limitations and complexities of using the data for research purposes, and how the agency uses the data.

History of the Social Security Program

The original Social Security Act, which was enacted in 1935, required that monthly benefits be paid to qualified individuals aged 65 or older based on their wages from employment before age 65.[3] The law tasked SSA's predecessor, the Social Security Board (SSB), with obtaining earnings information in order to calculate benefit amounts in retirement. In order to assign earnings to a specific individual, the SSB established Social Security numbers (SSNs) to allow employers to uniquely identify, and accurately report, earnings covered under the new program. This process began in November 1936 with the assistance of the

Selected Abbreviations

AWI	average wage index
CWHS	Continuous Work History Sample
EIN	employer identification number
ESF	Earnings Suspense File
FICA	Federal Income Contributions Act
HI	Hospital Insurance

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Selected Abbreviations—*continued*

HSA	Health Savings Account
IRS	Internal Revenue Service
MEF	Master Earnings File
MQGE	Medicare Qualified Government Employment
OASDI	Old-Age, Survivors, and Disability Insurance
P.L.	Public Law
QC	quarter of coverage
SSA	Social Security Administration
SSB	Social Security Board
SSN	Social Security number

Post Office Department (Corson 1938). Beginning in 1937, information on earnings up to the taxable maximum of $3,000 was collected for all qualified individuals. This was the maximum amount on which both employers and employees were required to pay their share of taxes (1.0 percent each) under Title VIII of the original Social Security Act. In the 1939 amendments, the taxing provisions were taken out of the Social Security Act and placed in the Internal Revenue Code as the Federal Insurance Contributions Act (FICA) (SSA 2009e).[4] FICA taxes (also called payroll taxes) continue to be withheld from wages and earnings up to the taxable maximum, which has increased over the past 70 years. For 2009, Social Security taxes are collected on earnings up to $106,800.

Changes to Coverage

The Social Security Act stipulated who would be covered by the program, meaning those who would pay into the system while working and then receive benefits in retirement. The types and numbers of workers covered by Social Security have changed over time as more categories of workers have been added to the rolls (see Chart 1). Under the original act, all workers in commerce and industry (excluding railroads) were covered by the program.[5] In 1940, 24 million workers were in covered employment, which was approximately 52 percent of the employed labor force (SSB 1944). Self-employment earnings information was first collected in 1951 when nonfarm self-employed workers (except members of professional groups) were added to the Social Security program. Additional groups of self-employed workers and professionals were added through legislation passed in 1954, 1956, and 1965 (more information appears in the Self-Employment Earnings section).

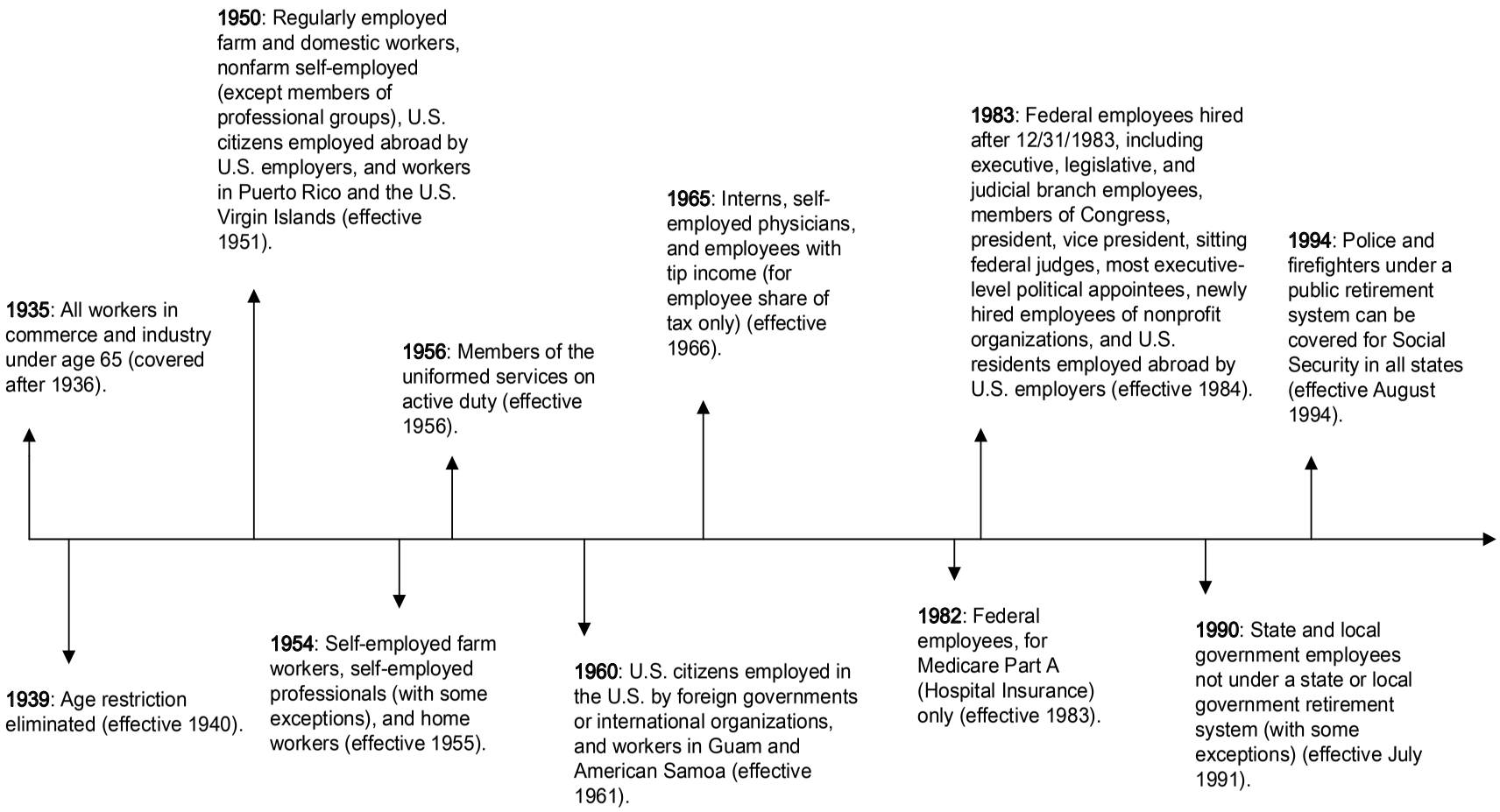
Various types of agricultural and domestic workers and members of the uniformed services on active duty were also added during the 1950s and 1960s, bringing the number of workers with taxable earnings to 92.1 million by 1970 (SSA 2008). The 1983 amendments to the act added newly hired federal employees, members of Congress, the president and vice president, and newly hired employees of nonprofit organizations. Today, approximately 96 percent of the U.S. workforce (including workers in American Samoa, Guam, the Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands) participate in the Social Security program (SSA 2008).[6] As more workers are added to the program, SSA collects an increasing number of earnings records each year. The MEF currently collects earnings information on an annual basis for about 160 million people working in the United States and its territories.

Changes to the Taxable Maximum

In addition to changing coverage laws, changes to the Social Security program and Social Security-related tax laws have also affected the information contained in the MEF (see Chart 2). Since its inception, there have been increases to the maximum income subject to Social Security payroll taxes, which has resulted in higher earnings amounts being stored in the MEF. The first increase in the taxable maximum, from $3,000 to $3,600, occurred in 1951, and four additional increases occurred through 1971. The 1972 Social Security Amendments provided for annual increases in the taxable maximum, proportional to the increase in the national average wage, beginning in 1975.[7] Since 1978, earnings information has also been collected for workers and earnings not covered by the program and for those with earnings above the taxable maximum (for more information on changes to the earnings data see the Relevant Time Periods section).

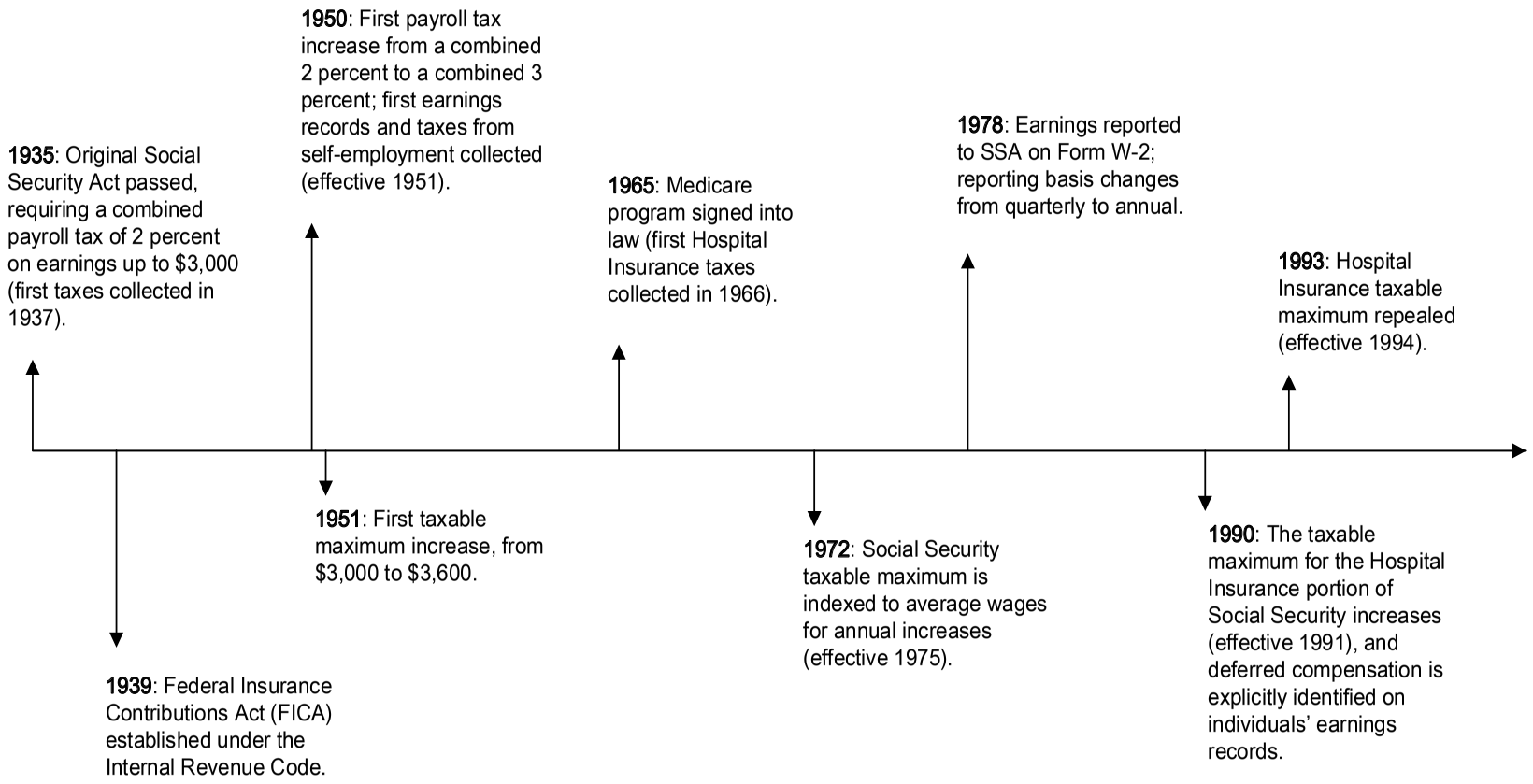
In this article "covered earnings" refers to those from employment covered by Social Security or, more specifically, Old-Age, Survivors, and Disability Insurance (OASDI). "Noncovered earnings" refers to those from employment not covered by OASDI. Covered earnings below the taxable maximum are called "OASDI taxable earnings," while those above the taxable maximum are referred to as "OASDI nontaxable earnings." A "quarter of coverage" (QC) is the basic unit for determining whether a worker is insured under the Social Security program. Covered

Chart 1.
Historical expansion of Social Security coverage: Additional types of workers covered, by date of authorizing legislation



SOURCE: SSA 2008, Table 2.A1.

Chart 2.
Selected Social Security program changes affecting Master Earnings File information



SOURCE: SSA 2008, Table 2.A3; SSA 2009e; and Donkar 1981.

NOTES: Entries with effective dates given are shown by date of authorizing legislation.

SSA = Social Security Administration.

workers must have a specific number of QCs to receive benefits, and the earnings needed to qualify for one QC has changed over time.[8]

Medicare

Other major changes to the program, such as the creation of Medicare in 1965, required new information to be added to the MEF. Medicare originally contained two parts: Part A, or Hospital Insurance (HI), provided free of premiums and generally covering inpatient hospital care; and Part B, or Supplemental Medical Insurance (SMI), requiring beneficiaries to pay a monthly premium and covering certain medical services and supplies.[9] Beginning in 1966, payroll taxes were collected for HI, generally from those who were also covered by the Social Security program (SSA 2008). Taxes were shared equally by the employer and the employee, and amounted to 0.7 percent of wages. This amount has increased over the years to the current combined tax of 2.9 percent. Today, the combined OASDI and HI payroll tax rate is 15.3 percent—7.65 percent each for the employer and employee.

From 1966 through 1990, the HI payroll tax was collected on earnings up to the Social Security taxable maximum. Under Public Law (P.L.) 101-508, enacted in 1990, the taxable maximum for Medicare in 1991 was increased to $125,000 (the taxable maximum for Social Security that year was $53,400) and was to be indexed to average wages thereafter. However, P.L. 103-66 repealed the Medicare taxable maximum beginning in 1994, and required HI payroll taxes to be paid on all wages and self-employment earnings. This increased the amount of earnings reported to SSA for those who had earnings above the Social Security taxable maximum, and greatly increased the amount of self-employment earnings records in the MEF. All earnings that are subject to OASDI taxes are also subject to HI taxes; however, the reverse is not true. Earnings that are subject to payroll taxes for Medicare purposes, but are not subject to OASDI taxes, are referred to as Medicare-only or HI-taxable earnings in the MEF. In addition, HI- or Medicare-covered earnings are from employment in jobs covered by Medicare, but not OASDI. Since 1994, HI-taxable earnings in the MEF are equal to HI-covered earnings because there is no longer an HI taxable maximum.

Because the Medicare coverage rules are different from those for the OASDI program, the MEF contains information on earnings subject to the Medicare tax but not also to the OASDI tax. Theoretically, this should be the case only for workers with Medicare Qualified Government Employment (MQGE).[10] This includes federal government employees hired before January 1, 1984, and state and local government employees hired after March 31, 1986, or whose employment after this date is subject to special conditions of the Social Security Act (CFR 2008).[11] The wages paid to those under MQGE are classified in the MEF as HI-taxable earnings. These earnings are used for Medicare purposes and do not qualify the worker for OASDI benefits, as they are not OASDI-taxable.

Self-Employment Earnings

As noted earlier, nonfarm and nonprofessional self-employed workers were added to the program by the 1950 Social Security Amendments (self-employed farm and professional workers were added later) (see Chart 1). Self-employed workers first paid taxes in 1951 at a rate that was less than the combined employer and employee rate for other covered workers. For example, in 1951 the combined Old-Age and Survivors Insurance (OASI) tax rate for employers and employees was 3.0 percent, while the OASI tax rate for the self-employed was 2.25 percent (SSA 2008). The Social Security Amendments of 1983 increased the self-employment tax rate to match the combined employee-employer Social Security and Medicare tax rates effective January 1, 1984 (General Accounting Office 1983). A temporary income tax credit reduced the effective tax rate from 1984 through 1989 (SSA 1990), and starting in tax year 1990, self-employed persons applied a factor of 92.35 percent (100 percent minus 7.65 percent) to their IRS-reported net earnings to determine their Social Security and Medicare taxable net earnings (SSA 2009c, Chapter 12).[12] This tax deduction provides similar Social Security and income tax treatment of employees, employers, and self-employed workers (SSA 1990). On their adjusted net earnings, self-employed workers pay a tax rate equivalent to the combined employer and employee OASDI and HI tax rate.[13]

SSA obtains earnings information for the self-employed electronically from IRS Form 1040 Schedule SE (self-employment tax).[14] Before 1991, the IRS sent self-employment earnings data to SSA only when those earnings were reported as Social Security taxable. For a worker with both employment and self-employment earnings, payroll taxes are paid on the employment earnings first. Until 1991, if an individual's wages from employment reached or exceeded the OASDI taxable maximum, SSA would not collect any

self-employment information for the worker during that year. If wages were less than the OASDI taxable maximum, then the employee was required to pay OASDI taxes on any self-employment income up to the OASDI taxable maximum. Therefore, SSA collected partial data reflecting self-employment income up to the OASDI taxable maximum. Starting in 1991, additional self-employment earnings—up to the Medicare taxable maximum—were added to the MEF. With the elimination of the Medicare taxable maximum in 1994, the MEF began including all reported self-employment income.

Deferred Compensation

Another change to the MEF resulted from the proliferation of deferred compensation. Deferred compensation is an arrangement in which a portion of an employee's wages are paid out in a year after that in which they are actually earned. This usually occurs with certain retirement plans such as 401(k)s and is usually done to defer the payment of income taxes. In 1984, earnings reports began to include elective deferrals for those workers with wages below the taxable maximum, although deferrals were not explicitly identified and the information was incomplete (Pattison and Waldron 2008).[15] As previously discussed, the Social Security taxable maximum is indexed to the growth rate in the national average wage. In 1989, P.L. 101-239 changed the calculation of the national average wage to include certain types of deferred-compensation plans for years after 1991.[16] Since 1990, SSA has collected additional information on the aggregate value of workers' deferred compensation from Form W-2 to include in the national average wage calculation, which is used to calculate the annual taxable maximum (and other wage-indexed amounts for the OASDI program).[17] Starting in 2004, SSA began to capture information on the specific type of deferred compensation (for example, a 401(k), 403(b), or 457(b) pension plan) and wages that were put into Health Savings Accounts (HSAs).[18] This more detailed deferred compensation and HSA information is now contained in the MEF.

Relevant Time Periods

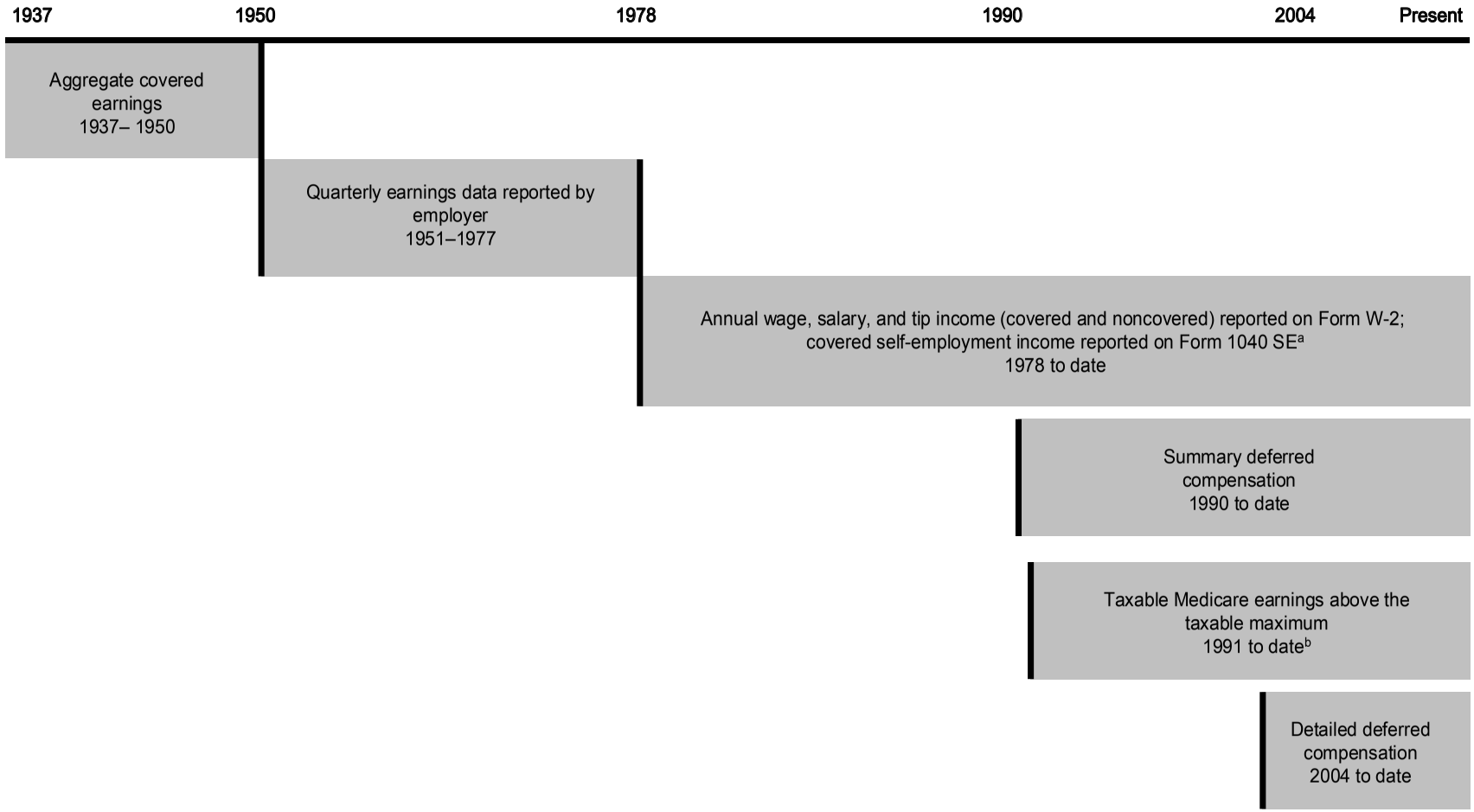
Amendments to the Social Security Act have not only increased the number and types of workers covered by the program, they have also necessitated changing the types of earnings information that are collected by SSA. Other laws passed by Congress and technological changes have also shaped the MEF data. The development of the MEF can be divided into three significant time periods: 1937–1950, 1951–1977, and 1978 to date (see Chart 3).

1937–1950. Initially, taxable wage reports for individual workers were sent by the IRS' forerunner, the Bureau of Internal Revenue, to SSB and, later, to SSA. Reports were sent on a semiannual basis in 1937, and on a quarterly basis thereafter, for employers with workers covered by the program. These wages were reported for each worker up to the taxable maximum (Fay and Wasserman 1938). This information, sent to SSB on the Employer Report Schedule A (Form 941),[19] was then manually transferred to punch cards. The punch card data were entered onto the ledger accounts of individual wage earners and checked against employer totals for accuracy (Corson 1938).[20] Recordkeeping of earnings during this period involved the use of collating, sorting, card punching, accounting, and posting machines (Cronin 1985). Noncovered earnings were not reported to SSA in the early years of Social Security because they were not needed for program purposes. Owing to limited storage capacity and the prohibitive costs of converting early earnings data to an electronic format, data for 1937 to 1950 are only available as two aggregate numbers for each worker:[21] total Social Security taxable earnings for 1937–1950 and total QCs for 1947–1950.

When needed, there are various procedures for establishing a count of QCs for this 14-year period. First, SSA counts QCs from 1951 forward. If those are insufficient to establish insured status, the QCs from 1947 to 1950 are considered, as well. If these do not provide enough quarters to be insured, then SSA allocates one QC for each $400 of covered earnings from 1937 to 1950.[22] If the individual is still not insured, SSA conducts a detailed earnings search of the microfilm records to determine the exact number of QCs. The individual is credited with a QC for any quarter in which he or she had $50 or more in covered earnings during this period; if he or she earned the taxable maximum in a year, four QCs (the most that can be earned each year) are credited.

1951–1977. The Social Security Amendments of 1950 changed the benefit calculation to increase monthly benefits payable (Cohen and Myers 1950). The new benefit calculation "put greater reliance on the use of individual yearly earnings totals" starting in 1951 (Cronin 1985). In addition, SSA began converting files to microfilm in the late 1940s and early 1950s and the installation of the first computer in 1956 greatly increased the use of magnetic tape at the agency

Chart 3.
Summary of earnings in the Social Security Master Earnings File



SOURCE: Michael Compson, Office of Research, Evaluation, and Statistics, Social Security Administration.

a. For 1978 to 1990, self-employment income is included only to the extent that it is taxable under the Social Security program. In general, during this period there is no way to break out the amount of covered earnings from wages and salary, self-employment income, or earnings from agriculture. Beginning in 1991, there is a difference between the maximum amount of earnings covered under Social Security and the Medicare program. In 1994, the cap on taxable Medicare-covered earnings was eliminated. As a result, 1994 is the first year in which earnings data provide a full accounting for wage and salary, tip, and self-employment income.

b. Beginning in 1991, the amount of earnings taxable under the Social Security program and under the Medicare program differed. From 1991 to 1993, there were caps on the total amount of earnings taxable under the Medicare program. In 1994, the cap on the amount of earnings taxable under the Medicare program was eliminated.

(Cronin 1985). The final earnings records during this period contained detailed quarterly and summary earnings information on microfilm, including the claim or disability status of the individual (SSA n.d.). Earnings information for individual workers up to the OASDI taxable maximum continued to be reported quarterly by employers through 1977.[23] If an employee reached the taxable maximum during the year, the employer was not required to report any information on that employee in subsequent quarters. After 1951, if an employee's combined wages from two or more employers exceeds the taxable maximum, the record includes wages exceeding the maximum.[24] However, for 1951 to 1977, only the total annual earnings amount is contained in the MEF; in later years, the amounts for each employer are also available. Similarly, earnings from self-employment were added to any employee wages and recorded as a yearly total in the MEF during this period.

Total QCs and the quarterly pattern in which wages were earned are also available for each year of data; however, QCs were allocated by different methods, depending on the type of earnings, during this period. For covered wages and tips, a QC was credited for each quarter in which the employee had $50 or more in earnings, up to four QCs a year. An employee with maximum covered earnings was credited with four QCs for the year. A self-employed individual would receive a QC for each $100 of self-employed income, up to four QCs a year; and a QC was allocated for each $100 of agricultural earnings (SSA 2008).[25]

1978 to date. Under P.L. 95-216, beginning in 1978, SSA began collecting wage and salary information directly from employers on the Form W-2 Wage and Tax Statement on an annual basis. This reduced processing delays and the administrative burdens of reporting and collecting information quarterly. The switch to Form W-2 also meant that SSA had access to information, such as wages above the taxable maximum and wages from noncovered employment, it had not previously received. By the late 1970s, electronic capabilities had increased dramatically from the original punch cards and magnetic tape used by SSA, enabling the agency to store the additional W-2 information (see the Data Available section for the full list of variables contained in the MEF today). In 1978, most W-2 information was received in paper form and was keyed into the SSA earnings record system on magnetic tape at three data keying centers (Cronin 1985). As more employers began to submit their wage reports via electronic media, only one data processing center was needed. Today, employers can go directly to SSA's Business Services Online[26] to submit W-2s electronically and to request verification of employees' names and SSNs through the Social Security Number Verification System. Although some earnings information still comes to SSA in paper form, 81 percent of W-2s in fiscal year 2007 were filed electronically by employers, thus reducing the administrative costs of entering and maintaining the earnings data (SSA 2007).

A QC was earned for each $250 of reported covered earnings from all sources (such as wages, tips, and self-employment) up to the annual limit of four in 1978. Since 1979, the amount of earnings needed for each QC has increased annually, proportional to the national average wage. In 2009, a QC is earned for each $1,090 of covered earnings.

Posting Process

Before posting earnings data to an individual's record, SSA verifies that the name and SSN on the W-2 or self-employment income report match information in its Numerical Identification (Numident) file. Records in the Numident are established when an individual applies for an SSN by filling out an SS-5 form.[27] SSA enters information from the SS-5 into the Numident file, which contains each person's name, SSN, sex, self-reported race, birth date, and place of birth. Numident records are updated when an individual reports a name change (usually from marriage), requests a correction, asks for a replacement for a lost card, or dies. Verification and date of death comes from state vital records or from public reporting (claimants, family members, or funeral homes) and is stored in a separate record.

SSA receives information on employee wages from the employer on Form W-2 Wage and Tax Statement and Form W-3 Transmittal of Wage and Tax Statements, and on self-employment earnings from IRS data files derived from Schedule SE and the unreported wages and tips line item on Form 1040, U.S. Individual Income Tax Return.[28] Form W-2 currently contains the following information:

- Employee's SSN
- Employer identification number (EIN)
- Employer's name, address, and ZIP code
- Employee's name and address
- Wages, tips, and other compensation
- Federal income tax withheld

- Social Security wages
- Social Security tax withheld
- Medicare wages and tips
- Medicare tax withheld
- Social Security tips
- Allocated tips
- Advance earned income credit (EIC) payment
- Dependent care benefits
- Nonqualified plan distributions
- Codes for reporting types of deferred compensation
- Checkboxes for statutory employee status, retirement plan participation, and third-party sick pay disburser status
- State and local income tax information

SSA stores some of the W-2 information as administrative data; most of it is sent to the IRS.

The W-3 is a summary form that contains aggregate earnings information for all employees in the wage report. For SSA to accept the wage amounts on the W-2s, their cumulative total must agree with the W-3. If the data files from these forms balance against one another, the information can then be posted to individual earnings records. SSA receives information from employers and the IRS continuously; therefore the MEF is updated on a weekly basis.

Each year, SSA processes about 245 million employee wage reports submitted by about 6.9 million employers (SSA 2009d). As noted earlier, in order for the earnings on these wage reports to be posted to the MEF, the combination of the name and SSN on Form W-2 must be matched to the Numident.[29] If either is different, SSA applies over 20 separate computer routines and other techniques to attempt to find matches for the initial mismatches. Approximately 90 percent of the wage reports received by SSA each year are posted to the MEF without difficulty. After the computerized routines are applied, approximately 96 percent of wage items are successfully posted to the MEF (GAO 2005).

If the name and SSN do not match, even after SSA has performed its computer matching routines, the wages can not be credited to the individual's account. Instead, the earnings are placed in the Earnings Suspense File (ESF). The ESF retains unposted items until they can be correctly assigned and placed in the MEF with a valid name and SSN.[30] SSA performs additional operations annually to further attempt to match earnings to individuals' records. To ensure that workers have an opportunity to correct any discrepancies in their earnings records, SSA has since 1979 sent letters to all employees whose names and SSNs can not be matched. In 1994, SSA began also to send letters to employers who submit more than 10 W-2s with nonmatching names and SSNs, when these represent more than 0.5 percent of the W-2s they submit.[31] Additionally, beginning in 2000, all workers and former workers aged 25 or older receive an annual Social Security Statement that lists by year all Social Security and Medicare earnings that have been posted to the MEF to date.[32] These statements have led to earnings being corrected at earlier ages, when workers can provide evidence of the wages missing from or erroneously posted to their record. Remaining discrepancies can be corrected at the time of benefit application, when individuals scrutinize their earnings records to ensure all their earnings are being used to calculate their monthly benefit amount.

As of October 2007, 275 million wage items for tax years 1937 to 2005 were in the ESF, amounting to $661 billion in wages for which Social Security taxes have been paid (SSA 2009b). Because SSA maintains these data for a long time, individuals with legitimate earnings missing from their earnings records can have them properly posted (there may also be legitimate earnings missing from earnings records that are not in the ESF).[33] Researchers using the MEF should understand that earnings records could be incomplete or contain extraneous earnings for certain individuals, and that there is no indicator to warn that an individual's earnings record is erroneous.

Data Available

Once SSA confirms that the employer- and IRS-reported name and SSN of a worker match those recorded in the Numident, his or her earnings are posted to the MEF Earnings Detail Segment, and the MEF Summary Segment is updated (Panis and others 2000).[34] The Summary Segment contains annual OASDI-taxable wages and tips and self-employment earnings from 1951 to the present; cumulative taxable earnings for 1937–1950, 1951–1977, and 1978 to date; annual information on MQGE from 1983 to date; cumulative QCs for 1947–1950 and 1951–1977; annual QCs for 1951–1977 (QCs from 1978 to date are computed using reported earnings); and railroad and military earnings indicators.[35] The Summary Segment also includes variables such as SSN, race, sex, date of birth, date of death,[36] an indicator of earnings

prior to 1950, first year of earnings after 1950, and last year of earnings (Panis and others 2000). This segment summarizes all the OASDI- and HI-taxable earnings since 1978 as reported in the Detail Segment and also contains all reported taxable earnings by tax year. Taxable earnings from more than one employer are summarized into one yearly total. For example, if an individual earned $20,000 from each of two different employers, the total earnings would be listed as $40,000 (thus individuals with more than one employer may have earnings that exceed the taxable maximum). The Summary Segment contains no information on employers.

The Earnings Detail Segment includes annual W-2–level data from each of a worker's employers since 1978, as well as self-employment earnings information from the Schedule SE. The W-2 information includes the employer identification number (EIN),[37] OASDI and Medicare taxable wages, and total wages reportable as IRS-taxable income on Form 1040 (currently shown in Box 1 of Form W-2, this amount includes wages above the OASDI taxable maximum, noncovered wages, and deferred-compensation distributions, but does not include deferred-compensation contributions). Information from delinquent or corrected W-2s (W-2c's) is included in separate records in the Detail Segment.[38] Information from self-employment postings includes the OASDI and Medicare taxable earnings, but does not indicate deferred-compensation contributions. Detail Segment records also contain additional variables pertaining to types of posting. These include an Earnings Report Type (ERT) code, indicating earnings categories such as covered, noncovered, delinquent, self-employment, and unreported tips; and an Earnings Type of Employment (EET) code, which indicates employment categories such as regular, military, self-employed, agricultural, nonprofit, state and local government, household, railroad, MQGE, and workers with tip income (Panis and others 2000). As of December 2005, about three-fourths of earnings in the MEF Detail Segment were taxable wages from Form W-2, with the rest consisting of noncovered W-2 wages, self-employment income, and delinquent W-2 earnings. From 1978 through 2005, about three-quarters of wages came from regular employment, while most of the rest came from tips and from employment in the military, state and local government, agriculture, households, and railroads (Pattison 2007).[39]

When the Detail Segment process was established in 1978, only two amounts were taken from the W-2: OASDI-taxable earnings (to be added into each person's summary earnings record) and the IRS-taxable wage (to be reported on Form 1040 and used in calculating the national average wage). There are still only two dollar fields on each Detail Segment record; so, in order to handle the information available on more recent W-2s, multiple records may be generated from a single W-2. The initial detail posting, called the primary wage posting, will contain two dollar values: wages subject to federal income taxes (including amounts paid under deferred-compensation plans) and OASDI-taxable earnings. Additional MEF records are created for a W-2 if it includes earnings above the Social Security–taxable maximum in 1991 and later (the excess earnings would be HI-taxable), deferred compensation in 1990 and later, or tips. Additional records are also created for corrected W-2s (W-2c's).

For example, in 2003, the OASDI-taxable maximum was $87,000 and for a worker earning $100,000, two records would be generated. The primary wage posting would show IRS-taxable earnings of $100,000 in the IRS taxable field and OASDI-taxable earnings of $87,000 in the OASDI/HI field. A secondary wage posting for HI-taxable earnings would have $0 in the IRS field and $13,000 in the OASDI/HI field representing HI-taxable earnings above the OASDI-taxable maximum. The OASDI/HI field can be used for other purposes as well, such as OASDI- and/or HI-taxable tips. The ERT and EET indicators show the type of earnings and employment represented in each of the fields in each posting. Depending on the information in an individual's W-2, there may be a single MEF detail record or there may be many records to account for multiple employers, earnings over the taxable maximum, or other types of earnings including tips, HSAs, or deferred compensation.

Limitations and Complexities

As shown above, the SSA Master Earnings File contains extensive historical data on U.S. earnings. However, as with all data sets—especially administrative data sets—there are some limitations and complexities that researchers must acknowledge (although it is important to note that these limitations do not preclude SSA from properly administering the program or determining benefit eligibility or benefit amounts). Foremost, earnings data were first collected for the sole purpose of computing Social Security benefits. In the earlier years, only data on earnings up to the OASDI-taxable maximum were collected because any earnings over this amount did not factor

into the benefit formula. This is one limitation of the data prior to 1978. In addition, data on race in the MEF are limited to a single undated entry, which does not account for changes in race coding over time (Scott 1999). Another limitation arises from the existence of the ESF, which includes wage reports that could not be entered into the MEF. This means that not all earnings from 1937 to the present are included in the file. Lastly, there could be errors resulting from the employer failing to report earnings properly or in a timely manner, from clerical errors, or from data being keyed improperly.

Some employer errors can be corrected by submitting a W-2c. However, introducing corrected earnings into the MEF may create additional problems because the previous earnings posting does not get removed when a W-2c is received. Instead, two new postings are created: one includes a negative amount to offset the original wage report, and the other includes the new, correct amount. For example, if a worker's original W-2 stated earnings of $20,000 and the W-2c stated corrected earnings of $15,000, SSA would create two new postings, one reporting −$20,000 and the other reporting the new earnings amount of $15,000. Occasionally, a negative dollar amount can result if more than one correction is made to a worker's earnings. This can happen when both the worker and the employer try to correct a mistake, resulting in a double correction, or a correction is resubmitted while the original submission is still working its way through the system. (These instances were more common in the past, as modernization and enhancements to SSA's computer systems have largely put an end to double corrections.) In addition, some employers may erroneously file a new W-2 instead of a W-2c to correct a mistake. Internal SSA processes check for duplicate postings of the same amount; when detected, the original amount is then offset. However, if the amounts on the W-2s differ, the new amount will be entered without offsetting the old amount, resulting in a false earnings total. The large majority of employers who file W-2c's, however, do so correctly.

Another issue arose beginning in 1978, when earnings information started to come to SSA annually on Form W-2. Even after the switch, some state and local governments were still able to report their employees' earnings under the old quarterly system. Some reported under both the old and new systems. This resulted in some double postings for a few years because different EINs were used under each system, with the quarterly system using a special EIN beginning with the digits 69 (to identify state and local government employers and earnings) and the annual system requiring a regular EIN (IRS 2009). Some state and local governments also used different EINs for reporting to SSA and to the IRS. When different EINs were used for each agency, some earnings were posted twice. This continued until tax year 1981, when SSA no longer allowed state and local governments to report earnings on a quarterly basis (Cronin 1985). Use of EINs with the 69 prefix ended in 1986 (IRS 2009). SSA corrects duplicate earnings records when notified by affected employees.

There are also some issues in the MEF data related to self-employment earnings. Total self-employment earnings reported by individuals and the total number of self-employed workers prior to 1978 can not be determined because of the way these data were collected by SSA (described above). In addition, self-employment earnings that were taxable by Medicare only were not recorded from 1991 through 1993. This was not discovered until 1994 and at that time only data from 1992 and 1993 could be recovered retroactively; for 1991, only self-employed earnings from delinquent reports are available. Therefore, complete self-employment income data for 1991 are not available. In addition, there may be limitations in the data reported to SSA, as they depend on the accuracy of data reported by self-employed individuals on IRS tax forms.

Uses of the Master Earnings File Data

The MEF data are used extensively, but are mainly used for calculating Social Security benefits for individuals and any auxiliary beneficiaries they may have.[40] First, the earnings data are used to determine if a person has sufficient QCs to qualify for benefits. SSA also uses earnings records from the MEF to calculate benefit amounts.[41] For benefit calculations, an individual's total taxable OASDI earnings for each year (including earnings from different employers and self-employment, military credits, and railroad earnings) are added together to determine total annual earnings up to the taxable maximum.[42] The annual earnings amounts are then indexed using the national average wage index (AWI) series, to ensure that benefits reflect the general rise in U.S. wages over the person's working lifetime.[43] The sum of indexed earnings in the years of highest earnings is then divided by the number of months in the computation period (35 years for retirement benefits, 35 or fewer for disability and survivors benefits). The result is called

average indexed monthly earnings (AIME). AIME is then used in a formula to calculate monthly benefit amounts for OASDI beneficiaries.[44]

For individuals already receiving benefits, MEF records are used for several programmatic purposes. If a retiree has not reached his or her full retirement age and earns more than a specified amount in a year (in 2009, the amount is $14,160), benefits are reduced $1 for every $2 over the earnings limit (the reductions are offset with an increase in benefits when the retiree reaches full retirement age).[45] In addition, each year SSA completes an Automatic Earnings Reappraisal Operation (AERO) or a manual recomputation to determine if any new earnings have been posted to a beneficiary's record. If so, the SSA computer system recalculates the monthly benefit (as described above). New earnings exceeding those in one of the previous 35 highest years of earnings would change the beneficiary's AIME, resulting in higher benefits. The maintenance of earnings information before and even after an individual begins receiving benefits is vital for the operation of the program.

In addition to program-specific uses, MEF data are used to create other files of interest to researchers. One significant example is the Continuous Work History Sample (CWHS). The CWHS is a 1-percent sample of all SSNs issued from 1937 to the current year.[46] It contains earnings and employment information derived from the MEF, demographic information derived from the Numident, and annual benefit data derived from the Master Beneficiary Record.[47] The MEF data for the CWHS are extracted annually in January, approximately 13 months after the end of the tax year, and are generally available in the spring of that year, after the file is validated (for example, the 2007 CWHS was pulled in January 2009 and will be available in mid-2009). The CWHS is broken into an active file (3.3 million records were in the 2006 file), which includes SSNs with any earnings in the MEF; and an inactive file (1.1 million records were in the 2006 file), which includes SSNs that have never had earnings posted to the MEF.[48] The CWHS is used by SSA researchers as well as by those at the Treasury Department and the Congressional Budget Office through Memoranda of Agreement (MOA). IRS law precludes its release to others (Buckler 1988).

In addition to the 1-percent sample described above, the CWHS system produces two annual Employee-Employer (EE-ER) files, a Longitudinal Employee-Employer Data (LEED) file, and an annual Self-Employment (SE) file, all of which are 1-percent samples based on data contained in the MEF. Of the two EE-ER files, one contains covered wages only and the other contains both covered and noncovered wages (this includes nontaxable wages and HI-only taxable wages and covered employment). The EE-ER files also contain age, sex, race, and deferred-compensation contributions variables. The importance of these files is that they show employee and employer location (county and state) and the employer's type of industry, since wages are reported at the employer level in the Detail Segment of the MEF (Panis and others 2000).[49] For each tax year, one version of the EE-ER is created when the data for the active CWHS are extracted and a second is created 2 years later, to incorporate any delinquent earnings data and to be added to the LEED file. The LEED file is a 1-percent longitudinal sample of the EE-ER records with data for 1957–2004.[50] The industry data contained in the CWHS and EE-ER files come from the IRS Form SS-4 Application for an EIN, income tax returns, and from the Census Bureau.[51] These data are categorized according to the North American Industry Classification System (NAICS), which assigns industry codes for the United States, Canada, and Mexico (Census Bureau 2009). The LEED file is used for studies of workers in different geographic regions and different industries over time (Panis and others 2000). The SE file is an annual snapshot of initial self-employment postings to the MEF in the most recent earnings-processing year and contains data sent by IRS to SSA, which is not stored on the MEF but is useful for statistical and research purposes (such as geographic data, farm/nonfarm earnings splits, and use of optional reporting methods).

MEF data are also used for certain statistical publications and data files, such as *Earnings and Employment Data for Workers Covered by Social Security and Medicare, by State and County*; *Benefits and Earnings Public Use-File, 2004*; and certain tables in the *Annual Statistical Supplement to the Social Security Bulletin*.[52] A new public-use earnings data file based on a 1-percent random sample of workers is currently being developed in SSA's Office of Retirement and Disability Policy (ORDP) for dissemination on the Social Security web site. This file could be very useful for outside researchers who are interested in long-term U.S. earnings data. In addition, SSA has published many studies using MEF data.[53] As noted earlier, because the MEF contains tax return information, access is granted only according to terms of the Internal Revenue Code. The primary organizations that have been granted access to the MEF data for

research purposes are the Census Bureau, the Department of Treasury, and the Congressional Budget Office. The University of Michigan obtained the consent of respondents to use MEF data for its Health and Retirement Study (HRS). Outside researchers have coauthored papers with SSA employees who have access to the data, or used Census Bureau data linked with MEF data after being granted access by both the IRS and the Census Bureau.[54,55]

Conclusion

In 1938, John J. Corson, Director of the Bureau of Old-Age Insurance, noted "[a]s a byproduct of its necessary operations, the records of the Bureau of Old-Age Insurance will in [the] future provide a wealth of new sources of information regarding the working population of the United States." The Master Earnings File was created for the purpose of calculating benefits, but as Corson predicted, it has been used more broadly for improving the administration of the Social Security program. The earnings data available at SSA are used by researchers, analysts, and others to understand the past and present U.S. working populations. As with any large administrative data set, the MEF has some limitations of which researchers should be aware. Nevertheless, it is the premier source of earnings data on U.S. workers.

Notes

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[1] IRS tax data are governed by section 6103 of the Internal Revenue Code. SSA can use it only to record wages and cannot share it with any other federal agency. For more information, see http://www.irs.gov/govt/fslg/article/0,,id=158487,00.html. For general information on the Master Earnings File, see the Privacy Act Notice at http://www.socialsecurity.gov/foia/bluebook/60-0059.htm.

[2] Some earnings data derived from the MEF are available only to a restricted set of researchers, while other earnings data are more widely available. For more information on access to the MEF, see the Uses of the Master Earnings File Data section of this article.

[3] For the full text of the original Social Security Act of 1935, see http://www.socialsecurity.gov/history/35actinx.html.

[4] For information on how an employer withholds these taxes from an employee's pay today, see IRS Publication 15, available at http://www.irs.gov/pub/irs-pdf/p15.pdf.

[5] Other groups not covered by the original Social Security Act include agricultural workers, domestic servants, casual laborers, maritime workers, employees of federal and state governments or their instrumentalities, those workers employed after reaching age 65, and employees of religious, educational, charitable, and nonprofit organizations (SSB 1938). For more information on the history of coverage, see Myers (1993).

[6] The major groups that are not covered include civilian federal employees hired before January 1, 1984; railroad workers; certain employees of state and local governments who are covered under their employers' retirement system; domestic workers and farm workers whose earnings do not meet certain minimum requirements; and persons with very low net earnings from self-employment.

[7] The taxable maximum was set by statute for the years 1937–1974 and 1979–1981 (SSA 2009a). Amounts for all other years were determined under the automatic adjustment provision of the Social Security Act, established in the 1972 Social Security Amendments (for more information on these amendments, see http://www.socialsecurity.gov/history/1972amend.html). For the full list of taxable maximum changes, as well as Social Security and Medicare tax rates and the rates paid by the self-employed up to the maximum amounts, see SSA (2008), Table 2.A3, available at http://www.socialsecurity.gov/policy/docs/statcomps/supplement/2008/2a1-2a7.pdf.

[8] For more information on QCs, see http://www.socialsecurity.gov/OACT/COLA/QC.html.

[9] Part C (Medicare Advantage) and Part D (Prescription Drug Plan) have since been added to the Medicare program. For more information on Medicare, see http://www.socialsecurity.gov/pubs/10043.pdf.

[10] There are instances in the MEF when nongovernmental workers appear to have MQGE wages because their reported Medicare taxable wages are greater than their Social Security wages and the latter is less than the OASDI taxable maximum. These appear to be reporting errors, but are stored on the MEF as if they are Medicare wages in excess of Social Security wages.

[11] For more information on these federal government employees, see http://www.socialsecurity.gov/retire2/fedgovees.htm and for more information on state and local government employees, see http://www.socialsecurity.gov/slge/.

[12] Because Social Security benefits are based on an individual's earnings record, self-employed workers receive less credit for earnings in 1990 and later because of the factor applied to adjust their IRS net earnings by the amounts of OASDI and Medicare payroll taxes due.

[13] For an explanation of how the self-employed pay Social Security and Medicare taxes, see http://www.socialsecurity.gov/pubs/10022.pdf. These taxes are collected under the Self-Employment Contributions Act (SECA).

[14] For more information on the Form 1040 Schedule SE, see http://www.irs.gov/pub/irs-pdf/i1040sse.pdf.

[15] The MEF OASDI taxable earnings field only includes deferred compensation for Social Security–covered workers whose earnings are below the taxable maximum from 1984 forward. However, MEF began to record deferred compensation for all groups in a separate field in 1990. For more information on deferred compensation, see Pattison and Waldron (2008).

[16] For more information on average wages for indexing during this time period, see Clingman and Kunkel (1992).

[17] For more information on the national AWI and its use at SSA, see http://www.socialsecurity.gov/OACT/COLA/AWI.html.

[18] 403(b) plans cover most tax-exempt organizations and 457(b) plans cover public sector employees and nongovernmental tax-exempt entities, including hospitals and unions. 408(k) plans (for organizations with fewer than 25 employees) and 501(c) 18(d) plans (employee-funded pension trusts) are also distinguished in the MEF data. For more information on HSAs, see http://www.treas.gov/offices/public-affairs/hsa/pdf/all-about-HSAs_072208.pdf.

[19] Form 941 was the employer's quarterly federal tax return. Form 942 (employer's quarterly tax return for household employees) and Form 943 (employer's annual tax return for agricultural employees) were also submitted to SSB when applicable.

[20] To view an original Social Security wage record, see http://www.socialsecurity.gov/history/account6.html.

[21] When detailed information is obtained for an individual prior to 1978, this is posted to the Detail Segment of the MEF. Therefore, information on the Detail Segment for this time period is incomplete and is only posted in special situations (usually if needed for benefit applications). For more information on the Detail Segment of the MEF, see the Data Available section of this article.

[22] The MEF includes data on QCs for 1937 to present and for 1950 to present. Calculating the difference enables the determination of the cumulative QCs for 1937–1950.

[23] An optical scanner was installed at SSA in 1966 to read and automatically transfer to magnetic tape a significant percentage of the typewritten paper wage reports sent in by employers (Cronin 1985).

[24] For example, the taxable maximum was $9,000 in 1972, so if a worker earned $5,500 from one employer and $5,000 from another employer, he would have total earnings in the MEF above the taxable maximum for that year.

[25] There are optional reporting procedures for the self-employed that allow them to claim $1,600 in earnings for Social Security purposes even in years when they had net earnings of less than $400. This allows them to remain insured for disability and retirement purposes (the QCs are allocated to specific quarters to best advantage the claimant). Effective for tax year 2008, the maximum amount reportable using the optional method of reporting will be equal to the amount needed for four QCs in a given year. For more information, see http://www.socialsecurity.gov/pubs/10022.pdf.

[26] See http://www.socialsecurity.gov/bso/bsowelcome.htm.

[27] Form SS-5 is available at http://www.socialsecurity.gov/online/ss-5.pdf. Originally, SSNs were used strictly to establish and maintain a worker's earnings record. However, as the use of the SSN expanded for tax and banking purposes, people began acquiring SSNs at earlier ages. In 1987, SSA began the enumeration-at-birth (EAB) program in which a parent or legal guardian can request an SSN for a child as part of the birth registration process (Streckewald 2005). A small percentage of SSNs are still requested by working-age and older persons, mostly immigrants.

[28] For information on the Forms W-2 and W-3, see http://www.irs.gov/pub/irs-pdf/iw2w3.pdf. For information on Form 1040, see http://www.irs.gov/pub/irs-pdf/i1040.pdf.

[29] There are two exceptions to posting earnings to the MEF when the name and SSN match the Numident: when the Numident record contains a death indicator, and when the Numident date of birth indicates that the individual is under age 7.

[30] In addition to the exceptions mentioned in the preceding endnote, the ESF also contains postings for individuals who claim that earnings on their record are not their own.

[31] For more information on these No-Match Letters, see SSA (2009d).

[32] For information on the Social Security Statement, see http://www.socialsecurity.gov/mystatement/.

[33] For example, in the past, some workers applied for and received a new SSN when they lost or forgot their original SSN, thereby separating their earnings record under the old number from that of the new one. In the 1980s, SSA established a procedure to determine if multiple numbers have been issued to a single person. Currently, SSA has software that will search the Numident file to prevent issuing a second number to an individual.

[34] The Detail Segment includes a Posted Section that contains earnings that are subject to Social Security or Medicare taxes and an Unposted Section that contains related earnings information (such as railroad wages, noncovered earnings, deferred compensation, and HSA contributions). The Unposted Section has no amounts in the Social Security or Medicare taxable fields. For more information on the Posted and Unposted Detail Segments, see Panis and others (2000).

[35] Individuals who have military service earnings from active duty from 1957 through 2001 can receive special extra earnings credits that are added to their Social Security records. These credits may qualify individuals for higher Social Security benefits. For more information on military credits, see http://www.socialsecurity.gov/retire2/military.htm.

[36] The date of death on the MEF is considered unreliable after 1978. The Master Beneficiary Record and Numident are the preferred sources for this variable (Panis and others 2000).

[37] For more information on EINs, see http://www.irs.gov/pub/irs-pdf/p1635.pdf.

[38] Delinquent W-2s are those posted after the January that is 13 months after the end of an earnings tax year. For more information on W-2c's, see the Limitations and Complexities section of this article and http://www.irs.gov/pub/irs-pdf/iw2cw3c.pdf.

[39] Researchers and staff in SSA's Office of Retirement and Disability Policy (ORDP) do not use the full MEF. Instead they receive a query that contains two summary earnings research files: adjusted earnings (up to the OASDI taxable maximum) and nonadjusted earnings. These files do not contain all of the variables described in the Data Available section. The Office of Research, Evaluation, and Statistics (ORES), a division of ORDP, has a procedure to obtain a subset of data from the Summary Segment through a finder system that will retrieve data for specific SSNs. A similar procedure is used to retrieve data from the Detailed Segment. ORES stores the data in a format that summarizes the data for a given SSN by year and EIN.

[40] Safeguards are established in accordance with the SSA Systems Security Handbook to protect individuals' records. Employees with access to records have been notified of criminal sanctions for unauthorized disclosure of information about individuals. Magnetic tapes or other files with personal identifiers are retained in secured storage areas accessible only to authorized personnel. Microdata files prepared for research and analysis are purged of personal identifiers and are subject to procedural safeguards to assure anonymity.

[41] If an individual has earnings records under two SSNs, they are combined for the purpose of calculating benefits.

[42] If an individual had some railroad earnings, but not enough to qualify for Railroad Retirement benefits, these earnings would apply toward his or her Social Security benefit. For more information on railroad benefits, see Whitman (2008).

[43] Information from the MEF is used to calculate the AWI series for 1951 to present, as mentioned earlier. For more information on AWI's origins and initial construction, see Donkar (1981). To see how the MEF data were used in calculating the AWI series, see http://www.socialsecurity.gov/OACT/COLA/oldawidata.html for the 1973–1984 period and http://www.socialsecurity.gov/OACT/COLA/awidevelop.html for the 1985–2007 period.

[44] For more information on how benefits are calculated using AIME, see http://www.socialsecurity.gov/OACT/ProgData/retirebenefit2.html.

[45] A separate earnings test applies for the year in which a person reaches full retirement age. For example, for an individual reaching full retirement age in 2009, benefits are reduced $1 for every $3 of earnings above $37,680. The earnings test applies only until the month that full retirement age is attained. For more information on the retirement earnings test, see http://www.socialsecurity.gov/OACT/COLA/rtea.html.

[46] For the list of variables contained in the CWHS, see Panis and others (2000). For more information on the CWHS, see Smith (1989) and the Privacy Act Notice at http://www.socialsecurity.gov/foia/bluebook/60-0159.htm.

[47] For more information on the Master Beneficiary Record, see the Privacy Act Notice at http://www.socialsecurity.gov/foia/bluebook/60-0090.htm.

[48] The CWHS is currently modernizing, which may change the output file structure.

[49] If earnings information comes to SSA electronically, the employee's address is used, but the employer's address is used for earnings information submitted on paper. For the self-employed, the address listed on Form 1040 is used. Prior to 1980, the employer's address was always used. The MEF does not record geographic codes.

[50] There is a 2-year lag between the data in the EE-ER file and the data in the LEED file.

[51] Because the industry data are Census Bureau data, SSA researchers who access the data must be Special Sworn Status employees and have their projects approved by the Census Bureau. For more information, see http://www.ces.census.gov/index.php/ces/cmshome.

[52] See http://www.socialsecurity.gov/policy/docs/statcomps/eedata_sc/2004/index.html, http://www.socialsecurity.gov/policy/docs/microdata/earn/index.html, and http://www.socialsecurity.gov/policy/docs/statcomps/supplement/2008/supplement08.pdf, respectively.

[53] For a full listing of these and other SSA studies, see http://www.socialsecurity.gov/policy/research_sub100.html#sub101.

[54] As previously noted, the use of earnings data is governed by section 6103 of the Internal Revenue Code. For Census Bureau approval, projects must meet a purpose in Title 13 Chapter 5 of the U.S. Code. For more information, see http://www.ces.census.gov/index.php/ces/researchguidelines.

[55] Two examples of this type of work include the papers "Uncovering the American Dream: Inequality and Mobility in Social Security Earnings Data Since 1937" by Wojciech

Kopczuk, Emmanuel Saez, and Jae Song (http://www.nber.org/papers/w13345) and "The Mis-Measurement of Permanent Earnings: New Evidence from Social Security Earnings Data" by Bhashkar Mazumder (http://www.chicagofed.org/publications/workingpapers/papers/Wp2001-24.pdf).

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Occupations of SSI Recipients Who Work

by Jeffrey Hemmeter*

This article uses the 2007 American Community Survey to estimate the occupational distribution of Supplemental Security Income (SSI) disability recipients aged 18–61 who work, and it compares their occupational distribution with that of working nonrecipients with and without disabilities. Based on models of occupational choice for working SSI recipients and nonrecipients, predicted occupational distributions are also estimated to understand what occupations are available to SSI recipients. Unlike the nonrecipient populations that are largely composed of sales- and office-based occupations (25 percent), the most common occupations of SSI recipients who work are in services (34 percent) and production, transportation, and material moving (30 percent), although sales- and office-based occupations are also common for SSI recipients (22 percent). The occupational distribution of working SSI recipients is also more concentrated than that of nonrecipient populations.

Dissimilarity indices are used to compare the predicted and actual occupational distributions of the SSI recipient population and nonrecipient populations. More than one-half of the difference between the occupations of working SSI recipients and nonrecipients can be explained by demographic characteristics, human capital, and disability type. Additionally, nonemployed SSI recipients have similar predicted occupational distributions as currently employed SSI recipients. Given the estimated occupational distributions and the average earnings of individuals in the most common occupations of SSI recipients, the results suggest that more targeted vocational training may provide expanded opportunities for employment.

Introduction

The Social Security Administration's (SSA's) involvement in back-to-work programs, vocational rehabilitation programs, and programs generally designed to help recipients become economically self-sufficient would benefit from an understanding of the types of jobs available to Supplemental Security Income (SSI) recipients. With the exception of a few back-to-work studies and work incentive demonstrations, relatively little is known about the occupations of SSI recipients relative to non-SSI recipients. This article fills a gap in knowledge about the types of jobs recipients have and how this differs from the jobs of the nondisabled and nonrecipient populations.

According to SSA (2008a), 5.7 percent (or 357,344) of the working-age (18–64) SSI population worked in December 2007. These individuals tend to have low wages; average earnings from wages were $597 in December. Knowledge of how the jobs these recipients hold differ from those of nonrecipients could help identify where vocational programs and placement efforts should best be focused and where outreach may be necessary to ensure employment opportunities for recipients. SSA is interested in assisting these individuals in becoming productive members of the economy and becoming self-sufficient. If individuals leave the SSI rolls but are trapped in marginal occupations (that is, occupations with low pay and insufficient health insurance), they may not only return to the program in the future, but may

Selected Abbreviations

ACS	American Community Survey
DI	Disability Insurance
HHI	Herfindahl-Hirschman Index
IIA	independence or irrelevant alternatives
NBS	National Beneficiary Survey
non-LFP	non–labor force participation

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Selected Abbreviations—*continued*

NSCF	National Survey of SSI Children and Families
OASDI	Old-Age, Survivors, and Disability Insurance
RR	Railroad Retirement
SIPP	Survey of Income and Program Participation
SOC	Standard Occupational Classification
SSA	Social Security Administration
SSI	Supplemental Security Income

be in worse health, requiring greater expenditures from related programs (for example, Medicaid) than would have been required had they remained in the SSI program.

This article addresses three important questions regarding the occupations of the disabled. First, how do the occupations of people with disabilities (particularly SSI recipients) compare with the occupations of people without disabilities? Second, what occupations would the people with disabilities (particularly SSI recipients) have if they did not have a disability? And third, what occupations can we expect SSI recipients who are not working to have? This study uses the large sample size of the 2007 American Community Survey (ACS) to estimate the occupational distributions of the SSI recipient population and nonrecipient populations with and without disabilities. These distributions are compared with the actual and predicted occupational distributions of these populations.

The next section describes the SSI program and the work incentives for recipients, followed by reports of what is known about the occupations and employment of individuals with disabilities. The data is then detailed, and a description of the methodology is given. What follows are the actual occupational distributions of employed individuals and the predicted occupations of nonworking SSI recipients. A discussion of the policy relevance of the results follow, and the last section concludes the article.

The Appendix tables provide detailed information about the data and results: Table A-1 lists the occupation categories used in this study; Table A-2 presents summary statistics; and Table A-3 shows the multinomial logit results.

SSI Program

The SSI program is a means-tested transfer program that provides income support for individuals who are blind, disabled, or aged. A working-age adult (18–64) is determined to be disabled if he or she has "a medically determinable physical or mental impairment that is expected to last (or has lasted) at least 12 continuous months or to result in death and … prevents him or her from doing any substantial gainful activity" (SSA 2008a, 2). The substantial gainful activity amount was defined as $900 per month in 2007.[1] For children (younger than age 18), there is a functional definition of disability that does not depend on employment; the aged (65 or older) do not need to have a disability to qualify for SSI.

In addition to the disability requirement, an individual must have low monthly income levels to qualify for SSI and no more than $2,000 in resources ($3,000 for a couple). The federal government sets the maximum monthly benefit level ($623 for an individual and $934 for a couple in 2007), which is supplemented by some states. Payments are reduced when an individual receives earned or unearned income.

Although these restrictions on income and assets may reduce the likelihood that recipients will work, there are several incentives and supports available to them should they attempt work. These include allowances for impairment-related work expenses, the Ticket to Work Program, and special SSI payments and Medicaid eligibility for working SSI recipients, known as Sections 1619(a) and (b).[2] Additionally, SSI payments are structured so that the first $65 of monthly earnings and an additional $20 of unearned or earned monthly income are not counted toward an individual's income level. After this disregard, there is a gradual reduction in payments of $1 for every additional $2 earned until payments are reduced to zero. As a result, SSI recipients can earn as much as $15,000 per year (depending on their state of residence) and remain eligible for reduced SSI payments and the accompanying health insurance access.[3] However, these limitations on earnings may also limit the observable occupations in the SSI community if certain occupations typically have earnings greater than these thresholds.

The number of back-to-work incentives and similar demonstration projects administered and proposed by SSA indicate the interest policymakers have in helping these individuals become economically self-sufficient. This study attempts to address a gap in the literature

on the differences between the occupations SSI recipients have and those of the nonrecipient populations with and without disabilities. By understanding the differences between the occupations of these groups, policymakers may be able to develop work incentives and vocational rehabilitation programs that will help these individuals return to the work force in a manner that will enable them to be self-sufficient. This may result in placing these individuals in occupations known to provide either immediate earnings or with higher earnings potential.

Previous Literature

Although several previous analyses have focused on the labor force participation of the SSI and Social Security Disability Insurance (DI) beneficiary populations (see, for example, Neumark and Powers (2003/2004); Muller, Scott, and Bye (1996); Autor and Duggan (2003); Hennessey and Muller (1995); Hennessey (1997); Muller (1992)), there have only been a handful of studies on the occupations of recipients who work (see, for example, Schechter (1999)).[4]

Most related occupational research has focused on all individuals with disabilities, who generally have less severe disabilities and greater labor force participation than the SSI population. Haveman and Wolfe (1990) and Wolfe and Haveman (1990) summarize the research of the employment patterns of individuals with disabilities through the mid-1980s, which was characterized by declining labor force participation rates. The employment of individuals with disabilities appears to be more cyclical than the nondisabled population (Yelin and Katz 1994).

The general decline in the employment rates of individuals with disabilities over the past few decades, shown by Burkhauser, Houtenville, and Wittenburg (2003), may be expected to translate into a tighter distribution of occupations for SSI recipients and other workers with disabilities. The changes in occupational requirements in the occupations of those with disabilities may also affect the occupational distribution (Stapleton, Goodman, and Houtenville 2003). However, Trupin and Yelin (2003) found no consistent trend in changes in the share of occupations held by those with and without disabilities from 1970 through 2001.

Occupation is common as an explanatory variable in regressions of earnings or labor force participation (for example, Muller (1992), Hotchkiss (2004), Ozawa and Yeo (2006)), but it is uncommon as the dependent variable in the literature on disability, especially on the SSI and DI populations. Most studies consider broad occupational categories, which mask finer occupation definitions. For example, Yelin and Cisternas (1996) used the National Health Interview Survey to show that 17.2 percent of individuals with disabilities were employed as professionals, followed closely by service jobs at 16.1 percent. They found that the change in occupation mix between 1970 and 1992 affected those with and without disabilities in a similar manner. Their grouping of occupations into nine categories sheds light on the general type of jobs performed, but lacks detail regarding specific occupations.

Stoddard and others (1998) report tabulations of the occupations of workers with disabilities from McNeil (1993), based on the 1991 Survey of Income and Program Participation (SIPP). They show that four occupations (out of 58) account for 25 percent of occupations of workers with disabilities—executive and administrative, machine operators, food preparation and service, and sales (retail and personal services). Hale, Hayghe, and McNeil (1998) also use the SIPP and find that individuals with severe disabilities are most likely to be in service occupations or work as operators, fabricators, and laborers. It is likely, however, that employment in some occupations (for example, laborers) may be a contributing cause of the disability, and the occupations of those with disabilities severe enough to receive SSI payments or DI benefits may be different.

Some studies have revealed information on the characteristics of the occupations of individuals with disabilities or the DI beneficiary or SSI recipient populations, but not the occupations themselves. Yelin and Trupin (2003), for instance, found that individuals with disabilities are less likely to be employed in traditional occupations or occupations that are economically and psychologically rewarding. The skills required in certain occupations and the level of accommodation may affect what types of jobs individuals with disabilities can perform. "Whether persons with disabilities are increasingly relegated to peripheral jobs within the growing and declining sectors of the economy or whether, instead they get the kinds of jobs and the working conditions they want and in which they and their workplaces can succeed" (Yelin and Cisternas 1996, 55) is likely more important for those with the most severe disabilities and those with low labor force attachment (who are more likely to be SSI recipients).

Workers with disabilities are more likely to have lower levels of education (Hale, Hayghe, and McNeil 1998; Steinmetz 2006). This is especially true of SSI recipients (DeCesaro and Hemmeter 2008) and may limit the occupational choices available to them.

Yelin and Trupin (2003) found that workers with disabilities are more likely to have episodic employment and employment that is part time. Hotchkiss (2004), however, argues that the increase in the fraction of the population with disabilities engaged in part-time work is largely a voluntary phenomenon. Because the relative "attractiveness" of the occupations (in terms of O*NET[5] measures of achievement, working conditions, recognition, relationships, support, and independence) chosen by individuals with and without disabilities changed little from 1990 to 2000, she argues that disability policy changes led to increased part-time employment among workers with disabilities. However, the author does not consider whether or not her sample actually received SSI (or DI).

Data

Research on the SSI population is largely based on administrative data or on special surveys of the beneficiary population (for example, the National Survey of SSI Children and Families (NSCF) or the National Beneficiary Survey (NBS)).[6] Administrative data cannot be used for the purposes of the current research because it is necessary to have a nonrecipient comparison group with which to compare the occupational distributions. Most recipient-specific survey data share this common drawback. National surveys, such as the Survey of Income and Program Participation or the National Health Interview Survey often do not include a large enough sample of SSI recipients to obtain reliable estimates of occupations given the small fraction of recipients who work.[7]

The inability of most survey's to capture a sufficiently large SSI population can be partially overcome by using a sufficiently large data set. The public-use version of the 2007 American Community Survey has a large enough sample size to accurately measure the SSI occupational distribution.[8] Roughly 3 million interviews are conducted annually, divided among the 12 months of the year. The ACS is designed to replace the decennial census long form and provide researchers and administrators information to evaluate programs and compare communities in intercensal years. This study uses the public-use version of the ACS.

As part of the section on income in the ACS, individuals are asked to report how much SSI income they received in the previous year. This information was used to create a binary variable indicating SSI program participation in the previous year. The ACS also includes three sets of disability-related questions, each including two parts. These questions ask if the individual: 1a) has "blindness, deafness, or a severe vision or hearing impairment" (sensory); 1b) "has a condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying" (physical); 2a) has difficulty "learning, remembering, or concentrating" (mental); 2b) has difficulty "dressing, bathing, or getting around inside the home" (self-care); 3a) has difficulty "going outside the home alone to shop or visit a doctor's office" (go outside home); and 3b) has difficulty "working at a job or business" (employment).[9]

If nonrecipients reported having any one of these conditions, they are defined as having a self-reported disability; otherwise they do not have a self-reported disability. This forms two groups of nonrecipients (with and without a disability) whose occupational distributions are compared with that of working-age SSI recipients (who are all disabled according to SSA's rules, but may not have a self-reported disability in the survey).

In addition to the employed working-age SSI population and the nonrecipient populations with and without disabilities, three other groups of interest are identified in the data: (1) nonrecipients with a work-related disability (the "employment" question above) are included and analyzed separately because this definition of disability is most closely aligned with the definition of disability used to qualify a working-age individual for SSI payments based on disability; (2) unemployed SSI recipients are included; and (3) SSI recipients who are not participating in the labor force are also included in the data to inform policy options regarding return to work among the nonemployed SSI population.[10]

If employed, respondents to the ACS write in descriptions of their occupations (type of work and most important activities and duties), which are coded by ACS contractors into Standard Occupational Classification (SOC) codes. The 509 identified occupations can be collapsed into 22 major occupational groups, not including unemployment or military-specific codes, according to the *Standard Occupational Classification Manual: 2000*.[11] For the most part, the SOC groupings are maintained throughout the article. There are, however, two exceptions. First, all construction, extraction, maintenance, and repair occupations are collapsed into a single group because of the small number of SSI recipients in extraction occupations. Second, computer and mathematical occupations; architecture and engineering occupations; and life, physical, and social science occupations are collapsed into a single group because of small cell sizes in the

prediction models. Table A-1 lists the occupation groups used in this study along with their codes.

Sample Restrictions

The data are limited to individuals aged 18–61. By limiting the data to those in this age range, most early retirees and individuals adjusting their employment in preparation for retirement are excluded from the sample. The unweighted sample for the bulk of the analysis includes 1,256,019 employed individuals: 2,745 SSI recipients; 72,686 nonrecipients with disabilities (including 18,414 with work disabilities); and 1,180,588 nonrecipients without disabilities. These individuals are all currently employed in nonmilitary occupations. Additionally, there are 861 unemployed SSI recipients and 30,009 SSI recipients who are not participating in the labor force.

Non-SSI recipients who receive Old-Age, Survivors, and Disability Insurance (OASDI) benefits or Railroad Retirement (RR) benefits are excluded from this analysis. The ACS questionnaire does not distinguish the program in which these individuals are participating; although the majority of these individuals are likely to be disabled workers under the DI program covered by Social Security, this cannot be identified with precision. Additionally, this group is likely systematically different from the non-SSI population because of the requirement that earnings remain under substantial gainful activity for OASDI beneficiaries. This may result in those beneficiaries being relegated to certain occupations. As a result, the usefulness of the results combining OASDI/RR beneficiaries with the nonrecipient populations with or without disabilities for determining which occupations are most useful in helping individuals become self-sufficient may be limited. SSI recipients who concurrently receive OASDI or RR benefits are retained in the sample.[12]

Limitations of the Data

There are three main limitations to the data. First, the quality of reported SSI and Social Security (or OASDI) receipt in survey data has long been known to be subject to reporting errors. Huynh, Rupp, and Sears (2002), for example, have shown that in the SIPP, SSI recipients report SSI payments only 80 percent of the time. The accuracy of the ACS instrument regarding SSI receipt has not been assessed. Some individuals may report no income from these sources even though they received payments (or vice versa). This could be due to recall failure or confusion on the months asked about in the survey. Additionally, some recipients may confuse SSI payments with Social Security (or OASDI) benefits. Because the accuracy of the survey reports is uncertain, these numbers should be taken with some degree of caution.

Second, recipients are defined as having positive income from SSI sometime in the previous 12 months. Because of this, they may have been off of the program rolls for the better part of a year and have an occupation that pays significantly higher amounts than the average reported by SSA.

Finally, there are also issues with the measurement of disability in surveys. Most previous research has focused on individuals with a work-based disability. However, it is known that work-disability measures in surveys miss a large proportion of the population with disabilities. Additionally, it is not clear if the presence of a self-reported work disability reflects a work environment that limits work or an impairment that limits work. See Bound (1991), Hale (2001), National Council on Disability (2002), Burkhauser, Daly, and Houtenville (2002), and Burkhauser and Stapleton (2003) for a discussion of these issues in the literature. By using both the work-based and broad measure of disability, the current analysis allows for multiple concepts of disability to be assessed.

Methodology

The first step in assessing differences in the occupational distributions is to obtain estimates of the actual occupational distribution of each group. In addition, a common measure of market concentration, known as the Herfindahl-Hirschman index (HHI), is estimated. This is calculated by summing the square of each occupation's share of the distribution. The higher the HHI, the more concentrated the distribution. In an economy where there is only one occupation, the maximum HHI of 10,000 is reached. In an economy of J occupations, where each occupation is equally represented, the minimum HHI, $J*(100*(1/J))^2$, is attained. In this case, there are 19 occupation classes, so the minimum HHI is 526.

The (dis)similarity of occupations between a reference group and each of the remaining groups is measured using the dissimilarity index proposed by Duncan and Duncan (1955):

$$(1)\ D = \sum_{j=1}^{J} \frac{1}{2} \left| A_j - B_j \right| ,$$

where j identifies each occupation and $A_j(B_j)$ is the proportion of the group A(B) in occupation j. This simple measure can be interpreted as the proportion of

the population that would need to change occupations so that groups A and B had similar distributions.

The next step is to estimate the occupational distributions under the assumption that no differences exist between the two groups. As with other studies of occupational choice (for example, Miller and Volker (1985); Brown, Moon, and Zoloth (1980); Gabriel and Schmitz (2007); Gabriel, Williams, and Schmitz (1990)), a multinomial logit model of occupational choice is estimated on a comparison group (for example, the sample of nonrecipients without a disability) controlling for observable characteristics (see Schmidt and Strauss (1975)). This model is based on random utility theory where individual *i* potentially gains utility *U* from each occupation *j* equal to—

$$(2)\ U_{ij} = \beta' Z_{ij} + \varepsilon_{ij}.$$

The *Z* vector incorporates all relevant individual characteristics. Assuming an individual would choose the occupation that offers the highest level of utility, the probability of individual *i* choosing occupation *j* takes the general form of—

$$(3)\ \Pr\left(Y_i = j\right) = \frac{e^{\beta' Z_{ij}}}{\sum_{j=1}^{J} e^{\beta' Z_{ij}}}.$$

The dependent variable identifies the occupation group of the individual. [13] In this study, the base occupation is office and administrative support, which comprises the largest single occupation group. Characteristics controlled for (the *Z* vector) include demographic characteristics: sex (men versus women), Hispanic ethnicity (Hispanic versus non-Hispanic), race (white versus nonwhite), marital status (married versus nonmarried), age, and age squared. Also controlled for are human capital characteristics: education (more than high school but less than college, college or more versus high school or less, or missing). Although this is a parsimonious model, it is limited by the fact that few other variables are available in the data set that would be expected to better explain occupation choice.[14]

The estimated coefficients are used to obtain the predicted probability of occupation j for individual i in each of the other groups (that is, working SSI recipients, nonrecipients with a disability, and nonrecipients with a work disability). These probabilities are then summed to estimate the fraction of individuals in each group in each occupation. Note that this is not equivalent to assigning each individual an occupation based on the highest predicted probability. Using the highest predicted probability would result in a loss of valuable information if there are small differences between predicted probabilities of different occupations. Additionally, if there are several occupations or occupations with very low probabilities, they would never be represented in the estimated distributions.

The dissimilarity index between the actual distributions of two groups reflects how different the occupational distributions are between those groups. Dissimilarity indices can also be calculated between the actual distribution of one group and the distribution of another group under the model of the first group; that is, the coefficients from a multinomial logit model predicting the occupational distribution of group A are applied to group B and the index is calculated from the actual distribution of group A and the estimated distribution of group B. Typically, any residual difference has been interpreted as a measure of the level of discrimination against one group. However, personal preferences, inadequate (specific) training, physical, cognitive, and mental limitations, or, especially with the population with disabilities, insufficient supports may also result in a nonzero dissimilarity index between the actual and predicted distributions.[15]

This process is repeated using the characteristics of the nonrecipients with disabilities, nonrecipients with work disabilities, and working SSI recipients to estimate occupational distributions of each group. However, an expanded model for these groups is estimated, which includes indicators of the type of disability to control for any disability-specific limitations in occupational opportunities.

Thus, predicted occupational distributions for each group, according to each of the other group's decision models, can be compared with the actual occupational distribution of the other groups. This can answer two important questions: First, what occupations would the disabled (or disabled SSI recipients) have if they were not disabled (or disabled SSI recipients), controlling for demographic and human capital characteristics? And second, conditional on having a disability and controlling for the type of disability and other demographic and human capital characteristics, what occupations would SSI recipients have if they did not receive SSI payments? Note that this methodology is based entirely on observable factors. Large differences in the occupational distributions could remain after controlling for observable factors if there are unobservable differences in the populations or their environments. This is discussed further in the Discussion section of this article.

Occupational Distributions of the Employed

The actual occupational distributions for the four employed populations are presented first and then compared with each other, focusing on comparisons with the working SSI population. This is followed by comparisons of predicted occupational distributions from the model(s) described above.

Actual Distributions

Table 1 presents the actual occupational distributions for the four employed population groups.[16] The differences in the occupational distributions between the groups can easily be seen. Generally, lower fractions of working SSI recipients are employed in occupations with higher fractions of nonrecipients, and vice versa. The occupational distributions of the nonrecipient populations with any disability and with a work disability

Table 1.
Actual occupational distributions of the employed population

Occupation	SSI recipients		Non-SSI recipients with—					
			No disability		Any disability		Work disability	
	Percentage	Standard error	Percentage	Standard error	Percentage	Standard error	Percentage	Standard error
Total	100.00	. . .	100.00	. . .	100.00	. . .	100.00	. . .
Management, professional, and related	**9.51**	. . .	**35.62**	. . .	**25.87**	. . .	**23.48**	. . .
Management	1.70	0.28	9.88	0.03	6.94	0.11	5.86	0.22
Business and financial operations	1.48	0.25	4.55	0.02	3.15	0.08	3.03	0.15
Computer and mathematical, architecture and engineering, life, physical and social science	0.25	0.09	5.45	0.02	3.64	0.07	2.93	0.14
Community and social services	1.60	0.28	1.58	0.01	1.71	0.05	1.56	0.11
Legal	0.33	0.13	1.17	0.01	0.74	0.04	0.67	0.06
Education, training, and library	2.02	0.33	5.84	0.02	4.32	0.08	3.78	0.14
Arts, design, entertainment, sports, and media	1.06	0.22	1.92	0.01	1.43	0.05	1.53	0.11
Health-care practitioner and technical	1.07	0.23	5.23	0.02	3.93	0.08	4.12	0.17
Service	**33.60**	. . .	**15.97**	. . .	**20.53**	. . .	**22.76**	. . .
Health-care support	1.72	0.30	2.20	0.01	2.95	0.07	3.22	0.16
Protective service	1.31	0.28	2.10	0.02	2.11	0.07	2.26	0.13
Food preparation and serving related	9.75	0.67	4.99	0.03	5.74	0.12	6.20	0.23
Building and grounds cleaning and maintenance	14.54	0.98	3.58	0.02	5.80	0.13	6.49	0.25
Personal care and service	6.27	0.55	3.10	0.02	3.93	0.08	4.60	0.19
Sales and office	**21.71**	. . .	**25.15**	. . .	**25.54**	. . .	**24.44**	. . .
Sales and related	8.66	0.76	11.00	0.03	10.65	0.15	10.65	0.28
Office and administrative support	13.05	0.69	14.15	0.04	14.89	0.15	13.79	0.30
Farming, fishing, and forestry	**0.84**	0.21	**0.67**	0.01	**0.73**	0.04	**0.75**	0.07
Construction, extraction, maintenance, and repair	**3.90**	0.44	**10.02**	0.04	**10.92**	0.13	**11.22**	0.31
Production, transportation, and material moving	**30.45**	. . .	**12.57**	. . .	**16.43**	. . .	**17.36**	. . .
Production	15.68	0.97	6.64	0.02	8.33	0.14	8.33	0.25
Transportation and material moving	14.78	0.86	5.94	0.03	8.09	0.12	9.03	0.27
N (unweighted)	2,745		1,180,588		72,686		18,414	
N (weighted)	311,838		123,408,821		7,432,897		1,852,399	

SOURCE: Author's calculations using the 2007 American Community Survey using balanced repeated replicate sample weights.

NOTES: The sum of individual categories may not equal the total because of rounding.

. . . = not applicable.

are similar to each other and are more similar to the occupational distribution of those without a disability than the working SSI occupational distribution.

SSI recipients are more common in certain occupations: production (16 percent), transportation and material moving (15 percent), and buildings and grounds cleaning and maintenance (15 percent). Service, production, and transportation and material moving occupations account for almost two-thirds of SSI employment. Many SSI recipients also work in office and administrative support occupations (13 percent), although they are only slightly less likely to work in these occupations than the other groups. The most common occupational groups of each of the other populations are office and administrative support, sales and related occupations, and construction, extraction, maintenance, and repair.

These results are similar to the occupational distributions found by Hale, Hayghe, and McNeil (1998). Although they used different occupational groupings, they found that those with severe disabilities were most likely to work in service occupations and as operators, fabricators, and laborers, followed by administrative support, including clerical occupations. McNeil (1993, as cited in Stoddard and others (1998)) found that 5 of the top 10 occupations of individuals with disabilities were employed as machine operators, food preparation and services, sales, cleaning or building services, and as motor vehicle operators, which are among the most common occupations for people with disabilities in the distributions estimated above. Both of those studies used the SIPP to estimate occupation distributions. The occupational distribution of SSI recipients is also similar to estimates from the National Beneficiary Survey of the occupations of SSI recipients and DI beneficiaries who work. Thornton and others (2008) show that the most common occupations of working SSI recipients and DI beneficiaries are in transportation and material moving (22 percent), production (14 percent), and building or grounds cleaning and maintenance (13 percent).[17]

Table 2 presents the Herfindahl-Hirschman and occupational dissimilarity indices for each of the population groups. The SSI population has the most concentrated occupational distribution (1,090). As would be expected, nonrecipients without disabilities have the lowest HHI (775). The HHI of the nonrecipient populations with a disability or work disability are slightly higher (796 and 786, respectively).

Although there is a high degree of similarity between the occupation rankings of the groups, there is also significant dissimilarity. Comparing working SSI recipients to the population without disabilities, 37 percent of the population would have to change occupation to achieve parity. This is higher than the percent that would need to change occupations when SSI recipients are compared with the populations with any disability (29 percent) or a work disability (26 percent). The occupational distribution of those with a work-related disability and any disability are quite

Table 2.
Herfindahl-Hirschman and occupational dissimilarity indices of the employed population

Employed population	SSI recipients	Non-SSI recipients with—		
		No disability	Any disability	Work disability
		Panel A: Herfindahl-Hirschman index		
Population	1,089.90	774.93	795.82	786.49
		Panel B: Dissimilarity index		
SSI recipients	0.00	36.95	29.23	26.49
Non-SSI recipients				
No disability	. . .	0.00	10.23	12.85
Any disability	. . .	. . .	0.00	3.77
Work disability	. . .	. . .	. . .	0.00

SOURCE: Author's calculations using the 2007 American Community Survey using balanced repeated replicate sample weights.

NOTES: The dissimilarity indices are calculated between the actual distributions. The dissimilarity matrix is symmetrical and only half is presented. This is the proportion of the two groups that would need to change occupations for there to be parity between the occupational distributions of the two groups.

The sum of individual categories may not equal the total because of rounding.

. . . = not applicable.

similar, only 4 percent of the population would need to change occupations for parity, and only 10–13 percent of the population would need to change occupations to equalize their distributions with respect to the population without a disability. Note that Table 2, panel B is symmetric and only one-half is presented.

Predicted Distributions

Whether or not the differences between these distributions disappear once factors such as age and education are taken into consideration would be useful for planning vocational rehabilitation or other back-to-work incentives. To do this, separate multinomial logit models of occupational choice are estimated for the four populations. The models control for sex, race, ethnicity, marital status, age, and education. Disability type is included in all but the no-disability model. Four separate sets of occupational distributions are then predicted for each group based on the coefficients for each of these models, as described earlier.

The predicted occupations of the working SSI population based on these models are presented in Table 3; those of the population with disabilities are presented in Table 4; those of the population without disabilities are presented in Table 5; and those with work disabilities are presented in Table 6. These predicted occupational distributions are compared with the actual distribution for each group in Table 1. In Table 3, for example, the coefficients of the four occupational-choice *models* are applied to the working SSI

Table 3.
Estimated occupational distributions of the employed SSI population, by occupational-choice model [a]

Occupation	SSI recipients	Non-SSI recipients with—		
		No disability	Any disability	Work disability
Total	100.00	100.00	100.00	100.00
Management, professional, and related	**9.25**	**16.64**	**13.38**	**12.92**
Management	1.70	6.37	4.17	4.18
Business and financial operations	1.48	2.53	1.84	1.78
Computer and mathematical, architecture and engineering, life, physical and social science	0.25	2.38	2.00	1.71
Community and social services	1.60	0.82	1.07	1.03
Legal	0.33	0.49	0.44	0.42
Education, training, and library	2.02	2.43	2.28	2.10
Arts, design, entertainment, sports, and media	1.06	1.23	1.15	1.14
Health-care practitioner and technical	1.07	2.77	2.42	2.29
Service	**33.60**	**21.88**	**28.99**	**30.00**
Health-care support	1.72	3.03	3.53	3.34
Protective service	1.31	2.01	2.10	2.15
Food preparation and serving related	9.75	7.47	9.62	9.98
Building and grounds cleaning and maintenance	14.54	5.29	8.74	9.33
Personal care and service	6.27	4.08	5.00	5.20
Sales and office	**21.71**	**27.36**	**24.58**	**22.49**
Sales and related	8.66	11.18	10.43	10.30
Office and administrative support	13.05	16.18	14.15	13.98
Farming, fishing, and forestry	**0.84**	**0.72**	**0.77**	**0.72**
Construction, extraction, maintenance, and repair	**3.90**	**12.59**	**10.22**	**10.10**
Production, transportation, and material moving	**30.45**	**18.45**	**20.05**	**22.49**
Production	15.68	9.55	9.48	9.09
Transportation and material moving	14.78	8.90	10.57	11.18

SOURCE: Author's calculations using the 2007 American Community Survey.

NOTES: The sum of individual categories may not equal the total because of rounding.

a. The occupational-choice models are based on separate multinomial logit regressions of occupation for each population group. Covariates in all models include sex, ethnicity, race, marital status, education, age, and age squared. The disabled, work-disabled, and working-SSI models also include disability type as additional covariates. All estimates use ACS balanced repeated replicate sample weights. See Table A-3 for the results of the models.

Table 4.
Estimated occupational distributions of the employed population with disabilities, by occupational-choice model [a]

Occupation	SSI recipients	Non-SSI recipients with—		
		No disability	Any disability	Work disability
Total	100.00	100.00	100.00	100.00
Management, professional, and related	**18.46**	**29.03**	**25.87**	**22.70**
Management	4.38	9.06	6.94	5.67
Business and financial operations	2.55	3.70	3.15	2.77
Computer and mathematical, architecture and engineering, life, physical and social science	1.23	3.98	3.64	2.73
Community and social services	2.35	1.26	1.71	1.54
Legal	0.45	0.87	0.74	0.64
Education, training, and library	3.36	4.21	4.32	3.91
Arts, design, entertainment, sports, and media	2.27	1.57	1.43	1.60
Health-care practitioner and technical	1.88	4.39	3.93	3.85
Service	**27.95**	**17.21**	**20.53**	**22.90**
Health-care support	2.17	2.41	2.95	3.08
Protective service	2.00	2.09	2.11	2.05
Food preparation and serving related	6.83	5.00	5.74	6.25
Building and grounds cleaning and maintenance	9.32	4.38	5.80	6.65
Personal care and service	7.63	3.33	3.93	4.88
Sales and office	**27.17**	**26.47**	**25.54**	**24.55**
Sales and related	10.84	10.98	10.65	10.99
Office and administrative support	16.32	15.49	14.89	13.34
Farming, fishing, and forestry	**0.76**	**0.68**	**0.73**	**0.81**
Construction, extraction, maintenance, and repair	**7.66**	**11.34**	**10.92**	**12.19**
Production, transportation, and material moving	**18.01**	**15.28**	**16.43**	**17.06**
Production	7.15	8.06	8.33	8.08
Transportation and material moving	10.86	7.22	8.09	8.98

SOURCE: Author's calculations using the 2007 American Community Survey.

NOTES: The sum of individual categories may not equal the total because of rounding.

a. The occupational-choice models are based on separate multinomial logit regressions of occupation for each population group. Covariates in all models include sex, ethnicity, race, marital status, education, age, and age squared. The disabled, work-disabled, and working-SSI models also include disability type as additional covariates. All estimates use ACS balanced repeated replicate sample weights. See Table A-3 for the results of the models.

population. Thus, Table 3 shows the predicted occupational distribution the working SSI population would have if their observable characteristics affected their occupational choice in the same manner as the reference population. Note that the predicted occupational distribution of a group based on its own population model is identical to the actual distribution in Table 1, although the standard errors are slightly different.[18]

Considering the occupational distributions of the working SSI population (Table 3), fewer SSI recipients would work in service occupations (from 34 percent to 22 percent) and production, transportation, and material moving occupations (from 30 percent to 18 percent) if their occupations were distributed according to the no-disability occupational-choice model. Additionally, more working SSI recipients would be in construction, extraction, maintenance, and repair occupations (from 4 percent to 13 percent) and management, professional, and related occupations (from 10 percent to 19 percent) under the this model.

Most of the individual occupations see changes of less than 1 percentage point. The largest change is the reduction of SSI recipients working in building and grounds cleaning and maintenance (from 15 percent to 5 percent). The following occupations all see a change of more than 3 percentage points under the no-disability occupational-choice model: management; office and administrative support; construction,

Table 5.
Estimated occupational distributions of the employed population without disabilities, by occupational-choice model [a]

Occupation	SSI recipients	Non-SSI recipients with—		
		No disability	Any disability	Work disability
Total	100.00	100.00	100.00	100.00
Management, professional, and related	**21.61**	**35.62**	**34.22**	**29.74**
Management	6.32	9.88	8.68	7.41
Business and financial operations	1.64	4.55	4.32	3.55
Computer and mathematical, architecture and engineering, life, physical and social science	1.28	5.45	5.42	4.20
Community and social services	3.14	1.58	1.91	1.64
Legal	0.58	1.17	0.96	0.90
Education, training, and library	3.16	5.84	6.37	5.40
Arts, design, entertainment, sports, and media	2.56	1.92	1.65	1.62
Health-care practitioner and technical	2.94	5.23	4.90	5.01
Service	**24.71**	**15.97**	**16.83**	**20.58**
Health-care support	1.53	2.20	2.81	3.29
Protective service	1.69	2.10	1.73	2.08
Food preparation and serving related	7.13	4.99	5.02	5.66
Building and grounds cleaning and maintenance	8.09	3.58	4.12	5.11
Personal care and service	6.27	3.10	3.14	4.46
Sales and office	**30.47**	**25.15**	**25.27**	**23.61**
Sales and related	11.37	11.00	10.69	11.11
Office and administrative support	19.09	14.15	14.59	12.50
Farming, fishing, and forestry	**0.52**	**0.67**	**0.71**	**0.85**
Construction, extraction, maintenance, and repair	**8.47**	**10.02**	**9.17**	**10.18**
Production, transportation, and material moving	**14.22**	**12.57**	**13.80**	**15.04**
Production	5.10	6.64	7.22	7.35
Transportation and material moving	9.12	5.94	6.57	7.70

SOURCE: Author's calculations using the 2007 American Community Survey.

NOTES: The sum of individual categories may not equal the total because of rounding.

a. The occupational-choice models are based on separate multinomial logit regressions of occupation for each population group. Covariates in all models include sex, ethnicity, race, marital status, education, age, and age squared. The disabled, work-disabled, and working-SSI models also include disability type as additional covariates. All estimates use ACS balanced repeated replicate sample weights. See Table A-3 for the results of the models.

extraction, maintenance and repair; production; and transportation and material moving.

Similar movements occur under the disability and work-related disability occupational-choice models, which yield similar results. For example, the percentage of working SSI recipients in management, professional, and related occupations increases from 9 percent to about 15 percent under these models, and the percentage in production, transportation, and material moving occupations falls from 30 percent to about 20–22 percent under these models.

Tables 4, 5, and 6 present similar estimates for the populations with any disability, no disability, and a work disability, respectively.[19] Because this article is focused on the SSI population, only the differences between the actual distributions and the working-SSI model are discussed here. As would be expected, when the working-SSI model is used to predict occupational distributions, the reverse of what was seen in Table 3 occurs. For example, the percentage of those with disabilities in management, professional, and related occupations falls from 26 percent to 18 percent (Table 4). Similarly, the decrease in the percentage in these occupations under the working SSI occupational-choice model is from 36 percent to 22 percent for the population without a disability (Table 5) and 23 percent to 20 percent for the population with a work disability (Table 6).

Table 6.
Estimated occupational distributions of the employed population with work disabilities, by occupational-choice model [a]

Occupation	SSI recipients	Non-SSI recipients with—		
		No disability	Any disability	Work disability
Total	100.00	100.00	100.00	100.00
Management, professional, and related	**20.10**	**28.56**	**23.48**	**23.48**
Management	3.60	8.93	5.86	5.86
Business and financial operations	2.49	3.67	3.03	3.03
Computer and mathematical, architecture and engineering, life, physical and social science	1.01	3.85	2.93	2.93
Community and social services	1.33	1.25	1.56	1.56
Legal	0.54	0.85	0.67	0.67
Education, training, and library	4.25	4.11	3.78	3.78
Arts, design, entertainment, sports, and media	3.96	1.53	1.53	1.53
Health-care practitioner and technical	2.93	4.37	4.12	4.12
Service	**30.05**	**17.39**	**22.76**	**22.76**
Health-care support	2.39	2.49	3.22	3.22
Protective service	1.75	2.08	2.26	2.26
Food preparation and serving related	5.53	4.97	6.20	6.20
Building and grounds cleaning and maintenance	10.67	4.46	6.49	6.49
Personal care and service	9.72	3.38	4.60	4.60
Sales and office	**23.07**	**26.47**	**24.44**	**24.47**
Sales and related	7.92	10.84	10.65	10.65
Office and administrative support	15.15	15.63	13.79	13.79
Farming, fishing, and forestry	**0.49**	**0.67**	**0.75**	**0.75**
Construction, extraction, maintenance, and repair	**5.21**	**11.33**	**11.22**	**11.22**
Production, transportation, and material moving	**21.07**	**15.58**	**17.36**	**17.36**
Production	8.29	8.23	8.33	8.33
Transportation and material moving	12.77	7.35	9.03	9.03

SOURCE: Author's calculations using the 2007 American Community Survey.

NOTES: The sum of individual categories may not equal the total because of rounding.

a. The occupational-choice models are based on separate multinomial logit regressions of occupation for each population group. Covariates in all models include sex, ethnicity, race, marital status, education, age, and age squared. The disabled, work-disabled, and working-SSI models also include disability type as additional covariates. All estimates use ACS balanced repeated replicate sample weights. See Table A-3 for the results of the models.

There is an increase in the percent of these populations in service occupations under the working-SSI model—21 percent to 28 percent for those with a disability (Table 4), 16 percent to 25 percent for those without a disability (Table 5), and 23 percent to 30 percent for those with a work disability (Table 6). This is largely due to increases in the percentage working in building and grounds cleaning and maintenance occupations. Construction, extraction, maintenance, and repair occupations also see large declines, as would be expected given the results in Table 3.

The concentration of predicted occupations somewhat follows that of the actual occupations (Table 7, panel A). The working SSI recipient occupational-choice model yields the highest concentration of occupations for all groups. Additionally, under each model, working SSI recipients have the highest HHI, reflecting more concentrated distributions. The occupational concentrations are not lowest under the no-disability occupational-choice model, as might be expected, although people without disabilities have the lowest concentrations under each model, other than the working SSI recipient model. However, all three nonrecipient models yield similar HHI values.

Controlling for demographic characteristics, human capital, and disability type greatly reduces the dissimilarity between the distributions of the various groups (Table 7, panel B). Compared with Table 2, the

Table 7.
Predicted Herfindahl-Hirschman and occupational dissimilarity indices of the employed population under alternative occupational-choice models

Estimated population	SSI recipient model	Non-SSI recipient models with—		
		No disability	Any disability	Work disability
		Panel A: Herfindahl-Hirschman index		
SSI recipients	1,089.90	898.38	865.27	876.76
Non-SSI recipients				
No disability	915.44	774.93	765.34	735.94
Any disability	865.66	825.35	795.82	797.31
Work disability	863.78	827.50	786.49	786.49
		Panel B: Dissimilarity index of comparison group and model		
SSI recipients	0.00	16.70	12.14	10.44
Non-SSI recipients				
No disability	25.82	0.00	8.40	6.89
Any disability	20.66	6.61	0.00	2.07
Work disability	18.83	7.24	3.77	0.00

SOURCE: Author's calculations using the 2007 American Community Survey.

NOTE: Herfindahl-Hirschman indices are calculated for each row group's estimated distribution under the column group's occupational-choice model. Dissimilarity indices are calculated between the estimated distribution of the row group under the model based on the column group and the column group's actual distribution. This is the proportion of the two groups that would need to change occupations for there to be parity between the occupational distributions of the two groups.

differences between the occupational distributions of each of the control populations and the SSI population are halved. Only 17 percent of the population would need to change occupations to equalize the distributions of those receiving SSI and those without a disability under the no-disability model. Under the disability and work-disability models, the difference is even smaller (12 percent and 10 percent of the population, respectively). Under the working SSI recipient model, the difference between the working SSI population and each group is larger than under the other models, and the difference from the actual distribution is much smaller for each group.

Predicted Occupations of Unemployed SSI Recipients

Although the above results present the current occupational distributions and how much any differences can be explained away by demographic characteristics, human capital, and disability type, much of SSA's interest in return to work is in getting those *not* employed into the labor force and employed. Estimates of the occupations the unemployed and non–labor force participant (non-LFP) SSI recipients would have if they were employed under each of the models above are presented in Tables 8 and 9, respectively. These estimates do not consider any effect the return to work would have on the larger distribution of occupations or for selection into the labor force. As a result, these estimates may under or overstate the proportion of recipients in each occupational group.

The predicted occupations of unemployed and non-LFP SSI recipients are very similar to those of working SSI recipients under any occupational-choice model (see Table 3 for comparison). For the unemployed SSI population, the most common predicted occupations are in office and administrative support (14 percent to 16 percent); sales and related occupations (about 11 percent); and construction, extraction, maintenance, and repair occupations (10 percent to 12 percent). Non-LFP SSI recipients are also well represented in these occupations. As with the working SSI population, many unemployed and non-LFP SSI recipients are predicted to work in building and grounds cleaning and maintenance or food preparation and serving-related occupations. In fact, service occupations comprise about 30 percent of predicted occupations in all but the no-disability occupational-choice model for both groups.

The HHI values for the predicted occupational distributions are similar to those of the working SSI population reported in Table 7 (see Table 10,

Table 8.

Estimated occupational distributions of unemployed SSI recipients, by occupational-choice model [a]

Occupation	SSI recipients	Non-SSI recipients with—		
		No disability	Any disability	Work disability
Total	100.00	100.00	100.00	100.00
Management, professional, and related	**10.84**	**19.70**	**15.67**	**15.04**
Management	1.84	6.28	4.12	4.20
Business and financial operations	1.48	2.65	1.82	1.75
Computer and mathematical, architecture and engineering, life, physical and social science	0.25	2.79	2.17	1.92
Community and social services	1.78	0.88	1.16	1.11
Legal	0.37	0.52	0.45	0.47
Education, training, and library	2.11	2.44	2.31	2.13
Arts, design, entertainment, sports, and media	1.71	1.34	1.26	1.20
Health-care practitioner and technical	1.31	2.80	2.38	2.25
Service	**34.33**	**22.73**	**29.21**	**30.01**
Health-care support	2.00	3.19	3.71	3.43
Protective service	1.39	2.15	2.21	2.19
Food preparation and serving related	9.82	8.25	10.23	10.21
Building and grounds cleaning and maintenance	14.34	4.96	7.90	8.79
Personal care and service	6.79	4.18	5.17	5.39
Sales and office	**23.51**	**27.28**	**24.67**	**24.34**
Sales and related	9.62	11.41	10.96	10.71
Office and administrative support	13.88	15.87	13.71	13.62
Farming, fishing, and forestry	**1.00**	**0.74**	**0.81**	**0.75**
Construction, extraction, maintenance, and repair	**4.54**	**12.15**	**10.71**	**10.37**
Production, transportation, and material moving	**25.78**	**17.40**	**18.92**	**19.50**
Production	11.49	8.94	8.82	8.69
Transportation and material moving	14.29	8.47	10.10	10.81

SOURCE: Author's calculations using the 2007 American Community Survey.

NOTES: The sum of individual categories may not equal the total because of rounding.

a. The occupational-choice models are based on separate multinomial logit regressions of occupation for each population group. Covariates in all models include sex, ethnicity, race, marital status, education, age, and age squared. The disabled, work-disabled, and working-SSI models also include disability type as additional covariates. All estimates use ACS balanced repeated replicate sample weights. See Table A-3 for the results of the models.

panel A). If currently unemployed or non-LFP SSI recipients were placed in occupations according to the occupational distribution of currently employed SSI recipients, the difference between the groups would be minimal. Only about 5 percent of the population would need to change occupations for parity (Table 10, panel B).

About 16 percent of the population would have to change occupations for unemployed SSI recipients and nonrecipients without a disability to reach occupational parity; similarly, 17 percent of non-LFP SSI recipients and nonrecipients without a disability would have to change occupations. Surprisingly, the differences between the distributions of unemployed recipients and nonrecipients with any disability or a work-related disability are slightly smaller than those between working recipients and unemployed recipients.

Discussion

There are several reasons why differences between the occupational distributions of the groups do not disappear when controlling for observable demographic characteristics, human capital, and disability type. First, the working-age SSI population is composed of low-income individuals with a disability defined to be severe and work limiting. It is unlikely that these individuals are physically, cognitively, or mentally capable of all the occupations available to the nondisabled or

Table 9.
Estimated occupational distributions of non–labor force participant SSI recipients, by occupational-choice model [a]

Occupation	SSI recipients	Non-SSI recipients with—		
		No disability	Any disability	Work disability
Total	100.00	100.00	100.00	100.00
Management, professional, and related	**10.16**	**18.58**	**14.44**	**14.56**
Management	1.54	6.64	4.03	4.16
Business and financial operations	1.71	2.48	1.83	1.91
Computer and mathematical, architecture and engineering, life, physical and social science	0.20	2.02	1.57	1.52
Community and social services	1.26	0.83	1.03	1.08
Legal	0.43	0.46	0.39	0.36
Education, training, and library	2.41	2.29	1.99	1.93
Arts, design, entertainment, sports, and media	1.34	1.10	1.04	1.14
Health-care practitioner and technical	1.27	2.77	2.55	2.44
Service	**34.97**	**22.32**	**30.46**	**30.45**
Health-care support	2.70	3.36	4.01	3.74
Protective service	1.38	1.77	2.17	2.16
Food preparation and serving related	7.68	6.54	8.63	8.77
Building and grounds cleaning and maintenance	14.77	6.25	9.71	9.78
Personal care and service	8.44	4.40	5.95	6.00
Sales and office	**20.57**	**28.99**	**24.81**	**25.13**
Sales and related	8.02	10.90	10.03	10.33
Office and administrative support	12.55	18.09	14.79	14.80
Farming, fishing, and forestry	**0.50**	**0.73**	**0.76**	**0.72**
Construction, extraction, maintenance, and repair	**3.30**	**10.82**	**9.52**	**9.58**
Production, transportation, and material moving	**30.50**	**18.56**	**20.01**	**19.57**
Production	14.98	9.93	9.71	9.53
Transportation and material moving	15.52	8.63	10.30	10.04

SOURCE: Author's calculations using the 2007 American Community Survey.

NOTES: The sum of individual categories may not equal the total because of rounding.

a. The occupational-choice models are based on separate multinomial logit regressions of occupation for each population group. Covariates in all models include sex, ethnicity, race, marital status, education, age, and age squared. The disabled, work-disabled, and working-SSI models also include disability type as additional covariates. All estimates use ACS balanced repeated replicate sample weights. See Table A-3 for the results of the models.

disabled nonrecipient populations. For example, one of the largest changes under the no-disability model would place almost 9 percent more individuals in construction occupations, which many SSI recipients simply would not be able to do. Additionally, some recipients' occupational choices may also be constrained by an inability to work full time. Over 70 percent of working SSI recipients work part time, compared with 17 percent of the population without a disability (Table A-2). Section 1619(b) may ease the transition from SSI to full-time employment, but its effect is not clear.

Second, SSI is a means-tested income support program; therefore occupations that traditionally have high wages and salaries, such as most management and professional occupations, will never have large numbers of SSI recipients. Workers in those occupations typically earn more than an individual can earn under SSI regulations while still receiving SSI payments. However, it is unlikely that many SSI recipients would be able to obtain these occupations given the average SSI recipient's level of education and work history.

Third, the models, although similar to other models of occupational choice, are parsimonious and most likely suffer from some form of omitted variable(s) bias, which may bias the predictions. Similarly, many observed variables were not included in the model

Table 10.
Predicted Herfindahl-Hirschman and occupational dissimilarity indices of the unemployed and non–labor force participant SSI recipient populations under alternative occupational-choice models

Estimated population	SSI recipients	Non-SSI recipients with—		
		No disability	Any disability	Work disability
		Panel A: Herfindahl-Hirschman index		
Unemployed SSI recipients	1015.32	877.41	854.88	864.79
Non–labor force participant SSI recipients	1072.12	921.67	870.51	872.37
		Panel B: Dissimilarity index		
Unemployed SSI recipients	4.88	15.91	11.58	9.52
Non–labor force participant SSI recipients	5.39	17.47	13.54	11.00

SOURCE: Author's calculations using the 2007 American Community Survey using balanced repeated replicate sample weights.

NOTE: Herfindahl-Hirschman indices are calculated for each row group's estimated distribution under the column group's occupational-choice model. Dissimilarity indices are calculated between the estimated distribution of the row group under the model based on the column group and the column group's actual distribution. This is the proportion of the two groups that would need to change occupations for there to be parity between the occupational distributions of the two groups.

because they are endogenous to the occupational decision. For example, 11 percent of the working SSI sample reside in group homes, which may impose a limit on potential occupations if they focus on certain activities or do not allow employment outside the group home. Additionally, 25 percent of SSI recipients in the sample are employees of a private nonprofit, tax-exempt, or charitable organization (almost four times the percentage of individuals without disabilities), which may indicate sheltered workshops (Table A-2).

The results suggest that nonrecipients with any disability or a work-related disability have occupational distributions very similar to those of nonrecipients without disabilities, controlling for demographic characteristics and human capital. This suggests that factors unique to SSI recipients that are not included in the model explain much of the difference.

In addition to the severity of the disability, policy factors—such as the reduction in payments for SSI recipients who work—may constrain the occupational choices of beneficiaries. Even though there are incentives to employment that would ensure the continued receipt of Medicaid, some beneficiaries may be confused by the program rules. Studies have repeatedly shown that beneficiaries are largely unaware of the work incentives associated with SSA's disability programs (for example, Hennessey and Muller (1995) for DI and Loprest and Wittenburg (2005) for SSI).

SSA has extensive work incentives for SSI recipients and has expressed a desire to help recipients return to work. Even though disability advocates suggest that help should be given to all who are willing to work, the form of that help and the final outcome expected needs to be weighed against what can realistically be expected. Table 11 shows the average annual wages of individuals in each occupation for each population group. The wages of individuals in the occupations in which SSI recipients are commonly employed are very low, even among nonrecipients. In fact, the wages of SSI recipients in the most common single occupation group (production) is, on average, lower than the level required for the SSI federal payment plus the state supplement to be reduced to zero in any state (SSA 2008b). Placing individuals in these occupations may not remove them from the SSI rolls, or may only remove them temporarily. Training and work incentives more closely aligned with occupations that are realistically attainable, but offer higher pay, may lead to better success in removing recipients from the rolls.

Conclusion

This article suggests a large difference in the occupational distributions of SSI recipients compared with nonrecipients with and without disabilities. Controlling for demographic characteristics, human capital, and disability type eliminates much of this difference, however a large gap remains. The low dissimilarity indices between the predicted occupations of unemployed and non-LFP SSI recipients and the actual occupations of working SSI recipients suggest these individuals have similar job prospects as the currently employed. It is not clear if the return-to-work efforts

Table 11.
Average annual wages of working individuals, by occupation and population group

Occupation	SSI recipients		Non-SSI recipients with—					
			No disability		Any disability		Work disability	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Management, professional, and related								
Management	31,484	6,415	74,479	266	52,146	843	42,761	1,593
Business and financial operations	25,932	5,548	60,669	306	46,443	1,113	38,067	1,467
Computer and mathematical, architecture and engineering, life, physical and social science	28,324	7,715	65,865	210	56,446	1,074	47,661	1,489
Community and social services	14,225	1,752	36,320	158	32,802	712	29,443	1,290
Legal	29,695	10,387	86,667	1,003	55,220	2,875	46,582	5,267
Education, training, and library	15,868	2,981	37,154	118	33,749	543	30,240	1,238
Arts, design, entertainment, sports, and media	8,685	2,373	38,186	396	26,305	894	18,667	1,890
Health-care practitioner and technical	26,437	5,930	62,161	282	47,233	1,059	43,125	1,821
Service								
Health-care support	10,883	1,831	21,685	122	19,405	352	18,295	671
Protective service	12,225	2,412	45,534	199	33,292	700	31,084	1,650
Food preparation and serving related	5,902	480	15,757	74	13,456	347	12,592	491
Building and grounds cleaning and maintenance	6,688	463	18,882	120	16,291	378	12,598	382
Personal care and service	6,642	778	15,228	122	12,758	345	10,143	643
Sales and office								
Sales and related	11,155	1,751	40,959	188	27,981	598	22,729	1,022
Office and administrative support	11,425	829	29,586	60	26,705	231	23,514	499
Farming, fishing, and forestry	6,889	2,888	19,964	286	18,216	792	17,435	1,822
Construction, extraction, maintenance, and repair	16,737	2,314	34,129	94	30,352	355	25,810	592
Production, transportation, and material moving								
Production	12,023	691	32,936	104	28,962	356	24,909	565
Transportation and material moving	9,286	798	31,210	119	25,460	354	22,653	594

SOURCE: Author's calculations using the 2007 American Community Survey using balanced repeated replicate sample weights.

SSA is currently implementing will result in improved outcomes for these individuals or result in more program exits for the reasons previously discussed. Targeting training toward occupations in building and grounds cleaning and maintenance or food preparation and serving-related work or partnering with large corporations, which utilize these jobs, may yield more immediate employment results for SSI recipients, but not program exits.

The model used to predict the occupations of the currently unemployed is not complete, and future studies should look into developing a model that controls for selection in the decisions to receive SSI and work. Particularly, variables (such as part-time status and type of employment) were not included in the model because they are endogenous and would bias the results because certain occupations have more part-time opportunities and some individuals may be limited in their ability or desire to work full time. Future work should consider more rigorous methods of controlling for these factors. Additionally, a match between the ACS and SSA administrative records would more accurately identify the population of interest and would enable an expansion of the analysis to the much larger DI program covered under Social Security. This would also allow an analysis of Section 1619(b) participants, who only receive Medicaid coverage, to determine if their employment opportunities differ from those receiving SSI payments. Finally, it may be useful to compare the current distribution with distributions in earlier years, particularly using data from the 2000 Decennial Census, to determine whether the employment opportunities available to SSI recipients are declining or improving.

Table A-1.
Standard occupational classification code groupings

Occupation	Code range	
	Lowest	Highest
Management, professional, and related		
Management	0010	0430
Business and financial operations	0500	0950
Computer and mathematical, architecture and engineering, life, physical and social science	1000	1960
Community and social services	2000	2060
Legal	2100	2150
Education, training, and library	2200	2550
Arts, design, entertainment, sports, and media	2600	2920
Health-care practitioner and technical	3000	3540
Service		
Health-care support	3600	3650
Protective service	3700	3950
Food preparation and serving related	4000	4150
Building and grounds cleaning and maintenance	4200	4250
Personal care and service	4300	4650
Sales and office		
Sales and related	4700	4960
Office and administrative support	5000	5930
Farming, fishing, and forestry	6000	6130
Construction, extraction, maintenance, and repair	6200	7620
Production, transportation, and material moving		
Production	7700	8960
Transportation and material moving	9000	9750

SOURCE: *2000 Standard Occupational Classification Manual,* Bureau of Labor Statistics.

NOTE: See SOC Manual for information on codes.

Table A-2.
Means and standard errors of variables used in multinomial logit estimation

	SSI recipients						Non-SSI recipients with—					
	Working SSI		Unemployed SSI		Non-LFP SSI		No disability		Any disability		Work disability	
Variable	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Male	0.52	0.01	0.53	0.02	0.44	0.00	0.53	0.00	0.54	0.00	0.53	0.00
Hispanic	0.08	0.01	0.09	0.01	0.11	0.00	0.15	0.00	0.12	0.00	0.12	0.00
White	0.71	0.01	0.64	0.02	0.66	0.00	0.76	0.00	0.76	0.00	0.74	0.00
Married	0.17	0.01	0.15	0.01	0.22	0.00	0.56	0.00	0.50	0.00	0.48	0.00
Some college	0.20	0.01	0.23	0.02	0.19	0.00	0.31	0.00	0.34	0.00	0.32	0.00
College	0.07	0.01	0.09	0.01	0.05	0.00	0.31	0.00	0.18	0.00	0.17	0.00
Age	39.20	0.30	36.84	0.46	45.24	0.08	39.24	0.01	43.44	0.06	43.67	0.11
Self-care	0.19	0.01	0.12	0.02	0.30	0.00	0.00	0.00	0.07	0.00	0.19	0.00
Sensory	0.18	0.01	0.19	0.02	0.19	0.00	0.00	0.00	0.29	0.00	0.12	0.00
Go outside home	0.43	0.01	0.25	0.02	0.46	0.00	0.00	0.00	0.10	0.00	0.29	0.00
Physical	0.42	0.01	0.36	0.02	0.63	0.00	0.00	0.00	0.51	0.00	0.55	0.00
Mental	0.64	0.01	0.57	0.02	0.56	0.00	0.00	0.00	0.28	0.00	0.29	0.00
Employment	0.55	0.01	0.61	0.02	0.86	0.00	0.00	0.00	0.25	0.00	1.00	0.00
Nonprofit-type employment	0.25	0.01	. . .	. . .	. . .	. . .	0.07	0.00	0.07	0.00	0.07	0.00
Part-time employment	0.71	0.01	. . .	. . .	. . .	. . .	0.17	0.00	0.22	0.00	0.31	0.00
Noninstitutional group home	0.11	0.01	0.03	0.01	0.05	0.00	0.01	0.00	0.01	0.00	0.01	0.00
N	2,745		861		31,009		1,180,588		72,686		18,414	
Weighted N	311,838		101,191		3,387,226		123,408,821		7,432,897		1,852,399	

SOURCE: Author's calculations using the 2007 American Community Survey using balanced repeated replicate sample weights.

NOTE: . . . = not applicable.

Table A-3.
Coefficients and standard errors from multinomial logit estimations of occupational choice

Occupation and variable	SSI recipients		Non-SSI recipients with—					
			No disability		Any disability		Work disability	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Management								
Male	0.68	0.34	1.40	0.01	1.30	0.04	1.33	0.10
Hispanic	-0.12	0.67	-0.19	0.02	-0.20	0.08	-0.24	0.17
White	-0.33	0.40	0.38	0.01	0.28	0.06	0.26	0.11
Married	0.55	0.39	0.28	0.01	0.26	0.04	0.17	0.09
Some college	0.28	0.40	0.13	0.01	0.01	0.05	-0.03	0.11
College	1.87	0.47	1.50	0.01	1.21	0.06	1.06	0.12
Age	0.09	0.10	0.19	0.00	0.15	0.02	0.10	0.03
Age squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Self-care	-0.68	0.46	-5.98	0.07	0.16	0.09	0.23	0.12
Sensory	-0.15	0.45	. . .	. . .	0.04	0.06	-0.08	0.15
Go outside home	-0.59	0.41	. . .	. . .	-0.14	0.08	-0.06	0.10
Physical	0.40	0.39	. . .	. . .	-0.09	0.06	-0.19	0.10
Mental	-0.64	0.42	. . .	. . .	-0.25	0.06	-0.31	0.11
Employment	0.12	0.38	. . .	. . .	-0.08	0.06	. . .	. . .
Constant	-4.60	2.08	-0.79	0.08	-5.20	0.34	-4.07	0.75
Business and financial operations								
Male	0.43	0.40	0.66	0.01	0.46	0.06	0.39	0.12
Hispanic	-0.12	0.66	-0.19	0.02	-0.16	0.12	-0.29	0.26
White	0.06	0.45	0.07	0.02	0.14	0.07	0.19	0.14
Married	-0.25	0.43	0.13	0.01	0.27	0.06	0.20	0.12
Some college	0.17	0.50	0.61	0.02	0.67	0.08	0.82	0.15
College	2.37	0.58	2.34	0.02	2.16	0.08	2.21	0.16
Age	0.11	0.13	0.12	0.00	0.11	0.02	0.07	0.04
Age squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Self-care	0.10	0.44	-4.91	0.08	0.15	0.11	0.24	0.16
Sensory	1.08	0.43	. . .	. . .	-0.10	0.07	-0.22	0.23
Go outside home	0.24	0.38	. . .	. . .	0.10	0.10	0.15	0.13
Physical	0.71	0.41	. . .	. . .	-0.10	0.07	-0.10	0.12
Mental	-0.19	0.43	. . .	. . .	-0.25	0.07	-0.18	0.13
Employment	0.21	0.46	. . .	. . .	-0.03	0.07	. . .	. . .
Constant	-6.56	2.83	0.39	0.09	-5.10	0.42	-4.74	0.90
Computer and mathematical, architecture and engineering, life, physical and social science								
Male	2.17	0.96	1.93	0.01	1.84	0.06	1.58	0.12
Hispanic	0.52	1.36	-0.48	0.02	-0.28	0.11	-0.35	0.25
White	-0.29	0.98	-0.09	0.01	0.17	0.07	0.16	0.14
Married	3.01	1.11	0.19	0.01	0.18	0.06	0.16	0.12
Some college	-0.16	1.47	0.96	0.02	1.04	0.08	1.04	0.19
College	4.49	1.01	2.70	0.02	2.36	0.09	2.36	0.19
Age	-0.33	0.25	0.12	0.00	0.15	0.02	0.12	0.05
Age squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Self-care	-1.65	1.36	. . .	. . .	0.19	0.11	0.34	0.17
Sensory	1.60	0.69	. . .	. . .	-0.07	0.07	-0.14	0.21
Go outside home	0.11	1.05	. . .	. . .	0.12	0.10	0.15	0.13
Physical	0.10	0.78	. . .	. . .	-0.09	0.07	-0.25	0.13
Mental	0.78	0.60	. . .	. . .	-0.09	0.07	-0.23	0.13
Employment	0.76	0.87	. . .	. . .	-0.24	0.07	. . .	. . .
Constant	-1.97	4.31	-5.43	0.08	-6.39	0.40	-5.78	0.96

(Continued)

Table A-3.
Coefficients and standard errors from multinomial logit estimations of occupational choice—*Continued*

Occupation and variable	SSI recipients		Non-SSI recipients with—					
			No disability		Any disability		Work disability	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Community and social services								
Male	0.25	0.41	0.32	0.02	0.41	0.08	0.37	0.16
Hispanic	-1.00	0.71	0.04	0.03	0.12	0.13	0.37	0.27
White	-0.75	0.46	-0.34	0.02	-0.51	0.09	-0.45	0.18
Married	-0.71	0.45	0.04	0.02	-0.02	0.08	-0.22	0.15
Some college	-0.48	0.48	0.56	0.04	0.58	0.12	0.50	0.24
College	1.43	0.52	2.77	0.03	2.58	0.11	2.43	0.23
Age	0.29	0.13	0.02	0.01	0.04	0.02	0.07	0.06
Age squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Self-care	-0.10	0.52	. . .	. . .	0.08	0.16	0.13	0.20
Sensory	0.66	0.47	. . .	. . .	0.11	0.10	0.09	0.26
Go outside home	0.30	0.42	. . .	. . .	-0.13	0.14	-0.02	0.17
Physical	-0.37	0.43	. . .	. . .	0.16	0.10	0.25	0.18
Mental	-0.18	0.35	. . .	. . .	0.14	0.09	-0.17	0.16
Employment	-0.50	0.43	. . .	. . .	-0.02	0.10	. . .	. . .
Constant	-7.50	2.46	-4.00	0.13	-4.17	0.52	-4.76	1.20
Legal								
Male	-1.05	0.79	0.72	0.02	0.25	0.11	0.12	0.21
Hispanic	-29.97	0.55	-0.07	0.04	-0.45	0.23	-0.96	0.54
White	-0.61	0.69	0.53	0.03	0.49	0.16	0.16	0.26
Married	-0.08	0.89	0.09	0.02	0.03	0.11	-0.11	0.22
Some college	-30.54	0.60	0.81	0.05	0.84	0.20	1.25	0.42
College	1.22	0.82	3.15	0.04	2.91	0.19	3.25	0.40
Age	-0.02	0.24	0.14	0.01	0.15	0.04	0.09	0.09
Age squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Self-care	0.85	1.10	. . .	. . .	0.05	0.19	0.23	0.26
Sensory	0.48	0.88	. . .	. . .	0.04	0.14	-0.21	0.36
Go outside home	-0.56	0.46	. . .	. . .	0.13	0.21	-0.06	0.22
Physical	-0.20	1.15	. . .	. . .	-0.05	0.13	-0.10	0.22
Mental	-0.66	0.56	. . .	. . .	0.13	0.14	0.17	0.22
Employment	0.48	0.68	. . .	. . .	-0.09	0.14	. . .	. . .
Constant	-2.56	4.82	-7.95	0.16	-8.04	0.91	-6.54	1.93
Education, training, and library								
Male	-0.80	0.36	-0.22	0.01	-0.28	0.06	-0.21	0.12
Hispanic	-0.50	0.58	0.01	0.02	0.02	0.09	-0.02	0.21
White	-0.42	0.39	0.23	0.02	0.02	0.06	0.13	0.13
Married	-0.08	0.36	0.32	0.01	0.26	0.05	0.19	0.11
Some college	1.01	0.46	0.56	0.02	0.55	0.08	0.61	0.17
College	2.74	0.51	3.13	0.02	2.97	0.08	3.00	0.16
Age	0.19	0.13	-0.03	0.00	-0.01	0.02	-0.06	0.04
Age squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Self-care	-0.12	0.45	. . .	. . .	0.21	0.10	0.45	0.15
Sensory	0.12	0.52	. . .	. . .	0.02	0.07	0.24	0.18
Go outside home	-0.02	0.41	. . .	. . .	-0.15	0.09	-0.11	0.12
Physical	0.43	0.38	. . .	. . .	-0.04	0.07	0.02	0.12
Mental	-0.21	0.37	. . .	. . .	-0.06	0.07	-0.35	0.12
Employment	0.53	0.35	. . .	. . .	-0.09	0.07	. . .	. . .
Constant	-7.41	2.68	-2.37	0.08	-2.35	0.36	-1.60	0.85

(Continued)

Table A-3.
Coefficients and standard errors from multinomial logit estimations of occupational choice—*Continued*

Occupation and variable	SSI recipients		Non-SSI recipients with—					
			No disability		Any disability		Work disability	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Arts, design, entertainment, sports, and media								
Male	1.19	0.40	1.06	0.02	1.04	0.08	0.95	0.15
Hispanic	0.23	0.79	-0.08	0.03	-0.06	0.15	-0.03	0.30
White	-0.93	0.49	0.43	0.02	0.23	0.11	0.33	0.21
Married	0.82	0.54	-0.26	0.02	-0.14	0.08	-0.14	0.15
Some college	-1.54	0.59	0.61	0.03	0.59	0.11	0.76	0.20
College	1.93	0.52	2.13	0.03	1.87	0.11	1.67	0.21
Age	0.27	0.14	0.05	0.01	0.02	0.03	0.04	0.05
Age squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Self-care	-0.87	0.77	. . .	. . .	0.04	0.15	0.12	0.21
Sensory	0.65	0.56	. . .	. . .	0.06	0.11	0.42	0.24
Go outside home	-1.39	0.63	. . .	. . .	0.04	0.14	0.09	0.16
Physical	-0.10	0.47	. . .	. . .	-0.05	0.10	-0.16	0.16
Mental	-0.06	0.46	. . .	. . .	0.13	0.10	-0.06	0.16
Employment	1.58	0.50	. . .	. . .	0.20	0.10	. . .	. . .
Constant	-8.76	2.98	-4.31	0.11	-3.81	0.50	-4.63	1.04
Health-care practitioner and technical								
Male	-0.84	0.53	-0.21	0.01	-0.46	0.06	-0.59	0.12
Hispanic	0.33	0.75	-0.46	0.02	-0.29	0.11	-0.38	0.21
White	-0.65	0.46	-0.02	0.01	0.04	0.06	-0.05	0.12
Married	0.31	0.45	0.29	0.01	0.23	0.05	0.15	0.10
Some college	0.22	0.54	1.42	0.02	1.12	0.08	1.36	0.15
College	2.00	0.61	2.71	0.02	2.32	0.08	2.53	0.16
Age	0.21	0.20	0.11	0.00	0.11	0.02	0.12	0.04
Age squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Self-care	-1.34	0.71	. . .	. . .	0.14	0.10	0.32	0.13
Sensory	-1.03	0.74	. . .	. . .	-0.08	0.07	-0.11	0.18
Go outside home	-0.95	0.67	. . .	. . .	-0.02	0.09	0.05	0.11
Physical	-0.01	0.53	. . .	. . .	-0.08	0.06	-0.05	0.11
Mental	-0.26	0.48	. . .	. . .	-0.20	0.07	-0.54	0.12
Employment	0.94	0.45	. . .	. . .	0.11	0.06	. . .	. . .
Constant	-7.17	4.28	-4.82	0.08	-4.81	0.39	-5.13	0.84
Health-care support								
Male	-1.27	0.41	-0.93	0.03	-0.93	0.08	-0.97	0.15
Hispanic	-0.71	0.76	-0.21	0.03	0.07	0.10	0.12	0.20
White	-1.13	0.38	-0.58	0.02	-0.55	0.07	-0.24	0.13
Married	0.05	0.35	-0.10	0.02	-0.06	0.06	-0.21	0.12
Some college	-0.67	0.41	-0.17	0.02	-0.38	0.06	-0.33	0.12
College	-1.00	0.89	-0.68	0.03	-0.55	0.11	-0.35	0.19
Age	0.11	0.13	0.04	0.00	0.04	0.02	0.05	0.03
Age squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Self-care	0.78	0.57	. . .	. . .	0.02	0.12	0.09	0.18
Sensory	0.47	0.46	. . .	. . .	-0.07	0.08	-0.12	0.21
Go outside home	-1.54	0.51	. . .	. . .	-0.20	0.10	-0.15	0.13
Physical	-0.12	0.36	. . .	. . .	-0.09	0.07	-0.04	0.13
Mental	0.11	0.39	. . .	. . .	0.11	0.07	-0.36	0.13
Employment	0.47	0.38	. . .	. . .	0.23	0.07	. . .	. . .
Constant	-4.06	2.71	-1.59	0.09	-1.46	0.36	-1.39	0.67

(Continued)

Table A-3.
Coefficients and standard errors from multinomial logit estimations of occupational choice—*Continued*

Occupation and variable	SSI recipients		Non-SSI recipients with—					
			No disability		Any disability		Work disability	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Protective service								
Male	1.07	0.42	2.32	0.02	1.98	0.08	1.91	0.15
Hispanic	-1.26	0.80	-0.20	0.03	-0.13	0.13	-0.06	0.24
White	-0.89	0.42	-0.23	0.02	-0.44	0.08	-0.27	0.16
Married	0.29	0.43	0.07	0.02	0.01	0.07	-0.08	0.14
Some college	0.14	0.42	0.24	0.02	-0.21	0.08	-0.06	0.15
College	-0.04	0.91	0.29	0.02	-0.16	0.10	-0.15	0.21
Age	0.13	0.14	0.13	0.01	0.06	0.02	0.10	0.04
Age squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Self-care	0.04	0.69	. . .	. . .	0.19	0.14	0.67	0.20
Sensory	-0.14	0.49	. . .	. . .	0.15	0.09	-0.03	0.22
Go outside home	-0.52	0.72	. . .	. . .	-0.27	0.13	-0.21	0.16
Physical	0.31	0.37	. . .	. . .	0.11	0.09	-0.10	0.17
Mental	0.33	0.46	. . .	. . .	0.14	0.09	-0.18	0.16
Employment	-0.06	0.43	. . .	. . .	0.26	0.08	. . .	. . .
Constant	-5.59	2.65	-5.30	0.11	-3.92	0.45	-4.45	0.89
Food preparation and serving related								
Male	0.11	0.20	0.79	0.01	0.57	0.05	0.35	0.10
Hispanic	-0.28	0.34	0.41	0.02	0.41	0.07	0.28	0.14
White	-0.39	0.23	-0.08	0.02	-0.20	0.06	0.04	0.11
Married	-0.44	0.27	-0.44	0.01	-0.46	0.05	-0.41	0.10
Some college	-1.36	0.27	-0.78	0.01	-1.07	0.05	-1.09	0.10
College	-1.63	0.54	-1.05	0.02	-1.12	0.10	-1.29	0.19
Age	0.05	0.06	-0.10	0.00	-0.07	0.01	-0.05	0.03
Age squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Self-care	-0.66	0.31	. . .	. . .	-0.06	0.10	0.12	0.13
Sensory	-0.40	0.28	. . .	. . .	0.11	0.07	0.40	0.16
Go outside home	0.15	0.26	. . .	. . .	-0.10	0.08	-0.05	0.10
Physical	-0.03	0.23	. . .	. . .	-0.01	0.06	-0.16	0.10
Mental	0.53	0.23	. . .	. . .	0.31	0.06	-0.01	0.10
Employment	-0.26	0.23	. . .	. . .	0.29	0.06	. . .	. . .
Constant	-0.45	1.15	1.66	0.06	1.32	0.25	1.22	0.50
Building and grounds cleaning and maintenance								
Male	0.75	0.19	1.55	0.02	1.34	0.05	1.19	0.09
Hispanic	-0.20	0.31	1.06	0.02	0.79	0.07	0.57	0.14
White	-0.59	0.21	-0.18	0.02	-0.27	0.06	-0.17	0.11
Married	-0.75	0.27	-0.20	0.02	-0.23	0.05	-0.44	0.09
Some college	-1.27	0.22	-1.29	0.02	-1.36	0.06	-1.33	0.10
College	-1.52	0.49	-1.69	0.03	-1.82	0.11	-1.77	0.20
Age	0.08	0.06	0.06	0.00	0.06	0.01	0.04	0.03
Age squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Self-care	-0.67	0.27	. . .	. . .	-0.26	0.11	-0.04	0.14
Sensory	-0.18	0.26	. . .	. . .	0.16	0.06	0.34	0.14
Go outside home	0.07	0.23	. . .	. . .	0.02	0.09	-0.20	0.11
Physical	-0.56	0.21	. . .	. . .	-0.14	0.06	-0.20	0.10
Mental	0.75	0.22	. . .	. . .	0.47	0.06	0.13	0.10
Employment	0.28	0.21	. . .	. . .	0.33	0.06	. . .	. . .
Constant	-1.98	1.14	-2.98	0.08	-2.56	0.30	-1.64	0.56

(Continued)

Table A-3.
Coefficients and standard errors from multinomial logit estimations of occupational choice—*Continued*

Occupation and variable	SSI recipients		Non-SSI recipients with—					
			No disability		Any disability		Work disability	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Personal care and service								
Male	-1.24	0.26	-0.27	0.02	-0.49	0.07	-0.79	0.12
Hispanic	0.04	0.39	-0.02	0.02	0.37	0.08	0.44	0.15
White	-0.06	0.26	-0.23	0.02	-0.29	0.06	-0.18	0.12
Married	0.08	0.29	-0.08	0.02	-0.11	0.06	-0.36	0.10
Some college	-0.13	0.27	-0.38	0.02	-0.55	0.06	-0.44	0.10
College	-0.22	0.44	-0.32	0.02	-0.51	0.09	-0.26	0.17
Age	-0.01	0.07	-0.03	0.00	-0.04	0.02	-0.02	0.03
Age squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Self-care	0.06	0.32	. . .	. . .	-0.20	0.11	-0.07	0.14
Sensory	0.10	0.29	. . .	. . .	0.06	0.07	0.33	0.16
Go outside home	-0.83	0.31	. . .	. . .	-0.20	0.09	-0.25	0.12
Physical	0.09	0.26	. . .	. . .	-0.03	0.06	-0.12	0.10
Mental	0.25	0.26	. . .	. . .	0.34	0.06	-0.12	0.11
Employment	0.63	0.28	. . .	. . .	0.41	0.06	. . .	. . .
Constant	-0.82	1.28	-0.26	0.08	-0.17	0.31	-0.04	0.65
Sales and related								
Male	-0.26	0.22	1.05	0.01	0.79	0.04	0.61	0.08
Hispanic	-0.26	0.36	-0.09	0.02	-0.04	0.07	0.06	0.13
White	0.01	0.23	0.16	0.01	0.14	0.05	0.11	0.09
Married	-0.24	0.27	0.03	0.01	0.04	0.04	0.05	0.08
Some college	-0.85	0.25	-0.20	0.01	-0.35	0.04	-0.33	0.08
College	-0.12	0.38	0.49	0.01	0.23	0.05	0.22	0.11
Age	0.04	0.07	-0.05	0.00	-0.07	0.01	-0.08	0.02
Age squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Self-care	-0.09	0.31	. . .	. . .	-0.10	0.08	0.09	0.11
Sensory	-0.19	0.29	. . .	. . .	0.03	0.05	0.12	0.13
Go outside home	-0.90	0.27	. . .	. . .	-0.19	0.07	-0.24	0.09
Physical	0.27	0.23	. . .	. . .	0.04	0.05	0.01	0.08
Mental	0.33	0.24	. . .	. . .	0.06	0.05	-0.12	0.08
Employment	-0.17	0.22	. . .	. . .	0.20	0.05	. . .	. . .
Constant	-0.67	1.26	0.25	0.05	0.86	0.23	1.09	0.46
Farming, fishing, and forestry								
Male	1.15	0.68	2.38	0.04	2.41	0.14	1.97	0.25
Hispanic	-29.80	0.44	1.70	0.03	1.45	0.13	1.63	0.23
White	0.47	0.83	0.37	0.04	0.20	0.14	0.32	0.24
Married	0.54	1.16	0.18	0.03	-0.04	0.12	-0.17	0.24
Some college	-1.20	0.67	-1.65	0.04	-1.51	0.14	-1.32	0.24
College	-34.41	0.43	-1.68	0.06	-2.06	0.25	-1.30	0.34
Age	0.15	0.18	-0.01	0.01	0.04	0.03	0.09	0.06
Age squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Self-care	0.38	0.75	. . .	. . .	-0.16	0.26	-0.41	0.35
Sensory	0.09	0.62	. . .	. . .	0.34	0.14	0.37	0.29
Go outside home	-1.26	0.66	. . .	. . .	-0.36	0.21	-0.26	0.25
Physical	-0.20	0.67	. . .	. . .	-0.31	0.14	-0.01	0.23
Mental	1.32	0.72	. . .	. . .	0.06	0.14	-0.43	0.23
Employment	-0.22	0.52	. . .	. . .	0.39	0.14	. . .	. . .
Constant	-5.64	3.99	-4.20	0.16	-5.00	0.68	-5.34	1.35

(Continued)

Table A-3.
Coefficients and standard errors from multinomial logit estimations of occupational choice—*Continued*

Occupation and variable	SSI recipients		Non-SSI recipients with—					
			No disability		Any disability		Work disability	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Construction, extraction, maintenance, and repair								
Male	2.45	0.40	4.46	0.02	4.07	0.08	3.96	0.15
Hispanic	-0.39	0.42	0.56	0.02	0.37	0.07	0.30	0.13
White	0.08	0.31	0.37	0.01	0.25	0.05	0.28	0.10
Married	0.62	0.31	0.10	0.01	0.10	0.04	-0.01	0.08
Some college	-0.97	0.31	-0.93	0.01	-0.97	0.04	-0.89	0.09
College	-1.17	0.61	-1.73	0.02	-1.64	0.08	-1.75	0.16
Age	0.07	0.08	0.11	0.00	0.12	0.01	0.12	0.02
Age squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Self-care	0.00	0.40	. . .	. . .	-0.07	0.09	0.02	0.11
Sensory	-0.07	0.31	. . .	. . .	0.28	0.05	0.41	0.13
Go outside home	-1.46	0.40	. . .	. . .	-0.47	0.08	-0.45	0.10
Physical	0.08	0.32	. . .	. . .	-0.09	0.05	0.07	0.09
Mental	0.07	0.32	. . .	. . .	0.01	0.05	-0.45	0.09
Employment	-0.22	0.32	. . .	. . .	0.37	0.05	. . .	. . .
Constant	-3.71	1.59	-5.36	0.06	-5.39	0.26	-5.08	0.52
Production								
Male	0.61	0.18	2.00	0.01	1.80	0.04	1.61	0.09
Hispanic	-0.35	0.39	0.34	0.02	0.38	0.07	0.27	0.13
White	-0.21	0.20	-0.08	0.01	-0.08	0.05	-0.08	0.10
Married	-0.82	0.28	0.02	0.01	0.02	0.04	-0.05	0.09
Some college	-1.36	0.25	-1.04	0.01	-1.15	0.05	-1.10	0.09
College	-1.38	0.72	-1.65	0.02	-1.88	0.09	-1.71	0.16
Age	0.05	0.06	0.11	0.00	0.10	0.01	0.06	0.03
Age squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Self-care	-0.05	0.23	. . .	. . .	-0.01	0.09	0.15	0.12
Sensory	0.21	0.23	. . .	. . .	0.24	0.05	0.23	0.13
Go outside home	0.98	0.22	. . .	. . .	-0.02	0.07	-0.07	0.09
Physical	-0.60	0.19	. . .	. . .	-0.20	0.05	-0.12	0.09
Mental	0.69	0.22	. . .	. . .	-0.03	0.05	-0.37	0.09
Employment	-0.02	0.20	. . .	. . .	0.19	0.05	. . .	. . .
Constant	-2.05	1.16	-3.41	0.07	-3.14	0.27	-1.94	0.55
Transportation and material moving								
Male	1.13	0.18	2.83	0.02	2.54	0.05	2.37	0.10
Hispanic	-0.55	0.32	0.20	0.02	0.14	0.07	-0.06	0.13
White	-0.35	0.21	-0.20	0.01	-0.18	0.05	-0.06	0.10
Married	-0.31	0.26	-0.07	0.01	-0.08	0.05	-0.13	0.09
Some college	-1.51	0.24	-1.08	0.01	-1.23	0.05	-1.01	0.09
College	-1.44	0.51	-1.67	0.02	-1.74	0.12	-1.40	0.24
Age	-0.02	0.06	0.07	0.00	0.07	0.01	0.10	0.03
Age squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Self-care	-0.37	0.25	. . .	. . .	-0.06	0.09	0.01	0.12
Sensory	-0.06	0.25	. . .	. . .	0.08	0.06	0.22	0.14
Go outside home	0.23	0.21	. . .	. . .	-0.12	0.08	-0.17	0.10
Physical	-0.30	0.19	. . .	. . .	-0.06	0.05	-0.04	0.09
Mental	0.44	0.20	. . .	. . .	0.12	0.05	-0.08	0.10
Employment	0.27	0.20	. . .	. . .	0.32	0.06	. . .	. . .
Constant	-0.27	1.05	-3.12	0.07	-2.78	0.26	-3.08	0.53

(Continued)

Table A-3.
Coefficients and standard errors from multinomial logit estimations of occupational choice—*Continued*

Occupation and variable	SSI recipients		Non-SSI recipients with—					
			No disability		Any disability		Work disability	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
N	2,745		1,180,588		72,686		18,414	
Wald chi2(252)(144)(252)(234)	31,871.16		376,139.87		21,407.64		5,561.22	
Prob>chi2	0.0000		0.0000		0.0000		0.0000	
Pseudo R2	0.1213		0.1316		0.1166		0.1117	
Log pseudolikelihood	-5,866.55		-2,782,603.70		-173,140.86		-44,143.96	

SOURCE: Author's calculations using the 2007 American Community Survey using sample weights.

NOTES: Office and administrative support is the base outcome.

. . . = not applicable.

Notes

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[1] 2007 dollars are used because the data in this study are from 2007.

[2] For more information on the work incentives for SSI recipients see the *Red Book: A Summary Guide to Employment Support for Individuals with Disabilities under the Social Security Disability Insurance and Supplemental Security Income Programs,* available at http://www.socialsecurity.gov/redbook.

[3] Almost all SSI recipients are automatically eligible for Medicaid.

[4] Scott (1992) matched industry information to administrative SSI recipient data, but no information can be used to identify beneficiary occupations from administrative records.

[5] O*NET is the Occupational Information Network, which lists standardized occupational descriptions and is replacing the Dictionary of Occupational Titles. See http://www.onetcenter.org for more information.

[6] The NSCF is a survey of individuals up to age 26 who currently or formerly received SSI payments or who applied but were denied eligibility (and their families). The NBS is a survey that is part of SSA's evaluation of the Ticket to Work initiative and gathers information on Ticket participants and the national beneficiary population. More information on the NSCF is available from http://www.socialsecurity.gov/disabilityresearch/nscf.htm and for the NBS from http://www.socialsecurity.gov/disabilityresearch/ttw2/appendixC.htm.

[7] For example, even with an oversample of SSI recipients, the 2001 SIPP only included 1,614 working-age SSI recipients, 10.3 percent of whom were working (DeCesaro and Hemmeter 2008).

[8] The long form of the 2000 Decennial Census also has a sufficiently large sample of SSI recipients and contains the information necessary for a comparison with these ACS results.

[9] See Weathers (2005) for more information on disability statistics and the ACS. Note that there is a large difference between SSA's definition of disability and the ACS's definition(s) of disability, particularly of "mental" disabilities.

[10] Here and throughout the article, unemployment is defined as an individual who is without a job, but is looking for work.

[11] See http://www.bls.gov/soc/home.htm for information on SOC codes.

[12] In 2006 there were only 696,472 RR beneficiaries, and over a fourth of them were aged (Railroad Retirement Board 2008). Any concurrent recipients are thus most likely OASDI, and specifically DI, beneficiaries.

[13] Multinomial logit models require that choices be made independently of other options available (the independence of irrelevant alternatives (IIA) assumption). Although these models are common in the occupational choice literature, the IIA assumption is rarely tested. Alternatives, such as the nested logit model are not feasible for this study because no information is known about the characteristics of the occupations themselves. Also, multinomial probit models are not computationally feasible with the current data. Formal tests of IIA are largely inconclusive regarding the appropriate occupation groupings. However, the estimates using only the six broad occupation groups —(1)

management, professional, and related; (2) service; (3) sales and office; (4) farming, fishing, and forestry; (5) construction, extraction, maintenance, and (6) repair; production, transportation, and material moving)—which are more likely to be independent of irrelevant alternatives, yield substantively similar results, suggesting IIA may not be a concern when the narrower occupations groups are used. Results using the six broad occupation groups are available from the author upon request.

[14] See Blau and others (1956) for a fuller description of occupational-choice and selection models. Most occupational-choice models also include relatively few variables; most other variables not included in the model estimated here are likely a result of occupational choice.

[15] Unfortunately, significance tests for the dissimilarity index are currently severely problematic. This would require estimating the mean and variance of the index, and, although there are some methods for doing this, all are problematic. See Mulekar, Knutson, and Champanerkar (2008) for a recent review of these methods.

[16] All estimates in this article use the sample weights provided in the survey.

[17] Thornton and others (2008) also found that 11 percent worked in food preparation and serving, 10 percent worked in office and administrative support, 5 percent worked in sales, 3 percent worked in personal care and services, and 22 percent worked in "other" occupations.

[18] The means and standard errors of the variables used in the models are presented in the Appendix (Table A-2), and the estimated models are presented in Table A-3. Standard errors are not included in the predicted distributions for brevity, but are available from the author upon request. Balanced repeated replicate weights are not utilized in the estimation of the occupational-choice models, although the base weights are used. This was done for two reasons. First, the computational capacity needed to utilize these weights is prohibitively large. Second, because this study is not interested in the significance of the individual covariates in the model, per se, the correct standard errors are not needed. The use of the base weights yields the same point estimates for the coefficients and thus the predicted values from the model are identical to when balanced repeated replicate weights are used.

[19] Although the coefficients for the estimated models are not identical (see Table A-3), the predicted occupational distributions for the work-disability population under the any-disability and work-disability models are identical. The any-disability approach produces the mean predicted value by estimating the model for those with and without a work disability and includes a dummy variable on the right-hand side of the regression that indicates whether a person has a work-related disability. This approach generates mean predicted values by predicting values for only those with a work disability (in this case) and taking the mean of those predicted values. The dummy variable allows one to separate out the mean predicted value for those with a work disability from the mean predicted value for those without a disability. The difference between the two is determined by the coefficient on the dummy variable. The work-disability approach produces mean predicted values by estimating a model with the same right-hand side variables (except for the work-disability dummy, which is not identified in this model), but for only those with a work-related disability. It then takes the mean of the predicted values for those with a work disability. Thus, when the any-disability model is restricted to the work-disability population, the occupational distribution will be identical to that of the actual work-disability population.

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An Empirical Study of the Effects of Social Security Reforms on Benefit Claiming Behavior and Receipt Using Public-Use Administrative Microdata

by Hugo Benítez-Silva and Na Yin*

In the past few years, the Social Security Old-Age and Survivors Insurance benefit system in the United States has undergone some of the most significant changes since its inception. In a short period of time, we have seen the implementation of the phased increase in the full retirement age (FRA) with the resulting increase in the penalty for claiming benefits early, the elimination of the earnings test for those above the FRA, and the incremental increase in the delayed retirement credit (DRC) for those claiming benefits after the FRA. Because these changes have taken place only recently, there is relatively little research using household-level data that analyzes the consequences of all these changes. Using the public-use microdata extract from the Master Beneficiary Record, we are able to uncover a number of interesting trends in benefit claiming behavior and level of benefit receipt, which can help us understand how the changes in the system are shaping the retirement benefit claiming behavior of older Americans. We find evidence of substantial effects of the removal of the earnings test and the increase in the FRA, but evidence of very small effects as a result of the increases in the DRC.

Summary and Introduction

In the past few years Social Security's Old-Age and Survivors Insurance (OASI) program has undergone some of the most important changes since its inception. In a short period of time, we have seen three major changes to the system: (1) the implementation of the phased increase in the full retirement age (FRA), with the resulting increase in the penalty for claiming benefits early; (2) the elimination of the earnings test for those above the FRA; and (3) the incremental increase in the delayed retirement credit (DRC) for those claiming benefits after the FRA.

The changes in the FRA and the most recent changes in the DRC are the result of the reforms signed into law by President Reagan in 1983 following the recommendations of the National Commission on Social Security Reform chaired by Alan Greenspan. The removal of the earnings test is a more recent development, which was introduced in the last year of Clinton's presidency and most likely unexpected for the average American.[1] There is relatively little research analyzing the consequences of all these changes, mainly because of how recent they are, but also because of the difficulty identifying the likely contribution of these changes to variables of interest such as labor supply and claiming behavior using publicly available household-level data.

In this article we use microdata from public-use extracts from the Master Beneficiary Record (MBR) to uncover a number of interesting trends in benefit claiming behavior and especially novel trends in the level of benefit receipt. The analysis can help us

Selected Abbreviations

ARF	actuarial reduction factor
DRC	delayed retirement credit
FRA	full retirement age
MBR	Master Beneficiary Record
OASDI	Old-Age, Survivors, and Disability Insurance

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Selected Abbreviations—*continued*

OASI	Old-Age and Survivors Insurance
PIA	primary insurance amount
SSA	Social Security Administration

understand how the changes in the system are shaping the retirement behavior of older Americans.

Our analysis finds evidence of significant effects of the removal of the earnings test, with a large and significant short-run effect of abolishing the test on the claiming behavior of older Americans and evidence of a significant and much longer-lived effect on the composition of benefit claimers and their levels of benefits received after age 65. We also find sizable effects in the levels of benefits received by early claimers, especially men, as a result of the increase in the FRA, but a hardly noticeable effect of the increases in the DRC. The results on claiming behavior are very similar to those discussed in recent articles by Song and Manchester (2007a, 2007b, and 2007c) using the same data but different empirical strategies. As far as we know, we are the first to analyze the trends in benefit receipt during the period from 1994 through 2004 and connect them with the reforms to the system.

Our findings should encourage researchers to use the public-use data provided by the Social Security Administration (SSA). This data source can complement more traditional analyses using household-level data and provide useful benchmarks for researchers modeling retirement behavior using advanced econometric and computational methods of analyses.

This data source, although highly reliable for the study of claiming behavior, has the disadvantage of not allowing us to control for the usually long list of sociodemographic and socioeconomic variables or to analyze other relevant variables of interest such as labor supply. This means that there is potentially a large amount of heterogeneity, which in other studies would be observable, but in this case remains unobservable for us. However, we find that our ability to access detailed information on claiming behavior and the level of benefits resulting from that benefit application allows us to provide a realistic and surprisingly illuminating picture of how changes in the system are quite likely affecting claiming behavior, which suggest a large explanatory power intrinsic in accurately observing the self-selection into claiming and the importance of properly understanding the complex set of incentives involved in people's decision to apply for retirement benefits at a given age.

It is important to highlight that the nature of the analysis we perform does not allow us to guarantee that the patterns we observe in claiming behavior and level of benefits received are solely the product of the policy changes. In terms of identification, other macro effects and also cohort effects could be driving, at least in part, the results. Given the lack of plausible reasons for the large differences over time and across cohorts that could be responsible for the particular pattern of decisions and outcomes we observe, we believe the policy changes are the most natural and appealing explanation.[2]

A discussion of the incentive structure provided by Social Security's OASI system follows. Next, we give information about the data set used in the analysis and then report our main findings. Our conclusions are given in the last part of the article.

Retirement Benefits: An Overview

Public pensions are a major income source for older Americans, and under the OASI program during 2008, SSA paid about $509.3 billion to almost 42 million beneficiaries (Board of Trustees 2009). Given the importance of Social Security, it is not surprising that the discussion over the need of reforms to the system has gone on for a long time. In fact, the 1983 Amendments to the Social Security Act were meant to solve short-term financial imbalances and the more serious long-run financial crisis that Social Security was headed toward. The reforms resulting from those amendments have started to take effect during the past few years, as the discussion on possible additional reforms continues.

Social Security provides fairly complex incentives that undoubtedly affect the labor supply and benefit claiming behavior of individuals starting at the early retirement age and continuing until age 70.[3] Retirement benefits at all ages are intimately linked to a person's earnings history, but also to a fairly large number of provisions that compute the benefits a person receives as a function of the following:[4]

- the person's 35 highest years of earnings, conditional on having at least 40 quarters of covered earnings, which loosely translates into 10 years of paid work. Any years without covered earnings go into the formula as a zero.

- the indexing factors to adjust past earnings to current wage levels. These factors reflect the growth in average earnings in the economy over the years.
- the progressive formula, which uses bend points (indexed to the growth rate in the average wage index and therefore change every year) and marginal replacement rates (fixed) by indexed-earnings brackets to compute the primary insurance amount (PIA). The latter is the level of benefits a person receives if he or she claims benefits at the FRA.
- the actuarial reduction factor (ARF), which determines the reduction in benefits that individuals face if they claim benefits before attaining the FRA. This reduction factor depends on the person's FRA. For those who claimed benefits upon attaining age 62 in 2008, the FRA was 66 and the reduction factor was 0.75. The reduction factor will be 0.7 for earliest entitlement when the FRA increases to age 67 for people born in 1960 or later. Given that individuals can claim benefits in any month after they reach age 62, the reduction factor is 5/9 of 1 percent during the first 36 months before the FRA, and 5/12 of 1 percent for the months beyond the first 36. The benefit reduction is permanent unless benefits are reduced because of the earnings test. In that case, as explained later, there will be a recalculation of this factor when the person reaches the FRA.
- the DRC, which determines the upward adjustment of benefits if individuals claim after the FRA. For those born in 1943 or later, it is 2/3 of 1 percent for each month up to age 70. For those born before 1943, it ranges from 11/24 to 5/8 of 1 percent per month, depending on their birth year. In fact, the Amendments of 1983 included, among other measures, a phased increase in the DRC, with the clear objective of fostering work after the FRA. The DRC started to increase (from an initial annualized value of 3 percent) by half a percentage point for those attaining age 65 in the 1990–1991 period, and it has increased by half a percentage point every 2 years, reaching 8 percent for the cohort that will reach age 65 in 2008—the level at which it will stay until further reform changes it.
- the earnings levels between the time the person claims benefits and reaches the FRA, in order to apply the earnings test and withhold benefits if necessary. Therefore, the exempt amounts matter and they are different in the period between the early retirement age and the year the person reaches the FRA, and thereafter.[5]
- the number of monthly checks withheld because of the earnings test. This function is used once the person reaches the FRA to compute the upward adjustment to the ARF to compensate for the withheld benefits.[6]

The concept of actuarial fairness is underlying all these factors and especially those that require adjustments that are due to early or late (with respect to the FRA) claiming of benefits. Although the application of this concept faces practical difficulties given how long ago some of these adjustment factors were decided and the reasons for them, the idea is that an individual with a life expectancy at the average of the population should be indifferent between claiming benefits early at a reduced rate and claiming them at any point after that, assuming all individuals have the same subjective discount rate or that there is a distribution of discount rates, which maps the mortality probabilities in the population.[7] In budgetary terms it means that no additional cost to the system arises on account of early (or late) retirement.[8]

At the individual level, however, it should come as no surprise that empirically we will observe in our analysis that actuarial fairness, although it goes a long way in explaining disparities in benefit levels, does not perfectly account for the different benefit claiming behavior of older Americans, even when we observe population data that allows us to use law-of-large-numbers arguments to approximate aggregate behavior. The reason is that there are many other factors potentially affecting claiming behavior, some of them relatively well understood and others the object of current and future research. In part, this article tries to analyze how substantial deviations from those averages can be linked to claiming behavior and the level of benefits of those claiming at different ages.

Open questions should come as no surprise given the short time since some of these changes started to take place and the fact that these changes are still taking place. These complications are exemplified by the three types of policy changes we focus on in this article: (1) the changes in the FRA, which affect the reduction factors when individuals claim early; (2) the changes in the adjustments that are due to late claiming of benefits; and (3) the removal of the earnings test for those above the FRA. The administrative publicly available extract of the MBR can be used to characterize some of the consequences of these changes, and it provides insightful discussions of how possible reforms will most likely affect the claiming behavior of older Americans.

The 1983 Amendments to the Social Security Act included, among other measures, the change in the FRA starting with the cohort attaining age 62 in 2000 (those born in 1938), for whom the FRA was set at 65 and 2 months. The FRA has increased by 2 months for every cohort since then until it reached 66 for those who attained age 62 in 2005, and it will stay at that level for a decade. The FRA will increase again by 2 months for the cohort born in 1955 (who reach age 62 in 2017, and it will continue to increase by 2-month increments for successive birth cohorts until it reaches 67 for the 1960 cohort.

The changes in the FRA and the DRC were clearly easy to anticipate by those nearing retirement age, and it is natural to expect comparatively less pronounced changes in behavior resulting from their phased implementation.[9] More unexpected was the repeal of the earnings test for individuals above the FRA, which withholds benefits for individuals earning above the exempt amounts. The legislation was passed in the spring of 2000, approximately a year after it was made a policy objective by President Clinton in early 1999, and it affected earnings obtained after January 1, 2000. The literature analyzing the effects of the earnings test is also quite large and has focused primarily on understanding whether people respond to the exempt amount.[10] Given the data analyzed, we are in a position to infer possible changes in behavior that are due to the repeal of the earnings test, which would otherwise be hard to characterize using household-level data.

Data

We use the 2004 publicly available release of the Old-Age, Survivors, and Disability Insurance (OASDI) public-use microdata files to analyze the trends in claiming behavior and level of benefits received in the 1994–2004 period.[11] The 2004 Benefits and Earnings public-use file is a 1 percent random sample of OASDI beneficiaries who were on the Social Security records in December 2004. It contains 473,366 records as of December 2004 and includes information in 16 fields on OASDI beneficiaries' characteristics, mainly about benefit entitlements. This more detailed information allows us to focus only on retired workers who claimed benefits on their own earnings history, and because it is individual-level data, we can compute standard deviations and therefore statistically compare benefit levels across ages and years.

This microdata has, however, two weaknesses. First, we have not been able to separate disability conversions from new entitlements for those persons claiming benefits at age 65 or the FRA, if higher—a distinction that the public-use file does not allow us to make.[12] What we have done to overcome this problem is to assume a proportion of Social Security claimants from age-65 samples each year as disability conversions. The proportions used are calculated according to the *Annual Statistical Supplement to the Social Security Bulletin*—referred to elsewhere in this article as the *Supplement* (SSA 1995–2008). Second, we are restricting attention to individuals in the MBR as of December of 2004. The latter method most likely results in a selection bias when looking at historical data on individuals who claimed benefits in the decade before 2004. The reason is that some individuals who claimed in the 1990s, or even more recently, might not be in the sample if they have died in the time since their application for benefits.[13]

Claiming Behavior and Retirement Benefits

Using public-use data extracts from the MBR, we notice the well-known retirement peaks at ages 62 and 65, both thinking in terms of proportions of claimers in a given calendar year and as proportions by cohort over different years.[14] It is interesting to highlight, however, that the relative sizes of these peaks, as proportions by calendar year, have changed considerably from previous decades—where the largest peak occurred at age 65 in the 1970s—or were roughly of similar size during part of the 1980s. In our study period, from 1994 through 2004, we see that the proportion of individuals claiming benefits at age 62 has remained quite stable in most years (in the 48–52 percent range) with the proportion of individuals claiming benefits before the FRA at almost 64 percent by 2004. This is a key development of the past two decades and one that has puzzled economists considerably.[15] On the other hand, the proportion of individuals claiming benefits at age 65 has remained at about 20 percent.

Until recently a number of researchers have tried to explain this with arguments regarding individual preferences (Coile, Gruber, and Jousten 2002; Gustman and Steinmeier 2002), suggesting that there is a proportion of individuals who seem to be rather myopic and do not quite behave as forward-looking optimizers. Other authors have recently shown that once the

full incentive structure of the system is properly modeled (mainly regarding the earnings test provisions), these proportions are much more consistent with the predictions of a fully dynamic intertemporal model of behavior than previously thought (Benítez-Silva and Heiland 2007).[16]

Evidence on Claiming Behavior

Table 1 shows the proportion of individuals claiming Social Security retirement benefits by age in the 1994–2004 period, as well as the total number of individuals who claimed in a given year. The total number of claimants used to compute the proportions does not include the disability conversions at age 65 (or the FRA if higher), but does include the relatively small number of individuals who claim at age 70 or older (proportions not included in the table).[17]

Chart 1, which illustrates the data in Table 1, shows that the proportions of individuals claiming benefits at different ages changed dramatically in 2000, with a large drop in the proportion claiming at age 62 (from 50 percent to around 45 percent), but a sharp increase in those claiming at age 65 or older. In 2000, the implementation of the FRA increase started, increases in the DRC continued, and the earnings test was repealed. Although the increase in the FRA is unlikely to have much of an effect in this case, given that it only affected those turning age 62 in 2000 who faced an increase in the FRA of only 2 months, an explanation linked to the elimination of the earnings test seems much more reasonable. Also, although the proportions changed considerably, the number of individuals claiming retirement benefits by age (Table 2) did not change much, except for those at age 65 (by approximately 200,000 people if we look at the aggregate data in the *Supplement* compared with the previous periods for this age in the year 2000, which explains the large jump in the total number of claimants shown in Table 1) to age 69.

These increases are larger than those described in Song (2004), but more in line with those described in Song and Manchester (2007a and 2007b), and suggest that individuals reacted to the elimination of the earnings test quite sharply and in accordance with a policy that eliminates any link between claiming benefits and labor earnings. These results are very much in line with those recently reported in Song and Manchester (2007c), who using the same data focus on the claiming behavior of individuals after the elimination of the earnings test for those above the FRA.[18] In the years since that change, the proportions of individuals claiming benefits at age 62 have risen even as the penalty for claiming early has become higher; the proportion claiming at age 65 has stayed at higher levels. In the meantime the proportions of those claiming after age 65 have returned to pre-2000 levels and even gone lower, suggesting a very small effect of the increases in the DRC on claiming behavior.[19] This latter result is in part surprising given the substantial increases in the DRC in the past years and its level, suggesting that alternative policies are necessary to convince individuals to claim benefits later and stay in the labor force longer. One possible reasonable explanation is that the likely effects of the increases in the DRC have been

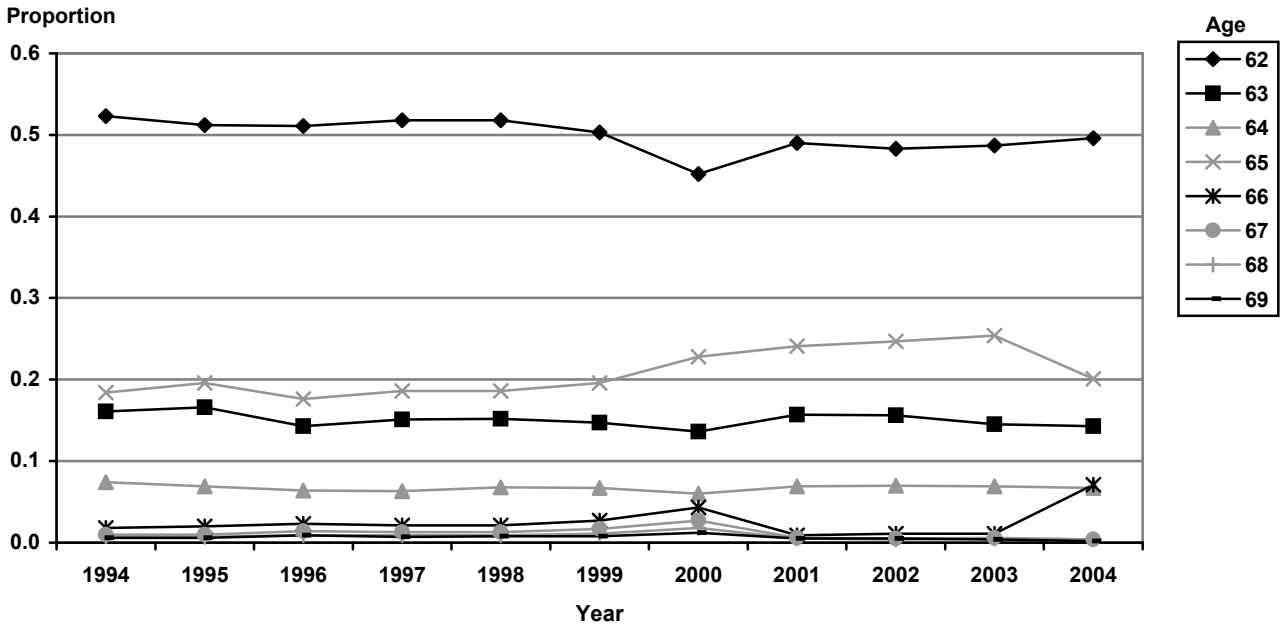
Table 1.
Proportions of new claimants of Social Security retirement benefits, by age, 1994–2004

Age	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
62	0.523	0.512	0.511	0.518	0.518	0.503	0.452	0.490	0.483	0.487	0.496
63	0.161	0.166	0.143	0.151	0.152	0.147	0.136	0.157	0.156	0.145	0.143
64	0.074	0.069	0.064	0.063	0.068	0.067	0.060	0.069	0.070	0.069	0.067
65	0.184	0.196	0.176	0.186	0.186	0.196	0.228	0.241	0.247	0.254	0.201
66	0.018	0.020	0.023	0.021	0.021	0.027	0.043	0.009	0.011	0.011	0.071
67	0.010	0.010	0.014	0.013	0.013	0.017	0.027	0.006	0.005	0.006	0.004
68	0.008	0.007	0.009	0.009	0.009	0.011	0.018	0.005	0.004	0.005	0.004
69	0.006	0.006	0.009	0.007	0.008	0.008	0.012	0.005	0.005	0.004	0.002
Total number	10,700	11,026	11,676	11,619	12,055	13,048	14,976	13,606	13,708	14,098	14,852

SOURCE: OASDI public-use microdata file, 2004.

NOTE: In the data, there is no way to separate disability converters from old-age claimants at age 65. What we have done is to assume a proportion of Social Security claimants from age-65 samples each year as disability converters. The proportions used are calculated according to the *Supplement*.

Chart 1.
Proportion of new claimants of Social Security retirement benefits, by age, 1994–2004



SOURCE: OASDI public-use microdata file, 2004.

NOTE: In the data, there is no way to separate disability converters from old-age claimants at age 65. What we have done is to assume a proportion of Social Security claimants from age-65 samples each year as disability converters. The proportions used are calculated according to the *Supplement*.

The data representing ages 66, 67, 68, and 69 are largely obscured because the underlying values are nearly identical.

Table 2.
Number of new claimants of Social Security retirement benefits, by age, 1994–2004

Age	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
62	5,592	5,641	5,967	6,022	6,245	6,565	6,767	6,671	6,627	6,861	7,372
63	1,726	1,829	1,668	1,749	1,831	1,921	2,034	2,141	2,132	2,047	2,121
64	796	762	748	733	815	877	894	933	961	971	988
65	1,973	2,156	2,054	2,164	2,246	2,556	3,411	3,280	3,392	3,581	2,985
66	197	220	263	246	254	358	638	117	153	162	1,052
67	105	108	159	146	160	217	399	86	70	89	66
68	81	73	103	99	104	142	264	67	57	71	57
69	68	64	102	84	99	106	187	69	71	63	36
Total	10,700	11,026	11,676	11,619	12,055	13,048	14,976	13,606	13,708	14,098	14,852

SOURCE: OASDI public-use microdata file, 2004.

NOTE: In the data, there is no way to separate disability converters from old-age claimants at age 65. What we have done is to assume a proportion of Social Security claimants from age-65 samples each year as disability converters. The proportions used are calculated according to the *Supplement*.

offset by the elimination of the earnings tests because these two policies seem to have affected claiming behavior in opposite directions around the FRA.

One number clearly stands out in Table 1—the large increase in the proportion of individuals claiming benefits at age 66 in 2004; see corresponding number in Table 2. The percentage claiming at age 66 increases from 1.1 percent to 7.1 percent in a single year. The reason for this is that the microdata report differently from the *Supplement* the claiming of benefits at the FRA of 65 and 2 months for the cohort who turned 66 in 2004. In the *Supplement*, those claiming benefits at age 65 and 2 months appear to be claiming at age 65, while in the microdata they appear to be claiming at age 66. This also explains the increasing percentage claiming at age 65 in 2004 as reported in the *Supplement*, but the declining percentage claiming at the same age in the microdata. The advantage of the microdata is that they show something that is well-known, but elusive in this period of changing FRA: A nontrivial number of individuals claim benefits exactly when they reach the FRA.[20] Song and Manchester (2007c) present striking additional evidence to that effect.

Evidence on Level of Benefit Receipt

Table 3 presents the level of average monthly benefits adapted for the adjustment factors that have changed considerably in the period of analysis resulting from the policy changes we have discussed. The evolution of these factors is presented in Table 4 and then used to obtain the ARF/DRC-adjusted or actuarially adjusted (and inflation-adjusted by the Consumer Price Index, so that the benefit levels are all reported in 2005 dollars) benefit levels in the remaining tables, discussed later.[21] These adjustments are necessary so that benefits can now be compared, with the theory in mind that in the absence of self-selection (which embeds individual heterogeneity, including for example, differential mortality expectations, health status, and earnings histories), the prediction would be that the benefit levels would not change by age, and they would only change by year because of time and cohort effects, where the former includes policy changes and macroeconomic effects.[22]

In Table 3, we are essentially estimating the average PIA by age and year for those applying in this period. Our calculation is likely to differ from the actual PIAs for two reasons. First, in our calculations it is assumed that individuals claim exactly on their birthdays (or in the month they reached the FRA for claimers who were 65 in 2003 or later), which means that for those claiming in the months between birthdays, our calculation will use an ARF that is too small, resulting in an adjusted benefit that is higher than the PIA. Second, the benefit level reported is taking into account the effect of the earnings test, but because the earnings test is nearly actuarially fair, our adjustment delivers an approximation that is too low compared with the true PIA. Because these effects move in different directions, it is an empirical question whether our approximation of the PIA is upward or downward biased. We have also used the PIA reported in the public-use microdata extract to perform the same analysis we present below, and the results are essentially unchanged as shown in Tables A-1 and A-2 in the Appendix.[23] The advantage of what we report here is that it can be compared by researchers with aggregate data from the *Supplement*, which is easily and readily accessible to researchers but does not provide the PIA.

Table 3.
Average monthly benefits for retired workers, adjusted by the ARF and the DRC, by age, 1994–2004 (in 2005 dollars)

Age	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
62	1,065.91	1,039.24	1,041.99	1,050.28	1,061.61	1,112.96	1,110.40	1,137.49	1,172.71	1,181.27	1,134.81
63	1,041.79	1,070.49	1,045.26	1,043.64	1,058.63	1,057.92	1,105.28	1,104.24	1,123.12	1,157.47	1,110.99
64	1,089.06	1,088.86	1,095.24	1,060.10	1,056.50	1,089.29	1,101.26	1,162.92	1,186.47	1,185.22	1,182.06
65	1,138.35	1,129.55	1,128.78	1,134.92	1,103.10	1,103.48	1,123.02	1,150.72	1,194.23	1,210.43	1,172.53
66	1,190.88	1,080.07	1,137.30	1,090.37	1,146.25	1,161.20	1,224.59	891.68	862.49	977.08	1,134.78
67	1,071.46	1,083.73	1,113.53	1,068.67	1,028.65	1,149.16	1,248.28	833.95	878.65	848.13	907.75
68	1,030.63	966.00	1,009.15	1,000.26	1,002.91	1,089.51	1,213.70	847.24	748.87	730.58	774.61
69	1,173.50	1,171.31	1,012.89	997.81	998.48	1,088.88	1,149.75	873.58	840.28	694.77	838.93

SOURCE: Authors' calculations using the OASDI public-use microdata file, 2004.

NOTE: Shading is used to emphasize differences by age group.

Table 4.
The evolution of the ARF and the DRC of retirement benefits, by age, 1994–2006

Age	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
62	0.800	0.800	0.800	0.800	0.800	0.800	0.792	0.783	0.775	0.767	0.758	0.750	0.750
63	0.867	0.867	0.867	0.867	0.867	0.867	0.867	0.856	0.844	0.833	0.822	0.811	0.800
64	0.933	0.933	0.933	0.933	0.933	0.933	0.933	0.933	0.922	0.911	0.900	0.889	0.877
65	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.989	0.978	0.967	0.955
66	1.040	1.045	1.045	1.050	1.050	1.055	1.055	1.060	1.060	1.065	1.054	1.047	1.035
67	1.080	1.080	1.090	1.090	1.100	1.100	1.110	1.110	1.120	1.120	1.130	1.119	1.116
68	1.105	1.120	1.120	1.135	1.135	1.150	1.150	1.165	1.165	1.180	1.180	1.195	1.184
69	1.140	1.140	1.160	1.160	1.180	1.180	1.200	1.200	1.220	1.220	1.240	1.240	1.260

SOURCE: Authors' compilation of information from the Social Security Administration.

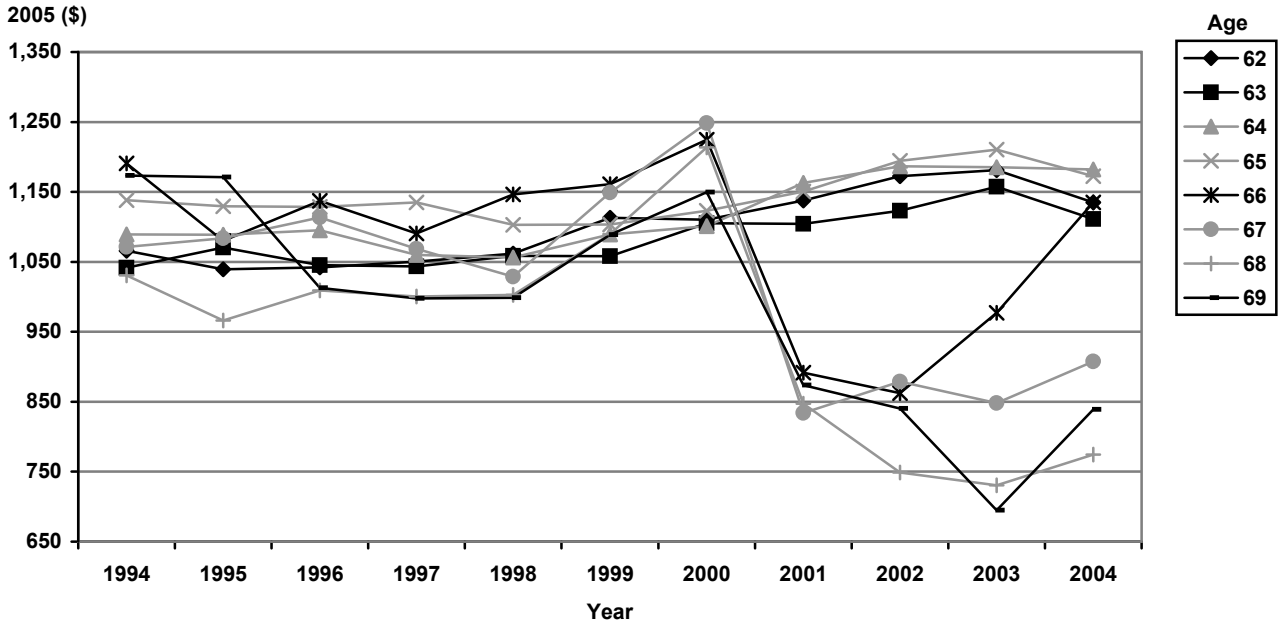
From Table 3 it should be clear that accounting for the actuarially fair nature of the ARF and the DRC is important, and we see that although the numbers in the table are hardly the same by age or year, they are mostly of the same order of magnitude, suggesting the considerable explanatory power of self-selection; this most likely puts to rest any notion that early retirees are comparatively (and on average) much worse off than those claiming retirement benefits at later ages from SSA. Notice, however, that there is obviously a distribution of monthly benefits underlying these numbers, which might still have a significant proportion of individuals with very low level of benefits. Also note that the standard deviations (not shown in the tables) for those claiming benefits early are actually smaller than the standard deviations of those claiming at later ages, suggesting that the dispersion is not particularly different for early claimers. An additional exploration of the data shows that the 25 percent percentile of the monthly benefit level is around $612 for those claiming before age 65 and $782 for those claiming at age 65 or older.

A number of researchers have described early retirees as comparatively similar to those who claim retirement benefits later (Burkhauser, Couch, and Phillips 1996; Smith 1999; Leonesio, Vaughan, and Wixon 2000; Mitchell and Phillips 2000), but not in terms of the level of benefits they receive.[24] A possible explanation behind the notion (described as *conventional wisdom* by Burkhauser, Couch, and Phillips (1996)) that early retirees where disproportionally at risk is that it was developed in a period of time in which claiming early was relatively less common. With 73.2 percent of Americans currently claiming benefits before the FRA (SSA 2007), it is hardly surprising that the range of characteristics of these retirees covers the spectrum of the population. In summary, although we still have to "beware of the mean" as stated by Quinn (1987) in his analysis of the economic status of the elderly, this summary statistic might now be less problematic than it was a couple of decades ago.[25]

The most relevant result shown in Table 3, which becomes even clearer in Chart 2, is also the main result and contribution of this article, which is that the level of benefits received by those claiming them after age 65 (shaded cells) decreased sharply after 2000, and during the following years it becomes increasingly different from the level of benefits received by those aged 62–65. The difference from the pre-2000 period, when benefit levels at all ages tend to be within $100 of one another, is striking.

Those persons aged 62–65 have seen an upward trend in their benefit levels possibly resulting from the increase in the FRA. We can theorize that the increase in the penalty for claiming early can have two related effects. On one hand, one effect (which we could call a scale or wealth effect) should make everyone potentially interested in claiming later because of the fact that in order to reach the previous level of benefits, the claiming needs to be delayed. On the other hand, it is possible that the change in the FRA could affect lower-income career earners more, for whom the new adjusted benefits would fall short of what they consider adequate to make ends meet. The latter would suggest that some of those individuals would choose to delay benefit claiming slightly, leaving a higher proportion of higher-income earners among those claiming earlier. As we will see later, this interesting result is mainly driven by male workers.

Chart 2.
Average monthly Social Security retirement benefits, by age, 1994–2004



SOURCE: OASDI public-use microdata file, 2004.

With the elimination of the earnings test, it seems that the composition in terms of earnings histories of those claiming benefits after age 65 has changed considerably and now is composed of a higher proportion of individuals trying to catch up after having had sketchy careers or relatively low earnings histories, although before 2000 there were more high earners perhaps more focused on the short-term consequences of the earnings test provisions.[26] Using data on total Social Security credits, we can analyze whether reaching fully insured status could be playing an important role among late claimers. We observe that there is a higher percentage of individuals near the 40 total credits (quarters of coverage) necessary to be insured among those claiming after age 65 (otherwise the distributions are quite similar), but because of the nature of the data we cannot observe the dynamics of how these credits were acquired, therefore we cannot present definitive evidence of individuals working longer after age 65 in order to achieve insured status. However, there is evidence that those claiming benefits later have comparatively lower total credits, with the 10th percentile at 43 credits for those claiming after age 65, and at 61 credits for those claiming at age 65. Therefore, it is plausible to believe that many of those claiming later could benefit from the extra years of work because they have a bit shorter employment histories.[27]

It would be ideal to additionally explore these conjectures regarding the composition of claimers using wage histories, however, this information is not available in the public-use microdata. We hope that in future releases of this data some additional variables are available, and some of these issues can be studied in more detail.

The sharp upward trend of the benefits received by those age 65 and those older than age 65 in the last couple of years, especially for men, provides some evidence of convergence toward the pre-2000 benefit levels. This could suggest the possibility that the increases in the DRC are finally playing a role among some workers with higher earnings histories and are more likely correlated to longer life expectancies of those who can gain the most from the permanent increases in their benefits if they claim later.

A clear advantage of using microdata is that we can now compute test statistics for the statistical significance of these average benefits with respect to the level of those that claimed, for example, at age 65 back in 1994, who at that time received 100 percent of their PIA at this age. Table 5 reports the t-statistics

for the test of equality of means between the benefits received by those claiming at age 65 in 1994 and all the other ages and time periods. Notice that in most cases even if the benefit levels seem rather close, the levels are significantly different from those received by the age-65 claimers of 1994. In the table we also see that the major change in the post-2000 period in the level of benefits received by those claiming after age 65 is highly significant. Furthermore, the level of benefits goes from being in a number of cases not significantly different from the 1994 figure in the pre-2000 period, to significantly higher in 2000, to significantly lower in the 2001–2004 period. This provides even clearer evidence of the changes resulting from abolishing the earnings test, even in the presence of the more generous DRC.

Table 6 provides a slightly different presentation of the test of statistical significance of differences in means. In this case instead of using the level of benefits of those who claimed at age 65 in 1994, we use the age-specific benefit levels as of 1994 to capture the variation over time and by age in the level of benefits. The results are even more striking and show a clear divergence in the benefit levels over time for those between ages 62 and 65 and those aged 66 or older. Although the former group's level of benefits are on the rise with increasingly statistically significant results, the benefit level for late claimers is quite the opposite, and they are receiving much lower benefits over time. The breaking point is the year 2000, suggesting in even more striking fashion the likely effect of the removal of the earnings test in the composition of those claiming benefits after age 65 and the effect of the increase in the FRA in the composition of those claiming early.

Table 5.
t-statistics of monthly Social Security retirement benefits: Benefit levels of those who claimed at age 65 in 1994 used as comparison

Age	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
62	-13.4805	-18.8968	-19.0375	-17.0784	-14.8081	-4.7205	-5.1620	-0.1537	5.7532	7.3185	-0.6521
63	-10.7386	-7.5375	-10.1821	-10.6993	-8.8523	-8.7318	-3.5480	-3.6254	-1.5533	1.8736	-2.7303
64	-3.5988	-3.5065	-2.9701	-5.2823	-5.9061	-3.5680	-2.6853	1.7147	3.3087	3.0444	2.8563
65	a	-1.0169	-1.0494	-0.3811	-4.1109	-4.4248	-2.2722	1.7050	7.3361	9.1248	3.9703
66	1.6634	-1.8287	-0.0406	-1.5536	0.2626	0.8813	4.7070	-5.1937	-6.8857	-3.8777	-0.2644
67	-1.4849	-1.1258	-0.6589	-1.6699	-2.8487	0.3316	4.5750	-6.4220	-4.4015	-5.3363	-3.7827
68	-1.7849	-2.6873	-2.6178	-2.9188	-2.7914	-1.1290	2.3995	-5.0251	-7.3427	-7.5304	-6.9266
69	0.6060	0.5722	-2.7263	-2.5275	-2.8545	-1.0505	0.3075	-5.0385	-5.5857	-8.7639	-5.0799

SOURCE: Authors' calculations using the OASDI public-use microdata file, 2004.

NOTE: The shaded cells represent significance at the 5 percent level or higher.

a. The corresponding cell from Table 3 is used as the comparison to test the equality of means with the rest of the cells in Table 3.

Table 6.
t-statistics of monthly Social Security retirement benefits: Age-specific benefit levels as of 1994 used as comparison

Age	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
62	a	-5.0854	-4.7262	-3.0317	-0.8293	8.7489	8.2168	**12.7966**	**17.8826**	**19.6706**	**12.6929**
63	a	3.1878	0.3795	0.2090	1.8700	1.7511	6.8118	**6.6375**	**8.2948**	**11.3359**	**6.9055**
64	a	-0.0142	0.4258	-1.9550	-2.3494	0.0167	0.8833	**5.1546**	**6.6978**	**6.2461**	**6.0776**
65	a	-1.0169	-1.0494	-0.3811	-4.1109	-4.4248	-2.2722	1.7050	**7.3361**	**9.1248**	**3.9703**
66	a	-3.4769	-2.0748	-3.2545	-1.4839	-1.1444	1.8398	-6.2997	-8.1969	-5.1407	-4.1568
67	a	0.2529	1.1169	-0.0669	-1.1116	2.3824	7.3587	-5.0108	-3.2678	-4.1064	-2.6854
68	a	-1.0077	-0.4352	-0.6420	-0.5713	1.3613	5.8301	-3.1657	-5.3119	-5.5411	-4.8753
69	a	-0.0380	-3.4901	-3.1597	-3.5718	-1.7969	-0.6406	-5.7073	-6.2444	-9.4584	-5.6763

SOURCE: Authors' calculations using the OASDI public-use microdata file, 2004.

NOTE: The shaded cells represent significance at the 5 percent level or higher. Bold type is used to emphasize the differences by age group.

a. The corresponding cells from Table 3 are used as the comparison to test the equality of means with the rest of the cells, by age, in Table 3.

Comparisons by Sex

Tables 7 through 9 break down the benefit claiming information by sex, providing a sample of what can be gained by controlling for some of the heterogeneity implicit in the previous tables.[28] Table 7 presents the proportion of individuals claiming benefits by age for men and women. We observe that women claim at lower ages than men, with a larger proportion of them claiming at age 62, and a smaller proportion claiming at age 65. As shown for both men and women, the proportion of individuals suddenly claiming at age 66 increases by several percentage points from a very low level—from 1.0 percent to 7.6 percent for men and from 1.3 percent to 6.5 percent for women, although the aggregate data shows no such trend during the 2003–2004 period. This is probably in part the result of a combination of the complementarity of leisure for husbands and wives, coupled with the fact that men are, on average, a few years older than their wives (see Blau (1997 and 1998), Blundell and others (2001), and Benítez-Silva and Dwyer (2006)). We also see that the large shift in the proportions of claimants in 2000 was much more pronounced for men, but in both cases the proportions seem to have reverted to pre-2000 figures by 2004, with an additional effect—the proportions of those claiming after age 65 have decreased for both subsamples. The exception to this occurred in 2004 (and will possibly continue into the future), and as explained for Table 1, this is due to the way the microdata records (assigning claimers to age 66) individuals who file for benefits exactly when they reach the FRA (now higher).

Table 8 provides the retirement benefit mean levels that have been actuarially and inflation-adjusted for male and female workers, which we also show in Chart 3. Notice the large differences in benefit levels, with men receiving at most ages and in most years much higher benefits than women and with a much higher variance across ages. This comes as no surprise given what we know about the labor force participation and earnings of these groups during the past decades, but it is still worth noting. Again we also see

Table 7.
Proportion of new claimants of Social Security retirement benefits, by sex and age, 1994–2004

Age	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
						Men					
62	0.489	0.480	0.509	0.500	0.491	0.473	0.414	0.453	0.460	0.465	0.478
63	0.162	0.170	0.150	0.158	0.163	0.152	0.137	0.163	0.160	0.148	0.142
64	0.081	0.072	0.072	0.066	0.071	0.072	0.061	0.075	0.073	0.073	0.072
65	0.207	0.215	0.201	0.208	0.207	0.212	0.248	0.273	0.275	0.282	0.219
66	0.022	0.024	0.025	0.025	0.024	0.033	0.054	0.009	0.010	0.010	0.076
67	0.008	0.010	0.013	0.015	0.013	0.018	0.031	0.007	0.005	0.006	0.004
68	0.008	0.008	0.009	0.008	0.007	0.012	0.021	0.004	0.003	0.005	0.002
69	0.007	0.004	0.007	0.006	0.007	0.009	0.013	0.004	0.004	0.003	0.001
Total number	5,766	5,911	6,001	6,073	6,344	6,970	8,169	7,195	7,266	7,404	7,794
						Women					
62	0.562	0.548	0.513	0.538	0.548	0.537	0.497	0.532	0.510	0.510	0.517
63	0.160	0.161	0.135	0.143	0.140	0.142	0.134	0.151	0.151	0.142	0.144
64	0.066	0.065	0.055	0.060	0.064	0.062	0.058	0.061	0.066	0.064	0.061
65	0.158	0.173	0.149	0.162	0.163	0.178	0.203	0.205	0.216	0.223	0.181
66	0.015	0.015	0.020	0.017	0.018	0.021	0.029	0.008	0.012	0.013	0.065
67	0.012	0.010	0.014	0.010	0.014	0.015	0.022	0.006	0.005	0.007	0.005
68	0.007	0.005	0.009	0.009	0.010	0.009	0.014	0.006	0.006	0.005	0.005
69	0.005	0.007	0.011	0.009	0.009	0.007	0.012	0.007	0.000	0.000	0.004
Total number	4,934	5,115	5,675	5,545	5,711	6,079	6,806	6,410	6,442	6,695	7,057

SOURCE: OASDI public-use microdata file, 2004.

NOTE: In the data, there is no way to separate disability converters from old-age claimants at age 65. What we have done is to assume a proportion of Social Security claimants from age-65 samples each year as disability converters. The proportions used are calculated according to the *Supplement*.

Table 8.
Average monthly Social Security retirement benefits of men and women, adjusted by the ARF and the DRC, by age, 1994–2004 (in 2005 dollars)

Age	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
						Men					
62	1,203.60	1,176.75	1,179.96	1,208.52	1,233.06	1,302.46	1,315.69	**1,352.61**	**1,402.60**	**1,414.35**	**1,356.50**
63	1,161.82	1,201.06	1,178.75	1,178.69	1,199.40	1,205.90	1,275.80	**1,264.56**	**1,310.93**	**1,355.05**	**1,317.45**
64	1,209.15	1,212.80	1,227.03	1,206.12	1,209.64	1,223.97	1,240.47	**1,322.56**	**1,344.97**	**1,359.56**	**1,354.08**
65	1,260.02	1,262.20	1,264.51	1,280.74	1,243.25	1,234.88	1,258.35	**1,298.34**	**1,348.48**	**1,384.61**	**1,349.91**
66	1,333.34	1,176.89	1,275.72	1,201.11	1,279.76	1,286.73	1,331.57	944.09	856.84	1,157.49	1,300.07
67	1,205.93	1,165.30	1,261.28	1,246.09	1,155.12	1,274.97	1,398.17	848.03	869.19	925.18	1,078.54
68	1,062.62	1,050.64	1,191.53	1,217.22	1,238.22	1,183.47	1,367.90	918.91	922.04	679.81	678.86
69	1,311.41	1,384.28	1,218.69	1,189.95	1,140.63	1,211.33	1,333.55	1,069.62	852.70	712.98	836.69
						Women					
62	926.15	899.80	897.24	889.07	890.88	921.42	905.06	931.88	938.98	946.07	908.38
63	899.92	911.93	887.69	880.47	877.21	877.27	895.07	909.60	898.14	931.10	885.60
64	916.81	930.03	912.09	886.62	869.56	908.99	925.39	944.52	988.25	965.87	958.82
65	951.20	938.96	934.97	929.89	905.25	924.06	924.22	930.00	972.30	967.53	936.41
66	943.55	896.61	956.38	920.27	947.29	941.04	983.33	823.85	867.93	813.65	918.73
67	962.50	985.53	967.63	775.12	902.19	971.63	996.81	814.39	888.67	772.81	781.91
68	988.59	829.98	808.16	778.87	823.43	949.39	925.39	785.52	662.28	789.03	822.48
69	964.08	1,025.60	880.13	860.57	875.10	902.29	903.93	755.03	830.65	686.31	839.57

SOURCE: Authors' calculations using the OASDI public-use microdata file, 2004.

NOTE: Shading is used to emphasize differences by age group. Bold type is used to emphasize differences by sex.

Table 9.
t-statistics of monthly Social Security retirement benefits, by sex and age, 1994–2004

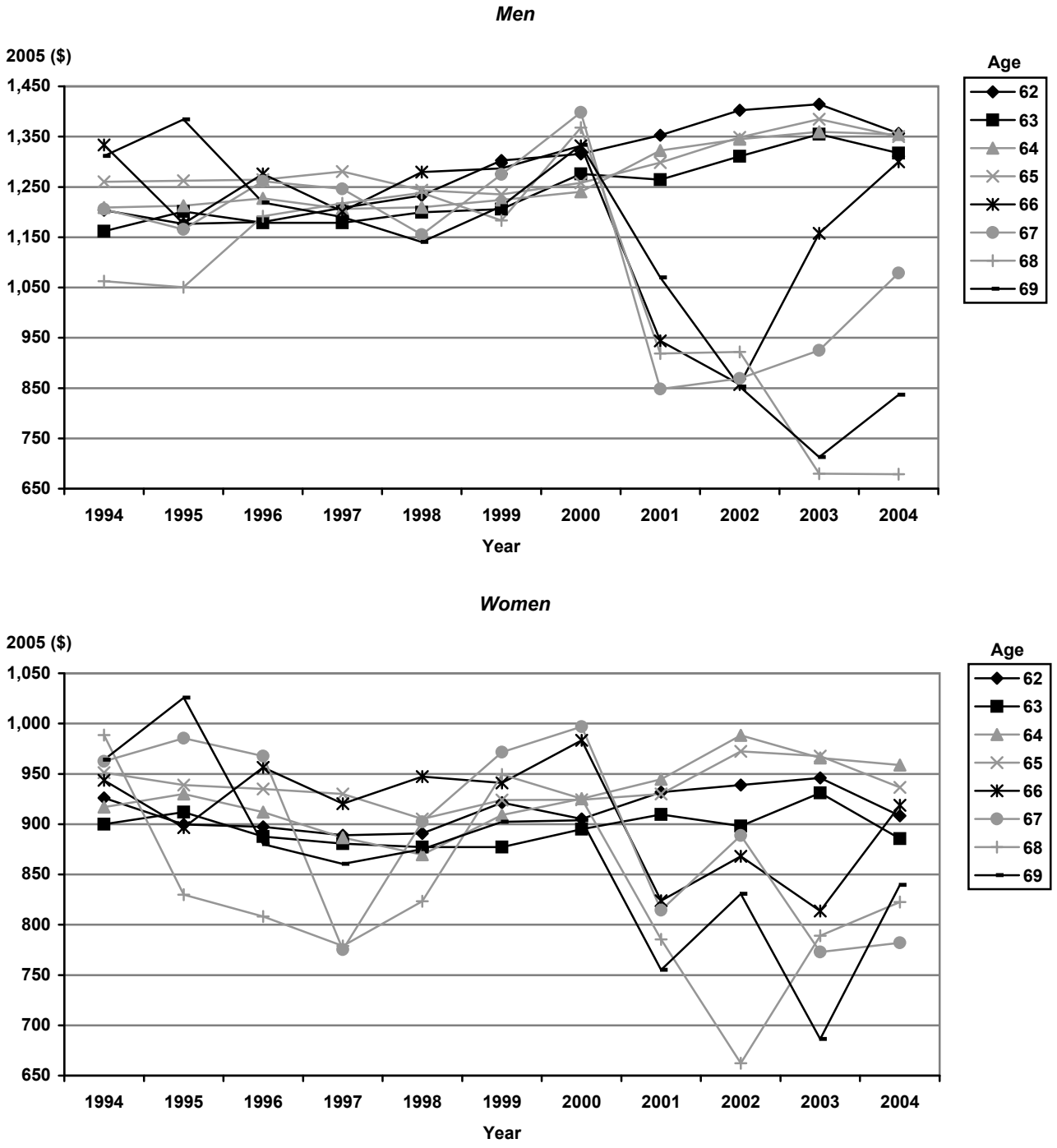
Age	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
						Men					
62	-8.0485	-12.0391	-12.0371	-7.5286	-3.7941	5.9236	7.4083	**11.8172**	**17.6262**	**19.0840**	**12.9759**
63	-8.4427	-5.3728	-7.2258	-7.1668	-5.3725	-4.4740	1.3357	0.3633	**3.9241**	**7.0243**	**4.3034**
64	-2.9746	-2.5950	-1.7915	-2.7834	-2.7543	-2.0273	-1.0789	**3.4206**	**4.4613**	**5.0305**	**4.6576**
65	a	0.2006	0.3866	1.8398	-1.5491	-2.5098	-0.1983	**4.3225**	**9.1668**	**12.5245**	**8.2154**
66	2.0553	-2.1057	0.5090	-1.4214	0.5129	0.3134	1.1297	-4.7461	-6.4202	-1.6187	2.2612
67	-0.7686	-1.3756	0.0236	-0.2809	-1.7136	0.3304	4.7137	-5.6247	-4.1352	-3.5897	-1.8140
68	-2.2183	-2.2577	-0.9059	-0.6648	-0.2784	-1.3099	2.9139	-3.2463	-3.2274	-6.9940	-5.2632
69	0.7077	1.3259	-0.4890	-0.7212	-1.5169	-0.7593	1.5287	-1.8202	-4.0705	-5.3359	-2.2697
						Women					
62	-3.4522	-7.3715	-8.0576	-9.5225	-9.7547	-4.5862	-7.7022	-3.1238	-1.8326	-0.8112	-7.2473
63	-4.1989	-3.0617	-5.0003	-6.1377	-6.2426	-6.4374	-4.8627	-3.6144	-4.7035	-1.7065	-5.7265
64	-1.8202	-1.1164	-2.0471	-3.4191	-4.9134	-2.3718	-1.4572	-0.3752	2.0109	0.7440	0.4103
65	a	-1.0684	-1.3725	-1.8117	-4.1544	-2.6010	-3.0871	-2.2322	2.1959	1.6526	-1.3827
66	-0.1590	-1.1458	0.1371	-0.7715	-0.0952	-0.2981	1.1986	-1.9225	-1.6426	-2.8306	-2.0403
67	0.2064	0.5236	0.3410	-3.1788	-1.1499	0.5223	1.4068	-2.6913	-0.8889	-3.1912	-2.4065
68	0.4840	-1.7215	-2.9704	-3.2030	-2.5353	-0.0305	-0.5830	-2.8440	-5.1789	-2.4343	-2.3084
69	0.1571	1.1702	-1.5565	-1.5437	-1.3517	-0.8516	-1.0374	-4.0480	-2.1660	-4.5948	-1.9692

SOURCE: Authors' calculations using the OASDI public-use microdata file, 2004.

NOTE: The shaded cells represent significance at the 5 percent level or higher. Bold type is used to emphasize the differences by age group.

a. The corresponding cell from Table 8 is used as the comparison to test the equality of means with the rest of the cells in Table 8.

Chart 3.
Average monthly Social Security retirement benefits, by sex and age, 1994–2004



SOURCE: OASDI public-use microdata file, 2004.

in the chart, especially for men, the changing composition of claimers after age 65 and more clearly after the FRA, which should be considered to be 66 starting in 2004 for the purposes of Table 8. The break in the post-65 series in 2000 is striking. We also observe the trend toward some convergence to pre-2000 levels of benefits, again especially for men (Chart 3).

The statistical significance of the differences by sex and age are explored in Table 9. That analysis shows that for men, the changes in the benefit levels for those claiming after age 65 have been especially sharp in the post-2000 period; the much lower benefits since the elimination of the earnings test contrast with many years in which the benefit levels for those claiming at ages 66–69 were not statistically significantly different from the levels of those claiming at age 65 in 1994. One final important result is the significantly higher benefit levels among men claiming at age 62 (and also at ages 63–65) starting in 1999, compared with those claiming at age 65 in 1994, likely resulting from the composition of those claiming early after the implementation of the increases in the FRA. This effect seems to be much smaller for women.

Conclusions

This article uses microdata from the OASDI public-use microdata extract of 2004 to analyze the effects on retirement benefit claiming behavior and level of benefit receipt of a number of changes to the Social Security system implemented in the past few years. These changes include increasing the full retirement age, increasing the delayed retirement credit, and abolishing the earnings test for persons above the FRA.

We find evidence of a large and significant short-run effect of abolishing the earnings test on the claiming behavior of older Americans. There is also evidence of a significant, and much longer-lived effect on the composition of those claiming benefits after age 65 in the post-2000 period, with much lower average benefits for late claimers compared with those claiming at other ages. Both effects are stronger for men than for women. We also find evidence of significant effects resulting from the changes in the FRA, leading to an increase in the benefit levels among early retirees, coupled with a fairly large proportion of individuals that still wait to exactly reach the FRA to file, which likely predicts a sizable shift of the traditional age-65 retirement benefit claiming peak toward age 66 (and eventually even age 67) in the coming years. Additionally, there is evidence that the effects of the increases in the DRC seem to be very small.

Key to our analysis are the concepts of actuarial fairness and self-selection, which allow us to overcome, to a high degree, the impossibility to control for observed individual heterogeneity, as it is usually done in most micro-level analyses of retirement. The fact that individuals self-select themselves into claiming at different ages, given the well-known adjustments to their lifetime benefits if they choose to claim at an age that is not the FRA, allows us to extract considerable information from the data sources we use and provide a surprisingly sharp picture of the likely effects of policy changes—effects that have been hard to pinpoint by researchers using household-level data. Although it would be ideal to be able to control for a much larger array of observables in order to explain the changes we see in the data, we believe that even if this were possible, our main results would not change significantly.

Our analysis is not able to illuminate one key aspect intimately linked with claiming behavior and benefit levels, and that is labor supply. Some recent data suggest an increase in the labor force participation among older Americans, but to disentangle the sources of these changes will quite likely require fairly sophisticated models of behavior, using household-level data matched to Social Security administrative records. Those models should be able to match the patterns of claiming behavior and benefit levels we have described in this analysis.

Our findings should encourage researchers to use the public-use data provided by SSA. This data source can complement more traditional analyses using household-level data and provide useful benchmarks for researchers modeling retirement behavior using advanced econometric and computational methods of analysis.

Appendix

Table A-1 shows the actual PIAs for the same group of individuals as shown in Table 3. Table A-2 is the counterpart of Table 5, providing the t-statistics to assess the magnitude of the differences between all the numbers in Table A-1 and the reference cell.

Table A-1.
Average PIA of new claimants of Social Security retirement benefits, by age, 1994–2004 (in 2005 dollars)

Age	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
62	940.78	926.23	935.13	953.19	973.71	1,034.55	1,046.03	1,080.50	1,127.71	1,142.03	1,103.01
63	979.89	1,009.24	992.26	1,004.17	1,026.54	1,030.67	1,089.22	1,098.32	1,123.75	1,165.74	1,121.95
64	1,018.19	1,021.65	1,047.72	1,013.85	1,012.43	1,039.77	1,061.02	1,135.15	1,154.62	1,165.67	1,181.94
65	1,057.93	1,058.15	1,058.74	1,078.11	1,054.01	1,061.43	1,099.92	1,122.12	1,170.74	1,181.23	1,141.35
66	1,136.01	1,026.72	1,101.08	1,053.64	1,121.91	1,124.77	1,232.29	887.25	856.65	986.29	1,172.39
67	1,000.67	1,039.73	1,058.21	1,047.50	1,011.88	1,115.41	1,240.26	830.71	888.67	840.90	942.88
68	1,001.07	941.18	977.90	969.08	992.46	1,078.06	1,222.81	845.29	757.86	751.68	796.67
69	1,155.27	1,150.30	1,009.65	981.93	990.41	1,082.81	1,153.82	879.90	844.02	718.22	843.33

SOURCE: OASDI public-use microdata file, 2004.

NOTE: Shading is used to emphasize differences by age group.

Table A-2.
t-statistics of PIA of new claimants of Social Security retirement benefits, by age, 1994–2004

Age	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
62	-20.942	-24.2018	-23.1928	-19.2652	-15.3388	-4.106	-2.0489	**3.7583**	**10.8637**	**13.3432**	**7.7827**
63	-7.9977	-5.0899	-6.7459	-5.5853	-3.2251	-2.7561	3.1105	**3.8991**	**6.1921**	**9.6267**	**5.8529**
64	-2.7804	-2.4186	-0.6552	-2.8275	-3.0307	-1.2372	0.2103	**5.0466**	**6.1515**	**6.5032**	**7.8343**
65	a	0.0343	0.1227	3.0688	-0.6182	0.5818	7.4898	**11.3957**	**19.3562**	**20.07**	**12.4059**
66	2.5193	-1.0137	1.7775	-0.1488	2.2147	2.6307	9.5604	-3.7035	-5.077	-1.6894	**7.9571**
67	-1.2032	-0.385	0.0076	-0.261	-1.2481	1.7761	7.6716	-4.8227	-2.9185	-4.0269	-1.8268
68	-1.0134	-1.9625	-1.6702	-1.8942	-1.4107	0.482	5.1924	-3.7229	-5.8324	-5.6851	-4.9683
69	1.6174	1.6602	-1.0627	-1.3864	-1.435	0.5483	2.5446	-3.3092	-4.1866	-6.7483	-3.5572

SOURCE: OASDI public-use microdata file, 2004.

NOTE: The shaded cells represent significance at the 5 percent level or higher. Bold type is used to emphasize differences by age group.

a. The corresponding cell from Table A-1 is used as the comparison to test the equality of means with the rest of the cells in Table A-1.

Notes

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[1] Notice, however, that with the sharply increasing earnings limit for those above the FRA starting in 1996, and the fact that the earnings test was eliminated for those aged 70–71 beginning in 1990, the change came in phases, even if the final removal was a policy item, the timing of which was not easy to foresee.

[2] In fact, the analysis of claiming behavior and benefit receipt by cohorts, which because of the time span of the data could only be partially completed, provide the same qualitative results. We consider this evidence of the robustness of our results.

[3] After age 70 there is little incentive to delay claiming benefits given that the DRC provision stops at that time, and therefore any individual claiming after age 70 would receive less in present value for any life expectancy or any length of life he or she might have or end up having.

[4] Our presentation here attempts to be as clear and simple as possible and not necessarily comprehensive of all the possible details and exceptions to the general rules of the system. For an encyclopedic presentation of the rules of the system we refer the reader to Myers (1993) and also to the Social Security Web site at http:/www.socialsecurity.gov.

[5] The exempt amount for the period between the month of benefit claiming and the year the person reaches the FRA was $13,560 in 2008: for every dollar earned above this limit the government withheld 50 cents of benefits. A higher exempt amount, $36,120, applies in the year of attaining FRA for months before such attainment. For the latter case the withholding rate is $1 for every $3 earned above this limit.

[6] This is a very important characteristic of the earnings test provisions, and too often misunderstood or ignored both by researchers and experts. Benítez-Silva and Heiland (2007 and 2008) present a good discussion and analysis of this important feature. Leonesio (1990), Gustman and Steinmeier (1991), and Gruber and Orszag (2003) describe this feature, but do not study it in detail. For the most recent evidence of how widely misunderstood this feature is, we refer the reader to a recent article by Stan Hinden, which appears in the AARP's October 2007 Bulletin, p. 23. Most of the other research on the earnings test has focused on the taxation aspects; see Vroman (1985), Burtless and Moffitt (1985), Honig and Reimers (1989), Leonesio (1990), Reimers and Honig (1993 and 1996), Friedberg (1998 and 2000), Baker and Benjamin (1999), and Votruba (2003).

[7] If none of these assumptions are correct, it could very well be, for example, that individuals who value the future very little (very much) find the current penalties for early retirement too high (or too low). Crawford and Lilien (1981) and Gustman and Steinmeier (1991) question the actuarial fairness of the system at the individual level, even if it has some bite at the aggregate level.

[8] Queisser and Whitehouse (2006) review, with an applied approach, this and other related concepts using data from a number of Organisation for Economic Co-operation and Development countries. Breyer and Hupfeld (2007) provide a more theoretical discussion to understand the redistributive effects of early retirement provisions.

[9] See Gustman and Steinmeier (1985) for an early discussion of the possible consequences of the 1983 reforms.

[10] Only recently have researchers (Benítez-Silva and Heiland 2007 and 2008) emphasized the nearly actuarial fairness of the earnings test and have connected its fairly complex incentives with the early benefit claiming behavior of older Americans.

[11] An alternative data source is the aggregate historical data from the *Supplement*, reported in Table 6.A4 of the 2008 edition and in similar tables in the historical editions of the document. In previous versions of this article, we also used this additional source of data and compared it with the public-use microdata we use here. The conclusions are similar, but provide an interesting comparison between an analysis using aggregate data and individual-level data. The aggregate data has some weaknesses, for example, the information for retired workers and dependents is not presented separately, and it is essentially impossible to make any statistical argument about the differences in benefit levels because we only have information about the mean of the distribution of benefits by age, but not about the standard deviation, preventing us from utilizing the data to make any inference about the statistical differences.

[12] The MBR has variables that probably allow for this distinction, but the public-use files do not.

[13] This selection bias is not present in the aggregate data using the *Supplement* because it reports yearly, not retrospective, data. It is natural to expect an upward bias in the retrospective adjusted benefit levels in the microdata, and this is what we conclude from comparing that data with the data in the *Supplement*. These results are available upon request.

[14] Notice that all our empirical analysis takes the calendar year perspective, and not a birth cohort perspective. The main reason is a serious right censoring problem that is due to the time span of the data, which prevents us from following a large number of individuals in younger cohorts into older ages. Despite this problem, we construct our main tables of interest by cohort, and the results do not change appreciably. In particular, as with the by-year data, we can observe the drop in the proportion of individuals claiming benefits for the 1938 cohort and the decline in benefit receipt once the members of the cohort become eligible to claim benefits after 2000. These results are available from the authors upon request. Recent work by Muldoon and Kopcke (2008), who take the birth cohort perspective, also does not find major differences in claiming behavior.

[15] Queisser and Whitehouse (2006) using 2002 mortality data find that the U.S. reduction for early retirement is not actuarially fair (it is too low) and too generous given current mortality figures, which results in a subsidy for early retirement and a penalty for late retirement. This in part explains the preference for early retirement expressed by Americans in the last decades, and also some of our results on benefit levels because higher-income individuals, likely to live longer, are the ones benefiting the most from this low reduction. The authors also find, based on the same mortality data, that the DRC is nearly actuarially fair.

[16] Rust and Phelan (1997) show quite convincingly that the proportion of individuals claiming benefits at age 62 could be explained through explicitly modeling that some individuals are liquidity constrained. However, they were using data from the 1970s with a much lower claiming peak at age 62, and they restricted attention to individuals for whom Social Security was essentially their only source of income in retirement.

Peracchi and Welch (1994) cast some doubt over this explanation, unless it is possible to provide a justification for why the proportion of liquidity-constrained Americans would shift so much over time. This point is especially important given the large age-62 peak we have discussed, pointing in the direction of alternative explanations for the current developments in claiming behavior. Recently, the large current peak at age 62 has been replicated if beliefs regarding the future ability of the system to pay benefits are accounted for (Benítez-Silva and others 2009). Although it is widely stated that any reforms to the system will not affect those close to retirement age, it is also clearly stated by Social Security in their communication to future beneficiaries that some reforms will be necessary to maintain the sustainability of the system and that they are likely to result in lower benefits. In a recent *New York Times* article, May 12 2007, Laurence J. Kotlikoff argues in favor of

late claiming of benefits by those that hold relatively large private pension assets. This is also defended by the same researcher along with others in a recent *U.S. News and World Report* article, February 11, 2008.

[17] Notice (and this is true in all the tables) that a given individual only appears in one of the cells identified by age and year, and that corresponds to the first time they apply for benefits.

[18] In principle, we cannot rule out possible period effects resulting from at least two aspects. First, the focal point of the year 2000 as the arrival of the new millennium could have lead some individuals to postpone their retirement (claiming of benefits) until this milestone date. Second, the new decade came with the burst of the technology bubble and a slowdown in job growth after the robust growth of the late 1990s; this change in trend could have prompted some individuals consider retirement as their expectations of future income growth became less optimistic.

[19] See also Gustman and Steinmeier (2004), Song (2004), and French (2005) for discussions of the likely consequences of the removal of the earnings test.

[20] We thank an anonymous referee for making this point to us.

[21] To truly compare these benefit levels we have to take into account the adjustments to their PIA so that the dollar amounts by column and rows are in the same actuarial units. The idea is that although a person who claims at age 62 will mechanically have a lower monthly benefit than a person who claims at age 65 yet has the same earnings history, the early claimer receives 3 more years of benefits and therefore is in present value at the actuarial adjustment factor, and assuming that they will live to the same age, their benefit levels are actuarially equivalent.

[22] This means that if individuals were randomly assigned to claiming at a given age between say age 62 and age 70, and without the existence of any policy changes in this period, the benefit levels (on average) in a given year for the different ages should be identical, and the differences over time could only be explained by time effects (macro effects but not related to Social Security reforms) or cohort effects.

[23] These tables show the actual PIAs for the same group of individuals as shown in Table 3, and therefore both sets of numbers can be directly compared. It is clear that our approximation is quite close to the PIA of record, and the differences can be traced back, as explained earlier, to the timing of claiming we have assumed and the role of the earnings test. Notice, that the main results of our analysis are essentially unchanged.

[24] More recently Haveman and others (2006) analyze whether early retirees will be able to maintain their well-being during retirement. Given the data they use, little is discussed regarding level of benefits, and they do not compare early claimers with those that delay claiming benefits.

[25] It is still true, however, that especially for long-lived early retirees and their survivors and low-income early retirees, the reduction can have real welfare consequences, even if for the average individual they are not of first order importance.

[26] The fact that the proportion of individuals claiming benefits changed considerably in the year that the earnings test was eliminated for those above the FRA and that the composition of claimers in the post-2000 period seemed to have significantly changed for those claiming after age 65 is however a bit puzzling in light of the discussion of Benítez-Silva and Heiland (2008), where the authors clearly show that the real incentives of the earnings test are very close to being actuarially fair given the adjustment of benefits at the FRA if benefits were withheld. These large shifts suggest, as discussed by Benítez-Silva and Heiland (2007), a likely lack of knowledge about this important aspect of the earnings test provision. Those authors estimate that only around 40 percent of individuals are aware of this aspect of the rules that govern the earnings test. In recent work using telephone surveys on individuals' knowledge of the Social Security retirement system Benítez-Silva, Demiralp, and Liu (2009) show that a majority of Americans do not seem to be aware of even some of the basic features of the system.

[27] This group can also potentially include individuals who do not need the benefit yet for a variety of reasons (access to private pensions or other sources of income) and consider the DRC a fair rate of return. Notice that additional work can lead to a recomputation of benefits, which can only be an advantage to individuals regardless of their economic circumstances.

[28] Unfortunately, the public-use microdata file does not provide any additional characteristics of individuals.

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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 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 August 2008–August 2009.

The Monthly Statistical Snapshot summarizes information about Social Security and the SSI programs and provides a summary table on the trust funds. Data for August 2009 are given on pages 98–99. Trust Fund data for August 2009 are given on page 99. The more detailed SSI tables begin on page 100. Persons wanting detailed monthly OASDI information should visit the Office of the Actuary's Web site at www.socialsecurity.gov/OACT/ProgData/beniesQuery.html.

Monthly Statistical Snapshot

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

Table 1.
Number of people receiving Social Security, Supplemental Security Income, or both, August 2009 (in thousands)

Type of beneficiary	Total	Social Security only	SSI only	Both Social Security and SSI
All beneficiaries	57,055	49,403	5,012	2,639
Aged 65 or older	37,276	35,241	888	1,147
Disabled, under age 65 [a]	12,516	6,899	4,124	1,492
Other [b]	7,263	7,263	. . .	. . .

SOURCE: 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: Art Kahn (410) 965-0186 or ssi.monthly@ssa.gov for further information.

Table 2.
Social Security benefits, August 2009

Type of beneficiary	Beneficiaries		Total monthly benefits (millions of dollars)	Average monthly benefit (dollars)
	Number (thousands)	Percent		
All beneficiaries	52,043	100.0	55,245	1,061.50
Old-Age Insurance				
Retired workers	33,240	63.9	38,564	1,160.20
Spouses	2,354	4.5	1,346	571.90
Children	545	1.0	309	567.00
Survivors Insurance				
Widow(er)s and parents [a]	4,352	8.4	4,774	1,096.90
Widowed mothers and fathers [b]	161	0.3	136	840.70
Children	1,882	3.6	1,402	745.00
Disability Insurance				
Disabled workers	7,657	14.7	8,133	1,062.20
Spouses	159	0.3	46	287.70
Children	1,692	3.3	536	316.70

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

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

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

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

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

CONTACT: Hazel P. Jenkins (410) 965-0164 or oasdi.monthly@ssa.gov for further information.

Table 3.
Supplemental Security Income recipients, August 2009

Age	Recipients		Total payments [a] (millions of dollars)	Average monthly payment [b] (dollars)
	Number (thousands)	Percent		
All recipients	7,651	100.0	4,099	498.50
Under 18	1,189	15.5	747	598.10
18–64	4,427	57.9	2,523	514.60
65 or older	2,035	26.6	829	405.30

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

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

a. Includes retroactive payments.

b. Excludes retroactive payments.

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Table 4.
Operations of the Old-Age and Survivors Insurance and Disability Insurance Trust Funds, August 2009 (in millions of dollars)

Component	OASI	DI	Combined OASI and DI
		Receipts	
Total	$43,358	$7,371	$50,729
Net contributions	43,292	7,352	50,644
Income from taxation of benefits	13	0	13
Net interest	53	19	72
Payments from the general fund	0	0	0
		Expenditures	
Total	46,546	9,944	56,490
Benefit payments	46,286	9,747	56,033
Administrative expenses	260	196	457
Transfers to Railroad Retirement	0	0	0
		Assets	
At start of month	2,300,919	212,773	2,513,692
Net increase during month	-3,188	-2,572	-5,761
At end of month	2,297,730	210,201	2,507,931

SOURCE: Data on the trust funds were accessed on September 24, 2009, on the Social Security Administration's Office of the Actuary's web site: http://www.socialsecurity.gov/OACT/ProgData/funds.html.

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

Supplemental Security Income, August 2008–August 2009

The SSI Monthly Statistics are also available at 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, August 2008–August 2009

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		
2008						
August	7,468,701	5,138,210	2,030,920	299,571	3,809,124	477.40
September	7,509,397	5,168,764	2,040,252	300,381	3,866,226	476.70
October	7,504,271	5,163,780	2,039,238	301,253	3,838,166	476.80
November	7,533,795	5,185,746	2,046,378	301,671	3,820,243	477.30
December	7,520,501	5,176,902	2,042,110	301,489	3,880,433	477.80
2009						
January	7,533,922	5,192,985	2,047,850	293,087	4,009,142	504.10
February	7,566,208	5,217,483	2,055,832	292,893	4,044,694	502.80
March	7,599,464	5,243,129	2,063,657	292,678	4,162,308	503.70
April	7,607,994	5,248,781	2,066,071	293,142	4,126,381	505.10
May	7,596,745	5,253,853	2,067,978	274,914	4,077,881	500.80
June	7,638,836	5,287,256	2,076,756	274,824	4,157,154	500.20
July	7,618,848	5,281,432	2,074,422	262,994	4,049,965	497.80
August	7,651,360	5,307,020	2,081,537	262,803	4,098,660	498.50

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

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

a. Includes retroactive payments.

b. Excludes retroactive payments.

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Table 2.
Recipients, by eligibility category and age, August 2008–August 2009

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2008						
August	7,468,701	1,203,846	6,264,855	1,136,978	4,302,730	2,028,993
September	7,509,397	1,205,505	6,303,892	1,147,765	4,328,605	2,033,027
October	7,504,271	1,206,466	6,297,805	1,138,706	4,330,689	2,034,876
November	7,533,795	1,210,023	6,323,772	1,152,268	4,341,446	2,040,081
December	7,520,501	1,203,256	6,317,245	1,153,844	4,333,096	2,033,561
2009						
January	7,533,922	1,203,955	6,329,967	1,153,684	4,344,951	2,035,287
February	7,566,208	1,204,781	6,361,427	1,165,415	4,362,970	2,037,823
March	7,599,464	1,204,671	6,394,793	1,172,224	4,388,753	2,038,487
April	7,607,994	1,205,349	6,402,645	1,173,714	4,393,945	2,040,335
May	7,596,745	1,199,665	6,397,080	1,173,700	4,389,985	2,033,060
June	7,638,836	1,200,922	6,437,914	1,185,753	4,416,687	2,036,396
July	7,618,848	1,196,190	6,422,658	1,178,932	4,408,897	2,031,019
August	7,651,360	1,198,038	6,453,322	1,189,283	4,426,845	2,035,232

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

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

CONTACT: Art Kahn (410) 965-0186 or ssi.monthly@ssa.gov for further information.

Table 3.
Recipients of federal payment only, by eligibility category and age, August 2008–August 2009

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2008						
August	5,138,210	604,910	4,533,300	906,983	3,110,480	1,120,747
September	5,168,764	605,337	4,563,427	915,806	3,130,287	1,122,671
October	5,163,780	605,292	4,558,488	908,584	3,132,083	1,123,113
November	5,185,746	606,874	4,578,872	919,557	3,140,406	1,125,783
December	5,176,902	602,347	4,574,555	920,836	3,135,122	1,120,944
2009						
January	5,192,985	604,209	4,588,776	920,828	3,148,016	1,124,141
February	5,217,483	604,285	4,613,198	930,292	3,162,043	1,125,148
March	5,243,129	603,315	4,639,814	936,012	3,182,658	1,124,459
April	5,248,781	603,076	4,645,705	937,186	3,186,808	1,124,787
May	5,253,853	602,826	4,651,027	937,302	3,191,392	1,125,159
June	5,287,256	603,148	4,684,108	947,230	3,213,216	1,126,810
July	5,281,432	602,563	4,678,869	941,735	3,212,379	1,127,318
August	5,307,020	603,370	4,703,650	950,076	3,227,252	1,129,692

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

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

CONTACT: Art Kahn (410) 965-0186 or ssi.monthly@ssa.gov for further information.

Table 4.
Recipients of federal payment and state supplementation, by eligibility category and age, August 2008–August 2009

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2008						
August	2,030,920	496,836	1,534,084	227,526	1,042,646	760,748
September	2,040,252	497,843	1,542,409	229,530	1,048,281	762,441
October	2,039,238	498,613	1,540,625	227,594	1,048,053	763,591
November	2,046,378	500,397	1,545,981	230,264	1,050,271	765,843
December	2,042,110	497,841	1,544,269	230,458	1,048,077	763,575
2009						
January	2,047,850	500,080	1,547,770	230,668	1,050,539	766,643
February	2,055,832	500,584	1,555,248	233,092	1,054,940	767,800
March	2,063,657	501,483	1,562,174	234,221	1,060,209	769,227
April	2,066,071	502,230	1,563,841	234,559	1,061,010	770,502
May	2,067,978	502,842	1,565,136	234,659	1,061,666	771,653
June	2,076,756	503,900	1,572,856	236,848	1,066,521	773,387
July	2,074,422	503,892	1,570,530	235,596	1,065,209	773,617
August	2,081,537	504,927	1,576,610	237,710	1,068,414	775,413

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

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

CONTACT: Art Kahn (410) 965-0186 or ssi.monthly@ssa.gov for further information.

Table 5.
Recipients of state supplementation only, by eligibility category and age, August 2008–August 2009

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2008						
August	299,571	102,100	197,471	2,469	149,604	147,498
September	300,381	102,325	198,056	2,429	150,037	147,915
October	301,253	102,561	198,692	2,528	150,553	148,172
November	301,671	102,752	198,919	2,447	150,769	148,455
December	301,489	103,068	198,421	2,550	149,897	149,042
2009						
January	293,087	99,666	193,421	2,188	146,396	144,503
February	292,893	99,912	192,981	2,031	145,987	144,875
March	292,678	99,873	192,805	1,991	145,886	144,801
April	293,142	100,043	193,099	1,969	146,127	145,046
May	274,914	93,997	180,917	1,739	136,927	136,248
June	274,824	93,874	180,950	1,675	136,950	136,199
July	262,994	89,735	173,259	1,601	131,309	130,084
August	262,803	89,741	173,062	1,497	131,179	130,127

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

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

CONTACT: Art Kahn (410) 965-0186 or ssi.monthly@ssa.gov for further information.

Table 6.
Total payments, by eligibility category, age, and source of payment, August 2008–August 2009 (in thousands of dollars)

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
			All sources			
2008						
August	3,809,124	471,801	3,337,323	674,981	2,332,418	801,724
September	3,866,226	473,306	3,392,920	683,173	2,378,779	804,274
October	3,838,166	473,343	3,364,824	671,832	2,361,694	804,640
November	3,820,243	475,770	3,344,472	680,894	2,331,667	807,682
December	3,880,433	475,880	3,404,553	684,552	2,386,554	809,328
2009						
January	4,009,142	496,179	3,512,964	718,597	2,445,116	845,429
February	4,044,694	496,670	3,548,024	727,249	2,470,398	847,048
March	4,162,308	499,779	3,662,529	747,164	2,563,702	851,443
April	4,126,381	500,346	3,626,035	741,838	2,531,720	852,824
May	4,077,881	488,153	3,589,728	738,370	2,504,478	835,033
June	4,157,154	490,264	3,666,889	752,909	2,565,843	838,401
July	4,049,965	481,411	3,568,554	734,333	2,489,436	826,197
August	4,098,660	482,682	3,615,978	747,253	2,522,549	828,858
			Federal payments			
2008						
August	3,430,320	368,265	3,062,055	656,424	2,129,688	644,208
September	3,483,686	369,382	3,114,304	664,311	2,173,220	646,155
October	3,457,102	369,367	3,087,735	653,337	2,157,278	646,487
November	3,440,107	371,338	3,068,768	662,297	2,128,868	648,941
December	3,497,759	371,512	3,126,247	665,678	2,181,608	650,473
2009						
January	3,630,829	392,284	3,238,545	699,999	2,243,606	687,225
February	3,664,119	392,537	3,271,582	708,369	2,267,299	688,451
March	3,775,713	394,882	3,380,831	727,912	2,355,990	691,811
April	3,741,381	395,105	3,346,276	722,880	2,325,840	692,660
May	3,735,175	394,849	3,340,327	723,168	2,319,309	692,698
June	3,810,543	396,524	3,414,018	737,431	2,377,672	695,440
July	3,730,693	394,870	3,335,823	720,964	2,315,836	693,893
August	3,777,800	395,886	3,381,914	733,759	2,347,927	696,114

(Continued)

Table 6.
Total payments, by eligibility category, age, and source of payment, August 2008–August 2009 (in thousands of dollars)—*Continued*

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
			State supplementation			
2008						
August	378,804	103,536	275,268	18,557	202,730	157,516
September	382,540	103,924	278,616	18,862	205,558	158,120
October	381,064	103,976	277,089	18,496	204,416	158,153
November	380,136	104,432	275,704	18,597	202,799	158,740
December	382,674	104,368	278,306	18,875	204,946	158,854
2009						
January	378,313	103,895	274,418	18,599	201,511	158,204
February	380,575	104,133	276,442	18,880	203,098	158,597
March	386,595	104,897	281,698	19,252	207,711	159,632
April	385,001	105,242	279,759	18,958	205,879	160,163
May	342,706	93,305	249,401	15,202	185,169	142,335
June	346,611	93,740	252,871	15,478	188,172	142,961
July	319,272	86,541	232,731	13,369	173,600	132,303
August	320,860	86,796	234,064	13,494	174,622	132,744

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: Art Kahn (410) 965-0186 or ssi.monthly@ssa.gov for further information.

Table 7.
Average monthly payment, by eligibility category, age, and source of payment, August 2008–August 2009 (in dollars)

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
			All sources			
2008						
August	477.40	391.20	494.00	569.90	492.30	394.20
September	476.70	391.20	493.10	566.00	491.90	394.10
October	476.80	391.50	493.20	566.30	492.20	394.30
November	477.30	391.90	493.70	567.10	492.40	394.60
December	477.80	393.50	493.90	561.30	494.00	396.00
2009						
January	504.10	411.10	521.80	603.00	519.90	414.30
February	502.80	410.60	520.30	597.90	518.80	413.90
March	503.70	411.60	521.00	599.40	519.40	414.70
April	505.10	412.20	522.60	605.40	520.10	415.30
May	500.80	404.80	518.80	601.40	516.60	408.70
June	500.20	405.10	517.90	598.10	516.00	408.90
July	497.80	400.80	515.90	596.20	514.20	405.20
August	498.50	400.90	516.60	598.10	514.60	405.30
			Federal payments			
2008						
August	446.60	333.90	467.10	555.80	464.30	341.70
September	445.90	333.80	466.20	551.90	464.00	341.70
October	446.00	333.90	466.30	552.10	464.30	341.80
November	446.50	334.40	466.90	553.00	464.50	342.10
December	447.00	336.00	467.00	547.10	466.10	343.60
2009						
January	473.90	354.40	495.40	588.60	492.60	362.60
February	472.60	353.80	493.90	583.60	491.50	362.20
March	473.50	354.80	494.70	585.10	492.10	362.90
April	475.00	355.20	496.30	591.20	492.80	363.40
May	474.80	355.40	496.10	590.20	492.80	363.60
June	474.20	355.60	495.30	587.00	492.20	363.80
July	474.00	355.50	495.10	586.50	492.20	363.70
August	474.80	355.60	495.90	588.40	492.70	363.90

(Continued)

Table 7.
Average monthly payment, by eligibility category, age, and source of payment, August 2008–August 2009 (in dollars)—*Continued*

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
			State supplementation			
2008						
August	156.10	171.70	150.70	76.20	159.30	172.30
September	156.00	171.80	150.60	76.10	159.10	172.20
October	156.10	171.90	150.70	76.30	159.10	172.30
November	156.00	171.90	150.50	76.00	159.10	172.40
December	156.20	172.30	150.70	76.10	159.30	172.70
2009						
January	156.00	172.20	150.40	76.00	159.00	172.50
February	155.80	172.10	150.20	75.80	158.80	172.50
March	155.90	172.30	150.20	75.80	158.80	172.60
April	155.90	172.40	150.20	75.80	158.80	172.70
May	139.50	154.80	134.30	59.80	143.40	155.20
June	139.40	154.70	134.10	59.70	143.20	155.10
July	130.40	144.50	125.60	52.30	134.80	145.10
August	130.30	144.50	125.50	52.30	134.80	145.10

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: Art Kahn (410) 965-0186 or ssi.monthly@ssa.gov for further information.

Table 8.
All awards, by eligibility category and age of awardee, August 2008–August 2009

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2008						
August	75,295	9,126	66,169	14,244	51,789	9,262
September	85,720	9,076	76,644	16,499	59,986	9,235
October	79,082	9,769	69,313	13,874	55,273	9,935
November	72,635	9,945	62,690	13,521	49,048	10,066
December	77,917	8,074	69,843	15,287	54,422	8,208
2009						
January	67,577	8,475	59,102	13,239	45,743	8,595
February	72,924	8,932	63,992	14,379	49,500	9,045
March	93,218	9,425	83,793	18,985	64,651	9,582
April	80,706	9,748	70,958	15,728	55,101	9,877
May	83,702	9,158	74,544	15,863	58,530	9,309
June	91,533	8,362	83,171	18,824	64,212	8,497
July [a]	81,004	8,941	72,063	16,280	55,660	9,064
August [a]	81,846	9,046	72,800	16,175	56,508	9,163

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: Art Kahn (410) 965-0186 or ssi.monthly@ssa.gov for further information.

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.

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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.

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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.

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Program Highlights, 2009

Old-Age, Survivors, and Disability Insurance

Tax Rates for Employers and Employees, Each [a] (percent)	
Social Security	
Old-Age and Survivors Insurance	5.30
Disability Insurance	0.90
Subtotal, Social Security	6.20
Medicare (Hospital Insurance)	1.45
Total	7.65
Maximum Taxable Earnings (dollars)	
Social Security	106,800
Medicare (Hospital Insurance)	No limit
Earnings Required for Work Credits (dollars)	
One Work Credit (One Quarter of Coverage)	1,090
Maximum of Four Credits a Year	4,360
Earnings Test Annual Exempt Amount (dollars)	
Under Full Retirement Age for Entire Year	14,160
For Months Before Reaching Full Retirement Age in Given Year	37,680
Beginning with Month Reaching Full Retirement Age	No limit
Maximum Monthly Social Security Benefit for Workers Retiring at Full Retirement Age (dollars)	2,323
Full Retirement Age	66
Cost-of-Living Adjustment (percent)	5.8

a. Self-employed persons pay a total of 15.3 percent—10.6 percent for OASI, 1.8 percent for DI, and 2.9 percent for Medicare.

Supplemental Security Income

Monthly Federal Payment Standard (dollars)	
Individual	674
Couple	1,011
Cost-of-Living Adjustment (percent)	5.8
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)	980

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
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