



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

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

January 2009

# **The Retirement Policy Program**

Discussion Paper 09-01

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

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

January 2009



## The Retirement Policy Program

*A crosscutting team of Urban Institute experts in Social Security, labor markets, savings behavior, tax and budget policy, and micro-simulation modeling ponder the aging of American society.*

The aging of America raises many questions about what's in store for future and current retirees and whether society can sustain current systems that support the retired population. Who will prosper? Who won't? Many good things are happening too, like longer life and better health. Although much of the baby boom generation will be better off than those retiring today, many face uncertain prospects. Especially vulnerable are divorced women, single mothers, never-married men, high school dropouts, and lower-income African-Americans and Hispanics. Even Social Security—which tends to equalize the distribution of retirement income by paying low-income people more than they put in and wealthier contributors less—may not make them financially secure.

Uncertainty about whether workers today are saving enough for retirement further complicates the outlook. New trends in employment, employer-sponsored pensions, and health insurance influence retirement decisions and financial security at older ages. And, the sheer number of reform proposals, such as personal retirement accounts to augment traditional Social Security or changes in the Medicare eligibility age, makes solid analyses imperative.

Urban Institute researchers assess how current retirement policies, demographic trends, and private sector practices influence older Americans' security and decision-making. Numerous studies and reports provide objective, nonpartisan guidance for policymakers.

The nonpartisan Urban Institute publishes studies, reports, and books on timely topics worthy of public consideration.

The research reported herein was supported by the Center for Retirement Research at Boston College pursuant to a grant from the U.S. Social Security Administration funded as part of the Retirement Research Consortium. The opinions and conclusions are solely those of the authors and should not be construed as representing the opinions or policy of the Social Security Administration or any agency of the federal government; the Center for Retirement Research at Boston College; or the Urban Institute, its board, or its sponsors.

The authors gratefully acknowledge the expert team of researchers that have developed MINT over the past decade. These include, but are not limited to, Karen Smith, Eric Toder, Melissa Favreault, Gary Burtless, Stan Panis, Caroline Ratcliffe, Doug Wissoker, Cori Uccello, Tim Waidmann, Jon Bakija, Jillian Berk, David Cashin, Matthew Resseger, and Katherine Micheltore.

Publisher: The Urban Institute, 2100 M Street, N.W., Washington, D.C. 20037

Copyright © 2009. Permission is granted for reproduction of this document, with attribution to the Urban Institute.



# Contents

Tables.....	ii
Figures.....	iii
Abstract.....	1
Executive Summary.....	2
Introduction.....	5
Background.....	6
Methodology.....	10
<i>Projecting Pensions in MINT</i> .....	11
<i>Measuring Income in Retirement from DB Pension Plans and Retirement Accounts</i> .....	14
Results.....	17
<i>Characteristics of Boomer Retirees</i> .....	17
<i>Subgroups Differences in Projected Retirement Outcomes</i> .....	20
<i>Who Are the Winners and Losers?</i> .....	21
<i>What's Driving the Outcomes?</i> .....	24
Conclusions.....	25
References.....	29
Appendix A.....	43

## Tables

1. Projected Characteristics of Individuals at Age 67 (%).....	33
2. Percent of Individuals with Family Income at Age 67, by Source (%) .....	34
3. Mean Family Income Per Person at Age 67, by Source (in thousands, \$2007) .....	35
4. Percent of Individuals with Family Pensions at Age 67 Under the Baseline, by Type (%) .....	36
5. Mean Family Income Per Person at Age 67 (in thousands, \$2007).....	37
6. Percent Change in Mean Family Income Per Person at Age 67 Between the Baseline and UK Scenarios (%).....	38
7. Percent of Individuals Who Win and Lose at Age 67 Between the Baseline and UK Scenarios (%) .....	39
8. Percent of Individuals Who Win and Lose Five Percent or More of Income at Age 67 Between the Baseline and UK Scenarios (%).....	40
9. Change in Mean Family Income Per Person at Age 67 for Winners and Losers Between the Baseline and UK Scenarios (in thousands, \$2007) .....	41
10. Mean Family Income Per Person at Age 67 for Winners and Losers, by Source (in thousands, \$2007).....	42
Appendix B1. Percent Change in Mean Per Person Family Income at Age 67 for Winners and Losers Between the Baseline and UK Scenarios (%) .....	48
Appendix B2. Percent of Individuals Who Win, Mean Family Income Per Person (thousands of \$2007), and Percent Change in Family Income at Age 67 for Winners, by Source and Percent Change in Family Income .....	49
Appendix B3. Percent of Individuals Who Lose, Mean Family Income Per Person (thousands \$2007), and Percent Change in Family Income at Age 67 for Losers, by Source and Percent Change in Family Income .....	50

## Figures

1. Percent of Last Wave Boomers Who Win and Lose Income at Age 67 Between the Baseline and UK Scenarios by Income Quintile..... 31
2. Percent of Last Wave Boomers Who Win and Lose Five Percent or More Income at Age 67 Between the Baseline and UK Scenarios by Income Quintile ..... 32



## **Abstract**

The long-term shift in coverage from defined benefit (DB) pensions to defined contribution (DC) plans may accelerate rapidly as more large companies freeze their DB pensions and replace them with new or enhanced DC plans. This paper uses the Model of Income in the Near Term to simulate the impact of an accelerated transition from DB to DC pensions on the distribution of retirement income among boomers. A scenario in which employers freeze all remaining private sector DB plans and a third of all state and local plans over the next five years will on balance produce more losers than winners among boomers and reduce their average incomes at age 67. Income changes will be largest among higher-income boomers, who have the highest DB coverage rates and projected pension incomes. Furthermore, the numbers of winners and losers and net income changes are much greater for the last wave of boomers (born between 1961 and 1965) than for earlier boomers. Younger boomers are most likely to have their DB pensions frozen with relatively little job tenure and to lose their high accrual years for DB pension wealth, but also to have relatively more years to accumulate DC pension wealth before retirement.

## Executive Summary

In recent years, the United States has seen a significant shift away from defined benefit (DB) pension plans to defined contribution (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.

This paper uses the Model of Income in the Near Term to simulate the effects of an accelerated shift from DB to DC pensions on boomers' incomes at age 67. We compare a scenario under which employers freeze all remaining private sector DB plans and a third of all state and local plans over the next five years with a baseline scenario that incorporates all known pension freezes as of the end of 2006. Under this baseline, future changes in DB coverage reflect only projected changes in employment patterns. We project how the accelerated decline in DB coverage affects the level, composition, and distribution of income at age 67 by sex, education, marital status, race/ethnicity, number of work years, and quintiles of lifetime earnings and retirement income. We also project numbers and characteristics of winners and losers from the change in pension coverage. To understand better the differential impact of DB pension freezes on the retirement incomes of boomers, we compare outcomes for four waves of boomer cohorts born between 1946 and 1965.

The results show that the numbers of winners and losers and net income changes are much greater for boomers born between 1961 and 1965 (last wave boomers) than for earlier boomers. Younger boomers are most likely to have their DB pensions frozen with relatively little job tenure and to lose their high accrual years for DB pension wealth, but also to have relatively more years to accumulate DC pension wealth before retirement.

Key findings include the following:

- For boomers born between 1946 and 1950 (first wave boomers), the accelerated pension freezes produce virtually no change in DB or DC pension coverage and little change in income at age 67. These individuals are near or at plan retirement age when the first new plan freezes occur in 2007. Because they are likely to have their DB pensions frozen with lengthy job tenures, they do not lose much DB pension income. They also will have relatively few years to contribute to new or enhanced DC pensions before retirement to accumulate much additional retirement wealth.
- The freezes will also produce little change in pension coverage for last wave boomers, reducing their DB coverage rates from 44 to 42 percent while increasing their DC coverage rates from 77 to 79 percent. Only workers who are projected to start new jobs with DB pensions under the baseline will lose DB coverage under the simulated pension freezes; existing workers will maintain DB coverage, but have lower benefits. The freezes will reduce average income at age 67 by \$700 per person. DB pension benefits will decline by \$1,100, but new and enhanced DC plans will raise income from retirement accounts by \$300 and delayed retirement will raise earnings at age 67 by another \$100.
- The accelerated decline in DB coverage will produce more losers than winners. The new freezes will reduce income for 26 percent of last wave boomers by an average of \$4,200 and raise income for only 11 percent of last wave boomers by an average of \$2,800.
- Boomers in high socio-economic groups, who have the highest DB coverage rates and projected pension incomes, are most likely both to lose and win from the additional DB plan freezes and will experience the largest losses and gains. For example, 48 percent of last wave boomers in the top income quintile will lose an average of \$8,000 in income at age 67, while 12 percent will gain an average of \$5,800. In comparison, only 8 percent of last wave boomers in the lowest quintile will lose an average of \$700 in income at age 67, while 6 percent will gain an average of \$800.

- While most boomers will experience relatively modest changes in income from the additional DB freezes, some boomers (particularly those in the last wave) will experience large losses and gains. The freezes will lower average incomes by at least 5 percent for 10 percent of last wave boomers, and raise average incomes by at least 5 percent for 3 percent of them. Big losers will be concentrated in the top income quintiles. For example, 15 percent of last wave boomers in the top income quintile, but only 3 percent of those in the bottom quintile will see their incomes decline by 5 percent or more under the accelerated pension shift. In contrast, the share of large winners will be fairly evenly distributed among income quintiles.
- On average, winners will experience gains in DC retirement accounts (\$2,100) and earnings (\$1,300) that exceed their losses in DB pension benefits (\$600). In comparison, losers will have small gains in retirement accounts (\$200) that are insufficient to offset their large losses in DB benefits (\$4,300). Losers are less likely than the winners to contribute to new or enhanced DC plans and, when they do contribute, are less likely to receive high returns.
- The net decline in retirement income from an accelerated shift from DB to DC plans is to some degree a transitory phenomenon. When workers switch from DB to DC plans in mid-career, they lose the high accrual years in their DB plans and have few 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 for their entire career. More than any other birth cohort, the boomers cohorts will suffer the repercussions of this transition; those who come later may fare better depending on participation rates, contribution rates, and market returns.

## 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. Between 1980 and 2008, the proportion of private wage and salary workers participating in DB pension plans fell from 38 to 20 percent (U.S. Bureau of Labor Statistics 2008; U.S. 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. Between 1980 and 2008, the proportion of private wage and salary workers participating in only DC pension plans increased from 8 to 31 percent (U.S. Bureau of Labor Statistics 2008; U.S. Department of Labor 2002). More recently, many employers have frozen their DB plans (Munnell *et al.* 2006). Some experts expect that most private sector plans will be frozen in the next few years and eventually terminated (Aglira 2006; Gebhardtshauer 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, and new employees will not be covered. Instead, employers will either establish new DC plans or increase contributions to existing DC plans.

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 paper 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 and a third of all state and local plans over the next five years. The analysis uses the Social Security Administration's (SSA) Model of Income in the Near Term (MINT) microsimulation model to describe the potential impact of the pension shift on boomers at age 67. The paper examines both changes in retirement income and numbers of winners and losers, and 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 (e.g., 1 percent of average salary received during the final three years on the job times 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.

The growth pattern of future benefits is by design more erratic in DB plans, and can even decline at older ages. Pension wealth—the present discounted value of the stream of future expected benefits—grows slowly in typical DB plans for young workers, but increases rapidly once workers approach the plan's retirement age. 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, their earnings increase through real wage growth and inflation, and 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 pre-retirement 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 due to 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.

For the past 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). Munnell and Sunden (2004) attribute the pension shift to changes in the economy, increased regulation of DB plans, and employee preferences for portable savings account balances and a sense of control over their savings. The shift began in the early 1980s after IRS regulations implemented a provision of the 1978 Revenue Act that allowed employees to make voluntary contributions to employer-sponsored retirement plans with pretax dollars.<sup>1</sup> 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). The employment sector shift away from manufacturing and towards service and information technology also decreased the availability of DB plans, as new firms in growing sectors of the economy adopted DC plans instead (Wiatrowski 2004). More recently, accounting changes that require corporate financial statements to recognize the future obligations

from retirement plans have accelerated the shift away from DB plans, as employers seek to reduce the volatility of reported earnings (Burkholder and Lugo 2007; Schieber 1999; Wyand 2006).

The future of pensions is 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 *et al.* 2007; Vanderhei 2007). The Pension Protection Act of 2006 may have fueled this trend by increasing the financial requirements for DB pensions, 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; The Center on Federal Financial Institutions 2006). In 2007, a survey of private sector DB plan sponsors by Mercer and the Employee Benefits Research Institute (EBRI) found 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 two years (Vanderhei 2007). Some experts expect that most private sector plans will be frozen or terminated within the next few years (Aglira 2006; Gebhardtshauer 2006; McKinsey & Company 2007). This is essentially what happened in the United Kingdom. When the British adopted transparent financial accounting standards and the government taxed “excess” pension plan accumulations, the level of assets “in terminated or frozen status” increased from 35 percent in 1998 to 70 percent in 2006 (Munnell and Soto 2007).

---

<sup>1</sup> Prior to 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.

## Methodology

Our analysis is based on projections of the major sources of retirement income from the Social Security Administration's MINT microsimulation model. SSA's Office of Research, Evaluation, and Statistics developed MINT with substantial assistance from the Brookings Institution, the RAND Corporation, and the Urban Institute. Starting with data from the 1990 to 1993 and 1996 panels of the United States Census Bureau's Survey of Income and Program Participation (SIPP) matched to the Social Security Administration's (SSA) earnings and benefit records through 2004, MINT projects the future life course of persons born between 1926 and 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, income from non-spouse co-resident family members, and imputed rental income.<sup>2</sup>

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 these factors will affect

---

<sup>2</sup> 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).

the retirement income of future boomer retirees.<sup>3</sup> The projections in this paper are based on MINT5.<sup>4</sup> More detail on the MINT model can be found in appendix A and in Smith *et al.* (2007).

### ***Projecting Pensions in MINT***

MINT projects employer-sponsored DB, DC, and cash balance (CB) pension plans.<sup>5</sup> 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<sup>6</sup> 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 than for older workers and higher for workers 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

---

<sup>3</sup> MINT5 uses projections by the Social Security Administration's Office of the Chief Actuary (OCACT) of net immigration, disability prevalence through age 65, mortality rates, and the growth in average economy-wide wages and the consumer price index (CPI) from the intermediate cost scenario in the 2008 Old Age, Survivors, and Disability Insurance (OASDI) Trustees Report (U.S. Board of Trustees 2008).

<sup>4</sup> Updated with 2008 Board of Trustees assumptions and technical corrections, November 2008 (MINT5exV5HIGH and MINT5exV5LOW).

<sup>5</sup> Cash balance (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.

<sup>6</sup> PENSIM is a microsimulation model developed by Martin Holmer of the Policy Simulation Group. PENSIM 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.

retirement age. Workers selecting a joint and survivor pension receive a reduced benefit with a 50 percent survivor annuity. MINT randomly assigns a cost of living adjustment (COLA) to pensions. See Toder *et al.* (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 the Social Security Administration's Detailed Earnings Records (DER).<sup>7</sup> 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 EBRI/Investment Company Institute (ICI) data. Every five 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.

MINT 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

---

<sup>7</sup> The DER includes longitudinal values for taxable and deferred earnings based on IRS W-2 forms from 1992 to 2004.

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) Pension Insurance Modeling System (PIMS) DB plan formulas, which are randomly assigned to DB participants based on broad industry, union status, and firm size categories, and an indicator of whether the firm offers dual (DB and DC) coverage.<sup>8</sup> MINT uses actual benefit formulas to calculate benefits for federal government workers and military personnel, and uses tables of replacement rates from the U.S. Bureau of Labor Statistics (BLS) 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.<sup>9</sup> 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

---

<sup>8</sup> PIMS is a model developed by the PBGC. It contains data for a sample of DB plans (but lacks CB plans). The model estimates future pension costs that must be borne by PBGC due to the bankruptcies of firms with DB plans.

to one of these two models based on their predicted probability of participating 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 (SPD). 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 that 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.

### ***Measuring Income in Retirement from DB Pension Plans and 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 retirement accounts as annuities in order to ensure comparability with DB pension and Social Security benefits, which are also annuities. Without this adjustment, MINT would overstate the loss in retirement well-being due to the shift

---

<sup>9</sup> The pension module assigns the actual DC provisions of the plan if it is known. Otherwise, DC plans parameters are imputed based on the distribution of known plans.

from DB pension income to DC assets because one dollar in DB pension wealth produces more measured income than one dollar in DC wealth. 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, 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 U.S. 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 her wealth. The U.S. Census Bureau and many analysts include this consumption of capital from retirement accounts only if people choose regularly to withdraw money from the accounts, while 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 pension scenario and the previously discussed British pension scenario. The baseline scenario represents the United States pension structure, including known pension plan freezes as of the end of 2006.<sup>10</sup> 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 represents the British pension structure, which we refer to as the "UK scenario", and assumes

---

<sup>10</sup> See Smith *et al.* (2007) table 8.9 for a list of the 25 baseline frozen pension plans and characteristics of the replacement DC plans.

that all private sector DB pensions and a third of public sector DB pensions will be frozen within five years. In each year between 2007 and 2011, an additional 20 percent of firms are randomly simulated to freeze their DB plans. 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 UK 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 all existing employees become vested under a pension freeze.)

We analyze the characteristics and family income of individuals born in the boomer cohort 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. Since our sample sizes are large (over 100,000 records), 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 are near or at retirement age when the first new plan freezes occur 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 understand better the differential impact of DB pension freezes on the retirement incomes of boomers, we report results separately for four waves of boomers born between 1946 and 1950, 1951 and 1955, 1956 and 1960, and 1961 and 1965.<sup>11</sup>

## **Results**

### *Characteristics of Boomer Retirees*

Boomers in the last wave (1961-1965 birth cohorts) 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 (1946-1950 birth cohorts) boomers, and 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. Cohort differences are important because pension coverage varies significantly by race/ethnicity and education.

---

<sup>11</sup> Boomers are typically represented as those born between 1946 and 1964. For analytical purposes, however, we define the boomer cohort as those born between 1946 and 1965.

### *Projected Sources of Retirement Incomes under the Baseline and UK 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 spouse's (table 2). Only 3 percent of individuals are projected to receive SSI benefits, but 85 percent will have imputed rental income from homeownership and 94 percent will receive Social Security benefits. Under the baseline, 50 percent of first wave boomers are projected to have family DB pension benefits and 76 percent are projected to have retirement accounts. Pension coverage does not change under the UK scenario for first wave boomers because no one who had DB coverage before the freeze loses their coverage (though, 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 are equally likely to have income from assets (86 versus 85 percent), but less likely to have earnings (42 versus 48 percent). Under the baseline, last wave boomers are 6 percentage points less likely than first wave boomers to have DB pension benefits (compare 44 with 50 percent), but are equally likely to have retirement accounts (compare 77 with 76 percent). The UK 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 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. Only workers with no previous DB coverage who take new jobs subject to a simulated hard freeze under the UK scenario have DB coverage in the baseline, but not under the UK scenario. The UK 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 job.

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, while income from 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 UK scenario than under the baseline, and average income from 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 UK scenario than under the baseline, and average income from retirement accounts is projected to be about \$300 more. Over time, the decline in DB pension benefits and the increase in income from retirement accounts is greater under the UK scenario than under the baseline. Furthermore, under both scenarios, the decline in DB benefits is greater than the increase in income from 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 UK scenario than under the baseline. On average, the additional income from retirement accounts under the UK 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.

### *Subgroups 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, 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 are most likely to have DB pensions and retirement accounts (table 4).<sup>12</sup>

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 UK scenarios are largest for many of these same groups (table 6). For the last wave boomers, however, non-Hispanic blacks experience the largest percentage decline in income among racial groups, non-married individuals experience greater percentage declines in income than married individuals, and females experience a slightly larger percentage decline in income than males. Still, the overall percentage declines in income are much greater in the highest than in the lowest quintiles of individuals ranked either by shared lifetime earnings or retirement income at age 67.

---

<sup>12</sup> Our earnings measure is “shared lifetime earnings”—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 unmarried.

### *Who Are the Winners and Losers?*

The accelerated switch from DB to DC plans illustrated in the UK scenario produces both losers and winners. Many boomers will lose under the UK 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 the losers greatly outnumber the winners (table 7).<sup>13</sup> When the shift from DB to DC pensions is accelerated under the UK 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 UK 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 socio-economic groups are most likely both 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 (figure 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

---

<sup>13</sup> 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 UK scenarios.

capita family income due to 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 workers who are not vested under the baseline scenario become immediately vested under a pension freeze, thereby gaining DB pension income. Many of these people who newly gain pension coverage may have previously changed jobs or dropped out of the labor force at a relatively young age due to a disability.<sup>14</sup>

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 UK scenario because they are more likely to be 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

---

<sup>14</sup> We measure winners and losers by looking at the change in total family income at age 67. A small percentage of DB recipients do not begin collecting DB pensions until after age 67. These recipients could ultimately end up as losers even when our table shows them as winners because their DB benefits, when they start collecting them, will be smaller under the UK scenario than under the baseline. The vast majority of DB beneficiaries, however, are already collecting benefits by age 67.

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 UK scenario is also concentrated among the highest income quintiles. The UK scenario reduces income at age 67 by 5 percent or more for 15 percent of last wave boomers in the top income quintile, but only 3 percent of those in the bottom quintile (figure 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 UK 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 amount that winners gain and losers lose increases over time as the accelerated change from DB to DC pension schemes affects more last wave boomers. Among winners, average per capita family incomes are projected to increase by \$2,100 for first wave boomers and \$2,800 for last wave boomers. Among losers, average per capita family incomes are projected to decline by \$2,600 for first wave boomers and \$4,200 for last wave boomers (table 9).<sup>15</sup> Boomers in high socio-economic groups, who are most likely to have pensions and who have the most benefits at risk, are projected to experience the largest gains and losses. 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

---

<sup>15</sup> Appendix table B1 shows the percent change in per capita income for winners and losers for the same subgroups as Table 9.

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's Driving the Outcomes?*

Retirement incomes may increase under the UK scenario for several reasons. First, some workers may increase their DC contributions or earn above average returns on their 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.<sup>16</sup> 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, Johnson, Smith, and Steuerle 2006). Indeed, we find that winners are projected to have higher per capita family earnings and slightly higher Social Security benefits under the UK scenario than under the baseline due to delayed retirement (table 10).

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

For those whose family incomes decline under the UK scenario, the reduction is driven almost totally by a reduction in DB benefits. Losers experience much larger DB pension losses under the UK scenario than winners, but have very modest increases in income from retirement account balances compared with winners. Compared with winners, losers have much more

retirement wealth under the baseline and so 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 winners, but they are also projected to have average per capita family 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 retirement accounts offsets less than six 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 retirement accounts, or lower than average investment returns on retirement account assets.<sup>17</sup>

## **Conclusions**

In recent years, the United States has seen a significant shift away from defined benefit pension plans to defined contribution plans. This shift may accelerate rapidly, as more large companies, even those with financially solvent plans, freeze their defined benefit plans and replace them with new or enhanced defined contribution plans. A dramatic shift away from defined benefit plans, as has happened 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 between 1961 and 1965 than for first wave boomers born between 1946 and 1950 because last wave boomers are more likely to have their DB pensions frozen with relatively little

---

<sup>16</sup> 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 five years of covered earnings and a higher-earning year before the freeze substitutes for a lower-earning year after the freeze.

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. While retirement incomes would increase for some families under the alternative pension scenario, only 11 percent of the last wave boomers would see their income 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

---

<sup>17</sup> Appendix table B2 shows mean family income at age 67 by income source for individuals that gain less than 2 percent, 2 to 5 percent, and 5 percent or more. Appendix table B3 shows the same information for losers.

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 frozen DB plans with 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 mid-career, 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 for their entire career. More than any other birth cohort, the boomer cohorts will experience the transition from DB to DC plans in mid-career and, as our simulations show, on average suffer declines in their projected retirement incomes. Gen-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 they can assess the alternative policy options of shoring-up DB plans before they 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 retirement accounts for some investors, policymakers may want to develop mechanisms to reduce risk in

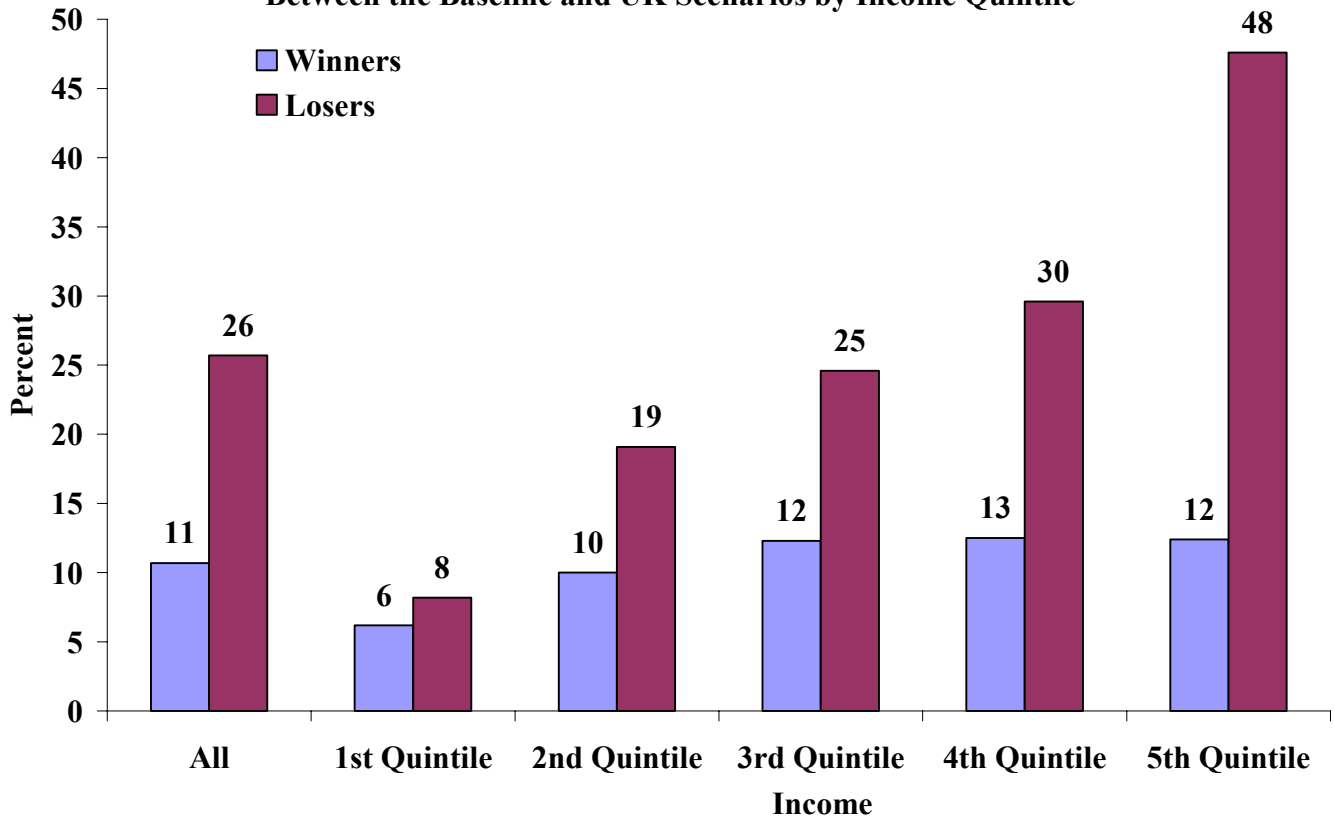
retirement assets. As more workers enter retirement with assets held outside of annuities, policymakers could also develop options to encourage people to use their increased retirement wealth to purchase annuities instead of spending it down rapidly. Finally, as policymakers consider proposals to improve 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 that most retirees can rely on.

## References

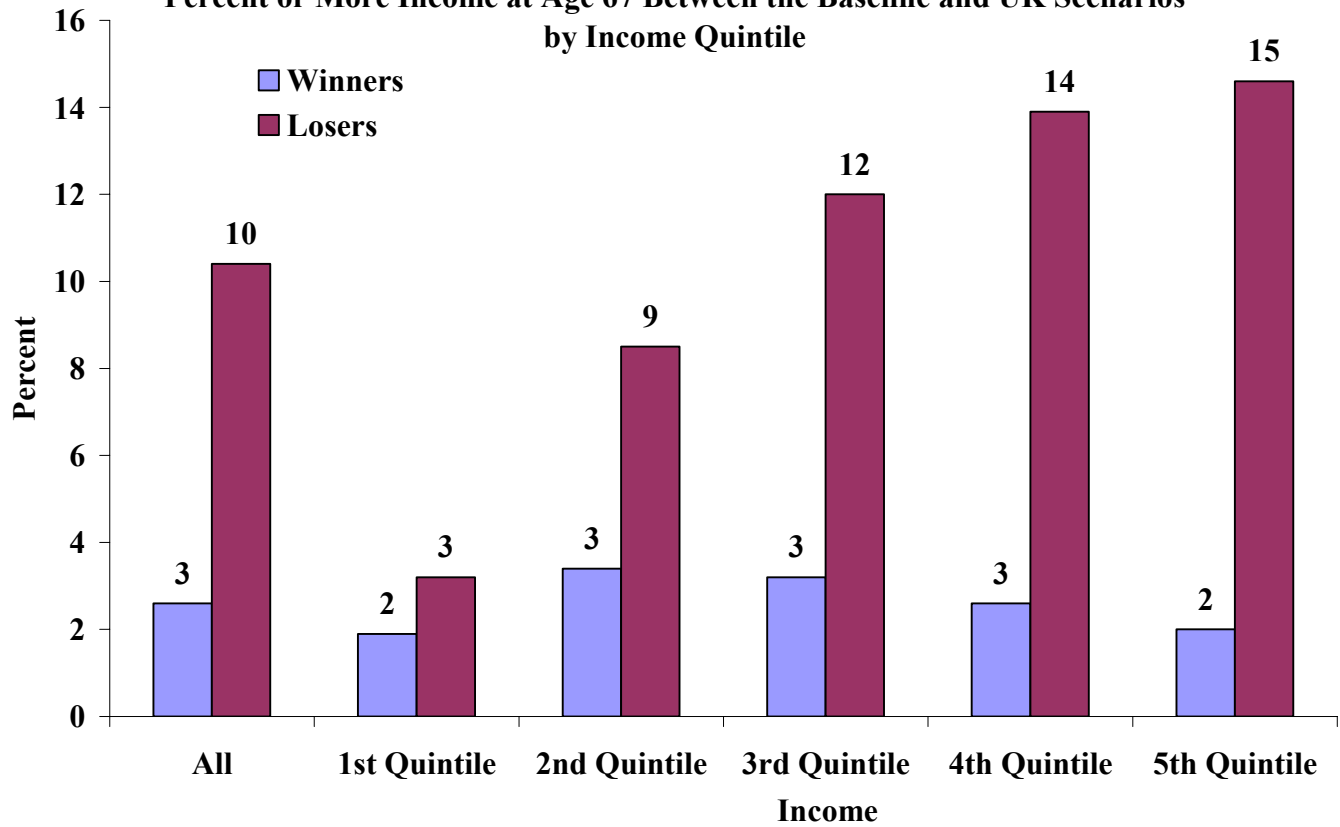
- AARP. 2007. *Enhancing 401(k) Value and Participation: Taking the Automatic Approach*. A report for AARP prepared by Towers Perrin. June. Washington, D.C.: AARP.
- Aglira, Bob. 2006. "To Freeze or Not to Freeze: Observations on the US Pension Landscape." *Global Retirement Perspective*. New York, NY: Mercer Human Resource Consulting.
- Buessing, Marris and Mauricio Soto. 2006. "The State of Private Pensions: Current 5500 Data." *Issue in Brief* No. 42. Chestnut Hill, MA: Center for Retirement Research.
- Burkholder, Steve and Denise Lugo. 2007. "FASB Tackles Second Phase of Pensions, Other Benefits, in Major Project for 2007." *Pension and Benefits Daily*. Vol 07, Number 6. January 10, 2007.
- Butrica, Barbara A., Richard W. Johnson, Karen E. Smith, Eugene Steuerle. 2006. "The Implicit Tax on Work at Older Ages." *National Tax Journal*. 59(2): 211-234.
- The Center on Federal Financial Institutions. 2006. "Pension Reform: Summary of Final 2006 Bill." August 6, 2006, release. Washington, D.C.: COFFI
- Copeland, Craig. 2006. "Retirement Plan Participation and Retirees' Perception of Their Standard of Living." *EBRI Issue Brief* No. 289.
- Gebhardtshauer, Ron. 2006. "The Future of Defined Benefit (DB) Plans." Keynote speech delivered at the National Plan Sponsor conference in Washington, DC on "The Future of DB Plans." Available at [http://www.actuary.org/pdf/pension/db\\_rondec06.pdf](http://www.actuary.org/pdf/pension/db_rondec06.pdf).
- Johnson, Richard W., Leonard E. Burman, and Deborah I. Kobes. 2004. "Annuitized Wealth at Older Ages: Evidence from the Health and Retirement Study." Final report to the Employee Benefits Security Administration, U.S. Department of Labor. Washington, D.C.: The Urban Institute. Available at <http://www.urban.org/url.cfm?ID=411000>.
- McKinsey & Company. 2007. "The Coming Shakeout in the Defined Benefit Market." New York, NY: McKinsey & Company. Available at [http://www.mckinsey.com/client/service/bankingsecurities/pdf/coming\\_shakeout\\_in\\_defined\\_benefit\\_market.pdf](http://www.mckinsey.com/client/service/bankingsecurities/pdf/coming_shakeout_in_defined_benefit_market.pdf).
- Munnell, Alicia H. and Mauricio Soto. 2007. "Why Are Companies Freezing Their Pensions?" CRR Working Paper No. 2007-22. Chestnut Hill, MA: Center for Retirement Research. Available at [http://crr.bc.edu/working\\_papers/why\\_are\\_companies\\_freezing\\_their\\_pensions\\_.html](http://crr.bc.edu/working_papers/why_are_companies_freezing_their_pensions_.html).

- Munnell, Alicia H., Francesca Golub-Sass, Mauricio Soto, and Francis Vitagliano. 2006. "Why Are Healthy Employers Freezing Their Pensions?" *Issue in Brief* No. 44. Chestnut Hill, MA: Center for Retirement Research. Available at [http://crr.bc.edu/images/stories/Briefs/ib\\_44.pdf?phpMyAdmin=43ac483c4de9t51d9eb41](http://crr.bc.edu/images/stories/Briefs/ib_44.pdf?phpMyAdmin=43ac483c4de9t51d9eb41)
- Munnell, Alicia H. and Annika Sunden. 2004. *Coming Up Short: The Challenge of 401(k) Plans*. Washington, D.C.: Brookings Institution Press.
- Schieber, Sylvester J. 1999. "The Employee Retirement Income Security Act: Motivations, Provisions, and Implications for Retirement Security." August draft for a conference on ERISA after 25 Years. Washington, D.C.: Watson Wyatt Worldwide.
- Smith, Karen E., Melissa M. Favreault, Caroline Ratcliffe, Barbara Butrica, Eric Toder, and Jon Bakija. 2007. "Modeling Income in the Near Term 5." Final Report, SSA Contract No: 600-01-60123. Washington, DC: The Urban Institute.
- Toder, Eric, Lawrence Thompson, Melissa Favreault, Richard Johnson, Kevin Perese, Caroline Ratcliffe, Karen Smith, Cori Uccello, Timothy Waidmann, Jillian Berk, and Romina Woldemariam. 2002. "Modeling Income in the Near Term: Revised Projections of Retirement Income Through 2020 for the 1931-1960 Birth Cohorts." Final Report, SSA Contract No: 600-96-27332. Washington, DC: The Urban Institute.
- U.S. Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds. 2008. *Annual Report*. Washington, DC: United States Government Printing Office.
- U.S. Bureau of Labor Statistics. 2008. "National Compensation Survey: Employee Benefits in the United States, March 2008." Bulletin 2715. Washington, DC: U.S. Bureau of Labor Statistics. Available at <http://www.bls.gov/ncs/ebs/benefits/2008/ownership/private/table02a.pdf>
- U.S. Department of Labor. 2002. "Private Pension Plan Bulletin: Abstract of 1998 Form 5500 Annual Reports." Number 11, Winter 2001-2002. Washington, DC: U.S. Department of Labor. Available at <http://www.dol.gov/ebsa/PDF/1998pensionplanbulletin.PDF>.
- VanDerhei, Jack. 2007. "Retirement Income Adequacy after PPA and FAS 158: Part One—Plan Sponsors' Reactions." EBRI Issue Brief no 307. Washington, DC: Employee Benefit Research Institute.
- Wiatrowski, William J. 2004. "Medical and Retirement Plan Coverage: Exploring the Decline in Recent Years." *Monthly Labor Review*. 127(8): 29-36.
- Wyand, Michael W. 2006. "Large Companies Support Pension Plans but Are Concerned about Future, CIEBA says." *Pension and Benefits Daily*. Vol 06, no. 243.

**Figure 1. Percent of Last Wave Boomers Who Win and Lose Income at Age 67 Between the Baseline and UK Scenarios by Income Quintile**



**Figure 2. Percent of Last Wave Boomers Who Win and Lose Five Percent or More Income at Age 67 Between the Baseline and UK Scenarios by Income Quintile**



**Table 1. Projected Characteristics of Individuals at Age 67 (%)**

	<b>First Boomers (1946-50)</b>	<b>Second Boomers (1951-55)</b>	<b>Third Boomers (1956-60)</b>	<b>Last Boomers (1961-65)</b>
<b>All</b>	100	100	100	100
<b>Gender</b>				
Female	52	52	53	53
Male	48	48	47	47
<b>Marital Status</b>				
Never married	5	6	7	8
Married	67	65	63	62
Widowed	10	10	10	10
Divorced	18	19	20	21
<b>Race/Ethnicity</b>				
Non-Hispanic white	77	74	72	69
Non-Hispanic black	9	10	10	10
Hispanic	8	10	12	14
Other	6	6	6	7
<b>Education</b>				
High school dropout	11	11	11	13
High school graduate	57	60	61	60
College graduate	32	30	27	28
<b>Labor Force Experience</b>				
Less than 20 years	13	12	12	11
20 to 29 years	10	11	11	12
30 or more year	77	77	77	77

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

**Table 2. Percent of Individuals with Family Income at Age 67, by Source (%)**

	<b>First Boomers (1946-50)</b>	<b>Second Boomers (1951-55)</b>	<b>Third Boomers (1956-60)</b>	<b>Last Boomers (1961-65)</b>
<b><i>Baseline</i></b>				
Income from Assets	85	86	86	86
Earnings	48	44	42	42
SSI Benefits	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
<b>Total Income</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b><i>UK Scenario</i></b>				
DB Pension Benefits	50	48	46	42
Retirement Accounts	76	77	78	79
<b>Total Income</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

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

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

**Table 3. Mean Family Income Per Person at Age 67, by Source  
(in thousands, \$2007)**

	<b>First Boomers (1946-50)</b>	<b>Second Boomers (1951-55)</b>	<b>Third Boomers (1956-60)</b>	<b>Last Boomers (1961-65)</b>
<i>Baseline</i>				
Income from Assets	7.1	7.3	7.0	6.9
Earnings	10.7	9.6	9.2	9.5
SSI Benefits	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
<b>Total Income</b>	<b>45.0</b>	<b>44.0</b>	<b>43.2</b>	<b>43.0</b>
<i>UK Scenario</i>				
Income from Assets	7.1	7.2	6.9	6.8
Earnings	10.8	9.6	9.3	9.6
SSI Benefits	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
<b>Total Income</b>	<b>44.8</b>	<b>43.5</b>	<b>42.5</b>	<b>42.3</b>
<i>Δ Baseline and UK Scenarios</i>				
Income from Assets	0.0	0.0	0.0	0.0
Earnings	0.0	0.0	0.0	0.1
SSI Benefits	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
<b>Total Income</b>	<b>-0.1</b>	<b>-0.5</b>	<b>-0.7</b>	<b>-0.7</b>

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

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

**Table 4. Percent of Individuals with Family Pensions at Age 67 Under the Baseline, by Type (%)**

	DB Benefits				Retirement Accounts			
	First Boomers (1946-50)	Second Boomers (1951-55)	Third Boomers (1956-60)	Last Boomers (1961-65)	First Boomers (1946-50)	Second Boomers (1951-55)	Third Boomers (1956-60)	Last Boomers (1961-65)
<b>All</b>	50	48	46	43	75	75	76	76
<b>Gender</b>								
Female	51	49	47	44	74	74	74	75
Male	49	48	46	42	76	77	78	78
<b>Marital Status</b>								
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
<b>Race/Ethnicity</b>								
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
<b>Education</b>								
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
<b>Labor Force Experience</b>								
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 year	55	53	51	48	83	83	84	85
<b>Shared Lifetime Earnings</b>								
1st 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
5th Quintile	62	58	57	56	96	96	96	96
<b>Income Quintile</b>								
1st 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
5th Quintile	62	59	57	54	96	95	95	95

*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.

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

**Table 5. Mean Family Income Per Person at Age 67 (in thousands, \$2007)**

	Baseline				Δ Baseline and UK Scenarios			
	First Boomers (1946-50)	Second Boomers (1951-55)	Third Boomers (1956-60)	Last Boomers (1961-65)	First Boomers (1946-50)	Second Boomers (1951-55)	Third Boomers (1956-60)	Last Boomers (1961-65)
<b>All</b>	45.0	44.0	43.2	43.0	-0.1	-0.5	-0.7	-0.7
<b>Gender</b>								
Female	42.8	41.9	41.4	40.8	-0.1	-0.4	-0.6	-0.7
Male	47.4	46.3	45.1	45.6	-0.2	-0.6	-0.7	-0.7
<b>Marital Status</b>								
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
<b>Race/Ethnicity</b>								
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
<b>Education</b>								
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
<b>Labor Force Experience</b>								
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 year	50.7	49.4	48.3	48.5	-0.2	-0.6	-0.8	-0.8
<b>Shared Lifetime Earnings</b>								
1st 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
5th Quintile	85.8	87.5	88.1	90.0	-0.3	-1.3	-2.0	-2.0
<b>Income Quintile</b>								
1st 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
5th Quintile	110.3	111.0	110.0	112.9	-0.5	-1.5	-2.3	-2.5

*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.

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

**Table 6. Percent Change in Mean Family Income Per Person at Age 67  
Between the Baseline and UK Scenarios (%)**

	<b>First Boomers (1946-50)</b>	<b>Second Boomers (1951-55)</b>	<b>Third Boomers (1956-60)</b>	<b>Last Boomers (1961-65)</b>
<b>All</b>	-0.3	-1.1	-1.6	-1.6
<b>Gender</b>				
Female	-0.3	-1.0	-1.5	-1.7
Male	-0.3	-1.2	-1.7	-1.6
<b>Marital Status</b>				
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
<b>Race/Ethnicity</b>				
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
<b>Education</b>				
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
<b>Labor Force Experience</b>				
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 year	-0.3	-1.2	-1.7	-1.8
<b>Shared Lifetime Earnings</b>				
1st 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
5th Quintile	-0.4	-1.5	-2.3	-2.2
<b>Income Quintile</b>				
1st 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
5th Quintile	-0.5	-1.4	-2.1	-2.2

*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.

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

**Table 7. Percent of Individuals Who Win and Lose at Age 67 Between the Baseline and UK Scenarios (%)**

	Winners				Losers			
	First Boomers (1946-50)	Second Boomers (1951-55)	Third Boomers (1956-60)	Last Boomers (1961-65)	First Boomers (1946-50)	Second Boomers (1951-55)	Third Boomers (1956-60)	Last Boomers (1961-65)
<b>All</b>	7	8	9	11	12	18	22	26
<b>Gender</b>								
Female	6	7	9	10	10	17	21	25
Male	9	9	10	12	14	20	23	27
<b>Marital Status</b>								
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
<b>Race/Ethnicity</b>								
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
<b>Education</b>								
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
<b>Labor Force Experience</b>								
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 year	9	9	11	12	14	21	25	30
<b>Shared Lifetime Earnings</b>								
1st 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
5th Quintile	13	11	12	13	20	31	37	44
<b>Income Quintile</b>								
1st 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
5th Quintile	13	11	12	12	20	32	38	48

*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 UK scenario.

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

**Table 8. Percent of Individuals Who Win and Lose Five Percent or More of Income at Age 67 Between the Baseline and UK Scenarios (%)**

	Winners				Losers			
	First Boomers (1946-50)	Second Boomers (1951-55)	Third Boomers (1956-60)	Last Boomers (1961-65)	First Boomers (1946-50)	Second Boomers (1951-55)	Third Boomers (1956-60)	Last Boomers (1961-65)
<b>All</b>	1	1	2	3	3	7	9	10
<b>Gender</b>								
Female	1	1	2	2	3	7	9	11
Male	1	1	2	3	3	8	10	10
<b>Marital Status</b>								
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
<b>Race/Ethnicity</b>								
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
<b>Education</b>								
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
<b>Labor Force Experience</b>								
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 year	1	1	2	3	4	9	11	12
<b>Shared Lifetime Earnings</b>								
1st 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
5th Quintile	2	2	2	3	5	12	15	16
<b>Income Quintile</b>								
1st 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
5th Quintile	1	1	1	2	5	10	12	15

*Note:* Sample includes individuals with a change of \$10 in per person family income at age 67 between the baseline and UK 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 five percent or more change in income between the baseline and UK scenario.

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

**Table 9. Change in Mean Family Income Per Person at Age 67 for Winners and Losers Between the Baseline and UK Scenarios (in thousands, \$2007)**

	Winners				Losers			
	First Boomers (1946-50)	Second Boomers (1951-55)	Third Boomers (1956-60)	Last Boomers (1961-65)	First Boomers (1946-50)	Second Boomers (1951-55)	Third Boomers (1956-60)	Last Boomers (1961-65)
<b>All</b>	2.1	1.8	1.8	2.8	-2.6	-3.7	-4.2	-4.2
<b>Gender</b>								
Female	2.0	2.1	1.7	3.0	-2.6	-3.6	-4.0	-4.2
Male	2.1	1.5	1.8	2.5	-2.5	-3.9	-4.3	-4.3
<b>Marital Status</b>								
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
<b>Race/Ethnicity</b>								
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
<b>Education</b>								
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
<b>Labor Force Experience</b>								
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 year	2.1	1.8	1.9	3.0	-2.6	-3.8	-4.3	-4.4
<b>Shared Lifetime Earnings</b>								
1st 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
5th Quintile	3.1	3.1	2.7	6.4	-3.9	-6.1	-7.5	-7.6
<b>Income Quintile</b>								
1st 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
5th Quintile	3.1	3.3	2.5	5.8	-4.6	-6.8	-8.2	-8.0

*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 UK scenario.

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

**Table 10. Mean Family Income Per Person at Age 67 for Winners and Losers, by Source (in thousands, \$2007)**

	Baseline				Δ Baseline and UK Scenarios			
	First Boomers (1946-50)	Second Boomers (1951-55)	Third Boomers (1956-60)	Last Boomers (1961-65)	First Boomers (1946-50)	Second Boomers (1951-55)	Third Boomers (1956-60)	Last Boomers (1961-65)
<b>Winners</b>								
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 Benefits	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
<b>Total Income</b>	<b>63.9</b>	<b>53.8</b>	<b>50.6</b>	<b>49.5</b>	<b>2.1</b>	<b>1.8</b>	<b>1.8</b>	<b>2.8</b>
<b>Losers</b>								
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 Benefits	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
<b>Total Income</b>	<b>64.4</b>	<b>60.3</b>	<b>58.3</b>	<b>58.9</b>	<b>-2.6</b>	<b>-3.7</b>	<b>-4.2</b>	<b>-4.2</b>

*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 UK scenario.

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

## Appendix A

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

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 and Supplemental Security Income (SSI) benefits, 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. MINT statistically imputes an earnings record for all non-matched 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 (DC) pension status.

MINT then projects annual earnings and disability onset through age 67 using a “nearest neighbor” matching procedure. MINT starts with a person’s own Social Security Administration (SSA) recorded earnings from 1951 to 2004. The nearest neighbor procedure statistically assigns to each “recipient” worker the next five years of earnings and Social Security Disability

Insurance (DI) entitlement status, based on the earnings and DI status of a “donor” MINT observation born five years earlier with similar characteristics. The splicing of five-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 gender, minority group status, education level, DI entitlement status, self employment status, average earnings over the prior five-year period, presence of earnings in the 4th and 5th years of the prior five-year period, and age-gender group quintile of average pre-match 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 post-process 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 SER and should generate actual benefits from the MBR. Calculated and actual benefits will not match in cases when the benefits are based on a former spouse. MINT selects former spouses (who bring with them their earnings histories), and to ensure consistency in benefits with earnings and spouse characteristics, MINT 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. MINT 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. MINT also projects wealth from retirement accounts (i.e. DC, IRA, and Keogh plans) to the retirement date based on initial account balances and projected new contributions and investment earnings.

MINT also projects housing equity and non-pension, non-housing wealth (i.e. vehicles, other real estate, 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 (PSID), HRS, and the SIPP. 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, gender, number and age of children, education, race, health and disability status, pension coverage, self-employment status, and last year of life.

MINT also projects living arrangements, SSI income, and income of non-spouse co-residents from age 62 until death. Living arrangements depend on marital status, age, gender, 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 benefits 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 for calculation of income tax liabilities.

The enhanced SOI file used with MINT is based on the 2001 SOI 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, IRA 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. MINT uses the potential annuity instead of capital income from assets as an income measure to treat families with DC pensions in a comparable fashion as 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.

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 (marriage, divorce, and death) changes over the period.

**Table B1. Percent Change in Mean Per Person Family Income at Age 67 for Winners and Losers Between the Baseline and UK Scenarios (%)**

	Winners				Losers			
	First Boomers (1946-50)	Second Boomers (1951-55)	Third Boomers (1956-60)	Last Boomers (1961-65)	First Boomers (1946-50)	Second Boomers (1951-55)	Third Boomers (1956-60)	Last Boomers (1961-65)
<b>All</b>	3.2	3.3	3.5	5.6	-4.0	-6.1	-7.1	-7.2
<b>Gender</b>								
Female	3.3	4.1	3.5	6.3	-4.1	-6.2	-7.0	-7.6
Male	3.1	2.7	3.5	5.0	-3.9	-6.1	-7.2	-6.9
<b>Marital Status</b>								
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
<b>Race/Ethnicity</b>								
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
<b>Education</b>								
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
<b>Labor Force Experience</b>								
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 year	3.2	3.3	3.6	5.7	-4.0	-6.2	-7.1	-7.2
<b>Shared Lifetime Earnings</b>								
1st 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
5th Quintile	3.4	3.5	3.1	7.0	-4.0	-6.4	-7.7	-7.3
<b>Income Quintile</b>								
1st 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
5th Quintile	2.8	3.0	2.4	4.9	-4.0	-6.0	-7.0	-6.8

*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 UK scenario.

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

**Table B2. Percent of Individuals Who Win, Mean Family Income Per Person (thousands of \$2007), and Percent Change in Family Income at Age 67 for Winners, by Source and Percent Change in Family Income**

Percent Change In Family Income	Baseline				Δ Baseline and UK Scenarios			
	First Boomers (1946-50)	Second Boomers (1951-55)	Third Boomers (1956-60)	Last Boomers (1961-65)	First Boomers (1946-50)	Second Boomers (1951-55)	Third Boomers (1956-60)	Last Boomers (1961-65)
<b>&lt; 2%</b>								
<b>Percent of Individuals</b>	<b>5%</b>	<b>5%</b>	<b>6%</b>	<b>5%</b>				
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 Benefits	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
<b>Total Income</b>	<b>\$67.2</b>	<b>56.7</b>	<b>55.3</b>	<b>54.0</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>
<b>2% - &lt; 5%</b>								
<b>Percent of Individuals</b>	<b>1%</b>	<b>1%</b>	<b>2%</b>	<b>3%</b>				
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 Benefits	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
<b>Total Income</b>	<b>56.0</b>	<b>46.6</b>	<b>45.3</b>	<b>48.6</b>	<b>1.8</b>	<b>1.5</b>	<b>1.4</b>	<b>1.6</b>
<b>&gt;= 5%</b>								
<b>Percent of Individuals</b>	<b>1%</b>	<b>1%</b>	<b>2%</b>	<b>3%</b>				
Income from Assets	\$5.3	\$5.8	\$6.3	\$6.0	\$0.0	\$0.0	\$0.0	\$0.0
Earnings	11.5	9.4	6.7	7.3	3.6	3.7	3.4	5.0
SSI Benefits	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
<b>Total Income</b>	<b>55.2</b>	<b>48.4</b>	<b>42.1</b>	<b>41.5</b>	<b>10.7</b>	<b>9.6</b>	<b>6.8</b>	<b>8.6</b>

*Note:* 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 UK scenario.

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

**Table B3. Percent of Individuals Who Lose, Mean Family Income Per Person (thousands of \$2007), and Percent Change in Family Income at Age 67 for Losers, by Source and Percent Change in Family Income**

Percent Change In Family Income	Baseline				Δ Baseline and UK Scenarios			
	First	Second	Third	Last	First	Second	Third	Last
	Boomers (1946-50)	Boomers (1951-55)	Boomers (1956-60)	Boomers (1961-65)	Boomers (1946-50)	Boomers (1951-55)	Boomers (1956-60)	Boomers (1961-65)
<b>&lt; 2%</b>								
<b>Percent of Individuals</b>	<b>5%</b>	<b>7%</b>	<b>8%</b>	<b>11%</b>				
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 Benefits	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
<b>Total Income</b>	<b>66.0</b>	<b>60.8</b>	<b>60.3</b>	<b>66.5</b>	<b>-0.6</b>	<b>-0.5</b>	<b>-0.4</b>	<b>-0.3</b>
<b>2% - &lt; 5%</b>								
<b>Percent of Individuals</b>	<b>4%</b>	<b>4%</b>	<b>4%</b>	<b>4%</b>				
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 Benefits	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
<b>Total Income</b>	<b>62.1</b>	<b>57.3</b>	<b>53.4</b>	<b>50.2</b>	<b>-2.0</b>	<b>-1.9</b>	<b>-1.8</b>	<b>-1.7</b>
<b>&gt;= 5%</b>								
<b>Percent of Individuals</b>	<b>3%</b>	<b>7%</b>	<b>9%</b>	<b>10%</b>				
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 Benefits	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
<b>Total Income</b>	<b>64.9</b>	<b>61.6</b>	<b>58.9</b>	<b>55.8</b>	<b>-6.2</b>	<b>-7.2</b>	<b>-7.8</b>	<b>-8.6</b>

*Note:* 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 UK scenario.

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