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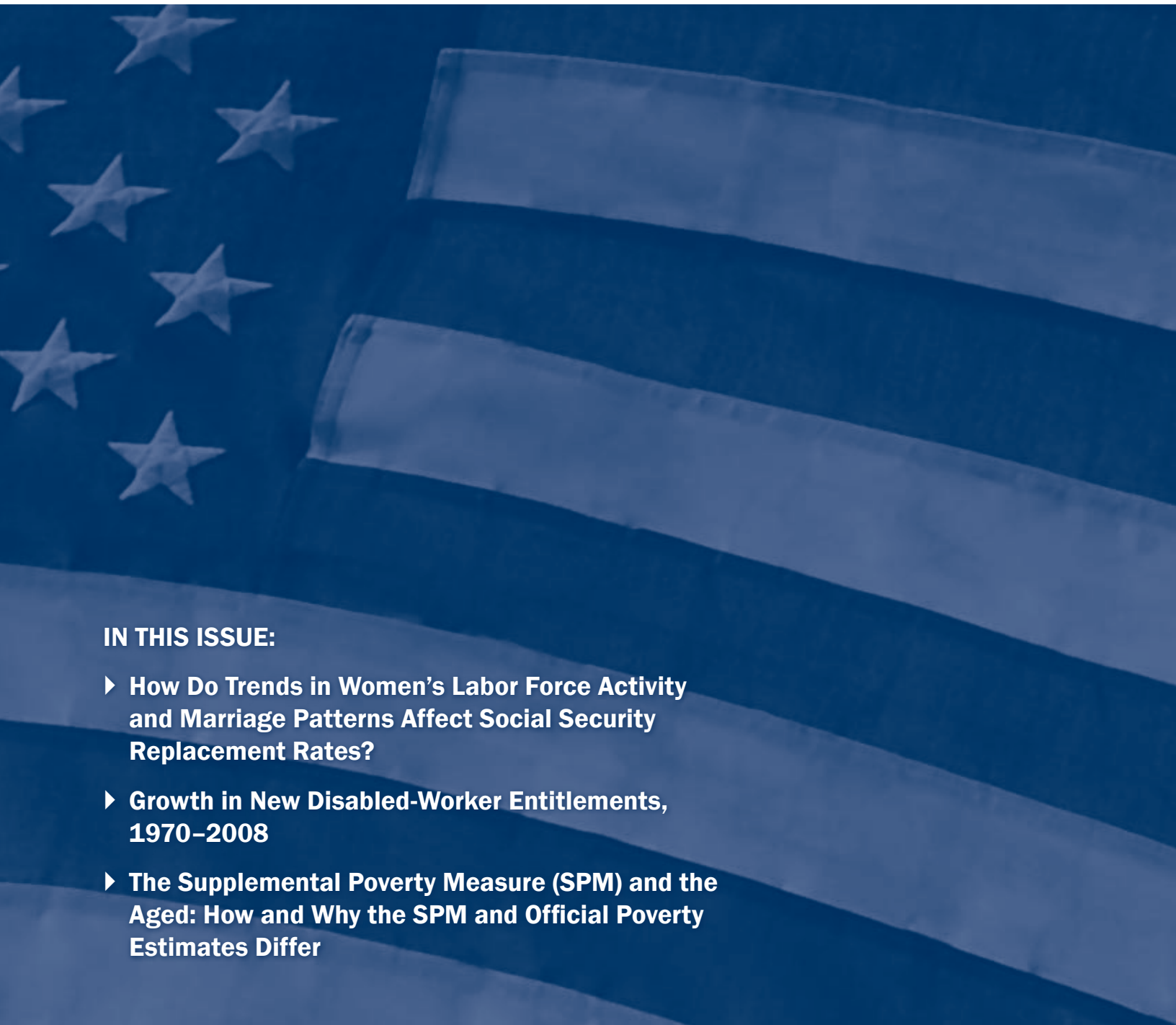

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Articles

Other

How Do Trends in Women's Labor Force Activity and Marriage Patterns Affect Social Security Replacement Rates?

by April Yanyuan Wu, Nadia S. Karamcheva, Alicia H. Munnell, and Patrick J. Purcell*

This article examines how women's increased labor force participation, increased earnings, and reduced marriage rates affect Social Security replacement rates over time. Based on data from the Health and Retirement Study and Modeling Income in the Near Term, our estimates show that Social Security replacement rates have dropped sharply at both the household and individual levels, and the declines will continue for future retirees. We also find that this aggregate change masks a complex relationship between replacement rates and the marital status and income levels of individuals. The decline in replacement rates over time is largest for married couples with husbands having higher earnings. Increases in the labor force activity and earnings of women explain more than one-third of the change. By contrast, the impact of changing marital patterns is relatively small. Changes to the full retirement age and the timing of benefit claiming explain much of the remaining decline.

Introduction

For the medium earner, the percentage of preretirement earnings replaced by Social Security benefits—the replacement rate—rose from about 30 percent in the 1970s to 40 percent in the 1980s, where it remains today (Board of Trustees 2012). Replacement rates for individuals and households depend partly on Social Security program provisions and partly on retirees' labor force histories and household arrangements.

Although an extensive literature has explored how policy changes affect the Social Security program, only a few studies have focused on the impacts of demographic factors—importantly, the changing role of women.[1] Compared with 30 years ago, women today have higher levels of education, increased labor force participation, more stable career trajectories, higher salaries, and a higher probability of being divorced or never married.

This article explores how the changing trends among women affect Social Security replacement rates and thereby the program's finances. The analysis starts with trends in replacement rates for current retirees

Selected Abbreviations

AIME	average indexed monthly earnings
DE	Depression Era
EBB	early baby boomer
FRA	full retirement age
Gen X	generation X
HRS	Health and Retirement Study

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Selected Abbreviations—*Continued*

LBB	late baby boomer
MBB	middle baby boomer
MINT	Modeling Income in the Near Term
PIA	primary insurance amount
SIPP	Survey of Income and Program Participation
SSA	Social Security Administration

based on data from the Health and Retirement Study (HRS), which contains workers' actual lifetime earnings profiles as well as their demographics, including marital status. We then use the Modeling Income in the Near Term (MINT) microsimulation model to project changes in replacement rates for future retirees. The article extends previous studies in that it makes use of these rich data sources to calculate replacement rates across a broad range of birth cohorts: Depression Era 1 (DE1, born 1931–1935), Depression Era 2 (DE2, born 1936–1941), war baby (born 1942–1947), early baby boomer (EBB, born 1948–1953), middle baby boomer (MBB, born 1954–1959), late baby boomer (LBB, born 1960–1965), and generation X (Gen X, born 1966–1975). Moreover, information on actual workers makes it possible to examine changes in replacement rates within cohorts by marital status and by income.

The article also uses an Oaxaca-Blinder method to decompose the replacement rate changes into contributing factors such as labor force activity; marital patterns; and the timing with which Social Security benefits are claimed, against the backdrop of the legislated gradual increase of the full retirement age (FRA). This approach not only isolates the impact of the changing trends among women from other factors, it also allows us to quantify the effect of these sweeping changes on replacement rates over time.

This article focuses on replacement rates—benefits as a percentage of preretirement earnings. As wages have risen over time, so have Social Security benefit levels; therefore, relative measures, such as replacement rates, are more appropriate than absolute measures when assessing the degree to which the program helps beneficiaries maintain their standard of living in retirement. Of course, Social Security is only one component of retirement income, and therefore Social Security replacement rates alone do not provide a complete measure of retirement income adequacy; however, because Social Security is the largest source of retirement income for a majority of retirees, the replacement rate is nevertheless an important measure.

The article is arranged in six sections, beginning with this introduction. The second section provides background information on the Social Security program, documents how women's roles have changed over time, and presents a brief overview of prior studies. The third section describes the data sets and the methodology. The fourth section summarizes the trends in replacement rates across cohorts and within cohorts by marital status and income. The fifth section discusses the decomposition procedure used to investigate how the changing roles of women—characterized by both labor force activity and marital patterns—explain the differences in replacement rates across cohorts. The final section concludes.

The findings can be summarized as follows. First, the changing role of women has led to a marked decrease in the proportion of preretirement income that Social Security replaces at both the household and individual levels, and the decline will continue for future retirees. Second, changes at the aggregate level mask the more complex relationship by marital status. The change is relatively modest for the never-married, but is larger for married, divorced, and widowed households. The decline in replacement rates for couples is largest for households with husbands' earnings in the top tercile. At the individual level, the decline in replacement rates is most dramatic for widows, and the decline is more pronounced for women than for men.

Third, the decomposition analysis shows that changes in labor force participation, including increased labor supply and earnings, account for more than one-third of the difference in replacement rates between individuals born 1931–1935 and those born 1966–1975. Although marital patterns have also changed dramatically over time, the impact of that factor is relatively small. However, changes to the FRA and in claiming behaviors across cohorts explain a significant fraction of the change in replacement rates. Nevertheless, up to 30 percent of the change across cohorts cannot be attributed to differences in mean characteristics identified in our analysis, and remain "unexplained." Those unexplained differences could be driven in part by the underlying assumptions used for the projection, as the explanatory power of the models is significantly higher for comparisons of cohorts who have already claimed Social Security benefits or will do so in the near future. As the age difference between cohorts grows, the explanatory power of the models declines.[2]

Background

This section frames the trends and parameters our study examines. It addresses the Social Security program characteristics relevant to retired-worker benefits, long-term changes in economic and marital patterns among women, and existing literature on those topics.

Social Security Program

Before exploring how women's labor force activity affects replacement rates, it is necessary to understand how Social Security benefits are determined. Social Security benefits, on which over one-third of beneficiaries aged 65 or older depend for 90 percent or more of their total income, are programmatically linked to both earnings and marital histories (SSA 2012). Social Security pays retired-worker benefits to individuals who have accumulated 40 or more quarters of earnings in covered employment over their lives. Benefits at FRA are determined with a three-step process. First, a worker's previous earnings are restated in terms of current wages by indexing past earnings (up to age 60) to wage growth. Second, indexed earnings for the highest 35 earnings years are averaged and then divided by 12 to determine average indexed monthly earnings (AIME). The final step is to calculate the primary insurance amount (PIA), which equals the sum of different percentages of three separate portions of the AIME. The portions are determined by a formula that uses earnings thresholds—or "bend points"—that are indexed to wage growth, and thus depend on the year in which a person reaches age 62. For example, the PIA for workers first becoming eligible for benefits in 2013 is calculated as follows:

- 90 percent of the first $791 of their AIME plus
- 32 percent of AIME between $791 and $4,768 plus
- 15 percent of any AIME in excess of $4,768.

The benefit actually paid depends on when the worker claims. Benefits paid between age 62 and the FRA are actuarially reduced, and benefits paid between the FRA and age 70 are actuarially increased.

In addition to the worker's own benefit, Social Security provides dependent (or "auxiliary") benefits to qualified spouses of retired workers. Although those benefits are not gender-based, they typically go to women because women have historically tended to work and earn less than men. Thus, a wife is entitled to either of two types of benefits: (1) a spouse's benefit that bridges any gap between her own retirement benefit and 50 percent of her husband's PIA (unreduced for his early retirement); or (2) a survivor's benefit that bridges any gap between her own benefit and 100 percent of her husband's benefit (reduced for early retirement). Divorced spouses are entitled to dependent benefits if their marriage lasted at least 10 years.

When most people retired as married couples and most women did not work, it was straightforward to calculate replacement rates. The wife who claimed benefits at her FRA was entitled to a benefit equal to 50 percent of her husband's (if he also claimed at FRA), so if the replacement rate for the typical worker was 40 percent, the replacement rate for the couple would be 60 percent. As women increasingly joined the workforce, the calculation became less obvious, because married women were entitled to the larger of either the spouse's benefit or the benefit they could earn on their own. Further, over time, the share of never-married or ever-divorced women reaching retirement has increased and will continue to rise.

Women's Changing Economic and Social Characteristics

On virtually every dimension, women's economic and social characteristics have changed, and these changes are remaking the current and future profile of the US retiree population. This subsection describes the changing role of women in two key dimensions: labor force participation and marital status.

Labor market trends. Women's labor force participation has risen dramatically over the past five decades. Only 37 percent of women aged 20–64 worked in 1950, but more than 71 percent of them worked by 2011. Chart 1 shows the labor force participation rate of women aged 25–34 by birth cohort. For Gen X women, 73 percent were in the labor force at ages 25–34, about twice the rate for DE1 women.

The increase in labor force participation has occurred mostly among married women: Between 1970 and 2010, the percentage of married women in the labor market rose from 40 percent to 61 percent (Kreider and Ellis 2011). Similarly, Chart 1 shows that 34 percent of married DE1 women aged 25–34 were in the labor force; the corresponding number for married Gen X women is close to 70 percent.

Participation levels do not tell the whole story. Occupation and pay scale also determine how labor market trends affect the economic status of women. With respect to job type, women are moving away from lower-paying jobs towards managerial and professional positions with higher wages. Currently,

40 percent of women are in managerial and professional jobs, compared with just 18 percent in 1975 (Department of Labor 2010).

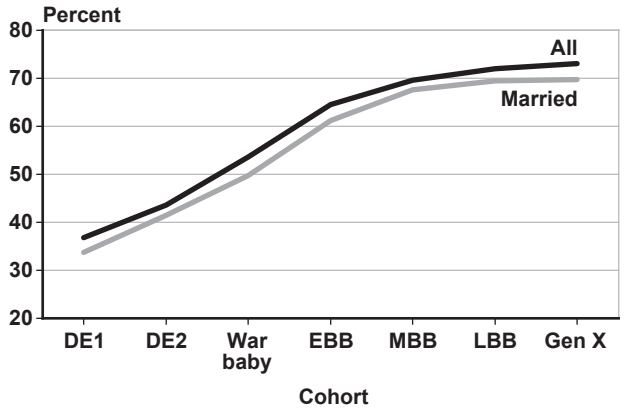
The gender difference in wages has endured, but it is declining. Women who work full time are now earning 80 percent of the male wage, compared with 62 percent in 1979 (BLS 2008). Chart 2 shows the median ratio of the wife's AIME to husband's AIME by cohort. Gen X wives are projected to earn about 68 percent of their husbands' lifetime earnings, which is 2.3 times the ratio for DE1 wives. As more women enter the labor force, and their earnings increase relative to their husbands' earnings, more women qualify for worker-only benefits. Similarly, the proportion of women receiving only spousal or widow's benefits will decline over time.

Marriage trends. Dramatic changes in family formation have occurred in the past four decades. Two family formation behaviors—marriage and divorce—are critical to determining Social Security outcomes and adequacy.

Marriage rates have fallen sharply over the past few decades. Chart 3 summarizes marriage trends for women by age and cohort. Although 84 percent of DE1 women were married at ages 25–34, the proportion declines to less than 60 percent for Gen Xers. Although nearly 70 percent of women in the oldest cohort were married at ages 55–64, the proportion is projected to decline for Gen Xers to about 56 percent. Along with changing marriage rates, the median age at first marriage has also increased, from 20.3 in 1950 to 25.1 in 2000 (Kreider and Ellis 2011).

Divorce rates increased rapidly beginning in 1960, peaked in 1979, and have remained flat since the mid-1980s. Although the divorce rate has leveled off, the characteristics of divorce have been changing. In particular, the duration of marriages ending in divorce appears to have declined among more recent cohorts of women. Among first marriages, the share of those who remained married at their 10th anniversaries declined from 82.8 percent for those married in 1960–1964 to 74.5 percent for those married in 1990–1994 (Kreider and Ellis 2011).

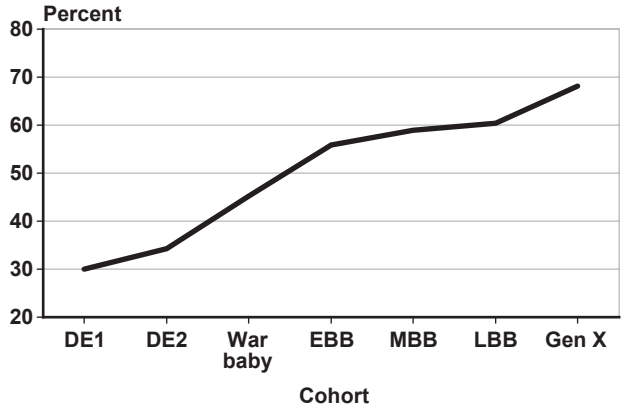
Chart 1.
Labor force participation rates for all and married women aged 25–34, by birth cohort



SOURCE: Authors' calculations based on MINT.

NOTE: "Labor force participation" is defined as having positive earnings during the year.

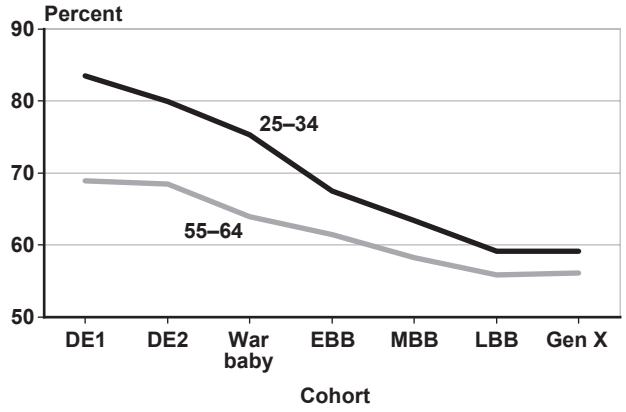
Chart 2.
Median ratio of wife's AIME to husband's AIME, by birth cohort



SOURCE: Authors' calculations based on MINT.

NOTE: Ratios are projected for three youngest cohorts.

Chart 3.
Percentage of women who are married, by age group and birth cohort



SOURCE: Authors' calculations based on MINT.

NOTE: Percentages for women aged 55–64 in three youngest cohorts are projected.

As a result of trends in marriage, divorce, and marriage duration, a higher percentage of women is likely to enter retirement without having married or having been married only for a short time, which has important implications for women's retirement security generally and their Social Security benefits specifically.

Literature to Date

Although an extensive literature has explored how policy changes affect the Social Security program, only a few studies have focused on the impact of demographic factors—particularly the changes among women. Using MINT, Butrica, Iams, and Smith (2007) and Butrica, Smith, and Iams (2012) examine how sweeping demographic and economic changes (including rising educational attainment, changing marital patterns, changes in both women's and men's labor force participation and earnings, and the increasing share of immigrants and minorities) impact retirement income across generations. They find that total income replacement rates will decline and that baby boomers and Gen Xers are less likely than current retirees to have enough postretirement income to maintain their preretirement standard of living.

A few studies have focused specifically on women. Butrica and Smith (2012a) explore the impact of women's increasing labor force participation and earnings on married women's Social Security benefits and find that the share of married women projected to receive spouses' benefits at retirement has declined in more recent birth cohorts. Although most wives will still be eligible for survivor benefits, the ineligible share is projected to double between cohorts. Using the Current Population Survey, Munnell, Sanzenbacher, and Soto (2007) evaluate the impact of the increased labor force participation of wives on the Social Security replacement rate for couples and find that, over the past 40 years, the rate for the hypothetical average couple has declined from 50 percent to 45 percent.

Another strand of literature examines changes in marital patterns and the economic well-being of divorced women in retirement. For instance, Butrica and Smith (2012b) find that changes in women's earnings, work patterns, and marriage-duration trends result in more divorced women receiving retired-worker benefits based on their own earnings. However, those who do not meet the 10-year marriage requirement are projected to have low retirement income and high poverty rates.

This article, which builds on the existing literature, has three goals. The first is to investigate how Social Security replacement rates have changed across a broad range of cohorts, and within cohorts by marital status and income. Second, the study aims to improve the estimates of the previous studies by using data from two different household surveys matched with Social Security administrative records. The third goal is to determine the extent to which the changing trends among women can explain the pattern of replacement rates across cohorts.

Data and Methodology

This section begins with a description of the datasets. It then describes the methodology of the replacement rate calculations.

Data

The analysis of current retirees uses data from the HRS 1992 through 2010 waves, matched to Social Security administrative records for covered earnings from 1951 through 2008.[3] The HRS is a nationally representative longitudinal study of older Americans. The survey began in 1992 with an initial cohort of 12,652 individuals from 7,607 households in which at least one member was born during 1931–1941. Additional cohorts were added later. Individuals may consent to have their Social Security earnings histories linked to the survey, and approximately 70 percent of respondents have done so. Our HRS sample is grouped into four birth cohorts: DE1 (1931–1935), DE2 (1936–1941), war baby (1942–1947), and EBB (1948–1953).[4, 5]

To project replacement rates for future retirees, we use MINT, a microsimulation model developed by the Social Security Administration (SSA). MINT links individuals' demographic information, marital histories, and income and wealth information from the Survey of Income and Program Participation (SIPP) with their earnings and benefit histories from Social Security administrative data. Based on those data, MINT projects each retiree's income from Social Security benefits, pensions, assets, and, for working beneficiaries, earnings. Using MINT, we can project the changes in replacement rates for the MBB (1954–1959), LBB (1960–1965), and Gen X (1966–1975) birth cohorts, where female labor force participation and marital patterns have changed most dramatically. MINT can also be used to estimate benefits for households that are already retired.[6]

Replacement Rate Calculation Methodology

In this study, we define replacement rate as the ratio of the Social Security benefit to the AIME. As discussed in Purcell (2012), there is no common measure of replacement rates. Whether a given replacement rate represents an adequate retirement income depends on whether the denominator in the replacement rate calculation is an appropriate measure of preretirement earnings. We use AIME in the replacement rate calculation rather than peak or final earnings because the AIME measures lifetime earnings and thus reflects available resources over individuals' careers, from which they could reasonably accrue retirement income.

Estimating the replacement rate is a three-step process. First, we construct the lifetime earnings profile; second, we estimate Social Security benefits based on earnings and marital-status histories; and third, we calculate replacement rates at the time of first benefit receipt to account for actuarial adjustments for early or delayed claiming.

Lifetime earnings. Lifetime earnings serve as the base for calculating career average indexed earnings and Social Security benefits. As noted earlier, matched administrative data provide Social Security earnings histories back to 1951 for the approximately 70 percent of the HRS sample that has consented to data linkage. Although previous work has documented that giving permission to link is nonrandom (Haider and Solon 2000), the distribution of Social Security benefits is similar across the linked and nonlinked respondents (Kapteyn and others 2006). Thus, for the approximately 30 percent of the HRS sample that has not consented to link, we follow Gustman and Steinmeier (2001) and estimate earnings histories based on survey data on previous jobs and wages, using the estimated returns to tenure from Anderson, Gustman, and Steinmeier (1999).[7]

MINT projects each person's mortality, entry to and exit from the Social Security Disability Insurance rolls, and age at first receipt of Social Security retirement benefits. For younger cohorts, MINT projections are adjusted for expected demographic and socioeconomic changes. Further, MINT accounts for the growth of economy-wide real earnings, the distribution of earnings both between and within birth cohorts, and the composition of the retiree population. Because MINT simulates the whole earnings profile, no additional simulation is needed.

Social Security benefits. As discussed in the background section, SSA calculates the PIA by applying a piecewise linear formula to each worker's AIME. In computing AIMEs using HRS data, we follow the SSA practice of indexing earnings prior to age 60 to the average wage index for the year the individual attains age 60.[8] Earnings after age 60 are not indexed. AIME is the simple monthly average of the indexed earnings in the 35 highest-earnings years. At FRA, a retiree is entitled to a benefit equal to the PIA. A worker may choose to retire as early as age 62, with reduced benefits. Conversely, if a worker delays receipt of benefits to an age as late as 70, the eventual benefits are permanently increased for each year of delay.

Marital status at retirement and marital history are important in determining spousal or survivor benefits. Those who have claimed Social Security benefits are categorized according to marital status at the time of first benefit receipt. In the HRS data for those not yet retired, we assume that the last reported marital status does not change before retirement. If a respondent is divorced with a previous marriage that lasted 10 or more years, we first determine if the sample includes the ex-spouse. If not, we match the respondent to someone else in the survey by sex, education, race, and 5-year birth-year band. We then use the earnings history of the matched spouse to compute the spousal and survivor benefit available from the ex-spouse. For the widow(er)s whose deceased spouses are missing from the sample, we match the respondent with another widow(er) in the sample, based on sex, race, education, 5-year birth cohort, and retirement age. We then use the earnings history of that person's deceased spouse to estimate survivor benefits.

We use an analogous method to calculate benefits using MINT data. MINT observes marriage patterns in the periods covered in the SIPP panels when husbands and wives can be precisely identified. For individuals projected to change marital status after the last SIPP observation (or whose former spouses from before the SIPP panel are not observed), the model statistically matches married individuals to a spouse with characteristics of a likely match. The spousal and survivor benefits then are calculated using data for the observed and imputed spouses.

Mortality adjustments. In the 2010 HRS, some war baby and EBB respondents had not yet retired, requiring mortality adjustments to account for the possibility

of their dying before claiming.[9] Mortality assumptions are already imbedded in the MINT data; therefore, no additional adjustments or projections are needed (Smith and others 2010, II-11).

Replacement rates by marital status. For currently married households, the replacement rate is the ratio of household benefits (the sum of the husband's and the wife's benefit) to the sum of each spouse's AIME. It is calculated as of the first time that both spouses receive their Social Security benefits. For individuals who are widowed or divorced when they start receiving benefits, we create a lifetime shared earnings measure that equals the individual's earnings in the years when not married and the average of the couple's earnings in the years when married. Thus, the household replacement rate for widowed and divorced persons is the ratio of the benefit that the widow(er)/divorcee receives to the average lifetime shared indexed earnings. At the individual level, we calculate the replacement rate as the ratio of the benefit (which can be a spouse/survivor or a retired-worker benefit) to the individual's career average indexed earnings.[10]

Cross-cohort demographic changes. HRS data for the DE1, DE2, war baby, and EBB cohorts suggest several reasons why Social Security replacement rates have changed over time (Table 1). Marriage rates have declined across successive cohorts, and the labor force participation of women has increased (based on Social Security quarters of coverage).[11] The share of individuals that are divorced or never married when they first claim has risen from about 29 percent for the DE1 cohort to 44 percent for the EBB cohort. Quarters of coverage have increased dramatically for women, by about 20 percent to 40 percent over time for those who were ever married. That change has increased the share of women eligible for Social Security retired-worker benefits based on their own earnings: Only 50 percent of women were eligible for benefits as a retired worker in the DE1 cohort compared with 73 percent in the EBB cohort.[12] At the same time, women eligible only for auxiliary benefits declined from 25 percent in the oldest cohort to about 9 percent in the youngest. Along with the increased female labor market attachment, household AIME rose, with the biggest increase among married couples. Although the benefit amounts have also increased over time, those changes are relatively modest compared with the changes in AIME, suggesting that replacement rates may continue to fall.

Changes in Replacement Rates Over Time

This section examines cross-cohort differences in replacement rates. We first examine the cohorts covered in the HRS sample; then, we look at the MINT cohorts.

Current Retirees: Actual Earners in the HRS

Table 2 shows individual replacement rates for the same four cohorts shown in Table 1. The median replacement rate for all groups has declined over time, from 47 percent for the DE1 cohort to 39 percent for the EBB cohort.[13] The aggregate trend masks more complex patterns by sex and marital status: The decline is more dramatic for women than for men, and the drop in the replacement rate for women is substantially larger for the currently married, divorced, and widowed than for the never-married. Those patterns reflect the changing labor force participation of married women: As more married women work, more of them earn their own benefits, which reduces their eligibility for spousal benefits and lowers their replacement rate.

The change in median household replacement rates (Table 3) largely mirrors that for individual replacement rates.[14] Among married couples, the results are broken out for single-earner and two-earner households; a single-earner household is one in which only one spouse works long enough to qualify for Social Security worker benefits and a two-earner household is one in which both spouses qualify for benefits based on their own earnings histories.[15] The decline for two-earner households is greater than that for single-earner households, reflecting the fact that working wives add substantially more to married couples' preretirement earnings than they do to their Social Security benefits.[16]

Table 4 shifts the focus from marital status to earnings and shows replacement rates of married couples by the husband's earnings level. Over time, the replacement rate has declined more for households with husbands in the top earnings tercile than for households with a husband in the bottom earnings tercile, in terms of percent change from the baseline. That pattern likely reflects the change in the correlation between husbands' and wives' earnings. Schwartz (2010) reports that the earnings of husbands and wives were negatively correlated in the late 1960s and 1970s; but as highly educated women increasingly joined the workforce thereafter, the correlation became positive.

Table 1.
Characteristics of individuals when first claiming Social Security benefits, by HRS birth cohort

Characteristic	DE1 (1931–1935)	DE2 (1936–1941)	War baby (1942–1947)	EBB (1948–1953)
		Percentage distributions		
Sex				
Men	46.3	47.6	47.2	46.9
Women	53.7	52.4	52.8	53.1
Marital status				
Married	54.7	53.5	52.7	49.7
Divorced	22.7	29.0	31.6	35.7
Never married	5.9	6.0	6.5	8.3
Widowed	16.7	11.5	9.2	6.3
Education				
Less than high school	22.0	17.3	9.9	8.8
High school degree	57.9	58.9	60.7	56.7
At least some college	20.1	23.8	29.5	34.5
Benefit type (women only)				
Retired worker	50.3	56.9	64.1	72.5
Dually entitled	25.1	26.5	23.8	18.9
Auxiliary only	24.7	16.6	12.1	8.6
		Cohort average values		
		Quarters of coverage		
Women				
Married	89	103	113	124
Divorced	109	114	124	133
Never married	145	145	143	153
Widowed	98	95	113	117
Men				
Married	147	156	154	154
Divorced	135	144	152	152
Never married	122	139	146	147
Widowed	142	151	141	148
		AIME (annual, household level, 2012 dollars)		
Marital status				
Married	55,679	70,879	81,200	89,750
Divorced	24,786	30,951	36,551	39,769
Never married	25,258	37,799	38,924	43,330
Widowed	20,774	21,630	28,142	29,229
		Benefit amount (annual, household level, 2012 dollars)		
Marital status				
Married	24,783	29,071	29,736	32,271
Divorced	11,428	13,338	14,091	14,906
Never married	10,966	14,560	14,201	15,671
Widowed	11,805	13,528	15,063	16,626
Number of observations	3,397	4,345	2,014	2,544

SOURCE: Authors' calculations based on the HRS.

NOTE: Rounded components of percentage distributions do not necessarily sum to 100.0.

Table 2.
Estimated median individual replacement rates, by sex, marital status, and HRS birth cohort (in percent)

Marital status and sex	DE1 (1931–1935)	DE2 (1936–1941)	War baby (1942–1947)	EBB (1948–1953)
All individuals	47	44	39	39
Men	38	37	34	35
Women	65	56	49	45
Never married				
Men	50	45	39	41
Women	43	41	38	42
Currently married				
Men	38	37	33	34
Women	70	56	49	45
Widowed				
Men	41	37	37	34
Women	72	82	77	62
Divorced				
Men	40	39	37	36
Women	57	52	44	42

SOURCE: Authors' calculations based on the HRS.

NOTE: "Replacement rate" is defined as the Social Security benefit amount divided by AIME.

Table 3.
Estimated median household replacement rates, by marital status and HRS birth cohort (in percent)

Marital status	DE1 (1931–1935)	DE2 (1936–1941)	War baby (1942–1947)	EBB (1948–1953)
All households	47	44	39	39
Never married	49	44	38	42
Currently married				
Single earner	54	53	49	52
Two earners	43	41	37	36
Combined	46	42	38	37
Widowed	64	68	61	61
Divorced	48	46	40	39

SOURCE: Authors' calculations based on the HRS.

NOTE: "Replacement rate" is defined as the Social Security benefit amount divided by AIME.

Table 4.
Estimated median replacement rates for married-couple households, by number of earners, husband's earnings tercile, and HRS birth cohort (in percent)

Number of earners and husband's earnings tercile	DE1 (1931–1935)	DE2 (1936–1941)	War baby (1942–1947)	EBB (1948–1953)
Single-earner households				
Low	67	71	78	76
Median	51	52	48	51
High	45	46	39	39
Dual-earner households				
Low	52	49	44	45
Median	42	40	36	36
High	37	35	31	30
All households				
Low	57	53	47	48
Median	45	42	38	37
High	38	35	31	30

SOURCE: Authors' calculations based on the HRS.

NOTE: "Replacement rate" is defined as the Social Security benefit amount divided by AIME.

Future Retirees: Projections Using MINT

Although the growth in women's labor force participation has slowed, later cohorts will have increasing shares of women who spend most of their lives in the workforce. Further, the shares of women that are divorced or never married as they reach retirement have increased and will continue to increase. These two phenomena suggest that replacement rates for future retirees will keep changing. To investigate the extent of cohort-to-cohort replacement rate changes for future retirees, we use MINT to project replacement rates for the MBB, LBB, and Gen X cohorts. The results are presented in Tables 5 and 6.

Although we use MINT primarily to project outcomes for future retirees, its rich information also allows us to estimate replacement rates for the earlier cohorts, which provides an external comparison to our HRS estimates. Comparing overlapped cohorts shows that MINT and HRS estimates of replacement rates are largely consistent, although MINT estimates are somewhat higher and the estimated decline for the first four cohorts is slightly smaller. For instance, although the HRS data show that replacement rates of currently married households declined from 46 percent to 37 percent (about 20 percent from baseline) between the DE1 and EBB cohorts (Table 3), MINT shows a decline from 47 percent to 42 percent (about 11 percent from baseline, Table 6).

A close look at the demographics of the MINT sample (Table 7) reveals possible sources of the difference. Compared with the HRS (Table 1), the MINT sample is relatively more educated, more likely to be married, and less likely to be divorced or never married. In terms of labor force participation, the women in the HRS sample work more than those in MINT, while the men work less. Consequently, the proportion of women that is eligible for own retired-worker benefits is higher for the HRS sample than for the MINT sample. In addition, across groups, beneficiaries in the HRS have higher AIMEs than those in the MINT, which likely contributes to lower replacement rates on average. This study's scope does not include investigating which of MINT's embedded assumptions lead to these differences, but the differences between MINT and the HRS should be taken into account when assessing projections for future retirees.

Current trends suggest a continuing decline in the share of households that will retire as married couples and increasing shares of never-married and divorced households at retirement. Table 7 also shows that the average number of covered quarters generally rises for women in successively younger cohorts. Consequently, more women will be eligible for their own worker benefits at retirement, with the proportion increasing from 68 percent for the EBBs to 75 percent for Gen Xers.

Projections from MINT indicate that the replacement rate will continue to decline for future retirees.[17] At the individual level, the replacement rate will decline from 46 percent for EBBs to 40 percent for Gen Xers (Table 5), and at the household level, it will decline from 45 percent to 39 percent (Table 6). Further, for both the earlier and later cohorts, the decline in replacement rates occurs across all income groups, but is more pronounced in the highest income tercile (Table 8). That pattern reflects the influx of highly educated women into the workforce among the two-earner couples.

MINT projects that replacement rates will decline more for single-earner households than for two-earner households: From the EBB to the Gen X birth cohorts, replacement rates are projected to drop from 54 percent to 38 percent for single-earner households (Table 6). That sharp decline, which is concentrated in the last two cohorts, is a surprising departure from the experience of older cohorts. The difference is driven primarily by projected changes in the nature of single-earner households. The share of single-earner households in which spouses receive benefits based solely on the husband's earnings record is projected to

Table 5.
Estimated median replacement rates for individuals, by MINT birth cohort, marital status, and sex (in percent)

Marital status and sex	DE1 (1931–1935)	DE2 (1936–1941)	War baby (1942–1947)	EBB (1948–1953)	MBB (1954–1959)	LBB (1960–1965)	Gen X (1966–1975)
All individuals	53	49	46	46	45	40	40
Never married							
Men	47	45	44	43	45	43	41
Women	52	49	44	44	47	38	39
Currently married							
Men	39	39	37	39	38	35	35
Women	78	68	57	52	49	44	44
Widowed							
Men	41	40	40	42	38	37	41
Women	121	86	81	70	66	58	58
Divorced							
Men	44	43	40	41	41	37	36
Women	66	57	53	52	50	46	44

SOURCE: Authors' calculations based on MINT.

NOTE: "Replacement rate" is defined as the Social Security benefit amount divided by AIME.

Table 6.
Estimated median replacement rates for households, by MINT birth cohort and marital status (in percent)

Marital status	DE1 (1931–1935)	DE2 (1936–1941)	War baby (1942–1947)	EBB (1948–1953)	MBB (1954–1959)	LBB (1960–1965)	Gen X (1966–1975)
All households	50	47	45	45	44	39	39
Never married	47	47	43	44	45	40	38
Currently married							
Single earner	53	54	54	54	48	39	38
Two earners	45	43	41	41	40	36	37
Combined	47	45	42	42	41	37	37
Widowed	64	60	61	56	53	48	50
Divorced	52	48	46	47	45	41	40

SOURCE: Authors' calculations based on MINT.

NOTE: "Replacement rate" is defined as the Social Security benefit amount divided by AIME.

Table 7.
Characteristics of individuals when first claiming Social Security benefits, by MINT birth cohort

Characteristic	DE1 (1931–1935)	DE2 (1936–1941)	War baby (1942–1947)	EBB (1948–1953)	MBB (1954–1959)	LBB (1960–1965)	Gen X (1966–1975)
			Percentage distributions				
Sex							
Men	46.8	47.2	47.1	46.2	46.9	47.4	47.6
Women	53.2	52.8	52.9	53.8	53.1	52.6	52.4
Marital status							
Married	73.8	72.1	68.1	63.4	61.1	60.5	58.5
Divorced	10.6	12.9	17.6	19.4	20.1	20.3	21.0
Never married	3.5	3.8	4.8	6.5	7.7	8.2	10.3
Widowed	12.1	11.2	9.6	10.8	11.1	11.0	10.2
Education							
Less than high school	20.6	13.9	9.0	6.4	7.3	7.2	8.1
High school degree	58.8	61.6	59.8	58.2	60.3	59.0	54.6
At least some college	20.6	24.5	31.2	35.4	32.4	33.8	37.3
Benefit type (women only)							
Retired worker	44.2	55.3	59.5	67.9	70.5	71.8	75.2
Dually entitled	31.3	28.3	27.9	23.9	21.6	20.6	17.7
Auxiliary only	24.5	16.4	12.6	8.2	7.9	7.7	7.1
			Cohort average values				
			Quarters of coverage				
Women							
Married	75	86	99	110	117	119	120
Divorced	106	107	121	129	131	131	129
Never married	124	132	132	142	134	140	137
Widowed	84	92	106	113	116	119	117
Men							
Married	141	143	144	143	144	146	142
Divorced	137	135	142	139	144	148	147
Never married	127	132	131	136	133	135	140
Widowed	139	141	134	137	141	141	137
			AIME (annual, household level, 2012 dollars)				
Marital status							
Married	48,474	58,188	69,901	77,339	84,564	90,867	96,205
Divorced	24,499	28,366	35,004	36,661	41,158	44,629	49,003
Never married	25,829	31,681	37,679	40,096	40,939	43,625	51,373
Widowed	21,491	25,465	29,014	32,608	36,855	39,889	40,475

(Continued)

Table 7.
Characteristics of individuals when first claiming Social Security benefits, by MINT birth cohort—*Continued*

Characteristic	DE1 (1931–1935)	DE2 (1936–1941)	War baby (1942–1947)	EBB (1948–1953)	MBB (1954–1959)	LBB (1960–1965)	Gen X (1966–1975)
			Cohort average values (cont.)				
			Benefit amount (annual, household level, 2012 dollars)				
Marital status							
Married	22,126	25,536	28,888	31,400	33,225	32,046	33,647
Divorced	12,397	13,012	15,620	16,360	17,543	17,063	18,148
Never married	11,290	13,533	14,908	16,043	16,260	15,209	17,291
Widowed	13,264	14,439	16,062	17,004	18,300	17,606	18,353
			Age when claiming (years)				
All	63.5	63.4	63.9	64.3	64.1	64.1	64.1
Men	63.9	63.7	64.0	64.5	64.3	64.4	64.4
Women	63.3	63.2	63.7	64.1	63.9	63.8	63.8
Number of observations	6,460	4,820	6,041	6,962	7,676	7,590	10,966

SOURCE: Authors' calculations based on MINT.

NOTE: Rounded components of percentage distributions do not necessarily sum to 100.0.

Table 8.
Estimated median replacement rates for married-couple households, by MINT birth cohort, number of earners in household, and husband's earnings tercile (in percent)

Husband's earnings tercile	DE1 (1931–1935)	DE2 (1936–1941)	War baby (1942–1947)	EBB (1948–1953)	MBB (1954–1959)	LBB (1960–1965)	Gen X (1966–1975)
			Single-earner households				
Low	73	72	67	72	52	54	55
Median	53	52	48	46	44	31	34
High	46	44	46	37	42	33	26
			Two-earner households				
Low	53	53	51	51	49	44	46
Median	45	43	40	42	41	36	38
High	41	38	37	36	36	31	30
			Combined households				
Low	58	57	54	53	50	45	47
Median	46	44	41	42	41	36	37
High	42	39	37	36	36	31	30

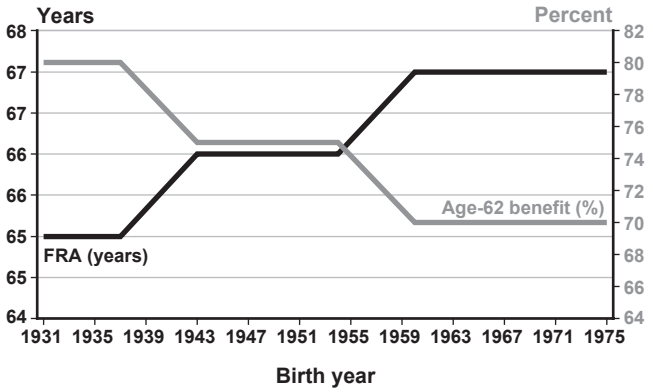
SOURCE: Authors' calculations based on MINT.

NOTE: "Replacement rate" is defined as the Social Security benefit amount divided by AIME.

drop sharply across cohorts, from 72 percent for EBBs to 64 percent for Gen Xers (not shown). At the same time, the share of households in which spouses receive benefits based on the wife's work history will increase. The latter category tends to have lower replacement rates because a husband who is not eligible for Social Security benefits based on his own working history usually has worked more and earned more than a noneligible wife. As a result, a noneligible husband ends up contributing more to the denominator of the replacement rate.

In summary, the analyses using the HRS and the MINT both show declining individual and household replacement rates. Moreover, the simulations indicate that the increasing labor force participation of women will continue to put downward pressure on Social Security replacement rates for future retirees.

Chart 4.
Legislated changes in FRA and in early eligibility (age 62) retirement benefit as a percentage of full retirement benefit, by birth year



SOURCE: Social Security Act, as amended.

Factors Contributing to Replacement Rate Changes

This section presents the decomposition analysis of the factors influencing cross-cohort declines in replacement rates. It describes the Oaxaca-Blinder decomposition model and then presents the decomposition results under actual and hypothetical assumptions about claiming age.

Conceptual Framework

How much of the decline in replacement rates can be explained by changes in women's labor force participation and marriage patterns—as opposed to other major factors, such as the raising of the FRA and early claiming? Claiming behavior may be particularly important because, under the 1983 Amendments to the Social Security Act, the FRA began to rise incrementally from 65 to 67. The actuarial reduction for early claiming means that if younger cohorts do not postpone claiming to keep pace with the scheduled increases in the FRA, they face lower replacement rates than older cohorts, all else equal. Chart 4 shows the magnitude of the decline by comparing the ratio of benefits claimed at age 62 to benefits claimed at FRA by birth year.[18] MINT projects that the average actual claiming age will increase from 63.5 for the DE1 cohort to 64.1 for the Gen X cohort (Table 7).[19]

To examine the relative contributions of observable characteristics—such as labor force experience, marriage patterns, and claiming behavior—to the gaps in replacement rates between birth cohorts, we use a decomposition method developed by Oaxaca (1973) and Blinder (1973). That method, widely used in social science research, essentially involves calculating what one cohort's outcomes would have looked like if it had the characteristics of another cohort. We estimate the following linear regression to predict household replacement rates for individuals at retirement:

$$R_i = X_i \beta_i + \varepsilon_i , \quad (1)$$

where R_i denotes the household replacement rate for individual *i;* X_i denotes a set of observed characteristics and a constant, β_i, contains the slope parameters and the intercept; and ε_i is a random error term. To explore the difference between two cohorts, we estimate parallel regressions for each cohort:

$$R_{C1} = X_{C1} \beta_{C1} + \varepsilon_{C1} \quad (2)$$

$$R_{C2} = X_{C2} \beta_{C2} + \varepsilon_{C2} , \quad (3)$$

where $C1$ denotes cohort 1 and $C2$ denotes cohort 2, and the error terms ε_{C1} and ε_{C2} are mean zero. The difference between the mean outcomes of these two cohorts is

$$E(R_{C1}) - E(R_{C2}) = \overline{X_{C1}} \beta_{C1} - \overline{X_{C2}} \beta_{C2} . \quad (4)$$

By adding and subtracting both $\overline{X_{C1}} \beta_p$ and $\overline{X_{C2}} \beta_p$ to the right-hand side, the equation can be rewritten as

$$E(R_{C1}) - E(R_{C2}) = (\overline{X_{C1}} - \overline{X_{C2}})\beta_p + (\beta_{C1} - \beta_p)\overline{X_{C1}} + (\beta_p - \beta_{C2})\overline{X_{C2}} , \quad (5)$$

where β_p is the coefficient from a pooled regression in either cohort (Neumark 1988).[20] This equation decomposes the difference in cross-cohort outcomes into the "explained" portion (attributable to differences in the mean of the variables X in the two groups) and the "unexplained" portion (owing to differences in

the coefficients between the two groups for the same values of *X,* including differences in the intercept).[21]

In the main analysis, the *X* vector includes three major components that could contribute to the difference across cohorts: marital status *(M),* labor force participation *(L),* and claiming behavior *(B ratio).* The vector for marital status *M* includes dummies for married, widowed, and divorced; the vector for labor force participation *L* includes total number of covered quarters, a dummy of whether 40 quarters have been accrued, and a measure of average lifetime earnings.[22] *B ratio* is the outcome of claiming behavior, given the gradually increasing FRA across cohorts; it is constructed as the ratio of actual to full benefits, which differ depending on whether individuals claim early and receive an actuarially reduced benefit, or claim late and receive delayed retirement credits.[23] The model also controls for changes over time in the population distribution by education, race, and sex; those factors are grouped in the *D* vector. Finally, ε is a random error term with mean zero.

Empirical Results

The results of estimating equation (5) are summarized in Table 9, which decomposes the differences in mean replacement rates between cohorts to their contributing factors.[24] Overall, the difference in average replacement rates between the oldest cohort (DE1) and the youngest (Gen X) is 12.7 percentage points.[25] Changes in labor force activity (and the resulting earnings) explain 31.7 percent of the difference in replacement rates between the oldest and youngest cohorts.[26] Moreover, when comparing the oldest cohort (DE1) with its more proximate cohorts, labor force activity accounts for even more of the change—ranging from 31.7 to 74.6 percent. For instance, the labor force activity explains 67.7 percent of the change when comparing the DE1 cohort with the DE2 cohort.

Changes in marital patterns over time also affect the replacement rate, but in the opposite direction as the effect of labor force activity—at least, for some cohort pairs, particularly those with greater age differences.[27] Because married couples have, on average,

Table 9.
Decomposition of changes in mean household-level replacement rates between MINT cohort pairs: All beneficiaries

Difference between DE1 cohort and—	Total decline in mean replacement rate	Decline in replacement rate attributable to—				
		Demographics [a]	Marital status	Claiming behavior	Labor force activity	Unexplained factors
			Percentage points			
DE2 cohort	2.4	0.2	0.1	1.1***	1.6***	-0.6
War baby cohort	5.2	0.6***	0.0	1.7***	3.5***	-0.6
EBB cohort	5.5	0.7***	-0.4***	0.3	4.1***	0.9**
MBB cohort	7.8	0.6***	-0.5***	2.5***	4.1***	1.1**
LBB cohort	12.8	0.8***	-0.5***	4.2***	4.5***	3.7***
Gen X cohort	12.7	0.6***	-0.3***	4.3***	4.0***	4.2***
			Percentage distribution			
DE2 cohort	100.0	8.4	2.8	47.9	67.7	-26.9
War baby cohort	100.0	12.0	0.9	31.8	67.7	-12.4
EBB cohort	100.0	12.7	-7.6	4.7	74.6	15.7
MBB cohort	100.0	7.7	-6.4	32.0	52.7	14.1
LBB cohort	100.0	5.9	-3.6	33.0	35.4	29.3
Gen X cohort	100.0	4.5	-2.7	33.7	31.7	32.8

SOURCE: Authors' calculations based on MINT.

NOTES: "Replacement rate" is defined as the Social Security benefit amount divided by AIME.

Totals do not necessarily equal the sum of rounded components.

* = statistically significant at the 10 percent level.

** = statistically significant at the 5 percent level.

*** = statistically significant at the 1 percent level.

a. Reflects the combined effects of changes to population distributions by race, sex, and educational attainment over time.

lower replacement rates than other groups, a decline in the share of married households leads to an increase in the replacement rate.[28] In terms of magnitude, these effects are small yet statistically significant. Changes in marital patterns account for less than 3 percent of the difference in mean replacement rates between the oldest and youngest cohorts in our sample (Table 9).

Given the incremental raising of the FRA, change in claiming behavior over time is also an important factor. It accounts for over one-third of the change in replacement rates between the oldest and the youngest cohorts. The reason claiming behavior exerts such influence is that even though the younger generations are projected to retire later, the delay is not sufficient to keep pace with the increase in the FRA. As a result, MINT expects a larger portion of future retirees to face an actuarial reduction in benefits.

Additionally, changes in demographic factors such as race, sex, and education distributions explain about 5 percent of the total decline in replacement rates between the DE1 and Gen X cohorts. Finally, although differences in three major factors (labor force activity, marital status, and claiming behavior) can account for much of the decline in replacement rates over time, more than 30 percent of the change between the oldest and the youngest cohort remains unexplained. The unexplained component is bigger when comparing cohorts with greater age differences, suggesting that these unexplained factors could in part be driven by the underlying assumptions used for the projections.

We repeated the Oaxaca-Blinder analysis for women only. The results (Table 10) are largely consistent with those for all households, although changes in labor force activity explain a larger fraction of the change in mean replacement rates across cohorts. About half (50.6 percent) of the difference is explained by the changes in labor force activity when comparing replacement rates of the oldest and the youngest cohorts. Further, the unexplained effect is much smaller (15.6 percent), which is consistent with the premise that the changes in replacement rates over time are primarily driven by the changing role of women.

Finally, we applied the Oaxaca-Blinder decomposition analysis to different marital-status groups. The

Table 10.
Decomposition of changes in mean household-level replacement rates between MINT cohort pairs: Women

Difference between DE1 cohort and—	Total decline in mean replacement rate	Decline in replacement rate attributable to—				
		Demographics [a]	Marital status	Claiming behavior	Labor force activity	Unexplained factors
			Percentage points			
DE2 cohort	3.3	0.2**	0.1	0.9***	2.1***	-0.1
War baby cohort	5.9	0.6***	0.2	1.1***	5.2***	-1.2**
EBB cohort	7.0	0.6**	-0.2	0.0	7.0***	-0.5
MBB cohort	9.0	0.7***	-0.2	2.1***	7.0***	-0.6
LBB cohort	14.1	1.0***	-0.3	4.0***	7.7***	1.7**
Gen X cohort	14.2	0.9***	-0.1	4.0***	7.2***	2.2***
			Percentage distribution			
DE2 cohort	100.0	7.0	3.6	28.0	63.3	-1.8
War baby cohort	100.0	10.5	3.4	18.1	88.0	-20.0
EBB cohort	100.0	8.9	-2.2	-0.7	100.9	-6.9
MBB cohort	100.0	7.6	-2.7	23.0	78.2	-6.2
LBB cohort	100.0	7.3	-2.0	28.1	54.3	12.3
Gen X cohort	100.0	6.1	-0.7	28.5	50.6	15.6

SOURCE: Authors' calculations based on MINT.

NOTES: "Replacement rate" is defined as the Social Security benefit amount divided by AIME.

Totals do not necessarily equal the sum of rounded components.

* = statistically significant at the 10 percent level.

** = statistically significant at the 5 percent level.

*** = statistically significant at the 1 percent level.

a. Reflects the combined effects of changes to population distributions by race, sex, and educational attainment over time.

results (Table 11) are largely consistent with the previous analyses, except that changing claiming behaviors play a much more important role for the divorced and never-married groups, accounting for nearly 50 percent of the change in replacement rates between the oldest and the youngest cohorts. For the married, the model also controls for spouses' characteristics. Doing so provides further evidence on how marriage, specifically assortative mating, impacts replacement rates.[29] The results show that a spouse's claiming behavior and labor force activity are nearly as important as those of the reference person in explaining changes in household replacement rates over time.

Alternative Claiming Behavior Specifications

The results from our main model reveal the importance of individuals' claiming behavior to replacement rates. By design, the variable that captures the effect of claiming behavior, *B ratio,* reflects the actuarial reduction or delayed retirement credit applied to an individual's full benefit; thus, it is a function of both the age at claiming and the individual's FRA, which has risen over time. Although *B ratio* does not separate the relative effects of age at claiming and the legislated change in FRA, its combined effect is important to the empirical specification because its omission would confound the estimates of the impacts of labor force activity and marriage rates.

However, to isolate the impacts of our variables of interest from those of claiming and law changes, we compare actual household replacement rates with the rates that would have resulted if all units claimed at FRA (Table 12).[30] As expected, we see higher median replacement rates at FRA than at actual claiming age. Further, replacement rates at FRA decline more gradually over time than do those at actual claiming age for all marital-status groups.

We estimate decompositions at the FRA to mitigate the effects of potential behavioral responses to the scheduled FRA increase and to provide a robustness check to the earlier estimation results. By defining the FRA replacement rates as the outcome variable, we remove the variable *B ratio* from the right-hand side of the model and avoid the potentially confounding effects of the previous specification.

Tables 13, 14, and 15 present the estimates for the full sample of households, for women only, and for

Table 11.
Decomposition of changes in mean household-level replacement rates between MINT cohorts DE1 and Gen X, by marital status

Marital status	Total decline in mean replacement rate	Decline in replacement rate attributable to—						
		Own			Spouse's			
		Demographics [a]	Claiming behavior	Labor force activity	Demographics [a]	Claiming behavior	Labor force activity	Unexplained factors
		Percentage points						
Married	11.2	0.0	2.6***	2.7***	0.2**	2.2***	3.2***	0.1
Widowed	17.7	0.4	4.9***	9.3***	. . .	. . .	. . .	3.1**
Divorced	15.0	0.2	7.3***	6.8***	. . .	. . .	. . .	0.7
Never married	17.0	0.3	8.5***	6.0***	. . .	. . .	. . .	2.2**
		Percentage distribution						
Married	100.0	0.1	23.5	24.4	2.0	20.0	28.2	1.3
Widowed	100.0	2.1	27.7	52.5	. . .	. . .	. . .	17.7
Divorced	100.0	1.5	48.7	45.0	. . .	. . .	. . .	4.9
Never married	100.0	1.8	49.8	35.3	. . .	. . .	. . .	13.1

SOURCE: Authors' calculations based on MINT.

NOTES: "Replacement rate" is defined as the Social Security benefit amount divided by AIME.

Totals do not necessarily equal the sum of rounded components.

. . . = not applicable.

* = statistically significant at the 10 percent level.

** = statistically significant at the 5 percent level.

*** = statistically significant at the 1 percent level.

a. Reflects the combined effects of changes to population distributions by race, sex, and educational attainment over time.

Table 12.
Median household-level replacement rates, by marital status and MINT birth cohort: Actual claiming age versus FRA (in percent)

Marital status and claiming age	DE1 (1931–1935)	DE2 (1936–1941)	War baby (1942–1947)	EBB (1948–1953)	MBB (1954–1959)	LBB (1960–1965)	Gen X (1966–1975)
All households							
Actual claiming age	50	47	45	45	44	39	39
If claimed at FRA	55	53	51	51	51	49	49
Never married							
Actual claiming age	47	47	43	44	45	40	38
If claimed at FRA	53	50	49	48	52	51	49
Currently married							
Actual claiming age	47	45	42	42	41	37	37
If claimed at FRA	53	51	48	48	48	45	46
Widowed							
Actual claiming age	64	60	61	56	53	48	50
If claimed at FRA	77	70	70	64	63	62	63
Divorced							
Actual claiming age	52	48	46	47	45	41	40
If claimed at FRA	55	53	52	53	52	51	50

SOURCE: Authors' calculations based on MINT.

NOTE: "Replacement rate" is defined as the Social Security benefit amount divided by AIME.

Table 13.
Decomposition of changes in mean household-level replacement rates at FRA between MINT cohort pairs: All beneficiaries

Difference between DE1 cohort and—	Total decline in mean replacement rate	Decline in replacement rate attributable to—			
		Demographics [a]	Marital status	Labor force activity	Unexplained factors
		Percentage points			
DE2 cohort	1.7	0.2	0.1	1.8***	-0.4
War baby cohort	4.4	0.6***	0.1	3.9***	-0.2
EBB cohort	5.9	0.7***	-0.5***	4.6***	1.1**
MBB cohort	6.6	0.6***	-0.6***	4.7***	1.9***
LBB cohort	10.2	0.8***	-0.6***	5.3***	4.8***
Gen X cohort	10.0	0.6***	-0.5***	5.0***	4.9***
		Percentage distribution			
DE2 cohort	100.0	11.8	5.9	105.9	-23.5
War baby cohort	100.0	13.6	2.3	88.6	-4.5
EBB cohort	100.0	11.9	-8.5	78.0	18.6
MBB cohort	100.0	9.1	-9.1	71.2	28.8
LBB cohort	100.0	7.8	-5.9	52.0	47.1
Gen X cohort	100.0	6.0	-5.0	50.0	49.0

SOURCE: Authors' calculations based on MINT.

NOTES: "Replacement rate" is defined as the Social Security benefit amount divided by AIME.

Totals do not necessarily equal the sum of rounded components.

* = statistically significant at the 10 percent level.

** = statistically significant at the 5 percent level.

*** = statistically significant at the 1 percent level.

a. Reflects the combined effects of changes to population distributions by race, sex, and educational attainment over time.

households by marital status, respectively. With the effect of claiming behavior removed, differences in labor supply (including labor force attachment and earnings) explain over 70 percent of the gap in replacement rates between the DE1 cohort and all subsequent cohorts through the MBBs, and about half of the difference between the DE1 and Gen X cohorts (Table 13). Marital pattern effects are statistically significant but economically small.[31] Changing demographics also account for only a small percentage of the difference. Again, nearly one-half of the difference between the DE1 and the last two cohorts remains unexplained by differences in mean characteristics and is instead attributed to the changes in the returns to the factors (that is, due to changes in the coefficient estimates, rather than the differences in mean characteristics) or to unobservable factors.

In the estimations for women (Table 14), higher labor force participation and earnings account for almost all of the difference in replacement rates between the DE1 and some of the earlier subsequent cohorts, and for about 74 percent of the difference between the DE1 and Gen X cohorts.[32]

To summarize, decomposing the source of the change in replacement rates over time shows that two factors—changes in labor force activity and in claiming behavior—each explain about one-third of the difference in replacement rates between the oldest and youngest cohorts. When comparing replacement rates at the FRA, labor force participation alone explains about one-half of the difference between the oldest and youngest cohorts and three-fourths or more of the difference between the DE1 and subsequent cohorts through the MBBs. Changes in demographics have produced only small effects, even for marital status, which has changed dramatically over time. A significant share of the change between the oldest and youngest cohorts remains unexplained; that is, not attributable to differences in mean characteristics between the cohorts.

Table 14.
Decomposition of changes in mean household-level replacement rates at FRA between MINT cohort pairs: Women

Difference between DE1 cohort and—	Total decline in mean replacement rate	Decline in replacement rate attributable to—			
		Demographics [a]	Marital status	Labor force activity	Unexplained factors
		Percentage points			
DE2 cohort	3.0	0.3**	0.1	2.4***	0.2
War baby cohort	5.6	0.8***	0.3	5.7***	-1.1*
EBB cohort	7.9	0.7***	-0.2	7.9***	-0.5
MBB cohort	8.3	0.7***	-0.4*	8.1***	0.0
LBB cohort	11.7	1.2***	-0.5**	8.9***	2.0**
Gen X cohort	11.7	0.9***	-0.2	8.6***	2.5***
		Percentage distribution			
DE2 cohort	100.0	10.2	4.6	78.8	6.4
War baby cohort	100.0	13.5	4.9	101.4	-19.8
EBB cohort	100.0	9.1	-2.8	99.9	-6.2
MBB cohort	100.0	8.6	-5.0	96.6	-0.2
LBB cohort	100.0	10.5	-4.0	76.2	17.2
Gen X cohort	100.0	7.4	-2.0	73.6	21.0

SOURCE: Authors' calculations based on MINT.

NOTES: "Replacement rate" is defined as the Social Security benefit amount divided by AIME.

Totals do not necessarily equal the sum of rounded components.

* = statistically significant at the 10 percent level.

** = statistically significant at the 5 percent level.

*** = statistically significant at the 1 percent level.

a. Reflects the combined effects of changes to population distributions by race, sex, and educational attainment over time.

Table 15.
Decomposition of changes in mean household-level replacement rates at FRA between MINT cohorts DE1 and Gen X, by marital status

Marital status	Total decline in mean replacement rate	Decline in replacement rate attributable to—				
		Own		Spouse's		
		Demographics [a]	Labor force activity	Demographics [a]	Labor force activity	Unexplained factors
			Percentage points			
Married	8.9	-0.2	3.4***	0.2	3.8***	1.6***
Widowed	16.5	0.4	11.1***	. . .	. . .	5.1**
Divorced	11.3	0.0	8.1***	. . .	. . .	3.2**
Never married	11.0	0.5	7.0***	. . .	. . .	3.5**
			Percentage distribution			
Married	100.0	-1.9	38.3	2.0	43.4	18.3
Widowed	100.0	2.3	67.0	. . .	. . .	30.7
Divorced	100.0	-0.2	72.2	. . .	. . .	28.0
Never married	100.0	4.1	63.9	. . .	. . .	32.0

SOURCE: Authors' calculations based on MINT.

NOTES: "Replacement rate" is defined as the Social Security benefit amount divided by AIME.

Totals do not necessarily equal the sum of rounded components.

. . . = not applicable.

* = statistically significant at the 10 percent level.

** = statistically significant at the 5 percent level.

*** = statistically significant at the 1 percent level.

a. Reflects the combined effects of changes to population distributions by race, sex, and educational attainment over time.

Conclusion

This article examines the extent to which the changing roles of women impacts Social Security replacement rates. We first document substantial changes in women's labor force participation and marital status over time. Then we estimate changes in Social Security replacement rates across a broad range of cohorts that includes claimants born during 1931–1975. We compare estimated replacement rates of current retirees using different data sets and project replacement rates for future retirees. The results show a marked decrease over time in the proportion of preretirement income that Social Security replaces, and the trend—one that is positive for Social Security's finances—will continue for years to come. Over one-third of the decline in replacement rates across cohorts can be explained by the increased labor force activity of women. Surprisingly, trends in marriage patterns account for only a small fraction of the change in replacement rates over time. Much of the remaining explanation rests with the rising FRA and changing claiming behaviors. As life expectancies increase but many people continue to retire in their early sixties, the share of lifetime retirement income provided by Social Security will decline, implying that retirees will have to rely increasingly on other sources of retirement income.

Notes

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[1] Some recent examples include Butrica, Iams, and Sandell (1999), Butrica and Iams (2000), Favreault, Sammartino, and Steuerle (2002), and Iams and others (2009). Earlier work includes HEW (1979), Burkhauser and Holden (1982), CBO (1986), Ferber (1993), Harrington Meyer (1996), Ross and Upp (1993), and HHS (1985).

[2] Results for later cohorts are subject to the uncertainty associated with the projection and should be interpreted with caution.

[3] The matched administrative earning records enable accurate calculations of the replacement rates and avoid the reporting errors that are common in public-use surveys.

[4] We did not include the HRS' Children of the Depression Era (CODA) cohort, born in the late 1920s. When we first observed individuals of the CODA cohort in 1998, they were aged 68–74, and about 40 percent were widowed. Because of the selection bias due to mortality, the replacement rate calculated using the HRS for the CODA cohort does not represent the replacement rate of all individuals born during that period. Further, for the majority of CODA widow(er)s, we do not have information on their late spouses. Thus, we decided to exclude the CODA cohort from our analysis.

[5] The HRS groups all Depression Era respondents into a single combined cohort. We separate that sample into two groups to be consistent with our MINT sample, which is likewise separated into two cohorts and is drawn from two versions of the MINT model (MINT5 and MINT6).

[6] To ensure that our cohort estimates are representative and to minimize survival bias, we use two versions of the MINT model—MINT5 and MINT6. Statistics related to the first half of the Depression Era cohort—the DE1 cohort—are derived from MINT5, while the rest of the cohorts are extracted from MINT6. MINT5 derives data from the 1990 to 1996 SIPP, while MINT6 uses the 2001 and 2004 panels of the SIPP. For descriptions of versions 5 and 6 of MINT, see Smith and others (2007, 2010, respectively).

[7] To project earnings beyond the last year for which an individual gave permission to match to the administrative data, we again follow Gustman and Steinmeier (2001). For individuals with self-reported earnings, we assume that the average real earnings observed in the last three reported periods persist until their expected claiming date. For respondents who have already claimed Social Security benefits, we use actual claiming age; for those who have not, we assume that respondents claim Social Security benefits at their self-reported expected retirement age. If the expected retirement age was greater than 70, or if the individual indicated that he or she never expected to retire, we use a retirement age of 70 (unless the individual had already worked beyond that age). If the respondent did not provide an expected retirement age, we assign a claiming age so that the age distribution of claiming matches the Social Security–reported claiming ages (SSA 2011, Table 6.B5.1). Combining the actual earnings with the simulated earnings yields a complete earnings profile for each individual in the HRS sample from 1951 to his or her retirement age.

[8] In cases where spouses are of different ages, their AIMEs are indexed to different years (although we adjust them for inflation to bring them to same-year dollars that reflect the first year in which both spouses receive benefits). The overall effect of this different indexing on the denominator of the couple's replacement rate depends on the distribution of individual replacement rates between the wife and the husband and on age differences in the population. To the extent that the majority of couples in our data set have wives who are younger, that wives tend to have higher individual replacement rates than husbands, and that wages grow faster than inflation, our household replacement rates for couples might be a bit overstated, as compared with couples having same-year wage indexing.

[9] The mortality assumptions imbedded in these calculations start with SSA mortality tables that provide detail by age and sex. We adjust those data, based on Brown, Liebman, and Pollet (2002), to reflect survival probability variations by education and race. We estimate the average mortality rate for each calendar year from 2010 through 2045 (when the youngest Gen X members reach age 70). Then, based on those estimated mortality distributions, we assign a death year to individuals with the lowest survival probability in that specific year. For instance, if 5 percent of the sample is expected to die in 2011, we assign to individuals at the bottom 5 percent of the survival probability distribution a death year of 2011.

[10] For individuals who do not have positive lifetime earnings, the replacement rate is undefined.

[11] Social Security pays retired-worker benefits to individuals who have accumulated 40 or more quarters of earnings in covered employment over their lives. Therefore, "quarters of coverage" is a crucial factor in benefit eligibility. An individual can earn up to 4 quarters of coverage per year. The amount of earnings that qualified for a quarter of coverage in 2012 was $1,130. Because most jobs are covered by Social Security, quarters of coverage is a good proxy for labor market attachment.

[12] See also Table 5.A14 in the *Annual Statistical Supplement to the Social Security Bulletin* (SSA 2011) for the distribution of women's benefit entitlement over time.

[13] We use median replacement rates in order to make the descriptive statistics easily comparable to previous studies and because replacement rates are more prone to outliers—for example, cases where earnings are very low, such as widows and divorced women. That is not a concern for other variables in Table 1.

[14] When replacement rates are evaluated at the household level, each married-couple household only counts once, and the household observation is assigned to the husband's birth cohort.

[15] Two-earner households include those where one spouse is entitled to benefits based on both his or her own earnings record and his or her spouse's record ("dual entitlement"). In single-earner households, one of the spouses is eligible for auxiliary benefits only.

[16] By definition, our measures are censored at the taxable maximum. As a result, they cannot capture the effects at the very top of the earnings distribution.

[17] Although declining replacement rates indicate that benefits as a percentage of preretirement earnings are expected to drop, benefits in real terms are expected to keep rising for all household groups (see Table 7).

[18] Similarly, because delayed retirement credits accrue only until age 70, the maximum benefit as a percentage of the full retirement benefit will be lower for later cohorts than for earlier cohorts.

[19] MINT projects that the claiming age trend will flatten beginning with the EBB cohort, partly because its claiming model does not explicitly build in the rising FRA or cohort effects as covariates in estimation and projection (Smith and others 2010, Table 4-4). However, MINT6 partially accounts for the higher FRA by estimating and simulating two separate models, depending on whether the individual is subject to the retirement earnings test, which in 2000 was suspended for claimants who had reached FRA. As the FRA rises, working individuals in future cohorts will be subject to the retirement earnings test for longer periods in their sixties; thus, they are projected to be more likely to delay claiming. The resulting distribution of claiming ages, of course, will also depend on the extent to which individuals belonging to various sociodemographic groups are likely to work enough to be subject to the retirement earnings test. Smith and others state, "these estimates are based on a sample of individuals for whom the FRA for Social Security ranged from 65 to 66. As the FRA continues to increase to 67, these algorithms automatically slow claiming for higher earners at younger ages (those with earnings above the retirement earnings test exempt amount), but they do not generally slow claiming for lower earners (all else equal)." When interpreting the decomposition results, one should be cautious of the possibility that the current version of MINT might somewhat underestimate the claiming age of younger cohorts.

[20] As discussed in the literature, the Oaxaca-Blinder decomposition incurs the index number problem, implying that the decomposition is unstable depending on the choice of the reference group. In order to overcome the index number problem, Neumark proposes a general decomposition based on a pooled regression using the weighted average of two groups. The pooled decomposition has been adopted as the primary approach to measure explained and unexplained gaps in a number of empirical studies (Elder, Goddeeris, and Haider 2010). Although there are other modifications of the Oaxaca-Blinder method, we adopt the Neumark (1988) version in this analysis.

[21] Importantly, the unexplained portion also captures all potential effects of differences in unobserved variables.

[22] Average lifetime earnings are constructed by averaging the individual's ratio of nominal earnings to the average wage index over his or her working life. Because one's initial Social Security benefits are wage-indexed, this measure directly relates lifetime earnings to the resulting replacement rate.

[23] Over time, the *B ratio* has declined, from 0.90 for the DE1 cohort to 0.83 for the Gen X cohort. The potential endogeneity of the *B ratio* variable is discussed in the "Alternative Claiming Behavior Specifications" section.

[24] For the purpose of consistency, we report the decomposition results using MINT. The results are largely consistent for overlapped cohorts using the HRS data. Detailed regression results, as well as the mean values of the covariates and the results of the pooled regressions, are available upon request from the authors.

[25] The Oaxaca-Blinder model decomposes the mean differences in household replacement rates. For married couples, each member is treated as a separate observation, and husband and wife can appear in different birth cohorts. Because the Oaxaca-Blinder methodology decomposes mean differences, Table 9 shows greater replacement rate declines between the oldest and youngest cohort than the declines shown in Table 5, which analyzes medians.

[26] We separately control for total number of covered quarters, eligibility (in the form of an indicator of whether 40 quarters have been accrued), and average lifetime earnings in the regression model for simplicity of exposition. Table 9 reports the combined effect of those three components of labor force participation. The separate effect of each component is available from the authors upon request.

[27] Although we separately control for three marital statuses (married, widowed, and divorced), the table reports the total effect for those three components of marital patterns. The separate effect of each component is available from the authors upon request.

[28] One should note that our measures capture only the percentage of average lifetime earnings that Social Security benefits replace in retirement. An alternative way to compare well-being across households is to use equivalence scales to account for the economies of scale in consumption that married couples enjoy. However, doing so is beyond the scope of this article.

[29] The literature has documented substantial changes in assortative mating patterns over time. In addition to the previously mentioned shift in the correlation between spouses' earnings from negative to positive over time, couples are becoming more similar in other dimensions and, rather than "marrying up," more women are marrying down in terms of education (Rose 2001).

[30] A full counterfactual exercise in which all individuals and households claim benefits at FRA involves many assumptions about labor supply, earnings, and potential effects on the average wage index and other macroeconomic variables. Such an exercise is beyond the scope of this article. Instead, for illustrative purposes we calculate benefits at the FRA, adjusted to offset the actuarial reduction for early claiming or the credits for delaying retirement.

[31] In the women-only sample, the overall effect of marital status is insignificant for most cohorts (Table 14) because the significant effects on married, widowed, and divorced women (never married is the omitted category) offset each other in magnitude. Detailed decomposition results including the marital groups are available from the authors upon request.

[32] We also conducted decomposition analysis using Gen X as the baseline. Although the comparison group in the Gen X-baseline model is subject to significant projection uncertainty, the overall results are consistent with our primary model's finding of strong effects of labor force activity and a much smaller effect of changing marital patterns. The Gen X-baseline model also explains consecutive cohorts better (the unexplained portion is smaller) and in fact shows almost no difference in outcomes between the LBB and Gen X cohorts. Results are available from the authors upon request.

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Growth in New Disabled-Worker Entitlements, 1970–2008

by David Pattison and Hilary Waldron*

We find that three factors—(1) population growth, (2) the growth in the proportion of women insured for disability, and (3) the movement of the large baby boom generation into disability-prone ages—explain 90 percent of the growth in new disabled-worker entitlements over the 36-year subperiod (1972–2008). The remaining 10 percent is the part attributable to the disability "incidence rate." Looking at the two subperiods (1972–1990 and 1990–2008), unadjusted measures appear to show faster growth in the incidence rate in the later period than in the earlier one. This apparent speedup disappears once we account for the changing demographic structure of the insured population. Although the adjusted growth in the incidence rate accounts for 17 percent of the growth in disability entitlements in the earlier subperiod, it accounts for only 6 percent of the growth in the more recent half. Demographic factors explain the remaining 94 percent of growth over the 1990–2008 period.

Introduction

The size of the working-age population in the United States has increased steadily since 1970 (Chart 1). The number of workers insured for Social Security Disability Insurance (DI) benefits but not receiving benefits has grown almost as steadily. The number of workers becoming entitled to DI benefits—while much smaller (about 0.4 percent of the working-age population in 2008, or 0.6 percent of the exposed disability-insured population[1])—has also grown, increasing from 254,200 in 1970 to 897,000 in 2008. Much of this growth in newly disabled workers reflects the growth in the pool of workers insured for disability. This in turn reflects the growth in the US working-age population and the increasing proportion of women who, because of their rising labor force participation, are insured for disability. In this article, we estimate how much of the growth in newly entitled disabled workers is attributable to the growth in the size of the underlying risk pool and how much of the growth in new disabled-worker entitlements remains unexplained.

Our analysis is complicated by two factors. First, the number of newly disabled workers has not followed a smoothly growing path, but has instead shown large fluctuations—with peaks around 1975, 1991, and 2002 and troughs around 1982, 1997, and 2006 (Chart 2). Those large fluctuations remain even after subtracting the effects of population growth or growth in the number of disability-insured workers. Because of these large swings, any attempt to calculate what percentage of total growth in newly disabled workers is due to population growth or to growth in number of disability-insured workers will be quite sensitive to the period chosen. This problem is addressed in this analysis in two ways. First, the decomposition is calculated year by year, instead of over a few select periods, allowing a visual inspection of the cumulative differences. Second, for decomposing average growth over longer periods, we chose 3 reference years (1972, 1990, and 2008)—neither at the peaks nor at the

Selected Abbreviations

DI	Disability Insurance
OCACT	Office of the Chief Actuary
SSA	Social Security Administration
SSI	Supplemental Security Income

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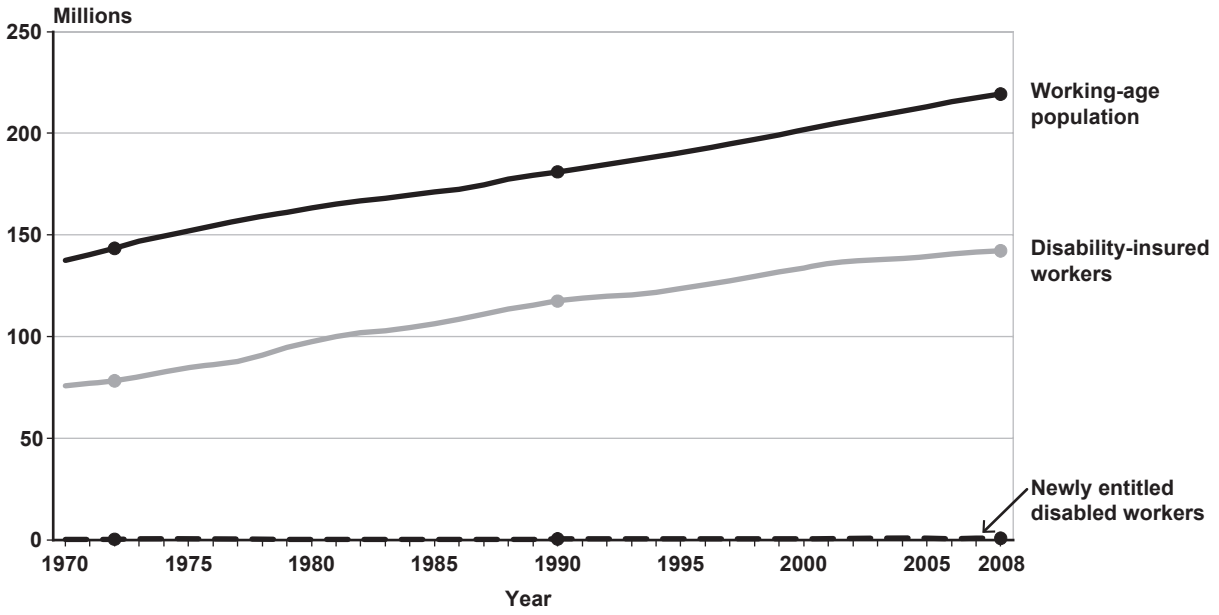
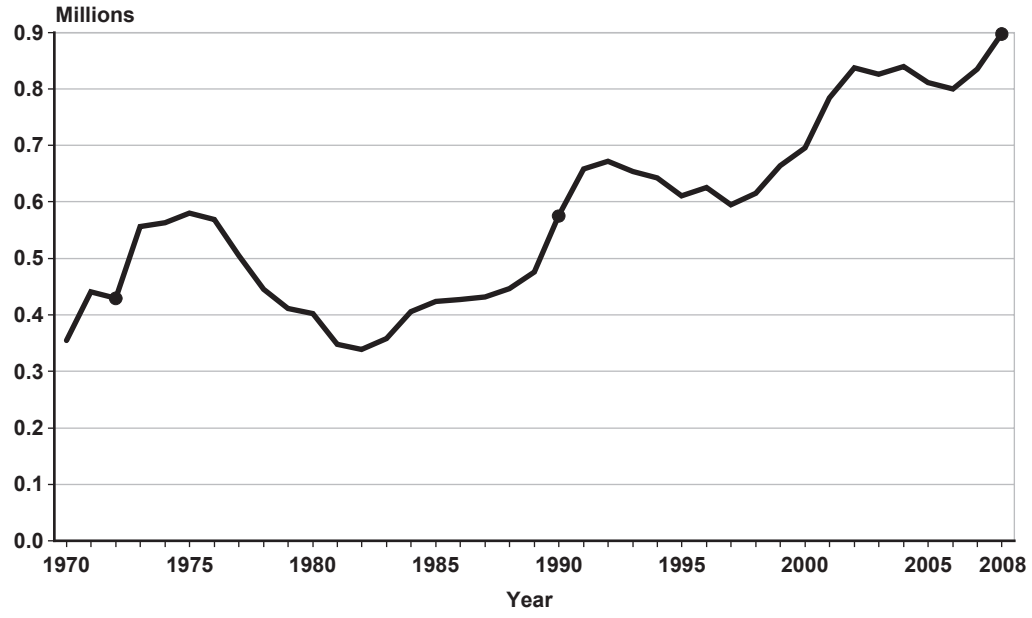
Chart 1.
Size of the working-age (16–64), disability-insured, and newly entitled disabled-worker populations, 1970–2008



SOURCE: Social Security administrative data.

Chart 2.
Number of workers newly entitled to Social Security DI benefits, 1970–2008



SOURCE: Social Security administrative data.

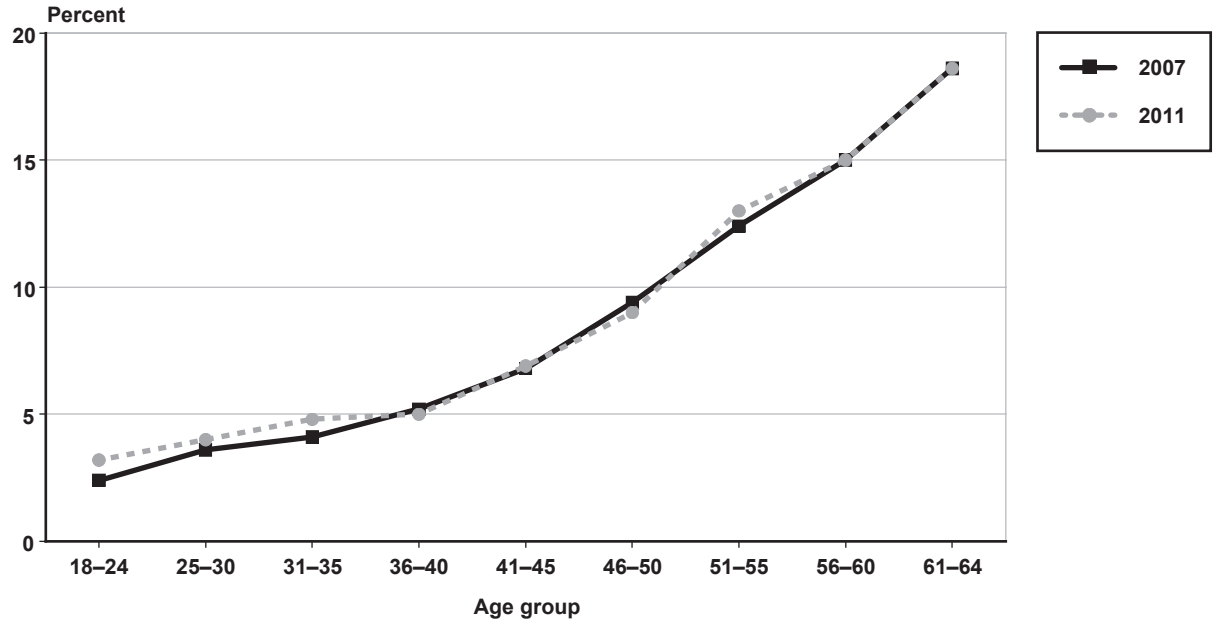
troughs—to make growth comparisons. It should be noted, however, that the choice of reference years is somewhat arbitrary, and some of the decompositions are sensitive to the choice of years.

The second complication is that the age composition of the working-age population changed substantially over the period under study (1970–2008), as the baby boom cohorts (born 1946–1964) grew older. In 1970, some of them were still too young to be working. By 2008, the older ones were beginning to retire. This aging of the working-age population can be expected to have appreciable effects on the percentage of workers who become disabled. As shown in Chart 3, work-limiting health problems increase with age.[2] As the working-age population has shifted into the more disability-prone[3] ages, the average probability of becoming entitled to DI has risen as well. Therefore, we can expect that the number of newly disabled workers has grown faster than the growth in the working-age population itself. In this article, an index-number technique is used to estimate how much of the overall growth in new disability entitlements can be attributed to this age shift in the working-age population rather than to the overall growth in that population. There will be an additional age-related effect if the proportion of the population that is disability insured has been growing faster at older ages than at younger ages. Because growth in the insured population has differed by sex, our "age adjustment" needs to take into account the shifting age composition of the insured population by sex as well as age.

The total number of new disability entitlements in any given year can be considered the product of three factors: (1) the number of people in the working-age population in that year, (2) the proportion of the working-age population that is disability insured and exposed to the risk of becoming entitled in that year, and (3) the proportion of exposed disability-insured workers who actually became entitled in that year. The index-number technique estimates how much of the growth in each of those factors is attributable to the shift in the age composition rather than to overall growth.

The third factor, the "disability incidence rate," is of special interest. It is the part of the growth in the new disabled-worker population that is not explained by the growth in the number of disability-insured workers. During periods when the baby boom cohorts were moving into the disability-prone ages, the overall (gross) disability incidence rate would have risen even if age-specific incidence rates were not changing. The age-adjusted incidence rate shows the rise in incidence that can be attributed to changes in the disability incidence rate at each age, rather than to a shift in the

Chart 3.
Percentage of CPS respondents self-reporting a health problem or disability that prevents or limits work, by age group, 2007 and 2011



SOURCE: Authors' tabulations using the 2007 and 2011 Current Population Survey (CPS).

age composition from low-incidence ages to high-incidence ages. The difference between the adjusted disability incidence rate and the unadjusted rate gives the change in the incidence rate that can be attributed to the shift in the age distribution of the insured population, rather than to changes in the incidence rate at each age.

The first two factors in the growth decomposition—working-age population growth and the proportion of the population that is disability insured—are affected by the age/sex adjustments as well. Each of those factors has an unadjusted growth rate and a growth rate adjusted for changes in the age/sex composition. The difference between the unadjusted and the adjusted growth rates is the growth in the factor attributable to the age/sex adjustment.

Instead of three factors in the growth decomposition, we can think of six: (1) the unadjusted growth in the working-age population, (2) the age adjustment to that growth, (3) the unadjusted growth in the proportion of exposed insured workers, (4) the corresponding age adjustment to the proportion exposed, (5) the unadjusted incidence rate, and (6) the corresponding age adjustment to the incidence rate. From those six components, other growth rates can be assembled. For example, the adjusted growth in the incidence rate is equal to the unadjusted growth in the incidence rate plus its age/sex adjustment. The unadjusted growth in exposed workers equals the unadjusted growth in the working-age population plus the unadjusted growth in the proportion insured. The adjusted growth in exposed workers equals the adjusted growth in the working-age population plus the adjusted growth in the proportion insured.

The adjusted incidence rate can be considered the residual growth that is unexplained after taking into account all the easily observable factors: population growth, the increase in the proportion of the population that is disability insured (driven by an increase in women's labor force participation), and the interaction of the shifting age composition of the insured population with the age pattern of disability incidence. Summarizing the results, we find that these factors account for 90 percent of the growth in new disabled-worker entitlements over the 36-year period (1972–2008) and 94 percent of the growth over the more recent half of that period (1990–2008).

The shifting age composition has much different effects in the two subperiods. Although the unadjusted measure for the disability incidence rate seems to grow faster in 1990–2008 than in 1972–1990, this apparent speedup disappears once the changing demographic structure of the insured population is taken into account. The growth in the adjusted incidence rate actually slows down across those two subperiods, and the share of incidence in total growth declines as well: Although growth in the adjusted incidence rate accounts for 17 percent of the growth from 1972 through 1990, it accounts for only 6 percent of the growth from 1990 through 2008.

This article and the estimates just summarized focus on disability *incidence*, as measured by the number of exposed workers becoming newly entitled to benefits in any given year, in contrast to disability *prevalence*, as measured by the number of exposed workers receiving disability benefits in any given year. Incidence measures the flow of workers onto the disability rolls. Prevalence, on the other hand, measures the stock of workers on the rolls—which is determined not just by the flow of workers onto the rolls but also by the flow of workers off the rolls (through death, recovery, or conversion to old-age benefits)—and by their duration on the rolls. In 2008, the number of disabled workers receiving benefits was approximately 3.4 percent of the working-age population (or 5.2 percent of the exposed disability-insured population), considerably higher than the 0.6 percent of the disability-exposed population that began receiving benefits during that year. Understanding changes in disability prevalence is the key to understanding growth in program costs over time. Disability incidence, the focus of this study, is the most important factor in the growth of disability prevalence, but it is not the only factor.

Background

This section summarizes relevant aspects of the Social Security DI program and discusses the main demographic factors behind the growth in new disabled-worker entitlements.

Although the original Social Security Act was enacted in 1935, cash disability benefits were not added to the Act until 1956. The evolution of the current legislative definition of disability actually began before that, with the introduction in 1954 of a disability freeze provision for the calculation of old-age and survivor benefits.[4] The current legislative definition of disability has been in place since 1967, with several steps taken between 1954 and 1967.

- The 1954 amendments, introducing the disability freeze provision, defined disability as "the inability to engage in any substantial gainful activity

by reason of any medically determinable physical or mental impairment which can be expected to result in death or to be of long-continued and indefinite duration." The amendments also defined the requirements for the attainment of disability-insured status, setting the outlines for the definition that is still in use today.[5]

- The 1956 amendments, which introduced cash benefits for workers aged 50–64, maintained the 1954 definition of disability.
- The 1960 amendments eliminated the age-50 requirement.
- The 1965 amendments liberalized the definition of disability to a disability that is expected to last at least 12 months (as opposed to "long-continued or indefinite duration"), while keeping the rest of the 1954 definition intact (Myers 1993, 239–241).
- The 1967 amendments tightened the definition of substantial gainful activity (SGA) by specifying that an individual be unable to engage in any SGA *that exists in the national economy* (Cohen and Ball 1968).[6]

The legislative definition of disability has not changed since 1967 (apart from changes in the dollar level associated with SGA[7]), although subsequent amendments, in 1984 in particular, have provided more detailed instructions to the Social Security Administration (SSA) on how to conduct the disability determinations. It is unclear how much the 1984 amendments represent a liberalization of the disability determination standards in place in the 1970s and how much they represent a reversal of a previous tightening of disability determination standards that occurred in the early 1980s.

These variations in the legislated disability determination process and their effects on policy implementation may have been responsible for some of the variation in disability incidence, shown in Charts 2 and 4. However, other factors may have contributed to those swings, including changing economic conditions. In economic recessions, for example, disabled workers might be more likely than nondisabled workers to lose their old jobs and less likely to be hirable for new jobs. These separate factors are difficult to quantify precisely, and we will treat all of them as a composite residual left over from what is explainable by the growth in disability-insured workers.

This article, accordingly, focuses on the role of growth in insured workers in explaining growth in new disabled-worker entitlements. Growth in insured workers can be decomposed into growth in the population as a whole and growth in the percentage of the population insured for disability.

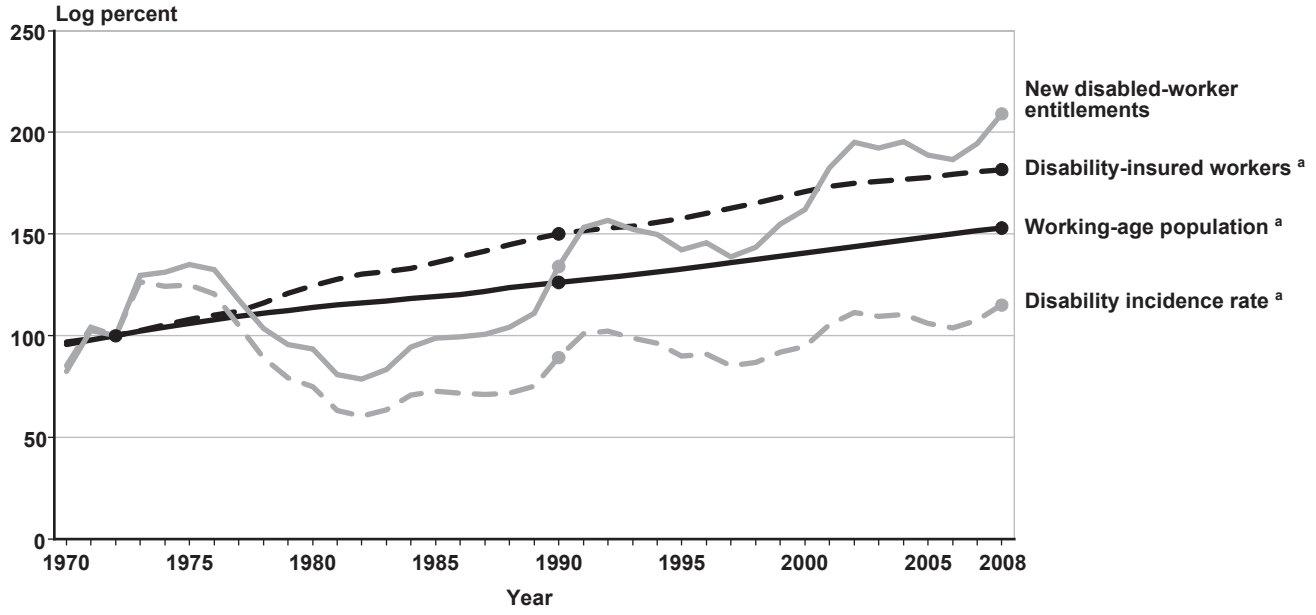
Population growth is a major driver of new disabled-worker entitlement growth. The effects of population change can be divided into two parts: overall growth and change in the age structure. Overall population growth is measured in this article by the size of the population aged 16–64. As indicated in Chart 4, that population grew by just over 50 percent over the 1972–2008 period, an average annual rate of 1.13 log percent.[8] Although the number of newly disabled workers did not always grow that fast, over the 36-year period as a whole it grew by 105 percent, or 1.99 log percent yearly, almost twice as fast as the population grew.

The population, however, does not grow at the same rate at all ages. The large cohort sizes associated with the baby boom and similar, but smaller, demographic cycles will lead to a changing age distribution as people who are a part of demographic booms or busts age through the life cycle. Because disability incidence is not constant across all ages, the changing age distribution would affect the overall disability incidence rate even if age-specific incidence rates were not changing.

As previously discussed, work-limiting disability as self-reported in the Census Bureau's Current Population Survey rises with age (shown in Chart 3). This rise in disability incidence with age is evident in DI entitlements as well.[9] Because disability onset is much more probable at older ages, a shift in the age composition toward the ages of likely disability entitlement will create an additional population effect on disability entitlement growth.

Over our study period, workers in the large baby boom birth cohorts (born from 1946 through 1964) were ages 8–24 in 1970 and ages 44–62 in 2008. During that period, therefore, we expect that this movement of the baby boom population into the more disability-prone ages will add to the effect of overall population growth. The age/sex-adjusted population growth index (calculated later) allows us to measure this additional demographic composition component of population growth. (The use of the population aged 16–64 to represent overall population growth is already in itself a crude age adjustment because that age range wholly contains the ages at which disability entitlement could have occurred, aside from a few years at the end of the study period when entitlement could have occurred after age 65.)

Chart 4.
Cumulative growth in the number of newly entitled disabled workers compared with *unadjusted* growth in the working-age population (16–64), the number of disability-insured workers, and the disability incidence rate



SOURCE: Social Security administrative data.

NOTE: The cumulative growth for the *unadjusted* components is set at 100 percent in 1972.

a. Unadjusted.

A second important driver in the growth of disabled-worker entitlements is the growth in the proportion of the population insured for disability. This is largely a story of the growth in the percentage of women insured for disability, which in turn is due to the growth in female labor force participation. For females aged 16 or older, labor force participation was about 40 percent in 1966 and about 60 percent in 2008.[10] Labor force participation of women during their prime earnings ages (25–54) was 45.2 percent in 1965 and 75.3 percent in 2005 (Mosisa and Hipple 2006, Table 1).

A worker is disability insured if he or she has had Social Security–covered employment in 5 of the preceding 10 years; this is true for all but the youngest workers. Although an increase in women's labor force participation will not necessarily translate into an increase in the proportion of women insured for disability, any persistent attachment to the labor force that increases the proportion of women with steady earnings will increase the share who have had earnings in at least 5 out of the past 10 years and who are, therefore, insured for disability.

Like population growth, the effect of growth in insured status can be divided into an overall growth level and an adjustment for the changing age/sex structure of insured workers, as the baby boom cohorts move through the disability-prone ages. Although the dramatic gains in female labor force participation at younger ages have almost leveled off (discussed later), there has been a less dramatic but continuing gain among women in their forties and fifties. At these ages, the persistent increase in their labor force participation has continued to contribute to growth in new disabled-worker entitlements.

Once we account for growth in the insured population, any remaining growth in the number of disabled-worker entitlements is classified as growth in the "incidence rate"—the ratio of new disability entitlements to exposed disability-insured workers. The incidence rate is the residual element unexplained by growth in the population or in the proportion of the population insured. It, too, can be divided into an overall growth in incidence and an adjustment for the changing age/sex composition of the population.

Many factors can contribute to the incidence rate residual. It can be affected by health and labor market trends and macroeconomic shocks that may affect disabled workers who are struggling to retain their jobs. Worker's perceptions of their probability of being awarded benefits may also influence their application rate, which can in turn affect the residual disability incidence rate.[11] The incidence rate residual may be sensitive to policy, legislative changes, and judicial rulings that influence how disability is determined. We do not attempt to measure or disentangle those other potential contributing factors.

Growth in disability incidence—the flow of newly entitled disabled workers onto the disability rolls—is the most important factor underlying growth in disability prevalence. Disability program costs, however, are even more closely related to disability *prevalence*—the number of disabled workers currently on the rolls. As discussed by Zayatz (2011), disability prevalence rates can also be affected by changes in the death and recovery rates of disabled-worker beneficiaries, as well as changes in the age at which disability benefits are converted to old-age benefits.[12]

Growth in disability prevalence can also be analyzed with techniques like those used here, but the analysis is complicated by the additional dimension of duration on the disability rolls.[13] Even if the age/sex structure of the population were not changing, trends that offset each other in the measure of incidence—such as a decrease in disability incidence at older ages offset by an increase at younger ages—can become much more important for a prevalence measure if, for example, workers who enter the disability rolls at younger ages tend to stay on the rolls longer than workers who enter at older ages. When the demographic structure is changing as well, the analysis is that much more complicated. An upsurge of age-50 disability incidence in 1990, when the baby boom cohorts were entering their disability-prone ages, will have more lasting consequences for disability prevalence than an age-50 upsurge in 1975, when the baby boom cohorts were younger. Exploring best measures for decomposing the growth in disability prevalence is a topic for additional research.

Data and Methods

Social Security administrative data allow the tabulation of the population of people with Social Security numbers (SSNs), the subset of that population that is insured for disability but not receiving benefits, and the subset of the exposed disability-insured population that becomes newly entitled to benefits. (In the Appendix, we discuss at greater length the data and methods provided in this section.)

These three numbers—population "*N*," exposed workers "*Exposed*," and new disabled workers "*DW"*—are tabulated for each sex *s*; for each age *x,* from ages 16 through 64; and for each year *t,* from 1970 through 2008. The numbers, tabulated using administrative data, are the basis for the rest of the calculations. With 49 ages and 2 sexes, there are 98 such numbers tabulated yearly for each of the three series (population, exposed workers, and new disabled workers), or 3,822 such numbers over the 39 years of data for each series.

The numbers tabulated for the age/sex composition of the working-age population can be aggregated each year to give the total working-age population,

$$N_t = \sum_x \sum_s N_{txs},$$

and, similarly, for the total exposed population $Exposed_t$ and the total new disabled workers DW_t.

The unadjusted incidence rate, r_t, is simply the ratio of the new disabled workers to the number of exposed workers,

$$r_t = \frac{DW_t}{Exposed_t}.$$

This yields a two-component decomposition of new disabled workers as the product of exposed workers and the incidence rate,

$$DW_t = Exposed_t \times r_t.$$

This two-part decomposition will be used here to explain the calculation of the age-adjusted incidence rate and the number exposed. (The extension to a three-part decomposition will be described shortly.) The year-by-year unadjusted numbers yield year-to-year growth rates in each component, unadjusted for changes in the age/sex composition. If log growth rates were used, they would add up, rather than multiply up,

$$g\left(DW_t\right) = g\left(Exposed_t\right) + g\left(r_t\right).$$

These unadjusted growth rates, however, can be misleading. If the incidence rate at each age stays the same, but the age composition of the exposed population shifts toward the disability-prone ages, the unadjusted incidence rate will grow, even with no growth in the incidence rate at each age. We would like to supplement those unadjusted growth rates with adjusted rates that indicate that some of the apparent

increase in incidence rates is really due to the shift in the exposed population toward ages with higher incidence rates. From that perspective, we want an adjusted incidence growth rate that is lower than the unadjusted rate, and an adjusted exposed population growth rate that is higher than the unadjusted rate.

The raw material for calculating adjusted growth rates are the growth rates in each age/sex cell, which are tabulated from the data,

$$g\left(DW_{txs}\right) = g\left(Exposed_{txs}\right) + g\left(r_{txs}\right).$$

The index calculated next belongs to the family of indexes in which the overall index is a weighted average of the cell indexes. The weight used for each cell is that cell's share in the total number of new disabled workers for that year,

$$w_{txs} = \frac{DW_{txs}}{DW_t}.$$

The index for growth in the exposed population—using these cell weights—is the weighted average of all the age/sex growth rates,

$$g\left(Exposed_t^*\right) = \sum_x \sum_s w_{txs} \cdot g(Exposed_{txs}),$$

where the asterisk signifies the adjusted growth rate.

Cell weights set equal to the share in the total have many desirable properties for the calculation of growth indexes. One desirable property is that the same set of cell weights can be used for all the components of the number of disabled workers. The weights used earlier to calculate the adjusted growth in the exposed population are also used to calculate the adjusted growth in the incidence rate,

$$g\left(r_t^*\right) = \sum_x \sum_s w_{txs} \cdot g\left(r_{txs}\right).$$

These are chain-weighted indexes because the weights w_{txs} change each year with the changing age/sex composition of the new disabled-worker population. As the intervals over which the growth rates are measured become shorter, the appropriate weight converges on the instantaneous disabled-worker share. Over longer periods, like the annual intervals used in this study, the weight shares will differ slightly from one year to the next. We use the Törnqvist index here, which simply averages the beginning share and the end share to represent the share for that interval's growth rates.

This decomposition of total growth into components becomes exact at the shortest time intervals, so that the adjusted component rates add up exactly to the growth in new disabled workers,

$$g\left(DW_t\right) = g\left(Exposed_t^*\right) + g\left(r_t^*\right).$$

Because the unadjusted rates also give, by their definition, an exact decomposition,

$$g\left(DW_t\right) = g\left(Exposed_t\right) + g\left(r_t\right),$$

the total growth can be considered the sum of four components: (1) the unadjusted growth in the exposed population, *g(Exposed)*; (2) the composition effect in the exposed population given by the difference between the adjusted and the unadjusted growth rate, *g(Exposed*)-g(Exposed)*; (3) the unadjusted growth in the incidence rate, *g(r)*; and (4) the composition effect for the incidence rate, *g(r*)-g(r)*.

Another advantage of this type of index is that because the same set of weights is used across components of the decomposition, the technique is easily extended to more than two components. For some of the analysis in this article, the exposed population will be factored into two components: the population (N) and the proportion of the population that is disability exposed ($p=Exposed/N$). The total growth can then be decomposed into three components, $g(DW_{txs}) = g(N_{txs}) + g(p_{txs}) + g(r_{txs})$, and the same weights as those used on the other components can be used to calculate a weighted average of the share exposed,

$$g\left(p_t^*\right) = \sum_x \sum_s w_{txs} g(p_{txs}).$$

The three components (or six, when each one is divided into two components—an unadjusted one and one that is adjusted by age and sex) are used in this article's accompanying tables. In the charts, which show cumulative changes, the focus will be on *N*, *Exposed*, and *r,* rather than on *N*, *p*, and *r*.

The index calculations yield annual growth rates, rather than levels. These annual growth rates can be averaged over longer periods, as Table 1 shows. For the charts, it is convenient to calculate cumulative growth (multiplying together the annual growth rates) and plot the cumulative growth relative to a base year, which for our purposes is 1972.

The raw numbers for the analysis—the numbers by sex and single year of age for the population, exposed workers, and new disabled workers—are tabulated from a 1 percent sample of the population with registered SSNs. The population with registered SSNs is close to representing the national population, and the populations of exposed disability-insured workers

Table 1.
Percentage decomposition of average annual growth rates, by selected reference subperiods

Component	1972–1990	1990–2008	1972–2008
	Panel 1: Growth in the working-age population (16–64)		
Unadjusted	1.30	1.06	1.18
Age/sex adjustment	-0.35	0.88	0.26
Adjusted	0.95	1.94	1.44
	Panel 2: Growth in the proportion insured		
Unadjusted	0.96	0.00	0.48
Age/sex adjustment	-0.56	0.39	-0.09
Adjusted	0.40	0.38	0.39
	Panel 3: Growth in the number of insured workers		
Unadjusted	2.26	1.06	1.66
Age/sex adjustment	-0.91	1.26	0.18
Adjusted	1.35	2.32	1.84
	Panel 4: Growth in the incidence rate		
Unadjusted	-0.63	1.41	0.39
Age/sex adjustment	0.90	-1.26	-0.18
Adjusted	0.27	0.15	0.21
	Panel 5: Total growth in disabled-worker entitlements		
Unadjusted	1.63	2.47	2.05
Age/sex adjustment	-0.01	0.00	0.00
Adjusted	1.62	2.47	2.04

SOURCE: Social Security administrative data.

and newly entitled disabled workers coincide with the actual population, at least conceptually, although there are some measurement problems discussed in the Appendix.

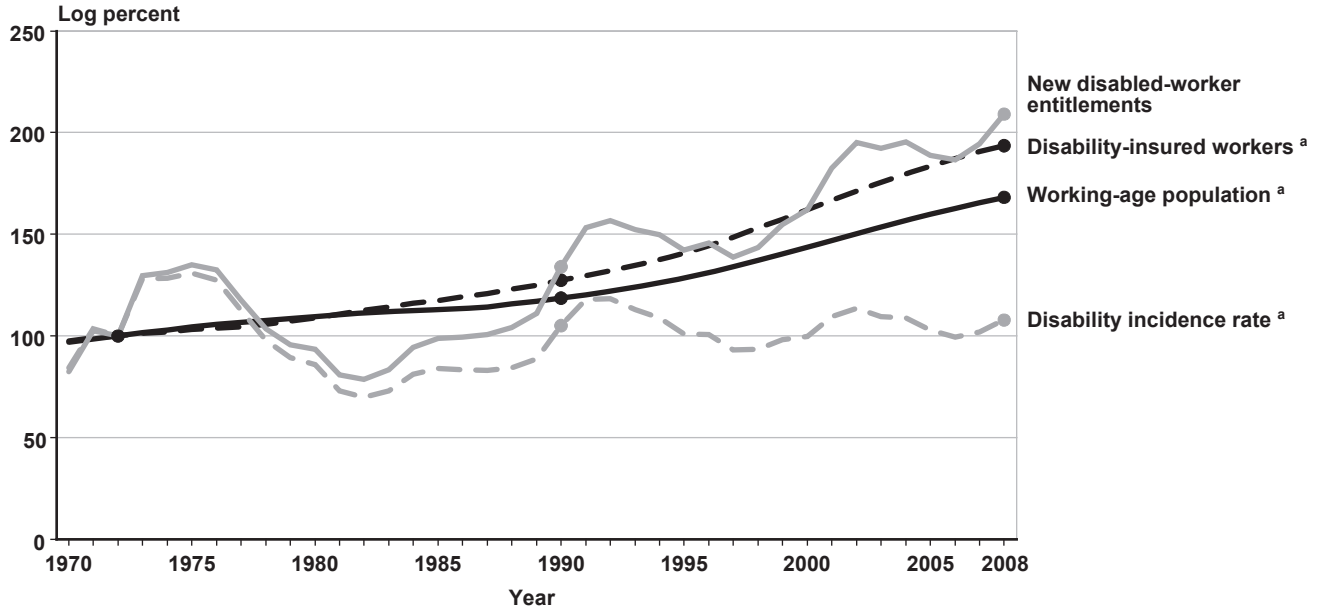
Our study period is 1970 through 2008. The earlier limit is set by data availability. (By coincidence, there were several changes to the definition of disability before 1970, as discussed in the Background section, that would have made analysis of that early period less meaningful.) The end date was chosen for data reasons as well. Although we had administrative data for several years after 2008, there were lags, not only in the disability determination process (the determination decision date can be several years after the eventually allowed date of entitlement), but also in data recording and combining earnings, disability, and death data into research files. The year 2008 was the first year for which the data were reasonably complete. Since starting the study, another year has become available, but, for our focus on the longer-term trends, we chose to avoid the large effects of the Great Recession, which was already beginning to have an impact in 2008.

Cumulative Growth

Growth rates calculated for every year in the study period can be converted into cumulative growth. In this article's charts, the cumulative growth is set to 100 percent in 1972. Cumulative growth for the unadjusted components is shown in Chart 4. Not all of the calculated unadjusted and adjusted components are presented in Chart 4 and Chart 5, respectively. The growth in the working-age population, the number of exposed workers, and the number of newly-entitled disabled workers is shown, as well as the growth in the incidence rate—the ratio of newly entitled workers to exposed workers.

The vertical scaling in both charts is such that the cumulative growth in the incidence rate from 100 percent is equal to the difference between the cumulative growth in newly disabled workers and the cumulative growth in exposed workers.[14] The growth in the proportion insured is not shown directly, but it is equal to the difference between the growth in the exposed population and the growth in the working-age population. The index-number decomposition of the growth rates is used for every year in the study period

Chart 5.
Cumulative growth in the number of newly entitled disabled workers compared with *age/sex-adjusted* growth in the working-age population (16–64), the number of disability-insured workers, and the disability incidence rate



SOURCE: Social Security administrative data.

a. Adjusted by age and sex.

(1970–2008), and the cumulative-growth indexes are presented graphically in Chart 5.

Because of the wide swings in disability incidence over time, the analysis of incidence trends is very sensitive to the beginning and endpoints used in the calculation. Measuring from a trough to a peak would give a misleadingly high incidence growth rate, and measuring from a peak to a trough would give a misleadingly low rate.

To avoid either extreme, the reference years used were selected through a semiautomatic procedure described in the Appendix. For the averages in this study, 3 years—1972, 1990, and 2008—are used, conveniently providing two equally long 18-year subperiods (1972–1990 and 1990–2008) and a combined 36-year period (1972–2008). (Although the two 18-year subperiods are the same length, they differ in that the earlier of the two periods contains only one large up-and-down cycle, but the later period contains two smaller up-and-down cycles.) The reference years are marked with points on the charts.

The year 1990 is notable because that year saw more new disabled-worker entitlements than had ever been seen before, with the exception of a near tie around 1975, but fewer than have ever been seen since, despite the wide fluctuations both before and after 1990 (Chart 2).[15] For the disability incidence rate, which is the growth in new entitlements after removing the growth in the insured population, 1990 is a middling year, whether using the unadjusted numbers (Chart 4) or the adjusted numbers (Chart 5). The apparent dramatic growth in Chart 2, in other words, is largely the effect of the growth in the insured population.

Average Annual Growth Rates

The year-to-year growth rates shown in Charts 4 and 5 are summarized as average annual growth rates in Table 1, both for the longer 36-year period and for the two 18-year subperiods. Those annual average growth rates are presented for both the unadjusted and the adjusted growth rates (Charts 4 and 5, respectively), as well as for the difference (the age/sex adjustment) between them. As we discuss in the following section, comparing unadjusted and adjusted growth rates for selected reference periods can give one an idea of the importance of the age/sex adjustment in explaining the cumulative growth in various components.

The three unshaded panels (1, 3, and 5) in Table 1 respectively show growth in the working-age population, in disability-insured workers, and in new disabled-worker entitlements. The two shaded panels (2 and 4) respectively show growth in the ratios of insured workers to the overall population (the proportion insured) and disabled-worker entitlements to insured workers (the incidence rate).

Within each panel, the age/sex adjustment is the difference between the unadjusted growth rate and the age/sex-adjusted growth rate. For example, the recent-period (1990–2008) average annual growth in the number of insured workers (panel 3, column two) was 1.06 percent without adjustment and 2.32 percent with adjustment. The difference, 1.26 percent, indicates the effect of the age/sex adjustment.

Between panels, the growth rate in the number of insured workers is the sum of the population growth rate and the proportion-insured growth rate. The growth rate in new disabled-worker entitlements is the sum of the growth rate in insured workers and the growth rate in the incidence rate; when decomposing the growth in insured workers, it is the sum of the three component growth rates: the population aged 16–64, the proportion DI insured, and the incidence rate (see the accompanying box for quick reference). These summations can be calculated with either the unadjusted rates or the adjusted rates. For the recent period (1990–2008), for example, see column two. The unadjusted rate of average annual growth in new disabled-worker entitlements (2.47 percent) is the sum of the unadjusted rates for the population, proportion insured, and incidence rate (1.06 + 0.00 + 1.41). Alternatively, the adjusted rate of growth in entitlements (2.47 percent) is the sum of the corresponding adjusted rates (1.94 + 0.38 + 0.15).

An index that decomposes the growth rates exactly would give the same total growth rate for the adjusted numbers as for those unadjusted. The two totals are shown in the bottom panel (5) of Table 1, with the age/sex adjustment showing the difference. The small differences, which are due to the calculation of the index at discrete annual intervals, rather than continuously, are negligible.

Growth in the Disabled-Worker Population and the Aging of the Baby Boom Cohorts

As discussed earlier, even if there were no changes in disability policy, worker health, or the economy, we would expect the number of disabled workers to grow in pace with the growth in the US working-age population. As shown in Chart 1, this study's working-age population grew from 143 million in 1972 to 219 million in 2008, an increase of 53 percent over 36 years, or 1.18 percent per year.

However, because of the aging of the baby boom cohorts, the age composition of the population has also changed substantially over the 1972–2008 period. In Chart 6, we show the size of the working-age population at selected ages. The size of the population at disability-prone ages first began to accelerate in the late 1980s and early 1990s. The large jump in each line, denoting specific ages in the chart, represents the 1946 birth cohort—a group that reached age 45 in 1991, age 50 in 1996, age 55 in 2001, and age 60 in 2006. The sharp increase in births in 1946, however, was only a striking jump in the middle of a longer-term growth in births that began in the mid-1930s

Decomposition Summations

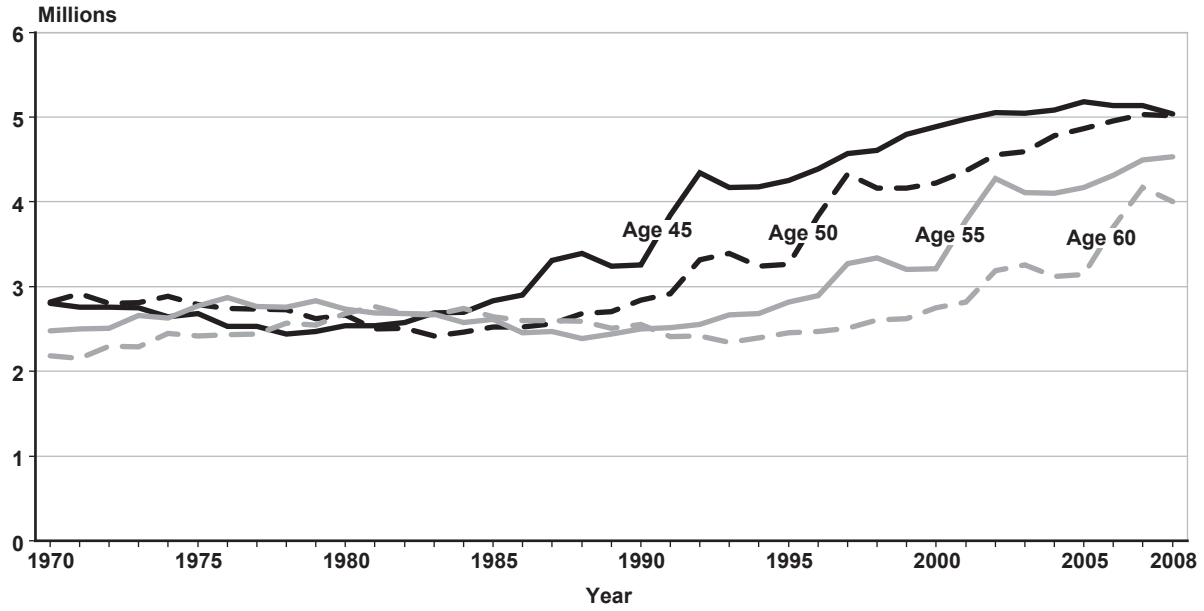
Growth in the number of DI-insured workers =
the growth in the working-age population (16–64)
+ the growth in the proportion of the population that is DI insured

Growth in the number of new disabled-worker entitlements =
the growth in the number of DI insured workers
+ the growth in the disabled-worker incidence rate

Or, when decomposing the growth in insured workers—

Growth in the number of new disabled-worker entitlements =
the growth in the working-age population (16–64)
+ the growth in the proportion of the population that is DI insured
+ the growth in the disabled-worker incidence rate

Chart 6.
Size of the working-age population (16–64), by selected ages, 1970–2008



SOURCE: Social Security administrative data.

and slowed down only much later. This movement of the baby boom cohorts into the disability-prone ages can be expected to have accelerated the growth in the number of new disabled workers during the 1990s.

The contribution of the aging of the baby boom cohorts to the growth in disability entitlements can be seen by comparing the unadjusted population growth in Chart 4 with the adjusted population growth in Chart 5. The unadjusted and adjusted growth rates between the reference years are also given in the top panel (1) of Table 1.

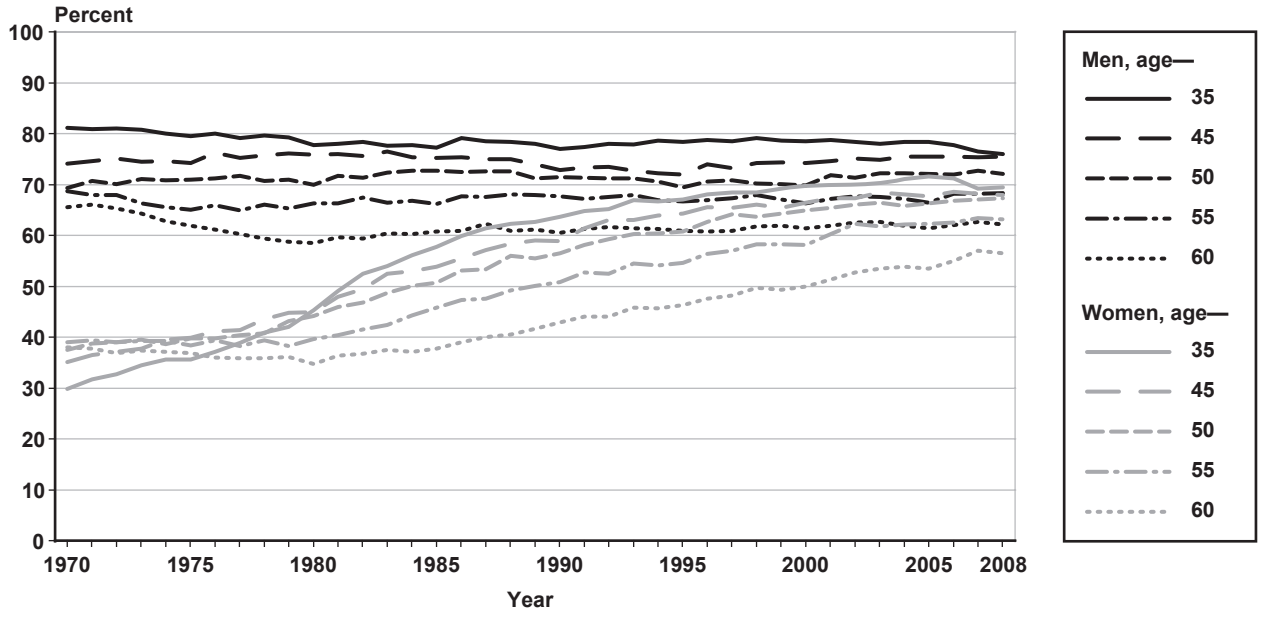
In the first half of the study period (1972–1990), the rapid population growth is concentrated at younger ages. Because much of this early growth was at ages where disability was uncommon, that growth was downweighted in the adjusted index, resulting in an adjusted growth rate for the period of 0.95 percent per year, lower than the unadjusted rate of 1.30 percent per year. In the second half of the period under study (1990–2008), in contrast, as population growth moves into the disability-prone ages, the adjusted growth rate increases, with an adjusted growth rate of 1.94 percent per year, substantially higher than the unadjusted rate of 1.06 percent per year. The differences are visually apparent in Charts 4 and 5 as well. The unadjusted population growth rate in Chart 4 is steady across both periods, but the adjusted population growth rate in Chart 5 accelerates between 1990 and about 1993 to a higher growth rate, which shows signs of slowing only toward the very end of the period.

The Growth in the Insured Population

Between 1972 and 2008, the disability-insured population in the Numident study sample grew from 78 million to 142 million, an 82 percent increase over 36 years, or an average of 1.66 percent per year. Part of this growth is due to the growth in the working-age population itself, but the proportion of the population that is insured for disability grew as well. That proportion increased from 54.6 percent in 1972 to 64.9 percent in 2008 at an average rate of 0.48 percent per year.[16]

The proportion of the working-age population insured, by sex and selected ages, is shown in Chart 7 for the overall 1970–2008 study period. As more women have spent more of their working-age years in the labor force, a higher proportion of them have accumulated enough earnings credits to be insured for disability benefits. This growth slows down at the younger ages, but still appears to be rising at ages 55 and 60. Even if there had been no baby boom, this growth in the share of workers with insured status

Chart 7.
Proportion of the working-age population (16–64) insured for Social Security DI benefits, by age and sex, 1970–2008



SOURCE: Social Security administrative data.

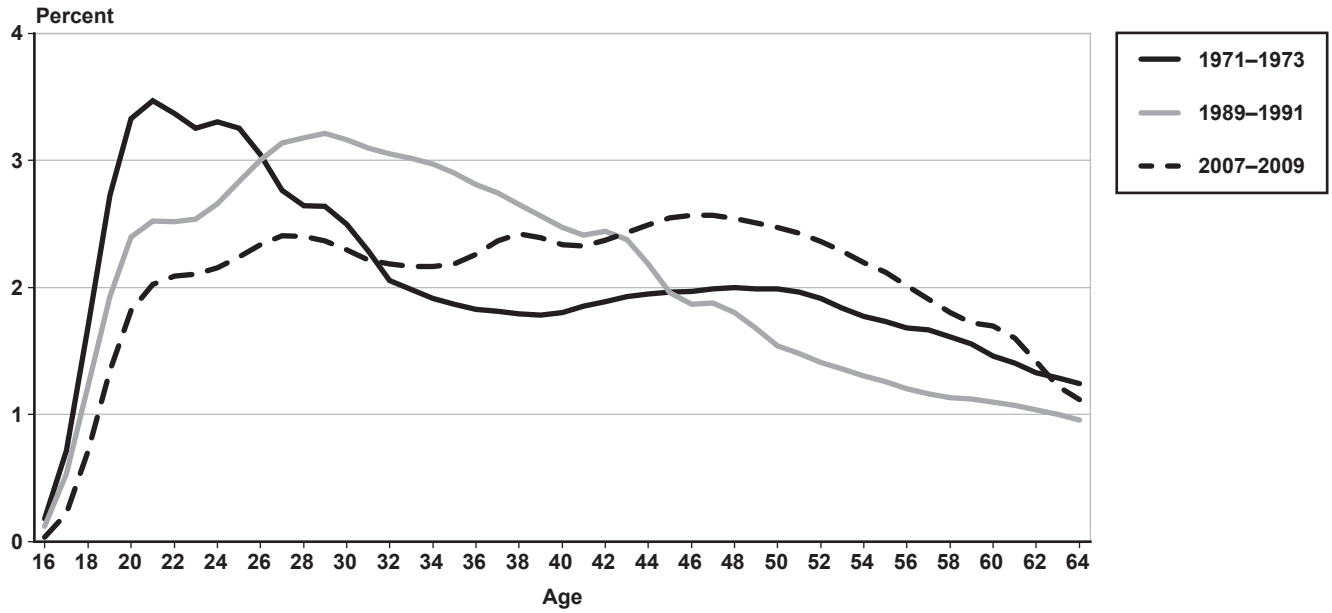
at older working ages would have contributed to an acceleration in the number of new disabled workers.

The growth in insured status in combination with the aging of the baby boom cohorts alters the age composition of the disability-insured population considerably. The age distribution of the insured population is shown for selected periods in Chart 8. (The chart shows the percentage of the population aged 16–64 insured at each age. If the population were distributed evenly over those 49 years, there would be about 2 percent insured at each age.) Note that the calculation of disability-insured status takes into account the special rules for workers younger than age 30, who have shorter recency-of-work requirements than the 20 quarters out of the last 40 required for disability onset after age 30.

In the 1971–1973 period, the baby boom bulge cohort was younger than age 25—ages that have relatively low rates of disability-insured status and disability onset. By the 2007–2009 period, the leading edge of the baby boom cohort was reaching age 62 and most of the cohort was entering the high disability-risk ages, where disability-insured status would be expected to be relatively high as well. We can expect that this movement of the baby boom cohorts by itself would contribute to a substantial increase in the number of new disabled workers.

The contribution of this growth in insured status at older ages can be seen by comparing Charts 4 and 5 and the appropriate rows of Table 1. The difference in growth between the working-age population and the growth in the number insured is the growth in the proportion insured; this is shown in Table 1, but not directly charted. In both Charts 4 and 5, however, the growth in the proportion insured is indicated by a growth in the difference between the indexes of the working-age population and the insured population. Using the unadjusted numbers (Table 1 and Chart 4), the insured population grows faster than the working-age population before 1990, but slows after 1990 to about the same rate of growth as the working-age population. This relatively rapid growth in the early period is due to the increase in insured status among younger women, where growth did not contribute much to disabled-worker entitlements. Using the adjusted numbers (Table 1 and Chart 5), in contrast, the insured population outpaced the working-age population by an almost identical rate, about 0.4 percent per year, in both of our earlier and later subperiods (1972–1990 and 1990–2008).

Chart 8.
The changing distribution of the disability-insured population, by age and selected subperiods



SOURCE: Social Security administrative data.

The Disability Incidence Rate

The incidence rate—the part of disability entitlement growth not explained by the growth in insured workers—will be of particular interest to policymakers because that factor may reflect growth that has been influenced by changes to Social Security legislation or administrative policy. It is important, therefore, to be able to calculate an incidence rate that shows the changes in disability incidence that are not due to the shifting age composition of insured workers.

The growth in the unadjusted and adjusted incidence rates is plotted in Charts 4 and 5, respectively, and is shown in Table 1.[17] Over the 1972–2008 period, growth in the unadjusted incidence rate averaged 0.39 percent per year. Over the same period, the adjusted incidence rate averaged 0.21 percent per year, a little over half of the unadjusted rate.

The striking difference in the subperiod growth rates, before and after the age/sex adjustment, illustrates how unadjusted statistics can lead to misleading analytical conclusions. For example, the unadjusted incidence rate for the first-half of the period (1972–1990) shows a decline of -0.63 percent per year, changing in the second-half of the period (1990–2008) to rapid growth of 1.41 percent per year. For the adjusted incidence rate, the earlier subperiod shows a growth averaging 0.27 percent per year, slowing in the later subperiod to 0.15 percent per year. In other words, an analyst looking at the unadjusted statistics would conclude that the 1990–2008 period had the higher growth in the disability incidence rate, when, by a more useful measure, growth in the 1972–1990 period was higher.

The incidence rate reflects a variety of factors, including both changes in the proportion of workers applying for benefits (because of either health trends, economic conditions, or expectations of being allowed) and changes in program stringency. Although some of those factors could reflect slowly moving trends, large cycles appear to dominate the incidence rate index. After about 1990, some of the variation might be associated with changes in the unemployment rate, but that is a subject for another study.

Because of the large fluctuations, the average annual rates for the disability incidence rate (adjusted or unadjusted) are sensitive to the beginning and ending points chosen for the time span, much more so than the growth rates for the working-age population or DI-insured workers. Perhaps the safest way of stating the results, a little less sensitive to the time period chosen, is that the ratio of disability incidence growth after 1990 to growth before 1990 is substantially lower after the adjustment for changes in the age/sex composition.

Percentage Decomposition of Growth in Disabled-Worker Entitlements

Because the annual growth rates are additive, the summarized annual averages from Table 1 can be used to calculate the percentage of overall growth in new disabled-worker entitlements that is explained by the various factors. Table 2 presents this set of decompositions for the two 18-year subperiods (1972–1990 and 1990–2008) and the combined 36-year (1972–2008) period. Looking at the combined period, for example, in which the total growth in disabled-worker entitlements was approximately 2.05 percent per year (Table 1), we see that, according to the unadjusted growth rates, 81 percent (1.66 percent per year out of 2.05) is attributable to growth in the number of insured workers, and 19 percent (0.39 percent per year out of 2.05) is attributable to the change in the disability incidence rate. According to the adjusted growth rates, however, the growth in insured workers explains 90 percent of the total (1.84 percent per year out of 2.04), and the growth in the incidence rate explains only 10 percent (0.21 percent per year out of 2.04).

Looking at the two 18-year subperiods, the impact of age and sex compositional changes on the decomposition is stark. In the 1972–1990 period, when the baby boom cohorts were young, the growth in the number of newly entitled disabled workers averaged 1.62 percent per year. Using the unadjusted numbers, it appears that growth in the number of insured workers would have accounted for 139 percent of that growth (meaning that the number of insured workers grew faster than the number of new disabled workers), with a shrinking incidence rate reducing growth by 39 percent. After adjustment for the age/sex differences, however, growth in insured workers explains 83 percent of the total, and growth in the incidence rate explains 17 percent.

In the second 18-year subperiod (1990–2008), growth in newly entitled disabled workers sped up, averaging 2.5 percent per year. Using the unadjusted numbers, it appears that growth in the number of insured workers accounts for 43 percent of the total, and growth in the incidence rate accounts for 57 percent. After adjustment, growth in the insured population accounts for almost all the growth in new disability entitlements, 94 percent, with only 6 percent of growth remaining unexplained (that is, attributable to growth in the incidence rate). The largest

Table 2.
Percentage decomposition of growth rates, by selected reference subperiods

Component	1972–1990	1990–2008	1972–2008
	Panel 1: Growth in the working-age population (16–64)		
Unadjusted	79.6	43.1	57.6
Age/sex adjustment	-21.4	35.5	12.9
Adjusted	58.2	78.6	70.5
	Panel 2: Growth in the proportion insured		
Unadjusted	59.0	-0.1	23.4
Age/sex adjustment	-34.5	15.6	-4.2
Adjusted	24.5	15.5	19.1
	Panel 3: Growth in the number of insured workers		
Unadjusted	138.7	43.0	80.9
Age/sex adjustment	-55.9	51.1	8.6
Adjusted	82.8	94.1	89.6
	Panel 4: Growth in the incidence rate		
Unadjusted	-38.7	57.1	19.0
Age/sex adjustment	55.5	-51.1	-8.8
Adjusted	16.9	5.9	10.2
	Panel 5: Total growth in disabled-worker entitlements		
Total	100.0	100.0	100.0

SOURCE: Social Security administrative data.

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

contributor to this change in the relative importance of the various components of DI entitlement growth is the growth in the population aged 16–64, which increases by 35 percentage points after the age/sex adjustment. This large adjustment reflects the baby boom cohorts moving into high disability-prone ages, as discussed earlier.

Comparison With Other Studies

As far as we know, this is the first study to decompose the growth in new disability entitlements into component parts using a chained index technique. Several other studies have used other techniques on some of the components.

SSA's Office of the Chief Actuary (OCACT) has a long history of conducting analyses that incorporate age and sex adjustments. What appears to be the first published instance of such a study is one analyzing total awards and disability incidence rates by age and sex (Myers 1965). More recently, Zayatz (2005, 2011) has presented some age-and-sex adjusted figures in his actuarial studies of worker experience in the DI program. Like us, Zayatz (2011, 9 and Table 4, 21) finds "the incidence of disability increases considerably as individuals age." This finding explains why our estimate of the growth in the disability incidence rate is sensitive to the presence or absence of an age/sex adjustment.

The indexed decomposition of new disability entitlement growth we use in this article can also be compared with OCACT's age/sex-adjusted analysis of disability incidence found in Figure V.C3 of *The 2013 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds* (Board of Trustees 2013). The age/sex-adjusted incidence rates presented in that report are obtained using a kind of index-number method, and the results are very similar to ours.[18] The unadjusted incidence rate calculated here corresponds conceptually to the gross incidence rate in the *Trustees Report* figure, and the adjusted incidence rate calculated here corresponds to the age/sex-adjusted incidence rate in the *Trustees Report*. In this study, we also go beyond the incidence rate calculation to calculate growth that is due to population and insured-status components. The technique used for the *Trustees Report* figures could also be extended in that way and would give similar results.

Other than the work of OCACT, the closest forerunners to our analysis appear to be Rupp and Stapleton (1995), drawing on Lewin-VHI (1995). These authors decompose the determinants of application and award growth over the 1988–1992 period.[19] Qualitatively, those analyses find results similar to ours. The difference in time periods studied precludes direct numerical comparisons.

For example, Rupp and Stapleton (1995, 47) find, "both the growth in the size of the working-age population and the aging of the baby boom generation have contributed to recent growth in applications and awards for SSA's disability programs." More specifically, the authors state, "based on 1988 age-specific application rates and population growth by age from 1988 to 1992, we estimate that population growth and aging together account for average annual DI application growth of 1.3 percentage points and [Supplemental Security Income] SSI application growth of 1.2 percentage points—both more than twice the average growth rate of the working-age population. Results for awards were almost identical" (48).

In addition, citing Lewin-VHI (1995), Rupp and Stapleton (1995, 48) note that the added contribution of changes in the disability-insured status of women contributed an additional 0.8 percentage points to the growth of DI awards from 1988 to 1992, for a total average annual contribution of 2.1 percentage points a year—attributed to changes in the size and age/sex composition of the disability-insured population.

Another segment of the literature focuses on prevalence rather than incidence (Autor and Duggan 2006; Duggan and Imberman 2009; and Burkhauser and Daly 2012). Those studies appear to find little role for population growth.[20] On the other hand, work by OCACT *does* find a role for population growth.

More specifically, with regard to the projected growth in the number of disabled workers in current-payment status from 2011 through 2090, the *2013 Trustees Report* states, "Of course, much of this growth results from the growth and aging of the population…" (Board of Trustees 2013, Table V.C5, 132–133). Likewise, in testimony before the House Ways and Means Committee, Goss (2013, 4) decomposes historical growth in the number of disabled workers on the rolls (prevalence) from 1980 through 2010 and finds a role for both population growth and the changing age distribution of the population.

As discussed earlier, the growth in the number of people on the rolls—the focus of the prevalence studies conducted by Autor and Duggan (2006); Duggan and Imberman (2009); Burkhauser and Daly (2012);

and Daly, Lucking, and Schwabish (2013)—will differ from the growth in the number of workers entering the rolls—the focus of our incidence study. However, the differences in apparent conclusions are not solely due to the difference between prevalence and incidence. Although the titles and tables in those studies appear to focus on the growth in the number of beneficiaries,[21] the studies actually appear to examine the growth in the *ratio* of beneficiaries to the population. Over long periods, population growth is the single largest factor contributing to growth in the number of beneficiaries, but studying the growth in the ratio of beneficiaries to the population leaves out entirely the contribution of population growth itself.[22]

Several of these studies also use 1984 as the starting point. As we have discussed, DI-growth measures are very sensitive to the choice of beginning and ending points. Chart 4 indicates that 1984 was a year reflecting relatively low DI incidence. Using it as a starting point in our analysis would have placed more weight on the growth of the incidence rate relative to the growth in the insured population, but this increased weight—the result of a low-incidence starting point—would be misleading for longer-term trends.

The period around 1984, furthermore, was a particularly unrepresentative period for SSA policy. Autor and Duggan (2006), Duggan and Imberman (2009), and Burkhauser and Daly (2012) attribute a key role in the growth in the DI rolls after 1984 to the Social Security Amendments of 1984, which introduced more detailed instructions to SSA on what criteria to use when making disability determinations (see SSA (2006, 8) for details), as if those amendments shifted disability incidence from a pre-1984 level to a higher and rising post-1984 level. However, as Kearney (2005/2006) and Puckett (2010) discuss, pre-1984 legislative and administrative efforts to reduce the disability rolls, particularly over the 1980–1983 period, prompted a backlash from the public, the press, state governors, the courts, and Congress, and, in hindsight, were unsustainable. In fact, the backlash was so swift that many challenges and corrections to SSA's policies occurred *prior* to the 1984 amendments, including, for example, an early SSA loss in the 9th Circuit Court of Appeals (*Finnegan v Matthews* in 1981),[23] discussed in Kearney (2005/2006) and the refusal of 23 state governors to conduct continuing disability reviews (Puckett 2010). Thus, given the tumult that occurred over the 1980–1983 period, using a year like 1984—several years before the restoration from temporarily depleted disabled-worker beneficiary levels had had a chance to work itself through the system—seems quite likely to give a misleading picture of the factors underlying current growth.

Conclusion

In this article, we find that although the raw or unadjusted growth in the number of workers becoming entitled to benefits under Social Security's DI program gives the appearance of an upward and accelerating trend, using such a measure may lead to misleading analytical conclusions. Once we adjust for population growth—compounded by the movement of the large baby boom generation into disability-prone ages and a continuing growth in the proportion of women at those ages who are insured for disability—we find that these factors explain 90 percent of the growth in new disabled-worker entitlements over the 36-year period (1972–2008) and 94 percent of the growth over the more recent 18-year subperiod (1990–2008). In addition, although an incidence rate measure that is unadjusted seems to indicate faster growth in disability incidence in the 1990–2008 period than in the earlier period (1972–1990), this apparent speedup disappears once the changing demographic structure of the insured population is taken into account. The growth in the adjusted incidence rate actually slows down, and the incidence rate's share of overall growth decreases. Although the adjusted growth in the incidence rate accounts for 17 percent of the growth in disability entitlements in the earlier period, it accounts for only 6 percent of the growth in the later one.

Appendix: Description of Data and Methods

As discussed in the Introduction, the method used in this study to decompose the growth in new disabled workers is an index-number technique that is similar to that used to calculate a price index. Price indexes separate growth in total expenditure into the part that is the result of price changes and the part that is the result of changes in the number of units purchased. The procedure here is the same, except that total expenditure is replaced by the number of new disability entitlements, the number of units purchased is replaced by the population in each age/sex group, and prices are replaced by the combination of the proportion of each age/sex group that is insured for disability and the proportion of the insured that becomes entitled to disabled-worker benefits.[24]

In this article, we use the Törnqvist index. The underlying data are the growth from one year to the next in each age/sex cell of the three components—population, proportion of the population insured, and proportion of the insured who become disabled. An index averages those rates of growth together. For the Törnqvist index, the weights used in calculating that average are the shares of each age/sex group in the total disability entitlements for that year, so that population growth at older disability-prone ages will count for more than the population growth at younger ages. The same age/sex share weights are used for the other components (growth in proportion insured and growth in the incidence rate), resulting in separate indexes for growth in the three components that when combined almost exactly reflect growth in total new disability entitlements.[25]

The Data

The data used in this analysis come from several internal SSA research files, all of which use the same 1 percent sample population as that used in SSA's Continuous Work History Sample (CWHS). The CWHS 1 percent sample "may be described as a stratified cluster probability sample of all possible [Social Security numbers] SSN's" (Smith 1989).

These data files allow tabulations by sex and single year of age of (1) the population of SSN holders, (2) the number of insured workers, and (3) the number of new disabled-worker entitlements. Age at tabulation is the age as of the end of the year. Timing decisions, such as whether to tabulate the insured population at the beginning of the year or at the end, and definitions, such as the exclusion of insured workers already receiving benefits, are described later.

The Population

The working-age population, as used in this study, refers to people alive at the beginning of the calendar year who are aged 16 to 64 at the end of the calendar year. The population counts are tabulated from a 1 percent sample of people with SSNs. Foreign-born people are not counted until the year after they receive an SSN. The base file for these tabulations is the Numident—although sex, year of birth, and year of death are sometimes corrected from other files.

The population figures tabulated from the Numident do not give a comprehensive count of the total population living in the United States, although the changing age distributions seen in the Numident population should closely match those from the Census Bureau. Differences are unlikely to affect our analysis of trends. The Numident population can differ because it does not include people who live in the United States but do not have an SSN, but it does include some people who have emigrated from the United States and others who have died without their death being recorded in the administrative files.[26]

Disabled-Worker Entitlements

Although the DI program pays auxiliary benefits to several types of dependents of insured workers, we limit this analysis to disabled-worker beneficiaries entitled on their own earnings history. As of December 2009, disabled-worker beneficiaries represented 87 percent of disabled beneficiaries in current-payment status (SSA 2010).[27]

The disability determination process for the Social Security DI program is also used to determine eligibility for the SSI disability program—a means-tested program paid from the general fund of the US Treasury rather than from the Social Security trust funds. (SSA administers the SSI program, but is reimbursed from the general fund for the cost of SSI administration.) Although workers can apply simultaneously for DI and SSI disability, only those workers who become entitled to DI are counted as disabled-worker entitlements in this study.

The Master Beneficiary Record (MBR) file contains records of people with a history of Social Security benefit entitlement. Those records include the dates of the beginning of entitlement; the end of entitlement (or death); and, in the case of disability benefits, conversion from disabled- to retired-worker benefits upon reaching retirement age. If there have been multiple periods of disability entitlement for a worker (such as when he or she recovers and then becomes entitled again to disabled-worker benefits or becomes entitled later to retired-worker benefits), the information on the intermediate dates has not always been retained in the data records. We expect the effects of these missing entitlements from multiple periods to be small.

Tabulations of disability entitlements include people aged 16 to 64 from 1970 through 2008. The count of entitlements in the last years of our study period might be low because there were some applications at the time of the sample extract that have been delayed by appeals and might yet be awarded a retroactive entitlement to 2008 or earlier.

Many of SSA's published statistics, such as some tables in the *Annual Statistical Report on the Social*

Security Disability Insurance Program and the *Social Security Trustees Report*, count the number of new disability *awards* by year. In contrast, this analysis focuses on the number of new disability *entitlements* by year. A disability award is reported in the year in which a payment is first made to an individual from the DI Trust Fund. Disability entitlement, on the other hand, generally refers to the month 5 months after the month in which the onset of disability was determined to have occurred—the month that follows the 5-month disability waiting period.[28] Because some DI-worker benefits are awarded on appeal by an administrative law judge, the date of the award can, in some cases, be 2 or more years after the date of the entitlement. (Workers whose month of award is later than their month of entitlement receive a retroactive payment for the months that were missed.)

The award date is the month in which payments actually begin, but the entitlement date determines the amount of benefits that actually will be paid, even if some are paid retroactively. There are arguments in support of both the entitlement date and award date for the analysis of trends. For this study, the entitlement date was used, in part because it is more closely tied to the onset of the disability[29] and to lifetime disability benefits paid, but also because it is more easily obtainable from the data available to us. Trends in new DI entitlements and trends in new DI awards tend to follow each other closely, with the average difference varying according to the average time between date of onset and the date of the decision to award. For a decomposition of the growth of DI entitlements, we expect there would be little practical difference in the qualitative analytical results if we instead decomposed the growth in DI awards.

For simplicity and consistency across time, we exclude new disability entitlements that occur at or after age 65. In our sample, the retirement age for cohorts born before 1938 is age 65, but the age for birth cohorts born from 1938 through 1944 will range from age 65 and 2 months to age 66, which means that disability-insured workers born in those years are eligible for disabled-worker benefits at ages greater than our last age of observation (64). In other words, for the last 3 years of our study period (2005–2008), we exclude any new disability entitlements that occur at or after age 65. However, because we measure our working-age population at ages 16 to 64, our exclusion is not expected to bias the growth decomposition. The unmeasured growth beyond age 65 will appear in other statistics, such as the *Trustees Report*, so our measure of disability incidence can be expected to be slightly lower than the other measures for years 2005 through 2008.

The Disability-Insured Population

The CWHS file for tax-year 2010, which contains earnings histories up through 2010, provides annual Social Security–taxable earnings data and quarters of coverage information from 1951 through 2010 and is used to calculate disability-insured status. Insured status is calculated at the end of each calendar year, taking into account earnings during that year. This definition allows workers who attained disability-insured status during the year to be counted.

The calculation of disability-insured status takes into account the special rules for workers younger than age 30, who have shorter recency-of-work requirements than the 20 quarters out of the last 40 required for disability onset after age 30.

Adjustment of the Insured Population to the Exposed Disability-Insured Population

Workers receiving disability benefits still are technically insured for disability, even if they have not worked for many years. If the rate of disability entitlements among nonbeneficiary-insured workers was constant, but the proportion of disabled beneficiaries in the population of insured workers was rising, inclusion of the number of beneficiaries in the denominator would indicate a declining trend. To avoid that possibility, the count of disability-insured workers in this article excludes those people already receiving benefits at the beginning of the year (other than those who show a new entitlement during the year).[30]

The adjusted insured population we use here is similar to the "exposed population" used by OCACT for its calculation of the incidence rate. The exposed population concept also excludes workers receiving benefits, even though they are technically entitled. OCACT's concept is more refined, with exposure averaged over the year, rather than using disability status at the beginning of the year.

Incidence Rate

The disability incidence rate for this study is calculated as the ratio of new disabled-worker entitlements in a given year to the number of insured workers at the end of that year, with the number of insured workers adjusted as described in the preceding paragraph. To be counted in the denominator, a worker must not have been receiving disability benefits at the beginning of

the year and must have either been insured for disability at the beginning of the year or become insured by the end of the year. To be counted in the numerator, a worker must have been counted in the denominator and, additionally, must have become entitled to disability benefits during the year.

Reference Years

The reference years used as intermediate years between the peaks and troughs were selected through a semi-automatic procedure designed to identify years that lie near a possible trend line, rather than at a peak or trough. Using the log age/sex-adjusted incidence rate as the dependent variable, AR(2) regressions with a linear trend were run for all possible samples of 15 years or more in the overall study period (1970–2008), and the distance of each point from the linear trend was calculated. Those distances were aggregated for each year using the regression likelihood as a weight. This procedure gives lower average distances to those years that tend not to lie far from the midline of the samples of which they were part. The low-distance years were 1971–1972, 1978, 1990, 1995–1996, 1999–2000, and 2005–2008. Although our overall study period encompasses 38 years from 1970 through 2008, for the averages in this study, 1972, 1990, and 2008 were used, conveniently providing two equally long 18-year subperiods and a larger combined 36-year subperiod.

Notes

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[1] As we describe later in more detail, only workers with sufficient recent covered earnings are insured for disability. Workers who become entitled to disability benefits remain insured. Exposed workers are those who are insured for disability, but not currently entitled. "Exposure" here is an insurance concept: Workers who are already disability beneficiaries do not expose the DI Trust Fund to further risk of their becoming entitled. The number of exposed workers is also a more suitable measure for assessing disability incidence trends if the proportion of workers on the rolls has been increasing. This concept of the disability-exposed population is also used by the Office of the Chief Actuary (OCACT) and the Board of Social Security Trustees in their annual report to Congress. OCACT's measure of the disability-exposed population is more refined than ours, but the differences are not expected to alter our results.

[2] Chart 3 plots the responses to a question in the March Current Population Survey Income Supplement asked of each person in each survey: "Does ... have a health problem or a disability which prevents work or which limits the kind or amount of work?" The percentages by age group responding "Yes" are graphed for both 2007 (prerecession) and 2011 (when unemployment was still high).

[3] There are many definitions of disability used in the literature and in society. The term "disability prone" as used in this study encompasses both a health-based definition of disability that alludes to the underlying natural correlation between age and health, where the risk of experiencing poor health and disabling conditions increases with age, as well as the narrower definition of disability described in the Social Security Act. The underlying relationship between age and health is expected to be one driver of the distribution of disability entitlement by age. See note 9 for more discussion of additional drivers and previous studies using the Social Security definition of disability.

[4] The disability freeze provision of 1954 protected workers from having years of no earnings averaged into their retired-worker benefit computation if those zeroes were caused by a Social Security Administration–determined disability (SSA 2010, 1).

[5] The 1954 amendments set the requirement for a worker to achieve disability-insured status at 20 quarters of coverage out of the last 40 quarters of coverage (roughly 5 years of earnings out of the last 10 years). In 1967, the disability-insured rules were made less stringent for workers younger than age 31, with a smaller further liberalization in 1983 (Myers 1993, 269–270).

[6] As Cohen and Ball (1968, 11) explain, "this means work that exists in significant numbers in the region in which he [the disability-insured worker] lives or in several regions of the country, but without regard to whether a specific job vacancy exists for him, or whether he would be hired if he had applied for work." According to Halpern (1979, 33), "court rulings made before 1967 required the Social Security Administration to show that an individual had realistic employment opportunities, thus allowing factors not strictly related to the individual's medical condition to be taken into account in the eligibility determination process." Halpern notes that the 1967 change in the definition of disability was an attempt by Congress to counter the tendency of the courts to consider local economic conditions as a factor in an individual's ability to work. Cohen and Ball (1968) note, "the clarifying language will better enable the courts to interpret the law in accordance with the intent of Congress."

[7] Beginning in 1977, blind people were subject to a separate (higher) SGA amount. In 2001, the dollar amount of earnings used to define SGA, which had originally been set at $100 in federal regulations and was updated on an ad hoc basis, was indexed (Zayatz 2011). Because the SGA amount has changed over time, denials for disabled-worker benefits because workers are earning above SGA in any given year may not be equal across years because some years will have lower levels (after adjustment for wage growth) than others.

We do not adjust for changes in the SGA level over time in our analysis.

[8] Many percentage growths in this article are expressed as log percents. For a percent *P*, the log percent is *100 * ln(1+P/100)*, where *ln* is the natural logarithm. For small changes, the log percent growth is almost identical to the percentage growth. A 5 percent growth, for example, is equivalent to a 4.9 log percent growth. For larger changes, the log percents are smaller, but have the advantage of being additive, so that a 20 log percent growth followed by a 20 log percent growth is 40 log percent (the equivalent percentage growths do not add: 22.1 percent followed by 22.1 percent gives 49.2 percent). Log percents also have common sense cancellation: a 10 log percent decrease followed by a 10 log percent increase ends up where it started (the equivalent in percentages is a 9.5 percent increase followed by a 10.5 percent increase). See Törnqvist, Vartia, and Vartia (1985).

[9] The largest share of disabled-worker awards are at ages 55 plus, with the second largest share at ages 45 through 54 (see Zayatz (2011, Figure 2, 9)). Entitlement shares by age will be similar to award shares by age, although age of entitlement may skew at younger ages than at age of award because many disabled-worker benefits are awarded on appeal. Bayo, Goss, and Weissman (1978, Table 3) show that in the 1972–1975 period, disability incidence by age of entitlement was greatest at ages 55 to the normal retirement age. In addition to the increase in disability risk with age that is related to the underlying natural correlation between age and health, the increased proneness to disability entitlement at older ages observed in SSA's administrative data may also include a component attributable to the use of age as a vocational factor in step 5 of the disability determination process (see Wixon and Strand (2013) for a description of step 5). However, note that any changes to the way SSA adjudicates claims over the course of our time series (for example, any changes in the administrative use of age as a determinant of residual capacity to work over time) will be absorbed in the residual or unexplained portion of our growth decomposition.

[10] Extracted from the Bureau of Labor Statistics' website, http://www.bls.gov/webapps/legacy/cpsatab1.htm.

[11] Rupp, Davies, and Strand (2008, 26) note that there may be interactions between changes in the Supplemental Security Income (SSI) program and incentives to apply for DI. Some DI-insured workers may also qualify for SSI payments if their countable income and assets are below the SSI means test. Zayatz (2011, 7) notes that applicants to the SSI program are required to apply for benefits from other programs, such as DI. Thus, passage of SSI in 1974 and periodic SSI outreach efforts may have drawn in workers who qualified for both DI and SSI, but who were previously unaware of the DI program.

[12] Once a disabled worker is converted to a retired worker, his or her benefits are paid out of the Old-Age and Survivors Insurance (OASI) Trust Fund rather than the DI Trust Fund.

[13] For a study of the effect of changes in the age composition of the population on disability duration, see Rupp and Scott (1996).

[14] The percentages on the vertical axis are log percentages.

[15] The same is true for disabled-worker *awards*, but for 1991 rather than 1990. Awards in 1991 were lower than awards in subsequent years and higher than awards in earlier years, except around 1975. See SSA (2013, Table 6.A1.)

[16] The 1.66 percent growth rate in the insured population is equal to the 1.18 percent growth rate in the population plus the 0.48 percent growth rate in the percentage insured.

[17] Because the Törnqvist index so exactly decomposes the overall growth in disabled-worker entitlements into population growth, growth in the proportion of the population that is insured, and growth in the incidence rate, the adjusted incidence rate is virtually identical to what would be obtained when subtracting the adjusted growth in insured workers from the growth in disabled-worker entitlements. As a check, however, the adjusted incidence rate was calculated directly, as well as by subtracting the other components from the total.

[18] The precise results will differ for several reasons: The *Trustees Report* started with insured workers and applied a fixed-weight index to decompose growth in awards, while this study starts with the working-age population and applies a chained-weight index to decompose growth in entitlements. A fixed-weight approach could be extended to include the effect of growth in insured workers relative to the working-age population, but a fixed-population approach does not decompose as readily and exactly into separate population, insured worker, and incidence rate effects, especially when the population composition changes over the study period.

[19] Stapleton and others (1998) also decompose the determinations of *initial* award growth over the 1980–1993 period. Because a measure of initial awards misses benefits awarded on appeal, we do not discuss those results here.

[20] In another study that focuses on prevalence growth, Daly, Lucking, and Schwabish (2013, 1) find some role for population growth but, despite the title "Explaining the Rapid Growth in Social Security Disability Insurance Rolls," their decomposition (Figure 2, 3) is described as a decomposition of the "factors [that] have contributed to the rise in SSDI caseloads as a share of the working age population." In other words, although they cite a nearly threefold increase in the caseload and note that much of that increase is attributable to population growth, their share calculation only focuses on the growth in excess of population growth.

[21] Examples include the following:

- Why are the Disability Rolls Growing?—a section in Autor and Duggan (2006, 8)

- Determinants of DI Growth—a section in Duggan and Imberman (2009, Table 11.9, 368)
- Why Have SSDI Caseloads Risen?—a section in Burkhauser and Daly (2012, 454)
- "Explaining the Rapid Growth in Social Security Disability Insurance Rolls," by Daly, Lucking, and Schwabish (2013)

[22] Burkhauser and Daly (2012) have less documentation of their decomposition than do Autor and Duggan (2006) and Duggan and Imberman (2009). We are assuming that Burkhauser and Daly follow Autor and Duggan's technique when they write, "Our own updates of their [Autor and Duggan's] calculations (1984 to 2010) show a slightly larger, but still relatively small impact of changes in the age structure on the SSDI increases shown in Figure 1" (456). Note that a change in the age structure does not account for overall population growth.

[23] SSA also adopted a practice called "nonacquiescence" during this time period, in which SSA did not revise its policies throughout the circuit to which an adverse ruling applied, but instead applied a reversal to only the individual claimant who had appealed a removal from the Social Security disability rolls. An 8th circuit court of appeals judge threatened Health and Human Services Secretary Margaret Heckler with contempt over this policy (Kearney 2005/2006, 16).

[24] The index computations here are in one aspect simpler than those for a price index because the units in this study never change, while price indexes have to adjust for the introduction of new items and the disappearance of old items. Most price indexes have two components: quantities of each item purchased (N) and prices (p). The index in this article has three components: (1) the population in each age/sex group, which is the underlying quantity (N); (2) the proportion of the population insured in each age/sex group (p); and (3) the proportion of the insured population in each age/sex group that becomes disabled (r). Total disability entitlements are the product of the three variables: $N*p*r$. An analogous price index might have quantities (N), pretax prices (p), and a ratio of post-sales-tax to pre-sales-tax prices (r)—with total after-tax expenditures being the product of the three.

[25] The Törnqvist index is a discrete approximation to the Divisia index, for which the decomposition of the total growth rate into component growth rates is exact. Even for the discrete approximation, the correspondence is close. The share weights in the Törnqvist index are an average of the share weights in the 2 years across which an index is being calculated. For the calculations in this article, the "Sato-Vartia" average was used, in which the average of two amounts, a and b, is $(a-b)/\log(a/b)$, with a zero when either a or b is zero and with a or b when the amounts are identical. A simple average, $(a+b)/2$, gives almost identical results. See Sato (1976), Vartia (1976), and Vartia (2010). The Törnqvist index, one of several indices often used for a price index, has also been used for the decomposition of productivity growth (for example, Chinloy (1981)). It provides an accurate approximation to the Divisia index without making assumptions about functional form (Trivedi 1981).

[26] SSA does not receive notifications of emigrations. Although SSA data on death is thought to be complete for people who are receiving benefits, the Numident may be missing some death reports for nonbeneficiaries (Aziz and Buckler 1992). Whatever the effect of the missing emigration and death information is, it will have less of an impact on the insured-population count than on the working-age-population count because insured status depends on recent covered earnings.

[27] Auxiliary benefits paid from the DI Trust Fund include a spouse's benefit, payable to the spouse of a disabled worker with a child in care younger than age 16; a child's benefit, payable to a child who is a dependent of a disabled worker; and a disabled adult child's benefit. Auxiliary benefits paid from the Old-Age and Survivors Insurance (OASI) Trust Fund include a disabled widow(er) benefit, payable to a disabled widow(er) who is older than age 50 and whose deceased spouse was an insured worker; and a disabled adult child benefit, payable to the child of a retired or deceased worker (SSA 2006, 4).

[28] Prior to January 1973, the waiting period between the month of disability onset and the first month of entitlement was 6 months.

[29] An argument could be made for using the date of disability onset; however, over the long span of data used in this analysis, we judged the data on month of entitlement to be more reliable than the data on month of disability onset.

[30] The exclusion of these workers increased the growth of the incidence rate very slightly relative to a disability-insured measure that includes those workers.

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The Supplemental Poverty Measure (SPM) and the Aged: How and Why the SPM and Official Poverty Estimates Differ

by Benjamin Bridges and Robert V. Gesumaria*

In 2011, the Census Bureau released its first report on the Supplemental Poverty Measure (SPM). The SPM addresses many criticisms of the official poverty measure and is intended to provide an improved statistical picture of poverty. This article examines the extent of poverty identified by the two measures. First, we look at how the SPM and official estimates differ for various age groups. One finding is that the SPM poverty rate exceeds the official rate for each subgroup of the aged (65–69, 70–74, 75–79, and 80 or older) by 4.3 to 8.3 percentage points. Then, we look at why the SPM poverty rate for the aged is higher than the official rate. The most important factor here is the difference in the treatment of medical-out-of-pocket expenses.

Introduction

The current official poverty measure was developed in the early 1960s by Mollie Orshansky of the Social Security Administration. Only a few minor changes have been made since it was first adopted as the official measure in 1969 (Orshansky 1963, 1965a, 1965b; Fisher 1992).[1] The official measure consists of a set of thresholds for families of different sizes and compositions that are compared with before-tax cash income to determine a family's poverty status. Those poverty thresholds are the minimum amounts of such income that families of particular sizes and composition need in order to be considered not poor. When they were developed, the official thresholds represented the cost of a minimum food diet multiplied by 3 (to allow for expenditures on other goods and services). These thresholds have been kept constant in real terms over time by increasing their money values to keep pace with increases in the general price level.

Concerns about the weaknesses of the official measure have increased markedly over time. Critics of the official measure point out that the official income or resource measure fails to account for noncash government benefits, taxes, medical out-of-pocket (MOOP) expenses, and work expenses. They also argue that the official thresholds are based on a very narrow measure of necessary expenditures, that is, food, and are based on very old data. Critics also point out that the official thresholds fail to adjust for geographic differences in the cost of living.

In November 2011, the Census Bureau released its first report on the Supplemental Poverty Measure, or SPM (Short 2011). The SPM addresses the concerns of the official measure's critics and is intended to provide an improved statistical picture of poverty. It is designed to provide information on economic need at the national level and within large subpopulations.[2]

Selected Abbreviations

CPS/ASEC	Current Population Survey's Annual Social and Economic Supplement
FCSU	food, clothing, shelter, and utilities
LIHEAP	Low-Income Home Energy Assistance Program
MOOP	medical out-of-pocket [expenses]
MSA	metropolitan statistical area

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Selected Abbreviations—*Continued*

SNAP	Supplemental Nutrition Assistance Program
SPM	supplemental poverty measure
WIC	Special Supplemental Nutrition Program for Women, Infants, and Children

The SPM income or resource measure is cash income plus in-kind government benefits (such as food stamps and housing subsidies) minus nondiscretionary expenditures (taxes, MOOP expenses, and work expenses). The SPM thresholds are based on a broad measure of necessary expenditures (food, clothing, shelter, and utilities (or FCSU)) and are based on recent, annually updated expenditure data. The SPM thresholds are adjusted for geographic differences in the cost of living.

The two measures (official and SPM) produce rather different pictures of who is counted as poor. Thus, one's view regarding the relative merits of the two poverty measures is relevant to his or her views regarding appropriate public policy. For the aged, key public policies are those affecting Social Security, Medicare, Medicaid, and Supplemental Security Income (SSI).

This article focuses on the measurement of poverty among people aged 65 or older. In the next section, we discuss the evolution of the SPM. In the following section, we describe in more detail the various features of the SPM (resource measure, threshold measure, and unit definition) and contrast them with the corresponding features of the official measure. In the next two sections, we present an empirical examination for 2011 of the two poverty measures. First, for various groups, we compare the SPM poverty estimates with official estimates. That is, we look at how the SPM and official estimates differ. We present some estimates for all age groups, but focus on the aged (65 or older). Then, for the aged as a whole, we estimate the effects of various features of the SPM on poverty levels. In effect, we look at why SPM estimates for the aged differ from official estimates.

We conclude this introduction by previewing some of our empirical findings. For the total population, the SPM poverty rate (16.1 percent) exceeds the official rate (15.1 percent).[3] For broad age groups, the SPM and official measures give quite different results. The SPM shows much *more* poverty for people aged 65 or older (the poverty rate increases from 8.7 percent to 15.1 percent) and much *less* poverty for those younger than age 18 (the poverty rate decreases from 22.3 percent to 18.2 percent). For all detailed subgroups of the aged (65–69, 70–74, 75–79, and 80 or older), the SPM poverty rates markedly exceed the official rates.

Many people are classified as poor by only one of the two measures. For the aged, the official measure and the SPM classify 3.6 million and 6.3 million as poor, respectively. Some 3.2 million aged adults are counted as nonpoor by the official measure, but as poor by the SPM. On the other hand, some 0.6 million aged adults are counted as poor by the official measure, but as nonpoor by the SPM.

We examine poverty of the aged (65 or older) for various demographic and socioeconomic groups. For all of the groups examined, SPM poverty exceeds official poverty. Compared with the official measure, the SPM shows larger increases in poverty rates for (1) people in units that have homeowners with mortgages than for those in units that have homeowners without mortgages, (2) people residing inside metropolitan statistical areas (MSAs) than for those residing outside MSAs, and (3) married people than for the nonmarried.

The combined effect of all changes (from the official to the SPM) in the *resource* measure increases the poverty rate of the aged by 5.5 percentage points. When subtracting taxes and other nondiscretionary expenses, only the subtraction of MOOP expenses results in a large increase in the measured poverty rate (7.1 percentage points). This effect is substantially larger than that of any other change in the poverty measure. When adding noncash transfers, the addition of housing subsidies produces the largest decrease in the poverty rate (1.2 percentage points). The combined effect of all the changes in the *threshold* measure increases the poverty rate by 1.6 percentage points.

Evolution of the SPM

What ultimately became the official poverty measure was developed by Mollie Orshansky in the 1963–1964 period (Orshansky 1963, 1965a, 1965b). In May 1965, the Office of Economic Opportunity—newly established as part of the Johnson administration's War on Poverty—adopted the Orshansky measure as a working or quasi-official definition of poverty.[4] In August 1969, the Orshansky measure was designated as the federal government's official statistical definition of poverty (Fisher 1992).

Over time, concerns about the adequacy of the official measure increased. As a result, in the early 1990s

at the request of Congress, the National Academy of Sciences (NAS) conducted an independent scientific study of the concepts, measurement methods, and information needs for a poverty measure. For that purpose, NAS established the Panel on Poverty and Family Assistance, which released its report, *Measuring Poverty: A New Approach* (Citro and Michael 1995). Based on its assessment of the weaknesses of the official poverty measure, the NAS panel recommended a considerably different poverty measure that it believed would reflect much better contemporary government policy and economic and social realities.

Over the next 15 years or so, numerous government and nongovernment studies examined alternative poverty measures. For example, the Census Bureau released studies that presented a set of experimental poverty measures based on the recommendations of the NAS panel (Short 2001; Short and others 1999). These studies suggested that the new measures would identify a rather different population as poor than that identified by the official poverty measure.

In 2009, the Office of Management and Budget formed a working group of representatives from a number of government agencies to consider improving the measurement of poverty. This working group was asked to develop a set of initial starting points to permit the Census Bureau, in cooperation with the Bureau of Labor Statistics, to produce a supplemental poverty measure. The Interagency Technical Working Group on Developing a Supplemental Poverty Measure (ITWG) issued its report in 2010.[5]

The Census Bureau released its first report on the SPM in 2011 (Short 2011). That report described the new measure in some detail and presented estimates of SPM-based poverty for 2009 and 2010. The second annual SPM report, which was released in November 2012, presented estimates for 2011 (Short 2012). The recently released SPM is largely based on the recommendations of the NAS panel. Deviations of the SPM from the panel's recommendations reflect suggestions from the ITWG and more current research.

Descriptions and Comparisons of Various Features of the Two Poverty Measures

Measurement of poverty within the population has three critical elements: (1) resource measures (What should be counted as resources?); (2) threshold measures (What minimum resources are required to be considered nonpoor?); and (3) unit measures (How does one combine individuals into resource-sharing units?). In this section, we consider each of those elements in turn.[6] The SPM and official poverty estimates examined in this article use the public-use version of the 2012 Current Population Survey's Annual Social and Economic Supplement (CPS/ASEC), which gives income information for calendar year 2011.[7] In the rest of this section, we describe the SPM elements as they were implemented for the 2012 CPS/ASEC.

Resource Measures

The official resource measure is unit before-tax money income.[8] People in units whose before-tax money income is less than the unit's threshold are classified as poor. Proponents of the SPM believe that the official resource measure has the following major weaknesses:[9]

1. Effects of government programs that alter the resources available to families and, thus, their poverty status are not reflected in this measure. These are in-kind public benefits, refundable tax credits, and various taxes. Some of these are large. For example, in fiscal year 2011, federal outlays for the Supplemental Nutrition Assistance Program or SNAP (formerly known as the Food Stamp Program) amounted to about $80 billion or 2.1 percent of all federal outlays. Federal expenditures for refundable tax credits and for housing subsidies were about $80 billion and $40 billion (Falk 2012). All three of these in-kind benefit programs are designed to assist the low-income population.[10]
2. Expenses that are necessary to hold a job and earn income are not accounted for. These expenses include transportation costs for getting to work and the costs of childcare for working families. More than 80 percent of the population under study are members of SPM units with work expenses. For those units, such expenses can be substantial; unit work expenses on average amount to 12 percent of SPM poverty thresholds.
3. MOOP expenses are not accounted for. More than 95 percent of our sample universe are members of SPM units with MOOP expenses, which include expenses for health insurance premiums; own medical care (hospital visits, medical providers, dental services, prescription medicine, vision aids, and medical supplies); and over-the-counter health-related products. For those units, MOOP expenses can be large; unit MOOP expenses on average amount to 22 percent of SPM thresholds. In addition, there is great dispersion around this average;

a minority of units have very high MOOP expenses relative to their poverty thresholds.

The SPM resource measure attempts to overcome the weaknesses of the official resource measure. The SPM resource measure is the sum of cash income *plus* refundable tax credits and any government in-kind benefits that families can use to meet their basic needs, which are represented in the thresholds*, minus* taxes and other nondiscretionary expenses for critical goods not included in the thresholds. These thresholds represent the amount needed for a basic set of goods that consists of FCSU and an additional amount allowed for other basic needs (for example, household supplies, personal care, nonwork-related transportation). The importance of these various additions to and subtractions from cash income varies greatly across age groups.

The SPM resource measure includes the following government in-kind benefit programs: (1) Housing subsidies; (2) Low-Income Home Energy Assistance Program (LIHEAP); (3) National School Lunch Program; (4) Supplemental Nutrition Assistance Program (SNAP); and (5) Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). For programs (1), (3), and (5), the CPS/ASEC collects information on recipiency, but not on amounts received. In estimating the amounts of these benefits, the Census Bureau uses information from other government agencies.[11]

Housing subsidies, LIHEAP benefits, and SNAP benefits go to both aged and nonaged people. On the other hand, school lunch and WIC benefits are intended to help nonaged people. Housing assistance programs usually take the form of rental subsidies and mortgage-interest subsidies targeted to very low-income people and are either dwelling based (public housing) or tenant based (vouchers). SNAP benefits are also targeted to low-income people. LIHEAP is not a large enough program to have much effect on the poverty rates of aged people or members of any other age group.

The SPM resource measure also includes the following refundable tax credits: (1) Earned Income Tax Credit (EITC) and (2) the additional federal childcare tax credit. These credits are intended to help low-income working families, especially those with children.

The following expenses are deducted in deriving SPM resources: (1) federal individual income tax (after nonrefundable credits), (2) state individual income tax, (3) Social Security tax payments by employees and the self-employed plus federal employee retirement payroll deductions, (4) child support paid, (5) MOOP expenses, and (6) work expenses (including childcare expenses). The CPS/ASEC does not collect information on taxes, refundable tax credits, or work expenses. The Census Bureau applies a tax-calculating computer program to the CPS/ASEC to simulate taxes and tax credits and uses information from another household survey to estimate work expenses.[12]

It should be clear that the relative impact of various types of expenses on household resources tends to vary by age. Low-income aged units typically have no or low income tax liabilities. Payroll taxes and work expenses affect working families. Child support payments come mostly from nonaged people.

MOOP expenses are very important for the aged population. As stated earlier, MOOP expenses include the payment of health insurance premiums plus other medically necessary items, such as prescription drugs and doctor copayments that are not paid for by health insurance.[13] Subtracting MOOP expenses from income, in addition to subtracting taxes and work expenses, leaves the amount of income that the family has available to purchase the basic bundle of goods included in the threshold.

Threshold Measures

The official measure uses a set of thresholds for families of different size and composition. The threshold values depend on unit size, number of children, and age of the unit head (younger than age 65 or aged 65 or older). At the time they were developed, the official thresholds represented the cost of a minimum food diet multiplied by 3 (to allow for expenditures on other goods and services).[14] The thresholds are updated each year using the US Consumer Price Index for all items.

Proponents of the SPM believe that the official threshold measure has the following major weaknesses:

1. The official thresholds are based on only one category of necessary expenditures, that is, food. (For 2011, food expenditures accounted for only 36 percent of the bundle of necessary expenditures or FCSU that form the basis of the SPM thresholds.) The expenditure information used is more than 50 years old. The share of food in expenditures is much lower now than it was 50 years ago. The threshold levels are fixed in real terms and do not reflect real increases over time in spending on basic needs.

2. The measure does not adjust for differences in FCSU-expenditure needs resulting from differences in housing status. For example, homeowners with mortgages on average need to make sizable mortgage payments. (In determining SPM thresholds for 2011, the FCSU needs of units that have owners with mortgages are estimated to be 21 percent larger than those of units that have owners with no mortgages.)
3. The measure does not adjust for geographic differences in the cost of living. Such differences are often large. (For 2011, the geographic adjustment factors used in the SPM range from .80 for the lowest-cost area to 1.48 for the highest-cost area.)
4. The thresholds use family size and composition adjustments that in some cases produce questionable results. For example, in some cases, single-parent families have higher thresholds than married-couple families of the same size, implying that children cost more than adults in certain size families. The evidence used in setting thresholds for aged units and for one-person nonaged units is quite weak. In addition to these questionable results, the fact that the equivalence scales are implicit and not transparent is a substantial weakness.

The SPM threshold measure attempts to overcome the weaknesses of the official threshold measure and has the following properties:

1. As stated earlier, these thresholds represent the amount needed for a basic set of goods that consists of FCSU and an additional amount allowed for other basic needs (household supplies, personal care, nonwork-related transportation). The basic FCSU needs reflect expenditures on this basic bundle of goods around the 33rd percentile of the expenditure distribution, as reported in the Bureau of Labor Statistics' Consumer Expenditure Survey (CE).[15] The SPM thresholds for 2011 are based on 2007–2011 data from the CE. To include other basic needs in the threshold, the basic FCSU needs are multiplied by 1.2. Over time, the thresholds are not fixed in real terms. Each year the thresholds are updated using the most recent CE data.
2. The SPM thresholds are adjusted for differences in shelter and utilities expenditure needs and depend on housing-status group. Those groups are made up of units that have owners with mortgages, owners with no mortgages, and renters. The adjustments are based on CE data.
3. The thresholds are adjusted for geographic differences in housing costs. The adjustment factors are for more than 300 areas and are based on American Community Survey estimates of apartment rents.
4. The threshold for units with two children (the base threshold) is derived from CE data as described in item #1. The thresholds for other unit types (differing in size and number of children) are then derived by applying an explicit equivalence scale to this base threshold. Equivalence scales are measures of the relative cost of living of units of different size and composition that are otherwise similar. For example, if a unit of two adults can live as well as a unit of two adults and two children while spending only three-fourths as much, then relative to the reference unit of two adults and two children, the equivalence scale value for a two-adult unit is three-fourths. For the purpose of poverty measurement, using an equivalence scale adjusts the threshold value for the reference unit to provide corresponding thresholds for other unit types. The three-parameter SPM equivalence scale used has the following four properties: (1) a child always costs less than an adult; (2) the scale always exhibits economies of scale in consumption; (3) the scale does not depend on the age of the unit head; and (4) for one-person nonaged units, the SPM scale value is rather different from the official scale value.[16]

Unit Measures

The official measure uses as its unit of analysis the Census-defined family, which includes all people residing together who are related by birth, marriage, or adoption; it treats all unrelated individuals aged 15 or older independently. Proponents of the SPM unit criticize the failure of the official unit to include all people at an address who are likely to share resources. In particular, they believe that the official unit concept does not treat cohabiters and their relatives properly.

Proponents of the SPM believe that the SPM unit better represents the unit that shares economic resources. The SPM unit includes all related people at the same address plus any cohabiters and their relatives and any coresident unrelated children who are cared for by the family (such as foster children).[17] Most aged people whose SPM units differ from their official units are in SPM units that contain cohabiters—some aged and others nonaged.

Official and SPM Poverty Estimates: A Comparison

In this section, we begin our empirical examination of the two poverty measures. For the various age groups, we compare the SPM poverty estimates with official estimates; that is, we look at the degree to which the two estimates differ. Then in the following section, for people aged 65 or older, we estimate the effects of various features of the SPM on poverty levels. In effect, we look at why SPM estimates for the aged differ from the official estimates.

We begin this section by looking at poverty for the total population and for various groups of aged and nonaged people. Next, we examine deep poverty and the distribution of people by welfare-ratio intervals. Then we examine movements into and out of poverty. Finally, we look at poverty of the aged for various demographic and socioeconomic groups.

Poverty by Age Groups

Table 1 gives numbers and percentages of people in poverty for the total population, broad age groups, and narrow age subgroups. For the total population, the SPM poverty rate (16.1 percent) exceeds the official rate (15.1 percent) by 1.0 percentage points.[18] The number of people poor under the SPM (49.8 million) exceeds the number poor under the official measure (46.6 million) by 3.2 million or 7 percent.[19]

For broad age groups of the aged and nonaged populations, the SPM and official measures give quite different results. Compared with the official measure, the SPM shows much *more* poverty for the aged (adults aged 65 or older) and much *less* poverty for children (those younger than age 18). For the group aged 65 or older, the SPM poverty rate (15.1 percent) exceeds the official rate (8.7 percent) by 6.4 percentage points or by 73 percent.[20] As we stated earlier, MOOP expenses are very important for the aged population. On the other hand, for the group younger than age 18, the SPM rate (18.2 percent) falls short of the official rate (22.3 percent) by 4.1 percentage points or by 18 percent.[21] Note that for the official measure, the rate for children is much higher than that for the aged; however, for the SPM, the poverty rate for children is only modestly higher than that for the aged. For the group aged 18–64, the SPM rate (15.6 percent) exceeds the official rate (13.7 percent) by 13 percent.

For the aged population, we also look at poverty rates for narrow age subgroups (Table 1). For each of those age subgroups, the SPM rates exceed the official poverty rates. This excess tends to increase with age, increasing from 4.3 percentage points for the subgroup aged 65–69 to 8.3 percentage points for the subgroup aged 80 or older.

In addition, we look at poverty rates for the near-aged subgroups (55–61 and 62–64). For those

Table 1.
Number and percentage of people in poverty, by the two poverty measures and selected age groups, 2011

Age group	Total number	Official poverty		SPM poverty		Percentage point difference between SPM and official poverty rates
		Number	Percent	Number	Percent	
Total population	308,827	46,618	15.1	49,797	16.1	1.0
Younger than 18	74,108	16,506	22.3	13,484	18.2	-4.1
18–64	193,213	26,492	13.7	30,052	15.6	1.8
55–61	27,814	2,983	10.7	3,798	13.7	2.9
62–64	10,157	1,097	10.8	1,369	13.5	2.7
65 or older	41,507	3,620	8.7	6,260	15.1	6.4
65–69	13,599	1,026	7.5	1,615	11.9	4.3
70–74	9,784	713	7.3	1,363	13.9	6.6
75–79	7,331	730	10.0	1,236	16.9	6.9
80 or older	10,792	1,152	10.7	2,045	19.0	8.3

SOURCE: The public-use version of the 2012 CPS/ASEC.

NOTE: Numbers are in thousands.

subgroups, the SPM poverty rates exceed the official rates by a little less than 3 percentage points or by about 25 percent. Note that these differences are smaller than those for the groups aged 65 or older.

Deep Poverty by Age Groups

We say that people in units with unit resources less than 50 percent of the unit threshold are in deep SPM or deep official poverty.[22] Table 2 gives numbers and percentages of people in deep poverty for the total population, broad age groups, and narrow age subgroups—the same groups shown in Table 1.

For the total population, the SPM deep poverty rate (5.2 percent) falls short of the official measure deep poverty rate (6.7 percent) by 1.5 percentage points or by 22 percent; in contrast, we just saw that the SPM rate (16.1 percent) exceeds the official poverty rate (15.1 percent) by 1.0 percentage points or by 7 percent. It follows that the number of people in poverty (but not in deep poverty) under the SPM substantially exceeds the number in poverty (but not in deep poverty) under the official measure.

For broad age groups of the aged and nonaged populations, the SPM and official measures give quite different results for deep poverty. Compared with the official measure, for deep poverty (as well as for poverty) the SPM shows a much higher rate for the aged (adults aged 65 or older) and a much lower rate for children (those younger than age 18). For the group aged 65 or older, the SPM deep poverty rate (4.3 percent) exceeds the official deep poverty rate (2.3 percent) by 2.0 percentage points or by 89 percent. On the other hand, for the group younger than age 18, the SPM rate (5.1 percent) falls short of the official rate (10.3 percent) by 5.2 percentage points or by 50 percent. Notice that for both deep poverty and poverty, as determined by the official measure, the rate for children is much higher than that for aged adults; on the other hand, for both deep poverty and poverty, as determined by the SPM, the rate for children is only modestly higher than that for aged adults. For people aged 18–64, the SPM deep poverty rate (5.5 percent) falls short of the official deep poverty rate (6.3 percent) by 0.8 percentage points or about 13 percent.

For the aged, we also look at deep poverty rates for narrow age subgroups (Table 2). For each of those age subgroups, the SPM rates exceed the official deep poverty rates. This difference tends to increase with age, increasing from 1.4 percentage points for the 65–69 subgroup to 2.6 points for the 80-or-older subgroup.

In addition, we look at deep poverty rates for the near aged (55–61 and 62–64). For those subgroups, the SPM deep poverty rates exceed the official rates by 0.8 and 1.4 percentage points. Note that these differences are smaller than those for the subgroups aged 70 or older.

Table 2.

Number and percentage of people in deep poverty,[a] by the two poverty measures and selected age groups, 2011

Age group	Total number	Official deep poverty		SPM deep poverty		Percentage point difference between SPM and official deep poverty rates
		Number	Percent	Number	Percent	
Total population	308,827	20,727	6.7	16,141	5.2	-1.5
Younger than 18	74,108	7,624	10.3	3,789	5.1	-5.2
18–64	193,213	12,164	6.3	10,578	5.5	-0.8
55–61	27,814	1,239	4.5	1,463	5.3	0.8
62–64	10,157	439	4.3	579	5.7	1.4
65 or older	41,507	940	2.3	1,773	4.3	2.0
65–69	13,599	272	2.0	457	3.4	1.4
70–74	9,784	185	1.9	340	3.5	1.6
75–79	7,331	198	2.7	407	5.5	2.9
80 or older	10,792	285	2.6	569	5.3	2.6

SOURCE: The public-use version of the 2012 CPS/ASEC.

NOTE: Numbers are in thousands.

a. People in units with resources less than 50 percent of the poverty threshold.

Welfare-Ratio Classes by Age Groups

We next compare distributions of economic welfare measured using SPM concepts with those measured using official poverty measure concepts. Table 3 shows the percentage distributions of people in broad age groups and narrow age subgroups by welfare-ratio intervals. Welfare ratio is the ratio of unit resources to the unit poverty threshold.[23] People in poverty and in deep poverty are those in units with welfare ratios less than 1.0 and less than 0.5, respectively.

Compared with the official measure, for the total population the SPM shows a higher share of people in each of the middle welfare-ratio classes (the non-poor with welfare ratios less than 2.00) and a much lower share in the top welfare-ratio class (4.00 or more). This pattern also holds for most of the age groups shown in Table 3. The lower shares in the top welfare-ratio class result in large part from the subtraction of tax payments in computing the SPM resource measure.

"Movements" Into and Out of Poverty by Age Groups

When the basis for poverty measurement changes, the composition of the population designated as poor also changes. We now discuss the effects on poverty status (movements into and out of poverty) of changing the way that poverty is measured—from the official measure to the SPM.

Table 3.

Percentage distribution of people, by welfare-ratio[a] intervals, the two poverty measures, and selected age groups, 2011

	Welfare-ratio intervals						
Age group	Less than 0.50	0.50–0.99 [b]	1.00–1.24 [b]	1.25–1.49 [b]	1.50–1.99 [b]	2.00–3.99 [b]	4.00 or more
				Official			
Total population	6.7	8.4	4.8	5.1	9.5	30.5	35.1
Younger than 18	10.3	12.0	6.0	6.0	10.3	29.1	26.3
18–64	6.3	7.4	4.0	4.4	8.5	30.2	39.1
55–61	4.5	6.3	3.3	3.2	6.8	26.0	49.9
62–64	4.3	6.5	3.3	4.3	7.7	29.0	44.9
65 or older	2.3	6.5	5.8	6.5	12.6	34.2	32.2
65–69	2.0	5.5	4.0	4.3	8.8	31.6	43.8
70–74	1.9	5.4	5.6	5.7	12.5	34.9	34.1
75–79	2.7	7.3	6.0	7.1	15.2	35.8	25.8
80 or older	2.6	8.0	8.1	9.6	15.8	35.6	20.2
				SPM			
Total population	5.2	10.9	8.6	8.4	15.0	34.2	17.7
Younger than 18	5.1	13.1	10.4	10.9	17.5	31.6	11.4
18–64	5.5	10.1	7.6	7.5	14.2	35.3	19.9
55–61	5.3	8.4	6.1	5.5	10.8	34.0	30.0
62–64	5.7	7.8	6.2	5.5	11.9	35.1	27.7
65 or older	4.3	10.8	9.7	8.4	14.3	33.6	18.9
65–69	3.4	8.5	7.1	6.3	12.8	35.7	26.3
70–74	3.5	10.5	8.8	7.8	14.1	34.5	20.8
75–79	5.5	11.3	11.2	9.9	15.2	31.8	15.0
80 or older	5.3	13.7	12.7	10.6	15.8	31.4	10.6

SOURCE: The public-use version of the 2012 CPS/ASEC.

NOTE: Row percentages sum to approximately 100.0.

a. The ratio of unit resources to the unit poverty threshold.

b. Less than the lower bound of the next interval.

Table 4 gives percentages of people who exit poverty, stay in poverty, and enter poverty for broad age groups and narrow age subgroups. We have seen that for the total population, the SPM poverty rate (16.1 percent) exceeds the official rate (15.1 percent) by 1.0 percentage points. Switching to the SPM moves some people into poverty (those who are official nonpoor who become SPM poor) and others out of poverty (those who are official poor who become SPM nonpoor). The switch to the SPM moves about 5.0 percent of the population into poverty and about 3.9 percent out of poverty. The number of people entering poverty is about 25 percent greater than the number exiting poverty. Some 11.2 percent of the population is considered poor under both poverty measures.

For the aged (adults 65 or older), the SPM poverty rate (15.1 percent) exceeds the official rate (8.7 percent) by 6.4 percentage points. Switching to the SPM moves about 7.7 percent of the aged population into poverty and only about 1.4 percent out of poverty. The number of aged people entering poverty is more than five times the number exiting poverty (Table 4). Some 7.3 percent of the aged are considered poor under both poverty measures.

For children (younger than age 18), the SPM poverty rate (18.2 percent) falls short of the official rate (22.3 percent) by about 4.0 percentage points. A switch to the SPM moves about 3.4 percent of children into poverty and about 7.4 percent out of poverty. The number of children entering poverty is less than half of the number exiting poverty. A very sizable share of children (14.8 percent) are considered poor under both poverty measures. For adults in each of the narrow age subgroups (65–69, 70–74, 75–79, and 80 or older), the number entering poverty is at least four times the number exiting poverty.

Joint percentage distributions are presented in Table 5 for people aged 65 or older—by their official measure and SPM welfare-ratio classes—for those who leave poverty, those who stay in poverty, those who enter poverty, and those who remain nonpoor. For people aged 65 or older, much of the movement into and out of poverty occurs near the poverty line. Thus, of the 3.2 million aged adults entering poverty, some 53 percent move from the 1.00–1.49 official welfare-ratio class to the 0.50–0.99 SPM class.[24] Similarly, of the 0.6 million exiting poverty, 90 percent move from the 0.50–0.99 official welfare-ratio class to the 1.00–1.49 SPM class.[25] Of those poor under both poverty measures, 16 percent move into deep poverty and only 3 percent move out of deep poverty.

Table 4.
Percentage of people in selected age groups, by poverty-status components of the two sets of poverty rates, 2011

Age group	Official poor [a]	Exit poverty [b]	Stay in poverty [c]	Enter poverty [d]	SPM poor [e]
Total population	15.1	3.9	11.2	5.0	16.1
Younger than 18	22.3	7.4	14.8	3.4	18.2
18–64	13.7	3.1	10.6	5.0	15.6
55–61	10.7	2.1	8.7	5.0	13.7
62–64	10.8	1.8	9.0	4.4	13.5
65 or older	8.7	1.4	7.3	7.7	15.1
65–69	7.5	1.3	6.3	5.6	11.9
70–74	7.3	1.1	6.2	7.8	13.9
75–79	10.0	1.9	8.1	8.8	16.9
80 or older	10.7	1.4	9.3	9.6	19.0

SOURCE: The public-use version of the 2012 CPS/ASEC.

a. "Exit poverty" column + "Stay in poverty" column.

b. Official poor, but SPM nonpoor.

c. Official poor and SPM poor.

d. Official nonpoor, but SPM poor.

e. "Stay in poverty" column + "Enter poverty" column.

Table 5.

Changes in poverty status of people aged 65 or older, by welfare-ratio[a] interval, 2011: Joint percentage distributions by change category

Official measure welfare-ratio interval	SPM welfare-ratio interval					
	Less than 0.50	0.50–0.99 [b]	1.00–1.49 [b]	1.50–1.99 [b]	2.00–3.99 [b]	4.00 or more
			People who exit poverty [c]			
Less than 0.50	0.0	0.0	1.9	0.0	1.4	0.0
0.50–0.99 [b]	0.0	0.0	89.8	2.0	4.5	0.4
			People who enter poverty [d]			
1.00–1.49 [b]	8.3	52.6	0.0	0.0	0.0	0.0
1.50–1.99 [b]	3.8	23.7	0.0	0.0	0.0	0.0
2.00–3.99 [b]	2.3	8.3	0.0	0.0	0.0	0.0
4.00 or more	0.5	0.4	0.0	0.0	0.0	0.0
			People poor under both measures			
Less than 0.50	26.8	3.4	0.0	0.0	0.0	0.0
0.50–0.99 [b]	15.6	54.2	0.0	0.0	0.0	0.0
			People not poor under both measures			
1.00–1.49 [b]	0.0	0.0	8.2	0.7	0.1	0.0
1.50–1.99 [b]	0.0	0.0	7.2	4.8	0.5	0.0
2.00–3.99 [b]	0.0	0.0	4.6	11.2	23.8	0.3
4.00 or more	0.0	0.0	0.1	0.3	15.7	22.3

SOURCE: The public-use version of the 2012 CPS/ASEC.

NOTE: For each change category (people who exit poverty, people who enter poverty, people poor under both measures, and people not poor under both measures), the percentages sum to approximately 100.0.

a. The ratio of unit resources to the unit poverty threshold.

b. Less than the lower bound of the next higher interval.

c. Official poor, but SPM nonpoor.

d. Official nonpoor, but SPM poor.

Poverty of the Aged by Various Demographic and Socioeconomic Characteristics

We now turn to more detailed comparisons of SPM and official poverty for the aged (adults 65 or older). We examine poverty for various demographic and socioeconomic groups.

Table 6 shows poverty numbers; poverty rates; and differences in poverty by sex, race, Hispanic origin, nativity, housing-tenure status, residence, region, health insurance coverage, Social Security beneficiary status, and marital status. For all of the categories shown in this table, SPM poverty exceeds official poverty. These differences generally range from 3.4 to 9.8 percentage points.

For housing-status categories, the percentage point increases (SPM poverty rate minus the official poverty rate) are larger for people in units that have owners with mortgages than for those in units that have owners with no mortgages or those in units that have renters. These differences in part reflect the fact that the SPM thresholds take housing status into account.

For residence categories, the percentage point increases are larger for people residing inside MSAs. For region categories, the percentage point increases are largest for the West and Northeast and smallest for the Midwest and South. These patterns of percentage point differences reflect the fact that the SPM threshold incorporates adjustments for geographic differences in housing costs.

For Social Security beneficiary-status categories, the percentage point increase is a bit larger for beneficiaries than for nonbeneficiaries. In part, this difference reflects the fact that MOOP expenses are more important for units with beneficiaries.

For marital-status categories, the percentage point increase is larger for married people than for the nonmarried. We later discuss the fact that this difference in part reflects equivalence scale differences between the two poverty measures.

For the demographic characteristics shown in Table 6, the excesses of SPM poverty over official poverty range from 28 percent to 181 percent. For most of the categories (sex, residence, and so forth), the groups with the largest *percentage* increases in poverty are those with the lowest official poverty rates.[26] For example, although the percentage point increases for whites (6.2 percent) and blacks (6.5 percent) are similar, the percentage increase for whites (81 percent) substantially exceeds that for blacks (37 percent). The official poverty rates for whites and blacks are 7.7 percent and 17.3 percent.

Thus, we find that percentage increases in poverty are larger for men than for women, for the native born than for the foreign born, and for people in units that have owners with mortgages than for those in units that have owners with no mortgages or those in units that have renters. In addition, we find that percentage increases in poverty are larger for people with private health insurance, for Social Security beneficiaries, and for married people.

Table 6.
Percentage of people aged 65 or older in poverty, by the two poverty measures and selected characteristics, 2011

Characteristic	Number	Percent		Difference between SPM and official poverty rates	
		Official poor	SPM poor	Percentage point	Percent
Total population	41,507	8.7	15.1	6.4	73
Sex					
Male	18,332	6.2	12.3	6.1	99
Female	23,174	10.7	17.3	6.6	61
Race [a] and Hispanic origin					
White	35,732	7.7	13.9	6.2	81
White, not Hispanic	32,904	6.7	12.7	6.0	89
Black	3,640	17.3	23.8	6.5	37
Asian	1,555	11.7	20.8	9.1	78
Hispanic (any race)	3,036	18.7	27.4	8.7	46
Nativity					
Native born	36,541	7.7	13.7	6.0	77
Foreign born	4,965	15.9	25.3	9.3	59
Naturalized citizen	3,625	14.9	24.1	9.2	61
Not a citizen	1,341	18.6	28.4	9.8	52
Unit housing-tenure status					
Owner with mortgage	11,056	4.7	13.1	8.4	176
Owner with no mortgage/rent free [b]	24,114	7.4	12.7	5.2	70
Renter	6,337	20.5	27.6	7.1	35
Residence [c]					
Inside MSAs	33,541	8.7	15.8	7.0	81
Outside MSAs	7,676	8.6	12.0	3.4	40
Region					
Northeast	7,948	8.9	15.9	7.0	78
Midwest	9,257	7.3	12.1	4.8	65
South	15,390	10.1	16.0	5.9	58
West	8,912	7.7	15.9	8.3	108
Health insurance coverage					
Private insurance [d]	24,098	4.5	11.0	6.5	144
Public insurance only	16,719	14.0	20.0	6.0	43
No insurance	690	28.1	39.1	11.0	39
Social Security beneficiary status					
Beneficiary	35,169	6.8	13.3	6.5	96
Not a beneficiary	6,337	19.4	24.9	5.4	28

Continued

Table 6.
Percentage of people aged 65 or older in poverty, by the two poverty measures and selected characteristics, 2011—*Continued*

Characteristic	Number	Percent		Difference between SPM and official poverty rates	
		Official poor	SPM poor	Percentage point	Percent
Marital status					
Married [e]	23,551	3.9	11.0	7.1	181
Not married [f]	17,956	15.0	20.4	5.4	36
Widowed	10,661	13.5	19.2	5.7	42
Divorced	4,517	15.4	19.9	4.5	30
Never married	1,820	19.3	25.0	5.7	29

SOURCE: The public-use version of the 2012 CPS/ASEC.

NOTE: Numbers are in thousands.

a. The race categories exclude people who report more than one race.

b. Includes nonowners who live rent free.

c. Excludes a small number of people in cases where confidentiality rules prevent identification of MSA status on the public-use data file. Such identification is available on the Census Bureau's internal data file.

d. Most people also have public insurance coverage.

e. Married with spouse present in the household.

f. In addition to people who are widowed, divorced, or never married, this category also includes those who are married with spouse absent from the household.

Effects of Various Features of the SPM on Poverty of the Aged

The substantial increase in measured poverty among the aged population can be attributed to specific features of the SPM. We next examine the effects of the SPM's resource measure, threshold measure, and unit measure.

Effects of Elements of the Resource Measure

We first examine the effects on poverty of including noncash transfers and refundable tax credits in the resource measure. Then we look at the effects of excluding taxes and other nondiscretionary expenses from resources.

Noncash transfers and refundable tax credits. We compare SPM poverty rates including and not including each program's benefits (transfer or tax credit) in the resource measure. In other words, for each of the government programs, we compare SPM poverty with the poverty that results when we use SPM resources minus the benefits of the program as our resource measure, but we continue to use the SPM thresholds and SPM units.[27] We view the change in poverty as the result of a specified change in the way poverty is measured.

There is another way to view the change in poverty. We could look at the change in poverty as the result of a change in program policy for a given measure of poverty, namely, the effect on poverty—as measured by the SPM—of introducing the program. Our estimate of the increase in resources because of the introduction of the program equals the amount of program benefits.[28] It does not include any changes in other resource components that are due to the program's behavioral (for example, work effort) and interprogram effects.[29]

The six programs considered here are refundable tax credits,[30] housing subsidies, LIHEAP, school lunches, SNAP, and WIC. The top section of Table 7 gives the percentage point decreases in the SPM poverty rate of the aged population attributed to each of those six programs. Only two of the programs—housing subsidies and SNAP—have much effect on the SPM poverty rates of the aged. When including housing subsidies and SNAP in the resource measure, the measured poverty rate is reduced by 1.2 and 0.7 percentage points. Those two programs target aged and nonaged low-income people. LIHEAP is not a large enough program to have much effect on the poverty rates of aged people or members of any other age group. School lunches and WIC benefits are intended

Table 7.
Effect on the SPM poverty rate of individual additions to and subtractions from SPM resources for people aged 65 or older, 2011

SPM resource additions and subtractions	Change in poverty rate (percentage points)
Additions (refundable tax credits and noncash transfers)	
Refundable tax credits	-0.2
Housing subsidies	-1.2
LIHEAP (energy assistance)	-0.1
School lunches	[a] -0.0
SNAP (formerly the Food Stamp Program)	-0.7
WIC	[a] -0.0
Subtractions (taxes and other nondiscretionary expenses)	
Federal income taxes	0.2
FICA taxes	0.2
State income taxes	0.1
Child support paid	0.1
MOOP expenses	7.1
Work expenses	0.3
Combined effect of all SPM additions and subtractions	[b] 5.5

SOURCE: The public-use version of the 2012 CPS/ASEC.

a. Negative but greater than -0.05.

b. Because of the interaction effect and rounding, this value does not equal the sum of the individual changes.

to help nonaged people. Refundable tax credits are intended to help working families, especially those with children.[31] The sum of the six individual program effects is 2.2 percentage points.

Taxes and other nondiscretionary expenses. For each expense element, we compare SPM poverty rates subtracting and not subtracting the element in calculating the resource measure. In other words, for each of the expense elements, we compare SPM poverty with the poverty that results when we use SPM resources plus the expense-element amount as our resource measure, but we continue to use the SPM thresholds and SPM units.

The six expense items considered here are federal income taxes,[32] FICA taxes,[33] state income taxes,[34] child support paid, MOOP expenses, and work expenses. The bottom section of Table 7 gives the percentage point increases in the SPM poverty rate of the aged population attributed to each of those six expense items. Only MOOP expenses have much effect on SPM poverty of the aged. Subtracting MOOP expenses in calculating the resource measure results in a large increase in measured poverty; this subtraction increases the poverty rate by 7.1 percentage points.[35] More than 98 percent of aged adults are members of SPM units with MOOP expenses. For those units, MOOP expenses can be high; people in such units have MOOP expenses on average that amount to 40 percent of their unit's SPM poverty threshold. In addition, there is great dispersion around that average; a minority of aged adults have very high MOOP expenses relative to their poverty thresholds. The poverty-rate effect of each of the other expense elements is 0.3 percentage points or less. Because of personal exemptions and other factors, low-income aged adults typically have no or low income tax liabilities. Payroll taxes and work expenses affect working families, including a sizable number with aged adults.[36] Child support payments come mostly from nonaged people. The sum of these six individual expense effects is 8.0 percentage points.

All resource elements. Here we compare SPM poverty with the poverty that results when we replace the SPM resource measure with the official resource measure, but use the SPM thresholds and SPM units. We find that the SPM poverty rate (15.1 percent) exceeds this modified poverty rate by 5.5 percentage points (Table 7).

The combined effect on poverty of all the differences between the SPM resource measure and the official resource measure need not equal the sum of the effects of the 12 individual differences. There can be interaction effects. An example of an interaction effect is the following: Although including either SNAP benefits or a housing subsidy in the resource measure may not move a unit out of poverty, including both benefits may move the unit out of poverty.[37]

The sum of the six poverty-increasing resource measure components (8.0 percentage points) exceeds the sum of the six poverty-reducing resource measure components (2.2 percentage points) by 5.8 percentage points. The fact that the 5.8 percentage point excess and the difference between the SPM poverty rate and the modified rate (5.5 percentage points)—the combined effect of all resource additions and subtractions—are similar indicates that the net interaction effect is small.

Effects of Elements of the Threshold Measure

We now examine the effects of various elements of the SPM threshold measure; that is, housing-status adjustments, geographic adjustments, threshold level, equivalence scales, and scale adjustments for the aged. In addition, we consider the combined effect of the various elements of the SPM threshold measure. These effects (in percentage points) on the SPM poverty rate of the aged are given in Table 8.

Housing-status adjustments. The SPM thresholds depend on housing-status group. The groups are units that have owners with mortgages, owners without mortgages, and renters. All thresholds for units that have owners without mortgages are 15 percent lower than they would be if the thresholds did not depend on housing status. Correspondingly, the thresholds for units that have owners with mortgages and renters are 3 percent and 1 percent higher than they would be if the thresholds did not depend on housing status.[38]

To estimate the effect of housing-status adjustments, we remove those adjustments from the SPM thresholds and compare SPM poverty with the poverty that results when we use those modified thresholds. We find that the housing-status adjustment decreases the poverty rate by a substantial 2.8 percentage points (Table 8).[39] Almost 60 percent of poor people in the absence of this adjustment are in units that have owners with no mortgages; the adjustment markedly lowers their thresholds and moves many of those people out of poverty. The adjustment decreases the poverty rate for those in units that have owners with no mortgages by 5.4 percentage points.[40] For people in units that have owners with mortgages or those in units that have renters, there are small increases in the poverty rates.

Table 8.
Effect on the SPM poverty rate of individual features of the SPM threshold for people aged 65 or older, 2011

Threshold feature	Change in poverty rate (percentage points)
Housing-status adjustment	-2.8
Geographic adjustment	-0.1
Threshold level	2.8
Equivalence scale	1.3
Combined effect of all SPM threshold features	[a] 1.6

SOURCE: The public-use version of the 2012 CPS/ASEC.

a. Because of the interaction effect and rounding, this value does not equal the sum of the individual changes.

Geographic adjustments. The SPM thresholds are adjusted to reflect geographic differences in living costs. The adjustment factors depend on housing-status group and area rent. Rent data for more than 300 areas are from the American Community Survey. For a given housing-status group, the geographic adjustment factor is derived by multiplying an area's rent index value by the group's share of housing (shelter + utilities) expenditures in its threshold and adding that product to the group's nonhousing share. The rent index is the ratio of the area's rent to the national average rent.[41]

The rent-index values range from about .60 to about 1.90. The housing shares of units that have owners with mortgages, owners without mortgages, and renters are .507, .401, and .497, respectively (Bureau of Labor Statistics 2012). For adults aged 65 or older, the geographic adjustment factors average about 1.01 and range from .80 to 1.48.

We remove these geographic adjustments from the SPM thresholds and compare SPM poverty with the poverty that results when we use those modified thresholds.[42] We find that the geographic adjustment has very little effect on the overall poverty rate of the aged (Table 8). The adjustment does move a sizable number of people into poverty and a sizable number out of poverty. It raises thresholds for people in higher-cost areas and thus moves some of them into poverty; on the other hand, it lowers thresholds for people in lower-cost areas and thus moves some of them out of poverty. It increases poverty in two regions (the Northeast and West) and decreases poverty in the other two regions (the Midwest and South).[43] The adjustment decreases poverty substantially for people living outside MSAs.

Threshold level. With no housing-status adjustment and no geographic adjustment, the SPM threshold for the two-adult two-child unit for 2011 would have been $25,000;[44] the two-adult two-child official threshold for 2011 was $22,811. Thus, for this base unit, the official threshold is only 91.24 percent of the SPM threshold.

To estimate the effect of the threshold-level difference, we remove that difference by multiplying each unit's SPM threshold by .9124. We then compare SPM poverty with the poverty that results when we use

those modified thresholds. This change increases the poverty rate for the aged by a substantial 2.8 percentage points (Table 8).

Equivalence scales. There are substantial differences between the official and SPM equivalence scales. Both scales depend on unit size and number of unit children, but depend on those two factors in somewhat different ways. The official scale also depends on the age of the unit head; small units with aged heads have lower scale values than corresponding units with nonaged heads.

First, we estimate the total effect of using the SPM equivalence scale on poverty of the aged. We then estimate the role of the official threshold's differential treatment of small aged and nonaged units in the total effect of using the SPM scale.

We incorporate the official equivalence scale into the SPM thresholds as follows. For each poverty measure, the equivalence scale value is set equal to 1.00 for a two-adult two-child unit. For each unit type, we compute the ratio of the official scale value to the SPM scale value, where unit type is defined by unit size, number of unit children, and whether the unit head is at least age 65. We next multiply each unit's SPM threshold by the ratio of scale values to get modified thresholds. We find that using the SPM equivalence scale increases the poverty rate for the aged by 1.3 percentage points (Table 8), an increase of 0.5 million people.

We now turn to the role of the differential treatment of aged units. For one-person units, the official threshold value for people aged 65 or older is 92.19 percent of the threshold for those younger than age 65. For two-adult no-child units, the official threshold for a unit with the head aged 65 or older is 90.26 percent of the threshold for a unit with the head younger than age 65. For one-adult one-child units, the threshold for a unit with the head aged 65 or older is 99.63 percent of the threshold for a unit with the head younger than age 65. That differential treatment of the aged in the official scale plays an important role in the effect on poverty of using the SPM equivalence scale. We incorporate the differential treatment of the aged into the SPM thresholds as follows. For each aged SPM unit, we multiply the unit's SPM threshold by the appropriate adjustment factor (.9219, .9026, or .9963) to get modified thresholds. We find that removing the differential treatment of the aged increases their poverty rate by 2.2 percentage points.[45] Recall that the overall effect of using the SPM equivalence scale increases the poverty rate for aged adults by 1.3 percentage points. Thus, properties of the SPM equivalence scale other than the absence of differential treatment of the aged cause a *decrease* in the poverty rate for the aged of 0.9 percentage points (2.2 – 1.3). The key property is that the SPM equivalence scale has a relatively low scale value for one-person units (shown below).

The overall effect of using the SPM equivalence scale reflects (1) the effect of the differential treatment of the aged and (2) the differences between the SPM equivalence scales and the official scales for the nonaged. About five-sixths of the aged population is in either a one-person or two-adult no-child unit. For nonaged two-adult no-child units, the SPM and official equivalence scale values are about the same (.655 and .660). On the other hand, for nonaged one-person units, the SPM scale value (.463) falls short of the official scale value (.513) by about 10 percent; this shortfall decreases poverty for one-person units.

The shortfall is also reflected in the equivalence scale effects on married and nonmarried people. About five-sixths of the aged married population are in two-adult no-child units, and about five-sixths of the aged nonmarried population are in one-person units. Using the SPM equivalence scale affects married and nonmarried people quite differently. The poverty rate for married people increases by 2.1 percentage points, but the rate for nonmarried people shows little change.[46]

All threshold elements. We can examine the combined effect on aged poverty of the housing and geographic adjustments, threshold level, and equivalence scale. For each SPM unit, we replace the SPM threshold with the official threshold, which depends on SPM unit size, number of unit children, and whether the unit head is at least age 65. We then compare SPM poverty with the poverty that results when we use those modified thresholds, but continue to use the SPM resource measure and SPM units.

We find that using the SPM thresholds increases aged poverty by 1.6 percentage points (Table 8). The sum of the four individual threshold component effects—(1) housing adjustment (decreases poverty rate by 2.8 percentage points), (2) geographic adjustment (decreases poverty by 0.1 points), (3) threshold level (increases poverty by 2.8 points), and (4) equivalence scale (increases poverty by 1.3 points)—is a poverty rate increase of 1.2 percentage points. Thus, the interaction effect is a poverty rate increase of 0.4 percentage points (1.6 – 1.2).

Effects of Unit Definition

We can compare official poverty of the aged (65 or older) with the poverty that results when we use the SPM unit, but use the official resource and threshold concepts.[47] We find that replacing the official unit with the SPM unit reduces the poverty rate for aged adults by 0.3 percentage points (Table 9). For the total population, the reduction is a much larger 1.4 percentage points.[48]

The majority of aged adults stay in the same unit, that is, their SPM unit is the same as their official unit. Only about 2.5 percent of them end up in a new unit, that is, in an SPM unit that differs from their official unit. Some 95 percent of those new-unit adults end up in larger SPM units, that is, their SPM unit is larger than their official unit.[49] Replacing the official unit with the SPM unit moves about an eighth of those new-unit adults out of poverty; a very small number moves into poverty. In larger units, greater resource sharing and economies of scale tend to reduce the number of people in poverty.

Effects of All Components of the SPM

For aged adults, the SPM poverty rate exceeds the official rate by 6.4 percentage points. The combined effect of all changes in the resource measure (from the official to the SPM) increases the poverty rate by 5.5 percentage points. The combined effect of all the changes in the threshold measure increases the poverty rate by 1.6 percentage points. On the other hand, replacing the official unit with the SPM unit reduces the poverty rate by 0.3 percentage points. The sum of the resource, threshold, and unit effects (5.5 + 1.6 – 0.3) is 6.8 percentage points. Thus, the interaction effect in this case is -0.4 percentage points (6.4 – 6.8).

Table 9.
Effect on the SPM poverty rate of features of the SPM for people aged 65 or older, 2011

SPM feature	Change in poverty rate (percentage points)
All resources	5.5
All thresholds	1.6
Unit	-0.3
Combined effect of all SPM features	[a] 6.4

SOURCE: The public-use version of the 2012 CPS/ASEC.

a. Because of the interaction effect and rounding, this value does not equal the sum of the individual changes.

Summary of Empirical Findings

First, we summarize our comparisons of official and SPM poverty estimates. Then, we summarize our analysis of the effects of the various features of the SPM on poverty of the aged.

Comparison of Official and SPM Estimates

We find that for the total population under study, the SPM poverty rate (16.1 percent) exceeds the official rate (15.1 percent). For broad age groups, the SPM and official measures give quite different results. Compared with the official measure, the SPM shows much *more* poverty for the aged—those aged 65 or older (an increase in the poverty rate from 8.7 percent to 15.1 percent) and much *less* poverty for children—those younger than age 18 (a decrease from 22.3 percent to 18.2 percent). For aged adults, we also look at poverty rates for narrow age subgroups (65–69, 70–74, 75–79, and 80 or older). For each of these subgroups, the SPM poverty rate exceeds the official rate.

For the total population, the SPM deep poverty rate (5.2 percent) *falls short* of the official measure deep poverty rate (6.7 percent). For broad age groups, the SPM and official measure give quite different results for deep poverty. Compared with the official measure, for deep poverty (as well as for poverty), the SPM shows a much higher rate for aged adults and a much lower rate for children.

Switching to the SPM moves 7.7 percent of the aged population into poverty, but moves 1.4 percent out of poverty. Much of this movement into and out of poverty occurs near the poverty line. We examine poverty of aged adults for various demographic and socioeconomic groups (Table 6). For all of the groups shown in this table, SPM poverty exceeds official poverty.

The percentage point increases in poverty rates (the SPM rate minus the official rate) are larger for those in units that have owners with mortgages than for those in units that have owners without mortgages or those in units that have renters, larger for people residing inside MSAs than for those residing outside MSAs, and larger for married people than for those not married.

Effects of SPM Features on Poverty of the Aged

For the group aged 65 or older, the SPM poverty rate (15.1 percent) exceeds the official poverty rate (8.7 percent) by 6.4 percentage points.

The combined effect of all the changes in the resource measure is an increase in the poverty rate of 5.5 percentage points. Of the subtractions of taxes and other nondiscretionary expenses, only the subtraction of MOOP expenses results in a large increase in the measured poverty rate (7.1 percentage points). This effect is substantially larger than that of any other change in resource measure, threshold measure, or unit definition. Of the additions of noncash transfers and refundable tax credits, the addition of housing subsidies produces the largest decrease in the poverty rate (1.2 percentage points).

The combined effect of all the changes in the threshold measure increases the poverty rate by 1.6 percentage points. Raising the threshold level and using the SPM equivalence scale increase the poverty rate by 2.8 percentage points and 1.3 percentage points, respectively. On the other hand, the housing-status adjustment decreases the poverty rate by 2.8 percentage points.

Replacing the official unit with the SPM unit reduces the poverty rate slightly, by 0.3 percentage points.

Concluding Comments

The SPM produces a picture of who is counted as poor that is quite different from that produced by the official poverty measure. Thus, one's view regarding the relative merits of the two poverty measures is quite relevant to his or her views regarding appropriate public policy. For the aged population, key public policies include those affecting Social Security, Medicare, Medicaid, and Supplemental Security Income.

The effects of certain types of government policies on the economic well-being of the low-income population would be better measured using the SPM than the official measure. For example, consider policies that eliminate Social Security payroll taxes for aged workers or increase SNAP benefits. The effects of these policies would be reflected in SPM estimates, but not in official poverty estimates.

Additional research on the SPM should prove very fruitful. We need further research evaluating the SPM and testing alternative methods of improving it. Research is needed on components of both the resource and threshold measures. For example, research on the valuation of work expenses, adjustments for the underreporting of income and expenses, and geographic adjustments of thresholds should be given high priority.

In addition, it would be worthwhile to conduct more research on how and why the SPM and official poverty estimates differ. This research could focus on specific groups such as children and nonaged adults.

Appendix

The sources of the dollar values for the various in-kind benefits, refundable tax credits, tax liabilities, and other nondiscretionary expense items given in the CPS/ASEC data file are discussed in this Appendix. We begin by discussing in-kind benefits and taxes and refundable tax credits.

- **Housing subsidies.** The CPS/ASEC collects information on recipiency, but not on amounts received. To estimate amounts of such assistance, the Department of Housing and Urban Development program rules are applied to CPS households.
- **Low-Income Home Energy Assistance Program (LIHEAP).** The CPS/ASEC collects information on amounts received.
- **National School Lunch Program.** The CPS/ASEC collects information on recipiency, but not on amounts received. To value benefits, the Census Bureau uses the amount of the cost per lunch from the Department of Agriculture's Food and Nutrition Service.
- **Supplemental Nutrition Assistance Program (SNAP).** The CPS/ASEC collects information on amounts received.
- **Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).** The CPS/ASEC collects information on recipiency, but not on amounts received. To value the benefits, the Census Bureau uses program information from the Department of Agriculture.
- **Taxes and refundable tax credits.** The CPS/ASEC does not collect information on taxes and refundable tax credits, but relies on a tax calculator to simulate those data. The calculator is a computer program that incorporates the main features of federal and state tax laws. These simulations also use a statistical match of the CPS/ASEC to the Internal Revenue Service's Statistics of Income microdata file of tax returns.

We conclude by discussing other necessary expenses that are subtracted from resources.

- **Child support paid.** The CPS/ASEC collects information on amounts paid.

- **Medical out-of-pocket (MOOP) expenses.** The CPS/ASEC collects information on amounts paid for (1) health insurance premiums; (2) over-the-counter health-related products; and (3) medical care (hospital visits, medical providers, dental services, prescription medicine, vision aids, and medical supplies). Caswell and O'Hara (2010) conclude that CPS/ASEC estimates of MOOP expenses compare favorably to estimates from the Medical Expenditure Panel Survey (MEPS) and the Survey of Income and Program Participation (SIPP). The MEPS, in particular, devotes considerably more effort to collecting MOOP expenses than does the CPS/ASEC.
- **Work-related expenses other than childcare expenses.** The CPS/ASEC does not collect information on these work-related expenses (travel to work, tools, uniforms, and so forth). Information on amounts of such work expenses from the most recent SIPP is used to estimate those expenses for workers in the CPS/ASEC.
- **Childcare expenses.** The CPS/ASEC collects information on amounts of such expenses (any type of childcare while parents are at work).

Notes

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[1] There are two slightly different versions of the official poverty measure: (1) poverty thresholds, which are more detailed and primarily used for statistical purposes; and (2) poverty guidelines, which are a simplified version of the thresholds and primarily used for administrative purposes. In this article, we use the term "official poverty measure" to denote the poverty threshold measure. For a discussion of the two measures, see Institute for Research on Poverty (2013).

[2] See note 1. The poverty guideline measure is sometimes identified in legislation regarding program eligibility. The SPM is not intended to be used in this way.

[3] The poverty rate is the percentage of people in a group who are classified as poor.

[4] In its 1964 report, the President's Council of Economic Advisors (CEA) set forth a poverty threshold of $3,000 (in 1962 dollars) for all families of two or more people and a threshold of $1,500 for unrelated individuals. The Orshansky set of thresholds, which increase with family size, was clearly superior to the CEA alternative.

[5] ITWG (2010).

[6] This section draws heavily on Short (2012); refer to the report for further details.

[7] The 2012 CPS/ASEC is a household survey, which uses a sample of about 100,000 households. The sample universe is the US civilian noninstitutionalized population; it also includes military personnel who live in a household with at least one civilian adult.

[8] Money income in the CPS/ASEC consists of (1) earnings; (2) unemployment compensation; (3) workers' compensation; (4) Social Security; (5) Supplemental Security Income; (6) public assistance; (7) veterans' payments; (8) survivor benefits; (9) disability benefits; (10) pension or retirement income; (11) interest; (12) dividends; (13) rents, royalties, and estates and trusts; (14) educational assistance; (15) alimony; (16) child support; (17) financial assistance from outside of the household; and (18) other income.

[9] For a critique of the resource-based SPM, see Meyer and Sullivan (2012). The authors favor a consumption-based poverty measure.

[10] Federal outlays for Supplemental Security Income (SSI) and Temporary Assistance for Needy Families (TANF) were about $56 billion and $17 billion. Both of these *cash* benefit programs are also designed to assist the low-income population.

[11] The sources of the dollar values for the various in-kind benefit, tax, and other nondiscretionary expense items given in the CPS/ASEC data file are discussed in the Appendix. For more details, see Short (2012) and references cited therein.

[12] See note 11.

[13] Respondents reported amounts of premium and non-premium MOOP expenses in the 2012 CPS/ASEC.

[14] For families of three or more persons, the multiplier is 3. However, for families of two, the multiplier is 3.7. Without using a food plan and a multiplier, the thresholds for unrelated individuals were set at 80 percent of the corresponding thresholds for two-person families.

[15] To be more precise, the expenditure around the 33rd percentile is the average of expenditures within the 30th to 36th percentile portion of the expenditure distribution.

[16] The three-parameter scale value is calculated as follows:

1. SPM unit with one or two adults and no children:
   unadjusted scale value = [number of adults]$^{0.5}$
2. SPM unit with one adult and one child or more (mostly single-parent units):
   unadjusted scale value =
   [1 + 0.8 + 0.5(number of children – 1)]$^{0.7}$
3. All other SPM units:
   unadjusted scale value =
   [number of adults + 0.5(number of children)]$^{0.7}$

In computing equivalence scale values, all people aged 18 or older and nondependent people aged 15–17 are counted as adults; all people younger than age 15 and dependent people aged 15–17 are counted as children.

In equation (2), the first child is treated as 80 percent of an adult; each additional child is treated as 50 percent of an adult. In equation (3), each child is treated as 50 percent of an adult. The numbers of adult equivalents are given by the expressions inside the brackets. For example, for a two-adult two-child unit, equation (3) shows that the number of adult equivalents is three.

Economies of scale means that whenever an additional equivalent adult is added to an SPM unit, the unit's equivalence scale value divided by the number of adult equivalents decreases. The exponents outside the brackets are the economy-of-scale factors. The smaller exponent (0.5) exhibits greater economies of scale than does the larger exponent (0.7).

The Census Bureau then adjusts all unadjusted scale values proportionally so that the adjusted scale value for the two-adult two-child unit equals 1. The base threshold level for the two-adult two-child unit is then multiplied by the adjusted scale values in deriving threshold values for the other unit types.

[17] For a detailed discussion of the SPM and official unit measures, see Provencher (2011).

[18] The Census Bureau's report on official poverty shows a poverty rate of 15.0 percent for 2011 (DeNavas-Walt, Proctor, and Smith 2012). That report excludes from the universe of official poverty calculations all unrelated individuals younger than age 15.

In the Census Bureau's report on the SPM (Short 2012) and in this study, those unrelated individuals are included in the universe for official and SPM poverty calculations. In these official poverty calculations, all of those unrelated individuals are counted as poor. In the SPM calculations, those individuals are assumed to share the resources of their SPM unit.

[19] The SPM thresholds incorporate adjustments for geographic differences in housing costs. Because of confidentiality restrictions, the geographic information available for use in calculating SPM thresholds on the public-use data file is slightly more limited than that available for use in calculating the SPM thresholds on the Census Bureau's internal data file. Thus, this study's SPM estimates differ slightly from those in Short (2012).

[20] For the group aged 65 or older, the percentage distribution among four age classes (65–69, 70–74, 75–79, and 80 or older) of the poor under the SPM is similar to that for the poor under the official measure. For the 65–79 group, the mean ages of the SPM poor and the official measure poor are 72 and 71.

[21] Refundable tax credits are very important for children.

[22] For official deep poverty, gross before-tax cash income is the resource measure.

[23] For the official welfare ratio, gross before-tax cash income is the resource measure.

[24] To be more precise, "1.00–1.49" means equal to or greater than 1.00 but less than 1.50. Correspondingly, "0.50–0.99" means equal to or greater than 0.50 but less than 1.00.

[25] Eighty-one percent of them move to the 1.00–1.24 class.

[26] The official poverty rates of people residing inside and outside metropolitan statistical areas (MSAs) are similar.

[27] For example, we compute the effect on the SPM rate of adding housing subsidies to the SPM resource estimate in the following way: (1) We subtract the value of each SPM unit's housing subsidies from its SPM resource estimate. (2) For each unit, we then compare that modified resource estimate to the unit's SPM threshold to determine the modified poverty status of its members. (3) We then calculate the percentage of aged adults whose modified poverty status is poor, that is, we calculate the modified poverty rate. For this case, the modified poverty rate is 16.3 percent. (4) Finally, we compare the modified poverty rate with the SPM rate. For the aged, the SPM rate is 15.1 percent. We find that the inclusion of housing subsidies in the resource measure reduces the poverty rate by 1.2 percentage points (15.1 – 16.3).

[28] These program benefit amounts usually incorporate behavioral and interprogram effects.

[29] Government cash transfers are included as resources by both the SPM and the official poverty measure. Cash transfer programs included are (1) Social Security, (2) Supplemental Security Income (SSI), (3) unemployment insurance, (4) workers' compensation, and (5) Temporary Assistance for Needy Families (TANF) and general assistance. Including Social Security in SPM resources reduces the SPM poverty rate of the aged by 39.0 percentage points, a huge reduction. The corresponding reductions that are due to SSI and unemployment insurance are 1.3 percentage points and 0.4 percentage points. The following is an example of an interprogram effect: As specified in SSI program rules, a person's SSI payment amount decreases as that person's Social Security benefit increases.

[30] Federal earned income tax credit plus refundable portion of federal child tax credit plus other refundable federal credits.

[31] Only 6 percent of the aged are in SPM units that receive refundable federal tax credits.

[32] Federal individual income tax after subtracting nonrefundable tax credits.

[33] Contributions by employees and the self-employed to Old-Age, Survivors, Disability, and Hospital Insurance (OASDHI) plus retirement contributions by federal employees.

[34] State income tax after credits. Some amounts are negative.

[35] For both people with private health insurance and those with only public insurance, this MOOP-expense subtraction increases the poverty rates by about 7–8 percentage points.

[36] Sixty-one percent of aged adults are in SPM units that do not have either payroll tax liability or work expenses.

[37] Interaction effect is not the same as interprogram effect discussed earlier. See note 29.

[38] With no geographic adjustment, basic thresholds for two-adult two-child units are $25,703, $21,175, and $25,222 for units that have owners with mortgages, owners without mortgages, and renters, respectively. With no geographic adjustment and no housing-status adjustment, the threshold for the two-adult two-child unit would be 1.2($20,833) or $25,000: $25,703, $21,175, and $25,222 are 103 percent, 85 percent, and 101 percent of $25,000. See the Bureau of Labor Statistics (2012).

[39] Preliminary thresholds are multiplied by geographic adjustment factors to get final thresholds. Those factors depend on housing-status group and on area rent data. The inclusion of housing-status group in the calculation of geographic adjustment factors reduces the poverty rate for adults aged 65 or older by 0.2 percentage points. We include this effect as part of the effects of the geographic adjustment factors and not as part of the effects of the housing-status adjustment.

[40] Not shown in this article's tables.

[41] The adjustment factors are calculated using the following formula:

$$\text{Factor}_{ah} = \text{HousingShare}_h \times (\text{Rent}_a/\text{Rent}_n) + (1 - \text{HousingShare}_h),$$

where *a* denotes area, *h* denotes housing-status group, and *n* denotes national. See Renwick (2011).

[42] Renwick (2011) made such estimates for an earlier year.

[43] Not shown in the article's tables.

[44] Derived from Bureau of Labor Statistics (2012).

[45] Not shown in this article's tables.

[46] Not shown in this article's tables.

[47] Note that here we compare official poverty with the poverty that results when we change a specified feature of the official measure. In all our previous estimates of poverty effects, we compare SPM poverty with the poverty that results when we change a specified feature of the SPM. In the case of unit definition, the approach used here is considerably easier to implement than our usual approach.

[48] Not shown in the article's tables.

[49] For the remaining new-unit adults, their SPM unit and their official unit are of the same size, but differ in composition.

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OASDI and SSI Snapshot and SSI Monthly Statistics

Each month, the Social Security Administration's Office of Retirement and Disability Policy posts key statistics about various aspects of the Supplemental Security Income (SSI) program at http://www.socialsecurity.gov/policy. The statistics include the number of people who receive benefits, eligibility category, and average monthly payment. This issue presents SSI data for September 2012–September 2013.

The Monthly Statistical Snapshot summarizes information about the Social Security and SSI programs and provides a summary table on the trust funds. Data for September 2013 are given on pages 72–73. Trust fund data for September 2013 are given on page 73. The more detailed SSI tables begin on page 74. Persons wanting detailed monthly Old-Age, Survivors, and Disability Insurance (OASDI) information should visit the Office of the Chief Actuary's website at http://www.socialsecurity.gov/OACT/ProgData/beniesQuery.html.

Monthly Statistical Snapshot

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

Table 1.
Number of people receiving Social Security, Supplemental Security Income (SSI), or both, September 2013 (in thousands)

Type of beneficiary	Total	Social Security only	SSI only	Both Social Security and SSI
All beneficiaries	62,871	54,489	5,579	2,802
Aged 65 or older	41,421	39,313	926	1,181
Disabled, under age 65 [a]	14,251	7,977	4,653	1,621
Other [b]	7,199	7,199	. . .	. . .

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

NOTES: Social Security beneficiaries who are entitled to a primary and a secondary benefit (dual entitlement) are counted only once in this table. SSI counts include recipients of federal SSI, federally administered state supplementation, or both.

. . . = not applicable.

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

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

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

Table 2.
Social Security benefits, September 2013

Type of beneficiary	Beneficiaries		Total monthly benefits (millions of dollars)	Average monthly benefit (dollars)
	Number (thousands)	Percent		
Total	57,695	100.0	67,053	1,162.20
Old-Age and Survivors Insurance	46,749	81.0	56,303	1,204.38
Retirement benefits	40,575	70.3	49,722	1,225.45
Retired workers	37,676	65.3	47,890	1,271.11
Spouses of retired workers	2,284	4.0	1,451	635.11
Children of retired workers	614	1.1	381	620.36
Survivor benefits	6,174	10.7	6,581	1,065.90
Children of deceased workers	1,873	3.2	1,499	800.20
Widowed mothers and fathers	149	0.3	135	904.94
Nondisabled widow(er)s	3,894	6.7	4,764	1,223.56
Disabled widow(er)s	257	0.4	182	707.20
Parents of deceased workers	1	(L)	1	1,079.63
Disability Insurance	10,946	19.0	10,750	982.08
Disabled workers	8,924	15.5	10,076	1,129.09
Spouses of disabled workers	158	0.3	48	304.00
Children of disabled workers	1,864	3.2	625	335.47

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

NOTE: (L) = less than 0.05 percent.

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

Table 3.
Supplemental Security Income recipients, September 2013

Age	Recipients		Total payments [a] (millions of dollars)	Average monthly payment [b] (dollars)
	Number (thousands)	Percent		
All recipients	8,381	100.0	4,717	527.47
Under 18	1,322	15.8	877	632.12
18–64	4,952	59.1	2,945	543.97
65 or older	2,107	25.1	896	423.28

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

a. Includes retroactive payments.

b. Excludes retroactive payments.

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

Table 4.
Operations of the Old-Age and Survivors Insurance and Disability Insurance Trust Funds, September 2013 (in millions of dollars)

Component	OASI	DI	Combined OASI and DI
		Receipts	
Total	51,710	8,804	60,514
Net contributions	52,554	8,921	61,475
Income from taxation of benefits	15	a	15
Net interest	93	39	133
Other income [b]	-952	-157	-1,109
		Expenditures	
Total	56,640	11,933	68,574
Benefit payments	56,364	11,700	68,064
Administrative expenses	276	233	509
Transfers to Railroad Retirement	0	0	0
		Assets	
At start of month	2,659,980	103,616	2,763,596
Net increase during month	-4,931	-3,129	-8,060
At end of month	2,655,049	100,486	2,755,536

SOURCE: Data on the trust funds were accessed on November 8, 2013, on the Social Security Administration's Office of the Chief Actuary's website: http://www.socialsecurity.gov/OACT/ProgData/funds.html.

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

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

b. Includes reimbursements from the general fund of the Treasury and a small amount of gifts to the trust funds.

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

SSI Federally Administered Payments

Awards of SSI Federally Administered Payments

Table 1.
Recipients (by type of payment), total payments, and average monthly payment, September 2012–September 2013

Month	Number of recipients				Total payments [a] (thousands of dollars)	Average monthly payment [b] (dollars)
	Total	Federal payment only	Federal payment and state supplementation	State supplementation only		
2012						
September	8,246,916	6,031,047	1,992,752	223,117	4,515,351	517.70
October	8,277,694	6,055,075	1,999,285	223,334	4,564,279	516.40
November	8,241,018	6,028,214	1,989,793	223,011	4,438,512	518.80
December	8,262,877	6,047,037	1,992,947	222,893	4,593,773	519.43
2013						
January	8,291,772	6,071,217	2,000,021	220,534	4,615,591	525.84
February	8,295,013	6,077,037	1,998,103	219,873	4,612,279	526.41
March	8,297,503	6,079,289	1,998,848	219,366	4,637,309	527.51
April	8,331,703	6,109,475	2,003,156	219,072	4,717,880	527.95
May	8,311,121	6,093,238	1,998,472	219,411	4,635,807	527.22
June	8,331,212	6,109,560	2,002,432	219,220	4,649,323	527.43
July	8,352,764	6,125,836	2,007,254	219,674	4,698,122	525.96
August	8,340,889	6,116,570	2,004,743	219,576	4,662,430	528.25
September	8,381,134	6,148,045	2,013,289	219,800	4,717,074	527.47

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

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

a. Includes retroactive payments.

b. Excludes retroactive payments.

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

Table 2.
Recipients, by eligibility category and age, September 2012–September 2013

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2012						
September	8,246,916	1,159,205	7,087,711	1,306,587	4,862,627	2,077,702
October	8,277,694	1,161,532	7,116,162	1,309,773	4,884,345	2,083,576
November	8,241,018	1,160,126	7,080,892	1,298,560	4,859,516	2,082,942
December	8,262,877	1,156,188	7,106,689	1,311,861	4,869,484	2,081,532
2013						
January	8,291,772	1,160,197	7,131,575	1,312,233	4,890,028	2,089,511
February	8,295,013	1,157,912	7,137,101	1,316,813	4,890,685	2,087,515
March	8,297,503	1,157,010	7,140,493	1,311,902	4,896,576	2,089,025
April	8,331,703	1,157,773	7,173,930	1,321,907	4,918,259	2,091,537
May	8,311,121	1,156,470	7,154,651	1,311,875	4,908,830	2,090,416
June	8,331,212	1,157,463	7,173,749	1,319,774	4,917,888	2,093,550
July	8,352,764	1,159,107	7,193,657	1,319,623	4,934,444	2,098,697
August	8,340,889	1,159,154	7,181,735	1,310,433	4,929,517	2,100,939
September	8,381,134	1,162,126	7,219,008	1,321,608	4,952,280	2,107,246

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

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

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

Table 3.
Recipients of federal payment only, by eligibility category and age, September 2012–September 2013

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2012						
September	6,031,047	621,710	5,409,337	1,072,574	3,743,796	1,214,677
October	6,055,075	623,096	5,431,979	1,075,224	3,761,557	1,218,294
November	6,028,214	622,423	5,405,791	1,066,370	3,743,731	1,218,113
December	6,047,037	619,717	5,427,320	1,077,394	3,752,903	1,216,740
2013						
January	6,071,217	622,577	5,448,640	1,077,416	3,770,916	1,222,885
February	6,077,037	621,407	5,455,630	1,081,714	3,773,175	1,222,148
March	6,079,289	620,481	5,458,808	1,077,491	3,779,039	1,222,759
April	6,109,475	620,838	5,488,637	1,086,346	3,798,608	1,224,521
May	6,093,238	619,822	5,473,416	1,077,680	3,792,104	1,223,454
June	6,109,560	620,282	5,489,278	1,084,357	3,799,950	1,225,253
July	6,125,836	620,900	5,504,936	1,083,874	3,813,790	1,228,172
August	6,116,570	620,958	5,495,612	1,075,933	3,810,875	1,229,762
September	6,148,045	622,597	5,525,448	1,085,034	3,829,343	1,233,668

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

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

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

Table 4.
Recipients of federal payment and state supplementation, by eligibility category and age, September 2012–September 2013

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2012						
September	1,992,752	466,888	1,525,864	232,892	1,006,000	753,860
October	1,999,285	467,938	1,531,347	233,362	1,009,788	756,135
November	1,989,793	467,406	1,522,387	230,977	1,003,014	755,802
December	1,992,947	465,726	1,527,221	233,290	1,004,546	755,111
2013						
January	2,000,021	468,210	1,531,811	233,600	1,007,611	758,810
February	1,998,103	467,285	1,530,818	233,971	1,006,380	757,752
March	1,998,848	467,494	1,531,354	233,335	1,006,735	758,778
April	2,003,156	467,979	1,535,177	234,588	1,009,041	759,527
May	1,998,472	467,543	1,530,929	233,086	1,006,052	759,334
June	2,002,432	468,154	1,534,278	234,427	1,007,319	760,686
July	2,007,254	469,152	1,538,102	234,641	1,009,932	762,681
August	2,004,743	469,143	1,535,600	233,422	1,008,064	763,257
September	2,013,289	470,397	1,542,892	235,541	1,012,282	765,466

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

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

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

Table 5.
Recipients of state supplementation only, by eligibility category and age, September 2012–September 2013

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2012						
September	223,117	70,607	152,510	1,121	112,831	109,165
October	223,334	70,498	152,836	1,187	113,000	109,147
November	223,011	70,297	152,714	1,213	112,771	109,027
December	222,893	70,745	152,148	1,177	112,035	109,681
2013						
January	220,534	69,410	151,124	1,217	111,501	107,816
February	219,873	69,220	150,653	1,128	111,130	107,615
March	219,366	69,035	150,331	1,076	110,802	107,488
April	219,072	68,956	150,116	973	110,610	107,489
May	219,411	69,105	150,306	1,109	110,674	107,628
June	219,220	69,027	150,193	990	110,619	107,611
July	219,674	69,055	150,619	1,108	110,722	107,844
August	219,576	69,053	150,523	1,078	110,578	107,920
September	219,800	69,132	150,668	1,033	110,655	108,112

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

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

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

Table 6.
Total payments, by eligibility category, age, and source of payment, September 2012–September 2013 (in thousands of dollars)

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
			All sources			
2012						
September	4,515,351	472,969	4,042,382	843,315	2,808,071	863,966
October	4,564,279	474,596	4,089,683	845,219	2,851,487	867,573
November	4,438,512	472,718	3,965,794	828,040	2,745,321	865,150
December	4,593,773	474,584	4,119,190	856,422	2,867,113	870,238
2013						
January	4,615,591	481,358	4,134,233	856,521	2,875,092	883,978
February	4,612,279	479,815	4,132,464	862,832	2,866,848	882,600
March	4,637,309	481,368	4,155,940	864,978	2,886,289	886,042
April	4,717,880	482,556	4,235,324	882,245	2,947,040	888,595
May	4,635,807	481,457	4,154,350	862,148	2,886,554	887,104
June	4,649,323	481,823	4,167,500	869,978	2,890,791	888,554
July	4,698,122	483,098	4,215,024	870,488	2,936,066	891,568
August	4,662,430	482,886	4,179,545	867,631	2,902,656	892,144
September	4,717,074	484,568	4,232,507	876,745	2,944,672	895,658
			Federal payments			
2012						
September	4,233,203	402,282	3,830,921	831,161	2,652,419	749,624
October	4,279,425	403,684	3,875,742	832,942	2,693,769	752,715
November	4,160,172	402,204	3,757,968	816,241	2,593,035	750,897
December	4,309,786	403,731	3,906,054	844,141	2,710,399	755,246
2013						
January	4,333,173	410,619	3,922,553	844,340	2,719,746	769,087
February	4,331,006	409,172	3,921,834	850,756	2,712,389	767,862
March	4,355,019	410,610	3,944,409	852,896	2,731,132	770,991
April	4,432,924	411,609	4,021,315	869,992	2,789,665	773,267
May	4,354,520	410,768	3,943,753	850,130	2,732,248	772,142
June	4,367,677	411,131	3,956,546	857,846	2,736,343	773,488
July	4,413,774	412,136	4,001,638	858,259	2,779,510	776,005
August	4,380,400	412,059	3,968,341	855,574	2,748,125	776,702
September	4,432,191	413,427	4,018,764	864,470	2,788,041	779,680

(Continued)

Table 6.
Total payments, by eligibility category, age, and source of payment, September 2012–September 2013 (in thousands of dollars)—*Continued*

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
			State supplementation			
2012						
September	282,148	70,687	211,461	12,154	155,651	114,342
October	284,854	70,912	213,941	12,277	157,718	114,858
November	278,339	70,514	207,826	11,800	152,286	114,253
December	283,988	70,853	213,135	12,281	156,715	114,992
2013						
January	282,418	70,739	211,679	12,181	155,346	114,892
February	281,273	70,643	210,630	12,076	154,459	114,738
March	282,290	70,758	211,532	12,082	155,157	115,050
April	284,956	70,947	214,009	12,253	157,375	115,328
May	281,287	70,690	210,597	12,018	154,307	114,962
June	281,646	70,692	210,954	12,132	154,448	115,066
July	284,348	70,962	213,386	12,229	156,557	115,562
August	282,030	70,827	211,204	12,057	154,531	115,442
September	284,884	71,141	213,743	12,275	156,631	115,977

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

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

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

Table 7.
Average monthly payment, by eligibility category, age, and source of payment, September 2012–September 2013 (in dollars)

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
			All sources			
2012						
September	517.70	407.60	535.80	621.30	533.80	415.20
October	516.40	407.50	534.20	614.70	533.30	415.20
November	518.80	407.90	537.00	624.60	534.90	415.60
December	519.43	409.31	537.36	620.77	536.06	416.80
2013						
January	525.84	414.13	544.02	627.01	542.99	422.17
February	526.41	413.41	544.74	631.02	542.93	421.70
March	527.51	414.84	545.78	633.12	543.95	422.79
April	527.95	415.09	546.17	634.71	543.93	423.02
May	527.22	415.23	545.34	631.23	543.86	423.13
June	527.43	415.15	545.57	632.96	543.62	423.07
July	525.96	415.10	543.86	626.41	542.98	422.99
August	528.25	415.61	546.47	636.19	544.40	423.39
September	527.47	415.42	545.54	632.12	543.97	423.28
			Federal payments			
2012						
September	498.50	369.40	518.80	613.20	516.10	380.50
October	497.10	369.20	517.20	606.60	515.50	380.40
November	499.60	369.60	520.10	616.50	517.20	380.80
December	500.29	371.17	520.48	612.68	518.39	382.15
2013						
January	506.75	375.99	527.20	618.83	525.45	387.56
February	507.36	375.16	527.97	622.86	525.43	387.03
March	508.47	376.61	529.02	624.97	526.47	388.15
April	508.93	376.83	529.44	626.56	526.45	388.38
May	508.17	376.90	528.60	623.11	526.41	388.46
June	508.41	376.83	528.85	624.82	526.17	388.41
July	506.92	376.76	527.12	618.25	525.55	388.33
August	509.24	377.28	529.77	628.07	527.00	388.75
September	508.47	377.10	528.84	623.99	526.58	388.64

(Continued)

Table 7.
Average monthly payment, by eligibility category, age, and source of payment, September 2012–September 2013 (in dollars)—*Continued*

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
			State supplementation			
2012						
September	121.70	130.40	118.90	48.70	129.50	131.30
October	121.70	130.40	118.90	48.70	129.50	131.40
November	121.80	130.40	119.00	48.70	129.60	131.40
December	121.79	130.66	118.95	48.61	129.58	131.56
2013						
January	121.58	130.43	118.75	48.59	129.30	131.38
February	121.47	130.39	118.63	48.48	129.19	131.35
March	121.59	130.51	118.75	48.59	129.27	131.42
April	121.54	130.50	118.69	48.52	129.27	131.40
May	121.53	130.47	118.68	48.53	129.19	131.35
June	121.43	130.39	118.58	48.46	129.12	131.30
July	121.39	130.35	118.53	48.47	129.05	131.26
August	121.52	130.42	118.67	48.50	129.16	131.31
September	121.40	130.37	118.54	48.41	129.07	131.28

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

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

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

Table 8.
All awards, by eligibility category and age of awardee, September 2012–September 2013

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2012						
September	77,606	9,462	68,144	14,387	53,623	9,596
October	87,026	9,395	77,631	16,836	60,654	9,536
November	58,337	9,338	48,999	10,868	38,037	9,432
December	82,821	8,679	74,142	16,404	57,626	8,791
2013						
January	72,260	8,293	63,967	14,109	49,729	8,422
February	73,445	9,512	63,933	13,883	49,917	9,645
March	75,522	8,819	66,703	14,154	52,405	8,963
April	87,879	9,743	78,136	16,511	61,470	9,898
May	77,881	10,026	67,855	14,614	53,113	10,154
June	72,083	9,398	62,685	14,072	48,483	9,528
July	82,408	9,162	73,246	16,202	56,895	9,311
August [a]	74,012	9,891	64,121	14,309	49,685	10,018
September [a]	86,344	10,332	76,012	16,439	59,437	10,468

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

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

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

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

Perspectives—Paper Submission Guidelines

The *Social Security Bulletin* is the quarterly research journal of the Social Security Administration. It has a diverse readership of policymakers, government officials, academics, graduate and undergraduate students, business people, and other interested parties.

To promote the discussion of research questions and policy issues related to Social Security and the economic well being of the aged, the *Bulletin* welcomes submissions from researchers and analysts outside the agency for publication in its Perspectives section.

We are particularly interested in papers that:

- assess the Social Security retirement, survivors, and disability programs and the economic security of the aged;
- evaluate changing economic, demographic, health, and social factors affecting work/retirement decisions and retirement savings;
- consider the uncertainties that individuals and households face in preparing for and during retirement and the tools available to manage such uncertainties; and
- measure the changing characteristics and economic circumstances of SSI beneficiaries.

Papers should be factual and analytical, not polemical. Technical or mathematical exposition is welcome, if relevant, but findings and conclusions must be written in an accessible, nontechnical style. In addition, the relevance of the paper's conclusions to public policy should be explicitly stated.

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Authors should submit papers for consideration via e-mail to Michael V. Leonesio, Perspectives Editor, at perspectives@ssa.gov. To send your paper via regular mail, address it to:

Social Security Bulletin Perspectives Editor
Social Security Administration
Office of Research, Evaluation, and Statistics
500 E Street, SW, 8th Floor
Washington, DC 20254-0001

We regard the submission of a paper as your implied commitment not to submit it to another publication while it is under consideration by the *Bulletin*. If you have published a related paper elsewhere, please state that in your cover letter.

Disclosures—Authors are expected to disclose in their cover letter any potential conflicts of interest that may arise from their employment, consulting or political activities, financial interests, or other affiliations.

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Formatting Guidelines

To facilitate the editorial process, papers submitted for publication must be prepared in Microsoft Word (**except for tables and charts—see below**) and be formatted as outlined below.

- **Title Page**—Papers must include a title page with the paper's title, name(s) of author(s), affiliation(s), address(es), including the name, postal address, e-mail address, telephone and fax numbers of a contact person. Any Acknowledgments paragraph should also be on this page. In the Acknowledgments, reveal the source of any financial or research support received in connection with the preparation of the paper.

- **Synopsis**—For the *Bulletin's* table of contents include a separate synopsis, including the title of the paper along with one to three sentences outlining the research question.
- **Abstract**—Prepare a brief, nontechnical abstract of the paper of not more than 150 words that states the purpose of the research, methodology, and main findings and conclusions. This abstract will be used in the Bulletin and, if appropriate, be submitted to the Journal of Economic Literature for indexing. Below the abstract supply the JEL classification code and two to six keywords. JEL classification codes can be found at http://www.aeaweb.org/jel/guide/jel.php.
- **Text**—Papers should average 10,000 words, including the text, the notes, and the references (but excluding the tables and charts). Text is double-spaced, except notes and references, which are double spaced only after each entry. **Do not embed tables or charts into the text. Create separate files (in the formats outlined in "Tables/Charts" below) for the text and statistical material**. Tables should be in one file, with one table per page. Include charts in a separate file, with one chart per page.
- **Endnotes**—Number notes consecutively in the text using superscripts. Only use notes for brief substantive comments, not citations. (See the *Chicago Manual of Style* for guidance on the use of citations.) All notes should be grouped together and start on a new page at the end of the paper.
- **References**—Verify each reference carefully; the references must correspond to the citations in the text. The list of references should start on a new page and be listed alphabetically by the last name of the author(s) and then by year, chronologically. Only the first author's name is inverted. List all authors' full names and avoid using *et al*. The name of each author and the title of the citation should be exactly as it appears in the original work.
- **Tables/Charts**—Tables must be prepared in Microsoft Excel. Charts or other graphics must be prepared in or exported to Excel or Adobe Illustrator. The spreadsheet with plotting data must be attached to each chart with the final submission. Make sure all tables and charts are referenced in the text. Give each table and chart a title and number consecutive with the order it is mentioned in the text. Notes for tables and charts are independent of Notes in the rest of the paper and should be ordered using lowercase letters, beginning with the letter a (including the Source note, which should be listed first). The sequence runs from left to right, top to bottom. The order of the notes as they appear below the tables or charts is (1) Source, (2) general notes to the table or chart, if any, and (3) letter notes.

For specific questions on formatting, use the *Chicago Manual of Style* as a guide for notes, citations, references, and table presentation.

Review Process

Papers that appear to be suitable for publication in Perspectives are sent to three reviewers who are subject matter experts. The reviewers assess the paper's technical merits, provide substantive comments, and recommend whether the paper should be published. An editorial review committee appointed and chaired by the Associate Commissioner, Office of Research, Evaluation, and Statistics, makes the final decision on whether the paper is of sufficient quality, importance, and interest to publish, subject to any required revisions that are specified in a letter to the author(s). The entire review process takes approximately 12 weeks.

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If your paper is accepted for publication, you will be asked to make your data available to others at a reasonable cost for a period of 3 years (starting 6 months after actual publication). Should you want to request an exception from this requirement, you must notify the Perspectives Editor when you submit your paper. For example, the use of confidential or proprietary data sets could prompt an exemption request. If you do not request an exemption, we will assume that you have accepted this requirement.

Questions

Questions regarding the mechanics of submitting a paper should be sent to our editorial staff via e-mail at ssb@ssa.gov. For other questions regarding submissions, please contact Michael V. Leonesio, Perspectives Editor, at perspectives@ssa.gov.

Title and Author Index for Volume 73, 2013

Titles

Authors

OASDI and SSI Program Rates and Limits, 2014

Old-Age, Survivors, and Disability Insurance

Tax Rates (percent)	
Social Security (Old-Age, Survivors, and Disability Insurance)	
Employers and Employees, each [a]	6.20
Medicare (Hospital Insurance)	
Employers and Employees, each [a,b]	1.45
Maximum Taxable Earnings (dollars)	
Social Security	117,000
Medicare (Hospital Insurance)	No limit
Earnings Required for Work Credits (dollars)	
One Work Credit (One Quarter of Coverage)	1,200
Maximum of Four Credits a Year	4,800
Earnings Test Annual Exempt Amount (dollars)	
Under Full Retirement Age for Entire Year	15,480
For Months Before Reaching Full Retirement Age in Given Year	41,400
Beginning with Month Reaching Full Retirement Age	No limit
Maximum Monthly Social Security Benefit for Workers Retiring at Full Retirement Age (dollars)	2,642
Full Retirement Age	66
Cost-of-Living Adjustment (percent)	1.5

a. Self-employed persons pay a total of 15.3 percent—12.4 percent for OASDI and 2.9 percent for Medicare.

b. This rate does not reflect the additional 0.9 percent in Medicare taxes certain high-income taxpayers are required to pay. See the IRS information on this topic (http://www.irs.gov/Businesses/Small-Businesses-&-Self-Employed/Questions-and-Answers-for-the-Additional-Medicare-Tax).

Supplemental Security Income

Monthly Federal Payment Standard (dollars)	
Individual	721
Couple	1,082
Cost-of-Living Adjustment (percent)	1.5
Resource Limits (dollars)	
Individual	2,000
Couple	3,000
Monthly Income Exclusions (dollars)	
Earned Income [a]	65
Unearned Income	20
Substantial Gainful Activity (SGA) Level for the Nonblind Disabled (dollars)	1,070

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

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