

ELDERLY POVERTY AND SUPPLEMENTAL SECURITY INCOME, 2002–2005

by Joyce Nicholas and Michael Wiseman*

The Supplemental Security Income (SSI) program is the nation’s safety net for the aged, blind, and disabled. SSI receipt is often not reported by individuals interviewed in the Current Population Survey (CPS), the statistical base for the Census Bureau’s annual estimates of poverty rates. In an earlier article, we explored the effect on estimated poverty rates in 2002 of adjusting CPS income reports using administrative data on earnings and benefits from the SSI and Old-Age, Survivors, and Disability Insurance programs. We assessed poverty using both the official standard and a “relative” standard based on half of median pretax, posttransfer income. This article extends that work through 2005. We find that including administrative data presents challenges, but under the methodology we adopt, such adjustments lower estimated official poverty overall and increase estimated poverty rates for elderly SSI recipients. Relative poverty rates are much higher than official poverty rates. By any of the applied standards and procedures for income adjustment, poverty changed little over the 2002–2005 interval.

Introduction

The Supplemental Security Income (SSI) program acts as a safety net by providing a minimum level of income to the aged, blind, and disabled. As of December 2008, approximately 7.5 million persons received SSI, of which 2 million (27 percent) were aged 65 or older (SSA 2009). This group of recipients is about 5 percent of America’s senior citizens. Thus, SSI for the elderly is not a major factor in the social assistance landscape. Nevertheless, it does establish an income floor, and it offers an institutional framework for caring for older people who for some reason reach later life with few resources. Given recent economic developments, it is possible that SSI enrollment may grow. Thus, continuing review of SSI outcomes is valuable.

The success of programs like SSI in ensuring minimum incomes for Americans can be measured in various ways. Typically, leaders and researchers have evaluated persons’ economic standing using the official Census poverty standard and data from the Current Population Survey’s (CPS’s) Annual Social and Economic Supplement (ASEC). The official poverty

standard is commonly described as “absolute” because it is based on a family budget established in the 1960s and is fixed in real terms (Fisher 1992). In recent decades, the prevalence of poverty among elderly Americans as measured by the official standard has declined substantially. From 1966 through 2006, the poverty rate for persons aged 65 or older fell from 28.5 percent to 9.4 percent. In 1966, the elderly poverty rate exceeded that of adults aged 18–65 by 18 percentage points. By 1993, parity with the poverty rate of other adults was achieved; since that year, the elderly poverty rate has generally been over a percentage-point lower than that registered for adults of “working

Selected Abbreviations

ASEC	Annual Social and Economic Supplement
CPS	Current Population Survey
DER	Detailed Earnings Record
FBR	federal benefit rate
NRC	National Research Council

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Selected Abbreviations—Continued

OASDI	Old-Age, Survivors, and Disability Insurance
PHUS	Payment History Update System
SER	Summary Earnings Record
SSA	Social Security Administration
SSI	Supplemental Security Income
SSN	Social Security number
SSR	Supplemental Security Record

age” (DeNavas-Walt, Proctor, and Smith 2007, 50). However, it is difficult to trace the connection between SSI and poverty because receipt of SSI is substantially underreported in the CPS. For example, the estimated number of SSI recipients in 2002 derived from the CPS is about 30 percent lower than the count obtained from administrative data (Nicholas and Wiseman 2009, Table 8).

In a recent article, we addressed the underreporting issue by merging CPS/ASEC survey data for 2002 with administrative data on earnings and benefits from the SSI and Old-Age, Survivors, and Disability Insurance (OASDI) programs (Nicholas and Wiseman 2009). We encountered two major problems in this effort. First, for various reasons only about three-quarters of persons surveyed for the CPS could be matched to Social Security administrative records. Second, in a significant number of cases, income sources and amounts reported in the CPS do not match administrative records, although often the differences are slight. We developed two alternatives to address these problems. For the problem of the unmatched records, we experimented both with simply leaving unmatched observations in the data set and relying on income as reported in the CPS and with using only the matched observations, but reweighting them using a propensity score technique. For the problem of the difference between administrative data on incomes and amounts reported in the survey, we developed estimates based on alternative “restrictive” and “inclusive” assumptions about which source to use. After addressing these methodological issues, we used our adjusted data to recalculate the prevalence of poverty using the official poverty standard and to investigate the prevalence of poverty using an alternative, “relative” standard.

Our data adjustments had appreciable effects on the estimates for calendar year (CY) 2002. We managed to reduce the weighted CPS undercount of elderly

SSI recipients from 42 percent to 5 percent. Adjustment of income with administrative data reduced the national absolute poverty rate by 0.3–2.8 percentage points, depending on the procedure for incorporating unmatched observations and application of the restrictive or inclusive income adjustment procedures. The effect on estimated poverty rates for elderly SSI recipients was sizable. Adjustment of income with administrative data reduced the estimated aggregate poverty rate for elderly SSI recipients by 7.4–9.4 percentage points, again depending on the method adopted for incorporating unmatched observations and whether the restrictive or inclusive income adjustments were applied.

In addition to poverty estimates that are based on the official standard, we experimented with a *relative* poverty standard that identifies people as poor if their gross income adjusted for family size is less than half the national median. (We employ the same income measure for both absolute and relative poverty calculations.) This common relative poverty threshold yields a much higher aggregate poverty rate than is registered using the official standard—22 percent versus 12 percent before adjustment of income using administrative data. This difference persists in virtually the same magnitude after adjustment with administrative data because such adjustment generally shifts the entire distribution of income, not just the lower tail. However, for SSI recipients, adjustment does lower poverty rates, but those rates remain at very high levels—from 75.1 percent without adjustment to 70–72 percent, again depending on the choice between using restrictive or inclusive income adjustments.

When this study began, the 2003 CPS/ASEC was the latest public-use file for which matched administrative data were available. Since that time, comparable studies have been completed within the Social Security Administration (SSA) for the 2004, 2005, and 2006 CPS/ASEC data, allowing replication of our methodology for CYs 2003–2005. This article reports the results of our 2002–2005 analysis and outlines opportunities for additional research.

SSI Background

The SSI program provides a basic monthly national income guarantee, called the federal benefit rate (FBR), to persons aged 65 or older, blind individuals, and qualified children and adults with disabilities. The FBR is adjusted annually for inflation and stays constant in real terms. In 2002, the baseline year for

this study, the FBR was \$545 per month for a single individual and \$817 for a couple (the 2009 amounts were \$674 and \$1,011, respectively). SSI is a program that provides a minimum level of income for needy aged, blind, or disabled individuals and acts as a safety net for those who have little or no Social Security or other income and limited resources (SSA 2009). To be eligible for SSI, applicants must pass financial tests involving certain assets and net (“countable”) income and a medical test if disabled and nonelderly. Once eligibility is established, the SSI payment is the FBR minus the recipient’s countable income and/or any “in-kind support and maintenance” received from others. In all states but two, the federal SSI payment is augmented for at least some SSI recipients by a state supplement (SSA 2008).

Because SSI eligibility is not determined by total household or even family income, a substantial number of recipients living with persons other than their spouse are not poor, although by official standards, anyone living solely on the FBR is considered to be poor. In 2002, the official poverty standard was \$9,359 for a nonelderly single person (\$8,628 if aged 65 or older) and \$12,047 for a nonelderly couple (\$10,874 if the “householder” was aged 65 or older). The annualized FBR—\$6,450 per year for a single individual and \$9,804 for a couple—was therefore even less than the poverty standard applicable to elderly persons. Despite this shortfall, it is possible for SSI payments to lift some persons out of poverty when considered in combination with the income of other family members. For others, SSI at least reduces the gap between income and the poverty standard, especially in states with substantial supplements.

The Data

We use CPS/ASEC data in conjunction with various Social Security administrative files to examine trends from CYs 2002 through 2005.¹ Our administrative data provide information about a person’s wages and salaries, self-employment, OASDI, and SSI income. We rely on the CPS for information about all other categories of income.

The Current Population Survey

The CPS is a monthly household survey conducted by the Census Bureau. This survey is the main source of employment information about the civilian noninstitutionalized American population. The CPS provides household, family, and person-level data about employment, unemployment, earnings, hours of work,

and other indicators. Additional data are collected in the ASEC for CPS households on various family characteristics plus income received in the previous year. For poverty calculations we follow Census Bureau practice and exclude a small number of children living in households with no relatives because no income data are collected for such persons.

To protect confidentiality, income data in the CPS are subject to top- and bottom-coding. When reported amounts exceed certain thresholds, the actual amounts reported are replaced (top-coded) with average reported amounts for the same item for all surveyed persons with above-threshold amounts and identical (on certain dimensions) demographic characteristics. Bottom-coding occurs for losses from farm and nonfarm self-employment income. When persons are known to have received certain types of income but amounts are not reported, the Census Bureau imputes the missing amount using “hot-deck” methods. In this procedure, missing values are imputed using the amounts reported for sample observations with identical (on certain dimensions) demographic characteristics. It is possible for top- or bottom-coded amounts to be used in such imputations, depending on the data processing sequence.

Social Security Administrative Files

The administrative files we employ from SSA include records of individual earnings in employment covered by the OASDI program as well as SSI payments and OASDI benefits. The data sources for earnings are the Summary Earnings Record (SER) and the Detailed Earnings Record (DER), the Payment History Update System (PHUS) for OASDI, and the Supplemental Security Record (SSR) for SSI.

Summary Earnings Record. Data herein are an extract from SSA’s Master Earnings File (MEF). A primary MEF record is created when a person receives a Social Security number (SSN); thus, every person in the CPS/ASEC for whom an SSN match was successfully accomplished will have an SER. The SER is the first administrative file examined when assessing the extent of the CPS/administrative match.

Detailed Earnings Record. These data are an extract from the MEF, which includes data on total earnings from all sources—wages, salaries, and income from self-employment that are subject to Federal Insurance Contributions Act (FICA) and/or Self-Employment Contributions Act (SECA) taxation. DER coverage extends to all earnings reported by employers on

workers' W-2 forms, and amounts are not capped.² These data include deferred wages such as contributions to 401(k) retirement plans.³ Because individuals do not make SECA contributions if they lose money in self-employment, only positive self-employment earnings are reported in the DER. Our data are aggregated across all employers for each individual and include earnings from wages, salaries, and self-employment, in addition to deferred income.⁴

Payment History Update System. These data record OASDI (Social Security) benefits when paid. PHUS data include both total benefit and the amount of benefit subtracted for Medicare Part B premiums. A key feature of the PHUS is that monthly amounts recorded here represent actual payments, not entitlement. Hence if a person begins entitlement for a Social Security benefit in November 2004, but does not actually receive a check for the amount until February 2005, the payment will be recorded for 2005. This corresponds to income received as reported in the CPS/ASEC.⁵

Supplemental Security Record. Data herein provide the information that is needed to calculate and distribute SSI payments. SSA typically creates an SSR record when an individual files an SSI application. Each person's record includes eligibility and payment information as well as income information about ineligible spouses and parents that is pertinent to establishing and maintaining the individual's eligibility. SSR payments are recorded as disbursed. The SSR includes state SSI supplements if federally administered (that is, if SSA makes the payment on the state's behalf). Payments made by state-administered SSI supplement programs are not included in the SSR. For the most part, state supplements are small, and some of the largest (from California, Massachusetts, and New York, for example) are federally administered (SSA 2008, 7). However, benefits in Alaska, Connecticut, Wisconsin, Minnesota, and a few other states are substantial and are administered by the state. By far the largest state-administered SSI supplement is Alaska's. In 2002, that state added \$362 to the FBR for singles and \$528 to the FBR for couples living independently (SSA 2008, 13).

The Match

The common element among original CPS/ASEC and administrative files is a Social Security number. CPS interviewers request SSNs for all persons aged 15 or older in each household in the address-based CPS

household sample. Interviewees are not required to provide these data, but most do, or at least permit the Census Bureau to search Social Security's administrative files for their SSN using name, birth date, and address. SSNs for persons younger than age 15 are all obtained by searching administrative data. Once collected, the CPS data are extensively reviewed and reorganized, missing values are imputed, and potentially identifiable outlier income values are top- or bottom-coded. Upon completion of these adjustments, the Census Bureau produces a public-use data set. CPS public-use data sets do not include respondents' SSNs, but do contain unique household sequence and, within households, person identifiers. These identifiers relate to file structure only and convey no information useful for determining the actual identity of CPS respondents.

Upon release of the public-use CPS data, the Census Bureau provides a special encrypted file to SSA. This "cross-walk" file specifies the SSN for each person in the CPS for whom an SSN has been reported, identified by the household sequence number and person identifier. Only one person at SSA has access to the cross-walk file, who then uses the SSNs to construct SER, DER, PHUS, and SSR files for each person with a corresponding household sequence number and person identifier. Only the CPS identifiers are retained and used to link persons' CPS and administrative records.

Unweighted match rates for CPS person observations and Social Security administrative data are given in Table 1. The key match is for the SER. Primarily because of diminishing respondent willingness to provide SSNs, the match rate declined from the 2003 to the 2005 CPS/ASEC interviews (pertaining to CYs 2002 through 2004). However, the match rate increases substantially for the March 2006 interview. Beginning with the 2006 CPS/ASEC, the Census Bureau altered its policy for collecting SSNs. Rather than asking respondents for their SSNs and for an affirmative agreement for use of such information for data matching, the new protocol requires that respondents not wanting such matches to occur to notify the Census Bureau through that agency's Web site or to use a special mailed response. If no such instruction is received from respondents, SSA uses both the SSN and other information (name, address, age, and sex) that are provided to establish correct SSNs for data matching. As the table indicates, substituting an "opt-out" option for the former "opt-in" procedure for SSN reporting had a major effect.

Table 1.
CPS and Social Security administrative data match rates, 2002–2005

Data	2002		2003		2004		2005	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
CPS/ASEC	215,860	100.0	212,717	100.0	210,152	100.0	207,987	100.0
Matched with records in the—								
SER	165,039	76.5	150,721	70.9	145,948	69.4	183,317	88.1
DER	113,138	52.4	104,255	49.0	97,537	46.4	132,469	63.7
PHUS	37,587	17.4	35,277	16.6	32,712	15.6	44,264	21.3
SSR	11,880	5.5	11,963	5.6	11,227	5.3	13,957	6.7

SOURCE: Authors' calculations using the CPS/ASEC public-use data set matched to Social Security administrative records.

Match rates for earnings (the DER), OASDI benefits (the PHUS), and SSI (the SSR) are lower than for the SER because not everyone for whom a match was achieved in a particular year had earnings or received SSI payments or OASDI benefits. Note that the DER, PHUS, and SSR match groups are subsets of the SER counts.

The Merge

We turn now to procedures for merging the CPS data with administrative records. “Adjusted data” is the term used for any CPS-reported values that have been replaced with administrative data. We discuss income adjustment first and then describe creation of a reweighted sample subset based on persons for whom we have a successful SER match. The outcome is three CPS samples for each year. “Baseline” samples are comprised of the same CPS/ASEC data applied by the Census Bureau to calculate official poverty estimates for any given year. (The terms *baseline*, *official*, and *unadjusted* refer to the same sample.) “Intermediate” samples involve CPS income adjustments that have only been applied to CPS observations with matching SER records. The “final” samples are restricted to individuals living in families with at least one person with a successful SER match and are reweighted to adjust for variation across families in the likelihood the match criterion is met.

Income-Adjustment Strategy

The baseline for our calculations is income as reported in the unadjusted public-use CPS/ASEC data. We distinguish between *restrictive* and *inclusive* assumptions at each step of our adjustment process. For a summary of the procedural protocol, see Nicholas and Wiseman (2009, Table A-1). In general, the restrictive

assumption set gives credence to administrative data when both administrative and CPS reports are available, and the inclusive assumption set gives credence to CPS income reports when such reports are not imputed and exceed amounts recorded in our administrative sources.

Our income-adjustment procedure incorporates three important choices. First, when comparing CPS data with income reported in the DER, we generally work with total earnings—the sum of wages, salaries, and self-employment income—rather than distinguish between wages and salaries and income from self-employment. Second, we use reported earnings from the DER, but accept CPS earnings reports in the absence of DER amounts or in cases of loss from self-employment. Third, we rely solely on administrative sources for income from OASDI and SSI. The CPS collects data on 17 types of income, from alimony and veterans’ benefits to wages and salaries. Our adjustments involve only earnings, OASDI benefits, and SSI payments. For all other sources the CPS amounts, including imputations and top-coded values, are retained.

The reasons for the earnings strategy are discussed in detail in our previous article. For OASDI and SSI, we rely on administrative data for both our restrictive and inclusive income adjustments. Incorporating OASDI and SSI administrative data is complicated by evidence that CPS respondents sometimes confuse SSI payments with OASDI benefits. In the previous article, we argue that this underreporting is due in part to misidentification of SSI payments as Social Security benefits. If such confusion does in fact exist, we should expect to see and actually do see greater reported OASDI benefits in the CPS among known SSI recipients who fail to report SSI than is the case for individuals who correctly report SSI receipt

(Nicholas and Wiseman 2009, Table 4). Given the misreporting problem, we focus our income adjustment on the combined OASDI and SSI benefit. Our calculations also include an adjustment for state-administered SSI supplements (SSA 2004).

The Consequences of Adjustment

Table 2 reports the outcome of our CPS income adjustments, differentiating observations by their CPS/SER match status and whether their earnings were changed, their combined OASDI/SSI total was changed, or whether both earnings and OASDI were adjusted. We are interested here in the prevalence of adjustments within the sample, so the data are unweighted. The table has two panels: one incorporating the restrictive income adjustments and the other incorporating the inclusive income adjustments. We have tabulated here only income changes, without respect to whether the CPS-reported numbers were increased or decreased. (Our previous article provides greater detail for 2002.)

The following four findings should be noted:

1. Income adjustments are made for only CPS observations with an SER match. The bottom row of Table 2 indicates that the proportion of affected observations ranges from a low of 69.4 percent in the 2005 CPS/ASEC (2004 reference year) to a high of 88.1 percent in the following year.
2. Income adjustments are common. This finding is to some extent misleading because any difference between what is in the CPS and what we gain from

administrative data is recorded. Moreover, in considering the large number of cases with no changes for both earnings and the sum of OASDI and SSI benefits, it is important to recall that many of these cases receive neither, so zero matches with zero.

3. The 2006 Census data linkage policy change not only increased the 2005 CPS/SER match rate, but also the proportion of CPS earnings and SSI/OASDI totals that our procedures adjust. This outcome might be attributed to a higher incidence of imputations among those observations added on the basis of the new Census “opt-out” procedure. Our adjustment procedure generally substitutes administrative data for imputations under both the restrictive and inclusive income protocols.
4. Adjustments in earnings are generally less prevalent under the inclusive adjustment procedure. This outcome is a consequence of accepting survey earnings reports by the inclusive procedure if reported amounts exceed administrative data and are not imputed. The restrictive procedure substitutes DER data in most of these cases, and each substitution counts as an adjustment. The obvious question is whether the size and distribution of these adjustments have significant effects on our perception of poverty for the elderly and for individuals and families in general.

We began with the CPS baseline samples. Applying the income adjustments to persons with an SER match creates for each year a second, intermediate data set,

Table 2.
Incidence of SSI, OASDI, and earnings adjustments: Percent of CPS/SER matched sample subset, 2002–2005

Adjustment category	2002	2003	2004	2005
<i>Using restrictive income adjustment</i>				
Change in earnings	50.4	48.4	48.0	53.4
Change in combined SSI and OASDI total	13.1	14.1	14.0	16.0
Both	60.5	59.4	58.9	65.7
<i>Using inclusive income adjustment</i>				
Change in earnings	29.5	26.4	27.7	30.6
Change in combined SSI and OASDI total	13.1	14.1	14.0	16.0
Both	40.6	38.4	39.7	44.2
Total CPS sample	215,860	212,717	210,152	207,987
Total CPS sample with SER match	165,040	150,721	145,948	183,317
Percent of total CPS sample	76.5	70.9	69.4	88.1

SOURCE: Authors' calculations using the CPS/ASEC public-use data set matched to Social Security administrative records.

which is somewhat of an amalgam because at least 24 percent of observations in each year lack an SER match. For this group it is necessary to rely solely on income as reported in the CPS.

The Final Sample

Our objective in constructing our third, final sample is to create a data set for which the administrative match is near “universal.” However, because poverty is assessed on the basis of family income, universal is somewhat ambiguous. Three alternatives were considered. One was to limit consideration only to singles living alone who were matched to the SER and to families in which every member was matched. A second, less rigorous, alternative was to limit consideration to persons who were themselves matched even if every person in their family was not. The third was to restrict the sample to singles living alone who were matched as well as any person living in a family in which at least one family member was matched. We chose the third alternative, in part because a majority of unmatched persons who ended up being included under this strategy appeared unlikely to have income. The effect of the most rigorous “every family member matched” approach and the second “every person matched” approach would be to reduce the final unweighted samples on average by about 35 percent and 24 percent, respectively.

For population inference, the original CPS weights still work for CPS observations without matching SER records because all original CPS observations are used for our *intermediate* analyses. However, this is not true for the final sample, which excludes unmatched observations. Before generating our *final* estimates, we must adjust the person weights of our CPS restricted sample members.

The absence of a CPS/SER match can be treated as a problem in unit nonresponse—as if failure to provide an SSN that could be matched to the SER is equivalent to refusing to cooperate with the survey at all (Lehtonen and Pahkinen 2004, 115). Adjusting data for nonresponse then requires specifying, to some extent, the circumstances that affect the likelihood of cooperation (Groves and Couper 1998). The simplest assumption is that such outcomes are a random phenomenon, and each sampling unit shares a common probability of responding. The response rate for the survey then provides an estimate of this common probability, and population totals for various

features of interest could be obtained by multiplying the analysis weights for respondents by a nonresponse adjustment factor. However, even the simplest tabulation indicates that the match rate is not independent of demographic characteristics. Hence without adjustment, the subset of observations for which matches are achieved cannot be used to make inference about the U.S. population as a whole.

We address this problem by reweighting our matched sample in a manner that reflects the varying propensity across interview units to provide SSNs or the information required for SSA to obtain them. Both poverty and income distribution statistics are based on families and single individuals. Given that absolute poverty assessment involves considering the income of all family members, it would be convenient if every family member had a CPS/SER match. In practice, there are families who have members without a CPS/SER match, and this issue presents a choice of what sample to use in generating population estimates. We choose to generate our final estimates from CPS observations who live in families in which someone in the family is matched, but not necessarily the observations themselves because this selection criteria is the least restrictive. For each year’s data, we compute the parameters of a logistic regression for the log odds of being matched in this sense for each of the persons in the CPS sample (Folsom 1991; Iannacchione 1999). We estimate separate functions for persons who are either younger than age 18, aged 18–64, or aged 65 or older (Nicholas and Wiseman 2009, Appendix C-2). We use this function to calculate i and an adjusted weight for each individual observation. These calculations produce a third or final sample made up of unrelated individuals with an SER match and persons in families with at least one member with an SER match, each with a propensity-adjusted weight and both restrictive and inclusive income estimates.

It should be emphasized that these estimates are not only experimental, but we have not attempted to estimate variances for the sample estimates. Because of confidentiality issues, the design information necessary to estimate variances for sample statistics from the CPS is not publicly released, and the variance estimation methodology provided by the Census Bureau is not applicable to the final sample we construct because of the additional reweighting step applied (Census Bureau and Bureau of Labor Statistics 2002; Valliant 2004).

The Results: Absolute Poverty

We turn now to the results, treating 2002 (that is, the income data from the 2003 CPS/ASEC) as the baseline of this study. The same data presentation employed in our previous article for 2002 is used here, and results for 2003–2005 are given in Table A-1.

Poverty in 2002

We begin by examining the consequence of CPS income and weight adjustments on poverty rate estimates using the same poverty thresholds applied in Census Bureau publications. As already noted, for 2002 a single, nonelderly adult living alone was considered poor if his or her gross cash income after transfers but before taxes for the year fell below

\$9,359; for a family of four with two children, the reference amount is \$18,244 (Proctor and Dalaker 2003, 4). The standard increases with family size and varies with composition. Elderly persons living alone or with spouses are assumed to require about 10 percent less income than do nonelderly persons in the same circumstance.

Poverty rates by age group for CY 2002 are reported in Table 3. The table is divided into two parts: (1) results for the total U.S. population as covered by official poverty statistics and (2) results for the SSI recipient population. For both groups, we present results (a) using the same *baseline* CPS/ASEC data applied for official estimates published by the Census Bureau, (b) based on an *intermediate* CPS/ASEC

Table 3.
Poverty rates across age and SSI recipient groups before and after adjustment using Social Security administrative data: Total U.S. population and SSI recipient population, 2002

Age group	Estimated population	Restrictive		Inclusive		Data summary			
		Number living below poverty ^a	Percent living below poverty	Number living below poverty	Percent living below poverty	Person records	Income	Weights	
1(a): U.S. population; estimates based on unadjusted CPS income data^b									
0–17	72,695,775	12,127,725	16.7	12,127,725	16.7				
18–64	178,387,747	18,859,737	10.6	18,859,737	10.6				
65 or older	34,233,824	3,576,169	10.4	3,576,169	10.4				
Total	285,317,346	34,563,631	12.1	34,563,631	12.1	215,860	Unadjusted		Unadjusted
1(b): U.S. population; estimates based on adjusted CPS income data^c									
0–17	72,695,775	11,942,960	16.4	9,684,218	13.3				
18–64	178,387,747	18,702,806	10.5	15,030,345	8.4				
65 or older	34,233,824	3,111,542	9.1	3,043,279	8.9				
Total	285,317,346	33,757,308	11.8	27,757,842	9.7	215,860	Adjusted		Unadjusted
1(c): U.S. population with income adjustment, sample restriction, and reweighting^d									
0–17	72,451,591	11,832,495	16.3	9,453,838	13.0				
18–64	172,660,884	18,192,264	10.5	13,616,602	7.9				
65 or older	33,001,207	2,768,217	8.4	2,677,064	8.1				
Total	278,113,682	32,792,976	11.8	25,747,504	9.3	185,284	Adjusted with sample restriction		Adjusted
2(a): SSI recipient population; estimates based on unadjusted CPS income data^e									
0–17	364,804	132,151	36.2	132,151	36.2				
18–64	3,595,948	1,577,196	43.9	1,577,196	43.9				
65 or older	1,192,268	572,868	48.0	572,868	48.0				
Total	5,153,020	2,282,215	44.3	2,282,215	44.3	3,635	Unadjusted		Unadjusted
2(b): SSI recipient population; estimates based on adjusted CPS income data^f									
0–17	830,116	219,764	26.5	181,242	21.8				
18–64	3,809,850	1,609,734	42.3	1,557,189	40.9				
65 or older	1,695,088	688,697	40.6	668,344	39.4				
Total	6,335,054	2,518,195	39.8	2,406,775	38.0	4,381	Adjusted		Unadjusted

Continued

Table 3.
Poverty rates across age and SSI recipient groups before and after adjustment using Social Security administrative data: Total U.S. population and SSI recipient population, 2002—Continued

Age group	Estimated population	Restrictive		Inclusive		Data Summary		
		Number living below poverty ^a	Percent living below poverty	Number living below poverty	Percent living below poverty	Person records	Income	Weights
2(c): SSI recipient population with income adjustment, sample restriction, and reweighting^g								
0–17	862,176	228,729	26.5	187,873	21.8			
18–64	3,880,146	1,729,553	44.6	1,666,596	43.0			
65 or older	1,956,997	781,043	39.9	754,997	38.6		Adjusted with sample	
Total	6,699,319	2,739,325	40.9	2,609,466	39.0	3,707	restriction	Adjusted

SOURCE: Authors' calculations using 2003 CPS/ASEC public-use data matched to Social Security administrative records.

NOTE: Weight adjustments are based on person-level records differentiated by age group.

- a. Persons are identified as "poor" if their CPS total family income record is less than their corresponding CPS family poverty standard record. Family income records may include top-coded components. These totals differ slightly from official reports, which are based on actual reported income without top-coding.
- b. Figures have been generated from the entire 2003 CPS/ASEC sample of 215,860 persons used by the Census Bureau to estimate poverty rates.
- c. Income adjustments made using administrative data on SSI, OASDI, and earnings receipt, following decision rules as presented in text and Nicholas and Wiseman (2009).
- d. Estimates derived from a reduced 2003 CPS/ASEC poverty sample of 185,284 persons who have at least one family member with matching CPS/SER records. Figures are based on the adjustment of CPS income records using administrative data following decision rules discussed in text and presented in detail in Nicholas and Wiseman (2009). Weights have been adjusted by propensity estimates derived from a regression model involving person-level records.
- e. Persons identified as SSI recipients if they have a positive CPS SSI record.
- f. Income adjustments made using administrative data on SSI, OASDI, and earnings receipt, following decision rules presented in text. SSI status based on adjusted data.
- g. Estimates derived from a reduced 2003 CPS/ASEC poverty sample of 185,284 persons who have at least one family member with matching CPS/SER records. Figures are based on the adjustment of CPS income records using administrative data following decision rules presented in text. Weights have been adjusted by propensity estimates derived from a regression model involving person-level records; see text and Nicholas and Wiseman (2009) for methodology; propensity model estimates are available from the authors upon request. Persons are identified as SSI recipients if they have a positive SSR SSI record.

data that only involve income adjustments, and (c) from a *final* sample involving a CPS/administrative matched data set limited to observations with matching SER records as well as CPS income- and weight-adjusted records. Within each estimate group, we present results for children aged 17 or younger, adults aged 18–64, and for those aged 65 or older.

Tabulations in panels 1(a) and 2(a), in Table 3, are based on the same CPS data used by the Census Bureau to generate official poverty estimates. (Our estimates differ slightly from figures published by the Census Bureau because it uses data without top-codes, and we use the public-use sample, which is top-coded.) The official estimates appear for reference for both the restrictive and inclusive computations. We are particularly interested in poverty rates among the elderly and SSI recipients. National poverty rates for working-age and elderly populations in 2002 were 10.6 percent and

10.4 percent, respectively. As anticipated, poverty rates for SSI recipients in all age groups are much higher than rates estimated for the age groups in the U.S. population as a whole.

Tabulations in panels 1(b) and 2(b) report the results of applying our restrictive and inclusive income-adjustment protocols. At this stage of our research, the entire CPS sample is retained, and CPS data are used for all persons for whom a CPS/SER match was not achieved, so the total sample size does not change from that recorded for the CPS. Looking first at the data for all persons, the effect of incorporating administrative data is sensitive to the assumption set. The restrictive income adjustment decreases the estimated aggregate poverty rate from 12.1 percent to 11.8 percent; the estimated rates for all three age groups decline, with the greatest change for the elderly. The inclusive income adjustment produces a much larger reduction

in poverty rates for all groups, most notably among the nonelderly. Both adjustments produce lower SSI poverty rates. The effect is most dramatic for persons aged 17 or younger. Under the restrictive income estimate procedure, the poverty rate for elderly SSI recipients is 40.6 percent, more than 7 percentage-points less than the unadjusted CPS estimate. Using our inclusive income-adjustment procedure, the estimate is 39.4 percent, 8.6 percentage-points less than the unadjusted CPS estimate. The unweighted SSI recipient count (the number in the “person records” column under the data summary section of the table) goes up by over a fifth, from 3,635 to 4,381 when administrative data are employed. This outcome is another manifestation of underreporting of SSI in the CPS.

Tabulations in panels 1(c) and 2(c) report the results of applying CPS income adjustments, reweighting the observations’ CPS person weights using propensity scores, and restricting the sample to persons living in families with at least one member with matching individual CPS and SER records. The combined effect of our CPS income and weight adjustments (panel 1(c)) is a modest additional decrease in estimated aggregate poverty rates under the restricted convention when compared with estimates based only on adjusting the CPS income data for respondents who could be matched to SSA records. When the inclusive adjustment is employed, estimated poverty rates fall further. The effect varies among SSI recipients; child and nonelderly adult SSI poverty estimates are greater, and elderly rates are less than those estimated without sample restriction and reweighting (Table 3, panels 1(b) and 2(b)).

What drives the difference between the final restrictive and inclusive income estimates? Our previous article indicates that the most sizable difference between our two sets of *final* estimates is that for earnings and self-employment income, the restricted calculations rely on the DER, that is, earnings reported by employers. The inclusive alternative takes CPS reports when the amounts reported in the survey exceed what appears in matching administrative records. Therefore, inclusive income estimates are larger than those that are restrictive. For the elderly, earnings are less important (although they count because poverty is estimated on the basis of total family income, not just the income of the elderly themselves), but correcting for SSI underreporting has a noticeable impact. Aside from imputations for state-administered SSI supplements, the same correction is applied in both the

restrictive and inclusive procedures, and the consequence in both cases is an 8–9 percentage-point reduction in estimated poverty, particularly among elderly SSI recipients. This alteration comes about principally because of the effect on prevalence of SSI receipt, not amounts reported.

Changes in Poverty, 2002–2005

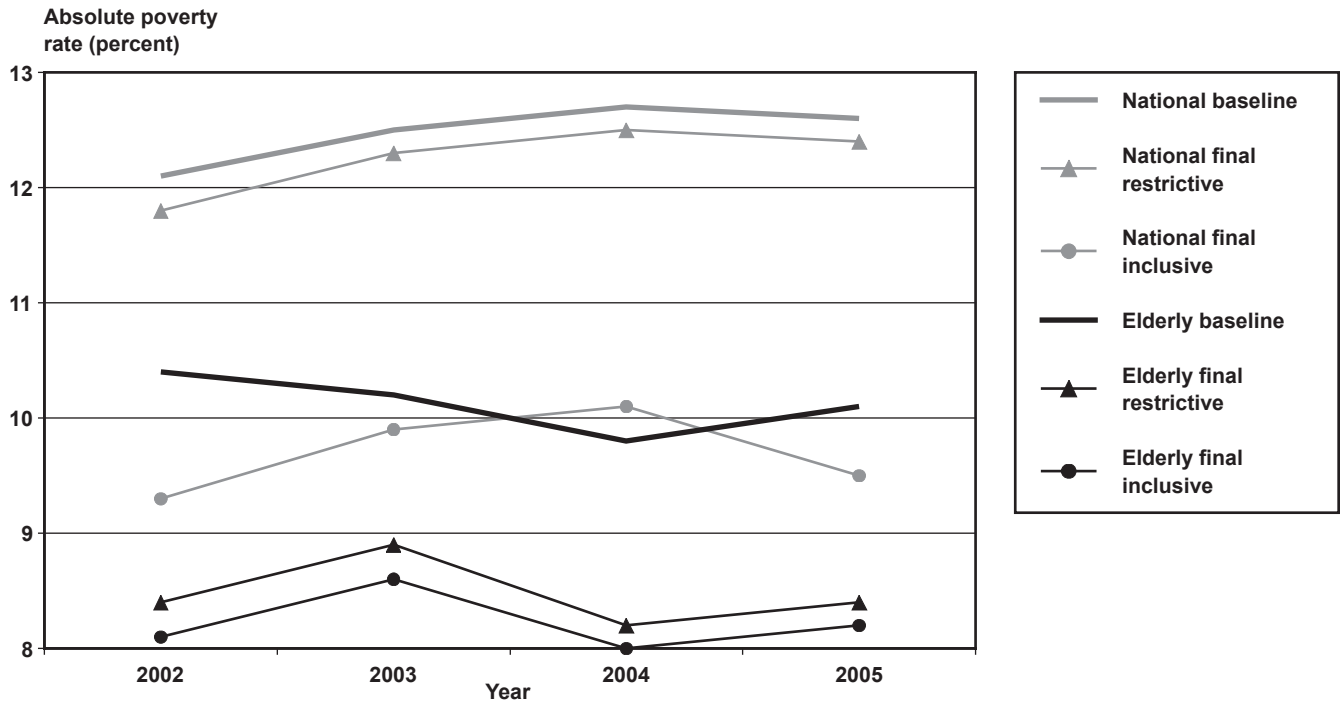
CPS adjustment with administrative data produces poverty estimates for 2002–2005 that differ from official ones generated from unadjusted CPS data. Charts 1 and 2 focus on the differences between unadjusted CPS *baseline* estimates (reported in panels 1(a) and 2(a) of Table 3) and our final restrictive and inclusive estimates based on adjusted CPS/administrative matched data (reported in panels 1(c) and 2(c) of Table 3). (A complete version of Table 3 is presented for each reference year in Table A-1.)

Chart 1 illustrates absolute poverty rates estimated for the entire national and elderly populations. The basic relationships between *baseline* and *final* estimates change marginally in later years. For the U.S. population as a whole, poverty estimates based on our restrictive final data are slightly below those generated from unadjusted CPS data, and estimates based on CPS inclusive final data are lower. The noted restrictive and inclusive income adjustments produce the same outcomes for the elderly from one reference year to another by reducing their absolute poverty estimates by approximately 1–2 percentage points.

Chart 2 plots *baseline* and *final* estimates for elderly SSI recipients. This chart is based on poverty estimates appearing in panels 2(a) and 2(c) of Table 3. For 2002, the chart shows that incorporating CPS elements with administrative data produces a sizable reduction in estimated poverty rates for elderly SSI recipients. In contrast, for 2003–2005, adjusted estimates for the elderly are greater, regardless of the income adjustment applied.

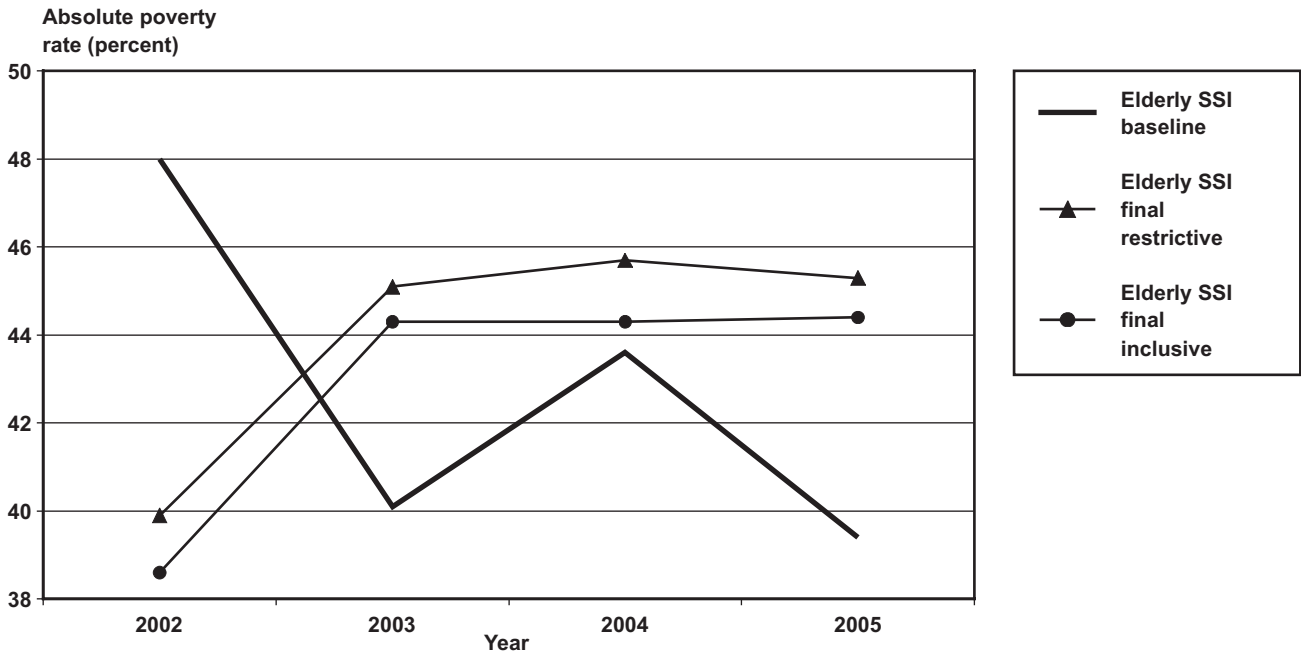
The relationship between our baseline and final poverty estimates for elderly SSI recipients differs substantially from the corresponding national estimates. For both the total U.S. population and all elderly persons, our restrictive and inclusive final estimates of the poverty rate for the 2002–2005 period are consistently below the baseline official estimates. For elderly SSI recipients, however, this is true for 2002 (as reported in our previous article), but not for the 2003–2005 period.

Chart 1.
Poverty rates for the entire national and elderly populations before and after inclusion of administrative data, 2002–2005



SOURCE: Authors' calculations using the CPS/ASEC public-use data set matched to Social Security administrative records.

Chart 2.
Poverty rates for elderly SSI recipients before and after inclusion of administrative data, 2002–2005



SOURCE: Authors' calculations using the CPS/ASEC public-use data set merged with Social Security administrative records.

What is going on in Chart 2 is unclear, but it is possible to say more about what is driving the change between the outcome for 2002 and for subsequent years. Recall that in moving from baseline to final estimates in each year, the sample base changes. The baseline includes only observations for people who report SSI receipt in the CPS. The sample base for the final estimates includes only observations for people in families matched to Social Security administrative records (using our match criteria) for the year. Persons who report SSI receipt and for whom matches to the SSR SSI records are found are included in both the baseline and final samples. The baseline poverty rates for this group are quite high, ranging from 44–50 percent over the 4 sample years. The final rates are only slightly changed with adjustment of family earnings, family income from other sources including SSI, and reweighting. Poverty rates adjusted for actual SSI receipt among persons who did not report SSI receipt in the 2002 CPS, but in fact were SSI recipients, were substantially lower than rates for those who reported SSI receipt, but for whom no administrative match was obtained. For the final poverty estimates, persons not meeting our CPS/SER match criteria were deleted from the sample of elderly SSI recipients, and persons known from administrative records to be recipients but who did not report so in the CPS were added and counted as SSI recipients. The observations in the resulting subsample were reweighted to reflect the sample adjustments. The result is a lower overall poverty rate than what is obtained from the baseline sample (Chart 2).

For subsequent years, things change. Persons who did not report SSI receipt to the CPS but in fact were SSI recipients have poverty rates higher than estimated for persons in this category in 2002. In 2003 and 2004, these higher rates are similar to those for the persons reporting SSI, but for whom no administrative confirmation is available. The effects of adjustment on the family income of those who did report receiving SSI are larger and result in substantial reduction in average estimated family income. The combination of changes causes the final samples to have a higher overall poverty rate that exceeds the baseline estimates. Because of the procedural change for collection of SSNs, discussed earlier, the match rate for the 2005 data is much higher, and the proportion of the elderly persons reporting SSI receipt that is verified with administrative data increases. Nevertheless, the final poverty estimates are similar to those for 2003 and 2004. In sum, to our knowledge the difference between the 2002 and 2003–2005 samples cannot be

related to some change in the way the CPS collects SSI data or other administrative factors, so the outcome remains an anomaly.

SSI Population Estimates

CPS income and weight adjustments substantially increase the sample-based estimates of the total population of SSI recipients. Estimates of the total SSI recipient population by age group for the original and modified CPS samples for each year are given in Table 4. The first bank in column (1) specifies the sum of sample weights for persons for whom the unadjusted 2003 CPS/ASEC reports receipt of SSI in 2002. The second column indicates *intermediate* estimates generated from the same CPS sample used for official poverty estimates, but matched to administrative sources and involving adjustment to only CPS income records. The third column gives our final estimates of the number of recipients calculated on the basis of our restricted CPS/administrative-matched sample with CPS income and weight adjustments. Column (4) shows the average monthly SSI caseload for 2002, indicated by SSA’s 1 percent SSR sample. Column (5) gives, from the same 1 percent SSR sample, an estimate of the number of persons in the CPS sample *universe* who had income from SSI in 2002.

Relative Poverty

We turn now from absolute to relative poverty assessment. Reliance on absolute poverty measures, especially measures as old as the official U.S. standard, is controversial. In our previous article, we considered the consequences of evaluating poverty on a relative basis, using the common Organisation for Economic Co-operation and Development standard of 50 percent of median income before taxes (Förster and Mira d’Ercole 2005). We convert family income into “individual equivalents” using an equivalence scale suggested by a recent National Research Council (NRC) review of recommendations for poverty standard reform.⁶ Because of data limitations, we conduct this analysis using the same “pretax, posttransfer” income measure as that employed in official statistics. Ideally we would include income benefits such as food stamps, earned income credit, and housing subsidies, but we could not do so. This issue is discussed further in our conclusions.

The Income Distribution in 2002

Again, we use 2002 and our previous analysis as an anchor. The results appear in the two parts of Table 5:

Table 4.
Estimated SSI population compared with Social Security administrative data count (including Medicaid institution adjustment), 2002–2005

Age group (at time of CPS/ASEC)	Total SSI recipients estimated from—			Average monthly recipient caseload from administrative data	Total SSI recipients in CPS/ASEC universe estimated from administrative data ^a	Ratio, CPS/ASEC unadjusted reweighted sample population estimate to administrative recipient count	Ratio, CPS/ASEC restricted/ reweighted sample population estimate to administrative recipient count
	CPS/ASEC (1)	CPS/ASEC using adjusted income data (2)	CPS/ASEC using restricted/ reweighted sample and adjusted income data (3)				
2002							
0–17	364,804	830,116	862,176	897,771	1,024,500	0.356	0.842
18–64	3,595,948	3,809,850	3,880,146	3,862,587	4,308,000	0.835	0.901
65 or older	1,192,268	1,695,088	1,956,997	1,998,249	2,064,200	0.578	0.948
Total	5,153,020	6,335,054	6,699,319	6,758,608	7,396,700	0.697	0.906
2003							
0–17	364,478	866,916	902,579	936,516	1,051,400	0.347	0.858
18–64	3,783,005	3,903,433	4,132,750	3,932,819	4,379,600	0.864	0.944
65 or older	1,225,478	1,690,810	1,994,570	1,996,932	2,070,500	0.592	0.963
Total	5,372,961	6,461,159	7,029,899	6,866,267	7,501,500	0.716	0.937
2004							
0–17	408,915	901,805	957,402	981,877	1,098,500	0.372	0.872
18–64	4,036,944	4,136,748	4,158,826	4,007,361	4,443,700	0.908	0.936
65 or older	1,117,640	1,620,585	1,832,597	1,993,369	2,058,900	0.543	0.890
Total	5,563,499	6,659,138	6,948,825	6,982,606	7,601,100	0.732	0.914
2005							
0–17	379,909	951,558	997,049	1,027,372	1,120,200	0.339	0.890
18–64	3,900,117	4,115,297	4,493,624	4,069,369	4,506,400	0.865	0.997
65 or older	1,176,402	1,825,269	1,878,685	1,992,673	2,047,500	0.575	0.918
Total	5,456,428	6,892,124	7,369,358	7,089,414	7,674,100	0.711	0.960

SOURCE: Authors' calculations using the noted year CPS/ASEC universe and Social Security 1 percent SSR beneficiary samples. SSI population in 2002 estimated using 2003 CPS/ASEC universe matched to Social Security administrative records; 2003 population estimated using 2004 survey data matched to administrative records; 2004 population estimated using 2005 survey data matched to administrative records; and 2005 population estimated using 2006 survey data matched to administrative records.

a. Estimated number of persons ever receiving SSI in a given year who were alive and in indicated age group at the time of the CPS March Supplement interview of the following year. This estimate is reduced by the approximate number of persons who live in communal facilities, but includes homeless persons not counted in the CPS/ASEC.

part 1—based on the restrictive adjustment protocol, and part 2—based on the inclusive alternative. Both parts of the table show results for unadjusted CPS data, the sample that combines adjusted data for matched households with CPS data alone for the unmatched, and a third sample of matched CPS data reweighted to adjust for nonresponse. Looking first at part 1, the table identifies the points of demarcation for various deciles of the income distribution for each

of the three samples and then the proportion of all observations that fall within the corresponding interval (to save space, deciles 30 and 40 and deciles 70 and 80 are combined). By definition, for each sample, 10 percent of all people fall within each decile. What is of interest here is the location of the median, the corresponding poverty standard, and the proportion of the elderly and elderly SSI recipients who fall below this standard. The median is quite similar across the

Table 5.
The effect of merging CPS and Social Security administrative data on the estimated national income distribution using restrictive and inclusive income-adjusted protocols, 2002

National income distribution	Percentiles										Data summary		
	10	20	40	50	60	80	90	Top decile	50 percent of the median	Person records	Income	Weights	
Part 1: Restrictive 2002—													
<i>(a) using unadjusted income percentiles for all people^a</i>													
Upper bound (\$)	7,462	12,000	20,862	25,712	31,350	47,696	64,793	...	12,856	215,860			
Distribution (%)													
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	22.0	215,860			
Elderly ^b	7.8	16.1	29.1	11.9	9.2	13.3	6.0	6.7	27.5	20,384			
Elderly SSI ^c	32.9	39.0	14.8	5.0	3.6	2.9	1.0	0.8	75.1	778	Unadjusted	Unadjusted	
<i>(b) using adjusted income percentiles for all people (unadjusted weights)^d</i>													
Upper bound (\$)	7,579	12,134	20,856	25,662	31,284	48,302	66,451	...	12,831	215,860			
Distribution (%)													
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	21.7	215,860			
Elderly	7.2	15.2	29.1	12.2	9.7	14.1	6.1	6.4	25.2	20,384			
Elderly SSI ^e	35.4	33.4	12.4	5.6	5.0	5.7	1.2	1.4	70.0	1,081	Adjusted	Unadjusted	
<i>(c) using adjusted income percentiles for all people (adjusted weights)^f</i>													
Upper bound (\$)	7,624	12,109	20,726	25,527	31,086	47,903	66,343	...	12,764	185,284			
Distribution (%)													
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	21.6	185,284	Adjusted with sample		
Elderly ^b	6.8	14.9	28.5	12.2	10.0	14.9	6.4	6.4	24.0	14,564	Adjusted with sample		
Elderly SSI ^g	35.2	34.2	11.5	5.8	4.8	5.7	1.4	1.5	70.7	906	Adjusted restriction	Adjusted	

Continued

Table 5.
The effect of merging CPS and Social Security administrative data on the estimated national income distribution using restrictive and inclusive income-adjusted protocols, 2002—Continued

National income distribution	Percentiles										Data summary		
	10	20	40	50	60	80	90	Top decile	50 percent of the median	Person records	Income	Weights	
Part 2: Inclusive 2002—													
<i>(a) using unadjusted income percentiles for all people^a</i>													
Upper bound (\$)	7,462	12,000	20,862	25,712	31,350	47,696	64,793	...	12,856	215,860			
Distribution (%)													
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	22.0	215,860			
Elderly ^b	7.8	16.1	29.1	11.9	9.2	13.3	6.0	6.7	27.5	20,384			
Elderly SSI ^c	32.9	39.0	14.8	5.0	3.6	2.9	1.0	0.8	75.1	778	Unadjusted	Unadjusted	
<i>(b) using adjusted income percentiles for all people (unadjusted weights)^d</i>													
Upper bound (\$)	8,708	13,585	23,095	28,325	34,441	52,321	72,435	...	14,163	215,860			
Distribution (%)													
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	21.3	215,860			
Elderly	10.1	17.6	28.7	10.8	8.5	12.7	5.8	5.8	29.6	20,384			
Elderly SSI ^e	42.3	27.4	13.2	4.2	5.1	5.1	1.4	1.4	70.7	1,081	Adjusted	Unadjusted	
<i>(c) using adjusted income percentiles for all people (adjusted weights)^f</i>													
Upper bound (\$)	9,000	13,896	23,444	28,718	34,843	52,919	73,743	...	14,359	185,284			
Distribution (%)													
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	21.0	185,284	Adjusted with sample restriction	Adjusted	
Elderly ^b	10.0	17.3	28.3	10.7	8.6	13.2	5.9	5.9	29.0	14,564			
Elderly SSI ^g	46.7	23.9	12.4	3.7	5.2	5.3	1.5	1.4	71.7	906			

SOURCE: Authors' calculations using 2003 CPS/ASEC data matched to Social Security administrative records and the NRC equivalence scale.

NOTE: ... = data not applicable.

- a. Figures involve unadjusted CPS income data and weights as well as the entire 2003 CPS/ASEC poverty sample of 215,860 persons.
- b. Persons with a CPS-reported age of 65 or older.
- c. Persons with a positive CPS SSI record.
- d. Estimates are based on adjusted CPS income records, unadjusted weights, and involve the entire 2003 CPS/ASEC poverty sample.
- e. Persons are identified as SSI recipients if either they have no matching CPS/SER records and a positive CPS SSI record or matching CPS/SER records and a positive SSR SSI record.
- f. Figures involve adjusted CPS income data and weights and a reduced 2003 CPS/ASEC poverty sample.
- g. Persons are identified as SSI recipients if they have a positive SSR SSI record.

three samples, causing the relative poverty standard to vary by less than \$100. For the estimates in panel (c) the standard is \$12,764. This is the amount for a single individual; the NRC equivalence scale says that for a family of two adults and two children, this should be increased by a factor of $(2 + .5 * 2)^{0.7} = 2.16$, that is, to \$27,540. As noted in our earlier article, the relative poverty standard assesses a larger proportion of the population to be in poverty (22 percent versus the 12.1 percent reported in Table 3). In contrast to the results for absolute poverty rates, the poverty rate for the elderly now exceeds that for the population as a whole, and the poverty rate for elderly SSI recipients rises to 70.7 percent for the adjusted and reweighted sample.

The same calculations using the inclusive version of the data set are shown in part 2 of Table 5. The inclusive income estimates increase estimated median income and thereby increase the poverty standard. However, the estimated poverty rates do not change much at all. We do find that a larger fraction of elderly SSI recipients are estimated to fall in the lowest decile of the income distribution. On the other side of the distribution, between 8.2 percent (inclusive) and 8.6 percent (restrictive) of elderly SSI recipients live in families with total incomes that place their members in the upper 20 percent of the income distribution.

Changes in the Income Distribution, 2002–2005

Both parts of Table 5 are replicated for 2003–2005 in Table A-2. Our text discussion is based on an extract of that data and focuses on comparison of baseline estimates with the *final* estimates developed with the restricted/reweighted data set and the restrictive and inclusive income-adjustment protocols. We begin with changes in median income over time and the resulting changes in the poverty standard. The standard for all 4 years of our data set is reported in Table 6. To

facilitate comparison, we have adjusted the data to 2002 prices using the Consumer Price Index.

Income distributions change slowly, so we do not expect much change over a 4-year interval. By and large, the restrictive income-adjustment procedure produces a relative poverty standard slightly lower than what is computed using the baseline, unadjusted data; the inclusive measure moves the estimated income distribution to the right and raises the standard. Perhaps the most interesting feature is the general decline in the relative standard from 2002–2004, followed by an increase in 2005. Recall that the federal SSI payment for a single individual is indexed for price changes. Annualized, the 2002 monthly individual FBR amounted to \$6,540 per year, or nearly 45 percent of the 2002 “final inclusive” relative standard (\$14,350).

Medians capture only one feature of the income distribution. Dispersion is relevant as well, especially in the context of relative poverty assessment. Table 7 reports the 90/10 and 80/20 decile cutoff ratios for the total population for each of the 4 years under study. The 90/10 ratio is equal to the ratio of the demarcation point for the 90th decile in the income distribution to the demarcation for the 10th decile. The 80/20 ratio is defined in a similar manner, but obviously does not reach as far out on the tails of the distribution.

Four things stand out in these results.

1. Adjustment with administrative data generally reduces estimated dispersion of the income distribution.
2. Estimates based solely on the inclusive income-adjustment protocol generally produce the lowest dispersion.
3. Dispersion as measured by the 90/10 ratio grew over this period, regardless of the income-adjustment protocol followed.

Table 6.
Relative poverty standard values, by estimate group, 2002–2005 (in 2002 dollars)

Estimate group	2002	2003	2004	2005
Baseline	12,856	12,844	12,766	12,852
Final restrictive	12,764	12,669	12,604	12,852
Final inclusive	14,359	14,104	14,051	14,702

SOURCE: Authors' calculations using CPS/ASEC public-use data matched to Social Security administrative records.

4. Most changes in the distribution of income occur among those belonging to the bottom and top quintiles of the national income distribution. The estimated change in the 90/10 ratio is larger than the estimated change in the 80/20 ratio.

Finally, relative poverty rates for each of the 4 years under study for all persons—the elderly and the subset of the elderly who are SSI recipients—are given in Table 8. Basically, no trends are evident in the general income distribution. The baseline shows some decline for the elderly and for elderly SSI recipients. This is consistent with trends in the official poverty rate shown in Chart 2. However, the adjusted data show little change. As with the data for the official poverty rate, results after adjustment using administrative data provide little evidence of improvement in the

prevalence of poverty among elderly SSI recipients using either poverty standard.

Conclusions

In this article, we have applied the experimental procedures developed in our earlier study of the incomes of elderly SSI recipients in 2002 as well as 3 subsequent years of data. In general, the results for 2003–2005 are consistent with 2002. Even given the incomplete match between CPS and administrative records, we have produced an adjusted data set that yields estimates of the prevalence of SSI receipt that are much closer to administrative totals than can be achieved using the standard CPS data set. Unlike what might be inferred from unadjusted CPS data, we see no evidence of significant decline in poverty rates

Table 7.
Comparison of national income dispersion ratios, by estimate group, 2002–2005

Estimate group	2002	2003	2004	2005
<i>National 90/10 ratios</i>				
Baseline	8.63	9.11	9.16	9.22
Final restrictive	8.70	8.72	8.93	9.28
Final inclusive	8.19	8.44	8.51	8.63
<i>National 80/20 ratios</i>				
Baseline	3.97	4.09	4.02	4.01
Final restrictive	3.96	3.96	4.01	4.09
Final inclusive	3.81	3.86	3.88	3.88

SOURCE: Authors' calculations using CPS/ASEC public-use data matched to Social Security administrative records.

Table 8.
Relative poverty rates, by estimate group, 2002–2005 (in percent)

Estimate group	2002	2003	2004	2005
<i>U.S. population</i>				
Baseline	22.0	22.4	22.2	22.2
Final restrictive	21.6	21.8	21.9	22.1
Final inclusive	21.0	21.4	21.4	21.3
<i>Elderly population</i>				
Baseline	27.5	27.7	26.4	26.1
Final restrictive	24.0	23.6	21.9	23.2
Final inclusive	29.0	28.2	26.7	28.8
<i>Elderly SSI recipient population</i>				
Baseline	75.1	73.3	67.3	71.5
Final restrictive	70.7	73.9	69.8	71.3
Final inclusive	71.7	74.7	70.8	72.2

SOURCE: Authors' calculations using CPS/ASEC public-use data set matched to Social Security administrative records.

among the elderly or among elderly SSI recipients over this interval.

Several features of this analysis deserve more attention. The difference between our restrictive and inclusive estimates is quite broad generally because of reliance on administrative data alone for the restrictive estimates. For a significant number of persons with an SER match, earnings reported in the CPS are substantially greater than what is recorded in the DER. On balance, the reduction in incorporated earnings for this group under the restrictive protocol almost offsets the addition to income made for those without CPS earnings, but with a DER report. Clearly more thought needs to be given to alternatives for using administrative data, and the sensitivity of the outcomes to procedural variation deserves more thorough investigation. Beyond sensitivity to definition, some investigation of confidence intervals for the many point estimates we have tabulated is essential.

There are noticeable differences between results for 2004 and 2005. The 2005 data are the first collected following the procedural change in obtaining CPS respondent consent for data matching. It is possible that the observed changes are the product of differences between those persons who prior to 2005 would not have been matched and those who would have been captured in the sample had procedures gone unchanged. Of course it is impossible to identify just who would and who would not have consented under the Census Bureau's *opt-in* interviewer policy. But it would be possible to use the match propensity models estimated for prior years to identify those observations in 2005 that would have been least likely in previous years to have been matched to Social Security administrative data and to use propensity scores to reduce

the 2005 sample to a rate consistent with earlier years. The analysis could then be replicated with an eye toward consequences for income distribution estimates obtained using the procedural change adopted with the 2006 CPS/ASEC.

Recently, various groups have shown renewed interest in the recommendations of the NRC for reform of the poverty standard. In March, the Census Bureau announced plans for a "supplemental poverty measure" (SPM) "broadly based" on the NRC recommendations, to be first published in the fall of 2011 (Census Bureau 2010). As the name suggests, at least initially, the new measure will not replace the current poverty standard, but rather provide a broader perspective on both the resources and needs of families and individuals. The Census Bureau's Web site now includes an ingenious table generator for experimenting with alternative equivalence scales and poverty standards, including relative measures based on position in the income distribution. However, aside from differences in top- and bottom-coding, the generator, like the Census Bureau's other experimental analyses, relies on reported amounts of income from sources such as SSI, OASDI, and Temporary Assistance for Needy Families (TANF). A major part of the reform agenda and the modifications incorporated in the SPM involves addition to measures of income from sources such as Supplemental Nutrition Assistance Program (SNAP, formerly the Food Stamp Program) benefits and payments from the Earned Income Tax Credit, which are not now included. Underreporting will need to be addressed as well, possibly through more systematic incorporation of administrative data. Our experience suggests that incorporating administrative data is important, but not easy.

Appendix

Table A-1.
Poverty rates across age and SSI recipient groups before and after adjustment using Social Security administrative data: Total U.S. population and SSI recipient population, 2003–2005

Age group	Estimated population	Restrictive		Inclusive		Data summary			
		Number living below poverty ^a	Percent living below poverty	Number living below poverty	Percent living below poverty	Person records	Income	Weights	
2003									
<i>1(a): U.S. population; estimates based on unadjusted CPS income data ^b</i>									
0–17	72,999,159	12,862,482	17.6	12,862,482	17.6				
18–64	180,040,766	19,438,817	10.8	19,438,817	10.8				
65 or older	34,659,258	3,552,224	10.2	3,552,224	10.2				
Total	287,699,183	35,853,523	12.5	35,853,523	12.5	212,717	Unadjusted	Unadjusted	
<i>1(b): U.S. population; estimates based on adjusted CPS income data ^c</i>									
0–17	72,999,159	12,458,869	17.1	10,572,783	14.5				
18–64	180,040,766	19,390,106	10.8	16,021,505	8.9				
65 or older	34,659,258	3,281,911	9.5	3,217,534	9.3				
Total	287,699,183	35,130,886	12.2	29,811,822	10.4	212,717	Adjusted	Unadjusted	
<i>1(c): U.S. population with income adjustment, sample restriction, and reweighting ^d</i>									
0–17	72,571,990	12,343,900	17.0	10,341,176	14.2				
18–64	174,596,837	19,083,414	10.9	14,583,316	8.4				
65 or older	33,410,983	2,970,712	8.9	2,877,647	8.6		Adjusted with sample restriction		
Total	280,579,810	34,398,026	12.3	27,802,139	9.9	176,378	Adjusted with sample restriction	Adjusted	
<i>2(a): SSI recipient population; estimates based on unadjusted CPS income data ^e</i>									
0–17	364,478	130,015	35.7	130,015	35.7				
18–64	3,783,005	1,641,514	43.4	1,641,514	43.4				
65 or older	1,225,478	491,079	40.1	491,079	40.1				
Total	5,372,961	2,262,608	42.1	2,262,608	42.1	3,689	Unadjusted	Unadjusted	
<i>2(b): SSI recipient population; estimates based on adjusted CPS income data ^f</i>									
0–17	866,916	232,028	26.8	214,996	24.8				
18–64	3,903,433	1,670,517	42.8	1,621,520	41.5				
65 or older	1,690,810	697,426	41.2	687,139	40.6				
Total	6,461,159	2,599,971	40.2	2,523,655	39.1	4,422	Adjusted	Unadjusted	
<i>2(c): SSI recipient population with income adjustment, sample restriction, and reweighting ^g</i>									
0–17	902,579	242,513	26.9	224,514	24.9				
18–64	4,132,750	1,847,519	44.7	1,786,457	43.2				
65 or older	1,994,570	898,805	45.1	883,584	44.3		Adjusted with sample restriction		
Total	7,029,899	2,988,837	42.5	2,894,555	41.2	3,641	Adjusted with sample restriction	Adjusted	Continued

Table A-1.

Poverty rates across age and SSI recipient groups before and after adjustment using Social Security administrative data: Total U.S. population and SSI recipient population, 2003–2005—Continued

Age group	Estimated population	Restrictive		Inclusive		Data summary		
		Number living below poverty ^a	Percent living below poverty	Number living below poverty	Percent living below poverty	Person records	Income	Weights
2004								
<i>1(a): U.S. population; estimates based on unadjusted CPS income data^h</i>								
0–17	73,241,407	13,032,729	17.8	13,032,729	17.8			
18–64	182,165,671	20,542,896	11.3	20,542,896	11.3			
65 or older	35,209,459	3,453,014	9.8	3,453,014	9.8			
Total	290,616,537	37,028,639	12.7	37,028,639	12.7	210,152	Unadjusted	Unadjusted
<i>1(b): U.S. population; estimates based on adjusted CPS income data^c</i>								
0–17	73,241,407	12,841,996	17.5	10,831,290	14.8			
18–64	182,165,671	20,389,278	11.2	17,005,469	9.3			
65 or older	35,209,459	3,153,166	9.0	3,089,437	8.8			
Total	290,616,537	36,384,440	12.5	30,926,196	10.6	210,152	Adjusted	Unadjusted
<i>1(c): U.S. population with income adjustment, sample restriction, and reweightingⁱ</i>								
0–17	72,780,925	12,673,526	17.4	10,516,356	14.4			
18–64	174,149,526	19,695,068	11.3	15,120,123	8.7			
65 or older	34,341,153	2,822,185	8.2	2,731,627	8.0		Adjusted with sample	
Total	281,271,604	35,190,779	12.5	28,368,106	10.1	171,025	restriction	Adjusted
<i>2(a): SSI recipient population; estimates based on unadjusted CPS income data^e</i>								
0–17	408,915	137,954	33.7	137,954	33.7			
18–64	4,036,944	1,636,391	40.5	1,636,391	40.5			
65 or older	1,117,640	487,229	43.6	487,229	43.6			
Total	5,563,499	2,261,574	40.7	2,261,574	40.7	3,654	Unadjusted	Unadjusted
<i>2(b): SSI recipient population; estimates based on adjusted CPS income data^f</i>								
0–17	901,805	288,788	32.0	264,954	29.4			
18–64	4,136,748	1,704,145	41.2	1,642,760	39.7			
65 or older	1,620,585	704,398	43.5	685,532	42.3			
Total	6,659,138	2,697,331	40.5	2,593,246	38.9	4,371	Adjusted	Unadjusted
<i>2(c): SSI recipient population with income adjustment, sample restriction, and reweighting^j</i>								
0–17	957,402	316,299	33.0	290,332	30.3			
18–64	4,158,826	1,831,598	44.0	1,750,954	42.1			
65 or older	1,832,597	837,655	45.7	811,304	44.3		Adjusted with sample	
Total	6,948,825	2,985,552	43.0	2,852,590	41.1	3,542	restriction	Adjusted

Continued

Table A-1.

Poverty rates across age and SSI recipient groups before and after adjustment using Social Security administrative data: Total U.S. population and SSI recipient population, 2003–2005—Continued

Age group	Estimated population	Restrictive		Inclusive		Data summary		
		Number living below poverty ^a	Percent living below poverty	Number living below poverty	Percent living below poverty	Person records	Income	Weights
2005								
<i>1(a): U.S. population; estimates based on unadjusted CPS income data^k</i>								
0–17	73,285,108	12,876,738	17.6	12,876,738	17.6			
18–64	184,344,650	20,445,497	11.1	20,445,497	11.1			
65 or older	35,504,791	3,603,363	10.1	3,603,363	10.1			
Total	293,134,549	36,925,598	12.6	36,925,598	12.6	207,987	Unadjusted	Unadjusted
<i>1(b): U.S. population; estimates based on adjusted CPS income data^c</i>								
0–17	73,285,108	12,991,585	17.7	10,181,026	13.9			
18–64	184,344,650	20,435,725	11.1	15,549,429	8.4			
65 or older	35,504,791	3,087,589	8.7	3,000,478	8.5			
Total	293,134,549	36,514,899	12.5	28,730,933	9.8	207,987	Adjusted	Unadjusted
<i>1(c): U.S. population with income adjustment, sample restriction, and reweighting^l</i>								
0–17	73,122,462	12,906,491	17.7	9,962,323	13.6			
18–64	187,594,219	20,881,714	11.1	15,301,606	8.2			
65 or older	35,489,782	2,986,274	8.4	2,894,087	8.2		Adjusted with sample	
Total	296,206,463	36,774,479	12.4	28,158,016	9.5	195,241	restriction	Adjusted
<i>2(a): SSI recipient population; estimates based on unadjusted CPS income data^e</i>								
0–17	379,909	163,268	43.0	163,268	43.0			
18–64	3,900,117	1,663,514	42.7	1,663,514	42.7			
65 or older	1,176,402	463,754	39.4	463,754	39.4			
Total	5,456,428	2,290,536	42.0	2,290,536	42.0	3,578	Unadjusted	Unadjusted
<i>2(b): SSI recipient population; estimates based on adjusted CPS income data^f</i>								
0–17	951,558	306,242	32.2	272,135	28.6			
18–64	4,115,297	1,776,404	43.2	1,715,613	41.7			
65 or older	1,825,269	804,188	44.1	789,392	43.2			
Total	6,892,124	2,886,834	41.9	2,777,140	40.3	4,513	Adjusted	Unadjusted
<i>2(c): SSI recipient population with income adjustment, sample restriction, and reweighting^m</i>								
0–17	997,049	326,283	32.7	290,511	29.1			
18–64	4,493,624	2,028,375	45.1	1,959,127	43.6			
65 or older	1,878,685	850,640	45.3	835,042	44.4		Adjusted with sample	
Total	7,369,358	3,205,298	43.5	3,084,680	41.9	4,298	restriction	Adjusted

Continued

Table A-1.**Poverty rates across age and SSI recipient groups before and after adjustment using administrative data: Total U.S. population and SSI recipient population, 2003–2005—Continued**

SOURCE: For the 2003 panel of the table, authors' calculations using 2004 CPS/ASEC public-use data matched to Social Security administrative records; for 2004, authors' calculations using 2005 survey data matched to administrative records; and for 2005, authors' calculations using 2006 survey data matched to administrative records.

NOTE: Weight adjustments are based on person-level records differentiated by age group.

- a. Persons are identified as "poor" if their CPS total family income record is less than their corresponding CPS family poverty standard record. Family income records may include top-coded components. These totals differ slightly from official reports, which are based on actual reported income without top-coding.
 - b. Figures have been generated from the entire 2004 CPS/ASEC sample of 212,717 persons used by the Census Bureau to estimate poverty rates.
 - c. Income adjustments made using administrative data on SSI, OASDI, and earnings receipt, following decision rules as presented in text and Nicholas and Wiseman (2009).
 - d. Estimates derived from a reduced 2004 CPS/ASEC poverty sample of 176,378 persons who have at least one family member with matching CPS/SER records. Figures are based on the adjustment of CPS income records using administrative data following decision rules discussed in text and presented in detail in Nicholas and Wiseman (2009). Weights have been adjusted by propensity estimates derived from a regression model involving person-level records.
 - e. Persons identified as SSI recipients if they have a positive CPS SSI record.
 - f. Income adjustments made using administrative data on SSI, OASDI, and earnings receipt, following decision rules presented in text. SSI status based on adjusted data.
 - g. Estimates derived from a reduced 2004 CPS/ASEC poverty sample of 176,378 persons who have at least one family member with matching CPS/SER records. Figures are based on the adjustment of CPS income records using administrative data following decision rules presented in text. Weights have been adjusted by propensity estimates derived from a regression model involving person-level records; see text and Nicholas and Wiseman (2009) for methodology; propensity model estimates are available from the authors upon request. Persons are identified as SSI beneficiaries if they have a positive SSR SSI record.
 - h. Figures have been generated from the entire 2005 CPS/ASEC sample of 210,152 persons used by the Census Bureau to estimate poverty rates.
 - i. Estimates derived from a reduced 2005 CPS/ASEC poverty sample of 171,025 persons who have at least one family member with matching CPS/SER records. Figures are based on the adjustment of CPS income records using administrative data following decision rules discussed in text and presented in detail in Nicholas and Wiseman (2009). Weights have been adjusted by propensity estimates derived from a regression model involving person-level records.
 - j. Estimates derived from a reduced 2005 CPS/ASEC poverty sample of 171,025 persons who have at least one family member with matching CPS/SER records. Figures are based on the adjustment of CPS income records using administrative data following decision rules presented in text. Weights have been adjusted by propensity estimates derived from a regression model involving person-level records; see text and Nicholas and Wiseman (2009) for methodology; propensity model estimates are available from the authors upon request. Persons are identified as SSI beneficiaries if they have a positive SSR SSI record.
 - k. Figures have been generated from the entire 2006 CPS/ASEC sample of 207,987 persons used by the Census Bureau to estimate poverty rates.
 - l. Estimates derived from a reduced 2006 CPS/ASEC poverty sample of 195,241 persons who have at least one family member with matching CPS/SER records. Figures are based on the adjustment of CPS income records using administrative data following decision rules discussed in text and presented in detail in Nicholas and Wiseman (2009). Weights have been adjusted by propensity estimates derived from a regression model involving person-level records.
 - m. Estimates derived from a reduced 2006 CPS/ASEC poverty sample of 195,241 persons who have at least one family member with matching CPS/SER records. Figures are based on the adjustment of CPS income records using administrative data following decision rules presented in text. Weights have been adjusted by propensity estimates derived from a regression model involving person-level records; see text and Nicholas and Wiseman (2009) for methodology; propensity model estimates are available from the authors upon request. Persons are identified as SSI beneficiaries if they have a positive SSR SSI record.
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Table A-2. The effect of merging CPS and Social Security administrative data on the estimated national income distribution using restrictive and inclusive income-adjustment protocols, 2003–2005

National income distribution	Percentiles									Data summary		
	10	20	40	50	60	80	90	Top decile	50 percent of the median	Person records	Income	Weights
Restrictive 2003—												
<i>(a) using unadjusted income percentiles for all people^a</i>												
Upper bound (\$2002)	7,252	11,826	20,568	25,687	31,377	48,166	66,090	...	12,844			
Upper bound (\$2003)	7,416	12,094	21,035	26,270	32,089	49,258	67,589	...	13,135	212,717		
Distribution (%)												
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	22.4	212,717		
Elderly ^b	7.2	15.9	29.5	11.3	8.8	14.2	5.9	7.0	27.7	20,369		
Elderly SSI ^c	25.0	44.8	15.6	5.5	2.7	3.9	0.9	1.1	73.3	813	Unadjusted	Unadjusted
<i>(b) using adjusted income percentiles for all people (unadjusted weights)^d</i>												
Upper bound (\$2002)	7,420	11,914	20,487	25,457	31,004	47,663	65,694	...	12,728			
Upper bound (\$2003)	7,588	12,184	20,952	26,034	31,707	48,744	67,184	...	13,017	212,717		
Distribution (%)												
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	22.0	212,717		
Elderly	7.3	14.7	29.0	11.3	9.1	15.1	6.2	7.3	25.4	20,369		
Elderly SSI ^e	33.6	36.4	14.2	4.7	3.6	4.5	1.7	1.3	72.5	813	Adjusted	Unadjusted
<i>(c) using adjusted income percentiles for all people (adjusted weights)^f</i>												
Upper bound (\$2002)	7,458	11,917	20,471	25,337	30,843	47,213	65,008	...	12,669			
Upper bound (\$2003)	7,627	12,187	20,935	25,912	31,543	48,284	66,483	...	12,956	176,378		
Distribution (%)												
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	21.8	176,378	Adjusted with sample restriction	Adjusted
Elderly ^b	7.0	14.0	58.3	11.5	9.4	16.0	6.3	7.6	23.6	13,539		
Elderly SSI ^g	37.3	34.9	13.5	4.3	3.3	4.5	1.2	1.1	73.9	880		
Inclusive 2003—												
<i>(a) using unadjusted income percentiles for all people^a</i>												
Upper bound (\$2002)	7,252	11,826	20,568	25,687	31,377	48,166	66,090	...	12,844			
Upper bound (\$2003)	7,416	12,094	21,035	26,270	32,089	49,258	67,589	...	13,135	212,717		
Distribution (%)												
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	22.4	212,717		
Elderly ^b	7.2	15.9	29.5	11.3	8.8	14.2	5.9	7.0	27.7	20,369		
Elderly SSI ^c	25.0	44.8	15.6	5.5	2.7	3.9	0.9	1.1	73.3	813	Unadjusted	Unadjusted

Continued

Table A-2.
The effect of merging CPS and Social Security administrative data on the estimated national income distribution using restrictive and inclusive income-adjustment protocols, 2003–2005—Continued

National income distribution	Percentiles							Data summary				
	10	20	40	50	60	80	90	Top decile	50 percent of the median	Person records	Income	Weights
Inclusive 2003—(continued)												
<i>(b) using adjusted income percentiles for all people (unadjusted weights)^d</i>												
Upper bound (\$2002)	8,259	13,117	22,479	27,728	33,730	51,420	70,804	...	13,864			
Upper bound (\$2003)	8,446	13,415	22,989	28,357	34,495	52,586	72,410	...	14,179	212,717		
Distribution (%)												
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	21.6	212,717		
Elderly	9.4	17.1	28.7	10.2	8.6	13.3	5.9	6.9	29.3	20,369		
Elderly SSI ^e	43.9	28.3	11.9	5.3	2.4	5.9	1.2	1.2	73.2	1,090	Adjusted	Unadjusted
<i>(c) using adjusted income percentiles for all people (adjusted weights)^f</i>												
Upper bound (\$2002)	8,562	13,478	22,882	28,208	34,209	52,071	72,252	...	14,104			
Upper bound (\$2003)	8,756	13,784	23,401	28,848	34,985	53,252	73,891	...	14,424	176,378		
Distribution (%)												
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	21.4	176,378	Adjusted with sample restriction	Adjusted
Elderly ^b	9.4	16.7	27.8	10.3	9.3	13.5	6.4	6.8	28.2	13,539		
Elderly SSI ^g	48.0	26.0	11.4	5.0	2.7	5.1	0.9	1.0	74.7	880		
Restrictive 2004—												
<i>(a) using unadjusted income percentiles for all people^h</i>												
Upper bound (\$2002)	7,115	11,854	20,604	25,532	31,040	47,612	65,207	...	12,766			
Upper bound (\$2004)	7,472	12,448	21,637	26,812	32,596	50,000	68,477	...	13,406	210,152		
Distribution (%)												
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	22.2	210,152	Unadjusted	Unadjusted
Elderly ^b	7.0	15.6	29.4	11.4	8.8	14.3	6.5	7.0	26.4	20,561		
Elderly SSI ^c	26.2	39.8	18.9	4.1	3.8	3.9	2.2	1.1	67.3	1,030		
<i>(b) using adjusted income percentiles for all people (unadjusted weights)ⁱ</i>												
Upper bound (\$2002)	7,307	11,859	20,575	25,415	30,920	47,888	66,087	...	12,707			
Upper bound (\$2004)	7,673	12,454	21,607	26,689	32,470	50,289	69,401	...	13,345	210,152		
Distribution (%)												
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	22.1	210,152	Adjusted	Unadjusted
Elderly	6.5	14.3	29.8	11.7	9.3	15.3	6.6	6.7	24.1	20,561		
Elderly SSI ^e	34.0	31.7	17.9	4.8	3.5	5.8	1.3	1.1	68.6	1,030		

Continued

Table A-2.
The effect of merging CPS and Social Security administrative data on the estimated national income distribution using restrictive and inclusive income-adjustment protocols, 2003–2005—Continued

National income distribution	Percentiles									Data summary		
	10	20	40	50	60	80	90	Top decile	50 percent of the median	Person records	Income	Weights
Restrictive 2004—(continued)												
<i>(c) using adjusted income percentiles for all people (adjusted weights)^j</i>												
Upper bound (\$2002)	7,399	11,823	20,468	25,209	30,632	47,453	66,072	...	12,604			
Upper bound (\$2004)	7,770	12,416	21,494	26,473	32,168	49,833	69,385	...	13,237	171,025		
Distribution (%)												
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	21.9	171,025	Adjusted with sample restriction	Adjusted
Elderly ^b	6.0	13.3	29.2	11.9	9.9	16.3	6.9	6.7	21.9	13,135		
Elderly SSI ^g	38.7	28.3	17.2	5.0	3.7	5.6	1.0	0.5	69.8	815		
Inclusive 2004—												
<i>(a) using unadjusted income percentiles for all people^h</i>												
Upper bound (\$2002)	7,115	11,854	20,604	25,532	31,040	47,612	65,207	...	12,766			
Upper bound (\$2004)	7,472	12,448	21,637	26,812	32,596	50,000	68,477	...	13,406	210,152		
Distribution (%)												
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	22.2	210,152	Unadjusted	Unadjusted
Elderly ^b	7.0	15.6	29.4	11.4	8.8	14.3	6.5	7.0	26.4	20,561		
Elderly SSI ^c	26.2	39.8	18.9	4.1	3.8	3.9	2.2	1.1	67.3	1,030		
<i>(b) using adjusted income percentiles for all people (unadjusted weights)ⁱ</i>												
Upper bound (\$2002)	8,138	13,093	22,508	27,655	33,444	51,268	70,343	...	13,828			
Upper bound (\$2004)	8,546	13,750	23,637	29,042	35,121	53,839	73,870	...	14,521	210,152		
Distribution (%)												
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	21.6	210,152	Adjusted	Unadjusted
Elderly	8.4	16.7	29.3	10.8	8.3	13.9	6.2	6.5	27.9	20,561		
Elderly SSI ^e	41.6	26.4	15.8	4.2	4.2	5.0	1.9	0.9	69.7	1,030		
<i>(c) using adjusted income percentiles for all people (adjusted weights)^j</i>												
Upper bound (\$2002)	8,489	13,429	22,860	28,103	33,861	52,099	72,221	...	14,051			
Upper bound (\$2004)	8,915	14,102	24,006	29,512	35,559	54,711	75,842	...	14,756	171,025		
Distribution (%)												
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	21.4	171,025	Adjusted with sample restriction	Adjusted
Elderly ^b	8.4	15.8	28.9	10.8	8.7	14.4	6.4	6.6	26.7	13,135		
Elderly SSI ^g	45.9	23.9	15.4	4.2	3.8	4.9	1.3	0.6	70.8	815		

Continued

Table A-2.
The effect of merging CPS and Social Security administrative data on the estimated national income distribution using restrictive and inclusive income-adjustment protocols, 2003–2005—Continued

National income distribution	Percentiles							Data summary				
	10	20	40	50	60	80	90	Top decile	50 percent of the median	Person records	Income	Weights
Restrictive 2005—												
<i>(a) using unadjusted income percentiles for all people^k</i>												
Upper bound (\$2002)	7,185	11,956	20,781	25,704	31,339	47,884	66,250	...	12,852	207,987		
Upper bound (\$2005)	7,801	12,981	22,562	27,907	34,025	51,989	71,929	...	13,954			
Distribution (%)												
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	22.2	207,987		
Elderly ^b	7.0	16.0	28.9	11.0	9.3	14.1	6.1	7.6	26.1	20,413		
Elderly SSI ^c	22.9	45.5	17.0	2.4	4.7	3.7	1.8	2.0	71.5	757	Unadjusted	Unadjusted
<i>(b) using adjusted income percentiles for all people (unadjusted weights)^l</i>												
Upper bound (\$2002)	7,293	11,936	20,735	25,635	31,326	48,800	67,983	...	12,818	207,987		
Upper bound (\$2005)	7,918	12,959	22,513	27,833	34,011	52,983	73,811	...	13,917			
Distribution (%)												
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	22.0	207,987		
Elderly	6.2	14.0	29.2	11.8	9.6	15.4	15.4	6.6	23.3	20,413		
Elderly SSI ^e	35.4	33.7	13.6	5.6	4.1	4.3	2.1	1.2	70.7	1,181	Adjusted	Unadjusted
<i>(c) using adjusted income percentiles for all people (adjusted weights)^m</i>												
Upper bound (\$2002)	7,334	11,953	20,768	25,705	31,433	48,907	68,038	...	12,852	195,241		
Upper bound (\$2005)	7,963	12,978	22,548	27,908	34,128	53,099	73,871	...	13,954			
Distribution (%)												
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	22.1	195,241	Adjusted with sample restriction	Adjusted
Elderly ^b	6.0	14.0	29.4	11.9	9.7	15.4	6.6	7.1	23.2	19,178		
Elderly SSI ^g	36.7	33.0	13.3	5.8	3.6	4.1	2.2	1.3	71.3	1,128		
Inclusive 2005—												
<i>(a) using unadjusted income percentiles for all people^k</i>												
Upper bound (\$2002)	7,185	11,956	20,781	25,704	31,339	47,884	66,250	...	12,852	207,987		
Upper bound (\$2005)	7,801	12,981	22,562	27,907	34,025	51,989	71,929	...	13,954			
Distribution (%)												
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	22.2	207,987		
Elderly ^b	7.0	16.0	28.9	11.0	9.3	14.1	6.1	7.6	26.1	20,413		
Elderly SSI ^c	22.9	45.5	17.0	2.4	4.7	3.7	1.8	2.0	71.5	757	Unadjusted	Unadjusted

Continued

Table A-2. The effect of merging CPS and Social Security administrative data on the estimated national income distribution using restrictive and inclusive income-adjustment protocols, 2003–2005—Continued

National income distribution	Percentiles							Data summary				
	10	20	40	50	60	80	90	Top decile	50 percent of the median	Person records	Income	Weights
Inclusive 2005—(continued)												
<i>(b) using adjusted income percentiles for all people (unadjusted weights) ^l</i>												
Upper bound (\$2002)	8,661	13,816	23,668	29,065	35,344	54,098	75,823	...	14,533	207,987		
Upper bound (\$2005)	9,403	15,000	25,697	31,557	38,374	58,735	82,323	...	15,779			
Distribution (%)												
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	21.4	207,987		
Elderly	9.4	16.7	28.6	10.3	8.7	13.3	6.2	6.9	28.3	20,413		
Elderly SSI ^e	46.0	24.5	13.4	5.0	3.9	3.9	1.8	1.6	71.7	1,181	Adjusted	Unadjusted
<i>(c) using adjusted income percentiles for all people (adjusted weights) ^m</i>												
Upper bound (\$2002)	8,860	14,039	23,976	29,403	35,669	54,422	76,447	...	14,702	195,241		
Upper bound (\$2005)	9,620	15,243	26,031	31,924	38,727	59,087	83,000	...	15,962			
Distribution (%)												
All people	10.0	10.0	20.0	10.0	10.0	20.0	10.0	10.0	21.3	195,241	Adjusted with sample	Adjusted
Elderly ^b	9.6	17.2	28.4	10.2	8.6	13.3	6.0	6.8	28.8	19,178	restriction	
Elderly SSI ^g	47.9	23.6	13.1	4.9	3.4	3.6	1.8	1.7	72.2	1,128		

SOURCE: For the 2003 panel of the table, authors' calculations using 2004 CPS/ASEC public-use data matched to Social Security administrative records; for 2004, authors' calculations using 2005 survey data matched to administrative records; and for 2005, authors' calculations using 2006 survey data matched to administrative records.

NOTES: ... = data not applicable. Both the restrictive and inclusive estimates are replicated for 2002 in Table 5 of this article.

- a. Figures involve unadjusted CPS income data and weights as well as the entire 2004 CPS/ASEC poverty sample of 212,717 persons.
- b. Persons with a CPS-reported age of 65 or older.
- c. Persons with a positive CPS record.
- d. Estimates are based on adjusted CPS income records, unadjusted weights, and involve the entire 2004 CPS/ASEC poverty sample.
- e. Persons are identified as SSI recipients if either they have no matching CPS/SER records and a positive CPS SSI record or matching CPS/SER records and a positive SSR SSI record.
- f. Figures involve adjusted CPS income data and weights and a reduced 2004 CPS/ASEC poverty sample.
- g. Persons are identified as SSI recipients if they have a positive SSR SSI record.
- h. Figures involve unadjusted CPS income data and weights as well as the entire 2005 CPS/ASEC poverty sample of 210,152 persons.
- i. Estimates are based on adjusted CPS income records, unadjusted weights, and involve the entire 2005 CPS/ASEC poverty sample.
- j. Figures involve adjusted CPS income data and weights and a reduced 2005 CPS/ASEC poverty sample.
- k. Figures involve unadjusted CPS income data and weights as well as the entire 2006 CPS/ASEC poverty sample of 207,987 persons.
- l. Estimates are based on adjusted CPS income records, unadjusted weights, and involve the entire 2006 CPS/ASEC poverty sample.
- m. Figures involve adjusted CPS income data and weights and a reduced 2006 CPS/ASEC poverty sample.

Notes

Acknowledgments: The authors are grateful to SSA colleagues Glenn Springstead, Jim Sears, Tom Rush, Tom Hale, Will Jimenez, Mary McKay, Bobbie Gower, and Sheila Thompson for their helpful contributions.

¹ Alexander, Davern, and Stevenson (2010) report discovery of errors in age- and sex-specific population estimates generated from the 2004–2009 CPS for persons aged 65 or older. These errors are apparently produced by misapplication of disclosure avoidance procedures to the CPS and certain other public-use microdata samples (PUMS). According to the authors (p. 11), the problems arise only in disaggregating the data for the elderly by age and sex and do not apply when the data are “grouped into a single age 65 or older category,” which is done in the present analysis.

² The SER also includes earnings data. However, annual earnings reports in the SER are capped at the FICA/SECA taxable maximum (\$84,900 in 2002).

³ Information on retirement plan contributions in the DER corresponds to codes “d” through “h” in box 13 on the W-2 form: 401(k), SIMPLE, 403(b), 408(k) and (6), SEP, 457(b), and 501(c), (18), and (D) plans (Smith, Johnson, and Muller 2004, 8). See Abowd and Stinson (2005, 10) for a more detailed discussion of elements of gross compensation (for example, pretax health insurance premiums paid by the employee) that will not appear in the DER.

⁴ The data aggregation was performed by SSA’s Office of Research, Evaluation, and Statistics following a protocol established by the agency.

⁵ See Sears and Rupp (2003) for an investigation on the divergence between payment eligibility and payment receipt and the consequence for assessment of errors in OASDI-reporting in the Survey of Income and Program Participation. Koenig (2003) analyzes OASDI/SSI under-reporting in the March 1997 CPS, but could use only information on OASDI entitlement, not payments (as in the PHUS) for comparison with CPS reports.

⁶ See Iceland (2005). Under the three-parameter NRC equivalence scale, to achieve an equivalent standard of living, for every \$1 of income for a single individual, a childless couple would require \$1.41; single-parent families would need $\$(A + P * (C-1))^F$; and all other families would require $\$(A + P * C)^F$, where A is the number of adults in a family and C is the number of children. Following the NRC review of the Census Bureau poverty standard, we assume

that = 0.8, P = 0.5, and F = 0.7. The parameter P indicates how children are to be weighted relative to adults: P = 0.5 means that each child beyond the first one requires half the income needed for adults. The parameter allows the first child in a single-parent family to be weighted differently from others. F reflects economies of scale.

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