Poverty Changes When Income Underreporting is Growing: Evidence from Linked Data

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Abstract

This paper provides the first estimates of absolute poverty trends in the United States for the full population using survey data linked to administrative tax and program records. While survey data alone suggest that poverty fell by 45% between 1995 and 2016 after accounting for taxes, in-kind transfers, and biases in the inflation measure, our combined survey and administrative data reveal a larger 63% reduction. The combined data have an even larger impact on deep poverty – the share below half the poverty line – as the survey data indicate essentially no change rather than a 38% decline after correcting for measurement error. These discrepancies arise because income is increasingly underreported in surveys over time, particularly at the bottom of the distribution. Elderly families and those with children experienced the largest poverty reductions, while single childless individuals experienced the smallest reductions. Our findings highlight how survey measurement error has significantly obscured substantial improvements in material well-being among America's most disadvantaged populations, with important implications for evaluating the evolution of anti-poverty policies since welfare reform.

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1. Introduction

The poverty rate is one of the most cited indicators of the well-being of the least advantaged. As a consequence, the extent to which poverty has changed over time serves as a critical gauge of societal progress or failure in reducing material deprivation. Changes in the rate are used both to evaluate the overall health of our economic system in distributing resources widely and to understand the impact of specific policy changes. Despite its importance, and maybe in part because of it, there is substantial disagreement about how to measure poverty and its change over time.

A large body of research and government statistics has estimated changes in poverty over time. The Census Bureau's Official Poverty Measure (OPM), which relies on survey-reported pre-tax money income, indicates that poverty fell by 1.1 percentage points (9%) between 1995 and 2016. This measure has been criticized in many ways. The OPM does not reflect taxes and in-kind transfers (Ruggles 1990, Citro and Michael 1995, Blank 2008), despite much of recent policy focusing on tax cuts, tax credits, and the direct provision of food, housing, and other goods and services. While the OPM is described as an absolute measure, it accounts for changes in prices using a deflator that a wide body of research finds to overstate inflation (Moulton 2018). The OPM has also been criticized as not reflecting changes in consumption patterns over time and in typical living standards (Ruggles 1990, Citro and Michael 1995, Blank 2008).

Research that accounts for taxes and in-kind transfers (Meyer and Sullivan 2012, Fox et al. 2015, Wimer et al. 2016, Winship 2016, Burkhauser et al. 2024) tends to find much larger declines in absolute poverty over time than the OPM. The Census Bureau's Supplemental Poverty Measure (SPM) also incorporates taxes and non-medical in-kind benefits, but it is is harder to interpret due to its changes in thresholds in real terms. This pattern of a greater decline over time is also true for measures that use price indices that attempt to reduce the bias in inflation measures (Meyer and Sullivan 2012, Burkhauser et al. 2024). On the other hand, measures that increase poverty thresholds in real terms over time tend to find less of a decline over time or find an increase in poverty (U.S. Census Bureau 2024). Some have argued for looking beyond income to measures of the direct consumption of goods and services to examine poverty trends (Meyer and Sullivan 2012, Han, Meyer, and Sullivan 2021, Fitzgerald and Moffitt 2022).

However, a problem of all past work on changes in income poverty over time is that it largely relies upon self-reported survey data which are misreported. A large body of literature,

relying on both comparisons to national account totals or other aggregates, finds that income tends to be under-reported, particularly for components that make up a large share of resources for those at the bottom. This pattern has also been confirmed by work examining administrative microdata linked to survey data. Maybe more importantly, this pattern of underreporting has been found to have grown over time, both in analyses of aggregate data (Meyer, Mok, and Sullivan 2015) and in more limited comparisons of linked microdata (Gathright and Crabb 2014). Consequently, relying solely on survey data may significantly bias estimates of poverty changes over time no matter how income poverty is measured. As shown in Figure 1, weighted survey totals for various income sources from the Current Population Survey (CPS) consistently understate national accounting totals, with dollar reporting rates *worsening* over time for nearly all income sources in the CPS. This decline is most pronounced for sources like Unemployment Insurance, the Supplemental Nutrition Assistance Program (SNAP), and Social Security Disability Insurance. The implication is that survey incomes are increasingly underreported over time, suggesting that true poverty rates have fallen by more (or increased by less) than what survey data imply. Since in-kind benefits like SNAP and tax credits are particularly misreported (Meyer et al. 2022) and have grown in importance, disposable income-based poverty measures such as the SPM and the others mentioned above are particularly susceptible to this bias.

Some researchers using survey data have attempted to impute missing benefits to match administrative totals (e.g., Congressional Budget Office 2025), and the Urban Institute's Transfer Income Model (TRIM) attempts to correct for measurement error in surveys using microsimulation methods (Zedlewski and Giannarelli 2015). However, since underreporting is non-random, relying on survey data alone without linkages to accurate records means that such corrections at best partially solve the problem and can sometimes worsen the bias (Mittag 2019). Administrative data hold great promise for addressing these measurement issues, and some research has utilized tax records exclusively to measure poverty trends (e.g., Larrimore, Mortenson, and Splinter 2022). Yet, tax records also miss income sources unobserved by tax authorities (such as in-kind transfers and informal incomes) and lack key demographic information like race/ethnicity and education. Other studies have instead used linked survey and administrative records to measure poverty at a point in time (Meyer et al. 2021, Bee et al. 2023, Meyer and Wu 2024), but to our knowledge no work has used linked data to examine changes in full-population poverty over time.

In this paper, we provide the first comprehensive estimates of absolute poverty over time in the United States using survey data from the CPS Annual Social and Economic Supplement (CPS ASEC) linked to tax and other administrative records covering eleven programs and major tax credits. As part of the Comprehensive Income Dataset (CID) Project, we use a relatively complete income measure that incorporates tax liabilities, tax credits, and select in-kind transfers in an accurate way. Our results provide the most accurate assessment to date of the change in income poverty over this period for the full U.S. population. We focus on 1995 and 2016, covering two decades and providing important insights into whether poverty increased or decreased after welfare reform in the 1990s, the Great Recession and its aftermath, and public health insurance expansions through Medicaid, the State Children's Health Insurance Program (SCHIP), and the Affordable Care Act. Our paper builds upon a series of other papers in recent years, including Corinth, Meyer, and Wu (2022), which used the CID to estimate trends in income poverty for single parent families (a key policy-relevant subgroup), and Meyer and Wu (2024), which used the CID to estimate point-in-time poverty for the full population in 2016.

Our analysis reveals that survey data alone miss substantial progress in reducing absolute poverty over time. Using survey data alone, the share of the population in poverty fell by 45% between 1995-2016 after correcting for bias in inflation measures and incorporating taxes and in-kind transfers in income. After combining survey and administrative data, the decline in poverty over time is substantially greater at 63%. For nearly every income component, the decline in poverty is larger after correcting for survey measurement error. With the CID, the decline in poverty is also greater at various multiples of the poverty threshold. Notably, survey data show effectively no change in deep poverty (the share below half the poverty line) during this period, while we estimate a reduction of 38% using the CID. Across family types, we find that elderly families and those with children experienced the largest poverty reductions, while single childless individuals experienced the smallest reductions. Taken together, our findings suggest that the improvements in material well-being for America's most disadvantaged populations have been starkly underestimated in official statistics.

2. Data

In this section, we describe the various survey and administrative data sources that we link in this paper. We focus on 1995 and 2016 as the reference years for our analysis. The year 1995

represents the oldest year for which most of our core administrative data are available, and predates welfare reform legislation in 1996. The year 2016 represents a recent year for which the available administrative data are relatively complete for most income sources.

Survey Data

Our survey data come from the 1996 and 2017 iterations of the CPS ASEC (hereafter CPS), which collect information about incomes in the prior calendar year (1995 and 2016, the reference years of interest). The CPS serves as the Census Bureau's source for official poverty statistics, including the Official Poverty Measure and the Supplemental Poverty Measure (SPM), as well as the historical median income series. While incomes reported in the CPS suffer from substantial measurement error, the survey also offers several advantages for our analysis. It covers a broader frame of individuals than tax and program records, contains information on income sources that may be missed in administrative data, and includes an extensive set of demographic information on respondents that is unavailable in most administrative sources. These demographics include family structure, which allows us to construct appropriate sharing units for our poverty analysis.

Administrative Data

We use a variety of administrative data sources for each income component. First, we incorporate data from Internal Revenue Service (IRS) tax records. Amounts on wages and salaries comes from two sources: the Social Security Administration's (SSA) Detailed Earnings Record (DER) database (derived from IRS W-2 Forms) and from IRS Form 1040.[3] It should be noted that W-2 data are not available before 2005. Self-employment earnings come from the DER, which obtains amounts from Schedule SE of IRS Form 1040. In addition to earnings for tax filers, the 1040s contain information on multiple sources of asset income – including taxable and tax-exempt interest and taxable dividends – and adjusted gross income (AGI). Data on retirement distributions come from IRS Form 1099-R, which covers gross payments from employer-sponsored plans and Individual Retirement Account (IRA) withdrawals. While our 1040 extracts do not contain actual

[3] In other work (e.g., Meyer and Wu 2024), we also bring in wage amounts directly from IRS Form W-2, which covers wages for those with Individual Taxpayer Identification Numbers (ITINs) in addition to those with Social Security Numbers (SSNs). A shortcoming of the wage data in the DER is that they only include those with SSNs. However, the W-2 data from the IRS are available only starting in 2005.

amounts for taxes paid and tax credits received, they cover enough line items (e.g., AGI, filing status, etc.) that we can calculate tax liabilities and credits with reasonable accuracy.

We also bring in administrative program records from various federal and state agencies. These programs all disburse benefits on a monthly basis. Social Security benefits (Old-Age, Survivors, and Disability Insurance or OASDI) come from the SSA's Payment History Update System (PHUS) file. Supplemental Security Income (SSI) benefits come from the SSA's Supplemental Security Record (SSR) file, which includes federal and federally-administered state payments but excludes state-administered payments. OASDI and SSI are each paid out at the individual level. Housing assistance records come from the Public and Indian Housing Information Center (PIC) and Tenant Rental Assistance Certification System (TRACS) files, which cover almost all public and subsidized housing assistance programs under the jurisdiction of the Department of Housing and Urban Development (HUD).[4] Supplemental Nutrition Assistance Program (SNAP) records come from state agencies and are available for twenty-three states in 2016. Housing assistance and SNAP benefits are paid out at the household level.

All of our administrative data sources are available for both 1995 and 2016, with the exception of the SNAP records, which the Census Bureau does not have prior to 2004 and only has for a subset of states even in later years. In Section 3, we describe how we handle these missing administrative SNAP records for 1995.

Linking Data Sources

We link these administrative data to surveys using individual identifiers called Protected Identification Keys (PIKs). PIKs are created by the U.S. Census Bureau's Person Identification Validation System (PVS), which is based on a reference file containing Social Security Numbers (SSNs) linked to names, addresses, and dates of birth (Wagner and Layne 2014). Over 99% of most administrative records are linked to PIKs. In our survey data, 93% and 92% of CPS ASEC families have at least one PIKed member in 1995 and 2016, respectively.

Our sample of analysis in the CPS consists of individuals whose families have at least one member with a PIK and no member that is wholly imputed. To account for the potential bias arising from non-random missing PIKs and whole imputations, we adjust survey weights using inverse probability weighting. Specifically, we divide individual survey weights by the predicted

[4] We calculate a household's benefit amount as the difference between the gross rent and actual tenant payment.

probability that at least one member of the family has a PIK and no member is wholly imputed, conditional on observable characteristics in the survey (see Wooldridge 2007). This adjustment helps ensure that our sample remains representative of the full population. By adjusting weights at the family level, we maximize our sample size (minimizing selection) while still capturing benefits for families where at least one member can be linked to administrative records.

One limitation of our approach is that we miss administrative dollars for un-PIKed individuals in PIKed families. This understatement should be relatively small for income sources like SNAP and housing assistance, as we link all benefit dollars from an assistance unit to a survey family as long as long as one member is linkable. However, the understatement will be more pronounced for income sources where the administrative data are at the individual level, including earnings, asset income, retirement income, OASDI, and SSI. For these sources, we use survey values for un-PIKed individuals, recognizing that these values may still be understated if they are on net underreported in the survey.

3. Methods

In this section, we describe our methodological approach in three parts. First, we discuss our main resource measures and sharing unit. Second, we explain how we use administrative data in our Comprehensive Income Dataset (CID) income measure. Finally, we detail the construction of poverty thresholds. Throughout our analysis, we compare poverty changes using the CID to those estimated using survey data alone, illustrating the extent to which survey misreporting biases poverty rate levels and changes over time.

Resource Measures and Sharing Units

We analyze poverty using three income concepts. The first is pre-tax money income, which serves as the resource measure underlying the OPM. The second income concept is post-tax money income, which adjusts for federal and state income taxes and payroll taxes on both wages (FICA) and self-employment (SECA).[5] This measure is inclusive of tax credits, namely the Earned Income Tax Credit (EITC), for which we simulate both federal and state amounts, as well as the non-refundable and refundable portions of the Child Tax Credit (CTC). Our third and most complete

[5] Unlike in Meyer and Wu (2024), we do not subtract expenses in this paper as they are not recorded in the 1996 CPS.

income concept additionally incorporates the value of non-medical in-kind transfers, including rental housing assistance, SNAP, the Supplemental Nutrition Program for Women, Infants, and Children (WIC), school lunch, and energy assistance.

For all analyses, we use the SPM family as our resource-sharing unit. This unit includes related individuals, cohabitating unmarried couples, unrelated children under the age of 15, and foster children under the age of 22 – reflecting a more comprehensive definition of the economic unit than the tax unit or traditional family definition used in many other poverty measures.

Use of Administrative Data in CID Income Measure

Our approach to using administrative data to correct incomes largely follows the methods in Meyer and Wu (2024), to which we direct readers for more details. We begin with survey pre-tax money income and correct only the components for which we have analogs in administrative records. For most income components, we simply replace survey values with values from administrative records when observations are PIKed. This includes replacing survey reports of asset income (interest and dividends) with their administrative counterparts from 1040s, replacing combined survey reports of retirement, survivor, and disability income (excluding Social Security and veterans' benefits) with gross amounts from employer-sponsored pensions and IRA distributions from 1099-Rs, replacing survey reports of OASDI with gross amounts from administrative data, and replacing survey values of SSI with the amount of federally-administered SSI from administrative records. We also use adjusted gross income (AGI) on 1040s to provide a lower bound for the taxable portion of pre-tax money income, which offers an implicit correction for the underreporting of income sources like Unemployment Insurance, alimony, and capital gains that are part of AGI but for which we do not have individual administrative sources.

Earnings – the single largest component of income – require a more nuanced approach. Our key modeling assumption is that survey reports of earnings are both under- and overreported, while administrative earnings are only underreported. While not strictly true, evidence on the general incompleteness of administrative data suggests this is a good approximation (Meyer and Wu 2024). This assumption has two important implications for our methodology. First, when combining administrative sources, we rely on the largest value since other sources can only be lower due to incompleteness and underreporting. Since we have two sources of administrative wage data (1040s and the DER), we take the higher of taxable wage amounts across these sources

and then include non-taxable wages in the form of deferred compensation from the DER (derived from W-2s). For self-employment income, where we have only one administrative source (DER), we simply add that to the combined administrative wage amount.

Second, we continue to rely on survey earnings to "fill in" gaps in the administrative values, which are either accurate or incomplete. Specifically, we incorporate survey earnings that exceed administrative earnings if amounts and employment characteristics are not imputed in the survey, and either the administrative data appear to be missing a job or earnings altogether (i.e., extensive margin underreporting) or respondents report being self-employed or working for a small employer in the survey (suggesting potentially informal earnings not reported to tax authorities). We combine total survey and administrative earnings, rather than wage and self-employment amounts separately, to avoid double-counting earnings that might be misclassified as wages in one source and self-employment in another. Even with these methods, we likely still understate total earnings. Our combined measure of earnings using the CID yields totals of $5.01 trillion in 1995 and $8.84 trillion in 2016, which fall short of the NIPA aggregates of $5.1 trillion in 1995 and $9.15 trillion in 2016 that use tax audits to correct for earnings underreporting.

For tax liabilities and credits, we replace survey values (which are simulated using the Census Bureau's internal tax model) with estimates simulated using the National Bureau of Economic Research's TAXSIM calculator (Feenberg and Coutts 1993) and inputs from a combination of IRS tax records and other sources. Prior work has shown that CID-based tax estimates are much closer to IRS-published totals than those calculated using survey data alone (Meyer et al. 2022). A key advantage of our approach is that we can accurately capture both income inputs and tax unit structure (e.g., filing status, number of dependents). The latter is especially important because surveys often miss out-of-household children who are claimed for tax purposes due to strategic reasons or unstable household situations (e.g., Tong 2014, Jones and O'Hara 2016, Splinter, Larrimore, and Mortenson 2017, Unrath 2023). This partly explains the under-imputation of head-of-household EITC recipients in the CPS, which understated IRS totals by 42% in 2016.

For in-kind transfers, we continue to use survey values for WIC, school lunch, and energy assistance, which are imputed using the SPM methodology (Fox 2017). We replace survey values of housing assistance and SNAP with amounts from administrative data. For housing assistance, since the administrative amounts cover only HUD-administered programs, we continue to include amounts from survey recipients who do not appear in the administrative data. This approach may

overstate housing assistance if there are false positives in the survey, but housing assistance may still be understated given false negatives associated with non-HUD programs.

For SNAP, we incorporate administrative data for 23 states in 2016 only. To calculate incomes that account for administrative SNAP values nationwide, we multiply income levels after all other adjustments (calculated over all 50 states) by the fractional change in incomes due to incorporating the administrative SNAP data (calculated over the 23 states with data). One might worry that this could overstate the decline in poverty using the CID, since we rely only on survey data for SNAP in 1995. However, the alternative of using only survey data in both years would lead us to understate the decline in poverty over time, given that the amount of SNAP dollars missed in surveys rose in real terms from $10 billion in 1995 to $30 billion in 2016. Even after including administrative SNAP for just one year, we likely still understate the decline in poverty because we are missing administrative data for income sources known to be increasingly underreported in surveys – such as workers' compensation, child support, and Aid to Families with Dependent Children/Temporary Assistance for Needy Families (AFDC/TANF).

Poverty Thresholds

We calculate head count poverty rates by determining the share of people in SPM families with resources below given thresholds. To construct absolute poverty thresholds for 1995 and 2016, we use as a starting point the official threshold in each year for a family of two adults and two children, multiplied by the SPM three-parameter equivalence scale to account for family size and composition.[6] This offers several improvements over the scale implicit in the OPM thresholds, including greater transparency and diminishing marginal costs with each additional child or adult.

The official thresholds are updated for inflation using the CPI-U, which has a widely documented upward bias (see, e.g., Moulton 2018). We therefore also construct alternative poverty thresholds for 2016 using an adjusted inflation measure that subtracts 0.8 percentage points from the annual growth in the CPI-U-RS each year starting from the 1995 baseline (Meyer and Sullivan 2012). We also present poverty estimates using the Personal Consumption Expenditure (PCE) price index to adjust for inflation, which has been used in several prior studies and corrects for some but not all of the bias in the CPI-U. While the level of the baseline thresholds is

[6] The SPM three-parameter equivalence scale is given by $(adults)^{0.5}$ for units without children, $(adults + 0.8 + 0.5 \times (children - 1))^{0.7}$ for single-parent units, and $(adults + 0.5 \times children)^{0.7}$ for all other units.

fundamentally arbitrary, we use the 1995 official thresholds because they allow us to show how the poverty rate in 1995 falls after using a broader income definition and correcting for survey misreporting.

Our main focus is on poverty (income below 100% of the threshold), but we also examine other multiples of the poverty line, including deep poverty (income below 50% of the threshold), near poverty (150%), and twice poverty (200%). Unlike the SPM, we do not incorporate geographic adjustments for cost-of-living into our poverty thresholds. This decision is based on recent evidence showing that incorporating such adjustments actually leads to identifying a less deprived population in poverty, given that local prices are sufficiently correlated with public goods and locational amenities such that those with low incomes appear less disadvantaged in higher-cost areas (Meyer, Wu, and Curran 2022, Larrimore 2025).

4. Results

In this section, we present our main findings. We begin by examining poverty rates and changes by major income concept. We then analyze how specific adjustments contribute to the observed changes in poverty. Finally, we explore differences in poverty trends across demographic subgroups.

Estimates by Income Concept

Table 1 contains our core results, showing poverty rates for the full population in 1995 and 2016, along with the percent change over time, using both survey data alone and the CID across our three main income concepts. Column 1 shows poverty rates in 1995, while Columns 2-4 show poverty rates in 2016 using three separate inflation adjustments: the traditional CPI-U used in official estimates (Column 2), PCE Deflator (Column 3), and our preferred adjusted CPI-U-RS (Column 4). Columns 5 through 7 then show the percent change in poverty between 1995 and 2016 using these respective inflation adjustments.

Starting with pre-tax money income using survey data alone and the CPI-U, poverty declined by 14% (from 13.3% to 11.42%) between 1995 and 2016. Using the PCE deflator instead, the reduction in poverty becomes more substantial at 23%. With our preferred bias-adjusted CPI-U-RS, the decline reaches 32%. When we use the CID to correct for measurement error while maintaining the pre-tax money income concept, poverty levels decrease in both 1995 (from 13.3%

to 11.3%) and 2016 (from 9.0% to 6.2% using our preferred bias-adjusted inflation measure). This pattern aligns with the general underreporting of incomes in surveys and the consequent overstatement of poverty rates in any given year (Bee et al. 2023, Meyer and Wu 2024). Because the proportional decline in poverty from the measurement correction is larger in 2016 than in 1995, the change in poverty between these years using the CID is substantially greater: more than a third larger (from 32.4% to 44.6%) with our preferred price index, nearly 50% larger using the PCE (23.2% to 34.2%), and nearly three-quarters larger using the CPI-U (from 14.1% to 24.6%). This pattern is consistent with income underreporting worsening over time.

When we expand the income concept to more closely reflect the ability to consume, the reductions using survey data become larger in fractional terms. Using our adjusted CPI-U-RS inflation measure, survey-only poverty would have fallen by 39% after accounting for tax liabilities and credits, and by 45% after also accounting for non-medical in-kind transfers. This finding reflects the considerable growth in the importance of tax credits (like the EITC and CTC) and in-kind transfers (like SNAP) over this period. Switching from survey data alone to the CID, we consistently observe larger poverty reduction estimates – from 39.3% to 52.6% for post-tax income and from 45% to 63% for our fullest income concept that also accounts for in-kind transfers. Even without including administrative SNAP data, the decline using the CID would still be considerably larger (at 58%) than the survey-only decline.

Figure 2 compares survey and CID changes in poverty across different multiples of the poverty threshold, using our fullest income measure and preferred price index (Appendix Table 1 shows the complete set of estimates for each multiple and across each income concept). At every threshold, the decline in poverty is larger when measured using the CID relative to survey data alone. For example, survey data show a 39% decline in twice poverty while the CID shows a 50% decline. For near poverty, survey data show a 49% decline while the CID shows a 59% decline. Most strikingly, the differences become more pronounced at lower positions in the income distribution. When examining deep poverty, survey data actually show a 0.5% increase while the CID shows a 38% decline. This finding has important policy implications. The literature on extreme poverty has argued that rates of extreme and deep poverty (e.g., Shaefer and Edin 2013, Brady and Parolin 2020) based on survey reports have risen over this period and since welfare reform. Our results suggest that these findings completely reverse after correcting for measurement error inherent in survey data.

Estimates After Step-by-Step Adjustments

We now examine the role of specific components in explaining the differences between survey and CID estimates. Table 2 shows how levels and changes in absolute poverty evolve after sequentially introducing each correction and adjustment, helping to identify which adjustments have the largest impacts. Appendix Tables A2-A4 show analogous results for other multiples of the poverty threshold, while Appendix Tables A5-A9 show the breakdown across five mutually exclusive and exhaustive family types.

Unlike our previous results, we begin from the well-known benchmark of the Official Poverty Measure (OPM), which allows us to clarify how our changes to the resource unit, equivalence scale, and sample of analysis affect the results. Using the full CPS sample, we find an 8% decline in the OPM using the CPI-U (Column 5), which aligns with official statistics. Using our preferred price index, we find the OPM would have fallen by nearly 25% (Column 7). This decline grows to 31% after expanding the resource-sharing unit to include cohabiting partners and young unrelated children, consistent with the rise in cohabiting unmarried couples over time – some of whom would be considered poor individually but not poor when grouped with other household members. Adopting the SPM 3-parameter equivalence scale marginally increases the change in poverty to 32%, while our sample changes (removing whole imputes and non-PIKed individuals and reweighting) lead to less than a percentage point change in the poverty reduction. The modest effects of these latter changes help validate our inverse probability weighting model used to make PIKed and non-whole-imputed individuals representative of the full population. Note that the 32% decline in poverty rate after this step corresponds to the survey rate for pre-tax money income and the adjusted CPI-U-RS in Table 1.

Next, we incorporate corrections to pre-tax money income, which can also be visualized in Figure 3. The key finding is that after every step, the fractional decline in poverty increases – suggesting that every income component is increasingly underreported over time in survey data. The single largest improvement comes when we bring in 1040 wages on top of administrative earnings from the DER (whose wage data are derived from W-2s), with the reduction in poverty increasing from 33% to 38%. Several factors may explain this. First, conceptual differences between W-2 and 1040 wages (such as scholarships and unreported tips) may have grown over time. Second, self-employment earnings may be increasingly misclassified over time as wage

amounts on 1040s, although this would not lead to double-counting because these earnings would be missing from the DER (pulled from 1040 Schedule SE) and instead recorded as wages on 1040s.

Correcting for retirement income also plays a non-trivial role, with the decline in poverty increasing from 39% to 42% - concentrated almost entirely among elderly families (for whom the decline in poverty increases from 42% to 54%, per Appendix Table A5). Previous research has documented substantial misreporting of retirement income in survey data (with nearly half of all dollars missing in the CPS, per Bee and Mitchell 2017), and our results show that the increasing nature of this underreporting can significantly bias poverty trend estimates.

When we incorporate tax liabilities and credits, we again observe that using administrative data leads to larger reductions in poverty over time. After including survey-reported tax liabilities before credits, we find a 37% reduction in poverty. However, with tax liabilities simulated using combined survey and administrative data, we find a 45% decline in poverty. One possible explanation for the larger role of administrative data is that the CPS may increasingly miss how households allocate children to optimize filing status, personal exemptions, and other tax provisions (creating greater misalignment between survey households and administrative tax units over time). Consistent with this hypothesis, the poverty reduction increases after using administrative sources to correct for EITC amounts (from 48% to 51%), which aligns with the growing under-imputation of EITC recipients (particularly among head of household filers) in the survey. In contrast, we see no change in the poverty reduction after using administrative sources to correct for CTC amounts, which targets families higher in the income distribution than the EITC.

Finally, we account for in-kind transfers. Incorporating survey values of our five non-medical in-kind transfers collectively increases the poverty reduction to 61% between 1995 and 2016 (driven primarily by housing assistance and SNAP). When correcting for measurement error in housing assistance using administrative data, we find that the decline in poverty over time decreases slightly to 58% – one of the few instances where using administrative data does not magnify the decline. One explanation could be that HUD programs (the only ones for which we have administrative data) reach approximately the same number of families in 2016 as in 1995, making them smaller as a share of the population. Additionally, we cannot account for the potentially increased underreporting of non-HUD programs (from the Department of Agriculture and from states and localities) in survey data, so the true decline may be larger. After accounting for SNAP, we reach our final 63% reduction in poverty over time, as shown in Table 1.

Taken together, these results consistently show that the decline in poverty over time becomes larger after incorporating administrative data – not just for isolated components, but across nearly every step. This suggests that almost every source of income is increasingly underreported in surveys, particularly among those with lower incomes.

Estimates by Demographic Subgroup

Finally, we examine how poverty declines vary across key demographic subgroups and how the role of the CID differs among them. This analysis is crucial given that certain subgroups are more targeted by specific policies, allowing us to better evaluate the effectiveness of government programs and identify segments of the population that require the most assistance.

Figure 4 compares survey and CID changes in poverty across our five family type subgroups, using our fullest income measure (including taxes and in-kind transfers) and preferred price index (bias-adjusted CPI-U-RS). Using survey data alone, one would conclude that the largest declines over time occurred among families with children – single-parent families see a decline of 49% and multiple-parent families see a decline of 54%. This finding is not surprising, as these groups have benefitted most from changes in the safety net in recent decades (given expansions in child-related tax credits and in-kind transfers). However, when using the CID, we find that the largest declines occur not only for families with children (63% decline for single parents and 71% decline for multiple parents) but – strikingly – also for the elderly, who experience a 74% decline. This appears to result from increased underreporting of pre-tax money income (specifically retirement distributions) as well as in-kind transfers like housing assistance and SNAP. For multiple childless individuals, using the CID dramatically increases their measured poverty reduction from 24% to 49%.

Notably, non-elderly single individuals consistently show the smallest declines (22% using survey data alone and 33% using the CID). This group is least connected to the safety net and is often excluded from many transfers that target based on age or the presence of children. Research also indicates that single men, who likely comprise a large share of this group, have experienced dramatic employment rate declines over time (e.g., Eberstadt 2016, Krueger 2017, Binder and Bound 2019, Abraham and Kearney 2020), suggesting this subgroup deserves significant policy attention.

Table 3 extends the analysis to examine levels and changes in poverty (using our fullest income concept and preferred inflation adjustment) across a broader set of demographic subgroups. Appendix Tables A10-A12 show analogous estimates for other, less comprehensive income concepts and yield qualitatively similar results. The overarching finding is that for *every* demographic subgroup, the level of poverty falls in both 1995 and 2016 after using the CID to correct for measurement error in survey data. Because the decline in the level of poverty is consistently proportionally larger in 2016 than in 1995, the reduction in poverty over time is always larger using the CID. This pattern holds without exception across all subgroups.

Nevertheless, the magnitude of the CID's effects varies across different subgroups, with the general finding that gaps in poverty reductions between subgroups often narrow after using administrative data to correct for survey misreporting. Across race/ethnicity subgroups, survey data indicate that Hispanic, Asian non-Hispanic, and Black non-Hispanic individuals have experienced poverty declines (66%, 59%, and 54%, respectively) that are approximately twice as large as that of white non-Hispanic individuals (33%). However, when using the CID, the changes become more homogeneous, with the aforementioned non-white subgroups seeing declines of 66-77% while whites see a decline of 56%. Similarly, survey data suggest immigrants experienced a much larger decline in poverty (59%) than non-immigrants (43%), but this difference diminishes substantially when using the CID (with declines ranging from 64-67%).

Across the four geographic regions, poverty reductions become more uniform after correcting for measurement error, ranging from 39%-56% using survey data but only from 58%-66% using the CID. Rural individuals continue to experience larger poverty declines than those in urban areas. Finally, those with lower levels of education continue to see larger reductions in poverty – whether evaluated using survey data alone or the CID – but the education gradient in poverty decline flattens when using the CID. This pattern is perhaps most evident for those without a high school diploma. Using survey data, their poverty decline of 49% would be nearly twice as large as the decline for the next least-educated subgroup (those with only a high school diploma) at 25%. However, using the CID, the decline for those without a high school diploma (66%) is less than a quarter larger than the decline for those with only a high school diploma (54%).

5. Conclusions

Our analysis reveals that poverty in the United States declined substantially between 1995 and 2016, with the magnitude of this reduction significantly larger than what conventional survey-based estimates would suggest. Using our most comprehensive income measure (accounting for taxes and in-kind transfers) and our preferred bias-adjusted inflation measure, we find that poverty fell by 63% after using combined survey and administrative data – compared to 45% when using survey data alone. These differences are even more pronounced at the very bottom of the income distribution, where survey data show virtually no change in deep poverty while the corrected data reveal a 38% reduction. Across every demographic subgroup, correcting for measurement error consistently shows larger poverty reductions, often narrowing the gaps in poverty reduction rates between different groups.

These results demonstrate the value of linking survey and administrative data to understand not just poverty at a point in time but also changes over time. They illustrate how survey results can be misleading but also how they can be improved using linked data. Importantly, our findings largely confirm results from prior research using consumption data, where consumption poverty was found to fall further than survey-based income poverty (Meyer and Sullivan 2012, 2023). The convergence of evidence from both consumption measures and our administrative data corrections reinforces the conclusion that material well-being has improved substantially more than official statistics suggest, particularly for the most disadvantaged Americans. Our research carries notable implications for evaluating the effectiveness of anti-poverty policies. The period we examine spans major reforms to the social safety net, including welfare reform in the 1990s and subsequent expansions of tax credits and in-kind benefits. While survey data alone would suggest modest progress in reducing poverty during this era, our corrected estimates reveal much more substantial improvements, suggesting that the evolution of anti-poverty programs over this period may have been more effective than previously understood.

It is worth noting some caveats to our estimates. On one hand, our preferred estimates include administrative SNAP data for 2016 even though they are not available in 1995, which could potentially overstate the decline in poverty over time using the CID. On the other hand, our inclusion of administrative data is incomplete. We are missing administrative data for numerous programs that are likely to be increasingly underreported over time, including workers' compensation, TANF/AFDC, General Assistance, Unemployment Insurance (which we can

partially correct for using AGI), WIC, child support, and housing assistance from non-HUD sources, among others. Omitting these sources understates the decline in poverty over time using the CID, and we would expect even larger effects if we had more complete data. We have also excluded medical in-kind transfers in this analysis, principally Medicare and Medicaid, both of which have expanded dramatically in recent decades.

In ongoing future work, we plan to either incorporate additional administrative sources or impute amounts that correct for survey measurement error in states and years where we lack the relevant administrative microdata. Beyond using these imputed values to directly analyze measures of poverty and inequality in the linked survey data, we also intend to disclose parameter estimates that would allow researchers without access to the linked data to impute corrected values of incomes. Finally, we plan to extend our analysis to intervening years between 1995 and 2016 (including during the Great Recession), more recent years (up to and including the COVID-19 pandemic), and earlier years starting in the 1980s (during which numerous important tax reforms took place).

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Tables and Figures

Table 1. Poverty Rates for Full Population by Income Concept, 1995 & 2016

Data Source	Poverty Rates (%)				% Change from 1995 to 2016		
	1995	2016 CPI-U	2016 PCE	2016 Adjusted CPI-U-RS	CPI-U	PCE	Adjusted CPI-U-RS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
				A. Pre-Tax Money Income			
Survey	13.29	11.42	10.21	8.98	-14.1	-23.2	-32.4
CID	11.27	8.50	7.41	6.24	-24.6	-34.2	-44.6
				B. Post-Tax Money Income			
Survey	12.92	10.24	9.03	7.84	-20.7	-30.1	-39.3
CID	11.06	7.17	6.14	5.24	-35.2	-44.5	-52.6
				C. Post-Tax Income + In-Kind Transfers			
Survey	10.60	7.97	6.91	5.86	-24.8	-34.9	-44.7
CID no admin SNAP	7.78	4.77	3.92	3.28	-38.8	-49.7	-57.9
CID with admin SNAP	--	4.56	3.65	2.90	-41.4	-53.1	-62.7

Source: 1996 CPS ASEC, 2017 CPS ASEC, Various Administrative Records
Notes: This table shows poverty rates in 1995 and 2016 for three income concepts (pre-tax money income, post-tax money income, and post-tax income plus in-kind transfers) calculated using survey data alone or combined survey and administrative data via the CID, along with the percent change from 1995 to 2016. Our sample consists of all individuals in SPM units where at least one member is PIKed and no member is whole imputed, and survey weights are adjusted for non-PIKing and whole imputes using inverse probability weighting. The rates in Columns 1 and 2 are calculated by multiplying the official poverty threshold in each year for a 2-adult/2-child family by the SPM equivalence scale, and the rates in Columns 3 and 4 are calculated using adjusted thresholds based on alternative inflation measures. Column 3 uses the PCE Deflator, while Column 4 scales the annual growth by the percentage change in the CPI-U-RS minus 0.8 percentage points starting from the 1995 baseline (our preferred measure). To obtain poverty rates that incorporate admin SNAP data, we multiply the CID poverty rate prior to bringing in admin SNAP (calculated over the entire nation) by the ratio of the CID poverty rate including admin SNAP to the CID poverty rate excluding admin SNAP (calculated over the states with admin SNAP data).

Table 2. Poverty Rates for Full Population After Step-by-Step Adjustments, 1995 & 2016

Poverty Measure	Poverty Rates (%)				% Change from 1995 to 2016		
	1995	2016 CPI-U	2016 PCE	2016 Adjusted CPI-U-RS	CPI-U	PCE	Adjusted CPI-U-RS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Official Poverty Measure	13.82	12.70	11.56	10.41	-8.1	-16.4	-24.7
Sample, Unit, & Threshold Changes							
Use SPM Sharing Unit	13.27	11.42	10.31	9.18	-13.9	-22.3	-30.9
Use SPM Equivalence Scale	13.11	11.29	10.12	8.90	-13.9	-22.8	-32.1
Remove Whole Imputes & Reweight	13.33	11.35	10.14	8.90	-14.9	-23.9	-33.2
Remove Non-PIKed & Reweight	13.29	11.42	10.21	8.98	-14.1	-23.2	-32.4
Correct Pre-Tax Money Income							
Use DER Earnings	15.22	12.84	11.58	10.14	-15.6	-23.9	-33.4
Use DER & 1040 Earnings	14.64	11.77	10.53	9.06	-19.6	-28.1	-38.1
Combine Admin & Survey Earnings	12.32	10.04	8.86	7.49	-18.5	-28.1	-39.2
Use Admin Asset Income	12.26	9.96	8.80	7.43	-18.8	-28.2	-39.4
Use Admin Retirement Income	12.06	9.35	8.29	7.01	-22.5	-31.3	-41.9
Use Admin OASDI	11.93	8.99	7.96	6.79	-24.6	-33.3	-43.1
Use Admin SSI	11.60	8.81	7.72	6.53	-24.1	-33.4	-43.7
Use Admin AGI	11.27	8.50	7.41	6.24	-24.6	-34.2	-44.6
Account for Taxes and Expenses							
Add Survey Taxes Before Credits	13.58	11.22	9.91	8.50	-17.4	-27.0	-37.4
Use Admin Taxes Before Credits	12.33	9.33	8.06	6.81	-24.3	-34.6	-44.8
Add Survey EITC	11.12	8.04	6.82	5.75	-27.7	-38.6	-48.3
Use Admin EITC	11.06	7.68	6.55	5.45	-30.6	-40.8	-50.7
Add Survey CTC	11.06	7.20	6.16	5.24	-34.9	-44.3	-52.6
Use Admin CTC	11.06	7.17	6.14	5.24	-35.2	-44.5	-52.6
Account for In-Kind Transfers							
Add Survey Housing Assistance	10.46	6.32	5.33	4.50	-39.5	-49.1	-57.0
Add Survey SNAP	9.14	5.29	4.41	3.63	-42.1	-51.8	-60.3
Add Survey WIC	9.02	5.26	4.35	3.59	-41.7	-51.8	-60.1
Add Survey School Lunch	8.69	5.10	4.15	3.45	-41.3	-52.2	-60.3
Add Survey Energy Assistance	8.65	5.05	4.11	3.41	-41.6	-52.5	-60.6
Use Combined Housing Assistance	7.78	4.77	3.92	3.28	-38.8	-49.7	-57.9
Use Admin SNAP	--	4.56	3.65	2.90	-41.4	-53.1	-62.7

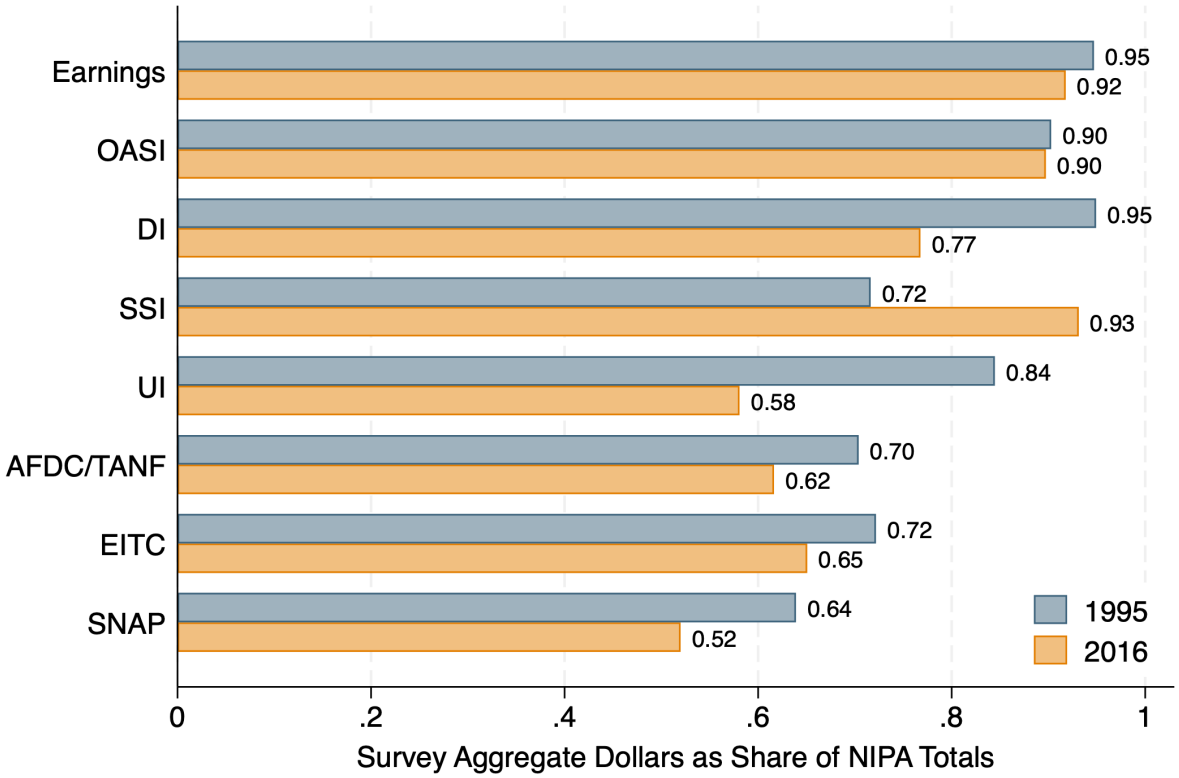
Source: 1996 CPS ASEC, 2017 CPS ASEC, Various Administrative Records
Notes: This table shows poverty rates in 1995 and 2016, along with the percent changes from 1995 to 2016, after step-by-step adjustments starting from the Official Poverty Measure (OPM) that incorporate definitional changes, income concept changes, and measurement corrections. See notes to Table 1 for more details on sample construction and poverty measures.

Table 3. Poverty Rates by Demographic Subgroups (Income Concept: Post-Tax + In-Kind Transfers), 1995 & 2016

Population Subgroup	1995 Poverty Rate (%)		2016 Poverty Rate (%)		% Change from 1995 to 2016	
	Survey (1)	CID (2)	Survey (3)	CID (4)	Survey (5)	CID (6)
All	10.60	7.78	5.86	2.90	-44.7	-62.7
Elderly	9.66	6.40	5.83	1.65	-39.7	-74.2
Single Parents	33.27	25.44	17.10	9.42	-48.6	-63.0
Multiple Parents	8.48	6.16	3.90	1.79	-54.0	-70.9
Single Childless	17.60	14.66	13.80	9.87	-21.6	-32.7
Multiple Childless	4.73	2.97	3.61	1.52	-23.8	-48.7
Hispanic	23.54	16.71	8.01	3.88	-66.0	-76.8
White (non-Hispanic)	6.39	5.06	4.27	2.25	-33.2	-55.5
Black (non-Hispanic)	21.90	14.27	10.08	3.66	-54.0	-74.4
Asian (non-Hispanic)	14.34	11.79	5.82	3.97	-59.4	-66.3
Other (non-Hispanic)	22.42	13.46	15.92	9.98	-29.0	-25.8
Immigrant	19.83	14.42	8.17	4.76	-58.8	-67.0
Non-Immigrant	9.66	7.11	5.49	2.60	-43.2	-63.5
Northeast	9.24	6.03	4.08	2.26	-55.8	-62.6
Midwest	7.56	5.59	4.64	2.37	-38.7	-57.6
South	12.57	9.57	7.30	3.41	-41.9	-64.4
West	11.74	8.69	5.87	2.98	-50.0	-65.7
Age <18	14.32	10.79	6.38	3.15	-55.4	-70.8
Age 18-64	9.21	6.77	5.75	3.14	-37.6	-53.6
Age 65+	9.28	6.20	5.48	1.59	-40.9	-74.4
Urban	10.19	7.23	5.88	2.91	-42.3	-59.8
Rural	12.28	10.06	5.77	2.84	-53.0	-71.7
Less than High School	25.54	18.17	12.96	6.25	-49.3	-65.6
High School	9.92	7.32	7.42	3.40	-25.2	-53.5
Some College	7.03	5.36	5.26	2.84	-25.2	-47.1
BA or More	2.94	2.39	2.87	1.47	-2.2	-38.4
Student	39.62	33.85	20.53	15.49	-48.2	-54.2
Non-Student	10.33	7.54	5.40	2.51	-47.7	-66.7

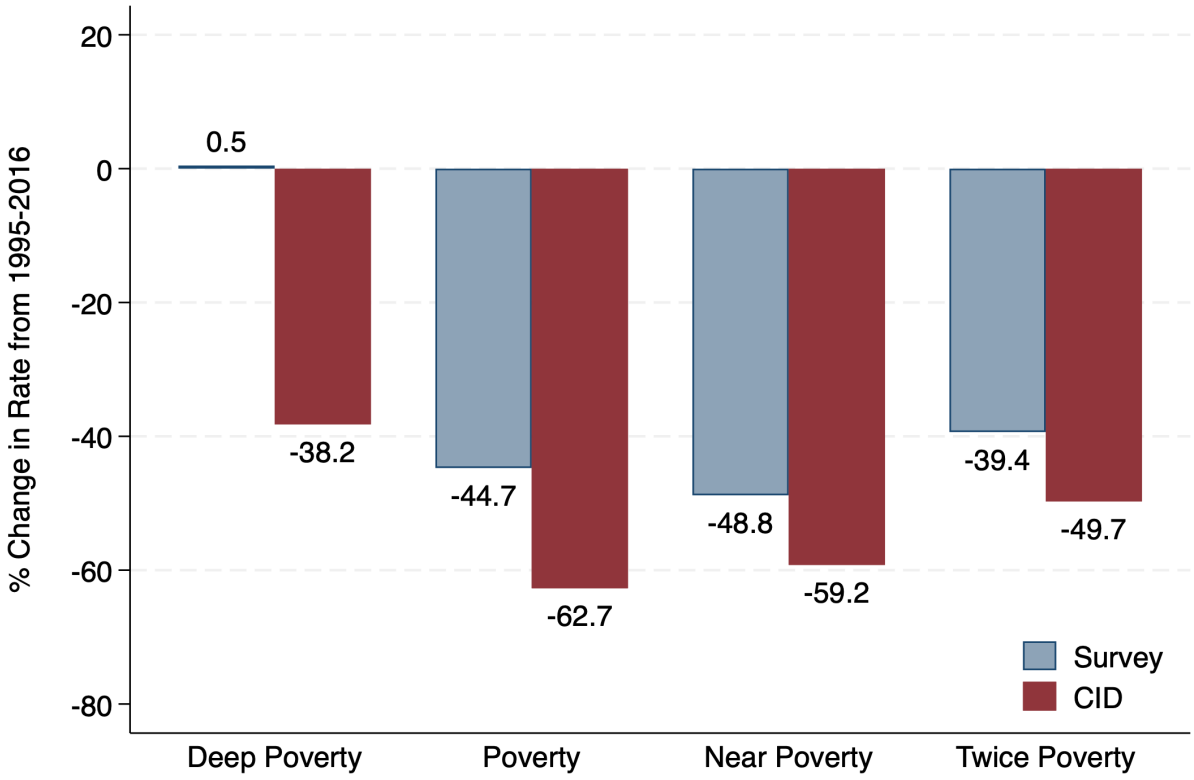
Source: 1996 CPS ASEC, 2017 CPS ASEC, Various Administrative Records
Notes: This table shows poverty rates in 1995 and 2016 for various demographic subgroups along with the percent change from 1995 to 2016, using our fullest income concept (post-tax income plus in-kind transfers) and our preferred inflation measure for adjusting poverty thresholds (scaling the annual growth by the percentage change in the CPI-U-RS minus 0.8 percentage points). See notes to Table 1 for more details on sample construction and poverty measures.

Figure 1. Aggregate Dollar Reporting Rates in CPS, 1995 vs 2016



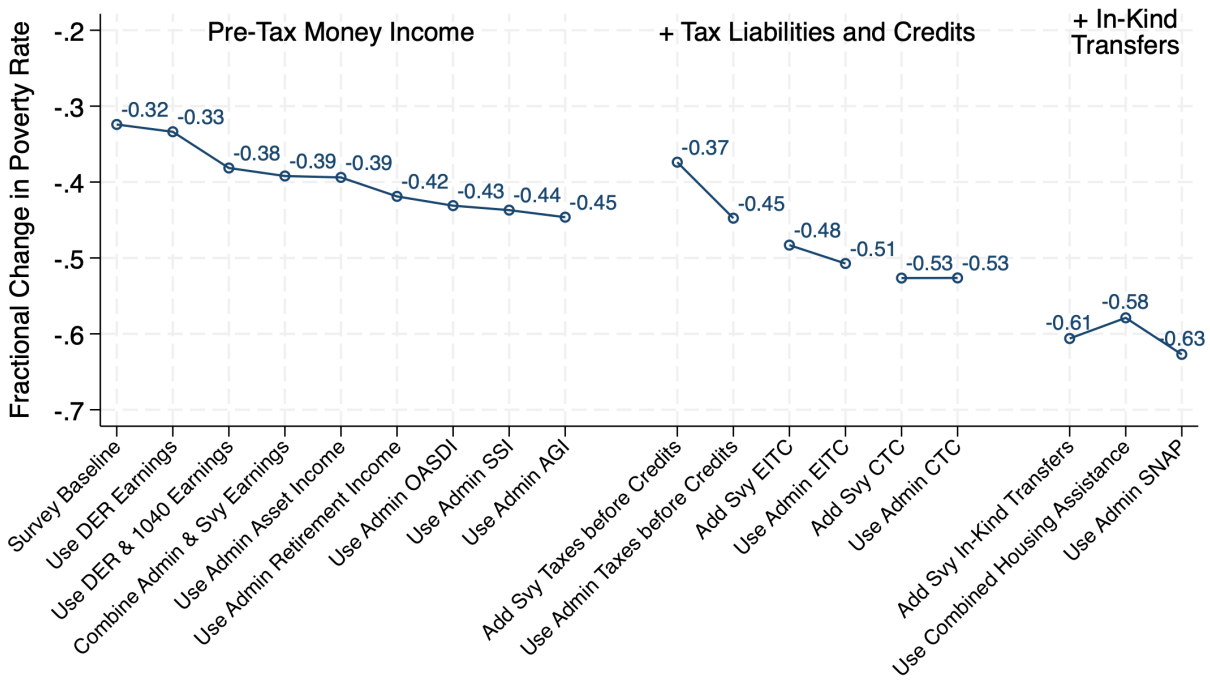
Source: Corinth, Meyer, and Wu (2022)
Notes: This figure shows aggregate survey dollars (reported in the CPS ASEC) for various income sources in 1995 and 2016 as shares of administrative aggregates from the National Income and Product Accounts (NIPA) and program records from the corresponding reference year. The administrative aggregates for earnings and General Assistance are created using the methodology in Rothbaum (2015), while the other income sources are created using the methodology in Meyer, Mok, and Sullivan (2015). Where applicable, we remove income received by the institutionalized, those living overseas, military personnel, and decedents from the administrative aggregates.

Figure 2. Percent Change in Poverty at Different Multiples of Thresholds, 1995 vs 2016



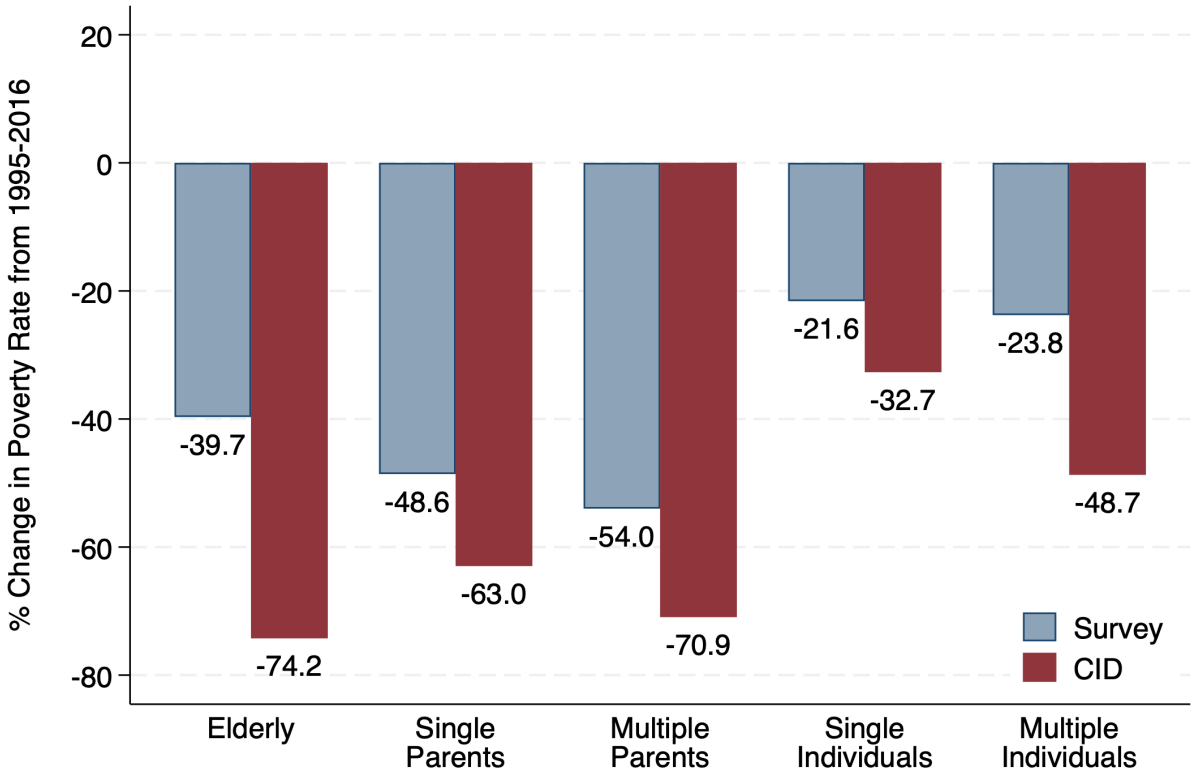
Source: 1996 CPS ASEC, 2017 CPS ASEC, Various Administrative Records
Notes: This figure shows the percent change in deep (0.5x), regular (1x), near (1.5x), and twice (2x) poverty rates between 1995 and 2016, calculated using either survey data alone or combined survey and administrative data via the CID. Here, we focus on our fullest income concept (post-tax income plus in-kind transfers) and our preferred inflation measure for adjusting poverty thresholds (scaling the annual growth by the percentage change in the CPI-U-RS minus 0.8 percentage points). See notes to Table 1 for more details on sample construction and poverty measures.

Figure 3. Role of Specific CID Components in Explaining Change in Poverty



Source: 1996 CPS ASEC, 2017 CPS ASEC, Various Administrative Records
Notes: This table shows the fractional change in the poverty rate between 1995 and 2016, after step-by-step adjustments starting from a survey-only measure that uses the SPM sharing unit, SPM equivalence scale, and relies on a reweighted sample that includes only individuals in PIKed and non-whole-imputed SPM units. Our preferred inflation measure is an adjusted version of the CPI-U-RS. See notes to Table 1 for more details on sample construction and poverty measures.

Figure 4. Percent Change in Poverty by Family Type, 1995 vs 2016



Source: 1996 CPS ASEC, 2017 CPS ASEC, Various Administrative Records
Notes: This figure shows the percent change in poverty rates by family type between 1995 and 2016, calculated using either survey data alone or combined survey and administrative data via the CID. We split individuals into five mutually exclusive and exhaustive family types: elderly, non-elderly single parents, non-elderly multiple parents, non-elderly single individuals, and non-elderly multiple childless individuals. Here, we focus on our fullest income concept (post-tax income plus in-kind transfers) and our preferred inflation measure for adjusting poverty thresholds (scaling the annual growth by the percentage change in the CPI-U-RS minus 0.8 percentage points). See notes to Table 1 for more details on sample construction and poverty measures.

Appendix Tables

Appendix Table A1. Deep, Near, and Twice Poverty Rates by Income Concept, 1995 & 2016

Poverty Measure	1995 Poverty Rate (%)		2016 Poverty Rate (%)		% Change from 1995 to 2016	
	Survey	CID	Survey	CID	Survey	CID
	(1)	(2)	(3)	(4)	(5)	(6)
			A. Deep Poverty (0.5x Poverty Line)			
Pre-Tax Income	4.77	3.57	4.05	1.91	-15.1	-46.7
Post-Tax Income	4.47	3.36	3.79	1.76	-15.2	-47.8
Post-Tax Income + In-Kind Transfers	2.64	1.76	2.65	1.18	0.5	-33.3
			B. Near Poverty (1.5x Poverty Line)			
Pre-Tax Income	23.17	20.57	15.92	12.55	-31.3	-39.0
Post-Tax Income	25.66	22.38	15.01	11.43	-41.5	-48.9
Post-Tax Income + In-Kind Transfers	24.85	19.77	12.72	8.06	-48.8	-59.2
			C. Twice Poverty (2.0x Poverty Line)			
Pre-Tax Income	33.30	30.18	23.40	19.50	-29.7	-35.4
Post-Tax Income	38.71	34.59	24.71	19.52	-36.2	-43.6
Post-Tax Income + In-Kind Transfers	38.41	33.32	23.29	17.17	-39.4	-48.5

Source: 1996 CPS ASEC, 2017 CPS ASEC, Various Administrative Records
Notes: This table shows deep, near, and twice poverty rates in 1995 and 2016 for the full population, along with the percent change from 1995 to 2016, for each of our three main income concepts. Our preferred inflation measure is an adjusted version of the CPI-U-RS. See notes to Table 1 for more details on sample construction and poverty measures.

Appendix Table A2. Deep Poverty Rates After Step-by-Step Adjustments, 1995 & 2016

Poverty Measure	1995 Rate (1)	2016 Rate (2)	% Change from 1995 to 2016 (3)
Official Poverty Measure	5.27	5.13	-2.6
Sample, Unit, & Threshold Changes			
Use SPM Sharing Unit	4.83	4.21	-12.9
Use SPM Equivalence Scale	4.70	4.10	-12.7
Remove Whole Imputes & Reweight	4.80	3.97	-17.2
Remove Non-PIKed & Reweight	4.77	4.05	-15.1
Correct Pre-Tax Money Income			
Use DER Earnings	6.39	4.69	-26.7
Use DER & 1040 Earnings	5.91	3.82	-35.3
Combine Admin & Survey Earnings	4.21	2.85	-32.3
Use Admin Asset Income	4.15	2.77	-33.2
Use Admin Retirement Income	4.11	2.59	-37.1
Use Admin OASDI	4.09	2.38	-41.8
Use Admin SSI	3.76	2.04	-45.8
Use Admin AGI	3.57	1.91	-46.7
Account for Taxes and Expenses			
Add Survey Taxes Before Credits	4.73	3.15	-33.4
Use Admin Taxes Before Credits	3.84	2.03	-47.3
Add Survey EITC	3.36	1.78	-47.1
Use Admin EITC	3.36	1.76	-47.7
Add Survey CTC	3.36	1.74	-48.4
Use Admin CTC	3.36	1.76	-47.8
Account for In-Kind Transfers			
Add Survey Housing Assistance	2.68	1.46	-45.3
Add Survey SNAP	2.00	1.23	-38.4
Add Survey WIC	1.95	--	--
Add Survey School Lunch	1.82	1.18	-35.0
Add Survey Energy Assistance	--	--	--
Use Combined Housing Assistance	1.76	1.18	-33.3
Use Admin SNAP	--	1.09	-38.2

Source: 1996 CPS ASEC, 2017 CPS ASEC, Various Administrative Records
Notes: This table shows deep poverty rates in 1995 and 2016, along with the percent change from 1995 to 2016, after step-by-step adjustments starting from the Official Poverty Measure (OPM) that incorporate definitional changes, income concept changes, and measurement corrections. See notes to Table 1 for more details on sample construction and poverty measures.

Appendix Table A3. Near Poverty Rates After Step-by-Step Adjustments, 1995 & 2016

Poverty Measure	1995 Rate (1)	2016 Rate (2)	% Change from 1995 to 2016 (3)
Official Poverty Measure	23.5	17.29	-26.4
Sample, Unit, & Threshold Changes			
Use SPM Sharing Unit	22.92	15.97	-30.3
Use SPM Equivalence Scale	22.96	15.72	-31.5
Remove Whole Imputes & Reweight	23.15	15.85	-31.5
Remove Non-PIKed & Reweight	23.17	15.93	-31.2
Correct Pre-Tax Money Income			
Use DER Earnings	25.52	17.48	-31.5
Use DER & 1040 Earnings	24.89	16.49	-33.7
Combine Admin & Survey Earnings	22.13	14.57	-34.2
Use Admin Asset Income	21.96	14.47	-34.1
Use Admin Retirement Income	21.46	13.58	-36.7
Use Admin OASDI	21.22	13.00	-38.7
Use Admin SSI	21.03	12.89	-38.7
Use Admin AGI	20.57	12.55	-39.0
Account for Taxes and Expenses			
Add Survey Taxes Before Credits	24.91	16.08	-35.4
Use Admin Taxes Before Credits	23.55	13.89	-41.0
Add Survey EITC	22.63	12.53	-44.6
Use Admin EITC	22.38	12.26	-45.2
Add Survey CTC	22.38	11.51	-48.6
Use Admin CTC	22.38	11.43	-48.9
Account for In-Kind Transfers			
Add Survey Housing Assistance	22.24	10.71	-51.8
Add Survey SNAP	21.78	9.53	-56.2
Add Survey WIC	21.71	9.00	-58.5
Add Survey School Lunch	21.33	9.09	-57.4
Add Survey Energy Assistance	21.30	9.03	-57.6
Use Combined Housing Assistance	19.77	8.54	-56.8
Use Admin SNAP		8.06	-59.2

Source: 1996 CPS ASEC, 2017 CPS ASEC, Various Administrative Records
Notes: This table shows near poverty rates in 1995 and 2016, along with the percent change from 1995 to 2016, after step-by-step adjustments starting from the Official Poverty Measure (OPM) that incorporate definitional changes, income concept changes, and measurement corrections. See notes to Table 1 for more details on sample construction and poverty measures.

Appendix Table A4. Twice Poverty Rates After Step-by-Step Adjustments, 1995 & 2016

Poverty Measure	1995 Rate (1)	2016 Rate (2)	% Change from 1995 to 2016 (3)
Official Poverty Measure	33.60	24.67	-26.6
Sample, Unit, & Threshold Changes			
Use SPM Sharing Unit	32.98	23.24	-29.5
Use SPM Equivalence Scale	33.08	23.12	-30.1
Remove Whole Imputes & Reweight	33.31	23.27	-30.1
Remove Non-PIKed & Reweight	33.30	23.40	-29.7
Correct Pre-Tax Money Income			
Use DER Earnings	35.70	25.16	-29.5
Use DER & 1040 Earnings	35.01	24.22	-30.8
Combine Admin & Survey Earnings	32.38	22.17	-31.5
Use Admin Asset Income	32.03	22.09	-31.0
Use Admin Retirement Income	31.14	20.73	-33.4
Use Admin OASDI	30.86	19.95	-35.4
Use Admin SSI	30.76	19.92	-35.2
Use Admin AGI	30.18	19.50	-35.4
Account for Taxes and Expenses			
Add Survey Taxes Before Credits	36.49	24.36	-33.2
Use Admin Taxes Before Credits	35.21	21.88	-37.9
Add Survey EITC	34.79	20.88	-40.0
Use Admin EITC	34.59	20.55	-40.6
Add Survey CTC	34.59	19.58	-43.4
Use Admin CTC	34.59	19.52	-43.6
Account for In-Kind Transfers			
Add Survey Housing Assistance	34.57	19.16	-44.6
Add Survey SNAP	34.46	18.46	-46.4
Add Survey WIC	34.43	18.34	-46.7
Add Survey School Lunch	34.27	17.90	-47.8
Add Survey Energy Assistance	--	17.86	--
Use Combined Housing Assistance	33.32	17.17	-48.5
Use Admin SNAP	--	16.75	-49.7

Source: 1996 CPS ASEC, 2017 CPS ASEC, Various Administrative Records
Notes: This table shows twice poverty rates in 1995 and 2016, along with the percent change from 1995 to 2016, after step-by-step adjustments starting from the Official Poverty Measure (OPM) that incorporate definitional changes, income concept changes, and measurement corrections. See notes to Table 1 for more details on sample construction and poverty measures.

Appendix Table A5. Poverty Rates for Elderly Families After Step-by-Step Adjustments, 1995 & 2016

Poverty Measure	1995 Rate (1)	2016 Rate (2)	% Change from 1995 to 2016 (3)
Survey Measure	11.04	6.98	-36.8
Correct Pre-Tax Money Income			
Use DER Earnings	11.28	6.75	-40.2
Use DER & 1040 Earnings	11.13	6.60	-40.7
Combine Admin & Survey Earnings	10.42	6.19	-40.6
Use Admin Asset Income	10.15	5.93	-41.5
Use Admin Retirement Income	9.39	4.37	-53.5
Use Admin OASDI	8.82	4.11	-53.4
Use Admin SSI	8.39	3.86	-54.0
Use Admin AGI	8.16	3.67	-55.0
Account for Taxes and Expenses			
Add Survey Taxes Before Credits	9.02	4.40	-51.2
Use Admin Taxes Before Credits	8.40	3.70	-55.9
Add Survey EITC	--	3.70	--
Use Admin EITC	8.26	3.68	-55.5
Add Survey CTC	8.26	3.68	-55.5
Use Admin CTC	8.26	3.68	-55.5
Account for In-Kind Transfers			
Add Survey Housing Assistance	7.73	2.75	-64.4
Add Survey SNAP	7.13	2.08	-70.8
Add Survey WIC	7.13	2.08	-70.8
Add Survey School Lunch	--	2.08	--
Add Survey Energy Assistance	--	--	--
Use Combined Housing Assistance	6.40	1.87	-70.7
Use Admin SNAP	--	1.65	-74.2

Source: 1996 CPS ASEC, 2017 CPS ASEC, Various Administrative Records
Notes: This table shows poverty rates for those in elderly families in 1995 and 2016, along with the percent change from 1995 to 2016, after step-by-step adjustments starting from a survey-only measure that uses the SPM sharing unit, SPM equivalence scale, and relies on a reweighted sample that includes only individuals in PIKed and non-whole-imputed SPM units. See notes to Table 1 for more details on sample construction and poverty measures.

Appendix Table A6. Poverty Rates for Single Parent Families After Step-by-Step Adjustments, 1995 & 2016

Poverty Measure	1995 Rate (1)	2016 Rate (2)	% Change from 1995 to 2016 (3)
Survey Measure	47.18	34.31	-27.3
Correct Pre-Tax Money Income			
Use DER Earnings	49.64	35.44	-28.6
Use DER & 1040 Earnings	47.50	32.67	-31.2
Combine Admin & Survey Earnings	45.57	30.57	-32.9
Use Admin Asset Income	45.58	30.57	-32.9
Use Admin Retirement Income	45.53	30.47	-33.1
Use Admin OASDI	45.52	30.10	-33.9
Use Admin SSI	45.04	28.90	-35.8
Use Admin AGI	44.74	28.23	-36.9
Account for Taxes and Expenses			
Add Survey Taxes Before Credits	47.54	32.07	-32.5
Use Admin Taxes Before Credits	46.98	30.39	-35.3
Add Survey EITC	41.78	23.58	-43.6
Use Admin EITC	42.38	22.40	-47.1
Add Survey CTC	42.38	21.01	-50.4
Use Admin CTC	42.38	20.83	-50.8
Account for In-Kind Transfers			
Add Survey Housing Assistance	39.50	16.71	-57.7
Add Survey SNAP	33.46	12.82	-61.7
Add Survey WIC	32.74	12.44	-62.0
Add Survey School Lunch	30.48	11.43	-62.5
Add Survey Energy Assistance	30.21	11.21	-62.9
Use Combined Housing Assistance	25.44	10.92	-57.1
Use Admin SNAP	--	9.42	-63.0

Source: 1996 CPS ASEC, 2017 CPS ASEC, Various Administrative Records
Notes: This table shows poverty rates for those in (non-elderly) single parent families in 1995 and 2016, along with the percent change from 1995 to 2016, after step-by-step adjustments starting from a survey-only measure that uses the SPM sharing unit, SPM equivalence scale, and relies on a reweighted sample that includes only individuals in PIKed and non-whole-imputed SPM units. See notes to Table 1 for more details on sample construction and poverty measures.

Appendix Table A7. Poverty Rates for Multiple Parent Families After Step-by-Step Adjustments, 1995 & 2016

Poverty Measure	1995 Rate (1)	2016 Rate (2)	% Change from 1995 to 2016 (3)
Survey Measure	11.43	7.85	-31.3
Correct Pre-Tax Money Income			
Use DER Earnings	13.52	9.56	-29.3
Use DER & 1040 Earnings	12.97	7.92	-39.0
Combine Admin & Survey Earnings	10.27	5.95	-42.0
Use Admin Asset Income	10.23	5.97	-41.6
Use Admin Retirement Income	10.15	5.90	-41.9
Use Admin OASDI	10.10	5.81	-42.5
Use Admin SSI	9.80	5.49	-43.9
Use Admin AGI	9.39	5.14	-45.2
Account for Taxes and Expenses			
Add Survey Taxes Before Credits	12.03	7.89	-34.4
Use Admin Taxes Before Credits	10.76	5.89	-45.3
Add Survey EITC	9.18	4.34	-52.8
Use Admin EITC	9.00	3.89	-56.8
Add Survey CTC	9.00	3.57	-60.3
Use Admin CTC	9.00	3.61	-59.9
Account for In-Kind Transfers			
Add Survey Housing Assistance	8.53	3.31	-61.2
Add Survey SNAP	7.11	2.48	-65.1
Add Survey WIC	6.97	2.45	-64.9
Add Survey School Lunch	6.65	2.25	-66.2
Add Survey Energy Assistance	--	2.21	--
Use Combined Housing Assistance	6.16	2.15	-65.1
Use Admin SNAP	--	1.79	-70.9

Source: 1996 CPS ASEC, 2017 CPS ASEC, Various Administrative Records
Notes: This table shows poverty rates for those in (non-elderly) multiple parent families in 1995 and 2016, along with the percent change from 1995 to 2016, after step-by-step adjustments starting from a survey-only measure that uses the SPM sharing unit, SPM equivalence scale, and relies on a reweighted sample that includes only individuals in PIKed and non-whole-imputed SPM units. See notes to Table 1 for more details on sample construction and poverty measures.

Appendix Table A8. Poverty Rates for Single Individuals After Step-by-Step Adjustments, 1995 & 2016

Poverty Measure	1995 Rate (1)	2016 Rate (2)	% Change from 1995 to 2016 (3)
Survey Measure	17.89	15.64	-12.6
Correct Pre-Tax Money Income			
Use DER Earnings	22.00	18.24	-17.1
Use DER & 1040 Earnings	21.24	17.35	-18.3
Combine Admin & Survey Earnings	17.05	14.47	-15.1
Use Admin Asset Income	17.08	14.46	-15.3
Use Admin Retirement Income	17.11	14.18	-17.1
Use Admin OASDI	16.93	13.62	-19.6
Use Admin SSI	16.81	13.91	-17.3
Use Admin AGI	16.47	13.61	-17.4
Account for Taxes and Expenses			
Add Survey Taxes Before Credits	19.98	17.03	-14.8
Use Admin Taxes Before Credits	17.96	14.35	-20.1
Add Survey EITC	--	14.15	--
Use Admin EITC	17.59	14.00	-20.4
Add Survey CTC	17.59	14.00	-20.4
Use Admin CTC	17.59	13.97	-20.6
Account for In-Kind Transfers			
Add Survey Housing Assistance	17.02	12.42	-27.0
Add Survey SNAP	16.30	10.98	-32.6
Add Survey WIC	16.30	10.98	-32.6
Add Survey School Lunch	16.30	10.98	-32.6
Add Survey Energy Assistance	--	--	--
Use Combined Housing Assistance	14.66	10.44	-28.8
Use Admin SNAP	--	9.87	-32.7

Source: 1996 CPS ASEC, 2017 CPS ASEC, Various Administrative Records
Notes: This table shows poverty rates for (non-elderly) single individuals in 1995 and 2016, along with the percent change from 1995 to 2016, after step-by-step adjustments starting from a survey-only measure that uses the SPM sharing unit, SPM equivalence scale, and relies on a reweighted sample that includes only individuals in PIKed and non-whole-imputed SPM units. See notes to Table 1 for more details on sample construction and poverty measures.

Appendix Table A9. Poverty Rates for Multiple Childless Individuals After Step-by-Step Adjustments, 1995 & 2016

Poverty Measure	1995 Rate (1)	2016 Rate (2)	% Change from 1995 to 2016 (3)
Survey Measure	4.78	4.08	-14.6
Correct Pre-Tax Money Income			
Use DER Earnings	6.42	4.76	-25.8
Use DER & 1040 Earnings	6.11	4.26	-30.3
Combine Admin & Survey Earnings	4.19	3.16	-24.7
Use Admin Asset Income	4.13	3.08	-25.6
Use Admin Retirement Income	3.90	2.75	-29.4
Use Admin OASDI	3.89	2.51	-35.5
Use Admin SSI	3.55	2.35	-33.8
Use Admin AGI	3.28	2.17	-33.8
Account for Taxes and Expenses			
Add Survey Taxes Before Credits	5.14	3.92	-23.7
Use Admin Taxes Before Credits	3.64	2.42	-33.4
Add Survey EITC	3.51	--	--
Use Admin EITC	3.47	2.27	-34.5
Add Survey CTC	3.47	2.27	-34.5
Use Admin CTC	3.47	2.27	-34.5
Account for In-Kind Transfers			
Add Survey Housing Assistance	3.31	2.00	-39.8
Add Survey SNAP	3.17	1.79	-43.4
Add Survey WIC	3.17	1.79	-43.4
Add Survey School Lunch	--	--	--
Add Survey Energy Assistance	--	--	--
Use Combined Housing Assistance	2.97	1.72	-42.2
Use Admin SNAP	--	1.52	-48.7

Source: 1996 CPS ASEC, 2017 CPS ASEC, Various Administrative Records
Notes: This table shows poverty rates for (non-elderly) multiple childless individuals in 1995 and 2016, along with the percent change from 1995 to 2016, after step-by-step adjustments starting from a survey-only measure that uses the SPM sharing unit, SPM equivalence scale, and relies on a reweighted sample that includes only individuals in PIKed and non-whole-imputed SPM units. See notes to Table 1 for more details on sample construction and poverty measures.

Appendix Table A10. Poverty Rates by Demographic Subgroups (Income Concept: Post-Tax + In-Kind Transfers, no Admin SNAP), 1995 & 2016

Population Subgroup	1995 Poverty Rate (%)		2016 Poverty Rate (%)		% Change from 1995 to 2016	
	Survey	CID	Survey	CID	Survey	CID
	(1)	(2)	(3)	(4)	(5)	(6)
All	10.60	7.78	5.86	3.28	-44.7	-57.9
Elderly	9.66	6.40	5.83	1.87	-39.7	-70.7
Single Parents	33.27	25.44	17.10	10.92	-48.6	-57.1
Multiple Parents	8.48	6.16	3.90	2.15	-54.0	-65.1
Single Childless	17.60	14.66	13.80	10.44	-21.6	-28.8
Multiple Childless	4.73	2.97	3.61	1.72	-23.8	-42.2
Hispanic	23.54	16.71	8.01	4.63	-66.0	-72.3
White (non-Hispanic)	6.39	5.06	4.27	2.42	-33.2	-52.2
Black (non-Hispanic)	21.90	14.27	10.08	4.69	-54.0	-67.1
Asian (non-Hispanic)	14.34	11.79	5.82	4.08	-59.4	-65.4
Other (non-Hispanic)	22.42	13.46	15.92	10.80	-29.0	-19.8
Immigrant	19.83	14.42	8.17	5.21	-58.8	-63.9
Non-Immigrant	9.66	7.11	5.49	2.97	-43.2	-58.2
Northeast	9.24	6.03	4.08	2.52	-55.8	-58.2
Midwest	7.56	5.59	4.64	2.59	-38.7	-53.8
South	12.57	9.57	7.30	3.98	-41.9	-58.4
West	11.74	8.69	5.87	3.30	-50.0	-62.0
Age <18	14.32	10.79	6.38	3.69	-55.4	-65.8
Age 18-64	9.21	6.77	5.75	3.47	-37.6	-48.7
Age 65+	9.28	6.20	5.48	1.88	-40.9	-69.8
Urban	10.19	7.23	5.88	3.25	-42.3	-55.0
Rural	12.28	10.06	5.77	3.37	-53.0	-66.5
Less than High School	25.54	18.17	12.96	7.16	-49.3	-60.6
High School	9.92	7.32	7.42	4.05	-25.2	-44.6
Some College	7.03	5.36	5.26	3.15	-25.2	-41.2
BA or More	2.94	2.39	2.87	1.54	-2.2	-35.8
Student	39.62	33.85	20.53	15.98	-48.2	-52.8
Non-Student	10.33	7.54	5.40	2.88	-47.7	-61.8

Source: 1996 CPS ASEC, 2017 CPS ASEC, Various Administrative Records

Notes: This table shows poverty rates in 1995 and 2016 for various demographic subgroups along with the percent change from 1995 to 2016, using our fullest income concept (post-tax income plus in-kind transfers) and our preferred inflation measure for adjusting poverty thresholds (scaling the annual growth by the percentage change in the CPI-U-RS minus 0.8 percentage points). Unlike in Table 3, we do not include admin SNAP in our CID measure (i.e., we continue to rely on survey SNAP). See notes to Table 1 for more details on sample construction and poverty measures.

Appendix Table A11. Poverty Rates by Demographic Subgroups (Income Concept: Pre-Tax Money Income), 1995 & 2016

Population Subgroup	1995 Poverty Rate (%)		2016 Poverty Rate (%)		% Change from 1995 to 2016	
	Survey (1)	CID (2)	Survey (3)	CID (4)	Survey (5)	CID (6)
All	13.29	11.27	8.98	6.24	-32.4	-44.6
Elderly	11.04	8.16	6.98	3.67	-36.8	-55.0
Single Parents	47.18	44.74	34.31	28.23	-27.3	-36.9
Multiple Parents	11.43	9.39	7.85	5.14	-31.3	-45.2
Single Childless	17.89	16.47	15.64	13.61	-12.6	-17.4
Multiple Childless	4.78	3.28	4.08	2.17	-14.6	-33.8
Hispanic	29.95	24.33	14.59	9.49	-51.3	-61.0
White (non-Hispanic)	7.68	6.47	5.69	4.03	-25.9	-37.7
Black (non-Hispanic)	29.48	25.66	17.19	12.31	-41.7	-52.0
Asian (non-Hispanic)	15.89	15.18	7.80	5.31	-50.9	-65.0
Other (non-Hispanic)	30.11	25.61	19.82	18.29	-34.2	-28.6
Immigrant	22.83	18.63	12.16	8.39	-46.7	-55.0
Non-Immigrant	12.32	10.52	8.48	5.90	-31.2	-43.9
Northeast	12.03	9.66	7.08	5.90	-41.2	-38.9
Midwest	9.63	8.21	7.36	5.36	-23.6	-34.7
South	15.66	13.54	10.61	7.22	-32.2	-46.7
West	14.35	12.16	9.15	5.72	-36.2	-53.0
Age <18	19.81	17.60	13.06	9.51	-34.1	-46.0
Age 18-64	10.92	9.10	8.03	5.63	-26.4	-38.2
Age 65+	10.69	8.10	6.64	3.77	-37.9	-53.4
Urban	12.83	10.69	9.24	6.46	-28.0	-39.6
Rural	15.15	13.63	7.95	5.36	-47.5	-60.7
Less than High School	31.72	27.07	22.91	16.12	-27.8	-40.5
High School	12.69	10.74	11.91	8.30	-6.1	-22.7
Some College	9.09	7.73	7.73	5.63	-15.0	-27.2
BA or More	3.29	2.65	3.31	1.99	0.4	-25.0
Student	39.40	36.78	24.18	19.72	-38.6	-46.4
Non-Student	13.05	11.03	8.51	5.82	-34.8	-47.2

Source: 1996 CPS ASEC, 2017 CPS ASEC, Various Administrative Records
Notes: This table shows poverty rates in 1995 and 2016 for various demographic subgroups along with the percent change from 1995 to 2016, using a pre-tax money income measure and our preferred inflation measure for adjusting poverty thresholds (scaling the annual growth by the percentage change in the CPI-U-RS minus 0.8 percentage points). See notes to Table 1 for more details on sample construction and poverty measures.

Appendix Table A12. Poverty Rates by Demographic Subgroups (Income Concept: Post-Tax Money Income), 1995 & 2016

Population Subgroup	1995 Poverty Rate (%)		2016 Poverty Rate (%)		% Change from 1995 to 2016	
	Survey (1)	CID (2)	Survey (3)	CID (4)	Survey (5)	CID (6)
All	12.92	11.06	7.84	5.24	-39.3	-52.6
Elderly	11.10	8.26	6.97	3.68	-37.2	-55.5
Single Parents	43.34	42.38	27.52	20.83	-36.5	-50.8
Multiple Parents	10.88	9.00	5.81	3.61	-46.6	-59.9
Single Childless	19.05	17.59	16.22	13.97	-14.9	-20.6
Multiple Childless	5.11	3.47	4.26	2.27	-16.7	-34.5
Hispanic	28.95	23.39	11.47	7.24	-60.4	-69.0
White (non-Hispanic)	7.48	6.50	5.22	3.57	-30.3	-45.0
Black (non-Hispanic)	28.49	24.76	15.52	10.17	-45.5	-58.9
Asian (non-Hispanic)	16.34	15.27	6.91	5.03	-57.7	-67.1
Other (non-Hispanic)	29.17	23.40	18.89	15.17	-35.2	-35.2
Immigrant	22.44	18.54	10.19	7.18	-54.6	-61.3
Non-Immigrant	11.96	10.30	7.47	4.93	-37.5	-52.1
Northeast	11.92	9.56	6.28	5.02	-47.3	-47.5
Midwest	9.45	8.35	6.33	4.53	-33.0	-45.7
South	15.11	13.18	9.37	6.08	-38.0	-53.9
West	13.86	11.73	7.83	4.69	-43.5	-60.0
Age <18	18.69	16.83	9.92	6.76	-46.9	-59.8
Age 18-64	10.81	9.08	7.36	5.05	-31.9	-44.4
Age 65+	10.73	8.20	6.65	3.72	-38.1	-54.7
Urban	12.44	10.49	8.02	5.38	-35.5	-48.7
Rural	14.88	13.37	7.12	4.67	-52.1	-65.1
Less than High School	31.08	26.30	19.47	13.27	-37.4	-49.5
High School	12.30	10.46	10.05	6.77	-18.3	-35.3
Some College	8.71	7.67	6.96	4.75	-20.1	-38.1
BA or More	3.22	2.85	3.15	1.89	-2.1	-33.9
Student	42.11	39.30	23.28	18.43	-44.7	-53.1
Non-Student	12.66	10.80	7.37	4.83	-41.8	-55.3

Source: 1996 CPS ASEC, 2017 CPS ASEC, Various Administrative Records
Notes: This table shows poverty rates in 1995 and 2016 for various demographic subgroups along with the percent change from 1995 to 2016, using a post-tax money income measure and our preferred inflation measure for adjusting poverty thresholds (scaling the annual growth by the percentage change in the CPI-U-RS minus 0.8 percentage points). See notes to Table 1 for more details on sample construction and poverty measures.