

Measuring Poverty in the United States Using the Comprehensive Income Dataset

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[DRAFT – Do not cite or circulate]

AEA Annual Meetings
San Diego, CA
January 3, 2020

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Overview

- We calculate new estimates of poverty that use linked survey and administrative data to:
 - Correct measurement error in pre-tax cash income
 - Incorporate tax liabilities and credits, in-kind transfers, and other non-cash income sources
 - Broaden the income concept in a fairly accurate way
- Focus on reference year 2010 (2011 CPS ASEC)
 - Use 2008 SIPP Panel (Waves 5-8) to incorporate asset flows and compare poverty and material well-being

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Linking Survey and Administrative Data

- Link survey and administrative data by PIK
 - PIK rates over 99% in most admin records
 - PIK rates at family level over 90% in both surveys (slightly higher in SIPP)
- SIPP: Keep families with at least one PIKed member
- CPS: Keep families with at least one PIKed member and no whole imputes
- Adjust for incomplete PIKing (and whole imputes) using IPW at family level
 - OPM calculated using adjusted weights matches actual OPM
- Approach minimizes selection (uses largest sample)
- Caveat: Miss admin dollars for un-PIKed individuals in PIKed families

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Outcomes of Interest

- Income distribution at the bottom
 - Pre-tax cash (survey, CID) – OPM
 - Post-tax cash (survey, CID)
 - Post-tax cash + in-kind transfers (survey, CID)
- Material well-being (hardships, appliance ownership, home quality issues)

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Outline of Steps

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2. Replace survey reports of pre-tax cash income with admin values

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3. Next, subtract tax liabilities (federal/state income, payroll) and add tax credits (namely EITC & CTC) to base income
 - Tax liabilities and credits simulated using TAXSIM with inputs from admin tax records and Numident; we need to calculate EITC and payroll taxes by hand outside TAXSIM because of its shortcomings
 - Our calculations line up closely with IRS totals, much more so than CPS imputed taxes

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4. Add survey values of non-medical in-kind transfers (SNAP, housing assistance, WIC, school lunch) and replace with admin data
 - Proportionately adjust for admin SNAP at the end (since we have admin SNAP data for only 15 states)
 - Eventually hope to do direct substitution when we get more states, but for now we have to extrapolate
 - 15 states are representative of the country on a number of survey characteristics

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Combining Multiple Earnings Sources

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Understanding Multiple Sources of Admin Earnings Data

- Multiple admin earnings sources:
 - Wage/salary amounts from DER, W-2s, and 1040s
 - Self-employment amounts from DER
- Wages in DER are from W-2s, but...
 - IRS W-2s include ITINs
- 1040s include some earnings not in W-2s or DER
 - E.g., tips, scholarships, disability pensions for age <65
- Differences in PIKing across earnings sources

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Empirical Evidence on Conflicting Admin Earnings

Unit	Comparison	Magnitudes	Characteristics
Individuals	W-2 > DER	0.67% of all persons 15+ 1.25% of poor persons 15+	More than half are ITINs known to us (when filing 1040); Among remainder (among OPM poor), 51% have no DER earnings and 68% have more W-2 employers
Individuals	DER > W-2	0.76% of all persons 15+ 0.78% of poor persons 15+	80% have more DER employers and 77% of those linking to 1040s have DER wages (not W-2 wages) matching Box 7 of 1040
Tax Units	1040 > W-2	6.00% of all tax units 13.18% of poor tax units	Among non-ITINs, 40% have characteristics consistent with conceptual diffs. between 1040/W-2 wages or misclassification of SE earnings as wages (vs. 30% of all tax units)
Tax Units	W-2 > 1040	Similar share for all tax units to above	Vast majority have difference between W-2s and 1040s equal to wages on a single W-2 (suggesting that filers did not include all of their W-2s on tax returns)

Source: 2011 CPS ASEC, SSA's DER, IRS W-2 and 1040 Forms
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Combining Earnings Sources

- Higher of wages in DER, W-2, and 1040 (in most cases), plus self-employment income from DER
 - 1040 only for individuals without 1099-R and survey-reported scholarship income (to avoid double counting)
- Use survey earnings only when 1) not imputed, 2) many employment characteristics not imputed, and 3) at least one of the following cases holds:
 - Admin earnings are missing
 - Number of survey employers exceeds number of admin employers
 - Respondent reports being self-employed in survey
 - Respondent reports working for a small employer in survey

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Frequency of Using Survey Earnings

- Only bring in survey earnings for 27% of all individuals (47% of OPM poor individuals) who have survey earnings > admin earnings
- Among those for whom we use survey earnings:
 - 27% have missing admin earnings
 - 33% have more survey employers than admin employers
 - 40% report being self-employed
 - 73% report working for small employer
- In total, 9% of combined earnings come exclusively from survey
 - IRS estimate of the tax gap is larger (between 15-18%)
 - Missed earnings larger at bottom according to Christian (1994), who uses 1988 audits

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Missed Earnings

- Informal earnings (especially self-employment) missed by both survey and administrative data
 - E.g., Hurst, Li, & Pugsley (2014); Abraham & Amaya (2019)
- Many of those who are unlikely to report earnings appear in Census surveys
 - For example, we find that a majority of those with ITINs link to CPS
- Admin self-employment information is systematically understated and incomplete
 - DER reports earnings for Medicare tax purposes = .9235 * (SE Earnings - Health Insurance Deduction)
 - Still missing 1099-MISC, 1099-K, and Schedule SE for ITINs

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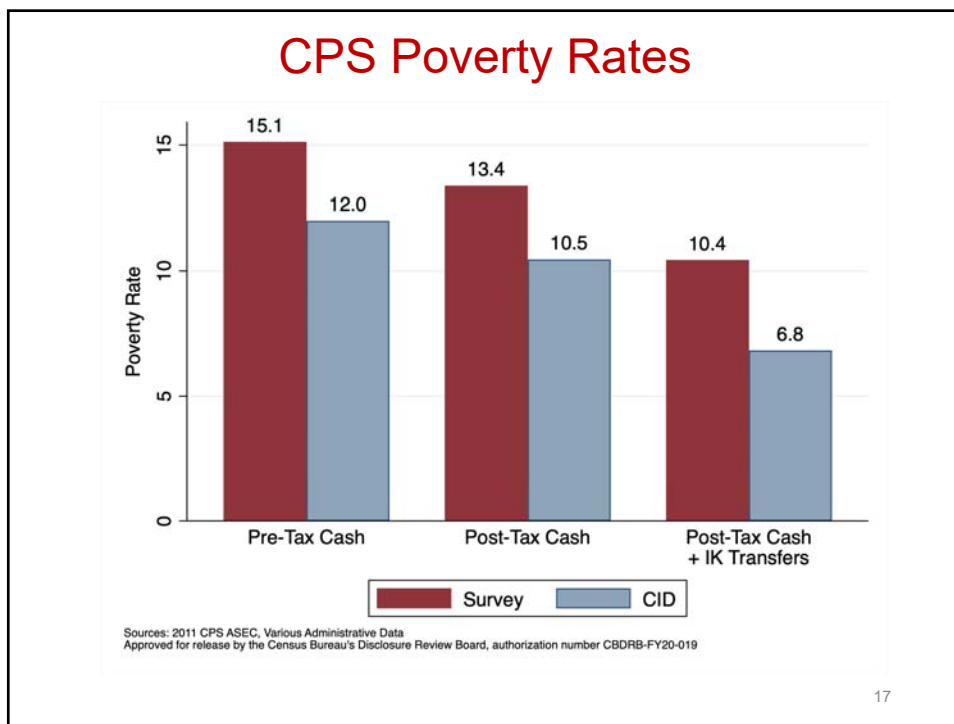
Summary

- Three types of evidence that support our treatment of earnings
 - Conceptual differences between measures
 - Confirmation of quantitative importance of conceptual differences and sources of potential errors
 - Validation with material well-being measures (SIPP)

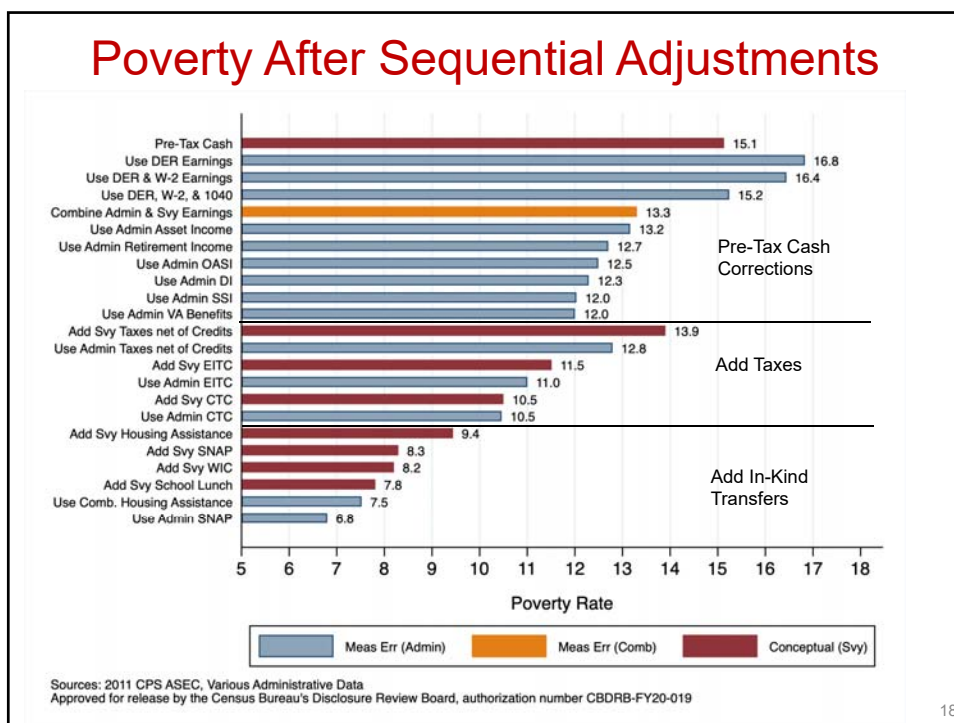
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Poverty Rates (CPS)

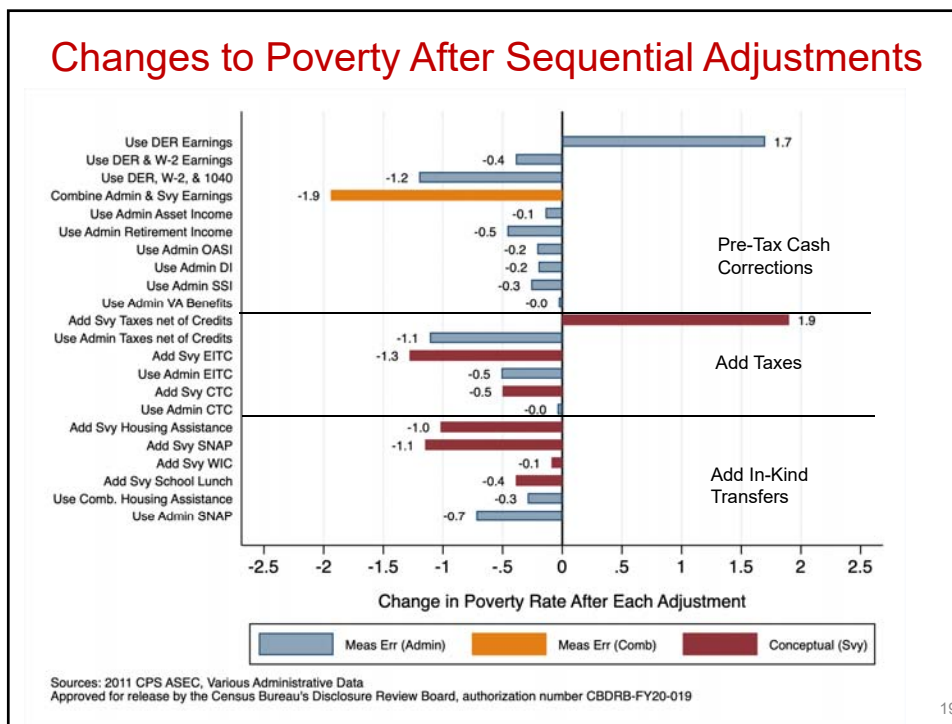
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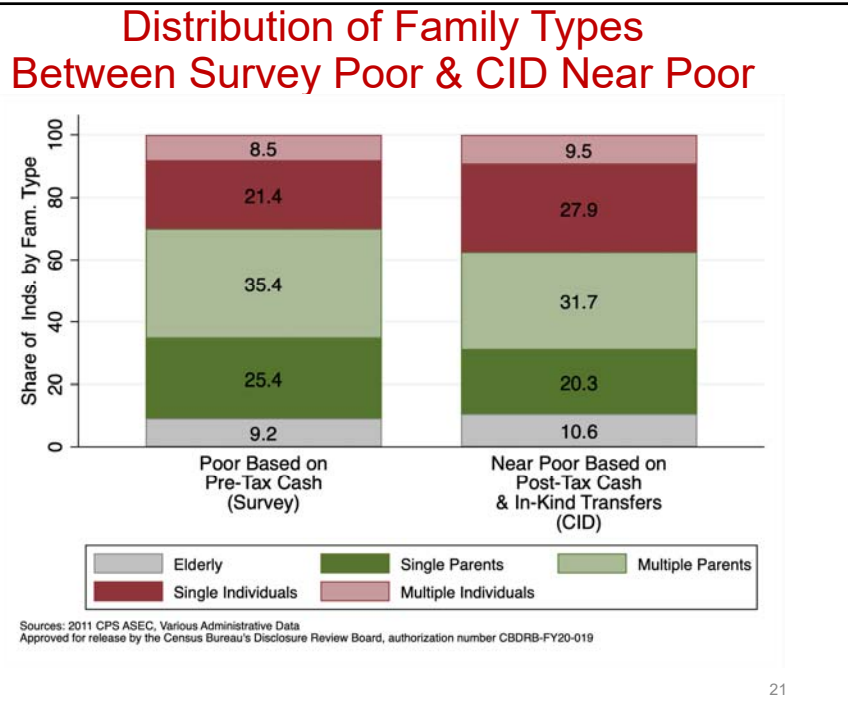


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Comparing OPM Poor and CID Near Poor

- The OPM (15.1%) is slightly below the CID near poverty rate after accounting for taxes and in-kind transfers (15.7%)
- Since near poverty thresholds are 50% higher than official poverty thresholds, this suggests that thresholds would have to increase by slightly under 50% to keep poverty rates after all adjustments at their official levels

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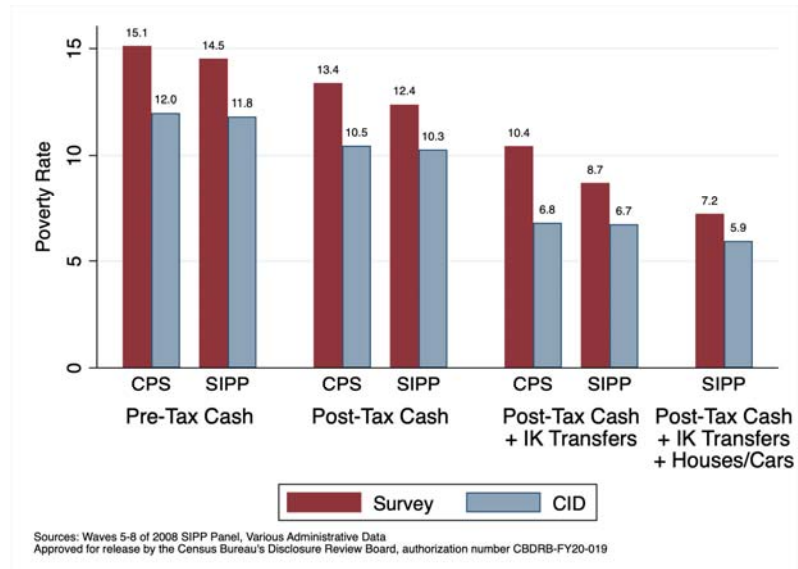


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Poverty in the SIPP

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Poverty Rates (CPS vs. SIPP)



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Summary of SIPP Results

- CID rates after taxes and in-kind transfers remarkably similar to CPS
- Differences between survey and CID measures less pronounced because of better reporting in SIPP

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Summary of Results for Material Hardships

- Non-monotonic relationship between income poverty and material hardships
- For given income concept and poverty level, hardships under CID measure always higher than hardships under survey measure
- Incorporating asset flows leads to a poor population with more hardships; incorporating taxes and in-kind transfers leads to a poor population with fewer hardships

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Summary and Research Questions

- Using linked data (CID), we find:
 - 61% fewer individuals are below official thresholds
 - Demographic shift in composition of poor – 26% lower share of families with children; 79% higher share single individuals
- Research questions raised by our results:
 - Why do hardships fall with some conceptual improvements to income?
 - Why do so many single individuals have low income?
 - What is the best way to use CPS data?
- Can we improve our identification of who is poor?
 - Large share of student heads
 - Assets often substantial
 - Permanent income from longitudinal tax records provide another check
 - Consumer Expenditure Survey CID income compared to consumption

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Remaining Changes

- Add version that includes private health insurance and medical in-kind transfers
- Examine more years (before and after 2010)
- Use 1040s to calculate self-employment income; bring in more comprehensive tax data
- SPM subtractions from income and thresholds, geographic adjustments

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Thank you!

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EXTRA SLIDES

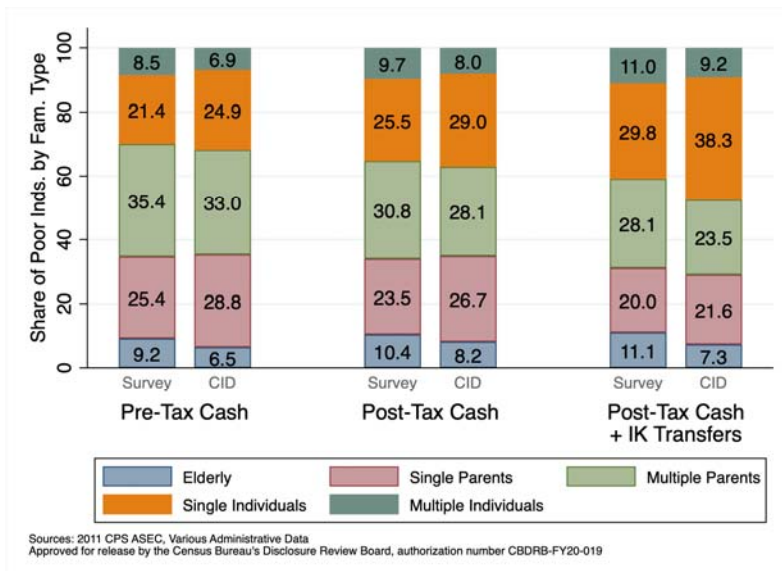
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Administrative Data

Income Source	Administrative Source	Income Unit	Income Frequency	States Covered
Earnings	DER (SSA), W-2 (IRS), Form 1040 (IRS)	Individual & Tax Unit	Annual	All
Asset Income	Form 1040 (IRS)	Tax Unit	Annual	All
Retirement Income	Form 1099-R (IRS)	Individual	Annual	All
Social Security	PHUS & MBR (SSA)	Individual	Monthly	All
SSI	SSR (SSA)	Individual	Monthly	All
Veterans' Benefits	US VETS (VA)	Individual	Monthly	All
Taxes (simulated)	Form 1040 (IRS)	Tax Unit	Annual	All
SNAP	State Agencies	Household	Monthly	15 States
Housing Assistance	PIC & TRACS (HUD)	Household	Monthly	All
TANF	HHS	Family	Monthly	30 States

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Distribution of Family Types Among Poor



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Selected Demographics

- Compared to OPM poor, those in poverty after conceptual and data improvements have family heads that are more likely to be:
 - Male
 - Unmarried
 - White
 - Rural
 - Full- or part-time students
 - Non-immigrant
- ...and are less likely live in families where at least someone:
 - Has a work-limiting disability
 - Is unemployed

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Characteristics of Individuals with W-2 > DER Wages

Characteristics	(1)	(2)	(3)	(4)
	All Persons 15+		OPM Poor Persons 15+	
	Share of Individuals	Share of Dollar Diff.	Share of Individuals	Share of Dollar Diff.
ITIN 1040 Filer	48.12%	51.08%	58.42%	63.92%
Among Non-ITINs...				
No DER Wages	24.92%	21.56%	50.82%	46.51%
W-2 Employers > DER Employers	38.46%	33.74%	68.03%	81.46%
W-2 Emp. > DER Emp. or Amended W-2	39.33%	33.87%	68.03%	81.46%
Among Non-ITINs that Filed 1040...				
DER Wages = 1040 Box 7	66.46%		62.57%	
Share of Individuals Aged 15+	0.67%		1.25%	
Data: CPS ASEC 2011 Linked to SSA DER and IRS W-2 Forms (Reference Year 2010)				
Notes: Sample consists of individuals aged 15+ in the 2011 CPS ASEC linked from the administrative SSA DER and IRS W-2 Form, dropping non-PIKed and whole imputed individuals in the CPS and adjusting survey weights using inverse probability weighting. DER and W-2 wages correspond to Box 1 (wages, tips, other compensation) of the W-2 summed across all W-2 forms received by an individual for that tax year.				
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Characteristics of Individuals with DER > W-2 Wages

Characteristics	(1)	(2)	(3)	(4)
	All Persons 15+		OPM Poor Persons 15+	
	Share of Individuals	Share of Dollar Diff.	Share of Individuals	Share of Dollar Diff.
ITIN 1040 Filer	0.00%	0.00%	0.00%	0.00%
Among Non-ITINs...				
No W-2 Wages	38.08%	69.37%	31.27%	58.79%
DER Employers > W-2 Employers	80.22%	96.42%	82.89%	95.01%
DER Emp. > W-2 Emp. or Amended W-2	80.66%	96.61%	82.89%	95.01%
Among Non-ITINs that Filed 1040...				
DER Wages = 1040 Box 7	76.82%		62.33%	
Share of Individuals Aged 15+	0.76%		0.78%	
Data: CPS ASEC 2011 Linked to SSA DER and IRS W-2 Forms (Reference Year 2010)				
Notes: Sample consists of individuals aged 15+ in the 2011 CPS ASEC linked from the administrative SSA DER and IRS W-2 Form, dropping non-PIKed and whole imputed individuals in the CPS and adjusting survey weights using inverse probability weighting. DER and W-2 wages correspond to Box 1 (wages, tips, other compensation) of the W-2 summed across all W-2 forms received by an individual for that tax year.				
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Characteristics of Tax Units with 1040 Wages > W-2 Wages

Characteristics	(1) All Tax Units		(3) OPM Poor Tax Units	
	Share of 1040 > W-2 Tax Units	Share of All Tax Units	Share of 1040 > W-2 Tax Units	Share of All Tax Units
From Administrative/Survey Data				
Presence of 1099-R, ≤ age 64, disabled	2.20%	1.39%	0.49%	1.07%
Presence of 1099-MISC & No Sched. C	7.51%	5.11%	6.91%	4.34%
Excess Deferred Compensation	1.73%	1.19%	0.13%	0.06%
From Survey Data Only				
Full- or Part-Time Student	10.01%	6.51%	13.75%	9.45%
Child Care Expenses in Household	9.69%	6.98%	6.82%	6.77%
Adopted Child in Household	1.28%	1.21%	0.85%	1.19%
Household Employee	2.56%	1.82%	3.37%	3.54%
Work in Heavily Tipped Industry	13.22%	10.26%	17.50%	16.42%
Any of the Admin Reasons	11.02%	7.48%	7.39%	5.35%
Any of the Admin or Survey Reasons	39.96%	29.67%	40.42%	35.77%
Share of All Tax Units with 1040 > W-2	6.00%		13.18%	

Data: CPS ASEC 2011 Linked to IRS 1040 and W-2 Forms (Reference Year 2010)

Notes: This table shows the share of tax units with 1040 wages above W-2 wages (after rounding up W-2 wages by \$5) explained by a number of potential reasons that we can check in the IRS or survey data. Estimates are calculated over all tax units in the 2011 CPS ASEC linked from the administrative IRS 1040 extract, dropping non-PIKed and whole imputed individuals in the CPS and adjusting survey weights using inverse probability weighting.

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Shares of Individuals for Whom We Use Survey Earnings

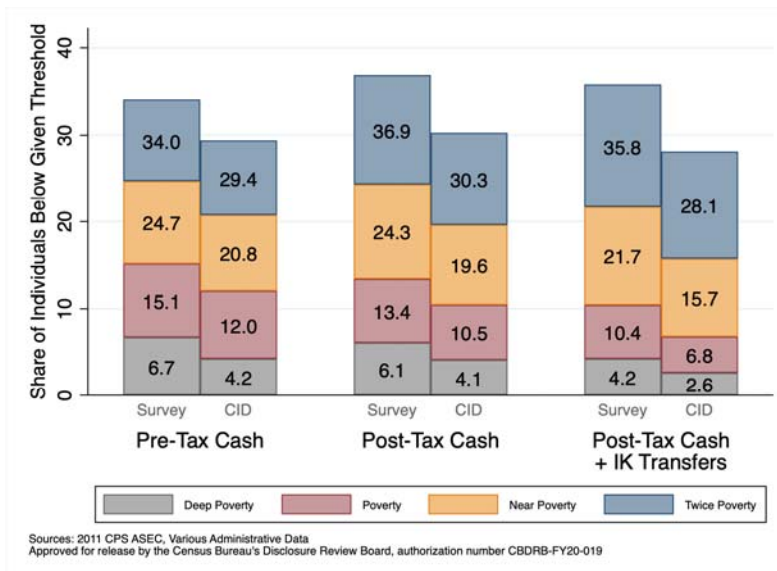
Reason	(1)	(2)
	All Persons Aged 15+	OPM Poor Persons Aged 15+
Missing Admin Earnings	2.51%	3.35%
More Survey Employers than Admin Employers	3.09%	3.49%
Report Being Self-Employed in Survey	3.71%	1.48%
Report Working for Small Employer in Survey	6.75%	4.04%
Any of the Above Reasons	9.24%	6.44%
Share with Any Survey Earnings > Admin Earnings	34.67%	13.63%

Data: CPS ASEC 2011 Linked to SSA DER, IRS 1040, and IRS W-2 Forms (Reference Year 2010)

Notes: Sample consists of individuals aged 15+ in the 2011 CPS ASEC, dropping non-PIKed and whole imputed individuals in the CPS and adjusting survey weights using inverse probability weighting. Shares are all conditional on having survey earnings not imputed (except for "missing admin earnings" category) and having a host of other employment characteristics (hours/weeks worked, industry, occupation, and number of employers) not imputed.

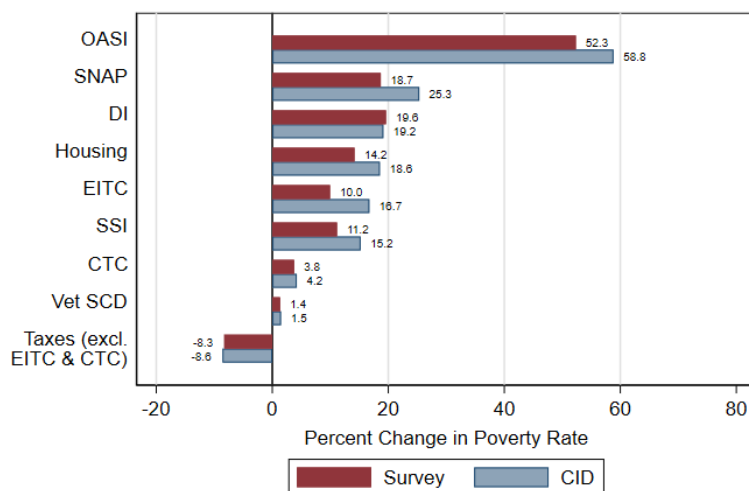
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Poverty Rates at Other Thresholds (CPS)



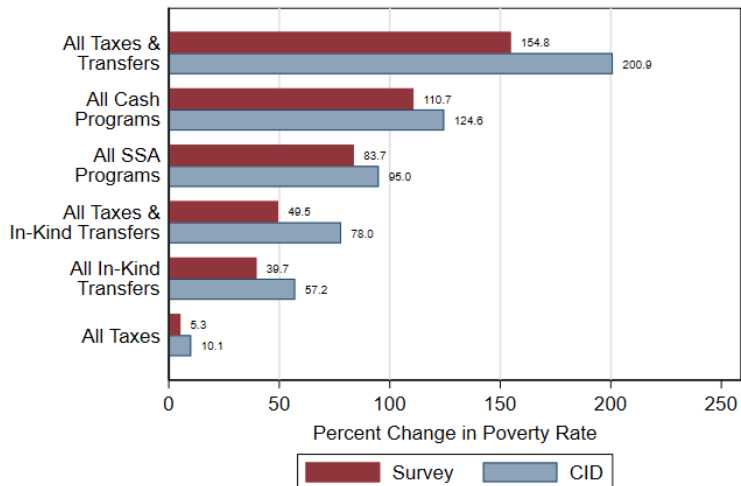
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What if We Didn't Have a Given Program?



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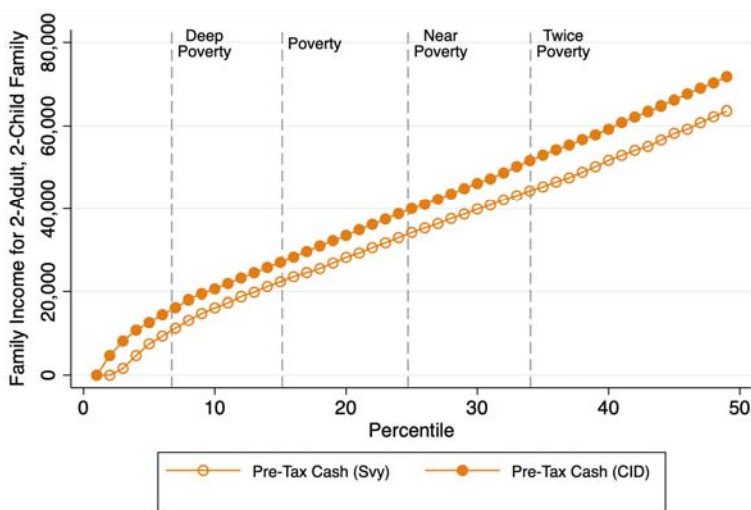
What if We Didn't Have Combinations of Programs?



Sources: 2011 CPS ASEC, Various Administrative Data
 Approved for release by the Census Bureau's Disclosure Review Board, authorization number CBDRB-FY20-019
 Geography: 15 States with Administrative SNAP Data

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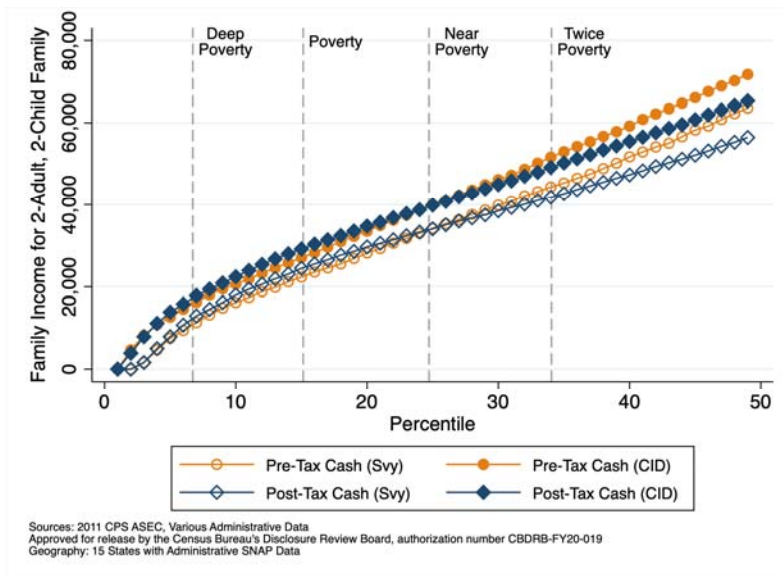
Pre-Tax Cash (CPS)



Sources: 2011 CPS ASEC, Various Administrative Data
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 Geography: 15 States with Administrative SNAP Data

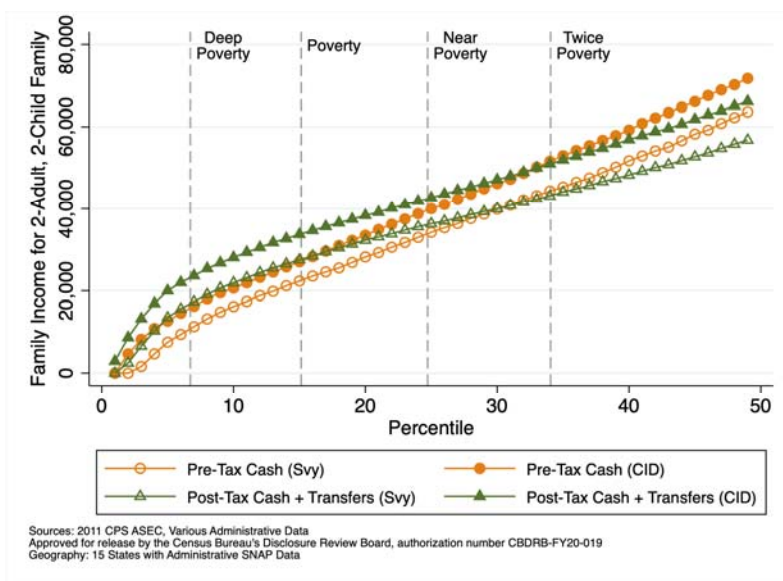
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Pre-Tax Cash vs. Post-Tax Cash (CPS)



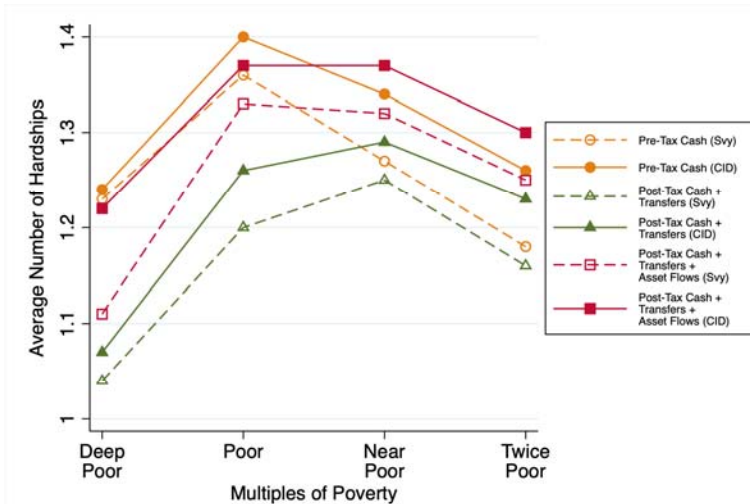
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Pre-Tax Cash vs. Post-Tax/Transfer (CPS)



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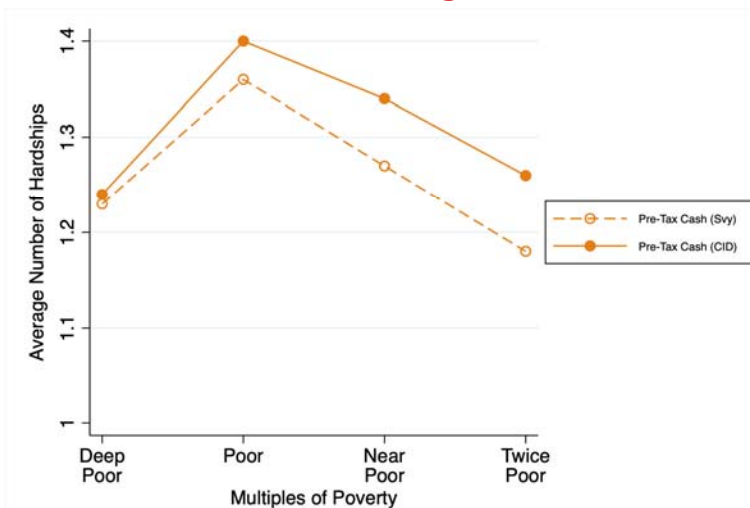
Material Hardships: Pre-Tax Cash vs. Post-Tax/Transfer/Asset



Sources: Waves 5-8 of 2008 SIPP Panel, Various Administrative Data
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 Geography: 15 States with Administrative SNAP Data

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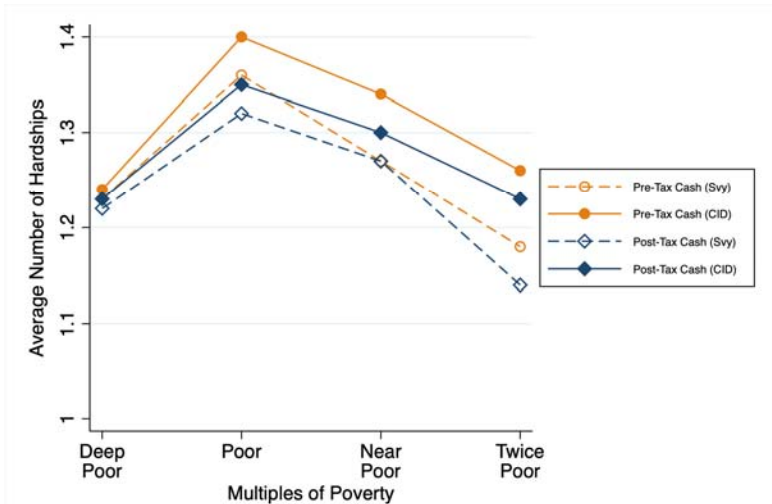
Material Hardships: Pre-Tax Cash



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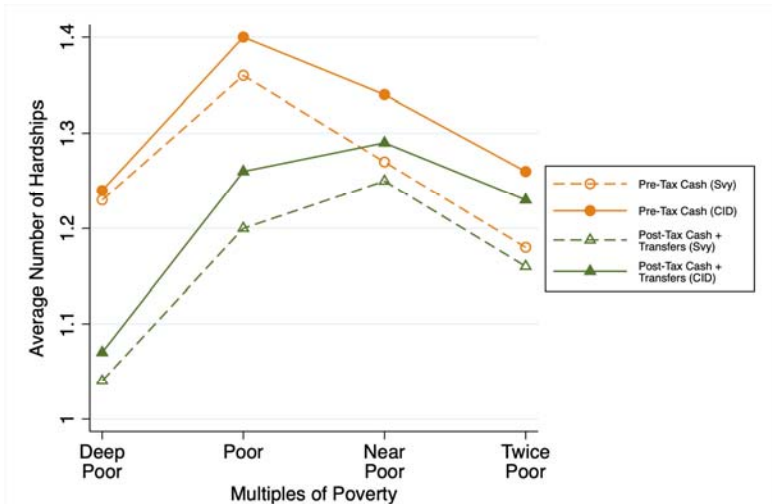
Material Hardships: Pre-Tax Cash vs. Post-Tax Cash



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Material Hardships: Pre-Tax Cash vs. Post-Tax/Transfer



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