The Receipt and Distributional Effects of Taxes and Transfers Using the Comprehensive Income Dataset

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Disclaimer: Any conclusions expressed herein are those of the author(s) and do not necessarily represent the views of the U.S. Census Bureau or Internal Revenue Service. All results were approved for release by the Census Bureau's Disclosure Review Board, authorization number CBDRB-FY20-ERD002-014 .

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Overview

- Using a groundbreaking set of linked survey and administrative data, we provide the first accurate picture of distribution of transfer and tax credit receipt in the U.S.
- Three broad sets of results:
  - Aggregate and individual comparisons of IRS tax liabilities and credits reported on tax returns with estimates simulated using survey information only or a limited set of IRS tax records
  - Estimates of the redistribution of the U.S. tax and transfer system
  - Estimates of the poverty reduction of tax credits and government transfers
- Sixth project to come out of the Comprehensive Income Dataset (CID)

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Which Taxes and Transfers?

- Taxes:
  - Federal income taxes
  - State income taxes
  - Payroll taxes – specifically, employee portion of Social Security and Medicare (FICA and SECA) taxes
  - Pay special attention to key tax credits: EITC and Child Tax Credit (unlike Piketty, Saez, & Zucman (PSZ), we want to include refundable tax credits in taxes)
- Pre-tax cash transfers
  - Social Security (OASI & DI), SSI, Unemployment Insurance, Veterans' Benefits, TANF, Workers' Compensation
- Non-medical in-kind transfers
  - SNAP, Housing assistance, WIC, School Lunch
- Later: Medical in-kind transfers (not implemented yet)
  - Medicare and Medicaid

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Survey Data

- Focus on reference year 2010
- 2011 Current Population Survey Annual Social and Economic Supplement (CPS)
  - Official source of income and poverty statistics in U.S.
  - Interviewed 75,000 households in Feb-Apr 2011 about annual incomes in previous calendar year

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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	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
Unemp. Insurance	Form 1099-G (IRS)	Individual	Annual	All

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Two Types of Tax Data: Limited and Extensive

	Limited	Extensive
Authority to use data	6103(j): for Census survey improvement	6103(n): for administration of taxes
Form 1040	Amounts for AGI, wages/salaries, interest, dividends, rental income, total money income; filing status; indicators for filing various schedules; indicators for EITC earned income and number of qualifying children; etc.	All fields for limited PLUS every line item on 1040 (including taxes paid and tax credits received)
Form W-2	Total taxable wages and tips, FICA wages, Medicare wages, and deferred compensation	All fields for limited PLUS amounts on taxes withheld
Form 1099-R	Gross retirement distributions	Most lines
Other information returns	None	Most lines for forms 1099-R, 1099-G, 1099-MISC, Schedule K-1 (among others)
Schedules	None	Most lines on most schedules (A, C, D, E, F, and SE)

Linking Survey and Administrative Data

- Link survey and administrative data by Protected Identification Key (PIK)
- Keep families with at least one PIKed member and no whole imputes
- Adjust for incomplete PIKing (and whole imputes) using IPW at family level
- Approach minimizes selection (uses largest sample)
- Caveat: Miss admin dollars for un-PIKed individuals in PIKed families

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Overview of Estimating Taxes

- Unit of analysis is family or unrelated individual
- Taxes and credits estimated at tax unit level, where tax unit structure determined by linked return or constructed from survey family information when no return available
- Tax liabilities and credits summed across tax units in family
- Estimate taxes and credits for year accrued (not year refund received)
- Various ways of estimating taxes:
  - Use CPS imputations (from CPS tax calculator)
  - Estimate taxes using survey inputs only and NBER's TAXSIM calculator
  - Estimate taxes using inputs from limited IRS tax data and TAXSIM
  - Estimate taxes using extensive IRS tax data and TAXSIM for those without linked returns

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Advantages of What We Do: Sharing Unit

- We use the family as the unit of analysis, which is more natural for distributional analyses than using a household or tax unit
  - Family members share income and plan expenditures in a way that unrelated roommates generally do not
  - Multiple tax units within a family may also share resources
- PSZ and Auten & Splinter (2019) use tax units, and CBO (2018) uses households

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Advantages of What We Do: Population Coverage

- By linking micro-level tax records to CPS, we can identify who are non-filers
- Other studies impute non-filers:
  - PSZ (2019) impute non-filers in CPS as those with sufficiently low taxable incomes – likely to be biased because survey incomes are heavily misreported, especially at very bottom
  - CBO (2018) imputes non-filers as those in CPS who do not statistically match to IRS SOI sample – but match done conditional on survey incomes, which are commonly misreported at the bottom

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Advantages of What We Do: Corrections for Earnings Underreporting

- We combine survey and admin earnings to account for underreported earnings in tax records
  - Do this only for cases when survey earnings are not imputed, job characteristics are not imputed, and either 1) entire job is missing in tax records, 2) survey respondent reports being self-employed, or 3) survey respondent reports working for small firm
  - Assumptions are likely to be more plausible than those in other studies – namely, PSZ (2018) or AS (2019)
- PSZ (2018) allocate underreported earnings proportionally to reported earnings (matching NIPA totals)
- AS (2019) use IRS audits to allocate underreported earnings (also matching NIPA totals)

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Advantages of What We Do: Accurate Values of Taxes and Transfers

- We can directly attach tax liabilities/credits (pulled directly from IRS tax returns) and transfers (pulled from admin program data) to families in CPS, allowing for accurate and more granular distributional analyses
- Previous studies handle transfers in following ways:
  - PSZ (2019) and CBO (2018): calculate means-tested transfers by starting with CPS self-reports and adjusting upwards to match admin totals (but this method is likely to be biased distributionally)
  - AS (2019): bring in means-tested transfer amounts from NIPA, which they allocate to bottom half of the income distribution; without more information, they cannot further parse out bottom 50%

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Advantages of What We Do: Base Income Choice

- We use market income (before taxes/transfers) as base income
  - Allows for analysis of full tax and transfer system relative to world with no taxes or transfers
- PSZ (2019) include Social Security (OASDI) and UI benefits in their pre-tax national income base
  - Doing so makes base income "…conceptually similar to what the IRS attempts to tax, as pensions, Social Security, and unemployment benefits are largely taxable" (p. 565)
- CBO (2018) also includes social insurance benefits in their base income
  - "In CBO's estimation, when analyzing the distributional effects of [Social Security and Medicare], it is more appropriate to use lifetime measures of income earned, payroll taxes paid, and benefits received." (p. 6)
  - Therefore focus on the effects of federal taxes and means-tested transfers using annual income data

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Comparisons of Tax Estimates (Aggregate & Individual) from Different Calculators

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Table 1: Aggregate Income and Tax Components Using Various Tax Calculators, 2010 Tax Year, CPS Data

		1040 Universe	CPS ASEC Linked to Administrative Data			
	Benchmarks from IRS SOI or Other Sources	Extensive Tax Data Calculation	CPS Tax Imputation	CPS Data & TAXSIM Imputation	Limited Tax Data Imputation	Extensive Tax Data Calculation
	(1)	(2)	(3)	(4)	(5)	(6)
Federal income tax liability	844,600	825,300	807,600	858,700	855,500	853,600
State income tax liability	243,400		216,800	235,500	240,700	231,600
Payroll tax liability	435,800		461,100	470,200	450,100	430,100
Adjusted Gross Income	8,089,000	7,892,000	7,326,000	7,394,000	8,102,000	8,234,000
Taxable income	5,502,000	5,367,000	5,238,000	5,421,000	5,327,000	5,555,000
Federal income tax before credits	1,065,000	1,041,000	917,100	979,100	1,017,000	1,060,000
Earned income tax credit	59,560	59,550	40,350	34,060	59,030	59,280
Child tax credit	56,260	54,610	45,860	44,460	52,040	54,290
Sample size		138,900,000		170,000		

Sources: IRS SOI line items; 2011 Current Population Survey (CPS) Annual Social and Economic Supplement (ASEC); IRS 1040, W-2, 1099-R extracts for tax year 2010; IRS extensive 2010 tax data; TAXSIM.

Payroll tax liability benchmark comes from SSA. State income tax liability benchmark comes from Census Bureau Survey of State Governments. All results were approved for release by the Census Bureau , authorization number CBDRB-FY20-ERD002-014.

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Absolute Deviations of Family Level Tax Imputations from Benchmark

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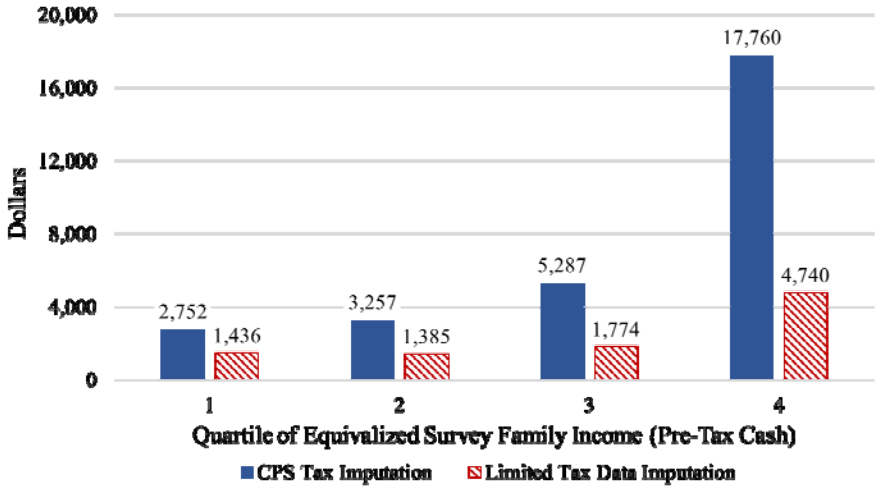
Figure 1a: Mean Absolute Difference in Federal Income Tax Between Tax Imputations and Extensive Tax Data Calculation



Sources: IRS SOI line items: 2011 Current Population Survey (CPS) Annual Social and Economic Supplement (ASEC); IRS 1040, W-2, 1099-R extracts for tax year 2010; IRS extensive 2010 tax data: TAXSIM.
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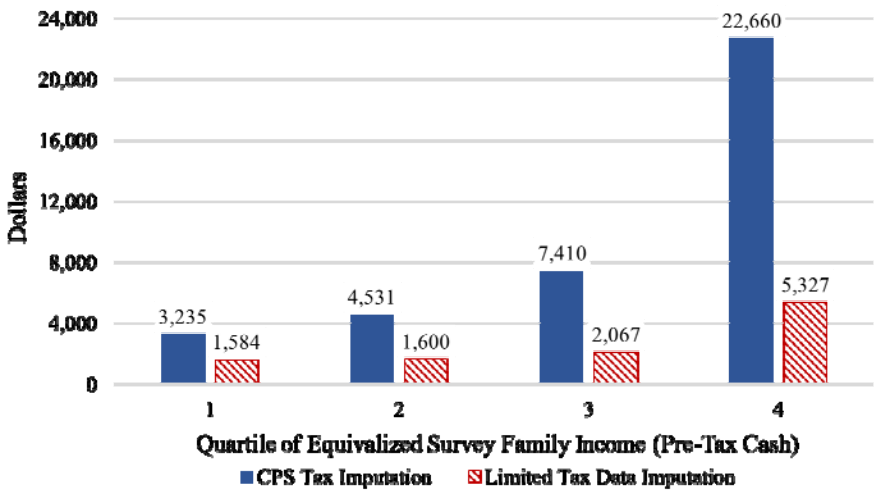
Figure 1b: Mean Absolute Difference in Total Taxes Between Tax Imputations and Extensive Tax Data Calculation



Sources: IRS SOI line items: 2011 Current Population Survey (CPS) Annual Social and Economic Supplement (ASEC); IRS 1040, W-2, 1099-R extracts for tax year 2010; IRS extensive 2010 tax data: TAXSIM.
All results were approved for release by the Census Bureau, authorization number CBDRB-FY20-ERD002-014.

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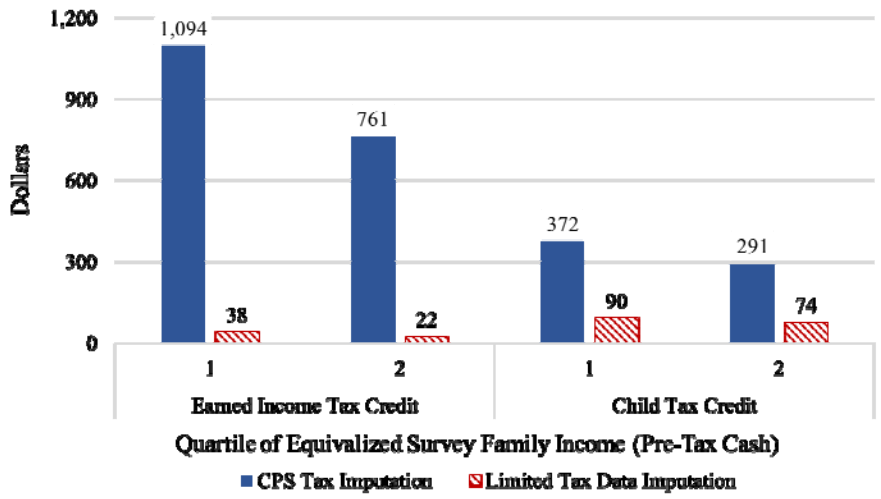
Figure 1c: Mean Absolute Difference in EITC & CTC Between Tax Imputations and Extensive Tax Data Calculation



Sources: IRS SOI file items; 2011 Current Population Survey (CPS) Annual Social and Economic Supplement (ASEC); IRS 1040, W-2, 1099-R extracts for tax year 2010; IRS extensive 2010 tax data; TAXSIM.
All results were approved for release by the Census Bureau, authorization number CBDRB-FY20-SEHSD002-014.

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Estimates of the Redistributive Value of Taxes and Transfers

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Taxes and Transfers by Decile

- Use market income as base income (without any taxes or transfers, reported results not equivalized but have done and will substitute)
- For each decile of base income, we calculate total federal/state income and payroll taxes and pieces as share of base income
  - Federal income tax before and after credits, state income tax, payroll tax, EITC, and CTC
  - Note that this is ratio of means and not mean of ratios
- Next, we subtract cash transfers from above taxes and calculate net tax difference as share of base income
  - OASDI, SSI, Unemployment Insurance, Veterans' benefits and survey values of WC and PA
- Finally, further subtract non-medical in-kind transfers and calculate difference as share of base income (at last stage we do additive adjustment for 15 SNAP states)
  - SNAP, Housing assistance, and survey values of WIC, School lunch
- Do this analysis in 3 ways:
  - Survey base income, survey taxes and benefits
  - Survey base income, CID taxes and benefits
  - CID base income, CID taxes and benefits

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First, Overall CID v. Survey Differences

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Table 2: Mean Survey and CID Amounts of Income and Tax Components

	Survey Amount (1)	CID Amount (2)	(2) as a share of (1) (3)
Market income	66,970	77,880	1.16
Federal income tax liability before credits	7,961	9,273	1.16
Federal income tax credits	1,298	2,396	1.85
Payroll tax liability	4,337	4,063	0.94
State income tax liability	1,960	2,090	1.07
Cash transfers	5,275	6,495	1.23
In-kind transfers	896	1,213	1.35

Sources: IRS SOI line items; 2011 Current Population Survey (CPS) Annual Social and Economic Supplement (ASEC); IRS 1040, W-2, 1099-R extracts for tax year 2010; IRS extensive 2010 tax data; TAXSIM.
Cash transfers encompass Social Security, SSI, Unemployment Insurance, veterans' disability compensation, workers' compensation, and public assistance. (Non-medical) in-kind transfers encompass SNAP, housing assistance, WIC, and school lunch. Worker's compensation, public assistance, WIC, and school lunch are survey values. All results were approved for release by the Census Bureau , authorization number CBDRB-FY20-ERD002-014.

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Progressivity of Taxes Using only Survey Information

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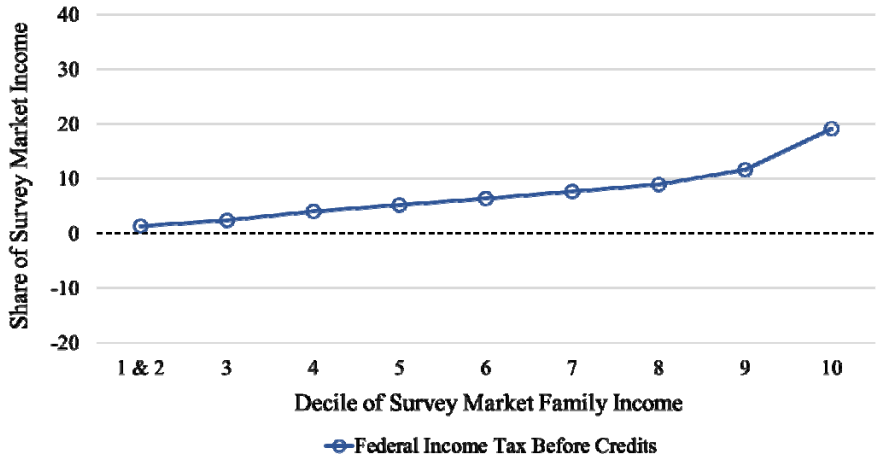
Figure 2a: Survey Taxes as Share of Survey Market Income (by Decile)



Sources: IRS SOI line items; 2011 Current Population Survey (CPS) Annual Social and Economic Supplement (ASEC); IRS 1040, W-2, 1099-R extracts for tax year 2010; IRS extensive 2010 tax data: TAXSIM.
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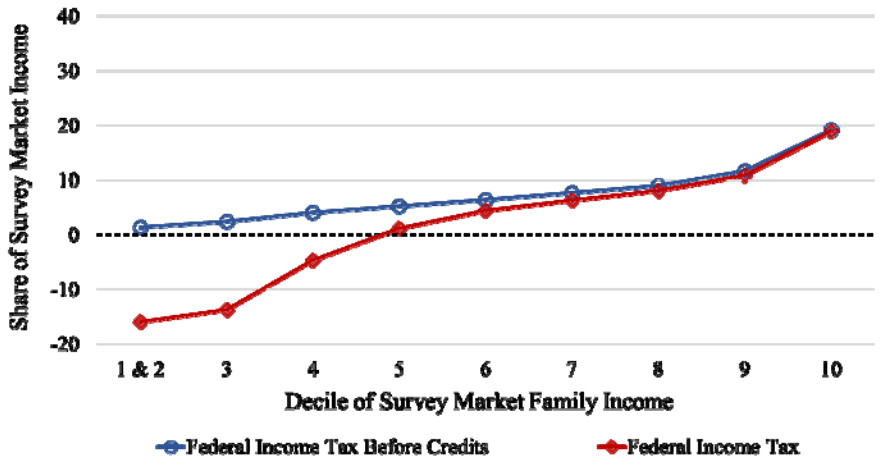

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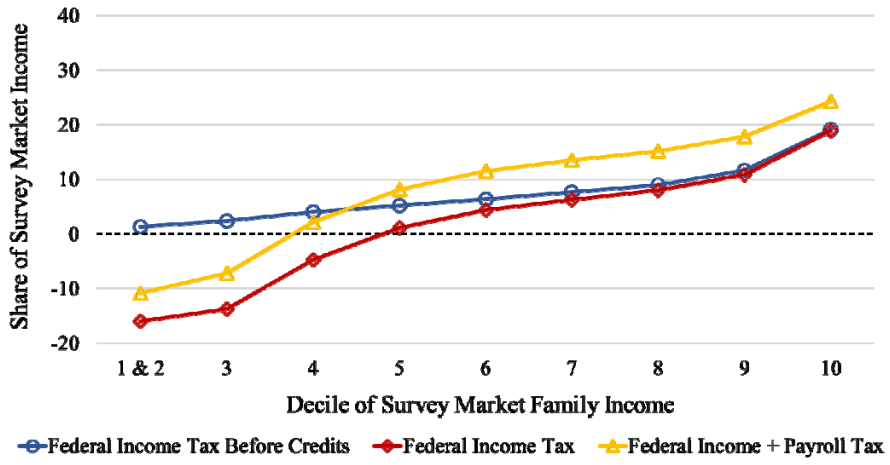

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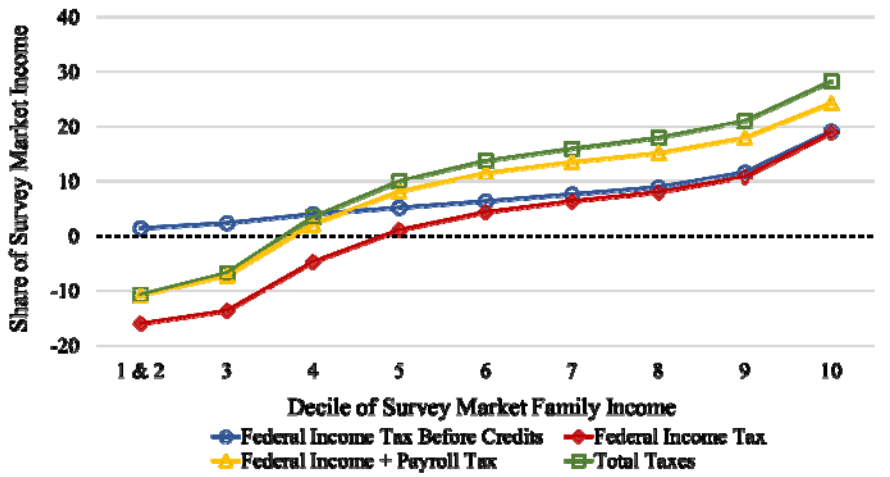

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Role of Survey Income Errors at Low Survey Incomes

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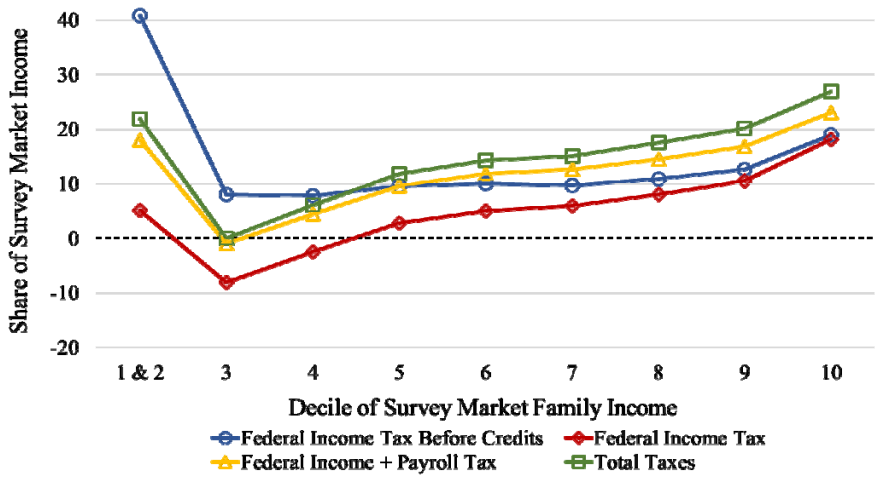
Figure 2b: CID Taxes as Share of Survey Market Income (by Decile)



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Progressivity of Taxes and Transfers Using the CID (percentages of base income)

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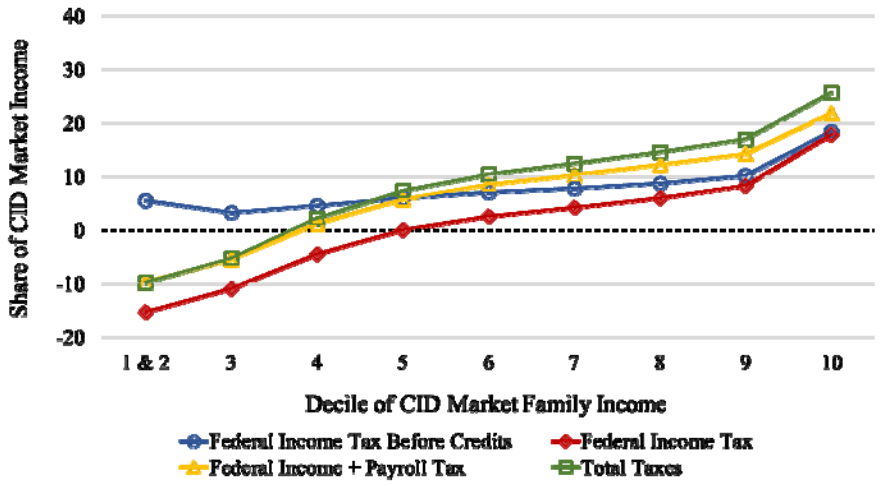
Figure 2c: CID Taxes as Share of CID Market Income (by Decile)



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All results were approved for release by the Census Bureau, authorization number CBDRB-FY20-SEHD002-014.

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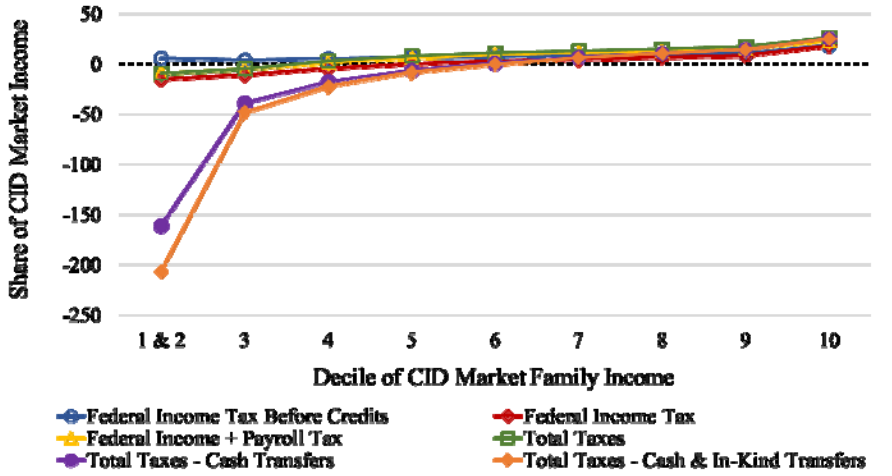
Figure 2c: CID Taxes net of Transfers as Share of CID Market Income (by Decile)



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Comparisons of Progressivity of Taxes and Transfers with Survey and the CID (dollar amounts)

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Figure 3a: Mean Federal Income Tax by Market Income Decile

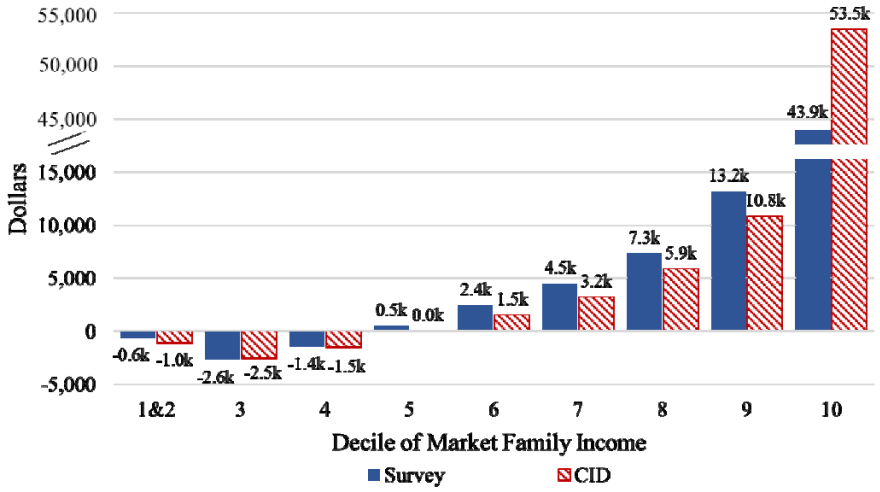

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Figure 3b: Mean Total Taxes Net of Transfers by Market Income Decile

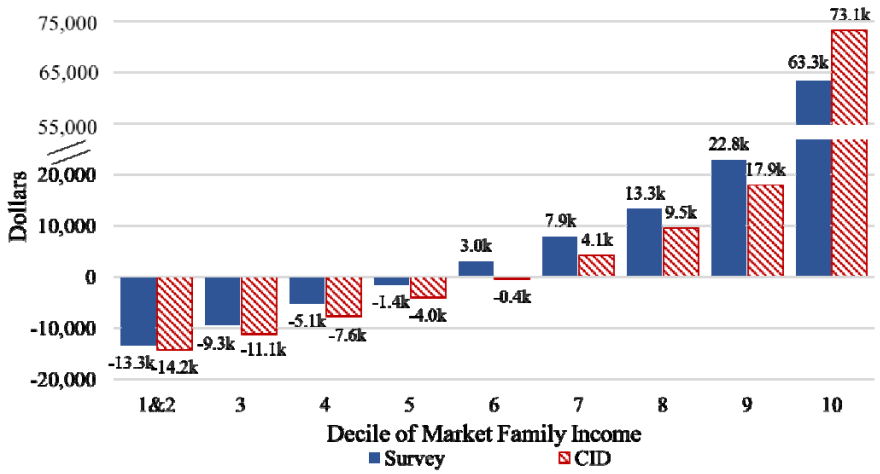

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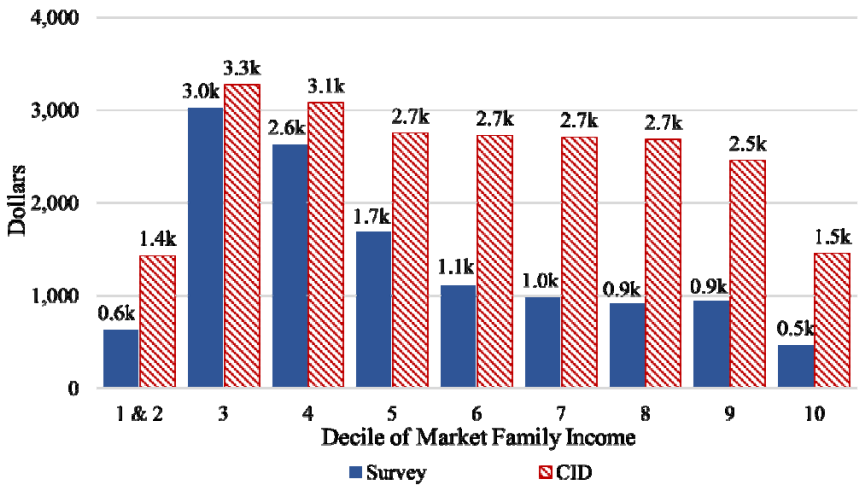
Figure 3c: Mean Federal Tax Credits by Market Income Decile



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All results were approved for release by the Census Bureau , authorization number CBDRB-FY20-ERD002-014.

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Figure 3d: Mean Cash Transfers by Market Income Decile

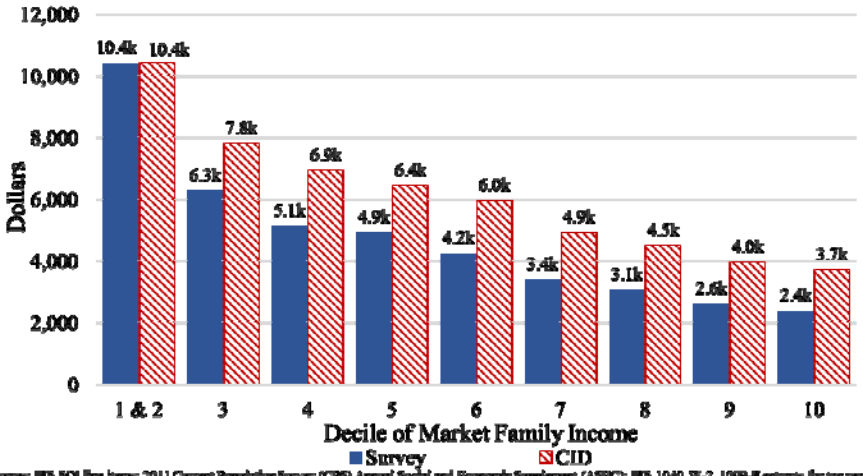

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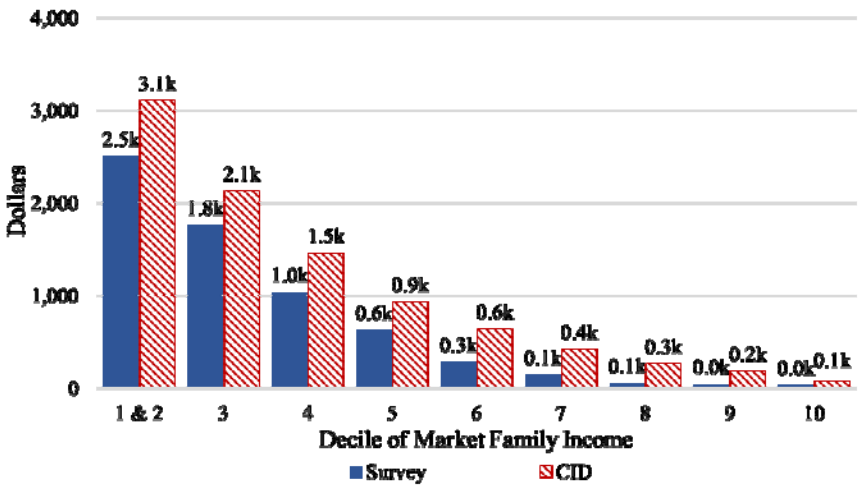
Figure 3e: Mean In-Kind Transfers by Market Income Decile



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(Non-medical) in-kind transfers encompass SNAP, housing assistance, WIC, and school lunch. WIC and school lunch use survey values. All results were approved for release by the Census Bureau, authorization number CBDRB-FY20-ERD002-014.

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Poverty Reduction of Taxes and Transfers

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Methodology

- Use post-tax money income + non-medical in-kind transfers as income base
- Calculate percentage change in poverty rate if a given government transfer were removed from income (see poverty paper for more detailed explanation)
- Do this analysis by subtracting survey taxes/benefits vs admin taxes/benefits from CID base income

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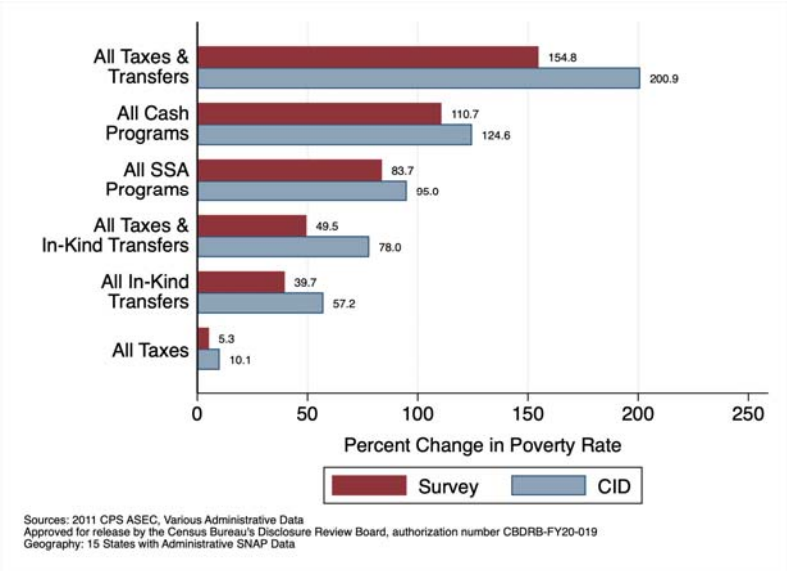
What if We Didn't Have Combinations of Programs?



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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Summary

- Accuracy of tax imputations
- Progressivity of taxes and transfers
- Poverty reduction of taxes and transfers

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Caveats & Extensions

- We have not included capital gain information that is available in the extensive tax data (but not the other sources)
- Accounting for medical in-kind transfers (principally Medicaid and Medicare) would make the net transfers to the bottom deciles considerably larger
- We do not include state and federal sales and property taxes or local income taxes
- Hope to also extend analysis to SIPP

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