METHODOLOGY FOR ESTIMATING THE IMPACT OF THE EXPANDED CHILD TAX CREDIT IN THE AMERICAN RESCUE PLAN

The American Rescue Plan Act of 2021 (ARPA) expanded the Child Tax Credit (CTC), lifting millions of children out of poverty nationwide. Co-Equal has developed a methodology to determine the CTC's effects on children and families in each congressional district. The data sources used are publicly available as described in detail below.

The Expanded CTC

ARPA makes four changes to the CTC. First, it increases the value of the credit from $2,000 per child to $3,000 per child (and $3,600 per child under age 6). The size of the credit begins to phase out for heads of households making $112,500 and married couples making $150,000. Second, it raises the CTC's eligibility age to include children who are 17 years old. Third, it converts the CTC from a partially refundable credit to a fully refundable credit. Previously, if the CTC was larger than a taxpayer's income tax liability, the refundable share was capped at $1,400 per child. Fourth, it makes the CTC available on a monthly or periodic basis, instead of as a lump sum at tax time.

Households and Children Benefiting from the Expanded CTC

The number of households who benefit from the expanded CTC is based on the 2014-2018 American Community Survey (5-Year ACS Microdata).[1] For each household, the pre-expansion CTC benefit is calculated using the laws in effect immediately before ARPA's passage. The expanded CTC for each household is calculated using ARPA's new rules. The difference between these two estimates is then used to determine the number of households who benefit from the CTC expansion.

The number of children who benefit is determined through a two-step process. First, the percent of children in the district who benefit from the expanded CTC is estimated by dividing the number of children in the district's benefiting households by the total number of children in the district, both of which numbers are calculated using the 5-Year ACS Microdata.[2] Second, the percent of children who benefit is then multiplied by the number of children in each district, as published by the Census Bureau in its 2019 ACS Single-Year Estimates (2019 Census

[1] U.S. Census Bureau, 2018 American Community Survey 5-Year Public Use Microdata Samples, https://www.census.gov/programs-surveys/acs/microdata/access.html. We use "household" as a shorthand for the household-family grouping (the "Supplemental Poverty Measure unit") used by the Census Bureau to determine poverty status. Liana Fox, Brian Glassman, & Jose Pacas, *The Supplemental Poverty Measure Using the American Community Survey*, SEHSD Working Paper 2020-09, https://www.census.gov/content/dam/Census/library/working-papers/2020/demo/SEHSD-WP2020-09.pdf.

[2] The ACS data has geography at the Public Use Micro Area (PUMA) level. Where local data is needed, a crosswalk can be used to match each PUMA to the county or counties in which it is located. The crosswalk is provided by the Missouri Census Data Center. Missouri Census Data Center, MABLE/Geocorr18 Version 1.0: Geographic Correspondence Engine, http://mcdc.missouri.edu/applications/geocorr2018.html.

Numbers).[3] These published population estimates are more precise and up-to-date than population estimates derived from the 5-Year ACS Microdata.

Number of Children in Poverty

Estimates for the number of children in poverty are based on (1) an analysis of the Current Population Survey (CPS) conducted by the Center on Poverty and Social Policy (CPSP) at Columbia University, (2) the 5-Year 2018 ACS Microdata, (3) published research data from the Census[4] and (4) the 2019 Census Numbers. These sources have different strengths and weaknesses. The 2019 Census Numbers provide the best estimates of state and district populations, but they do not include estimates of the poverty rate based on the supplemental poverty measure. The supplemental poverty measure is a more complete representation of poverty as it includes more forms of household income and costs. The 5-Year ACS Microdata has a very large sample size and can produce district-level estimates of poverty. Those estimates, however, tend to overstate the supplemental poverty measure. The CPS, by contrast, more accurately reflects the supplemental poverty measure but has a sample size that is only large enough for analysis at the state level. Consequently, each source is used to maximize its strengths. The child poverty rate in each state comes from the CPSP's analysis of the CPS, while the distribution of children within a state living in poverty by congressional district comes from the 5-Year ACS Microdata combined with the published data from Census researchers.[5] The 2019 Census Numbers are used to estimate district population size.

A two-step process is used to estimate the number of children in poverty. First, the number of children living in poverty (based on the supplemental poverty measure) in the district before and after the CTC expansion is estimated using the 5-Year ACS Microdata. Those numbers are multiplied by a state-specific correction for the overestimate of supplemental poverty measure in the 5-Year ACS Microdata. This state-specific correction is the statewide poverty rate before and after the CTC expansion as calculated from the CPS by the CPSP[6] divided by the statewide supplemental poverty rate using the 5-Year ACS Microdata.

Children in poverty in district (step 1) = Children in poverty in district (from 5-Year ACS Microdata) × Statewide child poverty rate (from CPSP) / Statewide child poverty rate (from 5-Year ACS Microdata)

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[3] U.S. Census Bureau, 2019 American Community Survey Single-Year Estimates, Tbl. S0101, https://data.census.gov/cedsci/table?g=0100000US.50016&y=2019&tid=ACSST1Y2019.S0101.

[4] Liana Fox, Brian Glassman, & Jose Pacas, *The Supplemental Poverty Measure Using the American Community Survey*, SEHSD Working Paper 2020-09, https://www.census.gov/content/dam/Census/library/working-papers/2020/demo/SEHSD-WP2020-09.pdf. Data retrieved for 2018 retrieved from https://www.census.gov/data/datasets/time-series/demo/supplemental-poverty-measure/acs-research-files.html.

[5] U.S. Census Bureau,2014-2018 American Community Survey 5-Year Public Use Microdata, https://www2.census.gov/programs-surveys/acs/data/pums/2018/5-Year.

[6] CPSP, *A Poverty Reduction Analysis of the American Family Act* (2021), https://static1.squarespace.com/static/5743308460b5e922a25a6dc7/t/600f2123fdfa730101a4426a/1611604260458/Poverty-Reduction-Analysis-American-Family-Act-CPSP-2020.pdf.

In the second step, this figure is corrected to reflect the 2019 Census Numbers' more accurate estimates of each district's population. Specifically, the number of children in poverty in each district (from step 1) is multiplied by the ratio of the number of children in the district (from the 2019 Census Numbers) to the number of children in the district (derived using the 5-Year ACS Microdata).

$$\textbf{Children in poverty in district} = \text{Children in poverty in district (step 1)} \times \frac{\text{Children in district (from 2019 Census)}}{\text{Children in district (from 5-Year ACS Microdata)}}$$

Children are considered to live in poverty if their household's resources are less than the Census Bureau's "Supplemental Poverty Measure" threshold.[7] Household resources are calculated using the pre-expansion CTC to estimate the number of children in poverty in each district before the CTC expansion. The resources are then recalculated using the expanded CTC to estimate the number of children in poverty in each district after the CTC expansion.

The change in the number of children in poverty in each district equals the number of children in poverty in the district before the expansion minus the number of children in poverty in the district after the expansion.

Average Additional CTC benefit

The average additional CTC benefit equals the total increase in CTC benefits after the CTC expansion divided by the number of households receiving a larger benefit because of the expansion.[8] The average additional CTC benefit for households in poverty is calculated using the same formula while limiting the sample only to those households that were living in poverty before the CTC expansion.

[7] Liana Fox, Brian Glassman, & Jose Pacas, *The Supplemental Poverty Measure using the American Community Survey*, SEHSD Working Paper 2020-09, https://www.census.gov/content/dam/Census/library/working-papers/2020/demo/SEHSD-WP2020-09.pdf. Data retrieved for 2018 retrieved from https://www.census.gov/data/datasets/time-series/demo/supplemental-poverty-measure/acs-research-files.html.

[8] The 5-Year ACS Microdata household weights are used in obtaining counts of households for each district.

Example

Here is an example for the state of Hawaii, a state with two congressional districts, which simplifies the example. It focuses on Hawaii's 2nd congressional district and uses rounded numbers throughout.

Step 1

Using the 5-Year ACS Microdata, we estimate the number of children living in poverty in District 2. Because the Microdata overestimates the number of children in poverty, we apply a state-specific correction. That correction equals the ratio of the statewide child poverty rate (from the CPSP) to the statewide child poverty rate (derived using the Microdata).

According to the Microdata, there are 29,400 children in poverty living in District 2 before the CTC expansion and 21,900 after the CTC expansion. The CPSP finds the child poverty rate for Hawaii is 15.1% before the CTC expansion and 9.8% after the CTC expansion. Using the Microdata, we estimate that the child poverty rate for Hawaii is 17.9% before the CTC expansion and 13.4% after the CTC expansion.

Children in poverty in District 2 before CTC expansion: $29{,}400 \times \frac{15.1\%}{17.9\%} = 24{,}800$

Children in poverty in District 2 after CTC expansion: $21{,}900 \times \frac{9.8\%}{13.4\%} = 16{,}000$

Step 2

Because these figures are based on the Microdata, they do not reflect the most accurate and up-to-date population estimates. Accordingly, we correct them to reflect the district population estimates published by the Census Bureau in its 2019 ACS Single-Year Estimates. The Census estimates, 157,000 children live in District 2. Using the 5-Year ACS Microdata, we estimate that 163,000 children live in District 2. The ratio of these two population estimates is used to adjust the figures from the previous section.

Children in poverty in District 2 before CTC expansion: $24{,}800 \times \frac{157{,}000}{163{,}000} = 23{,}800$

Children in poverty in District 2 after CTC expansion: $16{,}000 \times \frac{157{,}000}{163{,}000} = 15{,}400$

Calculating the reduction in child poverty

Children in District 2 lifted out of poverty after CTC expansion: $23{,}800 - 15{,}400 = 8{,}400$

Reduction in poverty for District 2: $\frac{8{,}400}{23{,}800} = 35.3\%$