Colorado Family Affordability Tax Credit (FATC) Evaluation
Colorado Department Of Revenue Tax Year 2024: FATC Take-Up Data Memo
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Overview

This memo combines Colorado Department of Revenue (DOR) tax year 2024 claims data for the Child Tax Credit, Earned Income Tax Credit, and Family Affordability Tax Credit with American Community Survey (ACS)/IPUMS estimates of eligible tax units. We use these data to estimate statewide credit take-up and to simulate how incomplete claiming affects the credits' impacts on child poverty.

Overall estimated take-up is high across all three credits. Using DOR claimant counts and ACS/IPUMS estimates of eligible tax units, we estimate statewide take-up at 93% for CTC, 78% for EITC, and 93% for FATC. However, because our estimates of the eligible population for these credits come from ACS data rather than directly from DOR (which is unavailable), credit take-up results should be interpreted as estimated claiming rates rather than exact administrative take-up measures. As a sensitivity test, we also include additional take-up scenarios that adjust for the ITIN population in Colorado and that index our Colorado credit take-up rates to federal take-up rates for similar credits.

The credits have sizable simulated effects on child poverty. Under full eligible take-up, the combined CTC, EITC, and FATC package reduces the estimated number of children in poverty from 141,794, or 11.63%, to 89,129, or 7.31%—a 37.14% reduction. Under incomplete take-up scenarios, the estimated reduction ranges from 31.20% to 31.89%. In the most conservative scenario, 96,561 children, or 8.00%, remain in poverty—roughly 7,400 more children than under full eligible take-up.

Data and Method

The analysis uses two main data inputs.

First, the numerator comes from Colorado Department of Revenue tax year 2024 data. The DOR files report county-level counts of returns and total credit dollars for CTC, EITC, and FATC. The analysis uses the county-level return counts as the measure of credit take-up.

Second, the denominator comes from ACS/IPUMS microdata projections of eligible tax units and eligible children. These projections identify likely eligible tax units for each credit based on income, family structure, child age, and other available ACS-based variables. Because ACS/IPUMS is survey-based, these eligibility counts should be interpreted as projections rather than exact administrative counts.

Take-up rate definition

For each credit, the estimated take-up rate is calculated as:

Take-up rate = DOR return count / ACS-estimated eligible tax units

The raw rate is retained for diagnostic checks. The displayed rate is capped at 100% for memo tables and figures.

Eligibility projection workflow

We estimate the eligible population using the 2023 ACS/IPUMS microdata for Colorado. The projection starts with person-level ACS records and organizes individuals into tax units using household, family, and tax-unit identifiers. For each tax unit, we calculate total income, filing status, number of children in relevant age groups, and other variables needed to approximate eligibility for CTC, EITC, and FATC.

Next, we apply credit-specific eligibility rules to each tax unit. For FATC, eligibility and credit amounts are based on filing status, income range, and the number of children under age 17, with separate amounts for children under age 6 and children ages 6 to 16. For CTC, eligibility is based on filing status, income range, and the number of children under age 6. For EITC, eligibility is approximated using the ACS/IPUMS supplemental poverty measure EITC variable, with Colorado's credit modeled as a share of the federal EITC.

After identifying eligible tax units, we use ACS person weights to project the number of eligible tax units and (separately, for) eligible children in each Public Use Microdata Area (PUMA). These PUMA-level eligibility estimates serve as the denominator for the take-up calculation. Finally, we combine the ACS/IPUMS eligibility estimates with DOR administrative counts of returns claiming each credit to calculate estimated take-up rates.

Take-up rate adjustment for poverty simulation

After estimating eligibility and take-up rates, we adjust the poverty simulation for incomplete claiming. We measure poverty using the 2023 Official Poverty Measure (OPM), but modify the income measure to account for taxes and credits. In the baseline, a family is counted as poor if ACS total family income, net of estimated family tax liability, falls below the official poverty threshold for a family of that size and number of children. In each credit scenario, we add the relevant simulated or full-credit amounts to this after-tax family income and recalculate poverty status.

The main poverty table first reports a full eligible take-up scenario, in which every ACS-simulated eligible tax unit receives the relevant CTC, EITC, and/or FATC amount. This scenario should be interpreted as a best-case estimate of the credits' poverty-reducing potential.

We then estimate a credit take-up adjusted scenario using statewide take-up rates by credit. We use statewide rather than PUMA-level rates for the poverty simulation because local take-up estimates can be unstable when ACS-based eligible-denominator projections are small or noisy. In each simulation, eligible tax units are randomly assigned credit receipt based on the statewide take-up rate for the relevant credit. Realized credits are then aggregated from tax units to families, and family poverty status is recalculated after adding the simulated credits.

We repeat this process 1,000 times. Reported take-up adjusted estimates are simulation means, and bracketed values show the 5th and 95th percentiles. These intervals capture uncertainty over which eligible tax units claim credits, conditional on statewide take-up rates; they are not formal ACS sampling confidence intervals.

ITIN-denominator adjustment sensitivity

We also estimate an intermediate sensitivity that adjusts the Colorado credit take-up simulation to account for potential undercoverage of ITIN filers in the ACS-based eligibility denominator. The ACS/IPUMS eligibility projection is likely to approximate the SSN-filer population more closely than the full population of potentially eligible tax filers. If some ITIN-filing households are eligible for CTC, EITC, or FATC but are not fully represented in the ACS-simulated denominator, then the unadjusted Colorado take-up rates may slightly overstate effective take-up relative to the broader eligible filing population.

To approximate this issue, we use DOR data on the total number of Colorado returns and ITIN returns. Specifically, we calculate the ITIN adjustment factor as (1 - 60,310 / 2,981,429 = 0.9798), where 60,310 is the number of ITIN returns reported in DOR materials and 2,981,429 is the number of Colorado returns in 2023. We then multiply the Colorado statewide take-up rate for each credit by this adjustment factor. Equivalently, this treats the eligible denominator as modestly larger after accounting for ITIN filers while holding the observed number of claiming returns fixed. This approach likely yields a conservative estimate of poverty impacts, as it assumes that there is no ITIN respondent coverage in the ACS. However, some ITIN holders do show up in ACS data, though with a lower probability than SSN holders.[1]

The ITIN-adjusted scenario uses the same 1,000-iteration Monte Carlo procedure as the main take-up simulation. Eligible tax units in the ACS are randomly assigned to receive the CTC, EITC, and FATC using the ITIN-adjusted take-up probabilities, with a common simulated claiming tendency applied across the three credits. Because the ACS does not separately identify the full set of ITIN-eligible tax units for this purpose, this scenario should be interpreted as a conservative effective take-up sensitivity rather than a direct simulation of the poverty impact among ITIN-filing families themselves.

Federal-indexed take-up sensitivity

As an additional sensitivity test, we also estimate poverty impacts using federal-indexed take-up assumptions instead of Colorado's estimated statewide rates. This specification assigns take-up probabilities of 93% for CTC and FATC and 78% for EITC.[2] The sensitivity uses the same ACS-simulated eligible tax units, simulated Colorado credit amounts, and poverty thresholds as the main analysis; only the assumed probability of claiming changes.

The federal-indexed sensitivity follows the same 1,000-iteration Monte Carlo procedure. In each simulation, eligible tax units are randomly assigned credit receipt using the federal-indexed rate for the relevant credit. To reflect that families who claim one credit may also be more likely to claim others, we assign each tax unit a single simulated claiming tendency and apply it across credits. Reported estimates are simulation means, with 5th and 95th percentile ranges reflecting claimant-composition uncertainty rather than formal sampling confidence intervals.

Results

Statewide take-up (table 1)

Statewide estimated take-up is high across all three credits. CTC and FATC both have estimated take-up rates of 93.3%, while EITC has an estimated take-up rate of 77.7%. The statewide pattern suggests that Colorado's tax-credit filing and delivery infrastructure is reaching a large share of eligible households, though EITC take-up remains lower than CTC and FATC.

Implications for Child Poverty Measures (tables 2 and 3; figures 1-3)

Under each of our take-up scenarios, credits have large potential effects on child poverty. Under the full-eligible take-up scenario, the combined CTC, EITC, and FATC package reduces the estimated number of children in poverty from 141,794 (11.63%) to 89,129 (7.31%), representing

[1] https://www2.census.gov/library/working-papers/202 onsingle3/adrm/ces/CES-WP-23-21.pdf
[2] Estimates from the Tax Policy Center (https://taxpolicycenter.org/taxvox/irss-direct-file-makes-it-easier-eligible-families-claim-earned-income-tax-credit-and-child)

a 37.14% reduction in child poverty. FATC accounts for the largest single-credit effect, reducing child poverty by 20.01% under full eligible take-up, compared with 6.14% for EITC and 2.17% for CTC.

Accounting for estimated credit take-up attenuates, but does not eliminate, the credits' poverty-reducing effects. Using corrected statewide take-up rates—93.30% for CTC, 77.70% for EITC, and 93.40% for FATC—the combined package reduces estimated child poverty to 96,581 children, or 7.92%, a 31.89% reduction from baseline. Relative to full eligible take-up, incomplete claiming leaves roughly 7,500 additional children in poverty.

The sensitivity analyses produce similar conclusions. The ITIN-adjusted scenario is the most conservative, reducing child poverty to 97,561 children, or 8.00%, a 31.20% reduction. The federal-indexed scenario produces nearly identical results to the main take-up simulation, reducing child poverty to 96,657 children, or 7.93%, a 31.83% reduction. Across both sensitivities, the combined credit package leaves roughly 7,500 more children in poverty than the full eligible take-up scenario, but still produces a large reduction in child poverty.

Across specifications, the results suggest that Colorado's refundable and family-oriented credits have meaningful implications for child poverty. Full eligible take-up provides an upper-bound estimate of the credits' maximum potential, while the CO credit take-up, ITIN-adjusted, and federal-indexed simulations provide more realistic estimates under incomplete claiming. The comparison also highlights take-up as an important policy mechanism: even with high estimated claiming rates for CTC and FATC, and moderate estimated claiming for EITC, incomplete take-up meaningfully attenuates the poverty reduction achieved by the credit package. At the same time, the robustness of the results across take-up assumptions suggests that the combined credit package has a sizable poverty-reducing effect even under conservative claiming scenarios.

Interpretation

The central takeaway is twofold. First, estimated take-up is high statewide, especially for CTC and FATC, suggesting that Colorado's refundable credits are reaching many eligible families. Second, take-up still matters: even relatively small gaps in claiming meaningfully reduce the credits' poverty impact. Continued outreach and administrative simplification may therefore have the greatest payoff for families near the poverty threshold, where receiving or missing a credit can determine whether a child is counted as poor.

Exhibits

Table 1: *State-level take-up rate, tax year 2024*

Credit	# of returns (DOR data)	Total credit value (DOR data)	Eligible tax units (ACS data)	Eligible children (ACS data)	Statewide take-up rate	Avg. credit per return
CTC	129,280	$118,018,000	138,544	279,557	93.30%	$912.89
EITC	338,120	$406,110,000	434,931	322,954	77.70%	$1,201.08
FATC	309,620	$842,285,000	331,381	586,999	93.40%	$2,720.38

Table 2: Child Poverty Reduction Under Colorado Tax Credits

Full eligible take-up / best case

Poverty measure	# children in poverty	% children in poverty	Poverty reduction
Baseline (Income Inferred)	**141,794**	**11.63**	**0.00**
Baseline+CTC	138,715	11.38	2.17
Baseline+EITC	133,089	10.92	6.14
Baseline+FATC	113,422	9.30	20.01
Baseline+EITC+CTC	127,845	10.49	9.84
Baseline+All three	**89,129**	**7.31**	**37.14**

CO credit take-up simulation

Poverty measure	# children in poverty	% children in poverty	Poverty reduction
Baseline (Income Inferred)	**141,794**	**11.63**	**0.00**
Baseline+CTC	138,923 [138,715, 139,457]	11.40 [11.38, 11.44]	2.02 [1.65, 2.17]
Baseline+EITC	135,121 [134,020, 136,259]	11.08 [10.99, 11.18]	4.71 [3.90, 5.48]
Baseline+FATC	115,316 [113,854, 117,322]	9.46 [9.34, 9.62]	18.67 [17.26, 19.70]
Baseline+EITC+CTC	130,291 [128,989, 131,858]	10.69 [10.58, 10.82]	8.11 [7.01, 9.03]
Baseline+All three	**96,581 [93,409, 100,100]**	**7.92 [7.66, 8.21]**	**31.89 [29.40, 34.12]**

CO credit take-up, ITIN-adjusted

Poverty measure	# children in poverty	% children in poverty	Poverty reduction
Baseline (Income Inferred)	**141,794**	**11.63**	**0.00**
Baseline+CTC	138,983 [138,715, 139,612]	11.40 [11.38, 11.45]	1.98 [1.54, 2.17]
Baseline+EITC	135,255 [134,194, 136,394]	11.10 [11.01, 11.19]	4.61 [3.81, 5.36]
Baseline+FATC	115,870 [114,245, 118,057]	9.51 [9.37, 9.68]	18.28 [16.74, 19.43]
Baseline+EITC+CTC	130,524 [129,195, 132,113]	10.71 [10.60, 10.84]	7.95 [6.83, 8.89]
Baseline+All three	**97,561 [94,318, 101,222]**	**8.00 [7.74, 8.30]**	**31.20 [28.61, 33.48]**

Federal-indexed sensitivity

Poverty measure	# children in poverty	% children in poverty	Poverty reduction
Baseline (Income Inferred)	**141,794**	**11.63**	**0.00**
Baseline+CTC	138,937 [138,715, 139,493]	11.40 [11.38, 11.44]	2.01 [1.62, 2.17]
Baseline+EITC	135,099 [134,010, 136,251]	11.08 [10.99, 11.18]	4.72 [3.91, 5.49]
Baseline+FATC	115,437 [113,981, 117,481]	9.47 [9.35, 9.64]	18.59 [17.15, 19.61]
Baseline+EITC+CTC	130,283 [129,031, 131,819]	10.69 [10.58, 10.81]	8.12 [7.03, 9.00]
Baseline+All three	**96,657 [93,512, 100,332]**	**7.93 [7.67, 8.23]**	**31.83 [29.24, 34.05]**

Note: Full eligible take-up assumes all ACS-simulated eligible tax units receive the relevant credit. CO credit take-up assigns receipt using corrected statewide take-up rates calibrated to the full ACS eligible base: CTC = 129,280 / 138,544, EITC = 338,120 / 434,931, and FATC = 309,620 / 331,381. The ITIN-adjusted scenario multiplies these Colorado take-up rates by the ITIN denominator adjustment factor, 1 - ITIN returns / all returns. Federal-indexed sensitivity uses 93% for CTC and FATC and 78% for EITC. Bracketed values report the 5th and 95th percentiles across Monte Carlo simulations.

Table 3: Population Coverage for Colorado Tax Credits

Eligible population

Credit type	# tax units	% tax units	# children	% children
FATC-eligible tax units	331,381	48.49	586,999	48.43
CTC-eligible tax units	138,544	20.27	279,557	23.06
EITC-eligible tax units w/ children 0-16	173,496	25.39	322,954	26.64
EITC-eligible tax units, any household type	434,931		322,954	
CTC+EITC	79,279	11.60	169,495	13.98
CTC+EITC+FATC	**79,279**	**11.60**	**169,495**	**13.98**

CO credit take-up simulation

Credit type	# tax units	% tax units	# children	% children
FATC-eligible tax units	309,672 [305,827, 313,010]	45.31 [44.75, 45.80]	548,582 [540,699, 555,402]	45.26 [44.61, 45.82]
CTC-eligible tax units	129,266 [126,755, 131,541]	18.91 [18.55, 19.25]	260,812 [255,134, 265,935]	21.52 [21.05, 21.94]
EITC-eligible tax units w/ children 0-16	134,766 [130,462, 138,730]	19.72 [19.09, 20.30]	250,961 [241,621, 259,846]	20.70 [19.93, 21.44]
EITC-eligible tax units, any household type	338,047 [331,672, 344,387]		250,999 [241,672, 260,104]	
CTC+EITC	61,630 [58,594, 64,497]	9.02 [8.57, 9.44]	131,773 [124,229, 138,803]	10.87 [10.25, 11.45]
CTC+EITC+FATC (0-16)	**61,699 [58,850, 64,427]**	**9.03 [8.61, 9.43]**	**131,967 [124,893, 138,623]**	**10.89 [10.30, 11.44]**

CO credit take-up, ITIN-adjusted

Credit type	# tax units	% tax units	# children	% children
FATC-eligible tax units	303,406 [299,160, 307,198]	44.39 [43.77, 44.95]	537,509 [528,723, 545,336]	44.34 [43.62, 44.99]
CTC-eligible tax units	126,622 [123,929, 129,151]	18.53 [18.13, 18.90]	255,523 [249,577, 261,137]	21.08 [20.59, 21.54]
EITC-eligible tax units w/ children 0-16	132,046 [127,650, 136,137]	19.32 [18.68, 19.92]	245,884 [236,251, 254,801]	20.28 [19.49, 21.02]
EITC-eligible tax units, any household type	331,117 [324,833, 337,637]		245,796 [236,559, 255,202]	
CTC+EITC	60,349 [57,177, 63,274]	8.83 [8.37, 9.26]	129,029 [120,748, 136,528]	10.64 [9.96, 11.26]
CTC+EITC+FATC	**60,457 [57,528, 63,178]**	**8.85 [8.42, 9.24]**	**129,320 [121,712, 135,871]**	**10.67 [10.04, 11.21]**

Federal-indexed sensitivity

Credit type	# tax units	% tax units	# children	% children
FATC-eligible tax units	308,246 [304,487, 311,615]	45.10 [44.55, 45.60]	546,044 [537,924, 553,133]	45.05 [44.38, 45.63]
CTC-eligible tax units	128,837 [126,422, 131,170]	18.85 [18.50, 19.19]	259,953 [254,099, 265,063]	21.45 [20.96, 21.87]
EITC-eligible tax units w/ children 0-16	135,211 [130,811, 139,190]	19.78 [19.14, 20.37]	251,788 [242,483, 260,617]	20.77 [20.00, 21.50]
EITC-eligible tax units, any household type	339,175 [332,735, 345,497]		251,848 [242,422, 260,965]	
CTC+EITC	61,840 [58,882, 64,702]	9.05 [8.62, 9.47]	132,227 [124,450, 139,196]	10.91 [10.27, 11.48]
CTC+EITC+FATC	**61,903 [59,052, 64,599]**	**9.06 [8.64, 9.45]**	**132,401 [125,180, 139,078]**	**10.92 [10.33, 11.47]**

Note: Eligible counts are based on ACS-simulated tax-unit eligibility, not family counts. Child counts refer to children ages 0–16 living in eligible tax units, not necessarily children individually eligible for each credit. CO credit take-up uses corrected statewide rates calibrated to the full ACS eligible base. The ITIN-adjusted scenario multiplies CO credit take-up rates by the ITIN denominator adjustment factor. For combined-credit rows, take-up reflects eligibility for all listed credits and uses a common latent take-up draw.

Figure 1: *Full take-up vs. estimated actual take-up, impact of tax credits and # of children in poverty*

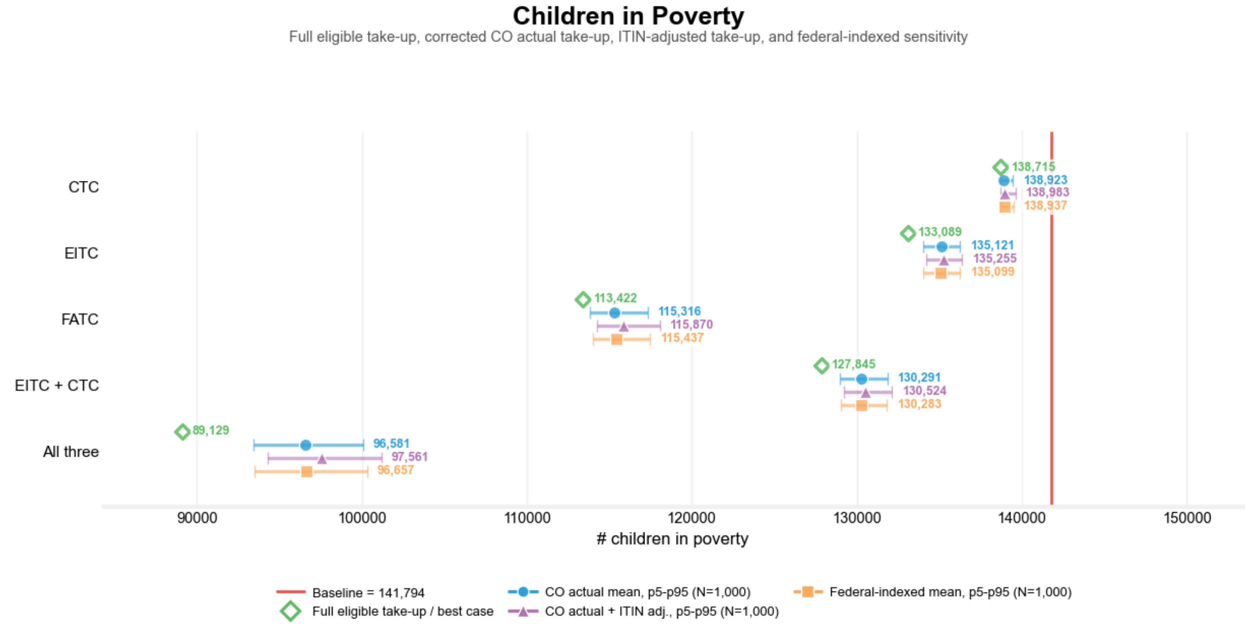

Figure 2: *Full take-up vs. estimated actual take-up, impact of tax credits and child poverty rate*

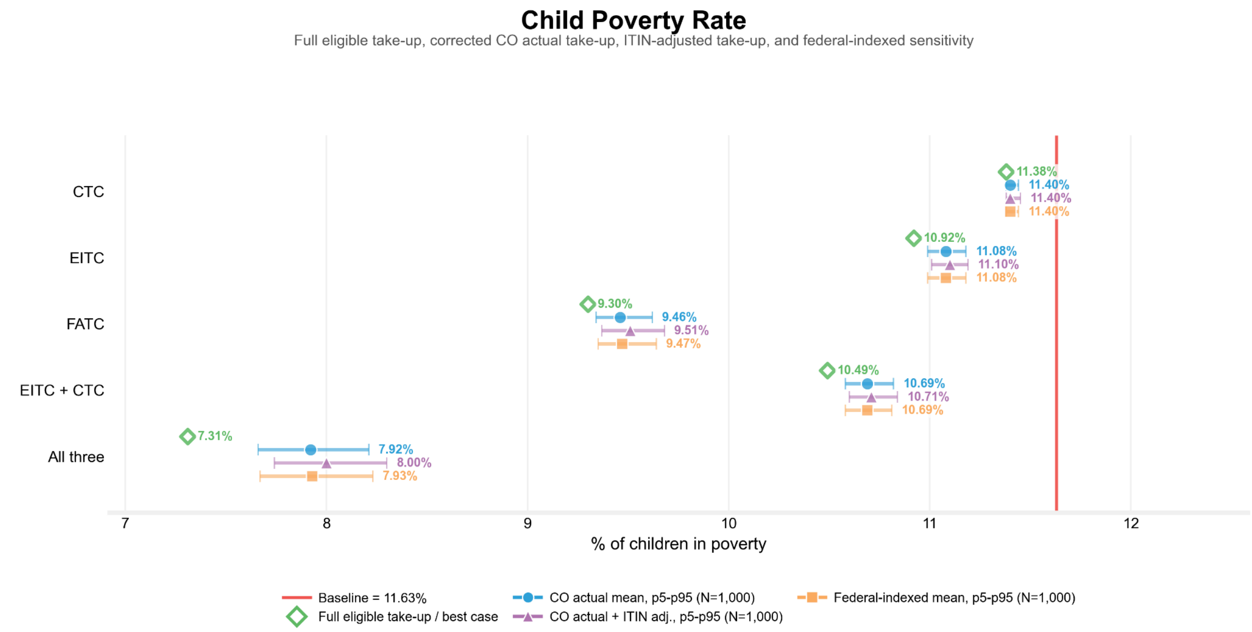

Figure 3: *Full take-up vs. estimated actual take-up, impact of tax credits and child poverty reduction*