

# Modeling the 2021 Child Tax Credit in the CPS ASEC\*

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## Abstract

The American Rescue Plan in 2021 greatly expanded the federal Child Tax Credit along several dimensions. This credit has been included in the Current Population Survey Annual Social and Economic Supplement (CPS ASEC) production tax model in previous years, but its expansion and enhanced refundability makes it likely to have an expanded impact in the 2021 Supplemental Poverty Measure. Anticipating this enhanced importance, a new item was added to the 2022 CPS ASEC questionnaire regarding receipt of the Child Tax Credit. In this paper we describe changes to the CPS ASEC Tax Model to reflect the changes to the Child Tax Credit, which includes imputing receipt and the credit amount. We then validate the tax model using information from individually linked IRS Form 1040 records, focusing on the formation of tax units and identification of dependents. Finally, we benchmark closely related advance Child Tax Credit payments against published IRS tables.

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\* This paper is released to inform interested parties of ongoing research and to encourage discussion of work in progress. All errors are those of the authors. Any views expressed, including those related to statistical, methodological, technical, or operational issues, are solely those of the authors and do not necessarily reflect the official positions or policies of the US Census Bureau. The Census Bureau has reviewed this data product to ensure appropriate access, use, and disclosure avoidance protection of the confidential source data used to produce this product Data Management System (DMS) number: P-7503840, Disclosure Review Board (DRB) approval number: CBDRB-FY22-394.

# 1. Introduction

Since 1997, the Child Tax Credit (CTC) has been available to families to ease the financial burden of raising children. The CTC is part of a package of programs to aid families including the Earned Income Tax Credit (EITC), Temporary Aid to Needy Families (TANF), Supplemental Nutrition Assistance Program (SNAP), housing assistance, and Medicaid. Unlike most of these programs, the CTC is not limited to low-income families; those with higher income can also claim the credit. The credit has been linked to reducing poverty, lessening food hardship, and increased spending on expenditures associated with children (e.g., Bastian 2022, Corinth et al. 2021, Perez-Lopez 2021, and Collyer et al. 2021). In 2021, the American Rescue Plan Act significantly expanded the CTC in several ways. It increased the credit amount, expanded qualifying age eligibility, was made fully refundable, and paid in advance in monthly payments beginning July 2021.

The Census Bureau publications *Income in the United States:2021* and *Poverty in the United States:2021* are based on information collected in the Current Population Survey Annual Social and Economic Supplement (CPS ASEC). These publications report post-tax income and supplemental poverty measure statistics, which are both based on income net of taxes and credits. In order to calculate these statistics, receipt and amounts of tax credits, including the CTC, must first be imputed to survey respondents, since the CPS ASEC does not collect information about tax payments or credits received. The CPS ASEC Tax Model imputes federal, state, and payroll tax liability and several tax credits, including CTC. This paper describes how the CPS ASEC Tax Model accommodated the 2021 expansions to the CTC.

## 2. Background: The Child Tax Credit and Recent Changes in Tax Law

Prior to 2021, the CTC was last amended in the Tax Cuts and Jobs Act of 2017 (TCJA).<sup>1</sup> The credit amount of \$2,000 per qualifying child phased out by \$50 for every \$1,000 of income over \$400,000 for joint filers and over \$200,000 for all other filers. Before the 2017 TCJA, the CTC was not refundable, meaning that filers with a tax liability less than the full value of their CTC only received the portion of the CTC that reduced their liability to zero. The TCJA, however, made amounts up to \$1,400 of the CTC refundable. This refundable amount was called the Additional Child Tax Credit (ACTC), and that amount

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<sup>1</sup> The CTC was created in 1997 by the Taxpayer Relief Act of 1997.

was phased in by 15 percent of earned income above \$2,500, to a maximum refundable amount of \$1,400 per qualifying child.

In March 2021 the American Rescue Plan Act (ARPA) temporarily expanded the CTC credit for tax year 2021.<sup>2</sup> It increased the credit amount from \$2,000 per child to \$3,000 per child for children over age six and from \$2,000 per child to \$3,600 per child for children under six. ARPA also made the credit fully refundable and raised the age limit of qualifying children from 16 to 17. Additionally, ARPA established advance payments of the CTC in 2021 for the credit that is typically part of the tax return in the 2022 tax filing season. These monthly payments began July 2021 and totaled half of the entire credit amount. Filers receive the second half of the entire credit amount upon filing their 2021 tax return in 2022. The portion of the expanded credit that was paid out during 2021 is referred to as advance CTC. The following table, “Child Tax Credit Expansion Comparison,” summarizes features of the expansion including eligibility criteria and amount, and compares these features to the credit under the TCJA. We describe the eligibility features and amount in more detail below.

<b>Child Tax Credit Expansion Comparison</b>		
Legislation	Tax Cuts and Jobs Act (2017)	American Rescue Plan Act (2021)
Date	November 2017	March 2021
Maximum credit amount	<ul style="list-style-type: none"> <li>• \$2,000 per qualifying child</li> </ul>	<ul style="list-style-type: none"> <li>• \$3,600 per qualifying child under 6</li> <li>• \$3,000 per qualifying child aged 6 to 17</li> </ul>
Maximum Refundable Portion	<ul style="list-style-type: none"> <li>• \$1,400 per qualifying child</li> </ul>	<ul style="list-style-type: none"> <li>• Fully refundable</li> </ul>
Minimum Income Requirement	<ul style="list-style-type: none"> <li>• \$2,500 in earned income to receive refundable portion of CTC</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>
First income threshold for full payment amount	<ul style="list-style-type: none"> <li>• Married, filing jointly*: \$400,000</li> <li>• Head of Household: \$200,000</li> <li>• Single or married filing separately: \$200,000</li> </ul>	<ul style="list-style-type: none"> <li>• Married, filing jointly*: \$150,000</li> <li>• Head of Household: \$112,500</li> <li>• Single or married filing separately: \$75,000</li> </ul>
Second income threshold for phaseout		<ul style="list-style-type: none"> <li>• Married, filing jointly*: \$400,000</li> <li>• Head of Household: \$200,000</li> <li>• Single or married filing separately: \$200,000</li> </ul>
Phaseout	<ul style="list-style-type: none"> <li>• Payment reduced by \$50 for every \$1,000 over the income thresholds</li> </ul>	<ul style="list-style-type: none"> <li>• Payment reduced by \$50 for every \$1,000 over the first income thresholds down to \$2,000 per child</li> <li>• Payment further reduced by \$50 for every \$1,000 over the second income thresholds**</li> </ul>

<sup>2</sup> For tax year 2022, the CTC reverted to the credit amount and parameters outlined in the TCJA.

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Auto-Payment Recipients	<ul style="list-style-type: none"> <li>• None, must claim on individual tax return.</li> </ul>	<ul style="list-style-type: none"> <li>• Tax year 2019 and 2020 filers</li> </ul>
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Source: US Internal Revenue Service, < <https://www.irs.gov/credits-deductions/individuals/child-tax-credit>>, < <https://www.irs.gov/credits-deductions/2021-child-tax-credit-and-advance-child-tax-credit-payments-frequently-asked-questions>>, and <<https://www.irs.gov/credits-deductions/2021-child-tax-credit-and-advance-child-tax-credit-payments-topic-h-reconciling-your-advance-child-tax-credit-payments-on-your-2021-tax-return>>.

Notes: \*Includes qualified widow/widower filers. \*\* 2021 CTC follows the same phaseout as in 2017 once payment is reduced to \$2,000 per child.

Filers were eligible for the CTC if they were a US citizen, US national, or US resident alien, and they had a valid Social Security number (SSN) or individual taxpayer identification number (ITIN) before filing the 2021 tax return. Nonresidents were not eligible for the expanded, refundable credit.<sup>3</sup> Married joint filers with adjusted gross income (AGI) under \$150,000, head of household filers with AGI under \$112,500, and individual filers using any other filing status with AGI under \$75,000 were eligible for the full CTC credit amount.<sup>4</sup> The maximum CTC amount was \$3,000 per qualifying child under 6 and \$3,600 per qualifying child aged 6 to 17. A qualifying child for the CTC is defined by the Internal Revenue Service (IRS) as someone who is the child, stepchild, eligible foster child, sibling, half-sibling, step-sibling, or descendant, who can be claimed as a dependent, who is under age 18 at the end of the reference tax year, is a US citizen, US national, or US resident alien, and has a valid SSN or individual taxpayer identification number.

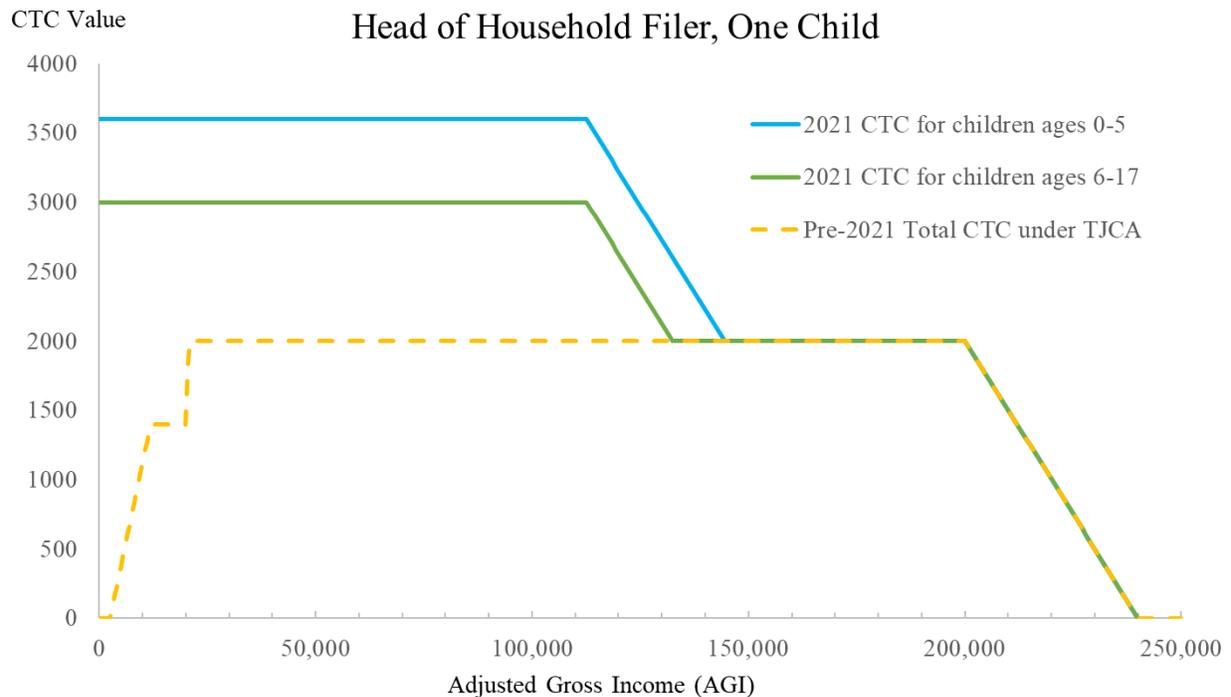
The expanded CTC had two phaseout provisions. First, the credit was initially reduced by \$50 for every \$1,000 of the filers' AGI above the first income threshold until plateauing at \$2,000 per qualifying child. Second, the CTC was further reduced by \$50 for every additional \$1,000 of the filer's AGI above the second threshold, until reaching \$0. The following figure illustrates the credit amount and phaseout thresholds for a head of household with one child under the TCJA and ARPA.

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<sup>3</sup> Information about residency is not available in the survey, so the CPS ASEC Tax Model assumes all respondents to be residents of the US. Nonresidents were still eligible for the previous version of the CTC.

<sup>4</sup> Widows had similar eligibility requirements as married joint filers.

## Child Tax Credit Amount Head of Household Filer, One Child



*Source:* Authors' calculations, Internal Revenue Service

*Notes:* 2021 expanded Child Tax Credit is fully refundable. Total Child Tax Credit under the 2017 Tax Cuts and Jobs Act (TCJA) is the sum of the nonrefundable Child Tax Credit and the refundable Additional Child Tax Credit and assumes the maximum possible credit given head of household filers only take the 2020 standard deduction of \$18,650 and no other tax credits. All versions of the Child Tax Credit follow a phase out of \$50 for each \$1,000 over the thresholds in a stairstep fashion.

ARPA also authorized IRS to issue advance payments of the CTC. The IRS used information from the 2019 or 2020 tax return to estimate the advance CTC payments.<sup>5</sup> The advance CTC payments were intended to equal half of a filer's total expected CTC amount. The IRS began disbursing advance CTC payments on July 15, 2021. After that, payments were disbursed monthly through December 2021.

Filers eligible for the advance CTC payments were required to have been eligible for the 2021 CTC. Additionally, they were required to have maintained a home in the US for more than half the year, and their qualifying children had to have an SSN valid for employment.<sup>6</sup> Tax filers who did not receive the advance CTC payments still could have claimed the full credit in their 2021 tax return. Because advance CTC payments are estimated by IRS based on 2019 and 2020 tax returns, filers may not have

<sup>5</sup> Individuals who did not file a 2019 or 2020 tax return could sign up to receive advance CTC payments using the "Child Tax Credit Non-Filer Sign-Up Tool" on the IRS website: <<https://www.irs.gov/credits-deductions/child-tax-credit-non-filer-sign-up-tool>>.

<sup>6</sup> The Social Security Administration issues three types of Social Security cards: (1) an unrestricted card for US citizens and people lawfully admitted to the US on a permanent basis; (2) "VALID FOR WORK ONLY WITH DHS AUTHORIZATION" for people lawfully admitted to the US on a temporary basis with authorization to work; and (3) "NOT VALID FOR EMPLOYMENT" for people who are lawfully admitted to US without work authorization or people who need a Social Security number for federal benefits or services.

received exactly half of their CTC in advance payments due to changes in income or filing status or family situations, such as a qualifying child changing homes. Tax filers who received advance CTC payments were able to claim the remaining amount of their CTC on their tax year 2021 tax return. However, filers who received excess advance CTC payments over their actual CTC amount had to repay the excessive payment in their 2021 tax return, unless their AGI was below certain limits. Married joint filers with AGI under \$60,000, head of household filers with AGI under \$50,000, and individual filers using any other filing status with AGI under \$40,000 were protected from having to repay excess advance CTC disbursements. Married joint filers with AGI over \$120,000 and head of household filers with AGI over \$100,000, and individual filers using any other filing status with AGI \$80,000 and over were required to fully repay any excess advance CTC they received. Tax filers with AGI between their respective two thresholds qualified for \$2,000 per child protected against the repayment of excess advance CTC.<sup>7</sup>

### 3. Data

#### 2022 Current Population Survey Annual Social and Economic Supplement

To collect data on the Child Tax Credit for 2021, the Census Bureau added a new question about the receipt of advance payments to the 2022 Current Population Survey Annual Social and Economic Supplement (CPS ASEC).<sup>8</sup> The yes/no question asked, at the household level:

*“In the spring of 2021, as part of the American Rescue Plan, the child tax credit was expanded and the IRS was instructed to pay out the benefit to parents, monthly, starting in July 2021. Since July, have you or anyone in your household received an Advance Child Tax Credit payment from the Federal Government?”*

Responses to this question indicate that 20.5 percent of US households would report having received an advance payment, containing 33.0 percent of individuals and 67.5 percent of children aged 0 to 17. The household-weighted item nonresponse rate (imputation rate) for this question was 27.2 percent. As explained in the following section, the CPS ASEC Tax Model uses this yes/no response to assign receipt and amount of the advance payment.

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<sup>7</sup> More details about repayment protection can be found on the IRS website: <<https://www.irs.gov/credits-deductions/2021-child-tax-credit-and-advance-child-tax-credit-payments-topic-h-reconciling-your-advance-child-tax-credit-payments-on-your-2021-tax-return>>.

<sup>8</sup> For more information on confidentiality protection, methodology, sampling and nonsampling error, and definitions, refer to <<https://www2.census.gov/programs-surveys/cps/techdocs/cpsmar22.pdf>>.

## Administrative records: Form 1040 returns and Numident

In order to validate the CPS ASEC Tax Model, we link IRS Form 1040 records to individuals in ASEC household rosters who are also listed as the primary filer on any IRS Form 1040 individual tax return for tax year 2021 posted to IRS's database through June 5, 2022. We use these records to both compare the model's inputs to those in linked records, as well as compare imputed CTC values between the two data sources. Since CTC amounts are not directly available in the IRS Form 1040 records, we use filing status, AGI, and a list of the first four dependents listed on each return.<sup>9</sup> We further link these records to the Social Security Administration 2022Q2 Numident file to assign ages to dependents as of December 31, 2021. We use these data to impute CTC amounts to each Form 1040 record to validate the model, as discussed later.

## 4. Methods

### CPS ASEC Tax Model

Modeling CTC receipt and amounts requires many inputs for each tax unit in the household: tax filing status, the number of qualifying children under 6, the number of qualifying children aged 6 to 17, and adjusted gross income.

*Tax filing status and number of qualifying children:* To identify CPS ASEC respondents' likely filing status as well as their likely number of qualifying children, it is necessary to construct likely tax units from the survey household rosters. The process of forming these tax units involves several steps. First, we sort individuals in the person-level file into three mutually exclusive subsets: (1) one for all married people; (2) one for all children; and (3) one for the "others." The first subset of all married people is defined as containing any record with a non-zero value for the spouse pointer variable. The second subset of all children is defined as any record with a non-zero value in the parent pointer variable. The remaining persons – with no values in spouse pointer or parent pointer – form the third subset for the "others."

The second step involves making the following adjustments to those initial assignments. We ensure that the children-and-dependents subset only includes qualifying children or dependents as the IRS defines them: children aged 18 years or under, children under 24 and enrolled in school, or adult children

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<sup>9</sup> Note that since we receive identifying information for only the first four dependents on each Form 1040 record, we are limited to identifying four qualifying children at most on each linked Form 1040 record.

with a disability.<sup>10</sup> Children who don't appear to be a qualifying child are moved to the "others" subset. We similarly reassign anyone under age 15 in the "others" subset (with no parent pointer) to the children subset.<sup>11</sup> The tax model only constructs single dependents and does not consider married dependent filers.

Third, dependents are linked to tax units. The child subset (2) is attached to the tax unit of their parent or parents, using the parent pointer variable. The number of qualifying children and qualifying dependents as defined for various federal and state deduction and credits, including the Child Tax Credit, is calculated for each tax unit.<sup>12</sup> In the CPS ASEC Tax Model, qualifying children are always a subset of dependents, which may not always be true for actual tax units.<sup>13</sup>

Fourth, the model assigns filing status. If the tax unit contains two spouses, then the filing status of the unit is defined as *Married, Filing Jointly*, and the spouse incomes are combined for the tax unit. The main filer is determined by the family relationship variable. The reference person is the main filer, and the spouse is attached to the main filer. We assume that all married couples file jointly, so we do not model the *Married, Filing Separately* filing status. If the tax unit contains a single person that has dependents, then the filing status is set to *Head of Household*. If the tax unit contains only a single person, then the filing status is set to *Single*. The survey data do not allow the identification of married separate filers, so the filing statuses in the ASEC Tax Model only consist of *Single, Head of Household*, and *Married, Filing Jointly*.

*Adjusted gross income:* Federal adjusted gross income (AGI) is computed as the sum of the following for the filer (and spouse, if married): wages and salaries, interest and dividend incomes, alimony income, business self-employment income, capital gains, IRA income, pension income, rent income, farm self-employment income, taxable unemployment compensation, and taxable social security benefits, and subtracted by one-half of self-employment taxes, self-employed health insurance, self-employed health savings, and IRA contributions.<sup>14</sup>

Several tax reforms enacted in 2021 were incorporated into the ASEC Tax Model for this year, such as the expansion of Earned Income Tax Credit (EITC), expansion of Credit for Child and Dependent Care Expenses (CDC), the third Economic Impact Payment (EIP 3), state-level stimulus payments, the

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<sup>10</sup> Since all inputs to the tax model are based on responses to the household survey, only resident children and dependents are included.

<sup>11</sup> Children under 15 and with no parent pointer are assigned to be a dependent of the householder.

<sup>12</sup> Refer to Section 2 for the definition of qualifying children for the Child Tax Credit, which the CPS ASEC Tax Model follows.

<sup>13</sup> For example, if a taxpayer did not pay more than half the cost of keeping up a home for the year, they cannot claim a dependent, but they could still claim a qualifying child for the Child Tax Credit.

<sup>14</sup> Some AGI and itemized deduction components are imputed from the IRS Statistics of Income microdata.

expiration of the federal unemployment compensation exclusion, and the suspension of the charitable contribution limit for itemizing deductions. The EITC for filers without qualifying children was expanded in these ways: the maximum credit increased from \$538 to \$1,502; the income threshold increased; the minimum age for filers was reduced to 19; and the maximum age of 65 was removed. The CDC became fully refundable (as it was previously a nonrefundable credit); its income threshold increased; and the maximum allowable credit was increased from \$1,050 to \$4,000 for one qualifying child and from \$2,100 to \$8,000 for two or more qualifying children.<sup>15</sup>

*Filing requirements:* Finally, the tax model determines whether each tax unit is likely to have filed a return. The tax model assumes a tax unit files a return if it meets at least one of the following requirements: (1) income above a filing threshold determined by age and filing status; (2) eligible for positive Earned Income Tax Credit (EITC); (3) positive self-employment income; (4) gross income less than \$0; (5) self-employment income less than \$0; (6) eligible for positive Child Tax Credit; (7) positive self-employment income for either spouse; or (8) has total income above \$2,000. Tax units that do not satisfy any of these eight requirements are presumed non-filers. Note that since all tax units that appear eligible for a positive Child Tax Credit are modeled as filers, this step does not impact CTC receipt and amount.

### Child Tax Credit Calculation

Given tax filing status, the number of qualifying children under 6, and the number of qualifying children aged 6-17, and adjusted gross income, the CPS ASEC Tax Model estimates the CTC amount and the advance payments by following line-by-line the instructions on Schedule 8812 (Credits for Qualifying Children and Dependents) and associated Line 5 Worksheet (Figure 1). Schedule 8812 and the Line 5 Worksheet present the various phaseouts for the CTC based on filing status. For single filers, if their AGI is less than or equal to \$75,000, then they receive the full amount of CTC: \$3,000 per qualifying child aged 6 to 17 and \$3,600 per qualifying child under 6. For married joint filers, if their AGI is less than or equal to \$150,000, then they receive the full amount of CTC. For head of household filers, if their AGI is less than or equal to \$112,500, then they receive the full amount of CTC. For the first phaseout, the payments are reduced by \$50 for every additional \$1,000 in AGI above the applicable threshold, plateauing at \$2,000. For example, for filers with one qualifying child aged 6 to 17, CTC is reduced to \$2,000 if their AGI is at least \$95,000 for single filers, \$132,500 for head of household filers, and \$170,000 for married joint filers. The second phaseout begins at AGI of \$400,000 for married joint filers

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<sup>15</sup> The federal unemployment compensation exclusion, which excluded up to \$10,200, was subtracted from AGI for tax year 2020. Though the federal exclusion ended in tax year 2021, many states that adopted this exclusion in tax year 2020 continued to exclude unemployment compensation from state taxable income for the tax year 2021.

and AGI of \$200,000 for all other filers. For the second phaseout, the amounts are again reduced by \$50 for every \$1,000 of the amount by which the filer’s AGI exceeds the applicable threshold from \$2,000 to \$0. For example, for filers with one qualifying child aged 6 to 17, CTC is reduced to \$0 if their AGI is at least \$440,000 for married joint filers and \$240,000 other individual filers. These phaseouts are illustrated in the “Child Tax Credit Amount” figure in Section 2.

The total advance CTC payment is calculated by taking 50 percent of the total estimated CTC credit amount.<sup>16</sup> We then assign the advance CTC payment to filers who are in households that report receiving any advance CTC payment using the answer to the yes/no question added to the CPS ASEC.<sup>17</sup> If the CPS ASEC Tax Model first assigns a CTC amount, but the household does not report receiving any advance CTC payment, then the advance CTC amount is set to zero. It is possible for a household to report receiving advance CTC payments, but they do not appear to have qualifying children within the survey household. For tax filing units within these households, their advance CTC payment and total CTC amount are zero. The answer to the yes/no question about receiving any advance CTC payment is not used in the tax model’s calculation of each household’s final CTC amount, however.

## Validation Methods

Ideally, the total estimated CTC amount from the tax model would be compared to aggregate final CTC statistics released by the IRS Statistics of Income (SOI) program as a direct way of validating the results. Unfortunately, the final CTC statistics are not scheduled to be released until mid-August, too late to include in this report.

In the absence of directly comparable aggregate statistics, we instead present results from three indirect comparisons. For the first validation, we link IRS Form 1040 records to individuals in ASEC household rosters who are also listed as the primary filer on any IRS Form 1040 record for tax year 2021, as described above. To complete this first validation exercise, we sum the resulting imputed CTC payments from linked 1040s within ASEC tax units and compare those sums to the CTC amount from the ASEC tax model. The results of this first validation exercise are summarized in Table 1.

For a second validation exercise, we present statistics comparing the two key inputs required to calculate the credit amount: adjusted gross income and number of qualifying children under age 18. We

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<sup>16</sup> The total estimated CTC amount variable (ACTC\_CRD) is available on the 2022 ASEC public-use file. Historically, the ACTC\_CRD was the refundable portion of CTC. This definition did not change for the 2022 CPS ASEC. Since in 2021 the CTC was fully refundable, ACTC\_CRD reflected the entire CTC amount. Historically, CTC\_CRD was the sum of the non-refundable portion of CTC and the credit for other dependents, so in the 2022 CPS ASEC it contains only the credit for other dependents.

<sup>17</sup> The advance CTC receipt variable used (HECTC\_YN) is an edited survey variable which includes imputed values. The receipt variable and the estimated advance CTC payment amount variable (ADV\_CTC) are available on the 2022 ASEC public-use file.

explore the correspondence in AGI by regressing Form 1040 AGI on ASEC-modeled AGI. We report the results from those regressions in Table 2. In Table 3 we explore the correspondence between qualifying children identified on CPS ASEC household rosters and the numbers of qualifying children listed on Form 1040 records linked to anyone in the CPS ASEC tax unit as a primary filer. Since the phaseouts begin at high incomes and apply over relatively narrow income intervals, the number of qualifying children is a much more consequential input.

As a third and final validation exercise, we compare the total advance CTC payments to aggregate statistics from the IRS SOI program. Although SOI will not publish final CTC aggregates for tax year 2021 (after the reconciliation that occurs upon filing an individual tax return) until the middle of August 2022, SOI has published aggregates for the *advance* CTC payments that were sent during the last half of 2021. These advance CTC payments were generally intended to equal about half the final CTC payments, although they often substantially varied from that one-half ratio, as Splinter (2022) documents. Tables 4 and 5 compare aggregates from the CPS ASEC model of advance CTC payments to the available-at-time-of-writing advance CTC aggregates published by SOI. Specifically, Table 4 compares aggregates by categories of AGI and Table 5 by filing status. Note, however, that while these tables compare *advance* CTC payments, since those are the statistics currently available from SOI, the amount that is relevant for each family's post-tax income is the *total* CTC amount.

## 5. Validation Results

As described above, Table 1 shows how CTC amounts imputed in the CPS ASEC Tax Model compare to CTC amounts constructed from individually linked IRS Form 1040 tax returns. Several encouraging facts can be gleaned from this comparison. First, 83.1 percent (+/- 0.4 percentage points<sup>18</sup>) of the person-weighted sample resides in tax units that agree between the two data sources on the extensive margin of CTC receipt. Second, among the 27.0 percent (+/- 0.3 percentage points) of people in tax units that have a positive CTC amount in both data sources, a majority (59.6 percent +/- 1.1 percentage points) have the exact same positive amount in both data sources. Among people with differing positive amounts, the tax model underestimates CTC for 17.6 percent (+/- 0.7 percentage points) of people and overestimates for 22.8 percent (+/- 0.8 percentage points).

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<sup>18</sup> Confidence intervals reflect the 90-percent confidence level.

Table 1 makes clear that CTC amounts modeled from the CPS ASEC survey information do not always match those modeled from the 1040s. Table 1 raises the question, however, as to which differences in inputs give rise to the differences in CTC amounts shown in Table 1. Tables 2 and 3 summarize the importance in modeling AGI and number of qualifying children in explaining those differences. Results in Table 2 suggest that AGI is unlikely to contribute much to the differences illustrated in Table 1. As was the case in last year’s modeling of the Economic Impact Payments (Bee, Hokayem, and Lin, 2021), Table 2 shows that the CPS ASEC Tax Model captures much of the variation in Form 1040 AGI values: 48.3 percent of the variation in Form 1040 values in the \$1-\$200,000 range is explained by the CPS ASEC Tax Model. Besides, as discussed above, the CTC benefit formula phaseouts apply to relatively high and narrow ranges of AGI, such that there is limited scope for AGI to affect CTC amounts.

Table 3 investigates a much more consequential input. We present cross-tabulations of dependent counts between the two data sources. Cells on the diagonal show matching assignment of qualifying children aged 0 to 17 from CPS ASEC Tax Model and tax year 2021 IRS Form 1040 records. The first column and first row show error on the extensive margin. These could be caused by children being claimed by different filers, or qualifying children being designated as single filers in the ASEC tax model.

The comparisons in Tables 1, 2, and 3 reveal differences in individual assignment of CTC amounts, but it remains difficult to tell how those differences, in conjunction with other potential sources of survey error and non-representativeness, net out in the aggregate. It could be the case that some households are assigned CTC amounts that are slightly too high, other receive amounts too low, and that on net these errors generally cancel out. Tables 4 and 5 investigate whether this may be the case, as they compare survey-weighted aggregate counts and amounts against benchmarks from tables published by the Internal Revenue Service’s Statistics of Income Program.

These published benchmarks do not tabulate final CTC credits, though, but rather the advance CTC payments sent over the last half of 2021, which were intended to generally total one-half of each household’s eventual CTC credit. Table 4 shows how the CPS ASEC Tax Model advance CTC aggregates compare to SOI tabulations by AGI. Table 5 shows the same comparison by filing status. Their underlying levels and standard errors are contained in Appendix Tables 1 and 2, respectively.

Comparisons of CPS ASEC modelled values to SOI benchmarks are limited by several conceptual inconsistencies. For example, the IRS calculated advance CTC payments using 2019 and 2020 tax return information, while the CPS ASEC Tax Model incorporates reported incomes received during 2021 and household rosters as of the interview date in the spring of 2022. As shown in Table 4, the CPS

ASEC Tax Model assigns much higher advance CTC payments at the lower end of the AGI distribution (negative to \$10,000). During the 2019 and 2020 tax years, the refundable portion of CTC had a \$2,500 restriction on earned income. The IRS may thus not count filers with no earned income who did not file in 2019 or 2020 because they did not owe income tax and did not qualify for any refundable earned income credits such as the CTC and EITC.

While the number of qualifying children that the model identifies for advance CTC is about 47.1 million, this is driven downward by the step in the model that imputes zero advance CTC payments to households that reported on the survey interview not receiving an advance CTC payment, which as discussed earlier contain 32.5 percent of children 0 to 17. By comparison, the CPS ASEC Tax Model identifies 68.6 million children as qualifying for the total CTC.

As discussed above, while at time of writing SOI has only published tables on aggregate advance CTC payments, the SPM does not directly incorporate advance CTC. Rather, the post-tax income measure used for the SPM and in the post-tax appendix of the *Income in the United States: 2021* report is instead influenced by the final CTC amount. Although most tax units' advance CTC payment amounts should be one-half of their eventual total CTC values, advance CTC payments could be higher or lower than that one-half value for a sizeable minority of families. As such, observed differences between SOI and ASEC aggregates of advance CTC payments need not necessarily imply differences between ASEC modelled CTC values and (unobserved) actual IRS CTC values.

## 6. Conclusion

This paper describes the changes to the CPS ASEC Tax Model to accommodate the expansion of the Child Tax Credit in 2021. It presents a comparison of the inputs used to calculate the total credit amount, as well as the portion paid in advance during 2021, using published SOI aggregates and linked individual tax returns. Data users interested in the total imputed CTC amount should use the ACTC\_CRD variable; the ADV\_CTC variable corresponds to the imputed advance CTC amount. Both variables are available on the 2022 CPS ASEC public-use file.<sup>19</sup> The total credit amount is reflected in many Census Bureau statistics and publications, including post-tax income in the report *Income in the United States: 2021* and the Supplemental Poverty Measure in the report *Poverty in the United States: 2021*.

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<sup>19</sup> The 2021 CPS ASEC public-use file can be found at <<https://www.census.gov/data/datasets/time-series/demo/cps/cps-asec.html>>.

While at time of writing, SOI has only published tables on advance CTC and not final CTC, benchmarking to these SOI tables may yet provide some suggestive evidence as to the model's performance, in combination with the other comparisons we provide. CTC values depend on counts of dependents aged 0 to 5 and 6 to 17, filing status, and AGI. Comparisons between ASEC and linked Form 1040 records of each of these inputs (as in Tables 2 and 3) suggest how the CPS ASEC may perform in its CTC modelling, but by themselves, they do not reveal how they affect the final distribution of CPS ASEC CTC errors. Comparisons to the SOI advance payments, however, ought to approximately map those differences in inputs into the unobserved differences in CTC output values.

Both the SOI tables and the CPS ASEC Tax Model, however, reflect a number of qualifying children for the advance CTC well short of the total number of children represented in the CPS ASEC as a whole, about 73.5 million. Though the Tax Model identifies 68.6 million children as qualifying for the total CTC, since about a third of children aged 0 to 17 were in households that reported not receiving advance payments, the tax model ends up with a much lower number of qualifying children (and therefore aggregate amount) for the advance CTC.

Larrimore, Mortenson, and Splinter (2019, Figure 4) show that almost all eligible children are claimed on *some* Form 1040 individual return in any given year. Jones and O'Hara (2016), as well as Larrimore, Mortenson, and Splinter (2017), describe how "doubled-up" households may often optimize their credits by assigning dependents to individual tax return in the household that most reduces the total household tax burden. If CPS ASEC simply had fewer total children than SOI, then the CPS ASEC Tax Model could never reach SOI benchmarks, and this could not be solved by better assignment of qualifying children in the ASEC Tax Model. Since CPS ASEC is weighted to target population controls including the national age distribution, it is mechanically constructed to contain approximately the same number of children as in the population. If the weighted number of children captured by the ASEC in total is not the explanation for the disagreement, it suggests the Tax Model misassigns children to the correct tax unit. It may thus be possible for future iterations of the CPS ASEC Tax Model to impute dependent children to tax units even when none appear on the roster, and conversely impute the *omission* of children from the modelled filings of other households projected to contain children claimed by filers outside those households.

Such an imputation reassigning children among households would mark a departure from the current tax modeling paradigm (*e.g.*, TAXSIM, the Bakija tax model, TRIM3) that takes inputs such as income and household structure as reported, deterministically applying the official IRS tax calculation algorithms. It would also generate some inconsistency between the tax model and other parts of SPM, such as equivalence adjustment scaling factors based on reported household structures. Wheaton and

Shantz (2016) show that the differences among various existing models are small given the same inputs, however, which suggests that further improvement in approaching IRS aggregate credits might need to come from improvement in model inputs such as counts of qualifying children. Ultimately, obtaining reliable household-level values for credits like the Child Tax Credit is a crucial step toward evaluating the performance of the nation's tax system.

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# Tables and Figures

**Figure 1: Excerpt of Schedule 8812 Credits for Qualifying Children and Dependents and its associated Line 5 Worksheet**

<b>SCHEDULE 8812</b> <b>(Form 1040)</b>		<b>Credits for Qualifying Children and Other Dependents</b> ▶ Attach to Form 1040, 1040-SR, or 1040-NR.		OMB No. 1545-0074 <b>2021</b> Attachment Sequence No. 47	
Department of the Treasury Internal Revenue Service (99)		▶ Go to <a href="http://www.irs.gov/Schedule8812">www.irs.gov/Schedule8812</a> for instructions and the latest information.			
Name(s) shown on return			Your social security number		
<b>Part I-A Child Tax Credit and Credit for Other Dependents</b>					
<b>1</b>	Enter the amount from line 11 of your Form 1040, 1040-SR, or 1040-NR . . . . .			<b>1</b>	
<b>2a</b>	Enter income from Puerto Rico that you excluded . . . . .	<b>2a</b>			
<b>b</b>	Enter the amounts from lines 45 and 50 of your Form 2555 . . . . .	<b>2b</b>			
<b>c</b>	Enter the amount from line 15 of your Form 4563 . . . . .	<b>2c</b>			
<b>d</b>	Add lines 2a through 2c . . . . .			<b>2d</b>	
<b>3</b>	Add lines 1 and 2d . . . . .			<b>3</b>	
<b>4a</b>	Number of qualifying children under age 18 with the required social security number . . . . .	<b>4a</b>			
<b>b</b>	Number of children included on line 4a who were under age 6 at the end of 2021 . . . . .	<b>4b</b>			
<b>c</b>	Subtract line 4b from line 4a . . . . .	<b>4c</b>			
<b>5</b>	If line 4a is more than zero, enter the amount from the <b>Line 5 Worksheet</b> ; otherwise, enter -0- . . . . .			<b>5</b>	
<b>6</b>	Number of other dependents, including any qualifying children who are not under age 18 or who do not have the required social security number . . . . .	<b>6</b>			
Caution: Do not include yourself, your spouse, or anyone who is not a U.S. citizen, U.S. national, or U.S. resident alien. Also, do not include anyone you included on line 4a.					
<b>7</b>	Multiply line 6 by \$500 . . . . .			<b>7</b>	
<b>8</b>	Add lines 5 and 7 . . . . .			<b>8</b>	
<b>9</b>	Enter the amount shown below for your filing status. • Married filing jointly—\$400,000 • All other filing statuses—\$200,000 . . . . .			<b>9</b>	
<b>10</b>	Subtract line 9 from line 3. • If zero or less, enter -0-. • If more than zero and not a multiple of \$1,000, enter the next multiple of \$1,000. For example, if the result is \$425, enter \$1,000; if the result is \$1,025, enter \$2,000, etc. . . . .			<b>10</b>	
<b>11</b>	Multiply line 10 by 5% (0.05) . . . . .			<b>11</b>	
<b>12</b>	Subtract line 11 from line 8. If zero or less, enter -0- . . . . .			<b>12</b>	
<b>13</b>	Check all the boxes that apply to you (or your spouse if married filing jointly). A Check here if you (or your spouse if married filing jointly) had a principal place of abode in the United States for more than half of 2021 . . . . . <input type="checkbox"/> B Check here if you (or your spouse if married filing jointly) were a bona fide resident of Puerto Rico for 2021 . . . . . <input type="checkbox"/>				

**Part I-B Filers Who Check a Box on Line 13**

**Line 5 Worksheet**

1.	Multiply Schedule 8812, line 4b, by \$3,600 . . . . .	1.	
2.	Multiply Schedule 8812, line 4c, by \$3,000 . . . . .	2.	
3.	Add line 1 and line 2 . . . . .	3.	
4.	Multiply Schedule 8812, line 4a, by \$2,000 . . . . .	4.	
5.	Subtract line 4 from line 3 . . . . .	5.	
6.	Enter the amount shown below for your filing status • Married filing jointly — \$12,500 • Qualifying widow(er) — \$2,500 • Head of household — \$4,375 • All other filing statuses — \$6,250 . . . . .	6.	
7.	Enter the smaller of line 5 or line 6 . . . . .	7.	
8.	Enter the amount shown below for your filing status • Married filing jointly or Qualifying widow(er) — \$150,000 • Head of household — \$112,500 • All other filing statuses — \$75,000 . . . . .	8.	
9.	Subtract line 8 from Schedule 8812, line 3 • If zero or less, enter -0- • If more than zero and not a multiple of \$1,000, enter the next multiple of \$1,000 For example, if the result is \$425, enter \$1,000; if the result is \$1,025, enter \$2,000, etc. . . . .	9.	
10.	Multiply line 9 by 5% (0.05) . . . . .	10.	
11.	Enter the smaller of line 7 or line 10 . . . . .	11.	
12.	Subtract line 11 from line 3. Enter on Schedule 8812, line 5 . . . . .	12.	

Source: US Internal Revenue Service instructions.

**Table 1. Differences in receipt and amount between CTC values from the ASEC tax model and from linked 1040s.**

	Proportion of Population	Standard Error
<i>Proportion of population in tax units with:</i>		
Zero ACTC in both CPS ASEC tax model and linked 1040 (if any)	56.06	0.15
False positive: ASEC model amount positive but 1040 zero	14.62	0.16
False negative: ASEC model amount zero but 1040 positive	2.33	0.06
Positive ACTC in both data sources	27.00	0.19
<i>    Among those with positive ACTC in both data sources:</i>		
ASEC more than 1040 amount	22.81	0.51
ASEC equals 1040	59.61	0.66
ASEC less than 1040 amount	17.58	0.40

*Sources:* US Census Bureau 2022 Current Population Survey Annual Social and Economic Supplement (CPS ASEC) individually linked to tax year 2021 Internal Revenue Service Form 1040 records and 2022Q2 SSA Numident age records for dependents.

*Notes:* Proportions are weighted by CPS ASEC final person weights of CPS ASEC tax unit members.

**Table 2. Regressing linked IRS Form 1040 tax year 2021 adjusted gross income (AGI) on CPS ASEC-modeled tax year 2021 AGI.**

	(1)	(2)	(3)	(4)
Coefficient (Std. err.)		Linear, Restricted to AGI	Linear, Restricted to AGI	Cubic, Restricted to AGI
<i>t</i> -statistic	Linear	\$1-\$150k	\$1-\$200k	\$1-\$150k
Constant	55,910 (3,750) <i>14.91</i>	17,480 (288.0) <i>60.70</i>	18,100 (292.2) <i>61.93</i>	21,530 (534.1) <i>40.30</i>
AGI/10k	4,892 (312.4) <i>15.66</i>	6,320 (55.70) <i>113.5</i>	6,577 (51.19) <i>128.5</i>	2,424 (372.6) <i>6.505</i>
AGI/10k squared	--	--	--	751.1 (71.33) <i>10.53</i>
AGI/10k cubed	--	--	--	-37.00 (3.663) <i>-10.10</i>
R-squared	0.007	0.443	0.483	0.447
N	51,000	32,000	34,000	32,000

*Sources:* US Census Bureau 2022 Current Population Survey Annual Social and Economic Supplement (CPS ASEC) individually linked to tax year 2021 IRS Form 1040 records.

*Notes:* The dependent variable is AGI from individually linked IRS Form 1040 records, from tax year 2021, linked to primary filers. The main independent variable is AGI as modeled in the CPS ASEC tax model, based on responses to the 2022 CPS ASEC regarding income received during the 2021 calendar year and household characteristics at the time of interview. Form 1040 records are linked via Protected Identification Key of the primary filer. AGI sample restrictions are applied to both the IRS amounts and the CPS ASEC-modeled amounts. Standard errors are in parenthesis, *t*-statistics in italics.

**Table 3. Number of dependents under 18 at the ASEC tax-unit level, among those with at least one dependent in either data source.**

*Weighted proportions of tax units*

*Standard errors in parenthesis*

Number of dependents in ASEC tax unit, according to ASEC tax model	Number of dependents aged 0-17 in all Form 1040 records linked to the ASEC tax unit					Total
	0	1	2	3	4+	
0	-- --	0.0727 (0.0019)	0.0273 (0.0013)	0.0083 (0.0008)	0.0020 (0.0004)	0.1103 (0.0022)
1	0.1643 (0.0022)	0.2196 (0.0014)	0.0112 (0.0031)	0.0019 (0.0005)	0.0004 (0.0002)	0.3973 (0.0040)
2	0.0996 (0.0028)	0.0310 (0.0032)	0.1788 (0.0008)	0.0056 (0.0003)	0.0008 (0.0002)	0.3157 (0.0040)
3	0.0372 (0.0015)	0.0044 (0.0006)	0.0145 (0.0010)	0.0641 (0.0019)	0.0017 (0.0003)	0.1219 (0.0026)
4+	0.0185 (0.0010)	0.0011 (0.0003)	0.0040 (0.0005)	0.0093 (0.0007)	0.0218 (0.0011)	0.0547 (0.0017)
Total	0.3196 (0.0034)	0.3288 (0.0034)	0.2358 (0.0032)	0.0892 (0.0021)	0.0266 (0.0012)	1.0000 --

*Sources:* US Census Bureau 2022 Current Population Survey Annual Social and Economic Supplement (CPS ASEC) individually linked to tax year 2021 Internal Revenue Service Form 1040 records and 2022Q2 SSA Numident age records for dependents.

*Notes:* This table omits the 76 percent of ASEC tax units that have no dependents in either the CPS ASEC tax model or any linked IRS Form 1040 record. Tax units are weighted by the weight of the first person listed in each tax unit (i.e., the person record with the lowest value of A\_LINENO). Standard errors in parenthesis.

**Table 4. ASEC/SOI ratios of advance Child Tax Credit payments by levels of adjusted gross income (AGI).**

	Count of payments	Total payment amount	Number of qualifying children	Mean payment
<b>Overall</b>	<b>0.64</b>	<b>0.75</b>	<b>0.76</b>	<b>1.17</b>
Under \$10,000*	0.93	1.25	1.23	1.34
\$10,000 under \$20,000	0.30	0.37	0.37	1.26
\$20,000 under \$30,000	0.36	0.42	0.43	1.18
\$30,000 under \$40,000	0.48	0.57	0.57	1.20
\$40,000 under \$50,000	0.52	0.61	0.61	1.18
\$50,000 under \$60,000	0.66	0.78	0.77	1.17
\$60,000 under \$75,000	0.69	0.82	0.81	1.19
\$75,000 under \$100,000	0.71	0.80	0.80	1.12
\$100,000 under \$200,000	0.90	1.03	1.01	1.15
\$200,000 under \$400,000	1.05	1.19	1.18	1.14
\$400,000 or more	0.46	0.47	0.48	1.03

*Sources:* Internal Revenue Service Statistics of Income (IRS SOI) tables (<https://www.irs.gov/statistics/soi-tax-stats-advance-child-tax-credit-payments-in-2021>), US Census Bureau 2022 Current Population Survey Annual Social and Economic Supplement (CPS ASEC).

*Notes:* Each cell represents the ratio of the CPS ASEC tax-modeled sum of the advance Child Tax Credit payments to its corresponding IRS SOI benchmark. Underlying levels are listed in Appendix Table 1. \*The "Under \$10,000" AGI category combines the SOI categories "no adjusted gross income" and "\$1 under \$10,000." Ratios may differ slightly from those implied by Appendix Table 1 due to use of unrounded SOI values.

**Table 5. ASEC/SOI ratios of advance Child Tax Credit payments by filing status.**

	Count of payments	Total payment amount	Number of qualifying children	Mean payment
<b>Overall</b>	<b>0.64</b>	<b>0.75</b>	<b>0.76</b>	<b>1.17</b>
Single or qualifying widow(er) <sup>1</sup>	--	--	--	--
Married filing jointly or separately <sup>2</sup>	0.79	0.88	0.88	1.11
Head of household	0.56	0.68	0.68	1.22

*Sources:* Internal Revenue Service Statistics of Income (IRS SOI) tables (<https://www.irs.gov/statistics/soi-tax-stats-advance-child-tax-credit-payments-in-2021>), US Census Bureau 2022 Current Population Survey Annual Social and Economic Supplement (CPS ASEC).

*Notes:* Each cell represents the ratio of the CPS ASEC tax-modeled sum of the advance Child Tax Credit payments to its corresponding IRS SOI benchmark. Underlying levels are listed in Appendix Table 2. Ratios may differ slightly from those implied by Appendix Table 2 due to use of unrounded SOI values.

<sup>1</sup>The CPS ASEC Tax Model assigns single filer status such that it is most comparable to the sum of SOI single filers and SOI qualifying widow(er) filers. The CPS ASEC Tax Model does not assign children or dependents to single filers. Singles filers with dependents are reclassified as head of household filers.

<sup>2</sup>The CPS ASEC Tax Model assigns married filing jointly such that counts are most comparable to the sum of SOI married joint and one-half of SOI married separate filers, and the amounts are most comparable to the sum of SOI married joint and separate filers.

**Appendix Table 1. Estimates of levels and standard errors of advance Child Tax Credit payments by levels of adjusted gross income (AGI).**

**Panel A. Levels**

	CPS ASEC Tax Model			IRS SOI		
	Count of payments (millions)	Total payment amount (\$ billions)	Number of qualifying children (millions)	Count of payments (millions)	Total payment amount (\$ billions)	Number of qualifying children (millions)
<b>Overall</b>	<b>24.48</b>	<b>70.62</b>	<b>47.14</b>	<b>37.96</b>	<b>93.62</b>	<b>61.98</b>
Under \$10,000*	2.44	7.83	4.88	2.62	6.26	3.95
\$10,000 under \$20,000	1.23	3.78	2.36	4.15	10.18	6.38
\$20,000 under \$30,000	1.70	5.02	3.16	4.73	11.83	7.42
\$30,000 under \$40,000	2.00	6.06	3.80	4.21	10.63	6.69
\$40,000 under \$50,000	1.61	4.90	3.09	3.12	8.07	5.09
\$50,000 under \$60,000	1.61	4.91	3.09	2.44	6.34	4.01
\$60,000 under \$75,000	2.04	6.40	4.02	2.97	7.81	4.94
\$75,000 under \$100,000	2.76	8.26	5.20	3.86	10.28	6.52
\$100,000 under \$200,000	6.42	18.32	12.30	7.14	17.71	12.15
\$200,000 under \$400,000	2.53	4.96	4.94	2.41	4.17	4.18
\$400,000 or more	0.14	0.17	0.31	0.32	0.35	0.64

*Sources:* Internal Revenue Service Statistics of Income (IRS SOI) tables (<https://www.irs.gov/statistics/soi-tax-stats-advance-child-tax-credit-payments-in-2021>), US Census Bureau 2022 Current Population Survey Annual Social and Economic Supplement (CPS ASEC).

*Notes:* Each cell represents the aggregate sum of the advance Child Tax Credit payments. The "Under \$10k" AGI category are combined from SOI categories "no adjusted gross income" and "\$1 under \$10,000." Counts and number of children are in millions. Payment amounts are in billions. Ratios in Table 4 are based on unrounded SOI statistics.

**Panel B. Standard Errors**

	CPS ASEC Tax Model		
	Count of payments (millions)	Total payment amount (\$ billions)	Number of qualifying children (millions)
<b>Overall</b>	<b>0.22</b>	<b>0.73</b>	<b>0.48</b>
Under \$10,000*	0.08	0.29	0.18
\$10,000 under \$20,000	0.05	0.19	0.12
\$20,000 under \$30,000	0.07	0.22	0.14
\$30,000 under \$40,000	0.07	0.25	0.15
\$40,000 under \$50,000	0.06	0.21	0.13
\$50,000 under \$60,000	0.06	0.22	0.14
\$60,000 under \$75,000	0.07	0.24	0.15
\$75,000 under \$100,000	0.08	0.24	0.15
\$100,000 under \$200,000	0.12	0.39	0.26
\$200,000 under \$400,000	0.07	0.15	0.15
\$400,000 or more	0.02	0.03	0.04

*Sources:* US Census Bureau 2022 Current Population Survey Annual Social and Economic Supplement (CPS ASEC).

*Notes:* Each cell represents the standard error of the aggregate modeled sum advance Child Tax Credit payments. Counts and number of children are in millions. Payment amounts are in billions.

**Appendix Table 2. Estimates of levels and standard errors of advance Child Tax Credit payments by filing status.**

**Panel A. Levels**

	CPS ASEC Tax Model			IRS SOI		
	Count of payments (millions)	Total payment amount (\$ billions)	Number of qualifying children (millions)	Count of payments (millions)	Total payment amount (\$ billions)	Number of qualifying children (millions)
<b>Overall</b>	<b>24.48</b>	<b>70.62</b>	<b>47.14</b>	<b>37.96</b>	<b>93.62</b>	<b>61.98</b>
Single or qualifying widow(er) <sup>1</sup>	-	-	-	-	-	-
Married filing jointly or separately <sup>2</sup>	15.97	46.80	31.94	20.21	53.20	36.20
Head of household	8.51	23.82	15.21	15.28	35.07	22.35

*Sources:* Internal Revenue Service Statistics of Income (IRS SOI) tables (<https://www.irs.gov/statistics/soi-tax-stats-advance-child-tax-credit-payments-in-2021>), US Census Bureau 2022 Current Population Survey Annual Social and Economic Supplement (CPS ASEC).

*Notes:* Each cell represents the aggregate sum of the advance Child Tax Credit payments. Counts and number of children are in millions. Payment amounts are in billions. Ratios in Table 5 are based on unrounded SOI statistics.

<sup>1</sup>The CPS ASEC Tax Model assigns single filer status such that it is most comparable to the sum of SOI single filers and SOI qualifying widow(er) filers. The CPS ASEC Tax Model does not assign children or dependents to single filers. Singles filers with dependents are reclassified as head of household filers.

<sup>2</sup>The CPS ASEC Tax Model assigns married filing jointly such that counts are most comparable to the sum of SOI married joint and one-half of SOI married separate filers, and the amounts are most comparable to the sum of SOI married joint and separate filers.

**Panel B. Standard Errors**

	CPS ASEC Tax Model		
	Count of payments (millions)	Total payment amount (\$ billions)	Number of qualifying children (millions)
<b>Overall</b>	<b>0.22</b>	<b>0.73</b>	<b>0.55</b>
Single or qualifying widow(er)	-	-	-
Married filing jointly or separately	0.18	0.59	0.47
Head of household	0.15	0.48	0.34

*Sources:* US Census Bureau 2022 Current Population Survey Annual Social and Economic Supplement (CPS ASEC).

*Notes:* Each cell represents the standard error of the aggregate modeled sum advance Child Tax Credit payments. Counts and number of children are in millions. Payment amounts are in billions.