Stylized Marginal and Average Income Tax Rates and Tax Support for Families under the American Rescue Plan Tax Year 2021

Office of Tax Analysis

October 26, 2021

The amount of income tax owed and tax benefits received at any level of income is determined by the interaction of the taxpayer's income and filing status with other characteristics of the tax unit. This report presents a series of figures showing the stylized marginal and average tax rates faced by typical family types as income varies. In cases where a dependent is present, the figures also show the amount of tax support provided to the family due to the presence of the dependent. This report updates a similar report from 2019 to reflect the changes to key tax provisions under the American Rescue Plan of 2021 (ARP).[1]

In taxable year 2021, taxpayers with dependent children pay lower taxes than similar families without children or dependents through the following major tax provisions of the individual income tax:

- *Filing status* – Unmarried taxpayers who are supporting a dependent child may be eligible to file as a head of household, instead of as a single filer. Head of household status has a higher standard deduction, and income is taxed under a separate rate bracket structure that is more generous.
- *Child tax credit (CTC)* – Taxpayers may be eligible for a fully refundable child credit of $3,600 for each child up through age 5 and $3,000 for each child age 6 through age 17 with a valid social security number. Taxpayers with insufficient tax liability to claim the entire CTC may claim the full amount remaining as an additional child credit (ACTC). The portion of the credit in excess of $2,000 per child phases out sequentially with income in excess of $150,000 of modified adjusted gross income (AGI) for married joint filers or surviving spouses, $112,500 for head of household filers, and $75,000 for all other filers, with a modified rule for large families. The remaining CTC (combined with the amount of other dependent credit [see below]) phases out beginning at $200,000 of modified AGI ($400,000 for married couples filing a joint return).[2]
- *Other dependent tax credit (ODTC)* – Taxpayers may be eligible for a non-refundable other dependent credit of up to $500 for each qualifying dependent relative or child who is not eligible for the child credit. The ODTC (combined with the amount of CTC [see above]) phases out beginning at $200,000 of modified AGI ($400,000 for married couples filing a joint return).
- *Earned income tax credit (EITC)* – Taxpayers with earned income may be eligible for a refundable EITC. The amount of EITC a taxpayer may receive initially increases as the taxpayer earns more income, then remains constant over a range of earned income, and then decreases as earned income (or modified adjusted gross income, if greater) increases further. The credit begins to phase out at a higher income level for married taxpayers and is more generous for families with more children (up to three children).

---

[1]The comparable 2019 report can be found here: https://home.treasury.gov/system/files/131/Marginal-and-Average-Income-Tax-Rates-and-Tax-Support-for-Families-2019.pdf. A full description of the taxable year 2021 changes is available in the *General Explanation of the Administration's Revenue Proposals for Fiscal Year 2022*, available here: https://home.treasury.gov/system/files/131/General-Explanations-FY2022.pdf.

[2] Up to 50 percent of the credit may be received in advance during the 2021 taxable year; the first monthly payments based on predicted eligibility were disbursed in July. This document does not otherwise consider the advance.

Taking the one-child schedule for a single parent as an example, the credit phases in with earnings at a rate of 34 percent, until the maximum credit of $3,618 at $10,640. The credit begins phasing out with modified AGI (or earnings if greater) in excess of $19,520 at a rate of 15.98 percent, phasing out completely at $42,158.[3]

- *Child and dependent care credit (CDCTC)* – Taxpayers with expenses for caring for a qualifying individual, who may be a child or an adult, may be eligible for a non-refundable CDCTC. The credit is generally available for working taxpayers with dependent children under age 13, but it is also available for working taxpayers supporting parents or other dependents needing care. The maximum credit match rate is 50 percent of up to $8,000 of childcare expenses for 1 child or dependent and $16,000 for 2 or more children or dependents. The credit match rate is phased down from 50 percent to 20 percent for taxpayers with AGI between $125,000 and $183,000. The credit rate is 20 percent for a taxpayer with AGI between $183,000 and $400,000. The phase down of the match rate then continues and is complete for taxpayers with AGI of $438,000 or more.[4]

This report presents five figures describing the experiences of stylized family types across a wide range of incomes. The thought experiment used to create the figures is the following: as we move from left to right along the X axis, we trace out a series of related families with progressively more income in thousand-dollar intervals. At each successive point, the family depicted has the attributes of a marginally better-off family and they spend marginally more on all the things as the previous family: eats a bit better, lives in a slightly nicer home, gives a bit more to charity, and pays a bit more in taxes than the family at the income level just to their left. Then, for each family, we calculate the tax concepts of interest. This structure results in a slightly nonstandard depiction of the marginal tax rates, which will be described in greater detail below.

Four simplifying assumptions about the families are made. First, all income comes from wages and the family forms a single tax unit. Second, families are only eligible for the tax benefits listed above.[5] Third, 12.5 percent of family income is spent on items that qualify for an itemized deduction.[6] Examples of such items include mortgage interest expenses, state and local income and property tax payments, and charitable contributions. Fourth, taxpayers choose to itemize their deductions or claim the standard deduction in order to minimize their tax liability.

---

[3] Taxpayers with no qualifying children (including those living with children they do not claim) may also claim an EITC. In 2021 the phase-in and phase-out rate is 15.3 percent, and the maximum credit is $1,527. The credit is fully phased in at earnings of $9,980 and begins phasing out at the greater of earnings or modified AGI at $11,800. The EITC for married taxpayers who file a joint return begins to phase out at higher incomes than for other filers: $5,950 higher for families with children ($5,940 for families without children). The end of the phase-in range and the end of the plateau are indexed for inflation.

[4] Taxpayers whose employers offer the benefit may exclude from income for income and payroll tax purposes amounts contributed to a dependent care flexible spending program, up to certain limits, and no expense is eligible for more than one provision. The exclusion is not modeled here.

[5] As a result of this assumption AGI, modified AGI, income, and earnings do not differ. In 2021 taxpayers who take the standard deduction may deduct charitable contributions of up to $300 ($600 for married joint filers). This deduction is also excluded from the analysis; it is too small to be visible in the figures.

[6] The rate of 12.5 percent was chosen to approximate (by filing status) the income at which the median taxpayer in that income range would itemize. This updates a longstanding Office of Tax Analysis assumption to account for the lower itemization rates under TCJA and ARP than under prior law. The decrease in itemization rates is due to the $10,000 cap on state and local tax deductions and the elimination of certain other deductions.

The third and fourth assumptions have an important implication when trying to interpret the figures in this report. The lines labeled "stylized marginal tax rate" and average tax rate are calculated as follows. At each AGI level, the taxpayer is given an extra $1,000 of wages.[7] The taxpayer therefore has an additional $125 of itemizable expenses and $875 of income used for expenses that are taxed. The taxpayer, by the fourth assumption, re-determines whether to itemize deductions or claim the standard deduction. Taxable income—in this case wages less either the standard deduction or itemized deductions—is then recalculated, and the relevant tax rates and credits are applied to determine the tax liability.[8] The difference in liability is divided by the $1,000 change in income to get a stylized marginal tax rate. The total tax liability is divided by AGI to get the average tax rate.

In short, while a traditional marginal tax rate describes the additional tax from an additional unit of income, *ceteris paribus*, the stylized marginal tax rate describes the additional tax when the additional unit of income affects behavior, as well. Once a taxpayer reaches the threshold and becomes an itemizer, the stylized marginal tax rate is equal to 87.5 percent of the marginal rate they would otherwise face. A stylized itemized deduction in the figures captures the benefit to taxpayers from itemization through lower taxes while limiting the impact on figures to a simple downward shift in the marginal tax rate at roughly the income level where we would observe most taxpayers itemizing.

Figure 1 presents the stylized marginal tax rate and average tax rate faced by a single filer without children. The stylized marginal tax rate deviates from the statutory rate schedule due to the EITC at low-income levels and the switch to itemization at higher income levels. The EITC decreases the (stylized) marginal tax rate as the credit phases in and increases it as the credit phases out. Itemization decreases the stylized marginal tax rate.

The remaining families have dependent children. Thus, the figures also show the level of tax support for a child, labeled on the right axis. The tax support for a child is calculated by taking the difference between the family's tax liability in absence of the child and their tax liability with the child present at each successive AGI point. For example, Figure 2 shows a married couple with one young child and no childcare expenses. At $50,000 of income this family would receive a refund of $1,010. In absence of the child, the same family would owe $2,590. The support for the child is the difference, calculated as $2,590 – (-$1,010) = $3,600. Repeating this calculation at all AGI levels traces out the solid orange regions shown in Figures 2, 3 and 4.

Figure 2 presents on the left axis the stylized marginal tax rate and average income tax rate faced by a married filer with one dependent child under 6 but no childcare expenses. The figure presents on the right axis the amount of tax support the family receives as a result of the child. The stylized marginal tax rate is large and negative as the EITC and ACTC phase in and is large and positive as the EITC phases out. If this figure were extended to include higher income

[7] Stylized marginal tax rates are calculated based on thousand-dollar earnings increments, except for Figure 1 which uses $100 increments for clarity.
[8] For taxpayers who claim the standard deduction, taxable income increases by the $1,000 increase in wages. In contrast, for taxpayers who itemize their deductions, taxable income increases by $875—the $1,000 increase in wages less 12.5 percent, or $125, for the commensurate increase in itemizable expenses.

families, there would be a temporary increase in the stylized marginal tax rate as the remainder of the CTC begins to phase out at $400,000.

Figure 2A presents the same one-child family as Figure 2 but focuses on those with low and modest incomes. This figure decomposes the total tax support for the child into the contribution of the CTC (blue), the ACTC (light blue), and the EITC (gray). In 2021 families with the lowest incomes can receive an ACTC up to the full amount of the otherwise unclaimed child credit; thus, the combined tax support from the CTC and ACTC is constant at $3,600. The tax support for a child due to the EITC is more complicated; the tax support is the value of the one-child EITC less the value of the EITC that would have been received in absence of that child. Subtracting the smaller EITC for workers without children from the larger EITC for workers with children results in the gray region.[9]

Figure 3 replicates Figure 2 for a head of household filer with one dependent child but no childcare expenses. The stylized marginal tax rate shares all of the key features seen in Figure 2, but with a less generous underlying statutory marginal rate schedule and credits that phase out at lower income levels. The switch to itemizer status occurs at a lower income than it does for married joint filers due to the smaller standard deduction available to head of household filers. The amount of tax support for this family type includes the added element that the child creates eligibility for head of household status—and thus a more generous rate schedule than applies to other unmarried taxpayers. The portion of the tax support due to the difference in schedules is shown in a lighter shade than the portion due to the remaining child-related provisions.

Figure 4 presents the stylized marginal tax rate and average tax rate faced by a joint filing couple with one dependent child and sufficient childcare expenses to qualify for the maximum CDCTC (even when spending the maximum is not realistic). In addition, it is assumed that both filers work.[10] The figure also presents the amount of tax support the family receives as a result of the child. Key differences between this figure and Figure 2 are the higher marginal rates as the CDCTC phases down and the additional benefit from this credit for nearly all taxpayers, but especially those at all but the lowest levels of income.[11] This figure shows the maximum amount of CDCTC permitted by law, even though this level of expenses is unrealistic at the lowest incomes.

[9] The more familiar "EITC trapezoid" does not account for any EITC that would have been received in absence of the child. The EITC traces out a trapezoidal region as it phases in, plateaus, and then phases out with earnings (or income), hence the name. The expansion under ARP of the EITC for workers without children results in a decrease in the tax support for a child in the lowest income range relative to the tax support in this range in prior years.
[10] The credit phases in based on the earnings of the lower earner and it is assumed here that both filers earn 50 percent of the total.
[11] The CDCTC phases down as a decreasing percentage match for expenses for each $2,000 of AGI above a threshold. The second stage begins at $400,000 (not shown). For ease of exposition, the stylized marginal tax rates in the phase-down range of the credit are smoothed.

Figure 1
Stylized Marginal and Average Tax Rates as Income Increases
Single Filer No Dependents
Taxable Year 2021

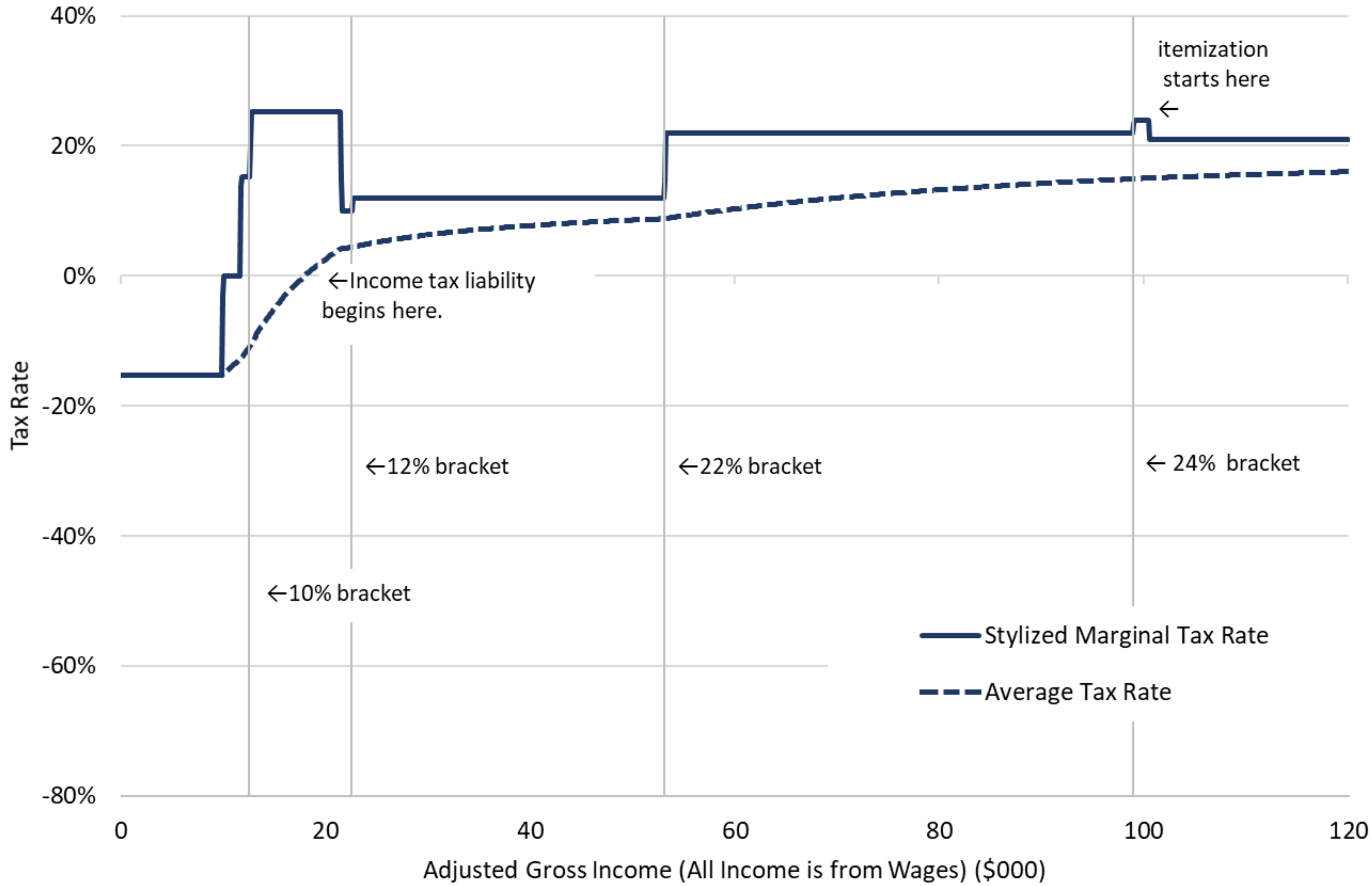

Figure 2
Stylized Marginal and Average Rates and Tax Support for Child
Married Filer with One Child Under 6, No Childcare Expenses
Taxable Year 2021

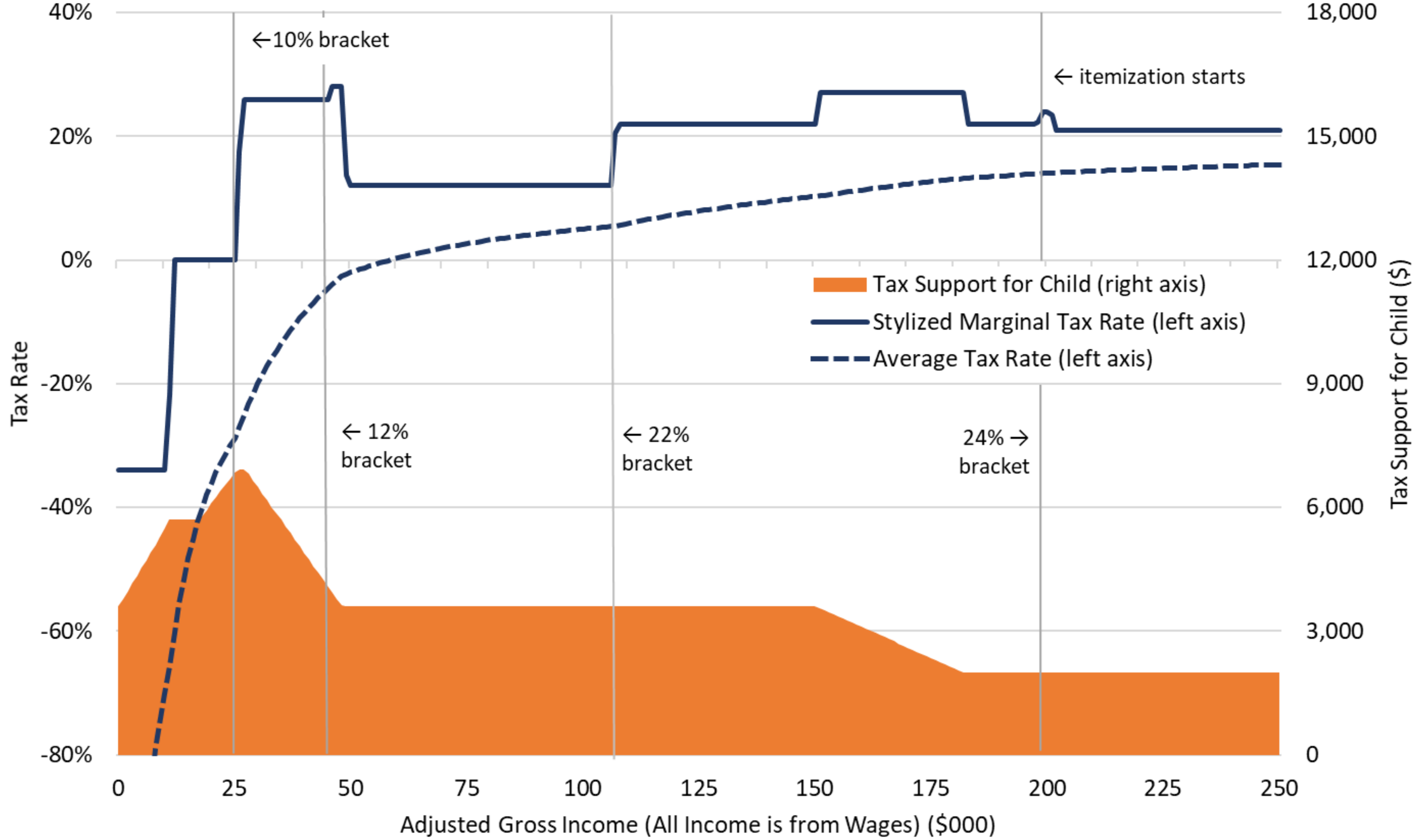

Figure 2A
Stylized Marginal and Average Rates and Tax Support for Child - Low Income Focus
Married Filer with One Child Under 6, No Childcare Expenses
Taxable Year 2021

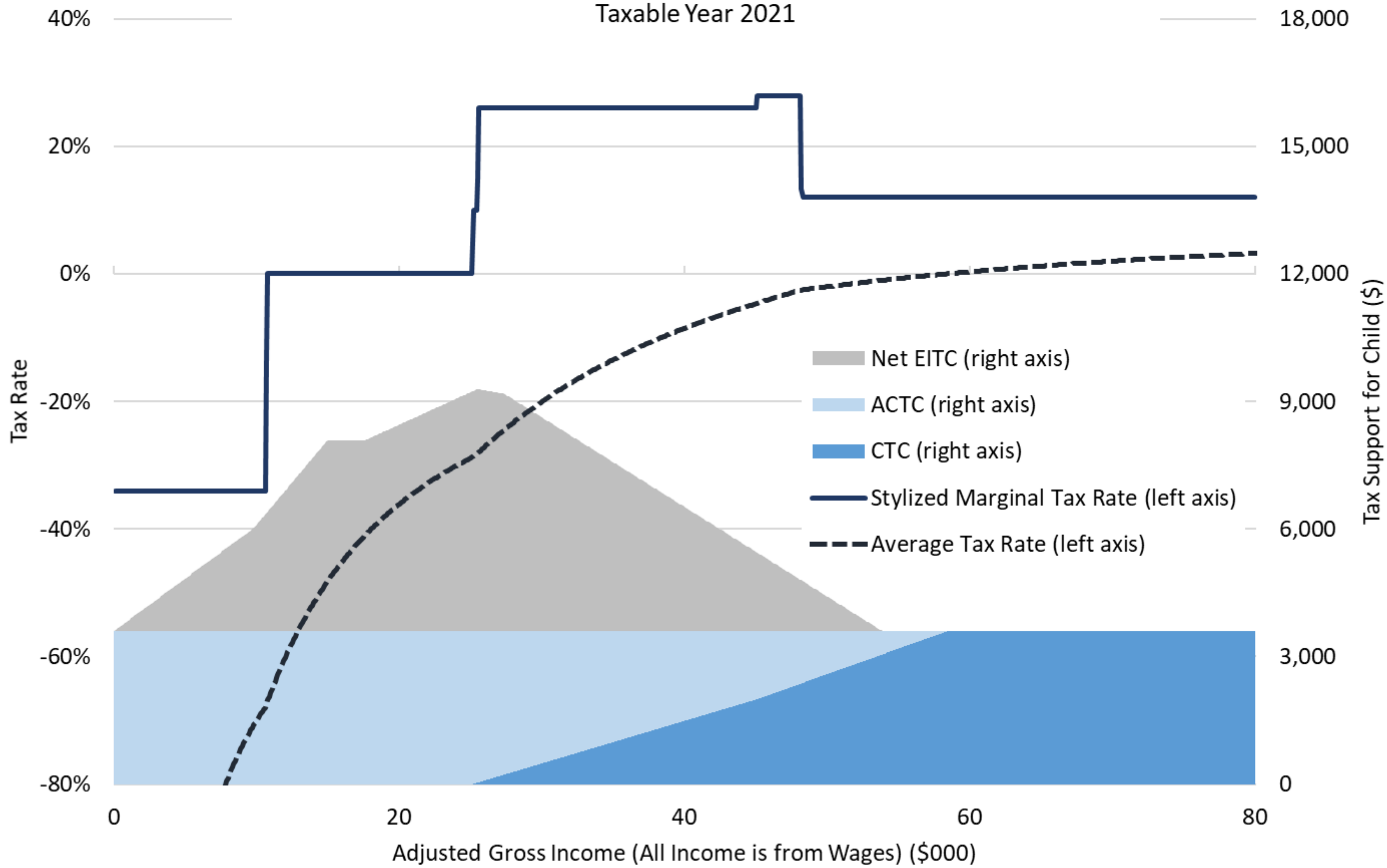

Figure 3
Stylized Marginal and Average Tax Rates and Tax Support for Child
Head of Household Filer with One Child Under 6, No Childcare Expenses
Taxable Year 2021

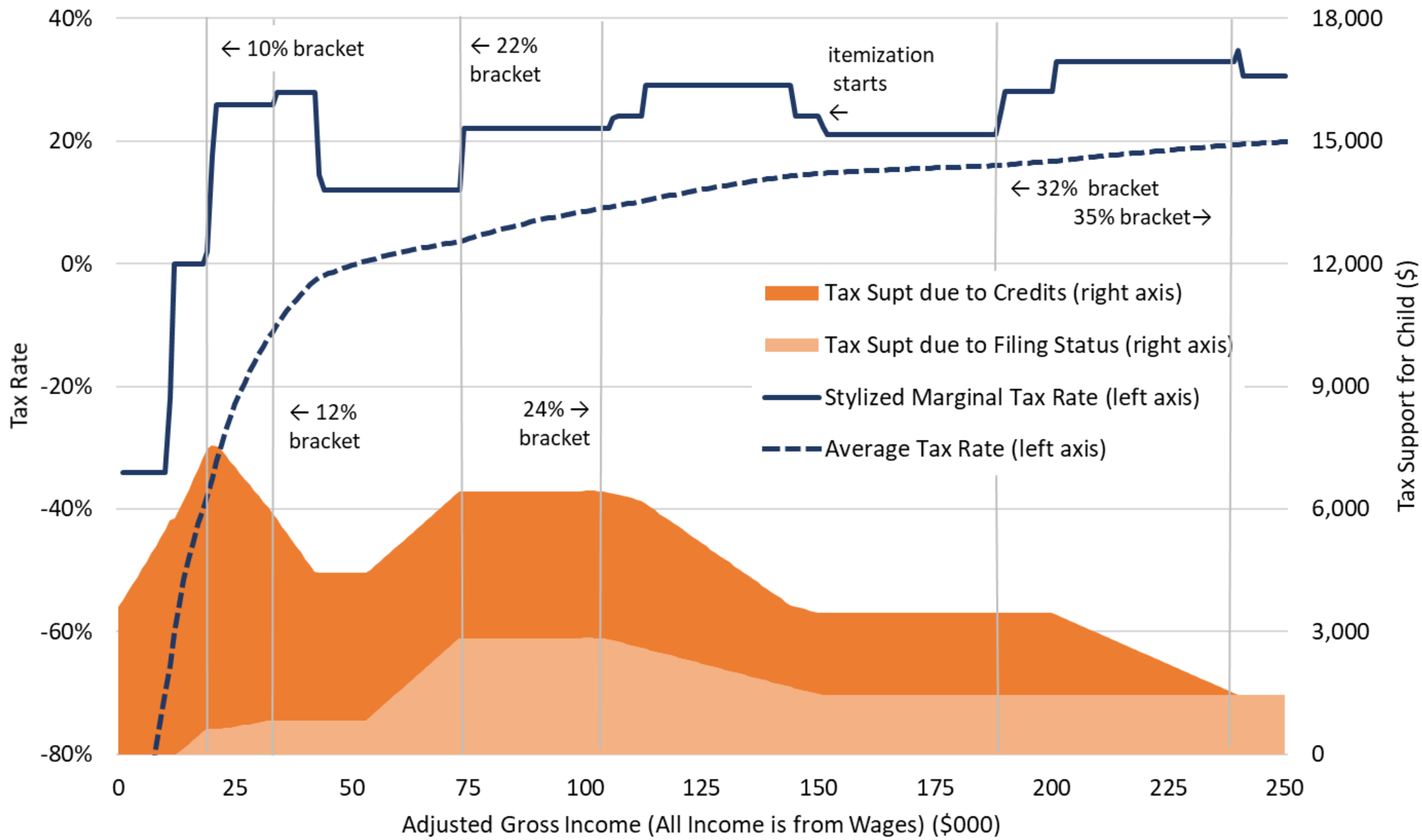

Figure 4
Stylized Marginal and Average Rates and Tax Support for Child
Married Filer with One Child Under 6, Maximum Childcare Expenses
Taxable Year 2021