What If We Expanded Child Care Subsidies? A National and State Perspective

Technical Appendix

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This technical appendix describes how we used the Urban Institute’s Analysis of Transfers, Taxes, and Income Security (ATTIS) state-level microsimulation model to assess the impact of guaranteeing child care subsidies to every family with income below 150 of the federal poverty guidelines who is eligible and wants a subsidy.

ATTIS Microsimulation Model

Microsimulation models can apply policy and program rules at an individual and household level to help answer detailed policy questions related to program eligibility, enrollment, benefits, and taxes. Microsimulation modeling allows us to capture the impact of single policy proposals on program eligibility and enrollment. We can also use microsimulation to understand the broader implications of those changes, including impacts on employment and poverty.

For this analysis, we used the Urban Institute’s ATTIS model. The ATTIS model uses American Community Survey (ACS) data to allow for national and state-level analysis. The model is comprehensive, estimating eligibility, benefits, and enrollment for all the major benefit programs—the Supplemental Nutrition Assistance Program (or, more familiarly, SNAP), Supplemental Security Income (SSI), Temporary Assistance for Needy Families (TANF), child care subsidies through the Child Care and Development Fund (CCDF), public and subsidized housing, the Low-Income Home Energy Assistance
Program (LIHEAP), and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)—and computing payroll taxes and federal and state income taxes. This analysis primarily used ATTIS’s capabilities to simulate the CCDF program and to impose presumed changes in employment.

Baseline

The hypothetical policy is assessed by comparing it to the situation that existed in calendar year (CY) 2016—including the CY 2016 population and economic circumstances and each state’s CY 2016 CCDF policies. The base year for the analysis is 2016 because the 2016 ACS data are the most recent data that have been fully prepared for use with ATTIS. (Although methods exist to “age” survey data to a future year, we determined that was not essential for this analysis.) Preparing ACS data for use in ATTIS involves numerous imputations to facilitate the simulations. Key imputations for purposes of this analysis include imputing whether a cohabiting partner is also a parent (because parents are always included in the CCDF family unit, even if they are not married), imputing the legal status of noncitizens (because children who are unauthorized or temporary immigrants are not eligible for CCDF), and allocating annual income amounts across the months of the year (because if a parent is working for only six months, and she is not in school or training, she may only be eligible for CCDF for six months). For more information on ATTIS data preparation, see Wheaton, Giannarelli, and Morton (2018).1

Because the ACS does not include information on either child care expenses or child care subsidies, ATTIS is used to simulate the required information for the ACS households, coming as close as possible to the actual situation in 2016. The caseload targets we align to come from the CCDF administrative data made available by the Office of Child Care.2 The targets for 2016 child care expenses come from another Census Bureau survey, the Current Population Survey Annual Social and Economic Supplement (CPS-ASEC).

Eligibility for CCDF subsidies is modeled in detail, following both the overall federal policies and each state’s actual policies, obtained from the CCDF Policies Database.3 In all states, a family is potentially eligible if (1) there is at least one child who is no older than age 12 or who has special needs, (2) the parents appear to be in eligible activities—in general, working or in school or training,4 and (3) the family’s income is under the state’s income limits. The state-specific eligibility policies include dozens of options, including the minimum number of hours per week of work to quality for subsidies, the maximum age at which a teenager with special needs may be eligible for subsidies, the definition of the family unit for purposes of eligibility determination (e.g., if older siblings are included), whether any kinds of income are excluded, and the maximum allowable income for each family size. Eligibility is modeled month by month, since parents may be eligible for CCDF in only part of the year.
Once eligibility is determined, a subset of the eligible families is identified as CCDF recipients. This simulated caseload is selected in order to come very close to the actual size and characteristics of the caseload along the following dimensions:

- Number of families, by state
- Number of children, by state
- Age of children
- Race and ethnicity of children
- Presence of one or two parents/guardians
- Family earnings (with or without earnings)
- TANF receipt (receiving or not receiving)
- Relative family income level (low-income or not)
- Copayment (no copayment or positive amount)
- Subsidy value

To determine the number of children receiving child care subsidies before the hypothetical policy change, we use an adjusted caseload that considers children who receive subsidies funded by CCDF as well as children served by the CCDF-administered program in each state but whose subsidies are funded through other sources. This adjusted caseload figure likely still underestimates the total number of low-income children receiving subsidized care—since states are not required to report all children served through the CCDF-administered program under separate funding—but gets us closer to the full picture of subsidy participation. For this analysis, the overall caseload modeled by the baseline simulation is 1.109 million families and 1.841 million children, in the average month of the year.

In addition to modeling CCDF eligibility and caseload, ATTIS assigns amounts of child care expenses. For families simulated to be enrolled in child care subsidies, ATTIS computes the copayment they would be required to pay under their state’s CCDF policies. Copayment policies vary widely across states; ATTIS models each state’s policies in detail, following information from the CCDF Policies Database. For families with parents who are working or in school or training who are not simulated to receive a CCDF subsidy, child care expenses are imputed in a two-stage process: first, estimating whether the family has any positive expenses; second, for the subset estimated to have positive expenses, estimating an amount of expense. These econometric equations take into account numerous demographic characteristics of the family and incorporate state variation in child care costs. The equations were calibrated to come close to the incidence and amount of child care expenses by income level as reported in the CPS-ASEC data for CY 2016.
For purposes of this analysis, the end result of the baseline process is that for every family in the ACS survey, we have determined if they are eligible for CCDF, if they take the subsidy, and how much they pay for child care. This provides the foundation for modeling the hypothetical policy.

Modeling Alternative Child Care Subsidy Policies

The alternative policy modeled for this analysis would guarantee CCDF subsidies to all families with income below 150 percent of the federal poverty guidelines who are eligible and want subsidies. Modeling this policy required assumptions about CCDF program rules, families’ participation choices, changes in employment, and how to measure income and poverty changes.

Program Rules

The following assumptions were made regarding CCDF program rules:

- **Income eligibility thresholds**: The monthly income eligibility thresholds were set no lower than 150 percent of the federal poverty guidelines for each family size (and accounting for Alaska and Hawaii using higher poverty guidelines). In states with eligibility thresholds below 150 percent of the poverty guidelines, we raised the thresholds to 150 percent. In states with eligibility thresholds at or above 150 percent of the poverty guidelines, no changes were made to their income eligibility policies.

- **Additional eligibility rules**: All other eligibility rules were left as is, using the state rules in place in 2016. For example, no changes were made to state rules for which family members are counted in the assistance unit, which types of income are counted, whether parents are allowed to participate in job search activities, or whether parents are required to work a minimum number of hours each week.

- **Family copayments**: No changes were made to states’ policies for how much families must contribute toward the cost of subsidized child care. The copayment amounts and any exemption policies reflect the state rules in place in 2016.

- **Provider reimbursement rates**: No changes were made to states’ policies for how participating child care providers are reimbursed. The reimbursement rates reflect those used in each state in 2016.

Participation

The alternative policy guarantees subsidies for families with income below 150 percent of the poverty guidelines, but not all eligible families will choose to take subsidies. For example, a family might have alternative care arrangements with a family member (e.g., a grandparent caring for the child while the
parent is at work) and prefer to continue using those arrangements. To account for this possibility, we did not model full participation among all eligible families. Instead, we modeled a family to begin taking subsidies if the family had child care expenses in the baseline simulation and was simulated as eligible in the alternative simulation. Families modeled to receive child care subsidies in the baseline continued to receive subsidies in the alternative simulation.

For families modeled to newly take the subsidy, we determined type of child care (child care center, family child care home, or in-home care), assuming newly subsidized families would be distributed across care types using the same distribution as for currently subsidized children in the same age group and state of residence. Assigning a type of care is necessary for determining cost; in some states, care type also affects the family’s copayment.

**Employment Effects**

Research shows that reducing the effective cost of child care can lead to an increase in maternal employment. Estimates of the degree to which maternal employment might increase varies across studies (Blau 2003). For this analysis, we followed the decisions made by the National Academies of Sciences, Engineering, and Medicine Committee on Building an Agenda to Reduce the Number of Children in Poverty by Half in 10 Years (2019) and modeled a price elasticity that fell in the midpoint of the various estimates. We modeled an elasticity of -0.2, meaning a 10 percent reduction in the net price of child care is estimated to result in a 2 percent increase in the employment rate.

The price elasticity is used to compute a target for increasing maternal employment. We first estimated the aggregate out-of-pocket child care expenses for women who were working in the baseline, and before modeling any policy change. We estimated these expenses both for married and unmarried mothers with children in two age ranges: (1) mothers with any child age 0, 1, or 2, and (2) mothers with children age 12 or under, but with no child age 0, 1, or 2. We then estimated the aggregate out-of-pocket child care expenses for women when the alternative child care policy was modeled and compared this amount to the baseline estimate to determine the percentage reduction in expenses. Next, we multiplied these amounts by 0.2 to obtain the percentage increase in employment, by state and by marital status.

We then determined which nonworking mothers would be guaranteed a subsidy if they began to work. For this assessment, it was necessary to make assumptions about job characteristics—weeks of work during the year, hours per week, and hourly wage. Generally following the approach in the National Academies’ child poverty report (2019), job characteristics were assigned based on a woman’s
educational attainment—less than high school, high school, some college, a two-year degree, or a four-year degree or more. Within each group, women were distributed between part-time and full-time jobs based on the distribution of lower-income women currently working; for each type (full- and part-time), women were assigned the average weeks of work per year and average hourly wage for lower-income women with that type of job in 2016. As an example, women with a high school diploma had a 63 percent chance of working full-time—41 hours/week for the full year, at $11.87 per hour—and a 37 percent chance of working part-time—31 hours/week for 38 weeks of the year, at $10.30 per hour.

Although most women starting to work at a lower-wage job would become eligible for CCDF, some would not because of higher levels of unearned income (such as child support) or the income of a husband or partner. After excluding the women who would not become eligible for CCDF even if they started to work, we assigned new jobs to a subset of the remaining women to come as close as possible to targets. The final simulation came very close to the overall targets. Regarding the detailed targets (by children’s ages within state), in most cases the deviation between target and simulated number was no greater than either 5 percent or an absolute difference of 100 (weighted) families, with greater precision for larger states.

**Child Poverty**

The child care subsidy guarantee, and subsequent increase in maternal employment, would also lead to increases in family resources and a reduction in child poverty. These financial benefits would come from two sources. First, for some families paying for child care out of pocket, receiving a subsidy would lower their child care expenses. Second, for almost all families in which a parent starts to work, family incomes would rise. To capture both those impacts, we assess poverty for this analysis using a modified version of the official poverty definition. We use the official poverty thresholds, but when comparing family income to those thresholds, we first subtract the family’s child care expenses (either their copayment or their unsubsidized child care expense). By that definition, in 2016, 14.036 million children (defined as under age 18) were living in poverty. (The Census Bureau’s published ACS-based estimate of poor children in 2016 is 14.116 million [Annie E. Casey Foundation 2018]. The difference stems from the fact that the ATTIS estimate corrects for underreporting of SSI and TANF, as well as the fact that we subtract child care expenses from family incomes in our adjusted definition.)
Notes

1 Another aspect of data preparation mentioned in Wheaton, Giannarelli, and Morton (2018) is the allocation of ACS-reported “other” income (all the income amounts not separately reported) into three components of child support, unemployment compensation, and all other elements not separately reported. However, these allocations do not compensate for the fact that, in the aggregate, there is less “other” income in the ACS than reported in the CPS. Future versions of ATTIS may address this issue. Currently, microsimulation using the CPS data likely provides the best overall estimate of CCDF eligibility; see Chien (2019).

2 We use the published caseload figures available from the Office of Child Care: https://www.acf.hhs.gov/occ/resource/ccdf-statistics. We adjust the caseload figures to bring in the additional children states report serving through their CCDF-administered programs, using the CCDF administrative (801) data: https://www.researchconnections.org/childcare/series/215.

3 The CCDF Policies Database is maintained by the Urban Institute under funding from the US Department of Health and Human Services, Administration for Children and Families, Office of Planning, Research, and Evaluation. For more information on the CCDF Policies Database and state policy variations, see https://ccdf.urban.org.

4 The model also captures the fact that some families are eligible for CCDF during a period of job search. The model does not capture some other reasons for CCDF eligibility, such as involvement with child protective services, due to data limitations.

References


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For more information on this project, see https://www.urban.org/research/publication/what-if-we-expanded-child-care-subsidies.