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Natasha V. Pilkauskas
Katherine Michelmore
Nicole Kovski
H. Luke Shaefer

October 2022

https://equitablegrowth.org/working-papers/the-effects-of-income-on-the-economic-wellbeing-of-families-with-low-incomes-evidence-from-the-2021-expanded-child-tax-credit

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1156 15th St NW Suite 700
Washington DC 20005
202-545-6002

THE EFFECTS OF INCOME ON THE ECONOMIC WELLBEING OF FAMILIES WITH LOW INCOMES: EVIDENCE FROM THE 2021 EXPANDED CHILD TAX CREDIT

Natasha V. Pilkauskas †
Katherine Michelmore
Nicole Kovski
H. Luke Shaefer

Gerald R. Ford School of Public Policy
University of Michigan

September 2022

Acknowledgements: The authors thank Propel for access to their Providers data. We thank Samiul Jubaed for his excellent data assistance. We also thank the Charles and Lynn Schusterman Family Philanthropies and the Washington Center for Equitable Growth for their generous support of our research.

† University of Michigan, Gerald R. Ford School of Public Policy, Natasha Pilkauskas (npilkaus@umich.edu), Katherine Michelmore (kmichelm@umich.edu), Nicole Kovski (nkovski@umich.edu), Luke Shaefer (lshaefer@umich.edu)

Abstract

We examine the effects of an unconditional cash transfer on the economic wellbeing (material hardship, ability to meet needs, money on hand, use of friends and family for assistance, and employment) of families and children with very low incomes. We use a parameterized difference-in-differences approach to study the impact of the 2021 temporary expansion of the Child Tax Credit (CTC), which provided monthly, unconditional cash payments to families with children from July to December 2021. The 2021 monthly CTC reduced the number of hardships families experienced, and in particular their food insecurity. We find some evidence that the credit reduced medical hardships, reduced reliance on friends and family for food, and improved respondents' ability to pay utility bills. We also find no effects on any labor supply measures. Analyses that examine differences by racial/ethnic groups show that the effects are somewhat stronger for Black families than for Hispanic and White families, but the differences are not large.

Income, or lack thereof, is associated with many short-and long-term outcomes for families and children (e.g., Duncan and Brooks-Gunn, 1997). Although many studies document the positive effects of income on wellbeing (e.g., Akee et al., 2010), the causal effect of unconditional cash transfers on material hardship in the U.S. is not well understood. Studies of income support policies that are coupled with employment (like the Earned Income Tax Credit [EITC]) or public assistance programs that target particular hardships (like Supplemental Nutrition Assistance Program [SNAP]/Food Stamps), find positive effects of these policies on material wellbeing (e.g., Kondratjeva et al., 2022; McKernan et al., 2021). But new evidence from three studies of one-time unconditional cash transfers (Jacob et al., 2022; Jaroszewicz et al., 2022; Pilkauskas et al., 2022) and one study of a recurring cash transfer (Gennetian et al., 2022) found little to no effect of cash transfers on material wellbeing. In this study, we add to the literature on the causal effects of income on material hardship in the U.S. by studying the effects of a recurring unconditional cash transfer – the monthly 2021 Child Tax Credit (CTC). We also extend the nascent evidence base on the effects of the 2021 CTC (Parolin et al., 2021; Shafer et al., 2021; Ananat et al., 2022; Hamilton et al., 2022) by focusing on a national sample of families with very low incomes – those who are often under-represented in national samples – and by examining a wide range of material hardship measures and indicators of economic wellbeing.

Heeding growing calls to create a universal child allowance or child benefit (National Academies of Sciences, Engineering, and Medicine ,2019; Garfinkel et al., 2016; Shaefer et al., 2018; Center on Poverty and Social Policy, 2021; Collyer et al., 2019), in March of 2021, Congress passed a one-year expansion of the Child Tax Credit (CTC) as part of the American Rescue Plan Act. The 2021 CTC expansion increased the size of the benefit, made the credit fully refundable, and extended eligibility to those with little or no earnings. Additionally, rather than distributing the entire CTC at tax time, half of the benefit was delivered in monthly installments from July 2021 to December 2021 reaching roughly 61 million children (Internal Revenue Service [IRS], 2021). These reforms made 26 million children eligible for a larger credit; 6 million of whom were entirely ineligible before the reform (Goldin and Michelmore, 2022). Thus, the 2021 CTC provided millions of children in families with low incomes with additional, or entirely new, income support. Our study focuses on these families, those at the lowest end of the income distribution, who were most likely to have gained new income support from the 2021 CTC. This group is of particular policy importance since these families faced

pronounced economic challenges during the COVID-19 pandemic and have also been the focus of debates about whether the 2021 reform reduced parents' incentives to participate in the labor force (e.g., Corinth et al., 2021).

To study the effects of the monthly 2021 CTC on the economic wellbeing (material hardship, ability to meet needs, money on hand, use of friends and family for assistance, labor supply) of families with low incomes, we employ a parameterized difference-in-differences approach. We use data from a national sample of families who receive SNAP, collected in partnership with Propel, the administrators of a mobile application that assists families in managing their SNAP benefits. We consider heterogeneity by household income, as those with no or very low income may have been impacted more strongly by the 2021 CTC and have been historically ineligible for the CTC. Additionally, research suggests that cash transfers have bigger impacts on wellbeing when they represent a larger proportion of household income (Haushofer and Shapiro, 2016; Haushofer et al., 2020; Pilkauskas et al., 2022). We also investigate heterogeneity by race/ethnicity, as there are important intersections between tax policy and racial inequality (e.g., Brown, 2021). Approximately half of Black and Hispanic children have also historically been excluded from receiving the full CTC, compared with one quarter of White children (Goldin and Michelmore, 2022). Thus, the 2021 CTC may have had larger effects on the economic wellbeing of Black and Hispanic children.

Our results suggest that the 2021 CTC expansion led to a significant reduction in the number of material hardships experienced by families with low incomes (a 17% decline associated with a $500 monthly credit), primarily driven by declines in food insecurity (32% decline associated with a $500 monthly credit). We also find some evidence that the expansion led to reductions in medical hardship, reduced inability to pay utility bills, and reduced the need to rely on friends and family for food. We find no evidence that the unconditional cash benefit affected labor supply, suggesting the 2021 monthly CTC did not lead to significant declines in employment among families with low incomes. We also find no evidence of heterogeneity by income and suggestive evidence of larger effects for Black families, but these differences were not large.

Our study speaks to an important policy debate about the design and delivery of cash transfers to families with low incomes. Unconditional cash transfers are currently a topic of considerable political and policy attention, with important questions raised about whether

monthly, universal transfers are the right mechanism by which to reduce poverty, as opposed to lump sum or conditional cash transfers. The findings from this study suggest that monthly unconditional cash transfers to families with low incomes reduce some material hardships, but not all.

BACKGROUND

The Child Tax Credit

The Child Tax Credit (CTC) was first introduced in 1997 as a $400, non-refundable credit for each child under the age of 17. The CTC is not indexed to inflation, but in 1998, the credit was increased to $500, and in 2001 it was increased to $1,000 per child. The credit was originally designed to offset taxes owed by parents, but in 2001, the credit was made partially refundable for families with earnings over $10,000. Making the credit partially refundable meant that even households without tax liability could still claim part of the credit. In 2009, the earnings minimum was reduced to $3,000 (temporarily and later permanently; Crandall-Hollick, 2018). In 2017, the credit was expanded to $2,000 per child, with the refundable portion increased to $1,400 per child and the earnings minimum reduced to $2,500.

In March of 2021, Congress passed a one-year expansion to the CTC that fundamentally altered the structure of the credit. First, the benefit was made fully refundable, and therefore, available to families regardless of tax liability. Second, the size of the credit increased for all children, but especially so for younger children: $3,600 per child under the age of 6 and $3,000 per child aged 6 to 17. Third, the earnings minimum was removed, extending eligibility to households with little or no earnings. Last, eligible households[1] received the first half of the credit in monthly installments over a six month period (July-December, 2021), and the remaining half of the credit in a lump-sum with their 2021 tax refunds, in early 2022. Though there were discussions of making these reforms permanent, Congress failed to pass a permanent reform, and thus the credit reverted back to pre-2021 law beginning in January of 2022. Our study focuses on

[1] The full credit was available to households earning up to $112,000 for single/$150,000 for married households. The credit then phased out to $2000 per household until it phased out again. Households with incomes over $240,000 for single ($440,000 for married) were not eligible for the credit. For example, a married household could get the full credit if their income was below $150,000. If they earn between $150,000 and $182,000 the credit phases out to a maximum of $2000 per child. Once their income reached $400,000, the credit again phased out until $439,999 at which point they no longer received any credit.

the 2021 expanded CTC, and in particular the effects of monthly payments made to families with children in the second half of 2021.

The first payments for the 2021 CTC were distributed in July 2021; however, there were some implementation challenges. In some cases, payments were delayed (IRS, 2021), and survey evidence suggests that many eligible families did not receive the monthly payments (Pilkauskas and Cooney, 2021; Parolin et al., 2021). In theory, families who filed taxes in either 2020 or 2019 were automatically eligible to receive the monthly credit. Families with little or no earnings and those with the lowest levels of education are least likely to file taxes, and were most likely to report not receiving the monthly payments in 2021 (Pilkauskas and Michelmore, 2021). Furthermore, intra-year changes in children's living or custody arrangements, which is common among economically vulnerable families, might have reduced CTC claims due to tax filing complexity. For instance, if a child was living in a different tax filing unit in 2021 than in 2020, the payments would have gone to the 2020 unit unless the family filed this change on the IRS online portal. Nearly 60% of households with low incomes face ambiguity in tax filing for the EITC due to family complexity (such as custody or residency issues), challenges that families claiming the CTC also face (Michelmore and Pilkauskas, 2022), suggesting that this issue could be widespread.

With implementation challenges and no guarantee of payments past December, parents' behavioral responses to the CTC may have differed than if the policy were in place for longer or payments more consistently reached all eligible families. The expansion was implemented during a global pandemic, when the federal government put forth a robust policy response (e.g., stimulus payments, expanded SNAP benefits, extended Unemployment Insurance, and eviction moratoria) to help families avoid extreme hardships. A challenge of identifying the effect of the CTC is that many of these programs were ending just as monthly CTC payments were first disbursed. Furthermore, many children also returned to in-person school in August and September 2021 after more than a year of virtual schooling for most students – just two months into the monthly CTC payments. Lastly, inflation increased dramatically during the last several months of 2021, likely dampening some of the effects of the CTC. Thus, the findings we present here are only suggestive of impacts on economic wellbeing that might follow a full scale child benefit program, were it longer lasting or implemented during a time of less uncertainty and change.

Prior Literature

The literature on income support and economic wellbeing is extensive. Here we focus on the U.S., although many studies have examined the effects of cash transfers on economic wellbeing outside the U.S. context (see Bastagli et al., 2016 for a review). In the U.S., income support policy is frequently in-kind, such as SNAP, Medicaid, or housing assistance (Edin and Shaefer, 2015). These policies, which target particular forms of consumption, have been found to improve economic wellbeing, and in particular the hardships they target (i.e., SNAP reduces food insecurity; Shaefer and Gutierrez, 2013; McKernan et al., 2021; Schmidt et al., 2016). Social safety net policies that provide cash transfers are also linked with improved outcomes. A recent study of a cash transfer that is conditioned on work (or looking for work), the Temporary Assistance for Needy Families (TANF), found that TANF improved food insecurity but also reduced labor supply, potentially as a result of either income support, or the program's marginal tax rates that reduced benefits with added earnings (Freedman and Kim 2022, see also Shaefer at al. 2020 for impacts on food insecurity). Two recent studies found that declines in cash assistance through TANF were linked to rising homelessness and housing instability in public schools (Parolin, 2021; Shaefer et al., 2020). Studies of earning supplements, like the Earned Income Tax Credit (EITC) are also linked with improved economic outcomes (i.e., Barr et al., 2022; Hoynes and Patel, 2017; Michelmore and Pilkauskas, 2021) and improved material hardship. The EITC reduces some housing hardships (household crowding, cost burdens, doubling up; Pilkauskas and Michelmore, 2019), medical hardship (Kondratjeva et al., 2021) and food insecurity (Kondratjeva et al., 2022; Batra and Hamad, 2021), but does not seem to impact ability to pay bills, buy prescriptions, or make housing payments (Kondratjeva et al. 2021, 2022). However, the EITC is conditioned on work making it is difficult to disentangle the effect of employment from the cash transfer itself.

The effects of cash on economic wellbeing have also been studied outside the social policy context. For example, one-time cash transfers reduced homelessness when the cash was provided for housing (Evans et al., 2016). On the other hand, three recent studies find few effects of one-time cash transfers on financial and material wellbeing of families with low incomes (Jacob et al., 2022; Jaroszewicz et al., 2022; Pilkauskas et al., 2022). However, Pilkauskas and colleagues found that a one-time $1,000 cash transfer did improve material hardship outcomes

(ability to pay bills, utilities, rent, food insecurity, and medical hardship) for those with extremely low incomes (below $500 a month in household earnings). Descriptive studies find that stimulus payments made during the pandemic reduced food insufficiency and improved financial stability (Cooney and Shaefer, 2021) and also increased consumption (Chetty et al., 2020).

Recurring cash transfers, akin to the 2021 CTC, may have different impacts on material wellbeing than one-time cash transfers. Studies of the Casino payments (Akee et al., 2010; Wolfe et al., 2012), Negative Income Tax experiments (Maynard and Murnane, 1979), and Alaska Permanent Fund (Amorim, 2021) have found positive effects on some measures of wellbeing (like health, education or consumption), but surprisingly few studies examine the impact on material hardship. One recent randomized controlled trial (Baby's First Years) provided monthly benefits of approximately $333 to low-income families with children in their first year of life and examined material hardship outcomes finding no impacts of the transfer on food insecurity, housing quality, or economic stress, although this study did find positive effects of the cash on other outcomes including child investments and parenting time (Gennetian et al., 2022). Thus, the findings from these new randomized control trials raise questions about the ability of unconditional cash transfers to reduce material hardships.

Prior research has also examined the impact of recurring cash transfers on labor supply in the U.S. The Negative Income Tax experiments (which also had a marginal tax rate) found some reductions in labor supply (Levine et al., 2005), whereas studies of the Alaska Permanent Fund – a program with no marginal tax rate – find no effects on employment (Jones and Marinescu, 2022). The Baby's First Years study also found no detectable effects on mothers labor supply when the child was one (Gennetian et al., 2022). Differences across studies are likely driven by heterogeneity in treatment size, timing and targeting.

Child benefits, which are regular cash transfers to families with children similar to the 2021 CTC, are common in high income countries outside the U.S. (Shaefer et al., 2018; Van Lancker and Mechelen, 2015). The Canadian child benefit is linked with improved outcomes for children and families (Milligan and Stabile, 2011), increased spending on basic needs like food, shelter, and transportation (Jones et al., 2019), no effect on the labor supply of single mothers (Baker et al., 2021), but reduced employment among married mothers (Schirle, 2015). The implementation of the Austrian child benefit increased labor supply, especially for women

(Christl et al., 2020). Although findings from other countries are informative, the social welfare states in Canada and western Europe are quite different from that of the U.S., making it difficult to generalize these findings to the U.S. context.

A handful of studies have directly examined the effects of the 2021 CTC, suggesting that the monthly payments improved families' economic wellbeing (see Curran, 2021 for a review of descriptive studies of the 2021 CTC). A number of studies have estimated the effects of the 2021 CTC on child poverty, all suggesting reductions in poverty to varying degrees (Columbia University Center for Poverty and Social Policy [CPSP], 2021; Acs and Werner, 2021; Corinth et al., 2022; Bastian, 2022). Other descriptive studies suggest that the CTC reduced food insufficiency (Perez-Lopez, 2021; Rapid EC, 2021; Karpman et al., 2022). These findings have been corroborated in studies using more causal methodological approaches (Hamilton et al., 2022; Parolin et al., 2022; Shafer et al., 2022). Hamilton and colleagues (2022) find that families were more likely to be able to pay for an emergency expense, but they find few effects on other hardships like paying utilities, bills, housing, needed medical treatments or debt. Three studies also find that the monthly CTC cash payments had no effect on parental employment (Ananat et al., 2022; Hamilton et al., 2022; Lourie et al., 2021).

We build on these earlier studies by studying the effects of the 2021 monthly cash payment on a broad array of hardship measures in a national sample of families with very low incomes, many of whom gained access to the CTC or received a larger credit as a result of the 2021 expansion. Based on prior research and theory, we expect that the monthly credit should reduce material hardships. We also anticipate material hardships that are less severe or potentially sensitive to small amounts of money (e.g., food insecurity or a bill hardship) will be affected by the 2021 CTC, whereas material hardships that are more severe or might require larger transfers or longer durations of a transfer to alleviate (e.g., severe housing hardships, like eviction) may not be affected. We also expect that families will be less likely to engage in hardship avoidance tactics (e.g., relying on friends or family for material or financial assistance) in response to the monthly credit, given reduced need to rely on social networks to avoid hardship. Lastly, we do not expect to find impacts on parents' employment given prior research.

METHOD

Data

Data come from a national monthly survey conducted in partnership with Propel, the creators of Providers (formerly Fresh EBT) a free mobile application that helps over 5 million families manage their SNAP benefits. Propel advertises this application on social media, but most users find out about it through word of mouth, either through friends, or their SNAP caseworkers. In any given month, roughly one-quarter of all SNAP beneficiaries in the U.S. use Providers to track their monthly benefits; thus, Providers has a very wide reach and includes users from all 50 states.

Every month, Propel invites a random sample of users of the Providers app to participate in a survey on a range of topics related to household financial stability. They are not compensated for their time, but each survey only takes about 11 minutes to complete. Approximately 4,000-6,000 users respond to the survey each month, roughly half of whom live in households with children under the age of 18.

Following passage of the expanded CTC law, we partnered with Propel to add questions about the CTC to their monthly survey. These questions were first fielded in June 2021. Because the monthly survey is administered on the 1st-14th day of each month, we observed participants for two months before CTC payments were first delivered on the 15th of July 2021. Beginning in August 2021, we asked participants about their CTC receipt in the previous month (e.g., in August, participants were asked about CTC receipt in July). Our analyses focus on surveys conducted between June 2021 and January 2022 (participants were asked about the final December 2021 payment in January 2022). This period includes two pre-CTC observations and six post-CTC observations.

We restrict our analyses to households with at least one child under the age of 18. (As we describe in greater detail in the robustness checks section, in extensions, we also conducted a number of analyses including households without children as a comparison group.) We excluded households living in the U.S territories since they were not eligible for the 2021 monthly CTC payments. To assess the representativeness of the Providers respondents, we compared the characteristics of parents in our sample to a nationally representative sample of households with children from the 2019 American Community Survey (ACS). In Appendix Table 1 we show the ACS estimates for households with children both among households that reported receiving

SNAP in the previous year and among households below the poverty line (100% of poverty), groups that we expect to be similar to the Providers respondents. Although there are some minor differences, we find that the parents in the Providers data look very similar in terms of their basic demographic characteristics to parents living in poverty in the ACS, as well as the average ACS parent who received SNAP. Thus, the Providers data appear to be representative of households with children below the poverty line.

In Table 1, we provide descriptive statistics on households with children in our sample showing the overall average as well as statistics for the families in the two pre-period observations (pre-CTC) as compared to the sample for the six post periods (post-CTC). In general we find that the sample is similar across the two periods. Thirty-five percent of respondents identified as Black, 35% as White, and 21% as Hispanic. Nearly all parents in our study are female (94%) and only 30% live with a partner or spouse. The families in our study are very economically disadvantaged: 85% receive SNAP and 31% were unemployed in the prior month. In addition, 22% reported having no household monthly earnings in the previous month and another 15% earned less than $500. Extrapolating from the monthly household earnings to the annual level, 88% of households in our study earn less than $24,000 per year, and the mean is approximately $10,000.

Measures

Material Hardship

Material hardship is a consumption-based indicator of economic wellbeing that has been linked with poorer outcomes for both children (e.g., Zilanawala and Pilkauskas, 2012) and adults (Heflin and Iceland, 2009), suggesting that reductions in hardship should improve family wellbeing. Our main measure of material hardship is a 14-item index of hardships that includes food, medical, housing, utility, transportation, and bill hardships (see Appendix 1 for a detailed discussion of these measures; α=0.71). For each index, we sum across the items and standardize (M=0, SD=1). We also examine specific types of material hardship since studies show that both the predictors and consequences of hardship can vary across hardship domains (Heflin et al., 2009). Each question related to material hardship asks respondents to indicate whether they have experienced the given material hardship in the past 30 days.

First, we consider *food insecurity* with a 4-item index that includes both the 2-item food insecurity scale derived from the USDA's food security scale (Hager et al., 2010) and questions about skipping meals or eating less (α=0.71). Second, we examine *medical hardship* with a 2-item index about missed visits to the doctor or dentist due to cost (α=0.61). Third, we consider *severe housing hardship* with a 4-item index (α=0.65) that includes homelessness, shelter use, evictions and lack of stable housing (e.g., living in a motel, car or shelter). We refer to this measure as severe housing hardship because it does not include less severe degrees of housing insecurity, such as the inability to pay rent or staying in someone else's home. Fourth, we examine two items related to *utility hardship*. Here we do not construct a scale since the two survey items of interest had a very low Cronbach's alpha (α=0.29) when combined into an index, suggesting poor internal consistency. Thus, we examine each item separately as a binary measure, one for having utilities cut off and another for utility bill hardship (not paying one's full utility bill). Fifth, we examine a single-item question that asks respondents if they "decided not to pay a bill" as a general measure of *bill hardship*. Unfortunately, this question does not indicate why the respondent decided not to pay their bill (e.g., due to financial constraints), and thus has some ambiguity in interpretation. Lastly, we study a single *transportation insecurity* item that asks respondents if they missed an appointment, skipped going somewhere, or missed work due to lack of transportation. Transportation insecurity is rarely considered as a measure of material hardship, but recent work suggests it is a commonly experienced hardship (Murphy et al., 2022).

Additional measures of economic wellbeing

We examine several other measures indicating overall economic wellbeing. The first is a broad measure of having things one typically needs. Respondents are asked "Do you have everything you typically need in your home right now? Like food, household products, and cleaning supplies", and can respond by indicating 1) they have everything, 2) most things, 3) some things, 4) running low on most things, or 5) they do not have most things they need. We create a binary indicator taking on the value of one if the respondent reports having everything or most things; all others are coded as zero. The second measure asks respondents about cash on hand. Respondents were asked "About how much money do you have in total right now (not including food stamps)?" in a six-item response category ranging from less than $25 to $1,000 or more. The final measure asks respondents how long the money they have on hand will last in

days, in a six-item response category ranging from 1-2 days to two weeks or more. For both of these questions about money on hand, we set the response to the midpoint of the range and treat the outcomes as continuous.

Hardship Avoidance

Hardship avoidance is a set of behaviors that individuals undertake to avoid the experience of hardship. We examine three measures of hardship avoidance that all refer to experiences "during the last 30 days." First, we examine if respondents relied on friends or families for meals. Second, we study if respondents reported visiting a food pantry. Last, we construct an indicator for borrowing money from friends/family. We chose not to construct an index with these items as their internal reliability was relatively low (α=0.41).

Labor Force Participation

Our final set of outcomes relate to parents' employment. Specifically, we construct measures of the respondent's current labor force participation (whether the respondent is either employed or seeking employment versus not actively seeking employment). We also separately examine whether respondents are employed, employed full-time or employed part-time.

Empirical Strategy

We use a parameterized difference-in-differences approach to study the effect of the CTC on economic wellbeing. Because of endogeneity concerns, whereby differences in CTC receipt and benefit size are correlated with other household characteristics that may be associated with economic wellbeing, we do not use household self-reports of CTC benefits. Instead, following many prior studies (e.g., Currie and Gruber, 1996; Michelmore and Pilkauskas, 2021), we use a simulated measure of household benefits based on policy changes. We predict monthly CTC benefits based on the number and ages of children in the household. Specifically, beginning with the August 2021 survey, which asks about CTC benefit receipt in July, we calculate the monthly household CTC benefit as the sum of $300 multiplied by the number of children under age six, and $250 multiplied by the number of children aged six to seventeen. Respondents in surveys prior to the rollout of the monthly CTC benefit are assigned $0 for their monthly CTC benefit, regardless of the number and ages of children residing in the household. Variation in this measure stems from the timing of CTC payments (before and after the implementation of the

CTC expansion), and benefit size as a function of the number and ages of children (under 6 years/6-17 years) in the household.

We then estimate reduced-form models of the following form:

$$(1)\ Y_{it} = \beta_0 + \beta_1 CTC_{itc} + \beta_2 X_{it} + \alpha_t + \delta_s + \gamma_{st} + \theta_c + \varepsilon_{it}$$

Where Y_{it} is the outcome of interest (e.g. employment, economic well-being, etc.) for individual i in month t. CTC is the predicted monthly benefit for a family with number of children (by age) c. The parameter of interest is β_1, which represents the effect of a $100 increase in predicted CTC benefits on the economic well-being indicator of interest. X is a vector of demographic characteristics (age, race/ethnicity, gender, state, education, urbanicity, and partnership status) that may be correlated with the outcome of interest. We also include month fixed effects (α_t) to address concerns that other policies occurring over this time frame may contribute to our effects, such as the expiration of the eviction moratorium in the fall of 2021. State fixed effects (δ_s) control for state level characteristics that might affect economic outcomes and also correlate with CTC receipt. γ_{st} is a set of state-by-month policy variables. Namely, we include controls at the state-month level for the presence of (1) Supplemental Nutrition Assistance Emergency Allotments – waivers to continue providing maximum SNAP assistance to eligible households; (2) extended Pandemic Electronic Benefit Transfers (P-EBT) – additional food assistance for school-aged children;[2] and (3) extended federal Unemployment Insurance. We create a set of binary indicators equal to 1 when the policy is operative in a particular state-month.[3]

In separate model specifications, we also control for either 1) household size fixed effects or 2) number-of-children fixed effects (θ_c is a term representing either variable). These two variables are correlated with CTC benefit size and likely with economic wellbeing outcomes, and thus would lead to omitted variable bias in estimating the impact of the CTC on hardship without their inclusion in the models. Since benefits are determined based on the number of children in the household, household size is correlated with, but does not directly determine CTC benefits. Models that include household size fixed effects allow for hardship to vary according to how

[2] Data on these programs comes from the USDA Food and Nutrition Service (https://www.fns.usda.gov/programs/fns-disaster-assistance/fns-responds-covid-19/snap-covid-19-waivers).
[3] Data on unemployment benefits comes from the Century Foundation (https://tcf.org/content/report/7-5-million-workers-face-devastating-unemployment-benefits-cliff-labor-day/).

many people live in the household, and are identified by comparing households of the same size, but different number and age composition of the children residing in the household.

Controlling for number of child fixed effects directly addresses the concern that any effect of the CTC we observe is driven by underlying differences in the prevalence of hardship according to the number of children residing in the household, rather than the CTC itself. With number of child fixed effects in the model, variation is generated by comparing households with the same number of children before and after the CTC expansion, but different age compositions of their children. However, because number of children directly determines CTC benefit amount, models that adjust for number-of-children fixed effects also absorb the vast majority of the variation in our predicted CTC measure, reducing our statistical power. Together, month and number-of-children fixed effects explain 81% of the variation in the predicted CTC,[4] while month fixed effects along with household size fixed effects explain 60% of the variation. We present results from both specifications (those with household size fixed effects, and those with the number of child fixed effects) and discuss any differences we observe across these different specifications.

Equation 1 represents our reduced-form, intent-to-treat analysis (ITT, i.e., the effect on the full treatment group regardless of CTC receipt). However, because not all families with children received the monthly CTC payment (as shown in Table 2, 66% of respondents with children in our sample reported receiving last month's CTC payment), we also estimate a treatment-on-the-treated response (the local average treatment effect, LATE).[5] To do this, we use our measure of predicted monthly CTC benefits to instrument for self-reported monthly CTC benefits. This approach is similar to that represented by Equation 1), but we estimate a two-stage least squares regression model (2SLS), in which the first stage regresses self-reported CTC benefits (the endogenous variable) on our predicted measure of CTC benefits (the exogenous variable).[6]

[4] We tested the inclusion of a linear specification of the number of children (and of household size) and it made no difference to the percent of the variation explained nor to the results.

[5] Note, unlike Parolin et al. (2022), we do not estimate the "extra CTC" provided to these families during the 2021 CTC as many were not eligible for the credit in 2020. We also do not take into account any lump-sum payment these families would receive during tax filing, as tax filing season is outside of our window of observation.

[6] We also ran an extension where we calculated the predicted monthly CTC benefit based on the number and ages of the children in the household, but set it to zero if the respondent did not report receiving the benefit in that month and find a similar pattern of results (using a 2SLS analysis where we use the predicted amount received adjusted for

The 2SLS method essentially rescales our ITT estimates to those who reported receipt of monthly CTC benefits. We use this strategy rather than directly relying on self-reported monthly CTC benefits because receipt and credit size are endogenous to family characteristics (see Pilkauskas and Michelmore 2021). In particular, self-reported CTC benefits are positively correlated with income and educational attainment. Income and educational attainment are negatively correlated with hardship, so we would expect that a naïve regression of material hardship on self-reported CTC benefits would generate a negative relationship. In fact, in Appendix Table 2 we present these "naïve" regressions, which largely confirm this hypothesis.

In addition to the parameterized difference-in-differences analyses for all families with children, we also study heterogeneity in CTC effects on economic wellbeing by 1) race/ethnicity and 2) monthly household income. We focus on household earnings in the last month because it provides a recent proxy for income. Last month's earnings are a good measure of current economic resources for families with very low incomes, who make up the majority of our sample, because their rates of earnings volatility are high. We divided the sample into households with monthly earnings above and below the median of $500. Our null findings on employment, as detailed further below, reduce concerns that monthly earnings are endogenous to CTC receipt.

In Table 2, we show the mean values of our outcomes measures, CTC receipt, and CTC value for the full sample, by race/ethnicity, and by household earnings. Rates of CTC receipt were similar between Black respondents (69%) and White respondents (68%). However, rates of CTC receipt were much lower among Hispanic respondents (61%) despite similar levels of tax filing (Pilkauskas and Michelmore, 2021). Differences in CTC receipt by earnings are even more stark, 58% of respondents with less than $500 in earnings received the CTC as compared to 73% of those with $500 or greater. Among respondents who reported receiving the CTC, the average value is close to $500, whereas the average imputed value (based on the number of children in the household) is higher and closer to $700. Although as noted, using the imputed value or self-reported value results in similar findings, we think this divergence between received amount and imputed amount may reflect implementation challenges (like changes in custody).

receipt rather than amount received). The findings from this analysis are similar to those presented here although the point estimates were slightly smaller.

RESULTS

How do families with low incomes spend their monthly benefits?

We first present some descriptive evidence on how families with low incomes spent their 2021 monthly CTC benefits in Table 3. Between August, 2021 and January, 2022, we included an open-ended question in our survey asking families how they spent the credit, which we then coded allowing multiple responses per respondent. We categorized the responses into three broad groups: bills and living expenses, child-related expenses, and other expenses.

Paying bills was by far the most common response. Each month, approximately three-quarters of families reported using the credit to pay bills. Families also indicated that they spent the credit on other living expenses, such as paying the rent or mortgage (approximately 9-12% each month), food (7-8%), gas (4%), and other household necessities such as toiletries and cleaning supplies (5%). Many respondents also reported spending the credit on child-related expenses and these responses varied over the course of the year. In July and August, around the time that children were returning to school, about 25% of families said they spent the money on school supplies or school clothes and uniforms for their children. In contrast, very few families mentioned school supplies in November and December, whereas in November and December far more parents reported using the credit for holiday gifts for their children. Each month, about 10% of respondents indicated they spent the money on other child necessities such as diapers and wipes, and 5-7% reported using the money to pay for child care. Finally, each month, a small fraction of families reported putting the credit in savings accounts (1-2%). Given the very low income of the respondents in our sample, it is not surprising that only a small percentage of families said they saved the credit.

From this open-ended question, it is clear that the vast majority of families spent the credit on immediate living expenses and child-related expenses, while very few were able to save the credit for future expenses. Given the patterns reported here – that families reported spending the money on immediate expenses – we expect to find reductions in material hardships among these families as well.

Does the expanded CTC improve the economic wellbeing of households with low incomes?

Material Hardship. We next examine the effect of the CTC on a set of material hardship measures (see Table 4). We present both the Intent-to-Treat (ITT) and the Local Average Treatment Effect (LATE) results for our two models: 1) including household size fixed effects and 2) including number-of-children fixed effects. In Appendix Table 3, we show how the inclusion of various control measures affect the results. In general, our estimates are not sensitive to the inclusion of other controls beyond those controlling for household size or number of children.[7] As expected, the ITT and LATE results are similar in terms of direction of the point estimates and statistical significance; however, the LATE estimates suggest larger effects on economic wellbeing as they apply to those who reported receiving the CTC. Here we focus our discussion on the LATE estimates.

We find that each additional $100 in monthly CTC payments significantly decreases the number of material hardships experienced by respondents by 0.033 to 0.042 standard deviations (SDs) across the two models. Recall, the average CTC among those who received it was close to $500; thus, if we multiply these estimates by five it suggests that overall hardship was reduced by 0.17-0.20 SDs. This suggests that the average monthly CTC benefit reduced the total number of hardships by roughly 17%. When we examine the particular types of hardship, we find that food hardship significantly declined in response to an additional $100 in monthly CTC benefits by about 0.06 SDs (or closer to 0.30 SDs for a $500 CTC, a reduction of about 32%). We similarly find that medical hardships declined in response to monthly CTC payments, by about 0.02-0.03 SDs; however, the effect was not significant once we controlled for number of child fixed effects, although the point estimate was similar in magnitude and direction.

In terms of utility hardships, we find that an additional $100 in monthly CTC payments significantly *increased* the likelihood of having a utility cut off in Model 1, but the effect was substantially attenuated and no longer significant after controlling for number of child fixed effects in Model 2. The impact of the CTC on the inability to pay the full utility bill is negative across the models, but only marginally significant, providing suggestive evidence that the CTC increased the likelihood of families paying their full utility bill (1 to 1.4 percentage points). We

[7] We also tested whether excluding a control for race/ethnicity changed the results and found it did not.

find no significant effects on severe housing hardships, bill hardships more generally, nor transportation hardship. As we discussed earlier, in some ways it is not surprising to find null effects on housing hardships, since our measures are fairly extreme housing hardships (e.g. eviction, homelessness), which might be difficult to alleviate with a modest monthly benefit provided over a short duration of time.

Additional Measures of Economic Wellbeing. In Table 5, we turn to results for needs being met, money on hand, and hardship avoidance techniques. Here we present the LATE estimates for simplicity. Each additional $100 in monthly CTC payments significantly increases the amount of money parents have on hand by about $5 (on a mean of $126, or about 4%), but once we include the number of children fixed effects the point estimate is rendered insignificant and becomes negative. We find no effect of the CTC on respondents reporting that they have their needs met nor on the amount of time that the money they have in their bank account will last. These null results may be surprising, but recall that respondents take the monthly surveys between two weeks and one month since receiving their last CTC payment. Since these monthly benefits make up a large portion of household monthly budgets, it is not surprising that respondents spend their benefits very soon after receiving them.

In terms of hardship avoidance techniques, we see some evidence of a reduction in relying on friends or family for food (a 1-2 percentage point reduction). This estimate is no longer significant once we control for number of child fixed effects; however, the point estimate is still negative and about one percentage point. We find no effects of the CTC on visiting a food pantry nor borrowing money from friends or family.

Employment. One of the main concerns raised by opponents of the 2021 reform to the Child Tax Credit was that it would decrease the incentive to work. Since the reform removed the earnings requirement to obtain the credit, some researchers hypothesized that a substantial number of parents, unmarried mothers with low incomes in particular, would stop working in response to the reform (Corinth et al., 2021). In Table 6, we provide evidence that this is not the case, at least with the 2021 CTC reform. We find no evidence that the monthly CTC benefits led to a reduction in employment or labor force participation in the six months during which the benefits were distributed. In our estimates that include number of child fixed effects (Model 2),

there is some suggestive evidence of shifts from full-time employment to part-time employment – we find a 1.1 percentage point decrease in full-time employment and a 0.7 percentage point increase in part-time employment – but none of these estimates are significant at conventional levels (and the part-time point estimate is not consistent across models). Taken at face value, our point estimates in Model 2 imply a 0.3 percentage point decline in labor force participation, which is an implied elasticity of about 0.05 with respect to after-tax monthly household income.[8] Given our standard errors, we can rule out declines in labor force participation larger than 2.1 percentage points (an elasticity of 0.25) associated with a $100 monthly benefit. In sum, we do not find evidence that the monthly, unconditional cash benefits reduced work in any meaningful way.

Are there heterogeneous treatment effects by race/ethnicity?

Previous research has shown differences in CTC receipt by race/ethnicity (Pilkauskas and Cooney, 2021; Parolin et al., 2022), and historically, Black and Hispanic children have been less likely to be eligible for the full CTC (Goldin and Michelmore, 2022). Though our entire sample is economically disadvantaged, and therefore unlikely to have been eligible for the full CTC regardless of race, we still may expect to find differential impacts of the 2021 monthly credit by race and ethnic background. In Table 7, we present results for the effects of the CTC by racial/ethnic groups, again focusing on the LATE estimates. We generally find more pronounced effects of the 2021 monthly CTC payments on various hardship items for Black respondents. However, it is important to note that almost all point estimates have overlapping confidence intervals across racial/ethnic groups.

For the overall material hardship index, we find that each additional $100 in monthly CTC payments significantly reduces the number of material hardships for Black respondents, but less so for White and Hispanic respondents. As in the full sample, monthly payments were significantly associated with reductions in food hardship for all three groups in Model 1. This association only remains significant in Model 2 for Black respondents (although estimates remain negatively signed for both White and Hispanic respondents). Similarly, the effect of the

[8] The average monthly income in our sample is about $833. A $100 increase in monthly earnings represents a 12% increase household income; a 0.3 percentage point decline in labor force participation amounts to a 0.4% decline in labor supply.

CTC on medical hardship is only significant for Black respondents. Point estimates are similar for Hispanic respondents but less precise and not statistically significant, potentially due to sample size limitations. We again find the perplexing result that the CTC increased utility cut offs, but these results dissipate with the inclusion of number of children fixed effects. We also find that monthly CTC payments reduced the likelihood that Black respondents were unable to pay their full utility bill, but not for White or Hispanic respondents.

In Appendix Table 4, we show the results for basic needs, cash on hand, hardship avoidance and employment outcomes by race/ethnicity. We continue to find that monthly CTC payments reduce reliance on friends/family for food across racial/ethnic groups, though these results are not consistently robust to the inclusion of number of child fixed effects. We also find some evidence that CTC payments increase the likelihood of Black families reporting having all or most of their needs met (by 2.8 percentage points, or 10%), but this effect is only marginally significant. We find no significant impact of CTC payments on the other outcomes (employment, cash on hand, etc.).

Are there heterogeneous treatment effects by monthly household earnings?

Although respondents in our study, on average, have very low earnings, many studies have found that the effects of public programs are larger for lower income groups. Additionally, families with the lowest incomes, those below $2,500 annually, have historically been completely ineligible for the CTC. The 2021 reform therefore marked a larger gain in benefits for the lowest income families in our sample relative to those with slightly higher earnings. To test this hypothesis, in Table 8, we show the LATE estimates for the material hardship items (and present the findings for hardship avoidance and employment in Appendix Table 5) by monthly household earnings (below $500 and $500 or greater). We find no evidence that monthly earnings moderates the effect of the CTC. Although significance varies across particular estimates, in general the estimates are of similar magnitude and in the same direction across the two groups.

Robustness checks

Comparing to families without children. Our main analyses focused on households with children under the age of 18, exploiting variation in the generosity of CTC benefits by number

and ages of children in households before and after 2021 CTC rule changes. In a supplemental analysis (shown in Appendix Table 6), we also conducted a traditional difference-in-differences analysis, where we compared changes in economic wellbeing following implementation of the 2021 CTC between treated (households with children under 18) and untreated (households without children under 18) groups. We conducted these analyses measuring the CTC in two ways: 1) with a pre-post indicator interacted with an indicator for the presence of children in the household and 2) with predicted CTC amounts.[9] In general, many of the findings discussed thus far are insignificant in these models, though we continue to find evidence of reductions in food hardship in models that use families without children as a comparison group and take into account the generosity of the monthly CTC benefits. For several reasons, discussed in detail below, we do not believe these models appropriately capture the impact of the monthly CTC benefits on material hardship, and thus our preferred estimates exclude families without children from the comparison group.

We are reluctant to rely on models that include families without children in the comparison group because we do not believe that they serve as a good counterfactual for how material hardship would have trended in the absence of the monthly CTC benefits. The traditional difference-in-differences approach relies on the assumption that trends among households without children serve as a valid counterfactual for what would have occurred among households with children if not for the monthly CTC payments (i.e., parallel trends assumption). To test this assumption, we visually inspected trends in our outcomes over the months leading up to the monthly CTC disbursement for households with children vs. households without children. Plotted trends were parallel across the two groups for some outcomes, but not others and the levels of hardship were often very different. To further assess baseline differences, we also compared demographic characteristics between households with and without children and noted several significant differences. Households without children were more likely to be male, older, and White, but less likely to live in an urban area or to be employed.

[9] As shown in Appendix Table 2, the results of the pre-post difference-in-difference estimates differ somewhat from the continuous exposure ($) estimates of the CTC when we use childless households as our comparison group. We are unsure why this is the case. It may be because childless households are a poor comparison group; however, we find that the continuous exposure estimates are more similar (point in the same direction but of a different magnitude) to our main specification that relies on households with children.

Another central assumption of the difference-in-differences approach is that no other events or policy changes differentially affected treatment and control groups over the study period. This assumption might be too strong when comparing families with children to those without children since policy responses to COVID-19 (e.g, eviction moratoria, rounds of stimulus payments) likely impacted these two groups differently. As noted earlier, we controlled for a set of far-reaching policy initiatives during the pandemic, but other potential confounders remain. In particular, disbursement of the first CTC payments coincides with the start of the school year and the return to in-person schooling for many families with children. Month fixed effects can account for some time-varying factors, but only those that uniformly affected households with and without children. Therefore, due to concerns about differential trends by household type, in concert with large demographic differences, we determined that the households without children in our sample served as a poor counterfactual.

Testing different time periods. Because of some implementation issues, fewer families received the CTC payment in July 2021 than in later months. To test whether the inclusion of the August survey (asking about the July CTC and economic wellbeing in the previous months) changed the results, we dropped that month in an analysis shown in Appendix Table 7. Dropping the August survey had little to no impact on the results. Similarly, we tested the exclusion of the January 2022 survey (asking about the December 2021 credit), as responses may have been affected by the fact that families were aware that the credit was not being renewed, or by the large surge in the COVID-19 omicron variant during this time. Again as can be seen in Appendix Table 7, excluding January had little impact on the point estimates.

Testing the inclusion of additional controls. Although the COVID-19 pandemic was occurring throughout the study period, we tested whether including a state-specific monthly COVID count affected the results. As shown in Appendix Table 7, this control did nothing to the point estimates. Families received the monthly CTC payment on the 15th of each month. Because our surveys ran from the 1st to the 14th of the following month it is possible that families reported higher levels of hardship if they took the survey later in the survey window. To test for this possibility we added a control to account for the timing of their survey response. This did nothing to change the findings. We also tested the inclusion of an interaction of the number of days since the last benefit would have been received, but found no significant interactions, likely

because the vast majority of respondents took the survey in the first few days of the survey period so there is little variation in this measure.

CONCLUSION

A few recent studies of the effectiveness of unconditional cash transfers in the United States in reducing material hardship have yielded mixed results. Our study adds to this evidence base by examining the impact of a monthly unconditional cash transfer to families with low incomes. Specifically, we examine the effect of the monthly 2021 CTC on a broad set of economic wellbeing indicators. We use a national sample of families who live in poverty in the U.S., a population that has previously been excluded from the full value of the CTC prior to the 2021 reform. This population was also disproportionately impacted by the COVID-19 pandemic (in terms of job losses and disease burden) making the effects of the policy on this population especially important to study. Lastly, policy debates around the extension of the CTC have focused on poor households, as some politicians have concerns about providing cash to families without work requirements.

We find that the 2021 CTC reduced the overall number of hardships by about 17% for the average family, who received $500 per month. Similarly, the number of food hardships declined by 32%. These findings are robust to a number of different model specifications, including number of child fixed effects, and a number of state-month controls for other pandemic-era policies in place during the same time period. The food insecurity findings are in keeping with other studies in nationally representative samples (e.g., Parolin et al., 2021). We also find suggestive evidence that the monthly CTC reduced medical hardship. Though the medical hardship effect was no longer significant with the inclusion of number of children fixed effects, the point estimates were similar in magnitude to the models with household size fixed effects. In effect sizes, a $500 CTC was associated with a 0.155 SD reduction in medical hardships (16% decline). We also find suggestive evidence that respondents were more likely to pay their full utility bill (5 percentage points more likely with a $500 credit, or about 9-13%); the point estimates were nearly identical across models, but only marginally significant.

Three results were not entirely robust across models; thus, we interpret them with more caution. First, in the model with household size fixed effects, we find that the CTC reduces reliance on friends and family for food by about 10 percentage points (for a $500 CTC), a

reduction of 63%. However, the model with number of children fixed effects is much smaller and not significant (though continues to be negatively signed), suggesting a smaller effect size – a reduction of about 22%. Thus, we believe there is suggestive evidence of reduced reliance on friends/family for food, but we interpret this finding with caution.

Second, we find that families report having more money on hand (about $30 more for $500 in CTC, or a 24% increase) in response to the monthly CTC, but this finding is not robust to the inclusion of number of child fixed effects. Including that control flips the sign, reduces the estimate eight fold and renders it insignificant. Given the inconsistency across models, we do not feel we have sufficient evidence to confirm or reject this finding. Lastly, we observe a perplexing finding – that the CTC increases the likelihood of having a utility cut off by about 7.5 percentage points (for $500 in CTC) an increase of 68% (only 11% of the sample experiences a utility cut off). Here when we turn to the model with number of children fixed effects, the point estimate remains positively signed but is far smaller and insignificant. Taken at face value, the estimate with number of child fixed effects would suggest an increase in utility shut offs of about 18%. This finding is especially surprising given that we find evidence that families expressed less difficulty paying their full utility bill. Those estimates, while only marginally significant, suggest a 9-13% reduction in inability to pay utility bills with a $500 CTC. Utility cut offs are far rarer events (11%) than being unable to pay the full utility bill (53%). Thus, because of the conflicting evidence, and the lack of robustness across model specifications, we do not have sufficient evidence to draw conclusions about the effects of the CTC on utility cut offs or payments.

We find no significant effects of the CTC on employment, which is consistent with other studies that use nationally representative samples (Ananat et al., 2022; Lourie et al., 2021; Hamilton et al., 2022). We examined overall employment, full-time employment, part-time employment and general labor force participation and found no significant effects for any outcome in either model. That we find no effects on employment in this population should provide some reassurance to policy makers who are concerned that individuals with very low incomes may leave the labor force, or reduce their labor supply as a result of the CTC.

Prior studies have shown that Hispanic and Black families have disproportionately been excluded from the CTC due to earnings minimums and the phase in structure of the CTC prior to the 2021 reform (Goldin and Michelmore, 2022; Collyer et al., 2019). Thus, the 2021 CTC provided these families with new support relative to White families, who have historically had

higher eligibility rates. However, it is worth noting that our study sample consists of families with very low incomes; thus, most families in our study were likely excluded from the CTC prior to 2021, regardless of race or ethnic background. We find some evidence that the 2021 CTC helped reduce hardship among Black families more than White or Hispanic families, but the differences were not large (there were overlapping confidence intervals).

When we examined differences by income, we found little to no evidence that monthly earnings moderated the effect of the 2021 CTC. We hypothesized that the CTC would have a larger impact on those with lower earnings given prior studies (e.g., Pilkauskas et al., 2022). However, it is also notable that among parents whose household earnings were less than $500 per month, only 58% reported getting the CTC. In comparison, among those in the top half of the distribution ($500+ earnings/month), nearly 73% reported getting the credit. Thus, more work that considers heterogeneous treatment effects by income is needed, as we may not have sufficient power to detect differences by income.

This study provides evidence of the potential effects of a monthly, unconditional cash transfer to families and children with low incomes in the U.S. Our results suggest that a monthly unconditional cash transfer improves the material wellbeing of families with low incomes, but has little to no effect on hardship avoidance, having needs met, or employment. The findings from our sample of households with low incomes are consistent with other recent studies (Parolin et al., 2022; Hamilton et al., 2022), providing yet more evidence that regular unconditional cash transfers may be effective at reducing material hardships among lower income populations and little to no effect on employment.

We should use caution when extrapolating from the findings in this study. First, the 2021 CTC expansion was short lived and it was unclear whether the expansion would continue beyond six months. Thus, behavioral changes observed here might be different than if the expansions were more permanent. Second, families experienced some problems with receipt (e.g., payments were mailed instead of put in direct deposit) and many reported not knowing why they did not receive the credit, despite filing taxes (Pilkauskas and Michelmore, 2021). Thus, families could not depend on it and likely did not change spending patterns in the same way as they might have were it longer lived or more certain. Third, this expansion occurred during an unprecedented crisis, the COVID-19 pandemic. The federal government took many measures to ensure families were buffered from the potential economic fallout in the form of expanded access to social

services (like SNAP) and through stimulus checks. In our analyses, we control for a number of federal programs that expired (unemployment insurance, pandemic EBT, SNAP). The inclusion of these policy level variables in our analyses did little to nothing to change the point estimates, suggesting these were not driving the effects we observe. However, we cannot account for all policy changes that might have affected families of different sizes during this time period. Lastly, inflation started to rise during this time period (although increases in inflation were more pronounced after the end of the 2021 monthly credit); increased prices for goods and services may have also impacted the effect of the 2021 CTC on material wellbeing.

Despite these limitations, we found that the monthly 2021 CTC reduced the experience of material hardship, and in particular food hardships, in ways that were likely meaningful to families. We know from other research that material hardships are associated with poorer outcomes for children (e.g., Zilanawala and Pilkauskas, 2012); thus, it is likely that in the longer term these types of policies would have real impacts on children's wellbeing. Unlike recent studies of unconditional cash transfers to families with low incomes during the pandemic (Gennetian et al., 2022; Jacob et al., 2022; Jaroszewicz et al., 2022; Pilkauskas et al., 2022), we find that the monthly unconditional cash transfer did improve material hardship. Questions remain about why different studies and different approaches to providing unconditional cash transfers yield different results, some of which may be answered by the ongoing experimental studies (e.g., Baby's First Years, Open Research). But the findings here suggest that regular cash transfers to households with very low incomes, even in the short-term, help reduce their experience of hardships.

REFERENCES

Acs, G., & Werner, K. (2021). *How a permanent expansion of the Child Tax Credit could affect poverty*. Washington, DC: Urban Institute. https://www.urban.org/sites/default/files/publication/104626/how-a-permanent-expansion-of-the-child-tax-credit-could-affect-poverty.pdf

Akee, R. K., Copeland, W. E., Keeler, G., Angold, A., & Costello, E. J. (2010). Parents' incomes and children's outcomes: A quasi-experiment using transfer payments from casino profits. *American Economic Journal: Applied Economics*, *2*(1), 86-115.

Amorim, M. (2022). Socioeconomic disparities in parental spending after universal cash transfers: The case of the Alaska Dividend. *Social Forces*, *101*(1), 252-280.

Ananat, E., Glasner, B., Hamilton, C., & Parolin, Z. (2022). *Effects of the expanded Child Tax Credit on employment outcomes: Evidence from real-world data from April to December 2021* (NBER Working Paper No. 29823). National Bureau of Economic Research.

Baker, M., Messacar, D., & Stabile, M. (2021). *The effects of child tax benefits on poverty and labor supply: Evidence from the Canada Child Benefit and Universal Child Care Benefit* (NBER Working Paper No. 28556). National Bureau of Economic Research.

Barr, A. C., Eggleston, J., & Smith, A. A. (2022). *Investing in infants: The lasting effects of cash transfers to new families* (NBER Working Paper No. 30373). National Bureau of Economic Research.

Bastagli, F., Hagen-Zanker, J., Harman, L., Barca, V., Sturge, G., Schmidt, T., & Pellerano, L. (2016). Cash transfers: what does the evidence say? *Overseas Development Institute.*

Bastian, J. (2022). *Will the Child Tax Credit on work decrease its poverty impact?* Washington, DC: Niskanen Center. https://www.niskanencenter.org/will-the-child-tax-credits-effect-on-work-decrease-its-poverty-impact/

Batra, A., & Hamad, R. (2021). Short-term effects of the Earned Income Tax Credit on children's physical and mental health. *Annals of Epidemiology*, *58*, 15-21.

Brooks-Gunn, J., & Duncan, G. J. (1997). The effects of poverty on children. *The Future of Children*, 7(2), 55-71.

Brown, D. A. (2021). *The whiteness of wealth: How the tax system impoverishes Black Americans--and how we can fix it*. Crown Publishing Group, New York.

Chetty, R., Friedman, J. N., Hendren, N., Stepner, M., & The Opportunity Insights Team. (2020). *How did COVID-19 and stabilization policies affect spending and employment? A new real-time economic tracker based on private sector data* (NBER Working Paper No. 27431). National Bureau of Economic Research.

Christl, M., & De Poli, S. (2021). Trapped in inactivity? Social assistance and labour supply in Austria. *Empirica*, *48*(3), 661-696.

Collyer, S., Wimer, C., & Harris, D. (2019).). Left behind: The one-third of children in families who earn too little to get the full Child Tax Credit. *Poverty & Social Policy Brief*, 3(6) New York, NY: Columbia University Center on Poverty and Social Policy.

Columbia University Center for Poverty and Social Policy. (2021). *November Child Tax Credit payment kept 3.8 million children from poverty, monthly report* [data release]. https://www.povertycenter.columbia.edu/news-internal/monthly-poverty-november-2021

Cooney, P. & Shaefer, H.L. (2021) *Material hardship and mental health following the Covid-19 Relief Bill and American Rescue Plan Act.* Ann Arbor, MI: Poverty Solutions at the University of Michigan. https://sites.fordschool.umich.edu/poverty2021/files/2021/05/PovertySolutions-Hardship-After-COVID-19-Relief-Bill-PolicyBrief-r1.pdf

Corinth, K., Meyer, B. D., Stadnicki, M., & Wu, D. (2021). *The anti-poverty, targeting, and labor supply effects of the proposed Child Tax Credit expansion* (NBER Working Paper No. 29366). National Bureau of Economic Research.

Crandall-Hollick, M. L. (2018). The child tax credit: Legislative history. *Congressional Research Service Report*, *45124*.

Curran, M. A. (2021). Research Roundup of the Expanded Child Tax Credit: The First 6 Months. *Poverty & Social Policy Report*, *5*(5), 25. https://www.povertycenter.columbia.edu/publication/child-tax-credit/research-roundup

Currie, J., & Gruber, J. (1996). Health insurance eligibility, utilization of medical care, and child health. *The Quarterly Journal of Economics*, *111*(2), 431-466.

Edin, K., & Shaefer, H. L. (2015). *$2.00 a day: Living on almost nothing in America*. Houghton Mifflin Harcourt.

Evans, W. N., Sullivan, J. X., & Wallskog, M. (2016). The impact of homelessness prevention programs on homelessness. *Science*, *353*(6300), 694-699.

Freedman, M., & Kim, Y. (2022). Quasi-Experimental Evidence on the Effects of Expanding Cash Welfare. *Journal of Policy Analysis and Management*, 41(3), 859-890.

Garfinkel, I., Harris, D., Waldfogel, J., & Wimer, C. (2016). Doing more for our children: Modeling a universal child allowance or more generous Child Tax Credit. New York: The Century Foundation.

Gennetian, L. A., Duncan, G., Fox, N. A., Magnuson, K., Halpern-Meekin, S., Noble, K. G., & Yoshikawa, H. (2022). *Unconditional cash and family investments in infants: Evidence*

from a large-scale cash transfer experiment in the US (NBER Working Paper No. 30379). National Bureau of Economic Research.

Goldin, J., & Michelmore, K. (2022). Who benefits from the Child Tax Credit? *National Tax Journal*, *75*(1), 123-147.

Hamilton, L., Roll, S., Despard, M., Maag, E., Chun, Y., Brugger, L., & Grinstein-Weiss, M. (2022). The impacts of the 2021 expanded child tax credit on family employment, nutrition, and financial well-being: Findings from the Social Policy Institute's Child Tax Credit Panel (Wave 2). *Global Economy and Development at Brookings*, *173*. https://www.brookings.edu/research/the-impacts-of-the-2021-expanded-child-tax-credit-on-family-employment-nutrition-and-financial-well-being/

Haushofer, J., Chemin, M., Jang, C., & Abraham, J. (2020). Economic and psychological effects of health insurance and cash transfers: Evidence from a randomized experiment in Kenya. *Journal of Development Economics,* 144, 102416.

Haushofer, J., & Shapiro, J. (2016). The short-term impact of unconditional cash transfers to the poor: experimental evidence from Kenya. *The Quarterly Journal of Economics*, *131*(4), 1973-2042.

Heflin, C. M., & Iceland, J. (2009). Poverty, material hardship, and depression. *Social Science Quarterly*, 90(5), 1051–1071.

Heflin, C., Sandberg, J., & Rafail, P. (2009). The structure of material hardship in US households: An examination of the coherence behind common measures of well-being. *Social Problems*, 56(4), 746-764.

Hoynes, H. W., & Patel, A. J. (2018). Effective policy for reducing poverty and inequality? The Earned Income Tax Credit and the distribution of income. *Journal of Human Resources*, *53*(4), 859-890.

Internal Revenue Service (2021). *Treasury and IRS disburse sixth monthly Child Tax Credit to families of 61 million children* [press release]. https://home.treasury.gov/news/press-releases/jy0533

Jacob, B., Pilkauskas, N., Rhodes, E., Richard, K., & Shaefer, H. L. (2022). The COVID-19 cash transfer study II: The hardship and mental health impacts of an unconditional cash transfer to low-income individuals. *National Tax Journal*, *75*(3), 597-625.

Jaroszewicz, A., Jachimowicz, J., Hauser, O., & Jamison, J. (2022). How effective is (more) money? Randomizing unconditional cash transfer amounts in the US. Randomizing Unconditional Cash Transfer Amounts in the US. Available at SSRN: http://dx.doi.org/10.2139/ssrn.4154000

Jones, D., & Marinescu, I. (2022). The labor market impacts of universal and permanent cash transfers: Evidence from the Alaska Permanent Fund. *American Economic Journal: Economic Policy*, *14*(2), 315-40.

Jones, L. E., Milligan, K., & Stabile, M. (2019). Child cash benefits and family expenditures: Evidence from the National Child Benefit. *Canadian Journal of Economics*, *52*(4), 1433-1463.

Karpman, M., Maag, E., Zuckerman, S. & Wissoker, D. (2022) *Child Tax Credit recipients experienced a larger decline in food insecurity and a similar change in employment as nonrecipients between 2020 and 2021*. Tax Policy Center. Washington, DC: Urban Institute and Brookings Institution.

Kondratjeva, O., Roll, S. P., Despard, M., & Grinstein-Weiss, M. (2021). The impact of state earned income tax credit increases on material and medical hardship. *Journal of Consumer Affairs*, *55*(3), 872-910.

Kondratjeva, O., Roll, S. P., Despard, M., & Grinstein-Weiss, M. (2022). The impact of tax refund delays on the experience of hardship among lower-income households. *Journal of Consumer Policy*, 1-42.

Levine, R., Watts, H., Hollister, R., Williams, W., O'Connor, A., Widerquist, K., Lewis, M. and Pressman, S., 2005. The Ethics and Economics of the Basic Income Guarantee. *Chapter A Retrospective on the Negative Income Tax Experiments: Looking Back at the Most Innovative Field Studies in Social Policy*, pp.95-106.

Lourie, B., Shanthikumar, D. M., Shevlin, T. J., & Zhu, C. (2021). Effects of the 2021 expanded Child Tax Credit. Available at SSRN: https://ssrn.com/abstract=3990385

Maynard, R. A., & Murnane, R. J. (1979). The effects of a negative income tax on school performance: Results of an experiment. *Journal of Human Resources*, 463-476.

McKernan, S. M., Ratcliffe, C., & Braga, B. (2021). The effect of the US safety net on material hardship over two decades. *Journal of Public Economics*, *197*, 104403.

Michelmore, K., & Pilkauskas, N. (2021). Tots and teens: How does child's age influence maternal labor supply and child care response to the earned income tax credit? *Journal of Labor Economics*, *39*(4), 895-929.

Michelmore, K. M., & Pilkauskas, N. V. (2022). The Earned Income Tax Credit, Family Complexity, and Children's Living Arrangements. *RSF: The Russell Sage Foundation Journal of the Social Sciences*, *8*(5), 143-165.

Milligan, K., & Stabile, M. (2011). Do child tax benefits affect the well-being of children? Evidence from Canadian child benefit expansions. *American Economic Journal: Economic Policy*, *3*(3), 175-205.

Murphy, A., McDonald-Lopez, K., Pilkauskas, N.V. & Gould-Werth, A. (2022). Transportation insecurity in the United States: A descriptive portrait. *Socius, 8,* 1-12.

National Academies of Sciences, Engineering, and Medicine. (2019). *A roadmap to reducing child poverty*. National Academies Press.

Parolin, Z. (2021). Decomposing the decline of cash assistance in the United States, 1993 to 2016. *Demography*, *58*(3), 1119-1141.

Parolin, Z., Ananat, E., Collyer, S. M., Curran, M., & Wimer, C. (2021). *The initial effects of the expanded Child Tax Credit on material hardship* (NBER Working Paper No. 29285). National Bureau of Economic Research.

Perez-Lopez, D. J. (2021). *Economic hardship declined in households with children as Child Tax Credit payments arrived*. United States Census Bureau. https://www.census.gov/library/stories/2021/08/economic-hardship-declined-in-households-with-children-as-child-tax-credit-payments-arrived.html

Pilkauskas, N.V. & Cooney, P, (2021). *Receipt and usage of the Child Tax Credit payments among low-income families.* Ann Arbor, MI: Poverty Solutions at the University of Michigan. https://poverty.umich.edu/publications/receipt-and-usage-of-child-tax-credit-payments-among-low-income-families-what-we-know/

Pilkauskas, N., Jacob, B., Rhodes, E., Richard, K., & Shaefer, H. L. (2022). The Covid Cash Transfer Study: The impacts of an unconditional cash transfer on the wellbeing of low-income families.https://sites.fordschool.umich.edu/poverty2021/files/2022/06/Pilkauskas_et_al_RCT1_May2022.pdf

Pilkauskas, N., & Michelmore, K. (2019). The effect of the earned income tax credit on housing and living arrangements. *Demography*, *56*(4), 1303-1326.

Pilkauskas, N.V. & Michelmore, K. (2021). *Families with low incomes and the Child Tax Credit: Who is still missing out?* Ann Arbor, MI: Poverty Solutions at the University of Michigan.https://sites.fordschool.umich.edu/poverty2021/files/2021/12/PovertySolutions-Child-Tax-Credit-who-is-still-missing-out-Decembe2021.pdf

RAPID-EC. (2021). *The Child Tax Credit is buffering families from financial hardship.* https://www.uorapidresponse.com/our-research/child-tax-credit-is-buffering-families-from-hardship

Schirle, T. (2015). The effect of universal child benefits on labour supply. *Canadian Journal of Economics/Revue canadienne d'économique, 48(*2), 437-463.

Schmidt, L., Shore-Sheppard, L., & Watson, T. (2016). The effect of safety-net programs on food insecurity. *Journal of Human Resources*, *51*(3), 589-614.

Shaefer, H. L., Edin, K., Fusaro, V., & Wu, P. (2020). The decline of cash assistance and the well-being of poor households with children. *Social Forces, 98(3),* 1000-1025.

Shaefer, H. L., Collyer, S., Duncan, G., Edin, K., Garfinkel, I., Harris, D., ... & Yoshikawa, H. (2018). A universal child allowance: A plan to reduce poverty and income instability among children in the United States. *RSF: The Russell Sage Foundation Journal of the Social Sciences*, *4*(2), 22-42.

Shaefer, H. L., & Gutierrez, I. A. (2013). The Supplemental Nutrition Assistance Program and material hardships among low-income households with children. *Social Service Review*, *87*(4), 753-779

Shafer, P. R., Gutiérrez, K. M., de Cuba, S. E., Bovell-Ammon, A., & Raifman, J. (2022). Association of the implementation of Child Tax Credit advance payments with food insufficiency in US households. *JAMA network open*, *5*(1), e2143296-e2143296.

Van Lancker, W., & Van Mechelen, N. (2015). Universalism under siege? Exploring the association between targeting, child benefits and child poverty across 26 countries. *Social science research*, *50*, 60-75.

Wolfe, B., Jakubowski, J., Haveman, R., & Courey, M. (2012). The income and health effects of tribal casino gaming on American Indians. *Demography*, *49*(2), 499-524.

Zilanawala, A., & Pilkauskas, N. V. (2012). Material hardship and child socioemotional behaviors: Differences by types of hardship, timing, and duration. *Children and Youth Services Review*, *34*(4), 814-825.

Table 1: Sample Descriptive Statistics, Households with Children, Before and After the CTC Expansion

	Average	Pre-CTC	Post-CTC
Age			
18-24	0.07	0.07	0.07
25-34	0.40	0.38	0.41
35-44	0.35	0.36	0.35
45-54	0.12	0.13	0.11
55+	0.05	0.07	0.05
Race/Ethnicity			
Black	0.35	0.31	0.37
White	0.35	0.38	0.34
Hispanic	0.21	0.22	0.21
Other	0.09	0.10	0.09
Education			
Less than High School	0.23	0.22	0.24
High School	0.39	0.37	0.40
Some College	0.27	0.28	0.26
Associate Degree +	0.10	0.12	0.10
Female	0.94	0.94	0.94
Urbanicity			
Urban	0.46	0.44	0.47
Rural	0.32	0.32	0.32
Suburban	0.22	0.24	0.21
Household structure			
Partner/spouse	0.30	0.33	0.29
Household size	4.30	4.26	4.32
(SD)	1.64	1.65	1.64
Number of kids			
1	0.25	0.26	0.24
2	0.31	0.32	0.31
3	0.21	0.21	0.21
4	0.12	0.12	0.13
5+	0.10	0.09	0.11
Receive food stamps	0.85	0.85	0.85
Employment status			
Employed	0.40	0.37	0.41
Unemployed	0.31	0.31	0.31
Out of labor force	0.29	0.32	0.29
Monthly household earnings			
No earnings	0.22	0.23	0.21
<$500	0.15	0.13	0.16
$500-$999	0.19	0.18	0.19
$1000-$1,999	0.25	0.26	0.25
$2000+	0.12	0.12	0.11
N	20,545	5,265	15,280

Note: Data come from the providers study, June 2021- January 2022. Sample is restricted to households with at least one child under the age of 18.

Table 2: Means on the Child Tax Credit and Outcomes, by Race/Ethnicity and by Household Earnings

	All	Race/Ethnicity			Monthly household earnings	
		Black	White	Hispanic	<$500	$500+
CTC (August - January)						
% received CTC	65.9	68.9	67.5	61.2	58.0	72.9
Reported CTC $$ (all)	325	338	334	303	271	373
(SD)	(314)	(305)	(319)	(314)	(298)	(319)
Reported CTC $$ (among recievers)	494	490	495	495	467	512
(SD)	(257)	(246)	(266)	(257)	(248)	(262)
Simulated CTC $$	712	743	644	744	702	717
(SD)	(425)	(436)	(373)	(440)	(433)	(412)
Outcomes						
Hardship						
Hardship index (14-item scale)	2.98	3.06	3.20	2.58	3.32	2.87
(SD)	(2.39)	(2.37)	(2.53)	(2.14)	(2.54)	(2.28)
Food hardship (4-item scale)	1.12	1.09	1.30	0.90	1.25	1.08
(SD)	(1.31)	(1.28)	(1.40)	(1.17)	(1.36)	(1.29)
Medical hardship (2-item scale)	0.40	0.34	0.46	0.41	0.38	0.42
(SD)	(0.68)	(0.64)	(0.71)	(0.69)	(0.67)	(0.69)
Severe housing hardship (4-item scale)	0.17	0.21	0.15	0.14	0.26	0.12
(SD)	(0.57)	(0.64)	(0.53)	(0.49)	(0.70)	(0.47)
Utilities cut off	0.11	0.15	0.09	0.09	0.14	0.10
Unable to pay full utility bill	0.53	0.58	0.51	0.52	0.59	0.51
Bill hardship	0.39	0.41	0.41	0.33	0.38	0.41
Transportation hardship	0.26	0.29	0.27	0.18	0.32	0.22
Needs/Cash on hand						
Have needs met	0.35	0.29	0.37	0.37	0.28	0.37
Total $ on hand ($)	125.93	110.33	118.28	147.05	87.90	145.74
Time $ will last (days)	3.65	3.37	3.64	3.84	3.26	3.78
Hardship avoidance						
Relied on friends/family for food	0.16	0.18	0.18	0.12	0.21	0.14
Visited food pantry	0.18	0.15	0.22	0.16	0.20	0.17
Borrow from friends or family	0.54	0.60	0.52	0.52	0.61	0.52
Employment						
Any employment	0.40	0.40	0.37	0.43	0.17	0.55
Full-time work	0.21	0.22	0.21	0.20	0.05	0.32
Part-time work	0.19	0.19	0.16	0.23	0.12	0.24
Labor force participation	0.71	0.77	0.62	0.74	0.63	0.77

Note: Data come from the providers study, June 2021- January 2022. Sample is restricted to households with at least one child under the age of 18.

Table 3: How Did You Use the CTC?

Month	July	August	September	October	November	December	Average
Bills and living expenses							
Paid bills	72	75	75	75	79	74	75
Paid rent/mortgage/for housing	9	9	9	12	9	9	9
Paid of loans/debts	5	4	4	4	4	3	4
Bought food	5	7	8	8	8	8	7
Bought household necessities (toiletries, cleaning supplies etc)	4	5	5	6	7	5	5
Paid for gas or car expenses	2	5	5	5	5	4	4
Child related expenses							
Bought school supplies	11	14	6	2	2	1	6
Bought school clothes/uniforms	8	10	5	2	1		4
Bought child necessities (diapers, wipes, other)	8	8	12	9	13	10	10
Bought child clothes	6	4	6	9	9	5	7
Paid for child care	4	6	5	5	7	7	6
Other							
Put money in savings	2	2	2	1	1	1	2
Other	4	4	3	2	2	0	3
Clothes (not specified kid/adult)		2	3	2	2	1	2
Holiday/birthday gifts			1	1	3	12	3
N	1,151	2,208	1,354	1,982	1,778	1,228	9,701

Note: Categories are not mutually exclusive (people could select multiple responses). Sample is restricted to parents who received the CTC and who provided a response. Percents may sum to more than 100%.

Table 4: Effect of the Child Tax Credit on Material Hardship, Intent-to-Treat Estimates and Local Average Treatment Effects, in $100

	ITT		LATE	
	(1)	(2)	(1)	(2)
Hardship index (14-item scale) [a]	-0.007 **	-0.008 *	-0.033 **	-0.042 *
	(0.002)	(0.003)	(0.012)	(0.019)
Food hardship (4-item scale) [a]	-0.013 **	-0.010 **	-0.065 **	-0.055 **
	(0.002)	(0.003)	(0.012)	(0.019)
Medical hardship (2-item scale) [a]	-0.006 **	-0.003	-0.031 **	-0.019
	(0.002)	(0.003)	(0.012)	(0.019)
Severe housing hardship (4-item scale) [b]	0.003	0.000	0.014	0.002
	(0.002)	(0.003)	(0.012)	(0.019)
Utilities cut off [b]	0.003 **	0.001	0.015 **	0.004
	(0.001)	(0.001)	(0.004)	(0.006)
Unable to pay full utility bill [b]	-0.002 +	-0.002	-0.010 +	-0.014
	(0.001)	(0.002)	(0.006)	(0.010)
Bill hardship [a]	0.001	-0.002	0.007	-0.009
	(0.001)	(0.002)	(0.006)	(0.009)
Transportation hardship [a]	0.002	0.001	0.008	0.005
	(0.001)	(0.002)	(0.005)	(0.009)
Household size fixed effects	x		x	
Number of children fixed effects		x		x

Note: Coefficients represent the effect of a $100 increase in the CTC. Intent-to-treat (ITT) estimates. Local average treatment effects (LATE) obtained by instrumenting for CTC amount received as reported by the respondent. SE's in parentheses. Scales are in standard deviation units (M=0; SD=1). Sample restricted to households with at least one child under the age of 18. All models include all demographic controls (age, gender, education, race/ethnicity, partnered, urbanicity), state fixed effects, month fixed effects, and contextual (SNAP/PEBT/UI) controls. Model 1 includes household size fixed effects; Model 2 includes number of children fixed effects.

[a] N= 19,154
[b] N=20,545
+p < .10;*p < .05; **p < .01

Table 5 : The Effects of the Child Tax Credit on Basic Needs, Cash on Hand, and Hardship Avoidance, Local Average Treatment Effects

	LATE	
	(1)	(2)
Needs/Cash on hand		
Have needs met	0.005	0.003
	(0.006)	(0.009)
Total $ on hand ($)	5.664 *	-0.692
	(2.611)	(4.230)
Time $ will last (days)	0.028	0.061
	(0.043)	(0.070)
Hardship avoidance		
Relied on friends/family for food	-0.020 **	-0.007
	(0.004)	(0.007)
Visited food pantry	-0.002	-0.002
	(0.005)	(0.007)
Borrow from friends or family [a]	-0.001	0.013
	(0.006)	(0.010)
Household size fixed effects	x	
Number of children fixed effects		x
N	19,154	

Note: Coefficients represent the effect of a $100 increase in the CTC. Local average treatment effects (LATE) obtained by instrumenting for CTC receipt as reported by the respondent. SE's in parentheses. Sample restricted to households with at least one child under the age of 18. All models include all demographic controls (age, gender, education, race/ethnicity, partnered, urbanicity), state fixed effects, month fixed effects, and contextual (SNAP/PEBT/UI) controls. Model 1 includes household size fixed effects; Model 2 includes number of children fixed effects.

[a] Sample for this outcome is slightly larger (19,327)
+p < .10;*p < .05; **p < .01

Table 6: The Effects of the Child Tax Credit on Employment, Local Average Treatment Effects

	LATE	
	(1)	(2)
Any employment	-0.009	-0.004
	(0.006)	(0.009)
Full-time work	-0.002	-0.011
	(0.005)	(0.008)
Part-time work	-0.007	0.007
	(0.005)	(0.008)
Labor force participation	-0.005	-0.003
	(0.005)	(0.009)
Household size fixed effects	x	
Number of children fixed effects		x
N	20,545	

Note: Coefficients represent the effect of a $100 increase in the CTC. Local average treatment effects (LATE) obtained by instrumenting for CTC receipt as reported by the respondent. SE's in parentheses. Sample restricted to households with at least one child under the age of 18. All models include all demographic controls (age, gender, education, race/ethnicity, partnered, urbanicity), state fixed effects, month fixed effects, and contextual (SNAP/PEBT/UI) controls. Model 1 includes household size fixed effects; Model 2 includes number of children fixed effects.

+p < .10;*p < .05; **p < .01

Table 7: Effect of the Child Tax Credit on Material Hardship, Local Average Treatment Effects, by Race/Ethnicity

	Black		White		Hispanic	
	(1)	(2)	(1)	(2)	(1)	(2)
Hardship index (14-item scale)	-0.064 **	-0.096 **	-0.031 +	-0.016	-0.014	0.033
	(0.023)	(0.037)	(0.017)	(0.024)	(0.032)	(0.08)
Food hardship (4-item scale)	-0.071 **	-0.088 *	-0.057 **	-0.023	-0.067 *	-0.014
	(0.02)	(0.036)	(0.017)	(0.025)	(0.032)	(0.078)
Medical hardship (2-item scale)	-0.043 *	-0.039	-0.011	-0.007	-0.062 +	-0.025
	(0.021)	(0.034)	(0.016)	(0.024)	(0.036)	(0.087)
Severe housing hardship (4-item scale)	-0.013	-0.059	-0.022	-0.008	0.082 *	0.104
	(0.026)	(0.042)	(0.015)	(0.022)	(0.033)	(0.081)
Utilities cut off	0.016 +	0.005	0.013 **	0.005	0.020 *	0.029
	(0.008)	(0.013)	(0.005)	(0.007)	(0.011)	(0.026)
Unable to pay full utility bill	-0.032 **	-0.044 *	-0.003	0.001	-0.008	-0.047
	(0.011)	(0.018)	(0.008)	(0.012)	(0.018)	(0.045)
Bill hardship	-0.012	-0.024	0.011	-0.01	0.020	0.041
	(0.011)	(0.018)	(0.008)	(0.011)	(0.017)	(0.042)
Transportation hardship	0.004	0.007	-0.002	0.005	0.018	0.032
	(0.01)	(0.017)	(0.007)	(0.01)	(0.014)	(0.035)
Household size fixed effects	x		x		x	
Number of children fixed effects		x		x		x
N	6,430		6,146		3,985	

Note: Coefficients represent the effect of a $100 increase in the CTC. Local average treatment effects (LATE) obtained by instrumenting for CTC receipt as reported by the respondent.SE's in parentheses. Scales are in standard deviation units (M=0; SD=1). Sample restricted to households with at least one child under the age of 18. All models include all demographic controls (age, gender, education, partnered, urbanicity), state fixed effects, month fixed effects, and contextual (SNAP/PEBT/UI) controls. Model 1 includes household size fixed effects; Model 2 includes number of children fixed effects.

+p < .10;*p < .05; **p < .01

Table 8: Effect of the Child Tax Credit on Material Hardship, Local Average Treatment Effects, by Monthly Earnings

	$500 or less		More than $500	
	(1)	(2)	(1)	(2)
Hardship index (14-item scale)	-0.039	-0.063	-0.034 **	-0.035 +
	(0.028)	(0.045)	(0.013)	(0.020)
Food hardship (4-item scale)	-0.073 **	-0.074 +	-0.062 **	-0.050 *
	(0.027)	(0.044)	(0.013)	(0.020)
Medical hardship (2-item scale)	-0.035	-0.011	-0.028 *	-0.013
	(0.025)	(0.041)	(0.013)	(0.021)
Severe ousing hardship (4-item scale)	0.013	-0.035	0.001	-0.011
	(0.033)	(0.053)	(0.011)	(0.017)
Utilities cut off	0.028 **	0.013	0.007 +	-0.001
	(0.009)	(0.015)	(0.004)	(0.006)
Unable to pay full utility bill	-0.030 *	-0.018	-0.002	-0.013
	(0.013)	(0.021)	(0.007)	(0.010)
Bill hardship	0.011	-0.017	0.006	0.001
	(0.013)	(0.021)	(0.007)	(0.010)
Transportation hardship	0.01	-0.005	0.006	0.010
	(0.012)	(0.02)	(0.006)	(0.009)
Household size fixed effects	x		x	
Number of children fixed effects		x		x
N	7,040		10,390	

Note: Coefficients represent the effect of a $100 increase in the CTC. Local average treatment effects (LATE) obtained by instrumenting for CTC receipt as reported by the respondent.SE's in parentheses. Scales are in standard deviation units (M=0; SD=1). Sample restricted to households with at least one child under the age of 18. All models include all demographic controls (age, gender, education, partnered, urbanicity), state fixed effects, month fixed effects, and contextual (SNAP/PEBT/UI) controls. Model 1 includes household size fixed effects; Model 2 includes number of children fixed effects.

+p < .10;*p < .05; **p < .01

Appendix 1 – Additional Information on Measures

This appendix provides additional information on the coding of the measures of economic wellbeing.

Measures of Material Hardship

Food Insecurity

Our measure of food insecurity relies on four items. First is the 2-item food insecurity scale (Hager et al., 2010) that is a well-validated instrument that is derived from the 18-item USDA food insecurity scale. Asking about the last 30 days we asked respondents if they "worried whether your food would run out before you got money to buy more" and if "the food you bought just didn't last and you didn't have money to get more". Second, respondents were asked if they had "skipped meals" or "eaten less" in the last 30 days. Because these questions did not specify that these behaviors were undertaken as a result of a lack of money, we were unsure if we should include them in our index. To explore this issue we examined the Cronbach's alpha of the 2-item food insecurity scale (α=0.62) and compared it to the alpha that included the two additional food related items. We found that including the additional two food items increased the alpha to α=0.71. Thus, we decided to keep all 4 items in our measure of food insecurity. Items were summed and then standardized (M=0, SD=1). In extensions we tested the robustness of our findings to just using the 2-item food insecurity index and found they were robust.

Medical Hardship

Medical hardship is assessed with two questions that are commonly assessed in the material hardship literature whether in the last 30 days the respond had: "Not visited the doctor when you needed to because of the cost" or "Not visited the dentist when you needed because of the cost" (α=0.61). These measures were selected as they are frequently used in the material hardship literature (e.g., Rodems and Shaefer, 2020; Pilkauskas, Campbell and Wimer 2017). Items are summed and then standardized.

Severe Housing Hardship

Inability to pay rent or mortgage is a common measure of material hardship. Unfortunately the available survey questions asking about rent, do not allow us to create a good measure of rental hardship. We do, however, have four good indicators of more severe housing hardships. The first measure is whether the respondent was evicted by a landlord or court order in the last 30 days, the second assesses shelter use – "have you slept or stayed in a shelter at least one night in the past month". A third indicator relies on a question that asks respondents about their current living situation that gets at homelessness. If a respondent says they do not currently have a home, we code them as homeless. The final measure asks respondents "Do you currently live in a house, apartment or other stable housing? Answer "no" if you currently live in a motel, car or shelter." We code respondents as not having stable housing if they say they say no to this question. We create an index summing across these four measures (α=0.65) and then we standardize the measure.

Utility Hardship

Another common measure of material hardship is that of utility hardship, although how this measure is constructed varies across studies. Some focus on all utilities, others consider the ability to pay a utility bill a bill hardship, others consider this a measure of financial precarity. In this study, we look at two utility hardship questions independently. The first is "In the last 30 days, did you pay the full amount of your utility bills (e.g., water, gas, oil, electric)?". The second question asks if the respondent had their utilities shut off in the last 30 days. We considered putting these measures together in an index but the Cronbach's alpha was only 0.29, suggesting they did not belong together in an index. Additionally shut offs are rare (about 11%) whereas not paying a utility bill is common (53%). We also considered combining inability to pay the utility bill with the measure of bill hardship but again found a low alpha (α=0.44).

Bill hardships

We consider a single item – "Did you decide not to pay a bill". Unlike more common measures of material hardship, this item is somewhat unusual as it says "decide not to pay" versus "did not pay". We examine this outcome as bill hardship is a common material hardship but are unsure how this measure might compare with other studies of similar outcomes.

Transportation hardship

Lastly, we examine a single item measure of transportation hardship with a question that was adapted from the Transportation Security Index (Murphy et al. 2021). This question asks respondents (about the last 30 days) if they "missed an appointment, skipped going somewhere, or missed work because you didn't have a way to get there". Transportation hardship is rarely included in measures of material hardship but new work suggests that 24% of adults experience transportation insecurity, with rates that are closer to 50% among lower income households (Murphy et al., 2022); thus, we added this measure to our suite of hardship indicators. However, we note, this one-item measure likely does not fully capture the likelihood of experiencing transportation insecurity.

Material Hardship Scale

Finally, we construct an index using all 14 indicators of material hardship (α=0.71). This measure is summed and standardized (M=0, SD=1).

Additional Measures of Economic Wellbeing

Have Needs Met

To assess how well families were doing economically, we used a measure that Propel created to consider whether families were able to meet their basic needs: "Do you have everything you typically need in your home right now? Like food, household products, and cleaning supplies". Respondents can indicate 1) they have everything, 2) most things, 3) some things, 4) running low on most things, or 5) they do not have most things they need. We create a binary indicator taking

on the value of one if the respondent reports having everything or most things; all others are coded as zero.

Cash on Hand

To assess whether the CTC changed the amount of cash families had on hand, we used a question that asked "About how much money do you have in total right now (not including food stamps)? This question was asked as a categorical question with responses ranging from $25 to $1,000 or more. To make this variable into a continuous measure we coded them with mid-points, with the top code being $1,000.

How Long Will Cash Last?

After asking respondents how much cash they had on hand, a follow up question asked about how long that money might last. The six-item responses ranged from 1-2 days to two weeks or more. We converted the weeks into days and assigned respondents the mid-point (e.g., 1.5 days for 1-2 days). The top code was 14 days for those who reported two or more weeks.

Hardship Avoidance

Rely on Friends and Family for Food

One way in which families might avoid experiencing food insecurity is through relying on friends and family for food. This measure was a single item question that asked respondents if they had to rely on friends or family for meals in the last 30 days. We coded this as a dummy variable (yes/no).

Food Pantry Use

Respondents were asked if they had visited a food pantry in the last 30 days. We consider this a hardship avoidance technique as those who got food from a food pantry may have been less likely to experience food insecurity – or may have been able to put some of their money towards other living expenses. We create a dummy variable where 1= yes the respondent went to a food pantry.

Borrow Money from Friends/Family

Our final measure of hardship avoidance is relying on friends and family for money. This measure was derived from two variables, first was a question that asked respondents if they "borrowed money or used credit to cover their expenses? This could be from family, friends, churches, GoFundMe, etc." If respondents said they had gotten money, they were then asked "How did you borrow or use credit?" and respondents could say "friend/family" as well as a number of additional options. If respondents said friends/family then they were coded as one on this variable.

We did not combine these three measures into an index as their internal reliability was relatively low (α=0.41).

Labor Force Participation

We rely on a measure that asked respondents about their current labor force from a question that asked "How would you describe your employment status currently?". Respondents could answer that they worked full-time, part-time, not working but looking for work, not working and not looking for work, not able to work, or retired. We categorized respondents who were working full-time or part-time or looking for work as those who were in the labor force and the rest were considered out of the labor force. Those who were not working but looking for work were considered unemployed.

Reference

Murphy, Alexandra K., Alix Gould-Werth, and Jamie Griffin. 2021. "Validating the Sixteen-Item Transportation Security Index in a Nationally Representative Sample: A Confirmatory Factor Analysis." *Survey Practice* 14 (1). https://doi.org/10.29115/SP-2021-0011.

Murphy, A., McDonald-Lopez, K., Pilkauskas, N.V. & Gould-Werth, A. 2022. The prevalence of transportation insecurity.

Appendix Table 1: Comparing Providers Survey Data to the American Community Survey Data - Households with Children

	ACS 2019		Providers
	SNAP recipients	Households below 100% of poverty	
Age			
18-24	6	7	7
25-34	31	33	33
35-44	32	33	31
45-54	17	16	16
55+	14	10	13
Household structure			
Household size	4.29	4.03	4.03
Number of kids	2.21	2.24	2.53
Partner/spouse	32	27	30
Race/Ethnicity			
Black	27	25	32
White	38	38	38
Hispanic	28	30	20
Other	7	8	9
Education			
<High school	19	22	25
High school	45	44	40
Some college	27	24	25
College or more	10	10	10
Female	71	74	94
Receive food stamps	100	56	85

Notes: All samples are restricted to households with at least one coresident child under the age of 18. SNAP recipients = those who reported receiving Supplemental Nutrition Assistance Program in the last 12 months. Poor = households with income below 100% of poverty using the Census Bureau's poverty thresholds.

Data: ACS= American Community Survey 2019. Sample is restricted to the reference person. Providers sample is June 2021- January 2022.

Appendix Table 2: Association between own Child Tax Credit Receipt and Amount and Material Hardship

	Self-reported CTC receipt (0/1)		Self-reported CTC $$ (in $100's)	
	(1)	(2)	(1)	(2)
Hardship index (14-item scale) [a]	-0.098 **	-0.096 **	-0.019 **	-0.018 **
	(0.018)	(0.018)	(0.003)	(0.003)
Food hardship (4-item scale) [a]	-0.085 **	-0.08 **	-0.019 **	-0.016 **
	(0.018)	(0.018)	(0.003)	(0.003)
Medical hardship (2-item scale) [a]	-0.022	-0.02	-0.005 *	-0.004
	(0.017)	(0.017)	(0.003)	(0.003)
Severe housing hardship (4-item scale) [b]	-0.148 **	-0.149 **	-0.021 **	-0.023 **
	(0.017)	(0.017)	(0.003)	(0.003)
Utilities cut off [b]	-0.021 **	-0.022 **	-0.003 **	-0.004 **
	(0.005)	(0.005)	(0.001)	(0.001)
Unable to pay bill [b]	-0.018 *	-0.017 *	-0.002 +	-0.002
	(0.008)	(0.009)	(0.001)	(0.001)
Bill hardship [a]	0.055 **	0.054 **	0.006 **	0.006 **
	(0.009)	(0.009)	(0.001)	(0.001)
Transportation hardship [a]	-0.036 **	-0.036 **	-0.005 **	-0.005 **
	(0.008)	(0.008)	(0.001)	(0.001)
Household size fixed effects	x		x	
Number of children fixed effects		x		x

Note: SE's in parentheses. Scales are in standard deviation units (M=0; SD=1). Sample is restricted to households with at least one child under the age of 18. All models include all demographic controls (age, gender, education, race/ethnicity, partnered, urbanicity), state fixed effects, month fixed effects, and contextual (SNAP/PEBT/UI) controls. Model 1 includes household size fixed effects; Model 2 includes number of children fixed effects.

+p < .10;*p < .05; **p < .01

[a] N= 19,154

[b] N=20,545

Appendix Table 3: Testing the Addition of Controls - Intent-to-Treat and Local Average Treatment Effects

	ITT				LATE			
Hardship index (14-item scale) [a]	-0.002	-0.002	-0.007 **	-0.008 *	-0.007	-0.007	-0.033 **	-0.042 *
	(0.002)	(0.002)	(0.002)	(0.003)	(0.008)	(0.008)	(0.012)	(0.019)
Food hardship (4-item scale) [a]	-0.013 **	-0.013 **	-0.013 **	-0.01 **	-0.054 **	-0.054 **	-0.065 **	-0.055 **
	(0.002)	(0.002)	(0.002)	(0.003)	(0.008)	(0.008)	(0.012)	(0.019)
Medical hardship (2-item scale) [a]	-0.003	-0.003	-0.006 **	-0.003	-0.011	-0.011	-0.031 **	-0.019
	(0.002)	(0.002)	(0.002)	(0.003)	(0.008)	(0.008)	(0.012)	(0.019)
Severe housing hardship (4-item scale) [b]	0.002	0.002	0.003	0.000	0.009	0.009	0.014	0.002
	(0.002)	(0.002)	(0.002)	(0.003)	(0.008)	(0.008)	(0.012)	(0.019)
Utilities cut off [b]	0.005 **	0.005 **	0.003 **	0.001	0.02 **	0.02 **	0.015 **	0.004
	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)	(0.004)	(0.006)
Unable to pay bill [b]	0.003 **	0.003 **	-0.002 +	-0.002	0.013 **	0.013 **	-0.010 +	-0.014
	(0.001)	(0.001)	(0.001)	(0.002)	(0.004)	(0.004)	(0.006)	(0.01)
Bill hardship [a]	0.003 **	0.003 **	0.001	-0.002	0.011 **	0.011 **	0.007	-0.009
	(0.001)	(0.001)	(0.001)	(0.002)	(0.004)	(0.004)	(0.006)	(0.009)
Transportation hardship [a]	0.003 **	0.003 **	0.002	0.001	0.013 **	0.013 **	0.008	0.005
	(0.001)	(0.001)	(0.001)	(0.002)	(0.004)	(0.004)	(0.005)	(0.009)
Demographic controls (age, gender, race/ethnicity, education, partnered, urbanicity), month fixed effects + state fixed effects	x	x	x	x	x	x	x	x
Contextual controls (SNAP/PEBT/UI)		x	x	x		x	x	x
Household size fixed effects			x				x	
Number of children fixed effects				x				x

Note: Coefficients represent the effect of a $100 increase in the CTC. Intent-to-treat (ITT) estimates. Local average treatment effects (LATE) obtained by instrumenting for CTC receipt as reported by the respondent. SE's in parentheses. Scales are in standard deviation units (M=0; SD=1). Sample restricted to households with at least one child under the age of 18.

[a] N= 19,154
[b] N=20,545
+p < .10;*p < .05; **p < .01

Appendix Table 4: The Effects of the Child Tax Credit on Basic Needs, Cash on Hand, Hardship Avoidance, and Employment, Local Average Treatment Effects, by Race/Ethnicity

	Black		White		Hispanic	
	(1)	(2)	(1)	(2)	(1)	(2)
Needs/Cash on hand						
Have needs met	0.020 +	0.028 +	0.007	-0.010	-0.012	-0.013
	(0.010)	(0.017)	(0.008)	(0.011)	(0.017)	(0.043)
Total $ on hand ($)	4.732	6.595	4.074	-11.118 *	12.483	21.133
	(4.531)	(7.291)	(3.388)	(5.053)	(8.167)	(20.461)
Time $ will last (days)	0.022	0.125	0.036	-0.108	0.034	0.366
	(0.078)	(0.126)	(0.057)	(0.084)	(0.131)	(0.332)
Hardship avoidance						
Relied on friends/family for food	-0.025 **	-0.008	-0.016 **	0.004	-0.032 **	-0.031
	(0.009)	(0.014)	(0.006)	(0.009)	(0.012)	(0.029)
Visited food pantry	-0.002	0.002	0.004	0.002	-0.004	-0.019
	(0.008)	(0.013)	(0.007)	(0.01)	(0.013)	(0.033)
Borrow from friends or family	0.011	0.022	-0.010	0.000	-0.024	0.029
	(0.011)	(0.018)	(0.008)	(0.012)	(0.018)	(0.045)
Employment						
Any employment	-0.018	-0.013	-0.007	-0.011	-0.019	-0.016
	(0.011)	(0.018)	(0.008)	(0.011)	(0.018)	(0.044)
Full-time work	-0.010	-0.015	0.002	-0.010	-0.018	-0.058
	(0.009)	(0.015)	(0.006)	(0.009)	(0.014)	(0.039)
Part-time work	-0.008	0.002	-0.010	0.000	-0.001	0.042
	(0.009)	(0.014)	(0.006)	(0.009)	(0.015)	(0.039)
Labor force participation	-0.022 *	-0.026 +	-0.010	-0.004	0.019	0.057
	(0.010)	(0.015)	(0.008)	(0.011)	(0.016)	(0.04)
Household size fixed effects	x		x		x	
Number of children fixed effects		x		x		x
	6430		6146		3985	

Note: Coefficients represent the effect of a $100 increase in the CTC. Local average treatment effects (LATE) obtained by instrumenting for CTC receipt as reported by the respondent.SE's in parentheses. Scales are in standard deviation units (M=0; SD=1). Sample restricted to households with at least one child under the age of 18. All models include all demographic controls (age, gender, partnered, education, urbanicity), state fixed effects, month fixed effects, and contextual (SNAP/PEBT/UI) controls. Model 1 includes household size fixed effects; Model 2 includes number of children fixed effects.

+p < .10;*p < .05; **p < .01

Appendix Table 5: Effect of the Child Tax Credit on Material Hardship, Local Average Treatment Effects, by Monthly Earnings

	Less than $500		More than $500	
	(1)	(2)	(1)	(2)
Needs/Cash on hand				
Have needs met	-0.018	-0.001	0.016 *	0.003
	(0.012)	(0.019)	(0.007)	(0.01)
Total $ on hand ($)	3.2135	-3.652	6.304 *	-0.068
	(4.752)	(7.711)	(3.129)	(4.82)
Time $ will last (days)	-0.077	-0.024	0.046	0.014
	(0.090)	(0.145)	(0.049)	(0.076)
Hardship avoidance				
Relied on friends/family for food	-0.043 **	-0.026	-0.011 *	0.001
	(0.011)	(0.017)	(0.005)	(0.007)
Visited food pantry	0.007	-0.006	-0.007	-0.004
	(0.011)	(0.017)	(0.005)	(0.008)
Borrow from friends or family	0.003	0.012	-0.004	0.014
	(0.013)	(0.021)	(0.007)	(0.01)
Employment				
Any employment	-0.007	0.008	-0.010	-0.011
	(0.010)	(0.016)	(0.007)	(0.010)
Full-time work	-0.003	0.002	-0.006	-0.018 +
	(0.006)	(0.009)	(0.006)	(0.010)
Part-time work	-0.003	0.007	-0.004	0.008
	(0.009)	(0.014)	(0.006)	(0.009)
Labor force participation	0.006	0.023	-0.006	-0.005
	(0.012)	(0.020)	(0.006)	(0.009)
Household size fixed effects	x		x	
Number of children fixed effects		x		x
N	7040		10390	

Note: Coefficients represent the effect of a $100 increase in the CTC. Local average treatement effects (LATE) obtained by instrumenting for CTC receipt as reported by the respondent.SE's in parentheses. Scales are in standard deviation units (M=0; SD=1). Sample restricted to households with at least one child under the age of 18. All models include all demographic controls (age, gender, education, race/ethnicity, partnered, urbanicity), state fixed effects, month fixed effects, and contextual (SNAP/PEBT/UI) controls. Model 1 includes household size fixed effects; Model 2 includes number of children fixed effects.

+p < .10;*p < .05; **p < .01

Appendix Table 6: Pre-Post Difference-in-Differences and Continuous/Parameterized Difference-in-Differences - Households without Children as the Comparison Group. Effects on Material Hardship

	Pre-post				Continuous (parameterized/reduced form)			
	ITT		LATE		ITT		LATE	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Hardship index (14-item scale) [a]	0.110 **	0.111 **	0.164 **	0.165 **	-0.002	-0.001	-0.007	-0.006
	(0.040)	(0.040)	(0.060)	(0.060)	(0.002)	(0.003)	(0.008)	(0.012)
Food hardship (4-item scale) [a]	0.057	0.065	0.086	0.097	-0.007 **	-0.005 +	-0.028 **	-0.019 +
	(0.040)	(0.040)	(0.060)	(0.060)	(0.002)	(0.003)	(0.008)	(0.012)
Medical hardship (2-item scale) [a]	0.062	0.064	0.093	0.096	-0.001	0.000	-0.004	-0.002
	(0.040)	(0.040)	(0.059)	(0.060)	(0.002)	(0.003)	(0.008)	(0.012)
Severe housing hardship (4-item scale) [b]	0.035	0.033	0.052	0.049	-0.005 *	0.001	-0.022 *	0.005
	(0.040)	(0.040)	(0.060)	(0.060)	(0.002)	(0.003)	(0.008)	(0.012)
Utilities cut off [b]	0.004	0.002	0.006	0.002	0.003 **	0.001	0.012 **	0.002
	(0.012)	(0.012)	(0.018)	(0.018)	(0.001)	(0.001)	(0.002)	(0.004)
Unable to pay bill [b]	0.018	0.014	0.027	0.021	0.000	-0.001	-0.002	-0.005
	(0.020)	(0.020)	(0.030)	(0.030)	(0.001)	(0.001)	(0.004)	(0.006)
Bill hardship [a]	0.031 +	0.031 +	0.046 +	0.046 +	0.003 **	0.000	0.013 **	0.001
	(0.019)	(0.019)	(0.028)	(0.028)	(0.001)	(0.001)	(0.004)	(0.005)
Transportation hardship [a]	0.069 **	0.069 **	0.104 **	0.103 **	0.004 **	0.003 **	0.014 **	0.014 **
	(0.018)	(0.018)	(0.026)	(0.026)	(0.001)	(0.001)	(0.003)	(0.005)
Household size fixed effects	x		x		x		x	
Number of children fixed effects		x		x		x		x

Note: SE's in parentheses. Scales are in standard deviation units (M=0; SD=1). Sample includes households with and without children (excludes individuals who live alone). All models include all demographic controls (age, gender, education, race/ethnicity, partnered, urbanicity), state fixed effects, month fixed effects, and contextual (SNAP/PEBT/UI) controls. Model 1 includes household size fixed effects; Model 2 includes number of children fixed effects.

+p < .10;*p < .05; **p < .01

[a] N= 30,265

[b] N= 32,615

Appendix Table 7: Effect of the Child Tax Credit on Material Hardship, Intent-to-Treat Estimates and Local Average Treatment Effects, in $100; Robustness Checks

	Excluding August		Excluding January		Controlling for covid rates		Controlling for the date	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Hardship index (14-item scale) [a]	-0.035 **	-0.041 *	-0.033 *	-0.037	-0.033 **	-0.042 *	-0.033 **	-0.043 *
	(0.012)	(0.019)	(0.013)	(0.020)	(0.012)	(0.019)	(0.012)	(0.019)
Food hardship (4-item scale) [a]	-0.067 **	-0.055 **	-0.068 **	-0.051 *	-0.065 **	-0.055 **	-0.065 **	-0.055 **
	(0.013)	(0.019)	(0.013)	(0.020)	(0.012)	(0.019)	(0.012)	(0.019)
Medical hardship (2-item scale) [a]	-0.031 *	-0.018	-0.031 *	-0.020	-0.031 **	-0.020	-0.031 **	-0.020
	(0.012)	(0.019)	(0.013)	(0.019)	(0.012)	(0.019)	(0.012)	(0.019)
Severe housing hardship (4-item scale) [b]	0.014	-0.001	0.017	0.003	0.014	0.002	0.015	0.002
	(0.012)	(0.019)	(0.013)	(0.020)	(0.012)	(0.019)	(0.012)	(0.019)
Utilities cut off [b]	0.013 **	0.003	0.015 **	0.005	0.015 **	0.004	0.015 **	0.003
	(0.004)	(0.006)	(0.004)	(0.006)	(0.004)	(0.006)	(0.004)	(0.006)
Unable to pay full utility bill [b]	-0.010	-0.012	-0.007	-0.008	-0.010 +	-0.014	-0.010 +	-0.014
	(0.006)	(0.009)	(0.006)	(0.010)	(0.006)	(0.010)	(0.006)	(0.010)
Bill hardship [a]	0.007	-0.007	0.007	-0.007	0.007	-0.009	0.007	-0.009
	(0.006)	(0.009)	(0.006)	(0.010)	(0.006)	(0.009)	(0.006)	(0.009)
Transportation hardship [a]	0.009	0.007	0.009	0.005	0.008	0.005	0.009 +	0.005
	(0.005)	(0.008)	(0.006)	(0.009)	(0.005)	(0.009)	(0.005)	(0.009)
Household size fixed effects	x		x		x		x	
Number of children fixed effects		x		x		x		x

Note: Coefficients represent the effect of a $100 increase in the CTC. Local average treatment effects (LATE) obtained by instrumenting for CTC receipt as reported by the respondent.SE's in parentheses. Scales are in standard deviation units (M=0; SD=1). Sample restricted to households with at least one child under the age of 18. All models include all demographic controls (age, gender, education, race/ethnicity, partnered, urbanicity), state fixed effects, month fixed effects, and contextual (SNAP/PEBT/UI) controls. Model 1 includes household size fixed effects; Model 2 includes number of children fixed effects.

+p < .10;*p < .05; **p < .01

[a] Excluding August: N= 17414; Excluding January: N=17411; Covid control: N=19154; Date control: N=19154

[b] Excluding August: N=18709; Excluding January: N=18674; Covid control: N=20545; Date control: N=20545