

Cash Assistance Through the Tax System and Financial Hardship Experienced by Lower-Income Households During the COVID-19 Pandemic: How Long Did the Association Last?

Vivekananda Das¹

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Abstract

This study investigates how long higher cash assistance eligibility from the tax system was associated with the financial hardship experienced by lower-income households during the COVID-19 pandemic. I use data from the United States Census Bureau’s Household Pulse Survey, which has regularly gathered data on financial hardship since August 2020. I utilize four contexts created by across-time and across-group variations in cash assistance eligibility for lower-income households with and without children (higher- and lower-eligible groups, respectively). In general, findings of models estimated using a difference-in-differences event study approach suggest that higher cash assistance eligibility was linked to a reduction in financial hardship in some of the weeks after the beginning of the payments; however, the association faded away after a while before reappearing following the beginning of subsequent payments. Although this study cannot identify program-specific effects, results suggest that pandemic-era programs – such as Economic Impact Payments and Advance Child Tax Credit – played a role, along with existing lump-sum Earned Income Tax Credit and Child Tax Credit programs, in reducing financial hardship over an extended period in 2021. These findings have implications for designing cash assistance programs and measurement of financial hardship experienced by economically disadvantaged households.

Keywords: Financial Hardship, Earned Income Tax Credit, Child Tax Credit, Economic Impact Payments, Household Pulse Survey

¹ Ph.D. candidate in Human Ecology (Specialization: Consumer Behavior and Family Economics) at the University of Wisconsin-Madison. Email: vdas3@wisc.edu.

Introduction

In the United States, lower-income households, especially those with children, often experience financial hardship – a condition characterized by difficulty paying for usual household expenses. The economic turmoil engendered by the COVID-19 pandemic further worsened the situation for these households. In the early weeks of the pandemic, lower-income parents were twice more likely to cut back on food expenditure and two-and-a-half times more likely to reduce savings or increase credit card debt than higher-income parents (Karpman et al., 2020). Literature shows that financial hardship is positively associated with health risk behaviors (Sampson et al., 2021), mental health problems (Frankham et al., 2020; Ryu & Fan, 2023), self-harm behavior (Barnes et al., 2016), and marital instability (Gudmunson et al., 2007). Because financial hardship can have far-reaching consequences for societal well-being, understanding *how long* higher cash assistance provides financial relief to lower-income households, especially during an economic downturn, is crucial.

The federal income tax system – the largest source of need-tested cash assistance for lower-income households with children in the United States (Crandall-Hollick & Cooper, 2023) – plays a vital role in reducing financial hardship for millions of households. Similar to previous years, in early March 2021, lower-income households started receiving yearly lump-sum cash assistance from the Earned Income Tax Credit (EITC) and the Child Tax Credit (CTC)², two large anti-poverty programs. From EITC, households with children received substantially more cash assistance than otherwise identical households without children, and only the earlier group received CTC payments. Additionally, in early January and mid-March 2021, both groups received cash assistance from the Economic Impact Payments (EIP) 2 and 3 programs as part of the Consolidated Appropriations Act, 2021 and American Rescue Plan Act (ARPA) of 2021,

² The CTC program includes refundable and non-refundable parts. The refundable part of the CTC is officially known as the Additional Child Tax Credit or ACTC (Crandall-Hollick, 2021a). As lower-income households with children have no or lower tax liability, their tax credits usually exceed their tax liabilities. This makes them eligible to receive cash assistance from the ACTC. Note that the non-refundable part of the CTC reduces the tax liability of higher-income households with children but does not provide them with direct cash assistance. As the target population of this study is lower-income households and the explanatory variable of interest is cash assistance from the tax system, this paper focuses on the refundable part of the CTC.

respectively (U.S. Government Accountability Office, 2022). Furthermore, the ARPA increased the generosity of the CTC program for the 2021 tax year and made households with children eligible for receiving up to 50% of their estimated CTC benefits in advanced monthly payments between July and December 2021 (Crandall-Hollick, 2022). Although there were no EIP payments in 2022, the ARPA made the Child and Dependent Care Tax Credit (CDCTC) fully refundable for the 2021 tax year (Crandall-Hollick, 2021c), through which many households with dependent care expenses became eligible to receive cash assistance in addition to their yearly lump-sum EITC and CTC benefits. In short, between 2021 and 2022, there were four contexts (January 2021, March 2021, July-December 2021, and March 2022) in which lower-income households with children became eligible to receive more cash assistance than otherwise identical households without children.

A growing body of literature documents the success of these programs in lifting millions of people out of poverty (Parolin et al., 2022) and reducing different aspects of material hardship (Parolin et al., 2023; Pilkauskas et al., 2022; Shafer et al., 2022; Wahdat, 2022) during the pandemic. Although existing studies provide strong evidence of the link between higher cash assistance eligibility and reduction in financial hardship, there appears to be limited attention on the *temporal variability* in the abovementioned association. This study contributes to the literature by investigating how financial hardship experienced by lower-income households with and without children (higher- and lower-eligible groups, respectively) evolved in relation to cash assistance eligibility from the tax system during the pandemic.

This study uses data from the United States Census Bureau's Household Pulse Survey and employs a difference-in-differences (DD) event-study design, which utilizes across-time and across-group variations in cash assistance eligibility. Estimates suggest a negative association between higher cash assistance eligibility and financial hardship, which followed a cyclical pattern of appearance and disappearance. In general, the association became visible in some of the weeks after the beginning of the payments but faded away after a while before reappearing following the beginning of subsequent payments. Although this study cannot identify program-specific effects, the findings suggest that pandemic-era programs, such as EIP and

Advance CTC, contributed to reducing the financial hardship experienced by lower-income households with children over a more extended period than what would have been observed in the absence of these programs, particularly in the second half of 2021.

This study makes two contributions to the literature on the role of cash assistance programs in mitigating the financial hardship experienced by lower-income households during an economic downturn. First, by using a unique high-frequency dataset, it elucidates how the financial hardship experienced by lower-income households evolves before and after cash assistance disbursement. Second, it sheds some light on how the design features of cash assistance programs (e.g., generosity and frequency of payments) relate to the temporal variation in the association between higher cash assistance eligibility and financial hardship. From a policy perspective, findings suggest that the permanent availability of a program that provides periodic cash assistance (similar to the 2021 Advance CTC payments) may reduce the cyclical financial hardship experienced by lower-income households with children over a more extended period, especially in the second half of a calendar year. Additionally, findings indicate that the financial hardship experienced by lower-income households varies substantially within a year. From a conceptual perspective, this finding implies that data on financial hardship should be gathered at regular intervals within a year for a more precise exploration of the phenomenon.

Background

Conceptual background on the relationship between cash assistance and financial hardship

Although no theory directly explains the relationship between cash assistance and financial hardship, based on related theories and empirical findings, this section explains possible mechanisms connecting the two constructs. The relationship can be conceptualized as a two-step process: Cash assistance affects a household's financial behavior, which, in turn, impacts their financial hardship. To elaborate on the first step, after receiving cash assistance, households can choose to do one or more of the following: 1) spend the money, 2) save it, 3) invest it, and 4) use it to pay down the debt they accumulated either in expectation

of the cash assistance or for some other purposes. For predicting households' financial decision-making in response to cash assistance, the canonical permanent income hypothesis (PIH) can be helpful.

The PIH posits that households consume a constant proportion of their permanent income and save their transitory income (M. Friedman, 1957). If the cash received from a program (e.g., EIP payments) is transitory, according to the PIH, households will save most of it. Also, assuming that households consider yearly lump-sum tax credit payments from EITC and CTC programs as part of their permanent income, the PIH predicts they will adjust their consumption upwards by a constant factor for every remaining period in their lifetime after they become eligible to receive these benefits. This prediction implies two things. One, there would be no change in expenditure in the weeks before and after the cash assistance reception. Two, households would borrow against anticipated future cash assistance to achieve a smooth consumption pattern over time and pay back their debt after receiving the cash assistance. Therefore, although there will be no change in expenditure before and after receiving the payments, there will be a reduction in debt in the post-reception periods. But how do an increase in savings and a decrease in debt affect financial hardship (conceptualized based on the respondents' perceived difficulty in paying for usual household expenses)?

Literature suggests that indebtedness has a psychological cost because it is negatively linked to people's psychological well-being (Brown et al., 2005) and financial well-being (Ruberton et al., 2016). Drentea & Reynolds, 2015 mention multiple pathways through which indebtedness can affect mental health. For example, the stress of carrying debt and not having enough money to pay for usual expenses can serve as a daily stressor that gradually degrades mental health. Additionally, indebtedness can harm mental health by eroding mastery and coping capacity and straining social relationships. The authors found no evidence to suggest that debt can improve economically disadvantaged people's mental health by providing a temporary solution to pay for usual household expenses. Given the empirical evidence, it seems reasonable to assume that reduced debt can decrease perceived financial hardship in the post-cash-assistance-reception periods.

Additionally, Ruberton et al., 2016 found a positive association between having a buffer of money available in checking and savings accounts and a sense of financial security. Therefore, increased savings can

potentially reduce perceived financial hardship in the post-cash-assistance-reception periods. Furthermore, increased savings may reduce future debt accumulation, potentially reducing perceived financial hardship at some point in the future.

Lower-income households, cash assistance through the tax system, and financial hardship

Literature suggests that lower-income households in the United States often experience financial hardship due to events such as income volatility, medical illness and other emergencies, changes in family composition, and lack of access to mainstream financial services (Barr, 2012). Many of these households find a much-needed financial boost after receiving their tax refunds (Halpern-Meeke et al., 2018)

Regarding how tax credit recipients use these refunds, Despard et al., 2015 found that EITC recipients used the refunds to pay down their debt (mostly unsecured debt) and to meet essential needs (e.g., food, housing, clothing, shoes, school supplies, furniture, car, etc.). In another study, Goodman-Bacon & McGranahan, 2008 focused on how spending behavior changed in relation to EITC and found that these payments were linked to higher spending on durables, such as vehicles, than on non-durables. Regarding changes in borrowing and savings behavior in relation to EITC payments, Jones & Michelmore, 2019 reported that EITC-eligible households had the lowest levels of credit card and unsecured debt holding around tax time (February-April) relative to other months. The authors found limited evidence of seasonality in savings behavior associated with EITC payments.

Importantly, the empirically-found financial behaviors of lower-income households (i.e., increased spending and decreased debt) in relation to cash assistance should reduce their perceived financial hardship. In terms of recipients' perceptions, Sykes et al., 2015 found that EITC recipients highly valued EITC for its significant role in mitigating the financial stress associated with accumulating unpaid bills and debts throughout the year.

In light of the conceptual background and empirical evidence, this paper hypothesizes that a higher cash assistance eligibility from the tax system will be linked to a reduction in the financial hardship experienced

by lower-income households in the post-cash-assistance-reception periods. However, the longevity of the negative association, especially during an economic downturn, is conceptually unclear and should be treated as an empirical question.

How long does cash assistance reduce financial hardship?

Existing literature provides limited attention to temporal variation in the association between cash assistance eligibility and financial hardship experienced by lower-income households. In the extant literature, Rehkopf et al., 2014 and Batra & Hamad, 2021 found that yearly lump-sum EITC eligibility reduced food insecurity, a measure closely related to financial hardship, in the months (February-April) when most eligible households received these payments. These findings imply a cyclical nature in the food hardship experienced by tax-credit-eligible households; put differently, existing literature suggests that although lump-sum tax credit payments reduce food hardship, the effect fades away after a while. In this context, the role of payment frequency is also worth mentioning. Using data from the EITC Periodic Payment Pilot conducted in Chicago in 2014–2015, Kramer et al., 2019 found that periodic payment recipients experienced lower levels of financial stress than lump-sum recipients over time. The authors suggest that the potential mediators in the relationship include a lower need for borrowing, lower food insecurity, and fewer unpaid bills. These findings imply that payment frequency plays a role in determining the longevity of the association between cash assistance and financial hardship.

Four Contexts

In 2021 and 2022, lower-income households received cash assistance from EITC, CTC, EIP, and CDCTC programs. Figure 1 shows the monthly spending by the federal government between August 2020 and August 2022 in EITC, CTC, and EIP programs³. As expected, given the yearly lump-sum nature of EITC and CTC payments, we observe spikes in spending in these programs between February and May of each

³ The monthly treasury statements published by the Bureau of the Fiscal Service – the sources from which Figure 1 is created – do not separately mention the spending on the CDCTC program.

year. Also, we observe increased spending in CTC between July and December 2021 as advance CTC payments were disbursed over this period. Lastly, for EIP, we observe two spikes: one in January 2021 and then in March 2021. As a simplified summary, Table 1 shows the maximum cash assistance eligibility from these programs for households with and without children. The following paragraphs succinctly describe how these programs provide cash assistance to lower-income households.

[Insert Figure 1 here]

EITC provides tax credits to lower-income workers, especially those with children (Crandall-Hollick et al., 2023). Recipient households receive tax refunds as yearly lump-sum payments after filing their taxes if their tax credits are higher than their tax liabilities. The amount of credit depends mostly on three factors: pre-tax annual household income, filing status, and number of children under 19 (Crandall-Hollick et al., 2023). Keeping other factors constant, EITC eligibility initially increases with income (phase-in), reaches a maximum amount and stays there over an income range (plateau), then starts decreasing as income increases (phase-out), and finally becomes 0 above a threshold income. For households with three or more children and filing as “Married Filing Jointly,” the maximum adjusted gross income was \$56,844 and \$57,414 in the 2020 and 2021 tax years, respectively (Internal Revenue Service, 2023c). The average recipient household received \$2,331 and \$1,973 in the 2020 and 2021 tax years, respectively (Internal Revenue Service, 2023a).

Similar to EITC, CTC provides yearly lump-sum tax refunds to lower-income households with children (Crandall-Hollick, 2021a). For the tax year 2020, taxpayers could claim 15% of the family’s earned income above \$2500, up to \$1400 per qualifying child (Crandall-Hollick, 2021a). The ARPA 2021 expanded the generosity and frequency of CTC payments for the tax year 2021. Eligible households, even those with little or no income, could receive up to \$3600 per child aged 6 or below and \$3000 per child aged between 6 and 17 (Crandall-Hollick, 2021d). Households had the option to receive 50% of their CTC benefits as monthly payments between July and December 2021 (Crandall-Hollick, 2021d).

[Insert Table 1 here]

CDCTC is another tax credit program that allows eligible taxpayers to reduce their tax liability (Crandall-Hollick, 2021c). The ARPA 2021 made this program refundable for the 2021 tax year. Taxpayers with income between \$0 and \$125,000 were eligible to receive up to \$4000 and \$8000 for 1 and 2 or more qualifying individuals, respectively (Crandall-Hollick, 2021c). For CDCTC, a qualifying individual refers to a child under 13 years old or another dependent who is unable to care for themselves (Crandall-Hollick, 2021c).

EIP programs, also known as stimulus payments, were implemented as part of the federal government's efforts to reduce financial hardship caused by the COVID-19 pandemic (Crandall-Hollick, 2021b). These payments were structured as one-time refundable tax credits and automatically sent to households by the IRS (Crandall-Hollick, 2021b). From EIP 2 and 3 programs, households were eligible to receive \$600 (Crandall-Hollick, 2021b) and \$1400 (Internal Revenue Service, 2023d) per eligible individual, respectively. As households with children, on average, have larger household sizes, they would have received more cash assistance from these payments than households without children. Generally, taxpayers qualified for the total amount if they had an adjusted gross income of up to \$75,000 for individuals and up to \$150,000 for married couples filing joint returns and surviving spouses (Internal Revenue Service, 2023b, 2023d).

This paper uses the four contexts (January 2021, March 2021, July-December 2021, and March 2022) shown in Table 1 to investigate the temporal variability in the association between higher cash assistance eligibility and financial hardship. In addition, it explores whether there was any variation in the abovementioned phenomenon depending on marital status (for female respondents), racial identity, Hispanic origin, and household income.

Data

Household Pulse Survey

This paper uses data from the Household Pulse Survey (HPS). The United States Census Bureau, in collaboration with several other federal agencies, has conducted this survey regularly since April 23, 2020 (United States Census Bureau, 2023). The goal of the survey is to assess the social and economic impacts of the coronavirus pandemic and other emerging issues on households in the United States. The HPS started asking a question about the difficulty in paying for usual expenses from wave 13 (August 19-August 31, 2020) onward. I combine data from HPS waves 13 to 48, which capture the period between August 2020 and August 2022. Within this period, household units were interviewed only once, which makes the HPS a repeated cross-sectional survey.

Table 2 in the Appendix shows the start and end dates of data collection, sample size, and response rate for each HPS wave. Given that the HPS gathered data regularly, these data are uniquely suited to investigate the temporal variation in the association between higher cash assistance eligibility and financial hardship. Nevertheless, given the quick implementation and online data collection, the average response rate in HPS (6.9%) was substantially lower than other household surveys conducted by the Census Bureau between August 2020 and August 2022, such as the Current Population Survey (75.6%), Consumer Expenditure Survey (diary= 43.8%, interview=45.8%), and American Time Use Survey (38.9%) (Office of Survey Methods Research, 2023). Because of the low response rates, the external validity of the estimates from the HPS may be questionable. However, an analysis by Parolin et al., (2023) shows that HPS closely reflects population estimates derived from the Current Population Survey Annual Social and Economic Supplement data. This evidence reduces concerns related to the external validity of the estimates derived from the HPS.

Main analytical sample

The main analytical sample of this study (N=604,922) is composed of the HPS respondents who met two conditions: 1) responded to the questions on difficulty paying for usual expenses, pre-tax annual household

income, and marital status, and 2) lived in a household with pre-tax annual income less than \$50,000⁴. A detailed description of the procedure for selecting the main analytical sample is provided in the Appendix. Table 3 in the Appendix presents the weighted summary statistics of the respondents in each HPS wave. Unsurprisingly, on average, households with (panel A) and without (panel B) children have different socio-economic characteristics. For example, households with children tend to have larger household sizes and are more likely to live in a house either rented or owned with a mortgage. Also, respondents from households with children are more likely to be married, employed, Black, Hispanic, female, and younger and less likely to have a college degree or above. These differences imply that along with differential eligibility to receive cash assistance from the tax system, the average respondents from households with and without children in the main analytical sample are quite different. However, as this paper employs a DD event study design, the similarity in the characteristics of the average respondents within each group across HPS waves is more important. Based on the findings in Table 3, the average within-group characteristics across HPS waves seem quite similar. Nevertheless, I control for the socio-economic variables in the empirical models to account for these within- and across-group differences.

Operationalizing financial hardship

Regarding financial hardship, the HPS asks, “In the last 7 days, how difficult has it been for your household to pay for usual household expenses, including but not limited to food, rent or mortgage, car payments, medical expenses, student loans, and so on? Select only one answer.” The response options are: 1) not at all difficult, 2) a little difficult, 3) somewhat difficult, and 4) very difficult. Following the existing literature (Carey et al., 2021; C. Friedman, 2022; Perez-Lopez & Monte, 2021; Sherman et al., 2020), I create a binary

⁴ The maximum adjusted gross income for EITC eligibility in the tax years 2020 and 2021 were \$56,844 and \$57,414 (for households with three or more children who filed as married, filing jointly), respectively (Internal Revenue Service, 2023c). As EITC is the major cash assistance program operated through the tax system, focusing on respondents with less than \$50,000 pre-tax annual household income arguably captures the group for which cash assistance programs operated through the tax system are most relevant in terms of reducing financial hardship.

financial hardship dummy, which takes a value of 1 if the respondent selected either *somewhat difficult* or *very difficult* and 0 otherwise.

Trends in financial hardship

[Insert Figure 2 here]

Figure 2 shows the trends in financial hardship between August 2020 and August 2022 for the average lower-income household with and without children. In the last five months of 2020, financial hardship experienced by both groups gradually increased and started decreasing in January 2021, when the IRS started disbursing the EIP 2 payments. Descriptively, it appears that the decrease in financial hardship between January and mid-February was steeper for households with children. Next, we observe another instance of a sharp decline in financial hardship for both groups around mid-March 2021 when households started receiving lump-sum cash assistance from EITC, CTC, and EIP 3 payments. In the second half of March 2021, the decrease in financial hardship was steeper for households with children, who were eligible to receive substantially more cash assistance combinedly from these programs. However, financial hardship started increasing for households with and without children in late April and early May 2021, respectively. Between July and December 2021, households with children became eligible to receive monthly cash assistance from the Advance CTC program. Over this period, they experienced phases of decrease and increase in hardship, whereas the trends remained relatively smoother, although upward trending, for households without children. In January 2022, when the advance CTC payments stopped, the percentage of households with children reporting financial hardship reached higher than the percentage in early July 2021 (i.e., immediately before the beginning of advance CTC payments). Finally, in March 2022, households became eligible to receive lump-sum cash assistance from EITC, CTC, and CDCTC programs. Around mid-March 2022, relative to the previous month, we observe a reduction in financial hardship for households with children but not for households without children. From April 2022 onward, as inflation kept soaring (U.S. Bureau of Labor Statistics, 2023), financial hardship for both groups continued to increase.

Empirical Strategy

Main empirical model

I estimate the following model using a DD event study approach to investigate the temporal variation in the association between higher cash assistance eligibility and financial hardship:

$$Y_{it} = \gamma_t + \gamma_s + \gamma_{st} + \beta Child_i + \sum_{\tau=-8}^{-1} \delta_{\tau} Child_i * Wave_{\tau} + \sum_{\tau=1}^{27} \delta_{\tau} Child_i * Wave_{\tau} + X_i + \epsilon_{it} \quad (1)$$

where Y_{it} refers to financial hardship reported by respondent i in HPS wave t . γ_t is a vector of wave fixed effects, γ_s is a vector of state fixed effects. γ_{st} is a vector of state and wave interaction effects. $Child_i$ is a dummy variable that takes a value of 1 if respondent i lived in a household with at least one child under 18 and 0 otherwise. X_i is a vector of socio-economic control variables. $\tau = 0$ corresponds to HPS wave 21 (reference wave), conducted between December 9 and December 21, 2020. ϵ_{it} is the error term. The coefficient of interest in equation (1) is δ_{τ} which, conditional on the covariates, estimates the following:

$$\delta_{\tau} = (\bar{Y}_{\text{with children, wave } \tau} - \bar{Y}_{\text{without children, wave } \tau}) - (\bar{Y}_{\text{with children, reference wave}} - \bar{Y}_{\text{without children, reference wave}})$$

In this paper, I refer to δ_{τ} as an estimator of the association between higher cash assistance eligibility and financial hardship. If the main hypothesis of this paper (i.e., eligibility to receive higher cash assistance from the tax system is linked to a reduction in financial hardship) is correct, I expect the estimated values of δ_{τ} for the periods $\tau = -8$ to -1 to be zero as these estimates are for the periods between August and December 2020, when there were no cash assistance programs operated through the tax system. Also, I expect δ_{τ} to be negative for the periods between $\tau = 1$ and 24 as lower-income households with children became eligible to receive more cash assistance relative to those without children in four different contexts between January 2021 and August 2022.

As the tax system provides cash assistance predominantly to lower-income households with children, whereas households without children either receive no or a substantially lower amount of assistance, many studies in the literature (Eissa & Liebman, 1996; Leigh, 2007; Meyer & Rosenbaum, 2001; Parolin et al., 2023; Shafer et al., 2022) compared the trends in outcomes between households with and without children before and after these payments to investigate the effect of these payments. Nevertheless, given the structural dissimilarities between households with and without children, one may argue that households without children do not serve as an appropriate comparison group for households with children. To make the two groups more comparable, in equation (1), I control for severable observable characteristics (X_i): employment status in the last 7 days, homeownership status, educational attainment, age, pre-tax annual household income category, marital status, interactions between income category and marital status, household size, gender assigned at birth, race, Hispanic origin, and Supplemental Nutrition Assistance Program (SNAP) reception.

Additionally, to account for policy variations across time and geography, equation (1) incorporates wave fixed effects, state fixed effects, and state and wave interaction effects. Wave fixed effects account for the events that identically affected the financial hardship experienced by households with and without children in wave τ . State fixed effects account for the time-invariant factors that identically affected the financial hardship experienced by both groups living in state s . State and wave interaction effects account for all the events that identically affected the financial hardship experienced by both groups living in state s in wave τ . Incorporating state and wave interaction effects in the model serves the same purpose as adding different state-level wave-specific factors, such as state-level COVID cases, unemployment rates, eviction policies, etc. in different waves.

Robustness

I conduct additional analyses to explore the robustness of the main analysis to alternative operationalizations of the outcome and the key explanatory variable and to the selection of the analytical sample.

As an alternative operationalization of the outcome, I create a financial hardship dummy, which takes a value of 1 if the respondent selected *very difficult* while responding to the question on difficulty with usual household expenses in the last 7 days and 0 otherwise. This operationalization, arguably, captures extreme financial hardship experienced by households and can be more indicative of their material deprivation. In addition, to get a better understanding of the relationship between higher cash assistance eligibility and financial hardship, I use measures of food hardship (food insufficiency) and housing hardship (caught up on mortgage payments and caught up on rent payments) as outcome variables given that these outcomes are closely related to financial hardship. Table 4 in the Appendix explains the operationalization of these outcomes.

Additionally, I operationalize higher cash assistance eligibility based on the number of children under 18 because keeping other factors constant, households with more children were eligible to receive more assistance from the programs considered in this study. I estimate a model in which the $Child_i$ dummy in equation (1) is replaced by a $Num. Child_i$ variable, which refers to the number of children under 18 in the respondent i 's household.

Furthermore, as an attempt to eliminate the concern that households without children are not an appropriate comparison group for households with children, I restrict the analytical sample to households with at least one child under 18 and estimate another model with $Num. Child_i$ as the treatment variable. In this model, households with a higher number of children serve as the comparison groups of households with a lower number of children. Lastly, because the main analytical sample is restricted to those with annual household income below \$50,000, to explore the sensitivity of the findings, I estimate equation (1) for these alternative analytical samples: 1) including all income groups, 2) including those with income between \$50,000 and \$100,000, and 3) including those with income above \$100,000.

Heterogeneous associations across sub-groups

Literature suggests that material deprivation caused by financial challenges is more prevalent among households headed by single mothers (Bowen et al., 1994), racial and ethnic minority households (Sherman, 2007), and households with income below the poverty threshold (Iceland & Bauman, 2007). To explore the heterogeneity in the association at the sub-group level depending on marital status (married female vs. not married female), race (Black vs. non-Black), ethnicity (non-Hispanic vs. Hispanic), and annual household income (less than \$25,000 vs. \$25,000-\$50,000), I estimate the following model using a difference-in-difference-in-differences (DDD) event study approach separately for each sub-group:

$$\begin{aligned}
 Y_{igt} = & \gamma_t + \gamma_s + \gamma_{st} + \beta_1 Child_i + \beta_2 Subgroup_g + \beta_3 Child_i * Subgroup_i \\
 & + \sum_{\tau=-8}^{-1} \alpha_{\tau} Child_i * Wave_{\tau} + \sum_{\tau=1}^{27} \alpha_{\tau} Child_i * Wave_{\tau} + \sum_{\tau=-8}^{-1} \pi_{\tau} Subgroup_g * Wave_{\tau} \\
 & + \sum_{\tau=1}^{27} \pi_{\tau} Subgroup_g * Wave_{\tau} + \sum_{\tau=-8}^{-1} \delta_{\tau} Child_i * Subgroup_g * Wave_{\tau} \\
 & + \sum_{\tau=1}^{27} \delta_{\tau} Child_i * Subgroup_g * Wave_{\tau} + X_i + \epsilon_{igt} \quad (2)
 \end{aligned}$$

where, $Subgroup_g$ is a binary variable, which is defined in four different ways depending on the characteristic of interest. It takes a value of 1 for married respondents and 0 for non-married respondents (sample includes only female respondents); 1 for Black respondents and 0 for non-Black respondents; 1 for non-Hispanic respondents and 0 for Hispanic respondents; and 1 for respondents with annual household income below \$25,000 and 0 for those with income between \$25,000 and \$50,000.

I estimate all the models in R using the `fixest` package (Berge, 2018). For estimation, I use the weighted least squares (WLS) procedure using the household-level weights provided in the HPS and cluster the standard errors at the state level.

Results

Main findings

[Insert Figure 3 here]

Figure 3 presents the findings of equation (1) in which differential cash assistance eligibility is captured by the presence of children under 18 in the household. The error bars show the 95% confidence intervals of the estimated coefficients (δ_τ). In the periods before the reference period (period 0), the estimated coefficients are not significantly different from 0 at the 5% significance level. These suggest that between August and December 2020, a period without any cash assistance through the tax system, the trends in average financial hardship for lower-income households with and without children were moving in parallel.

For the five periods after the beginning of EIP 2 disbursement (January to mid-March 2021), the estimated coefficients are consistently negative but not significantly different from 0⁵. To explore whether these findings are affected by a lack of statistical power, I estimate equation (1) in two other ways in which I combine multiple HPS waves to create roughly monthly and bimonthly samples. Findings of these alternative estimations (Figures 6 and 7 in the Appendix) also show no statistically significant association between higher cash assistance eligibility and financial hardship in January and February 2021.

Next, lower-income households started receiving yearly lump-sum EITC and CTC payments in early March and EIP 3 payments in mid-March 2021. Combinedly from the three programs, lower-income households with children, on average, would have received substantially more cash assistance than otherwise identical households without children. For event period 6 (March 17 – March 29, 2021), the estimated coefficient is -8.19 (95% confidence interval [-13.36, -3.01]). This finding suggests that higher cash assistance eligibility from the three programs was associated with a 8.19 percentage points reduction in financial hardship in mid-to-late March 2021. Given that in the pre-January-2021 periods, on average, 63.84% of respondents

⁵ Unless otherwise noted, throughout this paper, I describe the statistical significance of the estimates at the 5% significance level.

from lower-income households with children reported financial hardship, the estimated coefficient suggests a 12.83% reduction in financial hardship among them. However, the association appears to be short-term as the estimated coefficients for the periods between mid-April and early July, except for period 8 (April 28 - May 10), are not significantly different from 0. Alternative estimations with monthly (Figure 6) and bimonthly (Figure 7) periods also suggest the association disappeared by June 2021. These findings align with existing literature (Batra & Hamad, 2021; Rehkopf et al., 2014), which suggests that the effect of lump-sum tax credit payments tend to be short-lived.

Between July and December, households with children were eligible to receive monthly advance CTC payments. For the last six months of 2021, the estimated coefficients are significantly different from 0 in event periods 13 ($\delta_{13} = -5.04$, 95% CI [-8.84, -1.24]), 15 ($\delta_{15} = -6.54$, 95% CI [-9.51, -3.56]), 19 ($\delta_{19} = -4.60$, 95% CI [-8.81, -0.38]), and 20 ($\delta_{20} = -6.05$, 95% CI [-9.76, -2.36]). Alternative estimations using monthly and bimonthly periods, presented in Figures 6 and 7 in the Appendix, corroborate these findings. These results align with a growing body of studies (Batra et al., 2023; Hamilton et al., 2022; Parolin et al., 2023), which suggest that the disbursement of advance CTC payments reduced the material hardship experienced by households with children in the second half of 2021.

Finally, in March 2022, lower-income households started receiving yearly lump-sum tax credit payments from EITC, CTC, and CDCTC programs. The estimated coefficients for the event periods 22 to 24 are: $\delta_{22} = -5.31$, 95% CI [-8.97, -1.66]; $\delta_{23} = -4.19$, 95% CI [-8.82, 0.45]; and $\delta_{24} = -3.99$, 95% CI [-7.06, -0.92]. The coefficients for periods 22 and 24 are statistically significant at the 5% significance level, and the one for period 23 is significant at the 10% significance level. However, the coefficients for periods 25 and later are statistically insignificant. These estimates imply that higher cash assistance eligibility was associated with a reduction in financial hardship among lower-income households with children between March and early May 2022 but faded out afterward. Again, these results imply a short-term impact of lump-sum tax credit payments on the financial hardship experienced by lower-income households with children.

Robustness

Figure 8 in the Appendix shows the findings of estimating equation (1) with an alternative operationalization of the outcome (i.e., extreme financial hardship). For the post-January-2021 periods, we observe a statistically significant negative coefficient in event period 2 (January 20-February 1, 2020). Although negative, the estimated coefficients for the subsequent three periods are not significantly different from 0. These findings imply that the higher cash assistance eligibility from EIP 2 was associated with a reduction in extreme financial hardship for about a couple of weeks. The estimated coefficients for event periods 6 to 12 (March 17-July 5) are negative and statistically significant for event periods 6, 7, 8, 10, and 11. These findings imply that the eligibility to receive higher cash assistance from EITC, CTC, and EIP 3 payments in 2021 was linked to a reduction in extreme financial hardship between March and early-June 2021. Next, for the periods between July and December, estimated coefficients are negative and statistically significant in event periods 13, 15, 16, 17, 19, and 20. These estimates suggest that advance CTC payments were linked to reductions in extreme financial hardship over an extended period in the last half of 2021. Finally, the estimated coefficients are negative and significantly different from 0 for the event periods 22 and 23 but statistically insignificant for the remaining periods. These estimates imply that the association between higher cash assistance eligibility from the lump-sum tax credit payments and extreme financial hardship lasted between March and April 2022 and faded out afterward. Overall, the findings based on the alternative operationalization of financial hardship suggest that for contexts 1 (EIP 2), 2 (EITC, CTC, and EIP 3), and 3 (Advance CTC), higher cash assistance eligibility was linked to reduced financial hardship over a longer period than the longevity suggested by the main findings.

To further explore the association between higher cash assistance eligibility and financial hardship, I estimate equation (1) for three outcomes related to financial hardship: food insufficiency, caught up on mortgage (for those who lived in a house with a mortgage or loan), and caught up on rent (for those who lived in a rented house). These findings are presented in Figures 9-11 in the Appendix. The findings in Figure 9, suggesting a significant negative association between higher cash assistance eligibility and food

insufficiency, align with the main findings. However, findings in Figures 10 and 11 in the Appendix suggest that housing hardship (as indicated by being caught up on mortgage or rent) did not decrease in relation to higher cash assistance eligibility. Overall, these findings imply that the negative association between higher cash assistance eligibility and financial hardship may have been driven, at least partially, by a decrease in food hardship but not housing hardship.

Figure 12 in the Appendix shows the findings of re-estimating equation (1) by operationalizing differential cash assistance eligibility based on the number of children under 18 (as opposed to the binary categorization based on the presence of children under 18 in the main analysis). Although the magnitudes of the estimated coefficients differ from the main analysis, the direction and the statistical significance of the estimates are quite similar.

Figure 13 in the Appendix presents the results of estimating the equation for lower-income households with at least one child under 18 (i.e., excluding households without children) and the number of children as the key explanatory variable. Again, the results, by and large, align with the main findings. Lastly, I re-estimate equation (1) for respondents from 1) all households (Appendix Figure 14), 2) households with annual income between \$50,000 and \$100,000 (Appendix Figure 15), and households with annual income above \$100,000 (Appendix Figure 16). Generally, these estimates indicate that the negative association between higher cash assistance eligibility and financial hardship persisted over a more extended period than the longevity suggested by the main findings. However, for the higher income samples, it appears that the trends in financial hardship for households with and without children did not evolve in parallel (Figures 15 and 16 in the Appendix) in the last five months of 2020. The violation of parallel pre-trends for higher income households makes it difficult to suggest whether the negative association between higher cash assistance eligibility and financial hardship observed in the post-January-2021 periods for these samples were due to higher cash assistance eligibility or other factors.

Heterogeneity across sub-groups

The results of the DDD event study specification (equation 2), estimated to explore whether the association between higher cash assistance eligibility and financial hardship varied based on the marital status of female respondents, racial identity, Hispanic origin, and household income category, are shown in Figures 17-20 in the Appendix. Estimates presented in Figure 17 show that the associations were largely the same for non-married and married female respondents. The association was statistically significantly lower in period 17 (September 15 – September 27, 2021) and higher in period 18 (September 29 – October 11, 2021) for non-married female respondents. There appears to be no differential association for the two groups in relation to the other three contexts. Results shown in Figures 18 and 20 in the Appendix suggest that there were no statistically significant differential association depending on racial identity (Black vs. non-Black) and household income category (<\$25,000 vs. \$25,000-\$35,000), respectively. However, results presented in Figure 19 in the Appendix indicate that higher cash assistance eligibility was linked to a greater reduction in financial hardship for non-Hispanic households than Hispanic households. The relatively lower association for the Hispanic households may have been driven by the fact that they were more likely to experience a loss of employment income during the pandemic (Anyamele et al., 2022), which led to additional financial stress and weakened the impact of cash assistance. Another reason driving the lower association could be that Hispanic respondents in the HPS had a higher share of undocumented immigrants who were not eligible to receive benefits from the tax system (except for CTC payments if they had a child with a Social Security number). However, the HPS does not ask questions on citizenship and immigration status, which makes it difficult to explore the extent of the second possibility.

Limitations

The findings of this study should be interpreted in light of its limitations.

First, causal interpretation of the main findings requires a *parallel trends* assumption, which can be expressed as: “conditional on the covariates, in the absence of differential cash assistance eligibility from

the tax system between January 2021 and August 2022, the financial hardship experienced by the average lower-income household with children would have evolved in *parallel* to the financial hardship experienced by the average lower-income household without children.” Although this assumption is fundamentally untestable, one may argue that the estimates presented in Figure 3 provide some suggestive evidence in favor of it as it suggests that the average values of the outcome for the two groups were moving in parallel between August and December 2020, a period when there was no cash assistance provided through the tax system. Despite this suggestive evidence, the validity of the parallel trends assumption remains doubtful because of two critical issues. The first issue is that conceptually, households with children face unique challenges caused by other potentially time-varying events, such as the closure of childcare facilities, which may result in differential trends in the financial hardship experienced by them relative to households without children even if both groups have the same cash assistance eligibility. Note that this issue is generally applicable to all the studies that use a DD event study approach in a context where the treatment and control groups are structurally different. The second issue is that the *parallel pre-trends* (i.e., the parallel trends between August-December 2020 in the *real world*), even if correctly estimated, do not necessarily imply *parallel trends* in the *counterfactual world* where the two groups had the same cash assistance eligibility from the tax system between January 2021 and August 2022. Again, this criticism is applicable to all the studies that use a DD event study approach.

Nevertheless, when the empirical model is estimated for a sample of lower-income households with children (i.e., excluding those without children), a higher cash assistance eligibility (indicated by a higher number of children under 18) is still found to have a negative association with financial hardship (Figure 13 in the Appendix). Based on these estimates, it seems that although the magnitudes of the estimated associations may be biased, the signs are, possibly, correctly estimated.

Second, the empirical approach cannot separate out the extent to which each program contributed to the estimated associations. Note that some of these programs, e.g., lump-sum EITC and CTC, provide direct cash assistance mostly to the same group (i.e., lower-income households with children) during tax time.

Therefore, separating the effect of the two federally-operated programs is inherently challenging. Nonetheless, the findings of this study indicate a link between the eligibility to receive higher cash assistance from the tax system and reduced financial hardship over an extended period during an economic downturn – a finding that may be of interest to both policymakers and academic researchers.

Third, similar to many existing studies on the impact of tax credit programs, this study could not identify exactly which households received cash assistance and when they received these benefits because the HPS did not consistently ask questions about receiving benefits from all the programs considered in this study. Also, about one in five eligible households do not claim EITC benefits (Internal Revenue Service, 2024). Consequently, this paper's explanatory variable of interest was the eligibility to receive higher cash assistance rather than the reception of higher cash assistance.

Fourth, the HPS waves considered in this study do not consistently provide information on children's ages. Given that the amount of cash assistance households were eligible to receive depended on both the number of children in the household and their ages, there might have been some misclassifications. For example, this study considered every household in the main analytical sample with at least one child under 18 eligible for lump-sum CTC benefits in March 2021. However, households with children under 17 were eligible to receive benefits from the programs, which implies that some households with 17 years old children were erroneously classified as eligible for CTC benefits.

Fifth, the analytical samples used in this study are composed of people who responded to the questions on pre-tax annual household income, marital status, and difficulty paying for usual expenses. Although the number of non-respondents to the latter two questions is negligible (see Appendix), more than one in five HPS respondents did not respond to the question on household income. If the respondents to the question on household income are systematically different from the non-respondents, that may have induced some bias into the estimated associations.

Conclusion and Discussion

This study used data from the Household Pulse Survey – a unique repeated cross-sectional survey that gathered data regularly throughout the COVID-19 pandemic – to investigate the temporal variation in the association between higher cash assistance eligibility from the tax system and financial hardship for lower-income households. I estimated models using an event study approach, which utilized four contexts created by across-time and across-group variations in cash assistance eligibility for lower-income households with and without children (higher- and lower-eligible groups, respectively). These contexts were created by 1) EIP 2 payments in January 2021, 2) EITC, CTC, and EIP 3 payments in March 2021, 3) Advance CTC payments between July and December 2021, and 4) EITC, CTC, and CDCTC payments in March 2022. Results suggest that the link between higher cash assistance eligibility and reduction in financial hardship followed a cyclical pattern of appearance and disappearance. In general, the negative association became visible in some of the weeks after the beginning of cash assistance disbursement, faded away after a while, and reappeared following the beginning of the next round of disbursement. Although this study cannot identify program-specific effects, findings suggest that the pandemic-era cash assistance programs, such as EIP and Advance CTC, played a role in reducing the financial hardship experienced by lower-income households with children over an extended period in 2021. At the sub-group level, there appears to be no noticeable difference in the association based on marital status (for female respondents), racial identity, and household income. However, results indicate that the association was smaller for Hispanic households than for non-Hispanic households in terms of both magnitude and longevity. This finding is possibly driven by the fact that Hispanics faced a higher rate of income loss from employment during the pandemic, leading to additional financial challenges for them.

From a policy perspective, in terms of designing cash assistance programs, one critical question is: How frequently should cash assistance be disbursed to maximize the well-being of the recipients? Conceptually, the payment frequency enhancing households' well-being depends on their financial health. For example, households that are able to pay for usual expenses from their regular earnings may prefer larger lump-sum

cash assistance as it enables them to purchase big-ticket items. On the contrary, households that struggle to pay for their usual expenses with their regular earnings may prefer periodic payments, which help them smooth consumption without having to incur debt. Similar to the findings by Kramer et al., 2019, findings of this study suggest that for the typical lower-income household with children, the permanent availability of a program that provides periodic cash assistance may reduce financial hardship over a more extended period, especially in the second half of a calendar year. Given the growing evidence in favor of the efficacy of periodic payments in reducing hardship over a more extended period, policymakers should consider making changes to the existing lump-sum tax credit programs so that eligible households have the option to receive cash assistance at regular intervals.

From a measurement perspective, one critical question is: How often should financial hardship be measured? In this regard, one limitation of the official measure of poverty – an objective measure of financial hardship – is that it presents poverty rates annually, which potentially masks the hardship experienced by many resource-constrained households within a year. In a recent paper, Parolin et al., 2022 developed a framework to produce monthly estimates of the Supplemental Poverty Measure (SPM) and the official poverty measure. The authors found substantial variation in monthly poverty rates, induced by policy actions and other temporal factors, in 2020 and 2021. Similar to the variation in monthly poverty rates found by Parolin et al., 2022, the average value of the one-item 7-day financial hardship measure used in this study varied longitudinally (especially before and after cash assistance disbursements), which provides some suggestive evidence in favor of its validity for tracking households' financial difficulties over time. Furthermore, as shown in Table 5 in the Appendix, socio-economic characteristics – e.g., household income, marital status, homeownership, etc. – known to be associated with other outcomes related to households' financial health (e.g., material hardship and financial well-being) are also predictive of the financial hardship measure. Two key advantages of this parsimonious measure are 1) potentially lower recall bias given the shorter reference period and 2) decreased survey completion time. Therefore, including this question in surveys – particularly in contexts where gathering detailed information on income

from all possible sources is not feasible – can be helpful in terms of tracking how the financial hardship experienced by the typical household of a target population varies over time.

Lastly, although this study finds evidence to suggest that a higher cash assistance eligibility from the tax system was associated with a reduction in financial hardship over an extended period during the COVID-19 pandemic, it did not investigate the underlying mechanisms driving these associations due to a lack of data on financial behaviors (i.e., expenditure, debt, and savings) in the HPS. Future studies should combine longitudinal data from multiple sources, such as credit bureau and consumer expenditure data, to investigate the financial behaviors mediating the relationship between cash assistance and financial hardship.

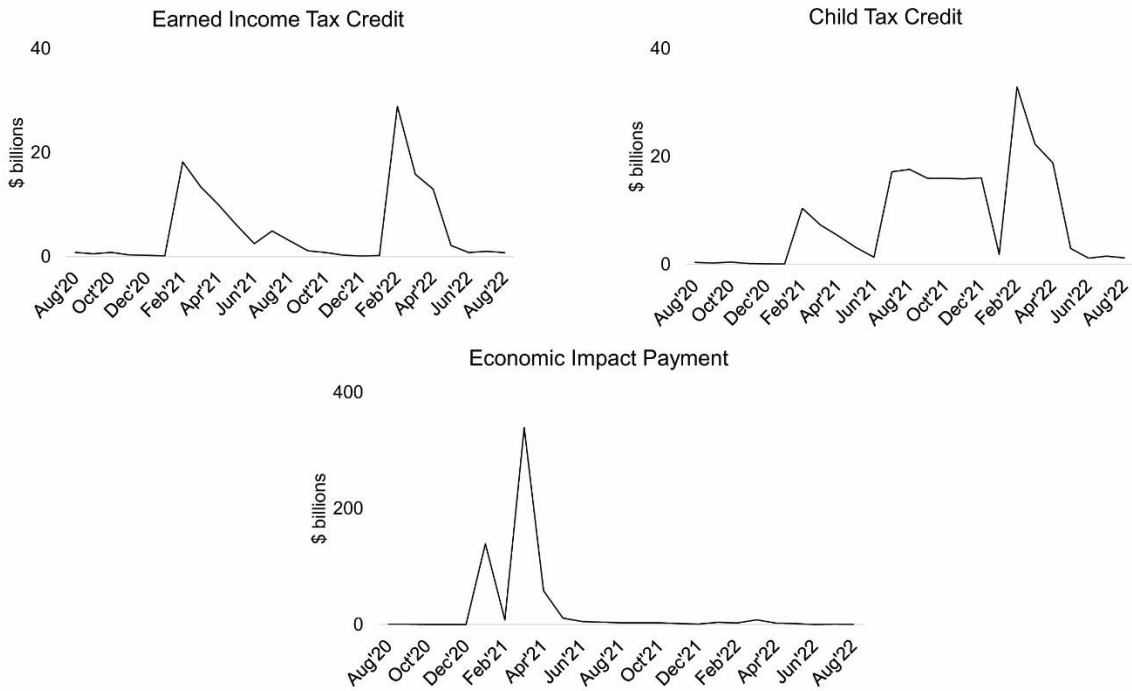
Tables and Figures

Table 1: Maximum cash assistance eligibility from different programs operated through the tax system for lower-income households with and without children

Context	Program	Year	Beginning of disbursement	Households with children	Households without children
1	EIP 2	2021	December 29, 2020	Household size * \$600	
2	EITC	2021	The first week of March 2021	\$3,584 (1 child aged <19) \$5,920 (2 qualifying children aged <19) \$6,660 (3 or more qualifying children aged <19)	\$538
	CTC	2021	The first week of March 2021	\$1400 per child aged <17	0
	EIP 3	2021	March 12, 2021	Household size * \$1400	
3	Advance CTC	2021	July 15, 2021 (ended on December 15, 2021)	Monthly payments of \$300 per child aged <6 Monthly payments of \$250 per child aged 6-17	0
4	EITC	2022	The first week of March 2022	\$3,618 (1 child aged <19) \$5,980 (2 children aged <19) \$6,728 (3 or more children aged <19)	\$1,502
	CTC	2022	The first week of March 2022	\$1800 per child aged <6 \$1500 per child aged 6-17	0
	CDCTC	2022	The first week of March 2022	\$4000 for 1 qualifying individual \$8000 for 2 or more qualifying individuals	

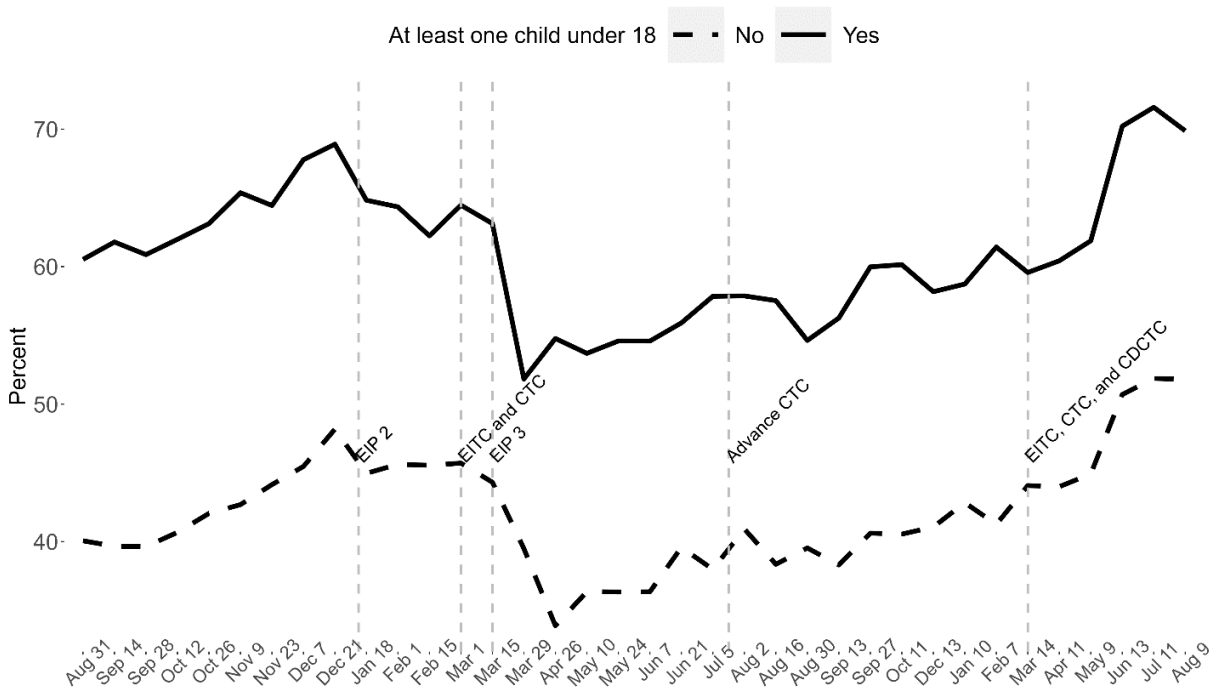
Source: Internal Revenue Service. Note: For CTC 2022, the amount mentioned in the table assumes that the household received 50% of their CTC benefits as advanced monthly payments between July and December 2021.

Figure 1: Monthly spending by the federal government in EITC, CTC, and EIP programs between August 2020 and August 2022



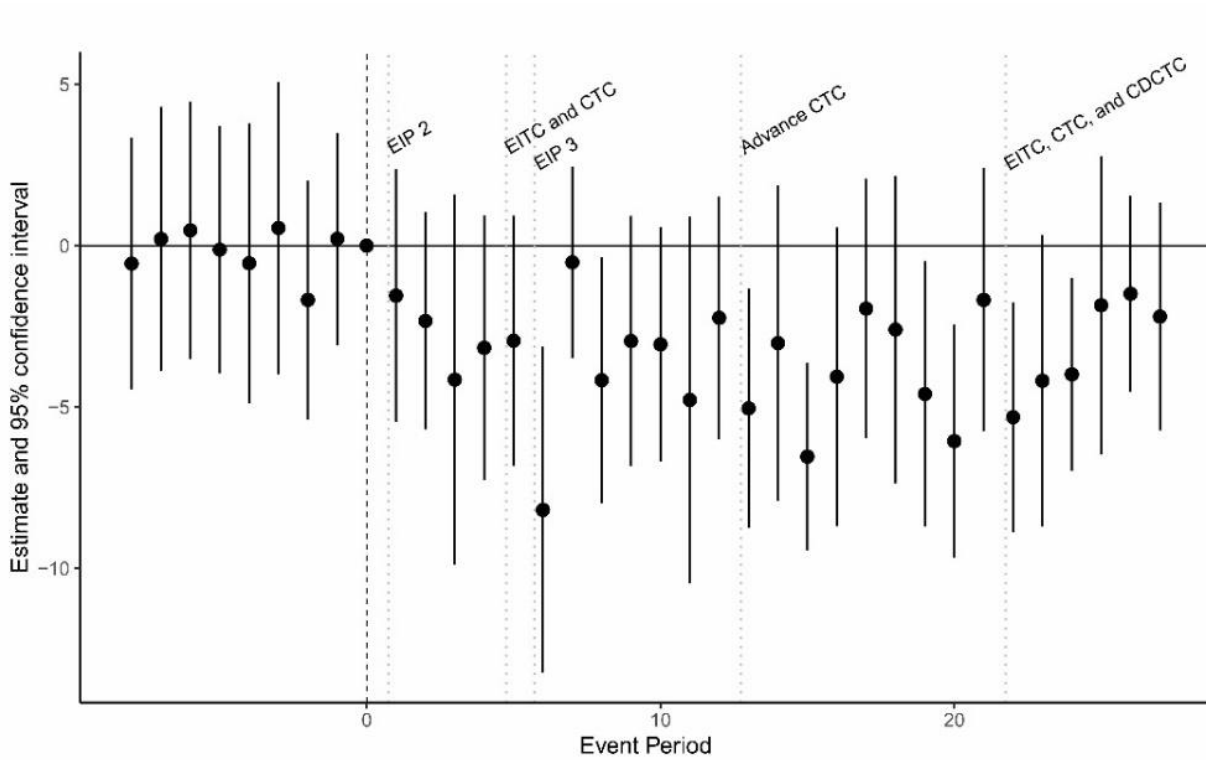
Note: Author's calculations based on the monthly treasury statements published by the Bureau of the Fiscal Service (Bureau of the Fiscal Service, 2024).

Figure 2: Trends in financial hardship for households with and without children between August 2020 and August 2022



Notes: Author's calculation based on data from United States Census Bureau's Household Pulse Survey waves 13 to 48. Sample (N=604,922) consists of respondents from households with less than \$50,000 pre-tax annual income who answered questions on household income, marital status, and difficulty paying for usual expenses. X axis labels show the last dates of each HPS wave. Household-level weights are used in the analysis.

Figure 3: Association between higher cash assistance eligibility and financial hardship experienced by lower-income households



Notes: Author’s calculation based on data from the United States Census Bureau’s Household Pulse Survey waves 13 to 48. Sample (N=604,922) consists of respondents who answered questions on household income, marital status, and difficulty paying for usual expenses and lived in a household with a pre-tax annual income of less than \$50,000. All models include these variables: state fixed effects, wave fixed effects, state and wave interaction effects, pre-tax annual household income category, marital status, interaction between income category and marital status, household size, employment status in the last 7 days, homeownership status, educational attainment, race, Hispanic origin, gender assigned at birth, age, and SNAP reception. Household-level weights are used in the analysis, and standard errors are clustered at the state level. Error bars show 95% confidence intervals for the estimated associations. On average, between August and December 2020 (i.e., in the five months before the beginning of EIP2 payments), 63.84% of lower-income households with children (higher-eligible group) experienced financial hardship.

Appendix

Selecting the main analytical sample

To select the main analytical sample, I apply the following steps:

- 1) I merge HPS waves 13 to 48, which combinedly have a total of 2,632,319 respondents.
- 2) Excluding the respondents with missing responses to the question on pre-tax annual household income (INCOME variable), I get a sample of 2,045,557 respondents (22.29% missing response rate).
- 3) Then, I exclude respondents with missing responses to the question on marital status (MS variable). This reduces the sample to 2,036,752 respondents.
- 4) Next, exclusion of respondents with missing responses to the question on difficulty paying for usual expenses (EXPNS_DIF variable) reduces the sample to 2,034,398 respondents.
- 5) Finally, I narrow the sample down to respondents living in households with pre-tax annual income below \$50,000. The main analytical sample consists of 604,922 respondents.

Table 2: Description of Household Pulse Survey waves

Context	Year	HPS wave	Event period	Event period (alternative 1)	Event period (alternative 2)	Data collection period	Sample size	Response rate (percent)
	2020	13	-8	-4	-2	Aug 19 – Aug31	109,051	10.3
		14	-7	-3	-2	Sep 2 – Sep14	110,019	10.3
		15	-6	-3	-2	Sep 16 – Sep 28	99,302	9.2
		16	-5	-2	-1	Sep 30 – Oct 12	95,604	8.8
		17	-4	-2	-1	Oct 14 – Oct 26	88,716	8.1
		18	-3	-1	-1	Oct 28 – Nov 9	58,729	5.3
		19	-2	-1	0	Nov 11 – Nov 23	71,939	6.6
		20	-1	0	0	Nov 25 – Dec 7	72,484	6.7
		21	0	0	0	Dec 9 – Dec 21	69,944	6.5
1	2021	22	1	1	1	Jan 6 – Jan 18	68,348	6.4
		23	2	1	1	Jan 20 – Feb 1	80,567	7.5
		24	3	2	1	Feb 3 – Feb 15	77,122	7.3
		25	4	2	1	Feb 17 – Mar 1	77,788	7.3
2		26	5	3	2	Mar 3 – Mar 15	78,306	7.4
		27	6	3	2	Mar 17 – Mar 29	77,104	7.2
		28	7	4	2	Apr 14 – Apr 26	68,913	6.6
		29	8	4	2	Apr 28 – May 10	78,467	7.4
		30	9	5	3	May 12 – May 24	72,897	6.8
		31	10	5	3	May 26 – Jun 7	70,854	6.7
		32	11	6	3	Jun 9 – Jun 21	68,067	6.4
		33	12	6	3	Jun 23 – Jul 5	66,262	6.3
3		34	13	7	4	Jul 21 – Aug 2	64,562	6.1
		35	14	7	4	Aug 4 – Aug 16	68,799	6.5
		36	15	8	4	Aug 18 – Aug 30	69,114	6.5
		37	16	8	5	Sep 1 - Sep 13	63,536	6.0
		38	17	9	5	Sep 15 – Sep 27	59,833	5.6
		39	18	9	5	Sep 29 - Oct 11	57,064	5.4
		40	19	10	6	Dec 1 – Dec 13	60,826	5.8
	2022	41	20	10	6	Dec 29 – Jan 10	74,995	7.2
		42	21	10	6	Jan 26 – Feb 7	75,482	7.2
4		43	22	11	7	Mar 2 – Mar 14	84,158	7.9
		44	23	11	7	Mar 30 – Apr 11	63,769	6.0
		45	24	12	7	Apr 27 – May 9	61,767	5.8
		46	25	12	8	Jun 1 - Jun 13	62,826	6.2
		47	26	13	8	Jun 29 - Jul 11	58,304	5.7
		48	27	13	8	Jul 27 - Aug 8	46,801	4.4

Source: Household Pulse Survey

Table 3: Summary statistics for the main analytical sample (per wave)

Panel A: Households with children

Wave	Sample size	Income <\$25k	Income \$25k-\$35k	Income \$35k-\$50k	Married	Employed	House hold size	White	Black	Hispanic	Female	Age	Rent/ Mortgage	College
13	7,576	39.69	29.81	30.5	37.94	49.3	4.07	64.28	23.81	27.87	65.69	42.88	80.65	9.86
14	7,696	39.08	29.17	31.76	38.96	52.74	4.13	60.7	25.02	26.22	66.44	42.66	83.24	9.98
15	6,811	39.15	28.27	32.58	38.24	50.16	4.1	64.6	22	27.8	66.05	43.51	81.95	9.5
16	6,361	39.96	30.12	29.92	36.77	53.12	4.06	62.33	22.33	26.77	67.33	42.86	82	10.19
17	5,885	39.29	30.79	29.92	40.09	50.17	4.18	61.92	23.17	27.38	64.91	43.21	83.17	10.29
18	3,730	38.63	28.32	33.05	40.21	48.37	4.21	63.15	23.95	24.87	66.37	43.12	80.5	9.59
19	4,882	38.55	29.29	32.16	40.62	51.87	4.12	64.65	22.09	28.59	65.31	42.92	84.51	10.78
20	4,876	40.25	29.09	30.66	40.82	46.25	4.17	64.67	23.01	25.56	66.29	42.83	82.3	9.9
21	4,757	39.54	28.34	32.12	39.47	47.37	4.15	66.11	20.96	27.19	65.95	43.59	82.12	10.22
22	4,458	38.71	30.08	31.21	39.07	47.78	4.22	63.06	23.6	28.3	65.75	43.02	82.07	10.53
23	5,087	39.17	28.16	32.67	41.8	47.24	4.15	61.93	23.15	26.24	67.27	42.62	80.55	10.92
24	4,761	40.11	29.1	30.79	39.41	49.08	4.12	67.19	22.11	27.72	64.13	42.96	82.11	10.43
25	4,735	39.32	30.97	29.71	39.84	45.39	4.15	62.42	23.42	25.83	64.84	42.7	82.13	9.94
26	4,654	39.19	29.97	30.84	41.2	47.03	4.26	64.19	22.82	29.04	66.06	42.17	80.83	10.77
27	4,391	39.58	28.58	31.85	40.02	52.38	4.08	65.57	20.95	25.91	65.14	42.52	82.49	11.27
28	3,762	40.02	29.89	30.08	40.53	49.83	4.12	67.52	19.89	27.65	65.15	43.36	80.77	10.36
29	4,563	38.62	30.22	31.16	39.44	51.15	4.14	66.04	22.02	26.79	65.55	43	81.46	10.92
30	4,407	39.49	33	27.51	38.45	50.6	4.11	66	23.21	26.61	65.81	42.97	81.83	10.92
31	4,161	37.29	31.63	31.09	38.05	50.59	4.07	64.42	23.29	25.33	66.91	43.02	81.45	11.32
32	4,128	38.86	30.14	31	40.21	51.25	4.14	65.83	22.09	28.32	67.02	42.6	81.87	11.13
33	3,873	41.12	27.89	30.99	41.25	51.15	4.2	63.61	23.43	25.88	66.43	43.04	81.14	10.6
34	4,008	42.42	29.44	28.14	38.72	44.55	4.15	65.96	21.4	28.4	65.8	43.42	79.13	10.6
35	4,222	41.8	30.12	28.08	40.42	47.25	4.2	66.53	21.46	26.09	65.67	43.31	82.14	11.3
36	4,239	40.89	27.62	31.49	37.49	47.32	4.19	65.29	22.87	27.96	64.98	43.01	80.79	11.95
37	3,839	41.08	28.54	30.38	40.66	49.43	4.21	65.09	23.19	26.34	66.05	42.73	80.28	11.52
38	3,606	43.12	28.61	28.26	39.37	48.39	4.08	62.97	23.06	26.06	67.97	43.03	80.67	12.23
39	3,391	43.75	26.76	29.49	39.81	47.33	4.14	65.39	23.07	27.45	65.82	44.01	79.53	11.03
40	4,177	42.83	27.93	29.24	39.23	51.84	4.09	64.58	22.78	28.18	66.11	41.93	81.63	9.42
41	5,756	42.6	27.16	30.24	37.43	47.2	4.2	64	24.28	27.58	67.31	41.11	82.91	10.39
42	5,574	40.45	28.97	30.58	40.48	48.84	4.14	66.58	22.43	26.67	65.09	41.77	80.36	10.13
43	5,764	39.34	29.95	30.71	39.26	53.78	4.13	65.14	22.64	28.59	64.3	41.66	79.5	10.01
44	3,875	41.8	27.82	30.37	41.09	52.46	4.12	67.27	20.13	26.65	67.08	42.23	78.84	9.99
45	3,718	42.69	28.34	28.97	37.77	50.41	4.12	63.72	22.9	27.76	72.47	43.08	80.51	11.51
46	3,768	41.66	27.46	30.89	38.08	51.25	4.12	62.79	23.96	25.66	67.29	41.96	80.31	9.43
47	3,516	40.41	28.61	30.99	38.85	47.17	4.17	65.65	24.23	26.41	68.71	42.15	78.97	10.76
48	3,163	39.55	28.66	31.8	37.26	51.87	4.1	64.71	21.17	26.46	69.19	41.61	80.04	9.39

Notes: Author's calculation based on data from United States Census Bureau's Household Pulse Survey waves 13 to 48. Sample consists of Household Pulse Survey respondents living in households with at least one child under 18 and less than \$50,000 pre-tax annual income who answered questions on household income, marital status, and difficulty paying for usual expenses. Household-level weights are used in the analysis. Numbers are rounded to two decimal places.

Panel B: Households without children

Wave	Sample size	Income <\$25k	Income \$25k-\$35k	Income \$35k-\$50k	Married	Employed	House hold size	White	Black	Hispanic	Female	Age	Rent/ Mortgage	College
13	16,872	38.78	28.16	33.06	28.37	40.89	1.82	77.22	13.89	14.18	54.66	54.96	68.52	18.14
14	17,410	37.46	29.6	32.94	27.32	42.68	1.85	77.33	13.53	13.88	55.47	54.52	69.48	18.14
15	15,803	38.46	28.75	32.79	27.83	42.05	1.84	76.25	14.41	13.87	54.42	54.51	68.95	16.81
16	15,245	37.79	29.33	32.88	28.35	42.25	1.84	76.37	14.25	12.83	54.83	54.39	68.68	18.15
17	13,878	39.03	28.89	32.08	28.01	40.52	1.84	77.16	13.64	13.81	53.86	54.68	67.29	18.05
18	9,362	36.45	29.13	34.41	28.89	38.55	1.84	78.87	11.67	13.28	55.08	55.26	66.82	18.32
19	11,270	36.97	29.36	33.68	29.47	40.58	1.85	78.36	12.49	12.96	54.95	55.83	69.27	18.04
20	11,584	38.32	28.33	33.36	30.04	38.11	1.88	78.71	13.11	13.41	55.45	55.11	68.56	18.84
21	11,533	40.09	28.02	31.89	27.77	38.9	1.86	76.94	13.16	14.3	55.54	54.88	68.47	18.67
22	10,892	37.59	28.38	34.03	30.08	39.34	1.91	78.35	12.54	14.26	53.47	54.19	68.81	18.92
23	13,268	37.42	28.28	34.29	28.6	41.26	1.92	77.72	13.31	13.08	53.8	53.12	69.52	17.75
24	12,939	39.04	28	32.96	28.97	41.54	1.91	77.31	13.65	13.76	54.09	53.7	68.28	19.12
25	12,878	39.82	27.95	32.23	30.2	39.61	1.92	78.21	12.18	14.55	54.73	54.26	67.46	18.08
26	12,567	37.56	29.56	32.88	28.6	41.89	1.91	77.71	13.6	13.14	54.1	53.48	68.9	18.91
27	12,314	38.68	29.25	32.07	27.73	41.39	1.86	78.37	13.05	13.86	54.18	53.43	68.88	18.65
28	10,266	37.96	29.14	32.9	28.91	40.29	1.85	77.74	13.96	13.2	54.96	54.93	65.51	18.87
29	12,074	39.13	28.4	32.47	29.15	41.42	1.88	78.2	13.08	13.93	55.7	54.88	67.59	19.25
30	11,064	38.67	30.49	30.83	28.3	40.86	1.87	77.12	13.2	14.95	55.38	54.96	68.14	18.77
31	10,702	38.31	28.58	33.11	29.64	43.39	1.88	78.21	12.44	13.21	54.46	54.55	68.68	19.14
32	10,343	39.13	30.48	30.39	27.09	41.39	1.85	77.1	14.62	12.89	54.28	54.53	68.59	18.56
33	10,122	38.81	29.32	31.87	28.15	40.97	1.88	78	12.74	14.74	55.87	54.88	66.79	19.38
34	11,246	40.63	29.03	30.34	29.06	41.31	1.88	77.31	14.33	12.76	54.42	54.55	68.48	17.58
35	11,779	38.55	28.33	33.13	30.16	41.47	1.89	78.64	13.69	14.24	54.82	54.29	68.62	18.79
36	11,753	39.97	28.5	31.53	30.29	40.26	1.89	78.85	12.79	13.85	55.34	54.6	67.01	18.63
37	11,054	38.54	29.04	32.42	29.43	39.18	1.92	78.43	13.37	13.64	53.8	54.48	66.1	18.49
38	10,518	39.85	28.54	31.61	28.22	39.52	1.89	77.11	14.09	13.77	54.03	54.27	68.13	17.45
39	10,049	39.47	29.33	31.2	29.07	41.13	1.86	77.85	13.8	13.39	56.4	54.69	67.38	18.37
40	11,703	40.41	28.89	30.7	27.97	42.38	1.83	78.76	13.06	12.48	54.68	53.49	68	19.33
41	14,082	41.84	28.9	29.26	27.2	39.84	1.83	77.93	13.5	13.33	54.1	53.56	68.78	17.78
42	14,436	40.02	27.63	32.36	27.07	42.34	1.83	78.48	12.99	13.6	54.19	53.26	68.61	18.79
43	15,616	39.73	30.32	29.95	27.25	43.68	1.82	78.02	13.28	14.52	54.11	53.52	68.92	19.17
44	11,875	40.6	29.16	30.23	26.76	42.92	1.83	77.26	13.61	14.51	53.21	53.74	67.84	18.38
45	11,216	40.51	28.33	31.15	28.64	42.63	1.87	78.54	13.01	14.71	54.21	53.04	69.13	18.79
46	10,980	39.8	29.42	30.79	26.46	41.39	1.8	76.81	13.97	15.33	52.96	53.52	66.18	17.2
47	10,085	40.15	28.3	31.55	26.64	40.23	1.82	74.84	15.29	14.95	53.21	53.96	66.08	17.54
48	7,974	39.49	28.62	31.9	24.75	44.65	1.84	78.23	11.95	14.88	54.24	52.27	69.32	16.86

Notes: Author's calculation based on data from United States Census Bureau's Household Pulse Survey waves 13 to 48. Sample consists of Household Pulse Survey respondents living in households with no children under 18 and less than \$50,000 pre-tax annual income who answered questions on household income, marital status, and difficulty paying for usual expenses. Household-level weights are used in the analysis. Numbers are rounded to two decimal places.

Table 4: Operationalization of food and housing hardship

Variable	Question	Response Options	Operationalization
Food insufficiency	In the last 7 days, which of these statements best describes the food eaten in your household? Select only one answer.	1) Enough of the kinds of food (I/we) wanted to eat 2) Enough, but not always the kinds of food (I/we) wanted to eat 3) Sometimes not enough to eat 4) Often not enough to eat	Takes a value of 1 if the respondent selected “Sometimes not enough to eat” or “Often not enough to eat” and 0 otherwise
Caught up on mortgage	Is this household currently caught up on mortgage payments? Select only one answer. (asked only to those who lived in a house/apartment owned by the respondent or someone in the household with a mortgage or loan (including home equity loans))	1) Yes 2) No	Takes a value of 1 if the respondent selected “Yes” and 0 otherwise
Caught up on rent	Is this household currently caught up on rent payments? Select only one answer. (asked only to those who lived in a rented house/apartment)	1) Yes 2) No	Takes a value of 1 if the respondent selected “Yes” and 0 otherwise

Source: Household Pulse Survey

The one-item financial hardship measure used in this paper is different from related measures used in the literature, such as multi-item financial hardship and single-item financial difficulty (Butterworth et al., 2009), multi-item financial strain (Kahn & Pearlin, 2006), multi-item financial stress (Cardona-Montoya et al., 2022), multi-item financial well-being (Consumer Financial Protection Bureau, 2017), and single-item financial satisfaction (Xiao et al., 2014). Therefore, I estimate a linear probability model to explore whether the socio-economic predictors of related measures are also associated with the one-item financial hardship measure. The eleven predictors are pre-tax annual household income, marital status, gender assigned at birth, educational attainment, generation, race, Hispanic origin, number of children under 18, homeownership status, SNAP reception, and employment status in the last 7 days. Based on the results shown in Table 4, it appears that all the variables are statistically significantly associated with financial hardship. Also, the directions of these associations are in the expected directions. For example, the literature suggests that age cohort and household income are positively associated with financial well-being (Collins & Urban, 2020), and the findings in Table 5 suggest that the two variables are negatively associated with financial hardship. Also, some other predictors of financial well-being, for example, race, educational attainment, marital status, and homeownership (Consumer Financial Protection Bureau, 2017), are correlated with financial hardship. Additionally, financial hardship shares many of the predictors of material hardship, such as age cohort, race, and employment status (Beverly, 2001). Everything considered, the one-item financial hardship appears to be a valid measure of the difficulties households face in paying their usual household expenses.

Table 5: Socio-economic predictors of financial hardship

	Coefficient (Standard error)
Constant	36.1*** (1.06)
Pre-tax annual household income (Reference: Less than \$25,000)	
\$25,000 - \$34,999	-6.82*** (0.303)
\$35,000 - \$49,999	-13.4*** (0.301)
Marital status (Reference: Now married)	
Widowed	-3.98*** (0.426)
Divorced	1.46*** (0.319)
Separated	7.69*** (0.685)
Never married	-2.08*** (0.334)
Gender assigned at birth (Reference: Male)	
Female	0.490* (0.247)
Educational attainment (Reference: Less than high school)	
Some high school	1.78 (1.11)
High school graduate	-1.26 (0.950)
Some college	0.976 (0.946)

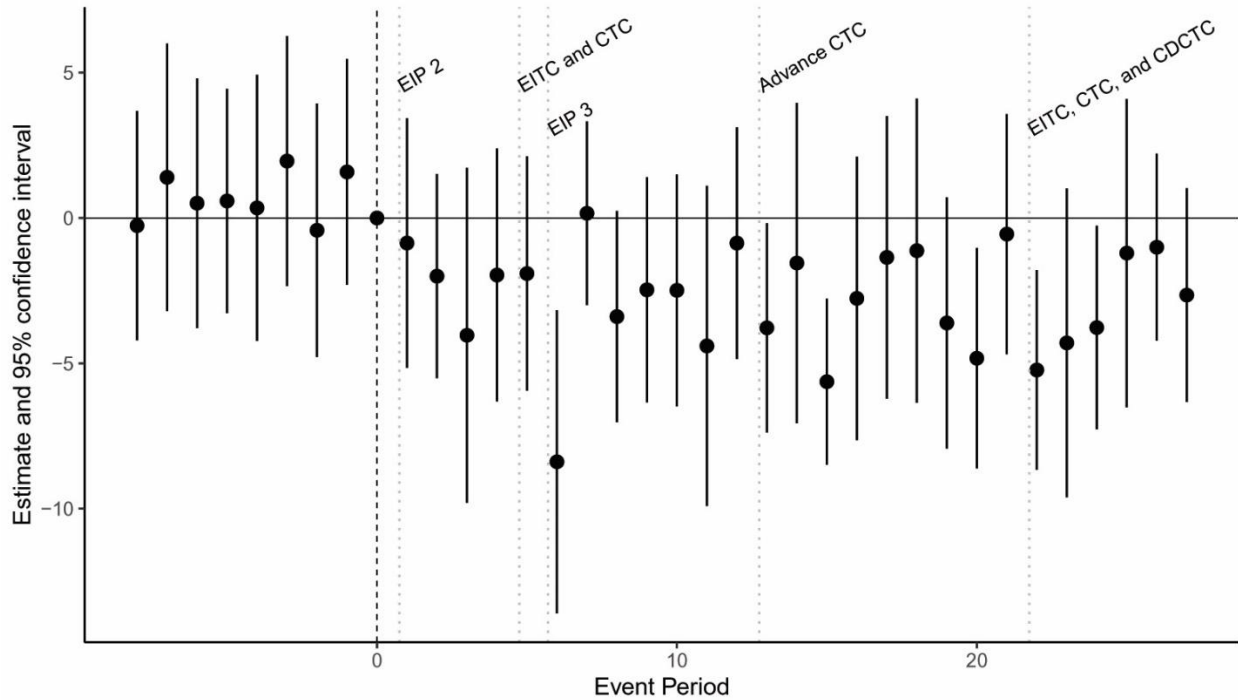
Associate's degree	0.362 (0.966)
Bachelor's degree	-7.08*** (0.958)
Graduate degree	-7.99*** (0.974)
Generation	
(Reference: Boomers and others)	
Gen Z	12.5*** (0.542)
Millennials	16.5*** (0.388)
Gen X	17.5*** (0.330)
Race	
(Reference: White)	
Black	5.97*** (0.354)
Asian	-2.07** (0.660)
Other or in combination	6.76*** (0.483)
Hispanic origin	
(Reference: non-Hispanic)	
Hispanic	2.45*** (0.372)
Number of people under 18	
(Reference: 0)	
1	6.22*** (0.357)
2	7.34*** (0.461)
3	8.40*** (0.648)
4	8.80*** (0.961)
5	11.5*** (1.18)
Housing owned or rented	
(Reference: Owned free and clear)	
Owned with a mortgage/loan	10.9*** (0.316)
Rented	13.3*** (0.320)
Occupied without payment of rent	16.0*** (0.757)
SNAP receipt	
(Reference: Yes)	
No	-9.91*** (0.328)
Employed in the last 7 days	
(Reference: Yes)	
No	7.19*** (0.261)
Adj. R ²	0.13

Notes: Author's calculation based on data from the United States Census Bureau's Household Pulse Survey waves 13 to 48. Sample (N= 596,150) consists of respondents from households with less than \$50,000 pre-tax annual income for whom there are no missing data on the variables of interest. Household-level weights and heteroskedasticity-robust standard errors are used in the analysis.

To further explore the robustness of the main empirical strategy, I estimate a simpler model without any covariates:

$$Y_{it} = \gamma_t + \beta Child_i + \sum_{\tau=-8}^{-1} \delta_{\tau} Child_i * Wave_{\tau} + \sum_{\tau=1}^{27} \delta_{\tau} Child_i * Wave_{\tau} + \epsilon_{it} \quad (3)$$

Figure 4: Association between higher cash assistance eligibility and financial hardship experienced by lower-income households (without covariates)

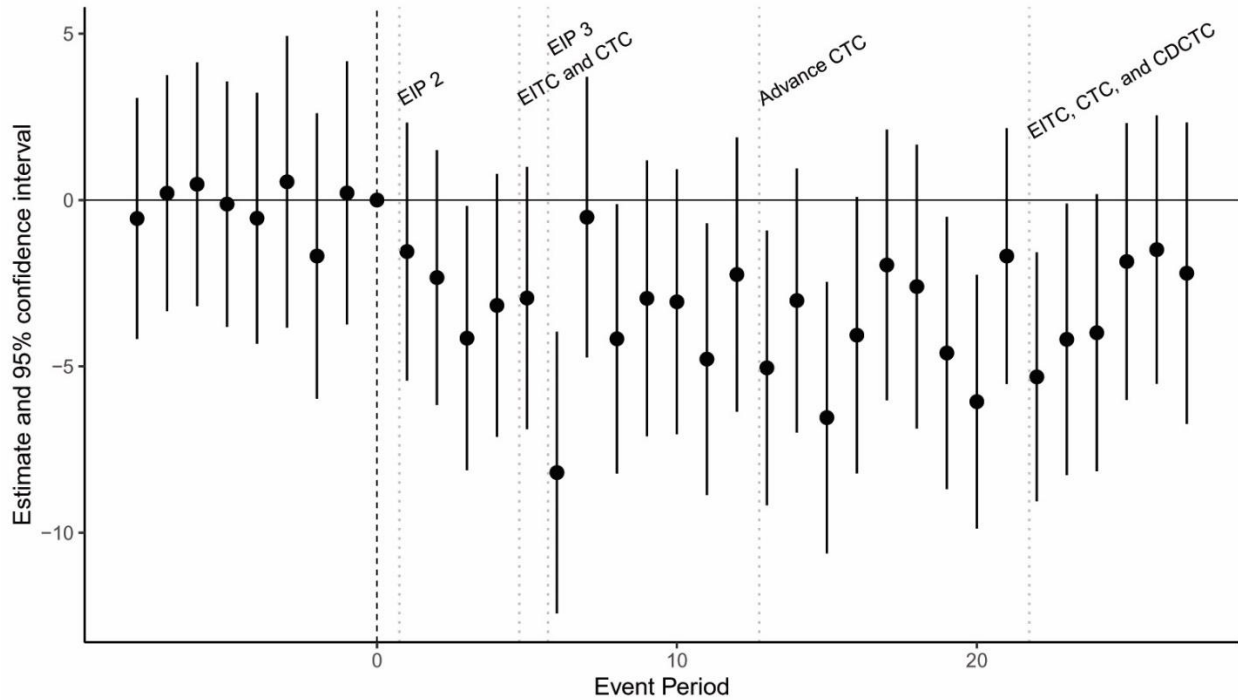


Notes: Author’s calculation based on data from the United States Census Bureau’s Household Pulse Survey waves 13 to 48. Sample (N=604,922) consists of respondents who answered questions on household income, marital status, and difficulty paying for usual expenses and lived in a household with a pre-tax annual income of less than \$50,000. Household-level weights are used in the analysis, and standard errors are clustered at the state level. Error bars show 95% confidence intervals for the estimated associations. On average, between August and December 2020 (i.e., in the five months before the beginning of EIP2 payments), 63.84% of lower-income households with children (higher-eligible group) experienced financial hardship.

Estimates shown in Figure 4 suggest that the findings of equation (3) mostly align with the findings of the main empirical model.

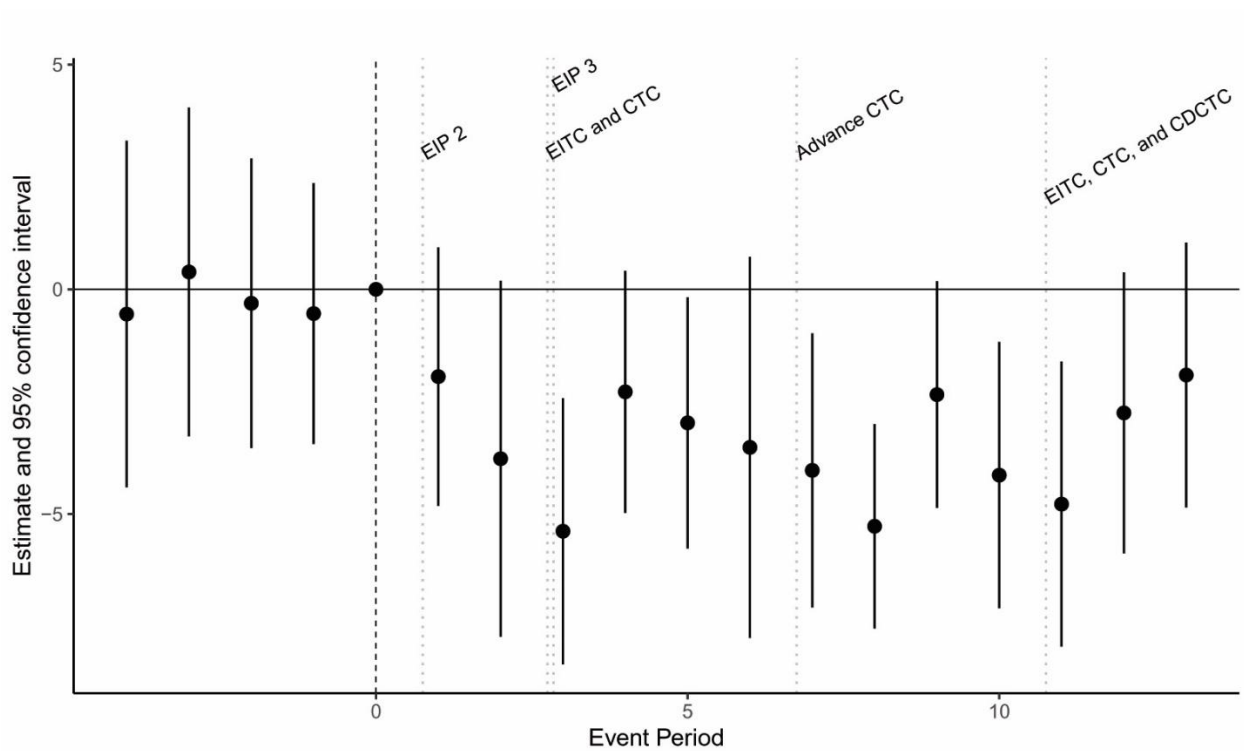
Additionally, I estimate equation (1) using heteroskedasticity-robust standard errors instead of cluster-robust standard errors. These estimates are shown in Figure 5. It appears that there are no major differences between these findings and the main findings, although some of the marginally insignificant estimates in the main analysis (e.g., estimate for event period 3) become statistically significant.

Figure 5: Association between higher cash assistance eligibility and financial hardship experienced by lower-income households (heteroskedasticity-robust standard errors)



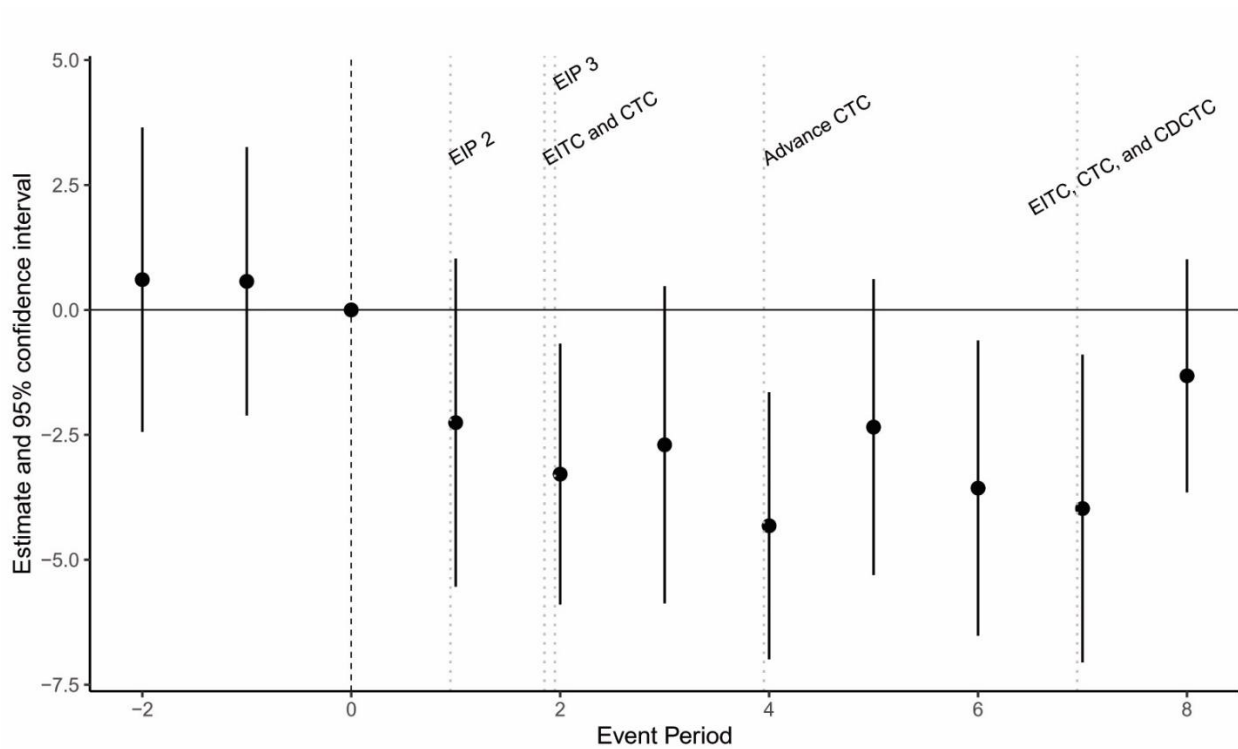
Notes: Author's calculation based on data from the United States Census Bureau's Household Pulse Survey waves 13 to 48. Sample (N=604,922) consists of respondents who answered questions on household income, marital status, and difficulty paying for usual expenses and lived in a household with a pre-tax annual income of less than \$50,000. All models include these variables: state fixed effects, wave fixed effects, state and wave interaction effects, pre-tax annual household income category, marital status, interaction between income category and marital status, household size, employment status in the last 7 days, homeownership status, educational attainment, race, Hispanic origin, gender assigned at birth, age, and SNAP reception. Household-level weights and heteroskedasticity-robust standard errors are used in the analysis. Error bars show 95% confidence intervals for the estimated associations. On average, between August and December 2020 (i.e., in the five months before the beginning of EIP2 payments), 63.84% of lower-income households with children (higher-eligible group) experienced financial hardship.

Figure 6: Association between higher cash assistance eligibility and financial hardship experienced by lower-income households (monthly periods)



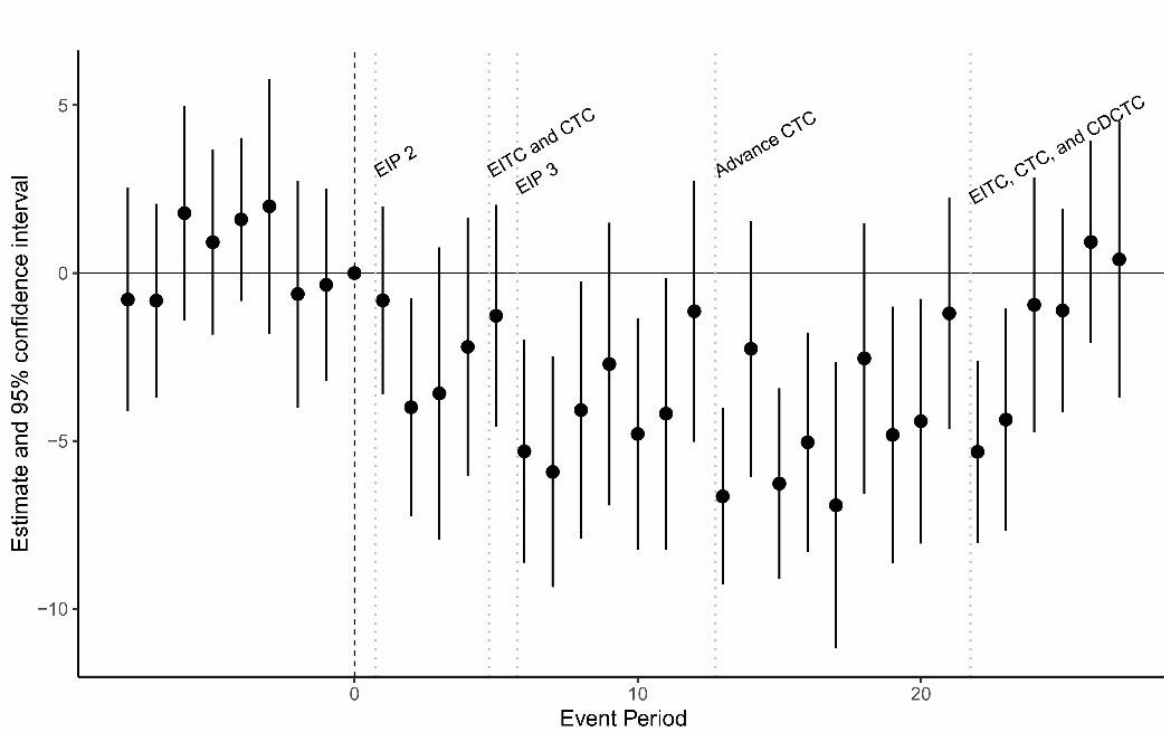
Notes: Author’s calculation based on data from the United States Census Bureau’s Household Pulse Survey waves 13 to 48. Sample (N=604,922) consists of respondents who answered questions on household income, marital status, and difficulty paying for usual expenses and lived in a household with a pre-tax annual income of less than \$50,000. All models include these variables: state fixed effects, wave fixed effects, state and wave interaction effects, pre-tax annual household income category, marital status, interaction between income category and marital status, household size, employment status in the last 7 days, homeownership status, educational attainment, race, Hispanic origin, gender assigned at birth, age, and SNAP reception. Household-level weights are used in the analysis, and standard errors are clustered at the state level. Error bars show 95% confidence intervals for the estimated associations. On average, between August and December 2020 (i.e., in the five months before the beginning of EIP2 payments), 63.84% of lower-income households with children (higher-eligible group) experienced financial hardship.

Figure 7: Association between higher cash assistance eligibility and financial hardship experienced by lower-income households (bimonthly periods)



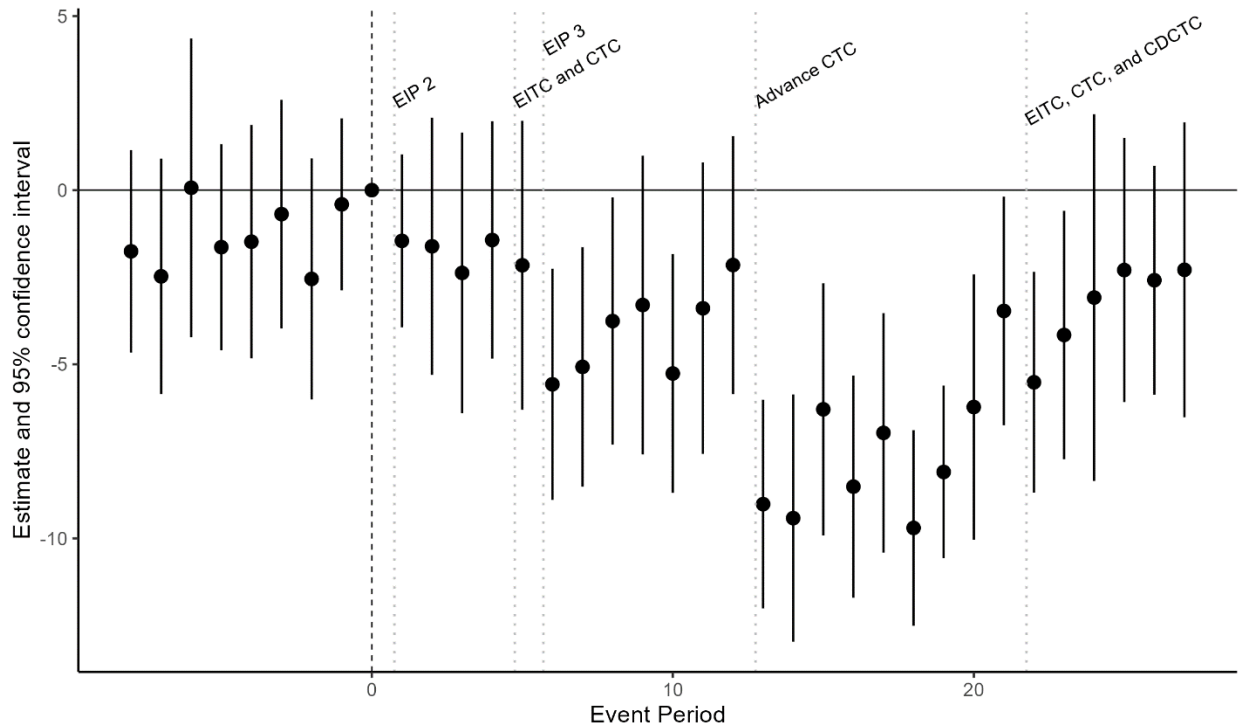
Notes: Author’s calculation based on data from the United States Census Bureau’s Household Pulse Survey waves 13 to 48. Sample (N=604,922) consists of respondents who answered questions on household income, marital status, and difficulty paying for usual expenses and lived in a household with a pre-tax annual income of less than \$50,000. All models include these variables: state fixed effects, wave fixed effects, state and wave interaction effects, pre-tax annual household income category, marital status, interaction between income category and marital status, household size, employment status in the last 7 days, homeownership status, educational attainment, race, Hispanic origin, gender assigned at birth, age, and SNAP reception. Household-level weights are used in the analysis, and standard errors are clustered at the state level. Error bars show 95% confidence intervals for the estimated associations. On average, between August and December 2020 (i.e., in the five months before the beginning of EIP2 payments), 63.84% of lower-income households with children (higher-eligible group) experienced financial hardship.

Figure 8: Association between higher cash assistance eligibility and extreme financial hardship experienced by lower-income households



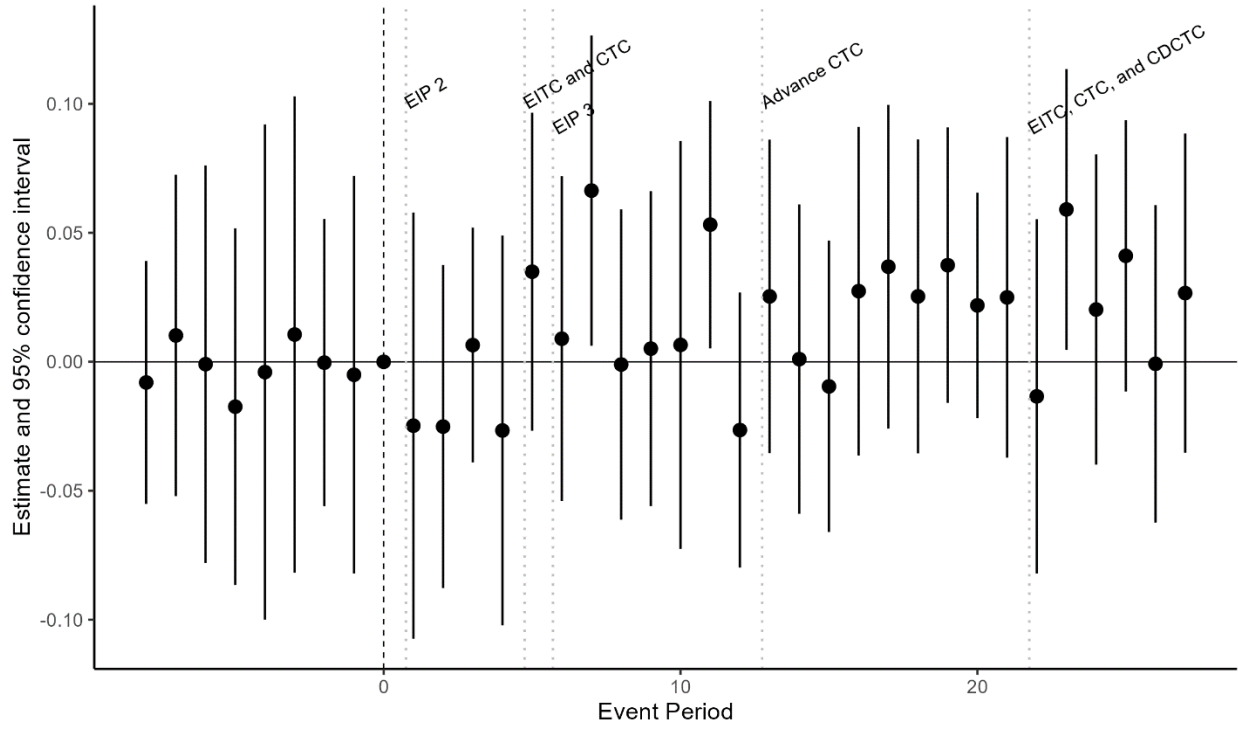
Notes: Author’s calculation based on data from the United States Census Bureau’s Household Pulse Survey waves 13 to 48. Sample (N=604,922) consists of respondents who answered questions on household income, marital status, and difficulty paying for usual expenses and lived in a household with a pre-tax annual income of less than \$50,000. All models include these variables: state fixed effects, wave fixed effects, state and wave interaction effects, pre-tax annual household income category, marital status, interaction between income category and marital status, household size, employment status in the last 7 days, homeownership status, educational attainment, race, Hispanic origin, gender assigned at birth, age, and SNAP reception. Household-level weights are used in the analysis, and standard errors are clustered at the state level. Error bars show 95% confidence intervals for the estimated associations. On average, between August and December 2020 (i.e., in the five months before the beginning of EIP2 payments), 36.72% of lower-income households with children (higher-eligible group) experienced extreme financial hardship.

Figure 9: Association between higher cash assistance eligibility and food insufficiency experienced by lower-income households



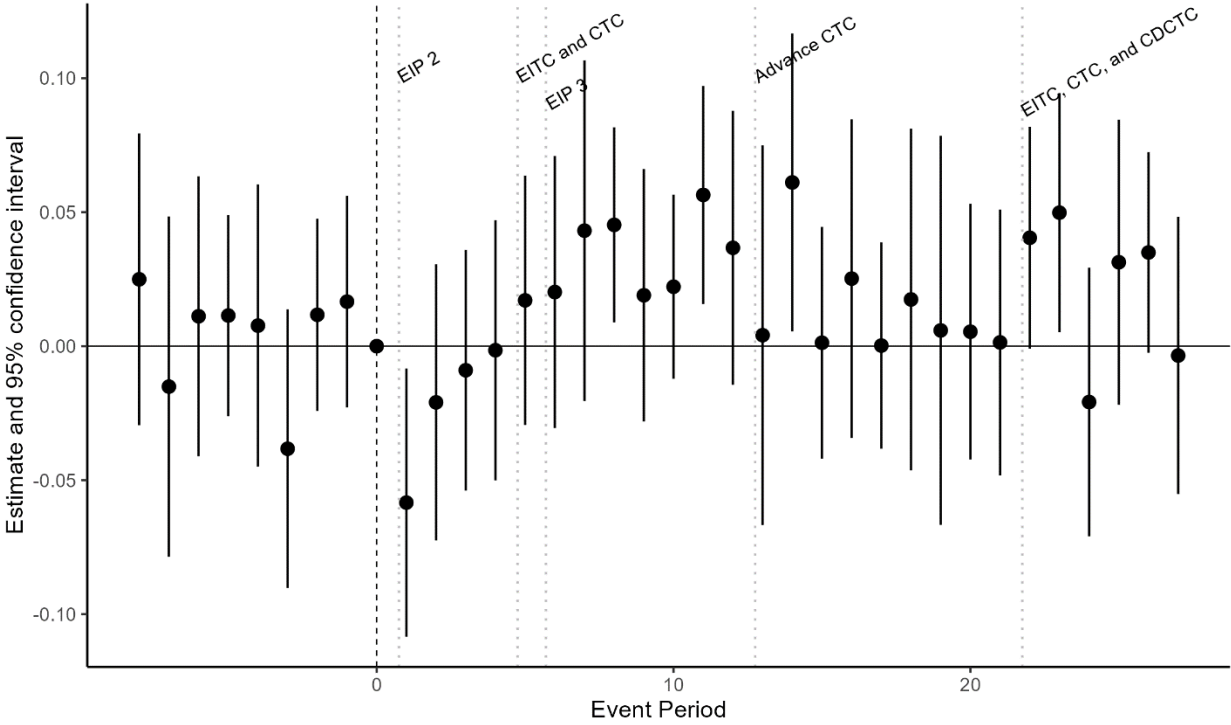
Notes: Author’s calculation based on data from the United States Census Bureau’s Household Pulse Survey waves 13 to 48. Sample (N=604,922) consists of respondents who answered questions on household income, marital status, and difficulty paying for usual expenses and lived in a household with a pre-tax annual income of less than \$50,000. All models include these variables: state fixed effects, wave fixed effects, state and wave interaction effects, pre-tax annual household income category, marital status, interaction between income category and marital status, household size, employment status in the last 7 days, homeownership status, educational attainment, race, Hispanic origin, gender assigned at birth, age, and SNAP reception. Household-level weights are used in the analysis, and standard errors are clustered at the state level. Error bars show 95% confidence intervals for the estimated associations. On average, between August and December 2020 (i.e., in the five months before the beginning of EIP2 payments), 28.49% of lower-income households with children (higher-eligible group) experienced food insufficiency.

Figure 10: Association between higher cash assistance eligibility and missed mortgage payments among lower-income households



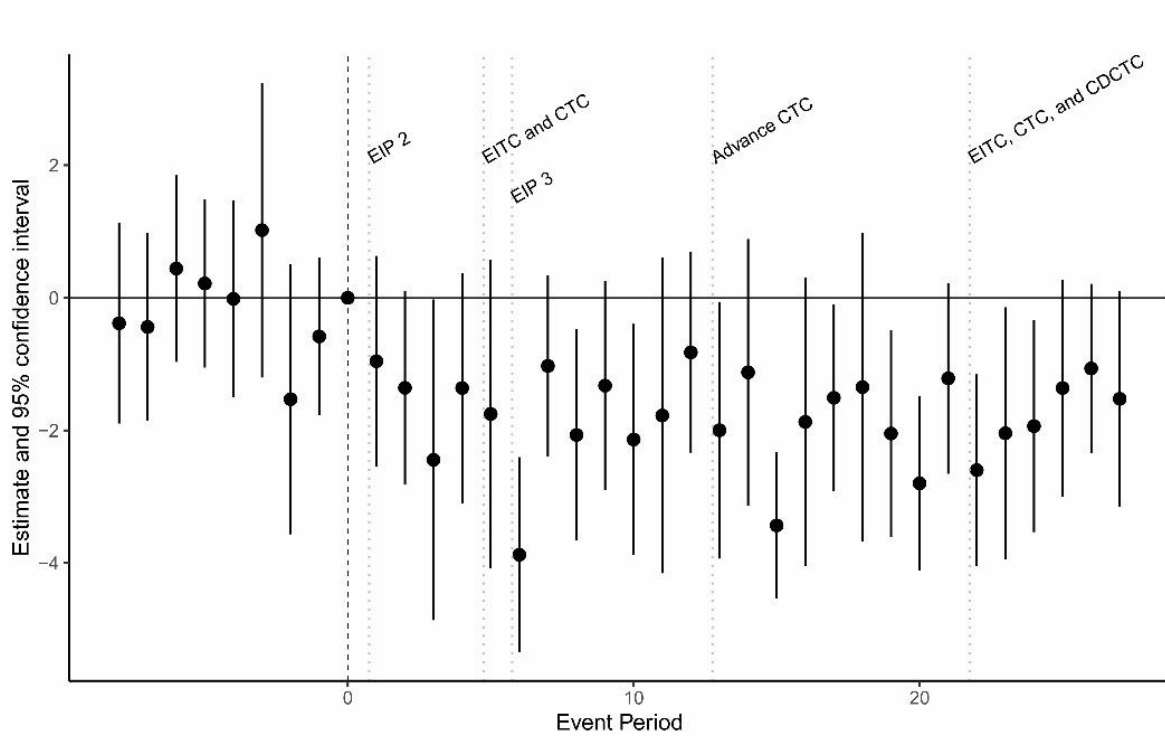
Notes: Author’s calculation based on data from the United States Census Bureau’s Household Pulse Survey waves 13 to 48. Sample (N=172,756) consists of respondents who answered questions on household income, marital status, and difficulty paying for usual expenses, lived in a house with a mortgage or loan, and had a pre-tax annual household income of less than \$50,000. All models include these variables: state fixed effects, wave fixed effects, state and wave interaction effects, pre-tax annual household income category, marital status, interaction between income category and marital status, household size, employment status in the last 7 days, educational attainment, race, Hispanic origin, gender assigned at birth, age, and SNAP reception. Household-level weights are used in the analysis, and standard errors are clustered at the state level. Error bars show 95% confidence intervals for the estimated associations. On average, between August and December 2020 (i.e., in the five months before the beginning of EIP2 payments), 77.56% of lower-income households with children (higher-eligible group) living in a house with a mortgage or loan were caught up on mortgage payments.

Figure 11: Association between higher cash assistance eligibility and missed rent payments among lower-income households



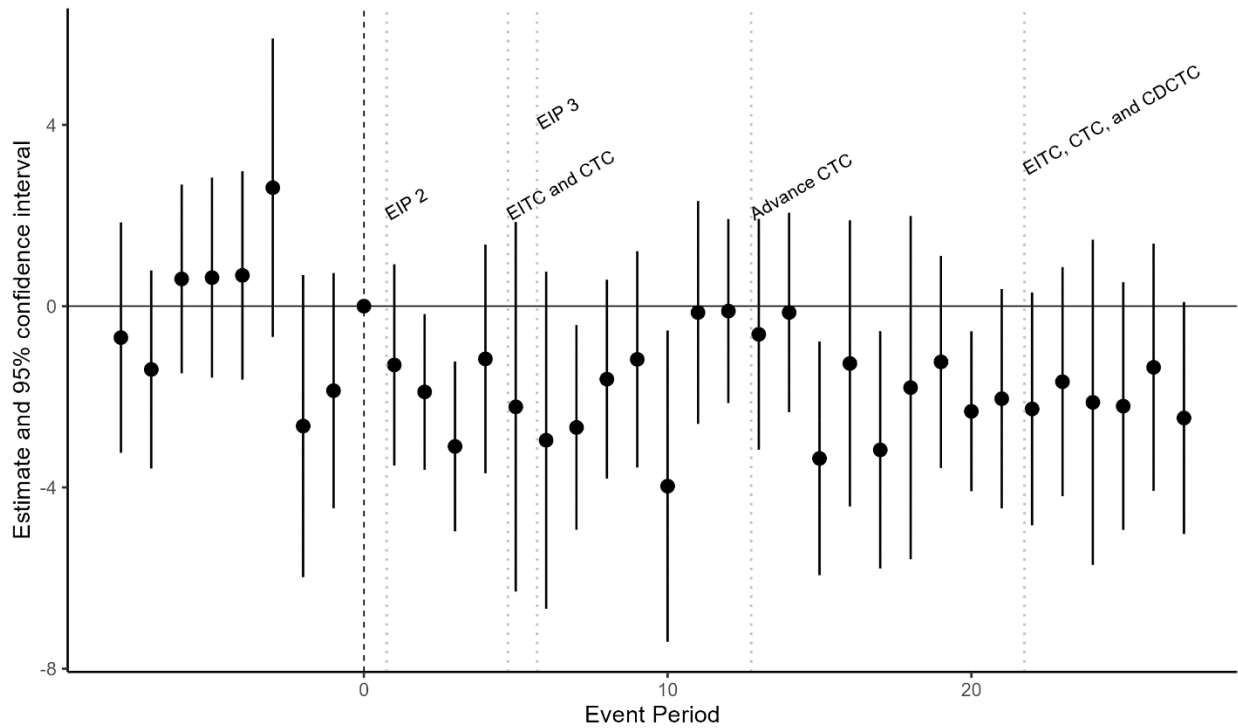
Notes: Author’s calculation based on data from the United States Census Bureau’s Household Pulse Survey waves 13 to 48. Sample (N= 252,705) consists of respondents who answered questions on household income, marital status, and difficulty paying for usual expenses, lived in a rented house, and had a pre-tax annual household income of less than \$50,000. All models include these variables: state fixed effects, wave fixed effects, state and wave interaction effects, pre-tax annual household income category, marital status, interaction between income category and marital status, household size, employment status in the last 7 days, educational attainment, race, Hispanic origin, gender assigned at birth, age, and SNAP reception. Household-level weights are used in the analysis, and standard errors are clustered at the state level. Error bars show 95% confidence intervals for the estimated associations. On average, between August and December 2020 (i.e., in the five months before the beginning of EIP2 payments), 71% of lower-income households with children (higher-eligible group) living in a rented house were caught up on rent payments.

Figure 12: Association between higher cash assistance eligibility and financial hardship experienced by lower-income households (alternative operationalization of higher cash assistance eligibility)



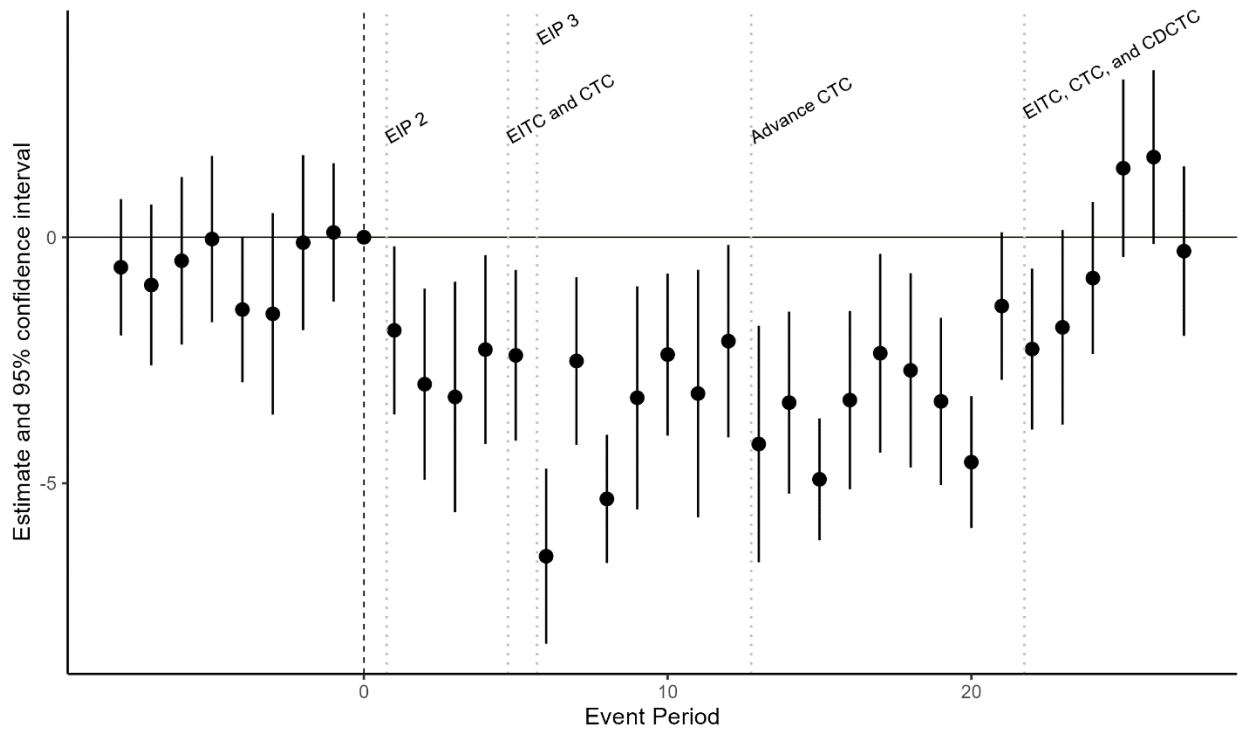
Notes: Author’s calculation based on data from the United States Census Bureau’s Household Pulse Survey waves 13 to 48. Sample (N=604,922) consists of respondents who answered questions on household income, marital status, and difficulty paying for usual expenses and lived in a household with a pre-tax annual income of less than \$50,000. All models include these variables: state fixed effects, wave fixed effects, state and wave interaction effects, pre-tax annual household income category, marital status, interaction between income category and marital status, household size, employment status in the last 7 days, homeownership status, educational attainment, race, Hispanic origin, gender assigned at birth, age, and SNAP reception. Household-level weights are used in the analysis, and standard errors are clustered at the state level. Error bars show 95% confidence intervals for the estimated associations.

Figure 13: Association between higher cash assistance eligibility and financial hardship experienced by lower-income households with children



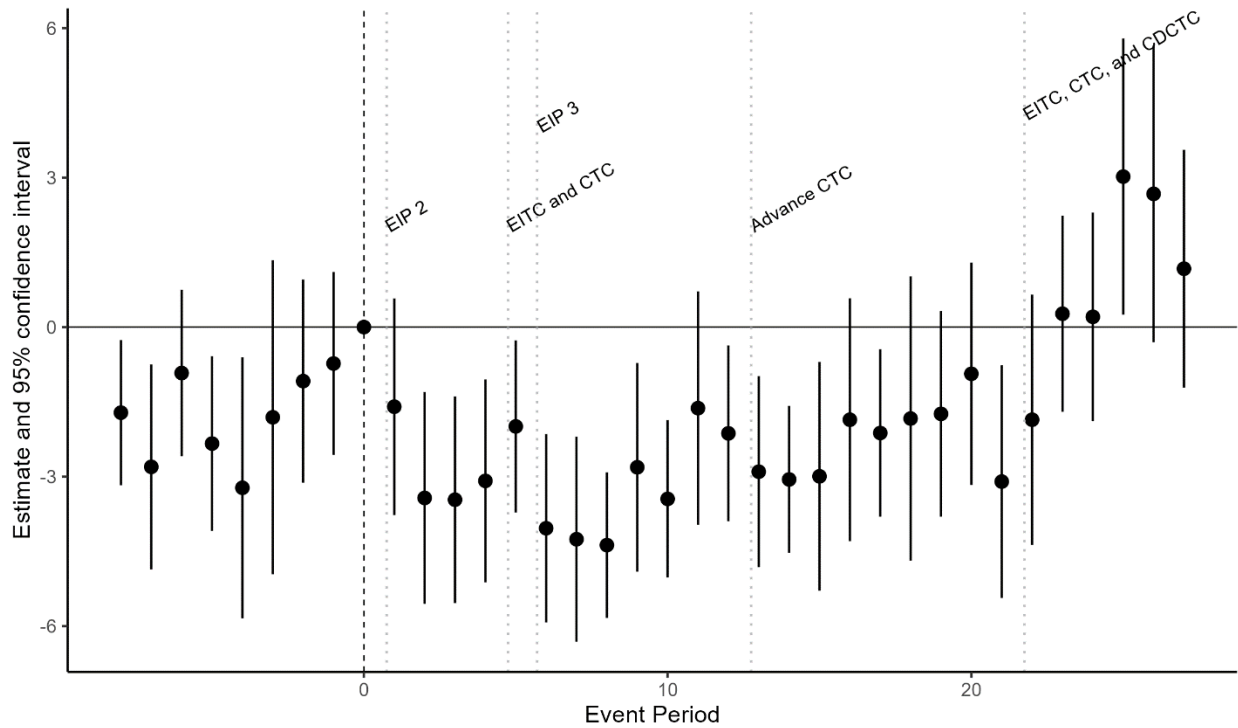
Notes: Author’s calculation based on data from the United States Census Bureau’s Household Pulse Survey waves 13 to 48. Sample (N=168,170) consists of respondents who answered questions on household income, marital status, and difficulty paying for usual expenses and lived in a household with a pre-tax annual income of less than \$50,000 and with at least one child under 18. All models include these variables: state fixed effects, period fixed effects, state and period interaction effects, pre-tax annual household income category, marital status, interaction between income category and marital status, household size, employment status in the last 7 days, homeownership status, educational attainment, race, Hispanic origin, gender assigned at birth, age, and SNAP reception. Household-level weights are used in the analysis, and standard errors are clustered at the state level. Error bars show 95% confidence intervals for the estimated associations.

Figure 14: Association between higher cash assistance eligibility and financial hardship experienced by households



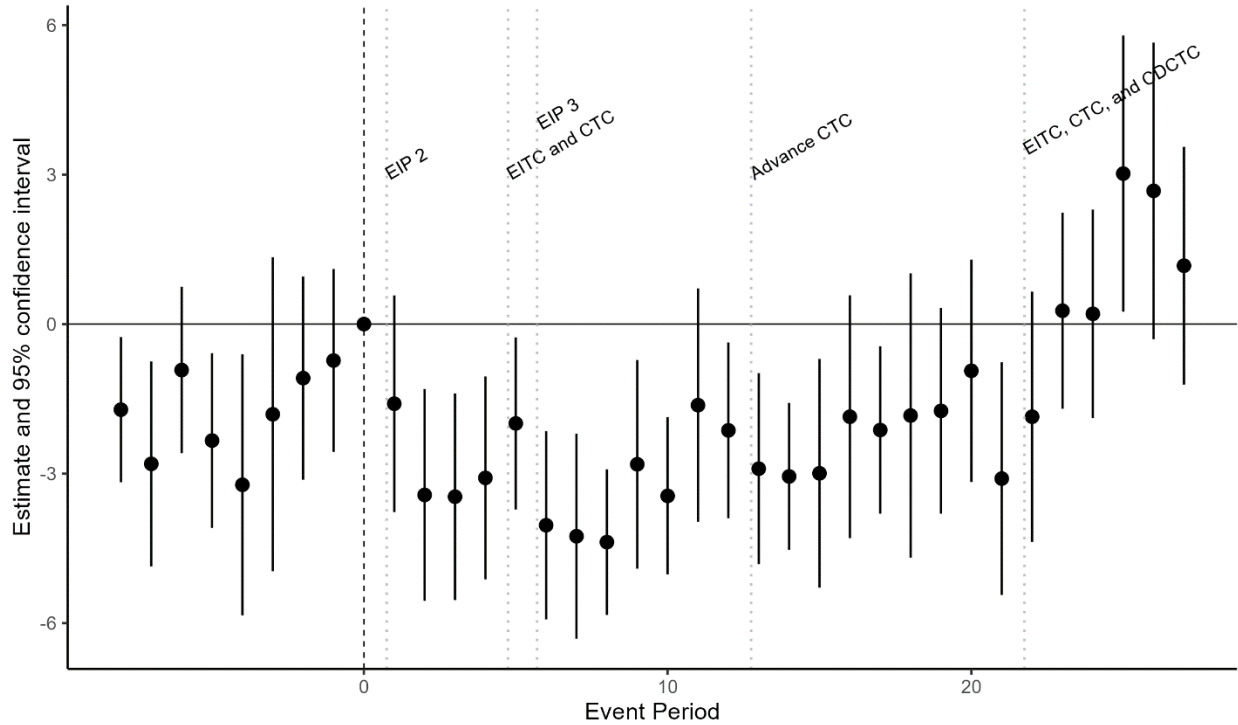
Notes: Author’s calculation based on data from the United States Census Bureau’s Household Pulse Survey waves 13 to 48. Sample (N=2,034,398) consists of respondents who answered questions on household income, marital status, and difficulty paying for usual expenses. All models include these variables: state fixed effects, wave fixed effects, state and wave interaction effects, pre-tax annual household income category, marital status, interaction between income category and marital status, household size, employment status in the last 7 days, homeownership status, educational attainment, race, Hispanic origin, gender assigned at birth, age, and SNAP reception. Household-level weights are used in the analysis, and standard errors are clustered at the state level. Error bars show 95% confidence intervals for the estimated associations. On average, between August and December 2020 (i.e., in the five months before the beginning of EIP2 payments), 40.61% of households with children (higher-eligible group) experienced financial hardship.

Figure 15: Association between higher cash assistance eligibility and financial hardship experienced by households with annual income between \$50,000 and \$100,000



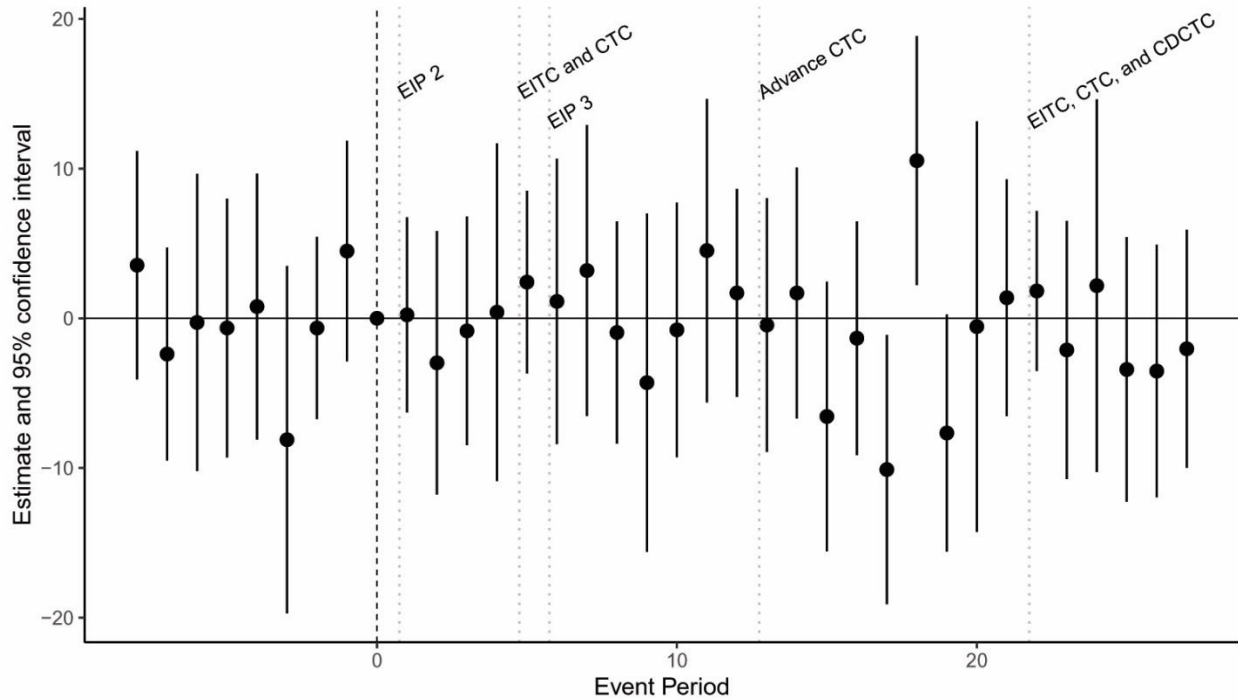
Notes: Author’s calculation based on data from the United States Census Bureau’s Household Pulse Survey waves 13 to 48. Sample (N=646,406) consists of respondents who answered questions on household income, marital status, and difficulty paying for usual expenses and lived in a household with a pre-tax annual income between \$50,000 and \$100,000. All models include these variables: state fixed effects, wave fixed effects, state and wave interaction effects, pre-tax annual household income category, marital status, interaction between income category and marital status, household size, employment status in the last 7 days, homeownership status, educational attainment, race, Hispanic origin, gender assigned at birth, age, and SNAP reception. Household-level weights are used in the analysis, and standard errors are clustered at the state level. Error bars show 95% confidence intervals for the estimated associations. On average, between August and December 2020 (i.e., in the five months before the beginning of EIP2 payments), 38.22% of households with pre-tax annual income between \$50,000 and \$100,000 and with children (higher-eligible group) experienced financial hardship.

Figure 16: Association between higher cash assistance eligibility and financial hardship experienced by households with annual income above \$100,000



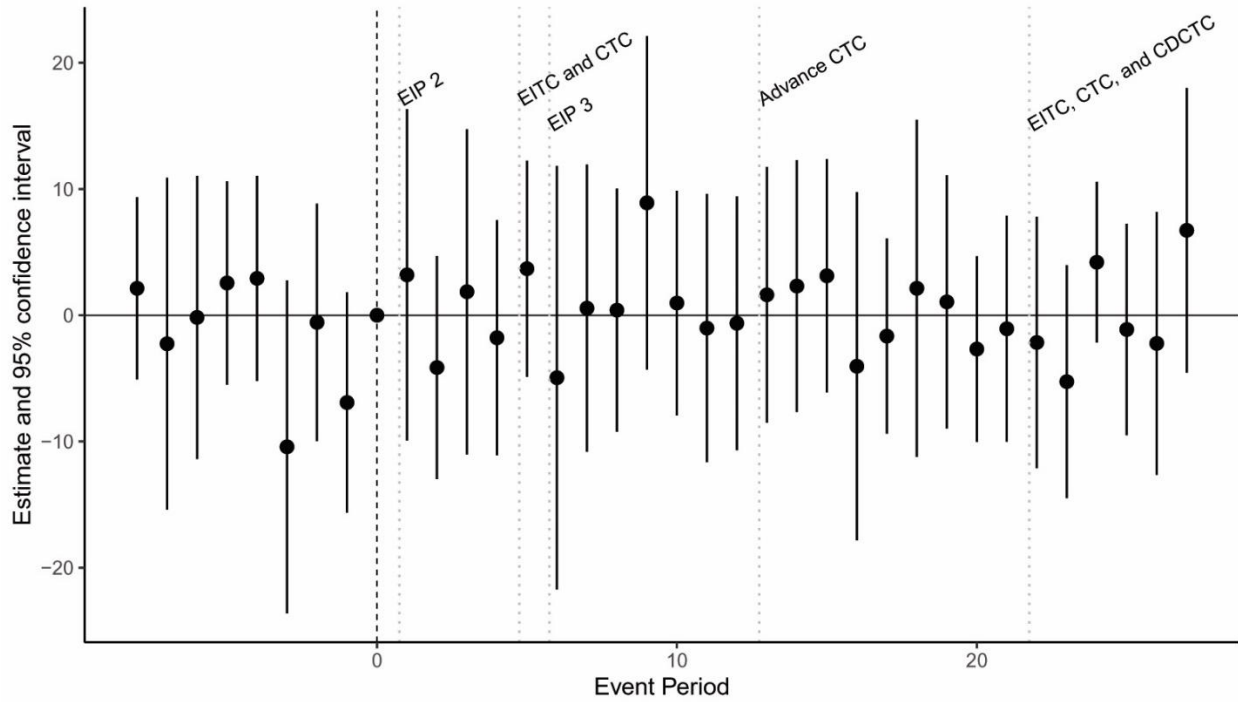
Notes: Author’s calculation based on data from the United States Census Bureau’s Household Pulse Survey waves 13 to 48. Sample (N=783,070) consists of respondents who answered questions on household income, marital status, and difficulty paying for usual expenses and lived in a household with a pre-tax annual income above \$100,000. All models include these variables: state fixed effects, wave fixed effects, state and wave interaction effects, pre-tax annual household income category, marital status, interaction between income category and marital status, household size, employment status in the last 7 days, homeownership status, educational attainment, race, Hispanic origin, gender assigned at birth, age, and SNAP reception. Household-level weights are used in the analysis, and standard errors are clustered at the state level. Error bars show 95% confidence intervals for the estimated associations. On average, between August and December 2020 (i.e., in the five months before the beginning of EIP2 payments), 14.96% of households with pre-tax annual income above \$100,000 and with children (higher-eligible group) experienced financial hardship.

Figure 17: Heterogeneity in the association between higher cash assistance eligibility and financial hardship experienced by lower-income households based on marital status (non-married female vs. married female)



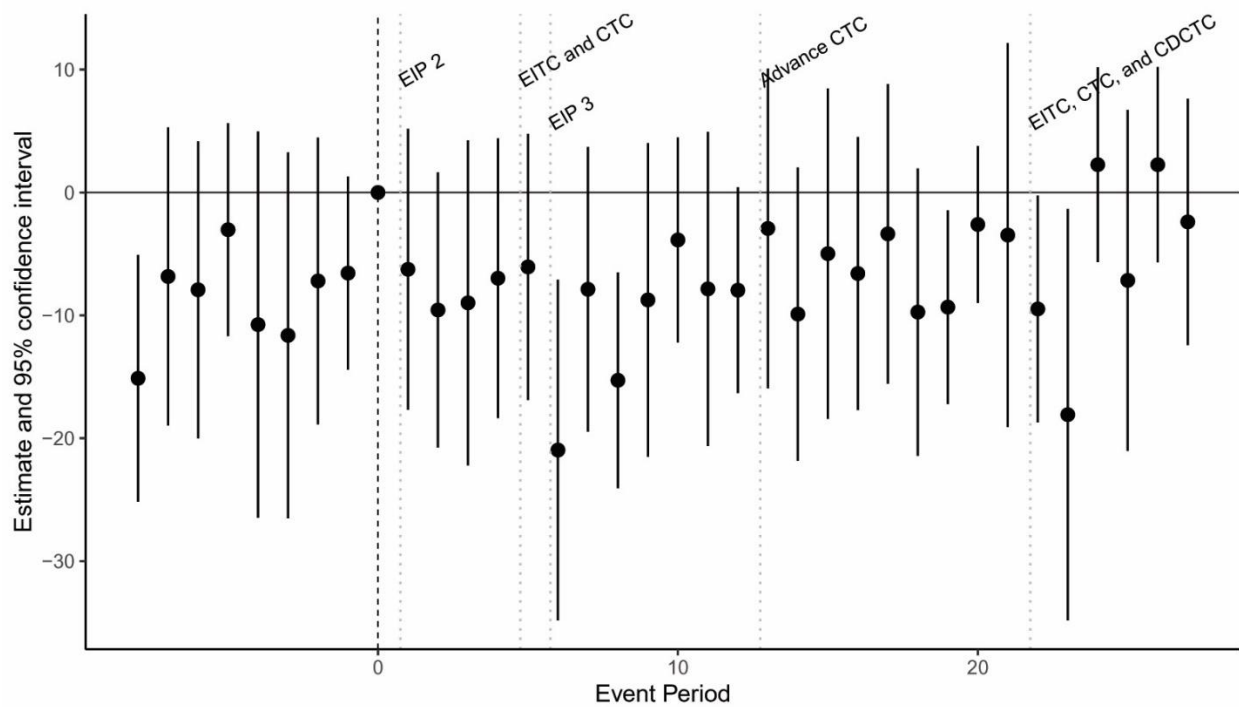
Notes: Author’s calculation based on data from the United States Census Bureau’s Household Pulse Survey waves 13 to 48. Sample (N=401,685) consists of female respondents who answered questions on household income, marital status, and difficulty paying for usual expenses and lived in a household with a pre-tax annual income of less than \$50,000. All models include these variables: state fixed effects, wave fixed effects, state and wave interaction effects, pre-tax annual household income category, marital status, interaction between income category and marital status, household size, employment status in the last 7 days, homeownership status, educational attainment, race, Hispanic origin, age, and SNAP reception. Household-level weights are used in the analysis, and standard errors are clustered at the state level. Error bars show 95% confidence intervals for the estimated associations.

Figure 18: Heterogeneity in the association between higher cash assistance and financial hardship experienced by lower-income households based on racial identity (Black vs. Non-Black)



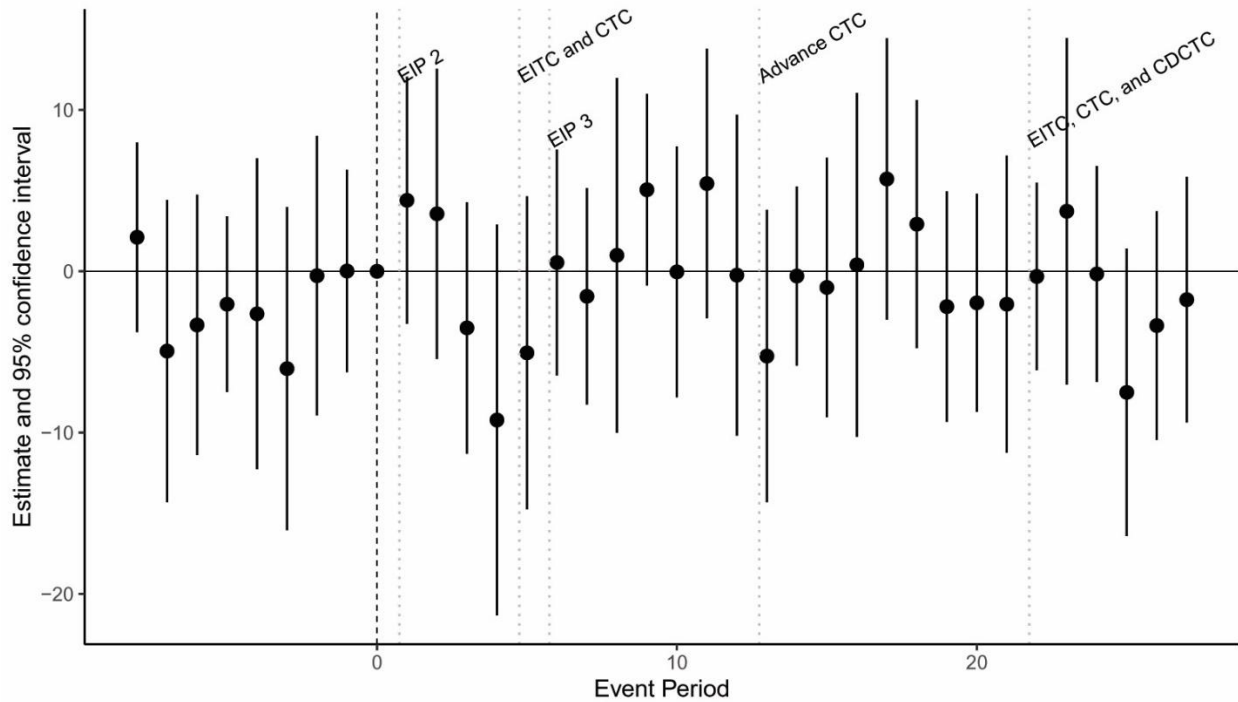
Notes: Author's calculation based on data from the United States Census Bureau's Household Pulse Survey waves 13 to 48. Sample (N=604,922) consists of respondents who answered questions on household income, marital status, and difficulty paying for usual expenses and lived in a household with a pre-tax annual income of less than \$50,000. All models include these variables: state fixed effects, wave fixed effects, state and wave interaction effects, pre-tax annual household income category, marital status, interaction between income category and marital status, household size, employment status in the last 7 days, homeownership status, educational attainment, Hispanic origin, gender assigned at birth, age, and SNAP reception. Household-level weights are used in the analysis, and standard errors are clustered at the state level.

Figure 19: Heterogeneity in the association between higher cash assistance eligibility and financial hardship experienced by lower-income households based on Hispanic origin (Non-Hispanic vs. Hispanic)



Notes: Author's calculation based on data from the United States Census Bureau's Household Pulse Survey waves 13 to 48. Sample (N=604,922) consists of respondents who answered questions on household income, marital status, and difficulty paying for usual expenses and lived in a household with a pre-tax annual income of less than \$50,000. All models include these variables: state fixed effects, wave fixed effects, state and wave interaction effects, pre-tax annual household income category, marital status, interaction between income category and marital status, household size, employment status in the last 7 days, homeownership status, educational attainment, race, gender assigned at birth, age, and SNAP reception. Household-level weights are used in the analysis, and standard errors are clustered at the state level.

Figure 20: Heterogeneity in the association between higher cash assistance eligibility and financial hardship experienced by lower-income households based on household income category (less than \$25,000 vs. \$25,000-\$50,000)



Notes: Author’s calculation based on data from the United States Census Bureau’s Household Pulse Survey waves 13 to 48. Sample (N=604,922) consists of respondents who answered questions on household income, marital status, and difficulty paying for usual expenses and lived in a household with a pre-tax annual income of less than \$50,000. All models include these variables: state fixed effects, period fixed effects, state and period interaction effects, marital status, household size, employment status in the last 7 days, homeownership status, educational attainment, race, gender assigned at birth, age, and SNAP reception. Household-level weights are used in the analysis, and standard errors are clustered at the state level. Error bars show 95% confidence intervals for the estimated associations.

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