APPENDICES: THE EXPANDED CHILD TAX CREDIT AND ECONOMIC WELLBEING OF LOW-INCOME FAMILIES

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APPENDIX 1 – ADDITIONAL INFORMATION ON MEASURES AND DATA

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

Shortly after the passage of the American Rescue Plan Act in March 2021, we partnered with Propel, the makers of the Providers application. Propel runs a monthly survey with Providers users to better understand the needs of their users. When we partnered with them they allowed us to include a few additional measures on their monthly survey, but in the interest of minimizing respondent burdens we tried to keep the new questions to a minimum. Additionally, because Propel tracks measures over time, we did not want to change any questions they regularly asked their users. Thus, the questions we included in this study of economic wellbeing were a mix of new questions we added to their survey (like the 2-item food insecurity scale) and questions they were already asking their users. We aimed to select (or add) measures of material hardship that mirror those used in other studies (e.g., the Survey of Income and Program Participation). The additional measures of economic wellbeing and of labor supply were questions Propel was already asking their users on a regular basis.

Measures of Material Hardship

Food Insecurity

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

Medical Hardship

Medical hardship is assessed with two questions that are commonly assessed in the material hardship literature: whether in the last 30 days the respond had "Not visited the doctor when you

needed to because of the cost" or "Not visited the dentist when you needed because of the cost" (α=0.64). These measures were selected as they are frequently used in the material hardship literature (e.g., Rodems & Shaefer, 2020; Pilkauskas et al., 2017). Items are summed and then standardized.

Severe Housing Hardship

Inability to pay rent or mortgage is a common measure of material hardship. Unfortunately the available survey questions asking about rent, do not allow us to create a good measure of rental hardship. We do, however, have four good indicators of more severe housing hardships. The first measure is whether the respondent was evicted by a landlord or court order in the last 30 days, the second assesses shelter use – "have you slept or stayed in a shelter at least one night in the past month". A third indicator relies on a question that asks respondents about their current living situation that gets at homelessness. If a respondent says they do not currently have a home, we code them as homeless. The final measure asks respondents "Do you currently live in a house, apartment or other stable housing? Answer "no" if you currently live in a motel, car or shelter." We code respondents as not having stable housing if they say no to this question. These indicators of severe housing hardships are frequently included in studies of material hardship (e.g., Pilkauskas et al., Forthcoming). We create an index summing across these four measures (α=0.64) and then we standardize the measure.

Bill Hardship

Another common measure of material hardship is of bill hardships. For this measure we include three questions, two focused on utility bills and one on general bill paying. These measures often vary across studies. Some consider all bills (like rent), while others separately consider utilities. The two utility hardship questions are: "In the last 30 days, did you pay the full amount of your utility bills (e.g., water, gas, oil, electric)?" and the second question asks if the respondent had their utilities shut off in the last 30 days. We also include a single bill hardship item, "Did you decide not to pay a bill". This item is somewhat unusual as deciding not to pay is distinct from not actually paying. Unfortunately, we cannot distinguish these two concepts with this measure. We sum the three measures (α= 0.39) and standardize the measure (M=0, SD=1). We included these items as an index, similar to other research (e.g., Iceland, 2021), but recognize that this scale has a very low alpha. (None of the three items ever attain statistical significance individually in any of our specifications).

Transportation hardship

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

we note, this one-item measure likely does not fully capture the likelihood of experiencing transportation insecurity.

Material Hardship Scale

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

Additional Measures of Economic Wellbeing

Have Needs Met

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

Cash on Hand

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

How Long Will Cash Last?

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

Hardship Avoidance

Rely on Friends and Family for Food

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

Food Pantry Use

Respondents were asked if they had visited a food pantry in the last 30 days. We consider this a hardship avoidance technique as those who got food from a food pantry may have been less likely

to experience food insecurity – or may have been able to put some of their money towards other living expenses. We create a dummy variable where 1= yes the respondent went to a food pantry.

Borrow Money from Friends/Family

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

Labor Force Participation

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

REFERENCES

Iceland, J. (2021). Hardship among immigrants and the native-born in the United States. *Demography*, 58(2), 655-684.

Murphy, A. K., Gould-Werth, A. & Griffin, J. (2021). Validating the sixteen-item transportation security index in a nationally representative sample: A confirmatory factor analysis. *Survey Practice* 14 (1). https://doi.org/10.29115/SP-2021-0011.

Murphy, A., McDonald-Lopez, K., Pilkauskas, N.V. & Gould-Werth, A. (2022). The prevalence of transportation insecurity. *Socius, 8, 23780231221121060.*

Pilkauskas, N. V., Campbell, C., & Wimer, C. (2017). Giving unto others: Private financial transfers and hardship among families with children. *Journal of Marriage and Family*, *79*(3), 705-722.

Pilkauskas, N. V., Jacob, B. A., Rhodes, E., Richard, K., & Shaefer, H. L. (Forthcoming). The COVID Cash Transfer Study: The Impacts of a One-Time Unconditional Cash Transfer on the Well-Being of Families Receiving SNAP in Twelve States. *Journal of Policy Analysis and Management*. https://doi.org/10.1002/pam.22464

Rodems, R., & Shaefer, H. L. (2020). Many of the kids are not alright: Material hardship among children in the United States. *Children and Youth Services Review*, *112*, 104767.

APPENDIX 2 – REWEIGHTING PROCEDURES

This appendix describes the reweighting procedures used in the robustness section of the paper (results shown in appendix tables 10 and 11). Although the Providers data are an excellent data source of families living in, or near, poverty, one potential concern is the extent to which the these data represent the overall population of families with children participating in SNAP as those who use an application to track their benefits may differ from other SNAP families.

As described in more detail in the manuscript, we compared the similarity of respondents' sociodemographic characteristics to those in three independent, nationally-representative surveys that include large samples of SNAP participants -- the 2019 American Community Survey (ACS), the 2019 Current Population Survey (CPS), and the 2019 SNAP Quality Control Data (SNAP QC). This evaluation revealed that the demographic profiles of Providers respondents resembled those of participants in other nationally representative samples (see Table 1). To further ensure representativeness of our estimates, we also constructed a series of weights that align Providers respondents to observable characteristics in each of the three benchmark samples.

Weights are constructed in two steps. First, in an effort to align the ACS, CPS, and SNAP QC samples with our the population of interest, we restrict each sample to households with at least one coresident child under the age of 18. We then further restrict the ACS and CPS samples to individuals who report having received SNAP benefits in the last 12 months and who are designated the household reference person. For the SNAP QC data, we further restrict the sample to household heads deemed eligible for the SNAP case under review.

Second, we calculate the ratio of the weighted proportion of a particular subgroup among the total sample of respondents in each benchmark sample (the ACS, CPS, and SNAP QC sample) relative to the corresponding proportion of that subgroup in Providers sample.[1] To form subgroups for this exercise, we use every combination of sociodemographic covariate available to us across both the Propel and benchmark datasets. These characteristics include age (18-24 years, 25-34 years, 35-44 years, 45-54 years, or 55+ years), race/ethnicity (Black non-Hispanic, white non-Hispanic, Hispanic, or other non-Hispanic) highest level of education (less than high school, high school, some college, or college or more), sex (male or female), and partner status (whether the respondent has a partner/spouse; however, this variable is not available in the SNAP QC sample).

Following this second step, we obtain three sets of weights (one for each ratio based on different pairings of the Providers sample and ACS, CPS, and SNAP QC benchmark samples). The logic of this reweighting technique is that a weight greater than 1 indicates that a demographic subgroup is underrepresented in the Providers sample relative to the benchmark sample. Conversely, a weight less than 1 indicates that a demographic subgroup is overrepresented in the Providers sample. Our reweighting approach allows us to adjust for differences in the distributions of observed individuals characteristics between the Providers and benchmark samples by either up-weighting or down-weighting specific subgroups. This weighting technique is similar to that implemented by Schneider and Harknet (2022) in their prior research based on non-probability samples recruited through Facebook. Appendix Table 10 shows that applying the weights successfully balance observable characteristics of Providers respondents to resemble each of the benchmark samples.

[1] To produce weighted proportions for each of the benchmark samples, we use, respectively, the ACS, CPS, and SNAP QC provided weights, which allow for nationally-representative estimates.

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

	Average	Pre-CTC	Post-CTC
Age			
18-24	0.07	0.07	0.07
25-34	0.40	0.38	0.41
35-44	0.35	0.36	0.35
45-54	0.12	0.13	0.11
55+	0.05	0.07	0.05
Race/ethnicity			
Black	0.35	0.31	0.37
White	0.35	0.38	0.34
Hispanic	0.21	0.22	0.21
Other	0.09	0.10	0.09
Education			
Less than High School	0.23	0.22	0.24
High School	0.39	0.37	0.40
Some College	0.27	0.28	0.26
Associate Degree +	0.10	0.12	0.10
Female	0.94	0.94	0.94
Urbanicity			
Urban	0.46	0.44	0.47
Rural	0.32	0.32	0.32
Suburban	0.22	0.24	0.21
Household structure			
Partner/spouse	0.30	0.33	0.29
Household size	4.30	4.26	4.32
(SD)	1.64	1.65	1.64
Number of kids			
1	0.25	0.26	0.24
2	0.31	0.32	0.31
3	0.21	0.21	0.21
4	0.12	0.12	0.13
5+	0.10	0.09	0.11
Receive food stamps	0.85	0.85	0.85
N	20,545	5,265	15,280

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

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

	Self-reported CTC receipt (0/1)		Self-reported CTC $$ (in $100's)	
	(1)	(2)	(3)	(4)
Hardship index (14-item scale)	-0.098 ***	-0.096 ***	-0.019 ***	-0.018 ***
	(0.018)	(0.018)	(0.003)	(0.003)
Food hardship (4-item scale)	-0.085 ***	-0.08 ***	-0.019 ***	-0.016 ***
	(0.018)	(0.018)	(0.003)	(0.003)
Medical hardship (2-item scale)	-0.022	-0.02	-0.005 **	-0.004
	(0.017)	(0.017)	(0.003)	(0.003)
Severe housing hardship (4-item scale)	-0.148 ***	-0.149 ***	-0.021 ***	-0.023 ***
	(0.017)	(0.017)	(0.003)	(0.003)
Transportation hardship	-0.036 ***	-0.036 ***	-0.005 ***	-0.005 ***
	(0.008)	(0.008)	(0.001)	(0.001)
Bill hardship (3-item scale)	0.016	0.013	0.000	-0.001
	(0.018)	(0.018)	(0.001)	(0.003)
Household size fixed effects	Yes	No	Yes	No
Number of children fixed effects	No	Yes	No	Yes
N	19,154			

Note: Standard errors in parentheses. Scales are in standard deviation units (M=0; SD=1). Sample is restricted to households with at least one child under the age of 18. All models include all demographic controls (age, gender, education, race/ethnicity, partnered, urbanicity), state fixed effects, month fixed effects, and contextual (SNAP/PEBT/UI) controls. Models in columns 1 and 3 include household size fixed effects. Models in columns 2 and 4 include number of children fixed effects. Regressions for severe housing hardship have 20,545 observations.

*p <0 .10;**p 0< .05; ***p < 0.01

Appendix Table 3: Effect of the Child Tax Credit on Material Hardship, by Race/Ethnicity, Intent to Treat Estimates

	Black		White		Hispanic	
	(1)	(2)	(3)	(4)	(5)	(6)
Hardship index (14-item scale)	-0.012 ***	-0.016 ***	-0.010 *	-0.005	-0.002	0.003
	(0.004)	(0.006)	(0.005)	(0.007)	(0.004)	(0.006)
Food hardship (4-item scale)	-0.013 ***	-0.015 **	-0.019 ***	-0.007	-0.009 **	-0.001
	(0.004)	(0.006)	(0.005)	(0.008)	(0.004)	(0.006)
Medical hardship (2-item scale)	-0.008 **	-0.006	-0.003	-0.002	-0.008 *	-0.002
	(0.004)	(0.006)	(0.005)	(0.007)	(0.005)	(0.007)
Severe housing hardship (4-item scale)	-0.003	-0.010	-0.007	-0.003	0.011 ***	0.008
	(0.005)	(0.007)	(0.005)	(0.007)	(0.004)	(0.006)
Transportation hardship	0.001	0.001	-0.001	0.002	0.002	0.003
	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
Bill hardship (3-item scale)	-0.006	-0.012 *	0.008	-0.001	0.005	0.002
	(0.004)	(0.006)	(0.005)	(0.007)	(0.002)	(0.003)
Household size fixed effects	Yes	No	Yes	No	Yes	No
Number of children fixed effects	No	Yes	No	Yes	No	Yes
N						

Note: Coefficients represent the effect of a $100 increase in the CTC. Intent-to-treat (ITT) estimates. Standard errors in parentheses. Scales are in standard deviation units (M=0; SD=1). Sample restricted to households with at least one child under the age of 18. All models include all demographic controls (age, gender, education, partnered, urbanicity), state fixed effects, month fixed effects, and contextual (SNAP/PEBT/UI) controls. Models in columns 1, 3 and 5 include household size fixed effects. Models in columns 2, 4 and 6 include number of children fixed effects.

*p <0 .10;**p 0< .05; ***p < 0.01

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

	Black				White				Hispanic			
	ITT		LATE		ITT		LATE		ITT		LATE	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Needs/Cash on hand												
Have needs met	0.004 *	0.005 *	0.020 *	0.028 *	0.002	-0.003	0.007	-0.010	-0.002	-0.001	-0.012	-0.013
	(0.002)	(0.003)	(0.010)	(0.017)	(0.003)	(0.003)	(0.008)	(0.011)	(0.002)	(0.003)	(0.017)	(0.043)
Total $ on hand ($)	0.881	1.096	4.732	6.595	1.328	-3.383	4.074	-11.118 **	1.687	1.693	12.483	21.133
	(0.844)	(1.212)	(4.531)	(7.291)	(1.106)	(1.517)	(3.388)	(5.053)	(1.099)	(1.608)	(8.167)	(20.461)
Time $ will last (days)	0.004	0.021	0.022	0.125	0.012	-0.033	0.036	-0.108	0.005	0.029	0.034	0.366
	(0.015)	(0.021)	(0.078)	(0.126)	(0.019)	(0.025)	(0.057)	(0.084)	(0.018)	(0.026)	(0.131)	(0.332)
Hardship avoidance												
Relied on friends/family for food	-0.005 ***	-0.001	-0.025 ***	-0.008	-0.005 **	0.001	-0.016 ***	0.004	-0.004 ***	-0.002	-0.032 ***	-0.031
	(0.002)	(0.002)	(0.009)	(0.014)	(0.002)	(0.003)	(0.006)	(0.009)	(0.002)	(0.002)	(0.012)	(0.029)
Visited food pantry	0.000	0.000	-0.002	0.002	0.001	0.001	0.004	0.002	0.000	-0.002	-0.004	-0.019
	(0.002)	(0.002)	(0.008)	(0.013)	(0.002)	(0.003)	(0.007)	(0.01)	(0.002)	(0.003)	(0.013)	(0.033)
Borrow from friends or family	0.002	0.004	0.011	0.022	-0.003	0.000	-0.010	0.000	-0.003	0.002	-0.024	0.029
	(0.002)	(0.003)	(0.011)	(0.018)	(0.003)	(0.004)	(0.008)	(0.012)	(0.002)	(0.004)	(0.018)	(0.045)
Employment												
Any employment	-0.003	-0.002	-0.018	-0.013	-0.002	-0.003	-0.007	-0.011	-0.003	-0.001	-0.019	-0.016
	(0.002)	(0.003)	(0.011)	(0.018)	(0.002)	(0.003)	(0.008)	(0.011)	(0.002)	(0.004)	(0.018)	(0.044)
Full-time work	-0.002	-0.002	-0.010	-0.015	0.001	-0.003	0.002	-0.010	-0.002	-0.005	-0.018	-0.058
	(0.002)	(0.002)	(0.009)	(0.015)	(0.002)	(0.003)	(0.006)	(0.009)	(0.002)	(0.003)	(0.014)	(0.039)
Part-time work	-0.002	0.000	-0.008	0.002	-0.003	0.000	-0.010	0.000	0.000	0.003	-0.001	0.042
	(0.002)	(0.002)	(0.009)	(0.014)	(0.002)	(0.003)	(0.006)	(0.009)	(0.002)	(0.003)	(0.015)	(0.039)
Labor force participation	-0.004 **	-0.004 *	-0.022 **	-0.026 *	-0.003	-0.001	-0.010	-0.004	0.003	0.005	0.019	0.057
	(0.002)	(0.002)	(0.010)	(0.015)	(0.002)	(0.003)	(0.008)	(0.011)	(0.002)	(0.003)	(0.016)	(0.04)
F-statistic	-	-	305.3 ***	119.2 ***	-	-	661.4 ***	305.9 ***	-	-	117.3 ***	19.3 ***
First stage coefficient	-	-	18.6 **	16.6 ***	-	-	32.6 ***	30.4 ***	-	-	13.5 ***	8.0 ***
Household size fixed effects	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Number of children fixed effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
	6430				6146				3985			

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

*p <0 .10;**p 0< .05; ***p < 0.01

Appendix 5: Effect of the Child Tax Credit on Material Hardship, by Monthly Earnings, Intent-to-Treat Estimates

	Earn less than $500		Earn more than $500	
	(1)	(2)	(3)	(4)
Hardship index (14-item scale)	-0.006	-0.008	-0.009 ***	-0.008 *
	(0.004)	(0.006)	(0.003)	(0.005)
Food hardship (4-item scale)	-0.011 ***	-0.010 *	-0.016 ***	-0.012 **
	(0.004)	(0.006)	(0.003)	(0.005)
Medical hardship (2-item scale)	-0.005	-0.002	-0.007 **	-0.003
	(0.004)	(0.005)	(0.004)	(0.005)
Severe housing hardship (4-item scale)	0.001	-0.005	0.000	-0.003
	(0.005)	(0.007)	(0.003)	(0.004)
Transportation hardship	0.001	-0.001	0.001	0.002
	(0.002)	(0.003)	(0.001)	(0.002)
Bill hardship (3-item scale)	0.001	-0.003	0.003	-0.003
	(0.004)	(0.006)	(0.004)	(0.005)
Household size fixed effects	Yes	No	Yes	No
Number of children fixed effects	No	Yes	No	Yes
N	7,040		10,390	

Note: Coefficients represent the effect of a $100 increase in the CTC. Intent-to-treat (ITT) estimates. Standard errors are in parentheses. Scales are in standard deviation units (M=0; SD=1). Sample restricted to households with at least one child under the age of 18. All models include all demographic controls (age, gender, education, partnered, urbanicity), state fixed effects, month fixed effects, and contextual (SNAP/PEBT/UI) controls. Models in columns 1 and 3 include household size fixed effects. Models in columns 2 and 4 include number of children fixed effects.

*p <0 .10;**p 0< .05; ***p < 0.01

Appendix Table 6: Effect of the Child Tax Credit on Basic Needs, Cash on Hand, Hardship Avoidance, and Employment, by Monthly Earnings

	Earn less than $500				Earn more than $500			
	ITT		LATE		ITT		LATE	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Needs/Cash on hand								
Have needs met	-0.003	0.000	-0.018	-0.001	0.004 **	0.001	0.016 **	0.003
	(0.002)	(0.003)	(0.012)	(0.019)	(0.002)	(0.002)	(0.007)	(0.01)
Total $ on hand ($)	0.464	-0.485	3.2135	-3.652	1.649 **	-0.016	6.304 **	-0.068
	(0.703)	(1.022)	(4.752)	(7.711)	(0.820)	(1.130)	(3.129)	(4.82)
Time $ will last (days)	-0.011	-0.003	-0.077	-0.024	0.012	0.003	0.046	0.014
	(0.013)	(0.019)	(0.090)	(0.145)	(0.013)	(0.018)	(0.049)	(0.076)
Hardship avoidance								
Relied on friends/family for food	-0.006 ***	-0.003	-0.043 ***	-0.026	-0.003 **	0.000	-0.011 **	0.001
	(0.002)	(0.002)	(0.011)	(0.017)	(0.001)	(0.002)	(0.005)	(0.007)
Visited food pantry	0.001	-0.001	0.007	-0.006	-0.002	-0.001	-0.007	-0.004
	(0.002)	(0.002)	(0.011)	(0.017)	(0.001)	(0.002)	(0.005)	(0.008)
Borrow from friends or family	0.001	0.002	0.003	0.012	-0.001	0.003	-0.004	0.014
	(0.002)	(0.003)	(0.013)	(0.021)	(0.002)	(0.002)	(0.007)	(0.01)
Employment								
Any employment	-0.001	0.001	-0.007	0.008	-0.003	-0.002	-0.010	-0.011
	(0.001)	(0.002)	(0.010)	(0.016)	(0.002)	(0.002)	(0.007)	(0.010)
Full-time work	0.000	0.000	-0.003	0.002	-0.001	-0.004 +	-0.006	-0.018 *
	(0.001)	(0.001)	(0.006)	(0.009)	(0.002)	(0.002)	(0.006)	(0.010)
Part-time work	0.000	0.001	-0.003	0.007	-0.001	0.002	-0.004	0.008
	(0.001)	(0.002)	(0.009)	(0.014)	(0.002)	(0.002)	(0.006)	(0.009)
Labor force participation	0.001	0.003	0.006	0.023	-0.002	-0.001	-0.006	-0.005
	(0.002)	(0.003)	(0.012)	(0.020)	(0.001)	(0.002)	(0.006)	(0.009)
F-statistic	-	-	234.2 ***	89.7 ***	-	-	867.3 ***	366.6 ***
First stage coefficient	-	-	14.8 ***	13.3 ***	-	-	26.3 ***	23.4 ***
Household size fixed effects	Yes	No	Yes	No	Yes	No	Yes	No
Number of children fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
N	7,040				10,390			

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

*p <0 .10;**p 0< .05; ***p < 0.01

Appendix Table 7: Pre-Post Parameterized Difference-in-Differences - Households without Children as the Comparison Group, Effects on Material Hardship

	ITT		LATE	
	(1)	(2)	(3)	(4)
Hardship index (14-item scale)	-0.002	-0.001	-0.007	-0.006
	(0.002)	(0.003)	(0.008)	(0.012)
Food hardship (4-item scale)	-0.007 ***	-0.005 *	-0.028 ***	-0.019 *
	(0.002)	(0.003)	(0.008)	(0.012)
Medical hardship (2-item scale)	-0.001	0.000	-0.004	-0.002
	(0.002)	(0.003)	(0.008)	(0.012)
Severe housing hardship (4-item scale)	-0.005 **	0.001	-0.022 **	0.005
	(0.002)	(0.003)	(0.008)	(0.012)
Transportation hardship	0.004 ***	0.003 ***	0.014 ***	0.014 ***
	(0.001)	(0.001)	(0.003)	(0.005)
Bill hardship (3-item scale)	0.007 ***	-0.001	0.026 ***	-0.003
	(0.002)	(0.003)	(0.008)	(0.012)
F-statistic	-	-	3792 ***	1725 ***
First stage coefficient	-	-	25.3 ***	24.5 ***
Household size fixed effects	Yes	No	Yes	No
Number of children fixed effects	No	Yes	No	Yes
N	30,265			

Note: Standard errors in parentheses. Scales are in standard deviation units (M=0; SD=1). Sample includes households with and without children (excludes individuals who live alone). All models include all demographic controls (age, gender, education, race/ethnicity, partnered, urbanicity), state fixed effects, month fixed effects, and contextual (SNAP/PEBT/UI) controls. Models in columns 1 and 3 include household size fixed effects. Models in columns 2 and 4 include number of children fixed effects. Regressions for severe housing hardship have 32,615 observations.

*p <0 .10;**p 0< .05; ***p < 0.01

Appendix Table 8: Effect of the Child Tax Credit on Economic Wellbeing Outcomes, Local Average Treatment Effects, in $100; Testing Time Periods

	Excluding August		Excluding January		Controlling for the date	
	(1)	(2)	(3)	(4)	(5)	(6)
Hardship index (14-item scale)	-0.035 ***	-0.041 **	-0.033 **	-0.037	-0.033 ***	-0.043 **
	(0.012)	(0.019)	(0.013)	(0.020)	(0.012)	(0.019)
Food hardship (4-item scale)	-0.067 ***	-0.055 ***	-0.068 ***	-0.051 **	-0.065 ***	-0.055 ***
	(0.013)	(0.019)	(0.013)	(0.020)	(0.012)	(0.019)
Medical hardship (2-item scale)	-0.031 **	-0.018	-0.031 **	-0.020	-0.031 ***	-0.020
	(0.012)	(0.019)	(0.013)	(0.019)	(0.012)	(0.019)
Severe housing hardship (4-item scale)	0.014	-0.001	0.017	0.003	0.015	0.002
	(0.012)	(0.019)	(0.013)	(0.020)	(0.012)	(0.019)
Transportation hardship	0.009	0.007	0.009	0.005	0.009 *	0.005
	(0.005)	(0.008)	(0.006)	(0.009)	(0.005)	(0.009)
Bill hardship (3-item scale)	0.009	-0.014	0.014	-0.014	0.011	-0.024
	(0.012)	(0.020)	(0.013)	(0.020)	(0.012)	(0.019)
F-statistic	1036.1	442.5	971.5	414.5	1078.8	413.7
First stage coefficient	33.2	30.6	33.0	30.3	33.3	30.1
Household size fixed effects	Yes	No	Yes	No	Yes	No
Number of children fixed effects	No	Yes	No	Yes	No	Yes
N	17,414		17,411		19,154	

Note: Coefficients represent the effect of a $100 increase in the CTC. Local average treatment effects (LATE) obtained by instrumenting for CTC receipt as reported by the respondent.Standard errors in parentheses. Scales are in standard deviation units (M=0; SD=1). Sample restricted to households with at least one child under the age of 18. All models include all demographic controls (age, gender, education, race/ethnicity, partnered, urbanicity), state fixed effects, month fixed effects, and contextual (SNAP/PEBT/UI) controls. Models in columns 1, 3 and 5 include household size fixed effects. Models in columns 2, 4 and 6 include number of children fixed effects. Regressions for severe housing hardship have the following observations: Excluding August: N=18709; Excluding January: N=18674; Date control: N=20545.

*p <0 .10;**p 0< .05; ***p < 0.01

Appendix Table 9: Testing the Addition of Controls, Material Hardship, Local Average Treatment Effects

	LATE										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Hardship index (14-item scale)	-0.007	-0.007	-0.007	-0.033 ***	-0.042 **	-0.040 **	-0.011	-0.011	-0.043 **	-0.031 ***	-0.038 **
	(0.008)	(0.008)	(0.008)	(0.012)	(0.019)	(0.019)	(0.015)	(0.016)	(0.019)	(0.018)	(0.019)
Food hardship (4-item scale)	-0.054 ***	-0.054 ***	-0.054 ***	-0.065 ***	-0.055 ***	-0.054 ***	-0.028 ***	-0.027 ***	-0.055 ***	-0.040 **	-0.054 ***
	(0.008)	(0.008)	(0.008)	(0.012)	(0.019)	(0.019)	(0.015)	(0.015)	(0.019)	(0.018)	(0.019)
Medical hardship (2-item scale)	-0.011	-0.011	-0.011	-0.031 ***	-0.019	-0.017	-0.006	-0.004	-0.020	-0.015	-0.013
	(0.008)	(0.008)	(0.008)	(0.012)	(0.019)	(0.019)	(0.015)	(0.015)	(0.019)	(0.018)	(0.018)
Severe housing hardship (4-item scale)	0.009	0.009	0.009	0.014	0.002	0.001	-0.006	-0.005	0.001	-0.002	0.002
	(0.008)	(0.008)	(0.008)	(0.012)	(0.019)	(0.019)	(0.015)	(0.015)	(0.019)	(0.019)	(0.019)
Transportation hardship	0.013 ***	0.013 ***	0.013 ***	0.008	0.005	0.005	0.013 ***	0.009	0.005	0.005	0.004
	(0.004)	(0.004)	(0.004)	(0.005)	(0.009)	(0.008)	(0.007)	(0.007)	(0.008)	(0.008)	(0.008)
Bill hardship (3-item scale)	0.047 ***	0.047 ***	0.047 ***	0.011	-0.023	-0.020	0.006	0.006	-0.023	-0.015	-0.016
	(0.008)	(0.008)	(0.008)	(0.012)	(0.019)	(0.019)	(0.015)	(0.016)	(0.019)	(0.018)	(0.018)
F-statistic	2339.6 ***	2338.9 ***	2339.6 ***	1078.8 ***	415.0 ***	420.4 ***	658.9 ***	629.4 ***	417.6 ***	455.9 ***	458.4 ***
First stage coefficient	23.7 ***	23.7 ***	23.7 ***	19.5 ***	17.6 ***	17.7 ***	25.2 ***	23.9 ***	17.6 ***	18.4 ***	18.5 ***
Demographic controls (age, gender, race/ethnicity, education, partnered, urbanicity), month fixed effects + state fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Contextual controls (SNAP/PEBT/UI)	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Controlling for COVID-19 rates	No	No	Yes	No	No	No	No	No	No	No	No
Household size fixed effects	No	No	No	Yes	No	Yes	No	Yes	No	No	No
Number of children fixed effects	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of children under 6 years fixed effects	No	No	No	No	No	No	Yes	Yes	No	No	No
Indicator for "doubled-up" household (additional adults)	No	No	No	No	No	No	No	No	Yes	No	No
Indicator for any children under 6 years	No	No	No	No	No	No	No	No	No	Yes	No
Number of children fixed effects x demographic controls	No	No	No	No	No	No	No	No	No	No	Yes
N	19,154										

Note: Coefficients represent the effect of a $100 increase in the CTC. Local average treatment effects (LATE) obtained by instrumenting for CTC receipt as reported by the respondent. Standard errors in parentheses. Scales are in standard deviation units (M=0; SD=1). Sample restricted to households with at least one child under the age of 18. Regressions for severe housing hardship have 20,545 observations.

*p <0 .10;**p 0< .05; ***p < 0.01

Appendix Table 10: Weighting Providers Data to Match the ACS, CPS and SNAP QC Data

	Providers data						
	Original	Weighted to the 2019 ACS	Weighted to the 2019 CPS	Weighted to the 2019 SNAP QC	ACS 2019	CPS ASEC 2019	SNAP QC 2019
Age							
18-24	7	6	8	9	6	8	9
25-34	40	37	37	40	38	38	41
35-44	35	37	34	30	38	35	32
45-54	12	15	15	13	15	15	12
55+	5	5	5	6	3	5	5
Household structure							
Household size	4.30	4.43	4.43	4.27	4.19	4.11	3.56
Number of kids	2.53	2.50	2.49	2.48	2.31	2.18	2.03
Partner/spouse	30	45	47	32	47	50	
Race/ethnicity							
Black	35	27	28	33	27	27	31
White	35	37	38	43	37	37	41
Hispanic	21	28	26	16	29	27	22
Other	9	7	9	7	7	9	7
Education							
<High school	23	18	23	21	18	23	25
High school	39	45	37	59	45	37	55
Some college	27	27	31	15	27	31	15
College or more	10	9	10	6	9	10	5
Female	94	75	75	89	72	73	89
Receive food stamps	85	84	84	86	100	100	

Notes: All samples are restricted to households with at least one coresident child under the age of 18. Weighting procedure described in more detail in Appendix 2.

Data: ACS= American Community Survey 2019. CPS = Current Population Survey ASEC 2019. SNAP QC = SNAP Quality Control data 2019.

Appendix Table 11: Regression results after reweighting Providers data to the ACS, CPS and SNAP QC benchmarks

	ITT						LATE					
	ACS		CPS		SNAP QC		ACS		CPS		SNAP QC	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Material Hardship												
Hardship index (14-item scale)	-0.014 ***	-0.010	-0.012 ***	-0.007	-0.009 ***	-0.009 **	-0.072 ***	-0.070	-0.063 ***	-0.050	-0.046 ***	-0.054 **
	(0.005)	(0.006)	(0.004)	(0.006)	(0.003)	(0.004)	(0.026)	(0.048)	(0.022)	(0.039)	(0.014)	(0.023)
Food hardship (4-item scale)	-0.017 ***	-0.007	-0.016 ***	-0.006	-0.013 ***	-0.005	-0.087 ***	-0.046	-0.081 ***	-0.043	-0.062 ***	-0.031
	(0.004)	(0.006)	(0.004)	(0.006)	(0.003)	(0.004)	(0.023)	(0.042)	(0.021)	(0.039)	(0.014)	(0.023)
Medical hardship (2-item scale)	-0.018 ***	-0.010 *	-0.017 ***	-0.008 *	-0.009 ***	-0.007 *	-0.092 ***	-0.066	-0.086 ***	-0.054	-0.046 ***	-0.039 *
	(0.004)	(0.005)	(0.004)	(0.005)	(0.003)	(0.004)	(0.023)	(0.041)	(0.021)	(0.035)	(0.014)	(0.022)
Severe housing hardship (4-item scale)	0.003	0.000	0.005	0.001	0.000	-0.004	0.017	-0.002	0.025	0.006	0.001	-0.024
	(0.003)	(0.004)	(0.004)	(0.005)	(0.003)	(0.003)	(0.017)	(0.029)	(0.019)	(0.033)	(0.013)	(0.020)
Transportation hardship	0.000	-0.003	0.000	-0.001	0.000	0.000	-0.002	-0.018	0.000	-0.006	0.002	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.010)	(0.018)	(0.009)	(0.015)	(0.006)	(0.010)
Bill hardship (3-item scale)	-0.001	-0.006	0.000	-0.004	0.000	-0.009 +	-0.006	-0.044	0.000	-0.025	0.002	-0.049 *
	(0.005)	(0.008)	(0.005)	(0.008)	(0.003)	(0.005)	(0.028)	(0.056)	(0.026)	(0.052)	(0.017)	(0.029)
F-statistic							76.2 ***	28.6 ***	89.7 ***	36.4 ***	291.3 ***	141.7 ***
First stage coefficient							19.0 ***	14.1 ***	19.3 ***	14.6 ***	19.9 ***	16.8 ***
Household size fixed effects	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Number of children fixed effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
N							19,154					

Note: Coefficients represent the effect of a $100 increase in the CTC. Intent-to-treat (ITT) estimates.Standard errors in parentheses. Local average treatment effects (LATE) obtained by instrumenting for CTC receipt as reported by the respondent. Scales are in standard deviation units (M=0; SD=1). Sample restricted to households with at least one child under the age of 18. All models include all demographic controls (age, gender, education, race/ethnicity, partnered, urbanicity), state fixed effects, month fixed effects, and contextual (SNAP/PEBT/UI) controls. Odd numbered columns are models with household size fixed effects; Even numbered columns are models with number of children fixed effects. Models are weighted to the demographic characteritics of the ACS, CPS, or SNAP QC benchmarks. Weighting procedure described in more detail in Appendix 2. Regressions for severe housing hardship have 20,545 observations.

Data: ACS= American Community Survey 2019. CPS = Current Population Survey ASEC 2019. SNAP QC = SNAP Quality Control data 2019.
*p <0 .10; **p 0< .05; ***p < 0.01