Is a Dollar a Dollar? How Transfer Design Shapes Household Spending

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Abstract

Government transfers vary along two design dimensions that standard models predict should not matter: whether benefits are paid in cash or kind, and whether they arrive as one-time or recurring payments. We test to what extent these design choices matter using sharp changes in four pandemic-era transfers to low-income families with children: one-time food vouchers, monthly food benefits, one-time cash payments, and monthly cash payments. Linking variation in benefit timing and amount to high-frequency NielsenIQ household scanner data, we estimate spending responses in a harmonized difference-in-differences and event-study framework.

We find that in the short run households spend more out of in-kind benefits than out of cash transfers of similar value, and more out of recurring payments than out of one-time transfers. Using a single household panel and a common estimation framework, we produce the first internally comparable set of short-run food-store MPCs across four pandemic-era transfer programs: 0.18 (one-time) and 0.38 (monthly) for in-kind, versus 0.06 (one-time) and 0.20 (monthly) for cash. The patterns suggest that the form and timing of transfers systematically shape household spending, consistent with mental accounting, labeling, and forward-looking responses to expected benefit replenishment. More broadly, our results imply that transfer design—not just generosity and targeting—is a first-order policy lever for both social insurance and short-run demand stabilization.

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1 Introduction

Government transfer programs differ not only in eligibility criteria and generosity, but also in *how* benefits are delivered. A household can receive $600 as unrestricted cash or as a food voucher, as a single, lump-sum payment or in six monthly installments. In a standard model with forward-looking consumers, no binding liquidity constraints, and inframarginal in-kind benefits, none of these design choices should affect the amount or allocation of spending (Deaton, 1992; Browning and Lusardi, 1996). A dollar is a dollar. Yet governments routinely restrict the uses of transfers, label payments for particular purposes, and choose payment schedules that vary from one-time relief to monthly support. Whether these design choices affect spending is central to both public finance—because in-kind restrictions and monthly disbursement carry real administrative costs that are worth paying only if they change behavior—and to macroeconomics, where marginal propensities to consume (MPCs) are the workhorse input to models of fiscal transmission.

This paper studies how the form and frequency of transfers shape household spending, using four large pandemic-era programs that together produce a clean two-by-two comparison. Between 2020 and 2023, low-income U.S. families with school-age children received substantial resources through Pandemic EBT (P-EBT, one-time in-kind), the Supplemental Nutrition Assistance Program Emergency Allotment (SNAP EA, monthly in-kind), Economic Impact Payments (EIPs, one-time cash), and the temporarily expanded monthly Child Tax Credit. The four programs vary along both design dimensions—cash versus in-kind, and one-time versus recurring—while reaching overlapping populations of low-income households over a narrow window. This allows us to compare cash with in-kind transfers holding frequency fixed, and recurring with one-time transfers while holding form fixed, within a single sample, dataset, and empirical framework.

We combine this policy variation with high-frequency household spending data from the NielsenIQ Consumer Panel, which records daily purchases including prices, products, dates of purchase, and store types for a longitudinal panel of households. Our analysis focuses

on low-income households with school-aged children, the group potentially receiving all four transfer types. For P-EBT and SNAP EA, we identify spending responses from state-by-week and state-by-month variation in the timing of implementation and termination, using not-yet-treated households as controls and reporting cohort-by-cohort estimates as a robustness check. For the EIP and CTC, we compare eligible households in the payment period to comparable households in the same calendar weeks of 2019. Because take-up is not observed at the household level, our headline estimates are intention-to-treat effects; treatment-on-treated MPCs are recovered by scaling with program-specific administrative take-up rates.

We find that both the frequency and form of benefits substantially impacts spending responses. Our estimated marginal propensities to consume at food stores (after adjusting for underreporting of shopping trips) for in-kind payments are 0.18 (P-EBT, one-time) and 0.38 (SNAP EA, monthly), and for cash are 0.06 (EIP, one-time) and 0.20 (CTC, monthly). Unadjusted MPCs are one-half these magnitudes.

Two patterns stand out. First, holding frequency fixed, the in-kind MPCs are roughly three times cash MPCs for one-time transfers (0.18 vs. 0.06) and nearly twice as large (1.9 times) for monthly transfers (0.38 vs. 0.20). Second, holding form fixed, monthly MPCs are roughly two to three times the one-time MPCs (0.38 vs. 0.18 for in-kind; 0.20 vs. 0.06 for cash). Restricting the outcome to food products only—excluding non-food items sold at food stores such as soap, paper products, and personal-care items—attenuates these numbers, with food-product MPCs of about 11-15% for in-kind benefits and 3-9% for cash. Neither pattern is consistent with full fungibility.

The composition of the spending responses is itself informative. For monthly in-kind benefits (SNAP EA), the increase in total food-store spending is substantially larger than the increase in food-product spending. That is, a substantial share of the SNAP EA response shows up in non-food purchases at food stores. This is difficult to reconcile with a pure mental-accounting story in which dollars labeled "food" flow exclusively to food. It is more consistent with SNAP EA relaxing a food-budget constraint so that freed-up cash flows to complementary in-store purchases. At the same time, we find little evidence that transfer

design changes the within-food product mix: households do not systematically shift toward or away from perishables, bulk purchases, or "temptation" categories such as alcohol, tobacco, sweets and soda. Transfer design appears to impact the amount households spend at food stores, shifting their purchases of non-food items more than food.

The timing of the spending responses supports the identification strategy. Event-study estimates show spending rising promptly after P-EBT, EIP, and CTC payments, with no evidence of differential pre-trends; SNAP EA spending is elevated in months when benefits are available and drops when states discontinue the program. The CTC event study exhibits a "sawtooth" pattern in which spending rises in the week of payment, remains elevated for two weeks, falls in the third week, then rises again with the next month's payment. This pattern suggests that households anticipate benefit replenishment. Spending responses are also larger among the households most likely to be liquidity constrained: low-income families with children have larger MPCs than higher-income families with children or low-income households without children. Placebo comparisons for groups ineligible for child-targeted benefits show no evidence of spurious effects. Internal validity is strong: we estimate an additional SNAP EA impact from a $12 increase in phase-2 benefit levels, and find that spending results are the same as those estimated from the $400 in monthly benefits in the pooled sample estimate. Our EIP1 estimate using 2019 as the control period is indistinguishable from the estimate using 2022, and pre-pandemic (2019) MPCs from refundable tax-credit payment are indistinguishable from the 2020 EIP1 estimates, suggesting that the small cash MPC we recover is not an artifact of pandemic-era conditions.

These findings contribute to several literatures. First, an extensive theoretical literature considers when in-kind transfers may dominate cash on targeting, paternalism, political-economy, and pecuniary-externality grounds (Nichols and Zeckhauser, 1982; Currie and Gahvari, 2008; Chorniy et al., 2025), alongside a growing empirical literature testing whether households treat food benefits as fungible with cash (Hoynes and Schanzenbach, 2009; Hastings and Shapiro, 2018). We build on this evidence and extend it in three ways: by comparing multiple in-kind and cash programs holding sample, method, and outcome definitions fixed;

by systematically documenting *where* the extra in-kind spending lands within food stores; and by showing that monthly delivery is itself a distinct design margin.

Second, a large literature estimates household consumption responses to transitory income shocks. Recent estimates emphasize that households often spend a meaningful share of predictable or anticipated income changes (Aladangady et al., 2023; Kueng, 2018; Ganong et al., 2024). Pandemic-era MPCs have been estimated by Parker et al. (2022); Baker et al. (2023) and Chetty et al. (2024) among others. A related strand highlights that MPC estimates can be sensitive to measurement and design choices. Orchard et al. (2025) and Orchard et al. (2026) show that estimated responses to earlier tax rebates are sensitive to the treatment of dynamics and to how consumption categories are aggregated. Several features of our setting are helpful on this front. We use household scanner reports instead of survey reports; we use not-yet-treated groups in the same calendar year as controls; and we estimate MPCs at food stores rather than a total-consumption MPC. Section 5.2 documents which portion of the food-store response is food and non-food, and which portion cannot be measured in the NielsenIQ data.

Third, the paper informs the design of social insurance and anti-poverty programs (Bitler and Hoynes, 2016; Parker et al., 2022). During economic downturns and emergencies, policymakers weigh broad cash payments against targeted recurring support and in-kind assistance. Our results imply that these choices affect not only *who* receives aid, but also *how quickly* and *where* the transfers are spent. In-kind and monthly benefits generate larger short-run responses at food stores, while cash and one-time benefits deliver broader flexibility and, we infer, higher rates of saving, debt repayment, or spending on categories outside of the NielsenIQ dataset such as rent, utilities, and durable goods. Our results are consistent with households treating recurring transfers as part of regular disposable resources, and treating lump-sum payments as more available for saving, debt repayment, or spending outside of food stores. They also suggest a forward-looking replenishment interpretation in which the marginal use of a dollar depends on whether household expects another dollar to arrive next month.

2 Identification Strategy and Policy Variation

We study multiple pandemic-era transfers that were paid to low-income families with children. The programs differed in terms of whether they were paid in cash or as in-kind grocery benefits, and whether they were a lump-sum or recurring monthly payment. We compare spending responses to transfers falling into each of four categories: in-kind lump-sum, in-kind recurring, cash lump-sum, and cash recurring. This within-paper, four-way cmoparison improves on existing work that typically focuses on a single program or compares across studies with different samples and data sources. While some programs reach broader groups, e.g. low-income families regardless of whether they have children or higher-income families with children, all four programs apply to low-income families with school-age children. Section 5.4 compares outcomes among this group to other populations who also receive benefits from one or more of the studied programs. We describe the policies in more detail below.

2.1 One-time, In-kind Payments: Pandemic EBT (P-EBT)

Due to widespread school closures during the COVID-19 pandemic, many children lost access to free or reduced-price school meals. The P-EBT program provided grocery vouchers, which could be redeemed to purchase food in retailers that accepted SNAP benefits, for the value of the missed school meals. The initial disbursement was primarily paid in a lump sum during summer 2020, worth $5.70 per student per day of school missed in spring 2020.[1] Because school closures were nearly universal in spring 2020, there was relatively little variation in payment amounts within or across states, and what variation existed was driven by school calendars (e.g., when spring break was scheduled relative to the closure, when the school year ended). These payments were available to students who usually received free or reduced-price meals at school and averaged about $300 per student ($529 per family in the NielsenIQ data).

[1] Approximately 84% of students lived in a state that made a single payment for the 2019-20 school year; 16% lived in a state that made multiple, smaller payments in the summer of 2020 (Bauer et al., 2024) Although states had the option to offer P-EBT in the 2021-22 and 2022-23 school years, the program was not reauthorized until October 2020, after the new school year had begun. Therefore, at the time of the first payment, families would have viewed P-EBT as one-time.

The timing of P-EBT benefit receipt varied across states. To participate in this federally funded program, states first had to submit an implementation plan for approval by the U.S. Department of Agriculture. A few states made payments in April 2020, most implemented in May or June, and some implemented as late as August or September (Appendix Figure A1 panel c). Notably, P-EBT payments were quickly and automatically loaded onto families' existing EBT cards if they were SNAP participants.[2] We identify the impacts of P-EBT payments from variation across states and week in the timing of payments, as illustrated in Appendix Figure A1.

P-EBT benefits per child by state are calculated from information that states reported to USDA on the amount issued and number of children served for the 2019-20 school year. Amounts are assigned to households in the NielsenIQ data based on state and number of school-age children.

2.2 Monthly, In-kind Payments: SNAP Emergency Allotments (SNAP EA)

SNAP provides benefits that can be used to purchase most grocery items at most food stores. Benefits are paid monthly on electronic benefit transfer (EBT) cards that look and function like debit cards. Under normal circumstances, SNAP benefits levels are calculated with a formula similar to a negative income tax: households with no net income receive a "guarantee" equal to the maximum benefit, and as income (net of allowable deductions) increases benefits are reduced at a 30% rate.[3] In 2023, 70% of SNAP participants with school-aged children had a positive net income and thus under typical circumstances would have received benefits lower than the maximum benefit.[4]

In March 2020, states were given the option to enact temporary "Emergency Allotment"

[2]Some students from (much) higher-income families were also eligible for P-EBT payments because they typically received free school meals through school- or district-wide "community eligibility provisions" for universal free meals. Those who were not SNAP participants received new benefit cards, but the process of issuing new cards took several weeks or months. Following the approach in Bauer et al. (2024), our main sample focuses on families who were income-eligible for SNAP for whom we can identify payment timing for the P-EBT lump-sum in-kind transfer.

[3]Net income is calculated as a household's monthly income minus deductions including a standard deduction and deductions for expenses such as out-of-pocket childcare costs, a portion of earnings, and housing costs that exceed half of the household's net income.

[4]Authors' calculations from USDA Quality Control data.

(SNAP EA) payments that increased benefits for all SNAP participants to the maximum benefit for their household size. All states took this option by April 2020. SNAP EAs were later amended so that beginning in April or May 2021 (depending on the state) all participating households received at least $95 in SNAP EA payments.[5] We begin our sample window in June 2021 so that all SNAP EA benefit amounts are measured relative to the second phase of the program. Beginning in May 2021, some states stopped issuing SNAP EA payments before the supplements were ended nationally in March 2023. We use cross-state variation stemming from the termination of increased monthly benefits between June 2021 and March 2023 to identify the impacts of additional in-kind monthly transfers. Appendix Figure A1 panel d displays the variation across states and months used to identify the program impact. SNAP EA benefits averaged $255 per month among families with children, and their termination reduced average SNAP benefits in these families by 33%.

SNAP EA payment amounts vary by a household's monthly net income—a complicated function of total income minus a series of allowable deductions including a portion of earned income, child care expenses, some housing payments, and others. Since the NielsenIQ data do not include sufficient information to precisely calculate EA payment amounts, we impute SNAP EA payment amounts from SNAP Quality Control administrative data by calculating average SNAP EA payment for households with children by household size and income bin and assigning these SNAP EA amounts to households in our analysis sample. We identify the effects of SNAP EAs from variation when states terminated the SNAP EA payments. Although the "experiment" used to identify the impact is a reduction in the monthly benefit, to ease interpretation and comparison with the other policies we reverse the sign so the coefficient can be interpreted as the impact of a benefit increase.[6]

2.3 One-time, Cash Payments: Economic Impact Payments (EIP)

In each recession since 2001, families have received lump-sum "stimulus" payments issued through the IRS in a policy effort to support incomes and stabilize aggregate demand. Dur-

[5] When SNAP EAs were in place, there was a sharp benefits cliff at the SNAP eligibility cutoff.
[6] Appendix Table A4 column 3 shows a similar spending response to the SNAP EA introduction.

ing the COVID-19 pandemic, three stimulus payments, called Economic Impact Payments (EIPs), were issued. The first, in April 2020, paid $1,200 to each adult and $500 per child to families with a single head of household earning less than $112,500 a year ($150,000 for married couples). The IRS and Social Security Administration automatically made payments to families based on their previous year's income. Accordingly, take-up was high and most families that would receive payments did so by the end of April 2020 (Government Accountability Office, 2020; IRS, 2020). We focus on the first EIP to identify expenditure responses to one-time cash transfers as this payment was large, unexpected, and subsequent payments were not discussed until months later. Our identification for the EIP comes by comparing outcomes for families with children observed between March and May 2020 with similar families observed between March and May 2019, with payment amounts varying by the number of children and adults in the household.[7]

2.4 Monthly, Cash Payments: Expanded Child Tax Credit (CTC)

The federal Child Tax Credit (CTC) normally provides an annual, partially refundable tax credit when families file their federal income taxes. In 2021, the credit was temporarily changed three ways. First, the credit was made fully refundable so that low-income families received the full credit if they had little or no labor market earnings.[8] Second, the maximum credit was increased from $2,000 per child to $3,000 for children 6-17 and $3,600 for younger children. Finally, half of the 2021 CTC was paid in advance with monthly cash transfers of $250-$300 per child (depending on age) from July to December 2021.

Similar to the EIP analysis, we identify the impacts of the monthly cash transfers provided through the refundable advance CTC by comparing outcomes for families with children observed between July and December 2021 with similar families observed between July and December 2019, with payment amounts varying by the number and ages of children in the

[7] Appendix Table A4 shows results for the third EIPs that provided $1,400 per person in March 2021. We do not separately analyze the second EIP, issued in December 2020/January 2021 as the timing coincided with the holiday season, which may be different than non-pandemic years due to public health guidance on social distancing.

[8] In other years, families with no earnings received no CTC, and the credit phased in at a 15% rate for earnings above $2,500 up to the maximum amount.

household.[9]

3 Data

We examine grocery expenditures using data from the NielsenIQ Consumer Panel, a longitudinal panel dataset in which respondent households scan products purchased for personal, in-home use from any retail outlet using an in-home scanner. The data include information on the products purchased, their prices, the date the purchase was made, and the (de-identified) store at which the sale occurred for each shopping trip. Panelists report demographic information annually, including the number and year of birth of household members and the household's (binned) annual income.

We restrict our sample to households that have school-aged children, defined as having at least one child between the ages of 6 and 18 as of December 31 of the given year. In addition, we require households to record at least one grocery purchase each month and have no month in which their reported grocery spending was greater than their monthly income plus estimated SNAP benefits. These additional screens remove households who record purchases inconsistently or inaccurately. We also restrict the sample to "magnet" households that record all products purchased, including items without UPC codes.

Our primary expenditure measure is total weekly spending at food stores. The appendix provides results for an alternative expenditure measure: weekly spending on food products (at food stores). Food stores are predominantly grocery, discount, or club stores, but also include more specialized retailers such as bakeries and butchers.[10] We exclude restaurant purchases (including categories such as fast food and delis) from our primary outcomes, and report spending in that category separately. We also disaggregate total spending into food categories, including perishable (dairy, deli, packaged meat, and fresh produce departments) and non-perishable products (dry grocery and frozen foods departments). We include a

[9]We do not compare to the second half of 2020 because that timeframe is potentially contaminated by other COVID-19 relief payments.

[10]In our sample, 55% of food spending at food stores occurs at grocery stores, 35% at discount stores, 7% at club stores, and 3% at other types of food stores (bakeries, butchers, etc.). Store types not included in food stores are stores such as apparel, beauty supply, computer, dollar stores, home furnishings, hardware, shoes, sporting goods and toy stores. See Data Appendix for a full list of retailer types.

subcategory of "sweets and soda" that includes candy, cookies, ice cream, frozen desserts, pudding, carbonated beverages, and sugar/sweeteners, and a separate subcategory of "alcohol and tobacco."[11]

A shortcoming of these data is that spending is under-reported if panelists do not record a trip or fail to scan all products purchased from a given trip. Einav et al. (2008) explored the accuracy of the NielsenIQ Consumer Panel data (then known as Nielsen Homescan) relative to retailers' internal records and found that on average 53% of trips go unreported. Within each reported trip, however, households appear to scan nearly all products. We mitigate the issue of not reporting trips by dropping households that have no reported grocery purchases in at least one month of the calendar year (i.e., those whose reporting is likely the least accurate); however, among the remaining households, there may still be missing trips or purchases that contribute to lower overall *levels* of spending.

The average household in our sample reports spending $850-$950 per month, roughly 75% of which is spent at food stores ($634-$700) (Appendix Figure A2). These numbers come from the bottom of purchase receipts, and therefore include taxes and fees, but do not rely on households scanning each individual item from the trip.[12]

If we instead sum up spending at food stores from individual product-level scans, we observe spending of $430-$540 per month (about 70% of reported trip-level spending). Note that some of the difference between this product-level spending and trip-level spending is likely due to the inclusion of sales taxes in the latter. We separate the data into spending on food products at food stores (averaging $64-$90, or 60-70% of the product-level spending) and non-food spending such as paper goods and cleaning products (averaging $33-$40, 30-40% of the product-level spending). If we limit our spending measure to UPCs that are consistently recorded in NielsenIQ across all years a program is in place, measured food spending is roughly $47-$90 per household per month. We analyze the data at the weekly level, and detail on sample averages of weekly spending and how it varies by program sample

[11] Alcohol purchases not included in food spending.

[12] Appendix Table A5 shows robustness to other definitions of food spending, including product-level scans and UPC codes that are consistently tracked across years. These other definitions account for about xx% and xx% of total food store spending, respectively (Appendix Figure A2).

and spending definition is shown in Appendix Table A1.

4 Empirical Approach

Two advantages of our setting are, first, that we have precise information on benefit issuance for multiple programs over a relatively narrow time horizon, and second, this detailed expenditure information is recorded at a daily level. We leverage this rich policy variation across households and over time in a generalized difference-in-difference framework. In words, we regress household-level spending on the benefit amount received in the prior four weeks, controlling for rich demographics, state fixed effects, and time effects. Our most parsimonious approach takes the form:

$$y_{ist} = \beta Benefits_{ist} + X'_{ist}\theta + \delta_s + \phi_t + \varepsilon_{ist} \tag{1}$$

The treatment variable, $Benefits_{ist}$, measures the dollar value of benefits (in hundreds of dollars) that household i living in state s was eligible to receive in period $t \in w, m$. For P-EBT, the expanded CTC, and the first EIP, we know the first date of payment disbursal at a daily level and estimate its impact on expenditures at the weekly level ($t = w$), based on the amount received in the previous 4 weeks. For SNAP EA payments, almost all states make SNAP payments throughout the month, with timing based on Social Security number, last name, case number, or other information not reported in NielsenIQ. Therefore, we only know the *month* in which households received SNAP EA and accordingly estimate expenditures at the monthly level ($t = m$). In order to ease interpretability, we aggregate all results to the monthly level, so that β captures the monthly increase in spending at food stores for every $100 of benefits.

δ_s and ϕ_t are state and time fixed effects that account for time-invariant state policies affecting spending and benefit receipt and seasonal factors that may influence consumption, respectively. For programs with daily issuance information (P-EBT, CTC, and EIP), ϕ_t includes week-of-year and year fixed effects; for SNAP EA that only includes monthly variation, ϕ_t is week-by-year fixed effects.

X_{ist} is a vector of control variables, including the head of household's age, gender, race/ethnicity, educational attainment, marital status, income, the number of children and adults in the household, the number of children under age 5 (as a proxy for WIC eligibility) and the state unemployment rate and share of monthly SNAP payments disbursed during the reference period. We also control for state-specific policies adopted in response to the pandemic: an active stay-at-home order and mask mandate; restaurant closures; and UI payment processing speed. Finally, we include controls for whether any of the other three programs we study were in effect in state s during period t.

Because the P-EBT and SNAP EA treatment timing varies across states, we exclude states that had disbursed benefits prior to the beginning of our sample window, as well as state-weeks beyond the 4-week post-treatment window (P-EBT) and state-months beyond the 3-month post-treatment window (SNAP EA). This ensures that each comparison compares states that had recently disbursed funds with those that had not yet made payments in the case of P-EBT, and states that had terminated EA benefits compared to those who had not yet ended the program. In doing so, the comparison group consists of households living in not yet treated, "clean" control states to avoid comparisons between newly treated and previously treated states (Goodman-Bacon, 2021).

The timing of EIP and CTC benefits did not vary across states, so for these programs we cannot leverage cross-state comparisons. Instead, we construct control groups of households that meet the same sample restrictions (low-income, has school-aged children, etc.) in 2019. We use 2019 as a comparison year because it is the most recent "typical" spending year prior to the COVID-19 pandemic, following an approach similar in spirit to Chetty et al. (2024). Thus, while the economic and demographic sampling criteria are the same across each program we study, the sample windows vary based on the timing of disbursements and control groups. The sample windows are as follows:

- P-EBT: April 15 – September 1, 2020
- SNAP EA: June 1, 2021 – December 30, 2023
- CTC: April 14 – November 16, 2021 (control: April 11 – November 13, 2019)

- EIP: March 25 – May 19, 2020 (control: March 21 – May 15, 2019)

and are displayed in Appendix Figure A1 panel b.

All analyses use household weights from NielsenIQ. For programs that were implemented at the state level (P-EBT and SNAP EA) we cluster standard errors at the state level, while for those implemented nationally (EIP and CTC) we calculate HC1 robust standard errors.

We also extend Equation 1 to an event-study framework to examine how quickly families spend the benefits and the extent to which immediate effects fade over time. The event-study approach also helps assess the plausibility of the parallel trends identifying assumption. Specifically, we estimate the following equations:

$$y_{ist} = \sum_{k \neq -2} \beta_k 1\left[\tau_{st} = k\right] * 1\left[Year_t \neq 2019\right] + X'_{ist}\theta + \delta_s + \phi_t + \varepsilon_{ist} \tag{2}$$

$$y_{ism} = \sum_{k \neq -2} \beta_k 1\left[\tau_{sm} = k\right] + X'_{ism}\theta + \delta_s + \phi_m + \varepsilon_{ist} \tag{3}$$

Equation 2 is used for P-EBT, EIP, and CTC estimations where ϕ_t is the week of the calendar year. Equation 3, used for the SNAP EA estimations, is modified to the monthly level since we only observe the monthly (rather than daily) timing of SNAP EA disbursement to individual households. The omitted lead is k = -2, corresponding to two periods before benefit receipt. Note also that these event studies measure benefit disbursement as a binary indicator, rather than the continuous measure of amount received used in the difference-in-difference estimates.

Both the DD and event study approaches in Equations 1-3 are intent-to-treat (ITT) effects, as the NielsenIQ data do not include information on program receipt. For policy-makers designing a new safety net program with non-compulsory participation, the ITT is a parameter of particular interest. In addition, we provide information on take-up rates below to provide an estimate for those families that chose to participate in the program (i.e., the treatment on the treated, TOT).

5 Results

5.1 Total Spending at Food Stores

We start by measuring how total spending at food stores (including food and non-food products) responds to each transfer in Table 1. Program benefits are scaled as the value in hundreds of dollars received over the past 4 weeks. We conduct the analysis at the weekly level, and report the corresponding increase in *monthly* spending in Table 1. Total monthly spending at food stores increases by approximately \$7.39 for eligibility for each \$100 in one-time, in-kind P-EBT benefits within the previous 4 weeks (panel a, column 1). P-EBT benefits averaged \$638, implying that spending increased by about \$47.15, or 6.5% of average monthly spending in the weeks after P-EBT was paid. We calculate a TOT estimate of a \$9.48 increase in spending for every \$100 in one-time, in-kind P-EBT benefits, based on evidence from Cunnyngham (2019) that 78% of income-eligible households participate in SNAP, and assuming the same rate for P-EBT (which was automatically paid to SNAP participants).

Because the NielsenIQ data only captures shopping trips that households scan, it may underestimate total household food spending. For this reason, when estimating MPC we adjust by a factor of 1.89 ($\frac{1}{0.53}$) to account for missing transactions, using the underreporting estimate from Einav et al. (2008).[13] Based on this, we estimate a MPC of 0.18 from one-time, in-kind P-EBT benefits.

The intent-to-treat spending response is approximately twice as large for the in-kind benefits that are paid monthly: the ITT estimate for SNAP EA payments is \$15.83 for every \$100 of eligibility for SNAP EA payments (panel a, column 2).[14] When adjusting for

[13] If underreporting is consistent over the 2019-23 analysis period, this measurement error will not affect our comparisons *across programs*, a primary contribution of this paper. These comparisons would be biased if, for example, households are more likely to purchase the types of products that are typically not scanned (e.g., a granola bar that is eaten on the drive home) with cash rather than in-kind benefits or vice-versa. We do not believe this is a major concern but acknowledge that it is a potential limitation.

[14] Note that average monthly spending at food stores is lower among the SNAP EA sample than it is among the P-EBT sample(\$651 vs. \$722). This is driven by variation in timing of benefit receipt, as P-EBT payments were made when children were universally out of school, stay-at-home orders were in effect, and many people were working exclusively from home, while SNAP EAs were discontinued as late as March 2023 when schooling and the economy had largely returned to normal.

program take-up, the estimated TOT is $20.30 for every $100 in monthly, in-kind SNAP EA benefits. The estimated MPC is 0.52.

Changes in spending are smaller in response to cash payments than to in-kind transfers, holding payment frequency fixed, as shown in panel b. That families spend less at food stores with cash than with grocery vouchers is consistent with previous work suggesting mental accounting in SNAP (Hastings and Shapiro, 2018). Comparing one-time to monthly payments shows a similar pattern among the cash programs as it did among the in-kind ones; households spend a higher share of monthly payments than one-time transfers. Estimated take-up of lump-sum, cash EIPs was 92% (Clark et al., 2023), implying a TOT estimate of $3.17 additional spending at food stores for every $100 in transfers, and a MPC of 0.06.[15] With a take-up of 83% for the monthly, cash CTC (Congressional Research Service, 2022), the TOT estimate indicates that spending increases by $10.46 per $100 transfer. This suggests that the increase in spending from monthly, cash CTC benefits is about half of the increase in spending from monthly, in-kind SNAP EA benefits. At the same time, the spending increase from monthly cash is somewhat larger than the spending increase from one-time, in-kind P-EBT benefits.[16] These findings are robust to the addition of household-level fixed effects (see Appendix Table A6).

A key advantage of this study is that we can compare spending responses across four different types of transfers in a harmonized framework. We find that households increase spending at food stores more for in-kind transfers that can only be used for groceries than for cash-based transfers of an equivalent value. In addition, families spend a greater share of recurrent, monthly benefits than transfers that are perceived to be one time within 4 weeks. These patterns are consistent with both mental accounting and forward-looking behaviors.

We obtain similar, albeit smaller, results when limiting the outcome to spending on food

[15] While our baseline results consider spending in response to the first EIP compared to the same weeks in 2019, Appendix Table A4 shows that the results are similar if we compare the first EIP to a control group observed in 2022, but that results are not statistically significant for the third EIP compared to a 2019 control group. The lower spending response for later EIPs is consistent with previous work (Parker et al., 2022). We also obtain similar results when applying our empirical approach to EITC receipt for years in our analysis period (Appendix Table A12.

[16] Appendix Table A7 reports robustness to a spending threshold of grocery spending not more than 200% of income plus estimated SNAP benefits.

products only (Appendix Table A2). However, for monthly in-kind benefits from SNAP EA, the spending response is smaller both in dollar and percentage terms when we examine spending on food products. While each $100 in SNAP EA results in $15.83 more spending at food stores, only about $4.16 of this is spent on food products. This complicates the mental accounting framework somewhat, and suggests that consumers spend the in-kind payments at grocery stores, but recognize that the benefits are fungible buy purchasing more goods that cannot be bought directly with SNAP. Interestingly, the increase in spending on food products in response to monthly SNAP EA ($4.16) is not much different than (and is not statistically significantly different from) the response to monthly CTC benefits ($3.12).

The previous literature has largely focused on the marginal propensity to consume food, rather than the MPC to consume at food stores. Under this measure, we find a marginal propensity to consume food items of 0.14-0.15 for both in-kind transfers (P-EBT and SNAP EA), 0.03 for one-time cash (EIP), and 0.09 for monthly cash (CTC, see Appendix Table A2).

5.1.1 Relation to prior MPC estimates

These estimates largely align with what other studies have found when studying a single program in isolation. Most closely related to our analysis, Parker et al. (2022) use the Consumer Expenditure Survey's interview surveys to estimate the MPC from the first EIP. They find a 4.2% MPC on food spending in the three months surrounding EIP arrival, an estimate very similar to ours. Three other facts from the Parker et al. (2022) paper help bridge our MPC estimates to the broader context. First, while our estimates are for low-income families with school-age children and Parker et al.'s are for all consumer units, their paper tests whether MPCs vary by income level and finds small, significantly insignificant differences in spending rates among lower-income households. (On the other hand, they do find significant differences across the distribution of wealth.) Second, in addition to their measure of food spending, their data allow them to also reliably measure consumption responses among all non-durables. They find an MPC of 10% across all non-durable goods (including food). Third, they find a lower MPC from this COVID-era EIP compared with

similar relief payments from prior recessions.[17]

Another closely related estimate comes from Hoynes and Schanzenbach (2009), which finds a MPC on food out of SNAP benefits of 0.17 to 0.30 among populations likely to be eligible for SNAP upon the program's introduction—very similar to our estimate of 0.14. Other estimates of food spending responses to SNAP have found higher MPCs. Using data from one retail chain, Hastings and Shapiro (2018) estimate a monthly MPC of food items of 0.5 to 0.6 among new SNAP recipients. Beatty and Tuttle (2015) also find an MPC of 0.5 to 0.6 using variation from the national SNAP benefit expansion during the Great Recession, while Bruich (2014) finds a somewhat smaller response of 0.3.[18]

Estimates on food spending out of cash income, including the EITC, Alaska Permanent Fund Dividend, and income tax refunds, tend to be smaller than estimates from in-kind transfers, on the order of 0.02 to 0.17 for both one-time (Aladangady et al., 2023; Castner and Mabli, 2010; Fraker, 1990; Ohls and Beebout, 1993; LaGuardia et al., 2025; Kueng, 2018) and monthly transfers (Ganong et al., 2024).

5.1.2 Shopping behavior

Changes in shopping behaviors also differ between one-time and monthly transfers and in-kind and cash benefits (Appendix Table A3). Households make slightly more shopping trips when they receive monthly benefits, but not when they receive one-time transfers.[19] They generally spend more per trip no matter what form of payment they receive (columns 3 and 4).

Appendix Table A5 shows that spending responses are robust to a range of alternative measures of monthly spending. The first 4 columns compare receipt level vs product level expenditures at food stores and all stores. The dependent variable means change in predictable ways, with receipt-level spending greater than product-level spending, and less spending at

[17] As discussed in Parker et al. (2022), their estimates (from self-reported consumption data) are substantially lower than estimates from studies of EIPs using transaction-level data. Karger and Rajan (2020) estimate that nearly half of the EIP is spent within a few weeks, while Baker et al. (2023) estimate that between one-quarter and one-third is.

[18] As noted in Section 3, lump-sum, in-kind payments are rare, and P-EBT was unique in this regard. Accordingly, there is no existing benchmark for P-EBT.

[19] Though the coefficient in panel c is marginally statistically significant, it is very small in magnitude.

the subset of food stores compared with all stores. The relative magnitudes of spending responses are consistent across spending measures, with larger increases in response to in-kind transfers than cash transfers of a similar frequency. A substantial amount of the increased SNAP EA spending is on non-food products at food stores (columns 9-12).

Households can purchase food at a variety of stores, yet much of the existing work on grocery expenditures and income assistance programs is either limited to one retailer or does not include information on store type. In addition to affecting overall spending, program design can also influence where a household shops. We next disaggregate the total (food plus non-food) spending response across types of stores in Table 2. While SNAP EA and P-EBT are generally redeemable at a wide range of outlets including grocery, discount, and club stores, these transfers disproportionately increase spending at grocery stores. Cash transfers raise spending at discount stores and, for monthly cash, club stores.[20] Neither cash nor in-kind benefits increase spending at convenience stores, other food stores, or restaurants. (Restaurants are not included in other measures of spending at food stores).

Table 3 separates food spending by product type. Each transfer increases households' spending on both perishable and non-perishable goods and tends to do so in similar shares of mean spending for both types of goods. An exception is that one-time in-kind P-EBT and monthly CTC benefits may increase purchases of non-perishable goods more than perishables (1.7-1.8% increase per $100 benefits, compared to 1.1%). We find no evidence of increases in alcohol and tobacco consumption for any type of transfer, with estimated impacts that are small and not statistically significant.[21] We generally find no increase in purchase of sweets and sodas, except in response to monthly CTC payments where the estimate, while significant, is small in magnitude.

Zaki and Todd (2023) find that SNAP households adjust their shopping behavior and obtain better price deals when they receive benefits. Likewise, Wich and Harris-Lagoudakis

[20] In general, Target and Wal-Mart are examples of discount stores. We provide these as examples and do not intend to suggest that these are or are not included in the NielsenIQ data.

[21] Chorniy et al. (2025) find that emergency department visits for drug and alcohol use increase after receipt of cash Supplemental Security Income (SSI) benefits, but not after SNAP receipt, suggesting some non-fungibility of benefits.

(2025) find that bulk purchases increase among new SNAP recipients. We test whether households respond to increased resources by spending a larger share of their budget purchasing larger, bulk-sized products, measured as a product at or above the 80th percentile of the size distribution of its product type, in column 5. About 25% of mean spending goes to bulk-sized products, and there is no change in the purchase of these goods in response to benefit receipt.

5.2 Event Studies

We next turn to event-study analyses, which allow us to transparently display the timing of spending on food both before and after the transfer is made. The event is measured as a binary indicator and is neither scaled by transfer size like it was in Tables 1-3 nor by the takeup rate. When we measure spending at the weekly level, the event-study windows range from 4 weeks prior to the payment to 8 weeks after it.

In panel a of Figure 1, total spending at food stores increases promptly after P-EBT payments are made. This higher spending persists for about 4 weeks after receipt of P-EBT payments, consistent with evidence of lower reported food hardship and the increased EBT redemptions from administrative data over this period documented in previous work (Bauer et al., 2024). Furthermore, there are no meaningful pre-trends in the weeks prior to P-EBT payments being made. Panel c shows similar impacts for the EIP lump-sum cash transfer, with no detectable pre-trend and higher spending for several weeks after payments are made, although the spending impacts in response to the EIP are noisier than those in response to the lump-sum in-kind P-EBT payments.

Panel d shows impacts of monthly cash payments through the expanded CTC. Food spending is higher in the week of the first payment and the following two weeks, then falls in week 3 before increasing again in week 4 (when the second monthly payment was made). The pattern looks similar in the second month of benefits, with spending elevated in weeks 4-6 and dropping again in week 7.

Panel b shows spending responses to receipt of SNAP EA payments. Recall that unlike other programs for which we can identify the week of benefit payments, SNAP EAs are

identified only on state-specific monthly timing, as most states issue benefits throughout the month. As a result, unlike panels a, c, and d, panel b shows event time in months relative to the last EA payment (times -1). To keep the sign consistent across programs, we index event time relative to the last month with EA payments. Similar to the other programs, figure c shows that spending is higher in months with EA payments than when it is not.

We conduct a series of robustness checks and heterogeneity analyses in the appendix. Appendix Figure A3 repeats the series of event studies for food spending and shows generally similar patterns for each program. Appendix Figures A5-A6 partitions each sample into households that receive above- or below-median benefits for each program, following the approach in Callaway et al. (2024) for event studies with a continuous treatment variable. The impacts generally are larger and more persistent among those receiving higher benefit amounts (bottom panels), and lack of pre-trends indicate that each of the quasi-experiments is reasonably "clean."[22]

5.3 Heterogeneity by Income

Our analyses so far have focused on households with school-age children and income below approximately 130% percent of the federal poverty line since these were the households that were eligible to receive each of the four tranfers. However, in some cases, higher-income households with school-age children also received these benefits, and it is of interest to compare spending responses across higher-income groups for whom there are fewer binding liquidity constraints. In other cases, few or no higher-income households with school-age children received the transfers; in these cases we can impute benefit levels based on their household size and composition, and the results can be interpreted as placebo tests. We generally find no effects in "response" to the placebo tests. We find systematically larger MPCs for the low-income families with children than for higher-income or childless households,

[22] Appendix Figures A4 and A7 replicate the event study analyses with a longer pre-period for P-EBT, SNAP EA, and the CTC. Again, we do not find any systematic divergent trends in the weeks leading up to benefit issuance, bolstering confidence in the parallel trends identifying assumption. We do not examine the EIP or weeks more than 6 weeks prior to P-EBT disbursement since this period coincides with the initial stay at home orders, restricted operating hours, and product shortages in March 2020. See for example https://www.npr.org/2020/03/18/817920400/empty-grocery-shelves-are-alarming-but-theyre-not-permanent.

consistent with the role of liquidity constraints.

We show total spending at food stores for alternative income groups in Table 4, with the first column reproducing the relevant estimate from Table 1.[23] Panel a reports impacts for P-EBT payments, which were designed to replace missed free or reduced-price school meals. In our sample, 10% of households who are not income-eligible for subsidized school meals live in areas with schools that offer universal free meals through USDA policies such as the Community Eligibility Provision. These students were also eligible for P-EBT, but their payments were delivered later than they were to those who were enrolled in SNAP. We calculate the expected P-EBT amount as the number of school-age children in the family multiplied by the average benefit in their state of residence. We identify the share of higher-income families that are likely to have received P-EBT payments as households living in counties with a (age-appropriate) school providing schoolwide free meals based on data in Ruffini et al. (2025). The vast majority (86%) of school-age children in households with incomes between 130% and 200% of the poverty line were eligible for P-EBT. The point estimate on P-EBT benefits is slightly smaller than for the primary sample of those below 130% of poverty, but it is not statistically significantly different from zero in the higher-income sample. The point estimate is (surprisingly) negative and statistically significant among households between 200% and 300% of poverty, a population with an estimated 12% eligible for the benefits. Overall, as incomes increase, the share eligible for benefits declines and the estimates become smaller and show no increased spending response to P-EBT timing.

Panel b shows results across income groups for SNAP EA payments. Under traditional SNAP rules, families with incomes above 130% of the poverty line are not eligible for benefits. Many states, however, implement "broad-based categorical eligibility" (BBCE) provisions that allow higher-income families to participate as long as they receive another form of assistance targeted at low-income groups (namely cash welfare (TANF)-related services) or have high child care or housing costs. Nearly all families eligible under BBCE provisions have income below 200% of the poverty threshold. These higher-income SNAP participants

[23] Appendix Table A9 shows spending on food items.

typically receive only modest benefits, with an average monthly benefit about 25% as large as the overall average benefit (Schanzenbach, 2019). There are two important implications of these patterns. First, higher-income families received larger EA payments, since EA raised monthly payments to the maximum SNAP benefit level. Second, SNAP participation rates are much lower among this group and as a result, the gap between the ITT presented in the table and the TOT will be larger. Using the SNAP Quality Control data, we calculate the share eligible as the share of families with incomes at or below the 98th percentile of the income-to-poverty rate among SNAP participants with school-age children by state to account for differences in BBCE across states.

Families with incomes between 130% and 200% of the poverty line increase their spending at food stores in response to SNAP EA payments. We estimate that just over half of households in this income range are eligible for SNAP. Because their normal SNAP payments are lower, their average EA payment is higher—about $700 per month, compared with $400 per month among the lower-income group. The magnitude of their spending response is also smaller than the lower-income group in both dollars and percentage terms, with food spending increasing about 1% for every $100 in EA received (compared to 2.4% among the lowest-income group).

Essentially no families with incomes above 200% of the poverty line receive SNAP, so these estimates can be interpreted as placebo tests. For these households, we assign a benefit amount equal to the maximum SNAP benefit for their household size. The estimates for higher-income families are small and not statistically significant, showing that our main results are likely not driven by other state-level changes that coincided with SNAP EA termination.

Appendix Table A9 repeats the exercise with spending on food products as the dependent variable. While most results are similar to those found for all spending at food stores, it is worth highlighting that there is no statistically significant increase in food spending in response to SNAP EA for the higher income-eligible group (with incomes 130%-200% of the poverty threshold). Like the lowest-income group, spending increases more at food stores

than it does on food products.

While the in-kind payments in Table 4 panels a and b were targeted to lower-income families, the cash payments in panels c and d were not limited to low-income families but extended much higher up the income distribution. However, since liquidity constraints are likely more pronounced for the lowest-income households, we expect to observe larger spending responses for low-income families. In line with this hypothesis, spending responses, defined as either total spending at food stores or food spending, are lower for higher-income households, particularly in response to the cash transfers. We estimate that nearly all of households with children were eligible for EIPs. Spending at food stores increases across the board for all income groups but is generally smaller for those with higher incomes. Spending increases in response to monthly CTC payments are only positive and statistically significant among the lowest-income group and are negative and statistically significant in the highest-income groups.

5.4 Heterogeneity by Household Composition

Just as eligibility varied across programs based on income among families with school-age children, eligibility for each program also varied among low-income families with different household compositions. For example, low-income household without children also received SNAP EA and EIP payments, and most low-income households with children younger than school age received all benefits except P-EBT.[24] Tables 5 presents total spending at food stores for other types of low-income households, with column 1 reproducing the results for our primary sample of low-income households with school-age children.[25] Taken together, these heterogeneity patterns reinforce that both liquidity and the presence of children matter for how transfers are spent.

We examine all households that have children, including those that only have have children younger than school age in column 2. As shown in panel a, P-EBT results are attenuated among all families with children because younger children did not receive benefits. By con-

[24]The primary exception was some households with immigrant children.
[25]Appendix Table A10 shows results for food items.

trast, CTC benefits were larger to pre-school age children, and the estimated spending boost per $100 is similar, 1.2%, across columns 1 and 2.

Low-income households received the EIP and those on SNAP received EA payments regardless of whether they had school-age children. As shown in panel b, total spending at food stores among childless families increased in response to EA payments, with a 1.5% increase in spending for each additional $100 in benefits, although food spending did not significantly increase (Appendix Table A10). The percentage increase in both measures of spending are somewhat lower than they are for families with school-aged children (1.6-2.4%). Likewise, households without children increased their spending by slightly less than families with children in response to the EIP (panel c).

The two remaining programs were targeted to families with children, so results for childless families should be interpreted as placebo tests. For families without children, we assign "placebo benefits" based on overall the number of household members (not on number of school-aged children). In both cases there is no measured increase in spending in response to these placebo tests.

It is worth noting that although SNAP EA payments increase total spending at food stores more than spending on food products among households with children of any age, the same pattern does not hold among childless households. While the estimated coefficient on SNAP EA payments among childless households is not statistically significant in Appendix Table A10, the implied percentage change in spending is identical for total spending and spending on food products.

6 Conclusion

This paper shows that the design of transfers, including their labels, form and frequency, systematically shapes how low-income families with children adjust their spending. In a harmonized setting that compares four large, pandemic-era transfer programs, we find that in-kind food benefits generate larger increases in spending at food stores than cash transfers of comparable value, and that recurring, monthly benefits generate larger short-run spending responses than one-time payments do. These patterns are inconsistent with a "dollar is a

dollar" framework that suggest full fungibility, and instead point to the importance of other frameworks such as mental accounting, labeling effects, and forward-looking responses to expected benefit replenishment.

On the household side, our results add to evidence that consumption responses depend not only on the size and predictability of income shocks, but also on how they are framed and delivered. We estimate marginal propensities to consume food of about 0.14-0.15 out of in-kind benefits, compared with about 0.03 out of one-time cash transfers and 0.09 from recurring cash transfers. The fact that monthly benefits are spent more readily than lump-sum payments, holding the total dollar amount constant, is consistent with households treating recurring transfers as part of "regular" disposable resources and lump sums as potentially earmarked for saving, debt repayment, or purchase of durable goods. At the same time, the concentration of additional spending at food stores, with little systematic change in the composition of food types—across perishables and non-perishables, bulk vs. non-bulk products, or "temptation" goods such as sweets, soda, alcohol, and tobacco—suggests that these design features mainly affect how much households allocate to spending at food stores rather than what products they buy.

On the policy side, our findings imply that transfer design can be used to target not only who receives support, but also how that support affects spending, insurance, and demand stabilization. In-kind and recurring food benefits such as P-EBT and SNAP EA generate larger short-run increases in spending at food stores than one-time cash payments or monthly cash benefits, making them particularly powerful when the goal is to raise spending at food stores among low-income families with children. By contrast, the lower spending response to EIPs and monthly CTC payments at food stores is consistent with these programs providing broader insurance. Households can save a larger share or redirect funds to other categories not observed in scanner data, such as rent, utilities, or durables. From a macroeconomic perspective, these differences suggest that otherwise similar transfer programs may have quite different implications for the timing and composition of aggregate demand, even when their budgetary cost is comparable.

Our approach highlights the values and limits of high-frequency transaction data for evaluating transfer design. By linking detailed NielsenIQ scanner data to sharp policy variation in timing and amount across multiple programs, states, and years, we can estimate marginal propensities to spend in a common empirical framework, rather than inferring differences across programs from separate studies with distinct samples, time periods, and measurement conventions. At the same time, incomplete reporting of shopping trips implies that our estimates should be interpreted as lower bounds for true MPCs on food, and we cannot observe how households spend these transfers outside the high-frequency, nondurable sector that is well measured in the NielsenIQ data. Taken together, the evidence points to a central lesson: dollars delivered through different administrative formats are not equivalent in practice, and recognizing the behavioral and institutional forces that inhibit fungibility is essential for both welfare analysis and the design of effective social insurance and macroeconomic stabilization policies.

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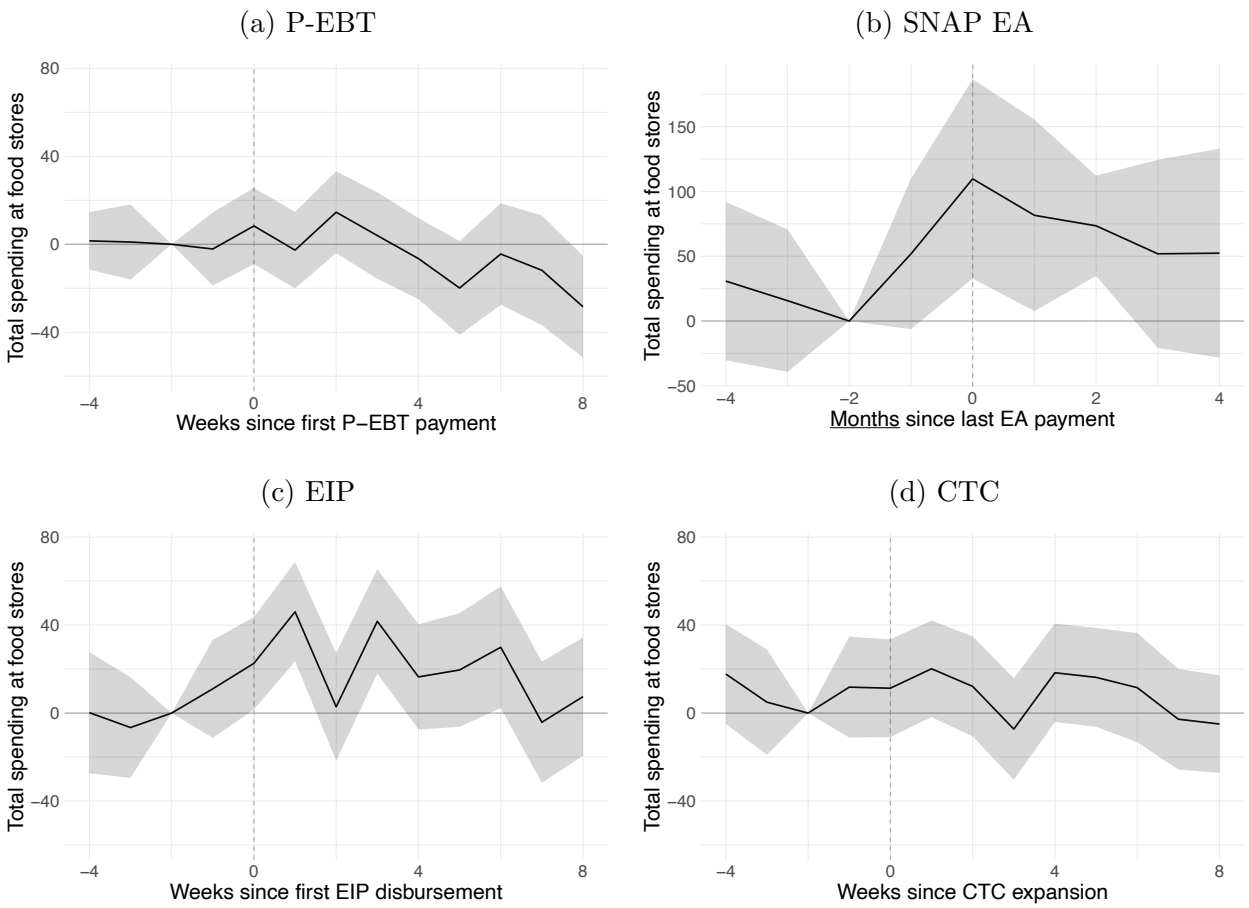
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Figure 1: Event study: Total spending at food stores



Notes: Figure shows event study of average total weekly spending at food stores relative to the period before transfer payments were made. P-EBT, EIP, and CTC impacts are measured at the week level; SNAP EA is measured at the month level. Sample includes families with school-aged children and household income no more than 130% of the federal poverty line in the previous year based on the midpoint of binned income and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. All equations include controls for head of household's age, gender, race/ethnicity, educational attainment, marital status, income, the number of children and adults in the household, and the number of children under age 5, as well as state-level controls for unemployment rate, share of monthly SNAP payments disbursed during the reference period, delays in UI payment processing, and pandemic policies. Shaded gray areas denote 95% confidence intervals.

Table 1: Total monthly spending at food stores and transfer receipt

	(1)	(2)
	One-time payments	Monthly payments
Panel a: In-kind transfers		
$100 transfers last 4 weeks (ITT)	7.39 (3.50)	15.83 (4.36)
TOT	9.48	20.30
MPC	0.18	0.52
N	9956	18948
DV mean	721.71	650.68
Avg transfer ($100s)	6.38	4.00
Benefit	P-EBT	SNAP EA
Panel b: Cash transfers		
$100 transfers last 4 weeks (ITT)	2.91 (0.71)	8.61 (2.10)
TOT	3.17	10.46
MPC	0.06	0.26
N	15432	58745
DV mean	680.49	707.43
Avg transfer ($100s)	43.73	5.56
Benefit	EIP	CTC

Notes: Sample includes families with school-aged children and household income no more than 130% of the federal poverty line in the previous year based on the midpoint of binned income and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. Treatment variable is the amount of P-EBT; SNAP EA ($\times -1$); monthly CTC; or the first EIP issued to households in the previous four weeks, based on household composition, date, and (P-EBT and SNAP EA) state of residence. Controls included as in Figure 1. Robust standard errors (clustered by state for P-EBT and SNAP EA) in parentheses.

Table 2: Monthly spending by type of store

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Grocery stores	Discount stores	Club stores	Convenience stores	Other food stores	Rest-aurants	Online spending
Panel a: One-time in-kind (P-EBT)							
$100 transfers	5.69	1.53	-0.96	-0.12	-0.03	0.26	0.38
last 4 weeks (ITT)	(1.38)	(1.86)	(0.91)	(0.11)	(0.07)	(0.65)	(0.34)
TOT	7.29	1.97	-1.23	-0.15	-0.03	0.34	0.49
N	9956	9956	9956	9956	9956	9956	9956
DV mean	200.15	140.63	40.26	7.75	2.71	39.23	5.55
Avg transfer ($100s)	6.38	6.38	6.38	6.38	6.38	6.38	6.38
Panel b: Monthly in-kind (SNAP EA)							
$100 transfers	4.55	-1.12	0.70	0.01	0.02	-0.67	-1.50
last 4 weeks (ITT)	(1.235)	(1.114)	(0.368)	(0.074)	(0.013)	(0.880)	(1.131)
TOT	5.84	-1.44	0.90	0.01	0.02	-0.86	-1.92
N	18948	18948	18948	18948	18948	18948	18948
DV mean	121.94	70.46	14.76	3.23	0.24	36.71	38.92
Avg transfer ($100s)	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Panel c: One-time cash (EIP)							
$100 transfers	0.68	0.45	0.13	-0.02	0.00	0.13	0.01
last 4 weeks (ITT)	(0.308)	(0.251)	(0.139)	(0.035)	(0.030)	(0.091)	(0.052)
TOT	0.74	0.49	0.15	-0.02	0.00	0.14	0.01
N	15432	15432	15432	15432	15432	15432	15432
DV mean	204.31	128.64	34.81	11.13	3.51	31.85	8.42
Avg transfer ($100s)	43.73	43.73	43.73	43.73	43.73	43.73	43.73
Panel d: Monthly cash (CTC)							
$100 transfers	0.90	1.81	0.41	-0.01	0.01	-0.15	0.37
last 4 weeks (ITT)	(0.585)	(0.464)	(0.277)	(0.069)	(0.022)	(0.412)	(0.173)
TOT	1.10	2.20	0.50	-0.02	0.01	-0.18	0.45
N	58745	58745	58745	58745	58745	58745	58745
DV mean	115.14	76.33	15.38	3.53	0.29	48.13	5.37
Avg transfer ($100s)	5.56	5.56	5.56	5.56	5.56	5.56	5.56

Notes: Sample includes families with school-aged children and household income no more than 130% of the federal poverty line in the previous year based on the midpoint of binned income and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. Store type as defined in Appendix **??**. Treatment variable is the amount of P-EBT; SNAP EA ($\times -1$); monthly CTC; or the first EIP issued to households in the previous four weeks, based on household composition, date, and (P-EBT and SNAP EA) state of residence. Controls included as in Figure 1. Robust standard errors (clustered by state for P-EBT and SNAP EA) in parentheses.

Table 3: Monthly spending on food products by food type

	(1)	(2)	(3)	(4)	(5)
	Perishables	Non-perishables	Alcohol + Tobacco	Sweets + Soda	Bulk purchases
Panel a: One-time in-kind (P-EBT)					
$100 transfers	1.23	4.89	0.03	0.31	0.00
last 4 weeks (ITT)	(0.65)	(1.31)	(0.40)	(0.47)	(0.00)
TOT	1.57	6.27	0.03	0.40	0.00
N	9956	9956	9956	9956	7583
DV mean	112.40	279.10	23.42	58.68	1.04
Avg transfer ($100s)	6.38	6.38	6.38	6.38	6.40
Panel b: Monthly in-kind (SNAP EA)					
$100 transfers	1.28	2.88	0.68	0.36	0.00
last 4 weeks (ITT)	(0.63)	(1.21)	(0.52)	(0.33)	(0.01)
TOT	1.64	3.69	0.87	0.46	-0.01
N	18948	18948	18948	18948	18414
DV mean	59.42	151.22	12.83	34.43	1.09
Avg transfer ($100s)	4.00	4.00	4.00	4.00	4.01
Panel c: One-time cash (EIP)					
$100 transfers	0.40	0.85	0.06	0.08	0.00
last 4 weeks (ITT)	(0.13)	(0.30)	(0.05)	(0.05)	0.00
TOT	0.43	0.92	0.06	0.08	0.00
N	15432	15432	15432	15432	11898
DV mean	109.23	273.16	15.18	39.79	0.99
Avg transfer ($100s)	43.73	43.73	43.73	43.73	44.12
Panel d: Monthly cash (CTC)					
$100 transfers	0.72	2.40	-0.01	0.41	0.00
last 4 weeks (ITT)	(0.27)	(0.58)	(0.12)	(0.15)	(0.00)
TOT	0.88	2.91	-0.02	0.49	0.00
N	58745	58745	58745	58745	43558
DV mean	65.14	145.51	12.21	32.90	1.06
Avg transfer ($100s)	5.56	5.56	5.56	5.56	5.57

Notes: Sample includes families with school-aged children and household income no more than 130% of the federal poverty line in the previous year based on the midpoint of binned income and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. Treatment variable is the amount of P-EBT; SNAP EA ($\times -1$); monthly CTC; or the first EIP issued to households in the previous four weeks, based on household composition, date, and (P-EBT and SNAP EA) state of residence. Bulk purchases are products that are in the 80th percentile or higher of the size distribution of products within its product module (defined for product modules with at least 50 UPCs); perishables include bakery, meat, seafood, deli, dairy, produce, and miscellaneous fresh departments (non-perishables are products in frozen or dry grocery good departments). Controls included as in Figure 1. Robust standard errors (clustered by state for P-EBT and SNAP EA) in parentheses.

Table 4: Total monthly spending at food stores, alternative income cutoffs, households with school-aged children

	(1) <130% FPL	(2) 130-200% FPL	(3) 200-300% FPL	(4) < 300% FPL	(5) > 300% FPL	(6) > 500% FPL
Panel a: One-time in-kind (P-EBT)						
$100 transfers	7.39	5.33	-5.75	2.12	0.73	-1.00
last 4 weeks (ITT)	(3.50)	(4.03)	(2.11)	(2.41)	(2.17)	(3.02)
N	9956	12763	17327	40046	45581	20455
DV mean	721.71	737.43	804.68	757.11	799.59	782.86
Avg P-EBT	6.38	6.00	6.21	6.20	5.52	4.93
Share eligible	1.00	0.86	0.12	0.63	0.08	0.06
Avg transfer if eligible ($100s)	6.38	5.98	5.05	6.11	5.16	4.62
% Δ (/$100)	1.02%	0.72%	-0.72%	0.28%	0.09%	-0.13%
Panel b: Monthly in-kind (SNAP EA)						
$100 transfers	15.83	7.19	1.73	4.24	2.24	4.57
last 4 weeks (ITT)	(4.36)	(4.03)	(2.99)	(1.45)	(1.67)	(2.86)
N	18948	22678	34184	75810	89277	40564
DV mean	650.68	691.08	723.68	691.56	732.93	730.69
Avg SNAP EA	4.00	7.09	8.01	6.48	7.43	6.83
Share eligible	1.00	0.57	0.00	0.48	0.00	0.00
Avg transfer if eligible ($100s)	4.00	7.05	9.33	4.98	.	.
% Δ (/$100)	2.43%	1.04%	0.24%	0.61%	0.31%	0.63%
Panel c: One-time cash (EIP)						
$100 transfers	2.91	1.33	1.76	1.87	0.83	1.43
last 4 weeks (ITT)	(0.71)	(0.61)	(0.62)	(0.38)	(0.39)	(0.59)
N	15432	23336	30752	69104	84720	37792
DV mean	680.49	705.48	773.05	722.54	789.82	776.35
Avg EIP	43.73	43.68	45.15	44.24	42.81	39.48
Share eligible	1.00	1.00	0.99	0.99	0.86	0.82
Avg transfer if eligible ($100s)	43.73	43.68	45.15	44.24	42.81	39.48
% Δ (/$100)	0.43%	0.19%	0.23%	0.26%	0.10%	0.18%
Panel d: Monthly cash (CTC)						
$100 transfers	8.61	1.66	1.98	4.16	-5.26	-7.82
last 4 weeks (ITT)	(2.10)	(1.98)	(1.82)	(1.14)	(1.19)	(1.98)
N	58745	87978	118265	263376	313379	138446
DV mean	707.43	727.22	760.57	733.47	758.41	751.73
Avg CTC	5.56	5.17	5.26	5.33	4.30	3.49
Share eligible	1.00	1.00	1.00	1.00	0.47	0.30
Avg transfer if eligible ($100s)	5.56	5.17	5.26	5.33	4.30	3.49
% Δ (/$100)	1.22%	0.23%	0.26%	0.57%	-0.69%	-1.04%

Notes: Sample includes families with school-aged children and household income no more than a given threshold of the federal poverty line in the previous year and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. Treatment variable is the amount of P-EBT; SNAP EA ($\times -1$); monthly CTC; or the first EIP issued to households in the previous four weeks, based on household composition, date, and (P-EBT and SNAP EA) state of residence. Controls included as in Figure 1. Robust standard errors (clustered by state for P-EBT and SNAP EA) in parentheses.

Table 5: Total monthly spending at food stores, different types of low-income households

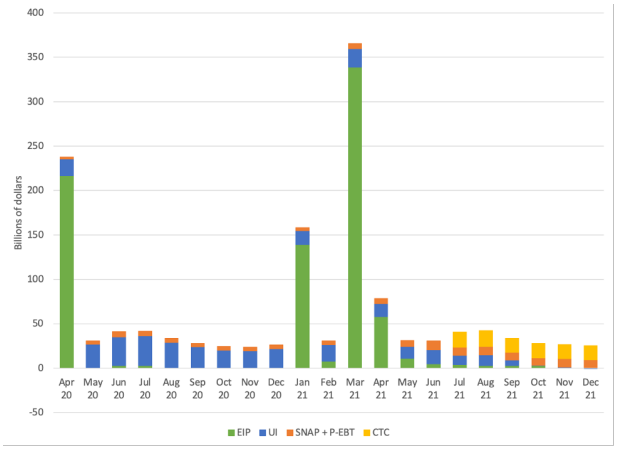
	(1) HH w/ school-aged children	(2) HH w/ any children	(3) All HH w/o children	(4) All HH
Panel a: One-time in-kind (P-EBT)				
$100 transfers	7.39	5.25	-1.16	6.11
last 4 weeks (ITT)	(3.50)	(4.05)	(1.56)	(3.71)
N	9956	10932	22212	33144
DV mean	721.71	704.12	491.54	577.57
Avg P-EBT	6.38	5.78	6.10	2.26
Share eligible	1.00	0.89	0.00	0.36
Avg transfer if eligible ($100s)	6.38	6.38	.	6.38
% Δ (/$100)	1.02%	0.75%	-0.24%	1.06%
Panel b: Monthly in-kind (SNAP EA)				
$100 transfers	15.83	14.53	8.28	12.61
last 4 weeks (ITT)	(4.36)	(3.84)	(4.12)	(3.92)
N	18948	20336	23871	44207
DV mean	650.68	643.60	556.26	607.68
Avg SNAP EA	4.00	3.96	2.72	3.41
Share eligible	1.00	1.00	1.00	1.00
Avg transfer if eligible ($100s)	4.00	3.96	2.72	3.41
% Δ (/$100)	2.43%	2.26%	1.49%	2.08%
Panel c: One-time cash (EIP)				
$100 transfers	2.91	2.82	1.59	2.32
last 4 weeks (ITT)	(0.71)	(0.68)	(0.51)	(0.40)
N	15432	17080	36272	53352
DV mean	680.49	677.11	467.14	549.81
Avg EIP	43.73	43.33	25.02	32.23
Share eligible	1.00	1.00	1.00	1.00
Avg transfer if eligible ($100s)	43.73	43.33	25.02	32.23
% Δ (/$100)	0.43%	0.42%	0.34%	0.42%
Panel d: Monthly cash (CTC)				
$100 transfers	8.61	8.66	-0.34	7.36
last 4 weeks (ITT)	(2.10)	(2.04)	(1.21)	(1.47)
N	58745	64728	133362	198090
DV mean	707.43	696.32	451.86	551.98
Avg CTC	5.56	5.47	5.10	2.24
Share eligible	0.94	0.94	0.00	0.39
Avg transfer if eligible ($100s)	5.94	5.80	.	5.80
% Δ (/$100)	1.22%	1.24%	-0.08%	1.33%

Notes: Sample includes families with school-aged children (column 1); any children (column 2); households without children (column 3); or all households (column 4) with income no more than 130% of the federal poverty line in the previous year based on the midpoint of binned income and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. Treatment variable is the amount of P-EBT; SNAP EA ($*-1$); monthly CTC; or the first EIP issued to households in the previous four weeks, based on household composition, date, and (P-EBT and SNAP EA) state of residence. Child-only benefits (CTC, P-EBT) for households without children calculated based on per-child amount and household size. Controls included as in Figure 1. Robust standard errors (clustered by state for P-EBT and SNAP EA) in parentheses.

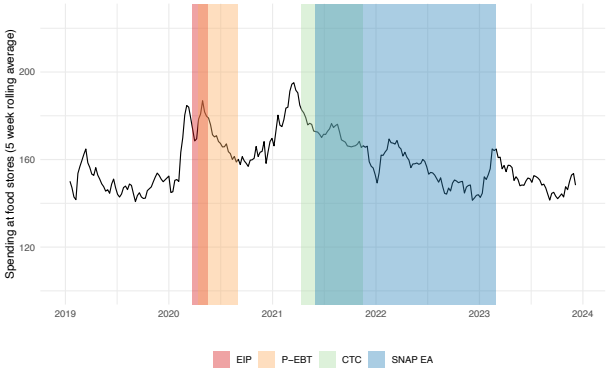
7 Appendix

Appendix Figure A1: Transfer payment timing

(a) Federal spending, select programs

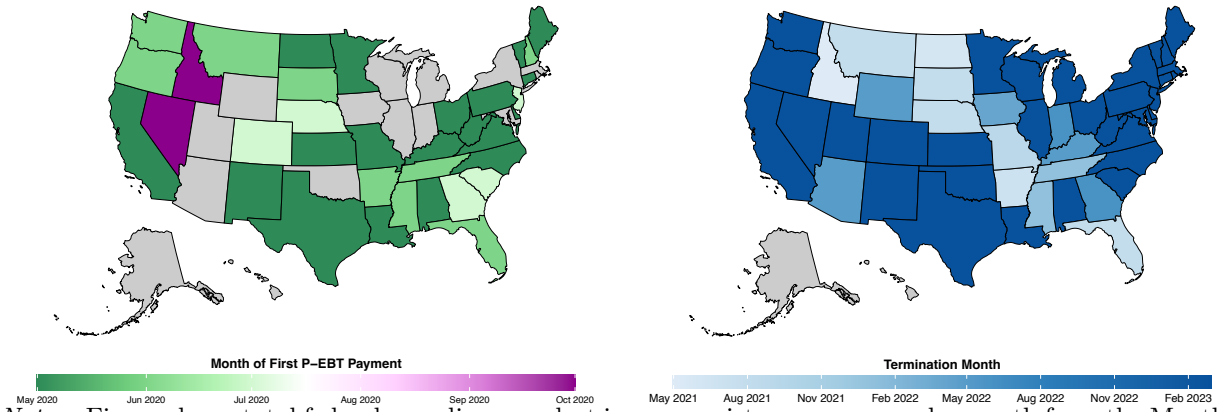


(b) Spending at food stores by program analysis period



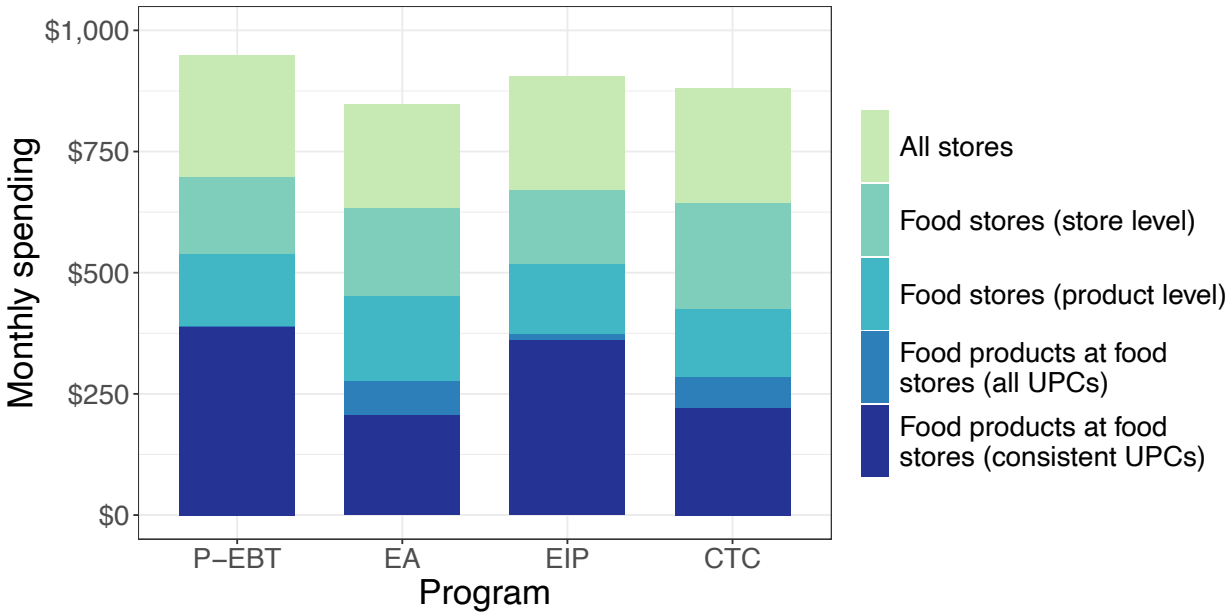
(c) Cross-state variation in P-EBT payments

(d) Cross-state variation in SNAP EA payments



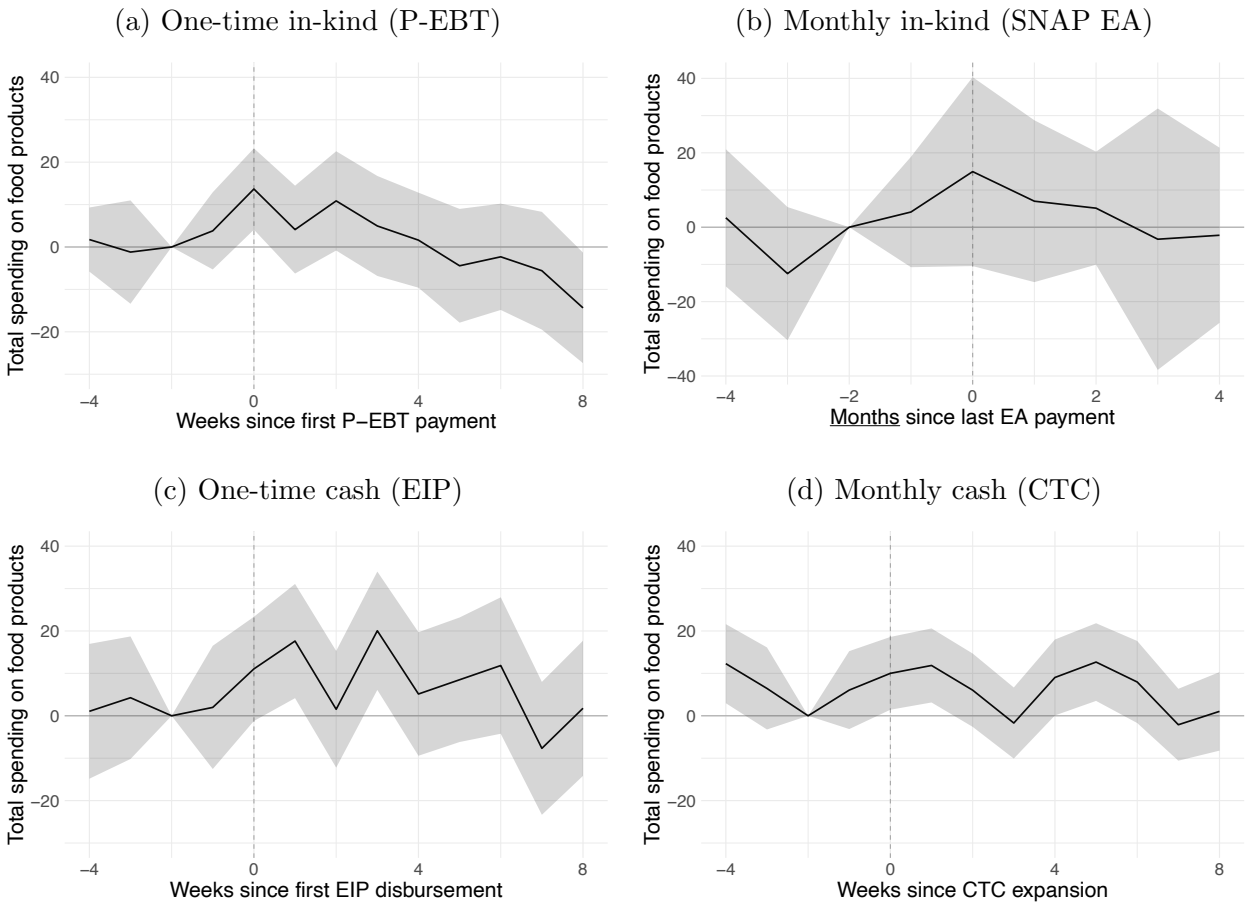
Notes: Figure shows total federal spending on select income assistance programs by month from the Monthly Treasury Statement (panel a); 5-week average of total spending at food stores among low-income families with children during the analysis period of each program (panel b); the month when states first issued P-EBT to SNAP households (panel c); and the month that SNAP EA payments ended (panel d).

Appendix Figure A2: NielsenIQ spending coverage



Notes: Figure shows monthly spending on several measures of spending for each program's analysis period. "All stores" and "food stores" captures all purchases at all (food) stores based on receipt scans. "Product level" is the sum of all items and does not include taxes or fees. "Consistent UPCs" include spending on food products that appear at least once in the NielsenIQ data each in each year of the analysis period.

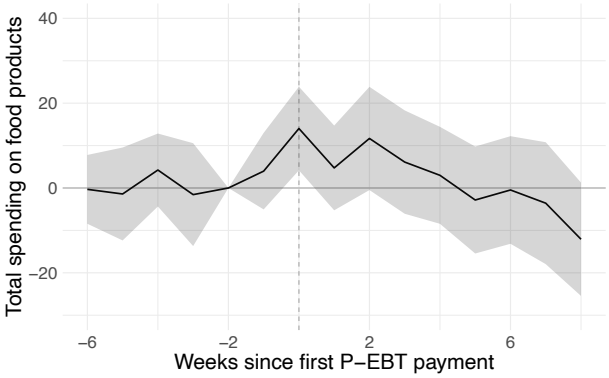
Appendix Figure A3: Event study: Spending on food products



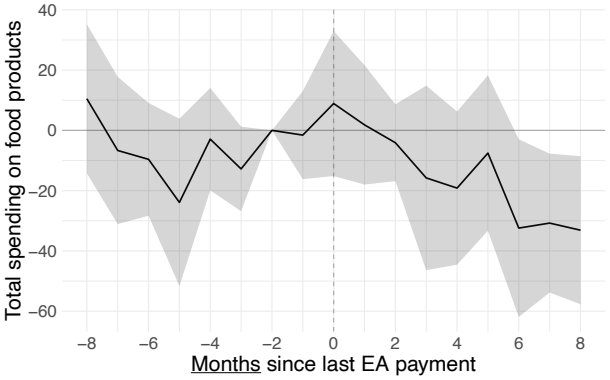
Notes: Figure shows event study of average weekly spending on food products relative to the period before transfer payments were made. P-EBT, EIP, and CTC impacts are measured at the week level; SNAP EA is measured at the month level. Sample includes families with school-aged children and household income no more than 130% of the federal poverty line in the previous year based on the midpoint of binned income and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. Controls included as in Figure 1. Shaded gray areas denote 95% confidence intervals.

Appendix Figure A4: Event study, longer pre-period: Total spending at food stores

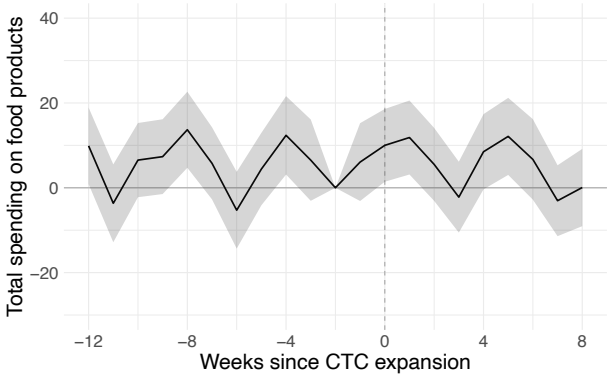
(a) One-time in-kind (P-EBT)



(b) One-time monthly (SNAP EA)

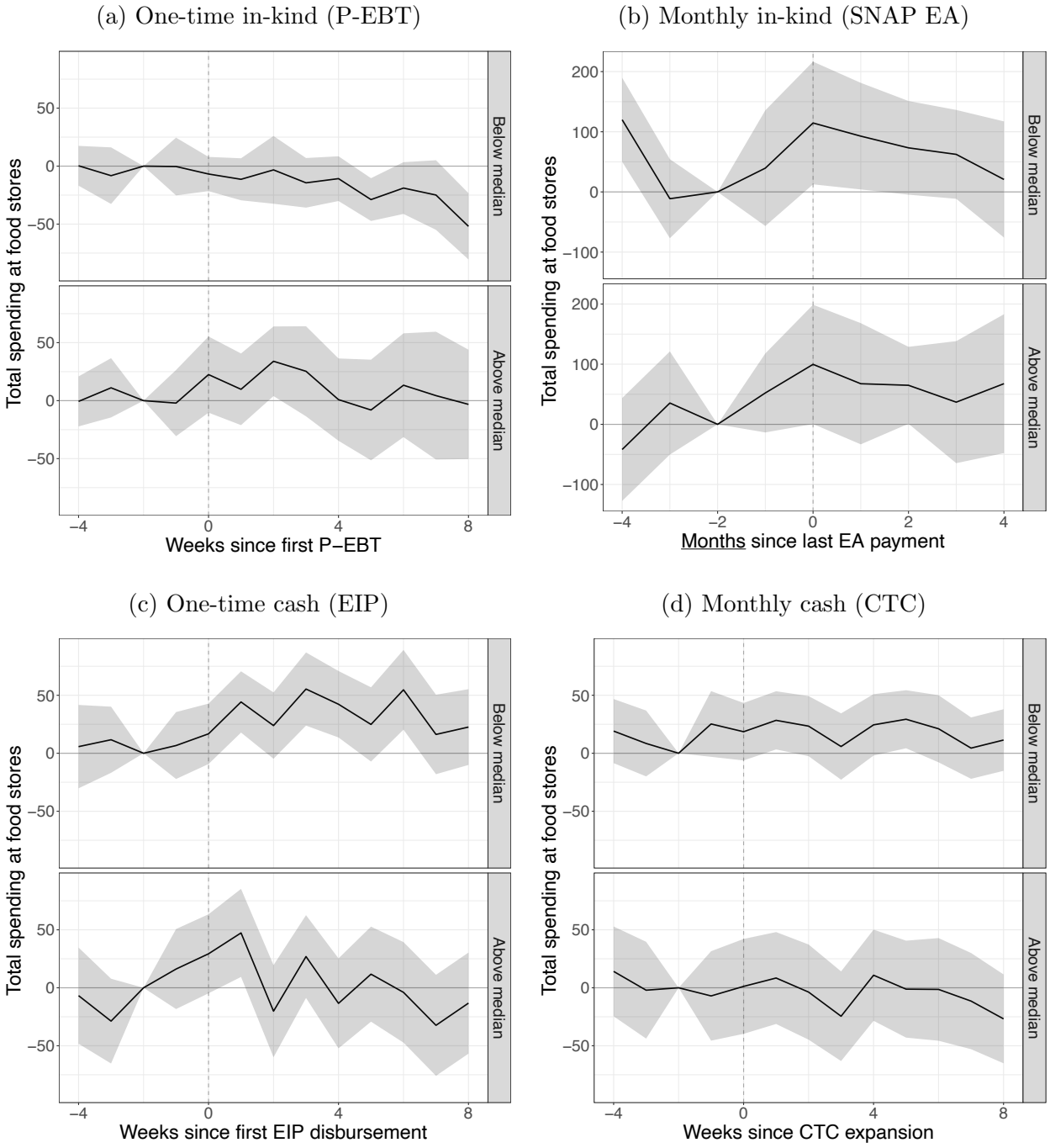


(c) Monthly cash (CTC)



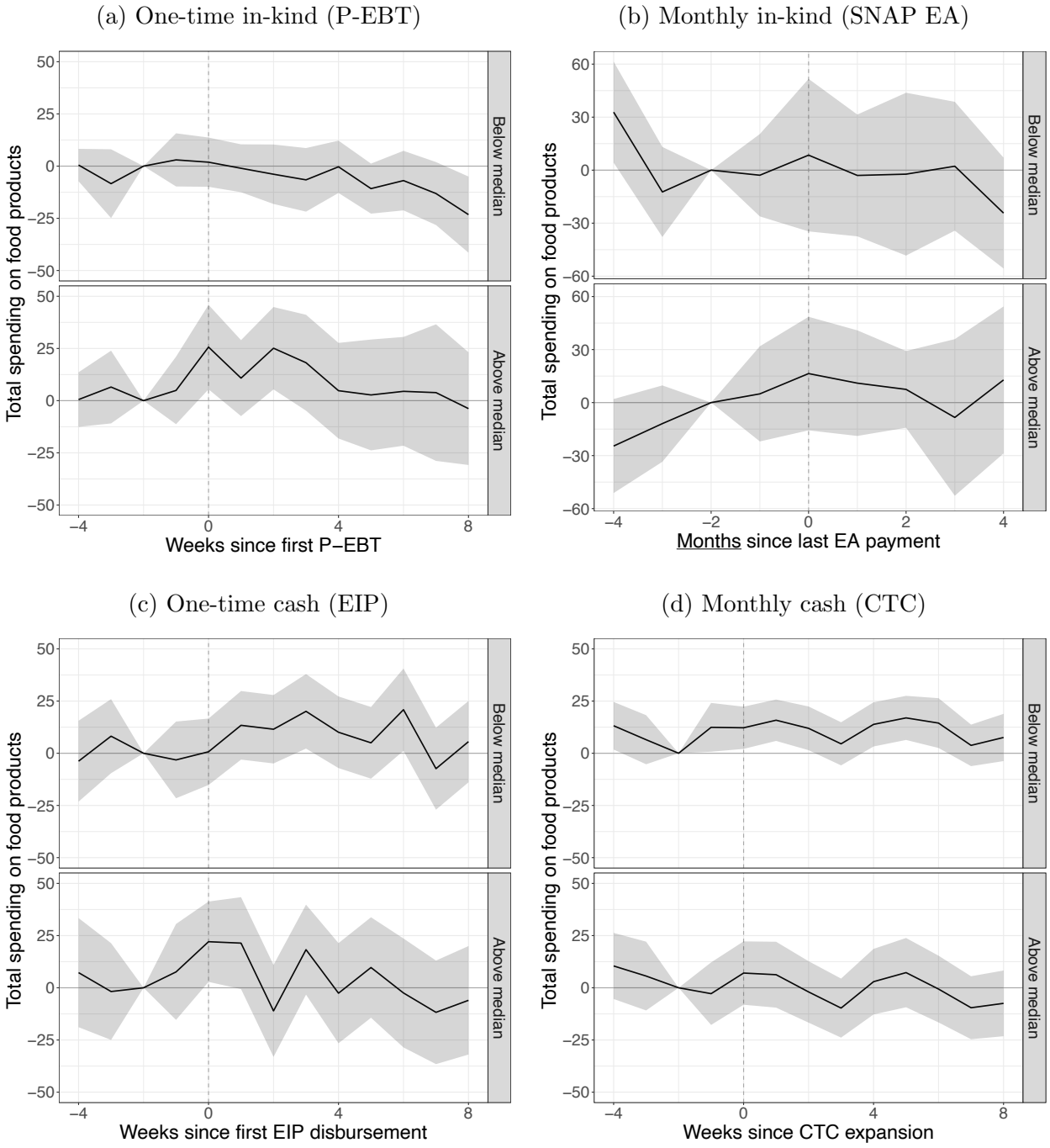
Notes: Figure shows event study of average total weekly spending at food stores relative to the period before transfer payments were made. P-EBT, EIP, and CTC impacts are measured at the week level; SNAP EA is measured at the month level. Sample includes families with school-aged children and household income no more than 130% of the federal poverty line in the previous year based on the midpoint of binned income and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. All equations include controls for head of household's age, gender, race/ethnicity, educational attainment, marital status, income, the number of children and adults in the household, and the number of children under age 5, as well as state-level controls for unemployment rate, share of monthly SNAP payments disbursed during the reference period, delays in UI payment processing, and pandemic policies. Shaded gray areas denote 95% confidence intervals.

Appendix Figure A5: Event study total spending at food stores by low and high benefit amounts



Notes: Figure shows event study of weekly total spending at food stores relative to the period before transfer payments were made. P-EBT, EIP, and CTC impacts are measured at the week level; SNAP EA is measured at the month level. Each panel partitions the sample into households receiving less than (top) or more than (bottom) the median transfer value. Sample includes families with school-aged children and household income no more than 130% of the federal poverty line in the previous year based on the midpoint of binned income and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. Controls included as in Figure 1. Shaded gray areas denote 95% confidence intervals.

Appendix Figure A6: Event study, by low and high benefit amounts: Total spending at food stores

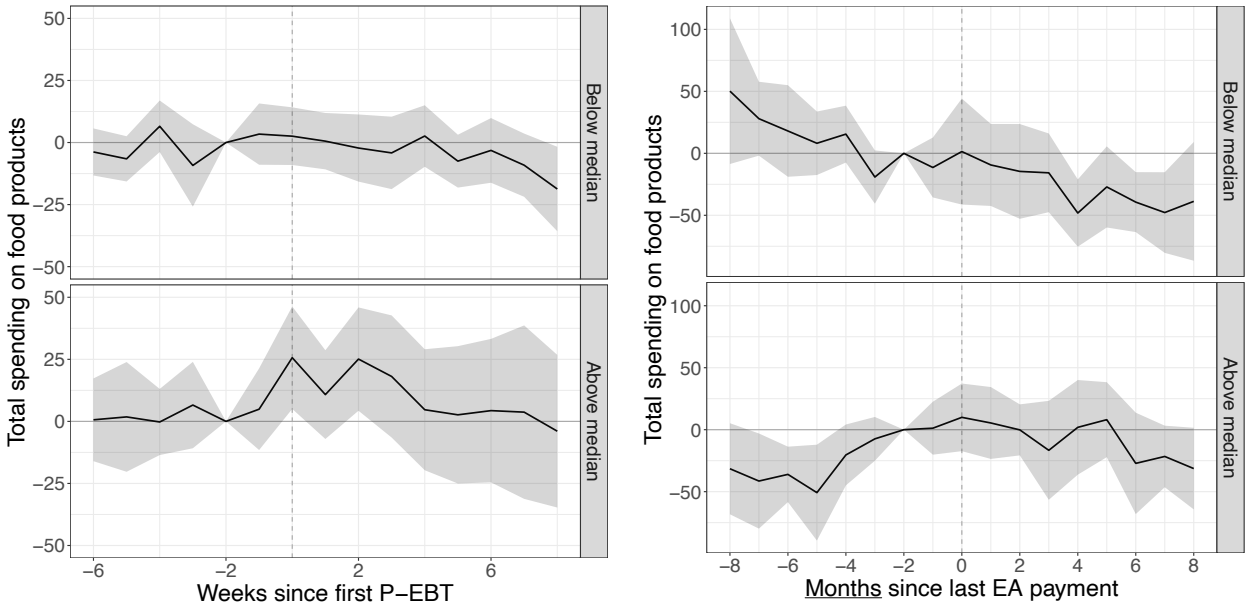


Notes: Figure shows event study of spending on food products relative to the period before transfer payments were made. P-EBT, EIP, and CTC impacts are measured at the week level; SNAP EA is measured at the month level. Each panel partitions the sample into households receiving less than (top) or more than (bottom) the median transfer value. Sample includes families with school-aged children and household income no more than 130% of the federal poverty line in the previous year based on the midpoint of binned income and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. Controls included as in Figure 1. Shaded gray areas denote 95% confidence intervals.

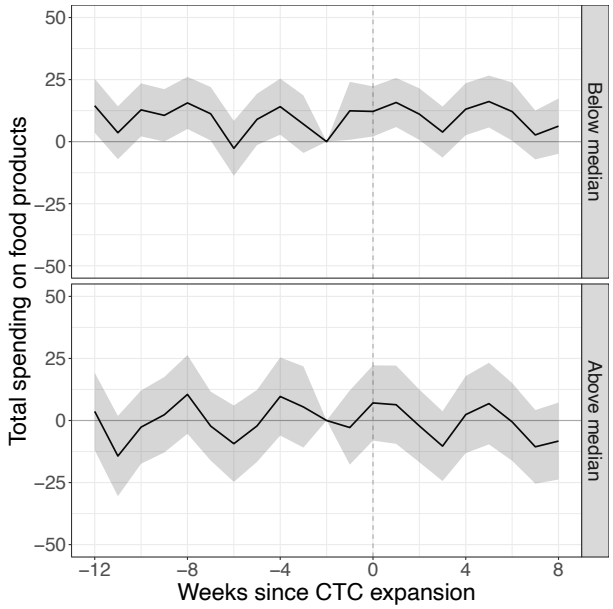
Appendix Figure A7: Event study, longer pre-period by low and high benefit amounts: Spending on food products

(a) One-time in-kind (P-EBT)

(b) Monthly in-kind (SNAP EA)



(c) Monthly cash (CTC)



Notes: Figure shows event study of spending on food products relative to the period before transfer payments were made. P-EBT, EIP, and CTC impacts are measured at the week level; SNAP EA is measured at the month level. Each panel partitions the sample into households receiving less than (top) or more than (bottom) the median transfer value. Sample includes families with school-aged children and household income no more than 130% of the federal poverty line in the previous year based on the midpoint of binned income and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. Controls included as in Figure 1. Shaded gray areas denote 95% confidence intervals.

Appendix Table A1: Summary statistics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	One-time in-kind		Monthly in-kind		One-time cash				Monthly cash			
	(P-EBT)		(SNAP EA)		(EIP)				(CTC)			
					2019		2020		2019		2021	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Outcomes of interest (monthly)												
Total spending at food stores	718.36	762.03	650.68	438.57	626.93	670.54	680.49	735.75	593.52	654.75	707.44	731.90
Total food spending	392.48	439.48	210.64	168.60	343.77	403.43	382.40	435.22	234.92	292.99	210.66	249.03
Number of trips	7.11	6.70	6.02	4.45	7.70	7.20	7.28	6.86	6.97	6.58	6.15	5.82
Spending/trip	64.54	61.46	40.37	31.60	52.20	50.61	61.67	58.47	38.45	38.17	38.80	35.85
Perishable spend	112.92	143.12	59.42	54.95	100.05	131.21	109.23	141.99	72.41	102.94	65.14	86.25
Non-perishable spend	279.56	326.48	151.22	127.06	243.72	301.03	273.17	321.67	162.51	217.35	145.52	185.33
Benefit amount												
Transfer amount	604.08	369.30	373.74	207.60	0.00	0.00	4418.44	1418.13	0.00	0.00	635.03	323.91
Demographics												
Married	0.550	0.498	0.497	0.500	0.526	0.499	0.513	0.500	0.526	0.499	0.499	0.500
< HS	0.055	0.228	0.041	0.197	0.045	0.207	0.047	0.212	0.045	0.207	0.039	0.195
HS diploma	0.329	0.470	0.355	0.479	0.352	0.478	0.340	0.474	0.352	0.478	0.355	0.478
Some college	0.401	0.490	0.382	0.486	0.393	0.488	0.404	0.491	0.393	0.488	0.376	0.484
College degree +	0.216	0.411	0.222	0.415	0.210	0.407	0.209	0.407	0.210	0.407	0.230	0.421
Black	0.166	0.372	0.163	0.369	0.169	0.375	0.154	0.361	0.169	0.375	0.159	0.366
Hispanic	0.211	0.408	0.217	0.412	0.182	0.386	0.218	0.413	0.182	0.386	0.201	0.401
White	0.558	0.497	0.552	0.497	0.595	0.491	0.568	0.495	0.595	0.491	0.571	0.495
Other race	0.065	0.247	0.068	0.251	0.054	0.227	0.060	0.237	0.054	0.227	0.068	0.252
Two heads of household	0.547	0.498	0.470	0.499	0.486	0.500	0.493	0.500	0.486	0.500	0.464	0.499
Female head only	0.416	0.493	0.470	0.499	0.454	0.498	0.458	0.498	0.454	0.498	0.484	0.500
Male head only	0.037	0.189	0.060	0.238	0.060	0.237	0.050	0.217	0.060	0.237	0.052	0.222
Age of HoH	43.8	10.7	45.0	11.1	44.7	11.0	44.1	10.9	44.7	11.0	44.9	11.0
# adults	2.18	0.86	2.26	1.01	2.19	0.97	2.18	0.92	2.19	0.97	2.22	0.93
# children	2.12	1.11	2.07	1.06	2.21	1.15	2.10	1.09	2.21	1.15	2.10	1.04
# children under 5	0.23	0.46	0.20	0.48	0.23	0.47	0.22	0.46	0.23	0.47	0.22	0.51
HH income	27138	19509	26637	18261	21144	9845	27278	19346	21144	9845	24084	9972
Covid policies and other benefits												
Stay-at-home active	0.503	0.500	0.000	0.000	0.000	0.000	0.770	0.421	0.000	0.000	0.000	0.000
Restaurant closure active	0.569	0.495	0.000	0.000	0.000	0.000	0.914	0.281	0.000	0.000	0.005	0.071
Mask mandate active	0.070	0.255	0.152	0.359	0.000	0.000	0.008	0.092	0.000	0.000	0.497	0.500
Any P-EBT disbursement			0.586	0.493	0.000	0.000	0.000	0.000	0.000	0.000	0.742	0.437
SNAP EAs active	1.000	0.000			0.000	0.000	1.000	0.000	0.000	0.000	0.991	0.093
Unemployment rate	0.126	0.048	0.013	0.008	0.011	0.006	0.090	0.052	0.010	0.005	0.023	0.010
UI processed wi/ 1 week	0.343	0.232	0.365	0.191	0.545	0.179	0.461	0.277	0.558	0.180	0.336	0.208
UI processed 1-2 weeks	0.622	0.211	0.583	0.181	0.815	0.114	0.813	0.148	0.829	0.108	0.564	0.167
UI processed > 10 weeks	0.969	0.078	0.838	0.143	0.984	0.018	0.998	0.003	0.988	0.014	0.866	0.088
# HH	873		1479		910		1019		910		985	

Notes: Table shows means and standard deviations of analysis sample for each transfer. Educational attainment, race/ethnicity, and marital status refer to the head of household.

Appendix Table A2: Monthly spending on food products and transfer receipt

	(1)	(2)
	One-time payments	Monthly payments
Panel a: In-kind transfers		
$100 transfers last 4 weeks (ITT)	6.11 (1.87)	4.16 (1.79)
TOT	7.84	5.33
MPC	0.15	0.14
N	9956	18948
DV mean	391.50	210.63
Avg transfer ($100s)	6.38	4.00
Benefit	P-EBT	SNAP EA
Panel b: Cash transfers		
$100 transfers last 4 weeks (ITT)	1.25 (0.41)	3.12 (0.78)
TOT	1.36	3.79
MPC	0.03	0.09
N	15432	58745
DV mean	382.40	210.66
Avg transfer ($100s)	43.73	5.56
Benefit	EIP	CTC

Notes: Sample includes families with school-aged children and household income no more than 130% of the federal poverty line in the previous year based on the midpoint of binned income and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. Treatment variable is the amount of P-EBT; SNAP EA ($\times -1$); monthly CTC; or the first EIP issued to households in the previous four weeks, based on household composition, date, and (P-EBT and SNAP EA) state of residence. Controls included as in Figure 1. Robust standard errors (clustered by state for P-EBT and SNAP EA) in parentheses.

Appendix Table A3: Monthly shopping patterns and transfer receipt

	Number of trips		Spending per trip	
	One-time payments	Monthly payments	One-time payments	Monthly payments
Panel a: In-kind transfers				
$100 transfers last 4 weeks (ITT)	0.013 (0.02)	0.074 (0.03)	3.935 (1.41)	1.673 (1.40)
TOT	0.02	0.09	5.04	2.14
N	9956	18948	7789	18432
DV mean	7.05	6.02	281.32	174.95
Avg transfer ($100s)	6.38	4.00	6.38	4.01
Benefit	P-EBT	SNAP EA	P-EBT	SNAP EA
Panel b: Cash transfers				
$100 transfers last 4 weeks (ITT)	0.01 (0.00)	0.04 (0.02)	0.49 (0.24)	1.72 (0.56)
TOT	0.01	0.05	0.53	2.09
N	15432	58745	12174	44161
DV mean	7.28	6.14	267.25	168.13
Avg transfer ($100s)	43.73	5.56	44.07	5.57
Benefit	EIP	CTC	EIP	CTC

Notes: Sample includes families with school-aged children and household income no more than 130% of the federal poverty line in the previous year based on the midpoint of binned income and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. Treatment variable is the amount of P-EBT; SNAP EA ($\times -1$); monthly CTC; or the first EIP issued to households in the previous four weeks, based on household composition, date, and (P-EBT and SNAP EA) state of residence. Controls included as in Figure 1. Robust standard errors (clustered by state for P-EBT and SNAP EA) in parentheses.

Appendix Table A4: Total spending at food stores robustness: Later EIPs, alternative EIP control groups, SNAP EA introduction

	(1) EIP 3 (2019 control group)	(2) EIP 1 (2022 control group)	(3) SNAP EA introduction
$100 transfers	0.16	1.82	16.78
last 4 weeks (ITT)	(0.41)	(0.70)	(30.21)
TOT	0.18	1.98	18.24
MPC	0.00	0.04	0.36
N	15432	12174	10236
DV mean	774.14	680.49	702.88
Avg transfer ($100s)	43.73	44.07	0.12

Notes: Sample includes families with school-aged children and household income no more than 130% of the federal poverty line in the previous year based on the midpoint of binned income and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. Treatment variable is the amount of the third EIP (column 1), first EIP (column 2), or first SNAP EA payment (column 3) issued to households in the previous four weeks, based on household composition and date. Panel b includes families in 2022, rather than 2019, as the control group. Column 3 includes not-yet-adopting states as the control group. Controls included as in Figure 1. Robust standard errors (clustered by state for P-EBT and SNAP EA) in parentheses.

Appendix Table A5: Monthly food and non-food spending, by store type

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All products				**Food products**				**Non-food products**			
	All stores, receipt	Food stores, receipt	All stores, product	Food stores, product	All stores, product	Food stores, product	All stores, clean UPCs	Food stores, clean UPCs	All stores, product	Food stores, product	All stores, clean UPCs	Food stores, clean UPCs
Panel a: One-time in-kind (P-EBT)												
$100 transfers	6.97	7.39	8.13	7.27	6.57	6.11	6.57	6.11	1.57	1.16	1.57	1.16
last 4 weeks (ITT)	(5.41)	(3.50)	(3.34)	(2.50)	(1.87)	(1.87)	(1.87)	(1.87)	(2.22)	(1.15)	(2.22)	(1.15)
TOT	8.93	9.48	10.43	9.32	8.42	7.84	8.42	7.84	2.01	1.48	2.01	1.48
N	9956	9956	9956	9956	9956	9956	9956	9956	9956	9956	9956	9956
DV mean	974.54	721.71	686.71	547.47	460.33	391.50	460.33	391.50	226.38	155.97	226.38	155.97
Avg transfer ($100s)	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38
Panel b: Monthly in-kind (SNAP EA)												
$100 transfers	11.28	15.83	7.48	8.86	4.82	4.70	4.25	4.16	2.67	4.16	3.00	4.41
last 4 weeks (ITT)	(5.42)	(4.36)	(3.38)	(3.02)	(2.33)	(2.28)	(1.79)	(1.79)	(1.93)	(1.25)	(1.84)	(1.08)
TOT	14.47	20.30	9.59	11.36	6.18	6.02	5.44	5.33	3.42	5.33	3.84	5.65
N	18948	18948	18948	18948	18948	18948	18948	18948	18948	18948	18948	18948
DV mean	869.96	650.68	553.99	437.51	288.28	267.37	227.24	210.63	265.71	170.14	226.42	138.59
Avg transfer ($100s)	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Panel c: One-time cash (EIP)												
$100 transfers	3.63	2.91	2.59	2.05	1.40	1.32	1.33	1.25	1.20	0.72	0.88	0.52
last 4 weeks (ITT)	(0.99)	(0.71)	(0.64)	(0.54)	(0.45)	(0.42)	(0.43)	(0.41)	(0.36)	(0.24)	(0.32)	(0.23)
TOT	3.94	3.17	2.82	2.22	1.52	1.44	1.44	1.36	1.30	0.79	0.96	0.57
N	15432	15432	15432	15432	15432	15432	15432	15432	15432	15432	15432	15432
DV mean	889.330	680.485	665.219	536.727	468.533	398.983	449.332	382.399	196.686	137.744	181.584	126.330
Avg transfer ($100s)	43.73	43.73	43.73	43.73	43.73	43.73	43.73	43.73	43.73	43.73	43.73	43.73
Panel d: Monthly cash (CTC)												
$100 transfers	8.45	8.61	4.53	5.34	5.27	4.14	3.89	3.12	-0.74	1.20	-1.33	0.80
last 4 weeks (ITT)	(2.92)	(2.10)	(1.60)	(1.30)	(1.02)	(0.97)	(0.82)	(0.78)	(0.99)	(0.62)	(0.91)	(0.54)
TOT	10.27	10.46	5.51	6.49	6.40	5.03	4.72	3.79	-0.90	1.46	-1.61	0.97
N	58745	58745	58745	58745	58745	58745	58745	58745	58745	58745	58745	58745
DV mean	983.36	707.43	538.15	404.84	267.18	247.35	226.90	210.66	270.96	157.49	240.53	134.68
Avg transfer ($100s)	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56

Notes: Sample includes families with school-aged children and household income no more than 130% of the federal poverty line in the previous year based on the midpoint of binned income and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. Treatment variable is the amount of P-EBT; SNAP EA ($\times -1$); monthly CTC; or the first EIP issued to households in the previous four weeks, based on household composition, date, and (P-EBT and SNAP EA) state of residence. Controls included as in Figure 1. Robust standard errors (clustered by state for P-EBT and SNAP EA) in parentheses.

Appendix Table A6: Total monthly spending at food stores and transfer receipt, household fixed effects

	(1)	(2)
	One-time payments	Monthly payments
Panel a: In-kind transfers		
$100 transfers	7.07	11.85
last 4 weeks (ITT)	(3.20)	(2.18)
TOT	9.07	15.19
MPC	0.17	0.39
N	9956	18948
DV mean	721.71	650.68
Avg transfer ($100s)	6.38	4.00
Benefit	P-EBT	SNAP EA
Panel b: Cash transfers		
$100 transfers	2.77	1.13
last 4 weeks (ITT)	(0.67)	(2.34)
TOT	3.01	1.37
MPC	0.06	0.03
N	15432	58745
DV mean	680.49	707.43
Avg transfer ($100s)	43.73	5.560
Benefit	EIP	CTC

Notes: Sample includes families with school-aged children and household income no more than 130% of the federal poverty line in the previous year based on the midpoint of binned income and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. Treatment variable is the amount of P-EBT; SNAP EA ($\times -1$); monthly CTC; or the first EIP issued to households in the previous four weeks, based on household composition, date, and (P-EBT and SNAP EA) state of residence. All specifications include household fixed effects. Controls included as in Figure 1. Robust standard errors (clustered by state for P-EBT and SNAP EA) in parentheses.

Appendix Table A7: Monthly total spending at food stores, spend no more than 200% income on food

	(1)	(2)
	One-time payments	Monthly payments
Panel a: In-kind transfers		
$100 transfers last 4 weeks (ITT)	4.43 (3.38)	12.63 (5.08)
TOT	5.68	16.19
MPC	0.11	0.41
N	10819	21266
DV mean	785.42	708.99
Avg transfer ($100s)	6.31	3.70
Benefit	P-EBT	SNAP EA
Panel b: Cash transfers		
$100 transfers last 4 weeks (ITT)	3.30 (0.75)	7.42 (2.19)
TOT	3.59	9.02
MPC	0.07	0.22
N	16816	65472
DV mean	728.43	765.80
Avg transfer ($100s)	43.17	5.44
Benefit	EIP	CTC

Notes: Sample includes families with school-aged children and household income no more than 130% of the federal poverty line in the previous year based on the midpoint of binned income and spend no more than 200% of their income inclusive of imputed SNAP benefits on groceries each month. Treatment variable is the amount of P-EBT; SNAP EA ($\times -1$); monthly CTC; or the first EIP issued to households in the previous four weeks, based on household composition, date, and (P-EBT and SNAP EA) state of residence. Controls included as in Figure 1. Robust standard errors (clustered by state for P-EBT and SNAP EA) in parentheses.

Appendix Table A8: Monthly food spending, different timing

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Total spending at food stores	Food spending	Number of trips	Spending/ trip	Grocery stores	Discount stores	Club stores	Conven- ience stores	Other food stores	Rest- aurants	Perish- ables	Non-perish ables	Alcohol + Tobacco	Sweets + Soda	Bulk purchases
Panel a: P-EBT															
P-EBT last 2 weeks	6.78	6.13	0.01	4.18	5.90	2.83	-2.42	0.29	0.16	-0.12	1.10	5.03	-0.08	0.29	0.00
($100s)	(3.50)	(2.19)	(0.02)	(1.83)	(1.94)	(3.74)	(1.22)	(1.04)	(0.52)	(0.52)	(0.79)	(1.49)	(0.25)	(0.41)	(0.00)
TOT	8.69	7.86	0.01	5.36	7.57	3.63	-3.10	0.38	0.21	-0.15	1.41	6.45	-0.10	0.37	0.00
N	8276	8276	8276	6488	8276	8276	8276	8276	8276	8276	8276	8276	8276	8276	6322
DV mean	721.71	391.50	7.05	281.33	276.48	299.86	72.51	60.06	12.79	39.23	112.40	279.10	23.42	58.68	1.04
Avg transfer ($100s)	6.37	6.37	6.37	6.37	6.37	6.37	6.37	6.37	6.37	6.37	6.37	6.37	6.37	6.37	6.39
% Δ (/$100)	0.94%	1.57%	0.12%	1.48%	2.13%	0.95%	-3.33%	0.49%	1.25%	-0.30%	0.98%	1.80%	-0.33%	0.49%	0.00%
Panel b: SNAP EA															
SNAP EA last 2 weeks ($100s)															
N															
DV mean															
Avg transfer ($100s)															
% Δ (/$100)															
Panel c: EIP															
EIP last 2 weeks	3.04	1.43	0.01	0.39	0.67	1.85	0.46	-0.13	0.19	0.14	0.44	0.99	-0.03	0.00	0.00
($100s)	(0.92)	(0.50)	(0.01)	(0.30)	(0.52)	(0.65)	(0.33)	(0.27)	(0.10)	(0.12)	(0.16)	(0.36)	(0.08)	(0.11)	0.00
TOT	3.31	1.55	0.01	0.43	0.73	2.02	0.50	-0.14	0.21	0.16	0.48	1.07	-0.04	0.00	0.00
N	11574	11574	11574	9105	11574	11574	11574	11574	11574	11574	11574	11574	11574	11574	8894
DV mean	680.49	382.40	7.28	267.25	289.94	259.12	64.97	55.64	10.82	31.85	109.23	273.16	23.12	55.54	0.99
Avg transfer ($100s)	43.92	43.92	43.92	44.22	43.92	43.92	43.92	43.92	43.92	43.92	43.92	43.92	43.92	43.92	44.24
% Δ (/$100)	0.45%	0.37%	0.18%	0.15%	0.23%	0.72%	0.71%	-0.23%	1.76%	0.45%	0.40%	0.36%	-0.15%	0.00%	0.00%
Panel d: Monthly CTC															
CTC last 2 weeks	7.51	2.93	0.04	1.21	1.93	3.78	0.64	0.38	0.78	-0.46	0.80	2.13	-0.09	0.70	-0.01
($100s)	(3.02)	(1.16)	(0.03)	(0.78)	(1.71)	(2.03)	(1.28)	(0.60)	(0.44)	(0.60)	(0.41)	(0.86)	(0.18)	(0.25)	(0.00)
TOT	9.12	3.56	0.05	1.47	2.34	4.60	0.77	0.46	0.95	-0.56	0.97	2.59	-0.11	0.85	-0.01
N	26530	26530	26530	19853	26530	26530	26530	26530	26530	26530	26530	26530	26530	26530	19597
DV mean	702.75	210.10	6.14	168.61	273.22	291.50	70.91	56.65	10.46	50.59	64.56	145.54	12.33	33.11	1.08
Avg transfer ($100s)	5.58	5.58	5.58	5.59	5.58	5.58	5.58	5.58	5.58	5.58	5.58	5.58	5.58	5.58	5.59
% Δ (/$100)	1.07%	1.40%	0.71%	0.72%	0.71%	1.30%	0.90%	0.67%	7.46%	-0.91%	1.23%	1.46%	-0.70%	2.12%	-0.80%

Notes: Sample includes families with school-aged children and household income no more than 130% of the federal poverty line in the previous year based on the midpoint of binned income and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. Treatment variable is the amount of P-EBT; monthly CTC; or the first EIP issued to households in the previous two weeks, based on household composition, date, and (P-EBT) state of residence. SNAP EA excluded as SNAP is typically disbursed throughout the month. Controls included as in Figure 1. Robust standard errors (clustered by state for P-EBT and SNAP EA) in parentheses.

Appendix Table A9: Monthly spending on food products, alternative income cutoffs, households with school-aged children

	(1) <130% FPL	(2) 130-200% FPL	(3) 200-300% FPL	(4) < 300% FPL	(5) > 300% FPL	(6) > 500% FPL
Panel a: One-time in-kind (P-EBT)						
$100 transfers	6.11	2.52	-2.42	2.11	0.82	-0.85
last 4 weeks (ITT)	(1.87)	(2.22)	(1.14)	(1.33)	(1.13)	(1.12)
N	9956	12763	17327	40046	45581	20455
DV mean	391.50	410.46	439.99	415.20	448.91	435.34
Avg P-EBT	6.38	6.00	6.21	6.20	5.52	4.93
Share eligible	1.00	0.86	0.12	0.63	0.08	0.06
Avg transfer if eligible ($100s)	6.38	5.98	5.05	6.11	5.16	4.62
% Δ (/$100)	1.56%	0.61%	-0.55%	0.51%	0.18%	-0.19%
Panel b: Monthly in-kind (SNAP EA)						
$100 transfers	4.16	1.24	0.06	0.94	0.55	0.81
last 4 weeks (ITT)	(1.79)	(1.18)	(1.10)	(0.59)	(0.55)	(0.77)
N	18948	22678	34184	75810	89277	40564
DV mean	210.63	221.65	227.65	220.64	217.66	214.45
Avg SNAP EA	4.00	7.09	8.01	6.48	7.43	6.83
Share eligible	1.00	0.57	0.00	0.48	0.00	0.00
Avg transfer if eligible ($100s)	4.00	7.05	9.33	4.98	.	.
% Δ (/$100)	1.97%	0.56%	0.02%	0.43%	0.25%	0.38%
Panel c: One-time cash (EIP)						
$100 transfers	1.25	0.19	0.45	0.56	0.28	0.24
last 4 weeks (ITT)	(0.41)	(0.35)	(0.33)	(0.21)	(0.21)	(0.31)
N	15432	23336	30752	69104	84720	37792
DV mean	382.40	397.18	424.84	402.68	448.19	443.21
Avg EIP	43.73	43.68	45.15	44.24	42.81	39.48
Share eligible	1.00	1.00	0.99	0.99	0.86	0.82
Avg transfer if eligible ($100s)	43.73	43.68	45.15	44.24	42.81	39.48
% Δ (/$100)	0.33%	0.05%	0.11%	0.14%	0.06%	0.05%
Panel d: Monthly cash (CTC)						
$100 transfers	3.12	0.36	-1.28	0.61	-2.70	-3.56
last 4 weeks (ITT)	(0.78)	(0.68)	(0.61)	(0.40)	(0.36)	(0.63)
N	58745	87978	118265	263376	313379	138446
DV mean	210.66	206.44	217.80	212.05	205.74	200.84
Avg CTC	5.56	5.17	5.26	5.33	4.30	3.49
Share eligible	1.00	1.00	1.00	1.00	0.47	0.30
Avg transfer if eligible ($100s)	5.56	5.17	5.26	5.33	4.30	3.49
% Δ (/$100)	1.48%	0.18%	-0.59%	0.29%	-1.31%	-1.77%

Notes: Sample includes families with school-aged children and household income no more than a given threshold of the federal poverty line in the previous year and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. Treatment variable is the amount of P-EBT; SNAP EA ($\times -1$); monthly CTC; or the first EIP issued to households in the previous four weeks, based on household composition, date, and (P-EBT and SNAP EA) state of residence. Controls included as in Figure 1. Robust standard errors (clustered by state for P-EBT and SNAP EA) in parentheses.

Appendix Table A10: Monthly spending on food products, different types of low-income households

	(1) HH w/ school-aged children	(2) HH w/ any children	(3) All HH w/o children	(4) All HH
Panel a: One-time in-kind (P-EBT)				
$100 transfers	6.11	4.49	-1.03	5.24
last 4 weeks (ITT)	(1.87)	(2.28)	(0.88)	(1.95)
N	9956	10932	22212	33144
DV mean	391.50	383.47	270.07	315.96
Avg P-EBT	6.38	5.78	6.10	2.26
Share eligible	1.00	0.89	0.00	0.36
Avg transfer if eligible ($100s)	6.38	6.38	.	6.38
% Δ (/$100)	1.56%	1.17%	-0.38%	1.66%
Panel b: Monthly in-kind (SNAP EA)				
$100 transfers	4.16	3.33	2.63	2.68
last 4 weeks (ITT)	(1.79)	(1.59)	(1.79)	(1.39)
N	18948	20336	23871	44207
DV mean	210.63	208.09	176.05	194.91
Avg SNAP EA	4.00	3.96	2.72	3.41
Share eligible	1.00	1.00	1.00	1.00
Avg transfer if eligible ($100s)	4.00	3.96	2.72	3.41
% Δ (/$100)	1.97%	1.60%	1.49%	1.37%
Panel c: One-time cash (EIP)				
$100 transfers	1.25	1.08	0.46	0.79
last 4 weeks (ITT)	(0.41)	(0.39)	(0.28)	(0.23)
N	15432	17080	36272	53352
DV mean	382.40	381.94	261.63	309.00
Avg EIP	43.73	43.33	25.02	32.23
Share eligible	1.00	1.00	1.00	1.00
Avg transfer if eligible ($100s)	43.73	43.33	25.02	32.23
% Δ (/$100)	0.33%	0.28%	0.18%	0.26%
Panel d: Monthly cash (CTC)				
$100 transfers	3.12	3.11	-2.24	1.19
last 4 weeks (ITT)	(0.78)	(0.76)	(0.43)	(0.54)
N	58745	64728	133362	198090
DV mean	210.66	208.49	134.16	164.60
Avg CTC	5.56	5.47	5.10	2.24
Share eligible	0.94	0.94	0.00	0.39
Avg transfer if eligible ($100s)	5.94	5.80	.	5.80
% Δ (/$100)	1.48%	1.49%	-1.67%	0.72%

Notes: Sample includes families with school-aged children (column 1); any children (column 2); households without children (column 3); or all households (column 4) with income no more than 130% of the federal poverty line in the previous year based on the midpoint of binned income and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. Treatment variable is the amount of P-EBT; SNAP EA ($*-1$); monthly CTC; or the first EIP issued to households in the previous four weeks, based on household composition, date, and (P-EBT and SNAP EA) state of residence. Child-only benefits (CTC, P-EBT) for households without children calculated based on per-child amount and household size. Controls included as in Figure 1. Robust standard errors (clustered by state for P-EBT and SNAP EA) in parentheses.

Appendix Table A11: Monthly in-kind robustness: Total spending at food stores, by SNAP EA cohort

	(1) Overall	(2) Aug 2021	(3) Sept 2021	(4) Jan 2022	(5) Apr 2022	(6) May 2022	(7) June 2022	(8) Feb 2023
	All states	FL, MT, NE, SD	MO	MS, TN	IA	AZ, KY, WY	GA, IN	All other states
$100 transfers last 4 weeks (ITT)	15.83 (4.36)	15.09 (4.42)	27.10 (4.00)	8.30 (6.74)	44.52 (12.64)	18.25 (4.17)	14.28 (4.75)	14.26 (7.99)
TOT	20.30	19.34	34.74	10.64	57.07	23.40	18.31	18.28
N	18948	15800	15564	15660	15492	15604	15700	17864
DV mean	650.68	650.60	650.32	650.58	650.47	650.61	650.43	650.17
Average transfers ($100s)	4.00	4.06	4.40	3.93	5.87	4.77	4.00	3.92

Notes: Sample includes families with school-aged children and household income no more than 130% of the federal poverty line in the previous year based on the midpoint of binned income and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. Treatment variable is the amount of the SNAP EA ($*-1$) issued to households in the previous four weeks, based on household composition and date. Column 1 replicates the main result in Table 1 panel a column 2; columns 2-8 limit the sample to states that terminated the SNAP EA payments each month. Controls included as in Figure 1. Robust standard errors clustered by state in parentheses.

Appendix Table A12: One-time cash robustness: Monthly total spending at food stores and other cash transfers

	(1) EITC (all years)	(2) EITC (2019)	(3) EITC (2021-2023)	(4) EIP1
$100 transfers last 4 weeks (ITT)	2.39 (0.30)	2.89 (0.47)	2.24 (0.40)	2.91 (0.71)
TOT	3.022	3.701	2.825	3.165
N	95910	23184	72726	15432
DV mean	663.60	607.24	679.93	680.49
Avg transfer ($100s)	74.94	82.58	72.73	43.73

Notes: Sample includes families with school-aged children and household income no more than 130% of the federal poverty line in the previous year based on the midpoint of binned income and spend no more than 100% of their income inclusive of imputed SNAP benefits on groceries each month. Treatment variable is the HOW DEFINED, SCALED Controls included as in Figure 1. Robust standard errors in parentheses.