

The Effects of Lump-Sum Food Vouchers on Spending, Hardship and Health¹

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Abstract

This paper examines how providing families with vouchers to use for groceries when school meals are not available affects food hardship, economic well-being, and parental health. We study the introduction of a new program, Pandemic EBT during spring and summer 2020, that provided grocery vouchers worth approximately \$300 per student to those who lost access to free school meals during the pandemic. Using cross-state variation in when states disbursed Pandemic EBT, we find that families spent \$8-16 per student per week in the 6 weeks after benefit receipt. Household food hardship and children's food hardship decline by approximately 40% among low-income families in the month following disbursement, and maternal mental health improves by 0.14 standard deviations.

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1. Introduction

Many families report not being able to afford sufficient food, particularly during economic downturns. For example, in spring and summer 2020, about 27% of households with children reported sometimes or often not being able to afford food (Census Bureau Household Pulse Survey 2020). Food hardship presents both short- and long-term costs (Hoynes and Schanzenbach 2019). For children, contemporaneous food insecurity is associated with worse health (Case, Fertig, and Paxson 2005) and academic outcomes (Jyoti, Frongillo, and Jones 2005) such as lower test scores and difficulty getting along with others (Howard 2011). More broadly, food insecurity indicates that a household is facing general economic challenges (Currie 2009). In the long-term, exposure to adverse economic shocks during childhood has negative health and economic consequences that persist into adulthood (Hoynes and Schanzenbach 2018). Therefore, the food insecurity patterns we observe today shape well-being and economic performance not just now, but for decades to come.

Households frequently exhaust monthly Supplemental Nutrition Assistance Program (SNAP, formerly food stamps) benefits in the first weeks after receipt, leading to fluctuations in both consumption and nutritional intake over the month (Hastings and Washington 2010, Wilde and Ranney 2000, Shapiro 2005, Seligman 2014, Hamrick and Andrews 2016). Increasing monthly SNAP payments has been shown lead to smoother consumption patterns (Todd 2015, Todd and Gregory 2018). While this assistance is inframarginal in a static sense, behavioral responses to greater assistance may also shape consumption responses. For example, new SNAP recipients increase grocery spending (Hastings and Shapiro 2018) and families increase spending in the period immediately after receipt of other intermittent forms of assistance, such as the Earned Income Tax Credit (EITC) and annual tax refunds (Alagangady et al. 2023, Barrow and

McGranahan 2000, Goodman-Bacon and McGranahan 2008, Farrell et al. 2019). While the existing literature focuses on consumption responses to recurrent monthly in-kind benefits or intermittent one-time cash transfers, it is unclear how families respond to one-time, lump-sum increases in nutritional assistance. In addition, most work examining consumption responses has not included measures of reported well-being. Therefore, an unanswered question is how families' subjective well-being is connected with greater consumption resources.

In this paper, we provide new information on the spending responses of one-time, in-kind transfers, and how this influx of resources maps onto measures of reported well-being, including food hardship and maternal mental health. We examine these questions in the context of additional nutritional assistance during the spring and summer of 2020 when widespread school closures due to the onset of the COVID-19 pandemic cut off access to school meals for more than 20 million students who had been receiving free or reduced-price school meals. In response, Congress authorized a new program, Pandemic Electronic Benefit Transfers (Pandemic EBT), to provide grocery vouchers equivalent to the dollar value of missed school meals to families that were affected by COVID-related school closures and whose children were eligible to receive free school meals.

As a state-led program operating for the first time during a crisis, there was substantial idiosyncratic variation across states in the implementation of Pandemic EBT. We leverage variation in the initial disbursement of benefits from April through August 2020 – a period with universal school closures – combined with biweekly data on food hardship and household well-being, as well as weekly data on EBT spending to provide some of the first evidence on how Pandemic EBT affected spending, food hardship, and household well-being.¹

¹ See Bonomo et al. (2024) for a more detailed investigation of household shopping patterns.

We find that that families appear to spread their spending of Pandemic EBT benefits across many weeks. EBT spending per student increased by \$8-16 in each of the subsequent six weeks after Pandemic EBT payments are first made in a state. This spending pattern is more modest and sustained than the sharp increase in spending immediately after households receive other forms of assistance like SNAP (Hastings and Washington 2010; Wilde and Ranney 2000, Todd 2015, Todd and Gregory 2018, Shapiro 2005) or the Earned Income Tax Credit (EITC) (Alagangady et al. 2023). These spending patterns suggest that increased nutritional assistance can help smooth short-term spending volatility, consistent with earlier work finding greater consumption smoothing with increased SNAP benefits (Todd and Gregory 2018).

In the month following disbursement, families also report lower levels of food hardship with household reports of food insufficiency or very low food security among children both falling by approximately 40 percent. We also find improvements in mothers' mental health. While the improvements in mental health are concentrated in the weeks immediately after receipt, the reduction in reported food hardship persists for at least a month after disbursement—the period for which we observe higher benefit spending. That reduced food hardship coincides with the period over which spending increase points to the potential of additional assistance to reduce nutritional fluctuations over the benefit month, with potential consequences for healthcare utilization (Hamrick and Andrews 2016, Seligman 2014, Cotti, Gordanier and Ozturk 2020). While annual cash-based assistance has been shown to improve maternal mental health (Evans and Garthwaithe 2014), our results provide novel evidence that in-kind nutritional assistance can yield similar benefits. Both the improvement in maternal mental health and reported reduction in food hardship dissipates more quickly than the spending response.

2. The Pandemic EBT program

The school meals programs (collectively the National School Lunch Program and the School Breakfast program) are a substantial source of nutritional assistance to school-aged children. In 2019, approximately 20 million children – 38 percent of children ages 5-17 – received a free school meal on a typical school day; for comparison about one in five receive SNAP benefits (Census 2021, USDA 2024). The school meals programs are also a sizable in-kind transfer to low-income families with a fungible value of approximately \$6.50 per student per school day in 2023, compared to a maximum per-person SNAP benefit of about \$8 per (calendar) day for a family of three (USDA 2022). To receive free school meals, students’ families must certify that their family income is no more than 130 percent of the federal poverty line (in 2023, \$32,318 for a single parent with two children and \$39,000 for a family of four), be receiving SNAP or TANF, or be attending a school that offers a schoolwide free meals program.²

School meals are generally only provided when schools are open. Widespread school closures at the start of the pandemic in spring 2020 resulted in students losing access to school meals.³ To compensate families for the value of forgone school meals, Congress authorized a new program in March 2020, Pandemic EBT, to provide families with benefits in the amount of the value of the free school breakfasts and lunches missed due to pandemic-related school closures.

2.1 Design of Pandemic EBT

² Schoolwide free meals programs include Provisions I-III, and the Community Eligibility Provision (CEP). In 2019, approximately 14 million students attended a CEP school (Billings and Carter 2020), most of whose families also receive SNAP.

³ Initial efforts to replace lost school meals commonly took the form of “grab-and-go” meals offered at central distribution sites, but these programs had low take-up, resulting in unmet nutritional need (Bauer et al. 2020).

Pandemic EBT functioned similarly to SNAP: families that were eligible for free and reduced-price school meals received benefits on an EBT debit card, which could then be used to purchase food at most grocery stores.⁴ Pandemic EBT was a voluntary, federally-funded, state-led program: states and territories had to apply to USDA by submitting an implementation plan. While every state and territory eventually submitted a plan and received approval to implement Pandemic EBT for the 2019-20 school year, states implemented the program on different schedules (Gupta et al. 2021). Crucial for this analysis, states varied in how much time it took to develop a plan for how to implement Pandemic EBT, gain approval from USDA, and begin disbursing benefits.

There is relatively little variation in the per-child amount awarded through the first Pandemic EBT disbursement. By formula, for the 48 contiguous states, payments per student were calculated as \$5.70 (the daily federal reimbursement to schools for free-price breakfasts and lunches) multiplied by the average number of school days missed due to pandemic-related school closures.⁵ Most states closed schools within days of March 15, 2020, and were closed for the rest of the academic year, so cross-state differences in the payment amount was determined by planned vacation days and timing of the end of the school year. Based on information in state plans issued to USDA, the difference in disbursement amounts between the 25th (\$268) and 75th (\$332) percentile of states was \$64 per student. Almost all states made a single lump-sum payment for the number of school days missed from March 2020 through the end of the school year.⁶

Households that were participating in SNAP received Pandemic EBT payments on their existing EBT cards. Families that were not on SNAP but were receiving free school meals were

⁴ In particular, Pandemic EBT could be used to purchase SNAP-eligible foods at food retailers that accept SNAP benefits.

⁵ Rates were \$6.66 and \$9.16 per day in Hawaii and Alaska, respectively.

⁶ About 84% of students lived in states that reported making one payment to SNAP families during summer 2020 (US. Department of Education 2023).

issued new EBT cards loaded with the Pandemic EBT benefits. In states like California, Florida, Missouri, and Texas, families had to proactively apply for the benefits through portals that states or schools developed. Other states, such as Minnesota, Nevada, and Ohio, relied on existing administrative linkages across programs when possible. Yet other states, such as Louisiana, developed these administrative linkages to process Pandemic EBT.

No matter how strong the administrative linkage was, some eligible non-SNAP students could not be identified immediately, requiring additional follow-up and retroactive payments at later dates. This process and the need to issue new EBT cards resulted in later and more varied disbursements for SNAP non-participants in most states. While many states issued at least some payments to non-SNAP households the same day as SNAP households, in other states, the first non-SNAP households received payments 3-4 weeks later. Approximately 60% of students who receive free or reduced-price meals participate in SNAP, and our primary analysis below focuses on households who are income-eligible to receive SNAP since we can better identify the timing of receipt for these families.

2.2 Timing of Pandemic EBT disbursements

Below we estimate the impact of Pandemic EBT payments on a series of outcomes using difference-in-differences and event-study frameworks. We combine several sources of information to construct a database that captures the first date that Pandemic EBT benefits were paid to SNAP-participating families in each state from April through August 2020. Our first source was drawn from correspondence with state and D.C. school nutrition officials between June 2020 and August 2022. We contacted each state at least three times and we received information on Pandemic EBT disbursement dates from 46 states (of the remaining five states, four reported that they had not

disbursed benefits by the end of August 2020). Subsequently we issued Freedom of Information Act (FOIA) requests to all 50 states and D.C. requesting more detailed information about the dates of disbursement, the populations receiving each disbursement (SNAP recipient households, non-SNAP recipient households, school-aged children, and childcare populations), the number of children or families receiving each disbursement, and any application processes. Forty states and D.C. provided specific date and population information through the FOIA process. From these sources we have reports of exact dates of initial Pandemic EBT payments to SNAP-participating families. We collect a third source of Pandemic EBT payment timing from reports that USDA made public that include only the month(s) (and not specific days) in which payments were made.

In ten cases, there were discrepancies between the disbursement dates provided through the FOIA requests and those obtained via the earlier correspondence. We reconciled both sources with the state-by-month disbursement information published by USDA and selected the date that corresponded to the first month that states began issuing benefits.⁷ When there was disagreement within the month between the FOIA and initial requests, we use the date provided through the FOIA request. We drop six states (AK, IN, OK, WY, WI, and UT) with conflicting dates across all three sources. Appendix Table A1 summarizes the date provided through each measure and the states used in the analysis.⁸

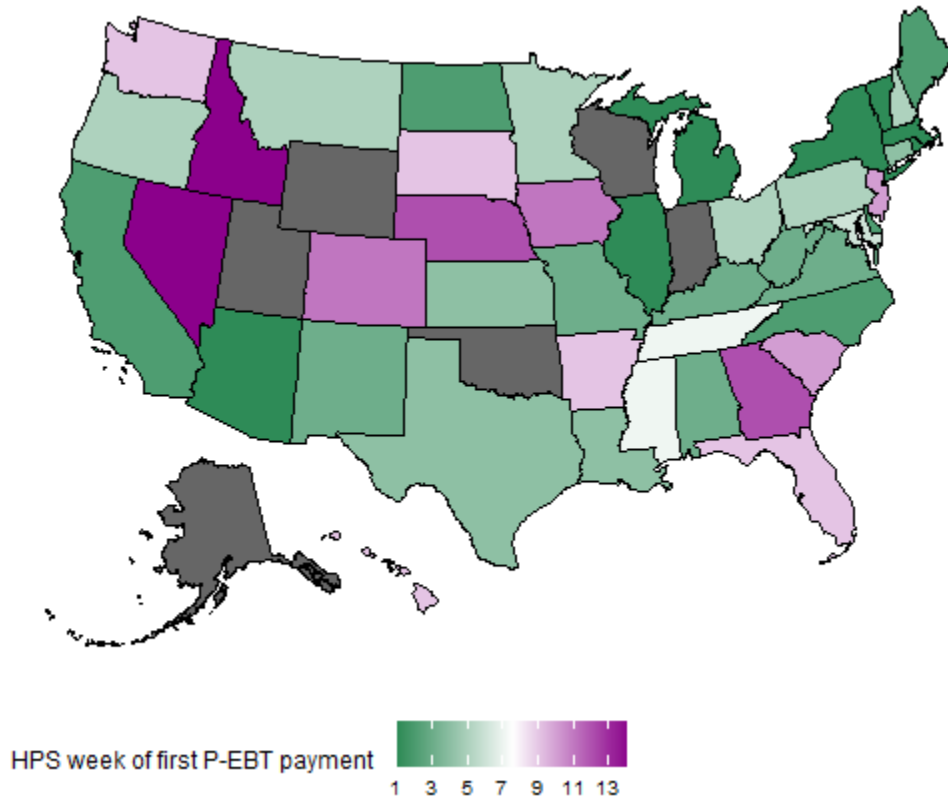
Figure 1 illustrates timing in initial Pandemic EBT disbursements across states by week. The first states issued benefits in April 2020 and the last states we include in our analysis issued

⁷ We include Michigan even though the reported dates fall in different months because they are within 3 days of each other.

⁸ Appendix Table A7 replicates our analysis using the first month of Pandemic EBT disbursement that appears in the USDA data without leveraging any information collected from state officials. For both measures of food hardship, improvements are sharply attenuated under this approach, highlighting the importance of more precise, daily disbursement data, particularly when considering safety net programs where changes are immediate or short-lived (Aladangady et al. 2023).

them in August 2020. Note that the six states that are dropped due to irreconcilable dates are grayed out.

Figure 1: Pandemic EBT Initial Disbursement Timing



Note: Figure shows the HPS “week” in which states issued the first Pandemic EBT payment. States shaded in gray are excluded from the analysis; states in dark purple had not disbursed the first payment by September 1, 2020. HPS week 1 corresponds to April 23–May 5, 2020; week 7 to June 11–16, 2020, and week 13 to August 19–31, 2020. Full timing to calendar weeks is available from the Census Bureau at <https://www.census.gov/programs-surveys/household-pulse-survey/data.html>.

The identifying assumption for a causal interpretation in our difference-in-differences and event-study models below is that the timing of states’ initial payment of Pandemic EBT benefits is not correlated with the timing of other factors affecting food hardship, spending, or family well-being. While this assumption is not directly testable, Appendix Table A2 presents results from a regression where the dependent variable is either the day (column 1) or HPS week (column 2) of

initial Pandemic EBT disbursement among states that disbursed between April through August 2020. While states with a larger school-age population tended to implement Pandemic EBT later in the time period, no other state demographic, economic, policy or political factor in the model predicts Pandemic EBT timing. These observable characteristics cannot account for the more than one-third of the timing of Pandemic EBT disbursement, supporting the assumption that implementation timing is as-good-as-random across states.

3. Data

We combine survey and administrative data with timing of Pandemic EBT payments to measure the impact of payments on spending and well-being. We describe each data source below.

3.1 Administrative data on benefit spending

We obtain administrative data on benefit spending from the USDA’s Store Tracking and Redemption System (STARS) for the period 2015 through 2020. STARS provides information on the dollar amount of all EBT spending (SNAP until 2020 and Pandemic EBT and SNAP beginning in 2020) at the state-by-week level. We cannot separate Pandemic EBT from SNAP spending, but below will use information on initial Pandemic EBT disbursement in the state to measure the resulting change in total EBT spending in an event-study framework.

3.2 Household Pulse Survey data

Data on food hardship and related measures of household well-being come from the Census Bureau’s Household Pulse Survey (HPS). We use the first 13 “weeks” of HPS data collection, covering the period from April 23 through August 31, 2020. During our time period of analysis,

HPS was collected approximately every two weeks. HPS data include standard demographic information, the respondent's state of residence, and questions about households' economic and health status. The nature of these questions, combined with the high frequency of the data, allow us to identify the short-term effects of policy changes across the country.

We examine the effects of Pandemic EBT on two measures of food hardship. First, "food insufficiency" is defined as whether the respondent reports that their household sometimes or often did not have enough to eat over the previous seven days. Second, very-low food security among children (VLFS-C) is whether the respondent reports that in the last seven days the children in the household sometimes or often did not eat enough because the household could not afford food.

Respondents are also asked to report the frequency over the past week that they experienced a range of poor mental health symptoms, with options ranging from not at all, to several days, to nearly every day. Outcomes include the four following domains: being nervous, anxious, or on edge; being unable to stop worrying; having little interest or pleasure in doing things; and being down, depressed or hopeless. We combine responses to these four questions, standardizing them into a z-score to measure mothers' current mental health so that higher values indicate worse mental health. We also explore a "stock" version of health measures as the response to where one's health "in general" ranges from excellent to poor. As a measure of general household financial health, we use the response to a question on the respondent's confidence their household will be able to afford the kinds of food they need over the next four weeks.

Respondents are also asked to report their total spending, including purchases made with SNAP, on food to prepare and eat at home over the past week.⁹ We scale this spending by the number of children in the household, and take its log.

⁹ Respondents were instructed to exclude any spending on alcoholic beverages.

4. Empirical strategy

When investigating outcomes from the HPS, we leverage cross-state variation in the timing of the first Pandemic EBT disbursement in a stacked difference-in-differences framework. For each outcome y for family i living in state s at time t , we estimate:

$$y_{ist} = \beta PE_{st} + X'_{ist}\theta + \delta_s + \gamma_t + \varphi'_s t + \varepsilon_{ist} \quad (1)$$

where the coefficient of interest, β , measures whether Pandemic EBT was first disbursed in the 2 weeks prior to the start of the survey period. During the period studied, the HPS data only includes information on the total number of children and whether there are any school-age children (but not the number of school-age children). Since we cannot determine the actual amount families received (number of school-aged children times per student amount), we employ a model that leverages a binary treatment measure equal to one if Pandemic EBT was disbursed within 2 weeks before the start of the HPS week. Since the HPS is conducted on an approximately bi-weekly basis over our analysis period, our measure corresponds to receiving Pandemic EBT in the previous 0-4 weeks. To avoid “forbidden comparisons” between newly treated and previously treated states (Goodman-Bacon 2021), we exclude states that made a disbursement more than 2 weeks before the start of the survey week. In Appendix Table A3 we report results using shorter (1 week prior to the start of the survey week) and longer (3 week) treatment windows.

X'_{ist} is a vector of standard control variables, including respondent age, race/ethnicity, educational attainment, marital status, employment status, the number of children and adults in the household, and the state unemployment rate during the reference period. In addition, we control for other state-specific nutrition policy responses to the pandemic, specifically whether the state of residence made SNAP Emergency Allotment payments in the month of observation, and the

monthly share of usual SNAP disbursements paid during in the 2 weeks leading up to the survey week.¹⁰ δ_s , γ_t , and $\varphi_s't$ are state fixed effects, survey-week fixed effects, and state-specific trends, respectively.¹¹ All analyses use person weights for the respondent, and standard errors are clustered at the state level.

When we use administrative data at the state-by-week level to measure the duration of the spending response, we employ an event-study framework as follows:

$$y_{st} = \sum_{w=-4}^{-2} \beta_w PEBT_{s,t=w} + \sum_{w=0}^6 \beta_w PEBT_{st=w} + \theta(\%SNAP_{st}) + \delta_s + \gamma_t + \varepsilon_{ist} \quad (2)$$

where y_{st} is the level of per-student EBT spending in state s in week t and $\%SNAP_{st}$ is the estimated share of SNAP beneficiaries receiving SNAP payments in state s and week t . Equation 2 closely mirrors the differences-in-differences analysis of Equation 1, but expands the β term to be a vector that traces out the spending response for each week relative to the week the first Pandemic EBT disbursement was made.¹²

5. Results

5.1 Benefit spending

Figure 2 shows results of an event-study analysis of the impact of initial Pandemic EBT disbursement on total EBT spending per public school student in the state at the state-week level, using USDA's administrative STARS data. We limit the analysis to the subset of states for which we have a balanced panel (i.e., states that initially disbursed Pandemic EBT at least 6 weeks before

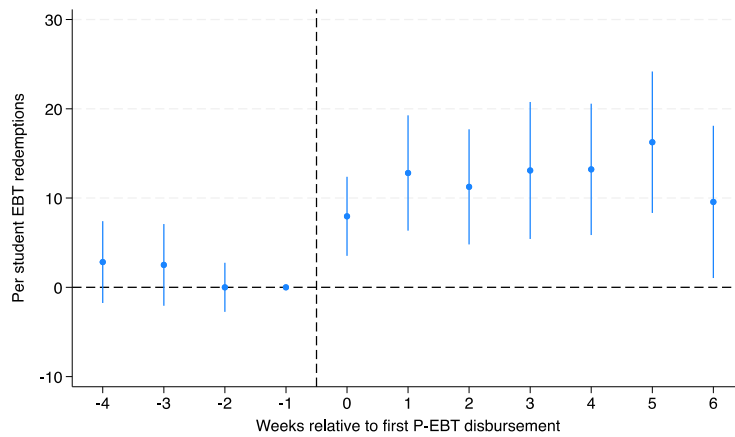
¹⁰ Emergency Allotment payments increased monthly SNAP benefits by an average of approximately 40% in families with children (Bitler, Hoynes and Schanzenbach 2023).

¹¹ Appendix Table 6 provides results without state trends, which are somewhat attenuated relative to the main findings.

¹² We do not provide an event study for the HPS outcomes since the limited sample period (13 survey waves) and substantial cross-state variation in timing (Figure 1) results in few observations having adequate pre- and post-periods for a balanced sample.

September 1, 2020) and normalize EBT spending to 0 in the week prior to Pandemic EBT disbursement.

Figure 2: Timing of EBT spending



Notes: Figure shows EBT spending per public school student relative to the week prior to disbursement under the approach in Equation 2. Sample includes balanced panel of states that disbursed Pandemic EBT at least 6 weeks prior to September 1, 2020. Vertical bars denote 95% confidence intervals of robust standard errors clustered by state.

As shown by the small, insignificant coefficients in weeks -4 through -1, EBT spending (reflecting SNAP EBT spending) were not trending in the weeks leading up to Pandemic EBT treatment. After the initial Pandemic EBT payments, per-student EBT spending promptly and significantly increased by between \$8 and \$16 over each of the subsequent six weeks. As the average Pandemic EBT payment was \$311 per student, these patterns indicate that approximately 27% of benefits were spent within the first six weeks of payment. These patterns suggest that families may have saved some Pandemic EBT funds to draw upon over the following weeks.

Since Pandemic EBT could only be used for grocery items, it is perhaps unsurprising that the spending response is somewhat less the 37-66% total spending response among low-income and low-asset households first Economic Impact Payment, which provided unrestricted cash and

was disbursed at the beginning of the Pandemic EBT rollout period (in April 2020) (Cox et al. 2020, Meyer and Zhou 2020, Misra et al. 2021, Chetty et al. forthcoming, Cooper and Olievei 2021, Baker et al. 2023). The spending responses are similar to stimulus payments (including payments made the 2001 and 2008 recessions) for the full population (Johnson et al. 2006, Parker et al. 2013).

An unusual feature of Pandemic EBT is that it was provided as a sizeable, one-time, lump-sum payment, in contrast to other forms of nutritional assistance (SNAP, WIC, summer benefits) that are provided as recurrent, monthly benefits. For SNAP, existing work documents a strong “benefit month” in which grocery spending peaks shortly after benefits are issued each month (Franckle et al. 2019, Hastings and Washington 2010, Goldin et al. 2020, Kuhn 2021, Todd 2015, Todd and Gregory 2018). In contrast, the spending response to Pandemic EBT was both more modest and sustained. While SNAP recipients receive payments once per month, most states spread payment timing over the month across their caseloads. A few small states (New Hampshire, North Dakota, Rhode Island, South Dakota, and Vermont) issue SNAP benefits within a single-week period, allowing us to identify the timing of SNAP payments and quantify differences in spending patterns between SNAP and Pandemic EBT in these states. As shown in Appendix Table A4, relative to the week when benefits are issued, SNAP spending in the 2015-19 period sharply increase in the week following disbursement, followed by a rapid decrease (column 1). In contrast, the increase in spending after Pandemic EBT disbursement is more muted. The Pandemic EBT estimates are imprecisely estimated due to small sample sizes, but point estimates echo the pattern in Figure 2 and do not show a decrease for at least 6 weeks. This comparison shows that additional assistance leads to smoother spending patterns over the benefit month.

5.2 Food hardship and household well-being

We next examine how the program affected food hardship and other measures of households' well-being. Our main treatment variable is whether Pandemic EBT was disbursed in the two weeks before the start of the HPS survey wave. Since the data do not include the precise interview date within the survey period, our results are reported as ranges based on the first and last day of the survey week, spanning approximately two weeks.¹³

We restrict the analysis to respondents with children who were enrolled in school during the 2019-20 school year and that had household incomes approximately less than 130 percent of the poverty line in 2019 to proxy eligibility for SNAP (sensitivity to this definition is tested in Appendix Table A6).¹⁴

Results of the difference-in-differences estimates described in equation (1) are shown in Table 1. In the month after Pandemic EBT payments were disbursed, the share of adults reporting food insufficiency in their household over the prior week declined by 10.45 percentage points, or 39% of the pre-disbursement mean (column 1).

We observe a similar reduction in very low food security among children, which fell by 16.46 percentage points, or approximately 43% (column 2). Because this variable was added to

¹³ At one extreme, if Pandemic EBT was issued the day before the survey period began, households surveyed the first day would have had Pandemic EBT for 1 day when they answered the survey. At the other extreme, if Pandemic EBT was disbursed 13 days before the start of the survey period, households that were interviewed towards the end of the period (approximately 2 weeks after the survey period began) would have received Pandemic EBT approximately 4 weeks prior.

¹⁴ Household income in the Pulse survey is reported in \$10,000 to \$50,000 increments, ranging from less than \$25,000 to \$200,000. We measure the income-to-poverty ratio by taking the midpoint income in a respondent's reported income category divided by the poverty threshold for its household size, and exclude households with a ratio that may be greater than 130 percent (similar to Han et al., 2020). Appendix Table A5 shows results using alternative income thresholds.

the HPS starting the week of June 4, 2020 (week 7), results for this outcome are necessarily restricted to the weeks after this point; 27 states had already issued benefits by then.¹⁵

Table 1. Pandemic EBT impacts on household food hardship, well-being, and spending

	(1)	(2)	(3)	(4)	(5)	(6)
		Children have very low food security	Poor mental health index (mother)	Poor or fair physical health (mother)	Very conf. can afford food next 4 weeks	Log grocery spend per child
Pandemic EBT disbursed w/i 2 weeks of start of survey week	-0.1045*** (0.0356)	-0.1646** (0.0780)	-0.1425** (0.0612)	-0.0483 (0.0498)	0.0044 (0.0297)	0.0460 (0.0450)
N	20856	8357	14881	14944	20876	19779
DV mean prior to disbursement	0.2662	0.3826	0.2645	0.3006	0.1263	4.6663

Notes: Table shows effect of being in a state that disbursed the first EBT payment within 2 weeks of the beginning of the survey week. States are dropped from the analyses after treatment so that the control group in each period is states that have not yet disbursed payments. All specifications include controls for respondent race/ethnicity, gender, educational attainment, and age, as well as controls for household size, the number of children in the household, the state unemployment claimant rate, the share of EAP and SNAP benefits disbursed in 2 weeks before the survey period, state and time-period fixed effects, and state trends. Sample restricted to households with children and with income below 130 percent of the federal poverty line. Regressions weighted by respondent sample weights. Robust standard errors clustered by state. Data from Household Pulse Survey weeks 1-13 (columns 1, 3-6) or weeks 7-13 (column 2). * p < 0.1, ** p < 0.05, *** p < 0.01.

Columns (3) and (4) examine impacts on health outcomes. Although Pandemic EBT is targeted to children, for many reasons including the fungibility of money and the fact that food is generally shared within the household, it is reasonable to investigate impacts on other members of the household. Indeed, prior work documents within-family spillovers of child-specific nutrition assistance (Bitler et al. 2023; Bhattacharaya, Currie, and Haider 2006). Column (3) shows that the

¹⁵ Results in column 1 are robust to considering the narrower sample period in which very-low food security among children is asked (column 2). Appendix Tables A5 shows results excluding state trends, under which we continue to observe reductions in food hardship, but effects are attenuated to between 17% (food insufficiency in the household) or 22% (children having very low food security).

index of poor mental health among mothers substantially declines (by 0.14 standard deviation) after initial Pandemic EBT payments. The effect fades and is no longer statistically significant 3 weeks after payment, as shown in Appendix Table A3. There is no significant change in the share of mothers reporting poor or fair physical health (column 4)—an outcome unlikely to be malleable in the short run, and likely best interpreted as a placebo test.

Although Pandemic EBT provided families with a meaningfully large transfer (approximately \$300 per student), we do not observe broader improvements in their perceived financial security as measured by the respondent's high confidence in their ability to afford the food they need over next four weeks (column 5). Note that only 13% of the sample reports high confidence prior to Pandemic EBT payment.

As shown in column (6), log grocery spending per child is estimated to increase by 0.046 after initial Pandemic EBT payments are made, but the effect is imprecisely measured. On average, the pre-treatment spending mean was \$106 per child. Taking the imprecisely estimated coefficient at face value, this implies a \$5 per child per week increase in grocery spending. The increase in total grocery spending is smaller than the average \$11 per student increase in EBT spending in the first 4 weeks after disbursement, implying that most Pandemic EBT spending went to finance families' existing grocery budgets.

Although imprecisely estimated, this implied marginal propensity to consume is smaller than estimates from Hastings and Shapiro (2018) who examine changes in spending as a result of SNAP receipt. The Pandemic EBT estimates suggest that families may adjust behavior differently in response to one-time (i.e., Pandemic EBT) versus ongoing (i.e., SNAP) grocery subsidies.

Because of the sizeable, lump-sum nature of the Pandemic EBT payments and recipients' slow spending of the benefits, we further examine the time pattern of the effects (shown in Appendix

Table A3). Using alternative reference periods, we find that the change in food hardship is most pronounced in the 0-4 weeks after disbursement, and is slightly attenuated when looking at either narrower or broader windows. In contrast, the improvements in both physical and mental health are front-loaded so that the effect is larger in the 0-3 weeks following disbursement.

5.3 Robustness

Our results have focused on families likely to be eligible for SNAP based on their reported income bin relative to the poverty threshold. In Appendix Table A6 we probe the robustness of our food insufficiency results across alternative approaches to defining low-income households: requiring the maximum (instead of median) income in the bins to be below 130% of the poverty threshold (column 1), expanding the sample to include households that are income-eligible for reduced-price meals (185% of the poverty threshold, column 2), using a fixed income threshold (column 3), a proxy (educational attainment) for low-income (column 4), or including all households. Results are similar when using the more restrictive income threshold (column 1) and are smaller when including higher-income households (columns 2-5). The attenuated results in columns 2-5 are consistent with either lower receipt or a lower marginal utility of consumption among higher-income groups. These patterns bolster confidence that our results are capturing the effect of Pandemic EBT, rather than unobservable factors affecting all families at the same time as disbursement.

6. Conclusion

We find that lump-sum, near-cash assistance through grocery vouchers can protect families against food hardship and improve maternal mental health. Our analysis leverages the introduction of the Pandemic EBT program and shows that the program reduced food hardship among low-income families over the month after they received benefits. Families smoothed their consumption by spending down their Pandemic EBT by a similar amount each week for at least six weeks after disbursement. These patterns are in contrast to the large within-month variations in grocery spending documented among SNAP recipients (Franckle et al. 2019, Hastings and Washington 2010, Goldin et al. 2020, Kuhn 2021) and indicate that families may respond differently to one-time payments than ongoing assistance.

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