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Termination of SNAP Emergency Allotments, Food Sufficiency, and Economic Hardships

Kabir Dasgupta¹ and Alexander Plum²

Abstract: To meet the rising need for food and nutrition assistance during the pandemic in the United States, all states were approved to provide Emergency Allotments (EA) to households enrolled in the Supplemental Nutrition Assistance Program (SNAP). In this analysis, we use the Census Bureau’s Household Pulse Surveys and exploit staggered state-level variation in dissolution of the SNAP EA payments to study whether the end of EA is associated with food-related challenges and economic hardships. Our findings indicate that EA termination is followed by a decrease in the likelihood that adult survey respondents had sufficient food for consumption and an increase in the probability of experiencing difficulty in paying meeting with usual household expenses. These findings provide useful empirical insights into the potential impact of the nationwide termination of the EA payments that came into effect in early 2023.

JEL Classification: I10; I18; I31; J10

Keywords: SNAP; Emergency Allotments; Pandemic; Staggered difference-in-differences.

The results and opinions expressed in this paper reflect the views of the authors and should not be attributed to the Federal Reserve Board.

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1. Introduction

The Supplemental Nutrition Assistance Program (or SNAP) is a public food assistance program that supports millions of low-income families in the United States (US) by providing monthly funds to the enrolled households for their nutritional and dietary requirements. To help meet the escalated need for nutrition assistance and address concerns of a possible hunger crisis during the COVID-19 pandemic, the US Department of Agriculture (USDA) allowed states to implement measures and introduce flexibilities in administering SNAP benefits. Consequently, these changes resulted in considerable increases in the SNAP participation and monthly benefits received by enrolled households and individuals.

This study focuses on Emergency Allotments – a major SNAP benefit expansion program implemented during the pandemic. Following the onset of the COVID-19 pandemic, Congress passed the Families First Coronavirus Response Act in March 2020 to help people navigate the pandemic-induced economic hardships. Among several provisions of the act, the USDA’s Food and Nutrition Services (FNS) was authorized to provide temporary boosts – the Emergency Allotments (EA) – to the regular SNAP benefits received by enrolled households. All states were approved to issue EA payments between March and April 2020 (Toossi, Jones and Hodges, 2021).

However, backed by a strong overall economic recovery in recent months, Congress passed a law in December 2022 to terminate the SNAP EA nationwide in March 2023 after the February SNAP payments were distributed.³ This reduced SNAP benefit levels for recipients in the 32 states and the District of Columbia. It is worth noting that the SNAP EA payments were already ended in 18 other states (see Table 1) before the nationwide termination came into effect. Analysis by the Center on Budget and Policy Priorities (CBPP) suggests that the nationwide termination of the emergency allotments could reduce monthly SNAP benefits for over 16 million households in the remaining states, amounting to an aggregate benefit cut of approximately \$3 billion (Rosenbaum, Bergh, and Hall, 2023).

Our analysis aims to understand whether ending SNAP EA can potentially exacerbate the problem of food insufficiency and impose further economic strain on consumers. Although it might be a bit too early to observe the likely effects of the nationwide termination of the EA payments, our analysis provides relevant evidence by focusing on the states that had already ended the EA program before March 2023. Specifically, we use the staggered adoption of state-level dissolution of the EA payments from March 2021 through August 2022 to investigate the short-term effects on the likelihood of experiencing food sufficiency and difficulty in meeting usual household expenses.

We apply Callaway & Sant’Anna’s (2021) staggered difference-in-differences framework to a nationally representative sample of adults from the Census Bureau’s Household Pulse Surveys from August 2020 until November 2022. For our key outcomes, we create

³ See <https://www.usda.gov/media/blog/2023/02/08/snap-emergency-allotments-are-ending>; Information retrieved on April 3, 2023.

dichotomous indicators of food sufficiency and of experiencing difficulties in meeting usual household expenses. While outcomes related to food (in)sufficiency could be directly linked to changes in SNAP benefits, the relevance of looking at the additional indicator of economic hardships arises from the households' option of using SNAP benefits as a source of funds for their spending needs.⁴

Our results suggest that, on average, the earlier termination of SNAP EA is associated with a statistically significant decline in the likelihood that an adult respondent reported having sufficient food during the week prior to the survey. We also find statistically relevant evidence of an elevated risk of experiencing some level of difficulty in paying usual household expenses. In general, our findings update and align with the empirical evidence documented by Bauer et al. (2020) and Schanzenbach (2023), who show that the pandemic-related additional welfare supports extended to SNAP recipients was associated with a noticeable reduction in food-related hardships and food insufficiency.

2. Background – Emergency allotments and economic implications

The various SNAP-related policy measures implemented during the pandemic, both at the federal and state levels, were accompanied by substantial increases in participation and in the amount of monthly SNAP benefits received by households. For instance, the SNAP participation rose from 37.3 million people to 42.5 million from the first half to the second half of the fiscal year (FY) 2020.⁵ Over that same period, the total monthly benefits increased by 66 percent from \$4.6 billion to \$7.7 billion (Toossi, Jones and Hodges, 2021). The SNAP EA accounted for 30 percent of the total benefits paid out during the second half of FY 2020. The temporary pandemic boosts to the SNAP benefits supported around 25.5 million people – almost 60 percent of SNAP beneficiaries. Due to the various pandemic-induced SNAP benefit expansions, the average monthly SNAP benefit per person rose from \$125 in October 2019-March 2020 to \$182 in April 2020-September 2020.

Since the inception of the EA payments in early 2020, the temporary increase in SNAP benefits were provided to all enrolled households receiving less than the maximum benefit. The increase in the monthly benefits received by a household was equivalent to the difference between the maximum benefit for the household size and the actual monthly base benefit.

However, in the second quarter of 2021, the SNAP EA policy was re-evaluated to provide greater equity for low-income households. Under the revised policy, all EA payments were increased to a monthly minimum of \$95 per household. Consequently, the dollar increase in monthly benefits for individual households ranged from a low of \$95 to a high of over \$340 (Schanzenbach 2023).

⁴ While almost 7 percent of all adults (18 and above) in the Household Pulse Survey appear to have used SNAP benefits, the share increases to approximately 52 percent for adult respondents who live in households that receive SNAP benefit payments.

⁵ As indicated by the USDA data, each fiscal year starts from the month of October of the previous year. So, the first half of FY 2020 would include October 2019-March 2020 and the second half of FY 2020 would include April-September 2020.

Table 1: States with early termination of SNAP EA

States	Date SNAP EA ended
Idaho	March-2021
North Dakota	May-2021
Arkansas	June-2021
Nebraska	July-2021
Florida	July-2021
South Dakota	July-2021
Montana	July-2021
Missouri	August-2021
Mississippi	December-2021
Tennessee	December-2021
Iowa	March-2022
Wyoming	April-2022
Arizona	April-2022
Kentucky	April-2022
Indiana	May-2022
Georgia	May-2022
Alaska	August-2022
South Carolina*	January-2023

Note: * South Carolina is excluded from the analysis as our study period is restricted to November 2022. Source: USDA; Information retrieved from <https://www.usda.gov/media/blog/2023/02/08/snap-emergency-allotments-are-ending>; Accessed on March 12, 2023.

Recent research has shown that the SNAP EA payments have been instrumental in reducing poverty and households’ likelihood of experiencing food insufficiency (Wheaton and Kwon 2022; Schanzenbach 2023). According to analysis by Wheaton and Kwon (2022), the SNAP EA helped reduce overall poverty, using the Supplemental Poverty Measure, by 10 percent, and child poverty by 14 percent in states with EA as of the final quarter of 2021. Additionally, Schanzenbach (2023) concludes that, on average, EA payments reduced a household’s probability of experiencing food insufficiency by nine percent, with larger impacts observed for Black or Hispanic households with children. Schanzenbach (2023) uses state-level variation at the end of EA payments to look at the effect of SNAP EA on outcomes related to food insufficiency.

Similar to Schanzenbach’s (2023) approach, our empirical analysis exploits state-level variation in the timing of EA termination to estimate the relationship of interest. However, our analysis extends Schanzenbach’s (2023) study in two ways. We exploit additional state-level variation to study the impact of EA termination on indicators of food sufficiency and individuals’ difficulty in meeting with usual household expenses. Second, we employ recently developed staggered difference-in-differences methodology to examine the treatment effect heterogeneities rather than using two-way fixed effects (TWFE)

specifications that usually rely on restrictive assumptions for causal interpretation (Callaway & Sant’Anna, 2021).

3. Data

We utilize the Household Pulse Surveys’ weekly data to estimate whether EA termination affected households’ experiences of food sufficiency and an indicator of financial hardships.⁶ Our empirical analysis covers a period from August 2020 and November 2022. Conditional on the availability of survey information on the outcome variables, we select this time window to make sure all states were approved for SNAP EA at the beginning of the period.⁷ Furthermore, we consider November 2022 as the terminal month of our study period to avoid possible confounding influences of the US administration’s decision to end the EA payments in early 2023 on individual states’ intention to continue providing EA payments. Due to that same reason, we exclude the state of South Carolina from our analysis, where the SNAP EA ended in January 2023 – a month after the decision to end EA nationwide was announced.

Specifically, we exploit variation in EA dissolution across 17 states that ended EA payments between March 2021 and August 2022. All other states along with DC (except South Carolina) are included in our control group (as the ‘never-treated’ group) since the EA payments in those regions were never terminated during the period of our analysis.

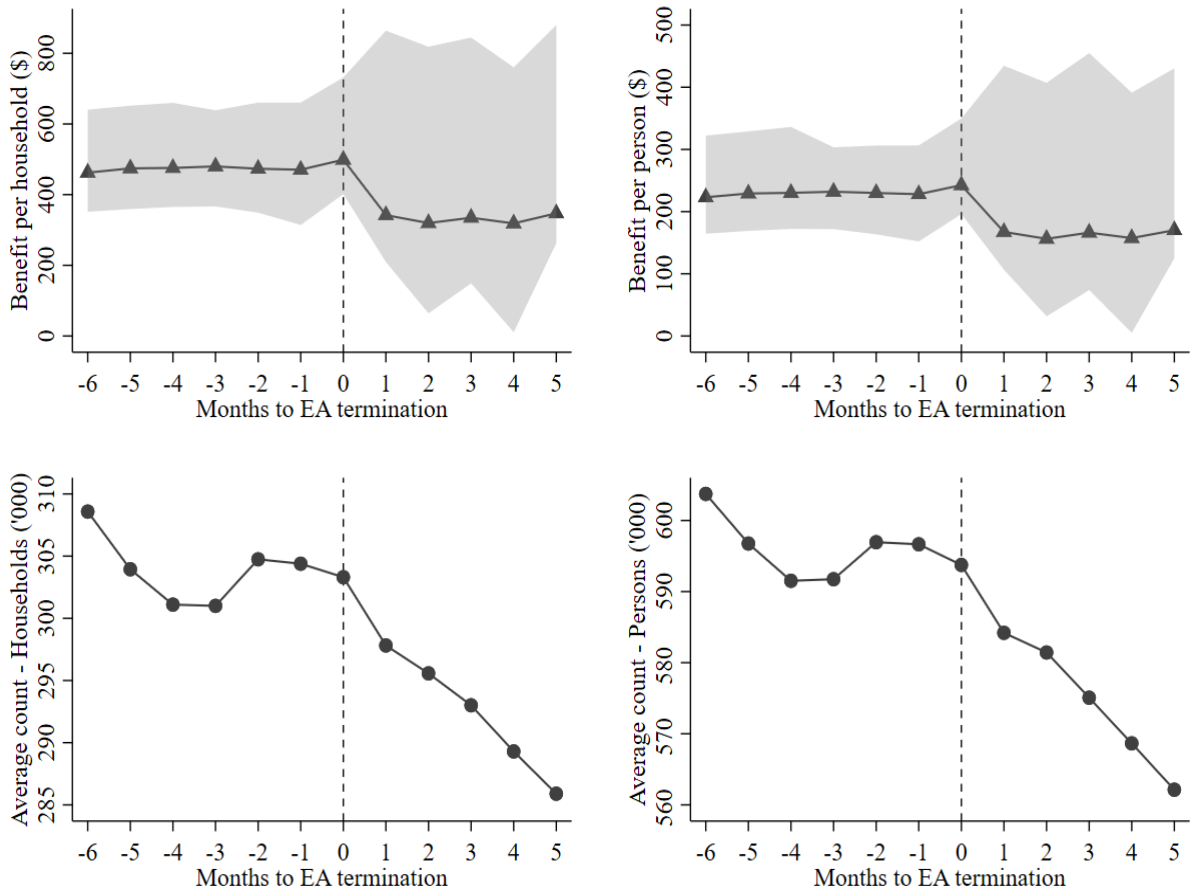
In Figure 1, we use the USDA state-year-level SNAP data to visualize the average change in monthly benefits and participation levels following the dissolution of EA payments in the 17 states listed in Table 1, excluding South Carolina. Comparing the six-month average before and after EA termination, on average, the monthly SNAP benefit per person (per household) decreased by approximately \$69 (\$146) – down from \$232 (\$479) to \$163 (\$332).

The figure also indicates the EA termination was followed by a visible increase in variability in the monthly benefits received by households and individuals – indicated by a widening gap between the minimum and the maximum average monthly benefits received by a person or a household in the 17 states. As will be revealed later, the monthly benefits’ range widened due to the state of Alaska where the monthly benefits per SNAP-enrolled household (or per person) increased after EA termination, while the overall participation declined. The bottom panel of Figure 1 indicates that, on average, the number of individuals and households receiving SNAP benefits also declined noticeably over time. While the underlying reason for the decline in overall participation remains unknown to the best of our knowledge, this change might indicate that the states’ conditions for SNAP eligibility were reverted to pre-pandemic rules, which were plausibly less generous than the pandemic-era policies.

⁶ Beginning in April 2020, the Household Pulse Survey assigns a week number to each survey release. The frequency of the survey releases has been modified over time from weekly basis (until July 2020) to bi-weekly basis (starting from August 2020) to twice per month (starting from December 2021) to only once per month (starting from September 2022). Additionally, the length of each survey period has also changed from one-week duration to two weeks, starting from August 2020.

⁷ The information related to difficulty in meeting household expenses is included from August 2020 survey.

Figure 1: Change in SNAP benefits before and after of end of EA.



Notes: Data drawn from the Food and Nutrition Service, US Department of Agriculture. Data accessed from <https://www.fns.usda.gov/pd/supplemental-nutrition-assistance-program-snap> on March 30, 2023.

In Table 2, we use the Household Pulse Surveys to look at important socio-economic and demographic characteristics of adults whose households receive SNAP benefits and compare those characteristics with an overall sample of US adults aged 18 and above. Approximately 12 percent of the adults report that they live in households where at least one individual receives SNAP benefits. Looking at our outcomes of interest, while close to 90 percent of adults in the overall sample report having “enough food” for consumption the week before the survey, the proportion falls to 75 percent in the sample of adults living in households receiving SNAP benefits. Additionally, adults in SNAP households are almost twice as likely to experience difficulty paying usual household expenses (63%) than the overall sample of adults (33%).

Table 2 also highlights other socio-economic and demographic disparities between SNAP recipients and the overall population. For instance, the share of Black, Hispanic, less-educated, and low-income adults is higher in the SNAP sample than the overall sample. On

the other hand, the fraction of employed or married adults appears to be lower in the SNAP sample. Finally, adults in the SNAP sample are more likely to have larger household sizes (5+ members) and are less likely to be in households without children under 18.

Table 2 – Summary statistics of SNAP benefit recipients – Household Pulse Survey

Characteristics	Overall sample	SNAP recipients
SNAP recipient	0.120	1.000
Food sufficiency	0.897	0.748
Difficulty with expenses	0.325	0.626
Male	0.485	0.361
Black	0.120	0.242
White	0.759	0.625
Hispanic	0.176	0.250
Married	0.545	0.332
Employed	0.565	0.389
Household income < \$25K	0.145	0.488
Household income ≥ \$200K	0.082	0.007
Educational attainment – High school or less	0.388	0.594
Educational attainment – Bachelor’s or higher	0.309	0.102
Household with one member	0.082	0.078
Household with five or more members	0.213	0.382
Household without any children (under 18)	0.615	0.424
Sample size	2,579,547	171,110

Notes: The above proportions are calculated using the Household Pulse Surveys from Week 13 (August 19, 2020) to Week 51 (November 2, 2022). The estimates are weighted using the surveys’ person-level survey weights.

The binary indicator of food sufficiency equals 1 when a respondent says having “Enough of the kinds of food [they] wanted to eat” or having “Enough, but not always the kinds of food [they] wanted to eat” when asked about food sufficiency in their household “in the last 7 days.” The indicator equals 0 if the respondent selects the following categories: “Sometimes not enough to eat” or “Often not enough to eat.” The binary indicator of difficulty with expenses equals 1 when a respondent says, “Somewhat difficult” or “Very difficult” when asked about difficulty experienced by the household “in the last 7 days” in paying usual household expenses including but not limited to food, rent, mortgage, car payments, medical expenses, student loans, etc. The indicator equals 0 if the respondent selects the following categories: “Not at all difficult” or “A little difficult.”

5. Methodology

For our empirical analysis, we apply Callaway and Sant’Anna’s (2021) empirical methodology that is explicitly designed for staggered difference-in-differences (DID) settings, in which units are exposed to treatment at different time points. The recent econometric literature highlights some of the key empirical concerns associated with the more commonly utilized TWFE specifications (e.g., Schanzenbach 2023) to estimate the causal effects of policy interventions. Particularly, several studies show that the TWFE estimator, which incorporates panel fixed effects and time dummies, can produce biased estimates, especially when there is a differential timing in treatment assignment and

heterogeneity in the treatment effects over time (de Chaisemartin and D’Haultfoeuille, 2020; Callaway and Sant’Anna 2021; Sun and Abraham 2021; Goodman-Bacon 2021; Borusyak, Jaravel, and Spiess; 2022; Athey and Imbens, 2022). In addition to attaining the well-known parallel trends assumption, causal interpretation of the TWFE estimator requires the average treatment effect to be constant over time and between groups. This is a highly restrictive assumption.

The semi-parametric DID estimator developed by Callaway and Sant’Anna (2021) circumvents the empirical issues associated with TWFE estimators by allowing for treatment effect heterogeneity. Notably, the Callaway and Sant’Anna’s (2021) staggered DID model (hereinafter CS-DID) can be used to estimate policy-relevant disaggregated causal parameters known as the ‘group time-specific average treatment effects’ experienced by each group. In our case, states where the SNAP EA payments were dissolved in the same month define a ‘group’. The CS-DID model also allows aggregation of the disaggregated parameters into representative measures of causal effects. Additionally, the CS-DID model provides conditions under which parallel trends assumption holds subject to inclusion of pre-treatment covariates. In all our empirical models, we control for pre-treatment state-specific averages of socio-economic and demographic characteristics, including race, ethnicity, household size, and educational attainment.

In this analysis, we investigate the treatment effects of state-level EA termination. In our setting, the control group includes 32 states and the District of Columbia where EA was never terminated (“never-treated” group) and states that are yet to implement EA dissolution (“not-yet-treated”) within our study period. The “not-yet-treated” states come from the pool of the 17 states that we focus on in our analysis. Conditional on the parallel trends assumption, when the states where EA is terminated are compared to “never-treated” states, the group-time average treatment effects on the treated (ATT) can be expressed as:

$$ATT(g, t) = E[Y_t - Y_{g-1} | G = g] - E[Y_t - Y_{g-1} | C = 1] \quad (1) \quad \forall t \geq g$$

where g denotes the month in which a group of states implement EA dissolution. The variable Y_t is the outcome at time t . The variable Y_{g-1} denotes the outcome in the period prior to the intervention month, g . The variable C is an indicator variable which equals 1 if the control states are in the never-treated group. To put it simply, equation (1) provides us the expected value of the difference between the gap in the pre- and post-EA dissolution outcomes in a treated state and the gap in the pre- and post-EA dissolution outcomes in a never-treated state.

Additionally, upon imposing the parallel trends assumption based on not-yet-treated states, the group-time ATT can be denoted as:

$$ATT(g, t) = E[Y_t - Y_{g-1}|G = g] - E[Y_t - Y_{g-1}|D_t = 0, G \neq g] \quad (2) \quad \forall t \geq g$$

where D_t is an indicator whether a state adopted EA termination at time t . To put it simply, equation (2) looks at the gap between the difference in pre- and post-EA dissolution outcomes in states where EA ended in month g and the states that have not yet ended EA payments as of the month g . Similar to equation (1)'s interpretation, equation (2) compares the difference in the pre- and post-EA termination outcomes in a treated state to the difference in pre- and post-EA termination outcomes in a not-yet-treated state.

Finally, for treatment effect heterogeneity, the disaggregated average effect of participating in the treatment for each group of states where EA is ended in the same period is given by:

$$\theta_s(g) = \frac{1}{T - g + 1} \sum_{t=g}^T \mathbf{1}\{g \leq t\} ATT(g, t) \quad (3)$$

where T denotes the total time periods in our study. Callaway & Sant'Anna (2021) also show how the disaggregated effects for each group can be further aggregated to calculate an overall effect parameter, denoted as the group average ATT.

Based on similar concepts, the CS-DID model can also be utilized to estimate average treatment effects for each post-intervention period based on states that have already ended the EA payment. Finally, using the CS-DID method also shows how the disaggregated group-specific and time-specific treatment effects can be summed to create a point estimate of the overall treatment effect (group-time aggregate).

It is important to note that there were other significant federal regulatory changes in the SNAP benefits during the pandemic, such as the Pandemic Electronic Benefit Transfer (PEBT) from March 2020 that reimbursed families for forgone school meals; the re-evaluation of the Thrifty Food Plan in October 2021; the cost of living adjustments in October 2021 and October 2022 (Toossi, Jones and Hodges, 2021). Importantly, the CS-DID model implicitly controls for such time- and state-specific heterogeneities such as macroeconomic events, regulatory changes, etc. that could potentially be correlated with both EA payments and our outcomes of interest.

6. Results

We report our key findings in Table 3. First, we present the average effect of SNAP EA termination, aggregated for all treated states and across all post-intervention periods ("group-time aggregate"). We also provide the disaggregated treatment effects for each group of states where the EA payments were dissolved in the same month. Moreover, we report the average treatment effects aggregated over all groups ("group average") and across all post-intervention time points ("time average"). The time average ATT's are based on "already

treated” states, which progressively increase in number over time. Finally, we estimate the dynamic average treatment effects that are estimated using all periods relative to the month when the EA was ended.

The group-time ATT in column 1 of Table 3 suggests that EA termination was followed by a statistically significant decline in the likelihood of experiencing food sufficiency – quantified by a 1 percentage point decline in the probability of having sufficient food in the week preceding the survey. The aggregated ATT is marginally over 1 percent of the sample proportion of the food sufficiency indicator (0.9; see Table 2). Alternatively, this marginal effect can be interpreted as 10-percent increase in the likelihood experiencing food insufficiency when evaluated relative to the share of adults in the overall sample who experience food insufficiency (0.1). The group-time ATT in column 2 of Table 3 indicates that dissolution of EA payments also saw a statistically significant 1-percentage point increase in the likelihood of experiencing difficulties in meeting usual household expenses like food, rent, mortgage, car payments, medical expenses, student loans, etc.

The group-time ATTs reported for the two outcomes are consistent with the group ATE as well as the time ATT in Table 3. When we estimate the disaggregated group-specific treatment effects of EA termination on the likelihood of experiencing food sufficiency, we find statistically significant effects for almost all groups except for states where the EA payments were terminated in July 2021. We do not see any statistically significant effects for the financial hardship indicator for those states where the temporary boosts in SNAP benefits ended in December 2021 and June 2021.

However, interestingly, for both the outcome variables, we find contrasting evidence for Alaska (compared to other states), where EA payments were terminated in August 2022. Specifically, we find that EA dissolution in Alaska was associated with an improvement in the experiences of having food sufficiency and reduction in households’ likelihood of facing financial hardships.

Upon further investigation into the state-level USDA data, Alaska seems to be a unique case. We found that while the number of households or individuals receiving SNAP benefits decreased after the dissolution of EA payments, there was a noticeable increase in the average SNAP benefits for those who continued receiving SNAP in Alaska (see Appendix Table A.2). As such, among other likely reasons that could drive these findings such as seasonal factors or cost of living adjustment in October 2022 SNAP payments, it is plausible that the economic advantages of receiving increased benefit payments for the existing SNAP households exceeded the potentially adverse effects of a decline in the overall level of participation in the state.

As supplemental evidence, we also report the treatment effects of EA termination, disaggregated by each post-intervention period in Appendix Table A.1. Although the statistical significance level of the coefficients varies, all the estimates corroborate our key findings that demonstrate a decline in the probability of consuming sufficient food and a rise

in the likelihood of experiencing financial hardships in meeting with households' usual expenses.

In addition to reporting the pre- and the post-ATT from our dynamic analysis (bottom part of Table 3), we also graphically present the event analysis in Figure 2. Overall, while we do not find any strong evidence of statistically significant pre-intervention trends in our pre-treatment covariate-adjusted models, the post-intervention trends are largely consistent with our key findings. However, the outcomes in the dynamic model goes through fluctuations. For instance, after a short-term increase in financial hardships in the post-EA termination weeks, we see a dip in the outcome at the 8th week before the dynamic effects gradually pick up again. It is likely that such short-term fluctuations could be driven by behavioral adjustments in managing household finances or other unaccounted heterogeneities.

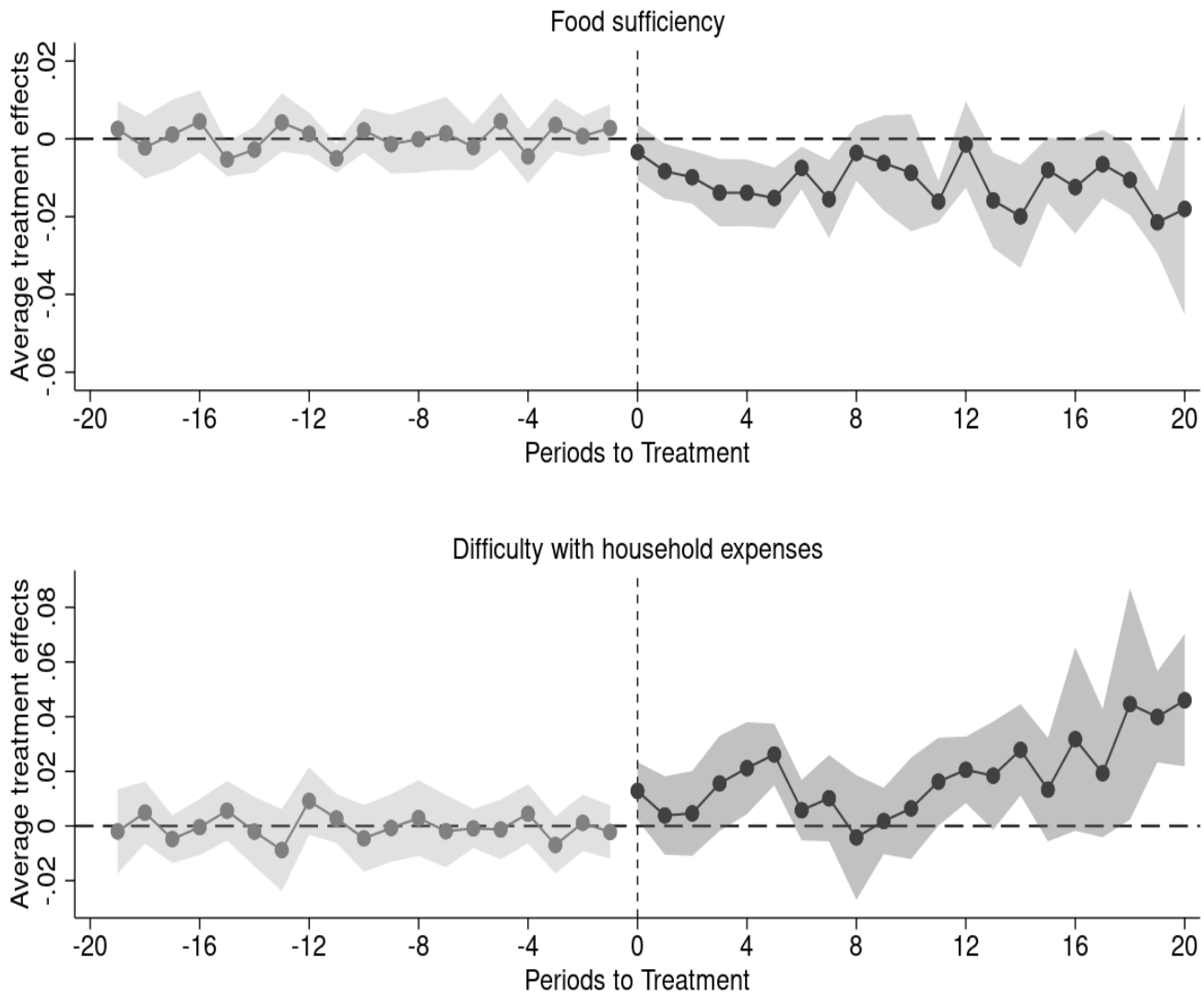
Table 3 – Estimation of the relationship between EA termination and food sufficiency and difficulty with expenses

	Food sufficiency	Difficulty with expenses
Average treatment effects		
	(1)	(2)
Group-time aggregate	-0.010 ^{***}	0.014 ^{***}
	(0.002)	(0.004)
Group average	-0.010 ^{***}	0.011 ^{***}
	(0.002)	(0.003)
Week 26 (Mar2021; ID)	-0.015 ^{***}	0.015 ^{***}
	(0.001)	(0.003)
Week 30 (May2021; ND)	-0.002 [*]	0.029 ^{***}
	(0.001)	(0.003)
Week 32 (Jun2021; AR)	-0.007 ^{***}	0.032 ^{***}
	(0.001)	(0.004)
Week 34 (Jul2021; FL, MT, NE, SD)	-0.007	0.016 ^{**}
	(0.006)	(0.007)
Week 35 (Aug2021, MO)	-0.017 ^{**}	0.008 ^{***}
	(0.001)	(0.003)
Week 40 (Dec2021; TE, MS)	-0.018 ^{***}	-0.015
	(0.004)	(0.011)
Week 43 (Mar2022; IA)	-0.011 ^{***}	0.035 ^{***}
	(0.001)	(0.003)
Week 45 (Apr2022; AZ, KY, WY)	-0.016 ^{***}	0.007 [*]
	(0.005)	(0.005)
Week 46 (Jun2022; GA, IN)	-0.007 [*]	0.009
	(0.004)	(0.006)
Week 49 (Aug2022; AK)	0.011 ^{***}	-0.014 ^{***}
	(0.001)	(0.003)
Time average	-0.010 ^{***}	0.013 ^{***}
	(0.002)	(0.003)
Event study aggregates		
Pre-average	-0.000	0.000
	(0.006)	(0.002)
Post-average	-0.011 ^{***}	0.018 ^{***}
	(0.003)	(0.004)
Sample size	2,007,378	2,009,183

Notes: The above estimates are obtained by estimating staggered difference-in-differences methodology developed by Callaway & Sant’Anna (2021). The analysis is performed using the Household Pulse Surveys from Week 13 (August 19, 2020) to Week 51 (November 2, 2022). The specific month when EA was terminated in each state is also reported in the above table. The estimates are weighted using the surveys’ person-level survey weights. *** p<0.01, ** p<0.05, * p<0.1.

Finally, in Table 4, we look at the effect of EA termination on specific sub-populations identified by racial, ethnic, educational, and household-specific characteristics. We only report the aggregated ATE averaged across all groups and over all time periods. Interestingly, for White adults and adults living in households with children (aged under 18), we see statistically significant effects for both the outcomes of our interest, confirming our results in Table 3. Moreover, while Asian adults are the only other demographic group who experiences an increase in the probability of experiencing financial hardships, less educated adults and adults living in households that receive SNAP benefits also experience a decline in the likelihood of consuming sufficient food. However, we note that the SNAP sample may suffer from self-selection bias if individuals select themselves into receiving SNAP benefits.

Figure 2: Dynamic treatment effects before and after the end of EA.



Notes: The above graphs are based on event analysis performed using Callaway & Sant'Anna's (2021) methodology.

Table 4 – Estimation of the effect of EA termination on food sufficiency by demographic characteristics

	White	Black	Hispanic	Asian	Edu: High- school or less	Family w/ any children	Family w/ 5+ members	SNAP receipt
<i>Food sufficiency</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
EA termination	-0.009*** (0.002)	-0.054 (0.039)	-0.010 (0.012)	0.005 (0.025)	-0.026** (0.011)	-0.012** (0.005)	-0.007 (0.006)	-0.031** (0.015)
	1,677,274	138,027	172,018	101,128	240,471	638,258	212,423	145,619
<i>Difficulty with expenses</i>								
EA termination	0.014*** (0.005)	0.061 (0.054)	0.024 (0.017)	0.063*** (0.018)	0.008 (0.013)	0.016** (0.007)	0.011 (0.010)	0.015 (0.014)
	1,676,000	138,246	172,383	101,318	239,888	638,822	212,920	145,767

Notes: The above estimates are obtained by estimating the staggered difference-in-differences methodology developed by Callaway & Sant’Anna (2021). The analysis uses the Household Pulse Surveys from Week 13 (August 19, 2020) to Week 51 (November 2, 2022). The estimates are weighted using the surveys’ person-level survey weights. *** p<0.01, ** p<0.05, * p<0.1.

7. Concluding remarks

Our analysis presents important insights into the effects of ending the temporary boosts in SNAP benefits that supported millions of households and individuals during the pandemic. According to the CBPP's projections, on average, the end of the emergency allotments in March 2023 could reduce monthly benefits by \$179 per household and \$93 per person in the 32 affected states along with the District of Columbia (Rosenbaum, Bergh, and Hall, 2023). Despite the strong labor market recovery in recent months, the nationwide termination of EA payments could put further pressure on low-income households who have been facing additional economic challenges from elevated levels of inflation.⁸

Our key findings indicate that the termination of EA payments temporarily exacerbates food insufficiency and financial hardships among households. Furthermore, the average treatment effects obtained in our analysis corroborate the findings presented by Schanzenbach's (2023) study that incorporates a TWFE model to examine the effect of EA payments on food insufficiency. However, it is unknown whether the effects observed in our study are driven by an overall decrease in SNAP participation or a decline in the average monthly benefits received by participating households and individuals. To that end, our analysis opens a scope for future research to study these underlying mechanisms.

⁸ See <https://news.gallup.com/poll/357731/inflation-causing-hardship-households.aspx>; Retrieved on May 12, 2023. Also see article from the Federal Reserve Bank of Minneapolis - <https://www.minneapolisfed.org/article/2022/as-inflation-rises-low-income-households-grapple-with-particular-challenges>; Accessed on May 26, 2023.

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Appendix

Table A.1 – SNAP participation and benefits in Alaska before and after EA termination

6-month average	Participation		Benefits	
	Households	Persons	Per household	Per person
Pre-EA termination	44,783	96,821	\$644.89	\$298.29
Post-EA termination	↓27,287	↓54,468	↑\$816.49	↑\$411.34

Notes: Data drawn from the Food and Nutrition Service, US Department of Agriculture. Data accessed from <https://www.fns.usda.gov/pd/supplemental-nutrition-assistance-program-snap> on May 22, 2023.

Table A.2 – Estimated average treatment effects for each period post-EA termination

Overall Sample	Food sufficiency	Difficulty with expenses
	(1)	(2)
Week 26	-0.008 ^{***} (0.002)	0.007 ^{***} (0.002)
Week 27	-0.017 ^{***} (0.002)	0.002 (0.003)
Week 28	-0.011 ^{***} (0.002)	0.005 (0.003)
Week 29	-0.015 ^{***} (0.002)	0.014 ^{***} (0.003)
Week 30	-0.012 (0.008)	0.005 (0.005)
Week 31	-0.013 ^{**} (0.006)	0.011 ^{***} (0.002)
Week 32	-0.004 (0.008)	0.010 ^{**} (0.005)
Week 33	-0.007 [*] (0.004)	0.019 ^{***} (0.004)
Week 34	-0.003 (0.004)	0.025 ^{***} (0.004)
Week 35	-0.009 (0.006)	0.019 ^{**} (0.008)
Week 36	-0.007 (0.006)	0.012 (0.010)
Week 37	-0.010 (0.007)	0.017 (0.015)
Week 38	-0.009 (0.007)	0.033 ^{***} (0.011)
Week 39	-0.009 (0.007)	0.018 [*] (0.011)
Week 40	-0.012 ^{**} (0.005)	0.013 (0.010)

Week 41	-0.015** (0.006)	0.012 (0.009)
Week 42	-0.005 (0.005)	-0.004 (0.013)
Week 43	-0.004 (0.005)	0.003 (0.006)
Week 44	-0.005 (0.006)	0.003 (0.006)
Week 45	-0.019*** (0.003)	0.027*** (0.005)
Week 46	-0.005 (0.004)	0.019** (0.008)
Week 47	-0.014*** (0.004)	0.006 (0.009)
Week 48	-0.018*** (0.005)	0.013** (0.008)
Week 49	-0.011*** (0.004)	0.012** (0.007)
Week 50	-0.014*** (0.005)	0.025** (0.012)
Week 51	-0.011*** (0.003)	0.012 (0.008)
Sample size	2,007,378	2,009,183

Notes: The above estimates are obtained by estimating staggered difference-in-differences methodology developed by Callaway & Sant'Anna (2021). The analysis is performed using the Household Pulse Surveys from Week 13 (August 19, 2020) to Week 51 (November 2, 2022). The specific month when EA was terminated in each state is also reported in the above table. The estimates are weighted using the surveys' person-level survey weights. *** p<0.01, ** p<0.05, * p<0.1.