

# Did Early Termination of SNAP Emergency Allotments Increase Food Scarcity in the US?

Maria Beatriz (ma4675); Neeti Sabnani (ns3838); Neha Bais (nsb2174)

May 10, 2025

## 1. Executive Summary

The Supplemental Nutrition Assistance Program (SNAP) is the largest federal nutrition assistance program in the United States, providing critical support to more than **42 million low-income individuals**. During the COVID-19 pandemic, the Families First Coronavirus Response Act (March 2020) introduced Emergency Allotments (EA) to temporarily increase monthly SNAP benefits, aiming to mitigate rising food scarcity driven by economic disruptions. However, states varied in their approach to EA, with some opting out as early as 2021, while others maintained benefits until the federal cutoff in March 2023.

**This study examines whether states that ended SNAP EA early experienced greater increases in food scarcity compared to those that maintained the program.**

Using a Staggered Difference-in-Differences (DiD) model, this analysis explores trends across states, leveraging variation in EA termination dates to estimate the causal impact of EA on household food scarcity. The policy context is especially crucial as recent federal budget proposals aim to reduce SNAP funding by approximately USD 200 billion over the next decade. Understanding the role of EA in stabilizing food access is vital to inform decisions on the future of federal nutrition assistance.

Our findings suggest that the effect of early EA expiration on food scarcity is minimal or close to 0. The lack of effect may be attributed to several confounding factors, most notably the widespread economic disruptions during the COVID-19 pandemic. Federal relief packages, expanded unemployment benefits, and temporary increases in other social safety nets likely mitigated immediate food insecurity, complicating the isolation of SNAP's direct impact. These overlapping interventions emphasise the need for a more nuanced analysis to understand how SNAP interacts with broader economic relief during crises.

These results offer critical insights for policymakers evaluating potential cuts to SNAP and emphasize the importance of considering broader economic contexts when assessing the effectiveness of emergency food assistance.

## 2. Background and Context

In 2023, about 14% or 18 million U.S. households experienced food insecurity at some point. This is an increase from 13% or 17 million households in 2022. This rise underscores the ongoing challenges in food access, highlighting the importance of SNAP as a safety net.

As of 2024, SNAP supports over 42 million low-income individuals and accounted for approximately 68% of the United States Department of Agriculture's (USDA) nutrition assistance spending, stressing its role as a critical safety net for vulnerable populations, including children, seniors, individuals with disabilities, and low-wage working families.

SNAP benefits are distributed monthly via Electronic Benefit Transfer (EBT) cards, which can be used to purchase eligible food items at authorized retailers. In addition to reducing hunger, SNAP serves as an economic stabilizer, supporting local food retailers and stimulating agricultural markets.

### 2.1 Food Scarcity vs Food Insecurity

To set the context for this study, it is important to differentiate between food scarcity and food insecurity:

- **Food Scarcity:** Defined as the percentage of adults in households that reported sometimes or often not having enough to eat in the past 7 days. This is measured biweekly through the Household Pulse Survey (HPS) by the U.S. Census Bureau.
- **Food Insecurity:** A broader measure that reflects limited or uncertain access to adequate food over an extended period, typically assessed annually by the USDA.

### 2.2 SNAP-EA

The Families First Coronavirus Response Act (March 2020) authorized states to provide EA to temporarily increase monthly SNAP benefits. The primary goal was to combat rising food access issues due to pandemic-driven economic disruptions, including job losses and supply chain breakdowns. Under this policy:

- States were permitted to provide EA as long as state-level public health emergency declarations were in effect.
- This created significant policy variation, with some states terminating EA as early as 2021, while others maintained benefits until March 2023.

## 3. Research Question and Motivation

Our Hypothesis is that EA increased benefit amounts, which may have raised household food purchasing power, helped buffer rising food prices, stabilized access for vulnerable populations during, income shocks. This means that states that ended EA earlier experienced increases in food scarcity than states that ended it later.

The central research question of this study is:

**Did states that ended SNAP EA early experience greater increases in food scarcity compared to states that maintained the program until March 2023?**

### 3.1 Motivation

The relevance of this analysis is heightened by recent federal budget proposals. In early 2025, concerns over federal fiscal sustainability prompted proposals to cut spending across major social programs, including SNAP. House Republicans proposed reducing spending by USD 230 billion over the next decade from programs under the House Agriculture Committee's jurisdiction, with SNAP expected to absorb a significant share of these reductions.

Understanding how SNAP-EA impacts food scarcity rates is crucial for assessing the program's effectiveness. While previous studies have shown that ending SNAP-EA resulted in reduced benefits and decreased enrollment (Steffen & Kim, 2024), the direct relationship between EA and food scarcity needs to be systematically assessed.

This research is particularly relevant now as any funding cuts can be estimated to have profound implications for food security, especially among vulnerable populations. Demonstrating the protective effects of enhanced SNAP benefits during the pandemic could provide critical evidence to inform these ongoing policy debates.

By comparing changes in food scarcity rates between states with longer duration and higher benefits of EA and states with early opt-outs, this study seeks to determine whether maintaining higher EA benefits prevented significant increases in food scarcity and insecurity.

## 4. Policy Implications

If statistical evidence shows that states with shorter EA benefits experienced bigger increases in food scarcity, it would support arguments for making enhanced SNAP benefits a standard policy tool during economic crises. It could also justify policy adjustments to ensure uniform access to emergency SNAP benefits across states, especially during future emergencies. Additionally, findings could inform debates over proposed federal budget cuts to SNAP by highlighting the protective effects of benefits against food insecurity. Policymakers could use these results to advocate for permanent improvements to SNAP benefit levels or mechanisms to scale benefits during future crises.

## 5. Policy Timeline and Variation Across States

EA ended nationwide in February 2023, but 18 states ended it earlier creating variation in exposure. This variation allows us to exploit: - Cross-sectional differences in EA timing - Time variation in food scarcity trends

## 6. Datasets and Data Description

In order to evaluate the impact of early termination of SNAP EA on food scarcity, we utilized a combination of publicly available datasets that offer granular insights into food scarcity, SNAP participation, and broader economic indicators at the state level. This section outlines the key datasets used in our analysis:

### 6.1 Food Scarcity Data: Household Pulse Survey (HPS)

- Source: U.S. Census Bureau
- Frequency: Biweekly (2020–2024), averaged to monthly and then aggregated to the year
- Geographical Level: State-level

The Household Pulse Survey (HPS) is a nationally representative, high-frequency survey conducted by the U.S. Census Bureau to measure the social and economic impacts of the COVID-19 pandemic on American households. For this study, we extracted state-level indicators from HPS to measure food scarcity, defined as the percentage of adults in households that reported sometimes or often not having enough to eat in the past 7 days.

The variables of interest from HPS include:

- Percent of adults in households experiencing food scarcity: This is our primary outcome variable (Y).
- Total number of adults reporting food scarcity: This value represents the raw count of adults experiencing food scarcity within each state.
- State adult population: This is used to normalize the food scarcity rates across states for comparability.

To construct a consistent annual panel data set, we averaged biweekly responses using a weighted average approach. This method ensured alignment with other economic indicators, providing a stable and comparable measure of food access trends across states.

Note: To make data comparable, we excluded special colonies of the US, like Puerto Rico, the Virgin Islands, etc.

### 6.2 SNAP Emergency Allotments

- Source: USDA Food and Nutrition Service (FNS)
- Frequency: Monthly (FY2020–FY2023)
- Geographical Level: State-level

The SNAP Monthly State Participation & Benefit Data is published by the USDA's Food and Nutrition Service (FNS). It provides detailed state-level records on:

- Number of SNAP households and persons: Reflects the monthly count of individuals and families receiving SNAP benefits.

- Total SNAP benefit cost: Represents the federal spending on SNAP benefits, capturing the scale of food assistance provided.
- Average cost per household: This is the average benefit amount distributed per SNAP household each month.

For our analysis, the key treatment variable (X) is a binary indicator reflecting whether a state's SNAP EA ended early (coded as 1) or persisted until the federal cutoff (coded as 0). This variable captures the treatment effect of early termination on food scarcity outcomes.

Note: To make data comparable, we excluded special colonies of the US, like Puerto Rico, the Virgin Islands, etc.

### 6.3 Control Variables

To isolate the impact of early SNAP EA termination on food scarcity, we planned to use Median Household Income (2022 inflation-adjusted dollars) as a control variable. We used it as a proxy for economic stability. While effective, it does not reflect per capita income disparities, potentially masking regional inequalities.

We explored other controls from the Household Pulse Survey (HPS) to help adjust for state-specific economic conditions, although synchronization challenges existed for real-time data. For instance, due to inconsistent data availability, we could not include critical measures such as: - Job loss since March 2020 - Difficulty covering household expenses - Food assistance for children in schools - Inability to pay energy bills

Inconsistent data across states and time made their inclusion impractical, potentially omitting key household vulnerabilities from the analysis. Future studies could benefit from more granular, real-time household-level indicators.

## 7. Descriptive statistics

To contextualize the effect of early expiration of SNAP Emergency Allotment (EA) on food scarcity at the state level, we will consider the distribution of the different variables considered. The data on costs associated with SNAP was sourced from the SNAP-EA Data from USDA Food and Nutrition Service (FNS). Variables on Food Scarcity along with other control variables was sourced from the Household Pulse Survey.

Our outcome variable is **Average Food Scarcity Percent**, defined as the share of adults reporting insufficient access to food. This percentage is calculated as the number of food-insecure adults divided by the measure universe — the total adult survey population in the state. It is important to note that the measure universe carries a margin of error of approximately  $\pm 3\%$ , which may vary by state and time period.

In 2020, the average food scarcity in states that **did not end EA early** was 23.28%, with a standard deviation of 12.58.

In contrast, states that **ended EA early** reported an average of 24.53%, with a standard deviation of 13.53.

Table 1: Summary Statistics: Average Food Scarcity Percent by EA Treatment and Year

EA Treatment Group	Year	Mean	SD	Min	Max	N
<b>States that Did Not End EA Early</b>						
0	2020	23.28	12.58	2.89	64.03	297
0	2021	15.11	6.20	3.47	36.08	363
0	2022	10.24	3.75	2.85	23.12	396
0	2023	11.94	3.44	3.75	22.20	330
0	2024	10.42	2.83	3.31	19.26	297
<b>States that Ended EA Early</b>						
1	2020	24.53	13.53	1.97	75.73	162
1	2021	16.50	6.30	3.89	30.22	198
1	2022	11.60	4.02	2.58	27.15	216
1	2023	12.95	3.59	3.63	26.48	180
1	2024	11.03	3.06	3.77	18.62	162

This trend persisted across years. For example, in **2022**, the mean food scarcity in early-terminating states was 11.60%, while non-terminating states had a slightly lower mean of 10.24%.

The year **2024** recorded the lowest levels of food scarcity across both groups.

These summary statistics indicate a visible decline in reported food scarcity across the board, though states that retained EA longer often reported slightly lower averages in later years.

While the analysis intended to include additional control variables such as the share of households receiving food assistance, job loss rates, and median household income, data availability was limited across the study period.

Specifically:

- **Food assistance data** (FA\_Mean) was only available in the following years:  
2021.
- **Job loss data** (JL\_Mean) was only available in the following years:

Table 2: Summary Statistics by Year: Food Assistance Rate, Job Loss Rate, and Median Income

Year	Food Assistance		Job Loss		Median Income (\$)	
	Mean	SD	Mean	SD	Mean	SD
2020	NA	NA	45.99	5.02	65045	10955
2021	24.96	4.67	NA	NA	69244	11213
2022	NA	NA	NA	NA	74446	12196
2023	NA	NA	NA	NA	78195	12863
2024	NA	NA	NA	NA	NA	NA

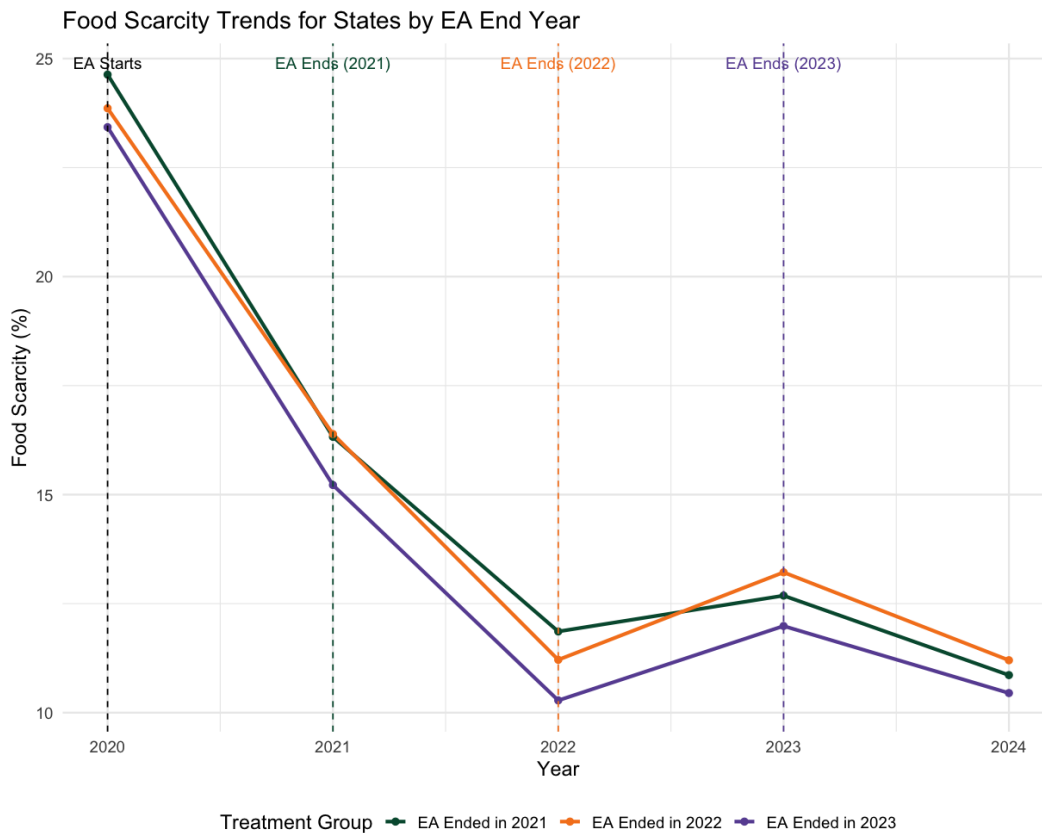
2020.

As a result, these variables were excluded from the main regression models to preserve sample size and avoid introducing additional bias from missing data.

However, **median household income** (Income\_Mean) was more consistently available from 2020 to 2023, and was therefore retained as a control in the final specification.

## 8. Empirical strategy and Findings

To estimate the causal effect of early termination of EA on food scarcity, we adopt a staggered difference-in-differences (DiD) framework exploiting variation in the timing of EA expiration across U.S. states between 2021 and 2023. Our primary outcome variable is the annual average percentage of adults reporting food scarcity at the state level.



The plot above reflects how food scarcity changed over the years for states relative to when they ended EA. Visually it seems to be that all states follow the same trend of food scarcity regardless of when they ended EA. However, there is some difference in states although minimal as seen in states ending EA in 2021 had a lower decline in food scarcity compared to states ending EA in 2022 or 2023.

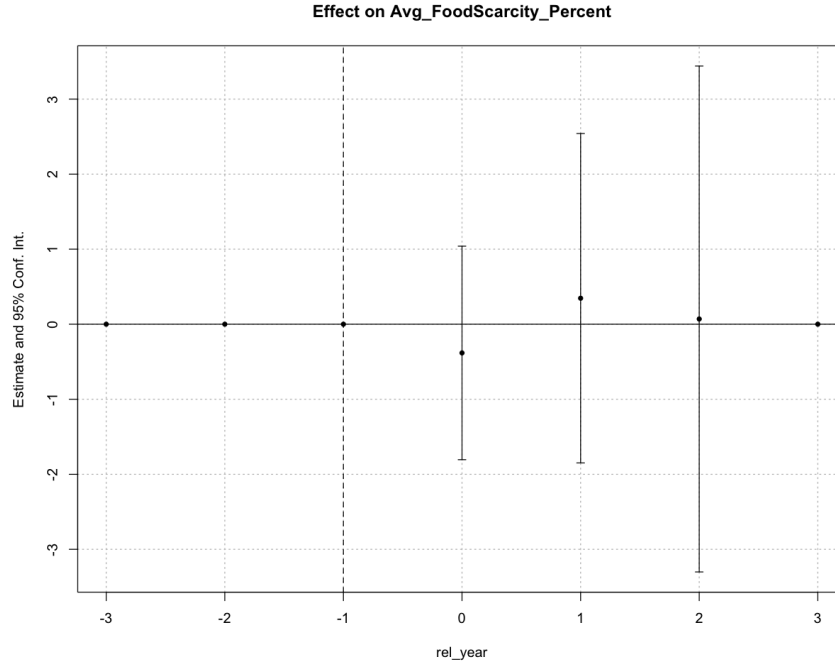
This graph overall can be used to establish parallel trends however we run the risk of no effect since the trend remains the same even after the years of treatment. We will use following

event-study specification to implement a more rigorous framework to check on this effect. The specification is as follows:

$$Y_{st} = \sum_{k \neq -1} \beta_k \cdot \mathbb{1}(\text{rel\_year}_{st} = k) + X_{st} + \delta_s + \lambda_t + \epsilon_{st} \quad (1)$$

**Where:**

- $Y_{st}$  is the average food scarcity percentage in state  $s$  at time  $t$ .
- $\beta_k$  captures the **difference-in-differences estimate** of the effect of EA expiration on food scarcity  $k$  periods before or after the policy change, relative to the reference period  $k = -1$ .
- $\text{rel\_year}_{st}$  is the event time relative to EA expiration.
- $\mathbb{1}(\cdot)$  are event-time dummies (excluding  $k = -1$ ).
- $X_{st}$  is a vector of controls (primarily median income household).
- $\delta_s$  and  $\lambda_t$  are state and time fixed effects.
- $\epsilon_{st}$  is the error term.



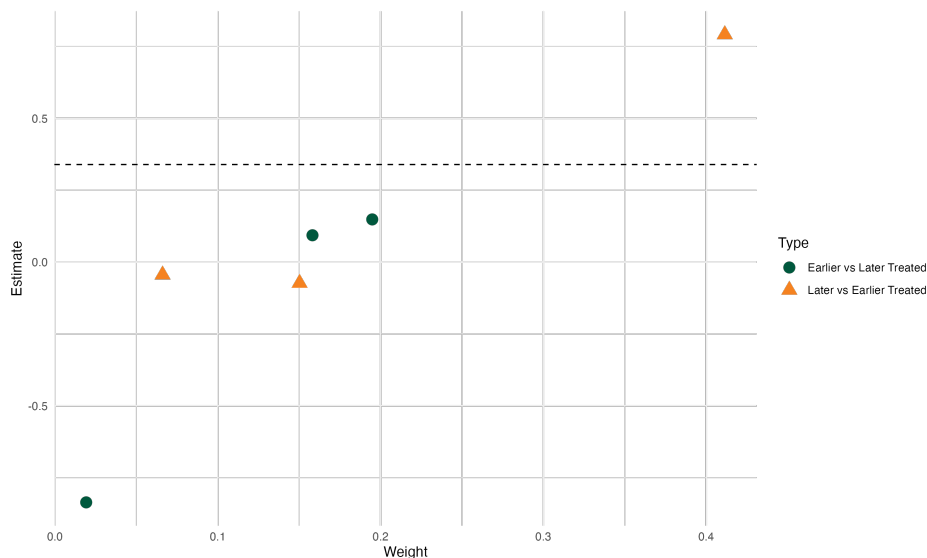
As the following event study shows, the post-treatment coefficients are mostly negative, implying that there is no significant effect on food scarcity.

The post-treatment effect in the year of EA expiration ( $t = 0$ ) is approximately -0.38, while the subsequent year ( $t = 1$ ) shows a change of 0.35.

To examine the dynamic treatment effects of the early expiration of EA, we estimate an event-study model using TWFE. However, recent literature has shown that TWFE estimators may produce biased estimates when treatment is staggered over time and treatment effects are heterogeneous across groups or over time. Specifically, the standard TWFE estimator can implicitly assign negative weights to certain comparisons (e.g., later-treated groups serving as controls for earlier-treated groups), misleading average treatment effects.



To address this concern, we implement the **Goodman-Bacon decomposition**, which breaks down the overall TWFE estimate into weighted averages of all possible  $2 \times 2$  difference-in-differences comparisons between groups treated at different times and never-treated groups. This decomposition helps us assess the extent to which our estimate is driven by comparisons with valid control groups (e.g., not-yet-treated or never-treated states), and whether problematic comparisons (e.g., treated vs. already-treated) dominate the estimation. While this method does not fully resolve bias in the presence of treatment effect heterogeneity, it allows us to better understand the source and reliability of the TWFE estimates.



The decomposition confirms that most of the identifying variation comes from comparisons of later-treated to earlier-treated states. While some comparison types yield positive or near-zero estimates, others are more negative. The overall weighted average treatment effect is 0.3393353 therefore not as relevant, are consistent with the event study findings.

Together, these results indicate that early termination of EA may have affected food scarcity slightly, but the estimated effects are **small and statistically imprecise**.

## 9. Conclusion

This analysis investigated the impact of the early termination of SNAP Emergency Allotments (EA) on food scarcity levels across U.S. states from 2020 to 2024. Using a staggered Difference-in-Differences (DiD) design and event study analysis, we find that states which ended EA earlier experienced very minimal difference in average food scarcity in the years following expiration, relative to those that maintained benefits through 2023.

However, our study is limited due to the lack of control data. It is imperative for regulatory authorities to collect and maintain complete data to aid a more rigorous econometric analysis of policy changes. This study can be enhanced in the future by controlling for the additional shocks and changes that may have occurred due to COVID-19.

**Policy Implications:** These results emphasize the critical role continued research and using it to inform policy changes. Policymakers should also weigh the broader household welfare consequences of curtailing any support prematurely.

**Limitations:** As mentioned, this analysis is constrained by incomplete data on control variables such as job loss and food assistance rates, which limited their use in the final regression. Additionally, potential unobserved state-level shocks and policy overlaps could bias our estimates. While the event study design helps address some concerns, further robustness checks—such as synthetic control methods or incorporating administrative data—would strengthen causal interpretation.

**Next Steps:** Future research could explore heterogeneity in impacts across demographic groups and combine SNAP data with broader economic indicators (e.g., unemployment claims or poverty rates). Additionally, exploring the long-term effects of EA expiration on household consumption and nutritional outcomes would provide deeper policy insights.

## 10. References

- U.S. Department of Agriculture, Economic Research Service, “Supplemental Nutrition Assistance Program (SNAP): Key Statistics and Research,” updated March 2024, <https://www.ers.usda.gov/topics/food-nutrition-assistance/supplemental-nutrition-assistance-program-snap/key-statistics-and-research/>
- Center on Budget and Policy Priorities, “Millions of Low-Income Households Would Lose Food Aid Under Proposed House Republican Cuts,” April 9, 2025, <https://www.cbpp.org/research/food-assistance/millions-of-low-income-households-would-lose-food-aid-under-proposed-house>
- AgWeb, “House Republicans Unveil Budget Resolution Calling for \$230 Billion in Agriculture-Related Cuts”, March 6, 2025, <https://www.agweb.com/news/policy/politics/house-republicans-unveil-budget-resolution-calling-230-billion-ag-related-cu>
- Sun, L., & Abraham, S. (2021). Estimating dynamic treatment effects in event studies with heterogeneous treatment effects. *Journal of Econometrics*, 225(2), 175-199. <https://doi.org/10.1016/j.jeconom.2020.09.006>