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Short-Run Impacts of SNAP Restriction Waivers on Beverage Purchases

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Short-Run Impacts of SNAP Restriction Waivers on Beverage Purchases*

Abstract

Ten states implemented Supplemental Nutrition Assistance Program (SNAP) Food Restriction Waivers to restrict purchases of sugary beverages with SNAP funds for the first time in program history in 2026. We estimate the short-run impact of these waivers using a new panel dataset of household beverage purchases. For the average SNAP household, these waivers decrease soda purchases by 13 percent with persistent effects for up to two months after implementation. For inframarginal SNAP households, these waivers decrease soda purchases by 18.5 percent. These findings are inconsistent with the predictions of traditional demand theory and suggest that behavioral models incorporating mental accounting and labeling better characterize consumer responses to SNAP purchase restrictions.

JEL classification

D12, H53, H51, H75, I38

Keywords

SNAP, consumption, mental accounting, labeling, fungibility

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* The authors' own analyses and calculations, based in part on data reported by Nielsen Consumer LLC (NIQ) through its Consumer Panel Service for the timeframe July 2025 to June 2026 for the Total U.S. market and Total Outlets channel. The conclusions drawn from the NIQ data are those of the authors and do not reflect the views of NIQ. NIQ is not responsible for, had no role in, and was not involved in analyzing and preparing the results reported herein or in developing, reviewing or confirming the research approaches used in connection with this manuscript. Funding for these data came from university research accounts and department funds. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

I. Introduction

Whether restrictions on the use of in-kind transfers change consumer behavior has important implications for both the design of social assistance programs and our understanding of household decision-making. The Supplemental Nutrition Assistance Program (SNAP), one of the largest means-tested transfer programs in the US, provides an ideal setting to test predictions about how consumers respond to such restrictions. In fiscal year 2024, SNAP granted an average transfer of $187 to more than 40 million individuals per month, or more than 12 percent of the population, at a cost of $100 billion in fiscal year 2024 (Jones et al., 2025). SNAP benefits are delivered as a monthly electronic transfer to a debit card that can be used with fewer restrictions than other food assistance programs (Hoynes and Schanzenbach, 2016). Throughout most of the program's history, the benefits could be used to purchase nearly all foods, except for hot, prepared foods intended for immediate consumption. Consequently, recent restrictions on what can be purchased create a unique opportunity to examine whether limiting the use of in-kind benefits changes consumer behavior.

Beginning on January 1, 2026, five states implemented SNAP Food Restriction Waivers that prohibit the use of SNAP benefits to purchase sweetened beverages and sugary foods. These waivers represent the first implementation of proposals that had been debated since the 1970s but consistently rejected by the U.S. Department of Agriculture (USDA), which is the agency responsible for administering SNAP (USDA, 2007). The policy raises a fundamental question that extends beyond SNAP itself: Do restrictions on the use of in-kind transfers meaningfully alter consumer behavior?

Traditional demand theory implies that in-kind transfers in the form of SNAP benefits are equivalent to a cash transfer for inframarginal households, who spend more on eligible purchases than the amount of the SNAP benefit. More than 80 percent of households who receive SNAP are inframarginal (Hoynes et al., 2015; Hastings and Shapiro, 2018). As a result, the SNAP Food Restriction Waivers would not change consumption patterns for inframarginal households; these households could instead change their type of payment to purchase restricted foods and beverages.

In contrast, with mental accounting, money is less fungible since individuals separate money into different categories based on its source or intended use (Thaler, 1999; Hastings and Shapiro, 2018; Farhi and Gabaix, 2020). Mental accounting could be more pronounced with

SNAP since the funds are distributed to recipients on a separate debit card (an Electronic Benefits Transfer (EBT) card). As a result, the SNAP Food Restriction Waivers would decrease consumption of restricted foods and beverages under mental accounting combined with a labeling effect that changes what recipients consider appropriate uses of SNAP funds.

In this paper, we test whether traditional demand theory or mental accounting combined with labeling more accurately reflects consumer behavior in the context of the SNAP Food Restriction Waivers implemented between January 1, 2026 and April 20, 2026. These waivers restrict purchases with SNAP of regular and diet soft drinks in all ten implementing states, energy drinks in eight of the ten states, and sports drinks in five states. As of June 30, 2026, the USDA approved waiver applications for another 13 states, although for three states implementation has been halted by federal district court rulings. We focus on the first wave of implementation to estimate the short-run impact of the waivers on households purchases of soda, energy drinks, sports drinks, and water.

To estimate the impact of the SNAP Food Restriction Waivers, we examine household-level purchase data from July 2025 through June 2026 from the NielsenIQ (NIQ) Omnishopper panel. This new panel dataset is one of the largest in the US. It combines product-level purchase information from online and in-store purchases captured from scanned receipts, e-receipts, and linked retailer accounts with household demographic characteristics, state of residence, and self-reported quarterly information on SNAP participation. Relative to the NIQ Homescan panel commonly used in academic research, the Omnishopper panel provides a substantially larger sample and records more shopping trips per week. We estimate treatment effects using the extended two-way fixed effects approach of Wooldridge (2023, 2025), which accommodates nonlinear functional forms and heterogeneous treatments effects by cohort and over time to account for staggered treatment timing. Because the number of ounces of each beverage type that are purchased by households each month are right skewed and non-negative, with households with zero purchases of a beverage, we estimate a Poisson pseudo maximum likelihood model. This approach avoids the arbitrary unit dependence of a log transformation of a dependent variable with zeros and eliminates bias due to the incidental parameters problem in nonlinear fixed effect models (Chen and Roth, 2024; Wooldridge, 2023).

Our results show that SNAP households decrease purchases of soda by 24 ounces per month or by approximately 13% of the pre-waiver average. We also find suggestive evidence

that SNAP households decrease purchases of energy drinks by 4 ounces per month. SNAP households do not change their purchases of sports drinks or water, which is a possible substitute product that is not restricted under the waivers. These results are robust across different model specifications, sample definitions, treatment definitions, and control group definitions that address potential concerns about unmeasured confounding, staggered treatment timing, control group selection, and measurement error.

To most closely test the predictions of demand theory while allowing for measurement error, we construct a ratio of pre-waiver average monthly spending on foods and beverages that are not restricted and the average monthly SNAP benefit. SNAP households in the first quartile of the distribution of this ratio are unlikely to be inframarginal, even allowing for measurement error. SNAP households in the fourth quartile are the most likely to be inframarginal; these households reduce soda purchases by 40 ounces per month, in contrast to the predictions from demand theory related to the fungibility of money.

We examine alternative interpretations that could explain the pattern of results. Changes in SNAP participation and recent eligibility policies that affected SNAP participation, changes in the number of SNAP authorized retailers, higher prices from retailers' costs of compliance, and consumer learning about the health consequences of soda consumption are not likely to explain the results. Further, the potential increase in out-of-state purchases with SNAP funds or difficulties implementing the restrictions by retailers would attenuate the estimates. Instead, a labeling effect that changes what recipients consider appropriate uses of SNAP funds combined with mental accounting most likely explains the results.

In addition to a setting that is useful for testing the predictions of traditional demand theory, estimating the impact of SNAP Food Restriction Waivers is important for understanding whether changes in SNAP policy can influence dietary patterns and improve public health. Nearly half of adults and two-thirds of children consume a sugary beverage on a given day, and approximately 5% of food expenditures are spent on soft drinks by SNAP and non-SNAP households (Garasky et al., 2016; CDC, 2026). Consumption of these beverages contributes to weight gain and the rise in obesity (Deierlein et al., 2024). Our results imply that, at least in the short term, SNAP Restriction Waivers plausibly improve diet quality.

This paper contributes to multiple literatures. The first literature explores the provision of cash versus in-kind benefits, considering the rationales for in-kind transfers and estimating

whether the effects of in-kind transfers differs from that of cash transfers (e.g., Nichols and Zeckhauser, 1982; Currie and Gahvari, 2008; Beatty et al., 2014; Cunha, 2014; Benhassine et al., 2015; Haushofer and Shapiro, 2016; Bitler et al., 2022; Banerjee et al., 2023; Gadenee et al., 2024; Ambuehl et al., 2025; Chorniy et al., 2025). Within this literature, most closely related to our study is research examining whether consumers use SNAP benefits equivalently to their use of cash (e.g., Hoynes et al., 2015; Cuffey et al., 2015). Hoynes and Schanzenbach (2009) find that the introduction of the Food Stamp Program in the 1960s and 1970s increased food expenditures by similar rates as an equivalent cash transfer. However, Beatty and Tuttle (2015) find that the SNAP benefit increases in 2008 and 2009 lead to a greater marginal propensity to spend on food out of SNAP than out of cash. Additionally, Hastings and Shapiro (2018) examine the spending patterns of customers in a large grocery store chain from 2006-2012 with three different approaches and also find a greater marginal propensity to spend on food out of SNAP than out of cash. We contribute to this literature by providing new evidence on whether restrictions on the use of in-kind benefits alter consumer behavior as a way to infer whether consumers treat SNAP benefits equivalent to cash. Additionally, our work relates to research on labeled cash transfers within this literature (e.g., Beatty et al., 204; Benhassine et al., 2015) but extends this literature to examine labeled restrictions on the use of transfers.

Second, this paper contributes to the literature examining the influence of nudges and public policies on food choices. Such nudges have included small rewards (Just and Price, 2013; Belot et al., 2016), commitment devices (Sadoff et al., 2020), changes to the salience of information (e.g., Courtemanche et al., 2025), and warning labels (Barahona et al., 2023). Policy attention has focused primarily on the role of taxes (e.g., Cawley et al., 2019; Allcott et al., 2022; Lozano Rojas et al., 2025). This paper extends this literature by considering restrictions and the role of labeling effects to change how consumers use in-kind transfers for food purchases.

Finally, this paper contributes to the literature on the role of the design of the SNAP program, besides changes in benefit levels, in influencing human development and health outcomes. Prior research has shown that the SNAP benefit distribution schedule influences food purchases and consumption, diet quality, test scores, educational attainment, domestic violence, emergency department use and household well-being (Shapiro, 2005; Carr and Packham, 2020; Cotti et al., 2020; Bond et al., 2022; Chorniy et al., 2025). Other research examines the influence changes in eligibility rules and the length of the recertification period on child health and diet

quality (East, 2020; Hastings et al., 2021). Whereas prior research has relied primarily on simulation models to evaluate the impact of restricting the purchase of sugary beverages with SNAP funds (Basu et al., 2014), this paper adds to this literature by providing real world evidence of the overall and heterogeneous impact of restricting sugary beverage purchases with SNAP funds.

II. Data

a. SNAP Food Restriction Waivers

Information on states' SNAP Food Restriction Waivers comes from the USDA (2026a). States apply to the USDA for a waiver from the federal program regulations; these waivers allow states to change which products can be purchased using SNAP funds. State waivers vary based on their implementation date and which products are restricted. As shown in Table 1 and Appendix Figure A1, five states implemented waivers on January 1, 2026 (Indiana, Iowa, Nebraska, Utah, and West Virginia), and a total of 10 states implemented waivers on or before April 20, 2026. These ten states comprise the treatment group. Each of these states restrict purchases of regular and diet soda, but restrictions on energy drinks, sports drinks, and fruit drinks vary across states.[1] On June 22, 2026, a federal district court ruled that the waivers in Iowa, Nebraska, and West Virginia may not proceed. Since the USDA issued the notice to retailers to stop implementing the restrictions on July 2, 2026, we consider these waivers active through the end of our sample on June 30. The rapid adoption of these waivers across multiple states, together with the legal challenges surrounding their implementation, underscores both the policy relevance and the contentious nature of restricting SNAP purchases. Evaluating the effects of these policies on household purchasing behavior is therefore important for informing ongoing federal and state discussions about the future design of SNAP.

Thirteen states submitted a waiver to the USDA that was approved with a planned implementation date between July 1, 2026 and February 1, 2028. The approved waivers for Colorado and Tennessee were vacated by a federal district court on June 22, 2026. The remaining

[1] Appendix A provides further details about each of the state waivers.

28 states plus Washington DC have not yet submitted a waiver or have not had an approved waiver, as of July 7, 2026; although, most states are considering a waiver.[2]

States were encouraged to apply for these waivers by the USDA and federal government officials (USDA, 2026a). States that applied for these waivers were eligible for additional funding through the Rural Health Transformation Fund (Florko, 2026; Levi, 2026). As a result, states with SNAP Food Restriction Waivers may differ from other states based on political alignment and rurality. However, since nearly all states are considering applying for a SNAP Food Restriction Waiver, we primarily compare households residing in the ten states that implemented a waiver prior to June 30 to households residing in the other 40 states plus Washington, DC. We additionally examine the robustness of the results to changing the comparison states to the 13 states with an approved waiver prior to the federal district court ruling.

b. Household Purchases Data

Data on household purchases are from the NIQ Omnishopper panel, which is a recent panel that includes online and offline purchases with multiple modes of data collection as opposed to traditional scanner data reliant exclusively on brick-and-mortar purchases. The Omnishopper panel consists of approximately 250,000 households selected from approximately 12 million users of the Fetch Rewards app to construct a panel of households who consistently report their purchases. Households record purchases by scanning paper receipts within the app. To further reduce respondent burden and improve purchase capture, households provide NIQ access to e-receipts through which NIQ passively records purchases from e-mailed receipts and connected retailer accounts, eliminating the need for households to manually record many transactions. As a result, the Omnishopper panel is more than 3.5 times larger with more recorded shopping trips per week than the NIQ Homescan Consumer Panel.[3, 4] Similarly to the

[2] Additional waivers may be approved in the future. At least 43 states have applied or are developing a waiver request, as described by the National Grocers Association SNAP Tracker at https://www.nationalgrocers.org/snap-waiver-tracker/ and Food Research & Action Center at https://frac.org/snap-restrictions.

[3] Gregory (2025) finds that the Circana (formerly, IRI) consumer scanner data underestimates monthly food-at-home expenditures by more than 30 percent for SNAP households relative to expenditures in the Consumer Expenditure Survey (CES). Zhen et al. (2019) finds that the underreporting of food expenditures in the IRI data compared to CES does not bias estimates of price elasticities. However, the greater frequency of recorded shopping trips per week in the Omnishopper data compared to consumer scanner data likely reduces underreporting of food expenditures and purchases.

[4] The Omnishopper panel is also larger than comparable panels. The Numerator panel consists of approximately 150,000 households selected from over 1 million app users (Hristakeva et al., 2026). The larger number of app users

NIQ Homescan Consumer Panel, the Omnishopper panel includes demographic characteristics, state of residence, the amount and price of each type of beverage purchased, and product characteristics. Importantly, and distinct from the NIQ Homescan Consumer Panel that is distributed for academic research, the Omnishopper panel includes a quarterly survey of panelists about SNAP participation.

We use Omnishopper panel data from July 1, 2025 through June 30, 2026 with information on beverages purchased during this period. NIQ provided these data in two six-month panels. For each six-month panel, NIQ requires that panelists report purchases in at least five out of six months and at least 84 percent of days (i.e., at least 151 out of 180 days). As a result, our data include information for 190,399 panelists from July through December 2025 and 197,879 panelists from January through June 2026. We further restrict the sample to 116,685 panelists with complete data from July 2025 through June 2026.

The primary outcome of interest is the number of ounces of soda purchased each month by households. The Omnishopper data identify the product category (e.g., soda) and brand (e.g., Coca-Cola Company) for all beverages but only describe the product item, flavor, and size (e.g., number of ounces) for products with a UPC code. The Omnishopper data are derived from receipts, which can have descriptions that are abbreviated, truncated, or lack sufficient detail to determine the UPC code for each item purchased. Twenty-three percent of the 7.5 million items of soda purchased between July 2025 and June 2026 do not have a UPC code in the data and, thus, do not have the number of ounces of the product. Measuring the number of ounces of soda purchased each month without explicitly imputing the number of ounces for these products would implicitly impute zero ounces for 23% of beverages purchased. As a result, we impute a value of 12 ounces for items in which the number of ounces is missing, since 12 ounces is product size that is most commonly purchased, and then aggregate the number of ounces of soda purchased to the monthly level for each household.[5]

We measure the number of ounces of energy drinks and sports drinks purchased similarly to soda by imputing missing values for the number of ounces with the amount for the product size that is most commonly purchased (12 and 28 ounces, respectively) and then aggregate the

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can allow NIQ to select the most engaged consumers for the Omnishopper panel; for example, NIQ reports that Omnishopper panelists provide purchase information for an average of 40 trips per month.

[5] Forty percent of soda items purchased are 12 ounces. We also examine the robustness of the results to imputing a value of 20 ounces, which is the second most common product size at 18% of soda items purchased.

number of ounces of soda purchased to the monthly level for each household.[6] To examine substitution patterns towards healthier beverages, we also examine the number of ounces of unflavored bottled water purchased each month. We impute a value of 16.9 ounces for the 23% of the 2.5 million items of water purchased in which the number of ounces is missing, and then aggregate the number of ounces of water purchased to the monthly level for each household.[7] Additional outcomes include the share of food spending allocated to each beverage category, following the literature on SNAP purchases and the monthly SNAP cycle (e.g., Hastings et al., 2021; Harris-Lagoudakis and Wich, 2024).

We measure SNAP participation based on self-reported values from the quarterly surveys of Omnishopper panelists. Panelists report whether anyone in their household currently receives SNAP, has previously received SNAP but does not currently receive SNAP, or has never received SNAP. Response rates to this survey are 29% in the third quarter and 19% in the fourth quarter of 2025.[8] As a result, rather than focus on participation in the fourth quarter only, we define pre-treatment SNAP participation as whether the household received SNAP benefits during the third or fourth quarter of 2025, which is before the implementation of any SNAP waivers.[9]

Inframarginal households are those in which the amount spent on unrestricted foods and beverages prior to the implementation of a SNAP waiver exceeds the amount received in SNAP benefits. We measure the amount spent on unrestricted items as average monthly total spent on foods and beverages from July-December 2025 minus the average monthly total spent on soda, energy drinks, and sports drinks. The amount received in SNAP benefits is based on household size and the USDA's definition of net income, which is not calculable in the Omnishopper data. As a result, we use the average monthly SNAP benefit from FY2026 for each household size.

[6] The number of ounces is not available for 30% of the 2.5 million items of energy drinks and 23% of the 1.5 million items of sports drinks purchased.
[7] Sixty one percent of water items purchased are 16.9 ounces. We also examine the robustness of the results to imputing a value of 128 ounces, which is the second most common product size at 20% of water items purchased.
[8] The combined response rate to either survey was 38%. In comparison, Gregory (2025) finds that 55-60% of panelists responded to an annual survey about SNAP participation in the Circana consumer panel.
[9] This definition addresses concerns about survey nonresponse and the underreporting of SNAP participation (Meyer et al., 2022). Of the 9,193 households who report receiving SNAP in either of the two surveys, 358 households report in the fourth quarter that they have used SNAP in the past, but do not currently. We examine the robustness of the results to defining these households as non-participants.

Based on this definition, 48% of SNAP households are inframarginal.[10] Since this definition is measured with error, we prioritize an alternate definition based on the ratio of the average monthly amount spent on unrestricted items to the average monthly SNAP benefit for the household's size. We define households least likely and most likely to be inframarginal as those in the lowest and highest quartile of the distribution of this inframarginal ratio.

c. Sample Construction

We restrict the sample to households with beverage purchases from July 2025 through June 2026 who received SNAP in July-December 2025, prior to the implementation of any SNAP waivers in January 2026. SNAP participation is often measured with error in consumer surveys and estimates of the effect of SNAP can be biased due to endogenous and mismeasured participation (Kreider et al., 2011; Meyer et al., 2022). Restricting the sample to households who self-report SNAP participation prior to SNAP waivers and examining variation within the SNAP program across states reduces these concerns as long as measurement error in participation and selection into the program in 2025 does not systematically differ across states based on whether states implemented a SNAP Food Restriction Waiver between January and June 2026.[11]

We focus our analysis on soda and water purchases in all states, since soda is the only product that is consistently restricted by SNAP waivers in all states with a waiver prior to June 30, 2026, and no state restricts purchases of water. To examine changes in the number of ounces of energy drinks and sports drinks purchased, we restrict the set of treatment states to only those with these product restrictions as shown in Table 1 and continue to include all control states in the sample.

Column (1) of Table 2 displays the summary statistics of the primary analysis sample. The sample is balanced with 5,073 SNAP households with complete data on beverage purchases from July 2025 through June 2026. On average, SNAP households purchase 174 ounces of soda

[10] This percentage is below the nationwide estimate of 84% from 1990-2013 from Hoynes et al. (2015) or the estimate of 94% for customers of a grocery store chain from 2006-2012 from Hastings and Shapiro (2018). Changes to the Thrifty Food Plan that increased SNAP benefits by approximately 20% in October 2021 would have decreased the percentage of inframarginal SNAP households after 2021.

[11] Meyer et al. (2022) find that nearly all mismeasured participation is false negative reporting (i.e., SNAP participants who do not report receipt). Thus, our analysis sample may exclude households who are truly SNAP-participating households (because of mismeasured participation or survey nonresponse). As a result, we examine the robustness of our results to restricting the sample to households in which the panelist received a high school degree or less rather than restricting the sample to SNAP-participating households.

and 120 ounces of water each month. These households report spending $562.54 on food and beverages each month.

III. Methods

To examine the impact of the SNAP state policy changes, we utilize a difference-in-differences research design in which we compare the changes over time in beverage purchases in states that restrict SNAP purchases to the changes over time in beverage purchases in states that do not restrict SNAP purchases. A key methodological challenge arises from states implementing SNAP waivers at different times. Traditional two-way fixed effects (TWFE) regression models may produce biased estimates when treatment effects are heterogeneous across cohorts or evolve over time (e.g., Goodman-Bacon, 2021). To address staggered adoption bias, we implement the extended TWFE estimator incorporating cohort specific interactions (Wooldridge, 2023, 2025).[12] This estimator is flexible in comparison to other staggered adoption estimators as it permits non-linear functional forms, while allowing the inclusion of interaction terms (Wooldridge, 2023). Our dependent variables, ounces of a beverage category purchased by households each month, include households with zero purchases of a beverage; these variables are non-negative and right skewed. As a result, we estimate a Poisson pseudo maximum likelihood model (Correia et al., 2020). This model allows for the inclusion of zeros in the dependent variable, avoids the arbitrary unit dependence of a log transformation of a dependent variable with zeros, and eliminates bias due to the incidental parameters problem in nonlinear fixed-effects models (Chen & Roth, 2024; Wooldridge, 2023).

Specifically, we estimate a Poisson extended TWFE regression model with household and month fixed effects:

$$E(Y_{ist} | Waiver_{st}, \gamma_i, \delta_t) = exp\left(\alpha + \sum_{g \in G} \sum_{t=g}^{T} \beta_{gt} Waiver_{sgt} + \gamma_i + \delta_t\right), \quad (1)$$

where Y_{ist} represents ounces of a beverage category purchased by household i in state s in month t, T is the last period of the analysis in June 2026, α is an intercept term, γ_i are household fixed effects, and δ_t are month fixed effects. *Waiver* is a binary variable equal to one when a SNAP Food Restriction Waiver is in effect for state s in treatment group g at time t. $g \in G$ identifies treatment cohorts based on the period in which the waiver was implemented (i.e., Indiana, Iowa,

[12] This estimator is equivalent to the imputation estimator of Borusyak et al. (2024) (Aguilar-Loyo, 2025).

Nebraska, Utah, and West Virginia are a treatment group defined by the implementation date of January 2026). β_{gt} represents the average treatment effect for treatment group g in month t. Household fixed effects subsume state fixed effects and control for any time invariant characteristics of the household; any constant state-level social, economic, or environmental confounders of nationwide trends in purchasing patterns; and any federal policy changes (including in the SNAP program) that are implemented consistently across states.[13] Standard errors are heteroskedasticity-robust and clustered at the state.

The extended TWFE estimator is efficient and assumes no anticipation and parallel trends. It uses all never treated and not-yet-treated observations as the comparison group. We additionally modify equation (1) to allow for full heterogeneity across all groups and relative time periods to include pre-treatment coefficients.[14] We create event-study graphs to visually examine the pre-treatment coefficients and confidence intervals for consistency with the parallel trends assumption. To address the concerns of Roth (2022), we directly test this assumption using the test proposed by Borusyak et al. (2024).

IV. Results

a. Preliminary Evidence

The treated states include the states shown in Table 1 that implemented a SNAP Food Restriction Waiver from January through July 2026, and the control states include all other states. As shown in Table 2, the means of the outcomes and demographic characteristics of individuals in the treatment and control groups are similar prior to the implementation of any waivers. As shown in Figure 1, the levels and unconditional trends in average soda purchases per month are similar for both groups from July through December 2025.[15]

Figure 1 further shows that the average soda purchases among households in the treated states decreases below the average among households in the control states by March 2026 and

[13] We do not include additional household or state covariates in the baseline specification. Identification is provided by the difference-in-differences design and does not require additional covariates. Moreover, conditioning on covariates may require stronger identifying assumptions when covariates exhibit differential trends or are correlated with treatment effects (Roth et al., 2023). Given our 12-month panel, most household and state characteristics are effectively time-invariant and are absorbed by the household fixed effects.

[14] The associated estimator is equivalent to the estimators of Sun and Abraham (2021) and Callaway and Sant'Anna (2021) when there are no covariates (Aguilar-Loyo, 2025).

[15] Appendix Figure B1 divides the control group of Figure 1 into states that, as of July 7, 2026, have not had a waiver approved by the USDA, and states that have a waiver approved but that their implementation date is later than Jun 30, 2026.

remains lower through June 2026. Average soda purchases fell from 185 ounces in 2025 to 158 ounces in 2026 in the treated states, while average soda purchases fell from 180 ounces in 2025 to 169 ounces in 2026 in the control group states. Thus, the trends and means show that average purchases are similar prior to the waivers but decrease by a greater extent in states that implemented a SNAP Food Restriction Waiver.

Appendix Figure B2 shows that soda purchases among SNAP households in states with a waiver who are likely not inframarginal (in the first quartile of the distribution of the inframarginal ratio) slightly decreases over time. In contrast, for SNAP households in these states who are the most likely to be inframarginal (in the fourth quartile of the distribution of the inframarginal ratio), soda purchases are relatively constant from July through November 2025 but show a marked decline during 2026 after the waivers are implemented.

b. Average Impact

Table 3 reports the estimated aggregate average treatment effects of the SNAP Food Restriction Waivers on monthly beverage purchases among SNAP households. Column (1) presents estimates using a specification in which the complete pre-treatment period serves as the reference period. Column (2), our preferred specification, additionally includes interactions between treatment cohorts and each pre-treatment period, allowing for flexible cohort-specific pre-treatment dynamics and ensuring that treatment effects are identified from comparisons among similar relative time periods.

Across both specifications, SNAP Food Restriction Waivers reduced soda purchases among SNAP households. The estimated effect decreases in magnitude from 26.8 to 23.8 ounces per household per month when moving from column (1) to the preferred specification in column (2), indicating that allowing for flexible pre-treatment dynamics attenuates the estimated effect while leaving the qualitative conclusion unchanged. Similarly, the estimated reduction in energy drink purchases decreases from 7.8 to 4.0 ounces per month. In contrast, the negative estimate for sports drink purchases is no longer statistically distinguishable from zero once pre-treatment interactions are included, suggesting that the larger estimate in column (1) reflects comparisons across dissimilar relative time periods rather than a persistent treatment effect. The waivers did not significantly affect purchases of bottled water, which remained eligible for purchase with SNAP benefits in all states.

Figure 2 presents the corresponding event-study estimates from column (2). Across all beverage categories except for sports drinks, the estimated pre-treatment coefficients are statistically indistinguishable from zero, providing evidence that households in treated and control states followed similar trends prior to the implementation of the SNAP Food Restriction Waivers. Following implementation, the estimates indicate a decline in soda purchases that persists throughout the post-treatment period. In contrast, there is little evidence of changes in water purchases, while the estimates for energy drinks become more negative over time and are statistically significantly negative by the second month after implementation of the waivers. Finally, sports drinks seem to have followed a different trend at the beginning of the timeframe and the changes in purchases do not exhibit a particular response to the introduction of SNAP restriction waivers.

Appendix Table B1 provides p-values for the test of parallel trends proposed by Borusyak et al. (2024).[16] Consistent with the parallel trends assumption, we fail to reject the null hypothesis for the F-test for soda and water purchases. The p-values for energy drinks (0.048) and sports drinks (0.017) suggest that the parallel trends assumption does not hold for these purchases. Given these results, and that soda is the only beverage type that is restricted in all states, we focus primarily on soda purchases in the analysis.

Overall, the preferred specification in column (2) indicates that restricting the use of SNAP benefits reduced purchases of soda, while providing little evidence of substitution toward bottled water. These results are robust to allowing for flexible pre-treatment dynamics across treatment cohorts.

In Appendix B, we show that these results are robust to alternate sample definitions, additional measures reflecting beverages purchases, different imputation approaches for missing values, alternate definitions of SNAP participation, different control groups, different levels of clustering, and different covariates. Since SNAP participation is often underreported (Meyer et al., 2022), we restrict the sample to households in which the panelist has a high school degree or less, as reported in 2025. These results are qualitatively similar, as shown in Appendix Table B2, but attenuated, since this sample includes households who would not receive SNAP funds. Appendix Table B3 displays the results for outcome variables that measure the share of food and beverage spending on each beverage category to be consistent with the outcomes in the literature

[16] Additionally, Appendix Table B1 demonstrates that the results are robust to using a linear model.

on the monthly SNAP cycle; these results show that the share of spending on soda purchases fell by 1% while the estimates for other beverage categories are less than 0.1% and are not statistically significant. Further, this table shows that there is no impact of the SNAP Food Restriction Waivers on the total amount that SNAP households spend on food and beverages. Additionally, as shown in Appendix Table B4, the results are robust to an alternative imputation for products with missing ounces, definition of SNAP participation, control group, level of clustering standard errors, and set of control variables. Finally, we examine placebo tests based on assigning implementation date of the waivers as October 2025, when many aspects of H.R. 1 were implemented and SNAP participation started to decline, and changing the treatment group to be states with approved waivers pending implementation. As shown in Appendix Table B5, for both scenarios, the placebo waivers do not have a statistically significant influence on soda purchases. Thus, the results are robust to concerns about measurement error defining the sample and in the outcome variables, the selection of the control group, model specification, and unobserved confounding.

c. Heterogeneous Impacts

Traditional demand theory predicts that the SNAP waivers would decrease soda purchases for marginal households while inframarginal households would primarily change their payment source and would not decrease their purchases of soda. To examine this prediction, Figure 3 presents event-study estimates separately for households least likely and most likely to be inframarginal. The estimated pre-treatment coefficients are small and statistically indistinguishable from zero for both groups, providing evidence consistent with the parallel trends assumption. Following implementation of the waivers, soda purchases decline for both groups of households. The reduction is evident not only among households least likely to be inframarginal but also among those most likely to be inframarginal, with the latter group exhibiting the larger estimated decline. As shown in Appendix Table B6, the aggregated average treatment effect of the SNAP restrictions is -12.5 ounces per month, but not statistically significant, for households least likely to be inframarginal, and is -40.3 ounces per month (an 18.5% decrease) for households most likely to be inframarginal. These findings are inconsistent with the prediction that inframarginal households would fully offset the restrictions by simply substituting another payment method. Instead, the results suggest that restricting the use of SNAP benefits affects purchasing behavior even among households whose expenditures on

unrestricted goods exceed the value of their SNAP benefits, a pattern more consistent with behavioral mechanisms such as mental accounting or labeling.

V. Alternative Interpretations and Mechanisms

This paper tests the predictions of the fungibility of money from traditional demand theory in the context of SNAP Food Restriction waivers, in contrast to the predictions of mental accounting combined with a labeling effect. In this section, we examine alternative interpretations and mechanisms that could explain the reduction in soda purchases following the SNAP waivers. In addition to mental accounting and a labeling effect, SNAP Food Restriction Waivers may reduce purchases of restricted beverages because of consumers' response to health promotion messaging about the health consequences of the consumption of the restricted foods, losing SNAP eligibility or ending participation, reductions in the number of SNAP retailers, or increases in prices. In addition to SNAP recipients changing their payment type because of the fungibility of money, SNAP Food Restriction waiver may not reduce purchases of restricted beverages because of the ability of SNAP recipients to purchase restricted beverages outside of their state of residence and because of limited compliance with the policy among retailers.

a. Changes in SNAP participation

Our analysis examines changes in purchases among households who received SNAP benefits during the third or fourth quarter of 2025, prior to the implementation of any state waiver. However, significant changes in SNAP participation occurred during this period. During July 2025, 42.0 million individuals participated in SNAP; participation fell to 37.0 million individuals by April 2026 (USDA, 2026b). Policy changes during this period include expanded work requirements, restrictions on state waivers of work requirements, and restrictions on non-citizen eligibility including refugees and asylees. Appendix Figure B3 shows that there was a sudden decrease in the number of SNAP households (per 1 million residents) beginning in October 2025 in the treated states, but the number of SNAP households also fell during this period in the control states.

To examine the potential that our estimates reflect changes in SNAP participation rather than changes in behavior among SNAP participants, first, we examine the impact of Food Restriction Waivers on SNAP participation using the USDA's administrative counts of participants by state, and, second, we examine the robustness of our results to restricting the

sample to individuals who report receiving SNAP in the third or fourth quarter of 2025 and in the first or second quarter of 2026. As shown in Appendix Table B7 in column (3), SNAP Food Restriction Waivers decreased SNAP participation by an average of 3,351 households per state per month, which is 0.8% of the pre-treatment baseline in December 2025. Appendix Table B8 shows that the primary results are robust to restricting the sample to households who report receiving SNAP in 2025 and 2026.[17] The estimate for soda and sports drink purchases are larger at decreases of 46.8 ounces and 6.4 ounces per month, respectively, while the estimates for energy drinks and water are similar, relative to the primary results in Table 3. Further, the placebo test based on changing the implementation dates of the waivers to October 2025, when SNAP participation began to decline, were smaller in magnitude and not statistically significant. Thus, although the SNAP Food Restriction Waivers contributed slightly to the ongoing decline in SNAP participation, changes in SNAP participation do not explain the pattern of results.

b. Availability of retailers

Compliance with the SNAP Food Restriction waivers can increase the operating costs of retailers. These higher costs could lead some retailers to stop participating in the SNAP program. We examine changes in the number of authorized SNAP retailers using data from the USDA's SNAP Retailer Locator Data. There were 59,860 authorized SNAP retailers at the end of June 2025 across all states that implemented Food Restriction Waivers in the first half of 2026. By the end of June 2026, the number of authorized SNAP retailers fell to 55,213 across these states. However, the number of authorized SNAP retailers also decreased during this period from 43,265 to 40,302 across all states that are approved to implement Food Restriction waivers after June 2026 and from 147,272 to 134,822 across all states without a Food Restriction waiver, as shown in Appendix Figure B5. Event-study design regressions of the number of authorized SNAP retailers, measured every 6 months from the end of June 2022 through the end of June 2026, controlling for state population and state, month, and year fixed effects, show that there is not a statistically significant change in the number of SNAP authorized retailers as a result of SNAP Food Restriction Waivers, as shown in Appendix Figure B6. Thus, changes in the

[17] The primary reason for the smaller sample in Appendix Table B8 compared to Table 3 is survey nonresponse about SNAP participation (2,532 out of 5,073 SNAP households in 2025) rather than losing SNAP (182 out of 5,073 SNAP households in 2025).

availability of restricted items due to a decline in the number of SNAP authorized retailers do not seem to explain the results.

c. Prices

The results show that SNAP households reduce the quantity of soda purchased but do not change the total amount spent on food and beverages each month. One possible explanation for this pattern is that prices increased, potentially due to retailers passing on the cost of complying with the restrictions. To assess this possibility, we examine the impact of the SNAP waivers on the price per ounce that households pay for each beverage type. This outcome reflects the choices of consumers about which beverage, brand, and size to purchase and where to purchase these items, in addition to the prices that retailers sell the products. The estimates in Appendix Table B9 show that the price of energy drinks purchased by households was 9.1 cents per ounce greater after the waivers while the prices of soda and sports drinks were 1.8 cents per ounce less. The lower price per ounce of soda may reflect lower demand for soda following the restrictions. As a result, higher prices are unlikely to explain the pattern of results for soda purchases.

d. Other Alternative Interpretations

The pattern of results is not consistent with the SNAP waivers increasing consumers' awareness of the health consequences of the restricted foods and then reducing their purchases of these items. As shown in Appendix A, state waivers were generally approved at least six months prior to the implementation date. Public health messaging would have occurred between the approval and implementation dates, but Figure 2 does not show evidence of differential trends in purchases, particularly for soda, among treated states prior to the implementation of the restrictions as a result of public health messaging.

Limited compliance with the restrictions among retailers is also unlikely to explain the results but potentially could have attenuated the estimates. The USDA monitors and penalizes retailers for noncompliance with the implementation of the restrictions. Monitoring includes undercover attempts to purchase restricted items, beginning 90 days after the implementation date (USDA, 2025). Penalties for noncompliance, after the second offense, include being unauthorized to accept SNAP EBT cards as a form of payment. This timeline suggests that retailers may not implement or comply with the SNAP restrictions shortly after the implementation date. However, our results for soda show that purchases decrease during the

month of implementation of the waiver and the magnitude of the treatment effect is constant for the next two months (see Figure 2).

A final alternative interpretation is that SNAP recipients could purchase restricted beverages outside of their state of residence with their SNAP EBT card.[18] Although we cannot directly test this, since the Omnishopper data do not include the location of retailers, we note that this alternative interpretation would attenuate the estimates and provide further evidence against the predictions of traditional demand theory.

VI. Conclusion

Waivers to restrict allowable purchases within SNAP have been proposed for at least 50 years but were implemented for the first time on January 1, 2026. These SNAP Food Restriction Waivers provide a test of whether SNAP recipients reallocate money to continue purchasing restricted items. We examine the purchase history of SNAP households from July 2025 through June 2026 using a new panel dataset that includes a greater number of recorded shopping trips per week than alternate datasets. We estimate a Poisson extended TWFE regression model with household and month fixed effects. Focusing on soda, which is restricted in all states that implemented a SNAP Food Restriction Waiver prior to June 2026, we find that the restrictions reduced purchases of soda by 23.8 ounces per month among SNAP households and by 40.3 ounces per month among SNAP households who are the most likely to be inframarginal. These results are inconsistent with the predictions of traditional demand theory and are unlikely to be explained by declining SNAP participation, declining availability of restriction items from the declining number of SNAP authorized retailers, or increases in prices due to retailers passing on the cost of the regulation. Instead, the results are consistent with mental accounting, in which consumers spend SNAP funds only on approved foods. As additional post-implementation data become available, future research can examine whether these effects persist.

[18] Online purchases from EBT cards by SNAP households in treated states are subject to the restrictions if the retailer fulfills any part of the order from a warehouse (USDA, 2025).

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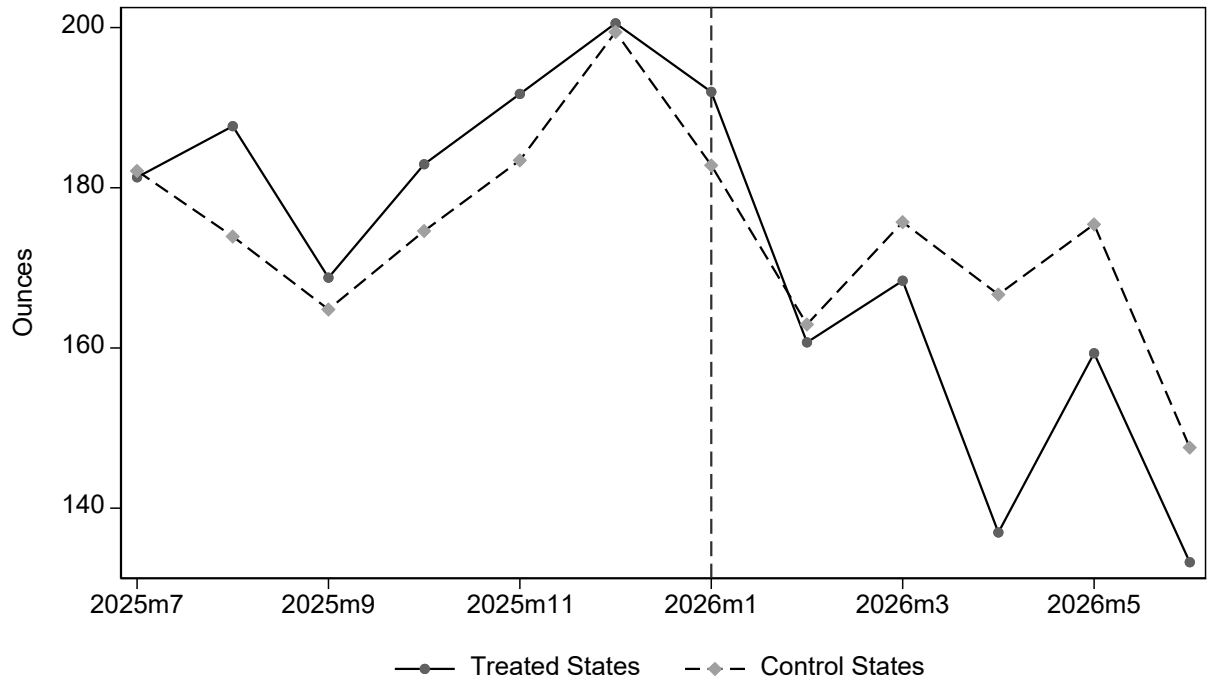
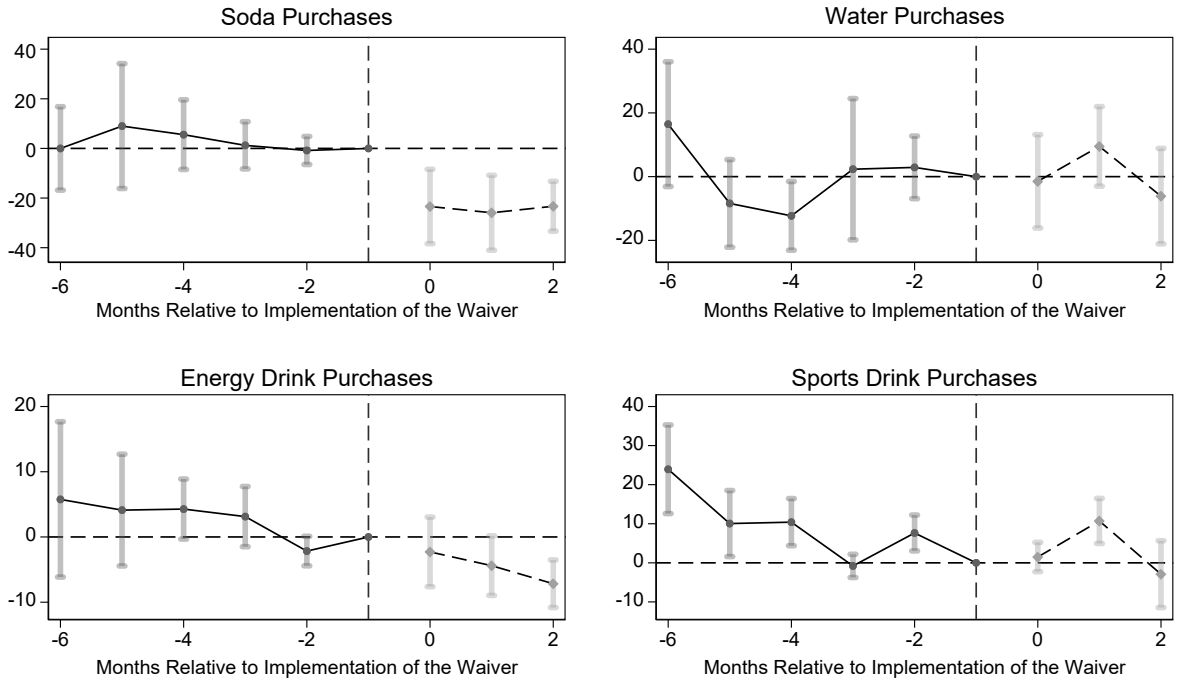
Figure 1: Trends in Soda Purchases Among SNAP Households



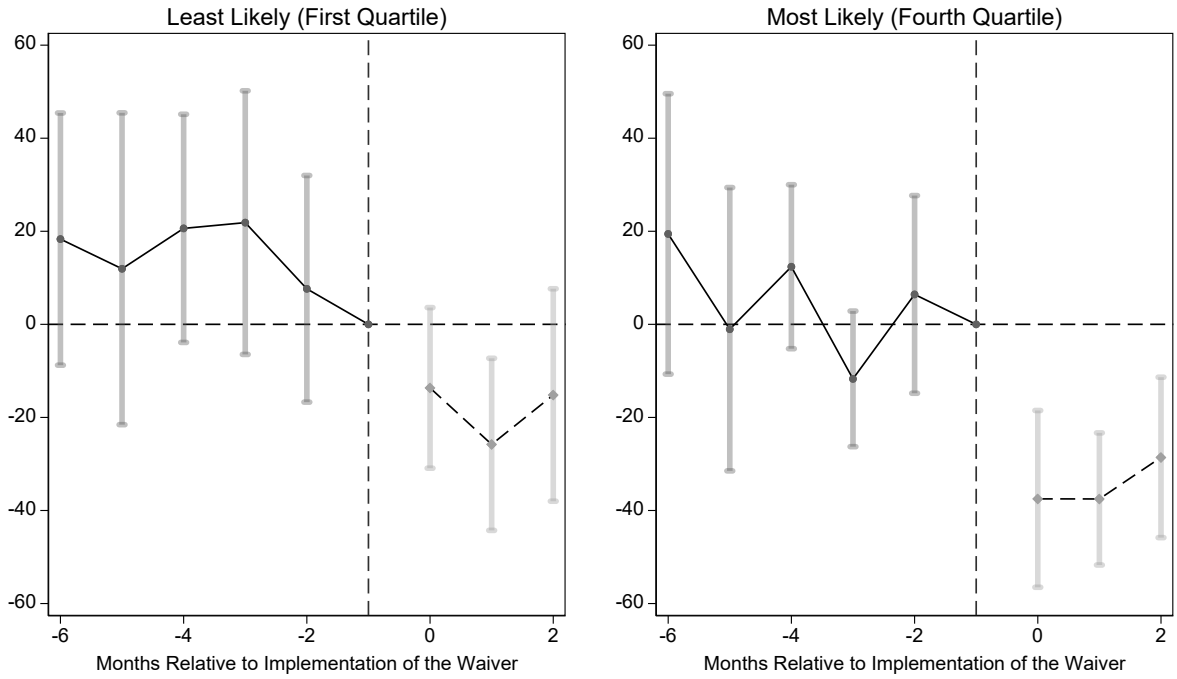
Notes: This figure shows the trends in the monthly average of the ounces of soda purchased by SNAP households in states that implemented a Food Restriction Waiver before June 30, 2026 and those that did not. The dashed vertical line shows the date of the implementation of the first group of SNAP Food Restriction Waivers.

Figure 2: Event-Study Estimates of the Impact of SNAP Food Restriction Waivers on Beverage Purchases among SNAP Households



Notes: The y-axes measure the marginal effect in ounces per month of each beverage category. The x-axes span 6 months before the implementation of the waivers to 2 months after implementation to display the estimates that are balanced over relative time across states.

Figure 3: Event-Study Estimates of the Impact of SNAP Food Restriction Waivers on Soda Purchases for SNAP Households Least and Most Likely to be Inframarginal to the Restrictions



Notes: The sample on the left includes households who are least likely to be inframarginal to the SNAP restrictions because these households are in the first quartile of the distribution of the inframarginal ratio, while the sample on the right includes households who are most likely to be inframarginal (fourth quartile of the distribution of the inframarginal ratio). The inframarginal ratio is the average monthly spending from July-December 2025 on foods and beverages that are not restricted by SNAP Food Restriction Waivers divided by the average monthly SNAP benefit based on the household's size. The y-axes measure the marginal effect in ounces per month of soda purchased. The x-axes span 6 months before the implementation of the waivers to 2 months after implementation to display the estimates that are balanced over relative time across states.

Table 1: States with a SNAP Food Restriction Waiver and the Beverage Categories that are Restricted

State	Date	Regular Soda	Diet Soda	Energy Drinks	Sports Drinks	Fruit Drinks	Water
Indiana	1/1/2026	X	X	X	X	X	
Iowa	1/1/2026	X	X	X		X	
Nebraska	1/1/2026	X	X	X			
Utah	1/1/2026	X	X				
West Virginia	1/1/2026	X	X				
Idaho	2/15/2026	X	X	X	X	X	
Oklahoma	2/15/2026	X	X	X	X	X	
Louisiana	2/18/2026	X	X	X	X	X	
Texas	4/1/2026	X	X	X	X	X	
Florida	4/20/2026	X	X	X		X	

Notes: This table lists the states with a waiver that was implemented prior to June 30, 2026. On June 22, 2026, a federal district court ruled that the implementation of the waivers in Iowa, Nebraska, and West Virginia must end; these states issued a notice to retailers to stop the implementation of the waiver on July 2, 2026. States with an approved waiver with a planned implementation date between July 1, 2026 and February 1, 2028 are: Arkansas, Hawaii, South Carolina, North Dakota, Ohio, Virginia, Missouri, Wyoming, Kansas, and Nevada. Colorado and Tennessee had an approved waiver with a planned implementation date after July 1, 2026 that was vacated by a federal district court on June 22, 2206. Diet soda is artificially sweetened soda. Fruit drinks contain 50 percent of less of natural fruit or vegetable juice.

Table 2: Sample Characteristics

	All	Treatment States, 2025	Control States, 2025
Soda (ounces)	173.638	185.496	179.726
	(318.183)	(287.117)	(333.862)
Soda (spending share)	0.059	0.061	0.060
	(0.076)	(0.074)	(0.076)
Water (ounces)	119.722	119.945	122.027
	(400.047)	(344.792)	(416.692)
Water (spending share)	0.017	0.020	0.017
	(0.037)	(0.071)	(0.028)
Energy drinks (ounces)	32.034	31.971	31.842
	(99.528)	(116.927)	(94.708)
Energy drinks (spending share)	0.015	0.014	0.014
	(0.044)	(0.048)	(0.042)
Sports drinks (ounces)	49.166	65.169	49.076
	(154.012)	(165.637)	(156.205)
Sports drinks (spending share)	0.008	0.010	0.008
	(0.025)	(0.023)	(0.026)
Total Food/Bev spending	562.544	577.902	573.587
	(369.756)	(363.634)	(375.445)
Black, non-Hispanic	0.168	0.166	0.169
	(0.374)	(0.372)	(0.375)
White, non-Hispanic	0.659	0.603	0.675
	(0.474)	(0.489)	(0.468)
Hispanic	0.138	0.199	0.120
	(0.345)	(0.400)	(0.325)
Other Race/Ethnicity	0.035	0.031	0.036
	(0.184)	(0.174)	(0.187)
Age	49.019	48.686	49.116
	(11.919)	(11.863)	(11.935)
Male	0.061	0.067	0.059
	(0.239)	(0.250)	(0.235)
Years of Schooling	14.022	14.049	14.014
	(1.663)	(1.656)	(1.665)
Household Income	44.807	44.587	44.871
	(37.635)	(37.244)	(37.753)
Household Size	2.972	3.023	2.957
	(1.422)	(1.425)	(1.421)
Inframarginal	0.480	0.479	0.480
	(0.500)	(0.500)	(0.500)
Observations	60,876	6,906	23,532
Panelists	5,073	1,151	3,922

Notes: Column (1) shows means and standard deviations, in parentheses, for the full sample of SNAP households with beverage purchases from July 2025 through June 2026. Columns (2) and (3) show the characteristics of panelists from July 2025 through December 2025 in states that implemented a SNAP Food Restriction Waiver from January 2026 through June 2026 (the treatment states) and in states that did not implement a waiver (the control states). The sample sizes for energy and sports drinks are 60,060 and 53,400 observations because we exclude from the samples the states shown in Table 1 without restrictions on energy and sports drinks, respectively.

Table 3: The Impact of SNAP Food Restriction Waivers on Ounces of Beverages Purchased in a Month Among SNAP Recipients

	(1)	(2)
Soda	-26.799	-23.831
	(4.199)	(6.147)
Energy Drinks	-7.772	-4.002
	(1.255)	(1.403)
Sports Drinks	-11.503	0.374
	(2.223)	(2.219)
Water	-3.071	-1.161
	(3.180)	(5.597)
β_{gt}	Post-treatment	All

Notes: Aggregated average treatment effects of SNAP Food Restriction Waivers are shown with their corresponding standard errors, clustered at the state level, in parentheses. Each cell shows the results of separate regressions. The row headings are the outcome variables, which are the ounces purchased per month of the corresponding beverage category. Soda includes regular and diet soda. Column (1) presents result where the complete pre-period is used as a reference, and Column (2) includes all pre-period interactions of month and treatment units.

Online Appendix

Appendix A: Description of States' Food Restriction Waivers

This appendix provides details of the SNAP Food Restriction Waivers approved by the USDA that were implemented between January 1, 2026 and June 30, 2026. States are listed in order of the date of implementation and alphabetical when the date of implementation is the same.

Indiana: Indiana submitted a request for a food restriction waiver to the USDA on April 15, 2025. It was approved on May 22, 2025 for a two-year period beginning on January 1, 2026. Indiana's waiver restricts SNAP recipients from using SNAP funds to purchase soft drinks and candy. As described in the state's waiver request to the USDA, soft drinks are defined as "non-alcoholic beverages that contain natural or artificial sweeteners. The term does not include beverages that contain milk or milk products, soy, rice, or similar milk substitutes, or are exclusively naturally sweetened using natural vegetable and/or fruit juice" (Indiana, 2025). Candy is defined as "a preparation of sugar, honey, or other natural or artificial sweeteners in combination with chocolate, fruits, nuts, or other ingredients or flavorings in the form of bars, drops, or pieces. The term does not include any preparation requiring refrigeration" (Indiana, 2025).

Iowa: Iowa submitted a request for a food restriction waiver to the USDA on April 1, 2025. It was approved on May 22, 2025 for a two-year period beginning on January 1, 2026. Iowa's waiver restricts SNAP recipients from using SNAP funds to purchase taxable food items. As described in the state's waiver request to the USDA, taxable beverages include "Carbonated and noncarbonated soft drinks, including but not limited to colas, ginger ale, near-beer, root beer, lemonade, orangeade; all other drinks or punches with natural fruit or vegetable juice which contain 50 percent or less by volume natural fruit or vegetable juice; a typical example is Hi-C; beverage mixes and ingredients intended to be made into taxable beverages; liquid or frozen, concentrated or non-concentrated, dehydrated, powdered, granulated, sweetened or unsweetened, seasoned or unseasoned; concentrates intended to be made into beverages which contain 50% or less by volume natural fruit or vegetable juice; and sweetened naturally or artificially sweetened water" (Iowa, 2025). Taxable foods include "seeds for food producing plants and food producing plants; candy, candy-coated items, and candy products, including gum, candy primarily intended for decorating baked goods, and hard or soft candies including jelly beans, taffy, licorice, and mints and breath mints; dried fruit leathers or other similar products prepared with natural or artificial sweeteners; sweetened baking chocolate in bars, pieces, or chips; fruits, nuts, or other ingredients in combination with sugar, chocolate, honey, or other natural or artificial sweeteners in the form of bars, drops, or pieces; caramel wraps, caramel or other candy-coated apples or other fruit; sweetened coconut, marshmallows; granola bars, unless they contain flour; mixes of candy pieces, dried fruits, nuts, and similar items when candy is more than an incidental ingredient in the product; and ready-to-eat caramel corn, kettle corn, and other candy-coated popcorn" (Iowa, 2025). The waiver continues to allow SNAP recipients to purchase seeds for food producing plants and food producing plants. The amended approval letter signed by the USDA on December 12, 2025 notes that prepared foods are also taxable items that are included in the waiver. On June 22, 2026, the US District Court for the District of Columbia, in Aragon et al. v. Rollins et al., 1:26-cv-00861 (D.D.C), determined that the implementation of the waiver may not proceed. The retailer notice to stop restricting items from being purchased with SNAP funds was issued on July 2, 2026 (USDA, 2026b).

Nebraska: Nebraska submitted a request for a food restriction waiver to the USDA on April 14, 2025. It was approved on May 19, 2025 for a two-year period beginning on January 1, 2026. Nebraska's waiver restricts SNAP recipients from using SNAP funds to purchase soda and energy drinks. As described in the state's waiver request to the USDA, soda is defined as "any carbonated non-alcoholic beverage that contains water, a sweetening agent (including but not limited to sugar, high-fructose corn syrup, or artificial sweeteners), flavoring, and carbon dioxide gas to create carbonation" (Nebraska, 2025). Energy drinks are defined as "carbonated or non-carbonated beverages containing a stimulant such as fortified caffeine, guarana, glucuronolactone, or taurine. They may also include herbal extracts such as ginseng, mineral salts and vitamins, or high doses of organic acids, amino acids, inositol, sugars, or other similar compounds in addition to sweeteners. Juices or natural fruit pulp or concentrates may also be added. Energy drinks are specifically formulated to enhance energy, alertness, or physical performance" (Nebraska, 2025). Additionally, the waiver request notes that "beverages marketed primarily as sports drinks to increase hydration, like Gatorade or medically necessary nutritional products, are not included" (Nebraska, 2025). On May 11, 2026, the USDA approved the state's request to add candy to the list of restricted foods beginning on November 1, 2026. On June 22, 2026, the US District Court for the District of Columbia, in Aragon et al. v. Rollins et al., 1:26-cv-00861 (D.D.C), determined that the implementation of the waiver may not proceed. The retailer notice to stop restricting items from being purchased with SNAP funds was issued on July 2, 2026 (USDA, 2026c).

Utah: Utah submitted a request for a food restriction waiver to the USDA on May 5, 2025. It was approved on June 10, 2025 for a two-year period beginning on January 1, 2026. Utah's waiver restricts SNAP recipients from using SNAP funds to purchase soft drinks. As described in the state's waiver request to the USDA, soft drinks are defined as "a nonalcoholic beverage that is made with carbonated water and is flavored and sweetened with sugar or artificial sweeteners. 'Soft drink' does not include a beverage that contains milk, milk products, soy, rice, or other milk substitutes, or that is greater than 50% vegetable or fruit juice by volume" (Utah, 2025).

West Virginia: West Virginia submitted a request for a food restriction waiver to the USDA on June 10, 2025. It was approved on August 4, 2025 for a two-year period beginning on January 1, 2026. West Virginia's waiver restricts SNAP recipients from using SNAP funds to purchase soda. As described in the state's waiver request to the USDA, soda is defined as "any carbonated non-alcoholic beverage that contains water, a sweetening agent (including but not limited to sugar, high-fructose com syrup, or artificial sweeteners), flavoring, and carbon dioxide gas to create carbonation. This term includes beverages with added caffeine or other ingredients but does not include carbonated water without sweeteners or flavoring. The following drink options are not included in this waiver and will remain available for purchase with SNAP: milk and milk products, fruit and vegetable juice, or water and water products" (West Virginia, 2025). Additionally, the waiver request notes that "soda includes regular soda, diet soda, and zero sugar/calorie soda" (West Virginia, 2025). In the waiver request, the state notes that retailers must comply with the restrictions within 12 months of the waiver implementation date. On June 22, 2026, the US District Court for the District of Columbia, in Aragon et al. v. Rollins et al., 1:26-cv-00861 (D.D.C), determined that the implementation of the waiver may not proceed. The

retailer notice to stop restricting items from being purchased with SNAP funds was issued on July 2, 2026 (USDA, 2026d).

Idaho: Idaho submitted a request for a food restriction waiver to the USDA on May 16, 2025. It was approved on June 10, 2025 for a two-year period beginning on January 1, 2026. On December 12, 2025, the USDA approved the state's request to delay the implementation date to February 15, 2026. Idaho's waiver restricts SNAP recipients from using SNAP funds to purchase soda and candy. As described in the state's waiver request to the USDA, soda is defined as "defined as nonalcoholic beverages containing sweeteners, excluding drinks with milk or milk substitutes, beverages with more than 50% juice, and products that require preparation before consumption" (Idaho, 2025). Candy is defined as "defined as preparations of sugar, honey, or other sweeteners in combination with chocolate, fruits, nuts, or other ingredients in the form of bars, drops, or pieces. It does not include those items containing flour or requiring refrigeration" (Idaho, 2025). In the initial waiver request, the state notes that implementation will begin with a small pilot project in January 2026, a phased-in approach starting June 2026, and full compliance of all retailers by December 31, 2026. However, the USDA's approval letter of the modification request describes that the implementation date is February 15, 2026 and the Idaho Department of Health & Welfare describes the implementation for all retailers as February 15, 2026. "DHW [Department of Health & Welfare] is asking all retailers to confirm their readiness to comply with these changes, which take effect on Feb. 15, 2026. To ensure retailer compliance, any necessary updates, such as changes to point of sale systems or operational processes, must be implemented on (but not before) Feb. 15, 2026" (Idaho Department of Health & Welfare, 2025).

Oklahoma: Oklahoma submitted a request for a food restriction waiver to the USDA on June 10, 2025. It was approved on August 4, 2025 for a two-year period beginning on January 1, 2026. On December 12, 2025, the USDA approved the state's request to delay the implementation date to February 15, 2026. Oklahoma's waiver restricts SNAP recipients from using SNAP funds to purchase soft drinks and candy. As described in the state's approved modification request, soft drinks are defined as "any beverage marketed or sold as a soda, soft drink, sports drink, energy drink, flavored water, or juice drink containing less than 100% juice. This includes colas, sodas, teas, punches, lemonades, sports or energy beverages, flavored waters, and fruit drinks that are not 100% juice. This definition also applies to equivalent items, including private-label or store-brand products, that retailers categorize or market as soda, soft drinks, energy drinks, flavored waters, or juice drinks. Soft drinks also include all fountain drinks and slushies, regardless of flavor or packaging. Soft drinks do not include: Milk or milk substitutes; Coffee beans, grounds, instant coffee, or brewed coffee; Plain bottled water; 100% fruit or vegetable juice; Drinks prepared at home" (Oklahoma, 2025). Candy is defined as "any product marketed or sold as candy, including but not limited to chocolate bars, gummies, caramels, taffy, licorice, mints, chewing gum, or similar confections. This includes candy bars or any products with wafers, cookies, or flour components when they are primarily sold as candy. Candy also includes non-bakery items that are dipped, coated, or covered in chocolate, yogurt, or other candy coating, such as chocolate-covered raisins, almonds, or similar products. This definition also applies to equivalent items, including private-label or store-brand products, that retailers categorize or market as candy. Candy does not include: Baked goods such as cakes, cookies, muffins,

brownies, pastries, or bread; Items primarily sold as baking ingredients, such as chocolate chips, baking chocolate, or cocoa powder" (Oklahoma, 2025).

Louisiana: Louisiana submitted a request for a food restriction waiver to the USDA on June 27, 2025. It was approved on August 4, 2025 for a two-year period beginning on January 15, 2026. On December 12, 2025, the USDA approved the state's request to delay the implementation date to February 18, 2026. Louisiana's waiver restricts SNAP recipients from using SNAP funds to purchase soft drinks, energy drinks, and candy. As described in the USDA's approval of the state's waiver request, soft drinks are defined as "any carbonated nonalcoholic beverage containing high fructose corn syrup or artificial sweeteners. The term does not include flavored carbonated water, nor does it include any beverages that contain milk or milk products, soy rice, or similar milk substitutes, or any beverage containing equal to or greater than fifty percent (50%) of vegetable or fruit juice by volume" (USDA, 2025). Energy drinks are defined as "carbonated or non-carbonated beverages containing a stimulant such as fortified caffeine, guarana, glucuronolactone, or taurine. They may also include herbal extracts such as ginseng, mineral salts and vitamins, or high doses of organic acids, amino acids, inositol, sugars or other similar compounds in addition to sweeteners. Juices or natural fruit pulp or concentrates may also be added. Energy drinks are specifically formulated to enhance energy, alertness, or physical performance" (USDA, 2025). Candy is defined as "a preparation of sugar, honey, or other natural or artificial sweeteners in combination with chocolate, fruits, nuts, or other ingredients or flavorings in the form of bars, drops, or pieces. The candy exclusion includes any such preparation that also contains flour and is sold in the form of bars, drops, or pieces. This definition does not include protein bars, granola bars or baking ingredients such as sprinkles, chocolate melting wafers, toffee bits, or chocolate chips" (USDA, 2025).

Texas: Texas submitted a request for a food restriction waiver to the USDA on June 26, 2025. It was approved on August 4, 2025 for a two-year period beginning on April 1, 2026. On February 25, 2026, the USDA approved the state's request to modify the definition of sweetened drinks. Texas's waiver restricts SNAP recipients from using SNAP funds to purchase sweetened drinks and candy. As described in the USDA's approval letter of the state's waiver modification request, sweetened drinks are defined as "nonalcoholic beverages made with water that contain five grams or more of added sugar or any amount of artificial sweetener. Excluded from this definition are beverages: (1) containing milk or milk products; (2) containing soy, rice, or similar milk substitutes; (3) containing more than 50 percent of vegetable or fruit juice by volume; (4) containing natural sweeteners derived from plants (such as Stevia, Stevia Leaf Extract, and Monk Fruit) with less than five grams of added sugar; or (5) considered medical grade electrolyte drinks used for illness related to dehydration. Medical grade electrolyte drinks do not include any beverage marketed primarily as a sports drink" (USDAa, 2026). As described in the state's waiver request to the USDA, candy is defined as "a confection made with natural or artificial sweeteners. Examples include candy bars; gum; drops; taffy; nuts, raisins, and fruits that have been candied, crystalized, glazed, or coated with chocolate, yogurt, or caramel; and nuts roasted with a sweetener. The term does not include products used exclusively for cooking, such as chocolate bits and cake sprinkles and snack items as defined by the Texas Administrative Code, Chapter 34, Section 3.293 (a)(14)" (Texas, 2025).

Florida: Florida submitted a request for a food restriction waiver to the USDA on May 29, 2025. It was approved on August 4, 2025 for a two-year period beginning on January 1, 2026. On December 12, 2025, the USDA approved the state's request to delay the implementation date to April 20, 2026. Florida's waiver restricts SNAP recipients from using SNAP funds to purchase soda, energy drinks, candy, and prepared desserts. As described in the state's waiver request to the USDA, a soda is defined as "a beverage that is made with carbonated water and that is flavored or sweetened with added sugar or artificial sweeteners such as corn sweetener, corn syrup, dextrose, fructose, glucose, high-fructose corn syrup, lactose, malt syrup, maltose, molasses, raw sugar, and sucrose. 'Soda' does not include carbonated water which is plain or naturally flavored or any beverage that is greater than 50 percent vegetable or fruit juice by volume, or that contains less than five grams of added sugar" (Florida, 2025). An energy drink is defined as "a beverage containing at least sixty-five (65) milligrams of caffeine per eight (8) fluid ounces that are advertised as being specifically designed to provide metabolic stimulation or an increase to the consumer's mental physical energy. 'Energy drinks' does not include coffee or tea or any substantially coffee or tea-based beverage" (Florida, 2025). Candy is defined as "a product that involve the preparation of sugar or artificial sweeteners in combination with chocolate, fruits, nuts, caramels, gummies, and hard candies or other ingredients or flavorings in the form of bars, drops, or pieces" (Florida, 2025). Prepared desserts are defined as "a processed, shelf-stable, ready-to-eat, pre-packaged sweet food intended for immediate consumption without any further preparation. This would include foods mostly made out of "chemically" modified substances extracted from foods, along with additives to enhance taste, texture, appearance, and durability, with minimal whole foods" (Florida, 2025). As described on the state's website with information for retailers, sports drinks are not included in the definition of soda or energy drinks and are not restricted beverages (Florida Department of Children and Families, 2026).

States with an approved waiver with a planned implementation date between July 1, 2026 and February 1, 2028 are: Arkansas (7/1/26), South Carolina (8/31/26), North Dakota (9/1/26), Montana (9/30/26), Ohio (10/1/26), Virginia (10/1/26), Wyoming (2/1/27), Kansas (2/15/27), Missouri (2/15/27), Hawaii (4/1/27), and Nevada (2/1/28). Tennessee and Colorado had approved waivers with planned implementation dates of July 31, 2026 and October 30, 2026. On June 22, 2026, the US District Court for the District of Columbia, in Aragon et al. v. Rollins et al., 1:26-cv-00861 (D.D.C), determined that the implementation of the waivers in Tennessee and Colorado may not proceed. Details about these waivers are listed on the USDA's SNAP Food Restriction Waivers webpage at: https://www.fns.usda.gov/snap/waivers/foodrestriction.

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Appendix Figure A1: Implementation Timing and Beverage Categories of SNAP Food Restriction Waivers

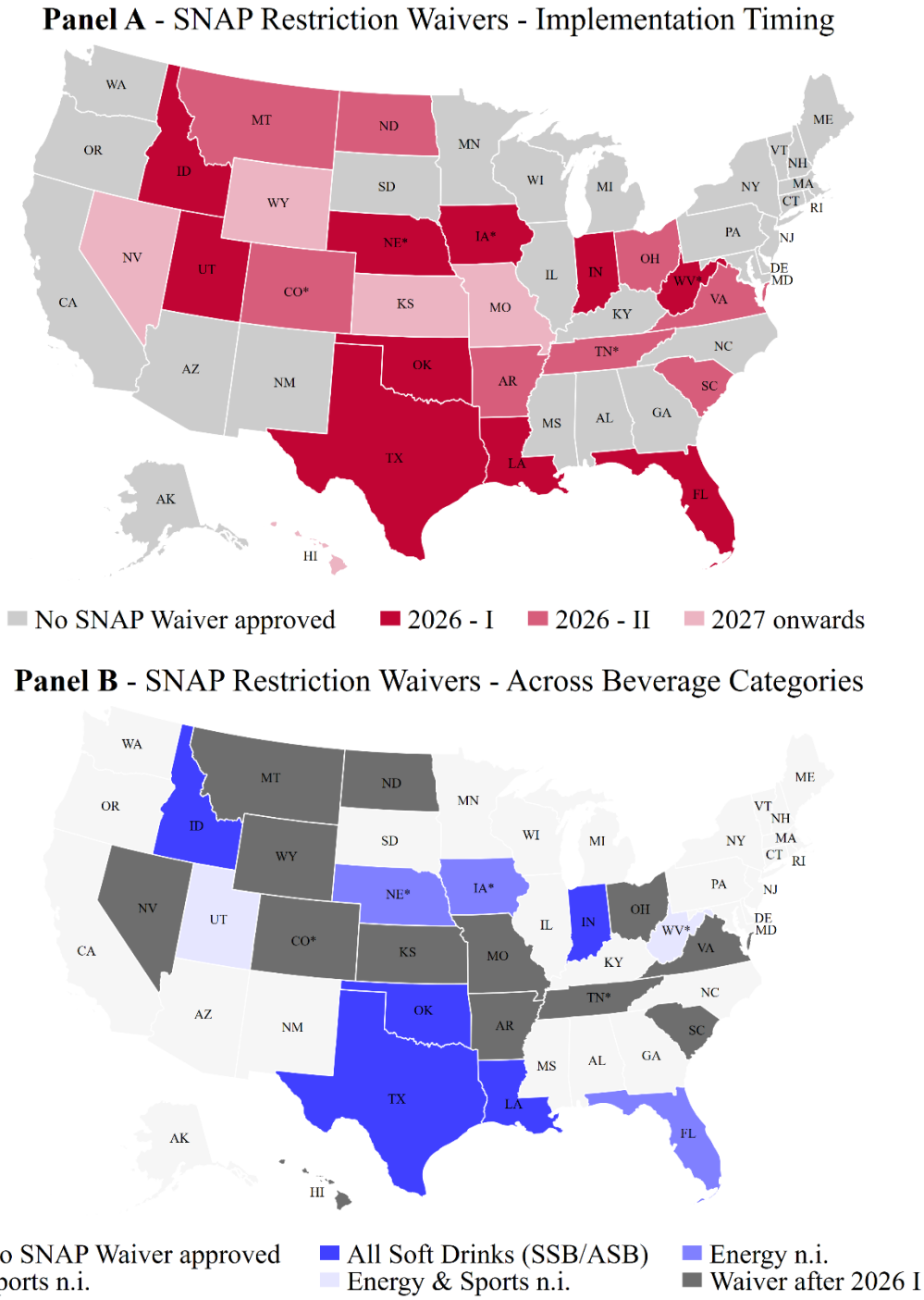

Figure notes: The map in panel A shows the implementation timing and planned implementation timing of SNAP Food Restriction Waivers. 2026 - I refers to the first half of 2026, prior to June 30, 2026, while 2026 – II refers to the second half of 2026. The map in panel B shows the beverage categories that are restricted from being purchased with SNAP funds for states that implemented a waiver prior to June 30, 2026. These maps show the planned implementation dates as of July 7, 2027. The details for Iowa, Nebraska, West Virginia, Colorado, and Tennessee are provided, although a federal district court ruled on June 22, 2026 that the implementation of the waivers for these five states cannot proceed (these states are signaled with * on the maps).

Appendix B: Robustness and Mechanisms

This appendix provides further details about the robustness checks and results assessing alternative interpretations and mechanisms described in the main paper.

We examine the robustness of the results to alternate econometric models, sample definitions, outcomes, alternate control group definitions, and covariates. Additionally, we examine multiple placebo outcomes.

Appendix Table B1 shows the results from an imputation-based estimator, which is equivalent to the extended TWFE estimator without pre-treatment cohort-time interactions, and the p-values of a test of parallel trends proposed by Borusyak et al. (2023). The results in column (1) are the same as those shown in column (1) of Table 3. Comparing the results from column (1) to column (2) shows that the estimates from a Poisson pseudo maximum likelihood model are similar to the estimates from a linear model. The results in column (2) further show that we fail to reject the null hypothesis for the F-test for soda and water purchases, which is consistent with the parallel trends assumption. However, the p-values for energy drinks and sports drinks show that the parallel trends assumption is unlikely to hold for these two outcomes.

Appendix Table B2 shows results for the sample of households in which the panelist has a high school degree or less. Since SNAP participation is often underreported in surveys (Meyer et al., 2022), this sample includes SNAP households who choose not to self-report their participation in SNAP. Additionally, this subgroup more closely resembles the educational attainment of the overall SNAP population and therefore provides a useful assessment of the external validity of our findings. As shown in Appendix Table B2, the qualitative pattern of results is unchanged. SNAP Food Restriction Waivers continue to reduce purchases of soda and energy drinks, while there is no statistically significant evidence of changes in purchases of sports drinks or bottled water. Although the estimated reduction in soda and energy drink purchases is smaller than in the baseline sample of SNAP participants, which is expected since this sample also includes households who do not receive SNAP funds, the direction and statistical significance of the estimated effects remain unchanged. These results suggest that our primary results are robust to SNAP misreporting and are not driven by the relatively high educational attainment of households in the Omnishopper panel.

Appendix Table B3 shows results for alternative measures of beverage purchases based on each beverage category's share of total food and beverage expenditures rather than the number of ounces purchased. This measure is consistent with the literature on the monthly SNAP cycle (e.g., Hastings et al., 2021; Harris-Lagoudakis and Wich, 2024) and is not affected by the imputation of package sizes for products with missing UPC information, while accounting for differences in households' overall food purchasing. As shown in Appendix Table B3, the results are consistent with the primary results. SNAP Food Restriction Waivers reduced the share of expenditures allocated to soda by 1.0 percentage point, while there is no statistically significant evidence of changes in expenditure shares for the other beverage types. In addition, the waivers did not significantly affect total monthly food and beverage expenditures, indicating that the observed reduction in soda purchases reflects a reallocation of household purchases rather than an overall reduction in grocery spending.

Appendix Tables B4 examines the robustness of the estimated effect of SNAP Food Restriction Waivers on soda purchases to a variety of additional alternative specifications. First, the estimated reduction in soda purchases is nearly unchanged when we use an alternative imputation for products with missing package sizes. Instead of imputing missing sizes with the

most common product size of 12 ounces, we impute missing sizes with the second most common product size of 20 ounces. Second, the results are robust to an alternative definition of SNAP participation that defines the 358 households who report in the fourth quarter of 2025 that they used SNAP in the past as non-participants. Third, the results are robust to restricting the comparison group to states with approved waivers that had not yet implemented the policy. Finally, inference is largely unchanged when clustering standard errors at the household level and the estimate impact is robust to replacing household fixed effects with demographic characteristics and treatment-group fixed effects. In additional placebo outcomes, not shown, we find no impact of the SNAP Food Restriction Waivers on any demographic characteristics, if we replace household fixed effects with the remaining demographic characteristics and treatment-group fixed effects. Across all specifications, the estimated effect remains negative, economically meaningful, and statistically significant, supporting the robustness of our primary findings.

Appendix Table B5 displays the results from a final set of robustness exercises in which we conduct two placebo tests to assess whether the estimated effects reflect broader policy changes or systematic differences between treatment and control states rather than the implementation of SNAP Food Restriction Waivers. First, we assign a placebo implementation date of October 2025, when several provisions of H.R. 1 took effect and SNAP participation began to decline nationally. Second, we assign placebo treatment to states with approved waivers that had not yet implemented the policy, using January 1, 2026 as the placebo implementation date. As shown in Appendix Table B5, neither placebo specification produces a statistically significant effect on soda purchases. These findings provide additional support for our identification strategy by indicating that the estimated reduction in soda purchases is attributable to the implementation of SNAP Food Restriction Waivers rather than to contemporaneous nationwide policy changes or pre-existing differences between states that ultimately adopted waivers and those that did not.

Appendix Figure B2 presents the raw trends in soda purchases for households least likely and most likely to be inframarginal, and Appendix Table B6 examines the sensitivity of the heterogeneous results to alternative definitions of inframarginality. Because the Omnishopper data do not contain households' actual SNAP benefit amounts, our classification of inframarginal households is based on an approximation using household size and average SNAP benefits. We therefore estimate treatment effects across each quartile of the inframarginal ratio, as well as using a binary classification of marginal and inframarginal households. The estimated effects become progressively larger as households are more likely to be inframarginal, with the smallest effects observed in the first and second quartiles and the largest reduction in soda purchases occurring among households in the fourth quartile. Similarly, the estimated reduction in soda purchases is more than twice as large for households classified as inframarginal than for those classified as marginal. These findings indicate that the heterogeneous results are not driven by the specific threshold used to classify households and reinforce the conclusion that SNAP Food Restriction Waivers reduced soda purchases even among households most likely to be inframarginal.

In Appendix Table B6, we additionally examine heterogeneous effects for households in the lowest and highest quartile of the distribution of the average monthly soda purchases from July-December 2025. As shown in the bottom panel of the table, the estimated effect is concentrated among households with the highest baseline soda purchases, while there is no statistically significant effect for households with the lowest pre-waiver soda purchases. This

pattern is consistent with the policy primarily affecting households with the greatest exposure to the restricted products prior to implementation.

In the remainder of the appendix, we describe further details assessing the potential alternative interpretations for the main results of changes in SNAP participation, changes in the number of authorized SNAP retailers, and changes in prices.

To examine changes in SNAP participation as an alternative interpretation of the results rather than changes in behavior among SNAP participants, we use monthly state-level participation counts for persons and households from the USDA SNAP Data Tables (USDA, 2026), available through April 2026, and annual state-level population data (U.S. Census, 2026). The population data are estimates as of July 1 of each year through 2025; we impute the value for 2026 from the value for 2025. The sample is balanced from January 2023 through April 2026.

Appendix Figure B3 shows the trends in the number of SNAP-participating households (per 1 million population) since January 2023 for states that have implemented a SNAP Food Restriction Waiver (the treated states) and all other states. As shown in the figure, there has been a noticeable drop in participation in the treated states, and participation in April 2026 is substantially lower than participation in the beginning of 2023. However, this drop in participation began during the fourth quarter of 2025, prior to the implementation of the waivers, and has occurred among all other states.

Appendix Table B7 displays the estimates of the impact of the SNAP waivers on participation using the extended two-way fixed effects estimator of Wooldridge (2023, 2025) as described in the paper. We control for state population without further interactions, although the estimates are not sensitive to excluding this covariate. We focus on households since households are the unit of analysis with the NIQ Omnishopper data; however, we note that the results for individuals are qualitatively similar to the results for households. As shown in column (1), for OLS estimates, the aggregated average treatment effect is negative but not statistically significant. In columns (2) and (3), we show estimates based on Poisson pseudo maximum likelihood models because of the skewed nature of the outcome (the number of SNAP-participating households in a state in a month). Column (2) shows the results based on the extended TWFE estimator in which the baseline period is all pre-treatment periods. The aggregated average treatment effect is a decrease of 15,692 participating households. Column (3) shows our preferred estimates, which are from a model that includes all group/time interactions in which the baseline is the period prior to the implementation of the waiver in each treatment state. The aggregated average treatment effect is a decrease of 3,351 participating households.

The reason for the differences in the results from columns (2) and (3) is apparent from the event-study graph corresponding to column (3), as shown in Appendix Figure B4. Prior to implementation of the waivers, the relative difference in the number of SNAP-participating households is positive but not statistically significant; this relative difference declines leading up to the implementation of the waivers. Thus, the baseline of all pre-treatment periods would have a higher value of the outcome variable, resulting in a more negative average treatment effect, than the baseline of the period prior to the implementation of each waiver.

Overall, the evidence suggests that SNAP Food Restriction Waivers have further contributed to an ongoing decline in SNAP participation. In December 2025, control group states averaged 409,768 SNAP-participating households. By April 2026, SNAP-participating households in these states fell an average of 3.9% to 393,887 households. In December 2025, the treatment group states averaged 439,395 SNAP-participating households. By April 2026, SNAP participating-households in these states fell an average of 8.9% to 400,221 households. An

aggregated average treatment effect of -3,351 households is a decrease of 0.76% relative to the December 2025 average across treated states; further, this estimate means that the average number of SNAP-participating households would have fallen from 439,395 to 403,572 households (or an 8.2% decrease) even in the absence of the waivers.

We further explore the potential that a decrease in SNAP participation could explain our main estimates by restricting the sample to households reporting SNAP participation in both 2025 and 2026. These results are shown in Appendix Table B8. The smaller sample in this table compared to the sample for the primary estimates (Table 3) is due to survey nonresponse in 2026. Of the 5,073 SNAP households in 2025, 2,532 households did not respond to the survey about SNAP participation in either the first or second quarter of 2026. As shown in the table, the results are robust to this sample restriction. SNAP Food Restriction Waivers decrease soda purchases by 46.8 ounces per month for households who received SNAP funds in both 2025 and 2026. As a result, declining SNAP participation is unlikely to explain our primary results.

We next examine the alternative interpretation that our main estimates could reflect a decrease in the availability of restricted items to purchase because of a decrease in the number of SNAP authorized retailers. All SNAP retailers must be authorized by the USDA Food and Nutrition Service. Authorized SNAP retailers include convenience stores, farmers' markets, grocery stores, specialty food stores, and food warehouses, but do not include restaurants. Compliance with the SNAP Food Restriction waivers can increase the operating costs of retailers. An industry report estimates that the initial costs will include technology (including new technology, updates to existing technology, and integrating new software with existing systems) and labor costs while ongoing costs include labor, procurement training, marketing, technology, legal, and compliance costs (Richards, 2025). These higher costs could lead some retailers to stop participating in the SNAP program.

Appendix Figure B5 displays the trends in the number of authorized SNAP retailers for the last five years in the treated and control group states. These data are from the USDA's SNAP Retailer Locator Data. We define the number of retailers authorized at the end of the month in 6-month intervals from June 2022 through June 2026. The number of authorized SNAP retailers fell from 59,232 at the end of December 2025 to 55,213 at the end of June 2026 in treated states. The number of authorized SNAP retailers fell from 186,925 at the end of December 2025 to 175,124 at the end of June 2026 in control states. Appendix Figure B6 displays the results of an event-study design regression, in which the number of authorized SNAP retailers, measured every 6 months from the end of June 2022 through the end of June 2026, is the outcome. The regression controls for state population and state, month, and year fixed effects. As shown in the figure, there is not a statistically significant change in the number of SNAP authorized retailers as a result of SNAP Food Restriction Waivers.

Appendix Table B9 displays the estimates of the impact of SNAP Food Restriction Waivers on the prices per ounce that SNAP households paid for each beverage type. These prices reflect the choices of households about which products to purchase, in addition to the prices that retailers charge. The results show that SNAP households paid 1.8 cents per ounce less for soda following the waivers. Thus, overall, these results are not consistent with an alternative interpretation that the observed reduction in soda purchases is due to higher prices reflecting the cost of compliance with the regulations.

Appendix B References

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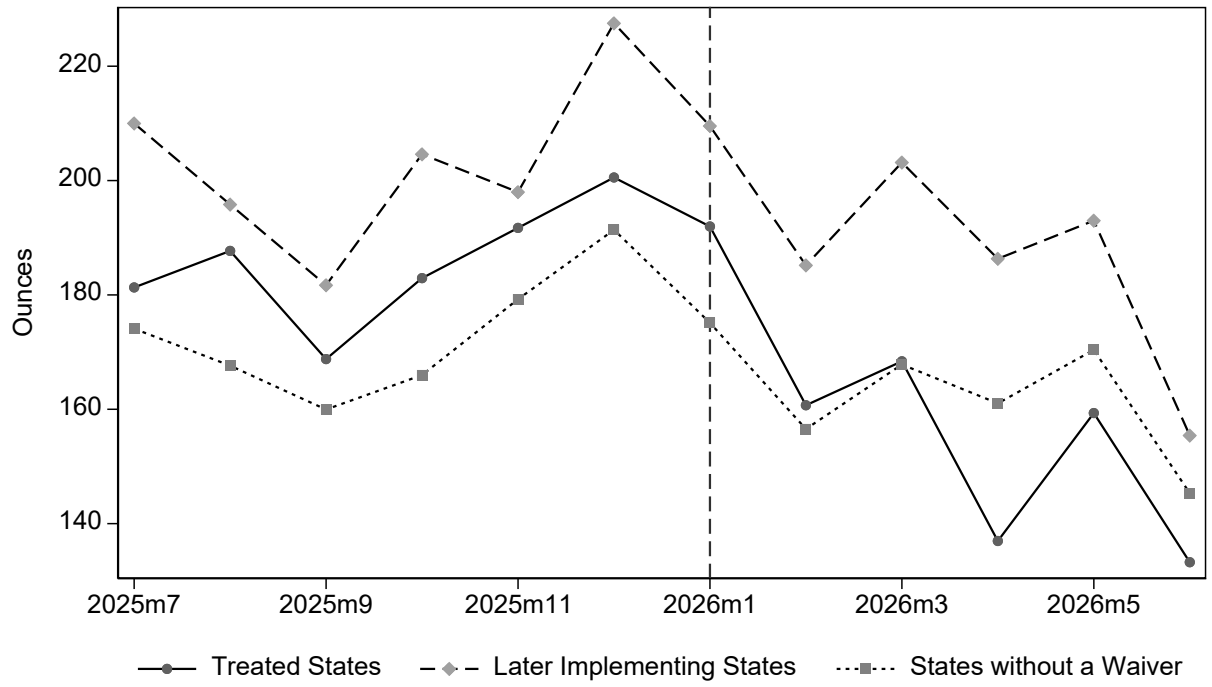
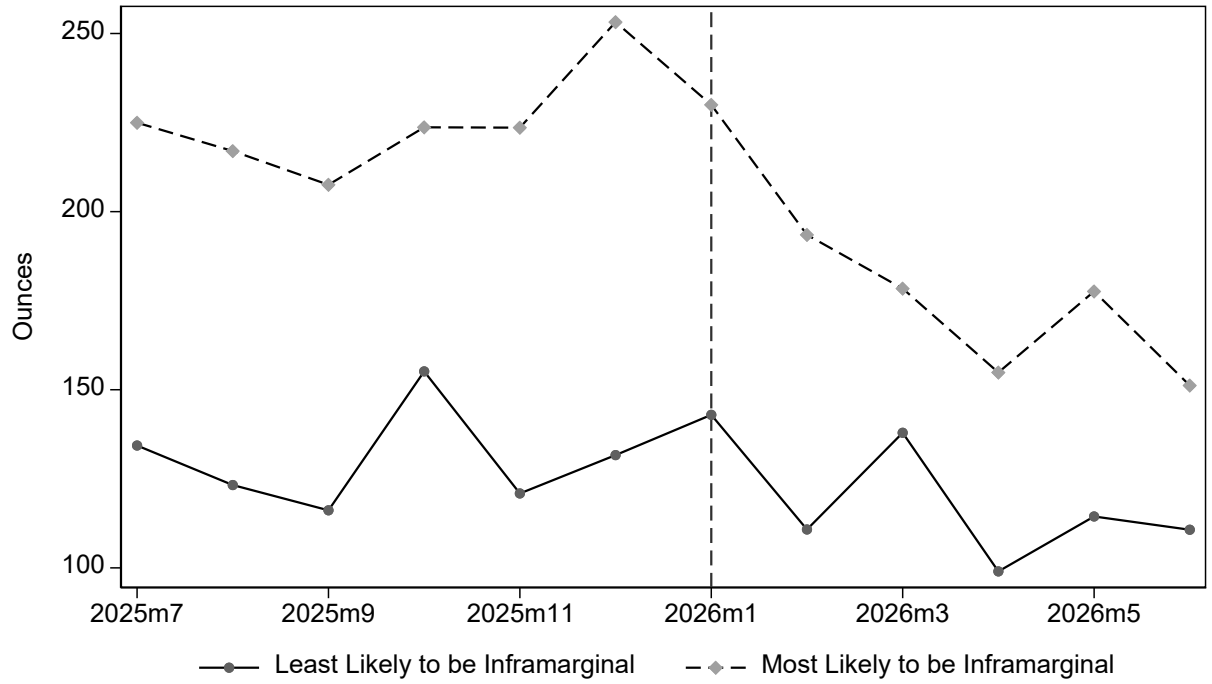
Appendix Figure B1: Trends in Soda Purchases Among SNAP Households



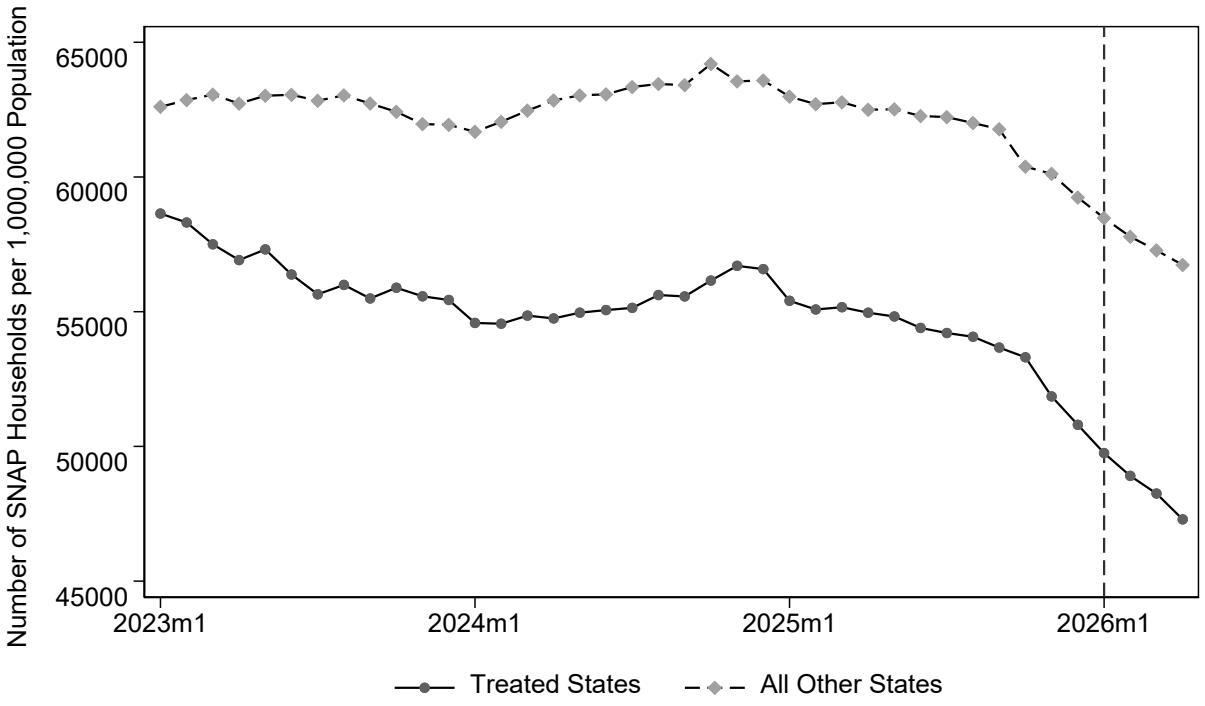
Notes: This figure shows the monthly average ounces of soda purchased by SNAP households in states that implemented a SNAP Food Restriction Waiver before June 30, 2026, states that planned to implement a waiver after June 2026, and states that have not had an approved waiver (as of July 7, 2026). The dashed vertical line shows the date of the implementation of the first group of SNAP Food Restriction Waivers.

Appendix Figure B2: Trends in Soda Purchases Among SNAP Households in States with a SNAP Food Restriction Waiver



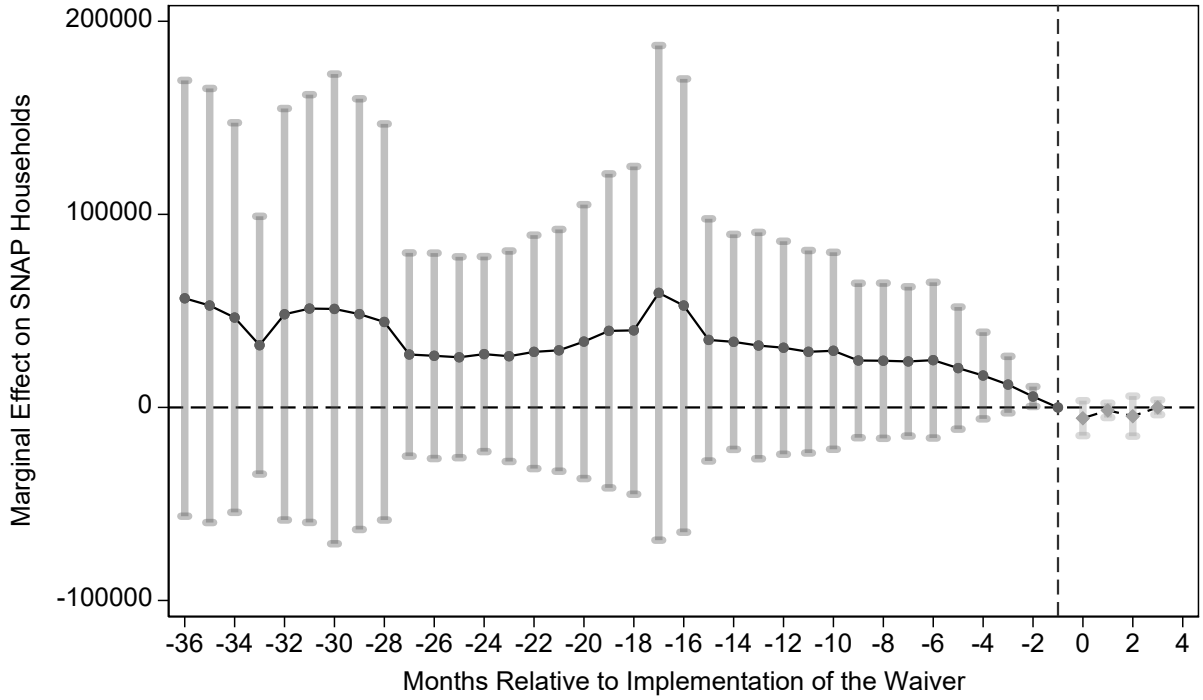
Notes: This figure shows the trends in the monthly average of the ounces of soda purchased by SNAP households in states that implemented a Food Restriction Waiver before June 30, 2026 for households in the lowest (least likely to be inframarginal) and highest (most likely to be inframarginal) quartile of the distribution of the inframarginal ratio. The dashed vertical line shows the date of the implementation of the first group of SNAP Food Restriction Waivers.

Appendix Figure B3: Trends in the Number of SNAP-Participating Households



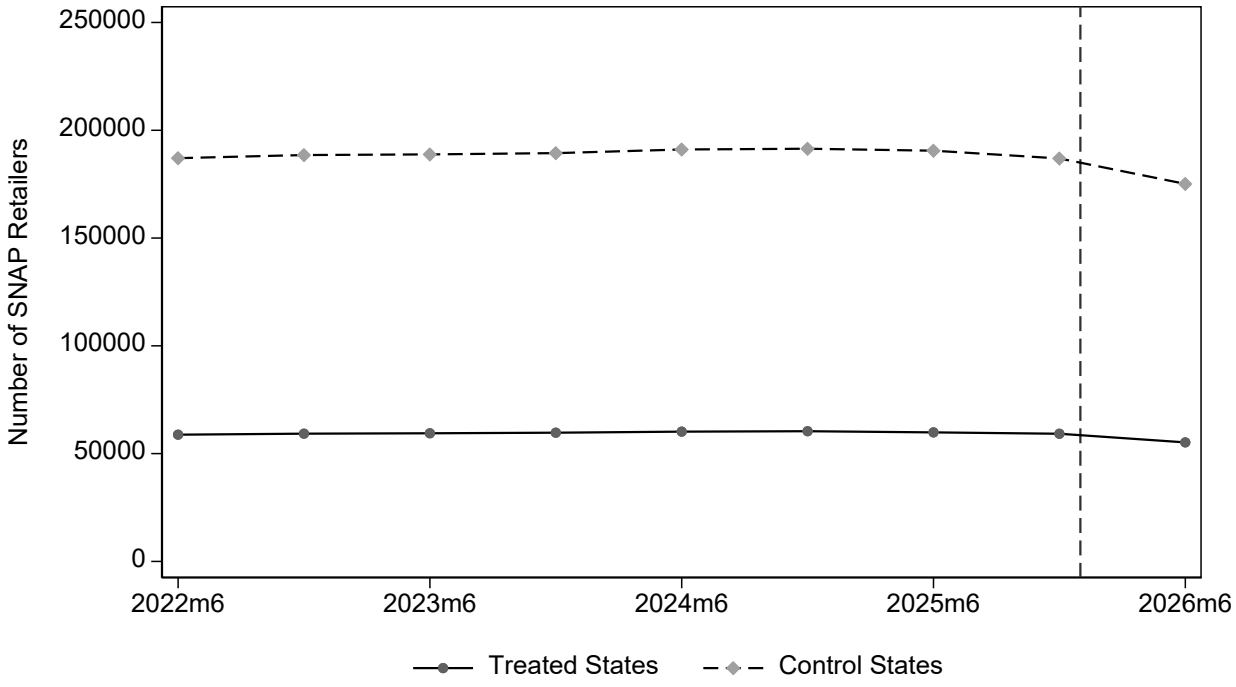
Notes: The dashed vertical line shows the date of the implementation of the first group of SNAP Food Restriction Waivers.

Appendix Figure B4: Event-Study Graph for SNAP-Participating Households



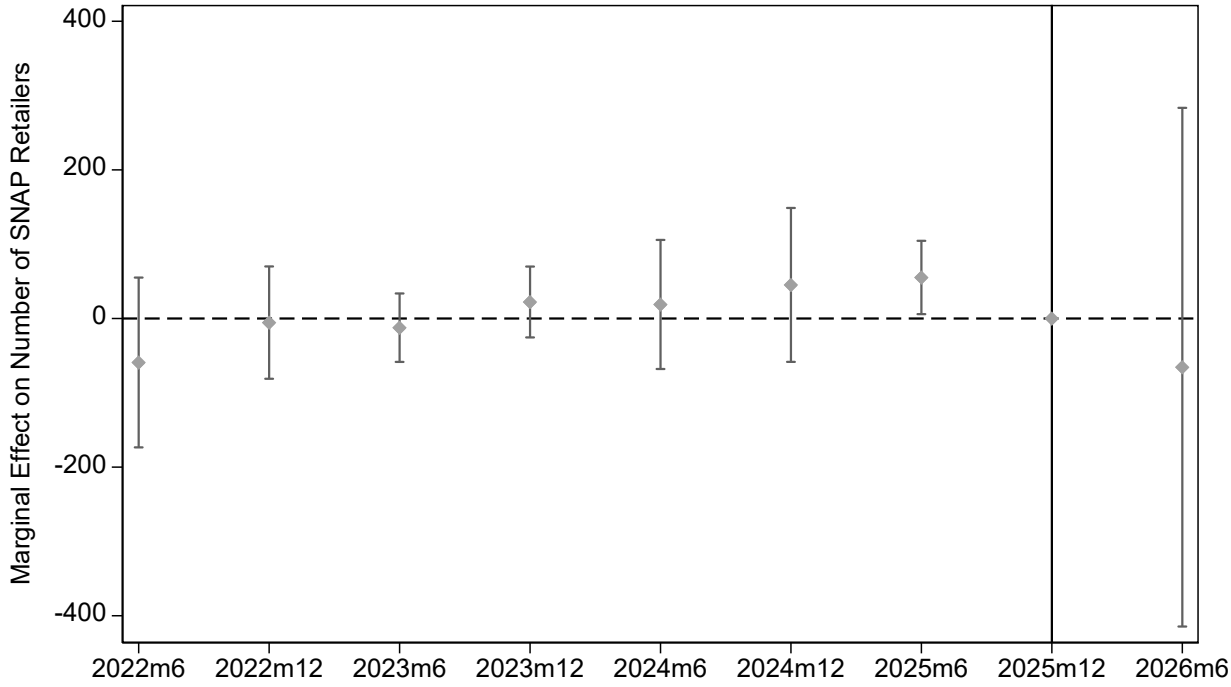
Notes: The dashed vertical line shows the date of the implementation of the first group of SNAP Food Restriction Waivers.

Appendix Figure B5: Trends in the Number of Authorized SNAP Retailers



Notes: The dashed vertical line shows the date of the implementation of the first group of SNAP Food Restriction Waivers.

Appendix Figure B6: Event-Study Graph of the Impact of SNAP Food Restriction Waivers on the Number of Authorized SNAP Retailers



Appendix Table B1: Tests of Pre-Treatment Parallel Trends and the Impact of SNAP Food Restriction Waivers on Ounces of Beverages Purchased in a Month Among SNAP Recipients

	(1)	(2)
Soda	-26.799	-27.505
	(4.199)	(5.453)
		[0.983]
Energy Drinks	-7.772	-5.934
	(1.255)	(2.151)
		[0.048]
Sports Drinks	-11.503	-9.723
	(2.223)	(4.661)
		[0.017]
Water	-3.071	-2.860
	(3.180)	(5.416)
		[0.955]
β_{gt}	Post-treatment	Post-treatment
Model	PPML	Linear

Notes: Aggregated average treatment effects of SNAP Food Restriction Waivers shown with their corresponding standard errors, clustered at the state level, in parentheses. Each cell shows the results of separate regressions. The row headings are the outcome variables, which are the ounces purchased per month of the corresponding beverage category. Soda includes regular and diet soda. Column (1) replicates column (1) from Table 3. Both columns present results where the complete pre-period is used as a reference. Column (2) displays results from the estimator of Borusyak et al. (2023), which is equivalent to the extended TWFE estimator from column (1) except that column (1) is estimated as a Poisson pseudo maximum likelihood model. The numbers in brackets in column (2) are p-values corresponding to the F-test for parallel trends proposed by Borusyak et al. (2023).

Appendix Table B2: The Impact of SNAP Food Restriction Waivers on Beverage Purchases Among Households in which the Panelist has a High School Degree or Less

	(1)	(2)
Soda	-8.595	-6.076
	(2.087)	(1.770)
	255,342	255,342
Energy Drinks	-2.298	-2.496
	(0.996)	(0.889)
	186,108	186,108
Sports Drinks	-0.865	1.389
	(1.135)	(1.345)
	179,154	179,154
Water	-0.377	-1.873
	(1.822)	(2.017)
	246,492	246,492
β_{gt}	Post-treatment	All

Notes: The sample is restricted to households in which the panelist has a high school degree or less. Aggregated average treatment effects of SNAP Food Restriction Waivers shown with standard errors, clustered at the state level, in parentheses and the number of observations. Each cell shows the results of separate regressions. The row headings are the outcome variables, which are the ounces purchased per month of the corresponding beverage category. Soda includes regular and diet soda. Column (1) presents result where the complete pre-period is used as a reference, and Column (2) includes all pre-period interactions of month and treatment units.

Appendix Table B3: The Impact of SNAP Food Restriction Waivers on the Share of Food and Beverage Expenditures on Each Beverage Category Among SNAP Households

	Aggregated ATE
Soda (share)	-0.0104
	(0.0006)
	59,857
Energy Drinks (share)	-0.0004
	(0.0009)
	45,288
Sports Drinks (share)	-0.0006
	(0.0005)
	44,087
Water (share)	-0.0002
	(0.0004)
	58,225
Total Food and Beverage Expenditures	-4.8699
	(5.3629)
	60,876

Notes: Aggregated average treatment effects of SNAP Food Restriction Waivers are shown with standard errors, clustered at the state level, in parentheses and the number of observations. Each cell shows the results of separate regressions. The row headings are the outcome variables, which are the ounces purchased per month of the corresponding beverage category. Soda includes regular and diet soda. The specification includes all pre-period interactions of month and treatment units.

Appendix Table B4: Robustness of the Impact of SNAP Food Restriction Waivers on Soda Purchases Among SNAP Households

	Aggregated ATE
Primary Estimate	-23.831
	(6.147)
	60,228
Alternate Imputation of Products with Missing Ounces	-25.404
(Use the second most common size of 20 ounces)	(6.231)
	60,228
Alternate Definition of SNAP Participation	-33.037
	(5.501)
	50,076
Control Group is Only States with an Approved Waiver	-17.289
That has not been Implemented before June 30	(7.109)
	24,084
Cluster Standard Error at the Individual	-23.831
	(6.030)
	60,228
No Individual Fixed Effects, Add Demographic	-26.239
Characteristics and Group Fixed Effects	(7.584)
	60,822

Notes: The primary estimate corresponds to the estimate for soda purchases from column (2) in Table 3. Aggregated average treatment effects of SNAP Food Restriction Waivers are shown with standard errors, clustered at the state level, in parentheses and the number of observations. Each cell shows the results of separate regressions. The specification includes all pre-period interactions of month and treatment units.

Appendix Table B5: Placebo Tests of the Impact of SNAP Food Restriction Waivers on Soda Purchases Among SNAP Households

	Aggregated ATE
Date of Implementation October 2025	-9.028
(When Many Aspects of HR1 were Implemented	(6.266)
And SNAP Participation Started to Decline)	60,228
Treatment Group is States with Approved Waivers Pending Implementation	-0.778
(Placebo Implementation Occurs on January 1, 2026)	(7.160)
	60,228

Notes: Aggregated average treatment effects of SNAP Food Restriction Waivers are shown with standard errors, clustered at the state level, in parentheses and the number of observations. Each cell shows the results of separate regressions. The specification includes all pre-period interactions of month and treatment units.

Appendix Table B6: Heterogeneous Impacts of SNAP Food Restriction Waivers on Soda Purchases Among SNAP Households

	Aggregated ATE
Least Likely to be Inframarginal	-12.512
(First Quartile of Inframarginal Ratio)	(10.143)
	7,560
Second Quartile	-4.711
	(9.230)
	15,180
Third Quartile	-27.713
	(12.588)
	17,748
Most Likely to be Inframarginal	-40.274
(Fourth Quartile of Inframarginal Ratio)	(9.305)
	19,704
Marginal	-14.308
	(6.534)
	31,344
Inframarginal	-33.951
	(7.639)
	28,848
Low Pre-Waiver Soda Purchases	6.471
(First Quartile of Pre-Waiver Distribution)	(4.858)
	6,612
High Pre-Waiver Soda Purchases	-33.189
(Fourth Quartile of Pre-Waiver Distribution)	(9.389)
	25,152

Notes: Aggregated average treatment effects of SNAP Food Restriction Waivers are shown with standard errors, clustered at the state level, in parentheses and the number of observations. Each cell shows the results of separate regressions. The specification includes all pre-period interactions of month and treatment units.

Appendix Table B7: The Impact of SNAP Food Restriction Waivers on SNAP Participation

	(1)	(2)	(3)
Aggregated ATE	-1189.30	-15692.31	-3351.09
	(9587.45)	(5227.19)	(1180.82)
N	2040	2040	2040
Model	OLS	PPML	PPML
β_{gt}	Post-treatment	Post-treatment	All

Notes: The dependent variable is the number of SNAP-participating households in a state in a month. The sample is balanced from January 2023 through April 2026 for all states. The regression model controls for state population without further interactions. Aggregated average treatment effects of SNAP Food Restriction Waivers are shown with their corresponding standard errors, clustered at the state level, in parentheses. Columns (1) and (2) present results where the complete pre-period is used as a reference, and column (3) includes all pre-period interactions of month and treatment units. Column (1) presents estimates from an OLS model, while columns (2) and (3) present estimates from a Poisson pseudo maximum likelihood model.

Appendix Table B8: The Impact of SNAP Food Restriction Waivers on Ounces of Beverages Purchased in a Month Among Households who Report SNAP Participation in Both 2025 and 2026

	(1)	(2)
Soda	-38.218	-46.785
	(5.267)	(8.522)
	27,960	27,960
Energy Drinks	-5.935	-3.429
	(3.094)	(1.436)
	21,000	21,000
Sports Drinks	-9.650	-6.436
	(2.891)	(3.111)
	20,580	20,580
Water	1.967	-2.626
	(9.235)	(11.852)
	27,264	27,264
β_{gt}	Post-treatment	All

Notes: The sample is restricted to households reporting SNAP participation in both 2025 and 2026. Aggregated average treatment effects of SNAP Food Restriction Waivers are shown with their corresponding standard errors, clustered at the state level, in parentheses and the number of observations. Each cell shows the results of separate regressions. The row headings are the outcome variables, which are the ounces purchased per month of the corresponding beverage category. Soda includes regular and diet soda. Column (1) presents result where the complete pre-period is used as a reference, and Column (2) includes all pre-period interactions of month and treatment units.

Appendix Table B9: Impacts of SNAP Food Restriction Waivers on Prices of Purchased Items Among SNAP Households

	Aggregated ATE
Soda Prices (dollars per ounce)	-0.0181
	(0.0080)
	48,221
Energy Drink Prices (dollars per ounce)	0.0911
	(0.0400)
	19,777
Sports Drink Prices (dollars per ounce)	-0.0181
	(0.0042)
	16,827
Water Prices (dollars per ounce)	-0.0043
	(0.0028)
	37,057

Notes: Aggregated average treatment effects of SNAP Food Restriction Waivers are shown with standard errors, clustered at the state level, in parentheses and the number of observations. Each cell shows the results of separate regressions. The specification includes all pre-period interactions of month and treatment units.