**Supplemental Nutrition Assistance Program participation and racial/ethnic disparities in food and beverage purchases**

**Online Appendix**

Note, all results presented are from authors’ own analyses and calculations based in part on data reported by Nielsen through its Homescan Service for the 52-week periods ending on December 31, 2010; December 31, 2011; December 31, 2012; December 31, 2013; and December 31, 2014. Nielsen data were licensed from The Nielsen Company, 2018.

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**Supplemental Fig. 1.** Flow chart of subjects included in multivariable pooled OLS and longitudinal conditional likelihood analyses using Nielsen Homescan Panel from 2010 Quarter 4, 2011 Quarter 4, 2012 Quarters 2 & 4, 2013 Quarters 2 & 4, 2013 Quarters 2 & 4, and 2014 Quarter 2 & 4.

Source: Authors’ own analyses and calculations based in part on data reported by Nielsen through its Homescan Service for the 52-week periods ending on December 31, 2010; December 31, 2011; December 31, 2012; December 31, 2013; and December 31, 2014. Nielsen data were licensed from The Nielsen Company, 2018.

N = 477,225 household-by-quarter observations in Nielsen Homescan Panel from 2010 Quarter 4, 2011 Quarter 4, 2012 Quarters 2 & 4, 2013 Quarters 2 & 4, 2013 Quarters 2 & 4, and 2014 Quarter 2 & 4

Exclusion: 3,823 household-by-quarter observations reporting that household head is “other race”

N = 89,048

N = 92,871

N = 169,912

Exclusion: 77,041 household-by-quarter observations did not provide data on their SNAP participation

Exclusion: 306,911 household-by-quarter observations with household income > 250% of the Federal Poverty Level

N = 476,823

Exclusion: 402 household-by-quarter observations for which per-capita purchases could not be computed because exact household size was censored (households with 9 or more members)

**Supplemental Table 1. Food and beverage groupings, examples, and rationales for inclusion**

| **Group** | **Definition** | **Example Nielsen Modules** | **Rationale for inclusiona** |
| --- | --- | --- | --- |
| Processed meats and seafood | Breaded seafood, any canned meat or seafood, pickled products, sausage, bacon, all lunchmeats, corn dogs, taco filling, bratwurst, frankfurters, and franks-cocktail | Breaded frozen fish; canned turkey; pickled pork; bacon; breakfast sausage | Increased consumption associated with increased risk of several types of cancers, 20,21 increased risk of diabetes22,23 and increased cardiovascular disease mortality.24 |
| Desserts and sweet snacks | All grain- and dairy-based desserts: Baking mixes (brownies, cakes, coffee cakes, muffins, pie crust, cobbler); frozen baked goods (cobbler, cakes, doughnuts, pies, cookies); canned mincemeat and pie filling; fresh baked goods (sweet rolls, cakes, cheesecake, doughnuts, muffins, pies); bars (breakfast and granola/yogurt) and toaster pastries; cookies; ice cream and frozen yogurt and sherbet; puddings; frozen desserts and novelties; gelatin and mixes; graham crackers and crumbs; pie shells; ice cream cones | Brownie mixes; bakery donuts; toaster pastries; pudding cups; frozen novelties; cookie dough | Represent a large contributor of added sugar and total energy intake in Americans’ diets.25,26 Additionally, are included as a ‘junk food’ in policy proposals to end SNAP subsidies for junk foods.27 |
| Salty snacks | Crackers; rice cakes (if ingredients include added salt); bread sticks; popcorn; pretzels; pork rinds; meat snacks; potato chips; tortilla chips; trail mixes (if ingredients include added salt); caramel corn | Cheese crackers; popcorn; tortilla chips; puffed cheese; potato chips; pork rinds | Represent a large contributor of total energy intake in Americans’ diets28 Are included as a ‘junk food’ in policy proposals to end SNAP subsidies for junk foods.27 |
| Sweeteners and toppings | Frosting & mixes; syrups; dessert toppings; sugar; molasses; icing; cocoa | Syrup; granulated sugar; ready-to-spread frosting; frosting mixes; molasses | Represent a large contributor of added sugar in Americans’ diets. 29 Are included as a ‘junk food’ in policy proposals to end SNAP subsidies for junk foods.27 |
| Candy, chocolate and gum | Candy, chocolate; gum; baking chips, baking chocolate | Chocolate; hard rolled candy; lollipops; chewing gum; chocolate chips | Specifically targeted by a Maine proposal to end SNAP subsidies for candy.30 |
| Junk foods | Desserts, salty snacks, sweeteners and toppings, candy and gum (each as defined above) | Sum of modules in the following categories (defined above):   * Desserts and sweet snacks * Salty snacks * Sweeteners and toppings * Candy, chocolate and gum | Several states have proposed ending SNAP subsidies for junk foods.27 |
| Sugar-sweetened beverages | Beverages with added caloric sweeteners and > 20kcal/100g: sodas, fruit and vegetable drinks (with < 100% juice), coffee and tea drinks with added sweeteners; flavored waters; energy drinks; sports drinks and fluid replacement beverages. Excludes sweetened milk and milk-substitute products. | Carbonated soft drinks; fruit punch; fruit drinks and mixes | Increased consumption associated with increased weight gain and obesity31,32, increased risk of diabetes32,33 and increased risk of cardiovascular disease.34,35 Additionally, sugar-sweetened beverages are commonly targeted by SNAP policy proposals.30,36–40 |

a We considered two types of rationales for including particular food and beverage groups. First, we included a food/beverage group if there were documented associations between the food/beverage group and one or more health outcomes. Second, we included a food/beverage group if we identified existing or proposed SNAP policies or programs that specifically target this food or beverage group (e.g., policies that would restrict purchases of candy with SNAP benefits).

**Supplemental File 1.** Cases with missing data on SNAP status and creation of inverse probability weights.

Approximately 45% of the 169,912 low-income household-by-quarter observations included in the 2010-2014 sample did not provide information on their SNAP participation, and thus had missing data on this variable.

To account for selection into this sample (i.e., to account for the likelihood of reporting SNAP status), we used time-varying inverse probability weights (IPWs). Specifically, our ‘IPW’ models weighted observations by a time-varying IPW for having data on SNAP status. The outcome variable models are estimated only on complete cases, but more weight is given to complete cases that are more similar to cases with missing SNAP data, reducing sample selection bias and creating a more balanced sample between those who do and do not report their SNAP participation status.1

To generate the IPW, we fitted a logistic regression, regressing a variable for having observed SNAP data (i.e., being a complete case, yes vs. no) on demographic characteristics, geographic indicators, and number of purchases. Following Seaman and White’s suggestions,1 model fit was checked using a Hosmer-Lemeshow goodness of fit test2 and Pregibon’s link test (also described by Hinkely3). If either test failed, the model was re-specified (typically by adding interactions or higher orders), iterating until neither specification test was rejected. We used the final model to generate each observation’s predicted probability of having non-missing (i.e., observed) SNAP status. Inverse probability weights were calculated as the inverse of these predicted probabilities, and ranged from [1.05, 8.89]. All models in the manuscript are weighted with this IPW.

We also ran models using stabilized weights4,5 as well as stabilized weights truncated at the 0.3rd/99.7th, 1st/99th, and 5th/95th centiles1 to examine whether results were sensitive to the presence of large weights. Results did not differ across these specifications; thus, in the main text, we report only the results from the (non-stabilized, non-truncated) IPW models, which retain the largest sample.

**Supplemental Table 2.** Sample Characteristics by Supplemental Nutrition Assistance Program (SNAP) Status in the Nielsen Homescan Panel and in a Nationally Representative Sample from the National Household Food Acquisition and Purchase Survey (FoodAPS)a

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Current SNAP Participant (Homescan sampleb)** | **Current SNAP Participant**  **(FoodAPS samplec)** | **Low-Income Nonparticipant (Homescan sampleb)** | **Low Income Nonparticipants (FoodAPS samplec)** |
| **Characteristic** | **Mean or %** | **Mean or %** | **Mean or %** | **Mean or %** |
| Household size | 2.37 | 2.90 | 2.45 | 2.17 |
| Children |  |  |  |  |
| Presence of children 0-5 years | 10% | 33% | 7% | 14% |
| Presence of children 5-17 years | 25% | 70% | 23% | 40% |
| Married | 36% | 22% | 55% | 30% |
| Aged | 55.26 | 45.91 | 59.73 | 52.93 |
| Race/Ethnicitye |  |  |  |  |
| Non-Hispanic White | 81% | 46% | 87% | 61% |
| Hispanic | 6% | 24% | 5% | 18% |
| Non-Hispanic Black | 13% | 28% | 8% | 17% |
| Educational attainmentf |  |  |  |  |
| High school or less | 33% | 62% | 32% | 51% |
| Some college | 39% | 30% | 35% | 34% |
| College graduate or more | 27% | 8% | 34% | 15% |
| Income as % FPL | 1.16 | 1.28 | 1.30 | 1.23 |
| Observationsg | 15,613 | 1,581 | 37,262 | 1,197 |

SNAP, Supplemental Nutrition Assistance Program; FoodAPS, National Household Food Acquisition and Purchase Survey; FPL, Federal Poverty Level.

aComparisons are meant to be qualitative; statistical tests comparing the samples’ characteristics (e.g., t-tests, χ2 tests) are not conducted and variance measures (SEs) are not reported due to differences in data collection procedures (e.g., timing, variable definition).

bCurrent SNAP participants in Homescan are households that indicated one or more individuals in the household was “currently participating” in SNAP. Current SNAP participants in FoodAPS are households that indicated that someone in the household was currently receiving SNAP benefits, and whose participation was confirmed in administrative data, see Todd and Scharadin (2016)(1).

cIn this table, low-income nonparticipants in Homescan are households that indicated they were not currently participating in SNAP and whose total household income was below 185% of the Federal Poverty Level [FPL]. (Note that following previous work,(2) the main text used a cutoff of 250% FPL to categorize nonparticipants as low-income; here, however, we use a 185% FPL cutoff to allow for comparison to the FoodAPS data). Low-income nonparticipants in FoodAPS are households that indicated (and were confirmed via administrative data) they were not currently participating in SNAP and whose total household income was below 185% FPL.

dAge is age of Household Head in Homescan and age of Primary Respondent in FoodAPS.

eWe report only the race/ethnic groups examined in the manuscript; thus, categories may not sum to 100% for the FoodAPS Sample.

fEducational attainment is the highest level of educational attainment in the household in Homescan and for the Primary Respondent’s education in FoodAPS.

gObservations are household-by-quarter observations for Homescan and households for FoodAPS.

**Sources:** Demographic characteristics for the Homesan sample (columns 2 and 4) are from authors’ own analyses, based in part on data reported by Nielsen through its Homescan Service for the 52-week periods ending on December 31, 2010; December 31, 2011; December 31, 2012; December 31, 2013; and December 31, 2014. Nielsen data were licensed from The Nielsen Company, 2018. Characteristics for the FoodAPS sample (columns 3 and 5) are reproduced from Todd and Scharadin (49), Table 1b. Estimates for the FoodAPS sample were weighted in the original analyses by Todd and Scharadin to be nationally representative.

**Supplemental Table 3.** Adjusted means and average differences in purchases of food, beverage, and nutrients among US white, black, and Hispanic households, by SNAP participation status. 2010-2014a

|  | **SNAP Participants** | | | | | **Nonparticipants** | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Adj. Meanb** | **SE** | **Avg. Diff.c** | **95% CI** | | **Adj. Meanb** | **SE** | **Avg. Diff.c** | **95% CI** | |
| **Lower Limit** | **Upper Limit** | **Lower Limit** | **Upper Limit** |
| **Food Purchases (kcal/person/day)** |  |  |  |  |  |  |  |  |  |  |
| *Processed Meat* |  |  |  |  |  |  |  |  |  |  |
| White | 56.3 | 0.9 | Referent |  |  | 49.6 | 0.4 | Referent |  |  |
| Black | 77.0 | 3.1 | 20.7 | 14.3 | 27.0 | 63.9 | 1.3 | 14.3 | 11.7 | 16.9 |
| Hispanic | 56.8 | 2.2 | 0.5 | -4.1 | 5.1 | 50.9 | 1.2 | 1.3 | -1.1 | 3.6 |
| *Desserts* |  |  |  |  |  |  |  |  |  |  |
| White | 154.8 | 2.1 | Referent |  |  | 152.5 | 0.9 | Referent |  |  |
| Black | 151.4 | 5.2 | -3.4 | -14.4 | 7.6 | 137.5 | 2.4 | -15.1 | -20.0 | -10.1 |
| Hispanic | 146.4 | 5.9 | -8.4 | -20.5 | 3.8 | 142.9 | 2.5 | -9.6 | -14.7 | -4.6 |
| *Salty Snacks* |  |  |  |  |  |  |  |  |  |  |
| White | 121.5 | 1.7 | Referent |  |  | 132.1 | 0.8 | Referent |  |  |
| Black | 130.8 | 4.8 | 9.3 | -0.8 | 19.3 | 127.6 | 2.2 | -4.5 | -9.0 | 0.0 |
| Hispanic | 123.2 | 4.3 | 1.7 | -7.3 | 10.7 | 129.2 | 2.5 | -2.9 | -7.9 | 2.2 |
| *Sweeteners* |  |  |  |  |  |  |  |  |  |  |
| White | 78.2 | 1.7 | Referent |  |  | 68.2 | 0.7 | Referent |  |  |
| Black | 111.5 | 5.9 | 33.4 | 21.2 | 45.5 | 88.5 | 3.0 | 20.4 | 14.3 | 26.4 |
| Hispanic | 67.0 | 3.9 | -11.2 | -19.3 | -3.0 | 68.6 | 2.5 | 0.5 | -4.4 | 5.3 |
| *Candy* |  |  |  |  |  |  |  |  |  |  |
| White | 82.7 | 2.1 | Referent |  |  | 85.9 | 0.9 | Referent |  |  |
| Black | 80.1 | 6.6 | -2.7 | -16.1 | 10.8 | 79.0 | 5.1 | -6.9 | -16.8 | 3.0 |
| Hispanic | 75.2 | 4.4 | -7.5 | -16.6 | 1.5 | 70.3 | 2.1 | -15.6 | -19.8 | -11.5 |
| *Junk Foodd* |  |  |  |  |  |  |  |  |  |  |
| White | 437.2 | 4.5 | Referent |  |  | 438.6 | 2.0 | Referent |  |  |
| Black | 473.8 | 14.1 | 36.6 | 7.4 | 65.7 | 432.6 | 7.4 | -6.1 | -21.0 | 8.8 |
| Hispanic | 411.8 | 11.4 | -25.4 | -49.0 | -1.8 | 410.9 | 5.9 | -27.7 | -39.6 | -15.8 |
| *Sugar-sweetened beverages* |  |  |  |  |  |  |  |  |  |  |
| White | 74.6 | 1.9 | Referent |  |  | 59.7 | 0.7 | Referent |  |  |
| Black | 88.4 | 3.9 | 13.8 | 5.4 | 22.3 | 79.5 | 2.2 | 19.8 | 15.3 | 24.3 |
| Hispanic | 70.2 | 5.1 | -4.4 | -15.0 | 6.3 | 61.4 | 2.1 | 1.7 | -2.6 | 6.1 |
| **Nutrients (per person/day)** |  |  |  |  |  |  |  |  |  |  |
| *Calories (kcal)* |  |  |  |  |  |  |  |  |  |  |
| White | 1470.4 | 10.1 | Referent |  |  | 1420.6 | 4.1 | Referent |  |  |
| Black | 1597.3 | 35.5 | 126.9 | 54.6 | 199.2 | 1437.9 | 15.2 | 17.3 | -13.3 | 47.9 |
| Hispanic | 1456.7 | 29.4 | -13.7 | -74.3 | 46.8 | 1415.6 | 15.2 | -5.1 | -35.6 | 25.4 |
| *Saturated fat (g)* |  |  |  |  |  |  |  |  |  |  |
| White | 25.6 | 0.9 | Referent |  |  | 22.9 | 0.3 | Referent |  |  |
| Black | 27.8 | 1.8 | 2.2 | -1.7 | 6.1 | 24.3 | 1.3 | 1.4 | -1.1 | 3.9 |
| Hispanic | 22.5 | 1.6 | -3.1 | -6.6 | 0.4 | 22.3 | 1.3 | 2.2 | -1.7 | 6.1 |
| *Sugar (g)* |  |  |  |  |  |  |  |  |  |  |
| White | 99.9 | 1.0 | Referent |  |  | 93.6 | 0.4 | Referent |  |  |
| Black | 112.1 | 3.0 | 12.2 | 6.0 | 18.4 | 99.9 | 1.4 | 6.3 | 3.5 | 9.1 |
| Hispanic | 93.9 | 2.7 | -6.0 | -11.6 | -0.4 | 91.1 | 1.4 | -2.5 | -5.2 | 0.2 |
| *Sodium (mg)* |  |  |  |  |  |  |  |  |  |  |
| White | 2520.1 | 29.6 | Referent |  |  | 2345.0 | 9.5 | Referent |  |  |
| Black | 2966.0 | 73.5 | 445.9 | 290.5 | 601.3 | 2667.6 | 39.4 | 322.6 | 243.0 | 402.1 |
| Hispanic | 2644.2 | 68.7 | 124.2 | -22.6 | 270.9 | 2493.7 | 38.8 | 148.7 | 71.5 | 225.9 |

SNAP, Supplemental Nutrition Assistance Program; CI, Confidence Interval; Avg. Diff., Average Differential Effect; kcal, kilocalories; g, grams; mg, milligrams

aData are from the Nielsen Homescan Consumer Panel, including 30,403 U.S. households reporting annual incomes ≤ 250% of the Federal Poverty level (n = 89,043 household-by-quarter observations). All values were determined using pooled Ordinary Least Squares (OLS) regressions, adjusting for household composition (household size, presence of any children, number of children, presence of children in four age groups [under 2 years, 2-5 years, 6-11 years; 12-18 years]); household structure [married vs. not]); education (indicators for maximum educational attainment in the household [high school, some college, college graduate, post-college]); income (total household income as % of Federal Poverty Level); age of the household head (male or female, whomever was older); geographic market indicators; year; and total number of purchases during the quarter. Models also include an interaction between the race/ethnicity of the household head (white, black, Hispanic) and current participation in SNAP (yes vs. no). Regressions cluster standard errors at the household level. Models are weighted by the inverse probability of reporting SNAP status. Adjusted means and average differences are computed at the sample distributions.

bAdjusted means are estimates of mean purchases (per capita per day) of food, beverage, and nutrient outcomes, adjusting for covariates. Means for SNAP participants are computed among households currently participating SNAP; means for nonparticipants are computed among households not currently participating in SNAP.

cAverage differences are estimates of differences in adjusted mean purchases (per capita per day) of food, beverage, and nutrient outcomes between white (referent), black, and Hispanic households, adjusting for covariates.

dJunk food is the sum of purchases of desserts, salty snacks, sweeteners, and candy.

**Source:** Authors’ own analyses and calculations based in part on data reported by Nielsen through its Homescan Service for the 52-week periods ending on December 31, 2010; December 31, 2011; December 31, 2012; December 31, 2013; and December 31, 2014. Nielsen data were licensed from The Nielsen Company, 2018.

**Supplemental Table 4.** Adjusted means and average differences in purchases of food, beverage, and nutrients among US white, black, and Hispanic households, by SNAP participation status. 2010-2014, without applying IPWsa

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **SNAP Participants** | | | | | **Nonparticipants** | | | | |
| **Adj. Meanb** | **SE** | **Avg. Diff.c** | **95% CI** | | **Adj. Meanb** | **SE** | **Avg. Diff.c** | **95% CI** | |
| **Lower Limit** | **Upper Limit** | **Lower Limit** | **Upper Limit** |
| **Food & Beverage Purchases (kcal/person/day)** |  |  |  |  |  |  |  |  |  |  |
| *Processed meat* |  |  |  |  |  |  |  |  |  |  |
| White | 59.2 | 0.9 | Referent |  |  | 52.1 | 0.4 | Referent |  |  |
| Black | 82.2 | 3.6 | 23.0 | 15.7 | 30.3 | 67.7 | 1.4 | 15.6 | 12.7 | 18.4 |
| Hispanic | 60.0 | 2.5 | 0.8 | -4.3 | 5.9 | 53.3 | 1.3 | 1.2 | -1.4 | 3.8 |
| *Desserts* |  |  |  |  |  |  |  |  |  |  |
| White | 161.9 | 2.2 | Referent |  |  | 159.4 | 1.0 | Referent |  |  |
| Black | 160.6 | 6.0 | -1.3 | -13.8 | 11.2 | 144.9 | 2.6 | -14.5 | -19.9 | -9.1 |
| Hispanic | 153.9 | 6.6 | -8.1 | -21.6 | 5.5 | 149.7 | 2.7 | -9.8 | -15.2 | -4.3 |
| *Salty Snacks* |  |  |  |  |  |  |  |  |  |  |
| White | 127.4 | 1.8 | Referent |  |  | 138.2 | 0.8 | Referent |  |  |
| Black | 138.0 | 5.3 | 10.6 | -0.6 | 21.7 | 134.4 | 2.4 | -3.8 | -8.7 | 1.05 |
| Hispanic | 129.2 | 4.6 | 1.8 | -7.9 | 11.4 | 135.4 | 2.8 | -2.9 | -8.4 | 2.6 |
| *Sweeteners* |  |  |  |  |  |  |  |  |  |  |
| White | 82.8 | 1.9 | Referent |  |  | 71.9 | 0.7 | Referent |  |  |
| Black | 119.7 | 6.8 | 36.9 | 23.1 | 50.7 | 94.9 | 3.4 | 23.0 | 16.1 | 29.9 |
| Hispanic | 71.1 | 4.5 | -11.8 | -21.2 | -2.3 | 73.1 | 2.8 | 1.2 | -4.4 | 6.7 |
| *Candy* |  |  |  |  |  |  |  |  |  |  |
| White | 88.0 | 2.8 | Referent |  |  | 91.0 | 1.3 | Referent |  |  |
| Black | 87.5 | 9.3 | -0.5 | -19.4 | 18.3 | 87.9 | 8.2 | -3.1 | -19.1 | 12.8 |
| Hispanic | 78.6 | 5.5 | -9.4 | -20.7 | 1.9 | 73.4 | 2.7 | -17.6 | -23.1 | -12.2 |
| *Junk foodd* |  |  |  |  |  |  |  |  |  |  |
| White | 460.2 | 5.1 | Referent |  |  | 460.6 | 2.3 | Referent |  |  |
| Black | 505.8 | 17.1 | 45.6 | 10.6 | 80.6 | 462.1 | 10.2 | 1.5 | -18.7 | 21.7 |
| Hispanic | 432.7 | 12.8 | -27.5 | -53.9 | -1.1 | 431.5 | 6.6 | -29.1 | -42.3 | -15.9 |
| *Sugar-sweetened beverages* |  |  |  |  |  |  |  |  |  |  |
| White | 77.9 | 2.1 | Referent |  |  | 62.2 | 0.8 | Referent |  |  |
| Black | 93.3 | 4.3 | 15.3 | 5.9 | 24.7 | 83.9 | 2.5 | 21.7 | 16.6 | 26.8 |
| Hispanic | 74.4 | 6.1 | -3.6 | -16.1 | 9.0 | 64.2 | 2.4 | 2.0 | -2.8 | 6.8 |
| **Nutrients (per person/day)** |  |  |  |  |  |  |  |  |  |  |
| *Calories (kcal)* |  |  |  |  |  |  |  |  |  |  |
| White | 1545.2 | 10.9 | Referent |  |  | 1489.5 | 4.4 | Referent |  |  |
| Black | 1699.8 | 41.6 | 154.6 | 70.2 | 239.0 | 1523.3 | 17.8 | 33.7 | -1.9 | 69.4 |
| Hispanic | 1531.9 | 32.7 | -13.3 | -80.2 | 53.6 | 1485.9 | 16.3 | -3.7 | -36.3 | 29.0 |
| *Saturated fat (g)* |  |  |  |  |  |  |  |  |  |  |
| White | 27.5 | 1.1 | Referent |  |  | 24.1 | 0.3 | Referent |  |  |
| Black | 30.2 | 2.1 | 2.7 | -1.9 | 7.3 | 26.0 | 1.3 | -0.8 | -3.7 | 2.0 |
| Hispanic | 23.9 | 2.0 | -3.6 | -7.9 | 0.7 | 23.3 | 1.4 | 0.0 | 2.7 | -1.9 |
| *Sugar (g)* |  |  |  |  |  |  |  |  |  |  |
| White | 104.9 | 1.1 | Referent |  |  | 98.1 | 0.4 | Referent |  |  |
| Black | 119.1 | 3.5 | 14.2 | 7.0 | 21.4 | 106.0 | 1.7 | 7.9 | 4.6 | 11.2 |
| Hispanic | 98.8 | 3.1 | -6.2 | -12.5 | 0.2 | 95.7 | 1.5 | -2.4 | -5.4 | 0.6 |
| *Sodium (mg)* |  |  |  |  |  |  |  |  |  |  |
| White | 2639.2 | 30.0 | Referent |  |  | 2453.2 | 9.9 | Referent |  |  |
| Black | 3141.4 | 83.8 | 502.2 | 327.5 | 676.9 | 2813.8 | 43.4 | 360.6 | 273.3 | 447.9 |
| Hispanic | 2762.8 | 75.1 | 123.6 | -35.2 | 282.3 | 2612.8 | 42.6 | 159.6 | 75.0 | 244.1 |

SNAP, Supplemental Nutrition Assistance Program; IPW, Inverse Probability Weight; CI, Confidence Interval; Avg. Diff., Average Differential Effect; kcal, kilocalories; g, grams; mg, milligrams.

a Data are from the Nielsen Homescan Consumer Panel, including 30,403 U.S. households reporting annual incomes ≤ 250% of the Federal Poverty level (n = 89,043 household-by-quarter observations). All values were determined using pooled Ordinary Least Squares (OLS) regressions, adjusting for household composition (household size, presence of any children, number of children, presence of children in four age groups [under 2 years, 2-5 years, 6-11 years; 12-18 years]); household structure [married vs. not]); education (indicators for maximum educational attainment in the household [high school, some college, college graduate, post-college]); income (total household income as % of Federal Poverty Level); age of the household head (male or female, whomever was older); geographic market indicators; year; and total number of purchases during the quarter. Models also include an interaction between the race/ethnicity of the household head (white, black, Hispanic) and current participation in SNAP (yes vs. no). Regressions cluster standard errors at the household level. Models are unweighted. Adjusted means and average differences are computed at the sample distributions.

bAdjusted means are estimates of mean purchases (per capita per day) of food, beverage, and nutrient outcomes, adjusting for covariates. Means for SNAP participants are computed among households currently participating SNAP; means for nonparticipants are computed among households not currently participating in SNAP.

cAverage differences are estimates of differences in adjusted mean purchases (per capita per day) of food, beverage, and nutrient outcomes between white (referent), black, and Hispanic households, adjusting for covariates.

dJunk food is the sum of purchases of desserts, salty snacks, sweeteners, and candy.

**Source:** Authors’ own analyses and calculations based in part on data reported by Nielsen through its Homescan Service for the 52-week periods ending on December 31, 2010; December 31, 2011; December 31, 2012; December 31, 2013; and December 31, 2014. Nielsen data were licensed from The Nielsen Company, 2018.

**Supplemental Table 5. Longitudinal associations between participation in the Supplemental Nutrition Assistance Program and household food, beverage, and nutrient purchases using fixed effects models, overall and by race/ethnicity of the household head, 2010-2014, without applying IPWsa**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Average Difference, Nonparticipants (Referent) vs. SNAP Participants** | | | | | | | | | | | |
|  | **Overall** | | | **White** | | | **Black** | | | **Hispanic** | | |
|  |  | **95% CI** | |  | **95% CI** | |  | **95% CI** | |  | **95% CI** | |
| **Outcome** | **Avg. Diff.**b | **Lower**  **Limit** | **Upper**  **Limit** | **Avg. Diff.**b | **Lower**  **Limit** | **Upper**  **Limit** | **Avg. Diff.**b | **Lower**  **Limit** | **Upper**  **Limit** | **Avg. Diff.**b | **Lower**  **Limit** | **Upper**  **Limit** |
| **Foods & Beverages (kcal/person/day)** |  |  |  |  |  |  |  |  |  |  |  |  |
| Processed meat & seafood | 0.32 | -1.37 | 2.02 | 0.59 | -1.26 | 2.44 | 0.06 | -4.46 | 4.57 | -3.95 | -10.72 | 2.83 |
| Desserts | 1.67 | -2.28 | 5.62 | 1.81 | -2.51 | 6.12 | 3.50 | -7.04 | 14.05 | -4.06 | -19.88 | 11.76 |
| Salty snacks | -2.07 | -5.40 | 1.25 | -2.60 | -6.23 | 1.03 | 7.11 | -1.77 | 15.98 | -9.04 | -22.35 | 4.27 |
| Sweeteners | 0.95 | -3.03 | 4.93 | 1.32 | -3.02 | 5.66 | -0.74 | -11.35 | 9.87 | -2.58 | -18.49 | 13.33 |
| Candy | 2.55 | -13.79 | 18.88 | 0.75 | -17.08 | 18.59 | 24.15 | -19.44 | 67.75 | -4.03 | -69.41 | 61.35 |
| Junk foodc | 3.09 | -14.87 | 21.06 | 1.28 | -18.33 | 20.89 | 34.03 | -13.92 | 81.97 | -19.71 | -91.61 | 52.18 |
| Sugar-sweetened beverages | 0.72 | -2.28 | 3.71 | 0.81 | -2.46 | 4.07 | -4.81 | -12.80 | 3.18 | 9.00 | -2.98 | 20.98 |
| **Nutrients (per person/day)** |  |  |  |  |  |  |  |  |  |  |  |  |
| Calories (kcal) | 21.11 | -2.40 | 44.62 | 20.32 | -5.34 | 45.99 | **80.30** | **17.56** | **143.04** | -70.52 | -164.60 | 23.57 |
| Saturated fat (g) | 0.94 | -2.61 | 4.50 | 0.56 | -3.32 | 4.44 | 6.72 | -2.76 | 16.20 | -2.51 | -16.72 | 11.71 |
| Sugars (g) | 1.31 | -0.92 | 3.53 | 1.35 | -1.08 | 3.78 | 3.00 | -2.94 | 8.94 | -2.57 | -11.48 | 6.34 |
| Sodium (mg) | 49.13 | -30.34 | 128.60 | 58.54 | -28.21 | 145.28 | 48.42 | -163.66 | 260.50 | -117.90 | -435.93 | 200.12 |

SNAP, Supplemental Nutrition Assistance Program; IPW, Inverse Probability Weight; CI, Confidence Interval; Avg. Diff., Average Differential Effect; kcal, kilocalories; g, grams; mg, milligrams

aData are from the Nielsen Homescan Consumer Panel, including 30,403 U.S. households reporting annual incomes ≤ 250% of the Federal Poverty level (n = 89,043 household-by-quarter observations). All values were determined using fixed effects models with household as the clustering variable, and adjusting for household composition (household size, presence of any children, number of children, presence of children in four age groups [under 2 years, 2-5 years, 6-11 years; 12-18 years]); household structure [married vs. not]); education (indicators for maximum educational attainment in the household [high school, some college, college graduate, post-college]); income (total household income as % of Federal Poverty Level); age of the household head (male or female, whomever was older); geographic market indicators; year; and total number of purchases during the quarter. Models also include an interaction between the race/ethnicity of the household head (white, black, Hispanic) and current participation in SNAP (yes vs. no). Average differences are computed at the sample distributions.

bAverage differences are estimates of differences in adjusted mean purchases (per capita per day) of food, beverage, and nutrient outcomes between nonparticipants (referent) and participants in SNAP from fixed effects models, adjusting for covariates. Differences are reported overall (without regard to race/ethnicity) and for white, black, and Hispanic households. A positive average difference indicates that SNAP participants purchase more of the outcome than nonparticipants, while a negative average difference indicates that SNAP participants purchase less of the outcome than nonparticipants. **Bolded** average differences are statistically significant at the 5% level.

cJunk food is the sum of purchases of desserts, salty snacks, sweeteners, and candy.

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