

Transactions at a Northeastern Supermarket Chain: Differences by Supplemental Nutrition Assistance Program Use

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Introduction: Although one in seven Americans receives Supplemental Nutrition Assistance Program (SNAP) benefits, little is known about how these benefits for food are spent because individual-level sales data are not publicly available. The purpose of this study is to compare transactions made with and without SNAP benefits at a large regional supermarket chain.

Methods: Sales data were obtained from a large supermarket chain in the Northeastern U.S. for a period of 2 years (April 2012–April 2014). Multivariate multiple regression models were used to quantify relative differences in dollars spent on 31 predefined SNAP-eligible food categories. Analyses were completed in 2016.

Results: Transactions with SNAP benefit use included higher spending on less healthful food categories, including sugar-sweetened beverages (\$1.08), red meat (\$1.55), and convenience foods (\$1.34), and lower spending on more healthful food categories, such as fruits (−\$1.51), vegetables (−\$1.35), and poultry (−\$1.25) compared to transactions without SNAP benefit use.

Conclusions: These findings provide objective data to compare purchases made with and without SNAP benefits. Next steps should be to test proposed SNAP modifications to determine whether they would have the intended effect of promoting healthier purchasing patterns among SNAP beneficiaries.

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INTRODUCTION

The Supplemental Nutrition Assistance Program (SNAP) is the largest federal food assistance program in the U.S., with approximately \$80 billion in total costs in 2013.¹ SNAP eligibility rules are complex, but include having a household income \leq 130% of the Federal Poverty Level and $<$ \$2,250 in countable assets.² The program reaches one in seven Americans, and three quarters of households that receive benefits include a child, a person aged \geq 60 years, or a person with a disability. The average household income of participants is only about 59% of the Federal Poverty Level, and monthly benefits average \$271/household.¹

A burgeoning area of research is considering the diet quality of SNAP recipients.^{3–7} In contrast to the Special Supplemental Program for Women, Infants and

Children, which provides benefits for identified foods targeted to specific nutritional needs, SNAP benefits can be used to purchase all foods and beverages except alcohol and prepared hot foods. One recent study using

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nationally representative data demonstrated that SNAP recipients consumed 43% more sugar-sweetened beverages; 47% more high-fat dairy; and 44% more processed meats, but 19% fewer nuts, seeds, and legumes compared with non-recipients with similar sociodemographic characteristics,⁵ and others have reported similar findings.⁶ Given that participating households are disproportionately made up of minorities¹ and overweight or obese individuals,^{4,8-10} these dietary differences may contribute to health inequities among these populations.

It has been suggested that restructuring SNAP could reduce both hunger and obesity in the U.S.¹¹ Recent debate has focused on whether the program should place constraints on types of purchases that are allowable with benefits or incentivize healthy purchases. For example, public health advocates have suggested removing sugar-sweetened beverages from the list of SNAP-eligible food items.¹² SNAP, as administered nationally, provides no incentives to purchase healthier foods or limitations on purchasing unhealthy foods with SNAP benefits,¹³ although some evidence supports such an approach¹⁴⁻¹⁶ and the U.S. Department of Agriculture (USDA) is currently offering grants to incentivize the purchase of fruits and vegetables via the Food Insecurity Nutrition Incentive grant program.¹⁷ Without documentation of how SNAP dollars are spent, it is impossible to estimate the potential impact of proposed changes.

Many studies assessing diet quality of SNAP recipients have relied on self-report,⁴⁻⁶ and others have considered only a single food category, such as beverages.¹⁸ This study adds to previous research by assessing differences in spending by SNAP benefit use across all types of SNAP-eligible food in a supermarket setting. It also builds upon a report recently published by the USDA discussing food purchase data among SNAP participants¹⁹ by presenting more recent data (2012–2014 versus 2011) and by quantifying sales in a different retail chain.

METHODS

Study Sample

All transaction data from a large Northeastern supermarket chain was obtained to examine food purchases. The database includes all sales from April 2012 through April 2014, from 188 stores across five states (Maine, Massachusetts, Vermont, New Hampshire, and New York).

Measures

Individual foods are identified by their Universal Product Code or price look-up code. Items were grouped into meaningful food categories by linking Universal Product Codes and price look-up codes to a separate database of approximately 130,000 unique item descriptions. Based on the item description, two members of the research team manually categorized all items in the sales database into nine food and beverage groups and 34 subgroups (e.g.,

Appendix Table 1, available online, provides details). Groups and subgroups were adapted for the supermarket setting from the New York City Food Standards and Good Choice food and beverage categories, which were created for institutional foodservice providers.^{20,21} Nutritional information was not included in the sales database, so further categorization based on nutritional characteristics of foods (e.g., whole versus refined grains, dried fruits with versus without added sugar) was not possible. Assignment of items to categories was aided by Internet search, as needed, to clarify item descriptions. A third member of the team was consulted to resolve disagreements, and assignment of categories was further validated by cross-referencing the food groups with the store's database on item-level SNAP eligibility. This process of data cleaning and categorization took approximately 1 year (summer 2014–2015).

A single transaction was defined as all individual foods purchased in a shopping basket at one time. Items purchased as part of a single transaction were linked via a transaction ID, and for each transaction the database includes information on time of day, date, store, whether coupons were used, method of payment, per-item spending, and total transaction amount. A transaction was then categorized as either a SNAP transaction or a non-SNAP transaction based on a transaction-level identifier for payment method when any portion of the purchase was made with SNAP dollars. Because it was fairly common for transactions to include more than one method of payment (37% of SNAP transactions included at least one other payment method), these transactions were included in the definition to capture a more comprehensive representation of purchases made with SNAP benefits (i.e., all items purchased with SNAP).

SNAP-ineligible items were excluded from this analysis (i.e., alcohol, non-food items, and hot convenience foods), leaving 31 SNAP-eligible food subgroups that were considered for analysis. Transactions totaling more than \$1,000 were excluded to remove extreme values, such as might occur during holidays or with institutional purchasing. Items for which an item description was unavailable and therefore a food group could not be assigned (11% of total items) were also excluded.

Stores were classified as being in high-poverty or low-poverty areas. Store locations were geocoded in ArcMap and linked to block group-level Census data from the 2013 American Community Survey.²² To capture the population most likely to shop at each store, the mean percent poverty of block groups within one mile of urban stores and within five miles of other stores was calculated. Urban stores were defined as stores located in areas designated with rural–urban commuting code “1” (urbanized area).^{22,23} High-poverty area stores were defined as stores with more than 9.8% of the population (the median for this variable) below the Federal Poverty Level. There may be some misclassification of this variable because some evidence suggests that people travel beyond the closest retail store to shop.²⁴ The assumption is that most misclassification would be in the direction of the null (i.e., by restricting the sample to high-poverty areas stores, the assumption is that individuals would be more likely to leave these areas to shop at stores located in low-poverty areas, rather than seeking out stores in high-poverty areas).

Statistical Analysis

Data were analyzed at the transaction level using multivariate multiple regression to assess use of SNAP benefits in relation to

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