

Researcher examines nutrition, timing of foods acquired in food deserts

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Eliza Davenport Whiteman, a second-year doctoral student in the University of Pennsylvania's Department of City and Regional Planning in the School of Design, conducted a pilot study that offers a novel metric for evaluating how low-income residents of food deserts acquire food.

Whiteman's study revealed that the nutritional quality of the food changed over the course of the month and varied between items purchased at the store and those received from emergency food networks.

Her paper, *When Is Food Insecure? Identifying Temporal Purchasing and Nutritional Patterns Among SNAP and Food Pantry Users* won the student research award in the Food & Nutrition track at the annual American Public Health Association meeting this fall.

She co-authored the paper with her mentor, Amy Hillier, an associate professor at Penn Design and a faculty fellow at Penn's Institute for Urban Research.

Whiteman, who is also a Penn IUR affiliated student, conducted the research in Chester, Pa., a small Rust Belt city that experienced a post-industrial decline in the mid-20th century, leading to a sharp drop in population. Chester has a predominantly African-American population of 35,000 residents, one-third of whom live below the federal poverty level. Chester had no grocery store or supermarket for 10 years until the

fall of 2013 and was classified as a food desert by the United States Department of Agriculture.

Whiteman's research on food access and food insecurity in the city adds a temporal dimension to the question of food deserts by evaluating changes in dietary quality of food desert dwellers over the course of a month.

Previous research on food access has primarily used spatial measures to understand distance to and availability of healthy food resources. This approach fails to account for temporal differences in access, such as may be experienced by populations reliant on cyclic food-assistance benefits.

"I'm not just evaluating where people have limited access to healthy food, but also when," Whiteman says about her study which challenges the notion that building a supermarket in a food desert leads residents to eat healthier food.

Many low-income families rely on the federal food assistance program, SNAP, formerly known as food stamps, to help stretch their food budgets. In Pennsylvania, SNAP benefits are distributed once per month within the first 10 business days of the month. She found that families who received SNAP benefits purchased less food overall as well as less healthy food by the end of each month as the length of time increased from the date of their SNAP disbursements.

The two-year Chester Food Shopping Study began in June 2013 and ended in August 2015. Study participants completed surveys answering questions about food shopping behaviors and attitudes, food security, their daily diets and demographic information including self-reported health status.

All participants were residents of Chester or one of the surrounding

towns, at least 18 years old, and the primary shoppers of their households.

The study used a food shopping receipt collection and nutritional coding methodology to evaluate the healthfulness of food purchases compared to food pantry acquisitions.

A subset of participants collected all their receipts for food to be consumed at home for a full month and also maintained a log of foods acquired without receipts such as items from friends or food pantries. This month-long data collection period enabled analysis of food shopping and dietary quality trends over the time of the SNAP cycle.

The nutritional coding system used focused on seven common food groups associated with obesity and diet-related disease risk: fruits, vegetables, low-fat dairy, salty snacks, sugary snacks, sugar-sweetened beverages, and ready-to-eat grain-based foods. Fruits, vegetables and low-fat dairy items were classified as low-calorie, healthier foods while the other items were classified as high calorie, less healthy foods.

Of the 45 participants who collected food-shopping receipts for the one-month period, ten matched pairs were selected based on family structure, employment status and income. One respondent per pair recorded food acquisition from a food pantry, while the matching respondent did not use any emergency food sites during the collection period.

To compare [nutritional quality](#) of foods received for free at food pantries with those purchased at food outlets, the analysis evaluates both percent of total items acquired and percent of spending.

"There was decreasing spending on low-calorie foods and U-shaped spending on high-calorie foods over the month, as well as a higher proportion of low-calorie foods among the study participant's food

pantry acquisitions," Whiteman says. "The findings suggest the need for a more nuanced measure of access that incorporates both temporal and spatial measures to better understand the dynamic food access patterns of urban shoppers."

"Eliza's research applies an exciting combination of social science research methods in creative ways to assess the spatial and temporal dimension of food insecurity. Her preliminary research in this area holds great promise for better understanding how the distribution of food assistance over time and over space could be reconsidered to protect families against food insecurity," Hillier says.

While the sample size for the study was too small to draw generalizable conclusions, Whiteman says that her "proof-of-concept" study can provide useful insight into how to measure dietary quality over a month's time.

She is currently working on another study that she hopes to complete next semester, examining questions around the time of month food purchases occur and the dietary quality of food using a national [food](#) purchasing dataset.

Provided by University of Pennsylvania

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