

The Influence of the WIC Food Package Changes on the Retail Food Environment in New Orleans

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ABSTRACT

Objective: To examine the effect of the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) food package changes on availability of healthy foods in small stores.

Design: Pre–post comparison group design with repeat in-store observations.

Setting: New Orleans.

Participants: Small stores (n = 102; 77% of total) were visited in 2009. Of these, 91% were observed again in 2010, including both WIC (n = 27) and non-WIC (n = 66) stores.

Intervention: The 2009 WIC food package changes to include healthier foods.

Main Outcome Measures: Change in store availability of fruits, vegetables, lower-fat milks, whole wheat bread, and brown rice. Change in number of varieties and shelf length of fruits and vegetables.

Analysis: Difference-in-differences analysis using logit models for change in availability and regression models for change in number of varieties or shelf length.

Results: The WIC stores were more likely to improve availability of lower-fat milks than non-WIC stores (adjusted odds ratio, 5.0, 95% confidence interval, 1.2—21.0). An even greater relative improvement was seen with whole grains. The WIC stores showed a relative increase in number of varieties of fresh fruits (0.9 ± 0.3 ; $P < .01$) and shelf length of vegetables (1.2 ± 0.4 meters; $P < .01$).

Conclusions and Implications: Results suggest that WIC changes improved the availability of healthy foods in small stores in New Orleans. Similar changes throughout the country could have a significant impact on neighborhood food environments.

Key Words: policy, food supply, food environment, WIC, United States Department of Agriculture (*J Nutr Educ Behav.* 2014;46:S38–S44.)

INTRODUCTION

Over the past decade, there has been a tremendous growth in studies on the neighborhood food environment and its relationship to nutritional outcomes, such as diet and weight status.^{1–8} There has also been substantial policy work undertaken to improve food environments. Consistent with recommendations from expert panels, 1 goal of this work has been to improve geographic access to healthy food.⁹ An intervention that brings

supermarkets to low-income neighborhoods is an example of 1 such approach.^{10,11} Other work has focused on improving the offerings of small corner stores that operate in neighborhoods without a full-service supermarket. The “corner store” strategy motivates store owners to carry more healthy foods, such as fresh produce, either through educational campaigns, or through financial incentives.^{12,13}

These examples focused on the suppliers' side of the food environ-

ment, but relatively little work has addressed the demand side. In particular, how might changing what people buy lead stores to carry healthier items and thus improve the food environment? For example, the farmers' market-food stamp bonus programs give low-income shoppers \$2 of produce for every dollar in food stamps that they spend, which incentivizes farmers to expand their offerings at these markets.^{14,15}

The historic change in the Women, Infants, and Children (WIC) Program's food package offers an important opportunity to study another demand-led approach to changing the food environment. Based on recommendations from the Institute of Medicine, the US Department of Agriculture changed the WIC Program's supplemental food packages, addressing nutritional concerns of the panel by offering low-fat milks and whole grains, and including cash vouchers for fruits and vegetables.^{16,17} Before the change, WIC

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offered juice, milk, cereals, eggs, beans, and other foods. However, the milk was whole milk, cereals were not whole grain products, there was no option to include whole grain bread or rice, and there were no fruits and vegetables. This set of changes, the first in a generation, went into effect in most states, including Louisiana, in October, 2009.

Some evidence on the effects of this policy change exists from a few studies conducted in the northeast and midwestern US. A study of 7 northern Illinois counties found that fresh and frozen fruit and vegetable availability increased in WIC stores after the food package change.¹⁸ Hillier et al¹⁹ found that healthful food availability, as measured by a composite score, showed a more substantial increase in WIC stores than non-WIC stores in 2 low-income neighborhoods in Philadelphia, PA. Andreyeva and colleagues²⁰ also found relative improvements in a composite score of food availability in WIC vs non-WIC stores throughout 5 towns in Connecticut. Hartford, CT was the site of another study that showed significant improvements in WIC stores vs non-WIC stores in the availability of whole grain bread, brown rice, fresh fruit varieties, and proportion of low-fat milks.²¹

Overall, however, the research base on the impact of this type of nutrition policy has been scarce, especially considering that the WIC program operates nationwide with some 50,000 authorized vendors²² and more than 9 million participants.²³ Only 3 of the studies to date used a comparison group to eliminate the potential bias from confounding by external changes to the retail environment.¹⁹⁻²¹ Of those that did, 2 used composite measures, which makes it difficult to see how specific aspects of the food environment (eg, vegetable availability) were affected by the changes.^{19,20} Moreover, the geographic range of the studies has been limited, with no work having been published from the southern or western US.

This study addressed these gaps with a natural experiment, conducted in New Orleans, LA. The overall objective was to understand how the changes in the WIC food package

influenced changes in WIC stores relative to non-WIC stores. In particular, it was hypothesized that there would be increases in the percentage of WIC stores that carried reduced-fat milk, whole grains, and fruits and vegetables. It was also hypothesized there would be increases in the number of varieties of fresh fruits and vegetables, and overall shelf space devoted to these foods.

METHODS

Study Sample

The study was conducted throughout New Orleans. The researchers developed a sampling frame of food stores by combining 2 lists. One list came from the 2008 annual census of retail food stores,²⁴ which identified and geo-mapped all food outlets in the city that sell food for at-home use. A second list came from the Louisiana State WIC Program, which included all WIC-authorized vendors in New Orleans as of July, 2009. The lists were merged and attempts were made to enumerate all authorized WIC vendors in the city as well as a representative number of non-WIC outlets from the categories of supermarkets and midsize and small stores.

This study focused on small stores (< \$1 million in annual sales), because that is where the researchers believed the most important effect of the WIC changes was likely to occur. These stores are least likely to carry healthy foods—such as fresh produce, whole grains, and reduced-fat milks—and are most commonly located in low-income neighborhoods, which often lack a supermarket.^{12,25} Because of their large numbers, small stores are also important for being able to detect a change in the in-store environment, should one have occurred. Of the 133 small stores eligible for the baseline survey (ie, that were open in 2009 and located in New Orleans), survey teams approached 115 stores, and the survey was conducted in 102 (77%). Eighteen stores were not approached because time elapsed on the data collection period, which needed to finish before the WIC policy change went into effect on October 1, 2009. Because stores were chosen and approached in a random sequence, this minimized

any potential bias of not obtaining data on these 18 stores. Thirteen stores did not grant permission to the team to do store observations, usually because the store manager was not present. Of the small stores observed in 2009, 91% were observed again in 2010. This sample of small stores (n = 93) is the focus of the analysis reported here.

Review by the institutional review board was not required for this study because human subjects were not involved, as per government guidelines.²⁶

In-Store Survey

Trained enumerators working in teams of 2 conducted the in-store survey. They collected data on the availability of key foods by direct observation. Availability measures were obtained for all foods required to be stocked by vendors in the Louisiana WIC Program. For most foods, this consisted of a simple yes/no recording of its availability. To be consistent with the program's nutritional guidelines, enumerators checked for specific product types, when required by the state WIC program. Stocking requirements for the program are detailed.²⁷ For example, for whole wheat bread and brown rice, the program required that stores carry specific brands.

Although there were no specific requirements for the types of fruits and vegetables that needed to be carried by stores, 5 specific ones (apples, bananas, oranges, grapes, and watermelons), which represent a range of common fruits available in small stores in New Orleans, were checked. In addition to checking yes or no for the availability of each of these, enumerators recorded a count (0, 1, or 2+) of the number of other kinds of fruits. Thus, in addition to individual item measures of availability, a summary measure of the number of varieties of fruits was created, ranging from 0 to 7. The same process was done for vegetables, with 8 specific kinds enumerated (lettuce, spinach, other greens, tomatoes, broccoli, carrots, potatoes, and onions) and a count of 0, 1, or 2+ for other kinds of vegetables. Past studies have revealed that these vegetables represent

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