

1) **Title:**  
The Effect of Revised WIC Food Package on Infant Feeding Practices.

2) **Name of Author, Department, Year in Program**  
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4) **Background:**  
As one of the largest food assistance programs funded by the United States Department of Agriculture (USDA), the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) aims to improve health and nutritional outcomes of low-income pregnant, breastfeeding, and postpartum women, and infants and children up to age five, who are at nutritional risk. WIC program has been implemented in the U.S. for over 40 years and benefited many families, by providing monthly electronic benefit cards or vouchers to purchase specific foods that are designed to supplement their diets. In 2015, the number of WIC participants has reached over 8 million with the total program costs of \$6.2 billion.

In 2009, the WIC food package policies were revised for the first time since 1980. The revisions were intended to improve the health and nutritional quality of WIC benefits by providing the participants with a wider variety of foods and account for the participants' diverse cultural food preferences. The revised food packages are now consistent with the Dietary Guidelines for Americans and infant feeding practice guidelines of the American Academy of Pediatrics. The changes intended to improve dietary practices and largely reflected recommendations made by Institute of Medicine (IOM) in its report "WIC Food Packages: Time for a Change."

Breastfeeding promotion is one of the important objectives of WIC program. WIC offers distinct food packages for mother-infant pairs based on breastfeeding status as follows: a fully breastfeeding package (FBP) with no infant formula but more food, a partially breastfeeding package (PBP) with some infant formula, and a fully formula feeding package (FFP) with a smaller postpartum food package for the mother. The food packages for mothers in each group depend on the infant's age (0 to 11-month old), which expected to provide incentives for mothers to initiate and continue breastfeeding.

Research about the effect of the revised WIC packages on participants' choices has emerged since the changes have been fully implemented, but mostly focus on the effect of revised packages on children's food consumption and health outcomes. The effect of the revised WIC food packages on breastfeeding behavior has not drawn much attention. The objective of this paper is to better understand the infant caregivers' behavior changes and identify if there are any differences between rural and urban areas.

5) **Description of Data**  
We used response to items from the infant questionnaire of the National Food and Nutrition Survey for WIC (NATFAN), a repeated cross-sectional survey of WIC participants, administered before and after revisions to the WIC food benefit. The NATFAN infant questionnaire, which was developed and field tested in a large Southwestern state and reviewed for content validity by a panel of state EIC program directors, contained 33 questions about infant feeding practices adapted from WIC certification interviews.

Local WIC clinics located in 49 State and Indian Territorial Organization WIC programs administered questionnaires to convenience samples of participants who attended clinics during the data collection

periods in 2009, before the food package revisions (“Before”). The questionnaire was re-administered to a second set of WIC participants about six months following the food package changes (“After”). The NATFAN questionnaire contains a series of questions related to program participants’ food choice and frequency of consumption. Information about participants’ age, zip code, language, race, and education level was also collected in the questionnaire.

Since zip codes of the respondents are provided in NATFAN data, we make use of the USDA Rural-Urban Continuum Codes (RUCC) database, which includes the FIPS county codes and zip codes of all counties in the US and socio-economics information based on county population, and create measures of rurality and urbanity and other county specific variables.

## **6) Preliminary Results and Discussion**

Differences across racial/ethnic compositions as well as location of the residence, such as urban and rural, might affect program participants’ food consumption behavior. Our preliminary results indicate significant differences in food package choices between urban and rural areas. Specifically, the changes in FBP, PBP and FFP from before to after the revisions in WIC food packages were 2.20 %, -3.40%, and 1.20%, respectively. When the data were separated into the groups of urban and rural counties, we observed that the increase in FBP was mostly driven by the increase in the package choices in urban areas. With respect to FFP, the changes in food package choices in rural areas were not significant. This evidence suggests that revisions affected urban and rural areas differently.

To further investigate the food package choices, we estimated a multivariate logistic regression model, which allows the effects of the explanatory variables to differ for each outcome. We control for caregivers’ age, language most frequently spoken, race/ethnicity, and level of education among many other variables.