



# ISSUES IN FOOD ASSISTANCE

## Effects of WIC Participation on Children's Food Consumption

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**Issue:** The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides packages containing foods that are good sources of nutrients typically lacking in the diets of the target population, along with nutrition education and referrals to health care. The provision of supplemental foods is assumed to lead to increased consumption of these foods, which in turn is expected to improve the health of program participants. The relationship between participation in WIC and increased consumption of WIC foods has not been fully examined.

The types of food included in the WIC packages have remained basically unchanged since the 1970s. Since then, food consumption patterns have changed, nutritional standards have been revised, and the WIC participant population has become more ethnically diverse. As a result, the composition of the WIC food packages is receiving increased attention, and some observers have recommended changes to better help program participants meet standards for a healthful diet. In addition, the dramatic increase in obesity and overweight among children has raised questions as to whether providing free supplemental foods through WIC increases children's caloric intake. The U.S. Department of Agriculture is thus considering redesigning the WIC food packages and needs to determine how they should be revised to improve the nutritional intake, health, and development of participants.

Understanding WIC's effect on consumption of the kinds of food in the WIC packages and on caloric intake will aid decisions on change. This issue brief focuses on two major concerns:

(1) How does participation in WIC affect the consumption of WIC-approved foods, not just from the WIC packages, but in the overall diet?

(2) Does participation in WIC result in increased caloric intake?

**Background:** WIC is based on the premise that early food interventions during critical times of growth and development will improve the health status of participants and help prevent later health problems. Low-income women, infants, and children who are at nutritional risk are eligible to participate in the program. (Family income must fall at or below 185 percent of the Federal poverty guidelines or the applicant or certain family members must participate in specified assistance programs.) About a quarter of all children 1-4 years of age in the United States participate in the program. WIC provides participants with supplemental foods that are high in five target nutrients—protein, iron, vitamins A and C, and calcium. Federal regulations specify the types of supplemental foods that may be prescribed to WIC participants. The WIC-authorized foods included in the food package for children 1-4 years of age are iron-fortified adult cereal, vitamin C-rich fruit and/or vegetable juice, protein/iron-rich eggs, calcium/protein-rich milk and cheese, and protein-rich peanut butter and dried beans/peas (table 1). Only low-sugar cereals (with no more than 6 grams of sugar per dry ounce of cereal) and 100 percent juice (i.e., unsweetened) are allowed.

WIC regulations specify the maximum quantities of supplemental foods that may be distributed to WIC participants. Typically, food benefits are provided in the form of a food "instrument" (a voucher or check) that participants use to purchase approved foods at authorized grocery stores. The food instrument specifies the type and amount of supplemental foods that can be obtained.

**Table 1—WIC food package for children 1 to 5 years: maximum monthly quantities<sup>1</sup>**

Milk:	
Fluid whole milk	24 qts (22.7 L)
or	
Fluid skim or low-fat milk	May be substituted for fluid whole milk on a quart-for-quart (.9 L) basis.
or	
Cultured buttermilk	May be substituted for fluid whole milk on a quart-for-quart (.9 L) basis.
or	
Evaporated whole milk	May be substituted for fluid whole milk at the rate of 13 fluid oz (.4 L) per qt (.9 L) of fluid whole milk.
or	
Dry whole milk	May be substituted for fluid whole milk at the rate of 1 lb (.4 kg) per 3 qts (2.8 L) of fluid whole milk.
or	
Nonfat or lowfat dry milk	May be substituted for fluid whole milk at the rate of 1 lb (.4 kg) per 5 qts (4.7 L) of fluid whole milk.
or	
Cheese	May be substituted for fluid whole milk at the rate of 1 lb (.4 kg) per 3 qts (2.8 L) of fluid whole milk. The maximum amount that may be substituted is 4 lbs (1.8 kg). <sup>2</sup>
Eggs:	
Fresh eggs	2 doz. or 2 ½ doz.
or	
Dried egg mix	May be substituted at the rate of 1.5 lbs (.7 kg) egg mix per 2 doz. fresh eggs or 2 lb. (.9 kg) egg mix per 2 ½ doz. fresh eggs.
Cereals (hot or cold)	36 oz dry (1 kg)
Juice: <sup>3</sup>	
Single-strength juice	276 fluid oz (8.2 L)
or	
Frozen concentrated juice	288 fluid oz reconstituted (8.5 L)
Legumes:	
Dry beans or peas	1 lb (.4 kg)
or	
Peanut butter	18 oz (.5 kg)

<sup>1</sup>As defined in the Code of Federal Regulations (7 CFR 246.10).

<sup>2</sup>Additional cheese may be issued on an individual basis in cases of lactose intolerance, provided the need is documented in the participant's file by the competent professional authority.

<sup>3</sup>Combinations of single-strength and frozen concentrated juice may be issued as long as the total volume does not exceed the amount specified for single-strength juice.

**Methodology:** The source of data for this study was the Continuing Survey of Food Intakes by Individuals (CSFII) 1994-96, 1998, which has information on the socioeconomic characteristics of individuals as well as their food intake, specifically, the kinds and amounts of food consumed on each of 2 nonconsecutive days using 24-hour dietary recalls. Descriptions of every food item eaten were obtained from the respondents and then matched to descriptions of foods in a food coding database consisting of almost 7,500 unique food codes. ERS researchers identified the specific food codes that seemed to best represent "WIC-approved" foods, based on Federal WIC program regulations and a

review of selected State's lists of WIC-allowed foods. In addition, other (i.e., non-WIC) cereal and beverages (such as soft drinks) were identified.

To determine WIC's effect on the consumption of WIC-approved foods, the consumption patterns of WIC participants were compared with those of eligible nonparticipants living in non-WIC households (eligibility of children was proxied by the annual income of the household). Two additional comparison groups were constructed to account for the possibility of spillover effects whereby WIC foods are shared among non-WIC household members (eligible non-

participants living in WIC households), and for the effect of higher household incomes (ineligible nonparticipants). Failure to control for spillover and income can confound effects due to WIC.

A Tobit multivariate regression analysis, which controls for observed differences between the groups of children, was used to compare the consumption patterns of WIC children with those of the other three groups of children. A weight-based measure—grams—was used to determine the amount of the individual WIC-approved food consumed. Since the study was also interested in whether WIC contributes to overweight, the food energy content—measured in calories—was used to determine the total amount of WIC-approved food consumed and the total amount of all foods and beverages consumed.

**Findings:** WIC-approved foods are important in the diets of children 1 to 4 years old whether or not they participate in the program. On average, WIC-approved foods accounted for a quarter of the total calories from food and beverages consumed by children in this age group.

After controlling for other observed factors, the analysis found that WIC participants consumed significantly more WIC-approved juice, and significantly less of other (i.e., non-WIC) beverages such as soft drinks, than each of the three comparison groups. WIC participants also consumed significantly more WIC-approved cereal than did nonparticipants living in non-WIC households and ineligible nonparticipants. The association between increased consumption of WIC-approved foods and participation in WIC was substantial for some types of food. Holding other factors constant, participation in WIC was associated with an increase of about 75 percent in the amount of WIC-approved cereal consumed, compared with eligible nonparticipants in non-WIC households and ineligible nonparticipants. Depending on the comparison group, WIC participation was also associated with a 24- to 45-percent increase in the amount of WIC-approved juice consumed and a 17- to 26-percent decrease in the amount of other beverages consumed (figs. 1 and 2).

WIC constrains participants' choices of cereal and beverages more than their choices of the other WIC foods. Consumers probably have stronger brand loyalties and taste preferences in cereals and, to a lesser degree, in juices than for foods in the other WIC food groups. However, WIC participants can only use their WIC vouchers for specific brands of cereal that are iron-fortified and low-sugar. Cereals that do not meet WIC requirements constitute a

Figure 1  
**Estimated effects of WIC on the consumption of WIC-approved juice: WIC participants vs. three comparison groups**

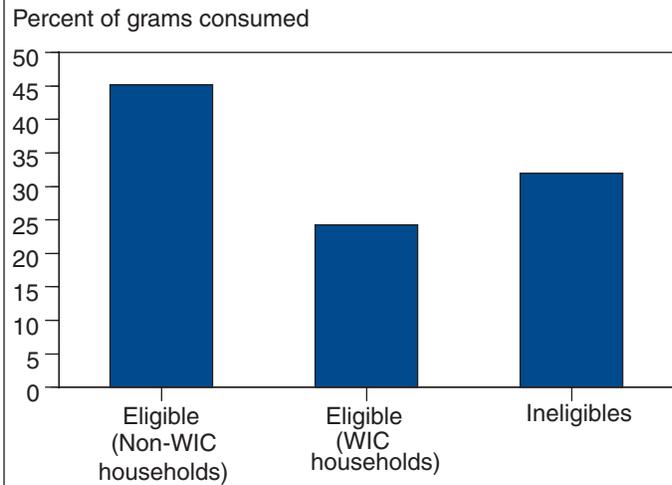
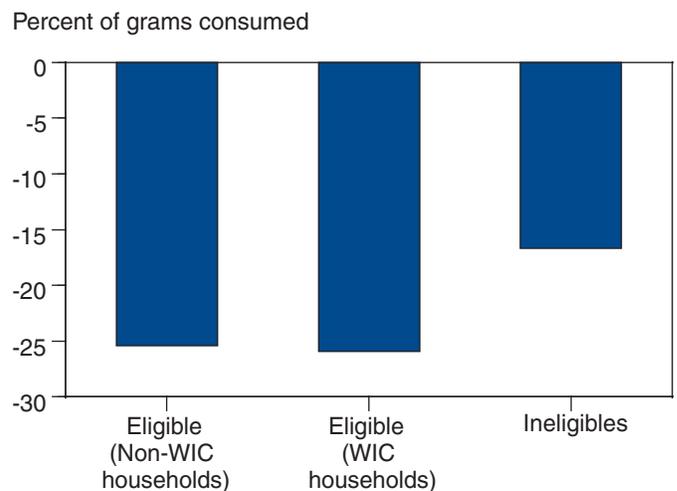


Figure 2  
**Estimated effects of WIC on the consumption of other beverages: WIC participants vs. three comparison groups**



considerable share of the market. Therefore, to take advantage of the free food provided by WIC, participants must purchase cereals that may be different from the ones they would otherwise choose if there were no restrictions. Similarly, WIC participants are required to use their WIC vouchers on products containing 100-percent juice, which competes with other beverages in the diets of children.

The analysis found few statistically significant differences in the consumption of the other WIC-approved food groups such as milk, cheese, eggs, dry beans/peas, and peanut butter. WIC regulations place fewer restrictions on the types of these WIC foods that participants can purchase with their WIC vouchers, and there is less product differentiation

among brands of milk, eggs, dry beans/peas, etc. So WIC participants are likely to purchase the same types of these foods as non-WIC participants.

The results clearly show that participation in WIC is statistically associated with increased consumption of some WIC-approved foods, such as cereal and juice. However, because of potential factors that could not be controlled for in the statistical analysis, such as the parent's motivation to improve the child's nutrition, it is not possible to prove that WIC participation per se is the cause of the increased consumption of WIC foods. However, the finding of basically similar results across three different comparison groups (eligible nonparticipants in non-WIC households, eligible nonparticipants in WIC households, and ineligible nonparticipants) provides strong evidence that participation in WIC does in fact increase the consumption of some WIC-approved foods and decreases the consumption of other non-WIC foods.

WIC participants consumed 11 to 14 percent more calories from all WIC-approved foods combined than each of the three groups of nonparticipants. At the same time, there was no significant difference in total calories consumed between WIC recipients and the two groups of eligible nonparticipants. This suggests that WIC-approved foods replace other food items in the diets of WIC participants rather than adding to total food consumed. Although WIC participants consumed about 5-percent more total calories than ineligible nonparticipants, this may be due more to fundamental differences in household resources and parents' knowledge of nutrition than to WIC status.

**Conclusions:** This study found that although WIC participation had little effect on the consumption of some types of food, it had a substantial impact on the consumption of other types, such as WIC-approved cereal and juice and other (i.e., non-WIC) beverages. The study also found significant differences in the consumption of WIC-approved foods by race/ethnicity and geographic regions, suggesting strong cultural and regional dietary patterns. These results highlight the importance of determining the specific foods to provide in the WIC food packages to influence change in the dietary patterns of participants.

Although participation in WIC was associated with a significant increase in the amount of calories consumed from all WIC-approved foods combined, there was no significant difference in the amount of total calories consumed from all foods and beverages between WIC participants and low-income nonparticipants. Thus, there is little evidence that participation in WIC contributes to increased caloric intake among low-income children eligible to participate in the program.

#### Information Sources:

Olivera, Victor, and Ram Chandran. *Children's Consumption of WIC-Approved Foods*. FANRR-44. U.S. Department of Agriculture, Economic Research Service. February 2005.  
<http://www.ers.usda.gov/publications/fanrr44/>

U.S. Department of Agriculture, Agricultural Research Service. *Continuing Survey of Food Intakes by Individuals 1994-96, 1998*. CD-Rom. 2000a.

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