

WIC PROGRAM RESEARCH



The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is one of this country's key food assistance programs. Each month, WIC serves over 8 million low-income, pregnant, breastfeeding, and postpartum women, as well as infants and children up to age 5 who are deemed to be at nutritional risk. The program provides three types of benefits:

- 1) a package of supplemental foods
- 2) nutrition education (including breastfeeding promotion and support)
- 3) health care referrals.

The supplemental foods are usually provided to participants through vouchers for retail purchase of specific foods approved by the program.

Research Highlights

Assessing Diet, Health, and Other Program Outcomes

WIC is based on the premise that early nutrition intervention during times of critical growth and development will not only improve the health status of participants, but will help prevent later health problems. Highlights of FANRP research examining WIC's impact on participants include:

Research Summary

FANRP has been an important source of information on the WIC program. A FANRP-sponsored review of food and nutrition assistance literature concluded that most of the studies of WIC's impact on nutrition and health suggest that WIC participation leads to improved birth outcomes and increases children's iron status and nutrient intake. However, these studies tend to be fairly old, capturing a program that is considerably different from today's program. Research on WIC's impact on some participant groups, such as women, is scarce. FANRP research has been instrumental in improving our understanding of how WIC operates, especially in the area of cost-containment. Several FANRP studies have not only informed, but have led to policy changes, for example in the methodology for estimating the number of people eligible for WIC and in allowable nutrition risk criteria.

Most research prior to 2004 suggests that WIC has a positive impact on birth outcomes

A comprehensive literature review of WIC's impact on participants' health concluded that research published prior to 2004 was strongly suggestive of a positive impact on birthweight and a number of other birth-related outcomes associated with WIC participation during pregnancy and significantly lower birth-related Medicaid costs (Fox et al., 2004). However, various empirical problems—such as unobserved differences between women who choose to participate in the program and those who choose not to participate even though eligible—make it difficult to determine the magnitude of WIC's contribution to the observed differences in outcomes.

Research questions WIC's effect on birthweight

There has been a debate in recent years over how a pregnant woman's participation in WIC affects her baby's birthweight, an outcome affirmed by prior research. A controversial study of women on Medicaid in New York City from 1988 to 2001 found no relationship between prenatal WIC participation and measures of fetal growth among singletons although there was a strong pattern of association between WIC and preterm births

among U.S.-born Black twins (Joyce et al., 2005). The authors concluded that mothers' prenatal participation in WIC had relatively little impact on infant health in New York City during the study period.

WIC affects children's consumption of some kinds of food

In the first study to examine in detail children's consumption of the types of foods contained in the WIC food packages, Oliveira and Chandran (2005) found that "WIC-approved foods" are an important part of children's diets, accounting for at least one-quarter of the total calories consumed by children. The study provided strong evidence that participation in WIC increases the consumption of at least some types of "WIC-approved foods," namely 100-percent fruit and vegetable juices and low-sugar cereals, and decreases the consumption of "non-WIC" beverages such as soft drinks. 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 providing in the WIC food packages specific foods that are most likely to improve the dietary patterns of WIC participants.

WIC improves children's iron status and increases children's nutrient intake

Previous research suggests that WIC participation improves children's iron status, and, based in part on several recent FANRP studies, increases children's intake of selected nutrients (Fox et al., 2004). However, because the methodology to assess the adequacy of nutrient intake postdates these studies, it is unclear whether these increases in nutrient intake are associated with any "benefits," such as increased proportion of WIC children with adequate nutrient intakes.

Participation in WIC reduces the risk of child abuse or neglect

Lee et al. (2006) examined the relationship between WIC participation and young children's health and mistreatment outcomes. Participation in WIC, either separately or jointly with participation in the Food Stamp Program, was found to reduce the risk of child abuse or neglect and several nutrition-related health problems, such as anemia, failure to thrive, and nutritional deficiency. These findings are significant because they offer some evidence that the family support provided by participation in programs such as WIC and the Food Stamp Program may protect children from abuse and neglect although the programs are not directly intended to do so.

Important information gaps remain regarding WIC's impact on some participant groups

Research on WIC impacts on pregnant women and breastfeeding and non-breastfeeding postpartum women is scarce and relatively dated (Fox et al., 2004). There is also no solid evidence about the impact of WIC on the initiation and duration of breastfeeding.

Nutrition education had minimal impact on WIC participants' food purchasing behavior

Nutrition education is a key component of the WIC program. Federal regulations require the WIC program to offer at least two nutrition education contacts to the participant during each certification period. However, the effect of nutrition education on participants' food consumption behavior is difficult to ascertain. Bell and Gleason (2007) examined whether WIC clients in Washington State changed their food purchasing behavior related to the fat content of milk and cheese after receiving nutrition education directed at encouraging the purchase of 1-percent and skim milk, as well as low-fat cheese, in order to prevent and reduce obesity. The researchers found no significant change in purchasing patterns among the study participants after the nutrition education intervention. Focus group participants explained that taste preference, pressure from family members, and historical purchasing patterns influenced their choice of milk or cheese more than WIC nutrition education. The results point out the difficulty of changing food consumption behavior.

Program Access and Participation

WIC is a discretionary grant program funded annually at a specific grant level determined by Congressional appropriations. As a result, the number of eligible people who can participate depends on the annual appropriation and the cost of operating the program.

Errors in previous estimation methods resulted in an underestimate of persons eligible for WIC

To help inform budgetary decisions for WIC, USDA estimates the number of individuals who are eligible to participate and who choose to participate if the program is fully funded (i.e., if there are sufficient funds to serve all who are eligible and wish to participate). The accuracy of these estimates is important. Since eligible people can participate in the program only to the extent that funds are available, underestimating the number of people eligible and likely to participate in WIC could result in some eligible persons not being able to receive WIC benefits. On the other hand, overestimating the number of people eligible and likely to

participate may unnecessarily limit appropriations to other important programs. Reported participation rates greater than 100 percent among some WIC participant groups in the 1990s raised concern about the program's integrity (i.e., that more people participated than were eligible) and questions about how program eligibility was estimated. In response, FANRP sponsored a study by the Committee on National Statistics of the National Research Council to review the methods used to estimate the national number of people eligible and likely to participate in WIC under full funding. After concluding that flaws in the estimation method resulted in an underestimate of eligibility, the Committee made several concrete recommendations for improving the estimation procedures which have since been incorporated into the estimates (National Research Council, 2003). The improved estimates show participation rates below 100 percent for all WIC participant groups, alleviating many of the concerns about program integrity.

Women in poor health are more likely to participate in WIC earlier

Increasing the proportion of pregnant women who join WIC early in their pregnancy is important because previous research suggests that earlier participation improves birth outcomes. Swann (2007) found that women with low income, low education, no insurance, and poor health participate in WIC earlier than other women. Automatic WIC eligibility for Medicaid recipients was associated with earlier WIC participation for women experiencing their first pregnancy. WIC participation during a first pregnancy was strongly correlated with earlier WIC participation during a second pregnancy. Thus, outreach toward women pregnant for the first time may be particularly important.



National Dairy Council/Dairy Management Inc.

Program Administration

Because food costs account for about three-quarters of the total cost of the WIC program, State WIC agencies have implemented a number of practices designed to contain food costs. FANRP research has provided important insights on these cost-containment practices and other program operation issues.

Retail markup accounts for most of the cost to WIC of providing infant formula

The primary WIC cost-containment practice is the use of infant formula rebates. Typically, WIC State agencies obtain discounts in the form of rebates from infant formula manufacturers. As a result of the rebates, the cost to WIC for each can of formula provided through the program has two components: 1) net wholesale price, which is equal to the wholesale price of formula minus the amount of the rebate; and 2) retail markup (fig. 4-1). Oliveira and Davis (2006) found that the retail markup accounts for most (about 60 percent) of the cost to WIC of infant formula in most States. However, both retail markup and net wholesale price have increased over time. Since WIC is a discretionary program with fixed funding, higher costs mean that fewer persons will be served (or that additional funds need to be appropriated).

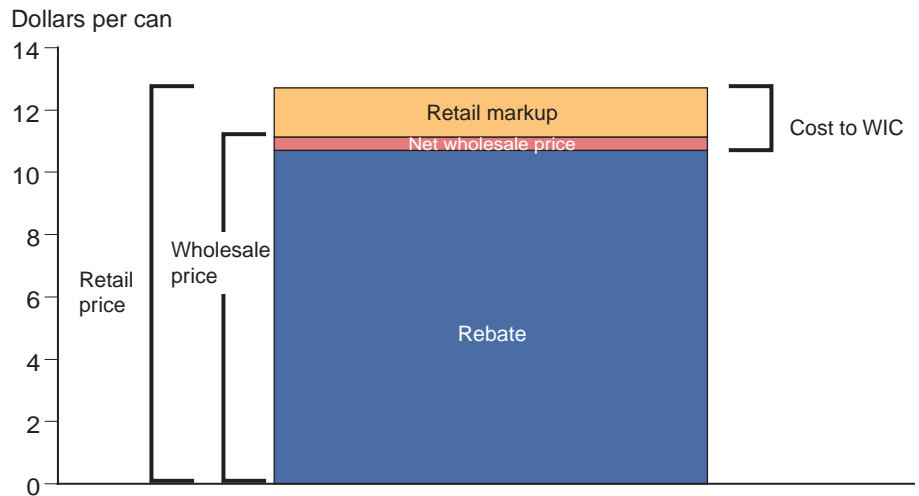
Other WIC cost-containment practices result in substantial food cost savings as well

WIC agencies have implemented cost-containment practices in addition to infant formula rebates. These practices include limiting authorized food vendors (such as supermarkets and grocery stores) to outlets with lower food prices; limiting food-item selection according to brand, package size, form, or price (for instance, only

Figure 4-1

Relationship of infant formula rebate, net wholesale price, and retail markup for can of powdered formula

Rebates significantly reduce the costs of infant formula to the WIC Program



Note: Example based on a 12.9 oz-can of Ross Similac Advance with iron (powder) in the California WIC program during the 2nd quarter of 2004.

Source: Oliveira and Davis, 2006.



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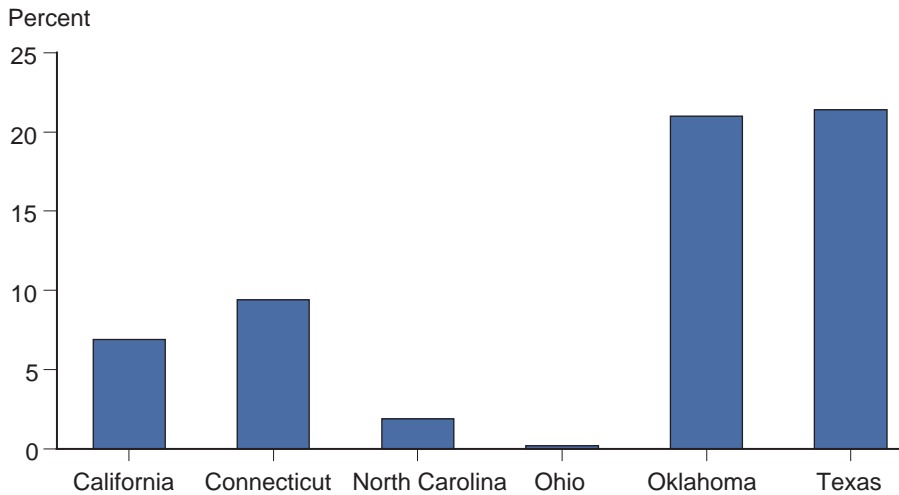
allowing generic cereals or requiring purchase of least-cost items); and negotiating rebates with food manufacturers or suppliers. Concerns have been raised that if cost-containment policies are overly restrictive, then WIC participants' access to and consumption of prescribed foods may be reduced. Some have also questioned whether cost-containment prac-

tices save enough in food costs to offset their additional administrative costs. A congressionally mandated study to assess the impacts of WIC cost-containment practices (other than the use of infant formula rebates) found that the cost-containment practices resulted in substantial food cost savings (reducing food costs by an average of 15 percent), had few

Figure 4-2

Estimated food cost savings from cost-containment practices by State

Cost-containment practices reduced average food package costs by 0.2 to 21.4 percent depending on practices implemented



Source: Kirlin et al., 2003.

adverse impacts on WIC participants, and were relatively inexpensive to manage and operate (Kirlin et al., 2003) (fig. 4-2). The six-State study, the first to examine the balance struck by WIC between the goals of nutritional improvement and customer satisfaction and the need to make the most of available program funds, provides strong evidence that cost-containment practices can be effective without jeopardizing WIC program goals.

Prices drive interstate variations in WIC food costs

Although the average monthly per-participant cost of providing WIC foods varies markedly across the States, little is known about the factors behind these differences. For example, to what extent are these cost variations due to factors under a State's control—such as cost-containment practices—or due to factors outside of a State's control—such as the proportions of enrollees qualifying for different foods, or differences in food prices? If all interstate food-cost variation was caused by differing policies, then policies in low-cost States could

provide cost-cutting insights for high-cost States. Davis and Leibtag (2005) found that variations in food prices played the largest role in the differing costs of WIC food packages from State to State; the differing composition of participants (e.g., infants, breastfeeding, pregnant, or postpartum women) played a much smaller role.

WIC eligibles may be presumed to be at risk of failing to meet dietary guidelines

To be eligible to receive WIC benefits, applicants must meet one of several nutrition risk criteria, one of which is dietary risk. The role of dietary risk in establishing eligibility for WIC is crucial, since many children and postpartum women are found to meet the nutritional risk criteria solely on the basis of dietary risk. FANRP sponsored a study by the Institute of Medicine (2002) that evaluated the use of various dietary assessment tools and concluded:

- 1) commonly used dietary assessment methods (e.g., 24-hour Dietary Recalls, and Food

Frequency Questionnaires) are not appropriate for determining nutrient deficiencies in individuals and for WIC eligibility purposes,

- 2) nearly all low-income women in the childbearing years and children ages 2 to 5 are at dietary risk and may benefit from WIC services and may be presumed to meet the nutrition risk requirement through the category of dietary risk based on failure to meet Dietary Guidelines.

Based on the report's recommendations, USDA's Food and Nutrition Service (FNS) discontinued the use of 24-hour Dietary Recalls and Food Frequency Questionnaires to quantify diet in order to determine WIC eligibility.

Maternal overweight becomes new risk criterion

Better understanding what risk factors at birth are associated with the development of childhood obesity could help to identify children who are in need of early obesity prevention efforts. Whitaker (2004) found among low-income children, maternal obesity in early pregnancy more than doubles the risk of a child's being obese at 2 to 4 years of age. Early results from this study contributed to WIC officials' implementing a new WIC nutritional risk criterion, titled "at risk for overweight" related to mother's obese weight status. This new criterion permits income-eligible children to be certified for WIC if they are born to mothers who were obese in early pregnancy.

The original nutrients targeted by WIC are no longer lacking in the diets of most U.S. preschoolers

WIC food packages were designed in the early 1970s to include foods rich in nutrients that were lacking in the diets of the target population – protein, calcium, iron, and vitamins A and C. However, since the initial development of the WIC food packages, U.S. food consumption patterns and dietary standards have changed, the prevalence of overweight and obesity has increased, and the WIC population has become more ethnically diverse. According to two FANRP-sponsored studies, it appears that of the original nutrients targeted by WIC, protein, calcium, vitamin A, and vitamin C are no longer lacking in the diets of infants and preschool children in the United States (Devaney et al., 2005, and Cole and Fox, 2004b). Most infants and preschool children also appear to consume adequate amounts of iron, although biochemical indicators suggest some children are still iron-deficient. Overconsumption of calories may be a problem for both WIC and non-WIC children and inadequate consumption of vitamin E and magnesium also appears to be a problem for many children.

Fruit and vegetable vouchers prove successful

In recent years, there has been considerable discussion of the possibility of adding fresh fruits and vegetables to the WIC food packages, given their role in optimizing diets. A study by Herman et al. (2006) investigated the effects of providing postpartum WIC women with supplemental vouchers specifically for the purchase of fresh fruits and vegetables, at either a local supermarket or nearby farmers' market. The study found a high redemption rate of the vouchers (nearly 90 percent) for the purchase of a wide variety of fresh fruits and vegetables. No particular barriers to voucher redemption by either participants or retail vendors were reported. These findings were used by the Institute of Medicine's Committee to Review the WIC Food Packages to support their recommendation that WIC participants be given a cash voucher for the purchase of fresh fruits and vegetables in supermarkets.

State and local WIC agencies use a range of innovative practices

State and local WIC agencies are constantly developing and testing new and improved ways of delivering services. Gordon et al. (2004) identified and examined a range of innovative

practices at 20 State or local WIC agencies. Their study focused on WIC practices in three main areas:

- 1) breastfeeding promotion and support (including peer counseling and extensive support programs for high-risk groups),
- 2) nutrition and health education (including obesity prevention, preventive health care, and staff training),
- 3) service delivery (including delivery in nontraditional settings such as in clients' home and workplaces).

A number of the programs serve high-risk groups such as teenagers, premature infants, immigrants, and those with alcohol or drug abuse problems. For each innovative program, the report provided background information and discussed the source of the innovation, key challenges, implementation lessons learned, evidence of its success, and the feasibility of replicating the practice.

Breastfeeding results in significant savings

Mothers who participate in the WIC program are encouraged to breastfeed their infants if possible. In a review of studies conducted in the United States to assess the economic benefits of breastfeeding, Weimer (2001) found that a minimum of \$3.6 billion would be saved if the prevalence of babies being breastfed exclusively increased from 1996 rates to those recommended by the Surgeon General by 2000. This figure reflected approximately \$3.1 billion attributable to preventing childhood illnesses and premature deaths, and an additional \$0.5 billion in annual savings associated with reducing traditional medical expenditures (for example, doctors' or hospital visits, laboratory tests, among others) and indirect costs, such as lost earnings of parents caring for sick children.

