



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

United States  
Department of  
Agriculture



Economic  
Research  
Service

Food Assistance  
and Nutrition  
Research Report  
Number 27

# The WIC Program

## Background, Trends, and Issues

Victor Oliveira  
Elizabeth Racine  
Jennifer Olmsted  
Linda M. Ghelfi



**The WIC Program: Background, Trends, and Issues.** By Victor Oliveira, Elizabeth Racine, Jennifer Olmsted, and Linda M. Ghelfi, Food and Rural Economics Division, Economic Research Service, U.S. Department of Agriculture. Food Assistance and Nutrition Research Report No. 27.

## **Abstract**

The mission of the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is to safeguard the health of low-income women, infants, and children up to age 5 who are at nutritional risk. WIC provides nutritious foods to supplement diets, nutrition education, and referrals to health care and other social services. Administered by USDA's Food and Nutrition Service (FNS), the program has grown rapidly since its establishment in 1972, and is now one of the central components of the Nation's food and nutrition assistance system. Almost half of all infants and about one-quarter of all children 1-4 years of age in the United States now participate in the program. Federal program costs were almost \$4 billion in fiscal 2000, making WIC the country's third-largest food assistance program in terms of total expenditures. WIC accounts for almost 12 percent of total Federal expenditures for food and nutrition assistance. This report presents comprehensive background information on the WIC program—how it works, its history, program trends, and the characteristics of the population it serves. It also examines issues related to program outcomes and administration. How the WIC community responds to these issues may have a large impact on future program operations.

# Contents

Summary .....	iii
Introduction .....	1
<b>Chapter I. Overview of the WIC Program .....</b>	<b>2</b>
Participant Eligibility .....	2
Participant Benefits .....	3
Food Delivery Systems .....	4
Administration of WIC .....	5
Priority System .....	5
Cost-Containment Measures .....	6
<b>Chapter II. History of the WIC Program .....</b>	<b>7</b>
Legislative and Regulatory History .....	7
Trends in Participation .....	11
Trends in Program Costs .....	12
<b>Chapter III. Characteristics of WIC Participants .....</b>	<b>13</b>
<b>Chapter IV. Outcome-Based Issues in WIC .....</b>	<b>15</b>
WIC’s Effect on the Health of Participants .....	15
WIC and Breastfeeding Rates .....	16
WIC and Childhood Obesity .....	18
WIC’s Nutrition Education and Health Care Referral Programs .....	20
Impact of the WIC Farmers’ Market Nutrition Program .....	21
<b>Chapter V. Administrative Issues in WIC .....</b>	<b>23</b>
The WIC Food Package .....	23
WIC Eligibility Standards .....	24
Access and Participation Issues .....	26
Estimating WIC Eligibility .....	27
Assessment of WIC’s Cost-Containment Practices .....	29
Fraud and Abuse in the WIC Program .....	30
<b>Chapter VI. Conclusions .....</b>	<b>33</b>
<b>References .....</b>	<b>34</b>
<b>Appendix—Ongoing WIC-Related Research Funded by the Economic     Research Service and the Food and Nutrition Service .....</b>	<b>38</b>

## Summary

The mission of the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is to safeguard the health of low-income women, infants, and children up to age 5 who are at risk for poor nutrition. WIC provides nutritious foods to supplement diets, nutrition education, and referrals to health care and other social services. Administered by USDA's Food and Nutrition Service (FNS), the program is available in each State, the District of Columbia, 33 Indian Tribal Organizations, Puerto Rico, the Virgin Islands, American Samoa, and Guam.

WIC is one of the central components of the Nation's food assistance system. Almost half of all infants and about one-quarter of all children 1-4 years of age in the United States now participate in the program. Federal program costs were almost \$4 billion in fiscal 2000, making WIC the country's third-largest food assistance program in terms of total expenditures. WIC accounts for almost 12 percent of total Federal expenditures for food and nutrition assistance.

WIC was created as a 2-year pilot program in 1972 by an amendment to the Child Nutrition Act of 1966 and was made permanent in 1975. The program was established during a time of growing public concern about malnutrition among low-income mothers and children. WIC is based on the premise that early intervention programs during critical times of growth and development can help prevent future medical and developmental problems. Since its inception, the number of participants in the program has expanded dramatically, from an average 88,000 participants per month in 1974 to an average 7.2 million in 2000. Strong congressional support, generated by various evaluations that found WIC to have high rates of return for its investment, resulted in increased funding for WIC, which, along with effective cost-containment practices, allowed more people to participate in the program. Legislative and regulatory actions and Federal/State/local partnerships that encouraged State innovations such as infant formula rebates have helped shape and refine the program. In recent years, participation in WIC has leveled off, as appropriations for WIC have stabilized at what is believed to be near full-funding levels.

As a gateway through which many low-income families enter the public health system, WIC reaches a large number of this Nation's infants and children. Therefore, having the most effective WIC program possible can have an important influence on the health of America. Issues have been raised about the impact of the WIC program. These include WIC's effect on breastfeeding rates, prevalence of childhood obesity, and the health of participating infants, children, and mothers.

In addition to issues relating to WIC's impact on the health of program participants, numerous issues are associated with administering a program of WIC's size and complexity. Issues related to the composition of the WIC food package, cost-containment practices, program accessibility, eligibility standards, and reduction of fraud and abuse in the program, directly affect the women, infants, and children who participate in the program. Other groups, including food retailers, infant formula manufacturers, and farmers, are indirectly affected.

While some of these issues have been addressed in the literature, others have not. Additional research to determine the optimal method of operating the WIC program to meet the needs of program participants given resource constraints will help shed light on many of the issues currently facing the WIC program.

# The WIC Program

## Background, Trends, and Issues

**Victor Oliveira  
Elizabeth Racine  
Jennifer Olmsted  
Linda M. Ghelfi**

### Introduction

The mission of the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is to safeguard the health of low-income women, infants, and children up to age 5 who are at nutritional risk, by providing nutritious foods to supplement diets, nutrition education, and referrals to health care and other social services. WIC is based on the premise that early intervention programs during critical times of growth and development can help prevent future medical and developmental problems. Administered by USDA's Food and Nutrition Service (FNS), the program provides grants for supplemental foods, nutrition services, and administration to 88 WIC State agencies, including the 50 States, the District of Columbia, Guam, the U.S. Virgin Islands, American Samoa, the Commonwealth of Puerto Rico, and 33 Indian Tribal Organizations.

Since its establishment in 1972, WIC has grown rapidly while becoming one of the central components of the Nation's food assistance system. In fiscal 2000, WIC served an average of 7.2 million participants per month (USDA, 2001c). Almost half of all infants and about one-quarter of all children 1-4 years of age in the United States now participate in the program.

Federal program costs totaled almost \$4 billion in fiscal 2000, making WIC the country's third-largest food and nutrition assistance program in terms of total expenditures, trailing only the Food Stamp Program (\$17.1 billion) and the National School Lunch Program (\$6.1 billion) (USDA, 2001c). WIC accounts for almost 12 percent of the total Federal Government expenditures for food and nutrition assistance.

WIC experienced many significant changes as it evolved into the current program. As a mature program, it continues to face a number of issues. How the WIC community responds to these issues may have a large impact on the program's future operation.

This report has two primary objectives. The first is to present comprehensive background information on the WIC program, specifically how it works, its history, program trends, and the characteristics of the population it serves. The second is to examine a number of issues currently facing the program, specifically those related to program outcomes and program administration. In addition, descriptions of ongoing WIC-related research being conducted by USDA's Economic Research Service (ERS) and Food and Nutrition Service (FNS) are presented in the appendix.

# Overview of the WIC Program

WIC is a large and complex program that supplies a package of benefits to a highly targeted group of participants who must meet a number of eligibility requirements. Administratively, WIC operates at three levels—Federal, State, and local. WIC is not an entitlement program and the number of people served by the program may be limited by funding levels established by Congress. Cost-containment practices play a major role in increasing the number of participants the WIC program can serve.

## Participant Eligibility

To qualify for WIC, applicants must meet categorical, residential, income, and nutrition risk eligibility requirements.

- (1) **Categorical eligibility.** To participate in the WIC program, a person must be:
  - A pregnant woman (includes women up to 6 weeks postpartum),
  - A nonbreastfeeding woman up to 6 months postpartum,
  - A breastfeeding woman up to 1 year postpartum,
  - An infant under 1 year of age, or
  - A child up to his/her fifth birthday.
- (2) **Residential eligibility.** WIC applicants must reside within the State where they establish eligibility and receive benefits.
- (3) **Income eligibility.** The family income of WIC applicants must meet specified guidelines.<sup>1</sup> All WIC State agencies currently set the income cutoff at the maximum 185 percent of the Poverty Income Guidelines (\$32,653 for a family of four in July 2001). Applicants who participate or who have certain family members who participate in the Food Stamp, Medicaid, or Temporary Assistance for Needy Families (TANF) programs, are adjunctively income eligible, that is, they are deemed to meet the income eligible criteria automatically.<sup>2</sup> (TANF in 1997 replaced the Aid to Families with Dependent Children program (AFDC).) In addition, State agencies have the option to deem individuals automatically income eligible if they participate in other State-administered programs that use income guidelines at or below 185 percent of the Poverty Income Guidelines and routinely require income documentation.
- (4) **Nutrition risk.** Applicants must be at nutrition risk, as determined by a health professional such as a physician, nutritionist, or nurse. Federal regulations recognize five major types of nutrition risk for WIC eligibility: (1) detrimental or abnormal nutritional conditions detectable by biochemical or anthropometric measurements (such as anemia, low maternal weight gain, or inadequate growth in children); (2) other documented nutritionally related medical conditions (such as nutrient deficiency diseases, some specific obstetrical risks, or gestational diabetes); (3) dietary deficiencies that impair or endanger health (such as highly restrictive diets, inadequate diet, or inappropriate infant feeding); (4) conditions that directly affect the nutritional health of a person, including alcoholism or drug abuse; and (5) conditions that predispose persons to inadequate nutritional patterns or nutritionally related medical conditions, including but not limited to, homelessness and migrancy (7 CFR 246.2).

<sup>1</sup>WIC regulations state that the maximum allowable family gross income (i.e., before taxes are withheld) must not exceed the guidelines for reduced-price school meals—185 percent of the U.S. Poverty Income Guidelines (7 CFR 246.7). State agencies may set the income guidelines equal to State or local guidelines for free or reduced-price health care as long as they are equal to or less than 185 percent of the poverty guidelines and not less than 100 percent of the poverty guidelines.

<sup>2</sup>In April 1998, over half of all WIC participants also participated in at least one of these three programs (Bartlett et al., 2000).

WIC participants are typically eligible to receive benefits for 6-month periods; they then must be recertified in order to continue to receive benefits. However, pregnant women are certified for the duration of their pregnancy and up to 6 weeks postpartum, and most infants are certified up to their first birthday.

## Participant Benefits

The WIC program offers three types of benefits to all participants free of charge: a supplemental food package, nutrition education, and referrals to health care and social services.

**Supplemental food package.** WIC provides participants with supplemental foods that are high in nutrients frequently lacking in their diets. Such a lack may result in adverse health consequences. The types of foods included in the WIC food package are chosen for their broad cultural and ethnic appeal, commercial

availability, versatility in preparation and use, and administrative feasibility (USDA, 1997). The food package is supplemental; it is not intended to meet the total nutritional needs of the participants. There are seven different food packages depending on the category of the recipient: (1) infants through 3 months, (2) infants 4 through 12 months, (3) children or women with special dietary needs, (4) children 1 to 5 years old, (5) pregnant and breastfeeding women (basic), (6) nonbreastfeeding postpartum women, and (7) breastfeeding women (enhanced). WIC food packages include combinations of the following foods: iron-fortified infant formula; iron-fortified infant and adult cereal; vitamin C-rich fruit and/or vegetable juice; eggs; milk; cheese; and peanut butter and/or dried beans or peas, as shown in table 1. Special infant formulas and certain medical foods may also be provided by the WIC food package when prescribed by a physician or health professional for a specific medical con-

**Table 1—WIC food packages' maximum monthly allowances**

Food	WIC food packages						
	I Infants 0-3 months	II Infants 4-12 months	III Children/ women with special dietary needs	IV Children 1-5 years	V Pregnant & breastfeeding women	VI Nonbreastfeeding postpartum women	VII Breastfeeding women enhanced package <sup>1</sup>
Infant formula (concentrated liquid) <sup>2</sup>	403 fl oz	403 fl oz	403 fl oz <sup>3</sup>				
Juice (reconstituted frozen) <sup>4</sup>		96 fl oz <sup>5</sup>	144 fl oz	288 fl oz	288 fl oz	192 fl oz	336 fl oz
Infant cereal	24 oz						
Cereal (hot or cold)			36 oz	36 oz	36 oz	36 oz	36 oz
Milk				24 qt	28 qt	24 qt	28 qt
Cheese <sup>6</sup>							1 lb
Eggs <sup>7</sup>				2-2½ dozen	2-2½ dozen	2-2½ dozen	2-2½ dozen
Dried beans/peas and/or peanut butter <sup>8</sup>				1 lb or 18 oz	1 lb or 18 oz		1 lb and 18 oz
Tuna (canned)							26 oz
Carrots (fresh) <sup>9</sup>							2 lb

<sup>1</sup>Available to breastfeeding women whose infants do not receive formula from the WIC program.

<sup>2</sup>Powdered or ready-to-feed formula may be substituted at the following rates: 8 lb powdered per 403 fl oz concentrated liquid; and 26 fl oz ready-to-feed per 13 fl oz concentrated liquid.

<sup>3</sup>Additional formula may be available up to 52 fl oz concentrated liquid or 1 lb powdered or 104 fl oz ready-to-feed.

<sup>4</sup>Single strength juice may be substituted at a rate of 92 fl oz per 96 fl oz reconstituted frozen.

<sup>5</sup>Infant juice may be substituted for adult juice at the rate of 63 fl oz per 92 fl oz single strength adult juice.

<sup>6</sup>A choice of various forms of milks and cheeses may be available. Cheese may be substituted for fluid whole milk at the rate of 1 lb per 3 qt, with a 4-lb maximum. Additional cheese may be issued in cases of lactose intolerance.

<sup>7</sup>Dried egg mix may be substituted at the rate of 1.5 lb per 2 dozen fresh eggs; or 2 lb per 2½ dozen fresh eggs.

<sup>8</sup>1 lb of dry beans/peas or 18 oz of peanut butter.

<sup>9</sup>Frozen carrots may be substituted at the rate of 1 lb per 1 lb fresh; or canned carrots at the rate of 16-20 oz canned per 1 lb fresh.

Source: USDA, 1997.



dition. Packages are tailored to the specific needs of each participant category. For example, breastfeeding women whose infants do not receive infant formula from WIC can receive an enhanced food package that includes canned tuna and carrots in addition to other WIC foods.

WIC regulations specify the maximum quantities of supplemental foods that may be prescribed to WIC participants (7 CFR 246.10). The authorized maximum monthly allowances of all WIC foods must be made available to participants if medically and nutritionally warranted. Local WIC agencies may tailor an individual's food package based upon a participant's nutritional or health status, their nutrition risk factors, and food restrictions, intolerances, and preferences.<sup>3</sup>

**Nutrition education.** WIC makes nutrition education available to all participants (or to the parents or caretakers of infant or child participants). WIC regulations state that nutrition education should be designed to achieve two broad goals: (1) stress the relationship between proper nutrition and good health, and raise awareness about the dangers of using drugs and other harmful substances, and (2) assist the nutritionally at-risk individual in achieving a positive change in food habits, resulting in improved nutritional status and in the prevention of nutrition-related problems through the optimal use of the supplemental foods and other nutritious foods (7 CFR 246.11). Local WIC agencies are required to offer participants at least two nutrition education sessions during each 6-month period in either an individual or group setting. Individuals who do not attend the nutrition education activities are not denied the WIC food package.

**Referrals to health care and social services.** WIC was designed to serve as an adjunct to good health care during critical times of growth and development. Local WIC agencies assist WIC participants in obtaining health care and social services (such as the Food Stamp Program, Medicaid, immunization programs, etc.) either through onsite health services or referrals to other agencies.

## Food Delivery Systems

To provide program participants with supplemental food packages, the State agencies may use three types

<sup>3</sup>With the approval of the Department, State agencies may substitute different foods providing the nutritional equivalent of foods prescribed by the Secretary, to allow for different cultural eating patterns (7 CFR 246.10).

of food delivery systems (or any combination of the three):

- (1) Retail—Participants obtain supplemental food by exchanging a food instrument at authorized retail outlets.
- (2) Home delivery—Supplemental food is delivered to the participant's home.
- (3) Direct distribution—Participants pick up supplemental food from storage facilities operated by the State or local agency.

In both home-delivery and direct-distribution food delivery systems, WIC State agencies may purchase the supplemental food in bulk lots and take advantage of discounts available to them. However, most State agencies have found these systems to be infeasible due to the costs associated with administering the program or because of its impact on participants (USDA, 1991). As a result, most participants receive their supplemental foods via retail food delivery systems.<sup>4</sup>

WIC State agencies provide food instruments (e.g., checks or vouchers) to participants who exchange them for supplemental foods at authorized retail outlets. The food instrument specifies the type and quantity of supplemental foods that can be purchased. Most participants periodically pick up their food instruments in person at the local agency or clinic every 1, 2, or 3 months.<sup>5</sup> However, State agencies may issue the food instrument through alternative means, such as mailing or electronic benefit transfer (EBT).<sup>6</sup>

Only vendors authorized by the State agency may accept food instruments. Currently, approximately 48,000 vendors are authorized by the WIC program nationwide. Vendors must charge competitive prices for supplemental foods and cannot collect sales tax on WIC food purchases.

<sup>4</sup>Vermont uses a home delivery system while Mississippi and parts of Chicago, IL, use direct distribution. All other States currently use a retail food delivery system.

<sup>5</sup>WIC regulations state that no more than a 3-month supply of food instruments may be issued to any participant at one time (7 CFR 246.12).

<sup>6</sup>EBT is an electronic process that replaces the paper WIC food instrument. It allows WIC food prescriptions to be authorized to a participant account, which is accessed electronically during the checkout process at an authorized retailer point of sale, where redeemed WIC food benefits are electronically reconciled against the available food balance.

## Administration of WIC

WIC operates through a Federal/State/local partnership. FNS provides cash grants for program nutrition services and administration and for food benefits to 88 WIC State agencies, including Washington DC, U.S. territories, and Indian Tribal Organizations.<sup>7</sup>

State agencies are responsible for program operations within their jurisdictions. They contract with about 2,000 local WIC sponsoring agencies, mostly State and county health departments, but also some public and private nonprofit health or human service agencies. The WIC State agencies allocate funds to them, negotiate rebate contracts with manufacturers of infant formula, and provide assistance to local agencies with respect to program operations.<sup>8</sup>

The local WIC sponsoring agencies provide services to WIC participants either directly, or through almost 10,000 local service sites or clinics, including county health departments, hospitals, mobile vans, community centers, and schools. Local WIC clinics certify applicants, provide nutrition education, make referrals to health care and other social services, and distribute food vouchers to be used at participating retail stores.

WIC is funded primarily by Federal appropriations with no requirement for State matching funds, although some States use their own funds to supplement the Federal grant.<sup>9</sup>

---

<sup>7</sup>In addition, FNS issues regulations, monitors compliance with these regulations, provides technical assistance to the State agencies, and conducts studies of program operation and compliance.

<sup>8</sup>Most of the WIC State-level agencies retain a portion of the funds they receive from USDA for costs incurred for State-level program operations. However, some State agencies, including most of the Indian Tribal Organizations, operate WIC without delegating authority to local agencies (U.S. General Accounting Office, 2000).

<sup>9</sup>According to the U.S. General Accounting Office (2000), 11 of the 55 State-level WIC agencies (including the 50 States, the District of Columbia, American Samoa, the Commonwealth of Puerto Rico, Guam, and the U.S. Virgin Islands, but excluding Indian Tribal Organizations) reported that their State government contributed funds (totaling \$38 million) for nutrition services and administration in fiscal year 1998 (States may also provide funds for food). In addition, some local agencies and Indian Tribal Organizations received non-Federal funds for nutrition services and administration. Some State-level WIC agencies, Indian tribal organizations, and local WIC agencies also received in-kind contributions from non-Federal sources.

The Federal grants to the WIC State agencies are divided into food grants and nutrition services and administration (NSA) grants.<sup>10</sup> Food grants cover the cost of the supplemental food while NSA grants cover the cost of certifying participants, determining nutrition risks, providing outreach and nutrition education services, breastfeeding promotion, printing food instruments, and administering the food delivery system (U.S. General Accounting Office, 1999).<sup>11</sup> At least one-sixth of a State's NSA expenditures must be used for nutrition education, and an additional portion of NSA funds must be used for breastfeeding promotion and support.

## Priority System

WIC is a discretionary grant program funded by appropriations law on an annual basis; therefore, the number of participants that can be served each year depends upon the annual appropriation and the cost of operating the program.<sup>12</sup> The program provides services to as many eligible people as funding allows. Because WIC may not be able to serve all eligible persons, WIC uses a seven-point priority system in order to ensure that those persons at the greatest nutrition risk receive program benefits (table 2). In general, priority is given to persons demonstrating medically based nutrition risks over dietary-based nutrition risks, to pregnant and breastfeeding women and all infants over children, and to children over postpartum women. Expansion of the WIC program during the 1990s allowed a greater number of lower priority applicants to participate and the role of the seven-point priority system in allocating available program slots among applicants decreased in importance relative to previous years when program funds were more limited. Anecdotal evidence suggests that in recent years nearly everyone who was eligible and who applied for the program has been able to participate.

---

<sup>10</sup>Costs to the Federal Government for WIC totaled \$3.9 billion in fiscal 1999, of which about 73 percent was for food and 27 percent was for nutrition services and administration (USDA, 1999d).

<sup>11</sup>The major expense covered by NSA grants is staff salary.

<sup>12</sup>In contrast, USDA's Food Stamp Program is an entitlement program whereby everyone who meets the eligibility criteria may receive benefits if they so choose.

**Table 2—WIC nutritional risk criteria system**

Priority	Description
I	Pregnant women, breastfeeding women, and infants at nutritional risk as demonstrated by hematological or anthropometric measurements, or other documented nutritionally related medical conditions which demonstrate the need for supplemental foods.
II	Except those infants who qualify for Priority I, infants up to 6 months of age of program participants who participated during pregnancy, and infants up to 6 months of age born of women who were not program participants during pregnancy but whose medical records document that they were at nutritional risk during pregnancy due to nutritional conditions detectable by biochemical or anthropometric measurements or other documented nutritionally related medical conditions which demonstrated the person's need for supplemental foods.
III	Children at nutritional risk as demonstrated by hematological or anthropometric measurements or other documented medical conditions which demonstrate the child's need for supplemental foods.
IV	Pregnant women, breastfeeding women, and infants at nutritional risk because of an inadequate dietary pattern.
V	Children at nutritional risk because of an inadequate dietary pattern.
VI	Postpartum women at nutritional risk.
VII	Individuals certified for WIC solely due to homelessness or migrancy and, at State agency option, previously certified participants who might regress in nutritional status without continued provision of supplemental foods.

Source: 7 CFR Subpart C, Section 246.7.

## Cost-Containment Measures

Since 1989, Federal law has required that WIC State agencies enter into cost-containment contracts for the purchase of infant formula used in WIC.<sup>13</sup> Generally, a State agency awards a contract to a manufacturer of infant formula for the exclusive right to sell its product to WIC participants. These sole-source contracts are awarded on the basis of competitive bids: the firm offering the lowest net wholesale cost wins the WIC contract.<sup>14</sup> The contract-winning manufacturer is then billed by the WIC State agencies for rebates on all infant formula purchased by WIC participants with vouchers at authorized retail outlets. Any savings from cost containment accrue to the food portion of the WIC grant, thereby enabling more persons to be served. In fiscal year 2001, WIC is projected to receive almost \$1.5 billion from infant formula rebates, an

amount that supports 28 percent of all WIC participants (USDA, 2000b).

The WIC State agencies use a variety of cost-containment practices in addition to infant formula rebates. Some State agencies have instituted rebate systems for other foods, such as infant cereal and infant fruit juice, but their savings are much smaller than for infant formula.<sup>15</sup> Other cost-containment practices used by some WIC State agencies include limiting WIC food selections to the lowest cost brand, limiting the types and package sizes of WIC foods, restricting the number of vendors, and ensuring that the prices vendors charge for WIC foods are competitive (U.S. General Accounting Office, 1997a). The average cost of the monthly WIC food package in 1998 was \$47.03 before rebates and \$31.76 after all rebates (Bartlett et al., 2000).

<sup>13</sup>WIC accounts for over half of all infant formula sales in the United States (U.S. General Accounting Office, 1998b).

<sup>14</sup>After rebates, WIC agencies paid, on average, 85 percent less than the wholesale price for infant formula in 1996 (U.S. General Accounting Office, 1998b).

<sup>15</sup>Savings from rebates for other food products are lower than for infant formula in part because no other single product accounts for as large a portion of WIC costs as infant formula and because the market characteristics of other products make it unlikely that manufacturers would offer large rebates per item (U.S. General Accounting Office, 1998b).

## History of the WIC Program

While the previous section looked at how the current WIC program operates, this section examines the legislative and regulatory history of WIC and how it evolved into the program of today. Trends in both the number of WIC participants and Federal expenditures on the program are also examined.

### Legislative and Regulatory History

The origins of WIC date back to the 1960s when the Nation began to recognize that many low-income Americans were suffering from malnutrition. Various studies identified hunger as a major problem in this country and events such as the Poor Peoples' March on Washington DC, and the CBS documentary "Hunger in America" helped to publicize the problem (USDA, 1999b). In 1969, the White House Conference on Food, Nutrition, and Health was convened with the intention of focusing national attention and resources on the problem of malnutrition and hunger due to poverty. Among the recommendations stated in the conference report was that special attention be given to the nutritional needs of low-income pregnant women and preschool children (White House Conference on Food, Nutrition, and Health, 1970).

In response to the growing public concern about malnutrition among low-income mothers and children, USDA established the Commodity Supplemental Food Program (originally named the Supplemental Food Program) in 1969 (Institute of Medicine, 1996). The program provided commodities to feed low-income pregnant women, infants, and children up to age 6. However, it was eventually recognized that the available food assistance programs, including the Food Stamp Program and the Commodity Supplemental Food Program, were not meeting the special needs of pregnant women and infants (USDA, 1999c).

In 1968, a group of physicians met with officials from the Department of Health, Education, and Welfare (HEW) and USDA in Washington, DC (Leonard, 1994). The physicians described young women, often pregnant, in their clinics with various ailments that

were caused by the lack of food. Out of this meeting came a plan to build food commissaries, attached to neighborhood clinics, that would be stocked with food. Doctors or clinic staff would prescribe needed foods with the prescription serving as a voucher that the women would take to the commissary to obtain a food package. Later that year, the first USDA commissary program was established in Atlanta, GA.<sup>16</sup> Independently, another voucher program to distribute foods in a Baltimore, MD, neighborhood was developed by Dr. David Paige of Johns Hopkins University.

On September 26, 1972, WIC was formally authorized by an amendment to the Child Nutrition Act of 1966. The legislation (P.L. 92-433, sponsored by Senator Hubert H. Humphrey), established the Special Supplemental *Food* Program for Women, Infants, and Children (WIC) as a 2-year pilot program.<sup>17</sup> The legislation's writers used the earlier Johns Hopkins voucher program as a model, and designed the program to be a 2-year demonstration, with the expectation that the program's benefits would be so overwhelming that it would be continued as a full program (Leonard, 1994). USDA was given responsibility for administering the program that was to provide supplemental foods to participants. No mention was made of providing nutrition education or health care referrals. However, the legislation, which grew out of concern that low-income families were not receiving good health care or proper nutrition, created a close association between the supplemental food aspect of the program and health care services by requiring that nutrition risk was necessary for eligibility and was to be determined by health professionals (U.S. General Accounting Office, 1979). USDA took little action and in 1973 a Federal court judge ordered the agency to implement the program. A USDA task force was established to design the operat-

<sup>16</sup>The commissary in this program was stocked with USDA commodity foods.

<sup>17</sup>In 1994, P.L. 103-448 changed WIC's name to the Special Supplemental *Nutrition* Program for Women, Infants, and Children.

ing guidelines and develop regulations for the program (USDA, 1999c). During this time, legislation (P.L. 93-150) was enacted that authorized federally recognized Indian tribes to act as their own WIC State agencies. Originally, WIC was set up to provide supplemental foods to children up to age 4 and excluded nonbreast-feeding postpartum women. Over 2 years after the legislation that established the WIC Program was enacted, the first WIC site officially opened in Pineville, KY, on January 15, 1974. By the end of the year, WIC was operating in 45 States.

On October 7, 1975, P.L. 94-105 established WIC as a permanent program. The legislation stated, “Congress finds that substantial numbers of pregnant women, infants and young children are at special risk in respect to their physical and mental health by reason of poor or inadequate nutrition or health care, or both. It is, therefore, the purpose of the program authorized by this section to provide supplemental nutritious food as an adjunct to good health during such critical times of growth and development in order to prevent the occurrence of health problems.” Categorical eligibility was extended to nonbreastfeeding women (up to 6 months postpartum) and children up to 5 years of age.<sup>18</sup> Eligibility was limited to persons at nutrition risk and with inadequate income (however, what constituted inadequate income was not defined). Supplemental foods were defined as foods containing nutrients known to be lacking in the diets of populations at nutrition risk, in particular foods containing high quality protein, iron, calcium, vitamin A, and vitamin C. The program was designed to supplement food stamps, and as a result, participation in the Food Stamp Program did not preclude a person from participating in WIC.<sup>19</sup> The legislation required that the program was to begin in areas most in need of special supplemental food, and allowed costs for nutrition education as administrative expenses.

In 1978, P.L. 95-627 defined nutrition risk and established income eligibility standards that were linked to the income standards prescribed for free and reduced-

---

<sup>18</sup>It has been suggested that Congress established the age limit at 5 years as a bridge between WIC and other child nutrition programs that begin when the child enters school (U.S. General Accounting Office, 1985).

<sup>19</sup>However, participation in the Commodity Supplemental Food Program disqualifies a person from participating in the WIC program.

price school meals.<sup>20</sup> The legislation required that nutrition education be provided to all program participants (or their parents or caretakers) and that not less than one-sixth of administrative funds be used for nutrition education activities. The Act also redefined supplemental foods as foods containing nutrients determined by nutrition research to be lacking in the diets of the target population, as prescribed by the Secretary of Agriculture. The Secretary (“to the degree possible”) was also to assure that the fat, sugar, and salt content of the foods prescribed by WIC were appropriate. The Act also established the link between WIC and the third component of its benefit package—referrals to health and other services—by requiring that WIC State agencies describe their plans to coordinate WIC operations with special counseling services such as family planning, immunization, child abuse counseling, and alcohol and drug abuse prevention counseling.

Over time a number of other legislative acts have affected the WIC program (table 3). Among the most important was one requiring WIC State agencies to implement cost-containment practices. In the mid-1980s, infant formula accounted for nearly 40 percent of total WIC food costs and infant formula retail prices were rising more quickly than prices for other foods. These factors led several WIC State agencies to look into cost-containment practices to reduce infant formula costs. In 1987, Tennessee became the first State with a retail food delivery system to implement a rebate system to control costs associated with infant formula. It used competitive bidding to award a contract to a manufacturer of infant formula for the exclusive right to provide its product to WIC participants in the State in exchange for a rebate on the formula. P.L. 101-147, enacted in 1989, required that all WIC State agencies enter into cost-containment contracts for the purchase of infant formula used in WIC. Funding for WIC is fixed by congressional appropriations. Therefore, cost-containment practices allow the program to serve more participants. Since the establishment of the infant formula rebate system, rebates have increased dramatically over time (fig. 1).

This same 1989 act also established adjunct income eligibility for Food Stamp, Medicaid, and AFDC participants. This was intended to simplify the WIC appli-

---

<sup>20</sup>The current guideline for reduced-price school meals is household income at or below 185 percent of the U.S. Poverty Income Guidelines.

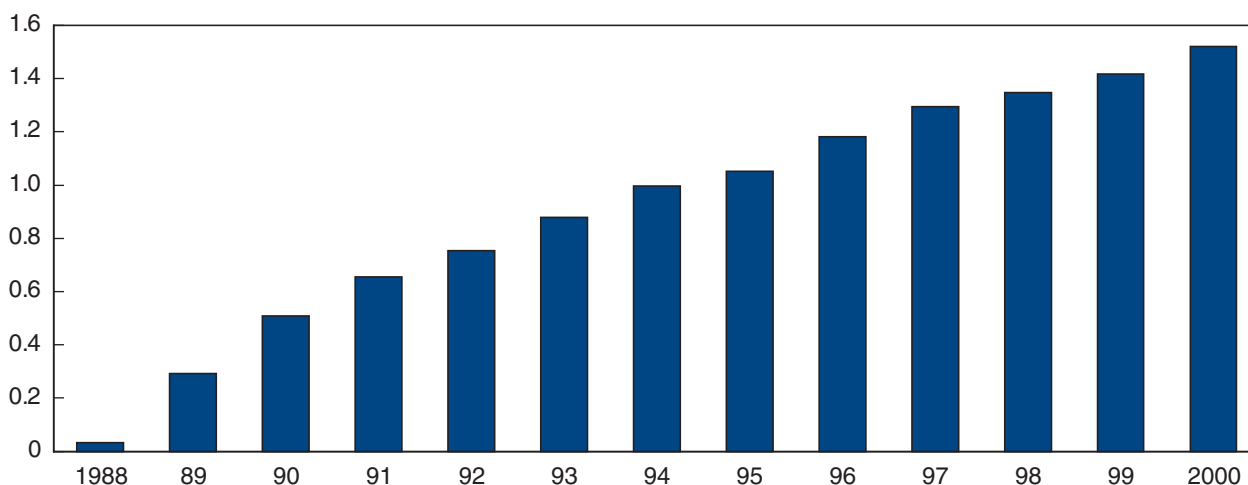
**Table 3—WIC timeline**

- 1972—Legislation created the Special Supplemental Food Program for Women, Infants, and Children (WIC) as a 2-year pilot project (P.L. 92-433).
- 1974—The first WIC site officially opened in Pineville, KY.
- 1975—Legislation established WIC as a permanent national health and nutrition program (P.L. 94-105).
- 1978—The Child Nutrition Amendments of 1978 (P.L. 95-627) established a national income standard for program eligibility based on income standards prescribed for reduced-price school lunches. The standards in 1978 were that a household's income had to be 195 percent of the Federal poverty guidelines or lower. The Act also strengthened WIC's nutrition education component by requiring that nutrition education be provided to all program participants.
- 1979—The WIC Nutritional Risk Priority System was established.
- 1980—USDA set a maximum level of 6 grams of sugar per dry ounce for adult cereals in the WIC food package rule.
- 1981—The maximum income level for reduced-price lunches was lowered to 185 percent of the Federal poverty guidelines. Since the WIC income eligibility standard was tied to the eligibility standard of the National School Lunch Program, the maximum income level for WIC was also lowered to 185 percent of poverty.
- 1986—Tennessee became the first State to implement an infant formula rebate program.
- 1988—The Hunger Prevention Act of 1988 (P.L. 100-435) provided grants in up to 10 States to conduct Farmers' Market Demonstration Projects.
- 1989—The Child Nutrition and WIC Reauthorization Act of 1989 (P.L. 101-147) required WIC agencies with retail food distribution systems to use competitive bidding to procure infant formula unless another cost-containment approach yielded equal or greater savings. The Act established adjunct income eligibility for Food Stamp, Medicaid, and Aid to Families with Dependent Children (AFDC) recipients. The Act also required that USDA promote breastfeeding.
- 1992—The WIC Farmers' Market Nutrition Act of 1992 (P.L. 102-314) established the WIC Farmers' Market Nutrition Program.
- 1992—An enhanced WIC food package (food package VII) was established for women who exclusively breastfeed their infants, to encourage breastfeeding among WIC mothers (*Federal Register*, November 27, 1992).
- 1994—The Healthy Meals for Healthy Americans Act of 1994 (P.L. 103-448) changed the name of the program to the Special Supplemental Nutrition Program for Women, Infants, and Children to emphasize its role as a nutrition program.
- 1997—USDA kicked off the National Breastfeeding Promotion Campaign to encourage WIC participants to begin and continue breastfeeding.
- 1998—The William F. Goodling Child Nutrition Reauthorization Act of 1998 (P.L. 105-336) required at certification that, except in limited circumstances, all applicants for WIC certification must be physically present, document their income, and present proof of residency.
- 1999—WIC State agencies are required to use WIC nutritional risk from a national list established for use in the WIC program. States are not required to use all of the nutritional risk criteria on the list.

Figure 1

**Infant formula rebates, fiscal years 1988-2000**

\$ billions



Source: USDA, Food and Nutrition Service, Office of Analysis, Nutrition, and Evaluation.

cation process since, at that time, the income eligibility criteria for these other programs were lower than those for WIC.<sup>21</sup> This provision also had the effect of increasing the coordination between WIC and other social service programs (Bartlett et al., 2000). Through the provision of onsite health services or referrals to other health-care and social-service providers, WIC has become an important source for an array of health and social services and has “evolved from being an adjunct to maternal and child health services to becoming the gateway program through which many low-income households enter the public health system” (Macro International, 1995).

The late 1980s also saw the beginning of an increased emphasis on breastfeeding promotion and support in WIC.<sup>22</sup> Concern about the low rates of breastfeeding among WIC mothers prompted Congress in 1989 to mandate that \$8 million be targeted for breastfeeding promotion support activities in WIC and allow the use of administrative funds for the purchase of breastfeeding aids by WIC agencies as part of P.L. 101-147 (U.S. General Accounting Office, 1993). A Breastfeeding Promotion Consortium was established in 1990 to exchange ideas on how the Federal Government and private health organizations can collaboratively promote breastfeeding to WIC participants and the general public as the optimal form of infant feeding. A 1991 Act (P.L. 102-342) required that the Secretary of Agriculture establish a breastfeeding promotion program to promote breastfeeding as the best method of infant nutrition and to foster wider public acceptance of breastfeeding in this country. In 1992, USDA established an enhanced WIC food package (food package VII, see table 1) for breastfeeding mothers whose infants do not receive WIC infant formula. In 1994, P.L. 103-448 required WIC to spend at least \$21 (to be adjusted for inflation annually) for breastfeeding promotion on every pregnant or breastfeeding woman participating in the program.

In 1989, P.L. 100-435 established a Farmers’ Market Coupon Demonstration Project in which 3-year grants

---

<sup>21</sup>Eligibility rules and practices in some States now enable persons with incomes above 185 percent of poverty to enroll in Medicaid and therefore be income eligible for WIC (Lewis and Ellwood, 1998).

<sup>22</sup>Although breastfeeding was always of some concern in the WIC program, the level of concern grew as the program grew because of the increasing number of women being served and the WIC’s growing share of the infant formula market (Schwartz et al., 1992).

were awarded in 10 States to create demonstration projects designed to provide WIC participants with coupons that could be exchanged for fresh, unprepared foods at farmers’ markets. Largely as a result of the success of these demonstration projects, P.L. 102-314 in 1992 permanently established the WIC Farmers’ Market Nutrition Program. Because of limited funding, the WIC Farmers’ Market Nutrition Program is only available in some geographical areas. Participants in the program receive \$10-\$20 (States may provide more) worth of coupons per year to be spent at approved farmers’ markets (a set of vouchers can be provided to a household or to an individual). The foods purchased must be fresh, nutritious, unprepared foods (fruits and vegetables).

In recent years, as the potential for loss through the misuse of program funds and violations of program regulations increased as WIC expanded, legislative and regulatory actions have been enacted to strengthen integrity in the program. For example, the 1998 William F. Goodling Child Nutrition Reauthorization Act (P.L. 105-336) required that WIC applicants at certification, except in limited circumstances, must be physically present, document their income if they were not adjunctively income-eligible based on enrollment in certain other programs, and provide proof of residency (to prevent dual participation).<sup>23</sup> The Act also requires WIC State agencies to permanently disqualify from the program those WIC vendors convicted of trafficking in food instruments (i.e., accepting food instruments for cash).

In 1999, the WIC program standardized nutrition risk criteria for program eligibility and assigning individual priority levels (the priority system was designed to ensure that in the event that program funds were not sufficient to serve all eligible persons, WIC benefits would be provided to those most in need). Prior to April 1, 1999, each WIC State agency developed its own nutrition risk criteria, subject to broad Federal parameters.

As of April 1, 1999, however, WIC State agencies are required to use consistently defined nutrition risk criteria selected from a list of nearly 100 risk factors established specifically for use in the WIC program and

---

<sup>23</sup>Dual participation refers to simultaneous participation in the WIC and Commodity Supplemental Food Program as well as to participation in more than one local WIC program at the same time.

issued by FNS (USDA, 1998).<sup>24</sup> State agencies may choose to use some or all of the nutrition risk criteria on the national list; however, at least one of those nutrition risks must be documented to be eligible for WIC and the risk factor(s) must be used as defined by FNS.

## Trends in Participation

In the quarter century since WIC's formal inception, the number of program participants has expanded dramatically. From an average of 88,000 participants per month in 1974, the program grew to an average of 1.9 million in 1980, 4.5 million in 1990, and peaked at 7.41 million in 1997 (fig. 2). This increase in the number of participants was largely the result of increased congressional funding as well as cost-containment measures, especially infant formula rebates. The increase in congressional funding was stimulated in part by favorable evaluations of the program that showed WIC to be a successful and cost-effective program.

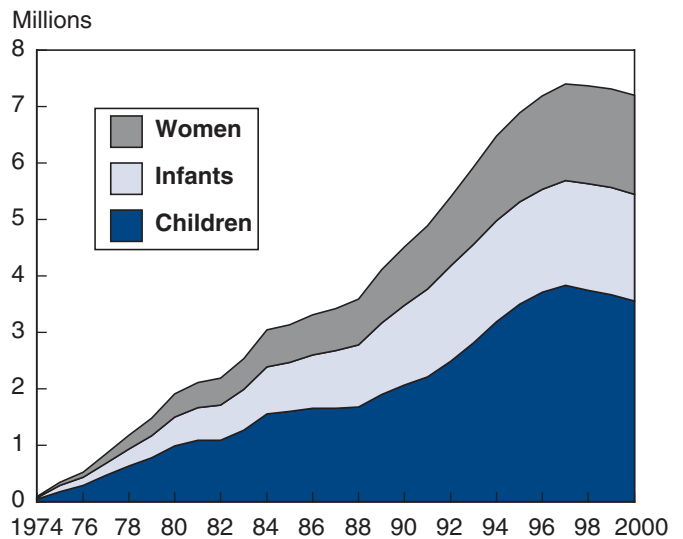
Between 1988 and 1997, participation in WIC grew by 106 percent. Children made up the fastest growing group of WIC participants during this period, increasing by 128 percent compared with 110 percent for women, and 70 percent for infants. Since a large proportion of the higher priority pregnant women and infants already participated in WIC, the program's expansion during this period allowed the program to serve more lower priority children.

WIC's long period of uninterrupted growth in participation ended in fiscal 1998, as the number of WIC participants dropped slightly (less than 1 percent), the first decrease in participation since the program began

<sup>24</sup>Concerned about the variation in criteria used to determine nutritional risk eligibility among WIC State agencies, Congress in 1989 (P.L. 101-147) directed USDA to conduct a review of risk criteria (USDA, 1998). In 1993, USDA awarded a grant to the Institute of Medicine (IOM) to conduct a comprehensive independent review of the nutritional risk criteria in use at that time. Following the publication of the IOM report in 1996, a joint National Association of WIC Directors (NAWD)/FNS workgroup called the Risk Identification and Selection Collaborative (RISC) was formed to review each of the criteria addressed by IOM. In 1998, FNS issued the list of the national nutrition risk criteria.

Figure 2

### Average number of WIC participants per month, fiscal years 1974-2000



Source: USDA, 1999a; USDA, 1999d; USDA, 2001c.

in 1974. This decline was followed by additional small decreases in fiscal 1999 and fiscal 2000. Although program appropriations in real terms were relatively flat or declining during this period, economic conditions may also have influenced this result. The decrease in the total number of participants in the last 3 years was concentrated mostly among children and may be a reflection of the Nation's favorable economic conditions that decreased the demand for food assistance (mothers of older children may be better able than pregnant women and women with infants to take advantage of the increased job opportunities and higher wages resulting from economic growth).<sup>25</sup>

<sup>25</sup>Another possible reason for the decrease in participation is the implementation of residency and income documentation requirements in 1998. The new requirements might have discouraged persons who lacked such proof from applying (i.e., those who are attempting to commit fraud). At the same time, illegal immigrants (who are eligible for WIC) may find it impossible to supply such documentation. Furthermore, the 1996 welfare reform legislation outlawed food stamp benefits for legal immigrants (benefits were restored to a limited number of legal immigrants in 1998) and limited the number of legal immigrants eligible for AFDC/TANF. These changes likely led to confusion over what government benefits legal immigrants could apply for. Therefore, legal immigrants might be less likely to apply for WIC and some food stamp and AFDC/TANF caseworkers may have stopped referring them to WIC.

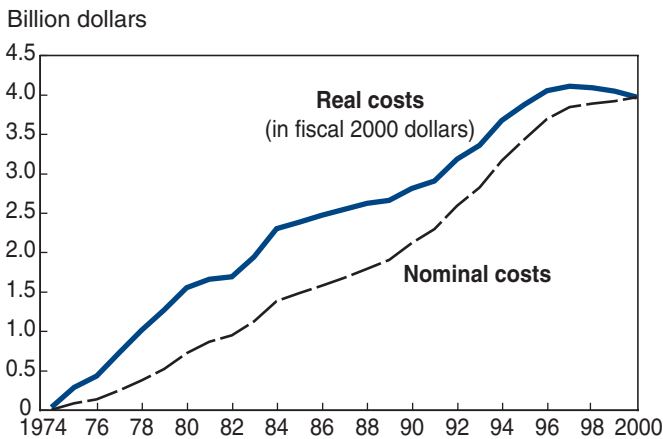


## Trends in Program Costs

Mirroring the increase in participation, costs of the WIC program to the Federal Government also increased dramatically over time. Total WIC costs increased from \$10.4 million in fiscal 1974 to almost \$3.9 billion in fiscal 2000 (fig. 3).<sup>26</sup> Even after adjusting for inflation, WIC costs (in 2000 dollars) increased each year from fiscal 1974 to fiscal 1997. The increase in total program costs was due largely to the increase in the number of participants served by the program as the average cost of the monthly per person WIC food

<sup>26</sup>Total WIC costs include food costs, administrative costs, as well as cost related to program evaluation, the Farmers' Market Nutrition Program, and special projects. Food costs totaled \$2.8 billion in fiscal 1999, or about 73 percent of the total cost of the WIC program (USDA, 1999d).

Figure 3  
**Real and nominal WIC program costs, fiscal years 1974-2000**

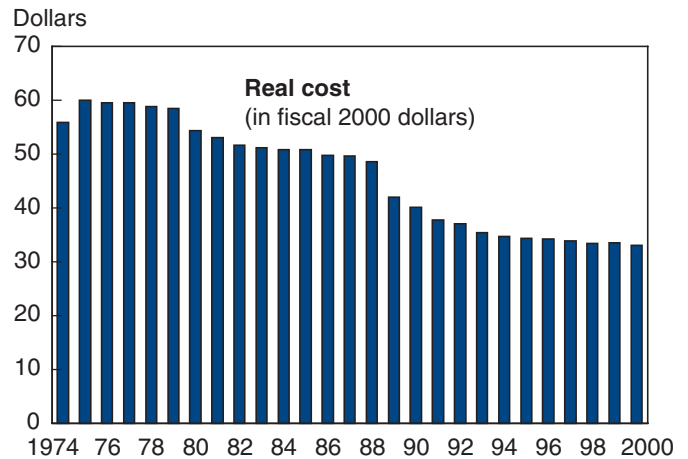


Note: Real costs were estimated using the Consumer Price Index for All Urban Consumers (CPI-U).  
Source: USDA, 1999a; USDA, 1999d; USDA, 2001c.

package decreased during this period (fig. 4). In real terms (in 2000 dollars, after adjusting for inflation), the average monthly cost per person of the WIC food package decreased from almost \$60 in the mid-1970s to \$33 in 2000, attesting to the effectiveness of the program's cost-containment measures that WIC State agencies began to initiate during the late 1980s.

Since WIC is a discretionary program, its funding is determined by annual appropriations law. As the program has approached full participation in recent years (whereby every eligible person who applies for WIC is accepted into the program), annual appropriations have leveled off. As a result, real total program costs have actually decreased slightly in each of the past 3 years.

Figure 4  
**Average real cost of the per person WIC food package, fiscal years 1974-2000**



Note: Real costs were estimated using the Consumer Price Index for All Urban Consumers (CPI-U).  
Source: USDA, 1999a; USDA, 1999d; USDA, 2001c.

## Characteristics of WIC Participants

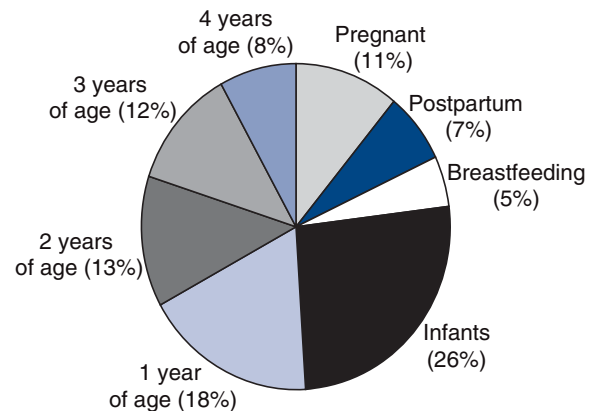
Every 2 years, USDA's Food and Nutrition Service (FNS) reports on the characteristics of WIC participants and the agencies administering the program. The most recent report was published in 2000 and covers all persons enrolled in WIC as of April 1998 (Bartlett et al., 2000). In that month, 8 million women, infants, and children were enrolled in the program. About 7.4 million used vouchers, thereby putting the month's participation number at about 8 percent less than enrollment. For simplicity and comparability with the 1998 report's terminology, enrollees are referred to as participants in the following discussion of characteristics.

Some of the demographic and economic characteristics of WIC participants have changed over time. The more important changes in the characteristics of the WIC population between 1992 and 1998 are noted in the discussion below based on data from FNS' 1992 characteristics report (Randall and Boast, 1994).

**Participant category.** Children made up slightly more than half (51 percent) of all WIC participants in April 1998 (fig. 5). The proportion of children participating decreased as their ages increased: 36 percent of all WIC children were 1 year of age, 25 percent were 2 years of age, 22 percent were 3 years of age, and only 16 percent were 4 years of age. Infants accounted for 26 percent and women for 23 percent of all WIC participants. Almost half (48 percent) of the women who participated in WIC were pregnant, and 32 percent were postpartum, not breastfeeding. Twenty-one percent of all women in WIC were breastfeeding, up from 16 percent in 1992.

**Race and ethnicity.** In 1998, whites made up 39 percent of WIC participants, followed by Hispanics (32 percent), blacks (23 percent), Asians (3 percent), and Native Americans (2 percent). Hispanics have grown as a percentage of WIC participants during the 1990's (from 23 percent of WIC participants in 1992 to 32 percent in 1998) while percentages of non-Hispanic blacks and whites fell. The Hispanic population in the United States has grown faster than the other groups and the WIC program has increased foreign language

Figure 5  
Distribution of WIC participants by participant category



Source: Bartlett et al., 2000.

outreach efforts, both trends contributed to the changing distribution by race and ethnicity during the 1990s (Bartlett, et al., 2000).

**Nutrition risks.** On the records used in the 1998 report, up to three nutrition risks could be reported for each WIC participant. Therefore, for participants with more than three nutrition risks, some risks will go unreported.<sup>27</sup> For women, general obstetrical risks and inadequate or inappropriate nutrient intake were the risks most often reported. For almost three-quarters of the infants, their mothers' current nutrition risk or their mothers' risk during pregnancy was cited as the reason for the infants' eligibility. For children, 68 percent had inappropriate or inadequate nutrient intake and 34 percent had anthropometric risks (such as low or high weight for height) as the risks most often documented.

**Income and poverty status.** In the 1998 participant records, 17 percent of the records had unreported

<sup>27</sup>In addition, in some States, WIC agencies do not record all of a participant's nutrition risks. For example, some agencies only record the single most important nutritional risk.

income or income reported as zero. Either of these conditions may mean that the participant qualified based on other program participation and income data collection was not necessary. Zero may also mean that the participant's family had no cash income.

Participants with unreported income or income recorded as zero are left out of the income and poverty status calculations because their true income cannot be determined from the administrative records. Among WIC participants with reported income, the average annualized 1998 income of the participants' families/economic units was \$12,479. Among participant categories, breastfeeding women had the highest average income at \$13,607 and postpartum women had the lowest average income at \$11,532.

About 69 percent of the WIC participants reporting income had incomes at or below the poverty level. In contrast, fewer than 1 percent of participants had family income above the 185 percent of poverty threshold that caps participation in WIC (some participants with incomes above the cap can legally participate in WIC because Medicaid makes them eligible and Medicaid participation in several States is capped at income levels greater than 185 percent of the poverty guideline). The percentage of very poor WIC participants with incomes equal to or less than half of the poverty level

has decreased over time. In 1998, 34 percent of those WIC participants reporting income had incomes at or less than half the poverty level compared with 41 percent in 1992. WIC's expansion during the 1990s has allowed the program to serve more "near poor" participants with incomes between 100 and 185 percent of poverty (Bartlett et al., 2000).

***Other program participation.*** Persons who participate in either the Medicaid, Food Stamp, or TANF programs are automatically income eligible for WIC. In 1998, 57 percent of WIC participants received benefits from at least one of these other public assistance programs at the time they were certified for WIC. Medicaid was received by 48 percent of WIC participants, food stamps by 27 percent of WIC participants, and TANF by 17 percent of WIC participants. Some WIC participants received benefits from more than 1 of these other programs including 15 percent who received benefits from all 3 of these other programs. Participation in Food Stamps, TANF/AFDC, and to a lesser extent Medicaid, has decreased since 1992 reflecting overall decreased participation in these programs since the passage of the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (also known as the welfare reform legislation) (Bartlett et al., 2000).

## Outcome-Based Issues in WIC

WIC serves more than 7 million persons each month at a cost to the Federal Government of almost \$4 billion annually. Given that its mission is to safeguard the health of low-income women, infants, and children, it is therefore important to ask how effective is WIC in improving the health of program participants, as measured by birth outcomes, nutritional status, and nutrient intake. WIC's impact on related topics, including breastfeeding rates and the incidence of childhood obesity, is also discussed.

### WIC's Effect on the Health of Participants

Over WIC's history, many studies have looked at the program's effect on the health of its participants. In fact, much of the strong congressional support for WIC has been attributed to research that showed that WIC had positive impacts on the health of program participants. Two of the most influential studies of WIC were completed in the early 1990s. Devaney et al. (1990) found that each dollar spent on prenatal WIC services yielded a \$1.77 to \$3.13 savings for newborns and mothers in Medicaid costs over the first 60 days after birth. The study also found that prenatal WIC participation was associated with increased birthweight, fewer preterm births, and longer gestational age. The U.S. General Accounting Office (1992) statistically combined results from 17 studies that compared rates of low birthweight among WIC participants and similar nonparticipants. GAO concluded that each Federal dollar spent providing WIC prenatal benefits in 1990 saved an estimated \$3.50 over an 18-year period in Federal, State, local and private health costs, primarily in the health care area.

Despite the body of research on WIC health outcomes, questions remain about WIC's impact on the health of its participants because issues related to selection bias have complicated the interpretation of much of the

research. Selection bias may occur because WIC evaluation studies are not randomized for ethical reasons.<sup>28</sup> Instead, WIC research is typically limited to a quasi-experimental design comparing those who participate in the program with those who do not. A problem exists if WIC participants differ in unobservable ways from eligible nonparticipants, and if these unobservable differences influence outcomes. Selection bias can either enhance or downplay the effects of WIC participation. For example, it can exaggerate the benefits of WIC when individuals who value health and nutrition are more likely to participate in the program than individuals who are at higher risk and do not see the value of participating. WIC effects can be downplayed in research if those not participating in WIC are at lower health risk than the WIC sample. The potential for selection bias is evident in almost all WIC studies. While, researchers know that it is an issue and attempt to control for it in study design and analysis, it is uncertain how successful they are.<sup>29</sup>

A recent ERS-funded review of USDA's food assistance programs reviewed the body of research examining WIC's effect on nutrition and health outcomes (table 4) (Fox and Hamilton, forthcoming). Much of this research focused on WIC's impact on birth outcomes. Birth outcomes have been the major focus of WIC research because they are the most critical: low birthweight, preterm delivery, and infant mortality are very serious health outcomes. These have also been relatively easy to study, because the outcomes are short-term and easily identified. The review concluded that even with the pervasive problem of selection bias

<sup>28</sup>In an ideal evaluation, the effects of WIC would be obtained by randomly selecting from a group of persons eligible for WIC some persons to receive and some not to receive benefits. On average, the characteristics of the two groups would not differ other than whether or not they participated in WIC (assuming that all persons selected to participate in WIC did so). Differences in the health outcomes between the two groups could be attributed solely to the effects of WIC, and not the result of selection bias.

<sup>29</sup>See Oliveira and Gundersen (2000) for results of a recent study that examined the impact of WIC on the nutritional outcomes of children while controlling for possible self-selection bias.

**Table 4—Summary of WIC research findings in the areas of health outcomes, nutrient intake, and nutritional status**

Outcome	Results of impact analyses of the WIC program	
	General findings	Comments
Health outcomes	Strong evidence of positive impact on birthweight, related outcomes, and associated Medicaid costs	No large-scale study of impacts on the health and development of infants and children has been done
Nutrient intake	Mostly positive significant impacts, particularly for nutrients targeted by WIC	Much of the available information is dated, and some population groups have no studies or very few studies
Nutritional status	Strong suggestion of impact on iron status of children; little useful information available for impacts on growth of infants and children	Many of the studies are old, essentially nothing is known about some population groups

Source: Adapted from Fox and Hamilton (forthcoming).

“the sheer weight of the research suggests that WIC does have a positive impact on birthweight as well as a number of other birth outcomes and significantly lower birth-related Medicaid costs.” Other authors have reviewed WIC evaluation studies with similar conclusions (see, for example, Abrams, 1993; Ku et al., 1994; Owen and Owen, 1997; and Rossi, 1998). It is largely on the basis of these studies on birth outcomes, including the Devaney et al., and GAO studies cited above, that WIC is often cited as being one of the most cost-effective food assistance programs in the Nation.

Other health outcomes that may be associated with WIC participation have not been the subject of as many studies. The impact WIC has on the health of participating mothers is one area that has not been studied. WIC participation during pregnancy may have an impact on mothers’ postpartum health (which may affect future birth outcomes). The nutrition education received from WIC may result in long-term positive health effects on the mother such as a reduced risk of diabetes or heart disease. In addition, the health of breastfeeding mothers and their infants on WIC has not been studied. As breastfeeding rates in the WIC program increase, more research in this area will be important.

Another area that has not been thoroughly studied is the health effect of WIC on children despite the fact that children make up half of all WIC participants. For example, little is known about the effect of WIC on the long-term growth and development on both physical and cognitive/psychological scales of children (Fox and Hamilton, forthcoming). It is difficult to link future health outcomes with WIC participation. Assessing

WIC’s impact on the growth and development of children requires a longitudinal study because a long period of time may be necessary to detect changes. In the early 1990s, Congress canceled a planned FNS-funded longitudinal study of the long-term developmental effects of WIC on children due primarily to the high costs of the project (Devaney, 1998).

The strongest evidence of WIC’s positive impact on children is in the area of iron-deficiency anemia, a serious health concern. “Virtually all studies that have examined the issue have found that WIC participation has a positive effect on mean levels of hemoglobin or hematocrit and/or reducing the incidence of childhood anemia” (Fox and Hamilton, forthcoming). WIC may also have had an indirect effect on the iron status of nonparticipants since some WIC foods on supermarket shelves such as infant formula and cereal are required to be iron-fortified and are consumed by nonparticipants as well as WIC program participants (Devaney, 1998).

Future research on the health of women, children, and breastfeeding women and their infants would be useful yet challenging. “The complexity of the health outcomes that have been studied has presented unique challenges to WIC researchers, further compromising their ability to obtain clear estimates of program impact” (Fox and Hamilton, forthcoming).

## WIC and Breastfeeding Rates

Breastfeeding is widely acknowledged to be the best method of feeding most infants. The American Academy of Pediatrics (AAP) recommends breastfeeding as the preferred form of feeding for all infants,

including premature and sick newborns, with rare exceptions (American Academy of Pediatrics, 1997).<sup>30</sup> In general, human milk provides all the necessary nutrients for the first 6 months of life. It helps protect infants against illness and allergy because of the antibodies from the mother that are transferred to the infant through breast milk. Breastfeeding may also provide benefits to the mother, including reduction in hip fractures, reduced risk of ovarian and premenopausal breast cancer, and a earlier return to prepregnancy weight. In their 1988 policy statement on the WIC program (reaffirmed in 1993), the Academy states that “breastfeeding should be aggressively promoted among WIC participants because of its exceptional nutritional value and its cost savings to the program” (American Academy of Pediatrics, 1988).

In spite of the benefits of breastfeeding, many women choose to formula-feed. There are many reasons for this: breastfeeding may be difficult to establish, it can be painful for the mother if she does not have proper instruction, some mothers feel breastfeeding is too time-consuming, and mothers may become concerned that their baby is not getting sufficient nourishment because one cannot measure the amount of milk the infant is consuming. It is also a challenge to return to work or school when breastfeeding, especially for low-income women who tend to work in environments that do not allow for breaks to pump breast milk and do not provide refrigerated storage facilities for the milk.

Through its nutrition education and breastfeeding promotion programs, the WIC Program encourages moth-

ers to breastfeed their infants if at all possible. In addition, breastfeeding women are a higher priority for certification into the program than are nonbreastfeeding postpartum women and are eligible to receive program benefits for up to 1 year postpartum compared with only 6 months postpartum for nonbreastfeeding women. The quantity and variety of food in the WIC food package for breastfeeding women is also greater than that for nonbreastfeeding women (see table 1).

However, breastfeeding rates among WIC women, both while they and their infants are in the hospital as well as when their babies are 6 months of age, have historically been significantly lower than those of non-WIC women (table 5). In 1999 (the latest data available), 56 percent of WIC women initiated breastfeeding (i.e., breastfed while in the hospital) compared with 77 percent of non-WIC women.<sup>31</sup> Rates of breastfeeding at 6 months of age were also lower for WIC women than non-WIC women (20 percent versus 40 percent).<sup>32</sup> Since the breastfeeding rate of women participating in WIC is so much lower than that of women not in the program, some have questioned whether WIC, by supplying infant formula, provides a disincentive to breastfeeding (Rossi, 1998).<sup>33</sup> However, women in lower socioeconomic groups, including mothers who are black, poor, and have low education levels, (i.e., women most likely to participate in WIC)

<sup>31</sup>Mothers who since the birth of their child either participated in WIC themselves or whose child participated in the program were considered to be WIC participants. Non-WIC women included all women who did not participate in WIC regardless of whether or not they were eligible for the program.

<sup>32</sup>Breastfeeding women included those who breastfed exclusively as well as those who supplemented breast milk with infant formula, or milk from other sources.

<sup>33</sup>The average cash value of the WIC food packages received by a nonbreastfeeding postpartum woman and her formula-fed infant is more than three times that received by a breastfeeding woman whose infant does not receive formula through WIC (USDA, 2000a).

<sup>30</sup>AAP recommends exclusive breastfeeding for approximately the first 6 months after birth and the gradual introduction of iron-enriched foods in the second half of the infant’s first year to complement the breast milk diet. Breastfeeding is recommended to continue for at least 12 months and thereafter for as long as mutually desired (American Academy of Pediatrics, 1997).

**Table 5—Breastfeeding rates by WIC status, 1990-99**

Status	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
<b>In hospital:</b>										
All infants	51.5	53.3	54.2	55.9	57.4	59.7	59.2	62.4	64.3	67.2
By WIC status:										
WIC	33.7	36.9	38.8	41.6	44.3	46.6	46.6	50.4	52.6	56.0
Non-WIC	62.9	65.2	66.4	67.9	68.8	71.0	70.8	73.4	75.2	76.9
<b>At 6 months:</b>										
All infants	17.6	18.2	18.9	19.0	19.7	21.6	21.7	26.0	28.6	30.7
By WIC status:										
WIC	8.2	9.0	10.1	10.8	11.6	12.7	12.9	16.5	18.9	19.9
Non-WIC	23.6	24.6	25.6	25.8	26.5	29.2	29.5	35.5	38.5	40.3

Source: Abbott Laboratories, 1999.

## WIC and Childhood Obesity

have traditionally been less likely to breastfeed their children (Abbott Laboratories, 1999). Furthermore, WIC women experienced great increases in the prevalence of breastfeeding during the 1990s; the percentage of WIC women who initiated breastfeeding increased by 66 percent from 1990 to 1999 while the percentage who were breastfeeding at 6 months increased by 143 percent.

WIC breastfeeding rates, although improving, continue to be significantly lower than the Healthy People 2010 target established by the U.S. Department of Health and Human Services—that at least 75 percent of women initiate breastfeeding and at least 50 percent continue breastfeeding for at least 6 months. Since 1989, a number of modifications have been made to the WIC Program in an attempt to increase breastfeeding rates. The Child Nutrition and WIC Reauthorization Act of 1989 earmarked \$8 million/year to be spent by WIC to promote breastfeeding. WIC State Agencies were required to hire a breastfeeding promotion coordinator, educate local agency staff on the benefits of breastfeeding, and coordinate promotion with programs in the State. In 1992, an enhanced WIC food package was established for women who exclusively breastfeed their infants. In 1998, the William F. Goodling Child Nutrition Reauthorization Act (P.L. 105-336) allowed food funds to be used to purchase breast pumps for participants.

In 1993, the General Accounting Office (GAO) studied the effect of WIC breastfeeding promotion activities on breastfeeding rates (including the relationship between prenatal WIC participation and breastfeeding initiation) and WIC food costs associated with increased breastfeeding (U.S. General Accounting Office, 1993) After controlling for factors such as education, income, race, age, parity, infant birthweight, marital status, and region, the authors found that there was no significant difference in breastfeeding rates between women who participated in WIC prenatally and those that did not. Therefore, it is unclear whether WIC promotion activities prenatally contributed to the increase in breastfeeding rates. The study was conducted in 1991, only 2 years after the authorization of funding specifically for breastfeeding promotion. GAO did find that efforts to increase breastfeeding rates had increased in WIC clinics by 1993.

Another emerging issue with direct implications on the health of program participants is the relationship between WIC and childhood overweight and obesity. WIC was first established to combat the problem of malnutrition and hunger among low-income Americans. However, since that time, overweight and obesity have become one of the most serious health problems in the United States. Over one-third of all adults in this country, 12 percent of adolescents, and 14 percent of children 6-11 years old are overweight and the prevalence of overweight is increasing (Centers for Disease Control and Prevention, 1997).<sup>34</sup> Overweight and obesity among children is a concern because overweight children tend to become overweight adults, and there is a clear association between overweight and obesity in adults and chronic diseases such as cardiovascular disease, diabetes, and hypertension.

Different criteria for overweight have been used to estimate prevalence, usually either weight-for-height status above the 85th or 95th percentiles of the original 1977 National Center for Health Statistics/Centers for Disease Control and Prevention (NCHS/CDC) weight-for-height reference growth charts.<sup>35/36</sup> Because infants and preschoolers are in a dynamic state of growth in which body size is continually in a state of flux, it is difficult to assign a single cutoff value to an age range. Similarly, there is no defined criterion for obesity in children. However, obesity generally refers to a more extreme case of overweight.

The proportion of children participating in the WIC program who are overweight or obese is growing. A recent study of low-income preschool children in 18 States who participated in several publicly funded health and nutrition programs (mostly WIC) found that 1 out of 10 children in these programs was overweight (based on the 95<sup>th</sup> percentile point for weight-for-

<sup>34</sup>Overweight for adults was defined as body mass index (BMI) equal to or greater than 27.8 for men and 27.3 for women, while overweight for children and adolescents was defined as body mass index at or above the 95<sup>th</sup> percentile BMI cutoff points.

<sup>35</sup>The growth charts were revised in 2000.

<sup>36</sup>Weight-for-height does not directly measure the degree of overweight. For example, a person with a high degree of lean body mass could have high weight-for-height but would not be obese. However, weight-for-height is strongly correlated with body fatness.

height) in 1995 (Mei et al., 1998).<sup>37</sup> That is an increase of 20 percent from 1983. Since overweight (defined by most WIC State agencies at that time as being at or above the 90<sup>th</sup> percentile weight for length or height based on established growth charts) is one of the anthropometric nutrition risk criteria used for determining eligibility into the program, it is not surprising that there would be a high incidence of overweight among WIC participants.<sup>38</sup> In fact, for a given participant category (i.e., infant, child, pregnant women, etc.) the highest priority is given to persons demonstrating medically based nutrition risks, including anthropometric risks such as overweight (see table 2). Obesity is also more prevalent among certain minorities who disproportionately participate in the WIC program. However, the increasing prevalence of overweight among WIC children prompted concern about a possible association with the foods provided by WIC (Centers for Disease Control and Prevention, 1996). The WIC food basket can provide substantial amounts of foods to some participants. For example, the maximum quantity of milk (whole or low-fat), authorized in food package IV—children 1 to 5 years of age—is 24 quarts per month (see table 1).<sup>39</sup> However, a study by the Centers for Disease Control and Prevention (1996) concluded that WIC foods provide necessary nutrients without contributing to overweight.<sup>40</sup> Another more recent study found that WIC children were no more likely to be overweight than other low-income children (Burststein et al., 2000).

The increase in overweight among WIC children may be a reflection of the increase in overweight among the general population of children.<sup>41</sup> In fact, WIC may have a positive effect on reducing overweight if participants substitute nutritious WIC foods for high-caloric-

---

<sup>37</sup>The study was based on data collected on children younger than 5 years of age in the Centers for Disease Control and Prevention (CDC) Pediatric Nutrition Surveillance System.

<sup>38</sup>Sixteen percent of all children in WIC in 1998 were reported as having high weight for height as a nutrition risk at certification (Bartlett et al., 2000).

<sup>39</sup>It should be noted that foods provided by WIC are only a portion of the diet and when studying obesity, the whole diet must be considered.

<sup>40</sup>The report acknowledged that small sample sizes for some subgroups and the inability to control for nutrition risk limit the study's findings (Centers for Disease Control and Prevention, 1996).

<sup>41</sup>The prevalence of obesity among all boys 4 to 5 years of age increased by almost 14 percent between 1971-74 and 1988-94. Among all girls age 4 to 5, the prevalence of obesity increased by 86 percent over the same period (Ogden et al., 1997).

content foods in their usual diet. In addition, local WIC agencies may tailor the WIC food package for an individual based on nutritional need. For example, the WIC food package may provide low-fat or nonfat milk instead of whole milk to overweight children.<sup>42</sup> The nutrition education provided by WIC may also contribute to lowering the prevalence of obesity among WIC children. One of the suggested goals of the nutrition education counseling provided by WIC “is to help the infant/child achieve recommended rates of growth and development by emphasizing food choices of high nutritional quality while avoiding unnecessary calorie-rich foods and emphasizing age-appropriate physical activity and exercise, thereby minimizing further risks associated with increased childhood obesity” (USDA, 1998). The WIC program can also help individuals with clinical complications obtain early diagnosis and treatment by health professionals through its health referral function (Institute of Medicine, 1996).

Recently WIC has increased its proactive approach to preventing obesity among children. For example, FNS has awarded grants for a multi-State project titled “Fit WIC” to identify ways that WIC policies, practices, and operations might be changed to help prevent childhood obesity (USDA, 2001a). In the spring of 2001, FNS added new nutrition risk criteria for infants and children—at risk of becoming overweight—to the allowable criteria that may be used to establish WIC program eligibility (USDA, 2001d). The new criteria, based on expert recommendations, makes children (24 months old and older) at or above the 85<sup>th</sup> percentile weight for height at risk of becoming overweight. The new criteria also includes the existence of one or both obese parents as an allowable contributing factor to the overall risk of a child becoming overweight or obese in later years. This factor is based on scientific evidence that suggests that the presence of obesity in a parent greatly increases the risk of overweight in preschoolers.

The rise in obesity raises questions as to how WIC may improve its efforts to confront this growing issue. WIC, with its large number of children participants, has the potential to positively impact the issue of childhood obesity. More research on WIC's impact on childhood obesity is needed. USDA is currently funding several research studies that examine WIC-related obesity topics (see appendix).

---

<sup>42</sup>The extent to which WIC clinics actually tailor the food package of overweight children has not been determined.



## WIC's Nutrition Education and Health Care Referral Programs

As discussed earlier, the body of research, with some caveats, suggests that WIC is associated with positive health outcomes, especially with regard to prenatal participation. Although WIC's positive effects are usually attributed solely to the provision of supplemental food, they should be viewed as the joint effects of WIC's supplemental foods, nutrition education, and health care referrals (Rossi, 1998). Yet, very little research has been done to assess the impact of WIC's nutrition education and referrals to health care services.

Since the nutrition education provided by clinics varies, it is difficult to generalize findings of a few clinics to the Nation. Nutrition education can be provided to clients either individually or in a group setting using a variety of methods. The topics covered are designed to be easily understood and bear a practical relationship to participant nutritional needs, household situation, and cultural preferences. Recently, USDA's Food and Nutrition Service funded an exploratory study of the nutrition education component of the WIC program for pregnant women (Fox et al., 1998). Researchers followed pregnant women from six WIC sites in three States from their enrollment in WIC to 4-6 months postpartum. The authors measured their nutrition knowledge, attitudes, and behaviors at baseline and compared these at 32-36 weeks gestation (prenatal survey) and then at 4-6 months postpartum (postpartum survey).

The study found that nutrition knowledge increased significantly from baseline to the prenatal survey. Knowledge continued to increase in the postpartum survey but to a lesser degree. Nutrition education in the content areas of breastfeeding and infant feeding practices increased the most dramatically. Baseline nutrition knowledge was found to be significantly higher in those women who had been WIC participants with a previous child.

Nutrition attitudes and perceptions were found to change over time but to a modest degree. When looking at the nutrition-related behaviors over time, the researchers found that the use of prenatal vitamins and iron supplements increased significantly from the baseline survey to the prenatal survey. Researchers also found that the consumption of WIC foods increased from the baseline survey to the prenatal sur-

vey. However, by the postpartum survey only the increased consumption of WIC cereals was maintained. While most women followed recommended infant feeding guidelines during the first few months of life, the prevalence of undesirable feeding practices increased for older infants. For example, the use of solid foods before 4 months of age ranged from 39 percent to 67 percent of families across the six sites.

A limitation to this study was that no control group was identified to compare the change in knowledge, attitudes, and behaviors from the prenatal to postpartum period for those not participating in the WIC program. The influence of other sources of information, as well as hands-on experience, are likely to impact nutrition knowledge, attitudes, and behavior.

FNS also recently sponsored several demonstration studies (one for prenatal WIC participants and one for child WIC participants) on the effectiveness of innovative approaches to nutrition education. The prenatal study incorporated two approaches: a computerized touch-screen video for individual nutrition education and a facilitated group intervention (Randall et al., 2001b). Results of the study found no increase in nutrition knowledge from the interventions. However, the study reports that the assessment tool used in the study (1) measured knowledge only and may or may not have affected behavior; and (2) would not detect knowledge in areas not covered by the test.

The demonstration study for children's nutrition education consisted of a preschool lesson that focused on the areas of the Food Guide Pyramid, variety in the diet, and making healthy food choices for 3- and 4-year-old children (Randall et al., 2001a). Results of the study found that children who received the preschool lesson scored significantly higher on the nutrition knowledge test than children not exposed to the preschool lesson. The researchers concluded that providing nutrition education directly to 3- and 4-year-old WIC participants is feasible and can increase nutrition knowledge.

The provision of health and social service referrals to WIC participants is also one of the primary objectives of the WIC program. One of the few studies in this area documented the number and type of referrals provided over a 2-month period by nutritionists at a Lawrence, MA, WIC clinic in 1990 (Sargent et al., 1992). WIC nutritionists were asked to document each

referral provided. Over this 2-month period, 1,850 persons were seen and 597 (27 percent) were given referrals. Multiple referrals were reported for 21 percent of the participants. The majority of referrals (59 percent) were for nutrition-related services such as supplemental and emergency food. Twenty-three percent of referrals were for medical needs such as prenatal care, primary care, family planning, emergency care, dental care, failure to thrive, and hematocrit and lead testing. The remaining referrals were for education and development programs and to social services.

One limitation to the study is that it was done in one WIC clinic, and therefore is not representative of all WIC sites. Second, the study asked WIC nutritionists to document referrals provided. On one hand, this requirement could have resulted in an increased awareness by the nutritionists to provide referrals, inflating the frequency of referrals. On the other hand, nutritionists may not have documented every referral provided because of the extra paperwork involved, underestimating the number of referrals. The authors suggest that WIC nutritionists would benefit from education on the variety of social and medical services available in their neighborhoods so that they can provide appropriate referrals.

Nutrition education and referrals to health and social services are, along with supplemental food, key components of the WIC program. However, more research is needed to estimate their effectiveness separately. If nutrition education and referrals are found to be effective, it might suggest that more program funds be allocated to each. Conversely, if they are found to be ineffective, it might be better to try new ways to improve them or else de-emphasize these components and re-allocate their funds to providing supplemental foods to additional participants.

## **Impact of the WIC Farmers' Market Nutrition Program**

The dual objectives of the WIC Farmers' Market Nutrition Program are (1) to provide resources in the form of fresh, nutritious, unprepared foods (fruits and vegetables) from farmers' markets to persons who are either participating in WIC or who are on the waiting list for WIC; and (2) to expand the awareness, use of and sales at farmers' markets (7 CFR 248.1). Since its beginnings as a demonstration project in 10 States during the late 1980s, the WIC Farmers' Market Nutrition

Program has grown substantially and now operates in 35 States, the District of Columbia, Guam, and on 4 Indian reservations.<sup>43</sup> In fiscal 2000, more than 12,800 farmers in over 1,600 farmers' markets were authorized to participate in the program (USDA, 2001b). That same year, about 1.9 million persons participated in the program and they redeemed approximately \$17.5 million worth of coupons. However, despite its growth, the impact of the WIC Farmers' Market Nutrition Program on farmers and WIC participants has not been studied thoroughly.

In 1991, USDA funded an evaluation of the then Farmers' Market Coupon Demonstration Project (FMCDP) (Galford et al., 1991). At the time, the FMCDP operated in only 10 States serving 250,000 WIC participants with 2,500 participating farmers. The study looked at three issues: (1) the relationship between the FMCDP and participants' consumption of fruits and vegetables, (2) the effect of nutrition education on fruit and vegetable consumption, and (3) the effect of the FMCDP on farmers. The study found that those who received the FMCDP coupons consumed about 6 percent more fruit and 5 percent more vegetables than WIC participants who did not receive the coupons. Researchers also found that those receiving FMCDP coupons were almost twice as likely to patronize farmers' markets, even when they had stopped receiving the coupons. Some WIC clinics also provided education on fruit and vegetable preparation in conjunction with the FMCDP. Women who said they had received the produce preparation information reported greater intake of fruits and vegetables than those not receiving the information, independent of FMCDP participation. The authors note that this finding may not be conclusive since health-conscious participants may be more likely to report having received education. Finally, the report questioned women about their satisfaction with the Farmers' Market Nutrition Program and found that two-thirds were "very satisfied" with the program.

These results of the 1991 survey were similar to those of a 1998 study conducted by the National Association of Farmers' Market Nutrition Programs (1999). Over half (58 percent) of Farmers' Market Nutrition Program participants had never visited a farmers mar-

<sup>43</sup>Compared with the total WIC program, the Farmers' Market Nutrition Program is relatively small—about \$15 million in Federal funds were earmarked for the farmers' market program in fiscal year 2000 (USDA, 2001b).

ket before taking part in the Farmers' Market Nutrition Program. Seventy-one percent of the participants reported that they would continue to shop at farmers' markets, even without coupons. Seventy-four percent said they ate more fresh fruits and vegetables last summer than usual.

The 1991 FMCDP survey also looked at the impact of the program on farmers. The survey reported that sales increased slightly as a result of program participation; over 80 percent of farmers reported receiving less than \$500 in FMCDP coupons. As such, farmers noted that their farming operations were not altered as a result of the program. (Even though farmers' direct benefits

from the program were small, there may be significant indirect benefits to farmers. For example, a large proportion of the participants stated that they will use the farmers' markets more even without the coupons.) Farmers indicated strong support for the program; 90 percent believed the program should continue.

As the Farmers' Market Nutrition Program continues to expand, continued research looking at the outcomes and effectiveness of the program would be useful. For example, examining how the increased availability of fresh fruits and vegetables contributes to the diet and nutrition of WIC participants is an important area for future study.

## Administrative Issues in WIC

In addition to issues relating to WIC's impact on the health of program participants, numerous issues are associated with administering a program of WIC's size and complexity. Issues related to the composition of the WIC food package, cost-containment practices, program accessibility, eligibility standards, and reducing fraud and abuse in the program directly affect the women, infants, and children who participate in the program, as well as indirectly affecting other groups, including food retailers, infant formula manufacturers, and farmers.

### The WIC Food Package

The last major revision to WIC food packages was in 1980. Since then, the ethnic/racial characteristics of the WIC participant population and food consumption patterns have changed considerably while nutritional standards have evolved as the result of recent research findings. It is therefore important to determine if the current packages are adequate in assisting program participants to meet nutritional standards for a healthful diet or if they can be improved to better meet the needs of program participants.

The WIC program provides participants with supplemental foods that are not intended to meet the total nutritional needs of the participants.<sup>44</sup> The WIC legislation defines "supplemental foods" as those foods containing nutrients determined by nutritional research to be lacking in the diets of the program's target population, as prescribed by the Secretary of Agriculture (Section 17(b)(14) of the Child Nutrition Act of 1966, as amended). Historically, WIC food packages have contained foods that are high in protein, calcium, iron, and vitamins A and C. The legislation also states that the Secretary, to the degree possible, shall assure that the fat, sugar, and salt content of the WIC foods is appropriate (Section 17(f)(11)). As of 1980, Federal regulations require that cereals eligible for use in the WIC food packages for women and children must con-

tain no more than 6 grams of sugar per dry ounce of cereal (7 CFR 246.10).<sup>45</sup> This regulation was in large part in response to advice from nutrition and health experts, the WIC community, and the general public, as well as the recognition that dental caries is a major public health problem and the role that sugars in foods play in the development of dental caries (*Federal Register*, March 18, 1996).

Periodically, USDA has reviewed the nutritional adequacy of the WIC food package. The latest review, completed by USDA's Center for Nutrition Policy and Promotion (CNPP) in 1999, was in response to inquiries by members of Congress and representatives of the food industry about the scientific basis for continuing the sugar limit for WIC-eligible adult cereals.<sup>46</sup> Instead of focusing solely on one requirement of the WIC foods (i.e. the sugar limit for WIC cereals), USDA decided to conduct a review of the overall WIC food packages. The study analyzed the nutrient intake of WIC participants to determine how well they meet current nutritional standards, including the 1989 Recommended Dietary Allowances (RDA), the 1995 Dietary Guidelines for Americans, and the Food Guide Pyramid. The study examined the median intakes of WIC participants, focusing on the five nutrients targeted in the WIC program—protein, iron, calcium, vitamins A and C, and four other nutrients of potential concern (folic acid, zinc, vitamin B<sub>6</sub> and magnesium)—as well as energy.

Results of the study indicated that while WIC infants and children generally achieved good nutrient intake, the diets of WIC women needed improvement

<sup>45</sup>At the same time, a limit was placed on the amount of cheese in the food packages to restrict salt intake.

<sup>46</sup>Research continues to support the relationship between sugar and dental caries, however, it has been shown that consumption of any fermentable carbohydrate, starches as well as sugars, contributes to dental caries. In addition, recent research has failed to demonstrate a positive relationship between sugar consumption and chronic disease (*Federal Register*, March 18, 1996).

<sup>44</sup>Participants are expected to obtain the balance of necessary nutrients from other food sources.

(Kramer-LeBlanc et al., 1999).<sup>47</sup> Infants and children met all nutrient recommendations.<sup>48</sup> Relative to the RDA, pregnant women were deficient in the intake of iron, calcium, folic acid, magnesium, zinc, and energy. Nonbreastfeeding women did not consume the recommended amounts of calcium, vitamin C, and magnesium. The authors of the study concluded that pregnant women and nonbreastfeeding women may either be not purchasing the entire WIC food package or not consuming all the WIC foods furnished in their package. The study also estimated the amount of sugar added to foods in the manufacturing process in the diets of WIC participants. Children 1-4 years of age consumed over twice the amount of added sugar recommended by the Food Guide Pyramid, pregnant women 1.5 times over the suggested amount, and WIC nonbreastfeeding women 1.3 times over (breastfeeding women did not exceed the suggested amount). However, the authors concluded that the contribution of the WIC package to added sugars in the overall diet is very low.<sup>49</sup>

Concurrent with the CNPP review of the WIC food packages, the National Association of WIC Directors (NAWD) conducted its own independent review, based in part upon a survey of its membership (National Association of WIC Directors, 2000). They recommended significant changes to the WIC food prescriptions, defined as the specific combination and quantities of allowable foods issued to WIC participants, including:

- Increased consumption of fruits, vegetables, whole grains, and fiber-rich foods,<sup>50</sup>

---

<sup>47</sup>Because of the difficulty of quantifying milk intake, breastfed infants were not included in the analysis.

<sup>48</sup>The study reported that shortfalls in the intake of zinc were seen among children, pregnant women, and breastfeeding women. However, in 2001 the National Academy of Sciences published new recommendations for zinc intake. Breastfeeding women age 18 and older and children met the recommendations for zinc when applying the new standards.

<sup>49</sup>Most of the added sugar in the WIC food packages comes from peanut butter and ready-to-eat cereals.

<sup>50</sup>Congress has also recommended that FNS look into ways to increase produce consumption in WIC. In 2001, the Committee on Appropriations urged FNS to study the feasibility of an incentive pilot program to increase produce consumption under the WIC and Food Stamp Programs. The increase in produce consumption “could enhance the control of adverse health conditions such as diabetes, high blood pressure, and osteoporosis” (U.S. House of Representatives, 2001).

- Reduction in the fat content of specific foods and the overall food package
- Balanced contribution from the major food groups in the Food Guide Pyramid
- Increased availability of nutrient-dense food prescriptions, and
- Substantially increased flexibility for WIC State agencies to offer locally available foods that reflect cultural groups served and regional dietary patterns.

Minority groups, especially Hispanics, account for an increasing percentage of WIC participants. Changing demographics may support NAWD’s recommendation to allow State agencies the flexibility to offer food prescriptions that respond to cultural or religious needs. NAWD’s stated goal is to collaborate with USDA to implement nutrition policy and practice changes related to the WIC food packages that will positively impact the WIC population. USDA is currently in the process of reexamining the composition of the WIC food packages.

## WIC Eligibility Standards

Although support for WIC is generally widespread, public concern has developed about the effectiveness of WIC’s eligibility criteria and whether WIC has expanded too much.<sup>51</sup> In fiscal 2000, over 7 million persons participated in the program each month. About 27 percent of all U.S. children and infants under 5 years of age now participate in WIC, including an estimated 47 percent of all infants born in this country.

Eligibility for WIC is based on category, residency, income, and nutrition risk. Because the number of participants in WIC is limited by funding levels, a priority system is used to allocate program slots. The dramatic growth in WIC’s funding during the 1990s has allowed the program to serve more people with lower priority and raised questions about whether the nutrition risk criteria are too lenient. In developing estimates of the number of persons eligible for WIC (used in part to develop program budget estimates), USDA estimated that 81 percent of all women, infants, and children, including 95 percent of all infants, who were income

---

<sup>51</sup>For example, Besharov and Germanis (1999) question “why a remedial program like WIC is now provided so broadly.” Others, on the other hand, are concerned that many fully eligible persons are not seeking WIC benefits. The next section examines several access and participation issues.

eligible in 1997 also met the nutrition risk criteria (table 6) (USDA, 1999e).<sup>52</sup>

Prior to 1999, WIC State agencies were allowed to develop their own nutrition risk criteria (within broad Federal guidelines) for determining eligibility in WIC. As a result, the criteria used to determine nutrition risk eligibility varied among WIC State agencies. Concern about this variation across State agencies led USDA to award a grant to the National Academy of Sciences' Institute of Medicine (IOM) in 1993 to conduct a comprehensive review of the scientific basis for the categories of nutrition risk criteria used in the WIC program—anthropometric, biochemical and other medical, dietary, and predisposing factors (USDA, 1998). In 1996 IOM released its report of the study, which concluded that while a majority of the nutrition risk criteria used by the WIC program were supported by a body of scientific evidence, some of the nutrition risk criteria used by States consisted of loosely defined conditions with generous cutoff points (Institute of Medicine, 1996). The report also made recommendations for the use of specific nutrition risk criteria. A Federal/State/local workgroup was then formed to address the issues and recommendations of the report and develop a list of allowable nutrition risk criteria based on sound science. As of April 1999, WIC State agencies began using criteria from this national list of allowable nutrition risk criteria in determining an individual's eligibility for WIC.

The development of nutrition risk criteria is ongoing. The IOM report also identified areas in which further research is needed. For example, IOM concluded that the current methods used to determine which

<sup>52</sup>A recent FNS-funded study determined that 9 out of 10 income eligible persons in 1989 were also at nutrition risk based on medical and/or dietary criteria (Harell et al., 1999).

individuals are at nutrition risk due to diet are weak and they recommended investing in the development and validation of practical dietary assessment tools that can be used for the identification of dietary risks.<sup>53</sup> USDA awarded a grant to IOM to review the scientific basis for methods used in the assessment of individuals for eligibility in WIC based upon dietary risk. An interim report was released in 2000 and the final report of this study is expected in 2002 (Institute of Medicine, 2000).

Questions have also been raised about whether the income eligibility requirements for WIC are too lenient. For example, the income eligibility limit for WIC is 185 percent of poverty, more lenient than the 130 percent of poverty limit used in the Food Stamp Program—the country's principal food assistance program. In addition, some States' Medicaid programs now allow some persons with incomes greater than 185 percent of poverty to qualify for WIC since participation in Medicaid makes one adjunct (that is automatically) income eligible for WIC. Some have questioned whether WIC adjunct income eligibility policies should necessarily apply in these States (Lewis and Ellwood, 1998).

Although income is used to determine eligibility for WIC, it is not used in determining an individual's priority level which is determined solely by participant category and nutrition risk.<sup>54</sup> Furthermore, the amount of benefits participants receive are independent of their economic need as measured by family income. That is, a child in a family with income less than 50 percent of

<sup>53</sup>Dietary risk is the most commonly reported nutrition risk for determining WIC eligibility (Bartlett et al., 2000).

<sup>54</sup>A report by the U.S. General Accounting Office (1985) stated that WIC program officials generally considered income to be an unreliable indicator of vulnerability.

**Table 6—1997 estimate of WIC eligibles**

Item	Pregnant women	Postpartum and breastfeeding women	Infants	Children	Total
<i>Thousands</i>					
Income eligible	1,202	860	1,617	6,813	10,492
Fully eligible	1,094	783	1,536	5,110	8,522
Participation	756	953	1,869	3,808	7,386
Coverage (percent)	69	122	122	75	87

Source: USDA, 1999e.

the poverty threshold will receive the same WIC benefits as a child at similar nutrition risk, in a family at 185 percent of poverty, holding all other factors constant.<sup>55</sup> This is different from the Food Stamp Program, in which a household's benefits decrease as household income increases.<sup>56</sup>

A recent article by Besharov and Germanis (1999) states that while the positive effects of WIC are probably concentrated among its most disadvantaged participants, all WIC participants in the same target group receive basically the same set of WIC benefits regardless of differences in need. They argue that WIC, instead of continuing to expand coverage to progressively less needy families, should target more WIC resources to the most needy families. They suggest that States should experiment with increasing the food package and intensify counseling services for the most needy families. Others have suggested that, given budgetary constraints, it might be advisable to reduce the overall eligible WIC population by dropping certain eligible categories of participants, such as all 4-year-olds (Library of Congress, 1997).

Do certain groups, such as the lowest income, the most nutritionally at risk, the youngest children, etc., benefit more from WIC than others? At present, little is known about the degree to which WIC benefits accrue to the most disadvantaged. More research is needed on the distributional effects of WIC participation to determine whether society would be better served by targeting more benefits to fewer, more needy families. Conversely, additional research on those persons just above the margin (e.g., nonbreastfeeding mothers 6- to 12-months postpartum and 5-year-old children) would be useful in determining the degree to which they may benefit by participating in WIC if eligibility were expanded.

---

<sup>55</sup>Participation in WIC does not preclude an individual from participating in other food assistance programs such as food stamps. Therefore, the child at 50 percent of poverty may be able to receive food stamps in addition to WIC benefits while the child at 185 percent of poverty would not be eligible for food stamps. A 1985 GAO report stated that many WIC policy officials believed that individuals whose family incomes are too high to be eligible for assistance from other programs may be at more economic need and nutritional risk than individuals with lower incomes but who qualify for other assistance programs (U.S. General Accounting Office, 1985).

<sup>56</sup>As a result, the determination of the amount of benefits an individual can receive in WIC is administratively simpler than in the Food Stamp Program.

## Access and Participation Issues

While some are concerned that WIC eligibility requirements may be too lenient, others argue that access to the program should be improved, and ask why more persons eligible to participate are not being served (see Ku et al., 1999). Some WIC-eligible subgroups, for example children (especially older children), do not participate to the same degree as other subgroups.<sup>57</sup> Little research has been conducted on the demographic characteristics of those WIC-eligible persons who do not participate in the program and their reasons for not participating.

A related issue that concerns policymakers is whether programs such as WIC are accessible to working women and their children, particularly at a time when welfare reform legislation, in the form of the Personal Responsibility and Work Opportunity Reconciliation Act (P.L. 104-193), is encouraging increased labor-force participation among low-income mothers. A recent study by the U.S. General Accounting Office (1997b) addressed the question of access by surveying WIC directors.<sup>58</sup> Potential barriers facing working women, as well as changes the WIC offices have made to assist working women, were both discussed in this report. Directors identified a number of reasons that working women might not participate in WIC, the primary ones being that the women lose interest in WIC benefits as their income increases, there is a perceived stigma associated with receiving WIC benefits, and working women may think that they are not eligible to participate in WIC. Difficulty in reaching the clinic, long waits at the clinic, and the lack of service during the lunch hour were other factors mentioned.

The directors were also asked whether they used various strategies to accommodate working women. These included scheduling appointments, designating an alternative person to pick up food instruments, and extending the hours that the WIC office was open. Almost all clinics allowed the scheduling of appointments (instead of taking participants on a first-come, first-served basis) and allowed an alternative person to pick up the food instrument. Similarly, most agencies issued food

---

<sup>57</sup>Among children 1 to 4 years of age in WIC in 1998, 36 percent were 1 year of age while only 16 percent were 4 years of age (Bartlett et al., 2000).

<sup>58</sup>The study was conducted from March to September 1997, i.e., before the full impacts of the welfare reform legislation were felt.

vouchers for more than 1 month at a time (89 percent) and were open during the lunch hour (75 percent). About half offered evening hours although very few were open Saturdays (11 percent) or early in the morning (21 percent). Although 76 percent of the directors reported that accessibility to their clinics was at least moderately easy for working women, 9 percent reported that accessibility was still a problem. Fifty-eight percent of those interviewed thought that their clinic was more accessible in 1997 than it was in 1995, while fewer than 1 percent thought it was less accessible.

While the GAO study addressed some of the accessibility issues, a number of issues remain unaddressed. For instance, no interviews of women actually participating in the program, or who were eligible for the program but choose not to participate, were conducted. Thus, the study only reiterates the concerns of a sampling of directors, but not those of the actual participants or eligible nonparticipants.

The New York State Department of Health recently conducted a study with a grant from USDA's Food and Nutrition Service to identify barriers to continuing on WIC after the initial certification period. The study provides information from the perspective of the participants themselves (Woelfel et al., 2001). The authors developed a survey, which listed 68 potential barriers to participation and asked WIC participants to identify those items they perceived as barriers. The most commonly reported were:

- Long waiting time (reported by 42 percent of respondents), overcrowded and noisy WIC clinics (reported by 36 percent of respondents) with nothing for the children to do (42 percent),
- Nutrition education sessions that were boring (27 percent) and repetitive (33 percent),
- Difficulty matching the amount of cereal specified on the WIC voucher to cereal box sizes in the store (41 percent), and
- Respondents feeling that WIC did not issue enough juice (27 percent) or infant formula (38 percent).

As a result of this study, the New York State WIC program has taken steps to minimize barriers to continued participation in WIC. Other States may wish to identify barriers within their own clinics and develop policies to improve access to the program.

## Estimating WIC Eligibility

A somewhat controversial policy issue surrounding WIC concerns the estimation of the number of persons eligible for WIC and the number of eligibles who would participate if funds were available. These estimates, which are done separately for women, infants, and children, are calculated by FNS and used for several purposes, including:

- **Budget estimates.** Projections of the number of eligibles and the number who would likely participate if funds were available are considered in developing WIC program budget estimates used in the President's budget request and the congressional budget process.
- **Coverage estimates.** Ratios of actual participants to estimated eligibles for the program as a whole and by participant category are used to assess how close the program is to the administration's goal of "full funding" whereby the program would serve all the eligible persons who apply. In 1997 (the most recent available data), overall coverage was estimated at 87 percent, with rates of 122 percent for infants, 75 percent for children, 69 percent for pregnant women, and 122 percent for postpartum women (table 6) (USDA, 1999e).

Underestimating the number of people eligible and likely to participate in WIC could result in a shortfall of funds to serve them while overestimating the number of people eligible and likely to participate in WIC could result in insufficient appropriations to other important programs (National Research Council, 2001). In recent years, Congress has expressed some concern about the accuracy of these estimates (U.S. House of Representatives, 1998). For example, the implausibly high participation rates (above 100 percent) for infants and postpartum women in recent years suggest either that ineligible persons are participating in WIC, or that the number of eligibles has been underestimated. FNS has sponsored a program of studies to improve the estimates.

One of these recent studies examined a number of issues affecting the accuracy of estimating the number of WIC eligibles (Gordon et al., 1999). For example, annual income is currently used to estimate income eligibility, while in reality the majority of participants are eligible based on the family's current income and more individuals may be eligible based on monthly (or



biweekly) income rather than annual income (for example, during a recent period of unemployment). The current estimation procedure also does not take into account that certification is for 6 months to 1 year, which could also lead to an underestimate of eligibles since some WIC participants may not be currently income-eligible but were when they were certified.<sup>59</sup> Further, some of the datasets used in developing the estimates are old and may not reflect current conditions. In addition, while applicants can meet any one nutrition risk criteria to be eligible for WIC, comprehensive datasets containing information on all of the nutrition risk criteria do not exist.

A main reason cited for the possible underestimation of WIC eligibles is that the current estimation technique does not take into account that some States raised their Medicaid cutoff level for infants above the cutoff for WIC, thus raising eligibility since by law Medicaid participants are income-eligible for WIC (Gordon et al., 1999).<sup>60</sup> The impact of the Medicaid program on estimating WIC eligibles is likely to become even more important in the future if the expansions of State Medicaid programs to infants with incomes above 185 percent of poverty continues.

Another concern of Congress is that some States have carried over unused balances in recent years, suggesting that WIC is fully funded and possibly serving ineligible persons (U.S. House of Representatives, 1998). The General Accounting Office looked into this issue and identified a number of reasons (some related to how the program is administered) that States had unspent funds, and concluded that “having unspent funds does not necessarily indicate a lack of need for

program benefits” (U.S. General Accounting Office, 1997c).<sup>61</sup>

A final concern is linked to the question of full funding and the estimation of the number of eligibles who would participate if funds were available. For fiscal years 1993 through 1996, estimates of full funding needs were made based on the assumption that 80 percent of those eligible were likely to participate. This figure was based on observed participation rates among young children in the Aid to Families with Dependent Children Program (AFDC) and the Food Stamp Program during the late 1980s. The rate was raised to 83 percent in fiscal 1997 to meet a goal of funding 7.5 million participants. Although the rate was purposely set for that goal, and was not based on direct empirical evidence, there is some evidence that participation in other programs increased in the 1990s. For example, participation by young children in the Food Stamp Program has recently been estimated at 94.5 percent (Gordon et al., 1999). These results suggest that the actual WIC full-funding participation rate may be greater than 83 percent.<sup>62</sup>

In response to congressional interest, USDA asked the National Research Council to convene an expert panel to review the methodology used in developing the estimates of the number of people who are eligible and likely to participate in the WIC program. The principal finding from the panel’s initial work “is that the current methodology and assumptions employed by FNS substantially understate the number of people who are income eligible for WIC” (National Research Council, 2001). The panel is currently examining alternative methods and data sources for estimates and is considering improvements in data that could affect the estimates.

<sup>59</sup>In other words, WIC accumulates new participants as they become eligible, but drops those persons who become income ineligible in later months only after their certification period (usually a 6-month period but up to 12 months for most infants) ends (Lewis and Ellwood, 1998).

<sup>60</sup>As of 1996, seven States qualified infants with incomes above 185 percent of poverty for Medicaid—California, Hawaii, Minnesota, Rhode Island, Tennessee, Vermont, and Washington (Lewis and Ellwood, 1998).

<sup>61</sup>For example, because the Federal grant is the only source of funds for WIC in most States, States exercise caution to ensure that they do not spend more than their Federal grant. In addition, because States use vouchers and checks to distribute food benefits, it is difficult for them to determine the program’s food costs until the vouchers and checks have been redeemed and processed. The installation of a new computer system in one State temporarily reduced the amount of time clinic staff had to certify and serve new clients because they had to instead spend time learning new software and operating procedures.

<sup>62</sup>Because of differences between the programs, the WIC full-funding participation rate could be either higher or lower than participation rates in AFDC or the Food Stamp Program. See Gordon et al. (1999) for a discussion of the reasons that WIC participation rates may be either higher or lower than participation rates in these other programs.

## Assessment of WIC's Cost-Containment Practices

Because WIC is a discretionary grant program that serves as many people as the available funding permits, WIC officials seek to contain program costs, particularly food costs, to serve greater numbers of eligible people (food costs accounted for \$2.8 billion or about 73 percent of the total cost of the WIC program in fiscal 1999). The WIC State agencies use a variety of practices to control costs, which can be grouped into three main categories:

- (1) Negotiating rebate contracts with food manufacturers.
- (2) Restricting the size or brand of food items that participants can obtain with WIC food instruments.
- (3) Restricting the number and/or types of approved WIC vendors.

The primary cost-containment practice is contracting with manufacturers to obtain rebates on infant formula. Since the late 1980s, Federal law has required that WIC State agencies enter into cost-containment contracts for the purchase of infant formula used in WIC. WIC is expected to receive nearly \$1.5 billion in fiscal 2001 from infant formula rebates. Two concerns arose around the question of formula pricing after the WIC rebate requirement was put in place. The first concern was that the policy change might lead to a rise in the price of formula paid by non-WIC participants. The second concern was whether rising prices would in turn be an indication that non-WIC participants were subsidizing WIC.

According to a recent report by the U.S. General Accounting Office (1998b), the wholesale price of formula rose 9 percent in 1989, the same year in which the rebate policy was put into place. Although this rise was considerably higher than increases in the years before or after this change (which averaged 3 percent), the report states that other explanatory factors for this rise in price could not be ruled out. In particular, changes in the structure of demand or production costs may have led to increased prices. While the report did not rule out that prices may have risen as a result of the rebate program, it concluded that non-WIC consumers of infant formula were not subsidizing WIC since the prices WIC pays for formula cover produc-

tion costs, although they are far below wholesale prices. In 1996, the average wholesale price of formula was \$2.48 per can while WIC paid only 15 percent of that price, or 38 cents per can.

In October 2000, Congress directed USDA's Economic Research Service (ERS) to report on the "number of suppliers of infant formula in each State or major marketing area, and to compare the cost of formula that is included in the WIC program versus the cost of formula that is not included in the WIC rebate program" (H.R. 106-948). An interim report (presenting preliminary findings) from the ongoing study was released in April 2001 (Oliveira et al., 2001). The final report was sent to Congress in October 2001.

The study's results indicate that infant formula from the major manufacturers was available throughout the country and that there was no clear and consistent relationship between a formula's being the WIC contract brand and having the highest average retail price.

In addition to the use of infant formula rebates, WIC State agencies use a variety of other practices to control costs including contracting with manufacturers to obtain rebates on other WIC foods.<sup>63</sup> Some State agencies also limit authorized food selections by requiring participants to select the lowest cost brands of food. While decreasing food costs, limiting food items can have a negative impact if WIC participants do not select that food item or do not consume it (U.S. General Accounting Office, 1997a).<sup>64</sup> The least-cost brand requirement may also make food selection more burdensome for vendors and confusing for participants (which, as a result, may use up scarce participant contact time explaining how to select the least-cost brands that could be spent on nutrition education).

While the use of rebates reduces food costs to WIC, the procurement process requires additional administrative effort and resources by WIC State agencies. In addition, State agencies could become increasingly dependent on the funds provided through these rebate contracts (U.S. General Accounting Office, 1997a). A

<sup>63</sup>For example, in fiscal year 1996 nine WIC State agencies obtained rebates on infant cereal and/or infant fruit juices (U.S. General Accounting Office, 1997a).

<sup>64</sup>For example, the WIC State agency in Texas discontinued the least-cost brand requirement for peanut butter after discovering that participants were not selecting it (U.S. General Accounting Office, 1997a).

problem could arise if the manufacturers begin to offer lower rebates, in which case States may have insufficient funds to provide benefits to the current level of participation.

Some States also restrict the number of vendors and/or select vendors with competitive prices in order to contain WIC costs. According to GAO, the retail community does not support placing limits on the number of approved WIC vendors (U.S. General Accounting Office, 1997a). Questions about whether the number of vendors servicing WIC clients are adequate have also been raised. Also of concern in inner cities and rural areas is the issue of whether a vendor is located within a convenient distance of some clients.

Concerns have been raised that overly restrictive cost-containment policies may reduce WIC participants access to and consumption of prescribed foods, ultimately leading to reduced participation and adverse health impacts (*Federal Register*, June 28, 2000). Some people have also questioned whether these cost-containment practices save enough in food costs to compensate for their additional administrative costs.

The William F. Goodling Child Nutrition Reauthorization Act of 1998 (P.L.105-336) mandated that USDA conduct a study on the effect of cost-containment practices (other than infant formula rebates) in the WIC program on seven outcomes: (1) program participation; (2) access and availability of prescribed foods; (3) voucher redemption rates and actual food selections by participants; (4) participants on special diets or with specific food allergies; (5) participant use and satisfaction of prescribed foods; (6) achievement of positive health outcomes; and (7) program costs. The goal of this study is to provide the first systematic data on the balance struck by WIC State agencies between the goals of nutritional improvement and customer satisfaction and the need to make the most of limited program funds (*Federal Register*, June 28, 2000). Information from this study will provide WIC officials with a better understanding of the potential impacts of cost containment as they make future decisions regarding the implementation of these cost-containment practices. The study, funded by ERS, is scheduled to be completed in fall 2002 (an interim report by Kirlin and Cole was released in February 2001).

## Fraud and Abuse in the WIC Program

Fraud and abuse in WIC wastes taxpayers' money and, since WIC serves only as many eligible people as funding allows, may result in fewer eligible persons being able to participate in the program. Three separate groups could engage in fraud or abuse—food retailers (or vendors), participants, and employees:

- **Vendor fraud and abuse** is any intentional or unintentional action of a vendor that violates the vendor agreement, program regulations, policies, or procedures. Vendor fraud includes providing unauthorized foods, or nonfood items to participants in exchange for food instruments; charging the program for supplemental foods not received by participants; and charging the program more for supplemental foods than other non-WIC customers are charged for the same foods.
- **Participant fraud and abuse** occurs when participants obtain benefits to which they are not entitled and/or to misuse the benefits they receive and includes intentionally making a false statement to obtain WIC benefits (e.g. by misrepresenting their income, claiming fictitious dependents), receiving benefits from multiple local agencies or clinics (dual participation), and exchanging food instruments for cash or unauthorized items.
- **Employee fraud and abuse** occurs when employees violate program regulations, policies, or procedures and includes obtaining benefits for themselves or for persons not eligible for the program.

Two early studies funded by USDA's Food and Nutrition Service estimated the extent of fraud and abuse in WIC (U.S. General Accounting Office, 1999). The WIC Income Verification Study found that 5.7 percent of all WIC enrollees in 1988 were income ineligible (either deliberately or unintentionally) and they accounted for 5.8 percent of the total cost of WIC food benefits.<sup>65</sup> The WIC Vendors Issues Study found that in 1991 an estimated 22 percent of vendors overcharged and these overcharges amounted to less than 2 percent of the total dollar value of WIC food vouchers redeemed. A followup to the WIC Vendors Issues Study was conducted in 1998 and examined the extent

<sup>65</sup>A recently released study estimated that 4.5 percent of WIC enrollees in 1998 were not eligible for WIC benefits (Cole et al., 2001).

to which WIC vendors were violating program rules and regulations (Bell et al., 2001). The results indicated that about 8 percent of all vendors overcharged buyers for the items purchased, however, fewer than 2 percent of all WIC redemptions nationally were attributed to overcharge.<sup>66</sup> Over one-third of all vendors (35 percent) allowed minor substitutions of unauthorized foods within a WIC food category (e.g., unauthorized cereals), while only 4 percent of all vendors allowed major substitutions involving a purchase of an item outside of the WIC food category (e.g., soda).

The U.S. General Accounting Office recently conducted a study in response to congressional concerns about the potential for fraud and abuse in the WIC program and the lack of reliable information on the subject. Information for the study was based on a survey of all State WIC agencies and a random sample of local WIC agencies. Their report, released in 1999, described what is known about the level of fraud and abuse in WIC, and examined the efforts taken to prevent and detect fraud and abuse (U.S. General Accounting Office, 1999). According to GAO, WIC State agencies reported that about 9 percent of all vendors committed fraud or abuse during fiscal 1997 and 1998.<sup>67</sup> The level of detected participant and employee fraud and abuse was much lower. Over the same 2-year period, local WIC agencies reported that only 0.14 percent of the average monthly number of participants committed fraud or abuse of a serious nature (such as exchanging food vouchers for cash or dual participation), while 1.6 percent of the average monthly number of participants committed less serious offenses (such as redeeming food vouchers outside authorized dates). Little fraud or abuse by employees was reported. GAO acknowledged that their estimates of fraud and abuse underestimate actual levels, in part because detected levels of fraud and abuse reflect the level of detection efforts which differed among the State and local WIC agencies. In addition, some fraud and abuse (by vendors, participants, and employees) goes undetected regardless of detection efforts.

<sup>66</sup>Overcharges are not necessarily deliberate attempts to commit fraud. For example, simple cashier error could result in an overcharge. Almost 7 percent of all vendors undercharged WIC buyers.

<sup>67</sup>The number of vendors committing fraud or abuse varied greatly by State. Fifteen States reported no detection and 6 States reported detecting 25 percent or more of their vendors as having committed fraud or abuse.

Monitoring the WIC program for fraud and abuse is resource-intensive and the lack of resources, in terms of both personnel and funding, was cited by many WIC State officials as one of the barriers inhibiting efforts to detect and prevent fraud in the WIC program. Activities associated with detecting and preventing fraud and abuse are funded through the Nutrition Services and Administration (NSA) grants to the WIC State agencies. Therefore, fraud and abuse detection and prevention activities compete with the other activities funded by the NSA grants, such as nutrition education, and program outreach, for limited resources.

State officials also cited limited resources as inhibiting their ability to implement the electronic benefits transfer (EBT) system. Using the EBT system to issue WIC food benefits offers a means of reducing some of the vulnerabilities for fraud and abuse by both vendors and participants (*Federal Register*, June 16, 1999). Instead of paper checks or vouchers, EBT uses a computer chip on the EBT card to issue and transact food instruments. Only when the EBT system approves the food item for purchase is the item accepted as part of the WIC transaction. Participants must enter a secret personal identification number (PIN) to access their EBT card, thereby reducing the likelihood that unauthorized individuals will use the card to obtain WIC food benefits. Since the person's EBT account lists the authorized WIC foods available to the recipient, the universal product code (UPC) listed on food items can be checked against the list of authorized foods to determine if that food item is allowable, as the cashier electronically scans each food item. The use of the UPC reduces the opportunity for overcharging, substitution, and charging for food items not received. Only if the computer indicates that the food item is allowable will that item be accepted as part of the WIC transaction. Currently, EBT is only in operation in parts of Wyoming, Ohio, and Nevada, which are conducting pilot tests examining the feasibility of using EBT in the WIC program statewide in fiscal year 2002. However, other States (including Connecticut, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New Mexico, North Dakota, Rhode Island, Texas, and Vermont) are in various stages of planning for EBT pilot studies (USDA, 1999b).

The GAO recommendations to improve program integrity include: amend program regulations to require State agencies to limit the number of vendors they authorize to a number they can effectively man-

age while meeting the regulatory requirements for participant access; develop and implement cost-effective strategies for the States to use in collecting and monitoring information on incidences of participant fraud and abuse; and require WIC State agencies to have policies and procedures for addressing employee conflicts of interest.<sup>68/69</sup>

Since its inception, WIC regulations have contained provisions directed specifically at the prevention and detection of fraud and abuse. For example, participants are required to meet eligibility criteria in order to receive WIC benefits and State agencies are required to conduct onsite monitoring visits to at least 10 percent of authorized food vendors each year. However, in recent years Congress has expressed concern that as the WIC program has grown in size and complexity, so too has the potential for loss of program funds through fraud and abuse (*Federal Register*, June 16, 1999).

Recent legislation in the form of the William F. Goodling Child Nutrition Reauthorization Act of 1998 (P.L. 105-336) contained provisions specifically designed to strengthen integrity in WIC. For example, the Goodling Act requires State agencies to (1) implement a system to prevent and identify dual participation within each local agency and between local agencies under the State agency's jurisdiction; and (2) identify high risk vendors and conduct compliance buys on them.

Vendors who have been convicted of either trafficking in WIC vouchers or other serious violations may be permanently disqualified from participating in WIC unless disqualification of the vendor would cause hard-

---

<sup>68</sup>By limiting the number of vendors, States can more frequently monitor vendors and conduct compliance investigations to detect and remove vendors from the program who commit fraud or other serious program violations, according to Federal and WIC State officials (U.S. General Accounting Office, 1998a).

<sup>69</sup>Potential conflicts of interest may arise when employees also participate in WIC or when an employee both certifies and issues benefits to the same individual.

ship to participants. The Goodling Act also requires that all applicants, except in limited circumstances, be physically present, document their income (or participation in the Food Stamp, Medicaid, or TANF programs) and provide proof of residency and identification, at certification.<sup>70</sup> Prior to this legislation, States were allowed to establish their own documentation requirements for applicants. A study by the U.S. General Accounting Office (1997a) conducted prior to the passage of the Goodling Act, found that at least 14 States did not require applicants to provide documentation of income eligibility, 20 States did not require applicants to provide proof of residency, and 12 States did not require applicants to provide proof of identity.

In December 2000, USDA published a final rule amending regulations governing the WIC food delivery systems (*Federal Register*, December 29, 2000). The rule increases program accountability and efficiency in food delivery and should decrease vendor violations of program requirements and loss of program funds. It strengthens vendor management in retail food delivery systems by establishing mandatory selection criteria, training requirements, criteria to be used to identify high-risk vendors, and monitoring requirements, including compliance investigations.

Given the size of the program and the costs associated with its operation, integrity issues in the WIC program will continue to come under scrutiny.

---

<sup>70</sup>Although the family income of participants must be documented, WIC State agencies are not required to verify the documentation.

## Conclusions

WIC has grown dramatically since its establishment almost three decades ago. Strong congressional support, generated by various evaluations that found WIC to have high rates of return for its investment, resulted in increased funding for WIC, which, along with effective cost-containment practices, allowed more people to participate in the program. Legislative and regulatory actions and Federal/State/local partnerships that encouraged State innovations such as infant formula rebates have helped shape and refine the program as it evolved into one of the central components of the Nation's food assistance system. In recent years, participation in WIC has leveled off, as appropriations for WIC have stabilized at what is believed to be near full-funding levels.

As a gateway through which many low-income families enter the public health system, WIC reaches a large number of this Nation's infants and children.

Therefore, having the most effective WIC program possible can have an important influence on the health of America. The WIC community faces a number of issues that have been raised by policymakers, researchers, and WIC program managers at the Federal, State, and local levels about both the impact and the administration of the WIC program. While some of these questions have been addressed in the literature, others remain unanswered. Additional research to determine the optimal method of operating the WIC program to meet the needs of program participants given the resource constraints is needed. USDA's Economic Research Service and the Food and Nutrition Service are both currently conducting research related to WIC (see appendix for a brief description of some of these ongoing studies). Results from these studies will help shed light on many of the issues currently facing the WIC program.

# References

- Abbott Laboratories, Ross Products Division. *Ross Mother Survey: Breastfeeding Trends Through 1999*. Unpublished report, 1999.
- Abrams B. "Preventing Low Birth Weight: Does WIC Work? A Review of the Special Supplemental Food Program for Women, Infants, and Children," *Annals New York Academy of Sciences* (678), March 1993.
- American Academy of Pediatrics. "Policy Statement: Breastfeeding and the Use of Human Milk (RE9729)," *Pediatrics* 100(6), December 1997.
- American Academy of Pediatrics. "Policy Statement: WIC Program (RE8122)," June 1988.
- Bartlett, S., M. Brown-Lyons, D. Moore, and A. Estacion. *WIC Participant and Program Characteristics 1998*. No. WIC-00-PC. Prepared by Abt Associates Inc., for U.S. Department of Agriculture, Food and Nutrition Service, Office of Analysis, Nutrition and Evaluation. May 2000.
- Bell, L., M. Harkins, V. Shayne, S. Schreiber, C. Miller, D. Smith, and P. Moore. *WIC Vendor Management Study, 1998*. Prepared by Health Systems Research, Inc., for U.S. Department of Agriculture, Food and Nutrition Service, Office of Analysis, Nutrition and Evaluation, July 2001.
- Besharov, D. J., and P. Germanis. "Is WIC as Good as They Say?" *The Public Interest* (134), Winter 1999.
- Burstein, N. R., M. K. Fox, J. B. Hiller, R. Kornfeld, K. Lam, C. Price, D. T. Rodda. *Profile of WIC Children*. Prepared by Abt Associates Inc., for U.S. Department of Agriculture, Food and Nutrition Service, Office of Analysis, Nutrition, and Evaluation, March 2000.
- Centers for Disease Control and Prevention. "Nutritional Status of Children Participating in the Special Supplemental Nutrition Program for Women, Infants, and Children—United States, 1988-1991," *The Morbidity and Mortality Weekly Report*, 45(3), January 26, 1996.
- Centers for Disease Control and Prevention. "Update: Prevalence of Overweight Among Children, Adolescents, and Adults—United States, 1988-1994," *The Morbidity and Mortality Weekly Report*, 46(9), March 7, 1997.
- Cole, N., D. Hoaglin, and J. Kirlin. *National Survey of WIC Participants*. Prepared by Abt Associates Inc., for U.S. Department of Agriculture, Food and Nutrition Service, Office of Analysis, Nutrition, and Evaluation, October 2001.
- Devaney, B. "Commentary," Ed. P. Rossi, *Feeding the Poor: Assessing Federal Food Aid*, Washington, DC: American Enterprise Institute, 1998.
- Devaney, B., L. Bilheimer, and J. Schore. *The Savings in Medicaid Costs for Newborns and Their Mothers from Prenatal Participation in the WIC Program: Volume 1*. Prepared by Mathematica Policy Research, Inc., for U.S. Department of Agriculture, Food and Nutrition Service, October 1990.
- Federal Register*. November 27, 1992, pp. 56231-56241.
- Federal Register*. March 18, 1996, pp. 10903-10907.
- Federal Register*. June 16, 1999, pp. 32308-32343.
- Federal Register*. June 28, 2000, pp. 39854-39856.
- Federal Register*. December 29, 2000, pp. 83248-83289.
- Fox, M.K., N. Burstein, J. Golay, and C. Price. *WIC Nutrition Education Assessment Study*. Prepared by Abt Associates Inc., for U.S. Department of Agriculture, Food and Nutrition Service, September 1998.

- Fox, M.K. and W. Hamilton. *Nutrition and Health Outcomes Study: Review of the Literature*. Prepared by Abt Associates Inc., for U.S. Department of Agriculture, Economic Research Service, forthcoming.
- Galford, G., J. Thompson, and K. Wise. *Evaluation of the Farmers' Market Demonstration Project*. Prepared by Price Waterhouse for U.S. Department of Agriculture, Food and Nutrition Service, March 1991.
- Gordon, A., R. Kliman, J. Ohls, J. Anderson, and K. LaBounty. *Estimating the Numbers of People Eligible for WIC and the Full-Funding Participation Rate: A Review of the Issues, Final Report*. Prepared by Mathematica Policy Research, Inc., for U.S. Department of Agriculture, Food and Nutrition Service, February 1999.
- Harell, M.L., R. Franklin, K. Zack, and L. Scher. *Nutrition Risk and Eligibility for WIC*. Prepared by Sigma One Corporation for U.S. Department of Agriculture, Food and Nutrition Service, 1999.
- Institute of Medicine. *Framework for Dietary Risk Assessment in the WIC Program: Interim Report*. Washington, DC: National Academy Press, 2000.
- Institute of Medicine, *WIC Nutrition Risk Criteria: A Scientific Assessment*. Washington, DC: National Academy Press, 1996.
- Kirlin, J.A., and N. Cole. *Assessment of WIC Cost-Containment Practices: An Interim Report to Congress*. E-FAN-01-005. Prepared by Abt Associates Inc., for U.S. Department of Agriculture, Economic Research Service, February 2001.
- Kramer-LeBlanc, C.S., A. Mardis, S. Gerrior, and N. Gaston. *Review of the Nutritional Status of WIC Participants*. CNPP-8. U.S. Department of Agriculture, Center for Nutrition Policy and Promotion, December 1999.
- Ku, L., B. Cohen, and N. Pindus. *Full Funding for WIC: A Policy Review*. Washington, DC: The Urban Institute, 1994.
- Ku, L., D.J. Besharov, and P. Germanis. "Debating WIC," *The Public Interest*, Spring 1999.
- Leonard, R.E. "Recalling WIC's Program's 1960s Humble Beginnings," *Nutrition Week* 24(15), April 22, 1994.
- Lewis, K., and M. Ellwood. *Medicaid Policies and Eligibility for WIC*. Prepared by Mathematica Policy Research, Inc., for U.S. Department of Agriculture, Food and Nutrition Service, July 1998.
- Library of Congress, Congressional Research Service. *The WIC Program*. CRS Report to Congress. 96-172 EPW. May 27, 1997.
- Macro International. *The WIC Dynamics Study, Volume 1, Final report*. Prepared for U.S. Department of Agriculture, Food and Consumer Service, February 1995.
- Mei, Z., K.S. Scanlon, L.M. Grummer-Strawn, D.S. Freedman, R. Yip, and F.L. Trowbridge. "Increasing Prevalence of Overweight Among U.S. Low-income Preschool Children: The Centers for Disease Control and Prevention Pediatric Nutrition Surveillance, 1983 to 1995," *Pediatrics* 101(1), January 1998.
- National Association of Farmers' Market Nutrition Program. *Program Impact Report for the 1998 WIC Farmers' Market Nutrition Program*. NAFMP, Washington, DC, May 1999.
- National Association of WIC Directors. *NAWD WIC Food Prescription Recommendations*. WIC Position Paper 00-001, 2000.
- National Research Council, Committee on National Statistics, Division on Behavioral and Social Sciences and Education. *Estimating Eligibility and Participation for the WIC Program: Phase 1 Report*, 2001.
- Ogden, C.L., R.P. Troiano, R.R. Briefel, R.J. Kuczmarski, K.M. Flegal, and C.L. Johnson. "Prevalence of Overweight Among Preschool Children in the United States, 1971 through 1994," *Pediatrics* 99(4), April 1997.
- Oliveira, V., and C. Gundersen. *WIC and the Nutrient Intake of Children*. FANRR-5. U.S. Department of Agriculture, Economic Research Service. March 2000.



- Oliveira, V., M. Prell, E. Frazao, and D. Smallwood. *Infant Formula Prices and Availability: ERS Interim Report to Congress*. U.S. Department of Agriculture, Economic Research Service, April 2001.
- Owen, A.L., and G.M. Owen. "Twenty Years of WIC: A Review of Some Effects of the Program," *Journal of the American Dietetic Association* 97(7), July 1997.
- Randall, B., and L. Boast. *Study of WIC Participant and Program Characteristics 1992*. Prepared by Abt Associates Inc., for U.S. Department of Agriculture, Food and Nutrition Service, Office of Analysis and Evaluation, April 1994.
- Randall, B., K. Sprague, D.B. Connell, and J. Golay. *WIC Nutrition Education Demonstration Study: Child Intervention*. Report no. CN-01-WICNECI. Prepared by Abt Associates Inc., for U.S. Department of Agriculture, Food and Nutrition Service, Office of Analysis and Evaluation, March 2001a.
- Randall, B., K. Sprague, D.B. Connell, and J. Golay. *WIC Nutrition Education Demonstration Study: Prenatal Intervention*. Report no. CN-01-WICNEPI. Prepared by Abt Associates Inc., for U.S. Department of Agriculture, Food and Nutrition Service, Office of Analysis and Evaluation, March 2001b.
- Rossi, P.H. *Feeding the Poor: Assessing Federal Food Aid*. Washington, DC: The American Enterprise Institute, 1998.
- Sargent, J.B., L. Attar-Abate, A. Meyers, L. Moore, and E. Kocher-Ahern. "Referrals of Participants in an Urban WIC Program to Health and Welfare Services," *Public Health Reports* 107(2), 1992.
- Schwartz, J.B., D.K. Guilkey, J.S. Akin, and B.M. Popkin. *The WIC Breastfeeding Report: The Relationship of WIC Program Participation to the Initiation and Duration of Breastfeeding*. Prepared by the Research Triangle Institute for U.S. Department of Agriculture, Food and Nutrition Service, September 1992.
- U.S. Department of Agriculture, Food and Consumer Service, Supplemental Food Programs Division. *The WIC Foods and Food Packages*, Memo, September 1997.
- U.S. Department of Agriculture, Food and Nutrition Service, Office of Analysis, Nutrition, and Evaluation. *Cost-Effectiveness of Infant Formula Rebate Systems in the Special Supplemental Food Program for Women, Infants, and Children (WIC)*, May 1991.
- U.S. Department of Agriculture, Food and Nutrition Service. *Final WIC Policy Memorandum 98-9, Revision 1, Nutrition Risk Criteria*, December 1998.
- U.S. Department of Agriculture, Food and Nutrition Service. *Annual Historical Review, Fiscal Year 1997*, September 1999a.
- U.S. Department of Agriculture, Food and Nutrition Service. *Directions: The WIC Program Technology Newsletter*, Spring/Summer 1999b.
- U.S. Department of Agriculture, Food and Nutrition Service. *History of WIC 1974-1999, 25<sup>th</sup> Anniversary, Activities Which Led to WIC's Establishment*. <http://www.fns.usda.gov/wic/menu/new/wic25.htm>. 1999c.
- U.S. Department of Agriculture, Food and Nutrition Service. Budget Division. *Program Information Report (Keydata), U.S. Summary, September 1999*, November 1999d.
- U.S. Department of Agriculture, Food and Nutrition Service. *Special Supplemental Nutrition Program for Women, Infants, and Children (WIC): Eligibility and Coverage Estimates, 1997 Update*, 1999e.
- U.S. Department of Agriculture, Food and Nutrition Service, Office of Analysis, Nutrition, and Evaluation. *Summary: FY1999 WIC Food Package Cost Analysis*, November 2000a.
- U.S. Department of Agriculture, Food and Nutrition Service, Office of Analysis, Nutrition, and Evaluation. *WIC Infant Formula Rebates—Fiscal Year 2001*, November 2000b.

- U.S. Department of Agriculture, Food and Nutrition Service. *Fit WIC: National Project Summary*. (Developed for Food and Nutrition Conference and Exhibition), October 2001a.
- U.S. Department of Agriculture, Food and Nutrition Service. "WIC Farmers' Market Nutrition Program: Program Description." <http://www.fns.usda.gov/wic/content/fmnp/fmnpfaqs.htm>. Updated August 2001b.
- U.S. Department of Agriculture, Food and Nutrition Service, Budget Division. *Program Information Report (Keydata), U.S. Summary, June 2001*, August 2001c.
- U.S. Department of Agriculture, Food and Nutrition Service, Supplemental Food Programs Division, *WIC Policy Memorandum 98-9, Revision 5, Nutrition Risk Criteria*, March 23, 2001d.
- U.S. General Accounting Office. *The Special Supplemental Food Program for Women, Infants, and Children (WIC)—How Can It Work Better?* Report by the Comptroller General. CED-79-55. February 1979.
- U.S. General Accounting Office. *Need to Foster Optimal Use of Resources in the Special Supplemental Food Program for Women, Infants, and Children (WIC)*. GAO/RCED-85-105. September 1985.
- U.S. General Accounting Office. *Early Intervention: Federal Investments Like WIC Can Produce Savings* GAO/HRD-92-18. April 1992.
- U.S. General Accounting Office. *Breastfeeding: WIC's Efforts to Promote Breastfeeding Have Increased*. GAO/HRD-94-13. December 1993.
- U.S. General Accounting Office. Resources, Community, and Economic Development Division. *Food Assistance: A Variety of Practices May Lower the Costs of WIC*. GAO/RCED-97-225. September 1997a.
- U.S. General Accounting Office. Resources, Community, and Economic Development Division. *Food Assistance: Working Women's Access to WIC Benefits*. GAO/RCED-98-19. October 1997b.
- U. S. General Accounting Office. *WIC: States Had a Variety of Reasons for Not Spending Program Funds*. GAO/RCED-97-166. June 1997c.
- U.S. General Accounting Office. *Information on Selected Aspects of WIC*. GAO/T-RCED-98-128. 1998a.
- U.S. General Accounting Office. *Information on WIC Sole-Source Rebates and Infant Formula Prices*. GAO/RCED-98-146. May 1998b.
- U.S. General Accounting Office. Resources, Community and Economic Development Division. *Efforts to Control Fraud and Abuse in the WIC Program Can Be Strengthened*. GAO/RCED-99-224. August 1999.
- U.S. General Accounting Office. Resources, Community, and Economic Development Division. *Food Assistance: Financial Information on WIC Nutrition Services and Administrative Costs*. GAO/RCED-00-66. March 2000.
- U.S. House of Representatives. A Report to the Committee on Appropriations, U.S. House of Representatives, on the Special Supplemental Nutrition Program for Women, Infants, and Children. Surveys and Investigations Staff, March 1998.
- U.S. House of Representatives. House Report 107-116. Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Bill, 2002. June 27, 2001.
- White House Conference on Food, Nutrition and Health, 1970.
- Woelfel M.L., R. Pruzek, H. Stratton, D. Hernandez, Shackman G., and R. AbuSabha. *Barriers to Retention Among NYS WIC Infants and Children*. New York State Department of Health, Division of Nutrition, Evaluation and Analysis Unit. December 2001.

# Appendix

## Ongoing WIC-Related Research Funded by the Economic Research Service and the Food and Nutrition Service

Since 1998, USDA's Economic Research Service (ERS) has had responsibility for conducting studies and evaluations of the Nation's domestic food and nutrition assistance programs, including WIC. ERS established the Food Assistance and Nutrition Research Program (FANRP) to carry out this responsibility. FANRP projects utilize the capabilities of both external researchers and ERS staff and are designed to meet the critical information needs of program managers, policy officials, the research community, and the public at large. USDA's Food and Nutrition Service (FNS), the agency responsible for administering USDA's food and nutrition assistance programs, also sponsors studies and analyses that inform policymaking and management of FNS programs, and coordinates program-related nutrition policy and services. Some of the ongoing WIC-related research projects at ERS and FNS are summarized below. More information on ERS's WIC-related research can be found at the ERS website at <http://www.ers.usda.gov>. Information about the status of ongoing WIC-related studies funded by FNS can be found at the FNS website at <http://www.fns.usda.gov/fns>.

### ERS Studies:

#### **Report to Congress on WIC Program Cost-Containment Practices and their Impacts**

Objective: to assess the effects of cost-containment practices by WIC State agencies—such as limiting brand-named products in the WIC food package—on program participation, access to and availability of prescribed foods, voucher redemption rates, actual food selections by participants, participants on special diets or with specific food allergies, participant use of and satisfaction with prescribed foods, achievement of positive health outcomes, and program costs. Awarded

to Abt Associates. An interim report to Congress was released in February 2001 (Kirlin and Cole, 2001); the final report is due summer 2002.

#### **Report to Congress on Infant Formula Prices and Availability**

Objective: to determine the number of suppliers of infant formula in each State or major marketing area, and to compare the cost of formula that is included in the WIC rebate program versus the cost of formula that is not included in the WIC rebate program. Conducted by ERS. An interim report to Congress was released in April 2001 (Oliveira et al., 2001). The final report may be found on the ERS website at <http://www.ers.usda.gov/publications/efan02001>.

#### **Obesity in Low-Income Mothers and Children**

Objective: using a data set that links WIC administrative data with birth certificate data on approximately 35,000 mother-child pairs, the study will examine factors that may influence the probability that by age 4 a WIC child with an obese mother will also be obese. Awarded to the Children's Hospital Medical Center, University of Cincinnati College of Medicine. The final report is due winter 2002/2003.

#### **Economic Benefits of a Breastfeeding Promotion: A Controlled Clinical Trial**

Objective: to evaluate the benefits of a breastfeeding promotion intervention campaign among low-income women. A randomized controlled clinical trial will examine the effects on breastfeeding prevalence and duration, infant health, and infant medical costs of providing the mother with personalized breastfeeding counseling. Awarded to the Montefiore Medical Center, Albert Einstein College of Medicine. The final report is due winter 2002/2003.

### **Expert Review of Methodology for Estimating Number of Individuals Eligible for WIC**

Objective: to review the methodology that USDA uses in preparing estimates for how many individuals are eligible for, and likely to participate in, the WIC program. The project is being conducted in two phases. During Phase I, the National Research Council reviewed the current eligibility and participation estimation methodology and pertinent literature, conducted a workshop, and issued a report that provides an assessment of the methodology (National Research Council, 2001). The objective of Phase II will be to achieve consensus on recommendations concerning a methodology for estimating eligibility for, and participation in, the WIC program. This phase of the work may also include preparing and critiquing test estimates produced using different methodologies under consideration by the panel. The final report is due summer 2003.

### **Identify and Evaluate Methods to Prevent Fraud and Abuse Among Staff and Participants in WIC**

Objective: to identify and evaluate the best tools for detecting fraud and abuse by WIC staff or participants. This study will review existing tools and data systems presently in use by some WIC State agencies for detecting fraud and abuse among WIC vendors. Awarded to Applied Techno-Management Systems, Inc. The final report, in two volumes, was posted on the ERS website in early 2002 at <http://www.ers.usda.gov/publications/efan01011> and <http://www.ers.usda.gov/publications/efan01012>.

### **Factors Associated with Iron Status Among WIC Infants in Rural West Virginia**

Objective: to collect primary data on WIC infants and toddlers, ages 6 to 24 months, in West Virginia counties that are known to have high rates of iron-deficiency anemia, to identify dietary factors that are associated with poor iron status, and to provide data that can be used to design and implement effective nutrition education and intervention programs. Awarded to West Virginia University Research Corporation. The final report is due spring 2003.

### **Diet Intake and Health Outcomes**

Objective: to develop and evaluate dietary assessment tools for young children that can be used in WIC program centers, recognizing that adaptations may be needed for culturally diverse populations. The tools

will serve several functions, including screening for dietary patterns that do not meet Federal dietary recommendations, facilitating the triage of patients for services, and serving as the basis for general nutrition education. Awarded to Harvard School of Public Health and Research Triangle, Inc. The final report is due winter 2001/2002.

### **Feasibility and Accuracy of Record Linkage to Estimate Multiple Program Participation**

Objective: to identify the feasibility of linking the administrative data files from food stamps, WIC, and child nutrition programs to facilitate analysis of multiple program participation and to improve program operations in such areas as one-stop shopping, adjunctive eligibility determination, program integrity, and administrative and client burden. Conducted by Abt Associates. The final report is due winter 2002/2003.

### **Early Childhood Longitudinal Study—Birth Cohort 2001**

Objective: to support enhanced data collection necessary to examine the link between WIC participation in infancy and childhood to cognitive development, obesity, and food security by adding a bank of questions to the Early Childhood Longitudinal Study—Birth Cohort (ECLS-B) conducted by the National Center for Educational Statistics, U.S. Department of Education. Added questions include information on WIC participation, infant feeding practices, health care, height and weight, and related information. Interagency agreement with the U.S. Department of Education.

### **FNS Studies:**

#### **Dietary Risk in the WIC Program: A Scientific Assessment**

Objective: to review the scientific basis for methods currently employed in the dietary risk assessment of individuals for eligibility to participate in WIC. In phase one, funded by FNS, the National Academy of Sciences convened an expert committee to develop a framework for assessing dietary risk among WIC Program applicants, focusing in particular on *Failure to Meet Dietary Guidelines* as a risk criterion for women and children. An interim report was released in October 2000 (Institute of Medicine, 2000). In the second phase of the study, funded by ERS, the Committee will review a variety of approaches, and recommend one or more for use in WIC. They will also recom-

mend specific cutoffs for establishing WIC eligibility of women and children using the recommended approach(es) using the decision framework developed for this project, and identify specific areas in which additional research or instrument development may be needed to fully implement the recommended approach(es). The release of the final report is scheduled for 2002.

### **Adolescent WIC Participants Study**

**Objective:** To describe WIC's benefits and services through the perception of adolescent WIC participants. This project is in light of the fact that pregnant teens and/or adolescent mothers may have different needs than other WIC participants. Program areas in which the needs of WIC adolescents may differ from those of WIC clients as a group include: Knowledge of nutrition, Adoption of healthy dietary practices, Knowledge of available health care services, and Access to available services. FNS surveyed a representative sample of pregnant adolescents and adolescent mothers who were enrolled in WIC. This survey provides precise estimates of the magnitude of teen clients' needs. A concurrent survey of local WIC agencies describes activities undertaken at the local level to address needs of adolescent participants. Focus groups of eligible nonparticipating adolescents provide insight into needs of adolescents not covered by the survey.

### **WIC/CHIP Enrollment Demonstration Project**

**Objective:** to evaluate the feasibility and costs of using WIC clinics to identify and enroll eligible children in Medicaid and the Children's Health Insurance Program (CHIP). Conducted by the Indiana Department of Health in conjunction with FNS. The Indiana Department of Health will conduct Medicaid/CHIP enrollment for approximately 2 years in about 20 WIC

clinics. Each site will receive up to \$10,000 each fiscal year for the project. The demonstration project studies the number of children enrolled in Medicaid/CHIP, income levels of families enrolled, cost of enrollment activities, effect of enrollment of activities on WIC clinic operations and caseloads, and other factors that are not yet determined by FNS.

### **Participant Characteristics Monograph Series**

Conducted by Abt Associates Inc. Monographs will be produced on two topics: Native Americans and overweight children. Each monograph will include a profile of the sociodemographic characteristics, risk profiles and health care usage patterns of the relevant group of participants. These reports will be based primarily on data available in the biennial participant characteristics data sets. The report on overweight children is available on the FNS website (Report No. WIC-01-PCOM).

### **Survey of State Public Health Nutrition Workforce**

**Objective:** to monitor trends in the education and training, work experience, areas of practice, and training needs of the public health nutrition workforce at the State and local government levels. The Association of State and Territorial Public Health Nutrition Directors (ASTPHND) in cooperation with FNS, is conducting a survey of public health nutritionists to monitor trends in education and training, work experience, areas of practice and training needs. ASTPHND has conducted similar surveys periodically beginning in 1985. A profile describing the workforce will assist the FNS in determining the extent to which the current and future workforces have the necessary requirements to carry out the WIC program. A final report is due to FNS in 2002.