



United States  
Department of  
Agriculture

Food and  
Nutrition  
Service

FNS-277

# WIC Evaluation Resource Guide

- 1. Alabama Breastfeeding Study
- 2. Massachusetts Study on Agency Outcomes
- 3. Missouri Prenatal Study
- 4. North Carolina Study on WIC Effects on Health
- 5. Missouri WIC/Medicaid Study
- 6. New Jersey Study on Parenting Promotion and Education

B-6

LOCAL AGENCY Jefferson

Nutrition Education  
Record a Y for Yes, an N for No, or an NA for Not Available. Record site names at the top of each column.

Topic	Site <i>Allen</i>	Site <i>Booth</i>	Site <i>Mercy</i>
NUTRITION EDUCATION SESSIONS Is nutrition education conducted on site?	Y	Y	Y
Is nutrition education conducted during . . .			
certification?		Y	
food instrument pickup?		Y	
waiting periods?		Y	
dietary assessment?		N	
Are nutrition education sessions scheduled independently of other activities?			
MATERIALS Are the following nutrition education materials available in the waiting area.....			
pamphlets/brochures		Y	
posters		Y	
recipes		Y	
audiovisuals		Y	

## ***Checklist for Designing and Implementing an Evaluation***

- Why evaluate?**  
Clearly think through the reason(s) you want to evaluate. Consider the evaluation in terms of your program's goals.
- What do I need to know?**  
Write down what you hope to learn.
- How will I use the information?**  
Before you begin an evaluation, determine how you will use the findings.
- What resources are available?**  
Identify available resources — include sources of technical assistance.
- Are my research questions clear?**  
Write clear and specific research questions.
- Where will I find the data to answer research questions?**  
Identify sources of information. Data availability may affect your choice of a particular study design.
- How should I design my study?**  
Choose an appropriate evaluation methodology, one that suits your research questions and your data as well as one that you and your staff can execute.
- What does data collection entail?**  
Carefully plan for data collection. Think through plans to identify data sources, design data collection instruments, train data collection staff, and collect data. Remember to use existing data; it requires fewer resources.
- How should I analyze the data?**  
Analysis and assessment are inherently judgmental. First calculate simple measures (such as frequencies and sample means). Apply sophisticated statistical techniques only if your data will support them, you have the skills necessary to complete such analyses (or resources to obtain help), and the findings from such analyses are necessary for your evaluation.
- What's the best way to report study results?**  
Think about the best way to get your study findings across. Experiment with tables, charts, and graphs that reduce narrative and provide easy-to-read visual aids.

## **Acknowledgments**

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The Special Supplemental Food Program for Women, Infants, and Children (WIC) is open to all eligible persons regardless of race, color, national origin, age, sex, or handicap.

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# Contents

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	Acknowledgments	i
	Introduction	
	Evaluation: A Vital Management Tool	1
I.	<b>Defining Evaluation</b>	2
	• Types of Evaluations	
	• Process or Implementation Studies	
	• Impacts Analyses	
	• Cost-benefit Analysis	
II.	<b>Deciding Whether To Evaluate</b>	3
	• Why Should We Evaluate?	
	• What Do We Want To Know?	
	• How Will We Use the Results?	
	• What Resources Are Available?	
III.	<b>Identifying Sources of Information</b>	6
	• How to Locate Data	
	• How to Organize Your Data Needs	
IV.	<b>Evaluation Designs</b>	8
	• Case Studies	
	• Surveys	
	• Field Experiments	
	• Pre/Post Designs	
	• Observational Studies	
	• Simulation	
	• Forecasts	
	• Linking a Design to the Evaluation Questions	
V.	<b>Understanding Sampling Strategies</b>	10
	• Four Major Points You Should Know About Sampling	
	• Probability Versus Nonprobability	
	• Types of Samples	
	• Sample Size	
	• Sample Size and Generalization	

---

---

<b>VI. Collecting Data</b>	13
• Data Collection Methods and Instruments	
• Training Data Collectors	
• Pilot Testing	

---

<b>VII. Analyzing the Data</b>	15
• Qualitative Data	
• Quantitative Data	
• Measures of Central Tendency	
• Measures of Dispersion	
• Frequencies and Cross-Tabulations	

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<b>VIII. Reporting Evaluation Results</b>	17
• What To Include in Your Evaluation Report	
• Using Illustrative Charts and Graphs	

---

<b>Appendix A</b>	
<b>Studies of the WIC Program by Independent Evaluators and State and Local WIC Agencies</b>	19

---

<b>Appendix B</b>	
<b>Sample Instruments</b>	33

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<b>Appendix C</b>	
<b>USDA Resources for Planning and Evaluation</b>	41



## **Introduction** **Evaluation: A Vital Management Tool**

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This publication is a practical guide for WIC administrators to design and implement program evaluations. The emphasis is on evaluation of critical issues at both State and local levels, management surveys, and assessment of administrative procedures that comprise day-to-day operations in local WIC agencies.

There are, of course, any number of reasons that you might evaluate some or all aspects of your WIC operations. Such information can be used for program planning and budgeting; for policy decisionmaking; to improve or redesign local operations, and to solve problems or resolve crises.

Program evaluation can involve highly complex, multiyear, multisite studies that require numerous, highly trained staff and significant funding levels. Or, it can also be a modest descriptive case study of how one program delivers a particular service. You need to decide which suits your needs.

Completing multiyear studies is clearly an important task, and their results help guide policy and program decisions at national, State, and local levels. Of equal importance, however, are shorter term administrative studies and management surveys that focus on less global program implementation issues. Such evaluations examine day-to-day operations in local service-delivery agencies. They focus on how services are delivered, the quality of service, and associated costs.

### **Seeking Key Answers**

A primary reason why WIC managers evaluate their operation is to obtain information that is administratively useful. Several questions set the framework for this type of evaluation:

- Are these activities the ones we should be carrying out?
- Are we carrying them out in the most effective and efficient fashion?
- By completing these activities, are we meeting our program objectives?
- Is our program effective?
- If our program is not effective, is the problem individual error, special circumstances, or the need for system redesign?
- What did we expect to see as results?
- What is different than, or the same as, what we expected?

This guide provides simple approaches to answer these key questions. It offers practical guidance on evaluation. It also includes information on evaluations conducted by other researchers and State and local WIC agencies. These reports can serve as valuable resources as you face issues and resolve problems in your agency.



## I. Defining Evaluation

For the public sector, an evaluation is a careful consideration of the objectives, operations, and effects of a publicly supported program or activity. Evaluation can measure program performance and often involves comparing one set of program measures with another set of measures — either of the same program, of other programs, or with a more general set of comparable measures. Program performance includes assessing program activities as well as identifying the outcomes of these activities. Measuring “performance” means:

- considering progress toward meeting program objectives
- estimating the use of resources
- gauging effects on persons served by the program

Evaluation may also include an assessment of the environment in which a program operates, as well as the program’s effects on that environment.

### Types of Evaluations

There are several types of evaluation. Program monitoring activities, feasibility studies, and outcome studies are all different types of evaluations. You will find that studies may have characteristics of different types of evaluations. Three types of evaluations often used to assess WIC as well as other social programs are:

- *Process or implementation studies* — descriptive evaluations that provide detailed information on the execution of an activity or series of activities. For example, all WIC local agencies are required to provide nutrition education services to their clients, so you might want to know how this aspect of WIC is being met. Questions include: How does the agency provide nutrition education (group sessions, one-on-one counseling)? What are the day-to-day operations? What is the average length of time for nutrition education contacts? Who does them? How much does this service cost?

- *Impact analyses or outcome evaluations* — usually quantitative evaluations that measure the outcome of an activity or program. They may also focus on whether or not there is a “problem” that the program

solves by providing certain services. To use the nutrition education example again, an impact analysis would ask such questions as: What are the effects on WIC clients? How many clients attend group sessions? What were the effects of these services on clients with regard to changes in dietary habits and/or nutrition knowledge? You might also wish to evaluate efforts to promote breastfeeding. Here questions might include: What proportion of WIC mothers chose to breastfeed their infants before and after the breastfeeding promotion project began? Are breastfeeding mothers different (demographically, for example) than mothers who choose to bottle feed? Did involvement in the breastfeeding promotion program affect the length of time that women breastfed their infants?

- *Cost-benefit analysis* — the combining of data from both process and impacts studies to compare the costs of the program with the estimated benefits. For our nutrition education example, a cost-benefit analysis would compare the costs of providing nutrition education with the observed benefits (improved diet, prenatal weight gain) for WIC clients. Results of a cost-benefit analysis often report such findings as that for every  $x$  dollars spent on WIC,  $x$  dollars are saved in health care costs.



## II. Deciding Whether To Evaluate

The first decision for any evaluation is to determine whether or not an "evaluation" is an appropriate method for obtaining needed information. Before deciding to evaluate, you should answer four questions:

*Why should we evaluate?*

*What do we want to know?*

*How will we use the results?*

*What resources are available?*

### Why Should We Evaluate?

If the evaluation is to have a clear direction, you must be able to explain clearly why you wish to study the issue or issues you have identified. If a logical rationale cannot be stated, there may be no need for the study.

For the most part, evaluations are conducted to:

- Obtain information for preparing program plans and budgets.
- Assess and improve the efficiency and/or effectiveness of day-to-day operations.
- Modify procedures or adjust for operational change, such as fewer staff or larger caseloads.
- Address specific issues such as staff turnover, budget deficits, or the delivery of WIC services.

Begin by setting out — in writing — the objectives of your study. You may write only a few sentences, but the exercise of writing them will help clarify your purpose. For example, your study objective may be to determine why your breastfeeding promotion campaign did not increase the number of breastfeeding mothers in WIC.

It is important to clearly identify your objectives. Your reasons for evaluating will affect your choices of methodology, data collection procedures, and reporting formats.

### What Do We Want To Know?

Next, you must determine the scope of the evaluation. What information do you need to achieve the stated objective of the evaluation? In more formal terms, the task is to develop research questions. When you review these questions you should be able to decide whether or not your reason for evaluating merits the effort that is required. Some information may be interesting but not necessarily useful to warrant the expenditure of scarce resources on an evaluation. On the other hand, a careful consideration of the research questions may reinforce your original inclination to evaluate.

### Typical Research Questions

*Typical research questions that may be asked of any program are:*

*How well did the program achieve its goals?*

*Were the program's activities achieved as planned?*

*For which groups was the program most/least successful?*

*What did the program cost?*

*How well was the program managed?*

Research questions can be of several different types. Descriptive questions ask about the characteristics of something, e.g., who is participating in WIC? Cause-and-effect questions try to identify if, how, or why something occurred, e.g., what is the impact of WIC on participants?

Research questions tailored for a specific study can be devised using a simple format called an EPD, or Evaluator's Program Description (exhibit II-A). This format developed by Fink and Kosecoff (*An Evaluation Primer: Evaluator's Program Description* (c) 1978. Reproduced by permission of Sage Publications, Inc.) offers a way to develop evaluation questions that assess both the impact of the program under study as well as the process or operation of the program. For example, assume that at the end of a breastfeeding promotion campaign, your evaluation finds no clear increase in breastfeeding



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rates. It is not enough to conclude that the promotion failed; you want to know why it failed so that you do not repeat mistakes, and to fine-tune your approach. To learn why, you must closely assess each campaign activity.

The Evaluator's Program Description should include:

1. *Program goals and activities.* A program goal is a statement of intent. An activity is a means of achieving a goal.
2. *Evidence of program merit.* What would it take to convince you that the activity was successfully achieved? The evidence of program merit describes exactly what must take place to achieve the goal or activity.
3. *Evaluation questions.* After you have completed the program description, you are ready to decide what questions the evaluation should answer. The program merit section is the best source for evaluation questions because it defines the successful accomplishment of goals and activities.

You can add to the list of questions developed by the EPD. Through specific questions, you can address whether or not a service is being delivered. Answering the questions will teach you a substantial amount about the quality of the service, the cost of delivery, and the program's impact.

### How Will We Use the Results?

Before you start an evaluation, it is essential to identify the intended uses of the results. The planned use of the findings will, to some extent, determine the primary research questions, set priorities on specific research issues, and direct the allocation of resources.

Uses of evaluation results include:

- required reports to sponsoring agencies, WIC State agencies, or FNS
- strategic planning
- professional staff development

- technical assistance
- general planning and budgeting
- requests for increased resources
- performance monitoring
- local management and administration

Clearly, the use of results should mesh with the stated purpose for conducting the evaluation.

### What Resources Are Available?

A final question in deciding to evaluate is whether there are sufficient resources to complete a credible evaluation. Consider the following:

- When is the information needed? Is there sufficient time to design the study, collect the data, analyze the results, and write a report?
- Is there a similar study that could be replicated or simply reviewed to find answers to the posed research questions?
- Are data now available (collected and ready for analysis) that can be used for the evaluation?
- Are there questionnaires or other data collection forms that can be used or adapted or will new instruments have to be designed?
- Do you have staff with sufficient time and skills to carry out all the steps of this evaluation?
- Is technical assistance available at a cost the agency can afford?
- Are there funds for data collection or abstraction, computer time, analysis, and report publication?

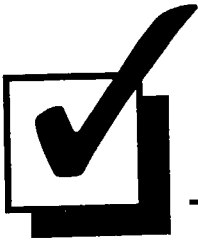
Any of these considerations might dramatically affect your schedules or ability to proceed with the planned evaluation.

**EVALUATOR'S PROGRAM DESCRIPTION\***

<b>Goal</b>	<b>Activity</b>	<b>Evidence of program merit</b>	<b>Related evaluation questions</b>
<i>One by one, describe the goals of the program under study.</i>	<i>For each goal, describe the program activity or method that will lead to fulfillment of the goal.</i>	<i>For each goal, describe the type of information that will be convincing evidence of program merit or success.</i>	<i>A question is developed to determine whether or not each measure of program merit was met.</i>
<p>1. To increase the number of pregnant women enrolled in WIC from 60 per month in 1989 to 70 per month in 1990.</p>	<p>1. WIC coordinator meets with prenatal clinic staff to develop an expedited referral process for WIC certification.</p> <p>2. Based on discussions with prenatal clinic staff, WIC coordinator established a protocol for the referral of prenatal patients for WIC certification.</p> <p>3. Certify prenatal applications within 5 days of initial contact with the program.</p>	<p>1. WIC coordinator met with prenatal clinic staff to discuss an expedited referral process.</p> <p>2. Protocol was established to refer prenatal patients for WIC certification.</p> <p>3. All prenatal applications certified within 5 days of initial contact.</p>	<p>1. Did the WIC coordinator meet with prenatal clinic staff to discuss a new referral process? When? What major issues were discussed?</p> <p>2. Was an expedited protocol established to refer patients for WIC certification?</p> <p>3. Were all prenatal applications certified within 5 days of initial contact? If not, why not? On average, how many days did it take to certify new applicants?</p>

These questions assess the activities (or the process) of an initiative to increase participation among pregnant women. This format helps us assess the implementation of the initiative as well as its overall impact. You can add to the questions identified by the EPD. Those you may want to add for this example include:

1. Did the number of pregnant women enrolled in WIC increase from 60 per month in 1989 to 70 per month in 1990?
2. Did participation increase for some groups of pregnant women but not others?



### III. Identifying Sources of Information

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Based on your research questions, identify the most appropriate data source(s) to ensure that the data collected will relate to the planned evaluation. For example, if we choose to evaluate a special breastfeeding promotion program that is still underway, the best data source may be the original program planners and designers rather than current staff now operating the breastfeeding program.

#### How To Locate Data

You can obtain data from existing sources (extant data) or from new data sources (primary data collection). Sometimes new data is more expensive to collect than existing data. You should carefully compare the "informational" value of new data collection with the costs of acquiring that information, and decide if it is worth the expense.

WIC managers already collect a wealth of information for program reporting. Take the time to rethink how you use your information, you may not need to collect additional information to answer questions about program effectiveness. Rearrange your existing data and think about it in different ways. Assess changes in your data over time, annually, quarterly, and look for patterns and trends.

Data available to a local WIC administrator include (for a list of Federal data sources, see appendix C):

- 1) client records maintained by the local agency. These include a host of demographic data about the population you serve. Data from client and certification records can help you assess measures like the trimester in which the majority of pregnant women enroll in WIC; the percentage of low-birthweight babies born to WIC mothers; the percentage of infants with low hemoglobin and hematocrit levels who improve by recertification, broken down by race and geographic location of residence.

- 2) automated food instrument issuance system records. Such systems provide information on clients and records which enable you to identify the percentage of no-shows for food instrument pickup and the percentage of instruments issued and not cashed broken down by risk level. They also provide you with historical information on food vendors.
- 3) databases maintained by State health departments and vital records bureaus. Public data on births, infant deaths, and people served by a public health system can provide valuable information to a WIC manager.
- 4) State and local population statistics. State and city planning offices maintain census data that may be helpful in targeting special services or outreach. In many instances, you can obtain local maps of your city and identify the lowincome populations, infant populations, the residences of various ethnic groups, or other populations of interest. For a visual representation of where your services are located, plot clinics on the map as well and assess where you need to target services.
- 5) financial records. Financial and expense statement records from your program or contracting offices are good data sources. Periodic measurement of labor and equipment costs can help you assess the cost of providing WIC services over time.
- 6) annual reports. Annual WIC Program reports can be used to identify trends in service delivery and program costs. Compare annual reports from year to year and develop graphs to easily identify service trends.

You can request that data from other agency information systems be transferred onto personal computer disks for use at a local agency. Before planning new data collection, you should talk with State WIC staff as well as other State and local health and public welfare staffs, at least annually, to determine what data are available.

Prior to using and relying on existing data for program evaluation, be sure the data is available in the format you need. Is it ready for analysis or data entry? Does it need to be cleaned or edited prior to use? In addition, include the staff that maintain the data in designing the study and interpreting findings. They offer an insight that you may not have and can help you identify strengths and weaknesses in the data.

### How to Organize Your Data Needs

Different sources can provide answers to different questions. You should review each question to identify the information needed to answer it. Prepare a simple three-column list (exhibit III-A) listing the question, the information needed, and the corresponding information source(s).

### EXHIBIT III-A

#### Three-Column List To Organize Your Data Needs

<u>Research Question</u>	<u>Needed Information</u>	<u>Information Source</u>
1. How many participants breastfed before the campaign?	1. No. of breastfeeding participants prior to the outreach	1. Local agency files
2. How many participants breastfed after the campaign?	2. No. of breastfeeding participants after the outreach	2. Local agency files
3. Did the breastfeeding promotion campaign make the difference?	3. Staff and participant perspectives on change in breastfeeding rates  Other efforts underway that might affect breastfeeding rates	3. Staff interviews, participant interviews  Discussions with health officials on current initiatives that might affect breastfeeding rates
4. How much did the campaign cost?	4. Estimate of labor and other costs expended	4. Staff time estimates, salary/benefit rates, cost of supplies



## IV. Evaluation Designs

There are many evaluation designs from which to choose. The appropriate design depends on the quality and volume of data; the evaluation's focus; intended results; and staff, time, and resource constraints. Among the typical evaluation methodologies are case studies, surveys, field experiments, pre/post designs, observational studies, simulation, and forecasts.

- **Case Studies** — A case study is an analytic description of single or multiple events, processes, institutions, or programs. It includes comprehensive descriptions of the key players and their motives as well as of key issues. Case studies can be exploratory, explanatory, or descriptive and may lead to larger evaluations. It may suggest solutions to identified problems, listing pros and cons. These studies may be comprehensive but they often cannot be used to generalize in other situations.
- **Surveys** — *Cross-sectional surveys* are limited to a descriptive analysis of a representative sample at one point in time. These surveys provide a "snapshot" of a large sample, so the population under study must be well defined. Cross-sectional surveys require rigorous sampling procedures to ensure that the sample closely resembles the population of interest. *Panel surveys* are similar to cross-sectional studies but collect information acquired at two or more points in time from the same respondents (e.g., infant weight gain now, at 6 months, at 9 months). Panel surveys are effective for measuring changes in facts, attitudes, or opinions over a course of time. Sometimes it is difficult to keep the "panel" or survey respondents intact; this design often requires the evaluator to track respondents to complete data collection.
- **Field Experiments** — field experiments are used to prove cause-and-effect relationships (e.g., nutrition education technique caused improved dietary patterns). Generally, such evaluations are "controlled" in that the researcher assigns a target population to be on the receiving end of certain actions (treatment or experimental group) while a control group will receive none. The researcher compares the two groups at the end of the experiment. A target population may be composed of persons, families, neighborhoods, towns, hospitals, schools, and so on. A measurable outcome is one that can be attributed to the specific policy and/or action. Its presence or absence alone can be noted for each individual in the study.

In a *true experimental design*, members are randomly assigned to treatment and control groups; this design provides a persuasive argument about causal effects of a program on participants. The random assignment of respondents to treatment and control groups ensures that both groups are equal (across certain characteristics such as age, race, area of residence) and the observed differences at the end of the experiment may be attributed to the intervention.

*Nonequivalent comparison group designs* are those in which respondents are not randomly assigned to treatment and control groups. Because the groups may be different in some fashion, outcomes cannot be solely attributed to the intervention. This type of study provides less proof of cause and effect and the researcher must consider other factors that may affect study outcomes beyond the intervention due to the possibility of differences between the two groups.

- **Pre/Post Designs** — pre/post designs compare individuals before and after a program or a specific intervention. Generally, no other comparison groups are used to help rule out alternative explanations for outcomes. Pre/post designs can measure change, but the researcher cannot attribute change solely to the program.
- **Observational Studies** — As the name suggests, the researcher observes ongoing activity, and gathers field data as they are available. The researcher does not intervene with any action or other experimental effort. While this may sound somewhat informal, observational studies include systematic and planned data collection about the persons or institutions of interest to the researchers. For example, if a breastfeeding promotion effort has been operating for 2 years and is now an accepted part of routine operations at the WIC local agency, the evaluation may seek to determine how the promotion actually operates and how it compares with the originally designed program.
- **Simulation** — This process uses a mathematical model, together with input data, to probe the response of a system to changes that have not actually occurred. Sometimes, the system has not even been created. For example, proposed changes to the Aid to Families with Dependent Children (AFDC) Program and the

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Food Stamp Program are often simulated on computer models to estimate the costs and effects of program innovations or modifications.

■ *Forecasts* — A prediction, or forecast, makes a judgment about future possibilities by extrapolating historical experience into the future. A projection (a type of forecast) is a mathematical exercise that specifies a model for what remains constant and how things change; specifies particular parameter values (or boundaries); calculates the future implications of these trends; and reflects the most likely future course or range of possibilities.

#### **Linking a Design to the Evaluation Questions**

There are many ways to design an evaluation. However, your evaluation questions are the key to what design you should use. For example:

- ☑ If your key research questions are descriptive in nature and you need to generalize study findings, cross-sectional or panel surveys may be appropriate. If you do not need to generalize the results of a descriptive study to other settings, case studies normally will do.
- ☑ If your research questions are cause-and-effect questions, and there is a need to generalize findings, comparison group experiments may be appropriate. If there is no need to generalize findings, nonequivalent comparison groups may be an alternative.



## V. Understanding Sampling Strategies

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When the population of interest is too large to obtain information on each individual member, a sample is drawn. Sampling allows evaluators to make predictions about a population based on study findings from a sample of cases. To make accurate statements about the population, a sample must be representative (unbiased) and exhaustive (inclusive of every possible category of participants) of the population under study. An unbiased sample is one that represents the population. For example, it may be appropriate to select every tenth case file from 1,000 WIC records (for a sample of 100) for a review of average income levels of WIC participants. This would be an unbiased sample because cases are not generally filed by income status, family size, or any other pattern that would bias your sample towards higher (or lower) income levels. This would allow you to generalize from your sample to all 1,000 WIC cases (i.e., the population).

### Four Major Points You Should Know About Sampling

Sampling can be a tricky task. If you choose to sample, you may need to consult a professional statistician or researcher. Here are four main points you need to know about sampling:

1. As a rule of thumb, do not sample when it is just as easy and not much more expensive to obtain data from everyone in the population.
2. Do not attempt to draw a sample to support major decisions when you are not trained in sampling methods or without consulting a professional.
3. There are different types of samples. Probability samples impose statistical rules to ensure that unbiased samples are drawn. These samples are normally used for impact studies. Nonprobability samples are less complicated to implement and less expensive. This type of sampling is appropriate for most process or implementation studies.
4. There are tradeoffs you must make when determining sample size. Large samples are more precise than smaller ones, yet they can be expensive to carry out. Small samples are okay if you are looking for a big change or effect and

are less worried about generalization. As a rule of thumb, the more critical the decision, the larger (and more precise) your sample should be.

Below are discussions on types of samples, sample size, and examples.

### Probability versus Nonprobability

*Probability* sampling imposes mathematical and procedural rules that must be followed to ensure that an unbiased, appropriately sized sample is drawn. The primary idea is that every individual, object, or institution (e.g., clinic) in the population under study has a chance of being selected into the sample and the likelihood of the selection of any individual is known. This is attained through some process of randomization. Probability sampling provides a firmer basis for generalizing from the sample to the population or universe. Because the requirements for drawing this type of sample are quite precise, technical assistance — either from published materials or from persons with substantive and methodological expertise — may be needed.

It is possible and sometimes appropriate to use a *nonprobability* sample. This is less complicated to conduct and less expensive than drawing a probability sample. It is wise to draw as large a sample as possible. Reliance on nonprobability samples reduces the researcher's ability to generalize the results of the study to the larger population.

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## **TYPE OF SAMPLES**

**Probability Sampling** (the following probability sampling designs have the characteristic of random selection in one way or another):

■ **Random . . .** Each element from the target population has an equal chance of selection. Usually, tables of random numbers are used to draw a random sample. The researcher may pick a starting point anywhere in the table and move in any direction. Once a starting point is selected, the number of columns of digits must be sufficient to give each element in the population a chance of selection. For example, if there are 900 elements in the population, three columns of random numbers are needed because there are three digits in "900." To make the random selections, the elements of the universe are numbered, and the selection of random numbers from the table continues until the desired sample size is reached.

■ **Stratified random . . .** a refinement of the simple random sample, this divides a population into similar groups or strata (based on identifiable and important characteristics). All strata are included in the sample, and elements are selected randomly from each strata. For example, if we are conducting a study of children on WIC, to ensure that we include a proportional number of male and female children in our study, first we divide all children into two groups based on sex and then randomly select from each group. The number of males and females selected depends on the number of each sex in the population.

■ **Cluster . . .** another type of probability sampling, this involves dividing a population

into subgroups (clusters) instead of individuals and then randomly selecting some of the clusters for the study. Once a cluster is randomly selected for the sample, all individuals in that cluster are included in the sample. Cluster sampling is most effective when the clusters are internally diverse — the opposite of stratified random sampling. Cluster sampling is typically used in survey research to minimize data collection costs. An example would be to randomly select neighborhoods of a city and then survey all WIC clients who live in the selected neighborhoods.

■ **Systematic . . .** a technique often used to study records, this requires creating a strategy for choosing the sample. The random selection of the first sample member determines the entire sample. For example, a systematic sample could include every record that ends in the number seven. This sampling approach is effective and simple so long as the method for assigning numbers to the records under study does not depend on any characteristic of the record itself.

### **Nonprobability Sampling:**

■ **Convenience . . .** where information is obtained from available subjects. For example, a sample of all breastfeeding women who are certified or who pick up food instruments during the month of April.

■ **Quota . . .** a form of convenience sampling where information is obtained on some proportion (or quota) of the population of interest to the researcher. For example, 50 percent of all pregnant clients who receive nutrition education services.



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Most process or implementation studies do not require strict probability sampling. Impact studies, on the other hand, which quantitatively measure program effects with implications for the population, generally require a probability sample.

### **Sample Size**

The size of the sample depends on several factors; most importantly, how small an effect you want to detect and how important it is that you do not miss the effect if it occurs. There are tradeoffs between large and small samples. Small samples (in relation to the size of the population) are economical and convenient; large samples are more reliable and representative of the population under study. The researcher must balance practical considerations against statistical power and generalizability when determining sample size. Other factors which effect sample size include:

- Larger samples will give you greater certainty and more statistical precision. If you are basing a major decision on data you are collecting, then you will want precision and certainty. Statistical precision increases as the sample size increases.
- When there is considerable variability in the population you need a larger sample. When the population is homogeneous, a smaller sample is appropriate to adequately represent the population.
- A larger sample will cost more time and money. The larger the sample, the more resources it takes to collect the data. You must ask yourself, is the increase in certainty worth the cost?
- If you expect that a number of individuals will not respond or participate in the study, you may need to over sample.
- When differences in the results are expected to be small, a larger sample guards against "noise" or other confounding variables that might contribute to the results of a treatment.
- For exploratory research and pilot studies, samples between 10 and 30 are used as a rule. These samples are quick and convenient to work with and they are large enough to test a hypothesis, yet small enough to overlook weak treatment effects.

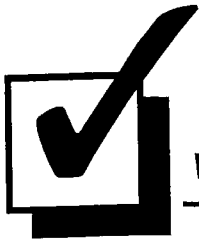
### **Sample Size and Generalization**

*Sampling allows you to make predictions or reach conclusions about a population based on study findings from a sample of cases. Making statements about a larger group (or a population) is referred to as generalization. However, the extent to which you can "generalize" or infer that study findings from a sample are true for an entire population depends on the size and make-up of the sample. In order to generalize, a sample must be representative (unbiased) and exhaustive (inclusive of every possible category of participants) of the population under study.*

*Responsible research does not draw conclusions about "large" groups based on "small" studies. As you consider sampling strategies, think about how you will use the study results. Don't "stretch" your findings; use sound sampling strategies and logic to guide you when interpreting and reporting study results.*

### **Example: Nonprobability Sampling Size:**

A local WIC administrator may wish to collect some quantitative information on one or several specific topics but may not have the resources to draw a large probability sample. Using nutrition education as an example, let's assume that the average annual WIC caseload is 2,000 (1,000 women, 750 infants, and 250 children). Using information from the State's automated information system, you learn that the agency certifies an average of 167 clients each month, with more certifications occurring in the second quarter of the calendar year. You decide to conduct the evaluation during the second quarter when you have the opportunity to acquire information on more than one-third of the caseload receiving the service (nutrition education). While this sample is not a probability sample, it is a substantial proportion (or quota) of the targeted population.



## VI. Collecting Data

There are different ways to collect data, and different corresponding collection instruments. Some of the methods and instruments are listed below:

### **Collecting Method**

1. **Abstracting**—data obtained from existing source such as a client records
2. **Interviewing**—information obtained in person from individuals. Interviews are good for collecting qualitative or sensitive data such as values or attitudes.
3. **Surveying**—information acquired by mail, telephone, or in-person interview, by asking individuals precisely the same questions in a standardized format.
4. **Observing**—data accumulated by observers who watch certain activities.
5. **Recording**—data collected on occurrence, frequency, and/or specific indicators about one or more activities.

Designing a data collection instrument can be a complex undertaking but it need not be if you take the time to think, plan carefully, and follow these suggestions:

- The items that comprise an instrument must be mutually exclusive; different from each other; and collectively exhaustive. The instrument must be designed to acquire all the data needed for the specific evaluation.
- The instrument should be as brief as possible. Clearly, the primary objective is to collect the necessary data, so it is important to minimize the burden placed on respondents.
- Because instrument design may be difficult, time-consuming, and expensive, check on instruments designed and tested in the field for

other studies. It may be feasible to use an existing instrument or, at much less cost, to adapt a field-tested and validated one.

### **Collection Instrument**

**Abstraction forms.** Data collectors complete a form for each record reviewed.

**Interview guides or questionnaires.** These can be structured, where respondents are asked the same questions in a specific order, or semistructured, where topics are listed and can be asked in the order that works best for each respondent

**Survey questionnaires.** Always structured so that each respondent is asked the same questions usually in a specific order; often self administered.

**Observation forms.** Generally created as checklists or grids so that observers can quickly record what they see.

**Other recording forms.** Can be matrices, grids, checklists, and so on. Their design is dependent on the type of information that is collected.

Going back to the hypothetical examination of the breastfeeding promotion outlined in section III, several data collection instruments are needed. Simply modify the existing list of needed information and information sources, expanding it to four columns in order to continue designing the evaluation (exhibit VI-A).

Before designing the instruments, check the Compendium of WIC Research (appendix A) to find out whether any other State or local agency has conducted a similar evaluation of its breastfeeding promotion program. If so, call the contact person to find out what instruments were used and how; and arrange to receive copies of these forms. Even if an evaluation did not deal exclusively with breastfeeding promotion, its instruments may provide a good format and direction.

## EXHIBIT VI-A

### *Four-Column List to Organize Data Needs and Accompanying Instruments*

Research Question	Needed Information	Information Source	Type of Instrument
1. How many participants breastfed before the campaign?	1. No. of breastfeeding participants prior to the outreach	1. Local agency files	1. Record abstraction form
2. How many participants breastfeeding after the campaign?	2. No. of breastfeeding participants after the outreach	2. Local agency files	2. Record abstraction form
3. Did the breastfeeding promotion campaign make a difference?	3. Staff and participant perspectives on change in breastfeeding rate	3. Staff interviews, participant interviews	3. Staff survey, participant survey
4. How much did the campaign cost?	4. Estimate of labor and other costs expended	4. staff time estimates, salary/benefit rates, cost of supplies	4. Staff time logs, staff survey, cost survey

### **Training Data Collectors**

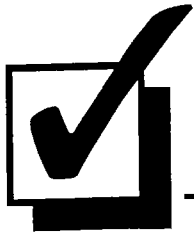
It is likely that you will need to train people to obtain your information. Obviously, the particulars of training will depend on the collection method, the data to be obtained, and the skills and backgrounds of the collection team. Because resources are usually limited, the State or local WIC administrator may have limited options with regard to data collectors. However, you should try to find people who are interested and unbiased — that is, who do not have a preconceived notion of study results. Each individual must be trained to collect precisely the information you have identified and defined. The data must be comparable across all data collectors; this is particularly necessary for quantitative studies of program impacts. However, it is also important in process studies.

As with data collection instruments, other agencies may have prepared accompanying training manuals, too. Be sure to ask about training manuals when calling your

colleagues about existing instruments. In addition, a local WIC administrator could contact the State WIC agency, other State agencies, local colleges, or schools of public health for assistance. Graduate-level students are an excellent resource because they often need to collect data for master-level courses and more advanced degrees.

### **Pilot Testing**

Whenever possible, instruments should be pilot-tested. That is, they should be administered to a small number of respondents before full-scale data collection begins. This will help identify any problems, inconsistencies, or inaccuracies so that instruments can be revised. The pilot test will also reveal whether needed data can be obtained, how long it takes to administer a questionnaire, and the appropriateness of the wording of individual items or questions. It will also provide training for the data collectors.



## VII. Analyzing The Data

Analysis and assessment are inherently judgmental processes that should be guided by the original evaluation objectives and professional standards commonly used by the evaluation and research community. An information source that might be useful to WIC administrators in choosing analytic methods is "The Evaluation Framework," a publication of the U.S. General Accounting Office.

### Qualitative Data

Process evaluations (discussed earlier in section I) often involve the analysis of qualitative, descriptive data. Qualitative data includes descriptive information on such things as staff opinions on program redesign or the quality of services from a participant's perspective. The researcher collects data and looks for common themes, patterns, or hypotheses. In essence, qualitative analysis may not include counting but rather summarizing and interpreting study findings. Qualitative data can strengthen and further explain quantitative findings. Analyzing qualitative data usually requires substantial knowledge of the program as well as a thorough understanding of the tasks comprising day-to-day delivery of program services. An evaluator who assesses a large volume of qualitative data may wish to incorporate an advisory panel into the analysis portion of the evaluation who can provide a broad view and consensus.

### Quantitative Data

More formally structured analysis methods are applied to quantitative or numerical data. These methods range from simple, easy-to-calculate descriptive statistics (discussed below) to sophisticated regression analyses such as probit and logit.

### Measures of Central Tendency

There are various statistical techniques to analyze particular types of data. An evaluator must first determine which type of data is available for analysis. Usually, an evaluator who analyzes quantitative data first calculates *descriptive statistics*. Primary among such statistics are measures of central tendency which represent typical or "average" values of the variables under study. A measure of central tendency is valuable because it captures, in a single number, information on an entire population or sample. Measures of central tendency are defined below.

■ The **mode** is the value or item occurring most frequently in a series of observations or statistical data. The mode can be used with any type of data. If, for instance, WIC records indicate the distribution of WIC breastfed infants is 200 black infants, 400 white, and 100 Hispanic, then the modal, or "typical," breastfed infant is white.

■ The **median** is the value that divides a distribution into two parts of equal area, or the 50th percentile, that is, half the measurements are on one side of the median and half are on the other side when all measurements are arranged in order of magnitude. The median is unrelated to any arithmetic manipulation of values and is simply the middle one. For example, if there are 5 children whose ages are: 2, 2, 2, 2, 5, the median age is 2 years; this value is the middle one of all the values selected. The value of the statistic depends on the order or rank of the data and tells us more about the entire group than the mode does.

■ The **mean**, or arithmetic average, is the sum of the values divided by the total number of values. It is the most commonly used summary measure. Using the data on ages for the example of a median, sum all of the ages, then divide by five (the number of cases in the sample). The mean age of this group of children is 2.6 years. The difference between the mean and mode (2 versus 2.6) is that the mean is more sensitive to extreme numbers (the 5 year old) and reflects the value of every member in the group.

Since each measure of central tendency provides different information you can specify all three averages for a comprehensive description of a group.

### Measures of Dispersion (Variability)

It is also useful to calculate measures of dispersion, or "variability," which indicate the level of spread of a group. Two such measures which may be of use to WIC administrators are:

■ **Range.** The range for numerical data is the difference between the largest and smallest observed values + 1 (range = highest - lowest + 1). The range for categorical data is the number of categories in the continuum, for example from "very satisfied" to "very dissatisfied."

■ **Variance.** The variance describes how close to a central measure, or how far away, the values of a distribution are. The standard deviation is often used to identify how elements of a group differ from the group mean. The measure of central tendency is more useful if the variance is small; that is, the values are not spread out.

### Frequencies and Cross-Tabulations

These are other measures that can be easily calculated. A frequency is a simple count of the number of times something occurs. A cross-tabulation is a table of counts arranged into distributions. Note the accompanying example of a cross-tab of a WIC agency's caseload of pregnant women by age and race/ethnicity.

**WIC Caseload of Women Participants  
by Age and Race/Ethnicity**

Age	Race				
	White	Black	Hispanic	Asian or Pacific Islander	American Indian or Alaskan Native
14 to 19	22	19	12	2	9
20 to 24	46	38	23	12	14
25 to 29	34	30	19	14	11
30 to 34	20	15	12	10	8
35 and older	7	5	5	4	6

### **DATA ANALYSIS:**

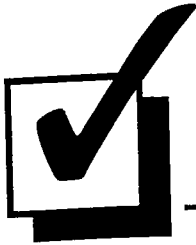
#### **Breastfeeding Promotion Example**

To complete the evaluation for the breastfeeding promotion example used earlier (in the 3- and 4-column lists) requires an analysis of quantitative data on changes in breastfeeding rates. Cross-tabulations of the breastfeeding participants before and after the campaign may be reported in a frequency table. It may be interesting to break this information out by age and race. Identify the mean, mode, and median and a measure of variability of the age of a

breastfeeding client before and after the campaign to assess whether you were successful in outreaching to a different population.

Identify the costs of implementing the campaign in terms of labor hours and costs of equipment and materials. Based on your results, was it worth it?

The qualitative information compiled from the interviews may be used to prepare a summary on the participant and staff perspectives on the effectiveness and opinions of the breastfeeding campaign.



## VIII. Reporting Evaluation Results

How you plan to use evaluation results will clearly shape reporting options. If an evaluation is conducted at the request of a State or Federal agency, it is likely that certain requirements have been established for reporting results. If, however, it was a local decision to evaluate, then you should develop a reporting format early in the process when you consider the intended use of results. Factors to consider in planning and preparing a report include:

- **Audience.** Who will read or hear this report? Why are they interested in the results?
- **Type of Report.** Is a single, formal report appropriate? Should a summary version be prepared and distributed? Are there other outlets (professional newsletters, for example) that should be used for disseminating results?
- **Resources.** Be sure to set aside sufficient resources for the kind of reporting you intend. For example, resources may be needed to hire a report writer or editor, type mailing lists, duplication, postage, etc.

### What To Include in Your Evaluation Report

The report format you choose depends on the audience. At a minimum, an evaluation report should include:

- an introduction that describes your study objectives and your key research questions.
- a description of your study design and sampling strategies. Be sure to include what type of study it is (process, impact), and your methodology (case, comparative evaluation, etc.). If you sampled participants or objects for the study, explain what sampling technique was used (random, quota, etc.,) and sample size (intended and eventually realized). Also be sure to describe the total population under study.
- a description of your data collection procedures (who collected the data, when, and where) and a full description of your instruments as well as copies.
- a description of analyses techniques.

- evaluation findings. Answer each research question and include any recommendations and interpretations of findings. Also, report both negative and positive findings. Negative findings may help identify areas where improvements can be made. They should not be ignored or viewed as failures of your program or staff. And always consider alternative explanations for study results!!

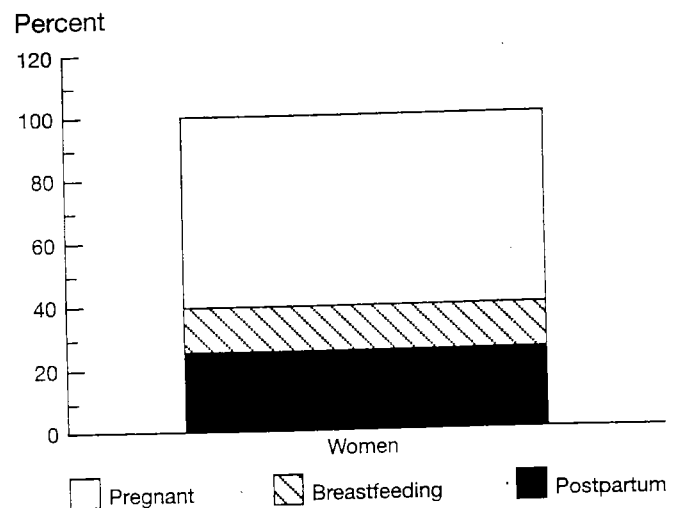
- a summary of problems encountered during the evaluation and a full acknowledgment of any limitations of the data.

### Using Illustrative Charts and Graphs

Charts and graphs are effective ways to summarize your findings. Several illustrations that may be useful are:

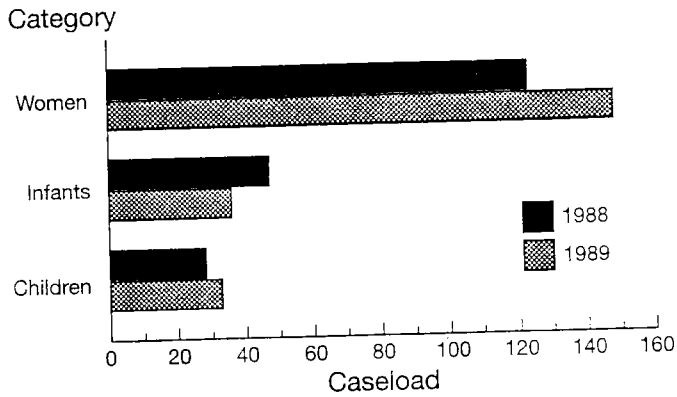
- **Bar charts** illustrate comparisons between items. They may be either vertical or horizontal. Sorting items from largest to smallest can be very effective. Segmented or stacked bar charts illustrate how the whole is made up of its component parts. This format depicts how the components change over time. A clustered bar chart can show how a set of items has changed over time (see examples).

### Segmented or Stacked Bar Chart



Total Women Participation in WIC

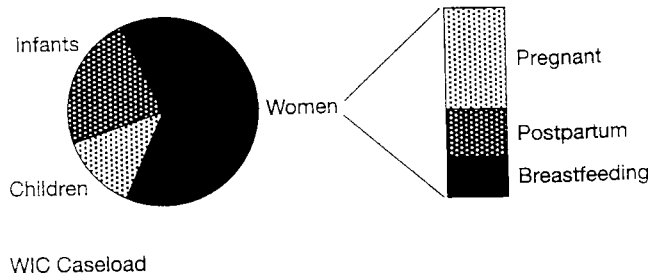
### Cluster Bar Chart



WIC Caseload 1988-1989

■ **Pie charts** illustrate how the whole is divided up into parts. They allow you to emphasize the percentage of each segment of a population. You can explode a slice of a pie to emphasize a certain segment of a population.

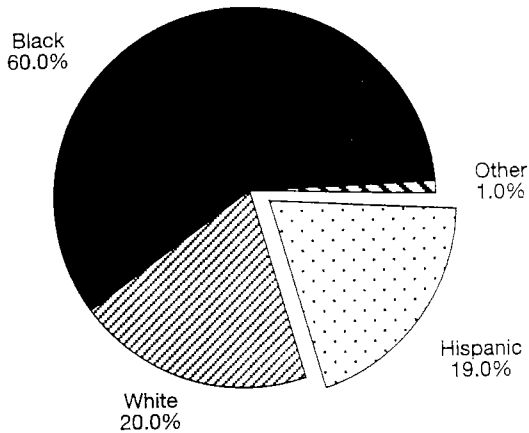
### Pie/Bar Chart



■ **Pie-bar charts** are a combination of the above and can be effective when one portion of a whole has several subcomponents.

Several graphic software packages are available on the market. Some familiar ones are Lotus Graphwriter, Harvard Graphics, and Desk Top Publisher. For those that have access to such tools, evaluation reports with a professional appearance can be produced on a limited budget. Most of the packages are also easy to use.

### Sample Pie Chart "Cut or Exploded" Slice



Racial/Ethnic Breakdown of Caseload

## Appendix A Studies of the WIC Program by Independent Evaluators and State and Local WIC Agencies

### Compendium of WIC Research

This section presents brief descriptions of several studies of the WIC Program. Some of the evaluations and other research projects were conducted by State and local WIC agencies while others are the work of academic or independent researchers. The matrix below lists each study described in this compendium.

The evaluation summaries may prove useful to WIC administrators in conducting their own evaluations. The descriptions include sources for obtaining copies of evaluations or materials to use for an evaluation. Each research effort includes the title of the research, researchers, citation (if applicable), research focus, population studied, research objectives, study design, analytic methods used, study findings, intended

Study Name	Process Analysis	Impact Analysis	Cost- Benefit Analysis
Alabama Breastfeeding Study	X		
Massachusetts Study on Pregnancy Outcomes	X		
Missouri Prenatal Study	X		
North Carolina Study on WIC Effects on Health Services		X	
Missouri WIC/Medicaid Study			X
New Jersey Study of Breast- feeding Promotion		X	
New Jersey Study of Nutrition Education Promotion		X	
Tennessee Evaluation of Breast- feeding Promotion		X	
California Study of Anemic Children		X	
Washington, DC, Study of Targeted Outreach		X	
Oregon Market Research Study	X		
Minnesota WIC Outreach Plan 1987	X*		
Wisconsin Standard Deviations Report	X*		

\* While these studies are not formal or traditional process analyses, they are descriptive presentations that may be useful to other WIC practitioners.



audience, and applicability for State and local WIC administrators.

The studies are examples of State and local evaluations voluntarily submitted by attendees at the 1990 meeting of the National Association of WIC Directors.

### **Studies of the WIC Program by Independent Evaluators**

The first five evaluations are State-specific. However, this group of studies was conducted by independent, academically based evaluators or by evaluators from State agencies other than State (or local) WIC agencies. Four of the evaluations are impact analyses; one is a cost-benefit study.

### **Impact Analyses**

#### **Perceptions and Knowledge of Breast-Feeding Among WIC and Non-WIC Pregnant Women in Alabama**

Terence R. Collins, James D. Leeper, Tamar Milo, and Sarah DeMellier

*Citation:* The Alabama Journal of Medical Sciences. 1984 21 (2): 145-148

*Research Focus:* Impact of WIC participation, age, and race on pregnant women's decisions, perceptions, and knowledge about breastfeeding

*Population Studied:* Prenatal WIC participants in six Alabama counties

*Research Objectives:* The primary purpose of the study was to explore the intention to breastfeed and the factors influencing that decision in the WIC population as compared with these same factors in a demographically similar group of non-WIC women.

*Study Design:* Trained interviewers conducted structured interviews with 341 WIC participants and a comparison group of 178 non-WIC clients of public health departments. Data were collected on demographics, pregnancy history, infant-feeding preferences, health care, and health service utilization. The comparison group was demographically similar to the WIC group.

*Analytic Methods:* Descriptive statistics were computed

on all demographic data. Evaluators also calculated proportions of women planning to breastfeed as well as proportions of responses for the reasons given for infant-feeding choices. Chi-square tests were used to identify statistically significant proportional differences between the treatment and comparison groups. Statistically significant differences between the means of continuous variables were determined using two independent sample T-tests. Yates correction was used with the chi-square tests when both dimensions had two categories.

*Study Findings:* There was no significant difference between plans to breastfeed by WIC and by non-WIC women (18.5 percent versus 16.3 percent). In general, women chose the method they perceived as more convenient. Among women not planning to breastfeed, a larger percentage of WIC participants said formula was "just as good" (66.2 percent versus 51.3 percent) and also said that they did not know how to breastfeed (30.2 percent versus 20 percent). Women aged 30 and older were more likely to breastfeed than younger women; white women were more likely to breastfeed than were black women. The authors conclude that the Alabama WIC Program "... could do a better job of influencing women to choose breastfeeding."

*Intended Audience:* Public health practitioners, educators, and evaluators, including the WIC community

*Applicability:* As noted in the article, this study was limited to a consideration of only prenatal intentions. Postpartum behavior was not studied. With sufficient resources, a State WIC agency could undertake a similar study.

#### **WIC Participation and Pregnancy Outcomes: Massachusetts Statewide Evaluation Project**

Milton Kotelchuck, Janet B. Schwartz, Marlene T. Anderka, and Karl S. Finison

*Citation:* American Journal of Public Health. 1984 74 (10): 1086-1092

*Research Focus:* Impact of WIC participation on birthweight, gestational age, morbidity, and infant mortality

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*Population Studied:* WIC prenatal participants and their infants

*Research Objectives:* This study addressed four questions:

- Does the WIC Program reach its target population?
- Is WIC participation associated with more positive outcomes of pregnancy?
- Are the effects of WIC participation similar across all high-risk subpopulations?
- Are the effects of the WIC Program enhanced with increased duration of participation?

*Study Design:* As a comparison group, this study used a matched pairs design in which the birth outcomes of 4,126 pregnant women who participated in the WIC Program and who gave birth in 1978 were compared with the birth outcomes of 4,126 women who did not participate in WIC. The study controlled for maternal age, race, parity, education, and marital status. Data were obtained from the State's WIC management information system as well as from the State's vital statistics records.

*Analytic Methods:* For 1978, demographic characteristics of WIC participants were contrasted with the characteristics of all pregnant women residing in the same catchment area and across the State. WIC participants were compared directly with their matched non-WIC controls on birth outcome measures. Statistical differences were examined with paired T-test comparisons and chi-square comparisons. Pairwise deletions were used for any subject pair with missing data. Using demographic characteristics and duration of WIC participation, both WIC and control women were stratified into subpopulations for separate analyses of birth outcome differences.

*Study Findings:* WIC prenatal participants are at greater demographic risk for poor pregnancy outcomes compared with all women in the same community. WIC participation, however, is associated with improved pregnancy outcomes: a decrease in low-birthweight incidence (6.9 percent versus 8.7 percent) and neonatal mortality (12 versus 35 deaths),

an increase in gestational age (40.0 versus 39.7 weeks), and a reduction in inadequate prenatal care (3.8 percent versus 7.0 percent). Analysis of the stratified subgroups indicates that subpopulations at higher risk (teenagers, unmarried women, and Hispanic-origin women) have "more enhanced" pregnancy outcomes associated with WIC participation. Review of the stratifications based on duration of WIC participation shows that increased participation is associated with enhanced pregnancy outcomes. Despite the positive results, the authors caution that there are other factors which might distinguish between the two groups and which could serve as the basis for alternative explanations. (See Applicability below.)

*Intended Audience:* Public health practitioners, educators, and evaluators, including the WIC community

*Applicability:* This study—one of the earliest studies of WIC impact—demonstrates the positive findings with regard to birth outcomes that several researchers have attributed to WIC participation. However, it also notes some difficulties of conducting WIC research such as the problem of selection bias. That is, in studies of WIC, researchers must confront the problem of self-selection—some women choose to participate in WIC and they may be more strongly motivated to improve the prenatal health of their babies than are women in the control population. Such a motivational difference could cause both an improvement in pregnancy outcome and a desire to enroll in the WIC Program.

#### **Evaluation of the Missouri WIC Program: Prenatal Components**

Joseph W. Stockbauer

*Citation:* Journal of the American Dietetic Association. 1986 86: 61-67

*Research Focus:* Impact of WIC participation on birthweight and gestational age

*Population Studied:* Missouri WIC prenatal participants delivering babies during 1980 (8.5 percent of Missouri mothers delivering in 1980)

*Research Objectives:* This study addresses three questions:

- Does prenatal nutrition supplementation influence the outcome of pregnancy?
- Does length of participation in prenatal nutrition supplementation influence the outcome of pregnancy?
- Are certain risk categories used as criteria for program participation more likely to be influenced by prenatal nutrition supplementation than others?

*Study Design:* The study employed two data sources: the Missouri WIC client information system which provided data on prenatal participants between October 1979 and June 1981 and on all infants enrolled in WIC who were born during 1980; and Missouri birth and fetal death certificates. The data merge resulted in 6,732 matches which formed the study population. The actual study population was slightly smaller because fetal deaths and/or twin births were excluded. Data on birthweight and gestational age for WIC and non-WIC groups were analyzed.

*Analytic Methods:* Three methods of analysis were employed to tackle the central problem of self-selection (selection bias) and the resulting lack of randomization:

1. Acquisition of a random sample of 6,560 births from live-born singletons delivered to non-WIC Missouri residents during 1980. Analysis of covariance was applied to statistically equate the two groups.
2. Use of the 1980 Missouri resident live births minus the WIC study group births as a comparison group and use of the WIC group as the standard population, adjusting for key variables (such as gravidity, complications of pregnancy) related to the outcome measures.
3. Development of a pair-match study group from the remainder of the 1980 Missouri resident data set matching on key variables (race, age, education, smoking during pregnancy, prepregnancy weight, and number born this pregnancy).

*Study Findings:* Overall, this study showed that WIC prenatal nutritional supplementation has a positive,

though not conclusive, impact on reducing low birthweight and raising mean birthweight. A higher mean birthweight was noted for WIC births and for the WIC nonwhite group. In either instance, the amount of increase was small. A reduced low birth weight rate was noted for all WIC participants as well as for the WIC nonwhite group regardless of the method of analysis; the differences were statistically significant for the standardization method. Duration in WIC had a positive influence on both mean birthweight and low birthweight, regardless of race.

Nonwhite WIC participants recorded a statistically significant lower percentage of births occurring prior to 37 weeks gestation than the corresponding non-WIC group. Non-white WIC participants also recorded a lower perinatal death rate than the corresponding non-WIC group after adjustments were made for education and length of pregnancy.

A lower low-birthweight rate was recorded for the majority of WIC risk categories. However, only the WIC medical risk group had a statistically significant lower rate.

*Intended Audience:* Public health researchers particularly nutritionists and practitioners especially in the WIC community

*Applicability:* This study employed sophisticated statistical methodologies that require specific skills and training as well as the resources to complete the computer merges on fairly large data sets. A State WIC agency may possess such resources or might be able to obtain help from staff in vital statistics sections. The article provides sufficient detail to allow for replication.

### **Effect of a WIC Program on Children's Clinic Activity in a Local Health Department**

Jonathan B. Kotch and David Whiteman

*Research Focus:* Impact of WIC participation on an increase in the demand for services in a local health department

*Population Studied:* Children in Columbus County, NC, who used the services of a children's health clinic during 1978 and 1979

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*Study Design:* A computerized system was used to track encounter data in a children's health clinic. The unit of measurement for this study is the encounter not the child, and 5,983 encounters occurred. An encounter is a visit to the health clinic. Child visits for health screening, health maintenance, acute illness, and followup care were included in the total number of encounters. Encounters were classified into three types: WIC; well baby/well child ("well"); and all other encounters ("other"). The WIC category does not include nutrition education or counseling. A separate analysis tracked individual children who first appeared at a WIC clinic but who later visited a non-WIC clinic. Only children born on or after July 1, 1977, were included in the this analysis. This group of 1,258 infants accounted for 2,946 (or about half) of the encounters.

*Analytic Methods:* Evaluators calculated the frequency of all clinic encounters including WIC visits. These data were also analyzed quarterly and were further broken into the three encounter categories. The frequency of encounters processed by the clinic's nursing staff was also computed. Finally, encounter frequencies for infants in the subanalysis were also calculated.

*Study Findings:* WIC clinic visits were found to disproportionately contribute to children's health clinic activity. Nearly 80 percent of the increase in total clinic encounters was attributable to WIC. In the first quarter of fiscal year 1978, only 18 percent of infant encounters in the children's clinic were for WIC services; that number rose to more than 58 percent by the last quarter of fiscal 1979. During the same period, the number of children on WIC as a percentage of all non-WIC encounters with public health nurses increased from 19 to 34 percent. Infants who came for the first time to the children's clinic to be certified for WIC contributed an increasing percentage of all infants seen in non-WIC clinics—from 0 percent at the start of the study to almost 15 percent by the final quarter.

The authors conclude that the presence of a WIC program in this local health department led to substantial increases in non-WIC health clinic activity that are not financially supported by the WIC Program. To further substantiate this point, Columbus County data were compared with 1978-79 data from two other North Carolina counties without WIC

programs but matched with Columbus on geographic location, total population, infant mortality rate, percent of population under 5 years of age, percent nonwhite population, and percent of population receiving AFDC benefits. Increases in the total nursing units of service of infants and children were 7 and 16 percent for the two counties as compared with 34 percent for Columbus County. Eliminating WIC encounters, nursing activity in the Columbus County health clinic continued to show a large increase—25 percent.

*Intended Audience:* Public health administrators and practitioners, legislators, WIC, and other public health service policymakers

*Applicability:* The authors state that previous studies as well as the Congress and WIC Program and policy decisionmakers have failed "to anticipate the additional demands that WIC would make on already overcrowded health department services, particularly on those provided by public health nurses." This study attempted to rectify this omission. The authors suggest that "consideration must be given to providing the additional resources" needed to handle increased clinic visits for WIC services and for non-WIC services used by WIC infants.

A State or local WIC agency attempting to carry out a similar study would need the software to operate the computerized program which allowed for analysis of encounter data. The analysis itself is relatively straightforward with perhaps the most complicated task being the calculation of unduplicated counts of participating infants. However, in areas where WIC programs are part of local health departments, regional or State health departments might consider conducting a similar study to ascertain the impact of WIC on the provision of public health services.

### **Cost-Benefit Analyses**

WIC Prenatal Participation and Its Relationship to Newborn Medicaid Costs in Missouri: A Cost/Benefit Analysis

Wayne F. Schramm

*Citation:* American Journal of Public Health. 1985 75 (8): 851-857

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*Research Focus:* Cost/benefit analysis of WIC participation costs and the associated reduction in newborns' Medicaid costs

*Population Studied:* Missouri's Medicaid-covered WIC prenatal participants and their infants--only Medicaid claims with a date of service within 30 days of birth and only babies born in calendar year 1980 were included in the study population.

*Research Objectives:* This study addressed five questions:

- Does WIC participation reduce Medicaid costs for the newborn and its mother for the 30 days immediately following birth?
- Does WIC increase birthweight and reduce low birthweight among Medicaid births?
- How do the relationships of birthweight, length of hospital stay, and admissions affect the WIC/non-WIC Medicaid cost differentials?
- Is increased participation in WIC associated with reduced Medicaid costs and/or increased birthweight?
- Do reduced Medicaid costs for WIC participants outweigh WIC costs, thus demonstrating a cost-beneficial program?

*Study Design:* This study required linking four separate data files: Medicaid (medicaid cost data); birth certificates (maternal characteristics, birthweight); WIC records (receipt and amount of WIC benefits), and Neonatal Intensive Care Unit (NICU) admissions (data for explaining differences between WIC and non-WIC Medicaid costs). The evaluation used 7,628 Missouri Medicaid records matched with their corresponding 1980 birth records. This file was then merged with WIC data and divided into a WIC group containing 1,883 records and a non-WIC comparison group of 5,745 records.

*Analytic Methods:* For infants born in 1980, demographic and behavioral characteristics of WIC participants were contrasted with similar data for the control group. After adjusting for higher medical costs in metropolitan areas, T-tests were used to establish

statistical differences. The total study population was used as the standard population. As a validity check on the primary method of adjustment, an analysis of covariance was performed using the per diem hospital reimbursement as the covariate.

*Study Findings:* WIC participation was found to be associated with a reduction of almost \$100 per participant in Medicaid costs for newborns. Mothers' Medicaid costs were not affected. For every dollar spent on WIC, about \$0.83 in Medicaid costs were saved for the period within 30 days of birth. Reductions in low-birthweight rates and NICU admission rates among WIC infants are two possible explanations for the reduced Medicaid costs associated with WIC food supplementation. As WIC food costs increased, both mean birthweight and newborn Medicaid savings also increased. The author notes that only short-term savings were examined and that an examination of longer term costs might produce estimates of greater savings.

*Intended Audience:* Public health researchers, Medicaid, and WIC policy and program decisionmakers

*Applicability:* The Missouri Medicaid study was one of the first WIC evaluations to control for income, as all Medicaid clients have low incomes. The author points out that this study has the obvious methodological problems of any retrospective study including selection bias. Further, nutritional risks cannot be easily identified on birth records, where recorded risks are more likely to be obstetrical.

The study used large data sets, complicated computer data merges and matches, and fairly sophisticated statistical methods. Most local WIC agencies lack the resources to carry out such a study. A State WIC agency may possess such resources or might be able to obtain help from staff in vital statistics sections.

### ***Evaluations by State and Local WIC Agencies***

Eight studies conducted by State and local WIC agencies are described in this section. Five of these were conducted by State WIC agencies. Five are impact evaluations; one is a market research effort; another is an outreach (benefit-targeting) plan; and one is a quarterly statistical compendium. These less

formal evaluations are included because they provide useful information for State and local WIC staff and because they could be easily replicated by other State WIC agencies.

### **Impacts Analyses**

Effectiveness of Inducement Factor in Promoting Breast Feeding in a WIC Clinic

Prema Achari

*Citation:* Plainfield WIC Program, Plainfield, NJ

*Research Focus:* Impact of the use of an incentive to promote breastfeeding among WIC mothers

*Population Studied:* WIC prenatal and postnatal participants in Plainfield, NJ

*Research Objectives:* This study determined whether or not offering incentives (decorated mugs) to prenatal WIC participants would increase the likelihood of breastfeeding.

*Study Design:* The incentive offer was introduced in December 1985 during prenatal classes on nutrition education which also offered information on the nutritional value and importance of breast milk. Women who decided to breastfeed their babies for at least 2 months were given decorative mugs. The distribution of the mugs began in February 1986. The test period was January through December 1986. The comparison period was January through December 1985. At recertification, a questionnaire was administered to mothers to obtain information on breastfeeding.

*Analytic Methods:* Time-series data from the questionnaires were analyzed to calculate the percent of WIC participants who were breastfeeding their infants during the comparison period and during the test period. Month-by-month differences in breastfeeding rates were calculated for the two periods.

*Study Findings:* During the test period, the number of mothers breastfeeding their infants was 16 to 18 percent higher than during the comparison period. In all but 1 month, the test period rates exceeded the comparison period rates. Breastfeeding rates during the test period were generally between 17 and 19

percent. Rates during the comparison period were generally between 14 and 17 percent.

*Intended Audience:* Administrators and staff in other WIC agencies, other public health professionals delivering prenatal services.

*Applicability:* This type of promotional campaign and a similar study could be replicated at other local WIC agencies. In carrying out such an effort, WIC administrators and their staffs should carefully separate test and comparison groups, define the test period as only the time during which an incentive is offered, and more closely track members of the treatment group.

### **A Novel Technique to Increase Attendance in WIC Nutrition Education Classes: A Promotional Approach**

Prema Achari

*Citation:* Plainfield WIC Program, Plainfield, NJ

*Research Focus:* Impact of a promotional program to increase nutritional awareness among WIC participants

*Population Studied:* WIC participants in Plainfield, NJ

*Research Objectives:* The study examined the impact of a promotional program on five aspects of WIC participant behavior:

- Nutritional awareness and understanding of the value of various foods
- Participant interest in nutrition and attention span during nutrition education classes
- Pickup rates for food instruments and attendance at secondary nutrition education classes
- Purchase of WIC approved food items
- Nutrition consciousness after termination from WIC

*Study Design:* The intervention (the technique to increase attendance) was giving magnetic models

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of WIC food items for participants to use on their refrigerators. Participants received one magnet every 2 months (for a total of eight magnets) when they came to the WIC clinic to pick up their food instruments and to attend nutrition education classes. A pretest questionnaire (on food instrument pickup, nutritional knowledge and awareness, and buying compliance) was administered to 300 participants prior to the intervention. One year after the promotional campaign began, a post-test questionnaire (covering the same topics as the pretest instrument) was administered to 306 participants.

*Analytic Methods:* Using data from the pretest and post-test questionnaires, descriptive statistics (percentages of participants missing food instrument pickup and attending nutrition classes) were computed and compared. Responses to questions about buying compliance were also reviewed.

*Study Findings:* Responses on the post-test questionnaire showed that participants liked the magnets and believed the magnets helped them to remember to buy WIC foods. Participants also reported using the magnets to explain healthy eating habits to their children. Attendance at the secondary nutrition education classes increased from 17 percent before the study began to 31 percent during the post-study period. No data concerning the other research objectives are presented in the published report.

*Intended Audience:* Administrators and staff in other WIC agencies, other public health professionals delivering educational services

*Applicability:* This type of intervention and a similar study could be replicated at other local WIC agencies. Copies of the questionnaires can be obtained from the Plainfield WIC Program.

#### **Evaluation of Tennessee Breastfeeding Promotion Project (preliminary, unpublished results)**

Minda Lazarov

*Citation:* Tennessee Breastfeeding Promotion Project, Tennessee Department of Health and Environment, Nashville, TN 37219-5402

*Research Focus:* Analyze the impact of a breastfeeding promotion project on breastfeeding rates among post-partum women in Tennessee

*Population Studied:* Tennessee women who entered Maternal and Child Health (MCH) prenatal projects and/or the WIC Program during their pregnancies  
*Research Objectives:* To determine whether a breastfeeding promotion project in Tennessee increased the incidence and duration of breastfeeding among low-income (MCH and WIC) women in five rural counties and one urban county.

*Study Design:* In 1987, the Tennessee Department of Health and Environment (TDHE) initiated an intensive breastfeeding promotion project in five Tennessee counties. Promotional efforts, which were conducted by TDHE State and regional staff, were based on a TDHE manual, Breastfeeding Promotion: A Handbook for Health Professionals. Women entering the MCH prenatal projects and/or the WIC Program during pregnancy were asked to participate in a series of educational activities designed to increase the incidence of breastfeeding. The activities included a survey of attitudes about breastfeeding, classes on initiating breastfeeding, peer group discussions, individual counseling sessions, and an incentive effort. Activities implemented to increase duration of breastfeeding included hospital and home visits, telephone followup, a new mother gift incentive program (T-shirts, diapers, nursing pads, nursing brassieres), a pump loan program, and mother-to-mother support groups. An additional survey of mothers in the support groups was also conducted.

Data on breastfeeding rates were obtained at birth and when infants were 2 weeks, 6 weeks, and 3 months old. At present, data from only one county have been analyzed. The information now available does not include copies of questionnaires, descriptions of survey conduct, or information on data collection.

*Analytic Methods:* Descriptive analysis (frequencies and demographic proportions) of data from before and after the breastfeeding promotional program. Available information does not describe the comparison population.

*Study Findings:* The preliminary analysis considered data from Fayette County, a poor, rural county with

a large black population. In Fayette county, the breastfeeding rates among an unidentified population prior to the promotion were 17 percent in the hospital and 6 percent at 6 weeks post-partum. Breastfeeding rates for 1989 were 41 percent in the hospital and 22 percent at 6 weeks post-partum. It is unclear from the report whether these rates are only for MCH and WIC participants or whether these rates encompass a larger population. In 1989, of the women who were breastfeeding, two-thirds of these women were breastfeeding exclusively while in the hospital, and half were still breastfeeding exclusively at 6 weeks post-partum. TDHE is planning to analyze data from the other counties in the promotional program.

*Intended Audience:* Public health (particularly MCH and WIC) practitioners and educators who are concerned with increasing the incidence and duration of breastfeeding among low-income mothers.

*Applicability:* The breastfeeding promotion as well as the evaluation could be conducted by other State WIC agencies or local agencies with sufficient resources. More detailed information would be needed in order to conduct a similar study. Such information can be obtained from staff of the Tennessee Breastfeeding Promotion.

### **An Evaluation of the Effect of Iron-specific Education on Mild Anemia Among Children in a WIC Program**

Stephen Plank, Kristine Cassidy, Marta McKenzie

*Citation:* Department of Public Health, Shasta County, CA

*Research Focus:* Evaluation of the impact of an iron-specific supplemental education component at a local WIC program on the iron content of anemic children.

*Population Studied:* Mildly anemic children in a local WIC program

*Research Objectives:* The study assessed the impact of an educational component of WIC designed for parents of anemic children in addition to the standard WIC nutrition education program. The measures used to monitor the educational intervention impact were dietary iron intake and hematocrit values.

*Study Design:* Local health care providers referred to WIC all eligible children aged 1 to 5 months with mild anemia. The providers collected dietary information and blood samples at the time of referral. The participating physicians agreed not to give iron-specific nutrition education or iron compound prescriptions before obtaining followup blood samples at 6 months after referral to WIC.

The 57 youngsters referred were randomly assigned to the treatment and control groups. Treatment group members received the standard WIC nutrition education program plus a 1-minute audiovisual presentation on the importance of iron in nutrition, a pamphlet on the same material, and individual counseling on iron-rich foods. The control group members received everything the treatment group did except the iron-related nutritional information. Both groups received WIC food instruments for seven iron-rich foods.

After 6 months, children in both groups were reassessed by the health care providers. Dietary histories were repeated and hematocrits were again taken.

*Analytic Methods:* Changes in mean daily dietary iron intake and mean hematocrit values for each group were compared using a two-tailed statistical test to measure the impact of the special iron-related nutrition education and counseling on these outcome measures.

*Study Findings:* Both groups had increased their dietary iron intake, but only the increases reported for the treatment group were statistically significant. On the other hand, while both groups had higher hematocrit values, the hematocrit values for the control groups showed a larger increase than for the treatment group. These increases were not statistically significant for either group.

The researchers used the contradictory evidence from the two measures (dietary iron intake and hematocrit values) to conclude that the treatment group parents learned from the special education effort (that is, they learned which foods to include in their children's dietary histories) but that, given the lack of change in hematocrit values, they failed to apply these lessons in everyday life. In fact, the evidence could be interpreted to suggest that the special education effort had no more effect than the standard WIC nutrition



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education along with the tailored food instruments which the control group also received.

*Intended Audience:* State and local WIC policymakers and program administrators

*Applicability:* The authors argue that the study findings suggest that the special iron-related nutrition education does nothing by itself to improve the health of anemic children and question the State's policy of encouraging health-care providers to offer nutrition education rather than elemental iron supplements.

The experimental design is sound. However, the findings do not include an assessment of the quality of the intervention.

### **Evaluation of Targeted Outreach Effort in the Special Supplemental Food Program for Women, Infants, and Children**

Geraldine Tompkins

*Citation:* Department of Human Services, Government of the District of Columbia

*Research Focus:* Evaluation of local WIC Program efforts to target outreach to higher risk groups who are eligible for WIC benefits

*Population Studied:* WIC priority groups

*Research Objectives:* The objective of the study was to assess the effectiveness of a targeted outreach campaign designed to increase the proportion of high-risk groups enrolled in WIC. The targeted outreach campaign included:

- Direct mailings to parents of newborn babies and to pregnant women insured by Medicaid.
- Public service announcements and news releases in newspapers and on radio stations.
- Distributing flyers and posters about WIC in public housing and in recreation department offices.
- Displaying WIC posters on buses in neighborhoods with higher concentrations of potentially eligible women and infants.

*Study Design:* The study was designed as a pre/post evaluation. WIC promotional materials (both before and after the targeted outreach campaign) contained a hotline number to call for more information. The hotline was in the WIC district office where calls were answered by clerical staff. These staff administered telephone questionnaires to collect data on demographic characteristics of callers, referral sources, health care arrangements, and WIC status. The questionnaire was administered during the 4-month period before targeted outreach began and for over a year after the outreach campaign was initiated. Demographic referral source data collected precampaign were compared with data collected during and after the benefit targeting campaign.

Data on WIC status were also examined to compare WIC enrollment during the period immediately before targeted outreach began with WIC enrollment during and after the outreach campaign.

*Analytic Methods:* Using data from the questionnaire and from WIC records, the study used simple statistical frequencies to describe pre/post outreach campaign differences.

*Study Findings:* The study reported pre/post outreach campaign differences in types of calls, referral sources, and WIC enrollments including:

- During the 4-month period before targeted outreach, 53 hotline callers were pregnant women, 36 were mothers wanting to enroll their infants, 5 were breastfeeding mothers, and 5 wanted to enroll their children in WIC. Within 1 month after the campaign began, 56 of the callers wanted to enroll their infants in WIC, 22 were pregnant women, 18 wanted to enroll their children, and 1 was a breastfeeding mother.
- Before targeted outreach, about twice as many callers had been referred by a friend as by a physician. All other sources accounted for about 25 percent of the calls. During the implementation of targeted outreach, friends remained the primary referral source—about 25 percent of the calls. Physicians became a more important referral source accounting for about 23 percent of all calls.

- The average number of pregnant women who were new enrollees during the first 5 months of the outreach campaign was 25 percent greater than the number of new pregnant enrollees during the previous 6 months.
- The average number of infants enrolled increased by 7 percent over the same period.
- The proportion of WIC enrollees in the three highest priority groups increased from 63.5 percent of total enrollees during the fiscal year preceding outreach to 71.6 percent during the fiscal year when outreach was initiated and increased to 78.8 percent during the first full year after implementation.

Researchers concluded that the outreach campaign was effective in increasing the proportion of high-risk enrollees.

*Intended Audience:* WIC Program administrators

*Applicability:* The successful implementation of a targeted outreach campaign is of interest to State and local WIC administrators. The methods used in the District of Columbia could also be used in other towns and cities. The relative suddenness of the change in types of hotline callers suggests that the targeted outreach was effective. However, it is important to note that, while WIC enrollments exhibited change after outreach, this study did not identify any other external factors or administrative or programmatic change that might also have affected women's decisions to enroll in WIC.

### **Process or Descriptive Studies**

Market Research Study, WIC Program, Oregon State Health Division

Griggs-Anderson (market research firm)

*Citation:* WIC Program, Oregon State Health Division, P.O. Box 231, Portland, Oregon 97207

*Research Focus:* Market research study to identify ways to modify WIC services and planning strategies to improve program effectiveness

*Population Studied:* WIC participants and local agency staff in Oregon

*Research Objectives:* The research was designed to meet five objectives:

- Collect information to improve program effectiveness;
- Examine WIC services as perceived by staff and clients;
- Profile needs, suggestions, and attitudes of participants and staff;
- Analyze findings and develop recommendations and guidelines for future planning; and
- Communicate findings.

*Study Design:* The study included both qualitative and quantitative components. For the qualitative component, Griggs-Anderson conducted indepth, inperson interviews with 10 WIC staff in four different counties and 39 WIC participants in six different counties. The counties and participants represented a mix of program types and clients. Interviews lasted 1 hour and 45 minutes. Interview guides were used. Using information from the qualitative component of the study, Griggs-Anderson developed survey instruments for the quantitative analysis component which involved telephone interviews with 127 WIC participants and 50 local agency staff persons. Participants were randomly selected and represented all 30 counties in Oregon. Staff were also randomly selected, though quotas were set to include all staff positions.

*Analytic Methods:* The quantitative analysis consisted of descriptive statistics-rating scales and frequencies. In addition to informing questionnaire design, the qualitative data were reviewed and used to interpret the quantitative findings.

*Study Findings:* The results of this study are divided into six categories in the published report. An overview of these findings includes:

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*General characteristics.* While both staff and participants said there is no “typical WIC client,” the study found that most (74 percent) Oregon WIC participants are married with an average of two children per family. Most WIC staff have several areas of responsibility.

*Awareness of WIC services.* Most participants understand the program’s purpose and the services offered.

*Participant satisfaction.* Participants give the program an overall rating of 8 on a scale of 1 to 10, with 10 being the highest rating. They value other WIC services, particularly the emotional support from WIC staff, as much as the free food. Some WIC clients find monthly food instrument pickup to be inconvenient but report that relationships with “good staff” can influence regular food instrument pickup.

Staff rate their success in effecting change in client behavior from 25 percent to 98 percent. Staff believe that participants primarily come to the WIC clinic for the free food and are not satisfied with WIC services. They regret that they cannot provide more emotional support to clients. They are frustrated by clients who do not show up for appointments. Both participants and staff feel that young, single mothers need the most help but are often the most difficult group to reach and to educate.

*Perceptions of WIC.* Perceptions of WIC are generally positive. Participants value the food they receive, the nutrition education, and the individual time with nutritional staff. One weakness identified by participants is the chaotic and rushed atmosphere. Both participants and staff think that WIC is doing a good job with regard to “important” factors—friendly and understanding staff, for example. There is, however, room for improvement on some of the less important factors—such as providing child care at the WIC clinic. The ideal WIC Program would offer more food, “fun” classes, and flexible appointment times.

*Nutrition education.* Participants say they place equal value on the food and the nutrition education, though participants also say that quality nutrition education “should be” practical, creatively presented, and easy to implement. They

particularly like recipes and demonstrations. Staff report that preparing such classes is very “time consuming.”

*Staff perceptions of their jobs.* Staff are generally satisfied with their jobs—reporting an overall rating of 8 on a 1-to-10 scale with 10 as the highest rating and also hold their coworkers in high regard. Local WIC staff though are discouraged by the lack of time to meet all needs, the hectic environment, and “negative” clients.

Recommendations include:

- Make client satisfaction the priority
- Personalize WIC’s approach and environment
- Market WIC as a fun program that can make a family’s life better
- Develop curriculum and creative techniques at a State level to provide support to local staff
- Promote staff consistency so that WIC “practices what it preaches”
- Clarify priority client populations

*Intended Audience:* State and local WIC staff in Oregon, WIC professionals in other States.

*Applicability:* This type of study could be conducted by other State WIC agencies or by large local WIC agencies. Because this study was undertaken by a professional market research organization, resource availability is a major issue. The published report does not include information on study costs. Copies of the interview guide and the survey instrument are not included in the published report.

The research appears to give a fairly comprehensive picture of the perceptions of both WIC participants and staff with regard to WIC program effectiveness and areas for improving effectiveness.

## Minnesota WIC Outreach Plan 1987

Spangler/Fisher Advertising, Inc.

*Citation:* Minnesota Department of Health, Division of Maternal and Child Health, Minneapolis, MN, 1987

*Research Focus:* Identify the characteristics of current WIC participants and of eligible nonparticipants. Develop a statewide outreach plan to market WIC to high-priority nonusers.

*Population Studied:* WIC participants and eligible nonparticipants in Minnesota

*Research Objectives:* Primary objectives of this study were to identify and describe:

- The characteristics of WIC-eligible women who do not receive WIC benefits;
- The best methods for reaching these women;
- The effectiveness of current outreach activities;
- Barriers to participation in the WIC Program;
- Differences across the State in the four objectives above; and
- The appropriateness of a role for the State WIC agency in outreach

*Study Design:* The research period covered 4 months beginning in the fall of 1986 and encompassed four types of data collection: indepth interviews with 20 WIC projects across the State; interviews with 16 referral agencies across the State; a survey of 249 clients of the referral agencies; and a telephone survey of 211 WIC participants and 273 low-income women who were not using WIC.

There is no information in the published report on sample selection of WIC agencies, referral agencies, referral agency participants, WIC participants, or low-income nonparticipants. The only questionnaire included in the report appears to be for the telephone survey of participants and nonparticipants. It can be inferred from the discussion of the findings that the same or a similar instrument was used to survey users of referral agency services.

*Analytic Methods:* Descriptive analysis of the survey data-response frequencies for every item on the telephone survey are reported. Extensive examination of the more qualitative data obtained from WIC and referral agencies.

*Study Findings:* WIC has high visibility among low-income women. These women are well served by current outreach efforts which rely primarily on word-of-mouth (relatives, friends, and neighbors). Most (81 percent) WIC clients know someone else on WIC. WIC users give the program "exceptionally high praise." WIC participants have higher participation rates (34 versus 10 percent) in the AFDC, Food Stamp, and Energy Assistance Programs than do nonparticipants.

Women with family incomes in the \$11,000 to \$20,000 range do not have accurate information on WIC services or on eligibility criteria for WIC. They view WIC as a welfare program. These women are not part of the social service network, so more and different outreach efforts are necessary to reach them.

Most local WIC agencies do not place a high priority on outreach—most have full caseloads. Further, local staff are not trained in outreach activities, do not know the State's objectives with regard to outreach, and have difficulty producing well-designed outreach tools (brochures and the like).

Referral agencies do not see large numbers of the higher income women. In addition, some of these referring agencies do not have sufficient information on WIC eligibility criteria.

The report recommends that Minnesota WIC and its local service providers target outreach to the higher-income women while maintaining the lower-income caseload. Some other recommendations include expanded contacts with key referral agencies, outreach training for local WIC staff, and regional outreach planning. The final section of the report presents a series of specific outreach strategies and activities for State WIC and the local agencies.

*Intended Audience:* State and local WIC staff in Minnesota, WIC professionals in other States

*Applicability:* If a State WIC agency needs information on the demographics and characteristics of its eligible

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non-WIC population, this type of market research would be useful. The report presents highly specific outreach planning activities and strategies that could be applied in other WIC agencies.

### **Wisconsin Standard Deviations Report**

Connie Welch

*Citation:* Wisconsin WIC Program

*Research Focus:* Comparative statistics for local WIC agencies

*Population Studied:* All local WIC agencies in Wisconsin

*Research Objective:* Summarizing information on the Wisconsin WIC population. Data on 12 indicators are drawn from 59 local agencies. The report flags percentages that are more than one standard deviation from the mean.

*Study Design:* The Wisconsin Standard Deviations Report presents, on a quarterly basis, by local agency, nutrition and administrative information about WIC clients. The reported data include:

- Percent of infants (born to prenatal WIC clients) breastfed at least once a month or more;
- Percent of infants who do not receive solid foods until they are 4 months of age;
- Percent of infants and children who are certified for WIC with low hematocrit or hemoglobin values who improve (higher hematocrit or hemoglobin values) at recertification;
- Percent of low-birthweight infants born to WIC mothers;
- Percent of pregnant women who report that they smoke;
- Percent of pregnant women who report that they drink;
- Percent of participants who receive at least one secondary nutrition contact during the

certification period; and percentage of participants who receive at least one health contact during the certification period;

- Percent of women and infants enrolled in WIC;
- Percent of women enrolled in WIC during the first trimester;
- No-show rate (for WIC food instrument pickup); and
- Percent of food instruments issued but not cashed.

Each local agency receives a quarterly report on that local agency, State averages (or means), and the percentages that are more than one standard deviation from the State mean.

*Analytic Methods:* Local agency data are downloaded from the automated data system mainframe, sent to the State WIC agency on diskettes, and placed in a spreadsheet format to calculate agency-specific frequencies and means as well as statewide frequencies and means.

*Study Findings:* Not applicable.

*Intended Audience:* State staff use composite reports to monitor and to provide technical assistance to local agencies. Local agency staff compare agency-specific data with statewide information. Local agencies may be required to prepare workplans (nutrition education plans, for example) for indicators more than one standard deviation from the mean.

*Applicability:* The data in the report, its format, distribution, and use could be replicated by other States.

## **Appendix B**

### **Sample Instruments**

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#### **Record Abstraction Forms**

The next page is a sample of one type of record abstraction form. This form was used in an FNS-funded study of the management of WIC funds for nutrition and program administration. It was designed to allow a data collector to review up to 10 WIC case records. If information on each topic was recorded in the case record, the data collector placed a check in the appropriate box. Blank boxes indicated that such data were not found in the case records. The sample includes only one page of a three-page form. Data collectors can also use a record abstraction form to copy data rather than indicating the presence or absence of information. B-2 is a sample of this type of record abstraction. This sample form was designed for a study for the Centers for Disease Control. Data collectors abstract from patient records the dates and results of certain laboratory tests.

#### **Interview Guides**

Interview guides are semistructured instruments that are often used to collect data on program organization and operations. They offer the means for conducting more informal interviews, but they provide sufficient structure so that the same topics are discussed with each respondent. The format is question-and-answer, but the questions are not in a designated order. Also, interviewers are trained to use respondents' answers in phrasing followup questions.

On B-3 are several questions that might appear on an interview guide for collecting data on day-to-day operations of a drug abuse information and referral service. Please note that this example is only the first page of an interview guide. It is by no means sufficiently developed to collect information on the design, implementation, and operation of a drug abuse information and referral service at a local WIC agency.

#### **Survey Instruments**

B-4 is the first page of a telephone survey questionnaire. This questionnaire was also used in studying the management of WIC funds for nutrition and program administration. More than 50 State WIC directors were interviewed during this survey.

Note that the information and questions that the telephone interviewer will read to the respondent

appear in one style while instructions to the interviewer on procedures and appropriate answers appear in another style.

A one-page sample of a mail questionnaire appears on B-5. This sample is drawn from the 1990 WIC participant and program characteristics study (PC90). Staff in State WIC agencies were to answer these questions and then return the forms in preaddressed, stamped envelopes.

Note that a mail questionnaire, which is a self-completed instrument, must contain very clear, quite precise instructions so that comparable data are collected across all respondents. As with the telephone survey instrument, different typefaces and styles (bold for example) are used to call respondent attention to the various instructions.

Site-specific or respondent-specific identifiers do not appear on these one-page samples. The assumption here is that the instrument will have a cover page on which site-specific or respondent-specific identifiers are recorded.

#### **Observation Forms**

Much can be learned by walking through a WIC agency and observing the waiting areas and the staff at work as well as the way in which space is used by both WIC participants and staff. Observation checklists can be informal—a series of reminders to observers to look for certain items or situations. Or, observation checklists can pose more specific questions.

The sample on the next page (B-6) is a checklist for collecting information on nutrition education in a local WIC agency. The form is designed so that an observer can record information on several sites operated by a local WIC Program. This checklist was used in the FNS-funded study of the management of WIC funds for nutrition and program administration.

B-1

RECORD REVIEW FORM

	Client									
	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Date										
Client Group (P, PP, BF, I, C)										
<b>Anthropometrics</b> Are client's height and weight recorded?										
Are data plotted on a growth chart?										
Does the chart include data on the client's: Weight for age										
Height for age										
Weight for height										
Head circumference										
Is data entered within 1/2 pound or 1/2 inch?										
<b>Food delivery</b> Does file contain information on: Current food package										
Problems with food package										
Resolution of problems										
<b>Referrals</b> Has client been referred to: On-site health care										
Other services on site										
Off-site health care										
Other services off site										
Is there any record of followup of referrals? SPECIFY _____										
Is there any documentation of referrals? SPECIFY _____										

**B-2**

Patient ID \_\_\_\_\_

Review Date \_\_\_\_\_

For each test, record the test results and the date of the test, if these data are in the records. If a test has been repeated, record (1) the date and results of the test **closest to onset of this illness**, and (2) the date and results of the test **nearest to the present date**. If a date is not in the records, write "NA" on the line for the date.

If the local laboratory indicates "normal values" for any test result, please record this information next to the name of the test.

	DATE	RESULT	DATE	RESULT
<b>AUTOIMMUNE DISEASES</b>				
ANA	_____	_____	_____	_____
RA	_____	_____	_____	_____
Other (Anti-thyroid, Anti-DS-DNA, Anti-smooth muscle)				
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

**COMPLETE BLOOD COUNT**

Hgb	_____	_____	_____	_____
Hct	_____	_____	_____	_____
WBC	_____	_____	_____	_____
Platelets	_____	_____	_____	_____
Differential WBC				
% Polys	_____	_____	_____	_____
Bands	_____	_____	_____	_____
Lymphs	_____	_____	_____	_____
Atypical lymphs	_____	_____	_____	_____
Monos	_____	_____	_____	_____
Eos	_____	_____	_____	_____
Other	_____	_____	_____	_____



**INTERVIEWERS:** Please discuss the following issues and topics with staff involved in designing, implementing, and/or providing drug abuse information and referral services in this WIC agency. The interview need not be limited to the issues listed on this interview guide. Remember to take notes on any other issues discussed.

**1. Program History**

What were the factors that most influenced how this drug abuse information and referral service was designed?

Did staff or anyone else feel a need for such a service before WIC regulations required it?

Who was involved in designing the drug abuse information and referral service? Were the designers all WIC staff or were others involved?

Who implemented it? What problems were encountered during implementation?

How were they resolved? Have they been resolved? If not, why not?

What was the timeframe for designing the program? for implementing it?

Was there formal staff training? Who designed the training effort? Who actually provided the training? What was the duration of staff training? What types of staff were trained? Did all staff receive the same training?

**2. Program Operations**

Who provides drug abuse information and referral services to WIC participants?

Where are these services provided?

How often are such contacts made?

Are such contacts separately scheduled? If so, what is the scheduling procedure?

What types of media are used? Where and how are these materials obtained?

Are specific drugs discussed or is the approach more general? What are the reasons for the chosen approach?

Are there formal referral procedures for participants needing more than information on the potential problems that drug abuse can create? If yes, what are they? If no, how are such referrals handled?

B-4

Because there are so many differences between and among WIC agencies, we would like to begin this interview by asking you some questions that will help us to characterize and describe your WIC program.

1. When did you begin managing this WIC program?

\_\_\_\_\_/\_\_\_\_\_  
MONTH                  YEAR

2. When did you begin working for this WIC program?

\_\_\_\_\_/\_\_\_\_\_  
MONTH                  YEAR

3. Did you work for any other WIC program before joining the staff of this program?

Yes	ASK QUESTION 3A.	1
No	SKIP TO QUESTION 4.	2

3A. How long did you work for WIC before coming to this program?

\_\_\_\_\_  
MONTHS

**INTERVIEWER:** DOUBLE CHECK RESPONDENT'S ANSWER TO CLARIFY WHETHER S/HE SPECIFIES YEARS OR MONTHS. CONVERT ALL ANSWERS TO MONTHS.

4. For fiscal year 1988, what is your total WIC administrative budget?

\$ \_\_\_\_\_  
SPECIFY WHOLE DOLLARS.

5. Of your total 1988 administrative budget, what portion of the budget is spent at the State level?

\$ \_\_\_\_\_  
SPECIFY WHOLE DOLLARS.

or

\_\_\_\_\_%  
PERCENT OF BUDGET

SUBMITTED BY \_\_\_\_\_  
Name of State WIC Agency

**Income Determination**

A1. Describe the State Agency (SA) gross income limit for eligibility. CIRCLE ONE NUMBER.

SA uses the standard 185 percent of poverty guidelines published in the Federal Register.....1

SA uses other standards.....DESCRIBE BELOW.....2

Economic Unit	Income Limit (gross per annum)	or Percent of Poverty
1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____
5	_____	_____
6	_____	_____
7	_____	_____
8	_____	_____
9	_____	_____

A2. What programs and/or respective income limits are used by the State Agency for adjunctive eligibility determinations?

CIRCLE THE PROGRAMS AND SPECIFY THE MAXIMUM PERCENT OF POVERTY ALLOWED FOR THOSE PROGRAMS.

Program		Percent of Poverty
AFCD.....	1.....	_____
Food Stamp Program.....	2.....	130%
Medicaid.....	3.....	_____
551.....	4.....	_____
Reduced-Price School Lunch.....	5.....	185%
Free School Lunch.....	6.....	130%
Other programs.....SPECIFY.....	7.....	_____

LOCAL AGENCY \_\_\_\_\_

**Nutrition Education**

Record a Y for Yes, an N for No, or an NA for Not Available. Record site names at the top of each column.

Topic	Site	Site	Site
<p><b>NUTRITION EDUCATION SESSIONS</b>                      Is nutrition education conducted on site?</p> <p>Is nutrition education conducted during . .                      certification?                      food instrument pickup?                      waiting periods?                      dietary assessment?</p> <p>Are nutrition education sessions scheduled independently of other activities?</p> <p><b>MATERIALS</b>                      Are the following nutrition education materials available in the waiting area.....                      pamphlets/brochures                      posters                      recipes                      audiovisuals</p>			

## **Appendix C**

### **USDA Resources for Planning and Evaluation**

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The following are USDA resources available to State and local WIC staff interested in evaluation:

1. The National Agricultural Library Food and Nutrition Information Center (FNIC) - FNS funds this information center to make library services available to you on WIC and related subjects. FNIC can provide you with literature searches on WIC research including FNS reports and major journals that publish WIC research, bibliographies on special topics, and copies of research articles. The public can also borrow materials from the library. Contact: 301-344-3719.
2. FNS Reports and Materials - National and Regional FNS staff may be aware of data sources or evaluations of certain aspects of WIC and oversee national studies of the program. Contact your regional office or the Supplemental Food Program Division (703-756-3746) or the Office of Analysis and Evaluation (703-756-3115) at FNS Headquarters.
3. USDA/Agricultural Research Service Human Nutrition Centers - There are 5 USDA Human Nutrition Centers, two may be of interest to WIC staff:
  - the Child Nutrition Research Center at Baylor College of Medicine is the only research center that deals exclusively with research on nutrient needs and nutritional status of mothers, infants, and children. Contact: 713-798-7018.
  - the Western Human Nutrition Research Center's mission is to improve methods for assessing human nutritional status and to study the factors that lead to malnutrition. Contact: 415-556-9699.