

Executive Summaries

Food Insecurity and Hunger

Changes in Food Security After Welfare Reform: Can We Identify a Policy Effect?

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Grant awarded by the Joint Center for Poverty Research, University of Chicago and Northwestern University

The authors investigated whether welfare reform has altered single mothers' standard of living relative to that of married couples with children. Welfare reform is broadly defined to include the Earned Income Tax Credit (EITC), a refundable tax credit that provides a subsidy to earned income up to a certain threshold. Much previous research attempted to track the well-being of welfare leavers, and many studies used income measures as proxies for material well-being. The studies of former welfare recipients, however, suffered from low response rates and did not examine how welfare reform affected nonenrolled families who face greater barriers to enrolling in Federal cash assistance programs. Focusing on income is also problematic in that employment involves new expenses as well as income; newly employed former welfare recipients face transportation, clothing, and childcare expenses, and often lose their Medicaid coverage. To address these shortcomings, the authors considered all single mothers and used direct measures of material well-being. They focused on changes in food-related problems, using data collected in the annual Food Security

Supplement to the Current Population Survey between 1995 and 1999. To distinguish the effect of welfare reform from that of the strengthening economy during this period, the authors compared trends in food-related problems among single mothers with trends among married mothers relatively unaffected by welfare reform.

The authors examined about 50 food-related problems. All these problems declined between 1995 and 1999 among single and married mothers, and the proportional declines were approximately equal for the two groups. Single mothers started with more food-related problems than married mothers, so equal proportional declines signify larger percentage point declines among single mothers. Multivariate analysis shows that single mothers and married mothers saw improvements from 1995 to 1997 and that problems declined among single mothers at least as much as among married mothers. After 1997, improvements appeared to cease among both groups. But, because the U.S. Department of Agriculture's report on its September 2000 survey showed significant improvement among female-headed households between 1998 and 2000, the absence of measurable progress between 1997 and 1999 may well be due to random sampling error or some other methodological artifact.

The interpretation of these findings depends upon how the strong economy of the late 1990s would be expected to affect single mothers relative to married couples with children. If one believes that prosperity would have reduced food-related problems by the same proportion among single mothers as among married couples with children even in the absence of welfare reform and the EITC, the authors' findings imply that welfare reform in itself had no effect on single mothers' living standards. If one believes that prosperity would have helped families with high labor force participation rates more than families with low labor force participation rates, then the fact that food-related problems fell by the same proportion among single mothers as among married mothers implies that single mothers did better under welfare reform and the EITC than they would have done in their absence.

Food Insecurity or Poverty? Measuring Need-Related Dietary Adequacy

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The U.S. Department of Agriculture monitors the food security of U.S. households through an annual survey that contains questions about behaviors that signal an inability to meet food needs because of financial constraints. The survey has been conducted annually since 1995 as part of the Current Population Survey (CPS) and has been adopted, at least in part, by many other surveys. Numerous researchers have used these questions to analyze a variety of topics, with reports published in medical and public health journals. An advantage of the questions is that they are relatively inexpensive to administer compared with biomedical measures or dietary recall.

Several recent studies examined the validity of the food insecurity questions. These studies examined how the questions are correlated among themselves (that is, their internal validity) and how the questions are correlated with demographic characteristics, household characteristics, and dietary outcomes (that is, their external validity). Generally, these studies found the food insecurity questions to be correlated in expected ways with both internal and external factors. For example, using the Continuing Survey of Food Intake by Individuals, one author found that in households reporting insufficient food, most household members had a significantly lower intake of most vitamins and minerals than members of other households. One exception was that preschoolers in food-insecure households did not suffer from low consumption.

The authors assessed the empirical content of the food insecurity questions, advancing the literature in several directions. First, rather than simply examine whether the food insecurity questions were correlated with other factors, they focused on how well they were correlated. The standard poverty measure serves as a useful benchmark for these purposes because it has been used extensively and can be computed from many different data sets. Second, this report used a unique dataset, the National Health and Nutrition Examination Survey III (NHANES III).¹ In addition to the dietary recall information collected in other data sets, NHANES III collects and analyzes blood from its participants. Thus, the authors could examine measures of diet adequacy from individuals of all ages without recall or proxy bias. Third, the authors examined how the correlations between the responses to the food security questions and dietary outcomes varied by age. This last point is particularly valuable, given that standard food insecurity questions make distinctions by age. For example, one distinction between the CPS's two most severe categories of food insecurity rests on whether children are skipping meals.

The study found that the responses to the food security questions are correlated with the diets of older household members but are not consistently correlated with the diets of children. In contrast, poverty is consistently related to the diets of preschoolers. Among adults, poverty and food insecurity questions are good predictors of diet. However, poverty may be a better overall predictor of diet quality, since it is more consistently related to a range of dietary outcomes than the food insecurity questions.

Although the focus of this research was related to measurement, it is important to note two substantive aspects of the study's findings. First, individuals in poverty tend to have different dietary outcomes even at the basic level of vitamin deficiencies and anemia. This finding is true for most age groups in the population, including the youngest and oldest, the two particularly vulnerable age groups. Second, the study reveals several underlying behavioral issues. For example, it

¹The authors note one important drawback of the NHANES III for their purposes. Most studies that examined food insecurity used a summary measure based on a specific series of 6 or 18 questions. NHANES III does not contain the entire series of questions, so a direct examination of the summary measure cannot be undertaken. However, the questions in NHANES III are very similar to those in the CPS, and these questions are highly correlated with the summary measures.

found much variation by age in the relationship between poverty and dietary outcomes. Adult dietary outcomes are more correlated with poverty than are child outcomes, and dietary outcomes of younger children are more correlated with poverty than are the dietary outcomes of older children. It is likely that

parents protect their children from the effects of poverty to the extent that they can and that older children have more opportunities to supplement their consumption outside the home. It would be useful to have a better understanding of these protective family behaviors.

Validation of Food Security Instruments in Hispanic Households

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Validation studies of food security instruments have reported strong relationships between food insecurity and (1) declines in household food supplies, (2) infrequent fruit and vegetable consumption, (3) unemployment and participation in food assistance programs, and (4) disordered eating behaviors. Validity testing of the Federal 18-item food security instrument has supported its usefulness for monitoring food insecurity and hunger in the general U.S. population. However, researchers conducting studies among Hawaiian and Pacific Islanders have questioned the validity of applying the categorical measure of food insecurity to that population. Similar research has not been conducted among Latinos.

The main goal of this study was to validate the 18-item food security instrument in a Latino population. The authors also developed and tested a cultural framework that links food insecurity to nutritional outcomes in Latino families with young children, primarily of Mexican descent. This research may contribute to more effective monitoring of food insecurity and hunger in the United States and for the design of nutrition education programs in diverse cultural groups.

The authors used data from a cross-sectional survey, carried out between February and May 2001, of approximately 250 low-income Latino households in six California counties. Prior to the survey, 4 focus groups were conducted to examine cultural interpretation of the 18 food security questions. The survey included the following instruments: (1) the 18-item

food security instrument, (2) a 171-item self-reported household food inventory, (3) a 66-item food frequency questionnaire, and (4) a 16-item family demographic record form. All families included in the study self-identified as Latino, Mexican, or Mexican-American and had at least one healthy child, between 3 and 5 years old. Trained bilingual interviewers recruited subjects from a variety of community-based agencies, including those that administer the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and Head Start, migrant camps, the local public health department, local health centers, and family resource centers. Subjects were interviewed in a private clinic room or in their homes. Statistical procedures included Pearson correlations, the Kruskal-Wallis test (for nonparametric data), and the Mantel-Haenzel chi-square. About 80 percent of the survey respondents were primarily Spanish-speaking and of Mexican descent. Seventy-nine percent were enrolled in the WIC program, and 25 percent received Food Stamps. Forty-four percent of the families (n=105) reported food insecurity without hunger, 13 percent reported moderate hunger (n=30), and 3 percent reported severe hunger (n=8).

Across the four levels of food security (food secure, food insecure with no hunger, food insecure with moderate hunger, and food insecure with severe hunger), the frequency of affirmative responses to each of 18 food security items increased as the level of food insecurity became more severe. However, within a given level of food insecurity, the frequency of affirmative responses did not always decline as expected as the severity of the items increased. In particular, subjects tended to respond positively more often to some of the child hunger items than to some of the adult hunger items.

The food insecurity scale measure was negatively associated with all categories of household food supplies: dairy, fruit, grains, meat, snack foods, and vegetables. Similarly, the categorical measure of food insecurity was significantly associated with lower household food stores. Neither the scale nor categorical measure of food security was correlated with daily servings of fruits or vegetables among preschool children. However, child fruit and vegetable intakes were significantly correlated with household supplies of those foods. Food insecurity was associated with declines in household supplies of many nutritious foods (carrots, tomatoes, whole wheat bread, apples, and oranges), as well as several less nutritious foods

(soda, cookies, and chocolate powder). Household supplies of traditional Mexican foods, including beans, corn tortillas, and chili, tended to remain stable, as did supplies of several relatively high-fat or inexpensive food items (hot dogs, ice cream, Kool-Aid, and instant soup).

The authors conclude that their research findings indicate that the 18-item instrument used to monitor food insecurity and hunger in the United States is valid for use in the Latino population. However, they note that

the Latino subjects responded more sensitively than expected to some of the child hunger items in comparison to the adult items, suggesting that the tool may be unable to detect the subtle differences between the quantity of foods available in these households and the nutritional quality of the food available. This research may contribute to more effective monitoring of food insecurity and hunger in the United States and to the design of nutrition education programs for diverse cultural groups.

Structural Analysis of the Relationship of Food Insufficiency to Disease Risk and Outcomes Among Adults From NHANES III

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Grant awarded by the Southern Rural Development Center, Mississippi State University

This study was based on the conceptual framework developed by Campbell for risk factors and consequences of food insufficiency. In this framework, food insufficiency could be both an outcome and a predictor of other outcomes, such as poor health. Over the past decade, research has provided evidence for the relationship between food insufficiency and each health risk factor or health outcome proposed by Campbell, but has not demonstrated inter-relationships among all model components simultaneously. The southern region of the United States has a relatively high rate of cardiovascular disease (CVD) and a high rate of food insufficiency. These conditions indicate a need to investigate interrelationships among food insufficiency, diet quality, health behaviors, CVD risk factors, and CVD. Therefore, this study developed and tested a model—derived from Campbell’s conceptual framework—of the relationships among food insufficiency, diet quality, CVD risks, and CVD in the South.

The authors examined these relationships among a sample of adults from the South who participated in the Third National Health and Nutrition Examination Survey (NHANES III). The study examined the relationship between food insufficiency and three categories of individual characteristics, referred to as latent constructs. The latent constructs were (1) health behaviors, (2) CVD risks, and (3) CVD outcomes. The structural model included independent variables for food insufficiency and diet quality, as well as socio-demographic variables known to be associated with food insufficiency and diet quality.

Data analysis involved the use of structural equation modeling (SEM) in a two-phase process. In the first phase, the authors estimated the relationships between predictor variables and the latent constructs. In the second phase, the authors tested the structural model using SEM. This involved estimating relationships among latent constructs and predictor variables simultaneously.

The results of the analysis indicated that food insufficiency is more prevalent among individuals with low income and education levels and those who are non-White and female. Evaluation of the measurement models indicated reasonably good fit of the latent constructs and their indicator variables. However, structural equation modeling did not confirm a statistically significant relationship between food insufficiency and CVD. The authors noted that because food insufficiency is correlated with many other factors, it is difficult to disentangle its effect on CVD. They suggest that future research focus on assessing correlations among the indicator variables to better define future structural models of the relationships among food insufficiency and cardiovascular disease risks and outcomes. In addition, the authors suggest that future research assess direct and indirect effects of the indicators for cardiovascular disease. Assessment of these effects may suggest areas of future investigation in cardiovascular disease prevention and management.

Impact of Participating in the Expanded Food and Nutrition Education Program on Food Insecurity

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Grant awarded by the Southern Rural Development Center, Mississippi State University

Considerable research has been conducted to develop a conceptual definition of food security, food insecurity, and hunger. Based on this definition, an instrument was developed to measure the prevalence of food insecurity and hunger among U.S. households. It is important to know if participation in nutrition education classes reduces food insecurity and if individuals in food-insecure households have poorer health status than individuals in food-secure households.

The objectives of this research were to (1) examine the relationship between food insecurity and participation in nutrition education, (2) examine the relationship between food insecurity and health status, and (3) determine factors associated with food insecurity. The authors compared rates of food insecurity between an intervention group—individuals enrolled in the Expanded Food and Nutrition Education Program (EFNEP)—and a nonintervention group—individuals who were eligible for EFNEP but who either had not enrolled or had completed only one lesson in the program. Participants were classified as food secure, food insecure, or food insecure with hunger, based on their responses to the 18-item household food security questionnaire. Respondents also reported whether their general health was excellent, very good, good, fair, or poor. Demographic variables collected in the interviews included race, age, educational level, participation in food assistance programs, number of children, marital status, county type—calculated using Tennessee census classification of rural and urban counties—gender, and income. The majority of the

subjects in the study were female, and more than half lived in an urban community.

The authors used descriptive analysis and logistic regression to study the association between participation in EFNEP and food insecurity. In the logistic regression, an individual's food security status was estimated to be a function of the rurality of county of residence, race, age, educational level, participation in food programs, health status, number of children, marital status, gender, and income. A forward logistic regression analysis was conducted to examine the point at which the independent variables enter the equation. Odds ratios were determined for variables included in the model.

The intervention and comparison groups were not significantly different from each other in terms of their race, gender, marital status, education, or number of children in the family. There were also no significant differences in the rurality of the county of residence of the intervention and comparison groups. However, the intervention group was significantly older (by an average of 2 years), and the two groups differed significantly based on the food security score. The respondents who had participated in more lessons in the EFNEP educational program were more food secure than the respondents who had not yet started or who had completed only one lesson in the EFNEP program.

Most of the subjects who reported excellent, very good, or good health were food secure, while most of the subjects who reported fair or poor health were food insecure. The variables significantly associated with food insecurity were health, income, nutrition education intervention, food program participation, and marital status. The subjects who had not participated in the EFNEP program were more likely to use food assistance programs and were half as likely to have excellent health status. Divorced and separated households were more likely to be food insecure than married-couple households.

The authors found that participation in a series of nutrition education programs that teach basic nutrition, food resource management, and basic cooking skills was associated with lower food insecurity. They also found that individuals who were food insecure had poorer health status than those who were food secure. Health was the first variable that loaded into a forward stepwise logistic regression model, and food-insecure individuals with severe hunger were half as likely to

report excellent health as food-secure individuals. The exact nature of the association between food security and health status needs further study. It is well established that poor diets contribute to poor health and that low-income individuals are at greater risk for poor health than higher income people.

The findings in this study support the need for multi-session nutrition education for low-income households, focusing on teaching basic nutrition, food

shopping, and cooking skills. These programs are associated with higher levels of food security and promote more efficient use of food resources and better health. The authors suggest that the study be replicated in other nutrition education programs to determine if similar results are found or if other variables contribute to the success of the program in decreasing food insecurity.

Assessing Food Security and Dietary Intake in the Post Welfare Reform Era in Two Southern States

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The authors examined the consequences of welfare reform legislation in two Southern States, Louisiana and South Carolina, by observing food security outcomes for families receiving Temporary Assistance for Needy Families (TANF), former TANF families, low-income non-TANF families, and local communities. The authors conducted interviews with approximately 130 former welfare recipients and working poor women in Louisiana and South Carolina from late fall 2000 through late summer 2001.

Most women (72 percent) in the Louisiana sample received food stamps; none received TANF benefits. Monthly food stamp benefits averaged \$299.43, with a range from \$16 to \$594. More than half (56 percent) of the women in the study reported that their actual food costs exceeded their monthly food stamp benefits;

the monthly shortfall averaged \$112.50. In South Carolina, the average monthly food stamp benefit reported by the 34 women participating in the program was \$280, and the monthly benefit ranged from \$10 to \$455. Fifteen of the 34 women using food stamps reported that they spent no money for food beyond their food stamp benefits. Among those spending money for food beyond their food stamp allotment, the average amount spent was \$52 each month.

In Louisiana, almost one-third of the women in the survey lived in households classified as food insecure and a fifth lived in households classified as food insecure with hunger. In South Carolina, 58 percent of participants lived in food-insecure households and 25 percent lived in households classified as food insecure with hunger.

Twenty-four-hour diet recalls were collected from 74 of the women in the original sample. Dietary recall data were collected at the start of a household's resource cycle, when the respondent received her food stamps or other source of income, and at the end of the resource cycle. The analysis shows a positive correlation between overweight and food insecurity in women, possibly as a result of monthly resource cycling. Women on food stamps often skipped meals at the end of the resource cycle. Diet quality, measured relative to the Federal Food Guide Pyramid recommendations, was similar for both groups: low in nutritional quality, high in fats, and generally deteriorated over the resource cycle. The diets lacked fruits and vegetables, variety, and key nutrients, minerals, and vitamins. When asked to give an example of a "balanced meal," neither group could adequately define a balanced diet. Both groups were overweight, with poor diet quality a likely contributor to overweight status.