Interest in the extent of hunger in the United States has fluctuated over the years. There was little public discussion of the subject during the post-Depression era until the mid-1960s, when unscientific but dramatic media exposés of the extent of hunger in the country helped launch the “war on poverty.” By 1979, the U.S. Senate Subcommittee on Nutrition proclaimed “the virtual defeat of hunger and malnutrition in the United States.”1 Yet, by the mid-1980s, following a recession and reductions in federal food assistance programs, the Physicians’ Task Force on Hunger in America reported that 20 million Americans were “hungry.”2 Current attempts to reform welfare, a focus of this journal issue, and to effect cost savings in food and income support programs for the poor will most likely result in increased attention to the issue of hunger in America, particularly the prevalence and consequences of hunger among children.

This Child Indicators article explores attempts to measure hunger among children and their families in the United States today. Much of the confusion in public policy debates about hunger stems from problems inherent in attempting to define and measure hunger. Hunger, per se, is a subjective sensation resulting from an immediate need for or lack of food, which nearly everyone experiences with some frequency. While the common sensation of hunger is not specifically the subject at hand, recognition of the universal and subjective nature of the concept of hunger does help to underscore the sources of problems and controversies encountered when attempting to assess hunger for purposes of policy.

This article first reviews the different policy-relevant concepts of hunger and discusses how these concepts are operationalized for purposes of measurement. Next, the article looks at the U.S. government’s attempts to measure hunger over the past two decades and contrasts these statistics with the most widely reported estimates from advocacy groups. Finally, the article examines the relationship of reported hunger among children to participation in federal programs designed to increase access to food.

Available data summarized in this article show that between 1977 and 1991, from 2% to 4% of households in the United States reported that they sometimes or often did not have enough to eat. Most of those who report-
ed insufficient food had low incomes, with the rate of reported food insufficiency 10 times higher among individuals in poor families than among individuals in nonpoor families. In the early 1990s, between two million and four million children under 12 years of age did not receive enough to eat. Even participation in federal food programs does not always prevent food insufficiency; as many as 2 in 10 families with children that participate in the Food Stamp Program report that their children are sometimes hungry.

**Defining Hunger for Policy Purposes**

Hunger among children in the United States does not take the form of mass starvation, as it does in some poorer nations, and cases of severe food deprivation are extremely rare. Objective, clinical signs of food deprivation (such as low weight-for-height, or *wasting* and low height-for-age, or *stunting*) generally appear in children (with the exception of infants) only after persistent food deprivation has been a problem for some time. The effects of hunger as they are seen in children in the United States are usually more subtle and challenging to measure: fatigue, irritability, dizziness, frequent headaches, frequent colds and infections, and difficulty concentrating.3

Because of the difficulty in measuring hunger by objective clinical standards, considerable effort has been given to devising alternative measures of hunger, based on a person’s self-report of his or her psychological or subjective experience of hunger. This effort has occurred in both the private and public sectors, often with cooperation among government agencies, privately funded advocacy groups, and academic institutions. While the participants may not yet agree on every detail of a single definition of hunger or a single measurement instrument, there has been a notable convergence in thought. For nearly two decades, hunger has been defined, for policy, measurement, and reporting purposes, as “an inadequate amount of food intake due to lack of money or resources”4 or “the mental or physical condition that comes from not eating enough food due to insufficient economic, family, or community resources.”5 Hunger, so defined, is referred to as resource-constrained hunger and is closely related to poverty and markedly distinct from the everyday premealtime hunger experienced across the income spectrum.

In the past several years, researchers have placed hunger as defined above within the context of a much broader concept called food insecurity. Food insecurity is a condition in which families or individuals are unable to afford enough adequately nutritious and safe food from socially acceptable sources for an active, healthy life.6 Families or individuals may experience food insecurity in varying degrees of severity, with less severe food insecurity showing up in coping behaviors such as borrowing money for food, obtaining food from charity, or reducing the variety and quality of their diet. More severe food insecurity is experienced as the actual uneasy or painful hunger sensation caused by lack of food as a result of inadequate resources.7

While issues concerning the safety and nutritional adequacy of food and the social acceptability of the sources of food are all elements of food insecurity, the focus in this article is on food quantity. Nutritional adequacy is related but not equivalent to the quantity of food consumed. While most people who are chronically hungry are likely to be malnourished, some malnourished people may not experience hunger, and those experiencing brief episodes of hunger may not become malnourished. (Growth stunting, an
indicator of malnutrition, will be addressed in the Summer/Fall 1997 Child Indicators article.) Food safety is also a separate issue from food quantity and is not discussed further in this article. Finally, while the social acceptability of food sources is an important element of food security, and while the reliance by needy people on food obtained from socially unacceptable sources (scavenged from trash bins or received from food pantries, food banks, or soup kitchens) has been documented, the relationship between resource-constrained hunger and the use of socially unacceptable food sources is complex and beyond the scope of this article.

With the focus narrowed to one concept—food quantity—it remains important to recognize that even that relatively simple concept has subjective elements. The concept of an “adequate amount of” or “enough” food can be highly subjective, reflecting not only the nutritive content of food, but other qualities such as variety and personal preferences. In addition, the notion of “inadequate” money or resources also has a subjective component. Because food competes with many other items in household budgets, whether food intake is adequate for a child in a family depends not only on the size of the family budget but also on what else is purchased with limited family resources and for whom.

**Operationalizing the Definitions**

This article presents data from four major surveys used to collect information on the extent of hunger in the United States. Three are periodic surveys conducted by U.S. government agencies: the Nationwide Food Consumption Survey (NFCS) and the Continuing Survey of Food Intakes by Individuals (CSFII) of the U.S. Department of Agriculture (USDA), and the National Health and Nutrition Examination Survey (NHANES III) of the U.S. Department of Health and Human Services (DHHS). The fourth survey, the Community Childhood Hunger Identification Project (CCHIP), was a project of a private advocacy group, the Food Research and Action Center (FRAC). All four of the surveys rely on adult responses about the children living in their households for information on food insufficiency among children. Adult responses on behalf of children may be subject to misreporting and bias, but there is no evidence reported of such bias in these surveys. Summary information about all four surveys is presented in Table 1.

Of the surveys, only the CCHIP was specifically designed to measure hunger as part of a wider range of experiences, similar to the concept of food insecurity discussed above. As the first effort to make scientifically defensible measurements of hunger, the CCHIP survey provided a foundation for the current research and measurement efforts discussed in this article. In contrast to those in the CCHIP, the hunger-related questions in the three government surveys were intended for exploratory data gathering. Because the USDA and the DHHS recognized the scientific limitations of their hunger-related survey questions, they adopted the term food insufficiency to reflect the lack of a precise definition of what the survey questions were intended to capture. The term food insufficiency is used throughout the rest of this article where responses to the government hunger-related survey questions are discussed. Where CCHIP results are presented, the term hunger is used, consistent with the CCHIP reports’ terminology. While their terminology differed, both the government and the CCHIP surveys were focused on the same aspect of food insecurity, namely resource-constrained hunger.

There is a similarity in the approach to collecting information on food insufficiency in the NFCS, the CSFII, and the NHANES III that is due in part to the Food and Agriculture Act of 1977, which required the DHHS and the USDA to submit a plan to integrate their respective surveys. Since 1977, the USDA in the NFCS and the CSFII has asked the following question to identify the respondent’s perception of the sufficiency of the household food supply:

> “Which of the following statements best describes the food eaten in your household: (1) Enough of the kinds of food we want to eat, (2) Enough but not always the kinds of food we want to eat, (3) Sometimes not enough to eat, or (4) Often not enough to eat?”

Using this question, food sufficiency is defined as a response of 1 or 2 and insufficiency as a response of 3 or 4 and is
<table>
<thead>
<tr>
<th>Survey Name</th>
<th>Sponsoring Organization</th>
<th>Years Conducted</th>
<th>Population Sampled</th>
<th>Sample Size and Response Rate (Most Recent Survey)</th>
<th>Interview Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Childhood Hunger Identification Project (CCHIP)</td>
<td>Food Research and Action Center (FRAC)</td>
<td>Round 1, 1987–90; Round 2, 1992–94</td>
<td>Low-income households (income not greater than 185% of the federal poverty level) with at least one child under age 12 at 11 non-randomly selected sites</td>
<td>5,282 households; 77% response rate over all sites for the 1992–94 round</td>
<td>Face-to-face interviews with the person in the household responsible for care and feeding of the children</td>
</tr>
<tr>
<td>Nationwide Food Consumption Survey (NFCS); Decennial Survey</td>
<td>U.S. Department of Agriculture (USDA)</td>
<td>1977–78, 1979–80 (Supplemental Low-Income Survey only), 1987–88</td>
<td>Households at all income levels nationwide. Supplemental Low-Income Survey: households with incomes not greater than 130% of the federal poverty level</td>
<td>4,495 households; (37% household response rate)</td>
<td>Face-to-face interviews with representative adult in the household</td>
</tr>
<tr>
<td>Continuing Survey of Food Intakes by Individuals (CSFII)</td>
<td>U.S. Department of Agriculture (USDA)</td>
<td>1985–86, 1989–91</td>
<td>Basic sample: residential households ¹</td>
<td>Basic sample: 1,500 households interviewed per year. Low-income sample: 750 households interviewed per year. (overall response rate: 67%)</td>
<td>Face-to-face home and telephone interviews with representative adult in the household</td>
</tr>
<tr>
<td>National Health and Nutrition Examination Survey III (NHANES III), Phase 1</td>
<td>U.S. Department of Health and Human Services (DHHS)</td>
<td>1988–91</td>
<td>Civilian non-institutionalized population ages two months and up</td>
<td>17,000 home interviews (86% response rate)</td>
<td>Face-to-face home interviews with representative adult in the household</td>
</tr>
</tbody>
</table>

¹ During the 1985–86 survey, interviews were conducted only in households with at least one woman between the ages of 19 and 50 years.

In the NHANES III (1988–91), information on food insufficiency was collected by asking questions both about entire households and about individuals, but the data presented in this article reflect only the household responses. NHANES III used a question similar to that of the NFCS to determine household food sufficiency but without the option “Enough but not always what we want to eat” because the intent of the survey’s designers was to capture quantitative, not qualitative, information, and field testing indicated that including both concepts in one question was too complex for some respondents.12,13

In the CCHIP, children are classified as “hungry,” “at-risk of hunger,” or “not hungry” based on the responses of an adult in the household to a set of eight questions. Each of the questions asks about hunger (CCHIP uses the term “hunger” rather than the government’s term “food insufficiency”) in light of available resources. The eight questions contain two on household food sufficiency (for example, “Does your household ever run out of money to buy food to make a meal?”), two on hunger among adults in the family (for example, “Do you or adult members of your household ever eat less than you feel you should because there is not enough money for food?”), and four on child hunger (for example, “Do any of your children ever go to bed hungry because there is not enough money to buy food?”). A child is termed “hungry” if affirmative answers to at least five of the eight questions are obtained, which requires that at least one of the questions centered on children be answered in the affirmative. Children in families that provide affirmative responses for one to four questions are termed “at risk,” and children in families with no affirmative responses are termed “not hungry.”14

In addition to differences in defining hunger, there are other important differences between the government surveys and the CCHIP survey. First, while the government surveys were designed to yield estimates representative of the entire noninstitutionalized population, the CCHIP survey population is not as broadly representative. In the CCHIP, only low-income families with at least one child under 12 years of age were interviewed (such families are defined as those with incomes at or below 185% of the federal poverty line at the time the interview was conducted).15 The CCHIP survey was based on a nonrandom sample representing a mixture of locally administered statewide, districtwide, multiple-county, and single-county surveys. Responses to the local CCHIP surveys were combined, and national population weights were used to make national projections about the extent of hunger, but such projections may not actually be representative of the national population. Another difference is that, while the government surveys were conducted by professional surveyors, not necessarily from the same community or socioeconomic class as the respondents, the CCHIP was conducted by specially trained local residents in their own communities. The CCHIP approach was deliberately intended to ease surveyors’ access to low-income neighborhoods and households and improve response rates.

The government surveys and the CCHIP are household surveys, and thus none of them includes the institutionalized population, homeless people, migrant workers, or Native Americans living on reservations—all groups that are likely to experience food insufficiency. Therefore, all projections based on these surveys will tend to underestimate the number of people experiencing food insufficiency, or hunger, in the United States.

### Food Insufficiency

Figure 1 shows the percentage of households responding to the USDA food surveys (in survey years during the period 1977–91) who reported that they sometimes or often do not have enough to eat, by income level. Low income is defined as household income at or below 130% of the official poverty threshold.15 Two important characteristics of food insufficiency in the United States over the past two decades are apparent in the figure.
Figure 1

**Percentage of Households Reporting that They Sometimes or Often Did Not Have Enough to Eat, 1977 to 1991**

Data for this graph come from the USDA’s Nationwide Food Consumption Survey (NFCS) and Continuing Survey of Food Intakes by Individuals (CSFII), and reflect the percentage of households which report that they sometimes or often do not have enough to eat (food insufficiency). In this survey, low-income households are those with incomes under 130% of the official federal poverty threshold.

- The food insufficiency rate for U.S. households has remained steady at 2% to 4% since 1977.

- Food insufficiency is closely related to poverty. The percentage of the low-income population that sometimes or often did not have enough to eat varied from 7.7% to 16% between 1977 and 1991. The variation in the measured rate of self-reported food insufficiency among low-income households may be attributable to several factors: real variations in the rate caused, for example, by fluctuations in the economy and changes in government programs; differences in sample size and composition between the different surveys on which Figure 1 is based (see sources below); and random variation.

Note: The NFCS was a decennial survey, conducted in 1977–78 and 1987–88. The CSFII was initiated in 1985 as a nondecennial year survey. For 1979–80, no all-income figures are available because only the Low-Income Survey Supplement to the NFCS was administered. No data are available for 1981 through 1984 because these were nondecennial survey years preceding the initial year of the CSFII.

First, the percentage of households reporting that sometimes or often they did not have enough to eat remained at a relatively low level, between 2.0% and 3.9%, during the period. These low prevalence rates, however, do translate into a substantial number of households (1.8 to 3.1 million) and individuals (4.7 to 8.4 million) who had problems getting enough food. Moreover, the number of individuals in households reporting that they do not have enough to eat increased by approximately 700,000 between the survey periods 1977–78 and 1991.

Figure 1 also illustrates that reported food insufficiency is closely related to poverty: The percentage of households with incomes not exceeding 130% of the federal poverty level who sometimes or often did not have enough to eat fluctuated between 7.7% and 16.0% during the 1977–91 period, rates about four times those reported for the general population. Data from the NHANES III for 1988–91 confirm the strong relationship between poverty and food insufficiency. In that data set, among individuals in families with incomes below the federal poverty level, 15.9% reported at least some food insufficiency, a rate 10 times higher than the 1.6% of individuals who reported insufficiency in nonpoor families.

Although intuitively obvious, the demonstrated fact that food insufficiency is closely related to poverty merits discussion because of its particular implications for children. Since poverty rates for children in the United States are higher than for the population as a whole (22.7% for children under 18 years versus 15.1% for the population as a whole), it stands to reason that children would suffer food insufficiency at higher rates than adults. Food insufficiency rates by age derived from the NHANES III, shown in Figure 2, support this conjecture.

Children and youths (ages two months to nineteen years) experienced food insufficiency at rates between 5.3% and 6.1%, while 4.1% of adults 20–49 years of age experienced food insufficiency, and adults 50 years of age and older experienced food insufficiency at the lowest rate, 1.5%.

Using the age-specific rates from the NHANES III and the child population for 1990, it is estimated that approximately 3.1 million children and youths less than 20 years of age experienced food insufficiency in the early 1990s. Of these, 1.1 million were less than six years of age, 0.9 million were 6 to 11 years of age, and 1.1 million were 12 to 19 years of age. These estimates for children less than 12 years of age are 50% less than the widely cited estimates of hunger among children in the United States produced by the CCHIP. Projections from the CCHIP suggested that approximately four million children under age 12 from low-income families (defined in the CCHIP as families with income less than 185% of the poverty level) were hungry at some point in 1993. In addition, CCHIP reports that approximately 9.6 million low-income children under age 12 are “at risk of hunger.” However, as described above, CCHIP uses criteria and a survey design different from those of the NHANES III to measure food insufficiency, so it is not surprising that the two surveys’ estimates of the number of children who have problems obtaining enough food do not agree exactly. Lack of agreement on the precise number of children experiencing food insufficiency, however, should not distract attention from the fact that between two million and four million children under age 12 have had problems obtaining enough to eat in the United States in recent years.

Federal Programs and Food Insufficiency Among Children

As measured by the CCHIP for 1992–94 and by the USDA surveys for 1989–91, a substantial proportion of low-income households participating in the Food Stamp Program report that they experience food insufficiency. The CCHIP reports that 23% of surveyed households that participate in the Food Stamp Program are hungry. The CCHIP also reports on the food insufficiency status of low-income households with children participating in or eligible for the four other major federal food assis-
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Figure 2

**Percentage of Individuals in Families Reporting Food Insufficiency by Age, 1988 to 1991**

- **Adults, 50+ Years**
- **Adults, 20 to 49 Years**
- **Youths, 12 to 19 Years**
- **Children, 6 to 11 Years**
- **Children, 2 Months to 5 Years**

Data presented in Figure 2 come from the NHANES III and show the percentage of individuals with reported family food insufficiency, based on responses provided by an adult household member to the family questionnaire. Food insufficiency is defined as “an inadequate amount of food intake due to lack of money or resources.”

Children and youth appear to experience food insufficiency at higher rates than do older age groups. One reason for this difference may be the close link between hunger and poverty; the poverty rate is higher among children than among older age groups.


Measuring hunger, or food insufficiency, is a subjective process at best. Any measurement of hunger based on self-report will by definition represent a range of actual food intakes characterized as sufficient or insufficient based on a subjective set of criteria. Nonetheless, data from a number of different sources, including both advocacy and federal surveys, have consistently shown that a portion of the U.S. population including millions of children experiences food insufficiency. The USDA surveys show that rates of food insufficiency have been relatively constant over time and are high among the poor; the population most

expected to have difficulties. It appears that recently in the United States two million to four million children (age not greater than 12 years) experienced food insufficiency annually and that more than one million youths (13 to 19 years old) also faced food insufficiency, despite a number of federal programs designed to alleviate the problem.

Development of these federal feeding programs may be traced in part to the important role advocacy activities and organizations have played in motivating public policy to address hunger in America. Media attention generated by the report on hunger in the South by the Field Foundation’s Physicians’ Task Force on Hunger in America created sufficient concern in the 1960s that Congress required the Department of Health, Education and Welfare to survey hunger and malnutrition. The resulting federal Ten-State Nutrition Survey showed that hunger was enough of a problem—particularly for childbearing women, infants, and young children—that the WIC program was initiated to provide nutrient-rich foods to the most nutrient-deprived and at-risk members of that segment of the population. And, despite the 1979 declaration of the U.S. Senate’s Subcommittee on Nutrition that hunger had been defeated, the House of Representatives established the Select Committee on Hunger in 1984, in part because of media stories of hardship in the early 1980s and a report issued in 1983 by the Food Research and Action Center (FRAC) on infant mortality rates (with poor prenatal maternal nutrition as one contributing factor), which returned hunger to the headlines.\textsuperscript{1,2}

In addition to focusing attention on hunger as an issue worthy of public attention, the advocacy organization FRAC may be credited with pioneering work on the measurement of hunger for policy purposes. FRAC’s work has led in part to the current collaborative effort of several government agencies (including the USDA’s Food and Consumer Service, the DHHS’s National Center for Health Statistics, and the Bureau of the Census) on the Food Security Measurement Study. One product of this interagency effort is a state-of-the-art hunger survey component included once each year in the Bureau of the Census’s monthly Current Population Survey, first tested in April 1995 and next scheduled for April 1997. This new survey component embodies much of the past decade of progress by both public and private researchers in refining the science of hunger measurement and raises hopes that meaningful periodic estimates of hunger and related measures of food insecurity nationwide may become available to policymakers.

Complementary and often cooperative efforts in the private and public sectors have produced visible progress in our ability to understand hunger as a social problem. Although federal food programs do not seem to have eradicated the problem of hunger for children, they have addressed the issue on a large scale, which should give hope to those who work to document and call attention to childhood hunger.

\textsuperscript{1} Graham, G.G. Commentary. \textit{Pediatrics} 75,1:118.
7. See note no. 6, Food security questionnaire.


9. For example, an increase in the number of people served by a given food pantry need not necessarily be interpreted as evidence of an increase in the number of hungry people in the neighborhood of the pantry; the hungry population might have remained unchanged while the fraction of the hungry population served by a pantry increased because of increases in donations of food to the pantry.


13. The USDA tested the sensitivity of reported food insufficiency to the inclusion of the qualitative response (option 2) in a small sample test in 1994 and in the Food Security Supplement to the April 1995 Current Population Survey. In that survey, the question was asked both with option 2 (as in the USDA surveys) and without option 2 (as in the NHANES III). Without the qualitative option, responses to option 3, “sometimes or often not enough,” were approximately twice as frequent as when the qualitative option was available. Gary Bickel, Program Analyst, Food and Nutrition Service, U.S. Department of Agriculture, Alexandria, VA. Personal communication, May 3, 1996.

14. At present, there are no plans to continue the CCHIP surveys. Nancy O’Conner, Development Associate, Food Research and Action Center. Personal communication with Linda Baker, August 15, 1996.

15. The definition of the term low income differs among the four surveys discussed in this article. In the three government surveys, low income is defined as households with income not greater than 130% of the federal poverty line. In the CCHIP, low income is defined as households with incomes not greater than 185% of the federal poverty line. In both instances, the choice to define low income to include levels above the federal poverty line was based on the recognition that the link between poverty and hunger does not disappear until households reach income levels well above the federal poverty line. Eligibility criteria for federal food assistance programs also played a role in the choice of definition: above 130% of the federal poverty line, households become ineligible for the Food Stamps Program and for free meals in the School Lunch and Breakfast Programs, while above 185% of the federal poverty line, children become ineligible for the Special Supplemental Food Program for Women, Infants, and Children (WIC) and for reduced prices in the School Lunch and Breakfast Programs.


17. The relative stability in food insufficiency rates despite the growth in the number reporting food insufficiency is the result of growth in the overall U.S. population during the period.


21. See note no. 3, Food Research and Action Center. Four million children under age 12 are hungry, according to this report.

22. See note no. 3, Food Research and Action Center, p. 40; see also, note no. 18, Life Sciences Research Office, p. ES-19, Table ES-6.