

The Uses and Purposes of the USDA Food Security and Hunger Measure:  
A Report for the Committee on National Statistics Panel on Food Security Measurement

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## **I. Introduction**

Ten years ago, the U.S. Departments of Agriculture (USDA) and Health and Human Services (HHS) jointly hosted a first conference on food security measurement and research. The preface to the proceedings described a “national commitment” to protect Americans from hunger as “one of the bedrock elements of public health and social welfare policy in the United States since the Great Depression” (Fishman and Briefel, 1995). Noting the nearly \$40 billion in Federal funds devoted annually to food assistance programs, the authors connected the research problem of measuring hunger to the practical problem of alleviating hunger:

In continuing the commitment to address the problem of hunger and food insecurity in America, accurate knowledge of the sources, nature, and magnitude of these conditions takes on increased importance. While we know that these conditions exist for some portion of our population, we do not know with any confidence the dimensions of the problem. What is needed is a set of clear, operational definitions and reliable authoritative measures of the prevalence of the conditions defined (Fishman and Briefel, 1995).

In short, a measure of food security and hunger would be defined clearly, so that it could be used for a purpose.

This paper is about the uses and purposes of the USDA food security and hunger measure, which originated with that 1994 conference. My assignment from the Committee on National Statistics (CNSTAT) review panel on food security measurement is to document and evaluate the uses of the USDA measure over the past 10 years. Who is using the measure and for what purposes?

What are the best uses of the measure? For which purposes is the measure weak? Are there uses for which the measure is inappropriate? Is the measure meeting the need it was intended to fill?

The paper finds that government, the media, and advocacy groups use the USDA measure in many ways. Most of these may be categorized into three broad headings:

- to report the extent of food insecurity and hunger in the United States;
- to monitor progress toward national objectives and judge the overall performance of anti-hunger efforts; and
- to evaluate the impact of particular policies and programs on food insecurity and hunger.

These headings are the topics of this paper's three main sections, which follow this introduction.

There are important successes to report under each heading. The USDA measure:

- is widely accepted for reporting the extent of food insecurity and hunger;
- is used by several Federal agencies to monitor progress toward national objectives; and
- forms the basis for a diverse and rapidly growing body of research on food assistance program effects.

However, for each broad use, there are also difficulties and challenges:

- advocacy groups and the media commonly interpret USDA prevalence estimates in language inconsistent with USDA usage;
- the USDA strategic plan uses a food security target that differs from the HHS Healthy People 2010 goals, while the USDA annual performance reports omit the target altogether; and

- policy and program evaluations using the USDA measure face serious challenges of research design and data collection, which have not yet been overcome.

Because this paper's assignment focuses on the measure's use, rather than its construction, the scope of recommendations in the body is somewhat limited. The body of the paper:

- recommends continued use of the USDA food security prevalence estimates as the most authoritative source of information about the extent of food security and hunger in America; suggests improvements to the annual food security reports, which would clarify the source and meaning of these prevalence estimates;
- recommends that USDA annual performance reports use the food security prevalence estimates consistently to monitor progress toward national goals; suggests slight modifications to the specification of the quantitative targets in USDA reports; and
- proposes that the 30-day food security measure, which is most useful for program evaluations, be made more consistent with the 12-month measures.

In the conclusion, this paper also briefly considers whether simplifying the food security measure could improve the USDA survey's effectiveness for all three broad uses. I have restricted this material to the final section, so that it does not encumber the rest of the paper. In the spirit of the quotation in the opening paragraph above, from the first conference on food security measurement and research, I suggest that the measure's successful use could be enhanced by continued advances in the transparency of its construction.

## **II. Reporting the extent of food insecurity and hunger**

### *II.a. Introduction*

The USDA measure has transformed the national debate over how many Americans are hungry. Peter Eisinger's 1998 book on ending hunger in America aptly summarized the measure's contribution:

After nearly three decades of effort, hunger analysts have finally achieved consensus on a measurement protocol for estimating the national prevalence of hunger. To understand how important this survey is for the purposes of thinking about food assistance policy, consider that until the 1995 CPS, it was common, particularly among advocacy groups and within the House Select Committee on Hunger, to assert that the number of Americans suffering from hunger ranged as high as 30 million. But now we have begun to understand not only that there are gradations of deprivation but also that the number of genuinely hungry people is probably significantly lower.

The consensus has grown more nearly complete in the years following Eisinger's comments. The following review describes wide variation in how USDA's prevalence estimates are used by advocacy groups and the media, but little disagreement that these are the best and most authoritative estimates we have. The USDA estimates are widely cited without critical comment by supporters of food assistance and nutrition programs. At the other end of the political spectrum, researchers at the Heritage Foundation, including the poverty skeptic Robert Rector, also recently endorsed USDA's measure: "How many people in the United States experience

hunger? The best answer to that question is provided by the Household Food Security Survey....” (Pardue, Rector, and Johnson, 2003).

There have been a couple articulate exceptions to the consensus. In discussant comments at a 1999 conference, Richard Bavier of the White House Office of Management and Budget (OMB), questioned the statistical model that USDA uses to justify key features of its measurement approach. Writing on his own behalf, not his agency’s, Bavier said, “[I]nvoking the elegance of Rasch analysis probably will be useful only as a delaying tactic against criticism that the number of hungry households was inflated by including households that did not report hunger” (Bavier, 2003). In later comments at the same conference, Robert Greenstein of the Center on Budget and Policy Priorities agreed with some of the criticisms that had been offered, “I’ve been disturbed at the rush to embrace this food insecurity measure. It’s a crude measure. The key point that has been mentioned is that it is a self-perception measure. It’s not clear what it means.”

This section reviews how the food security measure has been used to assess the extent of food security and hunger. Because of the measure’s widespread acceptance, this section will mainly address whether the uses are consistent with USDA’s terminology. While this section focuses on national reporting, State level food security reporting has also been an important and high-profile use of the USDA measure.

### *II.b. A wide range of USDA estimates*

There is no single number for the extent of food insecurity and hunger. The USDA annual food security report (Nord, Andrews, and Carlson, 2003) contains a range of national estimates for different levels of severity (*food insecurity* or *food insecurity with hunger*), units of observation (household or individuals), age groups (adults or children), and reference time periods (12 months, 30 days, or a daily average). An analyst or policy-maker who desires to understand the extent of hunger must consider how these parameters affect the magnitude of several estimates (Table 1).

The most important and commonly cited estimates are for the categories *food insecure*, *food insecure with hunger*, and *food insecure with hunger among children*. Each of these terms describes the status of a household, but one may also tally the number of persons or the number of children in each type of household. Throughout this paper, these terms are italicized if and only if they refer to the categories used to define official USDA prevalence estimates.

To understand how the estimates in Table 1 have been used, it helps to keep in mind four main results:

1. **High prevalences of 11 – 13 % are reported for the category *food insecure* at some point in 12 months.** In 2002, 11.1 percent of U.S. households were *food insecure* at some point, and 12.5 percent of individuals (34.9 million people) lived in these household (Table 1).
2. **Medium prevalences of 3 – 4 % are reported for the category *food insecure with hunger* at some point in 12 months.** In 2002, 3.5 percent of households were *food insecure with hunger*, and 3.4 percent of individuals (9.4 million people) lived in these households.

3. **Low prevalences of 0.5 – 0.8 % are reported for the number of children in households classified as *food insecure with hunger among children at some point in 12 months*.** In 2002, 18.1 percent of all children (13.1 million children) lived in households that were classified as *food insecure* (Table 1), but children tend to be protected from the most serious symptoms of hardship even in families that are food insecure. Thus, in 2002, 0.8 percent of all children (about 0.6 million children) lived in households that were classified as *food insecure with hunger among children*.
4. **Low prevalences of 0.5 – 0.8 % also are reported for the category *food insecure with hunger on average each day*.** This pattern reflects the fact that households classified as *food insecure* in a 12-month period typically show symptoms of food insecurity during several of those months, but only for a few days within each of the food insecure months. USDA’s estimated prevalence for *food insecure with hunger* in a 30-day period is 2.7 percent in all households, and the daily average prevalence is 0.5 to 0.7 percent of all households (Table 1).<sup>1</sup>

From this range of estimates, advocacy groups and the media select the prevalence estimates that best communicate their intended message. For example, from USDA’s 2002 estimates:

- USDA highlighted that 11.1 percent of households are *food insecure* and 3.5 percent of households are *food insecure with hunger* (Nord, Andrews, and Carlson, 2003);
- a coalition of National Anti-Hunger Organizations (NAHO) stated, “Each year nearly 35 million Americans are threatened by hunger, including 13 million children” (NAHO, 2004);

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<sup>1</sup> USDA estimates that between 0.08 and 0.10 percent of households with children are *food insecure with hunger among children on average each day* (Nord, Andrews, and Carlson, 2003, not shown in Table 1), although one suspects that survey estimates at such frequencies are imprecise.

- The Heritage Foundation reported, “According to the USDA, on a typical day, less than one American in 200 will experience hunger due to a lack of money to buy food.” Also, 0.8 percent of all children “were hungry at some point in 2002” (Pardue, Rector, and Johnson, 2003).

Selective emphasis is inevitable. Moreover, so long as each prevalence is described correctly, selective reporting may facilitate communication to lay audiences. At the same time, given the range of estimates in Table 1, each with its own definition, a misleading explanation is as bad as a falsely reported statistic. If 543,000 households were *food insecure with hunger* on average each day, then clearly it would be incorrect to report this statistic as 3.8 million. Likewise, if 3.8 million households really were *food insecure with hunger* at some point in the past year, then it would be equally incorrect to portray this statistic as the number of households that are hungry daily, which USDA estimates at 543,000. To measure the extent of food insecurity and hunger using the USDA statistics, it is essential to correctly describe the meaning of the USDA classifications.

### *II.c. The USDA classification system*

In seeking to meet this standard of correct description, a journalist, advocacy group, or other reader might be tempted at first to refer to the actual classification system that USDA uses to determine food security status. However, this classification system is complex. The prevalence estimates are based on responses to an annual food security supplement to the Current Population Survey (CPS). The survey items and cutoff scores for a particular prevalence estimate in Table 1 depend on the food security category in question, the reference period, and the presence of

children. The following discussion attempts to summarize the classification system in an organized way, but even this summary is too complex to serve the needs of advocacy groups or journalists very well.

USDA's 12-month prevalence estimates for the categories *food insecure* and *food insecure with hunger* are based on 18 binary ("yes" or "no") survey items (Table 2). Ten items refer to the respondent and other adults in the households, while 8 items refer to children under age 18. The child-referenced items are not asked for households without children. The food security classification is based on the "raw score," which is the number of affirmative responses. The threshold raw scores that define each category differ for households with and without children:

- For households with children, the threshold raw score for the *food insecure* category is 3 items, and the threshold raw score for the *food insecure with hunger* category is 8 items.
- For households without children, the threshold raw score for the *food insecure* category is 3 adult-referenced items, and the threshold raw score for the *food insecure with hunger* category is 6 adult-reference items.

USDA's 12-month prevalence estimates for the category *food insecure with hunger among children* are based on the 8 child-referenced items in Table 2. This category is undefined for households without children.

- For households with children, the threshold raw score for the *food insecure with hunger among children* category is 5 child-referenced items.

USDA's 30-day prevalence estimates for the category *food insecure with hunger* are based on 12 binary survey items (Table 3).<sup>2</sup> Seven items refer to the respondent and other adults in the household, while 5 items refer to children in the household.

- For households with children, the threshold raw score for the category *food insecure with hunger* is 3 items.
- For households without children, the threshold raw score for the category *food insecure with hunger* is 3 adult-referenced items.

USDA's annual food security report (Nord, Andrews, and Carlson, 2003) includes 30-day prevalence estimates, but refers the reader to a technical report (Nord, 2002) for an explanation of the 30-day survey items and raw score thresholds.

USDA's average daily prevalence estimates for the category *food insecure with hunger* are based on responses to 7 items, which include follow-up questions about the number of days in the past month during which household members experienced hardship. Using 1998 data, the daily rate of hardship for these seven items was estimated to range from 13% to 18% of the annual rate (Nord, Andrews, and Winicki, 2002). On the assumption that these rates remain constant, and that they represent the daily frequency of *food insecurity with hunger* as a fraction of the annual frequency, the most recent annual food security report (Nord, Andrews, and Carlson, 2003) multiplied the 2002 annual rate of *food insecurity with hunger* by these ratios to derive the range of estimates reported in Table 1. This methodology does not have a parallel structure to the 12-month and 30-day prevalence estimates.

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<sup>2</sup> Only 9 of these 12 items are 30-day analogues to items used in the 12-month scale. The remaining 3 of the 30-day items are new items describing conditions that were experienced in five or more days of the month. Of the original 18 items in the 12-month scale, 6 items were never asked with a 30-day reference period, and 3 items were omitted because the corresponding 12-month item does not really have a 12-month reference period.

### *II.c. The meaning of the USDA food security categories*

For those seeking to describe the prevalence estimates correctly, USDA food security reports offer a simpler approach. They argue that a few simple definitions suffice to describe the meaning of all the categories in the full classification system described above. According to the most recent annual food security report (Nord, Andrews, and Carlson 2003):

- “Food secure” households are those where “all household members had access at all times to enough food for an active, healthy life.”
- “Food insecure” households are “uncertain of having, or unable to acquire, enough food for all household members because they had insufficient money and other resources for food.”

Previous USDA reports have defined hunger as "the uneasy or painful sensation caused by a lack of food" and described it as "a potential but not necessary consequence of food insecurity" (Hamilton et al., 1997a). The annual food security reports focus on the latter description and treat hunger as a severe stage of food insecurity.

USDA reports do not distinguish sharply between *food insecure* (in italics, referring to the official classification in the preceding subsection) and “food insecure” (in quotation marks, referring to the conceptual definition in the preceding paragraph). The two concepts are treated as equivalent and interchangeable. Likewise, the word “hunger” is taken to mean the same thing in the USDA classification *food insecure with hunger* and in the conceptual definition above.

USDA supports this equivalent treatment with two general lines of argument. The first uses the Rasch model, a statistical model adapted from item response theory in the educational testing literature. If household responses to food security items obey certain statistical assumptions, one may use this model to determine what raw score for one population (such as households with children, who are asked 18 items in the 12-month scale) is equivalent to a corresponding raw score for another population (such as households without children, who are asked 10 items in the 12-month scale). For example, one can use a single definition, *food insecure with hunger*, to describe the status of households with children with a raw score  $\geq 8$  and also households without children with a raw score  $\geq 6$ .

There is reason to doubt that the statistical assumptions required for this use of the Rasch model are well met in practice. The 10 adult-referenced items do not have the same severity calibrations in households with and without children, as the Rasch model assumes (Wilde, 2004). Three of the items depend on others in a fashion that is not permitted by the Rasch model. The estimation algorithm USDA uses is recognized to be inconsistent, meaning that the model's estimated parameters do not converge on the true population values even as the sample size grows very large (Cohen et al., 2002). In any case, it is difficult to explain this model to nonspecialists who seek to use the food security measure.

USDA's second line of argument relies on the literal meaning of the items, especially the threshold items. For example, consider the survey item whose severity ranking lies just over the boundary between *food insecure* without hunger and *food insecure with hunger* in the 12-month scale. For households with children, the threshold item ranked eighth in severity indicates

whether adults cut or skipped meals in 3 or more months out of the past year. Likewise, for households without children, the threshold item ranked sixth in severity is exactly the same item. One could argue that this equivalence supports applying the same conceptual definition to households who are just barely classified as *food insecure with hunger*, even though households with and without children are asked different item sets.<sup>3</sup>

Unfortunately, this second line of argument does not work consistently. For example, in the 12-month scale, recall that any household with a raw score greater than or equal to 3 is classified as *food insecure*. Using 2000 data, for households with children, the third-ranked item asks whether the household “relied on a few kinds of low cost foods to feed children.” For households without children, the third-ranked item asks about having “balanced meals” (Wilde, 2004). Moreover, giving affirmative answers to 3 out of 10 items clearly indicates greater hardship than does giving affirmative answers to 3 out of 18 items. USDA staff believe that, while the official threshold does not precisely equate the meaning of *food insecure* for both household types, it does as well as possible with a finite number of available items.

USDA maintains that users can apply the simple conceptual definitions to prevalence estimates whose actual construction might otherwise appear quite distinct. For example, the following passage supports USDA’s contention that the meaning of “hunger” is identical in the conceptual definition of an “uneasy or painful sensation,” in the household classification *food insecure with hunger*, and in the children’s hunger classification *food insecure with hunger among children*:

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<sup>3</sup> In the 30-day scale, the threshold item for *food insecure with hunger* is a variant of this same item. It asks whether adults in the household cut or skipped meals in 5 or more days during the month. The 12-month item’s compound reference period hinders a more exact translation to a 30-day reference period.

Not only is the children’s hunger threshold specified in this report consistent with the corresponding severe hunger threshold in the household-level scale, it also is conceptually consistent with the operational principles developed in setting the household-level hunger threshold on the 18-item scale—in effect, the corresponding adult-hunger threshold. The operational rule of thumb that emerged in the development of the original scale and its associated categorical measure (Hamilton et al., 1997a, 1997b) required that a household affirm multiple indicators of reduced food intake to be classified “food insecure with hunger.” This extent of reduced food intake and disruption of eating patterns indicates the likelihood of the direct experience of hunger—i.e., “the uneasy or painful sensation caused by a lack of food” (Nord and Bickel 2002).

My uncertainty about this line of argument for equivalence presents a challenge for this paper in evaluating the strength or weakness of the measure’s use to assess the extent of food insecurity and hunger. The following discussion focuses on whether the measure’s users adhere to USDA’s preferred terminology. Whether this terminology itself accurately describes the classifications in official prevalence estimates is a more difficult matter.

#### *II.d. Advocacy groups, think tanks, professional associations, and the media*

The USDA food security and hunger measures have frequently been reported by advocacy groups and the media. These information sources are important intermediaries between Federal statistical agencies and the public. For example, the cover story in *Parade Magazine* discussed

below was included with Sunday newspapers across the country, reaching over 35 million customers.

This section focuses on uses in the past two years, so the reader can easily recognize the same prevalence estimates discussed already. The media review was fairly systematic (Table 4). After some preliminary trial runs, Jerusha Peterman, a Tufts Friedman School graduate student working with the Center on National Statistics (CNSTAT), used the LexisNexis database to find U.S. newspaper and wire reports in the past two years that included the terms food security or food insecurity, excluding those about bioterrorism or international hunger issues.<sup>4</sup> Of these reports, only those that described national prevalence estimates are summarized below, but the remaining state and local reports appeared similar. Two national reports cited elsewhere were added (the CBS 60 Minutes report and Trudy Lieberman's article in *The Nation*). This approach would not suffice to support a statistical study of the frequency of uses and misuses, but it does indicate the most important ways the USDA measure is described, without a bias toward finding uses that are either consistent or inconsistent with USDA terminology.

My review of uses by advocacy groups, think tanks, and professional associations was less systematic (Table 5). An internet search uncovered a vast number of reports using the USDA food security and hunger prevalences. The uses discussed below were selected to include a diversity of organizational types, political viewpoints, and common examples of uses that are consistent or inconsistent with USDA usage. Even more than was true for the review of media

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<sup>4</sup> Peterman's search algorithm excluded articles containing the terms Asia, China, Afghanistan, Pakistan, India, Korea, Africa, terrorism, bioterrorism, or safety.

citations, the resulting list of examples cannot be used to generalize about the frequency of uses and misuses.

In almost all the sources discussed here, the USDA measures were only part of the evidence cited to describe the extent of food-related deprivation in the United States. Descriptions of individual hardships and coping strategies received as much emphasis as did the USDA estimates. Other common quantitative measures included data on the use of emergency food sources, poverty statistics, and estimates of the number of people eligible for food assistance programs.

In describing the USDA prevalence estimates, users only sometimes adhered to USDA terminology on four key issues, the reference time period, and the conceptual definitions of *food insecure*, *food insecure with hunger*, and *food insecure with hunger among children*. These four issues will be discussed in turn.

*Time period.* Users sometimes adhered to the USDA terminology by providing a clear time-frame for the occurrence of hardship “at some point” during the year (see *New York Times*, Table 4), or alternatively reporting USDA’s much lower average daily prevalence estimates (see National Public Radio, Table 4; The Heritage Foundation, Table 5). Although some readers might miss the nuance, it also seems reasonably consistent with USDA practice to describe the 12-month estimates as the occurrence of food insecurity “each year” or in a particular year (see Adrienne Lu, *New York Times*, Table 4; National Anti-Hunger Organizations, Table 5). Some users pointed out how the reference time period influences the prevalence estimates.

It seems inconsistent with USDA terminology to report 12-month prevalence estimates in the present tense, without any indication of the reference period (see *America's Second Harvest*, Table 5; *Share our Strength*, Table 5). Most readers will imagine a reference period shorter than a year. Some users described the 12-month food insecurity estimates with language about food not lasting “to the end of the month” (see Bill Shore in *National Public Radio*, Table 4).<sup>5</sup>

The most misleading descriptions provide a daily reference time frame for the 12-month prevalence estimates. I could not figure out the origins of the popular description used to define *food insecure* as not knowing “where the next meal is coming from” (see Saul Friedman, *Newsday*, Table 4; Trudy Lieberman, *The Nation*, Table 4). Because USDA provides average daily estimates that are much lower, this language overstates the extent of food insecurity and hunger.

*Definition of food insecure.* Some users quote the USDA conceptual definitions for food security or food insecurity quite closely (see Tom Zeller, *New York Times*, Table 4; Peter Eisinger, *Bread for the World*, Table 5; Food Research and Action Center, Table 5). In some cases, these references emphasize aspects of USDA’s conceptual definition that are only weakly connected with the actual wording of the survey questions, such as language about not having enough food to be healthy (see *Parade Magazine*, Table 4). The most common deviation from USDA practice was to use the term hunger in describing the prevalence of food insecurity.

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<sup>5</sup> This language about food not lasting to the end of the month may have originated from the literal wording of one of the 12-month food security items, which asks about food not lasting, rather than from the conceptual definition of food insecurity.

*Definition of hunger.* Reasonably careful users frequently describe the prevalence for *food insecurity with hunger* as referring to households in which some people went hungry at some point during the year (see Tom Zeller, *New York Times*, Table 4). This language agrees with USDA’s preferred terminology.<sup>6</sup> In other cases, users describe *food insecurity with hunger* as a severe level of food insecurity, which also agrees with USDA terminology (see the Heritage Foundation, Table 5; Peter Eisinger, *Bread for the World*, Table 5). The Food Research and Action Center (FRAC) website correctly describes the USDA prevalences, and adds its own editorial comment that the USDA’s use of the term hunger is “very conservative” (see FRAC, Table 5). This description communicates FRAC’s message clearly, while still helpfully describing USDA’s own view.

The widespread use of the term hunger to describe the classification *food insecure* is inconsistent with USDA practice. Frequently, the term hunger is modified slightly so that *food insecure* households are described as threatened by hunger (see National Anti-Hunger Organizations, Table 5), or facing hunger (CBS 60 Minutes, Table 4), or often going hungry (Saul Friedman, *Newsday*, Table 4). Because USDA’s classification *food insecure with hunger* itself refers to households with hunger at one or more times during the year, these modifiers do not fix the problem. It would be more consistent with USDA usage to say the much smaller number of households classified as *food insecure with hunger* is threatened by hunger during the year.

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<sup>6</sup> The threshold for *food insecure with hunger* happens to be somewhat less severe than the single survey item whose wording asks about adults in the household going hungry. Thus the official estimates for the frequency of *food insecurity with hunger* are somewhat higher than the frequency of households who actually report adult hunger. This point is emphasized by Bavier (2003).

In a passage quoted earlier, Peter Eisinger (1998) noted that until the 1995 CPS, it was common for advocacy groups to assert that the number of Americans suffering from hunger ranged as high as 30 million. By expanding the term “hunger” essentially to include the whole USDA classification *food insecure*, such assertions are more common today than Eisinger might have expected.

*Definition of children’s hunger.* The USDA reports emphasize that children are usually protected from hunger even in household classified as *food insecure* or *food insecure with hunger*. Some users report the number of children in households that are *food insecure*, but follow USDA’s practice in emphasizing that these children may not be hungry. Others, who really mean the number of hungry children for a particular year, use USDA’s lower prevalence estimates for *food insecurity with hunger among children* (see Bob Edwards, National Public Radio, Table 4; The Heritage Foundation, Table 5; Peter Eisinger, Bread for the World, Table 5). Both these approaches accurately describe the USDA estimates.

Other users misrepresent the USDA estimates. When Scott Pelley of CBS 60 Minutes says 12 million kids face hunger (Table 4), he overstates the USDA estimates in several ways. This statistic refers to the number of children who reside in households that were classified as *food insecure* (not hungry) in a particular 12-month period (not mentioned), whether or not the children themselves showed evidence of hardship. Likewise, the National Anti-Hunger Organizations say 35 million Americans are threatened by hunger, including 13 million children (Table 5). Most readers of these statistics would probably be surprised to hear that USDA estimates 567,000 children lived in households that were *food insecure with hunger among*

*children* in 2002. Such descriptions go beyond mere selective reporting, which I described earlier as inevitable. Instead, they raise alarm about children's hunger by exaggerating the USDA estimates.

#### *II.e. Recommendations*

1. *Governments, advocacy groups, professional associations and the media should continue to use USDA's food security prevalence estimates as the most authoritative source of information about the extent of food insecurity and hunger in America.* The high level of consensus about this measure, including its acceptance by politically diverse users, has improved the national debate about hunger. Whatever problems remain with the current measure's construction and interpretation, matters were far worse before the measure was developed.
2. *Advocacy groups and the media should avoid misleading interpretations of the USDA prevalence estimates.* Descriptions should acknowledge key features of the USDA terminology, including the reference period, the limited use of the term "hunger" to describe an especially severe condition of food insecurity, and the particularly low rates of *food insecurity with hunger among children*. Whether users agree or disagree with USDA measurement's approach, they should represent USDA's methods and terminology correctly.
3. *USDA annual food security reports should tabulate raw score frequencies and item response frequencies, for the 12-month and 30-day measures, in households with and without children.* The raw score frequencies are the source of the main prevalence estimates. They provide the reader with insight into how the prevalence estimates would change if the raw score thresholds changed. The item response frequencies – the frequency of affirmative responses

to each item -- indicate the approximate severity ranking of the items, although not their actual Rasch calibrations. These frequencies also can help readers to interpret the meaning of the thresholds between classifications. Each of these tabulations should be reported separately for the 12-month and 30-day scales, and for households with and without children.<sup>7</sup>

4. *USDA reports should explain the meaning of the actual classifications used in prevalence estimation more clearly.* It would not suffice to present the conceptual definitions and say, “Trust me.” If USDA relies on the Rasch model to determine the equivalence of thresholds for households with and without children, or for the 12-month and 30-day scales, then the assumptions required for this use should be explained clearly and confirmed with each annual report. If USDA relies on a more intuitive approach, based on the literal meaning of selected items, then this approach should be explained more systematically and confirmed with each annual report.

### **III. Monitoring progress toward national objectives**

#### *III.a. Introduction*

The second broad use of the USDA measure is to monitor progress toward national objectives and judge the overall performance of anti-hunger efforts. The measure offers a critical feedback loop for national policy-makers. Measuring the prevalence of hunger is not like recording annual snowfall or some other natural phenomenon that is beyond human control. A key

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<sup>7</sup> For example, Table A-2 in the most recent annual report (Nord, Andrews, and Carlson, 2003) does provide 12-month raw score frequency tabulations for households with and without children. By comparison, Table A-1 mixes tabulations for item response frequencies for all households and households with children, so that the separate response frequencies for some items cannot be disentangled. Table A-1 does not indicate the true severity ranking of the items.

purpose of hunger measurement has always been to monitor success or failure in hunger alleviation.

### *III.b. The Rome Declaration and Healthy People 2010*

One statement of national goals comes from the World Food Summit in 1996, an international conference just one year after USDA first fielded its new food security measure. A 2002 report from USDA's Economic Research Service, summarizing "Progress Toward a National Objective," quoted the commitment undertaken by the United States and 185 other countries in the "Rome Declaration" at that conference:

We pledge our political will and our common and national commitment to achieving food security for all and to an ongoing effort to eradicate hunger in all countries, with an immediate view to reducing the number of undernourished people to half their present level no later than 2015 (Nord and Andrews, 2002).

Following this declaration, a U.S. Action Plan on Food Security adopted a specific quantitative goal to reduce the rate of household food insecurity by half, from a baseline of 12 percent in 1995. This quantitative target was included in the "Healthy People 2010" goals and accompanying reporting system of the U.S. Department of Health and Human Services (see Table 6).

The 2002 ERS report about this national objective was optimistic: "Through 2000, the United States made encouraging progress in reducing the rate of domestic food insecurity—progress that, if continued, would achieve the objective of reducing food insecurity by half from 1995 to

2010 (Nord and Andrews, 2002). The first panel of Figure 1, from that report, illustrated the progress dramatically. While emphasizing the improvement, the report cautioned that continued progress would require renewed economic growth, improved economic opportunities for single mothers with children, and maintenance of a strong nutrition safety net. Unfortunately, since the end of ERS' study period, the rate of domestic food insecurity has increased. The second panel of Figure 1, which updates the ERS illustration using data through 2002, suggests that progress has stalled.

### *III.c. Government performance and accountability*

During the same years as the Rome Declaration and the development of the new food security measure, the Federal Government also began implementing a major initiative in government accountability. This initiative responded to a large body of research and theory addressing why government institutions are sometimes thought to be less effective than comparable private sector institutions. An important theme of this literature has been that government personnel and institutions may be inherently as capable as their private sector counterparts, but that they lack the information and discipline that private sector actors derive from market signals. In this view, if Federal policy-makers and managers had an adequate feedback loop, they might be as effective in reducing hunger as General Motors is in producing automobiles.

Congress passed the Government Performance and Results Act (GPRA) in 1993, with government-wide implementation beginning in 1997. Under GPRA, Federal agencies and departments prepare: 1) strategic plans, including objectives and quantitative targets for a period of several years; 2) annual performance plans, including objectives and quantitative targets for

the next year; and 3) annual performance and accountability reports, describing success in meeting the objectives and targets of the annual plans. Periodically, OMB evaluates particular programs using a Program Assessment and Rating Tool (PART).

The objectives and quantitative targets in strategic plans and annual reports are supposed to include genuine outcome measures as opposed to activity or output measures. Reviews by the General Accounting Office and the Mercatus Center at George Mason University suggested that specific targets should be outcome oriented. In Congressional testimony in 2000, Maurice McTigue of the Mercatus Center argued:

The key indicator in this result area should be: By how much has hunger been reduced? The measures should reflect how much each program was able to reduce hunger. Only when there is a clear cause and effect linkage is it possible to be effective in producing public benefits in these social policy areas. I know these are more difficult measures to develop, but the mission is to reduce hunger. Unless there are measures that show a linkage between program activity and reduction in hunger, it is not acceptable to claim success (McTigue, 2000).

#### *III.d. FNS and USDA Strategic Plans*

FNS (U.S. Department of Agriculture, Food and Nutrition Service, 2000) and USDA (U.S. Department of Agriculture, 2002) both have used clear outcome-oriented targets, including food insecurity reduction, along with activity-oriented targets in their strategic plans. The FNS strategic plan for 2000-2005 included Objective 1.1, “improved food security” (see Table 6). One quantitative target seeks to reduce the prevalence for *food insecurity with hunger* among

households with income under 130 percent of the Federal poverty standard. From a baseline of 10.9 percent in 2000, the prevalence for *food insecurity with hunger* should be reduced to 7.9 percent of low-income households in 2005. Another target seeks to reduce the prevalence for *food insecurity with hunger among children*, among children in households with income under 185 percent of the Federal poverty standard.

Similarly, the USDA strategic plan for 2002-2007 included Objective 4.1, “Improve access to nutritious food.” Accompanying text proposed “a 30 % decrease in hunger among low-income people.” The specific quantitative targets are consistent with the rate of improvement anticipated in the FNS strategic plan. From a baseline of 10.9 percent of low-income households in 2000, the prevalence for *food insecurity with hunger* should be reduced to 7.4 percent of low-income households in 2007.

FNS adopted its strategic plan after circulating a draft version and discussing it with stakeholders in a series of high-profile public meetings around the country. In response to stakeholder comments, FNS articulated the reasons for using USDA’s new food security measure in the strategic plan. The agency acknowledged that the term “food security” is not yet common usage, and said it would “continue to explain and promote the use of food security as a concept, and the methods that we have developed to measure it, as we move forward in implementing the plan.” Essentially endorsing the viewpoint offered by the Mercatus Center and others, FNS explained the advantages of the food insecurity measure over an activity measure such as program participation. While program participation as a fraction of eligible persons could provide some

help in assessing a program's success in reaching the target population, "Program participation is a means, not an end, and therefore has not been included as an ultimate objective."

### *III.e. USDA annual performance plans and accountability reports*

The USDA annual performance plans and accountability reports (U.S. Department of Agriculture, 2003a; U.S. Department of Agriculture 2004) do not use quantitative targets that support the FNS and USDA strategic plans (see Table 6). Like the strategic plans, the most recent annual Performance and Accountability report included an Objective 4.1, "Improve access to nutritious food." Accompanying text included the subheading, "Reduce hunger and improve nutrition." However, the only quantitative targets were caseload numbers or meal counts for the food assistance and nutrition programs. For example, the USDA report stated that its target for the Food Stamp Program was 20.7 million people, and that it actually served 21.3 million people. Based on similar activity measures for the other food assistance programs, the objective for improving access to nutritious food was listed as "met."

These USDA annual reports differ from the USDA and FNS strategic plans in several respects. Whereas the strategic plans emphasize outcome measures and articulate their importance, the USDA annual reports include only activity measures for the same objective. While outside writers have warned against declaring success without outcome measures, the USDA annual report declares its target to be met on the basis of caseload statistics. While the strategic plans draw heavily on evidence from USDA's food security measurement project, the USDA annual reports omit food security measurement altogether.

These differences seem to place the USDA annual reports at odds with the intentions of Congress, OMB, the General Accounting Office (2001) and USDA's own instructions for the preparation of GPRA reports. USDA's 2002 performance management guidance explained the purpose of the annual reports as follows: "The Annual Performance Plan provides the direct link between USDA's longer-term strategic goals (as defined in the Strategic Plan) and what its managers and staff are doing on a day-to-day basis" (U.S. Department of Agriculture, 2003b). The performance goals section is supposed to include "a summary table with performance goals and indicators (displayed and aligned under the associated strategic goals and objectives from the current USDA Strategic Plan)."

#### *III.f. OMB's Program Assessment Rating Tool*

For the past couple of years, OMB has prepared Program Assessment Rating Tool (PART) reports for selected programs. This tool is supposed to measure program benefits against the size of their budgets. These reports are posted on OMB's website and appear prominently in the President's management agenda. OMB prepared a PART report for the U.S. Food Stamp Program in advance of the administration's most recent fiscal 2005 budget (Office of Management and Budget, 2004). Because the Food Stamp Program's budget (\$28 billion for fiscal 2003) constitutes a large fraction of USDA's total budget (\$78 billion for fiscal 2004), this PART report is especially important. To assess the Food Stamp Program, OMB relied heavily on USDA's food security measure.

OMB's rating gave the Food Stamp Program high marks for having a clear purpose and addressing an important problem: "Poverty-related hunger remains an on-going problem." As

evidence, the rating cited USDA's official prevalence estimates for *food insecurity with hunger*. The rating also gave the program high marks for having "a limited number of specific long-term performance measures that focus on outcomes and meaningfully reflect the purpose of the program." As support, the rating cited the most recent food security report (Nord, Carlson, and Andrews, 2003).

USDA's food security measure contributed to favorable marks in several of OMB's assessment criteria, which taken together were responsible for the program's final rating of "moderately effective." OMB emphasized food security measures and ignored the omission of these measures in the USDA annual reports.

### *III.g. Implications of targeting food security only for low-income households*

The quantitative targets in the U.S. Action Plan on Food Security and the Healthy People 2010 objectives refer to national prevalence estimates for all households. In contrast, the USDA and FNS strategic plans use a target for households that are *food insecure with hunger* as a fraction of low-income households, which have income below 130 percent of the Federal poverty guideline.

One can understand what USDA and FNS hoped to achieve by restricting the denominator of the quantitative targets to low-income households. Because the Food Stamp Program only serves households with low income, it seemed most reasonable to assess food security for this population only. One might think that using the Healthy People 2010 target, for example, would leave USDA and FNS at the mercy of variable economic conditions for a higher income population, which the Food Stamp Program is not even permitted to serve.

However, using the number of low-income households in the denominator has undesirable consequences. Success in meeting these targets depends on how economic conditions and program changes influence the composition of the caseload. As will be discussed in the next section, rates of food insecurity among Food Stamp Program participant households are very high, reaching more than 50 percent in the most recent annual report (Nord, Andrews, and Carlson, 2003). These rates reflect the program's success in serving those households with the greatest hardship and needs. Most observers believe the Food Stamp Program reduces the risk of food insecurity, but this beneficial effect is swamped by the program's concentration on a severely food insecure population. These patterns suggest that composition issues can outweigh actual program effects, in which case the USDA target as currently defined may not work as intended.

The Food Stamp Program does not just alleviate food insecurity. At its best, it also provides low-income families with essential support as they work their way out of poverty. Especially since the 1996 welfare reform, the Food Stamp Program has played a central role in the national social safety net. Whereas, in earlier years, most food stamp participants received Aid to Families with Dependent Children (AFDC), the program currently serves larger numbers of non-welfare families. Even for welfare families, the program's job training and work requirements corroborate the heavy work emphasis of the newer Temporary Assistance for Needy Families (TANF) program (see Super, 2003, for an assessment of work and the Food Stamp Program).

Paradoxically, if the Food Stamp Program contributed to the long-term economic success of working participants by helping significant numbers of households to rise above low-income status, the program could appear unsuccessful according to the USDA and FNS quantitative targets. In this instance, comparatively secure households would disappear from the denominator, causing the prevalence of food insecurity among those who remain to rise. The quantitative targets in the strategic plans would be appropriate for a program that alleviated hardship in a static and permanently impoverished population, but they are less appropriate for a program that seeks to provide both food and economic support to a dynamic population.

At the same time, it may be possible to overcome some of the apparent shortcomings of using a target that is more similar to the Healthy People 2010 goals. To avoid penalizing USDA and FNS for food security conditions among higher income households, it would be important to use a feasible quantitative target. If the objective were expressed as a food insecurity prevalence among all households, the actual target could be chosen such that it would be met if food insecurity dropped by half among those who are currently low income.

For example, USDA's most recent annual report estimated that 2 million low-income households (12.1 percent of low-income households) were *food insecure with hunger*. Another 1.3 million higher income households (about 1.8 percent of higher-income households) were *food insecure with hunger*. Suppose the Federal Government sought to reduce *food insecurity with hunger* among low-income people by half, or 1 million low-income households. The appropriate national target would be 2.3 million households classified as *food insecure with hunger*, or about 2.6 percent of all households for which income could be determined. The Federal Government

could reach this target by reducing hunger among low-income people or by helping households to rise above low-income status and join the ranks of the predominantly food-secure higher-income population.

With such an objective, USDA and FNS could be properly credited for their contribution to the nation's overall anti-poverty efforts as well as their contribution to alleviating hunger among those who remain poor. This approach seems consistent with the spirit of GPRA, which seeks to establish firm criteria for measuring progress without pre-judging the best way of achieving that progress. Although writers from various political perspectives have agreed on the merits of the food security measure, they have differed somewhat in their suggestions for how food insecurity could be reduced. Some organizations emphasize anti-hunger programs, others emphasize employment and economic opportunity, and others put a high value on both approaches. A target for reducing *food insecurity* and *food insecurity with hunger* among all Americans provides the most neutral scoreboard.

This change would also increase the consistency between the Federal Government's most prominent food security objectives. In first discussing the USDA and FNS quantitative targets, OMB's PART stated the targets as a fraction of low-income households. Then, when it came time to report the program's progress toward its targets, OMB instead described progress toward the Healthy People 2010 goals for all households. Similarly, USDA's ERS has reported progress toward the national goals for all households but not toward the targets in the strategic plans. A review of the food security measure's use by USDA, ERS, and FNS could find no public reporting of progress using the formulation in the strategic plans. If USDA and FNS switch at

this point to a target more consistent with the Healthy People 2010 approach, the earlier formulation may not be missed.

### *III.h. Recommendations*

5. *The Federal Government should continue to use the USDA food security measure to assess progress toward national objectives and the overall success of anti-hunger efforts.* The food security measure has been successfully used for this purpose by the U.S. Departments of Agriculture and Health and Human Services, the Food and Nutrition Service, and the Office of Management and Budget.
6. *The USDA annual performance reports under GPRA should use quantitative food security targets, to be more consistent with the USDA and FNS strategic plans.* The annual reports currently declare success using caseload statistics and other activity measures as quantitative targets. This practice represents a retreat from the Federal Government's movement toward better performance evaluation.
7. *USDA and FNS should consider slightly modifying the quantitative targets in the strategic plans, to be more consistent with Healthy People 2010 objectives and the U.S. Action Plan on Food Security.* The strategic plans refer to targets for *food insecurity with hunger* in low-income households, while the Healthy People 2010 objectives and the U.S. Action Plan on Food Security use targets for all households. Targets for *food insecurity* and *food insecurity with hunger* in all households better measure progress toward national goals and the overall success of anti-hunger efforts.
8. *USDA's annual food security reports should highlight progress toward the (modified) targets used by the USDA and FNS strategic plans, the Healthy People 2010 objectives, and the U.S.*

*Action Plan on Food Security.* USDA's annual reports receive heavy media coverage. At the time these reports are produced, USDA has all the information it needs to measure progress toward key food security objectives that have been adopted by the Federal Government. Such reporting would reduce the tendency for users to focus on small, and perhaps not even statistically significant, year-to-year fluctuations. Instead, the annual report would provide users with perspective on progress toward national objectives.

#### **IV. Using the Food Security Measure to evaluate specific food assistance programs**

##### *IV.a. Introduction*

The third broad use of the food security measure is to evaluate specific programs and policies. It would have been worthwhile to include in this review food assistance programs beyond food stamps. For example, Herman et al. (2004) follow pregnant first-time WIC participants to measure changes in their food security status over time.<sup>8</sup> Likewise, it would have been worthwhile to include recent studies of the impact of changes in cash assistance programs. For example, Borjas (2004) takes advantage of cross-state variation in the removal of immigrant families from cash assistance rolls to assess welfare program effects on food security.

However, this section focuses on the program whose effect on hunger has received the most attention, the U.S. Food Stamp Program. The previous section argued that USDA's food security measures are appropriate for measuring progress toward national objectives and

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<sup>8</sup> A complication in this analysis is that many of the households had no children at the time participation began pre-partum, and hence were assessed using the 10 adult-referenced items. All 18 items were used to assess food security post-partum. This comparison requires that *food insecurity* be defined similarly in households with and without children.

assessing the overall success of anti-hunger efforts. This section warns that evaluations of particular programs and policies have several additional hurdles to overcome. Such evaluations require sound research design and comparable reference periods for food security and program participation data.

#### *IV.b. Research design*

One cannot measure the impact of a food assistance program by comparing participants and nonparticipants. For example, while 11.1 percent of U.S. households were classified as *food insecure* in 2002, the rate among food stamp participant households was 51.4 percent.

Participants have much higher rates of food insecurity, not because the program has a pernicious effect, but rather because the program serves a population that experiences exceptional hardships.

This problem is not eliminated by using a comparison group of seemingly eligible nonparticipants. In 2002, USDA estimated that the rate of food insecurity among low-income households (with income below 130 percent of the Federal poverty guideline) that did not receive food stamps was 28.7 percent (Nord, Andrews, and Carlson, 2003). Thus, the appearance of higher rates of food insecurity for participants is only partly reduced when an appropriate comparison group is used. Similar results have been found using a more precise comparison group of eligible nonparticipants (Cohen et al., 1999).

This problem is also not eliminated by using regression analysis to control for other observable factors. For example, holding constant observable income and demographic variables, food

stamp participants still exhibit higher rates of food insufficiency (Gundersen and Oliveira, 2001). Households “self-select” into the program based on their own particular food needs, information, and tendency to like or dislike participating in such a program.<sup>9</sup> Unobserved household conditions may be positively related to program participation and negatively related to food security status, causing the appearance of an unfortunate program impact. FNS estimates suggest that only 62 percent of eligible people participated in the Food Stamp Program in 2001 (Cunningham, 2003), which leaves ample room for self-selection to strongly influence the characteristics of those who end up participating.

A number of studies have acknowledged the possible influence of unobserved factors in attempting to measure the impact of the Food Stamp Program on food insecurity, or on an older simpler outcome measure of food sufficiency. Gundersen and Oliveira (2001) used data from the 1991-1992 Survey of Income and Program Participation (SIPP) to estimate the effect of food stamps on food insufficiency. While the SIPP is a panel survey, their statistical approach was cross-sectional, using a maximum likelihood model with a fairly strong parametric distributional assumption to control for selection bias. They found that food stamps were positively associated with food insufficiency in probit regression models, but there was no association in models that sought to correct for selection bias.

Huffman and Jensen (2003) estimated simultaneous equations models with 1998 data from the Survey of Program Dynamics, to measure the Food Stamp Program’s effect on food security

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<sup>9</sup> There is an interesting related literature that treats cross-household variation in food needs as a topic of interest in its own right, rather than just a nuisance factor for evaluating program impacts on food security. This literature uses direct survey responses about how much households feel they need to spend on food to have an adequate diet (Andrews, Nord, and Kabbani, 2001; Jensen, 2002; Daponte and Stephens, 2004).

while controlling for the endogeneity of program participation. As is typical for instrumental variables estimators with survey data, their approach requires exclusion restrictions that are difficult to confirm. They find that FSP participation appears to increase food security.

In a study of the effect of several food assistance programs on food security, Kabbani and Yazbeck (2004) used variation in State-level policy factors to control for endogenous participation in the U.S. Food Stamp Program. Their paper focuses on discovering why households with children have higher reported rates of *food insecurity*, while households without children have higher reported rates of *food insecurity with hunger*, using the 12-month measure. The paper finds the participation in the National School Lunch Program helps to explain why households with children seem to be able to avoid *food insecurity with hunger* in particular.

In principle, panel data offer an alternative approach to controlling for unobserved factors. Under certain assumptions, fixed effects models may be used to control for unobserved factors that are constant over time. For example, even if some households are simply “hungrier” than others by nature, one might still use panel data to see whether entry into the Food Stamp Program provides any relief. This statistical approach would not work well if unobserved factors change over time. For example, if households are subject to periodic health or financial shocks that do not show up in the survey data, one cannot identify program impacts even by observing entry and exit from food stamp participation using panel data.

Ribar and Hamrick (2003) used the 1993 panel of the SIPP and the follow-up Survey of Program Dynamics (SPD) to study the dynamics of poverty and food sufficiency transitions. They

included Food Stamp Program participation as an explanatory variable, finding in some cases a paradoxical negative association with food sufficiency. Citing Gundersen and Oliveira (2001), they comment on the possibility that unobserved factors are responsible, but they did not attempt to estimate a fixed effects model to control for these factors.

Hofferth (2003) used data from the Panel Study of Income Dynamics (PSID) to study within-family changes over time in food security status, between 1997 and 1999. Only households with children were asked food security questions in 1997, so within-family changes could be studied only for these families. The analysis included food stamp participation as an explanatory variable, but the study did not seek to control for unobserved factors.

Hamilton and Rossi (2002), among others, have suggested that the best way to measure program impacts in the presence of self-selection concerns is through random assignment experiments. After an exhaustive review of quasi-experimental and non-experimental research designs, they conclude:

Lest the word count distort the message, we must reemphasize here the importance of exerting all possible efforts to use randomized experiments. For programs that deliver services and benefits directly to individuals and families, randomized experimentation is the only design that, properly applied, is guaranteed to produce unbiased estimates of program impact (Hamilton and Rossi, 2002).

This literature review found no research that attempted to assess food program impacts on food security using a random-assignment design.

#### *IV.c. Comparable reference periods*

The best reference period for measuring food security in specific program evaluations is 30 days. Nord (2002) suggested: “Assessing the association of food security status with participation in those programs would, most appropriately, use the 30-day food security scale.” By contrast, the more commonly used 12-month food security measure is not well suited for evaluating the impact of specific programs and policies. Only about 40 percent of new food stamp spells last for a whole year (Gleason et al., 1998), so even for program participants, any 12-month period for food security measurement probably includes periods of nonparticipation as well.

Unfortunately, the least severe food security questions are not asked with a 30-day reference period in the food security supplement to the CPS. For this reason, USDA suggests that the 30-day measure can be used to study prevalence rates for the classification *food insecure with hunger*, but not for the classification *food insecure* in general. The 30-day reference period and the focus on a more severe range of hardship each lower the prevalence estimates. Using this reference period, it is difficult to measure the impact of programs and policies on more commonly occurring food-related hardships.

For food stamp participants, the most severe period of hardship is widely thought to be the last days of the food stamp month, shortly before the next month’s benefits arrive (Wilde and Ranney, 2000). Intra-monthly timing issues are potentially important, because they offer one possible explanation for a paradoxical positive association between food insecurity and the risk of overweight (Townsend et al., 2001; Gibson, 2003). Similarly, in a major national survey of

Food Stamp Program participants, Cohen et al. (1999) found a positive association between food insecurity and nutrient availability, and suggested cyclical boom-and-bust consumption patterns as one possible explanation. As noted earlier, USDA's average daily prevalence estimates in the most recent annual report seem to be derived by multiplying the annual prevalence estimates by a constant factor. This approach cannot be used to study the particular time of month when hardship occurs. In general, the food security supplement to the CPS does not permit analysis of the relationship between the timing of food crises and the timing of food stamp and cash resource flows.

#### *IV.d. Recommendations*

9. *USDA should continue to support program evaluations with sound research designs, to measure the impact of particular food assistance programs on food security.* A recent report supported by USDA/ERS suggested that experimental designs are ideal, but it also summarized other accepted research designs (Hamilton and Rossi, 2002). Quasi-experimental and non-experimental designs can be strengthened by forethought about how to provide panel data and suitable instrumental variables, including detailed information about policy factors whose variation could be reasonably treated as exogenous. Each available quasi-experimental and non-experimental design has known limitations.
10. *USDA should consider making the 30-day food security measure more comparable to the 12-month food security measure.* It would help to ask the less severe food security items with 30-day reference periods as part of the food security supplement. There appears to be nothing about these less severe items that makes them unsuitable for use with a shorter reference period.

11. *Policy-makers should have limited expectations for specific program and policy impact evaluations using the food security measure in the near term.* Such evaluations face a particularly difficult self-selection environment, difficulties in achieving sound program evaluation design, and limitations in the range of conditions captured by the 30-day measure. At present, the USDA food security measure appears highly valuable for assessing overall progress toward national objectives, but more difficult to use for particular program and policy evaluations.

## **V. Conclusions**

Each part of this investigation highlighted an important link between the measure's use and the clarity of its construction. The paper reviewed the food security measure's purposes under three general headings:

- to report the extent of food insecurity and hunger in the United States;
- to monitor progress toward national objectives and judge the overall performance of anti-hunger efforts; and
- to evaluate the impact of particular policies and programs on food insecurity and hunger.

To serve these purposes well, some criteria may be suggested for future advances in the measure's construction.

First, to correctly describe the extent of food insecurity and hunger, users must understand the meaning of the food security classifications actually used in prevalence estimation. A misleading interpretation has the same effect as a falsely reported prevalence estimate. The

original conceptual definitions may not serve as a complete description of the classification system used for prevalence estimation today. The conceptual definitions appear on their face quite different from the actual language used in the food security items. Fortunately, the carefully constructed and vetted survey items offer a powerful resource for communicating the meaning of the prevalence estimates. In developing language for communicating with the general public, it may help to use the nontechnical language that already works for communicating with survey respondents. Why not construct the food security measure so that the meaning of the prevalence estimates may be explained in the plain language of the food security items themselves?

Second, some purposes call for a 12-month time frame while other purposes require a 30-day time frame. Several constituencies prefer the 12-month estimates for measuring the extent of hunger in America, while program evaluations require the 30-day measure. Translating from one time frame to the other is hindered by differences in the items and the threshold raw scores. For example, in the 12-month scale, the key threshold item for *food insecurity with hunger* happens to be one of only 3 items that have a compound reference period.<sup>10</sup> For this item in particular, it is difficult to define a corresponding 30-day item that represents the same condition. As another example, the classification *food insecure* cannot be measured with USDA's 30-day scale for the CPS, due to limitations in the items available. Why not base 12-month and 30-day food security scales on the same items, each asked with the appropriate time frame?

Third, the measure's main uses require empirical estimates of the rates of *food insecurity* and *food insecurity with hunger* for all household types. Currently, different item sets and raw score

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<sup>10</sup> This item asks whether adults in the household cut or skipped meals in 3 or more months in the past year.

thresholds are used for households with and without children. These differences complicate the effort to define classifications similarly for all household types. They provoke complex discussion of Rasch model scaling properties and elaborate systems for re-interpreting the literal meaning of the survey items, all of which may not even achieve the purpose of establishing comparable thresholds. Why not base the main prevalence estimates on items that may be asked of all households?

I fear these questions may seem outrageous to the researchers and scholars who built the food security measure, familiar as they are with the long chain of reasonable decisions that brought us to the present juncture. At the time the 12-month scale was developed, there was no definition of *food insecurity with hunger among children*, so it seemed essential to include child-referenced items in describing severe stages of *food insecurity* in the household measure. At the time the current item set was developed for the CPS, some 12-month items seemed more amenable to 30-day follow-up questions than others. Taking the item set as given, the developers of the 30-day classification system were forced to use 30-day items that differed substantially from the 12-month items. Throughout the development of USDA's approach, analysts assumed that a continuous scale measure would be central to the survey's use, not knowing in advance that the convenient discrete classifications would prove to be the only statistical output actually used for important government objectives or communication with the public.

If one sets this history aside and considers the measure's uses today, it is hard to escape the impression that simpler would be better. A simpler measure could improve communication with the lay public about the extent of hunger and tighten the link between the 12-month and 30-day

estimates. Above all, a well-understood measure provides the best scoreboard for judging progress toward national objectives. As the measure is adopted for purposes with real policy and budget consequences, the need for transparency will only increase. Having a clear scoreboard solves more than just a measurement problem. It provides feedback to guide important efforts to reduce food insecurity and hunger in the United States.

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Table 1. Prevalence estimates reported by government, media, and advocacy groups vary widely, depending on the selection of population group, food security condition, and reference period.

Population group	Condition	Reference period		
		12-month	30-day	Daily average
<b>2002 prevalence</b> <i>households or individuals</i>				
All households with...	Food insecurity	<b>11.1%</b> <sup>1</sup> 12,058,000		
	Food insecurity with hunger	<b>3.5%</b> <sup>1</sup> 3,799,000	<b>2.7%</b> 2,932,000	<b>~0.5%</b> <sup>3</sup> ~543,000
Individuals in households with...	Food insecurity	<b>12.5%</b> 34,902,000 <sup>2</sup>		
	Food insecurity with hunger	<b>3.4%</b> 9,385,000		
Children in households with...	Food insecurity	<b>18.1%</b> 13,127,000 <sup>2</sup>		
	Hunger among children	<b>0.8%</b> 567,000 <sup>3</sup>		

Source: The 2002 USDA food security report (Nord et al., 2003).

Notes:

<sup>1</sup>This statistic is emphasized in the abstract to the 2002 USDA food security report (Nord et al., 2003).

<sup>2</sup>This statistic is emphasized by National Anti-Hunger Organizations (NAHO, 2004)

<sup>3</sup>This statistic is emphasized by the Heritage Foundation (Pardue, Rector, and Johnson, 2003)

**Table 2.** 18 survey items used in USDA's 12-month food security measure.

<u>Shorthand description</u>	<u>Child-referenced?</u>	<u>Same as 30-day item?</u>
Worried food would run out		
Food bought didn't last		
----- food insecurity threshold -----		
Relied on few kinds of low-cost food to feed child(ren)	Yes	
Couldn't afford to eat balanced meals		
Couldn't feed child(ren) balanced meals	Yes	
Adult(s) cut size of meals or skipped meals		Yes
Respondent ate less than felt he/she should		Yes
----- hunger threshold -----		
Adult(s) cut size of meals or skipped meals, 3+ months		
Child(ren) were not eating enough	Yes	
Respondent hungry but didn't eat		Yes
Respondent lost weight		Yes
Cut size of child(ren)'s meals	Yes	Yes
Adult(s) did not eat for whole day		Yes
Child(ren) were hungry	Yes	Yes
Adult(s) did not eat for whole day, 3+ months		
Child(ren) skipped meals	Yes	Yes
Child(ren) skipped meals, 3+ months	Yes	
Child(ren) did not eat for whole day	Yes	Yes

Note: Items are listed in increasing order of severity in the CPS 2000 food security supplement.

Source: Table A-1 of Nord, Andrews, and Carlson (2003); Table 4 of Wilde (2004).

**Table 3.** 12 survey items used in USDA's 30-day food security measure.

<u>Shorthand description</u>	<u>Child-referenced?</u>	<u>Comparable to 12-month item?</u>
Adult cut size of meal or skipped meal		Yes
Respondent ate less than they felt they should		Yes
----- hunger threshold -----		
Adult cut size of meal or skipped meal, 3+ days		
Respondent hungry but didn't eat		Yes
Respondent lost weight		Yes
Cut size of child's meal	Yes	Yes
Adult did not eat for whole day		Yes
Child was hungry	Yes	Yes
Child skipped meal	Yes	Yes
Adult did not eat for whole day, 3+ days		
Child skipped meal, 3+ days	Yes	
Child did not eat for whole day	Yes	Yes

Source: Table A-1 of Nord, Andrews, and Carlson (2003).

**Table 4.** Media stories have a mixed record in reporting USDA food security estimates.

Source	Quotation	Adheres to USDA terminology for:			
		Time period	Food security	Hunger	Child hunger
National Public Radio Morning Edition (6/5/2003)	EDWARDS (host): On any given day, people go hungry in up to 600,000 American households. The Department of Agriculture reports that millions more don't have a secure supply of food.... MONTAGNE (reporter): Let's define our terms. These days in the United States, you experts speak about something called food insecurity. Tell me exactly what that is and how that differs, if it does, from hunger or starvation.	✓		✓	
	BILL SHORE (guest from Share our Strength): Well, it's a good question. Thankfully we don't have people in America who are really starving the way we often see overseas, but we do have a lot of Americans that are malnourished, and many of them are children. And when we talk about food insecurity, we talk about families who don't have enough food to get to the end of the month. MONTAGNE: Recent national figures from the USDA is that 36.2 million Americans live in food insecure households, and of that number, 14 million children.	x	x		x
CBS 60 Minutes (1/8/2003)	SCOTT PELLE (reporter): Almost half the people fed by these lines are kids. The Agriculture Department figures one out of six children in America faces shunger. That's more than 12 million kids.	x	x	x	x
Saul Friedman, Newsday (10/11/2003)	What does being poor mean? Among other outrages, 44.5 percent of poor households with children experience what experts call "food insecurity," which means they don't know where their next meal is coming from, and they often go hungry. Or they're in danger of losing their modest housing for not paying the rent.	x	x	x	x
Tom Zeller, New York Times (1/11/2004)	<i>Graphic contains the following definitions.</i> Food insecure, with hunger (3%)--one or more household members were hungry at least some time during the year because they could not afford enough food. Food insecure, without hunger (8%)--Households that avoided hunger using strategies like eating less varied diets, participating in food assistance programs or getting emergency food from community food pantries. Food secure (89%)--Households that had access, at all times, to enough food for an active, healthy life for all household members.	✓	✓	✓	

Continued...

Note: ✓ indicates adherence to USDA terminology.

**Table 4.** Continued.

Source	Quotation	Adheres to USDA terminology for:			
		Time period	Food security	Hunger	Child hunger
Trudy Lieberman, The Nation (7/31/2003)	While the most severe forms of malnutrition and starvation that prevailed through the 1960s have largely disappeared, some 33 million people live in households that aren't sure where their next meals are coming from -- those whom the policy analysts call the food insecure.	x	x		
Adrienne Lu, New York Times (3/23/2004)	Nationally, the rate of households facing limited or uncertain availability of food, what the federal government calls food insecurity, has been rising, reaching its highest point in four years. From 1999 to 2002, the latest year for which figures are available, the number of such households rose by about 15 percent, or about 1.5 million, according to the United States Department of Agriculture, bringing the number to just over 12 million.	✓	✓		
Jonathan Riskind and Catherine Candisky, The Columbus Dispatch (3/29/2004)	While chronic hunger is uncommon--some studies show that nearly all hunger in this nation is short-term and episodic rather than continuous--the number of people needing food assistance has been rising since 2001. Those numbers include working families suffering from what the government calls food insecurity: households confronted with limited or uncertain availability of food. Figures from the U.S. Department of Agriculture show the number of all households needing food aid has risen since 1999 by about 1.5 million to just over 12 million....	x	x		
Parade Magazine (4/4/2004), Cover Article	Last year, according to the Department of Agriculture, 34.9 million Americans like the Compeans were "food insecure"--the government's term for those who must survive on a diet not nutritious enough to keep a child or an adult healthy. More than 13 million of those people were children.	✓	✓		
Bill O'Reilly, Fox (4/1/2004)	O'REILLY: In the "Unresolved Problem" segment tonight, a cover story in "Parade" magazine this coming Sunday says that last year 35 million Americans lived in households that experienced what they call food insecurity. Thirteen million of them are kids. With us now, Lamar Graham, general manager of "Parade" magazine. In the interest of full disclosure, I am a contributing editor to that publication. All right. Let's define first food insecurity. LAMAR GRAHAM: Essentially, it means malnourishment or the potential of being malnourished. O'REILLY: All right. So they don't have enough money to buy fruits and vegetables and things like that. GRAHAM: Right, exactly.		x		

Note: ✓ indicates adherence to USDA terminology.

**Table 5.** Advocacy groups, think tanks, and other users only sometimes adhere to USDA's interpretation of the food security measure.

Source	Quotation	Adheres to USDA terminology for:			
		Time period	Food security	Hunger	Child hunger
National Anti-Hunger Organizations (NAHO 2004)	The United States is the largest and most efficient food producer in the world. Yet, each year nearly 35 million Americans are threatened by hunger, including 13 million children.	✓	✗	✗	✗
The Heritage Foundation (Pardue, Rector, and Johnson, 2003)	According to the USDA, on a typical day, less than one American in 200 will experience hunger due to a lack of money to buy food. The hunger rate rises somewhat when examined over a longer time period.... Overall, some 567,000 children (or 0.8 percent of all children) were hungry at some point in 2002. In a typical month, roughly one child in 400 skipped on or more meals because the family lacked funds to buy food.	✓	✓	✓	✓
American Dietetic Association (Olson and Holben 2002)	In 2000, over 10% of United States (US) households, including more than 33 million people, experienced food insecurity.... [F]ood insecure individuals and families have limited access to or availability of nutritious food.... Hunger, the uneasy or painful sensation caused by a lack of food,... is not an automatic consequence of food insecurity.	✓	✓	✓	✓
Bread for the World (2004)	INTRODUCTION: As of 2002, nearly 35 million people -- including 13 million children -- live in homes that struggle to put food on the table. Since 1999, the number of children living in homes at risk of hunger has increased by more than 1 million.	✓	✗	✗	✗
	PETER EISINGER: "Food insecurity" is a term that encompasses varying degrees of food deprivation.... [T]he rate of overall food insecurity actually had risen slightly by 2002 from its original baseline to 11.1 percent of all households. The percentage of food insecure households that experienced hunger, however, improved slightly from 3.9 percent of all U.S. households in 1995 to 3.5 percent by 2002.... Since parents go to great lengths to shield their children from the pain of hunger, [most] of the children in these severely deprived households did eat regularly while their parents or guardians missed meals.... [T]he U.S. Department of Agriculture (USDA) estimates that just more than half a million children (567,000) actually went hungry at some time in the year.	✓	✓	✓	✓

Continued...

Note: ✓ indicates adherence to USDA terminology.

**Table 5.** Continued.

Source	Quotation	Adheres to USDA terminology for:			
		Time period	Food security	Hunger	Child hunger
America's Second Harvest (website accessed 6/24/2004)	More than 34 million Americans--13 million of them children--are going hungry or living on the very edge of hunger (suffering "food insecurity"), according to official federal government data.	x	x	x	x
The Feinstein Foundation (website accessed 6/24/2004)	"To have 30 million people going hungry or in danger of hunger, in the richest country in the world, is a disgrace," said Feinstein. "We should be setting an example for the rest of the world by making the ending of hunger a top priority. The time to do it is right now."	x	x	x	
Share our Strength (website accessed 6/24/2004)	More than 33 million Americans -- one in ten households -- cannot afford enough food to meet their basic needs. These 13 million children and 20 million adults live on the edge of hunger because they lack sufficient resources for life's necessities.	x	x	x	
Food Research and Action Center (website accessed 6/24/2004)	One of the most disturbing and extraordinary aspects of life in this very wealthy country is the persistence of hunger. The U.S. Department of Agriculture (USDA) reports, based on a national U.S. Census Bureau survey of household representative of the U.S. population, that in 2002 11.1 percent of all U.S. households were "food insecure" because of lack of resources. Of the 12.1 million households that were food insecure, 3.8 million suffered from food insecurity that was so severe that USDA's very conservative measure classified them as "hungry".... Food insecurity refers to the lack of access to enough food to fully meet basic needs at all time due to lack of financial resources. There are different levels of food insecurity.	✓	✓	✓	

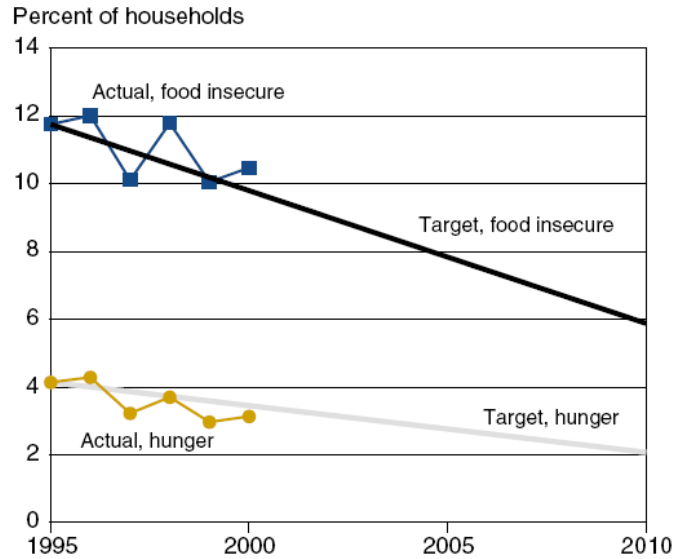
Note: ✓ indicates adherence to USDA terminology.

**Table 6.** USDA annual performance reports omit the Federal Government's quantitative food security targets.

Official document	Reference to the USDA food security measure in:		
	Broad objectives	Measures	Targets
Healthy People 2010	Objective 19.18: "Increase food security among U.S. households and in so doing reduce hunger."	Prevalence of <i>food security</i> among all households.	Baseline (1995): 88% of all households. Target (2010): 94% of all households.
USDA Strategic Plan for FY 2002 - 2007	Objective 4.1. "Improve access to nutritious food" (the narrative states: "A 30% decrease in hunger among low-income people").	Prevalence of <i>food insecurity with hunger</i> among low-income households.	Baseline (2000): 10.9% of low-income households. Target (2007): 7.4% of low-income households.
FNS Strategic Plan for FY 2000 - 2005	Objective 1.1. "Improved food security."	Prevalence of <i>food insecurity with hunger</i> among low-income households.	Baseline (2000): 10.9% of low-income households. Target (2005): 7.9% of low-income households.
USDA Annual Performance Plan for FY 2002	Objective 2.1. "Reduce hunger and improve nutrition among children and low-income people in the United States."	None	None
USDA Performance and Accountability Report for FY 2002	Performance measure: "Reducing hunger and improving nutrition in the U.S. through the nutrition assistance programs."	None	None
USDA Annual Performance Plan for FY 2003	Objective 2.1. "Reduce hunger and improve nutrition among children and low-income people in the United States."	None	None
USDA Performance and Accountability Report for FY 2003	Objective 4.1. "Improve access to nutritious food" (a narrative subheading states: "reduce hunger and improve nutrition").	None	None
USDA Annual Performance Plan for FY 2004	Objective 4.1. "Improve access to nutritious food" (a narrative subheading states: "reduce hunger and improve nutrition").	None	None

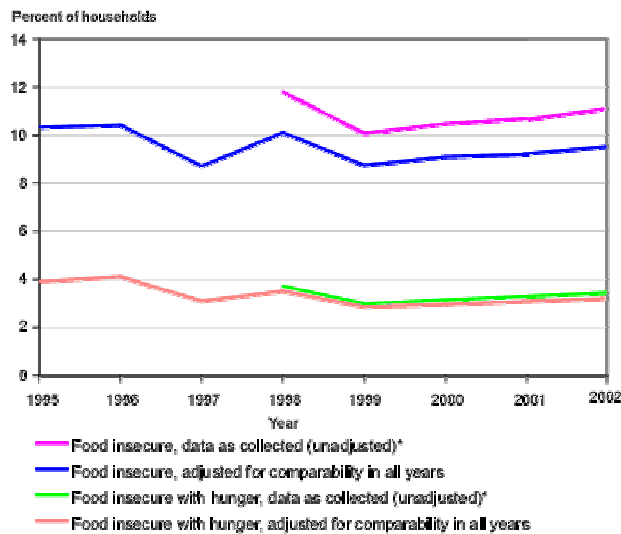
**Figure 1.** Progress toward national objectives may have stalled after 1999-2000.

**1A.** Prevalence of Food Insecurity and Hunger Compared with Healthy People 2010 Objectives (Nord and Andrews, 2002).



Note: “Prevalence rates for 1996 and 1997 were adjusted for screening differences in order to be comparable to the unadjusted rates for 1995 and 1998-2000.” Source, including graphics: Nord and Andrews (2002).

**1B.** Trends in the Prevalence of Food Insecurity and Hunger in U.S. Households, 1995-2002 (U.S. Department of Agriculture, Economic Research Service, 2003).



Note: “Data as collected in 1995-1997 are not exactly comparable with data collected in 1998-2002.” Source, including graphics: U.S. Department of Agriculture, Economic Research Service (2003).