2.   METHODOLOGY

The methodology and data sources used to derive estimates of the number of households experiencing food security, food insecurity and hunger are similar to those described in previous reports. This chapter presents details on these sources and analytical methods.

A.   The Current Population Survey

The data analyzed in this report are from the Food Security Supplement to the Current Population Survey (CPS). The CPS is a national labor force study conducted by the U.S. Census Bureau for the Bureau of Labor Statistics. The survey, conducted on a monthly basis, includes a probability sample of about 50,000 households. To improve the reliability of estimates of month-to-month and year-to-year change, 8 panels are used to construct the sample each month. A sample unit (household) is interviewed for four consecutive months and then, after an 8-month rest period, for the same four months a year later. Each month a new panel of addresses, or one-eighth of the total sample, is introduced. The Food Security Supplement, which is sponsored by USDA, has been included once a year since 1995. However, the survey month has alternated between April and August/September with April being the survey time in 1995, 1997 and 1999, September being the survey time in 1996, and August in 1998.

B.   Classifying Households by Food Security Status

Given the documented stability of the measurement construct and the reliability of the methods used to calculate prevalence estimates of food security status from 1995 through 1997, the analysis of 1998 and 1999 CPS food security supplement data utilized these same methods and measures. The criteria presented below (Exhibit 2.1) are used to classify households by food security status. Affirmative answers are counted for each household and the household's food security status is assigned based on that count. Households with children will have answered 18 items, while households without children will have answered only 10 items.

EXHIBIT 2.1   HOUSEHOLD FOOD SECURITY CLASSIFICATION

	Households Without Children (10-item scale)	**Households With Children (18-item scale)**
Food Secure, No Indication of Food Insecurity[*]	0 affirmatives	0 affirmatives
Food Secure, but with some Indications of Food Insecurity[*]	1, or 2 affirmatives	1, or 2 affirmatives
Food Insecure	3 or more affirmatives	3 or more affirmatives
Food Insecure with Hunger	6 or more affirmatives	8 or more affirmatives

[*]National statistical reports, including the present one, combine these two categories into one "food secure" category.

The recently developed children's food security scale is used to classify households with children as to whether or not the children in the household were hungry because there was not enough money for food.

Children may be affected by levels of food stress well below the level of severity represented by the classification "food insecure with hunger among children." Currently, work is being conducted to identify an appropriate threshold at a lower level of severity on the children's scale that will identify households in which children's normal eating patterns have been substantially disrupted, even if the reduction in food intake by children in that household has not been severe enough to result in hunger among the children. Since that work has not yet been completed, a broader picture of children's food situation is presented in the present report by combining information from the household food security scale and the children's hunger scale. The combined tabulation identifies households that are food secure, those that are food insecure without hunger, those that are food insecure with hunger among adults, but not children, and those that are food insecure with hunger among both adults and children. The parameters for the combined tabulation are presented in Exhibit 2.2.

Exhibit 2.2: Parameters for Tabulation of Food Security Status of Households with Children, Combining Information from the Household Food Security Scale and the Children's Food Security Scale

Food Security Category	Category Parameters
Food Secure	0-2 items affirmed
Food Insecure without Hunger	3-7 items affirmed
Food Insecure with Hunger Among Adults But Not Children	8 or more items affirmed, including 0-4 child items
Food Insecure with Hunger Among Adults and Children	8 or more items affirmed, including 5 or more child items

Theoretically, the food insecure with hunger category might have been divided into three categories (food insecure with hunger among adults and not children, food insecure with hunger among adults and children, and food insecure with hunger among children and not adults). However, there were no cases in which households reported hunger among children and not adults. Thus, the tables for households with children do not include this category.

It is important to keep in mind that the results do not directly represent the total *number* of children who have experienced hunger or food insecurity. The questions do not specifically ask how many of the children living in the household have had food insecurity or hunger experiences, but ask whether any children living in the household have had such experiences. Thus the results represent either the *number of households* in which children have experienced hunger or the *number of children living in such households* (regardless of whether or not they themselves have directly experienced hunger).

C.   Weighting and Prevalence Rates

The CPS assigns weights to each household and persons in those households so that the interviewed sample represents the total national non-institutionalized population. Weights are first assigned based on probability of selection into the sample and are then adjusted to match population controls for selected demographic characteristics at State

and national levels.   All prevalence calculations use household weights adjusted for supplement non-response.

D.   Assessing Change Over Time; Screening

The Food Security Supplement has been included in the Current Population Survey yearly since 1995. However, the data have not been collected in the same month in all years. The dates of collection were as follows: April 1995; September 1996; April 1997; August 1998; and April 1999. Although several comparisons have been made across the five-year time period, an analysis of the data indicates that the season in which the survey was conducted affected the annual prevalence estimates of food insecurity and hunger (see technical report, *Household Food Security in the United States, 1998 and 1999: Technical Report,* Cohen, et al., 2002). Therefore, to assess change over time, prevalence rates for 1998 and 1999 are compared to earlier years' surveys conducted in the same season; 1998 is compared to 1996, and 1999 is compared to 1995 and 1997. Tests of significance were conducted for all changes for which standard errors were available (1995, 1998 and 1999); these are reported in chapter 3, as relevant, but are not tabled. Estimates of change were assessed for statistical significance at the 90 percent confidence level.

To ensure comparability of prevalence estimates across years, data in each year had to be adjusted for differences in survey screening. Screening procedures were used to reduce respondent burden by skipping inappropriate questions -- or questions with known responses. This avoided asking any of the food security scale questions to higher-income households with no preliminary signs of food insecurity. Households screened out after the first few questions were classified as food secure. Although the 18 questions used in the CPS have remained the same since first implemented in 1995, the screening rules have been changed over time. In particular, different preliminary screens were tested in each of the first three years of the survey. Analyses have shown that a small proportion of the households screened out in years with more restrictive screens would have been classified as food-insecure using the screening procedures applied in other years (Bickel, Carlson and Nord, 1999).

In 1998, further changes in screening procedures and question order were introduced to minimize bias while keeping respondent burden low. The 1998 screening and question order remained unchanged in 1999, 2000 and 2001, and are expected to continue as the standard. To make prevalence rates comparable across years, "common screening" rules have been developed to be applied to the data after collection in all years (see *Household Food Security in the United States, 1998 and 1999: Technical Report* (Cohen, et. al., 2002) for specific screening procedures implemented). The rules follow the most restrictive screening procedures. That is, they screen a household out if it would have been screened out under any year's screening protocol.

The prevalence statistics presented in this report for 1998 and 1999 are generally based on data as collected in those years, with no post collection adjustment for screening differences. However, when comparisons are made to earlier years' estimates the common screen rules are applied to the 1998 and 1999 data as well as to the earlier years' data.

E. Missing Data

There are very few missing responses to food security items. Less than one percent of respondents declined to answer, or did not know the answer to, any item they were asked. If no valid answers were provided, the household was excluded from the analysis completely. If some valid responses were provided and some items were missing, standard procedures were followed to impute the missing responses as described in *Household Food Security in the United States, 1998 and 1999: Technical Report* (Cohen, et. al., 2002) and in *Guide to Measuring Household Food Security, Revised 2000* (Bickel, et. al., 2000).

F. Standard Errors

A key activity in assessing prevalence estimates is determining their precision. This is important in assessing the overall accuracy of the estimates and is necessary for determining whether estimated changes over time or differences between population subgroups are statistically significant. Balanced Repeated Replication (BRR) procedures

were used to compute standard errors for the food insecurity prevalence estimates from the CPS food security supplements. (See the technical report *Household Food Security in the United States, 1998 and 1999: Technical Report* (Cohen, et. al., 2002) for details on how the BRR methods were applied to these data.) Standard errors are reported for all 1998 and 1999 prevalence estimates and for children's hunger prevalence estimates calculated for 1995-1997.

Note that standard errors of the numbers of food secure and food insecure households for subpopulations differ, although the standard errors for the corresponding percents are identical. This occurs because the denominator – the total number of households in the subpopulation – is also estimated with some error. Thus, the standard error of the numerical estimate includes error associated with both the total number of households in the subpopulation as well as the proportion of those households that are secure or insecure.