

## Data and Methods

Data on food insecurity and hunger are from the CPS Food Security Supplements of April 1995,<sup>1</sup> September 1996, and April 1997. The CPS is a nationally representative survey of about 50,000 households, conducted monthly by the U.S. Census Bureau. Beginning in 1995, one of the monthly surveys each year has included additional questions, referred to as the Food Security Supplement, that ask about household spending for food, use of food assistance programs, and conditions, experiences, and behaviors indicating food insecurity and hunger. We used the variable HRFS12M1 to classify households as to their 12-month food security status, excluding households with HRFS12M1 missing (i.e., households lacking valid answers to any of the items in the food security scale). This left 127,558 household records for the analyses.

We used the HRPOOR variable to classify the households as *low-income* (less than 1.85 times the poverty threshold) or *middle/high-income* (above 1.85 times the poverty threshold) categories. The HRPOOR variable compares the "control card income"<sup>2</sup> for each household with a household poverty threshold approximating that specified by the Census Bureau (Hamilton et al., 1997a). The 3-year combined sample included 51,855 households with incomes below 1.85 times the poverty threshold and 75,703 households with incomes above that level. Households lacking income information (9,314, or 7.3 percent) were excluded from comparative analyses, but were included as a separate income category in the preliminary analysis of prevalence rates. To examine the more extreme cases of high-income food insecurity, we also identified households with annual incomes above \$50,000 (n=32,008),

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<sup>1</sup> The April 1995 data were assembled by matching the public-use file published by the Census Bureau with the FNS/ERS CPS update file available from the ERS Web site ([www.ers.usda.gov/briefing/foodsecurity/data](http://www.ers.usda.gov/briefing/foodsecurity/data)).

<sup>2</sup> Control card income (HUFAMINC in the CPS data file) is a categorical variable, specifying total household income in 14 categories. This income information is requested for "the last 12 months" at the time a household enters the sample and is updated when the household re-enters the sample a year later. To compare income with poverty thresholds, income was assigned at the midpoint of the income category. HUFAMINC was missing for 7.3 percent of households in the combined 1995, 1996, and 1997 data file, representing 10.9 percent of households when the data are weighted to represent all households in the Nation. Food insecurity was nearly twice as prevalent in the households with HUFAMINC missing (estimated at 85 percent, based on analysis not shown) as in those with recorded income above 1.85 times the poverty line (6.5 percent compared with 3.8 percent), but far less prevalent than in households with income below 1.85 times the poverty line (24.6 percent). Thus, most of the households with HUFAMINC missing probably had incomes higher than 1.85 times the poverty line.

creating the category "*high-income households*." These households were included in the middle/high-income category, but were also analyzed as a separate comparison group.

We created separate analysis files for low-income, middle/high-income, and high-income households.<sup>3</sup> Each income group's responses to the 18 items comprising the food security scale were submitted separately to Winsteps software for Rasch scaling (Linacre and Wright, 1998). We then compared item severity scores and item-fit and household-fit statistics for the three income groups. (See appendix for further information on the meaning of item severity scores and fit statistics.) These comparisons assess the extent to which the phenomenon measured by responses to the 18 scale items is invariant across the income groups.

We carried out two sets of comparisons of household characteristics across income and food security categories. The first set compares characteristics that can be calculated from data in the Food Security Supplement (other than the 18 core food security items) and from the corresponding CPS "core" monthly data files. These characteristics include household structure at the time of the interview, an alternative measure of food sufficiency and quality provided by the USDA/NHANES food-sufficiency questions, and use of coping strategies to avoid food insufficiency or hunger. The second set of comparisons is based on a match of the March 1995 CPS Annual Demographic Supplement with the April 1995 CPS and Food Security Supplement. The March supplement provides more precise income information than the April CPS, as well as information on cash-welfare program participation, employment, and migration in the previous year, none of which is available in the April CPS. Construction and coding of variables measuring household characteristics are described as they are encountered in the "findings" section of the paper.

We matched person records in the March 1995 and April 1995 files based on month-in-sample (HRMIS), State (GESTCEN), household ID number (HRHHID), household serial suffix (HRSERSUF), and person's line number (PULINENO). We verified the identity of matched

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<sup>3</sup> Rasch analysis is not informed by "extreme" response patterns, households that denied all items or affirmed all items. This reduces the sample size for the scaling analysis (but not for other analyses). Sample sizes in the scaling subsamples were 15,029 low-income, 5,158 middle/high-income, and 959 households with annual incomes above \$50,000.

individuals by age and sex. Potentially, six of the eight CPS rotation groups can be matched from March to April.<sup>4</sup> However, a small proportion of households in the April file did not match because they were not available for interview in March, and a few were excluded because they had moved between March and April. (CPS is a sample of addresses, and the same address is sampled even if the residents move.) We restricted the matched sample to households with no changes in composition between March and April, since information from the March file and food security information from the April file might not refer to the same consumption unit if individuals had moved into or out of the unit. These restrictions resulted in a matched sample of 30,446 households, or 91.8 percent of the households in the rotation groups common to the 2 months.

We calculated population estimates of food security status by income level (presented in table 1), using household supplement weights.<sup>5</sup> We used unweighted household cases for all other analyses. There was no compelling reason to use case weights because the issues under investigation have to do with response patterns and characteristics of respondent households, not with prevalence rates in the population.

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<sup>4</sup> The CPS sample is divided into eight rotation groups, each an independent sample of U.S. households. Each month, two new rotation groups are added and two are retired. Thus six of the eight rotations are common between any month and the month following.

<sup>5</sup> The supplement weights are based on sampling probabilities and are adjusted by the Census Bureau to match State and national control totals by age, sex, race, and Hispanic ethnicity. They are further adjusted for both core survey nonresponse and supplement response. Applying these weights allows the households that responded to the Food Security Supplement to represent the entire noninstitutionalized U.S. population.