

## The Data Set

The data set used in this analysis is the 1994-96 Continuing Survey of Food Intake by Individuals (CSFII), conducted by USDA's Agricultural Research Service (ARS) (USDA 1998a). The CSFII is based on a stratified, multistage area sampling design. Each of the 3 years of data comprise a nationally representative sample of noninstitutionalized persons residing in the United States (persons who lived in group quarters or institutions, resided on military installations, or were homeless were excluded). The dietary data consist of 2 nonconsecutive days of nutrient intake that were collected through in-person interviews using 24-hour recalls between January 1994 and January 1997. Adult proxies, preferably the person responsible for preparing the child's meals, provided the nutrient intake data for children. Respondents described both the types and amounts of food consumed during this period. A nutrient database containing the nutrient values of foods was used to calculate the total nutrient intake of the food consumed by the individual.

Only children 1 to 4 years of age who had 2 days of nutrient intake data were included in this analysis. Since the CSFII does not contain information on the nutrient contribution of the breast milk consumed by children, breastfeeding children were excluded from the analysis, as were children whose WIC status could not be determined.

To be eligible for WIC, family income must fall below 185 percent of the poverty guideline (or the child must participate in the Food Stamp, Medicaid, or TANF Programs) and the child must also be individually determined to be at "nutritional risk" by a health professional.<sup>7</sup> CSFII data do not allow for the determination of nutritional risk; therefore, for this study, WIC eligibility for children not participating in the program was proxied solely by income eligibility, as determined by the annual income of the household. Past research suggests that WIC income eligibility estimates based on annual income may underestimate actual income eligibility for WIC (USDA 1997).<sup>8</sup> To include all chil-

dren who were likely to have met the WIC income-eligibility criteria at some point during the year, this report considered children in households with annual income at or below 200 percent of the poverty guideline to be income-eligible for WIC, while children in households with annual income above 200 percent of the poverty guideline were deemed to be ineligible for WIC.<sup>9</sup> Children who were authorized to receive food stamps, or who lived in a household that received income from the AFDC program, were considered to be WIC eligible regardless of income.<sup>10</sup>

Useable data were available from 2,280 (86.4 percent) of the 2,640 children age 1 to 4 included in the CSFII. These children were assigned to one of three mutually exclusive groups—WIC recipient (n=439), WIC income eligible but did not participate (n=767), and income ineligible (n=1,074).<sup>11</sup>

This study focuses on eight nutrients, the five targeted by the WIC program—protein, calcium, iron, vitamin

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local agencies to consider the income of the family during the past 12 months and the family's current rate of income to determine which indicator more accurately reflects the family's status" (7 CFR Subpart C, Section 246.7).

<sup>9</sup>This analysis follows the convention established by Fraker et al. (1990) who set the income eligibility cutoff point at 200 percent of poverty in their earlier work on WIC's impact on nutrient intake.

<sup>10</sup>At the time of the survey, participation in the AFDC, Medicaid, and Food Stamp Programs automatically granted income eligibility to participants. However, the CSFII did not contain information on an individual's participation in the Medicaid program. The question on the CSFII regarding AFDC participation asked whether any household member received income from AFDC, general assistance, or other public assistance program. It is assumed that among households with children, AFDC accounted for the vast majority of positive responses to this item.

<sup>11</sup>Of the 439 children who reported that they were participating in the WIC program, 31 were seemingly income ineligible; that is, they did not participate in the Food Stamp Program and resided in households with annual incomes above 200 percent of the poverty guidelines that did not participate in the AFDC program. However, these children may have legitimately participated in WIC. For example, they may have participated in the Medicaid program or they may have been certified for WIC at a time when their household incomes were within WIC guidelines.

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<sup>7</sup>Prior to 1997, applicants participating in the Aid to Families with Dependent Children Program (AFDC) were automatically income eligible for WIC. The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 replaced AFDC with the TANF Program.

<sup>8</sup>WIC regulations state that in determining the income eligibility of an applicant, State WIC agencies "may instruct

A, and vitamin C—as well as folate, vitamin B-6, and zinc. In an independent examination of the WIC food package conducted for USDA in 1991, a panel of experts concluded that these three additional nutrients may be of concern for vulnerable population groups and recommended that they be included for targeting in the WIC program (USDA 1991). In addition, food energy was examined in order to determine if changes in nutrient intake were due to changes in nutrient density or to changes in the energy intake of WIC recipients.