

Monitoring Food Consumption Relative to Dietary Guidance

Information on how eating patterns differ from Federal dietary guidance is useful to many. For example, consumers use this information to make dietary adjustments, while policymakers and nutrition educators use it to target educational messages to specific audiences. Federal researchers use this information to monitor the dietary and nutritional status of the population under the Ten-Year Comprehensive Plan for National Nutrition Monitoring and Related Research Program (mandated by the National Nutrition and Related Research Act of 1990 (Public Law 101-445)) (Life Sciences Research Office, 1995).

The Food Guide Pyramid as a Dietary Assessment Tool

Researchers are using the Food Guide Pyramid as a tool for assessing U.S. dietary health—one that goes beyond the traditional approach which emphasized the adequacy of individual nutrients—to a food-based approach that recognizes the link between diet and chronic disease risk (Krebs-Smith and others, 1997; Cleveland and others, April 1997). This new approach led to the development of methods for assessing food consumption data in terms of Food Guide Pyramid serving recommendations. To date, researchers have used these methods to assess food-intake data from USDA's Continuing Survey of Food Intake by Individuals (CSFII) (Bowman and others, 1998; Cleveland and others, January 1995, April 1997; Krebs-Smith and others, 1995, 1996, 1997; Munoz and others, 1997; USDA, CNPP, 1995).

Intake-based Dietary Assessment

The CSFII measures foods eaten by individuals. The survey records food intake over a specific period of time (2 nonconsecutive days in the 1994-96 survey) and collects demographic information, such as household size, income, race, age, and sex, in addition to food-intake data (USDA, ARS, March 1997). It is a key component of Federal efforts to monitor nutrition (such as the *National Nutrition Monitoring Plan*). The demographic information is particularly valuable because it allows researchers to assess dietary status among population subgroups, which helps policymakers to develop effective nutrition policies, and nutrition educators to target nutrition education programs for specific socioeconomic groups.

Numerous studies have suggested that food-intake surveys, such as the CSFII, which collect food consumption data through recalls or food records over short periods of time, are subject to underreporting of consumption when measured in terms of energy intake (Bingham, 1994; Black and others, 1993; Mertz and others, 1991; Schoeller, 1990). Little is known about how much underreporting varies across food groups. However, in one study of 79 people in Cambridge, England, Bingham reported that those subjects that underreported energy intake also had significantly lower intakes of fat, total sugar, and added sugars, but not Vitamin C, starch, and fiber, compared with nonunderreporters (Bingham, 1994). Cleveland and others report that this finding "lends some support to the idea that nutrient-dense food groups may be less likely to be underreported than the foods in the tip of the pyramid" (Cleveland and others, April 1997). A 1995 study conducted by the United Fresh Fruit and Vegetable Association that compared food diaries from 2,000 households with consumers' self-reported food intake found that consumers overestimated fruit and vegetable consumption by up to one-third and underestimated consumption of fats and sweets by one-half (United Fresh Fruit and Vegetable Association, 1995).

While improved probing methods in the 1994-96 CSFII may have reduced underreporting compared with previous surveys, food-intake surveys, and hence the dietary assessments on which they are based, probably reflect a lower limit on actual food intake. Consequently, these assessments may also tend to understate the number of Food Guide Pyramid servings actually consumed by individuals at least for some food groups. In addition, because the CSFII reports cross-sectional data, which measure food consumption at one specific point in time, using methodologies that differ by survey period, it is difficult to separate methodological effects from true consumption changes.

Food Supply Dietary Assessment

Federal efforts to monitor nutrition (such as the *National Nutrition Monitoring Plan*) rely on food supply and use data that are collected and published annually by ERS. The food supply series estimates the quantity of food available for human consumption in the U.S. food marketing system by tracking commodity flows from production to end uses (Putnam and Allshouse, 1997). The series is the only continu-

ous source of food and nutrient availability in the United States with data extended back to 1909 for most commodities. The data are developed using similar methods across years, and thus complement the single point in time estimates reported in the CSFII.

Like most time series data, the food supply estimates are most often used as indicators of trends over time. They are typically used to measure the average annual level of food available for consumption in the country, to determine the approximate nutrient content of the food supply, and to show year-to-year variations in the quantity of particular foods available for consumption.

Up to now, however, the usefulness of the food supply data for comparing food consumption with Federal dietary guidance has been limited. The food supply data measure commodity supplies as they move through marketing channels for domestic consump-

tion. Consequently, the data overstate the amount of food actually ingested by humans by capturing substantial quantities of nonedible food portions and food lost to human use through waste and spoilage in the home and marketing system. The series also includes unknown quantities of foods that are used as ingredients in processed foods that are exported—soft drinks, baked goods, cereal products. For example, the food supply series for caloric sweeteners includes some high fructose corn syrup used by U.S. beverage manufacturers to make soft drinks for export (see “Discussion” on page 26). As a result of this and other overcounting, the average calories provided by the food supply are well-above those needed to meet the energy needs of the U.S. population. In 1994, for example, the food supply provided 3,800 calories per capita compared to a population-weighted Recommended Energy Allowance (REA) of 2,247 calories for the U.S. population (National Research Council, 1989).