EMERGING DATA ISSUES IN APPLIED FOOD DEMAND ANALYSIS

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EDITORS' NOTE

This Tennessee Experiment Station Bulletin is the edited collection of seven papers presented by members of the Changing Patterns of Food Consumption (S216 Regional Committee) at a 1993 Workshop held by the Regional Committee. They focus on a variety of emerging issues associated with data sets used in applied demand analysis. These pertain to topics that are not discussed in the extant literature but are quite germane to the extension of empirical models of food consumption.

CSFII AND HFCS DATA: ISSUES, PROBLEMS, AND NEEDS

Mary Y. Hama[1]

An update of survey activities conducted by the Human Nutrition Information Service (HNIS) of the U.S. Department of Agriculture (USDA) is contained in this paper. The surveys discussed here are the Continuing Survey of Food Intakes by Individuals, the Diet and Health Knowledge Survey, and the Household Food Consumption Survey.

The Human Nutrition Information Service is responsible for conducting surveys to assess the American diet. These surveys obtain three types of information relating to food consumption and dietary behavior: food eaten by individuals, dietary knowledge and attitudes of individuals, and food used by households.

USDA has been collecting food consumption surveys for 57 years, dating back to 1936 when the first national survey measuring household food use was conducted. The individual food intake survey dates back to 1965. In 1985, continuous data collection was initiated with the Continuing Survey of Food Intakes by Individuals (CSFII), which included the collection of only the individual intake information. In 1989, a new survey called the Diet and Health Knowledge Survey (DHKS) was introduced. This survey was conducted as a telephone follow-up to selected CSFII respondents.

CSFII and DHKS 1989-91

The CSFII, conducted as three separate 1-year surveys in 1989, 1990, and 1991, is the most recent of many USDA surveys designed to measure what Americans eat and drink. Information from the surveys is used to develop nutrition education programs, to assess dietary changes associated with participation in food programs, to develop food fortification and enrichment policies, to monitor the safety of the food supply, and to assess demand for agricultural products and marketing facilities.

CSFII 1989-91 was designed to collect 3 consecutive days of dietary data from all individuals in the household. The first day's data were collected by

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an in-person interview in the home using a 1-day dietary recall. The second and third days' data were collected using a self-administered 2-day dietary record. Individuals who were identified as the main meal planners/preparers in the CSFII were contacted by telephone, if possible, about 6 weeks after collection of the dietary data and were asked to answer a series of questions about knowledge and attitudes toward diet, health, and food safety.

The DHKS, a follow-up to CSFII, is designed to improve the understanding of factors that affect food choices and to obtain information on individuals' knowledge and attitudes about the Dietary Guidelines for Americans. Together, the CSFII and the DHKS provide the first opportunity on a national scale to link an individual's knowledge and attitudes (DHKS) to his or her dietary behavior as indicated by food intake information (CSFII).

More specifically, the DHKS contains about 40 questions. These may be grouped into five broad categories:

- attitudes about diet,
- knowledge about foods,
- food preparation practices,
- food shopping and label information, and
- food safety concerns.

In terms of attitudes about diet, interest centers on perceived importance of dietary guidance--do people believe in the dietary guidance promoted by HNIS, and do they think it applies to them personally. Because of the link between the DHKS and the CSFII, the relationship between such beliefs and food and nutrient intakes can be determined.

The next type of question on the DHKS relates to knowledge about diet-health relationships; knowledge about the quality of one's own diet; and practical knowledge about food sources of nutrients. To assess knowledge about diet-health relationships, interviewers ask: "Have you heard about any health problems that might be related to [various dietary behaviors]?" The behaviors include how much fat a person eats, how much fiber, and so forth.

CSFII also has questions that relate to knowledge about diet-health relationships; for example, interviewers ask about being on a special diet.

Another type of knowledge relates how well an individual is able to evaluate the quality of his or her own diet. DHKS respondents are asked to evaluate the quality of their diets with respect to 13 dietary components, such as fat, fiber, and calcium. Because of the link with the CSFII, the responses can be used to determine how accurately people rate their own diets. Furthermore, one can determine how well they actually are doing compared to dietary recommendations.

The DHKS also includes questions about knowledge of food sources of nutrients. Respondents are asked to choose which of a pair of foods is higher in fat, or in cholesterol, or in fiber. Answers to these questions will help determine what types of information Americans need.

Most data on dietary behavior comes from the CSFII. However, the DHKS contains a few questions about food preparation practices. These attempt to get at "usual" behavior. Examples include "Do you: Cook meat or poultry without added fat most of the time? Ever replace whole eggs with egg whites in recipes? Cut the amount of sugar in recipes?" Also, interviewers ask how long it takes to prepare the main meal of the day--trying to get at the effect of busy lifestyles on food choice.

Another type of question relates to grocery shopping and use of food labels. Respondents are asked how important six product attributes are product safety, nutrition, price, how well the food keeps, how easy it is to prepare, and its taste. Questions about food labels relate to frequency of use; use for comparing the nutrient content of different brands; use of cooking, defrosting, and storage information; and problems with interpreting label information when serving sizes differ.

The section devoted to food safety asks the DHKS respondents: "Do you consider safe or not safe" various types of foods or practices? Examples include foods that have been irradiated, meats from animals treated with antibiotics or hormones, foods containing raw eggs, raw beef, and so forth.

There is also a series of questions about the length of time cooked food is kept at room temperature.

CSFII 1989-91 produced a more favorable response rate than the 1987-88 Nationwide Food Consumption Survey. The combined basic and low-income household response rates were 67.9 percent in CSFII 1989, 66.0 percent in CSFII 1990, and 67.6 percent in CSFII 1991. Of those household participants in the CSFII, approximately 85 percent responded to the follow-up DHKS. Individual counts and response rates for the CSFII are summarized in Table 1.

Table 1.--CSFII 1989-91 Individual Counts and Overall Response Rates for Combined Samples (Basic and Low Income)

Number of Intake Days	1989		1990		1991	
	Count No.	Rate Pct.	Count No.	Rate Pct.	Count No.	Rate Pct.
Day 1	5,140	60.8	4,889	55.6	5,163	56.5
3 Days	4,215	49.9	3,601	40.9	4,096	44.8

Overall response rate = individual participation rate X overall household response rate

Results from each year of data collection are available on data tape from the U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161 (703-487-4750). These include

- "1989 Continuing Survey of Food Intakes by Individuals and 1989 Diet and Health Knowledge Survey." Accession Number: P-93-500411.
- "1990 Continuing Survey of Food Intakes by Individuals and 1990 Diet and Health Knowledge Survey." Accession Number: PB93-504843.
- "1991 Continuing Survey of Food Intakes by Individuals and 1991 Diet and Health Knowledge Survey." Accession Number: P-94-500063.

CSFII 1994-96

CSFII 1994-96 is the third in a series of continuing food intake surveys conducted since 1985. Preparations are well underway for the start of data collection in January 1994.

A pilot study was conducted April-June 1993. It produced good response rates and useful recommendations on refining the survey methods. Some highlights of the new survey include the following:

- The target population is noninstitutionalized individuals in all 50 states, rather than the 48 conterminous states. The DHKS target population is adults 20 years of age and older, rather than main meal planners/preparers in households.
- The CSFII food intake data will be collected on 2 nonconsecutive days through in-person interviews, rather than 3 consecutive days using a 1-day recall and 2-day record. The DHKS will be a paper-and-pencil telephone interview conducted by the field interviewer, rather than a computer-assisted telephone interview from a centralized facility.
- The sampling design for the CSFII will provide proportionately larger samples of young children and elderly individuals than would be found with the sampling framework used in previous HNIS surveys.
- Individuals within households will be subsampled for intake information, rather than collecting this information from all members of a household. These sampling changes will reduce respondent burden within households.
- The CSFII includes additional probes for eliciting food intake information. This development was based on cognitive testing by the Bureau of the Census.
- The DHKS includes additional questions on knowledge, attitudes, and behavior related to use of food labels and on behavior related to intakes of fat and cholesterol.
- Tighter management controls, an automated on-line food coding system, and weekly electronic data transmission from the contractor to HNIS will improve quality control and contribute to more timely data release.

Based on the new CSFII 1994-96 sampling design, the target collection of food intake data is about 16,000 individuals over the 3-year period. The CSFII intake questionnaire has incorporated other variables such as where each food item was obtained. These additions are intended to serve the needs of the users.

NFCS 1987-88

Before presenting the activities related to the household food consumption survey, an update on the 1987-88 Nationwide Food Consumption Survey (NFCS) is provided. The NFCS 1987-88 suffered from low response rates--38 percent at the household level and less at the individual intake level. Consequently, the number of data tapes and reports released has been limited.

The following data sets from both the household food use and the individual intake components of the survey are available on a tape from NTIS.

- "Nationwide Food Consumption Survey 1987-88 Household Use of Food." Accession Number: PB92-500016.
- "Nationwide Food Consumption Survey 1987-88 Individual Intake." Accession Number: PB90-504044.
- "Nationwide Food Consumption Survey 1987-88 Low-Income Household Use of Food." Accession Number: PB93-500387.

Two of four survey reports on NFCS 1987-88 have been published by HNIS, and the third is about to be released:

- Guenther, P.M., and Perloff, B.P. 1990. Effects of Procedural Differences Between 1977 and 1987 in the Nationwide Food Consumption Survey on Estimates of Food and Nutrient Intakes: Results of the USDA 1988 Bridging Study. NFCS Rep. No. 87-M-1, 48 pp.
- U.S. Department of Agriculture, Human Nutrition Information Service. Food and Nutrient Intakes by Individuals in the United States, 1 Day, 1987-88. NFCS Rep. No. 87-I-1, 250 pp.
- U.S. Department of Agriculture, Human Nutrition Information Service. Evaluation of Nonresponse in the Nationwide Food Consumption Survey 1987-88. NFCS Rep. No. 87-M-2.
- U.S. Department of Agriculture, Human Nutrition Information Service. Food Consumption and Dietary Levels of Households in the United States, 1987-88. NFCS Rep. No. 87-H-1.

In addition, ERS and HNIS have collaborated on two reports using NFCS 1987-88 household component data from the basic sample and from the low-income sample. A detailed description of the survey and tables containing information on quantity, money value, and percentage of households using food items in a week are presented by household size, household type, income quintile, race, region, and urbanization. Presented also are comparisons of trends for selected commodity groups between NFCS 1977-78 and NFCS 1987-88 data, between the 1980 and 1988 Continuing Consumer Expenditure Surveys, and between 1977-78 and 1987-88 using disappearance data. These reports should be useful to S-216 members. When the ERS/HNIS low-income report becomes available next month, it will be mailed to all S-216 members. Additional copies are available upon request from Steve Lutz at ERS or from Mary Hama at HNIS.

HFCS Plans

The USDA Household Food Consumption Survey (HFCS) will collect information on food used by households from the home food supply over a 7-day period. The HFCS replaces the household component of the NFCS. Food usage is reported in the form in which foods entered the household and by source (purchased, home produced, or received as gift or in payment for work). The HFCS is the only national survey that provides information on the quantity, money value, and nutrient values of food used by households.

The HFCS provides a major link in the development of the USDA Food Plans (thrifty, low-cost, moderate-cost, and liberal) because three key variables (quantity, money value, and nutrient values) and the number of meals eaten from the home food supply are required in revising the Plans. The Thrifty Food Plan is mandated by law as the source of information used in determining Food Stamp allotments.

What preparations are underway for the next HFCS? During the fall of 1992 planning for the next household food consumption survey began. The Census Bureau was brought in at that time.

Representatives of 12 Federal agencies met in September, 1992 to provide input into our plans for the next HFCS. HNIS presented preliminary plans and requested recommendations on the types of questions to be included in the household characteristics section of the questionnaire.

The Demographic Surveys Division (DSD) of the Census Bureau has assisted in drafting this section of the questionnaires, incorporating comments received from other agencies where possible. The DSD has also assisted in other development efforts.

In addition, work with the Census Bureau’s Center for Survey Methods Research (CSMR) should help improve collection of the food consumption information. The objectives of this cognitive research are to re-examine the household food use methodology to determine ways to reduce the length of the interview without sacrificing data quality and to review alternatives, including reducing the number of food subgroups.

This collaborative research has focused on the food list recall

methodology, Section II of the NFCS 1987-88 questionnaire. This section consisted of the food list and a food grid. The objectives of the first phase of the research was to improve the reporting of individual items on the food list. The study concentrated on how lay individuals understood the terms and foods used on the food list's structure. A list of ambiguous terms and hard-to-classify food items was developed by HNIS and CSMR. CSMR developed an interview protocol to obtain information from respondents about the meaning of these terms and foods. This phase of research has been completed.

Recently, the HFCS has been postponed beyond 1997, which allows additional time for planning. CSMR has focused its research efforts on examining alternative data collection methods for the household food consumption survey--i.e., alternatives to the present aided list-recall method. This phase of the research will begin this fall.

S-216 Inputs

S-216 researchers and other users of the household food consumption data have been asked to provide for input into the next household food consumption survey. In this period of budgetary constraints, HNIS wants to know the benefits and uses of the HFCS data and how to collect the needed information in the most efficient manner. Specifically, HNIS asks the following.

- What do you believe to be the greatest value of the household food consumption survey? What do you believe to be of least value?
- For what programs, analyses, or other purposes do you use the survey data? Can these uses be satisfied by data collected in other surveys?
- What suggestions do you have regarding the survey--sample design, target population; types of data collected, terminology used; and questionnaire content (questions to revise, add, or delete and the reasons)?
- What recommendations do you have to reduce respondent and interviewer burden?
- What suggestions can be made to improve survey and processing operations for improvement of data quality or quicker release of the data?
- Do you know of other possible uses for HFCS data?
- What specific topic areas and variables should HNIS address in the household food consumption survey?

- What effect would discontinuing the HFCS have on your research or that of fellow researchers?

The continued planning, improvement, and administration of the HFCS will allow for more effective food program policy initiatives, nutrition education efforts for high-risk groups, and the greater availability of timely data to a variety of users.

HNIS welcomes suggestions. It is extremely important that your needs be known. Send suggestions and recommendations to--

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