

Update of HNIS Survey Activities

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

USDA has been in the food consumption survey business for 55 years dating back to 1936 when the first survey measuring household food use was conducted. We began the individual food intake component of the survey in 1965. In 1985, we initiated continuous data collection with the Continuing Survey of Food Intakes by Individuals which includes only the collection of individuals intake information. In 1989, we introduced a new survey called the Diet and Health Knowledge Survey. It is being conducted as a telephone follow-up to selected respondents in the Continuing Survey. Today, survey work at HNIS is concentrating on surveys conducted from 1987 and on.

In the 1987-88 Nationwide Food Consumption Survey (NFCS), there is a large amount of data to process and analyze. Interviewers ask for information on the types, amounts, and costs of all foods used by the households during the previous 7 days. Then, the interviewer completes a 1-day recall of food intakes for each household member and instructs the respondents to complete a 2-day dietary record to be picked up by the interviewer 2-4 days later. In the 24-hour recall and 2-day record, we ask for information on the type of and amount of each food eaten, time and name of the eating occasion, and whether it was from home food supplies or obtained and eaten away from home. This information, on top of information collected on the individual's diet and health and sociodemographic characteristics such as education and income, is obviously a great deal of information to collect, and many people in 1987-88 were unwilling to provide it.

The household level response rate for the 1987-88 NFCS was 38 percent and the 1-day individual response rate was 31 percent, much lower than in previous surveys, and much lower than we are comfortable with. We believe one of the main reasons for the low response rate is due to the increased value and protection each of us places on our time. There is an increased proportion of women in the work force and therefore less likely to be home or to be willing to devote time to a long interview, increased number of surveys by many types of organizations, and greater concern about letting strangers into your home. We have little doubt, however, that there was a problem with the heavy respondent burden of the survey. The average length of the interview was 2.7 hours, and many people refused to participate after being informed of the 2 requirements of the survey. One -- although not the only -- cause of this burden was conducting the household and individual components of the survey together.

Because of the urgent need for the NFCS data, the individual intake data was released on data tape last October before the impact of nonresponse was fully investigated. The tape included a warning notice describing the nonresponse rate and the potential for nonresponse bias.

Since last fall, we have conducted a series of studies on comparing the NFCS sample characteristics and data with other surveys including the March 1987 Current Population Survey (CPS), the 1987 National Health Interview Survey conducted by the National Center for Health Statistics, and comparisons with our previous surveys -- the 1977-78 Nationwide Food Consumption Survey and the Continuing Surveys. We also contracted for an independent expert panel to assess causes and implications of nonresponse.

The first study conducted was the comparison of the unweighted NFCS sample with estimates of the

distribution of sociodemographic characteristics derived from the March 1987 Current Population Survey that are related to dietary intake. For most of them, the NFCS sample represented the population fairly well. One area of difference was that the NFCS included fewer female heads of households who were employed. Other small differences were that the NFCS sample has a slightly higher proportion of households with lower incomes and fewer 15- to 24-year-olds. When our weighting factors, developed by Wayne Fuller, Ph.D. at Iowa State University, are used with the sample data, they yield estimates that match the CPS estimates for these characteristics. The weighting scheme also corrects for deviations from the survey design related to uneven spacing of interviews over the calendar months of the year and over the 7 days of the week. This is expected to reduce the magnitude of nonresponse bias in the estimates; however, the use of so many control factors has the potential to increase the variances of the estimates.

Second, we compared estimates from the NFCS with estimates from the 1987 National Health Interview Survey (NHIS), conducted by the National Center for Health Statistics. The 1987 NHIS, with 22,080 respondents, had a response rate of about 95 percent. Therefore, nonresponse bias is considerably less likely in that survey. Some questions on sociodemographic and health variables were asked in an identical, or very similar, manner in NFCS and NHIS, making possible some direct comparisons of these characteristics. The estimated mean levels of several characteristics were in fairly close agreement between the two surveys. These characteristics included self-reported weight and height, household income expressed as a percent of the federal poverty level; education of the household head; employment status; age; and health status.

For other characteristics, there was less agreement between the estimated mean levels from the two surveys. For example, degree of urbanization, race, ethnic origin, smoking status, and use of vitamin and mineral supplements.

We turned also to comparisons with our own previous surveys. We compared 1987-88 NFCS estimates of energy and nutrient intakes with those from the NFCS conducted 10 years earlier. We also examined estimates from the Continuing Survey of Food Intakes by Individuals (CSFII), conducted in 1985 and in 1986.

These surveys had different methodology, design, and target sample; but all four surveys included a 24-hour recall of dietary intake in April and May, and comparisons were limited to those data. While we

were looking for evidence of nonresponse bias in NFCS, it appears that what we found were differences between NFCS and the Continuing Surveys. The estimates from the two NFCS were generally more similar to each other than they were to estimates from the two CSFII; and estimates of the intake of calories and nutrients were generally lower than in the CSFII. These estimates most likely reflect the differences in respondent burden between the NFCS and the CSFII.

And finally, we contracted with the Life Sciences Research office of the Federation of American Societies of Experimental Biology to convene a 3-member independent expert panel of statisticians to review the 1987-88 NFCS survey design and execution as well as the nonresponse studies conducted by HNIS. Based upon our studies and their report, it clearly cannot be demonstrated nor can it be stated that there is or is not nonresponse bias in the NFCS. The NFCS data has serious potential for error, and error has two components -- bias and variance. We believe the potential for bias has been limited to the best of our ability with our weighting procedures. As for variance, the potential for it increased by weighting; and users can and should objectively evaluate variance for estimates of interest by using software appropriate for multi-stage survey data, such as PCCARP, SESUDAAN, and OSIRIS, to calculate statistics such as standard errors and coefficients of variation. We are not stating that the data cannot be used. However, we are recommending that users of these data carefully balance their need and the tolerance for error in their specific application against the potential for nonresponse bias in the 1987-88 NFCS dataset. Whenever possible, confirmatory data from other sources should be sought to support results based on analysis of these data.

A report of the nonresponse investigations is in preparation. It will include the report of the Expert Panel. Also, with all data released on the NFCS, a three-page statement on nonresponse issues including response rate, weighting factors and cautions regarding increased variance and nonresponse bias is being included.

Reporting plans for the NFCS data have been limited because of the nonresponse. Data tapes of the individual component were released last October and the household component should be available by this fall. A methodology report on the 1988 Bridging Study, was published. Two statistical data reports will be published -- one on food consumption and dietary levels of households and one on food and nutrient intakes by individuals.

The Continuing Survey of Food Intakes by Individuals was initiated in 1985 to provide continuous

monitoring of the dietary status of the Population. The survey was conducted again in 1986, but discontinued during 1987 and 1988 while the NFCS was in process. In 1989, the Continuing Survey began again and we are now in the third year of data collection.

The sample is smaller than that for the NFCS. For each year, the total sample is 2,250 households including both all income and low income households. By combining the data for several years, however, we will be able to provide information for a much larger sample. The dietary intake methodology for the current Continuing Survey is a 1-day recall followed by a 2-day record.

The response rates for the Continuing Survey are better than for the NFCS, but they are still not what we would like. The overall 1-day response rate for the 1989 survey was 57 percent for the basic survey and 63 percent for the low income survey. The agency is taking steps to try to improve these rates and to lower the respondent burden.

How accurate are people's perceptions about their diets? This is one question we hope to be able to answer with our Diet and Health Knowledge Survey. The DHKS is a telephone follow-up to the CSFII. About six weeks after participating in the CSFII, the person in the household identified as the main meal-planner/preparer was recontacted by telephone and asked a series of about 36 questions.

Conceptually, the DHKS probes issues relating to the Dietary Guidelines for Americans. Survey questions are generally of five types: Attitudes about one's own diet; knowledge about foods; food preparation practices followed; food shopping practices including use of labels; and food safety concerns. Next year, a report will be issued on nutrition attitudes and dietary status covering information from both the CSFII and DHKS. The report will show relationships between knowledge and attitude parameters, health-related behaviors, and the dietary status of the main meal-planner/preparer.

Where do we go from here? Commitment of the Department of Agriculture to nutrition monitoring and food consumption surveys is strong as evidenced by our increasing number and types of surveys particularly during the 1980's. Because of the low response rates in the NFCS and in light of the passage of nutrition monitoring legislation last year, the Human Nutrition Information Service believes that now is the time to begin an in-depth review of the Agency's survey activities. To take a step back and plan for the 1990's and into the next century to continue improving and enhancing food consumption surveys conducted by USDA.

To begin, two interagency agreements have been signed with the U. S. Bureau of the Census. Staff of the Census Bureau have been meeting with HNIS staff on a regular basis to get acquainted with the survey methodology and survey operations. The agreement covers numerous areas including:

- o Assisting us in planning future surveys including the ongoing CSFII and the next NFCS;
- o Providing an in-depth review of the survey questionnaire including suggestions for reducing respondent burden and cognitive testing of questions to be sure they measure what we think they measure;
- o Suggesting ways to improve survey management and build in better quality controls;
- o Providing on-going support during data collection and processing and suggesting ways to improve efficiency;
- o Reviewing reasons for nonresponse and making suggestions for needed changes; and
- o Conducting or advising on research to improve dietary intake methodologies. Some of this research will be directed to issues such as use of proxy respondents and the number and spacing of interviews to best measure dietary intake.

A second area of change is our new Survey Data Management System. This system has two purposes: (1) to provide an efficient state-of-the-art system for future HNIS contractors to use for coding dietary recall and food intake records, and (2) to provide automated procedures for efficient maintenance of the food code system and to monitor and measure quality of a contractor's performance. The centerpiece of this system is the Food Intake Analysis System, an interactive, user-friendly nutritional analysis software package, developed jointly by HNIS and the University of Texas School of Public Health.

A third area of focus is on contract management. We have in place a full-time contract manager and are providing staff with additional training in contract management. In addition, we are making weekly trips to the contractor's central offices to monitor survey operations.

In addition to the survey activities, HNIS, being the lead agency in USDA for nutrition monitoring, is busy implementing the requirements of the National Nutrition Monitoring and Related Research Act signed into law last October. We are working jointly with our colleagues in the Department of Health and Human Services in this effort. We are to establish an Interagency Board for Nutrition Monitoring. The Board has been

established as of March 1991 by incorporating the functions and members of the Interagency Committee on Nutrition Monitoring. This Board is co-chaired by the USDA Assistant Secretary for Food and Consumer Services, Catherine Bertini, and the DHHS Assistant Secretary for Health, Dr. James Mason.

This Board is to assist in implementing the coordinated nutrition monitoring program. We are to establish a 9-member Nutrition Monitoring Advisory Council made up of experts in nutrition monitoring from outside the Federal government with 5 members appointed by the President and 4 by Congress. The Advisory council was established by Presidential Executive Order on January 25, 1991. Recommendations for the President's 5 appointments have been jointly made by USDA and DHHS and sent to the White House. There are also a number of reporting requirements including an annual interagency budget on nutrition monitoring to be reported to Congress.

The last requirement of the law I want to discuss is the development of a 10-Year Comprehensive Plan for National Nutrition Monitoring. The draft plan is to cover 10 years and address how the Federal government is to implement a comprehensive and coordinated program in nutrition monitoring. A draft of the plan is to be published in the Federal Register for public comment in late October 1991. There will be a 90-day comment period with a final plan to be published in the spring of 1992. We are working to solicit input from users of the monitoring data. Many sessions are planned at professional meetings to solicit input and recommendations. Major sessions are planned at the American Dietetic Association's and the American Public Health Association's annual meetings this fall. Your input as users of the data and information from the monitoring system is critical to development of an effective plan and program. Please let us hear from you.

In closing, let me leave you with an invitation to the HNIS Resources Conference on Nutrition Monitoring that we are holding in cooperation with the University of Texas School of Public Health November 7-8, 1991 in Bethesda, Maryland. The conference will describe nutrition monitoring activities of HNIS including our food consumption surveys, the nutrient data bank and other programs. Registration is free but limited due to meeting room space. A special feature is that all attendees will receive a data set of the 1989 Diet and Health Knowledge Survey on diskette. We hope you will join us in November 1991.