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Report to the Ranking Minority Member, Committee on Science, House of Representatives

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NUTRITION MONITORING

Data Serve Many Purposes; Users Recommend Improvements

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GAO

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Program Evaluation and
Methodology Division

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The Honorable George E. Brown, Jr.
Ranking Minority Member
Committee on Science
House of Representatives

Dear Mr. Brown:

The National Nutrition Monitoring and Related Research Program (NNMRRP) is a network of surveys, surveillance systems, and research activities designed to serve multiple purposes. It provides researchers and decisionmakers with data for assessing the safety of the nation's food supply, targeting food assistance to low-income families, and studying the relationship between diet and disease, among other uses. However, past evaluations of federal nutrition monitoring have criticized it on several counts, including the lack of coordination among the various activities and its poor coverage of populations at risk of nutritional problems. Through the National Nutrition Monitoring and Related Research Act of 1990 (P.L. 101-445), the Congress established objectives for addressing these problems.

This report is the second in a series of three responding to your request for information on the NNMRRP. In our first report, published last year, we detailed the activities that make up the NNMRRP, the history of concerns about the data collection systems, and agency progress toward meeting the objectives of the NNMRR Act.[1] In this report, we summarize the results of our survey of users of nutrition monitoring data. Specifically, the objectives of this report are to (1) describe users and major uses of nutrition monitoring data and (2) summarize the satisfaction of users with selected nutrition monitoring activities and the changes that users identified as likely to increase their use of or confidence in the data. The survey results presented here serve as a foundation for our follow-up report on the features of a model nutrition monitoring program.[2]

Results in Brief

The data users who responded to our survey were located in a variety of settings, including governmental, academic, and business. These users reported that they provide analyses to the general public as well as to

[1]Nutrition Monitoring: Progress in Developing a Coordinated Program (GAO/PEMD-94-23; May 27, 1994).

[2]See GAO/PEMD-95-19, forthcoming.

decisionmakers in their organizational settings and to other audiences. They also reported using nutrition monitoring data for an extensive range of purposes, from identifying nutrition-related problems and designing programs to address the problems to informing basic research.

Although most of the data users who responded to our survey were satisfied with the degree to which the data meet their information and data quality needs, a majority also suggested changes that would increase their use of or confidence in the data. Their recommendations include the need for improved dietary intake methods, more continuous data collection, better coverage of subpopulations and small geographic areas, improved timeliness and documentation of the data, and increased dissemination of the data in formats that facilitate access and analysis.

Background

The U.S. nutrition monitoring system has included more than 70 separate data collection activities conducted by several different federal agencies. Major components of the system include the national health and nutrition surveys administered by the National Center for Health Statistics (NCHS) within the Centers for Disease Control and Prevention (CDC), the state-based surveillance systems managed by the National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP), and national surveys operated by the Agricultural Research Service (ARS). Table 1 lists the data collection activities addressed in our survey.

Although the system has been praised for being comprehensive, it has also been criticized for the redundancy of some of the monitoring activities, the prolonged data collection and delays in data release, the poor coverage of subpopulations, and the lack of compatibility in data assessment and sampling methods across different surveys.[3] In response to these concerns, the National Nutrition Monitoring and Related Research Act of 1990 required the Secretaries of the Departments of Agriculture (USDA) and Health and Human Services (HHS) to implement a coordinated program of nutrition monitoring and established an Interagency Board to facilitate the process. The Board developed preliminary plans for meeting the goals of the legislation and published them in a 10-year comprehensive plan in June 1993.[4]

[3]See GAO/PEMD-94-23 for a discussion of these concerns and the NNMRRP activities intended to address them.

[4]Ten-Year Comprehensive Plan for the National Nutrition Monitoring and Related Research Program, 58 Fed. Reg. 111 (June 11, 1993), pp. 32752-806.

Table 1: Data Collection Systems in Our Survey[a]

Agency	Data collection system	Time period covered	Short name
HHS/PHS/CDC/ NCHS	National Health and Nutrition Examination Survey I: Epidemiological Follow-up	1982-84, 1986, 1987, 1992	NHEFS
	National Health and Nutrition Examination Survey II	1976-80	NHANES II
	National Health and Nutrition Examination Survey III	1988-94	NHANES III
	Hispanic Health and Nutrition Examination Survey	1982-84	HHANES
	National Health Interview Survey Supplement on Vitamin and Mineral Supplements	1986	NHIS-Vitamin
	National Health Interview Survey Supplement on Cancer Epidemiology and Cancer Control	1987, 1992	NHIS-Cancer
HHS/PHS/CDC/ NCCDPHP	Behavioral Risk Factor Surveillance System	Continuously since 1984	BRFSS
	Pregnancy Nutrition Surveillance System	Continuously since 1988	PNSS
	Pediatric Nutrition Surveillance System	Continuously since 1973	PedNSS
HHS/PHS/IHS	Navajo Health and Nutrition Survey	1991, 1992	Navajo HNS
HHS/PHS/FDA	Health and Diet Survey	Biannually since 1982	Health and Diet
USDA/ARS	Nationwide Food Consumption Survey	Every 10 years since 1936, 1977-78, 1987-88	NFCS
	Continuing Survey of Food Intake by Individuals	1985-86, 1989-91	CSFII
	Diet and Health Knowledge Survey	1989, 1990, 1991, 1993	DHKS

[a]For more information on the scope and design of these systems, see Directory of Federal and State Nutrition Monitoring Activities, prepared by the Interagency Board for Nutrition Monitoring and Related Research, HHS Pub. No. (PHS) 92-1255-1 (1992).

Scope and Methodology

To obtain information on the current uses of nutrition monitoring data and identify the kinds of changes that are needed to increase the utility of the data, we conducted a survey of potential users of nutrition monitoring data. The survey focused on the 14 NNMRRP data collection activities listed in table 1, selected because they are major activities or because they addressed a major concern, such as the need for data on subpopulations. These activities collect three kinds of nutrition data: nutritional and health status; food consumption and dietary intake; and dietary knowledge, attitudes, and behavior. Two other areas of nutrition monitoring—food composition and food supply and demand—were not addressed by the survey.

Because we found no comprehensive list of people who use these data, we developed a complex sampling plan to obtain lists of potential users from a variety of sources.[5] Our focus was on obtaining the views of primary data users, defined as those who have conducted analyses in the past 5 years rather than relied on information already processed and interpreted by others. We limited our focus to these users because we expected them to have a greater familiarity with the strengths and limitations of each data collection system. (The data collection and sampling design are detailed in appendix I.)

Our sample design cast a wide net with the intention of obtaining information from a variety of users. However, because we aggregated samples of different sizes from multiple lists, the survey results cannot be used to characterize the average user in general or the typical user in each of the organizational settings. Moreover, we asked users to consider their experiences with individual data systems only, rather than with the NNMRRP as a whole. Users first identified which of the 14 data collection activities they had used in the last 5 years and then focused on the two they used most frequently.

We conducted our review between December 1993 and December 1994 in accordance with generally accepted government auditing standards.

[5]Out of a total of 1,585 potential data users sampled from the lists, 1,180 (or 74.5 percent) responded; an industry group helped us find another 10 respondents. Among all respondents, 93 provided insufficient information and 123 pooled their responses with those of another respondent. Among the rest of the respondents, 344 were not users of nutrition monitoring data, 190 were secondary users (using information that had already been analyzed), and 440 were primary users.

Principal Findings

Data Are Used in a Variety of Settings for Multiple Purposes

The 440 primary users who responded to our survey worked in federal, state, and local government; academic institutions; for-profit businesses, such as food industries; and other settings, such as hospitals. These users also represented a variety of occupations. While data users in federal or academic settings were more likely to identify themselves as engaged in basic research, those in state or local settings were more likely to indicate program planning and management as their primary occupation. (As noted above, these data users who responded to our survey are not necessarily representative of users in general or of the users in each organizational setting.)

Some use of almost every data collection system was reported in each of the organizational settings. (The exception is the Navajo HNS, which was reported as used by only a small number of respondents in the federal government and "other" category.) While state and local government respondents were more likely to use the state-based surveillance systems, federal government and academic respondents were more likely to report using the national surveys. (Appendix IV presents more information on users, the data sets they use, and their organizational setting.)

Across the different settings, the nutrition monitoring data supported a variety of uses from identifying nutritional problems to planning programs to address the problems, evaluating food-and nutrition-related programs and policies, informing basic and methodological research, and supporting state and local surveillance activities. Table 2 provides specific examples of the decisions respondents stated they made based on the data. (Tables showing the percent of respondents indicating a specific purpose for which they used a data collection system are provided in appendix II.)

Table 2: Respondents' Examples of Decisions Made Based on the Data

Category	Reported use
Problem identification	Determine prevalence of high blood cholesterol in U.S. adults
	Calculate exposure estimates for regulatory issues involving food additives
	Assess damage from Exxon Valdez oil spill
Policy-making or program planning	Refocus on diabetes in minority populations by the American Diabetes Association
	Support goals and activities for improved nutrition status of population in state cancer plan
	Develop national guidelines for screening and management of iron-deficiency anemia
	Confirm need for addition of calcium to infant and toddler foods
	Decide the size of target populations for new pharmaceutical products
	Place breast-feeding coordinators in areas of greatest need
Policy or program management and evaluation	Increase funding for Healthy Heart Programs
	Modify year 2000 objectives for blood pressure to include Mexican Americans
	Document the need for use of iron-fortified infant formula and then document the success of the policy implementation
	Calculate sales tax consequences of cashing out food stamps
	Conclude that children have too much fat in their diets, but the excess is not caused by participation in child feeding programs
Research related to nutrition	Implement a clinical trial to prevent diabetes through diet modification
	Plan study of unusually high anemia levels in Alaskan Natives, which led to new cause of iron-deficiency anemia (bacterial)
	Determine which foods to include on a food-frequency questionnaire for Puerto Rican elderly
Support of monitoring activities by states and localities	Choose knowledge and attitude indicators for a state survey because reference values from national surveys are available
	Revise weighing and measuring policy to increase accuracy in clinics
	Use data in community needs assessment for counties to develop plans for services

The primary users who responded to the survey also identified the customers for their analyses. As shown in table 3, users in each organizational setting identified a range of end users of the data. In general, customers in their own organizational setting were most commonly indicated, but the general public was also frequently identified as a customer for the primary users' analyses of the nutrition data.

Table 3: End Users of Most Frequently Used Data Systems

	Organizational setting of primary data users					
End users	**Federal**	**State**	**Local**	**Academic**	**Business**	**Other[a]**
Federal government	79%	14%	0	17%	22%	18%
State government	38	81	32%	19	14	23
Local government	26	80	75	7	3	23
Universities	55	50	11	70	14	40
Hospital or health care	28	50	25	17	16	50
Researchers	68	34	14	74	38	48
For-profit business	27	10	11	14	68	20
Nonprofit, noncharitable	26	49	18	15	16	45
Charitable organization	13	24	18	8	5	18
Media	43	40	21	18	22	30
General public	50	53	43	30	30	53
Other[b]	9	10	11	7	11	8

[a]Other settings include hospitals, nonprofit organizations, and other charitable organizations.

[b]Other end users include trade associations, labor groups, tribal governments, community action agencies, medical practitioners, minority groups, regulators, university students, and so on.

Despite General Satisfaction, Users Suggest Changes

The majority of the primary users responding to our survey reported that the data collection systems meet their information and data quality needs to at least a moderate extent. However, despite this and the evidence that the data are used for a variety of purposes, a majority of respondents stated that changes are needed to increase their confidence in or substantially increase their use of the data. A somewhat higher proportion of users of USDA data systems than of HHS systems indicated a need for change. (Users' satisfaction is summarized in table IV.3.)

We asked primary users to identify what changes are needed in the systems that they use most frequently. Common themes in their comments were

- continuous or more frequent data collection;
- more detailed information on racial, ethnic, and age groups;
- data that can support estimates for small geographic areas;
- improved timeliness and documentation of the data; and
- increased dissemination of the data in general and in formats that facilitate access and analysis.

Specific comments from the users that illustrate these themes are provided in table 4. More detailed summaries are in appendix III.

Table 4: Comments Illustrating Users' Suggestions for Change

Category	Comment	Data system
Frequency of data collection	Consider sampling subsets of variables in NHANES and NFCS more frequently and conducting full survey occasionally—i.e., every 5-10 years.	NHANES
	NFCS could be done every 5 years since food availability changes so much.	NFCS
Coverage of racial, ethnic, and age groups	Include very young and old and enough minorities to make conclusions about the different groups.	NHANES
	Expand sample size to provide sufficient number of minority respondents.	BRFSS
	Need up-to-date analysis for all age groups. Had to use the different databases because one did not provide all age groups.	NFCS
Coverage of geographic areas	More specific regional coverage would be highly useful for assessing the diffusion of dietary and other health behaviors.	NHANES
	Geographic area coverage should be more specific to allow analysis and interpretation of data for individual states.	CSFII
	It would be valuable to be able to provide county-level data for use by local health departments.	BRFSS
Timeliness and documentation	Would like faster turnaround from CDC to states for annual PedNSS tables.	PedNSS
	If results could be published more frequently, it would help us see how well interventions are working.	NHANES
	Need more documentation, especially of what was done in the survey, how it was done, and how the statistical analyses were done.	CSFII
Dissemination	Data can be made more accessible and more timely using modern technology and user-friendly systems.	NHANES
	Put on CD-ROM, include software that facilitates use, establish bulletin board with updates as new data become available.	DHKS

Conclusions

The NNMRRP data systems provide an important resource, serving a wide set of purposes in a variety of settings. Moreover, the data users are mostly satisfied with the quality of the data and the degree to which their data needs are met. Despite this evidence of satisfaction with the data systems, those who responded to our survey had numerous suggestions for improving the data collection activities of the NNMRRP. These suggestions are consistent with many of the past criticisms of the nutrition monitoring system. Understanding who uses the data and for what purposes is essential to developing and implementing an effective nutrition monitoring

system. Our study begins this process and provides a useful framework of purposes for nutrition monitoring data.

Agency Comments

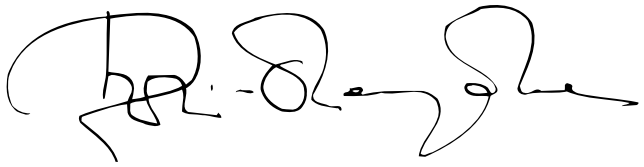
We provided the Board and responsible agencies with summary survey data so they could begin revising their data collection activities as we continued with our analyses and prepared this report. A draft of this report was then sent to USDA, HHS, and members of the National Nutrition Monitoring Advisory Council for review and comment. USDA and HHS provided written comments, which are included in appendixes VI and VII.

In general, officials from these Departments agreed with our principal findings and conclusions. USDA noted that our survey results will be useful as they plan future monitoring activities, and HHS indicated that our report provides a good overview of the user survey. HHS officials, however, thought that our report did not sufficiently describe all of the major federal uses of nutrition monitoring data, and they provided further detail about these uses. Both HHS and USDA also presented additional information about actions taken that respond to concerns raised by survey respondents regarding information and data quality needs. Technical comments made by HHS and USDA officials and the members of the Advisory Council that reviewed the report have been incorporated where appropriate.

As arranged with your office, we will be sending copies of this report to the Director of the Office of Management and Budget, the Interagency Board on Nutrition Monitoring and Related Research, the agencies

responsible for data collection, and to other interested parties. We will also make copies available to others upon request. If you have any questions or would like additional information, please call me at (202) 512-3092. Major contributors to this report are listed in appendix VIII.

Sincerely yours,



Kwai-Cheung Chan
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Abbreviations

ARS	Agricultural Research Service
BRFSS	Behavioral Rish Factor Surveillance Survey
CDC	Centers for Disease Control and Prevention
CSFII	Continuing Survey of Food Intake by Individuals
DHKS	Diet and Health Knowledge Survey
FDA	Food and Drug Administration
HHANES	Hispanic Health and Nutrition Examination Survey
HHS	Department of Health and Human Services
HNS	Health and Nutrition Survey
NCCDPHP	National Center for Chronic Disease Prevention and Health Promotion
NCHS	National Center for Health Statistics
NFCS	Nationwide Food Consumption Survey
NHANES	National Health and Nutrition Examination Survey II and III
NHEFS	National Health and and Nutrition Examination Survey I
NHIS	National Health Interview Survey
NNMRR	National Nutrition Monitoring and Related Research
NNMRRP	National Nutrition Monitoring and Related Research Program
NTIS	National Technical Information Service
PedNSS	Pediatric Nutrition Surveillance System
PHS	Public Health Service
PNSS	Pregnancy Nutrition Surveillance System
USDA	U.S. Department of Agriculture
WIC	Special Supplemental Food Program for Women, Infants, and Children

Questionnaire Design, Sampling Plan, and Analysis Decisions

Questionnaire Design

This section describes how we developed our questionnaire and provides an overview of the questionnaire content.

Selecting Data Collection Systems

Our survey queried respondents about only 14 of the approximately 70 data collection activities listed in the Directory of Federal and State Nutrition Monitoring Activities. (See table 1 on p. 3.) All 14 systems met our criteria of focusing on (1) dietary, nutritional, and health status; (2) food consumption; or (3) dietary knowledge, attitudes, and behavior. Information about the food composition databases or activities for monitoring the food supply was not gathered. This allowed us to concentrate on survey-based data collection activities.

An additional criterion was that the data collection system be an ongoing program. For example, periodic surveys like the Nationwide Food Consumption Survey were included, while one-shot evaluations of food assistance programs were excluded. We made three exceptions to this criterion. We chose the NHIS-Vitamin and Mineral Supplements and NHIS-Cancer Epidemiology and Cancer Control because of their large size (nearly 11,800 and 45,000 interviews, respectively). We also collected information on the Navajo Health and Nutrition Survey because of the need for data on subpopulation groups expressed in public comments to a draft of the 10-year comprehensive plan.

Defining Users

Most of the questions in the survey were directed only to primary users of the data from the 14 selected activities. We defined a primary data user as one who directly accesses these data. This includes those who request analyses from others as well as those who access the data systems themselves. In contrast, secondary users are those who use nutrition monitoring information that has already been processed and interpreted by others in reports, articles, publications, or other documents. We chose this definition to target the questionnaire to respondents with firsthand experience with the design and content of the data collection activities and the strengths and limitations of the data.

Structuring the Questionnaire

We sent our survey to both known and potential users. Primary users of the data could not be identified in advance, so in the first section, we screened out secondary users and nonusers of the 14 data collection systems. Then we asked the remaining respondents—the primary data

users—to identify the data collection system they used most frequently and the next most frequently in the past 5 years.

A major portion of the survey was dedicated to determining how the respondents used the data. Through literature reviews and a series of expert panel meetings, we developed an inventory of the uses of federal nutrition monitoring data. As shown in appendix II, specific uses were categorized in five main areas: (1) problem identification, (2) policy-making and program planning, (3) policy and program evaluation and management, (4) research related to nutrition, and (5) support of state and local nutrition monitoring activities. Respondents also had the opportunity to record up to five additional purposes for which they used the data. To ascertain the validity of the uses they identified, we asked them to list at least one report, article, or other document produced with the data.

We also obtained information on the extent to which the data collection systems met the respondent's information and data quality needs. We asked whether changes are needed to better meet their needs for the data. Of those indicating a need for changes, we asked for their suggestions on improving the (1) data elements collected, (2) data collection methods, (3) units of analysis, (4) time of data collection, (5) population group coverage, (6) geographic area coverage, and (7) ease of use.

Sampling Plan

This section details the sampling approach and provides information on the sources from which we obtained names of people to survey.

Overview

We had no way of identifying all the users of the federal nutrition monitoring data, so we chose a nonrandom sampling approach to maximize the heterogeneity of the individuals surveyed. From a variety of sources, we obtained lists of known and potential users of the data and also of contacts in organizations likely to contain data users.

We mailed out a total of 1,614 surveys. Addresses were incorrect for 29, so the sample size was reduced to 1,585. We received 1,180 responses, or 74.5 percent. An additional 10 responses came from a confidential industry mailing list, increasing our total responses to 1,190. Of those, 344 were nonusers, 190 were secondary users, and 440 were primary users. In addition, 123 indicated that their responses were included in with other respondents, and 93 did not provide useful information because they were

ill, retired, or failed to complete the questionnaire. Primary users tended to respond early, and nonusers tended to respond only after one or two follow-ups.

Identifying Users and Potential Users

We selected users both as individuals likely to use nutrition monitoring data and as members of organizations likely to contain one or more data users. We asked the former to answer only for their own uses and the latter to direct the survey to the most appropriate user within their organization, who would also answer only for his or her own use. We did not distinguish between individual and organizational respondents in our analyses.

Individuals

We identified actual and potential individual users of the 14 nutrition monitoring activities from a variety of sources, including lists maintained by federal agencies of people who had requested data, referrals of likely users from the Interagency Board and other federal contacts, lists of people attending workshops and conferences, and professional association membership lists. Tables I.1-I.3 identify the sources of our lists and the number of people surveyed.

Table I.1 provides the number individuals we surveyed, by data collection activity, who requested data from the National Technical Information Service (NTIS) or directly from the federal agencies administering any of the 14 systems. The two largest groups were the NHANES III and Cancer Risk Survey data requesters.

Table I.1: Data Requesters Included in Our Sample

Source agency	Data system	Number surveyed
USDA/HNIS	CSFII 1989	7
	CSFII 1990	1
	NFCS 1987-88	7
	NFCS (household)	5
	NFCS (low income)	9
	NFCS (household and individual intakes)	6
HHS/NCHS	NHANES I	16
	NHANES II	24
	NHANES III	58
	NHANES I Epidemiological Follow-up	13
	NHANES I Follow-up Group Members	12
	Hispanic HANES	7
	NHANES (unspecified)	9
	Cancer Risk Survey	42
	Vitamin and Mineral Survey	5
HHS/FDA	Health and Diet Survey	6
NTIS	CSFII	10
	Nutrient Data Base	8
	NHANES I	2
	NHANES II	9
	NHANES I Epidemiological Follow-up	7
	NHIS	10
	NFCS 1977-78	6
	NFCS 1987-88	10

To ensure that we had full coverage of federal government users, we asked the Interagency Board for the names of directors of agency divisions mentioned in the 10-year comprehensive plan. Through other referrals, we added the names of 26 potential users within those agencies. From lists of attendees at three federally-sponsored, nutrition-related workshops, we identified another set of known or likely users that we surveyed. Members of associations for nutrition professionals were another source of potential users we surveyed. Finally, we obtained lists of local government officials working in nutrition. (Table I.2 provides the source and application of these additional potential users that we surveyed.)

Table I.2: Additional Sources of Nutrition Data Users

Source	Affiliation	Number surveyed
Likely federal users	Division directors (list provided by the Interagency Board)	23
	Potential federal users identified through referrals	26
Nutrition-related workshop attendees	Dietary Consensus Conference	58
	Food Insecurity Conference	61
	USDA Household User Group	14
Association members	American Dietetic Association[a]	203
	American Institute of Nutrition[b]	268
	Society for Nutrition Education[c]	107
Lists of local government officials	CityMatCH members (Urban Maternal and Child Health directors)	144
	National Association of County Health Officials[d]	27

[a]From more than 65,000 members, we identified a subgroup of 2,030 employed in education and research, and then we drew a 1-in-10 sample.

[b]From nearly 3,000 members, we drew a 1-in-10 sample.

[c]We drew a 1-in-3 sample of members working in higher education, industry, public health, and county extension education.

[d]From their National Directory of Local Health Departments, we chose the directors from 30 counties containing 1 million or more inhabitants, or 23.6 percent of the 1990 U.S. population (according to the Census Bureau).

Organizations

To capture any state and local officials we may have missed, we targeted organizations that were likely to have at least one or more state and local nutrition monitoring data users. We asked organizations to direct the survey to the most appropriate or experienced officials, who would respond only for their own use of the data, not for the organization as a whole. (See table I.3.)

To cover the fragmented groups in nutrition research and policy analysis, we built in some redundancy within the sampling plan. Respondents who received more than one survey, however, were counted only once in our analyses.

Table I.3: Additional State and Local Nutrition Data Users

Affiliation	Respondents	Number surveyed
Association of State and Territorial Public Health Officials	Child health and nutrition officials	45
	Chronic disease officials	42
	Health education officials	53
Maternal and Child Health Association	Maternal and child health directors	52
Center on Budget and Policy Priorities	WIC directors	44
State Government Yellow Book	Health department directors	52
Surveillance system contacts	BRFSS	47
	PedNSS	39
	PNSS	18

Limitations of the Sampling Plan

While our approach allowed us to cast a wide net and contact as many data users as possible, it also has some limitations. The major one is our inability to determine the degree to which the survey respondents are representative of primary data users in general. With a nonprobability sample, we cannot generalize beyond our respondents to the universe of all users of the 14 data collection activities the questionnaire addresses. In addition, we cannot make any inferences about the extent of use across groups. Our ability to identify primary users within groups varied, so differences in reported use may be a function of our sample design rather than of actual differences in use. For example, we were able to target federal users of the data more closely than users in other sectors, but it would be inappropriate to compare the extent of their use to that by other groups of respondents.

A further limitation of our survey design is that we asked respondents to comment on individual data collection activities (such as DHKS) and not on the specific survey components within each activity (such as the 1989, 1990, 1991, or 1992 DHKS). Some users who are familiar with only a specific survey component and not all the survey components may have made suggestions to us for changes that have already been addressed by the agencies in later versions of the data collection activity.

Analysis Decisions

Construction of Analysis Groups

Our six groups of primary users—federal, state, local, academic, business (for-profit), and other—were constructed according to respondents' self-reports. Healthcare (hospital, nursing home) was the dominant group within the "other" category, which also included nonprofit businesses and charitable organizations. Overall, the groups were diverse, and no single subgroup dominated any group.

The federal group in our sample consisted of at least 23 different agencies. Those with the largest number of respondents were the National Center for Health Statistics (17) and the Human Nutrition Information Service (11). They are responsible for the main data systems, and they provided an insider's view to the strengths and weaknesses of these systems. The state group included 45 states that responded and the District of Columbia and Guam. The largest number of respondents from one state was eight, or 6 percent, so no one state had a large influence on the whole group. The local group had one user each from 28 different counties.

The academic group came from 67 different cities, and some cities, such as Boston and Chicago, were represented by more than one school. The largest number of respondents from one school was five, or 5 percent. Five of the 37 in the business group did not give their addresses; the others came from 26 different cities, and the largest number from one city was three. The 40 respondents in the "other" group came from 33 cities, and the largest number from one city was three.

Uses of Nutrition Monitoring Data

The data collected by the nutrition monitoring systems are not only used across a variety of organizational settings, but they also support a range of uses. With the assistance of our expert consultants, we developed an inventory of the purposes that federal nutrition monitoring data serve. Specific purposes were categorized in five overarching areas: (1) problem identification, (2) policy-making and program planning, (3) policy and program evaluation and management, (4) research related to nutrition, and (5) support of state and local nutrition monitoring activities.

For the two data collection activities used most frequently (see table II.1), respondents to our survey were asked to indicate the purposes the data had served. The data users were also asked to write in specific decisions that the data had supported. Although our respondents presented a variety of purposes and decisions, one noted that the data were not timely enough, or sufficiently on target, to truly inform decisions. We classified the written comments into the five major categories of purposes.

Table II.1: Two Most Frequently Used Data Collection Activities

	Frequency of use					
	Most		Second most		Total	
Data collection activity	Number	Percent	Number	Percent	Number	Percent
NHEFS	34	8	20	6	54	12
NHANES II	46	10	55	16	101	23
NHANES III	54	12	36	11	90	20
HHANES	11	2	17	5	28	6
NIHS-Vitamin	2	1	1	0	3	1
NHIS-Cancer	9	2	4	1	13	3
BRFSS	64	15	21	6	85	19
PNSS	29	7	44	13	73	17
PedNSS	68	15	28	8	96	22
Health and Diet	8	2	5	1	13	3
NFCS	69	16	41	12	110	25
CSFII	43	10	46	14	89	20
DHKS	3	1	20	6	23	5
Total	**440**	**101[a]**	**338[b]**	**99[a]**	**440[c]**	

[a]Because of rounding, total percentages do not add up to 100.

[b]Some respondents had used only one data system; thus, the number of the second most frequently used system was less than 440.

[c]Total sample; not column total.

Problem Identification

The expert panels distinguished seven kinds of problems that the data might be used to identify. (See table II.2.) As shown in the table, problem identification was a commonly indicated purpose supported by the data. However, there is some variation in the kinds of problems examined by the different data sets. For example, NHANES data—with its emphasis on health—is used to examine chronic degenerative diseases, as well as deviations in nutritional status.

Table II.2: Respondents' Indication of Use of Data for Problem Identification

	Purpose[a]						
Data collection activity	**1**	**2**	**3**	**4**	**5**	**6**	**7**
NHEFS	70%	48%	6%	52%	6%	4%	14%
NHANES II	49	45	11	55	9	2	10
NHANES III	55	47	21	57	6	5	14
HHANES	65	42	4	54	4	0	8
NHIS-Cancer	31	39	0	39	8	0	8
BRFSS	55	41	1	74	1	0	13
PNSS	14	86	15	80	0	1	6
PedNSS	17	88	16	80	0	1	5
Health and Diet	39	39	8	62	8	23	15
NFCS	29	44	22	56	18	11	43
CSFII	30	44	23	61	21	14	42
DHKS	36	27	23	77	32	23	27
Median percent	38	44	13	59	7	3	14

[a]For each of the two nutrition monitoring data collection activities that they used most frequently, respondents were asked to indicate if they had used the data to identify or estimate the risk, incidence, prevalence, duration, or cost of any of the following problems:

1. Chronic degenerative diseases and their relationship to diet and nutritional status;

2. Nutritional deficiency diseases and health-related issues;

3. Hunger and food insecurity, including its relationship to diet and its periodicity;

4. Deviations in nutritional status (e.g., obesity) and diet quality across the life-cycle and across population groups;

5. Food safety problems over which consumers have little control (e.g., contaminants);

6. Food safety problems over which consumers have some control (e.g., microbiological problems resulting from food preparation, handling, or consumption activities); and

7. Other food quality problems (availability, accessibility, and composition).

Policy-making or Program Planning

Within the overarching objective of policy-making or program planning, the expert panel identified seven purposes. (See table II.3). As shown in the table, most of the program purposes reported were fairly common uses of nutrition monitoring data sets. One exception was "to compare cost-effectiveness" of different kinds of policy or program interventions, which is not surprising since the nutrition data do not provide this information. Many of the uses that respondents wrote in response to the request for four specific decisions informed by the data appeared to fit under policy-making or program planning.

Table II.3: Respondents' Indication of Use of Data for Policy-making or Program Planning

	Purpose[a]						
Data collection activity	**1**	**2**	**3**	**4**	**5**	**6**	**7**
NHEFS	51%	30%	42%	20%	2%	19%	42%
NHANES II	58	36	44	28	4	23	43
NHANES III	64	52	55	31	8	27	61
HHANES	58	46	46	36	4	27	54
NHIS-Cancer	46	31	31	31	0	15	77
BRFSS	72	58	47	53	4	46	78
PNSS	85	70	65	85	7	60	89
PedNSS	86	69	66	80	11	60	89
Health and Diet	77	54	54	46	8	39	54
NFCS	66	44	52	38	8	22	48
CSFII	76	51	57	40	6	23	51
DHKS	74	48	73	52	0	23	57
Median percent	69	50	53	39	5	25	56

[a]For each of the two nutrition monitoring data collection activities that they used most frequently, respondents were asked to write in four specific decisions informed by the data, many of which fit within the following purposes:

1. Define and quantify the extent and distribution of a food- or nutrition-related problem or the risk of the problem;

2. Assess the importance of a problem or risk of the problem relative to other problems;

3. Identify determinants of a food- or nutrition-related problem or risk of the problem;

4. Identify policy and programmatic responses to the problem or risk of the problem;

5. Compare cost-effectiveness of responses;

6. Justify the selection of a response (prevention, intervention to mitigate, or intervention to deal with the consequences); and

7. Serve as a basis for targeting prevention or intervention resources or both.

Program Evaluation and Management

The inventory of purposes served by nutrition monitoring data included nine program evaluation and management purposes. (See table II.4.) As shown in the table, two of the more commonly indicated purposes in this area were measuring changes in deficiency diseases and assessing achievement of specific dietary objectives. For example, several of the uses described by the survey respondents focused on monitoring or modifying Healthy People 2000 objectives. In contrast, measuring changes in food safety problems was one of the least common purposes indicated in the survey.

Table II.4: Respondents' Indication of Use of Data for Program Evaluation or Management

	Purpose[a]								
Data collection activity	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
NHEFS	47%	8%	31%	35%	8%	33%	12%	15%	8%
NHANES II	37	8	23	43	7	46	14	22	13
NHANES III	46	13	33	42	7	50	13	28	18
HHANES	39	8	23	27	0	31	8	23	12
NHIS-Cancer	25	8	8	33	0	42	17	33	8
BRFSS	44	1	26	46	4	77	1	41	38
PNSS	16	7	63	66	1	78	3	40	64
PedNSS	20	7	75	73	0	79	3	30	63
Health and Diet	33	0	46	39	8	77	25	69	46
NFCS	19	17	20	50	13	51	28	42	27
CSFII	19	17	19	55	13	57	26	48	25
DHKS	36	18	14	46	10	57	23	57	30
Median percent	35	8	24	45	7	54	14	37	26

[a]For each of the two nutrition monitoring data collection activities that they used most frequently, respondents were asked if they had used the data for the following:

1. Measure changes in chronic degenerative diseases, their relationship to diet and nutritional status, and the risk of such diseases;

2. Measure changes in hunger and food insecurity;

3. Measure changes in deficiency diseases and health-related issues;

4. Measure changes in deviation in nutritional status and diet quality;

5. Measure changes in food safety problems;

6. Measure achievement of specific dietary objectives;

7. Evaluate food supply and nutrient supplements and fortificants;

8. Measure changes in food- and nutrition-related behaviors and their precursors and determinants; and

9. Assess targeting and coverage of food- and nutrition-related programs.

Research Related to Nutrition

The expert panelists included seven research purposes for nutrition monitoring data in the inventory. (See table II.5.) Across the different data sets, respondents commonly indicated that the data were used to increase basic research knowledge of the determinants of problems and options for intervention.

Table II.5: Respondents' Indication of Use of Data for Research

	Purpose[a]						
Data collection activity	**1**	**2**	**3**	**4**	**5**	**6**	**7**
NHEFS	27%	14%	54%	44%	35%	19%	10%
NHANES II	29	26	50	48	33	22	9
NHANES III	40	31	53	45	36	21	7
HHANES	54	44	62	50	42	39	8
NHIS-Cancer	39	23	54	23	23	8	0
BRFSS	33	44	40	33	18	8	5
PNSS	41	62	52	40	33	13	3
PedNSS	35	51	44	35	32	13	4
Health and Diet	15	15	39	39	23	8	0
NFCS	28	23	43	44	27	36	23
CSFII	26	30	51	49	40	41	22
DHKS	27	18	64	68	36	46	19
Median percent	31	28	52	44	33	20	8

[a]For each of the two nutrition monitoring data collection activities that they used most frequently, respondents were asked to indicate if they had used the data for the following:

1. Improve sampling and statistical methods for gathering data from people at different life-cycle stages or for minority or other subpopulations, especially those at risk of food- or nutrition-related problems;

2. Improve methods for informing decisionmakers so analysis results are timely, pertinent, and understandable;

3. Increase basic research knowledge of the determinants of problems and options for intervention;

4. Increase basic research knowledge of the relationships between food, nutrition, and health;

5. Identify and stimulate needed research and development on monitoring methods;

6. Conduct other kinds of basic research (e.g., on the distribution of human nutrient requirements, databases on food cost and food preparation, individual variability); and

7. Conduct food composition research and improve food composition databases.

A few data users conduct food composition research; however, the food composition databases were not included as a focus of the survey. Specific research uses supported by the data included identifying foods for food-frequency questionnaires, establishing cut-points for defining research subjects, and developing survey instruments.

Support of Monitoring Activities by States and Localities

Under the general goal of supporting the monitoring activities of states and localities, the expert panelists identified two specific purposes for the nutrition monitoring data: supporting state and local surveillance activities and supporting technical assistance. At least some portion of the users of each of the data collection activities identified one of these purposes as a way in which they use the data. (See table II.6.) Of the two, the latter was more commonly indicated. This pattern also appears in the respondents' comments, many of which focus on identifying the need for technical assistance and improving the quality of data collection. (See appendix III.)

Table II.6: Respondents' Indication of Use of Data for Activities by States and Localities

	Purpose[a]	
Data collection activity	**1**	**2**
NHEFS	10%	10%
NHANES II	5	13
NHANES III	12	26
HHANES	8	19
NHIS-Cancer	8	15
BRFSS	12	54
PNSS	22	63
PedNSS	19	62
Health and Diet	15	15
NFCS	11	16
CSFII	8	16
DHKS	14	23
Median percent	12	18

[a]For each of the two nutrition monitoring data collection activities that they used most frequently, respondents were asked to indicate if they had used the data for the following:

1. Support state and local surveillance of and responses to food- and nutrition-related crises; and

2. Support development and provision to states and localities of technical assistance in data collection, analysis, and interpretation.

Summaries of the Suggestions Made by Users

Systems Under NCCDPHP

The National Center for Chronic Disease Prevention and Health Promotion administers three surveillance systems that collect information on health and nutritional status: the Pediatric Nutrition Surveillance System, the Pregnancy Nutrition Surveillance System, and the Behavioral Risk Factor Surveillance System. The three systems are overseen by the National Center, but are actually implemented by the states that participate in the surveillance programs. Table III.1 describes each system's target population and data collection methods.

Table III.1: CDC's NCCDPHP Surveillance Systems

System	Target population	Type and source of sample	Data collection method
PedNSS	Low-income, high-risk children	Participants in publicly-funded prenatal nutrition and food assistance programs	Clinic staff record data at checkups (body measurements, blood test results, and demographic data)
PNSS	Low-income, high-risk pregnant women	Participants in publicly-funded prenatal nutrition and food assistance programs	Clinic staff record health status, blood test results, risk behaviors, and demographic data
BRFSS	Adults, age 18 and over	Random telephoning of households	Telephone interviews (body measurements, risk behaviors, food choices)

These surveillance systems vary in their purposes, methods of data collection, and types of respondents, yet we found common themes in the recommendations made by primary users of the systems. For all three systems, users suggested providing

- more data on dietary intake,
- better controls on the quality of the data collected,
- more detail on subpopulation groups in the reporting of the data,
- increased ability to look at substate geographic divisions,
- improved timeliness of CDC's return of the data,
- simplified reports that are more readily used at the local level, and
- additional technical and financial assistance in data collection and interpretation.

User recommendations specific to each of the systems are presented in the tables below.

Comments on PedNSS and PNSS

Because PedNSS and PNSS collect data on several similar issues, they are listed together in table III.2. In addition to these comments, some respondents complimented CDC on the quality of PedNSS, specifically for the

automated system and for its coordination of the data collection with the WIC Program.

Table III.2: User Suggestions for Improving PedNSS and PNSS

Type of change	Comment
Data elements	Collect more data on
	Infant feeding practices, particularly breast-feeding or type of formula (and provide better analysis)
	Pregnancy risk information (PNSS)
	Dietary intake (food frequency, 7-day records, "usual" intake)
	Food security and hunger (PedNSS)
	Demographics
	Other indicators— blood lead levels, serum cholesterol, immunizations, height and weight at 2 and 3 years, household smoking (PedNSS) and physical activity and risk behaviors (PNSS)
Data collection methods	Improve data collection quality control (training, uniform reporting, better software, and standardization of measurements)
	Use other sources of information (vital records, private physicians)
	Maintain cultural sensitivity
	Streamline and simplify questions
	Stop changing the data requirements (PNSS only)
	Use more biochemical measures
	Develop methods to obtain data from more sources than public clinics (e.g., scannable forms that private physicians could complete)
Units of analysis	Maintain records by individual child, not by clinic visit (PedNSS only) to avoid duplication of records
Time of data collection	Facilitate analyses of changes over time by linking all records to the individual child (PedNSS only)
Population group coverage	Expand beyond participants in WIC and other publicly-funded programs to include non-low-income women and children
	Collect and report more data by subgroup (race, ethnicity, age, sex, income)
Geographic area coverage	Enable reporting by substate divisions
	Improve national estimates by including all states (currently, states choose whether they participate)
Ease of use	Provide
	Improved timeliness of reporting
	Simplified report format and content
	Reports that are more accessible for local users
	Improved flexibility of the PedNSS automated system and exportability of the data
	An automated system for PNSS that is similar to PedNSS
	Technical training and funding assistance to states to implement systems

Comments on BRFSS Data

User recommendations for BRFSS are listed below in table III.3.

Table III.3: User Suggestions for Improving BRFSS

Type of change	Comment
Data elements	Collect more data on
	Dietary intake (in general and to link to behavior)
	Specific dietary elements (fat, food groups, fiber, nutritional supplements, alcohol, ethnic foods)
	Households (number of adult smokers)
	Ethnicity (state-specific)
	Improve
	Questions on dietary fat to obtain a better measure
	Correspondence of health indicators with health objectives (percent of fat, salt intake, label reading)
	Add questions on cholesterol, diabetes, and disease risk
	Make questions more culturally sensitive and relevant
Data collection methods	Address data validity and other quality control issues (translation for non-English-speakers, applicability to adults in households without telephones, nonuniformity across states)
	Develop a method to gather more complete dietary data
Units of analysis	Maintain records by individual, with more data on the individual's household
Time of data collection	Collect nutrition data
	Continually or at least every 2 years
	At times most representative of year-round habits (make seasonal adjustments)
Population group coverage	Provide more detail on
	Subpopulations in general (increase sample)
	Racial and ethnic groups (and those specific to a state)
	Specific age groups
	High-risk populations
	Include populations without telephones
Geographic area coverage	Improve national estimates by including all states
	Increase sample sizes within states for better estimates
	Provide information for substate divisions (counties, cities, rural areas), which will assist in planning and evaluating community interventions
Ease of use	Provide
	Improved timeliness of data (not only for state and local users, but also for researchers, who must obtain permission from each state)
	An automated system for state analyses of data
	Improved documentation
	Facilitated access to the data for nonstate users
	Technical assistance in data interpretation (especially dietary fat data)

Systems Under NCHS

Users of four of the data collection activities run by the National Center for Health Statistics commented on these systems in our survey: the National Health and Nutrition Examination Survey, the NHANES I Epidemiological Follow-up Study, the Hispanic Health and Nutrition Examination Survey, and the National Health Interview Survey on Cancer Epidemiology and Cancer Control. Table III.4 provides some summary information about these surveys.[1]

Table III.4: CDC's NCHS Data Collection Activities

Activity	Target population	Type and source of sample	Data collection method
NHANES	Civilian, noninstitutionalized population age 2 months and older	Stratified, multistage, probability cluster sample of households; oversampling of children, elderly, African-Americans, and Mexican-Americans	In-person interviews, including a single 24-hour recall and physical examinations
NHEFS	All persons between 25 and 74 years old who completed a medical examination at NHANES I in 1971-75	Same as for NHANES, with tracing of age group of interest	In-person interviews, physical measurements, review of hospital and other records
HHANES	Civilian, noninstitutionalized Hispanics (Mexican- Americans, Cubans, Puerto Ricans) age 6 months-74 years residing in households in three defined U.S. geographic areas	Stratified, multistage, probability cluster sample of the target populations	In-person interviews and physical examinations
NHIS-Cancer	Civilian, noninstitutionalized U.S. population age 18 years and older	Stratified, multistage, cluster sample, including one randomly selected person 18 years or older in each NHIS household; oversampling of Hispanics and African-Americans in the last implementation (1990)	In-person interviews

Our survey asked respondents to identify themselves as users of NHANES II, which was conducted from 1976 to 1980, or NHANES III, which started in 1988 and was completed in 1994. (NHANES I was conducted between 1971 and 1975.) Because the surveys are very similar in their design, no distinction is made between suggestions made by users of NHANES II and those made by users of NHANES III in the discussion below. HHANES differs from NHANES in its focus on three Hispanic subpopulations, but is otherwise similar in methodology. The data collected by NHEFS, unlike that for NHANES and HHANES, allow for the study of changes over time through follow-up surveys (in 1982-84, 1986, 1987, and 1992) with all persons between 25 and 74 years of age who had completed a medical examination for NHANES I. All three use both food-frequency questions and 24-hour recall to collect dietary intake data.

[1]Our survey also asked respondents if they had used and had comments on a fifth NCHS survey—the National Health Interview Survey on Vitamin and Mineral Supplements. Only three respondents identified themselves as primary users of NHIS-Vitamin, and none of these had comments.

In contrast, NHIS-Cancer relies solely on food-frequency questions. Even though it is not one of the major nutritional data collection systems, NHIS-Cancer was included in our survey because it measured nutrition variables such as frequency of eating selected food items, vitamin and mineral supplement intake, and knowledge of the relationship between diet and cancer.

Although the target populations and methods used for the NCHS data collection activities vary, some common themes emerged in the analysis of the comments from the users of the different systems. Users suggested providing

- more information on health habits and outcomes;
- more detailed data on food consumption;
- improved dietary intake methods, whether food-frequency questions or 24-hour recalls;
- a focus on the individual unit of analysis, with information linking the individual to the family or household unit;
- continuous or more frequent data collection;
- more detailed information on racial, ethnic, and age groups;
- data that can support estimates for smaller geographic areas;
- improved timeliness and documentation of the data; and
- increased dissemination of the data in general and in formats that facilitate access and analysis.

The specific comments made under these general themes and on other subjects are detailed in table III.5.

Table III.5: User Suggestions for Improving NCHS Data Collection Systems

Type of change	Comment
Data elements	Collect more information on
	Health-related habits (physical activity, smoking, alcohol use)
	Medical history
	Health outcomes in general (arthritis, skin diseases, food allergies, cancer, and for elderly, hearing loss)
	Cause of death (NHIS-Cancer)
	Dietary intake
	Demographics (occupation as a source of nondietary exposure to cancer)
	Environmental risk factors
	Nonrespondents

(continued)

Type of change	Comment
Data collection methods	Conduct more research on data collection methods, in particular
	Measuring for race, ethnicity, and age (minorities, adolescents)
	Validating portion size (absolute amounts and percent of calories
	Using biochemical analyses (larger samples)
	Improve automation and processing
	Standardize techniques
	Use multiple measures (telephone and in-person interviews and mailed questionnaires)
	Expand the use of food-frequency questions
	Include Hispanic foods and newer versions of common foods
	Translate questionnaires for non-English-speaking persons and use fully bilingual interviewers
	Obtain dietary data on more than a single day (multiple 24-hour data or 3-day records)
Units of analysis	Retain individual as most important unit for nutrition issues (NHANES, HHANES, NHEFS)
	Link individual data to family or household unit (NHIS-Cancer)
	Account for non-Hispanics in household (HHANES)
Time of data collection	Continuously collect nationally representative NHANES data while collecting subpopulation data[a]
	Shorten NHANES to conduct more frequently if not continuously (NHIS is a model for continuous collection.)
	Shorten cycles of surveys to produce more frequent updates
	Conduct more methods research and data analysis between surveys
	Increase frequency for nutritionally vulnerable groups
	Conduct longitudinal follow-up on chronic diseases
	Account for seasonality
Population group coverage	Provide
	Better and more coverage of racial, ethnic, and age groups
	Clearer criteria on definition of race
	Comparable age-sex groups for racial and ethnic groups
	Generalizability (HHANES)
Geographic area coverage	Provide
	More specific regional coverage
	More refinement of geographic detail (rural; urban; standard metropolitan statistical areas; Alaska, Hawaii, Puerto Rico, and Indian reservations)
	Use small-area estimation models
	Provide state-level estimates

(continued)

Type of change	Comment
Ease of use	Provide
	More timely release of data
	More and better documentation of complex sample designs
	On-line documentation Improved advertising of availability of different data
	Training in using complex sample designs
	Data in common statistical package format
	Occupation data coded for risk categories
	Anthropometric data using 15th and 85th percentiles as well as 25th and 75th

[a]One of the criticisms of HHANES is that the data were collected at a different time from the NHANES data, and thus, the health and nutritional status of the Hispanic groups cannot be compared to that of the nation as a whole.

Systems Under USDA

Our survey asked users of three USDA data collection activities to comment on changes to the surveys that would increase their use of the data. The three USDA surveys addressed are the Nationwide Food Consumption Survey (now called the Household Food Consumption Survey), the Continuing Survey of Food Intakes by Individuals, and the Diet and Health Knowledge Survey. Table III.6 describes each activity's target population and data collection methods.

Table III.6: USDA's Data Collection Activities

Activity	Target population	Type and source of sample	Data collection method
NFCS	Households in the 48 contiguous states and individuals residing in those households	Stratified, multistage, area probability sample with oversampling for low-income households	Personal interview with the household food manager, including a 7-day record of household food use; personal interview with household members on dietary intake, including 3 consecutive days of dietary intake data collected with one 24-hour recall and a 2-day record
CSFII	Individuals in the 48 contiguous states	Stratified, multistage, area probability sample with oversampling for individuals in low-income households	Personal interviews with household members on dietary intake, including 3 consecutive days of dietary intake data collected with one 24-hour recall and a 2-day record
DHKS	Main meal planner or preparer in households that participated in CSFII	Same as CSFII	Computer-assisted telephone interviews (supplemented with in-person interviews for respondents without telephones)

The focus of NFCS is on household use of food, including food costs, food preparation, and food consumption. NFCS data are intended to inform policies related to food production and marketing, food safety, food assistance, and nutrition education. CSFII is intended to complement NFCS in two ways. First, it provides a more frequent source of information than the decennial NFCS, and second, it focuses on individual, rather than household, food consumption. DHKS, a follow-up to CSFII, is intended to support analyses of the relationship between dietary intake and knowledge and attitudes about dietary guidance and food safety.

Although NFCS and CSFII vary in their target populations and purposes, they are similar in their sampling approach (national with oversampling for low-income population) and the focus on food consumption. Their similarities are reflected in the common themes in the recommendations made by the primary users of the two data collection systems. DHKS users had somewhat different concerns about data elements and data collection methods, but their comments were otherwise consistent with remarks made about the other two systems.

The major themes in the comments about the data systems were to provide

- more specificity and detail about foods and better data on food composition;
- improved questions on dietary behavior;
- more information about health and demographic variables;
- reduced respondent burden and improved response rates;
- higher quality dietary recall data in general and, specifically, more nonconsecutive days of 24-hour recall;
- individual data and information on the individual's household;
- continuous or more frequent collection;
- longitudinal component;
- increased sample size and broadened coverage;
- more detail on racial, ethnic, age, and income groups;
- refined geographic area coverage, specifically state and substate data;
- more rapid release of the data;
- improved documentation; and
- dissemination of the data in alternative forms (for example, CD-ROM, formatted for use with statistical packages).

Table III.7 provides more user suggestions and other issues from our survey on USDA systems.

Table III.7: User Suggestions for Improving USDA Data Collection Systems

Type of change	Comment
Data elements	Collect more data on
	Food eaten away from home
	Food shopping access, prices, and behavior; food preparation methods and facilities; food storage; and safety
	Use of salt, condiments, nutritional supplements, specific foods (dairy, caffeine, water, fruits, processed, seafood)
	Improve
	Quality and completeness of food composition data (newer products, brand names, reliability of data)
	Questions to assist linking diet and behavior (nutrition knowledge and opinion, exercise, barriers and motivation to change, participation in food programs)
	Health data (by measuring rather than self-reporting height, weight, health status)
	Bring questions in line with current theory (DHKS); standardize questions from year to year
Data collection methods	Streamline the instrument to reduce burden on respondents
	Use automation to improve response rates (also telephones, home bar scanners)
	Collect more days of recall data and more nonconsecutive days
	Use two periods of household records (shorten the 7 days) to measure better the usual food use
	Ensure questionnaires are answered completely
	Use multiple measures (telephone and in-person interviews and mailed questionnaires)
Units of analysis	Focus on individual data (NFCS)
	Focus on household data and individuals (CSFII)
Time of data collection	Need continuous survey or at least collect data more frequently
	Collect NFCS data every 5 years and CSFII data in the interim
	Collect longitudinal data to track changes in individual consumption (NFCS and CSFII)
Population group coverage	Increase coverage of subpopulations and racial, ethnic, and age groups
	Increase sample size
	Need clearer criteria for definition of race
	Focus on high-risk groups
	Integrate CSFII with NHANES sample
Geographic area coverage	Need
	More refinement of geographic detail (regions, localities, areas of low density)
	State-level estimates (allow states to collect their own data and feed into national survey)
	Use small-area estimation models
	Provide specific estimates for major population centers

(continued)

Type of change	Comment
Ease of use	Collect data more frequently and allow more rapid access to both published reports and raw data
	Provide
	User-friendly documentation
	More detailed data on sampling design variables
	Clear documentation on data tape and file format to facilitate combining record types
	Documentation on changes in format in food composition database, codebook, and recipe file
	Survey protocol and operations manual
	More technical assistance (to nonnutritional researchers)
	On-line documentation
	Data in common statistical package format
	Lists of surveys and sources for both data and technical assistance in professional journals

Characteristics of the Uses of Data Collection Activities

The tables in this appendix are based on the 440 responses from those who have used at least one of the 14 data systems in the past 5 years. Since some respondents pooled their answers, each of these 440 responses may represent one or more than one user. The first two tables describe some characteristics of the users in our sample. Table IV.1 shows the occupations that users identified themselves with, by organizational setting. To construct table IV.2, we asked them what data collection activites they have used at all in the past 5 years.

Table IV.1: Main Occupation of Respondents[a]

	Organizational setting						
	Federal	**State**	**Local**	**Academic**	**Business**	**Other[b]**	**Average**
Sample size	112	125	28	98	37	40	
Occupation							
Service delivery	6%	14%	32%	16%	14%	33%	15%
Basic research	47	6	0	57	35	28	32
Applied research	29	10	7	24	49	13	21
Program management and planning	13	66	71	1	5	15	29
Other	7	6	0	2	16	3	5

[a]Column percentage totals exceed 100 percent because some users identified more than one main occupation.

[b]Other settings include hospitals, nonprofit organizations, and other charitable organizations.

Table IV.2: Respondents' Use of Data Systems Within the Past 5 Years[a]

	Organizational setting						
	Federal	State	Local	Academic	Business	Other[b]	Average
Sample size	112	125	28	98	37	40	
Data system							
NHEFS	31%	14%	36%	39%	30%	45%	30%
NHANES II	50	17	36	41	59	58	39
NHANES III	57	17	39	29	30	48	35
HHANES	38	10	11	21	24	23	22
NHIS-Vitamin	9	8	7	10	3	23	10
NHIS-Cancer	11	5	14	16	14	20	12
BRFSS	13	71	39	15	11	33	33
PNSS	13	47	50	6	3	33	25
PedNSS	14	58	68	9	5	30	30
Navajo HNS	2	0	0	0	0	5	1
Health and Diet	13	7	11	10	19	23	12
NFCS	44	20	36	67	65	53	44
CSFII	46	10	7	55	46	40	35
DHKS	28	10	7	23	27	30	20

[a]Column percentage totals exceed 100 percent because most users checked two data systems.

[b]Other includes hospitals, nonprofit organizations, and other charitable organizations.

Tables IV.3-IV.5 show three aspects of respondents' satisfaction with each data collection activity: first, whether it provided for their information needs; second, whether it met their data quality needs; and third, whether they thought changes were needed to either increase their confidence in or substantially increase their use of the data system.

Table IV.3: Users' Response to How Well the Current Data Meet Their Information Needs

	Degree of satisfaction					
Data collection activity	Little or none	Some	Moderate	Great	Very great	Sample size
NHEFS	2%	10%	45%	33%	10%	54
NHANES II	3	14	37	31	15	101
NHANES III	2	16	34	28	19	90
HHANES	0	7	37	33	22	28
NHIS-Cancer	0	23	46	15	15	13
BRFSS	4	30	42	19	6	85
PNSS	4	23	27	41	6	73
PedNSS	6	21	31	35	6	96
Health and Diet	8	8	33	33	17	13
NFCS	3	15	34	38	10	110
CSFII	6	13	37	36	8	89
DHKS	13	4	52	22	9	23
Median	4	15	37	33	10	

Table IV.4: Users' Response to How Well the Current Data Meet Quality Needs

	Degree of satisfaction					
Data collection activity	Little or none	Some	Moderate	Great	Very great	Sample size
NHEFS	4%	18%	36%	34%	8%	54
NHANES II	2	8	32	36	22	101
NHANES III	4	11	33	34	19	90
HHANES	0	7	22	37	33	28
NHIS-Cancer	0	8	23	62	8	13
BRFSS	6	22	42	25	5	85
PNSS	7	14	38	35	6	73
PedNSS	9	17	35	33	6	96
Health and Diet	0	17	42	25	17	13
NFCS	8	13	43	32	4	110
CSFII	5	15	42	31	7	89
DHKS	4	9	52	26	9	23
Median	4	14	37	34	8	

Table IV.5: Users' Response to Whether Changes Would Increase Their Confidence in or Use of the Data

Data collection activity	Response						Sample size
	No	Probably not	Uncertain	Probably yes	Yes	No basis to judge	
NHEFS	8%	16%	24%	25%	27%	0	54
NHANES II	14	17	14	28	26	1%	101
NHANES III	13	17	16	34	16	5	90
HHANES	19	15	4	15	44	4	28
NHIS-Cancer	0	23	0	46	31	0	13
BRFSS	5	20	16	30	28	1	85
PNSS	4	26	16	26	24	3	73
PedNSS	6	26	11	27	29	2	96
Health and Diet	25	17	17	8	25	8	13
NFCS	3	12	13	30	38	4	110
CSFII	8	9	10	36	33	3	89
DHKS	9	9	22	26	35	0	23
Median	8	17	15	28	29	3	

List of Experts

This appendix lists the expert advisers who assisted on this project. The advisers were organized into three panels: core policy panel, methodology panel, and data users panel.

Core Policy Panel

Johanna Dwyer, D.Sc., R.D., Francis Stern Nutrition Center, New England Medical Center and Tufts University Schools of Medicine and Nutrition

Jean-Pierre Habicht, M.D., Ph.D., Division of Nutritional Sciences, Cornell University

Catherine Woteki, Ph.D.[1]

Methodology Panel

Norman Bradburn, Ph.D., Director, National Opinion Research Center

Marilyn Buzzard, Ph.D., Director, Nutrition Coordinating Center, University of Minnesota

Ricardo O. Castillo, M.D., M.P.H., Co-Director, Pediatric Gastroenterology, Stanford University Medical Center

Alan R. Kristal, Dr. P.H., Fred Hutchinson Cancer Research Center and Department of Epidemiology, University of Washington

James Lepkowski, Ph.D., Institute for Social Research, University of Michigan

Cheryl Ritenbaugh, Ph.D., Department of Family and Community Medicine, University of Arizona

Laura Sims, Ph.D., Department of Nutrition and Food Science, University of Maryland

Data Users Panel

Elizabeth Barnett, Ph.D., North Carolina Department of Environment, Health, and Natural Resources

Doris Disbrow, Dr. P.H., R.D., Center for Health Education

[1]Dr. Woteki withdrew from the panel when she was appointed to the Office of Science and Technology Policy in the White House. During her participation in our work, she was the Director of the Food and Nutrition Board of the National Academy of Sciences.

Pamela Haines, Dr. P.H., R.D., Department of Nutrition, University of North Carolina

Jay Hirschman, M.P.H., Senior Analyst, Food and Consumer Service, U.S. Department of Agriculture

Karen J. Morgan, Ph.D., Senior Director, Nutrition and Consumer Affairs, Nabisco Brands

Barbara Petersen, Ph.D., Technical Assessment Systems

Comments From the Department of Agriculture

United States Department of Agriculture | Agricultural Research Service | Office of the Administrator | Washington, DC 20250

MAY 1 [illegible]

Mr. Kwai-Cheung Chan
Director, Program Evaluation in Physical Systems Areas
Program Evaluation and Methodology Division
General Accounting Office
Washington, D.C. 20548

Dear Mr. Chan:

This is in response to your March 29, 1995, request to Mr. Richard Rominger to review and comment on the General Accounting Office (GAO) Draft Report entitled, "Nutrition Monitoring: Data Serve Many Purposes But Users Still Recommend Improvements." Enclosed is the Department of Agriculture's (USDA) response.

We appreciate the efforts of the GAO in surveying the users of nutrition monitoring data; the information will be useful to us as we plan future monitoring activities. The report documents the extensive use of the monitoring data and it describes the data users as mostly satisfied with the degree to which their data needs are met. Yet, USDA has made, and continues to make, improvements and enhancements.

Sincerely,

R. D. PLOWMAN
Administrator

Enclosure

CONCURRENCE: _____ DATE: 5/2/95
FLOYD P. HORN
Acting Under Secretary
Research, Education, and Economics

USDA, ARS COMMENTS ON GAO DRAFT REPORT "NUTRITION MONITORING: DATA SERVE MANY PURPOSES BUT USERS STILL RECOMMEND IMPROVEMENTS"

The Agricultural Research Service (ARS) is committed to responding to user needs for food consumption survey data within resources available. Recommendations and requests from data users are obtained by ARS through various formats. These include Federal agency working groups such as the Continuing Survey Users Group (CSUG) and Household Survey Users Group (HSUG); and workshops and conferences with Federal and non-Federal users of the data. Recent examples include an August 1994 workshop, "Dietary Survey Data Requirements of Federal Users," sponsored jointly with the Department of Health and Human Services (DHHS); a November 1992 USDA-sponsored Nutrition Monitoring Resources Conference with attendees from the Federal and State governments, industry, and academia; and formal teleconferences with household-level food consumption survey data users within and outside the Federal Government.

Further, the fiscal year 1996 ARS budget request includes an increase of $7 million for expansion of specific age categories in the Continuing Survey of Food Intakes by Individuals (CSFII). Expansion of the intake data base for children is essential if the Environmental Protection Agency (EPA) is to provide better pesticide exposure estimates for children in response to National Research Council recommendations. Once completed, this base funding increase will be used to support the National Household Food Consumption Survey, if the value of collecting the data is shown to outweigh the cost.

Many of the user requests listed in Table III.7 have been addressed by ARS. Some of the activities and products developed as a result of recent user requests are summarized below.

Data elements

Collect more data on: Food eaten away from home

- ARS worked closely with data users at USDA's Economic Research Service and Food and Consumer Service as well as at the EPA to meet the regulation and program-related needs of these agencies. Resulting changes have improved information collected on the source of foods in the CSFII; for every food reported, we now ask whether it was eaten at home or away from home and where it was obtained.

- Food expenditure data and meal counts by each household member for food away from home have been collected in past Nationwide Food Consumption Surveys (NFCS). ARS' plans for a household food consumption survey, which are dependent on funding, will include questionnaire items on the type of establishment and number of times each household member bought meals and ate away from home. ARS welcomes user suggestions on collecting food away from home data.

Food shopping access, price, and behavior; food preparation methods and facilities; food storage; and safety

- All past NFCS questionnaires contained questions on the distance to the food store. The NFCS 1977-78 elderly questionnaire contained questions on the transportation used to do food shopping, and special problems concerning food shopping. Members of CSUG did not indicate a need for these questions, and as part of our intense efforts to reduce respondent burden, the shopping access questions are not included in the CSFII 1994-96. If users express the need for this information, we will consider including the questions in future household-level surveys.

- Data on the price of food is available from the NFCS. This survey collected information on the quantity and the money value of food used at home. The price per pound of each food can be calculated by dividing the money value of food by the quantity of food used by the household. We plan to collect this information in the next household food consumption survey.

- The NFCS collected information on food preparation facilities. If users indicate the need for food preparation and food storage information, ARS will consider including these questions in future household-level surveys. Inclusion of any additional questions must be weighed against respondent burden.

Use of salt, condiments, nutritional supplements, specific foods (dairy, caffeine, water, fruits, processed, seafood)

- The CSFII 1994-96 collects information from all respondents on salt used in cooking and food preparation. Food-specific probes are used to elicit additional information on the salt or sodium content of foods. USDA's Survey Nutrient Database has been expanded to add codes for foods with special salt or sodium attributes.

- In the CSFII 1994-96, specific probes were added for accessory foods, including condiments.

- USDA surveys provide information on the foods consumed by the general and low-income populations and the nutrients in those foods. Information on the frequency and general type of nutritional supplements consumed is also collected. The collection of more detailed information on supplements must be considered against the large increase in respondent burden this would cause.

- In the CSFII 1994-96, information on the fat content of all types of dairy products is collected, and recipes for common foods are modified for the type of milk used. Respondents are probed for the presence or absence of caffeine in

beverages such as coffee and cola. In response to user requests, questions on individual and household water sources, recreational and subsistence fish, and home-grown foods are included. Additionally, the Survey Nutrient Database was expanded to capture dilutions of water for soups, beverages, and infant formulas, and the form of vegetables (canned, frozen, fresh) prior to cooking.

- The Food Instruction Booklet (FIB) is used by CSFII interviewers during the 24-hour recall to obtain detailed information on foods consumed by respondents. The FIB was expanded to include detailed probes and to ensure standard administration by the interviewers.

Improve: Quality and completeness of food composition data (newer products, brand names, reliability of data)

- ARS' Nutrient Data Laboratory is currently developing data quality evaluation systems and standard formats for data fields, and has initiated discussions with the food industry to obtain more brand name data. Analytical contract awards require satisfactory performance on quality control samples.

Improve: Questions to assist linking diet and behavior (nutrition knowledge and opinion, exercise, barriers and motivation to change, participation in food programs)

Bring questions in line with current theory (DHKS); standardize questions from year to year

- The 1994-96 Diet and Health Knowledge Survey (DHKS) questionnaire includes new questions in two areas of current interest: food label use and behaviors associated with dietary fat intake. Questions on food label use were developed in collaboration with the Food and Drug Administration (FDA), and cover frequency of use, type of information sought, knowledge of how to interpret label information, and attitudes about label use. The attitude questions are based on behavior change theory and will provide information on barriers to the use of food label information.

- Questions on behaviors associated with fat intake will be used to identify indicator questions for relatively simple assessment tools. The ability to link DHKS data with CSFII food intake data will allow validation of these behavior questions. No other national survey has that capability.

- A number of issues must be considered when incorporating current theories into the DHKS questionnaire. These include user priorities, time limitations for questionnaire development and testing, ease of implementation, and

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respondent burden. The DHKS 1994-96 questionnaire incorporates input from Federal users and suggestions from interviewer debriefings on the DHKS 1991. The questionnaire was pretested in collaboration with the Census Bureau for comprehension, wording, and flow, and adjustments were made in response to pilot test findings. A standardized list of questions is being used for the 1994-96 series. However, changes in DHKS questions may be made in future surveys in line with new knowledge and concerns about nutrition issues.

Improve: Health data (by measuring rather than self-reporting height, weight, health status)

- The CSFII provides information on food consumption patterns and dietary status of the general and low-income U.S. populations. DHHS' National Health and Nutrition Examination Survey (NHANES) collects information on the health status of individuals. The CSFII interviews are conducted in respondents' homes by nearly one hundred interviewers nationwide; the collection of measured height and weight by each interviewer using calibrated instruments would be both burdensome and costly.

Data collection methods

Streamline the instrument to reduce burden on respondents

- Respondent burden was reduced considerably in CSFII 1994-96 compared to prior USDA surveys by collecting fewer days of data. Whereas 3 consecutive days of dietary intake data (one 24-hour recall and 2-day respondent-administered food record) were previously collected, 2 nonconsecutive days of dietary data (interviewer-administered 24-hour recall) are now collected. Respondent burden was further reduced by subsampling within households for respondents, rather than requesting all household members to provide dietary data.

- Research on the cognitive aspects of responding to questions in the individual intake questionnaire have resulted in clearer, easier-to-answer questions.

Use automation to improve response rates (also telephones, home bar scanners)

Ensure questionnaires are answered completely

- In the early 1990's, ARS committed considerable resources to automate the processing of survey data. Survey Net, the automated coding system developed for the CSFII 1994-96, has resulted in accurate and more timely processing of intake data. ARS is now focusing on automating the dietary interview. Development of an automated dietary assessment

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system is being planned in collaboration with the National Center for Health Statistics, DHHS. ARS sponsored a September 1994 meeting of experts to identify the optimal scientific methods for obtaining accurate 24-hour recall data in a computer-assisted environment. A project proposal has been developed and shared with the Interagency Board for Nutrition Monitoring and Related Research (IBNMRR).

- The CSFII/DHKS 1994-96 contract stipulates required response rates with financial penalties for noncompliance. The response rates are based on questionnaires meeting the minimum criteria for completeness specified in the contract. Also required are minimum numbers of individuals in 40 sex-age domains and noncompliance financial penalties. These requirements support ARS efforts to enhance the integrity of the sample and national representation of the data.

Collect more days of recall data and more nonconsecutive days

- Collecting additional days of recall data and more nonconsecutive days adds to respondent burden and negatively affects survey response rates. This impact must be considered when determining the number of days of data to collect. While more days may be of help in estimating the "tails" of a distribution (i.e., the 90th percentile or greater; the 10th percentile or less), a statistically defensible method for estimating these tails is currently unavailable.

Use two periods of household records (shorten the 7 days) to measure better the usual food use

- At this time, ARS has begun initial planning for the next household food consumption survey. The use of the 7 day household food record will be re-evaluated, as will all instruments, methodology, and procedures used in the survey. This comment will be taken into consideration.

Use multiple measures (telephone and in-person interviews and mailed questionnaires)

- The CSFII/DHKS 1994-96 uses multiple measures to collect data. CSFII data are collected through in-person interviews and DHKS data are collected through a telephone interview. If a DHKS interview cannot be conducted by telephone due to hearing problems, language difficulties, or comprehension problems, an in-person interview is completed. A methodology study conducted during development of the CSFII demonstrated that the response rate for mailed questionnaires is much lower than for other methods. Also, because they are respondent-administered, burden is added.

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Units of analysis

Focus on individual data (NFCS)
Focus on household data and individuals (CSFII)

- After the Nationwide Food Consumption Survey 1987-88, USDA separated the household and individual survey components due to concerns about respondent burden. USDA decided to conduct two separate surveys, the CSFII and the Household Food Consumption Survey (HFCS), as documented in the Federal Register notice on the Ten-Year Comprehensive Plan for the National Nutrition Monitoring and Related Research Program, Vol. 58, No. 111, pages 32753 and 32767. The CSFII provides nationwide information on the food consumption patterns and dietary status of the general and low-income populations, and is the only nationwide survey that provides information on the source of all foods eaten by individuals at home and away from home. The HFCS is the only nationwide survey to measure food used by a household and the money value and nutrient value of that food.

Time of data collection

Need continuous survey or at least collect data more frequently

- ARS is considering more frequent data collection. However, the increase in resources needed to conduct a survey each year is considerable, both in staffing within ARS' Survey Systems/Food Consumption Laboratory and in the cost of contracts to field the surveys. USDA data show that dietary intakes do not change rapidly from year-to-year, and trends in dietary intakes can usually be identified only after several years.

Collect NFCS data every 5 years and CSFII data in the interim

- Currently, ARS does not have resources to conduct a household food consumption survey. However, ARS concurs that there is a need to collect household food consumption data every 5 years and CSFII data in the interim.

Collect longitudinal data to track changes in individual consumption (NFCS and CSFII)

- Since 1965, the NFCS and CSFII individual intake components have included a 24-hour recall of dietary intake administered by interviewers in the home. Use of the same basic methodology facilitates tracking trends in individual food consumption.

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- USDA food consumption surveys are conducted under the Privacy Act of 1974, which requires Federal agencies to protect personal information about respondents. USDA does not have access to information that would allow tracking of individuals over an extended period of time.

Population group coverage

Increase coverage of subpopulations and racial, ethnic, and age groups

- The sample design for the CSFII/DHKS 1994-96, as recommended in an independent review, includes all 50 States and Washington, D.C. Previous surveys included the 48 contiguous States and Washington, D.C. Also, rather than selecting households and bringing every household member into the sample, the CSFII/DHKS 1994-96 sample design selects individuals within households randomly, with the probability of each person being selected based on age, sex, and household income status. This method is used to increase proportionately the number of young children and older adults (60+) in the sample, and to ensure that low-income age-sex groups are adequately covered.

Increase sample size

- The sample size is dependent on available funds. The sample size for CSFII 1994-96 was based on the numbers of individuals needed to produce estimates of specified precision for 20 sex-age groups for both the total and low-income populations, within available funding.

Need clearer criteria for definition of race

- In support of comparability, USDA incorporated recommendations of the Survey Comparability Working Group of the IBNMRR for population descriptor variables such as race and ethnicity in the CSFII/DHKS 1994-96 questionnaires.

Focus on high-risk groups

- USDA is under a congressional mandate to collect dietary data on the low-income population. The CSFII 1994-96 includes an oversampling of the low-income population, and a larger sample of selected sex-age categories, specifically young children and older adults (60+).

Integrate CSFII with NHANES sample

- USDA co-sponsored sample design research with DHHS to explore the possibility of linking the CSFII and NHANES

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samples. The contractor, Westat, Inc., concluded that it was not possible to link the samples without 1) increased cost of doing the surveys, 2) great compromise to the objectives of one or both of the surveys, and 3) there would be no gain in analytic power to compensate for such compromises. The possibility of linking the data collected from each survey through statistical methods was not ruled out.

- Two key differences between the two surveys impact the design of a linked sample. First, CSFII requires estimates by sex-age groups within the low-income and the total population, while NHANES requires estimates by sex-age groups within the black American, Mexican American, total Hispanic, and the total population. Second, CSFII data collection occurs continuously in every Primary Sampling Unit (PSU) over the 3 years of the survey in order to address seasonality issues. NHANES data collection occurs one PSU at a time because of the examination component in the Mobile Examination Centers (MEC), and is limited by season due to the MEC.

Geographic area coverage

Need: More refinement of geographic detail (regions, localities, areas of low density)

Specific estimates for major population centers

- The primary limitation in collecting dietary data for specific geographic areas is resources. The increase needed in both staffing and contract costs would be considerable.

Need: State-level estimates (allow states to collect their own data and feed into national survey)

- If technical assistance was provided to the States they could collect their own dietary data using methodologies and procedures similar to those used in the national surveys. The level of technical assistance would depend on resources provided by the States. This would allow States to combine their data with national data, using appropriate statistical techniques. However, determination of the feasibility and cost-effectiveness of this method compared to others should be considered.

Small-area estimation models

- This is an area of research that ARS has considered. However, the development of small-area estimation models requires considerable commitments of Agency time and

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resources, and there is no consensus on how this research should proceed. Both the Census Bureau and the National Center for Health Statistics are currently sponsoring research in this area; ARS will consider adopting the methodologies under development by them, if appropriate.

Ease of use

Collect data more frequently and allow more rapid access to both published reports and raw data

- As discussed above, more frequent collection of data is limited by available resources.

- Much of ARS's in-house data processing has been automated to shorten processing time, to improve the efficiency of review, and to strengthen quality control. In November 1994, ARS sponsored a review of its in-house processing of survey data. The review panel included members from the Census Bureau, University of Maryland, USDA's Agricultural Research Service, and the National Institutes of Health. The outcome resulted in additional changes to in-house data processing procedures for CSFII in order to release quality data in a more timely manner. ARS anticipates release of 1994 CSFII/DHKS data in 1995.

- A CD-ROM containing raw data from the CSFII/DHKS 1989-91 has been produced and made available as a "test" set. Previously, raw data have been available only on magnetic tape requiring the use of a mainframe computer. The CD-ROM will make the data available to a greater number of users in a more user-friendly format. ARS plans to release CSFII 1994-96 data on CD-ROM also.

- Fact sheets on USDA's four most recent surveys are available on the Internet. Lists of survey publications, survey data sets, and ordering information will also soon be available on the Internet.

- In addition, USDA is exploring the possibility of placing statistical tables and reports on CD-ROM and writing more topic-specific articles both for publication and for use on the Internet.

Provide:

User-friendly documentation

More detailed data on sampling design variables

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Clear documentation on data tape and file format to facilitate combining record types

- ARS is aware of these suggestions from other sources. The review and modification of CSFII/DHKS 1994 data processing in order to provide a timely release of the data in 1995 has been a primary focus for ARS. At this time, we are exploring ways to conduct a user review of the data documentation before release. The above suggestions would be addressed in that review.

Provide: Documentation on changes in format in food composition database, codebook, and recipe file

- The document "USDA Survey Nutrient Database System: System Components and File Formats", distributed at the 1993 and 1994 National Nutrient Databank Conferences, contains changes in file format for all system files needed to produce the Survey Nutrient Database. The document has been in continuing development and is currently being finalized for release with the CSFII 1994 Survey Nutrient Database.

Provide: Survey protocol and operations manual

- A report on the design and operation of the CSFII/DHKS 1994-96 is in preparation.

Provide:

More technical assistance (to nonnutritional researchers)

Data in common statistical package format

Lists of surveys and sources for both data and technical assistance in professional journals

- We believe these are very useful suggestions, and will consider them for our CSFII/DHKS 1994-96 data release.

Online documentation

- Data documentation will be provided with the CD-ROM data set.

ARS also has taken a number of steps to provide higher quality recall data, also a major theme mentioned by users.

- A multiple-pass approach to improve data collection in the 24-hour recall for CSFII 1994-96 was developed in collaboration with the Center for Survey Methods Research, Census Bureau. The multiple-pass approach provides cues at three separate points during the interview to prompt

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respondents to recall additional foods and eating occasions.

- Training for interviewers in the CSFII/DHKS 1994-96 was enhanced by increasing the length of the training and the use of scripted presentations to ensure comparable training for all interviewers. Additional training was provided for Spanish-language interviewers.

- All CSFII/DHKS 1994-96 survey materials were printed in general Spanish to ensure consistent presentation of the questions. Data from respondents speaking other languages were collected with the assistance of interpreters.

Technical corrections

APPENDIX III, Table III.6: USDA's Data Collection Systems, page III-20

1. CSFII, Target population: Change to "Individuals in the 48 contiguous States."

2. CSFII, Data collection methods: Change to "Personal interview with household members on dietary intake, including three consecutive days of dietary intake data collected with one 24-hour recall and a 2-day record."

3. DHKS, Target population: Change "Main meal planner to "Main meal planner/preparer."

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Comments From the Public Health Service

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

DEPARTMENT OF HEALTH & HUMAN SERVICES — Public Health Service

Rockville MD 20857

MAY 1 1995

Mr. Kwai-Cheung Chan
Director of Program Evaluation in Physical Systems Areas
Program Evaluation and Methodology Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Chan:

The Public Health Service has reviewed the General Accounting Office's draft report entitled Nutrition Monitoring: Data Serve Many Purposes But Users Still Recommend Improvements. Our comments on the draft report are attached.

We appreciate the opportunity to review the draft report before it is finalized.

Sincerely yours,

Anthony L. Itteilag
Deputy Assistant Secretary for Health
(Management and Budget)

Attachment

PUBLIC HEALTH SERVICE COMMENTS ON
THE GENERAL ACCOUNTING OFFICE DRAFT REPORT
"NUTRITION MONITORING: DATA SERVE MANY PURPOSES
BUT USERS STILL RECOMMEND IMPROVEMENTS"

The Public Health Service (PHS) has reviewed the General Accounting Office (GAO) draft report and has the following comments.

GENERAL COMMENTS

We agree that continuous or more frequent data collection, improved timeliness of data and information dissemination, as well as procedures for producing data for small geographic areas and population subgroups would enhance the information derived from the National Nutrition Monitoring and Related Research Program (NNMRRP). The program's 10-year plan sets the necessary framework for implementing specific actions to improve the NNMRRP, but the resources to implement the plan must compete with many other high-priority programs.

The National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC), has undertaken some key actions to improve the major national surveys that collect nutrition and health data with respect to the issues of timeliness, ease of accessing the data, and subgroup population coverage. These improvements will be realized with the release of National Health and Nutrition Examination Survey (NHANES) III data for 1988-94 later this year. The release date is expected to be about a year from the end of the study which is considerably faster than in previous surveys. Data dissemination on data tapes, diskettes, and CD-ROMs [compact disk, read-only memory] with detailed documentation will dramatically improve access to the data. In addition, the analyses will show improved estimates for non-Hispanic blacks, Mexican Americans, and young and older persons; increased sample sizes in these groups and overall; and statistical and reporting guidelines for survey data.

To improve population and geographic coverage in the future, NCHS and CDC have sponsored the following activities.

1. In preparation for the next NHANES, CDC sponsored a contract to evaluate core nutrition and health indicators for inclusion in NHANES and the feasibility of conducting a core nutrition component that would include dietary intake in settings such as households, nursing homes, schools, homeless shelters, and reservations. Development and dissemination of a core nutrition component for use in national surveys, surveillance systems, and State and local settings is a high-priority activity for

which NCHS has lead responsibility under the 10-year plan.

2. The NCHS sponsored and published Consensus Workshop on Dietary Assessment: Nutrition Monitoring and Tracking the Year 2000 Objectives (1994) to improve and standardize dietary methods across the NNMRRP.

3. The CDC sponsored a contract on sample design research to improve population subgroup coverage for the next NHANES.

In addition, laboratory methods research related to assessing nutritional status and food composition has also been funded in joint undertakings by the CDC's National Center for Environmental Health and the U.S. Department of Agriculture's (USDA) Agricultural Research Service. These activities have focused on folate related assessments, currently a food fortification issue in the nutrition research community.

We also note that, although the GAO draft report generally provides a good overview of the results of GAO's user survey, we believe that the organization of the draft report results in some ambiguity and there are some omissions that we believe should be addressed or acknowledged.

The GAO draft report states that its first objective is to "...describe the users and major uses of nutrition monitoring data." We do not believe that the major Federal users and uses of nutrition monitoring data are well described in the narrative. The PHS agencies use nutrition monitoring data to track progress on national nutrition objectives, to establish nutrition research priorities, and to establish guidelines and plan intervention programs for prevention, detection, and management of nutritional conditions. The Food and Drug Administration (FDA) has one of the broadest uses of nutrition monitoring data because of its responsibilities with regard to: (1) the assessment of the adequacy and/or safety of the food supply and of American diets with regard to issues such as food fortification, food additives and contaminants; (2) decision-making regarding food labeling issues such as serving size; and (3) the monitoring of progress toward national nutrition objectives. These and other Federal agency uses should be summarized in the narrative response categories for this report. For example, there should be a response category for the important use of nutrition monitoring data for food labeling issues such as the establishment of serving sizes. We believe that the narrative description of uses of nutrition monitoring data at the beginning of the report should be expanded to reflect as a minimum the uses identified on pages I-1 through I-4 of Appendix I.

See comment 1.

The GAO draft report states that its second objective is to "...summarize the satisfaction of users with selected nutrition monitoring activities and the features that users identified as likely to increase their use of or confidence in the data." The GAO draft report's listings of suggested changes to the USDA and NCHS surveys do not reflect some of the points brought out in the set of questionnaire responses submitted to GAO by FDA employees. For example, a response specific to the Continuing Survey of Food Intake by Individuals cited the need for data elements combined (vs. data on just prevalence of supplement use), and the need for improvement in ease of use of the data for the estimation of food ingredient intakes is not included in the GAO draft report. We would be pleased to work with GAO to identify the specific parts of the questionnaire responses being referenced.

We suggest that GAO consider in its summary of the report the recent USDA/NCHS "Report of Dietary Survey Data Requirements of Federal Users Workshop" which was held in August 1994, as well as FDA employees' responses to the GAO questionnaire. We believe that consideration of the USDA/NCHS report and of the questionnaire responses would provide a better perspective on Federal agency uses and needs with respect to nutrition monitoring data.

See comment 2.

We also suggest that information on the data collection systems evaluated be presented in the body of the report rather than in the final appendices (Appendix III and IV) only. For example, Table 1 lists the data collection systems but does not provide key users, e.g., information on the scope of the surveys and typical sample sizes. Many criticisms of the current monitoring focus on limited coverage of specific demographic groups or geographic entities. By indicating the sample sizes and characteristics of the data collection systems the GAO report would make the reasons for the criticisms more apparent. For example, nationally representative samples are too small to permit analysis of certain subsets of the population without oversampling.

In addition, background information is sometimes necessary to interpret the criticisms made of particular data collection systems. Unique characteristics of particular data collection systems relevant to the issues covered in this report should be noted. For example, the Behavioral Risk Factor Surveillance System is conducted on a voluntary basis by individual States who may choose to use all or only some of the questions available. Information such as the number of States that participate should be noted.

The following are GAO's comments on the letter from the Public Health Service dated May 1, 1995.

GAO Comments

1. Our analysis of the responses to the open-ended questions involved, first, sorting responses by data collection activity and focus of the comment (such as data element, population coverage, ease of use). These responses were then aggregated to identify major themes. The comments made by FDA users were not identified as a major theme across the many users of the different systems and, thus, were not reported separately. However, detailed summaries of the responses were provided to the responsible agencies for their use.

2. We have included a reference to the Directory of Federal and State Nutrition Monitoring Activities for those readers who are interested in more information on the data collection systems. (See p. 3.)

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