

**NATIONWIDE FOOD CONSUMPTION SURVEY
1987/88**

SURVEY OPERATIONS REPORT

Prepared for:

**HUMAN NUTRITION INFORMATION SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE**

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MARCH, 1991

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I. INTRODUCTION

The United States Department of Agriculture (USDA) and, more specifically, the Human Nutrition Information Service (HNIS) has been mandated to monitor the nutritional status and well-being of the American public. Over the years, USDA has conducted six national food consumption surveys -- 1936, 1942, 1948 (urban only), 1955, 1965/66 and 1977/78 -- and numerous large-scale methodological studies. With each successive effort, new data capture and data analytic techniques have been introduced. Up until the 1965/66 effort, studies were confined to time-limited survey periods, such as the spring quarter. Beginning in 1965, and for every national survey thereafter, interviewing has been spread across a 12-month period thereby registering seasonal variation in food use and intake patterning. Also initiated with the 1965/66 NFCS was the dual reporting of household seven-day food use and individual 24-hour intake. The former provides information on foods available to the household from the home food supplies. The latter reflects actual individual ingestion of foods both at and away from home. Each of these data sets supports detailed nutritional analyses for public policy planning and program assessment.

The 1977/78 NFCS expanded the survey effort and focused new attention on key sub-groups in the population and on previously unsurveyed groups. The national survey of 15,000 households was supplemented by surveys of 5,000 low-income, food stamp-eligible households, 5,000 elderly, 3,000 Puerto Rican, 1,200 Alaskan and 1,200 Hawaiian households. In most of these surveys, individual intake reporting was increased from a single day to three consecutive 24-hour periods.

Between these periods the groundwork was prepared for a continuous monitoring effort building on the individual intake recording of food consumption. The NFCS 1987/88 continued these traditions and provide new data capture approaches as well.

In the NFCS 1987/88, two interpenetrating area probability samples were drawn -- one represented a cross-section of all American households in the conterminous U.S. and the other represented low-income households only. In-home interviews were conducted during a 17-month period and spread across the days of the week and the months of the years.

To capture comprehensive food-use data, appointments for interview were made a minimum of seven days in advance. Household interviews were completed with meal planners and preparers aided by a computer-administered questionnaire. One-day dietary recall records were completed with each household member along with follow-up two-day dietary records from these individuals.

Data from the household interviews were thoroughly reviewed and cleaned. Missing food prices were imputed and the household food use component expanded into food energy and 29 dietary components. Both the money value and nutritive value of food in the home were derived to assess the adequacy of food availability in American households.

Data from the individual intake records were subjected to rigorous review and interactive coding using National Analysts' computer-aided classifying system. These data were then expanded into their nutrient component and day total summary measures were derived.

The procedures and protocol used to perform these activities are the subject of this report.

II. SAMPLE DESIGN AND SELECTION

This chapter covers the design, sample selection and weighting issues associated with the development and implementation of both portions of the Nationwide Food Consumption Survey for 1987-88. The discussion focuses on an overview of the National Analysts' Master Sample which provides the framework for this survey, the specific elements of sample selection for both the basic and low-income surveys and weighting issues.

A. National Analysts' Master Sample, a Highly Stratified Multi-Stage, Replicated National Sample Is the Frame for NFCS

The current Master Sample employed by National Analysts is the fourth in its history and is based upon the 1980 decennial Census updated to estimate population counts of 1985 and made current at the point of final in-person contacts with four Census regions and sample households in the field. The Master Sample has been stratified by geography -- four Census regions and nine Census divisions -- and degree of urbanization -- three levels. All areas in all of the conterminous states have been classified into one of these 27 strata.

The Master Sample was constructed from a three-stage sampling process. The first stage units are primary sampling units (PSUs), which represent a community or portion of a community with known geographic boundaries. Within each PSU, second stage sampling units, called area segments, are selected. These second stage units consist of clustered groupings of housing units. Within these units, the third sampling stage units -- the sample housing units (HUs) -- are selected. At each stage in this process, the sampling units are drawn with known probabilities.

The final aspect of note about the Master Sample is that it is a replicated design. Multiple, parallel units at the primary and secondary sampling stages are identified. For the NFCS, as for the CSFII 85 and 86 efforts, two replicates of 60 PSUs each were employed. Replicates increase the number of sampling points and, hence, provide greater distribution of potential interviews.

- The NFCS 87/88 sample frame is based on current population projections

In building the Master Sample, the then current 1980 Census data were used along with Census information from earlier years to develop a population estimation model, projectable to population distribution across the U.S., by place as of 1985. It was this projected population estimate that was used as a measure of size for stratification and selection of sample PSU. Updates to these projections are made as of the period of NFCS interviewing.

- Sixty strata have been formed from which the NFCS PSUs were drawn

The frame for the NFCS 87/88 was 60 geographically-defined strata covering the conterminous U.S. First, all places in the 48 states were assigned to one of three levels of urbanization:

- Central Cities -- The area whose boundaries are those of the core central city within a 1980 Standard Metropolitan Area (SMA). There are 427 such places based on 1980 Census designations.
- Suburbia -- The area whose boundaries are the limits of the 1980 SMA, but excludes the core central city. This stratum is comprised of approximately 696 counties or county equivalents.
- Nonmetro -- The area outside SMAs is defined as nonmetropolitan by the 1980 Census.

Then these places were further classified by the Census division in which they were located. The nine Census divisions shown on the next page are identified below:

- New England
- Middle Atlantic
- East North Central
- West North Central
- South Atlantic
- East South Central
- West South Central
- Mountain
- Pacific

Finally, these 27 strata (3 urbanization by 9 Census divisions) were further broken down into smaller geographic units, in which "affinity" areas in close proximity to one another were clustered together. The result being 60 geographically-defined areas or strata of roughly equal size based on 1985 estimated population counts (and not land masses).

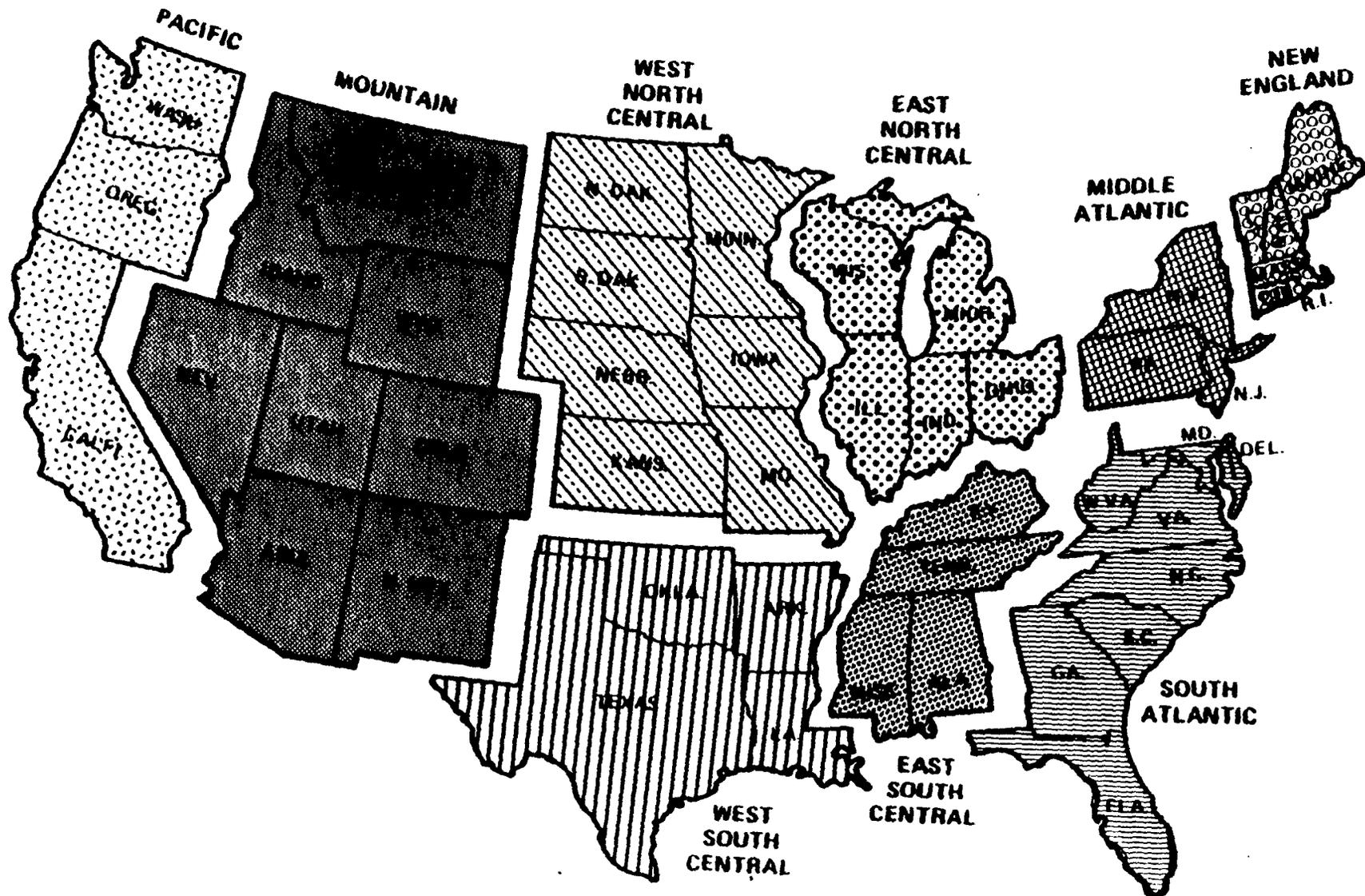
- Two PSUs have been sampled to represent each stratum of the Master Sample

The first stage sampling units -- the PSUs -- have been identified for each stratum in the Master Sample. Each PSU has been selected with a probability proportional to its size in the stratum (based upon projected 1985 population estimates). Two PSUs have been sampled with replacement to represent every strata for a total of 120 PSUs in the NFCS.*

*National Analysts has four replicated PSUs per stratum in its Master Sample, two of which were used in this and other surveys for USDA.

EXHIBIT A

CENSUS DIVISION STRATA



B. Different Secondary Stage Sampling Units -- Area Segments -- Were Drawn for the Basic and Low-Income NFCS Samples

In each PSU, specific areas with groupings of housing units were identified for potential contact in the NFCS study. These areas known as area segments are small land masses conformed to Census boundaries (e.g., block, tracts or Enumeration Districts [EDs]) and contain known numbers of housing units based on the 1980 Census data. Each area segment was created to contain at least 100 (expected) housing units, and was selected with known probabilities -- probability proportional to the 1980 housing counts reported by Census for the area.

Two separate sample draws were programmed, one for area segments to be used for the basic and, then, a separate selection of area segments to be used for the survey of low-income households. Although the possibility of overlap in area segments in the two surveys existed, few sampled areas fell into both of the independently drawn samples. In these cases, separate selection of housing units insured that the two samples remained independent.

The number of area segments selected was dictated by the needs to maintain continuity with past food consumption surveys performed for USDA; namely, NFCS 77/78 and CSFII surveys. Historically, National Analysts has targeted an average of not more than six completed interviews per segment in order to promote wide dispersion of surveyed households throughout the sample areas.* Given this objective, a total of 1,030 segments were selected initially for the basic and 2,150 for the low-income sample. Each were drawn with a probability proportional to size (i.e., the ratio of the number of housing units in the segment to the total number of housing units in the PSU).

- All sampled area segments were included in the basic portion of the NFCS research

All 1,030 area segments identified for the NFCS research were sketched and maps of the areas sent to the field so that a complete enumeration of housing units contained therein was made. Only one segment could not be listed because it was a military installation.

Completed listings were compared to Census counts for the areas and in locations where significant discrepancies in coverage occurred without explanation (e.g., in-field personnel noting major new construction in the area or widespread fire damage and abandonment), areas were relisted. A sample of segments were listed twice as an independent quality check. In total, 167 basic area segments were relisted.

*In the low-income sample where eligibility rates in segments and, hence, the potential number of interviews is unknown, the targeted number of screenings hold sway.

- A subsample of area segments identified for the low-income survey were selected for this part of the NFCS effort

In the low-income portion of the NFCS research, not all households would be eligible for interview -- only selected income-restricted households qualified. Whereas, a self-weighting sample approach was appropriate in directing the selection and fielding of basic area segments, this design was not efficient for the low-income survey. The model was not useful because:

- Only those households with income at or below 130% of poverty qualified for interview
- Such households are a relatively infrequent occurrence in a national representative sample
- Determination of eligibility for interview can only be made by contact with (e.g., screening) all the households sampled and comparing income to the number of household members

Therefore, a design which increased the likelihood that those households contacted in person would be interview-eligible while remaining nationally representative was called for. The approach used, as had been employed successfully in CSFII 85 and 86, oversampled areas with higher rates of low-income households and under-sampled areas with lower rates of poverty. To accomplish this, a two-phase area segment selection process was used. First, 2,150 area segments were selected in the same manner as those in the basic (i.e., PPS). Every low-income sample segment was then classified by its proportion of Census-identified income restricted households into one of three groupings. The groups were:

- Low Poverty -- Less than 10% of the households in the Census tract or Municipal Civic Division are at or below the 125% poverty threshold
- Medium Poverty -- Between 10% and 24% of the households are at or below the 125% poverty threshold
- High Poverty -- Twenty-five percent or more of the households are at or below the 125% poverty threshold

Second, using a high sampling rate to select area segments in Group C and a lower rate to select those in Group A, a total of 1,014 segments were subsampled for the purposes of completing screening contacts and NFCS food interviews in qualifying households. Table II-1 shows the distribution of low-income segments as originally sampled, the rates of subsampling, and the final distribution of low-income areas.

C. Housing Units in Area Segments Were Designed for Contact on a Quarterly Basis

In order to spread the interviewing effort across the entire 12-month period of data collection, target numbers of completed interviews were established for each of four quarters. Consistent with the plan for the NFCS 77/78 and the CSFII surveys of 1985 and 1986, four interpenetrating samples of housing units in the sample area segments were drawn. Just prior to the beginning of each quarter, a set of sample housing units was identified for contact that quarter. That is, four times during NFCS -- before the onset of the Spring, the Summer, the Fall and the Winter quarters -- independent samples of housing units in all the area segments were selected. In the basic sample, these quarterly draws were designed to yield a self-weighting sample of housing units. That is, each quarter considered alone was to be a self-weighting sample. In the low-income sample, each quarterly set of sample housing units were disproportional, based on the disproportionate draw of area segments. That is, the low-income quarterly samples were not by design, intended to be self-weighting, and were to be brought into balance each quarter.

On each sample draw, a systematic sample with random start was used to select sample housing units across all segments. The number of sample housing units identified for contact varied each quarter. At the time of each quarterly draw, the project's sampling statistician decided on the number of sample housing units (or the overall rate) to be selected. This decision was informed by the expected occupancy, cooperation, eligibility rate and related factors determined from experience in previous quarters. This figure could go up or down depending upon the performance in the field up to the time of the sample draw. Because the number of units selected were known, the probability of selection could be computed and used in the weighting process.

Because of the low number of interviews being completed each quarter, the overall sampling rate (and, hence, the number of sample housing units) was increased in each of the second, third and fourth quarters. The overall rates for the basic and low-income sample by quarter is as follows:

	<u>Basic*</u>	<u>Low Income*</u>
Spring	.0000154	.000072
Summer	.0000218	.000100
Fall	.0000330	.000144
Winter	.0000270	.000115

The goal of the fieldwork was that all the sample housing units selected in a quarterly sample would be contacted and interviews completed (or other final results of call determined) during the designated three-month period. Contacts with the sample housing units in the next sample draw were to begin immediately in the following three-month period with virtually no hiatus or overlap in the interviewing effort. As the fieldwork progressed,

*These "raw" rates make provision for occupancy, eligibility, cooperation and the like.

it became apparent that this goal would be difficult to realize. Successful resolution of contacts to sample households (either interviews or other final results of call) were not being obtained during the designated three-month period. It was therefore decided "to keep the sample open" and to continue attempting contacts and interviews with sample housing units at times outside the initial period. Therefore, sample housing units initially designed for contact only in the first quarter (April, May, June), for example, may have not reached a final resolution (e.g., interview or nonresponse outcome) until sometime after June.

Interviewing began in April, 1987 and continued beyond the 12-month period until August, 1988. However, only four interpenetrating samples were drawn. No new sample housing units were selected after the fourth quarter. Contacts and interviews taken after March, 1988 were with only sample housing units drawn in the earlier four quarters.

D. In Interview-Eligible Households, Members Were Selected for the Different Survey Tasks

In qualifying households, different household members qualified for different portions of the survey. For the household food use part of NFCS, the meal planner/preparer served as the household informant, this is most often the female head of household. He or she reported on the details of the food consumption of the household for a seven-day period.

For the intake portion of the NFCS interview, information on food intake was sought for all household members regardless of the source of the food (e.g., from home food supplies or elsewhere). Daily intake was sought for a three-day period -- the calendar day before the interview, the day of the interview and the day following.

E. The Weighting Models for the Survey Results Accounted for Sample Disproportioning and Missing Data

The two major data domains in NFCS -- the seven-day household food use and the individual intake data -- were treated similarly but separate weighting models were developed to recognize the unique issues involved with both. In general, the models were designed to adjust for disproportionality in the probability of selection of sample households in the low-income sample, to adjust for differential rates of completed interviews by season and to adjust for missing data. After these adjustments were completed, ratio estimation was used to create a final household weight to project the survey counts to the Census estimate of number of households in each of the urbanization and Census region or division strata of the master sample. Weighting of the basic and low-income samples differed; therefore, the effort for the basic survey will be discussed first followed by that of the low-income. The weighting model for the household data will be discussed first, followed by the individual intake model.

The Basic Sample

- Weighting the household data

The approach chosen was to treat the data as if all the sample housing units had been selected in a single draw and then weight the data by the season in which the interviews were actually completed. In this approach, interviews taken after March, 1988 were included with their appropriate seasonal data (e.g., July, 1988 interviews were weighted with the summer quarter data).

The first step in the development of the household-level weights was a recalculation of the probability of selection of a housing unit into the sample, independent of which of the four quarterly samples it had been selected into. Once this step was completed, then the adjustment for nonresponse was considered. This recalculation of the probability of selection was done on a segment-by-segment basis. The total number of sample housing units which had been selected in each of the area segments across the four quarters was determined. Then, a single probability of selection was calculated for all the sample housing units in the basic sample across the entire data collection period.

The number of sample housing units divided by the total observed in the segment was used to generate an expected sample size for each segment and served to make the sample self-weighting. In some limited cases where interviewers were unsuccessful in making contacts or completed little or no work in a segment, that segment was married to the other area segments in the PSU or its replicate which then absorbed the housing unit counts into the calculation of the probabilities of selection. That is, the number of sample housing units targeted for that segment were proportionally distributed to the other "worked" area segments. The result of this allocation is that the number of sample housing unit within a stratum remained fixed and in their proper proportion.

Next, data from the field contacts were used to build the model of the actual distribution of households *at the time of interviewing*. The sample design put into the field the best estimate of the distribution of sample housing units based on known, pre-survey information. However, that distribution needed to be calibrated to what existed in the sampled areas based on the empirical results from the survey. This adjustment involved determining, from the screening data, for each segment the number of occupied sample housing units identified and projecting this to the total number of sample housing units in the area. In most cases, this number equalled the number of sample housing units worked in the field minus the sample housing units observed to be vacant. (Very few cases occurred where a result of call was not determined in the field for all sample housing units in a segment. This adjustment was primarily used to accommodate those segments linked with others, post-survey.)

In the basic sample, this *adjusted expected sample housing units* figure is identical to the total number of households eligible to participate in the survey. If there was no nonresponse, then the segment weight for each interview would be "1". If there was nonresponse, then a segment-level adjustment was required to inflate the actual interviews to the expected totals. Therefore, a segment weight was derived and

associated with every completed interview in the segment. This weight -- the segment weight -- was computed by dividing the adjusted expected number of sample housing units by the number of household interviews completed in the segment.

In addition, an adjustment factor was required to bring the seasonal information into balance. The original design called for approximately equal numbers of interviews in each quarter or wave. Because interviews were taken out of the season to which they had been assigned, more interviews than expected were captured in some periods and fewer in other periods. To bring the completed interviews into balance by season, an adjustment was made which recognized the number of expected interviews by quarter and by location (i.e., one of the 27 cells in the Master Sample).

First, an independent estimate was made of the number of households in each of the 27 cells in the conterminous U.S. as of 1988 using Census (e.g., Current Population Reports) and other population projection figures.* Given that one-fourth of these households could have been contacted each quarter, the counts in each cell were divided by 4 to create the target quarterly household goal. Each of these figures then was divided by the previously weighted number of completed interviews in the cell. That is, the adjusted number of interviews actually taken in a 3-month period (regardless of the wave to which they were assigned) were weighted up to the number of households in the cell for the quarter. This produced the final weight for the 4,589 basic household interviews.

The final step in weighting the household was a data-smoothing process. First, the results of the above weighting activities yielded a large weighting factor in one cell (the summer season East South Central Division, central city urbanization cell). This weight was reduced by combining the cell with the results from the South Atlantic Division where the weighting factor was smaller.

The projected results fit many demographic categories reasonably well with the exception of disproportionately more large households and more black and other race households than expected. To reduce this potential bias, the weights assigned to a small number of large black households were reduced and other households in the same or an adjacent segment were increased. This procedure resulted in the projection of persons in the interviewed households coming into agreement with the Census model of total population. This person model was used to weight and project the intake data.

*Because more than half the interviews were completed in 1988, this was the point in time to which the survey results were projected. Current Population Reports, P25, Series 1044 was used to determine the housing unit counts; Statistical Abstracts data were used to determine the proportion of households in central cities, and Sales Management data were employed to determine the 1988 metropolitan counts.

- Individual intake data weighting

The individual intake data from household members were weighted using a person-based age, sex and race model. Adjustments were made to account for individuals in a household with missing intake (either one or multiple days of intake) and seasonally. Each intake day was given a separate weight.

First, a 40-cell model of the estimated number of persons in private households in the conterminous U.S. was created which included 10 age groupings, 2 race and two sex as shown below:

Age	<u>White</u>		<u>Black and Other</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
Under 1 year				
1 to 2 years				
3 to 5 years				
6 to 8 years				
9 to 14 years				
15 to 18 years				
19 to 34 years				
35 to 64 years				
65 to 74 years				
75 years and over				

This estimate of 242,370,000 individuals in 1988 became the target figure to which each day's intake was projected. To make these projections a three-stage process was used.

First, a weight was applied to every household that reported intake data to adjust for those households without any intake information. This was determined by dividing the previously reported total expected households for a quarter by the number of households with intakes for each of the 27 cells in the stratification matrix. This addressed household level non-response to intake.

The next step was to adjust for missing intake days within households reporting some intake. Some individuals within the households reported no intake information. In these situations, an adjustment factor was used to account for their data. The final weighting step projected all of the separate days of intake collected during each of the three-month periods classified by age, sex and race and projected them up to the total population estimates in the 40-cell matrix.

The Low-Income Sample

At the request of HNIS, weighting of the low-income sample was performed somewhat differently. It was weighted in a manner similar to what was done in 1977/78. Therefore, no adjustments for out-of-season interviewing were addressed. Lastly, because it was a smaller sample than the basic survey, a 12-cell model of geography and urbanization rather than a 27-cell matrix was employed to weight the low-income survey.

The model for the low-income sample is a multi-tiered design which first applies weights to the completed screening data and then to the interviews. The product of these weights projects to the universe of eligible households in the conterminous U.S. as of 1988. The low-income sample was taken in the same Primary Sampling Units (PSUs) as were selected for the basic. Therefore, the probability of selection of the PSU is the same as for the basic sample. However, different area segments were drawn for the low-income sample. Therefore, this must be factored into the model. Moreover, the segments were intentionally drawn disproportional which requires that they be brought into balance with one another in the weighting model. Another consideration in weighting the low-income survey interviews is the eligibility criterion for interview which allowed only households at or below 130% of poverty to be interviewed. The model needs to include an adjustment for eligibility. Finally, account was given of the nonresponse.

First, the number of sample dwelling units drawn into each of the four quarterly sample draws was determined for each low-income segment. The result of call at each dwelling was identified. Then the rate of occupancy in each segment and each quarter was determined from the screening result of call data and applied to the data to determine the actual number of occupied households by season in the area segments.

Each segment was then given a segment weight. This weight was to adjust for the prefield oversampling of the high poverty and undersampling of the low poverty areas. All high poverty segments were sampled with certainty (i.e., 1.00) while medium poverty segments were chosen at a rate of .40 and low poverty segments at a rate of .25. These segment sampling rates (H) are then multiplied times the number of estimated occupied sample households within each quarter to derive the distribution of occupied sample households by segment by quarter that is now self-weighting.

The next step is the determination of the number of these sample households that are eligible for the survey (i.e., at or below 130% of poverty) by segment by season. This number is estimated using data from the completed screeners for the dwelling units drawn into each quarterly sample. For each segment, the eligibility rate is determined by the number of eligible households screened (regardless of whether or not an interview was completed) divided by the number of screened occupied sample households. Each completed eligible and non-eligible sample household is given a weight (Q is the weight applied to eligible screeners and R to non-eligible screeners). In low incidence segments where no screening information was available, the rate from other quarters was used, if available, or the rate

from an adjacent segment is applied. The sum of the screening form weighting equals the total sample estimate of the eligible and non-eligible households by quarter. A final weight is given to each quarterly draw which projects the total to an estimate of one quarter of the households in the conterminous U.S. in 1988. Taken together, these data project to the household counts as a whole in the 48 states.

The final weighting step is to determine the household interview weight. If every eligible household had been interviewed, this weight would be the same as the final weight for eligible screening data. However, to adjust for nonresponse to the interview, an additional weight is required, bringing the interview database up to the total number of eligible households. For each quarterly draw, a 12-cell matrix is formed from the sample data, with three urbanization levels -- central city, suburban and non-metro -- by four Census regions. In each of the 12 cells, the total number of eligible households is determined from the projected eligible screening data for the quarter. For example, the estimated eligible universe count as derived from the projection of the completed screening data for the South non-metropolitan cell for Spring is 741.831 (000).

Also determined for each of the 12 cells is the total of the weighted interviews, that is, the sum of the number of eligible sample households in a segment divided by the number of actual interviews in the segment for the quarter multiplied by the number of actual interviews taken in the segment. In the example above, in the South non-metro cell for the Spring data, the weighted households figure is estimated at 613.3 (000). A nonresponse weight (L) is then determined for each of the 12 cells each quarter by dividing the total number of eligible households by the weighted interviews. This weight is then multiplied by the weighted interviews in the cell to obtain the final interview weight(1). Again, in the South non-metro cell for the Spring the L weight is 1.21.

In the 1977 NFCS according to the USDA requirements, no adjustments were made to the intake record data with the exception of the half sampling rates by the selected age groups. Since the later sample design was not employed in this study, no such adjustments have been added to these data. Attached at the end of this chapter are the 12-cell matrices for total households and total eligible households used for the low-income sample weighting.

Table II-1

LOW-INCOME AREA SEGMENTS SELECTION RATE

	<u>Initially Sampled</u>	<u>Segments Subsampled</u>	<u>Sampling Rate</u>
GROUP A -- Under 10% of population within 125% of poverty	700	175	0.25
GROUP B -- 10% to 24% of population within 125% of poverty	1,019	408	0.40
Group C -- 25% or more of population within 125% of poverty	431	431	1.00
TOTAL	2,150	1,014	

Table II-2

**TOTAL HOUSEHOLDS AND TOTAL ELIGIBLE HOUSEHOLDS
FOR LOW-INCOME SURVEY BY REGION
AND URBANIZATION**

(000)

	SPRING		SUMMER		FALL		WINTER	
	<u>Eligible Households</u>	<u>Total Households</u>	<u>Eligible Households</u>	<u>Total Households</u>	<u>Eligible Households</u>	<u>Total Households</u>	<u>Eligible Households</u>	<u>Total Households</u>
Central City -- East	407.16	1669.10	488.32	1648.60	327.59	1629.36	349.74	1592.12
Central City -- Central	331.50	1815.97	346.38	1853.80	438.51	1845.81	412.01	1879.70
Central City -- South	392.64	1939.88	356.45	1946.58	320.80	1972.92	329.63	1942.70
Central City -- West	402.64	1688.13	306.31	1672.04	388.57	1626.53	306.82	1638.23
Suburban -- East	161.25	2446.12	154.81	2424.04	214.93	2489.19	172.53	2482.13
Suburban -- Central	413.27	2495.50	375.30	2457.07	232.70	2390.59	205.01	2458.32
Suburban -- South	346.48	3093.26	388.29	3260.96	407.54	3208.65	397.39	3210.17
Suburban -- West	317.17	2506.20	325.28	2515.43	264.08	2610.89	276.58	2581.90
Non-Metro -- East	140.69	708.21	134.66	719.17	92.48	696.03	77.27	662.99
Non-Metro -- Central	407.95	1554.31	396.72	1502.30	279.05	1498.30	291.69	1524.78
Non-Metro -- South	741.83	2299.28	599.15	2249.66	558.20	2258.81	570.23	2285.00
Non-Metro -- West	124.83	533.43	130.44	492.29	90.24	471.31	76.02	486.10
TOTAL	4187.42	22749.39	4002.12	22741.94	3614.69	22698.39	3464.92	22744.14

III. FIELDWORK PREPARATION

Preparation for the in-field data collection efforts for NFCS involved the following activities: 1) revising survey instruments and supporting materials, 2) developing the computer-aided questionnaire program, 3) pretesting data collection instruments, 4) development of interviewer and editor training materials, and 5) selection and training of interviewers.

A. Revising Survey Instruments and Supporting Materials

HNIS supplied draft copies of the survey documents with the request for proposal and at the initial briefing meetings shortly after onset of the contract. All but the household questionnaire was to be administered in hard copy (paper-and-pencil) format and even the computer-administered CAPI questionnaire needed a paper version for use as backup (e.g., in case of in-field computer failure, respondent preference for paper copy and/or reluctance to accept the computer). Therefore, these field materials had to be finalized and made field-ready.

Finalization of these documents was an iterative process and the instruments continued influx up until shortly before onset of the fieldwork. Extensive programming of the Section II portion of the questionnaire (the household food use) was required: 1) to update each food grouping to accommodate new food product introductions and line extensions (e.g., changes in form and variation) since the previous effort, and 2) to identify the range of acceptable potential product configurations (so that the CAPI program could be tailored to accept only realistic input and eliminate possible sources of error).*

B. Developing the Computer-Aided Questionnaire Program

The interactive software used for the NFCS questionnaire was CI² licensed by Sawtooth Software. CI² is a general, multipurpose questionnaire program used in marketing and survey research. National Analysts acquired a user's license allowing us to adapt the system software, which we did for the NFCS questionnaire. Specifically, sophisticate edit checks for the food use section, a comments section, and a flexible review/edit mode throughout the questionnaire, were programmed. Therefore, in the food use section, for example, once a food item was specified, only the form, variation and measurement units associated with the food (in the USDA weight manual) were presented to the interviewer as entry choices. Warning would appear on screen should respondents/interviewers select unusual or unknown combinations of food items, forms, variations and/or amounts. Safeguards were built into the system which prevented many entry errors and inconsistencies from occurring. For example, prior experience with the hard-copy instrument demonstrated respondents would report using more of a food item than they purchased or when they reported the source of meals for individual family members (e.g., at home, away from home) they would fail to mention meals and, occasionally, even members of the household. The computerized consistency checks identified these problems and prompted interviewers to correct these entries before going onto the next portion of the questionnaire.

*The HNIS research team carefully reviewed every food item listed in Section II to identify the appropriate form, variation and quantity codes and to assure linkages between the NA and USDA codes.

The questionnaire development effort went through approximately 20 versions by the onset of fieldwork.

In addition to questionnaire developments, the respondent's guide for intake recording -- the Food Instruction Booklet -- underwent a thorough revision and expansion to more closely reflect the coding schema to be used in the data reduction effort. Finally, a section dealing in detail with vitamin/mineral supplements was revised and added to the household questionnaire shortly before OMB submission in December, 1986, only to be deleted by OMB during its review and acceptance in March, 1987.

C. Pretesting Data Collection Instruments

Three sets of pretests were conducted in the process of instrument development. First, a comparative testing of the hard-copy and CAPI version of the household questionnaire was completed. Twelve interviews were taken using five interviewers; six CAPI and six paper-and-pencil questionnaires were completed. Interviewers were both trained and debriefed in person by senior members of the study team.

A key finding of this test was that the CAPI format took longer because it forced more complete probing of food items by interviewers (i.e., the computer required that all questions be answered using standard precoded values). Using an abbreviated version of Section II the food use section, the six paper-and-pencil interviews averaged 33.5 minutes, while the computer interviews averaged 52.0 minutes. These differences were due mainly to the time required to complete the food use probing. For example, the average difference in length on a per food item basis was more than one minute -- 3.5 minutes by computer and 2.2 minutes by paper for each item. The demographic and household characteristics portion of the interviews ran about the same -- 7.5 minutes computer-aided and 8.5 minutes in hard copy.

Examination of interviewer recordings showed that more skip pattern errors occurred for interviewers using the paper questionnaire. They asked questions that should not have been raised and omitted others that should have been answered. In addition, inadequate probing and inconsistent recording was noted in the paper-and-pencil version more often than in the computer option. Interviewers working from the hard-copy questionnaire did not probe quantities sufficiently. Food items were recorded without size information or with inappropriate amounts (e.g., "small package" rather than "4 1/2 oz. container"). Moreover, entries for particular food items were recorded using both pounds/ounces and in number/size of units. This added to inconsistencies in reported quantities used or bought and made interpreting the data very difficult.

On the other hand, the computerized version entries had no skip pattern errors and fewer food recording problems. The program, however, was found to have a programming error (it warned interviewers that some food items were uncommon when, in fact, they were not. In addition, interviewers noted that a "don't know" response to the amount paid for a food item was not unaccepted by the program and both these events may have slowed down their entry speed. Interviewers, also, confessed to being unsure of themselves and making mistakes in entering information which may have lengthened the process somewhat.

An additional finding from the pretest was that the interviewers professed enjoying the computer, in spite of their tentativeness. The computer was thought to add a new dimension to the household

interview. It helped them choose the right questions to ask and seemed to require less space to work in than the legal size questionnaire. As a result of this pretest, a more sophisticated/flexible edit function was developed, the programming issues fixed and a second round of pretest completed.

The second pretest had a total of 10 interviews -- five computer-aided and five hard-copy. This pretest demonstrated that the "bugs" noted earlier had been eliminated and that the interview flowed smoothly. The time comparisons between the two administration forms reveal the CAPI to be slightly shorter than the hard copy. Average recording time for the food use portion dropped for the computer-aided version from 3.5 to 2.25 minutes compared to 2.5 minutes for the hard-copy version. Although the change is small it was in the right direction.

This test effort showed some interviewer complacency stemming from greater comfort with the computer (e.g., they did not question unusual amounts if the computer did not prompt them to do so) and pointed to ways of training interviewers for effective questionnaire administration. For example, interviewers need to remain attentive to respondents' answers and not think that the computer will do it all for them. We learned that they would require a solid grounding in the conceptual structure and content of the household questionnaire and not just indoctrination in computer recording techniques.

The final pretest focused on the revised intake records. Six records were completed in four households -- four with meal planners/preparers and two with other household members. The test proved that the document administered correctly with relative ease by either interviewer or respondent, that comprehensive recording requires about 30 to 35 minutes per intake day and that the self-administered portion provided less detailed food and amount descriptions than the interviewer-guided recording.

The final set of materials used in the NFCS interview consisted of:

- Respondent Letter -- This letter, either mailed or hand-delivered to each sample housing unit by the interviewer, invited the household to participate in the survey effort. This letter was used by interviewers at the point of respondent recruitment and set up time for the seven-day inventory period. The letter was signed by the Director of HNIS' Nutrition Monitoring Division and provided potential respondents a means of discovering more information about the study before consenting to cooperate.
- Screening/Call Report Form/Nonresponse Questionnaire -- A brief questionnaire was used to determine household and respondent eligibility for interview. In the basic sample, all households qualified for interview and the screening form was used to identify the meal planner/preparer who was to serve as the household informant.

Households in the low-income survey were screened on the additional criterion of income/size. The screening information conformed to the Food and Nutrition Service food stamp benefits program eligibility guidelines as known in February, 1987 and is shown on the next page:

<u>Number of Person</u>	<u>Monthly Income Cutoff (Income above These Values Are Ineligible for Benefits)</u>
1	\$595
2	\$800
3	\$1010
4	\$1215
5	\$1420
6	\$1625
7	\$1830
8	\$2035
9	\$2240
10	\$2445
11	\$2650
12	\$2860
13	\$3065
14	\$3270
15	\$3475
16	\$3680
17	\$3890
18	\$4095
19	\$4300
20	\$4505

These cutoffs were applied throughout the entire data collection period. Household size was reported in terms of persons who regularly lived in the household and income was for the month prior to interview.

In addition to serving as a screening vehicle, this screening document also provided a record of calls to the household. The Call Report Form portion identified attempted contacts at the address and their outcomes, as well as a record of the number of intake records retrieved and reasons for not securing the others.

The final section of the screening document was a nonresponse form in which the interviewer reported (based on observation or judgment) information on nonrespondent households (other than ineligible and vacants) about:

- Race
 - Ethnicity
 - Condition of residence
 - Farm status
- Household Questionnaire -- This portion of the survey was administered either in CAPI or hard-copy format. It is comprised of four distinctive sections: household sociodemographic characteristics; household seven-day food use; food production and related items; and household economic/financial factors.

Section 1

- Shopping patterns
- Usual food expenditures
- Household composition -- age, sex, race
- Employment status of all household members over the age of 14 years
- Educational attainment for male and female heads of household
- Participation in federally-funded feeding programs -- WIC, school breakfast, school lunch
- Household expenditures, including rent, mortgage, utilities payments
- Number of meals from home food supplies and away from home, including meals and snacks served to guests
- Amount spent for food bought and eaten away from home

Section 2

- Food usage in a seven-day period classified as to:
 - . Food item
 - . Form and variation (e.g., canned, fresh, with and without bone)
 - . Amount used
 - . Source: home produced (grown), gift or pay, purchase
 - . If purchased, amount paid and quantity bought
- Recipe sheet for leftovers that were previously reported as used. (Information in this section was used by coders to adjust the food usage data to properly reflect only quantity fully consumed during the seven-day reporting period.)
- Food sufficiency

Section 3

- Home production of foods
- Farm/ranch operation
- Sources of nutrition information

Section 4

- Sources and amounts of income for household members over the age of 14 years
- Food program participation (e.g., food stamps, commodities)
- Food Item Listing and Show Cards -- visual aids for respondents in answering questions from the household questionnaire (e.g., the food use section and other selected questions, such as occupation) and Day 1 intake record (e.g., listing of foods possibly omitted from the intake recording).
- Shopping List -- This form was used by interviewers to record the nature and amounts purchased of food items for which respondents could not recall the price. The computer program allowed interviewers to select an option of listing all purchased food items for which no price information was given. This summary information was recorded onto the Shopping List and then taken by interviewers to local stores where they priced comparable items whenever possible. This price information was subsequently used by reviewers/coders to edit in the value of the purchased food.
- Individual Intake Record -- This, the final section of questionnaire, came in two parts and covered the foods and beverages actually ingested by individual household members at and away from home during a period of up to three days. The interviewer administered the questionnaire for the 24-hour calendar day before the interview, using food measurement aids, to every respondent present at the time (the meal planner/preparer reported for children under 12). First, under the direction of the interviewer, and then on their own, household respondents completed intake records for the 24-hour day of and day after the interview recording information in a second questionnaire booklet.

Day 1

- Detailed description of the type and quantities of food ingested
- Source of foods consumed
- Quantity of water consumed
- Typicality of daily diet
- Healthfulness of diet
- Salt usage patterns
- Vitamin and mineral supplements
- Health, activity level and smoking behaviors

Day 2 and 3

- The same first four data elements as Day 1
- Food frequency for 11 specific food items
- Patterns of alcohol consumption for household members over the age of 17 years
- Food Instruction Booklet -- A detailed "work book" for interviewers and respondents to use in conjunction with completion of intake records. Organized by food groupings, the Food Instruction Booklet identified the nature and format of the food information sought by:
 - Name of individual food (line) items
 - Detailed food descriptions
 - Quantity measurements

D. Development of Interviewer and Editor Training Materials

Training materials were developed to prepare and accompany the in-person training of interviewers and post-field data handlers. Of particular importance to this project was the development of materials to familiarize interviewers with the operation of laptop personal computers. Two manuals were created.

- Preconference Introduction -- This 39-page manual was sent to all interviewers for home study prior to personal training. It introduced field personnel to the background and purpose of the NFCS 87, presented general interviewing guides and recording conventions, set forth food terminology important to the survey and briefly described the usage of the laptop computer (see Appendix III-A for a copy of the Table of Contents).
- Interviewer Instruction Manual -- This document was supplied to interviewers at their training conference and covered all aspects of the process and content of the survey effort. The materials addressed in this manual included survey tasks, sample control, the CAPI interview, intake recording, and on-site editing guidelines. A copy of the Table of Contents from this 164-page guide is found in Appendix III-B.

To acquaint data coders, reviewers and editors with their tasks and to train in the proper execution of them, another manual was created. This, the Post-Field Procedures Manual, outlined in detail all of the document edit and review activities, as well as procedures for recontacting field personnel or respondents to retrieve missing information. A copy of the Table of Contents for this document is shown in Appendix III-C.

E. Selection and Training of Interviewers

In-person interviewers from National Analysts' on-site field force were identified, screened and invited to participate in training conferences prior to the survey onset. Preference was given to interviewers with prior survey research experience with food and nutrition studies, especially those who had worked with National Analysts on other USDA-sponsored research (e.g., CSFII 85 and 86 or NFCS 1977-78).

Prior to their attendance at training conferences, potential interviewers received Pre-Conference Manuals. The manual presented general interviewing instructions, National Analysts' recording conventions and an introduction to laptop computers. Review of this prior to the conference set the framework for interviewer learning at the sessions.

Eleven training sessions were held at the onset of data collection in which 187 interviewers were given personal training and hands-on exposure to the computer and the CAPI interview. The dates and location of these sessions were:

<u>Location</u>	<u>Dates</u>
Philadelphia	March 30-April 3 (3 concurrent sessions) April 5-10
Chicago	April 5-10 (2 concurrent sessions)
Los Angeles	April 5-10 (2 concurrent sessions)
Philadelphia	April 20-25 (3 concurrent sessions)

Training sessions which averaged 15 to 20 interviewers each, were led by at least two experienced National Analysts' trainers, generally one field administrator and one member of the study direction team. Every session leader had prior training experience with USDA food consumption research, either seven-day food use and/or intake surveys. A total of eight trainers combined to cover the sessions. Typically, one or more USDA observers attended the sessions and assisted with the review and one-on-one instruction of interviewers. In the Philadelphia-based conference members of the National Analysts' coding team attended the meetings, both to serve as resource personnel and to become familiar with interviewer preparation for the specific activities associated with the NFCS 1987.

The conferences were designed to get interviewers involved with their computers as quickly as possible, so that they would have as much guided exposure to their tasks as possible. The sessions began with an overview of the NFCS 1987 and emphasis being given to the history, objectives, research task and training goals. Next, the screening forms were introduced and interviewers practiced reading aloud and completing both the basic and low-income screening questionnaires. Next, computers were given to each interviewer and group instruction followed in the fundamental (e.g., turning on/off, using diskettes, function keys, editing) conventions.

The afternoon of the first day was devoted to learning to complete the household questionnaire on the computer. A pre-scripted mock questionnaire was used, as interviewers asked questions and entered answers into their laptops in a lengthy round-robin session. As homework, interviewers were to practice entering Section I and II information into their laptops based on a "story problem" scenario and to review the relevant sections of their training manuals.

The second day's session began with a question-and-answer exercise designed to address interviewers' concerns and to test their knowledge/retention of materials from the previous session. A second pre-scripted mock interview was completed using the computer-entry system. After lunch, the hard-copy version of the household questionnaire was introduced so that all would be familiar with its use and recording conventions. Finally, interviewers broke into small groups to enter one more computer-aided household interview. Interviewers took turns role-playing respondents while the trainers and USDA researchers observed and served as resource personnel. Again, homework was assigned, this time a reading assignment in the manual.

On the third day of training, the Individual Intake Record was introduced. First, an unstructured recording exercise was used to demonstrate the need for standardized probes and recording. Then, the Food Instruction Booklet and its use was discussed, followed by a focused discussion of food measurement/quantification instruction. The afternoon session was devoted to completion of two mock intake questionnaires and intense drill on the use of interviewing aids and recording conventions. Homework consisted of completing an intake record with a friend and assigned readings in the interviewer's manual covering the intake portion of the survey.

The intake record completed as homework was reviewed, one-on-one, with each interviewer by trainers and USDA personnel at the beginning of the fourth day's session. This personalized interaction allowed for detailed assessment of interviewers' strengths/weaknesses and an opportunity to personally coach individuals in areas particularly problematic to them. Next, the protocol for selecting and interviewing at sample households was explored. The afternoon session was turned over to practice in completion of an entire interview from screening to intakes. A prerecorded scripted interview was played and interviewers practiced proper inputting and interview techniques. Trainers were freed to observe and assist interviewers requiring additional help.

The final day of the conference was used to review all the steps in the data collection process, study sample selection issues, drill or do refresher training in any areas that were troublesome to the group and deal with administrative matters (e.g., mailings, field status reporting).

Because we recognized that interviewer turnover would occur, especially due to the new technology using the computers, plans were made to have formal training sessions throughout the data collection period. Turnover was even greater than anticipated and retraining was nearly a continuous process. Training sessions to replenish interviewers occurred:

<u>Location</u>	<u>Dates</u>
Philadelphia	May 26-30 June 15-20
Los Angeles	July 20-24
New York City	July 20-24

Thereafter, individual training briefings were conducted in groups as small as one or two field interviewers until the end of data collection. The agenda of these two- and three-day sessions replicated the five-day program but could be compressed because of greater intimacy and direct interaction between student and trainer. The major format change was that the interviewers returned to their home base, completed practice interviews with nonsample respondents, returned the materials to the office and had lengthy telephone critiques with their field supervisors. That is, instead of bringing a respondent into the sessions to be interviewed by the group, each interviewer selected their own respondent and completed an entire interview which was then reviewed.

More than 250 interviewers were trained and worked at some point on NFCS 87. Most (approximately 210) were trained formally in one of the above scheduled conferences. About 45 were briefed in the smaller one-on-one sessions. Another ten persons were trained to assist with screenings for eligibility and appointment setting (but did not do actual household or intake interviews). Additional field personnel worked on prelisting area segments, providing escort services and other noninterviewing activities. Approximately 20 interviewers went through the formal training process but never completed an interview. These interviewers found the interview to be too burdensome and the computer portion difficult to master.

Trained interviewers who worked on the assignment averaged 28 completed interviews as shown below (see Table III-1). Most worked in a mixture of basic and low income sample areas and completed between 10 and 49 interviews. The majority of trained interviewers worked on two or more quarters of data collection, with 34% completing interviews throughout the entire interviewing period (see Table III-2).

Table III-1

NUMBER OF COMPLETED INTERVIEWS PER INTERVIEWER

	<u>%</u>
Less than 5	25
5 to 9	15
10 to 14	11
15 to 24	11
25 to 49	16
50 to 99	16
100 or more	6
Mean	28.5 interviews
N =	(255)

Table III-2

LENGTH OF INTERVIEWER SERVICE

	<u>%</u>
One quarter	29
Two quarters	24
Three quarters	13
All quarters	34
N =	(255)

IV. DATA COLLECTION

This chapter covers the activities associated with data collection, beginning with area listing and concluding with document validations. The first section deals with field procedures and the second summarized field results in several key areas.

A. Field Procedures

The NFCS data collection involved the following six tasks:

- Screening to determine eligibility and set appointment to interview
- Conduct household interview
- Completion of Day 1 intake interviews with eligible household members
- Instruction in completion of Day 2 and 3 intake records
- Collection and editing of intake records
- Completion of supermarket shopping list

Each of these activities is described below:

- Screen to determine eligibility and set appointment for interview

Interviewers visited every sample housing unit in person to invite participation and to determine eligibility in the low-income sample of the survey. Interviewers were instructed to attempt screening interviews with the household meal planner/preparer if at all possible. If he or she were not available, any knowledgeable adult member of the household 18 years old or older could complete the screening.

In the basic sample where all households qualified for interview, the screening activity was used to solicit the cooperation of the family meal planner/preparer. The potential respondent was identified, told of the requirements of the survey, asked to keep simple records of food use for a week and to set a time for interview at least seven days after the time of the screening. Receipt holders were given to the potential respondents as aids for record keeping (e.g., to store labels, shopping lists and any other notes that they might perceive useful to reporting the seven-day food use information). The invitation letter from the HNIS Nutrition Monitoring Division Director, the receipt holder and the offer of \$2.00 for keeping intake diaries were used at this point to motivate cooperation and convince respondents of the survey's authenticity.

Screening households in the low-income portion of the survey required completion of several additional questions to determine eligibility based on household size and monthly income. Only after the household qualified was the invitation to participate extended.

In cases where there were multiple meal planners/preparers in the household because the members kept separate food supplies, separate interviews were planned for each of the individual household eating units. The results from each eating unit were treated as separate households consistent with prior surveys. Up to six in-person attempts (five in rural) plus five telephone attempts were made to contact, screen and recruit participation in NFCS.

- Conduct household interviews

All interviews were completed with the meal planner/preparer who served as the household informant. This person was judged to be more knowledgeable about the subject of the survey, although input from others in the household was permitted (e.g., income questions) if the meal planner/preparer could not address the topic fully him- or herself.

As it was a lengthy interview, appointments were set and reconfirmed with the respondents for times early in the morning, in the afternoon or in the evening. The goal was to complete all sections of the questionnaire in one session. If, however, circumstances required that the interview be taken in two parts, all of Section 1 (household demographic information) and Section 2 (seven-day food usage) were captured before the break-off.*

Interviews were administered by computer and information for each interview was recorded on a single diskette with back-up on a cumulative file (also diskette). In some cases of computer problems, the back-up file was used to recover some or all of the interview. If the interviewer could not complete (or begin) the CAPI portion because of computer problems or other reasons, a paper-and-pencil version was used.**

The laptops proved to be very reliable in the field. Only a handful (i.e., less than five cases) of problems with the hardware were noted. Even in these situations it is unclear whether the hardware was at fault or whether it was an operator (i.e., interviewer) interface problem. Over 30 laptops, however, were lost to the field due to thief from automobile, a fire and, in some cases, both the interviewer and laptops disappeared.

The software was, for the most part, problem-free, as well. Two versions had minor errors and were replaced within three weeks of the onset of training (one being corrected before the end of the initial training conferences). A total of four field versions were used during the study. The most serious problem occurred in the first month of data collection when an

*This was a very rare occurrence.

**When hard copy documents were received in the office, coding personnel key entered the information into in-office lap tops and the resulting diskettes were processed in the same manner as ones completed in the field. In some cases the food use information could not be recovered from either the primary or the backup diskette. In these situations the interview was retained without this section if there were household and demographic data as well as intake records which could be used for that portion of the research.

Table IV-1

LENGTH OF COMPUTER-ADMINISTERED INTERVIEW

	<u>Basic</u> <u>Sample</u> <u>%</u>	<u>Low</u> <u>Income</u> <u>Sample</u> <u>%</u>	<u>Total</u> <u>Sample</u> <u>%</u>
<u>Number of Minutes</u>			
30 or less	2	3	2
31 to 60 minutes	17	20	18
61 to 90 minutes	29	28	29
91 to 120 minutes	25	24	25
121 to 150 minutes	14	13	14
151 to 180 minutes	7	6	6
181 to 210 minutes	3	3	3
211 to 240 minutes	1	1	1
241 or more	2	2	2
Mean	100 min.	96 min.	99 min.

Table IV-2
LENGTH OF DAY ONE INTAKE RECORDING*

	<u>Basic Sample</u> %	<u>Low Income Sample</u> %	<u>Total Sample</u> %
<u>Number of Minutes</u>			
10 or less	14	17	15
11 to 20 minutes	45	41	43
21 to 30 minutes	27	26	27
31 to 40 minutes	8	8	8
41 or more minutes	7	8	8
Mean	23 min.	23 min.	23 min.

*Excludes known cases in which the interviewer reported only the total time for the intake task; that is, recorded the starting time as the time the first intake was begun and the ending time as the time the final intake was completed.

- Instruction in completion of Day 2 and 3 intake records

Not only did the interviewer record the Day 1 intake but used the effort to train respondents in the proper entry of food descriptions and quantities so that the remaining days could be self-reported. Any eligible household members not reporting Day 1 intake or for whom the meal planner/preparer could not supply information, were left copies and instructions for completion of these records. In addition, the interviewer completed recording Day 2 intake up to the time of the interview and then left the Day 2 and 3 records -- for the 24-hour day of the interview and the 24-hour day following -- for all eligible household members to complete.

Meal planners/preparers continued to report for children under 12 and to assist other members if they desired it. The measuring utensils and FIB were left with the household to guide intake recording.

- Collection and editing of intake records

Interviewers returned to the sample household after the recording period to collect the completed forms. If the household members were present, the interviewer reviewed the documents and edited them on the spot. In other cases, they collected the records and completed the review at a later time.

Each household was paid \$2.00 per completed record, up to \$20.00 per household.

Table IV-3 displays reasons for not retrieving Day 1 and Day 2/3 intake records. More Day 1 than Day 2/3 records were secured, as expected. Refusal of a household member to cooperate was the major reason for not capturing an intake record, with nearly twice the refusal rate for Day 2/3 records as for Day 1. Household members being away from home was the next most popular reason for no intake records. Voided records represent those that were too incomplete to be accepted.

- Completion of supermarket shopping lists

If the meal planner/preparer was unable to provide substantial amounts of pricing information (i.e., more than 6 number of purchased items did not have prices), the interviewer attempted to shop for the items in a similar store and to secure missing price information, if possible.*

*To cover situations where there were fewer than 7 missing prices or where the interviewer failed to find prices, a member of the in-house coding team shopped regularly for unusual foods and/or quantity amounts. This information was often used to assist in making judgments about ascribing prices (see Chapter VI).

Table IV-3

REASONS FOR NOT OBTAINING INTAKE RECORDS IN THE FIELD

	Basic		Low Income	
	<u>Day 1</u> %	<u>Day 2/3</u> %	<u>Day 1</u> %	<u>Day 2/3</u> %
Record obtained	84	73	84	70
Refused	12	20	11	20
Person away from home	2	2	2	2
Intake voided	1	1	1	5
Person too sick	*	*	*	1
Not obtained -- NFS	*	*	1	2

B. Field Outcomes

A variety of measures were examined in assessing field outcomes in the NFCS projects. Several of these were targets or goals for the success of the field operation. Specific measures looked at were:

- Overall field counts and outcomes
- Distribution of interviews
- Distribution of interviews by mode of interview
- Distribution of individuals and intake interviews
- Distribution of interviews by day of the week
- Mean number of food items reported in the seven-day food use section and in the intake record
- Overall field counts and outcomes

Tables IV-4 and 5 show the distribution of interviews and outcomes of attempted contacts by the interviewing period to which the interview had been assigned (regardless of when the contact was actually completed). As shown for the basic sample, 4,589 usable household interviews were completed. The major cause of nonresponse was the refusal of households to cooperate with the interview effort once they were made acquainted with the study (n = 3,971). The second reason for nonresponse was the failure to find potential respondents at home after repeated attempts at contact (n = 2,354). The occupancy rate among the basic sample housing units was 88.5% which is the same rate reported by Census for 1987 (90.9 million households and 102.7 million housing units).

Among low income sample households the largest group of nonparticipants were households ineligible by size and income to qualify for survey. No one home constituted the next largest group of nonrespondents followed by refusals to screen and, once screened, refusals to interview.

Relatively few interviews were totally lost due to computer problems and failures; only 20 basic households completed interviews which could not be used in whole or in part. The final result of call category "other" includes cases where the respondent was too ill to continue, where interviews were taken incorrectly in whole (or in part) and were subsequently invalidated (e.g., less than seven days food use reporting and no useable intake records), and other similar reasons.

Table IV-4

**FINAL QUARTERLY COUNTS OF NFCS BASIC
BY RESULT OF CALL**

	<u>SPRING</u>	<u>SUMMER</u>	<u>FALL</u>	<u>WINTER</u>	<u>TOTAL</u>
<u>Result of Call*</u>					
Participated (Code 1)	847	1,032	1,540	1,170	4,589
Refused interview (Code 5)	537	789	1,264	1,112	3,702
Refused screening (Code 8)	248	251	492	379	1,370
No answer (Code 10)	292	538	702	583	2,115
Language barrier (Code 11)	8	26	46	35	115
Vacant (Code 12)	240	353	535	424	1,552
No access (Code 14)	6	32	42	51	131
Computer problems void (Code 15)	1	3	5	9	18
Other (Code 13)	8	31	52	36	127
TOTAL	2,187	3,055	4,677	3,799	13,719

*Codes 2, 3, 6, 7 and 9 are not final outcome codes.

Table IV-5

**FINAL QUARTERLY COUNTS OF NFCS LOW INCOME
BY RESULT OF CALL**

	<u>SPRING</u>	<u>SUMMER</u>	<u>FALL</u>	<u>WINTER</u>	<u>TOTAL</u>
<u>Result of Call*</u>					
Participated (Code 1)	554	665	838	635	2,692
Ineligible (Code 4)	3,043	4,080	6,080	4,855	18,058
Refused interview (Code 5)	326	483	658	502	1,969
Refused screening (Code 8)	343	481	831	703	2,358
No answer (Code 10)	626	1,161	1,361	996	4,144
Language barrier (Code 11)	49	78	149	120	396
Vacant (Code 12)	745	868	1,340	1,092	4,045
No access (Code 14)	42	131	199	195	567
Computer problems void (Code 15)	7	1	1	3	12
Other (Code 13)	15	27	112	71	225
TOTAL	5,750	7,975	11,569	9,172	34,466

- Distribution of interviews

The distribution of household interviews by the quarter to which they were assigned for the basic survey is shown in Table IV-6. The distribution of regional interviews shows that more interviews were taken in the South and fewer than expected in the West. Table IV-7, the distribution of household interviews by the quarter in which the household was assigned for low-income, shows the same pattern.

- Distribution of interviews by mode of interview

The distribution of interviews by type of data capture mode is shown in Table IV-8. In cases where the interviewer ran into problems with the laptop or the household was reluctant to complete the CAPI interview, the paper-and-pencil format was used as back-up. As can be seen, the fallback technique was reported relatively rarely. Nearly 90% of all interviews were successfully taken in the CAPI mode and, in the majority of the remaining cases, paper was used to supplement the computer-assisted portion. In less than 5% of the basic and 3% of the low-income households did interviewers report relying exclusively on paper-and-pencil administration.

- Distribution of individual and intake interviews

Table IV-9 shows the distribution of individuals by selected key characteristics of household members. The data on race and ethnicity reveal a sizable number of black ($n = 1,578$) and Spanish ($n = 562$) individuals resided in households included in the basic survey. In addition, sizeable numbers of persons were represented among selected population groups who may be at greater than average nutrition risk, including women in childbearing years, older men and women, children 1 to 6 years and 7 to 12 years and teenagers of both sex. Only small numbers of nursing infants under 12 months and nursing mothers were identified in the basic survey.

Proportionately more blacks and Hispanics are found in the low income sample but the picture is similar to basic for many of these selected population groups (see Table IV-10). Sizeable numbers of women in their childbearing years, women and men 65 years and older, children 1 to 6 years and 7 to 12 years as well as male and female teenagers are found in the households interviewed in the low income portion of the CSFII survey. The numbers of nursing infants and nursing mothers -- two important population groups -- are also small, as was the case with the basic sample.

Tables IV-11 and IV-12 show the distribution of individuals completing one or more intake records by some of the same selected characteristics for the basic and low-income surveys, respectively. Here the same pattern of coverage emerges as noted in the household food use portion of the survey. Intake reporting covers most of the selected groups with the exception of nursing infants, nursing mothers and, in the low income sample, pregnant women.

Table IV-6

**DISTRIBUTION OF INTERVIEWS
BY QUARTER FOR BASIC SAMPLE**

NFCS REPORTING GROUPS	BASIC				
	<u>SPRING</u>	<u>SUMMER</u>	<u>FALL</u>	<u>WINTER</u>	<u>TOTAL</u>
U.S. total (Households)	847	1,032	1,540	1,170	4589
REGION (Households)					
Northeast	174	213	297	240	924
North Central	212	266	422	295	1195
South	294	364	524	416	1598
West	167	189	297	219	872

Table IV-7

**DISTRIBUTION OF INTERVIEWS
BY QUARTER FOR LOW INCOME SAMPLE**

NFCS REPORTING GROUPS	LOW-INCOME				
	<u>SPRING</u>	<u>SUMMER</u>	<u>FALL</u>	<u>WINTER</u>	<u>TOTAL</u>
U.S. total (Households)	554	665	838	635	2,693
REGION (Households)					
Northeast	93	132	134	74	434
North Central	115	139	161	115	530
South	235	266	378	348	1,227
West	111	128	165	98	502

Table IV-8

FORM OF QUESTIONNAIRE ADMINISTRATION

	<u>Basic</u> %	<u>Low Income</u> %
Laptop	88.3	93.1
Laptop with paper-and-pencil	7.2	4.0
Paper only	4.5	2.9

Table IV-9

**DISTRIBUTION OF INDIVIDUALS BY SELECTED CHARACTERISTICS
BY QUARTER FOR BASIC SAMPLE**

	BASIC				
	<u>SPRING</u>	<u>SUMMER</u>	<u>FALL</u>	<u>WINTER</u>	<u>TOTAL</u>
RACE/ETHNICITY (Individuals)					
Hispanics	152	111	155	144	562
Non-Hispanic whites	1760	2192	3463	2589	10,004
Non-Hispanic blacks	294	356	501	427	1578
Other Non-Hispanics	85	69	147	77	378
AGE/SEX/PREGNANCY/NURSING (Individuals)					
Nursing infants less than 1 year	11	14	17	16	58
Non-nursing infants less than 1 year	30	23	63	35	151
Females, 12 to 55 years and pregnant	19	31	38	21	109
Females, 12 to 55 years and nursing	12	17	18	22	69
Children 1-6 years	252	261	433	332	1278
Children 7-12 years	215	261	415	322	1213
Males 13-19 years	105	122	226	166	619
Females 13-19 years	117	146	234	160	657
Males 20+ years	701	883	1321	1023	3928
Females 20+ years	860	1017	1554	1183	4614
ADDITIONAL HIGH RISK GROUPS (Individuals)					
Women of child-bearing age 12 to 55 years	732	850	1369	986	3937
Men aged 65 years and older	108	142	202	174	626
Women aged 65 years and older	167	197	278	217	859

Table IV-10

**DISTRIBUTION OF INDIVIDUALS BY SELECTED CHARACTERISTICS
BY QUARTER FOR LOW INCOME SAMPLE**

	<u>LOW-INCOME</u>				
	<u>SPRING</u>	<u>SUMMER</u>	<u>FALL</u>	<u>WINTER</u>	<u>TOTAL</u>
RACE/ETHNICITY (Individuals)					
Hispanics	235	247	251	179	912
Non-Hispanic whites	840	919	1195	928	3882
Non-Hispanic blacks	488	662	831	693	2674
Other Non-Hispanics	56	45	62	36	199
AGE/SEX/PREGNANCY/NURSING (Individuals)					
Nursing infants less than 1 year	6	12	9	6	33
Non-nursing infants less than 1 year	43	43	40	41	167
Females, 12 to 55 years and pregnant	9	22	31	22	84
Females, 12 to 55 years and nursing	7	14	11	6	38
Children 1-6 years	232	334	344	280	1190
Children 7-12 years	219	242	269	263	993
Males 13-19 years	106	84	131	121	442
Females 13-19 years	99	98	165	109	471
Males 20+ years	343	395	528	391	1657
Females 20+ years	571	665	853	622	2711
ADDITIONAL HIGH RISK GROUPS (Individuals)					
Women of child-bearing age 12 to 55 years	469	552	768	553	2342
Men aged 65 years and older	75	81	96	70	322
Women aged 65 years and older	159	148	186	133	626

Table IV-11

**DISTRIBUTION OF INDIVIDUALS WHO COMPLETED ONE
OR MORE INTAKE RECORDS
BY QUARTER**

	BASIC				TOTAL
	SPRING	SUMMER	FALL	WINTER	
AGE/SEX/PREGNANCY/NURSING (Individuals)					
Nursing infants less than 1 year	8	12	12	11	43
Non-nursing infants less than 1 year	28	22	53	25	128
Females, 12 to 55 years and pregnant	18	30	34	19	101
Females, 12 to 55 years and nursing	10	17	16	10	53
Children 1-6 years	205	221	374	253	1053
Children 7-12 years	175	214	327	243	959
Males 13-19 years	86	100	174	127	487
Females 13-19 years	93	119	189	127	528
Males 20+ years	567	719	1105	839	3230
Females 20+ years	735	895	1376	1013	4019
ADDITIONAL HIGH RISK GROUPS (Individuals)					
Women of child-bearing age 12 to 55 years	615	726	1180	814	3335
Men aged 65 years and older	85	124	178	153	540
Women aged 65 years and older	140	178	253	199	770

Table IV-12

**DISTRIBUTION OF INDIVIDUALS WHO COMPLETED
ONE OR MORE INTAKE RECORDS
BY QUARTER**

	<u>LOW-INCOME</u>				
	<u>SPRING</u>	<u>SUMMER</u>	<u>FALL</u>	<u>WINTER</u>	<u>TOTAL</u>
AGE/SEX/PREGNANCY/NURSING (Individuals)					
Nursing infants less than 1 year	4	10	7	4	25
Non-nursing infants less than 1 year	41	36	34	28	139
Females, 12 to 55 years and pregnant	9	21	27	21	78
Females, 12 to 55 years and nursing	7	12	10	6	35
Children 1-6 years	204	281	274	227	986
Children 7-12 years	192	205	201	215	813
Males 13-19 years	97	66	93	81	337
Females 13-19 years	89	75	125	86	375
Males 20+ years	299	329	437	320	1385
Females 20+ years	529	597	701	541	2368
ADDITIONAL HIGH RISK GROUPS (Individuals)					
Women of child-bearing age 12 to 55 years	427	482	611	458	1978
Men aged 65 years and older	69	72	87	66	294
Women aged 65 years and older	150	134	154	124	562

As can be seen, most eligible individuals in the basic sample, for example, completed at least one day of intake interviews. Among the key "at risk" groups in the basic sample, the greatest successes were with pregnant females, 93% (101 out of 109 women) of whom completed an intake record and with women over 64 years, 90% (770 out of 859) of whom reported intake. The lowest rate of intake completion was for nursing infants, for whom 74% of the possible records were obtained. Interviewers report nursing mothers were not confident in their ability to recall this frequently recurring activity. A remarkable number of individuals, once they agreed to cooperate with the reporting activity, did make an effort to provide all three days of information. The few cases of "checkered" reporting (e.g., days 2 and 3 but no day 1), come about as a result of voiding or rejecting a record during the coding stage rather than a failure on the part of a respondent to report.

In Tables IV-13 and 14 is found the total number of intake records by intake day for the basic survey. As expected, many more interviewer-directed Day 1 intake records were completed and retrieved than Day 2 and 3.

- Distribution of interviews by day of the week

Because patterns of consumption are noted to vary by day of the week as well as by season, efforts were made to collect data on each of the seven days of the week. Table IV-15 demonstrates the distribution of interviews across the days of the week and by weekday versus weekend. Most days of the week are well represented with the exception of Sunday. As is typical of interviews of this type,* interviewers and respondents appear reluctant to devote much of their time on Sunday to a lengthy food interview.

- Mean number of food items reported in the seven-day food use section and in the intake record

Table IV-16 shows the mean number of food items reported in the household seven-day food use section by household size. As expected, the larger the household the more food items used in a seven-day period. Multi-person households in the low-income sample report less varied food use than similar households in the basic survey; that is, low income households report usage of fewer food items in a seven-day period (36.6 vs. 40.8) than basic households for other than one-person households. In Table IV-17, the mean number of food lines is reported by individuals. As can be seen, the number of food lines reported declines slightly across days and, in general, the number of food lines increases by age category. Again low income sample respondents report fewer foods than members of basic sample households.

* * * * *

*See Survey Operations Report for the Continuing Survey of Food Intakes By Individuals 1985/87, December 1987.

Table IV-13

**DISTRIBUTION OF INTAKE RECORDS BY DAY
BY QUARTER FOR BASIC SAMPLE**

<u># of Individuals Providing Useable Data for:</u>	BASIC				
	<u>SPRING</u>	<u>SUMMER</u>	<u>FALL</u>	<u>WINTER</u>	<u>TOTAL</u>
Day 1 intake	1,897	2,301	3,597	2,631	10,427
Day 2 intake	1,697	2,011	3,149	2,157	9,011
Day 3 intake	1,677	1,998	3,127	2,159	8,961
All three days of intake	1,677	1,998	3,115	2,139	8,929
Day 1 and 2 intakes only	20	13	20	10	63
Day 1 and 3 intakes only	0	0	0	2	2
Day 2 and 3 intakes only	0	0	12	8	20
Day 1 intake only	200	291	462	480	1,433
Day 2 intake only	0	0	2	0	2
Day 3 intake only	0	0	0	10	10

Table IV-14

**DISTRIBUTION OF INTAKE RECORDS BY DAY
BY QUARTER FOR LOW INCOME SAMPLE**

<u># of Individuals Providing Useable Data for:</u>	<u>LOW INCOME</u>				
	<u>SPRING</u>	<u>SUMMER</u>	<u>FALL</u>	<u>WINTER</u>	<u>TOTAL</u>
Day 1 intake	1463	1599	1868	1503	6433
Day 2 intake	1333	1311	1532	1210	5386
Day 3 intake	1321	1304	1512	1187	5324
All three days of intake	1315	1295	1512	1187	5309
Day 1 and 2 intakes only	16	8	20	23	67
Day 1 and 3 intakes only	4	1	0	0	5
Day 2 and 3 intakes only	2	8	0	0	10
Day 1 intake only	128	295	336	293	1052
Day 2 intake only	0	0	0	0	0
Day 3 intake only	0	0	0	0	0

Table IV-15

**DAY OF THE WEEK OF INTERVIEW
BY TYPE OF SAMPLE**

<u>Day</u>	<u>Basic</u> %	<u>Low Income</u> %
Sunday	5	5
Monday	20	17
Tuesday	18	19
Wednesday	17	16
Thursday	15	17
Friday	13	14
Saturday	12	12
Weekday	83	83
Weekend	17	17

Table IV-16**HOUSEHOLD FOOD ITEMS BY HOUSEHOLD SIZE**

<u>Household Size</u>	<u>BASIC</u> Mean # <u>of Food Lines</u>	<u>LOW-INCOME</u> Mean # <u>of Food Lines</u>
1 person	26.39	26.51
2 to 3 persons	41.03	37.24
4 or more persons	50.94	44.73
All households	40.79	36.59

Table IV-17

**MEAN NUMBER OF INTAKE FOOD LINES
BY AGE, DAY AND SAMPLE**

Age	BASIC			LOW-INCOME		
	<u>Day 1</u>	<u>Day 2</u>	<u>Day 3</u>	<u>Day 1</u>	<u>Day 2</u>	<u>Day 3</u>
1 to 11 months old	8.71	8.42	8.59	8.22	8.14	8.29
1 to 5 years old	14.90	12.16	11.86	9.46	11.31	11.14
6 to 18 years old	12.48	12.16	11.97	12.20	11.58	11.71
19 years or older	13.56	12.95	11.75	12.29	11.58	11.63

Special efforts were made throughout the survey period to assist interviewers in making contacts and completing interviews in the field, especially in light of the shortfall in interviews. These efforts included tactics such as:

- Letters and telephone calls to potential respondents from the Philadelphia office encouraging participation
- Letter to managers of locked buildings to solicit opportunities to gain entrance
- Providing interviewers with identification badges and credentials to verify survey legitimacy
- Providing escorts to interviewers to difficult areas
- Assisting trained household/intake interviewers in screening and appointment setting
- Offering respondents honorarium for participation in the interviews/intake completion (up to the \$20 honorarium limit) rather than intakes alone
- Traveling expert interviewers to hard to work areas
- Reassign sample households to different interviewers for follow up contact and attempted interview
- Offering interviewers incentives for timely, accurate performance (e.g., Thanksgiving turkeys)

Even these efforts were not sufficient to overcome the barriers to participation due to a lengthy interview which interviewers and respondents perceived as burdensome.

V. DATA REDUCTION AND FILE PREPARATION

The topics addressed in this section cover the handling of the survey documents and diskettes from the time of their receipt in office to the submission of final format data tapes. Several major and distinctive file preparation activities took place -- check-in and control; review and edit; preparation of the household food use questionnaire portion of the interview (from the diskettes); coding and preparation of the intake record data and final data file cleaning and adjudication of two data bases (the household food use data base and the individual intake data base).

An overview of this process is found on page V-2.

A. Check-In and Document Control

When materials were received from the field, the packages were opened, checked for completeness and logged into the computer. A unique identification number was assigned to each sample household (either interview or nonresponse) which became its document control number for the remainder of the processing effort. The steps in this log-in process were designed to prepare the materials for smooth internal handling, maintain control over the sample survey materials and to flag problems at the earliest possible time. Details of these activities are given below.

- Step 1 -- Completeness Checking -- Field clerks opened materials sent in by interviewers and classified documents as either those associated with completed interviews or with nonresponsive sample housing units. Completed interviews were checked to determine if the appropriate materials were present (e.g., diskette, intake diaries) and, if not, the reasons for their absence. This information was noted on the Receipt of Interview Documents Form, a copy of which is found on page V-3. Nonresponse screening forms -- eligible and ineligible households -- were also reviewed at this time. All documents were reviewed to assure integrity (e.g., all intake records from the same household, interviews dated seven days after screening completed).
- Step 2 -- Computer Check-In -- Once the integrity of the documents was determined, the household was logged into the computer and given a sequence number which became its unique identification number in the final data base. All documents associated with that household were assigned this unique 5-digit number. Identification number sequences were different for completed vs. nonresponse questionnaires and for basic and low income sample dwellings. These sequences are shown in Exhibit V-3.

At the time of check-in, a computerized edit function determined which prelisted sample household unit was being associated with the newly assigned interview/nonresponse sequence number. If a mismatch occurred (e.g., the new entry was being associated with a phantom sample dwelling, the new entry was to be associated with a sample unit previously accounted for), assignment of a sequence number was blocked and a supervisor reviewed and corrected the situation to ensure that appropriate action taken to maintain sample integrity.

Exhibit V-1

NFCS 1987
POST-FIELD FLOW OF ACTIVITIES

STAGE 1: CHECK-IN (BROWN PENCIL)

MAIL RECEIVED,
OPENED & SORTED

COMPLETED
QUESTIONNAIRES

NONRESPONSE
SCREENING FORMS

INSPECTED & CHECKED
INTO COMPUTER:
VALIDATIONS IDENTIFIED

REVIEWED, CODED &
CHECKED INTO COMPUTER.
VALIDATIONS IDENTIFIED

HARD-COPY PRINTOUT OF
HOUSEHOLD QUESTIONNAIRE
& ERROR MESSAGE REPORT
GENERATED

VALIDATIONS
SUBMITTED TO
REVIEW

NONRESPONSE CODES
5, 8, 10, 11, 12 & 14
INSPECTED BY FIELD
ADMINISTRATOR FOR
POSSIBLE CONVERSION

REMAINDER
SET ASIDE
FOR CLEANING

STAGE 2: REVIEW/VALIDATION (GREEN PENCIL)

HOUSEHOLD QUESTIONNAIRE/
ERROR MESSAGE REPORT
REVIEWED & CODED

INTAKE RECORDS
REVIEWED

APPLICABLE
NONRESPONSE
SCREENERS
REWORKED

OTHER
NONRESPONSE
SCREENERS
RETURNED
FOR CLEANING

CALLBACKS MADE:
- QUESTIONS ANSWERED
- VALIDATIONS PERFORMED

CALLBACKS MADE:
- QUESTIONS ANSWERED
- VALIDATIONS PERFORMED

HOUSEHOLD & INTAKE
DOCUMENTS SEPARATED

STAGE 3: HOUSEHOLDS UPDATED/INTAKES CODED (RED PENCIL)

UPDATED TO
HOUSEHOLD
FILE

INTAKES CODED &
VERIFIED USING
NA DECS

HOUSEHOLD REQUESTS
SUBMITTED TO USDA

INDIVIDUAL INTAKE
REQUESTS SUBMITTED
TO USDA

STAGE 4: FINAL CLEANING (PURPLE PENCIL)

HOUSEHOLD DATA
CLEANED

INTAKE DATA
CLEANED

HOUSEHOLD & INTAKE DOCUMENTS MERGED &
FINAL CLEANING PERFORMED

NONRESPONSE
FILE CLEANED

FINAL DATA TAPES PREPARED FOR USDA

FINAL DATA TAPES PREPARED FOR USDA

FINAL READABILITY CHECKS

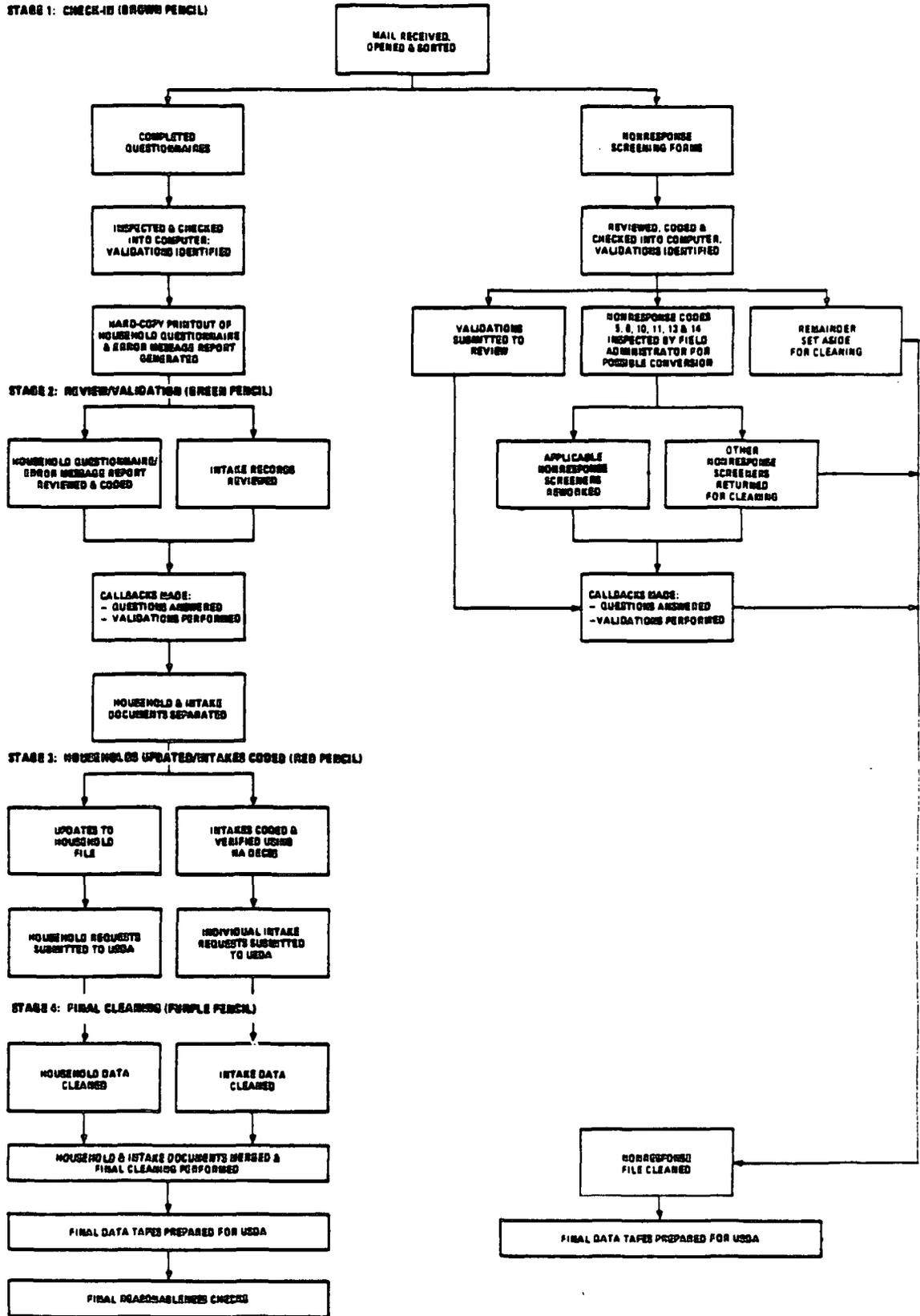


Exhibit V-2

Receipt of Interview Documents

SEGMENT # INTERVIEWER #

HOUSING UNIT # SEQUENCE ID #:

CHECKER: _____ Date _____/_____/_____

ACCOUNTING OF INTERVIEW DOCUMENTS:

	INCLUDED	MISSING
1. *SCREENING FORM		
2. *DISKETTE OF HH QUESTIONNAIRE		
3. ATTACHED INTERVIEWER'S NOTES		
4. HARD COPY OF HH QUESTIONNAIRE**		
5. *DAY 1 INTAKE RECORD FOR EACH HH MEMBER (OR EXPLANATION WHY MISSING)		
6. *DAY 2 & 3 INTAKE RECORD FOR EACH HH MEMBER (OR EXPLANATION WHY MISSING)		
7. *INTERVIEWER PAY SHEET		***
8. SUPERMARKET FORM		
9. RECIPE SHEET		
0. RECEIPT FOR RESPONDENT PAYMENTS		

- * Required documents; others are optional.
- ** Hard copy of household document may be submitted by interviewer in place of diskette; data need to be entered on diskette.
- *** If pay sheet is missing, fill out a pay sheet. Mark pay sheet "completed by checker" at top of form and place in appropriate field administrator box, continue check-in.

Exhibit V-3

IDENTIFICATION NUMBER SERIES

Basic Response

Spring	10001 - 10876
Summer	12001 - 13073
Fall	14002 - 15578
Winter	16001 - 17226

Basic Nonresponse

Spring	30001 - 31920
Summer	33001 - 35851
Fall	80001 - 84181
Winter	86001 - 89432

Low Income Response

Spring	20001 - 20580
Summer	12001 - 22700
Fall	24001 - 24893
Winter	26001 - 26669

Low Income Nonresponse

Spring	40001 - 45513
Summer	49001 - 56674
Fall	55001 - 65956
Winter	66001 - 74662

- **Step 3 -- Validation and Missing Information Retrieval Preparation** -- At both interviewed and nonresponse households, validations were to be attempted. Once checked-in, the computer flagged a subsample of contacts for validations. Clerks noted these households for follow up (either by telephone or mail) and attached validation forms to these and all other completed interviews. (See Exhibit V-4, V-5 and V-6 for copies of the interview and nonresponse validation forms.) Attempts were made to telephone or mail validate at these households. In the case of other interviewed households, if a callback was made to the household for missing information, then a validation would also be attempted (see below).

Finally, two additional forms were attached to the completed interviews -- the Intake Review Summary Sheet and the Household Review Summary Sheet, copies of which are attached on page V-9 and V-10.

B. Review and Editing

Completed interviews were subjected both to a preliminary review and edit check to determine the appropriateness of additional field contact and to a more intense detailed coding edit of the household questionnaire and intake records. The latter functions were performed by different teams of specially trained staff and will be described later. The initial review and field follow-up is the topic of this section.

The first step in the review process was to read the diskette for the household questionnaire into a cumulative data file and create a printout representing the detailed questionnaire information in English-oriented format for visual inspection by a reviewer. The printout (a copy of an exemplary case is found in Appendix V-A) presented data by "field specification" number along with any comments by the interviewer and problems identified by the computerized edit checking program.

Both the printout of the household questionnaire and the intake records were reviewed for correctness, completeness and consistency. The Reviewer took note of any errors or warnings identified from the computer edit check for the household questionnaire and attempted to resolve them using the interviewer's comments and recordings from the supplemental materials (e.g., prices from the Supermarket Shopping List). The computer edit prompted both relatively simple range checks for each field or entry to sophisticated warnings for interdependent relationships among variables and/or calculated variables.*

Often problems could be resolved through careful edit, using information available within the documents themselves. If, however, the reviewer could not satisfactorily address problems in the

*See Post-Field Procedural Handbook and Section C of this report for further description.

Exhibit V-4

A Division of Booz-Allen
& Hamilton Inc.

1/2

NATIONWIDE FOOD CONSUMPTION SURVEY

NFCS 1987

- Telephone Validation Form -

Completed Households

IF THIS HOUSEHOLD IS SCHEDULED FOR TELEPHONE VALIDATION, OR IF RESPONDENT IS CALLED FOR ANY REASON, COMPLETE THIS FORM

Household Sequence #:

Segment #:

Housing Unit #:

Interviewer #:

Telephone #: _____

Validator's ID #: _____

Date Validated: ___/___/___

Interviewing Period:

Spring	1
Summer	2
Fall	3
Winter	4

ASK TO SPEAK TO PERSON NAMED ON PAGE 2 (Q.83) OF SCREENER

INTRODUCTION: Hello, this is _____, from National Analysts, a survey company in Philadelphia. Your household was recently selected to take part in a Department of Agriculture food survey. I have just a few questions about the survey. (VERIFY ADDRESS AND TELEPHONE NUMBER FROM SCREENER. IF DIFFERENT, RECORD BELOW)

Street Address: _____

City: _____ State: _____ Zip Code: _____

1. To begin, were you contacted at any time in the last month or so to take part in a food study being conducted by the Department of Agriculture?

Yes	1
No	2

(PROBE FULLY)

2. Did the interviewer contact you:

In person,	1
By telephone, or	2
Both?	3

3. Were you asked questions about:

(CIRCLE ONE CODE FOR EACH)

	Yes	No
Your health?	1	2
Cigarette smoking?	1	2
Meals and snacks consumed by guests?	1	2
Food stamps?	1	2
Household income?	1	2

(OVER)

7. Did your household receive a set of measuring cups, spoons and a plastic ruler?

Yes	1
No	2

8. After completing the computerized interview, did the interviewer leave booklets for you and other household members to complete?

Yes	1
No	2

9. Did the interviewer return to pick up these booklets?

Yes	1
(SKIP TO Q.11) No	2

10. Did you speak with the interviewer when he or she returned to pick up the booklets?

Yes	1
No	2

11. Is there anything else about the interview you would like to tell us? (PROBE: Were there any unusual circumstances? Were there any parts of the interview that were confusing?)

THANK RESPONDENT FOR COOPERATING

RESULT OF CALL RECORD

CALL #	1		2		3		4	
DATE								
TIME	AM	1	AM	1	AM	1	AM	1
	PM	2	PM	2	PM	2	PM	2
VALIDATOR'S INITIALS								
RESULT CODE*								

*RESULT OF CALL CODES

1. Validation completed
2. Eligible respondent not at home at time of call; call again at DATE: _____ TIME: _____
3. Validation refused
4. Language barrier (SPECIFY LANGUAGE:)
5. Telephone busy
6. Telephone disconnected or out of order
7. No one home/No answer after ten rings
0. Other (SPECIFY:)

Exhibit V-5

National Analysts
 400 Market Street
 Philadelphia, PA 19106

Dear Respondent:

Recently your household was selected to take part in a U.S. Department of Agriculture survey. Please take a few minutes to answer the questions below in order to help us verify our results.

We have enclosed a self-addressed, stamped envelope for your convenience. Thank you for your cooperation.

Beth Rothschild

Beth Rothschild
 Project Director

1. Were you or any member of your household contacted at any time in the last month or so to take part in a food study conducted by the Department of Agriculture?

YES

NO

2. Did the interviewer contact you:

IN PERSON

BY TELEPHONE

BOTH?

3. Were you asked questions about:

(CHECK ONE BOX FOR EACH)

	YES	NO
Your health?		
Cigarette smoking?		
Meals and snacks consumed by guests?		
Food stamps?		
Household income?		

4. Approximately how long did it take for you to complete:

(ENTER HOURS
 AND MINUTES)

	HOURS	MINUTES
The computerized interview, that is, the questions about your household in the 7-day period?	_____	_____
The questions about what you ate the day before the interview?	_____	_____

(OVER)

5. How many people regularly live in this household? Count those who usually live in your home, including those who are temporarily absent, that is, traveling, in a hospital, at camp or similar places. Exclude persons living away at school or other institutions.

NUMBER OF HOUSEHOLD MEMBERS _____

6. Did your household receive a set of measuring cups, spoons and a plastic ruler?

YES

NO

7. After completing the computerized interview, did the interviewer leave booklets for you and other household members to complete?

YES

NO

(IF NO, GO TO Q.10)

8. Did the interviewer return to pick up these booklets?

YES

NO

(IF NO, GO TO Q.10)

9. Did you speak with the interviewer when he or she returned to pick up the booklets?

YES

NO

10. Is there anything about the interview you would like to tell us? For example, were there any unusual circumstances? Were there any parts of the interview that were confusing? Please write your response in the space below.

THANK YOU FOR YOUR COOPERATION

FOR OFFICE USE ONLY (1R)

Sequence #

Segment #

HU #

Int #

Exhibit V-6

NATIONAL ANALYSTS
A Division of Booz-Allen
& Hamilton Inc.

1/2

Survey #:

NATIONWIDE FOOD CONSUMPTION SURVEY

NFCS 1987

- Telephone Validation Form -

Nonresponse Households

Household Sequence #:

Interviewing Period:

Segment #:

Spring 1

Housing Unit #:

Summer 2

Interviewer #:

Fall 3

Winter 4

Telephone #: _____

ID #: _____

Validator's Initials: _____

Date Validated: ___/___/___

**ASK TO SPEAK TO PERSON NAMED ON PAGE 2 (O.S3) OF SCREENER
OR MALE OR FEMALE HEAD OF HOUSEHOLD**

INTRODUCTION: Hello, this is _____, from National Analysts, a survey company in Philadelphia. Your household was recently selected to take part in a Department of Agriculture food survey. I have just a few questions. (VERIFY ADDRESS AND TELEPHONE NUMBER FROM SCREENER. IF DIFFERENT, RECORD BELOW)

Street Address: _____

City: _____ State: _____ Zip Code: _____

1. To begin, were you contacted at any time in the last month or so to take part in a food study being conducted by the Department of Agriculture?

Yes	1
(PROBE FULLY) No	2

2. Did the interviewer contact you:

In person,	1
By telephone, or	2
Both?	3

3. How many people regularly live in this household? Count those who usually live in your home, including those who are temporarily absent, that is, traveling, in a hospital, at camp or similar places. Exclude persons living away at school or other institutions.

CIRCLE NUMBER OF PEOPLE IN HOUSEHOLD ON CHART ON REVERSE SIDE

(OVER)

NUMBER OF PEOPLE	INCOME LIMIT	NUMBER OF PEOPLE	INCOME LIMIT
1	\$595	11	\$2,650
2	\$800	12	\$2,860
3	\$1,010	13	\$3,065
4	\$1,215	14	\$3,270
5	\$1,420	15	\$3,475
6	\$1,625	16	\$3,680
7	\$1,830	17	\$3,890
8	\$2,035	18	\$4,095
9	\$2,240	19	\$4,300
10	\$2,445	20	\$4,505

- IF SEGMENT NUMBER BEGINS WITH A "1," SKIP TO Q.5
- IF SEGMENT NUMBER BEGINS WITH A "2," CONTINUE

4. In the month before you were contacted, was the total income received by all members of this household, before taxes and other deductions, more or less than (READ INCOME LIMIT CORRESPONDING TO NUMBER OF PEOPLE CIRCLED ABOVE):

(PROBE PULLY)	More than limit	1
	Less than limit	2

5. What were your reasons for not participating in this survey?

THANK RESPONDENT FOR COOPERATING

RESULT OF CALL RECORD

CALL #	1		2		3		4	
DATE								
TIME	AM	1	AM	1	AM	1	AM	1
	PM	2	PM	2	PM	2	PM	2
VALIDATOR'S INITIALS								
RESULT CODE*								

*RESULT OF CALL CODES

1. Validation completed
2. Eligible respondent not at home at time of call; call again at DATE: _____ TIME: _____
3. Validation refused
4. Language barrier (SPECIFY LANGUAGE:) _____
5. Telephone busy
6. Telephone disconnected or out of order
7. No one home/No answer after ten rings
8. Other (SPECIFY:) _____

Exhibit V-7

HOUSEHOLD REVIEW SUMMARY SHEET

NATIONAL ANALYSTS
A Division of Booz-Allen
& Hamilton Inc.

Study #: 09010-067-001

NATIONWIDE FOOD CONSUMPTION SURVEY
(NFCS 1987)
HOUSEHOLD REVIEW SUMMARY SHEET

Segment #:

Sequence #:

Housing Unit #:

Interviewing Period: 1 2 3 4

Reviewer's Name: _____

Reviewer's #: _____

Date Reviewed: ____/____/____

Interviewer's #:

ASK ABOUT ALL PROBLEMS IF CALLBACK IS MADE

LIST NUMBER OF OCCURRENCES FOR EACH SECTION

	MRC #	MIC #	RC #	IC #
<u>Section I</u>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<u>Section II</u>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<u>Section III</u>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<u>Section IV</u>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Supermarket Form

Food on form with no price	.	.	.	<input type="text"/>
No price in record but not listed on form	.	.	.	<input type="text"/>

Recipe Sheet

Items on sheet not in Section II	.	.	<input type="text"/>	.
Quantities reported left over exceed quantity used	.	.	<input type="text"/>	.

Key: MRC = Mandatory Respondent Callback
MIC = Mandatory Interviewer Callback
RC = Call Respondent if doing so for other reasons
IC = Call Interviewer if doing so for other reasons

NOTE: IF TEN OR MORE RCs, A CALLBACK SHOULD BE MADE. DISCRETION CAN BE USED FOR CALLING BACK RESPONDENT AND/OR INTERVIEWER IF NUMBER OR NATURE OF PROBLEMS DOES NOT CONSTITUTE MANDATORY RECONTACT

OUTCOME OF REVIEW:

1. No recontact required.....
2. Respondent recontact completed.....
3. Interviewer recontact completed.....
4. Respondent recontact attempted two times -- Not completed.....
5. Interviewer recontact attempted two times -- Not completed.....

COMMENTS ABOUT CALLBACK AND/OR INTERVIEWER: (e.g., respondent cooperative, interviewer consistently making errors on Q.12)

Exhibit V-8

INDIVIDUAL REVIEW SUMMARY SHEET

NATIONAL ANALYSTS
A Division of Booz-Allen
& Hamilton Inc.

STUDY #: 9901-57-01

NATIONWIDE FOOD CONSUMPTION SURVEY
(NFC 1987)
INTAKE REVIEW SUMMARY SHEET

Segment #:

Sequence #:

Housing Unit #:

Interviewing Period: 1 2 3 4

Reviewer's Name: _____ Reviewer's #: _____

Date Reviewed: ____/____/____ Interviewer's #:

ASK ABOUT ALL PROBLEMS IF CALLBACK IS MADE

PROBLEMS	NAME: _____			NAME: _____		
	DAY 1	DAY 2	DAY 3	DAY 1	DAY 2	DAY 3
• Age/Date of birth missing (MRC).....	<input type="checkbox"/>	**	**	<input type="checkbox"/>	**	**
• Date same as household questionnaire (MIC).....	<input type="checkbox"/>	**	**	<input type="checkbox"/>	**	**
• Incorrect date(s) recorded without explanation (MIC).....	<input type="checkbox"/>					
• Missing meals (MRC).....	<input type="checkbox"/>					
• Less than five items (MRC).....	<input type="checkbox"/>					
• Eating time(s) not reported (MRC).....	<input type="checkbox"/>					
• Answers to Q's 2 and/or 3 missing (RC).....	<input type="checkbox"/>					
• Number of <u>incomplete</u> descriptions (IF 5+ MRC)*.....	_____	_____	_____	_____	_____	_____
• Number of <u>imprecise and/or unreasonably high</u> quantities (IF 5+ MRC)*.....	_____	_____	_____	_____	_____	_____
• Number of missing estimation methods (IF 5+ MIC)*.....	_____	**	**	_____	**	**
• Food source(s) missing — Q's 7 and/or 8 (IC or RC).....	<input type="checkbox"/>					
• Meal planning questions missing for MPP or child (MRC).....	<input type="checkbox"/>					
• Food away source missing — Q.11 (RC).....	<input type="checkbox"/>					
• Q.12 — Problem (RC).....	<input type="checkbox"/>	**	**	<input type="checkbox"/>	**	**
• Calcium frequency problem (RC).....	**	**	<input type="checkbox"/>	**	**	<input type="checkbox"/>
• Other (Specify — If 5+ MRC)*.....	_____	_____	_____	_____	_____	_____

* 5+ items per day or total of 15+ overall (Over)

Key: MRC = Mandatory Respondent Callback
MIC = Mandatory Interviewer Callback
RC = Call Respondent if doing so for other reasons
IC = Call Interviewer if doing so for other reasons

NOTE: DISCRETION CAN BE USED FOR CALLING BACK RESPONDENT AND/OR INTERVIEWER IF NUMBER OR NATURE OR PROBLEMS DO NOT CONSTITUTE MANDATORY RECONTACT

ASK ABOUT PROBLEMS IF CALLBACK IS MADE	NAME: _____			NAME: _____		
	LINE #: _____			LINE #: _____		
	DAY 1	DAY 2	DAY 3	DAY 1	DAY 2	DAY 3
● Age/Date of birth missing (MRC).....	<input type="checkbox"/>	**	**	<input type="checkbox"/>	**	**
● Date same as household questionnaire (MIC).....	<input type="checkbox"/>	**	**	<input type="checkbox"/>	**	**
● Incorrect date(s) recorded without explanation (MIC).....	<input type="checkbox"/>					
● Missing meals (MRC).....	<input type="checkbox"/>					
● Less than five items (MRC).....	<input type="checkbox"/>					
● Eating time(s) not reported (MRC).....	<input type="checkbox"/>					
● Answers to Q's 2 and/or 3 missing (RC).....	<input type="checkbox"/>					
● Number of <u>incomplete</u> descriptions (IF 5+ MRC)*.....	_____	_____	_____	_____	_____	_____
● Number of <u>imprecise</u> and/or <u>unreasonably high</u> quantities (IF 5+ MRC)*.....	_____	_____	_____	_____	_____	_____
● Number of missing estimation methods (IF 5+ MIC)*.....	_____	**	**	_____	**	**
● Food source(s) missing — Q's 7 and/or 8 (IC or RC).....	<input type="checkbox"/>					
● Meal planning questions missing for MPP or child (MRC).....	<input type="checkbox"/>					
● Food away source missing — Q.11 (RC).....	<input type="checkbox"/>					
● Q.12 — Problem (RC).....	<input type="checkbox"/>	**	**	<input type="checkbox"/>	**	**
● Calcium frequency problem (RC).....	**	**	<input type="checkbox"/>	**	**	<input type="checkbox"/>
● Other (Specify — If 5+ MRC)*.....	_____	_____	_____	_____	_____	_____

IF MORE THAN FOUR HOUSEHOLD MEMBERS, USE SECOND REVIEW SUMMARY SHEET

- OUTCOME OF REVIEW:
1. No recontact required.....
 2. Respondent recontact completed.....
 3. Interviewer recontact completed.....
 4. Respondent recontact attempted 2x — Not completed.....
 5. Interviewer recontact attempted 2x — Not completed.....

COMMENTS ABOUT CALLBACK AND/OR INTERVIEWER: (e.g., respondent cooperative, interviewer consistently making errors on Q.12)

printout then the difficulties were noted and a recording made on the Household Review Summary Sheet. Depending on the nature of the problems, guidelines were established prioritizing the type of follow-up required:

- Callback to interviewer to be attempted
- Callback to respondent to be attempted
- Callback to interviewer attempted only if required for some other reason
- Callback to respondent attempted only if required for some other reason

A similar summary review of intake records was completed at the same time following codified guidelines appropriate for that data base.* Particular reference was made to the ability to classify the food items listed into the existing HNIS coding scheme and to link these foods to known units of quantity. Again, problems were noted on the Intake Review Summary Sheet where they were classified as to whether or not a callback attempt was mandatory and, if so, to whom.

Any required callback items and more than ten other problems on either the household or the intake check list, triggered a calling attempt. Calls were directed to interviewers who could often answer factual questions readily. If the interviewer could not answer or the information required clarification, contact with the respondent would be attempted. If the call was directed to the respondent, then a validation effort was automatically attempted.

The results of attempted contacts with respondent household is shown below. Many of the households flagged for validation were successfully reached. In addition many others were validated in the course of missing information retrieval.

	<u>Basic</u>	<u>Low Income</u>
Validation attempted and completed	953	524
- Household randomly selected for validation	606	246
- Household contacted for information and validation completed	347	278
Validation attempted and not completed	<u>150</u>	<u>188</u>
N =	1,103	712

*See Post-Field Procedural Handbook and Section D of this report for further description.

Responses to questions directed at either interviewers or respondents were recorded directly onto the printout or source documents in a distinctive color pencil to denote post-field input. At this juncture, the documents were physically separated for further coding and processing. Intake records were separated from the household portion of the interview materials and forwarded to interactive coding specialists for processing. The household materials were returned to cleaner/review specialists for final processing and file preparation.*

C. Household Food Use Processing/Cleaning

Conceptually, the review and detailed processing of the household portion of the survey questionnaires are two distinct functions. Practically, however, the activities were similar. The review effort represented the first cut at the printout information shortly after the survey materials were received in house. The detailed processing or cleaning activity occurred after this initial review had taken place and corrective steps had been taken. Processing then continued iteratively until no more errors were flagged by the computer edit program.

To prepare for the review/processing effort, several layers of data aggregate and analysis were performed by computer and were used to inform the results shown in the printout representation of the household interview and its Errors/Warnings Report. That is, not only did the printout provide an updated facsimile of the information from the survey, it also reported summaries of key elements from the household food use section and calculations of several critical outcome variables (e.g., household size in Equivalent Nutrition Units (ENUs) which were deemed problematic based on guidelines established in conjunction with HNIS.

Several classes of errors were flagged by computer and messages printed out in the Error Report for the data cleaner to address. Warnings and errors were identified, depending on the nature and magnitude of the problem. The types of computer checks used are:**

- Range checks -- Warnings indicated that response keyed in (or calculated if the item is a derived variable) was higher or lower than the expected range of values established for that item. The upper (and lower) limits were developed based on prior empirical findings as well as logically-derived cut-off values. Warnings did not signify unacceptable values, rather responses that were unusual and should be reviewed critically before being accepted at face value.

The age of a household member greater than 100 years would trigger a warning. Monthly alimony payments of more than \$10,000 would prompt a warning. Any single food item purchased for which the household paid more than \$25.00 would generate a warning. In each case, the data cleaner would review the printout and associate documents to determine what corrective action to take, including allowing the response to stand. In the case of the 100-year-old, the cleaner would examine the age and relationship of other household members to decide whether the age should have been keyed as 1 year, 10 years, 100 years, or something else.

*Hard copy documents were entered in laptop or PC computers by trained coding personnel (mostly supervisors) and then were subjected to the same review and editing routine as Interviews completed in the field with laptops. A code was noted in the final format output file to denote in-office entry of the data.

**See Post-Field Procedural Manual for complete enumeration of all warning and error checks.

Out of range errors indicated the inputted or derived value was unacceptable. While rare, this type of error could occur when a value response was inconsistent with the contingency question. For example, rent was paid but the amount was \$0.00.

- Linkage errors -- These errors occurred when the food item specified in the questionnaire could not be linked to the HNIS nutrient data file because: 1) there was no 11-digit USDA food code to match the NA food code, 2) no weight value existed to match with the NA code in the weight file, 3) no unit code existed in the weight conversion file, 4) no USDA food code match in the nutrient file was found for the NA food code, or 5) no weight in the weight conversion file.

The data cleaner reviewed the printout in each case to determine what changes needed to be made because, unlike warnings, linkage errors were not tolerated in the final output file. Typically, linkage errors were the result of interviewers using verbal descriptions to report food usage rather than existing food codes. These generated requests to USDA either to determine into which of the existing food codes was the item to be classified or to provide new food codes. In other cases, new quantity units were to be generated for use with specific food items.

- Weight check warning -- For 154 of the most commonly used food items, special attention was given to ensure their correct entry into the file. Upper boundaries were set based on empirical data by USDA for the quantities used of these items. If the amount used of a food (regardless of the form in which the quantity was reported) exceeded the cut-off, reported in pounds, then the item was identified for closer inspection by the data cleaner. A listing of these 154 items and their warning values is shown on the following pages.

Data cleaners examined the quantities used in the context of the amount consumed per a 21-meal equivalent person as well as the household as a whole. If the food item and quantities were properly coded, the unusually large amount was allowed to stand. If a problem were noted, the data were corrected and cycled through the cleaning program again.

- Nutrient warnings -- Like the weight check warnings, document look-up triggers were set when a household's nutrient consumption exceeded parameters set by USDA. A program was developed to determine, for all foods that were scorable (e.g., linked to the nutrient data base), the quantity of key nutrients used by that household as a ratio of the nutritive value per nutrition unit to the RDA for the reference man. For five key nutrients, both upper and lower cutoffs were established which if exceed, signaled the data cleaner to re-examine the printout for the household food use section of the interview.

<u>Nutrient</u>	<u>Low Limit</u>	<u>High Limit</u>
Food energy	0.50	3.00
Calcium	0.20	3.50
Vitamin A	0.20	3.50
Riboflavin	0.20	3.50
Ascorbic acid	0.30	6.00

Exhibit V-9

WEIGHT CHECK WARNINGS FOR 154 COMMONLY REPORTED ITEMS

<u>FOOD CODE</u>	<u>MAXIMUM LBS</u>	<u>FOOD CODE</u>	<u>MAXIMUM LBS</u>
40111010110	17.50	43212015499	1.00
40121010110	5.00	43221015499	1.50
40131010110	17.50	43232015499	2.00
40141010110	17.50	43251025499	1.00
40151030110	3.00	43265145499	1.00
40151040110	3.00	43281015499	1.50
40211010120	1.50	43292036499	1.00
40214020820	7.00	43331015499	2.00
40214040820	7.00	44111021010	3.00
40221010140	1.00	44121011010	4.00
40223010840	2.00	44151011010	3.50
40223020840	2.00	44151011012	3.50
40331010210	1.25	44151021010	3.50
40411010231	2.50	44151021012	3.50
40411020231	2.50	44153011010	3.50
40511010399	1.00	44211011210	3.00
40521010399	1.00	44214011210	1.50
40531010399	1.00	44221031201	1.25
40541010399	2.00	44222011199	1.50
40551010399	1.25	44611011599	1.50
40561010399	1.00	44622091599	1.00
41111017199	1.00	44622101599	1.00
41121017299	1.25	44622171599	1.00
41122017299	1.50	45111021610	4.00
41221017599	1.25	45112011610	4.00
41311017399	1.25	45217011720	1.00
41351017399	1.25	45217031720	1.00
41411017399	1.00	46112012110	2.00
41441017399	0.50	46113012110	2.50
41451017399	0.50	46115012110	2.00
41491077399	1.00	47111018199	2.00
42111015199	2.00	47121018199	0.60
42112015199	2.00	47141029399	0.08
42211015199	1.00	47212028199	0.80
42311055299	0.75	47231018199	0.50
42321015299	0.75	47311018111	0.75
42322065299	0.75	47311038199	0.75
42322125299	0.75	47321038199	0.75
42323015299	0.75	47431018199	1.00
42324035299	0.75	4744018199	1.00
42411015299	1.75	47511012840	0.10
42422025299	1.25	47511028340	0.40
42431015299	1.00	48111013110	4.50
42431035299	1.00	48121013310	4.00
42441015299	0.60	48511013199	1.00
43111015399	3.00	49131013210	1.00
43121015399	3.00	49211013310	1.50
43131015399	3.00	49211043310	2.00
43132025399	3.00	49311013410	3.00
43211015499	1.00	49431013510	2.00

(Continued)

WEIGHT CHECK WARNINGS FOR 154 COMMONLY REPORTED ITEMS
(Continued)

<u>FOOD CODE</u>	<u>MAXIMUM LBS</u>	<u>FOOD CODE</u>	<u>MAXIMUM LBS</u>
49441013510	3.00	55561028240	0.20
49451013510	2.50	55611029199	14.00
49511013510	1.00	55631019199	8.00
49521013510	2.00	56221025820	1.50
49531013510	1.50	56241013420	2.00
49582003510	3.00	56251010820	2.00
50111014110	6.00	57121012399	1.00
50121014110	2.00	57211013420	0.75
50131014110	3.00	57311013599	1.00
50211014210	8.00	58322035899	1.00
50311014310	4.00		
50321014310	3.00		
50361014310	5.00		
50371014310	4.00		
51131013420	3.00		
51131053420	3.00		
51142012220	2.00		
51144013520	2.00		
51145013520	2.00		
51146013520	2.00		
51146033520	2.00		
51147013520	2.00		
51224014320	2.00		
52112013230	2.00		
52134013530	2.00		
53111013420	3.00		
53311024120	6.00		
53312024120	6.00		
53321014320	6.00		
53411014130	1.70		
53611014110	6.00		
54221014342	1.00		
55111019299	1.25		
55121019240	0.15		
55211019299	0.14		
55221019240	0.10		
55311019299	0.30		
55311028399	0.50		
55411018399	12.00		
55412018399	12.00		
55413019299	12.00		
55511018220	11.00		
55551028240	1.12		
55561018240	0.20		

As an aid to the data editor, the computer printout provided information about the individual food items highest in that nutrient and, potentially, the likely source of the error. (See Exhibit V-10 for a sample Errors/Warnings Report).

- Special check warnings -- In addition to the above routine edit checks, approximately 50 additional special warnings were programmed. These warnings were designed to examine combinations of reported data elements to surface unusual or illogical situations. For example, ages of parents and their children were compared to identify unlikely combinations, such as, a 25-year-old mother and a 15-year-old daughter.

Data cleaners reviewed the warnings and errors reported and edited the questionnaire printout appropriately. If, after examining the data, there was no corrective action to be taken, the cleaner recorded his/her initials on the printout to indicate the information had been studied and allowed to stand. The typical household interview went through two iterations of cleaning before all errors were fully resolved.

In cases where the food items, form or variation codes and units of quantities used or purchased did not fit the established categories, data editors checked the appropriate HNIS databases (e.g., the USDA weight book). If found, the information was edited into the questionnaire, if not found, a Request Form (see Exhibit V-10) was prepared and HNIS made a determination of the appropriate response. This could have resulted in applying existing codes, creation of new codes, updating the units used/purchased linkages, or other dynamic changes to the databases. (See Exhibits V-11 and V-12 for examples of HNIS responses.) If the request resulted in a one-time only response, the data were edited on-line into the record for that interview. If HNIS chose to update the food use data file, in addition to correcting the individual record, all applicable files were updated (e.g., weight file, linkage file, nutrient file) and the need to make similar requests in the future was avoided (i.e., this situation would no longer generate error messages). A notebook reference file of request replies was maintained throughout the project.

A total of approximately 3,820 requests for household food item or weight information was produced in NFCS-87 -- 3,270 from the basic and 550 from the low income samples.

A total of 74 new food item codes were created during NFCS-87. Most of these fell into the grains and cereals and prepared foods categories. See Appendix V-B for the complete listing of new item codes.

After the household questionnaires completed the final phases of data cleaning, the mean price calculations were run to impute values for foods where price information was missing. Pricing information was not available for several reasons: the food was home produced or given as a gift or payment, or the respondent/interviewer was unable to identify a price (this was especially true of foods purchased prior to the seven-day period).

To determine a value for these items in the basic survey, data from all the interviews collected during a three-month period were reviewed for every missing value and a mean price per pound was computed from other respondent households using the item and reporting price information.

Exhibit V-10
HOUSEHOLD ERRORS/WARNINGS REPORT

.....

ERRORS/WARNINGS FOR HOUSEHOLD 16210

SEGMENT 1125205 HU 059

.....

=====

RANGE CHECK WARNING:

FIELD # : 034
VALUE : 1800
MINIMUM : 1500
MAXIMUM : 9997

FILTER FIELD : 033
FILTER MINIMUM: 1
FILTER MAXIMUM: 1
FILTER VALUE : 1

=====

RANGE CHECK WARNING:

FIELD # : 042
VALUE : 56
MINIMUM : 50
MAXIMUM : 9997

FILTER FIELD : NA
FILTER MINIMUM:
FILTER MAXIMUM:
FILTER VALUE :

=====

SPECIAL CHECK WARNING: # 52

DESCRIPTION:

WEEKLY FOOD EXPENDITURES PER HH MEMBER SHOULD BE \$5-\$75

FIELD # VALUE

```

-----
12          100
13          1
14          35
15          1
16          200
17          2

```

```

=====
WEIGHT CHECK WARNING FOR FOOD CODE =====> H03350000
TOTAL POUNDS CONSUMED =====> 10.00
# OF 21 MEAL EQUIVALENT PERSONS =====> 1.02
TOTAL POUNDS CONSUMED PER 21-MEP =====> 9.78
MAX. # OF POUNDS ALLOWED =====> 3.00
=====

```

```

=====
WEIGHT CHECK WARNING FOR FOOD CODE =====> P09600000
TOTAL POUNDS CONSUMED =====> 1.93
# OF 21 MEAL EQUIVALENT PERSONS =====> 1.02
TOTAL POUNDS CONSUMED PER 21-MEP =====> 1.89
MAX. # OF POUNDS ALLOWED =====> 1.00
=====

```

=====

NUTRIENT WARNING FOR: CALORIES

HOUSEHOLD SIZE IN EQUIVALENT NUTRITION UNITS =====> .7681

	VALUE / E.N.U.	TOTAL HOUSEHOLD VALUE
	-----	-----
MINIMUM =====>	9471.00	7274.63
MAXIMUM =====>	56826.00	43647.78
ACTUAL =====>	60895.70	46773.69

FOOD CODE	# OF UNITS	UNIT NAME	POUNDS USED	NUTRIENT AMT.	PERCENT	CUM. PERCENT
-----	-----	-----	-----	-----	-----	-----
P09600000	2.00	15 1/2 oz bag	1.93	4727.41	10	10
			REMAINING	61 FOODS	90	100

=====

NUTRIENT WARNING FOR: CALCIUM

HOUSEHOLD SIZE IN EQUIVALENT NUTRITION UNITS ==>>> 1.0238

	VALUE / E.N.U.	TOTAL HOUSEHOLD VALUE
MINIMUM ==>>>>>	1120.00	1146.66
MAXIMUM ==>>>>>	19600.00	20066.66
ACTUAL ==>>>>>	20292.48	20775.64

FOOD CODE	# OF UNITS	UNIT NAME	POUNDS USED	NUTRIENT AMT.	PERCENT	CUM. PERCENT
G02000000	1.00	Gallon	8.64	4777.70	23	23
G11520000		POUNDS AND OUNCES	.50	2093.58	10	33
			REMAINING	57 FOODS	67	100

NUTRIENT WARNING FOR: VITAMIN A

HOUSEHOLD SIZE IN EQUIVALENT NUTRITION UNITS ==>>> .8619

	VALUE / E.N.U.	TOTAL HOUSEHOLD VALUE
MINIMUM ==>>>>>	7000.00	6033.33
MAXIMUM ==>>>>>	122500.00	105583.33
ACTUAL ==>>>>>	307811.68	265304.35

FOOD CODE	# OF UNITS	UNIT NAME	POUNDS USED	NUTRIENT AMT.	PERCENT	CUM. PERCENT
D06050000		POUNDS AND OUNCES	2.00	153089.98	58	58
			REMAINING	41 FOODS	42	100

NUTRIENT WARNING FOR: RIBOFLAVIN

HOUSEHOLD SIZE IN EQUIVALENT NUTRITION UNITS ==>>> .8043

	VALUE / E.N.U.	TOTAL HOUSEHOLD VALUE
MINIMUM ==>>>>>	2.24	1.80
MAXIMUM ==>>>>>	39.20	31.52
ACTUAL ==>>>>>	67.69	54.44

FOOD CODE	# OF UNITS	UNIT NAME	POUNDS USED	NUTRIENT AMT.	PERCENT	CUM. PERCENT
-----------	------------	-----------	-------------	---------------	---------	--------------

D06050000		POUNDS AND OUNCES	2.00	22.20	41	41
G02000000	1.00	Gallon	8.64	6.48	12	53
			REMAINING	52 FOODS	47	100

NUTRIENT WARNING FOR: ASCORBIC ACID

HOUSEHOLD SIZE IN EQUIVALENT NUTRITION UNITS ==> 1.0238

	VALUE / E.N.U.	TOTAL HOUSEHOLD VALUE
MINIMUM ==>	126.00	129.00
MAXIMUM ==>	2520.00	2580.00
ACTUAL ==>	3895.95	3888.71

FOOD CODE	# OF UNITS	UNIT NAME	POUNDS USED	NUTRIENT AMT.	PERCENT	CUM. PERCENT
H03350000	2.00	Medium-large head	10.00	1527.61	38	38
J02850000	2.00	Quart	4.41	620.11	16	54
			REMAINING	33 FOODS	46	100

END OF MESSAGES FOR THIS HOUSEHOLD

.....

HOUSEHOLDS
REQUEST FOR FOOD CODE

Quarter 1 2 3 4

Study #: 09010-067-001

Request # _____ Interview # _____

Date Sent _____/_____/_____

Segment # _____ HU # _____

Date Returned _____/_____/_____

Date/ Location	Page Letter/ Number/Name	Food Description	Amount Used	Source (CIRCLE ONE)
				1. Bought 2. Home-produced 3. Gift/Pay
Amount Bought	Price (total or per unit)	*** USDA REPLY ***		
		Weight	NA Code	USDA Code

HOUSEHOLD REQUEST FOR FOOD CODE

Exhibit V-11

REQUEST FOR FOOD CODE

Quarter 1 2 (3)
 Request # 5076
 Segment # 2213314

Interview # 24864
 HU # 060

Study #: 09010-067-001
 Date Sent 12/13/88
 Date Returned 1/17/89

HOUSEHOLD REQUEST FOR FOOD CODE WITH HNIS RESPONSE

Exhibit V-12

Date/Location	Page Letter/Number/Name	Food Description	Amount Used	Source (CIRCLE ONE)
1/7/88 WI	C092 VEAL CUTLETS OR STEAK	FRESH BREADED NO BONE	1-16	1. Bought 2. Home-produce 3. Gift/Pay
Amount Bought	Price (total or per unit)	*** USDA REPLY ***		
2-lbs.	\$ 2.21 PER lb	Weight	NA Code	USDA Code
		Put this with:	C09850000	4433 201 13 10
			listing leakage	

REQUEST FOR FOOD CODE

Quarter 1 2 3 4
 Request # 5089
 Segment # 2115103

Interview # 24832
 HU # 049

Study #: 09010-067-001
 Date Sent 12/13/88
 Date Returned 1/17/89

HOUSEHOLD REQUEST FOR FOOD CODE WITH HNIS RESPONSE

Exhibit V-13

Date/Location	Page Letter/Number/Name	Food Description	Amount Used	Source (CIRCLE ONE)
2/8/88 FL	H 046 OTHER COLLARDS	COM CAN LO SODY	16-02	<input checked="" type="radio"/> 1. Bought 2. Home-produced 3. Gift/Pay

Amount Bought	Price (total or per unit)
64-02 <u>4lb</u>	\$ 0.55 Per 16-02 pals

*** USDA REPLY ***		
Weight	NA Code	USDA Code
	* H046400 10	* 5115 402 32 25
	new linkage	new code

Such calculations were performed regionally for each period. For the low-income survey, this was done once for the entire data collection period rather than three-month intervals. This imputation was a multi-stage process. First a stable mean price value was determined. Initially National Analysts would create two printouts, such as those shown in Appendices V-C and V-D. The first printout identified all the food items reported that season in that region. The total number of observations of the food item was reported followed by the number with and without price information. The mean price based on all observations with price information was reported as was an adjusted mean which was computed without outlier values (e.g., price two standard deviations or more from the mean). To remove obvious reporting and recording errors, all outlier values were identified (see the second printout) and the input documents re-examined. Corrections to these extreme values were made as necessary and the calculations rerun.

The second iteration of the mean price report was shared with HNIS analysts who also examined the adjusted mean and outlier values, often making future judgments to adjust the data. For the basic survey an additional iteration of the mean price routine was run and reviewed by HNIS. At this juncture, HNIS determined the appropriate values to be used for inputting missing prices. For the most part, this value was the adjusted mean, unless HNIS determine another value to be more appropriate, for example, if the mean was on a limited number of widely varying amounts, a market value might be substituted.

Once all food items were assigned a value, then the money value of foods used was derived.

D. Individual Intake Coding and Processing Functions

After the review of the household and intake records were completed and missing/inconsistent information was secured, intake records were forwarded to a dedicated interactive coding team for further processing. Interactive coding was done using the National Analysts' DECSS -- Data Entry Coding Support System. This system allowed coders to translate verbal descriptions of food items eaten and the quantity ingested into unique seven-digit code numbers and precise gram amounts with the aid of a computer-supported artificial intelligence system. At the heart of the system was the USDA-developed food codebook and its updates. This volume classified approximately 5,200 food items by food group, mode of preparation and variation. It also provided complete verbal descriptions of items, acceptable units of quantity measurements and other information useful to the nutrient assessment of food.

In addition, the USDA-provided gram conversion database was incorporated into the DECSS software. The gram conversion file translated the quantities of food consumed as reported in volumetric, weight or physical size measurement into the equivalent number of gram values.

To translate the food code descriptions into effective search items, each food description was assigned one or more key names (e.g., milk, low fat milk, chocolate milk) followed by a precisely stated description following established guidelines. (See Appendix V-E for initial guidelines established jointly with HNIS and updates to coding rules.) Key names were developed to facilitate cross-referencing of items and to reduce the sum total of items under any given key name. Similarly, gram amounts were entered by the commonly reported measurement units (e.g., 1 oz., raw, 1 oz., cooked). As new foods became available or as USDA added items to their codebook, updates were made to the food code and gram conversion files. Each computerized file -- description and gram conversion -- contained over 5,200 individual entries for NFCS codes.

The coder's task was to input enough descriptive information for DECSS to initiate a food file search. DECSS then sorted through a 26,800-plus food code file (this expanded number represents the multiple way the food views were listed in the file), selected the best subset of possible seven-digit codes according to a matching algorithm, ordered these codes from most to least likely match, and displayed them on the PC screen for the coder to choose the correct seven digit code. With a single stroke, the coder then entered into the data file the coded food item. A similar interactive process was used to convert the respondent-provided quantity consumed information into a gram amount in the data file.

Initially, all food items in intake records were subjected to blind double codings. That is, two coders independently and interactively coded records. Some highly-skilled coders were allowed to perform single-entry coding with periodic checks of their work by supervisors. In addition, a small group of other highly-skilled coders were selected as verifiers. They independently coded records after the initial entry by a coder. The DECSS program then presented the verifier with any mismatches on the screen and the verifier resolved the inconsistency, with supervisory input if needed, before the data file was saved. Of the more than 16,800 individuals for whom intake records were coded, 48% were also verified or double coded, the remainder were entered by verifiers only.

Food code requests -- The coding step was a dynamic process and updates to the food and gram conversion file were continuously requested and received from HNIS. If the computer search failed to produce a food description or gram value that matched the verbal descriptions provided by the respondent, then input from HNIS was requested.

If the food description was not found in the file, details of the item's description were sent to HNIS where the decision was made either to back-code the food into an existing seven-digit category, or to create a new food category and to add a new code to the food codebook search file.

If the quantity measures reported were not in the file, again a request for assistance was initiated and HNIS either determined the gram value for the specific item, or updated the file information so that the value could be applied to all future cases. An example of an intake request and HNIS response is found in Exhibit V-14.

New food product introductions and unusual homemade recipes were the most common cause of food requests. As with the household food use file, HNIS would make a determination of the generalizability of the response. If this were a onetime only application, only the specific individual intake record was updated. If the information was to be applied from that date on, the DECSS and cleaning systems were also amended to include the new information. In cases where new seven-digit codes were identified, HNIS would have nutrient composition data determined, and updated nutrient data files as a result of these requests, were received from HNIS at the end of each wave.

Over the course of the survey, this dynamic process resulted in more than 6,951 requests and replies being generated. A breakdown of these is shown below. These led to approximately 490 new food codes.

Exhibit V-14

INTAKE REQUEST AND HNIS REPLY

LOW INCOME

Page #: 14

INDIVIDUAL INTAKE REQUEST -- NFCS 1987
(Intake Record To Be Attached)

Request #: 13050 Date Sent to USDA: 4/2/90
 Quarter 1 2 3 4 Date Returned from USDA: MAY 11 1990
 Household Sequence #: 26490 Interviewer #: 142
 Respondent Line #: 03, 04, 05, 06 Coder #: 200
 Food Item Line #: 215, 212, 208, 213 (Include all line #'s if same item is repeated)
 Name of Food/Drink (Q.4): EGGS
 Food Source (Q.7): 1 2 3 >>> Where Obtained (Q.11): _____

Problem:
 (Circle all that apply) Need Code Need Weight Other _____
 Specific Reason for Submitting Request: WITH HOT DOGS + CHEESE, CUP WT.
 Suggested Code: NONE
 (Indicate "none" if code can not be suggested)
 Callback Made: Yes _____ >>> Explain Result: _____
 No _____

FOR USDA USE ONLY

Code(s)/Weight(s): 321 - 0501 [177g]
252 - 1011 [25g] = 202g / cup

Notes: _____

Replacement page will follow _____ B 2500

Individual Intake Requests

	<u>Basic</u>	<u>Low Income</u>
Spring	1,181	544
Summer	1,292	561
Fall	1,583	70
Winter	983	37

Once the intake data were keyed, either during the interactive coding process or by the data entry staff, the files were subjected to computer edit checks, merged with selected household data information and expanded into final data tapes.

Specific data edit programs were prepared for NFCS which flagged problem areas, classifying them either as errors or warnings. Errors referred to inconsistent or improper responses that could not remain in the database. For example, an interview start time that was later than the end time would generate an error message. Warnings refer to answers which could have been indicative of problems, but could have been valid responses. For example, 12 different eating occasions in one day was considered a warning. Such a number may have signaled an error, i.e., eating times may have been incorrectly entered or may have been perfectly acceptable if the respondent indeed ate on 12 different occasions. Source documents were consulted for each error and warning and the data file corrected wherever appropriate. Exhibit V-15 lists the range checks created for the individual intake records. The special consistency and relational checks are shown in Exhibit V-16.

The cleaning of intakes included the generation of nutrient warnings for seven nutrients and food energy for each of three sex-age groups. The intake data were expanded for all food line items for each individual and compared to set upper limits. The nutritionally-knowledgeable editors reviewed the intakes for these individuals for sources of unusual nutrient reporting. If coding or other errors were detected in this review, the data file was corrected accordingly. Often, these corrections were at the level of food line items, so that the day-total values were adjusted appropriately. Below are listed the nutrients, by sex-age group and the set limits:

Exhibit 15**RANGE CHECK WARNINGS/ERRORS FOR INDIVIDUAL INTAKES**

<u>Fld #</u>	<u>Intake/Question</u>	<u>Description</u>	<u>W/E</u>	<u>Warning/Error Ranges</u>
F101	Day 1 - Cover	Quarter	E	Not 1-4
F102		Sample	E	Not 1-2
F103	Day 1 - Cover	Interviewer	E	Not 000-999
F104	Day 1 - Cover	Time began - hour	E	Not 1-12, 99
F105	Day 1 - cover	Time began - minute	E	Not 0-59, 99
F106	Day 1 - cover	Time began - AM/PM	E	Not 1-2, 9
F107	Day 1 - Cover	Time end - hour	E	Not 1-12, 99
F108	Day 1 - Cover	Time end - minute	E	Not 0-59, 99
F109	Day 1 - Cover	Time end - AM/PM	E	Not 1-2, 9
F110	Day 1 - Cover	Person's name	-	Not applicable
F111	Day 1 - Cover	Date of Birth - month	E	Not 1-12, 98, 99
F112	Day 1 - Cover	Date of Birth - day	E	Not 1-31, 98, 99
F113	Day 1 - Cover	Date of Birth - year	E	Not 00-88, 98, 99
F114	Day 1 - Cover	Day 1 - Day of week	E	Not 1-7
F115	Day 1 - Cover	Day 1 - Month	E	Not 1-12
F116	Day 1 - Cover	Day 1 - Day	E	Not 1-31
F117	Day 1 - Cover	Day 1 - Year	E	Not 87-88
F118	Day 1 - Q12	Snacks/dessert	E	Not 1-2, 9
F119	Day 1 - Q12	Nonalcoholic drinks	E	Not 1-2, 9
F120	Day 1 - Q12	Alcoholic beverages	E	Not 1-2, 9
F121	Day 1 - Q12	Accessory foods	E	Not 1-2, 9
F122	Day 1 - Q12	Side dishes	E	Not 1-2, 9
F123	Day 1 - Q12	Foods tasted	E	Not 1-2, 9
F124	Day 1 - Q12	Other items	E	Not 1-2, 9
F126	Day 1 - Page 8	Time Q12 ended - Hour	E	Not 1-12, 99
F127	Day 1 - Page 8	Time Q12 ended - Min	E	Not 0-59, 99
F128	Day 1 - Page 8	Time Q12 ended - AM/PM	E	Not 1-2, 9
F129	Day 1 - Q13a	Drink water yesterday - FL OZ	W E	> 65.000 Not 0-999.000
F130	Day 1 - Q13b	Amt of water from home supplies	E	Not 1-4, 8, 9
F131	Day 1 - Q13c	Drink water usually - FL OZ	W E	> 65.000 Not 0-999.000
F132	Day 1 - Q14a	Amount of food and drink yesterday	E	Not 1-3, 8, 9
F133	Day 1 - Q14b	Reason amt different	E	Not 0-9
F134	Day 1 - Q15	Healthfulness of diet	E	Not 1-5, 8, 9
F135	Day 1 - Q16a	Add salt at table	E	Not 1-4, 8, 9

<u>Fld #</u>	<u>Intake/Question</u>	<u>Description</u>	<u>W/E</u>	<u>Warning/Error Ranges</u>
F136	Day 1 - Q16b	Amount of salt added	E	Not 1-3, 8, 9
F137	Day 1 - Q16c	Type of salt added	E	Not 1-4, 8, 9
F138	Day 1 - Q16d	Use iodized salt	E	Not 1-3, 9
F139	Day 1 - Q17a	On a special diet	E	Not 1-2, 8, 9
F140	Day 1 - Q17b	Low calorie diet	E	Not 1, 8, 9
F141	Day 1 - Q17b	Low fat diet	E	Not 1, 8, 9
F142	Day 1 - Q17b	Low salt diet	E	Not 1, 8, 9
F143	Day 1 - Q17b	Low sugar diet	E	Not 1, 8, 9
F144	Day 1 - Q17b	Diabetic diet	E	Not 1, 8, 9
F145	Day 1 - Q17b	Other diet	E	Not 1, 8, 9
F146	Day 1 - Q18	Vegetarian	E	Not 1-2, 8, 9
F147	Day 1 - Q19	How often take vitamins	E	Not 1-4, 8, 9
F148	Day 1 - Q20	Usually take - multivit	E	Not 0, 1, 8, 9
F149	Day 1 - Q20	Usually take - multivitamin with iron	E	Not 1, 8, 9
F150	Day 1 - Q20	Usually take - Vitamin C and iron	E	Not 1, 8, 9
F151	Day 1 - Q20	Usually take - combo vitamin & mineral	E	Not 1, 8, 9
F152	Day 1 - Q20	Usually take- Vitamin C	E	Not 1, 8, 8
F153	Day 1 - Q20	Usually take - iron	E	Not 1, 8, 9
F154	Day 1 - Q20	Usually take - calcium	E	Not 1, 8, 9
F155	Day 1 - Q20	Usually take - other vitamin or mineral	E	Not 1, 8, 9
F156	Day 1 - Q21	Weight - pounds	W E	Between 350-997 Not 001-999
F157	Day 1 - Q22	Height - feet	W E	Between 7-8 Not 0-7, 9
F158	Day 1 - Q22	Height - inches	E	Not 00-11, 98, 99
F159	Day 1 - Q23	Your health is	E	Not 1-5, 8, 9
F160	Day 1 - Q24	Any disability	E	Not 1-2, 8, 9
F161	Day 1 - Q25	Have diabetes	E	Not 1-2, 8, 9
F162	Day 1 - Q25	Have high blood pressur	E	Not 1-2, 8, 9
F163	Day 1 - Q25	Have heart disease	E	Not 1-2, 8, 9
F164	Day 1 - Q25	Have cancer	E	Not 1-2, 8, 9
F165	Day 1 - Q25	Have osteoporosis	E	Not 1-2, 8, 9
F166	Day 1 - Q26	Trouble biting	E	Not 1-2, 8, 9
F167	Day 1 - Q27	Poor fitting dentures	E	Not 1-2, 8, 9
F168	Day 1 - Q27	Loss of teeth	E	Not 1-2, 8, 9
F169	Day 1 - Q27	Other reason	E	Not 1-2, 8, 9
F170	Day 1 - Q28	Usual level of physical activity	E	Not 1-4, 8, 9
F171	Day 1 - Q29	Exercise regularly	E	Not 1-2, 8, 9
F172	Day 1 - Q30	Exercise per week	E	Not 1-99
F173	Day 1 - Q30	Exercise per month	E	Not 1-97

<u>Fld #</u>	<u>Intake/Question</u>	<u>Description</u>	<u>W/E</u>	<u>Warning/Error Ranges</u>
F174	Day 1 - Q30	Exercise per year	E	Not 1-97
F175	Day 1 - Q31	Smoked 100+ cigarettes	E	Not 1-2, 8, 9
F176	Day 1 - Q32	Smoke now	E	Not 1-2, 8, 9
F177	Day 1 - Q33	Cigarettes per day	W	> 80
			E	Not 0-999
F178	Day 1 - Q34	Since you smoked	E	Not 0-99
F179	Day 1 - Q35	Under 12 Main resp code	E	Not 0-6, 9
F180	Day 1 - Q35	Under 12 - mom help	E	Not 1, 9
F181	Day 1 - Q35	Under 12 - dad help	E	Not 1, 9
F182	Day 1 - Q35	Under 12 - sister help	E	Not 1, 9
F183	Day 1 - Q35	Under 12 - brother help	E	Not 1, 9
F184	Day 1 - Q35	Under 12 - grands help	E	Not 1, 9
F185	Day 1 - Q35	Under 12 - child help	E	Not 1, 9
F186	Day 1 - Q35	Under 12 - other help	E	Not 1, 9
F187	Day 1 - Q36	12+ - main respondent	E	Not 0-6, 9
F188	Day 1 - Q36	12+ - smple person help	E	Not 1, 9
F189	Day 1 - Q36	12+ - mon help	E	Not 1, 9
F190	Day 1 - Q36	12+ - dad help	E	Not 1, 9
F191	Day 1 - Q36	12+ - sister help	E	Not 1, 9
F192	Day 1 - Q36	12+ - brother help	E	Not 1, 9
F193	Day 1 - Q36	12+ - grands help	E	Not 1, 9
F194	Day 1 - Q36	12+ - other help	E	Not 1, 9
f195	Day 1 - Q37	Descriptions difficult	E	Not 1-2, 9
F196	Day 1 - Q39	Amounts difficult	E	Not 1-2, 8, 9
F201	Day 2 - Cover	Quarter	E	Not 1-4
F202		Sample	E	Not 1-2
F203	Day 2 - Cover	Interviewer	E	Not 000-999
F211	Day 2 - Cover	Day 2 - Day of week	E	Not 1-7
F212	Day 2 - Cover	Day 2 - Month	E	Not 1-12
F213	Day 2 - Cover	Day 2 - Day	E	Not 1-31
F214	Day 2 - Cover	Day 2 - Year	E	Not 87-88
F215	Day 2 - Q12	Snacks/dessert	E	Not 1-2, 9
F216	Day 2 - Q12	Nonalcoholic drinks	E	Not 1-2, 9
F217	Day 2 - Q12	Alcoholic beverages	E	Not 1-2, 9
F218	Day 2 - Q12	Accessory foods	E	Not 1-2, 9
F219	Day 2 - Q12	Side dishes	E	Not 1-2, 9
F220	Day 2 - Q12	Foods tasted	E	Not 1-2, 9
F221	Day 2 - Q12	Other items	E	Not 1-2, 9
F222	Day 2 - Q13	Amount of food and drink yesterday	E	Not 1-3, 8, 9
F223	Day 2 - Q14	Reason amt different	E	Not 0-9
F224				
F301	Day 3 - Cover	Day 3 - Day of week	E	Not 1-7
F302	Day 3 - Cover	Day 3 - Month	E	Not 1-12
F303	Day 3 - Cover	Day 3 - Day	E	Not 1-31

<u>Fld #</u>	<u>Intake/Question</u>	<u>Description</u>	<u>W/E</u>	<u>Warning/Error Ranges</u>
F304	Day 3 - Cover	Day 3 - Year	E	Not 87-88
F305	Day 3 - Q12	Snacks/dessert	E	Not 1-2, 9
F306	Day 3 - Q12	Nonalcoholic drinks	E	Not 1-2, 9
F307	Day 3 - Q12	Alcoholic beverages	E	Not 1-2, 9
F308	Day 3 - Q12	Accessory foods	E	Not 1-2, 9
F309	Day 3 - Q12	Side dishes	E	Not 1-2, 9
F310	Day 3 - Q12	Foods tasted	E	Not 1-2, 9
F311	Day 3 - Q12	Other items	E	Not 1-2, 9
F312	Day 3 - Q13	Amount of food and drink yesterday	E	Not 1-3, 8, 9
F313	Day 3 - Q14	Reason amt different	E	Not 0-9
F314	Day 3 - Q15	Consume milk as a beverage	E	Not 1-2, 8, 9
F315	Day 3 - Q15	Consume milk on cereal	E	Not 1-2, 8, 9
F316	Day 3 - Q15	Consume milk in coffee, tea, other	E	Not 1-2, 8, 9
F317	Day 3 - Q15	Consume yogurt	E	Not 1-2, 8, 9
F318	Day 3 - Q15	Consume soups made with cream or milk	E	Not 1-2, 8, 9
F319	Day 3 - Q15	Consume puddings, custard, cream pie	E	Not 1-2, 8, 9
F320	Day 3 - Q15	Consume cottage cheese	E	Not 1-2, 8, 9
F321	Day 3 - Q15	Consume other cheese	E	Not 1-2, 8, 9
F322	Day 3 - Q15	Consume ice cream	E	Not 1-2, 8, 9
F323	Day 3 - Q15	Consume dark green leafy vegetables	E	Not 1-2, 8, 9
F324	Day 3 - Q15	Consume cooked dried beans	E	Not 1-2, 8, 9
F325	Day 3 - Q16	How many times a day consume milk as a beverage	E	Not 1-97, 98, 99
F326	Day 3 - Q16	How many times a week consume milk as a beverage	E	Not 1-97, 98, 99
F327	Day 3 - Q16	How many times a month consume milk as a beverage	E	Not 1-97, 98, 99
F328	Day 3 - Q16	How many times a day consume milk on cereal	E	Not 1-97, 98, 99
F329	Day 3 - Q16	How many times a week consume milk on cereal	E	Not 1-97
F330	Day 3 - Q16	How many times a month consume milk on cereal	E	Not 1-97
F331	Day 3 - Q16	How many times a day consume milk in coffee	E	Not 1-97, 98, 99

<u>Fld #</u>	<u>Intake/Question</u>	<u>Description</u>	<u>W/E</u>	<u>Warning/Error Ranges</u>
F332	Day 3 - Q16	How many times a week consume milk in coffee	E	Not 1-97
F333	Day 3 - Q16	How many times a month consume milk in coffee	E	Not 1-97
F334	Day 3 - Q16	How many times a day consume yogurt	E	Not 1-97, 98, 99
F335	Day 3 - Q16	How many times a week consume yogurt	E	Not 1-97
F336	Day 3 - Q16	How many times a month consume yogurt	E	Not 1-97
F337	Day 3 - Q16	How many times a day consume soups with milk	E	Not 1-97, 98, 99
F338	Day 3 - Q16	How many times a week consume soups with milk	E	Not 1-97
F339	Day 3 - Q16	How many times a month consume soups with milk	E	Not 1-97
F340	Day 3 - Q16	How many times a day consume pudding	E	Not 1-97, 98, 99
F341	Day 3 - Q16	How many times a week consume pudding	E	Not 1-97
F342	Day 3 - Q16	How many times a month consume pudding	E	Not 1-97
F343	Day 3 - Q16	How many times a day consume cottage cheese	E	Not 1-97, 98, 99
F344	Day 3 - Q16	How many times a week consume cottage cheese	E	Not 1-97
F345	Day 3 - Q16	How many times a month consume cottage cheese	E	Not 1-97
F346	Day 3 - Q16	How many times a day consume other cheese	E	Not 1-97, 98, 99
F347	Day 3 - Q16	How many times a week consume other cheese	E	Not 1-97
F348	Day 3 - Q16	How many times a month consume other cheese	E	Not 1-97
F349	Day 3 - Q16	How many times a day consume ice cream	E	Not 1-97, 98, 99
F350	Day 3 - Q16	How many times a week consume ice cream	E	Not 1-97
F351	Day 3 - Q16	How many times a month consume ice cream	E	Not 1-97
F352	Day 3 - Q16	How many times a day consume vegetables	E	Not 1-97, 98, 99
F353	Day 3 - Q16	How many times a week consume vegetables	E	Not 1-97

<u>Fld #</u>	<u>Intake/Question</u>	<u>Description</u>	<u>W/E</u>	<u>Warning/Error Ranges</u>
F354	Day 3 - Q16	How many times a month consume vegetables	E	Not 1-97
F355	Day 3 - Q16	How many times a day consume dried beans	E	Not 1-97, 98, 99
F356	Day 3 - Q16	How many times a week consume dried beans	E	Not 1-97
F357	Day 3 - Q16	How many times a month consume dried beans	E	Not 1-97
F358	Day 3 - Q17	How many cups of milk as a beverage	E	Not 1-999.000,
F359	Day 3 - Q17	How many cups of milk on cereal	E	Not 1-999.000
F360	Day 3 - Q17	How many cups of milk in coffee; tea, other	E	Not 1-999.000
F361	Day 3 - Q17	How many cups/slice/oz of yogurt	E	Not 1-999.000
F362	Day 3 - Q17	How many cups of soups	E	Not 1-999.000
F363	Day 3 - Q17	How many cups of pudding, custard, etc	E	Not 1-999.000
F364	Day 3 - Q17	How many cups of cottage cheese	E	Not 1-999.000
F365	Day 3 - Q17	How many cups/slice/oz of other cheese	E	Not 1-999.000
F366	Day 3 - Q17	How many cups of ice cream	E	Not 1-999.000
F367	Day 3 - Q17	How many cups of vegetables	E	Not 1-999.000
F368	Day 3 - Q17	How many cups of dried beans	E	Not 1-999.000
F369	Day 3 - Q18	Consume any beer	E	Not 1, 9
F370	Day 3 - Q18	Consume any wine	E	Not 1, 9
F371	Day 3 - Q18	Consume any hard liquor	E	Not 1, 9
F372	Day 3 - Q18	Didnt consume any alcohol	E	Not 1, 9
F373	Day 3 - Q19	No. of days per week consume beer	E	Not 1-7, 8, 9
F374	Day 3 - Q19	No. of days per month consume beer	E	Not 1-31
F375	Day 3 - Q20	How many FL OZ of beer each day you drank	W E	800.000-997.000 Not 1-999.000
F376	Day 3 - Q21	Beer consumption vary by season	E	Not 1-2, 8, 9
F377	Day 3 - Q22	Drink more beer in Spring	E	Not 1, 8, 9
F378	Day 3 - Q22	Drink more beer in Summer	E	Not 1

<u>Fld #</u>	<u>Intake/Question</u>	<u>Description</u>	<u>W/E</u>	<u>Warning/Error Ranges</u>
F379	Day 3 - Q22	Drink more beer in Fall	E	Not 1
F380	Day 3 - Q22	Drink more beer in Winter	E	Not 1
F381	Day 3 - Q23	No. of days per week consume wine	E	Not 1-7, 8, 9
F382	Day 3 - Q23	No. of days per month consume wine	E	Not 1-31
F383	Day 3 - Q24	How many FL OZ of wine each day you drank	W E	800.000-997.000 Not 1-999.000
F384	Day 3 - Q25	Wine consumption vary by season	E	Not 1-2, 8, 9
F385	Day 3 - Q26	Drink more wine in Spring	E	Not 1, 8, 9
F386	Day 3 - Q26	Drink more wine in Summer	E	Not 1
F387	Day 3 - Q26	Drink more wine in Fall	E	Not 1
F388	Day 3 - Q26	Drink more wine in Winter	E	Not 1
F389	Day 3 - Q27	No. of days per week consume hard liquor	E	Not 1-7, 8, 9
F390	Day 3 - Q27	No. of days per month consume hard liquor	E	Not 1-31
F391	Day 3 - Q28	How many FL OZ of hard liquor each day drank	W E	800.000-997.000 Not 1-999.000
F392	Day 3 - Q29	Hard liquor consumption vary by season	E	Not 1-2, 8, 9
F393	Day 3 - Q30	Drink more hard liquor in Spring	E	Not 1, 8, 9
F394	Day 3 - Q30	Drink more hard liquor in Summer	E	Not 1
F395	Day 3 - Q30	Drink more hard liquor in Fall	E	Not 1
F396	Day 3 - Q30	Drink more hard liquor in Winter	E	Not 1
F397	Day 3 - Q31	Consume alcohol on Monday	E	Not 1, 8, 9
F398	Day 3 - Q31	Consume alcohol on Tuesday	E	Not 1
F399	Day 3 - Q31	Consume alcohol on Wednesday	E	Not 1
F400	Day 3 - Q31	Consume alcohol on Thursday	E	Not 1
F401	Day 3 - Q31	Consume alcohol on Friday	E	Not 1
F402	Day 3 - Q31	Consume alcohol on Saturday	E	Not 1

<u>Fld #</u>	<u>Intake/Question</u>	<u>Description</u>	<u>W/E</u>	<u>Warning/Error Ranges</u>
F403	Day 3 - Q31	Consume alcohol on Sunday	E	Not 1
F404	Day 3 - Q31	Consume alcohol on Everyday	E	Not 1
F501	Food Grid	Quarter	E	Not 1-4
F502	Food Grid	Sample	E	Not 1-2
F503	Grid - Q1	Time begin eating Hour	E	Not 1-12, 99
F504	Grid - Q1	Time begin eating Min	E	Not 0-59, 99
F505	Grid - Q1	Time begin eating AM/PM	E	Not 1-2, 9
F506	Grid - Q2	Name of eating occasion	E	Not 1-9
F507	Grid - Q3	With whom eaten	E	Not 1-4, 8, 9
F508	Food Grid	Food line number	E	Not 101-399
F509	Grid - Q4	Food code	E	Not 1-9999999
F510	Grid - Q6	Quantity consumed	W	0
			E	Not 1-999999
F511	Day 1 Grid	How quantity estimated	E	Not 1-7, 9
F512	Grid - Q7	Food source	E	Not 1-3, 9
F513	Grid - Q8	Brought into home	E	Not 1-3, 8, 9
F514	Grid - Q9a	Fats/oils in preparation of this meal	E	Not 1-2, 8, 9
F515	Grid - Q9b	Fats/oils used for this item	E	Not 1-2, 8, 9
F516	Grid - Q9c	What fat/oil used	E	Not 1-12
F517	Grid - Q10	Use salt in preparation	E	Not 1-2, 8, 9
F518	Grid - Q11	Where obtained if not from home supply	E	Not 1-12, 70-79
F519	Grid - Q12	Added/Changed item	E	Not 1
F520	Food Grid	Partition code	E	Not 0-6
F521	Food Grid	Military time	E	Not 0-23, 99
F522		Coder	E	Not 000-999
F601	Day 1	Missing data code	E	Not 0-9
F602	Day 2	Missing data code	E	Not 0-9
F603	Day 3 - Q17	Cup, slice or ounce of Yogurt	E	Not C,S,0
F605	Day 3	Missing data code	E	Not 0-9
F606	Day 3 - Q17	Cup, slice or ounce of Other cheese	E	Not C,S,0
F607	Day 1,2,and 3	Unit of measure	E	Not 01-89, 99

Exhibit V-16**SPECIAL INDIVIDUAL INTAKE CLEANING CHECKS**

<u>#</u>	<u>Description</u>	<u>Error/Warning</u>
1	Duplicate intake line number	Error
2	Line count variable should equal number of intake lines	Error
3	Result of call from screening form is not consistent with presence or absence of intake lines	Error
4	Number of intake lines for a given day should be five or more for the Basic sample and three or more for the Low income sample	Warning
5	More than 40 intake lines for a given day is unusually high	Warning
6	More than one meal type in a given day	Warning
7	Day 1 - birth date and actual date are not consisted with age given on the household interview	Error
8	Combination of valid/refused answers is not acceptable in the time field	Error
9	Time span between beginning and ending if Day 1 intake is questionable	Warning
10	Fat and salt questions should be answered by main meal preparer and children 12 and under	Error
11	Two different meal types are consumed at the same time	Error
12	Question 3 (with whom) should be all the same value within the same meal time	Error
13	Question 7 cannot have a code 1 (eaten at home) with any other answer for a given meal time	Error
14	Breast milk indicated, but child not being nursed	Error
15	Question 3 cannot be codes 2 or 4 for a single person household	Error
16	Respondent should be less than two years for Question 2 to be code 7 (infant feeding)	Error
17	Skip pattern error for multi-response question	Error
18	Conflicting responses within a given question	Error
19	Date doesn't correspond to day of week	Error
20	Day 1 - Question 12 ending time must be between the interview starting and ending time	Error
21	Invalid date for associated month	Error
22	Day 1 - Question 34, number of years smoking is incompatible with respondent's age	Error
23	Skip pattern error	Error
24	Quarter is not the same for all documents	Error
25	Sample number is not the same for all documents	Error
26	Interviewer number is not the same for all documents	Error
27	Intake has no line items, but there is no explanation of missing data	Error
28	Yes response to question 15 must have one and only one response to Question 16	Error
29	Day 3 - Question 17 amount is questionable (high)	Warning

<u>Nutrient</u>	<u>Units</u>	<u>Age Categories</u>		
		<u>Children</u> <u>0-11 Years</u>	<u>Males</u> <u>12+ Years</u>	<u>Females</u> <u>12+ years</u>
Food energy	Kilocalories	2761.000	4108.950	2806.000
Protein	Grams	110.815	172.400	120.200
Fat	Grams	129.100	209.585	142.700
Vitamin A	IU	11737.700	17411.250	14772.000
Vitamin E	Alpha-TE	30.000	50.000	50.000
Vitamin C	Milligrams	200.000	242.000	221.000
Vitamin B12	Milligrams	7.911	11.649	7.970
Calcium	Milligrams	1582.150	1953.900	1372.000

In addition reasonableness checks were established for weight and height reporting.

Once the data from each completed intake interview were clean, the coded intake information was broken down into nutrient components and summary consumption variables were created. The intake data expansion program calculated for each individual food item the nutritional content of that food in terms of food energy and 29 nutrients. These are:

- Protein
- Fat
- Saturated fatty acid
- Monounsaturated fatty acid
- Polyunsaturated fatty acid
- Carbohydrates
- Calcium
- Iron
- Phosphorus
- Magnesium
- Zinc
- Potassium
- Cooper
- Vitamin A -- IU
- Vitamin A -- RE
- Carotene -- RE
- Thiamin
- Riboflavin
- Preformed niacin
- Vitamin B6
- Vitamin B12
- Vitamin C
- Alpha-tocopherol (Vitamin E)
- Folacin
- Sodium
- Cholesterol
- Dietary fiber
- Water
- Alcohol
- Food energy (calories)

A separate set of computer calculations then created the following variables for each intake record:

- Summary day-totals -- the total gram (or other unit) amounts of each of the 29 nutrients and food energy consumed in the 24-hour period
- Summary RDA ratios -- the ratio of day-totals for each nutrient compared to the RDA for that person (as determined by the person's age and sex)

An additional reasonableness check was then performed to flag unusually large gram amounts consumed by individual food item and for day total (see Exhibit V-17 for an exemplary case). These individual records were consulted again and adjustment made, as needed.

The data record for each completed interview at this point contained the raw data for the household, for each individual intake record and the expanded nutrient base by food item, day-totals and RDA ratios. Two sets of final format files were produced at this stage. The household final format and the individual intake final format file. The household final format contained four types of hierarchical records -- one with information about the household characteristics (Record Type 60); one with information about each household member (Record Type 65); one for each of the different food used in the seven-day period (Record Type 70); one for household measure nutritional units (Record Type 75); one for aggregate nutritive value data for the survey seven-day reporting period.

The individual intake final format file contains three types of records. For each member providing intake data, the first record is individual household members' personal and household-related data (Record Type 20); the second is individual food items (lines) reported consumed by the household member (Record Type 30); and the third is summary day total and multiple-day aggregations of nutrition information for that individual (Record Type 40).*

Final consistency, range, logic and reasonableness checks were performed on the final format file prior to hand off.

E. Data Handler Training

Reviewers, interactive coders, verifiers, data cleaners and other data clerks all received essentially the same grounding in NFCS as part of their training. Those showing more interest and facility in either the computerized coding went on to get intensively trained in the intake coding area, others were given more depth of study in the household food use portion of the survey. Once experienced in either one or both of these areas, selected individuals were graduated to data cleaning responsibilities.

*See Post-Field Procedural Manual, Chapter VIII.

ERRORS/WARNINGS FOR INTAKE ID 24684*03

PLEASE CHECK Q35 AN Q36 FOR OTHER PERSON
IF INTERV. OR SPOUSE ENTER A 1 IN THE
CORRESPONDING FEILD

=====

GRAM CHECK WARNING FOR FOOD CODE: 3210500

LINE NUMBER =====>	307	VALUE#: 46
SEX =====>	2	
AGE =====>	8	
AGE PERIOD =====>	1	
MAXIMUM # OF GRAMS ALLOWED =====>	185	
ACTUAL # OF GRAMS SPECIFIED =====>	42800	

=====

GRAM CHECK WARNING FOR TOTAL GRAMS:

SEX =====>	2
AGE =====>	8
AGE PERIOD =====>	1
TOTAL GRAM CONSUMPTION =====>	259022
DAY OF INTAKE IN ERROR =====>	1
MAXIMUM # OF GRAMS ALLOWED =====>	2274.76

=====

GRAM CHECK WARNING FOR TOTAL GRAMS:

SEX =====>	2
AGE =====>	8
AGE PERIOD =====>	1
TOTAL GRAM CONSUMPTION =====>	253400
DAY OF INTAKE IN ERROR =====>	3
MAXIMUM # OF GRAMS ALLOWED =====>	2274.76

=====

NUTRIENT EXCEPTION WARNING FOR NUTRIENT: FOOD ENERGY

INTAKE DAY =====>	1
-------------------	---

ERRORS/WARNINGS REPORT FOR INDIVIDUAL

Exhibit V-17

```

SEX =====>                2
AGE =====>                8
AGE PERIOD =====>        1
MAXIMUM DAY TOTAL =====> 2761.00
ACTUAL DAY TOTAL =====> 2951.13

```

BREAKDOWN BY LINE ITEM:

FOOD CODE	FOOD AMT	NUTRIENT AMT
3110500	104.00	206.14
5110101	48.00	140.16
1111100	244.00	149.91
6314111	124.50	74.70
2523021	56.70	91.85
5110100	52.00	138.32
5840010	241.00	74.71
6310100	138.00	81.42
9241031	124.00	50.84
5620341	155.00	326.31
4121010	125.00	106.19
2416410	128.00	404.12
1111100	244.00	149.91
5320600	50.00	235.50
6310100	138.00	81.42
1111100	244.00	149.91
2523021	56.70	91.85
5110100	52.00	138.32
1111100	244.00	149.91
7440101	5.70	6.04
8110201	14.20	102.05
7440101	1.42	1.50

=====

NUTRIENT EXCEPTION WARNING FOR NUTRIENT: PROTEIN

```

INTAKE DAY =====>        1
SEX =====>                2
AGE =====>                8
AGE PERIOD =====>        1
MAXIMUM DAY TOTAL =====> 110.81
ACTUAL DAY TOTAL =====> 131.17

```

BREAKDOWN BY LINE ITEM:

FOOD CODE	FOOD AMT	NUTRIENT AMT
3110500	104.00	14.07
5110101	48.00	4.17
1111100	244.00	8.02
6314111	124.50	.52
2523021	56.70	10.35
5110100	52.00	4.10
5840010	241.00	4.04

6310100	138.00	.26
9241031	124.00	.00
5620541	155.00	4.67
4121010	125.00	5.40
2416410	128.00	33.74
1111100	244.00	8.02
5320600	50.00	2.70
6310100	138.00	.26
1111100	244.00	8.02
2523021	56.70	10.35
5110100	52.00	4.10
1111100	244.00	8.02
7440101	5.70	.11
8110201	14.20	.12
7440101	1.42	.02

=====

NUTRIENT EXCEPTION WARNING FOR NUTRIENT: FAT

INTAKE DAY =====>	1
SEX =====>	2
AGE =====>	8
AGE PERIOD =====>	1
MAXIMUM DAY TOTAL =====>	129.10
ACTUAL DAY TOTAL =====>	130.39

BREAKDOWN BY LINE ITEM:

FOOD CODE	FOOD AMT	NUTRIENT AMT
-----	-----	-----
3110500	104.00	15.59
5110101	48.00	1.92
1111100	244.00	8.14
6314111	124.50	.09
2523021	56.70	4.75
5110100	52.00	1.87
5840010	241.00	2.45
6310100	138.00	.49
9241031	124.00	.00
5620541	155.00	8.57
4121010	125.00	3.95
2416410	128.00	28.98
1111100	244.00	8.14
5320600	50.00	10.50
6310100	138.00	.49
1111100	244.00	8.14
2523021	56.70	4.75
5110100	52.00	1.87
1111100	244.00	8.14
7440101	5.70	.02
8110201	14.20	11.43
7440101	1.42	.00

=====

NUTRIENT EXCEPTION WARNING FOR NUTRIENT: VITAMIN C

INTAKE DAY =====> 2
 SEX =====> 2
 AGE =====> 8
 AGE PERIOD =====> 1
 MAXIMUM DAY TOTAL =====> 200.00
 ACTUAL DAY TOTAL =====> 277.97

BREAKDOWN BY LINE ITEM:

FOOD CODE	FOOD AMT	NUTRIENT AMT
2524000	14.00	.14
5432500	24.00	.00
5510100	80.00	.42
9130001	41.00	.00
3110500	92.00	.00
2522141	28.00	.44
6121000	248.80	96.78
5810821	63.00	6.79
6121000	187.00	72.74
6310100	138.00	7.86
1111100	244.00	2.29
9241031	248.00	.00
7150100	210.00	12.86
2712002	117.00	.58
7521601	82.00	5.05
1111100	244.00	2.29
6111901	131.00	69.69

=====

NUTRIENT EXCEPTION WARNING FOR NUTRIENT: FOOD ENERGY

INTAKE DAY =====> 3
 SEX =====> 2
 AGE =====> 8
 AGE PERIOD =====> 1
 MAXIMUM DAY TOTAL =====> 2761.00
 ACTUAL DAY TOTAL =====> 3958.17

BREAKDOWN BY LINE ITEM:

FOOD CODE	FOOD AMT	NUTRIENT AMT
9241031	248.00	101.68
5620541	155.00	326.31
2716101	226.80	821.29
7531100	93.50	71.23
5320600	80.00	376.80
1111100	244.00	149.91
3210500	428.00	695.32

2260010	32.00	184.32
5100011	48.00	140.16
8110202	14.20	101.72
2410200	85.00	201.93
5410201	14.00	53.76
7150500	128.00	284.16
1111100	244.00	149.91
6314111	125.00	75.00
1111100	244.00	149.91
6314111	124.50	74.70

=====

NUTRIENT EXCEPTION WARNING FOR NUTRIENT: PROTEIN

INTAKE DAY =====>	3
SEX =====>	2
AGE =====>	8
AGE PERIOD =====>	1
MAXIMUM DAY TOTAL =====>	110.81
ACTUAL DAY TOTAL =====>	173.60

BREAKDOWN BY LINE ITEM:

FOOD CODE	FOOD AMT	NUTRIENT AMT
-----	-----	-----
9241031	248.00	.00
5620541	155.00	4.67
2716101	226.80	48.10
7531100	93.50	2.60
5320600	80.00	4.32
1111100	244.00	8.02
3210500	428.00	46.26
2260010	32.00	9.74
5100011	48.00	4.17
8110202	14.20	.11
2410200	85.00	23.06
5410201	14.00	1.12
7150500	128.00	4.28
1111100	244.00	8.02
6314111	125.00	.52
1111100	244.00	8.02
6314111	124.50	.52

=====

NUTRIENT EXCEPTION WARNING FOR NUTRIENT: FAT

INTAKE DAY =====>	3
SEX =====>	2
AGE =====>	8
AGE PERIOD =====>	1
MAXIMUM DAY TOTAL =====>	129.10
ACTUAL DAY TOTAL =====>	216.01

BREAKDOWN BY LINE ITEM:

FOOD CODE	FOOD AMT	NUTRIENT AMT
9241031	248.00	.00
5620541	155.00	8.57
2716101	228.80	57.38
7531100	93.50	2.13
5320600	80.00	16.80
1111100	244.00	8.14
3210500	428.00	50.83
2260010	32.00	15.75
5100011	48.00	1.92
8110202	14.20	11.41
2410200	85.00	11.49
5410201	14.00	1.31
7150500	128.00	13.73
1111100	244.00	8.14
6314111	125.00	.10
1111100	244.00	8.14
6314111	124.50	.09

=====

NUTRIENT EXCEPTION WARNING FOR NUTRIENT: VITAMIN B12

INTAKE DAY =====>	3
SEX =====>	2
AGE =====>	8
AGE PERIOD =====>	1
MAXIMUM DAY TOTAL =====>	7.91
ACTUAL DAY TOTAL =====>	9.57

BREAKDOWN BY LINE ITEM:

FOOD CODE	FOOD AMT	NUTRIENT AMT
9241031	248.00	.00
5620541	155.00	.00
2716101	228.80	2.79
7531100	93.50	.00
5320600	80.00	.09
1111100	244.00	.87
3210500	428.00	3.23
2260010	32.00	.56
5100011	48.00	.00
8110202	14.20	.01
2410200	85.00	.25
5410201	14.00	.00
7150500	128.00	.00
1111100	244.00	.87
6314111	125.00	.00
1111100	244.00	.87
6314111	124.50	.00

Initially a three-day training program for all new data personnel was established, the agenda for which is shown in Exhibit V-18. Data coding personnel were systematically introduced to all parts of the interview and to all survey control forms. Sample documents were constructed (e.g., mock questionnaires, errors/warnings reports), which students worked with (see Appendix V-F).

At the onset of NFCS, large groups of 15 to 25 potential coding personnel were recruited and trained. However, the level of performance in groups of this size proved to be so variable that later training were set for groups of 2 to 4. This allowed more personalized attention and coaching to occur. These training sessions occurred throughout NFCS as the ability either to identify and properly rectify errors in the household food use review effort or to enter and correctly match data in the interactive intake coding activity required more diligence and judgment than many clerks could master. Replacing personnel was an ongoing activity.

Once through the formal training, new reviewers/intake coders were mentored with more experienced personnel. They were physically located with an experienced coder or verifier who coached them on a regular basis, answering questions and solving problems.

All new coder work was double coded and feedback provided on errors and miscues. It required, on average, two months for an intake coder to reach proficiency in the DECSS program and one month for reviewers of the household section to perform independently. In total more than 260 different coders worked on the household food use review and intake entry and coding.

Exhibit V-18

NATIONAL ANALYSTS
A Division of Booz·Allen
& Hamilton Inc.

Study #: 09010-067-001
Spring 1987

USDA - NFCS 1987

- Training Conference Agenda -
Review & Coding

DAY 1: SCREENING FORM/HOUSEHOLD QUESTIONNAIRE
REVIEW INSTRUCTION

<u>Time</u>	<u>Activity</u>
8:30 AM - 8:45 AM	Coffee and Danish Pass out materials
8:45 AM - 9:15 AM	Administrative introduction
9:15 AM - 9:30 AM	Introduction <ul style="list-style-type: none"> - Survey objectives and methodology - Review and coding functions
	Goals of training
9:30 AM - 10:00 AM	Screening form/Problem sheets <ul style="list-style-type: none"> - Identifying information -- what to look for
10:00 AM - 11:00 AM	Household questionnaire, Sections I, III, IV <ul style="list-style-type: none"> - Hard-copy mock - Printout mock
11:00 AM - 11:15 AM	Break
11:15 AM - 12:40 PM	Household questionnaire, Section II <ul style="list-style-type: none"> - Organization - Concepts - Definitions
12:40 PM - 1:30 PM	Lunch
1:30 PM - 2:30 PM	Household questionnaire, Section II <ul style="list-style-type: none"> - Printout
2:30 PM - 3:15 PM	Error Message Report <ul style="list-style-type: none"> - Overview - Mock
3:15 PM - 3:30 PM	Break
3:30 PM - 4:30 PM	Error Message Report (continued)
4:30 PM - 5:00 PM	Review Summary Sheet

DAY 2: HOUSEHOLD QUESTIONNAIRE ACTUAL REVIEW AND INTAKE
REVIEW INSTRUCTION

<u>Time</u>	<u>Activity</u>
8:30 AM - 8:45 AM	Coffee and Danish
8:45 AM - 10:15 AM	Household review, 2nd mock small groups <ul style="list-style-type: none"> - Sections I, III, IV - Section II
10:15 AM - 10:30 AM	Break
10:30 AM - 12:30 AM	Household review (continued) <ul style="list-style-type: none"> - Error Message Report - Review Summary Sheet
12:30 PM - 1:30 PM	Lunch
1:30 PM - 1:45 PM	Introduction to Intake <ul style="list-style-type: none"> - Explanation of Day One-Two/ Three - Overall description
1:45 PM - 3:00 PM	Materials used in review/coding <ul style="list-style-type: none"> - Food Instruction Booklet (FIB) - Guidelines for food groups, categories, items - Food Code Book <ul style="list-style-type: none"> . Organization of book . Seven-digit food code - Supermarket Check Form - Intake Review Summary Sheet
3:00 PM - 3:15 PM	Break
3:15 PM - 5:00 PM	Review mock, Day 1 <ul style="list-style-type: none"> - Question-by-question - Check for complete descrip- tions and quantities using FIB - Practice look up of food codes - Record unit of measurement codes - Review Q's 12 to 40 - Complete Review Summary Sheet

DAY 3: INTAKE ACTUAL REVIEW

<u>Time</u>	<u>Activity</u>
8:30 AM - 8:45 AM	Coffee and Danish
8:45 AM - 10:30 AM	Intake review, Day 2 <ul style="list-style-type: none"> - Question-by-question review - Check for complete description and quantities using FIB - Practice look up of food codes - Record unit of measurement codes - Review Q's 12 to 14 - Complete Review Summary Sheet
10:30 AM - 10:45 AM	Break
10:45 AM - 12:30 AM	Intake review, Day 3 <ul style="list-style-type: none"> - Question-by-question - Check for complete description and quantities using FIB - Practice look up of food codes - Record unit of measurement codes - Review Q's 12 to 31 - Complete Review Summary Sheet
12:30 PM - 1:30 PM	Lunch
1:30 PM - 3:15 PM	Intake practice review, one-on-one instruction
3:15 PM - 3:30 PM	Break
3:30 PM - 5:00 PM	Callbacks and validations for households and intakes <ul style="list-style-type: none"> - Determining callbacks <ul style="list-style-type: none"> . Evaluating Review Summary Sheet . Whom to call back . When to call back . Reporting outcome of review/callback - Validation procedures