

National Health and Nutrition Examination Survey

August 2021-August 2023 Data Documentation, Codebook, and Frequencies

Dietary Interview - Individual Foods, Second Day (DR2IFF_L)

Data File: DR2IFF_L.xpt

First Published: October 2024

Last Revised: NA

Component Description

The objective of the dietary interview component is to obtain detailed dietary intake information from NHANES participants. The dietary intake data are used to estimate the types and amounts of foods and beverages (including all types of water) consumed during the 24-hour period prior to the interview (midnight to midnight), and to estimate intakes of energy, nutrients, and other food components from those foods and beverages. Following the dietary recall, participants are asked questions on salt use, whether the person's overall intake on the previous day was much more than usual, usual or much less than usual, and whether the participant is on any type of special diet. Questions on frequency of fish and shellfish consumed during the past 30 days are asked of participants 1 year or older, with the use of proxies for young children (see the [Dietary Interview Procedure Manuals \(cdc.gov\)](#) for more information on the proxy interview).

The dietary interview component, called What We Eat in America (WWEIA), is conducted as a partnership between the U.S. Department of Agriculture (USDA) and the U.S. Department of Health and Human Services (DHHS). Under this partnership, DHHS' National Center for Health Statistics (NCHS), Division of Health and Nutrition Examination Surveys is responsible for the survey sample design and all aspects of data collection and USDA's Food Surveys Research Group (FSRG) is responsible for the dietary data collection methodology, maintenance of the databases used to code and process the data, and data review and processing.

All NHANES participants are eligible for two 24-hour dietary recall interviews. Traditionally, the first dietary recall interview was collected in-person in the Mobile Examination Center (MEC) and the second interview was collected by telephone 3 to 10 days later. In August 2021-August 2023, the time participants spent in the MEC was limited to reduce risk of exposure to SARS-CoV-2. As a result, both dietary recall interviews were administered via telephone. Further information about changes in data collection are described in the [Plan and Operations report of the NHANES August 2021-August 2023](#).

As in previous years, two types of dietary intake data are available for the August 2021-August 2023 survey cycle: Individual Foods files and Total Nutrient Intakes files.

What's New with the August 2021-August 2023 WWEIA Release:

In response to the COVID-19 pandemic, the mode of the first dietary recall changed from in-person during the MEC examination to telephone 3 to 7 days after the examination. Both dietary interviews were completed in English or Spanish. During the mobile examination, participants scheduled an appointment for the first telephone dietary interview and received a set of measuring guides to help estimate the amounts of foods and beverages consumed.

Appendix 1 provides a summary of changes among the 5 latest cycles of data collection. No new data variables were added in the August 2021-August 2023 WWEIA release.

Dietary Interview Data Files: Four data files were produced from the information collected in the dietary interviews: two Individual Foods files and two Total Nutrient Intakes files. Each file includes one day of intake data. The number "1" or "2" in the file name identifies the day of the interview: 1 = first day, 2 = second day. File names are as follows:

File Names for Dietary Interview Data:

File	Day 1	Day 2
Individual Foods File	DR1IFF_L	DR2IFF_L
Total Nutrient Intakes File	DR1TOT_L	DR2TOT_L

The amounts in these files reflect only nutrients obtained from foods, beverages, and water, including tap and bottled water. They do not include nutrients obtained from dietary supplement intakes, antacids, or medications. Data on intake of dietary supplement use are available on the [August 2021-August 2023 Dietary Data \(cdc.gov\)](#) page.

Individual Foods Files (DR1IFF_L and DR2IFF_L): Detailed information about each food/beverage item (including the description, amount of, and nutrient content) reported by each participant is included in the Individual Foods files. The names for both Day 1 and Day 2 variables are listed in **Appendix 2**.

The Individual Foods files include, for each interview day, one record for each food/beverage consumed by a participant. Each record is uniquely numbered within a participant's set of records and contains the information listed below:

- Number of days of complete intake obtained from participant;
- Day of the week of the intake;
- Whether the food/beverage was eaten in combination with other foods, such as in a sandwich;
- Time of eating occasion/when the food was eaten;
- Eating occasion name;
- Where the food/beverage was obtained;
- Whether the meal/snack was eaten at home or not;
- A USDA Food and Nutrient Database for Dietary Studies (FNDDS) code identifying the food/beverage;
- Amount of food/beverage consumed, in grams; and
- Food energy and 64 nutrients/food components (listed in **Appendix 3**) from each food/beverage as calculated using USDA's Food and Nutrient Database for Dietary Studies 2021-2023 (FNDDS 2021-2023).

Descriptions for the USDA FNDDS food codes are provided in the Food Code Description file (DRXFCD_L). The DRXFCD_L file includes abbreviated descriptions (up to 60 characters) and complete descriptions (up to 200 characters) associated with each USDA food code in the FNDDS 2021-2023. **Appendix 4** provides SAS code examples that may be used to link the food code description to the Individual Foods file.

Total Nutrient Intakes Files (DR1TOT_L and DR2TOT_L): For each participant, daily total energy and nutrient intakes from foods and beverages, and whether the amount of food consumed was usual, much more than usual, or much less than usual, are included in the Total Nutrient Intakes files. The Day 1 file also includes information on salt use in cooking and at the table; whether the participant is currently on any kind of diet to lose weight or for another health-related reason and, if so, the type of diet; and information on frequency of fish and shellfish consumption for participants aged 1 or older. The names for both Day 1 and Day 2 variables are listed in [Appendix 5](#).

The Total Nutrient Intakes files provide a summary record of total nutrient intakes for each participant. Each total intake record contains the following information:

- Number of days of complete intake obtained from participant;
- Day of the week of the intake;
- Type of salt used and how often added at the table and in food preparation (Day 1 file only);
- Use of salt at the table yesterday and the type of salt used;
- Whether the participant is currently on any kind of diet to lose weight or for other health-related reason and, if so, the type of diet (Day 1 file only);
- Total number of foods and beverages including water reported for that participant for that day's intake;
- Daily aggregates of food energy and 64 nutrients/food components (listed in [Appendix 3](#)) from all foods/beverages as calculated using USDA's Food and Nutrient Database for Dietary Studies August 2021-August 2023 (FNDDS 2021- 2023)
- Whether the amount of food consumed was usual, much more than usual, or much less than usual;
- Total amount of tap and bottled water consumed (calculated as the sum of reports of water drunk by itself in the 24-hour recall) and the usual source of tap water; and
- Frequency of fish and shellfish consumption in the past 30 days (participants 1 year or older, Day 1 file only).

Eligible Sample

All participants in the August 2021-August 2023 sample who spoke English or Spanish were eligible. Participants aged 1 year or older were eligible for the frequency of fish and shellfish consumption questions following the 24-hour recall.

Protocol and Procedure

The examination protocol and data collection methods are fully documented in the NHANES [dietary interviewer procedures manuals](#).

Interviews were conducted with a proxy for participants less than six years of age (who was generally the person most knowledgeable about the participant's intake). Interviews of children aged 6 to 8 were conducted with a proxy and the child was present to assist in reporting intake information. Interviews of children aged 9-11, were conducted with the child and the assistance of a proxy familiar with the child's intake. Participants 12 years or older answered for themselves. Dietary interviewers conducted telephone interviews in English and Spanish.

During the MEC visit, participants were scheduled an appointment for the first dietary interview and were given a set of measuring guides ([NHANES Measuring Guides for the Dietary Recall Interview](#)) to use for reporting food amounts during the telephone interview. The measuring guides included measuring cups, spoons, a ruler, and a food model booklet, which contained two-dimensional drawings of glasses, mugs, bowls, mounds, circles, wedges, a shape chart and a chicken chart. The first telephone dietary interview was scheduled 3 to 7 days post MEC examination while the second interview was collected 3 to 10 days following the first dietary interview and were generally scheduled on a different day of the week as the first interview. In August 2021-August 2023, 204 participants were interviewed on the same day of the week for both day 1 and day 2 interviews due to their scheduling availability. Any participant who did not have a telephone was given a toll-free number to call so that the recall could be conducted.

What We Eat in America data were collected using USDA's dietary data collection instrument, the Automated Multiple Pass Method (AMPM), available at:

<http://www.ars.usda.gov/nea/bhnrc/fsrg>. The AMPM was designed to provide an efficient and accurate means of collecting intakes for large-scale national surveys. The AMPM is a fully computerized recall method that uses a 5-step interview outlined below:

1. **Quick List** - Participant recalls all foods and beverages consumed the day before the interview (midnight to midnight).
2. **Forgotten Foods** - Participant is asked about consumption of foods commonly forgotten during the Quick List step.
3. **Time and Occasion** - Time and eating occasion are collected for each food.
4. **Detail Cycle** - For each food, a detailed description, amount eaten, and additions to the food are collected. Eating occasions and times between eating occasions are reviewed to elicit forgotten foods.
5. **Final Probe** - Additional foods not remembered earlier are collected.

The AMPM includes an extensive compilation of standardized food-specific questions and possible response options. Routing of questions is based on previous responses. The AMPM is updated for each 2-year collection of WWEIA to reflect the changing food supply and to address research needs from the data user community. Additional information about the AMPM is provided in Raper et al. ([Raper et al., 2004](#)).

The AMPM was validated in a large study and shown to be an effective method for collecting accurate group energy intake of adults. Completed in 2004, this extensive research project included 524 healthy, weight-stable volunteers, aged 30-69 years. The accuracy of the AMPM was evaluated by comparing reported energy intake (EI) to total energy expenditure (TEE) using the doubly labeled water technique ([Moshfegh et al., 2008](#)). Among the findings were that EI compared to TEE was under-reported by 11% overall, by less than 3% for normal weight subjects with body mass index (BMI) < 25 and 16% for overweight subjects with BMI ≥ 25.

Additional studies provide evidence that the AMPM accurately measures group energy intake. Blanton ([Blanton et al., 2006](#)) reported that EI was not significantly different from TEE for a sample of 20 adult females. Rumpler ([Rumpler et al., 2008](#)) found that mean EIs were accurately reported for a sample of 12 adult males.

Additional evidence for the accuracy of AMPM has been provided by analysis of the 24-hour urinary sodium data collected in the AMPM Validation Study, which suggest the AMPM is a valid measure for estimating mean sodium intake in adults. Dietary sodium intake calculated from 24-hour recall data of 465 subjects collected via AMPM was compared with sodium values from 24-hour urine collections measured during the same 24-hour period. The AMPM-derived mean dietary sodium estimates reflected over 90% of the biomarker-based estimates ([Rhodes et al., 2013](#)).

For additional information about the dietary interview component and related survey protocols, please visit the [August 2021-August 2023 Dietary Interviewer Procedures Manual](#) page. A description of changes to the NHANES August 2021-August 2023 survey is provided in the [Plan and Operations of the National Health And Nutrition Examination Survey, August 2021-August 2023](#).

Quality Assurance & Quality Control

All dietary interviewers were required to complete an intensive one-week training course and to conduct supervised practice interviews before working independently in the field. Retraining sessions were conducted annually to reinforce the proper protocols and technique.

Interviewers were monitored throughout the data collection period. Monitoring consisted of the following:

- Reviews of audio recorded interviews were conducted for approximately 5% of each interviewer's work.
- Quality control of interviews, which were checked for completeness of the recalls, missing information, inconsistent reports, and unclear notes. Written notification and feedback were provided to the interviewers.

Data Processing and Editing

Interview data files were sent electronically from the field and were imported into Survey Net, a computer-assisted food coding and data management system developed by USDA ([Raper et al., 2004](#)).

[USDA's Food and Nutrient Database for Dietary Studies \(FNDDS\)](#) 2021-2023 was used to process the intakes reported by the August 2021-August 2023 sample. The FNDDS includes comprehensive information that can be used to code individual foods/beverages and portion sizes reported by participants and includes nutrient values for calculating nutrient intakes. FNDDS nutrient values as well as food codes and portion sizes are updated for every 2-year WWEIA, NHANES release cycle. The basis for the nutrient values as well as food codes and portion weights in FNDDS are detailed in the documentation for FNDDS 2021-2023 available at <http://www.ars.usda.gov/nea/bhnrc/fsrg>.

Coders were required to pass a certification test after the initial training. They were routinely monitored to ensure the quality and completeness of their work. Approximately 10 percent of the coder's work was randomly selected to be independently coded by another coder. Results from the two codings were compared and adjudicated, if necessary.

After intake data were coded, various types of reviews and quality assurance procedures were conducted to ensure the quality of the data. Examples of reviews include the following:

- Interviewers' and coders' questions and comments were reviewed to ensure that they have been addressed.
- Decisions made by coders about how to code new or unusual foods/beverages or quantities reported by participants were reviewed for accuracy, reasonableness, and consistency across intake data; items in question were resolved by coder supervisors.
- Specific data integrity checks for reasonableness, consistency, and logic were conducted.

Analytic Notes

Each Individual Foods file (Day 1 and Day 2) is comprised of food records. For most participants, there are multiple records in each file. For each Total Nutrient Intakes file (Day 1

and Day 2) there is one record for each participant. These files can be linked with other NHANES files by the respondent sequence number (SEQN).

Variable names: For data collected on both Day 1 and Day 2, variable names are differentiated by having the number "1" or "2" in the third position of the variable name to identify the collection day. For example, the USDA food code variable (in the Individual Foods File), which identifies the food reported by the participant, is named DR1IFDCD in the Day 1 file and DR2IFDCD in the Day 2 file. Appendices 2 and 5 list the Day 1 and Day 2 variable names for the Individual Foods file and the Total Nutrient Intakes file, respectively.

Names for the following variables are the same for both days in the Individual Foods file and the Total Nutrient Intakes file:

Variables with the Same Name for Both Days in the Dietary Interview Files

Day 1 and Day 2 variable name	Label
SEQN	Respondent sequence number
WTDRD1	Dietary day one sample weight
WTDR2D	Dietary two-day sample weight
DRABF	Breast-fed infant (either day)
DRDINT	Number of days of intake

Number of days of intake: A variable has been included to indicate the number of days of intake collected from each participant. The variable name is DRDINT. In the August 2021-August 2023 sample, 6,754 participants provided complete dietary intakes for Day 1. The 6,754 participants with a complete Day 1 intake include 21 participants who had an unreliable day 1 intake but reliable day 2 intake. For these 21 individuals, the single reliable recall is included in the data set as Day 1 recall. Of those providing the Day 1 data, 5,879 provided complete dietary intakes for Day 2.

Dietary recall status code: A status code (DR1DRSTZ or DR2DRSTZ) is used in both the Individual Foods and Total Nutrient Intakes files to indicate the quality and completeness of a survey participant's response to the dietary recall section. The codes are the following:

1 = Reliable and met the following minimum criteria:

- The first 4 steps of the 5-step AMPM completed.
- Food/beverages consumed for each reported eating occasion identified.

For individuals with a code 1, all relevant variables associated with the 24-hour dietary recall contain a value.

2 = Not reliable or did not meet the minimum criteria

Individuals with a code 2 have incomplete records. No data on total nutrient intakes and the total number of foods reported are provided for these cases. These individuals have no records in the Individual Foods files.

3 [Code 3 is not included in the current datasets. It was only used for data from the 1999-2000 survey cycle.]

4 = Reported consuming breast milk

For infants and children who consumed human milk, there is a record in the Individual Foods files for each report of human milk. However, because amounts of human milk intake are not quantified, these records contain missing values for the amount consumed and for the amounts of energy and nutrients from human milk. Also, records of human milk have a missing value for the food source variable (DR1FS, DR2FS) and the eaten at home variable (DR1_040Z, DR2_040Z) in the Individual Foods files. Records for any other foods and beverages consumed by breast-fed infants and children are included in the Individual Foods files along with their amounts and nutrient information. Because of the missing amount or quantity information for human milk, no total nutrient intakes (contained in the Total Nutrient Intakes files) were computed for participants with a code 4.

A variable that identifies breast-fed children, DRABF, is included. This variable has a code of 1 if a child consumed human milk in either intake day.

5 = Not done

This code is assigned when the dietary recall section of the interview did not take place due to various reasons (such as refusal, equipment failure, or unable to contact the participant). These individuals have no records in the Individual Foods files. These individuals have a record in the Total Nutrients file with values only for the following variables: the respondent sequence number (SEQN), the dietary recall status code (DR1DRSTZ or DR2DRSTZ) and for participants 1 year or older, the fish and shellfish questions in the DR1TOT_L file (DRD340, DRD350A-K, DRD350AQ-JQ, DRD360, DRD370A-V, and DRD370AQ-UQ).

Only codes 1 and 4 appear in the Individual Foods file.

Distinguishing Between Foods/Beverages and Dietary Supplements in NHANES: In August 2021-August 2023, there was no 24-hour dietary supplement use collection. The 30-day dietary supplement use collection changed from being collected during the home interview to collection after the first 24-hour dietary recall via telephone. All NHANES participants responding to the 24-hour dietary recall interview are eligible for the dietary supplement and non-prescription antacid use questions. Information is obtained on all vitamins, minerals, herbals, and other dietary supplements as well as non-prescription antacids that were consumed during a 30-day period, including the name and the amount of supplement or antacid taken.

Distinguishing between foods/beverages and supplements can be challenging. NCHS and FSRG review questionable items reported in the dietary supplement and dietary recall components to resolve disposition of these items into the appropriate component. Products that are labeled as a dietary supplement, that have a supplement facts panel on the label, and are in tablets, capsules, softgels, gelcaps, or other pill forms, are considered dietary supplements. Items that are powders or liquids can be hard to distinguish. General guidelines used state that if powders and liquid concentrates have product directions stating that they be added to a liquid, they are classified as beverages. Examples are teas and protein powders. An exception is made for fiber products, which are classified as dietary supplements. Along this same guideline, energy drinks are considered beverages, but "energy shot" type products are considered dietary supplements.

It is best to refer to the databases that detail every food/beverage and dietary supplement reported in NHANES to identify exact determination used. The databases are:

- [2021-2023 Food and Nutrient Database for Dietary Studies](#)
- [NHANES Dietary Supplement Database](#)

Participants who reported consuming only water, no food or other beverages: Records are included in the Individual Foods file for participants who consumed only water. There are 5 such individuals in the August 2021-August 2023 datasets, 4 in the Day 1 data and 1 in the Day 2 data. Their dietary recall status variable for the day is coded as "1" (complete and reliable) in the Total Nutrients file and the total number of items is the number of times water was reported. Individuals with just water intake and no food intake will have zero energy intake for the day.

Participants who reported consuming no water, food or other beverages: There can be participants whose intakes are determined to be complete even though they reported no water, food, or other beverage records for the day. For such participants there are no records in the Individual Foods file, but their dietary recall status is coded as complete and reliable, and the Total Nutrients file will include records with zero values for all nutrients. In the August 2021-August 2023 datasets, there are 3 individuals in the day 1 data that reported no water, food, or other beverage records for the day.

Number of days between the intake day and the day of family interview: Each of the four intake files includes a variable (DR1DBIH for Day 1 files and DR2DBIH for Day 2 files) to indicate the number of days between the intake day (i.e., the period covered by the 24-hour recall) and the day that the family questionnaire was administered in the household. A positive value in DR1BHIH or DR2BHIH indicates the family interview occurred prior to the intake day. In the survey, most of the family interviews were done before the participant participated in the dietary interview. A value of "0" in DR1BHIH or DR2BHIH indicates the family interview occurred on the same date as the intake day. A negative value (i.e., DR1BHIH<0 or DR2BHIH<0) means that the family interview occurred after the intake day.

Food source: The source from which each food/beverage was obtained (e.g., from a store, fast food restaurant, cafeteria) is identified by the variables DR1FS (day 1) and DR2FS (day 2) in the Individual Foods files.

The code descriptions for this variable are:

Code Descriptions for Source of Food Variable

Code	Description
1	Store grocery/supermarket
2	Restaurant with waiter/waitress
3	Restaurant fast food/Pizza
4	Bar/Tavern/Lounge
5	Restaurant, no additional information
6	Cafeteria NOT in a K-12 school
7	Cafeteria in a K-12 school
8	Child/Adult care center
9	Child/Adult home care
10	Soup kitchen/shelter/food pantry facility
11	Meals on Wheels Program
12	Community food program – other
13	Community program, no additional info
14	Vending machine
15	Common coffee pot or snack tray
16	From someone else/gift
17	Mail order purchase
18	Residential dining facility
19	Grown or caught by you or someone you know
20	Fish caught by you or someone you know
24	Sport, recreation, or entertainment
25	Street vendor, vending truck
26	Fundraiser sales
27	Store - convenience type
28	Store - no additional information
91	Other, specify

Eating occasion: The variables DR1_030Z and DR2_030Z are located in the Individual Foods file. The code descriptions for the eating occasion variables are shown in the table below.

**Code Descriptions for Eating
Occasion Variable**

Code	Description
1	Breakfast
2	Lunch
3	Dinner
4	Supper
5	Brunch
6	Snack
7	Beverage/Drink
8	Feeding-infant only
9	Extended consumption
10	Desayuno
11	Almuerzo
12	Comida
13	Merienda
14	Cena
15	Entre comida
16	Botana
17	Bocadillo
18	Tentempie
19	Bebida
91	Other

Eating occasion was designated by the respondent. During the interview, a list of eating occasion names was available to the respondent for selection. However, eating occasion names were not defined for the respondent.

Foods and beverages coded as part of a combination: 41 percent of foods and beverages reported in the WWEIA, NHANES August 2021-August 2023 sample were identified as items consumed together as combinations. Items consumed as a combination were identified by one of sixteen unique "combination food types." Foods and beverages not coded in combination have the code "0" for the combination food type variable.

The combination types provide a linkage for:

- Foods or beverages with additions, such as cereal with milk, coffee with cream;
- Multi-component foods that have specific protocol for collection such as some salads and sandwiches; and
- Other combinations that do not have a unique code in the FNDDS.

Combination Type, Code, Examples, and Percent of Food and Beverages Reported by Type, August 2021-August 2023, Day 1

Combination Type	Code	Examples of Combination Type	% Items
Not in combination	0	NA	59
Beverage w/ additions	1	Coffee, tea with: milk, cream, sugar.	9
Cereal w/ additions	2	Cereals (ready-to-eat, cooked) with: milk, sugar, fruit, butter.	4
Bread/baked product w/additions	3	Breads, rolls, pancakes with: butter, jam, syrup, fruit. Cakes, pies with: ice cream, toppings. Crackers with: cheese, dip, peanut butter.	5
Salad	4	Components of salads that do not have a single code in FNDDS. It may also designate additional items to single code salads.	5
Sandwiches	5	Components of sandwiches that do not have a single code in FNDDS. It may also designate additional items added to single code sandwiches.	6
Soup	6	Soup with: crackers, croutons, cheese.	<1
Frozen meals	7	Components of a prepackaged frozen meal and additions to the meal.	<1
Ice cream/ frozen yogurt w/ additions	8	Ice cream with: syrup, nuts, toppings.	<1
Dried beans or Vegetable w/ additions	9	French fries, potatoes with: catsup, gravy, butter, toppings. Beans with: sauce, butter.	3
Fruit w/ additions	10	Fruit with: toppings, milk, honey. Components of fruit mixtures or salads that do not have a single code in FNDDS.	1
Tortilla products	11	Components of tacos and tortilla products that do not have a single code in FNDDS. It may also designate additional items to single code tacos or tortilla products.	2
Meat, Poultry, Fish	12	Meat, poultry, fish with: gravy, sauce, and condiments.	2
Lunchables®	13	Components of pre-packaged lunch kits.	<1
Chips w/ additions	14	Potato chips, corn chips with: dip, cheese, salsa.	1
Baby Toddler Food and Infant Formula	15	Baby Toddler cereal with: infant formula, fruit. Infant formula with: baby cereal.	<1
Other mixtures	90	Rice, pasta, spaghetti, eggs, other mixtures with: butter, gravy, sauce, condiments.	4

All items given a combination food type are given an additional variable to identify each of the items within the combination. This variable is the "combination food number" that is unique to the combination food type within the individual intake.

Variable Labels and Names for Combination Coding

Combination Coding	Variable Name, Day 1	Variable Name, Day 2
Combination food type	DR1CCMTX	DR2CCMTX
Combination food number	DR1CCMNM	DR2CCMNM

The What We Eat in America Food Categories, available on the FSRG website (<http://www.ars.usda.gov/nea/bhnrc/fsrg>), is a grouping scheme that combines foods and beverages together that have similar usage and nutrient content with the emphasis on how they are commonly consumed in the American diet. There are more than 170 unique categories, and each is assigned a 4-digit number and description. The WWEIA Food Categories contain discrete food items and are not disaggregated (e.g., pizza vs. grain, cheese, tomatoes, etc.). Designed to be flexible, the categories can be combined as needed to address specific research questions. A new version of the WWEIA Food Categories is produced for each 2-year release cycle of WWEIA, NHANES.

Special diet: Information on whether the participant is currently on any kind of diet to lose weight or for other health-related reason and, if so, the type of diet, was provided. The variable DRQSDIET identifies whether a participant was on a special diet. The variables DRQSDT1 through DRQSDT12 and DRQSDT91 identify the type of diet or diets that the participant was following. These variables can be found in the Total Nutrient Intakes file.

Sample weights for dietary intake data: The August 2021–August 2023 NHANES sample design is similar to past cycles that drew a multi-year, stratified, clustered four-stage sample of the U.S. civilian noninstitutionalized population to provide national health estimates. To adapt to the continuing pandemic environment, this cycle also included an updated sample design to minimize contact between interviewers and survey participants. An [overview of sample design, nonresponse bias assessment, and analytic guides for NHANES August 2021–August 2023](#) is provided on the NHANES website. In addition, a [document](#) is also available online to provide additional information on the changes that pertain to the dietary data collection in this survey cycle.

Similar to prior cycles, sample weights are constructed to encompass the unequal probabilities of selection, as well as adjustments for non-participation by selected sample persons. In order to produce national, representative estimates, **the appropriate sample weights must be used.**

For the NHANES August 2021–August 2023 sample, there were 22,660 persons selected; of these 8,860 were considered participants to the MEC examination and data collection. A total of 6,754 MEC participants provided complete dietary intakes for Day 1, and of those providing the Day 1 data, 5,879 provided complete dietary intakes for Day 2. The 6,754 participants who provided complete Day 1 intakes includes 21 participants who had an unreliable day 1 intake and reliable day 2 intake. For these 21 individuals, the single reliable recall is included in the data set as Day 1 recall.

Most analyses of NHANES data use data collected in the MEC and the variable WTMEC2YR should be used for the sample weights. However, for the WWEIA dietary data, different sample weights are recommended for analysis. Because food intake can vary by weekdays and weekends, use of the MEC weights disproportionately represents intakes on weekends.

A set of weights (WTDRD1) is provided that should be used when an analysis uses the Day 1 dietary recall data (either alone or when Day 1 nutrient data are used in conjunction with MEC data). The set of weights (WTDRD1) is applicable to the 6,754 participants with Day 1 data. Day 1 weights were constructed by taking the MEC sample weights (WTMEC2YR) and further adjusting for: (a) the additional non-response; and (b) the differential allocation by weekdays (Monday through Thursday) and weekends (Friday through Sunday) for the dietary intake data collection. These Day 1 weights are more variable than the MEC weights, and the sample size is smaller, so estimated standard errors using Day 1 data and Day 1 weights might be larger than standard errors for similar estimates based on MEC weights.

When analysis is based on both days of dietary intake, only 5,879 sample participants have complete data. The NHANES protocol requires an attempt to collect the second day of dietary data at least 3 days after the first day, but the actual number of days between the two interviews is variable. A set of adjusted weights, WTDR2D, is to be used when an analysis uses

the smaller sample with completed Day 1 and Day 2 dietary data. This two-day weight was constructed for the 5,879 participants by taking the Day 1 weights (WTDRD1) and further adjusting for: (a) the additional non-response for the second recall; and (b) for the proportion of weekend (Friday through Sunday) and weekday (Monday through Thursday) combinations of Day 1 and Day 2 recalls.

NOTE: All sample weights are person-level weights, and each set of dietary weights should sum to the same overall population control total as the MEC weights (WTMEC2YR). For the August 2021-August 2023 cycle, the Day 1 dietary recall weights (WTDRD1) are appropriate to use in the analysis of the fish and shellfish consumption data (i.e., variables DRD340, DRD350A-K, DRD350AQ-JQ DRD360, DRD370A-V, and DRD370AQ-UQ) located in the Day 1 Total Nutrient Intake File (DR1TOT_L), irrespective of whether other dietary data are included in the analysis. Please refer to the [NHANES Analytic Guidelines](#) and the on-line [NHANES Tutorial](#) for further details on the use of sample weights and other analytic issues.

References

- Agricultural Research Service, Beltsville Human Nutrition Research Center, Food Surveys Research Group, Beltsville, MD. USDA Food and Nutrient Database for Dietary Studies 2021-2023. <http://www.ars.usda.gov/nea/bhnrc/fsrg>
- Agricultural Research Service, Beltsville Human Nutrition Research Center, Food Surveys Research Group, Beltsville, MD. USDA Automated Multiple-Pass Method for Dietary Recalls. <http://www.ars.usda.gov/nea/bhnrc/fsrg>
- Blanton CA, Moshfegh AJ, Baer DJ, Kretsch MJ. The USDA Automated Multiple-Pass Method accurately estimates group total energy and nutrient intake. *J Nutr* 2006 Oct; 136(10):2594-9. <http://hdl.handle.net/10113/10039>
- Moshfegh AJ, Rhodes DG, Baer DJ, Murayi T, Clemens JC, Rumpler WV, Paul DR, Sebastian RS, Kuczynski KC, Ingwersen LA, Staples RC, Cleveland LC. The USDA Automated Multiple-Pass Method reduces bias in the collection of energy intakes. *Am J Clin Nutr* 2008; 88:324-332. <http://hdl.handle.net/10113/21951>
- Raper N, Perloff B, Ingwersen L, Steinfeldt L, Anand J. An overview of USDA's dietary intake data system. *J. Food Compos. Anal.* 2004; 17(3-4):545-55. <http://hdl.handle.net/10113/20984>
- Rhodes DG, Murayi T, Clemens JC, Baer DJ, Sebastian RS, Moshfegh AJ. The USDA Automated Multiple-Pass Method accurately assesses population sodium intakes. *Am J Clin Nutr* 2013; 97:958-64. <http://dx.doi.org/10.3945/ajcn.112.044982>
- Rumpler WV, Kramer M, Rhodes DG, Moshfegh AJ, Paul DR, Kramer M. Identifying sources of reporting error using measured food intake. *Eur J Clin Nutr* 2008; 62:544-52. <http://hdl.handle.net/10113/16546>
- Terry AL, Chiappa MM, McAllister J, Woodwell DA, Graber JE. Plan and operations of the National Health and Nutrition Examination Survey, August 2021-August 2023. National Center for Health Statistics. *Vital Health Stat* 1(66). 2024. DOI: <https://dx.doi.org/10.15620/cdc/151927>

Codebook and Frequencies

SEQN - Respondent sequence number

Variable Name:	SEQN
SAS Label:	Respondent sequence number
English Text:	Respondent sequence number.
English Instructions:	One of the key variables for the file. The primary key variables are SEQN and DR2ILINE.
Target:	Both males and females 0 YEARS - 150 YEARS

WTDRD1 - Dietary day one sample weight

Variable Name: WTDRD1

SAS Label: Dietary day one sample weight

English Text: Dietary day one sample weight

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
5708.632624 to 394679.4226	Range of Values	88032	88032	
0	Day 1 dietary recall not done/incomplete	0	88032	
.	Missing	0	88032	

WTDR2D - Dietary two-day sample weight

Variable Name: WTDR2D

SAS Label: Dietary two-day sample weight

English Text: Dietary two-day sample weight

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
6018.694738 to 759868.32478	Range of Values	88032	88032	
0	Day 2 dietary recall not done/incomplete	0	88032	
.	Missing	0	88032	

DR2ILINE - Food/Individual component number

Variable Name: DR2ILINE

SAS Label: Food/Individual component number

English Text: Food/Individual component number

English Instructions: One of the key variables for the file. The primary key variables are SEQN and DR2ILINE.

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1 to 40	Range of Values	88032	88032	
.	Missing	0	88032	

DR2DRSTZ - Dietary recall status

Variable Name: DR2DRSTZ

SAS Label: Dietary recall status

English Text: Dietary recall status

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Reliable and met the minimum criteria	87424	87424	
2	Not reliable or not met the minimum criteria	0	87424	
4	Reported consuming breast-milk	608	88032	
5	Not done	0	88032	
.	Missing	0	88032	

DR2EXMER - Interviewer ID code

Variable Name: DR2EXMER

SAS Label: Interviewer ID code

English Text: Interviewer ID code

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
5 to 96	Range of Values	88032	88032	
.	Missing	0	88032	

DRABF - Breast-fed infant (either day)

Variable Name: DRABF

SAS Label: Breast-fed infant (either day)

English Text: Indicates whether the sample person was an infant who was breast fed on either of the two recall days.

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Yes	624	624	
2	No	87408	88032	
.	Missing	0	88032	

DRDINT - Number of days of intake

Variable Name: DRDINT

SAS Label: Number of days of intake

English Text: Indicates whether the sample person has intake data for one or two days.

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Day 1 only	0	0	
2	Day 1 and day 2	88032	88032	
.	Missing	0	88032	

DR2DBIH - # of days b/w intake and HH interview

Variable Name: DR2DBIH

SAS Label: # of days b/w intake and HH interview

English Text: Number of days between intake day and the day of family questionnaire administered in the household.

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
-21 to 167	Range of Values	83166	83166	
.	Missing	4866	88032	

DR2DAY - Intake day of the week

Variable Name: DR2DAY

SAS Label: Intake day of the week

English Text: Intake day of the week

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Sunday	16799	16799	
2	Monday	13762	30561	
3	Tuesday	12495	43056	
4	Wednesday	16047	59103	
5	Thursday	14595	73698	
6	Friday	6792	80490	
7	Saturday	7542	88032	
.	Missing	0	88032	

DR2LANG - Language respondent used mostly

Variable Name: DR2LANG

SAS Label: Language respondent used mostly

English Text: The respondent spoke mostly:

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	English	81271	81271	
2	Spanish	6579	87850	
3	English and Spanish	182	88032	
4	Other	0	88032	
.	Missing	0	88032	

DR2CCMNM - Combination food number

Variable Name: DR2CCMNM
SAS Label: Combination food number
English Text: Combination food number (sequential number)
Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 12	Range of Values	88032	88032	
.	Missing	0	88032	

DR2CCMTX - Combination food type

Variable Name: DR2CCMTX

SAS Label: Combination food type

English Text: Combination food type

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	Non-combination food	51380	51380	
1	Beverage w/ additions	7709	59089	
2	Cereal w/ additions	2980	62069	
3	Bread/baked products w/ additions	4544	66613	
4	Salad	4855	71468	
5	Sandwiches	5230	76698	
6	Soup	389	77087	
7	Frozen meals	39	77126	
8	Ice cream/frozen yogurt w/ additions	260	77386	
9	Dried beans and vegetable w/ additions	2341	79727	
10	Fruit w/ additions	635	80362	
11	Tortilla products	1951	82313	
12	Meat, poultry, fish	1750	84063	
13	Lunchables®	137	84200	
14	Chips w/ additions	485	84685	
15	Baby Toddler Food and Infant Formula	86	84771	
90	Other mixtures	3261	88032	
.	Missing	0	88032	

DR2_020 - Time of eating occasion (HH:MM)

Variable Name: DR2_020

SAS Label: Time of eating occasion (HH:MM)

English Text: What time did you begin to eat/drink the meal/food?

English Instructions: Format HHMM6.

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 86340	Range of Values	88032	88032	
.	Missing	0	88032	

DR2_030Z - Name of eating occasion

Variable Name: DR2_030Z

SAS Label: Name of eating occasion

English Text: Name of eating occasion

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Breakfast	17334	17334	
2	Lunch	17934	35268	
3	Dinner	18882	54150	
4	Supper	3537	57687	
5	Brunch	601	58288	
6	Snack	14649	72937	
7	Drink	5920	78857	
8	Infant feeding	730	79587	
9	Extended consumption	2939	82526	
10	Desayuno	1239	83765	
11	Almuerzo	1031	84796	
12	Comida	773	85569	
13	Merienda	556	86125	
14	Cena	1164	87289	
15	Entre comida	130	87419	
16	Botana	131	87550	
17	Bocadillo	156	87706	
18	Tentempie	25	87731	
19	Bebida	301	88032	
91	Other	0	88032	
99	Don't know	0	88032	
.	Missing	0	88032	

DR2FS - Source of food

Variable Name:	DR2FS
SAS Label:	Source of food
English Text:	Where did you get (this/most of the ingredients for this) {FOODNAME}?
Target:	Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Store - grocery/supermarket	59861	59861	
2	Restaurant with waiter/waitress	4807	64668	
3	Restaurant fast food/pizza	6260	70928	
4	Bar/tavern/lounge	237	71165	
5	Restaurant no additional information	16	71181	
6	Cafeteria NOT in a K-12 school	567	71748	
7	Cafeteria in a K-12 school	1050	72798	
8	Child/Adult care center	171	72969	
9	Child/Adult home care	14	72983	
10	Soup kitchen/shelter/food pantry	52	73035	
11	Meals on Wheels	74	73109	
12	Community food program - other	126	73235	
13	Community program no additional information	1	73236	
14	Vending machine	181	73417	
15	Common coffee pot or snack tray	387	73804	
16	From someone else/gift	3032	76836	
17	Mail order purchase	936	77772	
18	Residential dining facility	78	77850	
19	Grown or caught by you or someone you know	622	78472	
20	Fish caught by you or someone you know	8	78480	
24	Sport, recreation, or entertainment facility	224	78704	
25	Street vendor, vending truck	215	78919	
26	Fundraiser sales	43	78962	
27	Store - convenience type	1922	80884	
28	Store - no additional info	298	81182	
91	Other, specify	0	81182	
99	Don't know	113	81295	
.	Missing	6737	88032	

DR2_040Z - Did you eat this meal at home?

Variable Name: DR2_040Z

SAS Label: Did you eat this meal at home?

English Text: Did you eat this meal at home?

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Yes	67446	67446	
2	No	20327	87773	
7	Refused	0	87773	
9	Don't know	5	87778	
.	Missing	254	88032	

DR2IFDCD - USDA food code

Variable Name: DR2IFDCD

SAS Label: USDA food code

English Text: USDA food code

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
11000000 to 95342000	Range of Values	88032	88032	
.	Missing	0	88032	

DR2IGRMS - Grams

Variable Name: DR2IGRMS

SAS Label: Grams

English Text: Gram weight of the food/individual component

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 44160	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IKCAL - Energy (kcal)

Variable Name: DR2IKCAL

SAS Label: Energy (kcal)

English Text: Energy (kcal)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 5290	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IPROT - Protein (gm)

Variable Name: DR2IPROT

SAS Label: Protein (gm)

English Text: Protein (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 249.58	Range of Values	87778	87778	
.	Missing	254	88032	

DR2ICARB - Carbohydrate (gm)

Variable Name: DR2ICARB

SAS Label: Carbohydrate (gm)

English Text: Carbohydrate (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 724.59	Range of Values	87778	87778	
.	Missing	254	88032	

DR2ISUGR - Total sugars (gm)

Variable Name: DR2ISUGR

SAS Label: Total sugars (gm)

English Text: Total sugars (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 479.88	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IFIBE - Dietary fiber (gm)

Variable Name: DR2IFIBE

SAS Label: Dietary fiber (gm)

English Text: Dietary fiber (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 94.8	Range of Values	87778	87778	
.	Missing	254	88032	

DR2ITFAT - Total fat (gm)

Variable Name: DR2ITFAT

SAS Label: Total fat (gm)

English Text: Total fat (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 280.12	Range of Values	87778	87778	
.	Missing	254	88032	

DR2ISFAT - Total saturated fatty acids (gm)

Variable Name: DR2ISFAT

SAS Label: Total saturated fatty acids (gm)

English Text: Total saturated fatty acids (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 175.845	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IMFAT - Total monounsaturated fatty acids (gm)

Variable Name: DR2IMFAT

SAS Label: Total monounsaturated fatty acids (gm)

English Text: Total monounsaturated fatty acids (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 123.9	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IPFAT - Total polyunsaturated fatty acids (gm)

Variable Name: DR2IPFAT

SAS Label: Total polyunsaturated fatty acids (gm)

English Text: Total polyunsaturated fatty acids (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 106.152	Range of Values	87778	87778	
.	Missing	254	88032	

DR2ICHOL - Cholesterol (mg)

Variable Name: DR2ICHOL

SAS Label: Cholesterol (mg)

English Text: Cholesterol (mg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 2755	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IATOC - Vitamin E as alpha-tocopherol (mg)

Variable Name: DR2IATOC

SAS Label: Vitamin E as alpha-tocopherol (mg)

English Text: Vitamin E as alpha-tocopherol (mg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 102.06	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IATOA - Added alpha-tocopherol (Vitamin E) (mg)

Variable Name: DR2IATOA

SAS Label: Added alpha-tocopherol (Vitamin E) (mg)

English Text: Added alpha-tocopherol (Vitamin E) (mg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 102.06	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IRET - Retinol (mcg)

Variable Name: DR2IRET

SAS Label: Retinol (mcg)

English Text: Retinol (mcg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 28581	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IVARA - Vitamin A, RAE (mcg)

Variable Name: DR2IVARA

SAS Label: Vitamin A, RAE (mcg)

English Text: Vitamin A as retinol activity equivalents (mcg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 28643	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IACAR - Alpha-carotene (mcg)

Variable Name: DR2IACAR

SAS Label: Alpha-carotene (mcg)

English Text: Alpha-carotene (mcg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 15631	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IBCAR - Beta-carotene (mcg)

Variable Name: DR2IBCAR

SAS Label: Beta-carotene (mcg)

English Text: Beta-carotene (mcg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 41934	Range of Values	87778	87778	
.	Missing	254	88032	

DR2ICRYP - Beta-cryptoxanthin (mcg)

Variable Name: DR2ICRYP

SAS Label: Beta-cryptoxanthin (mcg)

English Text: Beta-cryptoxanthin (mcg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 2460	Range of Values	87778	87778	
.	Missing	254	88032	

DR2ILYCO - Lycopene (mcg)

Variable Name: DR2ILYCO

SAS Label: Lycopene (mcg)

English Text: Lycopene (mcg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 137752	Range of Values	87778	87778	
.	Missing	254	88032	

DR2ILZ - Lutein + zeaxanthin (mcg)

Variable Name: DR2ILZ

SAS Label: Lutein + zeaxanthin (mcg)

English Text: Lutein + zeaxanthin (mcg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 67265	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IVB1 - Thiamin (Vitamin B1) (mg)

Variable Name: DR2IVB1

SAS Label: Thiamin (Vitamin B1) (mg)

English Text: Thiamin (Vitamin B1) (mg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 5.481	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IVB2 - Riboflavin (Vitamin B2) (mg)

Variable Name: DR2IVB2

SAS Label: Riboflavin (Vitamin B2) (mg)

English Text: Riboflavin (Vitamin B2) (mg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 23.808	Range of Values	87778	87778	
.	Missing	254	88032	

DR2INIAC - Niacin (mg)

Variable Name: DR2INIAC

SAS Label: Niacin (mg)

English Text: Niacin (mg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 146.122	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IVB6 - Vitamin B6 (mg)

Variable Name: DR2IVB6

SAS Label: Vitamin B6 (mg)

English Text: Vitamin B6 (mg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 21.497	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IFOLA - Total folate (mcg)

Variable Name: DR2IFOLA

SAS Label: Total folate (mcg)

English Text: Total folate (mcg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 1612	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IFA - Folic acid (mcg)

Variable Name: DR2IFA

SAS Label: Folic acid (mcg)

English Text: Folic acid (mcg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 1456	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IFF - Food folate (mcg)

Variable Name: DR2IFF

SAS Label: Food folate (mcg)

English Text: Food folate (mcg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 1612	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IFDFE - Folate, DFE (mcg)

Variable Name: DR2IFDFE

SAS Label: Folate, DFE (mcg)

English Text: Folate as dietary folate equivalents (mcg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 2476	Range of Values	87778	87778	
.	Missing	254	88032	

DR2ICHL - Total choline (mg)

Variable Name: DR2ICHL

SAS Label: Total choline (mg)

English Text: Total choline (mg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 1802.2	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IVB12 - Vitamin B12 (mcg)

Variable Name: DR2IVB12

SAS Label: Vitamin B12 (mcg)

English Text: Vitamin B12 (mcg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 307.04	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IB12A - Added vitamin B12 (mcg)

Variable Name: DR2IB12A

SAS Label: Added vitamin B12 (mcg)

English Text: Added vitamin B12 (mcg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 56.1	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IVC - Vitamin C (mg)

Variable Name: DR2IVC

SAS Label: Vitamin C (mg)

English Text: Vitamin C (mg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 766.3	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IVD - Vitamin D (D2 + D3) (mcg)

Variable Name: DR2IVD

SAS Label: Vitamin D (D2 + D3) (mcg)

English Text: Vitamin D (D2 + D3) (mcg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 62	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IVK - Vitamin K (mcg)

Variable Name: DR2IVK

SAS Label: Vitamin K (mcg)

English Text: Vitamin K (mcg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 3391.3	Range of Values	87778	87778	
.	Missing	254	88032	

DR2ICALC - Calcium (mg)

Variable Name: DR2ICALC

SAS Label: Calcium (mg)

English Text: Calcium (mg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 7415	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IPHOS - Phosphorus (mg)

Variable Name: DR2IPHOS

SAS Label: Phosphorus (mg)

English Text: Phosphorus (mg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 11545	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IMAGN - Magnesium (mg)

Variable Name: DR2IMAGN

SAS Label: Magnesium (mg)

English Text: Magnesium (mg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 1275	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IIRON - Iron (mg)

Variable Name: DR2IIRON

SAS Label: Iron (mg)

English Text: Iron (mg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 61.21	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IZINC - Zinc (mg)

Variable Name: DR2IZINC

SAS Label: Zinc (mg)

English Text: Zinc (mg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 54.04	Range of Values	87778	87778	
.	Missing	254	88032	

DR2ICOPP - Copper (mg)

Variable Name: DR2ICOPP

SAS Label: Copper (mg)

English Text: Copper (mg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 54.031	Range of Values	87778	87778	
.	Missing	254	88032	

DR2ISODI - Sodium (mg)

Variable Name: DR2ISODI

SAS Label: Sodium (mg)

English Text: Sodium (mg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 21441	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IPOTA - Potassium (mg)

Variable Name: DR2IPOTA

SAS Label: Potassium (mg)

English Text: Potassium (mg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 8084	Range of Values	87778	87778	
.	Missing	254	88032	

DR2ISELE - Selenium (mcg)

Variable Name: DR2ISELE

SAS Label: Selenium (mcg)

English Text: Selenium (mcg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 958.5	Range of Values	87778	87778	
.	Missing	254	88032	

DR2ICAFF - Caffeine (mg)

Variable Name: DR2ICAFF

SAS Label: Caffeine (mg)

English Text: Caffeine (mg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 1440	Range of Values	87778	87778	
.	Missing	254	88032	

DR2ITHEO - Theobromine (mg)

Variable Name: DR2ITHEO

SAS Label: Theobromine (mg)

English Text: Theobromine (mg)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 652	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IALCO - Alcohol (gm)

Variable Name: DR2IALCO

SAS Label: Alcohol (gm)

English Text: Alcohol (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 237.1	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IMOIS - Moisture (gm)

Variable Name: DR2IMOIS

SAS Label: Moisture (gm)

English Text: Moisture (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 44151.17	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IS040 - SFA 4:0 (Butanoic) (gm)

Variable Name: DR2IS040

SAS Label: SFA 4:0 (Butanoic) (gm)

English Text: SFA 4:0 (Butanoic) (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 9.078	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IS060 - SFA 6:0 (Hexanoic) (gm)

Variable Name: DR2IS060

SAS Label: SFA 6:0 (Hexanoic) (gm)

English Text: SFA 6:0 (Hexanoic) (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 5.383	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IS080 - SFA 8:0 (Octanoic) (gm)

Variable Name: DR2IS080

SAS Label: SFA 8:0 (Octanoic) (gm)

English Text: SFA 8:0 (Octanoic) (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 4.919	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IS100 - SFA 10:0 (Decanoic) (gm)

Variable Name: DR2IS100

SAS Label: SFA 10:0 (Decanoic) (gm)

English Text: SFA 10:0 (Decanoic) (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 6.769	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IS120 - SFA 12:0 (Dodecanoic) (gm)

Variable Name: DR2IS120

SAS Label: SFA 12:0 (Dodecanoic) (gm)

English Text: SFA 12:0 (Dodecanoic) (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 39.762	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IS140 - SFA 14:0 (Tetradecanoic) (gm)

Variable Name: DR2IS140

SAS Label: SFA 14:0 (Tetradecanoic) (gm)

English Text: SFA 14:0 (Tetradecanoic) (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 28.778	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IS160 - SFA 16:0 (Hexadecanoic) (gm)

Variable Name: DR2IS160

SAS Label: SFA 16:0 (Hexadecanoic) (gm)

English Text: SFA 16:0 (Hexadecanoic) (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 77.954	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IS180 - SFA 18:0 (Octadecanoic) (gm)

Variable Name: DR2IS180

SAS Label: SFA 18:0 (Octadecanoic) (gm)

English Text: SFA 18:0 (Octadecanoic) (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 32.116	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IM161 - MFA 16:1 (Hexadecenoic) (gm)

Variable Name: DR2IM161

SAS Label: MFA 16:1 (Hexadecenoic) (gm)

English Text: MFA 16:1 (Hexadecenoic) (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 8.399	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IM181 - MFA 18:1 (Octadecenoic) (gm)

Variable Name: DR2IM181

SAS Label: MFA 18:1 (Octadecenoic) (gm)

English Text: MFA 18:1 (Octadecenoic) (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 123.319	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IM201 - MFA 20:1 (Eicosenoic) (gm)

Variable Name: DR2IM201

SAS Label: MFA 20:1 (Eicosenoic) (gm)

English Text: MFA 20:1 (Eicosenoic) (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 3.537	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IM221 - MFA 22:1 (Docosenoic) (gm)

Variable Name: DR2IM221

SAS Label: MFA 22:1 (Docosenoic) (gm)

English Text: MFA 22:1 (Docosenoic) (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 3.024	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IP182 - PFA 18:2 (Octadecadienoic) (gm)

Variable Name: DR2IP182

SAS Label: PFA 18:2 (Octadecadienoic) (gm)

English Text: PFA 18:2 (Octadecadienoic) (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 92.174	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IP183 - PFA 18:3 (Octadecatrienoic) (gm)

Variable Name: DR2IP183

SAS Label: PFA 18:3 (Octadecatrienoic) (gm)

English Text: PFA 18:3 (Octadecatrienoic) (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 16.344	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IP184 - PFA 18:4 (Octadecatetraenoic) (gm)

Variable Name: DR2IP184

SAS Label: PFA 18:4 (Octadecatetraenoic) (gm)

English Text: PFA 18:4 (Octadecatetraenoic) (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 0.612	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IP204 - PFA 20:4 (Eicosatetraenoic) (gm)

Variable Name: DR2IP204

SAS Label: PFA 20:4 (Eicosatetraenoic) (gm)

English Text: PFA 20:4 (Eicosatetraenoic) (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 1.139	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IP205 - PFA 20:5 (Eicosapentaenoic) (gm)

Variable Name: DR2IP205

SAS Label: PFA 20:5 (Eicosapentaenoic) (gm)

English Text: PFA 20:5 (Eicosapentaenoic) (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 3.901	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IP225 - PFA 22:5 (Docosapentaenoic) (gm)

Variable Name: DR2IP225

SAS Label: PFA 22:5 (Docosapentaenoic) (gm)

English Text: PFA 22:5 (Docosapentaenoic) (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 1.728	Range of Values	87778	87778	
.	Missing	254	88032	

DR2IP226 - PFA 22:6 (Docosahexaenoic) (gm)

Variable Name: DR2IP226

SAS Label: PFA 22:6 (Docosahexaenoic) (gm)

English Text: PFA 22:6 (Docosahexaenoic) (gm)

Target: Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 5.135	Range of Values	87778	87778	
.	Missing	254	88032	

Appendix 1. Changes between WWEIA survey cycles 2013-2014 thru the August 2021-August 2023 sample

Variable or feature	WWEIA 2013-2014	WWEIA 2015-2016	WWEIA 2017-2018	WWEIA 2017-March 2020 Pre-Pandemic	WWEIA Aug 2021-Aug 2023
Administration of 24-hour dietary recall	Same as 2003-2012: Day 1 in-person in MEC, Day 2 by telephone	Same as 2013-2014	Same as 2013-2014	Same as 2013-2014	Day 1 by telephone, Day 2 by telephone
Language, Day 1	Same as 1999-2012: Interpreters assisted as needed	Same as 2013-2014	Same as 2013-2014	Same as 2013-2014	English or Spanish language
Language, Day 2	Same as 2011-2012: English, Spanish, or Asian languages	Same as 2013-2014	Same as 2013-2014	Same as 2013-2014	English or Spanish language
Person who did not provide reliable intake for Day 1 but did for Day 2	Same as 2003-2012: Neither intake was included in the release datasets	Same as 2003-2014	Same as 2003-2014	Same as 2003-2014	The single reliable intake was included in the release datasets as Day 1 intake (n=21)
Food source (where food was obtained)	Codes 8 and 9 revised descriptions.	Same as 2013-2014	Same as 2013-2014	Same as 2013-2014	Same as 2013-2014
Combination food types	Same as 2003-2012: Values for 15 combination types	Same as 2003-2014	Same as 2003-2014	Same as 2003-2014	Values for 16 combination types; added "Baby Toddler Food and Infant Formula"
Number of intakes that include only water consumption for the day	6 intakes (all in Day 2 data), records are included in Individual Foods file.	5 intakes (all in Day 2 data), records are included in Individual Foods file.	2 intakes (all in Day 2 data), records are included in Individual Foods file.	5 intakes (1 in Day 1, 4 in Day 2 data), records are included in Individual Foods file.	5 intakes (4 in Day 1, 1 in Day 2), records are included in Individual Foods file.
Number of intakes that include no water or food consumption for the day	1 intake in Day 2 with no food or water records for the day. Record is not included in the Individual Foods File for this intake.	1 intake in Day 1 with no food or water records for the day. Record is not included in the Individual Foods File for this intake.	1 intake in Day 1 with no food or water records for the day. Record is not included in the Individual Foods File for this intake.	2 intakes in Day 1 with no food or water records for the day. Record is not included in the Individual Foods File for these intakes.	3 intakes in Day 1 with no food or water records for the day. Record is not included in the Individual Foods File for these intakes.

Variable or feature	WWEIA 2013-2014	WWEIA 2015-2016	WWEIA 2017-2018	WWEIA 2017-March 2020 Pre-Pandemic	WWEIA Aug 2021-Aug 2023
Tap water source	Same as 2003-2012: Reported in 6 categories.	Same as 2003-2004	Responses combined into 4 categories	Same as 2017-2018	Same as 2017-2018
Modification codes: DR1MC Day 2 Modification codes: DR2MC Modification Code Description file: DRXMCD	All remaining modification codes deleted; new food codes addressing modifications added in FNDDS 2013-2014	No modification codes	No modification codes	No modification codes	No modification codes
Salt use at the table and in cooking or preparing foods and type	Same as 2003-2004	Same as 2003-2004	Question wording changed slightly by removing, "seasoned salt", and adding, "sea salt".	Same as 2017-2018	Same as 2017-2018
Salt used at the table yesterday and type	Question asked about salt use at the table yesterday and kind of salt to coincide with 24-hour recall.	Same as 2013-2014	Question wording changed slightly by removing, "seasoned salt", and adding, "sea salt".	Same as 2017-2018	Same as 2017-2018
Main respondent and person whom helped in responding for the interview	Same as 2003-2012	Response category changed	Same as 2015-2016	Same as 2015-2016	Same as 2015-2016

Appendix 2. Variables in the Individual Foods Files (DR1IFF_L and DR2IFF_L) by Position

Day1 Name	Day2 Name	Variable Label
SEQN	SEQN	Respondent sequence number
WTDRD1	WTDRD1	Dietary day one sample weight
WTDR2D	WTDR2D	Dietary two-day sample weight
DR1ILINE	DR2ILINE	Food/Individual component number
DR1DRSTZ	DR2DRSTZ	Dietary recall status
DR1EXMER	DR2EXMER	Interviewer ID code
DRABF	DRABF	Breast-fed infant (either day)
DRDINT	DRDINT	Number of days of intake
DR1DBIH	DR2DBIH	# of days b/w intake and HH interview
DR1DAY	DR2DAY	Intake day of the week
DR1LANG	DR2LANG	Language respondent used mostly
DR1CCMNM	DR2CCMNM	Combination food number
DR1CCMTX	DR2CCMTX	Combination food type
DR1_020	DR2_020	Time of eating occasion (HH:MM)
DR1_030Z	DR2_030Z	Name of eating occasion
DR1FS	DR2FS	Source of food
DR1_040Z	DR2_040Z	Did you eat this meal at home?
DR1IFDCD	DR2IFDCD	USDA food code
DR1IGRMS	DR2IGRMS	Grams
DR1IKCAL	DR2IKCAL	Energy (kcal)
DR1IPROT	DR2IPROT	Protein (gm)
DR1ICARB	DR2ICARB	Carbohydrate (gm)
DR1ISUGR	DR2ISUGR	Total sugars (gm)
DR1IFIBE	DR2IFIBE	Dietary fiber (gm)
DR1ITFAT	DR2ITFAT	Total fat (gm)
DR1ISFAT	DR2ISFAT	Total saturated fatty acids (gm)
DR1IMFAT	DR2IMFAT	Total monounsaturated fatty acids (gm)
DR1IPFAT	DR2IPFAT	Total polyunsaturated fatty acids (gm)
DR1ICHOL	DR2ICHOL	Cholesterol (mg)
DR1IATOC	DR2IATOC	Vitamin E as alpha-tocopherol (mg)
DR1IATOA	DR2IATOA	Added alpha-tocopherol (Vitamin E) (mg)
DR1IRET	DR2IRET	Retinol (mcg)
DR1IVARA	DR2IVARA	Vitamin A, RAE (mcg)
DR1IACAR	DR2IACAR	Alpha-carotene (mcg)
DR1IBCAR	DR2IBCAR	Beta-carotene (mcg)
DR1ICRYP	DR2ICRYP	Beta-cryptoxanthin (mcg)

Day1 Name	Day2 Name	Variable Label
DR1ILYCO	DR2ILYCO	Lycopene (mcg)
DR1ILZ	DR2ILZ	Lutein + zeaxanthin (mcg)
DR1IVB1	DR2IVB1	Thiamin (Vitamin B1) (mg)
DR1IVB2	DR2IVB2	Riboflavin (Vitamin B2) (mg)
DR1INIAC	DR2INIAC	Niacin (mg)
DR1IVB6	DR2IVB6	Vitamin B6 (mg)
DR1IFOLA	DR2IFOLA	Total folate (mcg)
DR1IFA	DR2IFA	Folic acid (mcg)
DR1IFF	DR2IFF	Food folate (mcg)
DR1IFDFE	DR2IFDFE	Folate, DFE (mcg)
DR1ICHL	DR2ICHL	Total choline (mg)
DR1IVB12	DR2IVB12	Vitamin B12 (mcg)
DR1IB12A	DR2IB12A	Added vitamin B12 (mcg)
DR1IVC	DR2IVC	Vitamin C (mg)
DR1IVD	DR2IVD	Vitamin D (D2 + D3) (mcg)
DR1IVK	DR2IVK	Vitamin K (mcg)
DR1ICALC	DR2ICALC	Calcium (mg)
DR1IPHOS	DR2IPHOS	Phosphorus (mg)
DR1IMAGN	DR2IMAGN	Magnesium (mg)
DR1IIRON	DR2IIRON	Iron (mg)
DR1IZINC	DR2IZINC	Zinc (mg)
DR1ICOPP	DR2ICOPP	Copper (mg)
DR1ISODI	DR2ISODI	Sodium (mg)
DR1IPOTA	DR2IPOTA	Potassium (mg)
DR1ISELE	DR2ISELE	Selenium (mcg)
DR1ICAFF	DR2ICAFF	Caffeine (mg)
DR1ITHEO	DR2ITHEO	Theobromine (mg)
DR1IALCO	DR2IALCO	Alcohol (gm)
DR1IMOIS	DR2IMOIS	Moisture (gm)
DR1IS040	DR2IS040	SFA 4:0 (Butanoic) (gm)
DR1IS060	DR2IS060	SFA 6:0 (Hexanoic) (gm)
DR1IS080	DR2IS080	SFA 8:0 (Octanoic) (gm)
DR1IS100	DR2IS100	SFA 10:0 (Decanoic) (gm)
DR1IS120	DR2IS120	SFA 12:0 (Dodecanoic) (gm)
DR1IS140	DR2IS140	SFA 14:0 (Tetradecanoic) (gm)
DR1IS160	DR2IS160	SFA 16:0 (Hexadecanoic) (gm)

Day1 Name	Day2 Name	Variable Label
DR1IS180	DR2IS180	SFA 18:0 (Octadecanoic) (gm)
DR1IM161	DR2IM161	MFA 16:1 (Hexadecenoic) (gm)
DR1IM181	DR2IM181	MFA 18:1 (Octadecenoic) (gm)
DR1IM201	DR2IM201	MFA 20:1 (Eicosenoic) (gm)
DR1IM221	DR2IM221	MFA 22:1 (Docosenoic) (gm)
DR1IP182	DR2IP182	PFA 18:2 (Octadecadienoic) (gm)
DR1IP183	DR2IP183	PFA 18:3 (Octadecatrienoic) (gm)
DR1IP184	DR2IP184	PFA 18:4 (Octadecatetraenoic) (gm)
DR1IP204	DR2IP204	PFA 20:4 (Eicosatetraenoic) (gm)
DR1IP205	DR2IP205	PFA 20:5 (Eicosapentaenoic) (gm)
DR1IP225	DR2IP225	PFA 22:5 (Docosapentaenoic) (gm)
DR1IP226	DR2IP226	PFA 22:6 (Docosahexaenoic) (gm)

Appendix 3. List of Nutrients/Food Components (Unit)

Energy and Macronutrients

Food energy (kcal)

Protein (gm)

Carbohydrate (gm)

Fat, total (gm)

Alcohol (gm)

Sugars, total (gm)

Dietary fiber, total (gm)

Water (moisture) (gm)*

Saturated fatty acids, total (gm)

Monounsaturated fatty acids, total (gm)

Polyunsaturated fatty acids, total (gm)

Cholesterol (mg)

Individual fatty acids:

4:0 (gm)

6:0 (gm)

8:0 (gm)

10:0 (gm)

12:0 (gm)

14:0 (gm)

16:0 (gm)

18:0 (gm)

16:1 (gm)

18:1 (gm)

20:1 (gm)

22:1 (gm)

18:2 (gm)

18:3 (gm)

18:4 (gm)

20:4 (gm)

20:5 n-3 (gm)

22:5 n-3 (gm)

22:6 n-3 (gm)

Vitamins, Minerals, and Other Components

Vitamin A as retinol activity equivalents (mcg)

Retinol (mcg)

Carotenoids:

Carotene, alpha (mcg)

Carotene, beta (mcg)

Cryptoxanthin, beta (mcg)

Lycopene (mcg)

Lutein + zeaxanthin (mcg)

Vitamin E as alpha-tocopherol (mg)

**Added vitamin E as alpha-tocopherol (mg)

Vitamin D (D2 + D3) (mcg)

Vitamin K as phyloquinone (mcg)

Vitamin C (mg)

Thiamin (mg)

Riboflavin (mg)

Niacin (mg)
Vitamin B-6 (mg)
Folate, total (mcg)
 Folate as dietary folate equivalents (mcg)
 Folic acid (mcg)
 Food folate (mcg)
Choline, total (mg)
Vitamin B-12 (mcg)
 ***Added vitamin B-12 (mcg)

Calcium (mg)
Iron (mg)
Magnesium (mg)
Phosphorus (mg)
Potassium (mg)
Sodium (mg)
Zinc (mg)
Copper (mg)
Selenium (mcg)
Caffeine (mg)
Theobromine (mg)

** Value reflects moisture present in all foods, beverages, and water consumed as a beverage (variables DR1IMOIS, DR2IMOIS, DR1TMOIS, DR2TMOIS)*

*** Represents a synthetic subcomponent of vitamin E and is included in the vitamin E value.*

**** Represents a fortified subcomponent of vitamin B12 and is included in the vitamin B12 value.*

Appendix 4. Adding Food Code Descriptions to Your Files

One supporting file is included with the Individual Foods files: the Food Code Description file (DRXFCD_L).

The DRXFCD_L file includes abbreviated descriptions (up to 60 characters) and complete descriptions (up to 200 characters) associated with each USDA food code included in the Individual Foods files.

The Food Code Description file (DRXFCD_L) contains three variables:

DRXFDCD a numeric value corresponding to DR1IFDCD in the file DR1IFF_L or DR2IFDCD in the file DR2IFF_L;

DRXFCSD a short description (up to 60 characters) of the food code;

DRXFDLD a long description (up to 200 characters) of the food code.

The following SQL code is an example of appending the shorter food code description (here renamed DR1IFCSD) to one of the Individual Foods files using PROC SQL from SAS®. Other SQL implementations may be different.

```
proc sql;
  create table DR1IFF_L_PLUS as
  select iff.*, desc.DRXFCSD as DR1FCSD, desc.DRXFCLD as DR1FCLD
  from NHANES.DR1IFF_L iff
  left join NHANES.DRXFCD_L desc
  on iff.DR1IFDCD = desc.DRXFDCD
  order by SEQN, DR1ILINE;
quit;
```

SAS® users may wish to use Proc Format to assign labels to the food codes. The following example generates and saves a picture format for food codes and a separate format for each food code that includes both the food code itself and the short food code description. It is assumed that the user has stored the Individual Foods files and the Food Code Description file in a library called NHANES and wishes to store the formats there as well.

```
options fmtsearch = (NHANES);

proc format library = library;
  picture foodcode
  low - high = '000-00000';
quit;

data tmp;
  set NHANES.DRXFCD_L;
  length cfoodcode $9 label $72;
  cfoodcode = put(DRXFDCD, foodcode.);
  label = cfoodcode || ' ' || DRXFCSD;
run;

data fmt (keep = fmtname start label);
  set tmp;
  retain fmtname 'DRXFDCD';
```

```
rename DRXFDCD = start;  
run;
```

```
proc format cntlin = fmt library = library;  
run;
```

SAS[®] is a registered trademark of SAS Institute, Inc.

Appendix 5. Variables in the Total Nutrients Files (DR1TOT_L and DR2TOT_L) by Position

Day1 Name	Day2 Name	Variable Label
SEQN	SEQN	Respondent sequence number
WTDRD1	WTDRD1	Dietary day one sample weight
WTDR2D	WTDR2D	Dietary two-day sample weight
DR1DRSTZ	DR2DRSTZ	Dietary recall status
DR1EXMER	DR2EXMER	Interviewer ID code
DRABF	DRABF	Breast-fed infant (either day)
DRDINT	DRDINT	Number of days of intake
DR1DBIH	DR2DBIH	# of days b/w intake and HH interview
DR1DAY	DR2DAY	Intake day of the week
DR1LANG	DR2LANG	Language respondent used mostly
DR1MRESP	DR2MRESP	Main respondent for this interview
DR1HELP	DR2HELP	Helped in responding for this interview
DBQ095Z	N/A	Type of table salt used
DBD100	N/A	How often add salt to food at table
DRQSPREP	N/A	Salt used in preparation?
DR1STY	DR2STY	Salt used at table yesterday?
DR1SKY	DR2SKY	Type of salt used yesterday
DRQSDIET	N/A	On special diet?
DRQSDT1	N/A	Weight loss/Low calorie diet
DRQSDT2	N/A	Low fat/Low cholesterol diet
DRQSDT3	N/A	Low salt/Low sodium diet
DRQSDT4	N/A	Sugar free/Low sugar diet
DRQSDT5	N/A	Low fiber diet
DRQSDT6	N/A	High fiber diet
DRQSDT7	N/A	Diabetic diet
DRQSDT8	N/A	Weight gain/Muscle building diet
DRQSDT9	N/A	Low carbohydrate diet
DRQSDT10	N/A	High protein diet
DRQSDT11	N/A	Gluten-free/Celiac diet
DRQSDT12	N/A	Renal/Kidney diet
DRQSDT91	N/A	Other special diet
DR1TNUMF	DR2TNUMF	Number of foods/beverages reported
DR1TKCAL	DR2TKCAL	Energy (kcal)
DR1TPROT	DR2TPROT	Protein (gm)
DR1TCARB	DR2TCARB	Carbohydrate (gm)
DR1TSUGR	DR2TSUGR	Total sugars (gm)

Day1 Name	Day2 Name	Variable Label
DR1TFIBE	DR2TFIBE	Dietary fiber (gm)
DR1TTFAT	DR2TTFAT	Total fat (gm)
DR1TSFAT	DR2TSFAT	Total saturated fatty acids (gm)
DR1TMFAT	DR2TMFAT	Total monounsaturated fatty acids (gm)
DR1TPFAT	DR2TPFAT	Total polyunsaturated fatty acids (gm)
DR1TCHOL	DR2TCHOL	Cholesterol (mg)
DR1TATOC	DR2TATOC	Vitamin E as alpha-tocopherol (mg)
DR1TATOA	DR2TATOA	Added alpha-tocopherol (Vitamin E) (mg)
DR1TRET	DR2TRET	Retinol (mcg)
DR1TVARA	DR2TVARA	Vitamin A, RAE (mcg)
DR1TACAR	DR2TACAR	Alpha-carotene (mcg)
DR1TBCAR	DR2TBCAR	Beta-carotene (mcg)
DR1TCRYP	DR2TCRYP	Beta-cryptoxanthin (mcg)
DR1TLYCO	DR2TLYCO	Lycopene (mcg)
DR1TLZ	DR2TLZ	Lutein + zeaxanthin (mcg)
DR1TVB1	DR2TVB1	Thiamin (Vitamin B1) (mg)
DR1TVB2	DR2TVB2	Riboflavin (Vitamin B2) (mg)
DR1TNIAC	DR2TNIAC	Niacin (mg)
DR1TVB6	DR2TVB6	Vitamin B6 (mg)
DR1TFOLA	DR2TFOLA	Total folate (mcg)
DR1TFA	DR2TFA	Folic acid (mcg)
DR1TFF	DR2TFF	Food folate (mcg)
DR1TFDFE	DR2TFDFE	Folate, DFE (mcg)
DR1TCHL	DR2TCHL	Total choline (mg)
DR1TVB12	DR2TVB12	Vitamin B12 (mcg)
DR1TB12A	DR2TB12A	Added vitamin B12 (mcg)
DR1TVC	DR2TVC	Vitamin C (mg)
DR1TVD	DR2TVD	Vitamin D (D2 + D3) (mcg)
DR1TVK	DR2TVK	Vitamin K (mcg)
DR1TCALC	DR2TCALC	Calcium (mg)
DR1TPHOS	DR2TPHOS	Phosphorus (mg)
DR1TMAGN	DR2TMAGN	Magnesium (mg)
DR1TIRON	DR2TIRON	Iron (mg)
DR1TZINC	DR2TZINC	Zinc (mg)
DR1TCOPP	DR2TCOPP	Copper (mg)
DR1TSODI	DR2TSODI	Sodium (mg)

Day1 Name	Day2 Name	Variable Label
DR1TPOTA	DR2TPOTA	Potassium (mg)
DR1TSELE	DR2TSELE	Selenium (mcg)
DR1TCAFF	DR2TCAFF	Caffeine (mg)
DR1TTHEO	DR2TTHEO	Theobromine (mg)
DR1TALCO	DR2TALCO	Alcohol (gm)
DR1TMOIS	DR2TMOIS	Moisture (gm)
DR1TS040	DR2TS040	SFA 4:0 (Butanoic) (gm)
DR1TS060	DR2TS060	SFA 6:0 (Hexanoic) (gm)
DR1TS080	DR2TS080	SFA 8:0 (Octanoic) (gm)
DR1TS100	DR2TS100	SFA 10:0 (Decanoic) (gm)
DR1TS120	DR2TS120	SFA 12:0 (Dodecanoic) (gm)
DR1TS140	DR2TS140	SFA 14:0 (Tetradecanoic) (gm)
DR1TS160	DR2TS160	SFA 16:0 (Hexadecanoic) (gm)
DR1TS180	DR2TS180	SFA 18:0 (Octadecanoic) (gm)
DR1TM161	DR2TM161	MFA 16:1 (Hexadecenoic) (gm)
DR1TM181	DR2TM181	MFA 18:1 (Octadecenoic) (gm)
DR1TM201	DR2TM201	MFA 20:1 (Eicosenoic) (gm)
DR1TM221	DR2TM221	MFA 22:1 (Docosenoic) (gm)
DR1TP182	DR2TP182	PFA 18:2 (Octadecadienoic) (gm)
DR1TP183	DR2TP183	PFA 18:3 (Octadecatrienoic) (gm)
DR1TP184	DR2TP184	PFA 18:4 (Octadecatetraenoic) (gm)
DR1TP204	DR2TP204	PFA 20:4 (Eicosatetraenoic) (gm)
DR1TP205	DR2TP205	PFA 20:5 (Eicosapentaenoic) (gm)
DR1TP225	DR2TP225	PFA 22:5 (Docosapentaenoic) (gm)
DR1TP226	DR2TP226	PFA 22:6 (Docosahexaenoic) (gm)
DR1_300	DR2_300	Compare food consumed yesterday to usual
DR1_320Z	DR2_320Z	Total plain water drank yesterday (gm)
DR1_330Z	DR2_330Z	Total tap water drank yesterday (gm)
DR1BWATZ	DR2BWATZ	Total bottled water drank yesterday (gm)
DR1TWSZ	DR2TWSZ	Tap water source
DRD340	N/A	Shellfish eaten during past 30 days
DRD350A	N/A	Clams eaten during past 30 days
DRD350AQ	N/A	# of times clams eaten in past 30 days
DRD350B	N/A	Crabs eaten during past 30 days
DRD350BQ	N/A	# of times crabs eaten in past 30 days
DRD350C	N/A	Crayfish eaten during past 30 days

Day1 Name	Day2 Name	Variable Label
DRD350CQ	N/A	# of times crayfish eaten past 30 days
DRD350D	N/A	Lobsters eaten during past 30 days
DRD350DQ	N/A	# of times lobsters eaten past 30 days
DRD350E	N/A	Mussels eaten during past 30 days
DRD350EQ	N/A	# of times mussels eaten in past 30 days
DRD350F	N/A	Oysters eaten during past 30 days
DRD350FQ	N/A	# of times oysters eaten in past 30 days
DRD350G	N/A	Scallops eaten during past 30 days
DRD350GQ	N/A	# of times scallops eaten past 30 days
DRD350H	N/A	Shrimp eaten during past 30 days
DRD350HQ	N/A	# of times shrimp eaten in past 30 days
DRD350I	N/A	Other shellfish eaten past 30 days
DRD350IQ	N/A	# of times other shellfish eaten
DRD350J	N/A	Other unknown shellfish eaten past 30 d
DRD350JQ	N/A	# of times other unknown shellfish eaten
DRD350K	N/A	Refused on shellfish eaten past 30 days
DRD360	N/A	Fish eaten during past 30 days
DRD370A	N/A	Breaded fish products eaten past 30 days
DRD370AQ	N/A	# of times breaded fish products eaten
DRD370B	N/A	Tuna eaten during past 30 days
DRD370BQ	N/A	# of times tuna eaten in past 30 days
DRD370C	N/A	Bass eaten during past 30 days
DRD370CQ	N/A	# of times bass eaten in past 30 days
DRD370D	N/A	Catfish eaten during past 30 days
DRD370DQ	N/A	# of times catfish eaten in past 30 days
DRD370E	N/A	Cod eaten during past 30 days
DRD370EQ	N/A	# of times cod eaten in past 30 days
DRD370F	N/A	Flatfish eaten during past 30 days
DRD370FQ	N/A	# of times flatfish eaten past 30 days
DRD370G	N/A	Haddock eaten during past 30 days
DRD370GQ	N/A	# of times haddock eaten in past 30 days
DRD370H	N/A	Mackerel eaten during past 30 days
DRD370HQ	N/A	# of times mackerel eaten past 30 days
DRD370I	N/A	Perch eaten during past 30 days
DRD370IQ	N/A	# of times perch eaten in past 30 days
DRD370J	N/A	Pike eaten during past 30 days

Day1 Name	Day2 Name	Variable Label
DRD370JQ	N/A	# of times pike eaten in past 30 days
DRD370K	N/A	Pollock eaten during past 30 days
DRD370KQ	N/A	# of times pollock eaten in past 30 days
DRD370L	N/A	Porgy eaten during past 30 days
DRD370LQ	N/A	# of times porgy eaten in past 30 days
DRD370M	N/A	Salmon eaten during past 30 days
DRD370MQ	N/A	# of times salmon eaten in past 30 days
DRD370N	N/A	Sardines eaten during past 30 days
DRD370NQ	N/A	# of times sardines eaten past 30 days
DRD370O	N/A	Sea bass eaten during past 30 days
DRD370OQ	N/A	# of times sea bass eaten past 30 days
DRD370P	N/A	Shark eaten during past 30 days
DRD370PQ	N/A	# of times shark eaten in past 30 days
DRD370Q	N/A	Swordfish eaten during past 30 days
DRD370QQ	N/A	# of times swordfish eaten past 30 days
DRD370R	N/A	Trout eaten during past 30 days
DRD370RQ	N/A	# of times trout eaten in past 30 days
DRD370S	N/A	Walleye eaten during past 30 days
DRD370SQ	N/A	# of times walleye eaten in past 30 days
DRD370T	N/A	Other fish eaten during past 30 days
DRD370TQ	N/A	# of times other fish eaten past 30 days
DRD370U	N/A	Other unknown fish eaten in past 30 days
DRD370UQ	N/A	# of times other unknown fish eaten
DRD370V	N/A	Refused on fish eaten past 30 days

