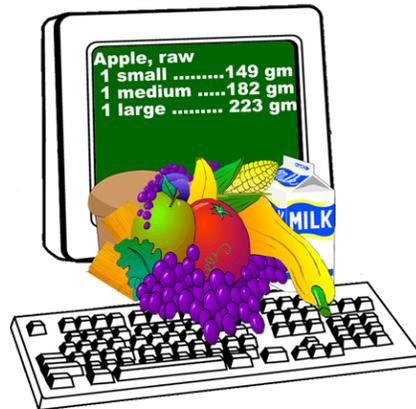


THE USDA FOOD AND NUTRIENT DATABASE FOR DIETARY STUDIES, 4.1 – DOCUMENTATION AND USER GUIDE



A nutrient value has been updated in May 2013 to reflect the USDA National Nutrient Database for Standard Reference, Release 25, Errata for Caffeine value for NDB No. 14627, Energy Drink, Monster (Agricultural Research Service, Nutrient Data Laboratory, December 14, 2012).

Nutrient values have been updated to reflect the USDA National Nutrient Database for Standard Reference, Release 22, Errata for several fatty acids in 2% reduced fat milk (Agricultural Research Service, Nutrient Data Laboratory, August 10, 2010).

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LIST OF ABBREVIATIONS AND ACRONYMS

AMPM = USDA Automated Multiple-Pass Method

ARS = Agricultural Research Service

ASCII = American Standard Code for Information Interchange

BARC = Beltsville Agricultural Research Center

CD-ROM = compact disk, read only memory

DFE = dietary folate equivalents

FNDDS = USDA Food and Nutrient Database for Dietary Studies

FSRG = Food Surveys Research Group

NDB No. = Nutrient Databank number

NDL = Nutrient Data Laboratory

NHANES = National Health and Nutrition Examination Survey

RAE = retinol activity equivalents

SAS[®] = programming language designed for data access, management, analysis and reporting

SR = USDA National Nutrient Database for Standard Reference

U.S. = United States of America

USDA = U.S. Department of Agriculture

WWEIA = What We Eat in America

THE USDA FOOD AND NUTRIENT DATABASE FOR DIETARY STUDIES, 4.1 – DOCUMENTATION AND USER GUIDE

INTRODUCTION

In dietary studies, the researcher collects information on what people eat. Collection methods may vary, from 24-hour recalls collected in What We Eat in America (WWEIA), the dietary intake interview component of the National Health and Nutrition Examination Survey (NHANES), to food diaries recorded by an individual. After data collection, the researcher needs a way to translate the food intake data into a form that can be used for analysis. The USDA Food and Nutrient Database for Dietary Studies (FNDDS) is a resource that is used to code dietary intakes and to calculate nutrients for WWEIA. The FNDDS is based on nutrient values in the USDA National Nutrient Database for Standard Reference, Release 22 (Agricultural Research Service, Nutrient Data Laboratory, 2009). The FNDDS can also be used with dietary intake data collected in your own study.

What is the FNDDS?

- This is a database of foods, their nutrient values, and weights for typical food portions; it is used to code food intake data and to calculate nutrient intakes based on the foods and amounts reported
- This version (FNDDS 4.1) was used to process WWEIA, NHANES 2007-2008
- Foods in this database include many mixtures, ethnic foods, and brand name items
- Nutrient values for FNDDS 4.1 are based on values in USDA National Nutrient Database for Standard Reference, Release 22 (SR22) (For more details, see section headed "[FNDDS Nutrient Values](#)")

How Can You Use It?

- In research projects using WWEIA food intake data
- In other food intake studies:
 - To code foods and amounts eaten
 - To calculate the amounts of nutrients/food components in those foods

What Are Some FNDDS Applications?

In addition to its use in WWEIA, the FNDDS is used in:

- [MyPyramid Tracker](#)
- [MyPyramid Equivalents Database](#)
- Food Intakes as Agricultural Retail Commodities
- National Cancer Institute [Diet History Questionnaire](#) and [Food Frequency Questionnaire](#)

How Can I Learn More About the FNDDS, WWEIA, and the SR?

- [Download](#) the database free from the website of USDA's Food Surveys Research Group (FSRG), that developed and maintains the FNDDS.
- Receive e-mail announcements about FNDDS, WWEIA, and other FSRG products and services by joining the [FSRG listserv](http://www.ars.usda.gov/ba/bhnrc/fsrg) at <http://www.ars.usda.gov/ba/bhnrc/fsrg>.
- Access the USDA National Nutrient Database for Standard Reference from the website of USDA's Nutrient Data Laboratory

DEVELOPMENT AND UPDATING OF THE FNDDS

Development and Updating

USDA's technical files for analyzing food and nutrient intakes have developed over several decades of food surveys (Bodner and Perloff, 2003). In 2004, the files were incorporated into one database, the FNDDS, for processing WWEIA. A new version of the FNDDS is released every 2 years, in parallel with the release of the WWEIA data. Versions of the FNDDS are tied to releases of data from WWEIA, NHANES. This version (FNDDS 4.1) was used to process WWEIA, NHANES 2007-2008. It is not recommended to use a version of the database not associated with the given survey; for example, FNDDS 4.1 should not be used for NHANES 2005-2006. For each new version of FNDDS, foods, portions, and nutrient values are reviewed and updated. The FNDDS is updated to reflect the US food supply by incorporating new foods based on what is reported in the survey, updating existing entries, and new and updated nutrients provided in new versions of SR.

As WWEIA food intakes are processed and the reported foods and amounts are coded, the FNDDS food descriptions and portion weights undergo continual review. Foods or portions that cannot be matched to items in the database are resolved by FSRG scientists. New food items and new portion sizes are added as needed. Information about new foods and package sizes is collected using internet resources, direct contact with manufacturers, or food labels. In addition to the monitoring of information reported by WWEIA respondents, two kinds of regular planned data review are conducted. Before a new version of FNDDS is updated, specific categories of foods are selected for comprehensive review. The selection of these categories is based on criteria such as frequency of use by ethnicity and age, changes in the marketplace, date of last review, and changes in SR. The purpose of these reviews is to ensure that the FNDDS reflects the current marketplace. For example, infant formulas, fast food sandwiches, pizza, and ready-to-eat breakfast cereals were among the food categories reviewed for FNDDS 4.1. Then, before finalizing the database for release, all changes for most frequently reported foods undergo in-depth review. These foods are selected based on frequency and contribution to total nutrient intake. They are reviewed to ensure the accuracy of changes made to these foods (Ahuja and Perloff, 2008).

The FNDDS Nutrient Values file is updated every other year, using the latest release of the SR and corresponding with the release of WWEIA data (e.g., FNDDS 4.1 was updated with SR22 for WWEIA 2007-2008). Data for about 2,900 items in SR22 were used to determine the nutrient values for the about 7,000 commonly consumed foods in FNDDS 4.1. As new and updated nutrient data are included in the SR, they are evaluated and incorporated into the FNDDS. Updates also include the complete nutrient profile for new foods; they may also include new nutrients for existing foods and new units of expression for existing nutrients. Values for new nutrients are added when sufficient analytical data are available for major contributors of the nutrient to permit the USDA Nutrient Data Laboratory (NDL) to calculate or impute estimated values for all of the approximately 2,900 SR foods that serve as the basis of the FNDDS.

The database includes a file, FNDDS-SR Links, which lists the SR codes (called "Nutrient Databank Numbers" or "NDB_No" in SR) and amounts that document how the nutrient values are calculated for each FNDDS food. New entries are added to the FNDDS-SR Links file as new food codes are added to the Food Descriptions files. The linkages are revised to reflect updates

to SR when appropriate. For example, all FNDDS-SR links containing pork were reviewed for FNDDS 4.1 because new 'enhanced' fresh pork items were added in the SR. Existing links are reviewed for most frequently reported foods for each update.

The size and complexity of the FNDDS necessitates careful quality control practices to ensure accuracy and consistency of the data. The FNDDS contains about 3 million data points held in many files interrelated through common fields. A comprehensive quality control plan is in place to ensure that interrelationships are maintained among the various database files and that updates do not introduce errors (Anderson et al., 2004). Checks for content validity, accuracy, and referential integrity are performed at all data processing steps. These checks are documented in the 'FNDDS Quality Control Handbook', which is updated for each 2-year data release. Historical files are also maintained to provide documentation of all changes in database values.

Changes Between FNDDS 3.0 and FNDDS 4.1

Changes or additions occurred in all ten database files. Major changes are shown in table 1.

Table 1. Changes between FNDDS 3.0 and FNDDS 4.1

| Type of change | Typical reasons and/or examples |
|--|---|
| File format | |
| Field dropped | Abbreviated description field dropped from Main Food Description file |
| Food descriptions component | |
| Total number of food codes | 7,174 |
| Total number of additional descriptions | 7,255 (linked to 3,256 food codes) |
| Food codes and descriptions added (N=283) | Additions: New ready-to-eat breakfast cereals, infant formulas, fast food sandwiches and salads, high energy/high protein bars, cereal/snack bars, and energy drinks. Expansion of: Mixed dishes to include prepared with and without fat or with different types of sauce; pizzas to further differentiate types of crust, extra toppings, and frozen pizzas. |
| Food codes and descriptions discontinued (N=30) | Products no longer on the market (such as certain brands of ready-to-eat cereals); codes for certain types of fish never used in the survey and being discontinued from SR. |
| Food descriptions (main or additional) revised (N=715) | Manufacturers' name changes (such as for ready-to-eat breakfast cereals and infant formulas); miscellaneous revisions to clarify the food item represented by the food code, and/or to use consistent terms in descriptions. |
| Food portions and weights component | |
| Total number of food portions and weights | 30,907 |
| Food portions and weights added (N=1,972) | About two-thirds of added weights were for new foods; about one-third for existing foods. Additions for existing foods: new portion sizes for fast food items, personal size pizza to all pizza codes, 100-calorie packages for more snack items, and pre-packaged bowl portions for more ready-to-eat cereals. Changed portions for existing foods: replaced portions to eliminate the specific size of the item, such as "1 small drink" to replace "1 small drink (16 fl oz)" for fast food soft drinks, or to broaden the use of a portion size, such as adding "1 miniature/bite size" to replace "1 miniature bar" and/or "1 bite size" for some candies. |
| Food portions and weights discontinued (N=337) | Half of changes for foods no longer in the database; half for existing foods, including weights for portion sizes no longer available and portions replaced by new weight records. |
| Food portions and weights revised (N=722) | Changes made to some fast food items, weights for pizza recalculated since frozen codes were split out; weights for egg omelets recalculated after recipe changes; revisions to match changes in SR; minor changes to "1 oz, cooked" for selected meats due to rounding. |

– table continued on next page –

– table 1, continued –

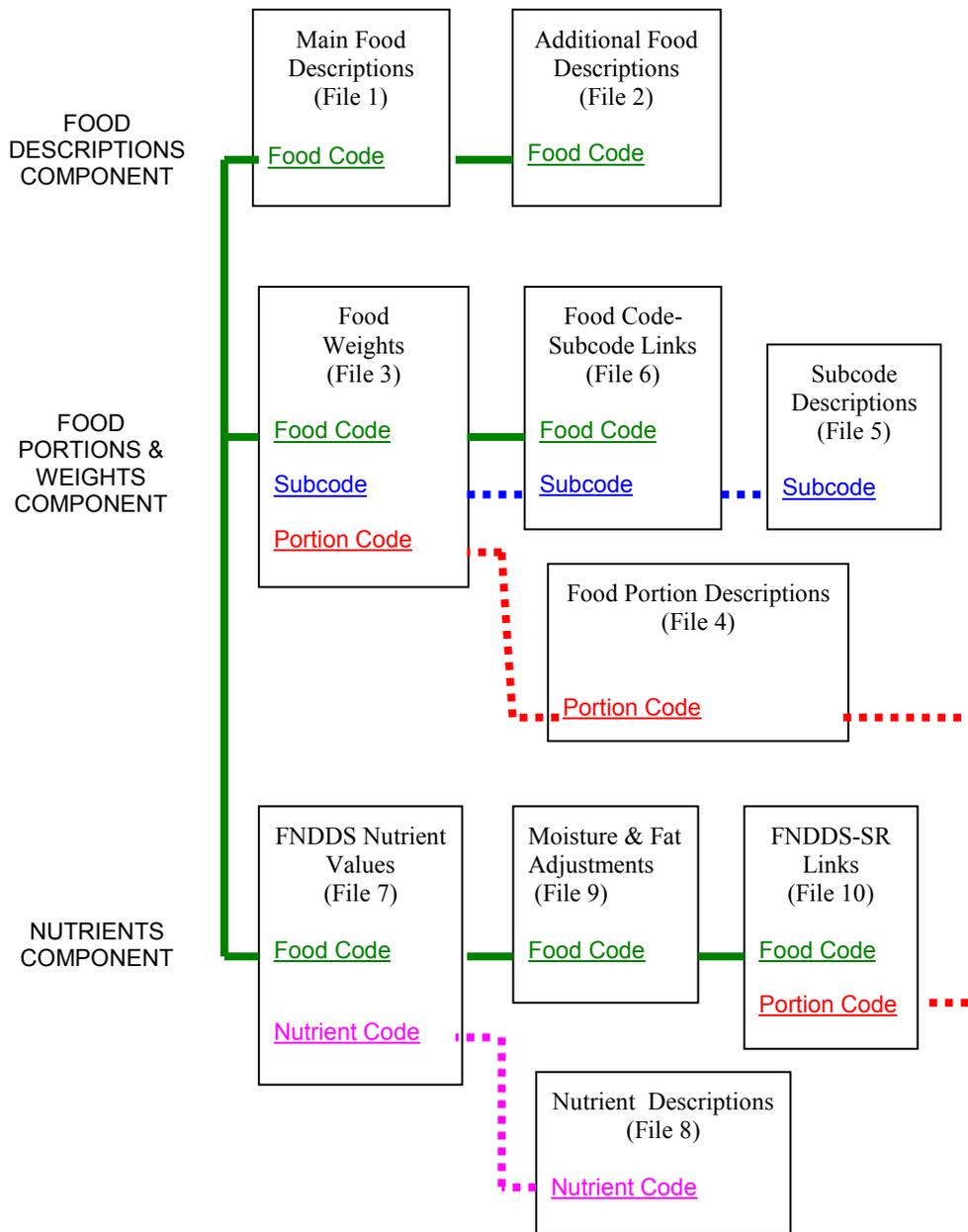
| Nutrients component | |
|--|---|
| New nutrients | Vitamin D (D2 + D3) added. |
| Updated nutrient values in SR22 (ARS, USDA, 2009) | Milk, sour cream, cream cheese, and cottage cheese; snack products such as crackers, saltines, corn puffs, tortilla chips, chocolate chip cookies and potato chips; Froot loops®, corn grits, ramen noodle soups, refried beans, chicken tenders, apple juice, and others. |
| Revisions in the selection of SR items to determine nutrient values for FNDDS foods (i.e., FNDDS-SR links) | For purposes of estimating vitamin D values, over 1,000 FNDDS-SR links were revised to include ingredients fortified or not with vitamin D. For commercial products containing milk or margarine as ingredients (e.g., low fat plain waffle), links were revised to use unfortified versions of the two ingredients; whereas for products that are mainly home-made, links were revised to use fortified milk and a margarine composite of 85% unfortified and 15% fortified. For foods available in the retail market in both vitamin D-fortified and unfortified forms (cheese product, orange juice, fruit yogurt, canned pasta, malted milk, margarine, soymilk, and rice milk), composites of the two forms were developed based on market share data. |
| | New SR codes used to revise linkages for foods: calcium fortified orange juice, selected Chinese foods, pie shell, horchata, rice milk, cheese sauce, icing, canned pudding, fish sticks, fast food breakfast items, canned pasta among others. |
| | 'Enhanced' fresh pork included in mixtures containing pork for better representation of the pork products currently in the market. |
| | Composites of "not further specified" milk, vegetable oil, cheese, chocolate milk, orange juice, whole wheat bread, ground beef, and fish updated to reflect market share data. |
| | Miscellaneous changes in recipes for pizza; cooked fish; scrambled eggs, and pasta/spaghetti with sauce among others. |
| | Miscellaneous |
| Food Coding Scheme | <p>Subgroups added</p> <ul style="list-style-type: none"> 1148 Yogurt, baby food 676 Fruits and vegetables mixtures baby food 78 Mixtures mostly vegetables without meat, poultry, fish 781 Vegetable and fruit juice blends, 100% juice <p>Description for Subgroup 674 changed ('desserts' inserted) to distinguish it from Subgroup 1148 Was: Fruit desserts and fruit-flavored puddings and yogurt baby food Now: Fruit desserts and fruit-flavored puddings and yogurt desserts baby food</p> |
| FSRG-Defined food groups | <p>Food codes for subgroup 1148 added to tables listing code ranges for "Total milk, milk drinks, yogurt" (MILK1) group and "Yogurt" (MILK2) group.</p> <p>Food codes for subgroup 781 added to table listing code ranges for "Other vegetables" (VEG8).</p> |

GENERAL INFORMATION ABOUT FNDDS FORMAT

What is the Database Format?

- Available in three formats - as a Microsoft Access® database, as a SAS dataset, and as ASCII delimited text files.
- Consists of 10 separate but linked data files (referred to as "tables" in the Microsoft Access® database). As shown in figure 1, food code is the primary link (shown as thick solid lines) between the database components. Secondary links between files (shown as dotted lines) include subcode and portion code in the Food Portions & Weights component, and nutrient code in the Nutrients component. Portion code also connects the FNDDS-SR Links file to the Food Portion Descriptions file. Together, the files form a normalized, relational database system where data redundancy is minimized.

Figure 1. USDA Food and Nutrient Database for Dietary Studies (FNDDS) – files and interrelationships



File number in parentheses after file name refers to the order of files as they are listed on the next page.

As shown in figure 1, the 10 FNDDS files fall into three components:

Food Descriptions Component:

1. Main Food Descriptions
 - Primary descriptions, usually generic, for 7,174 foods
 - Unique 8-digit food code assigned to each main description (see appendix B, "Food Coding Scheme")
2. Additional Food Descriptions
 - Descriptions for 7,255 similar foods associated with specific main foods
 - Same nutrient profile and food portion weights as the main food

Food Portions and Weights Component:

3. Food Weights
 - Weights (in grams) for various portions of each food
 - 30,907 weights
4. Food Portion Descriptions
 - Descriptions for [common portions](#) (amounts) of foods and beverages
 - Unique 5-digit code assigned to each portion description
5. Subcode Descriptions
 - Descriptions for specific snack cakes and candy only
 - Unique 7-digit code assigned to each subcode description
 - Same nutrient profile as the main food
 - Unique food portion weights
6. Food Code-Subcode Links
 - Records that show the association between main foods and subcodes

Nutrients Component:

7. FNDDS Nutrient Values
 - Complete nutrient profile (food energy and 64 [nutrients/food components](#)) for each food code
 - Source of nutrient values is the [USDA Nutrient Database for Standard Reference \(SR\), Release 22](#)
8. Nutrient Descriptions
 - Descriptions and measurement units for nutrients in FNDDS
 - Unique 3-digit code assigned to each nutrient
9. Moisture & Fat Adjustments
 - Factors used during calculation of nutrient values for some foods in the database
10. FNDDS-SR Links
 - Information used to calculate nutrient values in FNDDS
 - Documents the links between FNDDS and SR

The following table lists the full names of the FNDDS files, along with the abbreviated file/table name.

Table 2. Full and Abbreviated File/Table Names

| Full File Name | Abbreviated File Name |
|------------------------------|------------------------------|
| Main Food Descriptions | MainFoodDesc |
| Additional Food Descriptions | AddFoodDesc |
| Food Weights | FoodWeights |
| Food Portion Descriptions | FoodPortionDesc |
| Subcode Descriptions | SubcodeDesc |
| Food Code-Subcode Links | FoodSubcodeLinks |
| FNDDS Nutrient Values | FNDDSNutVal |
| Nutrient Descriptions | NutDesc |
| Moisture & Fat Adjustments | MoistNFatAdjust |
| FNDDS-SR Links | FNDDSSRLinks |

ASCII Format Files

The ASCII data files have an extension of .txt and use delimited, uncompressed formats. In the ASCII delimited files, all fields are separated (delimited) by carets (^), and text fields are also surrounded by tildes (~).

The following record example appears in the ASCII format version of the Main Food Descriptions file:

```
11111000^1/01/2007^12/31/2008^~Milk, cow's, fluid, whole~
```

SAS® Dataset

The SAS® data files have an extension of .sas7bdat. Proc Contents procedure may be used to get a listing of the fields and field data type in each file. The screenshot example below shows how the files appear in SAS®.

VIEWTABLE: mainfooddesc

| <i>Food code</i> | <i>Start date</i> | <i>End date</i> | <i>Main food description</i> |
|------------------|-------------------|-----------------|------------------------------|
| 11000000 | 1/1/2007 | 12/31/2008 | Milk, human |
| 11100000 | 1/1/2007 | 12/31/2008 | Milk, NFS |
| 11111000 | 1/1/2007 | 12/31/2008 | Milk, cow's, fluid, whole |

MS Access® Format Database

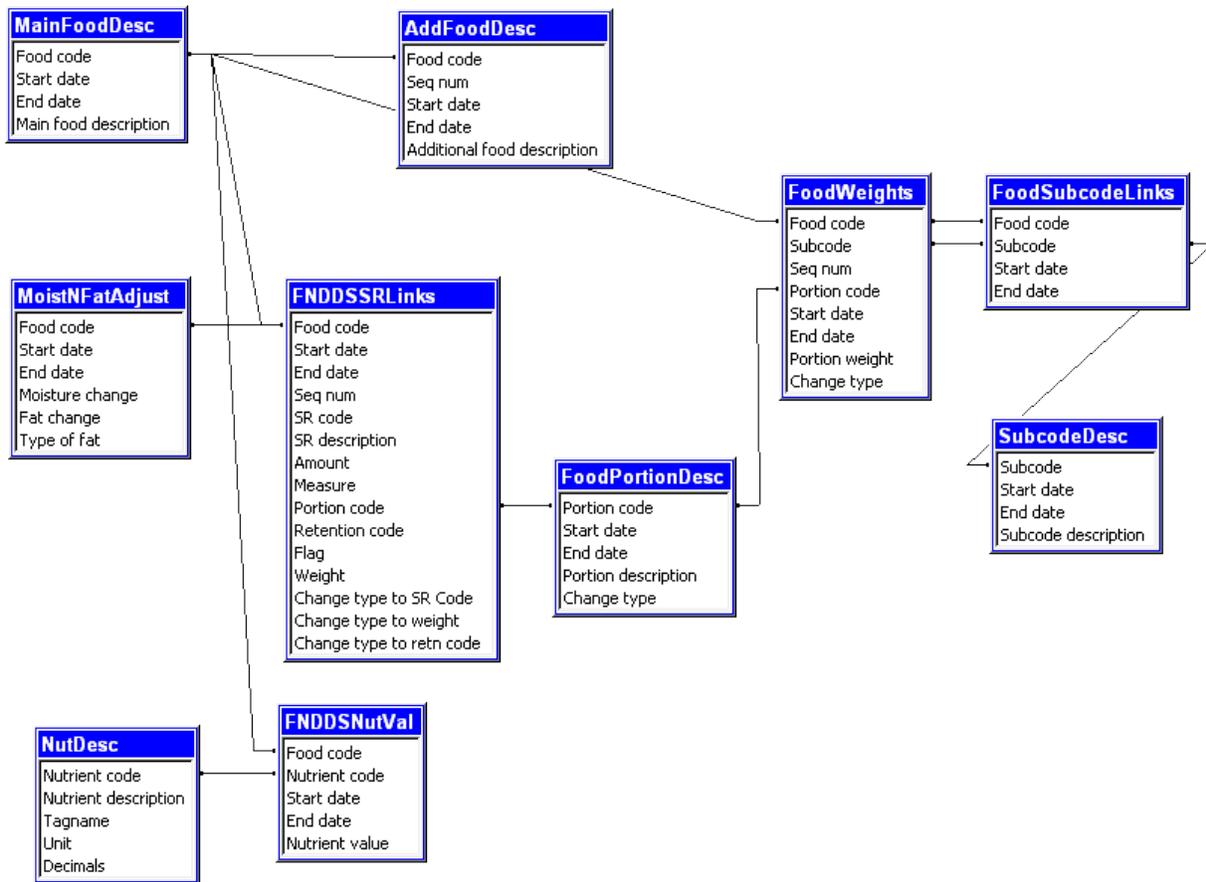
The FNDDS in MS Access® format consists of a single database file called FNDDS4.mdb. Within the file are the 10 individual tables whose names are listed in table 2. When a table is opened, the field label and field data type will already be defined, as shown in the screenshot example below:

MainFoodDesc

| <i>Food code</i> | <i>Start date</i> | <i>End date</i> | <i>Main food description</i> |
|------------------|-------------------|-----------------|------------------------------|
| 11000000 | 1/1/2007 | 12/31/2008 | Milk, human |
| 11100000 | 1/1/2007 | 12/31/2008 | Milk, NFS |
| 11111000 | 1/1/2007 | 12/31/2008 | Milk, cow's, fluid, whole |

In order to create Access queries, forms, and reports to display information from several tables at once, relationships between the tables must be created. Such relationships have been established between the FNDDS tables in the Access database by linking matching fields. Linked fields in the FNDDS include the food code, subcode, portion code, and nutrient code. Figure 2 shows the relationships and linked fields across all files.

Figure 2. Fields linked across FNDDS



Sample report and queries available

For information to help get started in MS Access®, see the section headed "[Combining Data from Different Files in MS Access,®](#)" as well as appendix D "[Sample Report and Sample Queries Using FNDDS Files in MS Access.®](#)"

FILE FORMATS

When this documentation is viewed online or printed in color, the linking fields that connect information from one file to another appear in color. Additional formatting has been added to distinguish these fields when color is not available or useful. In the schematic diagrams (figures), lines are used to show linking fields. In the tables and the examples of data records, the symbol ‡ follows the name of each linking field.

Key to Tables

This key (Table 3) defines abbreviations and symbols used in tables 4 to 13, which outline the format of each file in the FNDDS.

Table 3. Key to abbreviations and symbols used in tables 4 to 13

| Abbreviation or symbol in tables 4 to 13 | Meaning | Additional information |
|---|---|--|
| N #.# | Numeric field | Number (shown here as #) following field type indicates field length; number after decimal point indicates number of decimal places. |
| A # | Alphanumeric field | |
| D (MM/DD/YYYY) | Date field | For FNDDS 4.1 all start and end dates are the same (1/1/2007 and 12/31/2008, respectively). Dates may differ in the multi-year version of the FNDDS. |
| * | Indexed field (holds values by which the file is ordered) | Although ASCII delimited files do not have indexes, they are identified in this document to show the order of records. |
| ‡ | Linking field | Used to indicate links within FNDDS. Linking field names are also highlighted in color in the figures and tables. |

Food Descriptions Component

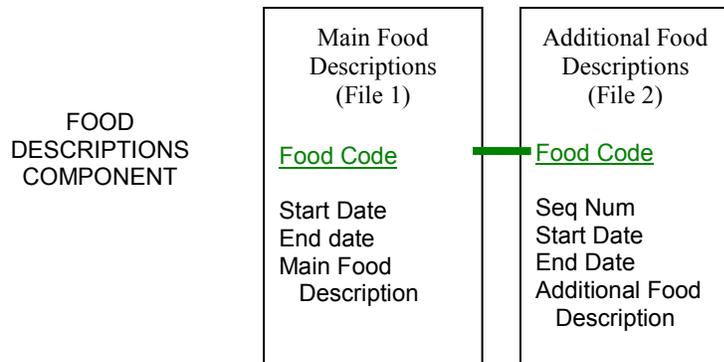
The Food Descriptions component consists of 2 files:

- Main Food Descriptions
- Additional Food Descriptions

Counting both main and additional food descriptions, the number of food descriptions included in FNDDS exceeds 14,000.

As shown in figure 3, the **food code** links the Main and Additional Food Descriptions files to one another and to other files in the database.

Figure 3. Main Food Descriptions file, Additional Food Descriptions file, and their link



Main food descriptions

There are about 7,000 main food descriptions. The main food description is the primary (usually generic) complete description identified by a unique 8-digit [food code](#). The food code links the description to information in the other database files. The main food description often includes form (fresh, frozen, or canned) and preparation method. See "[Notes About Foods in the Database.](#)"

Table 4. Format of Main Food Descriptions file†

| Field Name | Field Type | Description |
|-----------------------|-------------------|--|
| Food code‡ | N 8* | A unique 8-digit number assigned to a particular main food description. |
| Start date | D (MM/DD/YYYY)* | Start and end dates that indicate the time period corresponding to the WWEIA data for which the record was used. |
| End date | D (MM/DD/YYYY) | |
| Main food description | A 200 | A complete description for a food, often including preparation method (e.g., boiled) and original form of the food (e.g., from frozen); usually generic in nature. |

†See [table 3](#) for an explanation of the abbreviations and symbols used in this table.

Additional food descriptions

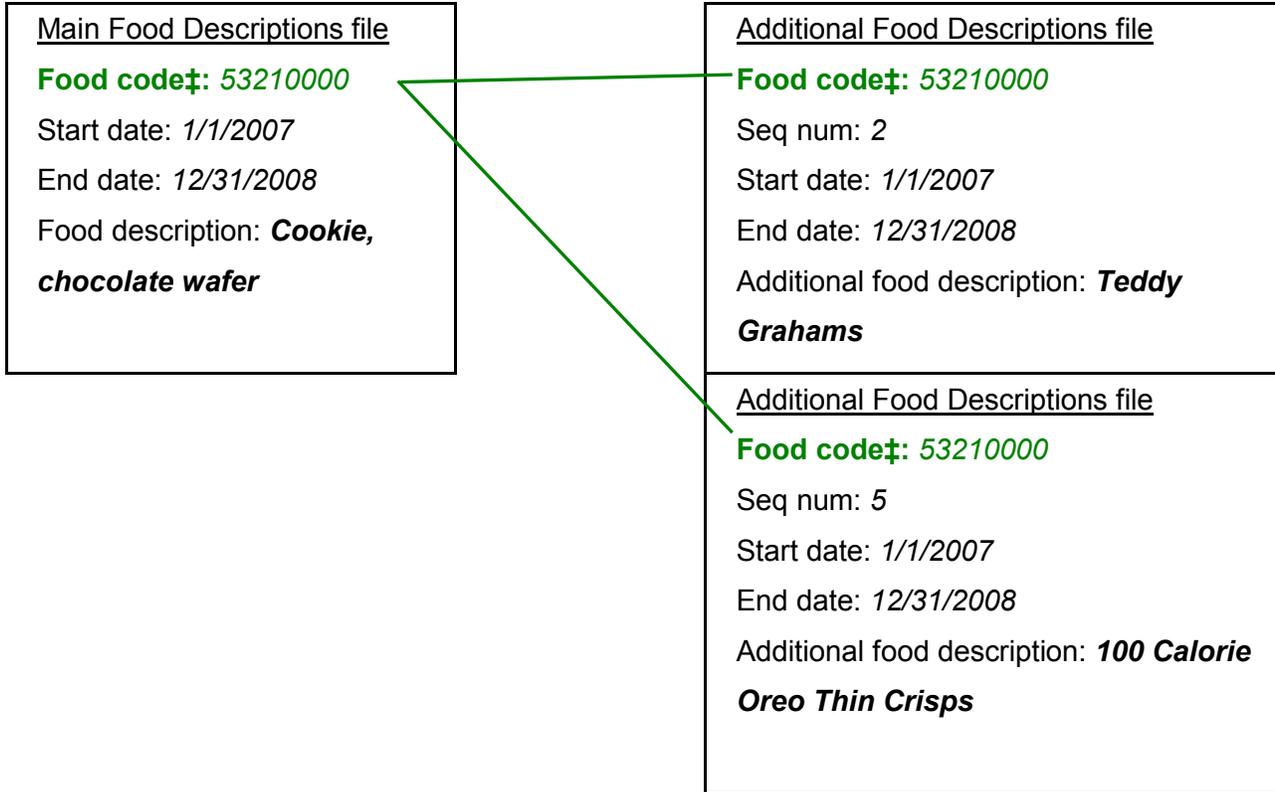
An additional food description is associated with a specific main food description and shares the same nutrient profile and same portion weights. More than one additional food description may be associated with a single food code. Not all food codes have additional descriptions. There are approximately 7,000 additional food descriptions linked to about 3,200 unique 8-digit food codes. Additional food descriptions aid in the selection of food codes to represent foods reported by study participants. About half of the additional food descriptions are brand names. Some additional food descriptions represent similar forms of the main food; some represent less specific forms.

Table 5. Format of Additional Food Descriptions file†

| Field Name | Field Type | Description |
|-----------------------------|-------------------|--|
| Food code‡ | N 8* | A unique 8-digit number assigned to a particular main food description. |
| Seq num | N 2* | A sequence number (unique within a food code) used for ordering additional food descriptions; a gap in a series of sequence numbers indicates that a previously used additional description has been discontinued. |
| Start date | D (MM/DD/YYYY)* | Start and end dates that indicate the time period corresponding to the WWEIA data for which the record was used. |
| End date | D (MM/DD/YYYY) | |
| Additional food description | A 80 | An additional food description included under the same food code as the main food description; often a specific brand name. |

†See [table 3](#) for an explanation of the abbreviations and symbols used in this table.

Examples of data records from the Food Descriptions Component files



The food code links the main food description (Cookie, chocolate wafer) with five additional food descriptions two of which are shown here (Teddy Grahams and 100 Calorie Oreo Thin Crisps).

Food Portions and Weights Component

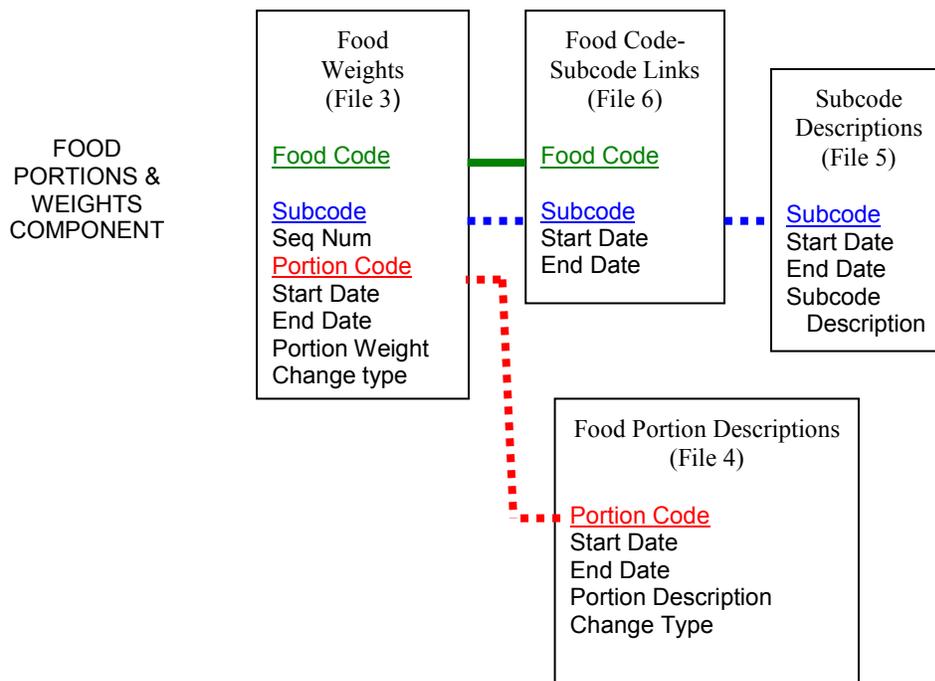
For each food in the FNDDS, there is a set of portion descriptions and weights for those portions. The Food Portions and Weights Component consists of four files:

- Food Weights
- Food Portion Descriptions
- Food Code-Subcode Links
- Subcode Descriptions

Figure 4 shows the following links:

- **Food code** links the Food Weights and Food Code-Subcode Links files, as well as other files in the database.
- **Portion code** links the Food Portion Descriptions and Food Weights files, as well as the FNDDS-SR Links file (a Nutrients Component file).
- **Subcode** links the Subcode Descriptions, Food Weights, and Food Code-Subcode Links files.

Figure 4. Food Weights file, Food Portion Descriptions file, Food Code-Subcode Links file, Subcode Descriptions file, and their links



Food weights

The Food Weights file includes the weights (in grams) for different portions of a particular food item.

This file contains over 30,000 food weights. Many weights are specific to brand name items. (The brand name information is in the Food Portion Descriptions file.)

Table 6. Format of Food Weights file†

| Field Name | Field Type | Description |
|----------------------|-----------------|--|
| Food code‡ | N 8* | A unique 8-digit number assigned to a particular main food description. |
| Subcode‡ | N 7* | Value may be zero; if present, a unique 7-digit number associated with a particular subcode description. |
| Seq num | N 2* | A sequence number (unique within a food code) used for ordering portion weights; a gap in a series of sequence numbers indicates that a previously used portion weight has been discontinued. |
| Portion code‡ | N 5* | A unique 5-digit number assigned to a particular portion description. |
| Start date | D (MM/DD/YYYY)* | Start and end dates that indicate the time period corresponding to the WWEIA data for which the record was used. |
| End date | D (MM/DD/YYYY) | |
| Portion weight | N 8.3 | Weight of food item for the portion indicated by portion code; all weights are in grams; weight of edible portion only is included; missing values for the portion code 90000 (quantity not specified) are indicated with -9 in this field^. |
| Change type | A 1 | Blank field unless a change has occurred in the weight record, indicated by a D (data change) or F (food change); indicated changes may have occurred prior to latest version of FNDDS. |

†See [table 3](#) for an explanation of the abbreviations and symbols used in this table.

^See ["Defaults Used for Coding Foods and Amounts in WWEIA."](#)

Food portion descriptions

This file contains common food portion descriptions that are used in coding portion sizes, such as:

Type of portion

Individual portion

Container or package

Brand name (when related to portion size)

Relative size

Household measure

Examples of portion descriptions

Slice, piece

Can, snack size

1 Hot Pocket, 1 McDonald's Sundae

Small, medium, large

Teaspoon, tablespoon, cup

Each portion description is identified by a unique 5-digit portion code. The same portion code and portion description can be used for many different foods.

Table 7. Format of Food Portion Descriptions file†

| Field Name | Field Type | Description |
|----------------------|-----------------|---|
| Portion code‡ | N 5* | A unique 5-digit number assigned to a particular portion description. |
| Start date | D (MM/DD/YYYY)* | Start and end dates that indicate the time period corresponding to the WWEIA data for which the record was used. |
| End date | D (MM/DD/YYYY) | |
| Portion description | A 120 | A description of an amount of food in terms that facilitate coding of portions. |
| Change type | A 1 | Blank field unless a change has occurred in the portion description, indicated by a D (data change) or F (food change); indicated changes may have occurred prior to latest version of FNDDS. |

†See [table 3](#) for an explanation of the abbreviations and symbols used in this table.

Subcode descriptions

A subcode description is associated with a specific food code and main food description and shares the same nutrient profile. Subcodes are used in the Food Portions and Weights component of the FNDDS for approximately 50 snack cake and candy food codes that have several different weights for a single portion description.

For example, the food code 53108200, "Cake, cupcake, chocolate, with icing or filling," includes 16 weights for the portion description code 63382, which represents "1 cupcake." Below are two examples:

- 25 grams (Drake's Yankee Doodles, subcode 1000233)
- 32 grams (Tastykake brand, subcode 1000231)

Subcodes were developed for these foods to facilitate food coding. Subcodes are not used with other foods because the number of brand name weights associated with individual food codes is smaller, and each has been given a unique portion description.

Table 8. Format of Subcode Descriptions file†

| Field Name | Field Type | Description |
|---------------------|-------------------|---|
| Subcode‡ | N 7* | A unique 7-digit number associated with a particular subcode description. |
| Start date | D (MM/DD/YYYY)* | Start and end dates that indicate the time period corresponding to the WWEIA data for which the record was used. |
| End date | D (MM/DD/YYYY) | |
| Subcode description | A 60 | A description for a specific food that has the same nutrient profile as a main food description but has its own unique weight data. |

†See [table 3](#) for an explanation of the abbreviations and symbols used in this table.

Food code-subcode links

Food code-subcode links document the associations between food codes and subcodes. A food code may be linked to multiple subcodes, and a subcode may be linked to multiple food codes. This file provides a quick way to list all subcodes for a particular food code, or all food codes for a particular subcode.

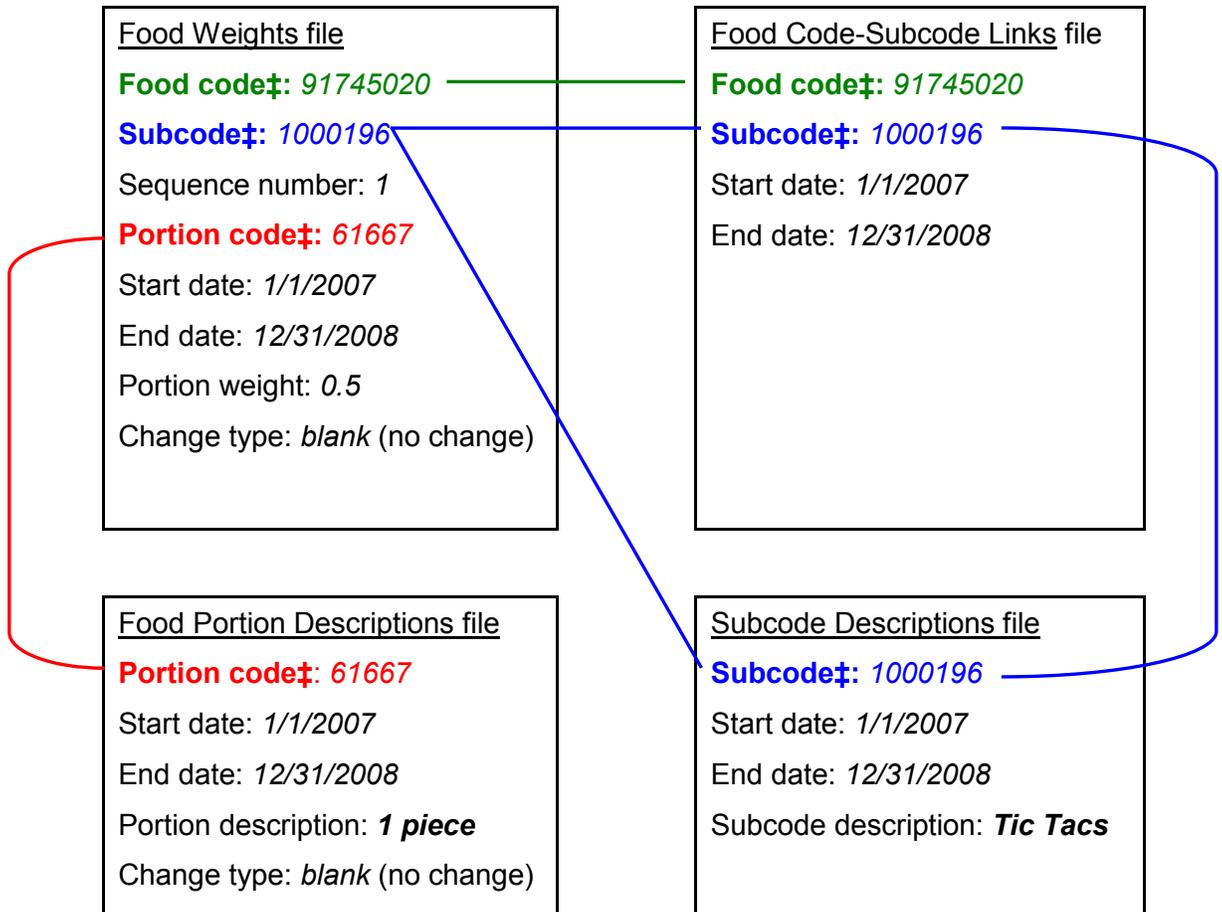
Table 9. Format of Food Code-Subcode Links file†

| Field Name | Field Type | Description |
|--------------------|-------------------|--|
| Food code ‡ | N 8* | A unique 8-digit number assigned to a particular main food description. |
| Subcode ‡ | N 7* | A unique 7-digit number associated with a particular subcode description. |
| Start date | D (MM/DD/YYYY) | Start and end dates that indicate the time period corresponding to the WWEIA data for which the record was used. |
| End date | D (MM/DD/YYYY) | |

†See [table 3](#) for an explanation of the abbreviations and symbols used in this table.

Examples of data records from the Food Portions and Weights Component files

The Main Food Description associated with the food code used in this example is "Hard candy."



Three linking fields are at work here:

1. **Food code** links the main food description "Hard candy" from the Food Descriptions Component to the Food Weights and Food Code-Subcode Links files.
2. **Subcode** links the Food Weights file and the Food Code-Subcode Links file to the Subcode Descriptions file.
3. **Portion code** links the Food Portion Descriptions file to the Food Weights file.

As a result, we can see that for a type of hard candy called "Tic Tacs," the weight of the portion "1 piece" is 0.5 grams.

Nutrients Component

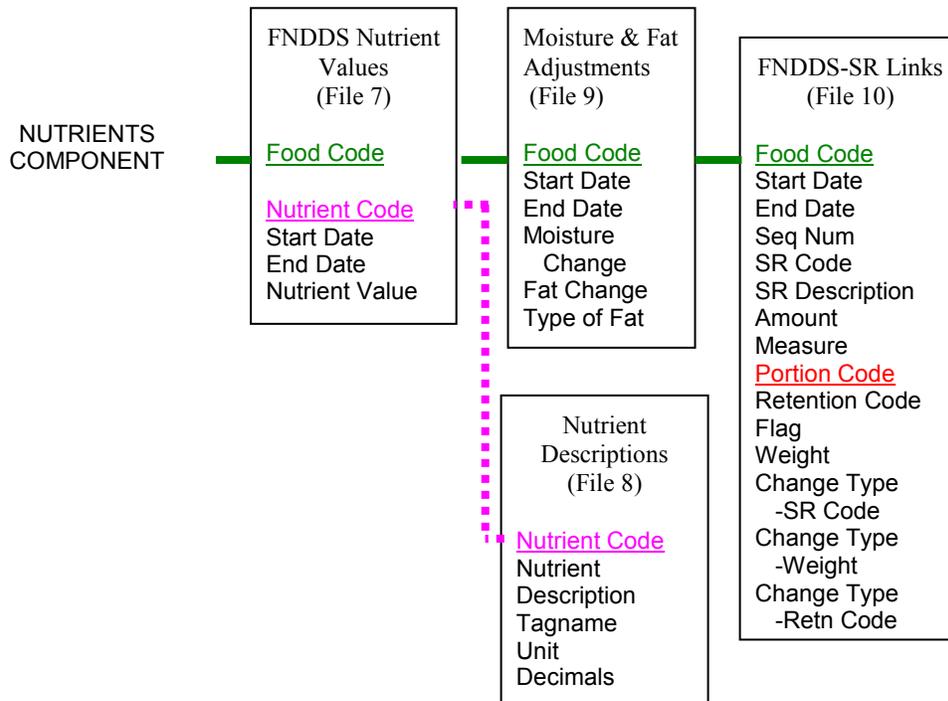
There are four files in the Nutrients Component:

- FNDDS Nutrient Values
- Nutrient Descriptions
- Moisture & Fat Adjustments
- FNDDS-SR Links

Figure 5 shows the following links:

- **Food code** links the FNDDS Nutrient Values file to the FNDDS-SR Links file and the Moisture & Fat Adjustments file, as well as to other files in the database.
- **Portion code** links the FNDDS-SR Links file to two of the Food Portions and Weights files (Food Weights and Food Portion Descriptions).
- **Nutrient code** links the Nutrient Descriptions file to the FNDDS Nutrient Values file.

Figure 5. FNDDS Nutrient Values file, Nutrient Descriptions file, FNDDS-SR Links file, Moisture & Fat Adjustments file, and their links



FNDDS nutrient values

The FNDDS Nutrient Values file provides a complete nutrient profile ([food energy and 64 nutrients](#)) for each food code. The nutrient values for FNDDS are based on data from the USDA National Nutrient Database for Standard Reference (SR). The nutrient codes and the number of decimal places to which values are expressed in the FNDDS Nutrient Values file are consistent with similar fields in SR release 22 (SR22). SR was developed and is maintained by USDA's Nutrient Data Laboratory (NDL).

Although the SR and FNDDS are similar, they were designed for different purposes and serve different needs (Bodner-Montville et al., 2006). SR serves as the standard for food composition information in the U.S. It is a compilation of data from many sources, including national samples of key food items (Haytowitz et al., 2002), and provides documentation about data sources and derivation of non-analytical (i.e., imputed) values. For analytical data, it provides many statistics including mean values, number of data points, standard errors, minimum and maximum values, lower and upper 95% error bounds, and statistical notes. SR22 contains values for up to 143 nutrients or food components for each food item; not all 143 components are present for all foods.

SR is not used directly in processing WWEIA for the following reasons. First, the survey uses a special food coding scheme that is not a part of SR. This food coding scheme has been used with USDA surveys for over 30 years, allowing the study of food consumption over time. It also forms the structure for maintaining food portion weights used by the survey. Second, this set of food codes contains many food items that are not included in SR. These foods are usually mixtures, such as beef goulash, or are food codes that may be used when survey respondents cannot be specific, e.g., "milk, not further specified," for when a respondent does not know if it was whole, reduced fat, or nonfat milk. Third, SR contains many nutrients for which data are incomplete i.e., nutrient values are missing and therefore would not be appropriate for estimating national intakes.

Data for about 2,900 items in SR22 were used to determine the values for the over 7,000 foods in the FNDDS 4.1. When any of those 2,900 items lacked analytical data for any FNDDS nutrient, the Nutrient Data Laboratory estimated the values from similar analyzed foods (Agricultural Research Service, Nutrient Data Laboratory, 2009). Source codes in the SR identify the estimated values.

Values for many items in FNDDS 4.1 (e.g., beef goulash) were calculated based on more than one of those 2,900 SR22 items. The specific SR items that were used to generate values for each survey food code in FNDDS 4.1, and their proportions, are identified in the FNDDS-SR Links file. The Moisture & Fat Adjustments file also contains information that was used in calculating the nutrient values.

Where salt is considered an optional component in a food, it was included in calculating the nutrient content of the food. An alternate file of sodium values with optional salt excluded from the sodium calculations is available on request. For determining sodium intakes for participants in the WWEIA, NHANES, either one or a combination of the two values may be used for home-prepared foods, based on responses to questions about salt use during the dietary interview.

Table 10. Format of FNDDS Nutrient Values file†

| Field Name | Field Type | Description |
|------------------------|-------------------|---|
| Food code ‡ | N 8* | A unique 8-digit number assigned to a particular main food description. |
| Nutrient code ‡ | N 5* | Identifies a nutrient. |
| Start date | D (MM/DD/YYYY)* | Start and end dates that indicate the time period corresponding to the WWEIA data for which the record was used. |
| End date | D (MM/DD/YYYY) | |
| Nutrient value | N 10.x | Amount of nutrient in 100 grams edible portion of the food; number of decimal places varies by nutrient, following conventions in SR. |

†See [table 3](#) for an explanation of the abbreviations and symbols used in this table.

Nutrient descriptions

This file contains the names (nutrient descriptions) and codes for nutrients included in the FNDDS Nutrient Values file. The nutrient codes, nutrient descriptions, units of expression, and number of decimal places to which values are expressed are consistent with similar fields in SR.

Table 11. Format of Nutrient Descriptions file†

| Field Name | Field Type | Description |
|-----------------------|-------------------|---|
| Nutrient code‡ | N 5* | Identifies a nutrient. |
| Nutrient description | A 45 | A description of a nutrient or food component. |
| Tagname | A 15 | The nutrient or food component name or “tag” assigned by INFOODS, the International Network of Food Data Systems, for international interchange of nutrient data (Food and Agriculture Organization, http://www.fao.org/infoods/tagnames_en.stm). |
| Unit | A 10 | The measurement unit in which values for the nutrient are expressed. |
| Decimals | N 1 | The number of decimal places to which the nutrient value is expressed; varies by nutrient, following conventions in SR. |

†See [table 3](#) for an explanation of the abbreviations and symbols used in this table.

Moisture & fat adjustments

The Moisture & Fat Adjustments file provides factors used to adjust amounts of moisture and fat during calculation of the nutrient values for some foods. These adjustments are made to account for changes that occur to food during cooking.

Table 12. Format of Moisture & Fat Adjustments file†

| Field Name | Field Type | Description |
|-------------------|-------------------|--|
| Food code‡ | N 8* | A unique 8-digit number assigned to a particular main food description. |
| Start date | D (MM/DD/YYYY)* | Start and end dates that indicate the time period corresponding to the WWEIA data for which the record was used. |
| End date | D (MM/DD/YYYY) | |
| Moisture change | N 5.1 | Increase or decrease in moisture, expressed as a percentage (plus or minus) of the total weight of the food; applied during nutrient value calculations. |
| Fat change | N 5.1 | Increase or decrease in fat, expressed as a percentage (plus or minus) of the total weight of the food; applied during nutrient value calculations. |
| Type of fat | N 8 | Type of fat (SR code or food code) used for calculating fat change. |

†See [table 3](#) for an explanation of the abbreviations and symbols used in this table.

FNDDS-SR links

This file provides information used to calculate FNDDS nutrient values. It documents the association between FNDDS foods and about 2,900 items in SR22.¹ Some foods are represented by a one-to-one link between an FNDDS code and the corresponding SR code, e.g., whole milk. FNDDS codes for food mixtures are usually linked to multiple SR codes. When multiple links exist, nutrient values were calculated according to the retention factor recipe calculation method (Powers and Hoover, 1989). For many commercial mixtures, links were estimated from label information. For other food mixtures, popular cookbooks were consulted to aid in constructing links.

The links for food mixtures were developed to estimate the nutrient content of foods, not to determine the intake of ingredients in recipes or mixtures. For example, for the FNDDS food code 28340660, “chicken or turkey vegetable soup, home recipe,” there are links to 12 different SR items, one of which is SR code (NDB No.) 11061, “beans, snap, green, frozen, boiled, drained.” Proportions of the 12 items were based on soup recipes from a popular cookbook. Sample persons who reported consuming home-made chicken or turkey soup may not have consumed green beans in their soups, or their soups may have included green beans, but not in the same proportion as in the recipe we chose to represent this food. Thus, the FNDDS-SR links document the basis for the nutrient values included in this database, not specific ingredients that were consumed. During food coding for WWEIA, some recipes were modified before nutrients were calculated to match more closely the food as described by the respondent. Modified food items are identified in the Individual Foods File2 in the WWEIA data release. Modified recipes are not included in this database.

Sometimes one FNDDS food is linked to another FNDDS item, instead of multiple SR codes, as a way of simplifying database maintenance. This type of linkage can be distinguished by the number of digits in the SR Code field – there are 8 digits for an FNDDS food code number and 4 or 5 digits for an SR code³.

¹ With few exceptions, the SR22 codes used in the FNDDS-SR Links file are available from the NDL website (online at <http://www.ars.usda.gov/nutrientdata>). For the exceptions that are not available from NDL, nutrient values can be obtained from the Food Surveys Research Group.

² For more information about the WWEIA, NHANES Individual Foods file and Total Nutrients file, see <http://www.ars.usda.gov/foodsurvey> and follow the links for What We Eat in America.

³ To match the SR Code field from the FNDDS with the NDB_No field in SR, it is necessary to add a leading zero to 4-digit SR codes (e.g., 4615 in the FNDDS-SR Links file is 04615 in SR22).

About retention codes and factors

Calculation of the nutrient value of a food must take into account any nutrient losses that occur as a result of cooking. A table of retention factors for calculating the amounts of nutrients that are retained after cooking was developed and is maintained by NDL (Agricultural Research Service, Nutrient Data Laboratory, 2006). Because nutrient losses vary by food and by cooking method, categories were created that are specific to a food type and cooking method (for example, "Chicken, broiled"). Each category is identified by a 4-digit retention code. For each retention code, there is a list of nutrient-specific retention factors. Each retention factor is the percent of the specific nutrient that remains in the food after it is prepared by the specified method. The retention codes are included in the FNDDS-SR links file to identify the set of retention factors that were applied during calculation of the FNDDS nutrient values for that food.

Table 13. Format of FNDDS-SR Links file†

| Field Name | Field Type | Description |
|----------------------|-------------------|---|
| Food code‡ | N 8* | A unique 8-digit number assigned to a particular main food description. |
| Start date | D (MM/DD/YYYY)* | Start and end dates that indicate the time period corresponding to the WWEIA data for which the record was used. |
| End date | D (MM/DD/YYYY)* | |
| Seq num | N 2* | A sequence number (unique within a food code and a time period) used for ordering SR codes and descriptions. |
| SR code | N 8 | May be a 4- or 5-digit SR code (called "NDB_No" in SR) or an 8-digit food code. |
| SR description | A 200 | Description of SR code or Main description of FNDDS food code. |
| Amount | N 11.3 | Number of measures or portions of SR code. |
| Measure | A 3 | Type of common volume or weight measure (such as cup, tablespoon, quart, fluid ounce, pound, gram) used to quantify amount of SR code; measure field may be blank. |
| Portion code‡ | N 5 | A unique 5-digit number assigned to a particular portion description; used in combination with SR code to calculate weight (gm) of SR item; value is 0 (not used) if measure = lb, oz, g, or mg. |
| Retention code | N 4 | Link to USDA Table of Nutrient Retention Factors, Release 6; retention code links to a description of the food category and preparation method; retention factors are expressed as a percentage of the nutrient retained. |
| Flag | N 2 | Signals a special condition: 2 = item not available, substitution used; SR description may not match SR code under this condition. other values = internal processing codes for FSRG use only. |
| Weight | N 11.3 | Weight of SR item (excluding refuse weight). |

– table continued on next page –

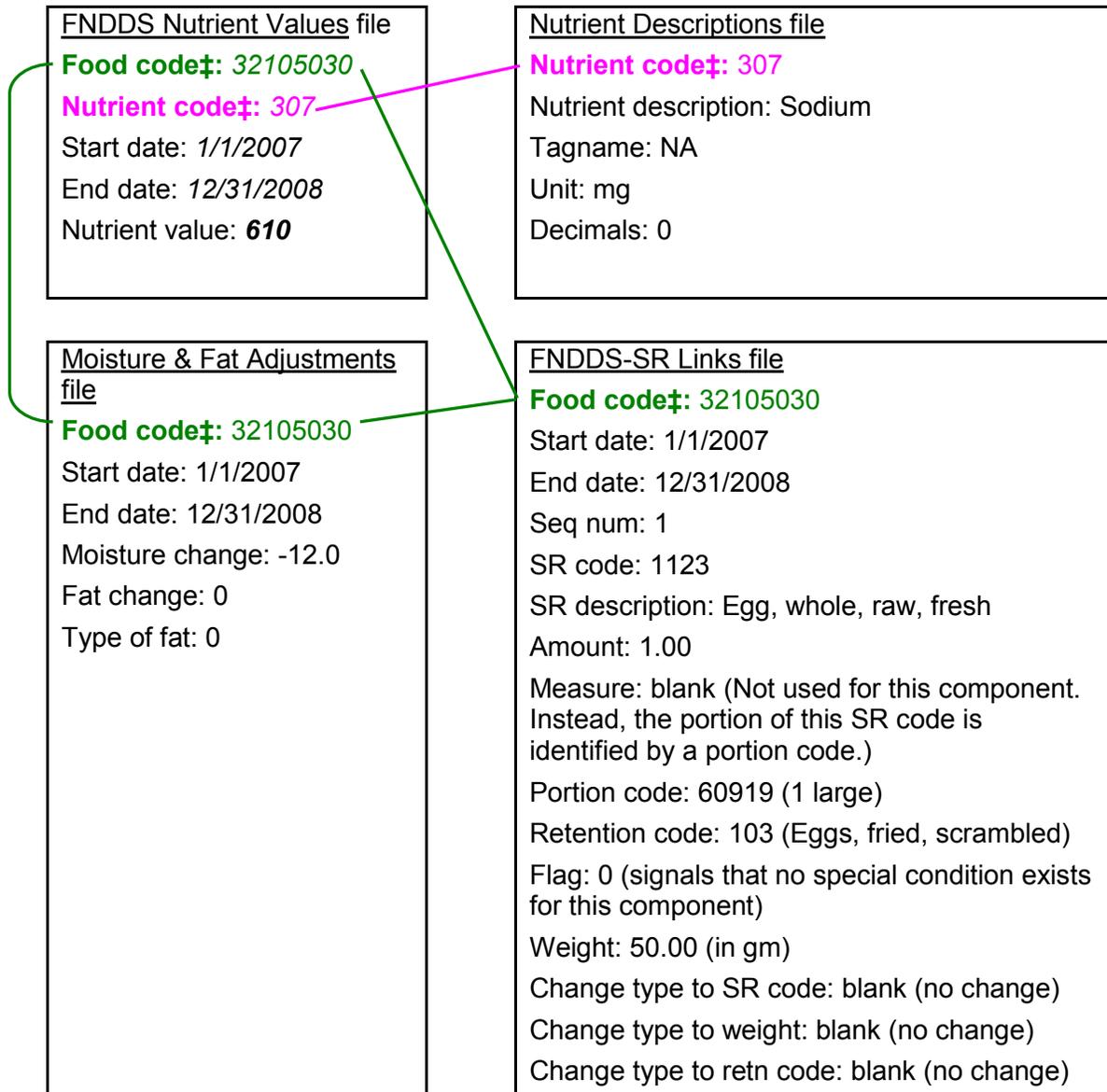
– table 13, continued –

| Field Name | Field Type | Description |
|--------------------------|-------------------|---|
| Change type to SR code | A 1 | Blank fields unless a change has occurred in the associated data field (SR code, weight, or retention code); changes are indicated by a D (data change) or F (food change); indicated changes may have occurred prior to the latest version of FNDDS. |
| Change type to weight | A 1 | |
| Change type to retn code | A 1 | |

†See [table 3](#) for an explanation of the abbreviations and symbols used in this table.

Example of data records from the Nutrients Component files

The food description associated with the food code in this example: "Egg omelet or scrambled egg, with ham or bacon" is found in the Main Food Description file. There are 5 records in the FNDDS-SR Links file that are used in calculating the nutrient values for this food. For the sake of simplicity, the illustration below shows only one of those records, the record for the egg used in the omelet. Similarly, for the FNDDS Nutrient Values and Nutrient Descriptions files, only the records associated with sodium are shown.



The nutrient code links the Nutrient Descriptions file with the FNDDS Nutrient Values file and indicates that there are 610 milligrams of sodium per 100 grams of this food.

The food code links the Moisture & Fat Adjustments file with the FNDDS-SR Links file (as well as with the FNDDS Nutrient Values file and other files in the database). The moisture change field indicates that a 12 percent moisture loss for this omelet must be applied to the total food weight.

In order to account for the nutrient losses that occurred as a result of cooking this omelet, the factors for retention code 0103 (Eggs, fried, scrambled) are applied to specific nutrient values for the egg (SR code 01123 = Egg, whole, raw, fresh).

Combining Data from Different Files in MS Access®

Since the FNDDS is a relational database, data from different files (called 'tables' in MS-Access®) usually must be combined in order to provide meaningful information. For example, when the data from the FNDDSNutVal table are viewed alone (as shown below), they do not immediately make sense:

| FNDDSNutVal | | | | |
|-------------|---------------|------------|------------|----------------|
| Food code | Nutrient code | Start date | End date | Nutrient value |
| 32105030 | 307 | 1/1/2007 | 12/31/2008 | 610 |

Table 10, which describes the format of the FNDDS Nutrient Values file, indicates that this record represents the amount of a nutrient in 100 grams edible portion of a food, but not which food or which nutrient. To understand the data, additional information is needed that is contained in other files. To know what the food code represents, the main food description from the MainFoodDesc table is required:

| MainFoodDesc | | | |
|--------------|------------|------------|--|
| Food code | Start date | End date | Main food description |
| 32105030 | 1/1/2007 | 12/31/2008 | Egg omelet or scrambled egg, with ham or bacon |

To know what the nutrient code represents, the nutrient description and unit from the NutDesc table is required:

| NutDesc | | | |
|---------------|----------------------|---------|------|
| Nutrient code | Nutrient description | Tagname | Unit |
| 307 | Sodium | NA | mg |

With information from the two additional tables, it is possible to interpret the data from the FNDDSNutVal table. In this case, the record indicates that there are 610 mg of sodium per 100 grams of "Egg omelet or scrambled egg, with ham or bacon."

In MS Access®, rather than looking back and forth from table to table, data from different tables can be connected or linked using a query or report. Both queries and reports can search and select data records based on specified criteria, provide a meaningful view of data, allow calculations and summarization, and provide answers to research questions. A query or report can also be saved to use again or can be modified to answer other questions.

Three sample queries and a sample report are included with the MS Access® release of the FNDDS. These are meant to be simply a starting point to explore the data files; they are not a tutorial for learning MS Access®. In going through the examples, keep in mind that there is usually more than one way to accomplish tasks in MS Access®; the samples show just a few possibilities. The samples can be used as templates to create other queries and reports.

Detailed descriptions of the sample report and sample queries are provided in [appendix D](#).

FOOD CODE NUMBERS, THE FOOD CODING SCHEME, AND FSRG-DEFINED FOOD GROUPS

The Main Food Descriptions file associates the primary (usually generic) description of a given food with a unique 8-digit food code. The food code is assigned according to a scheme that associates the first three or four digits of the code number with FSRG-defined food groups and subgroups. The first digit in the food code identifies one of nine major food groups:

- (1) milk and milk products
- (2) meat, poultry, fish, and mixtures
- (3) eggs
- (4) legumes, nuts, and seeds
- (5) grain products
- (6) fruits
- (7) vegetables
- (8) fats, oils, and salad dressings
- (9) sugars, sweets, and beverages

The second, third, and (sometimes) fourth digits of a food code identify increasingly more specific subgroups within the nine major food groups. The remaining digits are used for identification of particular foods within a numerical sequence. Most subgroups are identified by the first three digits, except for some subgroups in the Meat, Poultry, Fish, and Mixtures, and Sugar, Sweets, and Beverages section. Shown below is an example of a food item where the first four digits signify which groups the food item belongs to:

27116350 Stewed, seasoned, ground beef, Mexican style (Picadillo de carne de rez)

- The first digit (2) means this food item belongs in the **Meat, Poultry, Fish, and Mixtures** section.
- The first two digits (27) mean this item belongs in the **Meat, Poultry, Fish with nonmeat items** section.
- The first three digits (271) mean this food item is in the **Meat, Poultry, Fish in Gravy or Sauce or Creamed** section.
- The first four digits (2711) mean this food item is in the **Beef in Gravy or Sauce (tomato-based sauce; gravy; cream, white, or soup-based sauce; soy-based sauce; other sauce; Puerto Rican)** section.

The [food coding scheme](#) provides an outline of the major food groups and subgroups identified by the first 1 to 4 digits of the food code. The coding scheme is in [appendix B](#).

The [FSRG-defined food groups](#) that are used in reporting dietary intakes are in [appendix C](#), along with lists of the food codes that fall into each food group and subgroup.⁴

⁴ Researchers interested in reporting dietary intakes in terms of the food groups specified by the MyPyramid Food Guidance System reflecting recommendations based on the Dietary Guidelines for Americans, 2005, may download the MyPyramid Equivalent Database (MPED) from <http://www.ars.usda.gov/ba/bhnrc/fsrg>. MPED translates all the foods in the FNDDS into number of MyPyramid equivalents per 100 grams of the food by 32 MyPyramid food groups.

NOTES ABOUT FOODS IN THE DATABASE

Brand names

Brand names are included in the Main Food Descriptions file for many ready-to-eat cereals, infant formulas, candies, selected fortified bars, and energy drinks. These foods have unique food codes and also carry separate nutrient profiles in the Nutrients component of the database. Many brand names for other types of foods are included in the Additional Food Descriptions file to facilitate the selection of food codes for foods reported in WWEIA. Although items in the Additional Food Descriptions file do not have unique food codes, they are linked to specific codes as explained earlier under the section [Additional food descriptions](#). Much of the data in the Food Portions and Weights component of the database is also brand specific, identifying separate food weights by brand name.

Food intake files for WWEIA identify foods by food code only. For that reason, consumption of specific brands can be identified only for those foods with unique food codes, e.g., ready-to-eat cereals, infant formulas, candies, and some highly fortified foods.

Fortified foods

When the Main Description for a ready-to-eat cereal specifies a brand name (as described in the preceding section), the FNDDS Nutrient Values also reflect the specific fortification levels for that brand. Other foods (e.g., milk-and-cereal bars) may be represented in the database by a generic description linked to a nutrient profile that reflects fortification levels in one or more highly consumed brands.

Some common products are available in fortified and nonfortified versions. When experience has shown that most survey respondents are aware of the different versions and can report which one they consumed, the database includes separate food codes that are specific to the fortified versions. For example, the food code 61210220 is "Orange juice, canned, bottled, or in a carton," and 61210250 is "Orange juice, with calcium added, canned, bottled, or in a carton." When experience has shown that most survey respondents are not aware of different versions or can not report which one they consumed, only one food code is included in the database. For example, the food code 64104010, "Apple juice," represents products both with and without added vitamin C. The nutrient value for such products is determined based on market data.

Many of the newer, less common variations in fortification that exist on the market (e.g., orange juice with added zinc) are not differentiated in the database. Separate codes for product variations may be added to the database if they are reported more frequently in the future by survey respondents.

When values for foods containing flour are calculated from recipes, the flour is assumed to be enriched.

Fortified bars

FNDDS 3.0 contained four food codes and main food descriptions for fortified bars, two representing high-energy bars and two representing high-protein bars. FNDDS 4.1 contains six additional codes for fortified high energy and/or high protein bars. In addition, nine codes have been added for snack/cereal bars by brand name and variety. FSRG continues to track the specific types and brands of these bars that are being reported in WWEIA. New entries will be added to future releases of FNDDS to accommodate different types of bars as the frequency of reports for specific bars increases or if nutrient values diverge significantly from those in the database.

Water

Prior to NHANES 2005-2006, *total* amount of drinking water (i.e., tap water, plain bottled water, and unsweetened carbonated water) consumed was collected *after* the 24-hour recall and released in the Total Nutrients file. Since NHANES 2005-2006, all types of drinking water have been collected *during* the 24-hour recall. As a result, *each report* of water throughout the day was collected and coded as a separate intake item. As was done for 2005-2006, the water intake data for NHANES 2007-2008 will be released in the Individual Foods file.

Water as an addition to other foods or as an ingredient in mixed beverages has always been collected *during* the 24-hour recall. Water added as an ingredient in home or restaurant prepared foods (such as soups and reconstituted juices) is assumed to be tap water.

Revisions in the FNDDS-SR Links for purposes of estimating vitamin D values

Before new nutrients are added to FNDDS, the FNDDS-SR links are reviewed to ensure their appropriateness. For purposes of estimating vitamin D values, over 1,000 FNDDS-SR links for FNDDS 4.1 were revised to include ingredients fortified or not with vitamin D. For commercial products containing milk or margarine as ingredients (e.g., low fat plain waffle), links were revised to use unfortified versions of the two ingredients; while for products that are mainly home-made, links were revised to use fortified milk and a margarine composite of 85% unfortified and 15% fortified. For foods available in the retail market in both vitamin D-fortified and unfortified forms (cheese product, orange juice, fruit yogurt, selected margarines, soymilk, and rice milk), vitamin D values were calculated using composites, based on market share data.

DEFAULTS USED FOR CODING FOODS AND AMOUNTS IN WWEIA

Foods

In WWEIA, 24-hour recalls are conducted using the USDA Automated Multiple-Pass Method (AMPM), a computerized instrument that provides standardized questions for all types of foods. When a respondent is unable to answer all questions about a food, a food code is selected that contains the term "not specified" or "not further specified" in its description. Because the number of characters used in descriptions is limited, "not specified" is abbreviated "NS" and "not further specified" is abbreviated "NFS." For example, if a respondent reports milk but is unable to provide any additional information, the food code selected is 11100000, "Milk, NFS"; if a respondent reports ground beef but is unable to identify the percent lean of that ground beef, the food code selected is 21500100, "Ground beef or patty, cooked, NS as to percent lean."

Nutrient values and portion weight data for the NS or NFS food codes are developed using food production and supply statistics (when available), food consumption data from previous surveys, internal data on the frequency of reports during the current survey, information gathered from food industry publications and other sources, and the professional judgment of nutritionists and food specialists from FSRG and NDL. More research attention is given to those food codes that are considered to have more impact on survey data, such as food codes that are used more frequently to code intake data or that are used in the FNDDS-SR links for many other food codes.

Following are some examples of linkage development for NFS codes:

- The "Milk, NFS" code is used for approximately 2% of the survey reports of milk consumption in such situations as when respondents cannot provide the fat content of the milk they drank. "Milk, NFS" is also used as a component in the FNDDS-SR links for numerous other FNDDS foods that contain milk as part of the food mixture. The FNDDS food code for "Milk, NFS" is linked to multiple SR codes (whole milk, reduced-fat milk, lowfat milk, and nonfat milk), in proportions that reflect U.S. milk production statistics.
- "Vegetable oil, NFS" is another default food code used in the linkages for many other FNDDS food codes. The FNDDS food code for "Vegetable oil, NFS" is linked to multiple SR codes (soybean oil, canola oil, corn oil, olive oil, and peanut oil), in proportions based on retail sales data from the Institute of Shortening and Edible Oils and advice from the NDL food specialist for fats and oils.
- The link for "Bread, NFS" is to the SR code for white bread, which was by far the most frequently reported type of bread in previous surveys.
- "Cereal, ready-to-eat, NFS" is linked to the top reported breakfast cereals, in proportions of their frequency of reports in the past NHANES.
- Links for other NFS codes are based on information from the food industry (e.g., "Orange juice, NFS"), unpublished information about market availability (e.g., "Hot dog, NFS"), or both, tempered with the professional judgment of USDA nutritionists and food specialists.

The links for the top NFS codes are reviewed for each release of the FNDDS and revised as necessary to reflect the most current data.

Amounts

When a respondent in WWEIA can not describe the portion that was eaten, a portion description containing the phrase "Quantity not specified" (QNS) is chosen (portion codes 90000 to 90011). Because it is unusual for a respondent not to describe the amount of a food consumed, QNS values are not used frequently when coding food consumption data. For that reason, the FNDDS does not contain a QNS value for every food. In the Food Weights file, missing QNS values are identified with a -9 in the portion weight field for portion code 90000.

QNS values are usually based on a common measure of the food, but they do not necessarily represent the amount reported by most respondents. Database users should not assume that QNS values will accurately represent the average amount of a food consumed.

MULTI-YEAR VERSION OF FNDDS

Each release of the FNDDS is a subset of the multi-year (1994-2008) database maintained by FSRG. Each FNDDS release corresponds with a 2-year WWEIA data release cycle and is based on the version of SR that is current at the time it is generated. For example, FNDDS 4.1 covers the years 2007-2008 and is based on SR22.

The multi-year database was designed to track changes in foods and facilitate analysis of intake trends in the United States (Anderson et al., 2001). When a food has changed over time, the database may contain more than one record for the same food item, with different dates to indicate the different time periods when each value is valid. For example, the level of folate in many products changed in 1998 when folate fortification became mandatory in cereal grains subject to standards of identity. Separate records exist in the multi-year FNDDS Nutrient Values file for the different folate levels. The time period associated with each level is designated by the fields "start date" and "end date." In addition, as new nutrients are added to the FNDDS, they are given a start date of the beginning of the 2-year WWEIA, NHANES survey period. For example, records for total choline values have a start date of 1/1/2005 in the multi-year database, as choline was added for the NHANES 2005-2006 survey

Most changes that occur in the multi-year database are associated with changes in SR nutrient values. When nutrient values change in the SR for foods used in the FNDDS, NDL determines the classification of each change, i.e., data change versus food change.

Some changes to data values occur because a food actually changes, as in the case of new fortification levels or reformulation, or because a portion weight such as the weight for "1 package" has changed. Such changes are classified as food changes.

Other changes to data values occur because of improvements to the data. Improvements to nutrient values usually occur because of improved analytical procedures for determining the values, or because values are based on more representative samples of foods. Several thousand nutrient values have been revised over the past several years, largely due to improved food composition data generated by NDL's National Food and Nutrient Analysis Program, or NFNAP (Pehrsson et al., 2000). Such changes are classified as data changes. Values classified as data changes replace older values in the database and do not require

multiple records. It is valid to include those types of changed values in a database used to recalculate dietary intake data collected during a previous time period.

In the FNDDS, as in the multi-year database, many of the data files include start date and end date fields. For FNDDS 4.1, the start date for all records is 1/1/2007 and the end date for all records is 12/31/2008. Three data files (Food Weights, Food Portion Descriptions, and FNDDS-SR Links) also include “change type” fields that contain information about changes to data values. While these codes generally serve no purpose for a single version subset of the database such as FNDDS 4.1, they are included to keep the format consistent with the multi-version format.

The multi-year files are not included with the FNDDS releases, but can be provided to researchers under data sharing agreements. The multi-year database provides opportunities for research, for example:

- To investigate the real differences in nutrient intakes before and after fortification levels change.
- To re-analyze food intake data collected in earlier years, taking advantage of the improved data in a new version of the FNDDS, but maintaining the integrity of food values for the original time period (Ahuja, Goldman, and Perloff, 2006).

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APPENDIXES

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

| | |
|--|--|
| Food energy (kcal) | Vitamin A as retinol activity equivalents (µg) |
| Protein (g) | Retinol (µg) |
| Carbohydrate (g) | Carotenoids: |
| Fat, total (g) | Carotene, alpha (µg) |
| Alcohol (g) | Carotene, beta (µg) |
| | Cryptoxanthin, beta (µg) |
| | Lycopene (µg) |
| Sugars, total (g) | Lutein + zeaxanthin (µg) |
| Dietary fiber, total (g) | Vitamin E as alpha-tocopherol (mg) |
| Water (g) | Added vitamin E (mg) |
| | Vitamin D (D2+D3)(µg) |
| Saturated fatty acids, total (g) | Vitamin K as phylloquinone (µg) |
| Monounsaturated fatty acids, total (g) | Vitamin C (mg) |
| Polyunsaturated fatty acids, total (g) | Thiamin (mg) |
| Cholesterol (mg) | Riboflavin (mg) |
| | Niacin (mg) |
| Individual fatty acids: | Vitamin B-6 (mg) |
| 4:0 (g) | Folate, total (µg) |
| 6:0 (g) | Folate as dietary folate equivalents (µg) |
| 8:0 (g) | Folic acid (µg) |
| 10:0 (g) | Food folate (µg) |
| 12:0 (g) | Vitamin B-12 (µg) |
| 14:0 (g) | Added vitamin B-12 (µg) |
| 16:0 (g) | Choline, total (mg) |
| 18:0 (g) | |
| 16:1 (g) | Calcium (mg) |
| 18:1 (g) | Iron (mg) |
| 20:1 (g) | Magnesium (mg) |
| 22:1 (g) | Phosphorus (mg) |
| 18:2 (g) | Potassium (mg) |
| 18:3 (g) | Sodium (mg) |
| 18:4 (g) | Zinc (mg) |
| 20:4 (g) | Copper (mg) |
| 20:5 n-3 (g) | Selenium (µg) |
| 22:5 n-3 (g) | |
| 22:6 n-3 (g) | Caffeine (mg) |
| | Theobromine (mg) |

Other nutrients of public health interest, such as amino acids, trans fatty acids, and flavonoids, are not included in FNDDS 4.1 because data are missing for many of the 2,900 SR22 items used to generate the FNDDS nutrient values. Also, for some nutrients, information about retention during cooking or processing is not available. A nutrient is added to FNDDS when adequate analytical data and retention factors allow the necessary values to be derived.

Appendix B. Food Coding Scheme⁵

1 Milk and Milk Products

11 Milks and milk drinks

- 110 Milk, human
- 111 Milk, fluid (regular; filled; buttermilk; and dry reconstituted)
- 112 Milk, fluid, evaporated and condensed
- 113 Milk, fluid, imitation
- 114 Yogurt
 - 1148 Yogurt, baby food
- 115 Flavored milk and milk drinks, fluid
- 116 Milk-based meal replacements, fluid
- 117 Infant formulas, fluid, reconstituted concentrate, reconstituted dry, and ready-to-feed (milk-based formulas; soy-based formulas; therapeutic formulas)
- 118 Milk, dry, and powdered mixtures with dry milk, not reconstituted

12 Creams and cream substitutes

- 121 Sweet dairy cream
- 122 Cream substitutes
- 123 Sour cream

13 Milk desserts, sauces, gravies

- 131 Milk desserts, frozen
- 132 Puddings, custards, and other milk desserts
- 133 Milk desserts baby food
- 134 White sauces and milk gravies

14 Cheeses

- 140 Cheese, NS⁶ as to type
- 141 Natural cheeses
- 142 Cottage cheeses
- 143 Cream cheeses
- 144 Processed cheeses and cheese spreads
- 145 Imitation cheeses
- 146 Cheese mixtures
- 147 Cheese soups

⁵ The food coding scheme provides an outline of the major food groups and subgroups identified by the first three or four digits of the 8-digit food code. Most subgroups are identified by the first three digits, except for some subgroups in the Meat, Poultry, Fish, and Mixtures, and Sugar, Sweets, and Beverages sections.

⁶ NS = not specified. See section headed "Defaults Used for Coding Foods and Amounts in WWEIA."

2 Meat, Poultry, Fish, and Mixtures

20 Meat, NS as to type

200 Meat, NS as to type

21 Beef

210 Beef, NFS⁷

211 Beef steak

213 Beef oxtails, neckbones, short ribs, head

214 Beef roasts, stew meat, corned beef, beef brisket, sandwich steaks

215 Ground beef, beef patties, beef meatballs

216 Other beef items (beef bacon; dried beef; pastrami)

217 Beef baby food

22 Pork

220 Pork, NFS; ground, dehydrated

221 Pork chops

222 Pork steaks, cutlets

223 Ham

224 Pork roasts

225 Canadian bacon

226 Bacon, salt pork

227 Other pork items (spareribs; cracklings; skin; miscellaneous parts)

228 Pork baby food

23 Lamb, veal, game, other carcass meat

230 Lamb, NFS

231 Lamb and goat

232 Veal

233 Game

234 Lamb or veal baby food

24 Poultry

241 Chicken (breast; leg; drumstick; wing; back; neck or ribs; misc.)

242 Turkey

243 Duck

244 Other poultry

247 Poultry baby food

25 Organ meats, sausages and lunchmeats, and meat spreads

251 Organ meats and mixtures

2511 Liver

2512 Hearts

2513 Kidney

2514 Sweetbreads

2515 Brains

⁷ NFS = not further specified. See section headed "Defaults Used for Coding Foods and Amounts in WWEIA."

- 2516 Tongue
- 2517 Other variety meats
- 252 Frankfurters, sausages, lunchmeats, meat spreads
 - 2521 Frankfurters
 - 2522 Sausages
 - 2523 Luncheon meats (loaf)
 - 2524 Potted meat, spreads
- 26 Fish and shellfish**
 - 261 Finfish
 - 262 Other seafood
 - 263 Shellfish
- 27 Meat, poultry, fish with nonmeat items**
 - 271 Meat, poultry, fish in gravy or sauce or creamed
 - 2711 Beef in gravy or sauce (tomato-based sauce; gravy; cream, white, or soup-based sauce; soy-based sauce; other sauce; Puerto Rican)
 - 2712 Pork with gravy or sauce
 - 2713 Lamb and veal with gravy or sauce
 - 2714 Poultry with gravy or sauce (tomato-based sauce; gravy; cream, white, or soup-based sauce; soy-based sauce; other sauces; Puerto Rican)
 - 2715 Fish, shellfish with gravy or sauce
 - 2716 Miscellaneous meats with gravy or sauce
 - 272 Meat, poultry, fish with starch item (include white potatoes)
 - 2721 Beef with starch item (potatoes; noodles; rice; bread; Puerto Rican)
 - 2722 Pork with starch item
 - 2723 Lamb, veal, game with starch item
 - 2724 Poultry with starch item (potatoes; noodles; rice; bread)
 - 2725 Fish, shellfish with starch item
 - 2726 Miscellaneous meats with starch item
 - 273 Meat, poultry, fish with starch item and vegetables
 - 2731 Beef with starch and vegetable (potatoes; noodles; rice; bread; Puerto Rican)
 - 2732 Pork with starch and vegetable
 - 2733 Lamb, veal, game with starch and vegetable
 - 2734 Poultry with starch and vegetable (potatoes; noodles; rice; bread; Puerto Rican)
 - 2735 Fish, shellfish with starch and vegetable
 - 2736 Miscellaneous meats with starch and vegetable
 - 274 Meat, poultry, fish with vegetables (excluding white potatoes)
 - 2741 Beef with vegetable, no potatoes
 - 2742 Pork with vegetable, no potatoes
 - 2743 Lamb, veal, game with vegetable, no potatoes
 - 2744 Poultry with vegetables, no potatoes

- 2745 Fish, shellfish with vegetables, no potatoes
- 2746 Miscellaneous meats with vegetable, no potatoes
- 275 Sandwiches with meat, poultry, fish
 - 2751 Beef sandwiches
 - 2752 Pork sandwiches
 - 2754 Poultry sandwiches
 - 2755 Fish, shellfish sandwiches
 - 2756 Frankfurters, luncheon meat, potted meat sandwiches
 - 2757 Hors d'oeuvres, finger sandwiches
- 276 Meat, poultry, fish with nonmeat items baby food
 - 2761 Beef mixtures baby food
 - 2764 Poultry mixtures baby food
- 28 *Frozen and shelf-stable plate meals, soups, and gravies with meat, poultry, fish base; gelatin and gelatin-based drinks***
 - 281 Frozen or shelf-stable plate meals with meat, poultry, fish as major ingredient
 - 2811 Beef frozen or shelf-stable meals
 - 2812 Pork or ham frozen or shelf-stable meals
 - 2813 Veal frozen or shelf-stable meals
 - 2814 Poultry frozen or shelf-stable meals
 - 2815 Fish, shellfish frozen meals
 - 2816 Miscellaneous meat frozen or shelf-stable meals
 - 283 Soups, broths, extracts from meat, poultry, fish base
 - 2831 Beef soups
 - 2832 Pork soups
 - 2833 Lamb soups
 - 2834 Poultry, soups
 - 28345 Poultry cream soups
 - 2835 Fish, shellfish soups
 - 2836 Puerto Rican soups
 - 284 Gelatin and gelatin-based meal supplements
 - 285 Gravies from meat, poultry, fish base

3 Eggs

31 Eggs

- 311 Chicken eggs
- 312 Other poultry eggs

32 Egg mixtures

- 321 Egg dishes
- 322 Egg sandwiches
- 323 Egg soups
- 324 Meringues

33 Egg substitutes

- 330 Egg substitute, NS as to form
- 331 Egg substitute, from powdered mixture
- 332 Egg substitute, from frozen mixture
- 333 Egg substitute, from liquid mixture

35 Frozen plate meals with egg as major ingredient

- 350 Frozen plate meals with egg as major ingredient

4 Dry Beans, Peas, Other Legumes, Nuts, and Seeds

41 Legumes

- 411 Dried beans
- 412 Dried beans mixtures
- 413 Dried peas, lentils, and mixtures
- 414 Soybean derived products (excluding milks)
- 415 Frozen plate meals with legumes as major ingredient
- 416 Soups with legumes as major ingredient
- 418 Meat substitutes, mainly legume protein
- 419 Meat substitute sandwiches

42 Nuts, nut butters, and nut mixtures

- 421 Nuts
- 422 Nut butters
- 423 Nut butter sandwiches
- 424 Coconut beverages
- 425 Nut mixtures

43 Seeds and seed mixtures

- 431 Seeds

44 Carob products

- 441 Carob powder, flour
- 442 Carob chips, syrup

5 Grain Products

50 *Flour and dry mixes*

500 Flour and dry mixes

51 *Yeast breads, rolls*

510 Breads, rolls, NFS

511 White breads, rolls

512 Whole wheat breads, rolls

513 Wheat, cracked wheat breads, rolls

514 Rye breads, rolls

515 Oat breads

516 Multigrain breads, rolls

518 Other breads

52 *Quick breads*

521 Biscuits

522 Cornbread, corn muffins, tortillas

523 Other muffins, popovers

524 Other quick breads

53 *Cakes, cookies, pies, pastries*

531 Cakes

532 Cookies

533 Pies (fruit pies; pie tarts; cream, custard, and chiffon pies; miscellaneous pies; pie shells)

534 Cobblers, eclairs, turnovers, other pastries

535 Danish, breakfast pastries, doughnuts, granola bars

536 Coffee cake, not yeast

538 Cookies and bars, baby food

54 *Crackers and salty snacks from grain products*

540 Crackers, NS as to type

541 Sweet crackers

542 Low sodium crackers

543 Nonsweet crackers

544 Salty snacks from grain products

55 *Pancakes, waffles, french toast, other grain products*

551 Pancakes

552 Waffles

553 French toast

554 Crepes

555 Flour-water patties

556 Flour-milk patties

557 Rice flour cakes

558 Funnel cakes

- 56 *Pastas, cooked cereals, rice***
 - 561 Pastas
 - 562 Cooked cereals, rice
- 57 *Cereals, not cooked or NS as to cooked***
 - 570 Cereal, NS as to cooked
 - 571 Ready-to-eat cereals
 - 572 Ready-to-eat cereals
 - 573 Ready-to-eat cereals
 - 574 Ready-to-eat cereals
 - 576 Cereal grains, not cooked
 - 578 Cereals baby food
- 58 *Grain mixtures, frozen plate meals, soups***
 - 581 Mixtures, mainly grain, pasta, or bread
 - 582 Mixtures, mainly grain, pasta, or bread
 - 583 Frozen plate meals with grain mixture as major ingredient
 - 584 Soups with grain product as major ingredient
 - 585 Grain mixtures baby food
- 59 *Meat substitutes, mainly cereal protein***
 - 590 Meat substitutes, mainly cereal protein

6 Fruits

61 Citrus fruits, juices

- 611 Citrus fruits
- 612 Citrus fruit juices

62 Dried fruits

- 621 Dried fruits

63 Other fruits

- 631 Fruits, excluding berries
- 632 Berries
- 633 Mixtures of two or more fruits
- 634 Mixtures of fruits and nonfruit items

64 Fruit juices and nectars excluding citrus

- 641 Fruit juices, excluding citrus
- 642 Nectars
- 644 Vinegar

67 Fruits and juices baby food

- 671 Fruits and fruit mixtures baby food
- 672 Fruit juice and fruit juice mixtures baby food
- 673 Fruits with cereal baby food
- 674 Fruit desserts and fruit-flavored puddings and yogurt desserts baby food
- 675 Fruits with meat or poultry baby food
- 676 Fruits and vegetables mixtures baby food

7 Vegetables

71 *White potatoes and Puerto Rican starchy vegetables*

- 710 White potatoes, NFS
- 711 White potatoes, baked and boiled
- 712 White potatoes, chips and sticks
- 713 White potatoes, creamed, scalloped, au gratin
- 714 White potatoes, fried
- 715 White potatoes, mashed, stuffed, puffs
- 716 Potato salad
- 717 Potato recipes
- 718 Potato soups
- 719 Puerto Rican starchy vegetables

72 *Dark-green vegetables*

- 721 Dark-green leafy vegetables
- 722 Dark-green nonleafy vegetables
- 723 Dark-green vegetable soups

73 *Deep-yellow vegetables*

- 731 Carrots
- 732 Pumpkin
- 733 Squash, winter
- 734 Sweet potatoes
- 735 Deep-yellow vegetable soups

74 *Tomatoes and tomato mixtures*

- 741 Tomatoes, raw
- 742 Tomatoes, cooked
- 743 Tomato juices
- 744 Tomato sauces
- 745 Tomato mixtures
- 746 Tomato soups
- 747 Tomato sandwiches

75 *Other vegetables*

- 751 Other vegetables, raw
 - 7514 Raw vegetable mixtures
- 752 Other vegetables, cooked
- 753 Other vegetable mixtures, cooked
- 754 Other cooked vegetables, cooked with sauces, batters, casseroles
- 755 Olives, pickles, relishes (excluding tomatoes)
- 756 Vegetable soups

76 *Vegetables and mixtures mostly vegetables baby food*

- 761 Dark-green vegetables baby food
- 762 Deep-yellow vegetables baby food
- 764 Vegetables other than dark-green, deep-yellow, and tomato baby food

- 765 Vegetables with grain baby food
- 766 Vegetables with meat baby food
- 77 *Vegetables with meat, poultry, fish***
 - 771 White potato with meat, poultry, fish (mixtures)
 - 772 Puerto Rican starchy vegetable (viandas) mixtures
 - 773 Other vegetable mixtures
 - 775 Puerto Rican stews or soups with starchy vegetables (viandas)
- 78 *Mixtures mostly vegetables without meat, poultry, fish***
 - 781 Vegetable and fruit juice blends, 100% juice

8 Fats, Oils, and Salad Dressings

81 Fats

- 811 Table fats
- 812 Cooking fats
- 813 Other fats

82 Oils

- 821 Vegetable oils

83 Salad dressings

- 831 Regular salad dressings
- 832 Low-calorie and reduced calorie salad dressings

9 Sugars, Sweets, and Beverages

91 Sugars and sweets

- 911 Sugars and sugar-sugar substitute blends
- 912 Sugar replacements or substitute
- 913 Syrups, honey, molasses, sweet toppings
- 914 Jellies, jams, preserves
- 915 Gelatin desserts or salads
- 916 Ices or popsicles
- 917 Candies
- 918 Chewing gums

92 Nonalcoholic beverages

- 921 Coffee
- 922 Coffee substitutes
- 923 Tea
- 924 Soft drinks, carbonated
- 925 Fruit drinks
 - 9251 Fruit juice drinks and fruit flavored drinks
 - 9252 Group Discontinued as of 12/31/2004; previously described as "Fruitades and drinks, low calorie, NS as to vitamin C content"
 - 9253 Fruit juice drinks and fruit flavored drinks with high vitamin C
 - 9254 Fruit flavored drinks, made from powdered mix
 - 9255 Fruit juice drinks and fruit flavored drinks, low calorie
 - 9256 Sports drinks and thirst quencher beverages
 - 9257 Beverages, fluid replacement
 - 9258 Fruit juice drinks and fruit flavored drinks, fortified with calcium
- 926 Beverages, nonfruit
 - 9265 Beverages, nonfruit, fortified (include energy drinks)
- 927 Group Discontinued as of 12/31/2004; previously described as "Beverages, noncarbonated, without vitamin C, made from powdered mixes"
- 928 Nonalcoholic beers, wines, cocktails
- 929 Beverage concentrates, dry, not reconstituted

93 Alcoholic beverages

- 931 Beers and ales
- 932 Cordials and liqueurs
- 933 Cocktails
- 934 Wines
- 935 Distilled liquors

94 Water, noncarbonated

- 940 Water, not bottled
- 941 Water, bottled
- 942 Water, bottled, fortified

Appendix C. FSRG-Defined Food Groups – What Each Group Includes and Excludes and Food Codes in Each Group

Grain Products

Total grain products

Includes

Yeast breads, rolls, cereals, pastas, quick breads, pancakes, French toast, cakes, cookies, pastries, pies, crackers, popcorn, pretzels, corn chips, and mixtures having a grain product as a main ingredient.

Excludes

Grain products that are ingredients in food mixtures coded as a single item and tabulated under another food group. For example, noodles in tuna-noodle casserole are tabulated under Meat, Poultry, and Fish. Also, the bread in a grilled cheese sandwich coded as a single item is tabulated under Milk and Milk Products.

| Variable name | Food group | Food Code Number |
|---------------|----------------------|------------------|
| GRAIN0 | Total grain products | 5-- ----- |

Yeast breads and rolls

Includes

White, whole-wheat, "wheat," cracked-wheat, rye, pumpernickel, oatmeal, multigrain, and other yeast breads and rolls (excluding sweet rolls), bread stuffing, English muffins, bagels, and croutons.

| Variable name | Food group | Food Code Number |
|---------------|------------------------------|---|
| GRAIN1 | Total yeast breads and rolls | 510 ----- or 511 0100- thru 511 5900- or 511 8----- or 512 ----- thru 518 ----- |

Total cereals, rice, pasta

Includes

Macaroni, noodles, spaghetti, grits, oatmeal, rice, other cooked cereal grains, unsweetened and sweetened ready-to-eat cereals, baby food cereals, and mixtures of baby cereal and fruit.

| Variable name | Food group | Food Code Number |
|---------------|--------------------------|---------------------------|
| GRAIN2 | Total cereals and pastas | 56- ----- or 57- ----- |

Ready-to-eat cereals

Includes

Unsweetened and sweetened ready-to-eat cereals.

| Variable name | Food group | Food Code Number |
|---------------|----------------------|---|
| GRAIN21 | Ready-to-eat cereals | 571 ----- thru 574 ----- or 578 3010- |

Rice

Includes

White, brown, and wild rice.

| Variable name | Food group | Food Code Number |
|---------------|------------|--|
| GRAIN22 | Rice | 562 049-- thru 562 051-- or 562 0521- or 562 053-- thru 562 055-- or 576 03--- or |

Pasta

Includes

Macaroni, noodles, and spaghetti.

| Variable name | Food group | Food Code Number |
|---------------|------------|------------------|
| GRAIN23 | Pasta | 561 ----- |

Quick breads, pancakes, French toast

Includes

Biscuits, cornbread, tortillas, muffins, other quick breads, pancakes, waffles, and French toast.

Excludes

Quick-bread-type coffee cakes.

| Variable name | Food group | Food Code Number |
|---------------|--------------------------------------|---------------------------|
| GRAIN3 | Quick breads, pancakes, french toast | 52- ----- or 55- ----- |

Cakes, cookies, pastries, pies

Includes

Yeast-type sweet rolls, yeast- and crumb- or quick-bread-type coffee cakes, croissants, cakes, cookies, pies, cobblers, turnovers, Danish pastries, doughnuts, breakfast bars and tarts, granola bars, and sweet crackers.

| Variable name | Food group | Food Code Number |
|---------------|--------------------------------|---|
| GRAIN4 | Cakes, cookies, pastries, pies | 511 6---- or 53- - ---- or 541 0101- thru 541 0220- |

Crackers, popcorn, pretzels, corn chips

Includes

Mixtures having a grain product as a main ingredient, such as burritos, tacos, pizza, egg rolls, quiche, spaghetti with sauce, and rice and pasta mixtures; frozen meals in which the main course is a grain mixture; noodle and rice soups; and baby-food macaroni and spaghetti mixtures.

| Variable name | Food group | Food Code Number |
|---------------|---|--------------------------|
| GRAIN5 | Crackers, popcorn, pretzels, corn chips | 542 ----- thru 544 ----- |

Mixtures mainly grain

Includes

Mixtures having a grain product as a main ingredient, such as burritos, tacos, pizza, egg rolls, quiche, spaghetti with sauce, rice and pasta mixtures; frozen meals in which the main course is a grain mixture; noodle and rice soups; and baby-food macaroni and spaghetti mixtures.

| Variable name | Food group | Food Code Number |
|---------------|-----------------------|------------------|
| GRAIN6 | Mixtures mainly grain | 58- ----- |

Vegetables

Total vegetables

Includes

White potatoes, dark green and deep yellow vegetables, tomatoes, lettuce, green beans, corn, green peas, lima beans, and other vegetables; mixtures having vegetables as a main ingredient; and vegetable juices.

Excludes

Vegetables that are ingredients in food mixtures coded as a single item and tabulated under another food group. For example, potatoes or tomatoes in beef stew are tabulated under Meat, Poultry, and Fish.

| Variable name | Food group | Food Code Number |
|---------------|------------------|------------------|
| VEG0 | Total vegetables | 7-- ----- |

White potatoes

Includes

Baked, boiled, mashed, scalloped, and fried potatoes; potato chips; and mixtures having potatoes as a main ingredient, such as potato salad, stuffed baked potatoes, and potato soup.

| Variable name | Food group | Food Code Number |
|---------------|-----------------------|---|
| VEG1 | White potatoes, total | 710 ---- thru 717---- or 718 0---- or 764 2---- or 771 ----- |

Fried potatoes

Includes

French-fried, deep-fried, hash brown, and home-fried potatoes; potato skins; and potato chips.

| Variable name | Food group | Food Code Number |
|---------------|----------------|---|
| VEG11 | Fried potatoes | 712 ----- or 714 ----- or 715 05--- or 771 21--- |

Dark green vegetables

Includes

Raw and cooked broccoli and dark green leafy vegetables such as romaine, collards, mustard and turnip greens, kale, and spinach; mixtures having dark green vegetables as a main ingredient, such as broccoli with cheese sauce; and baby-food spinach.

| Variable name | Food group | Food Code Number |
|---------------|-----------------------|---|
| VEG2 | Dark-green vegetables | 72- ----- or 751 47--- or 761 ----- or 766 04000 |

Deep yellow vegetables

Includes

Raw and cooked deep yellow or orange vegetables such as carrots, pumpkin, winter squash, and sweet potatoes; mixtures having deep yellow vegetables as a main ingredient, such as peas and carrots and sweet potato casserole; and baby-food carrots, squash, and sweet potatoes.

| Variable name | Food group | Food Code Number |
|----------------------|------------------------|---|
| VEG3 | Deep-yellow vegetables | 73- ----- or 762 ----- or 766 02--- or 766 04500 |

Tomatoes

Includes

Raw and cooked tomatoes; tomato juice; catsup, chili sauce, salsa, and other tomato sauces; and mixtures having tomatoes as a main ingredient, such as tomato-based soups and tomato and corn coded as a single item.

| Variable name | Food group | Food Code Number |
|----------------------|-------------------|-------------------------|
| VEG4 | Tomatoes | 74- ----- |

Lettuce, lettuce-based salads

Includes

Lettuce and mixed salad greens; lettuce salad with assorted vegetables, cheese, or egg; and other lettuce-based salads.

| Variable name | Food group | Food Code Number |
|----------------------|-------------------|---|
| VEG5 | Lettuce | 751 13--- thru 751 14--- or 751 43--- thru 751 46--- or 751 48--- or 752 2005- |

Green beans

Includes

Raw or cooked green and yellow beans; mixtures having beans as a main ingredient, such as beans with tomatoes or onions, bean salad, and beans with cream or mushroom sauce; and baby-food green beans.

| Variable name | Food group | Food Code Number |
|---------------|-------------|--|
| VEG6 | Green beans | 751 018-- or 752 049-- thru 752 060-- or 753 02--- or 753 1525- or 754 03--- thru 754 04--- or 755 001-- or 756 02--- or 764 01--- or 764 02--- or 766 115- |

Corn, green peas, lima beans

Includes

Raw or cooked green peas; cooked corn and lima beans; mixtures having corn, green peas, or lima beans as a main ingredient, such as creamed corn, corn pudding, peas and onions, or pea soup; and baby-food corn and green peas.

Excludes

Dry lima beans and peas, which are tabulated under Legumes.

| Variable name | Food group | Food Code Number |
|---------------|------------------------------|--|
| VEG7 | Corn, green peas, lima beans | 751 020-- or 751 096-- or 751 20--- or 752 040--thru 752 041-- or 752 160-- thru 752 163-- or 752 1749- thru 752 1752- or 752 24--- or 753 01--- or 753 03--- or 753 1500- thru 753 1521- or 753 153-- or 754 02--- or 754 11--- or 754 165-- thru 754 170-- or 755 01--- or 756 040-- or 756 09--- or 764 05--- or 764 09--- thru 764 11--- or 765 02--- |

Other vegetables

Includes

Raw and cooked vegetables other than the following: white potatoes, dark green and deep yellow vegetables, tomatoes, lettuce, green beans, corn, peas, and lima beans and their mixtures.

Vegetable soups; pickles, olives, and relishes; mixtures having "other" vegetables as a main ingredient; baby-food vegetables and baby-food vegetable mixtures with meat.

| Variable name | Food group | Food Code Number |
|---------------|------------------|--|
| VEG8 | Other vegetables | 718 5---- or 719 ----- or 751 003 --- thru 751 010 -- or 751 025 --- thru 751 095 -- or 751 11 --- thru 751 12 -- or 751 15 --- thru 751 19 -- or 751 21 --- thru 751 42 -- or 752 006 --- thru 752 030 -- or 752 07--- thru 752 15-- or 752 1670-- thru 752 1740-- or 752 1771-- thru 752 2002-- or 752 201--- thru 752 230-- or 752 25--- thru 752 36-- or 753 06--- thru 753 11-- or 753 16--- thru 753 65-- or 754 00--- thru 754 01-- or 754 05--- thru 754 10-- or 754 120--- thru 754 160-- or 754 18--- thru 754 60-- or 755 002--- thru 755 005-- or 755 02--- thru |

| | | | |
|--|--|------------|------|
| | | 755 35-- | or |
| | | 756 01--- | thru |
| | | 756 03-- | or |
| | | 756 045--- | thru |
| | | 756 083-- | or |
| | | 756 1--- | thru |
| | | 756 5--- | or |
| | | 764 03--- | or |
| | | 764 07--- | or |
| | | 765 01--- | or |
| | | 766 01--- | or |
| | | 766 03--- | or |
| | | 766 050-- | thru |
| | | 766 110-- | or |
| | | 768 ----- | or |
| | | 772 ----- | or |
| | | 773 ----- | or |
| | | 775 ----- | or |
| | | 781 ----- | |

Fruits

Total fruits

Includes

Citrus fruits and juices, dried fruits, and other fruits; mixtures having fruit as a main ingredient; and fruit juices.

Excludes

Fruits that are ingredients in food mixtures coded as a single item and tabulated under another food group. For example, apples in apple pie are tabulated under Grain Products.

| Variable name | Food group | Food Code Number |
|----------------------|-------------------|--|
| FRUIT0 | Total fruits | 611 0--- thru 634 1---or 641 ---- thru 676 ---- |

Total citrus fruits and juices

Includes

Oranges and other citrus fruits, mixtures of orange juice and other citrus juices, and baby-food citrus juices.

Excludes

Citrus fruit juice drinks and citrus fruit flavored drinks such as lemonade, which are tabulated under Beverages.

| Variable name | Food group | Food Code Number |
|----------------------|--------------------------------|--|
| FRUIT1 | Total citrus fruits and juices | 611 ---- or 612 01-- thru 612 13--or 612 16--- or 672 0500- |

Citrus juices

Includes

Fresh, frozen, canned, or bottled grapefruit, lemon, lime, orange, and other citrus juices; blends of citrus juices; and baby-food citrus juices.

Excludes

Mixtures of citrus juices with noncitrus juices, which are tabulated under "noncitrus juices and nectars."

| Variable name | Food group | Food Code Number |
|----------------------|-------------------|---|
| FRUIT11 | Citrus juices | 612 01-- thru 612 13--or 612 16--- or 672 0500- |

Dried fruits

Includes

Dried apples, apricots, dates, prunes, raisins, and other dried fruits.

Excludes

Juices such as prune juice, which are tabulated under "other fruits, mixtures, and juices."

| Variable name | Food group | Food Code Number |
|----------------------|-------------------|-------------------------|
| FRUIT2 | Dried fruits | 621 ----- |

Total other fruits, mixtures, juices

Includes

Raw, frozen, cooked, and canned apples, bananas, melons, berries, and other fruits except citrus and dried fruit; mixtures that are mainly noncitrus fruit; noncitrus juices (including prune juice) and nectars; mixtures of citrus and noncitrus juices; and baby-food noncitrus fruits and juices, fruits with tapioca, and fruit desserts.

Excludes

Fruit juice drinks and fruit flavored drinks, which are tabulated under Beverages, and frozen fruit-juice bars and sorbets, which are tabulated under Sugars and Sweets.

| Variable name | Food group | Food Code Number |
|---------------|--------------------------------------|---|
| FRUIT3 | Total other fruits, mixtures, juices | 612 0050- or 612 14--- or 612 19--- thru 612 26--- or 631 01--- thru 631 49--- or 632 ----- or 633 ----- or 634 01--- thru 634 15--- or 641 0011- thru 642 2101- or 671 ----- or 672 02--- thru 672 04--- or 672 11--- thru 672 50--- or 673 ----- or 674 ----- or 675 ----- or 676 ----- |

Apples

Includes

Raw and cooked apples, applesauce, and baby-food applesauce.

| Variable name | Food group | Food Code Number |
|----------------------|-------------------|---|
| FRUIT31 | Apples | 631 0100- thru 631 0114- or 631 012-- thru 631 015-- or 671 02--- or 671 003-- |

Bananas

Includes

Raw and cooked bananas and baby-food bananas.

Excludes

The starchy vegetables called plantains or "green bananas," which are tabulated under Vegetables in the subgroup "other."

| Variable name | Food group | Food Code Number |
|----------------------|-------------------|--|
| FRUIT32 | Bananas | 631 070-- thru 631 073-- or 671 05--- or |

Melons and berries

Includes

Cantaloupe, honeydew melon, watermelon, blueberries, blackberries, raspberries, strawberries, and cranberries.

| Variable name | Food group | Food Code Number |
|----------------------|--------------------|---|
| FRUIT33 | Melons and berries | 631 0901- or 631 0961- or 631 10--- or 631 27--- or 631 49--- or 632 ----- |

Other fruits and mixtures, mainly fruit

Includes

Fruits other than citrus fruits, dried fruit, apples, bananas, melons, and berries; mixtures of noncitrus fruits and mixtures that are mainly noncitrus fruits coded as a single item such as fruit salad with salad dressing, marshmallow, or pudding; and baby-food noncitrus fruits and mixtures having fruit as a main ingredient.

| Variable name | Food group | Food Code Number |
|---------------|--|--|
| FRUIT34 | Other fruits and mixtures mainly fruit | 631 0115- or 631 016-- or 631 02--- thru 631 05--- or 631 074-- or 631 097-- or 631 11--- thru 631 26--- or 631 29--- thru 631 48--- or 633 ----- or 634 01--- thru 634 15--- or 671 0010- or 671 0020- or 671 01--- or 671 04--- or 671 06--- or 671 08--- thru 671 14--- or 673 ----- or 674 ----- or 675 ----- 676 ----- |

Noncitrus juices and nectars

Includes

Fruit juices, nectars, and baby-food juices other than citrus; and mixtures of citrus juices with noncitrus juices.

Excludes

Fruit juice drinks and fruit flavored drinks, which are tabulated under Beverages.

| Variable name | Food group | Food Code Number |
|---------------|------------------------------|--|
| FRUIT35 | Noncitrus juices and nectars | 612 0050- or 612 14--- or 612 19--- thru 612 26--- or 641 0011- thru 642 2101- or 672 02--- thru 672 04--- or 672 11--- thru 672 50--- |

Milk and Milk Products

Total milk and milk products

Includes

Milk and milk drinks, yogurt, milk desserts, and cheese
 Fluid and whipped cream, half-and-half, sour cream, and milk sauces and gravies
 are included in this total but not in any of the following subgroups.

Excludes

Butter and nondairy sweet cream and sour cream substitutes, which are tabulated
 under Fats and Oils.
 Milk and milk products that are ingredients in food mixtures coded as a single item
 and tabulated under another food group. For example, cheese on pizza is tabulated
 under Grain Products.

| Variable name | Food group | Food Code Number |
|---------------------|---------------------------------|--|
| MILK0 And MILK0C | Total Milk and milk products | 111 ----- or 112 ----- or 113 4----- or 114 ----- or 115 ----- or 116 ----- or 117 1----- or 117 4----- or 118 ----- or 119 4010- or 121 ----- or 123 1----- or 123 202-- or 123 5----- or 13- ----- or 14- ----- |

Total milk, milk drinks, yogurt

Includes

Fluid milk and yogurt. Flavored milk and milk drinks, meal replacements with milk, milk-based infant formulas, and unreconstituted dry milk and powdered mixtures are included in this total but not in any of the following subgroups.

| Variable name | Food group | Food Code Number |
|---------------|---------------------------------|---|
| MILK1 | Total milk, milk drinks, yogurt | 111 ----- or 112 ----- or 114 1---- thru 114 8---- or 115 ----- or 116 ----- or 117 1---- or 117 4---- or 118 ----- or 119 4010- |

Total fluid milk

Includes

Fluid whole, low-fat, skim, and acidophilus milk; buttermilk; reconstituted dry milk; evaporated milk; and sweetened condensed milk.

| Variable name | Food group | Food Code Number |
|---------------|------------------|---------------------------|
| MILK11 | Total fluid milk | 111 ----- or 112 ----- |

Whole milk

Includes

Whole fluid milk, low-sodium whole milk, and reconstituted whole dry milk.

| Variable name | Food group | Food Code Number |
|----------------------|-------------------|---|
| MILK111 | Whole milk | 111 1100- thru 111 1115- or 111 141-- or 111 16--- or 111 211-- |

Low-fat milk

Includes

Reduced fat (2 percent), low-fat (1 percent) milk, buttermilk (reduced fat, and low-fat), acidophilus milk, low-fat lactose-reduced fluid milk, and reconstituted low-fat dry milk.

| Variable name | Food group | Food Code Number |
|----------------------|-------------------|---|
| MILK112 | Lowfat milk | 111 1116- or 111 12--- or 111 142-- or 111 1430- or 111 1431- or 111 1433- or 111 1510- or 111 212-- or 111 22--- |

Skim milk

Includes

Skim or nonfat fluid milk, lactose-reduced fluid nonfat milk, nonfat buttermilk, and reconstituted nonfat dry milk.

| Variable name | Food group | Food Code Number |
|----------------------|-------------------|---|
| MILK113 | Skim milk | 111 1117- or 111 13--- or 111 1432- or 111 1500- or 111 213-- |

Yogurt

Includes

Plain, flavored, and fruit-variety yogurt.

Excludes

Frozen yogurt, which is tabulated under "milk desserts."

| Variable name | Food group | Food Code Number |
|----------------------|-------------------|----------------------------|
| MILK2 | Yogurt | 114 1----- thru 114 8----- |

Milk desserts

Includes

Ice cream, imitation ice cream, ice milk, sherbet, frozen yogurt, and other desserts made with milk, such as pudding, custard, and baby-food pudding.

| Variable name | Food group | Food Code Number |
|----------------------|-------------------|---|
| MILK3 | Milk desserts | 114 5----- thru 114 6----- or 131 ----- or 132 ----- or 133 ----- |

Cheese

Includes

Natural hard and soft cheeses, cottage cheese, cream cheese, processed cheese and spreads, imitation cheeses, and mixtures having cheese as a main ingredient, such as cheese dips and cheese sandwiches coded as a single item.

| Variable name | Food group | Food Code Number |
|----------------------|-------------------|-------------------------|
| MILK4 | Cheese | 14- ----- |

Meat, Poultry, and Fish

Total meat, poultry, and fish

Includes

Beef, pork, lamb, veal, game, organ meats, frankfurters, sausages, luncheon meats, poultry, fish, shellfish, and mixtures having meat, poultry, or fish as a main ingredient.

Excludes

Meat, poultry, and fish that are ingredients in food mixtures coded as a single item and tabulated under another food group. For example, pepperoni on pizza is tabulated under Grain Products. Meat gravies and unflavored gelatin are included in this total but not in any of the following subgroups.

| Variable name | Food group | Food Code Number |
|----------------------|------------------------------|-------------------------|
| MEAT0 | Total meat, poultry, fish | 2-- ----- |

Beef

Includes

All cuts (including ground), corned beef, beef bacon, pastrami, and baby-food beef.

Excludes

Organ meats, frankfurters, sausages, and luncheon meats.

| Variable name | Food group | Food Code Number |
|----------------------|-------------------|-------------------------|
| MEAT1 | Beef | 21- ----- |

Pork

Includes

All cuts (including ground); pickled, smoked, and cured pork; ham; pork roll; bacon; salt pork; pig's feet; and pork rinds.

Excludes

Organ meats, frankfurters, sausages, and luncheon meats.

| Variable name | Food group | Food Code Number |
|---------------|------------|--------------------------------------|
| MEAT2 | Pork | 220 --- thru 227 --- or 228 1---- |

Lamb, veal, game

Includes

Lamb, veal, goat, venison, and other game.

Excludes

Organ meats, frankfurters, sausages, and luncheon meats.

| Variable name | Food group | Food Code Number |
|---------------|------------------|---|
| MEAT3 | Lamb, veal, game | 230 ----- or 231 ----- or 232 ----- or 233 10--- thru 233 21--- or 233 2230- thru 233 4510- 234 ----- |

Organ meats

Includes

Liver, tripe, gizzards, and other organ meats.

| Variable name | Food group | Food Code Number |
|---------------|-------------|------------------|
| MEAT4 | Organ meats | 251 ----- |

Frankfurters, sausages, luncheon meats

Includes

Frankfurters, sausages, and luncheon meats made from beef, pork, ham, veal, game (deer bologna), chicken, and turkey; and baby-food meat sticks.

| Variable name | Food group | Food Code Number |
|---------------|--|---|
| MEAT5 | Frankfurters, sausages luncheon meats | 200 0009- or 228 2000- or 233 2210- or 247 05--- thru 247 06--- or 252 ----- |

Total poultry

Includes

Chicken, turkey, duck, cornish game hen, and baby-food chicken and turkey.

Excludes

Organ meats (giblets), frankfurters, sausages, and luncheon meats.

| Variable name | Food group | Food Code Number |
|---------------|---------------|--|
| MEAT6 | Total poultry | 241 ----- or 242 ----- or 243 ----- or 244 ----- or 247 01--- thru 247 03--- |

Chicken

Includes

Only chicken.

Excludes

Organ meats (giblets).

| Variable name | Food group | Food Code Number |
|---------------|------------|---------------------------|
| MEAT61 | Chicken | 241 ----- or 247 01--- |

Fish and shellfish

Includes

Finfish; shellfish, such as clams, crabs, lobster, oysters, scallops, and shrimp; and other seafood.

| Variable name | Food group | Food Code Number |
|---------------|--------------------|------------------|
| MEAT7 | Fish and shellfish | 26- ----- |

Mixtures mainly meat, poultry, fish

Includes

Mixtures having meat, poultry, or fish as a main ingredient, such as chicken cacciatore, beef loaf, chili con carne, venison stew, hash, tuna salad, corn dog, chicken soup; frozen meals in which the main course is a meat, poultry, or fish item; meat, poultry, or fish sandwiches coded as a single item (for example, cheeseburger on a bun); and baby-food meat and poultry mixtures.

| Variable name | Food group | Food Code Number |
|---------------|-------------------------------------|--|
| MEAT8 | Mixtures mainly meat, poultry, fish | 27- ----- or 281 ----- thru 283 ----- |

Eggs; Legumes; Nuts and Seeds; Fats and Oils; Sugars and Sweets

Eggs

Includes

Whole eggs; egg whites; egg yolks; egg substitutes; and mixtures having egg as a main ingredient, such as omelets, egg salad, or egg sandwiches coded as a single item.

Excludes

Eggs that are ingredients in food mixtures coded as a single item and tabulated under another food group. For example, eggs in baked goods are tabulated under Grain Products.

| Variable name | Food group | Food Code Number |
|----------------------|-------------------|-------------------------|
| EGG0 | Eggs | 3-- ----- |

Legumes

Includes

Cooked dry beans, peas, and lentils; mixtures having legumes as a main ingredient, such as baked beans or lentil soup; soybean-derived products, such as soy-based baby formulas, tofu, soy sauce, and soy-based meal replacements; and meat substitutes that are mainly vegetable protein.

Excludes

Peanuts, which are tabulated under Nuts and Seeds.
Legumes that are ingredients in food mixtures coded as a single item and tabulated under another food group. For example, beans in tacos are tabulated under Grain Products.

| Variable name | Food group | Food Code Number |
|----------------------|-------------------|--|
| LEGUME0 | Legumes | 41- ----- or 113 1----- thru 113 3----- or 117 2----- |

Nuts and seeds

Includes

Unroasted, roasted, and honey-roasted nuts and peanuts; coconut; peanut butter; peanut butter sandwiches coded as a single item; nut mixtures; and unroasted and roasted seeds.

Excludes

Chocolate-covered nuts, which are tabulated under Sugars and Sweets in the subgroup "candy."

Nuts and seeds that are ingredients in food mixtures coded as a single item and tabulated under another food group. For example, nuts in baked goods are tabulated under Grain Products.

| Variable name | Food group | Food Code Number |
|---------------|----------------|--------------------------|
| NUTSEED0 | Nuts and seeds | 42- ----- thru 44- ----- |

Total fats and oils

Includes

Table fats, cooking fats, vegetable oils, salad dressings, nondairy cream substitutes, tartar sauce, and other sauces that are mainly fat or oil.

Excludes

Fats and oils that were ingredients in food mixtures coded as a single item and tabulated under another food group. For example, fats or oils used to fry chicken are tabulated under Meat, Poultry, and Fish. Also, mayonnaise in coleslaw is tabulated under Vegetables.

| Variable name | Food group | Food Code Number |
|---------------|---------------------|---|
| FAT0 | Total fats and oils | 8-- ----- or 122 ----- or 123 201-- |

Table fats

Includes

Butter, margarine, imitation margarine, margarine-like spreads, blends of butter with margarine or vegetable oil, and butter replacements.

| Variable name | Food group | Food Code Number |
|---------------|------------|------------------|
| FAT1 | Table fats | 811 ----- |

Salad dressings

Includes

Regular and reduced- and low-calorie salad dressings and mayonnaise.

| Variable name | Food group | Food Code Number |
|---------------|-----------------|------------------|
| FAT2 | Salad dressings | 83- ----- |

Total sugars and sweets

Includes

Sugar, sugar substitutes, syrups, honey, sweet toppings, frostings, sweet sauces, jellies, jams, preserves, fruit butters, marmalades, gelatin desserts, ices, fruit bars, popsicles, candy (including dietetic sweets), and chewing gum.

Excludes

Sugars that were ingredients in food mixtures coded as a single item and tabulated under another food group. For example, sugar in baked goods is tabulated under Grain Products. Sugar in carbonated soft drinks is tabulated under Beverages.

| Variable name | Food group | Food Code Number |
|---------------|-------------------------|---|
| SUGAR0 | Total sugars and sweets | 634 2---- thru 634 3---- or 91- ----- |

Sugars

Includes

White sugar, brown sugar, saccharin, aspartame, and other sugar substitutes.

| Variable name | Food group | Food Code Number |
|----------------------|-------------------|---------------------------|
| SUGAR1 | Sugars | 911 ----- or 912 ----- |

Candy

Includes

All types of candy (including dietetic sweets), chocolate-covered nuts, chocolate chips, fruit leather, and chewing gum.

| Variable name | Food group | Food Code Number |
|----------------------|-------------------|---------------------------|
| SUGAR2 | Candy | 917 ----- or 918 ----- |

Beverages

Total beverages

Includes

Alcoholic and nonalcoholic beverages.

Excludes

Plain tap water and noncarbonated bottled water.

Beverages that are ingredients in food mixtures coded as a single item and tabulated under another food group. For example, wine in beef burgundy is tabulated under Meat, Poultry, and Fish.

| Variable name | Food group | Food Code Number |
|----------------------|-------------------|---------------------------|
| BEV0 | Total beverages | 92- ----- or 93- ----- |

Total alcoholic beverages

Includes

Wine, beer, ale, liqueurs, cocktails, other mixed drinks, and distilled liquors.

| Variable name | Food group | Food Code Number |
|----------------------|---------------------------|--|
| BEV1 | Total alcoholic beverages | 931 01--- thru 931 02--- or 932 ----- thru 935 ----- |

Wine

Includes

Wine, light wine, and mixtures made with wine, such as wine coolers.

Excludes

Nonalcoholic wine, which is tabulated under "nonalcoholic beverages."

| Variable name | Food group | Food Code Number |
|---------------|------------|------------------|
| BEV11 | Wine | 934 ----- |

Beer and ale

Includes

Beer, ale, and light (lite) beer.

Excludes

"Near beer," which is tabulated under "nonalcoholic beverages."

| Variable name | Food group | Food Code Number |
|---------------|--------------|--------------------------|
| BEV12 | Beer and ale | 931 01--- thru 931 02--- |

Total nonalcoholic beverages

Includes

Coffee, tea, fruit juice drinks and fruit flavored drinks, and soft drinks. Near beer and nonalcoholic wine are included under this total but not in any of the following subgroups.

| Variable name | Food group | Food Code Number |
|---------------|------------------------------|------------------|
| BEV2 | Total nonalcoholic beverages | 92- ----- |

Coffee

Includes

Decaffeinated and regular coffee made from ground or instant coffee, coffee mixes, and coffee substitutes.

| Variable name | Food group | Food Code Number |
|---------------|------------|---|
| BEV21 | Coffee | 921 ----- or 922 01--- thru 922 03--- or 922 9---- |

Tea

Includes

Decaffeinated and regular tea obtained ready to drink or made from leaves or from instant tea mixes with or without lemon, sugar, or artificial sweetener; and herb and other teas.

| Variable name | Food group | Food Code Number |
|---------------|------------|---|
| BEV22 | Tea | 922 04--- or 922 05--- or 923 ----- |

Total fruit juice drinks and fruit flavored drinks

Includes

Regular and low-calorie fruit juice drinks and fruit flavored drinks, including those made from powdered mix and frozen concentrate.

Excludes

Fruit juices, which are tabulated under Fruits, and carbonated fruit drinks, which are tabulated under "carbonated soft drinks."

| Variable name | Food group | Food Code Number |
|---------------|--|---|
| BEV23 | Total fruit juice drinks and fruit flavored drinks | 925 ----- or 927 ----- or 929 ----- |

Regular fruit juice drinks and fruit flavored drinks

Includes

All fruit juice drinks and fruit flavored drinks except low-calorie and low-sugar types.

| Variable name | Food group | Food Code Number |
|---------------|--|---|
| BEV231 | Regular fruit juice drinks and fruit flavored drinks | 925 1011- thru 925 1061- or 925 1065- thru 925 1211- or 925 3---- or 925 4101- or 925 4102- or 925 4110- or 925 4200- or 925 4400- or 925 6000- or 925 6010- or 925 8205- or 925 8210- or 925 8211- or 927 3100- or 927 5100- or 929 001- or 929 003- |

Low-calorie fruit juice drinks and fruit flavored drinks

Includes

Low-calorie and low-sugar fruit juice drinks and fruit flavored drinks

| Variable name | Food group | Food Code Number |
|---------------|--|---|
| BEV232 | Low-calorie fruit juice drinks and fruit flavored drinks | 925 2---- or 925 4104- or 925 4112- or 925 5---- or 925 8200- or 927 4100- or 929 0020- or 929 0030- |

Total carbonated soft drinks

Includes

Regular and low-calorie carbonated soft drinks, such as colas, fruit-flavored and cream sodas, ginger ale, root beer; carbonated soft drinks containing fruit juice; carbonated fruit juice drinks; sweetened and unsweetened carbonated water. Soft drinks not specified as either regular or low calorie are tabulated here but not in either of the following subcategories.

| Variable name | Food group | Food Code Number |
|---------------|------------------------------|------------------|
| BEV24 | Total carbonated soft drinks | 924 ----- |

Regular carbonated soft drinks

Includes

All carbonated soft drinks except unsweetened and sugar-free types.

| Variable name | Food group | Food Code Number |
|---------------|--------------------------------|---|
| BEV241 | Regular carbonated soft drinks | 924 1011- or 924 1031- or 924 1033- or 924 1034- or 924 1036- or 924 1039- or 924 1041- or 924 1051- or 924 1055- or 924 1061- or 924 1071- or 924 1081- or 924 1151- or 924 1152- or 924 1601- or 924 1701- or 924 3100- or 924 3200- or 924 3300- |

Low-calorie carbonated soft drinks

Includes

Unsweetened and sugar-free carbonated soft drinks, and unsweetened carbonated water.

| Variable name | Food group | Food Code Number |
|---------------|------------------------------------|---|
| BEV242 | Low calorie carbonated soft drinks | 924 0010- or 924 1021- or 924 1025- or 924 1030- or 924 1032- or 924 1035- or 924 1037- or 924 1040- or 924 1042- or 924 1052- or 924 1056- or 924 1062- or 924 1072- or 924 1082- or 924 1161- or 924 1162- |

Water

| Variable name | Food group | Food Code Number |
|---------------|-------------|---|
| WATER1 | Plain water | 940 0000- thru 940 0010- or 941 0010- |

Appendix D. Sample Report and Sample Queries Using FNDDS Files in MS Access®

One sample report and three sample queries are included with the MS Access® release of FNDDS 4.1. These are meant to be simply a starting point for your exploration of the data files; they are not a tutorial for learning MS Access®. Going through the examples, keep in mind that there is usually more than one way to accomplish tasks in MS Access®; the samples show just a few possibilities. The samples can be used as templates to create other queries and reports.

Note to new users of MS Access®: Start MS Access®. Click on "File," then choose "Open." Locate on the computer the file FNDDS2.mdb and select it, then click "Open." FNDDS 4.1 will open in a window (the database window) inside the main MS Access® window.

On left hand side of the database window, there is a list labeled "Objects." Select "Queries" to see the list of queries or "Reports" to see the report. With switching between queries and reports, the buttons on the database window's toolbar also change.

Queries – The "Open" button in the database window toolbar allows viewing of the datasheet. The "Design" button allows viewing or modifying of the format.

Reports – The "Preview" button in the database window toolbar allows viewing of the report. The "Design" button allows viewing or modifying of the format.

Once a query or report is open, switching between views occurs by clicking on the MS Access® "View" menu and selecting the desired view.

Sample Report

The sample report, "FNDDS – Nutrient list," simply lists the data from the NutDesc table (excluding the field Tagname). This provides a quick reference list of the nutrient code, nutrient description, unit of expression, and number of decimal places for nutrient values.

Sample Queries

The sample queries together perform a 3-step process to calculate and display certain nutrient values for a particular group of foods. The first time these queries are run (and again after any modifications to the query design), the steps should be performed in sequence: Open the Step1 query, run it, save the query/datasheet file, and repeat for each step.

Background planning for sample query

The 3-step example is written to display data for the group of foods whose codes start with “27” or “28”, which is the number range for food mixtures containing meat, poultry and fish (see appendix B, "Food Coding Scheme").

The nutrients selected for display include energy, carbohydrate, total fat, protein, total saturated fatty acids, and total polyunsaturated fatty acids. These are identified in the query grid by their nutrient codes (208, 205, 204, 203, 606, and 646, respectively), found by looking at the NutDesc file or printing the “FNDDS – Nutrient list” report.

SelectNutrients-Step 1

This query calculates the amounts of selected nutrients per all portions for selected foods.

Data is combined from 5 tables – MainFoodDesc, FoodWeights, FoodPortionDesc, FNDDSNutVal, and NutDesc.

A criteria statement in the food code field is used to select from the more than 7,000 food codes in the MainFoodDesc table. The criteria statement is:

like “27” or like “28*”*

This selects the codes and descriptions that represent items in the groups “Meat, poultry, fish with nonmeat items” and “Frozen and shelf-stable plate meals, soups, and gravies with meat, poultry, fish base; gelatin and gelatin-based drinks.”

The food code selects all the portions and gram weights for those foods from the FoodWeights table, excluding any “Quantity not specified” portions where the weight is missing (denoted by a -9 value.) The portion code links the FoodWeights and FoodPortionDesc tables to provide the text descriptions for the portions.

The food code also selects the specified nutrient values per 100 grams from the FNDDSNutVal table. The nutrient code links the FNDDSNutVal table to the NutDesc table to provide text descriptions for the nutrient codes.

To calculate nutrients per portion, a column was inserted between "Portion description" and "Unit." A calculated field was defined as:

*NutrientPerPortion: [Portion weight] * [Nutrient value] / 100*

Sort order is set to "ascending" for the food code, portion description, and nutrient code fields. This ensures that the resulting datasheet will list records in a consistent order and data will be grouped, with all data for a food code shown together. At this interim step, the data are not yet listed in the final desired order.

After the Step1 query is run, the resulting datasheet holds 15,162 records. The large number of records reflects the presence of six records (one for each of the selected nutrients) for each of the multiple portions that exist for each food code. At this interim step of the overall calculations, the nutrient values are left unrounded.

Note: Criteria can be changed for any of the fields to make the query more or less selective. Criteria changes may affect the time it takes for the Step1 query (and the subsequent queries) to run. For example, if the food code and nutrient code criteria are removed, the resulting datasheet will include records for all of the more than 7,000 FNDDS food codes and the more than 30,000 portion weights, with 65 nutrients (food energy included) for each. The queries will take much longer to run if all those records are included.

SelectNutrients-Step 2

This query uses the results of Step1 and changes the listing of nutrient values from rows to columns.

- a) A crosstab query is used to rearrange the nutrient data from multiple rows of records to multiple columns.
- b) The data to be kept in rows (food code, main food description, and portion description) are identified in the "Total" row as "Group By" and in the "Crosstab" row as "Row Heading."
- c) Nutrient description is set in the "Total" row as "Group By" and in the "Crosstab" row as "Column Heading."
- d) The calculated field NutrientPerPortion is identified in the "Crosstab" row as the "Value" to be displayed in the appropriate nutrient column.
- e) Sort order is set to "ascending" for the food code and portion description fields so that the resulting datasheet will list records in a consistent order and data will be grouped as expected, with all data for a food code shown together.
- f) After the query is run, the resulting datasheet holds 2,527 records, with one record for each portion of each food code. The nutrient columns are in alphabetical order by nutrient description (which is not necessarily the desired order). At this interim step of the overall calculations, the nutrient values are left unrounded.

SelectNutrients-Step 3

This query uses the results of Step2 and rearranges nutrient columns into the desired order, assigns captions (abbreviated column headings) to some nutrient descriptions, and rounds the nutrient values.

- a) Column captions are assigned for 'Carbohydrate' (Carb), 'Fatty acids, total polyunsaturated' (Pfat), and 'Fatty acids, total saturated' (Sfat).
- b) Sort order is again set to "ascending" for the food code and portion description fields so that the resulting datasheet will continue to list records in a consistent order and data will be grouped as expected, with all data for a food code shown together.
- c) After the query is run, the resulting datasheet holds 2,527 records; one record for each portion of each food code (same as for Step2.) The nutrient columns are reordered. At this final step of the calculations, nutrient values are rounded to the appropriate number of decimal places (as listed in the NutDesc table).

Appendix E. Explanations of Selected Terms

Additional food description – A secondary description associated with a specific food code and its main description; shares the same nutrient profile and portion weights.

Change type code – A letter signifying the type of change (data change (D) or food change (F)) to a value.

Data change -- A type of change to a value, represented by “D” (for data improvement) in the change type field.

End date -- Last date when a record was available for processing WWEIA data. Most FNDDS files include two date fields (Start date and End date) indicating the time period corresponding to the WWEIA data for which a record was used.

Fat change -- A factor applied during the calculation of a food's nutrient values in order to adjust nutrients for the amount of fat gained or lost during cooking. Expressed as a percentage, plus or minus, of the total food weight.

FNDDS-SR links -- A file which documents the SR codes, along with information applicable to each code, that are used to calculate FNDDS nutrient values. Many FNDDS food codes that represent food mixtures have multiple SR links.

Food change -- A type of change to a value, represented by “F” (for food change) in the change type field. A food change represents a real change to a food. Date fields designate the start and end point for the value. Relevant to the multi-year database.

Food code -- A unique 8-digit number assigned to a FNDDS main food description.

Main food description -- Primary description for a food, identified by a unique 8-digit food code.

Moisture change -- A factor applied during the calculation of a food's nutrient values in order to adjust nutrients for the amount of moisture gained or lost during cooking. Expressed as a percentage, plus or minus, of the total food weight.

NFS or NS -- Abbreviation for “not further specified” or “not specified.” Food codes containing NFS or NS in the description are used when a respondent can not provide any details about a food.

Nutrient code -- A unique 5-digit number assigned to a nutrient.

Nutrient description -- The description (nutrient name) associated with a unique nutrient code.

Portion code -- A unique 5-digit number assigned to a portion description.

Portion description -- A description of an amount of food identified by a unique portion code.

Portion weight -- The weight (in grams) of a portion, indicated by a portion code.

Retention code -- A 4-digit number representing a set of retention factors (expressed as a percentage of nutrients retained). Retention factors are used to calculate the amount of nutrients retained in a food after cooking.

Start date -- Beginning date when a record was available for processing WWEIA data. Most FNDDS files include two date fields (Start date and End date) indicating the time period corresponding to the WWEIA data for which a record was used.

Subcode -- A unique 7-digit number assigned to a subcode description.

Subcode description -- A description associated with a specific food code and its main description; shares the same nutrient profile but has its own unique portion descriptions and weights.

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