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National Household Food Acquisition and Purchase Survey (FoodAPS)

Nutrient Coding Overview

The OMB clearance number for FoodAPS is 0536-0068. The data were collected by the U.S. Department of Agriculture under authority of U.S.C, Title 7, Section 2026 (a)(1).

Information about the entire data collection, including instructions on how to request access to the data, may be found at <http://www.ers.usda.gov/foodaps>.

For further information contact: FoodAPS@ers.usda.gov

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1. Introduction

In FoodAPS, food items were reported for both food-at-home (FAH) and food-away-from-home (FAFH) acquisitions. Event or acquisition-level information is provided in the **faps_fahevent** (FAH events) and the **faps_fafhevent** (FAFH events) datasets. The item-level information is provided for FAH items in the **faps_fahitem** dataset and for FAFH items in the **faps_fafhitem** dataset.

This document provides an overview of the processes used to assign macro- and micronutrient and Food Pattern Equivalent (FPE) values for items in the FoodAPS survey and describes a food grouping system developed by ERS. These nutrient data are provided in the **faps_fahnutrients** and **faps_fafhnutrients** datasets, respectively. The nutrient files were developed to measure total macro- and micronutrients acquired as well as to quantify food acquisitions using the Health Eating Index (HEI) score.¹ Unlike other surveys, such as the National Health and Nutritional Examination Survey (NHANES), that measure the nutritional quality of foods consumed over 24 hours, the FoodAPS survey was designed to collect information on foods acquired. As such, many foods obtained are in a raw or uncooked form. Rather than assume how individuals prepared the food, ERS aimed to obtain the nutrient content and FPE values of the as-purchased form of each food.

2. Description of Source Nutrient Databases

The nutrient coding process involved several datasets developed by the USDA's Agriculture Research Service.

These are:

- **National Nutrient Database for Standard Reference (SR)** – SR provides the foundation for Food and Nutrient Database for Dietary Studies (FNDDS) and several other nutrient databases. Foods in SR are combined using “recipes”

¹ The HEI summarizes how closely an individual's dietary intake adheres to the dietary patterns recommended in the Dietary Guidelines for Americans (Guenther et al., 2013). Researchers have used the metric to score not only food consumption, but also the U.S. food supply (Reedy et al., 2010; Krebs-Smith et al., 2010) and shopping baskets or purchases (Volpe and Okrent, 2012).

to construct the foods in FNDDS. SR26 was used for FAH items that were not in FNDDS (for example, dry mixes and spices and seasonings) (USDA ARS, 2013).

- **Food and Nutrient Database for Dietary Studies (FNDDS)** – FNDDS releases correspond to the 2-year releases of the National Health and Nutrition Examination Survey. FNDDS provides nutrient values for 65 nutrients and food components on a per-100-gram basis (USDA ARS, 2014).² At the time the FoodAPS nutrient data were being finalized, the FNDDS 2011-12 was the most recent release, and served as the primary source of nutrient data. For some foods, the best food code match was to a discontinued code that appeared in the previous FNDDS release (FNDDS 5.0, 2009-10).
- **Food Patterns Equivalents Database (FPED)** – The FPED provides amounts of 37 USDA food pattern components on a per-100-gram basis for foods in FNDDS (Bowman et al., 2014). The FPED is updated and released with each new release of FNDDS. FPED 2011-12 was the most current version at the time these data were constructed and served as the primary source of food patterns equivalents (FPEs) data.
- **Food Patterns Equivalents Ingredients Database (FPID)** – The FPID provides food patterns equivalents data for many, but not all, of foods in the SR database (Bowman et al., 2014). FPID information was only assigned to an SR code if it was used as input into one of the recipes that make up an FNDDS food code. This means that there are several SR codes that do not have corresponding FPID codes.
- **Fourth School Nutrition Dietary Assessment Study (SNDA-IV)** – SNDA-IV was used to estimate nutrients, FPEs, and grams for items likely obtained from reimbursable school lunch and breakfast meals (Crepinsek et al., 2012).
- **What We Eat in America (WWEIA) Food Categories** – Each 8-digit FNDDS code can be grouped into broader food categories (USDA and ARS, 2015).

² FNDDS is designed for use with food consumption data. Some food codes include descriptions about parts of the food that were eaten—for example, the skin of chicken or the peel of a potato. Users should interpret these descriptions as the food being “acquired with” the part of the food.

The first digit of the food category classifies foods into very broad groups, the first two digits refine from there, and the 4 digit codes are the most refined WWEIA grouping in the data. The WWEIA categories were amended to allow sorting of the 5-digit SR codes and new food codes developed for FoodAPS into the same categories based on Mathematical Policy Research's (Mathematica's) and ERS's judgment.

Table 1 summarizes how these databases relate to one another. The macro- and micronutrient databases are linked to the respective FPE and Food Category databases in each row.

Table 1. Datasets in each row can be linked to each other to link nutrients to other information about a food

Type of food code	Source of macro and micronutrients	Source of food pattern equivalents	Process used to link to WWEIA food categories
4- to 5-digit code	SR	FPID (subset of SR)	Manually assigned by Mathematica or ERS
8-digit code	FNDDS	FPED (all FNDDS)	Crosswalk by FNDDS codes
9-digit code	SNDA-IV	SNDA-IV	Manually assigned by Mathematica or ERS
10-digit code	Study-created using SR and FNDDS	Study created using FPID and FPED linked to SR and FNDDS	Manually assigned by Mathematica or ERS

3. Summary of Nutrient Coding

A primary objective of appending nutrient data to FoodAPS items was to assess the diet quality of foods acquired and compare differences across demographic and socioeconomic subgroups. The measure of diet quality chosen for this purpose is the 2010 Healthy Eating Index (HEI), which measures diet quality in terms of conformance with Federal dietary guidance. The HEI score ranges from 0 to 100 and is based on 12 components, including 9 adequacy components (e.g., whole fruit, whole grains, and

dark green and orange vegetables) and 3 moderation components (e.g. empty calories, sodium, and refined grains). Components are measured using a density approach to set standards, such as per 1,000 calories or as a percent of calories. The 2010 HEI captures the key recommendations of the 2010 Dietary Guidelines and has been used to assess the diet quality of the U.S. population and subpopulations, in evaluating interventions, in dietary patterns research, and to evaluate various aspects of the food environment (Guenther et al., 2013).

Micro, macro, and caloric information on each food item acquired is needed to calculate component densities and HEI scores, as is information on the FPEs, such as servings of whole grains, for each item acquired. The FNDDS, SR, and SNDA data were used to obtain caloric, macro-, and micronutrient data. Each food item in the FNDDS data is represented by an 8-digit code and corresponding caloric, macro-, and micronutrient data per 100 grams of the food. The SR data also contain codes, typically 5 digits, for each food as well as the caloric, macro and micro nutrient information per 100 grams. The SR foods are generally considered “ingredients” that go into making the 8-digit foods reported in the FNDDS foods, although for some single-ingredient foods, there is a direct link between FNDDS and SR foods.

Two additional datasets were used to obtain food group information for each food: the Food Patterns Equivalents Database (FPED) and the Food Patterns Ingredients Database (FPID). Both datasets provide the food group content—such as ounces of whole grains, servings of whole fruit, and calories from added sugars—for 100 grams of each food in FNDDS (FPED) and SR (FPID). There was also a nutrient module to SNDA data, which included micro- and macronutrient information as well as FPE values.

Because FNDDS includes only foods reported as having been consumed, it does not include many raw or uncooked foods. The SR data provides nutrient value for many raw and uncooked foods, as well as for many “ingredients” that get mixed together to form mixed dishes that appear in the FNDDS data. However, not all the foods in the SR data are assigned FPID values. As such, matching items to food codes was limited by the extent to which there was an appropriate match with FPID information.

It is important to note that, while these nutrient data were developed to allow researchers to construct HEI scores, HEI scores were not calculated by Mathematica or ERS because the appropriate level of aggregations (such as weekly versus daily or all acquisitions versus only foods purchased at supermarkets) and the best way to deal with missing quantities will vary across research questions. For information and suggestions about how to use the HEI in research appropriately, please see the National Cancer Institute's guidance (<http://epi.grants.cancer.gov/hej/tools.html>).

Finally, the WWEIA Food Categories are included to allow users to classify foods into food groups corresponding to the USDA Food Plans (<http://www.cnpp.usda.gov/USDAFoodPlansCostofFood>) and more refined groupings. ARS assigns each FNDDS code a Food Category. Mathematica and ERS assigned SR and other food codes to Food Categories (see table 1).

3.1. FAH, Summary of Data Processing

The linking of FAH items to nutrient and food pattern data was conducted in two major steps. First, the FoodAPS contractor (Mathematical Policy Researcher, Mathematica) developed a process to sort items and then to link food items to nutrient data based on how they were sorted. ERS then conducted a review of Mathematica's matches and edited matches when necessary. The final nutrient data for FAH items are stored in the **faps_fahnutrients** dataset.

3.1.1. Contractor process to match FoodAPS food items to nutrient and FPE data.

Mathematica used a number of approaches to match each reported food to nutrient and FPE data using the SR/FPID and FNDDS/FPED datasets. The FAH items were sorted into one of five coding groups (See the *FAH Item Codebook* for details about how FAH items were reported. Please note, however, that Mathematica did not provide ERS information to indicate which one of these five categories each item fell into. The five coding groups are as follows:

1. Items with Universal Product Codes (UPCs) that matched to the IRI product dictionary (except meat and milk)
2. Items with scanned or assigned Food Book barcodes

3. Meat and milk items (however reported)
4. Items listed on Blue pages and items with UPCs that matched the Nielsen product dictionary (but not IRI), excluding milk and meat
5. Items reported on saved receipts, excluding milk and meat.

The IRI product dictionary sorts each UPC-coded item into groups using four classification variables—Department, Aisle, Category, and Type—with Type being the most specific. Additional product attributes can also be linked to each UPC. These classification variables provide the structure for most of Mathematica’s nutrient coding process. The process used by Mathematica for each coding group is described below.

3.1.1.1. Coding group 1 – UPC IRI items

For the items in coding group 1 (matched to IRI data directly by the UPC code), Mathematica used the IRI classification variables along with the detailed product attributes for each UPC-coded item to assign each food to an 8-digit (FNDDS) or 5-digit (SR) code.³ When matching, Mathematica prioritized the as-purchased form of the food that also had FPE values in FPED or FPID. There were some cases where the best match did not have associated FPE data. For some produce items, two food codes were assigned. An SR food code was assigned so that accurate refuse and micro- and macronutrient data could be obtained for the exact produce item, and a second FPED/FPID food code (FOODCODEFPED) was assigned so that FPE data could be obtained, using a similar food. When two food codes were assigned, both are provided in the **faps_fahnutrients** data file.

3.1.1.2. Coding group 2 – Food Book barcode items

Items that had a barcode from the Food Book were assigned food codes based on the standardized item descriptions assigned to each barcode.

³ SR codes are four and -five digits long. The searchable online SR database (<http://ndb.nal.usda.gov/ndb/search>) stores these codes as character values, so 4-digit codes need to be entered with the leading zero. However, in FoodAPS, all food codes store numeric values, and leading zeros are not retained for SR codes.

3.1.1.3. Coding group 3 – all meat and milk items

For meat and milk items matched to the IRI UPC database, food codes were assigned based only on item descriptions (not classification variables or IRI UPC attribute variables). For meat items with unspecific descriptions, assumptions were made and default food codes were assigned to identify the form of meat (cooked versus raw), type of meat, and other characteristics specified in the USDA databases. In general, most meat items were assumed to be raw unless there were words or phrases in the item description that indicated or implied the item was cooked (for example, rotisserie or fried chicken). Notable exceptions to this rule are identified in table 2. If the raw version of the meat item did not exist in the SR/FPID or FNDDS/FPED databases, the cooked version was used and the item was flagged (see FOODCODEMPR_FLAG variable). If the type of meat was not specified, it was inferred based on the cut indicated in the item description. Cuts of chicken were also used to determine whether a food code “with skin” or “skinless” should be applied, when the presence of skin was not otherwise specified in the item description. These assumptions are also documented in table 2. Default codes were only applied if the item description was missing information necessary for coding.

3.1.1.4. Coding group 4 – Items listed on Blue Pages and items matched to Nielsen UPC data

Mathematica first assigned IRI Department, Aisle, Category, and Type codes, when possible, based on the item description. These items were matched to SR/FPID or FNDDS/FPED food codes based on the assigned IRI type, using the set of food code matches within each type that occurred when matching items in coding group 1. When more than one food code was relevant to a type, Mathematica assigned “not specified” (NS) or “not further specified” (NFS) food codes when available. When an NS or NFS code was not available, the item was assigned the most prevalent food code among items in that type in coding group 1. Some manual coding was done when there was no NS or NFS food code for the IRI Type being coded, and the most prevalent food code in that type was not appropriate for the item being coded in group 4. If items in coding group 4 could not be assigned an IRI Type or Category, the item was not assigned a food code.

Table 2. Coding Assumptions for Meat Based on Item Description

Assumptions	Words or Phrases in Item Description
Cooked Meat^a	
Cooked	Chicken tenders, nuggets, patties (<i>assumed frozen</i>) Chicken wings Rotisserie and fried chicken Ham Roast beef (<i>unless brand/cut indicates deli meat</i>) Frozen beef patty Rib with sauce Chicken sausage, chorizo, and bratwurst
Type of Meat	
Beef	Filet Roast (<i>assumed beef roast</i>) Short-rib Steak Stew meat (<i>assumed beef round</i>)
Ground beef	Ground Patty Meatball (<i>assumed regular fat</i>)
Chicken	Breast Drumstick Fryer Leg/thigh Quarter Roaster
Pork	Chop Neck bones (<i>assumed pork shoulder</i>) Ribs Shoulder Tenderloin ^b
Skin/Skinless	
With skin	Chicken drumstick Chicken leg Chick thigh Whole chicken
Skinless	Chicken breast (<i>unless "split," "whole," "bone," "bone in"</i>)

^a As noted above, these are notable exceptions to the assumption that most meat was purchased in the raw form.

^b Tenderloin could describe beef or pork. When the meat type was not specified it was assumed to be pork, because pork was more prevalent among tenderloins with specified meat type.

3.1.1.5. Coding group 5 – Items with descriptions obtained from receipts

Mathematica also first assigned items in this group IRI Department, Aisle, Category, and Type codes, when possible, based on the item description. Matching food codes to items was done in much the same way as for group 4 items, using the food codes within each IRI Type matched in group 1. However, when a NS or NFS food code was not available for the type, Mathematica then searched for an NS or NFS food code within an IRI Category, which is a less specific categorization than Type. When an NS or

NFS food code was not available even at the Category level, the most prevalent food code within the type or category was assigned.

3.1.2. Contractor process to construct gram weight for computing nutrient availability

The calculation of total grams purchased for FAH items (TOTGRAMSUNADJ) is described in the *FAH Item Codebook* (section 2.3.2) and for FAFH items (TOTGRAMS) in the *FAFH Item Codebook* (section 2.3.4). TOTGRAMSUNADJ is calculated only for FAH items with reported package size or weight. For items such as fresh produce (e.g., cantaloupe, head of lettuce) where no package or weight information was provided, the gram weight was imputed (TOTGRAMSUNADJIMP) by multiplying the count of items purchased (VARWGTCOUNT) by the gram weight of a large form of the item (or one item, when sizes were not distinguished) per USDA databases. For FAFH items, TOTGRAMS is mainly imputed using information from a variety of sources. All measures of total gram weight account for the quantity (or number of packages) reported.

USDA nutrient and food-pattern databases provide values per-100-grams of the edible portion of a food. To use the nutrient and FPE data, users need a measure of the gram weight of the edible portion of food. In the FAH nutrient data file (**faps_fahnutrient**) this is provided in the TOTGRAMSEDIBLE variable, which subtracts the gram weight of any inedible portions of the food. The variable REFUSE provides the estimated inedible share of the food (e.g., the share of meat that is bones and cartilage; the share of a banana that is the peel), and is missing if the items does not contain any inedible amounts. Mathematica assigned refuse factors to FAH items based on USDA food code. Two sources of information were used:

- **SR refuse factors** – SR was the source of refuse for items with an SR food code (and items with FNDDS food codes linked to SR via the FNDDS-SR Links file). If a refuse factor could not be assigned directly using the food code, the refuse factor from a similar item was assigned.
- **FNDDS and SR yield information** – SR does not contain refuse factors for most canned vegetables and meats (these have canning liquid), shellfish, and

some meat products.⁴ If a refuse factor was not available from SR, it was constructed using yield information from FNDDS and SR.⁵ If the USDA databases did not include yield information for a particular FAH item, a refuse factor for a similar item was assigned.

After assigning refuse factors to FAH items based on food code, items were manually reviewed by Mathematica and by ERS. In some cases, assumptions were made as to whether or not an item was purchased with or without refuse, especially for Blue Page and receipt items (for example, hard-boiled eggs were purchased without the shell and shrimp were purchased with the shell). The original refuse factor assigned by Mathematica appears in the variable REFUSEMPR and has an associated source indicator (REFUSESOURCEMPR). The final refuse factors appears in REFUSE, and a flag (REFUSEEDIT) equals 1 if ERS edited Mathematica's original assignment.

The final measure of edible grams for FAH items (TOTGRAMSEDIBLE) was calculated as:

$$\text{TOTGRAMSEDIBLE} = \text{TOTGRAMSUNADJ} * ((100 - \text{REFUSE}) / 100)$$

A similar calculation was performed for items with an imputed gram weight, creating TOTGRAMSEDIBLEIMP.

$$\text{TOTGRAMSEDIBLEIMP} = \text{TOTGRAMSUNADJIMP} * ((100 - \text{REFUSE}) / 100)$$

Items with no refuse have $\text{TOTGRAMSEDIBLE} = \text{TOTGRAMSUNADJ}$, or $\text{TOTGRAMSEDIBLEIMP} = \text{TOTGRAMSUNADJIMP}$.

3.1.3. *ERS's additional nutrient matching work*

ERS reviewed Mathematica's matches and discovered a number of concerns with respect to the accuracy of the matches:

⁴ For example, SR does not include refuse factors for chicken feet, rotisserie chicken, beef oxtails, beef knuckles, and pork neck bones.

⁵ For a few items, neither SR nor FNDDS included data that could be used to construct a yield factor. For these cases, yields from the Third School Food Purchase Study (SFPS-III) were used (Crepinsek et al., 2012).

- Many whole-grain items are not well covered by the SR/FPID and FNDDS/FPED data, and the inaccurate matches underestimate whole-grain acquisitions. For items such as raw brown rice or whole-grain pasta, there is no food code for the item that also has FPE values attached. As a result, Mathematica matched these items either to their cooked form, or to the unrefined raw version. For sandwiches or mixed dishes with grains, there are few codes that include whole grains. As a result, most sandwiches and wraps on whole-grain bread or tortillas reported in FoodAPS were matched to similar items on refined grains. Because of these gaps in the SR/FPID and FNDDS/FPED, whole-grain acquisitions are underestimated using Mathematica's matches.
- Mathematica assigned nutrients and FPE values using older SR/FPID and FNDDS/FPED data (from 2009-10) rather than the most recent 2011-12 data. Given that ARS updates the nutrient data to reflect changes in product formulation and changes in how foods are prepared or consumed, the use of 2009-10 nutrient data for the 2012 FoodAPS was not the most accurate representation of what FoodAPS households obtained.
- The different ways in which items could be reported and the variations in the information attached to items meant that the same item or very similar items could have been classified by Mathematica as two or more different food codes. Furthermore, the differences in the processes used to match FAH items to food codes for each of these coding groups resulted in differences in the precision of matches for the same items. For example, one household could have reported purchasing a box of Cheerios by scanning the UPC. This item would have matched to the IRI database and been matched to a very specific food code. Another household could have also purchased the same box of Cheerios (package size, flavor, etc), but either could not or did not scan the item. Instead, information on this item would have then been entered using the information available upon the receipt, which varies depending on the store it was purchased from. For example, the description on the receipt could have read 'GM CH 12oz,' or something equally as cryptic and may have been matched to the "ready-to-eat cereal, nfs" food code, or to no food code at all. Generally, the crude process Mathematica used for foods

not matched to IRI data ignored details contained in item descriptions (such as fat content of milk, types of cheeses, and other item-level details).

ERS undertook additional efforts to overcome these limitations by matching items to more specific food codes. These included:

- Developing 36 new food codes (see table A1 in the Appendix).
 - A staff member from the Agricultural Research Service (ARS) developed new food codes for whole-grain sandwiches, other mixed foods, and some “kits” such as taco kits and tuna salad kits.
 - FPE values for raw whole-grain pasta and rice values were imputed by triangulating existing data on raw and cooked refined grain and cooked whole-grain foods.
- An independent contractor and ERS staff manually reviewing the matches and recoding many foods. Focus was directed on items matched to NS and NFS food codes and items that Mathematica was unable to code. We also conducted multiple, but not exhaustive, cross-checks to look for consistency across item descriptions and food codes. During this process, some nonfood items were discovered and removed from the data.
- Replacing nutrient values using information in the 2011-12 FNDDS/FPED and SR 26/FPID for each food code. Between the 2009-10 and 2011-12 data releases, the Agricultural Research Service (ARS) dropped or discontinued several hundred food codes. When these food codes represented the best match to an item, the codes and all nutrient and FPE values were retained in the FoodAPS data. These codes are indicated with a value of 1 in the variable CODENOT1112.
- Using information in the item description to identify quantities. Several items that were not assigned a quantity had information in the item description that was used to determine the package size. For example, the text “gallon” in “homogenous milk, gallon” was used to update the quantity.
- ERS also reviewed the refuse factors assigned to items, making sure that these were consistent across similar items and were updated to reflect any changes in food codes that occurred during the review of nutrient matching described above.

3.1.4. *Known anomalies in the FAH nutrient data*

Despite the additional work conducted by ERS, there are still a number of factors that limit the quality or accuracy of nutrient coding. These include:

- The completeness of and our ability to decipher the item description.
 - Items that could be matched to UPC-coded information in the IRI data have standardized descriptions. In addition, when the IRI data contain detailed item information, the various attributes (fat content, whole grains, etc.) could be observed and used to pinpoint the appropriate food code.
 - Items that are linked directly to the Food Book Barcode items also have standardized item descriptions, which may or may not accurately describe the item. For example, deli pasta salads and other prepared foods are included in the list of items in the Food Book. We cannot observe whether the items actually purchased had different nutritional qualities than more common (standard) items, and the nutrients will reflect the usual form of that food rather than the specific item purchased.
 - Item descriptions that were written in the Food Book Blue Pages directly have varying degrees of specificity.
 - Similarly, item descriptions obtained from the receipt will also vary across similar items, depending on the completeness of the information on the receipt.
- Coverage of items purchased in the nutrient data file and in the form purchased. We cannot observe how the household used the item, so our goal was to quantify the nutrients obtained.
- There are some inconsistencies between the item's description and the food code, especially for items matched to IRI. Some examples include an item description that indicates regular coffee, but the food code is for decaffeinated coffee. Mathematica informed us that the attribute information in IRI indicated that the item was decaffeinated, but such attribute information was not included in the final dataset so ERS was unable to check for consistency between attribute information and the ultimate food code assignment.

- The types of raw meat and poultry items in the SR/FPID database is insufficient for the variety reported in FoodAPS. Some adjustments are made for inedible portions using the refuse factor; however, the fat content of raw meat and poultry items is probably not differentiated well.
- In many cases, there are more appropriate food codes in the SR data. However, because these codes do not have FPID data to provide FPE values, they were not used in the matching process.

3.2. FAFH, Summary of Data Processing

Mathematica matched nutrient data to each FAFH item using a hierarchical system. First, items were classified into four types of items: beverages, foods from top restaurants, school foods, and all other food identified by type (see **MENUGRP** in the **faps_fahitem** data). Because the process for coding school foods differs somewhat from all other FAFH items, school foods are discussed separately.

3.2.1. School foods (*MENUGRP*="SCH")

Not all foods obtained from schools are part of USDA-reimbursable school lunches and breakfasts. These non-reimbursable items include items from school stores, vending machines, friends, or school activities, such as a class party or bake sale. Mathematica matched nutrient and FPE data to all items likely obtained from reimbursable meals to the SNDA-IV data, which includes only items included in reimbursable school meals; items not typically allowed as part of reimbursable meals were classified as menu group "GEN" and coded with all other items.

SNDA-IV includes data collected from a nationally representative sample of school districts and schools in school year (SY) 2009-10, and provides nutrient and FPE data for foods offered in reimbursable school breakfasts and lunches. SNDA-IV data includes foods that were matched to nutrients by three methods: (1) foods were linked to the closest-match food in FNDDS, (2) foods were assigned nutrients/FPEs based on existing recipes in FNDDS that were modified to more closely reflect the types and amounts of ingredients used by a school, and (3) commercially prepared foods that were specially formulated for schools (mostly entrees/mixed dishes). The Food Surveys Research

Group at the ARS imputed nutrient and FPE data for the commercially prepared foods because they were not well represented in the FNDDS. Thus, the SNDA-IV data provide the best representation of the nutrient/FPE content of school foods.

SNDA-IV food groups are defined by a hierarchical set of major and minor food groups (major, minor1, minor2, minor3, and minor4). For example, the major group for MILK includes nine minor food groups: four minor1 groups defining levels of fat content (skim, 1%, 2%, whole) plus other milk beverage; the four minor1 groups are further defined by minor2 groups for flavored and unflavored milk. The SNDA-IV major and minor food groups are shown in tables A1a-A1i. Each SNDA-IV minor food group identifies additional characteristics of the foods within a group. FAFH school foods were assigned a specific number of minor food groups depending on the level of specificity reported by the respondent for the FAFH school item. Of the 243 combinations of major and minor food groups defined for SNDA-IV, 213 are observed in FoodAPS school food data. Weighted average nutrient and food-pattern profiles (including average grams) were developed for each combination of major and minor food group using the foods included in the SNDA-IV data. The profiles reflect averages for all food in a given group of foods and are weighted by how often each food was reported in SNDA-IV. Mathematica assigned each of the foods groups listed in tables 1a–1i a FoodAPS-specific 9-digit code (FOOD CODE).

Each FAFH school item was assigned the food code corresponding with major and minor food-group combinations.

3.2.2. All other items (BEV, TOP, and GEN)

Mathematica then matched all other FAFH items to the *most similar food* in FNDDS.⁶ This method is consistent with procedures used to code foods reported in the dietary intake component of the National Health and Nutrition Examination Study

⁶ Five items included in FAFH acquisitions from food stores were matched to food codes and nutrient values from the USDA National Nutrient Database for Standard Reference (SR). These acquisitions were reported on Red Pages and likely include a mix of FAH and FAFH items. The SR database is described in the separate “Food-At-Home Nutrition Coding Documentation” report.

(NHANES). The FNDDS food description and “includes” statements (or additional description) were used to determine the best match for the FAFH items.

For top restaurant items, FNDDS food codes for specific fast-food restaurant items were selected when available in the database. For all other top restaurant foods that are not specifically named in FNDDS, the items were matched to the most similar food in the database. Foods from top restaurants were not researched online to confirm nutrient values.

If a FAFH item had a general description or there were several potential food codes in FNDDS for a particular FAFH item, the “not further specified” (NFS) or “not specified” (NS) codes in FNDDS were used. In cases where FNDDS did not include a NFS/NS code for a particular type of food and there were multiple food codes to select from, the food code reported most often in NHANES 2009-2010 was used as a default.⁷

FAFH items were reported with varying levels of details about the food, and the FNDDS food codes specify various details that have implications for the nutrient content of foods. Thus, it is not possible to have *exact matches* for all FAFH items. The exact food item reported by the respondent did not always exist in FNDDS (this was particularly true for sandwiches). For example, the only “egg and cheese” sandwich in FNDDS is on a biscuit, and no other bread options are available (e.g., on a bagel, English muffin, etc.). Thus, all “egg and cheese” sandwiches were coded with the single, closest-match food code available in FNDDS.

For many foods, FNDDS includes food codes that indicate whether a part of the food was eaten (e.g., skin or coating on chicken, or the peel of a potato). Food codes were chosen to reflect the nutrient content of foods as they were likely acquired by respondents. For example, baked potatoes were coded as “peel eaten” and breaded chicken was coded as “coating eaten.” This indicates that the food item was acquired “with the peel” or “with coating.” In addition, FNDDS includes food codes that indicate whether fat was added to the food. In most cases, foods were coded with the “NS as to fat added” option unless the item description clearly indicated that fat was added (e.g., buttered noodles).

⁷ Data available on ARS’ website that show the frequency of food codes reported in NHANES and WWEIA 2009-2010 were used to select default food codes:
<http://www.ars.usda.gov/Services/docs.htm?docid=23429>

FAFH items that were reported as a single record but consisted of multiple components or foods were flagged and reviewed. In some cases, the multi-component food existed in FNDDS as a single food code (e.g., biscuits and gravy) and could be coded as such. For other cases, the foods were parsed into separate, single records so that food codes could be assigned to individual food items (e.g., mashed potatoes and gravy). For buffets and meals that were reported with no information about individual foods or components, “frozen dinner” food codes in FNDDS were assigned. For example, “breakfast meal” was assigned the food code of “58310110 Frozen breakfast, NFS (frozen meal).”

3.2.3. *Contractor process to construct gram weight for computing nutrient availability*

In the FAFH nutrient file (**faps_fafhnutrients**), there is no adjustment for inedible shares, as everything is assumed to be purchased ready for consumption. As such, the variable GRAMSTOTAL provides the total grams purchased, as well as the total grams for calculating total nutrients and FPEs for FAFH items.

3.2.4. *Additional ERS nutrient coding work*

Most of ERS’s nutrient coding work for FAFH items focused on matching whole-grain items to a food code that better captured whole grains, and trying to find food codes for items that Mathematica could not match to food codes.

Items were pulled for review when the item description indicated that the item contained whole grains (such as whole wheat bread in a sandwich or brown rice in a mixed dish). These items were recoded to a newly developed food code (see table A1) or other food code that more accurately reflected the reported whole-grain content of the food. This resulted in some school foods originally assigned the SNDA food codes being recoded to a newly developed food code that included whole grains, instead of a SNDA food code.

Mathematica was unable to assign food codes to approximately 500 FAFH items. ERS reviewed these items and was able to identify some of them and assign a food code. Items identified as being nonfood items in this review (including lottery tickets,

cigarettes, and other items) were dropped from both the **faps_fafhnutrients** and **faps_fafhitem** datasets.

Because the FNDDS nutrient and FPE values are updated with each release to reflect changes in consumption patterns, ERS replaced all nutrient values with the most recent values for each food code (from the 2011-12 FNDDS and SR 26), when the food code was available in 2011-12. For items matched to codes in 2009-10 that were dropped or discontinued in 2011-12, ERS retained the nutrient and FPE values from the originally assigned 2009-10 food code.

3.2.5. FAFH, summary of known data anomalies

The SNDA-IV database does not include vitamin D, so values for vitamin D are missing for all school items with nutrients assigned a food code from the SNDA-IV data.

There are 286 items in the **faps_fafhnutrients** dataset that do not have a food code assigned. Some of these items are the lead entry for a combination of items purchased together (such as “Value Meal”), where the separate items in that combination are listed separately. Other items were not identifiable, and therefore no food code could be assigned.

The accuracy of the matches is limited by the completeness of an item description and the coverage of reported foods in the FNDDS, SR data, SNDA, and the additional food codes created by ERS.

4. ERS Food Groups

The USDA has used several different systems to aggregate individual food items into broader categories. For example, the Center for Nutrition Policy and Promotion (CNPP) developed MyPlate to synthesize all of the recommendations from the *Dietary Guidelines for Americans* into five food groups that are considered the foundation for a healthy diet: fruits, vegetables, grains, dairy, and protein. More granular groupings are used in the various USDA Food Plans. The Thrifty, Low-Cost, Moderate-Cost, and Liberal Food plans represent a nutritious diet at a different cost, and the Thrifty Food Plan (TFP) is the basis for Supplemental Nutrition Assistance Program (SNAP) allotments. ERS developed the Quarterly Food-at-Home Price Database (QFAHPD) to

provide market-level food prices that can be used to study how prices affect food choices, intake, and health outcomes. The food groupings developed for FoodAPS expand and improve upon the groups developed for the QFAHPD, providing greater refinement in the classification of foods.

Similar to the QFAHPD food groups, the FoodAPS food groups were created to correspond with the 2015 [*Dietary Guidelines for Americans*](#) and to capture price premiums for convenience and processing. The remainder of this section will describe the food items that are placed into each of the 82 FoodAPS food groups. In general, the assigned USDA food codes were used as the first level of information to sort the item. The item description given by the respondent and IRI database information about the item were used as a secondary sources to increase accuracy. In the case of the FAFH items, the source of the item (food store or other source) was also taken into account when assigning the item an ERS food group. In addition, items identified as belonging to a bundle (such as mashed potatoes and gravy listed as two separate items or taco, lettuce, cheese, and sour cream listed as four items in a bundle) were placed in the prepared ready to eat food group, when they were clearly part of a mixed dish. Beverages (including milk and juice), desserts, salty snacks, and other ‘a la carte’ items that may have been purchased in a bundle, but are clearly separable items, were sorted individually into their respective food group.

4.1. Description of Each ERS Food Group

Grains

This Tier-1 category has two Tier-2 groups (refined grains and whole grains), with each having four Tier 3 groups (breads; rice and pasta; breakfast cereal; flour and frozen dough). If an item has greater than 50 percent of grain ounce equivalents from whole grains, it is placed in the appropriate whole-grain category. If it has less than 50 percent, it is placed in the appropriate refined grain category.

- **Breads** contain breads, rolls, bagels, tortillas, taco shells, biscuits, etc.
- **Rice and pasta** contain dry rice and pasta of all types.
- **Breakfast cereal** contains all ready-to-eat breakfast cereals, and unprepared oatmeal, grits, hominy, etc.

- **Flour, bread mixes, frozen dough** contain all flour, bread mixes, and frozen doughs.

There are three grain-based types of foods (baked goods, grain-based snacks, grain mixtures) that are not placed in the grains section of the ERS food groups. These groups contain much more processed grain products compared to the ingredient-based groups in the grains section of the ERS food groups. In addition, while the main ingredient may be grains, these groups contain ingredients in multiple groups. For example, baked goods are placed in the sugar, sweets, and candy section; grain-based snacks are placed in the salty snack section.; and grain mixtures are placed in the prepared meals section.

Vegetables

This Tier-1 category has six Tier-2 groups (starchy vegetables; tomatoes; dark green vegetables; other red and orange vegetables; beans/lentils/peas/legumes; and other/mixed vegetables) each having three Tier-3 categories based on processing (fresh, frozen, canned).

- **Starchy vegetables** contain fresh, boiled, or cooked white potatoes, corn, green peas, green lima beans, plantains, and cassava.
- **Tomatoes** contain fresh and canned tomatoes.
- **Dark green vegetables** contain vegetables noted as dark green by the 2015–2020 USDA dietary guidelines.⁸ Examples are bok choy, broccoli, collard greens, dark green leafy lettuce, kale, mesclun, mustard greens, romaine lettuce, spinach, turnip greens, and watercress.
- **Other red and orange vegetables** contain vegetables noted as red and orange by the 2015–2020 USDA dietary guidelines except tomatoes. Examples are acorn squash, butternut squash, carrots, Hubbard squash, pumpkin, and sweet potatoes.

⁸2015-2020 Dietary Guidelines, <https://health.gov/dietaryguidelines/2015/guidelines/>

- **Beans/lentils/peas/legumes** contain black beans, black-eyed peas, garbanzo beans, kidney beans, lentils, lima beans, navy beans, pinto beans, soybeans, and split peas.
- **Other/mixed vegetables** contain asparagus, bean sprouts, celery, onions, mushrooms, beets, turnips, cucumbers, eggplant, green beans, iceberg lettuce, mixed vegetables, etc.

Fruit

This Tier-1 category has two Tier-2 groups (whole fruit and 100% fruit and vegetable juices). Whole fruit has four Tier-3 groups (fresh, frozen, canned, and dried).

- **Fresh fruit** contains all fruit that is unprocessed. Common examples are apples, bananas, berries, melons, apricots, etc.
- **Frozen fruit** contains similar fruits that are not prepared, except they are frozen.
- **Canned fruit** contains similar fruits, but also contains fruits salads and pie fillings that are a mixture of multiple fruits. Canned fruits are likely to be in a syrup with added sugar.
- **Dried fruit** contains similar fruits, but that are put through a drying process and often have added sugar.
- **100% fruit juices and vegetable juices** contain only 100-percent juices. Other juice drinks are placed in their respective ERS beverage group.

Milk Products

This Tier-1 category has three Tier-2 groups (whole milk; low-fat and skim; all cheese products). Both whole and low-fat and skim have three Tier-3 groups (milk; yogurt; cream), while all cheese products has two Tier-3 categories (cheese; processed cheese). Milk-based drinks and desserts are included in the desserts, sweets, and candies group.

- **Whole milk, yogurt, and cream** groups contain fluid milk, condensed milk, yogurt, and sour cream.

- **Low-fat and skim milk, yogurt, cream** groups contain similar products as the whole-fat category, but in a reduced-fat form. The same TFP departure applies.
- **Cheese** contains all natural cheeses, including cottage cheese.
- **Processed cheese** contains American cheese, Velveeta, cheese soups, cheese sauces, etc.

Meat and Proteins

This Tier-1 category has seven Tier-2 groups (Beef/pork/lamb/veal/game; chicken/turkey/game birds; fish/seafood; nuts/nut butters/seeds; bacon/sausage/lunch meats; egg/egg substitutes; and tofu/meat substitutes). The first three Tier-2 groups have three Tier 3 categories (fresh; frozen; canned) and nuts/nut butters/seeds has two Tier-3 categories (raw and processed).

As noted above, the USDA food codes were used as the primary sorting information. A limitation of this approach is that there are only a few raw meat food codes. Therefore, many raw meat items are attached to cooked meat food codes. While secondary information, such as item description and IRI classification, are used to increase accuracy, the lack of raw meat food codes should be noted.

- **Beef/pork/lamb/veal/game** contains all of these types of meat in either fresh, frozen, or canned form. Any meat that was additionally processed (for example, frozen meatballs) is placed in the prepared food group.
- **Chicken/turkey/game birds** contains all of these types of meat in either fresh, frozen, or canned form. Any meat that was additionally processed (for example, frozen chicken patties or stuffed chicken breast) is placed in the prepared food group.
- **Fish/seafood** contains fish or other seafood in either fresh, frozen, or canned form. Any fish that was additionally processed (for example, frozen fish sticks) is placed in the prepared food group.
- **Nuts/nut butters/seeds** contain all raw or roasted nuts, such as peanuts, cashews, almonds, etc.; seeds, such as sunflower seeds, pumpkin seeds, sesame seeds, etc.; and nut butters. This group is comparable to the TFP group.

- **Bacon/sausage/lunch meats** contains bacon, sausage, pre-packed and deli lunch meat, hot dogs, frankfurters, etc. This group is comparable to the TFP group.
- **Egg/egg substitutes** contain eggs and egg substitutes.
- **Tofu/meat substitutes** contain tofu and other meat substitutes.

Prepared Meals, Sides, and Salads

This Tier-1 category has four Tier-2 groups (ready to eat; frozen; canned; packaged). While these groups are very general the intention was to allow the user enough categorization to make sorting prepared meals simple, but enough flexibility for individual users to group them in their preferred way.

- **Ready to eat** contains all prepared food that is ready to eat. Examples are deli or bakery food from the grocery store. This does not include baked goods.
- **Frozen prepared meals** contain chicken patties, fish sticks, frozen vegetables with sauce added, microwave dinners, bagged complete dinners, pizza, etc.
- **Canned prepared meals** contain soups, chili, SpaghettiOs, etc.
- **Packaged prepared meals** contain dry soups, macaroni and cheese, taco kits, dry salad kits, etc.

Other Foods

This Tier-1 category has eight Tier-2 groups (table fats/oils/salad dressings; gravies/sauces/condiments/spices; beverages; desserts/sweets/candies; salty snacks; vitamins/meal supplements; baby food; infant formula). Table fats/oils/salad dressings have two Tier-3 categories (fats/oils and salad dressing).

Gravies/sauces/condiments/spices have two Tier-3 categories (condiments/gravies/sauces and dry spices). Beverages have six Tier-3 categories (sweetened coffee and tea; unsweetened coffee and tea; low-calorie beverages; all other caloric beverages; alcohol; water). Desserts/sweets/candies have six Tier-3 categories (sweeteners; jellies/jams; candy; baked goods; cake mixes; all other desserts).

Table fats/oils/salad dressings

- **Table fats/oils** contain butter, margarine, olive oil, peanut oil, lard, etc.
- **Salad Dressing** contains salad dressings and mayonnaise.

Gravies/sauces/condiments/spices

- **Condiments/gravies/sauces** contain ketchup, barbecue sauce, mustard, gravies, tomato sauce, Worcestershire sauce, etc.
- **Dry spices** contain dry parsley, oregano, pepper, garlic, onion, salt, pepper, thyme, etc. Fresh herbs are included in the dark green vegetable category if there are any dark green servings associated with them in the FNDDS nutrition data, and otherwise are in the other/mixed vegetable group.

Beverages

- **Sweetened coffee and tea** contain coffee and tea drinks that have added sugar, such as frappuccinos, cappuccinos, lattes, sweetened iced tea, etc.
- **Unsweetened coffee and tea** contain coffee and tea drinks that have no added sugar, such as coffee grounds, tea bags, unsweetened prepared tea, etc.
- **Low-calorie beverages** contain drinks not included in sweetened or unsweetened coffee and tea, alcohol, or water that have less than 5 calories per 8 ounces.
- **All other caloric beverages** contain drinks not included in sweetened or unsweetened coffee and tea, alcohol, or water that have more than or are equal to 5 calories per 8 ounces.
- **Alcohol** contains all alcoholic drinks, such as beer, wine, liquor, premixed drinks, etc.
- **Water** contains all plain or flavored water, whether is it still or carbonated.

Desserts/sweets/candies

- **Sweeteners** contain all types of sugars, artificial sweeteners, syrups, honey, icings, etc.
- **Jellies/jams** contain all types of jellies, jams, marmalade, preserves, etc.
- **Candy** contains all types of candy, both chocolate and non-chocolate, chewing gum, etc.
- **Baked goods** contain cakes, cookies, pies, pastries, doughnuts, granola bars, etc., that are both fresh and packaged. There is no distinction between refined and whole-grain content.
- **Cake mixes** contain all types of dry cake mixes.
- **All other desserts** contain any other sweet dessert that is not in the other categories, such as Jell-O, pudding, cheesecake, and ambrosia.

Salty Snacks

- **Salty snacks** contain potato chips, trail mixes, pork rinds, corn chips, crackers, popcorn, pretzels, etc. If an item has greater than 50 percent of grain ounce equivalents from whole grains, it is placed in the appropriate whole-grain category. If it has less than 50 percent, it is placed in the appropriate refined-grain category.

Vitamins and Meal Supplements

- **Vitamins and meal supplements** contain all vitamins, protein shakes, diet bars, etc.

Baby food

- **Baby food** contains all baby food except infant formula.

Infant formula

- **Infant formula** contains all infant formula.

4. 2. Summary of Known Anomalies with ERS Food Groups

As stated above, the USDA food code is used as the primary sorting criteria. This method works well for a majority of the food items; however, there are limitations. One limitation is that there are a limited number of raw meat food codes because the food codes are developed for consumption, not purchasing data. Therefore, raw meat items were assigned the cooked food code that most closely matched the food product. Although the cooked food code would originally place these items in the prepared meals group, IRI information and the item description are used to correctly identify raw meat items.

Another limitation of the food code is identifying the form purchased or level of preparation. Although the food codes identify some of this information, there are food items that contradicted the IRI or item description data. In these cases, the food code was used to categorize the food item into the Tier-1 and Tier-2 category, then IRI or item description information is used to categorize them into the Tier-3 category. For example, the food code sorts all fruit into the fruit category, then the IRI information sorts all fruit identified as frozen into the frozen fruit category.

In the case of FAFH items, the contractor assigned most items in this dataset a food code corresponding to a prepared food item. However, some of these items are purchased in stores and are clearly a packaged food or otherwise unprepared item. Thus, for some items, the food code is inconsistent with the ERS food group. There are 3,485 FAH food items that are not classified into a food group. Despite the many methods of identification, these items were unidentifiable, and did not receive a food code. As such, these items received a food group code of 99999.

Table 3. ERS Food Groups

Tier 1	Tier 2	Tier 3
1 - Grains		
	101- Whole grain breads, cereal, rice, pasta, and flours	
	Breads (bread, rolls, pita, bagels, tortillas)	10101
	Rice and pasta	10102
	Breakfast cereal	10103
	Flour/bread mixes/frozen dough	10104
	102 - Non-whole-grain breads, cereal, rice, pasta, and flours	
	Breads (bread, rolls, pita, bagels)	10201
	Rice and pasta	10202
	Breakfast cereal	10203
	Flour/bread mixes/frozen dough	10204
2 - Vegetables		
	201 - Starchy vegetables	
	Fresh	20101
	Frozen	20102
	Canned	20103
	202 - Tomatoes	
	Fresh	20201
	Frozen	20202
	Canned	20203
	203 - Dark green vegetables	
	Fresh	20301
	Frozen	20302
	Canned	20303
	204 - Other red and orange vegetables	
	Fresh	20401
	Frozen	20402
	Canned	20403
	205 - Beans, lentils, and peas or legumes	
	Fresh/Dried	20501
	Frozen	20502
	Canned	20503
	206 - Other/mixed vegetables	
	Fresh	20601
	Frozen	20602
	Canned	20603

Tier 1	Tier 2	Tier 3
3 - Fruit		
	301 - Whole fruit	
	Fresh	30101
	Frozen	30102
	Canned	30103
	Dried	30104
	302 - 100% Fruit and vegetable juices	30201
4 - Milk products		
	401 - Whole milk, yogurt, and cream	
	Milk	40101
	Cream	40102
	Yogurt	40103
	402 - Low-fat and skim milk and low-fat yogurt	
	Milk	40201
	Cream	40202
	Yogurt	40203
	403 - All cheese, including cheese soups and sauces	
	Cheese	40301
	Processed	40302
5 - Meat and beans		
	501 - Beef, pork, veal, lamb, and game	
	Fresh	50101
	Frozen	50102
	Canned	50103
	0502 - Chicken, turkey, and game birds	
	Fresh	50201
	Frozen	50202
	Canned	50203
	503 - Fish and seafood	
	Fresh	50301
	Frozen	50302
	Canned	50303
	504 - Nuts, nut butters, and seeds	
	Nuts and Seeds	50401
	Nut and Seed Butters and Spreads	50402
	505 - Bacon, sausage, and lunch meats including spreads	50501
	506 - Egg and egg substitutes	50601
	507 - Tofu and meat substitutes	50701

Tier 1	Tier 2	Tier 3
6 - Prepared meals, sides, and salads		
	Ready to eat	60101
	Frozen	60201
	Canned	60301
	Packaged	60401
7 - Other foods		
	701 - Table fats, oils, and salad dressings	
	Fats and oils	70101
	Salad dressing	70102
	702 - Gravies, sauces, condiments, and spices	
	Condiments, gravies, and sauces	70201
	Dry spices	70202
	703 - Beverages	
	Sweetened coffee and tea	70301
	Unsweetened coffee and tea	70302
	Low-calorie beverages	70303
	All other caloric beverages	70304
	Alcohol	70305
	Water	70306
	704 - Desserts, sweets, and candies	
	Sweeteners	70401
	Jellies/jams	70402
	Candy	70403
	Baked goods (including packaged)	70404
	Cake mixes	70405
	Milk drinks and milk desserts	70406
	All other desserts	70407
	705 - Salty snacks	
	Whole grain snacks	70501
	All other snacks	70502
	706 - Vitamins and meal supplements	70601
	707 - Baby food	70701
	708 - Infant formula	70801
9 - Not coded		
	999-Not coded	99999

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Appendix – Food codes from non-USDA databases

Table A1. New food codes developed by ERS

Foodcode	Description
900020036	Brown rice pilaf, rice flavor
900020088	Brown rice pilaf, chicken flavor
900020107	Macaroni, dry, whole wheat
900020124	Spaghetti, dry, whole wheat
9014640100	Grilled cheese sandwich on whole wheat
9027213500	Mongolian beef with brown rice
9027243500	Chicken yellow curry with brown rice
9027345310	Hunan chicken with brown rice
9027510110	Sloppy Joe on whole wheat buns
9027510230	Hamburger on whole-grain bun with lettuce, tomato, and cheese
9027520150	BLT on whole wheat with mayonnaise
9027520320	Half ham and cheese sandwich on whole wheat
9027520370	Hot ham and cheese on whole wheat
9027520380	Lunchables, ham and cheese
9027540200	Chicken fajita pita with whole grain
9027540230	Whole-grain bun chicken patty
9027540350	Turkey sandwich on whole wheat
9027550000	Breaded fish patty on whole-grain bun
9027550710	Tuna salad on whole-wheat wrap with Swiss cheese, lettuce, and tomato
9027550720	Bumble Bee tuna salad with mayonnaise (3.5 oz) (99 gm) kit
9027550730	Tuna sandwich with cheddar cheese slices, two toasted whole wheat light mayonnaise
9027560710	Sausage on whole-wheat toast
9032201000	2 fried eggs on a whole-wheat bagel
9032202030	Chicken apple breakfast sandwich, whole-wheat roll with cheddar cheese and two scrambled eggs on sandwich
9042302010	Peanut butter and jelly sandwich on whole wheat
9058101710	Old El Paso flour and corn dinner kit (11.4 oz)(323 gm)
9058127500	Cheese, tomato, avocado, and lettuce sandwich on sliced whole wheat
9058147100	Whole wheat pasta with pesto
9127520320	Clubhouse sandwich, whole wheat bread, ham, cheese, and bacon
9127520380	Lunchables, turkey and cheese
9127540350	Turkey sandwich on whole wheat break with cheese, lettuce, and mustard
9132202030	Breakfast sandwich on a whole-grain English muffin with hickory-smoked ham, egg, and cheese
9158101710	Old El Paso flour dinner kit (12.5 oz box)(354 gm)
9258101710	Ortega whole grain and whole wheat taco kit (15.9 oz) (448.38 gm)
9327520380	Lunchables, meatless
9358101710	Old El Paso Stand 'n Stuff corn dinner kit (8.8 oz) (249 gm)

Table A2a. SNDA Milk groups

FOODCODE	MINOR1	MINOR2
100000000	NFS	
101000000	Skim	
101010000	Skim	Flavored
101020000	Skim	Unflavored
102010000	1%	Flavored
102020000	1%	Unflavored
103010000	2%	Flavored
103020000	2%	Unflavored
104010000	Whole	Flavored
104020000	Whole	Unflavored
105000000	Other milk beverage	

Table A2b. SNDA Fruit groups

FOODCODE	MINOR1	MINOR2	MINOR3
201000000	Juice		
201010200	Juice	Citrus, melons, and berries	Blend
201011500	Juice	Citrus, melons, and berries	Orange
201012600	Juice	Citrus, melons, and berries	Cranberries
201020200	Juice	Other	Blend
201020400	Juice	Other	Apple
201021200	Juice	Other	Grapes
201022100	Juice	Other	Pineapple
202000000	Canned		
202010300	Canned	Citrus, melons, and berries	Mandarin oranges
202012300	Canned	Citrus, melons, and berries	Strawberries
202012600	Canned	Citrus, melons, and berries	Cranberries
202020100	Canned	Other	Applesauce
202020800	Canned	Other	Cherries
202021000	Canned	Other	Fruit cocktail
202021800	Canned	Other	Apricot
202021900	Canned	Other	Peaches
202022000	Canned	Other	Pear
202022100	Canned	Other	Pineapple
203022700	Dried	Other	Raisins
204010000	Fresh	Citrus, melons, and berries	
204010600	Fresh	Citrus, melons, and berries	Blueberries
204010700	Fresh	Citrus, melons, and berries	Cantaloupe
204011300	Fresh	Citrus, melons, and berries	Honeydew melon
204011400	Fresh	Citrus, melons, and berries	Kiwi
204011500	Fresh	Citrus, melons, and berries	Orange
204011600	Fresh	Citrus, melons, and berries	Mix w/ citrus
204012300	Fresh	Citrus, melons, and berries	Strawberries
204012400	Fresh	Citrus, melons, and berries	Tangerine
204012500	Fresh	Citrus, melons, and berries	Watermelon
204020400	Fresh	Other	Apple
204020500	Fresh	Other	Banana
204020900	Fresh	Other	Fruit bar
204021200	Fresh	Other	Grapes
204021700	Fresh	Other	Mix w/o citrus
204021800	Fresh	Other	Apricot
204021900	Fresh	Other	Peaches
204022000	Fresh	Other	Pear
204022100	Fresh	Other	Pineapple
204022200	Fresh	Other	Plum
204022900	Fresh	Other	Mango

Table A2c. SNDA Vegetable groups

FOODCODE	MINOR1	MINOR2	MINOR3	MINOR4
300000000	NFS			
301010300	Cooked	Dark green	Broccoli	
301011000	Cooked	Dark green	Other leafy greens	
301012800	Cooked	Dark green	Spinach	
301020000	Cooked	Dry beans and peas		
301020100	Cooked	Dry beans and peas	Baked beans/mixtures	
301020200	Cooked	Dry beans and peas	Black beans	
301021500	Cooked	Dry beans and peas	Other beans	
301021504	Cooked	Dry beans and peas	Other beans	Soup
301021600	Cooked	Dry beans and peas	Pinto/kidney beans	
301030500	Cooked	Orange	Carrots	
301032100	Cooked	Orange	Sweet potatoes	
301040400	Cooked	Other	Cabbage	
301040600	Cooked	Other	Cauliflower	
301041200	Cooked	Other	Mixtures	
301041204	Cooked	Other	Mixtures	Soup
301041300	Cooked	Other	Okra	
301041900	Cooked	Other	String beans	
301042000	Cooked	Other	Summer squash	
301042200	Cooked	Other	Tomatoes	
301042204	Cooked	Other	Tomatoes	Soup
301042700	Cooked	Other	Asparagus	
301042900	Cooked	Other	Peppers	
301043000	Cooked	Other	Onion	
301050700	Cooked	Starchy	Corn	
301050800	Cooked	Starchy	French fries/similar products	
301050900	Cooked	Starchy	Green peas	
301051100	Cooked	Starchy	Lima beans	
301052300	Cooked	Starchy	White potatoes	
302000000	Raw			
302010300	Raw	Dark green	Broccoli	
302011000	Raw	Dark green	Other leafy greens	
302012800	Raw	Dark green	Spinach	
302030500	Raw	Orange	Carrots	
302040000	Raw	Other		
302040600	Raw	Other	Cauliflower	
302041200	Raw	Other	Mixtures	
302041700	Raw	Other	Side salad bar	
302041800	Raw	Other	Side salads	
302042200	Raw	Other	Tomatoes	
302042400	Raw	Other	Celery	
302042500	Raw	Other	Cucumber	
302042900	Raw	Other	Peppers	
302053100	Raw	Starchy	Jicama	

Table A2d. SNDA Combination Entrée groups

FOODCODE	MINOR1	MINOR2	MINOR3
400000000	NFS		
401000000	Breakfast sandwich		
402010000	Cheeseburger, similar beef/pork sandwiches with cheese	Cheeseburger	
402020000	Cheeseburger, similar beef/pork sandwiches with cheese	Similar beef/pork sandwiches w/ cheese	
403000000	Entree salads		
404010000	Hamburger, similar beef/pork sandwiches	Hamburger	
404020000	Hamburger, similar beef/pork sandwiches	Similar beef/pork sandwiches	
405010000	Frankfurter, corn dog, similar sausage sandwiches	Corn dog	
405020000	Frankfurter, corn dog, similar sausage sandwiches	Frankfurter	
405030000	Frankfurter, corn dog, similar sausage sandwiches	Similar sausage sandwiches	
406000000	Mexican-style entrees		
406010000	Mexican-style entrees	Burritos	
406020000	Mexican-style entrees	Nacho dishes	
406030000	Mexican-style entrees	Tacos	
406040000	Mexican-style entrees	Quesadillas, fajitas, enchiladas	
407000000	Mixtures with grain, meat/meat alternate and/or vegetables		
407010000	Mixtures with grain, meat/meat alternate and/or vegetables	Other	
407020000	Mixtures with grain, meat/meat alternate and/or vegetables	Chicken/turkey, beef, or pork with noodles	
407030000	Mixtures with grain, meat/meat alternate and/or vegetables	Macaroni and cheese	
407040000	Mixtures with grain, meat/meat alternate and/or vegetables	Chicken/turkey, beef, or pork with rice	
407050000	Mixtures with grain, meat/meat alternate and/or vegetables	Lasagna, ravioli, stuffed shells	
407060000	Mixtures with grain, meat/meat alternate and/or vegetables	Spaghetti	
408010000	Other mixtures with meat/meat alternate and/or vegetables	Other	
408020000	Other mixtures with meat/meat alternate and/or vegetables	Baked potato with cheese and/or meat	
408030000	Other mixtures with meat/meat alternate and/or vegetables	Stir-fry with chicken, beef, pork, or tofu	
408040000	Other mixtures with meat/meat alternate and/or vegetables	Chili with meat/meat substitute	
408050000	Other mixtures with meat/meat alternate and/or vegetables	Egg rolls	
409000000	Peanut butter sandwich		
410000000	Sandwich with breaded/fried meat, poultry, or fish		
410010000	Sandwich with breaded/fried meat, poultry, or fish	With meat	

410020000	Sandwich with breaded/fried meat, poultry, or fish	With poultry	
410030000	Sandwich with breaded/fried meat, poultry, or fish	With fish	
411010000	Sandwich with mayonnaise-based poultry, tuna, or egg salads	Chicken or turkey salad	
411020000	Sandwich with mayonnaise-based poultry, tuna, or egg salads	Tuna salad	
411030000	Sandwich with mayonnaise-based poultry, tuna, or egg salads	Egg salad	
412000000	Sandwich with only cheese		
413000000	Sandwich with plain meat, poultry, or fish		
413010000	Sandwich with plain meat, poultry, or fish	With meat	
413020000	Sandwich with plain meat, poultry, or fish	With poultry	
414000000	Pizza		
414010000	Pizza	With meat	
414010100	Pizza	With meat	With vegetables
414020000	Pizza	Without meat	
414020100	Pizza	Without meat	With vegetables
415000000	Pizza pockets, pizza sticks, and calzones		
415010000	Pizza pockets, pizza sticks, and calzones	With meat	
415020000	Pizza pockets, pizza sticks, and calzones	Without meat	
416000000	Entree salad bar		
422000000	Sandwich with meat substitute and/or vegetables		
423000000	Breakfast burritos		
424000000	Parfaits		
425000000	Prepackaged meals		

Table A2e. SNDA Meat and Meat Alternatives groups

FOOD CODE	MINOR1	MINOR2	MINOR3
501000000	Chicken and turkey		
501010000	Chicken and turkey	Breaded or fried	
501010100	Chicken and turkey	Breaded or fried	Nuggets
501010200	Chicken and turkey	Breaded or fried	Patties
501010300	Chicken and turkey	Breaded or fried	Parts
501020000	Chicken and turkey	Plain	
501030000	Chicken and turkey	With sauce, gravy, or mayonnaise	
502000000	Fish and shellfish		
502010000	Fish and shellfish	Breaded or fried	
502030000	Fish and shellfish	With sauce, gravy, or mayonnaise	
503010000	Meat (beef and pork)	Breaded or fried	
503020000	Meat (beef and pork)	Plain	
503030000	Meat (beef and pork)	With sauce, gravy, or mayonnaise	
504010000	Other protein	Nuts, nut butters, seeds, nut mixtures	
504020000	Other protein	Cheese	
504030000	Other protein	Eggs	
504040000	Other protein	Meat substitutes, hummus, and legumes	
505010000	Sausage, frankfurters, and cold cuts	Frankfurters	
505020000	Sausage, frankfurters, and cold cuts	Sausage	
505030000	Sausage, frankfurters, and cold cuts	Cold cuts	
506010000	Yogurt	Low-fat/fat-free	
506020000	Yogurt	Regular	

Table A2f. SNDA Bread and Grains groups

FOODCODE	MINOR1	MINOR2
601000000	Biscuits and cornbread	
602000000	Bread or bread alternates with added fat	
602010000	Bread or bread alternates with added fat	Cream-cheese-filled bagel
602020000	Bread or bread alternates with added fat	Pre-buttered bread and rolls
603000000	Breads, rolls, bagels, and other plain breads	
604000000	Cold cereal	
605000000	Corn/tortilla chips	
606000000	Crackers and pretzels	
607000000	Granola bars and breakfast bars	
608000000	Hot cereal	
609000000	Muffins, sweet/quick breads	
610000000	Pancakes, waffles, French toast	
611000000	Pasta	
612000000	Pastries	
612010000	Pastries	Cinnamon buns
612020000	Pastries	Donuts
612030000	Pastries	Toaster pastries
612040000	Pastries	Strudels, turnovers, and Danishes
612050000	Pastries	Other
613000000	Rice	
614020000	Other	Cheese-filled breadsticks

Table A2g. SNDA Desserts groups

FOODCODE	MINOR1	MINOR2
700000000	NFS	
701010000	Dairy-based desserts	Ice cream
701020000	Dairy-based desserts	Yogurt and pudding
702010000	Desserts containing fruit or fruit juice	Frozen juice bars
702020000	Desserts containing fruit or fruit juice	Fruited gelatin
703000000	Grain-based desserts	
703010000	Grain-based desserts	Cake
703020000	Grain-based desserts	Cookies
703030000	Grain-based desserts	Brownies
703040000	Grain-based desserts	Fruit cobblers and crisps
704010000	Other	Non-fruited gelatin
704020000	Other	Other
705000000	Parfaits	

Table A2h. SNDA Accompaniments groups

FOOD CODE	MINOR1	MINOR2
802000000	Condiments and toppings	
802010000	Condiments and toppings	Fat-free or low-fat
802020000	Condiments and toppings	Higher fat
803000000	Salad dressings	
803020000	Salad dressings	Regular

Table A2i. SNDA Other groups

FOOD CODE	MINOR1
901000000	Fruit drinks/ades
903000000	Bacon
904000000	Snacks
905000000	Bottled water