

# **Food Patterns Equivalents Database 2017-2018: Methodology and User Guide**

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## Glossary of Abbreviations

| <u>Abbreviation</u> | <u>Full Name</u>                                       |
|---------------------|--|
| ARS                 | Agricultural Research Service                          |
| CDC                 | Centers for Disease Control and Prevention             |
| CNPP                | Center for Nutrition Policy and Promotion              |
| Cup eq.             | Cup equivalents  |
| DGA                 | Dietary Guidelines for Americans                       |
| ERS                 | Economic Research Service                              |
| FDA                 | Food and Drug Administration                           |
| FDC                 | Food Data Central                                      |
| FICRCD              | Food Intakes Converted to Retail Commodities Database  |
| FNS                 | Food and Nutrition Service                             |
| FP                  | Food Patterns  |
| FPE                 | Food Patterns Equivalents                              |
| FPED                | Food Patterns Equivalents Database                     |
| FPID                | Food Patterns Equivalents Ingredients Database         |
| FNDDS               | Food and Nutrient Database for Dietary Studies         |
| FSRG                | Food Surveys Research Group                            |
| HHS                 | United States Department of Health and Human Services  |
| MPED                | MyPyramid Equivalents Database                         |
| NCI                 | National Cancer Institute                              |
| NHANES              | National Health and Nutrition Examination Survey       |
| Oz. eq.             | Ounce equivalents                                      |
| SR                  | USDA National Nutrient Database for Standard Reference |
| Tsp. eq.            | Teaspoon equivalents                                   |
| USDA                | United States Department of Agriculture                |
| WWEIA               | What We Eat in America                                 |

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## Chapter 1

### Overview

#### Background

The 2015-2020 Dietary Guidelines for Americans (DGA) [1] recommendations have been translated into messages and tips for making healthful food choices [2]. The 2015-2020 DGA form the basis for revisions to the U.S. Department of Agriculture (USDA) Food Patterns (FP) groups. The Food Patterns Equivalents Database (FPED) 2017-2018 has been developed based on the USDA Food Pattern definitions used in the DGA [1]. The Food Patterns provide calorie-based dietary guidance on how much Americans should eat from each of the FP components such as Fruits, Vegetables, Grains, Protein Foods, Dairy, and Oils to have a healthful diet, while simultaneously placing limits on the amounts of added sugars, solid fats, and alcoholic drinks that can be consumed.

The Federal Government, as part of its ongoing nutrition monitoring and surveillance activities conducts the What We Eat in America (WWEIA) survey, which is the dietary intake component of the National Health and Nutrition Examination Survey (NHANES) [3]. The WWEIA, NHANES is a continuous survey and is conducted by the U.S. Department of Agriculture (USDA) and the U.S. Department of Health and Human Services (HHS). The survey uses 24-hour dietary recalls to collect data on the types and amounts of foods and beverages Americans report that they consume. The Food and Nutrient Database for Dietary Studies (FNDDS) 2017-2018 [4] provides nutrient composition for about 7100 foods and beverages in WWEIA, NHANES 2017-2018 [3]. In order to monitor whether Americans meet the FP recommendations of the DGA 2015-2020, the foods in the FNDDS must be converted to the respective amounts of FP equivalents present in them. The FPED includes the amounts of Fruits, Vegetables, Grains, Protein Foods, Dairy, Oils, Added Sugars, Solid Fats, and Alcoholic Drinks present in 100 grams of each of the FNDDS foods.

#### Why Develop the Food Patterns Equivalents Database?

FNDDS foods composed of single ingredients such as orange juice, baked potato, cooked rice, baked fish, or skim milk that can be directly assigned to Fruit, Vegetables, Grains, Protein Foods, and Dairy components, respectively. However, many of the FNDDS foods such as pizza, sandwiches, fruit salad, chocolate milk shake, fried eggs, and casseroles are multi-ingredient foods consisting of ingredients that are from more than one FP component. Hence, it is necessary to disaggregate multi-ingredient foods to ingredients that can be assigned to an FP component before computing the amount of FP equivalents present in the food. The Food Patterns Equivalents Database serves this purpose by converting foods that are in the forms reported consumed to appropriate Food Patterns equivalents



amounts, thereby providing means to assess the adherence of American diets to the 2015-2020 DGA FP recommendations.

### **What is Food Patterns Equivalents Database?**

Food Patterns Equivalents Database is the current name for the former MyPyramid Equivalents Database (MPED) [5] developed by USDA, Agricultural Research Service (ARS), Food Surveys Research Group (FSRG). The FPED converts FNDDS foods to the respective number of cup equivalents of Fruit, Vegetables, and Dairy; ounce equivalents of Grains and Protein Foods; number of Alcoholic Drinks; teaspoon equivalents of Added Sugars; and gram equivalents of Solid Fats and Oils. Foods in FNDDS 2017-2018 are disaggregated to ingredients that can be directly assigned to one of the FP components. Additionally, protein foods are further disaggregated to lean fraction and fat as follows: meat and poultry are disaggregated to lean meat and solid fat fractions; and seafood and nuts to lean protein and oil fractions. Similarly, dairy foods are further disaggregated to low fat dairy fraction, similar to skim milk, and solid fat fraction.

In addition, the FPED release includes a Food Patterns Equivalents Ingredients Database (FPID) that is similar to FPED for the unique ingredients of FNDDS foods. A few applications of FPID are described in this section.

### **What is Food Patterns Equivalents Ingredients Database?**

The FNDDSIngred file includes data on the ingredients and the amounts present in each of the FNDDS foods (includes beverages). Majority of the foods in FNDDS 2017-2018 are multi-ingredient foods and are composed of various combinations of 2300+ unique foods in the USDA's FoodData Central (FDC) and National Nutrient Database for Standard Reference (SR) 28. A separate database named Food Patterns Equivalents Ingredients Database (FPID) has been developed for these unique ingredients. The FP equivalent amounts of FPID ingredients are then applied to foods in the FNDDSIngred file to create FPED. Details on FPID and FPED development are described in the later sections.

The methodology for the development of FPED and FPID are essentially the same. The FPED includes the amounts of the 37 FP components per 100 grams of each of the FNDDS foods, and FPID includes the amounts of the 37 FP components per 100 grams of each of the unique ingredients of FNDDS foods.

### **Uses of Food Patterns Equivalents Ingredients Database**

The FPID has the potential for research, economic, and policy applications. A few of the major applications of FPID are listed below.

- Because FPID is ingredient-based, it can be used to estimate the amounts of FP components present in foods in general, where recipes are available. FPID serves as a tool to estimate the amounts of FP components consumed

by participants of dietary studies. Additionally, because FPID is used to create FPED for foods reported in the national dietary surveys, the dietary status of the study populations is comparable to that of the national population.

- FPID in combination with ARS Food Intakes Converted to Retail Commodities Databases (FICRCDs) [6] can be used to estimate the amounts of raw, frozen, or canned fruits and vegetables commodities to be purchased to meet the DGA FP recommendations. To estimate the amounts of raw fruits and vegetables to be purchased, it is necessary to convert fruits and vegetables from their consumed forms to purchased forms, which include peel, seeds, and other refuse. FICRCDs include conversion factors that convert fruits and vegetable from consumed forms to purchased forms. FICRCDs also include conversion factors to convert cooked grains, legumes, meat, poultry, and fish to their respective uncooked or raw forms. Appendices 8-11 of this document [FPED 2017-2018 Methodology and User Guide] include the weights of 1 cup equivalents for many fruits, vegetables, and dairy foods that are ingredients of FNDDES 2017-2018 foods.
- The FPID can serve as a resource for estimating the cost of meeting DGA recommendations for fruits and vegetables and other food commodities. By pricing the commodities, the cost (price) of nutritious food choices can be estimated.

The following two examples illustrate the use of FPID cup equivalent weights and FICRCD conversion factors in combination to estimate: (1) the amount of raw broccoli and cantaloupe commodities to be purchased to obtain one cup equivalent of each; (2) the cost (price) of one cup equivalent of raw broccoli and cantaloupe; and (3) the number of cup equivalents of raw broccoli and cantaloupe present in one pound of respective commodities (1 pound = 454 grams).

#### **Raw Broccoli:**

1 cup equivalent of broccoli (from FPID) = 80 g  
 Conversion factor for raw broccoli (from FICRCD) = 1.64  
 i.e., 164 grams of raw broccoli commodity purchased will yield 100 grams of raw, edible portion.

- (1) 1 cup equivalent of broccoli, edible portion  
 $= 80 \times 1.64 = 131 \text{ g of raw broccoli commodity}$   
 $131 \text{ grams raw broccoli commodity} = 131/454 = 0.29 \text{ lb.}$   
 Or, 0.29 lb. of raw broccoli commodity will yield 1 cup equivalent of raw broccoli (edible portion).

- (2) Price of 1 lb. raw broccoli commodity = \$1.70  
 Price of 0.29 lb. raw broccoli commodity =  $$(1.70 \times 0.29)$   
 $= \$0.49$

Price of 1 cup equivalent of raw broccoli is \$0.49.

$$(3) \text{ 1 lb. raw broccoli commodity} = [(454/80)/1.64] \text{ cup eq.} \\ = 3.46 = 3.5 \text{ cup eq.}$$

i.e., 1 pound of raw broccoli commodity will yield 3.5 cup equivalents of raw broccoli (edible portion).

### **Cantaloupe:**

1 cup equivalent of cantaloupe (from FPID) = 170 g  
 Conversion factor for cantaloupe (from FICRCD) = 1.96  
 i.e., 196 grams of raw cantaloupe commodity purchased will yield 100 grams of raw, edible portion.

$$(1) \text{ 1 cup equivalent of cantaloupe, edible portion} \\ = 1.96 \times 170 = 333 \text{ g of raw cantaloupe commodity} \\ 333 \text{ grams of raw cantaloupe commodity} = 333/454 = 0.73 \text{ lb.} \\ \text{Or, 0.73 lb. of raw cantaloupe commodity will yield 1 cup equivalent of} \\ \text{cantaloupe (edible portion).}$$

$$(2) \text{ Price of 1 lb. raw cantaloupe commodity} = \$1.00 \\ \text{Price of 0.73 lb. raw cantaloupe commodity} = \$ (1.00 \times 0.73) \\ = \$0.73$$

Price of 1 cup equivalent of raw cantaloupe is \$0.73.

$$(3) \text{ 1 lb. raw cantaloupe commodity} = [(454/170)/1.96] \text{ cup eq.} \\ = 1.36 = 1.4 \text{ cup eq.} \\ \text{i.e., 1 pound of raw cantaloupe commodity will yield 1.4 cup equivalents of} \\ \text{cantaloupe (edible portion).}$$

Similar computations can be made for frozen and canned fruits and vegetables by applying appropriate conversion factors from FICRCD. Canned fruits and vegetables are assumed to contain 65% of gross weight as fruit and vegetables, respectively [6].

### **FPED in Dietary Analysis**

Many multi-ingredient foods such as pizza, soups, sandwiches, and salads are commonly consumed. The energy and nutrients obtained from these foods can be estimated without having to disaggregate these foods to their ingredients. Nutrient adequacy estimations can be done without requiring food disaggregation. However, if data analysis requires an assessment of diets with respect to the DGA recommendations, disaggregation of foods to appropriate FP components can be attained by applying FPED amounts.

## Applications of FPED

The FPED has many important applications in Federal nutrition policies and in education programs. It can be used to estimate the mean intakes of FP components and to evaluate whether Americans eat according to the DGA recommendations by linking FPED with the appropriate WWEIA, NHANES dietary intake data. The FPED data release includes the WWEIA, NHANES day 1 and day 2 dietary data converted to FP components. The FPED data files are also used as a dietary assessment tool such as the Healthy Eating Index [7], and USDA Food Plans including the Thrifty Food Plan [8], to name a few. Federal agencies use the data to conduct epidemiological studies, surveillance, risk analysis, policy analysis and to develop dietary intervention programs. These agencies include USDA Economic Research Service (ERS), Center for Nutrition Policy and Promotion (CNPP), Food and Nutrition Service (FNS), U.S. Department of Health and Human Services (HHS) [9], National Cancer Institute (NCI) [10], and the Centers for Disease Control and Prevention (CDC).

FPED can be used in dietary research, where the foods in the study can be directly linked to FNDDS food codes.

## What is Included in the Methodology and User Guide?

It describes the methodology including guiding principles and other decisions made in the development of FPID and FPED FP components, determination of FP equivalents for each component, and algorithms used in the computation of FP equivalents. It also includes descriptions of the data files and databases in FPED 2017-2018 release.

## Food Patterns Components

Table 1 includes the main FP components in FPED and their units of measurement.

**Table 1. Units of Food Patterns Equivalents Database Components**

| <b>Food Patterns Equivalents Database<br/>Main Components</b> | <b>Units of Measurement</b>     |
|---|---------------------------------|
| Fruits  | Cup equivalents (cup eq.)       |
| Vegetables  | Cup equivalents                 |
| Grains  | Ounce equivalents (oz. eq.)     |
| Dairy   | Cup equivalents                 |
| Protein Foods   | Ounce equivalents               |
| Added Sugars  | Teaspoon equivalents (tsp. eq.) |
| Oils  | Gram equivalents                |
| Solid Fats  | Gram equivalents                |
| Alcoholic Drinks  | Number of drinks                |

## **Food Patterns Components New to FPED**

FPED includes new components that are not in MPED

- Fruit juices have been separated into a separate Fruit Juice component.
- The Red and Orange Vegetables component includes tomatoes and other red and orange colored vegetables.

Additionally, names of some of the components common to FPED and MPED have changed so as to be consistent with DGA 2010 and DGA 2015-2020. Meat, poultry, fish, eggs, nuts, seeds, and soy products are included in the Protein Foods components. The Fish component in MPED is named Seafood in FPED. The Cured Meat component includes frankfurters, sausages, and luncheon meats that are made from beef, pork, or poultry and replaces M\_Frank component of MPED.

## **Subdivision of Food Patterns Components to Facilitate Data Analysis**

In FPED, many of the Food Patterns main components are further subdivided so as to facilitate in-depth data analysis. The Red and Orange Vegetable component is subdivided into Tomatoes and Other Red and Orange Vegetables; the Starchy Vegetable component is subdivided into Potatoes (white potatoes) and Other Starchy Vegetables; the Meat, Poultry, and Seafood component is subdivided into Meat, Poultry, Organ Meat, Cured Meat, Seafood high in *n*-3 fatty acids, and Seafood low in *n*-3 fatty acids.

Because beans, peas, and lentils (legumes) can be considered as Vegetables as well as Protein Foods, the Beans, Peas, and Lentils component is computed both ways, thereby providing flexibility to users to place Beans, Peas, and Lentils in either of the two components, but not in both simultaneously to avoid double counting. Frankfurters, sausages, cured ham, corned beef, and luncheon meat that are made from beef, pork, or poultry are placed in the Cured Meat component because of the way they are processed. Organ meat is a separate component in FPED.

Table 2 lists the 37 FP components and includes a brief description of foods included in the components.

**Table 2. Food Patterns Equivalents Database Components**

| <b>FPED component and SAS variable name</b>                | <b>Foods and Units</b>  |
|--|---|
| <b>Total Fruit</b><br>(F_TOTAL)                            | Total intact fruits (whole or cut) and fruit juices (cup eq.)   |
| <b>Citrus, Melons, and Berries</b><br>(F_CITMLB)           | Intact fruits (whole or cut) of citrus, melons, and berries (cup eq.)   |
| <b>Other Fruits</b><br>(F_OTHER)                           | Intact fruits (whole or cut); excluding citrus, melons, and berries (cup eq.)                                   |
| <b>Fruit Juice</b><br>(F_JUICE)*                           | Fruit juices, citrus and non-citrus (cup eq.)   |
| <b>Total Vegetables</b><br>(V_TOTAL)                       | Total dark green, red and orange, starchy, and other vegetables; excludes legumes (cup eq.)                     |
| <b>Dark Green Vegetables</b><br>(V_DRKGR)                  | Dark green vegetables (cup eq.)   |
| <b>Total Red and Orange Vegetables</b><br>(V_REDOR_TOTAL)* | Total red and orange vegetables (tomatoes and tomato products + other red and orange vegetables) (cup eq.)      |
| <b>Tomatoes</b><br>(V_REDOR_TOMATO)                        | Tomatoes and tomato products (cup eq.)  |
| <b>Other Red and Orange Vegetables</b><br>(V_REDOR_OTHER)  | Other red and orange vegetables, excluding tomatoes and tomato products (cup eq.)                               |
| <b>Total Starchy Vegetables</b><br>(V_STARCHY_TOTAL)*      | Total starchy vegetables (white potatoes + other starchy vegetables) (cup eq.)                                  |
| <b>Potatoes</b><br>(V_STARCHY_POTATO)                      | White potatoes (cup eq.)  |
| <b>Other Starchy Vegetables</b><br>(V_STARCHY_OTHER)       | Other starchy vegetables, excluding white potatoes (cup eq.)  |
| <b>Other Vegetables</b><br>(V_OTHER)                       | Other vegetables not in the vegetable components listed above (cup eq.)   |
| <b>Beans, Peas, and Lentils</b><br>(V_LEGUMES)             | Beans, peas, and lentils (legumes) computed as vegetables (cup eq.)   |
| <b>Total Grains</b><br>(G_TOTAL)                           | Total whole and refined grains (oz. eq.)  |
| <b>Whole Grains</b><br>(G_WHOLE)                           | Grains defined as whole grains and contain the entire grain kernel — the bran, germ, and endosperm (oz. eq.)    |
| <b>Refined Grains</b><br>(G_REFINED)                       | Refined grains that do not contain all of the components of the entire grain kernel (oz. eq.)                   |
| <b>Total Protein Foods</b><br>(PF_TOTAL)*                  | Total meat, poultry, organ meat, cured meat, seafood, eggs, soy, and nuts and seeds; excludes legumes (oz. eq.) |
| <b>Total Meat, Poultry, and Seafood</b><br>(PF_MPS_TOTAL)  | Total of meat, poultry, seafood, organ meat, and cured meat (oz. eq.)   |

\* New variable in FPED and is not in MPED 2

**Table 2. Food Patterns Equivalents Database Components (Continued)**

| <b>FPED component and SAS variable name</b>                    | <b>Foods and Units</b>   |
|--|--|
| <b>Meat</b><br>(PF_MEAT)                                       | Beef, veal, pork, lamb, and game meat; excludes organ meat and cured meat (oz. eq.)  |
| <b>Cured Meat</b><br>(PF_CUREDMEAT)                            | Frankfurters, sausages, corned beef, cured ham and luncheon meat that are made from beef, pork, or poultry (oz. eq.)   |
| <b>Organ Meat</b><br>(PF_ORGAN)                                | Organ meat from beef, veal, pork, lamb, game, and poultry (oz. eq.)  |
| <b>Poultry</b><br>(PF_POULT)                                   | Chicken, turkey, Cornish hens, duck, goose, quail, and pheasant (game birds); excludes organ meat and cured meat (oz. eq.)   |
| <b>Seafood High in <i>n</i>-3 Fatty Acids</b><br>(PF_SEAFD_HI) | Seafood (finfish, shellfish, and other seafood) high in <i>n</i> -3 fatty acids (oz. eq.)  |
| <b>Seafood Low in <i>n</i>-3 Fatty Acids</b><br>(PF_SEAFD_LOW) | Seafood (finfish, shellfish, and other seafood) low in <i>n</i> -3 fatty acids (oz. eq.)   |
| <b>Eggs</b><br>(PF_EGGS)                                       | Eggs (chicken, duck, goose, quail) and egg substitutes (oz. eq.)   |
| <b>Soy Products</b><br>(PF_SOY)                                | Soy products, excluding calcium fortified soy milk (soymilk) and products made with raw (green) soybean (oz. eq.)  |
| <b>Nuts and Seeds</b><br>(PF_NUTSDS)                           | Peanuts, tree nuts, and seeds; excludes coconut (oz. eq.)  |
| <b>Beans, Peas, and Lentils</b><br>(PF_LEGUMES)*               | Beans, peas, and lentils (legumes) computed as protein foods (oz. eq.)   |
| <b>Total Dairy</b><br>(D_TOTAL)                                | Total milk, yogurt, cheese, and whey. For some foods, the total dairy values could be higher than the sum of D_MILK, D_YOGURT, and D_CHEESE because the Miscellaneous Dairy component composed of whey is not included in FPED as a separate variable. (cup eq.)                             |
| <b>Milk</b><br>(D_MILK)  | Fluid milk, buttermilk, evaporated milk, dry milk, and calcium fortified soy milk (soymilk) (cup eq.)  |
| <b>Yogurt</b><br>(D_YOGURT)                                    | Yogurt (cup eq.)   |
| <b>Cheese</b><br>(D_CHEESE)                                    | Cheeses (cup eq.)  |
| <b>Oils</b><br>(OILS)  | Fats naturally present in nuts, seeds, and seafood; all unhydrogenated vegetable oils, except palm oil, palm kernel oil, and coconut oils; the fat present in avocado and olives above the allowable amount; 50% of the fat present in stick and tub margarine and margarine spreads (grams) |

\* New variable in FPED and is not in MPED 2

**Table 2. Food Patterns Equivalents Database Components (Continued)**

| <b>FPED component and SAS variable name</b> | <b>Foods and Units</b>  |
|---|---|
| <b>Solid Fats</b><br>(SOLID_FATS)           | Fats naturally present in meat, poultry, eggs, and dairy (lard, tallow, and butter); fully or partially hydrogenated oils; shortening; palm oil; palm kernel oil; coconut oils; fats naturally present in coconut meat and cocoa butter; and 50% of the fat present in stick and tub margarines and margarine spreads (grams) |
| <b>Added Sugars</b><br>(ADD_SUGARS)         | Caloric sweeteners such as syrups and sugars and others defined as added sugars (tsp. eq.)  |
| <b>Alcoholic Drinks</b><br>(A_DRINKS)       | Alcoholic beverages and alcohol (ethanol) added to foods after cooking (no. of drinks)  |

\* New variable in FPED and is not in MPED 2

Appendix 1 contains a detailed list of foods included in each of the 37 Food Patterns components in FPED. Appendix 2 lists the variables in MPED 2 and FPED, showing the connections between the variables in the two databases.

### **Foods Not Assigned to Any Food Patterns Components**

A few of the FNDDS 2017-2018 foods are considered as non-FP components because they contain a substantial proportion of ingredients that are not conventional FP components. These non-FP foods include infant formula and a few of the milk- or soy-based beverages that are meal supplements or protein supplements containing extensively processed ingredients such as hydrolyzed whey and soy products which are not FP foods. Other foods that are considered as non-FP components include broth, coconut water, cornstarch, black coffee without added sugars, human milk, leavening agents, lecithin, mustard, orange peel, salt, low-calorie or nonnutritive sweeteners, sugarless gums, soy sauce, tea without additions, vinegar, water, yeast extract, and spices such as celery seeds, cinnamon, cloves, cumin, curry powder, nutmeg, black and white pepper, poppy seeds, and powdered spices.

### **Files Included in the Release**

The release includes:

- Methodology and User Guide
- The amount of each of the 37 FP components present per 100 grams of each of the FNDDS 2017-2018 foods (FPED) and their unique ingredients (FPID) in Microsoft Access, Microsoft Excel, and SAS
- The amount of each of the 37 FP components present in individual foods reported by each respondent on day 1 and day 2 of the survey and respondents' demographic information in SAS



- Total amount of each of the 37 FP components reported by each respondent on day 1 and day 2 of the survey and respondents' demographic information in SAS
- Four table sets containing estimates of mean intakes of the 37 FP components on day 1, by demographic groups
- SAS codes file to create mean intake estimates of FP components on day 1, by demographic groups.

The names of the files including the MS Access and SAS datasets that are released in FPED 2017-2018 are listed in Table 3.

**Table 3. List of Files and Datasets Included in FPED 2017-2018 Release**

| <b>Name of the file</b>   | <b>Information contained in the file</b>  |
|---------------------------|---|
| fped_1718.pdf             | Food Patterns Equivalents Database 2017-2018: Methodology and User Guide with appendices on the foods included in each of the 37 FP components and cup weights for fruits, vegetables, and dairy  |
| fpid_1718.mdb             | Includes amounts of the 37 FP components present per 100 grams of the 2322 FNDDS 2017-2018 ingredients, in Microsoft Access   |
| fpid_1718.xlsx            | Includes amounts of the 37 FP components present per 100 grams of the 2322 FNDDS 2017-2018 ingredients, in Microsoft Excel  |
| fpid_1718.sas7bdat        | Includes amounts of the 37 FP components present per 100 grams of the 2322 FNDDS 2017-2018 ingredients, in SAS  |
| fped_1718.mdb             | Includes amounts of the 37 FP components present per 100 grams of the 7083 FNDDS 2017-2018 foods, in Microsoft Access   |
| fped_1718.xlsx            | Includes amounts of the 37 FP components present per 100 grams of the 7083 FNDDS 2017-2018 foods, in Microsoft Excel  |
| fped_1718.sas7bdat        | Includes amounts of the 37 FP components present per 100 grams of the 7083 FNDDS 2017-2018 foods, in SAS  |
| fped_dr1iff_1718.sas7bdat | Includes amount of each of the 37 FP components present in each of the foods reported by the respondents on day 1 and demographic variables. Total number of observations in the file = 112683. See Appendix 5 for the list of variables. |

**Table 3. List of Files and Datasets Included in FPED 2017-2018 Release**  
(Continued)

| <b>Name of the file</b>   | <b>Information contained in the file</b>  |
|---------------------------|---|
| fped_dr2iff_1718.sas7bdat | Includes each of the 37 FP components present in each of the foods reported by the respondents on day 2 and demographic variables. Total number of observations in the file = 93500. See Appendix 5 for the list of variables |
| fped_dr1tot_1718.sas7bdat | Includes total amount of each of the 37 FP components from foods reported by each respondent on day 1 and demographic variables. Total number of observations in the file = 8704. See Appendix 6 for the list of variables.   |
| fped_dr2tot_1718.sas7bdat | Includes total amount of each of the 37 FP components from foods reported by respondents on day 2 and demographic variables. Total number of observations in the file = 8704. See Appendix 6 for the list of variables.       |
| Table_1_FPED_GEN_1718.pdf | Mean intakes of FP components by age-gender groups; day 1 dietary intake  |
| Table_2_FPED_RAC_1718.pdf | Mean intakes of FP components by race-ethnicity groups; day 1 dietary intake  |
| Table_3_FPED_INC_1718.pdf | Mean intakes of FP components by household income groups (in dollars); day 1 dietary intake   |
| Table_4_FPED_POV_1718.pdf | Mean intakes of FP components by household income groups (as percent of poverty); day 1 dietary intake  |
| MakeTables_1718_sas.sas   | SAS codes file that produces mean intakes tables 1- 4 (Appendix 7). While executing MakeTables.sas, day 1 total file, fped_dr1tot_1718.sas7bdat should be in the same folder as MakeTables.sas file.                          |

## Chapter 2

### Food Patterns Equivalents Database Methodology

#### What is New in the FPID/FPED 2017-2018?

The guiding principles and methodology used in the development of FPID/FPED 2017-2018 is the same as that used in previous FPID/FPEDs since 2005-2006, except from 2011-2012 onward undiluted fruit juice concentrated in foods were assigned to added sugars. However, this change did not impact mean intakes of added sugars or fruit juice by demographic groups.

The current release includes a Microsoft Excel file that contains the amount of each of the 37 FP components present per 100 grams of each of the FND DS 2017-2018 foods (FPED) and their unique ingredients (FPID). The previous releases had these per 100-gram databases in SAS and Microsoft Access only.

#### MPED vs. FPED

The methodology used to develop the MPED has been revised in order to:

- Simplify FPED development
- Apply consistent decisions across similar foods

Major differences between FPED and MPED methodology are:

- Consolidation of the weights of one cup equivalent of fruits such that similar types of fruits will have the same cup weights, with a few exceptions.
- Fruit juices form a separate fruit juice component and are not included along with intact or whole fruit.
- Consolidation of the weights of one cup equivalent of vegetables such that similar types of vegetables will have the same cup weights, with a few exceptions.
- Definition of ounce equivalents of grains: For grain products such as breads, pancakes, waffles, muffins, and grain-based snacks made of flour, 16 grams of flour is used as the basis for defining one ounce equivalent of grains. Cooked grains such as cooked rice, pasta, and hot breakfast cereals are converted to uncooked form, and one ounce equivalent of grains is defined as 28.35 grams. No change has been made from the MPED definition of one ounce equivalent of grains (28.35 g) for ready-to-eat cereals.
- Inclusion of calcium fortified soymilk (calcium fortified soy beverage) in the Dairy Group, as defined in the DGA 2010 and DGA 2015-2020.
- Computation of added sugars equivalents using the sugar content of foods that are defined as added sugars.

- Computation of the number of alcoholic drinks directly from the alcohol (ethanol) content of the beverages. One drink is defined as the amount of alcoholic beverage containing 0.6 fluid ounces or 14 grams of alcohol.
- Yogurt present in frozen yogurt is assigned to the Yogurt component. In MPED, frozen yogurt was assigned to the Milk component.
- Fat free cream cheese is assigned to the Cheese component. In MPED, it was assigned to solid fat.
- The fats present in stick, tub, and spread type of margarines are divided into equal amounts of oils and solid fats. This is a major change from MPED, where stick margarines were assigned to solid fats and tub and spread types containing less than 80 percent fat were assigned to oils.

### Guiding Principles

The following guiding principles were used when assigning foods to respective Food Patterns (FP) components:

- **Assigning foods to appropriate FP components independent of the amounts in which they are present:** All ingredients are assigned to an FP component, even if they are present in small amounts in the food. Milk present in coffee, tea, batters, cookies, and cakes; lemon juice used in mayonnaise, cake icing, baked or broiled fish; lime juice present in alcoholic beverages; cheese and oils present as ingredients of sauces; nuts used as garnishes; fruits and nuts present as ingredients in candies, breads, muffins and ready-to-eat cereals are some of the examples where an FP component can be present in small amounts in a food and required consideration in FPED.
- **Rounding to two decimals places:** The amounts of FP components present per 100 grams of each food in FPED were rounded to two decimal places. Any food ingredient that is present in very minuscule amounts will have a value of zero when rounded.
- **Rounding the weights of fruits and vegetables cup equivalents to the nearest zero or five grams:** Weights of one cup equivalent of fruits and vegetables, including cooked beans, peas, and lentils (legumes), were rounded to the nearest zero or five grams. The reason being because of measurement error we do not have the precision to estimate the cup weight rounded to the nearest gram. For example, a cup weight of 126 grams is rounded to 125 grams (nearest five grams), implying it is between 122.50 to 127.49 grams. However, it should be noted that even these rounded values have measurement errors associated with them. The cup weights of dried fruits and vegetables, potato chips, and vegetable chips are small compared with raw or cooked vegetables and hence were not rounded to the nearest zero or five grams to minimize cup weight errors.
- **Consolidating cup equivalents for similar fruits and vegetables:** The weights of one cup equivalents of fruits and vegetables were consolidated

such that similar types of fruits or vegetables will have the same cup weights, with a few exceptions. For example, all types of berries such as raw blackberries, blueberries, cranberries, mulberries, raspberries, and strawberries were assigned 145 grams as the weight of one cup equivalent. Likewise, all types of raw peppers such as banana, hot chili, poblano, serrano, and bell were assigned a weight of 120 grams per one cup equivalent. Cooked beans, peas, and lentils (legumes) such as cooked black beans, fava beans, lentils, lima beans, mung beans, pinto beans, chickpeas, cowpeas, and white beans were assigned a weight of 175 grams per cup equivalent. Details on additional decisions made on fruit and vegetables groups are described under Fruit Group and Vegetables Group chapters.

- **Applying 16-gram flour rule:** The grains were categorized into either whole grains or refined grains (non-whole grains) based on whether they contained the entire grain kernel or only certain components of the kernel. In the MPED, the weights of specific sizes of foods such as the weights of one slice of white bread (26 g), half of a hamburger roll (21.5 g), half of an English muffin (25 to 29 g), and small pancakes (40 g) were used as the basis for determining what counts as one ounce equivalent of grains. However, in FPED, the weight of the food that contained 16 grams of flour was used as the basis for defining an ounce equivalent of grains for grain products made of flour. This principle was applied to grain-based foods such as breads, cakes, cookies, corn chips, crackers, muffins, pie crust, pastries, pretzels, quick breads, and all types of rolls (hard, hamburger, hot dog, soft, sweet). The revised methodology offers a standardized way to compute grain equivalents. Cooked grains such as cooked rice, pasta, macaroni, and hot breakfast cereals were first converted to respective amounts of uncooked grains or cereals with an ounce equivalent of grains defined as 28.35 grams. No changes were made to the MPED definition of one ounce equivalent of grains for ready-to-eat cereals, which was 28.35 grams. Details on additional decisions made on grains are described in the Grain Group chapter.
- **Soy milk:** Calcium fortified soy milk (calcium fortified soy beverages) was included in the Dairy Group, and soy milk/beverage that did not contain added calcium was placed in the Soy Product Group.

### **Food Patterns Equivalents Ingredients Database and Food Patterns Equivalents Database**

The 7083 foods in the FNDDS 2017-2018 were composed of various combinations of 2322 unique ingredients. A Food Patterns Equivalents Ingredients Database (FPID) was developed first for these unique ingredients. The methodology for the development of FPID and FPED were the same, and they each have 37 FP components per 100 grams of ingredient or food. The FPID was applied to foods in the FNDDSIngred file and the FPED was developed.

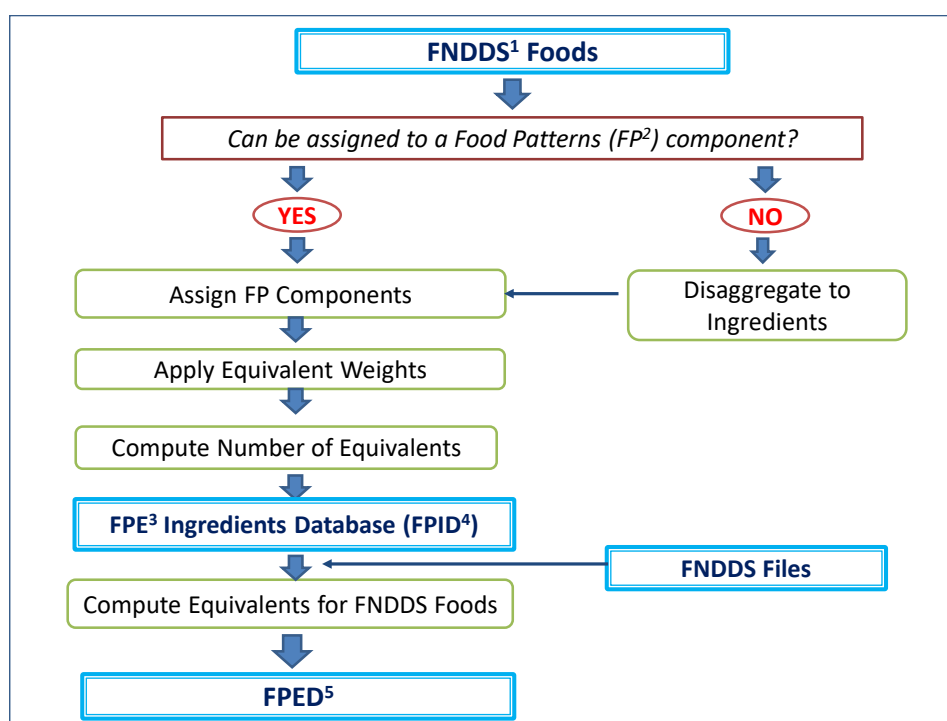
## Major Development Steps

There are four major steps involved in computing Food Patterns equivalents for each FNDDS 2017-2018 food:

1. Disaggregation of FNDDS 2017-2018 foods to its ingredients.
2. Assignment of appropriate Food Patterns (FP) components to ingredients.
3. Computation of FP equivalents per 100 grams of ingredient by applying equivalent weights (FPID).
4. Determination of the amounts of each of the 37 FP equivalents present per 100 grams of FNDDS 2017-2018 foods, by applying FPID values.

Figure 1 illustrates the major steps in the development of FPID and FPED.

**Figure 1. Overview of the Process**



<sup>1</sup>FNDDS = Food and Nutrient Database for Dietary Studies

<sup>2</sup>FP = Food Patterns

<sup>3</sup>FPE = Food Patterns Equivalents

<sup>4</sup>FPID = Food Patterns Equivalents Ingredients Database

<sup>5</sup>FPED = Food Patterns Equivalents Database

## Assignment of FNDDS Foods to Food Patterns Components

Some of the FNDDS foods form their own ingredient, and others have more than one ingredient, as shown below. In Table 4, milk, apple, and carrots form their own ingredient; and fried eggs, cheese sandwich, and custard have three, two, and five ingredients, respectively.

**Table 4. Examples of FNDDS Foods and Their Ingredients**

| <b>FNDDS food code</b> | <b>Description</b>          | <b>Ingredient code</b> | <b>Ingredient description</b>                     |
|------------------------|-----------------------------|------------------------|---|
| 11111000               | Milk, cow's, fluid, whole   | 01077                  | Milk, whole, 3.25% milk fat, with added vitamin D |
| 63101000               | Apple, raw                  | 09003                  | Apples, raw                                       |
| 73101010               | Carrots, raw                | 11124                  | Carrots, raw                                      |
| 31105030               | Eggs, whole, fried with oil | 01123                  | Eggs, whole, raw, fresh                           |
|                        |                             | 02047                  | Salt, table                                       |
|                        |                             | 82101000               | Vegetable oil, NFS                                |
| 14640000               | Cheese sandwich             | 01252                  | Cheese product, pasteurized process, American     |
|                        |                             | 18069                  | Bread, white, commercially prepared               |
| 13210300               | Custard                     | 11100000               | Milk, NFS   |
|                        |                             | 19335                  | Sugars, granulated                                |
|                        |                             | 01123                  | Egg, whole, raw, fresh                            |
|                        |                             | 14429                  | Beverages, water, tap, municipal                  |
|                        |                             | 02047                  | Salt, table                                       |

FNDDS foods that can be directly assigned to an FP component are assigned to the appropriate component. Fruits, vegetables, fluid milk, cheese, cooked rice and pasta, broiled meat and fish, butter, cooking oils, and plain peanuts and tree nuts are examples of foods that can be directly assigned to an FP component, without requiring disaggregation into ingredients. Using Table 5 examples, milk, apples, and carrots can be assigned directly to the appropriate FP components. If an FNDDS food can be directly assigned to an FP component, then the number of FP equivalents were computed using appropriate cup, ounce, or gram weights.

### **Disaggregation of FNDDS Foods into Ingredients**

Foods that cannot be directly assigned to an FP component are disaggregated into its ingredients. Most of the FNDDS foods are multi-ingredient foods and cannot be directly assigned to an FP component, without prior disaggregation into their ingredients (e.g., fried vegetable, fried eggs, pizza, sandwiches, soups, cakes, cookies, candies, ready-to-eat cereals, rice with vegetables and meat, frozen dinners). In Table 4 examples, fried eggs, cheese sandwich, and custard cannot be directly assigned to an FP component and need disaggregation into ingredients that can be assigned to an FP component. Table 5 provides a conceptual model for the level of food disaggregation used in FPID and FPED.

**Table 5. A Conceptual Model for Food Disaggregation**

| Survey food description   | Recipe for the previous level <sup>a</sup>                          |   |   |
|---|---|---|---|
|   | Level 1 disaggregation  | Level 2 disaggregation  | Level 3 disaggregation  |
| Tuna noodle casserole with cream or white sauce, with butter <sup>a</sup> | 1. Light tuna fish, canned in oil, drained                          | i. Tuna fish <sup>b</sup><br>ii. Vegetable oil <sup>b</sup><br>iii. Salt <sup>c</sup> |   |
|   | 2. Egg noodles, cooked  | i. Egg noodles, dry   | i. Whole eggs, raw <sup>b</sup><br>ii. Wheat flour <sup>b</sup> |
|   | 3. Fluid milk <sup>b</sup>  |   |   |
|   | 4. Butter <sup>b</sup>  |   |   |
|   | 5. Wheat flour, white, all-purpose, enriched, bleached <sup>b</sup> |   |   |
| Tequila Sunrise <sup>a</sup>  | 1. Tequila <sup>b</sup>   |   |   |
|   | 2. Orange juice <sup>b</sup>  |   |   |
|   | 3. Lime juice <sup>b</sup>  |   |   |
|   | 4. Grenadine  | i. High fructose corn syrup <sup>b</sup><br>ii. Water <sup>c</sup>                    |   |
| Baked fish, made with butter <sup>a</sup>                                 | 1. Fish <sup>b</sup>  |   |   |
|   | 2. Butter <sup>b</sup>  |   |   |
|   | 3. Lemon juice <sup>b</sup>   |   |   |

<sup>a</sup> Only the major ingredients are listed

<sup>b</sup> Indicates the level at which assignments are made

<sup>c</sup> Ingredient is defined as a non-FP component

### Assignment of Ingredients to Food Patterns Components

After disaggregation, each ingredient is either assigned to an appropriate FP component listed in Table 2 or to the “non-FP component” category.

### Applying Equivalent Weights and Computing Number of Food Patterns Equivalents

The FP equivalents are computed per 100 grams of ingredients or foods that have an FP component assignment. Table 6 gives examples of FP equivalents computations per 100 grams of ingredient or foods.



**Table 6. Application of Equivalent Weights and Computation of Number of Equivalents Present per 100 Grams of Ingredient or Food**

| Food              | Weight of one cup equivalent (g) | Number of equivalents per 100 grams of food |
|-------------------|----------------------------------|---|
| Fluid milk        | 245                              | $100/245 = 0.41$                            |
| Carrots, raw      | 125                              | $100/125 = 0.80$                            |
| Berries, raw      | 145                              | $100/145 = 0.69$                            |
| 100% fruit juices | 250                              | $100/250 = 0.40$                            |

### Computation of Number of Equivalents in 100 Grams of FNDDS Foods

The amounts of FP equivalents present in each of the ingredients of an FNDDS food are totaled to get the 37 FP component profile per 100 grams of food. FNDDS foods that have only non-FP components will have zero values for all of the FP components in FPED. There are no missing values in FPID and FPED.

The following table (Table 7) provides an overview of computing number of equivalents for 100 grams of sweetened yogurt with strawberries.

**Table 7. Number of Equivalents Computation: Sweetened Yogurt with Strawberries**

| Ingredients <sup>1</sup> | Amount present per 100 grams of food (g) | Weight of one cup or tsp. equivalent (g) | Food Patterns component assignment | Number of equivalents per 100 grams of food |
|--------------------------|--|--|------------------------------------|---|
| Yogurt, non-fat          | 82                                       | 245                                      | Yogurt                             | 0.34 cup                                    |
| Strawberries, frozen     | 6  | 150                                      | Citrus, Melons, and Berries        | 0.04 cup                                    |
| Sugar                    | 12                                       | 4.2                                      | Added Sugar                        | 2.86 tsp.                                   |

<sup>1</sup>Only the major FP ingredients are listed.

In FPED, 100 grams of sweetened yogurt will have 0.34 cup Yogurt and Total Dairy; 0.04 cup Citrus, Melons, and Berries, and Total Fruit; and 2.86 teaspoons of Added Sugars; and the rest of the FP components will have zero values.

## Chapter 3

### Fruit Group

This chapter discusses the Fruit Group components and the determination of the amount of Food Patterns equivalents for its components, with examples.

#### Fruit Group Components

The Fruit Group consists of three components: Citrus, Melons, and Berries; Other Fruits; and Fruit Juice. The first two components include fruits that are consumed as intact fruit or as fruit pieces and exclude fruit juices. The Fruit Juice component includes both citrus and non-citrus fruit juices.

The Citrus, Melons, and Berries component includes blackberries, blueberries, cranberries, currents, dewberries, huckleberries, kiwifruit, loganberries, mulberries, raspberries, and strawberries; melons such as cantaloupe, casaba, honeydew, and watermelon; and citrus fruit such as calamondin, grapefruit, kumquats, lemons, limes, mandarin oranges, oranges, tangerines, and tangelos. The Other Fruits component includes apples, apricots, bananas, cherries, dates, figs, grapes, guava, litchis, mangoes, nectarines, papaya, passion fruit, peaches, pears, pineapple, plums, pomegranates, prunes, raisins, rhubarb, and tamarind. The Fruit Juice component includes juice of citrus, melons, berries and other fruits.

Appendix 1 lists foods in the Fruit Group.

#### Determination of Cup Equivalent Weights of Fruits and Fruit Juices

One cup of raw, canned, or frozen fruit or one cup of 100% fruit juice is defined as one cup equivalent of fruit. The weights of one cup equivalent of fruits are consolidated such that similar types of fruits will have the same cup weights, with a few exceptions. The cup weights are rounded to the nearest zero or five grams. The FPED 2017-2018 uses the same cup weights as those used in the previous FPEDs.

**Berries:** One cup weights of raw (or fresh) berries such as blackberries, blueberries, dewberries, huckleberries, loganberries, mulberries, and strawberries are between 140 and 145 grams, with most of them weighing 145 grams. Therefore, raw/fresh berries are assigned 145 grams per cup. Frozen berries have a higher cup weight, probably due to compacting of fruit during blanching prior to freezing. One cup of frozen, unsweetened berries is given a weight of 150 grams; and frozen, sweetened berries are given 165 grams cup weight because of added sugars.

**Melons:** Casaba, cantaloupe, and honeydew melons weigh about 170 grams per cup, and therefore 170 grams is chosen as one cup weight for all types of melons. An exception is watermelon with a cup weight of 150 grams.

**Citrus fruit:** One cup weight of all raw commercial varieties of oranges is 180 grams, Florida oranges 185 grams, and tangerines and mandarins 195 grams. A cup weight of 185 grams is chosen for these fruits. Lemon, lime, and grapefruits have a higher cup weight, and are assigned the cup weight of lemon, which is 210 grams.

**Other fruits:** For most of the fruits categorized as other fruits, weights were rounded to the nearest zero or five grams such as apples 110 grams, banana 150 grams, papaya 140 grams, peaches 154 grams rounded to 155 grams, and nectarines 143 grams rounded to 145 grams.

**Fruit juices, nectars and fruit juice drinks:** Single strength fruit juices and fruit juice drinks are assigned a cup weight of 250 grams; frozen juice concentrates 70 grams; and fruit nectars 250 grams. Fruit nectars and fruit juice drinks contain added sugars in addition to fruit juice or pulp. Only a few fruit nectars have label information as to the amount of fruit contained in them which ranged from 25 to 45 percent. Due to a lack of detailed information as to the percentage of fruit pulp or juice present in fruit nectars, it was decided that all types of fruit nectars contained 40 percent of fruit juice or pulp. Fruit juice drinks were assumed to contain 15 percent fruit juice. Consequently, 100 grams of nectars and fruit juice drinks contain 0.16 and 0.06 cup equivalents of fruit juice, respectively. In addition, the added sugars present in nectars and fruit juice drinks are computed, after subtracting sugars naturally present in the Fruit Juice components.

### Examples:

#### 1. Mango nectar

|  |  |
|--|--|
| One cup weight of mango pulp                                   | = 250 g  |
| Number of cup equivalents per 100 grams                        | = $100/250 = 0.4$ cup eq.                      |
| Number of cup equivalents in FPED<br>(40% fruit juice assumed) | = $(0.4 \times 0.4)$ cup eq.<br>= 0.16 cup eq. |

#### 2. Fruit juice drink, low calorie

|  |   |
|--|---|
| One cup weight of fruit juice drink                            | = 250 g   |
| Number of cup equivalents per 100 grams                        | = $100/250 = 0.4$ cup eq.                       |
| Number of cup equivalents in FPED<br>(15% fruit juice assumed) | = $(0.4 \times 0.15)$ cup eq.<br>= 0.06 cup eq. |

**Frozen fruit juice concentrates:** The determination of one cup weight for frozen fruit concentrate is described below.

**Example: Frozen orange juice concentrate**

|   |              |
|---|--------------|
| One cup weight of orange juice frozen concentrate   | = 284 g      |
| Frozen orange juice concentrate is made to single-strength by adding 3 parts water to 1 part juice concentrate. |              |
| Dilution factor to bring frozen concentrate to single strength juice  | = 4          |
| Weight of frozen orange juice concentrate to produce 1 cup single strength juice                                | = $284/4=71$ |
| Rounded weight  | = 70 g       |

**Canned fruit:** The weights of one cup equivalent of canned fruits are as follows: in water pack or juice pack 245 grams, in light syrup 250 grams, and in heavy syrup 255 grams. Fruit canned in 100% fruit juice, water, light or heavy syrups were assumed to contain 65 percent fruit and 35 percent liquid medium. Fruits canned in fruit juice contain 65 percent fruit and 35 percent juice. The juice in juice packs is assigned to Fruit Juices and the fruit to the respective Fruit component. In addition, the added sugars in the syrup are computed, after subtracting the naturally present sugars in fruits.

**Example: Canned pineapple in light syrup**

|   |                               |
|---|-------------------------------|
| One cup weight of canned pineapples in light syrup    | = 250 g                       |
| Number of cup equivalents per 100 grams               | = $100/250 = 0.4$ cup eq.     |
| Number of cup equivalents in FPED (65% fruit assumed) | = $(0.4 \times 0.65)$ cup eq. |
|   | = 0.26 cup eq.                |

**Dried Fruit:** The weight of  $\frac{1}{2}$  cup of dried fruit is defined as one cup equivalent.

**Multi-ingredient Foods Containing Fruit**

Fruit present in multi-ingredient foods such as fruit salads, cakes, ice cream, and other desserts; fruit juices present in cocktails, fruit nectars, and fruit juice drinks are assigned to the appropriate Fruit component. Ingredients other than fruit or fruit juice are assigned to the respective FP components.

Table 8 summarizes one cup equivalent weight of selected Fruit Group foods. Appendix 8 includes an extensive list of one cup equivalent weights for fruits and fruit juices.

**Table 8. Fruit Group: Summary of Selected Cup Equivalent Weights**

| <b>Fruit type</b>                         | <b>Weight of one cup equivalent (g)</b> | <b>Additional information</b>                  |
|---|---|--|
| All types of berries, raw                 | 145                                     |  |
| All types of berries, frozen, unsweetened | 150                                     |  |
| All types of berries, frozen, sweetened   | 165                                     |  |
| Citrus fruit, oranges                     | 185                                     |  |
| All melon types (except, watermelon), raw | 170                                     | Watermelon<br>150 grams/cup                    |
| All other fruits, raw                     | varied                                  | Weights rounded to nearest 0 or 5 grams        |
| Fruit juice (100%)                        | 250                                     |  |
| Fruit juice concentrate, frozen           | 70                                      |  |
| Canned fruit in juice pack                | 245                                     | 65% fruit assumed, 35% juice                   |
| Canned fruit in water pack                | 245                                     | 65% fruit assumed                              |
| Canned fruit in light syrup               | 250                                     | 65% fruit assumed; added sugars computed       |
| Canned fruit in heavy pack                | 255                                     | 65% fruit assumed; added sugars computed       |
| Canned fruit water or juice pack, drained | 190                                     |  |
| Canned fruit syrup pack, drained          | 200                                     |  |
| Applesauce                                | 245                                     |  |
| Fruit nectar                              | 250                                     | 40% fruit juice assumed; added sugars computed |
| Fruit juice drinks                        | 250                                     | 15% fruit juice assumed; added sugars computed |
| Dried fruit                               | 45-90                                   | Weights, rounded                               |
| Dried fruit, cooked or stewed             | 250                                     |  |

## Chapter 4

### Vegetables Group

This section discusses the Vegetables Group components and the determination of the amount of Food Patterns equivalents for its components, with examples.

Olives, avocados, and plantains are used as vegetables in meals, and hence are included in the Vegetables Group in the USDA Food Patterns.

#### Vegetables Group Components

The Vegetables Group consists of five components: Dark Green, Red and Orange, Starchy, Other, and Beans, Peas, and Lentils (Legumes). Beans, Peas, and Lentils can also be treated as Protein Foods. Vegetable juices were included under the respective vegetables; FPED does not have a separate vegetable juice component.

The Dark Green Vegetables component includes arugula, basil, beet greens, bitter melon leaves, broccoli, Chinese cabbage (pak-choi), chrysanthemum garland, chard, cilantro, collards, cress, dandelion greens, kale, lambsquarters, lettuce (Boston, butterhead, cos, romaine, green leaf, and red leaf), mustard cabbage, mustard greens, parsley, poke greens, spinach, turnip greens, and watercress.

The Red and Orange Vegetables component includes calabaza (Spanish pumpkin), carrots, red chili peppers, red or orange bell peppers, pimento (pimiento), pumpkin, squash (most winter types), sweet potatoes, and tomatoes.

The Starchy Vegetables component includes breadfruit, burdock, cassava (yuca blanca), corn, lima beans, immature or raw (not dried) peas (e.g., cowpeas, blackeye peas, green peas, pigeon peas), jicama or yam beans, plantain, poi, white potatoes, salsify, tapioca, taro, water chestnuts, and yam.

The Other Vegetables component includes artichoke, asparagus, avocado, bamboo shoots, beans (green, string), bean sprouts, beets, bitter melon (bitter melon), balsam pear), broccoflower, Brussels sprouts, cabbage (green, red, savoy), cactus (nopales), cauliflower, celeriac, celery, chayote or christophine, chives, cucumber, eggplant, fennel bulb, garlic, ginger root, kohlrabi, leeks, lettuce (iceberg and others not included under dark green category), luffa (Chinese okra), mushrooms, okra, olives, onions, peppers (chili and bell types that are not red or orange in color), radicchio, sprouted beans (e.g. sprouted mung beans), radish, rutabaga, squash (summer), snow peas, tomatillos, turnips, and winter melons.

The Beans, Peas, and Lentils (Legumes) component includes all mature or dried beans, peas, and lentils (legumes) such as black beans, blackeye peas, brown beans, bayo beans, carob, chickpeas (garbanzo beans), fava beans, kidney beans, lentils, lima beans, mung beans, navy beans, pink beans, pinto beans, split peas, white beans, and soybeans. Soy flour, soy isolate, and soy concentrate are not

included in the Beans, Peas, and Lentils component, but are assigned to Protein Foods (variable name: PF\_Soy).

Appendix 1 lists foods in the Vegetables Group.

### **Determination of Cup Equivalent Weights of Vegetables and Vegetable Juices**

One cup of raw, canned, frozen, or cooked vegetable, two cups of raw, leafy vegetables, one cup of cooked beans, peas, and lentils (legumes), or one cup of 100% vegetable juice are defined as one cup equivalent of vegetables. The cup weights used are the same as those used in the previous FPEDs. The weights of one cup equivalent of vegetables are rounded to the nearest zero or five grams. Variations in the cup weights exist among some of the vegetables in the dark green, red and orange, starchy, or other vegetables categories; and the cup weights are consolidated as much as possible.

- Sliced, diced, or chopped raw vegetables are given the same cup weight because FNDDS food code descriptions do not specify the types of cuts. Most often, the cup weights were the average weights of different cuts. For example, raw carrots are assigned 125 grams cup weight, which is an average of one cup of sliced (122 g) and chopped (128 g) carrots; bell peppers are assigned 120 grams cup weight, which is an average of one cup sliced (92 g) and chopped (149 g); and one cup of broccoli was assigned 80 grams, which is an average of broccoli flowerets (71 g) and chopped broccoli (88 g).
- In general, raw vegetables have lower cup weights than their cooked counterparts. Examples include carrots, raw 125 grams, cooked 145 grams; cucumber, raw 120 grams, cooked 180 grams; eggplant, raw 80 grams, cooked 95 grams; bell peppers, raw 120 grams, cooked 135 grams; and mushrooms, raw 70 grams, cooked 155 grams. This highlights the fact that a person eating cooked vegetables will have to eat greater amounts to get the same number of cup equivalents as a person eating raw or uncooked vegetables.
- Most often, the same cup weights are used regardless of whether a cooked vegetable is prepared from raw (fresh), frozen, or canned form of vegetables, with a few exceptions. Vegetables for which the same cup weights are assigned regardless of the form include artichoke, asparagus, beets, Brussels sprouts, cabbage, carrots, corn, onions, peas, peppers, pumpkin, summer squash, sweet potatoes, and turnips. Where the cup weights of canned or frozen vegetables are quite different from the respective vegetables cooked from fresh or NS as to form, two sets of cup weight are used, as described below.
  - Dark green, leafy vegetables such as collards, greens, kale, mustard greens, spinach, and turnip greens have the same cup weights when prepared from fresh (raw) and different set of cup weights if prepared from frozen or canned forms.

- Other vegetables such as okra and string beans and starchy vegetables such as immature lima beans prepared from fresh or NS as to forms are assigned the same cup weights, and that prepared from frozen or canned have a different set of cup weights.

An explanation for the observed higher weights of canned and frozen vegetables could be due to the compacting of leafy vegetables and some of the other non-leafy vegetables during blanching.

- The FNDDS weights for one cup of cooked beans, peas, and lentils (legumes) range from 170 to 191 grams, with an exception of mung beans which weigh 200 grams per cup. Most of the cup weights for beans are between 172-177 grams. A cup weight of beans not specified as to type of beans is 175 grams. For this reason, cooked beans, peas, and lentils (legumes) are assigned 175 grams cup weight. The average value of the conversion factors that are used in the USDA's Food Intakes Converted to Retail Commodities Database, 2003-08 [6], to convert cooked legumes to uncooked legumes is 0.33. And so, one cup of uncooked legumes is assigned as 60 grams weight ( $175 \times 0.33 = 58$ , then rounded to 60).
- The assigned weights of one cup of potatoes and potato products are: boiled potatoes and canned potatoes, drained, 155 grams; baked or roasted potatoes, 120 grams; and potato chips, 57 grams (2 oz.).
- The weight of  $\frac{1}{2}$  cup of dried vegetables is defined as one cup equivalent of vegetables.
- One cup of raw tomatoes is assigned 170 grams; tomato paste and puree, 120 grams; tomato sauce and tomato juice, 245 grams; and dried tomatoes, 25 grams.

Table 9 summarizes one cup equivalent weight of vegetables discussed above and a few additional vegetables. Appendix 9 includes an extensive list of one cup equivalent weights for vegetables.



**Table 9. Vegetables Group: Summary of Selected Cup Equivalent Weights**

| <b>Vegetables</b>  | <b>Weight of one cup equivalent (g)</b> |
|--|---|
| Artichoke, raw   | 150                                     |
| Artichoke, cooked from raw, frozen, or canned                          | 175                                     |
| Asparagus, raw   | 135                                     |
| Asparagus, cooked from raw, frozen, or canned                          | 180                                     |
| Avocados, raw  | 145                                     |
| Bean sprouts, raw  | 105                                     |
| Bean sprouts, cooked from raw, or canned                               | 125                                     |
| Beets, raw   | 135                                     |
| Beets, cooked from raw, frozen, or canned                              | 170                                     |
| Bitter melon, cooked   | 125                                     |
| Broccoflower, raw  | 110                                     |
| Broccoflower, cooked   | 125                                     |
| Broccoli, raw  | 80                                      |
| Broccoli, cooked from raw, frozen, or not specified as to form         | 155                                     |
| Brussels sprouts, raw  | 90                                      |
| Brussels sprouts, cooked from raw, frozen, or not specified as to form | 155                                     |
| Cabbage, (green, red, or savoy), raw                                   | 90                                      |
| Cabbage, (green, red, or savoy), cooked                                | 150                                     |
| Cabbage, Chinese (pak-choi), raw                                       | 140                                     |
| Cabbage, Chinese (pe-tsai), raw  | 150                                     |
| Carrots, raw   | 125                                     |
| Carrots, cooked from raw, frozen, or canned                            | 145                                     |
| Cauliflower, raw   | 110                                     |
| Cauliflower, cooked from raw, frozen, or not specified as to form      | 125                                     |
| Cauliflower, cooked from canned  | 180                                     |
| Celery, raw  | 120                                     |
| Celery, cooked   | 150                                     |
| Collards, raw  | 70                                      |
| Collards, cooked from fresh or not specified as to form                | 130                                     |
| Collards, cooked from frozen or canned                                 | 165                                     |
| Corn, raw  | 150                                     |
| Corn, cooked from raw, frozen, or canned                               | 165                                     |
| Cucumber, raw  | 120                                     |
| Cucumber, cooked   | 180                                     |
| Eggplant, raw  | 80                                      |
| Eggplant, cooked   | 95                                      |

**Table 9. Vegetables Group: Summary of Selected Cup Equivalent Weights**  
(Continued)

| <b>Vegetables</b>  | <b>Weight of one cup equivalent (g)</b> |
|--|---|
| Kale, cooked from fresh or not specified as to form                                      | 130                                     |
| Kale, cooked from frozen or canned   | 165                                     |
| Beans, peas, lentils (legumes), uncooked   | 60                                      |
| Beans, peas, lentils (legumes),, cooked  | 175                                     |
| Lima beans, raw, immature  | 155                                     |
| Lima beans immature, cooked from fresh or not specified as to form                       | 170                                     |
| Mushrooms, raw   | 70                                      |
| Mushrooms, cooked from raw, frozen, or canned  | 155                                     |
| Mustard greens, cooked from fresh  | 140                                     |
| Mustard greens, cooked from canned, frozen, or not specified as to form                  | 150                                     |
| Okra, raw  | 115                                     |
| Okra, cooked from fresh  | 160                                     |
| Okra, cooked from frozen or canned   | 170                                     |
| Onions, raw  | 160                                     |
| Onions, cooked from raw, frozen, or not specified as to form                             | 210                                     |
| Peppers: bell, chili and all types, raw  | 120                                     |
| Peppers: bell, chili and all types, cooked from raw, frozen, or not specified as to form | 135                                     |
| Potatoes, baked  | 120                                     |
| Potatoes, boiled or canned and drained   | 155                                     |
| Potato chips, snack-type   | 57 (2 oz.)                              |
| Pumpkin, raw   | 115                                     |
| Pumpkin, cooked from raw, frozen, or canned  | 245                                     |
| Spinach, raw   | 70                                      |
| Spinach, cooked from fresh or not specified as to form                                   | 150                                     |
| Spinach, cooked from frozen or canned  | 170                                     |
| Squash, summer, raw  | 115                                     |
| Squash, summer, cooked from raw, frozen, or canned                                       | 180                                     |
| Squash, winter type, raw   | 115                                     |
| Squash, winter type, cooked or baked   | 205                                     |
| Squash, winter type, mashed  | 245                                     |
| String beans, raw  | 110                                     |
| String beans, cooked from fresh or not specified as to form                              | 125                                     |
| String beans, cooked from frozen or canned   | 135                                     |
| Sweet potatoes, boiled or baked  | 200                                     |
| Sweet potato chips   | 57 (2 oz.)                              |

**Table 9. Vegetables Group: Summary of Selected Cup Equivalent Weights**  
(Continued)

| <b>Vegetables</b>  | <b>Weight of one cup equivalent (g)</b> |
|--|---|
| Tomatoes, raw  | 170                                     |
| Tomatoes, dried  | 25                                      |
| Tomato paste   | 120                                     |
| Tomato puree   | 120                                     |
| Tomato sauce   | 245                                     |
| Turnips, raw   | 130                                     |
| Turnips, cooked from raw, frozen, or canned                            | 155                                     |
| Turnip greens, cooked from fresh                                       | 145                                     |
| Turnip greens, cooked from canned, frozen, or not specified as to form | 160                                     |
| Juices: 100% vegetable juices, all types                               | 245                                     |

### **Naturally Occurring Fats in Olives and Avocado**

Among vegetables, olives and avocado have naturally occurring fat in much higher amounts than the rest of the other vegetables in FPED. Next to olives and avocado, fresh sweet corn has the highest amount of naturally occurring fat. The amount of naturally occurring fat in fresh sweet corn was defined as the allowable fat in raw vegetables. Fresh corn contains 1.5 grams of naturally occurring fat per 100 grams which equals 2.25 grams per cup equivalent. The fats naturally occurring in olives and avocado in amounts greater than 1.5 grams per 100 grams are assigned to the Oils component (USDA, Center for Nutrition Policy and Promotion, personal communication, February 8, 2013).

### **Addition of Fats or Sugars to Vegetables**

Fats added to vegetables during cooking or at the table (e.g., butter or sour cream added to baked potato) are appropriately assigned to either Oils or Solid Fats. Sugars added to relishes and pickles are assigned to Added Sugars.

### **Data Analysis Guidance: White Potatoes and Tomatoes**

White potatoes and tomatoes are consumed in large amounts and researchers are interested in estimating their consumption. Hence these two vegetables have their own individual component assignments to aid data analysis. FPED variables v\_starchy\_potato includes potatoes only; v\_starchy\_other includes all starchy vegetables, except potatoes; and v\_starchy\_total is the sum of the previous two variables. Similarly, v\_redor\_tomato includes tomatoes and tomato products;

v\_redor\_other includes all other red and orange vegetables, except tomatoes; and v\_redor\_total is the sum of the previous two variables.

### **Data Analysis Guidance: Beans, Peas, and Lentils**

Beans, Peas, and Lentils (Legumes) can be considered either in the Vegetables or Protein Foods component, but not in both components simultaneously. For convenience, FPED has both component forms: Vegetables (v\_legumes) and Proteins Foods (pf\_legumes). When considered as Vegetables, beans, peas, and lentils (legumes), are computed in cup equivalents. When considered as Protein Foods, they are computed in ounce equivalents. One cup equivalent of beans, peas, and lentils equals 4 ounce equivalents of protein foods. Appendix 10 includes a list of one cup equivalent weights for beans, peas, and lentils (legumes).

#### **Example:**

1 cup equivalent of beans, peas, and lentils (legumes) computed as Vegetables =  
4 ounce equivalents of beans, peas, and lentils (legumes) as Protein Foods.

### **Multi-ingredient Foods Containing Vegetables**

Vegetables present in multi-ingredient foods such as soups, salads, pizza, sandwiches, and vegetable dishes are assigned to the appropriate Vegetables component.

## Chapter 5

### Grains Group

This section discusses the Grains Group components and the determination of the amount of Food Patterns equivalents for its components, with examples.

#### Grains Group Components

The Grains Group consists of two components: Whole Grains and Refined Grains (non-whole grains). Whole Grains include amaranth, barley (not pearled), brown rice, buckwheat, bulgur, millets, oats, popcorn, quinoa, dark rye, triticale, whole-grain cornmeal, whole-grain wheat flour, whole-grain cracked wheat, wild rice, and grain-based products made with 100% whole grains or their flours. Refined Grains (non-whole grains) include grains that are degermed or polished and their flours or meal, cornmeal, masa, corn grits, bran of all cereals, cream of rice, cream of wheat, cracked wheat, malted barley or malted flours, pearled barley, rye (light and medium), wheat gluten, and white rice.

Appendix 1 lists foods in the Grains Group.

#### Determination of Ounce Equivalents of Grains

The method of computing grain equivalents is described below. The ChooseMyPlate.gov Web site lists consumer-friendly examples of what counts as one ounce grain equivalent [2]. These examples are based on common portion sizes such as one slice of bread, one-half cup of cooked rice, and one cup of ready-to-eat cereal, instead of the actual amount of grains present in these foods. Using common portion sizes to compute grain equivalents poses a challenge because standard rules cannot be applied across all foods, whereas using the actual amounts of grains present in a food to determine grain equivalents offers a systematic approach to creating FPED.

Two different definitions of what counts as one ounce grain equivalent are used in FPED:

- For grain products such as breads, bagels, biscuits, muffins, cakes, cookies, pancakes, and waffles made with flour, each 16 grams of flour present in a food was used as the basis for defining one ounce grain equivalent, the rationale being that one standard slice of bread has been defined as equal to one ounce grain equivalent will contain 16 grams of flour.
- For intact grains or grain products such as cream of wheat, barley, bulgur, millets, oats, pasta, rice, rye, quinoa, and ready-to-eat cereals, 28.35 grams of grains was defined as equal to one ounce grain equivalent.

To evaluate this approach, bagels, biscuits, breads, muffins, grain snacks, baked grain products, pancakes, pasta, rice, and ready-to-eat cereals in FNDDS 4.1 for

WWEIA, NHANES 2007-08 were selected. The grain equivalents were computed by two methods: (1) using the definitions based on the common portion sizes of the foods, and (2) using FPED definitions described above and the actual amounts of the grains present in foods [11]. The differences in the amounts of grain equivalents computed by the two methods were not appreciable; and the national mean intakes of grain equivalents estimated were the same. Using the amounts of grains present in grain-based foods offers a standardized method for the computation of grain equivalents.

Table 10 summarizes foods grouped based on the definition of one ounce of grain equivalents.

**Table 10. Amounts of Grain in One Ounce Equivalent**

| <b>Grain amounts in one ounce equivalents</b> | <b>Foods</b>   |  |
|---|--|--|
| 16 grams flour                                | Bagels<br>Biscuits<br>Breads and rolls<br>Cakes<br>Cookies<br>Crackers<br>Danishes<br>Doughnuts                          | Grain based snacks<br>(e.g., pretzels,<br>tortilla chips, corn<br>chips)<br>Gravies and sauces<br>Muffins and quick<br>breads<br>Pancakes and waffles<br>Pies<br>Tortillas |
| 28.35 grams grain                             | Barley<br>Buckwheat<br>Bulgur<br>Couscous<br>Hot cereals (e.g.,<br>cream of<br>wheat/rice,<br>farina, grits,<br>oatmeal) | Millets<br>Pasta<br>Popcorn<br>Quinoa<br>Ready-to-eat cereals<br>Rice  |

### **Multi-ingredient Foods Containing Grains**

Grains present in multi-ingredient foods such as breads, rice and vegetable dishes, macaroni and cheese, and noodle soups are assigned to Whole or Refined Grains components, as appropriate.

## **Chapter 6**

### **Dairy Group**

This section discusses the Dairy Group components and the determination of the amount of Food Patterns equivalents for its components, with examples.

#### **Dairy Group Components**

The Dairy Group consists of four components: Milk, Yogurt, Cheese, and Miscellaneous Dairy, which is predominantly whey. The Milk component includes all types of fluid milk, buttermilk, dry milk, and evaporated milk, with different levels of fat. Soy milk (soymilk) with added calcium is included in the Milk component. Soy milk (soymilk) without calcium fortification is assigned to Soy Products. The Yogurt component includes plain yogurt, flavored yogurt, fruit yogurt, and frozen yogurt, containing different levels of fat. The Cheese component includes all types of cheeses such as natural cheese, soft cheese, processed cheese, and cheese food. Examples of cheeses include brie, camembert, cheddar, cottage cheese, colby, edam, feta, fontina, gouda, gruyere, limburger, Mexican cheeses (queso anejo, queso asadero, queso chihuahua), monterey, mozzarella, muenster, parmesan, provolone, ricotta, and Swiss. The Miscellaneous Dairy component includes whey. Because its national mean intake is minuscule, the Miscellaneous Dairy component is not a standalone FPED variable, and it is included under the Total Dairy component. The Dairy Group does not include dairy fats such as butter, cream, and cream cheese, which are assigned to the Solid Fats component. Appendix 1 lists foods in the Dairy Group.

#### **Solid Fats Naturally Present in Dairy Foods**

Milk fat is classified as solid fat. The fat naturally present in milk, yogurt, and cheese in excess of 1.5 grams per cup equivalent is assigned to the Solid Fats component.

#### **Determination of Cup Weights of Dairy Group**

One cup equivalent weight of selected foods in the Dairy Group are listed in Table 11. Appendix 11 includes a list of one cup equivalent weights for dairy group foods.

**Table 11. Dairy Group: Summary of Selected Cup Equivalent Weights**

| <b>Dairy</b>  | <b>Weight of 1 cup equivalent</b> |
|---|-----------------------------------|
| Fluid milk, all fat types, plain or flavored            | 245 g                             |
| Buttermilk  | 245 g                             |
| Dry milk, reconstituted                                 | 245 g                             |
| Soy milk (soymilk), calcium fortified                   | 245 g                             |
| Evaporated milk   | 125 g                             |
| Dry milk  | 25 g                              |
| Yogurt, all fat types, plain or flavored, without fruit | 245 g                             |
| Yogurt, frozen, sweetened with low-calorie sweetener    | 245 g                             |
| Cheese, natural   | 1 to 2 oz.                        |
| Cheese, natural, soft                                   | 4.5 oz.                           |
| Cheese, processed                                       | 1.5 to 2 oz.                      |

### **Other Considerations**

**Flavored milk:** All types of flavored milk are assigned as 100 percent milk. In addition, added sugars are computed, if they are present. Whey present in beverages will be counted under the Miscellaneous Dairy Component.

**Yogurt with fruit or nuts:** Fruit yogurts are assumed to contain six percent fruit, and three percent nuts, if nuts are present. In addition, added sugars are computed, if they are present.

**Cheeses:** In general, cup equivalents for various cheeses are set using several categories, based on the type of cheese and approximate calcium content in comparison to the calcium in one cup of milk. For cream cheeses, only the fat-free form of cream cheese is assigned to the Cheese component (CNPP, personal communication, December 17, 2012). Regular and low fat cream cheeses are not assigned to the Cheese component due to their low calcium content; only the fat present in these two cheeses are assigned to the Solid Fats component, as in the case for all types of cheese. Also, one cup equivalent of cottage cheese is defined as the amount containing 302 milligrams of calcium, the amount present in a cup of milk.

### **Multi-ingredient Foods Containing Dairy Components**

The milk present in multi-ingredient foods such as half and half and ice cream are assigned to the Milk component; yogurt present in frozen yogurt is assigned to the Yogurt component; and cheese present in sandwiches, salads, and pizza are assigned to the Cheese component.



## Chapter 7

### Protein Foods

This section discusses the Protein Foods components and the determination of the amount of Food Patterns equivalents for its components, with examples.

#### Protein Foods Components

The Protein Foods Group consists of Meat, Poultry, Seafood, Eggs, Nuts and Seeds, Beans, Peas, and Lentils (or Legumes), and Soy Products (except, calcium added soy milk assigned to the Dairy Group and raw, green soybean assigned to the Vegetables Group). The Meat and Poultry components were further subdivided into: Meat (pf\_meat); Poultry (pf\_poultry); Organ Meat (pf\_organ); and Cured Meat (pf\_curedmeat) to facilitate detailed data analysis. The Seafood component is divided into: Seafood that are high in *n*-3 fatty acids (pf\_seafd\_hi) and Seafood that are low in *n*-3 fatty acids (pf\_seafd\_lo).

The Meat component includes red meat [1] such as beef, goat, lamb, pork (includes fresh or uncured ham), veal, and game meat (e.g., bear, bison, moose, opossum, rabbit, raccoon, squirrel, venison). The Poultry component includes chicken, Cornish hens, dove, duck, game birds (e.g. ostrich, pheasant, quail), goose, and turkey. The Cured Meat component includes cured or smoked meat products such as frankfurters, sausages, and luncheon meats, cured meat made from beef, chicken, pork, and turkey. The Organ Meat component includes brain, chitterlings, giblets, gizzard, heart, kidney, liver, stomach, sweetbreads, thymus, tongue, and tripe.

The following Food and Drug Administration (FDA) definitions [12] are used for classification of cured meat and poultry products. Cured meat and poultry can be divided into three basic categories: (1) uncomminuted smoked products; (2) sausages; and (3) uncomminuted, unsmoked processed meat and poultry products, as defined by FDA are listed in Table 12.

**Table 12. FDA Cured Meat and Poultry Categories**

| <b>FDA cured meat and poultry categories</b>  | <b>Foods included within the category</b>  |
|---|--|
| (1) Uncomminuted smoked products              | Include bacon, beef jerky, hams, pork shoulders, turkey breasts, turkey drumsticks.  |
| (2a) Sausages                                 | Include both finely ground and coarsely ground products. <ul style="list-style-type: none"> <li>• Finely ground sausages include bologna, frankfurters, luncheon meats and loaves, sandwich spreads, and viennas.</li> <li>• Coarse ground sausages include chorizos, kielbasa, pepperoni, salami, and summer sausages.</li> </ul> |
| (2b) Cured sausages                           | Cured sausages may be categorized as (1) raw, cured; (2) cooked, smoked; (3) cooked, unsmoked; and (4) dry, semidry, or fermented.   |
| (3) Uncomminuted, unsmoked processed products | Include corned beef, pastrami, pig's feet, and corned tongues. This category of products may be sold either as raw ready-to-cook or ready-to-eat.  |

### **Computation of *n*-3 fatty Acids Cutoff per 100 Grams of Seafood**

The only *n*-3 fatty acids of interest are the long chain fatty acids, EPA and DHA. The Seafood component is further subdivided into: (1) high in *n*-3 fatty acids and (2) low in *n*-3 fatty acids. Cooked seafood containing 500 mg or more of *n*-3 fatty acids (EPA and DHA) per three ounces was assigned as seafood high in *n*-3 fatty acids [13]. This translates to 588 milligrams per 100 grams of cooked fish as shown below.

$$3 \text{ oz.} = 3 \times 28.35\text{g} = 85.05\text{g}$$

85 grams of cooked high *n*-3 seafood should contain at least 500 mg of *n*-3

$$100 \text{ grams of cooked high } n\text{-3 seafood should contain at least } (500 / 85) \times 100 \\ = 588 \text{ mg } n\text{-3 fatty acids}$$

To estimate the cutoff amount of *n*-3 fatty acids in raw fish, a cooking yield of 77 percent is applied. The amount of 452 milligrams of *n*-3 fatty acids per 100 grams of raw seafood is used to categorize seafood to one of the two *n*-3 groups. The computation is described below.

### **Computation of Raw Seafood *n*-3 Cutoff Amount**

130 g raw fish will yield 100 g cooked fish (77% yield)

Cutoff *n*-3 fatty acid amount = 588 mg per 100 g cooked or 130 g raw

Cutoff *n*-3 fatty acid amount =  $(588/130) \times 100$

= 452 mg

Examples of seafood that are high in *n*-3 fatty acids include anchovy, herring, mackerel, salmon, sardine, shark, trout, and bluefin and albacore tuna. Seafood low in *n*-3 fatty acids include catfish, clams, cod, crabs, crayfish, croaker, eel, flounder, haddock, lobster, mussels, octopus, oyster, perch, pollock, scallop, shrimp, snapper, tilapia, tuna (other than bluefin and albacore) and turtle. Canned tuna fish was divided between the two seafood components: 30.5% high in *n*-3 and 69.5% low in *n*-3 (USDA, Center for Nutrition Policy and Promotion, personal communication, October 17, 2014). Appendix 1 lists seafood in the two *n*-3 components.

The Eggs component includes chicken eggs and other birds' eggs and their components such as egg yolk, egg white, liquid egg, dried eggs, and egg substitutes containing egg whites. The Nuts component includes nuts, nut butters, seeds, and seed butters. The Soy Products component includes all soy products except calcium added (fortified) soy milk (soymilk) and raw, green soybean cooked as vegetables. The Soy Products component includes soy flour, soy protein isolate, soy concentrate, tofu, and soy milk (soymilk) that is not calcium fortified. The Beans, Peas, and Lentils (Legumes) component includes all mature or dried beans, peas, and lentils (legumes) such as black beans, black-eyed peas, brown beans, bayo beans, carob, chickpeas (garbanzo beans), fava beans, kidney beans, lentils, lima beans, mung beans, navy beans, pink beans, pinto beans, and white beans.

Appendix 1 lists foods in the Protein Foods Group. The definitions of an ounce equivalent of protein foods are in Table 13.

**Table 13. Definitions of One Ounce Equivalent of Protein Foods**

| <b>Protein Foods components</b>   | <b>Definition of one ounce equivalent</b>   |
|-----------------------------------|---|
| Lean meat/poultry                 | 28.35 grams of cooked, lean portion of meat/poultry containing no more than 2.63 grams of solid fats naturally present, per ounce equivalent  |
| Lean seafood                      | 28.35 grams of cooked, lean portion of seafood containing no more than 2.63 grams of fats naturally present as oils, per ounce equivalent   |
| Eggs                              | 50 grams, raw or cooked   |
| Nuts and seeds                    | $\frac{1}{2}$ ounce or $(28.35/2)$ grams  |
| Nut butters                       | 16 grams (1 tablespoon)   |
| Legumes                           | 4 x the number of cup equivalents of legumes as vegetables<br>(i.e., $\frac{1}{4}$ cup of cooked legumes as vegetables equals 1 ounce equivalent of legumes as protein foods. 1 cup equivalent of cooked legumes = 175 grams in FPED) |
| Soy flour, isolate or concentrate | $\frac{1}{2}$ ounce or $(28.35/2)$ grams  |
| Soy, tofu                         | $\frac{1}{4}$ cup or $(250/4)$ grams  |
| Soy nuts                          | 28.35 grams   |

### **Solid Fats and Oils Naturally Present in Protein Foods**

The fats naturally present in seafood, nuts, seeds, and legumes are defined as oils and fats present in meat, poultry, and eggs are defined as solid fats. The USDA Food Patterns allows 2.63 grams of fat or oils per ounce of lean meat and other protein foods. Any solid fats or oils that are naturally present above the allowable amounts are included under the Solid Fats or Oils components of the respective protein foods.

The method for calculating ounce equivalents for meat, poultry, and seafood disaggregates solid fats or oils while the method for eggs and nuts does not. The following section describes computation of these components.

### **Determination of Ounce Equivalents of Lean Meat in Cooked Meat, Poultry, and Seafood**

By definition, one ounce of cooked lean meat, poultry, or seafood can have no more than 2.63 grams of allowable fat per 28.35 grams of lean meat. Or, 100 grams of cooked lean meat, poultry, or seafood will contain  $100/28.35$  or 3.53 ounces of lean meat with a maximum of  $(3.53 \times 2.63)$  grams or 9.28 grams of allowable fat.

$$\begin{aligned}\text{Non-fat portion} &= (100-9.28) \text{ g} \\ &= 90.72\text{g}\end{aligned}$$

Or, 90.72 grams of non-fat meat, poultry, or seafood can contain up to 9.28 grams of allowable fat or oils.

$$\begin{aligned}\text{Or, Food Patterns allowable solid fat per ounce equivalent} &= 2.63 \text{ g} \\ \text{Non-fat meat portion per 28.35 grams (1 ounce) lean meat} &= 28.35-2.63 \\ &= 25.72\text{g}\end{aligned}$$

The following is derived from the above information:

- (1) Any cooked meat, poultry, or seafood that has 9.28 percent or less total fat will **not** have either solid fats or oils above the allowable limits.
- (2) Any cooked meat, poultry, or seafood that has 9.28 percent or less total fat will have **3.53** ounce equivalents of lean protein per 100 grams.

### Examples:

The computation of Protein Food equivalents and Solid Fats or Oils components can be done in several ways. The computation used in FPED is described below.

#### Example 1. Pork sausage, cooked (FNDDS 2017-2018 food code 25221405)

Total fat content =27.25%

Because the total fat content is greater than 9.28, the cooked pork sausage will contain solid fats that are present above the allowable limit.

$$\begin{aligned}\text{Non-fat meat portion present in 100 grams sausage} &= 100-27.25 \\ &= 72.75 \text{ g} \\ \text{Number of ounce equivalents of meat} &= 72.75/25.72 \\ &= \mathbf{2.83} \\ \text{Allowable solid fat} &= 2.63 \times 2.83 \\ &= 7.44 \text{ g} \\ \text{Solid fat present above the allowable limit} &= 27.25-7.44 \\ &= \mathbf{19.81g}\end{aligned}$$

**Example 2. Pork, fresh, shoulder, blade, Boston (steaks), separable lean only, cooked, broiled**

Total fat content =12.54%

Because the total fat content is greater than 9.28, the broiled pork steak will contain solid fats that are present above the allowable limit.

|  |               |
|--|---------------|
| Non-fat meat portion present in 100 grams broiled pork steak | = 100-12.54   |
|  | = 87.46 g     |
| Number of ounce equivalents of meat                          | = 87.46/25.72 |
|  | = <b>3.40</b> |
| Allowable solid fat  | = 2.63 x 3.40 |
|  | = 8.94 g      |
| Solid fat present above the allowable limit                  | = 12.54-8.94  |
|  | = <b>3.6g</b> |

**Example 3. Cooked ground beef, 85%-89% lean**

Total fat content =13.9%

Because the total fat content is greater than 9.28, the cooked ground beef will contain solid fats that are present above the allowable limit.

|  |               |
|--|---------------|
| Non-fat meat portion present in 100 grams cooked ground beef | = 100-13.9    |
|  | = 86.1 g      |
| Number of ounce equivalents of meat                          | = 86.1/25.72  |
|  | = <b>3.35</b> |
| Allowable solid fat  | = 2.63 x 3.35 |
|  | = 8.81 g      |
| Solid fat present above the allowable limit                  | = 13.9-8.81   |
|  | = <b>5.1g</b> |

**Example 4. Salmon, baked or broiled without added fat**

Baked salmon without added fat contains 98 grams of baked salmon and a small amount of lemon juice and added salt per 100 grams (FNDDS food code: 26137123; added salt and lemon juice combined is about 2%)

98 grams of baked salmon without added fat contains 5.54 percent total fat.

Because this 5.54 percent fat is lower than the allowable oil level of 9.28 grams per 100 grams of salmon, the baked salmon will not contain any Oils component.

|  |               |
|--|---------------|
| Number of ounce equivalents of seafood | = 98/28.35    |
|  | = <b>3.46</b> |

**Example 5. Herring, baked without added fat**

Baked herring without added fat contains 98 grams of baked herring and a small amount of lemon juice and added salt per 100 grams (FNDDS food code: 26119121; added salt and lemon juice combined is about 2%).

98 grams baked herring contain 11.39 percent total fat. Because this amount is greater than the allowable amount of 9.28 grams per 100 grams, the baked herring will have an Oils component

|  |                |
|--|----------------|
| Non-fat, lean portion present in 100 grams | = 98-11.39     |
|  | = 86.6g        |
| Number of ounce equivalents of seafood     | = 86.6/25.72   |
|  | = <b>3.37</b>  |
| Allowable oils                             | = 2.63 x 3.37  |
|  | = 8.86g        |
| Oils present above the allowable limit     | = 11.39-8.86   |
|  | = <b>2.53g</b> |

**Differences between FPID and FPED in the Calculation of Meat, Poultry, and Seafood Ounce Equivalents**

In FPID, raw meat and poultry are assumed to have 75 percent cooking yield and the raw seafood is assumed to have 77 percent cooking yield. Cooked meat, poultry, and seafood ingredients are assumed to have 100 percent cooking yield (no moisture or fat loss during cooking). However, in FNDDS, some of the meat, poultry, and seafood, whether raw or cooked, may have varying levels of moisture loss and cooking yields. Because of the differences in cooking yields, the FPID FP equivalents are not used for the computation of meat, poultry, and seafood in FPED. In FPED, meat, poultry, and seafood equivalents are computed using FNDDS moisture change information.

The following examples show computations used in FPID.

## FPID: Determination of Ounce Equivalents of Lean Meat in Raw Meat, Poultry, and Seafood as an Ingredient.

Here, no fat loss is assumed in cooking.

### Examples

#### Raw (uncooked) pork

Pork, fresh, shoulder, (Boston butt), blade (steaks), separable lean and fat, raw (SR code: 10080). This is a raw (uncooked) ingredient and hence a cooking yield of 75% is assumed

Total fat=12.36%

Cooking Yield =75%, assumed (cooked weight=75g)

Fat loss during cooking 0% assumed (no fat loss).

|  |                |
|--|----------------|
| Non-fat meat portion present in 100 grams pork steak | = 75-12.36     |
|  | = 62.64 g      |
| Number of ounce equivalents of meat                  | = 62.64/25.72  |
|  | = <b>2.44</b>  |
| Allowable solid fat                                  | = 2.63 x 2.44  |
|  | = 6.42 g       |
| Solid fat present above the allowable limit          | = 12.36-6.42   |
|  | = <b>5.94g</b> |

#### Raw mackerel

Raw mackerel contains 13.9 percent total fat. In computation, 77 percent cooking yield and no fat loss during cooking are used.

|   |                |
|---|----------------|
| Non-fat, lean portion present in 77 grams of mackerel | = 77 - 13.9    |
|   | = 63.1 g       |
| Number of ounce equivalents of seafood                | = 63.1/25.72   |
|   | = <b>2.45</b>  |
| Allowable oils  | = 2.63 x 2.45  |
|   | = 6.44 g       |
| Oils present above the allowable limit                | = 13.9-6.44    |
|   | = <b>7.46g</b> |



## Determination of Ounce Equivalents and Solid Fats Present in Eggs

Computation of the lean portion of eggs is parallel to that of meat, poultry, and seafood, except in eggs, the excess fat (solid fats) is not subtracted before calculating the ounce equivalents. The total fat content of eggs is included in calculating the ounce equivalents.

One ounce equivalent of eggs is defined as 50 grams and can have no more than 2.63 grams of allowable solid fat. The methodology for computing ounce equivalents is described below:

- (1) The number of ounce equivalents is computed first, without subtracting the solid fats naturally present in eggs.
- (2) Allowable solid fat is computed for the number of ounce equivalents computed in step 1.
- (3) The amount of solid fat present above the allowable limit is computed by subtracting the allowable fat from the total fat.

### Example:

#### 1. Cooked eggs, boiled or poached (FNDDS food code: 31103010)

100 grams of hard-boiled eggs contain 9.44 percent total fat.

Number of ounce equivalents of eggs per 100 grams (PF\_EGGS) =  $100/50=2$

Allowable fat per 2 ounce equivalents of eggs =  $2.63 \times 2$

= 5.26 g

Solid fat present above the allowable limit =  $9.44-5.26$

= **4.18 g**

Solid fat present per ounce equivalent of eggs =  $4.18/2$

= 2.09 g

## Determination of Ounce Equivalents and Oils Present in Nuts

Computation of lean portion of nuts is parallel to that of meat, poultry, and seafood, except in nuts, the excess fat (oils) is not subtracted before calculating the ounce equivalents. All fat present in nuts are included in calculating the ounce equivalents. The oil present above the allowable limit is calculated using the number of ounce equivalents.

One ounce equivalent of nuts is defined as ½ ounce or 14.175 grams. The fats naturally present in nuts are defined as oils. The methodology for computing ounce equivalents is described below:

- (1) The number of ounce equivalents is computed first, without subtracting the oils naturally present in nuts.
- (2) Allowable oil is computed for the number of ounce equivalents computed in the above step.
- (3) The amount of oils above the allowable limit is computed by subtracting the allowable fat from the total fat.

The oil present above the allowable limit is calculated using the number of ounce equivalents. As a result, the amount of oil present in one ounce equivalent of nuts will vary, as shown in the following examples.

### Examples:

#### 1. Dry roasted almonds

Dry roasted almonds contain 52.5 percent total fat.

Number of ounce equivalents of nuts per 100 grams  $= 100/14.175$   
 $= 7.05$

Allowable oils in 7.05 ounce equivalents  $= 2.63 \times 7.05$   
 $= 18.5 \text{ g}$

Oils present above the allowable limit  $= 52.5 - 18.5$   
 $= 34 \text{ g}$

100 grams of roasted almonds contain 7.05 ounce equivalents, and each ounce equivalent of roasted almonds will contain  $(52.5/7.05) = 7.45$  grams of fat, of which 4.82 grams  $(7.45 - 2.63)$  is also assigned to Oils component.

#### 2. Macadamia nuts

Macadamia nuts contain 76.1 percent total fat.

Number of ounce equivalents of nuts per 100 grams  $= 100/14.175$   
 $= 7.05$

Allowable oils in 7.05 ounce equivalents  $= 2.63 \times 7.05$   
 $= 18.5 \text{ g}$

Oils present above the allowable limit  $= 76.1 - 18.5$   
 $= 57.6 \text{ g}$

Each ounce equivalent of macadamia nuts will contain 10.8 grams of fat  $(76.1/7.05)$ , of which 8.17 grams  $(10.8 - 2.63)$  is also assigned to Oils component.

Table 14 includes examples of the amount of oils present in one ounce equivalent of selected nuts.

**Table 14. Amount of Oils Present in One Ounce Equivalent of Selected Nuts**

| <b>Name</b>            | <b>Fat content per 100 grams of nuts (g)</b> | <b>No. of ounce equivalents per 100 grams nuts</b> | <b>Amount of oils present per ounce equivalent of nuts (g) [A/7.05]</b> |
|------------------------|--|--|---|
|                        | <b>A</b>                                     |  |   |
| Almonds, dry roasted   | 52.5   | 7.05   | 7.45  |
| Peanuts, dry roasted   | 49.7   | 7.05   | 7.05  |
| Pecans                 | 72.0   | 7.05   | 10.21   |
| Pistachio, dry roasted | 45.8   | 7.05   | 6.50  |
| Walnuts, English       | 65.2   | 7.05   | 9.25  |

**Multi-ingredient Foods Containing Protein Foods**

Protein foods present in multi-ingredient foods such as sandwiches and subs; rice and meat or chicken dishes; soups; pizza; hotdogs; and frozen dinners are assigned to the appropriate Protein Foods components.

## Chapter 8

### Added Sugars

Added sugars are defined as sugars that are added to foods as an ingredient during preparation, processing, or at the table. Added sugars do not include naturally occurring sugars such as lactose present in milk and fructose present in whole or cut fruit and 100% fruit juice. Examples of added sugars include brown sugar, cane sugar, confectioners' sugar, granulated sugar, dextrose, white sugar, corn syrup and corn syrup solids, fruit juice concentrates, honey, molasses, and all types of syrups such as maple syrup, table syrups, and pancake syrup.

Starting with FPED/FPID 2011-2012, fruit juice concentrates not diluted to single strength juices were assigned to added sugars, whereas in the FPEDs prior to 2011-2012, fruit juice concentrates were placed in the Fruit Juice component. This change affected the added sugars contents of foods such as snack bars, ready-to-eat cereals, baby foods, and fruit spread. Frozen fruit juice concentrates that are diluted with water to single strength fruit juice before consumption were retained as fruit juice. Appendix 1 lists added sugars included in FPED.

#### Determination of Teaspoon Equivalents of Added Sugars

One teaspoon equivalent of added sugars is computed using the sugar content of foods defined as added sugars. One teaspoon equivalent of added sugars is defined as 4.2 grams of sugars, the amount present in one teaspoon of granulated sugar.

#### Computation of Added Sugars

##### Examples:

##### 1. Granulated sugar

|  |               |
|--|---------------|
| The sugar content of 100 grams of granulated sugar           | = 99.8 g      |
| Number of teaspoon equivalents in 100 grams granulated sugar | = $99.8/4.2$  |
|  | = <b>23.8</b> |

##### 2. Maple syrup

|   |               |
|---|---------------|
| The sugar content of 100 grams of maple syrup           | = 60.4 g      |
| Number of teaspoon equivalents in 100 grams maple syrup | = $60.4/4.2$  |
|   | = <b>14.4</b> |

##### 3. Iced tea, instant, black, pre-sweetened with sugar

|   |               |
|---|---------------|
| The sugar content of 100 grams of presweetened herbal tea | = 7.7 g       |
| Number of teaspoon equivalents in 100 grams of herbal tea | = $7.7/4.2$   |
|   | = <b>1.83</b> |

#### 4. Fruit canned in syrup

Added sugars present in fruit canned in syrups were estimated by subtracting total sugars present in fruit canned in water from fruit canned in syrup.

Apricot canned in heavy syrup contains 19.9 percent total sugars

Apricot canned in light syrup contains 14.9 percent total sugars

Apricot canned in water (water pack) contains 4.8 percent sugar. The 4.8 percent sugar is from apricot and hence is not added sugars.

Added sugars in apricot canned in heavy syrup 
$$= (19.9-4.8)/4.2$$
$$= 15.1/4.2$$
$$= \mathbf{3.6 \text{ tsp. eq.}}$$

Added sugars in apricot canned in light syrup 
$$= (14.9-4.8)/4.2$$
$$= 10.1/4.2$$
$$= \mathbf{2.4 \text{ tsp. eq.}}$$

#### Multi-ingredient Foods Containing Added Sugars

Ingredients that are added sugars present in multi-ingredient foods such as cakes, cookies, milk shakes, and ice cream are assigned to the Added Sugars component.

##### Example:

##### Wheat bran muffin (FNDDS code 52304010)

The added sugars present in wheat bran muffin come from granulated sugar and molasses.

| Ingredient*       | Amount per 100<br>grams of muffin *<br>(g) | Added sugars<br>from ingredient<br>(g) | Added sugars<br>(tsp. eq.) |
|-------------------|--|--|----------------------------|
| Wheat flour       | 21   | -                                      |                            |
| Oat bran          | 12   | -                                      |                            |
| Sugar, granulated | 2  | 2                                      |                            |
| Molasses          | 14   | 10.5                                   |                            |
| Buttermilk, fluid | 42   | -                                      |                            |
| Egg, whole raw    | 4  | -                                      |                            |
| Butter            | 4  | -                                      |                            |
| Baking soda       | --   | -                                      |                            |
| Total             |  | 12.5                                   | $\mathbf{12.5/4.2=3}$      |

\* Amounts rounded and the total may not add to 100

## **Chapter 9**

### **Oils**

Oils include all unhydrogenated vegetable oils (except palm oil, palm kernel oil, and coconut oil) and fats naturally present in nuts, seeds, avocado, olives, and seafood. Appendix 1 lists oils included in FPED.

### **Margarine**

In MPED, tub margarines and margarine-like spreads were assigned to the Oils component and stick margarines were assigned to the Solid Fats component. We examined the food labels of these margarines. Almost all of the margarines, whether stick, tub, or spread have unhydrogenated vegetable oils as the first ingredient; partially hydrogenated oils and/or palm oil as the next ingredient(s); and water. As per the guiding principles used in developing FPED, the unhydrogenated vegetable oils present in margarines are assigned to Oils component; and the partially hydrogenated oils, palm oil, and palm kernel oils present in margarines are assigned to Solid Fats. We were unable to obtain data on the proportion of unhydrogenated vegetable oils and oils that are defined as solid fats in margarines. For this reason, the fat present in margarine was divided equally between Oils and Solid Fats. That is, margarine with a fat content of 80 grams per 100 grams is assigned 40 grams each to Oils and Solid Fats.

### **Avocado and Olives**

Among vegetables, olives and avocado have naturally occurring fat in much higher amounts than the rest of the other vegetables in FPED. Next to olives and avocado, fresh sweet corn has the highest amount of naturally occurring fat. The amount of naturally occurring fat in fresh sweet corn was defined as the allowable fat in raw vegetables. Fresh corn contains 1.5 grams of naturally occurring fat per 100 grams, which equals 2.25 grams per cup equivalent (1 cup equivalent of fresh corn weighs 150 grams). The fats naturally occurring in olives and avocado in amounts greater than 1.5 grams per 100 grams are assigned to the Oils component.

### **Fats Naturally Present in Seafood, Nuts and Seeds**

The gram equivalents of oils present in seafood and nuts and seeds are computed after subtracting 2.63 grams of allowable fat per ounce equivalents of protein foods from the total fat. Details on the computation of oils present in seafood and nuts and seeds are explained in the Protein Foods Section (Chapter 7).

## Determination of Number of Equivalents of Oils

One gram of oil is defined as one equivalent. The following examples describe the computation of oil equivalents in 100 grams of food.

### Examples:

#### 1. Vegetable oils

Vegetable oils such as almond, canola, corn, peanut, sunflower, and soybean containing 100 grams of fat per 100 grams

Gram equivalents of oils in 100 grams of vegetable oil = **100**

#### 2. Margarine, 60% fat, tub

Tub margarine containing 60 grams of fat per 100 grams

Gram equivalents of Oils in 100 grams of tub margarine =  $60/2=30$

Gram equivalents of Solid Fats in 100 grams of tub margarine =  $60/2=30$

## Multi-ingredient Foods Containing Oils

Oils present in multi-ingredient foods such as fried vegetables, fried rice, seafood dishes, ready-to-eat cereals that contain nuts, mayonnaise, and salad dressings are assigned to the Oils component.

### Example:

#### Tzatziki sauce (FNDDS code 11440060)

| Ingredient*                      | Amount per 100 grams of sauce * (g) | Total fat from ingredient (g) | Oils (g)   |
|----------------------------------|-------------------------------------|-------------------------------|------------|
| Yogurt, Greek, plain, whole milk | 56                                  | 2.8                           | -          |
| Cucumber, with peel, raw         | 37                                  | -                             |            |
| Oil, olive                       | 3.5                                 | 3.5                           | 3.5        |
| Lemon juice                      | 2                                   | -                             |            |
| Salt                             | -                                   | -                             |            |
| Garlic, raw                      | -                                   | -                             |            |
| Total                            |                                     |                               | <b>3.5</b> |

\* Amounts rounded and the total may not add to 100

The oil present in Tzatziki sauce comes from the olive oil. Fat present in other ingredients are not in the Oils group, by definition.

## Chapter 10

### Solid Fats

Solid fats include fats naturally present in dairy products such as milk, cheese, butter, cream, cream cheese, and sour cream; fats naturally present in meat, poultry, and eggs; lard; fully or partially hydrogenated fats and shortenings; cocoa butter; coconut oil; and palm oil. The fat present in stick and tub margarines and margarine spreads was divided equally between Oils and Solid Fats. Appendix 1 lists solid fats included in FPED.

#### Determination of Number of Equivalents of Solid Fats

One gram of fat is defined as one equivalent. The following examples describe the computation of solid fats equivalents in 100 grams of food.

##### Examples:

##### 1. Coconut oil or palm oil

Vegetable oils such as coconut and palm oil containing 100 grams of fat per 100 grams

Gram equivalents of solid fats per 100 grams of coconut or palm oil = **100**

##### 2. Coconut meat, raw

Raw coconut meat containing 33.5 grams of fat per 100 grams

Gram equivalents of solid fats per 100 grams of raw, coconut meat = **33.5**

##### 3. Butter

Butter containing 81.1 grams of fat per 100 grams

Gram equivalents of solid fats per 100 grams of butter = **81.1**

##### 4. Stick margarine

Stick margarine containing 80 grams of fat per 100 grams

Gram equivalents of Oils in 100 grams of stick margarine =  $80/2$   
= **40**

Gram equivalents of Solid Fats in 100 grams of stick margarine =  $80/2$   
= **40**

#### Solid Fats Naturally Present in Dairy, Meat, Poultry, and Eggs

The gram equivalents of solid fats present in meat, poultry, and eggs are computed after subtracting 2.63 grams of allowable fat per ounce equivalent of these protein foods from the total fat. The amount of allowable fat in the Dairy component is 1.5 grams per cup equivalent. Details on the computation of solid fats present in meat, poultry, and eggs are explained in the Dairy and Protein Foods sections.



### Multi-ingredient Foods Containing Solid Fats

Solid fats present in multi-ingredient foods such as cakes, cookies, pies, pizza, meat dishes, and ice cream are assigned to the Solid Fats component.

#### Example:

#### Honey butter (FNDDS code 81322000)

| Ingredient*    | Amount per<br>100 grams of<br>sauce (g) | Total fat from<br>ingredient (g) | Solid fats<br>(g) |
|----------------|---|----------------------------------|-------------------|
| Butter, salted | 40                                      | 32.5                             | 32.5              |
| Honey          | 60                                      | -                                |                   |
| Total          |   |                                  | <b>32.5</b>       |

\* Amounts rounded and the total may not add to 100

The solid fats present in honey butter come from the butter.

## Chapter 11

### Alcoholic Drinks

Alcoholic Drinks include all types of beers; all types of wines; distilled spirits such as brandy, gin, rum, vodka, and whiskey; and cordials and liqueurs. Appendix 1 lists alcoholic drinks included in FPED.

#### Determination of Number of Drinks

In general, 12 fluid ounces of beer, 5 fluid ounces of wine, or 1.5 fluid ounces of 80-proof distilled spirit is considered as one drink and contains about 14 grams of ethanol. Based on this, in FPED, one drink was defined as the amount of alcoholic beverage containing 0.6 fluid ounce or 14 grams of ethanol.

FNDDS foods that have alcoholic beverages used in cooking are considered not having any residual ethanol and therefore, do not contain alcoholic drinks equivalents. If alcoholic beverages are added to a food after cooking, credit is given for alcoholic drinks equivalents (e.g., no-bake rum ball cookie, zabaglione). The following examples describe the computation of the number of alcoholic drinks present in 100 grams of beverages.

#### Examples:

##### 1. Table Wine, red

Table wine containing 10.6 grams of ethanol per 100 grams  
 Number of alcoholic drinks per 100 grams  $= 10.6/14 = 0.76$

##### 2. Whiskey

Whiskey containing 33.4 grams of ethanol per 100 grams  
 Number of alcoholic drinks per 100 grams  $= 33.4/14 = 2.39$

##### 3. Martini

Martini containing 29 grams of ethanol per 100 grams  
 Number of alcoholic drinks per 100 grams  $= 29/14 = 2.07$

##### 4. Zabaglione

Zabaglione containing 7.6 grams of ethanol per 100 grams  
 Number of alcoholic drinks per 100 grams  $= 7.6/14 = 0.54$

##### 5. Alcoholic fruit punch

Alcoholic fruit punch containing 8.3 grams of ethanol per 100 grams  
 Number of alcoholic drinks per 100 grams  $= 8.3/14 = 0.59$

**Multi-ingredient Foods Containing Alcohol (Ethanol)**

Alcohol (ethanol) present in beverages such as cocktails and alcoholic beverages that are added to multi-ingredient foods after cooking are assigned to the Alcoholic Drinks component.

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**Appendix 1: List of Foods Included in the Food Patterns Components, Units, and FPID/FPED 2017-2018 Variable Names in Parenthesis**

| <b>Fruit Components<br/>(cup eq.)</b>                | <b>Foods</b>  |   |
|--|---|---|
| <b>Total Fruit</b><br>(F_TOTAL)                      | Includes the sum of all foods in the Fruit components listed below:   |   |
| <b>Citrus, Melons,<br/>and Berries</b><br>(F_CITMLB) | Blackberries<br>Blueberries<br>Boysenberries<br>Calamondin<br>Cantaloupe<br>Casaba<br>Cranberries<br>Dewberries<br>Grapefruit<br>Honeydew<br>Huckleberries<br>Juneberries<br>Kiwi fruit | Kumquats<br>Lemons<br>Limes<br>Loganberries<br>Mandarins<br>Mulberries<br>Oranges<br>Raspberries<br>Strawberries<br>Tangelos<br>Tangerines<br>Watermelon<br>Youngberries                      |
| <b>Other Fruits</b><br>(F_OTHER)                     | Apples<br>Apricots<br>Bananas<br>Cherries<br>Currants<br>Dates<br>Figs<br>Grapes<br>Guava<br>Lychees<br>Mangoes<br>Nectarines<br>Papayas  | Passion fruits<br>Peaches<br>Pears<br>Persimmons<br>Pineapple<br>Plums (Ciruelas)<br>Pomegranates<br>Prunes<br>Raisins<br>Rhubarb<br>Soursop (Guanabana)<br>Starfruit (Carambola)<br>Tamarind |
| <b>Fruit Juice</b><br>(F_JUICE)                      | Citrus and non-citrus fruit juices  |   |

**Appendix 1: List of Foods Included in the Food Patterns Components, Units, and FPID/FPED 2017-2018 Variable Names in Parenthesis (Continued)**

| <b>Vegetables Components (cup eq.)</b>                    | <b>Foods</b>   |   |
|---|--|---|
| <b>Total Vegetables</b><br>(V_TOTAL)                      | Includes the sum of all foods in the Vegetables components listed below except Beans and Peas (Legumes):   |   |
| <b>Dark Green Vegetables</b><br>(V_DRKGR)                 | Arugula<br>Basil<br>Beet greens<br>Bitter melon leaves<br>Broccoli<br>Broccoli raab<br>Chinese Cabbage (Pak-choi)<br>Chrysanthemum garland<br>Chard<br>Chicory leaves<br>Cilantro (Coriander)<br>Collards<br>Cress<br>Dandelion greens<br>Endive<br>Escarole<br>Greens | Horseradish leaves<br>Kale<br>Lambsquaters<br>Leaves of grapes, pumpkin, squash, sweet potato, swamp cabbage, taro, and thistle<br>Lettuce (Boston, butterhead, green or red leaf, cos or romaine)<br>Mustard cabbage<br>Mustard greens<br>Parsley<br>Poke greens<br>Spinach<br>Turnip greens<br>Watercress |
| <b>Total Red and Orange Vegetables</b><br>(V_REDOR_TOTAL) | Includes the sum of all foods in the Tomatoes and Other Red and Orange Vegetables components listed below:   |   |
| <b>Tomatoes</b><br>(V_REDOR_TOMATO)                       | Tomatoes (canned, cooked, raw, stewed)<br>Tomatoes, dried<br>Tomato juice  | Tomato paste<br>Tomato puree<br>Tomato sauce  |

| <b>Vegetables Components (cont.) (cup eq.)</b>            | <b>Foods</b>  |   |
|---|---|---|
| <b>Other Red and Orange Vegetables</b><br>(V_REDOR_OTHER) | Calabaza (Spanish pumpkin)<br>Carrots<br>Carrot juice<br>Red colored bell, and nonbell peppers  | Pimiento<br>Pumpkin<br>Squash (most winter varieties)<br>Sweet potatoes   |
| <b>Total Starchy Vegetables</b><br>(V_STARCHY_TOTAL)      | Includes the sum of all foods in the Potatoes and Other Starchy Vegetables components listed below:   |   |
| <b>Potatoes</b><br>(V_STARCHY_POTATO)                     | White potatoes<br>White potato flour  | White potato flakes   |
| <b>Other Starchy Vegetables</b><br>(V_STARCHY_OTHER)      | Breadfruit<br>Burdock<br>Cassava (Yuca blanca)<br>Corn, sweet (raw)<br>Dasheen<br>Green bananas<br>Hominy<br>Jicama (Yam beans)<br>Lima beans, immature<br>Lotus root | Parsnips<br>Immature peas (e.g., immature cowpeas, blackeye peas, green peas, pigeon peas)<br>Plantains<br>Salsify<br>Tannier<br>Tapioca<br>Taro<br>Water chestnuts<br>Yams |

**Appendix 1: List of Foods Included in the Food Patterns Components, Units, and FPID/FPED 2017-2018 Variable Names in Parenthesis (Continued)**

| <b>Vegetables Components (cont.) (cup eq.)</b> | <b>Foods</b>                        |                        |
|--|-------------------------------------|------------------------|
| <b>Other Vegetables</b><br>(V_OTHER)           | Alfalfa sprouts                     | Jute                   |
|  | Artichoke                           | Kohlrabi               |
|  | Asparagus                           | Leeks                  |
|  | Avocado                             | Lettuce (varieties not |
|  | Bamboo shoots                       | in dark green          |
|  | Beans (green, yellow, snap, string) | category)              |
|  | Bean sprouts                        | Mushrooms              |
|  | Beets                               | Okra                   |
|  | Bitter melon                        | Olives                 |
|  | (bitter gourd, balsam pear)         | Onions                 |
|  | Broccoli                            | Palm hearts            |
|  | Brussels sprouts                    | Peas, podded           |
|  | Cabbage                             | Peppers, bell and      |
|  | Cactus (Nopales)                    | nonbell peppers        |
|  | Capers                              | (not red or orange     |
|  | Cauliflower                         | in color)              |
|  | Celeriac                            | Pokeberry shoots       |
|  | Celery                              | Radicchio              |
|  | Chayote                             | Radish                 |
|  | (Christophine)                      | Rutabaga               |
|  | Chinese cabbage                     | Scallions              |
|  | (Pei-tsai)                          | Seaweed                |
|  | Chinese okra                        | Snow peas              |
|  | (Luffa)                             | Sprouted beans (e.g.   |
|  | Chives                              | mung, soybean)         |
|  | Cucumber                            | Squash (green,         |
|  | Eggplant                            | sequin, spaghetti,     |
|  | Fennel bulb                         | yellow, zucchini,      |
|  | Flowers, edible                     | most summer            |
|  | Garlic                              | varieties)             |
|  | Ginger root                         | Tomatillos             |
|  | Horseradish pods                    | Tomatoes, green        |
|  |                                     | Turnips                |
|  |                                     | Winter melon (Wax      |
|  |                                     | gourd)                 |

| <b>Vegetables Components (cont.) (cup eq.)</b>           | <b>Foods</b>  |                   |
|--|---|-------------------|
| <b>Beans, Peas, and Lentils (Legumes)</b><br>(V_LEGUMES) | Includes all mature beans, peas, and lentils (legumes) such as: |                   |
|  | Black beans   | Kidney beans      |
|  | Blackeye peas   | Lentils           |
|  | Brown beans   | Mature lima beans |
|  | Bayo beans  | Mung beans        |
|  | Calico beans  | Navy beans        |
|  | Carob   | Pink beans        |
|  | Chickpeas   | Pinto beans       |
|  | (Garbanzo beans)  | Red Mexican beans |
|  | Cowpeas   | Soybeans* (raw)   |
|  | Fava beans  | Split peas        |
|  |   | White beans       |

\*Products such as edamame made from raw soybeans are placed under Legumes.



**Appendix 1: List of Foods Included in the Food Patterns Components, Units, and FPID/FPED 2017-2018 Variable Names in Parenthesis (Continued)**

| <b>Grains Components (oz. eq.)</b>   | <b>Foods</b>  |   |
|--------------------------------------|---|---|
| <b>Total Grains</b><br>(G_TOTAL)     | Includes the sum of all foods in the Grains components listed below:  |   |
| <b>Whole Grains</b><br>(G_WHOLE)     | Amaranth<br>Barley, whole<br>Barley flour (from whole barley)<br>Barley meal<br>Brown rice<br>Brown rice flour<br>Buckwheat groats<br>Bulgur<br>Corn, whole grain<br>Corn meal or flour (whole grain) | Millet<br>Oats<br>Oat flour<br>Oatmeal<br>Popcorn<br>Quinoa<br>Rye, whole grain<br>Rye flour (dark)<br>Triticale<br>Wheat<br>Whole wheat flour<br>Whole grain cracked wheat<br>Wild rice            |
| <b>Refined Grains</b><br>(G_REFINED) | Barley, pearled<br>Barley, pearled, flour<br>Barley malt flour<br>Bran (all grains)<br>Corn flour or meal, degermed<br>Corn grits<br>Cream of wheat<br>Couscous<br>Farina                             | Masa<br>Oat flour, debranned<br>Rice (milled, not whole grain )<br>Rice, milled, flour<br>Rye flour (light and medium)<br>Semolina<br>Wheat flour and cracked wheat (not whole grain)<br>Wheat germ |

**Appendix 1: List of Foods Included in the Food Patterns Components, Units, and FPID/FPED 2017-2018 Variable Names in Parenthesis (Continued)**

| <b>Protein Foods Components (oz. eq.)</b>                 | <b>Foods</b>  |           |      |                   |       |      |         |        |        |      |      |       |        |         |         |                   |          |      |      |            |         |                 |          |
|---|---|-----------|------|-------------------|-------|------|---------|--------|--------|------|------|-------|--------|---------|---------|-------------------|----------|------|------|------------|---------|-----------------|----------|
| <b>Total Protein Foods</b><br>(PF_TOTAL)                  | Includes the sum of all foods in the Protein Foods components listed below except Beans and Peas:   |           |      |                   |       |      |         |        |        |      |      |       |        |         |         |                   |          |      |      |            |         |                 |          |
| <b>Total Meat, Poultry, and Seafood</b><br>(PF_MPS_TOTAL) | Includes the sum of all foods in the Meat, Cured Meat, Organ Meat, Poultry, Seafood High in <i>n</i> -3, and Seafood Low in <i>n</i> -3 components listed below:  |           |      |                   |       |      |         |        |        |      |      |       |        |         |         |                   |          |      |      |            |         |                 |          |
| <b>Meat</b><br>(PF_MEAT)                                  | <table> <tr> <td>Armadillo</td><td>Lamb</td></tr> <tr> <td>Bacon (not cured)</td><td>Moose</td></tr> <tr> <td>Bear</td><td>Opossum</td></tr> <tr> <td>Beaver</td><td>Oxtail</td></tr> <tr> <td>Beef</td><td>Pork</td></tr> <tr> <td>Bison</td><td>Rabbit</td></tr> <tr> <td>Caribou</td><td>Raccoon</td></tr> <tr> <td>Game meat (other)</td><td>Squirrel</td></tr> <tr> <td>Goat</td><td>Veal</td></tr> <tr> <td>Ground hog</td><td>Venison</td></tr> <tr> <td>Ham (not cured)</td><td>Wild pig</td></tr> </table> | Armadillo | Lamb | Bacon (not cured) | Moose | Bear | Opossum | Beaver | Oxtail | Beef | Pork | Bison | Rabbit | Caribou | Raccoon | Game meat (other) | Squirrel | Goat | Veal | Ground hog | Venison | Ham (not cured) | Wild pig |
| Armadillo   | Lamb  |           |      |                   |       |      |         |        |        |      |      |       |        |         |         |                   |          |      |      |            |         |                 |          |
| Bacon (not cured)   | Moose   |           |      |                   |       |      |         |        |        |      |      |       |        |         |         |                   |          |      |      |            |         |                 |          |
| Bear  | Opossum   |           |      |                   |       |      |         |        |        |      |      |       |        |         |         |                   |          |      |      |            |         |                 |          |
| Beaver  | Oxtail  |           |      |                   |       |      |         |        |        |      |      |       |        |         |         |                   |          |      |      |            |         |                 |          |
| Beef  | Pork  |           |      |                   |       |      |         |        |        |      |      |       |        |         |         |                   |          |      |      |            |         |                 |          |
| Bison   | Rabbit  |           |      |                   |       |      |         |        |        |      |      |       |        |         |         |                   |          |      |      |            |         |                 |          |
| Caribou   | Raccoon   |           |      |                   |       |      |         |        |        |      |      |       |        |         |         |                   |          |      |      |            |         |                 |          |
| Game meat (other)   | Squirrel  |           |      |                   |       |      |         |        |        |      |      |       |        |         |         |                   |          |      |      |            |         |                 |          |
| Goat  | Veal  |           |      |                   |       |      |         |        |        |      |      |       |        |         |         |                   |          |      |      |            |         |                 |          |
| Ground hog  | Venison   |           |      |                   |       |      |         |        |        |      |      |       |        |         |         |                   |          |      |      |            |         |                 |          |
| Ham (not cured)   | Wild pig  |           |      |                   |       |      |         |        |        |      |      |       |        |         |         |                   |          |      |      |            |         |                 |          |

| <b>Protein Foods Components (cont.) (oz. eq.)</b>               | <b>Foods</b>   |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
|---|--|-------|---------|--------------|-----------------|--------------------|------------------------|---------------|----------|-----------|------------|---------|------------|-----------|--------------|----------------|-------------|----------|-----------|----------|------------|----------------|----------|-----------------------|-----------|------------------------|-------------|---------|----------------|--------------------|--------------------|-------------|--------------|--------------|--------------|------------------|--------|--------------|---------------|---|-------|-------------|-----------|------------|----------------------|--|----------------|--|----------------|--|---------------|--|-----------|--|----------------|
| <b>Cured Meat</b><br>(PF_CUREDMEAT)                             | <table> <tr> <td>Bacon</td><td>Hotdogs</td></tr> <tr> <td>Beef sausage</td><td>Italian sausage</td></tr> <tr> <td>Beef luncheon meat</td><td>Jerky (all meat types)</td></tr> <tr> <td>Blood sausage</td><td>Kielbasa</td></tr> <tr> <td>Bockwurst</td><td>Knockwurst</td></tr> <tr> <td>Bologna</td><td>Liverwurst</td></tr> <tr> <td>Bratwurst</td><td>Meat spreads</td></tr> <tr> <td>Braunschweiger</td><td>Meat sticks</td></tr> <tr> <td>Capicola</td><td>Mettwurst</td></tr> <tr> <td>Cervelat</td><td>Mortadella</td></tr> <tr> <td>Chicken sticks</td><td>Pastrami</td></tr> <tr> <td>Chicken luncheon meat</td><td>Pepperoni</td></tr> <tr> <td>Chicken or turkey loaf</td><td>Pepper loaf</td></tr> <tr> <td>Chorizo</td><td>Polish sausage</td></tr> <tr> <td>Cold cut deli meat</td><td>Pork luncheon meat</td></tr> <tr> <td>Corned beef</td><td>Pork sausage</td></tr> <tr> <td>Chipped beef</td><td>Potted meats</td></tr> <tr> <td>Dutch brand loaf</td><td>Salami</td></tr> <tr> <td>Frankfurters</td><td>Sandwich loaf</td></tr> <tr> <td>Ham (cured, smoked, deli, deviled, loaf, luncheon meat, minced)</td><td>Souse</td></tr> <tr> <td>Head cheese</td><td>Thuringer</td></tr> <tr> <td>Honey loaf</td><td>Turkey luncheon meat</td></tr> <tr> <td></td><td>Turkey sausage</td></tr> <tr> <td></td><td>Turkey, smoked</td></tr> <tr> <td></td><td>Turkey sticks</td></tr> <tr> <td></td><td>Veal loaf</td></tr> <tr> <td></td><td>Vienna sausage</td></tr> </table> | Bacon | Hotdogs | Beef sausage | Italian sausage | Beef luncheon meat | Jerky (all meat types) | Blood sausage | Kielbasa | Bockwurst | Knockwurst | Bologna | Liverwurst | Bratwurst | Meat spreads | Braunschweiger | Meat sticks | Capicola | Mettwurst | Cervelat | Mortadella | Chicken sticks | Pastrami | Chicken luncheon meat | Pepperoni | Chicken or turkey loaf | Pepper loaf | Chorizo | Polish sausage | Cold cut deli meat | Pork luncheon meat | Corned beef | Pork sausage | Chipped beef | Potted meats | Dutch brand loaf | Salami | Frankfurters | Sandwich loaf | Ham (cured, smoked, deli, deviled, loaf, luncheon meat, minced) | Souse | Head cheese | Thuringer | Honey loaf | Turkey luncheon meat |  | Turkey sausage |  | Turkey, smoked |  | Turkey sticks |  | Veal loaf |  | Vienna sausage |
| Bacon   | Hotdogs  |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Beef sausage  | Italian sausage  |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Beef luncheon meat  | Jerky (all meat types)   |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Blood sausage   | Kielbasa   |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Bockwurst   | Knockwurst   |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Bologna   | Liverwurst   |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Bratwurst   | Meat spreads   |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Braunschweiger  | Meat sticks  |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Capicola  | Mettwurst  |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Cervelat  | Mortadella   |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Chicken sticks  | Pastrami   |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Chicken luncheon meat   | Pepperoni  |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Chicken or turkey loaf  | Pepper loaf  |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Chorizo   | Polish sausage   |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Cold cut deli meat  | Pork luncheon meat   |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Corned beef   | Pork sausage   |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Chipped beef  | Potted meats   |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Dutch brand loaf  | Salami   |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Frankfurters  | Sandwich loaf  |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Ham (cured, smoked, deli, deviled, loaf, luncheon meat, minced) | Souse  |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Head cheese   | Thuringer  |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Honey loaf  | Turkey luncheon meat   |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
|   | Turkey sausage   |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
|   | Turkey, smoked   |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
|   | Turkey sticks  |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
|   | Veal loaf  |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
|   | Vienna sausage   |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| <b>Organ Meat</b><br>(PF_ORGAN)                                 | <table> <tr> <td>Brain</td><td>Liver</td></tr> <tr> <td>Chitterlings</td><td>Stomach</td></tr> <tr> <td>Giblets</td><td>Sweetbreads</td></tr> <tr> <td>Gizzard</td><td>Thymus</td></tr> <tr> <td>Heart</td><td>Tongue</td></tr> <tr> <td>Kidney</td><td>Tripe</td></tr> </table>   | Brain | Liver   | Chitterlings | Stomach         | Giblets            | Sweetbreads            | Gizzard       | Thymus   | Heart     | Tongue     | Kidney  | Tripe      |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Brain   | Liver  |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Chitterlings  | Stomach  |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Giblets   | Sweetbreads  |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Gizzard   | Thymus   |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Heart   | Tongue   |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |
| Kidney  | Tripe  |       |         |              |                 |                    |                        |               |          |           |            |         |            |           |              |                |             |          |           |          |            |                |          |                       |           |                        |             |         |                |                    |                    |             |              |              |              |                  |        |              |               |   |       |             |           |            |                      |  |                |  |                |  |               |  |           |  |                |

**Appendix 1: List of Foods Included in the Food Patterns Components, Units, and FPID/FPED 2017-2018 Variable Names in Parenthesis (Continued)**

| <b>Protein Foods Components (cont.) (oz. eq.)</b>              | <b>Foods</b>  |  |
|--|---|--|
| <b>Poultry</b><br>(PF_POULT)                                   | Chicken<br>Cornish game hen<br>Dove<br>Duck<br>Goose  | Ostrich<br>Pheasant<br>Quail<br>Turkey   |
| <b>Seafood High in <i>n</i>-3 Fatty Acids</b><br>(PF_SEAFD_HI) | Anchovy<br>Barracuda<br>Caviar (Roe)<br>Cisco<br>Herring<br>Mackerel<br>Pompano<br>Ray<br>Salmon  | Sardine<br>Sea bass<br>Shad<br>Shark<br>Swordfish<br>Trout<br>Tuna (albacore & bluefin)  |
| <b>Seafood Low in <i>n</i>-3 Fatty Acids</b><br>(PF_SEAFD_LOW) | Abalone<br>Carp<br>Catfish<br>Clams<br>Cod<br>Crab<br>Crayfish<br>Croaker<br>Eel<br>Flounder<br>Frog legs<br>Haddock<br>Halibut<br>Lobster<br>Mullet<br>Mussels<br>Ocean perch<br>Octopus<br>Oyster | Perch<br>Pike<br>Pollock<br>Porgy<br>Scallop<br>Scup<br>Shrimp<br>Snail<br>Snapper<br>Sole<br>Squid<br>Sturgeon<br>Tilapia<br>Tuna (excludes albacore & bluefin)<br>Turtle<br>Whitefish<br>Whiting |

| <b>Protein Foods Components (cont.) (oz. eq.)</b>         | <b>Foods</b>   |  |
|---|--|--|
| <b>Eggs</b><br>(PF_EGGS)                                  | Eggs, whole<br>(chicken, duck, goose, quail, and other birds)  | Egg white<br>Egg yolk<br>Egg substitute<br>Egg, dried  |
| <b>Soy Products</b><br>(PF_SOY)                           | Miso<br>Natto<br>Soybean curd or tofu<br>Soybean flour<br>Soybean meal   | Soybean protein isolate and concentrate<br>Soy milk (soymilk), not calcium fortified<br>Soy nuts   |
| <b>Nuts and Seeds</b><br>(PF_NUTSDS)                      | Almonds<br>Almond butter<br>Almond paste<br>Brazil nuts<br>Cashew<br>Cashew butter<br>Chestnuts<br>Flax seeds<br>Hazelnuts<br>Macadamia nuts<br>Peanuts<br>Peanut butter | Peanut flour<br>Pecans<br>Pine nuts<br>Pistachios<br>Pumpkin seeds<br>Squash seeds<br>Sesame butter (tahini)<br>Sesame seeds<br>Sesame paste<br>Sunflower seeds<br>Walnuts |
| <b>Beans, Peas, and Lentils (Legumes)</b><br>(PF_LEGUMES) | See under Vegetables, Beans and Peas component for the list of foods   |  |

**Appendix 1: List of Foods Included in the Food Patterns Components, Units, and FPID/FPED 2017-2018 Variable Names in Parenthesis (Continued)**

| <b>Dairy Components (cup eq.)</b> | <b>Foods</b>   |
|-----------------------------------|--|
| <b>Total Dairy</b><br>(D_TOTAL)   | Includes the sum of all foods in the Dairy components listed below, plus the following:<br><br>Whey  |
| <b>Milk</b><br>(D_MILK)           | Includes fluid milk and calcium added soy milk of all fat-types such as:<br><br>Buttermilk              Milk, fluid<br>Evaporated milk      Goat milk, fluid<br>Filled milk              Soy milk (soymilk),<br>Milk, dry                  calcium added<br>Milk, evaporated |
| <b>Yogurt</b><br>(D_YOGURT)       | Includes yogurt of all fat-types and yogurt present in flavored and frozen yogurt  |

| <b>Dairy Components (cont.) (cup eq.)</b> | <b>Foods</b>  |
|---|---|
| <b>Cheese</b><br>(D_CHEESE)               | Includes natural and processed cheeses of all fat-types such as:<br><br>American cheese      Mexican cheese<br>Blue cheese              blend<br>Brick cheese              Monterey cheese<br>Brie cheese              Mozzarella cheese<br>Camembert              Muenster cheese<br>cheese                      Parmesan cheese<br>Cheddar cheese          Pasteurized cheese<br>Colby cheese              Port de salut cheese<br>Colby Jack cheese      Provolone cheese<br>Cottage cheese          Ricotta cheese<br>Cream cheese, fat      Romano cheese<br>free                          Roquefort cheese<br>Edam cheese              Swiss cheese<br>Feta cheese                Queso anejo<br>Fontina cheese          Queso asadero<br>Goat cheese              Queso chihuahua<br>Gouda cheese              Queso del pais,<br>Gruyere cheese              blanco<br>Limburger cheese        Queso fresco |

**Appendix 1: List of Foods Included in the Food Patterns Components, Units, and FPID/FPED 2017-2018 Variable Names in Parenthesis (Continued)**

| <b>Oils Component<br/>(grams)</b> | <b>Foods</b>   |
|-----------------------------------|--|
| <b>Oils<br/>(OILS)</b>            | Includes fats naturally present in seafood, nuts, seeds, olives, avocados, and the following:<br><br><div> Almond oil      Safflower oil<br/> Canola oil      Sesame oil<br/> Corn oil      Spreads<br/> Cottonseed oil      Soybean oil<br/> Fish oil      Sunflower oil<br/> Flaxseed oil      Vegetable oil<br/> Olive oil      Walnut oil<br/> Peanut oil      Wheat germ oil<br/> Rapeseed oil </div> |

| <b>Solid Fats Component<br/>(grams)</b> | <b>Foods</b>   |
|---|--|
| <b>Solid Fats<br/>(SOLID_FATS)</b>      | Includes fats naturally present in milk products, meat, poultry, eggs and the following:<br><br><div> Butter      Fully or partially<br/> Cocoa butter      hydrogenated oils<br/> Cocoa fat      Ghee<br/> Coconut oil      Lard<br/> Cream      Palm oil<br/> Cream substitute      Tallow<br/> Cream Cheese,      Shortening (animal<br/> regular and      and vegetable)<br/> low-fat      Sour cream </div> |

| <b>Added Sugars Component<br/>(tsp. eq.)</b> | <b>Foods</b>   |
|--|--|
| <b>Added Sugars<br/>(ADD_SUGARS)</b>         | <div> Brown Sugar      Fruit syrups<br/> Cane syrup      Granulated sugar<br/> Confectioners'      Honey<br/> sugar      Maple syrup<br/> Corn Syrups      Molasses<br/> Corn syrup solids      Pancake syrups<br/> Dextrose      Powdered sugar<br/> Fructose      Raw sugar<br/> Fruit juice      Sorghum syrups<br/> concentrates      White sugar (cane<br/> (undiluted)      and beet) </div> |

| <b>Alcoholic Drinks Component<br/>(no. of drinks)</b> | <b>Foods</b>   |
|---|--|
| <b>Alcoholic Drinks<br/>(A_DRINKS)</b>                | Includes:<br>Beer<br>Wine<br>Distilled spirits<br>Alcohol (ethanol) present in cocktails and other alcoholic beverages<br>Alcohol (ethanol) added to foods after cooking |

## Appendix 2: Connecting MPED 2.0 and FPED 2017-2018 Variables

| MPED 2.0 Variables    | FPED Variables               | Foods in FPED Variables (units)  |
|-----------------------|------------------------------|--|
| F_TOTAL               | F_TOTAL                      | Total intact fruits (whole or cut) and fruit juices (cup eq.)  |
| F_CITMLB <sup>1</sup> | F_CITMLB                     | Intact fruits (whole or cut) of citrus, melons, and berries (cup eq.)  |
| F_OTHER <sup>1</sup>  | F_OTHER                      | Intact fruits (whole or cut); excluding citrus, melons, and berries (cup eq.)  |
| --                    | F_JUICE <sup>2</sup>         | Fruit juices, citrus and non-citrus (cup eq.)  |
| V_TOTAL               | V_TOTAL                      | Total dark green, red and orange, starchy, and other vegetables; excludes legumes (cup eq.)                                |
| V_DRKGR               | V_DRKGR                      | Dark green vegetables (cup eq.)  |
| --                    | V_REDOR_TOTAL <sup>2</sup>   | Total red and orange vegetables (tomatoes and tomato products + other red and orange vegetables) (cup eq.)                 |
| V_TOMATO              | V_REDOR_TOMATO               | Tomatoes and tomato products (cup eq.)   |
| V_ORANGE              | V_REDOR_OTHER                | Other red and orange vegetables, excluding tomatoes and tomato products (cup eq.)  |
| --                    | V_STARCHY_TOTAL <sup>2</sup> | Total starchy vegetables (white potatoes + other starchy vegetables) (cup eq.)   |
| V_POTATO              | V_STARCHY_POTATO             | White potatoes (cup eq.)   |
| V_STARCHY             | V_STARCHY_OTHER              | Other starchy vegetables, excluding white potatoes (cup eq.)   |
| V_OTHER               | V_OTHER                      | Other vegetables not in the vegetable components listed above (cup eq.)  |
| LEGUMES               | V_LEGUMES                    | Beans, peas, and lentils (legumes) computed as vegetables (cup eq.)  |
| G_TOTAL               | G_TOTAL                      | Total whole and refined grains (oz. eq.)   |
| G_WHL                 | G_WHOLE                      | Grains defined as whole grains and contain the entire grain kernel — the bran, germ, and endosperm (oz. eq.)               |
| G_NWHL                | G_REFINED                    | Refined grains that do not contain all of the components of the entire grain kernel (oz. eq.)                              |
| --                    | PF_TOTAL <sup>2</sup>        | Total meat, poultry, organ meat, cured meat, seafood, eggs, soy, and nuts and seeds; excludes legumes (oz. eq.)            |
| M_MPF                 | PF_MPS_TOTAL                 | Total of meat, poultry, seafood, organ meat, and cured meat (oz. eq.)  |
| M_MEAT <sup>3</sup>   | PF_MEAT                      | Beef, veal, pork, lamb, and game meat; excludes organ meat and cured meat (oz. eq.)  |
| M_FRANK <sup>3</sup>  | PF_CUREDMEAT                 | Frankfurters, sausages, corned beef, cured ham and luncheon meat that are made from beef, pork, or poultry (oz. eq.)       |
| M_ORGAN               | PF_ORGAN                     | Organ meat from beef, veal, pork, lamb, game, and poultry (oz. eq.)  |
| M_POULT               | PF_POULT                     | Chicken, turkey, Cornish hens, duck, goose, quail, and pheasant (game birds); excludes organ meat and cured meat (oz. eq.) |

## Appendix 2: Connecting MPED 2.0 and FPED 2017-2018 Variables (Continued)

| MPED 2.0 Variables  | FPED Variables          | Foods in FPED Variables (units)   |
|---------------------|-------------------------|---|
| M_FISH_HI           | PF_SEAFD_HI             | Seafood (finfish, shellfish, and other seafood) high in <i>n</i> -3 fatty acids (oz. eq.)   |
| M_FISH_LO           | PF_SEAFD_LOW            | Seafood (finfish, shellfish, and other seafood) low in <i>n</i> -3 fatty acids (oz. eq.)  |
| M_EGG               | PF_EGGS                 | Eggs (chicken, duck, goose, quail) and egg substitutes (oz. eq.)  |
| M_SOY <sup>4</sup>  | PF_SOY                  | Soy products, excluding calcium fortified soy milk (soymilk) and raw soybeans (oz. eq.)   |
| M_NUTSD             | PF_NUTSDS               | Peanuts, tree nuts, and seeds; excludes coconut (oz. eq.)   |
| --                  | PF_LEGUMES <sup>2</sup> | Beans and Peas (legumes) computed as protein foods (oz. eq.)  |
| D_TOTAL             | D_TOTAL                 | Total milk, yogurt, cheese, and whey. For some foods, the total dairy values could be higher than the sum of D_MILK, D_YOGURT, and D_CHEESE because miscellaneous dairy component composed of whey is not included in FPED as a separate variable. (cup eq.)  |
| D_MILK <sup>4</sup> | D_MILK                  | Fluid milk, buttermilk, evaporated milk, dry milk, and calcium fortified soy milk (soymilk) (cup eq.)   |
| D_YOGURT            | D_YOGURT                | Yogurt (cup eq.)  |
| D_CHEESE            | D_CHEESE                | Cheeses (cup eq.)   |
| DISCFAT_OIL         | OILS                    | Fats naturally present in nuts, seeds, and seafood; all unhydrogenated vegetable oils, except palm oil, palm kernel oil, and coconut oils; the fat present in avocado and olives above the allowable amount; 50% of the fat present in stick and tub margarines and margarine spreads (grams)                                 |
| DISCFAT_SOL         | SOLID_FATS              | Fats naturally present in meat, poultry, eggs, and dairy (lard, tallow, and butter); fully or partially hydrogenated oils; shortening; palm oil; palm kernel oil; coconut oils; fats naturally present in coconut meat and cocoa butter; and 50% of the fat present in stick and tub margarines and margarine spreads (grams) |
| ADD_SUG             | ADD_SUGARS              | Foods defined as added sugars (tsp. eq.)  |
| A_BEV               | A_DRINKS                | Alcoholic beverages and alcohol (ethanol) added to foods after cooking (no. of drinks)  |

<sup>1</sup> Fruit juices were included in the individual fruit subgroups in MPED 2.0. In FPED, they are in the Fruit Juice group (F\_JUICE).

<sup>2</sup> New variables, not in MPED 2.0

<sup>3</sup> Cured/smoked meat were included in the M\_MEAT subgroup in MPED 2.0. In FPED, it is a separate group (PF\_CUREDMEAT)

<sup>4</sup> Calcium fortified soy milk was included in the M\_SOY subgroup in MPED 2.0 and is placed in the Dairy group in FPED

### Appendix 3: Food Patterns Equivalents Ingredients Database (FPID) 2017-2018 Variables

| FPID Variables   | Description (units)  |
|------------------|--|
| CODE             | Food code  |
| DESCRIPTION      | Food description   |
| F_TOTAL          | Total intact fruits (whole or cut) and fruit juices (cup eq.)  |
| F_CITMLB         | Intact fruits (whole or cut) of citrus, melons, and berries (cup eq.)                                      |
| F_OTHER          | Intact fruits (whole or cut); excluding citrus, melons, and berries (cup eq.)                              |
| F_JUICE          | Fruit juices, citrus and non-citrus (cup eq.)  |
| V_TOTAL          | Total dark green, red and orange, starchy, and other vegetables; excludes legumes (cup eq.)                |
| V_DRKGR          | Dark green vegetables (cup eq.)  |
| V_REDOR_TOTAL    | Total red and orange vegetables (tomatoes and tomato products + other red and orange vegetables) (cup eq.) |
| V_REDOR_TOMATO   | Tomatoes and tomato products (cup eq.)   |
| V_REDOR_OTHER    | Other red and orange vegetables, excluding tomatoes and tomato products (cup eq.)                          |
| V_STARCHY_TOTAL  | Total starchy vegetables (white potatoes + other starchy vegetables) (cup eq.)                             |
| V_STARCHY_POTATO | White potatoes (cup eq.)   |
| V_STARCHY_OTHER  | Other starchy vegetables, excluding white potatoes (cup eq.)   |



**Appendix 3: Food Patterns Equivalents Ingredients Database (FPID) 2017-2018 Variables (Continued)**

| <b>FPID Variables</b> | <b>Description (units)</b>   |
|-----------------------|--|
| V_OTHER               | Other vegetables not in the vegetable components listed above (cup eq.)  |
| V_LEGUMES             | Beans, peas, and lentils (legumes) computed as vegetables (cup eq.)  |
| G_TOTAL               | Total whole and refined grains (oz. eq.)   |
| G_WHOLE               | Grains defined as whole grains and contain the entire grain kernel — the bran, germ, and endosperm (oz. eq.)               |
| G_REFINED             | Refined grains that do not contain all of the components of the entire grain kernel (oz. eq.)                              |
| PF_TOTAL              | Total meat, poultry, organ meat, cured meat, seafood, eggs, soy, and nuts and seeds; excludes legumes (oz. eq.)            |
| PF_MPS_TOTAL          | Total of meat, poultry, seafood, organ meat, and cured meat (oz. eq.)  |
| PF_MEAT               | Beef, veal, pork, lamb, and game meat; excludes organ meat and cured meat (oz. eq.)  |
| PF_CUREDMEAT          | Frankfurters, sausages, corned beef, cured ham and luncheon meat that are made from beef, pork, or poultry (oz. eq.)       |
| PF_ORGAN              | Organ meat from beef, veal, pork, lamb, game, and poultry (oz. eq.)  |
| PF_POULT              | Chicken, turkey, Cornish hens, duck, goose, quail, and pheasant (game birds); excludes organ meat and cured meat (oz. eq.) |

### Appendix 3: Food Patterns Equivalents Ingredients Database (FPID) 2017-2018 Variables (Continued)

| FPID Variables | Description (units)   |
|----------------|---|
| PF_SEAFD_HI    | Seafood (finfish, shellfish, and other seafood) high in <i>n</i> -3 fatty acids (oz. eq.)   |
| PF_SEAFD_LOW   | Seafood (finfish, shellfish, and other seafood) low in <i>n</i> -3 fatty acids (oz. eq.)  |
| PF_EGGS        | Eggs (chicken, duck, goose, quail) and egg substitutes (oz. eq.)  |
| PF_SOY         | Soy products, excluding calcium fortified soy milk (soymilk) and raw / mature soybean products (oz. eq.)  |
| PF_NUTSDS      | Peanuts, tree nuts, and seeds; excludes coconut (oz. eq.)   |
| PF_LEGUMES     | Beans and Peas (legumes) computed as protein foods (oz. eq.)  |
| D_TOTAL        | Total milk, yogurt, cheese, and whey. For some foods, the total dairy values could be higher than the sum of D_MILK, D_YOGURT, and D_CHEESE because miscellaneous dairy component composed of whey is not included in FPED as a separate variable (cup eq.) |
| D_MILK         | Fluid milk, buttermilk, evaporated milk, dry milk, and calcium fortified soy milk (soymilk) (cup eq.)   |
| D_YOGURT       | Yogurt (cup eq.)  |
| D_CHEESE       | Cheeses (cup eq.)   |

**Appendix 3: Food Patterns Equivalents Ingredients Database (FPID) 2017-2018 Variables (Continued)**

| FPID Variables | Description (units)   |
|----------------|---|
| OILS           | Fats naturally present in nuts, seeds, and seafood; all unhydrogenated vegetable oils, except palm oil, palm kernel oil, and coconut oils; the fat present in avocado and olives above the allowable amount; 50% of the fat present in stick and tub margarines and margarine spreads (grams)                                 |
| SOLID_FATS     | Fats naturally present in meat, poultry, eggs, and dairy (lard, tallow, and butter); fully or partially hydrogenated oils; shortening; palm oil; palm kernel oil; coconut oils; fats naturally present in coconut meat and cocoa butter; and 50% of the fat present in stick and tub margarines and margarine spreads (grams) |
| ADD_SUGARS     | Foods defined as added sugars (tsp. eq.)  |
| A_DRINKS       | Alcoholic beverages and alcohol (ethanol) added to foods after cooking (no. of drinks)  |

#### Appendix 4: Food Patterns Equivalents Database (FPED) 2017-2018 Variables

| FPED Variables   | Description (units)  |
|------------------|--|
| FOODCODE         | Food code  |
| DESCRIPTION      | Food description   |
| F_TOTAL          | Total intact fruits (whole or cut) and fruit juices (cup eq.)  |
| F_CITMLB         | Intact fruits (whole or cut) of citrus, melons, and berries (cup eq.)                                      |
| F_OTHER          | Intact fruits (whole or cut); excluding citrus, melons, and berries (cup eq.)                              |
| F_JUICE          | Fruit juices, citrus and non-citrus (cup eq.)  |
| V_TOTAL          | Total dark green, red and orange, starchy, and other vegetables; excludes legumes (cup eq.)                |
| V_DRKGR          | Dark green vegetables (cup eq.)  |
| V_REDOR_TOTAL    | Total red and orange vegetables (tomatoes and tomato products + other red and orange vegetables) (cup eq.) |
| V_REDOR_TOMATO   | Tomatoes and tomato products (cup eq.)   |
| V_REDOR_OTHER    | Other red and orange vegetables, excluding tomatoes and tomato products (cup eq.)                          |
| V_STARCHY_TOTAL  | Total starchy vegetables (white potatoes + other starchy vegetables) (cup eq.)                             |
| V_STARCHY_POTATO | White potatoes (cup eq.)   |
| V_STARCHY_OTHER  | Other starchy vegetables, excluding white potatoes (cup eq.)   |

#### Appendix 4: Food Patterns Equivalents Database (FPED) 2017-2018 Variables (Continued)

| FPED Variables | Description (units)  |
|----------------|--|
| V_OTHER        | Other vegetables not in the vegetable components listed above (cup eq.)  |
| V_LEGUMES      | Beans, peas, and lentils (legumes) computed as vegetables (cup eq.)  |
| G_TOTAL        | Total whole and refined grains (oz. eq.)   |
| G_WHOLE        | Grains defined as whole grains and contain the entire grain kernel — the bran, germ, and endosperm (oz. eq.)               |
| G_REFINED      | Refined grains that do not contain all of the components of the entire grain kernel (oz. eq.)                              |
| PF_TOTAL       | Total meat, poultry, organ meat, cured meat, seafood, eggs, soy, and nuts and seeds; excludes legumes (oz. eq.)            |
| PF_MPS_TOTAL   | Total of meat, poultry, seafood, organ meat, and cured meat (oz. eq.)  |
| PF_MEAT        | Beef, veal, pork, lamb, and game meat; excludes organ meat and cured meat (oz. eq.)  |
| PF_CUREDMEAT   | Frankfurters, sausages, corned beef, cured ham and luncheon meat that are made from beef, pork, or poultry (oz. eq.)       |
| PF_ORGAN       | Organ meat from beef, veal, pork, lamb, game, and poultry (oz. eq.)  |
| PF_POULT       | Chicken, turkey, Cornish hens, duck, goose, quail, and pheasant (game birds); excludes organ meat and cured meat (oz. eq.) |
| PF_SEAFD_HI    | Seafood (finfish, shellfish, and other seafood) high in <i>n</i> -3 fatty acids (oz. eq.)                                  |

**Appendix 4: Food Patterns Equivalents Database (FPED) 2017-2018 Variables (Continued)**

| <b>FPED Variables</b> | <b>Description (units)</b>  |
|-----------------------|---|
| PF_SEAFD_LOW          | Seafood (finfish, shellfish, and other seafood) low in <i>n</i> -3 fatty acids (oz. eq.)  |
| PF_EGGS               | Eggs (chicken, duck, goose, quail) and egg substitutes (oz. eq.)  |
| PF_SOY                | Soy products, excluding calcium fortified soy milk (soymilk) and raw / mature soybean products (oz. eq.)  |
| PF_NUTSDS             | Peanuts, tree nuts, and seeds; excludes coconut (oz. eq.)   |
| PF_LEGUMES            | Beans and Peas (legumes) computed as protein foods (oz. eq.)  |
| D_TOTAL               | Total milk, yogurt, cheese, and whey. For some foods, the total dairy values could be higher than the sum of D_MILK, D_YOGURT, and D_CHEESE because miscellaneous dairy component composed of whey is not included in FPED as a separate variable. (cup eq.)                                  |
| D_MILK                | Fluid milk, buttermilk, evaporated milk, dry milk, and calcium fortified soy milk (soymilk) (cup eq.)   |
| D_YOGURT              | Yogurt (cup eq.)  |
| D_CHEESE              | Cheeses (cup eq.)   |
| OILS                  | Fats naturally present in nuts, seeds, and seafood; all unhydrogenated vegetable oils, except palm oil, palm kernel oil, and coconut oils; the fat present in avocado and olives above the allowable amount; 50% of the fat present in stick and tub margarines and margarine spreads (grams) |

**Appendix 4: Food Patterns Equivalents Database (FPED) 2017-2018 Variables (Continued)**

| FPED Variables | Description (units)   |
|----------------|---|
| SOLID_FATS     | Fats naturally present in meat, poultry, eggs, and dairy (lard, tallow, and butter); fully or partially hydrogenated oils; shortening; palm oil; palm kernel oil; coconut oils; fats naturally present in coconut meat and cocoa butter; and 50% of the fat present in stick and tub margarines and margarine spreads (grams) |
| ADD_SUGARS     | Foods defined as added sugars (tsp. eq.)  |
| A_DRINKS       | Alcoholic beverages and alcohol (ethanol) added to foods after cooking (no. of drinks)  |

**Appendix 5: Food Patterns Equivalents Intakes per Food per Individual for Day 1 and Day 2 SAS Files: Number of Observations and Variables, 2017-2018**

| <b>Day 1</b><br><b>fped_dr1iff_1718.sas7bdat</b> | <b>Day 2</b><br><b>fped_dr2iff_1718.sas7bdat</b> | <b>Description (units)</b>                         |
|--|--|--|
| 112683   | 93500  | Number of observations                             |
| SEQN   | SEQN   | Respondent sequence number                         |
| RIAGENDR   | RIAGENDR   | Gender   |
| RIDAGEYR   | RIDAGEYR   | Age in years at screening                          |
| RIDRETH3   | RIDRETH3   | Race/Hispanic origin w/Non-Hispanic Asian – Recode |
| SDMVPSU  | SDMVPSU  | Masked variance pseudo-PSU                         |
| SDMVSTRA   | SDMVSTRA   | Masked variance pseudo-stratum                     |
| INDFMIN2   | INDFMIN2   | Annual family income                               |
| INDFMPIR   | INDFMPIR   | Ratio of family income to poverty                  |
| WTDRD1   | WTDRD1   | Dietary day one sample weight                      |
| WTDR2D   | WTDR2D   | Dietary two-day sample weight                      |
| DR1DRSTZ   | DR2DRSTZ   | Dietary recall status                              |
| DRABF  | DRABF  | Breast-fed infant (either day)                     |



**Appendix 5: Food Patterns Equivalents Intakes per Food per Individual for Day 1 and Day 2 SAS Files: Number of Observations and Variables, 2017-2018 (Continued)**

| <b>Day 1</b><br><b>fped_dr1iff_1718.sas7bdat</b> | <b>Day 2</b><br><b>fped_dr2iff_1718.sas7bdat</b> | <b>Description (units)</b>  |
|--|--|---|
| DRDINT   | DRDINT   | Number of days of intake  |
| DR1TNUMF   | DR2TNUMF   | Number of foods/beverages reported  |
| DR1ILINE   | DR2ILINE   | Food/Individual component number  |
| DR1IFDCD   | DR2IFDCD   | USDA food code  |
| DR1IGRMS   | DR2IGRMS   | Grams   |
| DESCRIPTION                                      | DESCRIPTION                                      | Food description  |
| DR1I_F_TOTAL                                     | DR2I_F_TOTAL                                     | Total intact fruits (whole or cut) and fruit juices (cup eq.)                 |
| DR1I_F_CITMLB                                    | DR2I_F_CITMLB                                    | Intact fruits (whole or cut) of citrus, melons, and berries (cup eq.)         |
| DR1I_F_OTHER                                     | DR2I_F_OTHER                                     | Intact fruits (whole or cut); excluding citrus, melons, and berries (cup eq.) |
| DR1I_F_JUICE                                     | DR2I_F_JUICE                                     | Fruit juices, citrus and non-citrus (cup eq.)                                 |

**Appendix 5: Food Patterns Equivalents Intakes per Food per Individual for Day 1 and Day 2 SAS Files: Number of Observations and Variables, 2017-2018 (Continued)**

| <b>Day 1</b><br><b>fped_dr1iff_1718.sas7bdat</b> | <b>Day 2</b><br><b>fped_dr2iff_1718.sas7bdat</b> | <b>Description (units)</b>   |
|--|--|--|
| DR1I_V_TOTAL                                     | DR2I_V_TOTAL                                     | Total dark green, red and orange, starchy, and other vegetables; excludes legumes (cup eq.)                |
| DR1I_V_DRKGR                                     | DR2I_V_DRKGR                                     | Dark green vegetables (cup eq.)  |
| DR1I_V_REDOR_TOTAL                               | DR2I_V_REDOR_TOTAL                               | Total red and orange vegetables (tomatoes and tomato products + other red and orange vegetables) (cup eq.) |
| DR1I_V_REDOR_TOMATO                              | DR2I_V_REDOR_TOMATO                              | Tomatoes and tomato products (cup eq.)   |
| DR1I_V_REDOR_OTHER                               | DR2I_V_REDOR_OTHER                               | Other red and orange vegetables, excluding tomatoes and tomato products (cup eq.)                          |
| DR1I_V_STARCHY_TOTAL                             | DR2I_V_STARCHY_TOTAL                             | Total starchy vegetables (white potatoes + other starchy vegetables) (cup eq.)                             |
| DR1I_V_STARCHY_POTATO                            | DR2I_V_STARCHY_POTATO                            | White potatoes (cup eq.)   |
| DR1I_V_STARCHY_OTHER                             | DR2I_V_STARCHY_OTHER                             | Other starchy vegetables, excluding white potatoes (cup eq.)   |
| DR1I_V_OTHER                                     | DR2I_V_OTHER                                     | Other vegetables not in the vegetable components listed above (cup eq.)                                    |
| DR1I_V_LEGUMES                                   | DR2I_V_LEGUMES                                   | Beans, peas, and lentils (legumes) computed as vegetables (cup eq.)  |

**Appendix 5: Food Patterns Equivalents Intakes per Food per Individual for Day 1 and Day 2 SAS Files: Number of Observations and Variables, 2017-2018 (Continued)**

| <b>Day 1</b><br><b>fped_dr1iff_1718.sas7bdat</b> | <b>Day 2</b><br><b>fped_dr2iff_1718.sas7bdat</b> | <b>Description (units)</b>   |
|--|--|--|
| DR1I_G_TOTAL                                     | DR2I_G_TOTAL                                     | Total whole and refined grains (oz. eq.)   |
| DR1I_G_WHOLE                                     | DR2I_G_WHOLE                                     | Grains defined as whole grains and contain the entire grain kernel — the bran, germ, and endosperm (oz. eq.)               |
| DR1I_G_REFINED                                   | DR2I_G_REFINED                                   | Refined grains that do not contain all of the components of the entire grain kernel (oz. eq.)                              |
| DR1I_PF_TOTAL                                    | DR2I_PF_TOTAL                                    | Total meat, poultry, organ meat, cured meat, seafood, eggs, soy, and nuts and seeds; excludes legumes (oz. eq.)            |
| DR1I_PF_MPS_TOTAL                                | DR2I_PF_MPS_TOTAL                                | Total of meat, poultry, seafood, organ meat, and cured meat (oz. eq.)  |
| DR1I_PF_MEAT                                     | DR2I_PF_MEAT                                     | Beef, veal, pork, lamb, and game meat; excludes organ meat and cured meat (oz. eq.)  |
| DR1I_PF_CUREDMEAT                                | DR2I_PF_CUREDMEAT                                | Frankfurters, sausages, corned beef, cured ham and luncheon meat that are made from beef, pork, or poultry (oz. eq.)       |
| DR1I_PF_ORGAN                                    | DR2I_PF_ORGAN                                    | Organ meat from beef, veal, pork, lamb, game, and poultry (oz. eq.)  |
| DR1I_PF_POULT                                    | DR2I_PF_POULT                                    | Chicken, turkey, Cornish hens, duck, goose, quail, and pheasant (game birds); excludes organ meat and cured meat (oz. eq.) |

**Appendix 5: Food Patterns Equivalents Intakes per Food per Individual for Day 1 and Day 2 SAS Files: Number of Observations and Variables, 2017-2018 (Continued)**

| Day 1<br>fped_dr1iff_1718.sas7bdat | Day 2<br>fped_dr2iff_1718.sas7bdat | Description (units)  |
|------------------------------------|------------------------------------|--|
| DR1I_PF_SEAFD_HI                   | DR2I_PF_SEAFD_HI                   | Seafood (finfish, shellfish, and other seafood) high in <i>n</i> -3 fatty acids (oz. eq.)  |
| DR1I_PF_SEAFD_LOW                  | DR2I_PF_SEAFD_LOW                  | Seafood (finfish, shellfish, and other seafood) low in <i>n</i> -3 fatty acids (oz. eq.)   |
| DR1I_PF_EGGS                       | DR2I_PF_EGGS                       | Eggs (chicken, duck, goose, quail) and egg substitutes (oz. eq.)   |
| DR1I_PF_SOY                        | DR2I_PF_SOY                        | Soy products, excluding calcium fortified soy milk (soymilk) and raw soybeans products (oz. eq.)   |
| DR1I_PF_NUTSDS                     | DR2I_PF_NUTSDS                     | Peanuts, tree nuts, and seeds; excludes coconut (oz. eq.)  |
| DR1I_PF_LEGUMES                    | DR2I_PF_LEGUMES                    | Beans and Peas (legumes) computed as protein foods (oz. eq.)   |
| DR1I_D_TOTAL                       | DR2I_D_TOTAL                       | Total milk, yogurt, cheese, and whey. For some foods, the total dairy values could be higher than the sum of D_MILK, D_YOGURT, and D_CHEESE because miscellaneous dairy component composed of whey is not included in FPED as a separate variable. (cup eq.) |
| DR1I_D_MILK                        | DR2I_D_MILK                        | Fluid milk, buttermilk, evaporated milk, dry milk, and calcium fortified soy milk (soymilk) (cup eq.)  |

**Appendix 5: Food Patterns Equivalents Intakes per Food per Individual for Day 1 and Day 2 SAS Files: Number of Observations and Variables, 2017-2018 (Continued)**

| <b>Day 1</b><br><b>fped_dr1iff_1718.sas7bdat</b> | <b>Day 2</b><br><b>fped_dr2iff_1718.sas7bdat</b> | <b>Description (units)</b>  |
|--|--|---|
| DR1I_D_YOGURT                                    | DR2I_D_YOGURT                                    | Yogurt (cup eq.)  |
| DR1I_D_CHEESE                                    | DR2I_D_CHEESE                                    | Cheeses (cup eq.)   |
| DR1I_OILS  | DR2I_OILS  | Fats naturally present in nuts, seeds, and seafood; all unhydrogenated vegetable oils, except palm oil, palm kernel oil, and coconut oils; the fat present in avocado and olives above the allowable amount; 50% of the fat present in stick and tub margarines and margarine spreads (grams)                                 |
| DR1I_SOLID_FATS                                  | DR2I_SOLID_FATS                                  | Fats naturally present in meat, poultry, eggs, and dairy (lard, tallow, and butter); fully or partially hydrogenated oils; shortening; palm oil; palm kernel oil; coconut oils; fats naturally present in coconut meat and cocoa butter; and 50% of the fat present in stick and tub margarines and margarine spreads (grams) |
| DR1I_ADD_SUGARS                                  | DR2I_ADD_SUGARS                                  | Foods defined as added sugars (tsp. eq.)  |
| DR1I_A_DRINKS                                    | DR2I_A_DRINKS                                    | Alcoholic beverages and alcohol (ethanol) added to foods after cooking (no. of drinks)  |

**Appendix 6: Total Food Patterns Equivalents Intakes per Individual for Day 1 and Day 2 SAS Files: Number of Observations and Variables, 2017-2018**

| <b>Day 1</b><br><b>fped_dr1tot_1718.sas7bdat</b> | <b>Day 2</b><br><b>fped_dr2tot_1718.sas7bdat</b> | <b>Description (units)</b>                 |
|--|--|--|
| 8704   | 8704   | Number of observations                     |
| SEQN   | SEQN   | Respondent sequence number                 |
| RIAGENDR   | RIAGENDR   | Gender                                     |
| RIDAGEYR   | RIDAGEYR   | Age in years at screening                  |
| RIDRETH3   | RIDRETH3   | Race/Hispanic origin w/ non-Hispanic Asian |
| SDMVPSU  | SDMVPSU  | Masked variance pseudo-PSU                 |
| SDMVSTRA   | SDMVSTRA   | Masked variance pseudo-stratum             |
| INDFMIN2   | INDFMIN2   | Annual family income                       |
| INDFMPIR   | INDFMPIR   | Ratio of family income to poverty          |
| WTDRD1   | WTDRD1   | Dietary day one sample weight              |
| WTDR2D   | WTDR2D   | Dietary two-day sample weight              |
| DR1DRSTZ   | DR2DRSTZ   | Dietary recall status                      |

**Appendix 6: Total Food Patterns Equivalents Intakes per Individual for Day 1 and Day 2 SAS Files: Number of Observations and Variables, 2017-2018 (Continued)**

| <b>Day 1</b><br><b>fped_dr1tot_1718.sas7bdat</b> | <b>Day 2</b><br><b>fped_dr2tot_1718.sas7bdat</b> | <b>Description (units)</b>   |
|--|--|--|
| DRABF  | DRABF  | Breast-fed infant (either day)   |
| DRDINT   | DRDINT   | Number of days of intake   |
| DR1TNUMF   | DR2TNUMF   | Number of foods/beverages reported   |
| DR1T_F_TOTAL                                     | DR2T_F_TOTAL                                     | Total intact fruits (whole or cut) and fruit juices (cup eq.)  |
| DR1T_F_CITMLB                                    | DR2T_F_CITMLB                                    | Intact fruits (whole or cut) of citrus, melons, and berries (cup eq.)                                      |
| DR1T_F_OTHER                                     | DR2T_F_OTHER                                     | Intact fruits (whole or cut); excluding citrus, melons, and berries (cup eq.)                              |
| DR1T_F_JUICE                                     | DR2T_F_JUICE                                     | Fruit juices, citrus and non-citrus (cup eq.)  |
| DR1T_V_TOTAL                                     | DR2T_V_TOTAL                                     | Total dark green, red and orange, starchy, and other vegetables; excludes legumes (cup eq.)                |
| DR1T_V_DRKGR                                     | DR2T_V_DRKGR                                     | Dark green vegetables (cup eq.)  |
| DR1T_V_REDOR_TOTAL                               | DR2T_V_REDOR_TOTAL                               | Total red and orange vegetables (tomatoes and tomato products + other red and orange vegetables) (cup eq.) |

**Appendix 6: Total Food Patterns Equivalents Intakes per Individual for Day 1 and Day 2 SAS Files: Number of Observations and Variables, 2017-2018 (Continued)**

| <b>Day 1</b><br><b>fped_dr1tot_1718.sas7bdat</b> | <b>Day 2</b><br><b>fped_dr2tot_1718.sas7bdat</b> | <b>Description (units)</b>   |
|--|--|--|
| DR1T_V_REDOR_TOMATO                              | DR2T_V_REDOR_TOMATO                              | Tomatoes and tomato products (cup eq.)   |
| DR1T_V_REDOR_OTHER                               | DR2T_V_REDOR_OTHER                               | Other red and orange vegetables, excluding tomatoes and tomato products (cup eq.)                            |
| DR1T_V_STARCHY_TOTAL                             | DR2T_V_STARCHY_TOTAL                             | Total starchy vegetables (white potatoes + other starchy vegetables) (cup eq.)                               |
| DR1T_V_STARCHY_POTATO                            | DR2T_V_STARCHY_POTATO                            | White potatoes (cup eq.)   |
| DR1T_V_STARCHY_OTHER                             | DR2T_V_STARCHY_OTHER                             | Other starchy vegetables, excluding white potatoes (cup eq.)   |
| DR1T_V_OTHER                                     | DR2T_V_OTHER                                     | Other vegetables not in the vegetable components listed above (cup eq.)                                      |
| DR1T_V_LEGUMES                                   | DR2T_V_LEGUMES                                   | Beans, peas, and lentils (legumes) computed as vegetables (cup eq.)  |
| DR1T_G_TOTAL                                     | DR2T_G_TOTAL                                     | Total whole and refined grains (oz. eq.)   |
| DR1T_G_WHOLE                                     | DR2T_G_WHOLE                                     | Grains defined as whole grains and contain the entire grain kernel — the bran, germ, and endosperm (oz. eq.) |



**Appendix 6: Total Food Patterns Equivalents Intakes per Individual for Day 1 and Day 2 SAS Files: Number of Observations and Variables, 2017-2018 (Continued)**

| <b>Day 1</b><br><b>fped_dr1tot_1718.sas7bdat</b> | <b>Day 2</b><br><b>fped_dr2tot_1718.sas7bdat</b> | <b>Description (units)</b>   |
|--|--|--|
| DR1T_G_REFINED                                   | DR2T_G_REFINED                                   | Refined grains that do not contain all of the components of the entire grain kernel (oz. eq.)                              |
| DR1T_PF_TOTAL                                    | DR2T_PF_TOTAL                                    | Total meat, poultry, organ meat, cured meat, seafood, eggs, soy, and nuts and seeds; excludes legumes (oz. eq.)            |
| DR1T_PF_MPS_TOTAL                                | DR2T_PF_MPS_TOTAL                                | Total of meat, poultry, seafood, organ meat, and cured meat (oz. eq.)  |
| DR1T_PF_MEAT                                     | DR2T_PF_MEAT                                     | Beef, veal, pork, lamb, and game meat; excludes organ meat and cured meat (oz. eq.)  |
| DR1T_PF_CUREDMEAT                                | DR2T_PF_CUREDMEAT                                | Frankfurters, sausages, corned beef, cured ham and luncheon meat that are made from beef, pork, or poultry (oz. eq.)       |
| DR1T_PF_ORGAN                                    | DR2T_PF_ORGAN                                    | Organ meat from beef, veal, pork, lamb, game, and poultry (oz. eq.)  |
| DR1T_PF_POULT                                    | DR2T_PF_POULT                                    | Chicken, turkey, Cornish hens, duck, goose, quail, and pheasant (game birds); excludes organ meat and cured meat (oz. eq.) |
| DR1T_PF_SEAFD_HI                                 | DR2T_PF_SEAFD_HI                                 | Seafood (finfish, shellfish, and other seafood) high in <i>n</i> -3 fatty acids (oz. eq.)                                  |

**Appendix 6: Total Food Patterns Equivalents Intakes per Individual for Day 1 and Day 2 SAS Files: Number of Observations and Variables, 2017-2018 (Continued)**

| <b>Day 1</b><br><b>fped_dr1tot_1718.sas7bdat</b> | <b>Day 2</b><br><b>fped_dr2tot_1718.sas7bdat</b> | <b>Description (units)</b>   |
|--|--|--|
| DR1T_PF_SEAFD_LOW                                | DR2T_PF_SEAFD_LOW                                | Seafood (finfish, shellfish, and other seafood) low in <i>n</i> -3 fatty acids (oz. eq.)   |
| DR1T_PF_EGGS                                     | DR2T_PF_EGGS                                     | Eggs (chicken, duck, goose, quail) and egg substitutes (oz. eq.)   |
| DR1T_PF_SOY                                      | DR2T_PF_SOY                                      | Soy products, excluding calcium fortified soy milk (soymilk) and raw soybeans products (oz. eq.)   |
| DR1T_PF_NUTSDS                                   | DR2T_PF_NUTSDS                                   | Peanuts, tree nuts, and seeds; excludes coconut (oz. eq.)  |
| DR1T_PF_LEGUMES                                  | DR2T_PF_LEGUMES                                  | Beans and Peas (legumes) computed as protein foods (oz. eq.)   |
| DR1T_D_TOTAL                                     | DR2T_D_TOTAL                                     | Total milk, yogurt, cheese, and whey. For some foods, the total dairy values could be higher than the sum of D_MILK, D_YOGURT, and D_CHEESE because miscellaneous dairy component composed of whey is not included in FPED as a separate variable. (cup eq.) |
| DR1T_D_MILK                                      | DR2T_D_MILK                                      | Fluid milk, buttermilk, evaporated milk, dry milk, and calcium fortified soy milk (soymilk) (cup eq.)  |
| DR1T_D_YOGURT                                    | DR2T_D_YOGURT                                    | Yogurt (cup eq.)   |
| DR1T_D_CHEESE                                    | DR2T_D_CHEESE                                    | Cheeses (cup eq.)  |

**Appendix 6: Total Food Patterns Equivalents Intakes per Individual for Day 1 and Day 2 SAS Files: Number of Observations and Variables, 2017-2018 (Continued)**

| <b>Day 1</b><br><b>fped_dr1tot_1718.sas7bdat</b> | <b>Day 2</b><br><b>fped_dr2tot_1718.sas7bdat</b> | <b>Description (units)</b>  |
|--|--|---|
| DR1T_OILS  | DR2T_OILS  | Fats naturally present in nuts, seeds, and seafood; all unhydrogenated vegetable oils, except palm oil, palm kernel oil, and coconut oils; the fat present in avocado and olives above the allowable amount; 50% of the fat present in stick and tub margarines and margarine spreads (grams)                                 |
| DR1T_SOLID_FATS                                  | DR2T_SOLID_FATS                                  | Fats naturally present in meat, poultry, eggs, and dairy (lard, tallow, and butter); fully or partially hydrogenated oils; shortening; palm oil; palm kernel oil; coconut oils; fats naturally present in coconut meat and cocoa butter; and 50% of the fat present in stick and tub margarines and margarine spreads (grams) |
| DR1T_ADD_SUGARS                                  | DR2T_ADD_SUGARS                                  | Foods defined as added sugars (tsp. eq.)  |
| DR1T_A_DRINKS                                    | DR2T_A_DRINKS                                    | Alcoholic beverages and alcohol (ethanol) added to foods after cooking (no. of drinks)  |

## Appendix 7: SAS Program for Calculating Mean Intakes of Food Patterns Equivalents for the Thirty-Seven Components, 2017-2018

```

/*****
SAS Program:    MakeTables_1718.sas

```

Purpose: Sample SAS program to estimate mean intakes of USDA 2017-2018 Food Patterns Equivalents and create tables

Data In: ...\\FPED\_DR1TOT\_1718.sas7bdat

Output: ...\\Table1.pdf by Gender and Age  
 ...\\Table2.pdf by Race/Ethnicity and Age  
 ...\\Table3.pdf by Family Income in Dollars and Age  
 ...\\Table4.pdf by Family Income as % of Poverty Level and Age

```

*****/

```

```

*****,
*
* MakeTables.sas
*
* This SAS® program estimates mean intakes, consumed per
* individual in the United States of USDA 2017-2018 Food
* Patterns Equivalents and creates the following tables
* in the same directory as this program:
*
* Table1.pdf by Gender and Age
* Table2.pdf by Race/Ethnicity and Age
* Table3.pdf by Family Income (in Dollars) and Age
* Table4.pdf by Family Income (% of Poverty Level) and Age
*
* The required input data set, FPED_DR1TOT_1718.sas7bdat,
* is assumed to exist in the same directory as this program.
* If not, be sure to modify the libname statement appropriately.
*
*****,
options nocenter nodate number orientation=landscape ls=155 ps=48 missing = ' ';

* Create macro var, iPath, with directory of this program.;
%let iPath=%sysfunc(tranwrd(%sysget(SAS_EXECFILEPATH),\%sysget(SAS_EXECFILENAME),));

* Libname of folder where FPED_DR1TOT_1718 resides.;
libname Input "&iPath.";

```

```

*****,
*
* Make data1 with stub variables for the groups.
* Day 1, 2 year and over, exclude breast-fed, reliable intakes.
*
*****,

```

```

data data1;
  set Input.FPED_DR1TOT_1718 (where = ((RIDAGEYR >= 2) and
                                     (DRABF ne 1) and DR1DRSTZ = 1));

  all = 1;
  sex = RIAGENDR;

  if      2 <= RIDAGEYR <= 5      then ag1 = 1;
  else if 6 <= RIDAGEYR <= 11     then ag1 = 2;
  else if 12 <= RIDAGEYR <= 19    then ag1 = 3;
  else if 20 <= RIDAGEYR <= 29    then ag1 = 4;
  else if 30 <= RIDAGEYR <= 39    then ag1 = 5;
  else if 40 <= RIDAGEYR <= 49    then ag1 = 6;
  else if 50 <= RIDAGEYR <= 59    then ag1 = 7;
  else if 60 <= RIDAGEYR <= 69    then ag1 = 8;
  else if RIDAGEYR >= 70          then ag1 = 9;

  if      ( 2 <= RIDAGEYR <= 19)  then ag2 = 10;
  else if (RIDAGEYR >= 20)        then ag2 = 11;

  if      RIDRETH3 = 3             then rac = 1;  * Non-Hisp White;
  else if RIDRETH3 = 4             then rac = 2;  * Non-Hisp Black;
  else if RIDRETH3 = 6             then rac = 3;  * Non-Hisp Asian;
  else if RIDRETH3 in(1 2)         then rac = 4;  * Hispanic      ;
  else                               rac = 5;  * Other Race      ;

  if      INDFMIN2 in(1:5 13)      then inc = 1;  * Under $20k      ;
  else if INDFMIN2 in(6:10)        then inc = 2;  * $20 - $75k    ;
  else if INDFMIN2 in(14 15)       then inc = 3;  * $75k and Over ;
  else                               inc = 4;  * Other          ;

  if      0 <= INDFMPIR <= 1.3     then pov = 1;  * Under 131% pov;
  else if 1.3 < INDFMPIR <= 3.50  then pov = 2;  * 131-350% pov  ;
  else if INDFMPIR > 3.50         then pov = 3;  * Over 350% pov  ;
  else                               pov = 4;  * Other          ;

  * Apply shortened labels, these will appear in table headings.;
  label DR1T_G_TOTAL      = "Total Grain";
  label DR1T_G_WHOLE      = "Whole Grains";
  label DR1T_G_REFINED    = "Refined Grains";
  label DR1T_V_TOTAL      = "Total Vegetables";
  label DR1T_V_DRKGR      = "Dark Green";
  label DR1T_V_REDOR_OTHER = "Other Red Orange";
  label DR1T_V_STARCHY_TOTAL = "Total Starchy";
  label DR1T_V_STARCHY_POTATO = "Potatoes";
  label DR1T_V_STARCHY_OTHER = "Other Starchy";
  label DR1T_V_REDOR_TOTAL = "Total Red and Orange";
  label DR1T_V_REDOR_TOMATO = "Tomatoes";
  label DR1T_V_OTHER      = "Other";
  label DR1T_F_TOTAL      = "Total Fruit";
  label DR1T_F_CITMLB     = "Citrus, Melons and Berries";
  label DR1T_F_OTHER      = "Other Fruit";
  label DR1T_F_JUICE      = "Fruit Juice";
  label DR1T_D_TOTAL      = "Total Dairy";
  label DR1T_D_MILK       = "Fluid Milk";
  label DR1T_D_YOGURT      = "Yogurt";
  label DR1T_D_CHEESE      = "Cheese";

```

```

label DR1T_PF_TOTAL          = "Total Protein";
label DR1T_PF_MPS_TOTAL      = "Total Meat, Poultry, and Seafood";
label DR1T_PF_MEAT           = "Meat";
label DR1T_PF_ORGAN          = "Organ";
label DR1T_PF_CUREDMEAT      = "Cured Meats";
label DR1T_PF_POULT          = "Poultry";
label DR1T_PF_SEAFD_HI       = "Seafood High n-3";
label DR1T_PF_SEAFD_LOW      = "Seafood Low n-3";
label DR1T_PF_EGGS           = "Eggs";
label DR1T_PF_SOY            = "Soybean Products";
label DR1T_PF_NUTSDS         = "Nuts and Seeds";
label DR1T_V_LEGUMES         = "Legumes as Vegetable";
label DR1T_PF_LEGUMES        = "Legumes as Protein";
label DR1T_OILS              = "Oils";
label DR1T_SOLID_FATS        = "Solid Fats";
label DR1T_ADD_SUGARS        = "Added Sugar";
label DR1T_A_DRINKS          = "Alcoholic Drinks";
run;

```

```

*****;
*                                           ;
* Create formats for the group variables.    ;
*                                           ;
*****;

```

```
proc format;
```

```
value agef
```

```

1  = " 2 - 5....."
2  = " 6 - 11....."
3  = "12 - 19....."
4  = "20 - 29....."
5  = "30 - 39....."
6  = "40 - 49....."
7  = "50 - 59....."
8  = "60 - 69....."
9  = "    70 and over....."
10 = "    2-19....."
11 = "    20 and over..."
12 = "    2 and over...";

```

```
value sexf
```

```

1  = "Males:"
2  = "Females:"
3  = "Males and females:";

```

```
value racf
```

```

1  = "Non-Hispanic White:"
2  = "Non-Hispanic Black:"
3  = "Non-Hispanic Asian:"
4  = "Hispanic:";

```

```
value incf
```

```

1  = "$0 - $24,999:"
2  = "$25,000 - $74,999:"
3  = "$75,000 and higher:"
4  = "All Individuals:";

```

```

value povf
  1 = "Under 131% poverty:"
  2 = "131-350% poverty:"
  3 = "Over 350% poverty:"
  4 = "All Individuals:";
run;

*****;
*
* Generate weighted means and SE.
*
*****;
ods listing close;
ods noresults;
proc sort data=data1;
  by SDMVSTRA SDMVPSU;
* By Gender and Age.;
proc surveymeans nobS mean stderr data = data1;
  stratum SDMVSTRA;
  cluster SDMVPSU;
  weight WTD RD1;
  domain all all*ag2 all*sex sex*ag1 sex*ag2;
  var DR1T_;;
  ods output domain = data2_sex;
* By Race/Ethnicity and Age.;
proc surveymeans nobS mean stderr data = data1;
  stratum SDMVSTRA;
  cluster SDMVPSU;
  weight WTD RD1;
  domain rac rac*ag1 rac*ag2;
  var DR1T_;;
  ods output domain = data2_rac;
* By Family Income (in Dollars) and Age.;
proc surveymeans nobS mean stderr data = data1;
  stratum SDMVSTRA;
  cluster SDMVPSU;
  weight WTD RD1;
  domain all inc all*ag1 all*ag2 inc*ag1 inc*ag2;
  var DR1T_;;
  ods output domain = data2_inc;
* By Family Income (% Poverty) and Age.;
proc surveymeans nobS mean stderr data = data1;
  stratum SDMVSTRA;
  cluster SDMVPSU;
  weight WTD RD1;
  domain all pov all*ag1 all*ag2 pov*ag1 pov*ag2;
  var DR1T_;;
  ods output domain = data2_pov;
run;
ods listing;

*****;
*
* Combine data sets, assign statistical flag, round, and add
* table, age, and group variables.

```

```

*
*****;
data data3;
  set data2_sex (in=insex)
      data2_rac (in=inrac)
      data2_inc (in=ininc)
      data2_pov (in=inpov);

  * Assign statistical flag based on cv, sample size, and vif.;
  vif = 2.57; * Variance inflation factor for 2 year and older.;
  if (mean > 0) then cv = stderr / mean * 100;
  if (cv >= 30) or
      (n < (30 * vif)) then statflag = '*';

  * Round values. ;
  cstat = put(mean, 8.2);
  cse = put(stderr, 8.3);

  * Indicate if value greater than zero too small to print. ;
  if (round(mean, 0.01) eq 0) and (mean > 0) then cstat = "#";
  if (round(stderr, 0.001) eq 0) and (stderr > 0) then cse = "#";

  * Don't show statflag if too small to print. ;
  if cstat = "#" then statflag = "";
  cse = compress("("||cse||")");
  * Don't show cse if cstat too small to print. ;
  if cstat = "#" then cse = "";

  * Replace zero with #. ;
  if compress(cstat) = "0" then do;
    cstat = "#";
    cse = "";
    statflag = "";
  end;

  * Make table, age, and group variables. ;
  if insex=1 then do;
    table = "sex";
    if sex in(1) then sex = 3; * Male and females ;
    if ag1 in(1:9) then age = ag1;
    if ag2 in(10:11) then age = ag2;
    if ag1=. and ag2=. then age = 12; * 2 and over ;
    group = put(sex, sexf.);
  end;

  if inrac=1 then do;
    table = "rac";
    if rac in(5) then rac = .; * Exclude other and miss ;
    if ag1 in(1:3) then age = ag1;
    if ag2 in(11) then age = ag2;
    if ag1=. and ag2=. then age = 12; * 2 and over ;
    group = put(rac, racf.);
  end;

  if ininc=1 then do;
    table = "inc";
    if inc in(4) then inc = .; * Exclude other and miss ;

```



```

        if all in(1)          then inc = 4; * All individuals          ;
        if ag1 in(1:3)        then age = ag1;
        if ag2 in(11)         then age = ag2;
        if ag1=. and ag2=. then age = 12; * 2 and over                ;
        group = put(inc, incf.);
    end;

    if inprov=1 then do;
        table = "pov";
        if pov in(4 5)        then pov = .; * Exclude other and miss ;
        if all in(1)          then pov = 4; * All individuals          ;
        if ag1 in(1:3)        then age = ag1;
        if ag2 in(11)         then age = ag2;
        if ag1=. and ag2=. then age = 12; * 2 and over                ;
        group = put(pov, povf.);
    end;

    agegroup = put(age, agef.);
    if group ^= "" and age in(1:12) then output;
    keep varname varlabel cstat cse statflag n mean stderr cv;
    keep sex rac inc pov table age group agegroup;
run;

*****;
*
* Create data set, vars, with varnames and varorder.
* Permits printing vars in the correct order.
*
*****;
proc transpose data=data1(keep=DR1T_: obs=0)
    out=vars (keep=_name_ rename=( _name_ =varname));
data vars;
    set vars;
    varorder=_n_;
proc sort data=data3;
    by varname;
proc sort data=vars;
    by varname;
data data3;
    merge data3 vars;
    by varname;
proc sort data=data3;
    by table sex rac inc pov age varorder;
run;

* Create variable, wide, indicating wide line to appear as space. ;
data data3;
    set data3;
    if sex in(1 2) and age in(4 7 10) then wide = 1;
    else if sex in(.) and age in(11) then wide = 1;
    else wide = 0;
run;

*****;
*

```

```

* Create and run macro program to make tables. ;
* ;
*****;
%macro makeTables();

ods escapechar = '~';
ods listing close;

%do i = 1 %to 4;    * Loop through tables.;
%if &i. = 1 %then %do;
    %let grp = sex;
    %let grpTxt = Gender*and age (years);
    %let grpBy = by Gender and Age;
%end;
%if &i. = 2 %then %do;
    %let grp = rac;
    %let grpTxt = Race/ethnicity*and age (years);
    %let grpBy = by Race/Ethnicity and Age;
%end;
%if &i. = 3 %then %do;
    %let grp = inc;
    %let grpTxt = Family income*in dollars*and age (years);
    %let grpBy = by Family Income in Dollars and Age;
%end;
%if &i. = 4 %then %do;
    %let grp = pov;
    %let grpTxt = Family income as% of poverty level;
    %let grpTxt = &grpTxt.*and age (years);
    %let grpBy = by Family Income as % of Poverty Level and Age;
%end;

ods pdf file = "&iPath.\Table&i..pdf" style = journal notoc;

* Macro var with style, column, defines, and computes for all reports.;
%let allReports = %str(
    style(header)=[font=('Times') height=0.80in fontsize=10pt fontstyle=roman]
    style(column)=[font=('Times') height=0.18in fontsize=10pt fontstyle=roman];
    column    &grp.  ("&grpTxt." age) ("n" n) wide varlabel, (cstat statflag cse );
    define &grp.    /group  "" noprint id order=data;
    define age      /group  "" style=[width=1.30in just=r] id order=data;
    define n        /group  "" style=[width=0.40in just=r];
    define wide     /group  "" noprint;
    define varlabel /across "" order=data;
    define cstat    /group  "" style=[width=0.35in just=r rightmargin=-0.10in leftmargin=-
0.10in];
    define statflag /group  "" style=[width=0.02in just=r rightmargin= 0.05in leftmargin=-
0.10in];
    define cse      /group  "" style=[width=0.36in just=l rightmargin=-0.05in leftmargin=-0.10in
fontsize=9pt];

    compute wide;
    if wide=1 then
        call define(_row_, "style", "style=[height=0.22in vjust=t topmargin=-0.100in
bottommargin=-0.100in]");
    else

```

```

        call define(_row_, "style", "style=[height=0.12in vjust=t topmargin=-0.100in
bottommargin=-0.100in]");
    endcomp;
    compute before &grp.;
        line "~S={just=l vjust=b fontweight=bold font=('Times') "
            "height=0.25in fontsize=11pt}" &grp. &grp.f.;
    endcomp;
    compute after &grp.;
        line "~S={height=0.10in}";
    endcomp;

    format age agef. &grp. &grp.f.););

%let footnote1 = "() Standard Error";
%let footnote2 = "* Indicates an estimate with a relative standard error greater than 30%.";
%let footnote3 = "# Indicates a non-zero value that is too small to report.";
%let footnote4a = "Total Dairy includes fluid milk, cheese, yogurt, and miscellaneous dairy (not
in table). "
    "Fluid Milk includes calcium fortified soy milk.";
%let footnote4b = "Legumes are not included in Total Protein Foods or Total Vegetables. "
    "Legumes as Protein Foods are calculated as 4x Legumes as Vegetable.";
%let footnote4c = "Total Vegetables does not include Legumes.";
%let footnote6 = "DATA SOURCES: ~mWhat We Eat in America, NHANES 2017-2018, "
    "individuals 2 years and over (excluding breast-fed children), "
    "day 1 dietary intake data, weighted.~-2n"
    "Food Patterns Equivalent Database (FPED) 2017-2018.";
%let titleEnd = Consumed per Individual,~-2nEstimated from Dietary Intake;
%let titleEnd = &titleEnd. Data, &grpBy., in the United States, 2017-2018;

title;
footnote;
footnote1 &footnote1.;
footnote2 &footnote2.;
footnote3 &footnote3.;
footnote4 &footnote4a.;
footnote6 &footnote6.;

title1 "Dairy: ~mMean Cup Equivalents, &titleEnd.";
proc report nowindows missing split = "*" data=data3 &allReports.;
    where table = "&grp." and varname
        in( "DR1T_D_TOTAL" "DR1T_D_MILK"
            "DR1T_D_CHEESE" "DR1T_D_YOGURT");
run;

footnote4;
footnote6 &footnote6.;
title1 "Fruit: ~mMean Cup Equivalents, &titleEnd.";
proc report nowindows missing split = "*" data=data3 &allReports.;
    where table = "&grp." and varname
        in( "DR1T_F_TOTAL" "DR1T_F_CITMLB"
            "DR1T_F_OTHER" "DR1T_F_JUICE");
run;

title1 "Grains: ~mMean Ounce Equivalents &titleEnd.";
proc report nowindows missing split = "*" data=data3 &allReports.;
    where table = "&grp." and varname
        in( "DR1T_G_TOTAL" "DR1T_G_WHOLE"

```

```

        "DR1T_G_REFINED");
run;

title1 "Protein Foods: ~mMean Ounce Equivalents, &titleEnd.";
proc report nowindows missing split="*" data=data3 &allReports.;
    where table = "&grp." and varname
        in( "DR1T_PF_TOTAL"          "DR1T_PF_MPS_TOTAL"
            "DR1T_PF_MEAT"          "DR1T_PF_POULT"
            "DR1T_PF_CUREDMEAT"     "DR1T_PF_SEAFD_LOW"
            "DR1T_PF_SEAFD_HI"      "DR1T_PF_ORGAN");
run;

title1 "Protein Foods: ~mMean Ounce Equivalents, &titleEnd.";
proc report nowindows missing split="*" data=data3 &allReports.;
    where table = "&grp." and varname
        in( "DR1T_PF_EGGS"          "DR1T_PF_NUTSDS"
            "DR1T_PF_SOY");
run;

title1 "Legumes: ~mMean Cup Equivalents (as vegetable) and Ounce "
    "Equivalents (as protein), &titleEnd.";
footnote4 &footnote4b.;
footnote6 &footnote6.;
proc report nowindows missing split="*" data=data3 &allReports.;
    where table = "&grp." and varname
        in( "DR1T_PF_LEGUMES"      "DR1T_V_LEGUMES");
run;

title1 "Vegetables: ~mMean Cup Equivalents &titleEnd.";
footnote4 &footnote4c.;
footnote6 &footnote6.;
proc report nowindows missing split="*" data=data3 &allReports.;
    where table = "&grp." and varname
        in( "DR1T_V_TOTAL"          "DR1T_V_DRKGR"
            "DR1T_V_REDOR_OTHER"     "DR1T_V_STARCHY_TOTAL"
            "DR1T_V_STARCHY_POTATO"  "DR1T_V_STARCHY_OTHER"
            "DR1T_V_REDOR_TOTAL"     "DR1T_V_REDOR_TOMATO"
            "DR1T_V_OTHER");
run;
footnote4 ;
footnote6 &footnote6.;
title1 "Oils and Other Components: ~mMean Grams of Oils and Solid Fats; "
    "Teaspoon Equivalents of Added Sugars;~-2nand Number of Alcoholic "
    "Drinks, &titleEnd.";
proc report nowindows missing split="*" data=data3 &allReports.;
    where table = "&grp." and varname
        in( "DR1T_OILS"             "DR1T_SOLID_FATS"
            "DR1T_ADD_SUGARS"       "DR1T_A_DRINKS");
run;

ods _all_ close;
%end; * End of table loop.;
ods listing;
%mend makeTables;

%makeTables();

```

### Appendix 8: Fruit, One Cup Equivalent Weights, FPID/FPED 2017-2018

| <b>Food Description</b>      | <b>Weight of One Cup Equivalent (grams)</b> |
|------------------------------|---|
| 100% Fruit juice             | 250   |
| 100% Fruit juice blend       | 250   |
| 100% Fruit juice concentrate | 70  |
| Apple, baked                 | 110   |
| Apple, dried                 | 45  |
| Apple, raw                   | 110   |
| Applesauce                   | 245   |
| Apricot, dried               | 65  |
| Apricot, raw                 | 165   |
| Banana flakes, dehydrated    | 50  |
| Banana, boiled               | 150   |
| Banana, raw                  | 150   |
| Blackberries, frozen         | 150   |
| Blackberries, raw            | 145   |
| Blueberries, frozen          | 150   |
| Blueberries, raw             | 145   |
| Boysenberries, frozen        | 150   |
| Boysenberries, raw           | 145   |
| Calamondin, raw              | 185   |
| Cantaloupe melon, frozen     | 170   |
| Cantaloupe melon, raw        | 170   |
| Carambola (starfruit), raw   | 140   |
| Casaba melon, raw            | 170   |

**Appendix 8: Fruit, One Cup Equivalent Weights, FPID/FPED 2017-2018**  
(Continued)

| <b>Food Description</b>   | <b>Weight of One Cup Equivalent (grams)</b> |
|---|---|
| Cherries, sour, raw   | 155   |
| Cherries, sweet, raw  | 155   |
| Cranberries, raw  | 145   |
| Currants, dried   | 75  |
| Currants, raw   | 110   |
| Dates   | 75  |
| Dewberries, raw   | 145   |
| Fig, dried  | 75  |
| Fig, raw  | 255   |
| Fruit juice drink <sup>1</sup>  | 250   |
| Fruit nectar <sup>2</sup>   | 250   |
| Fruit, all types, canned in heavy syrup, solids, and liquids <sup>3</sup> | 255   |
| Fruit, all types, canned in light syrup, solids, and liquids <sup>3</sup> | 250   |
| Fruit, all types, canned in syrup, drained                                | 200   |
| Fruit, all types, canned in fruit juice, solids, and liquids <sup>3</sup> | 245   |
| Fruit, all types, canned in water, solids, and liquids <sup>3</sup>       | 245   |
| Fruit, all types, canned in water, drained                                | 190   |
| Fruit, dried, all types, cooked   | 250   |
| Grapefruit, raw   | 210   |
| Grapes, raw, not specified as to type                                     | 150   |
| Guava, raw  | 165   |
| Honeydew melon, frozen  | 170   |
| Honeydew melon, raw   | 170   |
| Huckleberries, raw  | 145   |

**Appendix 8: Fruit, One Cup Equivalent Weights, FPID/FPED 2017-2018**  
(Continued)

| <b>Food Description</b> | <b>Weight of One Cup Equivalent (grams)</b> |
|-------------------------|---|
| Juneberries, raw        | 145   |
| Kiwifruit, raw          | 175   |
| Kumquats, raw           | 185   |
| Lemon, raw              | 210   |
| Lime, raw               | 210   |
| Litchis, dried          | 45  |
| Litchis, raw            | 190   |
| Loganberries, frozen    | 150   |
| Loganberries, raw       | 145   |
| Mango, raw              | 165   |
| Mulberries, raw         | 145   |
| Nectarine, raw          | 145   |
| Orange, raw             | 185   |
| Papaya, dried           | 70  |
| Papaya, raw             | 140   |
| Passion fruit, raw      | 235   |
| Peach, dried            | 80  |
| Peach, frozen           | 150   |
| Peach, raw              | 155   |
| Pear, dried             | 90  |
| Pear, raw               | 165   |
| Persimmon, raw          | 165   |
| Pineapple, dried        | 70  |
| Pineapple, raw          | 165   |

**Appendix 8: Fruit, One Cup Equivalent Weights, FPID/FPED 2017-2018**  
(Continued)

| <b>Food Description</b> | <b>Weight of One Cup Equivalent (grams)</b> |
|-------------------------|---|
| Plum, raw               | 165   |
| Plum, dried             | 60  |
| Pomegranate, raw        | 155   |
| Prunes, dried           | 85  |
| Raisins                 | 75  |
| Raspberries, frozen     | 150   |
| Raspberries, raw        | 145   |
| Rhubarb, raw            | 120   |
| Strawberries, frozen    | 150   |
| Strawberries, raw       | 145   |
| Tamarind, raw           | 120   |
| Tangelo, raw            | 185   |
| Tangerine, raw          | 185   |
| Watermelon, raw         | 150   |
| Youngberries, raw       | 145   |

<sup>1</sup> Fruit juice drinks are assumed to contain 15% fruit juice, unless specified otherwise.

<sup>2</sup> Fruit nectars are assumed to contain 40% fruit juice.

<sup>3</sup> Fruits canned in syrup or in water are assumed to contain 65% fruit. Fruits canned in fruit juice are assumed to contain 65% fruit and 35% fruit juice.



**Appendix 9: Vegetables, One Cup Equivalent Weights, FPID/FPED 2017-2018**

| <b>Food Description</b>                             | <b>Weight of One Cup Equivalent (grams)</b> |
|---|---|
| 100% Vegetable juice, all types                     | 245   |
| Alfalfa sprouts or sprouted seed, raw               | 35  |
| Artichoke, cooked                                   | 175   |
| Artichoke, raw                                      | 150   |
| Arugula, raw  | 40  |
| Asparagus, cooked                                   | 180   |
| Asparagus, raw                                      | 135   |
| Avocados, raw                                       | 145   |
| Bamboo shoots, cooked                               | 150   |
| Bamboo shoots, raw                                  | 150   |
| Basil   | 40  |
| Bean sprouts, cooked                                | 125   |
| Bean sprouts, raw                                   | 105   |
| Beans, string or snap, cooked from frozen or canned | 135   |
| Beans, string or snap, cooked from raw              | 125   |
| Beans, string or snap, raw                          | 110   |
| Beet greens, cooked                                 | 145   |
| Beet greens, raw                                    | 75  |
| Beets, cooked                                       | 170   |
| Beets, raw  | 135   |
| Bitter melon leaves, cooked                         | 125   |
| Bitter melon, cooked                                | 125   |
| Breadfruit, cooked                                  | 250   |

**Appendix 9: Vegetables, One Cup Equivalent Weights, FPID/FPED 2017-2018**  
(Continued)

| <b>Food Description</b>                 | <b>Weight of One Cup Equivalent (grams)</b> |
|---|---|
| Breadfruit, raw                         | 220   |
| Broccoflower, cooked                    | 125   |
| Broccoflower, raw                       | 110   |
| Broccoli, cooked                        | 155   |
| Broccoli, raw                           | 80  |
| Brussels sprouts, cooked                | 155   |
| Brussels sprouts, raw                   | 90  |
| Burdock root, cooked                    | 125   |
| Burdock root, raw                       | 120   |
| Cabbage, (green, red, or savoy), cooked | 150   |
| Cabbage, (green, red, or savoy), raw    | 90  |
| Cabbage, Chinese, cooked                | 170   |
| Cabbage, mustard, raw                   | 130   |
| Cabbage, pak-choi, raw                  | 140   |
| Cabbage, pe-tsai, raw                   | 150   |
| Calabaza (Spanish pumpkin), cooked      | 165   |
| Capers, cooked                          | 135   |
| Carrot juice                            | 245   |
| Carrots, cooked                         | 145   |
| Carrots, dried                          | 35  |
| Carrots, raw or frozen                  | 125   |
| Cassava (yuca blanca), cooked           | 130   |
| Cassava (yuca blanca), raw              | 130   |

**Appendix 9: Vegetables, One Cup Equivalent Weights, FPID/FPED 2017-2018**  
(Continued)

| <b>Food Description</b>                  | <b>Weight of One Cup Equivalent (grams)</b> |
|--|---|
| Cauliflower, cooked from canned          | 180   |
| Cauliflower, cooked from raw or frozen   | 125   |
| Cauliflower, frozen                      | 110   |
| Cauliflower, raw                         | 110   |
| Celeriac, cooked                         | 155   |
| Celeriac, raw                            | 150   |
| Celery juice                             | 245   |
| Celery, cooked                           | 150   |
| Celery, raw                              | 120   |
| Chard, cooked                            | 150   |
| Chard, raw                               | 70  |
| Chayote (Christophine), cooked           | 160   |
| Chayote (Christophine), raw              | 130   |
| Chicory greens, raw                      | 60  |
| Chives, dehydrated                       | 10  |
| Chives, raw                              | 50  |
| Chrysanthemum garland, cooked            | 100   |
| Cilantro or coriander, raw               | 30  |
| Collards, cooked from frozen or canned   | 165   |
| Collards, cooked from raw                | 130   |
| Collards, raw                            | 70  |
| Corn, cooked from raw, frozen, or canned | 165   |
| Corn, raw or frozen                      | 150   |

**Appendix 9: Vegetables, One Cup Equivalent Weights, FPID/FPED 2017-2018**  
(Continued)

| <b>Food Description</b>              | <b>Weight of One Cup Equivalent (grams)</b> |
|--------------------------------------|---|
| Cress, cooked from raw or canned     | 135   |
| Cress, raw                           | 100   |
| Cucumbers, cooked                    | 180   |
| Cucumbers, pickled                   | 155   |
| Cucumbers, raw                       | 120   |
| Dandelion greens, cooked             | 110   |
| Dandelion greens, raw                | 110   |
| Dasheen, cooked                      | 140   |
| Eggplant, cooked                     | 95  |
| Eggplant, pickled                    | 135   |
| Eggplant, raw                        | 80  |
| Endive, raw                          | 100   |
| Escarole, cooked                     | 130   |
| Escarole, raw                        | 100   |
| Fennel bulb, cooked                  | 85  |
| Fennel bulb, raw                     | 85  |
| Garlic, cooked                       | 135   |
| Garlic, raw                          | 135   |
| Ginger root, raw                     | 95  |
| Grape leaves, raw                    | 30  |
| Greens, cooked from frozen or canned | 160   |
| Greens, cooked from raw              | 145   |
| Hominy, canned or cooked             | 165   |
| Jicama, raw                          | 130   |

**Appendix 9: Vegetables, One Cup Equivalent Weights, FPID/FPED 2017-2018**  
(Continued)

| <b>Food Description</b>                                  | <b>Weight of One Cup Equivalent (grams)</b> |
|--|---|
| Kale, cooked from frozen or canned                       | 165   |
| Kale, cooked, from raw                                   | 130   |
| Kohlrabi, cooked   | 165   |
| Kohlrabi, raw  | 135   |
| Lambsquarter, cooked                                     | 180   |
| Leeks, cooked  | 170   |
| Leeks, raw   | 90  |
| Lettuce, Boston, raw                                     | 110   |
| Lettuce, butterhead, raw                                 | 110   |
| Lettuce, cooked  | 110   |
| Lettuce, cos or romaine, raw                             | 95  |
| Lettuce, green leaf, raw                                 | 70  |
| Lima beans, immature, cooked from raw, frozen, or canned | 170   |
| Lima beans, immature, raw or frozen                      | 155   |
| Lotus root, cooked                                       | 120   |
| Mung beans, sprouted, cooked                             | 125   |
| Mung beans, sprouted, raw                                | 105   |
| Mushrooms, cooked from raw, frozen, or canned            | 155   |
| Mushrooms, dehydrated                                    | 20  |
| Mushrooms, raw   | 70  |
| Mustard greens, cooked from frozen or canned             | 150   |
| Mustard greens, cooked from raw                          | 140   |

**Appendix 9: Vegetables, One Cup Equivalent Weights, FPID/FPED 2017-2018**  
(Continued)

| <b>Food Description</b>  | <b>Weight of One Cup Equivalent (grams)</b> |
|--|---|
| Mustard greens, raw  | 110   |
| Okra, cooked from frozen or canned   | 170   |
| Okra, cooked from raw  | 160   |
| Okra, frozen   | 115   |
| Okra, raw  | 115   |
| Olives   | 135   |
| Onions, dehydrated   | 30  |
| Onions, frozen   | 160   |
| Onions, cooked from raw or frozen  | 210   |
| Onions, pearl, cooked from raw, frozen, or canned                              | 185   |
| Onions, raw  | 160   |
| Onions, young green (spring or scallion), cooked                               | 220   |
| Onions, young green (spring or scallion), raw                                  | 100   |
| Palm hearts, cooked  | 145   |
| Palm hearts, raw   | 145   |
| Parsley, cooked  | 120   |
| Parsley, raw   | 120   |
| Parsnips, cooked   | 155   |
| Peas, cow, field, or black eye (immature), cooked, from raw, frozen, or canned | 170   |
| Peas, green (immature), cooked, from raw, frozen, or canned                    | 160   |
| Peas, green, dehydrated  | 35  |
| Peas, green, frozen  | 145   |
| Peas, green, raw   | 145   |

**Appendix 9: Vegetables, One Cup Equivalent Weights, FPID/FPED 2017-2018**  
(Continued)

| <b>Food Description</b>  | <b>Weight of One Cup Equivalent (grams)</b> |
|--|---|
| Peppers, bell and non-bell (chili), canned                             | 135   |
| Peppers, bell and non-bell (chili), cooked from raw, frozen, or canned | 135   |
| Peppers, bell and non-bell (chili), frozen                             | 125   |
| Peppers, bell and non-bell (chili), raw                                | 120   |
| Pigeon peas, immature seeds, cooked                                    | 150   |
| Pigeon peas, immature seeds, raw                                       | 145   |
| Pimiento   | 190   |
| Plantain chips   | 57  |
| Plantain or green banana, cooked                                       | 150   |
| Plantain or green banana, raw  | 150   |
| Poke greens, cooked  | 155   |
| Pokeberry shoots, cooked   | 165   |
| Potato chips   | 57  |
| Potatoes, dry, powder  | 30  |
| Pumpkin leaves, cooked   | 65  |
| Pumpkin, cooked from raw, frozen, or canned                            | 245   |
| Pumpkin, raw   | 115   |
| Radicchio, raw   | 80  |
| Radish, cooked   | 145   |
| Radish, raw  | 125   |
| Rutabaga, cooked   | 170   |
| Rutabaga, raw  | 140   |

**Appendix 9: Vegetables, One Cup Equivalent Weights, FPID/FPED 2017-2018**  
(Continued)

| <b>Food Description</b>                            | <b>Weight of One Cup Equivalent (grams)</b> |
|--|---|
| Salsify, cooked                                    | 135   |
| Sauerkraut   | 140   |
| Seaweed, raw                                       | 80  |
| Snow peas, cooked from raw or frozen               | 160   |
| Snow peas, raw                                     | 100   |
| Spinach, cooked from frozen or canned              | 170   |
| Spinach, cooked, from raw                          | 150   |
| Spinach, frozen                                    | 155   |
| Spinach, raw                                       | 70  |
| Sprouts, not further specified                     | 55  |
| Squash, spaghetti, cooked                          | 155   |
| Squash, summer, cooked from raw, frozen, or canned | 180   |
| Squash, summer, raw                                | 115   |
| Squash, winter type, baked or cooked               | 205   |
| Squash, winter type, mashed                        | 245   |
| Squash, winter type, raw                           | 115   |
| Sweet potato chips                                 | 57  |
| Sweet potato leaves, cooked                        | 65  |
| Sweet potatoes, canned                             | 200   |
| Sweet potatoes, cooked, baked or boiled            | 200   |
| Sweet potatoes, raw                                | 130   |



**Appendix 9: Vegetables, One Cup Equivalent Weights, FPID/FPED 2017-2018**  
(Continued)

| <b>Food Description</b>                     | <b>Weight of One Cup Equivalent (grams)</b> |
|---|---|
| Tannier, cooked                             | 190   |
| Taro chips                                  | 57  |
| Taro leaves, cooked                         | 145   |
| Taro leaves, raw                            | 60  |
| Taro, cooked                                | 130   |
| Taro, raw                                   | 105   |
| Thistle leaves, cooked                      | 145   |
| Tomatillos, raw                             | 130   |
| Tomato juice                                | 245   |
| Tomato paste                                | 120   |
| Tomato puree                                | 120   |
| Tomato sauce                                | 245   |
| Tomatoes, canned in tomato juice            | 245   |
| Tomatoes, cooked                            | 240   |
| Tomatoes, dried                             | 25  |
| Tomatoes, raw                               | 170   |
| Turnip greens, cooked from frozen or canned | 160   |
| Turnip greens, cooked from raw              | 145   |
| Turnips, cooked from raw, frozen, or canned | 155   |
| Turnips, raw                                | 130   |
| Vegetable juice (all vegetable juices)      | 245   |

**Appendix 9: Vegetables, One Cup Equivalent Weights, FPID/FPED 2017-2018**  
(Continued)

| <b>Food Description</b>          | <b>Weight of One Cup Equivalent (grams)</b> |
|----------------------------------|---|
| Water chestnuts, cooked          | 160   |
| Water chestnuts, raw             | 125   |
| Watercress, cooked               | 135   |
| Watercress, raw                  | 70  |
| White potatoes, boiled           | 155   |
| White potatoes, raw              | 150   |
| White potatoes, roasted or baked | 120   |
| Winter melon (wax gourd), cooked | 175   |

**Appendix 10: Beans, Peas, and Lentils (Legumes), One Cup Equivalent Weights,  
FPID/FPED 2017-2018**

| <b>Food Description</b>                                    | <b>Weight of One Cup<br/>Equivalent (grams)</b> |
|--|---|
| Beans or peas, not specified, cooked                       | 175   |
| Beans or peas, not specified, uncooked                     | 60  |
| Black beans, cooked  | 175   |
| Black beans, uncooked                                      | 60  |
| Brown beans, cooked  | 175   |
| Brown beans, uncooked                                      | 60  |
| Calico beans, cooked                                       | 175   |
| Calico beans, uncooked                                     | 60  |
| Carob flour or powder                                      | 60  |
| Chickpeas (garbanzo beans, Bengal gram), canned, drained   | 175   |
| Chickpeas (garbanzo beans, Bengal gram), cooked            | 175   |
| Chickpeas (garbanzo beans, Bengal gram), uncooked          | 60  |
| Cowpeas, (blackeyed, crowder, and southern peas), cooked   | 175   |
| Cowpeas, (blackeyed, crowder, and southern peas), uncooked | 60  |
| Fava beans (broad beans), cooked                           | 175   |
| Fava beans (broad beans), uncooked                         | 60  |
| Kidney beans, canned, drained                              | 175   |
| Kidney beans, cooked                                       | 175   |
| Kidney beans, uncooked                                     | 60  |
| Lentils, cooked  | 175   |
| Lentils, uncooked  | 60  |
| Lima beans (mature), cooked                                | 175   |

**Appendix 10: Beans, peas, and lentils (Legumes), One Cup Equivalent Weights,  
FPID/FPED 2017-2018 (Continued)**

| <b>Food Description</b>       | <b>Weight of One Cup<br/>Equivalent (grams)</b> |
|-------------------------------|---|
| Lima beans (mature), uncooked | 60  |
| Mung beans, cooked            | 175   |
| Mung beans, uncooked          | 60  |
| Navy beans, canned, drained   | 175   |
| Navy beans, cooked            | 175   |
| Navy beans, uncooked          | 60  |
| Pink beans, cooked            | 175   |
| Pink beans, uncooked          | 60  |
| Pinto beans, cooked           | 175   |
| Pinto beans, uncooked         | 60  |
| Split peas, cooked            | 175   |
| Split peas, uncooked          | 60  |
| White beans, cooked           | 175   |
| White beans, uncooked         | 60  |

**Appendix 11: Dairy, One Cup Equivalent Weights, FPID/FPED 2017-2018**

| <b>Food Description</b>                                    | <b>Weight of One Cup Equivalent</b>          |
|--|--|
| <b>Milk</b>  |  |
| Buttermilk, fluid, all fat types                           | 245 g  |
| Milk, dry, all fat types, not reconstituted                | 25 g   |
| Milk, dry, all fat types, reconstituted                    | 245 g  |
| Milk, evaporated, all fat types                            | 125 g  |
| Milk, fluid, all fat types, plain or flavored              | 245 g  |
| Soy milk, with added calcium                               | 245 g  |
| <b>Yogurt</b>  |  |
| Yogurt, all fat types, plain or flavored                   | 245 g  |
| <b>Cheeses</b>   |  |
|  | <b>Weight of One Cup Equivalent (ounces)</b> |
| Cheese food, pasteurized process, American                 | 2 oz.  |
| Cheese food, pasteurized process, Swiss                    | 1.5 oz.                                      |
| Cheese product, pasteurized process, American, reduced fat | 2 oz.  |
| Cheese product, pasteurized process, cheddar, reduced fat  | 2 oz.  |
| Cheese spread, pasteurized process, American               | 2 oz.  |
| Cheese, blue   | 2 oz.  |
| Cheese, brick  | 1.5 oz.                                      |
| Cheese, brie   | 6 oz.  |
| Cheese, camembert  | 3 oz.  |
| Cheese, cheddar  | 1.5 oz.                                      |

**Appendix 11: Dairy, One Cup Equivalent Weights, FPID/FPED 2017-2018**  
(Continued)

| <b>Food Description</b>              | <b>Weight of One Cup Equivalent (ounces)</b> |
|--------------------------------------|--|
| Cheese, cheddar, nonfat              | 1 oz.  |
| Cheese, Colby                        | 1.5 oz.                                      |
| Cheese, cottage                      | Variable                                     |
| Cheese, cream, fat free              | 3 oz.  |
| Cheese, Edam                         | 1.5 oz.                                      |
| Cheese, Feta                         | 2 oz.  |
| Cheese, Fontina                      | 2 oz.  |
| Cheese, goat, hard type              | 1 oz.  |
| Cheese, goat, semisoft type          | 3.5 oz.                                      |
| Cheese, goat, soft type              | 7.5 oz.                                      |
| Cheese, Gouda                        | 1.5 oz.                                      |
| Cheese, Gruyere                      | 1 oz.  |
| Cheese, Limburger                    | 2 oz.  |
| Cheese, low fat, Cheddar or Colby    | 3 oz.  |
| Cheese, low-sodium, Cheddar or Colby | 1.5 oz.                                      |
| Cheese, Mexican, blend, reduced fat  | 1 oz.  |
| Cheese, Mexican, queso anejo         | 1.5 oz.                                      |
| Cheese, Mexican, queso asadero       | 1.5 oz.                                      |
| Cheese, Mexican, queso chihuahua     | 1.5 oz.                                      |
| Cheese, Monterey                     | 1.5 oz.                                      |
| Cheese, Monterey, low fat            | 1.5 oz.                                      |
| Cheese, mozzarella, low sodium       | 1.5 oz.                                      |
| Cheese, mozzarella, nonfat           | 1 oz.  |

**Appendix 11 Dairy, One Cup Equivalent Weights, FPID/FPED 2017-2018**  
(Continued)

| <b>Food Description</b>                                    | <b>Weight of One Cup Equivalent (ounces)</b> |
|--|--|
| Cheese, mozzarella, part skim milk                         | 1.5 oz.                                      |
| Cheese, mozzarella, part skim milk, low moisture           | 1.5 oz.                                      |
| Cheese, mozzarella, whole milk                             | 2 oz.  |
| Cheese, mozzarella, whole milk, low moisture               | 2 oz.  |
| Cheese, Muenster   | 1.5 oz.                                      |
| Cheese, Muenster, low fat                                  | 2 oz.  |
| Cheese, parmesan, dry grated                               | 1 oz.  |
| Cheese, parmesan, dry grated, reduced fat                  | 1 oz.  |
| Cheese, parmesan, hard                                     | 1 oz.  |
| Cheese, parmesan, low sodium                               | 1.5 oz.                                      |
| Cheese, pasteurized process, American, low fat             | 1.5 oz.                                      |
| Cheese, pasteurized process, American                      | 2 oz.  |
| Cheese, pasteurized process, Cheddar or American, fat-free | 1.5 oz.                                      |
| Cheese, pasteurized process, Swiss                         | 1.5 oz.                                      |
| Cheese, pasteurized process, Swiss, low fat                | 1.5 oz.                                      |
| Cheese, Port de Salut                                      | 1.5 oz.                                      |
| Cheese, Provolone  | 1.5 oz.                                      |
| Cheese, provolone, reduced fat                             | 1.5 oz.                                      |
| Cheese, queso fresco                                       | 3.5 oz.                                      |
| Cheese, Ricotta, part skim milk                            | 4.5 oz.                                      |
| Cheese, Ricotta, whole milk                                | 5 oz.  |
| Cheese, Swiss  | 1.5 oz.                                      |
| Cheese, Swiss, low fat or low sodium                       | 1 oz.  |