

# **MyPyramid Equivalents Database, 2.0 for USDA Survey Foods, 2003-2004: Documentation and User Guide**

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**MyPyramid Equivalents Database, 2.0 for USDA Survey Foods, 2003-2004**  
(MPED 2.0)

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## Abbreviations and names used in this document

<b>Abbreviation</b>	<b>Full Name</b>
ARS	Agricultural Research Service, USDA
BHNRC	Beltsville Human Nutrition Research Center, ARS, USDA
CDC	Centers for Disease Control and Prevention, HHS
CNPP	Center for Nutrition Policy and Promotion, USDA
CNRG	Community Nutrition Research Group, BHNRC, ARS, USDA
CSFII	Continuing Survey of Food Intakes by Individuals
DGAC	Dietary Guidelines Advisory Committee
DHHS	U.S. Department of Health and Human Services
FASEB/LSRO	Federation of American Societies for Experimental Biology, Life Sciences Research Office
FNDDS 2.0	Food and Nutrient Database for Dietary Studies, 2.0
FSRG	Food Surveys Research Group, BHNRC, ARS, USDA
HNIS	Human Nutrition Information Service
MPED 1.0	MyPyramid Equivalents Database, 1.0 for USDA Foods, 1994-2002
MPED 2.0	MyPyramid Equivalents Database, 2.0 for USDA Foods, 2003-2004
MPFGS	MyPyramid Food Guidance System
MyPyrEquivDB_v1	MyPyramid Equivalents Database, 1.0 for USDA Survey Foods, 1994-2002 Version 1.0 (released in 2006)
MyPyrEquivDB2	MyPyramid Equivalents Database, 2.0 for USDA Survey Foods 2003-2004 (released in 2008)
NCHS	National Center for Health Statistics, CDC, HHS
NDL	Nutrient Data Laboratory, BHNRC, ARS, USDA
NHANES	National Health and Nutrition Examination Survey
PyrServDB_v1	Pyramid Servings Database for USDA Survey Food Codes Version 1.0 (released in 2000); releases in 1997 and 1998 have different names and no version number
PyrServDB_v2	Pyramid Servings Database for USDA Survey Food Codes Version 2.0 (released in 2005)
SAS®	Statistical Analysis System
SR16.1	USDA National Nutrient Database for Standard Reference Release 16.1
SR18	USDA National Nutrient Database for Standard Reference Release 18
USDA	U.S. Department of Agriculture
WWEIA	What We Eat in America

# Chapter 1: Purpose and Overview

## Purpose of the MyPyramid Equivalents Database, 2.0 and Files

The Dietary Guidelines for Americans [1] form the basis for Federal nutrition policy and nutrition education activities in the United States. The MyPyramid Food Guidance System (MPFGS) [2] translates the Dietary Guidelines into guidance for consumers on daily amounts of foods and beverages from each food group to consume in order to meet their nutrient needs.

The MyPyramid Equivalents Database, 2.0 for USDA Survey Foods, 2003-2004 (MPED 2.0) translates the amounts of foods eaten in USDA’s What We Eat in America (WWEIA) survey, the dietary intake component of the NHANES 2003-2004 [3,4] into the number of equivalents for the 32 MyPyramid major groups and subgroups.

Table 1 includes a list of the 7 major components of the MyPyramid [5] and the corresponding subgroups in the MPED 2.0.

**Table 1. MyPyramid major groups and MyPyramid Equivalents Database 2.0 major groups and subgroups**

MyPyramid major groups	MyPyramid Equivalents Database major groups and subgroups
Grain group	Total grain Whole grain Non-whole/refined grain
Vegetable group	Total vegetables Dark-green vegetables Orange vegetables White potatoes Other starchy vegetables Tomatoes Other vegetables
Fruit group	Total fruits Citrus fruits, melons, and berries Other fruits
Milk group	Total Milk (milk, yogurt & cheese) Milk Yogurt Cheese
Meat and Beans group	Meat, poultry, fish Meat (beef, pork, veal, lamb, game) Organ meats (meat, poultry) Frankfurters, sausage, luncheon meats (made from meat or poultry) Poultry (chicken, turkey, other) Fish and shellfish high in n-3 fatty acids Fish and shellfish low in n-3 fatty acids

	Eggs Cooked dry beans and peas <sup>a</sup> Soybean products (tofu, meat analogs) Nuts and seeds
Oils	Discretionary oil
Extras	Discretionary solid fat Added sugars Alcoholic beverages

<sup>a</sup> Dry beans and peas can be counted toward the meat group or toward the vegetable group, as defined by the users of the database.

The MPED 2.0 does not include the variable “extras,” but includes its three components: discretionary solid fat, added sugars, and alcoholic beverages. Subgroups in addition to that specified in the MyPyramid are included in MPED 2.0, to enhance its analytic utility. The additional subgroups are: White potatoes placed separately from starchy vegetables; Tomatoes placed separately from other vegetables; Citrus fruits, melons, and berries; Other fruits; Organ meats; Frankfurters, sausage, luncheon meats; Fish and shellfish high in n-3 fatty acids; Fish and shellfish low in n-3 fatty acids; and Alcoholic beverages.

### What Is In The MPED 2.0 Release?

The MPED 2.0 release includes database, data sets, sample SAS® code files, and documentation that provide the following information:

- The number of MyPyramid equivalents of each of the 32 food groups that are present in 100 grams of each WWEIA, NHANES 2003-2004 survey food (“equiv0304.txt” and “equiv0304.mdb”)
- SAS® datasets containing the number of each of the 32 food-group equivalents that are present in each food and beverage consumed per person, for days 1 and 2 in NHANES 2003-2004 (“pyr\_iff\_d1.sas7bdat” and “pyr\_iff\_d2.sas7bdat”, respectively)
- SAS® datasets containing the daily total number of each of the 32 food-group equivalents consumed per person for days 1 and 2 in NHANES 2003-2004 (“pyr\_tot\_d1.sas7bdat” and “pyr\_tot\_d2.sas7bdat”, respectively)
- A set of sample SAS® code files for data analysis (“readequiv.sas”, “pyr\_iff\_d1.sas”, “pyr\_iff\_d2.sas”, “pyr\_tot\_d1.sas”, “pyr\_tot\_d2.sas”, “pyrrecom.sas”, “pyrrpt.sas”)
- Documentation regarding the development of the database and SAS® datasets listed above (“doc.pdf”), and the descriptions of the survey food codes and food modification codes (“fddes0304.txt” and “fddes0304.mdb”).

MPED 2.0 is based on the same principles used in the development of the MyPyramid Equivalents Database for USDA Survey Food Codes, 1994-2002, Version 1.0 (MPED 1.0)[6]. [Table 2](#) highlights the similarities and differences between the previously released MyPyramid Equivalent Databases for USDA Survey Foods, 1994-2002, 1.0 and MPED 2.0. Some of the more apparent differences are described as follows.



**Table 2. A comparison of MyPyramid Equivalents Databases (MPED) for USDA survey foods, 1994-2004**

Variables	MyPyramid Equivalents Database Name			
	MyPyrEquivDB_v1 (MPED 1.0)			MyPyrEquivDB2 (MPED 2.0)
<b>Survey period (number of days)</b>	CSFII 1994-1996, 1998 (2 days)	NHANES 1999-2000 (1 day)	WWEIA, NHANES 2001-2002 (1 day)	WWEIA, NHANES 2003-2004 (2 days)
<b>Total number of food/modification<sup>a</sup> codes in the database</b>	7,360 Food codes 3,902 Modification codes (applies to 1994-1998 only)		6,974 Food codes 0 Modification codes	6,940 Food codes 811 Modification Codes
<b>Number of new food codes added since the previous survey</b>	Not applicable		102 Food codes	70 Food codes 811 Modification Codes
<b><u>MPED file names:</u></b>  <b>• Food intake data</b>  <b>(Files are SAS® data files with .ssd7bdat extension)</b>	RT32 – individual food records	Pyr_iff – combined 1999-2002 individual food records		Pyr_iff_d1 – individual food records for day 1
	RT42 – daily total and 2 day average records	Pyr_tot – combined 1999-2002 daily total records		Pyr_iff_d2 – individual food records for day 2  Pyr_tot_d1 – daily total records for day 1  Pyr_tot_d2 – daily total records for day 2
<b>• Equivalents/100 g (text, MS Access®, and in SAS®)</b>	Equiv9400.txt		Equiv0102.txt	Equiv0304.txt Equiv0304.mdb Equiv0304.ssd7bdat
<b>Technical databases used to create the MPED</b>	CSFII 1994-96, 98 Technical Files and SR13	FNDDS 1.0 and SR16-1		FNDDS 2.0 and SR18

Variables	MyPyramid Equivalents Database Name	
	MyPyrEquivDB_v1 (MPED 1.0)	MyPyrEquivDB2 (MPED 2.0)
<b>Number of MyPyramid food groups and subgroups</b>	The 32 food groups and subgroups remain the same	
<b>Additional subgroups created within MyPyramid major groups to facilitate data analysis</b>	Vegetables - White potatoes (V-POTATO) are placed as a separate variable from other starchy vegetables (V_STARCY); and tomatoes (V-TOMATO) are placed as a separate variable from other vegetables (V_OTHER) Fruits - Citrus fruits, melons, and berries Other fruits Meat and Beans - Organ Meats Frankfurters, sausage, and luncheon meats Fish separated into high/low n-3 fatty acid groups Soybean products Alcoholic Beverages - Alcoholic drinks	
<b>Food amount-weight combinations that count as one MyPyramid equivalent</b>	The assumptions used to define and select the weights of foods that count as one cup-, ounce-, or teaspoon-equivalent remain the same	
<b>Method to assign dry beans and peas to meat and beans group</b>	Dry beans and peas are counted as vegetables in MPED 1.0 and MPED 2.0 and placed under a separate variable named “LEGUMES” <ul style="list-style-type: none"> <li>• 1 cup cooked beans and peas = 1 cup equivalent of vegetable</li> <li>• Cup equivalents of dry beans and peas are not included in the total vegetables variable named “V_TOTAL”</li> <li>• The LEGUMES and V_TOTAL amounts should be added together, if the data user decides to include dry beans and peas to the amount of total vegetables consumed.</li> </ul> Dry beans and peas can also be counted as ounce equivalents of meat and beans. The following conversions are used: <ul style="list-style-type: none"> <li>• 1 ounce equivalent of meat and beans = ¼ cup cooked beans and peas</li> <li>• To convert dry beans and peas from vegetable cup equivalents to meat and beans group ounce equivalents, multiply the number of LEGUMES cup equivalents by 4 (LEGUMES x 4)</li> </ul>	

<sup>a</sup> Modification codes indicate adjustments to predefined recipe ingredients such as type of fat or milk used that reflect more closely the food as described by survey respondents.

The use of food modification codes applies to CSFII 1994-1998 and WWEIA, NHANES 2003-2004 data. No food modification codes are available for the NHANES 1999-2002. The CSFII 1994-1998 and WWEIA, NHANES 2003-2004 include 2 days of dietary data and the NHANES 1999-2002 include 1 day dietary data. White potatoes and tomatoes are eaten in large amounts as compared with the rest of the vegetables. Therefore, it may be of interest to specifically know about the two vegetables. Hence, white potatoes form a separate variable and are not included with other starch vegetables. Similarly, tomatoes form a separate variable and are not included with other vegetables. The data user will need to add white potatoes (V\_POTATO) to other starch vegetables (V\_STARCHY) and tomatoes (V\_TOMATO) to other vegetables (V\_OTHER) to get the respective amounts of total starchy and total other vegetables.

Dry beans and peas (LEGUMES) are counted as vegetables in the MPEDs and measured in cup equivalents. However, they are not included in the total vegetables variable (V\_TOTAL). To capture dry beans and legumes with vegetables, the data user will need to add dry beans and peas to total vegetables. Dry beans and peas can be also counted as meat alternates and included in the meat and beans group. To convert dry beans and peas, from cup equivalents of vegetables to ounce equivalents of meat and bean, multiply LEGUMES values by 4.

The development of the MPED 2.0 began with the USDA Food and Nutrient Database for Dietary Studies, 2.0 (FNDDS 2.0) [7] used for the WWEIA, NHANES 2003-2004, which is available at: <http://www.ars.usda.gov/Services/docs.htm?docid=12083> [3,4]. Food specialists from the Nutrient Data Laboratory (NDL) provided data on recipes and nutrient composition of ingredients of survey foods for which specific details were not available in FNDDS 2.0. Where necessary, the staff of USDA's Center for Nutrition Policy and Promotion (CNPP) were consulted on the selection of appropriate amounts of foods and weight combinations that were consistent with the MyPyramid food guidance definitions of equivalents [2].

## **MPED 2.0 Development**

The first step in developing the MPED 2.0 is to translate the foods in the FNDDS 2.0 into the 32 MyPyramid food-group equivalents per 100 grams of each food. The database is then linked to the WWEIA, NHANES 2003-2004 food intake data, and the 32 food-group equivalents consumed by each respondent on each day of the survey are then computed.

The following summarizes the major steps involved in translating the foods in FNDDS 2.0 into the 32 food groups present in 100 grams and in the amounts consumed by each person in the survey:

- **Disaggregation of foods and the assignment of foods ingredients into appropriate MyPyramid food groups:** Many of the foods in FNDDS 2.0 require disaggregation before they can be assigned to appropriate MyPyramid food groups. Each FNDDS 2.0 food is evaluated to determine whether it can be directly assigned to any of the 32 MyPyramid food groups or whether it needs disaggregation before food group assignment can be made. Skim milk and apples can be directly assigned to milk and fruit group, respectively and are not disaggregated. Foods that require disaggregation are disaggregated into food ingredients using recipes, and these food ingredients are then

assigned to appropriate MyPyramid groups. A vegetable salad with raisins and nuts is first disaggregated into respective vegetables, raisins, and nuts. Each vegetable is assigned to the appropriate vegetable group/subgroup, raisins to the fruit group, and nuts to the nuts and seeds group.

- **Determination of amounts and respective weights:** Amounts for the foods that are defined as one MyPyramid equivalent and the weights of the respective amounts are determined. The amount-weight combinations are linked to the food recipes and the amounts of each of the 32 MyPyramid food-group equivalents in the recipe ingredients per 100 grams of foods are determined.
- **Summing food-group equivalents of food ingredients:** The amounts of each of the 32 food-group equivalents present in the ingredients are totaled to reflect the amount present per 100 grams of each FNDDS 2.0 food.
- **Computing food group intakes of survey respondents for days 1 and 2:** The 100 gram database is then used to calculate the number of each of the 32 food-group equivalents present in each food and beverage consumed by persons on days 1 and 2 of the survey. The daily total number of each of the 32 food-group equivalents consumed by each person is estimated by adding the number of food groups present in all foods and beverages reported consumed on days 1 and 2, separately.

### **What Is Included In This Documentation?**

The documentation contains the decisions made in assigning foods/food ingredients to MyPyramid food groups and determining the number of equivalents in the foods/food ingredients. It also includes supporting files for database users. The following are described:

- Assignment of MyPyramid food groups and subgroups to survey foods,
- General definitions of the amounts of foods that count as one MyPyramid equivalent and determination of their weights,
- Definitions specific to each of the major MyPyramid food groups and determination of what counts as 1 MyPyramid equivalent of the food groups and determination of their respective weight,
- Definitions and methods used to determine the amounts of discretionary fats, added sugars, and alcoholic beverages, and
- The details on data file characteristics, list of variables in the data files, and analytic guidance.

## Chapter 2: Disaggregation of Foods and Assignment of MyPyramid Food Groups and Subgroups to Survey Foods

### Disaggregation of Foods

Each survey food is evaluated to determine whether it can directly be assigned to a MyPyramid food group, including subgroups. If a direct assignment is not possible, the food is disaggregated into ingredients that can be assigned to MyPyramid foods groups or subgroups.

Apples, raw vegetables, hard boiled eggs, and skim milk are examples of single foods that can be directly assigned to a single MyPyramid food group and do not require disaggregation. Foods such as fruit cup and mixed nuts that are composed of more than one ingredient from the same MyPyramid food group, and foods such as fruit salad with nuts and cream, and cheeseburger that have ingredients from more than one MyPyramid food group require disaggregation. About 87% of survey foods require disaggregation into ingredients before food group assignment. [Table 3](#) provides an example of the disaggregation of beef barbecue on bun into its respective ingredients that can be assigned to MyPyramid food groups.

**Table 3. Example of the conceptual model for survey recipe disaggregation**

Survey Food Code and Description	Recipe for the previous level		
	Level 1 disaggregation	Level 2 disaggregation	Level 3 disaggregation
27510110 Beef barbecue on bun	1. Ground beef, cooked <sup>a</sup>  2. Hamburger roll <sup>b</sup>  3. Barbecue sauce <sup>c</sup>	No further disaggregation is required  White bread flour Water Yeast Salt Nonfat milk solids Sugar Shortening  Catsup  Water	No further disaggregation is required  Tomato sauce Vinegar Sugar Brown sugar Onion Mustard Worcestershire sauce

<sup>a</sup> Cooked ground beef is directly assigned to the meat group. It is not further disaggregated.

- <sup>b</sup> The hamburger roll is directly assigned to the grain group, and it is also disaggregated into its ingredient forms only to account for the sugar present in it as added sugar, and the shortening as discretionary fat.
- <sup>c</sup> The barbecue sauce is first disaggregated into catsup and water. Catsup is then disaggregated into tomato sauce, sugar, brown sugar, and onion, which are assigned to respective food groups and subgroups. The rest of the ingredients are assigned to “not a MyPyramid food group” category.

### **Assignment of Food Groups and Subgroups**

By the end of the disaggregation process, each food/ingredient is either assigned to an appropriate MyPyramid food group and subgroup or to “not a MyPyramid food group” category. Examples of ingredients that are not assigned to a MyPyramid food group include water used in cooking, salt, spices, yeast, baking powder, vinegar, flavoring agents, and non-caloric beverages.

## **Chapter 3: General Definitions of the Food Amounts that Count as One MyPyramid Equivalent and Determination of Their Weights**

### **MyPyramid Equivalents Definitions**

The MyPyramid Food Guidance System (MPFGS) defines food-group equivalents in terms of cup- or ounce-equivalents, teaspoons, or grams [2]. The cup and ounce equivalents are defined as below:

- **Cup Equivalent** (cup eq) - A comparable amount of various foods used as a standard of comparison within the fruit, vegetable, and milk food groups. In the fruit and vegetable groups, a cup equivalent is the amount of a food considered equivalent to 1 cup of a cut-up fruit or vegetable; in the milk group, one cup equivalent is the amount of the food considered equivalent to 1 cup of milk [2].
- **Ounce Equivalent** (ounce eq) - A comparable amount of various foods used as a standard of comparison within the grain and meat and beans food groups. In the grain group, an ounce equivalent is the amount of a food considered equivalent to a one-ounce slice of bread or one ounce of dry cereal; in the meat and beans group, one ounce equivalent is the amount of food considered equivalent to one ounce of cooked lean meat, poultry, or fish [2].

In addition, in the MPFGS added sugars are measured in teaspoons, and fats and oils in grams.

### **Assignment of Food Amounts and Respective Weights**

Assignment of food amounts and respective weights is a 2-step process, which is described below

#### **1. Determination of the Amounts of Foods/Food Ingredients that Represent One MyPyramid Equivalent**

The MPFGS defines and provides examples of what counts as one equivalent for many foods [5]. The portion sizes of the foods in FNDDS 2.0 that match MPFGS definitions of one equivalent for the respective foods are chosen. Most survey foods in FNDDS 2.0 have several portion sizes, and each portion size has a weight assigned to it. For example, apples can have several portions such as small, medium, large, 1 cup sliced, and a single apple slice, each with respective weight in grams. The FNDDS portion size that represents 1 MyPyramid cup equivalent of apples is determined from the MPFGS definition. The food amounts for which no direct matches are available between MPFGS and FNDDS 2.0 are defined in consultation with CNPP specialists.

## 2. Determination of the Weights of One MyPyramid Equivalent for Foods/Food Ingredients

Next, the weight of the FNDDS portion size representing one equivalent is determined. The FNDDS 2.0 food weights file is the major source for establishing weights of portion sizes that count as one equivalent. If no portion size-weight matches are available in FNDDS 2.0, weight information in SR18 [8] is used.

### General Protocol for Selecting FNDDS Portion Sizes with Respective Weights

Table 4 includes examples of foods with several portion size and weight combinations in the FNDDS 2.0 and the portion size and corresponding weight selected in the assignment of a MyPyramid cup or ounce equivalent.

**Table 4. Examples of foods with appropriate FNDDS portion sizes and weights that equal 1 MyPyramid cup or ounce equivalent**

Food code & food code description	Portion sizes available in the FNDDS	Weight (grams)
63101000 Raw apple	1 small (2-1/2" dia) <sup>a</sup> 1 medium (2-3/4" dia) 1 large (3-1/4" dia) 1 cup, sliced 1 cup, quartered or chopped 1 slice	106 <sup>a</sup> 138 212 110 125 17
41106020 Cooked, dry red kidney beans, fat not added in cooking	1 cup <sup>a</sup> 1 cup, mashed 1 ounce dry red bean yield after cooking <sup>b</sup>	172 <sup>a</sup> 224 68 <sup>b</sup>
73102221 Cooked, fresh carrots, fat added in cooking	1 cup, sliced <sup>a</sup> 1 cup, mashed 1 cup, baby carrots 1 baby carrot 1 slice	161 <sup>a</sup> 233 154 8.8 2.8
72201100 Raw broccoli	1 cup, NFS <sup>c</sup> 1 cup, flowerets 1 cup, chopped <sup>a</sup> 1 spear (about 5" long)	88 71 88 <sup>a</sup> 31
75233023 Summer squash, from canned, cooked, fat added in cooking	1 cup, NFS <sup>c</sup> 1 cup, diced 1 cup, sliced <sup>a</sup> 1 slice 1 cup, mashed	185 215 185 <sup>a</sup> 8 245



56203010 Regular, cooked oatmeal, fat not added in cooking	1 cup, cooked <sup>d</sup>	234 <sup>d</sup>
	1 ounce dry oatmeal, yield after cooking	164
51101000 White bread	1 very thin slice	15
	1 thin slice	20
	1 regular slice <sup>e</sup>	26 <sup>e</sup>
	1 large slice	30
	1 regular slice, crust not eaten	12
	1 thin slice, crust not eaten	9

<sup>a</sup> FNDDS portion size and weight assigned as 1 cup equivalent.

<sup>b</sup> FNDDS portion size and weight used for computing cooking yield factors from dry beans used as ingredients to their cooked forms.

<sup>c</sup> NFS = not further specified.

<sup>d</sup> Half of the cup weight of cooked oatmeal assigned as 1 ounce equivalent.

<sup>e</sup> FNDDS portion size and weight assigned as 1 ounce equivalent.

The following paragraphs explain how unique situations are handled in the selection of FNDDS portion sizes and respective weights that count as 1 MyPyramid equivalent.

- Where dry food form is used as an ingredient**, the cooking yield factor is used to determine the weight of 1 MyPyramid equivalent. For instance, 1 ounce of dry red beans yields 68 grams of cooked beans (Table 4) with a cooking yield factor of 2.4 (68 grams/28.3 grams = 2.4). The cooking yield factor is applied if a recipe has dry beans as an ingredient and the FNDDS 2.0 has cup weights for its cooked form. One cup of cooked red beans, prepared from dry beans, weighs 172 grams, and is counted as 1 cup equivalent in the MPFGS. Dry red beans are used as an ingredient in the recipe. By applying the cooking yield factor of 2.4, 172 grams of cooked red beans are converted to 71.7 grams of dry form and then assigned as 1 cup equivalent of cooked red beans.
- Where more than one weight is available for 1 MyPyramid equivalent of a food**, the following approach is used. MPFGS defines 1 cup of fruit or 1 cup of either raw or cooked vegetable as 1 cup equivalent of fruit or vegetable, respectively. However, a cup of fruit or vegetable can be in chopped, sliced, or cubed forms, each with a different weight. If the specific form, such as sliced, chopped, cubed, or mashed/pureed, in which the fruit or vegetable is reported consumed can be identified from the food code description, then the weight of 1 cup of the specific form of the fruit or the vegetable is used as 1 cup equivalent. If the specific form can not be determined from the food code description, the following order of priority is used to assign the weight of 1 cup equivalent: chopped, sliced, cubed, diced, and pieces, and whole fruit or vegetable.

## **Estimation of Food-group equivalents in Multi-Ingredient Foods**

The number of each of the 32 food-group equivalents present in each ingredient of a multi-ingredient food is totaled to get the 32 food-group equivalents present in the food. Beef barbecue on bun, in [Table 3](#), has three ingredients. Ground beef contains meat and discretionary solid fat groups; hamburger roll contains grain, added sugar, and discretionary oil groups; and barbecue sauce contains vegetable and added sugar groups. After assigning the amount of the 32 food-group equivalents present in each of the three ingredients, the values are totaled to obtain the amount of the 32 food-group equivalents present in the food item, beef barbecue on bun.

## **Chapter 4: Grain Group: Definitions and Determination of What Counts as One Equivalent of Grains and Weight Assignment**

### **Grain Group Foods and Subgroups**

The MyPyramid grain group includes yeast breads and rolls; quick breads such as muffins, biscuits, pancakes, and tortillas; rice; pasta; breakfast cereals; grain-based snacks such as crackers, pretzels, popcorn, and corn chips; and baked goods made from flour, such as cakes, cookies, croissants, doughnuts, pastries, and pie crust [9].

The grain group has two subgroups: whole grain and non-whole or refined grain.

- Whole grains contain the entire grain kernel (the bran, germ, and endosperm). Examples of whole grain products include whole-wheat flour, bulgur (cracked wheat), oatmeal, whole cornmeal, and brown rice.
- Non-whole grains or refined grains are grains from which bran and germ are removed in milling. Examples of refined grain products are white flour, degerminated cornmeal, white bread, white rice, and pearled barley.

### **General Definition of Grain Equivalents**

The MyPyramid grain group equivalents are defined in ounces [10]. [Table 5](#) includes a list of selected grain products and what counts as an ounce equivalent of grain. The definitions are from CNPP's MyPyramid website section: "What Counts as an Ounce Equivalent of Grains?" [10]. The definitions are used as the basis for determining appropriate ounce equivalents for the grain products not defined in the MyPyramid website. The estimates for what counts as an ounce equivalent are rounded to commonly used, consumer-friendly measures and may not always weigh 28.35 grams. For example, 1 slice of bread, 1 small roll, ½ English muffin, ½ cup cooked pasta or rice, and 1 small flour or corn tortilla are defined as ounce equivalents but do not weigh 28.35 grams.

**Table 5. What counts as an ounce equivalent of grains in the MyPyramid Food Guidance System? <sup>1</sup>**

<b>Grains</b>	<b>Amount that counts as 1 ounce equivalent of grains<sup>2</sup></b>	<b>Common portions<sup>2</sup> consumed and the number of ounce equivalents present in them</b>
<b>Bagels</b> WG <sup>3</sup> : whole wheat RG <sup>4</sup> : plain, egg	1 “mini” bagel	1 large bagel = 4 ounce equivalents
<b>Biscuits</b> (baking powder/ buttermilk—RG <sup>4</sup> )	1 small (2” diameter)	1 large (3” diameter) = 2 ounce equivalents
<b>Breads</b> WG <sup>3</sup> : 100% whole wheat RG <sup>4</sup> : white, wheat, French, sourdough	1 regular slice 1 small slice French 4 snack-size slices rye bread	2 regular slices = 2 ounce equivalents
<b>Bulgur</b> , cracked wheat (WG <sup>3</sup> )	½ cup cooked	
<b>Cornbread</b> (RG <sup>4</sup> )	1 small piece (2 ½” x 1 ¼” x 1 ¼”)	1 medium piece (2 ½” x 2 ½” x 1 ¼”) = 2 ounce equivalents
<b>Crackers</b> WG <sup>3</sup> : 100% whole wheat, rye RG <sup>4</sup> : saltines, snack crackers	5 whole wheat crackers 2 rye crispbreads 7 square or round crackers	
<b>English muffins</b> WG <sup>3</sup> : whole wheat RG <sup>4</sup> : plain, raisin	½ muffin	1 muffin = 2 ounce equivalents
<b>Muffins</b> WG <sup>3</sup> : whole wheat RG <sup>4</sup> : bran, corn, plain	1 small (2 ½” diameter)	1 large (3 ½” diameter) = 3 ounce equivalents
<b>Oatmeal</b> (WG <sup>3</sup> )	½ cup cooked 1 packet instant 1 ounce dry (regular or quick)	
<b>Pancakes</b> WG <sup>3</sup> : Whole wheat, buckwheat RG <sup>4</sup> : buttermilk, plain	1 pancake (4 ½” diameter) 2 small pancakes (3” diameter)	3 pancakes (4 ½” diameter) = 3 ounce equivalents
<b>Popcorn</b> (WG <sup>3</sup> )	3 cups, popped	1 microwave bag, popped = 4 ounce equivalents
<b>Ready-to-eat breakfast cereal</b> WG <sup>3</sup> : toasted oat, whole wheat flakes RG <sup>4</sup> : corn flakes, puffed rice	1 cup flakes or rounds ¼ cup puffed	

**Table 5. What counts as an ounce equivalent of grains in the MyPyramid Food Guidance System? <sup>1</sup> (continued)**

Grains	Amount that counts as 1 ounce equivalent of grains <sup>2</sup>	Common portions <sup>2</sup> consumed and the number of ounce equivalents present in them
<b>Rice</b> WG <sup>3</sup> : brown, wild RG <sup>4</sup> : enriched, white, polished	½ cup cooked 1 ounce dry	1 cup cooked = 2 ounce equivalents
<b>Pasta--spaghetti, macaroni, noodles</b> WG <sup>3</sup> : whole wheat RG <sup>4</sup> : enriched, durum	½ cup cooked 1 ounce dry	1 cup cooked = 2 ounce equivalents
<b>Tortillas</b> WG <sup>3</sup> : whole wheat, whole grain corn RG <sup>4</sup> : Flour, corn	1 small flour tortilla (6” diameter) 1 corn tortilla (6” diameter)	1 large tortilla (12” diameter) = 4 ounce equivalents

<sup>1</sup> Source: [http://www.mypyramid.gov/pyramid/grains\\_counts.html](http://www.mypyramid.gov/pyramid/grains_counts.html)

<sup>2</sup> The estimates are rounded to commonly used, consumer-friendly measures.

<sup>3</sup> WG = whole grains

<sup>4</sup> RG = refined grains

### Definitions of Ounce Equivalents Unique to Grains

All foods in the grain group do not have defined MyPyramid ounce equivalent amounts. Moreover, for several foods, the portion size and respective weight combinations available in the FNDDS 2.0 may not be an exact match of the MyPyramid defined amounts. In such instances, other criteria based on how the food is commonly consumed are used to determine 1 ounce equivalent. The MyPyramid ounce equivalent assignments unique to grain products are discussed below.

1. **Yeast bread:** MyPyramid counts 1 slice of bread as 1 ounce equivalent. In FNDDS 2.0, 1 slice of a standard white bread weighs 26 grams. Therefore, 26 grams are counted as 1 ounce equivalent of commercial white bread and also as the basis for determining grain equivalents for yeast breads if no weights are available for a single slice of bread. However, due to the variations in the ingredients and preparation, the weight of a slice of bread may not be always 26 grams. Also, FNDDS 2.0 does include data on slice sizes (thin, regular) and weights. The following methods are used where details are not available.
  - **Instances where the weights of 1 slice of bread are available in FNDDS 2.0, but they do not equal 26 grams:** Homemade breads and many specialty breads are denser than commercial breads, and a slice of these breads weighs more than 26 grams. If slice weights are available for these breads, then the weight that is

closest to 26 grams is chosen as 1 ounce equivalent. In many instances, a thin slice of dense bread weighs 33 grams and is defined as 1 ounce grain equivalent. The slice size from all the available slice sizes and its weight are selected such that the weight of the slice size selected is within  $26 \pm 6.5$  grams (6.5 grams is  $\frac{1}{4}$  of 26 grams)

- **Instances where breads have no slice sizes with respective weights available in FNDDS 2.0:** A slice of standard white bread weighing 26 grams contains 16 grams of flour. For breads that have no slice size and weight data, the amount of bread that contains 16 grams of flour is defined as 1 ounce grain equivalent.
2. **Rolls:** One ounce equivalent of a roll is defined as 1 small (pan/dinner) roll, which weighs 28 grams. If the weight of 1 small roll is not available, the size of the roll with a weight that is closest to 28 grams, but no more than 35 grams, is used. One small French roll that weighs 34 grams is defined as 1 ounce grain equivalent. If the minimum weight of a roll available in FNDDS 2.0 is more than 35 grams (e.g., hamburger roll and submarine roll), the weight of  $\frac{1}{2}$  roll is defined as the weight of 1 ounce equivalent. A hamburger roll weighs 43 grams, and therefore,  $\frac{1}{2}$  hamburger roll weighing 21.5 grams is defined as 1 ounce equivalent. The assignment is similar to that used for English muffin discussed below.
  3. **English muffin:** MyPyramid defines  $\frac{1}{2}$  English muffin as 1 ounce grain equivalent. The weight of  $\frac{1}{2}$  English muffin (1 ounce equivalent) ranges from 25 to 29 grams due to the variations in its dimension and the presence of other food ingredients such as fruits (blueberry, raisins). Fruits and nuts present in English muffins are also counted toward fruit and nut groups, respectively, after disaggregation.
  4. **Muffin:** MyPyramid defines 1 ounce equivalent as 1 small muffin, about  $2\frac{1}{2}$  inches in diameter. Small muffins in FNDDS 2.0 are  $2\frac{1}{2}$  inches in diameter with a weight of 45 grams, independent of whether they contain fruits and nuts and are defined as 1 ounce grain equivalent. The 16-gram-flour rule is not used here, because FNDDS 2.0 has weights for small muffins that are about  $2\frac{1}{2}$  inches in diameter. Also, the use of the 16-gram-flour rule would result in wide variations in the weight of 1 ounce equivalent, ranging between 32-68 grams. Fruits and nuts present in muffins, after disaggregation, are also counted toward fruit and nut groups, respectively.
  5. **Quick breads (non-yeast breads, biscuit, pancake, waffle, tortilla, taco shell):** Two different rules are used to assign ounce equivalent for quick breads depending upon the type of quick bread:
    - **Non-yeast breads:** The weight of 1 ounce equivalent of quick breads (non-yeast breads) such as nut bread, banana bread, or zucchini bread is imputed from the definitions used for muffins and defined equal to 45 grams.
    - **Other quick breads:** The other quick breads in FNDDS 2.0 have several sizes and dimensions with respective weights. The size (or dimension) with a weight

closest to the weight of the quick bread that contains 16 grams of flour is defined as 1 ounce grain equivalent. A pancake weighing 38 grams contains 16 grams flour. The FNDDS 2.0 includes weights for pancakes ranging from 1 to 10 inches in diameter. Among the available choices, the 5 inch diameter pancake, weighing 40 grams, has a weight closest to 38 grams. Therefore, a small pancake weighing 40 grams is defined as 1 ounce grain equivalent.

6. **Rice, pasta, cooked breakfast cereals:** The MyPyramid-defined ounce equivalents are used (Table 5). One ounce grain equivalent is defined as ½ cup of cooked forms of cereals. In the case of uncooked rice, dry pasta, and dry cereals (e.g., oatmeal) that are used as ingredients in the recipes, 1 ounce grain equivalent is defined as 28.35 grams.
7. **Ready-to-eat breakfast cereals:** One ounce equivalent is defined as 28.35 grams. Many of the ready-to-eat cereals contain ingredients such as nuts, dried fruits, added sugars, and fat which have their own specific MyPyramid food groups. The weights of these ingredients are not counted toward grain equivalents, but are assigned to the ingredients' respective food groups, after disaggregation. However, a few non-grain ingredients such as dry milk, whey, spices, flavorings, vitamins, minerals, baking powder, yeast, and salt present in ready-to-eat cereals are counted toward the grain equivalents because they are present in very small amounts and their weight will not increase the total grain equivalent values appreciably.
8. **Other grain-based foods with no ounce equivalent defined in MyPyramid:** The amount of grain product that contains 16 grams of flour is defined as 1 ounce equivalent. This rule is used to define the grain ounce equivalents of most of the snack-type grain products. This applies to crackers, pretzels, and corn chips; grain-based desserts such as cookies, cakes, sweet rolls, pastries, and pie crust; certain quick breads such as hush puppies and dumplings; and miscellaneous grains such as batter, breading, and thickeners that are recipe ingredients.

### **Determination of Whole Grains and Non-Whole Grains in Grain Products**

Food code and ingredient descriptions are used to identify the proportion of whole grain and non-whole grain components present in grain-based foods. As an example, cracked wheat bread contains three grain ingredients: whole wheat flour, white wheat flour, and bran. The first ingredient, whole wheat flour, is assigned to the whole grain subgroup and the other two ingredients to the non-whole grain subgroup. The whole wheat flour contributes 32%, and the white wheat flour and bran together contribute 68% of the total weight of the grain ingredients. Therefore, 100 grams of cracked wheat bread that has 4 ounce equivalents of grain contains 1.3 whole grain and 2.7 non-whole grain ounce equivalents.

Foods for which details on grain ingredients are not available to make a determination about the grain subgroups, ARS' Nutrient Data Laboratory food specialists provided guidance on determining the proportion of whole grain and non-whole grain components present in a grain product.

## Chapter 5: Vegetable Group: Definitions and Determination of What Counts as One Equivalent of Vegetables and Weight Assignment

### Vegetable Group Foods and Subgroups

The vegetable group has five subgroups: dark-green vegetables, orange vegetables, starchy vegetables, dry beans and peas, and other vegetables [11]. Dry beans and peas (legumes) can be counted either as a vegetable or as a meat alternate in the meat and beans group. However, care must be exercised to not count dry beans and peas in both the vegetable and meat and beans groups. The vegetables included in each of the five subgroups are listed below. The vegetables with an asterisk are listed in the MyPyramid website under the “Inside the Pyramid” consumer information section “vegetables” [11], and those with no asterisk are additional to the subgroup list.

- **Dark-green vegetables:** Arugula, balsam-pear tips, beet greens, bitter melon leaves, broccoli\*, chard, chicory, cilantro, collard greens\*, cress, dandelion greens, endive, escarole, grape leaves, kale\*, lambsquarters, mustard greens\*, mustard cabbage, parsley, poke greens, pumpkin leaves, romaine lettuce\*, spinach\*, sweet potato leaves, taro leaves, turnip greens\*, watercress\*.
- **Orange vegetables:** Calabaza, carrots\*, carrot juice, pumpkin\*, sweet potatoes\*, winter squash, yams.
- **Starchy vegetables:** Black-eyed peas (not dried), breadfruit, burdock, casabe, cassava, corn\*, cowpeas (not dried), dasheen, green peas\*, hominy, jicama, lima beans\* (immature), parsnips, pigeon peas, salsify, white potato\*, rutabaga, tannier, taro, yambean.
- **Other vegetables:** Algae, aloe vera juice, artichoke\*, asparagus\*, balsam-pear pods, bamboo shoots, bean and alfalfa sprouts\*, broccoflower, beets\*, Brussels sprouts\*, buckwheat sprouts, cabbage\* (green and red), cactus, capers, cauliflower\*, celeriac, celery\*, celery juice, chayote, Chinese cabbage, chives, christophine, chrysanthemum, coriander, cucumber\*, eggplant\*, fern shoots, garlic, ginger root, green beans\*, horseradish, jute (potherb), kohlrabi, leek, lettuce\*, lotus root, luffa (Chinese okra), mushrooms\*, nopales, okra\*, olives, onions\* (mature and green), oriental radishes, palm hearts, peppers\* (green, red, hot, banana), pimientos, pumpkin flowers, radicchio, radishes, sauerkraut, seaweed, sequin (Portugese cabbage), snow peas, summer squash, string beans (yellow), swamp cabbage, tomatillo, tomato\*, tomato juice\*, tree fern, turnips\*, water chestnuts, wax beans\*, waxgourd, winter melon, zucchini\*.
- **Dry beans and peas:** Bayo beans, black beans\*, blackeyed peas\*, broadbeans, calico beans, chickpeas\* (garbanzos), cowpeas, fava beans, kidney beans\*, lentils\*, lima beans\* (mature), mongo beans, mung beans, navy beans\*, pinto beans\*, pink beans, red Mexican beans, split peas, soybeans\* (mature), white beans\*.



## **General Definition of Vegetable Equivalents**

The MyPyramid vegetable group equivalents are defined in cups [12]. MyPyramid defines 1 cup of raw, cooked, or canned vegetables; 2 cups of raw leafy green vegetables; and ½ cup dried vegetables as 1 cup equivalent. [Table 6](#) includes a list of selected vegetables and what counts as a cup equivalent of vegetable. The definitions are from CNPP’s MyPyramid website section: “What Counts as a Cup of Vegetables?” [12]. The definitions are used as the basis for determining appropriate cup equivalents for the vegetables not defined in the MyPyramid website. The estimates for what counts as a cup equivalent of vegetables are rounded to commonly used, consumer-friendly measures that may not always be in cup measures. For example, 1 large ear of corn, 1 medium baked potato, 20 medium to long strips of French fries, and 1 large pepper are defined as 1 cup equivalent of vegetables.

The form of vegetables such as chopped, sliced, or cubed, with its respective weight chosen to define 1 cup equivalent, varies depending upon the choices of forms of vegetables available in the FNDDS 2.0 and SR18. If the form of the vegetable is not known, the priority for cup equivalent is as follows: chopped, sliced, cubed, diced, pieces, and whole. If a person reports eating broccoli without further details to the form of broccoli, the weight of 1 cup chopped broccoli is selected as the weight of 1 cup equivalent of broccoli.

**Table 6. What counts as a cup equivalent of vegetables in the MyPyramid Food Guidance System?<sup>1</sup>**

<b>Vegetables</b>	<b>Amount that counts as 1 cup equivalent of vegetables<sup>2</sup></b>
<b><i>Dark-Green Vegetables</i></b>	
Broccoli	1 cup chopped or florets 3 spears 5" long raw or cooked
Greens (collards, mustard greens, turnip greens, kale)	1 cup cooked
Spinach	1 cup, cooked 2 cups raw is equivalent to 1 cup of vegetables
Raw leafy greens: spinach, romaine, watercress, dark green leafy lettuce, endive, escarole	2 cups raw is equivalent to 1 cup of vegetables
<b><i>Orange Vegetables</i></b>	
Carrots	1 cup, strips, slices, or chopped; raw or cooked 2 medium 1 cup baby carrots (about 12)
Pumpkin	1 cup mashed, cooked
Sweet potato	1 large baked (2 ¼" or more diameter) 1 cup sliced or mashed, cooked
Winter squash (acorn, butternut, hubbard)	1 cup cubed, cooked
<b><i>Dry beans and peas<sup>3</sup></i></b>	
Dry beans and peas (such as black, garbanzo, kidney, pinto, soybean, black eyed peas, split peas)	1 cup whole or mashed, cooked
Tofu	1 cup ½" cubes (about 8 ounces)
<b><i>Starchy Vegetables</i></b>	
Corn, yellow or white	1 cup 1 large ear (8" to 9" long)
Green peas	1 cup
<b><i>Potatoes</i></b>	
White potatoes	1 cup diced, mashed 1 medium boiled/baked potato (2 ½ " to 3" diameter) French fried: 20 medium-to-long strips (2 ½" to 4" long)

**Table 6. What counts as a cup equivalent of vegetables in the MyPyramid Food Guidance System<sup>1</sup> (continued)**

Vegetables	Amount that counts as 1 cup equivalent of vegetables <sup>2</sup>
<i>Other Vegetables</i>	
Bean sprouts	1 cup cooked
Cabbage, green	1 cup, chopped or shredded, raw or cooked
Cauliflower	1 cup pieces or florets, raw or cooked
Celery	1 cup, diced or sliced, raw or cooked 2 large stalks (11" to 12" long)
Cucumbers	1 cup raw, sliced or chopped
Green or wax beans	1 cup cooked
Green or red peppers	1 cup chopped, raw or cooked 1 large pepper (3" diameter, 3-3/4" long)
Lettuce, iceberg or head	2 cups raw, shredded or chopped
Mushrooms	1 cup raw or cooked
Onions	1 cup chopped, raw or cooked
<i>Tomatoes</i>	
Tomatoes	1 large raw whole (3") 1 cup chopped or sliced, raw, canned, or cooked
Tomato or mixed vegetable juice	1 cup
Summer squash or zucchini	1 cup cooked, sliced or diced

<sup>1</sup> Source: [http://www.mypyramid.gov/pyramid/vegetables\\_counts.html](http://www.mypyramid.gov/pyramid/vegetables_counts.html)

<sup>2</sup> The estimates are rounded to commonly used, consumer-friendly measures.

<sup>3</sup> To convert dry beans and peas from vegetable cup equivalents to meat and beans ounce equivalents, multiply the number of vegetable cup equivalents by 4.

### Definitions of Cup Equivalents Unique to Vegetables

All foods in the vegetable group do not have defined MyPyramid cup equivalent amounts. In such cases, other criteria as explained below are used to determine 1 cup equivalent of vegetables.

1. **Tomato puree or paste:** One-half cup is defined as 1 cup equivalent. The rationale: ½ cup of tomato puree or tomato paste reconstitutes to about 1 cup and contains total solids similar to that present in 1 cup of tomatoes.
2. **Dehydrated vegetables:** The MyPyramid Food Guidance System does not specify cup equivalents for dehydrated vegetables, but provides guidance on dried fruits. It defines ½ cup of dried fruit as a cup equivalent. The same rationale is applied to dehydrated vegetables, and ½ cup of dehydrated vegetables is defined as 1 cup equivalent. This rule applies to dehydrated vegetables including carrot chips, sun-dried tomatoes, dried seaweed, dehydrated chives, dehydrated onion, and freeze-dried sweet green peppers. It

does not apply to dry beans and peas, dehydrated potatoes and potato chips, for which different methodologies, as described below, are used to define 1 cup equivalent.

3. **Dry beans and peas:** The weight of dry beans and peas needed to yield 1 cup of cooked beans or peas is defined as 1 cup equivalent. The cooking yield factor of 2.4 from the FNDDS 2.0 food weights file is used to calculate the dry-to-cooked form ratios.
4. **Potato chips:** One cup-equivalent of potato chips is defined as 2 ounces or 56.7 grams. The rationale: 2 ounces of potato chips contain about the same amount of carbohydrate as 1 cup of baked or boiled potato and are representative of the potato present in potato chips, without the added fat.
5. **Dehydrated potatoes:** One cup-equivalent is defined as the amount of dried potato flakes that yields 1 cup prepared mashed potato.

### **Guidance on Analyzing Dry Beans and Peas, White Potatoes, and Tomatoes**

1. **Dry Beans and Peas:** The name of the variable that denotes dry beans and peas in MPED 2.0 is “LEGUMES.” Legumes can also be counted as meat alternates and captured under meat and beans group [2], instead of vegetables group. For details on how to analyze dry beans and peas, refer to [chapter 1](#).
2. **White Potatoes and Tomatoes:** White potatoes and tomatoes are eaten in large amounts and hence have their own subgroups and are not included in other starchy vegetable (V\_STARCHY) variable or other vegetables variable (V\_OTHER), respectively. For details on analyzing potatoes, tomatoes, starchy and other vegetables, refer to [chapter 1](#).

### **Estimation of Cup Equivalents of Vegetables in Foods with Other Ingredients That Do Not Appreciably Increase the Final Volume of the Foods**

The MyPyramid Food Guidance System defines vegetable equivalents by volume (that is, cup equivalents). If the addition of an ingredient does not add extra volume to a cup of vegetables, the weight of 1 cup equivalent of vegetables includes the weight of the vegetables with these added ingredients. Examples include spinach to which fat is added in cooking, corn relish, glazed carrots, canned sweet potato in syrup with fat added in cooking, and mashed potatoes with added milk.

Although the weight of 1 cup equivalent of vegetable includes the weight of other ingredients, the non-vegetable ingredients, after disaggregation, are counted toward their respective food groups. In the previous examples, the fat added to spinach, sweet potato, and mashed potatoes is counted toward discretionary solid fats/oils; the added sugar in glazed carrots and syrup in the canned sweet potatoes are counted toward added sugars group; and the milk in mashed potatoes is counted toward the milk group. Vinegar used in corn relish is not counted because it does not have a MyPyramid food group assignment, but the corn and red peppers present are counted toward the vegetable group.

## Raw Vegetables Used as Recipe Ingredients in a Cooked Food

MyPyramid defines vegetable cup equivalents in both raw and cooked forms. Therefore, if a raw form of vegetable is used as an ingredient in a multi-ingredient recipe, the weight of raw vegetable needed to yield 100 grams of final recipe, after applying cooking yield adjustments, is used to assign cup equivalents, instead of the cooked form of the vegetable.

The following two examples highlight how the use of raw or cooked vegetables as ingredients will differently impact the estimation of total vegetable cup equivalents present in a cooked food. In the first example, the recipe uses raw tomatoes and in the second, cooked tomatoes. Only the vegetable ingredients in the respective recipes are listed in the examples.

### Example 1: Chutney

The cooked recipe has a 50% yield factor, because there is a 50% moisture loss from cooking.

Ingredients	Amount in 100 grams of uncooked recipe (grams)	Amount needed for 100 grams of cooked recipe (grams)	Weight of 1 cup equivalent (grams)	Number of cup equivalents present
Raw tomatoes, red, ripe	50.70	101.40	180	0.563
Raw onions	3.98	7.96	160	0.050
Raw sweet green pepper	1.85	3.70	149	0.025
			Total	0.638

**Example 2: Stewed tomatoes using cooked tomatoes**

The cooked recipe has a 90% yield factor, because there is a 10% moisture loss from cooking.

Ingredients	Amount in 100 grams uncooked recipe (grams)	Amount needed for 100 grams of cooked recipe (grams)	Weight of 1 cup equivalent (grams)	Number of cup equivalents present
Cooked, red ripe tomatoes	88.27	98.08	240	0.409
Raw onions	0.49	0.54	160	0.003
Raw celery	2.21	2.45	120	0.020
Total				0.432

## Chapter 6: Fruit Group: Definitions and Determination of What Counts as One Equivalent of Fruit and Weight Assignment

### Fruit Group Foods and Subgroups

The MyPyramid Food Guidance System has no specific fruit subgroups [13]. MPED 2.0 has the following two fruit subgroups: citrus, melons, and berries group and other fruits group. Fruits in the two subgroups are listed below.

- **Citrus fruits, melons, berries:** Acerola, blackberries, blueberries, boysenberries, calamondin, cantaloupe, casaba melon, cranberries, dewberries, elderberries, gooseberries, grapefruit, huckleberries, honeydew melon, June berries, kiwifruit, kumquats, lemons, limes, loganberries, mandarin oranges, mulberries, oranges, raspberries, strawberries, tangelos, tangerines, ugli fruit, watermelon, youngberries, and juices made from these fruits.
- **Other fruits:** Apples, apricots, Asian pears, avocados, bananas, cherries, currants, dates, figs, genip, guava, quinces, grapes, jackfruit, japanese pears, jobo, loquats, lychees, mamey (mamea) apples, mangoes, nectarines, papaya, passion fruit, peaches, pears, persimmons, plantains, pineapples, plums, pomegranates, prickly pears, prunes, raisins, red bananas, rhubarb, sapodilla, soursop (guanabana), star fruit (carambola), sweetsop, tamarind, watermelon rind, wi-apples, and juices made from these fruits.

### General Definition of Fruit Equivalents

The MyPyramid fruit group equivalents are defined in cups [14]. MyPyramid defines 1 cup of fruit, 100% fruit juice, or ½ cup of dried fruit as 1 cup equivalent. [Table 7](#) includes a list of selected fruits and what counts as a one cup or half-cup equivalent of fruits. The definitions are from CNPP’s MyPyramid website section: “What Counts as a Cup of Fruit?”[14]. The definitions are used as the basis for determining appropriate cup equivalents for the fruits not defined in the text on the MyPyramid website. The estimates for what counts as a cup equivalent of fruits are rounded to commonly used, consumer-friendly measures that may not always be in cup measures. For example, 1 small apple, 1 medium pear, 1 large peach, 1 wedge of watermelon, and ½ cup of raisins are defined as 1 cup equivalent.

As in the case of vegetables, the form of fruits such as chopped, diced, or sliced with its respective weight chosen to define 1 cup equivalent varies depending upon the choices of forms of fruits available in FNDDS 2.0 and SR18. If the form of the fruit is not known from food code descriptions, the priority for cup equivalent assignment is as follows: chopped, diced, and sliced.

**Table 7. What counts as one cup or one-half cup equivalent of fruits in the MyPyramid Food Guidance System?<sup>1</sup>**

<b>Fruits</b>	<b>Amount that counts as 1 cup equivalent of fruit<sup>2</sup></b>	<b>Amount that counts as ½ cup equivalent of fruit<sup>2</sup></b>
Apples	½ large (3.25" diameter) 1 small (2.5" diameter) 1 cup sliced or chopped, raw or cooked	½ cup sliced or chopped, raw or cooked
Applesauce	1 cup	1 snack container (4 ounces)
Bananas	1 cup sliced 1 large (8" to 9" long)	1 small (less than 6" long)
Cantaloupe	1 cup diced or melon balls	1 medium wedge (1/8 of a medium melon)
Grapes	1 cup whole or cut-up 32 seedless grapes	16 seedless grapes
Grapefruit	1 medium (4" diameter) 1 cup sections	½ medium (4" diameter)
Mixed fruit (fruit cocktail)	1 cup diced or sliced, raw or canned, drained	1 snack container (4 ounces) drained = 3/8 cup
Oranges	1 large (3-1/16" diameter) 1 cup sections	1 small (2-3/8" diameter)
Oranges, mandarin	1 cup canned, drained	
Peaches	1 large (2 ¾" diameter) 1 cup sliced or diced, raw, cooked, or canned, drained 2 halves, canned	1 small (2 3/8" diameter) 1 snack container (4 ounces) drained = 3/8 cup
Pears	1 medium pear (2.5 per lb) 1 cup sliced or diced; raw, cooked, or canned, drained	1 snack container (4 ounces) drained = 3/8 cup
Pineapples	1 cup chunks, sliced or crushed; raw, cooked, or canned, drained	1 snack container (4 ounces) drained = 3/8 cup
Plums	1 cup sliced raw or cooked 3 medium or 2 large plums	1 large plum
Strawberries	About 8 large berries 1 cup whole, halved, or sliced, fresh or frozen	1/2 cup whole, halved, or sliced
Watermelon	1 small wedge (1" thick) 1 cup diced or balls	6 melon balls



**Table 7. What counts as one cup or one-half cup equivalent of fruits in the MyPyramid Food Guidance System?<sup>1</sup> (continued)**

<b>Fruits</b>	<b>Amount that counts as 1 cup equivalent of fruit<sup>2</sup></b>	<b>Amount that counts as ½ cup equivalent of fruit<sup>2</sup></b>
Dried fruit (raisins, prunes, apricots, etc.)	½ cup dried fruit is equivalent to 1 cup fruit ½ cup raisins ½ cup prunes ½ cup dried apricots	¼ cup dried fruit is equivalent to ½ cup fruit 1 small box raisins (1.5 ounces)
100% fruit juice (orange, apple, grape, grapefruit, etc.)	1 cup juice	½ cup juice

<sup>1</sup> Source: [http://www.mypyramid.gov/pyramid/fruits\\_counts.html](http://www.mypyramid.gov/pyramid/fruits_counts.html)

<sup>2</sup> The estimates are rounded to commonly used, consumer-friendly measures.

### **Definitions of Cup Equivalents Unique to Fruits**

All fruits in the fruit group do not have defined MyPyramid cup equivalent amounts. Other criteria, as explained below, are used to determine 1 cup equivalent for such fruits.

1. **Raw fruits:** MPFGS uses specific sizes of whole fruits to define 1 cup equivalent of fruit. A small apple, a medium grapefruit, or a large banana is equal to 1 cup equivalent of fruit. The specified whole fruit size is used in developing fruit assignments in MPED 2.0. The weight of whole fruit is assigned equal to one cup equivalent where a direct match between the whole fruit size and weight is available in FNDDS 2.0 or SR18. If a direct whole fruit-weight match is not available, one of the following rules is applied to define 1 cup fruit equivalent:
  - If there are several fruit sizes available in FNDDS 2.0, the weight of the fruit size closest to the weight of 1 cup of raw fruit is chosen.
  - For fruits with pits, the weight of 1 cup of pitted fruit is defined as 1 cup equivalent.
  - For small-sized fruits, the weight of 1 cup of whole fruit or fruit segments is defined as 1 cup equivalent. Examples of such fruits include blueberries, cherries, grapes, strawberries, and tangelo segments.
  - For large fruits such as cantaloupe, watermelon, and pineapple, 1 cup equivalent is defined as the weight of 1 cup of cut fruit.
2. **Canned or cooked fruit:** One cup equivalent is defined as 1 cup cooked or canned fruit, fruit sauces, and baby food fruits. The following rules are used to define different forms of fruits and canned fruits packed in different mediums. The order of priority for assigning cup equivalents to canned and cooked fruit is as follows: chopped, diced, sliced, halves, whole. One cup equivalent of canned fruit that is unsweetened or sweetened, or canned in juice pack, light syrup, or heavy syrup includes the weight of

both the fruit and its liquid. The reason is that the weight of the canned fruit in FNDDS 2.0 includes the weight of both the fruit and the liquid medium in which it is canned.

3. **Dried fruits:** One cup equivalent is defined as equal to the weight of ½ cup dried fruit.
4. **Fruit juices:** The following rules are used to define 1 cup fruit equivalent of fruit juice, juice concentrate, or other sweetened fruit juice:
  - For single-strength fruit juices and fruit juices containing less than 10% of added sweeteners by weight, 1 cup equivalent is defined as 1 cup juice.
  - For juice concentrates, 1 cup equivalent is defined as 2 ounces, which is the amount needed to prepare 1 cup reconstituted juice.
  - Other sweetened fruit juices, juice drinks, and fruit ades are processed as multi-ingredient beverages, and 1 cup equivalent is determined based on its fruit ingredients after disaggregation.
5. **Fruits with added sugar:** The cup equivalent assignments depend on whether the addition of sugar impacts the final volume or not. For fruit prepared with added sugar, 1 cup equivalent is defined as the weight of the fruit and added sugar, if the added sugar does not appreciably increase the volume of the final food. The rationale is similar to the assignment of cup equivalents to vegetables that contain ingredients that do not increase appreciably the total volume of the final food. For fruit mixtures such as fruit nectars and cranberry sauces that contain a large proportion of added sugar which increases the total food volume, only the fruit component is used to determine cup equivalents of fruits.

### **Estimation of Fruit Juice Intake**

Estimation of an approximate amount of fruits consumed as fruit juice can be achieved by selecting survey food codes that are juices. Survey food codes from 61201010 to 6123900 and from 64100100 to 64134000 include fruit juices. This selection does not include fruit juices and juice concentrates present in frozen fruit juice bars, bakery products, candies, confectionary, and cocktails. The mean daily consumption of fruit juice from these food codes is very small.

## Chapter 7: Milk Group: Definitions and Determination of What Counts as One Equivalent of Milk and Weight Assignment

### Milk Group Foods and Subgroups

In the MPFGS, the milk group includes all fluid milk, yogurt, milk-based desserts, and cheese. It does not include butter, cream, sour cream, and cream cheese that are mainly milk fat and retain little or no calcium from milk [15].

MPED 2.0 has three milk group subcategories: milk, yogurt, and cheese. All milk-based desserts such as ice cream and frozen yogurt are multi-ingredient foods containing other ingredients such as flour, eggs, sugar, fruit, and nuts. Therefore, milk-based desserts do not have a separate subgroup in MPED 2.0, but are disaggregated into ingredients and each ingredient is assigned to its respective food group. The foods in MPED 2.0 milk subgroups include:

- **Milk:** All fluid milk, chocolate milk, lactose-reduced milk, lactose-free milk, filled milk, dry milk, and evaporated milk.
- **Yogurt:** All yogurts such as fat-free, low-fat, reduced-fat, and whole-milk yogurt.
- **Cheese:** Hard natural cheese, soft cheese, processed cheese, and cheese products.

### General Definition of Milk Equivalents

The MyPyramid milk group equivalents are defined in cups [16]. One cup milk, 1 cup yogurt, 1½ ounces natural cheese, and 2 ounces processed cheese, count as 1 milk cup equivalent each. MPED 2.0 uses these same criteria, except for cheese, where the calcium content of cheese is used as the basis for defining milk equivalents.

Table 8 includes examples of 1 cup equivalents for the milk group. The definitions are from the “What Counts as One Cup in the Milk Group?” section of the MyPyramid website [16]. The estimates for what counts as a cup equivalent of milk are rounded to commonly used, consumer-friendly measures that may not always be in cup (8 oz by volume) measures.

**Table 8. What counts as a cup equivalent of milk in the MyPyramid Food Guidance System?<sup>1</sup>**

<b>Milk Products</b>	<b>Amount that counts as 1 cup equivalent of milk <sup>2</sup></b>	<b>Common portions and respective cup equivalents of milk<sup>2</sup></b>
Milk	1 cup 1 half-pint container ½ cup evaporated milk	1 cup
Yogurt	1 regular container (8 fluid ounces) 1 cup	1 small container (6 ounces) = ¾ cup 1 snack size container (4 ounces) = ½ cup
Cheese	1 ½ ounces hard cheese (cheddar, mozzarella, Swiss, Parmesan) 1/3 cup shredded cheese 2 ounces processed cheese (American) ½ cup ricotta cheese 2 cups cottage cheese	1 slice <sup>3</sup> of hard cheese is equivalent to ½ cup milk  1 slice <sup>3</sup> of processed cheese is equivalent to 1/3 cup milk  ½ cup cottage cheese is equivalent to ¼ cup milk
Milk-based desserts	1 cup pudding made with milk 1 cup frozen yogurt 1 ½ cups ice cream	1 scoop ice cream is equivalent to 1/3 cup milk

<sup>1</sup> Source: [http://www.mypyramid.gov/pyramid/milk\\_counts.html](http://www.mypyramid.gov/pyramid/milk_counts.html)

<sup>2</sup> These are estimates that are rounded to easy-to-use, consumer-friendly measures.

<sup>3</sup> A slice of cheese is not defined in the MyPyramid Food Guidance System

### **Definitions of Cup Equivalents Unique to the Milk Group**

1. **Fluid milk:** A cup equivalent is defined as 1 cup of each of the following types of milk: cow's milk, goat's milk, skim milk, low-fat milk, whole milk, calcium-fortified milk, filled milk with vegetable oil, lactose-reduced milk, dry milk reconstituted, chocolate milk, and diluted evaporated milk. Flavored milks, other than chocolate milk (e.g., strawberry flavored milk), are disaggregated into fluid milk and other ingredients, and the milk component is assigned to the fluid milk group.
2. **Dry milk:** A cup equivalent is defined as 1/3 cup of dry milk, which reconstitutes to 1 cup fluid milk. The same rule is applied to dry whey.

3. **Evaporated milk, undiluted:** A cup equivalent is defined as  $\frac{1}{2}$  cup of evaporated, undiluted milk; when diluted, it yields 1 cup fluid milk.
4. **Yogurt:** A cup equivalent is defined as 1 cup (8 fluid ounces) of plain fat-free, low-fat, reduced fat, and whole-milk yogurt; flavored yogurt; and yogurt with fruit. Milk present in frozen yogurt is counted in the milk subgroup.
5. **Cheese:** MyPyramid defines  $1\frac{1}{2}$  ounces of natural cheese and 2 ounces of processed cheese as 1 cup equivalent of milk. However, the calcium contents of different types of cheese are not uniform, but vary with the type of cheese. MPED 2.0 uses calcium content to define milk equivalents for cheese. One cup of skim milk contains 302 milligrams of calcium [8]. A cup equivalent of natural or processed cheese is defined as the number of ounces that contain 302 milligrams of calcium, the amount present in 1 cup skim milk. The values are rounded up or down to the nearest  $\frac{1}{2}$  ounce increment and may range from 1- 8 ounces of cheese. One cup equivalent of natural cheddar cheese and processed American cheese ranges between 1 and 2 ounces in weight. One ounce of dry cheese such as Parmesan and reduced-fat- and non-fat-cheese are defined as one cup equivalent of milk. Cup measures, instead of ounces, are used to define 1 cup milk equivalents for cheese with low calcium content. The values are rounded up or down to the nearest  $\frac{1}{2}$  cup increments. Examples of one milk cup equivalent include: 2 cups creamed cottage cheese, 3 cups cottage cheese with vegetable or fruit added,  $6\frac{1}{2}$  cups dry curd cottage cheese, and  $\frac{1}{2}$  cup ricotta cheese. All types of cream cheese, including fat free cream cheese, are counted toward the discretionary solid fat and are not included in the milk group.
6. **Ice cream and other frozen milk-based desserts:** Milk-based desserts are disaggregated into ingredients, and cup equivalents of milk are assigned based on their milk ingredients.
7. **Infant formulas:** Milk equivalents are not assigned to infant formulas. The MyPyramid Food Guidance System applies to persons ages 2 and above, and infant formulas are generally not consumed by this segment of the population. In addition, infant formulas are highly formulated products which, in general, do not reflect the traditional definitions of foods in the milk group.
8. **Meal replacements:** Meal replacements that are in powdered or liquid forms are multi-ingredients foods. These are disaggregated into their ingredients and assigned to the respective MyPyramid groups. The meal replacements have ingredients from the milk, soy, and grain groups and also contain discretionary fats and added sugars.
9. **Other:** Milk-based ingredients (milk solids) present in foods such as bread and lunchmeats are not counted toward milk group equivalents but are included in the grain and meat equivalents, respectively, because they are present in very small amounts.

## **Chapter 8: Meat, Poultry, Fish, Dry Beans, Eggs, and Nuts (or Meat and Beans) Group: Definitions and Determination of What Counts as One Equivalent of Meat and Beans and Weight Assignment**

### **Meat and Beans Group Foods and Subgroups**

There are no subgroups in the MyPyramid Meat and Beans group [17]. Foods in this group include beef, pork, lamb, veal, game, poultry, fish, shellfish, frankfurters, sausages, bacon, luncheon meats, organ meats, and meat alternates. Meat alternates include eggs, soy-based products such as tofu/soybean curd, soy milk and soy flour, meat analogs, nuts, and seeds. Dry beans and peas can also be counted as meat alternates, or they can be counted as vegetables, but should not be counted in both food groups simultaneously. Refer to the section on the vegetable group for details on converting cooked dry beans and peas from vegetable cup equivalents to meat and beans ounce equivalents.

Subgroups for MPED 2.0 meat and beans group are: total meat, poultry, eggs, frankfurters, organ meats, fish high in n-3 fatty acids, fish low in n-3 fatty acids, soy-based products, and nuts and seeds. The fish group is divided into two subgroups based on their n-3 fatty acid content. Fish that have the n-3 fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) in amounts at or above 0.5 gram per 85 grams (3 ounces) are placed in the high n-3 group, and the rest are placed in the low n-3 group.

### **General Definition of Meat and Beans Equivalents**

The MyPyramid meat group equivalents are defined in ounces [18]. [Table 9](#) lists selected examples of foods that count as 1 ounce equivalent in the Meat and Beans group. The definitions are from CNPP's MyPyramid website section: "What Counts as an Ounce Equivalent in the Meat and Beans Group?" [18]. The definitions are used as the basis for determining appropriate ounce equivalents for the meat and beans group foods not defined in the MyPyramid website. The estimates for what counts as an ounce equivalent of meat and beans are rounded to commonly used, consumer-friendly measures. For example, 1 ounce of cooked lean meat, poultry, or fish, ¼ cup cooked dry beans, 1 egg, 1 tablespoon of peanut butter, and ½ ounce of nuts or seeds are counted as 1 ounce equivalent of meat and beans group.

**Table 9. What counts as an ounce equivalent in the meat and beans group in the MyPyramid Food Guidance System? <sup>1</sup>**

<b>Meat and beans</b>	<b>Amount that counts as 1 ounce equivalent in the meat and beans group<sup>2</sup></b>	<b>Common portions and respective ounce equivalents of meat and beans<sup>2</sup></b>
Meats	1 ounce cooked lean beef	1 small steak (eye of round, filet) = 3 ½ to 4 ounce equivalents
	1 ounce cooked lean pork or ham	1 small lean hamburger = 2 to 3 ounce equivalents
Poultry	1 ounce cooked chicken or turkey, without skin	1 small chicken breast half = 3 ounce equivalents
	1 sandwich slice of turkey (4 ½ x 2 ½ x 1/8")	½ Cornish game hen = 4 ounce equivalents
Fish	1 ounce cooked fish or shell fish	1 can tuna, drained = 3 to 4 ounce equivalents
		1 salmon steak = 4 to 6 ounce equivalents
		1 small trout = 3 ounce equivalents
Eggs	1 egg	1 egg = 1 ounce equivalent
Nuts and seeds	½ ounce of nuts (12 almonds, 24 pistachios, 7 walnut halves) ½ ounce of seeds (pumpkin, sunflower or squash seeds, hulled, roasted) 1 Tablespoon of peanut butter or almond butter	1 ounce of nuts or seeds = 2 ounce equivalents
Dry beans and peas	¼ cup of cooked dry beans (such as black, kidney, pinto, or white beans) ¼ cup of cooked dry peas (such as chickpeas, cowpeas, lentils, or split peas) ¼ cup of baked beans, refried beans ¼ cup (about 2 ounces) of tofu 1 ounce tempeh, cooked ¼ cup roasted soybeans 1 falafel patty (2 ¼", 4 ounce) 2 tbsp. hummus	1 cup split pea soup or 1 cup lentil soup or 1 cup bean soup = 2 ounce equivalents  1 soy or bean burger patty = 2 ounce equivalents

<sup>1</sup> Source: [http://www.mypyramid.gov/pyramid/meat\\_counts.html](http://www.mypyramid.gov/pyramid/meat_counts.html)

<sup>2</sup> These are estimates that are rounded to commonly used, consumer-friendly measures.

## Definitions of Lean Meat, Allowable Fat, and Discretionary Fat in the Meat and Beans Group

MyPyramid recommends making lean or lowfat food choices from the meat and beans group [2]. One ounce cooked lean meat, poultry, fish, eggs, and nuts and seeds composite contains 2.63 grams of fat, which is defined as the amount of **allowable fat** per ounce of meat and beans group foods (USDA, CNPP-personal communications). The allowable fat in the meat group includes that present in lean cuts of meat trimmed of all fat and poultry without skin. By MPFGS definition, 100 grams of cooked, lean meat food items have 3.53 ounces of cooked lean meat and no discretionary fat. Also, an ounce of the meat group composite can have up to 2.63 grams of allowable fat. This translates to 9.28 grams of allowable fat per 100 grams (3.53 ounces) of cooked lean meat group food item. Therefore, **lean meat** is defined as any meat, poultry, fish (MPF) food item that contains 9.28 grams or less fat and at least 90.72 grams of nonfat meat component per 100 grams of cooked food item.

The amount of fat present above the allowable fat level of 9.28 grams per 100 grams of food item is defined as **discretionary solid fat**, if the food source is meat or poultry, and as **discretionary oil** if the food source is fish, nuts, or seeds [19, 20].

## Calculation of Lean Meat and Discretionary Fat in the Meat and Beans Group Foods

The following three sets of algorithms are used to calculate ounce equivalents of lean meat and beans and discretionary solid fat or oil in:

- I. Single-ingredient, **cooked** form of meat, poultry, fish, or meat alternates.
- II. Multi-ingredient, cooked foods containing **raw** meat, poultry or fish as ingredients.
- III. **Raw** meat, poultry, or fish eaten **raw**.

### I. Lean meat ounce equivalents and discretionary fat present in a single-ingredient, cooked meat, poultry, fish, or meat alternate

The set of algorithms shown below is used to calculate the ounce equivalents of cooked lean meat, poultry, or fish (MPF) and the amount of discretionary fat (solid or oil) present in **cooked** meat, poultry, or fish without added ingredients; bean burgers such as veggie or garden burgers; other mainly legume-based meat substitutes such as vegetarian or meatless fish sticks, chicken, hotdogs; or soy-based meal replacements that are reported as single food items in the What We Eat In America-NHANES 2003-2004.

**Step 1.** Compute the amount of nonfat meat in 100 grams of MPF food by subtracting % total fat from 100 grams [7].

Amount of Nonfat Meat = (100-% fat) grams

**Example:** Cooked sausage has 31.16% total fat.



Therefore, the amount of nonfat meat in 100 grams of cooked sausage

$$\begin{aligned} &= (100-31.16) \text{ grams} \\ &= 68.84 \text{ grams} \end{aligned}$$

**Step 2.** Compute the amount of fat allowed (nondiscretionary fat) in the lean portion of the MPF food by using the ratio of fat to nonfat meat in the meat composite profile developed by CNPP

$$\text{Amount of fat allowed (grams)} = (9.28/90.72) \times \text{Amount of nonfat meat (grams)}$$

$$\begin{aligned} \text{Amount of fat allowed in 100 grams of cooked sausage} \\ &= [(9.28/90.72) \times 68.84] \text{ grams} \\ &= 7.04 \text{ grams} \end{aligned}$$

**Step 3.** Compute the amount of lean meat in 100 grams of food

$$\begin{aligned} \text{Amount of lean meat (grams)} &= \text{Amount of nonfat meat (grams)} \\ &+ \text{Amount of fat allowed (grams)} \end{aligned}$$

$$\begin{aligned} \text{Amount of lean meat in 100 grams of cooked sausage} &= [68.84+7.04] \text{ grams} \\ &= 75.88 \text{ grams} \end{aligned}$$

**Step 4.** Convert lean meat to ounce equivalents  
(1 ounce = 28.35 grams)

$$\text{Ounce equivalents of lean meat} = \text{Grams of lean meat} / 28.35 \text{ grams}$$

$$\begin{aligned} \text{Ounces of lean meat in 100 grams of cooked sausage} &= [75.88/28.35] \text{ ounce} \\ &= 2.68 \text{ ounce equivalents} \end{aligned}$$

**Step 5.** Calculate the amount of **discretionary fat (grams) per 100 grams** of cooked food by subtracting the amount of lean meat (grams) calculated in step 3.

$$\text{Amount of discretionary fat (grams)} = 100 \text{ grams} - \text{amount of lean meat (grams)}$$

$$\begin{aligned} \text{For the cooked sausage in the example,} \\ \text{Amount of solid discretionary fat in 100grams of cooked sausage} &= [100-75.88] \text{ grams} \\ &= 24.12 \text{ grams} \end{aligned}$$

**Calculation check:**

Percent total fat should equal the sum of the amount of fat allowed (grams) and discretionary fat

$$\begin{aligned} \% \text{ Total fat in 100 grams of cooked sausage in the example} &= [7.04+24.12] \text{ grams} \\ &= 31.16 \text{ grams} \end{aligned}$$

**The final algorithms used in calculating ounce equivalents of cooked lean meat and discretionary fat in 100 grams of food are:**

(i) Ounce equivalents of cooked lean meat in 100 grams of meat and beans group food =

$$[(100-\% \text{ total fat}) + \{(9.28/90.72) \times (100-\% \text{ total fat})\}] / 28.35$$

(ii) Discretionary fat in 100 grams of meat and beans group food =

$$100 - [(100-\% \text{ total nutrient fat}) + \{(9.28/90.72) \times (100-\% \text{ total fat})\}] \text{ grams}$$

The algorithms can be further simplified as below:

(i) Ounce equivalents of cooked lean meat in 100 grams of cooked food

$$= [0.03888 \times (100 - \% \text{ total fat})]$$

(ii) Discretionary fat in 100 grams of cooked food (grams) =  $100 - [1.1023 \times (100 - \% \text{ total fat})]$

**Example: Cooked sausage**

Cooked sausage has 31.16% total fat

Ounce equivalents of cooked lean meat in 100 grams of cooked sausage

$$= 0.03888 \times (100-31.16)$$

$$= 2.68 \text{ ounce equivalents}$$

Discretionary fat in 100 grams of cooked sausage

$$= 100-[1.1023 \times (100-31.16)]$$

$$= 100- [1.1023 \times 68.84]$$

$$= (100-75.88)$$

$$= 24.12 \text{ grams}$$

Three more examples on the calculation of discretionary fat are included below:

**Example 1: Broiled beef steak**

Broiled beef steak has 15.01% total fat

Ounce equivalents of cooked lean meat in 100 grams of broiled steak  
=  $0.03888 \times (100-15.01)$   
= 3.30 ounce equivalents

Discretionary fat in 100 grams of broiled steak =  $100-[1.1023 \times (100-15.01)]$   
=  $100- [1.1023 \times 84.99]$   
=  $(100-93.68)$   
= 6.32 grams

**Example 2: Eggs**

MyPyramid defines 1 egg as 1 ounce equivalent. The weight of 1 egg is 50 grams. Therefore, 1 ounce equivalent of eggs is defined as 50 grams of eggs (and not 28.35 grams).

The amount of allowable fat per 1 ounce equivalent of eggs is 2.63 grams.

Total fat in 100 grams whole egg = 9.94 grams

Amount of total fat in 50 grams whole egg =  $[50 \times (9.94 / 100)]$  grams  
= 4.97 grams

Amount of discretionary fat in 1 ounce equivalent of eggs =  $(4.97-2.63)$  grams  
= 2.34 grams

**Example 3: Cooked meatless chicken (a meat alternate)**

Cooked meatless chicken has 12.73% total fat

Ounce equivalents of cooked lean meat in 100 grams of cooked meatless chicken  
=  $0.03888 \times (100-12.73)$   
= 3.39 ounce equivalents

Discretionary fat in 100 grams of cooked meatless chicken =  $100-[1.1023 \times (100-12.73)]$   
=  $100- [1.1023 \times 87.27]$   
=  $(100-96.20)$   
= 3.80 grams

## II. Lean meat ounce equivalent and discretionary fat present in a multi-ingredient, cooked food containing raw meat, poultry or fish group foods as ingredients

The algorithms in I above are used to calculate the number of ounce equivalents of lean meat and grams of discretionary fat (solid or oil) for single food items. However, there may be more than one ingredient in the recipe that contains fat. The amount of fat from each ingredient in the final, cooked food is determined by using nutrient retention factors [21,22].

The retention factors adjust for the percent of the nutrient retained after cooking. Retention factors are nutrient specific. In the following calculation, the retention factor for total fat is used. Additionally, changes in moisture and fat, if any, are included in the calculation, because they impact the final cooking yield.

**Step 1.** Calculate total fat present in the MPF ingredient in 100 grams of the cooked multi-ingredient food using the following algorithm.

Total fat from the MPF ingredient in 100 grams of the cooked multi-ingredient food (grams) =

$$\frac{\left[ \text{MPF ingredient weight in grams} \times \left( \frac{\text{fat per 100 grams ingredient}}{100} \right) \times (\% \text{ fat retention}) \right]}{100\% + (\% \text{ moisture change}) + (\% \text{ fat change})}$$

**Step 2.** The MPF ingredient weight and amount of total fat in the MPF ingredient in the prepared food are used to determine the number of ounce equivalents of lean meat and the amount of discretionary fat (solid or oil) in the multi-ingredient foods.

Ounce equivalents of cooked lean meat from MPF ingredient in 100 grams of multi-ingredient food = [0.03888 x (weight of cooked MPF ingredient (grams) - total fat present in the cooked MPF ingredient in 100 grams of multi-ingredient food)]

Grams of discretionary fat from MPF ingredient in 100 grams of multi-ingredient food =

[Weight of cooked MPF ingredient (grams) - (1.1023 x (Weight of MPF ingredient (grams) - total fat present in MPF ingredient in 100 grams of multi-ingredient food)]

### Example: Baked or broiled salmon

Cooking yield 80%, Moisture change in cooking = - 20%, Fat change in cooking = 0%

% fat retained =100%

<u>Ingredients</u>	<u>Raw ingredients in 100 grams recipe</u>	<u>Cooked ingredients in 100 grams recipe</u>	<u>Total fat</u>	<u>Fat in cooked food</u>
	<u>Grams</u>	<u>Grams</u>	<u>%</u>	<u>Grams</u>
Salmon, raw	93.9	92.85	10.84	12.74
Margarine	2.9	3.45	78.77	2.9
Lemon juice, raw	3.1	2.92	0.00	0.0
Table salt	0.6	0.77	0.00	0.0

Fat in cooked salmon=

$$\frac{\left[ \text{Raw salmon weight in grams} \times \left( \frac{\text{fat in 100 grams raw salmon}}{100} \right) \times (\% \text{ fat retention}) \right]}{100\% + (\% \text{ moisture change}) + (\% \text{ fat change})}$$

$$= \frac{[93.9 \times (10.84/100) \times 100]}{[100 + (-20) + 0]} \text{ grams}$$

$$= [(93.9 \times 10.84) / 80] = 12.74 \text{ grams}$$

Lean meat ounce equivalents in 100 grams of baked or broiled salmon = 0.03888 (92.85-12.74)  
= 0.03888 (80.11)  
= 3.11 ounce equivalents

Grams of discretionary fat from 100 grams baked or broiled salmon

$$= 92.85 - [1.1023 \times (92.85 - 12.74)]$$

$$= 92.85 - [1.1023 \times 80.11]$$

$$= (92.85 - 88.31)$$

$$= 4.54 \text{ grams}$$

The baked or broiled salmon has 4.54 grams discretionary fat per 100 grams. The discretionary fat is placed under discretionary oils, because it is from a fish.

The 2.9 grams of fat from margarine that is added during cooking is placed under discretionary solid fat, and the 3.1 grams of lemon juice is placed under fruit group.

### III. Lean meat ounce equivalents and discretionary fat present in meat and fish foods consumed in raw form

Consumption of raw meat and fish has been reported in the surveys. The following method is used when meat, poultry, or fish is consumed in raw form. (Note: If a raw meat, poultry, or fish ingredient is used in a cooked multi-ingredient food, the algorithm II previously described is used.)

The ounce equivalents are calculated on a cooked weight basis. A cooking yield of 75% is used to convert raw meat, poultry, or fish foods to cooked forms. That is, 1.333 ounces of raw lean meat or raw fish yield 1 ounce cooked lean meat or fish.

The MyPyramid allowable fat level of 9.28 grams per 100 grams cooked lean meat is used as the basis for calculating allowable fat in 100 grams of raw food. This amount translates to 6.11 grams of allowable fat per 100 gram of raw meat or fish and is used in the calculations.

The algorithms for raw meat, poultry, or fish foods are:

$$\begin{aligned} \text{Ounces of cooked lean meat in 100 grams of raw food} &= \\ &[(100-\% \text{ total fat}) + \{(6.11/93.89) \times (100-\% \text{ total fat})\} / 28.35] \times 0.75 \end{aligned}$$

$$\begin{aligned} \text{Grams of discretionary fat in 100 grams raw food} &= \\ &100- [(100-\% \text{ total fat}) + \{(6.11 / 93.89)\} \times (100-\% \text{ total fat})] \times 0.75 \end{aligned}$$

By simplifying the above algorithms:

$$\begin{aligned} \text{Cooked lean meat ounce equivalents in 100 grams of raw food} \\ &= 0.0376 \times (100- \% \text{ total fat}) \times 0.75 \end{aligned}$$

$$\text{Grams of discretionary fat in 100 grams raw food} = [100- \{1.0651 \times (100-\% \text{ total fat})\}] \times 0.75$$

**Example:** Raw mackerel is an example where the above algorithm is used.

100 grams raw mackerel contains 9.36 grams of total fat.

$$\begin{aligned} \text{Ounces equivalents of meat in 100 grams of raw mackerel} &= 0.0376 \times (100-9.36) \times 0.75 \\ &= 0.0376 \times 90.64 \times 0.75 \\ &= 2.56 \text{ ounce equivalents} \end{aligned}$$

$$\begin{aligned}\text{Grams of discretionary oil in 100 grams raw mackerel} &= [100 - \{1.0651 \times (100 - 9.36)\}] \times 0.75 \\ &= [100 - (1.0651 \times 90.64)] \times 0.75 \\ &= (100 - 96.541) \times 0.75 \\ &= 3.459 \times 0.75 \\ &= 2.59 \text{ grams}\end{aligned}$$

## Chapter 9: Discretionary Fats: Definitions and Determination of Discretionary Fats

### Discretionary Fats Definition and Subgroups

MyPyramid recommends choosing foods with the lowest level of fat [2]. The fat present in amounts above the lowest available fat level is considered to be discretionary fat [23]. For example, in comparison to skim milk, the fat present in whole milk is considered discretionary. Also, fats or oils used in cooking (fried potatoes, fried chicken or stir fried vegetables) or added to the food at the table (e.g., cream in coffee, butter or margarine on a slice of bread, or butter or sour cream on baked potatoes) are discretionary. In MPFGS, discretionary fat is classified as discretionary oils [19] and discretionary solid fats [20].

- **Discretionary oils:** Oils are fats that are liquid at room temperature. Examples include vegetable oils used in cooking. Foods that are mainly oil include mayonnaise, some salad dressings and soft tub or squeeze margarine. The fat from the following foods is assigned to the discretionary oil subgroup:
  - Oils from a plant source and not described as "hydrogenated" or "shortening"
  - Fish
  - Nuts and seeds
  - Margarine described as "tub" or "liquid" types. If the type (stick/tub/liquid) of the margarine is not included in the description, it is classified as an oil if the recipe ingredient is an oil, or if it contains less than 80% total fat.
  
- **Discretionary solid fats:** Solid fats are fats that are solids at room temperature. Examples include butter, beef tallow, stick margarines, and shortenings. Solid fats primarily come from animal sources or from vegetable oils that have been hydrogenated. A fat is defined for the purpose of MyPyramid as solid fat if it is:
  - from an animal source other than fish
  - a blend of animal and plant sources (e.g., butter and margarine blend)
  - described as "hydrogenated"
  - described as a "shortening"
  - cocoa fat /fat in chocolate (not liquid)
  - derived from coconut or palm oils
  - a margarine described as "stick." If the type of margarine (stick/tub/liquid) is not included in the description, or if the recipe ingredient is classified as solid or if the fat content was 80 percent or greater, it is classified as a solid fat.

### Discretionary Solid Fats and Oils in MPED 2.0

The discretionary solid fats and oils in MPED 2.0 include the fats and oils reported in the surveys as a single food item or as ingredients in foods such as mayonnaise, salad dressings, or fats or oils in baked, fried, and other cooked foods. They also include oils from fish and nuts that are in excess of the allowable fat amounts, which is explained in the meat and beans group [chapter](#).



## Discretionary Fat Definitions Unique to Specific Food Groups

The definitions previously described are used to calculate discretionary fats and oils present in survey foods. The following section describes the methodology used in specific food groups.

1. **Meat and beans and milk groups:** Discretionary fats in MPED 2.0 include fats from the meat, poultry, and fish group that exceed the allowable amount of 2.63 grams of fat per ounce equivalent of cooked meat, poultry, fish, and eggs, and fat from milk that is in excess of 0.20 gram per 1 cup equivalent of milk [2]. The allowable fat in the meat group includes that present in lean cuts of meat trimmed of all fat and poultry without skin, and the allowable fat for the milk group includes that present in skim milk.
2. **Cooked dry beans and peas:** Cooked dry beans and peas to which no fat is added in cooking contain no discretionary solid fat or oil. If solid fat or oil is added during cooking or at the table, it is defined as discretionary fat. Examples of discretionary solid fats added during food preparation or at the table include sour cream, butter, stick margarine, regular or low-fat cream cheese, lard, meat drippings, and cocoa fat.
3. **Grain, fruit, and vegetable groups:** The amounts of total fat present in the basic (natural) forms of grains, fruits, and vegetables (e.g., flour, banana, and peas respectively) are defined as allowable fat. The amounts inherently present in grains, fruits, and vegetables are within the allowance of 2.63 grams per ounce equivalent of meat and beans group. One exception is the fat present in avocado; its amount is higher than the allowable limit, but by definition it is allowable. Added fats such as oil in bread, oil in fried banana, butter in buttered peas, and heavy cream in fruits are defined as discretionary fat.

## Determination of Discretionary Fat in Multi-ingredient Foods

Many multi-ingredient survey foods may contain both oils and solid fats. Multi-ingredient foods are disaggregated into their basic ingredients. The oil/fat present in each ingredient is classified into either oils or solid fats.

- (i) The total fat from each basic ingredient in a multi-ingredient food is calculated by using the recipe retention factor method [21, 22] described in the [chapter](#) on meat and beans group. This procedure adjusts for changes in moisture and fat in the final, cooked form of food.
- (ii) The total discretionary fat (solid or oil) present in multi-ingredient foods are calculated by totaling the discretionary fats and oils present in each ingredient for that food.

The following are the algorithms used to calculate discretionary fat/oil as previously explained:

(i) Total fat provided by a basic ingredient present in 100 grams of prepared multi-ingredient food (grams) =

$$\frac{\left[ \text{Weight of ingredient in 100 grams of recipe} \times \left( \frac{\text{fat in 100 grams ingredient}}{100} \right) \times (\% \text{ fat retention}) \right]}{100\% + (\% \text{ moisture change}) + (\% \text{ fat change})}$$

(ii) Grams of discretionary fat contributed by a basic ingredient present in 100 grams of the multi-ingredient food

= Amount of total fat from basic ingredient present in 100 grams of multi-ingredient food (grams) – [{Amount of fat allowed per equivalent of ingredient (grams) x (Weight of ingredient in 100 grams of multi-ingredient food (grams)) / Weight of one equivalent of ingredient (grams)]

**Example: Calculation of discretionary fat present in egg, sausage, and croissant sandwich, a multi-ingredient food**

**Step 1.** Calculation of total fat and discretionary fat for each ingredient of egg, sausage, and croissant sandwich

The recipe moisture change=0% and fat change = 0% because all ingredients in recipe are in the cooked forms.

**Cooked Egg:**

Weight of cooked egg present as ingredient in 100 grams of croissant sandwich  
= 27.47 grams

Total fat retention factor for cooked egg = 100% (all fat is retained after cooking)

Amount of fat per 100 grams of egg = 9.94 grams

Total fat in the egg present as an ingredient in 100 grams of croissant sandwich  
= [{27.47 x (9.94/100) x 100} / (100 + 0 + 0)] grams  
= 2.73 grams

Allowable fat per 1 ounce equivalent (50 grams) of cooked eggs = 2.63 grams

Amount of total fat in 27.47 grams of cooked egg ingredient in 100 grams of croissant sandwich = 2.73 grams

$$\begin{aligned}
&\text{Discretionary solid fat in cooked egg as an ingredient in 100 grams of croissant sandwich} \\
&= [2.73 - \{27.47 \times (2.63/ 50)\}] \text{ grams} \\
&= (2.73-1.44) \text{ grams} \\
&= 1.29 \text{ grams}
\end{aligned}$$

**Cooked Sausage:**

$$\begin{aligned}
&\text{Weight of cooked sausage present as an ingredient in 100 grams of sandwich} \\
&= 28.17 \text{ grams}
\end{aligned}$$

Total fat retention factor for cooked sausage = 100% (all fat is retained after cooking)

$$\text{Amount of fat per 100 grams of sausage} = 36.25 \text{ grams}$$

$$\begin{aligned}
&\text{Total fat in the sausage present as an ingredient in 100 grams of croissant sandwich} \\
&= [\{28.17 \times (36.25/100) \times 100\} / (100 + 0 + 0)] \text{ grams} \\
&= 10.21 \text{ grams}
\end{aligned}$$

$$\text{Allowable fat per 1 ounce equivalent (28.35 grams) of cooked sausage} = 2.63 \text{ grams}$$

$$\text{Amount of total fat in 28.17 grams of cooked sausage ingredient in 100 grams of croissant sandwich} = 10.21 \text{ grams}$$

$$\begin{aligned}
&\text{Discretionary solid fat in cooked sausage as an ingredient in 100 grams of croissant sandwich} \\
&= [10.21 - \{28.17 \times (2.63/ 28.35)\}] \text{ grams} \\
&= (10.21-2.61) \text{ grams} \\
&= 7.60 \text{ grams}
\end{aligned}$$

**Croissant:**

$$\begin{aligned}
&\text{Weight of the croissant present as an ingredient in 100 grams of croissant sandwich} = \\
&46.36 \text{ grams.}
\end{aligned}$$

Croissant is a multi-ingredient food and is disaggregated. The discretionary fat present in the croissant is calculated from its fat ingredient (butter).

$$\begin{aligned}
&\text{The weight of the butter present as an ingredient in 46.36 grams of croissant} = 10.35 \\
&\text{grams.}
\end{aligned}$$

$$\text{Total fat retention factor for butter} = 100\% \text{ (all fat is retained after cooking)}$$

$$\text{Amount of fat per 100 grams of butter} = 81.11 \text{ grams}$$

$$\begin{aligned} \text{Total fat in the butter present as an ingredient in 100 grams of croissant sandwich} \\ &= [\{10.35 \times (81.11/100) \times 100\} / (100 + 0 + 0)] \text{ grams} \\ &= 8.39 \text{ grams} \end{aligned}$$

Allowable fat per 1 gram of butter = 0 grams

Amount of total fat in 10.35 grams of butter ingredient in 100 grams of croissant sandwich = 8.39 grams

$$\begin{aligned} \text{Discretionary solid fat in croissant as an ingredient in 100 grams of croissant sandwich} \\ &= [8.39 - \{10.35 \times (0 / 1)\}] \text{ grams} \\ &= (8.39 - 0) \text{ grams} \\ &= 8.39 \text{ grams} \end{aligned}$$

**Step 2.** Discretionary fat from each of the ingredients present in 100 grams of egg, sausage, and croissant sandwich are totaled to obtain total discretionary fat in the croissant sandwich.

<b>Ingredient number</b>	<b>Name of the ingredient</b>	<b>Discretionary fat present (grams)</b>
1	Cooked egg	1.29
2	Cooked sausage	7.60
3	Croissant	8.39
	Total	17.28

## Chapter 10: Added Sugars: Definitions and Determination of What Counts as One Equivalent of Added Sugars and Weight Assignment

### Definition of Added Sugars

Added sugars include all sugars used as ingredients in processed and prepared foods such as breads, cakes, soft drinks, jams, chocolates, and ice cream, and sugars eaten separately or added to foods at the table [24]. Examples of added sugars include white sugar, brown sugar, raw sugar, corn syrup, corn syrup solids, high fructose corn syrup, malt syrup, maple syrup, pancake syrup, fructose sweetener, liquid fructose, honey, molasses, anhydrous dextrose, crystal dextrose, and dextrin. Added sugars do not include naturally occurring sugars [24] such as lactose in milk or fructose in fruit, unless the sugar is added to the food item.

In MPED 2.0, sugars from fruit juice concentrates used as recipe ingredients are not counted as added sugars, but counted in the fruit group. Also, sugar substitutes are not counted as added sugars.

### Definition of One Equivalent of Added Sugars

Added sugars are expressed in terms of teaspoon equivalents of table sugar (i.e., granulated, white sugar, USDA food code 91101010). One teaspoon of table sugar weighs 4.2 grams and contains 4.2 grams of total sugars.

Number of teaspoon equivalents of added sugars in 100 grams of table sugar  
=  $100/4.2$  tsp equivalents  
= 23.8 tsp equivalents

### Calculation of Added Sugars in Caloric Sweeteners

The % total sugar content of foods in FNDDS 2.0 is used to estimate teaspoon equivalents of added sugars in caloric sweeteners.

The general algorithm to estimate the number of teaspoon equivalents of added sugar present in caloric sweeteners is:

Number of teaspoons of added sugars in 100 grams of a caloric sweetener =

$$\frac{\text{Amount of total sugars in 100 grams sweetener (grams)}}{4.2 \text{ grams}}$$

**Example:** Estimation of teaspoon equivalents of added sugars in 100 grams of honey and weight of 1 added sugar teaspoon equivalent:

100 grams of honey contains 82.1 grams of total sugars.

A. The number of teaspoon equivalents of added sugars in 100 grams of honey  
= (82.1 / 4.2)  
=19.5 tsp equivalents

B. Weight of 1 teaspoon equivalent of added sugars in honey = (100/19.5) grams  
= 5.1 grams

That is, 5.1 grams of honey contain 4.2 grams of total sugars.

### **Added Sugars in Sugar Substitutes**

The amount of total sugars present in sugar substitutes is zero. Sugar substitutes contain carbohydrates, but the retail form of aspartame is the only sugar substitute included in FNDDS 2.0 that contains starch as a calorie-containing carbohydrate. The carbohydrate in dry aspartame (85.54%) is counted toward the grain group. However, a one-gram packet of dry aspartame contains about 0.05 ounce equivalents of grains from starch [7]. This value is derived by using the 16 gram flour rule for bread, where 11.60 grams of carbohydrate equal 1 grain ounce equivalent of grains. Hence, there are 7.37 grain ounce equivalents in 100 grams dry aspartame (85.54 /11.60=7.37).

### **Calculation of Teaspoon Equivalents of Added Sugars from Sweetener Present in Multi-ingredient Foods**

The number of added sugars equivalents for each sweetener ingredient in a multi-ingredient food is calculated by using the recipe retention factor method [21,22] and then totaled:

Total sugars in the sweetener ingredient in 100 grams of a multi-ingredient food (grams) =

$$\frac{\left[ \text{Weight of sweetener ingredient in 100 grams of food} \times \left( \frac{\text{total sugars in 100 grams ingredient}}{100} \right) \times (\% \text{ retention}) \right]}{100\% + (\% \text{ moisture change}) + (\% \text{ fat change})}$$

The following example describes the steps in the calculation of teaspoons of added sugars equivalents in 100 grams of honey-roasted nuts, a multi-ingredient food.

**Step1.** Calculation of total sugars in honey present in 100 grams honey-roasted nuts:

Amount of honey in 100 grams honey-roasted nuts = 15 grams

Amount of total sugars in 100 grams honey = 82.1 grams

% Retention for sugar=100, Moisture change= 0%, Fat change= 0%, Yield =100%

Total sugars from honey (ingredient) present in 100 grams of honey-roasted nuts

$$\begin{aligned} & [15 \times (82.1 / 100) \times 100] \\ & = \frac{\text{-----}}{(100 + 0 + 0)} \text{ grams} \\ & = 12.3 \text{ grams total sugars} \end{aligned}$$

**Step 2.** Converting grams of total sugars to teaspoon equivalents of added sugars

The amount of total sugars in grams is divided by 4.2, the weight of total sugars in 1 teaspoon of table sugar.

Teaspoon equivalents of added sugars in 15 grams of honey present as an ingredient in 100 grams honey-roasted nuts

$$\begin{aligned} & = [12.3 \text{ grams} / 4.2 \text{ grams}] \text{ tsp equivalents} \\ & = 2.9 \text{ tsp equivalents} \end{aligned}$$

## Chapter 11: Alcoholic Beverages: Definition of What Counts as One Drink

### Definition of One Drink

Alcoholic beverages include beer, wine, and distilled spirits. One drink is defined as 12 fluid ounces of beer, 5 fluid ounces of wine, or 1½ fluid ounces of 80-proof distilled spirits [1], each containing between 13 to 14 grams of alcohol. These definitions of a drink are used as the basis for alcoholic beverages not listed above [25]. Drink sizes are rounded to half-ounce units, where necessary.

### Definitions of a Drink Unique to Specific Alcoholic Beverages

One drink, in MPED 2.0, is defined as equal to:

Beer:	Regular beer	12.0 fluid ounces
	Light beer	12.0 fluid ounces
Wine:	Table wine (dry)	5.0 fluid ounces
	Dessert wine	3.0 fluid ounces
	Rice wine (saki)	3.0 fluid ounces
	Light wine	7.0 fluid ounces
	Cooking wine	14.0 fluid ounces

Wine used in cooking, baked or simmered depends on total cooking time:

Table wines--

1 to 60 minutes.....	14.0 fluid ounces
1 to 1-1/2 hours.....	20.0 fluid ounces
2 to 2-1/2 hours.....	51.0 fluid ounces

Dessert wines--

1 to 30 minutes.....	7.0 fluid ounces
46 to 60 minutes.....	10.0 fluid ounces
1-1/2 to 1-3/4 hours....	14.5 fluid ounces

Wine stirred into hot liquid--

Table wine.....	6.0 fluid ounces
Dessert wine.....	3.5 fluid ounces

Distilled spirits.....1.5 fluid ounces

Cordial or liqueur.....1.5 fluid ounces

Liqueur stirred into hot liquid:

Sweet.....	2.0 fluid ounces
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**Figure 1. Directories, subdirectories and descriptions of files in MPED 2.0 (continued)**

C:\MyPyrEquivDB2\	
--doc\ - doc.pdf	Documentation of MPED 2.0 development
--programs\	<b>Selected sample SAS® programs for analysis using MPED 2.0</b>
-readequiv.sas	Reads "equiv0304.txt" and stores the data in SAS® format ("equiv0304.sas7bdat")
-pyr_iff_d1.sas	Shows how to merge MPED 2.0 "equiv0304.sas7bdat" with What We Eat in America, NHANES 2003-2004, day 1 individual food file and demographic data file and create the number of MyPyramid equivalents for each of the 32 food groups present in each food and beverage consumed by persons ages 2 and over with reliable food records on day 1 ("pyr_iff_d1.sas7bdat")
-pyr_iff_d2.sas	Shows how to merge MPED 2.0 "equiv0304.sas7bdat" with What We Eat in America, NHANES 2003-2004, day 2 individual food file and demographic data file and create the number of MyPyramid equivalents for each of the 32 food groups present in each food and beverage consumed by persons ages 2 and over with reliable food records on day 2 ("pyr_iff_d2.sas7bdat")
-pyr_tot_d1.sas	Reads day 1 NHANES 2003-2003 MyPryamid food intake data from "pyr_iff_d1.sas7bdat" and creates day 1 total MyPryamid equivalents intakes ("pyr_tot_d1.sas7bdat") by persons ages 2 and over with reliable food records on day 1
-pyr_tot_d2.sas	Reads day 2 NHANES 2003-2003 MyPryamid food intake data from "pyr_iff_d2.sas7bdat" and creates day 2 total MyPryamid equivalents intakes ("pyr_tot_d2.sas7bdat") by persons ages 2 and over with reliable food records on day 2
-pyrrecom.sas	Shows how to compare the actual intake of MyPyramid food groups to the Dietary Guidelines for Americans, 2005 recommendations
-pyrrpt.sas	Shows how to convert legumes as vegetable cup equivalents to ounce equivalents of meat and estimation of unweighted mean intakes of major MyPyramid food groups

## MyPyramid Equivalents per 100 Grams of Food: ASCII Text File Format and Characteristics

This ASCII file includes the number of MyPyramid equivalents of the 32 food groups present per 100 grams of each survey food included in FNDDES 2.0

File name:	“equiv0304.txt”
Size:	2.01 megabytes
Format:	ASCII text fixed
Record:	35 fields, 271 characters
Number food codes:	7,751
Codes with zero equivalents:	90

Food codes with zero (0) equivalents have been flagged for easy identification (see the EQUIVFLAG variable in the data file format below). These include foods providing few or no calories in the quantities consumed, such as coffee and tea without sugar or creamer; broth, bouillon and consomme; flavoring (spices, herbs, vanilla, and other seasonings); sauces such as mustard, soy, and Worcestershire; fluid replacements; plain gelatin; yeast; and water. Infant formulas also show zero (0) equivalents for all groups since these highly formulated products do not reflect the traditional definition for dairy or soy milk.

[Appendix A](#) includes the list of variables and their position, width, data type, and full description of the variables in the “equiv0304.txt” file.

## MPED 2.0 Food Code and Modification Description File

[Appendix B](#) describes the variables in the file “fddes0304.txt.” It identifies whether a variable is numeric or alphanumeric, its length, and start and end columns. The file also describes the 8-digit food codes and food modification codes.

## MPED 2.0 Food Group Intake SAS® Data File Characteristics

The size, format, number of records, number of variables, and sample size for days 1 and 2 MyPyramid food group intake data files are as below:

### Day 1 Intakes:

File name:	“pyr_iff_d1.sas7bdat”	“pyr_tot_d1.sas7bdat”
Size:	26.7 megabytes	2.6 megabytes
Format:	SAS® Version 9.1 data set	SAS® Version 9.1 data set
Records:	120,869	8,273
Variables:	74 variables	68 variables
Sample: (ages 2 and over)	8,273	8,273

Day 2 Intakes:

File name:	“pyr_iff_d2.sas7bdat”	“pyr_tot_d2.sas7bdat”
Size:	24.4 megabytes	2.4 megabytes
Format:	SAS® Version 9.1 data set	SAS® Version 9.1 data set
Records:	111,661	7,650
Variables:	74 variables	68 variables
Sample: (ages 2 and over)	7,650	7,650

These data files include records for all persons, ages 2 and over, with reliable intake records. There are zero (0) records for breast fed children and 3 records for fasters (1 on day 1 and 2 on day 2).

See [Appendix C](#) for details on the list of variables, data type, and variables in the above four SAS® data sets. Control counts on the number of records and control statistics (N, mean, minimum, maximum, and sums) for the data in these two files are in [Appendix D](#). [Appendix E](#) includes a set of sample SAS® program files for the data users. Survey design effects and other analytic guidance available at the NHANES 2003-2004 website [3,4] should be followed.

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## Appendix A: MyPyramid Equivalents Per 100 grams of Food: ASCII Text File Format and Characteristics

Listed below are the Variables (name and description), Position (location), Width (W), and Data type (T) for each record in the MyPyramid equivalents food group data file (“equiv0304.txt”). All data are numeric (N) and may include three decimal places (N3), where necessary.

Variable	Position	W	T	Description
FOODCODE	1- 8	8	N	<p>Food code</p> <p>Applies to all records</p> <p>11000000 - 99999999 =Food code numbers</p> <p>Food code descriptions are found in dated description files (e.g., fddes0304.txt).</p>
EQUIVFLAG	9	1	N	<p>Flag to indicate food codes with or without equivalents data</p> <p>Applies to all records</p> <p>0 = Food codes with few or no calories and zero (0) equivalents for all MyPyramid groups.</p> <p>1 = Food codes where the number of equivalents for at least one MyPyramid group is greater than zero (0).</p> <p>2 = Food codes for infant formula for which equivalents values have not been assigned and, hence, appear as zero (0) equivalents.</p>
MODCODE	10- 15	6	N	<p>Modification codes: Indicate adjustments to predefined recipe ingredients such as type of fat or milk used that reflect more closely the food as described by survey respondents.</p> <p>Applies to all records</p> <p>0 = No modification to recipe ingredients</p> <p>100000-999999 = Indicates a specific food modification to the recipe ingredient</p>



G_TOTAL	16-23	8	N3	<p>Total number of ounce equivalents from the grains group</p> <p>Applies to all records</p> <p>0.000 - 999.999 Ounce equivalents</p>
G_WHL	24-31	8	N3	<p>Number of ounce equivalents of whole grains from the grains group</p> <p>Applies to all records</p> <p>0.000 - 999.999 Ounce equivalents</p>
G_NWHL	32-39	8	N3	<p>Number of ounce equivalents of non-whole grains (refined grains) from the grains group</p> <p>Applies to all records</p> <p>0.000- 999.999 Ounce equivalents</p>
V_TOTAL	40-47	8	N3	<p>Total number of cup equivalents from the vegetables group. Includes cup equivalents from: V_DRKGR, V_ORANGE, V_POTATO, V_STARCY, V_TOMATO, and V_OTHER</p> <p>NOTE: V_TOTAL does not include cup equivalents from dry beans and peas (variable LEGUMES). Dry beans and peas can count toward equivalents from either the vegetables or meat and beans group (but not double counted in both) according to USDA's MyPyramid Food Guidance System</p> <p>Applies to all records</p> <p>0.000 - 999.999 Cup equivalents</p>

V_DRKGR	48-55	8	N3	Number of cup equivalents of dark-green vegetables  Applies to all records  0.000 - 999.999 Cup equivalents
V_ORANGE	56-63	8	N3	Number of cup equivalents of orange vegetables  Applies to all records  0.000 - 999.999 Cup equivalents
V_POTATO	64-71	8	N3	Number of cup equivalents of white potatoes  Applies to all records  0.000 - 999.999 Cup equivalents
V_STARCHY	72-79	8	N3	Number of cup equivalents of other starchy vegetables, excluding dry beans and peas (LEGUMES) and white potatoes (V_POTATO)  Applies to all records  0.000 - 999.999 Cup equivalents
V_TOMATO	80-87	8	N3	Number of cup equivalents of tomatoes  Applies to all records  0.000 - 999.999 Cup equivalents
V_OTHER	88-95	8	N3	Number of cup equivalents of other vegetables, not dark-green (V_DRKGR), orange (V_ORANGE), white potatoes (V_POTATO), other starchy vegetables (V_STARCHY), tomatoes (V_TOMATO), or dry beans or peas (LEGUMES)  Applies to all records  0.000 - 999.999 Cup equivalents

F_TOTAL	96-103	8	N3	Total number of cup equivalents from the fruits group  Applies to all records  0.000 - 999.999 Cup equivalents
F_CITMLB	104-111	8	N3	Number of cup equivalents of citrus fruits, melons, berries, and their juices  Applies to all records  0.000 - 999.999 Cup equivalents
F_OTHER	112-119	8	N3	Number of cup equivalents of fruits and juices, which are not citrus fruits, melons, berries, or their juices  Applies to all records  0.000 - 999.999 Cup equivalents
D_TOTAL	120-127	8	N3	Total number of cup equivalents from the milk group  Applies to all records  0.000 - 999.999 Cup equivalents
D_MILK	128-135	8	N3	Number of cup equivalents of milk  Applies to all records  0.000 - 999.999 Cup equivalents
D_YOGURT	136-143	8	N3	Number of cup equivalents of yogurt  Applies to all records  0.000 - 999.999 Cup equivalents
D_CHEESE	144-151	8	N3	Number of cup equivalents of cheese Includes natural and processed cheese  Applies to all records

				0.000 - 999.999 Cup equivalents
M_MPF	152-159	8	N3	Ounces of cooked lean meat from beef, pork, veal, lamb, and game (M_MEAT); organ meats (M_ORGAN); frankfurters, sausages, and luncheon meat (M_FRANK); poultry (M_POULT); and fish and shellfish (M_FISH_HI and M_FISH_LO)  Applies to all records  0.000 - 999.999 Ounce equivalents
M_MEAT	160-167	8	N3	Ounces of cooked lean meat from beef, pork, veal, lamb, and game, excludes lean meat organ meats (M_ORGAN) and frankfurters, sausages, and luncheon meat (M_FRANK)  Applies to all records  0.000 - 999.999 Ounce equivalents
M_ORGAN	168-175	8	N3	Ounces of cooked lean meat from all types of organ meats, including that from beef, pork, veal, lamb, game, poultry, and fish  Applies to all records  0.000 - 999.999 Ounce equivalents
M_FRANK	176-183	8	N3	Ounces of cooked lean meat from frankfurters, sausages, and luncheon meats  Applies to all records  0.000 - 999.999 Ounce equivalents
M_POULT	184-191	8	N3	Ounces of cooked lean meat from chicken, turkey, and other poultry. Excludes poultry organ meats and poultry present in frankfurters, sausages, and luncheon meats  Applies to all records 0.000 - 999.999 Ounce equivalents

M_FISH_HI	192-199	8	N3	<p>Ounces of cooked lean meat from fish, shellfish, and other seafood that are high in the n-3 fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA)</p> <p>Applies to all records</p> <p>0.000 - 999.999 Ounce equivalents</p> <p>Fish with <math>\geq 0.5</math> grams of the n-3 fatty acids EPA and DHA per 85 grams (3 ounces) are classified as M_FISH_HI.</p>
M_FISH_LO	200-207	8	N3	<p>Ounces of cooked lean meat from fish, shellfish, and other seafood that are low in the n-3 fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA)</p> <p>Applies to all records</p> <p>0.000 - 999.999 Ounce equivalents</p> <p>Fish with <math>&lt; 0.5</math> grams of the n-3 fatty acids EPA and DHA per 85 grams (3 ounces) are classified as M_FISH_LO</p>
M_EGG	208-215	8	N3	<p>Number of ounce equivalents, where one egg is one ounce equivalent of cooked lean meat. Includes eggs and egg substitutes</p> <p>Applies to all records</p> <p>0.000 - 999.999 Ounce equivalents</p>
M_SOY	216-223	8	N3	<p>Number of ounce equivalents from soybean products where one cup of soy milk, 1/4 cup of cubed tofu, 1/4 cup of soy nuts, and one ounce of meat analog are one ounce equivalent of cooked lean meat each</p> <p>Applies to all records</p> <p>0.000 - 999.999 Ounce equivalents</p>

M_NUTSD	224-231	8	N3	<p>Number of ounce equivalents of cooked lean meat from nuts and seeds, where ½ ounce of nuts and seeds is one ounce equivalent of cooked lean meat.</p> <p>Applies to all records</p> <p>0.000 - 999.999 Ounce equivalents</p>
LEGUMES	232-239	8	N3	<p>Number of cup equivalents of cooked dry beans and peas.</p> <p>[In MPED 2.0, legumes are placed under vegetables and expressed in terms of cup equivalents. They can also be counted meat alternate. See <a href="#">Chapter 1</a> for guidelines and conversion factors for analyzing legumes as meat alternate.]</p> <p>Applies to all records</p> <p>0.000 - 999.999 Cup equivalents</p>
DISCFAT_OIL	240-247	8	N3	<p>Grams of discretionary oil from the foods in each of the five major MyPyramid food groups and oils.</p> <p>Applies to all records.</p> <p>0.000 - 999.999 = Grams</p>
DISCFAT_SOL	248-255	8	N3	<p>Grams of discretionary solid fat from the foods in each of the five major MyPyramid food groups.</p> <p>Applies to all records.</p> <p>0.000 - 999.999 = Grams</p>
ADD_SUG	256-263	8	N3	<p>Teaspoon equivalents of added sugars, where one teaspoon is the quantity of sweetener that contains the same amount of total nutrient sugar as one teaspoon of table sugar. [Added sugars are defined as white sugar, brown sugar, raw sugar, corn syrup, corn syrup solids, high fructose corn</p>

syrup, malt syrup, maple syrup, pancake syrup, fructose sweetener, liquid fructose, honey, molasses, dextrose, and dextrin that are eaten separately or as ingredients from processed or prepared foods.]

Applies to all records

0.000 - 999.999 Teaspoon equivalents

A\_BEV            264-271        8            N3

Total drinks of alcohol, where one drink is defined as 12 fluid ounces of beer, five fluid ounces of wine, and 1-1/2 fluid ounces of 80-proof distilled spirits

Applies to all records

0.000 - 999.999 Number of drinks

## Appendix B: Food Description Data File Format

Listed below are the variable names, type (N=numeric, A=alphanumeric), length (number of columns), and the start and end column numbers (Start Col; End Col.) for each record in the food description file. The file “fddes0304.txt” is an ASCII text file that contains the food descriptions in FNDDS 2.0.

Name	Type	Length	Start Col.	End Col.
Survey Food Code	N	8	1	8
Food Modification Number	N	6	10	15
Food Description	A	240	17	256

**Survey Food Code** -- a unique 8-digit number assigned to a USDA survey food code

**Food Modification Number** -- a number greater than zero (0) identifies a specific recipe modification. Each modification number is linked to a specific survey food code. Food recipe modifications indicate adjustments to predefined recipe ingredients in the FNDDS [7] as described by survey respondents. Most modifications involve the type of fat, type of milk, or the amount of water or milk used to dilute concentrated or dry foods.

**Food Description** -- Each description is the primary (usually generic) complete description identified by a unique 8-digit food code. If the food modification number is greater than zero (0), the description also details how the modified food differs from the original survey food code recipe.

About 7,000 “Main Food Descriptions” from FNDDS 2.0 appear in the “fddes0304.txt” file. The file includes complete descriptions for each food code and often includes preparation methods such as boiled, baked, and fried and the original form of the food such as prepared from frozen form. The descriptions are generic in nature.



## Appendix C: Days 1 & 2 MyPyramid Equivalents Intake SAS® Data File Format

The name, type, and label for each variable in the NHANES 2003-2004 MyPyramid equivalents intake data files for individual foods (“pyr\_iff\*.sas7bdat”) and total foods (“pyr\_tot\*.sas7bdat”) for days 1 & 2 are listed below. For details on values for variables 1-42 in pyr\_iff\*.sas7bdat and variables 1-36 in pyr\_tot\*.sas7bdat, see the NHANES website:  
[http://www.cdc.gov/nchs/about/major/nhanes/nhanes2003-2004/nhanes03\\_04.htm](http://www.cdc.gov/nchs/about/major/nhanes/nhanes2003-2004/nhanes03_04.htm)).

### C.1: Variable List (num) for “pyr\_iff\_d1.sas7bdat” and for “pyr\_iff\_d2.sas7bdat”

Var			
<u>Num</u>	<u>Variable</u>	<u>Type</u>	<u>Label</u>
1	SEQN	N	Respondent Sequence Number
2	DR1ILINE	N	Food/individual Component Number
3	SDDSRVYR	N	Data Release Number
4	RIDSTATR	N	Interview/Examination Status
5	RIAGENDR	N	Gender - Adjudicated
6	RIDAGEYR	N	Age at Screening Adjudicated - Recode
7	RIDAGEMN	N	Age in Months - Recode
8	RIDAGEEX	N	Exam Age in Months - Recode
9	RIDRETH1	N	Race/Ethnicity - Recode
10	RIDRETH2	N	Linked NH3 Race/Ethnicity - Recode
11	DMDBORN	N	Country of Birth - Recode
12	DMDEDUC	N	Education - Recode
13	DMQMILIT	N	Served in the US Armed Forces
14	INDHHINC	N	Annual Household Income
15	INDFMINC	N	Annual CPS Family Income
16	INDFMPIR	N	CPS Family PIR
17	DMDMARTL	N	Marital Status
18	RIDEXPRG	N	Pregnancy Status at Exam - Recode
19	DRABF	N	Breast-fed Infant (either day)
20	WTINT2YR	N	Full Sample 2 Year Interview Weight
21	WTMEC2YR	N	Full Sample 2 Year MEC Exam Weight
22	WTDR2D	N	Dietary Two-Day Sample Weight
23	WTDRD1	N	Dietary Day One Sample Weight
24	SDMVPSU	N	Masked Variance Pseudo-PSU
25	SDMVSTRA	N	Masked Variance Pseudo-Stratum
26	AIALANG	N	Language of ACASI Interview
27	FIINTRP	N	Interpreter Used in Family Interview?
28	FIALANG	N	Language of Family Interview
29	FIAPROXY	N	Proxy Used in Family Interview?
30	MIINTRP	N	Interpreter Used in MEC Interview?
31	MIALANG	N	Language of MEC Interview
32	MIAPROXY	N	Proxy Used in MEC Interview?
33	SIINTRP	N	Interpreter Used in SP Interview?

**C. 1: Variable List (num) for “pyr\_iff\_d1.sas7bdat” and for “pyr\_iff\_d2.sas7bdat”: --**  
*(continued)*

<u>Var</u>	<u>Num</u>	<u>Variable</u>	<u>Type</u>	<u>Label</u>
	34	SIALANG	N	Language of SP Interview
	35	SIAPROXY	N	Proxy Used in SP Interview?
	36	DR1DRSTZ	N	Dietary Recall Status
	37	DR1DAY	N	Intake Day of Week
	38	DRDINT	N	Number of Days of Intake
	39	DR1IFDCD	N	USDA Food Code
	40	DR1MC	N	Modification Code
	41	DR1IGRMS	N	Grams of Food Consumed
	42	DAYCODE	N	Day of Intake (day1 or day 2)
	43	G_TOTAL	N	Number of Ounce Equivalents of Total Grains
	44	G_WHL	N	Number of Ounce Equivalents of Whole Grains
	45	G_NWHL	N	Number of Ounce Equivalents of Non-whole Grains
	46	V_TOTAL	N	Number of Cup Equivalents of Total Vegetable, Excludes Legumes
	47	V_DRKGR	N	Number of Cup Equivalents of Dark-green Vegetables
	48	V_ORANGE	N	Number of Cup Equivalents of Orange Vegetables
	49	V_POTATO	N	Number of Cup Equivalents of White Potatoes
	50	V_STARCY	N	Number of Cup Equivalents of Other Starchy Vegetables
	51	V_TOMATO	N	Number of Cup Equivalents of Tomatoes
	52	V_OTHER	N	Number of Cup Equivalents of Other Vegetables
	53	F_TOTAL	N	Number of Cup Equivalents of Total Fruits
	54	F_CITMLB	N	Number of Cup Equivalents of Citrus, Melons, and Berries
	55	F_OTHER	N	Number of Cup Equivalents of Other Fruits
	56	D_TOTAL	N	Number of Cup Equivalents of Total Milk (Milk, Yogurt, and Cheese)
	57	D_MILK	N	Number of Cup Equivalents of Milk
	58	D_YOGURT	N	Number of Cup Equivalents of Yogurt
	59	D_CHEESE	N	Number of Cup Equivalents of Cheese
	60	M_MPF	N	Number of Ounce Equivalents of Cooked Lean Meat from Meat, Poultry, and Fish
	61	M_MEAT	N	Number of Ounce Equivalents of Cooked Lean Meat from Beef, Pork, Veal, Lamb, and Game
	62	M_ORGAN	N	Number of Ounce Equivalents of Cooked Lean Meat from Organ Meats
	63	M_FRANK	N	Number of Ounce Equivalents of Cooked Lean Meat from Franks, Sausages, and Luncheon Meats
	64	M_POULT	N	Number of Ounce Equivalents of Cooked Lean Meat from Chicken, Turkey, and Other Poultry

65	M_FISH_HI	N	Number of Ounce Equivalents of Cooked Lean Meat from Fish and Other Seafood High in n-3 Fatty Acids
66	M_FISH_LO	N	Number of Ounce Equivalents of Cooked Lean Meat from Fish and Other Seafood Low in n-3 Fatty Acids
67	M_EGG	N	Number of Ounce Equivalents of Lean Meat from Eggs
68	M_SOY	N	Number of Ounce Equivalents of Lean Meat from Soy Products
69	M_NUTSD	N	Number of Ounce Equivalents of Lean Meat from Nuts and Seeds
70	LEGUMES	N	Number of Cup Equivalents of Cooked Dry Beans and Peas
71	DISCFAT_OIL	N	Grams of Discretionary Oil
72	DISCFAT_SOL	N	Grams of Discretionary Solid Fat
73	ADD_SUG	N	Number of Teaspoon Equivalents of Added Sugars
74	A_BEV	N	Total Drinks of Alcohol

**C.2: Variable List (num) for “pyr\_tot\_d1.sas7bdat” and “pyr\_tot\_d2.sas7bdat”**

<u>Var</u>	<u>Num</u>	<u>Variable</u>	<u>Type</u>	<u>Label</u>
	1	SEQN	N	Respondent Sequence Number
	2	SDDSRVYR	N	Data Release Number
	3	RIDSTATR	N	Interview/Examination Status
	4	RIAGENDR	N	Gender - Adjudicated
	5	RIDAGEYR	N	Age at Screening Adjudicated - Recode
	6	RIDAGEMN	N	Age in Months - Recode
	7	RIDAGEEX	N	Exam Age in Months - Recode
	8	RIDRETH1	N	Race/Ethnicity - Recode
	9	RIDRETH2	N	Linked NH3 Race/Ethnicity - Recode
	10	DMDBORN	N	Country of Birth - Recode
	11	DMDEDUC	N	Education - Recode
	12	DMQMILIT	N	Served in the US Armed Forces
	13	INDHHINC	N	Annual Household Income
	14	INDFMINC	N	Annual CPS Family Income
	15	INDFMPIR	N	CPS Family PIR
	16	DMDMARTL	N	Marital Status
	17	RIDEXPRG	N	Pregnancy Status at Exam - Recode
	18	DRABF	N	Breast-fed Infant (either day)
	19	WTINT2YR	N	Full Sample 2 Year Interview Weight
	20	WTMEC2YR	N	Full Sample 2 Year MEC Exam Weight
	21	WTDR2D	N	Dietary Two-Day Sample Weight
	22	WTDRD1	N	Dietary Day One Sample Weight
	23	SDMVPSU	N	Masked Variance Pseudo-PSU
	24	SDMVSTRA	N	Masked Variance Pseudo-Stratum
	25	AIALANG	N	Language of ACASI Interview
	26	FIAINTRP	N	Interpreter Used in Family Interview?
	27	FIALANG	N	Language of Family Interview
	28	FIAPROXY	N	Proxy Used in Family Interview?
	29	MIAINTRP	N	Interpreter Used in MEC Interview?
	30	MIALANG	N	Language of MEC Interview
	31	MIAPROXY	N	Proxy Used in MEC Interview?
	32	SIAINTRP	N	Interpreter Used in SP Interview?
	33	SIALANG	N	Language of SP Interview
	34	SIAPROXY	N	Proxy Used in SP Interview?
	35	DR1DRSTZ	N	Dietary Recall Status
	36	DAYCODE	N	Day of Intake (day 1 or day 2)
	37	G_TOTAL	N	Number of Ounce Equivalents of Total Grains
	38	G_WHL	N	Number of Ounce Equivalents of Whole Grains
	39	G_NWHL	N	Number of Ounce Equivalents of Non-whole Grains

**C.2: Variable List (num) for “pyr\_tot\_d1.sas7bdat” and for “pyr\_tot\_d2.sas7bdat”: --**  
*(continued)*

<u>Var</u> <u>Num</u>	<u>Variable</u>	<u>Type</u>	<u>Label</u>
40	V_TOTAL	N	Number of Cup Equivalents of Total Vegetable, Excludes Legumes
41	V_DRKGR	N	Number of Cup Equivalents of Dark-green Vegetables
42	V_ORANGE	N	Number of Cup Equivalents of Orange Vegetables
43	V_POTATO	N	Number of Cup Equivalents of White Potatoes
44	V_STARCY	N	Number of Cup Equivalents of Other Starchy Vegetables
45	V_TOMATO	N	Number of Cup Equivalents of Tomatoes
46	V_OTHER	N	Number of Cup Equivalents of Other Vegetables
47	F_TOTAL	N	Number of Cup Equivalents of Total Fruits
48	F_CITMLB	N	Number of Cup Equivalents of Citrus, Melons, and Berries
49	F_OTHER	N	Number of Cup Equivalents of Other Fruits
50	D_TOTAL	N	Number of Cup Equivalents of Total Milk (Milk, Yogurt, and Cheese)
51	D_MILK	N	Number of Cup Equivalents of Milk
52	D_YOGURT	N	Number of Cup Equivalents of Yogurt
53	D_CHEESE	N	Number of Cup Equivalents of Cheese
54	M_MPF	N	Number of Ounce Equivalents of Cooked Lean Meat from Meat, Poultry, and Fish
55	M_MEAT	N	Number of Ounce Equivalents of Cooked Lean Meat from Beef, Pork, Veal, Lamb, and Game
56	M_ORGAN	N	Number of Ounce Equivalents of Cooked Lean Meat from Organ Meats
57	M_FRANK	N	Number of Ounce Equivalents of Cooked Lean Meat from Franks, Sausages, and Luncheon Meats
58	M_POULT	N	Number of Ounce Equivalents of Cooked Lean Meat from Chicken, Turkey, and Other Poultry
59	M_FISH_HI	N	Number of Ounce Equivalents of Cooked Lean Meat from Fish and Other Seafood High in n-3 Fatty Acids
60	M_FISH_LO	N	Number of Ounce Equivalents of Cooked Lean Meat from Fish and Other Seafood Low in n-3 Fatty Acids
61	M_EGG	N	Number of Ounce Equivalents of Lean Meat from Eggs
62	M_SOY	N	Number of Ounce Equivalents of Lean Meat from Soy Products
63	M_NUTSD	N	Number of Ounce Equivalents of Lean Meat from Nuts and Seeds
64	LEGUMES	N	Number of Cup Equivalents of Cooked Dry Beans and Peas
65	DISCFAT_OIL	N	Grams of Discretionary Oil

66	DISCFAT_SOL	N	Grams of Discretionary Solid Fat
67	ADD_SUG	N	Teaspoon Equivalents of Added Sugars
68	A_BEV	N	Total Drinks of Alcohol

## **Appendix D: Control Counts for MyPyramid Equivalents ASCII and SAS® Data Files**

This appendix provides control counts on the number of records (n) and control statistics (mean, minimum, maximum, and sum) for the MyPyramid Equivalents data files in MyPyrEquivDB2. The numbers in these tables are unweighted and are intended to be used as benchmarks when using the MyPyramid Equivalents food and intake data files.

- D.1: Control counts for the MyPyramid equivalents food file “equiv0304.txt”
- D.2: Control counts for the MyPyramid equivalents intake file “pyr\_iff\_d1.sas7bdat”
- D.3: Control counts for the MyPyramid equivalents intake file “pyr\_iff\_d2.sas7bdat”
- D.4: Control counts for the MyPyramid equivalents intake file “pyr\_tot\_d1.sas7bdat”
- D.5: Control counts for the MyPyramid equivalents intake file “pyr\_tot\_d2.sas7bdat”

### D.1: Control Counts for the MyPyramid Equivalents Food File “equiv0304.txt”

File name: “equiv0304.txt”  
 Data: Number of MyPyramid equivalents for 32 MyPyramid food groups per food code  
 Survey: What We Eat In America, NHANES 2003-2004  
 Format: ASCII fixed  
 Record length: 271 characters  
 Total byte count: 2,116,023 bytes  
 Total records: 7,751 records

Variable	N	Mean	Minimum	Maximum	Sum
DRDIFDCD	7751	51425933.52	11000000.00	94210100.00	398602410713
EQUIVFLAG	7751	1.00	0.00	2.00	7755.00
DRDIMC	7751	19565.79	0.00	206571.00	151654457.00
G_TOTAL	7751	0.62	0.00	8.28	4786.09
G_WHL	7751	0.10	0.00	6.25	809.59
G_NWHL	7751	0.51	0.00	8.28	3974.48
V_TOTAL	7751	0.17	0.00	13.33	1292.46
V_DRKGR	7751	0.02	0.00	3.13	159.94
V_ORANGE	7751	0.01	0.00	2.70	107.83
V_POTATO	7751	0.02	0.00	2.99	153.91
V_STARCY	7751	0.02	0.00	1.76	175.54
V_TOMATO	7751	0.01	0.00	3.70	115.25
V_OTHER	7751	0.07	0.00	13.33	579.99
F_TOTAL	7751	0.05	0.00	2.78	350.86
F_CITMLB	7751	0.01	0.00	1.67	94.22
F_OTHER	7751	0.03	0.00	2.78	256.62
D_TOTAL	7751	0.07	0.00	4.41	560.66
D_MILK	7751	0.03	0.00	4.41	243.10
D_YOGURT	7751	0.00	0.00	0.42	8.58
D_CHEESE	7751	0.04	0.00	3.53	295.28
M_MPF	7751	0.56	0.00	3.53	4325.48
M_MEAT	7751	0.19	0.00	3.53	1462.01
M_ORGAN	7751	0.01	0.00	3.53	67.99
M_FRANK	7751	0.05	0.00	3.53	406.05
M_POULT	7751	0.14	0.00	3.53	1099.68
M_FISH_HI	7751	0.04	0.00	3.53	336.48
M_FISH_LO	7751	0.12	0.00	3.53	953.28
M_EGG	7751	0.04	0.00	2.66	321.52
M_SOY	7751	0.02	0.00	4.48	118.91
M_NUTSD	7751	0.09	0.00	7.06	734.06
LEGUMES	7751	0.01	0.00	1.33	69.18
DISCFAT_OIL	7751	1.93	0.00	100.00	14986.08
DISCFAT_SOL	7751	4.40	0.00	100.00	34085.83



ADD_SUG	7751	1.28	0.00	23.81	9892.30
A_BEV	7751	0.01	0.00	2.40	83.26

Table notes:

The numbers in these tables are unweighted and are intended to be used as a reference only.

## D.2: Control Counts for the MyPyramid Equivalents Intake File “pyr\_iff\_d1.sas7bdat”

File name: “pyr\_iff\_d1.sas7bdat”  
 Pyramid Data: Number of MyPyramid food-group equivalents for each food reported eaten per person for day 1  
 Survey: NHANES 2003-2004  
 Format: SAS® Version 9.1 data file  
 Total byte count: 28,050,432 bytes  
 Total records: 120,869 records

Variable	N	Mean	Minimum	Maximum	Sum
SEQN	120869	26067.92	21005.00	31125.00	3150803072.00
DR1ILINE	120868	8.95	1.00	42.00	1081926.00
SDDSRVYR	120869	3.00	3.00	3.00	362607.00
RIDSTATR	120869	2.00	2.00	2.00	241738.00
RIAGENDR	120869	1.52	1.00	2.00	183308.00
RIDAGEYR	120869	34.06	2.00	85.00	4116791.00
RIDAGEMN	117894	398.73	24.00	1019.00	47008361.00
RIDAGEEX	117523	399.59	24.00	1021.00	46961404.00
RIDRETH1	120869	2.80	1.00	5.00	338728.00
RIDRETH2	120869	1.95	1.00	5.00	235256.00
DMDBORN	120869	1.22	1.00	3.00	147030.00
DMDEDUC	109029	1.84	1.00	9.00	200384.00
DMQMILIT	79389	1.86	1.00	2.00	147735.00
INDHHINC	114380	7.27	1.00	99.00	831923.00
INDFMINC	119447	7.61	1.00	99.00	908457.00
INDFMPIR	114818	2.36	0.00	5.00	271003.84
DMDMARTL	89148	2.87	1.00	6.00	255803.00
RIDEXPRG	40075	1.94	1.00	3.00	77671.00
DRABF	120868	2.00	2.00	2.00	241736.00
WTINT2YR	120869	31115.58	1637.65	135582.47	3760908846.30
WTMEC2YR	120869	32848.46	1673.55	145843.56	3970360779.10
WTDR2D	112159	37494.95	722.89	374736.27	4205395768.60
WTDRD1	120868	34727.03	916.83	293828.97	4197386592.00
SDMVPSU	120869	1.50	1.00	2.00	180845.00
SDMVSTRA	120869	35.77	29.00	43.00	4322944.00
AIALANG	64575	1.08	1.00	2.00	69857.00
FIAINTRP	119756	1.99	1.00	2.00	238180.00
FIALANG	119756	1.08	1.00	2.00	128765.00
FIAPROXY	119756	2.00	1.00	2.00	239189.00
MIAINTRP	91589	2.00	1.00	2.00	182806.00

### Table notes:

The numbers in these tables are unweighted and are intended to be used as a reference only.

**D.2: Control Counts for the MyPyramid Equivalents Intake File “pyr\_iff\_d1.sas7bdat” (continued)**

Variable	N	Mean	Minimum	Maximum	Sum
MIALANG	91589	1.08	1.00	2.00	98735.00
MIAPROXY	91589	2.00	1.00	2.00	182924.00
SIAINTRP	120869	1.99	1.00	2.00	240221.00
SIALANG	120869	1.11	1.00	2.00	133792.00
SIAPROXY	120869	1.68	1.00	2.00	202874.00
DR1DRSTZ	120869	1.00	1.00	1.00	120869.00
DR1DAY	120868	4.58	1.00	7.00	554049.00
DRDINT	120868	1.93	1.00	2.00	233027.00
DR1IFDCD	120868	58054361.89	11100000.00	94210100.00	7.0169146E12
DR1MC	120868	5070.72	0.00	206571.00	612887355.00
DR1IGRMS	120868	147.44	0.03	8640.00	17821075.66
DAYCODE	120869	1.00	1.00	1.00	120869.00
G_TOTAL	120869	0.47	0.00	35.95	57306.65
G_WHL	120869	0.04	0.00	14.01	4473.42
G_NWHL	120869	0.44	0.00	35.95	52831.30
V_TOTAL	120869	0.09	0.00	9.75	11103.19
V_DRKGR	120869	0.00	0.00	3.39	530.14
V_ORANGE	120869	0.00	0.00	2.38	438.77
V_POTATO	120869	0.03	0.00	9.75	3135.01
V_STARCY	120869	0.00	0.00	5.07	555.02
V_TOMATO	120869	0.02	0.00	5.33	2865.08
V_OTHER	120869	0.03	0.00	4.75	3578.68
F_TOTAL	120869	0.07	0.00	10.93	8987.68
F_CITMLB	120869	0.03	0.00	10.50	3821.81
F_OTHER	120869	0.04	0.00	10.93	5165.42
D_TOTAL	120869	0.12	0.00	13.99	14195.15
D_MILK	120869	0.07	0.00	13.99	8522.93
D_YOGURT	120869	0.00	0.00	2.08	205.46
D_CHEESE	120869	0.04	0.00	7.24	5414.01
M_MPF	120869	0.29	0.00	35.98	35382.52
M_MEAT	120869	0.12	0.00	35.98	14234.12
M_ORGAN	120869	0.00	0.00	12.86	217.17
M_FRANK	120869	0.05	0.00	16.46	6576.34
M_POULT	120869	0.09	0.00	20.24	10611.12
M_FISH_HI	120869	0.01	0.00	12.67	770.31
M_FISH_LO	120869	0.02	0.00	23.00	2974.47
M_EGG	120869	0.03	0.00	9.78	3634.69

Table notes:

The numbers in these tables are unweighted and are intended to be used as a reference only.

**D.2: Control Counts for the MyPyramid Equivalents Intake file “pyr\_iff\_d1.sas7bdat” (continued)**

<u>Variable</u>	<u>N</u>	<u>Mean</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Sum</u>
M_SOY	120869	0.00	0.00	7.47	421.97
M_NUTSD	120869	0.03	0.00	31.75	3674.08
LEGUMES	120869	0.01	0.00	4.50	963.46
DISCFAT_OIL	120869	1.21	0.00	168.45	146470.65
DISCFAT_SOL	120869	3.20	0.00	159.70	387258.35
ADD_SUG	120869	1.44	0.00	139.01	173589.97
A_BEV	120869	0.03	0.00	30.00	3747.92

Table notes:

The numbers in these tables are unweighted and are intended to be used as a reference only.

### D.3: Control Counts for the MyPyramid Equivalents Intake File “pyr\_iff\_d2.sas7bdat”

File name: “pyr\_iff\_d2.sas7bdat”  
 Pyramid Data: Number of MyPyramid food-group equivalents for each food reported eaten per person for day 2  
 Survey: NHANES 2003-2004  
 Format: SAS® Version 9.1 data file  
 Total byte count: 25,658,368 bytes  
 Total records: 111,661 records

Variable	N	Mean	Minimum	Maximum	Sum
SEQN	111661	26044.07	21005.00	31124.00	2908106690.00
DR2ILINE	111659	8.96	1.00	43.00	1000051.00
SDDSRVYR	111661	3.00	3.00	3.00	334983.00
RIDSTATR	111661	2.00	2.00	2.00	223322.00
RIAGENDR	111661	1.52	1.00	2.00	169715.00
RIDAGEYR	111661	34.78	2.00	85.00	3884100.00
RIDAGEMN	109036	408.35	24.00	1019.00	44524361.00
RIDAGEEX	108689	409.09	24.00	1021.00	44463434.00
RIDRETH1	111661	2.79	1.00	5.00	311680.00
RIDRETH2	111661	1.94	1.00	5.00	216780.00
DMDBORN	111661	1.21	1.00	3.00	135595.00
DMDEDUC	100927	1.84	1.00	9.00	185839.00
DMQMILIT	73352	1.85	1.00	2.00	135960.00
INDHHINC	106144	7.21	1.00	99.00	765678.00
INDFMINC	110374	7.54	1.00	99.00	831840.00
INDFMPIR	106482	2.39	0.00	5.00	254196.17
DMDMARTL	82266	2.81	1.00	6.00	230864.00
RIDEXPRG	36872	1.94	1.00	3.00	71673.00
DRABF	111659	2.00	2.00	2.00	223318.00
WTINT2YR	111661	31610.88	1637.65	135582.47	3529702882.30
WTMEC2YR	111661	33387.13	1673.55	145843.56	3728040513.70
WTDR2D	111659	37770.09	722.89	374736.27	4217370985.70
WTDRD1	111659	35222.82	916.83	293828.97	3932945369.50
SDMVPSU	111661	1.50	1.00	2.00	167998.00
SDMVSTRA	111661	35.76	29.00	43.00	3993410.00
AIALANG	58544	1.08	1.00	2.00	63504.00
FIAINTRP	110700	1.99	1.00	2.00	220394.00
FIALANG	110700	1.08	1.00	2.00	119376.00
FIAPROXY	110700	2.00	1.00	2.00	221152.00
MIAINTRP	84896	2.00	1.00	2.00	169623.00

Table notes:

The numbers in these tables are unweighted and are intended to be used as a reference only.

**D.3: Control Counts for the MyPyramid Equivalents Intake File “pyr\_iff\_d2.sas7bdat” (continued)**

Variable	N	Mean	Minimum	Maximum	Sum
MIALANG	84896	1.08	1.00	2.00	91587.00
MIAPROXY	84896	2.00	1.00	2.00	169582.00
SIINTRP	111661	1.99	1.00	2.00	222226.00
SIALANG	111661	1.11	1.00	2.00	124040.00
SIAPROXY	111661	1.68	1.00	2.00	187307.00
DR2DRSTZ	111661	1.00	1.00	1.00	111661.00
DR2DAY	111659	3.12	1.00	7.00	348347.00
DRDINT	111659	2.00	2.00	2.00	223318.00
DR2IFDCD	11165957390694.33	11100000.00	94210100.00	6.4081875E12	
DR2MC	111659	5525.44	0.00	206570.00	616965341.00
DR2IGRMS	111659	137.74	0.04	8584.00	15379851.80
DAYCODE	111661	2.00	2.00	2.00	223322.00
G_TOTAL	111661	0.45	0.00	33.34	50327.42
G_WHL	111661	0.04	0.00	7.95	4653.91
G_NWHL	111661	0.41	0.00	33.34	45673.07
V_TOTAL	111661	0.09	0.00	9.37	10590.54
V_DRKGR	111661	0.01	0.00	3.10	639.26
V_ORANGE	111661	0.00	0.00	2.66	491.86
V_POTATO	111661	0.03	0.00	7.86	2877.87
V_STARCY	111661	0.01	0.00	3.31	620.41
V_TOMATO	111661	0.02	0.00	5.33	2608.77
V_OTHER	111661	0.03	0.00	5.27	3351.87
F_TOTAL	111661	0.08	0.00	8.27	8881.66
F_CITMLB	111661	0.03	0.00	8.27	3742.54
F_OTHER	111661	0.05	0.00	7.36	5138.71
D_TOTAL	111661	0.12	0.00	11.82	13176.73
D_MILK	111661	0.08	0.00	11.82	8420.36
D_YOGURT	111661	0.00	0.00	2.00	249.17
D_CHEESE	111661	0.04	0.00	8.36	4449.70
M_MPF	111661	0.30	0.00	40.26	33070.30
M_MEAT	111661	0.12	0.00	40.26	13321.21
M_ORGAN	111661	0.00	0.00	10.23	122.77
M_FRANK	111661	0.05	0.00	17.99	5725.09
M_POULT	111661	0.09	0.00	24.28	10453.86
M_FISH_HI	111661	0.01	0.00	32.93	797.45
M_FISH_LO	111661	0.02	0.00	29.80	2650.55

Table notes:

The numbers in these tables are unweighted and are intended to be used as a reference only.

**D.3: Control Counts for the MyPyramid Equivalents Intake File “pyr\_iff\_d2.sas7bdat” (continued)**

<u>Variable</u>	<u>N</u>	<u>Mean</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Sum</u>
M_EGG	111661	0.03	0.00	6.58	3353.39
M_SOY	111661	0.00	0.00	10.01	409.81
M_NUTSD	111661	0.03	0.00	27.52	3117.58
LEGUMES	111661	0.01	0.00	3.94	777.56
DISCFAT_OIL	111661	1.13	0.00	165.37	126081.58
DISCFAT_SOL	111661	2.95	0.00	140.95	329652.15
ADD_SUG	111661	1.24	0.00	151.16	138283.31
A_BEV	111661	0.02	0.00	42.67	2010.31

Table notes:

The numbers in these tables are unweighted and are intended to be used as a reference only.

#### D.4: Control Counts for the MyPyramid Equivalents Intake File “pyr\_tot\_d1.sas7bdat”

File name: “pyr\_tot\_d1.sas7bdat”  
 Pyramid Data: Total number of MyPyramid food-group equivalents from all foods eaten per person for day 1  
 Survey: NHANES 2003-2004  
 Format: SAS® Version 9.1 data file  
 Total byte count: 2,737,152 bytes  
 Total records: 8,273 records

Variable	N	Mean	Minimum	Maximum	Sum
SEQN	8273	26056.11	21005.00	31125.00	215562183.00
SDDSRVYR	8273	3.00	3.00	3.00	24819.00
RIDSTATR	8273	2.00	2.00	2.00	16546.00
RIAGENDR	8273	1.51	1.00	2.00	12509.00
RIDAGEYR	8273	32.49	2.00	85.00	268807.00
RIDAGEMN	8098	381.73	24.00	1019.00	3091280.00
RIDAGEEX	8074	382.59	24.00	1021.00	3089015.00
RIDRETH1	8273	2.83	1.00	5.00	23396.00
RIDRETH2	8273	1.97	1.00	5.00	16317.00
DMDBORN	8273	1.21	1.00	3.00	10045.00
DMDEDUC	7510	1.76	1.00	9.00	13224.00
DMQMILIT	5277	1.87	1.00	2.00	9866.00
INDHHINC	7831	7.17	1.00	99.00	56154.00
INDFMINC	8179	7.50	1.00	99.00	61362.00
INDFMPIR	7866	2.27	0.00	5.00	17838.64
DMDMARTL	6065	3.04	1.00	6.00	18453.00
RIDEXPRG	2847	1.95	1.00	3.00	5558.00
DRABF	8272	2.00	2.00	2.00	16544.00
WTINT2YR	8273	29932.65	1637.65	135582.47	247632809.74
WTMEC2YR	8273	31569.43	1673.55	145843.56	261173918.49
WTDR2D	7649	36313.75	722.89	374736.27	277763882.08
WTDRD1	8272	33563.35	916.83	293828.97	277636038.50
SDMVPSU	8273	1.50	1.00	2.00	12401.00
SDMVSTRA	8273	35.83	29.00	43.00	296413.00
AIALANG	4623	1.08	1.00	2.00	4985.00
FIAINTRP	8196	1.99	1.00	2.00	16296.00
FIALANG	8196	1.08	1.00	2.00	8834.00
FIAPROXY	8196	2.00	1.00	2.00	16373.00
MIAINTRP	6304	2.00	1.00	2.00	12580.00
MIALANG	6304	1.08	1.00	2.00	6800.00

Table notes:

The numbers in these tables are unweighted and are intended to be used as a reference only.



**D.4: Control Counts for the MyPyramid Equivalents Intake File “pyr\_tot\_d1.sas7bdat” (continued)**

Variable	N	Mean	Minimum	Maximum	Sum
MIAPROXY	6304	2.00	1.00	2.00	12590.00
SIAINTRP	8273	1.99	1.00	2.00	16437.00
SIALANG	8273	1.11	1.00	2.00	9170.00
SIAPROXY	8273	1.66	1.00	2.00	13771.00
DR1DRSTZ	8273	1.00	1.00	1.00	8273.00
DAYCODE	8273	1.00	1.00	1.00	8273.00
G_TOTAL	8273	6.93	0.00	47.98	57306.65
G_WHL	8273	0.54	0.00	23.76	4473.42
G_NWHL	8273	6.39	0.00	41.31	52831.30
V_TOTAL	8273	1.34	0.00	11.91	11103.19
V_DRKGR	8273	0.06	0.00	4.61	530.14
V_ORANGE	8273	0.05	0.00	4.00	438.77
V_POTATO	8273	0.38	0.00	10.64	3135.01
V_STARCY	8273	0.07	0.00	6.29	555.02
V_TOMATO	8273	0.35	0.00	5.33	2865.08
V_OTHER	8273	0.43	0.00	7.01	3578.68
F_TOTAL	8273	1.09	0.00	20.43	8987.68
F_CITMLB	8273	0.46	0.00	15.18	3821.81
F_OTHER	8273	0.62	0.00	12.10	5165.42
D_TOTAL	8273	1.72	0.00	20.10	14195.15
D_MILK	8273	1.03	0.00	20.10	8522.93
D_YOGURT	8273	0.02	0.00	2.08	205.46
D_CHEESE	8273	0.65	0.00	9.85	5414.01
M_MPF	8273	4.28	0.00	39.37	35382.52
M_MEAT	8273	1.72	0.00	39.37	14234.12
M_ORGAN	8273	0.03	0.00	15.34	217.17
M_FRANK	8273	0.79	0.00	16.46	6576.34
M_POULT	8273	1.28	0.00	20.61	10611.12
M_FISH_HI	8273	0.09	0.00	17.82	770.31
M_FISH_LO	8273	0.36	0.00	24.41	2974.47
M_EGG	8273	0.44	0.00	9.81	3634.69
M_SOY	8273	0.05	0.00	13.20	421.97
M_NUTSD	8273	0.44	0.00	31.75	3674.08
LEGUMES	8273	0.12	0.00	4.50	963.46
DISCFAT_OIL	8273	17.70	0.00	199.68	146470.65
DISCFAT_SOL	8273	46.81	0.00	243.62	387258.35
ADD_SUG	8273	20.98	0.00	177.80	173589.97
A_BEV	8273	0.45	0.00	43.01	3747.92

Table notes:

The numbers in these tables are unweighted and are intended to be used as a reference only.

**D5: Control Counts for the MyPyramid Equivalents Intake File “pyr\_tot\_d2.sas7bdat”**

File name: “pyr\_tot\_d2.sas7bdat”  
 Pyramid Data: Total number of MyPyramid food-group equivalents from all foods eaten per person for day 2  
 Survey: NHANES 2003-2004  
 Format: SAS® Version 9.1 data file  
 Total byte count: 2,524,160 bytes  
 Total records: 7,650 records

Variable	N	Mean	Minimum	Maximum	Sum
SEQN	7650	26038.23	21005.00	31124.00	199192431.00
SDDSRVYR	7650	3.00	3.00	3.00	22950.00
RIDSTATR	7650	2.00	2.00	2.00	15300.00
RIAGENDR	7650	1.52	1.00	2.00	11612.00
RIDAGEYR	7650	32.60	2.00	85.00	249424.00
RIDAGEMN	7500	384.13	24.00	1019.00	2880996.00
RIDAGEEX	7479	384.97	24.00	1021.00	2879180.00
RIDRETH1	7650	2.81	1.00	5.00	21484.00
RIDRETH2	7650	1.97	1.00	5.00	15092.00
DMDBORN	7650	1.21	1.00	3.00	9239.00
DMDEDUC	6958	1.77	1.00	9.00	12295.00
DMQMILIT	4874	1.87	1.00	2.00	9107.00
INDHHINC	7264	7.20	1.00	99.00	52290.00
INDFMINC	7566	7.48	1.00	99.00	56573.00
INDFMPIR	7293	2.30	0.00	5.00	16740.12
DMDMARTL	5617	3.02	1.00	6.00	16948.00
RIDEXPRG	2676	1.95	1.00	3.00	5222.00
DRABF	7648	2.00	2.00	2.00	15296.00
WTINT2YR	7650	30235.43	1637.65	135582.47	231301040.18
WTMEC2YR	7650	31880.55	1673.55	145843.56	243886196.43
WTDR2D	7648	36313.69	722.89	374736.27	277727064.62
WTDRD1	7648	33672.68	916.83	293828.97	257528654.89
SDMVPSU	7650	1.50	1.00	2.00	11492.00
SDMVSTRA	7650	35.85	29.00	43.00	274283.00
AIALANG	4303	1.08	1.00	2.00	4643.00
FIAINTRP	7585	1.99	1.00	2.00	15101.00
FIALANG	7585	1.08	1.00	2.00	8196.00
FIAPROXY	7585	2.00	1.00	2.00	15156.00
MIAINTRP	5869	2.00	1.00	2.00	11727.00
MIALANG	5869	1.08	1.00	2.00	6330.00

Table notes:

The numbers in these tables are unweighted and are intended to be used as a reference only.

**D5: Control Counts for the MyPyramid Equivalents Intake File “pyr\_tot\_d2.sas7bdat” (continued)**

Variable	N	Mean	Minimum	Maximum	Sum
MIAPROXY	5869	2.00	1.00	2.00	11725.00
SIAINTRP	7650	1.99	1.00	2.00	15223.00
SIALANG	7650	1.11	1.00	2.00	8503.00
SIAPROXY	7650	1.67	1.00	2.00	12739.00
DR2DRSTZ	7650	1.00	1.00	1.00	7650.00
DAYCODE	7650	2.00	2.00	2.00	15300.00
G_TOTAL	7650	6.58	0.00	46.00	50327.42
G_WHL	7650	0.61	0.00	10.52	4653.91
G_NWHL	7650	5.97	0.00	42.95	45673.07
V_TOTAL	7650	1.38	0.00	13.70	10590.54
V_DRKGR	7650	0.08	0.00	4.46	639.26
V_ORANGE	7650	0.06	0.00	3.08	491.86
V_POTATO	7650	0.38	0.00	7.90	2877.87
V_STARCY	7650	0.08	0.00	3.50	620.41
V_TOMATO	7650	0.34	0.00	6.93	2608.77
V_OTHER	7650	0.44	0.00	6.40	3351.87
F_TOTAL	7650	1.16	0.00	16.75	8881.65
F_CITMLB	7650	0.49	0.00	10.10	3742.54
F_OTHER	7650	0.67	0.00	12.75	5138.71
D_TOTAL	7650	1.72	0.00	18.84	13176.73
D_MILK	7650	1.10	0.00	18.24	8420.36
D_YOGURT	7650	0.03	0.00	2.00	249.17
D_CHEESE	7650	0.58	0.00	12.00	4449.70
M_MPF	7650	4.32	0.00	43.50	33070.30
M_MEAT	7650	1.74	0.00	43.50	13321.21
M_ORGAN	7650	0.02	0.00	10.23	122.77
M_FRANK	7650	0.75	0.00	19.59	5725.09
M_POULT	7650	1.37	0.00	32.65	10453.86
M_FISH_HI	7650	0.10	0.00	32.93	797.45
M_FISH_LO	7650	0.35	0.00	29.80	2650.55
M_EGG	7650	0.44	0.00	10.00	3353.39
M_SOY	7650	0.05	0.00	11.76	409.81
M_NUTSD	7650	0.41	0.00	27.52	3117.58
LEGUMES	7650	0.10	0.00	4.51	777.56
DISCFAT_OIL	7650	16.48	0.00	187.14	126081.58
DISCFAT_SOL	7650	43.09	0.00	278.24	329652.15
ADD_SUG	7650	18.08	0.00	177.53	138283.31
A_BEV	7650	0.26	0.00	42.67	2010.31

Table notes:

The numbers in these tables are unweighted and are intended to be used as a reference only.

## Appendix E: Sample SAS® Program Files

Sample SAS® programs are included with the MPED 2.0 for analysis purposes. These are only examples as there are many ways to write SAS® programs. The following table lists the files and what functions the program files perform. Users may develop their own SAS® programs depending upon their analytic requirements. Also, other statistical software suitable for survey data analysis can be used instead of SAS® and the SAS® codes modified accordingly.

File #	File Name	File Function
E1	readequiv.sas	Reads "equiv0304.txt" and stores the data in SAS® format ("equiv0304.sas7bdat")
E2	pyr_iff_d1.sas	Shows how to merge MPED 2.0 "equiv0304.sas7bdat" to the What We Eat in America, NHANES 2003-2004, day 1 individual food file and demographic data file and create the number of MyPyramid equivalents for each of the 32 food groups present in each food and beverage consumed per person ages 2 and over with reliable food records on day 1 ("pyr_iff_d1.sas7bdat")
E3	pyr_iff_d2.sas	Shows how to merge MPED 2.0 "equiv0304.sas7bdat" to the What We Eat in America, NHANES 2003-2004, day 2 individual food file and demographic data file and create the number of MyPyramid equivalents for each of the 32 food groups present in each food and beverage consumed per person ages 2 and over with reliable food records on day 2 ("pyr_iff_d2.sas7bdat")
E4	pyr_tot_d1.sas	Reads day 1 MyPyramid equivalent intake data from "pyr_iff_d1.sas7bdat" and creates a daily total MyPyramid equivalents intake data set (pyr_tot_d1.sas7bdat") per person ages 2 and over with reliable food records on day 1
E5	pyr_tot_d2.sas	Reads day 2 MyPyramid equivalent intake data from "pyr_iff_d2.sas7bdat" and creates a daily total MyPyramid equivalents intake data set ("pyr_tot_d2.sas7bdat") per person ages 2 and over with reliable food records on day 2
E6	pyrrpt.sas	Shows how to convert legumes as vegetable cup equivalents to ounce equivalents of meat and estimate unweighted mean intakes of major MyPyramid food groups
E7	pyrrecom.sas	Shows how to compare the reported intake of MyPyramid food groups to the Dietary Guidelines for Americans, 2005 recommendations

## E1: readequiv.sas

```
*****
*
* readequiv.sas
*
* This SAS® program reads the fixed format MyPyramid
* Equivalents data file (equiv0304.txt) and stores the data
* as equiv0304.ssd. The SAS® output from this program
* serves as input into the pyr_iff_d1.sas and pyr_iff_d2.sas
* programs.
*
* Be sure to modify the libname statement as appropriate.
*
*****;

options ls = 128 ps = 87;

libname SASdata 'C:\<SAS_data_directory>'; /* Directory for SAS® */
                                           /* data files */

filename equiv0304 'C:\MyPyrEqv vDB2\data\equiv0304\equiv0304.txt';
           /* Default location of the equivalents food data files */

*****
*
* Read and store the equiv0304.txt equivalents data. Create
* benchmark control counts data to verify results.
*
*****;

data SASdata.equiv0304 (compress = yes);           /* Create SAS® output */
                                                    /* data file */
  infile equiv0304 lrecl = 271;
  input DRDI FDCD      1- 8
        EQUI VFLAG    9- 9
        DRDI MC       10- 15
        G_TOTAL       16- 23
        G_WHL         24- 31
        G_NWHL        32- 39
        V_TOTAL       40- 47
        V_DRKGR       48- 55
        V_DPYEL       56- 63
        V_POTATO      64- 71
        V_STARCHY     72- 79
        V_TOMATO      80- 87
        V_OTHER       88- 95
        F_TOTAL       96-103
        F_CITMLB     104-111
        F_OTHER       112-119
        D_TOTAL       120-127
        D_MILK        128-135
        D_YOGURT      136-143
        D_CHEESE      144-151
        M_MPF         152-159
        M_MEAT        160-167
        M_ORGAN       168-175
        M_FRANK       176-183
        M_POULT       184-191
```

```

M_FISH_HI 192-199
M_FISH_LO 200-207
M_EGG 208-215
M_SOY 216-223
M_NUTSD 224-231
LEGUMES 232-239
DI SCFAT_OIL 240-247
DI SCFAT_SOL 248-255
ADD_SUG 256-263
A_BEV 264-271;

```

label

```

DRDI_FDCD = "USDA Food code"
EQUI_VFLAG = "Equivalents Flag"
DRDI_MC = "Modification code"
G_TOTAL = "Total number of grain ounce equivalents"
G_WHLE = "Number of whole grain ounce equivalents"
G_NWHL = "Number of non-whole grain ounce equivalents"
V_TOTAL = "Total number of vegetable cup equivalents, excl
legumes"
V_DRKGR = "Number of dark-green vegetable cup equivalents"
V_DPYEL = "Number of orange vegetable cup equivalents"
V_POTATO = "Number of white potato cup equivalents"
V_STARCHY = "Number of other starchy vegetable cup equivalents"
V_TOMATO = "Number of tomato cup equivalents"
V_OTHER = "Number of other vegetable cup equivalents"
F_TOTAL = "Total number of fruit cup equivalents"
F_CITMLB = "Number of citrus, melon, berry cup equivalents"
F_OTHER = "Number of other fruit cup equivalents"
D_TOTAL = "Total number of milk group (milk, yogurt & cheese)
cup equivalents"
D_MILK = "Number of milk cup equivalents"
D_YOGURT = "Number of yogurt cup equivalents"
D_CHEESE = "Number of cheese cup equivalents"
M_MPF = "Oz cooked lean meat from meat, poultry, fish"
M_MEAT = "Oz cooked lean meat from beef, pork, veal, lamb, and
game"
M_ORGAN = "Oz cooked lean meat from organ meats"
M_FRANK = "Oz cooked lean meat from franks, sausages, luncheon
meats"
M_POULT = "Oz cooked lean meat from chicken, poultry, and other
poultry"
M_FISH_HI = "Oz cooked lean meat from fish, other seafood high in
n-3 fatty acids"
M_FISH_LO = "Oz cooked lean meat from fish, other seafood low in
n-3 fatty acids"
M_EGG = "Oz equivalents of lean meat from eggs"
M_SOY = "Oz equivalents of lean meat from soy product"
M_NUTSD = "Oz equivalents of lean meat from nuts and seeds"
LEGUMES = "Number of cooked dry beans and peas cup equivalents"
/* or ounce equivalents of lean meat from cooked dry bean and pea */
DI SCFAT_OIL = "Grams of discretionary Oil"
DI SCFAT_SOL = "Grams of discretionary Solid fat"
ADD_SUG = "Teaspoon equivalents of added sugars"
A_BEV = "Total drinks of alcohol";

```

run;

```

proc sort data=SASdata.equi v0304; /* Sort SAS® output */
by drdi_fdcdrdi_mc; /* data file */
run;

```

```

proc contents data = SASdata.equiv0304;          /* Generate listing of */
  title1 '0304 EQUIV';                          /* variables in SAS®   */
  title2 'MyPyramid Equivalents Data File';    /* output data file    */
  title3 'Contents';
run;

proc means maxdec=2 n mean min max sum          /* Create control      */
  data = SASdata.equiv0304;                    /* counts - see        */
  title1 '0304 EQUIV';                         /* benchmark control   */
  title2 'MyPyramid Equivalents Data File';    /* counts below        */
  title3 'Control Counts';
run;

```

**E2: pyr\_iff\_d1.sas**

```
*****
*
* pyr_iff_d1.sas
*
* This SAS® program joins the MyPyramid equivalent data
* files (equiv0304.ssd) with the NHANES 2003-2004 day 1
* intake data to create an NHANES 2003-2004 MyPyramid
* equivalent day 1 intakes data file (pyr_iff_d1.ssd). The
* output file contains one record per food (line item) for
* each responding sample person. Each record has data on
* the number of equivalents of each of the 32 MyPyramid
* food groups.
*
* Be sure to modify the libname statements as appropriate.
*
* ARS suggests that prior to using the output file
* (pyr_iff_d1.ssd) for analysis, dry beans and peas be
* assigned to the vegetables OR meat and beans group.
*
*****;

options ls = 128 ps = 87;

libname SASdata 'C:\<SAS_data_directory>'; /* Directory for SAS® */
/* data files */

libname NH0304 'C:\<SAS_data_directory_for_NH0304>'; /* Directory for */
/* NHANES 2003-2004 data */

*****
*
* Begin creating MyPyramid equivalent Intake records for the
* WWEIA-NHANES 2003-2004 intakes.
*
*
* Sort reliable dr1iff_c data (grams of food consumed) by
* foodcode (dr1ifdcd) and save data in a temporary data
* file (data1).
*
*****;

proc sort data = NH0304.dr1iff_c
      (keep = seqn dr1iline dr1drstz dr1ifdcd dr1mc dr1igrms dr1day
      wtdrd1 wtdr2d drabf drdint
      where = (dr1drstz = 1)) /* selects reliable intakes
only */
      out = data1;
  by dr1ifdcd dr1mc;
run;
```



```

*****
*
* Merge the sorted dr1iff_c data (data1) with the SAS® file *
* (equiv0304.ssd) containing the number of equivalent per 100*
* gram food. Calculate the number of equivalent consumed per*
* person per food code.
*
*****;

data equivdat (keep = dr1ifdcd dr1mc val01--val32);
  set SASdata.equiv0304 (rename=(drdifdcd=dr1ifdcd drdimc=dr1mc));

  length val01 val02 val03 val04 val05
         val06 val07 val08 val09 val10
         val11 val12 val13 val14 val15
         val16 val17 val18 val19 val20
         val21 val22 val23 val24 val25
         val26 val27 val28 val29 val30
         val31 val32 8;

  array grp g_total --a_bev;
  array val val01--val32;

  do i = 1 to dim(val);
    val[i] = grp[i];
  end;
run;

data data1 (keep = seqn dr1iline dr1drstz dr1ifdcd dr1mc dr1igrms dr1day
                wtdrd1 wtdrd2 drabf drdint g_total --a_bev);
  merge data1 (in = in1)
        equivdat;
  by dr1ifdcd dr1mc;

  if in1;

  length g_total g_whl g_nwhl v_total v_drkgr v_dpyel
         v_potato v_starcy v_tomato v_other
         f_total f_citmlb f_other d_total d_milk
         d_yogurt d_cheese m_mpf m_meat m_organ
         m_frank m_poult m_fish_hi m_fish_lo m_egg m_soy m_nutsd
         legumes discfat_oil discfat_sol add_sug a_bev
                                                8;

  array equiv g_total --a_bev;
  array val val01--val32;

  do i = 1 to dim(equiv);
    equiv[i] = round((dr1igrms * val[i] / 100), 0.001);
  end;
run;

*****
*
* Get NH0304 demographic data for all individuals providing *
* reliable intakes, including fasters. The DR1TOT_c data *
* file contains all valid individuals so it will be used as *
* the basis for the SEQN list.
*
*****;

data demo;
  merge NH0304.dr1tot_c (keep = seqn dr1drstz
                        where = (dr1drstz = 1)

```

```

                                in = in1)
NH0304.demo_c (keep = seqn--sdmvstra);
by seqn;
if in1;
run;

proc sort data = demo out = demo;
by seqn;
run;

*****
*
* Sort the equivalent intake records and merge them with the *
* demographic data to add the key variables. *
*
*****;

proc sort data = data1 out = data1;
by seqn dr1iline;
run;

data data1 (compress = yes);
merge data1
      demo (where = (ri dageyr >= 2) /* limits data to individuals 2 */
            in = in1);           /* years of age and older only */
by seqn ;

if in1;
run;

proc contents data = data1;
run;

*****
*
* Reorder fields and save them as a SAS® data file called *
* pyr_fff. Round equivalent intakes to three decimals. *
*
*****;

data dummy;
length
  SEQN          DR1LINE      SDDSRVYR      RIDSTATR      RIAGENDR
  RIDAGEYR      RIDAGEMN     RIDAGEEX     RIDRETH1      RIDRETH2
  DMBORN        DMDEDUC      DMQMLIT      INDHINC       INDFMNC
  INDFMPIR      DMDMARTL     RIDEXPRG     DRABF         WTI NT2YR
  WTMEC2YR      WTDR2D        WTDRD1       SDMVPSU       SDMVSTRA
  AI ALANG      FIAI NTRP     FIALANG     FIAPROXY     MIAI NTRP
  MI ALANG      MIAPROXY     SIAI NTRP   SIALANG      SIAPROXY
  DR1DRSTZ      DR1DAY        DRDINT       DR1IFDCD     DR1MC
  DR1GRMS       DAYCODE
  G_TOTAL      G_WHL        G_NWHL       V_TOTAL       V_DRKGR
  V_DPYEL      V_POTATO     V_STARCH     V_TOMATO     V_OTHER
  F_TOTAL      F_CITMLB     F_OTHER      D_TOTAL       D_MILK
  D_YOGURT     D_CHEESE     M_MPF        M_MEAT        M_ORGAN
  M_FRANK      M_POULT      M_FISH_HI    M_FISH_LO    M_EGG        M_SOY
  M_NUTSD      LEGUMES      DISCFAT_OIL DISCFAT_SOL   ADD_SUG      A_BEV        8;

proc append base = dummy (compress = yes) /* Note: SAS® will issue */
data = data1 force;                    /* warning messages */
run;

```

```

data SASdata.pyr_i ff_d1 (drop = i
                        compress = yes);
    set dummy (where = (SEQN > 0));

array equiv g_total --a_bev;

do i = 1 to dim(equiv);
    if equiv[i] = . then do;
        equiv[i] = 0;
        end;
    else
        equiv[i] = round(equiv[i], 0.001);
    end;

daycode = 1;

label
    SEQN          = "Respondent sequence number"
    DR11LINE      = "Food/individual component number"
    SDDSRVYR      = "Data Release Number"
    RIDSTATR      = "Interview/Examination Status"
    RIAGENDR      = "Gender - Adjudicated"
    RIDAGEYR      = "Age at Screening Adjudicated - Recode"
    RIDAGEMN      = "Age in Months - Recode"
    RIDAGEEX      = "Exam Age in Months - Recode"
    RIDRETH1      = "Race/Ethnicity - Recode"
    RIDRETH2      = "Linked NH3 Race/Ethnicity - Recode"
    DMDBORN       = "Country of Birth - Recode"
    DMDDEDUC      = "Education - Recode"
    DMQMLIT       = "Served in the US Armed Forces"
    INDHINC       = "Annual Household Income"
    INDFMINC      = "Annual CPS Family Income"
    INDFMPIR      = "CPS Family PIR"
    DMDMARTL      = "Marital status"
    RIDEXPRG      = "Pregnancy Status at Exam - Recode"
    DRABF         = "Breast-fed infant (either day)"
    WTINT2YR      = "Full Sample 2 Year Interview Weight"
    WTMEC2YR      = "Full Sample 2 Year MEC Exam Weight"
    WTDR2D        = "Dietary two-day sample weight"
    WTDRD1        = "Dietary day one sample weight"
    SDMVPSU       = "Masked Variance Pseudo-PSU"
    SDMVSTRA      = "Masked Variance Pseudo-Stratum"
    AIALANG       = "Language of ACASI Interview"
    FIAINTRP      = "Interpreter used in Family Interview?"
    FIALANG       = "Language of Family Interview"
    FIAPROXY      = "Proxy used in Family Interview?"
    MIAINTRP      = "Interpreter used in MEC Interview?"
    MIALANG       = "Language of MEC Interview"
    MIAPROXY      = "Proxy used in MEC Interview?"
    SIAINTRP      = "Interpreter used in SP Interview?"
    SIALANG       = "Language of SP Interview"
    SIAPROXY      = "Proxy used in SP Interview?"
    DR1DRSTZ      = "Dietary recall status"
    DR1DAY        = "Intake day of week"
    DRDINT        = "Number of days of intake"
    DR11FDCD      = "USDA food code"
    DR1MC         = "Modification code"
    DR11GRMS      = "Grams"
    DAYCODE       = "Day of intake (1 or 2)"
    G_TOTAL       = "Total number of grain ounce equivalents"
    G_WHL         = "Number of whole grain ounce equivalents"
    G_NWHL        = "Number of non-whole grain ounce equivalents"
    V_TOTAL       = "Total number of vegetable cup equivalents, excl

```

```

                                Legumes"
V_DRKGR      = "Number of dark-green vegetable cup equivalents"
V_DPYEL      = "Number of orange vegetable cup equivalents"
V_POTATO     = "Number of white potato cup equivalents"
V_STARCHY    = "Number of other starchy vegetable cup equivalents"
V_TOMATO     = "Number of tomato cup equivalents"
V_OTHER      = "Number of other vegetable cup equivalents"
F_TOTAL      = "Total number of fruit cup equivalents"
F_CITMLB    = "Number of citrus, melon, berry cup equivalents"
F_OTHER      = "Number of other fruit cup equivalents"
D_TOTAL      = "Total number of milk group (milk, yogurt & cheese) cup
                equivalents "
D_MILK       = "Number of milk cup equivalents"
D_YOGURT     = "Number of yogurt cup equivalents"
D_CHEESE     = "Number of cheese cup equivalents"
M_MPF        = "Oz cooked lean meat from meat, poultry, fish"
M_MEAT       = "Oz cooked lean meat from beef, pork, veal, lamb, and
                game"
M_ORGAN      = "Oz cooked lean meat from organ meats"
M_FRANK      = "Oz cooked lean meat from franks, sausages, luncheon
                meats"
M_POULT      = "Oz cooked lean meat from chicken, poultry, and other
                poultry"
M_FISH_HI    = "Oz cooked lean meat from fish, other seafood high in
                n-3 fatty acids"
M_FISH_LO    = "Oz cooked lean meat from fish, other seafood low in
                n-3 fatty acids"
M_EGG        = "Oz equivalents of lean meat from eggs"
M_SOY        = "Oz equivalents of lean meat from soy product"
M_NUTSD      = "Oz equivalents of lean meat from nuts and seeds"
LEGUMES      = "Number of cooked dry beans and peas cup equivalents"
/* or ounce equivalents of lean meat from cooked dry bean and pea */

DISCFAT_OIL  = "Grams of discretionary Oil"
DISCFAT_SOL  = "Grams of discretionary Solid fat"
ADD_SUG      = "Teaspoon equivalents of added sugars"
A_BEV        = "Total drinks of alcohol"
;
run;

*****
*
*   Generate unweighted control counts for verifying the
*   pyr_iff_d1 data set.
*
*****

proc contents data = SASdata.pyr_iff_d1;           /* Generates listing */
  title1 'PYR_IFF_D1';                             /* of variables in */
  title2 'NHANES 2003-2004 equivalent Intake Records' /* the SAS® output */
  title3 'Day 1';                                   /* data file */
  title4 'Contents';
run;

```

```
proc means maxdec=2 n mean min max sum                                /* Create control */
  data = SASdata.pyr_iff_d1;                                         /* counts - see */
  title1 'PYR_IFF';                                                 /* benchmark control */
  title2 'NHANES 2003-2004 equivalent Intake Records'; /* counts below */
  title3 'Control Counts (unweighted)';
  title4 'All Individuals 2 and older';
  title5 'Day 1';
  title6 '++ Benchmark control counts are not to be used for analysis ++';
run;
```

### E3: pyr\_iff\_d2.sas

```
*****
*
* pyr_iff_d2.sas
*
* This SAS® program joins the MyPyramid equivalent data
* files (equiv0304.ssd) with the NHANES 2003-2004 day 2
* intake data to create an NHANES 2003-2004 MyPyramid
* equivalent day 2 intakes data file (pyr_iff_d2.ssd). The
* output file contains one record per food (line item) for
* each responding sample person. Each record has data on
* the number of equivalents of each of the 32 MyPyramid
* food groups.
*
* Be sure to modify the libname statements as appropriate.
*
* ARS suggests that prior to using the output file
* (pyr_iff_d2.ssd) for analysis, dry beans and peas be
* assigned to the vegetables OR meat and beans group.
*
*****;

options ls = 128 ps = 87;

libname SASdata 'C:\<SAS_data_directory>'; /* Directory for SAS® */
/* data files */

libname NH0304 'C:\<SAS_data_directory_for_NH0304>'; /* Directory for */
/* NHANES 2003-2004 data */

*****
*
* Begin creating MyPyramid equivalent Intake records for the
* WWEIA-NHANES 2003-2004 intakes.
*
*
* Sort reliable dr2iff_c data (grams of food consumed) by
* foodcode (dr2ifdcd) and save data in a temporary data
* file (data2).
*
*****;

proc sort data = NH0304.dr2iff_c
      (keep = seqn dr2iline dr2drstz dr2ifdcd dr2mc dr2igrms dr2day
          wtldr1 wtldr2d drabf drdint
          where = (dr2drstz = 1)) /* selects reliable intakes only */
      out = data2;
  by dr2ifdcd dr2mc;
run;
```

```

*****
*
* Merge the sorted dr2iff_c data (data2) with the SAS® file *
* (equiv0304.ssd) containing the number of equivalent per 100*
* gram food. Calculate the number of equivalent consumed per*
* person per food code.
*
*****;

data equivdat (keep = dr2ifdcd dr2mc val01--val32);
  set SASdata.equiv0304 (rename=(drdifdcd=dr2ifdcd drdimc=dr2mc));

  length val01 val02 val03 val04 val05
         val06 val07 val08 val09 val10
         val11 val12 val13 val14 val15
         val16 val17 val18 val19 val20
         val21 val22 val23 val24 val25
         val26 val27 val28 val29 val30
         val31 val32 8;

  array grp g_total --a_bev;
  array val val01--val32;

  do i = 1 to dim(val);
    val[i] = grp[i];
  end;
run;

data data2 (keep = seqn dr2iline dr2drstz dr2ifdcd dr2mc dr2igrms dr2day
                wtdrd1 wtdrd2 drabf drdint g_total --a_bev);
  merge data2 (in = in1)
        equivdat;
  by dr2ifdcd dr2mc;

  if in1;

  length g_total g_whl g_nwhl v_total v_drkgr v_dpyel
         v_potato v_starcy v_tomato v_other
         f_total f_citmb f_other d_total d_milk
         d_yogurt d_cheese m_mpf m_meat m_organ
         m_frank m_poult m_fish_hi m_fish_lo m_egg m_soy m_nutsd
         legumes discfat_oil discfat_sol add_sug a_bev
                                                8;

  array equiv g_total --a_bev;
  array val val01--val32;

  do i = 1 to dim(equiv);
    equiv[i] = round((dr2igrms * val[i] / 100), 0.001);
  end;
run;

*****
*
* Get NH0304 demographic data for all individuals providing *
* reliable intakes, including fasters. The DR2TOT_c data *
* file contains all valid individuals so it will be used as *
* the basis for the SEQN list.
*
*****;

data demo;
  merge NH0304.dr2tot_c (keep = seqn dr2drstz
                        where = (dr2drstz = 1)

```

```

                                in = in1)
NH0304.demo_c (keep = seqn--sdmvstra);
by seqn;
if in1;
run;

proc sort data = demo out = demo;
by seqn;
run;

*****
*
* Sort the equivalent intake records and merge them with the *
* demographic data to add the key variables. *
*
*****;

proc sort data = data2 out = data2;
by seqn dr2iline;
run;

data data2 (compress = yes);
merge data2
      demo (where = (ri dageyr >= 2) /* limits data to individuals 2 */
            in = in1); /* years of age and older only */
by seqn ;

if in1;
run;

proc contents data = data2;
run;

*****
*
* Reorder fields and save them as a SAS® data file called *
* pyr_i ff. Round equivalent intakes to three decimals. *
*
*****;

data dummy;
length
  SEQN          DR2I LINE      SDDSRVYR      RI DSTATR      RI AGENDR
  RI DAGEYR     RI DAGEMN     RI DAGEEX     RI DRETH1     RI DRETH2
  DMDBORN      DMDEDUC      DMQMI LIT     I NDHHC      I NDFMNC
  I NDFMPI R    DMDMARTL     RI DEXPRG     DRABF         WTINT2YR
  WTMEC2YR     WTDR2D      WTDRD1       SDMVPSU      SDMVSTRA
  AI ALANG     FI AI NTRP   FI ALANG     FI APROXY     MI AI NTRP
  MI ALANG     MI APROXY    SI AI NTRP    SI ALANG     SI APROXY
  DR2DRSTZ     DR2DAY      DRDI NT      DR2I FDCD     DR2MC
  DR2I GRMS    DAYCODE
  G_TOTAL      G_WHL       G_NWHL       V_TOTAL       V_DRKGR
  V_DPYEL     V_POTATO    V_STARCHY    V_TOMATO     V_OTHER
  F_TOTAL      F_CITMLB    F_OTHER      D_TOTAL      D_MILK
  D_YOGURT     D_CHEESE    M_MPF        M_MEAT        M_ORGAN
  M_FRANK      M_POULT     M_FISH_HI    M_FISH_LO    M_EGG         M_SOY
  M_NUTSD     LEGUMES     DISCFAT_OIL  DISCFAT_SOL  ADD_SUG       A_BEV         8;

proc append base = dummy (compress = yes) /* Note: SAS® will issue */
data = data2 force; /* warning messages */
run;

```



```

data SASdata.pyr_i ff_d2 (drop = i
                        compress = yes);
  set dummy (where = (SEQN > 0));

array equiv g_total --a_bev;

do i = 1 to dim(equiv);
  if equiv[i] = . then do;
    equiv[i] = 0;
  end;
  else
    equiv[i] = round(equiv[i], 0.001);
end;

daycode = 2;

label
  SEQN          = "Respondent sequence number"
  DR2I LINE     = "Food/individual component number"
  SDDSRVYR     = "Data Release Number"
  RIDSTATR     = "Interview/Examination Status"
  RIAGENDR     = "Gender - Adjudicated"
  RIDAGEYR     = "Age at Screening Adjudicated - Recode"
  RIDAGEMN     = "Age in Months - Recode"
  RIDAGEEX     = "Exam Age in Months - Recode"
  RIDRETH1     = "Race/Ethnicity - Recode"
  RIDRETH2     = "Linked NH3 Race/Ethnicity - Recode"
  DMDBORN      = "Country of Birth - Recode"
  DMDDEDUC     = "Education - Recode"
  DMQMLIT     = "Served in the US Armed Forces"
  INDHINC     = "Annual Household Income"
  INDFINC     = "Annual CPS Family Income"
  INDFPIR     = "CPS Family PIR"
  DMDMARTL     = "Marital status"
  RIDEXPRG     = "Pregnancy Status at Exam - Recode"
  DRABF       = "Breast-fed infant (either day)"
  WTI NT2YR    = "Full Sample 2 Year Interview Weight"
  WTMEC2YR    = "Full Sample 2 Year MEC Exam Weight"
  WTDR2D      = "Dietary two-day sample weight"
  WTDRD1      = "Dietary day one sample weight"
  SDMVPSU     = "Masked Variance Pseudo-PSU"
  SDMVSTRA    = "Masked Variance Pseudo-Stratum"
  FIALANG     = "Language of ACASI Interview"
  FIAINTRP    = "Interpreter used in Family Interview?"
  FIALANG     = "Language of Family Interview"
  FIAPROXY    = "Proxy used in Family Interview?"
  MIAINTRP    = "Interpreter used in MEC Interview?"
  MIALANG     = "Language of MEC Interview"
  MIAPROXY    = "Proxy used in MEC Interview?"
  SIAINTRP    = "Interpreter used in SP Interview?"
  SIALANG     = "Language of SP Interview"
  SIAPROXY    = "Proxy used in SP Interview?"
  DR2DRSTZ    = "Dietary recall status"
  DR2DAY      = "Intake day of week"
  DRDINT      = "Number of days of intake"
  DR2IFDCD    = "USDA food code"
  DR2MC       = "Modification code"
  DR2IGRMS    = "Grams"
  DAYCODE     = "Day of intake (1 or 2)"
  G_TOTAL     = "Total number of grain ounce equivalents"
  G_WHL       = "Number of whole grain ounce equivalents"
  G_NWHL      = "Number of non-whole grain ounce equivalents"

```

```

V_TOTAL      = "Total number of vegetable cup equivalents, excl
               legumes"
V_DRKGR      = "Number of dark-green vegetable cup equivalents"
V_DPYEL      = "Number of orange vegetable cup equivalents"
V_POTATO     = "Number of white potato cup equivalents"
V_STARCHY    = "Number of other starchy vegetable cup equivalents"
V_TOMATO     = "Number of tomato cup equivalents"
V_OTHER      = "Number of other vegetable cup equivalents"
F_TOTAL      = "Total number of fruit cup equivalents"
F_CITMLB     = "Number of citrus, melon, berry cup equivalents"
F_OTHER      = "Number of other fruit cup equivalents"
D_TOTAL      = "Total number of milk group (milk, yogurt & cheese) cup
               equivalents"
D_MILK       = "Number of milk cup equivalents"
D_YOGURT     = "Number of yogurt cup equivalents"
D_CHEESE     = "Number of cheese cup equivalents"
M_MPF        = "Oz cooked lean meat from meat, poultry, fish"
M_MEAT       = "Oz cooked lean meat from beef, pork, veal, lamb, and
               game"
M_ORGAN      = "Oz cooked lean meat from organ meats"
M_FRANK      = "Oz cooked lean meat from franks, sausages, luncheon
               meats"
M_POULT      = "Oz cooked lean meat from chicken, poultry, and other
               poultry"
M_FISH_HI    = "Oz cooked lean meat from fish, other seafood high in
               n-3 fatty acids"
M_FISH_LO    = "Oz cooked lean meat from fish, other seafood low in
               Omega-3 fatty acids"
M_EGG        = "Oz equivalents of lean meat from eggs"
M_SOY        = "Oz equivalents of lean meat from soy product"
M_NUTSD     = "Oz equivalents of lean meat from nuts and seeds"
LEGUMES      = "Number of cooked dry beans and peas cup equivalents"
/* or ounce equivalents of lean meat from cooked dry bean and pea */
DISCFAT_OIL  = "Grams of discretionary Oil"
DISCFAT_SOL  = "Grams of discretionary Solid fat"
ADD_SUG      = "Teaspoon equivalents of added sugars"
A_BEV        = "Total drinks of alcohol"
;
run;

*****
*
*   Generate unweighted control counts for verifying the
*   pyr_iff_d1 data set.
*
*****

proc contents data = SASdata.pyr_iff_d2;           /* Generates listing */
  title1 'PYR_IFF_D2';                             /* of variables in */
  title2 'NHANES 2003-2004 equivalent Intake Records' /* SAS® output data */
  title3 'Day 2';                                   /* file */
  title4 'Contents';
run;

```

```

proc means maxdec=2 n mean min max sum                                /* Create control */
  data = SASdata.pyr_1ff_d2;                                          /* counts - see */
  title1 'PYR_1FF';                                                  /* benchmark control */
  title2 'NHANES 2003-2004 equivalent Intake Records'; /* counts below */
  title3 'Control Counts (unweighted)';
  title4 'All Individuals 2 and older';
  title5 'Day 2';
  title6 '++ Benchmark control counts are not to be used for analysis ++';
run;

```

#### E4: pyr\_tot\_d1.sas

```
*****
*
* pyr_tot_d1.sas
*
* This SAS® program summarizes the individual MyPyramid
* equivalent intakes (pyr_i ff_d1.ssd) and calculates total
* daily intakes. The output file, pyr_tot_d1.ssd, contains
* one record for each responding sample person two years of
* age and older providing reliable intakes. Each record
* has data on the number of equivalents from each of the 32
* MyPyramid food groups.
*
* Be sure to modify the libname statements as appropriate.
*
* ARS suggests that prior to using the output file
* pyr_tot_d1.ssd for analysis dry beans and peas be
* assigned to the vegetables OR meat and beans group.
*
*****
options ls = 128 ps = 87;

libname SASdata 'C:\<SAS_data_directory>'; /* Directory for SAS® */
/* data files */

*****
* Begin creating pyr_tot_d1.ssd
*
* Calculate total daily equivalents intake records for each
* individual in the pyr_i ff_d1.ssd file.
*
*****
proc sort data = SASdata.pyr_i ff_d1 out=data1;
  by seqn SDDSRVYR--DR1DRSTZ DAYCODE;
run;

proc means noprint data = data1; /* Aggregates by day */
  by seqn SDDSRVYR--DR1DRSTZ DAYCODE;
  var g_total --a_bev;
  output out = data1
    sum(g_total --a_bev) = g_total g_whl g_nwhl
    v_total v_drkgr v_dpyel v_potato v_starcy v_tomato
    v_other f_total f_citmlb f_other d_total d_milk d_yogurt
    d_cheese m_mpf m_meat m_organ m_frnk m_poult m_fish_hi m_fish_lo
m_egg
    m_soy m_nutsd legumes discfat_oil discfat_sol add_sug a_bev;
run;

*****
*
* Reorder fields and save them as a SAS® data file called
* pyr_tot_d1.ssd. Order is by SEQN.
*
*****
data dummy;

length
  SEQN          SDDSRVYR      RIDSTATR      RIAGENDR
```

RI DAGEYR	RI DAGEMN	RI DAGEEX	RI DRETH1	RI DRETH2		
DMDBORN	DMDEDUC	DMQMI LIT	INDHHI NC	INDFMI NC		
INDFMPI R	DMDMARTL	RI DEXPRG	DRABF	WTINT2YR		
WTMEC2YR	WTDR2D	WTDRD1	SDMVPSU	SDMVSTRA		
AI ALANG	FI AI NTRP	FI ALANG	FI APROXY	MI AI NTRP		
MI ALANG	MI APROXY	SI AI NTRP	SI ALANG	SI APROXY		
DR1DRSTZ	DAYCODE					
G_TOTAL	G_WHL	G_NWHL	V_TOTAL	V_DRKGR		
V_DPYEL	V_POTATO	V_STARCH	V_TOMATO	V_OTHER		
F_TOTAL	F_CITMLB	F_OTHER	D_TOTAL	D_MILK		
D_YOGURT	D_CHEESE	M_MPF	M_MEAT	M_ORGAN		
M_FRANK	M_POULT	M_FISH_HI	M_FISH_LO	M_EGG	M_SOY	
M_NUTSD	LEGUMES	DI SCFAT_OIL	DI SCFAT_SOL	ADD_SUG	A_BEV	8;

```
proc append base = dummy                                /* Note: SAS® will issue*/
            data = data1 force;                          /* warning messages */
run;
```

```
data SASdata.pyr_tot_d1 (compress = yes);
  set dummy (where = (seqn > 0));
```

label

```

SEQN          = "Respondent sequence number"
SDDSRVYR     = "Data Release Number"
RIDSTATR     = "Interview/Examination Status"
RIAGENDR     = "Gender - Adjudicated"
RIDAGEYR     = "Age at Screening Adjudicated - Recode"
RIDAGEMN     = "Age in Months - Recode"
RIDAGEEX     = "Exam Age in Months - Recode"
RIDRETH1     = "Race/Ethnicity - Recode"
RIDRETH2     = "Linked NH3 Race/Ethnicity - Recode"
DMDBORN      = "Country of Birth - Recode"
DMDEDUC      = "Education - Recode"
DMQMI LIT    = "Served in the US Armed Forces"
INDHHI NC    = "Annual Household Income"
INDFMI NC    = "Annual CPS Family Income"
INDFMPI R    = "CPS Family PIR"
DMDMARTL     = "Marital status"
RIDEXPRG     = "Pregnancy Status at Exam - Recode"
DRABF        = "Breast-fed infant (either day)"
WTINT2YR     = "Full Sample 2 Year Interview Weight"
WTMEC2YR     = "Full Sample 2 Year MEC Exam Weight"
WTDR2D       = "Dietary two-day sample weight"
WTDRD1       = "Dietary day one sample weight"
SDMVPSU      = "Masked Variance Pseudo-PSU"
SDMVSTRA     = "Masked Variance Pseudo-Stratum"
AI ALANG     = "Language of ACASI Interview"
FI AI NTRP   = "Interpreter used in Family Interview?"
FI ALANG     = "Language of Family Interview"
FI APROXY    = "Proxy used in Family Interview?"
MI AI NTRP   = "Interpreter used in MEC Interview?"
MI ALANG     = "Language of MEC Interview"
MI APROXY    = "Proxy used in MEC Interview?"
SI AI NTRP   = "Interpreter used in SP Interview?"
SI ALANG     = "Language of SP Interview"
SI APROXY    = "Proxy used in SP Interview?"
DR1DRSTZ     = "Dietary recall status"
DAYCODE      = "Day of intake (1 or 2)"
G_TOTAL      = "Total number of grain ounce equivalents"
G_WHL        = "Number of whole grain ounce equivalents"
G_NWHL       = "Number of non-whole grain ounce equivalents"
V_TOTAL      = "Total number of vegetable cup equivalents, excl
              legumes"
```

```

V_DRKGR      = "Number of dark-green vegetable cup equivalents"
V_DPYEL      = "Number of orange vegetable cup equivalents"
V_POTATO     = "Number of white potato cup equivalents"
V_STARCHY    = "Number of other starchy vegetable cup equivalents"
V_TOMATO     = "Number of tomato cup equivalents"
V_OTHER      = "Number of other vegetable cup equivalents"
F_TOTAL      = "Total number of fruit cup equivalents"
F_CITMLB     = "Number of citrus, melon, berry cup equivalents"
F_OTHER      = "Number of other fruit cup equivalents"
D_TOTAL      = "Total number of milk group (milk, yogurt & cheese) cup
               equivalents "
D_MILK       = "Number of milk cup equivalents"
D_YOGURT     = "Number of yogurt cup equivalents"
D_CHEESE     = "Number of cheese cup equivalents"
M_MPF        = "Oz cooked lean meat from meat, poultry, fish"
M_MEAT       = "Oz cooked lean meat from beef, pork, veal, lamb, and
               game"
M_ORGAN      = "Oz cooked lean meat from organ meats"
M_FRANK      = "Oz cooked lean meat from franks, sausages, luncheon
               meats"
M_POULT      = "Oz cooked lean meat from chicken, poultry, and other
               poultry"
M_FISH_HI    = "Oz cooked lean meat from fish, other seafood high in
               Omega-3 fatty acids"
M_FISH_LO    = "Oz cooked lean meat from fish, other seafood low in
               Omega-3 fatty acids"
M_EGG        = "Oz equivalents of lean meat from eggs"
M_SOY        = "Oz equivalents of lean meat from soy product"
M_NUTSD      = "Oz equivalents of lean meat from nuts and seeds"
LEGUMES      = "Number of cooked dry beans and peas cup equivalents"
/* or ounce equivalents of lean meat from cooked dry bean and pea */
DISCFAT_OIL  = "Grams of discretionary Oil"
DISCFAT_SOL  = "Grams of discretionary Solid fat"
ADD_SUG      = "Teaspoon equivalents of added sugars"
A_BEV        = "Total drinks of alcohol"

```

```

;
run;

```

```

*****
*
* Generate unweighted control counts for verifying the
* pyr_tot_d1 data set.
*
*****

```

```

proc contents data = SASdata.pyr_tot_d1;          /* Generates listing */
  title1 'pyr_tot_d1';                          /* of variables in */
  title2 'NHANES 2003-2004 equivalents Intake Records'; /* SAS® output data */
  title3 'Day 1';                               /* file */
  title4 'Contents';
run;

```

```

proc means maxdec=2 n mean min max sum          /* Creates control */
  data = SASdata.pyr_tot_d1;                   /* counts - see */
  title1 'pyr_tot_d1';                         /* benchmark control */
  title2 'NHANES 2003-2004 equivalents Intake Records' /* counts below */
  title3 'Control Counts (unweighted)';
  title4 'All Individuals 2 Years of Age and Older';
  title5 'Day 1';
  title6 '++ Benchmark control counts are not to be used for analysis ++';
run;

```

## E.5. pyr\_tot\_d2.sas

```

*****
*
* pyr_tot_d2. SAS
*
* This SAS® program summarizes the individual MyPyramid
* equivalent intakes (pyr_i ff_d2.ssd) and calculates total
* daily intakes. The output file, pyr_tot_d2.ssd, contains
* one record for each responding sample person two years of
* age and older providing reliable intakes. Each record
* has data on the number of equivalents from each of the 32
* MyPyramid food groups.
*
* Be sure to modify the libname statements as appropriate.
*
* ARS suggests that prior to using the output file
* pyr_tot_d2.ssd for analysis dry beans and peas be
* assigned to the vegetables OR meat and beans group.
*
*****;

options ls = 128 ps = 87;

libname SASdata 'C:\<SAS_data_directory>';          /* Directory for SAS® */
                                                    /* data files          */

*****
* Begin creating pyr_tot_d2.ssd
*
* Calculate total daily equivalents intake records for each
* individual in the pyr_i ff_d2.ssd file.
*
*****;

proc sort data = SASdata.pyr_i ff_d2 out=data2;
  by seqn SDDSRVYR--DR2DRSTZ DAYCODE;
run;

proc means noprint data = data2;                    /* Aggregates by day */
  by seqn SDDSRVYR--DR2DRSTZ DAYCODE;
  var g_total --a_bev;
  output out = data2
    sum(g_total --a_bev) = g_total g_whl g_nwhl
    v_total v_drkgr v_dpyel v_potato v_starcy v_tomato
    v_other f_total f_ci tmlb f_other d_total d_milk d_yogurt
    d_cheese m_mpf m_meat m_organ m_frnk m_poult m_fi sh_hi m_fi sh_lo
m_egg
    m_soy m_nutsd legumes di scfat_oil di scfat_sol add_sug a_bev;
run;

*****
*
* Reorder fields and save them as a SAS® data file called
* pyr_tot_d2.ssd. Order is by SEQN.
*
*****;

data dummy;

length
  SEQN          SDDSRVYR    RIDSTATR    RIAGENDR

```

```

RI DAGEYR    RI DAGEMN    RI DAGEEX    RI DRETH1    RI DRETH2
DMDBORN     DMDEDUC     DMQMI LIT    INDHHI NC    INDFMI NC
INDFMPI R   DMDMARTL    RI DEXPRG    DRABF        WTINT2YR
WTMEC2YR    WTDR2D      WTDRD1      SDMVPSU      SDMVSTRA
AI ALANG    FIAI NTRP   FIALANG     FI APROXY    MIAI NTRP
MI ALANG    MI APROXY   SIAI NTRP   SIALANG      SI APROXY
DR2DRSTZ    DAYCODE
G_TOTAL     G_WHL       G_NWHL      V_TOTAL      V_DRKGR
V_DPYEL     V_POTATO    V_STARCHY   V_TOMATO     V_OTHER
F_TOTAL     F_CITMLB    F_OTHER     D_TOTAL      D_MILK
D_YOGURT    D_CHEESE    M_MPF       M_MEAT       M_ORGAN
M_FRANK     M_POULT     M_FISH_HI   M_FISH_LO    M_EGG        M_SOY
M_NUTSD     LEGUMES     DISCFAT_OIL DISCFAT_SOL  ADD_SUG      A_BEV        8;

```

```

proc append base = dummy          /* Note: SAS® will issue */
            data = data2          force; /* warning messages */
run;

```

```

data SASdata.pyr_tot_d2 (compress = yes);
  set dummy (where = (seqn > 0));

```

label

```

SEQN          = "Respondent sequence number"
SDDSRVYR     = "Data Release Number"
RIDSTATR     = "Interview/Examination Status"
RIAGENDR     = "Gender - Adjudicated"
RIDAGEYR     = "Age at Screening Adjudicated - Recode"
RIDAGEMN     = "Age in Months - Recode"
RIDAGEEX     = "Exam Age in Months - Recode"
RIDRETH1     = "Race/Ethnicity - Recode"
RIDRETH2     = "Linked NH3 Race/Ethnicity - Recode"
DMDBORN      = "Country of Birth - Recode"
DMDEDUC      = "Education - Recode"
DMQMI LIT    = "Served in the US Armed Forces"
INDHHI NC    = "Annual Household Income"
INDFMI NC    = "Annual CPS Family Income"
INDFMPI R    = "CPS Family PIR"
DMDMARTL     = "Marital status"
RIDEXPRG     = "Pregnancy Status at Exam - Recode"
DRABF        = "Breast-fed infant (either day)"
WTINT2YR     = "Full Sample 2 Year Interview Weight"
WTMEC2YR     = "Full Sample 2 Year MEC Exam Weight"
WTDR2D       = "Dietary two-day sample weight"
WTDRD1       = "Dietary day one sample weight"
SDMVPSU      = "Masked Variance Pseudo-PSU"
SDMVSTRA     = "Masked Variance Pseudo-Stratum"
AI ALANG     = "Language of ACASI Interview"
FIAI NTRP    = "Interpreter used in Family Interview?"
FIALANG      = "Language of Family Interview"
FI APROXY    = "Proxy used in Family Interview?"
MIAI NTRP    = "Interpreter used in MEC Interview?"
MI ALANG     = "Language of MEC Interview"
MI APROXY    = "Proxy used in MEC Interview?"
SIAI NTRP    = "Interpreter used in SP Interview?"
SIALANG      = "Language of SP Interview"
SI APROXY    = "Proxy used in SP Interview?"
DR2DRSTZ     = "Dietary recall status"
DAYCODE      = "Day of intake (1 or 2)"
G_TOTAL      = "Total number of grain ounce equivalents"
G_WHL        = "Number of whole grain ounce equivalents"
G_NWHL       = "Number of non-whole grain ounce equivalents"
V_TOTAL      = "Total number of vegetable cup equivalents, excl
              legumes"

```



```

V_DRKGR      = "Number of dark-green vegetable cup equivalents"
V_DPYEL      = "Number of orange vegetable cup equivalents"
V_POTATO     = "Number of white potato cup equivalents"
V_STARCHY    = "Number of other starchy vegetable cup equivalents"
V_TOMATO     = "Number of tomato cup equivalents"
V_OTHER      = "Number of other vegetable cup equivalents"
F_TOTAL      = "Total number of fruit cup equivalents"
F_CITMLB     = "Number of citrus, melon, berry cup equivalents"
F_OTHER      = "Number of other fruit cup equivalents"
D_TOTAL      = "Total number of milk group (milk, yogurt & cheese) cup
               equivalents "
D_MILK       = "Number of milk cup equivalents"
D_YOGURT     = "Number of yogurt cup equivalents"
D_CHEESE     = "Number of cheese cup equivalents"
M_MPF        = "Oz cooked lean meat from meat, poultry, fish"
M_MEAT       = "Oz cooked lean meat from beef, pork, veal, lamb, and
               game"
M_ORGAN      = "Oz cooked lean meat from organ meats"
M_FRANK      = "Oz cooked lean meat from franks, sausages, luncheon
               meats"
M_POULT      = "Oz cooked lean meat from chicken, poultry, and other
               poultry"
M_FISH_HI    = "Oz cooked lean meat from fish, other seafood high in
               Omega-3 fatty acids"
M_FISH_LO    = "Oz cooked lean meat from fish, other seafood low in
               Omega-3 fatty acids"
M_EGG        = "Oz equivalents of lean meat from eggs"
M_SOY        = "Oz equivalents of lean meat from soy product"
M_NUTSD      = "Oz equivalents of lean meat from nuts and seeds"
LEGUMES      = "Number of cooked dry beans and peas cup equivalents"
/* or ounce equivalents of lean meat from cooked dry bean and pea */
DISCFAT_OIL  = "Grams of discretionary Oil"
DISCFAT_SOL  = "Grams of discretionary Solid fat"
ADD_SUG      = "Teaspoon equivalents of added sugars"
A_BEV        = "Total drinks of alcohol"

```

```

;
run;

```

```

*****
*
* Generate unweighted control counts for verifying the
* pyr_tot_d2 data set.
*
*****

```

```

proc contents data = SASdata.pyr_tot_d2;          /* Generates listing */
  title1 'pyr_tot_d2';                          /* of variables in */
  title2 'NHANES 2003-2004 equivalents Intake Records'; /* SAS® output */
  title3 'Day 2';                               /* data file */
  title4 'Contents';
run;

```

```

proc means maxdec=2 n mean min max sum          /* Creates control */
  data = SASdata.pyr_tot_d2;                   /* counts - see */
  title1 'pyr_tot_d2';                         /* benchmark control */
  title2 'NHANES 2003-2004 equivalents Intake Records'; /* counts below */
  title3 'Control Counts (unweighted)';
  title4 'All Individuals 2 Years of Age and Older';
  title5 'Day 2';
  title6 '++ Benchmark control counts are not to be used for analysis ++';
run;

```

## E. 6: pyrrpt.sas

```
*****
*
* pyrrpt. sas
*
* This SAS® program is an example of the processing steps
* necessary to prepare equivalent intakes for analysis by
* assigning dry bean and peas (legumes) to the Meat and Beans
* group or Vegetables group.
*
* According to the MyPyramid Guidelines dry beans and peas
* can be counted as either lean meat or vegetable (but not
* both). The equivalents data for legumes in this database
* have been calculated as vegetable equivalents (cup
* equivalents of cooked dry beans and peas). The Guidelines
* identify 1/4 cup of dry beans and peas as equivalent to 1
* ounce of lean meat. Therefore, the number of cup
* equivalents can be multiplied by 4 to convert Legumes to
* ounces of lean meat equivalents.
*
* Depending on the users research objectives, one of the
* blocks of program code provided below should be inserted
* into an analysis program that uses any of the MyPyramid
* intake files ("pyr_i ff_d1.ssd", "pyr_tot_d1.ssd",
* "pyr_i ff_d1.ssd", and/or "pyr_tot_d1.ssd").
*
* Appropriate precautions are required to ensure that dry
* beans and peas are counted toward just one of these major
* food groups, and not double counted in both groups.
*
*****
*
* Be sure to modify the libname statement as appropriate.
*
*****
options ls = 128 ps = 87;

libname SASdata 'C:\<SAS_data_directory>'; /* Directory for SAS® */
                                           /* data files */

*****
*
* Code block #1 -
*
* Include legumes in the Meat and Bean Alternate group
*
*****
*
* Select the MyPyramid equivalents intake data to prepare
* for analysis. This example selects the day 1 total
* intake records from NHANES 2003-2004 ("pyr_tot_d1.ssd").
*
* Calculate total ounce equivalents of lean meat to include
* dry beans and peas.
*
*****
```

```

data data1;
  set SASdata.pyr_tot_d1 (keep = SEQN RIDAGEYR RIGENDR DAYCODE
                             g_total --g_nwhl v_total --v_other
                             f_total --f_other m_mpf m_egg
                             m_soy m_nutstd legumes
                             where = (DAYCODE eq 1));

TOTMEAT = m_mpf + m_egg + m_soy + m_nutstd + (legumes * 4);

/* Includes legumes in the total meat group */

label totmeat = "0z lean meat equivalent from Meat and Beans Group (incl.
legumes)";
label v_total = 'Total number of veg. equivalents (excl. legumes)';

run;

*****
*
* Calculate the mean number of grain, fruit, and vegetable *
* and meat equivalents consumed by children 2-3 years of *
* age. *
*
*****;

proc means maxdec=2 n mean sum data=data1 (where = (RIDAGEYR <= 3));
  var g_total --g_nwhl v_total --v_other f_total --f_other
      totmeat m_mpf m_egg m_soy m_nutstd legumes;
  title1 'Mean number of equivalents consumed (unweighted)';
  title2 'by children 2-3 years of age, Day 1, NHANES 2003-2004';
  title3 '(legumes included in the total meat group)';

run;

*****
*
* Code block #2 -- *
*
* Include legumes in vegetable group. *
*
*****;
*****;
*
* Select the MyPyramid equivalents intake data to prepare *
* for analysis. This example selects the day 1 total *
* intake records from NHANES 2003-2004 ("pyr_tot_d1.ssd"). *
*
* Calculate total ounces of meat and lean meat equivalents. *
*
* Calculate total vegetable equivalents to include dry *
* beans and peas. *
*
*****;

data data2;
  set SASdata.pyr_tot_d1 (keep = SEQN RIDAGEYR RIGENDR DAYCODE
                             g_total --g_nwhl v_total --v_other
                             f_total --f_other m_mpf m_egg
                             m_soy m_nutstd legumes
                             where = (daycode eq 1));

```

```

V_TOTAL = v_total + legumes;          /* include legumes in */
TOTMEAT = m_mpf + m_egg + m_soy + m_nutsd; /* the vegetable group */

label TOTMEAT = "Oz lean meat equivalent from Meat and Beans Group (excl.
legumes)";
label V_TOTAL = 'Total number of veg. equivalents (incl. legumes)';
label LEGUMES = 'Number of dry beans/peas equivalents';

run;

*****
*
* Calculate the mean number of grain, fruit, vegetable and
* meat equivalents consumed by children 2-3 years of age
* after including legumes in the vegetable group.
*
*****;

proc means maxdec=2 n mean sum data=data2 (where = (RIDAGEYR <= 3));
var g_total--g_nwhl v_total--v_other legumes f_total--f_other
totmeat m_mpf m_egg m_soy m_nutsd;
title1 'Mean number of equivalents consumed (unweighted)';
title2 'by children 2-3 years of age, Day 1, NHANES 2003-2004';
title3 '(legumes included in the total vegetable group)';

run;

```

## E7: pyrrecom.sas

```
*****
*
* pyrrecom. sas
*
* This SAS® program is an example of the processing steps
* necessary to compare the total equivalent intakes from
* the five major MyPyramid groups (total grains, total
* vegetables, total fruits, total meat, and total milk) for
* each sample person to the recommended number of
* equivalents for each group. See the the Dietary
* Guidelines for Americans 2005 for more information on the
* suggested amount of each food group to consume.
*
* The Dietary Guidelines provide suggested amounts of food
* to consume from the basic food groups to meet the
* recommended nutrient intakes at 12 different caloric
* levels (which are based on age, sex and level of physical
* activity). This program shows how to operationalize the
* MyPyramid equivalents intakes and compare them to these
* recommendations.
*
* Be sure to modify the libname statement as appropriate.
*
* NOTE: This program --
*
*         (1) includes dry beans and peas (legumes) in
*             the meat group. See pyr rpt. sas for
*             replacement code to include dry beans and
*             peas in the vegetable group.
*
*         (2) uses reported day 1 energy intake to
*             identify the recommended number of
*             equivalents that an individual should
*             consume and does not account for what an
*             individual's energy intake should be based
*             on age, sex and activity level.
*
*         (3) compares the number of day 1 equivalents
*             consumed by each individual to the
*             recommended amount interpolated for the
*             individual's reported caloric intake.
*
*****
options ls = 128 ps = 87;

libname SASdata 'C:\<SAS_data_directory>';          /* Directory for SAS® */
                                                    /* data files          */

libname NH0304 'C:\<SAS_data_directory_for_NH0304>'; /* Directory for NHANES */
                                                    /* 2003-2004 data     */

*****
*
* Get the MyPyramid equivalent Day 1 intakes to be compared *
```

```

* to the recommendations in the program steps that follow. *
* * *
* Read total grain, total vegetable, total fruit, and total *
* dairy equivalents from pyr_tot_d1.ssd. *
* * *
* Read the total energy intake for each individual from the *
* day 1 total NHANES data ("dr1tot_c"). *
* * *
* Calculate total ounces of meat and lean meat equivalents *
* to include legumes. *
* * *
*****
data data1 (keep = SEQN RIDAGEYR RIAGENDR DAYCODE
              g_total v_total f_total d_total
              m_mpf m_egg m_soy m_nutsd legumes
              grain veg fruit dairy meat Energy
              where = (DAYCODE eq 1));
merge SASdata.pyr_tot_d1 (in = in1)
      NH0304.dr1tot_c (rename =(DR1TKCAL=Energy));
by seqn;

if in1;

meatgrp = m_mpf + m_egg + m_soy + m_nutsd + (legumes * 4); /* Include legumes */
                                                    /* in the meat grp */

*****
* * *
* Compare an individual's equivalents intake to the number *
* of equivalents recommended interpolated for the amount of *
* calories consumed. *
* * *
* The "grain", "veg", "fruit", "dairy", "meat" variables *
* are preset to 2 (not meeting the recommendation) and then *
* set to 1 (meets the recommendation) if it is determined *
* that a sample person meets the recommendation. *
* * *
*****

grain = 2;
veg = 2;
fruit = 2;
dairy = 2;
meat = 2;

if (energy <= 1000) then do; /* 1000 calorie Level */
  if (f_total >= 1) then fruit = 1;
  if (v_total >= 1) then veg = 1;
  if (g_total >= 3) then grain = 1;
  if (meatgrp >= 2) then meat = 1;
  if (d_total >= 2) then dairy = 1;
end;

else if (1000 < energy <= 1200) then do; /* 1200 calorie Level */
  if f_total >= 1 then fruit = 1;
  if v_total >= (1 + ((.5) * ((energy - 1000) / 200))) then veg = 1;
  if g_total >= (3 + ((1) * ((energy - 1000) / 200))) then grain = 1;
  if meatgrp >= (2 + ((1) * ((energy - 1000) / 200))) then meat = 1;
  if d_total >= 2 then dairy = 1;
end;

```

```

else if (1200 < energy <= 1400) then do;          /* 1400 calorie
Level */
  if f_total >= (1 + ((.5) * ((energy - 1200) / 200))) then fruit = 1;
  if v_total >= 1.5 then veg = 1;
  if g_total >= (4 + ((1) * ((energy - 1200) / 200))) then grain = 1;
  if meatgrp >= (3 + ((1) * ((energy - 1200) / 200))) then meat = 1;
  if d_total >= 2 then dairy = 1;
end;

else if (1400 < energy <= 1600) then do;          /* 1600 calorie Level */
  if f_total >= 1.5 then fruit = 1;
  if v_total >= (1.5 + ((.5) * ((energy - 1400) / 200))) then veg = 1;
  if g_total >= 5 then grain = 1;
  if meatgrp >= (4 + ((1) * ((energy - 1400) / 200))) then meat = 1;
  if d_total >= (2 + ((1) * ((energy - 1400) / 200))) then dairy = 1;
end;

else if (1600 < energy <= 1800) then do;          /* 1800 calorie Level */
  if f_total >= 1.5 then fruit = 1;
  if v_total >= (2 + ((.5) * ((energy - 1600) / 200))) then veg = 1;
  if g_total >= (5 + ((1) * ((energy - 1600) / 200))) then grain = 1;
  if meatgrp >= 5 then meat = 1;
  if d_total >= 3 then dairy = 1;
end;

else if (1800 < energy <= 2000) then do;          /* 2000 calorie Level */
  if f_total >= (1.5 + ((.5) * ((energy - 1800) / 200))) then fruit = 1;
  if v_total >= 2.5 then veg = 1;
  if g_total >= 6 then grain = 1;
  if meatgrp >= (5 + ((.5) * ((energy - 1800) / 200))) then meat = 1;
  if d_total >= 3 then dairy = 1;
end;

else if (2000 < energy <= 2200) then do;          /* 2200 calorie Level */
  if f_total >= 2 then fruit = 1;
  if v_total >= (2.5 + ((.5) * ((energy - 2000) / 200))) then veg = 1;
  if g_total >= (6 + ((1) * ((energy - 2000) / 200))) then grain = 1;
  if meatgrp >= (5.5 + ((.5) * ((energy - 2000) / 200))) then meat = 1;
  if d_total >= 3 then dairy = 1;
end;

else if (2200 < energy <= 2400) then do;          /* 2400 calorie Level */
  if f_total >= 2 then fruit = 1;
  if v_total >= 3 then veg = 1;
  if g_total >= (7 + ((1) * ((energy - 2200) / 200))) then grain = 1;
  if meatgrp >= (6 + ((.5) * ((energy - 2200) / 200))) then meat = 1;
  if d_total >= 3 then dairy = 1;
end;

else if (2400 < energy <= 2600) then do;          /* 2600 calorie Level */
  if f_total >= 2 then fruit = 1;
  if v_total >= (3 + ((.5) * ((energy - 2400) / 200))) then veg = 1;
  if g_total >= (8 + ((1) * ((energy - 2400) / 200))) then grain = 1;
  if meatgrp >= 6.5 then meat = 1;
  if d_total >= 3 then dairy = 1;
end;

else if (2600 < energy <= 2800) then do;          /* 2800 calorie Level */
  if f_total >= (2 + ((.5) * ((energy - 2600) / 200))) then fruit = 1;
  if v_total >= 3.5 then veg = 1;
  if g_total >= (9 + ((1) * ((energy - 2600) / 200))) then grain = 1;
  if meatgrp >= (6.5 + ((.5) * ((energy - 1600) / 200))) then meat = 1;

```

```

    if d_total >= 3 then dai ry = 1;
end;

else if (2800 < energy <= 3000) then do;      /* 3000 calorie Level */
    if f_total >= 2.5 then fruit = 1;
    if v_total >= (3.5 + ((.5) * ((energy - 2800) / 200))) then veg = 1;
    if g_total >= 10 then grain = 1;
    if meatgrp >= 7 then meat = 1;
    if d_total >= 3 then dai ry = 1;
end;

else if (energy >= 3000) then do;            /* 3200 calorie Level */
    if f_total >= 2.5 then fruit = 1;
    if v_total >= 4 then veg = 1;
    if g_total >= 10 then grain = 1;
    if meatgrp >= 7 then meat = 1;
    if d_total >= 3 then dai ry = 1;
end;

```

```

*****
*
* Summarize the comparison results from above and report
* the total number and percentage of individuals meeting
* and not meeting the MyPyramid Recommendations for the
* grain, vegetable, fruit, dairy and meat MyPyramid groups.
*
*****

```

```

proc format;
    value grain
    1 = "Meet"
    2 = "Not Meet";

    value fruit
    1 = "Meet"
    2 = "Not Meet";

    value veg
    1 = "Meet"
    2 = "Not Meet";

    value dairy
    1 = "Meet"
    2 = "Not Meet";

    value meat
    1 = "Meet"
    2 = "Not Meet";
run;

```

```

proc tabulate data=data1 format=10.0;
    class grain veg fruit dairy meat;
    table n*(grain veg fruit dairy meat);
    table pctn*(grain veg fruit dairy meat);
    format grain grain. veg veg. fruit fruit. dairy dairy. meat meat.;
    keylabel n='Number of Indi v. Meeting Recommendations'
             pctn='% of Indi v. Meeting Recommendations';
    label grain=' Grain Group'
           veg=' Vegetable Group'
           fruit=' Fruit Group'
           dairy=' Dairy Group'

```



```
      meat='Meat Group w/ Legumes';  
title1 'Total Number and Percentage of Individuals';  
title2 'Meeting and Not Meeting MyPyramid Recommendations';  
title3 'NHANES 2003-2004, Day 1';  
title4 '(unweighted)';  
run;
```

## Appendix F: Useful Websites

### National Food Surveys

An introduction and overview of What We Eat in America, National Health and Nutrition Examination Survey 2003-2004:

<http://www.ars.usda.gov/Services/docs.htm?docid=15044>. Accessed May 15, 2008

The Food and Nutrient Database for Dietary Studies, 2.0 used to code the dietary component of the What We Eat in America, National Health and Nutrition Examination Survey 2003-2004: <http://www.ars.usda.gov/Services/docs.htm?docid=12089>. Accessed May 15, 2008

Data and documentation for the National Health and Nutrition Examination Surveys: available at <http://www.cdc.gov/nchs/nhanes.htm>. Accessed May 15, 2008

### National Nutrient Database

Nutrient Data Laboratory Home Page:

[http://www.ars.usda.gov/main/site\\_main.htm?modecode=12354500](http://www.ars.usda.gov/main/site_main.htm?modecode=12354500). Accessed May 15, 2008. Links to the latest releases of USDA National Nutrient Database for Standard Reference and USDA Table of Nutrient Retention Factors are available on this home page.

### USDA MyPyramid Food Guidance System

The MyPyramid Web Site: <http://www.mypyramid.gov>. Accessed May 15, 2008

“Inside the Pyramid” – Information about each pyramid food group such as foods they contain and what counts as a cup or ounce is available at

<http://www.mypyramid.gov/pyramid/index.html>. Accessed May 15, 2008

Development of MyPyramid: <http://www.cnpp.usda.gov/MyPyramidDevelopment.htm>. Accessed May 15, 2008

### Dietary Guidelines for Americans, 2005

Dietary Guidelines for Americans, 6th Edition, 2005:

<http://www.cnpp.usda.gov/DietaryGuidelines.htm>. Accessed May 15, 2008

Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2005 - to the Secretary of Health and Human Services and the Secretary of Agriculture. Prepared for the committee by the Agricultural Research Service is available at <http://www.health.gov/dietaryguidelines/dga2005/document>. Accessed May 15, 2008