Methodology and User Guide for The Food Intakes Converted to Retail Commodities Databases:
CSFII 1994-1996 and 1998
NHANES 1999-2000
WWEIA, NHANES 2001-2002

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Table of Contents

Chapter 1

Overview

Why Develop the Food Intakes Converted to Retail Commodities Database?

The Food Intakes Converted to Retail Commodities Database (FICRCD) is jointly produced by USDA's Agricultural Research Service (ARS) and Economic Research Service (ERS). The purpose of the FICRCD is to provide commodity data for the foods consumed in the national dietary surveys. This requires conversion of foods reported as consumed in the surveys into commodities. Currently, there are no national databases that provide information on foods consumed in terms of equivalent amounts of food commodities. FICRCD fills this gap; and by doing so, it provides opportunities for several unique applications and has the potential to link nutrition, agriculture, and economics. In addition to its basic purpose of linking to national dietary survey data, FICRCD can be linked to other dietary data that use USDA food codes and to some of the local and national food price databases. This provides a means to conduct both direct as well as complex analyses, a few examples of which are listed below:

- FICRCD can be used to estimate the amounts of various retail commodities that are consumed by different age, gender, income, and ethnic groups.
- FICRCD can be used to address questions such as:
  - How is a commodity used in the American diet? (e.g., what are the popular uses of the cheese commodity –in sandwiches, pizza, salads, or other foods?)
  - Which foods in the dietary surveys contain specific commodities such as tomatoes, tree nuts, or eggs, and in what amounts?
  - Is a specific commodity more often eaten at home or away-from-home? (e.g., do people eat more of commodities such as fluid milk, beef, and potatoes, at home or away from home?)
- By linking FICRCD to economic databases, cost of commodities such as fruits, vegetables, fluid milk, cheese, and yogurt can be computed, and the types and amounts of retail commodities that may be purchased for a healthful diet can be estimated. This permits determination of affordability of healthful diets for economic and nutrition policy purposes and for planning nutrition interventions.
- By linking FICRCD with the MyPyramid Equivalents Database (MPED) [1] for the respective survey years, one can estimate healthful food options in terms of retail commodities. The MPED, which is also released by ARS, converts foods in the dietary surveys to corresponding MyPyramid equivalents for the 32 food groups and other components of the MyPyramid and is based on the MyPyramid Food Guidance System [2], which provides guidance on the types and amounts of foods Americans need to eat to have a

healthful diet. The MPED provides data on edible portions of foods as consumed, whereas FICRCD provides data on uncooked forms of foods with refuse included in many of the commodities. From MPED, nutrition educators can estimate the amounts of fruits and vegetables their clients should eat to meet the dietary recommendations. FICRCD provides data on the same foods in MPED, in terms of commodities. Nutrition educators can estimate the amounts of fruit and vegetable commodities to be purchased. Such an exercise can help nutrition educators offer guidance to their clients not only in terms of what foods to eat, but also in terms of the amounts of food commodities they need to purchase to meet the dietary recommendations. By pricing these commodities, one could estimate the cost of nutritious food choices. It should be noted that FICRCD does not separate the fat naturally present in foods such as meat and poultry into meat and fat components, whereas MPED differentiates between the lean and fat components of these foods.

The development of FICRCD demonstrates that it is possible to convert foods consumed into respective commodities through a systematic, multi-step conversion process. By doing so, FICRCD provides the missing link between food consumption and food production in terms of food commodities available at the retail level for purchase by Americans. FICRCD can be used to answer questions addressing the dietary patterns and dietary choices of Americans such as which age, gender, ethnic, or income groups consume specific types of fruit or vegetable commodities and in some cases can also be used to estimate money spent on foods by pricing the commodities.

FICRCD has been developed for the foods reported in the following dietary surveys:
- Continuing Survey of Food Intakes by Individuals 1994-1996 and 1998 (CSFII 1994-1996 and 1998) [3],
- National Health and Nutrition Examination Survey 1999-2000 (NHANES 1999-2000) [4], and
- What We Eat In America, National Health and Nutrition Examination Survey, 2001-2002 (WWEIA, NHANES 2001-2002) [5].

What Is Included in the FICRCD Release?

The FICRCD release includes several components as described below:
- Documentation of the development of FICRCD.
- Databases in MSAccess® and SAS®, one each for the surveys identified above. Each database includes the amounts of the 65 commodities present in 100 grams of each survey food in that survey. The databases are described in Table 1.

Table 1. Characteristics of files in FICRCD

Characteristics	FICRCD 1994-1998	FICRCD 1999-2000	FICRCD 2001-2002
Survey period	CSFII 1994-1996 and 1998	NHANES 1999-2000	WWEIA, NHANES 2001-2002
Name of the documentation file	Documentation FICRCD1994_2002.pdf		
Total number of food records	9639	4270	4225
Technical files and resources used to create FICRCD	CSFII 1994-1996 and 1998 technical files, SR-21, AH-102, ERS technical files	CSFII 1994-1996 and 1998 technical files, SR 21, AH-102, ERS technical files	FNDDS 1.0, SR 21, AH-102, ERS technical files
Name of FICRCD 100-gram MS Access® database	FICRCD_1994_1998. mdb	FICRCD_1999_2000.mdb	FICRCD_2001_2002. mdb
Name of FICRCD 100-gram SAS® database	FICRCD_1994_1998 .sas7bdat	FICRCD_1999_2000 .sas7bdat	FICRCD_2001_2002 .sas7bdat

What Is Included in the Documentation?

The documentation describes the process of disaggregation of foods, their assignment to appropriate commodities, and the application of conversion factors to convert foods to respective amounts of commodities. The appendices of the documentation provide a list of foods included in each commodity (Appendix A), a list of selected conversion factors that are used to convert foods as consumed to retail food commodities (Appendix B), and the names of the variables in the 100 gram FICRCD databases (Appendix C).

Definition of Food Commodities in FICRCD

Food commodities are defined as those available for purchase in retail stores, supermarkets, or other retail food outlets, with a few exceptions such as industrial shortening, corn syrup, and high-fructose corn syrup that are solely used by the food industry, and game meats that are obtained elsewhere. There are 8 major categories of commodities in FICRCD: Dairy Products; Fats and Oils; Fruits; Grains; Meat, Poultry, Fish and Eggs; Nuts; Caloric Sweeteners; and Vegetables, Dry Beans and Legumes. Each of the major categories has several components. Hence,

FICRCD contains a total of 65 food commodities. Foods within each commodity are converted to a single commodity type even if the food is available in different forms at retail stores (e.g., there are no canned, frozen, or dried carrots; instead carrots consumed in the surveys are converted to the carrots commodity; similarly, nonfat dry milk is converted to fluid skim milk in FICRCD). Table 2 includes a list of the major commodity categories, the food commodities within these categories, and specific types of commodities presented in FICRCD. Appendix A lists major foods within each commodity.

Table 2. Alphabetical list of commodities included in FICRCD

Major commodity category (# within category)	Commodities within major commodity category[1]	Commodity types presented in FICRCD

Dairy Products (10)	Total dairy products
	  Total fluid milk
	    Fluid whole milk
	    Fluid 2% milk
	    Fluid 1% milk
	    Fluid skim milk
	  Butter
	  Cheese
	  Yogurt
	  Other dairy products
		• Dairy products are presented as those available in retail stores or supermarkets.

Fats and Oils (5)	Total fats and oils
	  Margarine
	  Salad & cooking oils
	  Shortening (includes industrial shortenings)
	  Other oils
		• Fats and oils are presented as those available in retail stores or supermarkets, except for the shortening commodity which also includes industrial shortenings.
		• Animal fats are not assigned a separate commodity, but are included in the total fats and oils commodity.

Fruits (14)	Total fruit
	  Total apples
	    Apples from fruit
	    Apples from juice
	  Bananas
	  Berries
	  Grapes
	  Melons
	  Total oranges
	    Oranges from fruit
	    Oranges from juice
	  Other citrus fruits
	  Stone fruits
	  Tropical fruits
		• Fruits are presented as raw fruits with refuse (e.g., core, crown, peel, skin, seeds, pits).
		• Two commodity variables are included for apples and oranges. Differentiation has been made between the amounts of fruit consumed as fruit and the amounts of fruit consumed as fruit juices.
		• Fruits not assigned to a specific commodity are included in the total fruit commodity

Grains (5)	Total grains
	  Corn flour & meal
	  Oats & oat flour
	  Rice (dry or uncooked)
	  Wheat flour
		• Wheat, corn, and oats are presented as uncooked flour, or meal.
		• Rice is presented as uncooked grain, without husk.
		• Other grains are included in the total grains commodity.

Major commodity category (# within category)	Commodities within major commodity category¹	Commodity types presented in FICRCD

Meat, Poultry, Fish & Eggs (10)	Total meat, poultry, & fish
	  Total meat
	    Beef
	    Pork
	  Total poultry
	    Chicken
	    Turkey
	  Finfish & shellfish
	Eggs, shell included
	Eggs, without shell
		• Meat, poultry and fish are presented as uncooked, boneless meat.
		• Poultry with or without skin are combined and presented as one commodity.
		• Eggs are presented in two ways: shell eggs and eggs without shell.
		• Game meat is included in the total meat and game birds in the total poultry commodities.

Nuts (tree nuts & peanuts) (3)	Total nuts
	  Peanuts
	  Tree nuts
		• Nuts are presented as raw nuts without the shell.

Sweeteners, Caloric (1)	Total caloric sweeteners	• Sugars and syrups are presented as available in retail stores or supermarkets. • Corn syrup solids and high-fructose corn syrups are presented as such, without conversion.

Vegetables, dry beans & legumes (17)	Total vegetables
	  Total brassica (cruciferous) vegetables
	    Broccoli & cauliflower
	  Carrots
	  Celery
	  Cucumbers
	  Green peas
	  Total leafy vegetables
	    Lettuce (head & leaf)
	  Onions
	  Peppers (bell & non-bell)
	  Tomatoes
	  Sweet corn
	  Total roots & tubers
	    Potatoes
	  Snap beans (string beans)
	  Legumes (dry beans and peas)
		• Vegetables are presented as raw vegetables with refuse (e.g., peel, skin, seeds).
		• Dry beans and peas (legumes) are presented as uncooked, without husk.
		• The totals in each vegetable commodity category include other similar vegetables that have not been assigned to a separate commodity.

¹Some of the commodities not given a separate commodity assignment may be included in the respective total commodity category. See Appendix A for details on foods included in each commodity.

Criteria for Establishing Commodity Categories

ERS provided ARS with a list of commodities. Eight major commodity categories were developed, based on the ERS list. In the early stages of the development of FICRCD, many commodities were developed to be similar to the ERS Food Availability commodities. However, after converting dietary intakes to commodities, mean commodities consumed were estimated for 23 age-gender population groups. Commodities having very low mean estimates with large relative standard errors were either aggregated with similar commodities, or were included only under the totals of the respective major commodity. Therefore, some of the major commodity category totals may exceed the sum of the commodities that are within the major commodities.

In assigning vegetables to commodities, if ERS grouping was not possible due to low mean intakes, then vegetables were grouped based on botanical classifications or other commonalities. For example, in the Brassica family, broccoli and cauliflower were assigned a separate commodity because of their high mean intakes and the remaining vegetables in the Brassica family with low mean intakes were included in the total brassica commodity. Similarly, all types of leafy vegetables, except lettuce, were included only in the total leafy vegetable commodity, without being assigned to separate commodities. All roots and tubers, except potatoes, were assigned only to the total roots and tubers commodity. Mean intakes of the non-bell pepper commodity were low and therefore the non-bell pepper commodity was combined with the bell pepper commodity. All dry beans and peas (legumes) were combined into a single commodity. Tomatoes, sweet corn, and snap beans (string beans) have their own commodities, due to high consumption. Many of the other vegetable commodities such as asparagus, eggplant, garlic, mushroom, okra, squash, and zucchini that had low mean intake estimates could not be combined with any of the other 16 vegetable commodities because of a lack of similarity with other vegetable commodities. These commodities are included only under the total vegetables commodity (Appendix 1). Similarly, there are fruits (e.g., dates, figs, kiwi, pomegranate) and grains (e.g., amaranth, barley, millets, rye, triticale) that had low mean intakes and are included only under the total fruit or total grain commodities, respectively. Only a single total caloric sweeteners commodity category that included sugar, corn syrups, maple and other syrups, honey, and molasses was established because of the difficulties in the identification of the exact type of caloric sweetener used in several of the food products.

Foods That Have No Commodity Assignments

Not all foods reported in the dietary surveys have been converted to commodities. No commodity assignments are made for the following foods: highly processed products such as infant formula; broth; cocoa powder; coconut; herbs other than fresh herbs such as parsley, cilantro, and basil; orange and other citrus peels used as flavorings; seeds such as flax seed, pumpkin seed, sesame seed, sunflower seed and their butters; spices; onion and garlic powders; and non-caloric sugar substitutes (e.g., aspartame, saccharin). These foods have been assigned a value of zero for each of the 65 commodities. The data on spices and herbs in foods are very generic in the survey technical files and are not representative of the actual amounts used in foods, and hence are not assigned to a commodity. Seeds, because of very small dietary intakes and coconut, not being a tree nut, are also not assigned to a commodity.

Beverages Other Than Milk and Fruit Juices

No separate commodity category has been established for beverages such as alcoholic beverages, soft drinks, fruit drinks, coffee, and tea, because these beverages are stand-alone foods and their use as ingredients in other foods is minimal, if any. Therefore, their intakes can be estimated directly from the survey dietary data without requiring conversions to commodities. However, cream and milk added to coffee and tea, fruit juices in mixed alcoholic drinks, and caloric sweeteners in the beverages are counted under the appropriate commodities. Due to a lack of data, FICRCD does not account for the grapes and other fruits used in wine production, the grains used in beer production, and the grains and potatoes used in distilled spirits production.

Differences Between FICRCD, EPA's Food Commodity Intake Database, and ERS Food Availability Data Series

FICRCD is unique in its definition and purpose and is different from the Food Commodity Intake Database (FCID) of Environmental Protection Agency (EPA) [6] and the Food Availability data series released by ERS [7].

Like FICRCD, EPA's FCID is also based on actual food intake data, but serves a different purpose. EPA's FCID converts foods consumed in national dietary surveys to respective amounts of EPA-defined food commodities to estimate pesticide exposure from foods. The FCID definitions of commodities are different from that of FICRCD, because FCID is designed for the purpose of estimating the probable intakes of pesticide residues through foods. The amounts of various pesticides that are present in foods are contingent upon several factors including processing techniques, cooking method, and the fat or water content of foods. Therefore, FCID distinguishes between different types of the same foods (e.g., fresh, canned, frozen, dried), cooked status of the food, and also the different components of the same food

(e.g., milk separated into milk fat, nonfat-milk solids, and milk water components). In comparison, for each food commodity in FICRCD, a single retail commodity type is represented without differentiating between fresh, frozen, or canned foods or cooking status. That is, fresh, frozen, or canned vegetables and sautéed, steamed, or grilled vegetables are converted to raw vegetables.

The ERS Food Availability (also known as U.S. Food Supply data or Disappearance data) [7] annual data series is not based on actual food intake data. The data series includes U.S. per capita estimates of foods that are available for human consumption. Here, the amounts of food commodities available for human consumption are estimated by measuring food supplies moving from production through marketing channels for domestic consumption for several hundred foods. In addition, ERS also adjusts the per capita food availability data for food loss due to spoilage; inedible components of foods such as bones, shells, and seeds; and plate waste and pet food use in the Loss-Adjusted Food Availability data series to account for food loss prior to consumption. Because it is per capita, it can not be used to estimate the amounts of commodities actually consumed by different socio-economic and ethnic groups.

Chapter 2

Methodology for Converting USDA Survey Foods into Retail Food Commodities

Major Processing Steps

There are four major steps involved in converting the survey foods back to respective amounts of commodities:
1. Disaggregation of survey foods to ingredients, where necessary.
2. Assignment of food ingredients to retail commodities.
3. Conversion of foods to retail commodities by using appropriate conversion factors.
4. Determination of the amounts of each of the 65 commodities present per 100 grams of each survey food.

Disaggregation of Survey Foods into Ingredients

The amounts of food ingredients present per 100 grams of survey foods for the three surveys provided in FICRCD are obtained from the CSFII 1994-1996, 1998 technical files [3] and Food and Nutrient Database for Dietary Studies (FNDDS 1.0) [8] associated with the respective surveys (see Table 1, Chapter 1). Most of the survey foods are multi-ingredient foods and can not be directly assigned to a single commodity. If a direct assignment is not possible, the food is disaggregated into ingredients that can be assigned to appropriate single commodities. The level of disaggregation of a food into its ingredients is contingent upon the information available in the survey technical files and other data sources used.

Whole fruits, raw vegetables, cheese, and fluid milk are examples of single-ingredient foods that do not require disaggregation and can be directly assigned to a single commodity. Multi-ingredient foods such as pizza and fruit salad with nuts that are composed of ingredients from more than one commodity type require disaggregation before commodity assignments.

Beverages such as soft drinks, coffee, tea, and alcoholic beverages are not among the eight major commodity categories. However, the caloric sweeteners and dairy components of these beverages are included under the appropriate commodities. For example, honey added to tea; sugar, cream, or milk added to coffee; and fruit juice in mixed alcoholic drinks are separated out through disaggregation of these beverages and included in the respective commodities. A few examples of the disaggregation process are included in Table 3.

Table 3. A conceptual model for food disaggregation

Survey Food Description	Recipe for the previous level		
	Level 1 disaggregation	Level 2 disaggregation	Level 3 disaggregation
Tuna noodle casserole with cream or white sauce [a]	1. Light tuna fish, canned in oil, drained	Tuna fish [b] Soybean oil [b] Salt [c]	
	2. Egg noodles, cooked	Egg noodles, dry	Whole eggs, raw [b] Wheat flour [b]
	3. Fluid milk [b]		
	4. Regular stick margarine, 80% fat [b]		
	5. White all purpose wheat flour [b]		
Polish sausage [a]	1. Pork [b]		
	2. Nonfat dry milk [b]		
	3. Sugar [b]		
	4. Spices [c]		
	5. Water [c]		
Coffee, latte [a]	1. Espresso brewed coffee [c]		
	2. Fluid milk [b]		
Carbonated soft drink, regular type [a]	1. Water [c]		
	2. High fructose corn syrup [b]		
Tequila Sunrise [a]	1. Tequila [c]		
	2. Orange juice, unsweetened [b]		
	3. Lime juice, unsweetened [b]		
	4. Grenadine	High fructose corn syrup [b] Water [c]	
Vanilla ice cream [a]	1. Heavy cream [b]		
	2. Fluid whole milk [b]		
	3. Sugar [b]		
	4. Vanilla extract [c]		

[a] Only major ingredients of the foods are listed in the first column.
[b] Indicates the level at which commodity assignments are made.
[c] Ingredient is defined as a non-food commodity.

Assignment of Foods/Ingredients to Food Commodity Categories

After the disaggregation process, each food/ingredient is either assigned to an appropriate commodity listed in Table 2 or to the "not a commodity" category. Food ingredients that are not assigned to a commodity include water used in cooking, salt, baking powder, flavoring agents, citrus peel, spices, vinegar, yeast, and other leavening agents. Foods that are consumed in amounts too small to warrant a separate commodity by themselves are counted under the major commodity category totals. For example, in the grains commodity category, amaranth, barley, buckwheat, and triticale are consumed in amounts too small to have a separate commodity assignment by themselves. These are counted under the total grains commodity. Therefore, some of the major commodity category totals may exceed the sum of the commodities that are within them.

Conversion of Foods into Commodity Categories Using Conversion Factors

Conversion factors are applied in the development of FICRCD to convert foods within a commodity to a common commodity type (e.g. fluid milk, raw tomatoes, uncooked fish or meat) to facilitate aggregation of similar commodities. Conversion factors are applied before aggregation within each commodity. The amounts of each food commodity present in the ingredients are totaled to calculate the amounts of each commodity present per 100 grams of survey foods.

Need for Conversion Factors

In FICRCD, commodities are represented per 100 grams of foods consumed in the surveys. During the conversion of foods consumed to food commodities, weight losses that occur due to food preparation and cooking or processing are rectified by using conversion factors. The conversion factors are applied to foods within a commodity to convert them to a common commodity type to facilitate aggregation of similar commodities. Appendix B includes a list of conversion factors that are applied in FICRCD.

The conversion of foods to commodities may result in the commodity values exceeding 100 grams, in most cases. For example, 100 grams of raw apples eaten without peel and core, when expressed as a retail commodity will weigh 130 grams. This is because 23% of refuse (13% peel and 10% core and stem) is added back to the apples as eaten. [Math check: 130x [(100-23)/100] =100 grams of edible portion].

Where the Conversion Factors Are Applied

The following examples illustrate the use of conversion factors:
- To convert cooked foods to raw or uncooked foods (e.g., cooked pasta, rice, legumes, dry beans, meat, fish, poultry, vegetables).
- To convert fruits and vegetables consumed in the surveys to fruits or vegetables with refuse (e.g., skin, peel, core, crown, parings, seeds, pits, trimmings). Fruit and vegetable (including tubers) commodities in FICRCD include appropriate refuse components.
- To convert 100% fruit juices to respective whole fruits with refuse (e.g., apple, cranberry, orange, lime, lemon, grape, and pineapple juices).
- To convert frozen, 100% fruit juice concentrates to single-strength, ready-to-drink- 100% fruit juice and then to the respective raw fruit commodities. Here, two conversion factors are applied. The first factor converts frozen concentrates to single-strength juice and the second factor converts the juice to whole fruit with refuse.
- To convert dried fruits to fresh fruit with refuse (e.g., dried apples, prunes, raisins, dates, dried figs, and dried pears).
- To convert roasted nuts to raw nuts, without husk.
- To convert peanut butter and almond butter to respective whole raw nuts, without husk.
- To convert dried foods to fresh or raw foods, as applicable (e.g., to convert dried milk to fluid milk, dried fish to raw fish, dried meat to raw meat, and dried vegetables to raw vegetables).

At times, more than one conversion factor is necessary to convert foods consumed to the respective commodity.

Sources of Conversion Factors

The conversion factors applied in the development of FICRCD come from the following sources:
- The Food and Nutrient Database for Dietary Studies 1.0 (FNDDS 1.0) [8]. The data from the FNDDS "MoistFatAdjust" file is used to adjust for cooking losses (e.g., loss of weight during broiling fish and cooking meat or vegetables), to adjust back moisture gained during cooking (e.g., cooked pasta or rice back to uncooked pasta or rice), and the "FNDDSSRLINKS" file is used to adjust for dilution of frozen, concentrated fruit juices to single-strength juices.
- The National Nutrient Database for Standard Reference [9] is used to compute percentage refuse factors for fruits and vegetables as explained in the above example of raw apples; and also to adjust for weight changes due to cooking, if this information is not available in the FNDDS.

- Agriculture Handbook No. 102, Food Yields Summarized by Different Stages of Preparation [10], is used only if the percentage refuse factors for fruits and vegetables are not available in the National Nutrient Database for Standard Reference.
- USDA, Economic Research Service provided some of the conversion factors [11]. Agricultural Handbook No. 697, Weights, Measures, and Conversion Factors for Agricultural Commodities and Their Products [12], is one of the resources used by ERS.

Types of Conversion Factors

Conversion factors serve different purposes and are classified based on their functions as described below.

1. **To adjust for preparation losses or refuse**: These conversion factors are applied to add the refuse (e.g., skin, peel, core, crown, parings, seeds, pits, trimmings) to the edible portions of raw fruits and vegetables. ARS' National Nutrient Database for Standard Reference is the major source for establishing percentage refuse factors. The computational steps are explained below:

    Banana:
    A banana has, on average, 36% of its weight as peel (refuse)
    64 grams of edible portion of banana   =100 grams with peel
    100 grams of edible portion of banana   =[(100/64)x100]
                                          =156 grams with peel

    Conversion factor to convert 100 grams of edible portion of banana to banana as a commodity =156/100=**1.56**

    Raw, ripe tomatoes:
    Red, ripe tomatoes have 9% refuse (composed of core and stem)
    91 grams of edible portion of tomatoes   =100 grams with refuse
    100 grams of edible portion of tomatoes =[(100/91)x100]
                                          =110 grams with refuse

    Conversion factor to convert 100 grams of edible portion of tomato to tomato as a commodity =110/100=**1.1**

2. **To adjust for the weight loss that occurs during cooking:** Examples of foods where this type of conversion factor is applied include broiled, grilled, or baked fish, meat, and vegetables. The percentage weight loss is obtained from FNDDS for this type of conversion factor.

Broiled tomatoes:
Fresh tomatoes lose 20% of their weight during broiling
80 grams of grilled tomatoes   =100 grams fresh tomatoes
100 grams of grilled tomatoes =[(100/80)x100]=125 grams fresh

Conversion factor to convert 100 grams of grilled tomatoes to fresh
edible portion of tomatoes   =125/100=1.25

To further convert broiled tomatoes to tomatoes commodity, a second
conversion factor of 1.1 is applied to add back the refuse component.
Final conversion factor   =1.25x1.1=**1.38**

Baked or broiled fish:
Raw, boneless fish loses 23% of its weight during broiling
77 grams of broiled fish   =100 grams raw, boneless fish
100 grams of broiled fish   =[(100/77)x100]
                                  =130 grams raw, boneless fish

Conversion factor to convert 100 grams of grilled fish to
raw, boneless fish =130/100=**1.30**
Since this is boneless fish, there is no refuse.

3. To convert cooked foods to dry, uncooked foods by removing moisture:
This type of conversion factor is applied to convert cooked rice or cooked
pasta back to uncooked rice or pasta, respectively. In this instance, the total
solid contents (100 - % moisture) of the cooked and uncooked food are used
to compute the conversion factor. The percent moisture values are obtained
from FNNDS; when not available in FNDDS, the National Nutrient Database
for Standard Reference is used.

Rice:
% total solids, cooked rice   =31.56   (% moisture=68.44)
% total solids, uncooked rice   =88.38   (% moisture=11.62)

Conversion factor to convert cooked rice to uncooked rice= 31.56/88.38
                                                        = **0.36**
Macaroni, whole wheat:
% total solids, cooked macaroni   =32.85   (% moisture=67.15)
% total solids, uncooked macaroni   =89.75   (% moisture=10.25)

Conversion factor to convert cooked macaroni to uncooked macaroni
                                =32.85/89.75
                                =**0.37**
There is no refuse for rice and macaroni.

4. To convert dry/dried foods to fresh state by adding moisture: This type of conversion factor is applied in the conversion of foods such as dried fruits and vegetables to their respective raw or fresh state. The total solid contents of the dried and the fresh foods are used to compute the conversion factors. The principle is the same as that described above. The percent moisture values are obtained from FNNDS; when not available in FNDDS, the National Nutrient Database for Standard Reference is used.

Sun-dried tomatoes:
% total solids, sun-dried tomatoes   =85.44   (% moisture=14.56)
% total solids, fresh, ripe tomatoes   =5.5   (% moisture=94.5)

Conversion factor to convert sun-dried tomatoes to fresh, ripe edible portion of tomatoes   =85.44/5.5=15.53

To further convert sun-dried tomatoes to tomatoes as commodity, a second conversion factor of 1.1 is applied to add back the refuse component.

Final conversion factor =15.53x1.1=**17.08**

5. To convert frozen fruit juice concentrates to single-strength juices: A conversion factor of **4** is applied to frozen fruit juice concentrate when the addition of water is required to be 3 times the amount of concentration. The dilution data are obtained from FNDDS.

6. To convert single-strength or ready-to-drink fruit juices to raw fruits: Conversion factors are applied to directly convert single-strength fruit juices to respective raw fruit, with refuse included. The conversion factors used are obtained from the USDA, Economic Research Service [11]. Examples:

Apple juice to apples with refuse, conversion factor =**1.5**
Grape juice to grapes with refuse, conversion factor =**1.3**
Orange juice to oranges with refuse, conversion factor=**2.0**
Tomato juice to tomatoes with refuse, conversion factor=**1.53**

7. To convert cooked, frozen vegetables to raw vegetables: The total solid contents (100 - % moisture) of vegetables are used to convert cooked, frozen vegetables to raw vegetables with refuse. The percent moisture values are obtained from the National Nutrient Database for Standard Reference.

Spinach:

% total solids in frozen spinach, cooked =11.06 (% moisture=88.94)

% total solids in raw spinach, cooked   =8.79 (% moisture=91.21)

% total solids in raw spinach, uncooked =8.60 (% moisture=91.40)

Conversion factor to convert cooked, frozen spinach, drained to raw
spinach without refuse =11.06/8.60=1.29

Conversion factor to convert cooked spinach to raw spinach,
without refuse =8.79/8.60=1.02

Raw spinach has 28% refuse that is composed of large stems and roots.

100 grams of edible portion of raw spinach =[(100/72)x100] grams

=139 grams with refuse

Conversion factor used to include refuse in raw spinach
=139/100=1.39

Conversion factor to convert cooked, frozen spinach, drained to raw
spinach with refuse =1.29x1.39=**1.79**

Conversion factor to convert cooked, spinach, drained to raw spinach
with refuse =1.02x1.39=**1.42**

Broccoli:

% total solids in frozen broccoli, cooked, drained

=9.28 (% moisture=90.72)

% total solids in raw broccoli, cooked   =10.75 (% moisture=89.25)

% total solids in raw broccoli   =10.70 (% moisture=89.30)

Conversion factor to convert cooked, frozen, drained broccoli to raw
broccoli without refuse =9.28/10.70=0.87

Conversion factor to convert cooked broccoli to raw broccoli, edible
portion without refuse =10.75/10.70=1.00

Raw broccoli has 39% refuse that is composed of leaves and tough
stalks with trimmings

100 grams of edible portion of raw broccoli=[(100/61)x100] grams

=164 grams with refuse

Conversion factor used to include refuse in raw broccoli

=164/100=1.64

Conversion factor to convert cooked, frozen, drained broccoli to raw
broccoli with refuse =0.87x1.64=**1.43**

Conversion factor to convert cooked broccoli, edible portion to raw
broccoli with refuse=1.00x1.64=**1.64**

Use of a Conversion Factor of One

There are foods in the surveys that can be directly matched to a respective commodity, without any intermediate conversions. In such cases, a conversion factor of one is applied. Examples include:
- All dairy products such as fluid whole milk, 2% milk, 1% milk, and non-fat milk; cheese; yogurt; and butter.
- Boneless meat, poultry, and fish ingredients. If these ingredients are raw (uncooked), a conversion factor of 1 is applied because FICRCD reports these commodities as uncooked, boneless.
- Grain flours and meal such as wheat, rice, oats, and corn.
- Shortening, margarine, cooking oils, and salad oils.
- Beet and cane sugars; corn syrup; honey; malt extract; molasses; and cane, malt, maple, and sorghum syrups.

Summary of Conversion Factors Application

An example of the application of conversion factors to convert different apple products that are consumed in the surveys to the apple commodity (fresh apples with refuse) is shown in Table 4.

Table 4. Application of conversion factors in apple products

Apple products	Factor applied to convert to raw apples without refuse[1]	Factor applied to convert to single strength juice	Factor applied to add refuse[1]	Final conversion factor applied to convert to raw apples at retail level
Apple, dried	4.73	-	1.3	6.15
Apple, baked	1.08	-	1.3	1.4
Applesauce	1.08	-	1.3	1.4
Apple raw	1	-	1.3	1.3
Apple juice, frozen concentrate (3:1)	-	4	1.5	6.0
Apple juice, single strength	-	-	1.5	1.5

[1] Refuse= peel, core, and seeds

Instances Where No Additional Weight Adjustment Is Made to a Commodity Category

FICRCD does not adjust for the following losses:
- Variability in the refuse factors (proportion of peel and seeds to the total weight) due to differences within varieties of fruits and vegetables. FICRCD uses a single conversion factor for each type of fruit and vegetable.
- Variability in refuse loss in fruits and vegetables due to person-to-person variability in food preparation techniques.
- Discarded left-over foods and plate waste.
- Fat trimmed or drained from meat at home after purchase.
- Left-over cooking oils used for deep frying and discarded after use.
- Foods that are discarded at home because of spoilage. This may apply to all fruits, vegetables, dairy products, meats, fish, and eggs that are not used within the expiration dates.
- Non-food use of flour, oils, eggs, and other food commodities.
- The use of fruits and vegetables for decorative purposes.

Other Sources of Variation Between Food Commodities Estimated Using FICRCD and the ERS Food Availability Data Series

Some of the discrepancies between the two types of estimations may be due to the use of a single conversion factor for all varieties of a single fruit or vegetable and due to home food losses as explained above. In addition to these losses, there are other sources of food losses, which include:
- The supermarket items such as fresh meat, poultry, fish, eggs, dairy products, bread and other food commodities discarded after the expiration date or due to other reasons, including food recalls or the inability to maintain the appropriate storage temperatures. Fresh fruits and vegetables are removed and discarded in supermarkets when they are no longer fresh and lack consumer appeal. Certain amounts of prepared hot food items and deli foods are also discarded.
- Loss of foods before and after preparation in restaurants, fast food restaurants, and other food service venues.

Chapter 3

Development of Major Commodity Categories and Their Components

This chapter describes the commodities included within each of the eight major categories, the process of categorizing the foods in the survey to the appropriate commodity, and the decisions that are specific to each commodity category.

Dairy Products Commodity Category and Its Components

The dairy products category consists of the following 10 commodities: total dairy products, total fluid milk, fluid whole milk, fluid 2% milk, fluid 1% milk, fluid skim milk (nonfat milk), butter, cheese, yogurt, and other dairy products. Foods within each of the 10 dairy products commodities are listed in Appendix A. The conversion factors applied to convert foods in the dairy commodity category to respective commodities are in Appendix B.

Foods that are single diary items such as fluid milk, cheese, cream, half and half, and yogurt are directly assigned to the appropriate dairy products commodity, without disaggregation. Multi-ingredient dairy foods such as ice cream and other frozen dairy desserts, puddings and custards, ice milk, milk shake, flavored milk, malted milk, and yogurt with added sugar are separated into dairy and non-dairy components. Mixed dishes and foods such as sandwiches with cheese, cheeseburgers, pizza, and tacos containing dairy ingredients are disaggregated; and the dairy components are assigned to the appropriate dairy products commodity.

The following are specific to the dairy products commodity category:
- The dairy products commodities in FICRCD are presented in terms of that available at retail stores.
- Dry milk and evaporated milk are converted to respective amounts of fluid milk and are included in the appropriate fluid milk commodity. Because of this conversion of dry milk to fluid milk, some of the bakery, sausages and other meat-based products, and other food products may appear to have fluid milk present in them.
- Butter is considered a dairy commodity in the ERS Food Availability Data Series; therefore, it is included in the dairy products commodity category, and not in the fats and oils commodity category.

Fats and Oils Commodity Category and Its Components

The fats and oils category consists of the following five commodities: total fats and oils, margarine, salad and cooking oils, shortening, and other oils. Foods within each of the five fats and oils commodities are listed in Appendix A. The conversion factors applied to convert foods in the fats and oils category to appropriate commodities are listed in Appendix B. Dairy fats such as butter and cream are considered a dairy commodity by ERS Food Availability Data Series and thus, are included under the dairy products commodity category and not under the fats and oils commodity category.

Foods that are only fats or oils are directly assigned to the appropriate fats and oils commodity, without disaggregation. Multi-ingredient foods such as fried foods, bakery products such as bread, cookies, cakes and pies, and condiments that contain fats or oils as ingredients are disaggregated. The fat or oil ingredients of the foods are assigned to the appropriate fats and oils commodity.

The following are specific to the fats and oils commodity category:
- There is no differentiation made between industrial shortenings and that sold in grocery stores. A single, shortening commodity has been created.
- Animal fats such as lard and beef fat (tallow) do not have a separate commodity assignment, but are included in the total fats and oils commodity.
- Shortenings made with animal or vegetable fats are not separated by animal or vegetable origin, because of the generic nature of food ingredients in FNDDS, but are included under the shortening commodity.
- Margarine, light margarine and margarine-like spreads are included under the margarine commodity, without disaggregation.
- Margarine-butter blends are disaggregated into margarine and butter and placed in either the margarine or butter commodities, as appropriate.

Fruit Commodity Category and Its Components

The fruit category consists of the following 14 commodities: total fruit; total apples; apples from fruit; apples from juice; bananas; berries such as strawberry and blueberry; grapes; melons such as cantaloupe and honeydew; total oranges; oranges from fruit; oranges from juice; other citrus fruits; stone fruits such as cherry and peach; and tropical fruits. Fruit juices consumed alone or as components of other beverages are converted to their respective fruit with refuse and assigned to the appropriate fruit commodity. Fruits such as dates, figs, kiwifruit, persimmon, pomegranate, and tamarind that are consumed in amounts too small to warrant a separate commodity assignment by themselves are included in the total fruit commodity, along with the rest of the commodities listed above. Foods within each of the 14 fruit commodities are listed in Appendix A. The conversion factors applied

to convert foods in the fruit commodity category to appropriate commodities are listed in Appendix B.

Foods that are composed of only fruits or 100% fruit juices are directly assigned to the appropriate fruit commodity, without disaggregation. Multi-ingredient foods such as fruit cocktail, fruit salads, fruit pies, muffins, cakes, breads, mixed drinks, and desserts that contain fruits are disaggregated into respective food ingredients. The fruit components of the foods are assigned to the appropriate fruit commodity. Fresh, frozen, and canned fruits may be ingredients of some of the foods. Survey foods that use canned fruits as ingredients include only the fruit and not the liquid component. For each type of fruit, a common conversion factor is applied to convert canned, frozen, or fresh fruit reported eaten to its commodity.

The following are specific to the fruit commodity category:
- All fruit commodities in FICRCD are presented as raw fruit commodities with refuse (e.g., peel, core, and seeds, crown, pits, as applicable) included.
- Apples and oranges have two commodity types: eaten as fruit (apples/oranges from fruit) and juice converted to fruit (apples/oranges from juice). The two commodity types are added together and reported under the total apples or the total oranges commodities, as appropriate.
- All other fruit juices that are present in 100% fruit juices, fruit drinks, or in mixed alcoholic drinks are converted to fruits and reported under the respective fruit commodity.
- In canned fruits such as apricots, cherries, figs, grapes, peaches, pears, pineapples, and plums packed in any liquid medium (e.g., water pack, light or heavy syrup), the drained weight estimates are between 45% and 65% of net weight. In the case of small fruits such as blueberries, raspberries, and strawberries and for canned mandarins and apple slices, the drained weight estimates are between 80% and 90% of the net weight.
- Grapes and other fruits used in the production of wine and other alcoholic beverages are excluded from the fruit commodity, because of the lack of conversion factors.
- Orange and lemon peels used as flavorings are not included in FICRCD.

Grain Commodity Category and Its Components

The grain category consists of the following five commodities: total grains, corn flour and meal, oats and oat flour, rice, and wheat flour. Grains such as amaranth, barley, buckwheat, millets, and triticale that are consumed in amounts too small to warrant a separate commodity assignment by themselves are included in the total grains commodity, along with the rest of the commodities listed above. Foods within each of the five grain commodities are listed in Appendix A. The conversion

factors applied to convert foods in the grains commodity category to respective commodities are listed in Appendix B.

Foods that are composed of only grains are directly assigned to the appropriate grain commodity, without disaggregation. Multi-ingredient foods such as bread, cookies, pizza, burritos, and sandwiches that contain grains as an ingredient are disaggregated into respective food ingredients. The grain components of the foods are assigned to the appropriate grain commodity.

The following are specific to the grain commodity category:
- Many of the grain commodities in FICRCD such as wheat, corn, and oats are presented as their respective flour or meals. Mature, dry corn that is used to make popcorn is included in the grain commodity.
- Rice is presented as uncooked grain, without husk.
- The grains used in the production of alcoholic beverages and malted beverages are not included in the grain commodity category due to a lack of data.

Meat, Poultry, Fish, and Eggs Commodity Category and Its Components

The meat, poultry, fish, and eggs category consists of the following 10 commodities: total meat, poultry, and fish; total meat; beef; pork; total poultry; chicken; turkey; finfish and shellfish; eggs with shell; and eggs without shell. All types of fin- and shellfish are combined together into a single fish commodity and are also included under the total meat, poultry, and fish commodity. Similarly, fresh, frozen, and dried egg whites, egg yolks, and whole eggs are combined together into a single eggs commodity and presented in two commodity types: eggs with shell and eggs without shell. Some foods in the meat and poultry commodities are consumed in amounts too small to warrant a separate commodity assignment by themselves and are aggregated separately, and included under the appropriate commodity totals (total meat, total poultry), as well as the main commodity category total. For example:
- Lamb, goat, and game meats do not have their own commodity assignments. Instead, they are aggregated together and included in the total meat commodity and in the total meat, poultry, and fish commodity.
- Dove, duck, goose, pheasant, and quail meats do not have their own commodity assignments. Instead, they are aggregated together and included in the total poultry commodity and in the total meat, poultry, and fish commodity category.

Foods within each of the 10 meat, poultry, fish, and eggs commodities are listed in Appendix A. The conversion factors applied to convert foods within this commodity category to appropriate commodities are listed in Appendix B.

Foods that are composed of only meat, poultry, fish, or eggs are directly assigned to the appropriate food commodities, without disaggregation. Examples include broiled fish or chicken with no fat added, broiled meat, and boiled or poached eggs. Multi-ingredient foods such as stews, burritos, omelets, sausages, and sandwiches that contain meat, poultry, fish, or egg as an ingredient are disaggregated. The meat, poultry, fish, or eggs components of the foods are assigned to the appropriate meat, poultry, fish, or eggs commodity.

The following are specific to the meat, poultry, fish, and eggs commodity category:
- The foods in the meat, poultry, and fish, category are presented as raw (uncooked) and boneless. This allows for the comparison of results with other ERS databases where meat, fish, and poultry are raw and boneless.
- The poultry commodity includes poultry with or without skin depending upon the survey respondent's description of the poultry item they consumed. No attempt has been made to remove the skin from poultry items reported as eaten with skin or to add skin to the skinless poultry reported. Therefore, no conversion factor was applied to the skinless poultry.
- Veal is combined with the beef commodity.
- The eggs commodity includes only chicken eggs and is presented as two commodity types: eggs without shell and shell eggs. Conversion factors are applied to convert eggs without shell to shell eggs.
- Sausages and frankfurters are disaggregated into their major ingredients before commodity assignments are made. The meat components from these foods are assigned to the respective commodities such as beef, pork, chicken, or turkey. However, if foods such as hot dogs and frankfurters lack details about the proportion of different types of meat they contain, they are assigned to the meat commodity that is listed first in the food description in the FNDDS. Luncheon meats are directly assigned to the respective commodity category without disaggregation.
- Organ meats and meat by-products are included in their respective meat commodity. Organ meats without further description in FNDDS are assigned to the beef commodity.

Nuts Commodity Category and Its Components

The nuts category consists of the following three commodities: total nuts, peanuts, and tree nuts. The total nuts category includes tree nuts and peanuts. Peanut butter is included with peanuts. Foods within each of the three nuts commodities are listed in Appendix A. The conversion factors applied to convert nuts to respective commodities are listed in Appendix B.

Foods that are composed of only nuts such as almonds, walnuts, and peanuts are directly assigned to the appropriate nuts commodity, without disaggregation. Multi-ingredient foods such as cereals, muffins, breads, cookies, snacks, and candies that contain nuts as an ingredient are disaggregated. The nut components of the foods are appropriately assigned to either the tree nuts or peanuts commodity.

The following are specific to the nuts commodity category:
- Tree nuts and peanuts are presented as raw nuts, without shell.
- Nut butters such as peanut butter and almond butter are converted to the respective raw nuts, without shell.

Caloric Sweeteners Commodity Category and Its Components

The caloric sweeteners category consists of a single commodity, total caloric sweeteners. In the early stages of the database development, attempts were made to separate beet/cane sugars and corn syrups from other caloric sweeteners such as dextrose; honey; malt extract; molasses; and cane, malt, maple, and sorghum syrups. However, the difficulties in identifying the exact types of caloric sweeteners present in many of the foods resulted in combining all caloric sweeteners into a single commodity, namely total caloric sweeteners. Foods within the total caloric sweeteners commodity are listed in Appendix A. The conversion factors applied to convert caloric sweeteners to respective commodities are listed in Appendix B.

Foods that are composed of only caloric sweeteners such as cane sugar and corn syrup are directly assigned to total caloric sweeteners commodity, without disaggregation. Multi-ingredient foods such as cookies, cakes, pies, muffins, ice cream, ready-to-eat cereals, snacks, and beverages such as non-diet soft drinks, non-diet fruit drinks, coffee, tea, mixed alcoholic drinks, and other sweetened beverages that contain caloric sweetener as an ingredient are disaggregated. The caloric sweetener components of the foods and beverages are assigned to the total caloric sweeteners commodity.

The following are specific to the caloric sweeteners commodity category:
- Inter-conversion of corn syrup solids and liquid corn syrup is not done due to the difficulty in identifying which sweetener is used. Corn syrup solids and liquid corn syrups are retained as such.
- Corn syrups and dextrose are included as retail commodities. This is one of two exceptions (the other being industrial shortenings) where non-retail type commodities are included with retail commodities in FICRCD.

Vegetables Commodity Category and Its Components

The vegetables category consists of the following 17 commodities: total vegetables, total brassica (cruciferous), broccoli and cauliflower, carrots, celery, cucumbers, green peas, total leafy vegetables, head and leafy lettuce, onions, bell and non-bell peppers, tomatoes, sweet corn, total roots and tubers, potatoes, snap beans (string beans), and legumes (dry beans and peas). Some of the vegetables are consumed in amounts too small to warrant a separate commodity. These vegetables are aggregated separately and included in the appropriate total commodities.

- Roots and tubers such as beets, cassava, jicama, kohlrabi, parsnips, sweet potatoes, tapioca, taro, and yam do not have their own commodity due to small mean intakes and are included in the total roots and tubers commodity and in the total vegetables commodity.
- Brussels sprouts, cabbage, collard greens, kale, mustard greens, turnip green and roots, and Swiss chard do not have their own commodities due to small mean intakes and are included in the total brassica (cruciferous vegetables) commodity and in the total vegetables commodity.
- Leafy vegetables such as beet greens, chicory greens, cress, dandelion greens, endive, grape leaves, pumpkin leaves, spinach, sweet potato leaves, taro leaves, and watercress do not have their own commodities due to small mean intakes and are included in the total leafy vegetables commodity and in the total vegetables commodity.
- Alfalfa sprouts, artichokes, asparagus, avocados, bean sprouts, breadfruit, eggplant, garlic, gourds, mushrooms, okra, olives, summer and winter squash, pumpkin, and tomatillos do not have their own commodities due to small mean intakes and are included in the total vegetables commodity.

Foods within each of the 17 vegetable commodities are listed in Appendix A. The conversion factors applied to convert vegetables to respective commodities are listed in Appendix B.

Foods that are composed of only vegetables are directly assigned to the appropriate vegetable commodity, without disaggregation. Multi-ingredient foods such as mixed vegetable dishes and vegetable soup, salads, stew, rice dishes with vegetables, and sandwiches that contain vegetables as ingredients are disaggregated. The vegetable components of the foods are assigned to the appropriate vegetable commodity.

The following are specific to the vegetables commodity category:
- The vegetables in FICRCD are presented as raw vegetable commodities with refuse (e.g., peel, skin, seeds, trimming, as applicable) included.
- Legumes (dry beans and peas) are presented as uncooked (dry) and without husk (or pod).

- Soybean and soy products such as tofu, soy milk, soy flour, and soy protein isolate are not used in cooking in a manner similar to dry beans and peas (legumes). These foods are not given a separate commodity, but are included under the total vegetables commodity.
- Only sweet corn (succulent type of corn) is included in the vegetables commodity category. All other mature, dry corn products such as corn meal, corn flour, and popcorn are included in the grain commodity category.
- Potatoes used in the production of alcoholic beverages are not included in the vegetables commodity category.
- The FNDDS food code descriptions of some of the meat, poultry, or fish dishes with mixed vegetables describe these foods as containing several vegetables. However, all of the vegetables listed in the FNDDS food code description may not be present in the commodity assignment. For example, the food *Beef with vegetables including carrots, broccoli, and/or dark-green leafy vegetables, tomato-based sauce* includes carrots, onions, and tomatoes commodities and does not include broccoli or total leafy vegetables commodities.

Other Issues in the Vegetables Commodity Category

Among frozen vegetables, some lose moisture and others gain moisture during cooking. Frozen, leafy vegetables such as collard greens, spinach, and turnip greens lose moisture when cooked and therefore have lower moisture contents than the respective raw forms. Whereas frozen vegetables such as beans, broccoli, carrots, corn, and other mixed vegetables gain moisture when cooked and thus have slightly higher moisture contents than the respective raw forms. Because of these differences, the final conversion factors used to convert leafy vegetables to commodities are higher for frozen leafy vegetables than raw leafy vegetables, and the reverse is true for beans, broccoli, carrots, corn, and other mixed vegetables. Example 7 under the 'Types of Conversion Factors' section in Chapter 2 includes details on the computation of conversion factors for spinach and broccoli.

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Appendix A: List of Foods in the Food Commodity Categories

This list identifies the majority of the foods (and ingredients) in each commodity group. Text in bold and parenthesis () identifies the form of the group reported.

Dairy Product Commodities	Foods Included
Total Dairy	Foods in the dairy commodities listed below:
Total Fluid Milk	All foods in the fluid milk commodities listed below:
Fluid Whole Milk	Fluid milk that contain 3.25% or more fat including: Cows' milk Evaporated milk Chocolate milk (diluted) Dry milk (reconstituted)
Fluid 2% Milk	Fluid cows' milk, flavored milk, and butter milk that contain 2% fat
Fluid 1% Milk	Fluid cows' milk and flavored milk that contain 1% fat
Fluid Skim Milk	Fluid cows' milk, flavored milk, and butter milk that contain less than 1% fat
Butter	Butter Ghee
Cheese	All types of cheese including: Cheese spreads Processed cheese Cottage cheese Ricotta cheese Hard natural cheese Soft cheese
Yogurt	All types of plain, flavored, and fruit yogurt
Other Dairy Products	Cream cheese Sour cream Fluid cream

Fats and Oils Commodities	Foods Included
Total Fats and Oils	Foods in the fats and oils commodities listed below and animal fats such as beef fat and lard.
Margarine	Margarine and margarine-like spreads
Salad and Cooking Oils	Canola oil Safflower oil Corn oil Sesame oil Olive oil Soybean oil Peanut oil
Shortening	Household and industrial shortenings
Other Oils	Almond oil Flaxseed oil Coconut oil Palm oil

Fruit Commodities	Foods Included
Total Fruit	Foods in the fruit commodities listed below and the following: Dates Persimmon Figs Pomegranate Kiwi Rhubarb Pears Tamarind
Total Apples	Apples from juice converted back to fruit and apples consumed as fruit
Apples from Fruit	Raw apples Dried apples Baked apples Apple sauce
Apples from Juice	Apples from apple cider, apple juice (single strength) and apple juice concentrate converted back to apples
Bananas	Bananas Plantains
Berries	Blackberries Huckleberries Blueberries Mulberries Boysenberries Raspberries Cranberries Strawberries Cranberry juice Strawberry juice Currants
Grapes	Grapes Raisins Grape juice
Melons	Cantaloupe Watermelon Casaba Watermelon juice Honeydew

Fruit Commodities (cont.)	Foods Included
Total Oranges	Oranges from juice converted back to fruit and oranges consumed as fruit
Oranges from Fruit	Oranges consumed as fruit
Oranges from Juice	Oranges from orange juice and orange juice concentrate converted back to oranges
Other Citrus Fruits	Grapefruits Kumquats Grapefruit juice Mandarin oranges Lemons Tangelos Lemon juice Tangerines Limes Tangerine juice Lime juice
Stone Fruits	Apricots Peaches Cherries Plums Nectarines Prune juice
Tropical Fruits	Genips Passion fruit juice Guava Pineapples Lychees Pineapple juice Mangoes Soursop Mango juice Starfruit Papayas Sugar apples Passion fruit

Grain Commodities	Foods Included
Total Grains	Foods in the grain commodities listed below and the following: Amaranth Millets Barley Popcorn Buckwheat Rye Couscous Triticale
Corn Flour and Meal	Corn flour Corn starch Corn grits Dried corn Corn meal Hominy
Oats and Oat Flour	Oats and oat flour
Rice (Dry)	Rice flour Brown rice Rice cereal Wild rice White rice
Wheat Flour	Wheat flour Bulgur Wheat Macaroni Farina Spaghetti Semolina Noodles

Meat, Poultry, Fish, and Eggs Commodities	Foods Included	
Total meat, poultry, and fish	Foods in the meat, poultry and fish commodities listed below:	
Total Meat	Foods in the beef and pork commodities and the following:	
	Bear	Lamb
	Bison	Moose
	Caribou	Rabbit
	Deer	Raccoon
	Frog legs	Squirrel
	Goat	
Beef	Beef meat, boneless	Luncheon meat (beef)
	Bacon (beef)	Pastrami
	Beef sausage & hot dogs	Veal
	Corned beef	Organ meats
Pork	Pork meat, boneless	Luncheon meat (pork)
	Bacon (pork)	Pork sausage and hot dogs
	Cured ham	

Meat, Poultry, Fish, and Eggs Commodities (cont.)	Foods Included	
Total Poultry	Foods in the chicken and turkey commodities and the following:	
	Dove	Goose
	Duck	Quail
Chicken	Chicken meat, boneless	Organ meats
	Luncheon meat (chicken)	Cornish game hen
Turkey	Turkey meat	Organ meats
	Luncheon meat (turkey)	
Finfish and Shellfish	All types of finfish and shellfish including:	
	Abalone	Lobster
	Clams	Mussels
	Crabs	Octopus
	Crayfish	Oysters
	Conch	Scallops
	Fish roe	Shrimp
	Finfish, freshwater and saltwater (includes tuna and salmon)	Snails
		Squid
Eggs, shell included	Chicken eggs (whole, yolk, and white)	
Eggs, without shell	Chicken eggs (whole, yolk, and white)	

Nuts Commodities	Foods Included	
Total Nuts	Foods in the nuts commodities listed below:	
Peanuts	Peanuts	Peanut butter
Tree Nuts	Almonds Almond butter Brazil nuts Chestnuts Cashews Cashew butter Filberts	Hazelnuts Macadamias Pecans Pine nuts Pistachios Walnuts

Caloric Sweeteners Commodities	Foods Included	
Total Caloric Sweeteners	Includes the following caloric sweeteners:	
	Beet and cane sugar (brown and white)	Honey
	Corn syrup (including high fructose)	Maple syrup
		Molasses
	Cane syrup	Sorghum syrup
	Grenadine syrup	

Vegetables Commodities	Foods Included	
Total Vegetables	Foods in the vegetable commodities listed below and the following:	
	Alfalfa sprouts	Palm hearts
	Artichokes	Pumpkin
	Asparagus	Radicchio
	Avocado	Seaweed
	Bamboo shoots	Soybeans (cooked)
	Bean sprouts	Soybean curd (tofu)
	Breadfruit	Soy flour & meal
	Cactus	Soy milk
	Chayote	Soy nuts (dry soybeans)
	Chives	
	Eggplant	Summer squash
	Garlic	Swamp cabbage
	Leeks	Water chestnuts
	Mushrooms	Winter squash
	Okra	Zucchini
	Olives	
Total Brassica	Foods in the broccoli and cauliflower commodity and the following:	
	Brussels sprouts	Kale
	Cabbage	Mustard greens
	Chard	Radish
	Collards	Rutabagas
	Cress	Turnips
	Horseradish leaves	Turnip greens
Broccoli and Cauliflower	Broccoli	Cauliflower

Vegetables Commodities (cont.)	Foods Included	
Carrots	Carrots and carrot juice	
Celery	Celery and celery juice	
Cucumbers	Cucumber	
Green Peas	Green peas and edible pod peas	
Total Leafy Vegetables	Foods in the lettuce (head and leaf) commodity and the following:	
	Beet greens	Jute
	Chicory greens	Parsley (fresh)
	Cilantro (fresh)	Pumpkin leaves
	Dandelion greens	Spinach
	Endive	Taro leaves
	Grape leaves	
Lettuce	Leaf and head lettuce	
Onions	Onions	
Peppers (Bell and Non-Bell)	Banana peppers	Pimiento
	Sweet bell peppers	Non-Bell peppers (chiles)

Vegetables Commodities (cont.)	Foods Included
Tomatoes	Tomatoes, tomato paste, tomato puree, and tomato juice
Sweet Corn	White and yellow corn (excludes mature, dry corn)
Total Roots and Tubers	All foods included in potatoes commodity and the following: Beets — Parsnips Cassava — Sweet potatoes Jicama — Tapioca Kohlrabi — Taro Lotus root — Yam
Potatoes	Potatoes
Snap Beans (String beans)	Snap beans (String beans)
Legumes (Dry Beans and Peas)	Black beans — Mung beans Chickpeas — Navy beans Cowpeas — Pigeonpeas Fava beans — Pink beans Kidney beans — Pinto beans Lentils — Split peas Lima beans — White beans

Appendix B: List of Conversion Factors

A list of conversion factors used to convert selected foods consumed to commodities.

Convert From	Convert To	Conversion Factor
Dairy		
Butter, all types	Butter, all types	1.00
Cheese, all types	Cheese, all types	1.00
Non-fat dry milk, reconstituted	Fluid skim milk	1.00
Dry milk, lowfat	Fluid lowfat milk	9.53
Dry buttermilk	Fluid buttermilk	7.89
Fluid milk (including buttermilk), all types	Fluid milk, all types	1.00
Evaporated milk, all types	Fluid milk, all types	2.22
Fluid cream, all types	Fluid cream, all types	1.00
Sour cream, all types	Sour cream, all types	1.00
Yogurt, all types	Yogurt, all types	1.00
Eggs		
Egg, fresh or liquid, without shell	Shell eggs	1.14
Egg, dried, whole, yolk & white	Egg, raw, without shell	4.01
Egg, dried, whole, yolk & white	Shell eggs	4.57
Egg, whole, cooked, hard-boiled	Shell eggs	1.20
Egg, whole, cooked, poached	Shell eggs	1.15
Fats and Oils		
Lard	Lard	1.00
Margarine, all types	Margarine, all types	1.00
Oils, salad and cooking	Oils, salad and cooking	1.00
Shortening, all types	Shortening, all types	1.00
Fish		
Fish and shellfish, all types, raw, boneless	Fish and shellfish, all types, raw, boneless	1.00
Catfish, baked or broiled, boneless	Catfish, raw, boneless	1.25
Catfish, steamed or poached, boneless	Catfish, raw, boneless	1.25
Cisco, smoked	Cisco, raw, boneless	1.43
Cod, baked or broiled, boneless	Cod, raw, boneless	1.25
Cod, steamed or poached, boneless	Cod, raw, boneless	1.25
Croaker, baked or broiled, boneless	Croaker, raw, boneless	1.49

Convert From	Convert To	Conversion Factor
Fish (continued)		
Croaker, steamed or poached, boneless	Croaker, raw, boneless	1.26
Flounder, baked or broiled, boneless	Flounder, raw, boneless	1.25
Flounder, steamed or poached, boneless	Flounder, raw, boneless	1.25
Mackerel, baked or broiled, boneless	Mackerel, raw, boneless	1.25
Mackerel, salted	Mackerel, raw, boneless	1.91
Perch, baked or broiled, boneless	Perch, raw, boneless	1.25
Perch, steamed or poached, boneless	Perch, raw, boneless	1.25
Salmon, baked or broiled, boneless	Salmon, raw, boneless	1.30
Salmon, steamed or poached, boneless	Salmon, raw, boneless	1.25
Sea bass, baked or broiled, boneless	Sea bass, raw, boneless	1.30
Sea bass, steamed or poached, boneless	Sea bass, raw, boneless	1.25
Sturgeon, smoked	Sturgeon, raw, boneless	1.60
Trout, baked or broiled, boneless	Trout, raw, boneless	1.25
Trout, steamed or poached, boneless	Trout, raw, boneless	1.26
Tuna, baked or broiled, boneless	Tuna, braw, boneless	1.25
Trout, smoked	Trout, raw, boneless	1.79
Tuna, steamed or poached, boneless	Tuna, raw, boneless	1.26
Clams, baked or broiled	Clams, raw, without shell	1.25
Clams, steamed or boiled	Clams, raw, without shell	1.25
Crab, blue, steamed	Crab, blue, raw, without shell	1.08
Crayfish, steamed	Crayfish, raw, boneless	1.16
Lobster, steamed	Lobster,raw, without shell	1.03
Oysters, smoked	Oysters, raw, without shell	1.62
Oysters, steamed	Oysters, raw, without shell	1.25
Scallops, baked or broiled	Scallops, raw, without shell	1.25
Shrimp, baked or broiled	Shrimp, raw, without shell	1.25
Shrimp, canned	Shrimp, raw, without shell	1.14
Shrimp, steamed or boiled	Shrimp, raw, without shell	1.31
Fruits		
Apples, raw, with skin, edible portion	Apples, with refuse	1.30
Apples, raw, without skin, cooked	Apples, with refuse	1.38

Convert From	Convert To	Conversion Factor
Fruits (continued)		
Apples, dried, uncooked	Apples, with refuse	6.15
Apple juice, canned or bottled, unsweetened	Apples, with refuse	1.50
Apple juice, frozen concentrate, unsweetened, undiluted	Apples, with refuse	6.00
Applesauce, canned, unsweetened	Apples, with refuse	1.40
Apricots, raw, edible portion	Apricots, with refuse	1.08
Apricots, dried, uncooked	Apricots, with refuse	5.46
Bananas, raw, edible portion	Bananas, with refuse	1.56
Bananas, dehydrated	Bananas, with refuse	6.04
Bananas, red, raw, edible portion	Bananas, red, with refuse	1.56
Blackberries, raw, edible portion	Blackberries, with refuse	1.04
Blackberries, frozen, unsweetened	Blackberries, with refuse	1.56
Blueberries, raw, edible portion	Blueberries, with refuse	1.05
Blueberries, frozen, unsweetened	Blueberries, with refuse	0.89
Boysenberries, frozen, unsweetened	Boysenberries, with refuse	1.24
Carambola (starfruit), raw, edible portion	Carambola (starfruit), with refuse	1.03
Cherries, sweet, raw, edible portion	Cherries, with refuse	1.09
Cranberries, raw, edible portion	Cranberries, with refuse	1.02
Cranberry juice, unsweetened	Cranberries, with refuse	1.30
Currants, red and white, raw, edible portion	Currants, red and white, with refuse	1.02
Dates, deglet noor	Dates, deglet noor, with refuse	1.11
Elderberries, raw, edible portion	Elderberries, with refuse	1.05
Figs, dried	Figs, with refuse	3.38
Grapes, American type (slip skin), raw, edible portion	Grapes, with refuse	1.72
Grapes, red or green (european type varieties, such as, Thompson seedless), raw, edible portion	Grapes, with refuse	1.04
Raisins, golden seedless	Grapes, with refuse	4.54
Raisins, seeded	Grapes, with refuse	4.46
Grape juice, canned or bottled, unsweetened	Grapes, with refuse	1.30
Grapefruit, raw, all types	Grapefruit, with refuse	2.00
Grapefruit juice, white, frozen concentrate, unsweetened, undiluted	Grapefruit, with refuse	10.3
Grapefruit juice, frozen, unsweetened (reconstituted with water)	Grapefruit, with refuse	2.25

Convert From	Convert To	Conversion Factor
Fruits (continued)		
Guavas, common, raw, edible portion	Guavas, common, with refuse	1.28
Kiwi fruit, (chinese gooseberries), raw, edible portion	Kiwi fruit, (chinese gooseberries), with refuse	1.16
Kumquats, raw, edible portion	Kumquats, with refuse	1.08
Lemons, raw, edible portion	Lemons, with refuse	1.89
Lemon juice	Lemons, with refuse	3.25
Limes, raw, edible portion	Limes, with refuse	1.20
Lime juice	Limes, with refuse	3.25
Litchis, raw, edible portion	Litchis, with refuse	1.67
Litchis, dried	Litchis, with refuse	7.11
Mammy-apple, (mamey), raw, edible portion	Mammy-apple, (mamey), with refuse	1.67
Mangos, raw, edible portion	Mangos, with refuse	1.45
Mango juice	Mangos, with refuse	1.88
Melons, cantaloupe, raw, edible portion	Melons, cantaloupe, with refuse	1.96
Melons, casaba, raw, edible portion	Melons, casaba, with refuse	1.67
Melons, honeydew, raw, edible portion	Melons, honeydew, with refuse	2.17
Nectarines, raw, edible portion	Nectarines, with refuse	1.10
Oranges, raw, edible portion	Oranges, with refuse	1.37
Orange juice, canned, unsweetened	Oranges, with refuse	2.00
Orange juice, frozen concentrate, unsweetened, undiluted	Oranges, with refuse	8.00
Papaya, green	Papayas, with refuse	1.49
Papayas, raw, edible portion	Papayas, with refuse	1.49
Passion-fruit (granadilla), purple, raw, edible portion	Passion-fruit (granadilla), purple, with refuse	1.28
Passion-fruit juice, yellow, raw, edible portion	Passion-fruit, with refuse	1.88
Peaches, raw, edible portion	Peaches, with refuse	1.04
Peaches, dried	Peaches, with refuse	6.38
Pears, Asian, raw, edible portion	Pears, Asian, with refuse	1.10
Pears, raw, edible portion	Pears, with refuse	1.11
Pears, dried	Pears, with refuse	5.00
Persimmons, japanese, raw, edible portion	Persimmons, japanese, with refuse	1.19
Pineapple, raw, edible portion	Pineapple, with refuse	1.96

Convert From	Convert To	Conversion Factor
Fruits (continued)		
Pineapple juice, canned, unsweetened	Pineapple, with refuse	1.88
Pineapple juice, frozen concentrate, unsweetened, undiluted	Pineapple, with refuse	8.44
Plantains, raw, edible portion	Plantains, with refuse	1.54
Plums, raw, edible portion	Plums, with refuse	1.06
Plums, dried (prunes)	Plums, with refuse	5.73
Prune juice, canned	Plums, with refuse	1.63
Pomegranates, raw, edible portion	Pomegranates, with refuse	1.79
Quinces, raw, edible portion	Quinces, with refuse	1.64
Raspberries, raw, edible portion	Raspberries, with refuse	1.04
Rhubarb, raw, edible portion	Rhubarb, with refuse	1.33
Soursop, raw, edible portion	Soursop, with refuse	1.49
Strawberries, raw, edible portion	Strawberries, with refuse	1.06
Sugar-apples (sweetsop), raw, edible portion	Sugar-apples (sweetsop), with refuse	1.82
Tamarinds, raw, edible portion	Tamarinds, with refuse	2.94
Tangelo, raw, edible portion	Tangelo, with refuse	1.35
Tangerines (mandarin oranges), raw, edible portion	Tangerines (mandarin oranges), with refuse	1.35
Tangerine juice, NFS	Tangerines, with refuse	2.00
Watermelon, raw, edible portion	Watermelon, with refuse	1.92
Grains		
All grains and flours, uncooked	All grains and flours, uncooked	1.00
Barley, pearled, cooked	Barley, pearled, uncooked	0.35
Buckwheat groats, cooked	Buckwheat groats, uncooked	0.27
Couscous, cooked	Couscous, uncooked	0.28
Macaroni, cooked	Macaroni, uncooked	0.38
Macaroni, whole-wheat, cooked	Macaroni, whole-wheat, uncooked	0.37
Millet, cooked	Millet, uncooked	0.29
Oats, regular and quick and instant, cooked	Oats, regular and quick and instant, uncooked	0.16
Rice, white, cooked	Rice, white, uncooked	0.36
Spaghetti, cooked	Spaghetti, uncooked	0.38
Wild rice, cooked	Wild rice, uncooked	0.28

Convert From	Convert To	Conversion Factor
Meats		
Meat, all types, raw, boneless	Meat, all types, raw, boneless	1.00
Beef, brisket, whole, all grades, braised	Beef, brisket, whole, all grades, raw, boneless	1.23
Beef, chuck, arm pot roast, all grades, braised	Beef, chuck, arm pot roast, all grades, raw, boneless	1.38
Beef, chuck, blade roast, all grades, braised	Beef, chuck, blade roast, all grades, raw, boneless	1.29
Beef, cured, corned beef, brisket, cooked	Beef, raw, boneless	1.20
Beef, cured, dried	Beef, cured, corned beef, raw	1.38
Beef, cured, pastrami	Beef, cured, corned beef, raw	1.59
Beef, ground, 75% lean meat / 25% fat, patty, broiled	Beef, ground, 75% lean meat / 25% fat, raw	1.06
Beef, ground, 80% lean meat / 20% fat, patty, broiled	Beef, ground, 80% lean meat / 20% fat, raw	1.15
Beef, ground, 85% lean meat / 15% fat, patty, broiled	Beef, ground, 85% lean meat / 15% fat, raw	1.22
Beef, rib, large end (ribs 6-9), all grades, roasted	Beef, rib, large end (ribs 6-9), all grades, raw, boneless	1.15
Beef, round, bottom round, all grades, braised	Beef, round, bottom round, all grades, raw, boneless	1.45
Beef, round, eye of round, all grades, roasted	Beef, round, eye of round, all grades, raw, boneless	1.32
Beef, round, tip round, all grades, roasted	Beef, round, tip round, all grades, raw, boneless	1.14
Beef, round, top round, all grades, broiled	Beef, round, top round, all grades, raw, boneless	1.29
Beef, short loin, top loin, all grades, broiled	Beef, short loin, top loin, all grades, raw, boneless	1.07
Beef, tenderloin, all grades, broiled	Beef, tenderloin, all grades, raw, boneless	1.13
Beef, top sirloin, all grades, broiled	Beef, top sirloin, all grades, raw, boneless	1.28
Veal, ground, broiled	Veal, ground, raw	1.22
Veal, leg (top round), roasted	Veal, leg (top round), raw, boneless	1.35
Veal, loin, roasted	Veal, loin, raw, boneless	1.33
Veal, rib, braised	Veal, rib, raw, boneless	1.62
Veal, shoulder, whole (arm and blade), roasted	Veal, shoulder, whole (arm and blade), raw, boneless	1.42
Veal, sirloin, roasted	Veal, sirloin, raw, boneless	1.33
Lamb, ground, broiled	Lamb, ground, raw	1.11
Lamb, leg, whole (shank and sirloin), choice, roasted	Lamb, domestic, leg, whole (shank and sirloin), choice, raw, boneless	1.19
Lamb, loin, choice, roasted	Lamb, domestic, loin, choice, raw, boneless	1.09
Lamb, shoulder, whole (arm and blade), choice, roasted	Lamb, domestic, shoulder, whole (arm and blade), choice, raw, boneless	1.13
Pork, cured, bacon, broiled, pan-fried or roasted	Pork, cured, bacon, raw	1.47
Pork, cured, canadian-style bacon, grilled	Pork, cured, canadian-style bacon, raw	1.16
Pork, cured, ham, boneless, regular, roasted	Pork, cured, ham, boneless, regular, raw	1.07

Convert From	Convert To	Conversion Factor
Meats (continued)		
Pork, leg (ham), whole, roasted	Pork, leg (ham), whole, raw, boneless	1.20
Pork, loin, sirloin (chops), boneless, broiled	Pork, loin, sirloin (chops), raw, boneless	1.42
Pork, loin, tenderloin, roasted	Pork, loin, tenderloin, raw, boneless	1.30
Pork, loin, whole, broiled	Pork, loin, whole, raw, boneless	1.27
Pork, shoulder, blade, boston (roasts), roasted	Pork, shoulder, blade, boston (roasts), raw, boneless	1.25
Pork, spareribs, braised	Pork, spareribs, raw, boneless	1.38
Chicken, broilers or fryers, back, meat and skin, roasted	Chicken, broilers or fryers, back, meat and skin, raw, boneless	1.11
Chicken, broilers or fryers, breast, meat and skin, roasted	Chicken, broilers or fryers, breast, meat and skin, raw, boneless	1.23
Chicken, broilers or fryers, breast, meat and skin, stewed	Chicken, broilers or fryers, breast, meat and skin, raw, boneless	1.11
Chicken, broilers or fryers, drumstick, meat and skin, roasted	Chicken, broilers or fryers, drumstick, meat and skin, raw, boneless	1.36
Chicken, broilers or fryers, drumstick, meat and skin, stewed	Chicken, broilers or fryers, drumstick, meat and skin, raw, boneless	1.27
Chicken, broilers or fryers, leg, meat and skin, roasted	Chicken, broilers or fryers, leg, meat and skin, raw, boneless	1.30
Chicken, broilers or fryers, leg, meat and skin, stewed	Chicken, broilers or fryers, leg, meat and skin, raw, boneless	1.20
Chicken, broilers or fryers, thigh, meat and skin, roasted	Chicken, broilers or fryers, thigh, meat and skin, raw, boneless	1.26
Chicken, broilers or fryers, wing, meat and skin, roasted	Chicken, broilers or fryers, wing, meat and skin, raw, boneless	1.33
Chicken, broilers or fryers, wing, meat and skin, stewed	Chicken, broilers or fryers, wing, meat and skin, raw, boneless	1.12
Chicken, cornish game hens, meat and skin, roasted	Chicken, cornish game hens, meat and skin, raw, boneless	1.30
Chicken, liver, simmered	Chicken, liver, raw	1.41
Turkey, dark meat, meat and skin, roasted	Turkey, dark meat, meat and skin, raw, boneless	1.38
Turkey, light meat, meat and skin, roasted	Turkey, light meat, meat and skin, raw, boneless	1.23
Turkey, ground, cooked	Turkey, ground, raw	1.45
Nuts		
Almonds, dry roasted	Almonds, raw, without shell	1.03
Almond butter	Almond, raw, without shell	1.03
Cashews, dry roasted	Cashews, raw, without shell	1.04
Cashew butter	Cashews, raw, without shell	1.03
Chestnuts, european, roasted	Chestnuts, european, raw, without shell	1.24
Filberts or hazelnuts, dry roasted	Filberts or hazelnuts, raw, without shell	1.03
Peanuts, dry-roasted	Peanuts, raw, without shell	1.05
Peanuts, raw, without shell	Peanuts, raw, without shell	1.00
Peanut butter, all types	Peanuts, raw, without shell	1.05

Convert From	Convert To	Conversion Factor
Nuts		
(continued)		
Pecans, dry roasted	Pecans, raw, without shell	1.02
Pistachio nuts, dry roasted	Pistachio nuts, raw, without shell	1.02
Walnuts, English, raw, without shell	Walnuts, English, raw, without shell	1.00
Sweeteners, Caloric		
Beet or cane sugar	Beet or cane sugar	1.00
Cane syrup	Cane syrup	1.00
Corn syrup solids	Corn syrup solids	1.00
Corn syrup, all types	Corn syrup, all types	1.00
Honey	Honey	1.00
Malt syrup	Malt syrup	1.00
Maple syrup	Maple syrup	1.00
Molasses	Molasses	1.00
Sorghum syrup	Sorghum syrup	1.00
Vegetables		
Arugula, raw, edible portion	Arugula, with refuse	1.67
Asparagus, raw, edible portion	Asparagus, with refuse	1.89
Avocados, raw, edible portion	Avocados, raw, edible portion	1.35
Balsam-pear (bitter gourd), pods, cooked, boiled, drained	Balsam-pear (bitter gourd), pods, with refuse	1.06
Bamboo shoots, raw, edible portion	Bamboo shoots, with refuse	3.45
Beans, snap, green, raw, edible portion	Beans, snap, green, with refuse	1.14
Beet greens, raw, edible portion	Beet greens, with refuse	1.79
Beet greens, cooked, boiled, drained	Beet greens, with refuse	2.17
Beets, cooked, boiled, drained	Beets, with refuse	1.55
Beets, raw, edible portion	Beets, with refuse	1.49
Turnips, cooked, boiled, drained	Turnips, with refuse	0.97
Black beans, cooked, boiled	Black beans, uncooked	0.38
Breadfruit, raw, edible portion	Breadfruit, with refuse	1.28
Broadbeans (fava beans), cooked, boiled	Broadbeans (fava beans), uncooked	0.32
Broccoli, chinese, cooked	Broccoli, with refuse	0.87
Broccoli, raw, edible portion	Broccoli, with refuse	1.64
Broccoli, cooked, boiled, drained	Broccoli, with refuse	1.64

Convert From	Convert To	Conversion Factor
Vegetables (continued)		
Broccoli, frozen, chopped, cooked, boiled, drained	Broccoli, with refuse	1.43
Broccoli, frozen, chopped, unprepared	Broccoli, with refuse	1.31
Brussels sprouts, raw, edible portion	Brussels sprouts, with refuse	1.11
Cabbage, chinese (pak-choi), raw, edible portion	Cabbage, chinese (pak-choi), with refuse	1.14
Cabbage, raw, edible portion	Cabbage, with refuse	1.25
Cabbage, red, raw, edible portion	Cabbage, red, with refuse	1.25
Cabbage, red, cooked, boiled, drained	Cabbage, red, with refuse	1.19
Carrots, raw, edible portion	Carrots, with refuse	1.12
Carrot juice	Carrots, with refuse	1.12
Cauliflower, raw, edible portion	Cauliflower, with refuse	2.56
Celery, raw, edible portion	Celery, with refuse	1.12
Celery juice	Celery, with refuse	5.00
Chard, swiss, raw, edible portion	Chard, swiss, with refuse	1.09
Chickpeas (garbanzo beans, bengal gram), cooked, boiled	Chickpeas (garbanzo beans, bengal gram), uncooked	0.45
Collards, raw, edible portion	Collards, with refuse	1.75
Corn, sweet, white or yellow, raw, edible portion	Corn, sweet, white or yellow, with refuse	2.78
Corn, sweet, white or yellow, cooked, boiled, drained	Corn, sweet, white or yellow, with refuse	3.53
Corn, sweet, white or yellow, frozen, unprepared	Corn, sweet, white or yellow, with refuse	2.89
Cowpeas (Blackeyes), cooked, boiled, drained	Cowpeas (Blackeyes), uncooked	0.28
Cucumber, with peel, raw, edible portion	Cucumber, with refuse	1.03
Dandelion greens, cooked, boiled, drained	Dandelion greens, with refuse	0.71
Eggplant, raw, edible portion	Eggplant, with refuse	1.23
Eggplant, cooked, boiled, drained	Eggplant, with refuse	1.67
Endive, raw, edible portion	Endive, with refuse	1.16
Garlic, raw, edible portion	Garlic, with refuse	1.15
Jerusalem-artichokes, raw	Jerusalem-artichokes, with refuse	2.50
Kidney beans, cooked, boiled	Kidney beans, uncooked	0.37
Leeks, (bulb and lower leaf-portion), raw, edible portion	Leeks, (bulb and lower leaf-portion), with refuse	2.27
Lentils, cooked, boiled	Lentils, uncooked	0.34
Lettuce, butterhead, raw, edible portion	Lettuce, butterhead, with refuse	1.35

Convert From	Convert To	Conversion Factor
Vegetables (continued)		
Lettuce, cos or romaine, raw, edible portion	Lettuce, cos or romaine, with refuse	1.06
Lettuce, green leaf, raw, edible portion	Lettuce, green leaf, with refuse	1.56
Lettuce, iceberg, raw, edible portion	Lettuce, iceberg, with refuse	1.05
Lima beans, cooked, boiled	Lima beans, uncooked	0.34
Mungo beans, cooked, boiled	Mungo beans, uncooked	0.31
Mushrooms, raw, edible portion	Mushrooms, with refuse	1.03
Mushrooms, shiitake, dried	Mushrooms, shiitake, with refuse	12.36
Mustard greens, raw, edible portion	Mustard greens, with refuse	1.08
Okra, raw, edible portion	Okra, with refuse	1.16
Okra, cooked, boiled, drained	Okra, with refuse	0.88
Olives, black, canned	Olives, black, canned	0.89
Onions, raw, edible portion	Onions, with refuse	1.11
Onions, cooked, boiled, drained	Onions, with refuse	1.18
Onions, spring or scallions, raw, edible portion	Onions, spring or scallions, with refuse	1.04
Peas, edible-podded, raw, edible portion	Peas, edible-podded, with refuse	1.06
Peas, green, raw, edible portion	Peas, green, with refuse	2.63
Peas, green, cooked, boiled, drained	Peas, green, with refuse	2.76
Peas, split, cooked, boiled	Peas, split, uncooked	0.34
Pepper, banana, raw, edible portion	Pepper, banana, with refuse	1.22
Pepper, serrano, raw, edible portion	Pepper, serrano, with refuse	1.03
Peppers, hot chili, raw, edible portion	Peppers, hot chili, with refuse	1.37
Peppers, hot chile, sun-dried	Peppers, hot chile, with refuse	20.82
Peppers, jalapeno, raw, edible portion	Peppers, jalapeno, with refuse	1.09
Peppers, jalapeno, canned, solids + liquids	Peppers, jalapeno, with refuse	1.46
Peppers, sweet, green, raw, edible portion	Peppers, sweet, green, with refuse	1.22
Peppers, sweet, green, freeze-dried	Peppers, sweet, green, with refuse	19.57
Pinto beans, cooked, boiled	Pinto beans, uncooked	0.43
Potato, flesh and skin, raw, edible portion	Potatoes, with refuse	1.33
Potato, baked, flesh and skin	Potatoes, with refuse	1.62
Potatoes, boiled, cooked in skin, flesh	Potatoes, with refuse	1.48

Convert From	Convert To	Conversion Factor
Vegetables (continued)		
Potatoes, boiled, cooked without skin, flesh	Potatoes, with refuse	1.45
Potatoes, french fried, frozen, unprepared	Potatoes, with refuse	2.15
Potatoes, frozen, whole, unprepared	Potatoes, with refuse	1.33
Potato flour	Potatoes, with refuse	6.01
Potatoes, mashed, dehydrated, granules without milk, dry form	Potatoes, with refuse	6.20
Pumpkin, raw, edible portion	Pumpkin, with refuse	1.43
Radicchio, raw, edible portion	Radicchio, with refuse	1.10
Radishes, oriental, raw, edible portion	Radishes, with refuse	1.27
Radishes, raw, edible portion	Radishes, with refuse	1.11
Rutabagas, raw, edible portion	Rutabagas, with refuse	1.18
Shallots, raw, edible portion	Shallots, with refuse	1.14
Soy flour	Soy flour	1.00
Soy milk, fluid	Soybeans, cooked	0.17
Spinach, raw, edible portion	Spinach, with refuse	1.39
Spinach, cooked, boiled, drained	Spinach, with refuse	1.42
Spinach, frozen, chopped or leaf, unprepared	Spinach, with refuse	1.71
Spinach, frozen, chopped or leaf, cooked, boiled, drained	Spinach, with refuse	1.79
Squash, summer, all varieties, raw, edible portion	Squash, summer, with refuse	1.05
Squash, summer, all varieties, cooked, boiled, drained	Squash, summer, with refuse	1.24
Squash, winter, all varieties, raw, edible portion	Squash, winter, with refuse	1.41
Squash, winter, all varieties, cooked, baked	Squash, winter, with refuse	1.48
Sweetpotato, raw, edible portion	Sweetpotato, with refuse	1.39
Sweetpotato, cooked, baked in skin	Sweetpotato, with refuse	1.67
Tomatoes, raw, edible portion	Tomatoes, with refuse	1.10
Tomatoes, green, raw, edible portion	Tomatoes, with refuse	1.10
Tomatoes, cooked	Tomatoes, with refuse	1.13
Tomatoes, canned, whole	Tomatoes, with refuse	1.27
Tomato juice	Tomatoes, with refuse	1.53
Tomato paste	Tomatoes, with refuse	5.30
Tomato puree	Tomatoes, with refuse	2.42

Convert From	Convert To	Conversion Factor
Vegetables (continued)		
Tomatoes, sun-dried	Tomatoes, with refuse	17.08
Turnip greens, cooked, boiled, drained	Turnip greens, with refuse	0.94
Turnips, raw, edible portion	Turnips, with refuse	1.23
Waterchestnuts, chinese, (matai), raw, edible portion	Waterchestnuts, chinese, (matai), with refuse	1.30
Watercress, raw, edible portion	Watercress, with refuse	1.09
Waxgourd, (chinese preserving melon), cooked, boiled, drained	Waxgourd, (chinese preserving melon), with refuse	1.42
Yam, raw, edible portion	Yam, with refuse	1.16
Yam, cooked, boiled, drained, or baked	Yam, with refuse	1.14
Yambean (jicama), raw, edible portion	Yambean (jicama), with refuse	1.09

Appendix C: List of Variables in the 100-gram Databases

The names and descriptions of the variables in the FICRCD files are listed below.

Sequence	Variable Name	Description
1	FoodCode	USDA 8-digit food code
2	ModCode	Food modification code
3	Description	Food code description
4	TotalDairy	Total dairy products
5	TotalFluidMilk	Total fluid milk
6	FluidMilkWhl	Fluid whole milk
7	FluidMilk2pct	Fluid 2% milk
8	FluidMilk1pct	Fluid 1% milk
9	FluidMilkSkim	Fluid skim milk
10	Butter	Butter
11	Cheese	Cheese
12	Yogurt	Yogurt
13	OtherDairy	Other dairy products
14	TotalFatAndOils	Total fats and oils
15	Margarine	Margarine
16	SaladCookingOils	Salad and cooking oils
17	Shortening	Shortening
18	OtherOils	Other oils
19	TotalFruit	Total fruit
20	TotalApples	Total apples
21	Apples	Apples from fruit
22	ApplesFromJuice	Apples from juice
23	Bananas	Bananas
24	Berries	Berries
25	Grapes	Grapes
26	Melons	Melons
27	TotalOranges	Total oranges
28	Oranges	Oranges from fruit

Sequence	Variable Name	Description
29	OrangesFromJuice	Oranges from juice
30	OtherCitrusFruits	Other citrus fruits
31	StoneFruits	Stone fruits
32	TropicalFruits	Tropical fruits
33	TotalGrain	Total grains
34	CornFlour	Corn flour and meal
35	OatFlour	Oats and oat flour
36	RiceDried	Rice (dry or uncooked)
37	WheatFlour	Wheat flour
38	TotalMeatPoultryFish	Total meat, poultry, and fish
39	TotalMeat	Total meat
40	Beef	Beef
41	Pork	Pork
42	TotalPoultry	Total poultry
43	Chicken	Chicken
44	Turkey	Turkey
45	FinAndShellfish	Finfish and shellfish
46	EggsWithShell	Eggs, shell included
47	EggsNoShell	Eggs, without shell
48	TotalNuts	Total nuts
49	Peanuts	Peanuts
50	TreeNuts	Tree nuts
51	TotalCaloricSweeteners	Total caloric sweeteners
52	TotalVegetables	Total vegetables
53	TotalBrassica	Total brassica (cruciferous) vegetables
54	BroccoliAndCauliflower	Broccoli and cauliflower
55	Carrots	Carrots
56	Celery	Celery
57	Cucumbers	Cucumbers
58	GreenPeas	Green peas
59	TotalLeafyVeg	Total leafy vegetables
60	Lettuce	Lettuce (head and leaf)

Sequence	Variable Name	Description
61	Onions	Onions
62	Peppers	Peppers (bell and non-bell)
63	Tomatoes	Tomatoes
64	SweetCorn	Sweet corn
65	TotalRootsAndTubers	Total roots and tubers
66	Potatoes	Potatoes
67	SnapBeans	Snap beans/string beans
68	LegumesDried	Legumes (dry beans and peas - uncooked),