

2015-2020 Dietary Guidelines

CHAPTER 1

Key Elements of Healthy Eating Patterns

A Closer Look Inside Healthy Eating Patterns

In this section:

1. Food Groups
2. Other Dietary Components

The following sections describe a healthy eating pattern and how following such a pattern can help people meet the Guidelines and its Key Recommendations. Throughout, it uses the Healthy U.S.-Style Eating Pattern as an example to illustrate the specific amounts and limits for food groups and other dietary components that make up healthy eating patterns. The Healthy U.S.-Style Eating Pattern is one of three USDA Food Patterns and is based on the types and proportions of foods Americans typically consume, but in nutrient-dense forms and appropriate amounts. Because calorie needs vary based on age, sex, height, weight, and level of physical activity (see [Appendix 2. Estimated Calorie Needs per Day, by Age, Sex, and Physical Activity Level \(/dietaryguidelines/2015/guidelines/appendix-2/\)](/dietaryguidelines/2015/guidelines/appendix-2/)), the pattern has been provided at 12 different calorie levels (see [Appendix 3. USDA Food Patterns: Healthy U.S.-Style Eating Pattern \(/dietaryguidelines/2015/guidelines/appendix-3/\)](/dietaryguidelines/2015/guidelines/appendix-3/)). The 2,000-calorie level of the Pattern is shown in [Table 1-1](#).

The Healthy U.S.-Style Eating Pattern is the same as the primary USDA Food Patterns of the *2010 Dietary Guidelines*. Two additional USDA Food Patterns—the Healthy Mediterranean-Style Eating Pattern and the Healthy Vegetarian Eating Pattern—are found at the end of this chapter and reflect other styles of eating (see [Appendix 4. USDA Food Patterns: Healthy Mediterranean-Style Eating Pattern \(/dietaryguidelines/2015/guidelines/appendix-4/\)](/dietaryguidelines/2015/guidelines/appendix-4/) and [Appendix 5. USDA Food Patterns: Healthy Vegetarian Eating Pattern \(/dietaryguidelines/2015/guidelines/appendix-5/\)](/dietaryguidelines/2015/guidelines/appendix-5/)). These three patterns are examples of healthy eating patterns that can be adapted based on cultural and personal preferences. The USDA Food Patterns also can be used as guides to plan and serve meals not only for the individual and household but in a variety of other settings, including schools, worksites, and other community settings.

Table 1-1.

Healthy U.S.-Style Eating Pattern at the 2,000-Calorie Level, With Daily or Weekly Amounts From Food Groups, Subgroups, and Components

Food Group ^a	Amount ^b in the 2,000-Calorie-Level Pattern
Vegetables	2½ c-eq/day
Dark green	1½ c-eq/wk
Red and orange	5½ c-eq/wk
Legumes (beans and peas)	1½ c-eq/wk
Starchy	5 c-eq/wk
Other	4 c-eq/wk
Fruits	2 c-eq/day
Grains	6 oz-eq/day
Whole grains	≥ 3 oz-eq/day
Refined grains	≤ 3 oz-eq/day
Dairy	3 c-eq/day
Protein Foods	5½ oz-eq/day
Seafood	8 oz-eq/wk
Meats, poultry, eggs	26 oz-eq/wk

Nuts, seeds, soy products	5 oz-eq/wk
Oils	27 g/day
Limit on Calories for Other Uses (% of calories)^c	270 kcal/day (14%)

^a Definitions for each food group and subgroup are provided throughout the chapter and are compiled in [Appendix 3. \(/dietaryguidelines/2015/guidelines/appendix-3/\)](/dietaryguidelines/2015/guidelines/appendix-3/).

^b Food group amounts shown in cup-(c) or ounce-(oz) equivalents (eq). Oils are shown in grams (g). Quantity equivalents for each food group are defined in [Appendix 3. \(/dietaryguidelines/2015/guidelines/appendix-3/\)](/dietaryguidelines/2015/guidelines/appendix-3/). Amounts will vary for those who need less than 2,000 or more than 2,000 calories per day. See [Appendix 3 \(/dietaryguidelines/2015/guidelines/appendix-3/\)](/dietaryguidelines/2015/guidelines/appendix-3/) for all 12 calorie levels of the pattern.

^c Assumes food choices to meet food group recommendations are in nutrient-dense forms. Calories from added sugars, added refined starches, solid fats, alcohol, and/or to eat more than the recommended amount of nutrient-dense foods are accounted for under this category.

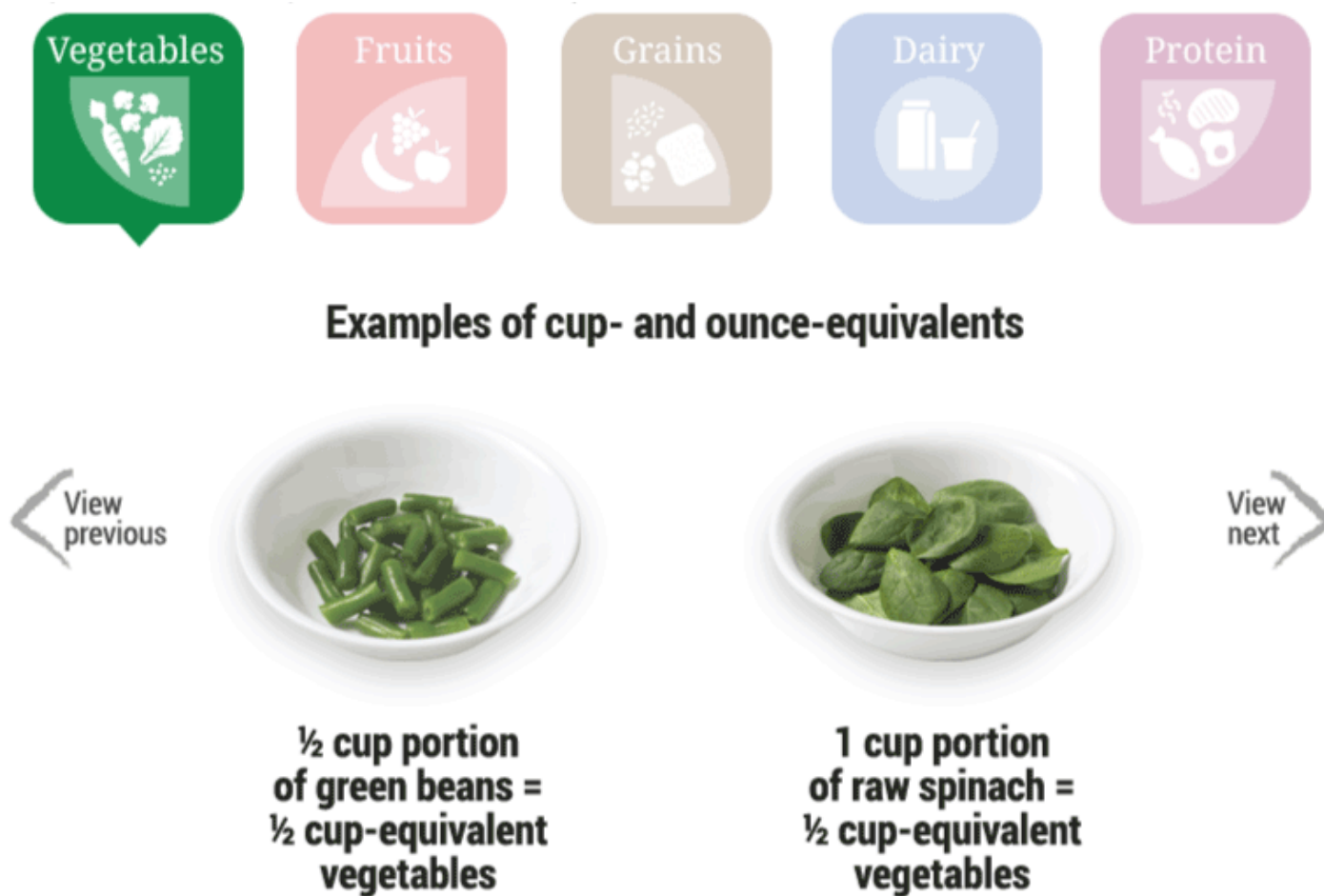
Note: The total eating pattern should not exceed *Dietary Guidelines* limits for intake of calories from added sugars and saturated fats and alcohol and should be within the Acceptable Macronutrient Distribution Ranges for calories from protein, carbohydrate, and total fats. Most calorie patterns do not have enough calories available after meeting food group needs to consume 10 percent of calories from added sugars *and* 10 percent of calories from saturated fats and still stay within calorie limits. Values are rounded.

The Healthy U.S.-Style Eating Pattern is designed to meet the Recommended Dietary Allowances (RDA) and Adequate Intakes for essential nutrients, as well as Acceptable Macronutrient Distribution Ranges (AMDR) set by the Food and Nutrition Board of the IOM. This eating pattern also conforms to limits set by the IOM or *Dietary Guidelines* for other nutrients or food components (see [Appendix 6. Glossary of Terms \(/dietaryguidelines/2015/guidelines/appendix-6/\)](/dietaryguidelines/2015/guidelines/appendix-6/) and [Appendix 7. Nutritional Goals for Age-Sex Groups Based on Dietary Reference Intakes and Dietary Guidelines Recommendations \(/dietaryguidelines/2015/guidelines/appendix-7/\)](/dietaryguidelines/2015/guidelines/appendix-7/)). Nutritional goals for almost all nutrients are met (see [Appendix 3 \(/dietaryguidelines/2015/guidelines/appendix-3/\)](/dietaryguidelines/2015/guidelines/appendix-3/) for additional information).

Figure 1-1.

Cup- and Ounce-Equivalents

Within a food group, foods can come in many forms and are not created equal in terms of what counts as a cup or an ounce. Some foods are more concentrated, and some are more airy or contain more water. Cup- and ounce-equivalents identify the amounts of foods from each food group with similar nutritional content. In addition, portion sizes do not always align with one cup-equivalent or one ounce-equivalent. See examples below for variability.



[Read text description of Figure 1-1](#)

Importance of Calorie Balance Within Healthy Eating Patterns

Managing calorie intake is fundamental to achieving and maintaining calorie balance—the balance between the calories taken in from foods and the calories expended from metabolic processes and physical activity. The best way to determine whether an eating pattern is at an appropriate number of calories is to monitor body weight and adjust calorie intake and expenditure in physical activity based on changes in weight over time.

All foods and many beverages contain calories, and the total number of calories varies depending on the macronutrients in a food. On average, carbohydrates and protein contain 4 calories per gram, fats contain 9 calories per gram, and alcohol has 7 calories per gram. The total number of calories a person needs each day varies depending on a number of factors, including the person's age, sex, height, weight, and level of physical activity (see [Appendix 2 \(/dietaryguidelines/2015/guidelines/appendix-2/\)](/dietaryguidelines/2015/guidelines/appendix-2/)). In addition, a need to lose, maintain, or gain weight and other factors affect how many calories should be consumed.

All Americans—children, adolescents, adults, and older adults—are encouraged to achieve and/or maintain a healthy body weight. General guidance for achieving and maintaining a healthy body weight is provided below, and [Appendix 8. Federal Resources for Information on Nutrition and Physical Activity \(/dietaryguidelines/2015/guidelines/appendix-8/\)](/dietaryguidelines/2015/guidelines/appendix-8/) provides additional resources, including an evolving array of tools to facilitate Americans' adoption of healthy choices.

- Children and adolescents are encouraged to maintain calorie balance to support normal growth and development without promoting excess weight gain. Children and adolescents who are overweight or obese should change their eating and physical activity behaviors to maintain or reduce their rate of weight gain while linear growth occurs, so that they can reduce body mass index (BMI) percentile toward a healthy range.
- Before becoming pregnant, women are encouraged to achieve and maintain a healthy weight, and women who are pregnant are encouraged to gain weight within gestational weight gain guidelines.^[8]
- Adults who are obese should change their eating and physical activity behaviors to prevent additional weight gain and/or promote weight loss. Adults who are overweight should not gain additional weight, and those with one or more CVD risk factors (e.g., hypertension and hyperlipidemia) should change their eating and physical activity behaviors to lose weight. To lose

weight, most people need to reduce the number of calories they get from foods and beverages and increase their physical activity. For a weight loss of 1 to 1½ pounds per week, daily intake should be reduced by 500 to 750 calories. Eating patterns that contain 1,200 to 1,500 calories each day can help most women lose weight safely, and eating patterns that contain 1,500 to 1,800 calories each day are suitable for most men for weight loss. In adults who are overweight or obese, if reduction in total calorie intake is achieved, a variety of eating patterns can produce weight loss, particularly in the first 6 months to 2 years;^[9] however, more research is needed on the health implications of consuming these eating patterns long-term.

- Older adults, ages 65 years and older, who are overweight or obese are encouraged to prevent additional weight gain. Among older adults who are obese, particularly those with CVD risk factors, intentional weight loss can be beneficial and result in improved quality of life and reduced risk of chronic diseases and associated disabilities.

Food Groups

Eating an appropriate mix of foods from the food groups and subgroups—within an appropriate calorie level—is important to promote health. Each of the food groups and their subgroups provides an array of nutrients, and the amounts recommended reflect eating patterns that have been associated with positive health outcomes. Foods from all of the food groups should be eaten in nutrient-dense forms. The following sections describe the recommendations for each of the food groups, highlight nutrients for which the food group is a key contributor, and describe special considerations related to the food group.

Vegetables

Healthy intake: Healthy eating patterns include a variety of vegetables from all of the five vegetable subgroups—dark green, red and orange, legumes (beans and peas), starchy, and other.^[10] These include all fresh, frozen, canned, and dried options in cooked or raw forms, including vegetable juices. The recommended amount of vegetables in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 2½ cup-equivalents of vegetables per day. In addition, weekly amounts from each vegetable subgroup are recommended to ensure variety and meet nutrient needs.

Key nutrient contributions: Vegetables are important sources of many nutrients, including dietary fiber, potassium, vitamin A,^[11] vitamin C, vitamin K, copper, magnesium, vitamin E, vitamin B₆, folate, iron, manganese, thiamin, niacin, and choline. Each of the vegetable subgroups contributes different combinations of nutrients, making it important for individuals to consume vegetables from all the subgroups. For example, dark-green vegetables provide the most vitamin K, red and orange vegetables the most vitamin A, legumes the most dietary fiber, and starchy vegetables the most potassium. Vegetables in the “other” vegetable subgroup provide a wide range of nutrients in varying amounts.

Considerations: To provide all of the nutrients and potential health benefits that vary across different types of vegetables, the Healthy U.S.-Style Eating Pattern includes weekly recommendations for each subgroup. Vegetable choices over time should vary and include many different vegetables. Vegetables should be consumed in a nutrient-dense form, with limited additions such as salt, butter, or creamy sauces. When selecting frozen or canned vegetables, choose those lower in sodium.

About Legumes (Beans and Peas)

Legumes include kidney beans, pinto beans, white beans, black beans, garbanzo beans (chickpeas), lima beans (mature, dried), split peas, lentils, and edamame (green soybeans).

Legumes are excellent sources of protein. In addition, they provide other nutrients that also are found in seafood, meats, and poultry, such as iron and zinc. They are excellent sources of dietary fiber and of nutrients, such as potassium and folate that also are found in other vegetables.

Because legumes have a similar nutrient profile to foods in both the protein foods group and the vegetable group, they may be thought of as either a vegetable or a protein food and thus, can be counted as a vegetable or a protein food to meet recommended intakes.

Green peas and green (string) beans are not counted in the legume subgroup, because their nutrient compositions are not similar to legumes. Green peas are similar to starchy vegetables and are grouped with them. Green beans are grouped with the other vegetables subgroup, which includes onions, iceberg lettuce, celery, and cabbage, because their nutrient content is not similar to legumes.

Fruits

Healthy intake: Healthy eating patterns include fruits, especially whole fruits. The fruits food group includes whole fruits and 100% fruit juice. Whole fruits include fresh, canned, frozen, and dried forms. The recommended amount of fruits in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 2 cup-equivalents per day. One cup of 100% fruit juice counts as 1 cup of fruit. Although fruit juice can be part of healthy eating patterns, it is lower than whole fruit in dietary fiber and when consumed in excess can contribute extra calories. Therefore, at least half of the recommended amount of fruits should come from whole fruits. When juices are consumed, they should be 100% juice, without added sugars. Also, when selecting canned fruit, choose options that are lowest in added sugars. One-half cup of dried fruit counts as one cup-equivalent of fruit. Similar to juice, when consumed in excess, dried fruits can contribute extra calories.

Key nutrient contributions: Among the many nutrients fruits provide are dietary fiber, potassium, and vitamin C.

Considerations: Juices may be partially fruit juice, and only the proportion that is 100% fruit juice counts (e.g., 1 cup of juice that is 50% juice counts as ½ cup of fruit juice). The remainder of the product may contain added sugars. Sweetened juice products with minimal juice content, such as juice drinks, are considered to be sugar-sweetened beverages rather than fruit juice because they are primarily composed of water with added sugars (see the [Added Sugars](#) section below). The percent of juice in a beverage may be found on the package label, such as “contains 25% juice” or “100% fruit juice.” The amounts of fruit juice allowed in the USDA Food Patterns for young children align with the recommendation from the American Academy of Pediatrics that young children consume no more than 4 to 6 fluid ounces of 100% fruit juice per day.^[12] Fruits with small amounts of added sugars can be accommodated in the diet as long as calories from added sugars do not exceed 10 percent per day and total calorie intake remains within limits.

Grains

Healthy Intake: Healthy eating patterns include whole grains and limit the intake of refined grains and products made with refined grains, especially those high in saturated fats, added sugars, and/or sodium, such as cookies, cakes, and some snack foods. The grains food group includes grains as single foods (e.g., rice, oatmeal, and popcorn), as well as products that include grains as an ingredient (e.g., breads, cereals, crackers, and pasta). Grains are either whole or refined. Whole grains (e.g., brown rice, quinoa, and oats) contain the entire kernel, including the endosperm, bran, and germ. Refined grains differ from whole grains in that the grains have been processed to remove the bran and germ, which removes dietary fiber, iron, and other nutrients. The recommended amount of grains

in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 6 ounce-equivalents per day. At least half of this amount should be whole grains (see the [How To Make at Least Half of Grains Whole Grains](#) call-out box).

Key nutrient contributions: Whole grains are a source of nutrients, such as dietary fiber, iron, zinc, manganese, folate, magnesium, copper, thiamin, niacin, vitamin B₆, phosphorus, selenium, riboflavin, and vitamin A.^[13] Whole grains vary in their dietary fiber content. Most refined grains are enriched, a process that adds back iron and four B vitamins (thiamin, riboflavin, niacin, and folic acid). Because of this process, the term “enriched grains” is often used to describe these refined grains.

Considerations: Individuals who eat refined grains should choose enriched grains. Those who consume all of their grains as whole grains should include some grains, such as some whole-grain ready-to-eat breakfast cereals, that have been fortified with folic acid. This is particularly important for women who are or are capable of becoming pregnant, as folic acid fortification in the United States has been successful in reducing the incidence of neural tube defects during fetal development. Although grain products that are high in added sugars and saturated fats, such as cookies, cakes, and some snack foods, should be limited, as discussed in the [Added Sugars](#) and [Saturated Fats](#) sections below, grains with some added sugars and saturated fats can fit within healthy eating patterns.

How To Make at Least Half of Grains Whole Grains

A food is a 100-percent whole-grain food if the only grains it contains are whole grains. One ounce-equivalent of whole grains has 16 g of whole grains. The recommendation to consume at least half of total grains as whole grains can be met in a number of ways.

The most direct way to meet the whole grain recommendation is to choose 100 percent whole-grain foods for at least half of all grains consumed. The relative amount of whole grain in the food can be inferred by the placement of the grain in the ingredients list. The whole grain should be the first ingredient—or the second ingredient, after water. For foods with multiple whole-grain ingredients, they should appear near the beginning of the ingredients list.

Many grain foods contain both whole grains and refined grains. These foods also can help people meet the whole grain recommendation, especially if a considerable proportion of the grain ingredients is whole grains. Another way to meet the recommendation to make at least half of grains whole grains is to choose products with at least 50 percent of the total weight as whole-grain

ingredients.^{[14],[15]} If a food has at least 8 g of whole grains per ounce-equivalent, it is at least half whole grains.^[16] Some product labels show the whole grains health claim or the grams of whole grain in the product. This information may help people identify food choices that have a substantial amount of whole grains.

Dairy

Healthy intake: Healthy eating patterns include fat-free and low-fat (1%) dairy, including milk, yogurt, cheese, or fortified soy beverages (commonly known as “soymilk”). Soy beverages fortified with calcium, vitamin A, and vitamin D, are included as part of the dairy group because they are similar to milk based on nutrient composition and in their use in meals. Other products sold as “milks” but made from plants (e.g., almond, rice, coconut, and hemp “milks”) may contain calcium and be consumed as a source of calcium, but they are not included as part of the dairy group because their overall nutritional content is not similar to dairy milk and fortified soy beverages (soymilk). The recommended amounts of dairy in the Healthy U.S.-Style Pattern are based on age rather than calorie level and are 2 cup-equivalents per day for children ages 2 to 3 years, 2½ cup-equivalents per day for children ages 4 to 8 years, and 3 cup-equivalents per day for adolescents ages 9 to 18 years and for adults.

Key nutrient contributions: The dairy group contributes many nutrients, including calcium, phosphorus, vitamin A, vitamin D (in products fortified with vitamin D), riboflavin, vitamin B₁₂, protein, potassium, zinc, choline, magnesium, and selenium.

Considerations: Fat-free and low-fat (1%) dairy products provide the same nutrients but less fat (and thus, fewer calories) than higher fat options, such as 2% and whole milk and regular cheese. Fat-free or low-fat milk and yogurt, in comparison to cheese, contain less saturated fats and sodium and more potassium, vitamin A, and vitamin D. Thus, increasing the proportion of dairy intake that is fat-free or low-fat milk or yogurt and decreasing the proportion that is cheese would decrease saturated fats and sodium and increase potassium, vitamin A, and vitamin D provided from the dairy group. Individuals who are lactose intolerant can choose low-lactose and lactose-free dairy products. Those who are unable or choose not to consume dairy products should consume foods that provide the range of nutrients generally obtained from dairy, including protein, calcium, potassium, magnesium, vitamin D, and vitamin A (e.g., fortified soy beverages [soymilk]). Additional sources of potassium, calcium, and vitamin D are found in [Appendix 10 \(/dietaryguidelines/2015/guidelines/appendix-10/\)](/dietaryguidelines/2015/guidelines/appendix-10/), [Appendix 11 \(/dietaryguidelines/2015/guidelines/appendix-11/\)](/dietaryguidelines/2015/guidelines/appendix-11/), and [Appendix 12 \(/dietaryguidelines/2015/guidelines/appendix-12/\)](/dietaryguidelines/2015/guidelines/appendix-12/), respectively.

Protein Foods

Healthy intake: Healthy eating patterns include a variety of protein foods in nutrient-dense forms. The protein foods group comprises a broad group of foods from both animal and plant sources and includes several subgroups: seafood; meats, poultry, and eggs; and nuts, seeds, and soy products. Legumes (beans and peas) may also be considered part of the protein foods group as well as the vegetables group (see the [About Legumes \(Beans and Peas\)](#) call-out box). Protein also is found in some foods from other food groups (e.g., dairy). The recommendation for protein foods in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 5½ ounce-equivalents of protein foods per day.

Key nutrient contributions: Protein foods are important sources of nutrients in addition to protein, including B vitamins (e.g., niacin, vitamin B₁₂, vitamin B₆, and riboflavin), selenium, choline, phosphorus, zinc, copper, vitamin D, and vitamin E). Nutrients provided by various types of protein foods differ. For example, meats provide the most zinc, while poultry provides the most niacin. Meats, poultry, and seafood provide heme iron, which is more bioavailable than the non-heme iron found in plant sources. Heme iron is especially important for young children and women who are capable of becoming pregnant or who are pregnant. Seafood provides the most vitamin B₁₂ and vitamin D, in addition to almost all of the polyunsaturated omega-3 fatty acids, eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA), in the Patterns (see the [About Seafood](#) call-out box). Eggs provide the most choline, and nuts and seeds provide the most vitamin E. Soy products are a source of copper, manganese, and iron, as are legumes.

Considerations: For balance and flexibility within the food group, the Healthy U.S.-Style Eating Pattern includes weekly recommendations for the subgroups: seafood; meats, poultry, and eggs; and nuts, seeds, and soy products. A specific recommendation for at least 8 ounce-equivalents of seafood per week also is included for the 2,000-calorie level (see the [About Seafood](#) call-out box). One-half ounce of nuts or seeds counts as 1 ounce-equivalent of protein foods, and because they are high in calories, they should be eaten in small portions and used to replace other protein foods rather than being added to the diet. When selecting protein foods, nuts and seeds should be unsalted, and meats and poultry should be consumed in lean forms. Processed meats and processed poultry are sources of sodium and saturated fats, and intake of these products can be accommodated as long as sodium, saturated fats, added sugars, and total calories are within limits in the resulting eating pattern (see the [About Meats and Poultry](#) call-out box). The inclusion of protein foods from plants allows vegetarian options to be accommodated.

About Seafood

Seafood, which includes fish and shellfish, received particular attention in the *2010 Dietary Guidelines* because of evidence of health benefits for the general populations as well as for women who are pregnant or breastfeeding. For the general population, consumption of about 8 ounces per week of a variety of seafood, which provide an average consumption of 250 mg per day of EPA and DHA, is associated with reduced cardiac deaths among individuals with and without preexisting CVD. Similarly, consumption by women who are pregnant or breastfeeding of at least 8 ounces per week from seafood choices that are sources of DHA is associated with improved infant health outcomes.

The recommendation to consume 8 or more ounces per week (less for young children) of seafood is for the total package of nutrients that seafood provides, including its EPA and DHA content. Some seafood choices with higher amounts of EPA and DHA should be included.

Strong evidence from mostly prospective cohort studies but also randomized controlled trials has shown that eating patterns that include seafood are associated with reduced risk of CVD, and moderate evidence indicates that these eating patterns are associated with reduced risk of obesity. As described earlier, eating patterns consist of multiple, interacting food components and the relationships to health exist for the overall eating pattern, not necessarily to an isolated aspect of the diet.

Mercury is a heavy metal found in the form of methyl mercury in seafood in varying levels. Seafood choices higher in EPA and DHA but lower in methyl mercury are encouraged.^[17] Seafood varieties commonly consumed in the United States that are higher in EPA and DHA and lower in methyl mercury include salmon, anchovies, herring, shad, sardines, Pacific oysters, trout, and Atlantic and Pacific mackerel (*not* king mackerel, which is high in methyl mercury). Individuals who regularly consume more than the recommended amounts of seafood that are in the Healthy U.S-Style Pattern should choose a mix of seafood that emphasizes choices relatively low in methyl mercury.

Some canned seafood, such as anchovies, may be high in sodium. To keep sodium intake below recommended limits, individuals can use the Nutrition Facts label to compare sodium amounts.

Women who are pregnant or breastfeeding should consume at least 8 and up to 12 ounces^[18] of a variety of seafood per week, from choices that are lower in methyl mercury. Obstetricians and pediatricians should provide guidance on how

to make healthy food choices that include seafood. Women who are pregnant or breastfeeding and young children should not eat certain types of fish that are high in methyl mercury.^[19]

About Meats and Poultry

Meat, also known as red meat, includes all forms of beef, pork, lamb, veal, goat, and non-bird game (e.g., venison, bison, and elk). Poultry includes all forms of chicken, turkey, duck, geese, guineas, and game birds (e.g., quail and pheasant). Meats and poultry vary in fat content and include both fresh and processed forms. Lean meats and poultry contain less than 10 g of fat, 4.5 g or less of saturated fats, and less than 95 mg of cholesterol per 100 g and per labeled serving size (e.g., 95% lean ground beef, pork tenderloin, and skinless chicken or turkey breast). Processed meats and processed poultry (e.g., sausages, luncheon meats, bacon, and beef jerky) are products preserved by smoking, curing, salting, and/or the addition of chemical preservatives.

Strong evidence from mostly prospective cohort studies but also randomized controlled trials has shown that *eating patterns* that include lower intake of meats as well as processed meats and processed poultry are associated with reduced risk of CVD in adults. Moderate evidence indicates that these *eating patterns* are associated with reduced risk of obesity, type 2 diabetes, and some types of cancer in adults. As described earlier, eating patterns consist of multiple, interacting food components, and the relationships to health exist for the overall eating pattern, not necessarily to an isolated aspect of the diet. Much of this research on eating patterns has grouped together all meats and poultry, regardless of fat content or processing, though some evidence has identified lean meats and lean poultry in healthy eating patterns. In separate analyses, food pattern modeling has demonstrated that lean meats and lean poultry can contribute important nutrients within limits for sodium, calories from saturated fats and added sugars, and total calories when consumed in recommended amounts in healthy eating patterns, such as the Healthy U.S.-Style and Mediterranean-Style Eating Patterns.

The recommendation for the meats, poultry, and eggs subgroup in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 26 ounce-equivalents per week. This is the same as the amount that was in the primary USDA Food Patterns of the *2010 Dietary Guidelines*. As discussed in [Chapter 2 \(/dietaryguidelines/2015/guidelines/chapter-2/\)](#), average intakes of meats, poultry, and eggs for teen boys and adult men are above recommendations in the Healthy U.S.-Style Eating Pattern. For those who eat animal products, the recommendation for the protein foods subgroup of meats, poultry, and eggs can be met by consuming a variety of lean meats, lean poultry, and eggs. Choices within these eating patterns may include processed meats and processed poultry as long as the resulting eating pattern is within limits for sodium, calories from saturated fats and added sugars, and total calories.

Oils

Healthy intake: Oils are fats that contain a high percentage of monounsaturated and polyunsaturated fats and are liquid at room temperature. Although they are not a food group, oils are emphasized as part of healthy eating patterns because they are the major source of essential fatty acids and vitamin E. Commonly consumed oils extracted from plants include canola, corn, olive, peanut, safflower, soybean, and sunflower oils. Oils also are naturally present in nuts, seeds, seafood, olives, and avocados. The fat in some tropical plants, such as coconut oil, palm kernel oil, and palm oil, are not included in the oils category because they do not resemble other oils in their composition. Specifically, they contain a higher percentage of saturated fats than other oils (see [Dietary Fats: The Basics](#) call-out box). The recommendation for oils in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 27 g (about 5 teaspoons) per day.

Key nutrient contributions: Oils provide essential fatty acids and vitamin E.

Considerations: Oils are part of healthy eating patterns, but because they are a concentrated source of calories, the amount consumed should be within the AMDR for total fats without exceeding calorie limits. Oils should replace solid fats rather than being added to the diet. More information on types of fats is provided in the [Dietary Fats: The Basics](#) call-out box, and information on the relationship between dietary fats and health is discussed in the **Saturated Fats, Trans Fats, and Cholesterol** section, below.

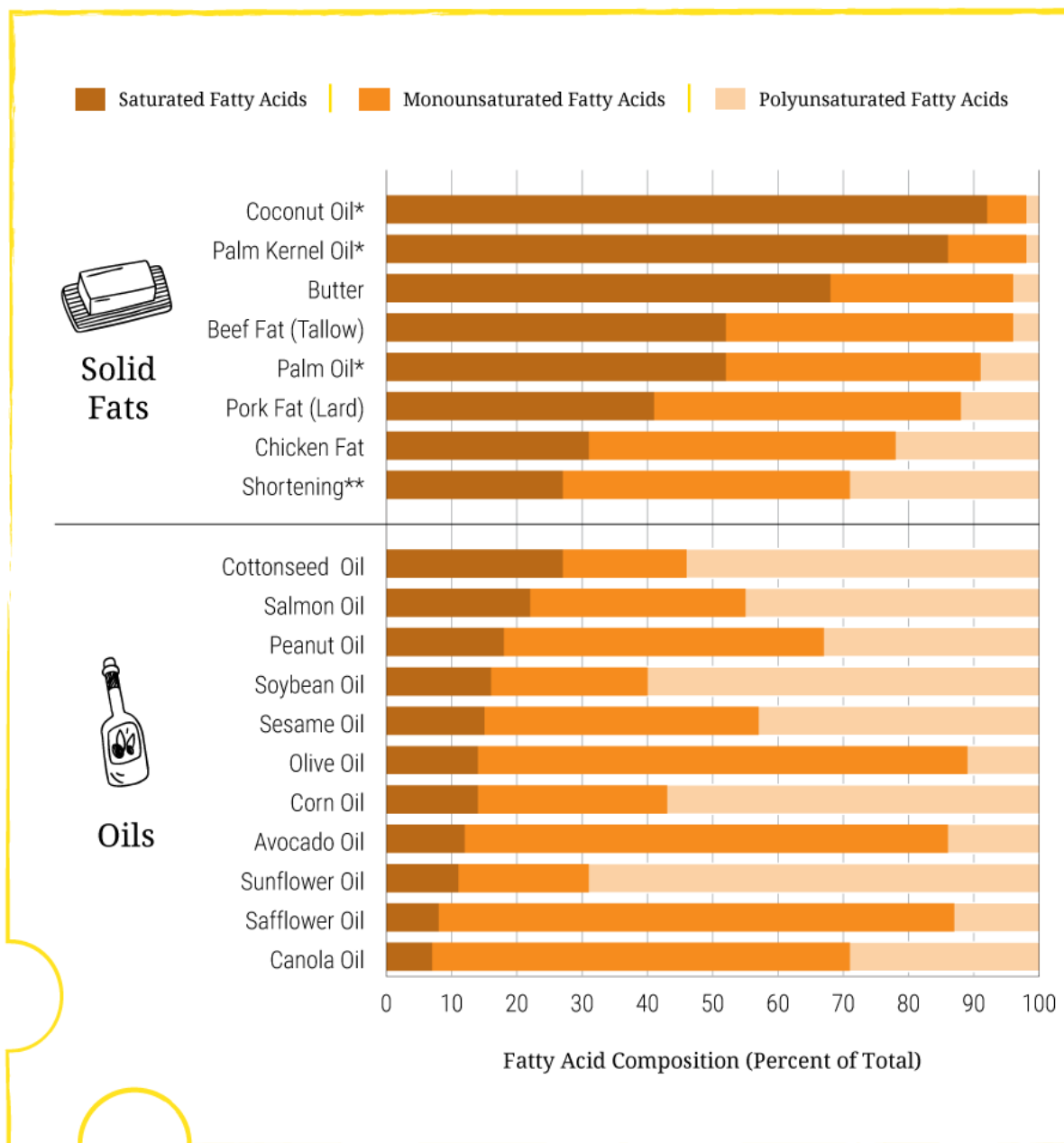
Dietary Fats: The Basics

Dietary fats are found in both plant and animal foods. They supply calories and help with the absorption of the fat-soluble vitamins A, D, E, and K. Some also are good sources of two essential fatty acids—linoleic acid and α -linolenic acid.

All dietary fats are composed of a mix of polyunsaturated, monounsaturated, and saturated fatty acids, in varied proportions (Figure 1-2). For example, most of the fatty acids in butter are saturated, but it also contains some monounsaturated and polyunsaturated fatty acids. Oils are mostly unsaturated fatty acids, though they have small amounts of saturated fatty acids.

Figure 1-2.

Fatty Acid Profiles of Common Fats and Oils



[Read text description of Figure 1-2](#)

* Coconut, palm kernel, and palm oil are called oils because they come from plants. However, they are solid or semi-solid at room temperature due to their high content of short-chain saturated fatty acids. They are considered solid fats for nutritional purposes.

** Shortening may be made from partially hydrogenated vegetable oil, which contains *trans* fatty acids.

DATA SOURCE:

U.S. Department of Agriculture, Agricultural Research Service, Nutrition Data Laboratory. USDA National Nutrient Database for Standard Reference. Release 27, 2015. Available at <http://ndb.nal.usda.gov/> (<http://ndb.nal.usda.gov/>). Accessed August 31, 2015.

- **Polyunsaturated fatty acids (polyunsaturated fats^[20])** are found in greatest amounts in sunflower, corn, soybean, and cottonseed oils; walnuts; pine nuts; and sesame, sunflower, pumpkin, and flax seeds. Only small amounts of polyunsaturated fats are found in most animal fats. Omega-3 (*n*-3) fatty acids are a type of polyunsaturated fats found in seafood, such as salmon, trout, herring, tuna, and mackerel, and in flax seeds and walnuts. EPA and DHA are long chain *n*-3 fatty acids found in seafood.
- **Monounsaturated fatty acids (monounsaturated fats)** are found in greatest amounts in olive, canola, peanut, and safflower oils, and in avocados, peanut butter, and most nuts. Monounsaturated fats also are part of most animal fats such as fats from chicken, pork, beef, and wild game.
- **Saturated fatty acids (saturated fats)** are found in the greatest amounts in coconut and palm kernel oils, in butter and beef fats, and in palm oil. They also are found in other animal fats, such as pork and chicken fats and in other plant fats, such as nuts.
- ***Trans* fatty acids (*trans* fats)** are unsaturated fats found primarily in partially hydrogenated vegetable oils and foods containing these oils and in ruminant (animal) fats. They are structurally different from the unsaturated fatty acids that occur naturally in plant foods and differ in their health effects.

The proportions of fatty acids in a particular fat determine the physical form of the fat:

- Fats with a higher amount of polyunsaturated and monounsaturated fatty acids are usually liquid at room temperature and are referred to as “oils.”
- Fats with a higher amount of saturated fatty acids are usually solid at room temperature and are referred to as “solid fats.” Fats containing *trans* fatty acids are also classified as solid fats, although they may or may not be solid

at room temperature.

A relevant detail in the complexity of making food-based recommendations that consider nutrients is the difference between the terms “saturated fats” and “solid fats.” Although they are closely related terms, saturated fats and solid fats are not synonymous. The term “saturated fats” refers to saturated fatty acids, a nutrient found in foods, while the term “solid fats” describes the physical manifestation of the fats in a food. Some solid fats, such as the strip of fat around a piece of meat, can easily be seen. Other solid fats are not so visible. For example, the solid fats in whole milk are suspended in the fluid milk by the process of homogenization.

Margarines and margarine-like vegetable oil spreads are food products composed of one or more oils or solid fats designed to replace butter, which is high in saturated fats. These products may be sold in sticks, tubs, bottles, or sprays. Margarine and vegetable oil spreads generally contain less saturated fats than butter. However, they vary in their total fat and calorie content and in the fat and oil blends used to make them and, thus, in the proportions of saturated, unsaturated, and *trans* fats they contain. It is important to read the Nutrition Facts label to identify the calorie and saturated and *trans* fats content of the spread and choose foods with no *trans* fats and lower amounts of saturated fats.

The *Dietary Guidelines* provides recommendations on saturated fats as well as on solid fats because its aim is to improve the health of the U.S. population through food-based guidance. It includes recommendations on saturated fats because of the strong relationship of this nutrient to a health outcome (CVD risk). It includes recommendations on solid fats because, as discussed in [Chapter 2](#) (</dietaryguidelines/2015/guidelines/chapter-2/>), they are abundant in the diets of the U.S. population, and reducing solid fats when making food choices is an important way to reduce saturated fats and excess calories.

Limits on Calories That Remain After Food Group Needs Are Met in Nutrient-Dense Forms

The USDA Food Patterns are designed to meet food group and nutrient recommendations while staying within calorie needs. To achieve this goal, the Patterns are based on consuming foods in their nutrient-dense forms (i.e., without added sugars and in the leanest and lowest fat forms, see [Appendix 6](#) (</dietaryguidelines/2015/guidelines/appendix-6/>)). For nearly all calorie levels, most of

the calories in the USDA Food Patterns are needed for nutrient-dense food choices, and only a limited number remain for other uses. These calories are indicated in the USDA Food Patterns as “limits on calories for other uses.” For example, after food group needs are met in the Healthy U.S.-Style Eating Pattern from 1,000 to 1,600 calories, only 100 to 170 calories per day remain within the limit for other uses. In the 2,000-calorie pattern, the limit for other uses is 270 calories and in the 2800-calorie pattern, 400 calories (see [Appendix 3 \(/dietaryguidelines/2015/guidelines/appendix-3/\)](/dietaryguidelines/2015/guidelines/appendix-3/), [Appendix 4 \(/dietaryguidelines/2015/guidelines/appendix-4/\)](/dietaryguidelines/2015/guidelines/appendix-4/), and [Appendix 5 \(/dietaryguidelines/2015/guidelines/appendix-5/\)](/dietaryguidelines/2015/guidelines/appendix-5/)). Calories up to the limit for the specific pattern can be used to eat foods that are not in nutrient-dense forms (e.g., to accommodate calories from added sugars, added refined starches, or solid fats) or to eat more than the recommended amount of nutrient-dense foods. If alcohol is consumed, calories from alcoholic beverages should also be accounted for within this limit to keep total calorie intake at an appropriate level.

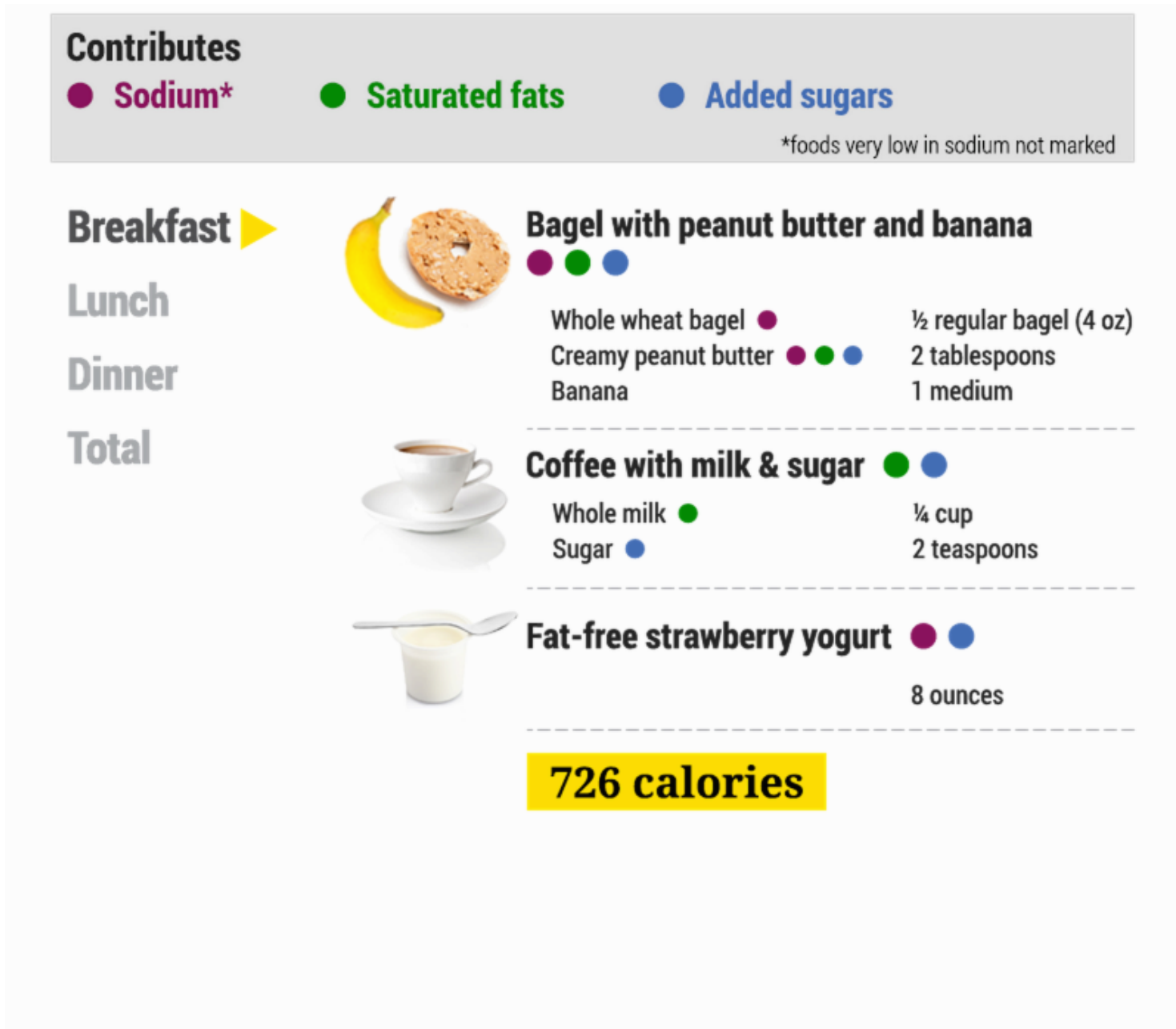
As discussed in [Chapter 2 \(/dietaryguidelines/2015/guidelines/chapter-2/\)](/dietaryguidelines/2015/guidelines/chapter-2/), in contrast to the healthy choices that make up the Patterns, foods from most food groups as they are typically consumed in the United States are not in nutrient-dense forms. In addition, foods and beverages are consumed that are primarily composed of added sugars and/or solid fats, and provide excess calories without contributing to meeting food group recommendations. The excess calories consumed from these sources far exceed the limited number of calories available for choices other than nutrient-dense foods in each food group.

From a public health perspective, it is important to identify the calories that are needed to meet food group needs to help inform guidance on limits from calories from added sugars, solid fats, alcohol^[21], or other sources, in order to help individuals move toward healthy eating patterns within calorie limits. The USDA Food Patterns can be used to plan and serve meals for individuals, households, and in a variety of organizational settings (e.g., schools, worksites, and other community settings). The limit on calories for other uses can assist in determining how to plan and select foods that can fit within healthy eating patterns, such as how many calories are available to select foods from a food group that are not in nutrient-dense forms. As discussed in the next portion of the chapter, additional constraints apply related to other dietary components when building healthy eating patterns.

Figure 1-3.

Hidden Components in Eating Patterns

Many of the foods and beverages we eat contain sodium, saturated fats and added sugars. Making careful choices, as in this example, keeps amounts of these components within their limits while meeting nutrient needs to achieve a healthy eating pattern.



[Read text description of Figure 1-3](#)

Other Dietary Components

In addition to the food groups, it is important to consider other food components when making food and beverage choices. The components discussed below include added sugars, saturated fats, *trans* fats, cholesterol, sodium, alcohol, and caffeine. For each component, information is provided on how the component relates to eating patterns and outlines considerations related to the component. See

[Chapter 2 \(/dietaryguidelines/2015/guidelines/chapter-2/\)](/dietaryguidelines/2015/guidelines/chapter-2/) for a further discussion of each of these components, current intakes, and shifts that are needed to help individuals align with a healthy eating pattern.

Added Sugars

Healthy intake: Added sugars include syrups and other caloric sweeteners. When sugars are added to foods and beverages to sweeten them, they add calories without contributing essential nutrients. Consumption of added sugars can make it difficult for individuals to meet their nutrient needs while staying within calorie limits. Naturally occurring sugars, such as those in fruit or milk, are not added sugars. Specific examples of added sugars that can be listed as an ingredient include brown sugar, corn sweetener, corn syrup, dextrose, fructose, glucose, high-fructose corn syrup, honey, invert sugar, lactose, malt syrup, maltose, molasses, raw sugar, sucrose, trehalose, and turbinado sugar.

Healthy eating patterns limit added sugars to less than 10 percent of calories per day. This recommendation is a target to help the public achieve a healthy eating pattern, which means meeting nutrient and food group needs through nutrient-dense food and beverage choices and staying within calorie limits. When added sugars in foods and beverages exceed 10 percent of calories, a healthy eating pattern may be difficult to achieve. This target also is informed by national data on intakes of calories from added sugars, which as discussed in [Chapter 2, \(/dietaryguidelines/2015/guidelines/chapter-2/\)](/dietaryguidelines/2015/guidelines/chapter-2/) account on average for almost 270 calories, or more than 13 percent of calories per day in the U.S. population.

The USDA Food Patterns show that an eating pattern with enough foods from all food groups to meet nutrient needs without eating too many calories has only limited room for calories from added sugars. At most lower calorie levels (i.e., 1,200 to 1,800 calories), the calories that remain after meeting food group recommendations in nutrient-dense forms (“limits on calories for other uses”) are less than 10 percent per day of calories; however, at higher calorie levels, the limits on calories for other uses are more than 10 percent per day. The recommendation to limit added sugars to no more than 10 percent of calories is a target that applies to all calorie levels to help individuals move toward healthy eating patterns within calorie limits.

Although the evidence for added sugars and health outcomes is still developing, the recommendation to limit calories from added sugars is consistent with research examining *eating patterns* and health. Strong evidence from mostly prospective cohort studies but also randomized controlled trials has shown that *eating patterns* that include lower intake of sources of added sugars are associated with reduced risk of CVD in adults, and moderate evidence indicates that these *eating patterns* are associated with reduced risk of obesity, type 2 diabetes, and some types of cancer in adults. As described earlier, eating patterns consist of multiple, interacting food components, and the

relationships to health exist for the overall eating pattern, not necessarily to an isolated aspect of the diet. Moderate evidence indicates a relationship between added sugars and dental caries in children and adults.

Considerations: Added sugars provide sweetness that can help improve the palatability of foods, help with preservation, and/or contribute to functional attributes such as viscosity, texture, body, color, and browning capability. As discussed in [Chapter 2](/dietaryguidelines/2015/guidelines/chapter-2/) (</dietaryguidelines/2015/guidelines/chapter-2/>), the two main sources of added sugars in U.S. diets are sugar-sweetened beverages and snacks and sweets. Many foods high in calories from added sugars provide few or no essential nutrients or dietary fiber and, therefore, may contribute to excess calorie intake without contributing to diet quality; intake of these foods should be limited to help achieve healthy eating patterns within calorie limits. There is room for Americans to include limited amounts of added sugars in their eating patterns, including to improve the palatability of some nutrient-dense foods, such as fruits and vegetables that are naturally tart (e.g., cranberries and rhubarb). Healthy eating patterns can accommodate other nutrient-dense foods with small amounts of added sugars, such as whole-grain breakfast cereals or fat-free yogurt, as long as calories from added sugars do not exceed 10 percent per day, total carbohydrate intake remains within the AMDR, and total calorie intake remains within limits.

It should be noted that replacing added sugars with high-intensity sweeteners may reduce calorie intake in the short-term, yet questions remain about their effectiveness as a long-term weight management strategy. High-intensity sweeteners that have been approved by the U.S. Food and Drug Administration (FDA) include saccharin, aspartame, acesulfame potassium (Ace-K), and sucralose.^[22] Based on the available scientific evidence, these high-intensity sweeteners have been determined to be safe for the general population. This means that there is reasonable certainty of no harm under the intended conditions of use because the estimated daily intake is not expected to exceed the acceptable daily intake for each sweetener. The FDA has determined that the estimated daily intake of these high-intensity sweeteners would not exceed the acceptable daily intake, even for high consumers of each substance.

Saturated Fats, *Trans* Fats, and Cholesterol

Saturated Fats

Healthy intake: Intake of saturated fats should be limited to less than 10 percent of calories per day by replacing them with unsaturated fats and while keeping total dietary fats within the age-appropriate AMDR. The human body uses some saturated fats for physiological and structural functions, but it makes more than enough to meet those needs. Individuals 2 years and older therefore have no dietary requirement for saturated fats.

Strong and consistent evidence shows that replacing saturated fats with unsaturated fats, especially polyunsaturated fats, is associated with reduced blood levels of total cholesterol and of low-density lipoprotein-cholesterol (LDL-cholesterol). Additionally, strong and consistent evidence shows that replacing saturated fats with polyunsaturated fats is associated with a reduced risk of CVD events (heart attacks) and CVD-related deaths.

Some evidence has shown that replacing saturated fats with plant sources of monounsaturated fats, such as olive oil and nuts, may be associated with a reduced risk of CVD. However, the evidence base for monounsaturated fats is not as strong as the evidence base for replacement with polyunsaturated fats. Evidence has also shown that replacing saturated fats with carbohydrates reduces blood levels of total and LDL-cholesterol, but increases blood levels of triglycerides and reduces high-density lipoprotein-cholesterol (HDL-cholesterol). Replacing total fat or saturated fats with carbohydrates is not associated with reduced risk of CVD. Additional research is needed to determine whether this relationship is consistent across categories of carbohydrates (e.g., whole versus refined grains; intrinsic versus added sugars), as they may have different associations with various health outcomes. Therefore, saturated fats in the diet should be replaced with polyunsaturated and monounsaturated fats.

Considerations: As discussed in [Chapter 2 \(/dietaryguidelines/2015/guidelines/chapter-2/\)](/dietaryguidelines/2015/guidelines/chapter-2/), the main sources of saturated fats in the U.S. diet include mixed dishes containing cheese, meat, or both, such as burgers, sandwiches, and tacos; pizza; rice, pasta, and grain dishes; and meat, poultry, and seafood dishes. Although some saturated fats are inherent in foods, others are added. Healthy eating patterns can accommodate nutrient-dense foods with small amounts of saturated fats, as long as calories from saturated fats do not exceed 10 percent per day, intake of total fats remains within the AMDR, and total calorie intake remains within limits. When possible, foods high in saturated fats should be replaced with foods high in unsaturated fats, and other choices to reduce solid fats should be made (see [Chapter 2 \(/dietaryguidelines/2015/guidelines/chapter-2/\)](/dietaryguidelines/2015/guidelines/chapter-2/)).

***Trans* Fats**

Individuals should limit intake of *trans* fats to as low as possible by limiting foods that contain synthetic sources of *trans* fats, such as partially hydrogenated oils in margarines, and by limiting other solid fats. A number of studies have observed an association between increased intake of *trans* fats and increased risk of CVD. This increased risk is due, in part, to its LDL-cholesterol-raising effect.

Trans fats occur naturally in some foods and also are produced in a process called hydrogenation. Hydrogenation is used by food manufacturers to make products containing unsaturated fatty acids solid at room temperature (i.e., more saturated) and therefore more resistant to becoming spoiled or rancid. Partial hydrogenation means that some, but not all, unsaturated fatty acids are converted to saturated fatty acids; some of the unsaturated fatty acids are changed from a *cis* to *trans* configuration. *Trans* fatty acids produced this way are referred to as “artificial” or “industrially

produced” *trans* fatty acids. Artificial *trans* fatty acids are found in the partially hydrogenated oils^[23] used in some margarines, snack foods, and prepared desserts as a replacement for saturated fatty acids. Although food manufacturers and restaurants have reduced the amounts of artificial *trans* fats in many foods in recent years, these fats can still be found in some processed foods, such as some desserts, microwave popcorn, frozen pizza, margarines, and coffee creamers.

Naturally occurring *trans* fats, known as “natural” or “ruminant” *trans* fats, are produced by ruminant animals. Natural *trans* fats are present in small quantities in dairy products and meats, and consuming fat-free or low-fat dairy products and lean meats and poultry will reduce the intake of natural *trans* fats from these foods. Because natural *trans* fats are present in dairy products and meats in only small quantities and these foods can be important sources of nutrients, these foods do not need to be eliminated from the diet.

Dietary Cholesterol

The body uses cholesterol for physiological and structural functions but makes more than enough for these purposes. Therefore, people do not need to obtain cholesterol through foods.

The Key Recommendation from the *2010 Dietary Guidelines* to limit consumption of dietary cholesterol to 300 mg per day is not included in the 2015 edition, but this change does not suggest that dietary cholesterol is no longer important to consider when building healthy eating patterns. As recommended by the IOM,^[24] individuals should eat as little dietary cholesterol as possible while consuming a healthy eating pattern. In general, foods that are higher in dietary cholesterol, such as fatty meats and high-fat dairy products, are also higher in saturated fats. The USDA Food Patterns are limited in saturated fats, and because of the commonality of food sources of saturated fats and dietary cholesterol, the Patterns are also low in dietary cholesterol. For example, the Healthy U.S.-Style Eating Pattern contains approximately 100 to 300 mg of cholesterol across the 12 calorie levels. Current average intake of dietary cholesterol among those 1 year and older in the United States is approximately 270 mg per day.

Strong evidence from mostly prospective cohort studies but also randomized controlled trials has shown that *eating patterns* that include lower intake of dietary cholesterol are associated with reduced risk of CVD, and moderate evidence indicates that these eating patterns are associated with reduced risk of obesity. As described earlier, *eating patterns* consist of multiple, interacting food components and the relationships to health exist for the overall eating pattern, not necessarily to an isolated aspect of the diet. More research is needed regarding the dose-response relationship between dietary cholesterol and blood cholesterol levels. Adequate evidence is not available for a quantitative limit for dietary cholesterol specific to the *Dietary Guidelines*.

Dietary cholesterol is found only in animal foods such as egg yolk, dairy products, shellfish, meats, and poultry. A few foods, notably egg yolks and some shellfish, are higher in dietary cholesterol but not saturated fats. Eggs and shellfish can be consumed along with a variety of other choices within and across the subgroup recommendations of the protein foods group.

Sodium

Healthy intake: The scientific consensus from expert bodies, such as the IOM, the American Heart Association, and Dietary Guidelines Advisory Committees, is that average sodium intake, which is currently 3,440 mg per day (see [Chapter 2 \(/dietaryguidelines/2015/guidelines/chapter-2/\)](/dietaryguidelines/2015/guidelines/chapter-2/)), is too high and should be reduced. Healthy eating patterns limit sodium to less than 2,300 mg per day for adults and children ages 14 years and older and to the age- and sex-appropriate Tolerable Upper Intake Levels (UL) of sodium for children younger than 14 years (see [Appendix 7 \(/dietaryguidelines/2015/guidelines/appendix-7/\)](/dietaryguidelines/2015/guidelines/appendix-7/)). Sodium is an essential nutrient and is needed by the body in relatively small quantities, provided that substantial sweating does not occur.^[25] Sodium is primarily consumed as salt (sodium chloride).

The limits for sodium are the age- and sex-appropriate ULs. The UL is the highest daily nutrient intake level that is likely to pose no risk of adverse health effects to almost all individuals in the general population. The recommendation for adults and children ages 14 years and older to limit sodium intake to less than 2,300 mg per day is based on evidence showing a linear dose-response relationship between increased sodium intake and increased blood pressure in adults. In addition, moderate evidence suggests an association between increased sodium intake and increased risk of CVD in adults. However, this evidence is not as consistent as the evidence on blood pressure, a surrogate indicator of CVD risk.

Calorie intake is highly associated with sodium intake (i.e., the more foods and beverages people consume, the more sodium they tend to consume). Because children have lower calorie needs than adults, the IOM established lower ULs for children younger than 14 years of age based on median intake of calories. Similar to adults, moderate evidence also indicates that the linear dose-response relationship between sodium intake and blood pressure is found in children as well.

Adults with prehypertension and hypertension would particularly benefit from blood pressure lowering. For these individuals, further reduction to 1,500 mg per day can result in even greater blood pressure reduction. Because of the linear dose-response relationship between sodium intake and blood pressure, every incremental decrease in sodium intake that moves toward recommended limits is encouraged. Even without reaching the limits for sodium intake, strong evidence indicates that reductions in sodium intake can lower blood pressure among people with prehypertension and

hypertension. Further, strong evidence has demonstrated that adults who would benefit from blood pressure lowering should combine the Dietary Approaches to Stop Hypertension (DASH) dietary pattern with lower sodium intake (see [Dietary Approaches to Stop Hypertension](#) call-out box).

Considerations: As a food ingredient, sodium has multiple uses, such as in curing meat, baking, thickening, enhancing flavor (including the flavor of other ingredients), as a preservative, and in retaining moisture. For example, some fresh meats have sodium solutions added to help retain moisture in cooking. As discussed in [Chapter 2 \(/dietaryguidelines/2015/guidelines/chapter-2/\)](#), sodium is found in foods across the food supply, including mixed dishes such as burgers, sandwiches, and tacos; rice, pasta, and grain dishes; pizza; meat, poultry, and seafood dishes; and soups. Multiple strategies should be implemented to reduce sodium intake to the recommended limits (see [Chapter 3. Everyone Has a Role in Supporting Healthy Eating Patterns \(/dietaryguidelines/2015/guidelines/chapter-3/\)](#)).

Dietary Approaches to Stop Hypertension (DASH)

The DASH dietary pattern is an example of a healthy eating pattern and has many of the same characteristics as the Healthy U.S.-Style Eating Pattern. The DASH dietary pattern and several variations have been tested in randomized controlled clinical trials to study the effect of the DASH dietary pattern on CVD risk factors. The original DASH trial demonstrated that the DASH dietary pattern lowered blood pressure and LDL-cholesterol levels, resulting in reduced CVD risk, compared to diets that resembled a typical American diet. The DASH-Sodium trial confirmed the beneficial blood pressure and LDL-cholesterol effects of the DASH eating pattern at three levels of dietary sodium intake and also demonstrated a step-wise lowering of blood pressure as sodium intake was reduced. The OmniHeart Trial found that replacing some of the carbohydrates in DASH with the same amount of either protein or unsaturated fats lowered blood pressure and LDL-cholesterol levels more than the original DASH dietary pattern.

The DASH Eating Plan is high in vegetables, fruits, low-fat dairy products, whole grains, poultry, fish, beans, and nuts and is low in sweets, sugar-sweetened beverages, and red meats. It is low in saturated fats and rich in potassium, calcium, and magnesium, as well as dietary fiber and protein. It also is lower in sodium than the typical American diet, and includes menus with two levels of sodium, 2,300 and 1,500 mg per day. Additional details on DASH are available at <http://www.nhlbi.nih.gov/health/health-topics/topics/dash> (<http://www.nhlbi.nih.gov/health/health-topics/topics/dash>).

Alcohol

Alcohol is not a component of the USDA Food Patterns. The *Dietary Guidelines* does not recommend that individuals who do not drink alcohol start drinking for any reason. If alcohol is consumed, it should be in moderation—up to one drink per day for women and up to two drinks per day for men—and only by adults of legal drinking age.^[6] There are also many circumstances in which individuals should not drink, such as during pregnancy. For the purposes of evaluating amounts of alcohol that may be consumed, the *Dietary Guidelines* includes drink-equivalents. One alcoholic drink-equivalent is described as containing 14 g (0.6 fl oz) of pure alcohol.^[26] The following are reference beverages that are one alcoholic drink-equivalent: 12 fluid ounces of regular beer (5% alcohol), 5 fluid ounces of wine (12% alcohol), or 1.5 fluid ounces of 80 proof distilled spirits (40% alcohol).^[27] The amount of alcohol and calories in beverages varies and should be accounted for within the limits of healthy eating patterns so that calorie limits are not exceeded. See [Appendix 9. Alcohol](#) (</dietaryguidelines/2015/guidelines/appendix-9/>) for additional information.

Caffeine

Caffeine is not a nutrient; it is a dietary component that functions in the body as a stimulant. Caffeine occurs naturally in plants (e.g., coffee beans, tea leaves, cocoa beans, kola nuts). It also is added to foods and beverages (e.g., caffeinated soda, energy drinks). If caffeine is added to a food, it must be included in the listing of ingredients on the food label.^[28] Most intake of caffeine in the United States comes from coffee, tea, and soda. Caffeinated beverages vary widely in their caffeine content. Caffeinated coffee beverages include drip/brewed coffee (12 mg/fl oz), instant coffee (8 mg/fl oz), espresso (64 mg/fl oz), and specialty beverages made from coffee or espresso, such as cappuccinos and lattes. Amounts of caffeine in other beverages such as brewed black tea (6 mg/fl oz), brewed green tea (2-5 mg/fl oz), and caffeinated soda^[29] (1-4 mg/fl oz) also vary. Beverages within the energy drinks category have the greatest variability (3-35 mg/fl oz).

Much of the available evidence on caffeine focuses on coffee intake. Moderate coffee consumption (three to five 8-oz cups/day or providing up to 400 mg/day of caffeine) can be incorporated into healthy eating patterns. This guidance on

coffee is informed by strong and consistent evidence showing that, in healthy adults, moderate coffee consumption is not associated with an increased risk of major chronic diseases (e.g., cancer) or premature death, especially from CVD. However, individuals who do not consume caffeinated coffee or other caffeinated beverages are not encouraged to incorporate them into their eating pattern. Limited and mixed evidence is available from randomized controlled trials examining the relationship between those energy drinks which have high caffeine content and cardiovascular risk factors and other health outcomes. In addition, caffeinated beverages, such as some sodas or energy drinks, may include calories from added sugars, and although coffee itself has minimal calories, coffee beverages often contain added calories from cream, whole or 2% milk, creamer, and added sugars, which should be limited. The same considerations apply to calories added to tea or other similar beverages.

Those who choose to drink alcohol should be cautious about mixing caffeine and alcohol together or consuming them at the same time; see [Appendix 9. Alcohol \(/dietaryguidelines/2015/guidelines/appendix-9/\)](/dietaryguidelines/2015/guidelines/appendix-9/) for additional discussion. In addition, women who are capable of becoming pregnant or who are trying to, or who are pregnant, and those who are breastfeeding should consult their health care providers for advice concerning caffeine consumption.

Notes

[6] It is not recommended that individuals begin drinking or drink more for any reason. The amount of alcohol and calories in beverages varies and should be accounted for within the limits of healthy eating patterns. Alcohol should be consumed only by adults of legal drinking age. There are many circumstances in which individuals should not drink, such as during pregnancy. See [Appendix 6. Alcohol \(/dietaryguidelines/2015/guidelines/appendix-6/\)](/dietaryguidelines/2015/guidelines/appendix-6/) for additional information.

[8] Institute of Medicine (IOM) and National Research Council (NRC). Weight gain during pregnancy: Reexamining the guidelines. Washington (DC): The National Academies Press; 2009.

[9] Jensen MD, Ryan DH, Apovian CM, Ard JD, Comuzzie AG, Donato KA, et al. 2013 AHA/ACC/TOS guideline for the management of overweight and obesity in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity

Society. J Am Coll Cardiol. 2014;63(25 Pt B):2985-3023. PMID: 24239920. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/24239920> (<http://www.ncbi.nlm.nih.gov/pubmed/24239920>).

[10] Definitions for each food group and subgroup are provided throughout the chapter and are compiled in [Appendix 3 \(/dietaryguidelines/2015/guidelines/appendix-3/\)](#).

[11] In the form of provitamin A carotenoids

[12] American Academy of Pediatrics. Healthy Children, Fit Children: Answers to Common Questions From Parents About Nutrition and Fitness. 2011.

[13] In the form of provitamin A carotenoids

[14] Products that bear the U.S. Food and Drug Administration (FDA) health claim for whole grains have at least 51 percent of the total ingredients by weight as whole-grain ingredients; they also meet other criteria.

[15] Foods that meet the whole grain-rich criteria for the school meal programs contain 100 percent whole grain or a blend of whole-grain meal and/or flour and enriched meal and/or flour of which at least 50 percent is whole grain. The remaining 50 percent or less of grains, if any, must be enriched. <http://www.fns.usda.gov/sites/default/files/WholeGrainResource.pdf> (<http://www.fns.usda.gov/sites/default/files/WholeGrainResource.pdf>). Accessed October 22, 2015.

[16] Adapted from the Food Safety and Inspection Service (FSIS) guidance on whole-grain claims. Available at <http://www.fsis.usda.gov/wps/portal/fsis/home> (<http://www.fsis.usda.gov/wps/portal/fsis/home>). Accessed November 25, 2015.

[17] State and local advisories provide information to guide consumers who eat fish caught from local waters. See the EPA website, "Fish Consumption Advisories, General Information." Available at <http://water.epa.gov/scitech/swguidance/fishshellfish/fishadvisories/general.cfm> (<http://water.epa.gov/scitech/swguidance/fishshellfish/fishadvisories/general.cfm>). Accessed September 26, 2015.

[18] Cooked, edible portion

[19] The U.S. Food and Drug Administration (FDA) and the U.S. Environmental Protection Agency (EPA) provide joint guidance regarding seafood consumption for women who are pregnant or breastfeeding and young children. For more information, see the FDA and EPA websites www.FDA.gov/fishadvice (<http://www.FDA.gov/fishadvice>); www.EPA.gov/fishadvice (<http://www.EPA.gov/fishadvice>).

[20] The term "fats" rather than "fatty acids" is generally used in this document when discussing categories of fatty acids (e.g., unsaturated, saturated, *trans*) for consistency with the Nutrition Facts label and other Federal materials.

[21] It is not recommended that individuals begin drinking or drink more for any reason. The amount of alcohol and calories in beverages varies and should be accounted for within the limits of healthy eating patterns. Alcohol should be consumed only by adults of legal drinking age. There are many circumstances in which individuals should not drink, such as during pregnancy. See [Appendix 9. Alcohol \(/dietaryguidelines/2015/guidelines/appendix-9/\)](#) for additional information.

[22] For more information, see: FDA. High-Intensity Sweeteners. May 19, 2014. [Updated November 5, 2014.] Available at: <http://www.fda.gov/food/ingredientspackaginglabeling/foodadditivesingredients/ucm397716.htm> (<http://www.fda.gov/food/ingredientspackaginglabeling/foodadditivesingredients/ucm397716.htm>). Accessed October 19, 2015. This page provides a link to “Additional Information about High-Intensity Sweeteners Permitted for use in Food in the United States” which includes more information on types and uses of high-intensity sweeteners and the scientific evidence evaluated by the FDA for safety for the general population.

[23] The FDA has determined that partially hydrogenated oils, which are the primary dietary source of industrially produced *trans* fats, are no longer generally recognized as safe (GRAS), with compliance expected by June 18, 2018. FDA. Final Determination Regarding Partially Hydrogenated Oils. Federal Register. June 17, 2015;80(116):34650-34670. Available at: <https://www.federalregister.gov/articles/2015/06/17/2015-14883/final-determination-regarding-partially-hydrogenated-oils> (<https://www.federalregister.gov/articles/2015/06/17/2015-14883/final-determination-regarding-partially-hydrogenated-oils>). Accessed October 20, 2015.

[24] Institute of Medicine. Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids. Washington (DC): The National Academies Press; 2002.

[25] The IOM set an Adequate Intake (AI) level for sodium to meet the sodium needs of healthy and moderately active individuals. Because of increased loss of sodium from sweat, the AI does not apply to highly active individuals and workers exposed to extreme heat stress, estimated to be less than 1 percent of the U.S. population. Institute of Medicine. Dietary Reference Intakes for Water, Potassium, Sodium, Chloride, and Sulfate. Washington (DC): The National Academies Press; 2005.

[26] Bowman SA, Clemens JC, Friday JE, Thorig RC, and Moshfegh AJ. 2014. Food Patterns Equivalents Database 2011-12: Methodology and User Guide [Online]. Food Surveys Research Group, Beltsville Human Nutrition Research Center, Agricultural Research Service, U.S. Department of Agriculture, Beltsville, Maryland. Available at: <http://www.ars.usda.gov/nea/bhnrc/fsrg> (<http://www.ars.usda.gov/nea/bhnrc/fsrg>). Accessed November 3, 2015. For additional information, see the National Institute on Alcohol Abuse and Alcoholism (NIAAA) webpage available at: <http://rethinkingdrinking.niaaa.nih.gov/> (<http://rethinkingdrinking.niaaa.nih.gov/>).

[27] Drink-equivalents are not intended to serve as a standard drink definition for regulatory purposes.

[28] Some dietary supplements such as energy shots also contain caffeine, but the amount of caffeine in these products is not required to be disclosed.

[29] Caffeine is a substance that is generally recognized as safe (GRAS) in cola-type beverages by the U.S. Food and Drug Administration for use by adults and children. Code of Federal Regulation Title 21, Subchapter B, Part 182, Subpart B. Caffeine. U.S. Government Printing Office. November 23, 2015. Available at: http://www.ecfr.gov/cgi-bin/retrieveECFR?gp=1&SID=f8c3068e9ec0062a3b4078c-fa6361cf6&ty=HTML&h=L&mc=true&r=SECTION&n=se21.3.182_11180 (http://www.ecfr.gov/cgi-bin/retrieveECFR?gp=1&SID=f8c3068e9ec0062a3b4078c-fa6361cf6&ty=HTML&h=L&mc=true&r=SECTION&n=se21.3.182_11180).