

Appendix 2: Estimation of Serving Weights for Individual Commodities

A single serving weight, consistent with sample servings identified in *The Food Guide Pyramid* bulletin Food Choices Chart and other USDA dietary guidance materials (USDA, CNPP, 1996; USDA, March 1997) was defined for each food supply commodity, using serving weights identified in the USDA Nutrient Data Base (NDB) (USDA, ARS, October 1997). For each commodity, the selected food portion was that which most closely resembled the serving size defined for that commodity or commodity type (for example, fresh fruit, cooked vegetables, fluid milk) in the Food Guide Pyramid.

For most commodities, serving weights were dictated by data availability and the marketing level at which consumption was reported in the food supply series. For some commodity groups—milk, yogurt, and cheese; fruits; vegetables; and added sugars—serving weights closely matched those defined in *The Food Guide Pyramid* bulletin. On the other hand, because some Food Guide Pyramid serving recommendations—particularly those in the grains and meat groups—are product-based, rather than ingredient-based, this meant that serving weights for some foods were not consistent with standard serving sizes defined by dietary guidance.

Grains

The food supply data for foods in the bread, cereals, rice, and pasta group are a mixture of semi-processed ingredients and final food products, making it difficult to identify serving weights consistent with Food Guide Pyramid definitions. *The Food Guide Pyramid* bulletin defines a serving from this food group in terms of final products—one slice of bread, 1 ounce of breakfast cereal, two 4-inch pancakes, or two medium cookies. However, food supply consumption estimates are reported mostly for semi-processed commodities—white and wheat flour, durum flour (used for pasta and couscous), rice (milled basis), oat products (rolled oats, ready-to-eat oat cereals, oat flour, and oat bran), corn products (corn flour and meal, hominy and grits, corn starch), barley (barley flour, pearl barley, barley malt and malt extract used in food processing), and rye flour. Changes in weight due to cooking and processing are particularly difficult to identify.

Since it is not possible to determine the end uses of these semi-processed commodities, serving weights were determined using a “grain-equivalent” approach; that is, a serving was defined as the average weight of the grain-ingredient used to make an end product (appendix table 1). For example, the serving weight for white and wheat flour (excluding durum flour used for pasta) was 16 grams, or the average quantity of flour in a regular slice of commercial white bread. Servings of flour used in all other flour-based products (cakes, cookies, hamburger rolls, doughnuts) were thus indirectly measured as a fraction of a bread serving. Servings of all other ingredients used to make bread or other bakery products—including eggs, milk, fats and oils, and sweeteners—were measured in their respective food groups (meat, dairy, fats and oils, and added sugars).

For ready-to-cook products like rice, barley, and oatmeal, a food supply serving was defined as the dry amount that would yield 1/2 cup of the product cooked; about 32 grams for rice, 20 grams for oatmeal, and 25 grams for pearl barley. For semolina and durum flour (used in pasta and couscous), a serving was defined as the amount of dry pasta that would yield a half cup of macaroni cooked, about 29 grams. For corn products, serving weights were assigned for each of the three product types identified in the food supply data. For corn flour and meal and cornstarch, a serving was the amount of product that had the same amount of carbohydrate as a serving of wheat flour, 16 grams for corn flour and meal and about 20 grams for cornstarch. The serving weight for corn hominy and grits was the dry weight of 1/2 cup of cooked grits.

Vegetables

Vegetable group serving weights were based on sample serving sizes defined in *The Food Guide Pyramid* bulletin Food Choices Chart, 1/2 cup cooked vegetables, 1 cup raw leafy vegetables, 1/2 cup raw, chopped, nonleafy vegetables (USDA, CNPP, 1996). These serving sizes were then used as the basis for selecting appropriate serving weights for different uses of vegetables reported in the food supply data—fresh, canning, freezing, chips and shoestrings, and dehydrating (appendix table 2).

For most fresh vegetables, serving weights were defined as the weight of 1/2 cup of the product, raw, except for dark-green leafy vegetables for which a

Appendix table 1—Serving weights for the grains group

Food supply commodity	Nutrient database number ¹	Serving description	Serving weight	Loss from primary to consumer weight ²	Nonedible share (refuse)	Cooking loss	Retail loss	Foodservice and consumer loss	Calories per serving
White and whole wheat flour	20081	Flour in one regular slice of commercially prepared white bread	16	--	--	2	20	58	
Durum flour	20099	Dry weight of 1/2-cup macaroni, cooked	29	--	--	2	20	106	
Rye flour	20064	Medium rye flour in one slice of rye bread	16	--	--	2	20	57	
Rice (milled basis)	20044, 20050, 20052	Dry weight of 1/2-cup white long grain, medium grain, or short grain, cooked	32	--	--	2	20	117	
Corn products:									
Corn flour and meal ³	20022, 20016, 20017, 20018, 20020	Corn flour or meal, enriched or unenriched	16	--	--	2	20	58	
Corn hominy and grits ⁴	08159	Dry weight of 1/2-cup corn grits, cooked	20	--	--	2	20	74	
Comstarch ⁵	20027	Dry weight of 1/2-cup cooked corn grits	13	--	--	2	20	50	
Oat products	08120	Dry weight of 1/2-cup cooked, regular, quick or instant	20	--	--	2	20	77	
Barley products	20005	Dry weight of 1/2-cup cooked barley	25	--	--	2	20	88	

-- = not estimated.

¹USDA, ARS, October 1997.

²Grain group food supply data are all on a consumer weight or product basis.

³Corn flour and meal are used in a variety of grain products including corn bread, tortillas, corn chips—servings were calculated based on a grain equivalent.

⁴Dry weight of 1/2-cup cooked corn grits.

⁵Quantity equal to carbohydrates in one slice of bread.

Source: U.S. Department of Agriculture, Economic Research Service.

Appendix table 2—Serving weights for the vegetable group

Food supply commodity	Nutrient database number ¹	Serving description	Serving weight ²	Loss from primary to consumer weight ³	Nonedible share (refuse)	Cooking loss	Retail loss	Foodservice and consumer loss	Calories per serving
Fresh vegetables:									
Artichokes	11008	1 medium (globe or french) cooked, boiled, drained	120	7	60	6	2	30	60
Asparagus	11012	1/2-cup, cooked, boiled, drained	90	9	47	7	2	30	22
Beans - snap	11053	1/2-cup, green snap beans, cooked, boiled, drained	63	6	12	2	2	30	22
Broccoli	11090	1/2-cup chopped or diced, raw	44	8	39	--	2	30	12
Brussels sprouts	11099	1/2-cup, cooked, boiled, drained	78	8	10	+9	2	30	30
Cabbage	11109	1/2-cup chopped or shredded, raw	80	7	20	--	2	30	17
Carrots	11124	1/2-cup chopped, grated, strips, or slices, raw	62	3	11	--	2	30	26
Cauliflower	11135	1/2-cup, raw	50	8	61	--	2	30	12
Celery	11143	1/2-cup diced or strips, raw	61	7	11	--	2	30	10
Corn - sweet	11168	1/2-cup, yellow, cooked, boiled, drained, cut from cob	82	8	64	12	2	30	89
Cucumbers	11206	1/2-cup pared, chopped or sliced	63	8	27	--	2	30	8
Eggplant	11210	1/2-cup cubes, cooked, boiled, drained	45	10	19	7	2	30	14
Escarole/endive	11213	1 cup endive chopped, raw	50	7	14	--	2	30	4
Garlic	11215	1/2-cup, raw	68	19	13	--	2	30	13
Lettuce-head	11252, 11250	1/2-cup shredded or chopped, iceberg or butterhead, raw	28	7	16	--	2	30	3
Lettuce-Romaine/leaf	11251, 11253	1-cup Cos, Romaine or looseleaf, shredded, raw	56	7	21	--	2	30	4
Mushrooms	11260	1/2-cup pieces or slices, raw	35	na	3	--	2	30	9
Onions	11283	1/2-cup cooked, boiled, drained	105	6	10	15	2	30	46
Peppers - bell	11333	1/2-cup sliced or chopped, raw	61	8	18	--	2	30	16
Potatoes	11363, 11367	1/2-cup flesh, without skin, boiled; 1/2-cup flesh, baked	70	4	23	10	2	30	62
Radishes	11429	1/2-cup slices, raw	58	3	10	--	2	30	12
Spinach	11457	1-cup, raw	30	15	28	--	2	30	7
Sweetpotatoes ⁴	11367	1/2-cup flesh, without skin, boiled; 1/2-cup flesh, baked	70	4	25	11	2	30	62
Tomatoes	11529	1/2-cup chopped or sliced, raw	90	15	9	--	2	30	19
Vegetables for canning:									
Asparagus	11015	1/2-cup canned, drained solids	121	18	0	--	1	15	23
Snap beans	11056	1/2-cup green, canned, regular pack, drained solids	68	+40	0	--	1	15	13
Cabbage for sauerkraut	11439	1/2-cup sauerkraut, canned, solids and liquids	71	56	0	--	1	15	22
Carrots	11128	1/2-cup, canned, regular pack, drained solids, sliced	73	25	0	--	1	15	18
Chile peppers	11329	1/2-cup chopped or diced	68	27	0	--	1	15	14
Corn, sweet	11172	1/2-cup, yellow, canned, whole kernel, drained solids	82	27	0	--	1	15	66
Cucumbers for pickling	11907, 11940	1/2-cup dill or sweet, diced, chopped, or sliced	79	60	0	--	1	15	55
Green peas	11308	1/2-cup, canned, regular pack, drained solids	85	+34	0	--	1	15	59
Mushrooms	11264	1/2-cup, canned, drained solids, pieces	78	+35	0	--	1	15	19
Potatoes	11376	1/2-cup, canned, drained solids	90	29	0	--	1	15	54
Tomatoes	11885	1/2-cup, canned, red ripe, whole	120	59	0	--	1	15	23
Other (beets, spinach)	11084, 11461	1/2-cup beets, or spinach, chopped or diced, sliced or whole, canned	107	24	0	--	1	15	39

See notes at end of table.

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Appendix table 2—Serving weights for the vegetable group—Continued

Food supply commodity	Nutrient database number ¹	Serving description	Serving weight ²	Loss from primary to consumer weight ³	Nonedible share (refuse)	Percent			Calories per serving
						Grams	Cooking loss	Retail loss	
Vegetables for freezing:									
Asparagus	11018	1/2-cup, frozen, cooked, boiled, drained	90	48	0	20	1	15	25
Beans - snap	11061	1/2-cup green, frozen, cooked, boiled, drained	68	15	0	10	1	15	19
Broccoli	11093	1/2-cup, frozen, cooked, boiled, drained, chopped	92	25	0	6	1	15	26
Carrots	11131	1/2-cup, frozen, cooked, boiled, drained, sliced	73	45	0	2	1	15	26
Cauliflower	11138	1/2-cup, frozen, cooked, boiled, drained, pieces	90	30	0	7	1	15	17
Corn - sweet	11179	1/2-cup, yellow, frozen kernels cut off the cob, boiled, drained	82	73	0	4	1	15	66
Peas, green	11313	1/2-cup, frozen, cooked, boiled, drained	80	70	0	7	1	15	62
Potatoes	11403	Cooked potato portion of 10 strips, frozen, home-prepared, heated in oven, w/o salt	50	50	0	22	1	15	66
Other	11038, 11164, 11196, 11273, 11281, 11464, 11474, 11567, 11575, 11791, 11867	1/2-cup, frozen, cooked, boiled, drained, chopped, sliced, or mashed; lima beans; collards; blackeyed peas; mustard greens; okra; spinach; summer squash; crookneck and straight; turnips; turnip greens; kale; winter squash, butternut	87	30	0	13	1	15	39
Vegetables for dehydrating and chips and shoestrings:									
Onions (dehydrated)	11284	1/4-cup dehydrated flakes	14	89	0	--	1	15	49
Potatoes (dehydrated)	11378	1/4-cup dehydrated flakes	12	86	0	--	1	15	42
Potatoes for chips and shoestrings	19410	Potato portion in 1 ounce of potato chips	18	75	0	--	1	15	60
Dry beans, peas, and lentils:									
Dry edible beans	16015, 16025, 16033, 16041, 16043, 16046, 16057, 16072, 16075, 11192, 16070, 16086	Dry-weight of 1/2-cup cooked, boiled, drained	37	0	0	--	1	15	126
Dry peas and lentils		Dry-weight of 1/2-cup cooked, boiled, drained	37	0	0	--	1	15	126

na = not available.

-- = not estimated.

¹USDA, ARS, October 1997.

²All serving weights are without refuse unless otherwise noted.

³Primary weights are farm weights for fresh, canned, frozen, and dehydrated vegetables. Primary weight is "cleaned basis" for dry beans, peas, and lentils.

Consumer weights are retail weight for fresh, canned, frozen, and dehydrated vegetables. Consumer weight for dry beans, peas, and lentils is "cleaned basis."

⁴Serving weight was not available for sweetpotatoes, serving weight for fresh potatoes was used.

Source: U.S. Department of Agriculture, Economic Research Service.

serving is defined as 1 cup, raw. The raw-value serving weight was chosen to eliminate the need to estimate changes in weight due to cooking which can vary markedly for vegetables depending on preparation methods. However, an exception was made for nine vegetables that, while purchased fresh by the consumer in the supermarket, are normally cooked prior to consumption. Serving weights for eight of these vegetables—aspargus, Brussels sprouts, eggplant, onions, potatoes, snap beans, sweet corn, and sweet potatoes—were defined as the weight of 1/2 cup of these products, cooked. An artichoke serving was one medium artichoke, cooked.

A serving weight for vegetables for canning was defined as 1/2 cup of drained solids. The serving weight for most vegetables for freezing was the weight of 1/2 cup, cooked. A serving of dehydrated vegetables was the dry weight that would yield 1/2 cup of the product cooked. In some cases, the weight for a 1/2 cup portion of the same vegetable varied depending on whether the vegetables had been chopped, sliced, cubed, etc. For these commodities, the serving weight was an average of these multiple portion weights. The case of potatoes illustrates the way that servings were calculated for all vegetables.

The food supply series reports five different sets of consumption data for potatoes; potatoes for fresh use, potatoes for canning, potatoes for freezing, potatoes for dehydrating, and potatoes for chips and shoestrings. The selection of serving weights for each of these commodities was dictated by the manner in which consumption was reported. For example, the serving weight for fresh potatoes was the weight of 1/2 cup of the product cooked, or 70 grams. This serving weight reflects an average of two different cooking methods for fresh potatoes listed in the Nutrient Data Base—fresh potatoes boiled, flesh only, or fresh potatoes, baked, flesh only. For canning potatoes, a serving was the weight of 1/2 cup of drained canned potatoes. Since most potatoes for freezing are made into french fries, a serving was defined as the weight of 10 (2-3 1/2-inch) frozen strips, oven-baked, minus the added fat. The serving weight for dehydrated potatoes was the dry weight of 1/2 cup cooked, or 12 grams, while for potato chips and shoestrings, a serving was equal to the amount of potato used in 1 ounce of potato chips, minus the added fat, or 18 grams. Fat added during the manufacture of

potato chips or french fries is captured in the servings estimates for added fats and oils.

Dry Beans, Peas, and Lentils

Dry beans, peas, and lentils are unique commodities in that they can be counted as either a vegetable serving or a protein serving in the meat, poultry, fish, dry beans, eggs, and nuts group. Like other vegetables, dry beans, peas, and lentils are valuable sources of starch, dietary fiber, and other nutrients frequently low in American diets, B-6, folacin, iron, and magnesium. However, they are also good sources of protein and in earlier dietary guidance had been grouped with meat and other animal proteins in the meat group. Since most Americans consume meat, dietary guidance encouraged the use of these foods as a starchy vegetable (Cronin and others, 1987). *The Food Guide Pyramid* bulletin suggests that consumers eat dry beans, peas, and lentils several times per week as part of their regular vegetable servings. However, the bulletin also suggests that consumers include them often as protein choices from the meat group (USDA, CNPP, 1996).

For consistency with the methods used in the CSFII servings estimates, dry beans, peas, and lentils were counted as vegetable servings in this study. A serving of dry beans, peas, and lentils was defined as the dry weight needed to yield 1/2 cup of the product cooked, or about 37 grams.

Fruit

Serving weights for fruit were based on serving sizes defined in the *Food Guide Pyramid* bulletin—one medium whole fruit, 1/2 cup of raw or canned fruit, or 3/4 cup of unsweetened fruit juice (USDA, CNPP, 1996). For each commodity, appropriate serving weights were identified based on the form in which consumption was reported in the food supply series—fresh, canned, frozen, dried, or single-strength equivalent juice (appendix table 3).

For fresh fruits, serving weights were defined as one medium whole fruit or 1/2 cup of chopped or diced fruit, raw. For whole fruits where several serving sizes were defined in the Nutrient Data Base—that is, small, medium, large—a serving was the weight of one medium-sized fruit. This method is consistent with serving sizes for whole fruits defined in *The*

Appendix table 3—Serving weights for the fruit group

Food supply commodity	Nutrient database number ¹	Serving description	Serving weight ²	Loss from primary to consumer weight ³	Nonedible share (refuse)	Cooking loss	Retail loss	Foodservice and consumer loss	Calories per serving	
										Grams
Fresh fruit:										
Fresh citrus fruit—										
Oranges/temples	09200	Raw, all commercial varieties; 1 medium fruit (2 5/8")	131	3	27	0	2	30	62	
Tangerines/tangelos	09218	Raw, 1/2-cup sections	98	5	28	0	2	30	43	
Grapefruits	09111	Raw, all varieties; 1/2 medium fruit (4 1/2")	128	3	50	0	2	30	41	
Lemons	09150	Raw, 1/2-cup sections	106	4	47	0	2	30	31	
Limes	09159	Raw, 1 fruit (2")	67	5	16	0	2	30	20	
Fresh noncitrus fruit—										
Apples	09003	Raw, medium with skin (2 3/4")	138	4	8	0	2	30	81	
Apricots	09021	Raw, 1/2-cup halves; 1/2-cup sliced	80	9	7	0	2	30	38	
Avocados	09037	Raw, all commercial varieties; 1/2-cup cubed; 1/2-cup sliced	74	6	26	0	2	30	119	
Bananas	09040	Raw, 1 medium (7-7 7/8" long)	118	0	36	0	2	30	109	
Cantaloupe	09181	Raw, 1/2-cup balls; 1/2-cup cubed; 1/2-cup diced pieces	82	8	49	0	2	30	29	
Cherries	09070	Raw, 1/2-cup sweet, whole, pitted	73	8	10	0	2	30	52	
Cranberries	09078	Raw, 1/2-cup chopped	55	4	5	0	2	30	27	
Grapes	09131	Raw, European type (adherent skin), 1/2-cup seedless	80	9	4	0	2	30	57	
Honeydew melon	09184	Raw, 1/2-cup balls, 1/2-cup diced pieces	87	8	54	0	2	30	30	
Kiwifruit	09405	Raw, 1 medium fruit without skin	76	0	14	0	2	30	46	
Mangoes	09176	Raw, 1/2-cup sliced	83	0	31	0	2	30	54	
Peaches/nectarines	09191	Raw, 1 medium (2 1/2") peach; 1 medium (2 1/2") nectarine	117	5	11	0	2	30	54	
Pears	09252	Raw, 1 medium (2 1/2") fruit	166	5	8	0	2	30	98	
Pineapple	09266	Raw, 1/2-cup diced, pieces	78	5	48	0	2	30	38	
Papayas	09226	Raw, 1/2-cup cubed pieces	70	0	33	0	2	30	27	
Plums/prunes	09279	Raw, 1 fruit (2 1/8")	66	5	6	0	2	30	36	
Strawberries	09316	Raw, 1/2-cup halves; 1/2-cup sliced; 1/2-cup whole	77	8	6	0	2	30	23	
Watermelon	09326	Raw, 1/2-cup balls; 1/2-cup diced	77	10	48	0	2	30	24	
Fruit for canning:										
Apples and applesauce	09401	1/2-cup applesauce, unsweetened, canned	122	0	0	0	1	15	52	
Apricots	09023	1/2-cup canned, water packed without skin or pits, solid and liquids	114	0	0	0	1	15	25	
Cherries (sweet & tart)	09071	1/2-cup sweet, canned, water pack, solids and liquid, pitted	124	0	0	0	1	15	57	
Peaches (excludes spiced)	09237	1/2-cup canned, water pack, solids and liquids, halves or slices	122	0	0	0	1	15	29	
Pears (incl. fr. cocktail)	09253	1/2-cup canned, water pack, cooked, drained solids	122	0	0	0	1	15	35	
Pineapples	09267	1/2-cup canned, water pack, solids and liquids, crushed, sliced, or in chunks	123	0	0	0	1	15	39	
Plums and prunes	09281	1/2-cup canned, purple, water pack, solids and liquids, pitted	125	0	0	0	1	15	51	

See notes at end of table.

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Appendix table 3—Serving weights for the fruit group—Continued

Food supply commodity	Nutrient database number ¹	Serving description	Serving weight ²	Loss from primary to consumer weight ³	Nonedible share (refuse)	Cooking loss	Retail loss	Foodservice and consumer loss	Calories per serving
Fruits for freezing:									
Berries—									
Blackberries	09048	1/2-cup, frozen, unsweetened	76	0	0	0	1	15	48
Raspberries ⁴	09048	1/2-cup, frozen, unsweetened	76	0	0	0	1	15	48
Strawberries	09318	1/2-cup, frozen, unsweetened, unthawed	75	0	0	0	1	15	26
Blueberries	09054	1/2-cup, frozen, unsweetened, unthawed	78	0	0	0	1	15	39
Other berries ⁵	09048	1/2-cup, frozen, unsweetened	76	0	0	0	1	15	48
Other fruits for freezing—									
Apples	09014	1/2-cup, frozen, unsweetened, unheated	87	0	0	0	1	15	41
Apricots ⁶	09014	1/2-cup, frozen, unsweetened, unheated	87	0	0	0	1	15	41
Cherries	09068	1/2-cup, frozen, sour red, unsweetened, unthawed	78	0	0	0	1	15	36
Peaches ⁶	09014	1/2-cup, frozen, unsweetened, unheated	87	0	0	0	1	15	41
Dried fruit:									
Apples	09011	1/4-cup, dried, sulfured, uncooked	22	0	0	0	1	15	52
Apricots	09032	1/4-cup, dried, sulfured halves, uncooked	33	0	0	0	1	15	77
Dates (pits-in basis)	09087	1/4-cup, domestic, natural, dry, pitted	45	0	0	0	1	15	122
Figs	09094	1/4-cup, dried, uncooked	50	0	0	0	1	15	127
Peaches	09246	1/4-cup, dried, sulphured, uncooked halves	40	0	0	0	1	15	96
Pears	09259	1/4-cup, dried, uncooked halves	45	0	0	0	1	15	118
Prunes	09291	1/4-cup, dried, uncooked, pitted	43	0	0	0	1	15	102
Raisins	09298	1/4-cup, seedless, packed; seedless, unpacked	39	0	0	0	1	15	116
Fruit juices:									
Citrus juices—									
Orange	09207	3/4-cup, canned, unsweetened	187	0	0	0	1	15	78
Grapefruit	09123	3/4-cup, canned, unsweetened	185	0	0	0	1	15	70
Lemon	09153	3/4-cup, canned or bottled, unsweetened	183	0	0	0	1	15	38
Lime	09161	3/4-cup, canned or bottled, unsweetened	185	0	0	0	1	15	38
Other juices—									
Apple	09016	3/4-cup, canned or bottled, unsweetened	186	0	0	0	1	15	87
Grape	09135	3/4-cup, canned or bottled, unsweetened	190	0	0	0	1	15	116
Pineapple	09273	3/4-cup, canned, unsweetened	188	0	0	0	1	15	105
Prune	09294	3/4-cup, canned, unsweetened	192	0	0	0	1	15	136

¹USDA, ARS, October, 1997.

²All serving weights are without refuse unless otherwise noted.

³Primary weight for fresh vegetables is farm weight, consumer weight is retail weight. Primary and consumer weights for canned and frozen fruits are product weight. Primary and consumer weights for dried fruits are processed weight. Primary and consumer weights for fruit juices are single-strength equivalents.

⁴Unsweetened value for raspberries not available, value is for blackberries.

⁵Serving weights for other frozen berries (boysenberries, loganberries) are for blackberries.

⁶Serving weights are for frozen apples, values for apricots and peaches include sweetener.

Source: U.S. Department of Agriculture, Economic Research Service.

Food Guide Pyramid bulletin Food Choices Chart. In the case of smaller sized fresh fruit—plums, grapes, apricots, etc.—where the weight of an individual fruit was less than 1/2 cup, a serving was defined as the weight of 1/2 cup.

In the case of raw fruits where several different preparation methods were available for a 1/2 cup serving—chopped, sliced, diced, etc.—the serving weight was an average of the available options. For example, the Nutrient Data Base defines three different serving portions for fresh cantaloupe—balled, cubes, and pieces—each with a different serving weight. A serving of fresh cantaloupe was thus assigned a weight of 82 grams, or an average of the three portion weights.

A serving of canned fruit was the weight of 1/2 cup, water-pack. This is consistent with the product-weight basis for which consumption of these foods is reported in the food supply. A serving of frozen fruit, also reported on a product-weight basis, was 1/2 cup, unthawed and unsweetened. Dried fruits were assigned a serving weight of 1/4 cup while a serving of fruit juice was about 185 grams (single-strength equivalent) or 3/4 cup.

Dairy

Food supply data for dairy foods is reported on a product-weight basis, directly comparable with serving sizes identified in *The Food Guide Pyramid* bulletin or other dietary guidance materials (USDA, CNPP, 1996). Thus for this group, serving weights matched those identified in *The Food Guide Pyramid* bulletin—8 ounces of fluid milk or yogurt, 1.5 ounces of natural cheese, 2 ounces of processed cheese, 2 cups of cottage cheese, and 1-1/2 cups of ice cream, ice milk or other frozen dairy dessert (appendix table 4). For dry milk, a serving was defined as the dry weight that would yield 1 cup of fluid milk. For evaporated and condensed milk, a serving was one-half cup, or the quantity needed to yield 1 fluid cup of milk, when diluted.

The product-weight nature of the food supply data for dairy products means that a small quantity of nondairy ingredients, mostly added sweeteners, are included in the dairy servings total. Data on sweetener deliveries to the dairy industry (see table 9, page 24) suggest that the total amount of added sweeteners included in the consumption weight for dairy products is less than

1/2 of 1 percent of the total weight of dairy product consumption and would thus have a minimal impact on the food supply servings for dairy products. However, servings for dairy products that typically contain the most added sweeteners—ice cream and other frozen dairy desserts, yogurt, and flavored beverage milk—may be overstated.

While the food supply data for dairy foods are reported on a product-weight basis, many of the products are widely used as ingredients in other foods. Much of the nonfat dry milk, for example, is consumed indirectly as an ingredient in other food products such as bread, cake mixes, processed meat products, and beverage mixes. Some fluid milk is also used in the bakery and confectionary industries and for home baking in cakes, cookies, pies, and breads. The total dairy servings reported in this monograph reflect these ingredient uses.

Meat, Poultry, Fish, Dry Beans, Eggs, and Nuts

For the meat, poultry, fish, dry beans, eggs, and nuts group, total servings were estimated on a lean meat equivalent basis (appendix table 5). The *Food Guide Pyramid* suggests that consumers choose two to three servings each day from foods in this group, depending on calorie intake (USDA, CNPP, 1996). The total amount of these servings should be the equivalent of 5 to 7 ounces of cooked lean meat, poultry, or fish. Two to 3 ounces of cooked lean meat, poultry, or fish are counted as a serving. Servings of other foods in this group—1 egg, 2 tablespoons of peanut butter, or 1/3 cup of nuts—are counted as the equivalent of 1 ounce of cooked lean meat, or about 1/3 of a serving.

The food supply data for red meat (beef, pork, and lamb and mutton), poultry (chicken and turkey), and fish are reported on a *boneless, trimmed, equivalent weight*, which estimates the uncooked weight of various meats available for human ingestion (Duewer, Krause, and Nelson, 1993). Because it includes both the fat and lean portion of meat, poultry, and fish, the boneless weight equivalent is not directly comparable with the lean meat serving identified in *The Food Guide Pyramid* bulletin or the CSFII servings data. For example, the food supply data includes poultry skin, 1/4-inch external trim on red meat products, and all other naturally occurring fat that exists in meat, poultry, and fish products. As a result, the total meat group servings discussed in the “Findings” section of

Appendix table 4—Serving weights for the milk, yogurt, and cheese group

Food supply commodity	Nutrient database number ¹	Serving description	Serving weight	Loss from primary to consumer weight ²	Nonedible share (refuse)	Cooking loss	Retail loss	Foodservice and consumer loss	Calories per serving
Milk, yogurt, and cheese									
Total fluid milk products:									
Plain fluid milk—									
Whole milk	01077	1-cup, whole fluid milk, 3.3% fat	244	0	0	0	2	30	150
2-percent milk	01079	1-cup, low fat fluid milk, 2% fat	244	0	0	0	2	30	121
1-percent milk	01082	1-cup, low fat, 1% fat	244	0	0	0	2	30	102
Skim milk	01085	1-cup, skim fluid milk	245	0	0	0	2	30	85
Beverage milks—flavored—									
Whole beverage milks	01102	1-cup chocolate drink, fluid	250	0	0	0	2	30	208
Lowfat beverage milks	01103, 01104	1-cup chocolate drink, fluid (1% or 2%)	250	0	0	0	2	30	168
Buttermilk	01088	1-cup, fluid cultured buttermilk	245	0	0	0	2	30	99
Yogurt	01116, 01118	1-cup, plain, whole milk or skim yogurt	144	0	0	0	2	30	144
Cheese:									
American cheese—									
Cheddar	01009	Cheddar cheese	43	0	0	0	2	30	171
Other American cheese	01011, 01025	Colby, Monterey Jack	43	0	0	0	2	30	166
Italian cheese—									
Provolone	01035	Provolone cheese	43	0	0	0	2	30	149
Romano	01038	Romano cheese	28	0	0	0	2	30	110
Parmesan	01032	Parmesan cheese, grated	28	0	0	0	2	30	129
Mozzarella	01026, 01027, 01028, 01029	Mozzarella, whole milk, low moisture, part skim	43	0	0	0	2	30	121
Ricotta	01036, 01037	Ricotta, whole milk, part-skim	124	0	0	0	2	30	193
Other Italian cheese ³									
Miscellaneous cheese—									
Swiss	01040	Swiss cheese	43	0	0	0	2	30	160
Brick	01005	Brick cheese	43	0	0	0	2	30	158
Muenster	01030	Muenster cheese	43	0	0	0	2	30	162
Blue	01004	Blue cheese	43	0	0	0	2	30	150
Other Miscellaneous cheese ⁴			43	0	0	0	2	30	157
Processed cheese and spreads:									
Cheese	01042	Cheese, pasteurized process, American	57	0	0	0	2	30	213
Foods and spreads	01046, 01147	Cheese food or spread, pasteurized process	57	0	0	0	2	30	199

See notes at end of table.

—Continued

Appendix table 4—Serving weights for the milk, yogurt, and cheese group—Continued

Food supply commodity	Nutrient database number ¹	Serving description	Serving weight	Loss from primary to consumer weight ²	Nonedible share (refuse)	Cooking loss	Retail loss	Foodservice and consumer loss	Calories per serving
Cottage cheese:									
Regular cottage cheese	01015	2-cups cottage cheese, 2% fat	452	0	0	0	2	30	405
Lowfat cottage cheese	01016	2-cups cottage cheese, 1% fat	452	0	0	0	2	30	327
Frozen dairy products:									
Ice cream	19095	1.5-cups frozen vanilla ice cream	198	0	0	0	2	30	398
Ice milk	19088	1.5-cups frozen vanilla ice milk	198	0	0	0	2	30	275
Other, including frozen yogurt	19293	1.5-cups vanilla soft-serve yogurt	216	0	0	0	2	30	343
Evaporated and condensed milk:									
Canned whole milk	01096	1/2-cup canned, evaporated, whole milk	126	0	0	0	2	30	169
Bulk whole milk	01096	1/2-cup canned, evaporated, whole milk	126	0	0	0	2	30	169
Bulk and canned skim milk	01097	1/2-cup, canned, evaporated skim milk	128	0	0	0	2	30	100
Dry milk products:									
Dry whole milk	01090	1/4-cup whole dry milk	32	0	0	0	2	30	159
Nonfat dry milk	01091	1/4-cup dry skim, nonfat milk solids	30	0	0	0	2	30	109
Dry buttermilk	01094	1/4-cup dried buttermilk	30	0	0	0	2	30	116

¹USDA, ARS, October 1997.

²Consumer weight for dairy products is at product or retail level.

³Serving weight for Other Italian cheeses was an average of all Italian cheeses.

⁴Serving weight for Other Miscellaneous cheeses was an average of Swiss, Brick, Muenster, and Blue cheeses.
Source: U.S. Department of Agriculture, Economic Research Service.

Appendix table 5—Servings weights for the meat, poultry, fish, dry beans, eggs, and nuts group

Food supply commodity	Nutrient database number ¹	Serving description	Serving weight	Loss from primary to consumer weight ²	Nonedible share (refuse)	Cooking loss	Retail loss	Foodservice and consumer loss	Calories per serving
Meat, poultry, fish, dry beans, eggs, nuts, and cheese									
Meat, poultry, and fish									
Red meat: ³									
Beef	13004	Beef composite of trimmed and retail cuts, separable lean and fat, trimmed to 1/4-inch fat, all grades, cooked	na	0	0	22	2	15	259
Veal	17089	Veal, composite of trimmed retail cuts, separable lean and fat, cooked	na	0	0	25	2	15	196
Pork	10188	Pork, fresh, composite of trimmed retail cuts (leg, loin, shoulder, and spareribs), separable lean and fat, cooked	na	0	0	39	2	15	232
Lamb and mutton	17002	Lamb, domestic, composite of trimmed retail cuts, separable lean and fat, trimmed to 1/4-inch fat, choice, cooked	na	0	0	26	2	15	250
Chicken and poultry: ⁴									
Chicken	05004	Cooked—boneless trimmed equivalent	na	0	0	30	2	15	199
Turkey	05164	Cooked—boneless trimmed equivalent	na	0	0	22	2	15	174
Fish and shellfish:									
Fresh and frozen—									
Fish	5	Cooked - edible weight	na	0	0	23	2	15	108
Shellfish	15243	Cooked - edible weight	na	0	0	23	2	15	74
Canned—									
Salmon	15084	Edible weight	na	0	0	0	1	15	118
Sardines	15089	Edible weight	na	0	0	0	1	15	151
Tuna	15121, 15126	Edible weight	na	0	0	0	1	15	104
Shellfish		Edible weight	na	0	0	0	1	15	93
Other		Edible weight	na	0	0	0	1	15	117
Cured	15179	Edible weight	na	0	0	0	1	15	99
Eggs ⁶	01129	One large egg, cooking method not specified, without shell	na	12	0	0	2	30	78

See notes at end of table.

—Continued

Appendix table 5—Servings weights for the meat, poultry, fish, dry beans, eggs, and nuts group—Continued

Food supply commodity	Nutrient database number ¹	Serving description	Serving weight	Loss from primary to consumer weight ²	Nonedible share (refuse)	Cooking loss	Retail loss	Foodservice and consumer loss	Calories per serving
Treenuts, peanuts, and coconuts:									
Treenuts—									
Almonds	12061	1/3-cup almonds, ground, sliced, slivered, whole	36	0	0	0	1	15	224
Filberts	12120	1/3-cup hazelnuts, chopped, ground, whole	36	0	0	0	1	15	254
Pecans	12142	1/3-cup pecans, chopped or halves	37	0	0	0	1	15	250
Walnuts	12155	1/3-cup english or persian walnuts, chopped, ground, halves, pieces, or chips	35	0	0	0	1	15	233
Macadamia nuts	12131	1/3-cup whole or halves	44	0	0	0	1	15	310
Pistachios	12151	1/3-pistachio nuts, dried	42	0	0	0	1	15	244
Other	12078, 12147, 12085	1/3-cup brazilnuts, pine nuts, or cashew nuts, dried	45	0	0	0	1	15	272
Peanuts—									
Cleaned in shell, shelled equivalent	16087	1/3-cup, all types, raw without shell	48	0	0	0	1	15	273
Peanut butter	16397, 16398	2 tablespoons smooth or chunk style, without salt	32	0	0	0	1	15	189
Snack	16087	1/3-cup, all types, raw	48	0	0	0	1	15	273
Other	16087	1/3-cup, all types, raw	48	0	0	0	1	15	273
Coconut (desiccated)	12108	1/3-cup dried, unsweetened coconut	76	0	0	0	1	15	486

na = not applicable. Meat, poultry, and fish consumption was measured in terms of total ounces, not servings.

¹USDA, ARS, October, 1997.

²Primary and consumer weights for red meat, poultry and fish are boneless, trimmed, equivalent. Primary and consumer weights for tree nuts are shelled basis. Primary and consumer weights for peanuts are kernel basis. Primary weight for eggs is farm weight. Consumer weight for eggs is retail weight.

³Boneless trimmed equivalent includes 1/4-inch trimmable fat on red meat and skin, neck meat, and giblets for poultry products.

⁴Edible weight includes raw edible meat, excluding bones, viscera, and shells.

⁵15009, 15016, 15029, 15032, 15034, 15037, 15061, 15063, 15067, 15086, 15092, 15102, 15116, 15118, 15133.

⁶Egg servings were measured by number rather than weight.

Source: U.S. Department of Agriculture, Economic Research Service.

this report are likely to overstate the number of lean meat servings available in the food supply.

For purposes of this study, dry beans, peas, and lentils were counted in the vegetable group and were assigned a serving weight of half a cup of the product cooked (see "Vegetable Group," page 15). However, these foods can also be counted in the meat group. In the meat group, 1/2 cup of cooked dry beans, peas, or lentils is equal to 1 ounce of lean meat, cooked.

Added Fats and Oils

In this study, fat servings were measured for added fats and oils only. Added fats and oils include shortening, salad oils and dressings, lard, edible tallow, margarine and dairy fats (butter, sour cream, cream cheese, half and half, light cream, and heavy cream) (appendix table 6). Total servings for this group reflect both direct use and indirect ingredient use of fats and oils in other food products. For example, the food servings for shortening include fats used directly for deep-fat frying as well as shortenings used as ingredients in home-prepared and commercial baked goods.

Fat grams were counted on a nutrient-fat basis. Butter and margarine were assumed to be 80 percent fat. Sour cream, light cream, heavy cream, half and half,

cream cheese, and eggnog were assumed to be 21 percent fat; 19 percent fat; 37 percent fat; 12 percent fat; 35 percent fat; and 8 percent fat; respectively.

However, to account for the growth of reduced-fat dairy products in the food supply, fat contents for sour cream and cream cheese were reduced for 1990-96. This reduction assumes that reduced-fat products accounted for 25 percent of total sour cream consumption and 31 percent of total cream cheese supplies in these years (Frazao and Allshouse, 1996). Naturally occurring fats, such as those found in meat, eggs, cheese, fluid milk, and nuts were not counted because of the difficulty in making waste adjustments for these nutrients.

Added Sugars

Servings of added sugars were measured for the following caloric sweeteners: cane and beet sugar, High Fructose Corn Syrup, dextrose, glucose, honey, and edible syrups (appendix table 7). Consumption was measured on a dry-weight basis and includes sweeteners consumed both directly and as food ingredients. Consumption was measured in both grams and teaspoons. Naturally occurring sugars, such as those found in milk and fruits, were not included. Also, due to data limitations, servings were not estimated for low calorie sweeteners (aspartame, saccharin, etc.).

Appendix table 6—Serving weights for the added fats and oils group

Food supply commodity	Nutrient database number ¹	Serving description	Serving weight ²	Loss from primary to consumer weight ³	Nonedible share (refuse)	Cooking loss	Retail loss	Foodservice and consumer loss	Calories per gram
Animal and vegetable fats:									
Margarine	4	4	2	0	0	0	1	20	9
Shortening	4	4	2	0	0	0	1	50	9
Salad and cooking oils	4	4	2	0	0	0	1	20	9
Lard	4	4	2	0	0	0	1	50	9
Edible tallow	4	4	2	0	0	0	1	50	9
Other edible fats and oils	4	4	2	0	0	0	1	20	9
Dairy fats:									
Butter	4	4	2	0	0	0	2	30	9
Half and half ⁵	01049	Fluid cream, half and half	2	0	0	0	2	30	9
Light cream ⁶	01050	Fluid cream, light, coffee or table	2	0	0	0	2	30	9
Heavy cream ⁷	01053	Fluid cream, heavy whipping	2	0	0	0	2	30	9
Sour cream ⁸	01056, 01055	Sour cream, cultured; Sour cream, half and half, cultured	2	0	0	0	2	30	9
Cream and neufchatel cheese ⁹	01037, 01031	Cream cheese, neufchatel cheese	2	0	0	0	2	30	9
Eggnog ¹⁰	01057	Eggnog	2	0	0	0	2	30	9

¹USDA, ARS, October, 1997.

²Serving weights are total fat grams.

³Primary and consumer weights are product or retail weight for all added fats and oils.

⁴Fat grams were based on total product weight and percent fat; fat content of margarine and butter is 80 percent of product weight; fat content of shortening, salad and cooking oils, lard, edible tallow, and other edible fats and oils is 100 percent of product weight.

⁵Fat content, 12 grams per 100 grams of product weight.

⁶Fat content, 19 grams per 100 grams of product weight.

⁷Fat content, 37 grams per 100 grams of product weight.

⁸Fat content, 21 grams per 100 grams of product weight for 1970-89; 25 percent of product weight was assumed to be reduced fat at 12 grams per 100 grams of serving weight for 1990-96.

⁹Fat content, 35 grams per 100 grams of product weight for 1970-89; 31 percent of product weight was assumed to be reduced fat at 23 grams per 100 grams of serving weight for 1990-96.

¹⁰Fat content, 8 grams per 100 grams of product weight.

Source: U.S. Department of Agriculture, Economic Research Service.

Appendix table 7—Serving weights for the added sugars group

Food supply commodity	Nutrient database number	Serving description	Serving weight ¹	Loss from primary to consumer weight ¹	Nonedible share (refuse)	Cooking loss	Retail loss	Foodservice and consumer loss	Calories per gram
Refined cane and beet sugar	2	2	2	0	0	0	1	30	4
Corn sweeteners:									
High Fructose	2	2	2	0	0	0	1	30	4
Glucose	2	2	2	0	0	0	1	30	4
Dextrose	2	2	2	0	0	0	1	30	4
Other caloric sweeteners:									
Edible syrups ³	2	2	2	0	0	0	1	30	4
Honey	2	2	2	0	0	0	1	30	4

¹Primary and consumer weights for added sugars are on a product or retail basis.

²Grams of sugar were estimated on a product dry-weight basis.

³Includes sorgo, maple and sugarcane syrup, edible molasses, and edible refiner's syrup.

Source: U.S. Department of Agriculture, Economic Research Service.