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# U.S. Consumption Patterns of Tree Nuts

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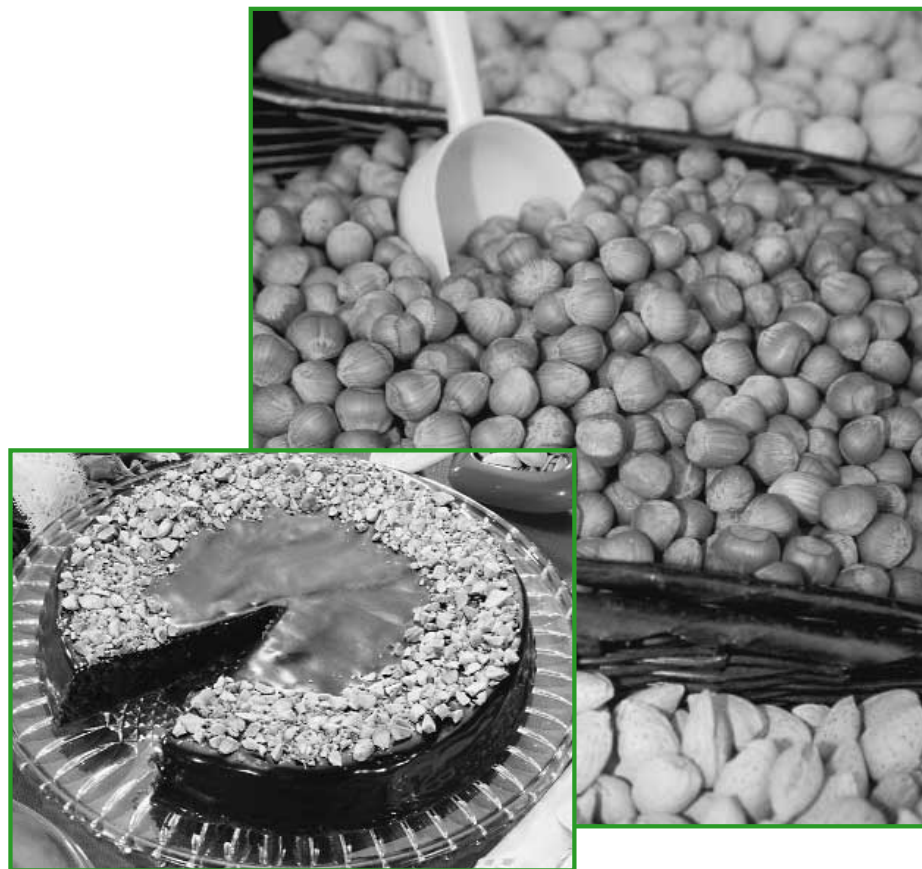
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**A**mericans are more than a little nutty when it comes to their diets. Recent USDA food consumption data show that about 1 in every 10 consumers eats tree nuts (almonds, walnuts, pecans, pistachios, cashews, and others) on any given day, and the amount eaten is fairly small. On average, slightly more than 1 gram of tree nuts are eaten per person per day. Tree nut consumption is higher among wealthier consumers and Whites in the United States. More adults age 40 and above eat tree nuts than younger consumers. A smaller proportion of consumers living in the South and in rural areas consume tree nuts than other consumers.

These findings are from a new analysis by USDA's Economic Research Service (ERS) of USDA's most recent food consumption survey, the 1994-96 Continuing Survey of Food Intakes by Individuals (CSFII). Each year of the survey's 3-year data set comprises a nationally representative sample of noninstitutionalized persons residing in all 50 States and Washington, DC. The 1994-96 CSFII collected 2 nonconsecutive days of dietary data for indi-

viduals of all ages through in-person interviews. Survey respondents were asked to recall all the food and beverages they had consumed in the last 24 hours. The respondents provided a list of foods consumed as

well as information on where, when, and how much of each food was eaten. An array of social, demographic, and economic data were collected for each respondent. The ERS study analyzed the responses of



About 60 percent of all tree nuts consumed in the United States are consumed in nut-containing foods, such as breakfast cereals, candies, pastries, and cakes.

Credits: Ken Hammond, USDA (nuts). PhotoDisc (cake).

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the 14,262 individuals age 2 and above who completed the 2-day dietary recalls.

Our analysis was supported by two technical databases developed by USDA's Agricultural Research Service (ARS): Pyramid Servings Data and Recipe Files. ARS's Pyramid Servings Data provide servings of 30 different food groups contained in each of the 7,300 foods that were reported eaten by consumers in the United States. For example, a 100-gram Danish pastry with nuts provides about 5 teaspoons of added sugar, 25 grams of total fat, 2 servings of nonwhole grains, and 0.3 ounces of nuts and seeds (in lean-meat equivalents). The "nuts and seeds" group includes tree nuts, peanuts, and seeds (such as sunflower seeds). ARS's Recipe Files helped us identify the types of tree nuts in nut-containing foods (such as almonds in breakfast cereal and walnuts in brownies). We also used the Recipe Files to calculate quantities of tree nuts by subtracting the peanuts and seeds from the total servings of nuts and seeds. The servings data for nuts are expressed in terms of cooked lean-meat equivalent: 1 cup of tree nuts equals 3 ounces of lean meat. We used 142 grams per cup to express nut consumption in grams.

## Consumption Highest Among 40- to 59-Year-Olds

On any given day in 1994-96, 12 percent of males and 14 percent of females ate tree nuts. On any given day, 15 percent of adults age 40 and older consumed tree nuts, compared with 11 percent for younger adults and children (table 1). Older adults consumed more tree nuts than younger adults. Among the 13 percent of the population that ate tree nuts, children age 2-5 consumed 3.2 grams per person per day, children 6-19 consumed 3.6 grams, adults 20-

Table 1

### Americans Are More Than a Little Nutty When It Comes to Their Diets

Individuals	Population eating nuts	Per capita consumption	
		All individuals	Individuals consuming
	Percent	Grams	
U.S. consumers, age 2 and over	13	1.1	6.2
Age 2-5	11	.5	3.2
Age 6-19	12	.6	3.6
Age 20-39	11	1.0	6.4
Age 40-59	15	1.6	8.1
Age 60 and over	15	1.2	6.4
Male, all	12	1.1	6.9
Age 2-5	10	.5	3.0
Age 6-19	12	.7	4.1
Age 20-39	10	1.0	7.9
Age 40-59	14	1.7	9.2
Age 60 and over	16	1.4	7.1
Female, all	14	1.1	5.6
Age 2-5	11	.6	3.4
Age 6-19	13	.5	2.6
Age 20-39	12	1.0	5.5
Age 40-59	16	1.5	7.2
Age 60 and over	15	1.1	5.8
Race/Ethnic origin:			
White, non-Hispanic	15	1.3	6.3
Black, non-Hispanic	5	.4	4.5
Hispanic	7	.9	7.1
Others	10	.5	4.0
Household income as a percentage of poverty:			
0-130 percent	7	.5	5.2
131-350 percent	11	.9	5.5
351 percent and above	18	1.6	7.0
Census region:			
Northeast <sup>1</sup>	12	1.1	6.5
Midwest <sup>2</sup>	16	1.0	5.0
South <sup>3</sup>	10	.9	6.7
West <sup>4</sup>	16	1.4	6.8
Metropolitan Statistical Area status:			
Metropolitan	13	1.0	5.9
Suburban	14	1.2	6.4
Rural	11	1.0	6.3

<sup>1</sup>Northeastern States are Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

<sup>2</sup>Midwestern States are Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

<sup>3</sup>Southern States are Alabama, Arkansas, Delaware, Washington, DC, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

<sup>4</sup>Western States are Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, New Mexico, Oregon, Utah, Washington, and Wyoming.

Source: 1994-96 CSFII, 2-day.

39 consumed 6.4 grams, adults 40-59 consumed 8.1 grams, and adults 60 and above consumed 6.4 grams. On a per capita basis for all individuals, children age 2-5 consumed 0.5 grams per day, children 6-19 consumed 0.6 grams, adults 20-39 consumed 1.0 grams, adults 40-59 consumed 1.6 grams, and adults 60 and above consumed 1.2 grams

### Popularity of Tree Nuts Rises With Income, Varies by Race

According to the CSFII data, tree nut consumption rises with income; that is, people with higher incomes eat more tree nuts and eat them more frequently than people with lower incomes. We classified households into three income groups. About 40 percent of U.S. households had high incomes—incomes exceeding 350 percent of the poverty level. (The Federal poverty level was \$15,141 for a family of four in 1995.) Forty-two percent of households were classified as middle income, with incomes falling between 131 and 350 percent of the poverty level. Nineteen percent of households fell into the low-income group, with incomes below 131 percent of the poverty level.

Eighteen percent of people in the high-income group consumed tree nuts on any given day, compared with 7 percent for the low-income group and 11 percent for the middle-income group. On a per capita basis for all individuals, the high-income group consumed 1.6 grams of tree nuts per day, compared with 0.5 gram for the low-income group and 0.9 grams for the middle-income group. Among those who consumed tree nuts, individuals in the high-income group consumed 7.0 grams per person per day, more than one-third higher than individuals in the low-income group and more than one-quarter higher than individuals in the middle-income group.

Tree nuts are more popular among non-Hispanic Whites (73 percent of the U.S. population) than other racial/ethnic groups. Fifteen percent of non-Hispanic Whites consumed tree nuts on any given day, compared with 5 percent of non-Hispanic Blacks (13 percent of the U.S. population) and 7 percent of Hispanics (11 percent of the U.S. population). Whites consumed 1.3 grams of tree nuts per person each day, while Blacks consumed 0.4 grams and Hispanics consumed 0.9 grams. Among those who reported eating tree nuts, Hispanics ate 7.1 grams per person per day, Blacks consumed 4.5 grams, and Whites consumed 6.3 grams.

Tree nut consumption also varies among regions. Sixteen percent of the people in the Western States and the Midwestern States consumed tree nuts on any given day, compared with 12 percent in Northeastern States and 10 percent in Southern States. Of the four regions, per capita consumption among those

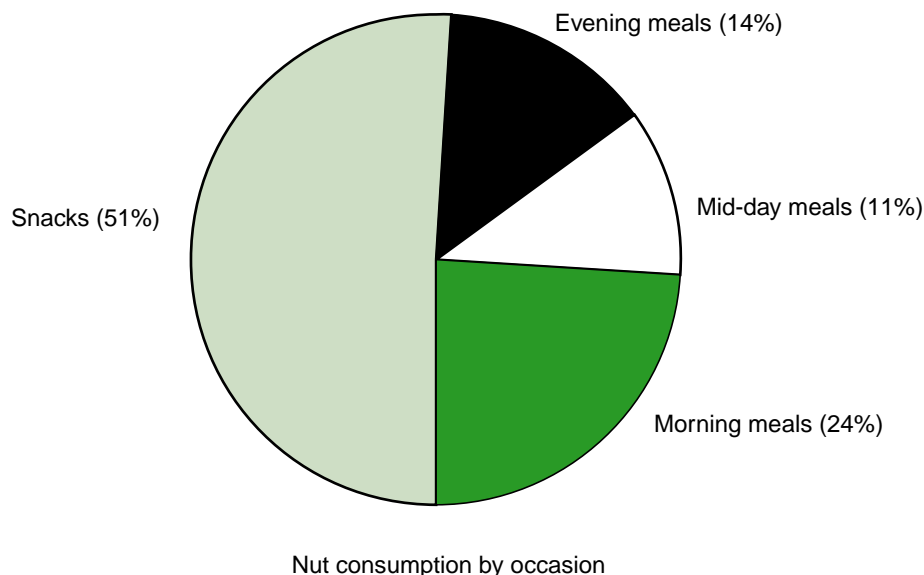
eating tree nuts was highest (6.8 grams per day) for consumers in the West.

### Tree Nuts Mostly Consumed as Snacks

Over half (51 percent) of tree nuts eaten in the United States were consumed as snacks, followed by 24 percent consumed during morning meals, including breakfast and brunch before 10 a.m. (fig. 1). Fourteen percent of tree nuts were consumed during evening meals (dinner, supper, or brunch after 3 p.m.) and 11 percent of tree nuts were consumed during mid-day meals, including lunch and brunch between 10 a.m. and 3 p.m.

The distribution of tree nut consumption by snacks and meals is related to the different types of foods that contain tree nuts. We separated nut-containing foods into five groups: nuts, breakfast cereals, desserts and baked foods, candies, and others. Thirty-nine percent of tree nuts were consumed as nuts

Figure 1  
Over Half of Tree Nuts Are Consumed as Snacks



Source: 1994-96 CSFII, 2-day.

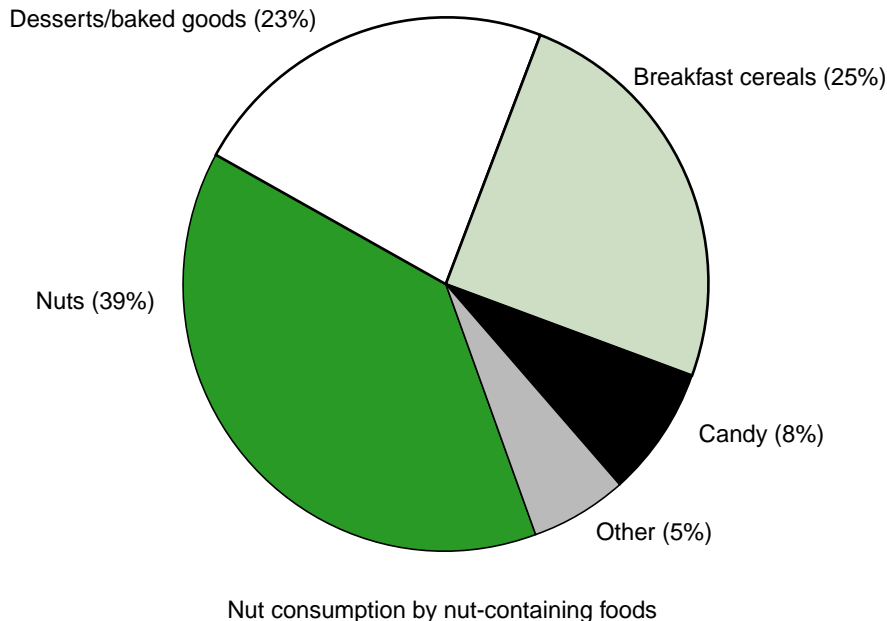
(fig. 2), consistent with the dominant consumption of tree nuts as snacks. As 24 percent of tree nuts

were consumed during morning meals, it is no coincidence that 25 percent of tree nuts consumed came

from breakfast cereals. A substantial amount of tree nuts were consumed as desserts and baked goods (23 percent), and 8 percent of tree nuts were consumed in candies.

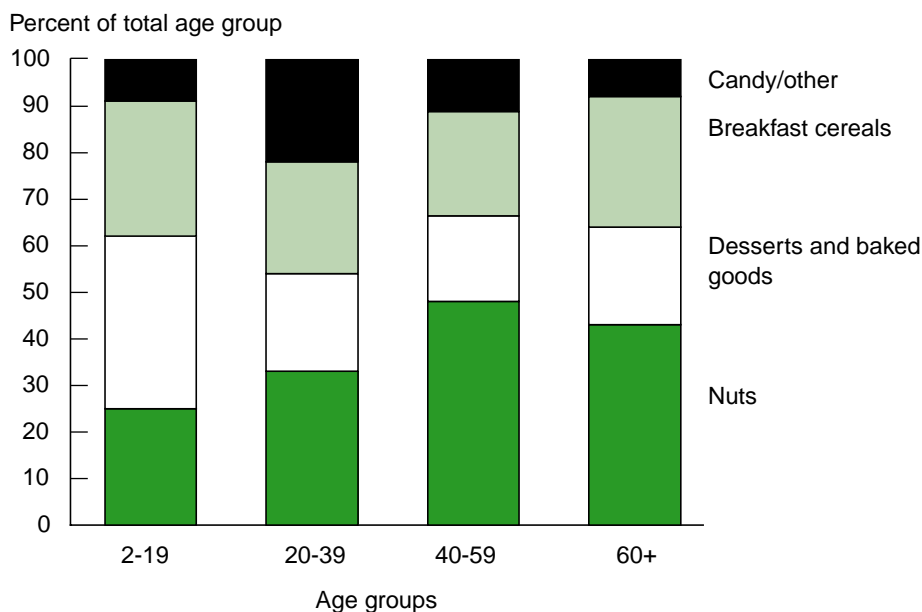
Americans' favorite ways to eat tree nuts vary by age (fig. 3). Nut-containing desserts and baked goods account for 37 percent of total tree nut consumption by children age 2-19, whereas about 45 percent of tree nuts consumed by adults age 40 and older are eaten as nuts. Nuts eaten as nuts account for only 25 percent and 33 percent of tree-nut consumption among children age 2-19 and young adults age 20-39, respectively. Breakfast cereals contribute to similar shares of tree nut consumption across all age groups, with slightly higher shares among children (29 percent) and seniors (28 percent). Breakfast cereals accounted for 24 percent of tree nut consumption among adults age 20-39 and 22 percent among adults age 40-59.

Figure 2  
Americans Favor Eating Tree Nuts as Nuts



Source: 1994-96 CSFII, 2-day.

Figure 3  
Adults Favor Eating Tree Nuts as Nuts, Children Like Desserts and Baked Goods Containing Nuts



Source: 1994-96 CSFII, 2-day.

### Tree Nuts—Good Sources of Monounsaturated Fats

Tree nuts are high in fat and dense in energy. Each 100-gram quantity of tree nuts contains 52 grams of fat. About 14 percent of this total fat is saturated fat; unsaturated fats (mono- and polyunsaturated fat) account for 82 percent of total fat in tree nuts. Tree nuts are also good sources of other nutrients. For example, 100 grams of tree nuts contain 7.6 grams of fiber, 200 milligrams of magnesium, and 6 milligrams of vitamin E. The daily Recommended Dietary Allowances for females age 31-50 are 5.2 grams of fiber, 320 milligrams of magnesium, and 8 milligrams of vitamin E.

Because tree nuts are excellent sources of monounsaturated fats, they have received attention as foods having a protective effect against coronary heart disease. Several controlled diet studies indicate that low-fat diets supplemented with tree nuts can lower total cho-

lesterol and low-density lipoprotein cholesterol. However, over half of all tree nuts consumed in the United States are consumed as ingredients in nut-containing foods. Thus, we need to look at the nutrient profile of the nuts themselves, as well as that of the different nut-containing foods, to determine the nutrients Americans would add to their diets if they decided to increase their nut consumption through a variety of nut-containing foods.

We used ARS's nutrient-composition database, which lists the quantities of about 20 nutrients contained in each food reported in CSFII, to compare the nutrient profiles of the five nut-containing foods. Tree nuts consumed as nuts have the highest energy density of the five types of nut-containing foods, providing 595 calories per 100 grams of tree nuts. Candy provides 510 calories, breakfast cereals provide 396 calories, and desserts and baked goods provide 370 calories. The nutritional profile of the catchall category "other" is not reported here.

The nutrient-to-calorie (or nutrient) density, which measures the amount of a nutrient for each 1,000 calories of a food, can be used to

compare nutritional values of different nut-containing foods. The amount of tree nuts that generates 1,000 calories also provides 88 grams of total fat (12 grams are saturated fats and 76 grams are unsaturated fat). Nut-containing breakfast cereals are much lower in fats (23 grams of total fat, of which 16 grams are unsaturated fat, per 1,000 calories). Cereals are fortified with additional nutrients, such as iron and folate. Candies that contain tree nuts provide considerably higher amounts of saturated fat (27 grams of saturated fat per 1,000 calories) and lower amounts of fiber and magnesium than cereals or nuts alone.

While studies have found that total cholesterol and low-density lipoprotein cholesterol can be lowered in low-fat diets that are supplemented with tree nuts, not all Americans adhere to dietary recommendations regarding fat intake. The 2000 *Dietary Guidelines for Americans* recommend that total fat should account for no more than 30 percent of total calories and less than 10 percent of total calories from saturated fat. In 1994-96, only 37 percent of U.S. consumers age 2 and

above met the recommended intake for fat and only 40 percent met the recommended intake for saturated fat.

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