

# Food Consumption

## Red Meat, Poultry, and Fish

In 1997, total meat consumption (red meat, poultry, and fish) amounted to 190 pounds (boneless, trimmed-weight equivalent) per person, 13 pounds above the 1970 level (fig. 3, table 6). Each American consumed an average of 21 pounds less red meat (mostly less beef) than in 1970, 31 pounds more poultry, and 3 pounds more fish and shellfish. In 1998, total meat consumption jumped to 196 pounds per person, according to preliminary estimates; the forecast for 1999 is slightly higher.

Nutritional concern about fat and cholesterol has encouraged the production of leaner animals, the closer trimming of outside fat on retail cuts of meat, the marketing of lower-fat ground meat and processed meat products, and consumer substitution of poultry for red meat—significantly lowering the meat, poultry, and fish group's contribution to total fat and saturated fat in the food supply. Despite near record-high per capita consumption of total meat in 1994, the proportion of fat in the U.S. food supply contributed by meat, poultry, and fish declined from 35 percent in 1970 to 25 percent in 1994 (table 43). Similarly, the proportion of saturated fat contributed fell from 37 percent to 26 percent (table 43).

Red meat—beef, pork, lamb, and veal—accounted for 58 percent of the total meat supply in 1997, on a boneless, trimmed-weight basis, compared with 70 percent in 1980 and 74 percent in 1970. By 1997, chicken and turkey accounted for 34 percent of the total meat consumed, up from 23 percent in 1980 and 19 percent in 1970. Fish and shellfish accounted for 8 percent of total meat consumption in 1997 and 7 percent in 1980 and 1970.

Per capita consumption of beef reached an all-time high of 89 pounds (boneless, trimmed-weight equivalent) in 1976 when beef supplies were at record levels because of liquidation of the Nation's beef herd. It dropped significantly in the late 1970's, remained flat in the early 1980's, and then, from a 1980's high of 75 pounds per capita in 1985, declined steadily to 61.5 pounds in 1993. In 1994-98, increasing supplies

of beef and declining beef prices spurred a 2- to 3.5-pound increase in annual per capita consumption of beef. Consumer concerns about cholesterol and saturated fat, inconsistent quality, and lack of convenience in preparation are behind the negative trend in beef demand. Beginning around 1960, in response to concerns about fat and cholesterol, beef producers began shifting production from the very fat English breeds like Hereford and Angus to the bigger, rangier, less fat, faster growing exotic breeds. This shift led to increasing inconsistency in the quality of beef—a less tender, less juicy, less succulent product. By 1995, one of four steaks was too tough to chew, according to the 1995 National Beef Quality Audit. In addition, the mass entry of women into the paid labor force has drastically reduced consumption of beef roasts and other beef cuts requiring lengthy cooking times. Beef has lagged behind poultry and pork in marketing value-added, convenience items. In January 1999, the beef industry launched a new advertising campaign that uses the familiar “Beef, It's What's for Dinner” tagline and aims to inform consumers and beef industry channels about a new trend—beef dishes that are fully-cooked and ready to microwave and serve in 10 minutes. Such dishes include traditional beef favorites like pot roast, meat loaf, and beef ribs. In addition, in 1998, the beef industry funded new genetic research, which may foster the marketing of brand name fresh beef cuts that are juicy and more consistent in quality.

In contrast, per capita consumption of chicken, which remained flat in the early 1970's, steadily increased from 26 pounds (boneless-weight equivalent) in 1975 to 52 pounds in 1998. Similarly, per capita consumption of turkey climbed from 6.5 pounds in 1975 to 14 pounds a year in 1997 and 1998. The poultry industry has enjoyed great success, partly by catering to consumers. The industry has provided scores of new brand-name, value-added products processed for consumers' convenience, as well as a host of products for foodservice operators. Poultry has also benefited from health-related concerns about beef.

Year-to-year fluctuations in pork consumption are often quite large, but consumption has been fairly

stable in the long run. In fact, annual per capita pork consumption averaged 47.6 pounds per person in 1970-74 and 47.8 pounds per person in 1994-98. The 1990's quantity, however, contained much more lean and much less fat. Through improved breeding and husbandry practices and greater trimming of outside fat on retail cuts, the pork industry has lowered the fat content of retail pork by more than 30 percent since the 1970's. The industry has capitalized on this accomplishment by portraying pork as a light and nutritious alternative to chicken with its "Pork: The Other White Meat" advertising campaign, which debuted in 1987. Research indicates that consumers now are less likely to perceive pork negatively in terms of fat, calories, and cholesterol than before the advertising began. The campaign focused on the industry's leaner cuts and lower-fat products.

U.S. per capita seafood consumption for 1997 is estimated at 14.5 pounds, down from a record high of 16.1 pounds in 1987 (tables 7 and 49-52). Despite the 10-percent decline from the 1987 level, average consumption in 1997 was still 24 percent above 1970. Between 1970 and 1997, increased consumption of fresh and frozen fish and shellfish accounted for all of the growth, rising 42 percent, while canned products held steady, and consumption of cured items fell. Average seafood consumption increased 24 percent from 1970 to 1997, even though seafood prices outpaced those of other protein sources during those years. CPI's for fish, red meat, and poultry climbed 466 percent, 297 percent, and 194 percent, from 1970 to 1997 (table 95).

### **World Meat Consumption**

The Republic of Maldives, Iceland, Greenland, Faeroe Island, and Kiribati are the world leaders in per capita consumption of fishery products (table 8). In 1993-95, the typical Icelander consumed an average 201 pounds of fish and shellfish (live-weight equivalent) a year, more than 4 times that consumed by the typical American.

In 1998, Hong Kong led the rest of the world with an annual per capita consumption of poultry of 116 pounds, ready-to-cook weight, followed by the United States, 104 pounds; Israel, 97 pounds; Saudi

Arabia, 80 pounds; and Canada, 73 pounds (table 9). Beef and veal consumption of 98 pounds per capita, carcass weight, put Americans third behind the Uruguayans, 131 pounds; and Argentines, 122 pounds. Many countries, European countries in particular, rank above the United States in per capita pork consumption. The typical Dane, for example, consumes more than twice as much pork as does the typical American (140 pounds, carcass weight). New Zealanders lead in per capita consumption of lamb, mutton, and goat, averaging 71 pounds per person in 1998. Americans averaged 1 pound per person of these meats.

### **Eggs**

Egg consumption has two components: shell eggs and egg products. Shell eggs are those eggs purchased in cartons in the grocery store. Egg products are eggs that have been processed and sold primarily to food manufacturers and foodservice operators in liquid or dried form. These pasteurized eggs reach consumers as ingredients of foodservice menu items and processed foods—such as pasta, candy, baked goods, and cake mixes—or directly as liquid eggs in grocery stores. These liquid egg products usually are made from egg whites and are used by consumers as a nonfat, no-cholesterol, and safer alternative to shell eggs.

Between 1970 and 1989, total annual consumption of shell eggs and egg products steadily declined about 4 eggs per person per year, from 309 to 237 eggs (fig. 5, tables 10 and 57). During the 1990's, total egg consumption has leveled off, fluctuating between 234 and 244 eggs per person per year. The record high for U.S. per capita egg consumption was 403 eggs in 1945.

The decline in per capita egg consumption over the last few decades reflects two very different and somewhat counterbalancing trends: a dominating, nearly constant decline in consumption of shell eggs, and a partially offsetting growth in consumption of egg products during the 1980's and 1990's.

Shell-egg consumption dropped from 276 eggs per capita in 1970 to 173 in 1997. The average annual

rate of decline in per capita shell-egg consumption was 4 eggs per year in the 1970's and 5 eggs per year in the 1980's. In the 1990's, the rate of decline in per capita consumption of shell eggs has slowed to 2-1/2 eggs per year and is expected to slow even more.

Much of the decline in shell-egg consumption since 1970 was due to changing lifestyles (for example, less time for breakfast preparation in the morning as large numbers of women joined the paid labor force) and the perceived ill effects of the cholesterol intake associated with egg consumption. Total cholesterol in the U.S. per capita food supply declined 13 percent between 1970 and 1994, from 470 milligrams per person per day to 410 milligrams (table 42). Eggs contributed 39 percent of the total cholesterol in the food supply in 1970 and 34 percent in 1994 (table 43).

Declining wholesale and retail egg prices may have spurred egg use in recent years. The average retail price for a dozen large, Grade A eggs declined from \$1.01 in 1990 to 86 cents in 1994 (table 98). In 1997, it was \$1.06. The Consumer Price Index (CPI) for eggs increased 13 percent between 1990 and 1997. That compares with a 19-percent increase in the CPI for all food during the same period, and a 27-percent increase in the CPI for cereals and bakery products (table 95). Changing consumer attitudes toward eggs may also be responsible. New test results show eggs to contain less cholesterol than previously documented, leading the American Heart Association to increase its maximum recommended consumption from three eggs per week to four.

Consumption of egg products has nearly doubled since 1983, reaching 68 eggs per person by 1998. The growth period followed more than two decades of relatively constant consumption. Egg product consumption will continue to increase as consumers opt for more prepared foods.

## Dairy Products

Per capita consumption of all dairy products in 1997 came to 580 pounds (milk-equivalent, milkfat basis), up 16 pounds from 1970 and down 21 pounds from 1987 (a year in which both commercial sales and

USDA donations were at high levels) (fig. 6, tables 11 and 58). The level of donations through government commodity programs in 1997 was considerably below 1987 levels, accounting for zero percent of butter, 1 percent of nonfat dry milk, and zero percent of cheese (tables 64, 63, and 61). In 1987, the corresponding percentages were 20 percent, 25 percent, and 10 percent. USDA donations of dairy products declined 44 pounds per capita between 1987 and 1997, while commercial sales increased 23 pounds per capita (fig. 6, table 11).

Per capita commercial sales fell from 540 pounds in 1970 to 522 pounds in 1983, then increased to a high for the 1970-97 period of 580 pounds in 1997. Reasons for the upturn in sales include increased generic advertising of dairy products, reduced relative prices, awareness of the importance of calcium in the diet and of dairy products as a source of calcium, demographic changes in the population, and increased use of dairy products, especially cheese, as ingredients in other foods (pizza, for example).

In 1997, Americans drank an average of 23 percent less milk and ate nearly 2-1/2 times as much cheese (excluding cottage types) as in 1970 (figs. 7 and 9, tables 11, 12, and 13). Annual per capita consumption of milkfat from fluid milk products (beverage milks and yogurt) has declined by half since 1970 due to lower milk consumption and a trend toward lower fat milks. Americans cut their average consumption of fluid whole milk by two-thirds between 1970 and 1997, and nearly tripled their use of lower fat milks. But because of the growing yen for cheese and fluid cream products, the Nation failed to cut the overall use of milkfat. (Annual average consumption of milkfat from some other dairy products—butter, frozen dairy products, condensed milk, evaporated milk, dry milk, and cottage-type cheeses—also declined during 1970-97 due to lower consumption of these products and increasing preference for lower fat versions.)

Annual per capita consumption of beverage milk declined from 31 gallons in 1970 to 24 gallons in 1997 (table 39). A sixfold increase in per capita consumption of yogurt since 1970—to 9.5 half-pint servings per person in 1997—partially offset the decline

in beverage milks. Consumption of soft drinks, fruit drinks and ades, and flavored teas may be displacing beverage milk in the diet (fig. 8, table 39). Big increases in eating away from home, especially at fast-food places, and in consumption of salty snack foods favored soft drink consumption.

The beverage milk trend is toward lower fat milk. While whole milk represented 81 percent of all beverage milk (plain, flavored, and buttermilk) in 1970, its share dropped to 35 percent in 1997 (table 12). As a result, total beverage milk contributed 51 percent less fat to the average American's diet in 1997 than in 1970. In contrast, rising consumption of fluid cream products meant that they contributed two times as much milkfat to the average diet in 1997 as in 1970. Per capita consumption of fluid cream products—half-and-half, light cream, heavy cream, eggnog, sour cream, and dips—jumped from 9.8 half-pints in 1970 to 17.0 half-pints in 1997 (fig. 10).

On balance, however, annual per capita consumption of milkfat from all fluid milk and cream products declined by 37 percent in 1970-97, from 9.1 pounds to 5.8 pounds per person. Of that 5.8 pounds, whole milk contributed 2.4 pounds; lower fat milks, 1.7 pounds; and fluid cream products, 1.6 pounds. Skim milk added 0.05 pound of fat to the average diet in 1997, and yogurt (most of which is reduced-fat or fat-free) added 0.09 pound of fat.

These changes are consistent with increased public concern about cholesterol and animal fats. However, the decline in per capita consumption of fluid milk between 1970 and 1997 also may be attributed to declining numbers of U.S. teenage males and children age 5-12 years, an increasing prevalence of lactose intolerance among Americans due to the growing ethnic diversity and aging of the population, and increasing preference for soft drinks.

Price may also be behind the shift to lower-fat milks. Skim milk traditionally has been cheaper than whole milk, but this has not always been the case for 1-percent and 2-percent milks. However, since 1980, the retail prices for a half-gallon of 1-percent and 2-percent milks have averaged a few cents below that for whole milk.

Over time, this price break has enabled consumers to accept and prefer the lower fat milk. Evidence of such acceptance is McDonald's switch from whole milk to 2-percent in 1986 and from 2-percent milk to 1-percent in 1991. Starbucks and other coffee chains and foodservice operators now provide whole milk and fat-free milk in addition to half-and-half, cream, and coffee whiteners.

Advertising has influenced the shift to lower-fat milks. A major print advertising program that features celebrities, models, and sports stars wearing "milk mustaches" has improved the overall image of milk, especially light and skim milks. Preliminary research, conducted by Roper Starch, an independent research firm, indicated that major contributing factors to a decline in total milk consumption were concern about fat and a belief that lower fat milks contain fewer nutrients than whole milk. Followup research, also conducted by Roper Starch, showed that more people now know that lower fat milks are as high or higher in calcium, vitamins, and other nutrients (except fat) as whole milk.

Average consumption of cheese (excluding full-skim American and cottage, pot, and baker's cheeses) increased 146 percent between 1970 and 1997, from 11 pounds per person to 28 pounds (figs. 2 and 9, tables 11 and 13). Lifestyles that emphasize convenience foods were probably major forces behind the higher consumption. In fact, two-thirds of our cheese now comes in commercially manufactured and prepared foods (including foodservice) such as pizza, tacos, nachos, salad bars, fast-food sandwiches, bagel spreads, sauces for baked potatoes and other vegetables, and packaged snack foods. Advertising and new products—such as reduced-fat cheeses and resealable bags of shredded cheeses, including cheese blends tailored for use in Italian and Mexican recipes—also boosted consumption.

From 1970 to 1997, consumption of Cheddar cheese, America's favorite cheese, increased 65 percent to 9.6 pounds per capita. Per capita consumption of mozzarella—the main pizza cheese—in 1997 was 8.4 pounds, more than 7 times higher than in 1970, making it America's second favorite cheese. Cream cheese (including Neufchatel) overtook Swiss in the

1980's to become America's third favorite cheese, at 2.3 pounds per person in 1997. Despite the flurry of lower fat cheese introductions in the 1990's, these products still accounted for a fifth (reduced fat, 16 percent; nonfat, 4 percent) of supermarket sales for the 52 weeks ending July 11, 1998 (at 20 percent, that is down 2 percentage points from two years earlier), according to the International Dairy Foods Association. In the year ending July 11, 1998, sales of nonfat cheese fell 20 percent, while sales of reduced fat and regular increased 3.3 percent and 4.0 percent, respectively. Lower fat cheeses make up a much smaller proportion of the total cheese used by food manufacturers and foodservice operators.

## Fats and Oils

Americans' overriding nutrition concern in the mid-1990's with cutting dietary fat is apparent in the recent per capita food supply data, which show a modest decline since 1993 in the use of added fats and oils (fig. 15, table 14). Annual per capita consumption of added fats and oils declined at least 7 percent between 1993 and 1997, from a record-high 70.2 pounds (fat-content basis) per person to 65.6 pounds. (ERS is in the process of adjusting the data to reflect the trend toward lower-fat margarine-type spreads.) However, average use of added fats and oils in 1997 remained a fourth above the 1970 level. Added fats and oils include those used directly by consumers, such as butter on bread, as well as shortenings and oils used in commercially prepared cookies, pastries, and fried foods. Excluded is all fat naturally present in foods, such as in milk and meat.

Studies in the 1950's and 1960's showed that replacing saturated fatty acids (SFA's) and animal fat with polyunsaturated fatty acids (PUFA's) lowered serum cholesterol levels. Consequently, diets high in PUFA's were widely recommended for the prevention of heart disease. Within the added fats and oils group, animal fats declined roughly a fourth from 1970 to 1997, on a per capita basis, and vegetable fats increased roughly two-fifths. Per capita consumption of salad and cooking oils (high in PUFA's) nearly doubled between 1970 and 1997, from 15 pounds to 29 pounds.

However, concern developed about the safety of PUFA's, and interest in the health benefits of monounsaturated fatty acids (MUFA's) also increased. Some research suggests that replacing SFA's with PUFA's reduces LDL cholesterol but also reduces beneficial HDL cholesterol, while replacing SFA's with MUFA's lowers LDL cholesterol but leaves HDL levels stable. In addition, PUFA's are more easily oxidized than MUFA's, making them more likely to contribute to atherosclerosis. Monounsaturated fatty acids are the most common fat in foods, but they are particularly plentiful in olive oil, canola oil, almonds, and avocados. In the 1997 food supply, olive oil and canola oil together accounted for 16 percent of total salad and cooking oils, up from 2 percent in 1985. Canola oil also is used in some soft, liquid-oil margarines.

In 1993, health concern about trans-fatty acids (or trans-fats) hit newspaper headlines. Trans-fats are created when liquid oils are hydrogenated to make them more solid and stable at room temperature; they raise LDL cholesterol and lower beneficial HDL cholesterol levels, and are associated with increased risk of coronary heart disease. Hydrogenated fats are used in everything from margarines, shortenings, crackers, cookies, baked goods, and peanut butter to foods fried in fast-food eateries, fried snack foods, and even some soups, beans, and cereals. From 1993 to 1997, consumption of margarine declined 23 percent per capita and consumption of shortening declined 17 percent per capita. About 40 percent of the margarine on supermarket shelves today is the old-fashioned stick variety, with the other 60 percent made up of tub or liquid margarines. In 1970, most margarine was the stick variety. In general, the softer the margarine, the lower its percentage of partially hydrogenated oils, and thus the lower the amount of trans-fats.

In 1970, the fats and oils group (composed of all added fats and oils) contributed the most fat to the food supply (43 percent), followed by the meat, poultry, and fish group (35 percent) (fig. 25, table 43). By 1994, the fats and oils group's contribution to total fat had jumped 9 percentage points to 52 percent, probably due to the greatly expanded consumption of fried foods in foodservice outlets, the huge

increase in consumption of high-fat snack foods, and the increased use of salad dressings. USDA food intake survey data show that, in 1989-91, the average woman age 19 to 50 got more fat from salad dressing than from any other food.

In contrast, by 1994, the meat, poultry, and fish group's contribution to total fat had dropped 10 percentage points to 25 percent, reflecting changes in fat-trimming practices at processor and retail levels, improvements in animal husbandry, and increasing substitution of poultry and fish for red meats. Dairy products' contribution to total fat declined from 12.6 to 12.3 percent between 1970 and 1994, even as total fat from dairy products increased from 19 to 20 grams per person per day.

## Fruits and Vegetables

As Americans increasingly embrace national health authorities' recommendation of consuming at least five fruits and vegetables a day, their array of choices continues to widen. Fresh-cut fruits and vegetables, prepackaged salads, locally grown items, and exotic produce—as well as hundreds of new varieties and processed products—have been introduced or expanded since the early 1980's. Supermarket produce departments carry over 400 produce items today, up from 250 in the late 1980's and 150 in the mid-1970's. Also, the number of ethnic, gourmet, and natural foodstores—which highlight fresh produce—continues to rise.

Consumers increasingly have more access to fresh, local produce as well. The number of farmers' markets reported to State agriculture departments has grown substantially throughout the United States over the last several decades, numbering around 1,755 at the end of 1993 and eclipsing 2,746 in 1998. Some analysts say that the total number of farmers' markets, including those not reported, is more than double that figure.

While the overall market for fruits and vegetables has expanded in the last 15 years, the mix has changed. Shifts have taken place among traditional produce items and between fresh and processed forms. Traditional varieties have lost market share to spe-

cialty varieties, and exotic produce has gained favor. For example, per capita consumption of iceberg lettuce fell by 4.4 pounds (or 15 percent) between 1989 and 1997, while per capita consumption of romaine and leaf lettuces increased 2.5 pounds (or 69 percent) during the same period (table 27). In addition, many specialty lettuces not yet tracked in USDA's food supply database—such as radicchio, frisee, arugula, and red oak—gained in popularity in the last several years because of inclusion in fresh-cut salad mixes and in upscale restaurant menus.

Total per capita use of the 129 commercially produced fruits and vegetables for which ERS has U.S. production data rose 24 percent, from 573 pounds in 1970 to 711 pounds in 1997 (fig. 11, table 15). Four-fifths of this increase occurred since 1982, the year in which an expert scientific panel convened by the U.S. National Academy of Sciences published its landmark report *Diet, Nutrition, and Cancer*. The report emphasized the importance of including fruits (especially citrus fruits), vegetables (especially carotene-rich and cruciferous, or cabbage-family, vegetables), and whole-grain cereal products in the daily diet, noting that these dietary guidelines were consistent with good nutritional practices and likely to reduce the risk of cancer.

The 19-percent gain in fruit and vegetable consumption between 1982 and 1997 was probably tempered by the fact that fruits and vegetables led in retail price increases from 1982 to 1997 (fig. 12, tables 15, 95, and 96). Price increases for fresh fruits and vegetables were more than double those for processed (fig. 13). Despite the bigger price increases for fresh than processed, per capita consumption from 1982 to 1997 increased 24 percent for fresh fruit and 4 percent for processed fruit. Better quality, increased variety, and year-round availability have boosted consumption of fresh fruits and vegetables. The increase between 1982 and 1997 in per capita consumption of processed vegetables nearly equaled that of fresh vegetables--24 percent versus 25 percent. Price, convenience, and increasing preference for fast-food eateries and ethnic foods have hiked consumption of frozen vegetables (especially french fries) and canned tomato products.

## Flour and Cereal Products

Per capita use of flour and cereal products reached 200 pounds in 1997 from an annual average of 145 pounds in 1980 and 136 pounds in 1970 (fig. 19, table 34). The expansion in supplies reflects ample grain stocks, strong consumer demand for variety breads and other instore bakery items as well as grain-based snack foods, and increasing fast-food sales of products made with buns, doughs, and tortillas. Yet this consumption level is far below the 300 pounds consumed per person in 1909 (the earliest year for which data are available) (fig. 20). In 1909, the major source of protein in the American diet was grain products. By 1994, it was meat, poultry, and fish.

USDA's nationwide food consumption surveys confirm the food supply data, also indicating Americans are eating more grain products. Consumption of grain mixtures—such as lasagna and pizza—increased 115 percent between 1977-78 and 1994. Snack foods—such as crackers, popcorn, pretzels, and corn chips—soared 200 percent, and ready-to-eat cereals were up 60 percent. One of the biggest changes within the grain mixture group was the explosion of ethnic foods, especially Mexican foods. Mexican foods were consumed four times more often in 1994 than in the late 1970's.

Yet Americans are still eating a serving or less a day of whole-grain foods, far below the minimum three per day the American Dietetic Association recommends. If a bread does not have whole wheat, oats, or some other whole grain as the first ingredient, much of its vitamin- and mineral-rich germ and bran have been milled away, along with most of its fiber. Enriched flour, from which most breads are made, is not a whole grain. The processor has simply added back three of the B-vitamins (niacin, thiamine, and riboflavin) and the iron that were lost when the flour was refined. Some companies that make "light" breads also add highly processed fiber to boost the fiber content and cut the calories. But nothing replaces the lost vitamin E, B-6, magnesium, manganese, zinc, potassium, copper, pantothenic acid, and phytochemicals.

Since January 1, 1998, all enriched grain foods—including ready-to-eat breakfast cereals, pasta, bread, rolls, flour, cakes, and cookies—have been fortified with folic acid (the synthetic form of folate, a B-vitamin). That should reduce the risk of neural tube birth defects like spina bifida. It may also protect adults from heart disease and reduce the chances of cervical cancer in women. Folic acid is found naturally in legumes; liver; many vegetables, especially green leafy ones like spinach; citrus fruits and juices; whole-grain products; and eggs.

Wheat is the major grain product eaten in the United States, with wheat flour and other products representing 75 percent of total grain consumption in 1997. However, wheat's share of total grain consumption has declined 6 percentage points since 1980, as rice, corn products, and oat products have gained momentum. Consumption of wheat flour in 1997 was 150 pounds per person, up 35 percent from 1970 (tables 34 and 79). Per capita use of durum wheat flour, mainly used in pasta production, doubled between 1984 and 1994, to 14 pounds per person, but then dropped to 12.5 pounds in 1997.

Consumption increased for other cereal products as well. Per capita use of corn products (corn flour, cornmeal, hominy, grits, and starch) increased 79 percent from 1980, to 23 pounds per capita in 1997. Per capita use of rice and oat products (rolled oats, ready-to-eat cereals, oat flour, and oat bran) climbed 107 percent and 67 percent, from 1980 to 1997. In contrast, consumption of rye flour has continued to decline.

Between 1980 and 1997, consumption of breakfast cereals increased 41 percent to 17 pounds per capita (table 35). Consumption of ready-to-eat and ready-to-cook cereal in 1997 was 14.3 pounds and 2.6 pounds, compared with 9.7 pounds and 2.3 pounds in 1980. This 41-percent increase in per capita breakfast cereal consumption occurred even as prices for cereals and bakery products have risen much faster than the prices for most other grocery foods (fig. 12, tables 95 and 96). The rise in consumption is attributed to the quest for increased fiber in the diet, to aggressive advertising and health claims by food

processors, and to the convenience of these foods for breakfast. The home-cooked, eggs-and-bacon breakfast has given way to ready-to-eat, “instant” grain-based products.

## Caloric and Low-Calorie Sweeteners

Americans have become conspicuous consumers of added sugars and sweet-tasting foods and beverages. Per capita consumption of caloric sweeteners (dry-weight basis)—mainly sucrose (table sugar made from cane and beets) and corn sweeteners (notably high-fructose corn syrup, or HFCS)—increased 34 pounds, or 28 percent, between 1982 and 1997 (fig. 16). In 1997, each American consumed a record average 154 pounds of caloric sweeteners. That amounted to more than two-fifths of a pound—or 53 teaspoonfuls—of added sugars per person per day in 1997. USDA’s Food Guide Pyramid suggests that people consuming 1,600 calories limit their intake of added sugars to 6 teaspoons per day. The daily suggested limit increases to 12 teaspoons for those consuming 2,200 calories, and to 18 teaspoons for those consuming 2,800 calories.

A striking change in the availability of specific types of sugar occurred in the past three decades (fig. 16, tables 36 and 85-88). Sucrose’s share of total caloric sweetener use dropped from 83 percent in 1970 to 43 percent in 1997, while corn sweeteners increased from 16 percent to 56 percent. All other caloric sweeteners—including honey, maple syrup, and molasses—combined to maintain a 1-percent share.

Per capita use of sucrose dropped from 102 pounds per person in 1970 to a low of 60 pounds per person in 1986. Since 1986, use of sucrose has steadily increased, reaching 67 pounds per person per year in 1996 and 1997. Much of the displacement of sucrose by HFCS and aspartame has been in soft drinks. Between 1980 and 1997, beverage manufacturers reduced their use of sucrose from 19 pounds to 1 pound per capita. The uptick in sucrose consumption since 1986 reflects increased use by industrial bakers, confectioners, and breakfast cereal manufacturers and by consumers in urban areas populated by recent immigrants, who are likely baking their native foods from scratch.

Use of corn sweetener (HFCS, glucose, and dextrose) rose from 19 pounds per capita in 1970 (dry basis) to a record 86 pounds in 1997, mainly because of HFCS. Use of HFCS, which is significantly less expensive than sucrose, rose from 0.5 pound per person in 1970 to 62.4 pounds in 1997. In 1997, beverages accounted for 72 percent of total HFCS deliveries for domestic food and beverage use, compared with 36 percent in 1980. Use of HFCS in bakery products and processed foods has jumped higher since 1990. Corn sweeteners became economical as a result of abundant corn supplies and low corn prices. Moreover, sales of byproducts—corn oil and corn gluten feed and meal—made corn sweetener production even less expensive. At the same time, Federal sugar programs maintained high support prices and import quotas on refined sugar. Total corn sweetener use surpassed cane and beet sugar use for the first time in 1985.

In 1997, Americans consumed three-fourths more caloric sweeteners per capita than in 1909 (fig. 17). In 1909, two-thirds of the sugar produced went directly into the home, which meant control was in the hands of the person who bought it. The balance was used mostly by industry. In contrast, more than three-quarters of the refined and processed sugars produced today goes to food and beverage industries, and less than a quarter is brought home.

The steep rise in caloric sweetener consumption since the mid-1980’s coincides with a 47-percent increase in annual per capita consumption of regular (nondiet) carbonated soft drinks, from 28 gallons per person in 1986 to 41 gallons in 1997 (that is 14.5 ounces per person per day, an amount that contains 11 teaspoonfuls of sugar) (table 39). Carbonated soft drinks provided more than a fifth (22 percent) of the refined and processed sugars in the 1994 American diet.

One quarter of the calories available from the 1994 per capita food supply (excluding alcoholic beverages) came from sugars. Lactose from milk and the sugars occurring naturally in fruit and vegetables accounted for one-fourth of this amount. The remaining three-fourths—more than 18 percent of total calories—was from sugars added to foods (table 43).

Sugar—including sucrose, corn sweeteners, honey, and molasses—is, in a sense, the number-one food additive. It turns up in some unlikely places, such as pizza, bread, hot dogs, boxed rice mixes, soup, crackers, spaghetti sauce, lunch meat, canned vegetables, fruit drinks, flavored yogurt, ketchup, salad dressing, mayonnaise, and some peanut butter.

The new food label, introduced in 1994, which lists the amount of sugars in grams (4 grams is equivalent to 1 teaspoon) in a serving of the food, can help people who are trying to moderate their sugar intake. This number includes both added sugars and those naturally present. Foods with natural sugars, such as milk and fruit, are also good sources of other nutrients, such as vitamins and minerals.

## **Beverages**

In 1997, Americans consumed an average of 53 gallons of carbonated soft drinks, followed by beverage

milk, 24 gallons; coffee, 23.5 gallons; and beer, 22 gallons (fig. 21, table 39). Between 1977 and 1997, per capita consumption increased 908 percent for bottled water, 61 percent for carbonated soft drinks, 42 percent for fruit juices, and 11 percent for wine. During the same period, per capita consumption declined 40 percent for distilled spirits, 17 percent for beverage milk, 4 percent for coffee, 2 percent for beer, and 1 percent for tea.

## **Spices**

Annual per capita spice consumption, excluding dehydrated onion and garlic, reached a record 2.9 pounds per person per year in 1996 and 1997 (table 92). That's more than a pound above 1970 and 1980 levels. The growth in per capita spice consumption reflects a trend toward the use of spices to compensate for less salt and lower fat levels in foods, and heightened popularity of ethnic foods from Asia, Mediterranean countries, and Latin America.