

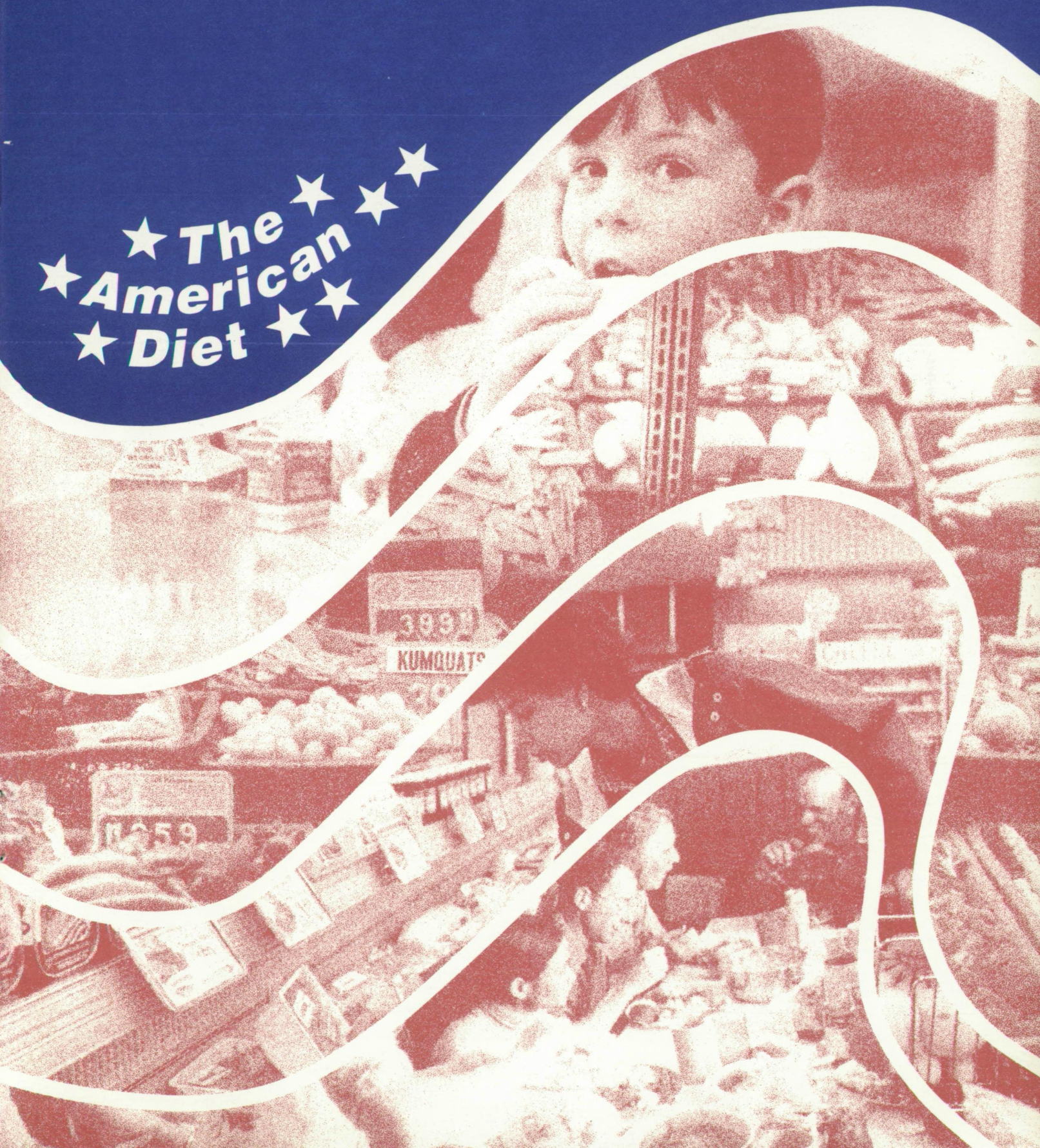
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★ The ★ American ★ Diet ★



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Grain Products Regain Popularity

Karen Bunch and Bruce Wendland
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Grain is called the "staff of life," but it seemed for a while that Americans were getting along with less of it. However, the trend is changing.

After declining dramatically from the early 1900's, to a low of about 137 pounds per capita in 1972, consumption of grain products increased 9 percent by 1985 (figure 1). Current consumption of food grains is approximately 150 pounds per person per year, similar to levels during the 1950's.

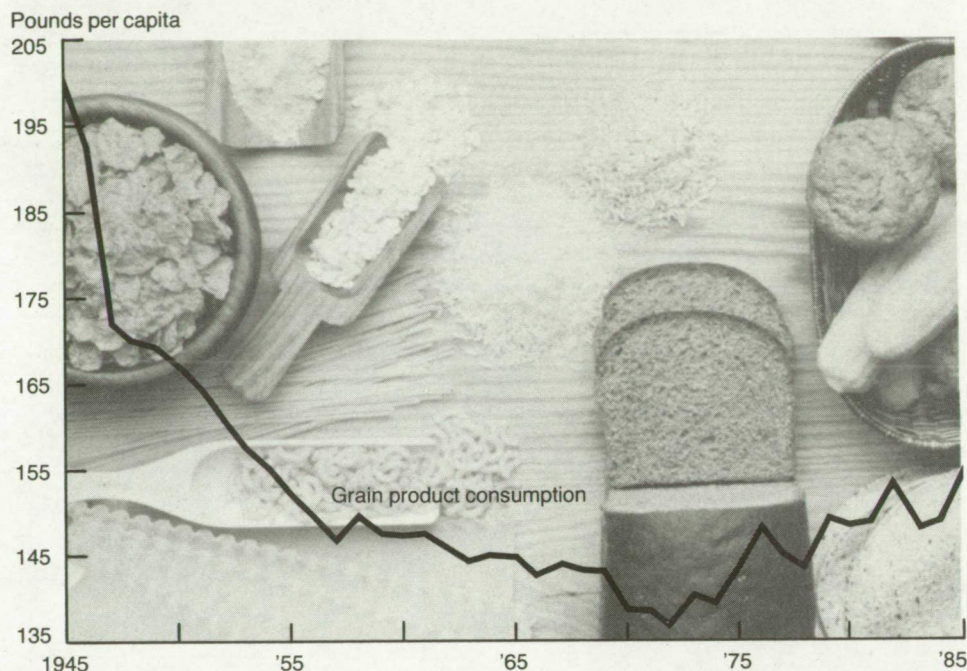
As a percentage of the food budget, U.S. households increased their expenditures on cereal and grain products from 12.1 percent during 1972-73 to 12.7 percent during 1980-81. The only other gainers were fruits, sweeteners, and specialty foods and beverages.

Many factors have led consumers to eat more grain products. Recommendations from many health groups, including the American Heart Association and the National Cancer Institute, have encouraged Americans to reduce their fat consumption and increase use of the complex carbohydrates found in grain products.

Another major influence on the shift to grain products is the increasing demand for variety in the diet. Furthermore, rising incomes mean that consumers spend more on prepared foods and foods away from home. Manufacturers have responded to these influences by introducing grain-based foods that are new to the American diet—like croissants. In addition, some old favorites, such as pasta and rice, have achieved new popularity.

Perhaps as part of the quest for variety, Americans seem more willing to experiment with different cuisines, such as Italian, Mexican, and Chinese. These cuisines

Figure 1. Grain Product Consumption Has Increased Since the Early 1970's



generally include more grain products than the standard American fare of meat and potatoes.

A recent survey of eating patterns provides further evidence that Americans are using more grain products. USDA's Continuing Survey of Food Intake by Individuals measured the food eaten by women 19-50 years of age and their children under 5 years old for 1 day in 1985 (for more information on survey, see articles on women's diets and calcium in this issue). The women surveyed ate 29 percent more grain products in 1985 than their counterparts in 1977, the last year in which a similar survey was taken. This gain was primarily due to a 79-percent increase in consumption of grain mixtures. Grain mixtures are entrees that may or may not include a small amount of meat, such as pizza or enchiladas. Grain consumption by children under 5 in 1985 was up 18 percent from 1977, primarily be-

cause of increases in breakfast cereals and grain mixtures.

Wheat Flour and Products Show Major Gains

Wheat is the major grain product eaten in the United States, with wheat flour and other products representing more than 80 percent of total grain consumption. In 1984, 163 pounds of wheat per person (grain equivalent) were used in manufactured food products (for background on data, see sidebar box).

Flour has been one of the major gainers in recent years. In 1985, 122.5 pounds of wheat flour were produced for every American, up 12 percent from the low point in 1972 and the highest in more than 30 years (table 1). Only about 15 percent is sold directly to consumers, 10 percent as flour and 5 percent in prepared mixes, such

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as cake mixes. The remainder is further processed into baked goods, pasta, and many other foods.

Consumption trends reflect growing concerns about health and demand for variety. Nowhere are these issues more clearly seen

than in the case of bread. Total per capita bread consumption declined 22 percent after 1967, to about 46.4 pounds by 1985 (*figure 2*). All of the decrease was in white pan bread, which fell more than 39 percent since 1967. At the same time, consumption

of whole grain and variety breads (for example, rye, pumpernickel, French, and Italian) increased 12 percent and represented about 40 percent of total bread consumption last year. Whole wheat bread alone doubled after 1967, but at almost 9 pounds per person in 1985, it was still less than half the consumption of white bread.

Nutrition and variety in the diet contributed to the switch to whole grain and other breads. A 1983 survey by the Wheat Industry Council found that many people believed that white bread was high in preservatives and low in nutritional value. They also thought of it as more suitable for children, which may partly explain the decline in consumption, since the number of children has decreased since 1972. On the other hand, consumers perceived wheat bread to be higher in fiber and vitamins and lower in calories than white bread. They also considered it to be a better value than white bread.

White bread also has not been popular in the away-from-home market. A 1980 study by food manufacturer Rich Products, Inc. found that white bread was the favorite lunch bread of only 9 percent of those surveyed. French, Italian, and whole grain breads were preferred by 67 percent of the survey respondents.

Sales of rolls increased 50 percent in 15 years, rising to almost 20 pounds per person in 1982, fueled by fast food sales of hamburger and hotdog buns. However, consumption of these buns has declined slightly in recent years, partly because of the introduction of fast food items that do not include bread, such as chicken, salads, and baked potatoes.

Declines in hamburger and hotdog buns have been more than offset by increases in other types of bread products. Kaiser and other variety rolls, bagels, and English muffins increased from 1.8 pounds per person in 1967 to 4.7 in 1982. English muffin sales alone doubled between 1972 and 1982, partly because of fast food breakfast sandwiches.

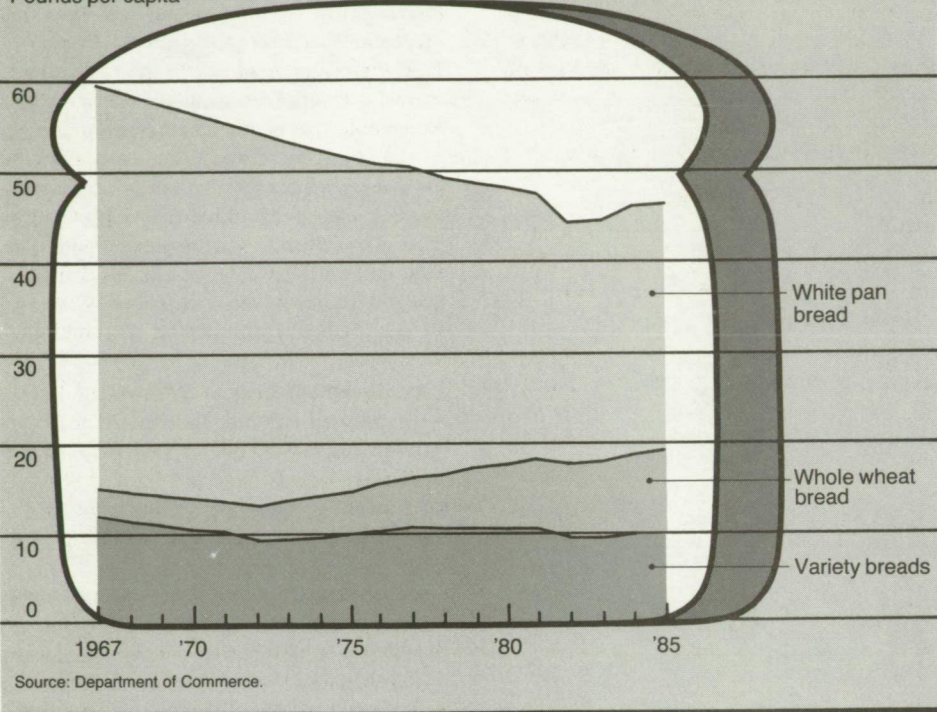
The cookie and cracker industries used over 3 billion pounds of flour in 1982.

Table 1. 1985 Wheat Flour Consumption the Highest Since the Late 1950's

	Wheat flour	Rye flour	Rice	Corn flour and meal
	<i>Pounds per person</i>			
1910-14	211.0	3.8	6.9	47.9
1915-19	194.6	3.3	8.8	44.2
1920-24	177.1	2.8	5.6	34.8
1925-29	179.8	2.8	5.6	29.5
1930-34	165.2	2.7	5.3	26.5
1935-39	159.5	2.3	5.8	23.1
1940-44	155.9	2.6	5.6	20.4
1945-49	145.7	1.7	4.7	14.3
1950-54	130.6	1.5	5.4	10.4
1955-59	120.8	1.3	5.5	7.9
1960-64	116.1	1.1	6.7	5.9
1965	113.3	1.2	7.6	6.8
1966	112.0	1.2	7.3	7.5
1967	113.0	1.2	7.5	7.7
1968	112.8	1.3	7.9	7.4
1969	112.5	1.2	8.3	7.5
1970	110.8	1.2	6.7	7.0
1971	110.5	1.1	7.6	6.7
1972	109.8	1.0	7.0	6.2
1973	112.8	1.3	7.0	5.9
1974	110.9	1.2	7.5	5.8
1975	114.5	1.0	7.6	6.0
1976	119.1	0.8	7.1	5.8
1977	115.5	0.8	7.5	5.7
1978	115.2	0.8	5.7	5.9
1979	117.2	0.7	9.4	6.2
1980	116.9	0.7	9.4	6.3
1981	115.9	0.7	11.0	6.2
1982	119.6	0.6	11.8	6.6
1983	116.1	0.7	9.8	6.6
1984	117.8	0.8	8.5	6.6
1985	122.5	0.8	9.3	6.8

Figure 2. White Bread Pulls Down Total Bread Consumption

Pounds per capita



roughly 13 pounds per person. Nineteen pounds of cookies and crackers were produced for each person in 1985 (table 2). Cracker consumption rose 21 percent between 1967 and 1977, but declined about 13 percent by 1985, to 8 pounds per person. Meanwhile, cookie consumption, which declined 18 percent between 1967 and 1982, was revitalized in 1983 by the introduction of soft store-bought cookies. Consumption jumped 6 percent in 1984 and another 5 percent to 11 pounds per person in 1985. Last year, the dollar value of supermarket sales of cookies rose 14 percent.

Sales Expand in Retail Bakeries

Another reason for the rising use of grain products is an increase in retail bakery sales. In 1982, the last year of the retail census, these bakeries took in \$6.2 billion, an additional 35 percent above sales by manufacturers.

Among retail bakeries, tremendous growth has occurred in the number and sales of those in supermarkets. Surveys by the bakery and supermarket industries indicate that the number of in-store bakeries has more than doubled since 1980, with sales topping the \$4 billion mark in 1985.

In-store bakeries appeal to customers because of the convenience and freshness of the products. Smaller households can buy just the amount they need, rather than relying on packaged products designed for larger families.

Bread and rolls accounted for about 39 percent of in-store sales in 1984; doughnuts, 16 percent; cakes, 11 percent; and pies, cookies, bagels, croissants, and other sweet baked goods, 34 percent.

About 50 percent of in-store bakeries rely on frozen dough that is produced elsewhere and baked in the store, particularly for labor-intensive items such as croissants. Frozen bakery products sold directly to consumers have also become more popular.

For example, The Kitchens of Sara Lee increased sales 25 percent in 1985.

Pasta Sheds Its Dull Image

One of the largest gainers among flour products is pasta. Macaroni, spaghetti, and noodles are made primarily from durum wheat, a very hard wheat that is somewhat higher in protein than other varieties. In 1982, more than 1.5 billion pounds of durum flour were made into pasta products. An additional 159 million pounds of pasta were imported. Last year, each American ate more than 12 pounds of pasta, up more than 30 percent from 1970 (table 2).

Pasta consumption has increased in part because these products fit into changing lifestyles, having shed their dull image in the process. As recently as 1983, respondents to the Wheat Industry Council's survey described pasta as "inexpensive, filling, and fattening." While dishes such as macaroni and cheese may still fit this description, other products, like pasta primavera—pasta and vegetables—help consumers see a different image.

While grocery store sales of pasta have increased modestly, it's the away-from-home market that has made the biggest gains. Pasta dishes in restaurants are now often considered a "light" alternative to more traditional entrees. The popularity of ethnic foods has also boosted pasta consumption. A recent survey by a restaurant magazine found that Italian food represents 40 percent of all ethnic meals ordered in restaurants.

Pasta salads have also moved into the spotlight. Instead of just serving macaroni salad as a side dish with a sandwich, restaurants are featuring a variety of pasta salads as entrees. In 1984, 45 percent of restaurants offered pasta salads.

Rice Gains Popularity

Rice is another major grain product to show significant consumption gains. Use of rice has increased about 39 percent since the 1970's 20-year low of 6.7 pounds per capita. Average consumption from 1980

Table 2. Consumption of Manufactured Grain Products on the Increase

	Breakfast cereals ¹			Pasta	Cookies	Crackers and pretzels
	Ready to eat	Ready to cook	Total			
	<i>Pounds per person</i>					
1965	7.6	3.1	10.7	5.7	NA	NA
1966	8.0	2.6	10.6	5.6	NA	NA
1967	8.3	2.1	10.4	6.4	11.7	7.6
1968	8.5	2.2	10.7	6.8	11.5	7.6
1969	8.6	2.3	10.9	7.2	11.3	7.7
1970	8.7	2.4	11.1	7.7	11.1	7.7
1971	8.9	2.5	11.4	8.1	10.9	7.8
1972	8.7	2.6	11.3	8.6	10.8	7.9
1973	8.9	2.7	11.6	9.0	10.6	8.0
1974	9.1	2.8	11.9	9.3	10.4	8.1
1975	9.3	2.8	12.1	9.7	10.1	8.4
1976	9.6	2.9	12.5	10.1	9.9	8.8
1977	9.8	3.0	12.8	10.4	9.7	9.2
1978	9.8	3.0	12.8	10.3	9.6	8.9
1979	9.9	2.9	12.8	10.2	9.6	8.6
1980	10.0	2.9	12.9	10.1	9.5	8.4
1981	10.1	2.9	13.0	10.0	9.4	8.2
1982	10.1	2.9	13.0	9.9	9.6	7.9
1983	10.2	2.9	13.1	10.5	9.9	7.8
1984	10.3	3.0	13.3	11.2	10.5 ²	7.9
1985	10.6	3.1	13.7	12.3	11.0 ²	8.0

¹Includes infant cereals. ²Estimated.

to 1985 was about 10 pounds, the highest since the 1920's.

About 60 to 65 percent of rice is sold for direct consumption, a relatively constant percentage since the mid-1950's. The next major use is in beer—29 percent of the total in 1982. However, USDA figures for rice consumption exclude direct shipments to brewers, because alcohol is not considered a food. If use in beer is included, per capita rice consumption would be around 13 pounds over the last few years, compared with 10 pounds for only food. Use of rice in beer has increased more than 70 percent on a per capita basis since the early 1970's, partly because of a 16-percent rise in beer

drinking. In addition, one major beer company uses only rice because it produces a lighter-tasting beer.

Rice is also used in processed foods, such as breakfast cereals and soup. In fact, breakfast cereals account for 75 percent of the rice used in processed foods. In 1982, 250 million pounds of rice were processed into breakfast cereals—about 1 pound per person. Soup, baby food, and packaged mixes were the other major processing uses of rice, accounting for another 55 million pounds or 0.2 pound per capita.

Like wheat, rice has benefited from greater variety in the diet and the healthy image of grain products. And similar to pasta, rice has gained in the away-from-home market. In 1982/83, 40 percent of rice was sold in

restaurant-sized bags of 25 pounds or more—up from 29 percent in 1971/72. Increasing numbers of ethnic restaurants serving rice, mostly Oriental and Mexican, have contributed to this growth.

The changing makeup of the population has also contributed to increased rice consumption. The number of Asians and Hispanics in the United States has more than doubled since 1970. Nonwhite households spend almost three times as much on rice than do white households. In addition, rice consumption is highest in the Pacific and Mid-Atlantic regions, where Asian and Hispanic populations are the largest.

Corn Outstanding in Versatility

Corn is the most versatile of all grain products. In 1984, over 1 billion bushels of corn were processed into a variety of food and industrial products, including oil, sweeteners, starch, alcohol, animal feed, and flour.

Corn is basically processed through either wet or dry milling. The wet milling process involves a long soaking or seeping step to remove the hull, gluten, and germ components. The remaining starch is used as an end product or further processed into either alcohol or sweeteners. Corn alcohol is used for beverages and for fuel. Sweeteners produced from wet milling include glucose, dextrose, and high fructose corn syrup (HFCS). Use of glucose and dextrose has remained relatively constant over the years. In contrast, use of HFCS has increased faster than almost any other food product, climbing from zero in the late 1960's to over 43 pounds per capita in 1985, mainly in soft drinks.

In the dry milling process, the corn kernel is either ground whole or processed to remove the germ and some of the gluten. This process divides the kernel into two separate products: alcohol and the more familiar corn flour and meal.

Consumption of corn flour and meal is far below the amounts used earlier in the century. Before refrigeration and year-round availability of fresh foods, wheat and corn meal were important staples in the diet.

Corn meal, however, has become significantly less important than wheat flour. At just under 7 pounds per person in 1985, consumption of corn meal has fallen 86 percent from the 1910-14 average. In contrast, wheat flour has dropped only 42 percent.

Consumption of corn products has, however, increased modestly in recent years. The growth in corn cereals, Mexican products, and snack foods has been a boon. Although still way below figures for the early part of the century, corn meal has increased 8 percent from the 1977 low.

Ethnic food growth is led by Mexican-type snack foods and a substantial rise in the number of Mexican restaurants. According to the National Restaurant Association, there were 13,034 Mexican restaurants in the United States in 1985, up 15 percent from 1983. Between 1973 and 1983, sales in Mexican chain restaurants increased at an annual rate of 24 percent—faster than any other type.

Big growth has also occurred in corn snack foods. Sales of corn and tortilla chips increased almost 70 percent between 1980 and 1985 (*table 3*). In the early 1980's, there was speculation that these products would replace potato chips as the snack food leader. With about 20-percent increases in 1980 and 1981, it looked like this might be true. However, increases have tapered off considerably over the last several years. Sales climbed less than 3 percent to \$1.63 billion last year. In contrast, potato chip sales reached more than \$2.7 billion. New flavors and thicker, crunchier chips have helped keep potato chips out in front in the snack food race.

Corn is also one of the major grains used in breakfast cereals. Though corn cereals lost some ground in the 1970's, consumption has increased steadily since 1977, reaching 3.3 pounds per person in 1985, double the level of the 1950's.

Breakfast Cereals on the Rise

While consumers reached for more corn cereals in 1985, there were also gains in wheat and mixed grain ready-to-eat cereals. Meanwhile, consumption of ready-to-eat cereals using rice or oats remained constant. The introduction of flavored instant varieties

boosted consumption of cooked cereals, primarily oatmeal (*table 2*). In total, consumption of breakfast cereals increased 22 percent since 1970, to 13.7 pounds in 1985,

with presweetened cereals accounting for the largest share of the more than 300 varieties and package sizes (*figure 3*).

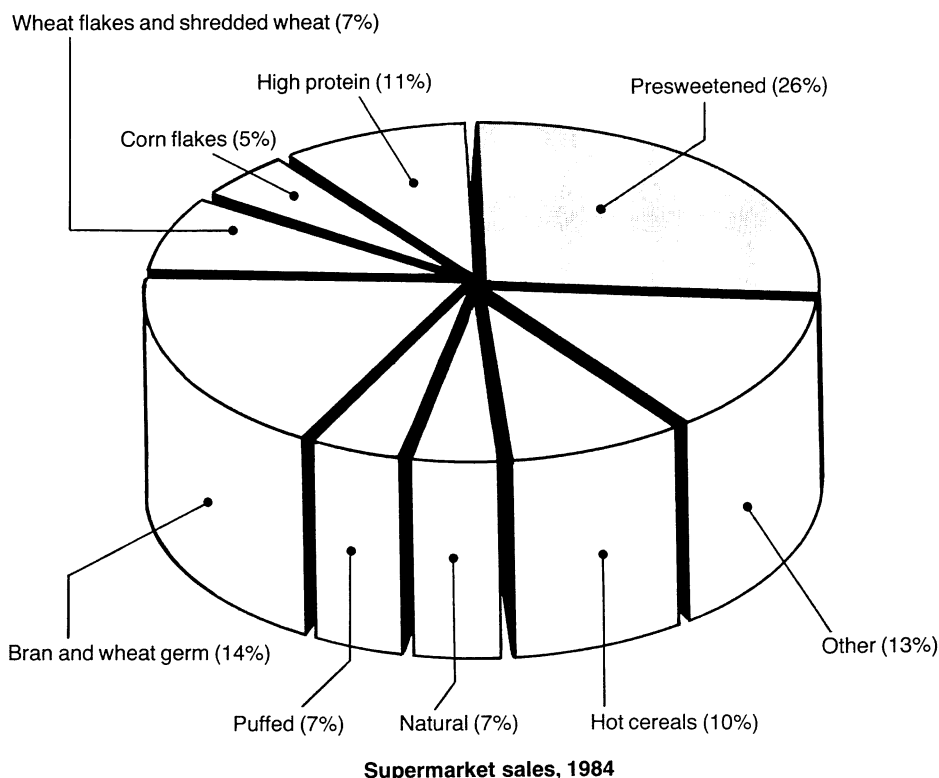
A major factor influencing sales of break-

Table 3. Growth in Corn Snack Sales Has Slowed Since 1980

	Corn snacks		Potato chips	
	Sales (dollars)	Change from previous year	Sales (dollars)	Change from previous year
	Millions	Percent	Millions	Percent
1980	1100	24.6	1900	17.7
1981	1190	19.1	2200	16.3
1982	1330	11.6	2540	14.7
1983	1470	10.8	2690	6.3
1984	1590	8.6	3050	13.4
1985	1630	2.6	3300	8.1

Source: Snack Food Association.

Figure 3. Presweetened Cereals Largest Segment of Breakfast Cereal Sales



*Includes cold oats, combination packs of individual servings, and others.
Source: *Progressive Grocer*.

fast cereals is demographic change. Children under 14 years of age eat the most breakfast cereals. However, with fewer children in this age group, manufacturers have turned their attention to designing products for adults.

Nutrition has helped successfully market cereals to adults. Companies are now advertising their product as having the most vitamins, the most whole grain, or the least sugar and preservatives. In 1984, Kellogg's kicked off the competition among high-fiber cereals with their ad campaign relating bran cereal to cancer prevention. Kellogg's share of the bran cereal market increased 30 percent in the 48 months following the start of the campaign. With other companies following Kellogg's advertising lead, bran and wheat germ cereals accounted for about 15 percent of ready-to-eat cereals in 1984—up from 12 percent in 1983.

Nutrition and health questions have implications for presweetened cereals. Parental concern about high sugar content of children's cereals influenced the industry to reduce the amount in these products. Sugar use by cereal manufacturers edged down 0.4 percent a year between 1977 and 1982, while use of fruit and nuts increased 16 percent. Some products were renamed to remove sugar from the title—both to appeal to adults and to make the products more acceptable to concerned parents.

Will Grain Consumption Continue To Increase?

Grain product consumption will likely gain further in the years ahead. Demographic changes should be a positive factor. For example, people over 65 spend more on cereals and bakery products than any other age group, and this population group is expected to increase 2.1 percent annually in the next 5 years. This could affect the demand for products currently favored by older people, including cooked cereals and white bread, assuming future seniors adopt the consumption patterns of those currently in that age group.

Similarly, the number of 5- to 19-year olds will increase 0.7 percent by 1990, which may mean a larger market for cook-

ies and breakfast cereals. The Department of Commerce forecasts breakfast cereal consumption up 2.3 percent a year, and cookies 1.7 percent, between now and the end of the decade.

Several major health groups are encouraging people to change their diets, including eating more foods that are high in fiber and complex carbohydrates. If many individuals respond to this advice, long-term growth for grain products could continue.

In hopes of gaining from health awareness, the wheat industry is disseminating nutrition information through their campaign "Eat Wheat, America." Television and radio ads were tested in 14 markets in early

1986, with another 13-week test that began in September. The goal of the campaign is to "improve consumer attitudes toward wheat foods, and convince American mothers that wheat products are good sources of nutrition for the whole family." With the cooperation of bakers and retailers, point-of-purchase materials have been placed in stores and inserts in bread bags encouraging customers to send away for a diet pamphlet from the American Heart As-



Grain products offer consumers the variety they are looking for.

A Closer Look at the Data

This article presents the latest available information on consumption of grain products. Because it was collected from several different sources, however, the latest years reported will vary. For example, the estimates of per capita consumption of rice, and wheat and rye flour were obtained from USDA's data on food supplies and utilization. Estimates were available through 1985.

Data on consumption of manufactured products (bakery products, breakfast cereals, pasta, and corn flour and meal) were derived from the U.S. Department of Commerce's Census of Manufactures, conducted every 5 years. The latest survey covered data for 1982. This information is augmented by annual surveys of a sample of manufacturers.

Beyond the differences in years reported, there are variations in what the data actually measure. USDA's consumption data, for instance, are actually "disappearance" figures because they are derived from estimates of the amount of grain used in food products adjusted for imports, exports, and stock changes. The data, therefore, are not direct estimates of food actually eaten.

The Department of Commerce's estimates of consumption or use of manufactured products reflect the amount produced by manufacturers and sold to consumers through restaurants and food stores. For perishable items, like bread and other bakery products, production is a close approximation of consumption.

Omitted from the Census of Manufactures estimates are products made and sold in bakeries in retail establishments, such as supermarkets. However, while the Census of Manufactures data may understate the total quantity of bakery products consumed, they are indicative of trends in total consumption and shifts among different products.

Finally, adjustments are made in Census of Manufactures data for pasta to account for significant imports and exports of these products. For other bakery and cereal products, trade is negligible.

For more information about data on cereal and bakery products, contact William Janis, Department of Commerce, International Trade Administration, 14th Street and Constitution Avenue, N.W., Washington, D.C. 20230, (202) 377-2550.

sociation. As of May 1, the Wheat Industry Council had received 3,600 requests for the pamphlet.

The baking industry is also working on new ways to improve bread nutritionally. Two areas with greatest potential are calcium fortification and fiber enrichment. Whole wheat bread contains about 6 percent dietary fiber, compared with 2 percent in white bread. Through the addition of fiber, manufacturers could advertise their white

bread as having as much fiber as whole wheat. If Kellogg's success in marketing high-fiber cereal is indicative of consumer attitudes, fiber can be used as an effective marketing tool.

The picture also appears bright for pasta. One industry analyst predicts growth of 8.3 percent a year in sales of pasta over the next 10 years. Because of new tariffs on imported pasta, future growth in consumption will likely draw more heavily on domestic supplies.

As for the other grains, rice consumption could increase. The Food Security Act of 1985 substantially lowers the price farmers are paid for their rice relative to other grains. While it's unlikely that this reduction will significantly lower the retail price, it should affect the wholesale price, which may encourage restaurants and institutions to offer more rice dishes on their menus. Food processors should also be enticed to manufacture more processed rice products or include rice in processed entrees.

A larger ethnic population should further increase consumption of rice and corn. The U.S. Census Bureau forecasts that between now and the end of the century, the Hispanic population in the United States will increase 66 percent and the Asian 58 percent, compared with increases of 10 percent for whites and 24 percent for blacks. Though immigrants and their families adopt many American eating patterns, they still maintain preferences for their native cuisines. Their presence also helps introduce other Americans to new tastes and broadens the variety of foods available. □

References

- Bunch, Karen and Grace Simon. *Food Consumption, Prices, and Expenditures, 1964-84*. Statistical Bulletin No. 736. Economic Research Service, USDA, November 1985.
- Holder, Shelby H. *U.S. Rice Distribution Patterns, 1982-83*. Statistical Bulletin 723. Economic Research Service, USDA, March 1985.
- Janis, William. "Bakery Products." *1986 Industrial Outlook*. U.S. Dept. of Commerce, January 1986. pp. 40-19-40-23.
- Janis, William. "Cereal Breakfast Foods." *1986 Industrial Outlook*. U.S. Dept. of Commerce, January 1986. pp. 40-23-40-27.

Counting the Cost of Restricting Casein Imports

Alden C. Manchester and Kathryn L. Lipton
(202) 786-1880

Casein—the principal protein in milk—is truly a versatile ingredient. It's in a wide array of products, from animal feed and pet foods to imitation cheese, dietary products, and coffee whiteners. It is also used in glues, paints, and cleaning agents.

Despite its widespread use, however, casein is not produced in the United States because producing nonfat dry milk (NFDM) at federally supported prices is more profitable. Nine countries accounted for 92 percent of the 231 million pounds imported by the United States in 1985 (*table 1*). New Zealand supplied almost half, while seven European countries provided 43 percent, with Ireland supplying about 28 percent of total U.S. imports.

Researchers at USDA's Economic Research Service (ERS) recently examined the impacts of restricting casein imports. The study was conducted in response to a Congressional request to determine whether imports of casein interfere with the Government's dairy price support program.

The ERS report revealed that casein import restrictions would mean lower Federal costs for dairy price supports—from 3 to 14 percent of 1985 program expenditures. Because casein is widely used in consumer and industrial products, however, both manufacturers and consumers would face higher costs. Consumers would also find they had fewer product choices.

The Versatile Ingredient

Casein accounts for roughly 3 percent of the weight of whole milk, and 80 percent of the total protein content. Whole milk is made up of fat, water, and nonfat milk solids. When the fat component of whole milk is skimmed off for making butter, the skim milk that remains includes casein, water, and other nonfat milk solids. This skim milk can be dried and made either into NFDM or casein.

Manchester is senior economist and Lipton is staff economist in the Office of the Director of the National Economics Division.

In the 1940's, only a small percentage of U.S. milk production went for casein, as its use was primarily in industrial products. In 1947, casein production totaled 36 million pounds, but fell to 3 million pounds in 1955, as the price of NFDM rose relative to casein. As a result, NFDM producers diverted milk supplies away from casein. This relative price relationship has continued to keep casein out of production in the United States.

While U.S. production was declining, the uses for casein were expanding worldwide. Developments in cosmetics and textiles in the late 1940's and early 1950's, as well as the introduction of dried casein lactate as a dietary supplement in 1953, marked the beginning of attempts to more fully use its unique characteristics. With growing demand, U.S. imports of casein rose from 21 million pounds in the mid-1940's to 75 million pounds about a decade later.

Water-soluble casein became available in 1955 and, by 1960, it was used in food products around the world. In the 1960's, development of casein's emulsifying and stabilizing qualities facilitated successful introduction of a powdered nondairy coffee whitener. By 1969, as much as one-quarter of the world's estimated annual production of 240 to 320 million pounds went into

coffee whiteners and other food. Other major edible uses included medical and dietary products, flavor enhancers, imitation whipped cream for desserts and baked goods, and filler for meat products, such as sausage and luncheon meats.

In the United States during the 1960's, casein was still primarily being used in industrial products, although over 20 million of the 107 million pounds used went into food. These food uses were limited to beverages, breakfast cereals, coffee whiteners, desserts and toppings, and dietetic products.

In the 1970's, U.S. manufacturers discovered even more uses for casein, and it became an important ingredient in baby foods, baked goods, confectionery products, processed meats, dry soups, and pet foods. By 1980, food uses accounted for an estimated 69 percent of the 138.9 million pounds used in the United States (*table 2*).

Impact of Restricted Imports Depends on Substitutes

To evaluate the impact of restricted imports of casein on the U.S. dairy industry, the ERS researchers identified major domestic casein uses and considered the availability and costs of alternative inputs. The principal alternatives to casein in food and



Casein can be found in a variety of products, from coffee whitener to pizza.

Table 1. New Zealand Supplies Almost Half of U.S. Casein Imports

Country	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
<i>Million pounds</i>																
New Zealand	63.0	37.9	29.7	31.4	33.5	14.7	56.0	96.3	84.3	92.1	76.8	76.8	85.2	68.4	94.7	102.0
Australia	34.3	31.8	27.3	23.9	18.3	10.0	33.4	23.1	22.9	21.7	17.9	18.4	16.5	18.8	15.3	12.1
Ireland	(²)	.9	4.4	13.6	7.3	5.7	3.3	4.3	9.2	14.8	24.0	19.9	40.2	35.9	39.2	64.9
France	11.2	8.3	8.7	10.3	22.9	5.2	.2	(²)	(²)	2.0	8.9	5.8	14.9	12.0	13.9	10.7
West Germany	.4	2.3	2.6	2.5	5.5	3.5	1.2	.4	.2	.2	.6	1.2	1.2	2.6	1.5	1.9
Netherlands	.2	1.7	4.6	1.8	2.7	2.3	1.1	.6	1.5	2.5	2.5	1.8	4.6	6.0	7.9	7.7
Others	26.2	23.1	28.1	29.3	22.7	17.0	16.9	19.5	19.0	17.5	21.5	3.9	14.2	15.8	19.8	32.1
Total	135.3	106.0	105.4	112.8	112.9	58.4	112.1	144.1	137.1	150.8	152.2	127.8	176.8	159.5	192.3	231.4

¹Includes casein and casein mixtures. ²Less than 100,000 pounds.

Source: U.S. Department of Commerce, Bureau of the Census.

feed include nonfat dry milk, soy products (flour, grits, isolates, and concentrates), and whey protein concentrate. Which of these can be used in various products depends on their technical properties and relative cost.

The main technical substitute for casein in powdered coffee whiteners, for example, is soy protein. Soy-based whiteners are currently marketed for people who must restrict their intake of dairy products. However, these products don't taste as good or mix as well with coffee. On the other hand, liquid coffee whiteners made from soy isolates have found wide consumer acceptance, although they do not have the shelf-life of their powdered counterparts.

Because coffee whiteners require long shelf-life and good flavor, it is likely that casein would continue to be used to assure those attributes. Since the proposals call only for restricted imports, casein from foreign countries would still be available. However, competition for these limited imports by manufacturers with no casein substitutes would bid up the price of casein to approximately the level where domestic production would become feasible.

Producers could then use the higher priced domestic casein.

Other foods provide examples of substitutions that could occur if casein imports were restricted. Producers of processed meat products, such as imitation sausage, stews, and soups, for instance, need an ingredient that can bind water in the product and keep fat from escaping to the surface. In many imitation dairy products, such as whipped desert toppings, an ingredient that prevents "weeping" of liquids is also desired. In most of these products, skim milk solids could be used; casein is used mainly for economic reasons.

Soy proteins could replace casein in certain of these uses. Complete replacement of dairy protein is possible in many cream fillings, icings, and whipping creams, but further research is apparently necessary to obtain an acceptable flavor.

Dietary products encompass specially formulated food and medical products low in cholesterol and lactose-free. Casein-based products provide a protein source easily tolerated by people with medical problems, such as intolerance of lactose in milk. Other products using casein include coatings and

binders for pills, weight-reduction formulations, protein powder formulas, and other special dietetic and infant food products. No substitutes can duplicate casein's role in the majority of these products.

With restricted imports and the resulting higher prices, manufacturers of a variety of casein-based products might use the more costly domestically produced casein if they felt they could recapture the higher ingredient cost.

In the industrial sector, for example, casein is an important component of glues and adhesives. Casein makes these products quick-setting, water-resistant, durable, able to adhere to different surfaces (such as paper on glass and aluminum foil to paper), and convenient. Casein is the main binding agent in adhesives, making them resistant to water and temperature extremes (important in bottle labeling) and stable when mixed with water.

Some manufacturers indicated that soy-based proteins and synthetics such as polyacrylate could be substituted for casein in glues and adhesives. But most manufacturers claimed that the resulting product

Table 2. Imports Supply the Needs of Growing Domestic Casein Uses

Year	Imports	Production	Change in stocks	Exports	Estimated domestic use				
					Total	Food	Feed	Industrial	Other
Million pounds									
1940	24.5	46.6	—	—	60.2	(1)	(1)	56.4	3.8
1950	54.6	18.5	+ .3	0.1	72.7	—	—	—	—
1955	74.5	3.1	—	.1	77.5	1.0	(1)	(1)	76.5
1960	92.2	.9	—	.1	93.0	4.7	—	—	—
1966	107.9	2.7	—	3.6	107.0	22.5	(1)	79.5	5.0
1970	135.0	0	—	3.7	131.6	39.5	26.3	65.8	0
1971	106.0	0	—	2.5	103.5	32.1	—	—	—
1972	105.4	0	—	1.9	103.5	33.1	—	—	—
1973	112.8	0	—	1.9	110.9	36.6	—	—	—
1974	112.9	0	—	2.3	110.6	37.6	—	—	—
1975	58.4	0	—	.7	57.7	—	—	—	—
1976	112.1	0	—	1.1	111.0	72.9	—	—	—
1977	144.1	0	—	.9	143.2	65.9	—	—	—
1978	137.0	0	+ 6.6	1.2	129.3	72.4	30.4	26.6	0
1979	150.8	0	+ 2.1	.7	148.1	87.7	32.1	28.2	0
1980	152.2	0	+ 12.3	1.0	138.9	95.8	22.7	20.5	0
1981	127.8	0	-15.4	.9	142.2	100.6	22.9	18.8	0
1982	176.8	0	-2.6	.6	178.8	136.1	23.6	19.0	0
1983	159.5	0	-28.7	1.2	187.0	142.1	—	—	—
1984	192.3	0	-4.5	2.8	194.0	146.7	—	—	—
1985	231.4	0	+ 33.3	2.3	195.8	146.9	23.9	25.0	0

¹If any, included in other. — = Not available.

Sources of use data:

1940: USDA, *Dairy Situation*, DS-168, August 1945, p. 12.

1955: U.S. Tariff Commission, *Summaries of Trade and Tariff Information, Chemicals and Related Products*, TC Publication 239, November 1967, p. 58.

1966: Poarch, A.E., "Uses of Casein and Caseinates in the Industry in General and in the Food Industry," International Dairy Federation Seminar on Casein and Caseinates, Paris, 1967, p. 7.

1970: Hammonds, T. M., and Call, D.L., *Utilization of Protein Ingredients in the U.S. Food Industry, Part I—The Current Market for Protein Ingredients*, Cornell University, A.E., Res. 320, July 1970, p. 21.

1978-81: International Trade Commission.

1982: Census of Manufactures (partial).

would be inferior. In the past, however, when casein prices increased, many glue manufacturers have substituted soy protein.

Restricting Imports Means Higher Producer Costs

To estimate the costs associated with limiting foreign casein, ERS researchers considered the two methods of restricting imports permitted under Section 22 of the Agricultural Adjustment Act of 1935. The first method is a quota that would cut imports up to 50 percent from a specified base period. ERS researchers analyzed a quota

based on 50 percent of average imports during 1981-85.

If the import quota was 88 million pounds, most users with ready substitutes would shift out of casein into alternative proteins (*table 3*). All others would continue to use imported casein while bidding up the price of the available supply. However, casein use by these producers would eventually decline somewhat as consumer demand for some of their products would fall because of higher prices. Casein use by producers who could substitute skim milk would decline by about 57 million pounds.

The second method under Section 22 is an *ad valorem* tariff that would tax imported casein on the basis of its value. ERS researchers assumed this tariff would be set at 50 percent of the value. In 1985, this would have added 48 cents to the price of casein, which was about 96 cents a pound that year.

If a 50-percent tariff were imposed and the price of casein rose to \$1.44 a pound, many users would shift to other ingredients where possible. About 46 million pounds of casein would be replaced, leaving about 130 to 135 million pounds to be imported. Little

increase in the use of domestically produced skim milk solids would result because producers would shift mainly to lower priced soy protein or whey protein concentrate.

A Less Costly Dairy Program?

To support the prices of dairy products, USDA's Commodity Credit Corporation (CCC) purchases butter, NFDM, and cheese. Because a 50-percent tariff would not greatly increase commercial use of skim milk solids, the tariff would have little impact on CCC purchases. The CCC's cheese purchases would also be unaffected if the ingredient cost of casein in cheese analogs (cheese substitutes, imitation cheese, and cheese blends) rose by as much as 12 cents a pound. This would still leave prices of these products substantially below natural cheese. If analog prices rose by more than 12 cents, moving closer to the price of natural cheese, then there might be a small shift in consumer demand toward natural cheese, relieving the CCC of some purchases.

The effect of a quota of 88 million pounds also depends on the extent to which natural cheeses displace analogs and skim milk solids displace casein in products. If there is only a partial shift from analogs to natural cheese, due to a narrowing of the price gap, ERS researchers estimate 32 million pounds of casein would be replaced by the skim milk solids used to make products other than cheese. As a result, commercial disappearance of skim milk solids would increase by the equivalent of about 100 million pounds of NFDM (3.16 pounds of NFDM are required to replace 1 pound of casein in commercial use). CCC purchases would decline by this amount, reducing Government costs about \$84 million (based on the 1985 NFDM support price of 84 cents a pound), or 3 percent of 1985 dairy program costs, which totaled \$2.2 billion.

At the other end of the range of possibilities, natural cheese might replace all cheese analogs because of the latter's higher costs. In such a case, estimated sales of about 280 million pounds of analogs (1985 data) would be replaced by commercial sales of only about 240 million pounds of natural cheese. At the higher prices for natural

Table 3. Several Product Groups Depended Heavily on Casein in 1980¹

Use group	Million pounds
Group A—Alternatives to casein not available:	
Coffee whiteners (80 percent) ²	10.6
Dietary products	12.5
Desserts and toppings (72 percent)	3.7
Bakery (10 percent)	.7
Total	27.5
Group B—NFDM or skim milk can replace casein:	
Cheese analogs	44.7
Animal feed (20 percent)	3.7
Coffee whiteners (20 percent)	2.7
Desserts and toppings (28 percent)	1.5
Other foods	13.5
Total	66.1
Group C—Soy or other proteins can replace casein:	
Industrial	20.5
Bakery (90 percent)	5.9
Pet food	4.4
Animal food (80 percent)	14.6
Total	45.4

¹Based on International Trade Commission report. ²Percent in parentheses is estimated share of casein use in that product falling in that substitution category.

cheese, consumers will buy less though than they did of the analogs. With the boost in natural cheese demand, CCC costs could drop by about \$300 million. Thus, the range of possible reductions in Government costs is \$84 to \$300 million.

For Consumers, It Could Mean Higher Prices

A 50-percent *ad valorem* tariff would increase the ingredient cost of consumer products by \$66 million annually, given the continued use of 138 million pounds of casein.

A 50-percent quota would raise the price of casein to about \$2.49 a pound, compared with the 1985 price of 96 cents. Domestic skim milk solids would substitute for 32 million pounds of the displaced imported casein. The remainder would be replaced by other proteins. Considering these two facts, ingredient costs of consumer products would increase an estimated \$180 million. Those products for which soy proteins would be substituted for casein would see no significant price impact.

In addition to price, however, restricted imports would affect consumer choice. Since not all people have the same tastes, needs, and wants, consumer satisfaction usually increases as more products at reasonable prices are made available. A tariff or a quota that drives up the price of casein would increase prices for some products. In other cases, such restrictions could mean the elimination of products from the marketplace. Consumer choice would be constrained in either situation.

Cheese analogs are just one example. These products are now sold at lower prices than natural cheeses because imported casein costs substantially less than domestic skim milk solids. A quota or tariff would raise the ingredient cost of cheese analogs, thereby increasing retail prices and possibly limiting product availability.

Presumably a technical or cost advantage, or both, exists for products in which casein is presently being used. Therefore, an increase in its price or a limit on its availability would inevitably affect consumer choice. □

Diets of American Women: Looking Back Nearly a Decade

Betty B. Peterkin and Robert L. Rizek
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What do American women choose to eat? Compared with nearly a decade ago, they choose more products such as pizza or spaghetti with meat sauce and less plain red meat, more skim and less whole milk, and more carbohydrates and less fat. These observations and others are part of a recent study that provides the first national assessment of women's diets since before the beginning of the decade.

The new study of women's diets is based on USDA's Continuing Survey of Food Intakes by Individuals (CSFII) initiated in 1985. The survey uses a national sample to observe dietary behavior of women 19-50 years old in response to economic change, nutrition and health promotions, and other factors affecting food consumption. The CSFII supplements USDA's comprehensive Nationwide Food Consumption Surveys (NFCS) taken every 10 years. The last NFCS was in 1977. Both the NFCS and CSFII are part of the National Nutrition Monitoring System.

As part of the CSFII, 1,503 women reported what they ate at home and away from home for 6 days spread over 1985. The first day's data were compared with a day's data for 2,228 women of the same age range interviewed for the 1977 NFCS. Data collection methods were similar for both years: Women were asked to recall their food intake—what they ate—over the past 24 hours. The interviews were conducted in the spring of both years.

There were some differences in the surveys. For example, to expand and improve estimates of dietary fat, the 1985 survey asked more questions about the trimming of meat and the types of fats used.

Food Selection: Similarities and Differences

Food selections by women in 1985 and 1977 were alike in many ways. Most women in both years had some food from each

of four major groups. About 90 percent of them had at least one vegetable or fruit, at least one grain product, and at least one meat, poultry, or fish item. Only about 75 percent in each year had milk or a milk product.

While diets were similar from a broad perspective, women's diets in 1985 differed in several ways from those in 1977. One change was that today's women tend to eat

more food as mixtures of two or more ingredients. For example, women ate an average of one-third more meat, poultry, and fish mixtures than in 1977—mainly in such forms as stews, sandwiches, and frozen entrees (*table 1*). Grain mixtures, such as pizza and spaghetti, were up more than two-thirds.

While meat mixtures rose, about a third less meat—beef, pork, lamb, veal, organ

Table 1. What Women Ate in 1977 and 1985

	Average Intake, 1985			Change from 1977		
	All incomes	Low income ¹	High income ¹	All incomes	Low income ¹	High income ¹
	<i>Grams</i>			<i>Percent</i>		
Meat, poultry, fish	181	188	179	- 3	8	- 8
Meat ²	56	64	48	-34	-16	-47
Poultry	22	29	22	- 8	0	-12
Fish, shellfish	13	13	12	18	18	20
Mixtures ³	88	77	94	35	33	38
Milk, milk products ⁴	259	203	270	4	-15	10
Whole milk	64	77	50	-35	-42	-32
Skim, lowfat milk	77	43	86	60	43	59
Cheese	18	12	20	6	- 8	0
Eggs	18	22	16	-28	-29	-30
Legumes, nuts, seeds	22	21	19	5	-16	12
Vegetables	173	144	186	- 7	-21	- 6
Fruits	119	86	140	- 7	-15	- 5
Grain products	209	234	209	29	31	28
Bread, other baked goods	95	89	98	10	5	11
Cereals, pastas	40	61	32	25	9	14
Mixtures ⁵	74	84	79	72	127	68
Carbonated soft drinks	287	253	309	53	44	65
Regular	179	210	170	28	44	34
Low-calorie	105	42	138	123	40	130
Alcoholic beverages	84	50	110	53	47	43

¹Low-income is defined as 130 percent of the poverty line and below; high income, over 300 percent of the poverty line.

²Beef, pork, veal, lamb, organ meats (cooked edible parts only), frankfurters, sausages, and luncheon meats. ³Mainly meat, poultry, or fish, such as stews and sandwiches. ⁴Milk equivalent in terms of calcium content. ⁵Mainly grain products, such as pizza and pasta with sauce.

Peterkin is acting administrator of USDA's Human Nutrition Information Service, and Rizek is director of that agency's Nutrition Monitoring Division.

For More Information

This article is a summary of just some of the aspects of CSFII-85. For more information on the survey itself and the diets of American men, women, and children see the following reports:

No. 85-1. Women 19-50 Years and Their Children 1-5 Years, 1 Day, 1985.

No. 85-2. Low-income Women 19-50 Years and Their Children 1-5 Years, 1 Day, 1985.

Upcoming reports include:

No. 85-3. Men 19-50 Years, 1 Day, 1985.

No. 85-4. Women 19-50 Years and Their Children 1-5 Years, 6 Days, 1985.

No. 85-5. Low-income Women 19-50 Years and Their Children 1-5 Years, 6 Days, 1985.

For information about these reports, write to Human Nutrition Information Service, Federal Building, Hyattsville, MD 20782, or call (301) 436-8457.

meats, sausages, frankfurters, and luncheon products—was eaten separately. The amount of poultry and fish and shellfish eaten in 1985 remained well below red meat and changed less from 1977 than the meat figures did.

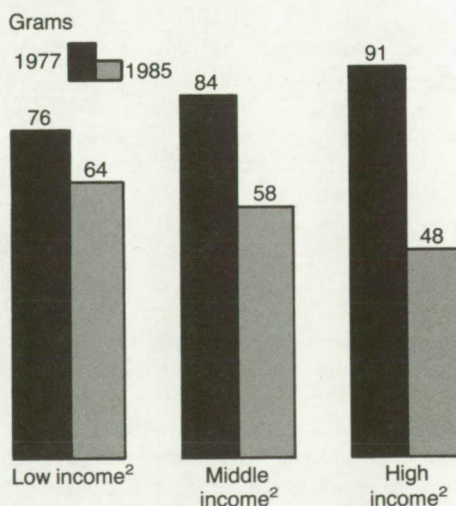
Surveys for the last several decades have shown that consumption of red meat increases as income rises. People who could

afford it bought meat and more of it.

However, the 1985 CSFII suggests this pattern might be changing for women.

The amount and types of food eaten were assessed at three household income levels: low (130 percent of poverty and below), medium (131 to 300 percent of poverty), and high (over 300 percent of poverty). (For purposes of comparison, the Federal Government's official poverty level for a family of four was \$5,850 in 1977 and \$10,650 in 1985.) When looking at the 1977 data, the pattern of greater meat consumption by high-income women appears. In 1977, these women ate almost 20 percent more meat than low-income ones; in 1985, high-income women reported 25 percent less meat consumption than low-income women (*figure 1*). Although the amount of meat eaten was lower in 1985 than in 1977 in both the high-income and low-income groups, the percentage decline was greatest for the high-income women (47 percent versus 16 percent).

Figure 1. Women's 1985 Meat Consumption Decreased as Income Rose¹



¹Average intake on surveyed day by women 19 to 50 years old.

²Low income defined as under 131 percent of poverty; middle income, 131 to 300 percent; high income, over 300 percent.

Source: Unpublished data from NFCS 77-78 and CSFII-85, HNIS, USDA.

Women Drinking More Skim or Lowfat, Less Whole Milk

As a group, women used about the same amount of milk and milk products in 1977 and 1985. However, the women drank about 35 percent less whole milk in 1985 than in 1977, while lowfat and skim milk was up 60 percent. Low-income women consumed 15 percent less milk and milk products in 1985 than in 1977; high-income women, 10 percent more. Lowfat and skim intake was higher at each of the three income levels in 1985, but the spread between 1985 and 1977 was greatest for the high-income women. Furthermore, in 1985, high-income women took about two-thirds of their fluid milk as skim or lowfat, compared with one-third for low-income women. (*For more information on milk and calcium intake by women, see next article.*)

Despite nutrition advice to eat more vegetables and fruits, the amount eaten by women in 1985 didn't gain from 1977. In fact, low-income women ate somewhat less.

On the whole, women ate more grain products in 1985 than in 1977. Grain mixtures, such as pizza and pasta with sauce, had the greatest gain over the period.

These increases were apparent for all three income groups, though low-income women led with a 127-percent rise.

Carbonated soft drinks also rose, from an average of about 6 ounces a day for all women in the 1977 survey to about 10 ounces in 1985. On the day surveyed, 54 percent of the women drank soft drinks. These soft drink users averaged about 18 fluid ounces a day. Women in all three income groups drank more soft drinks, with the largest gains for high-income women. Low-calorie soft drinks were more popular among high-income women, accounting for 45 percent of their soft drinks, compared with 17 percent among low-income women.



American women are eating more meat mixtures, drinking more soda, and replacing more whole milk with skim and lowfat.

The Bottom Line: Is the Diet Nutritious?

A shift in how much is eaten of a single food or type of food by itself is not nutritionally bad or good. Rather, the total diet must be assessed for nutritional quality.

The nutrient content of foods eaten was estimated using special data bases developed by USDA's Human Nutrition Information Service. Estimates for 1977 reflected food composition data for 15 food components available at the time of the 1977 survey. However, the number of food components

studied was expanded to 27 in the 1985 survey. The 27 components included food energy (calories), protein, three types of fat and total fat, cholesterol, carbohydrate, dietary fiber, ten vitamins and six minerals, and two electrolytes (sodium and potassium).

Not only have more components been studied, but the actual nutrient content of certain foods has changed since 1977. Some of the change is attributable to new varieties of familiar foods, such as carrots and sweet potatoes, which are now deeper in color and contain more vitamin A. Also, more nutrients have been added to some foods that are enriched and fortified. For example, the amount of iron and B-vitamins ad-

ded to bread that is labeled "enriched" is higher than it was in 1977.

The average diet of American women in 1985 was above the Recommended Dietary Allowances (RDA's) for eight of the 15 nutrients studied for which RDA's are set. The eight were protein, vitamin A, thiamin, riboflavin, niacin, vitamin B12, ascorbic acid, and phosphorous. Women were taking in less than the RDA's of vitamin B6, folacin, vitamin E, calcium, iron, magnesium, and zinc. Consuming less than the RDA's does not necessarily signal an inadequate diet, because to be on the safe side, the RDA's are set above the needs of most people. However, the risk of inadequacy is greater for groups with average intakes that fall below the RDA's.

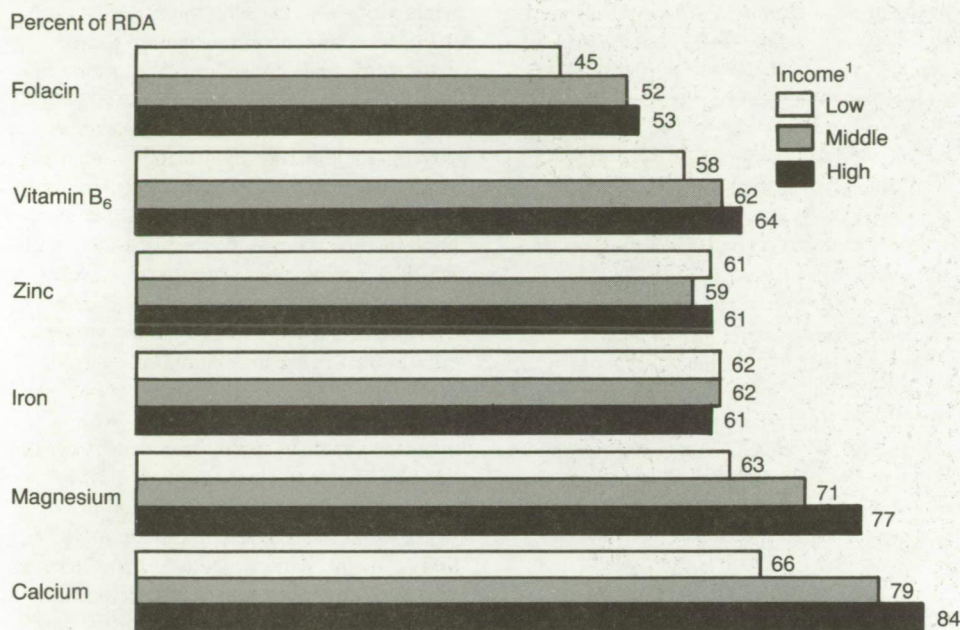
Of the seven nutrients falling short of the RDA's, only vitamin E, at 97 percent, came close. Women's consumption of the other six in 1985 averaged half to three-fourths of the RDA's. However, compared with 1977, consumption was as high or higher for four of the six: calcium, magnesium, iron, and vitamin B (table 2). Cal-

Table 2. Calcium Gains Most, Though Still Below RDA's¹

Nutrient ²	1977	1985
Percent of RDA		
Food energy	77	82
Calcium	69	78
Iron	56	61
Magnesium	71	72
Zinc	(³)	60
Vitamin B ₆	60	61
Folacin	(³)	51
Vitamin E	(³)	97

¹One day, spring 1977 and 1985. ²Includes only nutrients where women's average intakes were below RDA's. ³Intake not estimated in 1977.

Figure 2. Diets of High- and Low-Income Women are Short of RDA Goals for Some Nutrients



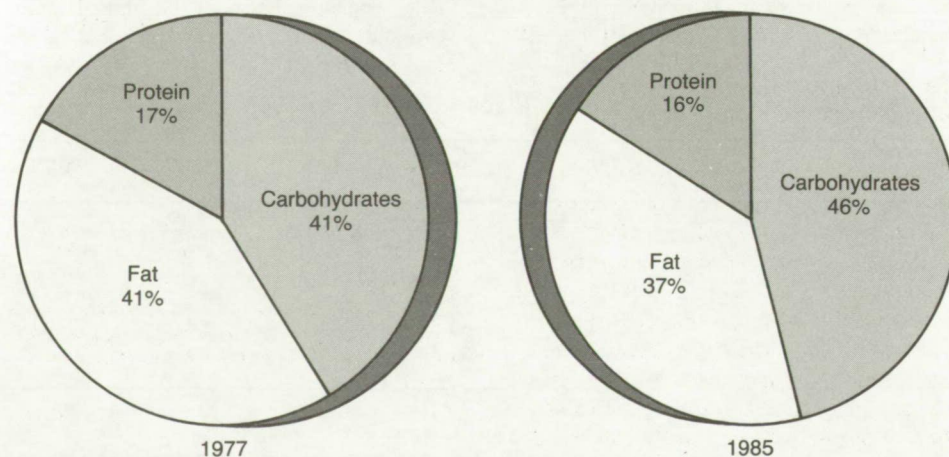
¹Low income defined as under 131 percent of poverty; middle income, 131 to 300 percent; high income, over 300 percent.
 Source: CSFII-85, HNIS, USDA.

cium showed the most improvement, rising from 69 percent of the RDA in 1977 to 78 percent in 1985. Zinc and folacin were not studied in 1977.

Consumption of calcium, magnesium, vitamin B₆, and folacin increased slightly with income in 1985, but iron and zinc did not (figure 2). This probably reflects the fact that high-income women ate less meat—rich sources of iron and zinc.

The major nutritional change between 1977 and 1985 was in the sources of calories. Of the primary sources of calories (carbohydrates, fat, and protein), the amount of carbohydrates increased, while fat decreased (figure 3). Carbohydrates from starch and sugars provided 46 percent of calories in 1985, up from 41 percent. Fat provided 37 percent of calories, down from 41 percent in 1977. The percentage of calories from fat declined for all three income groups, with a less pronounced decline for high-income women. These reported differences may reflect updated nutrient data bases and improved survey procedures, such as increased, detailed questioning by 1985 interviewers concerning the use of fat, as well as actual changes in consumption. □

Figure 3. Fat Provided Less of Women's Calories in 1985



Source: CSFII-85, HNIS, USDA.

Calcium in Women's Diets

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The Winter 1986 (NFR-32) issue of the National Food Review included "Closeup on Calcium" in the food supply. The following article provides another look at that topic, focusing on the amount of calcium in the diets of women—the group that often falls short of recommended levels of calcium.

For many years we've heard of calcium's role in building strong bones in children. More recently, however, evidence has indicated that too little calcium is one factor associated with osteoporosis, a bone disorder characterized by decreased bone mass and increased susceptibility to fractures—occurring more frequently in women. A 1985 USDA food consumption survey reveals that the average amount of calcium in the diets of American women 35-50 years old is less than 80 percent of the current Recommended Dietary Allowances (RDA's).

What's more, in 1984 the National Institutes of Health Consensus Conference on osteoporosis concluded that the current RDA of 800 milligrams (mg) of calcium for women is too low. Although dietary calcium is only one of the factors associated with the development of osteoporosis in post-menopausal women, the conference panel recommended increasing the level to 1,000 to 1,500 mg per day as a preventive measure, beginning well before menopause.

In light of heightened concern about calcium, researchers at USDA's Human Nutrition Information Service (HNIS) recently looked at how much calcium women take in and from what foods they receive it. The data were taken from the 1985 Continuing Survey of Food Intakes by Individuals (CSFII) (see sidebar box) and were compared with the same information from the 1977-78 Nationwide Food Consumption Survey (NFCS).

The author is a nutritionist with the Guidance and Education Research Branch of the Nutrition Education Division, Human Nutrition Information Service, USDA. Technical assistance was provided by Bruce Gray, Renee Powell, and Joseph Goldman of the Survey Statistics Branch.

Calcium Intake Up, But Varies Among Groups of Women

As the first step in assessing the amounts of dietary calcium, HNIS researchers compared women's diets in 1985 and 1977. In general, women in 1985 reported diets that were about 5 percent higher in food energy (calories) than they did in 1977. Similarly, the diets of the 1985 respondents were as high or higher in vitamins and minerals. However, interviewers for the 1985 survey asked more questions to ensure respondents included often-forgotten foods, and this increased probing may account for some of the rise in calories and nutrients.

The average calcium intake of women was significantly higher in 1985 than in 1977 (table 1). For women 19 to 34 years old, it rose 12 percent to 685 mg per day. Women 35 to 50 reported an increase of almost 18 percent to 606 mg per day. Despite the gains, however, the 1985 average amount of calcium in the diets of women 19 to 34 was only 81 percent of the RDA and only 75 percent of the RDA for the older group. In both survey years, women 19 to 34 reported diets significantly higher in calcium than those 35 to 50 years old.

Between 1977 and 1985, the average amount of dietary calcium increased significantly for white women, women living in the Midwest or South, in the central city or suburban areas, and at middle and high in-

comes (table 2). In both years, the average amount of calcium in the diets of black women was significantly lower than that of white women or those of other races.

In 1985, low-income women reported diets significantly lower in calcium than women with middle or high incomes. Among middle- and high-income women, dietary calcium was significantly higher in 1985 than in 1977. No significant increase was noted for the low-income women. High-income women averaged 688 mg daily in 1985, versus 549 for those in the low-income group. In contrast, average daily consumption for the three income classes only ranged between 548 and 581 mg in 1977.

In the 1985 survey, all women were asked about their employment status, education, and number of children ages 1 to 5 they had at home. (Only a subsample of women was asked these questions in 1977). Sixty percent of the women in the 1985 survey were employed either full- or part-time, but their calcium intakes didn't differ significantly from those not working. About 41 percent of the women in the 1985 survey had at least some college, while 59 percent had a high school education or less. On average, women with a college background had significantly more calcium in their diets than the others. Approximately 27 percent of the women had at least one child 1 to 5 years old at home. These women had sig-

Table 1. Calcium in Women's Diets Rises from 1977 to 1985

Age	1977	1985	1977	1985	1977	1985
	mg/day		mg/1,000 Kcal		Percent of RDA	
Women						
19 to 34	611	685 ¹	389	402	74	81 ¹
35 to 50	515	606 ¹	352	392 ¹	64	75 ¹
All	570	651 ¹	374	398 ¹	69	78 ¹

¹Statistically significant increase from 1977 to 1985.
Source: U.S. Department of Agriculture's 1977-78 Nationwide Food Consumption Survey and 1985 Continuing Survey of Food Intake by Individuals.

Table 2. Amount of Dietary Calcium Varies Among Women

	1977	1985
	<i>mg/day</i>	
Race		
White	588	678 ¹
Black	471	487
Other	486	549
Region		
Northeast	603	633
Midwest	581	730 ¹
South	491	576 ¹
West	636	702
Income		
Low ²	548	549
Middle ²	583	667 ¹
High ²	581	688 ¹
Urbanization		
Central city	591	684 ¹
Suburban	573	653 ¹
Nonmetropolitan	547	598
Employment ³		
Employed (full- or part-time)	NA	659
Not employed	NA	640
Education ³		
High school or less	NA	606 ⁴
Some college	NA	716
Child 1-5 years at home ³		
None present	NA	630 ⁴
At least one	NA	706

¹Statistically significant increase from 1977 to 1985.

²Low income is below 131 percent of the poverty level; middle, 131 to 300 percent; high, over 300 percent. In 1977, the poverty level for a family of four was \$5,850, versus \$10,650 in 1985. ³Comparable data were not available for these characteristics in 1977. ⁴Statistically significant difference between groups.

Source: U.S. Department of Agriculture's 1977-78 Nationwide Food Consumption Survey and 1985 Continuing Survey of Food Intake by Individuals.

nificantly more calcium in their diets than those with no children this age.

While the amount of calcium in the diet varies by income, education, and race, these characteristics are not necessarily the causes. Diet is affected by many factors, some of which are difficult to measure, such as food preferences and attitudes towards food and health.

Beyond total daily calcium intake, it is also important to look at the amount obtained per 1,000 calories, technically termed calcium density. The more calcium per 1,000 calories in the diet, the more calcium dense it becomes. For example, a diet containing several foods, such as lowfat dairy products or green leafy vegetables that are calcium rich yet low in calories, is likely to be calcium dense. Overall, the calcium density of women's diets was significantly higher in 1985 than in 1977, suggesting that women ate more foods that are good sources of calcium and relatively low in calories.

About the Data Sources...

The results reported in this article were drawn mainly from two USDA food consumption surveys. In the 1977-78 Nationwide Food Consumption Survey, 36,000 people reported what they ate for 3 consecutive days. The survey asked a wide variety of questions regarding what was eaten, how much, and the source of the food, as well as a number of characteristics about the individuals and their households.

USDA's HNIS researchers used the data from the first of these 3 days in the 1977 survey (involving 2,228 women 19 to 50 years of age) and compared them with the first 1-day recall from the HNIS Continuing Survey of Food Intakes by Individuals. The 1985

Dairy Products: Major Providers of Calcium

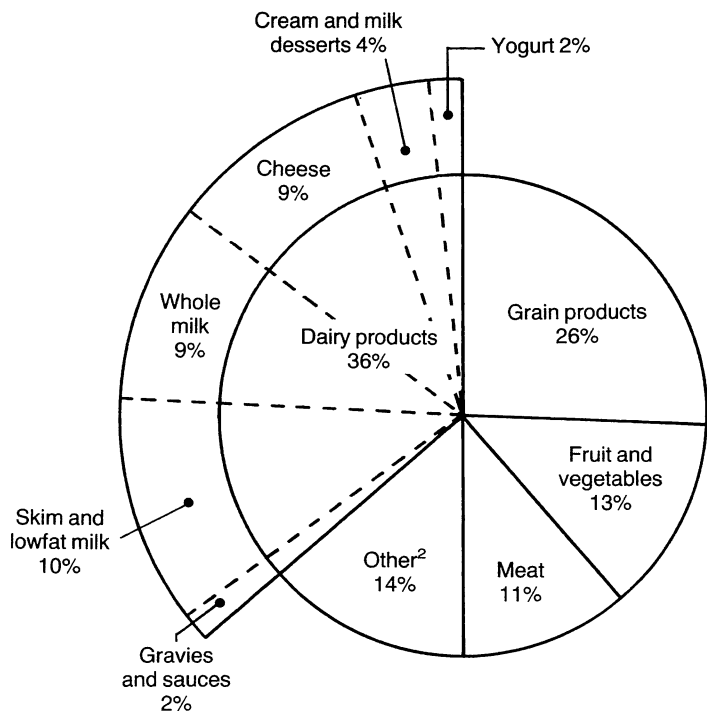
Calcium can come from many foods, but milk and milk products were the major contributors to women's calcium intake in 1985, providing about 36 percent (*figure 1*), compared with 39 percent in 1977. Fluid milk, including whole, lowfat, and skim, contributed about 19 percent in 1985. The food group contributing the next largest share of calcium was grain products, including breads and other baked goods, cereals, pastas, and grain mixtures such as macaroni and cheese and pizza. These foods accounted for 26 percent of total calcium in women's diets.

In the one-day recall, fewer women reported using fluid milk in 1985 than in 1977. However, there was no significant difference in the average amount consumed, suggesting that those who drank milk increased their share. Women's consumption of whole milk was significantly lower in 1985 than in 1977, while skim and lowfat milk was significantly higher (*table 3*).

survey includes six 1-day dietary recalls by 1,503 women and their children, if any, between 1 and 5 years. Survey data were collected over a year.

Data from the first 1-day recall for 1985 have been published in the *Nationwide Food Consumption Survey: Continuing Survey of Food Intakes by Individuals, Women 19 to 50 Years and Their Children, 1 to 5 Years, 1 Day*. The report is available from the U.S. Government Printing Office, Washington, D.C. 20402. The stock number is 001-000-04458-3, and the price is \$4.50. Make checks or money orders payable to the Superintendent of Documents. For faster service, call the GPO order desk at (202) 783-3238.

Figure 1. Dairy Products Provided the Largest Share of Women's Calcium in 1985¹



¹Women 19 to 50 years old. ²Includes eggs, nuts, seeds, legumes, fats and oils, sugars and sweeteners, and alcoholic and nonalcoholic beverages. Source: CSFII-85, HNIS, USDA.

Some recent studies have shown that women getting a lot of calcium obtain a greater percentage of it from dairy products than women with low calcium intakes. An HNIS study using NFCS 1977-78 data revealed that women consuming 800 mg or more of calcium obtained more than 60 percent from milk and milk products. Women getting less than 560 mg obtained only 30 percent of their calcium from dairy products. Results of a Pennsylvania State University study using the 1977 data showed that, for over three-quarters of those surveyed, whenever two or more foods from the milk group were reported in one day, the calcium intake was at least 80 percent of the RDA.

Many women who want to increase their consumption of milk and milk products to meet calcium needs may be concerned about the fat content of some of these foods. In 1985, the milk and milk products group contributed about 11 percent of women's total calories and about 14 percent of their fat intake. Most of the fat from this group comes from cheese, cream, and milk desserts. Skim and lowfat milk, considered rich in calcium yet low in calories, overall provided 10 percent of women's total calcium and only 2 percent of the total fat in their diets. Switching from whole to lowfat milk products as a way to avoid too much fat in the diet is one of the tips suggested in the Dietary Guidelines for Americans, issued by the Departments of Agriculture and Health and Human Services (HHS).

Milk is an important source of calcium. However, only about half of all women reported using fluid milk in the 1985 survey. The overall average daily intake was 141 grams or about half a cup. About 20 percent reported avoiding whole milk only, while 7 percent indicated they avoided all milk.

Table 3. Women's Consumption of Dairy Products

	Intake		Women using	
	1977	1985	1977	1985
	Grams per day		Percent	
Total fluid milk	148	141	54.9	51.4
Whole	98	64 ¹	39.0	26.0
Lowfat/skim	48	77 ¹	16.1	26.1
Yogurt	6	8	2.9	4.5
Cheese	17	18	27.5	33.9
Cream and milk desserts	19	24 ¹	20.0	25.0

¹Statistically significant difference from 1977 to 1985.

Source: U.S. Department of Agriculture's 1977-78 Nationwide Food Consumption Survey and 1985 Continuing Survey of Food Intake by Individuals.

As might be expected, women avoiding milk of all kinds had a significantly lower average calcium intake than those who didn't. However, the average amount of calcium in the diets of women who said they only avoided whole milk was significantly higher than those not avoiding whole milk. Women who avoided whole milk likely chose to drink skim or lowfat instead, and in large enough amounts to significantly increase the calcium in their diets.

For women who do not drink milk regularly, alternate sources of calcium become increasingly important. These include products made from milk, such as yogurt and cheese; dark green leafy vegetables, such as kale, spinach, and collards; and fish with edible bones, such as salmon and sardines.

Beverage Choices and Other Dietary Trends

With milk consumption down, what other beverages are American women drinking? For a starter, the average daily intake of carbonated soft drinks rose from 6 fluid ounces in 1977 to about 10 fluid ounces in 1985. Over half of the women surveyed in 1985 drank carbonated soft drinks. Women's consumption of both regular and low-calorie soft drinks rose significantly. In fact, consumption of low-calorie soft drinks doubled between 1977 and 1985.

In 1985, 15 percent of the women surveyed reported using alcoholic beverages, compared with 12 percent in 1977. Women reported drinking significantly more alcoholic beverages in the one-day recall in 1985 than in 1977—84 grams a day in 1985 (about 3 fluid ounces), compared with 55 grams (about 2 fluid ounces) in 1977.

Trends in alcohol use, however, are

difficult to interpret from a survey of this type for several reasons, including possible intentional underreporting.

Over half of the women surveyed in 1985 reported drinking coffee and one-third, tea. The average amount of each consumed by all women did not change significantly from 1977 to 1985.

Approximately 13 percent of the 1985 respondents reported that they were currently on a special diet, the majority of these being low-calorie diets. Women on a special diet had significantly less calcium in their diets than other women. However, the calcium density of their diets was significantly higher than those not on special diets, suggesting those on diets included more calcium-dense foods in their meals. In 1985, 4 percent of the women reported they were vegetarians; the average amount of calcium in the vegetarians' diets did not differ significantly from other women. But here again, their calcium density was above that of nonvegetarians.

The percentage of women who reported using vitamin and mineral supplements increased from 39 percent in 1977 to 58 percent in 1985. Interestingly, in both years, supplement users got more calcium from food than the nonusers. These findings were similar to those found in the recent HHS National Health and Nutrition Examination Survey II. Since it is difficult to collect accurate figures on the quantity and dose of supplements taken, the amount of calcium provided by them is usually not reported. However, a 1980 Food and Drug Administration survey revealed that women between 25 and 64 years who used supplements got an average of 24 percent of their RDA for calcium from them. □

References

- Consensus Conference, National Institutes of Health. "Osteoporosis." *Journal of American Medical Association*, 252(1984):799-802.
- Crocetti, Annemarie F. and Helen A. Guthrie. "Eating Behavior and Associated Nutrient Quality of Diets." *A Study of Food Consumption Patterns in the United States*. Final Report for contract with the Human Nutrition Center, USDA. Anarex Systems Research Corporation, New York, New York. Unpublished. October 1982.
- Koplan, Jeffrey P., Joseph L. Annett, Peter M. Layde, and George L. Rubin. "Nutrient Intake and Supplementation in the United States (NHANES II)." *American Journal of Public Health*, 76(1986):287-89.
- Moshfegh, Alanna J. and Susan O. Welsh. "Characteristics of Vitamin and Mineral Supplement Users and Nonusers." Speech at American Dietetic Association Annual Meeting, New Orleans, Louisiana. October 1985.
- Pao, Eleanor M. and Sharon J. Mickle. "Problem Nutrients in the United States." *Food Technology*, 16(1981):58-78.
- Stewart, Michael L., Janet T. McDonald, Alan S. Levy, Raymond E. Schucker, and Douglas P. Henderson. "Vitamin/Mineral Supplement Use: A Telephone Survey of Adults in the United States." *Journal of American Dietetic Association*, 85(1985):1585-90.
- U.S. Department of Agriculture. "Nationwide Food Consumption Survey: Continuing Survey of Food Intakes by Individuals, Women 19 to 50 Years and Their Children, 1 to 5 Years, 1 Day." *NFCS, CSFII, Report No. 85-1*. Washington, D.C.: Human Nutrition Information Service, Nutrition Monitoring Division, November 1985.

Finding Best Buys Among Meats and Alternates

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Meat, poultry, and fish are sources of high-quality protein. Together they supply nearly half of America's total protein intake. In addition, they provide several B vitamins, iron, zinc, and certain other minerals. Several of these nutrients fall short of recommended levels in U.S. diets.

However, most meat, poultry, and fish items are expensive relative to other foods, accounting for over a third of all money spent on food used at home. Careful selections among these items, nevertheless, can mean savings.

If additional savings and variety are desired, some meat can be replaced with meat alternates, such as dry beans, dry peas, peanut butter, and eggs. Meat alternates are usually less expensive than meat, yet provide protein and many other nutrients found in meat, poultry, and fish. In fact, it's nutritionally beneficial to vary choices among meats and meat alternates since each of these foods has distinct advantages.

Comparing Costs

One way to find the best buys among meats and meat alternates is to compare the cost of foods that provide 20 grams of protein—about a third of the Recommended Dietary Allowance for a man and nearly half for a woman (*table 1*). This is the approximate amount of protein in a single serving (about 3 ounces) of cooked lean beef, pork, lamb, veal, chicken, turkey, or fish.

The cost of 20 grams of protein from the various meats and meat alternates reflects differences in retail prices and in the amount needed to provide 20 grams. For example, turkey at 35 cents for 20 grams of protein is a better buy than bacon at \$1.01. The average retail price of turkey was

Table 1. Recommended Dietary Allowances for Protein

	Age	Grams of protein per day
Children	1-3	23
	4-6	30
	7-10	34
Males	11-14	45
	15-18	56
	19 and older	56
Females	11-14	46
	15-18	46
	19 and older	44
	Pregnant	75
	Lactating	65

Source: National Academy of Sciences, "Recommended Dietary Allowances," Ninth Edition, 1980.

\$1.05 a pound in 1985, versus \$1.94 for bacon. Furthermore, only one-third of a pound of turkey is needed to provide 20 grams of protein, compared with over half of a pound of bacon (*table 2*). Equal to about 10 slices of bacon, this is well over the usual serving size.

For some other meats and alternates, well over a serving is also required for 20 grams of protein: four frankfurters, three and a half eggs, or four and a half tablespoons of peanut butter, for example. (Generally, smaller amounts of these foods can be used with other protein sources to provide the day's needs.)

Regional variation in protein costs for specific items is due to differences in retail prices. For some products, canned tuna or peanut butter for example, the cost difference among regions in 1985 was very small—2 to 3 cents per 20 grams of protein. For other products, such as smoked ham or chicken breasts, the difference was much greater—9 cents per 20 grams (*table 2*).

Price differences among meats and meat alternates within regions can make some items a better buy in one area than another. The 1985 average retail price of canned

salmon, for example, was much lower in the West than elsewhere. As a result, salmon ranked as the eighth cheapest source of protein in the West, but twelfth in other regions (*table 3*).

Though the order of best buys among meats and their alternates is not identical for the United States and each region, eggs, beef liver, peanut butter, whole chicken, regular ground beef, frozen turkey, and canned tuna were consistently among the top seven in 1985. These products ranged from a U.S. average of 22 cents for 20 grams of protein from eggs to 36 cents for canned tuna. Among the most expensive sources of protein for each region were bacon, rib roast, and porterhouse steak, all three posting a U.S. average of more than a dollar for 20 grams of protein.

Looking at Other Meat Alternates

Dry beans and peas are economical sources of protein. (About 1-1/3 cups of cooked dry beans or peas provide 20 grams of protein). In fact, past studies using prices for just Washington, D.C., showed these foods to be the best protein buy. However, these meat alternates were not included in the latest Human Nutrition Information Service estimates because nationwide prices were not available.

In addition to protein, dry beans and peas, like meat items, are good sources of other nutrients—some of them below recommended levels in many diets. Dry beans and peas are also excellent sources of starch and dietary fiber—two substances stressed in the latest version of the Departments of Agriculture and Health and Human Services' Dietary Guidelines for Americans (*see NFR-33*).

Like meat, dairy products are good sources of high-quality protein. Some, such as milk, are among the most economical protein sources; others, such as yogurt, are as costly as the more expensive cuts of meat. While cheese and yogurt are used as main dishes at some meals, they are not considered meat alternates because they are

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relatively poor sources of several minerals. For example, red meat is an important source of iron in the diet, but milk and milk products are low in this nutrient.

Although grain products are generally not used as meat alternates in meals, they do provide protein. However, this protein is lower quality than that in meat, because it does not supply as complete an assortment of amino acids—the building blocks of protein—as animal products do. However, grain products contain several other important nutrients for which meats and alternates are valued, including iron and niacin.

Furthermore, most grain products are economical and can be used in many ways to help stretch the food dollar. For example, bread and other grain products, such as pasta and rice, can be used in a main dish along with a small amount of meat, poultry, fish, or cheese. In such combinations, the lower quality protein in the grain product is complemented by the higher quality protein in meat.

Other Considerations May Affect Choices

The cost of protein is only one consideration in selecting meats and meat alternates.

Although they are rich sources of protein and other important nutrients, some also contain considerable amounts of fat and dietary cholesterol. The Dietary Guidelines suggest, among other recommendations, that consumers “avoid too much fat, saturated

Going Shopping?

USDA's Human Nutrition Information Service (HNIS) estimates of the cost of protein provide guidelines for finding the best buys among meats and meat alternates. But prices do vary among cities and supermarkets within a city. What's more, the costs of items are heavily influenced by “specials.” Therefore, the most meaningful comparisons are those consumers make where they shop.

To compare protein costs from different sources, multiply the retail price by the part of a pound or other market unit that results in 20 grams of protein (see “percent of market unit” column in table 2). For example, if whole chicken costs 69 cents a pound, the calculation would be $.69 \times 42$ percent = 29 cents per 20 grams of protein.

Twice each year, HNIS publishes nationwide costs of meats and meat alternates. For a free copy of the most recent cost comparisons, contact the Human Nutrition Information Service, Room 325A, 6505 Belcrest Road, Hyattsville, Maryland 20782. Further information on finding best buys in meats and other foods is provided in Home and Garden Bulletin Number 183, “Your Money's Worth in Foods” and in Home and Garden Bulletin Number 244, “Thrifty Meals for Two: Making Food Dollars Count.” These publications may be purchased from the Consumer Information Center, Pueblo, Colorado 81009 at a cost of \$2.25 and \$2.50, respectively.

Table 2. From Eggs to Steak: Cost of 20 Grams of Protein Varies¹

Food	Market unit	Percent of market unit to give 20 grams of proteins ²	Cost of 20 grams of protein	
			United States	Range for regions
		Percent	Dollars	
Eggs, large (grade A)	doz.	28	.22	.20-.25 ³
Beef liver	lb.	25	.24	.23-.24
Peanut butter	18 oz.	14	.24	.23-.26
Chicken, whole, ready-to-cook	lb.	42	.32	.30-.35
Ground beef, regular	lb.	27	.33	.31-.37
Turkey, whole, frozen	lb.	33	.35	.34-.36
Tuna, light chunk, canned	6½ oz.	42	.36	.36-.38 ³
Ground chuck	lb.	25	.42	.40-.46
Ham, half, smoked, bone-in	lb.	33	.42	.39-.48
Chicken breasts, bone-in	lb.	27	.45	.42-.51
Chuck roast of beef, bone-in	lb.	29	.46	.44-.49
Salmon, pink, canned	15½ oz.	22	.50	.47-.52 ³
Round roast of beef, bone-out	lb.	23	.57	.55-.60
Round beefsteak, bone-out	lb.	22	.62	.58-.64
Ham, canned (3-5 lb.)	lb.	26	.67	.65-.68
Frankfurters, all meat	lb.	39	.71	.65-.73
Pork chops, center cut, bone-in	lb.	32	.75	.71-.79
Sirloin beefsteak, bone-in	lb.	26	.77	.75-.80 ³
Haddock fillets, frozen	lb.	26	.78	.64-.81 ³
Bologna	lb.	38	.80	.77-.90
Pork sausage, bulk	lb.	47	.82	.78-.87 ³
Bacon, sliced	lb.	52	1.01	.98-1.07
Rib roast of beef, bone-in	lb.	32	1.05	1.03-1.08
Porterhouse beefsteak, bone-in	lb.	30	1.21	1.18-1.24

¹Based on 1985 average monthly retail price of food items collected by the Bureau of Labor Statistics, U.S. Department of Labor, and the National Marine Fisheries Service, U.S. Department of Commerce. ²About one-third of the daily recommended allowance for a man. ³Price data available in only three regions.

Table 3. Ranking the Costs of Meats and Alternates

Food	United States	Northeast	Midwest	South	West
Order of cost ¹					
Eggs, large (Grade A)	1	3	1	1	NA
Beef liver	2	1	2	2	1
Peanut butter	3	2	3	3	2
Chicken, whole, ready-to-cook	4	4	4	4	4
Ground beef, regular	5	6	5	6	3
Turkey, whole, frozen	6	5	6	5	5
Tuna, light chunk, canned	7	7	NA	7	6
Ground chuck	8	8	7	10	7
Ham, half, smoked, bone-in	9	9	9	8	9
Chicken breasts, bone-in	10	10	8	9	11
Chuck roast of beef, bone-in	11	11	10	11	10
Salmon, pink, canned	12	12	NA	12	8
Round roast of beef, bone-out	13	13	11	13	12
Round beefsteak, bone-out	14	14	12	14	13
Ham, canned (3-5 lb.)	15	16	14	15	14
Frankfurters, all meat	16	17	13	16	15
Pork chops, center cut, bone-in	17	18	15	17	16
Sirloin beefsteak, bone-in	18	19	16	21	NA
Haddock fillets, frozen	19	15	NA	20	17
Bologna	20	20	17	19	18
Pork sausage, bulk	21	NA	18	18	19
Bacon, sliced	22	21	19	22	20
Rib roast of beef, bone-in	23	22	20	23	21
Porterhouse beefsteak, bone-in	24	23	21	24	NA

¹From least to most costly. NA = Price data not available.

Source: Based on costs per 20 grams of protein calculated from 1985 average monthly retail price of food items collected by the Bureau of Labor Statistics, U.S. Department of Labor, and the National Marine Fisheries Service, U.S. Department of Commerce.

fat, and cholesterol." Here are suggestions to implement this guideline:

- Choose lean meat, poultry, fish, and dry beans and peas as protein sources.
- Trim visible fat from meat before cooking. Remove skin from poultry.
- Broil, roast, or simmer meat, poultry, and fish without adding fat. Drain off fat that accumulates during cooking.
- Moderate use of egg yolks and organ meats (such as liver). They are high in cholesterol.
- Use skim and lowfat milk and milk products.

- Moderate use of large amounts of fat as an ingredient in foods you prepare and as spreads for breads.

Comparative preparation time is another factor to consider in selecting meats and meat alternates. Foods in this study covered a wide range of preparation times—from little or none for peanut butter and tuna to 2 to 3 hours or more of cooking time for some larger cuts of meat.

Some of the lower cost selections are also low in fat, saturated fat, and cholesterol, but take longer to prepare—dry beans and peas, for example. On the other hand, foods such as eggs, liver, and peanut butter are economical and quick, but are relatively high in either cholesterol or fat. □

References

- "Composition of Foods...Raw, Processed, Prepared." *Agriculture Handbook No. 8-1, -5, -7, -10, -12*. Washington, D.C.: U.S. Dept. of Agriculture, Human Nutrition Information Service, 1976-84.
- "Composition of Foods...Raw, Processed, Prepared." *Agriculture Handbook No. 8-13*. Washington, D.C.: U.S. Dept. of Agriculture, Human Nutrition Information Service, 1986.
- "Consumer Prices: Energy and Food." *News Release. USDL-85-82, 121, 168, 208, 254, 293, 347, 399, 452, 510, 553; 86-25*. Washington, D.C.: U.S. Dept. of Labor, Bureau of Labor Statistics, February 1985-January 1986.
- "Food Consumption: Households in the United States, Seasons and Year, 1977-78." *Nationwide Food Consumption Survey 1977-78, Report No. H-6*. Washington, D.C.: U.S. Dept. of Agriculture, Human Nutrition Information Service, June 1983, pp. 1, 15.
- "Food Yields Summarized by Different Stages of Preparation." *Agriculture Handbook No. 102*. Washington, D.C.: U.S. Dept. of Agriculture, Agricultural Research Service, 1975.
- "Nutrition and Your Health: Dietary Guidelines for Americans." *Home and Garden Bulletin No. 232*, second edition, Washington, D.C.: U.S. Dept. of Agriculture and U.S. Dept. of Health and Human Services, August 1985.
- "Nutrient Intakes: Individuals in 48 States, Year 1977-78." *Nationwide Food Consumption Survey 1977-78. Report No. 1-2*. Washington, D.C.: U.S. Dept. of Agriculture, Human Nutrition Information Service, May 1984, p. 11.
- Operation Price Watch*. Washington, D.C.: U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, January-December 1985.
- Recommended Dietary Allowances, Ninth Edition*. Washington, D.C.: National Academy of Sciences, Food and Nutrition Board, 1980.

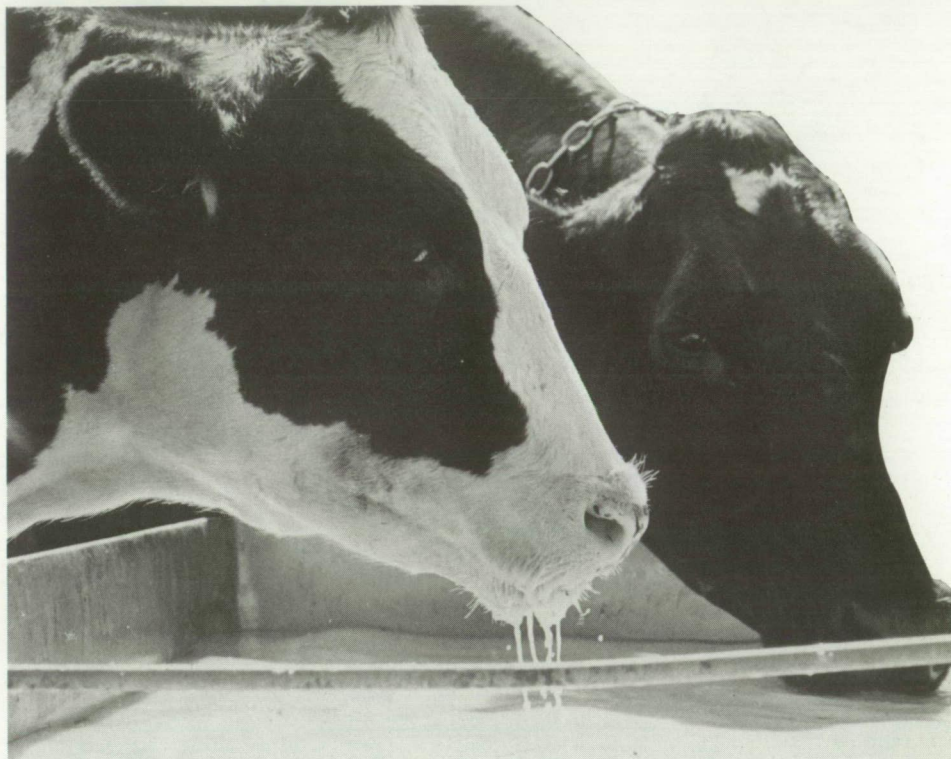
USDA Actions

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USDA regularly implements operational and regulatory changes that affect the status of food and nutrition in the United States. Some of the recent changes are summarized below.

Heptachlor Contamination: In response to the contamination of milk and dairy cattle with the banned pesticide, heptachlor, and the resulting herd quarantines, USDA's Farmers Home Administration (FmHA) will make additional loans available to affected dairy farmers already borrowing from the agency. The contamination affected dairy farmers in parts of Arkansas, Missouri, and Oklahoma. Operators can use the loan funds to buy feed and replace dairy cattle that must be sold or destroyed. FmHA will also increase its loan guarantee program for lenders in these areas.

Dairy Termination Program: USDA has accepted 13,988 bids to participate in the dairy termination program, popularly called the whole-herd buyout, mandated by the Food Security Act of 1985. Many of the 39,534 dairy farmers who applied submitted multiple bids—up to one for each of the three disposal periods—so the total number of bids exceeded 105,700. The disposal periods—the times when producers must export or slaughter their dairy cattle—are April 1-August 31, 1986; September 1, 1986-February 28, 1987; and March 1-August 31, 1987. Bids per hundredweight (cwt) of milk ranged from \$3.40 to over \$1,000. The maximum bid accepted was \$22.50. In the case of multiple bids by an individual, where at least one bid was \$22.50 per cwt or less, the lowest bid was accepted. The dairy termination program will cost \$1.827 billion, spread out over 5 years. Based on participants' 1985 marketings, the program's average cost per cwt will be \$14.88. Assessments will result in an estimated total collection of \$650 to



USDA accepted 13,988 bids to participate in the dairy termination program.

\$700 million. Therefore, the dairy industry will pay for about 38 percent of the cost of the termination program.

To offset the impact of the increased slaughter on livestock markets, USDA will purchase 400 million pounds of red meat. These purchases are in addition to quantities normally bought for the school lunch program and other domestic feeding programs. Of the 400 million pounds, 200 million will be donated to domestic charitable organizations for the needy, nutrition programs for the elderly, nonprofit summer camps for children, and other child nutrition programs. The other 200 million pounds will be exported. Purchases of canned and ground beef began on March 28. Purchases of other red meat products will coincide with the disposal periods.

Biotechnology: USDA has established an Office of Agriculture Biotechnology, which will have responsibility for developing and implementing policies and procedures relating to biotechnology. The new office will assist USDA's Agricultural Recombinant DNA Advisory Committee and the National Biological Impact Assessment Program.

Poultry Grade Standards: USDA has revised its voluntary grade standards for poultry products. The revisions eliminate the duplicate requirement for grading bone-

less breast and thigh parts before and after deboning. Instead, they will be graded only after they are deboned. The revisions provide an additional option for printing the USDA grademark on poultry product packages. Processors will have greater flexibility in displaying the grademark on packages, so that it is easily visible and compatible with various colors of packaging materials.

Bonus Flour for Schools: Since May 20, States have been eligible to receive unlimited amounts of flour for their school lunch and breakfast programs once they use the amount of flour they usually receive. The bonus flour will not be counted as part of the States' regular allotments of USDA-donated foods. The announcement was made so that schools may make plans for next year.

Inspection of Processed Fruits and Vegetables: USDA has issued revised regulations covering inspection and certification of processed fruits, vegetables, and related products. The major changes revise sampling plans by limiting the lot size to correspond to a sample size with a maximum of 29 units; revise and readjust the schedule of fees and charges for inspection; and pro-

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The Federal marketing order for red tart cherries expired at the end of August this year.

vide for control of labels bearing approved grade or inspection marks when a contract for service is canceled.

Honey Promotion Order: Honey producers and importers have voted to adopt a Federal research, promotion, and consumer information order. In a referendum conducted in May, 87.5 percent of honey producers and importers voted for the order, which was authorized by the Honey Research, Promotion, and Consumer Information Act of 1984. Funds to administer the program will be derived from assessments on producers and importers of honey. Only those who produce or import 6,000 pounds or more annually will pay into the program. The assessment will be 1 cent per pound for the first year and cannot be increased more than ½ cent per year thereafter. The maximum assessment cannot exceed 4 cents per pound. A producer or importer who doesn't wish to support the program can obtain a refund on written request. The Honey Board—a 13-member group of producers, packers, importers, and a public representa-

tive appointed by the Secretary of Agriculture—will administer the program.

Oriental Fruit Fly: Since June 14, fresh fruits and vegetables have again moved interstate from areas of California's Los Angeles, Orange, and Santa Clara Counties. These areas had been quarantined since last fall to prevent the spread of the oriental fruit fly. Because of a State-Federal effort, this destructive pest has been eradicated from California.

Surplus Cheese: States may now request additional supplies of surplus cheese for distribution to low-income households through the Temporary Emergency Food Assistance Program. Quarterly allotments of surplus cheese and other commodities are offered to States on a formula using poverty levels and unemployment statistics. Previously, when some States did not order their full allotments of cheese and other States requested additional allotments, reallocations were handled informally on a regional basis. The new system formalizes reallocations on a national basis. When States do not order their full allotments, the remainder will be entered into a national pool. States requesting additional cheese will be able to receive a share of this pool, based on the same factors used in the initial allocations.

Nitrite Levels in Bacon: Effective July 16, the U.S. Department of Agriculture began permitting new methods of processing bacon with less nitrite than previously required. The rule allows plants with USDA-approved quality control programs to reduce sodium nitrite levels in bacon from the previously required 120 parts per million (ppm) to 100 ppm. Nitrite is used to cure or preserve meats and to help prevent botulism, a rare but serious food poisoning. The rule also permits a new method for making bacon—using lactic acid starter cultures and sugar in a curing solution with 40 to 80 ppm sodium nitrite. Only packers with approved quality control programs may use this method. The harmless bacterial cultures in the lactic acid help protect against the growth of organisms that cause botulism. The rule retains the required 120 ppm nitrite level for plants not using the new alternative curing methods. The new regulations apply only to pumped bacon—the most common type produced—not to dry-cured bacon.

Red Tart Cherries: The Federal marketing order for red tart cherries expired August 31, 1986. In a referendum conducted March 10-20, 51 percent of the growers voting favored terminating the order. First established in 1971, the order limited the total quantity of cherries that handlers could freely move into commercial use. The remainder of the crop was frozen and set aside in grower-financed reserve pools during periods of overproduction.

Export Promotion: USDA has announced several targeted export promotion programs for U.S. agricultural products in accordance with the Food Security Act of 1985 (*table 1*). These programs are designed to counter the adverse effects of foreign subsidies, import quotas, or other unfair trade practices on U.S. agricultural exports. □

Table 1. Targeted Export Promotion Programs: United States Takes An Aggressive New Stance

Program	Targeted markets	Reasons for promotion	Cost
Frozen potatoes	Japan, Hong Kong, Taiwan, Malaysia, and Singapore	Help U.S. potato industry, currently troubled by excess supplies and depressed prices.	\$2 million
Arizona and California citrus	Pacific Rim (Japan, Hong Kong, Taiwan, Malaysia, Singapore, Korea, and New Zealand)	Offset adverse effects of the European Community's (EC) preferential tariffs and a retaliatory import duty imposed on U.S. lemons in November 1985.	75 percent of outlays during May-October 1986
Raisins	Western Europe and Pacific Rim countries	Counter adverse effects of EC subsidy and minimum import price system for Greek raisins.	\$6.3 million
Walnuts	Western Europe and Japan	Offset EC retaliatory import duty imposed in November 1985.	\$7 million
Canned peaches and fruit cocktail	Japan and Taiwan	Counter imports of subsidized EC products.	\$2.5 million
Almonds	Western Europe, Japan, and Korea	Offset effects of restrictive import policies of Egypt and India, as well as EC export refund program.	50 percent of outlays during 1986/87 marketing year
Wine	Japan, United Kingdom, Hong Kong, and Singapore	Offset Japan's tariff and excise tax system, which restricts imports of U.S. wine; EC export subsidies; and restrictive import practices in potential markets.	\$2.3 million
Dried prunes	Mainly Western Europe	Targeted at developing and expanding consumption in overseas markets.	\$4 million
Florida citrus	Western Europe and Pacific Rim countries	Counter the impact of EC export subsidies and citrus tariffs on U.S. citrus, and Japanese and Korean import restrictions.	\$4.6 million

Food and Nutrition Legislation

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Numerous food and nutrition bills have been introduced in the 99th session of Congress. Some of the legislation is described below.

Food Assistance

S. 2239—Sen. Jesse Helms (NC)

This bill, entitled the Food Stamp Cost Avoidance Act of 1986, would repeal several changes in the Food Stamp Program made by the Food Security Act of 1985, P.L. 99-198 (see *NFR-33*, p. 32). Specifically, S. 2239 would make the following changes:

- Eliminate the requirement that States grant automatic food stamp eligibility to recipients of Aid to Families with Dependent Children (AFDC) or Supplemental Security Income (SSI).
- Repeal the increase in the earned income deduction—from 18 to 20 percent—that became effective May 1, 1986. This deduction compensates households for mandatory work-related expenses, such as taxes and union dues.
- Repeal the increase in the excess shelter deduction and the establishment of a separate limit on dependent care deductions. The 1985 Act established a separate deduction for dependent care, at \$160 per month, and raised the excess shelter deduction from \$139 to \$147 per month for the 48 contiguous States and the District of Columbia. The deductions for Alaska, Hawaii, Guam, and the U.S. Virgin Islands reflect their differing shelter costs.
- Eliminate the asset limitation increases for food stamp recipients. The 1985 Act raised the asset limit from \$1,500 to \$2,000 for nonelderly households and to \$3,000 for households consisting of one elderly person.
- Repeal the requirement that the Secretary of Agriculture and the National Academy of Sciences conduct studies on the food stamp quality control system. Provisions



mandating a new control system, based on the studies' findings, would also be repealed.

- Freeze the funding levels for Puerto Rico's nutrition assistance block grant program at \$825 million annually, thereby eliminating the scheduled increases for fiscal years 1987-90.
- Repeal the expansion of the Commodity Supplemental Food Program (CSFP). The 1985 Act allows additional sites for food distribution and participation by the elderly.
- Repeal the provisions that require State Cooperative Extension Services to expand food, nutrition, and consumer education programs for low-income persons.

The bill would also amend the Balanced Budget and Emergency Deficit Control Act of 1985 (P.L. 99-177), popularly known as Gramm-Rudman-Hollings. The Food Stamp Program; the Special Supplemental Food Program for Women, Infants, and Children (WIC); and child nutrition programs would be removed from the list of programs exempt from automatic spending cuts.

S. 2279—Sen. John Heinz (PA)

This bill is designed to standardize and improve the administration of the Temporary Emergency Food Assistance Program (TEFAP). S. 2279 defines three tasks. First, States would be required to submit an annual plan to the Secretary of Agriculture outlining the distribution of surplus commodities to volunteer and emergency feeding organizations, including State efforts in training and technical assistance. Second, States would also have to submit quarterly reports on actual commodity inventories, allocations, and distributions. Third, the Secretary would issue regulations that establish standards for warehousing and storing commodities, State monitoring of commodity distribution by local organizations, and the liability of organizations for the loss of commodities. The bill would also reopen the Food Bank Demonstration Program, making food banks eligible to receive surplus USDA commodities.

S. 2495—Sen. Ted Kennedy (MA)
and H.R. 4990—Rep. Leon Panetta (CA)

These identical bills, the Hunger Relief Act of 1986, would amend the Food Stamp Act of 1977, the Child Nutrition Act of 1966, and the National School Lunch Act to improve the benefits available under these programs. The bills would:

- Gradually increase the cost of the Thrifty Food Plan over a 4-year period and ultimately move to the Low Cost Food Plan as the basis for determining food stamp benefits. USDA issues four food plans. The Thrifty Food Plan is the least expensive; the Low Cost Food Plan is the second least expensive.
- Raise the cap on the shelter deduction from \$147 to \$175. An increase from \$147 to \$152 is already scheduled for October 1986.
- Set the medical deduction for the elderly at 5 percent of gross income or \$35, whichever is less.
- Raise the asset limit to \$2,250 for nonelderly households and \$3,500 for elder-

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ly households. The limit for an automobile would increase to \$5,500.

- Restore the Federal 50-percent matching funds for States who opt to provide food stamp outreach services—informing elderly, unemployed, and disabled people about the availability of food stamps.
- Exempt the first \$50 a month paid in child support when determining eligibility and benefits. This would make the Food Stamp Program consistent with AFDC.
- Increase the Federal reimbursements for school breakfasts to help defray the costs of providing a nutritional meal. S. 2495 and H.R. 4880 would also increase the reimbursements for reduced-price meals, lowering the price for breakfast from 30 to 15 cents and lunch from 40 to 25 cents.
- Raise the reimbursement rate for breakfasts served in day care centers and family and group day care homes. One additional meal or snack per day would be provided through the Child Care Food Program.
- Increase WIC funding by \$550 million over 3 years.
- Increase funding authorization for congregate and home-delivered meals, and nutrition education for the elderly. TEFAP funding authorizations would also be increased.
- Raise the authorization levels for the Expanded Food and Nutrition Program, the Community Food and Nutrition Program, and Nutrition Education Training in schools.
- Establish and implement a Coordinated National Nutrition Monitoring and Related Research Program. This section was originally introduced as H.R. 2436 (*see NFR-30, page 33 for a description*).

Food and Safety and Quality

S. 2446—Sen. John Chafee (RI)

The Fast Food Ingredient Information Act of 1986 would provide for ingredient labeling of food served in fast food restaurants. The Food, Drug, and Cosmetic Act; the Federal Meat Inspection Act; and the Poultry Products Inspection Act require that food sold in wrappers or containers have ingredient statements on the label. S. 2446 would make these laws applicable to fast food. If it is impractical to put the information on a label, lists of ingredients could be displayed on wall charts, food tray liners, or printed in brochures. The Secretaries of Agriculture and Health and Human Services would determine what is impractical. A fast food restaurant would be defined as one which is part of a chain of 10 or more franchised outlets.

H.R. 4683—Rep. Charles Stenholm (TX)

This bill, entitled the Processed Products Inspection Improvement Act of 1986, would allow USDA greater flexibility in allocating inspectors among meat processing establishments (e.g., canning, salting, packing, or rendering). USDA would determine the type and frequency of inspections for a particular establishment, taking into account the nature and volume of the processing operation, the reliability of processing controls and sanitation procedures, and the history of compliance with USDA regulations. Presently, USDA must always have an inspector on site when the plant is in operation.

H.R. 4762—Rep. Douglas Bosco (CA)

The Food Irradiation Safety and Labeling Requirement Act of 1986 would prohibit the Food and Drug Administration (FDA) from implementing its regulations relating to the irradiation of fresh foods. In April, FDA

published regulations covering irradiation to inhibit sprouting and maturing and to rid the foods of insects (*Federal Register*, April 18, 1986). USDA and FDA would likewise be prohibited from implementing regulations relating to the irradiation of pork (*Federal Register*, July 22, 1985).

H.R. 4762 would require a study, conducted by the National Academy of Sciences, on the possible risks food irradiation presents to human health and the environment. The National Academy of Sciences would be required to provide a review of existing research on the safety and wholesomeness of consuming irradiated food. It also would be required to study the contamination of food by improper irradiation, the health risks to employees in food irradiation facilities and residents who live near such facilities, and the effects of transporting radioactive source material on the environment, population centers, and rural areas.

As do current FDA and USDA regulations, the bill would require irradiated food to carry a label stating this fact. The bill would go beyond FDA's regulations, however, by requiring that irradiated ingredients in foods also be identified on the label and that restaurants designate on their menus any foods that have been irradiated. Firms involved in irradiating foods would have to submit semiannual reports to FDA, which would then be available to the public. The report would contain a summary of the foods irradiated during the period (including quantities), for whom the work was done, and the dosages used. □



Food Spending and Income

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Americans spent \$434 billion (seasonally adjusted at an annual rate) for food in the first quarter of 1986, 5.2 percent more than a year earlier (*table 1*). Spending rose because of price increases, shifts to more expensive foods, added services, and larger purchases. After adjusting for inflation, food expenditures were up 3.6 percent from the first quarter of 1985.

Expenditures for food away from home continued to increase at a faster rate than for food at home. In the first quarter of 1986, spending for eating out was 6.2 percent above a year earlier, while outlays for food at home were up 4.8 percent. However, adjusted for price increases, which have been greater for restaurant meals, the rise in food spending away from home was only 2.3 percent, compared with 4.1 percent for food at home. The rise in real (inflation adjusted) spending for food at home was larger than recent years, partly because of increased spending for high-value prepared foods. These foods are being purchased in increasing quantities from the delicatessen, bakery, and frozen food departments of grocery stores.

Food's Share of Income Remains Stable

Although food expenditures increased, they continued to account for 15 percent of disposable personal income. The 5.6-percent rise in personal income, to \$2,893 billion in the first quarter of 1986, was less than previous years, reflecting slower economic growth.

While the share of income spent on food recently has been stable, the portion of income spent on food has declined over the long term. Americans spent 16.5 percent of

Table 1. Food Expenditures Continue To Rise, But So Does Income

	Personal consumption expenditures for food ¹			Disposable personal income ¹
	At home	Away from home	Total	
<i>Billion dollars</i>				
1985				
I	285.2	126.9	412.1	2,739.2
II	288.8	129.4	418.2	2,817.7
III	291.9	130.0	421.9	2,800.2
IV	296.5	131.7	428.2	2,845.9
1986				
I	299.0	134.7	433.7	2,893.4

¹Seasonally adjusted at an annual rate.



their income on food 10 years ago and 20 percent 25 years ago (*table 2*). All of the decline occurred in spending for food at home, which dropped from 12.3 percent of disposable personal income in 1975 to 10.4 percent in 1985. At the same time, expenditures on food away from home rose from 4.2 to 4.6 percent.

Americans have spent less of their incomes on food and more on some other items. Outlays for services have risen considerably. They now absorb about 47 percent of disposable personal income, compared with 40 percent 10 years ago. Medical care and housing have grown significantly in the past 10 years. The portion of income spent on housing rose from 13 percent in 1975 to 14.4 percent last year. Medical care now takes 10 percent of personal income, up from 7.4 percent in 1975. Expenditures on recreation rose from 2.2 to 2.5 percent, and spending for personal business services, such as banking and legal services, grew to 5.7 percent, up from 4.6 percent. □

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Table 2. Share of Income Spent for Food Shows Long-Term Decline¹

Year	Disposable personal income	Personal consumption expenditures for food			Proportion of income spent for food		
		At home ²	Away from home ³	Total	At home ²	Away from home ³	Total
Billion dollars				Percent			
1950	207.5	36.6	9.4	46.0	17.6	4.5	22.2
1951	227.6	41.1	11.0	52.1	18.1	4.8	22.9
1952	239.8	43.1	11.6	54.7	18.0	4.8	22.8
1953	255.1	43.8	11.7	55.5	17.2	4.6	21.8
1954	260.5	45.0	11.5	56.5	17.3	4.4	21.7
1955	278.8	46.4	11.7	58.1	16.6	4.2	20.8
1956	297.5	48.3	12.1	60.4	16.2	4.1	20.3
1957	313.9	51.3	12.6	63.9	16.3	4.0	20.4
1958	324.9	53.9	12.7	66.6	16.6	3.9	20.5
1959	344.6	55.7	14.4	70.1	16.2	4.2	20.3
1960	358.9	56.6	15.2	71.8	15.8	4.2	20.0
1961	373.8	57.7	16.0	73.7	15.4	4.3	19.7
1962	396.2	58.2	17.1	75.3	14.7	4.3	19.0
1963	415.8	59.2	18.0	77.2	14.2	4.3	18.6
1964	451.4	62.7	19.1	81.8	13.9	4.2	18.1
1965	486.8	67.3	20.2	87.5	13.8	4.1	18.0
1966	525.9	73.2	21.5	94.7	13.9	4.1	18.0
1967	562.1	74.9	22.4	97.3	13.3	4.0	17.3
1968	609.6	80.3	24.9	105.2	13.2	4.1	17.3
1969	656.7	85.8	27.0	112.8	13.1	4.1	17.2
1970	715.6	92.9	29.6	122.5	13.0	4.1	17.1
1971	776.8	95.2	31.0	126.2	12.3	4.0	16.2
1972	839.6	101.5	34.0	135.5	12.1	4.0	16.1
1973	949.8	113.2	38.0	151.2	11.9	4.0	15.9
1974	1038.4	128.4	42.7	171.1	12.4	4.1	16.5
1975	1142.8	140.6	48.5	189.1	12.3	4.2	16.5
1976	1252.6	150.6	54.0	204.6	12.0	4.3	16.3
1977	1379.3	161.7	60.0	221.7	11.7	4.4	16.1
1978	1551.2	176.1	69.3	245.4	11.4	4.5	15.8
1979	1729.3	195.8	80.3	276.1	11.3	4.6	16.0
1980	1918.0	214.2	89.2	303.4	11.2	4.7	15.8
1981	2127.6	232.8	95.3	328.1	10.9	4.5	15.4
1982	2261.4	247.7	101.6	349.3	11.0	4.5	15.4
1983	2425.4	258.0	111.7	369.7	10.6	4.6	15.2
1984	2670.2	277.0	121.6	398.6	10.4	4.6	14.9
1985	2801.1	290.6	129.7	420.3	10.4	4.6	15.0

¹Series revised by Department of Commerce back to 1929. ²Includes food purchases for off-premise consumption and food consumed on farms where produced. ³Includes purchased meals and beverages, excluding alcohol, and food furnished to the military and employees of hospitals.

Source: Department of Commerce, Bureau of Economic Analysis. Percentages compiled by USDA.

Recent Trends in Domestic Food Programs

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This article compares food program participation and costs for the January-March quarter of 1986 with the same 3 months of 1985. Preliminary data are reported as of May 1986 and are subject to revision. Entitlement and bonus commodities are included where applicable. Administrative costs are excluded unless noted.

Except for the Food Stamp Program (FSP), average participation in the USDA food programs either rose or remained constant during the first quarter of 1986 (table 1). The number of food stamp participants declined by about 660,500. Monthly FSP benefits averaged \$45.62 per person, compared with \$45.35 a year earlier. Federal expenditures for food stamp benefits amounted to \$2.7 billion in the first quarter of 1986 (table 2), and the Federal share of administrative costs totaled \$270.5 million.

Child Nutrition Programs

A daily average of 23.7 million students participated in the National School Lunch Program in the first quarter of this year, an increase of 0.5 percent. The average number of participants who received free and reduced-price lunches rose about 59,800 and 10,300, respectively, while the average number who paid the full price rose 64,000. During the first quarter of this year and last, free lunch recipients represented 42.6 percent of the total; reduced price, 6.7 percent; and full price, 50.6 percent.

Cash, entitlement commodities, and cash-in-lieu of commodities for the National School Lunch Program totaled \$983.6 million in the first quarter of 1986, up from \$954.1 million. In addition, schools received bonus commodities worth \$123.2



The number of half-pints of milk served under the Special Milk Program declined from 45.2 million in first-quarter 1985 to 43.1 million in the first quarter of this year.

million in the first quarter of 1985 and \$118.7 million in the same period of 1986.

The School Breakfast Program provided subsidized breakfasts to an average of 3.5 million participants per day in the first 3 months of 1986, a 1.9-percent increase from the previous year. Average participation among students receiving free and reduced-price breakfasts rose 2.1 percent, compared with 0.6 percent for those paying the full price for breakfasts. Federal expenditures rose 5.8 percent to \$123.9 million.

An average of 57.3 million meals were served under the Child Care Food Program during the first quarter of 1986, an increase of 3.3 percent from a year earlier. Approximately 78.1 percent of the meals were served free in 1986, 5.7 percent at reduced prices, and 16.2 percent at the full price. Meal costs and the value of commodities used in meal preparation increased 5.6 percent, from \$109.4 million to \$115.5 million.

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Table 1. Average Participation in USDA Food Programs

Program	Jan.- Mar. 1985	Jan.- Mar. 1986
	<i>Millions</i>	
Food Stamp Program	20.4	19.7
National School Lunch Program	23.6	23.7
School Breakfast Program	3.4	3.5
Special Supplemental Food Program for Women, Infants, and Children (WIC)	3.1	3.3
Nutrition Assistance Program in Puerto Rico	1.5	NA
Child Care Food Program ¹	1.1	1.1
	<i>Thousands</i>	
Commodity Supplemental Food Program	139.2	141.0
Elderly Feeding Pilot Project	19.5	19.6
Food Distribution Program on Indian Reservations ²	140.0	146.3
Nutrition Program for the Elderly ¹	826.8	858.3

¹Average daily attendance in March. ²Includes needy families in Trust Territories. NA = Not available.

Source: Data from the Food and Nutrition Service.

The total number of half-pints of milk served under the Special Milk Program declined from 45.2 million in the first quarter of 1985 to 43.1 million. Federal expenditures totaled \$4.2 million in the first quarter of 1986, compared with \$4.3 million the previous year.

Supplemental Food Programs

The Special Supplemental Food Program for Women, Infants, and Children (WIC) and the Commodity Supplemental Food Pro-

gram (CSFP) serve the same general population. WIC is available nationwide, whereas the CSFP currently operates in 12 States and the District of Columbia. Persons may not participate in both programs simultaneously.

Average participation in WIC rose 5.8 percent, from 3.1 million persons per month to 3.3 million. In the first quarter of 1986, children accounted for 50.4 percent of the participants; infants, 28.4 percent; and women, 21.3 percent. Food costs to-

taled \$318.7 million, a 6.8-increase from the first quarter of 1985.

The CSFP served an average of 141,000 persons per month in the first quarter of 1986, an increase of 1.3 percent. The distribution of participants in 1986 was: children, 65.7 percent; women, 19.3 percent; and infants, 15 percent. Food costs fell from \$9.7 million to \$8.3 million, largely reflecting a decline in the value of bonus commodities.

Average participation in the Elderly Feeding Pilot Project (which operates under the auspices of the CSFP) increased 0.6 percent to 19,600 persons. Food costs for the projects were \$534,300 in the first quarter of 1986, compared with \$544,000 a year earlier.

Food Distribution Programs

Participants in the Food Distribution Program on Indian Reservations received food worth \$12.8 million in the first quarter of 1986, a 4-percent increase from the previous year. Participants include Native Americans and needy persons in the Trust Territories. Approximately 97 percent of the 146,300 participants in the first quarter of 1986 either lived on or near reservations.

Average daily attendance at centers participating in the Nutrition Program for the Elderly rose 3.8 percent to 858,290 persons. During the period, Federal expenditures increased from \$33.1 million to \$34.9 million. About 90 percent of the assistance was in cash.

Food valued at approximately \$206.8 million was distributed under the Temporary Emergency Food Assistance Program in the first quarter of 1986, down from \$260.1 a year earlier. This decline is largely due to a reduction in the amount of cheese that was distributed—from 120.6 to 101.5 million pounds. The program provides food to the needy while reducing Government stocks of surplus commodities. □

Table 2. Federal Cost of USDA Food Programs¹

Program	1983	1984	1985 ²	I	1985 ² (Quarters)			1986 ² I
					II	III	IV	
Million dollars								
Family Food								
Food Stamps	11,119	10,673	10,704	2,771	2,691	2,580	2,662	2,697
Nutr. Asst. Prog. in Puerto Rico ³	825	825	825	206	206	206	206	206
Food Distribution								
Food Distribution on Indian Reservations	36	43	49	12	12	12	12	13
Schools ⁴	821	828	851	273	159	144	275	270
Other ⁵	229	225	201	45	56	59	41	50
Temporary Emergency Assistance ⁶	1,106	1,057	908	260	253	189	206	207
Cash in lieu of Commodities ⁷	126	133	142	36	35	35	36	36
Child Nutrition ⁸								
School Lunch	2,443	2,552	2,608	807	644	327	831	835
School Breakfast	357	378	391	117	99	51	124	124
Child Care Food and Summer Food Serv. Prog.	407	454	499	101	119	173	106	108
Special Milk	17	16	16	4	4	4	4	4
WIC ⁹	1,194	1,417	1,512	368	375	382	387	396
Total ¹⁰	18,680	18,601	18,706	5,000	4,653	4,162	4,890	4,946

¹Calendar years. Administrative costs are excluded unless noted. ²Preliminary. Quarterly data may not add to annual total due to rounding. ³Puerto Rico transferred from the Food Stamp Program to a substitute nutrition assistance program on July 1, 1982. Includes special projects expenditures. ⁴National School Lunch, Child Care Food, Summer Food Service programs and commodity schools. ⁵Commodity Supplemental Food Program, Elderly Feeding Pilot Project, Nutrition Program for the Elderly, and donations to charitable institutions. ⁶Initiated December 1981. ⁷Child nutrition programs and the Nutrition Program for the Elderly. ⁸Cash expenditures. ⁹Special Supplemental Food Program for Women, Infants, and Children. Includes administrative costs. ¹⁰May not add due to rounding.

Source: Data from the Food and Nutrition Service.

In the News...

Food Manufacturing Sees Wave of Mergers

Mergers are transforming the food manufacturing industry. Between January 1977 and December 1985, 118 of the 500 largest food manufacturers (as of 1976) had been acquired in mergers. Mergers occur often in the U.S. economy, but unusually intense merger "waves" have appeared only four times over the last 100 years. By some measures, the current wave is the largest, exceeding the conglomerate merger wave of the late 1960's.

Three features distinguish the current merger wave in food manufacturing. First, many individual transactions are "block-buster" mergers, with some of the largest firms being acquired. For example, Nestle acquired Carnation for \$3 billion, R.J. Reynolds paid \$4.9 billion for Nabisco Brands, and Phillip Morris acquired General Foods for \$6 billion.

Second, many recent large mergers joined firms that produce related consumer products, in contrast to the conglomerate character of many mergers during the late 1960's. Agricultural commodity firms like Cargill and Archer-Daniels-Midland have expanded into related grain and oilseed processing, transportation, and storage activities.

Finally, firms now often divest divisions acquired in previous mergers. In fact, in recent years, divestitures have often been as numerous as acquisitions, although the average value of divestitures is still smaller. Many nonfood companies have sold their food manufacturing operations. Prominent examples include IT&T's sale of Continental Baking to Ralston Purina and RCA's sale of its Banquet Foods subsidiary to ConAgra.

For more information, contact James MacDonald, (202) 786-1864.

Convenience Stores Show Rapid Growth

Convenience stores, long known for their limited high-volume food and nonfood products and extended hours, have grown rapidly by including such items as self-service gasoline and self-service fast food. In addition to self-service, a number of convenience store retailers have installed limited-menu food service, often with customer seating as well as carryout.

At \$14.1 billion, gasoline sales constituted 41 percent of convenience store sales in 1985, up from 7 percent in 1975. Fast food sales totaled \$2.2 billion, a 50-percent gain from 1975.

The number of convenience units increased from 26,600 in 1974 to 45,400 in 1985, with their share of grocery store sales rising from 4 to 12 percent. Although convenience stores are still experiencing real (adjusted for inflation) growth, the rate of increase has slowed in recent years.

For more information, contact Phil Kaufman, (202) 786-1866.

Food Marketing—Contributing to the Economy

There are over a million establishments within the overall food marketing system, including more than 250,000 retailers, about 700,000 foodservice operations, about 40,000 wholesalers, and 16,000 food processors.

The food marketing system is one of the largest industries in the Nation in terms of employment, generating approximately 12 million full-time equivalent jobs and employing more than 1 out of every 10 U.S. workers. These include over 3½ million workers in retailing, wholesaling, and transportation; over 1½ million in food processing; and 3½ million in eating and drinking places. The food marketing system generates another 3½ million jobs through other

supporting sectors, such as packaging, advertising, and energy.

For more information, contact Charles Handy, (202) 786-1866.

HFCS Use in Soft Drinks May Register Smaller Increases

For several years now, high fructose corn syrup (HFCS) has been replacing sugar in soft drinks. However, early estimates for 1986 indicate the trend may be leveling off because the soft drink industry has almost finished making the switch. Last year may have been the final year for a high growth rate. Total HFCS use rose 21 percent to 5.2 million tons in 1985. Domestic sugar use fell more than 5 percent to 7.6 million tons. Any further growth for HFCS would have to come from an expanded overall market, and not from a bigger share of the existing market.

HFCS accounts for 30 percent of total sweetener use, up from 4 in 1975. Noncaloric and low-calorie sweeteners share of the market doubled to 12 percent of the total following the introduction of aspartame in 1981. Relatively high sugar prices and a more acceptable taste than previous noncaloric sweeteners led to much of the gain.

For more information, contact David Harvey, (202) 786-1769.

U.S. Monthly Agricultural Trade Balance in Deficit

The United States' agricultural trade balance in May went into the first monthly deficit since 1971. The deficit totaled \$146 million, after the previous 7 months of the fiscal year averaged a surplus of \$715 million. Extremely low exports, high coffee import prices, and delays in reporting previous months' import data were behind this shift.

Low exports give greater weight to shifts in imports that would ordinarily have little

or no chance of moving the balance into deficit. May imports, at \$2 billion, were record-high, fueled by coffee prices which have been as much as \$2.50 a pound this year, the highest since 1977. Also, vegetable imports in May were reportedly \$164 million higher than a year earlier, mainly because of increased shipments of fresh tomatoes from Mexico.

Despite this first recorded deficit in fifteen years, the U.S. farm trade balance is expected to average a \$600 million monthly surplus for the year. During the previous 5 fiscal years, the monthly surplus averaged \$1.65 billion a year.

For more information, contact Stephen MacDonald, (202) 786-1621.

Beverage Container Deposit Law Reduces New York Litter

Take a walk or drive and you're bound to see bottles, cans, and other waste tossed by the side of the road or in parks. Beverage containers alone account for 20 to 30 percent of the pieces of litter collected by roadsides and in parks. By volume, that's 40 to 60 percent.

In response to this problem, New York has become the newest and the ninth State to enact a beverage container deposit law. While the specific provisions of the laws vary by State, they have the same basic premise—consumers who purchase certain

beverages leave a deposit that is refunded when the bottle or can is returned to an established distribution site (usually the local supermarket). In New York, beer, soda, and mineral water drinkers receive a minimum of 5 cents for each empty container they return.

New York recently took a look at the effectiveness of its law 1 year after enactment. A State commission on returnable beverage containers found that litter was 70 percent less in New York than in Pennsylvania, which doesn't have such a law. Solid waste tonnage declined by 3 to 5 percent a month, yielding a monthly savings of 5 to 8 percent in landfill space. Statewide container return rates were about 70 percent for soft drinks and 86 percent for beer.

For more information, contact Doris J. Newton, (202) 786-1866.

USDA Offers New Electronic Information Service

A new electronic service provides USDA information on food and nutrition and tells how to reach Department specialists. The system carries information on topics such as the dietary guidelines, food economics, and food safety. The service also lists bibliographies and announces upcoming activities and programs.

For more information on this service, call Lillie Vincent, (202) 447-8157. For information on how to electronically access this service, call (202) 488-0550.

Rice Bran Could Yield New Foods

Rice bran may yield new foods high in vitamins, minerals, protein, and fiber. Rice bran contains about 20 percent oil, which

deteriorates, making the bran inedible.

However, USDA scientists have discovered an economical process that prevents this deterioration. Scientists ran the bran through a machine that created enough heat to destroy enzymes that break down the oil. What are left are edible bran and an oil rich in vitamin E.

The deterioration of rice bran had concerned world food experts for 25 years. Now, rice bran oil could be used as a major cooking oil in developing countries where rice is a staple. In this country, the technique is stimulating development of products such as new breakfast cereals.

For more information, contact Robin M. Saunders, (415) 486-3296.

Calcium Increases Storage Life of Pears

Calcium sprayed on pear trees helps the fruit stay fresh longer. Just as calcium helps humans develop strong bones and teeth, it helps build strong cell walls in Anjou pears. Strong cells make pears less prone to spongy spots and an ugly skin browning called scald, both of which shorten storage life. USDA researchers say that growers can also get more calcium into pears by pruning excess growth early in summer, applying less nitrogen fertilizer, and irrigating less.

For more information, contact J. Thomas Raese, (509) 662-4317. □

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Provisions of the Food Security Act of 1985, by Lewrene K. Glaser. AIB-498. April 1986. 116 pp. \$5.50. Order SN: 001-019-00461-4.

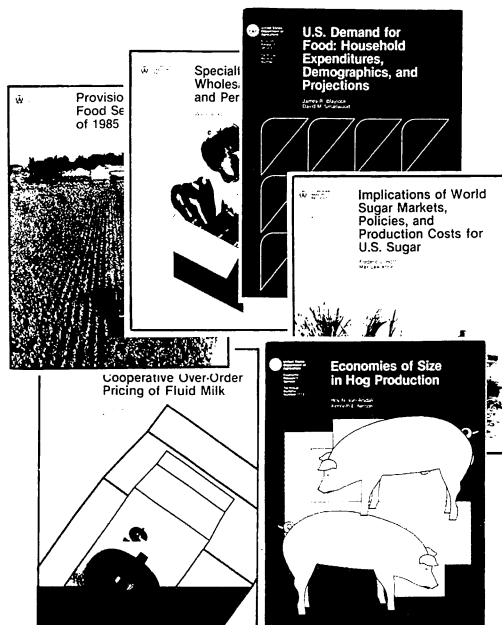
The Food Security Act of 1985 will guide U.S. agricultural policy for the next 4 years. This new report summarizes the Act's provisions for USDA's commodity, trade, nutrition, and conservation programs, among others. It compares the 1985 Act with previous legislation and summarizes the Food Security Improvements Act of 1986.

U.S. Demand for Food: A Complete System of Price and Income Effects, by Kuo S. Huang. TB-1714. December 1985. 60 pp. \$2.00. Order SN: 001-019-00433-9.

A complete matrix of all direct, cross-price, and expenditure elasticities for 40 food items and one nonfood item. The estimated demand system examines the interdependent nature of demand for foods in terms of prices and income.

U.S. Demand for Food: Household Expenditures, Demographics, and Projections, by James R. Blaylock and David M. Smallwood. TB-1713. February 1986. 56 pp. \$2.25. Order SN: 001-019-00436-3.

Measures the effects of income and other demographic factors on per person spending for 28 food groups and alcoholic beverages. The results are combined with projections for income, age distribution, regional population shifts, racial mix, and population growth to project food spending to the year 2020.



Specialty Grocery Wholesaling: Structure and Performance, by Walter B. Epps. AER-547. March 1986. 24 pp. \$1.00. Order SN: 001-019-000435-5.

Specialty grocery merchants sell more food at wholesale than any other group of wholesale vendors, according to this benchmark study of the industry. The typical specialty grocery merchant is a supplier of perishable food who runs a low-volume wholesale operation with few employees, handles one product line, supplies particular customers, trades with other wholesale vendors, and offers specialized services. Although these establishments predominate, changes in marketing, such as processors selling directly to retail clients, may reduce the demand for specialty services.

Food Marketing Review. AER-549. March 1986. 60 pp. \$3.00. Order SN: 001-019-00455-0.

Sales in the U.S. food marketing system in 1985 reached an estimated half a trillion dollars and grew faster than the gross national product. The food marketing system comprises more than 1 million firms in food manufacturing, wholesaling, retailing, and service and employs more than 1 out of every 10 U.S. workers. The current status and outlook for these firms, workers, and the food marketing system as a whole are examined in this publication.

Implications of World Sugar Markets, Policies, and Production Costs for U.S. Sugar, by Frederic L. Hoff and Max Lawrence. AER-543. November 1985. 44 pp. \$1.75. Order SN: 001-019-00424-0.

Analyzes production costs of 56 sugarcane producing countries and 26 sugarbeet producing countries to determine the conditions under which total world sugar production has expanded since 1981, despite low prices. Most major sugar producing and exporting countries have adopted national policies to protect domestic producers from periodic price depressions.

Economies of Size in Hog Production, by Roy N. Van Arsdall and Kenneth E. Nelson. TB-1712. December 1985. 100 pp. \$3.50. Order SN: 001-019-00417-7.

Discusses economies of size in hog production: inputs and costs; investments in depreciable assets; returns; income taxes; and physical, price, and economic performance measures in the North Central and Southeast regions, the major U.S. hog producing areas.

An Analysis of Cooperative Over-Order Pricing of Fluid Milk, by Edward V. Jesse and Aaron C. Johnson. TB-1708. August 1985. 52 pp. \$2.00. Order SN: 001-019-00401-0.

Focuses on what over-order premiums represent, whether they monopolize milk markets through dairy cooperatives, or whether they are a means of achieving competitive pricing in Federal milk marketing orders. Identifies factors likely to influence the level of over-order premiums and estimates their individual and combined effects.

Dietary Guidelines and Your Diet. June 1986. 52 pp. \$4.50. Order SN: 001-000-004467-2.

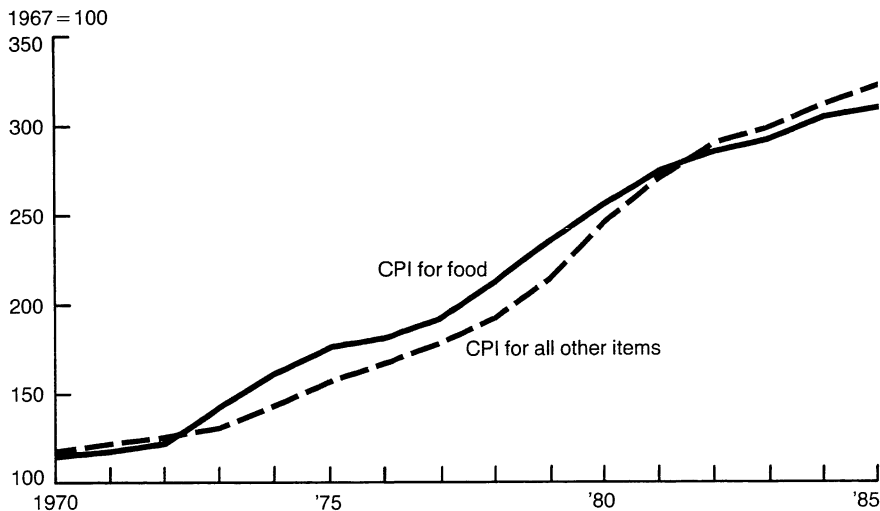
Set of the first seven bulletins that supplement *Nutrition and Your Health: Dietary Guidelines for Americans*. Each bulletin focuses on one of the seven dietary guidelines, providing suggestions for their implementation. Second set to be published in 1987. □



Food and Commodity Prices

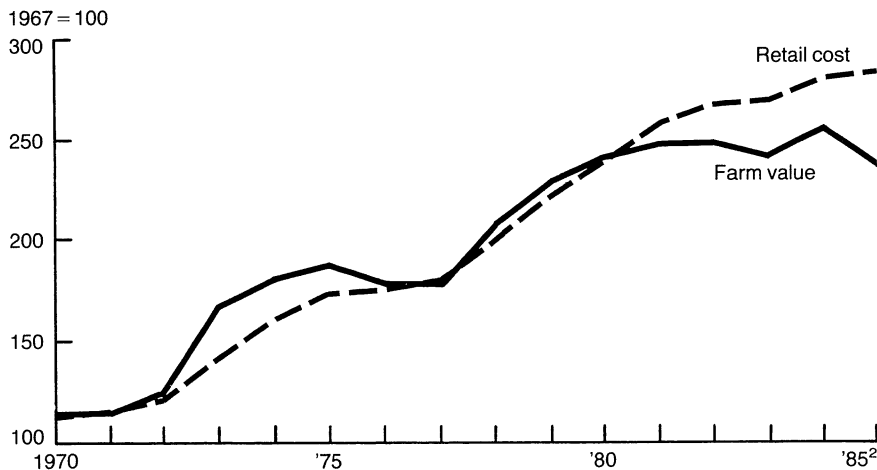
The Consumer Price Index (CPI) for food in 1985 almost tripled its 1970 level. The CPI for food measures retail prices of imported food items, as well as those produced on U.S. farms. Between 1970 and 1985, retail prices for food increased at approximately the same rate as other consumer items.

Retail Food Prices Rose at Nearly Same Rate as Other Items



The retail cost and farm value of USDA's market basket of farm-produced foods have both more than doubled since 1970, with especially large increases in 1973 and 1974, and again in 1978. However, because of depressed farm prices over several years, the 1985 farm value was only 15 percent above 1978. Meanwhile, retail food prices rose 42 percent. The 1985 farm value fell 7 percent from a year earlier, while retail prices rose slightly more than 1 percent.

Rise in Retail Cost Outpaces Farm Value¹

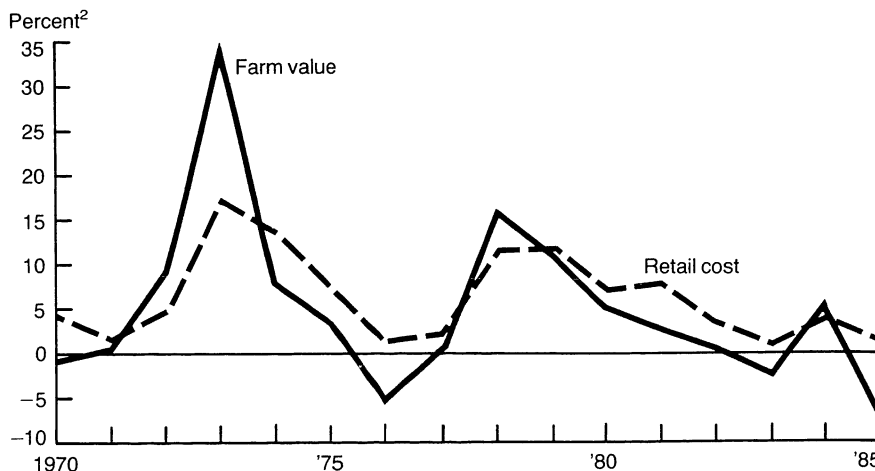


¹Market basket of farm-produced foods.

²Preliminary.

The farm value of food fluctuates more sharply than retail value, because farm prices are affected by supply disruptions caused by weather, pests, and variable costs for fuel and livestock feed. In contrast, marketing costs rely heavily on labor costs that are often fixed by contracts and container and packaging costs. As a result, marketing costs have risen consistently since 1970, but the annual changes have varied.

Farm Value Fluctuates More Than Retail Cost of Food¹

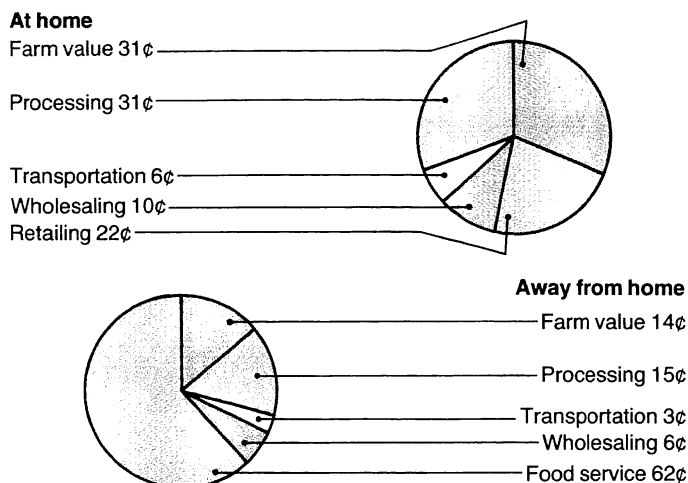


¹Market basket of farm-produced foods.

²Year-to-year change.

The 1985 farm value totaled 31 cents of the at-home food dollar but only 14 cents of the away-from-home dollar. Food service accounted for 62 cents of the away-from-home food dollar, overwhelming all other costs. The at-home food dollar posted a more even split.

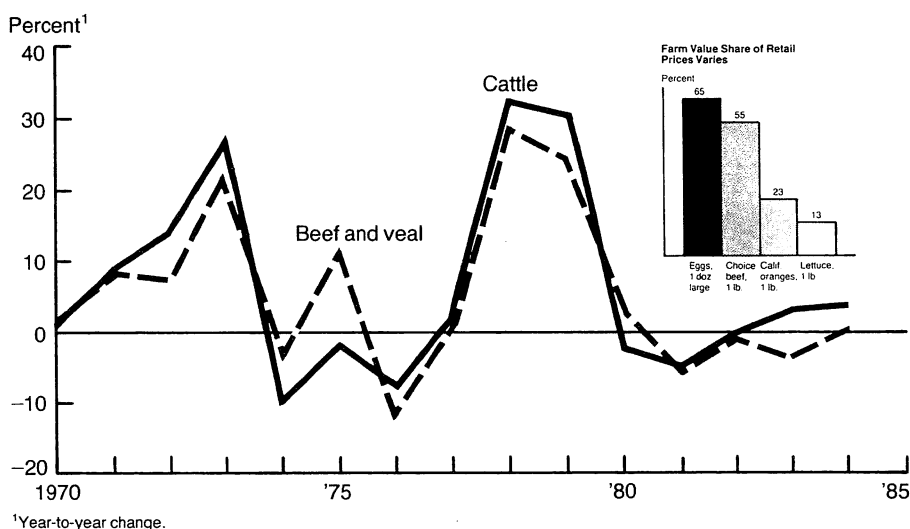
Where the Food Dollar Went at Home and Away in 1985



Source: *Food Costs... From Farm to Retail*, by Denis Dunham. Economic Research Service, March 1986.

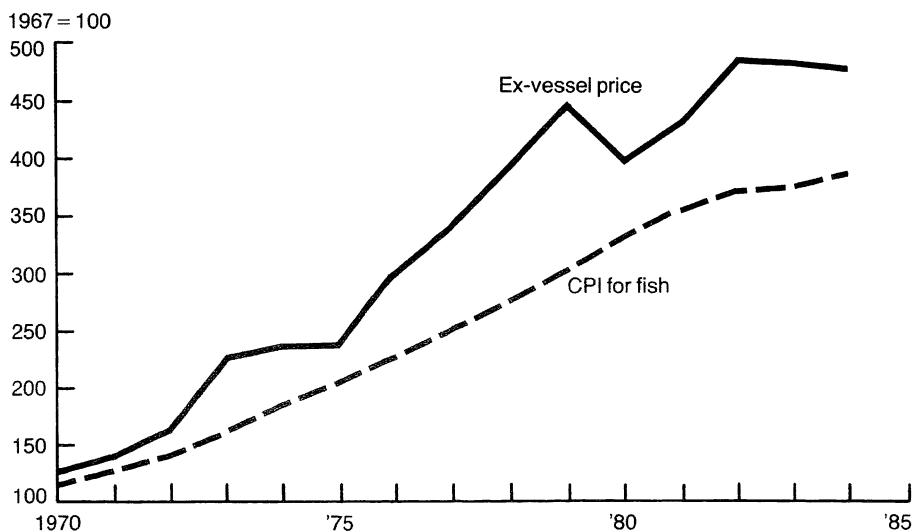
The influence of the farm and marketing components of retail prices can be more clearly seen by examining individual commodities. Beef and veal, for example, illustrate how closely retail prices can follow swings in farm value when marketing costs form a relatively small portion of consumer costs. Farm value accounted for 55 percent of the retail price of 1 pound of Choice beef in 1985. In contrast, the share for lettuce was 13 percent.

Retail Beef and Veal Prices Closely Track Cattle Prices



In contrast to farm-produced foods, growth in the price fishermen received (the ex-vessel price) outpaced the retail price of fish during 1970-84. The ex-vessel price has risen because of increasing consumer demand and the relatively fixed supplies of the major fish species. Processing costs have also trended upward, but at a slower rate. Because they comprise a larger share of the retail price of fish, slower growth in marketing costs has dampened the rise in retail fish prices.

Fishermen's Price Rose Faster Than the Retail Price



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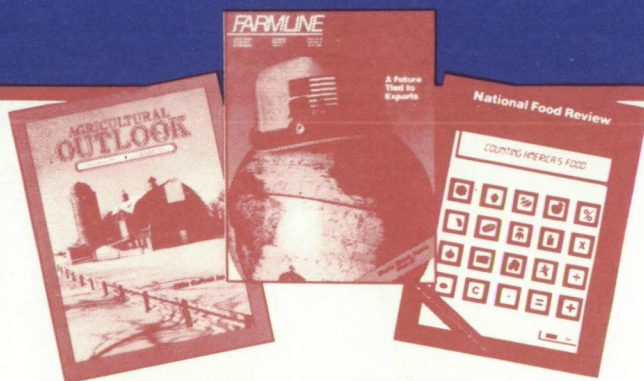
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