

# National Food Review

United States  
Department of  
Agriculture

Economic  
Research  
Service

1987  
Winter-Spring  
NFR-36

## COUNTING AMERICA'S FOOD



☐ On

Annual Issue on Food Consumption and Prices

# Contents

The *National Food Review* is published quarterly by the National Economics Division, Economic Research Service, U.S. Department of Agriculture.

The Secretary of Agriculture has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this Department. Use of funds for printing this publication has been approved by the Director of the Office of Management and Budget.

Contents of the *National Food Review* may be reprinted without permission. The use of commercial or trade names does not imply approval or constitute endorsement by USDA or ERS.

Subscription price is \$9 a year to U.S. addresses (\$11.25 foreign). Ask for *National Food Review* and make your check or money order payable to USDA/ERS. Mail to: ERS Pubs, Rm. 228 USDA, 1301 New York Ave. N.W., Washington, D.C. 20005-4788. Please include your complete address and daytime telephone. Refunds cannot be issued. For information, call (202) 786-1495. Subscriptions are also available from the Sup't. of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

**Economics Editor:**  
Kathryn Longen Lipton  
(202) 786-1880

**Managing Editor:**  
Sherrie M. Biernacki  
(202) 786-1494

**Art Director:**  
Joan A. Van Chantfort

**Editorial Assistant:**  
Martha R. Evans

**Editorial Staff:**  
Joyce Bailey  
Juliana King

## Counting America's Food



- 1 Highlights of 1985 Food Consumption Data**  
Per capita consumption in the United States continues to favor a mixture of high and lowfat foods.
- 5 Food Prices in 1986 and 1987**  
Overall retail food prices rose 3.2 percent in 1986 as marketing costs, held down by lower inflation and declining oil prices, rose slightly.
- 8 How Lower Feed Grain Prices Affect Meat Prices**  
Lower feed grain prices could provide an incentive for expanded meat production and a corresponding decrease in retail prices of various meats.
- 11 A Look Ahead at Food Prices**  
Increases in food prices should be small for the next 10 years.
- 13 Changes in the CPI**  
The U.S. Department of Labor introduces its revised Consumer Price Index.
- 18 Nutrient Content of the U.S. Food Supply**  
Nearly all levels of nutrients in the U.S. food supply increased in 1985 compared to the previous year.

## Food Situation and Review



- 24 Recent Trends in Domestic Food Programs**  
An update on the Food Stamp and other food assistance programs.

## Legislation



- 26 USDA Actions**  
A review of regulatory changes affecting the food industry.

## General



- 28 In the News**  
Changes in food production and processing.
- 30 Reports of Interest**  
Key ERS reports on U.S. supermarkets, Rice distribution, world grain markets, general indices, and chart books on agriculture.

## Charting the Food Picture



- 31 Consumer Expenditures on Food**  
Data covering spending on specific products, plus eating patterns both inside and outside the home.





# Highlights of 1985 Food Consumption Data

Karen Bunch  
(202) 786-1870

Americans favored an almost incongruous mixture of high and lowfat foods, as well as fresh and processed items, in 1985. For example, while consumption increased for chicken and fish and declined for whole milk, use of fats and oils and cream rose. In addition, Americans consumed more fresh fruit and juices, but also more soft drinks.

## Looking at General Trends

USDA's aggregate food consumption index continued its 5-year climb, rising 2.2 percent in 1985, to a record level. It is unclear, however, whether the trend means America's appetite is growing. Some of the increase may reflect more waste or trimming of food—factors not accounted for in the ERS consumption data. In processed foods, such as frozen dinners, and in salad bars, there is generally more trimming than at home. The growing trend to eat away from home may also mean more waste.

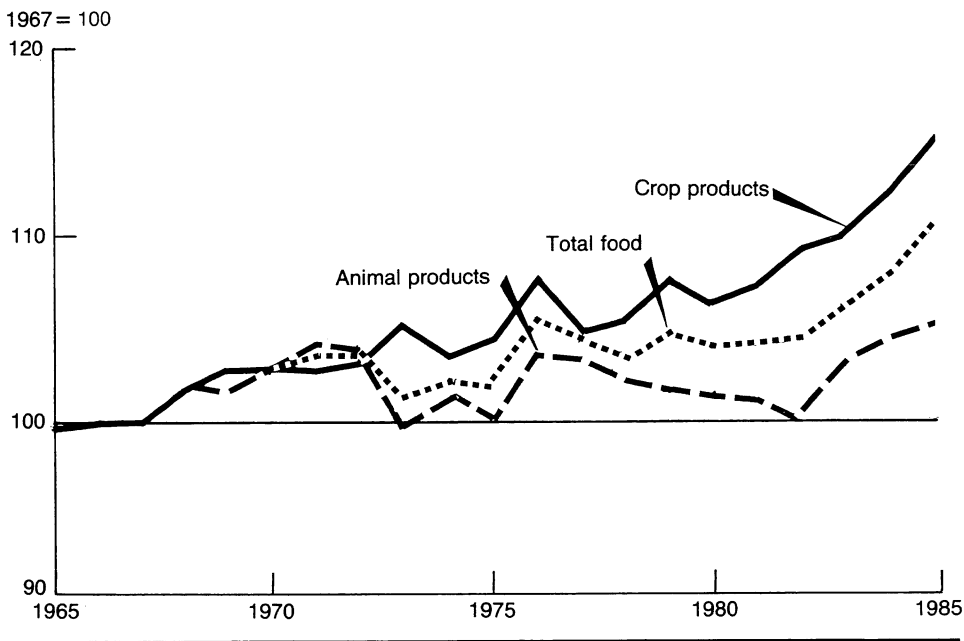
Additionally, the ERS data don't reflect demographic factors. For example, since the total amount of food available is divided by the population, the consumption statistics don't account for a generally older population. The median age increased in the last 12 years from 27.9 years to 30.9 years. A population made up of more adults and relatively fewer children would be expected to eat more, therefore explaining some of the rise in food consumption.

In other general trends, large increases in the consumption of fats and oils, fresh potatoes, and grains led the 3.4-percent increase in the index of crop products. At the same time, the animal products index rose 1.4 percent because of slight increases in all commodities except eggs.

The crop products index has risen about 16 percent since 1965, nearly twice the rate

*The author is an agricultural economist, formerly with the Food Marketing and Consumption Economics Branch of the National Economics Division.*

**Figure 1. Crop Products Consumption Increases More Than Animal Products**



of the animal products index. Consumption of foods in most crop categories has risen steadily in the last 20 years, particularly fats and oils, fruits, vegetables, grain products, and sweeteners. In contrast, declines in red meat and dairy products have moderated the increase for animal product consumption, which rose 8.9 percent in the last 20 years.

## Red Meat and Poultry Gain in 1985

Although still below the levels of the 1970's, consumption of red meat (retail weight basis) increased for the third year in a row, rising slightly to 144.4 pounds per capita in 1985 (table 1). The total, however, remains 7.8 percent below 1971's peak of 156.7 pounds. Despite the 3-year gain, red meat consumption was 2 percent below 1980, with much of the decline attributed to a 9-percent drop in pork consumption. A 3-percent gain for beef helped offset lower pork consumption, however.

The rise in red meat supplies since 1982 occurred as livestock producers reduced their inventories by sending more animals to market in response to poor returns and other factors affecting profits. Available meat supplies in 1986—and consequently consumption—remained close to the 1985 total.

Lower inventories have resulted in the smallest breeding herds of both cattle and hogs since the early 1960's (see *NFR-32*, p. 24). In 1987, the smaller herds will mean significantly reduced supplies of red meat, particularly beef. Per capita consumption of beef is expected to drop by more than 5 pounds to 73.8 pounds, the lowest in 20 years.

Despite the declines for beef and pork, total red meat and poultry consumption is likely to remain near the record because of increases for chicken and turkey. In 1985, per capita poultry consumption reached 69.3 pounds. The total likely climbed another 4

Table 1. Consumption Data Show Trend to Mix of High and Lowfat Foods

Commodity	1970-74	1975-79	1980-84	1983	1984	1985
<i>Pounds per capita</i>						
<b>Meats</b>	150.9	148.2	144.0	143.9	143.7	144.4
Beef and veal	85.8	90.7	79.3	80.2	80.4	81.0
Lamb and mutton	2.6	1.5	1.5	1.5	1.5	1.4
Pork	62.5	56.0	63.2	62.2	61.8	62.0
<b>Fish (edible weight)</b>	12.1	12.9	12.7	13.1	13.7	14.5
Fresh and frozen	7.0	7.9	8.0	8.0	8.5	9.0
Canned and cured	5.1	5.0	4.7	5.1	5.2	5.5
<b>Poultry products</b>						
Chicken	40.7	44.8	52.9	53.8	55.7	57.4
Turkey	8.5	9.2	10.9	11.3	11.4	11.9
Eggs	40.0	34.7	33.6	33.1	33.0	32.4
<b>Dairy products</b>						
Total, milk equivalent	553.0	543.0	558.7	572.2	580.0	595.8
Cheese	18.2	20.7	19.7	20.6	21.6	22.4
Fluid milk and cream	272.3	260.4	244.5	242.3	243.3	245.1
Frozen desserts	28.0	27.5	26.6	27.0	27.1	27.2
<b>Fats and oils, total</b>	55.9	57.4	61.3	63.0	61.8	67.2
Butter	4.9	4.4	4.6	4.9	4.9	4.9
Margarine	11.0	11.3	10.9	10.4	10.4	10.7
Lard and tallow	3.8	2.6	3.8	4.1	3.8	3.7
Shortening	15.9	15.8	19.0	18.5	21.3	22.8
Salad and cooking oils	16.7	19.4	21.6	23.5	19.8	23.5
<b>Selected fruits</b>						
Fresh, total	76.3	80.9	85.7	88.0	87.5	88.2
Citrus	27.3	26.2	25.4	28.2	23.1	21.8
Noncitrus	49.0	54.7	60.4	59.8	64.4	66.4
Processed						
Canned fruit	13.0	11.6	9.7	9.3	8.9	8.5
Juices	20.5	23.5	20.9	21.3	18.6	19.9
Frozen and dried fruit	5.7	5.4	5.6	5.7	5.9	6.3
<b>Selected vegetables</b>						
Fresh	66.3	70.4	75.8	75.7	80.7	81.4
Canned	35.5	34.9	33.2	33.7	32.6	NA
Frozen	10.0	10.3	11.2	11.1	12.0	NA
<b>Potatoes</b>						
Total, fresh weight equivalent	116.0	123.3	115.6	116.3	118.2	125.3
Fresh, retail weight	54.3	49.0	45.4	45.9	44.7	49.9
Processed, retail weight	22.6	27.2	26.3	26.4	27.8	28.5
<b>Grains</b>						
Wheat flour	111.0	116.3	115.3	115.9	117.6	122.5
Corn flour and meal	6.3	5.9	6.5	6.6	6.6	6.7
Breakfast cereals	11.5	12.5	13.0	13.0	13.3	13.7
Rice	7.2	7.9	10.2	9.8	8.5	9.3
Pasta	8.5	10.1	10.2	10.5	10.3	12.3
<b>Corn sweeteners</b>	26.9	40.4	64.4	69.4	77.3	87.5
<b>Sugar (refined)</b>	100.5	91.5	75.1	71.1	67.7	63.4
<b>Peanuts and tree nuts (shelled)</b>	7.6	7.7	7.7	8.1	8.2	8.4
<b>Coffee (gallons)</b>	32.2	27.1	25.0	25.6	26.3	25.9
<b>Soft drinks (gallons)</b>	25.5	32.6	40.3	41.1	44.2	45.2
<b>Alcoholic beverages (per adult)</b>	38.6	42.0	43.7	43.2	42.5	40.8
<b>Food consumption index (1967 = 100)</b>	<b>102.5</b>	<b>103.7</b>	<b>104.5</b>	<b>105.5</b>	<b>106.8</b>	<b>109.2</b>

NA = Not Available.



pounds in 1986 and is expected to jump 5 pounds to 78.6 pounds per capita this year—the first year that poultry consumption will exceed beef.

Fish consumption reached another record in 1985, totaling 14.5 pounds on an edible weight basis (*see sidebar box on data changes*). Fish consumption rose 23 percent between 1970 and 1985, with most of the gain in fresh and frozen products. Canned and cured fish remained relatively constant. Shrimp consumption also set a record in 1985. At 2 pounds per capita, it gained 36 percent since 1970.

### Shift to Lowfat Milk Continues

Dairy products continued to see a turnaround from their longer term downtrend. Per capita consumption increased 2.6 percent to 595.8 pounds (milk equivalent basis) in 1985, a 20-year record. Fluid milk consumption reached 245.1 pounds per capita in 1985, its third consecutive annual gain. Consumption of beverage milk other than whole (primarily lowfat) led the increase, with the 5.1-percent gain offsetting whole milk's 3.4-percent decline. Whole milk accounted for only 49 percent of total fluid milk and cream consumption in 1985, down from 84 percent in 1965. Preliminary data for 1986 indicate a continuation of this shift.

With the trend away from whole milk, the average fat content of fluid products dropped rapidly during the 1970's. However, several trends reversing the decline have appeared in the 1980's. The result is a slight increase in the amount of milk fat sold in fluid milk products.

One factor reversing the trend: while consumers have continued to switch to lowfat milk, they chose 2 percent milk more than lower fat products such as skim milk. Sales of cream have also gained in recent years, after declining to a low point in 1972. In 1985 alone, sales rose 5.7 percent to 7.3 pounds per capita. Although cream sales account for less than 3 percent of the aggregate weight of fluid products, they contain 16 percent of the fat.

Lower prices for cream products and the process of ultrapasteurization have en-

couraged the shift from imitation products back to cream. Ultrapasteurization increases shelf life, providing a less perishable product for use at home and in foodservice.

### Use of Fats and Oils Increases

Per capita consumption of fats and oils reached a record 67.2 pounds in 1985, up 8.7 percent in just a year. About 50 percent of fats and oils are used in processed foods, such as baked goods, salad dressings, and snacks. The remainder is used by restaurants and institutions, or purchased for home use.

The 1985 data show consumption increases for shortening, salad and cooking oils, margarine, and edible tallow. Salad and cooking oils were the big gainers, increasing 18.6 percent to 23.5 pounds per capita. These oils, along with shortening, account for 69 percent of all fats and oils consumed.

Direct use of edible tallow increased 11.7 percent in 1985, to 1.9 pounds per capita. While a small amount compared with overall totals for other fats and oils, large quantities of edible tallow are used to produce shortening. In 1985, it accounted for 18 percent of the 22.8 pounds of shortening used per person.

The use of fats and oils increased 20 percent in the last 15 years. This gain, however, may be deceiving because the data

are not adjusted for waste (*see sidebar box—Reminder to Our Readers*). If the percentage of waste has not changed over the years, then the observed trend is still accurate. But the data indicate that most of the increase in the fats and oils category was in products used for frying or salad dressing. Therefore, it is possible that a rise in the proportion wasted may have offset some of the increase in use.

What's more, the long-term gain in fats and oils may be slowing. Despite plentiful supplies of soybean oil, data through September 1986 indicate that per capita use stayed constant or slightly below the same months a year earlier.

### Consumption Increases for Fruits and Vegetables

Fresh fruit consumption rose by 0.7 pounds in 1985. Citrus fruit consumption was down for the third year, falling 6 percent to 21.8 pounds per capita. Noncitrus fruit, in contrast, continued to increase to 66.4 pounds per capita, led by grapes, nectarines, and bananas. Consumption of apples, avocados, and peaches declined. Smaller supplies of apples and oranges boosted prices of each of these fruits 6 percent, contributing to the 3.5-pound gain in banana consumption.

Canned fruit consumption continued its 15-year decline, falling to 8.5 pounds per capita. Consumption of frozen and dried fruit has been relatively constant over the same period. Raisin consumption is the one exception, totaling 40 percent more than in 1965. Most of the increase occurred in the last few years, with larger raisin supplies pushing producer prices down 28 percent since 1981. In addition, cereal manufacturers have been introducing new varieties of ready-to-eat cereals with raisins.

Juice consumption also increased in 1985. Frozen concentrated orange juice jumped 19 percent to 11.3 pounds per capita, a historic high. The biggest gainer, however, was frozen concentrated grapefruit juice, which more than doubled between 1984 and 1985, to just over 1 pound per capita. The introduction of grapefruit and other juice blends, along with a major promotion of

## A Reminder to Our Readers

Because ERS derives its consumption data by subtracting imports, exports, and stock changes from production and marketing estimates of food, the data are not direct estimates of the food actually eaten. Rather, they report the disappearance of food from commercial market channels. No estimates are made of food loss prior to ingestion. Food consumption figures include spoilage, inedible components (such as bones in meat or pits in fruit), unused leftovers, and use as pet food. As a result, the statistics likely overstate actual ingestion.

## Some Changes in USDA's Consumption Data

ERS per capita consumption data for 1985 incorporate two major changes. A new series presents consumption of meat, poultry, and fish on an edible weight basis. The U.S. Department of Commerce's data on fish consumption already measured edible weight, but a comparable series was not available for red meat and poultry. The new series will facilitate comparisons between types of meat and fish.

On an edible weight basis, total consumption of meat, poultry, and fish was 185 pounds per capita in 1985, compared with 228.2 pounds on a retail weight basis. The edible weight measure excludes all bones, but includes the  $\frac{1}{4}$  to  $\frac{1}{2}$  inch of separable

fat normally sold on retail cuts of red meat.

Edible weight is derived as a constant percentage of retail weight. In the case of beef, for example, 5.7 percent of the retail weight is bone and other inedible portions. Subtracting this same percentage over time, therefore, reveals the identical trends observed in the retail weight measure.

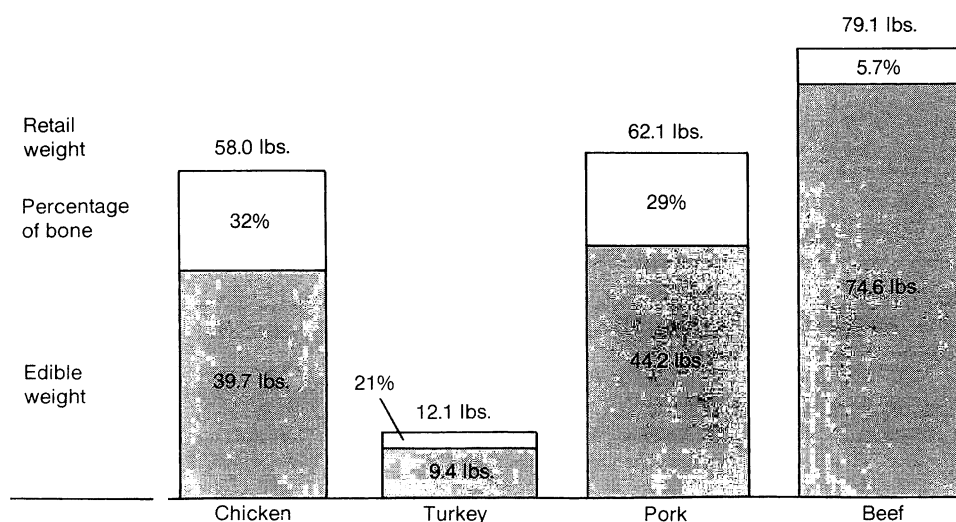
In the second major revision of ERS data, consumption of processed vegetables is no longer reported on a retail weight basis. A new series reflecting consumption on a fresh weight equivalent basis was developed.

Over the years, disclosure problems have forced the National Food Processors Association and similar organizations to drop or consolidate statistics on several commodities. This disruption of traditional data sources necessitated using only USDA data to derive

the fresh weight equivalent series for processed vegetables. ERS analysts are currently reviewing procedures for estimating per capita consumption of processed vegetables on a retail weight basis. Until these data are available, there are no 1985 statistics on processed vegetables in retail weight.

For more information on the fresh weight equivalent series, see *Food Consumption, Prices, and Expenditures*, 1985, SB-749. The report can be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Enclose a check or money order for \$4.25, payable to the Superintendent of Documents. For faster service, call the GPO order desk at (202) 783-3238 and charge your purchase to your VISA, MasterCard, Choice, or GPO Deposit Account.

**Figure 2. Per Capita Red Meat and Poultry Consumption, 1985: Comparison of Retail and Edible Weight<sup>1</sup>**



<sup>1</sup>Cooking would further reduce weight by 15 to 30 percent, depending on type of meat and method of cooking. These data are not adjusted for plate waste.

pink grapefruit, has accounted for the 127-percent increase.

Total consumption of the eight major commercial fresh vegetables (broccoli, carrots, cauliflower, celery, corn, lettuce, onions, and tomatoes) rose almost 1 percent in 1985, to 81.4 pounds per capita (retail weight basis). Of the three vegetables that registered gains, onions ranked first with a 5.7-percent increase, broccoli 4 percent, and tomatoes 3 percent. Although it didn't gain in 1985, lettuce still ranked as the number one fresh vegetable, with consumption totaling 23.7 pounds.

A record potato crop led to a 13-percent decline in retail prices. As a result, per capita consumption rose to 125.3 pounds (fresh equivalent basis), a 7-pound gain in 1985. Fresh consumption showed the largest increase, up more than 5 pounds to 49.9 pounds—the highest in 8 years. Processed products registered a 2.8-percent gain.





Over 15 years, soft drink consumption rose 92 percent to 45.6 gallons per person in 1985.

### Total Beverage Consumption Up

America's thirst seems to continue to increase, with per capita consumption of commercially produced beverages gaining 0.4 percent to 140.3 gallons (total population basis) in 1985. That figure was almost 15 percent higher than in 1970.

Soft drinks, beer, and fruit juices have seen the largest increases in the last 15 years. Juice consumption has gained 59 percent to 7.3 gallons, while soft drink consumption has risen 92 percent to 45.6 gallons per capita in 1985. Coffee consumption has fallen from 33.4 gallons in 1970 to 25.9 gallons in 1985, a drop of 22.5 percent.

Total alcohol consumption has also begun to decline in recent years, after increasing 22 percent between 1970 and the 1981 peak of 44.6 gallons per adult. In 1985, total alcoholic beverage consumption amounted to 40.8 gallons per adult, 4 percent below a year earlier. Beer consumption fell for the fourth consecutive year to 34.5 gallons per adult. Wine consumption, in contrast, increased 3.4 percent to 3.8 gallons. The gain can be partly attributed to the growing popularity of wine coolers, a mixture of wine and fruit juice. Coolers now account for 14 percent of total wine consumption. □

## Food Prices in 1986 and 1987

Ralph L. Parlett  
(202) 786-1880

**F**ood prices rose an average of 3.2 percent in 1986—about the same rate as in each of the last 4 years. The increase, 2.8 percent for foods sold in grocery stores and 3.9 percent for meals in restaurants and fast food establishments, was primarily due to higher marketing costs. A lower general inflation rate, brought about by reduced oil prices, helped keep processing and distribution costs from rising in 1986.

Increased consumer demand also contributed to the modest rise in food prices in 1986. Demand increased in response to a slightly lower unemployment rate and a 2.3-percent rise in inflation-adjusted (real) disposable personal income.

Partially offsetting the rise in retail food costs were declines in farm prices. Provisions of the Food Security Act of 1985, which sets farm policy through 1990, resulted in lower farm prices for some commodities.

In 1987, food prices will again rise about 2 to 4 percent, largely because of smaller red meat supplies. Smaller fresh vegetables supplies, particularly potatoes, will also contribute to higher prices. Economic growth this year will likely be modest and consumer demand for food should remain stable. Prices of major marketing inputs will increase modestly, adding little to retail price increases (*table 1*).

**Table 1. Packaging Costs Likely to Rise the Most in 1987**

Category	Average annual change from previous year			
	1984	1985	1986 <sup>1</sup>	1987 <sup>2</sup>
Food marketing costs	4	1	-1	2 to 4
Labor	3	0	-1	1 to 3
Packaging	10	0	-2	5 to 7
Transportation	4	1	0	0 to 1
Energy	1	-2	-14	2 to 4

<sup>1</sup>Preliminary. <sup>2</sup>Forecast.

*The author is an agricultural economist with the Food Marketing and Consumption Economics Branch of the National Economics Division.*

### Meat and Poultry

Beef and veal prices rose less than 1 percent on average in 1986 (*table 2*). Large supplies of red meat were available during the first half of the year. Beef production jumped during the first 5 months of 1986 because of greater marketings of grass-fed cattle and the slaughtering of milk cows under the Dairy Termination Program (DTP). The program—often referred to as the dairy or whole herd buyout—is a provision of the Food Security Act of 1985. It is aimed at permanently cutting milk production by reducing the Nation's dairy herds. Federal purchases of meat, also mandated by the Act, helped offset the added supplies from the DTP.

By the second half of 1986, beef production was nearly identical to a year earlier as grass-fed cattle marketings slowed and dairy cow slaughter declined. At the same time, marketings of grain-fed cattle remained strong.

Pork production declined during the first half of 1986, but large supplies of beef and poultry kept pork prices from rising. By mid-year, prices began to increase as pork supplies dropped to the lowest levels in 13 years. With cold storage stocks the lowest on record and imports also down, retail pork prices in the third quarter of 1986 rose 15 percent above the previous 3 months.

Poultry production climbed to near capacity last year as producers worked to fill the void left by smaller red meat supplies. Higher output, however, could not meet the growing demand for poultry. As a result, prices were up about 7.5 percent from 1985.

Demand for broilers was strong last summer, particularly among the various fast food chains that were heavily promoting new chicken items. Broiler demand was also high in grocery stores during the summer because consumers substituted chicken for the higher priced red meats. The resulting competition between grocery stores and fast food chains pushed prices up.

Reduced production in the Southeast because of the severe heat was another contributor to higher poultry prices. Death losses



Table 2. Changes in the CPI, 1984 through 1987

	1984	1985	1986	1987 <sup>1</sup>
Consumer Prices Indexes	<i>Percent</i>			
All food	3.8	2.3	3.2	2 to 4
Food away from home	4.2	4.0	3.9	3 to 5
Food at home	3.6	1.4	2.8	2 to 4
Meat, poultry, and fish	1.6	-0.3	4.3	3 to 5
Meats	0.3	-1.0	3.2	3 to 5
Beef and veal	1.2	-2.1	0.6	4 to 6
Pork	-1.3	0.2	8.2	3 to 5
Other meats	0.4	0.6	2.6	2 to 4
Poultry	10.6	-1.0	7.5	-3 to 0
Fish and seafood	3.2	4.9	9.2	7 to 10
Eggs	11.7	-16.6	6.9	0 to 2
Dairy products	1.3	1.9	0.0	0 to 2
Fats and oils	9.5	2.2	-2.2	-1 to 0
Fruits and vegetables	8.6	2.6	0.9	2 to 4
Fresh fruits	11.1	10.1	2.1	0 to 2
Fresh vegetables	10.9	-4.3	4.0	0 to 2
Processed fruits and vegetables	6.0	2.6	-1.6	0 to 2
Processed fruits	7.2	4.1	-2.9	-1 to 2
Processed vegetables	4.7	1.1	0.2	1 to 3
Sugar and sweets	3.9	2.5	3.1	1 to 3
Cereal and bakery products	4.4	3.8	2.8	2 to 4
Nonalcoholic beverages	2.5	2.0	5.9	0 to 2
Other processed foods	3.0	3.3	2.6	3 to 5

<sup>1</sup>Forecast.

due to the heat were somewhat higher than normal, but most of the reduction stemmed from the fact that chickens eat less in hot weather. The average broiler produced in the Southeast last summer weighed about 15 percent less than normal. The heat also caused lower fertility rates in hatching eggs which extended production problems into the fall.

Poultry production will continue to expand in 1987. Consumption will also remain strong because consumers perceive poultry as a good buy relative to higher priced red meats. With larger supplies, poultry prices are expected to average slightly below 1986.

Red meat supplies will continue to fall this year, as beef production declines 6 to 7 percent. Supplies of Choice grain-fed beef will remain near 1986 levels, but supplies of grass-fed beef used for processed

products will be lower. As a result, some grain-fed beef will be used for processing, reducing supplies of some Choice cuts and further contributing to the likely 4 to 6-percent gain in beef and veal prices in 1987. Pork production will be above 1986 levels through most of this year, meaning prices will likely average about the same as last year.

### Fish and Seafood

Prices of fish and seafood increased more in 1986 than any other major food component of the Consumer Price Index (CPI)—about 9 percent above 1985. At the same time, domestic per capita consumption of fish reached a record 14.5 pounds.

While demand for seafood in general is expanding, supplies of the more traditional species are diminishing. Measures to protect from overfishing of some species have limited domestic supplies. To satisfy the growing domestic demand, seafood proces-

sors and wholesalers are searching for new foreign supply sources; promoting lesser known species such as monkfish, squid, and whiting; and expanding product lines to include a wider selection of frozen and processed entrees. Simulated seafood products produced by combining raw minced fish and colorings and flavorings are also rapidly gaining in U.S. markets. The seafood supply situation, however, is not likely to improve in 1987, and retail prices are expected to gain another 7 to 10 percent.

### Dairy Products

Average retail prices for dairy products stabilized in 1986 as slightly lower prices for fluid milk were offset by higher prices for processed products. The DTP succeeded in cutting milk production, but the effect on retail prices was minimal. With reduced surpluses and increased commercial use in 1987, retail prices may rise as much as 2 percent above 1986.

### Cereals and Bakery Products

The Food Security Act of 1985 significantly reduced market prices for wheat, rice and other food grains. The lower grain prices somewhat offset increases in the costs of processing and marketing which make up the largest share of retail prices for grain products. Consequently, retail prices of cereals and bakery products increased almost 3 percent in 1986. This year, with processing and marketing costs expected to rise moderately again, the CPI for cereals and bakery products could climb another 3 percent.

### Fresh Fruits and Vegetables

Fresh fruit prices rose just over 2 percent in 1986, with larger citrus supplies helping to dampen price increases. Citrus trees, damaged by bad weather several years ago, are recovering and yields have improved considerably. Summer fruit yields, particularly peaches, were smaller in the drought areas of the Southeast, pushing up prices in some markets.

Citrus supplies in 1987 will be larger than in 1986, helping to dampen price increases.

Smaller apple and pear crops last fall will cause tight supplies through the first half of 1987. As a result, prices for these fruits are likely to be higher. The CPI for all fresh fruit in 1987 is expected to average close to 1986.

Fresh vegetable prices averaged about 4 percent higher last year than in 1985. The severe drought in the Southeast did not have a significant effect on prices since the States affected supply only about 2 percent of domestic commercial vegetables. Moreover, many of the vegetables grown in that region were harvested ahead of the drought. A record potato harvest in the fall of 1985 that triggered lower prices in 1986, also helped hold down the CPI for all fresh vegetables. Reduced acreage for other vegetable crops brought less production and slightly higher prices for all fresh vegetables.

Last year, potato acreage was reduced and the harvest was smaller. Therefore, 1987 potato prices will be up from last year's low levels. Other fresh vegetable prices will likely average higher because producers are expected to plant fewer acres for the winter crop.

### Processed Fruit and Vegetables

Processed fruit prices in 1986 were almost 3 percent below 1985, with most of the decrease attributed to the 15 to 20-percent decline in frozen concentrated orange juice prices. Other processed fruit prices remained fairly stable.

Lackluster demand for most processed fruits will keep prices stable in 1987. Prices for frozen concentrated orange juice could also remain close to 1986 levels since domestic production is expected to be up. However, the picture is clouded somewhat by a possible agreement with Brazil that would prohibit "dumping" frozen concentrated orange juice on world markets. In the past, Brazil has exported large quantities of



Smaller apple and pear crops last fall will likely mean higher prices for these fruits in 1987.

its surplus production below world market prices, thereby hurting U.S. exports of frozen concentrated orange juice.

Processed vegetable prices averaged about the same as in 1985. Consumer demand for canned and frozen vegetables has fallen off in recent years. With the trend likely to continue, prices in 1987 are not expected to rise significantly.

### Fats and Oils

Fats and oils prices fell 2.2 percent in 1986, reflecting large world supplies of vegetable oils. Retail prices for shortening, salad oils, and margarine decreased about 4 percent from 1985. Retail prices for non-dairy substitutes and peanut butter increased slightly, but not enough to offset the decline in prices of other oil products. With the large harvest of soybeans last year and continued large supplies of vegetable oils worldwide, retail prices of fats and oils are expected to show another small drop in 1987.

### Nonalcoholic Beverages

The nonalcoholic beverage component of the CPI for food increased about 6 percent in 1986 primarily because of a 31.5-percent gain in coffee prices. A severe drought in the coffee-producing areas of Brazil in 1985 reduced the crop about 58 percent. Brazil supplies about 25 percent of U.S. coffee.

The increase in coffee prices, however, cannot be solely attributed to reduced Brazilian supplies. Consumer alarm about possible shortages also was likely a big factor. Consumers flocked to grocery stores in January and February 1986 to stock up on coffee and avoid higher prices. Soon, with grocery store shelves depleted, prices rose 40 percent from year earlier levels. Between April and December 1986, coffee prices fell each month, but remained about 23 percent above a year earlier.

Supplies of coffee, accounting for only about 20 percent of the nonalcoholic beverages, are expected to return to normal this year, and coffee prices should continue to fall. □

# How Lower Feed Grain Prices Affect Meat Prices

Paul C. Westcott  
(202) 786-1840

Two recent pieces of legislation indirectly benefit consumers by lowering market prices for many crops, including feed grains. Because feed grains—corn, sorghum, oats, and barley—are a significant expense for meat and poultry producers, lower costs could mean expanded production and eventually, reduced prices at the meat counter. But don't expect prices to fall immediately. Instead, for some meats it may take over a year before prices fall below what they would have been without the reduction in feed grain costs because of the biological lag time between breeding and slaughter.

With changes resulting from the Food Security Act of 1985 and the Gramm-Rudman-Hollings Deficit Reduction Act (*see sidebar box*), many crop prices have fallen this year. Corn prices, for example, averaged \$2.35 a bushel in the 1985/86 crop year (September 1985 through August 1986), but are forecast to average \$1.35 to \$1.65 a bushel in 1986/87. Feed grain prices, in general, are expected to decline more than a fourth.

Because feed grains account for roughly half the total value of all grains, oilseed meals, and hay used in animal feeding, lower prices for feed grains can substantially improve the profitability of meat production. As net returns for meat producers improve, there is an economic incentive to increase production. However, in the short run, meat output could decline because to raise future production, breeding inventories must be increased. Older animals that might have been slaughtered may be retained as breeding stock longer. Younger animals that might have been fattened for slaughter could be kept for breeding.

Biological constraints determine the duration of this short-term impact. Cattle

producers, for example, face the longest adjustment period, with 30 months from breeding to slaughter (*figure 1*). Breeding to slaughter takes 9 months for hogs, 5-1/2 months for turkeys, and just 2-1/2 months for broilers.

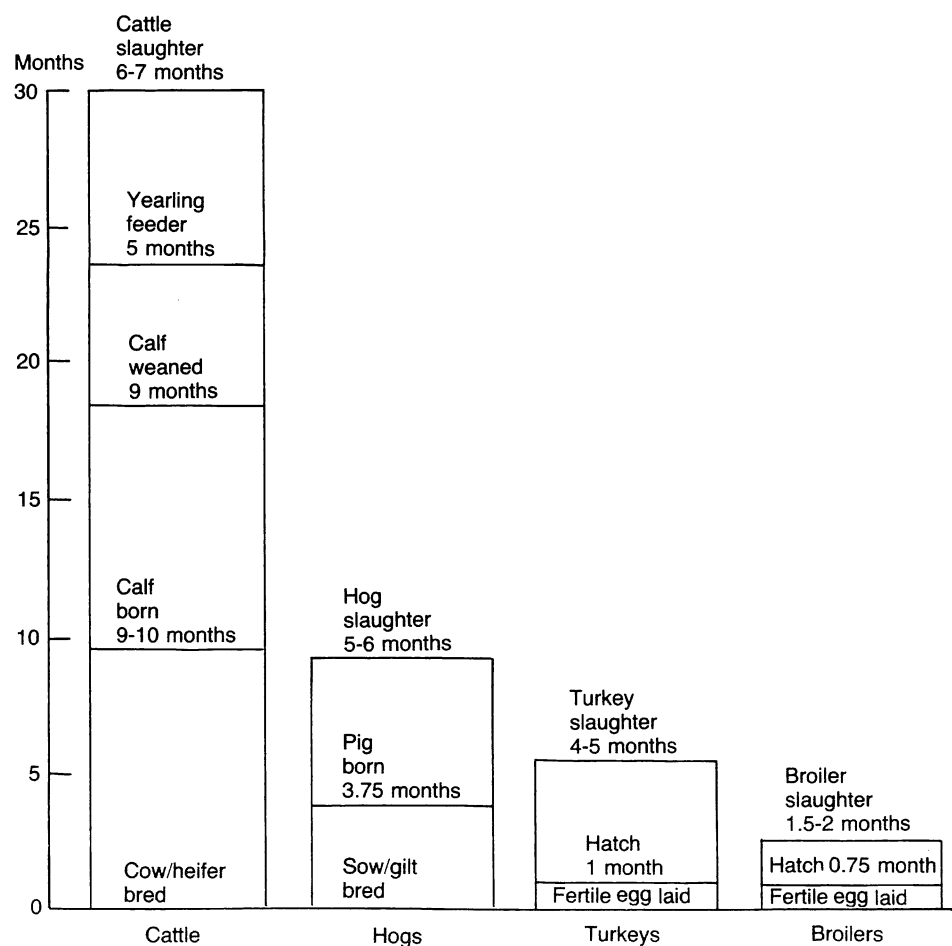
## Determining the Effects of Lower Feed Grain Prices

To assess the implications of lower feed grain costs on meat production and prices, ERS researchers used an econometric model

to simulate the effects of a 25-percent reduction in feed grain prices. They compared estimated changes in beef, pork, and poultry production and prices with the levels expected without the lower feed grain costs.

Looking first at meat production, the researchers found that cattle slaughter could be down for more than a year because more animals would be held back for breeding (*figure 2*). Also, some animals that would have been grass fed and slaughtered within

**Figure 1. Biological Production Lags for Different Meats**



*The author is an agricultural economist with the Crops Branch of the National Economics Division.*



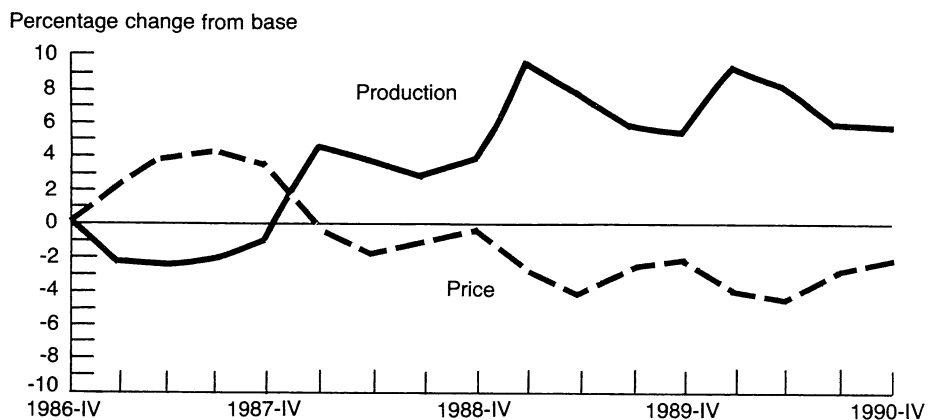
the first year would instead be grain fed and slaughtered later at heavier weights.

In 1988, however, beef production could be larger. The increase would initially be from the slaughter of additional animals that were grain fed and marketed later at heavier weights, rather than being grass fed. By 1989, further increases in beef output would reflect marketings of additional slaughter animals produced from the larger breeding herd.

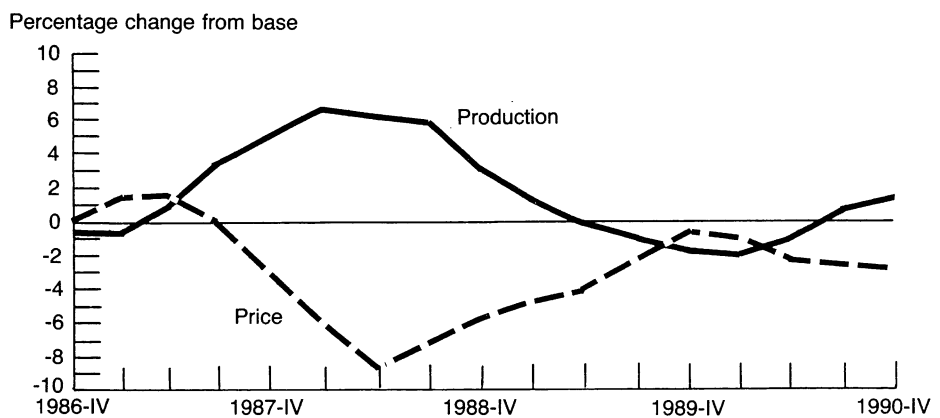
Initially, pork production would also be lower than without the decline in feed costs, because slaughter would be reduced to expand breeding herds (*figure 3*). However, because the biological production lag is shorter for hogs than for cattle, output would begin to increase within 9 to 10 months. The resulting pork production increases, coupled with larger supplies of competing beef and poultry, would lead to lower hog prices and a drop in producers' net returns in 1988. This would trigger a second round of hog sector adjustments, resulting in somewhat reduced pork production in late 1989 and early 1990.

The short biological constraints of broilers and turkeys allow faster responses to changing market conditions (*figure 4*). Therefore, poultry production can increase as early as 3 to 6 months, before the full effects of cattle and hog adjustments are realized. Then, starting in the second year, higher red meat production would lead to lower prices for all meats, narrowing increases in poultry production.

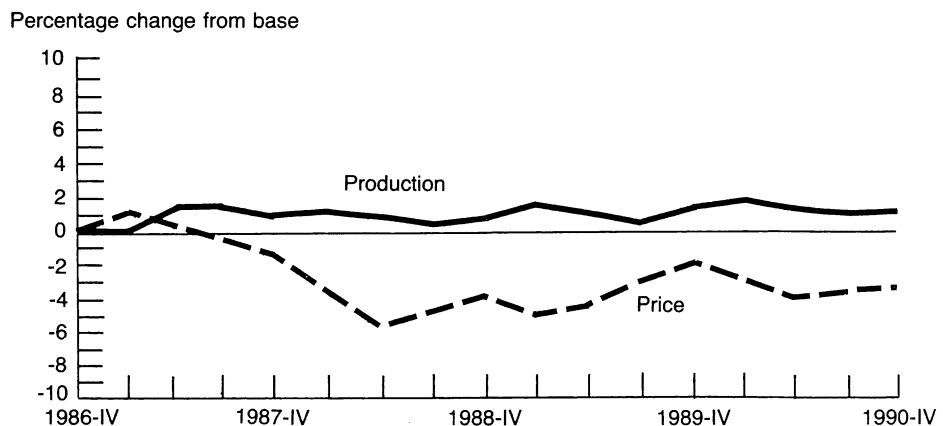
**Figure 2. Beef: Higher Production, Lower Prices Could Start in 1988**



**Figure 3. Pork: Higher Production, Lower Prices May Begin Later This Year**



**Figure 4. Poultry: Prices Influenced by Total Meat Supplies**



#### Greater Production and Lower Meat Prices

With reduced prices for feed grains eventually leading to larger meat production, in the long run consumer prices for all meats could be 3 to 5 percent lower than they would have been without a 25-percent decline in feed prices. However, because of

## Recent Legislation Affecting Agriculture

The Food Security Act of 1985 (P.L. 99-198) provides a 5-year framework for the Secretary of Agriculture to administer various agriculture and food programs. The legislation was drafted with the goal of achieving greater market orientation in the agricultural sector; that is, prices that more closely reflect world supply and demand conditions.

One of the most significant changes in the Act is the provision that allows sharply lower loan rates for grains and several other crops. The loan rates are part of a program in which farmers pledge their output as collateral and borrow from USDA's Commodity Credit Corporation (CCC) at a fixed rate per unit of commodity—the "loan rate." Farmers can opt to repay the loan within a specified period or default and surrender the collateral commodity to the CCC. Because the loan program is designed to support prices, farmers typically default when the market price is below the loan rate. Therefore, the loan rate acts as a price

"floor" for farmers who participate in the Government commodity programs.

The Gramm-Rudman-Hollings Deficit Reduction Act lowered effective loan rates for 1986 crops and may do so in the future, although not for 1987 crops. The Act, passed in 1985, was designed to reduce the Federal budget deficit. If Congress and the President cannot enact a budget within specified deficit levels, Congress may vote for automatic spending cuts. When this occurs, spending for Federal programs is reduced proportionately to meet targeted deficit levels. Defense and non-defense programs are treated separately, and some programs are exempt from cuts while others are subject to reduction limitations.

Gramm-Rudman-Hollings budget cuts for 1986 reduced spending by 4.3 percent for all nondefense, nonexempt, not reduction-limited Federal programs, including payments going to farmers under the 1986 CCC commodity loan program. No Gramm-Rudman-Hollings reductions will be made for 1987 crop loan programs, because the current Federal budget met the 1987 targeted deficit level.

increased breeding herd retention, retail prices for beef and pork would be higher in the short term.

Beef prices would be higher than without the reduced feed costs for more than a year and pork prices for about three-fourths of a year before overall increased meat production begins to push prices down from what they would have been.

Higher prices for beef and pork in the short run will mean greater demand and initially higher prices for poultry. Poultry prices will be higher than they would have been for about three-quarters of a year, declining as the total output of poultry and red meat increases. □

## References

- Malley, James, Ralph Monaco, Barbara Stucker, and Terry Townsend. "How Will Gramm-Rudman-Hollings Affect Farm Programs?" *Agricultural Outlook*. AO-118, April 1986, pp. 25-29.
- Westcott, Paul C., Richard P. Stillman, and Keith J. Collins. "Quarterly Livestock Sector Adjustments to Changes in Feed Grain Prices" *Agricultural Economics Research*. Vol. 39, No. 1, Winter 1987.

Recent legislation that has reduced feed grain costs will indirectly benefit consumers by lowering meat prices.



# A Look Ahead at Food Prices

Ralph L. Parlett and Kathryn L. Lipton  
(202) 786-1870 (202) 786-1880

In the 1970's, food prices led the overall Consumer Price Index (CPI) and were a major contributor to inflation. Today, the opposite is true. Food prices are rising less than the overall CPI and help keep inflation under control (*table 1*). Furthermore, the rest of the decade may bring more of the same.

Between 1982 and 1985, consumers saw increases in grocery store prices of about 3 percent annually. The cost of meals sold in restaurants and fast food establishments rose an average of 4.5 percent (*table 2*). Depressed farm prices, more moderate increases in food marketing costs, and slow growth in demand have been behind the tempering of food price inflation. These trends are likely to continue over the next 10 years, holding retail food price increases to about 3 percent annually.

## Understanding Food Price Changes

To track changes in food prices, USDA analysts use a fixed set of domestically produced foods representing consumer purchases. This market basket accounts for about 82 percent of food at home, with prices for fish, nonalcoholic beverages, and imported products making up the remainder.

The cost of the market basket is divided into two components—the farm value and the farm-to-retail spread, with the latter accounting for all charges for processing and distributing foods to consumers.

The farm value of food, a measure of the return or payment received by farmers for the farm-products equivalent to retail foods, slightly more than doubled between 1970 and 1980. However, large crop harvests and expanded meat supplies, combined with weak domestic and foreign demand for agricultural commodities during the 1980's, held down farm prices. As a result, the farm value of food was stable or declining during the first half of the 1980's. This slowed the rise in retail food prices to 25.5 percent from 1980 to 1986, much less than the 33.1-percent increase for all items in the CPI.

*Parlett is an agricultural economist with the Food Marketing and Consumption Economics Branch and Lipton is a staff economist in the Office of the Director of the National Economics Division.*

**Table 1. Food Prices Led Inflation of 1970's, Lag It in the 1980's**

	Consumer Price Index			
	Food at home	Food away from home	All food	All items
	1967 = 100			
1970	113.7	119.9	114.9	116.3
1971	116.4	126.1	118.4	121.3
1972	121.6	131.1	123.5	125.3
1973	141.4	141.4	141.4	133.1
1974	162.4	159.4	161.7	147.7
1975	175.8	174.3	175.4	161.2
1976	179.5	186.1	180.8	170.5
1977	190.2	200.3	192.2	181.5
1978	210.2	218.4	211.4	195.4
1979	232.9	242.9	234.5	217.4
1980	251.5	267.0	254.6	246.8
1981	269.9	291.0	274.6	272.4
1982	279.2	306.5	285.7	289.1
1983	282.2	319.9	291.7	298.4
1984	292.6	333.4	302.9	311.1
1985	296.8	346.6	309.8	322.2
1986	305.2	360.1	319.6	328.4

For most foods, farm value makes up a relatively small part of the food dollar. It averaged 34 cents for all foods in the market basket in the first half of the 1980's, compared with 50 cents in the 1940's. The decline partly reflects the trend toward more processed foods, in which marketing costs comprise a larger share of the retail price.

The farm value as a share of retail price varies depending on the inputs used and the complexities of the marketing process. In general, animal products have the highest ratios of farm value to retail prices, and the more highly processed crop products have the lowest. In 1986, for example, the farm value share of the retail price for major foods ranged from 7.5 percent for bakery products to about 61 percent for eggs.

The farm value's share of the food dollar also varies for food at home and away. The farm value share is smaller in the away-from-home market because the cost of the increased labor needed to prepare food for

this sector diminishes the relative value of the farmer's contribution to the final product. In 1986, the farmer's share of the away-from-home dollar was 15 percent, versus 30 percent for food at home.

## Larger Share of Food Dollar Goes For Marketing

The farm-to-retail spread has risen steadily over the last several decades, accounting for most of the increase in retail food prices. A wider spread reflects higher costs faced by food industry firms, including wages of workers and prices of inputs bought from other parts of the economy.

The farm-to-retail spread for the market basket of foods rose each year since 1980. USDA's food marketing cost index, which measures prices of inputs, increased about 26 percent from 1980-86. The increase in marketing input prices, therefore, nearly matched the 30-percent rise in the farm-to-retail spread.

Labor is the largest component of food marketing costs, accounting for about half of all costs. Therefore, the nearly 25-percent rise in hourly labor compensation since 1980 contributed to the growth in the farm-to-retail spread. The rise in hourly earnings and benefits, however, is considerably less than the 56-percent increase between 1975 and 1980.

Several factors moderated labor costs, including the trend toward "multi-tiered" labor contracts that pay new workers significantly less than existing employees. More importantly, many of the union contract settlements in the last several years did not provide any wage increase during the first year of the contract, and only small gains were negotiated for the ensuing years. Moreover, there have been reductions in several areas, including overtime pay rates, cost-of-living adjustments, and holiday and sick day benefits. Some companies sold stores that were paying union wages. While many of these stores reopened under new ownership, worker pay scales were lower.

Energy represents about 9 percent of the cost of marketing food. Plentiful supplies and substantial declines in oil prices starting in 1983 nearly stabilized energy costs for food processing and transportation. After



**Table 2. Estimates for Food Prices<sup>1</sup>**

Item	1960-71	1972-81	1982-85	1986-90	1991-95
Consumer Price Index	<i>Average percent change</i>				
Food	2.6	8.9	3.0	2.8	3.1
Food away from home	3.9	8.7	4.5	3.5	3.3
Food at home	2.3	8.8	2.4	2.5	3.0
Meats	2.4	8.5	0.8	2.6	2.8
Beef and veal	2.4	8.6	-0.3	2.1	2.4
Pork	2.3	8.7	2.7	4.0	3.4
Other meats	2.4	6.8	2.2	2.3	2.4
Poultry	0.4	6.8	2.3	2.8	3.9
Eggs	0.7	6.3	0.7	1.7	5.5
Dairy products	2.4	7.9	1.4	1.1	2.0
Fats and oils	NA	9.5	2.6	0	2.5
Sugar and sweets	2.5	13.0	2.0	1.6	1.3
Cereals and bakery products	2.4	9.4	3.9	3.2	3.3
Macroeconomic assumptions					
Real per capita disposable personal income	2.7	2.0	2.4	2.4	2.3
Inflation rate (GNP deflator)	3.0	7.4	4.1	4.0	4.3

<sup>1</sup>Based on May 1986 estimates. NA = Not available.

rising nearly 35 percent in 1980, fuel and electricity costs have held relatively steady since 1982. The rate of increase in transportation costs, which comprise nearly 11 percent of the total for food marketing, also slowed in the early 1980's.

Lower petroleum prices have also helped hold down the cost of packaging materials, the second largest component of food marketing costs at 15 percent. Costs have risen slightly in recent years due to greater use of paper and paperboard products, reflecting larger quantities of food in the marketing system and more competition for packaging materials from the nonfood sector.

### Food Prices by 1995

Looking ahead, farm value is projected to change little during the late 1980's. Sharp reductions in commodity price supports provided for in the Food Security Act of 1985 will also hold down the farm value of food over the next few years.

By 1990, the farm value of food should begin to trend upward. Farmers are likely to make adjustments that will reduce the

surpluses that have depressed commodity prices during the 1980's. However, commodity price increases will probably not be sufficient to raise the farm value's share of the retail food dollar.

Marketing costs will increase at a faster rate than the farm value because of several trends. Fast-paced, two-income lifestyles have reduced the amount of time available for preparing food in the home. Therefore, consumers will continue to purchase a growing percentage of their meals from public eating places. The resulting increase in demand for restaurant personnel will mean greater marketing costs for meals away from home.

Changing lifestyles and rising per capita income will also increase the likelihood that the food consumed at home will be in the form of convenience items, such as frozen dinners and entrees. Marketing services, such as deboning, portioning, cooking, seasoning, and storing, are already being added to farm foods as the labor required for preparation is shifted from the consumer to the marketing system. Furthermore, su-

permarkets are responding to foodservice competition by expanding their operating hours and adding specialty departments, such as salad bars, in-store bakeries, and delicatessens. Increased purchases of convenience products with built-in services will mean higher marketing costs and greater consumer food spending.

While greater demand for more prepared foods may raise consumer costs, increases in food prices are still likely to be moderate through the end of the 1980's. Continued low inflation of 3 to 4 percent will temper labor and other costs in food retailing and processing, and the moderate growth in the economy that has prevailed for several years is likely to continue.

A trend toward growing use of plastics and new types of packaging in the food industry, such as microwave-ready containers, could boost marketing costs somewhat in the next decade. Plastics currently account for approximately 15 percent of packaging costs and are used for a number of functions, including trays, bottles, and wrapping. Increasingly, however, plastic bottles are being substituted for metal cans and glass for a range of food products. This greater use of plastics means that the food industry will be subject to any unforeseeable fluctuations in petroleum prices to an even greater extent than in the past.

The trend toward more away-from-home eating will also have implications for energy costs. Over one-third of the fuel and electricity costs of food marketing are incurred by public eating places and other foodservice facilities. Energy expenses for this sector have risen more rapidly during the past decade than for the other food marketing functions. The increased expenses are partly due to more outlets and a greater volume of business. Growth in away-from-home spending rose from 36 percent of the food dollar in 1975 to 43 percent in 1985. Also, the foodservice industry has the highest energy costs per dollar of sales, averaging about 3.8 percent.

Overall, marketing costs will increase at a faster rate than the farm value. However, the decline in the farm value share of food expenditures is expected to be at a slower rate than during the last 5 years, when farm prices were depressed. □

# Changes in the CPI

Laura A. Blanciforti and Ralph Parlett  
(202) 523-9301 (202) 786-1870

Consumer buying patterns have always changed with new lifestyles and technology. Manual typewriters, for example, have given way to word processors. Because of such change, revisions in major economic indicators, such as the Consumer Price Index (CPI), have been periodically necessary. The U.S. Department of Labor's Bureau of Labor Statistics (BLS) introduced its latest updates in the January 1987 CPI.

The revision is a 5-year effort to ensure that the CPI provides the best possible representation of changes in the prices that consumers pay for goods (including food) and services. The revision is based on 1982-84 consumer spending patterns, replacing those of 1972-73.

## Why Revise the CPI?

New products, discontinued items, demographic changes, and population shifts affect the purchasing patterns of consumers. Since the last market basket was developed, for example, there have been a number of significant changes. Consumers are now buying personal computers, video cameras and recorders, and microwave ovens—products virtually unknown 10 years ago. Furthermore, technological advances have changed the quality of many traditional items. Refrigerators, home heating and air conditioning systems, and automobiles, for example, are more energy-efficient.

Big changes have also occurred for food. With many consumers wanting more convenience, processed foods are gaining in popularity. Ready-to-microwave products are among the fastest growing new items in the grocery store. At the same time, we eat fewer processed and more fresh vegetables, and less red meat and more poultry, particularly cut-up chicken.

Where we eat has also changed. Higher incomes and changing lifestyles have increased eating away from home. In the 1982-84 market basket, consumers spent 38

percent of their food dollars eating out, compared with 30 percent in 1972-73.

The growth in two-earner households has increased the demand for services: nursery schools and day care for children, as well as meals away from home. Lifestyle changes have increased the demand for more physical exercise and other recreational activities. Families are also smaller. Therefore, the sample of goods and services comprising the CPI must be revised periodically to accurately represent these and other changes in the types of goods and services purchased.

Furthermore, revising the CPI reflects not only different consumer lifestyles, but also changes at BLS. The agency is putting proportionately more resources, for example, into surveys to collect and calculate information concerning items of increasing importance in the consumer budget. Changes in the design of the surveys underlying calculation of the CPI have also been

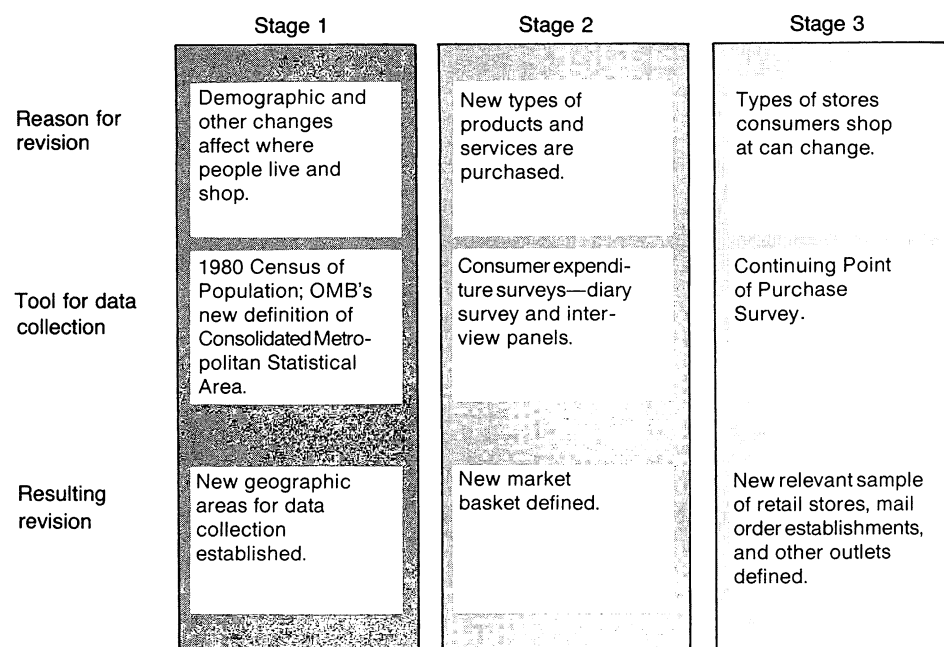
made. Advancements in computer applications have made data processing more efficient and expedient, enabling more recent survey information to be incorporated. What's more, BLS staff conduct research to advance the statistical techniques used to calculate the index.

## Revising the Index

There are three stages to revising the CPI. First, changes in where people live are assessed in order to update the set of urban areas where price information should be collected. Next, the amount households spend on a wide variety of items is measured. Finally, the outlets where people shop are identified so that price information is collected in a representative sample of stores (*figure 1*.)

For the first stage of information gathering, the country is divided into four regions, with sampling conducted in 1,166 counties or groups of contiguous counties

**Figure 1. New CPI . . . Three Stages of Revision**



*Blanciforti is an economist with the Office of Productivity and Technology, Bureau of Labor Statistics of the U.S. Department of Labor. Parlett is an agricultural economist with the Economic Research Service's Food Marketing and Consumption Economics Branch.*

with similar demographic and economic characteristics. Under the first stage of revising the CPI, new geographic areas were selected based on the 1980 Census of Population and the new definitions of a Consolidated Metropolitan Statistical Area issued by the Office of Management and Budget. As a result of the revisions, cities such as New York, Philadelphia, San Francisco, and Los Angeles included a larger geographic area.

The total number of sample areas increased from 85 to 91. The South had eight more areas, the North Central region one more. The Northeast declined by three, and the West remained unchanged.

### Updating the Market Basket

During the second stage of revision, BLS used its recent Consumer Expenditure Survey (CES) as the basis for selecting a new market basket of goods and services. The survey also provides a measure of the importance of each item in terms of total expenditures. The survey was first used to establish the CPI in 1921. In the five CPI revisions since, it has incorporated improved sampling techniques, data collection, and processing methods. The previous CPI reflected the 1972-73 CES, while the revised index incorporates results of the survey for 1982-84. Since 1980, the CES has been on-going, with rotating panels of urban and rural respondents of varying ages, family sizes, and incomes being interviewed.

The CES is composed of two types of surveys, each with its own questionnaire and sample. The Interview Panel consists of 5,000 consumer units (defined as a person living alone or with others but financially independent, families, or a household with two or more members not related by blood or marriage who share income and expenses). The respondents are visited by interviewers every 3 months for a year. The Interview Panel provides data on major expenditures, such as real estate, automobiles, large appliances, medical care, and those that occur on a regular basis, such as rent, insurance, and clothing.

### What is the Consumer Price Index?

The CPI is a statistical tool used to measure average price changes for a representative sample of consumer goods and services, called a market basket. The CPI is published monthly for some major cities, for various sizes of urban areas, and for the United States as a national city average. The indexes published for local areas measure average changes in the specified area over time, and not price differences between locations.

Separate indexes are calculated for major expenditure categories, including food and beverages, housing, apparel and upkeep, transportation, medical care, entertainment, and other goods and services; for services and durable and nondurable goods; for certain special items like energy; and for about 200 detailed items (*table 1*).

The CPI has been reported for two population groups since 1978. The CPI-W is a continuation of the index introduced over a half-century ago for use in wage negotiations. It encompasses the buying patterns of urban hourly wage earners and clerical workers and represents about 32 percent of the civilian noninstitutional population. Today, the CPI-W is used to index Federal payments such as Social Security benefits. It is also used to adjust wages in collective bargaining contracts for cost-of-living increases.

The CPI-U includes the wage earners and clerical workers covered by the CPI-W, as well as all other residents of urban places. These include professional, technical, and managerial staff; the self-employed; short-term workers;

the unemployed; retirees; and others not in the labor force. The index is representative of the buying habits of about 80 percent of the civilian population of the United States, excluding prisoners, hospital patients, and other institutional residents.

Because it serves as a measure of price changes, the CPI has many uses. The CPI-U is used to adjust personal income tax brackets and exemptions in order to prevent "bracket creep" and is incorporated in a wide variety of private-party escalation agreements.

The CPI is the most widely used measure of inflation. It is also used as a deflator of many economic series, that is, to adjust them for price changes and translate these series into inflation-free dollars. Analysts considering changes in national after-tax income, for example, often deflate the series using the CPI to sort out real versus inflation-induced effects.

With inflation outpacing incomes in the 1970's, cost-of-living adjustments based on changes in the CPI became standard practice in many wage and salary contracts. Today, more than 4.3 million workers are covered by collective bargaining contracts that adjust wage rates based on changes in the CPI. The benefits of almost 38 million Social Security recipients, 3.5 million retired military and Federal Civil Service employees and survivors, and about 20 million food stamp recipients are adjusted by the CPI. The index is also used to adjust the eligibility criterion of many Federal, State, and local government programs. Similarly, the CPI is applied in long-term contractual agreements to adjust prices and fees or rents for goods and services.



Table 1. Indexes Calculated for Many Categories<sup>1</sup>

Year	Special indexes and groups				Consumer Price Index for all urban consumers						
	Durables	Commodities less food Non-durables	Total	Services	Food	Housing total <sup>2</sup>	Apparel and upkeep	Transportation <sup>3</sup>	Medical care	Entertainment	All items
1967 = 100											
1966	98.5	97.0	97.5	95.8	99.1	97.2	96.1	97.2	93.4	NA	97.2
1967	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1968	103.1	104.1	103.7	105.2	103.6	104.0	105.4	103.2	106.1	105.7	104.2
1969	107.0	108.8	108.1	112.5	108.9	110.4	111.5	107.2	113.4	111.0	109.8
1970	111.8	113.1	112.5	121.6	114.9	118.2	116.1	112.7	120.6	116.7	116.3
1971	116.5	117.0	116.8	128.4	118.4	123.4	119.8	118.6	128.4	122.9	121.3
1972	118.9	119.8	119.4	133.3	123.5	128.1	122.3	119.9	132.5	126.5	125.3
1973	121.9	124.8	123.5	139.1	141.4	133.7	126.8	123.8	137.7	130.0	133.1
1974	130.6	140.9	136.6	152.1	161.7	148.8	136.2	137.7	150.5	139.8	147.7
1975	145.5	151.7	149.1	166.6	175.4	164.5	142.3	150.6	168.6	152.2	161.2
1976	154.3	158.3	156.6	180.4	180.8	174.6	147.6	165.5	184.7	159.8	170.5
1977	163.2	166.5	165.1	194.3	192.2	186.5	154.2	177.2	202.4	167.7	181.5
1978	173.9	174.3	174.7	210.9	211.4	202.8	159.6	185.5	219.4	176.6	195.4
1979	191.1	198.7	195.1	234.2	234.5	227.6	166.6	212.0	239.7	188.5	217.4
1980	210.4	235.2	222.0	270.3	254.6	263.3	178.4	249.7	265.9	205.3	246.8
1981	227.1	257.5	241.2	305.7	274.6	293.5	186.9	280.0	294.5	221.4	272.4
1982	241.1	261.6	250.9	333.3	285.7	314.7	191.8	291.5	328.7	235.8	289.1
1983	253.0	266.3	259.0	344.9	291.7	323.1	196.5	298.4	357.3	246.0	298.4
1984	266.5	270.8	267.0	363.0	302.9	336.5	200.2	311.7	379.5	255.1	311.1
1985	270.7	277.2	272.5	381.5	309.8	349.9	206.0	319.9	403.1	265.0	322.2
1986	270.2	262.2	263.4	400.5	319.6	360.2	207.8	307.5	433.5	274.1	328.4

<sup>1</sup>Represents only selected categories. <sup>2</sup>Separate indexes available for shelter, fuel and other utilities, and household furnishings and operations. <sup>3</sup>Separate indexes available for public and private transportation.

NA = Not available.

Source: Bureau of Labor Statistics.

The second survey, known as the Diary Survey, asks respondents to complete a diary of expenses for 2 consecutive weeks. The survey obtains data on frequently purchased items, such as food and beverages, tobacco, drugs, personal care products, and personal services.

Respondents were statistically selected from the sample areas around the country. Moving from one geographic area to another can alter peoples' purchasing patterns. Therefore, the 1982-84 CES took into consideration population shifts to those regions of the country showing rapid

growth in the last 10 years, such as the South and the West.

With current information about what people buy, a new basket of goods and services was developed. While the new basket contains many of the same items as the old one, some items were added. In addition, the relative importance of many items, including food, has changed to reflect shifts in consumption trends.

### Collecting the Price Information

To compute the CPI, the market basket is paired with price tags. Price changes are measured by repricing the market basket at regular intervals and comparing it with the

costs of the same goods and services in a selected base period.

To be sure that price information is collected in the types of stores where consumers actually shop, a point of purchase survey is used to update the relevant sample of retail stores, mail order establishments, and other outlets. In the Continuing Point of Purchase Survey (CPOPS), conducted by the Census Bureau for BLS, about 4,000 families across the Nation provide information on where they purchase over 130 categories of goods and services.

## Using the Consumer Price Index

We often hear about the Consumer Price Index (CPI) on the evening news or read about it in the paper. While we're familiar with it as a measure of inflation, how it's used may not be so clear. As the following example shows, comparing price changes over time really comes down to simple arithmetic.

Indexes express price changes from a designated base or reference period, which is always denoted as 100. Currently, the base year for the all-items national CPI is 1967. Any table showing the CPI will have the notation 1967=100. The CPI for all items was 322.2 in 1985. This means the cost of a fixed market basket of goods and services increased 222.2 percent from 1967. In dollar terms, the price of the base-period market basket rose from \$100 in 1967 to \$322.20 in 1985.

To calculate percentage changes from one period to the next, subtract the

earlier observation from the latest month or year and divide the difference by the earlier observation. For example, the CPI for all items was 303.5 in December 1983 and 315.5 in December 1984. The percentage increase in prices during 1984 was:  

$$(315.5 - 303.5) / 303.5 = 4.0 \text{ percent.}$$

Monthly CPI information is available in The CPI Detailed Report. The publication may be ordered from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The subscription price per year is \$16 domestic and \$20 foreign. A single copy is \$4 domestic and \$5 foreign.

The CPI MAILGRAM provides selected U.S. city average data for CPI-U and CPI-W within 24 hours of release. This information can be ordered from the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161. The cost of the subscription is \$125 in the contiguous United States and Hawaii, \$135 in Alaska and Canada.

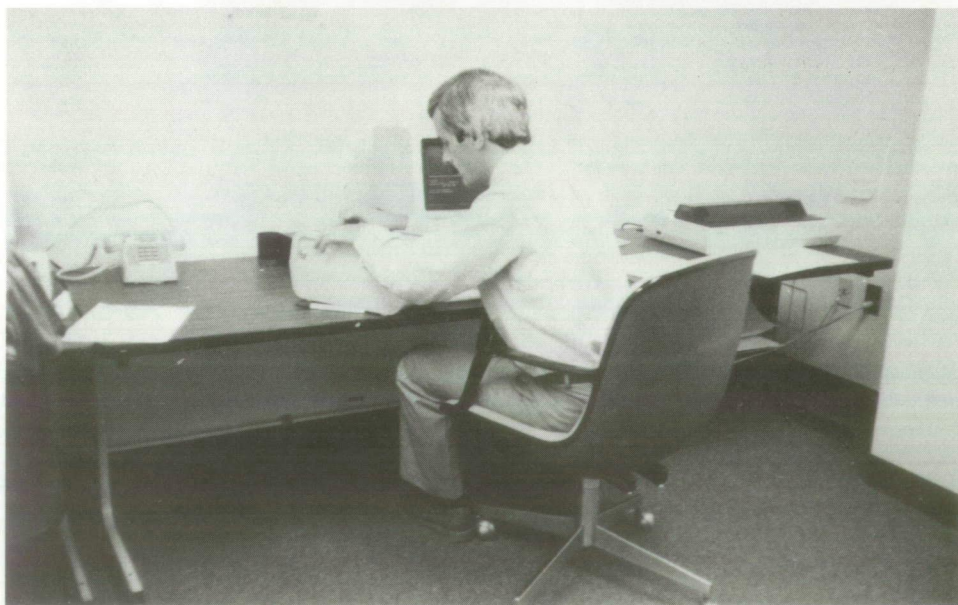
The particular items priced in each store in the sample depend on the sales history of the store or outlet. Data collectors are given lists of outlets derived from the CPOPS and the market basket items ascertained from the CES, as well as detailed specification sheets. Using a statistical technique called probability sampling, data collectors select the items to be priced based on their proportion of sales within a category in each store.

Once an item is selected and its specifications noted, it is priced over time in that particular outlet. Therefore, the varieties, brands, and sizes of products priced can vary at different stores. This avoids the problem of trying to price an item that is not stocked by a particular outlet. It also allows a representative range of products to be priced.

The BLS field representatives monthly collect prices for food, fuel, and a few other items around the country. Prices of most other commodities and services are collected monthly in the five largest cities and bimonthly in the remaining ones.

## CPI Changes To Take Place Gradually

All the changes in the CPI have not yet been reflected in the January 1987 data. BLS is using a concept called "rolling-in," where the new sample items, outlets, and area changes are incorporated gradually over a period of 2 years. First, pricing will be initiated in 20 new areas to account for population shifts. The CPOPS will be conducted in the 20 new areas so that items and outlets can be designated. Second, new items or those with substantially modified definitions will be initiated in all areas. Finally, the revised expenditure weights will be introduced by linking; that is, indexes using old and new weights will be published for 6 months. In 1987, outlet samples will be updated at the same time as 16 more new geographic areas are rolled-in. This will again include the pricing of new items. Three more areas will be introduced during 1988.



Advancements in computer applications have made data processing more efficient, enabling more recent information to be incorporated in the CPI.



**Table 2. Title and Definition Changes in the Food and Beverage Index**

New series title	Definition change
Fresh other breads, biscuits, rolls, and muffins <sup>1</sup>	Combines "other breads" and "fresh biscuits, rolls, and muffins"
Cookies, fresh cakes, and cupcakes <sup>1</sup>	Combines "fresh cakes and cupcakes" and "cookies"
Other bakery products <sup>1</sup>	Combines "fresh sweetrolls, coffee cake, and donuts" and "frozen and refrigerated bakery products and fresh pies, tarts, and turnovers"
Ham <sup>1</sup>	Combines "ham other than canned" and "canned ham"
Other pork, including sausage <sup>1</sup>	Combines "sausage" and "other pork"
Lunchmeat, lamb, organ meats, game, mutton, and goat	Combines "frankfurters", "bologna, liverwurst, and salami", "other lunchmeats," and "lamb and organ meats"
Other dairy products, including	Combines "butter" and "other dairy products" butter <sup>1</sup>
Oranges, including tangerines	Adds tangerines
Other fresh fruits	Excludes tangerines
Fruit juices and frozen fruit <sup>1</sup>	Combines "frozen fruit and fruit juices" and "fruit juices other than frozen"
Other processed vegetables <sup>1</sup>	Combines "cut corn and canned beans except lima" and "other canned and dried vegetables"
Sweets, including candy	Combines "candy and chewing gum" and "other sweets"
Fats and oils	Combines "margarine," "nondairy substitutes and peanut butter," and "other fats, oils, and salad dressings"
Carbonated drinks <sup>1</sup>	Combines "cola drinks, excluding diet cola" and "carbonated drinks, including diet cola"
Coffee <sup>2</sup>	Combines "roasted coffee" and "freeze dried and instant coffee"
Seasonings, condiments, sauces, and spices <sup>1</sup>	Combines "seasonings, olives, pickles, relish" and "other condiments"
Miscellaneous prepared foods, including baby food <sup>1</sup>	Combines "miscellaneous prepared foods" and "other canned and packaged prepared foods"
Distilled spirits (at home) <sup>1</sup>	Combines "whiskey (at home)" and "other alcoholic beverages (at home)"

<sup>1</sup>Historical data available back to January 1978. <sup>2</sup>Historical data available back to January 1967.

### What Changes Will Occur for Food and Beverages?

Consumer spending patterns for food, especially grocery items, have fallen in importance relative to other items. Therefore, BLS will apply fewer resources to collecting information in these categories. Because the samples for some food items were reduced to accommodate those of increasing importance, users will notice a small reduction in product detail in the published indexes.

Some previously separate items have been combined into larger groupings. For example, three categories—margarine; nondairy substitutes and peanut butter; and other fats, oils, and salad dressing—have been combined into the general fats and oils category (*table 2*). Similarly, two others—frozen fruit and fruit juices other than frozen—have been combined into fruit juices and frozen fruit.

To accommodate users, separate indexes for the items that were merged into larger categories are still available. However, because the sample sizes have been reduced considerably, these indexes are less reliable. Separate indexes are no longer available for canned ham, cola drinks excluding diet colas, and other carbonated drinks. □



# Nutrient Content of the U.S. Food Supply

Ruth Marston and Nancy Raper  
(301) 436-5810

**A**lmost all nutrients in the 1985 U.S. food supply were higher than a year earlier. Levels of food energy (calories), fat, carbohydrate, vitamin E, and ascorbic acid ranged between 3 and 7 percent higher, while the other 13 nutrients and food components changed 2 percent or less (table 1).

Over the past two decades, the changes in the nutrient content of the U.S. food supply have been more substantial. Six nutrients rose between 10 and 23 percent and vitamin A increased 37 percent. Food energy and four other nutrients advanced between 5 and 9 percent. The level of cholesterol declined 8 percent and vitamin B<sub>12</sub>, 5 percent.

## Changes Between 1984 and 1985

**Food energy:** Higher levels of fat and carbohydrate were largely responsible for a 3-percent increase in food energy. Fat accounted for the largest share of the gain because it provides more than twice the energy of carbohydrate or protein (on an equal weight basis). Salad and cooking oils were primarily responsible for the 5-percent increase in fat, although edible beef tallow and shortening contributed somewhat. Use of salad and cooking oils increased from 21 to 25 pounds per capita between 1984 and 1985 (including a small amount of oil used for other purposes, such as nondairy creamers). Not all of salad and cooking oil is ingested, however. For example, considerable amounts may be discarded after foods are fried.

Most of the 3-percent increase in carbohydrate was attributed to flour and cereal products and sugar and sweeteners. Use of flour and cereal products rose roughly 5 pounds per capita between 1984 and 1985, providing almost one-half of the increase in carbohydrate. Use of high fructose corn syrup (HFCS) was responsible for the increase from the sugar and sweeteners

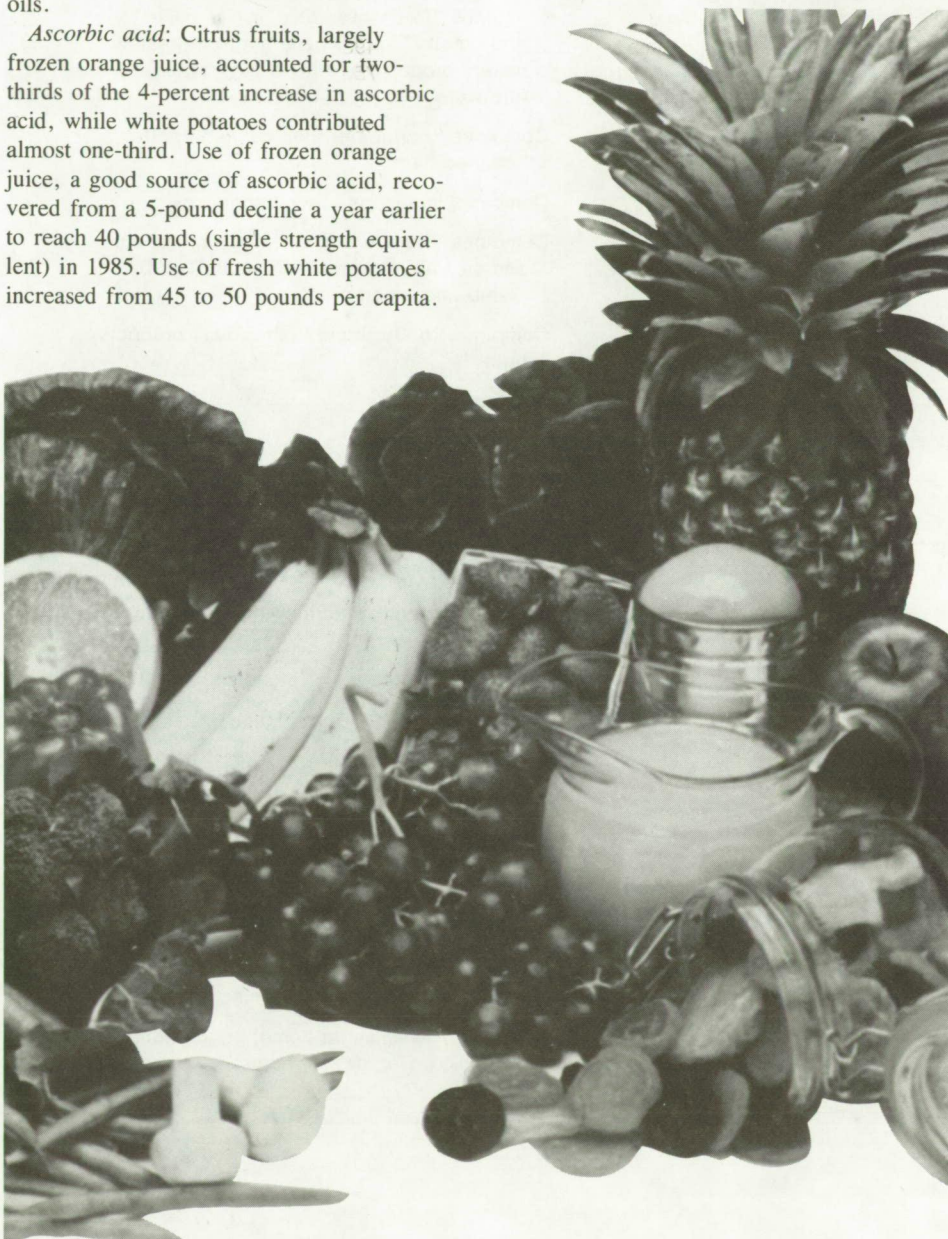
group. Use of HFCS increased 20 percent from 1984 to 1985.

**Vitamin E:** The 7-percent increase in vitamin E was attributed to fats and oils, the leading source of this vitamin (table 2). Salad and cooking oils supplied more than half of the vitamin E in the food supply and accounted for the increase from fats and oils.

**Ascorbic acid:** Citrus fruits, largely frozen orange juice, accounted for two-thirds of the 4-percent increase in ascorbic acid, while white potatoes contributed almost one-third. Use of frozen orange juice, a good source of ascorbic acid, recovered from a 5-pound decline a year earlier to reach 40 pounds (single strength equivalent) in 1985. Use of fresh white potatoes increased from 45 to 50 pounds per capita.

## Changes Between 1967-69 and 1985

**Food energy:** Higher levels of fat, carbohydrate, and protein led to a 9-percent increase in food energy between 1967-69 and 1985. The amount of fat rose 10 percent, primarily from a marked increase in use of salad and cooking oils, and shortening. These oils rose from 16 to 25 pounds per



Fruits and vegetables, including potatoes, have accounted for approximately 90 to 95 percent of the ascorbic acid in the food supply over the years.

*The authors are home economists with the Human Nutrition Information Service of USDA.*

Table 1. Nutrients Available for Consumption, Per Capita Per Day

Nutrient	Unit	1909-13	1947-49	1967-69	1977-79	1984	1985	Percent change <sup>1</sup>	
								1967-69 to 1985	1984 to 1985
Food energy	Calories	3,500	3,200	3,300	3,300	3,400	3,600	9	3
Protein	Grams	99	93	97	98	101	102	5	1
Fat	Grams	124	140	156	158	164	172	10	5
Cholesterol	Milligrams	500	570	520	480	480	480	8	0
Carbohydrate	Grams	493	403	378	391	401	413	9	3
Calcium	Milligrams	750	980	900	880	920	920	3	0
Phosphorus	Milligrams	1,480	1,490	1,470	1,470	1,510	1,510	3	1
Magnesium	Milligrams	380	340	310	310	320	320	3	1
Iron	Milligrams	14.8	15.9	16.2	16.4	18.0	18.3	13	1
Zinc	Milligrams	12.7	11.4	12.1	12.1	12.2	12.3	2	1
Vitamin A	Int. Units	7,200	8,100	7,300	9,100	9,800	9,900	37	2
Vitamin E	Milligrams a-te	11.2	12.5	14.3	16.0	16.4	17.6	23	7
Ascorbic Acid	Milligrams	101	110	98	108	110	114	16	4
Thiamin	Milligrams	1.6	2.0	2.0	2.1	2.1	2.2	10	1
Riboflavin	Milligrams	1.8	2.3	2.3	2.3	2.4	2.4	5	0
Niacin	Milligrams	19	20	23	25	26	26	14	2
Vitamin B <sub>6</sub>	Milligrams	2.2	1.9	1.9	2.0	2.0	2.1	8	2
Vitamin B <sub>12</sub>	Micrograms	7.9	8.6	9.2	9.0	8.9	8.8	65	61

<sup>1</sup>Based on unrounded quantities of nutrients from foods available for consumption per capita per day.

capita and shortening from 16 to 23 pounds. The increase in fat from these foods more than offset the decline from less use of lard—from 9 to 3 pounds per capita. Less use of red meat reduced the fat from the meat, poultry, and fish group. The decline in fat from red meat more than outweighed the increase from greater use of poultry.

The carbohydrate level of the food supply increased 9 percent between 1967-69 and 1985, largely due to greater use of HFCS. This sweetener, introduced in the late 1960's, is largely used in the production of soft drinks. Use of HFCS reached 61 pounds per capita in 1985, up from less than 1 pound in 1967-69. At the same time, use of sugar declined 36 percent to 63 pounds per capita in 1985. The increase in carbohydrate from flour and cereal products was about one-half the gain from sugar and sweeteners. Use of flour and cereal products rose from 144 to 155 pounds per capita.

The 5-percent increase in protein resulted chiefly from about a 50-percent gain in use of poultry. Flour and cereal and dairy products also contributed. The increase in protein from these foods more than offset the decrease from less use of red meat.

**Vitamin A:** The 37-percent increase in vitamin A was attributed primarily to dark-green, deep-yellow vegetables. In 1985, carrots and sweetpotatoes provided 83 percent of the vitamin A from this group, compared with 72 percent in 1967-69, and accounted for almost all of the increase. Although use of carrots rose slightly, the gain in vitamin A primarily reflected higher values for carrots and sweetpotatoes beginning in 1970. New varieties were developed that had deeper orange-colored flesh and more carotene, a precursor of vitamin A.

**Vitamin E:** The 23-percent increase in the vitamin E level of the food supply was derived mainly from fats and oils. Salad and cooking oils accounted for well over half of the increase in vitamin E from fats and oils—more than from shortening and margarine combined.

**Ascorbic acid:** Over half of the 16-percent increase in ascorbic acid resulted from greater use of citrus fruits, chiefly frozen orange juice. Between 1967-69 and 1985, use of frozen orange juice rose from 20 to 40 pounds per capita. Vegetables, mainly dark-green and deep-yellow, and noncitrus fruits were also important contributors to the gain in ascorbic acid.

**Vitamin B<sub>6</sub>:** The 8-percent gain in vitamin B<sub>6</sub> came mostly from increased use of poultry, which more than offset the decline in use of red meat. Fruits, mainly non-citrus, also contributed.

**Thiamin, riboflavin, niacin, and iron:** Federal standards for enrichment of white flour with thiamin, riboflavin, and niacin were raised in 1975 and with iron in 1983. These higher standards and an 11-percent increase in the per capita use of flour and cereal products, mainly wheat flour and rice, were major factors behind the higher levels. Between 1967-69 and 1985, thiamin rose 10 percent, riboflavin 5 percent, niacin

14 percent, and iron 13 percent. Almost all of the increase in thiamin, riboflavin, and iron and a major portion of the gain in niacin was derived from flour and cereal products. Poultry also contributed to the increase in niacin.

*Cholesterol and vitamin B<sub>12</sub>*: Of all the nutrients, only cholesterol and vitamin B<sub>12</sub> declined between 1967-69 and 1985. The 8-percent drop for cholesterol primarily reflected the decline in use of eggs from 40

to 32 pounds per capita. There was also less butter and lard used. Decreased use of eggs and meats, largely offals, was responsible for the 5-percent decline in the vitamin B<sub>12</sub> level. Offals, used primarily in luncheon meats, include liver and other organ meats, which are particularly good sources of vitamin B<sub>12</sub>.

*Other nutrients*: The 1985 levels for calcium, phosphorus, and magnesium showed small increases. Calcium, provided largely

by dairy products, rose 3 percent as increased use of lowfat milk and cheese more than offset the decline in whole, canned, and dry milks. Lowfat milk use more than doubled while use of whole milk declined about one-half. The 3-percent increase in phosphorus was attributable chiefly to greater use of poultry, lowfat milk, cheese, and flour and cereal products. The same foods, along with fruits, accounted for the 3-percent rise in magnesium.

**Table 2. Contributions by Major Food Groups to Nutrient Levels<sup>1</sup>**

Food group	Food energy	Protein	Fat	Cholesterol	Carbohydrate	Minerals				
						Calcium	Phosphorus	Magnesium	Iron	Zinc
1967-69						Percent				
Meat, poultry, and fish	22	43	38	35	*	4	28	14	33	48
Eggs	2	5	3	46	*	3	5	2	6	5
Dairy products, exc. butter	11	21	12	14	7	77	37	21	2	19
Fats and oils, inc. butter	17	*	40	5	*	*	*	*	*	*
Citrus fruits	1	*	*	0	2	1	1	2	1	*
Noncitrus fruits	2	1	*	0	4	1	1	4	2	1
White potatoes	3	2	*	0	5	1	3	7	4	3
Dark green, deep yellow vegetables	*	*	*	0	1	1	1	2	1	1
Other vegetables	2	3	*	0	4	4	4	8	7	4
Legumes, nuts, and soy	3	5	3	0	2	2	5	11	7	4
Flour and cereal products	20	19	1	0	36	4	13	20	31	12
Sugar and sweeteners	17	*	0	0	39	*	*	*	1	*
Miscellaneous <sup>2</sup>	1	1	1	0	1	2	2	9	5	2
1985										
Meat, poultry, and fish	20	43	33	40	*	4	28	15	29	48
Eggs	2	4	2	40	*	2	4	1	4	4
Dairy products, exc. butter	10	21	11	14	6	76	36	20	2	20
Fats and oils, inc. butter	20	*	46	5	*	*	*	*	*	*
Citrus fruits	1	1	*	0	2	1	1	2	1	*
Noncitrus fruits	2	1	*	0	5	1	1	5	2	1
White potatoes	3	2	*	0	5	1	3	6	4	3
Dark green, deep yellow vegetables	*	*	*	0	1	1	1	2	2	1
Other vegetables	2	2	*	0	3	4	4	7	6	3
Legumes, nuts, and soy	3	5	3	0	2	3	6	12	6	5
Flour and cereal products	20	19	1	0	36	4	14	20	38	13
Sugar and other sweeteners	18	*	0	0	40	*	*	*	1	*
Miscellaneous <sup>2</sup>	1	1	2	0	1	2	2	9	4	2

\* Less than 0.5 percent.

<sup>1</sup>Based on unrounded nutrient data. <sup>2</sup>Coffee, chocolate liquor equivalent of cocoa beans, tea, spices, and fortification of products not assigned to a specific group.



Table 2. Contributions by Major Food Groups to Nutrient Levels (continued)<sup>1</sup>

Food group	Vitamins							
	Vit. A	Vit. E	Ascorbic Acid	Thia-min	Ribo-flavin	Niacin	Vit. B <sub>6</sub>	Vit. B <sub>12</sub>
1967-69	<i>Percent</i>							
Meat, poultry, and fish	25	11	2	30	23	49	40	71
Eggs	3	3	0	2	6	*	3	7
Dairy products, exc. butter	13	3	4	12	38	2	12	20
Fats and oils, inc. butter	9	54	0	*	*	*	*	0
Citrus fruits	1	1	25	2	1	1	2	0
Noncitrus fruits	5	4	15	2	2	2	8	0
White potatoes	0	4	18	4	1	7	13	0
Dark green, deep yellow vegetables	30	3	9	1	1	1	2	0
Other vegetables	11	7	24	5	3	4	7	0
Legumes, nuts, and soy	*	6	*	5	2	6	4	0
Flour and cereal products	*	5	0	36	18	24	10	1
Sugar and sweeteners	0	0	*	*	*	*	*	0
Miscellaneous	3	1	2	*	5	5	*	0
1985								
Meat, poultry, and fish	17	10	2	26	22	47	40	72
Eggs	2	2	0	1	4	*	2	6
Dairy products, exc. butter	10	2	3	9	35	2	11	20
Fats and oils, inc. butter	6	61	0	*	*	*	*	0
Citrus fruits	1	1	28	3	1	1	2	0
Noncitrus fruits	4	3	15	2	2	2	9	0
White potatoes	0	2	16	4	1	6	12	0
Dark green, deep yellow vegetables	49	3	11	1	1	1	3	0
Other vegetables	8	5	21	5	3	4	7	0
Legumes, nuts, and soy	*	6	*	5	2	5	4	0
Flour and cereal products	*	4	0	43	24	29	10	2
Sugar and sweeteners	0	0	*	*	*	*	*	0
Miscellaneous <sup>2</sup>	3	1	4	*	4	3	*	0

\* Less than 0.5 percent.

<sup>1</sup>Based on unrounded nutrient data. <sup>2</sup>Coffee, chocolate liquor equivalent of cocoa beans, tea, spices, and fortification of products not assigned to a specific group.

### Closeup on Vitamins

Changes in the food supply have raised vitamin levels since the early part of the century. Year-round availability of an assortment of foods, new varieties, and enrichment have raised levels of seven vitamins—thiamin, riboflavin, niacin, vitamin B<sub>12</sub>, ascorbic acid, vitamin A, and vitamin E—from 1909-13 to 1985. The supply of vitamin B<sub>6</sub> has remained about the same. Changes in the food supply have not only

raised many vitamin levels, but also shifted the proportionate share of some food sources of vitamins throughout the century.

*Thiamin, Riboflavin, and Niacin:* Thiamin increased 38 percent from 1.6 milligrams per capita per day in 1909-13 to 2.2 milligrams in 1985. Riboflavin rose 33 percent, from 1.8 to 2.4 milligrams, and niacin, 37 percent, from 19 to 26 milligrams. Levels for each began climbing in the early 1940's when enrichment of white flour began.

Despite a decline in the per capita use of flour and cereal products until the mid-1970's, these nutrients generally remained above levels before enrichment. Since the mid-1970's, thiamin and niacin have been slightly higher because of an increase in the enrichment standards for white flour and a small rise in the use of flour and cereal products. Small declines from other foods since 1975 partially offset the

increase in riboflavin from the higher enrichment standard.

The meat, poultry, and fish group was the largest contributor of niacin and was also the main source of thiamin until the late 1940's when flour and cereal products took the lead. In 1985, meat, poultry, and fish accounted for 47 percent of the niacin, 26 percent of the thiamin, and 22 percent of the riboflavin. The primary source of riboflavin was dairy products, providing 35 percent that year.

**Vitamin B<sub>6</sub>:** The vitamin B<sub>6</sub> available from the food supply in 1985, 2.1 milligrams per capita per day, was about the same as in 1909-13. Meat, poultry, and fish accounted for the largest share throughout the century (*figure 1*). Their share has increased from 26 to 40 percent, reflecting greater use of beef and poultry, coupled with declines for grain products and potatoes.

Dairy products provided 7 percent in 1909-13 versus 11 percent in 1985. Meanwhile, the share of vitamin B<sub>6</sub> from fruits and vegetables declined from 41 to 33 percent because of a decrease in use of potatoes. Fortification of cereals, meal replacements such as powdered instant breakfast mixes, and infant formulas since the late 1960's also contributed to the amount of B<sub>6</sub> in the food supply.

**Vitamin B<sub>12</sub>:** The level of vitamin B<sub>12</sub> in the 1985 food supply, 8.8 micrograms per capita per day, was 11 percent higher than in 1909-13. Levels were lowest during the Great Depression of the mid-1930's. A peak of 9.4 micrograms occurred in 1944, when use of dairy products and offals was high, and again in 1970 and 1971 because of increased use of pork and offals.

Vitamin B<sub>12</sub> occurs only in foods of animal origin. However, small amounts

## Developing the Data

USDA's Human Nutrition Information Service (HNIS) annually estimates per capita per day levels of food energy and 17 nutrients and food components, such as cholesterol, in the U.S. food supply. HNIS also estimates the percentage contribution of each nutrient provided by the 13 major food groups. The series dates from 1909.

The estimates are derived from quantities of food available for consumption based on data published by the Economic Research Service (ERS) and data on the nutrient composition of the edible portion of food from HNIS. ERS determines the amount of food available by subtracting exports, year-end inventories, nonfood use, and military procurement from total production, imports, and beginning inventories. Food losses during further processing, marketing, and home use are not considered. Therefore, quantities of food available for consumption and nutrients provided are larger than are actually eaten.

have been added to cereals in recent years. The meat, poultry, and fish group accounted for 72 percent in 1985. Offals provided 55 percent of the vitamin B<sub>12</sub> from meats and beef, 25 percent. Over the years, poultry has provided from 4 to 12 percent of this vitamin.

**Ascorbic acid:** Ascorbic acid reached 114 milligrams per capita per day in 1985, up 13 percent from the 101 milligrams in 1909-13, but lower than the peak of 124 milligrams in 1944, when use of vegetables was high because of the popularity of home gardens. In recent years, ascorbic acid added to fruit drinks and some other foods contributed to the increase.

Fruits and vegetables, including potatoes, have accounted for approximately 90 to 95 percent of the ascorbic acid in the food supply over the years. However, shifts oc-

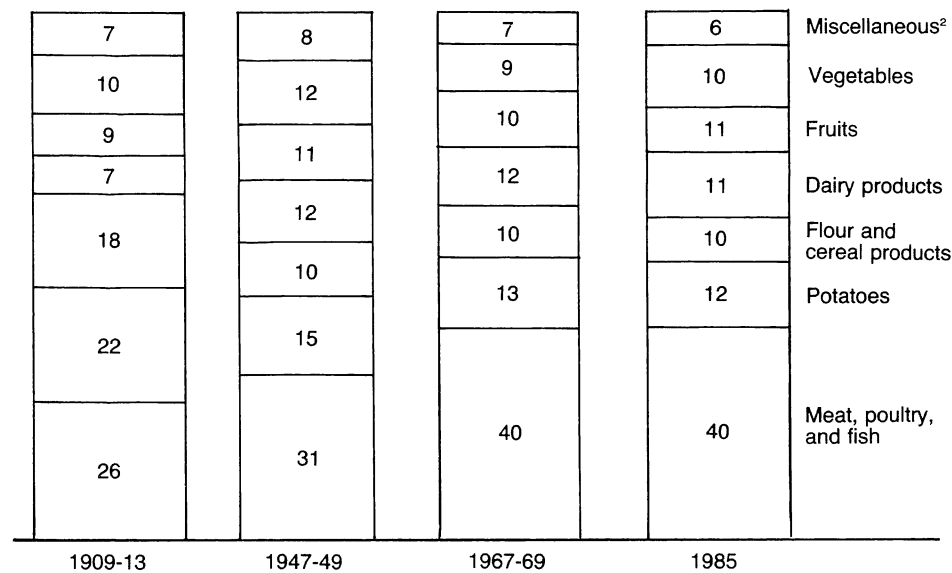
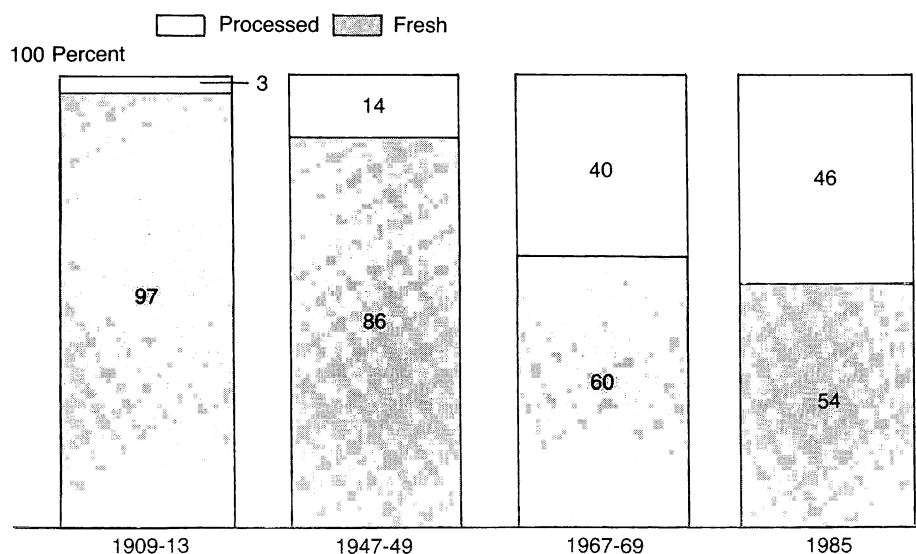
curred in sources. The share provided by potatoes declined from 32 percent during 1909-13 to 16 percent in 1985. The share from all vegetables other than potatoes declined from 41 percent to 32 percent. The share of ascorbic acid from dark-green, deep-yellow vegetables increased over the years. The share from other vegetables declined, although still accounting for the largest proportion. Citrus fruits provided 28 percent in 1985, compared with only 7 percent early in the century.

Processed products accounted for 3 percent of the total ascorbic acid from fruits and vegetables during 1909-13, compared with 46 percent in 1985 (*figure 2*). Frozen items accounted for 28 percent of the ascorbic acid from fruits and vegetables in 1985, compared with only 2 percent during 1947-49, when the frozen food industry was new.

**Vitamin A:** The peak level for vitamin A was 9,900 International Units per capita per day in 1985, 38 percent higher than during 1909-13. Vegetables, particularly dark-green and deep-yellow types, accounted for 46 percent of vitamin A during 1909-13 and 57 percent in 1985. Despite a sharp decline in the use of fresh sweetpotatoes, the share of vitamin A provided by dark-green and deep-yellow vegetables increased from 35 to 49 percent. A higher vitamin A content in newer varieties of sweetpotatoes and other deep-yellow vegetables, such as carrots, was primarily responsible for offsetting the decrease from less use of sweetpotatoes.

Vitamin A also comes from meat, poultry, and fish; dairy products; fats and oils; and fruits. Offals, especially liver, are the major source of vitamin A from the meat, poultry, and fish group, contributing 71 percent in 1985.

Margarine, with vitamin A first added in the late 1930's, has replaced butter as the

**Figure 1. Amount of Vitamin B<sub>6</sub> From Meat, Poultry, and Fish Has Increased**100 Percent<sup>1</sup><sup>1</sup>Components will not add to total due to rounding.<sup>2</sup>Includes eggs; fats and oils; legumes, nuts, and soy; sugar and sweeteners; coffee, tea, cocoa, and spices.**Figure 2. Amount of Ascorbic Acid from Processed Fruits and Vegetables Has Increased<sup>1</sup>**<sup>1</sup> Includes potatoes.

major source of vitamin A from the fats and oils group. Butter provided all of the vitamin A from the fats and oils group during 1909-13 but only 30 percent in 1985. The decline in the use of butter has been greater than the increase in use of margarine. Consequently, the amount of vitamin A provided by both has declined 6 percent since 1909-13.

**Vitamin E:** The vitamin E content of the food supply reached a record of 17.6 milligrams per capita per day in 1985, 57 percent higher than for 1909-13. Between 1909 and 1957-59, levels fluctuated upward from 10.9 to 12.8 milligrams per capita per day. A sharper increase, from 13 to 17.6 milligrams per capita per day, has occurred in the last 25 years.

Fats and oils were the leading source of vitamin E. The portion they contributed to the total rose from 23 percent during 1909-13 to 61 percent in 1985, mainly from increased use of salad and cooking oils and to a lesser extent, from more shortening and margarine. In the fats and oils group, the contribution from salad and cooking oils increased from 21 to 53 percent between 1909-13 and 1985—while the share from shortening declined from 52 to 28 percent. Although the amount of vitamin E from shortening increased over the years, the portion it contributed to the total declined because of even greater increases from salad and cooking oils. Margarine supplied 6 percent during 1909-13, compared with 16 percent in 1985.

Potatoes, vegetables, and grain products each contributed a smaller share of vitamin E in 1985 than during 1909-13, declining from 12, 22, and 15 percent, to 2, 8, and 4 percent, respectively. The share provided by meat, poultry, and fish varied from 7 to 11 percent over the years. The contributions of dairy products and eggs were small. □





# Recent Trends in Domestic Food Programs

Masao Matsumoto  
(202) 786-1864

*This article compares food program participation and costs for the fourth quarter (July through September) of fiscal year 1986 with the same 3 months of 1985. Preliminary data are reported as of November 1986 and are subject to revision. Entitlement and bonus commodities are included where applicable. Administrative costs are excluded unless noted.*

An average of 7.1 million households participated in the Food Stamp Program during the fourth quarter of fiscal year 1986, a decline of 0.6 percent from 1985. The average number of people participating in the program fell 1 percent, from 19.3 million to 19.1 million (*table 1*). Average monthly benefits rose 1.5 percent to \$45.28 per person. Federal expenditures (including administrative costs) totaled \$2.87 billion, up from \$2.83 billion. Food stamp benefits represented 90.6 percent of Federal program expenditures, compared with 91.3 percent in the fourth quarter of 1985.

## Child Nutrition Programs

An average of 23.5 million children participated each day in the National School Lunch Program during September 1986, compared with 23.2 million a year earlier. Data for July and August are excluded because most schools are not in session during those months. During the school year, the program is available to about 90 percent of the children enrolled in public and private elementary and secondary schools. Federal expenditures for the National School Lunch Program rose 8.7 percent to \$509.6 million in July-September 1986, including commodities and cash-in-lieu of commodities.

Cash expenditures for the School Breakfast Program increased 14 percent, from \$50.9 million to \$57.9 million, while average daily participation rose from 3.1 million

to 3.4 million children. Of the 82.8 million breakfasts served in the fourth quarter of 1986, 85 percent were free, 4 percent were purchased at a reduced price, and 11 percent were purchased at the full price.

A total of 153 million meals were served under the Child Care Food Program, a 5.9-percent increase from the previous year. Food costs totaled \$102.1 million, a 9-percent increase from the fourth quarter of 1985.

**Table 1. Average Participation in USDA Food Programs**

Program	July- Sept. 1985	July- Sept. 1986
	<i>Millions</i>	
Food Stamp Program	19.3	19.1
National School Lunch Program <sup>1</sup>	23.2	23.5
School Breakfast Program <sup>1</sup>	3.1	3.4
Special Supplemental Food Program for Women, Infants, and Children (WIC)	3.2	3.3
Child Care Food Program <sup>2</sup>	1.1	1.1
Summer Food Service Program <sup>3</sup>	1.5	1.4
	<i>Thousands</i>	
Commodity Supplemental Food Programs	140.7	135.5
Elderly Feeding Pilot Project	19.3	34.2
Food Distribution Program		
Indian Reservations	139.2	143.3
Trust Territories	4.8	5.3

<sup>1</sup>September only. <sup>2</sup>Average daily attendance in September.

<sup>3</sup>Average daily attendance in July.

Source: Monthly data from USDA's Food and Nutrition Service.

The Summer Food Service Program funds snacks as well as meals for children in needy neighborhoods when school is not in session. In July 1986, daily average attendance at facilities offering the program was 1.4 million. A total of 62.4 million meals were served during the third quarter (April-June) of 1986, compared with 63.6 million a year earlier. Meal costs and the value of commodities distributed to participants rose from \$83.5 million to \$85.3 million, a 2.1-percent increase.

The Special Milk Program served 38.9 million half pints of milk in the fourth quarter 1986, up from 38.6 million a year earlier. Federal expenditures for the program amounted to \$3.64 million, down slightly from \$3.71 million.

## Supplemental Food Programs

The Special Supplemental Food Program for Women, Infants, and Children (WIC) served an average of 3.3 million participants a month, compared with 3.2 million in fourth quarter 1985. Children accounted for 1.6 million participants; infants, 975,000; and women, 727,000. Food costs totaled \$322.7 million, up from \$304.7 million in the previous year.

The Commodity Supplemental Food Program, which is similar to the WIC program, currently operates in 12 States and the District of Columbia. Average participation was 135,500 a month during July-September 1986, compared with 140,700 a year earlier. Food costs for the program were up about \$400,000 to \$8.9 million.

The Elderly Feeding Pilot Program, which is administered under the Commodity Supplemental Food Program, served about 34,200 people during the fourth quarter of 1986—over 75 percent more than a year earlier. Total costs increased from \$684,000 in fourth quarter 1985 to \$1.2 million a year later. Food costs rose by 76 percent, from \$499,300 to \$878,600, while administrative expenses increased by 54.6 percent, from \$185,000 to \$286,000.

*The author is an agricultural economist with the Food Marketing and Consumption Economics Branch of the National Economics Division.*

Table 2. Benefit Cost of USDA Food Programs<sup>1</sup>

Program	1984	1985 <sup>2</sup>	FY 1985 <sup>2</sup> (Quarters)				FY 1986 <sup>2</sup>			
			I	II	III	IV	I	II	III	IV
Million dollars										
Family Food										
Food Stamps	10,673	10,743	2,702	2,771	2,691	2,580	2,662	2,691	2,667	2,597
Nutr. Asst. Prog. in Puerto Rico <sup>3</sup>	825	825	206	206	206	206	206	206	206	206
Food Distribution										
Indian Reservations	43	48	12	12	12	12	12	12	12	11
Schools <sup>4</sup>	828	835	259	273	159	144	239	67	157	149
Other <sup>5</sup>	225	216	55	45	56	60	43	50	88	99
Temporary Emergency Assistance <sup>6</sup>	1,057	972	270	260	253	189	206	209	220	211
Cash-in-lieu of Commodities <sup>7</sup>	133	136	31	35	35	35	37	37	36	35
Child Nutrition <sup>8</sup>										
School Lunch	2,552	2,579	801	807	644	327	831	827	693	363
School Breakfast	378	385	119	117	99	51	125	123	107	58
Child Care Food and Summer Food	454	491	98	101	119	173	107	111	131	183
Special Milk	16	16	4	4	4	4	4	4	4	4
WIC <sup>9</sup>	1,417	1,489	363	368	375	382	387	394	395	410
Total <sup>10</sup>	18,555	18,735	4,920	4,999	4,653	4,161	4,858	4,929	4,714	4,326

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

Source: Monthly data from the Food and Nutrition Service.

### Food Distribution Programs

The Food Distribution Program helps needy families living on Indian reservations and in the Trust Territories of the Pacific Islands by providing USDA-donated food. The program consists of many local projects and two more were added in 1986, for a total of 106. Food costs amounted to \$11.5 million, a 6-percent decline for the fourth

quarter of 1985. The Nutrition Program for the Elderly served an average of 895,000 meals daily at approximately 14,100 sites. In comparison, the program served an average of 903,000 meals in the fourth quarter of 1985. Meal costs rose about \$1.3 million to \$33.9 million, with cash-in-lieu of commodities accounting for \$30.1 million of the total.

The Temporary Emergency Food Assistance Program distributed \$211.2 in commodities, an 11.7-percent increase from

\$189.1 million in the fourth quarter of 1985. The program distributes surplus commodities to low income U.S. households. It has the dual goals of reducing Federal surplus inventories and storage costs and providing nutritional assistance to needy people. □

# USDA Actions

Tom Fulton  
(202) 786-1780

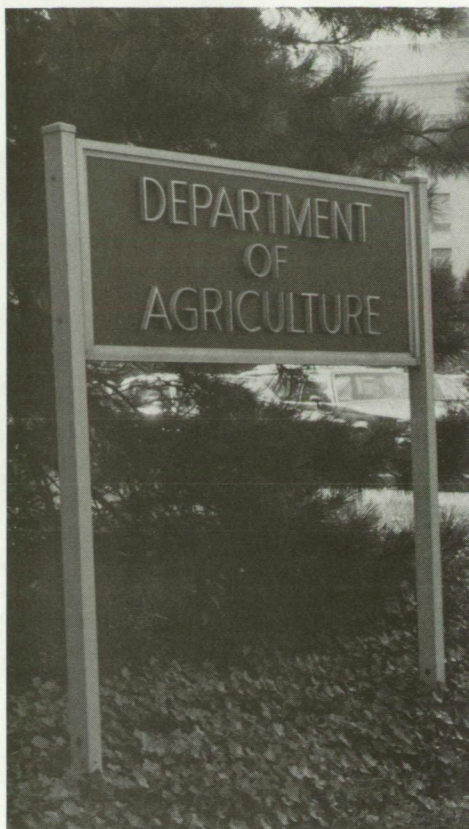
*USDA regularly implements operational and regulatory changes that affect the status of food and nutrition in the United States. Here are some relevant actions.*

## Lower Fat Cooked Sausage Products.

USDA has proposed that meat processors be allowed to make lower fat hot dogs, bologna, and other cooked sausage products, as long as labels on the product meet USDA rules for lean and lower fat claims. Under the proposal, processors would be able to replace fat in cooked sausage products by adding water above the current limit of 10 percent. The new limit would allow a 40-percent fat and added water combination in these products. The labels could say "lite," "light," "leaner," or "lower fat," if the products contain at least 25 percent less fat than similar products in the market. However, when using one of the labeling terms, the producer must include a statement explaining the comparison. For example, a label for lower fat hot dogs might say: "This product contains 20 percent fat, while USDA allows 30 percent fat in regular hot dogs."

**Canned Fruit Exports.** USDA has approved an additional \$500,000 to expand exports of canned peaches and fruit cocktail; \$5.1 million had already been approved for this project in August 1986. The increase is to help California's canned peach industry counter subsidized products from the European Economic Community. Promotional activities will be carried out through an agreement between the Department's Foreign Agricultural Service and the California Cling Peach Advisory Board, a nonprofit organization that has worked with USDA on export promotion programs since 1964.

*The author is a social science analyst with the Food and Agricultural Policy Branch of the National Economics Division.*



**Restriction on Container Size for Meat Fat Shortening.** New regulations proposed by USDA would remove its current restriction on the size of containers allowed for artificially flavored and colored meat fat shortening. The change would allow meat processors to expand the market for this product by appealing to commercial customers who prefer to buy in large quantities. The proposal would also bring USDA into line with current Food and Drug Administration regulations, which do not specify container size.

**Surface Application of Vitamin E for Bacon.** USDA now allows bacon processors to apply vitamin E to the surface of bacon to prevent nitrosamine formation. Nitrosamines form at high frying temperatures when sodium nitrite, which is used in the curing process to prevent botulism, combines with naturally occurring amines in the meat. Nitrosamines have been shown to cause cancer in laboratory animals.

**Flavor Enhancer in Meat Products.** Calcium lactate can now be used as a flavor enhancer in some sausages and meat sticks.

Under a new USDA rule, meat processors can add up to 0.6 percent calcium lactate to cooked sausage.

## Grade Standards for Bunched Spinach.

USDA has proposed establishing voluntary grade standards for bunched spinach. The standards were requested by the industry and would provide a common trading language and a means of determining quality and value. The proposal would establish two grade levels, U.S. No. 1 and No. 2, and would provide standards similar to those used for other types of domestic fresh produce.

**Safety Review of Animal Drugs.** USDA is participating in an international review of several commonly used livestock drugs to establish an agreement on the safety of drug residues in food. The Codex Committee on Residues of Veterinary Drugs in Food Use is a new committee established by the Codex Alimentarius Commission, an international group of experts who work toward the adoption of common food standards to protect consumers and promote fair trade.

**Bovine Growth Hormone Study.** USDA is studying the use of bovine growth hormone and its economic effect on the dairy industry. This study, which will be completed by mid to late 1987, will quantify the hormone's impact on the Government's milk price support program and on the structure of the dairy industry. The study, requested by Congress, will be conducted by the Economic Research Service.

## Egg Research and Promotion Order.

USDA has proposed establishing a new consumer information, research, and promotion order for eggs. The order would establish a national board, appointed by the Secretary of Agriculture, to administer activities designed to expand the egg industry's position in the market.



**Small-Scale Farming Office.** USDA has established an office for small-scale agriculture in response to the growth of the number of small farms that reflect consumers' increased preference for fresh, locally grown produce. According to the Census Bureau's 1982 census, the number of farms with less than 50 acres has increased 17 percent since 1978. Many of these are operated by part-time farmers who produce diverse agricultural products, including vegetables, fruits, nursery plants, honey, and livestock. The new office will provide

information on research, education, and technological developments of interest to small and medium-sized farmers. Support for the new office will be provided by the Small Farm Resources Development Working Group, which consists of representatives from several USDA agencies.

**Unshu Orange Imports.** USDA is considering allowing the importation of Japanese Unshu oranges into an expanded area of the United States. Currently, these oranges may be imported only into Alaska,

Hawaii, Idaho, Montana, Oregon, and Washington, because the climate in these States prevents the spread of a citrus canker endemic to this fruit. Under the proposal, the orange would be allowed in all areas of the United States, except those where citrus is commercially grown.

**Japanese Market Access for U.S. Cherries.** Japan has agreed to permit entry of U.S. fresh cherries at the beginning of the 1987 marketing year. This change, which is scheduled for a date earlier than was originally agreed upon, will allow California cherries to compete in Japan for the first time. Fresh cherries can enter Japan on May 25, 1987, instead of July 1. The entry date will move up 1 day for each of the next 4 years. In 1992, all entry dates for U.S. cherries will be eliminated.

**State Meat and Poultry Inspection.** USDA has announced that it will halt its quarterly review of State-inspected plants and begin a new, comprehensive oversight program. Federal laws for meat and poultry inspection allow products from USDA-inspected plants to be sold in interstate or foreign commerce. Products from State-inspected plants can be sold only in that State. States are required to impose inspection requirements at least equal to those of USDA. The new oversight program is designed to give a more complete assessment and to use USDA resources more efficiently. USDA will review each State's program at least annually. Both initial and follow-up reviews may include examination of State-inspected plants but this will no longer be mandatory. USDA field inspectors will be able to spend more time providing expert advice and consultation to State program personnel.

**Official USDA Mark to Seal Samples.** USDA has proposed that meat and poultry samples collected by USDA inspectors for testing be sealed with an official mark to prevent tampering. The proposal calls for an official mark with the words "official sample" and the USDA logo. □



USDA has established an office for small-scale agriculture in response to consumers' increased preference for fresh, locally grown produce.



## In the News . . .

### Home Food Production Plummets Over the Century

Nearly a third of all U.S. food never entered marketing channels in 1869. It was consumed by the same household that produced it and came from either the farm, the backyard, or nearby woods and rivers. Home production has declined considerably since then and now accounts for only 2 percent of food expenditures, with most of that coming from the family garden.

For a few individual products that were once widely produced and consumed at home, trends in consumption levels differed dramatically from the commercial market over the century. Two main examples are milk and eggs.

In 1910, about 37 percent of the population was drinking milk from the family cow. Consumption levels in these households were more than twice as high as those who purchased milk. However, the number of households owning a cow declined to about 28 percent in 1920, 20 percent in 1940, and less than 1 percent in 1980. The consumption gap remained large through 1940, but then began to narrow. There has been no significant difference since 1960.

The case for eggs is somewhat different. While the number of backyard flocks was enormous in the early days—about 43 percent of all households in 1910—consumption was higher among those buying eggs. The differences narrowed by 1930 and consumption levels have been similar since then.

For more information, contact Alden C. Manchester at (202) 786-1880.

### USDA Reconfirms Rule on Pork Irradiation

USDA has reconfirmed its rule allowing irradiation of pork for trichinae control.



Studies suggest that reconstituted orange juice lacks the intensity of the flavor chemicals contained in fresh juice.

Some concern was raised about the rule, but after reviewing all public comments, USDA found no compelling arguments that would question the rule.

Low-dose irradiation of fresh or previously frozen pork effectively controls trichinae larvae, the parasites that cause trichinosis. Nevertheless, consumers should cook all fresh pork to at least 160 degrees F. to prevent other food-borne illnesses.

USDA's approval of pork irradiation followed that of the U.S. Food and Drug Administration (FDA). FDA has primary responsibility for assuring the safety of food additives, which include the energy sources used in food irradiation. USDA approves additives for use in meat and poultry products. FDA approved irradiation of pork for trichinae control in July 1985. USDA passed its rule in early 1986.

However, irradiated pork is yet to be marketed because no company has satisfied USDA's stringent requirements for inspection and quality-control of the process.

For more information, contact Tanya Roberts at (202) 786-1864.

### Tracking the Flavor of Fresh Orange Juice

A USDA chemist has broken the "flavor code" for orange juice that could help the juice industry duplicate nature's way of making the beverage.

According to Manuel G. Moshonas, there are 21 separate chemicals contributing to fresh orange juice's distinctive flavor. This natural blend of chemicals, however, is altered when the juice is processed or stored.

The sought-after fresh taste is lost when the juice is concentrated. That process not only removes water, but also some of the essential chemicals. Studies suggest reconstituted orange juice lacks the intensity of the flavor chemicals contained in fresh juice.

The breakthrough in the flavor code was accomplished by using a sensitive gas chromatograph to compare differences between the fresh and reconstituted products. Previous attempts to isolate the flavor code had been unsuccessful because of the chemicals' low concentrations.

The \$3 billion dollar a year processed industry has expressed considerable interest in the process, but further study is needed to determine if the volatile components can be recovered economically and on a large enough scale. According to the Florida Department of Citrus, 90 percent of the U.S. annual orange crop goes into processed products.

Similar studies of other fruit juices, such as apple and grapefruit, are also planned. For additional information, contact Mr. Moshonas at (813) 293-4133.



### Inputs and Processing Link Farming to the General Economy

The farm sector is linked to the larger economy in a network of input purchases and product sales. Farmers buy inputs such as repair parts for equipment, feed, seed, fertilizer, and custom harvesting services from what can be termed "upstream" sectors. In turn, farmers sell their products to "downstream" sectors that store, process, transport, distribute, retail, consume, or export.

For some commodities these chains can be very long. For example, wheat may be milled into flour, which is processed into pasta, mixed with sauces and other foods, and sold in restaurants or as part of a frozen dinner in the grocery store.

However, for grain destined for storage or export, the chain can be very short, ending with transport to a central terminal or port.

The value of farm products consumed, exported, or stored tallied \$648 billion in 1984. Of the total, \$65 billion went to upstream activities, \$66 billion for on-farm activities, and \$518 billion for downstream sectors. In other words, \$1.00 in farm activity was linked to 64 cents upstream and \$3.20 in further processing downstream, provided that the food or fiber product was ultimately consumed domestically. If the product was exported raw, that same dollar on the farm was linked to the 64 cents upstream and only 31 cents downstream. The downstream amount was negligible if the commodity was stored by the farmer or U.S. Government as surplus.

Agriculture accounts for 18 percent of U.S. gross national product (GNP). But this refers to the entire complex of agribusiness activities, from farm machinery dealers to

food processors. Farming alone accounted for 2 percent of total GNP, while upstream activities accounted for another 2 percent and downstream further processing and handling 14 percent.

In terms of household food expenditures, the farm sector contributed about \$140 bil-

lion in total output in 1984. Upstream activities contributed \$96 billion, and downstream operations \$741 billion.

For more information, contact Gerald Schluter at (202) 786-1285. □



The farm sector is linked to the larger economy by a network of input purchases and product sales.



## Reports of Interest . . .

To order any of the following reports, write to: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Make check or money order payable to the Superintendent of Documents, or use your VISA, MasterCard, Choice, or GPO Deposit Account. Be sure to include the publication title; stock number; your name, address, and phone number; and, if applicable, your credit card number and its expiration date. For faster service, order by phone at (202) 783-3238.

**U.S. Supermarkets: Characteristics and Services**, by Charlene Price and Doris Newton. AIB-502. November 1986. 32 pp. \$1.75. Order SN: 001-019-00489-4.

Findings from a nationwide supermarket price survey in 1982. For example, fewer but larger stores characterize the U.S. supermarket industry in the 1980's, compared with a decade ago.

**1986 Agricultural Chartbook**. AH-663. November 1986. 124 pp. \$5.50. Order SN: 001-019-00488-6.

A complete overview of the agricultural sector. The 310 charts illustrate data and trends for subjects ranging from farm income to consumer costs, and from commodities to agricultural trade. Charts showing food programs, cost of production figures, farmland numbers, and population trends round out the agricultural picture. NOTE: An enlargement of the chartbook, with each of the charts on a page of its own, is also available from GPO.

**U.S. Rice Distribution Patterns, 1984/85**, by Shelby H. Holder, Jr. SB-748. December 1986. 32 pp. \$1.75. Order SN: 001-019-00481-9.

Assesses proportional market shares and trends for domestic rice distribution. U.S. rice millers and repackagers distributed 33.7

million hundredweight of rice in marketing year 1984/85. The amount went to three domestic uses: direct food, processed foods, and beer.

**World Indices of Agricultural and Food Production, 1976-85**. SB-744. July 1986. 172 pp. \$8.00. Order SN: 001-019-00476-1.

Presents indices of total and per capita production for 111 countries, 12 regions, and the world. Total world agricultural production grew at a compound annual rate of 2.1 percent since 1976, while the rate on a per capita basis was only 0.4 percent.

**Price Responsiveness of World Grain Markets: The Influence of Government Intervention on Import Price Elasticity**, by Terry Roe, Matthew Shane, and De Huu Vo. TB-1720. June 1986. 32 pp. \$1.75. Order SN: 001-019-00466-5.

Analyzes the effect of government intervention on import behavior, concluding that such intervention fundamentally alters the character and composition of agricultural trade.

**Social and Economic Characteristics of the Population in Metro and Nonmetro Counties, 1970-80**, by David A. McGranahan, John C. Hession, Fred K. Hines, and Max F. Jordan. RDRR-58. September

1986. 80 pp. \$3.75. Order SN: 001-019-00442-8.

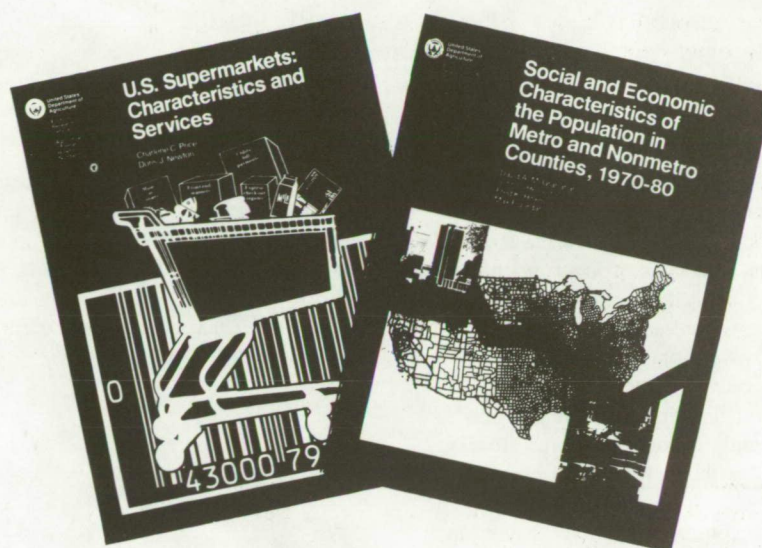
Rapid growth in service and manufacturing employment, increasing numbers of women in the workplace, and a steep rise in single-parent families were leading changes in the social and economic profile of non-metro counties during the 1970's.

**The Mid-Atlantic Region in Transition: Employment Trends, 1974-84**, by Theodore E. Fuller. RDRR-57. April 1986. 20 pp. \$1.25. Order SN: 001-019-00445-2.

This study measures the extent of the Mid-Atlantic's economic lag. The region's total employment growth lagged national averages from 1974-84 because of its higher share of slow-growth manufacturing industries and its lagging employment growth in all major economic sectors.

**Alimentacion y salud: Guia para su dieta** (Spanish language version of Nutrition and Your Health: Dietary Guidelines for Americans). Single free copies available by writing to HG-232S, Consumer Information Center, Pueblo, Colorado 81009.

Explains how diet helps support health and reduces the risk of some diseases. Tells how to choose and prepare foods based on nutrition information.

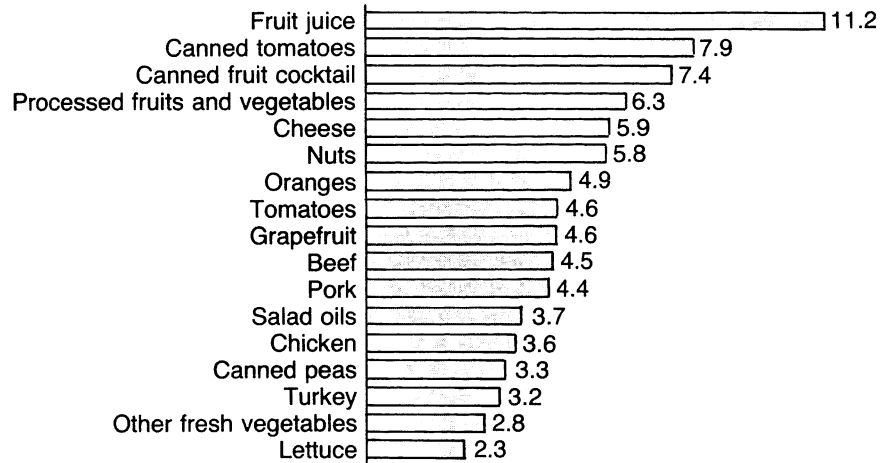




## Consumer Expenditures on Food

Consumer purchases of a particular food may or may not vary as incomes rise. According to an Economic Research Service study, spending for 17 of 40 foods increased when income rose 10 percent. Fruit juices showed the largest estimated rise in spending, up 11.2 percent for each 10-percent increase. Expenditures for lettuce, in contrast, rose only 2.3 percent. Of the remaining 23 foods, expenditures for 4 fell, and 19 remained the same.

### Rising Incomes Mean Greater Spending for Some Foods

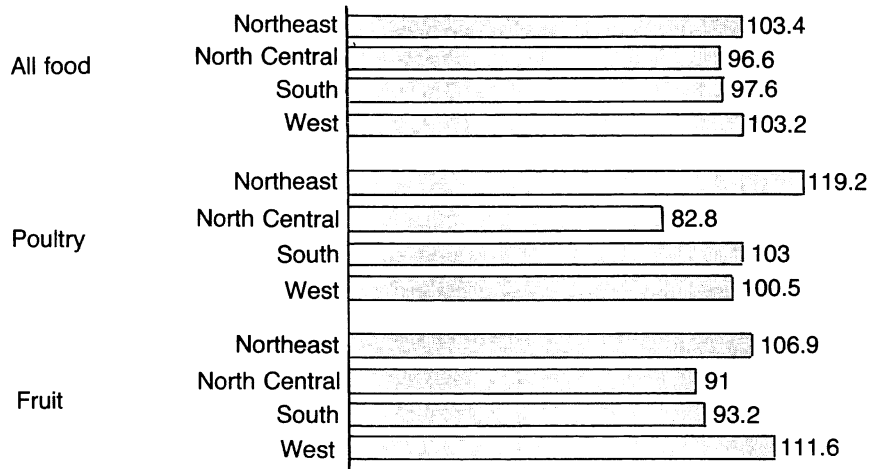


Percent change of expenditures<sup>1</sup>

<sup>1</sup> Percent change in expenditures per 10-percent change in income. Prices of products relative to each other were assumed constant.

Differences in food expenditures across regions are usually small. Poultry and fruit are exceptions, though. Spending for poultry varies from 19 percent above the national average in the Northeast to 17 percent below in the North Central region. Expenditures for fruit by households in the West are 12 percent above the national average, compared with 9 percent below in the North Central region. Differences in availabilities of supplies, and consequently, in prices may explain some of the variation.

### Spending on Poultry and Fruit Varies Widely by Region

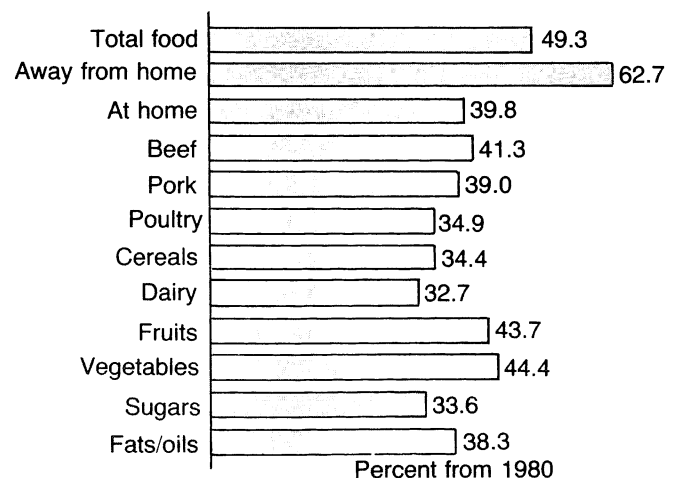


Percent of U.S. average<sup>1</sup>

<sup>1</sup> U.S. average = 100 percent.

Projections indicate that national food expenditures will increase almost 50 percent between 1980 and 2005. Away-from-home food spending is likely to see the largest gain, rising almost 63 percent. At-home expenditures could rise about 40 percent. Spending on fruits and vegetables will likely outpace other food groups.

### Eating Out Likely To See Largest Spending Gains Through 2005



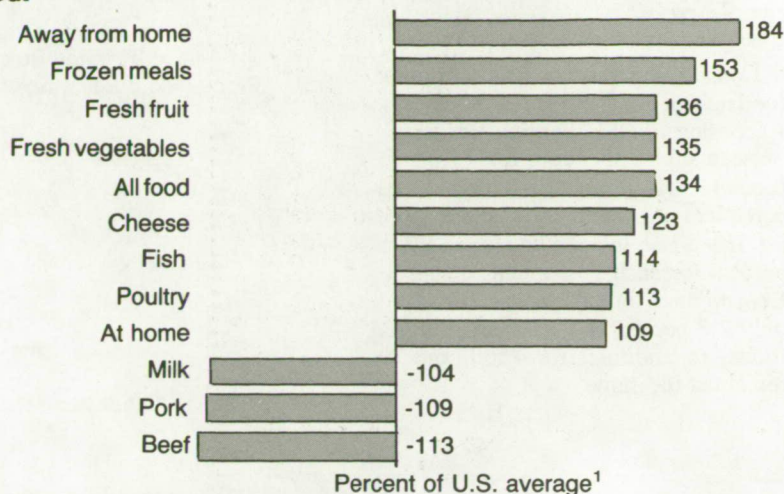
Percent from 1980

<sup>1</sup> Assumes 2-percent income growth per year. Population growth assumed at midpoint of range of estimates of U.S. Census Bureau.



The growth in single-member households has meant gains for most food groups. During 1980-81, this group's per capita expenditures for food away from home exceeded the national average by 84 percent. At-home spending exceeded the average by only 9 percent. Breaking out at-home expenditures by commodity, single person households spent relatively more on frozen meals and prepared foods, fresh fruits and vegetables, cheese, fish, and poultry. Conversely, spending for milk, pork, and beef fell below the national average.

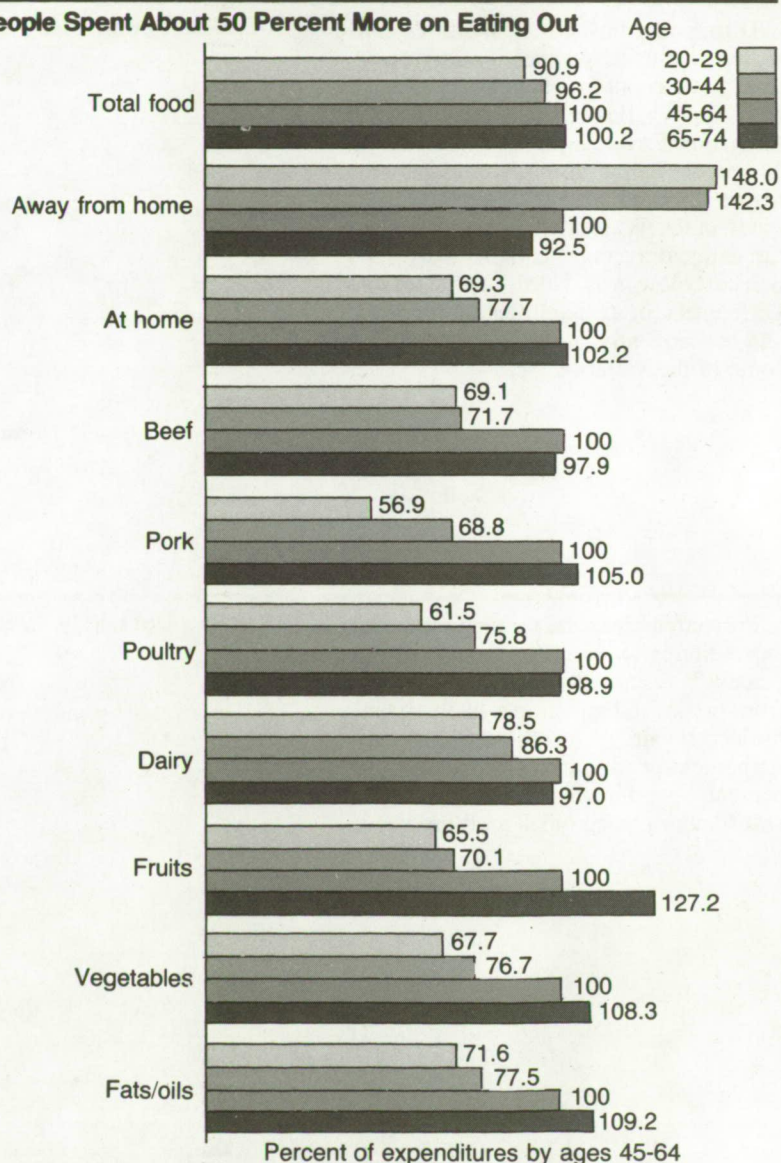
### Single-Member Households Spend Almost Twice National Average on Eating Out



<sup>1</sup> U.S. average = 100 percent.

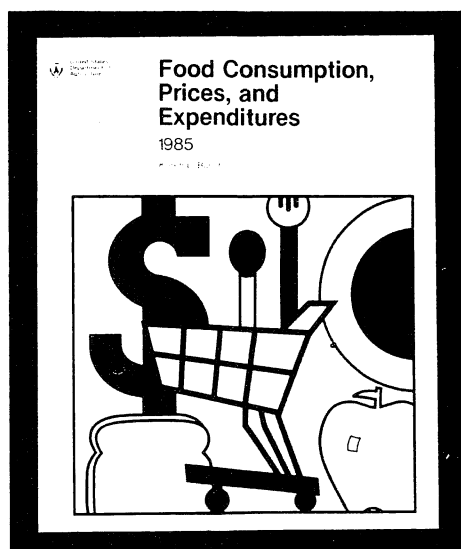
Food-away-from-home spending is 40 to 50 percent higher for persons between 20 and 44 than for those 45 and over. Conversely, at-home expenditures are 20 to 30 percent lower for those under 45. Per person expenditures for pork, fruits, vegetables, and fats and oils rise as age increases, while spending for beef, poultry and dairy peaks at 45 to 64 years old.

### Younger People Spent About 50 Percent More on Eating Out





# ***Food Consumption, Prices, and Expenditures***



Rounding up data on the food industry should be as convenient as a trip to the supermarket. **Food Consumption, Prices, and Expenditures, 1965-85**, published by USDA's Economic Research Service, provides an up-to-

date and unified source of food data for your analytical work.

Ninety-six tables present USDA's latest annual estimates and historical data for:

- Per capita food consumption for 39 selected categories,
- Food supply and utilization tables for 58 commodities,
- Nutrient availability per capita,
- Retail and producer prices indexes,
- Farm to retail price spreads,
- Indexes of food industry marketing costs, and
- Income, food expenditure, and population statistics.

What's more, narrative highlights the changes in key food sector indicators during 1985 and the previous 20 years. This report shows which foods have a pattern of declining per capita consumption, and which foods are responsible for the longterm rise in total food consumption.

To purchase your copy of **Food Consumption Prices, and Expenditures, 1965-85, SB-749**, write the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Include your name, address and zipcode and a check or money order for \$5.50 (\$7.00 to foreign address). Or charge your purchase to your VISA, MasterCard, or GPO deposit account (include account number and expiration date). For faster service, phone in charge orders to GPO by calling (202) 783-3238.

**United States  
Department of Agriculture**

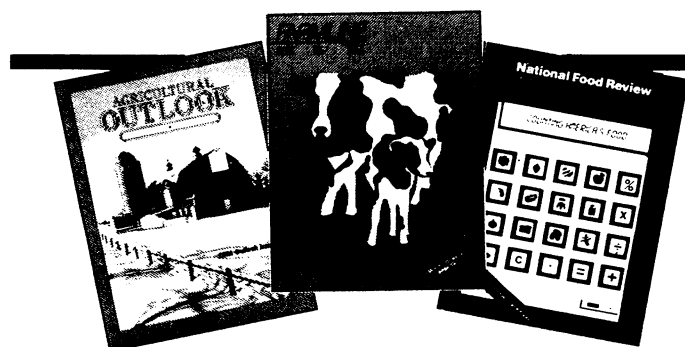
Washington, D.C.  
20250

**OFFICIAL BUSINESS**  
Penalty for Private Use, \$300

1987  
Winter-Spring  
NFR-36

**BULK RATE  
POSTAGE & FEES PAID  
U.S. Dept. of Agriculture  
Permit No. G-145**

**Moving?** To change your address, send mailing label on this page and your new address to: National Food Review, USDA, Room 228, 1301 New York Avenue NW, Washington, D.C. 20005-4788.



## Order Direct and Save!

Check these new, reduced subscription rates now offered on a user fee, cost-recovery basis from USDA's Economic Research Service

**NATIONAL FOOD REVIEW. Quarterly averaging 40 pages. Subscribe from ERS for \$9.00 domestic; \$11.25 foreign.** The latest developments in food prices, product safety, nutrition programs, consumption patterns, marketing, and processing technology for those who manage, monitor, or depend on the Nation's food system.

**AGRICULTURAL OUTLOOK. 11 issues annually averaging 52 pages. Subscribe from ERS for \$26 domestic; \$32.50 foreign.** USDA's official outlet for farm income and food price forecasts. Data and discussion of issues ranging from international trade to prospects for commodity supply and demand, food marketing, agricultural policies, and other major issues affecting agriculture and the economy.

**FARMLINE. 11 issues annually averaging 20 pages. Subscribe from ERS for \$14 domestic; \$17.50 foreign.** Farm economic information in an easily read style, reinforced with charts and statistics for those without time to review all the technical reports from ERS. Reports on all economic topics important to those involved in agriculture, with the focus on the causes and implications.

**HOW TO ORDER.** Check the box for each publication or insert the number of extra subscriptions you wish to order. Write one check or money order to cover total charges. You will receive a copy of the most current issue, and a letter acknowledging your subscription. Do not send cash. No credit cards. Sorry, no refunds. Foreign customers note: Only checks drawn on U.S. banks, cashier's checks, or international money orders accepted. For additional information, call (202) 786-1494.

Publication	Domestic	Outside U.S.
<input type="checkbox"/> National Food Review Quarterly	\$ 9.00	\$11.25
<input type="checkbox"/> Agricultural Outlook 11 issues	\$26.00	\$32.50
<input type="checkbox"/> Farmlines 11 issues	\$14.00	\$17.50

Enclosed is my check or money order for \$ \_\_\_\_\_  
Make check or money order payable to USDA/ERS  
and mail to: ERS Publications  
USDA, Room 228  
1301 New York Ave., N.W.  
Washington, DC 20005-4788

Name \_\_\_\_\_

Company or Organization \_\_\_\_\_

Street address or Post Office Box no. \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Zip code \_\_\_\_\_

Daytime phone \_\_\_\_\_

### OFFICE USE ONLY

Date Rec'd \_\_\_\_\_

Pubs Rec'd \_\_\_\_\_

Last issue \_\_\_\_\_

Amount \_\_\_\_\_

First issue \_\_\_\_\_