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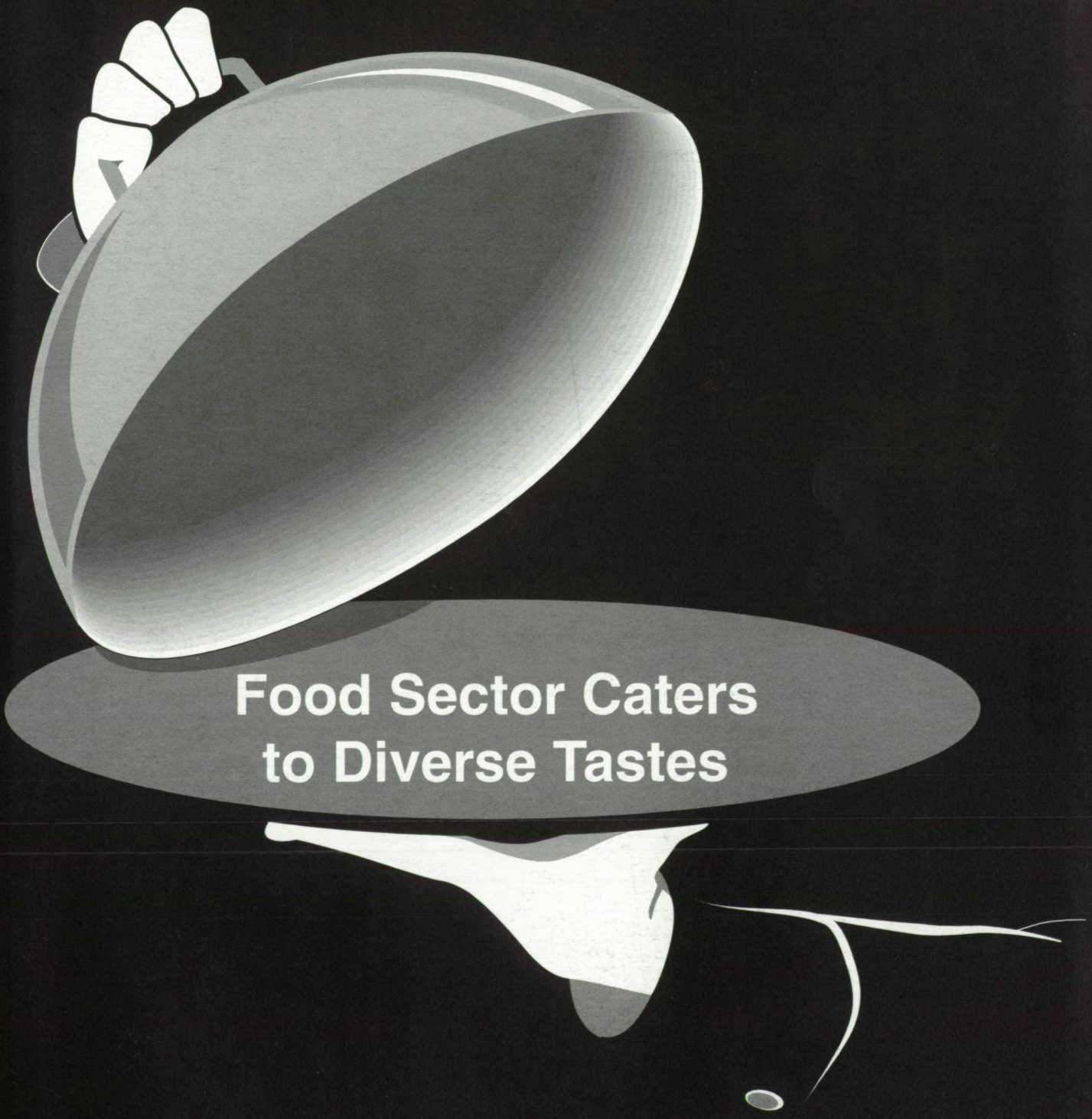

Food Sector Caters to Diverse Tastes

...Upfront

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Food Sector Caters to Diverse Tastes

The American diet has changed over the last two decades. We are consuming less beef, more chicken and turkey, fewer eggs, more cheese, and greater amounts of fruits and vegetables. Our food choices are becoming more diverse. Restaurants featuring Thai or Indian foods are no longer found only in major cities. And, limited-menu fast food chains that once offered only burgers and fries now regularly feature burritos, grilled chicken sandwiches, and salad bars.

Farmers, food manufacturers, retailers, and restaurateurs have responded to and encouraged this diversity by offering more of what consumers want and new products for consumers to try. The number of products supermarkets stock, for example, doubled over the last decade.

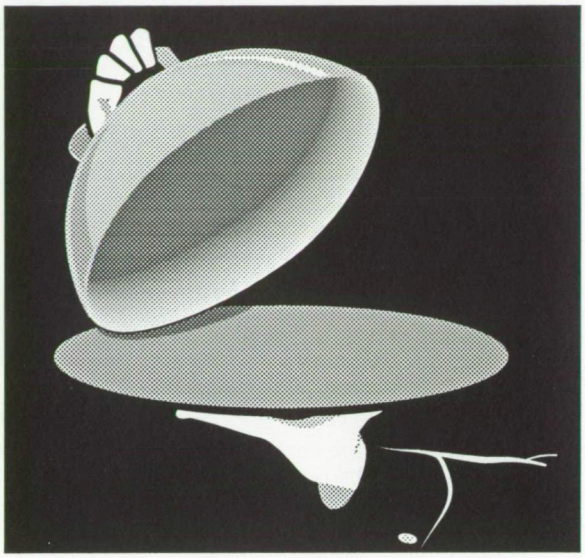
Health concerns, the desire for convenience, and growing ethnic populations are driving much of the change. Food manufacturers are providing consumers with more and more new foods with improved nutritional profiles, like low-calorie, reduced-fat, or high-fiber. In fact, over 3,000 claims were made about the improved nutrient content of new products in the first three quarters of 1995—nearly three times more claims than in all of 1988. An analysis reported in this issue found that nutritionally improved foods generally were more expensive, but their sales in supermarkets grew faster than their regular versions. Nutritionally improved foods and beverages accounted for three-fourths of the increases in quantities sold for 37 food categories between 1989 and 1993.

U.S. spice consumption has soared along with the growing popularity of ethnic foods. Americans flavored their foods with an average of 3.1 pounds of spices per person in 1990-94, up almost 1 pound from a decade earlier. The popularity of Hispanic and Asian cuisine is evident in the growing consumption of many spices. For example, U.S. production of dried chile peppers at 160 million pounds in 1994 was nearly double the amount produced in 1985.

Organic foods are a small, but growing, segment in the American food market. Production is expanding as the number of acres certified as organic more than doubled between 1991 and 1994, although it still accounted for less than 1 percent of U.S. farmland. Organic foods—notably fresh produce, dairy products, eggs, and a variety of processed foods—are important to consumers concerned with how foods are grown and processed. Not just found at farmers' markets, organic sales in natural foodstores grew 21 percent in 1994. This success is spurring an increase in the volume of organic foods stocked in conventional grocery stores.

The safety of food continues to be important to consumers, the food industry, and the Federal Government. Raw meat and poultry now prominently display safe handling instructions for consumers. In this issue, a survey of meat and poultry processors and supermarket retailers reveals diverse opinions about the details of USDA's labeling requirements and their potential impacts on consumer confidence and sales. Food companies' insights are instructive for designing and implementing future food-safety initiatives.

Inside...



Food Sector Caters to Diverse Tastes

Also Inside

Sales of Nutritionally Improved Foods Outpace Traditional Counterparts

Elizabeth Frazão and Jane E. Allshouse
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As evidence grows about the role of diet in long-term health, consumers show increasing interest in improving the healthfulness of their diets. Consumers report that they are changing what they eat and the ways they prepare foods. According to a 1995 annual survey by the Food Marketing Institute, 63 percent of respondents reported they were eating more fruits and vegetables, 34 percent reported eating less fats and oils, and 43 percent reported eating less meat to ensure their diet was healthy.

A recent study by USDA's Economic Research Service (ERS) confirms that consumers are interested in nutrition and changing the types of foods they purchase. According to the study using data on food items that are scanned at the checkout registers, supermarket sales of nutritionally improved foods grew faster than sales of their regular counterparts in U.S. supermarkets between 1989 and 1993—despite their usually costing more than regular versions.

Dietary Patterns Are Changing . . . But Not Fast Enough

Dietary intake surveys confirm that changes are occurring in the types of food eaten. Yet, the pace of change has been slow, with many changes offsetting other changes. At the going rate, it may take well into the 21st century before the typical American diet meets the Dietary Guidelines recommendations, such as choosing a diet that provides no more than 30 percent of total calories from fat or choosing a diet with plenty of grain products, vegetables, and fruits.

Part of the reason for the slow pace of change is that it is difficult to change dietary patterns. Although many consumers believe that their diets could be healthier, many feel that they lack the information to change their dietary behavior. Many consumers also believe that doing so costs more or requires them to give up their favorite foods.

Thus, many consumers look to the food industry to help them achieve healthier diets by changing the nutritional composition of foods. Many researchers also believe that the food industry—through its role in determining what types of foods are available, where, in what amounts, at what prices, and with what nutritional profiles—could be instrumental in accelerating the trend toward healthier diets by helping consumers improve their diets without having to make major changes in food consumption patterns and without requiring extensive knowledge about what changes to make.

The food industry has been actively responding to consumer demand by bringing to market new foods with improved nutritional profiles. In the first three quarters of 1995, there were more than 3,000 claims made about the improved nutrient content of new food products—nearly three times the number of claims made in all of 1988. In particular, there were over 1,500 claims about improved fat content in the first three quarters of 1995—over five times more than in all of 1988.

This study uses 1989-93 supermarket data on food items that are scanned at the checkout registers (see box) to evaluate the size and growth of the market for nutritionally improved foods relative to their traditional counterparts, and to determine how nutritionally improved foods compare in price with regular versions. The study analyzed the quantities and prices of 37 food categories (such as cookies, hot dogs, and ice cream). Products

Frazão is an economist and Allshouse is database coordinator with the Food and Consumer Economics Division, Economic Research Service, USDA.

"Nutritionally Improved" Foods in the Study

This study used 1989-93 sales data of food products scanned at the checkout register from a nationally representative sample of 3,000 supermarkets with at least $2 million in annual sales. Sales volume is standardized to a 16-ounce equivalent (hereinafter referred to as "pounds," even though for beverages the standard refers to 16 fluid ounces). These data do not include sales of food items that are not scanned at the register, such as fresh produce and fresh meats, items sold in bulk, or items prepared or packaged at the store (such as bakery and deli items), or sales from stores with less than $2 million in annual sales. Prices are calculated from information available on dollar sales and do not represent shelf prices for any particular food item.

The study covered 37 food categories (such as cookies, hot dogs, and ice cream), and divided each category into two groups: "nutritionally improved versions" and "regular versions." The 37 food categories accounted for 71 percent of the food sales volume captured by the scanner data in 1993.

Individual products within each food category were designated "nutritionally improved" if they offered at least one nutritional improvement over their traditional (or "regular") counterpart, based on either the presence of a nutrition-related claim on the label (such as "low fat," "light," and "packed in water"), or some other product characteristic believed to constitute a nutritional improvement. For example, poultry-based hot dogs and lunch meats were considered a nutritional improvement over traditional versions, since they tend to be lower in fat, even if not necessarily low in fat. Similarly, canola and olive oils are perceived as being nutritionally superior to other oils due to their higher levels of monounsaturated fatty acids and lower levels of saturated fatty acids.

within each category were allocated to one of two groups: "nutritionally improved versions" and "regular versions." Products were classified as "nutritionally improved" if they offered at least one nutritional improvement over their regular counterpart. Some of those improvements included label nutrient claims such as "low fat," "light,"or "packed in water." Other improvements included poultry-based hot dogs and luncheon meats versus beef- or pork-based regular versions, or frozen yogurt versus regular ice cream.

Nutritionally Improved Versions Take Increasing Proportion of Sales

Increased purchases of nutritionally improved foods in supermarkets translated into growing shares of sales volume among the 37 food categories. In 1993, nutritionally improved foods represented 39 percent of sales volume, up from 36 percent in 1989.

Sales volume for all 37 food categories rose 10.9 billion pounds from 1989 to 1993. Nutritionally improved versions provided 8.5 billion pounds, or 78 percent, of that increase. That translates into a 9-percent rise in sales for all 37 food categories between 1989 and 1993—a 19.5-percent increase in nutritionally improved versions and a 3-percent increase in regular versions. The large switch from whole milk to lower fat milks alone contributed 41.6 percent of the increase among all nutritionally improved versions between 1989 and 1993.

In a slightly different perspective, sales volume increased for 28 of the 37 food categories between 1989 and 1993. However, sales increased for 30 categories of nutritionally improved versions, compared with 13 categories of regular versions.

Sales volume of nutritionally improved versions increased while the market for their traditional counterparts was expanding as well as contracting (fig. 1). For example, sales of nutritionally improved baked goods expanded simultaneously with increased sales of regular baked goods—suggesting that nutritionally improved versions might be attracting new consumers. Growth in both segments of the category contributed to the expansion for the category as a whole. Among other food categories—such as bacon and cookies—growth of nutritionally improved versions took place at the expense of regular versions, suggesting that many consumers might simply be switching from regular to nutritionally improved versions. For some of these food categories, the growth in nutritionally improved versions was more than sufficient to offset declining sales of the regular versions. For example, the 250-percent increase in sales of nutritionally improved cream cheese was more than sufficient to offset the 10-percent decline in sales of regular cream cheese and net a 17-percent increase in total sales of cream cheese. Bacon, however, suffered a 5-percent decline in total sales despite the nearly 60-percent increase in sales of nutritionally improved versions.

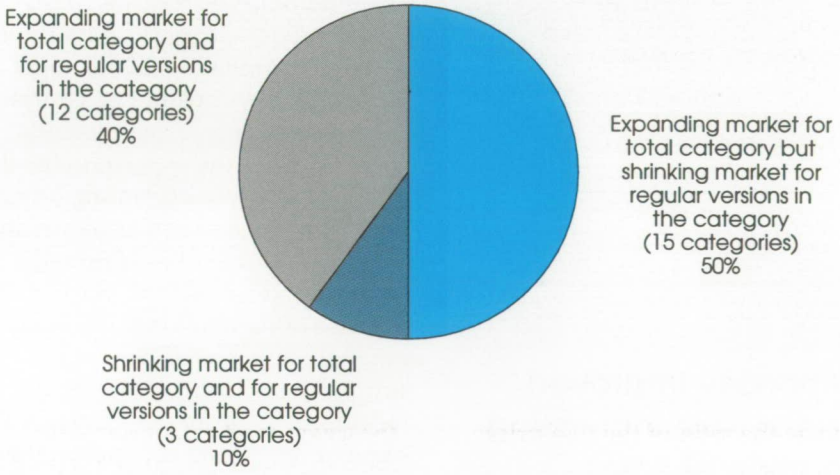
With the exception of frozen pizza, declines in sales volume of nutritionally improved versions for six categories occurred with declining sales for regular versions and for the category as a whole. With frozen pizza, sales of nutritionally improved versions declined in the presence of increasing sales for regular versions and for the entire category.

The contribution of nutritionally improved versions to a category's total sales volume ranged up to 93 percent in 1993. For 32 of the 37 food categories, the share of nutritionally improved versions increased between 1989 and 1993. This included a higher share for three food categories (cottage cheese, canned fruit, and canned tuna) for which sales of nutritionally improved versions declined in the same time period—but the decline was smaller than that for regular versions. Conversely, the share of nutritionally improved fruit juices and drinks in the category's total sales volume declined even though sales of nutritionally improved versions rose (but the 2-percent increase was not sufficiently large to maintain its share in face of a 25-percent increase in sales of regular versions).

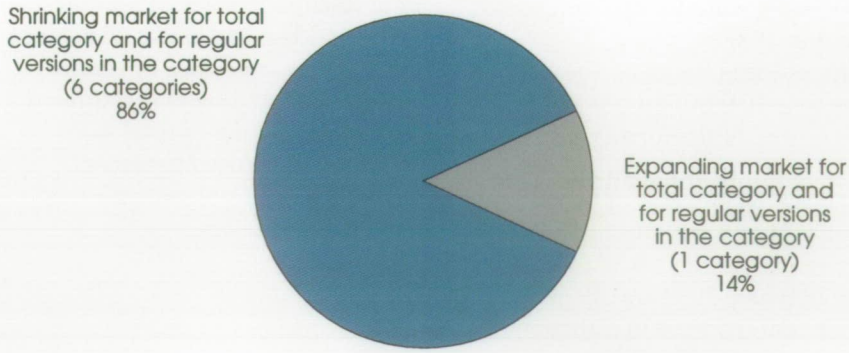
Seven food categories more than doubled their sales volume of nutritionally improved versions between 1989 and 1993 (table 1). However, the small market size of these food categories makes their contribution to total sales small. Conversely, the large size of other food categories contributed a large quantity of nutritionally improved versions, even though their growth rate was not as large. This is particularly true for three beverage categories, where nutritionally improved versions of milk, carbonated beverages, and beer contributed 71 percent of the nutritionally improved volume sold in 1993.

Figure 1
Change in Volume Sales, 1989-93

Nutritionally improved versions grew under three different conditions...



...But declining sales of nutritionally improved versions were mostly associated with shrinking demand for the category as a whole



Nutritionally Improved Versions Generally Cost More

In 1993, nutritionally improved versions cost more than regular versions for 30 of the 37 food categories (fig. 2). Price differences ranged from $0.03 to $1.86 per pound, or 2-94 percent higher than regular versions (the price difference for canned pasta was $3.68—372 percent higher than regular versions—but that appears to be an exception). Furthermore, the price difference was larger than in 1989 for 17 (57 percent) of these food categories, smaller for 9 food categories, and the same for 4 categories (despite price increases for these last products).

Six food categories contained lower priced nutritionally improved

versions (priced 3-15 percent lower than regular versions) in 1993 (fig. 2). Among hot dogs, the lower price associated with nutritionally improved versions could be related to the use by manufacturers of less expensive, mechanically deboned poultry meat in many of the nutritionally improved versions. However, the price difference was cut nearly in half between 1989 and 1993, likely resulting from increased demand for nutritionally improved hot dogs. It is not clear why nutritionally improved versions of beer, frozen potatoes, canned vegetables, and crackers cost less than regular versions, and even less in 1993 than in 1989 for all but the crackers. One food category—spaghetti sauce—had the same price for both nutritionally improved and regular versions in 1993.

Although some of the observed price differences may be associated with a premium charged on so-called "healthier" food products, some may be associated with higher production and marketing costs. For example, when Taco Bell introduced its Border Lights product line, the company announced these products would cost 10 cents more than the regular versions because the low-fat ingredients cost more. For some products, increased consumer demand may make it possible for larger production runs, with subsequent economies of scale translating into price reductions that get passed on to consumers. This may have been the case for nutritionally improved versions of salad and cooking oils (olive and canola oils), for which sales more than doubled between 1989 and 1993, but prices declined 34 percent (down $0.80 per quart).

The relative price indicates how the price of the nutritionally improved version of a category compares with the price of the regular version for the same category. Measured as the ratio of the two prices, an increase in the relative price indicates that the nutritionally improved version has become more expensive compared with the regular version. This is a particularly useful measure when both prices change over a period of time.

Table 1
Food Categories with Nutritionally Improved Versions Exhibiting the Largest Change

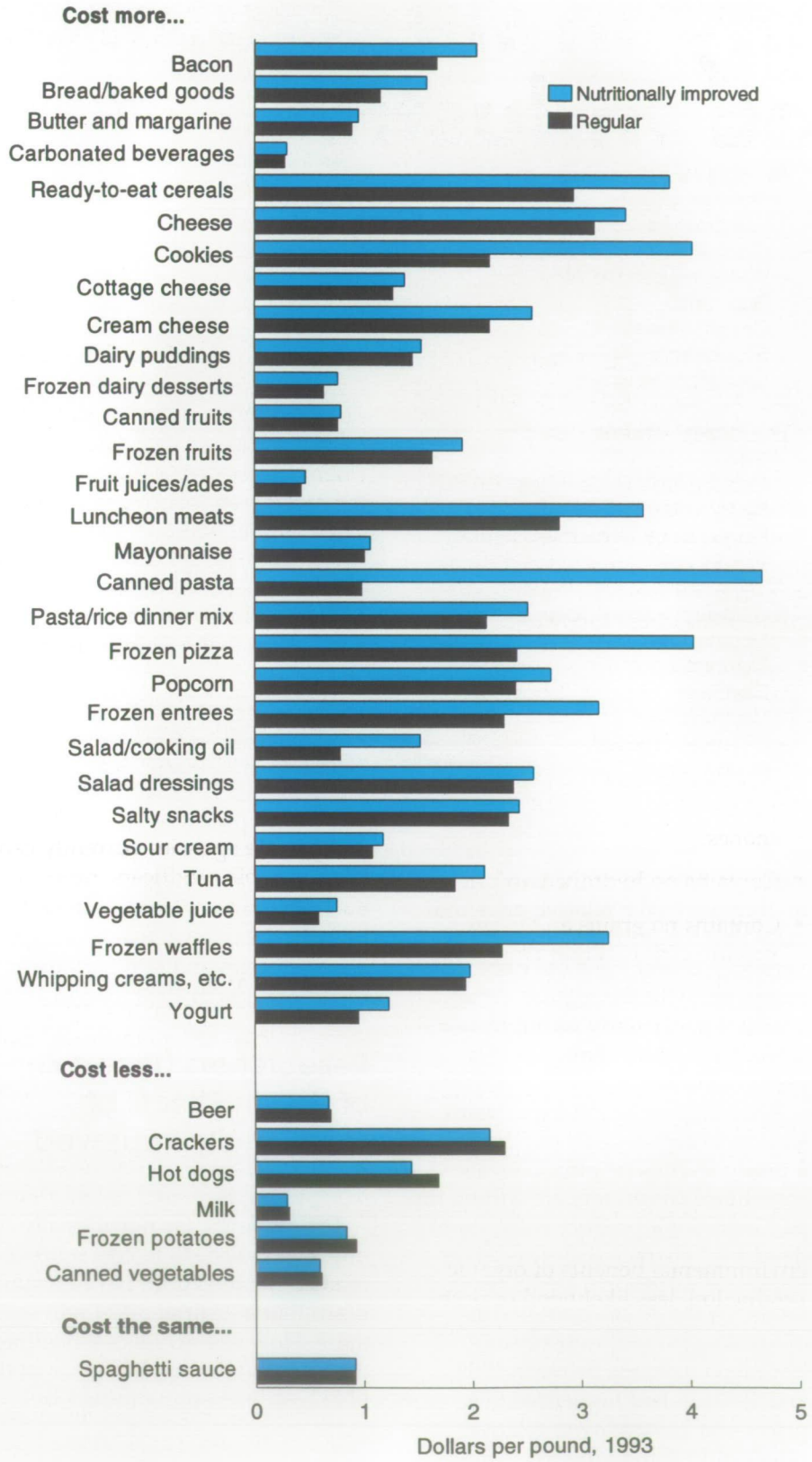
Item	Change in sales volume, 1989-93	
	Percent	*Million pounds*
The largest percentage growth:		
Dairy puddings	24,000	45
Spaghetti sauce	2,000	117
Cookies	1,500	94
Whipping cream, etc.	1,000	39
Popcorn	500	76
Cream cheese	350	53
Sour cream	250	57
Salad/cooking oils	200	157
The largest volume growth:		
Milk	23	3,522
Carbonated beverages	19	2,406
Beer	36	812
Frozen dairy desserts	22	218
Yogurt	22	179
The largest volume losses:		
Mayonnaise	-8	-40
Canned tuna	-6	-30
Crackers	-13	-24
Canned fruit	-4	-22
Cottage cheese	-6	-16
Frozen pizza	-17	-3

Although we might expect consumers to reduce their purchases of a product when its price increases, sometimes consumers are willing to pay more for a product with "more desirable" characteristics—such as improved nutritional attributes in foods. Of the 30 categories with expanding sales of nutritionally improved versions between 1989 and 1993, 16 had higher relative prices and 14 had lower relative prices in 1993 than in 1989. Among the seven food categories with declining sales of nutritionally improved versions, five had higher relative prices and two had lower relative prices in 1993 than in 1989.

Researchers Uncertain of Health Effects of Nutritionally Improved Foods

The tendency for nutritionally improved versions to cost more than regular versions does not necessarily mean that a healthier diet will cost more. How one achieves a healthier diet can make a big difference in the final cost. Although product-by-

Figure 2
Nutritionally Improved Versions Generally Cost More Than Regular Versions



product substitution through the use of nutritionally altered versions may result in a more costly diet, simple substitutions in the types of foods eaten—such as by substituting carrot sticks for a bag of potato chips or a cup of milk for a can of soda—may offer larger nutritional improvements while reducing food costs.

The increased availability of nutritionally improved foods also may not represent a panacea. Nutrition experts currently disagree on the potential impact that nutritionally improved foods may have on total dietary quality. There is some concern that increased consumption of nutritionally improved foods may lead to distorted food consumption patterns—such as substituting calcium-fortified orange juice for dairy products, or over-indulging in fat-free foods that are high in calories. Researchers believe the latter partly explains why the proportion of overweight adults has increased from 25 to 33 percent while the average intake of calories from total fat has gradually declined from an average of 40 percent in 1977-78 to 34 percent in 1989-90.

Nevertheless, technological advances in plant and animal breeding and in food science will likely translate into more nutritionally improved foods with improved taste and cooking characteristics. And as nutritionists attempt to identify potentially beneficial dietary components, many researchers believe that nutritionally improved foods in the future will focus more on increasing—or adding—levels of "beneficial" elements to traditional foods rather than on reducing the levels of "undesirable" food components (such as fat).

Reference

Frazão, Elizabeth, and June E. Allshouse. *Size and Growth of Nutritionally Improved Foods Market*, AIB-723. USDA, Economic Research Service. Apr. 1996. ■

Organic Foods Find Opportunity in the Natural Food Industry

Julie Anton Dunn
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Organic foods may constitute a small segment of the $334 billion in retail food sales in 1994, but they have carved a niche in a retail food sector growing by leaps and bounds—the natural food industry. As reported by the industry's leading trade publication, the *Natural Food Merchandiser* (NFM), organic product sales in natural foodstores grew by 21 percent in 1994.

The market for organic products has escalated with sales increases of 20 percent or more each year from 1989 to 1994, according to NFM (USDA does not compile retail sales data for organic foods or natural foodstores). The dominant retail outlet for organic foods—natural foodstores—captured 67 percent of the $2.3 billion in total 1994 U.S. organic food sales. In some areas, competition from successful natural foodstores has spurred an increase in the volume of organic products stocked in conventional grocery chains.

The author, formerly an economist with the Agricultural Marketing Service, USDA, is a partner in the consulting firm AgriSystems International.

Natural Foodstores Reach Out to Consumers with Organic Products

Natural foodstores define themselves by their merchandise purchasing criteria, which are usually displayed prominently for the clientele. These informal criteria may include some of the following:

- Contains no synthetic preservatives, colorings, or flavorings.
- Contains no synthetic sweeteners.
- Meat and poultry from animals raised without synthetic hormones.
- Contains no hydrogenated oils.
- Contains no grains and grain products (flours) that have been bleached or bromated.
- Organic whenever cost and availability factors allow.

Different from most natural foods stressing only nutritional and additive-free characteristics, organic foods offer unique qualities to consumers concerned with how foods are grown and processed, such as environmental benefits of organic production, less likelihood of pesticide residues in foods, and reduced farmworker exposure to synthetic chemicals.

The Organic Foods Production Act adopted as part of the 1990 farm bill calls for national standards to define organic food and assure consumers that food marketed as organic meets prescribed standards (see box). The Act provides for USDA to develop the standards using recommendations received from a 14-member National Organic Standards Board. The Board has submitted the majority of its recommendations to USDA for incorporation into regulations that will implement the law.

While no definition of "organic" yet exists at the national level, some general principles of organic farming and food processing are commonly accepted among the State and private agencies currently certifying organic producers, processors, and distributors. These principles include:

- Organic food production systems are based on farm management practices that replenish and maintain soil fertility by providing optimal conditions for soil biological activity.
- The organic food has been determined by an independent third-party certification program to be produced in accordance with a set of historically derived organic principles and practices.
- Only natural substances or approved synthetic materials have been used on the land and crops, usually for at least 3 years prior to harvest.

- Organic food is documented and verifiable by an accurate and comprehensive record of the production and handling system.
- Organic food meets all local, state, and Federal regulations governing the safety and quality of the food supply, including the Federal Food, Drug, and Cosmetic Act and the Nutrition Labeling and Education Act.

In general, these principles form the basis of existing organic certification programs in the United States.

Certification of organic practices smooths transactions between producers, suppliers, and buyers and assures consumers that food marketed as organic meets certain prescribed criteria. Farmers, wholesalers, food processors, and retailers can all be certified by States or private organizations as being in compliance with a set of written standards.

According to the Organic Trade Association, an association of organic growers, manufacturers, handlers, and others, organic certification is generally characterized by the following:

- Annual farm and processing facility inspections by a third-party agent.
- Review of detailed farm, processing, and distribution records that provide a trail of verification from farm field to retail shelf.
- Assessment of farm management and product handling plans.

U.S. organic certification organizations began to form in the 1970's. Presently, there are 43 U.S. certifiers. Most were established in the 1980's, although a quarter of the total appeared within the past 5 years. Thirty-two of the organizations are privately run, and 11 are State-developed.

Although 28 States have laws regulating organic food labeling, only 10 require certification for use of an organic label in the marketplace. Many growers continue to avoid certification, due to some processors not requiring certification documents or to the cost of becoming certified, among other reasons. For example, a recent California study found that only 45 percent of organic growers in that state were certified. The 1990 Organic Foods Production Act calls for national standards to define organic food and will make certification mandatory.

The Natural Products Industry Expands, Offering a Larger Market for Organics

Natural food cooperatives, pioneering the retailing of natural products, sprouted up around America in the 1960's. Consumers operated the stores, banding together to get organic products to market at workable returns. These stores spread the distribution of organic products across the States, as they located in small rural boroughs, suburban areas, city centers, and college towns.

Since then, natural food supermarkets (defined by NFM as natural foodstores larger than 5,000 square feet and offering fresh meat and seafood) have sprung up, experiencing vibrant growth in both sales volume and number of stores. NFM reports that natural food supermarkets' sales increased 15.5 percent from 1993 to 1994. The sales growth is contributing to expansion, with metropolitan areas of the Midwest and East Coast the latest new store targets.

Some growth has occurred in response to market niches in areas with few natural food outlets. Fresh Fields Markets, Inc., which opened its first store in 1991 in metropolitan Washington, DC, has added 21 stores across 7 States and the District of Columbia. Sales by this natural food supermarket chain amounted to $85 million in 1993.

Growth in natural food supermarket chains also occurred through the incorporation of smaller natural foodstore chains. Whole Foods Market, Inc., sprouted from the opening of its first store in Texas in 1980 to operate 41 stores by 1995 by acquiring several natural foodstore chains, including Mrs. Gooch's Natural Foods Markets of Los Angeles and Bread & Circus stores of New England. Whole Foods Market, Inc., rang up $496.4 million in sales in 1995.

Smaller natural foodstore chains are also growing in number, some incorporating an aggressive strategy of marketing specialty products to ethnic groups. Sun Harvest Farms and Fiesta stores cater to the large Hispanic population in Texas by promoting the organic version of a wide variety of Southwestern cuisine foods.

Organic Production Expands To Meet Demand

Organic production is expanding as farmers introduce new crops and increase the size of their farms. Organic farmers are discovering cultivars with characteristics that appeal to gourmet and natural food store shoppers and restaurant chefs. For example, quinoa and amaranth are two specialty organic seeds successfully marketed in consumer-sized packages by Arrowhead Mills of Texas. Montana Flour and Grain Company supplies Arrowhead Mills with a high-protein and vitamin-rich species of wheat marketed as "Kamut," reflecting its ancient Egyptian origins. Kamut is distributed widely today in the form of grain and in over 100 manufactured products, including breakfast cereals, pasta, and bread.

Some large family farms exemplify the growth in organic farming. Cal-Organic Farms in California has grown from 10 acres a decade ago to

2,000 acres of mixed vegetables and cotton today. Nearby, Pavich Family Farms, which began with 400 acres 23 years ago, markets organic grapes, specialty melons, and other produce items from 3,500 acres of certified organic land today.

More Farmland Certified Organic as Market Grows

The number of acres certified as organic more than doubled between 1991 and 1994. In 1994, 1.1 million acres of U.S. farmland were certified as organic, representing 0.1 percent of total U.S. farmland (table 1). The proportion of organic acreage in high-value produce crops is eight times that of the overall U.S. farm sector. In addition to produce, growth was strong for dry beans

Organic Foods Production Act

The 1990 Organic Foods Production Act authorizes establishing national standards for producing and marketing organically produced agricultural products. National organic standards will assure consumers that food products labeled "organically grown" or "made with organic ingredients" meet known requirements that are consistent across the United States. The Act also ensures use of a consistent, nationally recognized certification process and appropriate Federal oversight of certification programs. National standards will facilitate interstate commerce in fresh and processed organic foods.

Under the Act, USDA will establish a certification program that will accredit States and private organizations, which in turn certify that individual producers and handlers meet the standards for organic production or processing. A 14-member National Organic Standards Board—composed of food industry representatives, consumers, environmentalists, and scientists—provided formal recommendations to the Secretary of Agriculture on national organic standards and recommended methods for accreditation of certifiers.

General Requirements Are Laid Out in the 1990 Farm Bill

While USDA completes the final standards, consumers can get an idea of what's in store. General requirements that must be met by all organic products are laid out in the Act, which is part of the 1990 farm bill.

A certified organic operation, whether a farm, processor, or distributor, must utilize a system of organic production and handling as described by the Act. The Act addresses two main requirements of such a system, materials application and production and handling according to a plan agreed to by the producer/handler and the certifier. In general, synthetic materials are prohibited and natural materials are allowed on organic foods under the Act. However, the Act also provides for a national list of allowed synthetic substances and prohibited natural substances for use in organic production and processing. Prohibited materials include most synthetic pesticides and fertilizers, some natural poisons such as arsenic and lead salts, and growth promoters and hormones. The materials restrictions are required for 3 years prior to harvest of an organic product. To maintain the integrity of organic food products from farm to store shelf, organic foods are required to be kept physically separated from nonorganic foods in processing and post harvest handling. Organic plans must address soil fertility management on the farm, and demonstrate that production and handling methods conform to the purposes of the Act in all operations.

The Act lists the responsibilities of certifying agents, which may be State or private entities, under the certification program. These include conducting annual, onsite inspections for certification, periodic residue testing of products, providing public access to certification documents, and collecting reasonable fees. States can set additional certification rules. State certification programs must be consistent with the Federal rules and must be approved by the Secretary of Agriculture.

General penalties for violations are set in the Act, as are general guidelines for the appeals process. For example, fines for intentionally mislabeling cannot exceed $10,000 and a 5-year loss of certification.

Organic Labeling for Meat and Poultry

The Act extends the organic market to cover livestock and poultry products. Under current regulations, meat and poultry cannot be labeled organic. The Food and Drug Administration is currently permitting the use of the term "organic" on processed non-meat animal food products pending the development of national standards. The Bureau of Alcohol, Tobacco, and Firearms has taken a similar position to FDA with regard to organic wine, beer, and ale.

Initial Organic Standards and Rules Expected

The National Organic Standards Board has submitted their recommendations for national standards, and USDA is in the process of writing the proposed rule based on these recommendations. After the proposed rule is published in the Federal Register, a 90- or 120-day public comment period will follow. USDA's National Organic Program staff will revise the rule based on the comments received. USDA will then issue the final rule and establish the National Organic Program.

For more information, contact C. Philip Brent at (202) 219-0756.

Table 1
Higher Proportion of Organic Acreage Devoted to Produce Than for Overall U.S. Farmland

Type of farmland	U.S. farmland	Proportion of total U.S. acreage	U.S. organic land	Proportion of total organic acreage
	Acres	*Percent*	*Acres*	*Percent*
Total	945,531,506	100.0	1,127,000	100.0
Cropland[1]	434,944,493	46.0	668,690	59.0
Produce	8,553,136	0.9	90,676	8.0
Other crops	426,391,357	45.1	578,014	51.0
Pastureland and rangeland	411,306,205	43.5	446,600	40.0
Woodland	73,751,457	7.8	11,280	1.0
Other land	25,529,351	2.7	430	*

Notes: * = Less than 1 percent. [1]Includes cropland harvested, cropland pastured, cropland idled, and other cropland (cover crops failed, and summer fallow). Source: Dunn, Julie Anton. *Organic Food and Fiber: An Analysis of 1994 Certified Production in the United States*, U.S. Department of Agriculture, Agricultural Marketing Service, Sept. 1995.

and grains for human consumption (table 2).

Organic production is not limited to crops. Over half the acreage certified as organic is devoted to livestock production. The number of dairy cows and layer hens certified organic increased 169 percent and 8 percent, respectively, between 1992 and 1994 (table 3). Dairy products and eggs can be labeled and sold as organic, but meat and poultry products may not bear the organic label in the U.S. marketplace until new labels are approved by the USDA Food Safety and Inspection Service, following implementation of the Organic Foods Production Act.

Processed Foods Dominate Growth in the Organic Sector

Food product manufacturing is the fastest growing segment of the organic industry (table 4). Sales of processed foods made with organic

Table 2
Organic Food Production Not Limited to Fruits and Vegetables

Certified organic land by food commodity	1992	1993	1994	Change, 1992-94
	Acres planted[1]			*Percent*
Total produce	77,501	85,373	90,676	17
Fruits	36,847	35,882	39,183	6
Vegetables	37,317	46,649	47,800	22
Herbs	1,086	1,255	1,832	69
Nuts	1,096	1,407	1,648	50
Other produce	1,155	180	213	-82
Dry beans	27,180	35,931	52,330	93
Grains and seeds	157,515	162,557	238,995	52
Coffee	0	79	85	8[2]
Total food crops	262,196	283,940	382,086	46

Notes: [1]Double cropped acres counted once. [2] Percent change from 1993 to 1994. Source: Dunn, Julie Anton. "U.S. Certified Organic Production: 1991-1994 Summation." Report to U.S. Organic Certification Organizations, USDA, AMS, Jan. 1996

ingredients topped $370 million in natural foodstores in 1994, with natural food supermarkets experiencing a 57-percent increase in those sales from 1993 to 1994, according to NFM. A wide diversity of organic foods is available today, with an organic version in almost every food category. Some organic food companies are finding themselves the dominant manufacturer in their food product category. For example, the organic food company Eden Foods of Tecumseh, Michigan, is the largest soy milk producer in the United States. The proportion of organic products in a manufacturer's line varies greatly, with some companies committed to offering a 100-percent organic line and others opting to supply both organic and conventional products.

Natural food retailers report that vegetable-protein products, cereals, snacks, and juices generally have the largest selection among processed organic food categories in natural foodstores. Organic dairy is a large growth category, with sales more than doubling from 1993 to 1994 to an estimated $24 million, as reported by NFM. Some of this growth may be due to consumer concerns over the introduction of growth hormones in conventional dairy production.

Manufacturers of foods made with organic products are increasingly looking to organic certification for added credibility. Food manufacturers accounted for over a quarter of the 500 handlers certified in 1994 to process, package, and/or sell organic products. The total number of processors and distributors certified to handle organic products doubled between 1991 and 1994.

Table 3
Chicken and Turkey the Fastest Rising Segment of Certified Organic Meat Production During 1992-94

Item	1992	1993	1994	Change, 1992-94
	Number			Percent
Beef cattle	6,796	9,222	3,300	-106
Dairy cattle	2,265	2,846	6,100	169
Chickens and turkey for meat	17,382	26,331	110,000	533
Layer hens	43,981	20,625	47,700	8
Sheep	1,221	1,186	1,600	31
Swine	1,365	1,499	2,100	54

Note: Also certified were ducks, geese, bison, goats, quail, and ostriches. Source: Dunn, Julie Anton. "U.S. Certified Organic Production: 1991-1994 Summation." Report to U.S. Organic Certification Organizations, USDA, AMS, Jan. 1996.

Table 4
Food Processors and Distributors the Largest Growing Segments of Certified Organic Marketing, 1991-94

Item	1991	1992	1993	1994	Change, 1991-94
	Number				Percent
All certified organic farmers	2,841	3,749	3,683	4,060	43
Produce growers	2,025	2,693	2,757	2,971	47
Livestock producers	114	170	197	197	73
Certified processors and distributors handling organic foods	254	364	441	526	107
Certified retailers selling organic foods	23	21	23	31	35

Note: 1991 totals exclude data from two organic certifiers. Source: Dunn, Julie Anton. "U.S. Certified Organic Production: 1991-1994 Summation." Report to U.S. Organic Certification Organizations, USDA, AMS, Jan. 1996.

Organic Market Outlets Diversified

Organic food manufacturers are widening their marketing options, with some like Eden Foods finding a fifth or more of their retail sales through conventional grocery chains, primarily in areas with a strong presence of natural foodstores. For example, in the Boston and New York City metropolitan areas, conventional chains such as Food Emporium, Grand Union, and Star Markets are stocking a growing number of organic processed foods as well as produce, with the impact of competition from Bread & Circus and Fresh Fields Markets, which together have opened five stores in those areas since 1992.

In the Washington, DC, metropolitan area, Giant Food placed organic produce sections in 12 of its 163 stores in 1993-94. The Texas Department of Agriculture certified the retail-level handling of unpackaged and bulk-bin organic products in over 360 stores during 1995, 89 percent of which are conventional supermarkets.

Sales of organics through conventional supermarket retailers are increasing, according to NFM, with a 23-percent rise from 1993 to 1994. However, the $150 million to $200 million in conventional grocery store sales of organic products still represent only around 7 percent of total organic product sales.

Exports of organic products resulted in $203 million in sales in 1994, according to NFM. Organic suppliers report that the 80-percent increase in export sales in 1993 can be partly attributed to the steady growth in demand for organic soybeans by Japan and for processed organic food products, raw grains, and cotton by the European Union.

Notable sales of organic products continue to be made through direct market outlets. Close connections between consumers and organic growers flourish as consumers shop for organics at farmers' markets and farm stands, and as they subscribe to allotments of food harvested from a particular farm each season. At $397.5 million in sales in 1994, direct market options of organic products showed a 10-percent increase from 1993, according to NFM, and constitute a market outlet for organics second only to the natural foodstores.

The natural foodstore chains' commitment to merchandising organic food products effectively has been one factor that has encouraged the market success of organic food products. Natural food retailers hope that by upholding product criteria while broadening product selection, they will expand their customer base. That may in turn carve a larger niche for organic products.

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Whether a Pinch or a Dash, It Adds Up to a Growing U.S. Spice Market

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The United States is the world's largest consumer and importer of spices. A growing population, a trend toward using spices to compensate for less salt and fat in food, and a heightened popularity of ethnic foods have pushed U.S. demand for spices to record levels.

Rapid expansion of eating away from home in recent years has increased the commercial use of spices. By the early 1990's, about 60 percent of domestically produced spices were used by the food processing and foodservice sectors, compared with 40 percent a decade earlier. Another trend in food manufacturing is the greater use of spice oleoresins (a concentrated form of spice) because they are easier to disperse in products.

The American Spice Trade Association (ASTA) defines a spice as "any dried plant produce used primarily for seasoning purposes." This definition includes tropical aromatics (such as pepper, cinnamon, and cloves); leafy herbs of the temperate zone (notably oregano, basil, and sage); spice seeds (sesame, mustard, and caraway); and dehydrated vegetables (such as onion, garlic, and chile peppers).

The authors are agricultural economists with the Economic Research Service, USDA. Buzzanell is with the Commodity Analysis Division and Lipton is with the Office of the Administrator.

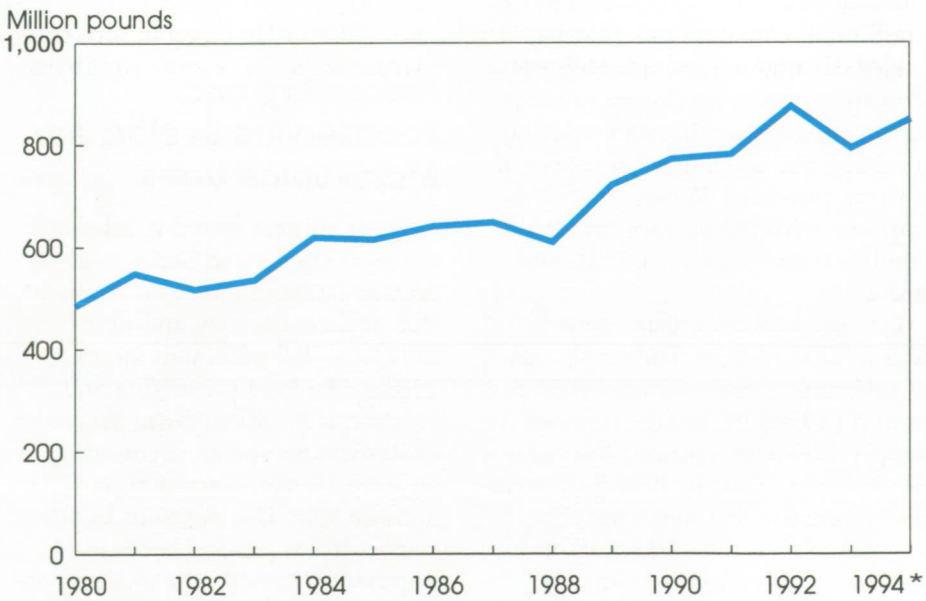
U.S. Spice Market Is "Hot"

U.S. spice consumption averaged an estimated 815 million pounds in 1990-94, compared with 541 million in 1980-84 (fig. 1). Per capita spice consumption increased nearly 1 pound from a decade ago to 3.1 pounds in 1990-94. Imports and domestic production increased over the past decade in response to greater U.S. spice demand.

The United States produces more than one-third of its annual spice needs. Domestic production accounted for 310 million pounds of U.S. spice consumption in 1990-94, up from 195.8 million pounds in 1980-84. Domestic production consists of four major spice types. Dehydrated garlic and onions represent nearly two-thirds of U.S. spice production, capsicum (cayenne or red) peppers represented about 30 percent, and mustard seed and various herbs account for the remainder.

Dehydrated garlic and onion production from domestically produced

Figure 1
Americans Are Consuming More Spices



*Note: 1994 estimate.

fresh material has been growing in recent years. Production, concentrated in California, totaled 206.3 million pounds (dry basis) in 1990-93, compared with 120.6 million in 1980-84.

New Mexico, California, and Arizona are important producers of capsicums for spices and other uses. U.S. production of dried chile peppers totaled 160 million pounds in 1994, nearly double the amount produced in 1985.

Imports supply nearly two-thirds of U.S. spice needs. The United States imports more than 40 primary types of spices each year. Seven major types (vanilla beans, capsicums, black and white pepper, sesame seed, cinnamon and cassia, mustard, and oregano) account for more than 75 percent of the total annual value of spice imports and almost 71 percent of the volume (see box).

A number of other spices are imported into the United States in significant volumes.

The U.S. market for cumin, for example, has been expanding, reflecting growing use in both Hispanic and Asian foods. Shipments of cumin, primarily from Pakistan, Turkey, and Syria, reached a record 15 million pounds in 1994, up from an average of 8.8 million pounds in 1980-84. The value of U.S. cumin imports totaled $9.5 million in 1994.

Saffron, the world's most expensive spice, has several uses, chief among them flavoring and coloring foods. Spain, the largest producer of saffron, provided 86 percent of U.S. imports, with the balance primarily coming from Costa Rica, Italy, and India.

U.S. imports of saffron totaled $3.2 million in 1994. The unit value of saffron imports averaged $464 per pound in 1989-92. Sharp increases in supply, however, reduced the value per pound to $168 in 1994. Saffron is costly because it comes from the stigmas of a crocus and no other part of the plant is used. An acre planted for saffron will yield only 8 to 12 pounds of dried spice per year. Despite its high price, demand remains strong because of its distinctive taste and intense yellow color.

Other commonly used spices include ginger from China, India, Fiji, Indonesia, and Jamaica; parsley from Israel and Mexico; poppy seed from Australia and The Netherlands; dill from India; and curry and curry powder from India and Japan. U.S. imports of basil, primarily from Egypt, more than doubled from 1980-84 to an average of 5.2 million pounds annually in 1990-94. The value of basil imports rose from $1.2 million annually in 1980-84 to $3.3 million in 1990-94.

Some previously unfamiliar spices are becoming more popular, especially in processing. Anise, for instance, is used both whole and ground to flavor candy and pastry. Anise imports averaged 2.5 million pounds annually in 1990-94, compared with 1.4 million pounds a decade earlier. U.S. imports of cardamom, used whole as a pickling spice and ground as a flavoring for pastries, in curry powders, and in spice blends for sausages, have also been increasing. Cardamom imports have grown to an annual average of 0.5 million pounds in 1990-94, compared with 0.3 million pounds in 1980-84.

Processing and Foodservice Sectors Are Major Spice Users

Trade sources estimate sales of spices in the United States totaled around $2 billion in 1994, double that of a decade ago, and up from only $400-450 million in the mid-1970's. The food processing and foodservice industries are the major customers for spices, accounting for an estimated 60 percent of the amount sold. Use of spices by these sectors has expanded because of population growth, the greater popularity of ethnic foods and prepared meals, and increased consumption of food away from home.

With Americans eating a third of their meals outside the home, the foodservice sector uses sizable quantities of spices. Among the major users are large fast-food chains, such as Kentucky Fried Chicken and McDonald's. Fast food restaurants use natural spices, like pepper and paprika, as ingredients. In addition, restaurants provide customers with prepared seasonings and flavors, such as mustard and pepper, in packages or dispensers specially made by spice processors.

Some sales of spices and seasonings are shifting from foodservice outlets to food processors, because foodservice products increasingly are being prepared by food processors rather than on-site. Many pizzas sold in foodservice establishments and for home delivery, for example, are prepared by food processing firms and reheated at the restaurant. This growing trend means the demand for oregano at the food processing level has increased sharply.

The food processing sector uses spices in meat preparations, soups, bakery products, beverages, snacks, convenience foods, and many other products. The largest users of spices in the food processing industry are meatpackers, such as Armour and Oscar Mayer. Large quantities of spices are also used in soups. Sesame, caraway and poppy seeds, cinnamon and cassia, nutmeg and mace, cloves, and cardamom are widely used in bakery products.

Beverages, particularly soft drinks, contain sizable amounts of liquid spice flavorings, which are derived from the essential oils in spices. Colas, for example, may contain nutmeg and other liquid flavorings.

Although the food industry uses spices in their natural or powdered form, there is a trend toward greater use of spice flavorings and mixes prepared to meet the specifications

Getting the Flavor of the Popular Spices

Seven products make up about three-fourths of U.S. spice imports. Here's a profile of those spices' markets, trade value, and major producers.

Vanilla beans

- The United States is the world's largest market for vanilla beans.
- Vanilla beans rank as the leading U.S. spice import in terms of value. At an average unit value of $22.79 per pound, imports averaged $61.6 million annually in 1990-94 for 2.7 million pounds.
- Indonesia is the largest supplier to U.S. market. Other suppliers include Madagascar, the Comoros, and several Pacific islands.
- Ice cream is the largest use for natural vanilla, accounting for half of the market.
- The natural spice faces strong competition from synthetic flavorings, such as vanillin.

Black and white pepper

- The United States is the world's largest pepper buyer, accounting for over one-quarter of annual world imports.
- Black pepper imports averaged $52.9 million annually in 1990-94; white pepper, $10.9 million. Ground pepper imports totaled $1.4 million.
- While the value is near the leading U.S. import, vanilla, the volume is significantly higher, at an annual average of 98.1 million pounds in 1990-94. Per-unit values averaged $0.63 per pound for black pepper and $0.80 per pound for white pepper.
- Indonesia, India, and Brazil are leading suppliers.
- Black pepper is used to season many prepared meats and foods. White pepper is used when dark specks of black pepper are undesirable.

Capsicum and paprika peppers

- One of the fastest growing spice import groups in the U.S. market.
- Three basic types in demand are chili powder, chile pepper, and paprika (the mildest of the capsicum peppers).
- Imports averaged 57.3 million pounds in 1990-94 at an average annual value totaling $44.6 million.
- Peppers are imported from Mexico and Asia, particularly India, China, and Pakistan.
- Paprika imports originate in Spain, Morocco, and Hungary.
- Increasing domestic production in New Mexico, California, and Arizona.

Sesame seed

- One of the leading spices imported into the United States in both volume and value.
- Widely used by the baking industry and is popular as a topping for yeast-leavened buns in the fast-food sector.
- Imports averaged $43.7 million for an annual average of 84.6 million pounds in 1990-94.
- Mexico accounts for nearly half of U.S. imports. Guatemala and El Salvador are also important suppliers.

Cassia and cinnamon

- Cinnamon quills or curls are widely used in pickling, preserves, pudding, flavorings, and stewed fruits. In ground form, the largest end use is baking.
- Cassia, which can be sold under the name cinnamon, is widely used in making doughnuts.
- An average of 31.5 million pounds was imported in 1994 at a value of $27.9 million.
- Indonesia supplies 90 percent of U.S. import market.

Mustard seed

- Mustard use has been growing at home and in fast-food restaurants (however, part of the increase in use may include the waste common with minipackets of mustard at fast-food establishments).
- A small amount is produced domestically, but most is imported from Canada.
- Import volume, the largest of any spice group, averaged almost 135.1 million pounds in 1990-94, compared with 76.4 million in 1980-84. Total import values rose from an average of $11.9 million in 1980-84 to $20.2 million in 1990-94. Imported mustard seed averaged $0.13 per pound.

Oregano

- Growth in imports reflects increasing demand spurred by use in the rapidly expanding market for pizza.
- Imports averaged 12.6 million pounds in 1990-94, up from 7.7 million pounds in 1980-84. The value of imports totaled $12.1 million in 1990-94, more than double a decade earlier.
- Turkey and Mexico are the leading sources of U.S. imports.

of individual food processing companies. For instance, manufacturers may require a number of different spices for hot dogs. Purchasing blends of these spices from a spice supplier in exact unit sizes premixed for manufacturing a certain amount of product is more efficient and accurate than is acquiring the spices separately from different suppliers and mixing them at the meatpacking plant.

A small number of large spice processing and marketing companies grind imported or domestically produced spices and pack them in a variety of containers. McCormick/Schilling is the industry leader, accounting for 37 percent of the U.S. retail spice market. As in other segments of the food processing sector, a trend of mergers is resulting in fewer, larger firms operating in the spice industry.

Natural Concentrates Growing...

U.S. imports of natural spice concentrates, called spice oleoresins, averaged $25.7 million in 1990-94, compared with $8.7 million in 1980-84. U.S. demand for oleoresins, principally paprika and black pepper, is increasing because they offer certain advantages over natural spices, such as consistency of quality, freedom from microorganisms, uniform dispersion in the product, and easy handling and storage.

Spice oleoresins contain the aroma and flavor of the spice in a concentrated form, and are usually viscous liquids or semisolid materials. Because of their high concentration, oleoresins cannot be incorporated into food products unless they are diluted.

Oleoresins are used by food processors in liquid products when even dispersion is desirable. For example, black pepper oleoresin may be used in products, such as salad dressing, when it is important that no flakes are visible.

Spice oleoresins are generally more expensive per pound than their natural counterparts. Black pepper oleoresins averaged $7.12 per pound in 1990-94, for instance, compared with $0.63 per pound for black pepper. However, because oleoresins are highly concentrated, a manufacturer would need to use a much smaller amount of the oleoresin than the natural spice.

...As Are Synthetics

Use of synthetic substitutes, such as vanillin, is an emerging trend in food manufacturing— particularly beverages, ice creams, and frozen desserts. Vanillin accounts for more than 90 percent of the U.S. market for vanilla flavorings. Most vanilla flavorings used in baking, confectionery, and in many frozen desserts contain some vanillin, ethyl vanillin, vanitrope, or a combination of these products.

The market for synthetics is expected to remain strong because of their relatively low and stable prices, as well as their reliable supply and demand. However, use of natural flavorings in food products continues to keep demand for natural spices steady despite the strong competition from some synthetics. Legislation requiring the labeling of products to show whether real or artificial flavors have been added has also aided the sale of natural spices.

Spices Perk Up Agricultural Trade

The volume of U.S. spice imports grew 46 percent in the past decade. The United States imported an annual average 530 million pounds of spices in 1990-94, compared with 362 million pounds in 1980-84 (table 1). The value of these imports increased from an average of $225 million per year in 1980-84 to $374 million in 1990-94.

Spice sales to the United States are important for many countries, especially those in the Asian tropics. While more than 50 countries export spices to the United States, Indonesia, Mexico, India, Canada, and China regularly account for half of the annual value of U.S. spice imports. Indonesia accounted for 19 percent—or $71.1 million—of U.S. spice imports in 1990-94, followed by Mexico with 12 percent. India, Spain, and Morocco regularly account for two-thirds of the value of spice oleoresin imports. India claimed the largest share at 33 percent in 1990-94.

While the United States is the major spice importer, it also exports commercially grown spices and spices that have been imported and then cleaned, sorted, or graded. Counting these "re-exports," U.S. spice exports totaled 94.8 million pounds in 1994, up from 63.2 million in 1990. The value of U.S. exports has risen from $77.1 million to almost $100 million. U.S. exports of whole or ground spices grown in the United States averaged 32.6 million pounds in 1990-94 at a value of $87 million. Canada, Japan, and Germany are the principal markets for U.S. spice exports.

Dehydrated garlic and onion led the growth in U.S. spice exports in recent years, accounting for nearly half the value. U.S. exports of dehydrated garlic and onion have outpaced imports. Australia and the European Union are the major markets for U.S. dehydrated garlic, while Canada, Japan, and the European Union are the largest customers for U.S. dehydrated onions.

Capsicum peppers, mustard, and ginger are the other leading U.S. spice exports. Other spices exported include anise, cassia and cinnamon, and sesame seed. Few of these spices actually are grown commercially in significant quantities in the United States. However, imported spices are cleaned, sorted, or graded in the United States and then exported. These re-exports are counted as U.S. merchandise in the trade statistics.

Table 1
U.S. Spice Production and Trade Are Expanding

Year	Imports[1]	Production[2]	Exports of U.S.-grown spices[3]
		1,000 pounds	
1980	323,094	181,120	18,339
1981	353,600	208,816	14,747
1982	344,519	187,320	15,040
1983	370,990	183,662	18,698
1984	416,888	218,019	15,827
1985	400,990	228,781	13,284
1986	438,878	217,340	14,513
1987	442,922	224,676	17,771
1988	399,974	228,875	17,641
1989	480,439	262,115	20,246
1990	505,634	296,492	29,624
1991	507,469	306,088	31,515
1992	531,080	337,700	31,619
1993	520,973	307,878	34,440
1994[4]	582,910	303,500	36,000

Notes: [1]Spices and oleoresins. [2]Domestic production consists of capsicums, mustard seed, dehydrated garlic and onions, and herbs used as spices. [3]Excludes re-exports. [4]Production and exports are estimates. Source: Buzzanell, Peter J., Rex Dull, and Fred Gray. *The Spice Market in the United States: Recent Developments and Prospects*, AIB-709. U.S. Dept. Agr., Econ. Res. Serv., July 1995.

Changes Ahead

If the current rate of per capita consumption continues and the U.S. population reaches the forecasted 274.8 million by the year 2000, total domestic use of spices would increase 8 percent from 1990-94 to an estimated 877 million pounds. But all indications are that the growth likely will be even higher. The trend toward less salt in foods will likely continue to stimulate more spice use to compensate for flavor loss.

Consumption

Increased consumption of ethnic foods will also encourage growth in the use of more and greater variety of spices. The U.S. population is becoming both more Asian and more Hispanic. According to the U.S. Census Bureau, the Asian population grew from 4.4 million in 1982 to 8.2 million in 1992 and the Hispanic population grew from 15.9 million to 23.7 million in 1992. Moreover, Asian and Hispanic cuisine is increasing in popularity, and this will continue to cause a surge in use of the spices common to these cultures. For example, capsicum imports increased by 85 percent from 32.0 million pounds in 1984 to 59.2 million in 1994—an indicator of the increasing popularity of Latin American foods.

Many restaurants are popularizing the terms "Pacific Rim" and "Tastes of Asia" cooking, signifying a menu apt to offer dishes from parts of Korea, Taiwan, Thailand, Vietnam, Burma, Malaysia, the Philippines, and Indonesia, as well as India, Japan, and the various regional cuisines of China. Typical spices of these countries—ginger, onion, garlic, red pepper, coriander, black and white pepper, anise, cumin, fennel, cloves, nutmeg, curry powder, cinnamon, star anise, mace, and turmeric—are increasingly being imported to service the growing demand.

While this growth scenario is likely for those spices, a downtrend may occur for particular spices. Short-term changes in prices (either up or down) will not likely radically alter demand. However, if prices for natural spices were to move sharply higher for a sustained period, artificial spice substitutes are frequently available. Major U.S. spice processors have a number of artificial flavors ready in the laboratory for many of the world's major spices if the need arises.

Production

The outlook for increased domestic production of certain spices is strong. While many spices will continue to be grown overseas because of comparative advantages in climate, soils, and labor costs, domestic production of certain spices (such as capsicum, and garlic and onions used for spices) should expand, reflecting prospects for expanded demand. For example, the surge in demand for chiles has created opportunities for large and small growers. Based on the continued popularity of Mexican and southwestern cuisine and the discovery of new uses for chile pepper products, the demand for chile peppers and the U.S. chile pepper industry will likely continue expanding.

Trade

Increased participation in global sourcing programs has important implications for both importing and exporting countries. Under these

programs, processors buy directly from sources in producing countries rather than from agents or importers. For example, McCormick has developed several long-term alliances with growers and governments, such as with Indonesian growers of black pepper and vanilla beans.

With global sourcing, sellers learn directly the quality requirements of various buyers. Buyers heighten their knowledge of foreign crop conditions and improve their ability to analyze current market forces; sellers increase their knowledge of the buyers' current season demand. Global sourcing also enables buyers to improve their knowledge of crop prospects and potential, while sellers gain greater perspective on the outlook for buyers' needs.

Regulation

The heightened concern over food safety may foster tighter safety regulations. At present, many spices imported into the United States are treated in order to kill insects and microorganisms that thrive under the tropical weather conditions and rudimentary packaging common in many spice-producing countries. For example, cumin seed from Pakistan packed in jute or burlap bagging must be treated to prevent the possible entry of the Khapra beetle into the United States. Sterilization of spices is also critical for maintaining the quality of processed foods and retail spices.

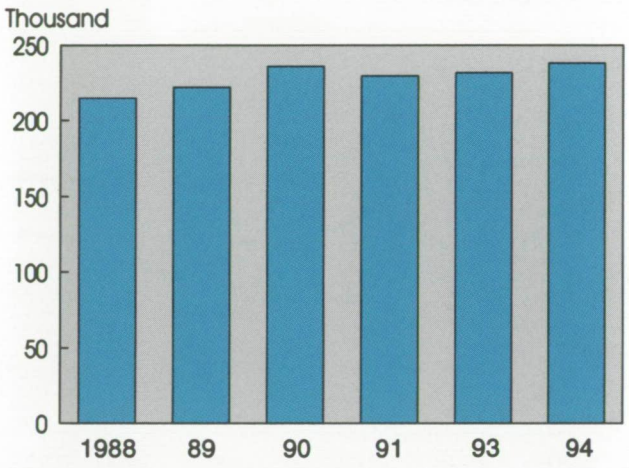
Ethylene oxide and methyl bromide gas are currently used to treat spices. Ethylene oxide is used to lower microbial counts in spices, while methyl bromide reduces insect infestation. However, new Federal regulations will phase out methyl bromide by the year 2001, because it contributes to the depletion of the ozone. Federal regulators are also currently debating the continued use of ethylene oxide.

Therefore, U.S. spice companies must consider alternative techniques for ridding spices of insect and microbial pests. One choice available is irradiation, which uses gamma rays or high-energy electrons to kill insects, molds, and microbes. The spice industry has generally not adopted this alternative, however, because of uncertain consumer acceptance.

Other alternatives are available, although they are more expensive and less convenient than methyl bromide and ethylene oxide. Steam sterilization, for example, is useful on certain "hard" spices, such as black pepper and nutmeg, but does not work well on leaf spices, such as oregano. ▫

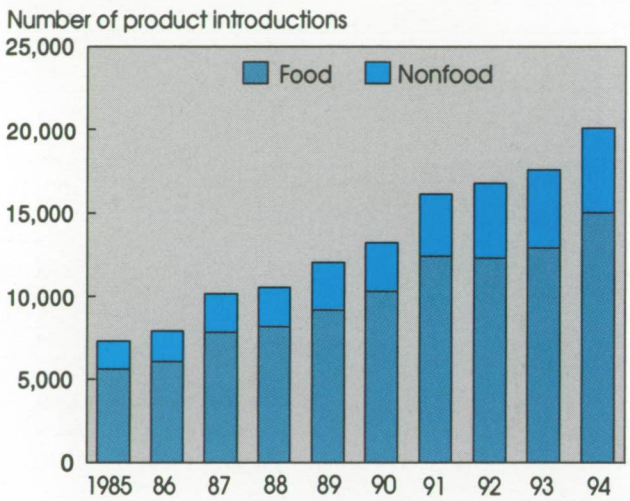
Food Marketing . . . At a Glance

Over 238,000 Packaged Food Products Available in the Food Marketing System



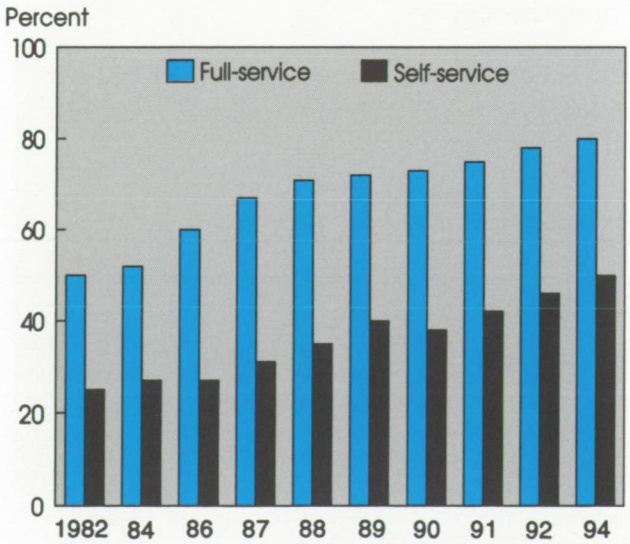
Note: Represents packaged food products, including dry grocery, frozen food, and dairy; but excluding meats, produce, and many other grocery products.

Ever More New Food Products Being Introduced in Foodstores

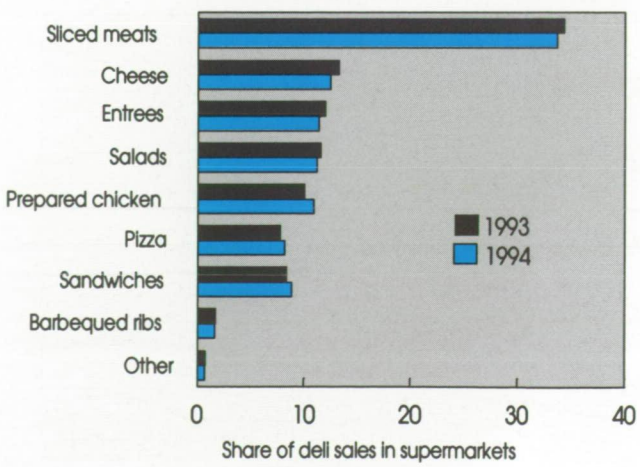


Source: *New Product News,* selected issues.

More Supermarkets Feature Full-Service Delis...



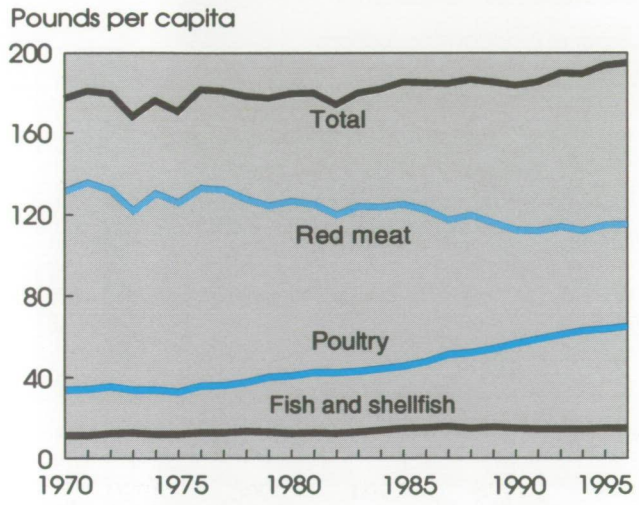
...Which Offer Much More Than Just Sliced Meats



Source: *Supermarket Business,* selected issues.

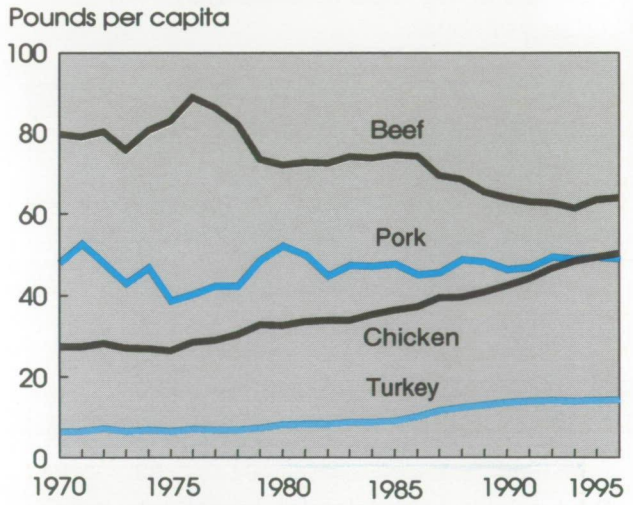
Food Consumption . . . At a Glance

Americans Consumed Record High Levels of Total Meat in 1995...



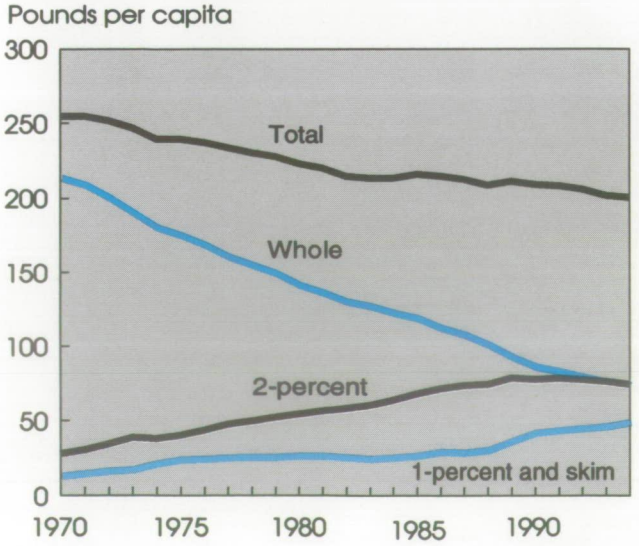
Boneless, trimmed equivalent.

...With Beef Still the Most Popular Meat, But Chicken Is Gaining

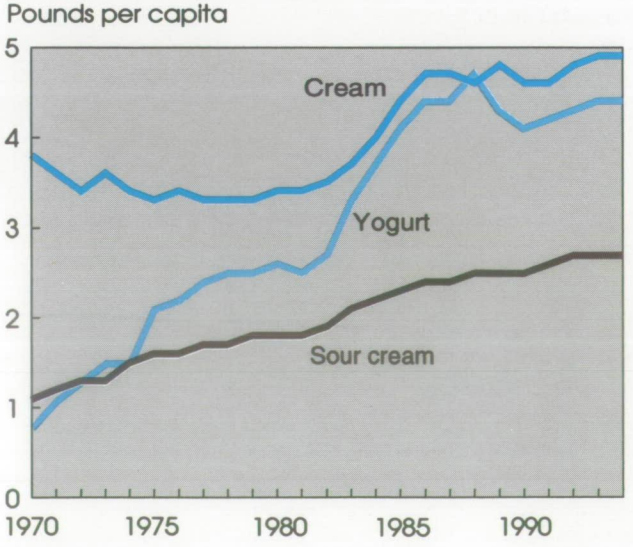


Boneless, trimmed equivalent.

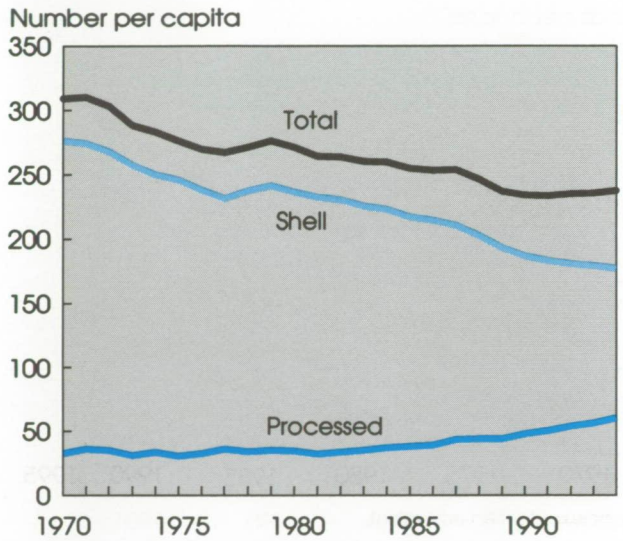
Higher Consumption of Lowfat Milks Not Enough To Offset the Decline in Whole Milk



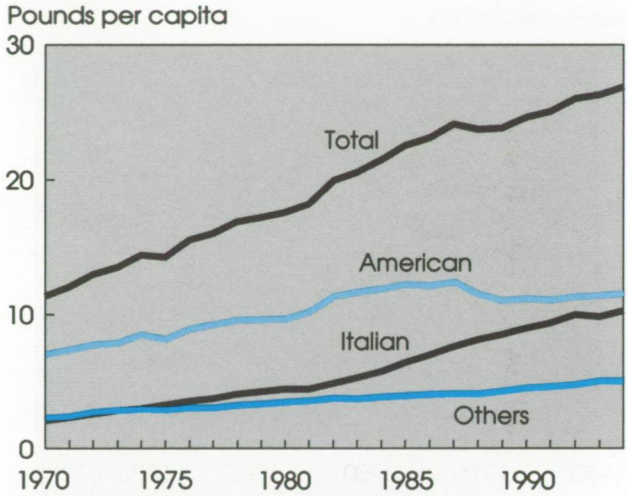
Per Capita Consumption of Yogurt Increased Sixfold Between 1970 and 1994



Longterm Decline in Egg Consumption Levels Off in the 1990's

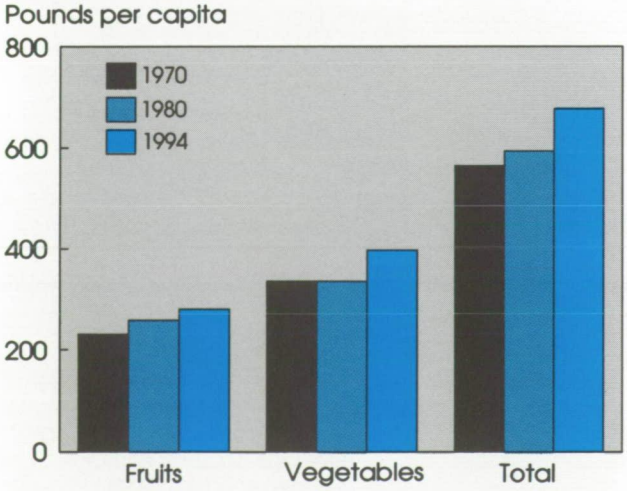


Cheese Consumption More Than Doubled Since 1970



Natural equivalent of cheese and cheese products.
Excludes full-skim American and cottage-type cheeses.

Consumption of Fruits and Vegetables Up 20 Percent Since 1970...

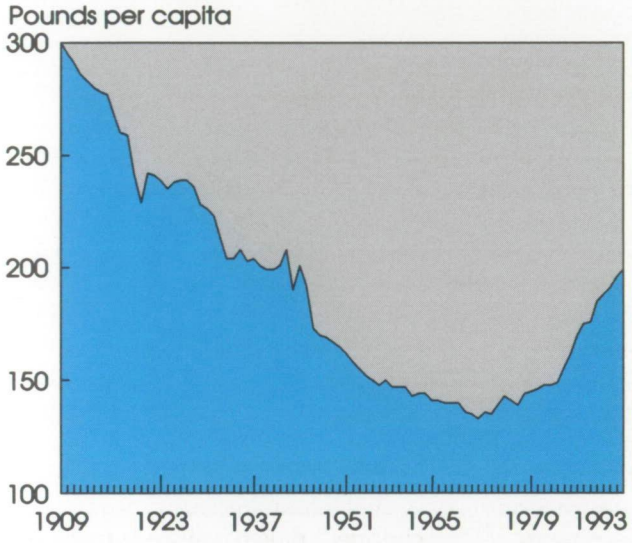


Fresh-weight equivalent. Excludes wine grapes and produce from home gardens.

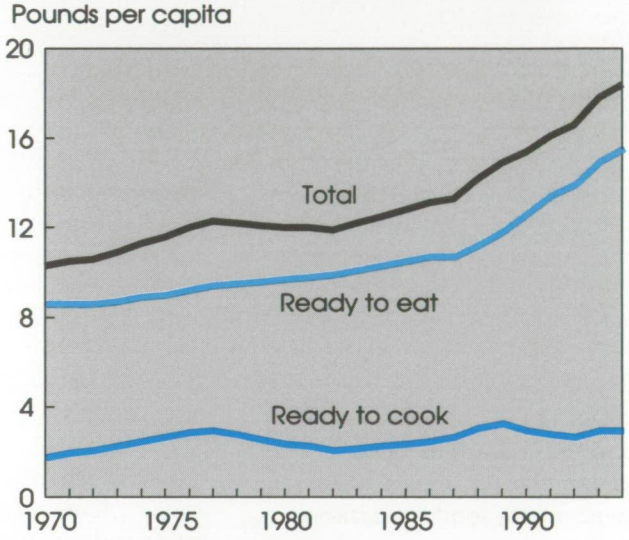
...With Ethnic Flavors Leading the Pack

Top six gainers	Percent increase in per capita consumption, 1980-84 to 1990-94
Kiwi fruit	267
Mangoes	146
Limes	106
Garlic	97
Sweet bell peppers	80
Chile peppers	76

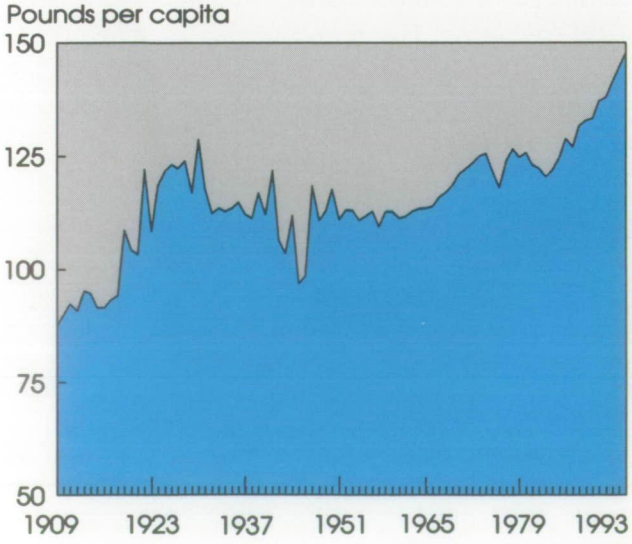
Consumption of Flour and Cereal Products on an Upswing



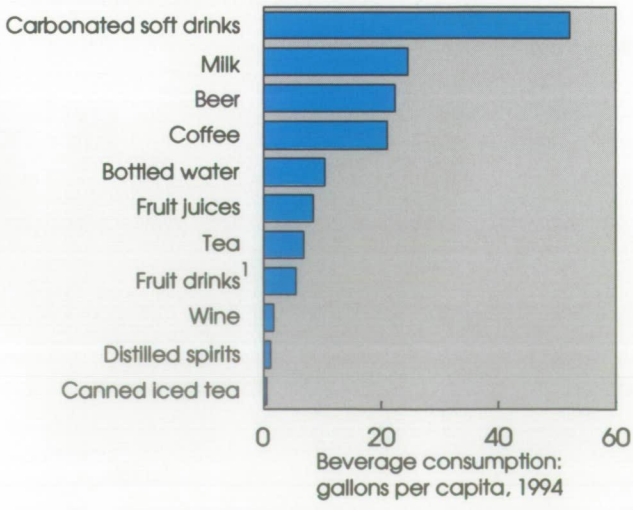
Per Capita Consumption of Breakfast Cereals Increased 53 Percent Between 1980 and 1994



In 1994, Americans Consumed 69 Percent More Caloric Sweeteners Than in 1909...



...Partly Due to the Amount of Soft Drinks Consumed



Note: [1]Includes fruit cocktails and ades.

Food Companies Offer Views of Safe Handling Label for Meat and Poultry

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Microbial foodborne illness inflicts significant burdens on society. According to food-safety researchers, there are between 6.5 million and 33 million cases of microbial foodborne illness in the Nation annually—500 to 9,000 of these cases result in death. USDA's Economic Research Service (ERS) estimated the cost of illness (medical costs, time lost from work, and loss of life) of seven foodborne pathogens associated with meat and poultry products to range from $4.5 billion to $7.5 billion in 1993.

Food safety is a pressing issue for the Government, food manufacturers, retailers, and consumers. New Federal regulatory initiatives include USDA's requirement to have a label with safe handling instructions placed on packages of raw or partially cooked meat and poultry to provide food preparers with information on safe practices, USDA's Hazard Analysis and Critical Control Point (HACCP) regulation to prevent meat and poultry contamination in meat and poultry establishments, FDA's seafood HACCP regulation to reduce seafood contamination, and FDA's 1993 Food Code to prevent food contamination in retail stores or foodservice facilities.

A recent ERS study was conducted to explore the views of meat and poultry processors and supermarket retailers concerning USDA's proposed rule mandating safe handling labels on meat and poultry and the regulation's impacts on firms. The findings shed some light on the diversity of firms' attitudes and responses toward Government food-safety policies and initiatives. Knowledge of these views and attitudes is instructive for the design and implementation of future food-safety initiatives as Government-firms' interactions can influence regulatory processes and outcomes.

The companies and trade associations examined in the study generally supported the goal of providing consumers with safe food handling information. Yet at the time, many were concerned about compliance costs, scope of products covered under the regulation, adverse marketing effects, and effectiveness of the label in reducing foodborne illness. Moreover, many did not believe the safe handling label would reduce product liability or generate greater sales of fresh meat and poultry. The promulgated regulation reflected USDA's consideration of some of these concerns.

The Safe Handling Label Regulation

On May 27, 1994, USDA's regulation requiring safe handling instructions on raw or partially cooked (that is, uncooked or not processed to the status of ready-to-eat) meat and poultry products took effect. The safe handling instructions were designed to reduce the risk of foodborne illness attributable to unsafe handling, preparation, and storage of meat and poultry products, both at foodservice facilities and in private kitchens. All raw or partially cooked comminuted (ground, chopped, flaked, minced) meat and poultry products carried the label starting May 27, 1994, while other raw or partially cooked products were labeled beginning July 6, 1994.

The label is mandated for products packaged and labeled in USDA- or State-inspected processing plants and at retail stores, regardless of whether the products are distributed to retail stores or to foodservice facilities (such as restaurants and hotels). The regulation specifies the label's language and format, based on the results of a USDA focus group study of consumers. Participants in the focus group study expressed a preference for package instructions over pamphlets or instore signs; they also felt that an explanation of the importance of safe handling was a necessary part of the label.

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USDA estimated that every 1-percent reduction in illness due to unsafe handling and cooking of raw meat and poultry would result in societal benefits between $38.8 million and $43.3 million each year from savings in medical costs, time lost from work, and loss of life. As for the cost of the regulation, USDA's preliminary estimate was $37.5 million to $75 million per year, to be incurred by retail stores for adding text of the instructions to existing labels. In response to comments to the proposed rule, the cost estimate was later increased to include also processor costs, purchase of new equipment, and labor. For all processors and retailers, the revised cost estimate ranged from $76.1 million to $92.1 million per year. USDA found no quantitative estimate of the effectiveness of such a label on safe handling practices. Under these benefit and cost estimates, societal benefits would exceed costs to the industry if foodborne illness was reduced by 3 percent or more.

Industry Response to Microbial Food-Safety Initiatives

The level of food safety due to microbial exposure may be less than socially desirable if left to market forces. While more safety generates economic benefits to society, in terms of the reduced cost of illness, it may not provide adequate financial returns to individual firms for their additional costs. It is difficult for individual firms to market a product or brand based on its superior safety, and one firm's promotion of food safety may be construed as impugning the safety record of its competitors. Whether a food item has pathogens and how likely the food is to be a vector for pathogens that cause human illness is not usually observable by either its producers or consumers. Also, pathogens can enter, multiply, and grow in food during production, handling, preparation, and storage. As a result, the cost of complying with a microbial food-safety regulation may be more obvious than its potential gains to individual firms. Regulations can be used to enhance public health by helping to ensure that the foods consumers purchase in the market are as safe as possible and that information is provided to food preparers so they can handle foods in a manner that reduces the risk of foodborne illness.

The financial impacts on firms can be substantial when the links between food and illness are identified and severe illness is experienced. These financial impacts can include product liability compensation, product recalls, efforts to restore customer confidence and company market share, and other expenses. However, identifying the source of a foodborne illness is often difficult, except when the illness is diagnosed shortly after the suspected food was eaten and the illness-food linkage is confirmed. Many times foodborne illness symptoms are mild and short-lived. Thus, some firms may perceive microbial food-safety problems to pose a less severe threat to the product liability of a firm than do other product problems (for example, physical contaminants such as broken glass) since the food-illness linkage may not always be established.

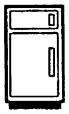
Information Gathered From Processors and Retailers

To learn more about food companies' reactions to the safe handling label requirement, we collected information from two different sources: (1) a pilot survey of eight meat and poultry processors and nine supermarket retailers, and (2) a review of about 200 comments received by USDA during the comment period on the proposed rule.

In the pilot survey, two versions of a 15-minute questionnaire were mailed in late May 1994 (the same month the regulation took effect) to 18 processors and retailers across the country that had agreed to participate. Most of the selected companies returned the questionnaire within a month, while one processor failed to respond.

Safe Handling Instructions

This product was prepared from inspected and passed meat and/or poultry. Some food products may contain bacteria that could cause illness if the product is mishandled or cooked improperly. For your protection, follow these safe handling instructions.



Keep refrigerated or frozen.
Thaw in refrigerator or microwave.

Keep raw meat and poultry separate from other foods.
Wash working surfaces (including cutting boards), utensils, and hands after touching raw meat or poultry.

Cook thoroughly.

Keep hot foods hot. Refrigerate leftovers immediately or discard.

Three in each of the processing and retailing sectors were chosen among the largest 25, the 26th through 50th largest, and 51st through 100th largest firms, according to sales rankings reported in trade publications. The combined sales of these selected processors in 1993 amounted to $23 billion, or about 60 percent of the total industry sales. Supermarket retailers in this pilot survey accounted for $23 billion, or 8 percent of all supermarket sales, in 1993.

The processors and retailers were asked to express their views about the immediate and long-term impacts of mandatory labeling on their company such as compliance costs, products sales, and legal implications. They were also asked about their current activities related to microbial safety of meat and poultry products. Questions in the pilot survey were selected on the basis of prior research on firms' reactions to Government regulations. No proprietary company information was requested. The designated respondent was the person(s) most responsible for, or knowledgeable of, food-safety matters in the company.

In addition to information collected from the pilot survey, comments received by USDA during the public comment period of the proposed rule for mandatory labeling were also reviewed. More than 200 food companies and organizations representing food industry members submitted comments to USDA.

Due to the voluntary nature of the comments and the limited number of firms included in the pilot survey, the findings should not be construed to be necessarily representative of industries' or their members' views. But taken together, findings from these two sources of information serve to illustrate the diversity of perceived impacts of the labeling requirement by food companies prior to the final rule.

Compliance Costs and Product Coverage Worried Companies

Many companies and trade associations examined in this study shared concern about microbial food safety and emphasized their commitment to providing consumers with safe and wholesome foods. They also endorsed the idea of providing consumers with necessary information to handle and prepare food safely. Yet, there were different opinions between them on details of the regulation.

Some firms, particularly retailers, commented that label redesign and printing would actually cost more than USDA estimated. Some firms also commented that new or modified weighing/wrapping equipment would be necessary. Additionally, applying the label would increase labor costs. In response to these comments, in the final rule, USDA broadened its cost estimate of the regulation to include equipment, labor, and costs to processors.

Some commenters also argued that the label should be required only for comminuted products, rather than for all raw meat and poultry products. Part of the concern was due to costs. As stated in USDA's regulation proposal, the regulation would affect 50,000 to 100,000 different labels placed on 15 billion packages of meat and poultry each year (with two-thirds of them packaged and labeled at retail). Perhaps more importantly, comminuted products only account for about 10 percent of all meat and poultry packages labeled at retail stores. Hence, some retailers felt their compliance costs would be lessened if the label was mandated on comminuted products only.

The concern about requiring the label for all raw meat and poultry products was also perhaps related to the evidence used in the proposal to justify the regulation. USDA cited nine foodborne illness incidents related to hamburgers or ground beef contaminated with the *E. coli* O157:H7 pathogen as the rationale to initiate the regulation. Some commenters argued that many noncomminuted products, such as frozen entrees or dinners, contain fully or partially cooked meat and poultry and already carry cooking instructions. These commenters said safe handling labels should not be required on these products.

When asked about the potential impacts of labeling requirements, "higher operating costs" in the short term (less than 1 year) and the long term (1 year or more ahead) were selected by 9 and 8 of the 17 respondents in the pilot survey, respectively (table 1). This view is consistent with comments received by USDA in response to the proposal. The responses may also suggest the extent of compliance costs actually incurred by the respondents as the survey closely coincided with the effective date of the regulation.

Companies' Perceived Marketing Effects

Several of the companies commenting to USDA during the rulemaking process were concerned about a part of the label saying these products "may contain bacteria that could cause illness." In their view, the statement constituted negative information or a scare tactic that may undermine consumer confidence in products bearing the label.

The pilot survey also elicited opinions about the potential impacts of USDA's label requirement on short-term and long-term consumer confidence and on sales of uncooked meat and poultry products (table 1). Among the 17 respondents, 8 thought the label would improve consumer confidence in their uncooked meat and poultry products but would not necessarily improve sales of these products in the short

term or long term. None of the respondents anticipated more sales in the short term due to improved consumer confidence, while two anticipated higher long-term sales from improved consumer confidence. In comparison, five respondents felt the label was likely to weaken consumer confidence in their uncooked meat and poultry products (four in the short term and one in the long term), but would not necessarily reduce sales. One respondent felt the worsened consumer confidence would hurt sales of uncooked products in the long term.

In addition, two of the respondents thought the label could increase long-term sales of their cooked meat and poultry products because consumers would buy fewer uncooked products (table 1). One respondent was concerned that sales of cooked products could decline in the long term as consumers become suspicious of the safety of all cooked and uncooked products.

Companies Questioned Effectiveness of the Label

A number of companies that made comments to the USDA during the rulemaking process indicated that their own research suggests that consumers are more receptive to positive and specific educational messages. Some comments stated there are effective alternatives for reaching consumers other than the mandated label. Many firms had their own consumer food-safety information activities, such as providing pamphlets, other point-of-sale information in the stores, and handling labels on products. Twelve respondents in the pilot survey said they would maintain or increase their own consumer information programs even after the handling label was instituted.

The inconsistency between USDA's safe handling label and the handling instructions that firms had been using was another problem area. For example, some food processors, food retailers, and trade associations commented that their products were already labeled "keep frozen" and they feared USDA's label that states "keep refrigerated or frozen" might confuse consumers and compromise product safety. There were also some foodservice firms and trade associations that mentioned inconsistencies between the practices suggested in the label and current industry good manufacturing practices. For instance, the label says that raw products should be kept refrigerated or frozen, while industry procedures specify frozen storage only. The final rule provided for flexibility to allow for specific industry practices.

Some commenters cited the lack of evidence to show that the proposed label would reduce unsafe food handling practices and lower the number of foodborne illness.

Table 1
Firms in the Survey Perceived Various Impacts of the Label Requirement

Likely impacts of the label requirement on the firm	Short-term impacts	Long-term impacts
	Number of firms	
Higher operating costs	9	8
Improved consumer confidence in *uncooked* products but **not** necessarily improved sales	5	3
Increased sales of *uncooked* products as consumer confidence improves	0	2
Worsened consumer confidence in *uncooked* products but **not** necessarily reduced sales	4	1
Reduced sales of *uncooked* products as consumer confidence worsens	0	1
Increased sales of *cooked* products due to decreased sales of *uncooked* products	0	2
Reduced sales of *cooked* products due to suspicion of the safety of *all* products	0	1
Reduced consumer complaints,claims or lawsuits as foodborne illness becomes less likely	2	3
Other responses	1	4

Note: Short term is less than 1 year,long term is 1 year or more ahead. Multiple responses were accepted.

Some firms questioned whether consumers would read and understand the label language or symbols. Other firms felt USDA provided no evaluation of the label's potential efficacy.

Firms Expressed Doubts About Legal Benefits

In the pilot survey, respondents were asked if they expect USDA's safe handling label to reduce consumer complaints, claims, or lawsuits against the company because consumers are less likely to get sick from eating meat and poultry products sold by the firm. As shown in table 1, 5 of the 17 respondents thought the label would produce legal benefits for them in either the short term (2 respondents) or the long term (3 respondents). The lack of perceived legal benefits may be due to uncertainty about the effectiveness of the label and the difficulty of confirming the alleged source of illness.

Firm Costs and Benefits Varied

The diversity of firms' opinions of the labeling regulation is evident from the pilot survey in which respondents were asked to assess the regulation considering all of its impacts on the firm (table 2). In the short term, five respondents thought the regulation's total benefits to the firm would somewhat exceed its total costs, five thought the costs would somewhat exceed benefits, six felt that benefits and costs would be about the same, and one believed the costs would be significantly higher than the benefits. In the long term, six respondents foresaw somewhat higher benefits than costs, four felt the opposite, five did not anticipate noticeable differences between benefits and costs, one believed the costs would be significantly higher than the benefits, and one respondent was not sure of the impacts.

Table 2
Respondents Assessed the Overall Impacts of the Regulation

Overall impacts on the firm	Short-term impacts	Long-term impacts
	Number of firms	
Significantly positive	0	0
Somewhat positive	5	6
Neither positive nor negative	6	5
Somewhat negative	5	4
Significantly negative	1	1
Don't know	0	1

Note: The impacts are positive if the regulation's total benefits on the firm exceed its total costs and negative if its total costs on the firm exceed the total benefits.

The findings reported in this study suggest that if labeling were made voluntary, some firms would probably choose not to adopt the label, based on individual company costs and benefits. USDA justified a mandatory label requirement after determining that societal benefits exceeded total industry costs of labeling.

Despite the differences about details of the regulation, however, USDA and the industry share a commitment to enhance food safety and public health. Given the challenges faced by USDA and the industry in ensuring optimal microbial food safety, this common dedication can serve as a basis for more dialogue and collaboration between them in the pursuit of public as well as private interests.

Firms' perceptions of the label regulation and its impacts on them also highlight the difficulties both public and private sectors face in dealing with microbial food-safety issues. More research and information sharing in areas such as costs of regulations, consumer behavior, and epidemiology will promote informed decisionmaking by the Government and the industry.

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Consumer Price Index Overstates Food-Price Inflation

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The Consumer Price Index (CPI) is the most widely used and most well-known measure of inflation, or general price changes, in the United States. The CPI is a measure of the average change in prices paid by urban consumers for a fixed market basket of goods and services, including food. Annual cost of living adjustments to Social Security benefits, as well as wage changes in many union contracts, are explicitly based on formulas that include changes in the CPI. Annual changes in the CPI are also used informally to adjust salaries for many nonunion jobs and to adjust prices in many sales contracts between firms.

The CPI has been recently criticized by economists, general interest business magazines, and others on the grounds that it overstates changes in general living costs. Articles examining the issue appeared in *Fortune*, *Business Week*, and *The Economist*. The issue gained even greater saliency during the winter of 1995, when the Federal Reserve Board Chairman asserted to a joint meeting of the Senate and House Budget Committees that the CPI overstated inflation. His testimony indicated that Congress could reduce Federal expenditures substantially by adjusting the CPI-based formula used to calculate increases in Social Security benefits. In September 1995, a panel of five distinguished economists with extensive experience in the analysis of prices and price indices examined the issue and reported to Congress that their "best estimate" of the overstatement was 1 percentage point a year.

The CPI for Food at Home is a major component of the CPI, and is the Nation's principal indicator of changes in retail food prices. As such, the Food at Home CPI is watched closely by policymakers, investors, and corporate leaders. The U.S. Labor Department's Bureau of Labor Statistics (BLS) collects food prices and each month calculates the CPI for Food at Home. BLS has identified some sources of overstatement in the Food at Home CPI and has made changes to improve accuracy. These improvements will change how the CPI for Food at Home is calculated.

The Food at Home CPI also indirectly affects policy decisions, when it is used to provide base estimates for reporting the present situation and for various policy outcomes. Take the case of expenditure surveys used to measure trends in food consumption. When spending changes are converted to changes in physical quantities of foods using price changes between surveys, an adjustment based on an inaccurate CPI will lead to inaccurate measures of consumption changes. Between 1978 and 1988, for example, CPI-adjusted expenditure data show per capita consumption of fresh vegetables falling by 15.2 percent and by 2.4 percent for fresh fruits. Those indicators conflict sharply with retailer perceptions as well as with USDA disappearance data, which show a 25-percent increase in that period. (Disappearance data estimate food consumption by subtracting exports, yearend inventories, processing, and nonfood uses from production, imports, and beginning of year inventories.) Clearly, something is wrong if the alternative methods give such sharply different conclusions.

Prices Overstated for Food at Home

Analyses by BLS and USDA's Economic Research Service (ERS) suggest that the CPI for Food at Home overstates inflation of food prices, and that the gap could be as high as 1 to 1.9 percentage points per year beginning around 1978.

The ERS findings are based on two analyses of price data for food items in dry grocery product classes, using supermarket scanner data ob-

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tained from the A.C. Nielsen Company. The Nielsen data report the quantity sold nationwide in a given month for a particular item, as well as total dollar sales of the item. An item's average monthly price is calculated by dividing sales by quantity.

In the first analysis, inflation rates for 14 product categories in the Food at Home CPI were compared with average annual price changes for precisely defined Nielsen product classes or groups of classes (based on all items in the group) that correspond closely to the CPI product categories (examples of CPI categories include bacon, butter, and canned and packaged soup) over 1988-91. For each of those 14 groups, the CPI measures were consistently higher, averaging 1.5 percent per year higher (table 1).

The second comparison represented a wider array of product classes (323 nonperishable grocery product classes), but compared average annual price changes for only the leading item of the leading brand in each product class between April 1988 and April 1993. For example, in the category of "canned soup," Campbell's is the leading brand, and its largest selling item is the 10.75-ounce can of mushroom soup.

A weighted average of the individual price changes provided overall food price inflation for this group of 323 items, giving more weight in the average to product classes with greater consumer expenditures (because, for example, consumers typically spend far more on breakfast cereals than on pimientos, price changes in breakfast cereals should be accorded more importance in a price index).

Nielsen-based food prices grew much slower than the corresponding CPI measure in the second comparison, too. When calculated for nonperishable grocery products, the CPI grew at an average annual rate of 3.7 percent per year over the 5-year period, compared with 1.88 percent per year for the Nielson items (table 2).

These findings are consistent with two related analyses: one compares the CPI with "average prices" and one with the Producer Price Index (table 2). Similar to the calculation with Nielsen data, the BLS calculates average prices across the country for precisely defined products, such as Red Delicious apples (fresh meats and produce, which are not recorded in the Nielsen data, account for about half of the products in the average-price series) when it collects prices for the CPI.

A corresponding CPI category generally will be broader than an average-price category. For example, pears are reported separately in the average-price series, but are included in the CPI as part of a category called "other fresh fruits." Likewise, the CPI for apples includes several varieties of apples, but the average-price series measures only the prices of Red Delicious apples. Since average-price categories do not precisely match CPI categories, we should not expect the two series to show identical rates of price change. Nonetheless, the two should not show large and systematic differences.

Between 1980 and 1992, BLS research shows that prices for the usually broader CPI categories grew faster than average prices for 64 of the 68 products analyzed. The average annual difference was 1.66 percent per year, quite close to the earlier ERS findings based on Nielsen data. The difference was especially pronounced for fresh fruits and vegetables, where CPI indices grew 2.93 percent per year faster than the average-price indices.

Now consider a fourth comparison between the CPI for Food at Home, based on prices observed at retail stores for items sold to consumers, and the BLS Producer Price

Table 1
The CPI Increases More Than Nielsen Average Prices

CPI product category	Annual rates of price change, 1988-94		Difference
	CPI	Nielsen	
	Percent		*Percent*
Bacon	2.18	0.51	1.67
Butter	-4.09	-6.23	2.14
Canned and packaged soup	5.60	4.59	1.01
Canned fish & seafood	-.04	-.54	.50
Carbonated drinks	1.60	-.53	2.13
Cut corn & canned beans	1.22	-1.64	2.86
Frankfurters	2.90	1.30	1.60
Frozen fruit & fruit juices	-.52	-1.59	1.07
Frozen vegetables	2.71	1.12	1.59
Ice cream & related products	2.88	.49	2.39
Instant & freeze-dried coffee	5.15	4.66	.49
Margarine	1.96	.57	1.39
Rice, pasta, & cornmeal	2.31	1.31	1.00
Roasted coffee	7.49	6.39	1.10

Table 2
Three Comparisons Highlight Exaggerated Food-Price Inflation in the CPI

1.	**Average annual growth in aggregate nonperishable grocery categories, 1988-93** CPI: 3.70% 323 Nielsen classes: 1.88%
2.	**CPI minus growth in related BLS average-price series, 1980-92** All food products: 1.66% per year difference Fresh fruits & vegetables: 2.93% per year difference
3.	**CPI minus growth in Producer Price Index (PPI) for consumer foods, 1971-93** 1971-78: PPI grows 0.2% per year faster (7.80% annually versus 7.60%). 1978-93: CPI grows 1.31% per year faster (4.37% annually versus 3.06% annually)

Index (PPI) for consumer foods, based on prices observed at processing plants for items sold to wholesalers and retailers.

For most of the 1970's, the two indexes grew at about the same rate (table 2). But the two diverged after 1978: the PPI grew 3.1 percent per year in 1978-93, while the CPI grew at an average rate of 4.3 percent per year. Taken alone, this divergence does not prove that the CPI grows too fast, because retail costs could have been growing faster than processing costs. However, the divergence does become significant when combined with other patterns, as seen in the previous three analyses.

Although each of these four comparisons has weaknesses, they all suggest that the Food at Home CPI may overstate rates of retail food price increases. Taken together, the evidence suggests that there may be something systematically incorrect with the CPI for Food at Home, and that the measure could have been off by 1 to 1.9 percentage points per year for more than a decade. Small annual differences accumulate into large ones over time. For example, over the full 1988-94 period in table 1, the CPI for Food at Home increased 9.3 percent faster than the corresponding Nielsen prices.

Higher Rates of Inflation Due to Construction of the CPI

To see how the CPI could go wrong, we first need to appreciate the enormity of the task involved in constructing a CPI in a dynamic modern economy. First, consumers' broad expenditure patterns change dramatically over time. People spend much smaller proportions of their income on food today than three or four decades ago, and a smaller proportion of food expenditures goes for food at home. Consumers eat less red meat and more poultry, and more fresh fruits and vegetables and less canned produce. Indexes must be adjusted periodically to reflect changing consumption patterns.

Second, there is a growing influx of new items within product categories, including new products (rice cakes or bottled iced tea), as well as new flavors, container sizes, and container materials (plastic ketchup bottles now outsell glass). The number of new items introduced in supermarkets increased from 5,400 in 1984 to 12,300 in 1992. Price analysts have to find ways to smoothly introduce new items into samples, so that price indices accurately reflect the mix of items actually bought by consumers.

Finally, price indices must account for another type of important change in consumer buying patterns—shifts in the types of stores where people shop. Conventional supermarkets (typically around 25,000 square feet of selling space) accounted for 73 percent of all supermarket sales in 1980, but only 28 percent in 1994. Large superstores (typically more than 50,000 square feet of selling space) took in 18 percent of supermarket sales in 1980 but 36 percent in 1994, while sales by warehouse-type supermarkets grew from 4 to 11 percent of total supermarket sales. Further, a growing share of food sales occurs outside of supermarkets, in convenience stores, club stores, and other retailers (like Wal-Mart).

Changing Shopping Patterns Partially Account for Overstatement...

To keep up with changing retail purchasing patterns, the BLS has relied on a sophisticated system of household and store sampling since 1978. Each year, the agency uses the system to introduce new samples of stores and items in about one-fifth of the 95 metropolitan areas where prices are gathered. Thus, a given area's sample of stores stays in the index for about 5 years, and the na-

tional sample is completely revised over a 5-year period.

The approach represents a major advance in incorporating changes in consumer behavior into price indexes, because frequent sampling can capture changes in consumption patterns, item characteristics, and stores. But two problems seem to lie at the heart of discrepancies with price indices other than the CPI. One problem is well understood but extremely difficult to fix, while the other is more subtle but easier to fix. Let's take the well-understood problem first.

Consider what happens when a new supermarket opens. Today's new supermarkets are likely to be much larger than older stores and offer a wider variety of food and nonfood products and services. New supermarkets usually also offer lower prices: BLS research found that during a 2-year period, stores in newly selected samples offered prices averaging about 1.2 percent lower than the stores that they replaced in the sample.

Average price indices, such as the ERS measures based on Nielsen price data, are sensitive to price differences between stores. If a store with lower prices for a particular product, such as Oscar Mayer bacon, enters the Nielsen sample, the effect will be to lower the U.S. average price of bacon. Average price indices will increase less over time if a lot of this "store substitution" goes on.

By contrast, the CPI is explicitly designed to omit the effects of average price differences between new and old sample stores, by measuring price changes in stores. A CPI for bacon will fall only if bacon prices fall in stores already in the sample. An average-price measure (such as the ERS Nielsen-based index or the BLS average-price series) will fall for that reason, too, but it will also fall if new stores have lower prices than the stores that they replaced in the sample.

The CPI design follows from an assumption that price differences between stores must reflect differences in service quality. In other words, bacon is lower priced in one store because that store offers less service, and customers in the higher priced store are merely paying for more service. Recent ERS evidence suggests that may not be an accurate assumption: new stores appear to offer more services, on average, as well as lower prices, and consumers are shifting to those stores in large numbers.

The assumption behind the CPI design is not made out of sloth or stupidity. An attempt to measure quality-adjusted differences in store prices for the CPI would require more resources than BLS now spends, as well as some intellectual breakthroughs in measuring the value of quality. As a result, while BLS understands this discrepancy, it is hard to fix. It also appears to be a relatively minor source of the total discrepancy—less than one-third of the problem—because store price differences are not nearly large enough to account for the price gaps between the CPI and other price series.

... But Weighting Procedures the Biggest Culprit

The larger overstatement of food price increases seems to arise from a subtle bias attached to the weights (that is, the relative importance) given to prices of a particular item collected from different stores. BLS procedures appear to give too much weight to stores where the item's price is going to rise and too little to stores where the price is about to fall.

When the BLS constructs a price index for a particular product, it collects prices each month from a sample of stores. But the agency correctly does not take the simple average of price changes across stores, because some stores sell a lot more of a product than do others. Therefore, it constructs a weighted average. Continuing with the bacon example, each store receives a weight corresponding to the quantity of bacon it sells. A store that sells 500 packages of bacon per week should receive 5 times the weight of a store selling 100 packages.

However, BLS does not know precisely how much bacon a store sells. Instead, the agency estimates the quantity of bacon by dividing sales (obtained in a separate survey performed several months before a store enters the sample for the first time) by the price that the store is charging for bacon at the time it enters the survey (with an additional adjustment that need not concern us here).

To understand the bias that this can cause, think about how this procedure would work for a single store (simplifying the actual procedure considerably to focus on the key problem). Suppose that this store sold $3,000 worth of bacon in the survey period and that it generally charged a price of $2.25 per pound for the product. But bacon prices fluctuate; suppose that the store ran a sale on bacon at the time of entry into the CPI sample, when its prices were first observed and its weight was calculated. If the price at that time was $2.00, then the store would receive an estimated weight of 1,500 pounds.

But the store could just as easily have been off sale, and charging unusually high prices at the time of sample entry. If the price had been $2.50, the store would have a lower estimated weight—1,200 pounds. Note that the weight given to the store will be higher if its price is unusually low this period, and lower if the price is unusually high.

Now what should happen to unusual prices in the future? In many stores, a food item's price may fluctuate sharply from week to week because of store sales, changing manu-

facturer strategies, seasonal changes, and competition. Prices that are unusually low this week, perhaps because of a sale, will probably rise. Prices that are unusually high this week are likely to fall. But BLS' weighting procedure gives more importance to those stores with sharply rising prices, leading to an upward bias in the estimates of the average-price increase.

The method of estimating weights can cause problems for products whose prices fluctuate over time and whose price changes vary across stores. That price behavior makes it more likely that the weighting estimation will introduce a bias by giving inaccurately high weights to stores whose prices are likely to rise. Products with the greatest price fluctuations should see the most severe overstatements. Fresh fruits and vegetables show very sharp monthly price fluctuations, and the CPI overstatement is most severe for those products.

Most Problems To Be Corrected

BLS researchers first identified the weighting bias. In January 1995, the agency changed its procedures for estimating the weights to be assigned to specific price observations at particular stores. Rather than divide sales by prices in the month of entry to the sample, the new procedure will observe prices for 3 months before the store enters the sample, and will estimate the store's base period quantities (hence its weighting factor) based on the earlier price. This adjustment should limit the influence of sharp and temporary price fluctuations. BLS estimates that the change will reduce the growth in the CPI for Food at Home by about 0.3 to 0.4 percent per year.

Over the longer term, the BLS will need to look closely at its procedures for collecting prices and for forming price indices at the most basic level of the CPI. The agency is looking at alternative formulas for averaging prices, which might by themselves remove much of the bias described above. The BLS may also move to greater reliance on electronic collection of prices, through retention of scanner data at stores. The advantage of such data is that they record price and quantity sold for highly specific food items (recall that the weighting bias occurs through efforts to estimate quantity). Scanner data, therefore, hold the promise of providing far more accurate, timely, and precise information for price indices. The weakness is that at present, electronic scanners do not record information on all items (most important, they miss fresh meats and fresh fruits and vegetables) and they do not cover all types of stores.

What about the effects of store substitution, as consumers shift to lower priced stores? As noted earlier, the problem raises difficult conceptual issues. Even if the problem was solved, BLS likely would need a major commitment of new resources to implement index adjustments, resources that might be better spent on other index problems. In short, the CPI is not likely to be adjusted to account for store substitution, but store substitution does not appear to be a major problem for the index.

How should users react to CPI problems? First, use caution. The index probably did overstate food-price inflation over the last decade and a half and, as a result, the price series are overstated while a variety of data series on real sales, retail productivity growth, and consumption trends should and do look understated. The problem becomes larger as the time span covered becomes larger, and it is most serious for products that show the sharpest price fluctuations (like fresh fruits and vegetables). Second, the problem is not permanent. The weighting bias can be fixed, and the recent BLS adjustments to the index should help to do that. Third, price indices are not perfect measures of changes in the costs of living. They do not capture all the important changes in consumer behavior. Any user who bases major financial decisions on any price index should invest the time and money to understand the attributes of that index and its suitability for that decision.

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Participation in the Food Stamp Program Dropped in 1995

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The Food Stamp Program is the largest Federal food-assistance program in terms of both people served and money spent. In fiscal 1995, an average 26.6 million people in 10.9 million households participated in the program each month. Food Stamp Program costs for the year totaled $24.6 billion, or almost two-thirds of all food-assistance spending.

The modern Food Stamp Program began as a pilot project in 1961, and in 1964 was authorized as a permanent program to those States wishing to take part. The program expanded rapidly after 1974 when all States were required to offer food stamps to low-income households. The Food Stamp Program now operates in all 50 States, the District of Columbia, the Virgin Islands, and Guam. Since 1982, Puerto Rico and the Northern Marianas, and since 1994, America Samoa, have received block grant funds (with fixed spending limits) from the Federal Government to provide food coupons or cash assistance in lieu of food stamps (see "Spending on Food-Assistance Programs Leveled Off in 1995," elsewhere in this issue).

The purpose of the Food Stamp Program is to improve the nutrition levels of low-income households by increasing their food purchasing power. The program provides low-income households with monthly allotments of coupons that can be used like cash at more than 200,000 authorized retail foodstores. However, many States are moving to an Electronic Benefits Transfer (EBT) system for food stamp issuance. EBT provides recipients with a plastic card (similar to a bank card), that allows them to buy groceries by transferring funds directly from their food stamp benefits account to a retailer's account. Five States now operate statewide EBT systems (Maryland, New Mexico, South Carolina, Texas, and Utah). Nine additional States operate EBT systems that are not yet statewide. All but three State agencies are now in the process of EBT planning.

Eligibility for the program is based on need. Households must meet income guidelines, asset limitations, and certain work requirements (see box). Households can use food stamps to buy almost any food for human consumption, except hot foods ready to eat, foods intended to be heated in the store, and lunch counter items or foods to be eaten in the store. Food stamps may also be used to buy seeds and plants for use in home gardens to produce food. Food stamps cannot be exchanged for cash, nor can they be used to buy alcohol, tobacco, vitamins, medicines, pet foods, or any nonfood items.

The Food Stamp Program is a joint Federal-State venture. USDA's Food and Consumer Service administers the program at the Federal level, and State welfare agencies administer the program at the State and local levels. The Federal Government shares with the States the administrative costs of the program, which include the certification of households, antifraud activities, and automation costs. These also include costs for operating the Employment and Training Program, which all States are required to conduct in order to assist food stamp recipients obtain and keep regular employment, thereby increasing their earnings and reducing their dependence on public assistance programs.

Children the Primary Beneficiaries

According to a USDA study, slightly over half of all food stamp beneficiaries in the summer of 1994 were children. Sixty-one percent of all food stamp households contained at least one child, and these households received 81 percent of all benefits. Seven percent of food stamp recipients were elderly, and 14 percent of the households contained disabled persons. About 41 percent

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of all participants were white, 34 percent were black, and 19 percent were Hispanic. Two-thirds of all food stamp recipients aged 18 years and older were women.

In addition, in over 20 percent of all food stamp households, at least one member earned income from working. Ten percent of all food stamp households had no income. On average, food stamps represented about one-fourth of participating households' total monthly income (including food stamp benefit).

Benefits Tied to Food Costs

The food stamp benefits schedule is uniform across the contiguous United States. All participants receive the same level of benefits based on their income, regardless of their geographic location (except in Alaska, Hawaii, Guam, and the Virgin Islands where benefit levels are higher because of higher food prices).

The size of a household's monthly allotment is based on the cost of USDA's Thrifty Food Plan, a low-cost model diet plan that meets standards for a nutritious diet. The cost of the Thrifty Food Plan for different household sizes is calculated annually to reflect changes in the cost of food. The maximum food stamp allotment is equal to 103 percent of the cost of the Thrifty Food Plan. An individual household's food stamp allotment is equal to the maximum allotment for that household's size, less 30 percent of the household's net income (table 1). Households with no countable income receive the maximum allotment for their size.

Program Responds to Economic Conditions

The Food Stamp Program is an entitlement program, which means that all people meeting the eligibility requirements are automatically entitled to participate in the program. Expenditures for the program increase or decrease to meet the number of persons in need who apply for assistance, unlike some assistance programs that operate under annual appropriations which limit the amount of assistance provided. As a result, the program can quickly adjust to changes in economic conditions, expanding to meet increased need when the economy is in recession, and contracting when the economy is growing and job opportunities and wages are favorable. Because food stamp benefits flow to areas that face rising unemployment or poverty, they help to cushion

Who Is Eligible for Food Stamps?

The Food Stamp Program has uniform national eligibility criteria (except for Alaska and Hawaii, which have slightly higher eligibility criteria). To be eligible for the program in fiscal 1995:

- The gross monthly income of the household must not exceed 130 percent of the Federal poverty guidelines. Households with an elderly or disabled member are exempt from this requirement, but the other requirements apply.
- The net monthly income, derived by subtracting a number of approved deductions for earned income, child care, extra shelter costs, and other expenses from gross income, must not exceed 100 percent of the Federal poverty guidelines.
- Households must have no more than $2,000 in countable resources ($3,000 if at least one member of the household is 60 years of age or older). Certain resources, such as a home and lot, and household goods, are not counted.
- Physically and mentally fit food stamp recipients 16 to 60 years of age (with certain exceptions) are required to register for work, participate in an employment and training program if assigned, and accept suitable employment if it is offered.
- All household members must provide a Social Security number or apply for one.

Fiscal 1995 Net and Gross Monthly Income Eligibility Standards for the 48 States and the District of Columbia:

Household size	Net monthly income (100 percent of poverty)	Gross monthly income (130 percent of poverty)
	Dollars	
1	614	798
2	820	1,066
3	1,027	1,335
4	1,234	1,604
5	1,440	1,872
6	1,647	2,141
7	1,854	2,410
8	2,060	2,678
Each additional member	+ 207	+ 269

some of the harsher effects of economic recession and provide a positive stimulus to weakening economies.

Participation Declined

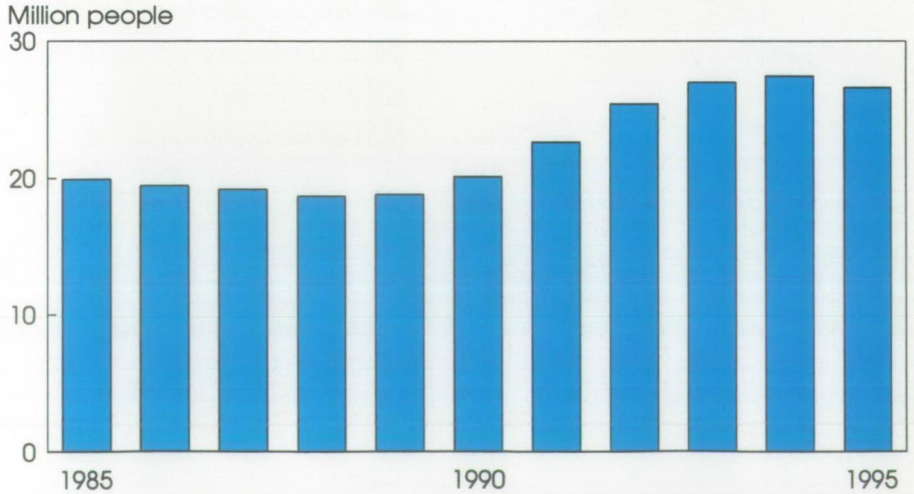
Between fiscal 1985 and 1994, the average number of people receiving food stamps per month increased by 7.6 million, or 38 percent (fig. 1). The Food Stamp Program is designed to respond to changes in the economy. The recession of 1990-91 and the weak economic recovery that immediately followed brought millions of people onto the Food Stamp Program. However, while most of the growth in participation between 1989 and 1993 was driven by the economy, part of the growth in participation between 1989 and 1993 was also fueled by expansion of the Medicaid Program and improvements in making the Food Stamp Program more accessible to people, thus bringing more people into the social service network. When the country's economy improved after 1992, the increase in the number of food stamp participants slowed. In fiscal 1994, the average monthly number of food stamp recipients peaked at a record 27.5 million. In fiscal 1995, the number fell by about 853,000 per month to 26.6 million, a 3-percent drop from the previous year. This was the first decrease in the number of food stamp recipients in 7 years. During each month of fiscal 1995, the number of food stamp recipients was lower than the corresponding month a year earlier.

Table 1
Maximum Monthly Food Stamp Allotments Vary with Household Size

Household size	Maximum allotment
Number of members	*Dollars per month*
1	115
2	212
3	304
4	386
5	459
6	550
7	608
8	695
Each additional person	+ 87

Note: Standards are for the 48 States and the District of Columbia, fiscal 1995.

Figure 1
Participation in the Food Stamp Program Fell in Fiscal 1995



Costs Increased Slightly

The Food Stamp Program cost the Federal Government $24.6 billion in fiscal 1995. About $1.7 billion was for the Federal share of State administrative costs. (The States spent an additional $1.7 billion for their share of administrative costs.) Another $118 million was for other costs, such as printing and processing stamps, studies and surveys, and computer support systems. The remaining $22.8 billion, or 93 percent of total program costs, went directly to benefits paid to recipients. Monthly benefits per person averaged $71.26 in fiscal 1995, a 58-percent increase from 1985.

Total costs for the Food Stamp Program more than doubled from $11.7 billion in fiscal 1985 to $24.6 billion in fiscal 1995, the result of both inflation in food prices and increased participation (fig. 2). However, as the increase in the number of food stamp recipients slowed after fiscal 1992, the rate of increase in food stamp program costs also slowed considerably. Despite a 3-percent increase in the average cost of benefits per person in fiscal 1995, total program costs increased by less than 1 percent due to the decrease in the number of recipients. This was the smallest percentage increase in annual food stamp program costs since fiscal 1987.

Participation Rates Vary by State

Participation rates were calculated by dividing the number of food stamp participants per State by State population estimates from the U.S. Bureau of the Census. Although about 10 percent of the U.S. population received food stamps in July 1995, some States had higher participation. For example, Mississippi, West Virginia, Louisiana, and the District of Columbia each had over 15 percent of its population receiving food stamps (fig. 3). In general, States with high participation rates (over 12 percent) were located in the southern half of the country, while those States with low participation rates (less than 8 percent) were located in the northern half.

Future Direction of the Food Stamp Program

Lawmakers are currently debating how to reform the country's welfare system. Some proposed reforms in the Food Stamp Program could dramatically alter the way the program has operated over the past 30 years. The major proposals include reducing funding and eligibility and transfering control to the States under a block grant with a fixed spending limit. (For some of the proposed changes in the Food Stamp Program and their likely economic impacts, see "Economic Effects of Refocusing National Food-Assistance Efforts," in the January-April 1995 issue of *FoodReview*.)

Figure 2
Food Stamp Program Costs Rose Less Than 1 Percent in Fiscal 1995

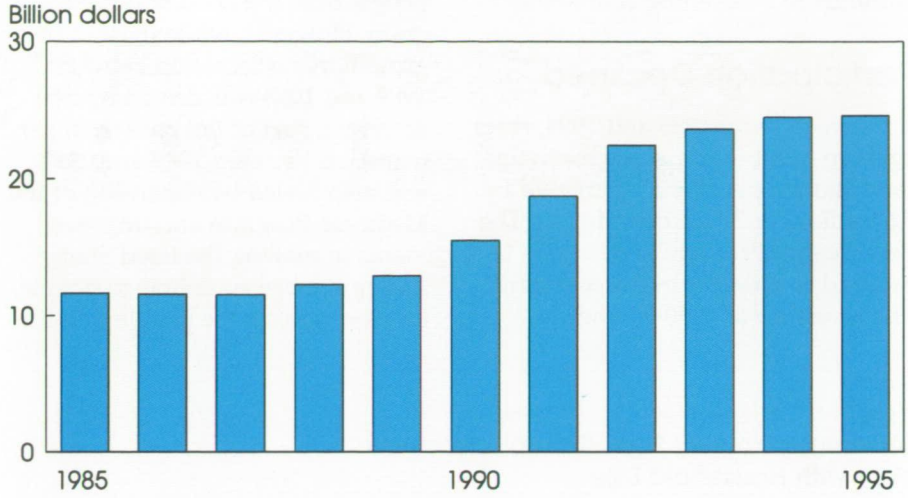
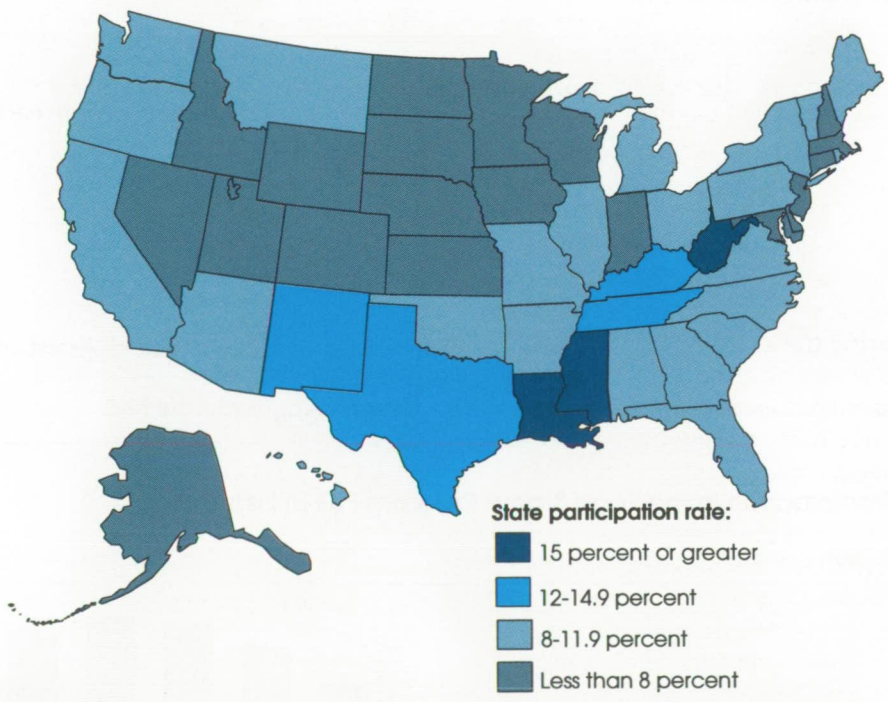


Figure 3
Food Stamp Program Participation Highest in the South, Lowest in the North



Note: Estimates are based on July 1995 food stamp participation numbers from "Food Stamp Participation, August 1995, State by State Comparison," FCS, and July 1995 population estimates from Bureau of the Census.

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Spending on Food-Assistance Programs Leveled Off in 1995

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More than 45 million people, or about 1 in 6 Americans, received food assistance at some time in fiscal 1995. USDA outlays for domestic food-assistance programs totaled almost $38 billion in fiscal 1995, an increase of less than 2 percent from fiscal 1994—the smallest rise in 8 years (fig. 1). This was in sharp contrast to fiscal years 1990, 1991, and 1992, when outlays for food assistance grew 14-16 percent per year.

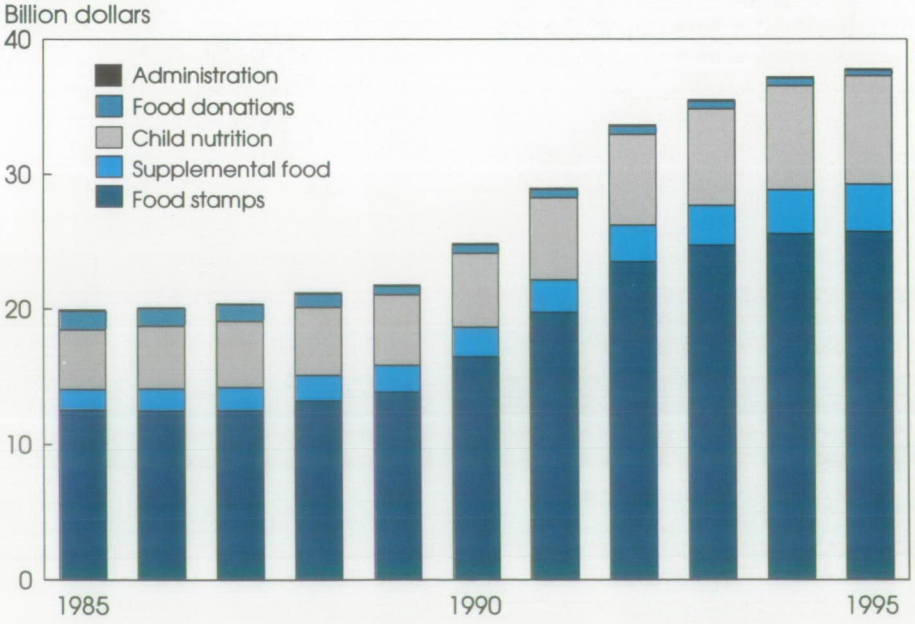
The U.S. Department of Agriculture administers most of the Nation's domestic food-assistance programs, which were first established during the 1930's. At that time, the primary objective of the programs was to reduce the stocks of surplus agricultural commodities that had been purchased by the Federal Government in order to stabilize farm prices and incomes. The level of food assistance depended on the amount of available surplus commodities, increasing when surpluses were large and falling when surpluses decreased. Over time, the primary goals of the food-assistance programs expanded to include providing low-income people with access to a more nutritious diet and improving the eating habits of children.

USDA's food-assistance programs are administered by the Food and Consumer Service (FCS), which works in partnership with the States. These programs take a variety of forms, differing by size, the population groups they serve, and the types of benefits provided (see box). This article discusses how each of these programs works and the degree of expansion or contraction in 1995. Individual food-assistance programs were grouped into four broad categories of programs—Food Stamp Related, Child Nutrition, Supplemental Food, and Food Donation—in order to examine general trends from fiscal 1985 to 1995.

Food Stamp Related Programs

Food Stamp Related Programs—including the Food Stamp Program and the Nutrition Assistance Program for Puerto Rico, the Northern

Figure 1
Outlays for USDA's Food-Assistance Programs Leveled Off in Fiscal 1995



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Marianas, and American Samoa—constitute the largest of the four major food-assistance program groups (fig. 1). Together, they accounted for $25.7 billion, or over two-thirds of all USDA food-assistance expenditures, in fiscal 1995. Over the past decade they have been among the fastest growing groups of food assistance programs, as expenditures more than doubled between fiscal 1985 and 1995. Expansion of the Food Stamp Program was responsible for much of this increase. The Food Stamp Program is designed to respond to changes in the economy. For example, the recession of 1990-91 and the weak economic recovery that immediately followed brought millions of people into the Food Stamp Program. However, while most of the growth in participation between 1989 and 1993 was driven by the economy, part of the growth was also fueled by expansion of the Medicaid Program and improvements in making the Food Stamp Program more accessible to people, thus bringing more people into the social service network. Growth in the Food Stamp Program has since slowed, as the country's economy strengthened. In fiscal 1995, expenditures for food stamp related programs increased by less than 1 percent.

The Food Stamp Program

With outlays of $24.6 billion in fiscal 1995, the Food Stamp Program is the single largest Federal food-assistance program (table 1). The program improves the nutrition levels of low-income households by increasing their food purchasing power. Unlike the other food-assistance programs that target specific groups, such as children or the elderly, the Food Stamp Program is designed to address the basic nutritional needs of all eligible low-income families or individuals. Eligibility and benefits are based on household size, household assets, and gross and net income (see "Participation in the Food Stamp Program Dropped in 1995," elsewhere in this issue). While most recipients are provided with monthly allotments of coupons that can be used like cash at more than 200,000 authorized retail foodstores, a growing number receive an Electronic Benefits Transfer (EBT) card which operates like a debit card and can be used only at authorized retail foodstores. More than half of all food stamp beneficiaries are children, and more than 60 percent of all households receiving food stamps have children.

Major Characteristics of Food-Assistance Pograms

Food-assistance program	Target population	Type of benefits
Food stamp related programs:		
Food Stamp Program	Low-income households	Food coupons or EBT card
Nutrition Assistance Programs	Low-income households	Food coupons or cash
Child nutrition programs:		
National School Lunch	School children	Meals
School Breakfast	School children	Meals
Child and Adult Care Food	Children, elderly, and impared adults	Meals
Summer Food Service	Children in low-income areas	Meals
Special Milk	Children	Milk
Supplemental food programs:		
WIC	Women, infants, and children	Food vouchers
CSFP	Elderly, women, infants, and children	Commodities
Food donation programs:		
Food Distribution on Indian Reservations	Native Americans	Food packages
Nutrition Program for the Elderly	Elderly persons	Meals
Disaster Feeding	Disaster victims	Commodities
TEFAP	Needy households	Commodities
Charitable Institutions and Summer Camps	Needy persons and children	Commodities
Soup Kitchens and Food Banks	Homeless and other needy persons	Commodities

The Food Stamp Program served an average of 26.6 million people residing in 10.9 million households each month in fiscal 1995. This represented a 3-percent drop in the number of food stamp recipients from the previous year, the first decrease in 7 years. Food stamp recipients received an average monthly benefit of $71.26 per person in fiscal 1995, up 3 percent from fiscal 1994. However, total program costs in fiscal 1995 increased by less than 1 percent over the previous year because of lower program participation.

The Nutrition Assistance Program in Puerto Rico, the Northern Marianas, and American Samoa

The Food Stamp Program in Puerto Rico was replaced in 1982 by the Nutrition Assistance Program. Programs were started in 1982 for the Northern Marianas and in 1994 for America Samoa. These modified food stamp programs receive Federal funds through block grants, which allow these areas to operate food-assistance programs designed specifically for their low-income citizens. Recipients receive either food coupons or cash. USDA funding for these programs totaled $1.1 billion in fiscal 1995, a 5-percent increase from the previous year.

Child Nutrition Programs

Child Nutrition programs comprise five programs: the National School Lunch, School Breakfast, Child and Adult Care, Summer Food Service, and Special Milk Programs. Total USDA outlays for these programs, including aid for State administrative expenses and the

Table 1
Food-Assistance Program Outlays, 1994-95

Food-assistance program	1995 program costs	1994 program costs	Change in costs, 1994-95
	Million dollars	*Million dollars*	*Percent*
Food stamp related programs	25,743.9	25,556.0	0.7
Food Stamp Program[1]	24,609.6	24,473.7	.6
Nutrition Assistance Programs	1,134.2	1,082.2	4.8
Child nutrition programs[2]	8,010.2	7,673.2	4.4
National School Lunch	5,150.8	5,001.2	3.0
School Breakfast	1,043.1	959.0	8.8
Child and Adult Care[1]	1,463.2	1,354.5	8.0
Summer Food Service[1]	239.5	229.9	4.2
Special Milk	17.1	17.8	-3.7
Supplemental food programs	3,518.3	3,276.6	7.4
WIC[1]	3,419.5	3,169.2	7.9
CSFP[1]	98.8	107.4	-8.0
Food donation programs	410.6	587.6	-30.1
Food Distribution on Indian Reservations[1]	63.8	64.7	-1.5
Nutrition Program for the Elderly	146.7	153.4	-4.3
Diaster Feeding	0.7	3.1	-77.6
TEFAP[1]	86.9	215.6	-59.7
Charitable Institutions and Summer Camps	66.6	104.7	-36.4
Soup Kitchens and Food Banks	46.0	46.0	-.1
All programs[3]	37,789.3	37,199.6	1.6

Notes: [1]Includes administrative costs. [2]Total includes the Federal share of State administrative costs which were $96.6 million in fiscal 1995 and $110.8 million in fiscal 1994. [3]Total includes Federal administrative expenses of $106.4 million in fiscal 1995 and $106.3 million in fiscal 1994.

costs of nutrition studies and education, increased 4 percent to $8 billion in fiscal 1995. This is a continuation of the trend of steady increases in program outlays, which grew 82 percent over the last decade.

The National School Lunch Program

The second largest food-assistance program behind food stamps, the National School Lunch Program accounted for 64 percent of total outlays for all the child nutrition programs in fiscal 1995. The program provides lunches to children in public and nonprofit private schools and residential childcare institutions. Schools receive cash and commodity reimbursements from USDA to offset the cost of foodservice. Additional cash reimbursement is provided to further subsidize lunches served free or at a reduced price. To receive USDA reimbursements, schools must serve lunches that meet Federal nutritional requirements and offer free or reduced-price lunches to needy children determined eligible for such benefits. Any child at a participating school may participate in the program. Children from families with incomes at or below 130 percent of the poverty level are eligible for free meals, and those from families between 130 and 185 percent of the poverty level are eligible for reduced-price meals. Children from families with incomes over 185 percent of the poverty level must pay the full price, as set by the school, although even those are subsidized 31.5 cents per meal in school year 1995-96, which includes a 17.25-cent cash subsidy and a 14.25-cent commodity subsidy.

Participation in the School Lunch Program was widespread in fiscal 1995, as over 94,000 schools and residential childcare institutions (accounting for about 97 percent of all public school children) participated in the program. On average, 58 percent of all children in participating schools participated in the program each school day. In 1995, USDA began moving toward implementation of the School Meals Initiative for Healthy Children, requiring school meals to meet the Dietary Guidelines for Americans. To help schools implement the new policy, USDA launched Team Nutrition, which supports schools with educational and technical resources to motivate children to eat healthy meals in addition to providing new tools and techniques to help foodservice staff prepare nutritious, appealing meals.

Each school day in fiscal 1995, the School Lunch Program served an average 25.6 million children, including 12.5 million who received a free lunch, and another 1.9 million who received a reduced-price lunch. Because the program already operated in most schools prior to 1995, there was limited potential for growth. Average daily participation in fiscal 1995 increased only 1 percent over the prior year. USDA's costs for the program totaled $5.2 billion, up 3 percent from fiscal 1994.

The School Breakfast Program

The School Breakfast Program provides breakfasts to school children, with students from low-income families eligible to receive free or reduced-price meals. Although eligibility guidelines for free and reduced-price meals are identical to those for the National School Lunch Program, the School Breakfast Program differs in several aspects. First, the School Breakfast Program is considerably smaller than the School Lunch Program; an average of only 6.3 million children in 65,113 schools and residential childcare institutions participated in fiscal 1995. Second, a much greater proportion of breakfast program participants are low-income; 81 percent of all school breakfasts were served free, and another 6 percent were served at reduced prices in fiscal 1995. Third, the breakfast program has expanded rapidly in recent years as a result of USDA's efforts to encourage schools that participate in the School Lunch Program to also participate in the School Breakfast Program. The average daily number of participants increased 8 percent in 1995, and outlays for the program rose 9 percent, the largest increase among all the individual food-assistance programs.

The Child and Adult Care Food Program

This program provides healthy meals and snacks to children in nonprofit childcare centers and family and group daycare homes. (The adult care portion of the program, which provides meals to the elderly and functionally impaired adults in adult daycare settings, accounted for only 2 percent of total program costs in fiscal 1995.) Children from low-income families are eligible for free or reduced-price meals and snacks, based on the same eligibility guidelines used in the School Lunch and Breakfast Programs.

The program's rapid expansion over the past decade continued in fiscal 1995 when 1.5 billion meals were served, a 6-percent increase over the previous year. About 82 percent of all meals served under this program were served free and another 4 percent were at reduced prices in fiscal 1995. Program expenditures totaled $1.5 billion in fiscal 1995, an 8-percent increase over fiscal 1994.

The Summer Food Service Program

The Summer Food Service Program provides free meals to children (age 18 and under) and handicapped adults during school vacations in areas where at least half of the children are from households with income at or below 185 percent of the poverty level. There is no income test for eligibility; any child in the program's operating area may

participate. The program is operated at the local level by local sponsors who are reimbursed by USDA. Local sponsors may be government agencies, public or private nonprofit schools, public or private nonprofit colleges and universities operating the National Youth Sports Program, and public and private nonprofit summer camps.

In fiscal 1995, the program served almost 123 million meals or snacks. During the peak month of July, an average of 2.1 million children participated each day. Program costs totaled almost $240 million in fiscal 1995, a 4-percent increase from fiscal 1994.

The Special Milk Program

This program provides funding for milk in public and nonprofit schools, childcare centers, summer camps, and similar institutions which have no other federally assisted food program. Milk is provided either free or at low cost to all children at participating schools. Schools may elect to serve free milk to children from families with incomes at or below 130 percent of the poverty level.

The Special Milk Program is the smallest of the child nutrition programs, accounting for less than 1 percent of this group's total expenditures. In fiscal 1995, 152 million half pints of milk were served under this program, about 6 percent of which were served free. Program costs totaled $17.1 million, almost a 4-percent decrease from the previous year. This was the fourth straight year program costs decreased, due primarily to a drop in program participation as a result of the expansion of the National School Lunch and School Breakfast Programs, which include milk with the meals.

Supplemental Food Programs

This group consists of two programs: the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and the Commodity Supplemental Food Program. Combined outlays for these two programs reached $3.5 billion in 1995, a 7-percent increase from 1994. Since 1984, Supplemental Food Programs have been the fastest growing of the four major food-assistance program groups, as outlays increased 130 percent from 1985 to 1995.

Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)

WIC dominates the supplemental food programs, accounting for 97 percent of the total costs. The program provides nutritious supplemental foods, nutrition education, and healthcare referrals at no cost to low-income pregnant and postpartum women, as well as infants, and children up to their 5th birthday who are determined by health professionals to be nutritionally at risk. Participants receive vouchers that can be redeemed at retail foodstores for specific foods that are high in protein, calcium, iron, and vitamins A and C. The WIC program encourages breastfeeding among low-income mothers, providing them with an enhanced food package and allowing them to stay in the program longer than mothers who do not breastfeed. To increase access to fresh produce, WIC recipients in 30 States are provided additional coupons that can be used to buy fresh fruits and vegetables from authorized farmers or from farmers' markets through WIC's Farmers' Market Nutrition Program.

An average of 6.9 million people per month participated in the WIC program in fiscal 1995, of whom 23 percent were women, 26 percent were infants, and 51 percent were children. In terms of participation, WIC has been one of the fastest growing food-assistance programs, as the number of participants more than doubled since fiscal 1985. This expansion was reflected in WIC program costs, which reached $3.4 billion in fiscal 1995, up 8 percent over the previous year. Participants received an average of $30.44 per month in benefits.

The Commodity Supplemental Food Program (CSFP)

Like WIC, this program provides nutritious supplemental foods at no cost to low-income pregnant and postpartum women, and infants and children up to their 6th birthday. Unlike the much larger WIC program, the CSFP also serves the elderly (60 years of age or older) and it provides food instead of vouchers. Authorized food distributed under this program includes iron-fortified infant formula and cereal, adult cereals, grits, oatmeal, canned juice, evaporated milk and/or nonfat milk, canned vegetables and/or fruits, canned meat, poultry or tuna, egg mix, dehydrated potatoes, rice or pasta, and peanut butter or dry beans. In addition to authorized food, CSFP participants sometimes receive surplus food acquired through USDA's commodity price-support programs. CSFP often operates in areas where WIC is not available. Eligible people cannot participate in both programs at the same time.

In fiscal 1995, an average of over 364,000 people participated in the program each month, about the same number as in the previous year. However, the composition of CSFP participants continued to change in fiscal 1995. In recent years, many women, infants, and children have shifted out of the CSFP and into WIC. As the participation of women, infants, and children in the

program declined, the number of elderly in the program increased. In fiscal 1995, for the first time, the elderly made up over half of all participants in the program. Program costs fell 8 percent from fiscal 1994 to $99 million in fiscal 1995. This decrease was almost entirely the result of the reduction of surplus food acquired through USDA's price-support programs.

Food Donation Programs

Food Donation Programs consists of six separate programs: The Food Distribution Program on Indian Reservations, Nutrition Program for the Elderly, Disaster Feeding Program, The Emergency Food Assistance Program, Food Distribution Programs for Charitable Institutions and Summer Camps, and Food Donation Programs to Soup Kitchens and Food Banks. This group of programs has experienced the greatest change over the past decade. Combined USDA outlays fell 70 percent from fiscal 1985 to $411 million in fiscal 1995, including a 30-percent drop in fiscal 1995 alone. The decrease in outlays was widespread among each of the six programs in fiscal 1995, although to varying degrees.

Much of the contraction in the Food Donation Programs in recent years has been due to the reductions in stocks of surplus foods. USDA supports farmers by acquiring food through its price stabilization and surplus removal activities. While some of this surplus food is distributed in the Child Nutrition and the Supplemental Food Programs, most is distributed through the Food Donation programs. USDA also purchases foods specifically to distribute in its Food Donation Programs. In the past, most of the food distributed in these programs was surplus commodities. For example, in fiscal 1985, over 80 percent of the total costs associated with the Food Donation Program involved purchasing, processing, packaging, and distributing surplus foods. However, modifications in the commodity price-support programs and changing market conditions have resulted in less surplus food being available for distribution for the needy. By 1995, surplus foods accounted for only 31 percent of the total costs of the Food Donation programs.

Food Distribution Program on Indian Reservations

This program provides commodities to American Indians living on or near participating Indian reservations and who choose not to participate in the Food Stamp Program (it also includes a small number of residents of the Marshall Islands, who comprise about 3 percent of the program's participants.) The program provides an alternative to the Food Stamp Program to many American Indians whose remote location limits its access to foodstores. Program recipients receive a monthly food package weighing about 50 to 75 pounds. It contains a variety of foods recommended in 1986 by a USDA task force to meet the health needs and preferences of American Indians. Commodities either come from agricultural surpluses or are purchased by USDA specifically for the program. Household eligibility is based on income, resources, and proximity to a reservation. One of the smaller food-assistance programs, it served an average of 117,000 people per month in fiscal 1995. Cost of the program totaled $64 million in fiscal 1995, a 2-percent decrease from the previous year.

Nutrition Program for the Elderly

This program provides cash and commodities to States for meals for senior citizens. Administered by the U.S. Department of Health and Human Services, the program receives commodity foods and financial support from USDA. Food is served through meals-on-wheels programs or in senior citizen centers and similar settings. There is no income test for eligibility; all people age 60 or older and their spouses are eligible for the program. Recipients can contribute as they wish toward the cost of the meal, but the meal is free to those who cannot contribute.

Over 251 million meals were served under this program in fiscal 1995. USDA program costs totaled $147 million, a 4-percent decrease from the previous year.

Disaster Feeding Program

The Federal Emergency Management Agency (FEMA) is responsible for coordinating disaster relief. However, USDA purchases food commodities for assistance in major disasters or emergencies when other food supplies are not readily available under the Disaster Feeding Program. Expenditures for this program totaled $0.7 million in fiscal 1995, a decrease of 78 percent from fiscal 1994 when food assistance was given to victims of the Northridge earthquake in California and to flood victims in the Southeast.

The Emergency Food Assistance Program (TEFAP)

This program, which began as a cheese-giveaway program in 1982, was implemented as a way to reduce inventories and storage costs of surplus commodities through distribution to needy households. In 1989, Congress appropriated funds to purchase additional commodities specifically for this program. USDA buys the food, processes and packages it, and ships it to the States. Within broad guidelines, each State sets its own eligibility criteria and selects local emergency feeding organizations to distribute the com-

modities. Expenditures for this program have fallen dramatically in recent years along with the inventory of surplus commodities. About $87 million went to the programs in fiscal 1995, a 60-percent decrease from the previous year.

Food Distribution Programs for Charitable Institutions and Summer Camps

Under this program, USDA donates food to nonprofit charitable institutions serving meals on a regular basis to needy persons and to summer camps for children. These include church-operated community kitchens for the homeless, orphanages, soup kitchens, temporary shelters, and homes for the elderly. Expenditures on these programs in fiscal 1995 totaled $67 million, a 36-percent decrease from the previous year. This decline reflects changes in agricultural policy which reduced the inventories of price-support commodities available for donation.

Food Donation Programs to Soup Kitchens and Food Banks

USDA purchases food specifically to distribute to soup kitchens and food banks under this program. (Historically, surplus food has been only a minor source of the program's food supply.) Commodities are allocated to the States based on a formula which considers the number of people in each State below the poverty level and the number unemployed. Within each State, priority is given to institutions that prepare food for the homeless. Expenditures for this program totaled $46 billion in fiscal 1995, only slightly below its fiscal 1994 level.

Future Considerations

Lawmakers continue to debate the issue of welfare reform. Although all sides propose cuts in welfare spending (including food-assistance programs), they differ in the amount and form that these cuts will take. Until legislation is actually passed and the exact form of these cuts in the food assistance-programs is specified, their impact on the needy is difficult to predict.

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Shortfalls in International Food Aid Expected

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Food aid is a necessary resource for the many countries that experience "food insecurity"—when food supplies are not sufficient to provide all people all the time with adequate food for an active and healthy life. Some countries face chronic food insecurity because of slow growth in domestic production and insufficient inflows of foreign exchange to pay for needed food imports. Some countries also face shorter term, but emergency, food insecurity because of catastrophic events, such as drought, flood, and war, which can devastate production.

Food aid plays an important role in lessening food insecurity in low-income countries, but it remains inadequate to offset the full magnitude of needs. In fact, food aid shipments have declined in recent years due to growing budget problems in donor countries.

USDA's Economic Research Service estimated chronic and emergency grain food aid needs for 60 countries that traditionally receive food aid: 40 developing countries in Africa, 9 countries in Asia, and 11 Latin American countries (see box). These recipients represent 2.2 billion people, or about 40 percent of the world's population. Emergency needs for the rest of the world are also estimated.

This article assesses the amount of aid needed to meet grain consumption requirements. Grains are used because they account for about half of all calories consumed in low-income countries and because comparable estimates of nongrain foods are not reliable due to data limitations.

The amount of grain needed to maintain grain consumption in the 60 countries studied is projected to nearly double over the next decade, even with reasonably optimistic assumptions about those recipients' ability to produce their own food or to have the financial capacity to import food commercially. Total grain aid needed to maintain current per capita consumption levels and meet emergency needs for refugees is projected at 15 million tons in 1996, increasing to 27 million tons by 2005. Even more food aid would be required if the recipients' financial capacity to commercially import food lagged or if food aid were to provide enough grain to meet the minimum recommended calorie intakes.

However, global food aid resources will not likely match the increased need. If the donors' food aid budgets remain at 1995 levels and world grain prices decline slightly in the next decade (which is an optimistic projection), grain aid availability will increase to 11 million tons in 2005 from 8.4 million tons in 1994.

Aid Levels Vary

High-income food-exporting countries provide different types of assistance to low-income countries, mainly economic and military aid. For example, economic aid accounts for about two-thirds of U.S. total foreign assistance, with food aid accounting for less than 15 percent. The United States, the European Union, Canada, Japan, and Australia are the largest donors of food aid. Japan is the only country in the group that is a net food importer—it donates money for recipients to use to purchase food.

Food aid includes commodities given by donor governments to the governments of needy countries as well as to multilateral organizations, such as the World Food Program (WFP). Most food aid is donated. However, some U.S. food aid is provided with highly concessional credit terms, low interest rates, and extended repayment periods.

Grains account for more than 90 percent of world food aid, with wheat and wheat flour constituting

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more than 70 percent. In many countries, grain is the basic staple consumed by lower income people. Other, nongrain food aid commodities include vegetable oil, pulses, dairy products, and canned meat and fish.

The contribution of food aid to overall food consumption in low-income countries is small. Grain aid contributed an average of about 5 percent of grain consumption in 60 traditional food aid recipient countries during the last decade.

However, food aid's contribution to total consumption is much higher for individual countries, regions, or people at particular times. Latin America was the most dependent region during the last decade. Eleven Latin American countries depended on donated grains to provide 18 to 31 percent of their food grain consumption during 1984-94 (table 1).

North Africa was the next most dependent region over the last decade, but the contribution of food aid to total caloric consumption fell sharply from 15 to 2 percent of total food grain consumption during the last decade.

In Sub-Saharan Africa, food aid's contribution to consumption is strongly influenced by the level of domestic supplies, which depends on local production and, in turn, on weather and political conditions. For example, food aid shipments during 1983-93 were in response to emergency food shortages in Ethiopia, Sudan, and Somalia. During the drought years of 1983-85, food aid provided more than 20 percent of grain consumption in Ethiopia. In Somalia, food aid contributed more than 30 percent of food consumption during the 1983-85 drought years, and about 70 percent of consumption during the 1992-93 civil war. Sudan, which has been faced with prolonged economic and political difficulties, relied on food aid to supplement an average of 10 percent of its food consumption during 1985-95, and as much as 30 percent in some years during the last decade. The 5.4 million tons of grain shipped to Sub-Saharan Africa in 1992-93 were in response to the disastrous drought in southern Africa.

Countries Included in the Study

Sixty countries were included in the study's systematic assessment of food aid needs. Some of the countries received food aid in the past but no longer need it, and are not expected to need it in the future. Others continue to have chronic food aid needs.

Some countries not included in the list have emerged as food aid recipients in recent years (such as republics of the former Soviet Union and former Yugoslavia); still others may become candidates for food aid in the future. These countries were not included in the study because of data limitations.

North Africa
- Algeria
- Egypt
- Morocco
- Tunisia

Sub-Saharan Africa

Central Africa
- Cameroon
- Central African Republic
- Zaire

East Africa
- Burundi
- Ethiopia
- Kenya
- Rwanda
- Somalia
- Sudan
- Tanzania
- Uganda

Southern Africa
- Philippines
- Angola
- Lesotho
- Madagascar
- Malawi
- Mozambique
- Swaziland
- Zambia
- Zimbabwe

West Africa
- Benin
- Burkina
- Cape Verde
- Chad
- Cote d'Ivoire
- Gambia
- Ghana
- Guinea
- Guinea-Bissau
- Liberia
- Mali
- Mauritania
- Niger
- Nigeria
- Senegal
- Sierra Leone
- Togo

Asia
- Afghanistan
- Bangladesh
- India
- Indonesia
- Nepal
- Pakistan
- Sri Lanka
- Vietnam

Latin America
- Bolivia
- Costa Rica
- Dominican Republic
- El Salvador
- Guatemala
- Haiti
- Honduras
- Jamaica
- Nicaragua
- Panama
- Peru

Table 1
Food Aid Share of Grain Food Use Declining

Year	North Africa	Sub-Saharan Africa	Asia	Latin America
		Percent		
1985/86	11.1	8.2	1.4	21.9
1986/87	14.7	6.6	1.5	26.0
1987/88	12.6	8.6	1.9	31.2
1988/89	9.9	5.7	1.5	19.7
1989/90	9.6	5.6	1.1	18.2
1990/91	12.1	6.9	.9	21.9
1991/92	6.0	8.4	1.2	26.4
1992/93	3.7	10.7	.7	21.4
1993/94	2.3	8.2	.6	18.2
1994/95*	1.6	6.6	.7	10.3

Notes: See box for countries included in each region. *1994/95 data are preliminary.

Shipments Declining

Grain food aid from all donors reached a peak of 15 million tons in 1992/93 and declined 20 percent in the following year, largely due to reduced shipments to the former Soviet Union. In 1994/95, grain food aid fell to about 8 million tons, the lowest in more than a decade. Food aid shipments are forecast to fall to about 7 million tons in 1995/96.

Worldwide changes in grain supply and demand influence the supply of food aid. For example, donors' grain shortages during the mid-1970's reduced aid shipments. In the early 1980's, food aid shipments remained below the 1974 World Food Conference goal of 10 million tons needed to improve food security. By the mid-1980's, large stocks enabled most donor countries to increase grain aid donations to 13.5 million tons and respond to the African food crisis. Large food aid donations to the former Soviet Union and southern Africa in 1992/93 led to record total shipments of 15.2 million tons.

The United States provided about half of total food aid in the 1990's, followed by the European Union with 25 percent, and Canada with 9 percent. While the United States was the sole provider in the late 1950's and by far the largest donor in the early 1960's and 1970's, its share has since declined following changes in conditions that govern U.S. food assistance (table 2). The United States no longer generates the large agricultural surpluses which affected U.S. food aid policy. In addition, funding for U.S. food aid has been subject to budget constraints as have other programs.

The share of world food aid contributed by the European Union more than doubled during the last two decades. Grain production in the European Union has improved dramatically since European countries joined together in 1960 to form the Common Agricultural Policy for increasing the region's production and harmonizing internal and trade policies. The European Union has shifted from being a large grain importer to a major exporter, and it has assumed a major responsibility in providing food aid.

The future availability of food aid is uncertain, depending mainly on the trend in grain prices and the donors' budget plans. An optimistic scenario is that donors' food aid budgets remain intact at the current levels and world grain prices decline slightly in the next decade leading to a small increase in food aid from the current level.

Needs Projected To Grow

Food aid needs in this study reflect the amount of grain needed to fill the gap between what a country can produce plus its financial capacity to import commercially, and a targeted consumption level. Two targeted consumption levels are used: (1) maintaining average per capita consumption at recent levels, and (2) achieving the minimum daily caloric intake recommended by the United Nations.

The projections in this study are based on optimistic assumptions about population growth, foreign exchange earnings, and yield increases for grain production. The analysis also assumes no major changes in global trade or agricultural policies.

Twenty-nine of the 60 countries studied will likely have chronic food aid needs over the next decade. All but three of these countries are in Sub-Saharan Africa. Such chronic aid needs account for 80 percent of the 11-million-ton increase in world grain food aid needs projected for the next decade.

Emergency needs of the 60 countries in this study will grow about 30 percent to 3 million tons of grain from 1996 to 2005, along with continued growth in population and financial constraints. Emergency needs for the rest of the world will remain at the current level of 2.7 million tons per year.

Table 2
Most Donors Providing Less Food Aid

Year	World total	United States	European Union	Canada	Japan	Australia	Other European countries	Other donors
			1,000 metric tons of grain and grain products (grain equivalents)					
1971/72	12,468	9,174	978	1,093	731	215	32	243
1975/76	6,844	4,273	928	1,034	33	261	119	196
1979/80	8,887	5,339	1,206	730	688	315	160	449
1983/84	9,849	5,655	1,923	817	445	460	181	368
1987/88	13,503	7,946	2,554	1,062	561	355	267	758
1991/92	13,086	7,052	3,707	996	387	328	292	323
1992/93	15,184	8,466	4,114	702	358	232	307	936
1993/94	12,633	8,258	2,812	712	378	219	289	235
1994/95*	8,436	4,190	2,735	525	402	240	238	106

Notes: *Preliminary estimates. FAO data (July/June year) are used for national comparisons,but they do not match official USDA October/ September year data for U.S.shipments. Source: FAO *Agrostat* and *Food Outlook*,August/September 1995.

Sub-Saharan Africa Most Vulnerable

Sub-Saharan Africa is the most vulnerable region. Even with optimistic assumptions about available foreign exchange to import food commercially, 26 of that region's 36 countries will need food aid during the entire projection period. Only seven countries in the region are projected to be able to buy enough commercial imports to maintain their consumption.

To maintain per capita consumption at recent levels, food aid needs of Sub-Saharan African countries will increase from 5 million tons to 12 million tons during the projection period (table 3). In 1996, 8 percent of total food use will have to come from food aid in order to maintain recent per capita consumption levels. This could increase to as much as 15 percent by 2005.

In North Africa, only Egypt requires food aid (about 3 million tons) to maintain per capita consumption later in the projection period.

In Asia, Afghanistan is the only country that will need external support to maintain consumption through 2005. Food aid needs in Bangladesh, Nepal, and Sri Lanka will decline during the projection period. These countries are estimated to be able to pay for commercial imports for their food needs by 2005.

Although Asia's food aid needs are projected to increase from 2.3 million tons in 1996 to 4.9 million tons by 2005, this amount will account for less than 1 percent of food consumption in the region. Asian countries have been successful in increasing food production by investing in research, market infrastructure, and irrigation (see "Food Shortages in Developing Countries Continuing," in the January-April 1995 issue of *FoodReview*).

Four countries in Latin America will need a total of 2 million tons of grain by 2005 to maintain recent levels of per capita consumption. This 13-percent growth in their food aid needs is the slowest of any world region. Many of the food aid recipients in Latin America are nearly self-sufficient in food production and have adequate financial resources. El Salvador and Honduras are expected to gradually switch from food aid to commercial markets for their imports, while Haiti's and Nicaragua's food aid needs will continue during the projection period.

Meeting Nutritional Standards Requires More Aid

If the goal is to achieve a minimum nutritional standard (instead of just maintaining consumption at recent levels), then the number of countries needing sustained food aid will increase from 29 to 35, assuming optimistic foreign exchange earnings to import food commercially. The quantity of food aid needed also increases significantly. While 10 million tons of food aid will be needed to maintain consumption levels in the 60 study countries in 1996, 30 million tons

will be needed to support minimum nutritional standards.

As grain production increases and/or commercial food imports grow, the nutritional condition of the countries improves, thereby reducing the gap in consumption that needs to be filled by food aid. By 2005, the gap under the scenario to maintain consumption is 21 million tons versus 34 million tons under the nutrition-based needs scenario. In a few North African and Latin American countries, the level of food aid needed to maintain consumption is higher than that required to meet the nutritional standard due the relatively high level of consumption already achieved.

In Sub-Saharan Africa, only 6 of the 36 countries will be able to satisfy the nutritional needs of their populations. About 22 million tons of grain aid will be needed in 1996 to meet the region's recommended caloric needs. By 2005, the amount of food aid needed to meet the nutritional standard in Sub-Saharan Africa will increase to 27 million tons, about 30 percent of their grain requirements.

In North Africa, slow growth in food production and commercial food imports in Egypt will create a need for 1.7 million tons of grain by 2005 to meet recommended calorie levels.

With projected increases in food production, many Asian countries will have enough food supplies to meet nutritional standards. Indonesia and the Philippines are expected

Table 3
Chronic Grain Food Aid Needs Projected To Rise

Region	Maintain consumption requires: Food	Maintain consumption requires: Food aid	Meet nutritional standards requires: Food	Meet nutritional standards requires: Food aid
	Million tons		*Million tons*	
Sub-Saharan Africa:				
1996	61.0	4.8	77.9	21.7
2005	79.6	11.8	95.0	27.2
East Africa:				
1996	21.6	1.9	28.7	9.0
2005	27.8	4.7	36.9	13.8
West Africa:				
1996	26.0	1.1	32.7	7.8
2005	34.6	3.6	37.2	6.2
Southern Africa:				
1996	10.5	1.6	12.4	3.5
2005	13.1	2.7	15.3	4.9
Central Africa:				
1996	3.0	.2	4.2	1.4
2005	4.0	.8	5.5	2.3
North Africa:				
1996	38.9	1.6	37.3	0
2005	46.5	2.9	94.6	1.7
Latin America:				
1996	12.2	1.6	12.0	1.4
2005	14.6	1.8	13.2	0.4
Asia:				
1996	289.9	2.3	294.3	6.7
2005	360.3	4.9	360.3	4.9
Total for the 60 study countries:				
1996	353	10.3	421.5	29.8
2005	440	21.4	513.7	34.2

Note: See box for countries included in each region.

to have adequate financial capacity to import food commercially. In South Asia, however, nutritional problems persist despite improved financial conditions. Bangladesh and Nepal, which are estimated to be able to maintain consumption, will need food aid to achieve minimum nutritional requirements. Sri Lanka and Vietnam will need aid in the first few years of the projection period, but they are expected to eventually supply sufficient food from their own resources to meet nutritional requirements.

In Latin America, 6 of 11 countries need some food aid at some time during the projection period to achieve minimum nutritional standards. Nutritional needs in Nicaragua and Haiti will remain high. Bolivia and El Salvador will need aid in the early part of the projection period, and Honduras and Guatemala will require support in later years. Overall, the region's need for food aid to help it achieve nutritional standards will decline over time due to improvement in its food production and financial situation. Those continuing to need food aid to meet nutritional standards during the entire period are Bolivia, El Salvador, Haiti, Honduras, and Nicaragua.

Emergency Needs Growing Rapidly

During the last decade, about 20 to 30 percent of food aid was allocated to emergency needs. Much of this emergency aid has been for refugees from other countries and internally displaced people in the former Yugoslavia and the former Soviet Union. Between 1985 and 1994, the number of refugees grew by 11 percent per year and the number of displaced people by 8.5 percent per year.

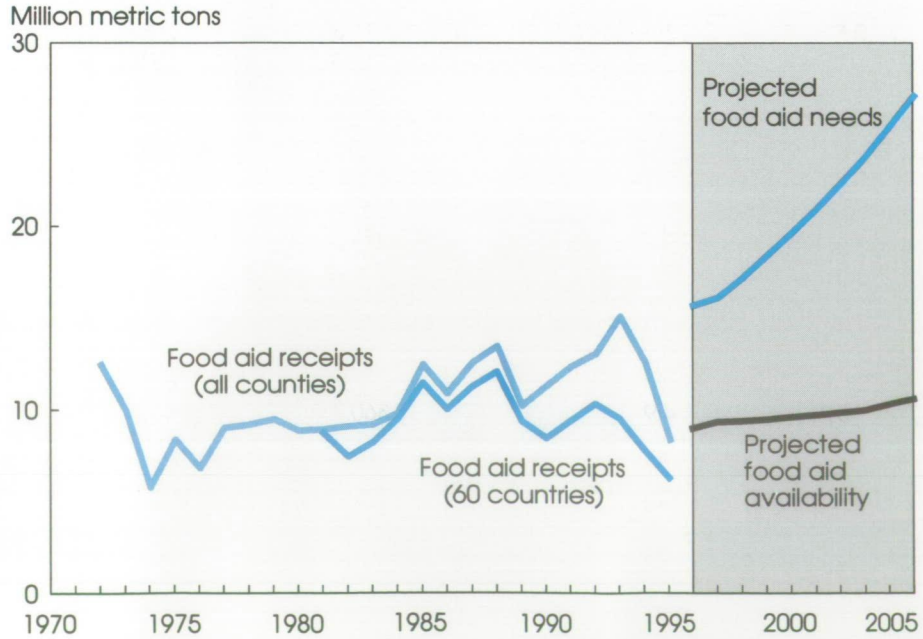
As with chronic food insecurity, Sub-Saharan Africa is the region most vulnerable to emergency food insecurity. The 2.5 million tons of grain projected for emergency needs of Sub-Saharan Africa in 2005 are about half of global emergency needs. The most vulnerable to emergency needs are Ethiopia, Somalia, Sudan, Liberia, and Sierra Leone with unstable political situations, and Cape Verde and Mauritania with high production variability and limited financial resources.

Most of the emergency food aid needs in Asia are in Bangladesh, Afghanistan, Nepal, and Sri Lanka, where political and weather variability cause economic and production disruptions. Emergency needs of the region are the highest in 1996 and decline with expected improvement in the financial situation of the countries.

In Latin America, the Caribbean islands show the highest prospects for emergency food aid needs. However, Haiti's and Nicaragua's political problems are also expected to add more pressure to their already fragile economic conditions.

The emergency needs of the rest of the world will increase if the historical trend continues. However, we do not expect a continuation of recent trends because the growth in emergency food aid reflects the effects of political instability in the former Soviet Union, the former Yugoslavia, and the Middle East. Therefore, a stabilization of emergency needs at 1994 levels in the rest of the world is expected.

Figure 1
Gap Widens Between Food Needs and Available Aid



Reaching Those With the Greatest Need

Food aid is critical to low-income countries. In fact, at times aid supplies provided more than half of their food consumption. Estimated food aid needs during the next decade are projected to double, while the quantity of food aid is expected to rise much less—20 to 30 percent. Sub-Saharan Africa alone will require more food aid than the projected global supply of food aid. In Sub-Saharan Africa, per capita food consumption has declined in the last two decades even with an increase in food aid receipts because of declining domestic food supplies. A further decline in food consumption from these already low levels can lead to severe malnutrition.

These results have major implications for our thinking about food aid over the next decade. The need for food aid—both chronic and emergency—will not automatically diminish. Decreasing the level of food aid resources—and doing nothing else—will increase vulnerability in some of the world's poorest countries. Food aid can accelerate long-term economic growth in developing countries by improving food security, which is an important factor in increasing productivity in agriculture and other sectors of the economy.

It should be emphasized that while food aid does add to development resources, its success depends on the commitment of both recipients and donors. Large population increases, slow growth in agricultural productivity, and slow overall economic growth are driving forces behind food insecurity and need to be addressed. Food aid alone will not likely expand economic growth. It must be combined with other types of support to increase investment and influence the institutional and policy environment within the recipient countries. The challenge, therefore, is to find the most effective mix of food aid, development aid, and diplomatic resources to respond humanely and effectively to rising food aid needs, while creating the basis for reducing those needs over time.

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