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# How America Quenches Its Thirst

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Thus, while it may seem a long way from the scientist's laboratory to the consumer's table, we all have an important stake in future agricultural production technologies.

## Gene Center Opens

The Plant Gene Expression Center, a joint venture of USDA's Agricultural Research Service (ARS), the California Agricultural Experiment Station, and the University of California at Berkeley, has been established to speed the genetic engineering of crops to help meet tomorrow's food and fiber needs.

Ira Michael Heyman, chancellor at the Berkeley campus, said the Albany, California, center "will exploit biotechnology to produce genetically engineered crops, thereby enhancing traditional plant breeding methods. Bioengineering will also provide new crops for new uses, including feedstocks for industry."

USDA will initially provide annual funding of \$4 million, with industry and various public institutions contributing a smaller amount.

Terry B. Kinney, Jr., ARS administrator, said the center will "reach out and draw on the expertise and ideas of the existing science and agriculture research community, both public and private."

Kinney added that when the center is fully operational it will "integrate its efforts with major centers of biotechnology, in effect establishing a network that would embrace most of the world's top researchers in plant biotechnology."

James B. Kendrick, Jr., vice president for agriculture and university services, University of California, noted that "the center will put its research products into the hands of scientists anywhere who are dedicated to the genetic improvement of plants."

Americans are drinking more commercially produced beverages than ever before. In 1982, we averaged 133 gallons per person of milk, coffee, tea, beer, wine, soft drinks, and fruit juices in total, compared to 114 gallons in 1962. In contrast, per capita consumption of food overall was relatively constant over this period.

While the trend in consumption has been upward, there have been significant shifts among beverages, with increases for some and decreases for others. In 1982, for example, soft drinks ranked first, accounting for 29.7 percent of total beverage consumption. Twenty years earlier they were third at 14.1 percent (figure 1).

Consumers are also drinking more beer, pushing it from 13.2 percent of total beverages in 1962 to 18.3 percent. Consumption of other alcoholic beverages rose from 2 percent to 3.1 percent of the total, with a doubling in wine accounting for almost all of the increase.

Meanwhile, coffee plummeted from a first-place share of 33.4 percent of the total in 1962 to fourth, at 18.3 percent 20 years later.

These shifts in consumption patterns, in turn, have affected calorie intake. In 1982, soft drinks, beer, wine, and liquor accounted for almost 10 percent of total calories consumed, compared with 5 percent in 1962. These beverages added about 343 calories a day to per capita calorie availability in 1982, almost double the 175 calories 20 years earlier.

## More than Price Affects Demand

Economists traditionally point to price as one of the major factors influencing total consumption and the shift among competing products.

Coffee prices rose over 300 percent between 1962 and 1982, compared with an increase of 218 percent in the price of all food (figure 2). A large part of the increase in coffee prices occurred in the late 1970's when a freeze in Brazil caused production shortages. Per capita coffee consumption, which had been declining at an annual rate of 1 gallon, fell by almost 8 gallons in 1977 as consumers

responded to the 85.2-percent rise in price (figure 3).

For other beverages, the relationship between price and consumption is less clear. For instance, the price of soft drinks rose 274 percent between 1962 and 1982, while fresh whole milk price increased about half as much, at 144 percent. Yet, per capita consumption of soft drinks soared 146 percent over the 20-year period, and milk fell 18 percent.

Other factors, then, such as changes in lifestyle, dietary concerns, and shifts in the age distribution of the population affect consumers' decisions about what and how much they drink of different beverages.

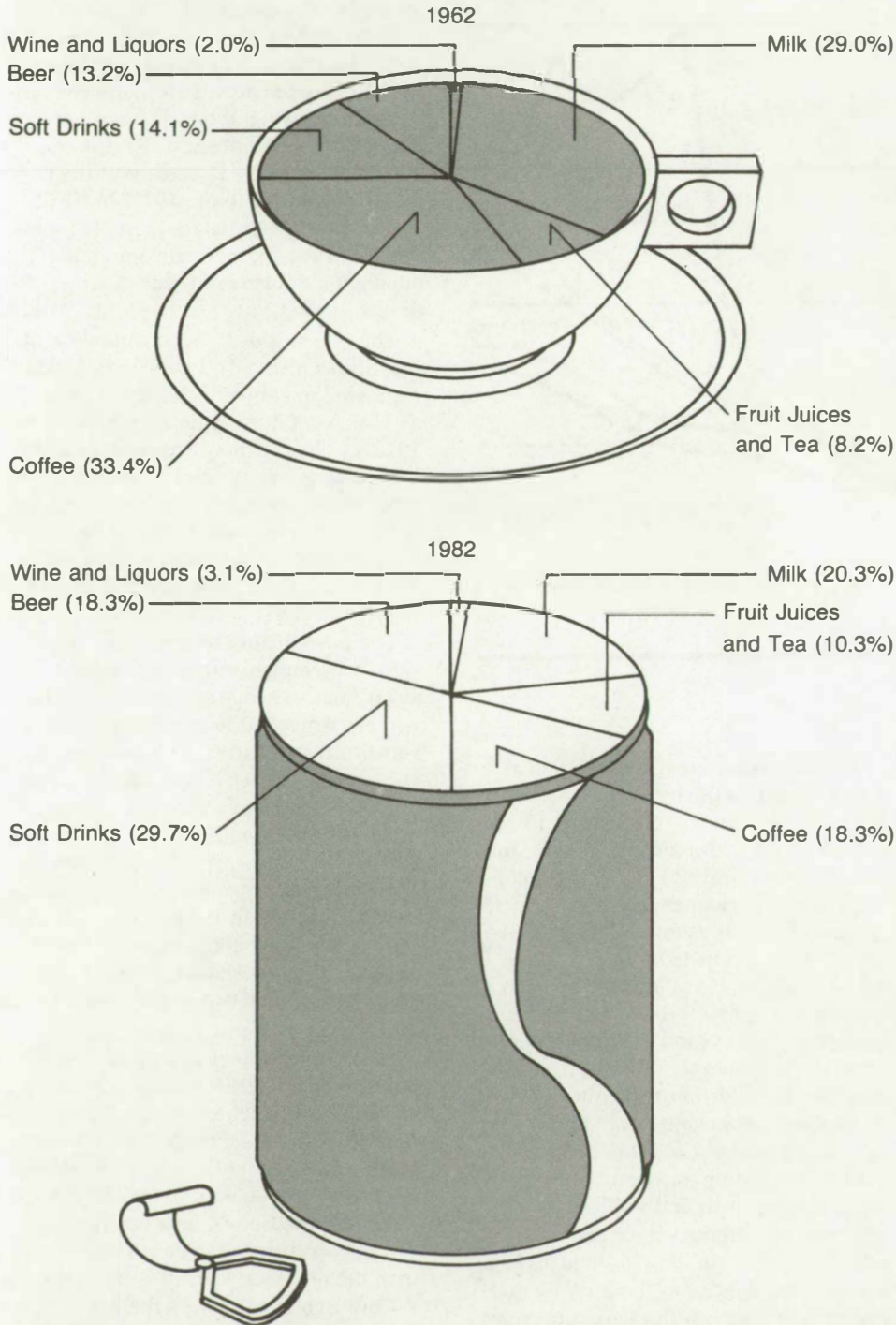
## Old Habits are Changing

The favorite drinks of Americans differ among age groups. USDA's 1977/78 Nationwide Food Consumption Survey (NFCS) indicates, for example, that more than 80 percent of individuals over 35 drank coffee, compared to about 50 percent of 19-to 34-year-olds (table 1). Alcoholic beverages were consumed more by 19-to 50-year-olds. About 30 to 34 percent of males in this age group drank alcoholic beverages, compared to 27 percent aged 51 to 64 and 17 percent over 65. Soft drink consumption was greatest among 12-to 34-year-olds. About 70 percent of males and 70 to 74 percent of females in this age group consumed sodas. Among 35-to 50-year-olds, the share was only about 53 percent for males and 57 percent for females.

In the United States, the median age of the population is increasing, rising from 29 in 1962 to 31 in 1982. Shifts in the age distribution, then, will affect consumption patterns. The percent of the population in the peak milk drinking years of 6 to 18 has decreased, for instance, contributing to the decline in milk consumption.

In addition, persons in the age group that traditionally drinks more milk have been switching to soft drinks. According to the NFCS, the average daily consumption of milk and soft drinks by teenagers in 1965 was 16 and 9 ounces, respectively. By 1977, milk had declined to 12

**Figure 1. Beverage Market Shifts to Soft Drinks**



ounces and soft drinks had risen to 19 ounces. Even 6-to 12-year-olds are drinking less milk; in 1965, average daily consumption was 19.4 ounces, declining to 15 ounces by 1977. Soft drink consumption, in contrast, rose from 5 ounces to 7 ounces.

Though the peak coffee consumers are traditionally 30-to 50-year-olds, individuals in this range apparently have not developed the previous generation's preference for it. Price and health concerns are the apparent factors influencing this trend. Another reason could be the changing taste of coffee. In 1962, coffee manufacturers began using more robusta beans, which are more bitter, but less costly than the arabica, the major bean then in use. Fewer people now in the peak consuming age group have developed that once-traditional taste for coffee.

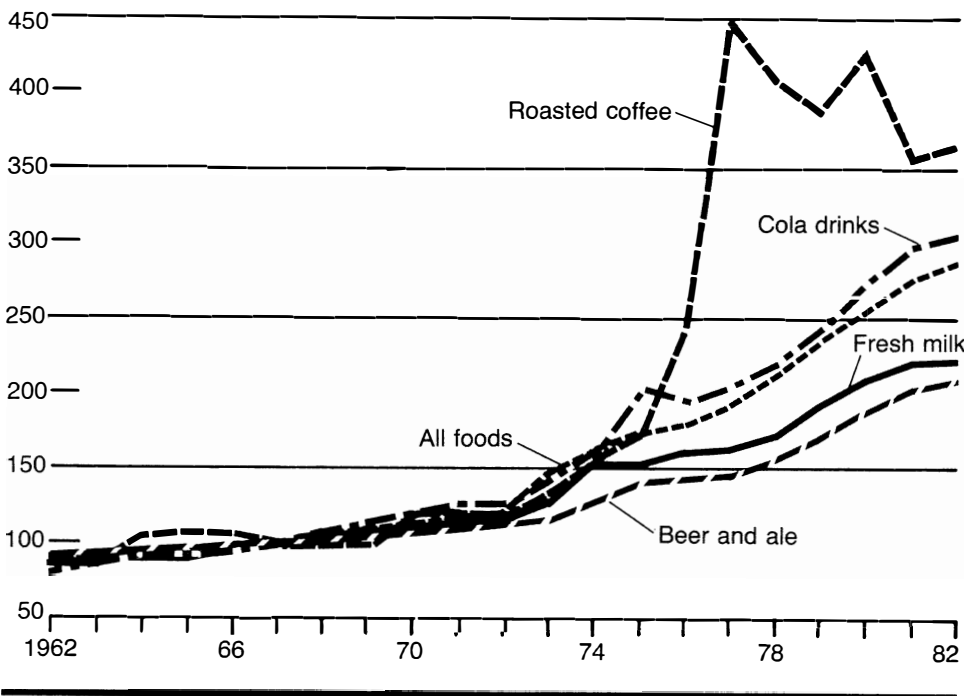
The next generation of potential peak coffee consumers—those currently in their twenties—has also shown preferences for other beverages. According to the International Coffee Organization (ICO), 81 percent of individuals in their twenties were coffee drinkers in 1962, compared to only 42.6 percent in 1983.

**It's the Soft Drink Generation**

Major changes in lifestyle have also gone hand in hand with declines in milk and coffee consumption. Increased physical activities and time spent outdoors, for example, have helped boost soft drink and beer popularity. Accordingly, manufacturers of these products have geared their advertising to leisure activities. In 1982, they spent \$660 million promoting their products. In addition, many soft drink and beer manufacturers sponsored rock concerts, sporting events, and activities on college campuses.

Coffee and milk consumption have also been affected by the expanding food-away-from-home market. The quantity of soft drinks received by food service operations more than doubled between 1969 and 1979, while the amount of milk rose only 14.6 percent. Despite a 1,000-percent increase in the quantity of instant coffee sold, the amount of total coffee

**Figure 2. Consumer Price Index for Beverages**



sold decreased by 15.2 percent. Milk and coffee consumption away from home is primarily in full service restaurants and the institutional market, which includes schools, hospitals, and rest homes. Soft drinks, on the other hand, have a strong identity in fast food establishments—one of the fastest growing sectors in the away-from-home market.

**Consumers Go for Low-Fat and Sugar-Free Beverages**

In the last decade, many consumers have made health-related changes in food and beverage choices. Concerns about saturated fat have more than doubled consumption of low-fat milk since 1962, partially offsetting the 47-percent decline in whole milk use. Similarly, the trend in decaffeinated coffee has been upward, despite declining total consumption of coffee.

Weight consciousness has also had a major impact on the beverage market. In 1983, diet soft drinks represented 18 percent of total soft drink consumption, up from 7 percent in 1970. Similarly, light beers, lower in calories, accounted for 19 percent of beer consumption in 1983, up from 1.9 percent in 1975.

The last several years have also seen innovations in both products or packaging designed to expand the market for beverages. A number of breweries, for example, have further responded to concerns about caloric and alcohol intake by developing low- or no-alcohol beers. Producers are reacting to consumer concerns about refined sugar and artificial ingredients by introducing natural fruit juice blends. In addition, aseptic packaging has been a factor in the growing market for fruit juices, with many companies

now offering individual packaged servings.

**Beverage Prospects**

Daily consumption of soft drinks in 1982 amounted to 14 ounces per person in the United States. This figure rises to 27.2 ounces when total consumption is divided by only those actually drinking soft drinks—about 51 percent of the population according to the 1977/78 NFCS. The greatest potential for increased sales rests with the approximate one-half of the population not currently consuming soft drinks.

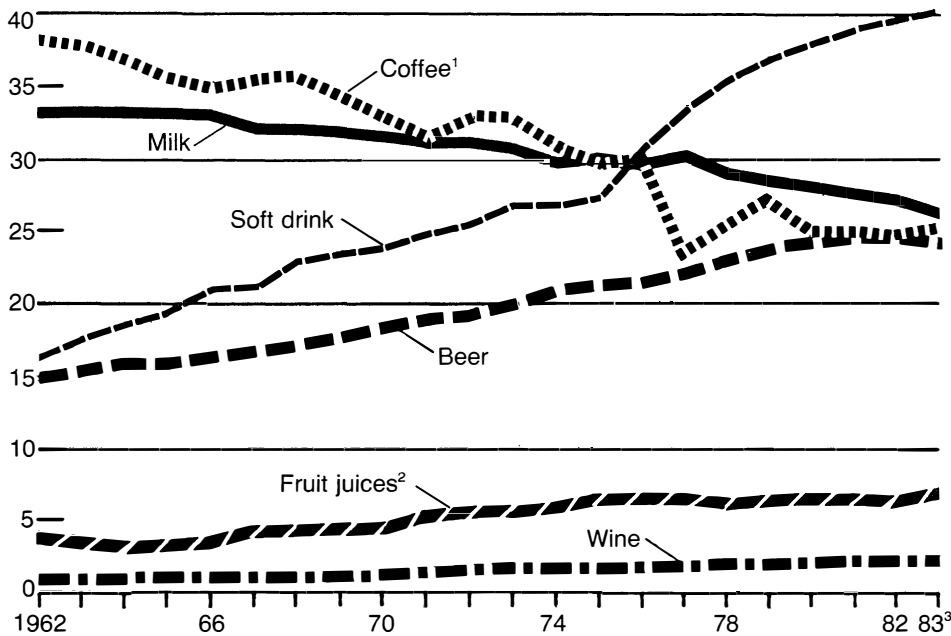
The rate of growth in consumption of soft drinks rose only 3 percent in 1982, compared to annual increases of as much as 15 percent during the 1960's and 1970's. The rate may be higher in 1984, however, as a result of the stronger economy, increases in fast food sales, and the recent proliferation of products designed to appeal to a broad range of consumers. This includes the growing trend toward sugar- and caffeine-free products.

The introduction of aspartame, a non-calorie sweetener with a taste close to sugar, may expand the market to include persons who want to avoid sugar and its substitute, saccharin. Known as Nutra-sweet in commercial applications, aspartame is made from a blend of amino acids. Estimates indicate that the increase in products reformulated with aspartame will boost the diet soda market share 25 percent in 1984 to about 23 percent of soft drink consumption. Increased use of these diet products will also increase total soft drink consumption.

Historically, men have consumed 81 percent of all beer, but that could change since the introduction of light beer has already expanded the market to include more women. Light, low- or no-alcohol beers may also substitute for soft drinks. Despite these trends, beer consumption in 1983 is estimated to be slightly lower than the previous year.

Coffee consumption in the United States has also been relatively stable for the last 3 years, signaling a tapering off of the decline. A recent study by the ICO

**Figure 3. Per Capita Beverage Consumption**



<sup>1</sup>Ground coffee converted to fluid equivalent on the basis of 60 6 oz cups per pound; the conversion factor for tea is 200 6 oz cups per pound leaf equivalent.

<sup>2</sup>Excluding tomato and other vegetable juices.

<sup>3</sup>Preliminary.

reported a slight increase in the percentage of the population drinking coffee. In 1984, 57 percent of all Americans drank coffee, compared to 55 percent the previous year. The largest gain came in the percentage of the U.S. population drinking decaffeinated coffee. In 1984, 17.1 percent of Americans drank decaffeinated coffee versus 15.3 percent in 1983.

Fluid milk products may continue to lose ground in the beverage market. In the next decade, the 1945-60 "baby boom generation" will move into the lowest consuming age group, although this shift should be offset somewhat by their children. On balance, growth in fluid milk consumption over the next 5 years is expected to be at a rate less than the projected 3-percent increase in population.

A new dairy promotion program established by the Dairy and Tobacco Adjustment Act of 1983 could help boost consumption and improve the outlook for milk. The program, funded by a 15 cents-per-hundred-pounds assessment on all milk produced in the contiguous 48 States and marketed commercially by dairy farmers, involves dairy promotion, research, and nutrition education. From September 1984 through April 1985, about \$50 million is scheduled to be spent for television, radio, and magazine advertisements stressing the nutritional benefits of a calcium-rich diet.

In 1983, the average daily per capita intake of beverages was an estimated 47 ounces, not including water or reconstituted drink mixes. This translated into about an 8-ounce beverage at each of three meals and almost three 8-ounce drinks between meals for every man, woman, and child in the United States. Consequently, prospects are limited for total commercial beverage consumption to increase significantly. Instead, an increase for one beverage may well come at the expense of another, and manufacturers will devote advertising dollars to convincing consumers which beverage to drink.

**Table 1. Beverage Use Varies By Age**

Age group	Milk	Soft drinks <sup>1</sup>	Coffee	Beer	Total alcohol <sup>2</sup>
	Percent of individuals				
6-11	97.1	64.1	2.9	0	.4
12-18					
males	93.0	70.6	11.8	2.2	2.7
females	87.8	74.2	12.3	.9	2.3
19-34					
males	78.7	72.5	49.7	24.9	30.4
females	75.3	69.9	53.9	7.7	18.8
35-50					
males	72.0	52.9	83.0	25.1	34.1
females	68.1	57.2	81.0	5.7	17.4
51-64					
males	77.4	37.2	87.2	7.0	27.0
females	75.3	38.9	86.3	5.2	15.5
Over 65					
males	82.1	21.6	86.5	9.6	16.6
females	79.9	21.4	85.4	1.7	8.3

<sup>1</sup>Includes noncarbonated soft drinks made from powdered mixes. <sup>2</sup>Includes distilled liquor, wine, beer, and ale.

Source: Nationwide Food Consumption Survey, 1977/78.