

Factors Influencing Milk Consumption In Pennsylvania

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UNIVERSITY PARK — Because consumers recognize their nutritional value, dairy products have been, and will continue to be, an important part of the diet. However, the consumption pattern of dairy products in the United States has been changing over the past 25 years.

In 1960, approximately 17.2 percent of all food expenditures were for dairy products, but by 1984, these expenditures had dropped to 12.1 percent.

One of the largest changes in dairy product consumption has occurred with fluid milk. The U.S. per capita consumption of fluid milk products decreased from 33 gallons in 1960 to 28 gallons in 1984. Underlying this decline is a significant shift away from using whole milk to lowfat milk. In 1960, the U.S. per capita consumption of whole and lowfat milk was 29 and 0.2 gallons, respectively. But by 1984, the U.S. per capita consumption had decreased to 14 gallons for whole milk but jumped to slightly over 9 gallons for lowfat milk.

Fluid Milk Consumption In Pennsylvania

Total consumption of fluid milk products, whole, 2 percent, 1 percent and skim milk, which make up over 90 percent of the total fluid products, in Pennsylvania decreased slightly from 24 gallons per capita in 1975 to 22 gallons per capita in 1985. The national trend toward consuming more lowfat milk and less whole milk also occurred in Pennsylvania.

In 1975, whole milk consumption was 81 percent; by 1985, it had decreased to 63 percent. All three lowfat milk products increased

their share of total fluid milk consumption. The consumption of 2 percent milk had the largest increase from 9 percent in 1975 to 22 percent in 1985. The increases in 1 percent and in skim milk consumption were more modest — from 5 percent in 1975 to 8 percent in 1985 and from 5 percent to 7 percent in 1985, respectively.

An understanding of the factors influencing these changes in fluid milk consumption will allow the dairy industry to improve its marketing efficiency. Maintaining efficiency requires the accurate appraisal of demand. A thorough knowledge of consumption trends and factors affecting those trends are important to: producers, processors, distributors, advertisers, retailers, and policy makers.

- Milk producers need up-to-date information concerning potential market demand to plan their future operations. Since producers fund a large portion of the industry's advertising effort, knowledge of the trends of milk consumption and those factors affecting them will allow a more efficient use of advertising.

- Processors can use the information to make informed decisions on plant location and types and quantities of fluid milk products processed in the plants and pricing strategies.

- Milk distributors can plan for a more efficient assembly of raw milk and efficient distribution of milk products.

- Advertisers can make a more efficient allocation of advertising efforts among the fluid milk products and among groups of consumers.

- Retailers need detailed demand analysis to assist them in establishing milk prices, planning daily purchases, and coordinating promotion activities with display

arrangements.

The evaluation of market demand is essential for policy makers to develop an efficient pricing system.

In Pennsylvania, the Pennsylvania Milk Marketing Board sets minimum resale prices at the wholesale and retail levels. A knowledge of the effects of price on demand will enable the PMMB to determine the effects of its established prices on fluid milk consumption. It is also particularly important for the PMMB to have knowledge of the effects on demand of variables not under their control. These include the effects of income, prices of substitute products, availability of new product forms, age, sex, and changing consumer tastes and preferences.

With a knowledge of all these factors, the PMMB can take them into account when it assesses the impact of its established minimum resale prices on producers, processors, distributors, retailers and consumers.

To identify these factors Penn State researchers undertook a study on the demand for fluid milk products in Pennsylvania.

Factors Influencing Demand Of Fluid Milk Products

The Penn State study attempted to determine the extent to which several factors influenced total demand (consumption) of whole, 2 percent, 1 percent, and skim milk in Pennsylvania during the period from 1975 to 1985. Specifically, the study was designed to determine the influence of factors on the average consumption per person of each of the fluid products.

The factors used to explain the demand of these four fluid milks were:

- the price of each product
- the price of cola

- average per capita income
- percentage of population under 19
- percentage of population which is female
- season of the year

Product Prices

The prices of all four fluid milks were used to determine their influence on the per capita consumption of each fluid milk. The price of whole milk was the average market price determined from surveys of milk prices in supermarkets.

Minimum prices as set by the PMMB were used for 2 percent, 1 percent and skim milk since only a partial set of market prices were available for these milks. However, a comparison of the minimum prices and the market prices revealed that they were almost identical — the market prices being only slightly higher than the minimum prices.

Minimum and market prices moved in the same direction as well as proportionately when they changed.

The prices of the four fluid products were adjusted for the effects of inflation by dividing by the Consumer Price Index. This gave a more accurate idea of how the "real" changes in the prices of the fluid milks affected their consumption.

It was hypothesized that, as the price of a fluid product increases, the consumption of that product would decrease.

The prices of the other milk products were used to determine if there were substitution effects between the four milk products.

In other words, if the price of one of the other milk products decreased while the others remained constant, consumers might purchase more of the milk product whose price decreased and less of the other products whose price didn't change. Other studies have reported mixed findings on the effects of price. In some studies fluid prices had a significant influence on fluid milk consumption while in others it was not an important factor in consumers' decisions to purchase fluid milk.

Cola was thought to be a possible substitute beverage for milk. The

price of cola was used to determine if changes in it had any influence in the consumption of the four fluid milks. It was thought that as the price of cola increased, consumers might purchase more of the fluid milks.

Prices of cola were also adjusted for inflation by using the CPI.

Average Per Capita Income

Per capita income, adjusted for the effects of inflation through use of the CPI, was used to determine the effect of consumer's purchasing power on the consumption of fluid milk. It was thought that, as consumers income increased, they would have more money to spend on food purchases and thus fluid milk consumption would increase.

The level of income might also have different effects on the type of fluid product purchased. It was thought that as the average income levels increased, less whole milk and more of the lowfat milks might be purchased.

Age of Population

The percentage of the population under 19 years of age was used to get at the effect of age on milk consumption. It has been reported in other studies that the middle-aged and senior citizens drink less than the average amount of milk. The children and young adults must then drink more milk than the other age groups. In fact, one report maintained that 50 percent of all fluid milk products are consumed by persons under 17 years of age.

Therefore, it was expected that as the percentage of the population under 19 increases fluid milk consumption should increase. But does this age group consume whole or lowfat milk products? That is one question for which we hoped to find an answer in this study.

The proportion of the population that is female was included since it is generally recognized that women consume less fluid milk than males. Furthermore, it is thought that women tend to consume more lowfat milk and less whole milk. Therefore, it is expected that as the proportion of women in the population increases,

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