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## An Analysis of U.S. Household Dairy Demand

**Christopher G. Davis, Diansheng Dong, Don P. Blayney,  
and Ashley Owens**

### ***What Is the Issue?***

The measurement of the economic effects of food prices and consumer incomes on the demand for foods derived from agricultural products is important in economic analysis. Consumers allocate spending among a wide array of competing products sold at retail outlets across the country. In this technical study, the authors estimate how fluctuation in prices and household expenditures, as well as a number of demographic characteristics, affect household demand for 12 dairy products and margarine. These empirical estimates offer a glimpse of relationships among the 13 product categories—including ways that consumers use some of the products together or interchangeably—which are of interest to many in the U.S. dairy industry.

### ***What Did the Study Find?***

Using a censored demand system and Nielsen Homescan data for purchase of items in the 13 categories, the authors estimated two types of elasticities: price and expenditure. The effects of selected demographic variables, based on characteristics such as household size and composition, educational level and ethnicity of household head, regional location, and household income, are also analyzed. The analysts found that:

- Ten of the 13 products have negative own-price elasticities with absolute values greater than 1.
- Strong substitution relationships exist among most dairy product categories.
- All of the expenditure elasticities are statistically significant and positive. Changes in the overall household dairy expenditure have the largest effect on purchases of reduced-fat milk, canned milk, bulk ice cream, refrigerated and frozen yogurts, natural cheese, and cottage cheese.
- Although the influence of most demographic variables is relatively small, some of them do have statistically significant effects on consumer purchases of dairy products:
- Single-person households and households headed by a college-educated woman have a positive, statistically significant influence on the purchase of refrigerated and frozen yogurt and reduced-fat milk.

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- Black heads of household have a positive, statistically significant effect on the purchase of bulk ice cream, sherbet/ice milk, refrigerated and drinkable yogurts, whole and canned milk, and butter. Asian heads of household have a positive, statistically significant effect on the purchase of all fluid milks, refrigerated and drinkable yogurts, and bulk ice cream.
- Households in the Western, Eastern, and Central regions of the United States are more likely to purchase refrigerated yogurt, natural cheese, cottage cheese, and butter than those in the Southern region. Households in the Western region are also more likely to purchase frozen and drinkable yogurts and sherbet/ice milk.
- Of the income categories analyzed, households in the two lowest categories—\$20,000-\$34,999 annually and \$19,999 or less—have a positive, statistically significant influence on whole and reduced-fat milk purchases. Other dairy product purchases that are statistically significant and positively influenced by households with incomes of \$34,999 or less include sherbet/ice milk, processed and cottage cheese, and margarine.

### ***How Was the Study Conducted?***

The authors compiled data on retail purchases of dairy products from Nielsen Homescan data for 2007. The Nielsen Homescan data provide detailed information on dairy product purchases for at-home use by U.S. households, allowing the authors to examine consumption patterns among margarine and 12 categories of dairy products: bulk ice cream, sherbet/ice milk, refrigerated yogurt, frozen yogurt, drinkable yogurt, whole milk, reduced-fat milk, canned milk, natural cheese, processed cheese, cottage cheese, and butter. The Nielsen database includes not only economic data such as product prices, but also demographic and location information. The authors used the data to derive estimates of own- and cross-price elasticities and expenditure elasticities for the 13 product categories, employing a censored demand system.