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Consumer Milk Expenditures and Preferences for Tennessee Milk

Sreedhar Upendram, Assistant Professor
Kimberly L. Jensen, Professor
Karen DeLong, Assistant Professor
Jamey Menard, Research Leader
Department of Agricultural and Resource Economics

Elizabeth A. Eckelkamp, Assistant Professor
Department of Animal Science

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Introduction

The dairy industry in Tennessee has experienced changes over the past few decades. As of August 2019, the current number of dairy operations licensed to sell Grade A milk in the state is 196, down from 271 in 2018 (Tennessee Department of Agriculture). A potential market opportunity for Tennessee dairy producers is to sell milk to consumers who prefer local milk. In 2018, the Tennessee Department of Agriculture, Business Development Division, instituted the Tennessee Milk logo (Figure 1). This logo was designed to help consumers identify milk that was entirely sourced, processed and bottled in Tennessee.

Figure 1. Tennessee Milk Logo

The market for milk with the Tennessee Milk logo is emerging and little is known about consumers' preferences and attitudes toward fluid milk labeled with the Tennessee Milk logo. The goal of this publication is to convey results of a consumer survey regarding Tennessee consumers' milk expenditures and preferences for Tennessee Milk to dairy producers, retailers and policy makers. This study presents:

- Willingness to pay for Tennessee Milk.
- Purchase amounts for Tennessee Milk.
- Locations where consumers would purchase Tennessee Milk.
- Consumer attitudes toward Tennessee Milk.
- Distance traveled for milk to be considered local.
- Current milk purchase patterns.
- Respondent demographics.

Survey

In June 2019, an online survey was distributed to obtain Tennessee consumers' attitudes toward milk expenditures and preferences for Tennessee Milk. The survey participants were limited to those 18 years or older, Tennessee residents, and primary food shoppers for the household. The respondents also were limited to those households with at least one or more members who consume cow's milk. A total of 410 responses were obtained. The survey contained several sections including consumer preferences for Tennessee Milk, attitudes toward fluid milk, consumer milk expenditures, attitudes toward local foods, and demographics.

Before asking consumers about their preferences for fluid milk with a Tennessee Milk logo, the definition of Tennessee Milk was provided, along with the logo (Figure 1) on the information screen.

> *The Tennessee Milk logo is administered by the Tennessee Department of Agriculture and milk with this logo must be entirely sourced, processed, and bottled in Tennessee. This means milk with this logo is 100% from Tennessee dairy farms and is packaged and processed within the state.*

Respondents were then asked if they were familiar with the Tennessee Milk logo.

To determine whether consumers would pay more for a gallon of milk (most often purchased) with the Tennessee Milk logo, the question showed 2 gallons of fluid milk with varying prices. The first gallon had the Tennessee Milk logo and the second was identical except it did not have a logo. The survey respondent could choose either gallon of milk or neither product. The gallon of milk with no logo was always priced at $2.69/gallon. This base price was determined according to the average market price of a gallon of milk at major retailers collected prior to the survey. The Tennessee Milk price was one of five: $2.69, $3.19, $3.69, $4.19 or $4.69 (each price was offered to 20 percent of the respondents). An example choice set is shown in Figure 2.

Figure 2. Example Choice Set for Tennessee Milk

Respondents with a preference for Tennessee Milk were asked about the quantity of milk they would purchase per month and the retail outlets where they might purchase it.

Respondents were asked to rate their level of agreement (ranging from 1 = strongly disagree to 5 = strongly agree) that Tennessee Milk would likely:

- Be fresher;
- Be safer;
- Be better for the environment;
- Help support Tennessee’s dairy farmers;
- Help support the state’s economy; and
- Taste better.

Respondents were asked how far they would travel to purchase Tennessee Milk and how many miles milk could travel to be considered local.

Results

Survey Participants

A summary of the survey participants' demographics is provided in Table 1. The average age of the respondents was 44 years old as compared to the state average of 39 years old. Eighty-two percent of the respondents were female, which was expected since the sample was limited to primary food shoppers. Average household income was $45,977, which is below the state average of $51,340. About 38 percent of the households have children under 12 years old. In the state of Tennessee, 18 percent of the households have children under 13 years old. Thus, our sample slightly overestimates households with children. Just under a quarter of the respondents were college graduates, which is comparable to the state average.

Table 1. Survey Respondent Demographics

Measure	Mean (n = 389)	Tennessee Average
Age in Years	43.6	38.6[1]
% Female Population	82%	51%[1]
Household Income	$45,977	$51,340[1]
Children Under Age 12	38%	18%[1,2]
College Graduates	24%	26%[1]
Rural Residents[3]	17%	33%[1]
Eastern TN Residents	47%	36%[1]
Middle TN Residents	36%	40%[1]
Western TN Residents	17%	24%[1]

[1] U.S. Census Bureau, 2017.
[2] Tennessee average numbers are for children under 13.
[3] Survey respondents self-identified as rural residents.

Around 17 percent considered themselves to live in a rural area as compared to the 33 percent of the rural population across the state. About 47 percent of the respondents resided in East Tennessee, 36 percent in Middle Tennessee, and 17 percent in West Tennessee, which is somewhat representative of Tennessee residents. A map of the three regions in Tennessee is shown in Figure 3.

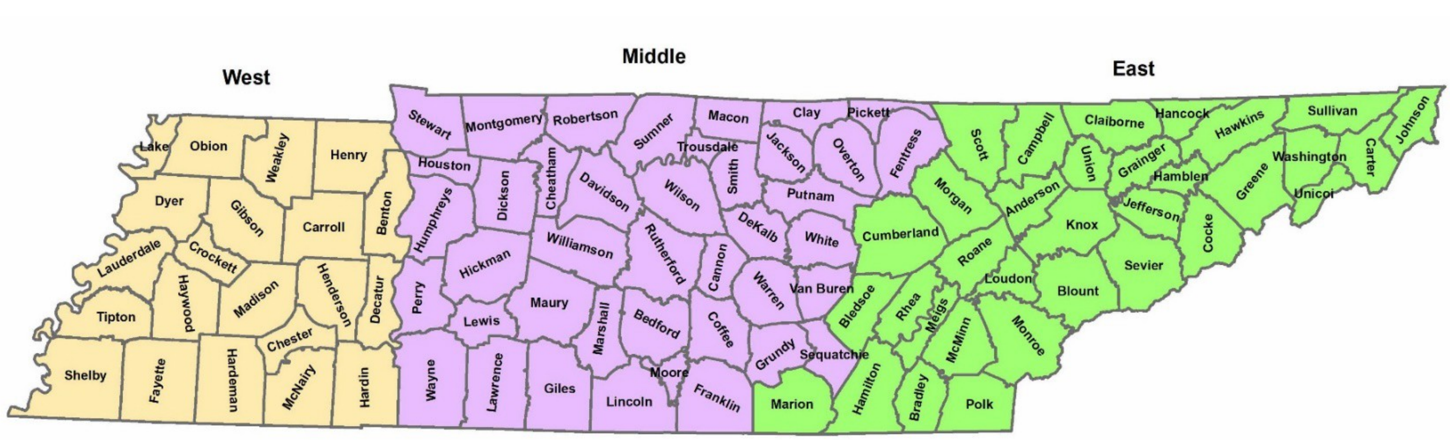


Figure 3. Map of Tennessee Counties and Regions

Milk Purchases and Expenditures

As shown in Figure 4, the most commonly purchased type of milk among the respondents was 2 percent milk (46 percent), followed by whole milk (38 percent). Around 7 percent usually purchased 1 percent milk and 6 percent purchased skim milk. Only about 3 percent of the respondents indicated they usually purchased lactose-free milk.

The most common response to the question regarding the brand of milk most often purchased (Figure 5) was the store brand (55 percent), followed by a national brand (13 percent), and then a regional brand (10 percent). About 22 percent of respondents shopped for the lowest priced milk (Figure 5), regardless of the brand. These responses suggest brand loyalty among the majority of the responding milk shoppers rather than price.

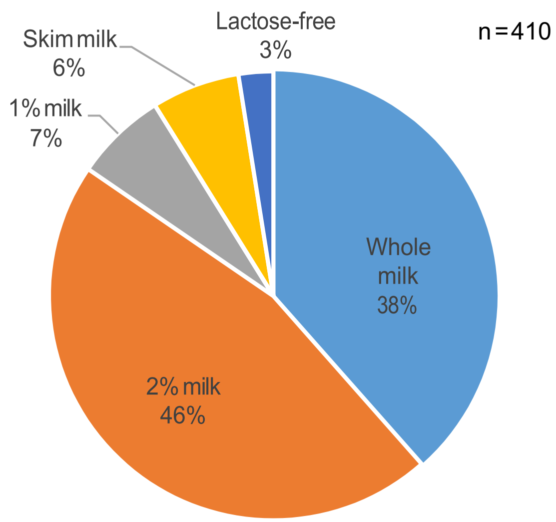


Figure 4. Type of Milk Often Purchased by Households

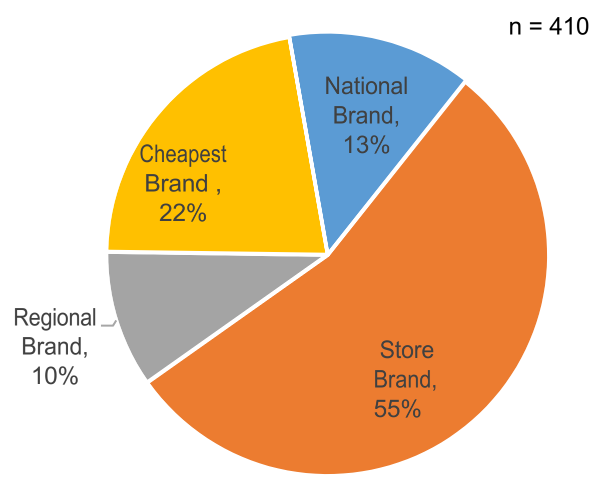


Figure 5. Type of Milk Brand Respondents Purchase

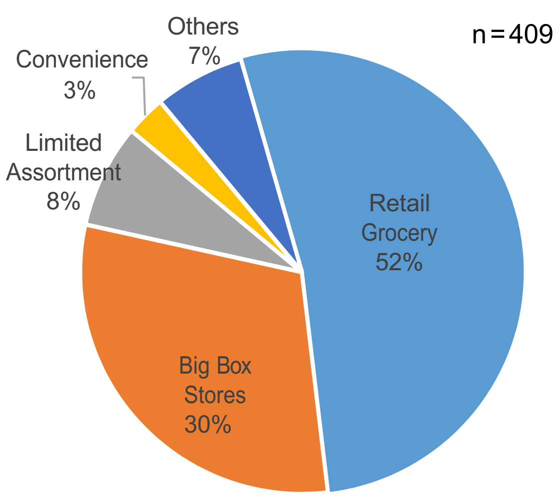


Figure 6. Store Types Where Households Purchase Milk

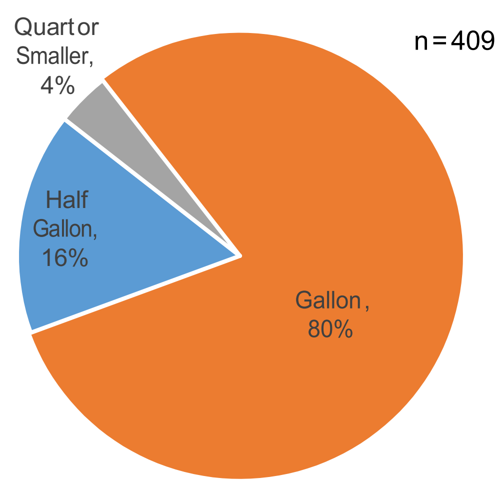


Figure 7. Amount of Milk Most Often Purchased

As shown in Figure 6, 52 percent of the respondents indicated they usually purchased milk at a retail grocery store (e.g., Kroger and Publix). Subsequent responses revealed purchases at big box stores (e.g., Walmart, Target) at 30 percent, limited assortment stores (e.g., Dollar General, Aldi) at 8 percent, and convenience stores (e.g., Weigel's, Pilot) at 3 percent. Other outlets comprised 7 percent of consumer milk purchases.

By far, the most often purchased milk container size was a gallon at 80 percent (Figure 7) of responses, followed by half gallons at 16 percent and quart or smaller amounts at 4 percent.

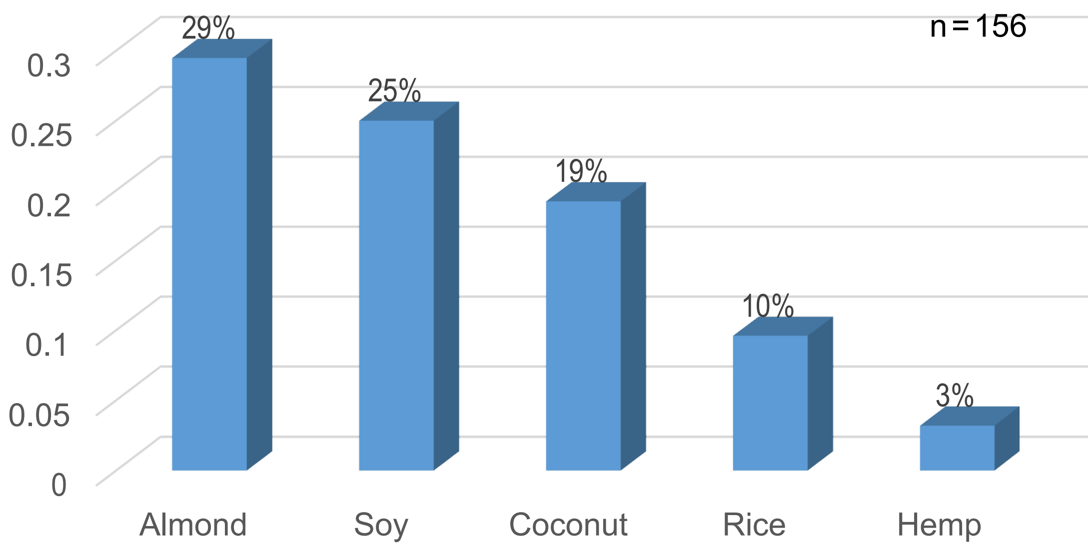


Figure 8. Percent Purchasing Milk Alternative Type Among Milk Alternative Purchasers

Approximately 18 percent of respondents indicated they usually buy organic milk (n = 409). About 62 percent of the respondents indicated they have never purchased milk alternatives. However, among the milk alternatives, the most commonly purchased among those having bought milk alternatives (n = 156) was almond (29 percent), followed by soy (25 percent), coconut (19 percent), rice (10 percent), and hemp (3 percent) (Figure 8).

Table 2. Average Household Milk Purchase Characteristics

Variable	Amount (n = 390)	Units
Amount of milk purchased by households	0.89	Gallons
Average milk purchase price per gallon	$2.81	Dollars per gallon
Average quantity of milk purchased per month	4.05	Gallons
Average monthly expenditure on milk	$10.84	Dollars per month

Using the information about purchases by container size, frequency of milk purchases and prices paid, monthly milk expenditures were calculated (Table 2). Results showed that respondents buy around $0.89 gallons per purchase, spend around $2.81 per gallon, and purchase milk about 4.05 times per month. Thus, their average household monthly expenditure on milk is estimated to be $10.84.

Tennessee Milk

Knowledge about the Tennessee Milk Logo

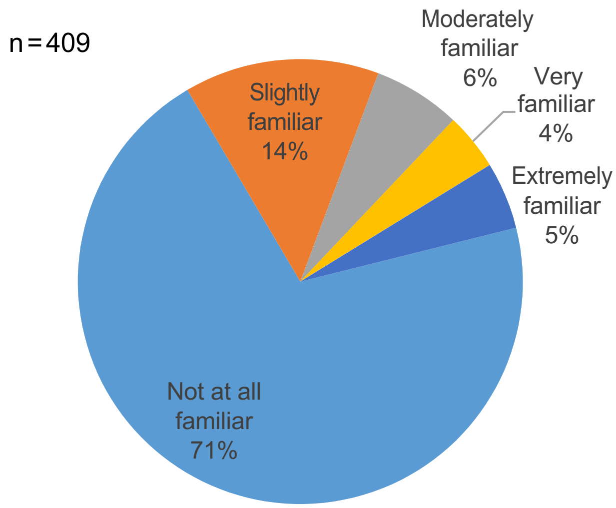
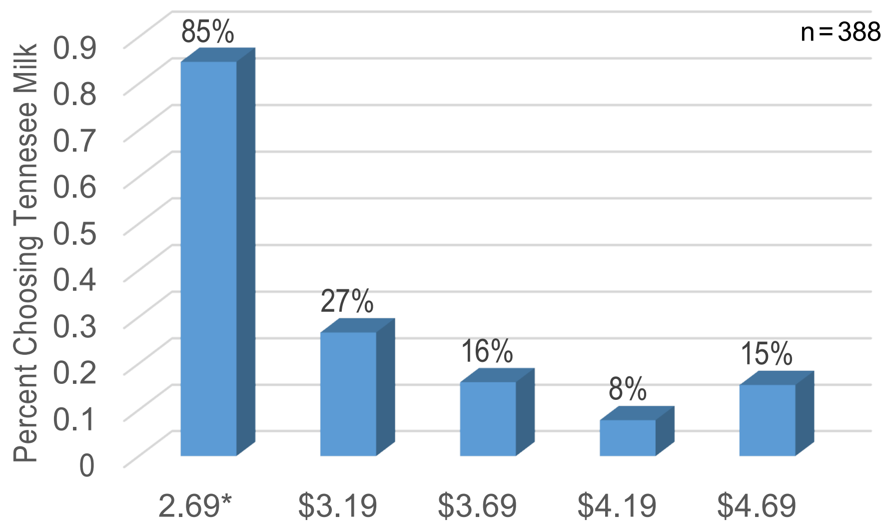


Figure 9. Respondents' Familiarity with Tennessee Milk Logo

As shown in Figure 9, most respondents (70 percent) were not familiar with the Tennessee Milk logo. Among respondents who recognized the logo, 14 percent were slightly familiar, 6 percent were moderately familiar, and 9 percent were very familiar with the logo. These figures are not surprising because the market for Tennessee Milk is still emerging and the logo has only been available since late 2018. According to the Tennessee Department of Agriculture and the Tennessee Dairy Producers Association, the Tennessee Milk logo is currently used by Weigel's stores, Sunrise Dairy, Hatcher Family Dairy, G&G Family Dairy, Stooksbury Creamery and Middle Tennessee State University's Creamery. As the market grows, future research might re-examine consumers' level of familiarity with the logo. The lack of logo familiarity highlights the need to adequately advertise this logo to consumers so they are more aware of its existence.

Willingness to Purchase Tennessee Milk



*Note the price of the base, unlabeled milk product was always $2.69.

Figure 10. Choice of Tennessee Milk Across Price Levels

On average, across all price points examined ($2.69 to $4.69), 29 percent of respondents were willing to purchase Tennessee Milk at the price offered. As seen in Figure 10, at the same price as the base gallon of milk ($2.69) about 85 percent of the respondents would choose Tennessee Milk compared to unlabeled milk. As the price of the Tennessee Milk increased above $2.69, the percent of consumers choosing the product declined.

We estimated how price and milk expenditures impact the probability that consumers will purchase Tennessee Milk. On average, Tennessee consumers were willing to pay an average of $3.06 for Tennessee Milk, with a lower 95 percent confidence level of $2.87, and an upper 95 percent confidence level of $3.20. This represents a $0.37 per gallon premium over the base, unlabeled milk.

Anticipated Purchase Patterns for Tennessee Milk

Table 3. Tennessee Milk Purchase Characteristics

Variable	Amount (n = 390)	Units
Amount of milk purchased by households	2.8	Gallons
Miles consumers willing to travel to purchase Tennessee Milk	3.2	Miles
Maximum miles that milk could travel to be considered locally produced	74	Miles

As indicated in Table 3, among those who stated they would purchase Tennessee Milk, on average they would purchase about 2.8 gallons per month. The average farthest distance these consumers would travel to purchase Tennessee Milk was 3.2 miles. Respondents indicated that the maximum distance that milk should travel to be considered locally produced was 74 miles.

As shown in Table 4, respondents who indicated they would purchase Tennessee Milk stated they would purchase it at a variety of retailer types. The most commonly cited was retail grocery stores at 85 percent, followed by big box stores at 60 percent. Twenty-eight percent indicated they would purchase it at limited assortment stores, while 22 percent stated they would purchase it at wholesale clubs. Twenty percent reported they would shop for Tennessee Milk at convenience stores. Less than 10 percent chose farmers markets, specialty/organic stores, on-farm, farmers cooperative, home delivery or other retailers.

Table 4. Retailer Types Where Consumers Would Purchase Tennessee Milk

Retailer Type	Percent Consumers Who Would Purchase Tennessee Milk at Retailer Type (N = 176)*
Retail Grocery Stores (e.g., Kroger, Publix)	85%
Big Box Stores (e.g., Walmart, Target)	60%
Limited Assortment Stores (e.g., Dollar General, Aldi)	28%
Wholesale Clubs (e.g., Sam's Club, Costco)	22%
Convenience Stores (e.g., Weigel's, Pilot)	20%
Specialty/Organic Stores (e.g., Whole Foods, Trader Joe's)	8%
Farmers Market	7%
Other Retailer	5%
On-Farm	3%
Home Delivery	2%
Farmers Cooperative	1 %

*Respondents could select more than one option.

Respondent Perceptions of Tennessee Milk

The majority of survey respondents believed that Tennessee Milk would help support Tennessee dairy farmers' incomes and help support the state's economy, as shown in Table 5. When compared to other milk, consumers perceived Tennessee milk to be fresher, better for the environment, taste better and be safer.

Table 5. Respondent Perceptions of Tennessee Milk

Compared With Other Milk, Tennessee Milk Will Likely:	Mean Rating (Out of 5)	Percent Respondents (n = 402)				
		Strongly Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Strongly Agree
Be fresher	3.94	4.2%	3.5%	20.9%	36.8%	34.6%
Be safer	3.53	6.5%	4.2%	40.3%	27.4%	21.6%
Be better for the environment	3.60	4.5%	5.0%	41.3%	24.9%	24.4%
Help support Tennessee dairy farmers' incomes	4.44	3.5%	1.7%	6.5%	24.4%	63.9%
Help support the state's economy	4.32	3.0%	2.2%	10.2%	28.6%	56.0%
Taste better	3.50	6.7%	5.5%	40.5%	25.9%	21.4%

Conclusions and Implications for Tennessee's Dairy Industry

Results from this study show that Tennessee Milk consumers would pay an average of $0.37 per gallon premium for milk bearing the Tennessee Milk logo. Eighty-five percent of respondents indicated they would purchase Tennessee Milk. The results from this study also show that consumers believe Tennessee Milk will help support dairy farmers' incomes, the state's economy and would be fresher. These are attributes that might be highlighted in the promotion of Tennessee Milk. Results also suggest that Tennessee Milk consumers feel that local milk should be obtained within a distance of around 74 miles. Consumers would be willing to purchase Tennessee Milk at a variety of retail outlets; however, most would look for it at retail grocery and big box stores. The Tennessee Milk logo is fairly new, and only 30 percent of consumers were aware of it when they completed the survey. Thus, increased promotion and marketing of the benefits of Tennessee Milk are needed to increase awareness and label recognition among consumers.

This study provides valuable information on consumers' preferences, patterns and perceptions of Tennessee Milk. The dairy industry, retailers and policy makers can use the results to help market Tennessee Milk.

References

Tennessee Department of Agriculture — Grade A Cow Dairies County data (Accessed August 12, 2019)

Tennessee Department of Agriculture: https://www.tn.gov/agriculture/news/2018/9/5/tennessee-milk-logo.html (Accessed August 2, 2019)

U.S. Census Bureau, 2013-2017 American Community Survey 5-year Estimates (Accessed August 2, 2019) https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml

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