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# Tennessee Consumer Perceptions of Milk: Purchase Considerations, Safety and Price

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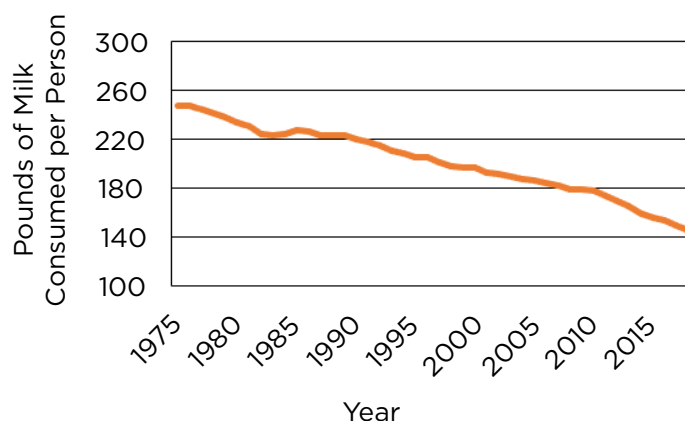
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## I. Introduction

The Tennessee dairy industry is facing many challenges with aging farmer populations, low milk prices and dairy farms struggling to maintain profitability. Many dairy producers have retired, sold out or lost contracts with milk handlers leading to a steady decline of dairy farms. Tennessee has declined to 179 licensed Grade 'A' dairy farms in January 2020 from 276 Grade 'A' dairy farms in January 2018 – a decrease of 97 dairies in two years (Strasser, 2021). With the loss of dairy farms, we can expect economic difficulties for businesses that provide goods and services to the dairy industry across Tennessee. Along with declining milk prices, consumer demand for fluid milk has also been decreasing (Figure 1; USDA-ERS, 2020). The trend to consume local goods and services could potentially help Tennessee producers. In 2018, a Tennessee Milk logo was created to promote milk produced and bottled in Tennessee. Theoretically, this milk could



**Figure 1.** Consumer Demand for Milk (lbs./person).

be considered premium and demand a higher price. The consumer demand for locally branded fluid milk is unknown. The goal of this publication is to provide results of a consumer survey of perceptions, preferences and purchasing considerations for local,

organic and store-brand milk to dairy producers, retailers and policy makers. As part of this study, we present:

- Study participants' willingness to pay for local, organic or store-branded milk
- Purchasing trends for milk
- Attributes associated with local, organic or store-branded milk
- Participants' various definitions of "local" according to geographic regions and miles traveled

## II. Survey

In January 2019, an online survey was conducted to assess Tennessee consumer attitudes toward milk purchases. Survey participants were limited to Tennessee residents ages 18 or older. A total of 440 respondents completed the survey (n = 440). The survey contained several sections including: household's primary shopper, milk purchase trends and considerations, attribute perceptions for local, USDA organic or store-branded milk, and geographic area or distance milk can travel from the farm and still be considered local.

At the beginning of the survey, participants were asked about the primary type of milk they purchased. Consumers could select *skim milk, 1 percent milk, 2 percent milk, whole-fat milk, lactose-free milk* or a *milk alternative*. Consumers were asked to consider all of the following questions in terms of the type of milk they usually purchased. Consumers were asked how much they knew about milk, what sources they used and trusted to learn about milk, where they purchased milk, how much milk was typically purchased, why milk was typically purchased, and who was responsible for shopping.

Specific questions were asked about how often participants purchased items specifically branded as local, USDA organic, grass-fed, non-GMO, hormone

free, lactose free, A2 and store-branded milk or milk alternatives. Participants ranked how eight factors influenced their decision to purchase milk, in order of importance: *price, taste, expiration date, packaging, nutritional value, fat content, brand and label marketing*. Participants were also asked to select attributes from a pre-populated list that they associated with store-branded, local and organic milk including: *farm-to-table, healthier, locally owned, cheaper, environmentally friendly, locally processed, unsustainable, money goes back to the farmer, humane treatment and expensive*.

To more clearly define "local," respondents were asked to define how many miles away from a farm milk could be marketed and still be considered "local." Respondents were also asked to identify which geographic area best described "local." This could be within my: *city/town, county, surrounding counties, state, region (Southeast) or United States*.

## III. Results

### Survey Participants

The average age of respondents was 42 years old, compared to Tennessee's state average of 39. Households with minors (less than 18 years old) made up 31 percent of respondents and 85 percent of respondents lived in a household of four or fewer members. Approximately 82 percent of respondents were females, while the Tennessee state average is 51 percent female. Primary grocery shoppers made up 64 percent of respondents. Many respondents, 51 percent, were employed either full or part time and 16 percent were retired. The majority of respondents (72 percent) had an annual income of \$59,000 or less and no farm experience (do not live or work on a farm and were not raised on a farm). A third of respondents, or 34 percent, had a college degree of some kind, while 31 percent had a high school education. State average for college graduates is 34 percent (US Census Bureau, 2017). The majority of respondents (83 percent) were white.

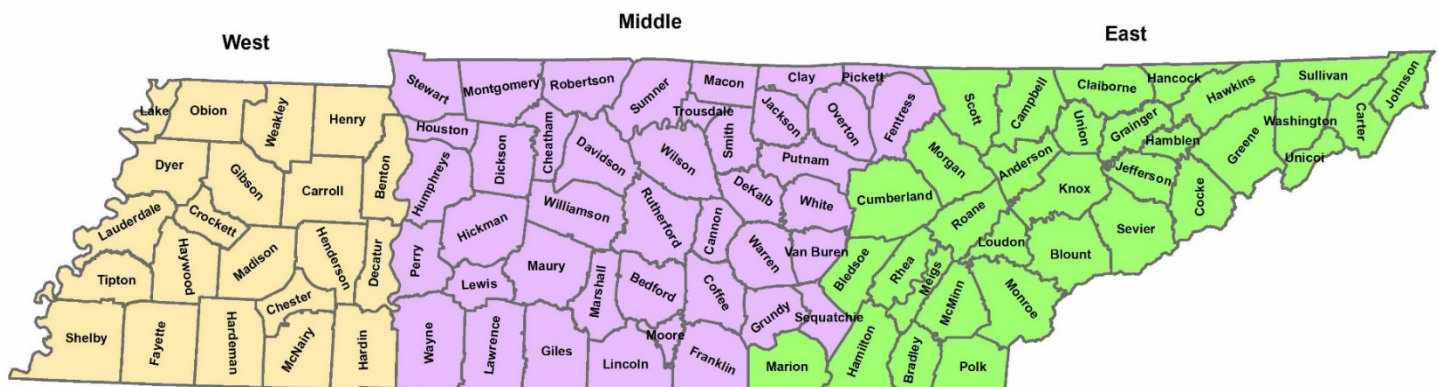
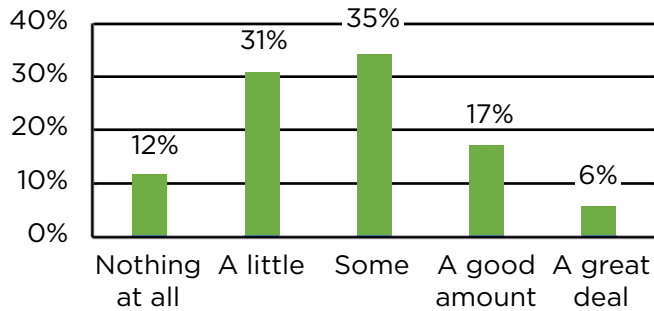


Figure 2. Map of Tennessee Counties and Regions.

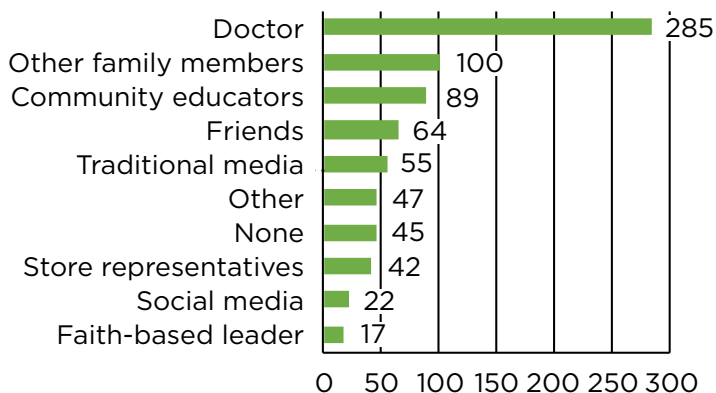
About 38 percent of the respondents resided in East Tennessee, 26 percent in Middle Tennessee, and 25 percent in West Tennessee, which is mostly representative of the distribution of Tennessee residents. (About 11 percent of respondents did not provide an answer to specify the region of Tennessee where they live.) The U.S. Census in 2017 found that 36 percent of the Tennessee population was in East Tennessee, 40 percent in Middle Tennessee, and 24 percent in West Tennessee. A map of the three regions in Tennessee are shown in Figure 2.



**Figure 3.** Respondent's General Knowledge of Cow's Milk.

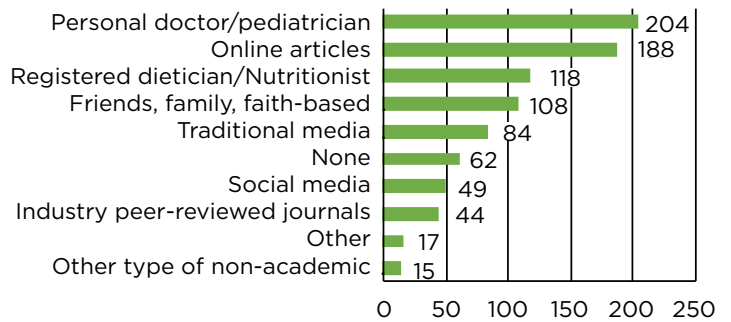
### Consumer Preferences, Milk Purchase Patterns and Purchase Considerations

A total of 440 respondents completed the survey (average age of 42 years old; 82 percent female), with most respondents identifying as the primary food shopper (64 percent) while some (31 percent) shared the responsibility. *Whole milk* (42 percent) and *2 percent milk* (39 percent) were the most purchased types of milk, with 14 percent of the sample being comprised of other milk types (*skim milk* or *1 percent milk*). In our survey of Tennessee consumers, *milk alternatives* only accounted for five percent of total respondent purchases.

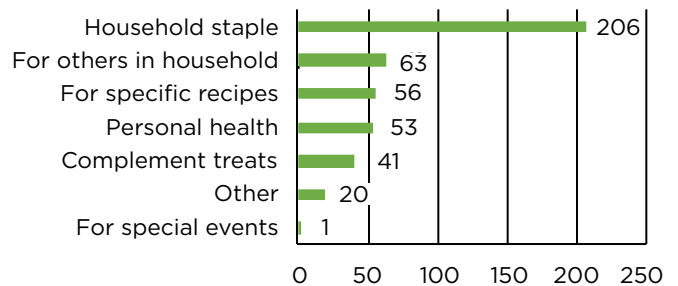


**Figure 4.** Trusted Source to Learn About Milk.

The first goal of the survey was to define respondents' base knowledge of milk. Most respondents (66 percent) had a *little to some* general knowledge about milk (Figure 3). Only 23 percent considered themselves to have a *good amount to great deal* of knowledge about milk. By far, respondents trusted *doctors* (65 percent) the most to learn about milk (Figure 4; n = 889). However, only 46 percent went to *doctors* to get information, followed closely by *online articles* (43 percent; Figure 5; n = 766). Extension programs focused on providing information about milk production, processing and nutritious dairy choices can be a powerful tool to decrease misinformation and promote healthy consumption, especially if used by healthcare professionals. Providing information through online articles and incorporating information from healthcare professionals can ensure trustworthy resources.

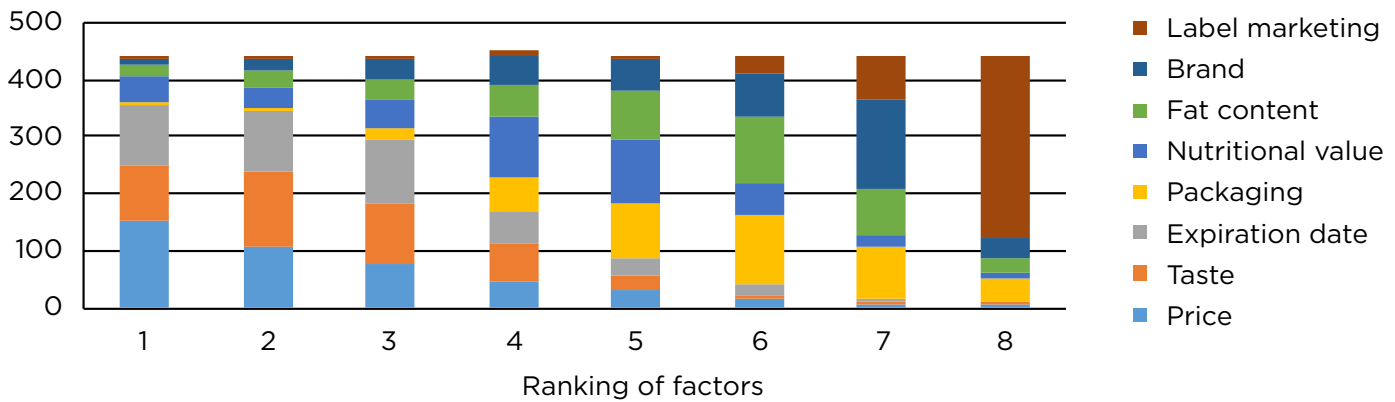


**Figure 5.** Source of Information on Milk.



**Figure 6.** Reasons Consumers Buy Milk.

The second goal was to determine what drives consumers' decisions to buy milk and to categorize the attributes related to store-brand, locally produced and organic-certified milk. The most common reason to buy milk was because it is a *household staple* (47 percent), followed by *for others in the household, including children, elderly, etc.* (14 percent; Figure 6; n = 435). When asked to rank factors that influence respondent's purchase of milk, the top three qualities in order were *price* (153 responses), *taste* (135 responses), and *expiration*

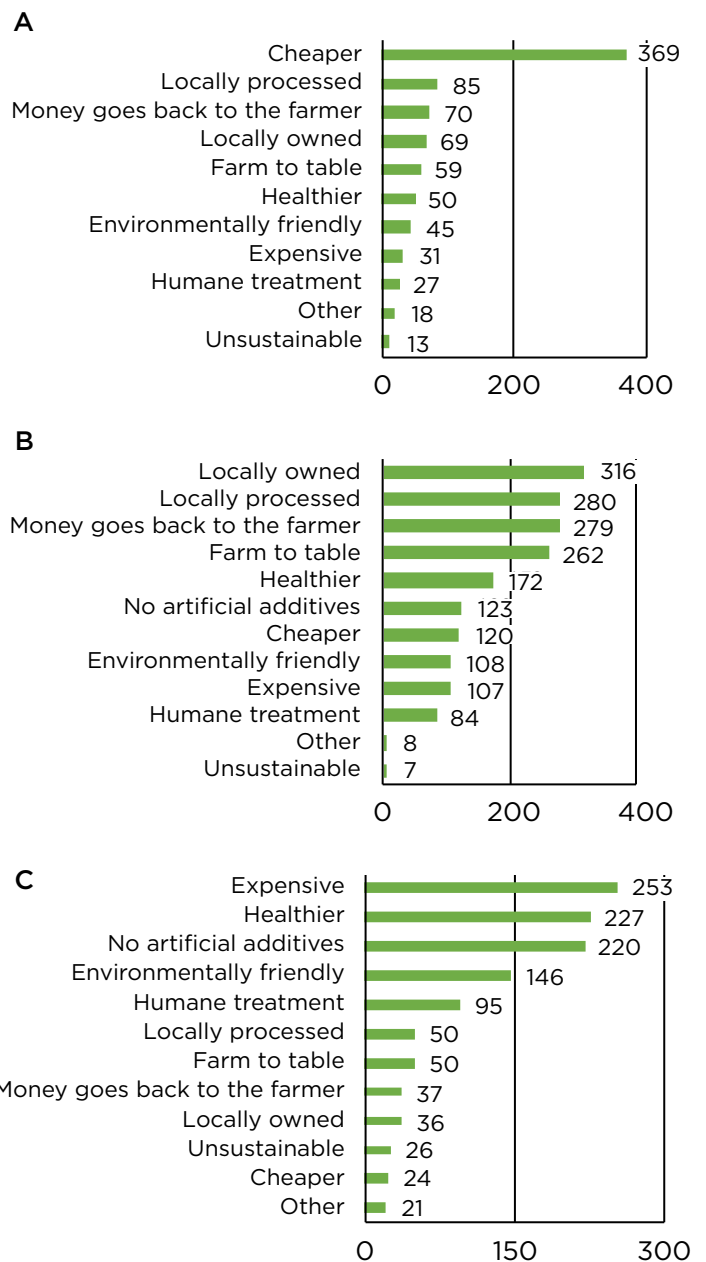


**Figure 7.** Factors Ranked in Order of Importance that Influenced Respondent's Milk Purchases.

date (113 responses; Figure 7). The three factors having the least impact on milk purchases were *fat content* (114 responses in sixth), *brand* (158 in seventh), and *label marketing* (318 in eighth). Label marketing was the least considered factor.

The most common attribute found to be related to store-branded milk purchases is the fact that it's *cheaper* (44 percent; Figure 8.A; n = 818). The four next most considered traits were related to locally produced products, comprising 34 percent of the attributes together. Interestingly, when asked the definition of local, the top four attributes were the same as those identified in Figure 8.A, and the attribute of it being *cheaper* was intermediate at six percent of the responses (Figure 8.B; n = 1858). The local attributes were: *locally owned* (17 percent), *locally processed* (15 percent), *money goes back to farmer* (15 percent), and *farm-to-table* (14 percent). These attributes were listed in almost the same order as Figure 8.A, with locally processed being first, followed by *money goes back to farmer*, *locally owned*, and then *farm-to-table*. When considering USDA organic products, the top three responses were *expensive* (21 percent), *healthier* (19 percent), and *no artificial additives* (18 percent; Figure 8.C; n = 1164). The four attributes related to local products comprised 15 percent of the total responses. This suggests that consumers do not view USDA organic milk as local, but they do view it as a luxury food item.

The third objective was to determine consumer habits and perceptions of the types of milk, as well as identify what consumers consider local. The majority of respondents (65 percent) agree that they purchase local foods *sometimes* instead of *never* (7.5 percent), *about half the time* (17.5 percent), *most of the time* (five percent), or *always* (five percent). Ninety percent of respondents said that they *sometimes* or *never* purchased organic products.



**Figure 8.** Attributes Respondents Associated with A) Store, B) Local, and C) USDA Organic-Branded Milk.

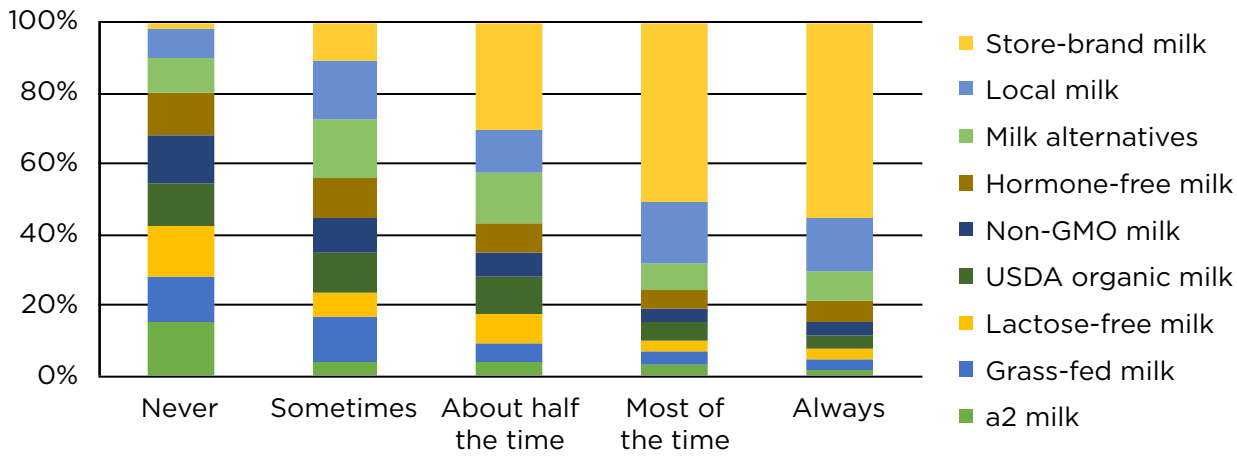


Figure 9. Frequency of Milk Purchases.

Consumers were asked their level of concern for safety of local milk, USDA Organic milk, and store-branded milk from *not at all*, *a little*, *somewhat*, *very* and *extremely* concerned. The overwhelming majority had no concerns about the safety regardless of the type of milk. For USDA organic milk, 46 percent of respondents had no concern about safety, 19 percent were a little concerned, 19 percent were somewhat concerned, eight percent were very concerned, and eight percent were extremely concerned. In reference to local milk, 41 percent had no concerns, 21 percent were a little concerned, 21 percent were somewhat concerned, 10 percent were very concerned, and seven percent were extremely concerned. Finally, in terms of store-branded milk safety where 41 percent of respondents were not concerned, 20 percent were a little concerned, 20 percent were somewhat concerned, 10 percent were very concerned, and nine percent were extremely concerned. In line with our previous findings, over 50 percent of

respondents said they purchase store-branded milk *most of the time* or *all the time* (Figure 9). The next most purchased milk was local milk, followed by milk alternatives. Most respondents (47 percent) agreed that for products to still be considered local, milk should be sold within 100 to 500 miles of the farm (Figure 10). Thirty-two percent preferred it to be sold less than 100 miles from the farm, and 21 percent said that it could be sold over 500 miles away from farm and still be considered local. Most (91 percent) respondents considered milk “local” if it was produced in the state or closer to the respondent (Figure 11; n = 727). Half of the respondents only considered milk “local” if it was produced in their *county* or the *surrounding counties*. A small percentage (four percent) of respondents considered milk “local” that was produced anywhere *within* the U.S., and just over five percent said anything in the *region* of the southeast U.S. is considered local.

Respondents indicated that they would pay the most for locally-produced milk (\$4.63) versus store-brand (\$3.22), organic certified (\$3.86), or milk alternatives (\$3.53). It is noteworthy that they would pay \$1.41 more for local than they would store-branded, but their willingness to pay store-branded was \$3.22, which was almost \$1 higher than the actual price of store-branded milk at the time. Respondents indicated that they would pay a higher premium than the \$0.37/gallon premium observed in the 2019 study by Upendram et al. titled *Consumer Dairy Product Expenditures and Preferences for Dairy Products Made with Tennessee Milk*.

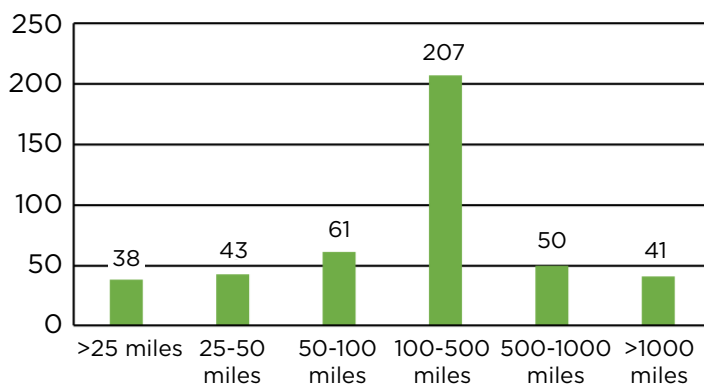


Figure 10. Distance from Farm to Remain Local.

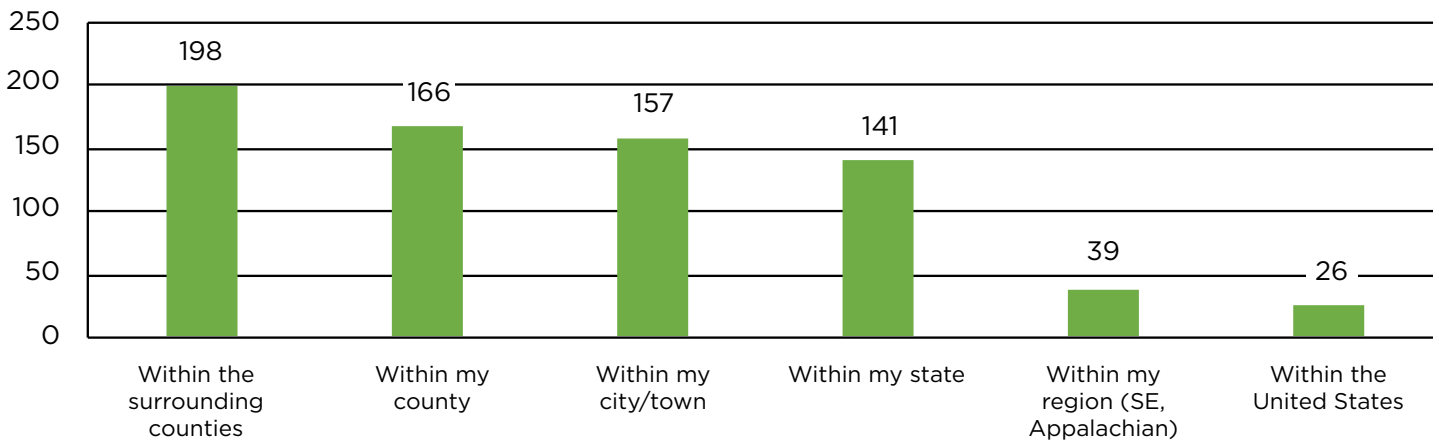
#### IV. Summary and Conclusions

Nationwide, the number of dairy farms has declined over time. Within the United States, only 19 percent of the consumer’s money spent on food is returned to farmers, with a range of 10 to 20 percent on dairy products specifically (UT-ADC, 2002, USDA-ERS, 2021). Our survey obtained results from 440 primary food shoppers, mostly female with an average age of 42. Milk was considered a household staple, and respondents purchased mainly whole milk (42 percent) and 2 percent fat milk (39 percent), with less than 20 percent purchasing any other milk or milk alternatives. Respondents followed common consumer trends, making purchases based on price, taste and expiration date. Following this pattern, most respondents purchased store-brand milk and almost never purchased local or USDA organic-branded milk. Respondents also did not express any concern over the safety of local, USDA organic or store-branded milk.

Surprisingly, although store-branded milk was perceived as cheaper, it was also believed to be a locally produced and processed product with the money spent to purchase it going back to the farms. When asked about local milk, consumers did not believe local milk was cheaper. USDA organic

products were not perceived as local or cheap. Most respondents said they sometimes purchased local foods, and there was almost an even split between never and sometimes when asked if they purchased organic products.

Few definitions exist for what “local” means in terms of milk. In our survey, local milk was generally considered to be produced within the state or closer to the buyer, and could travel between 100 to 500 miles from the farm. This is a much larger range than that found within the study done by Upendram et al. in 2019, which found that the average distance still considered “local” was 68 miles. Respondents were willing to pay the highest price for locally produced milk at \$4.63, followed by organic milk at \$3.86. However, this was a point-in-time question and respondents were not provided with the traditional reminders associated with willingness to pay questions (i.e. overall food budget goes down if price spent on milk goes up). This could be reflected in that consumers were willing to pay almost a dollar more for store-branded milk than it is currently priced in stores (\$3.22). Results from this survey help describe consumer preferences for milk in Tennessee and can be used by producers and processors to reach their target audience and goals.



**Figure 11.** Distance Milk Can Travel and Still be Considered a Local Product.



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