

# Estimating Restaurant Willingness to Pay for Local Beef

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Cattle are an integral part of the agricultural landscape in Tennessee, with most cattle producers participating in the cow-calf and/or the stocker and backgrounding sectors. Few producers finish and slaughter cattle in Tennessee. This is evidenced by Tennessee having 910,000 head of beef cows that calved in 2018 and only having a commercial cattle slaughter of 32,800 in the same year (USDA National Agricultural Statistical Service [NASS], 2018a; USDA NASS, 2018b).

Though few cattle are finished and harvested in Tennessee, consumer demand for local foods has expanded. Thus, the expansion of the local foods movement brings to question, if Tennessee cattle producers can expand marketing opportunities, as well as improve profitability, by producing finished cattle and marketing them via a Tennessee Certified Beef (TCB) program. In order to evaluate this marketing opportunity, several components need to be addressed, including producer willingness to supply cattle to a TCB program (Griffith et al. 2018a), consumer willingness to pay for TCB (Griffith et al. 2018b), and retailers' willingness to purchase and market TCB.

Two surveys have been conducted in Tennessee to evaluate consumer willingness to pay for beef with a Tennessee label (Dobbs et al. 2016; Merritt et al. 2018). However, no known Tennessee survey has contacted restaurants to estimate their demand for locally (Tennessee) produced foods. Thus, the goal of this publication is to convey the results of a restaurant survey that elicited restaurant willingness to pay (WTP) for steak and ground beef labeled hypothetically as Tennessee Certified Beef (TCB). The purpose of this publication is to provide information to cattle producers in Tennessee who may have an interest in marketing Tennessee-produced beef to restaurants. These results can also help assist these producers in targeting restaurants that have a higher likelihood and higher WTP for Tennessee-produced beef. This publication was adapted from McKay et al. (2019).

## Survey

A telephone survey of Tennessee restaurants was conducted in fall 2017 to determine restaurant WTP for TCB. Restaurants for the survey were identified by using the Pick Tennessee Products (2018) restaurant directory and Trip Advisor (2018). In order to be included in the survey, restaurants had to offer beef products. The offering of beef products by a restaurant was verified by examining websites and reviewing menu items. Chain restaurants were omitted from the survey, resulting in 798 potential restaurant respondents. Individuals who were responsible for making the beef purchasing decisions for the restaurant completed the survey. The survey contained questions concerning an 85 percent lean/15 percent fat ground beef product and a sirloin steak. Respondents were provided the following information: "TCB declares that the animal was born, raised and harvested in Tennessee and graded U.S. Department of Agriculture (USDA) Choice or Prime." These grading requirements were chosen because they are similar to Certified Angus Beef grading requirements (Certified Angus Beef, 2018).

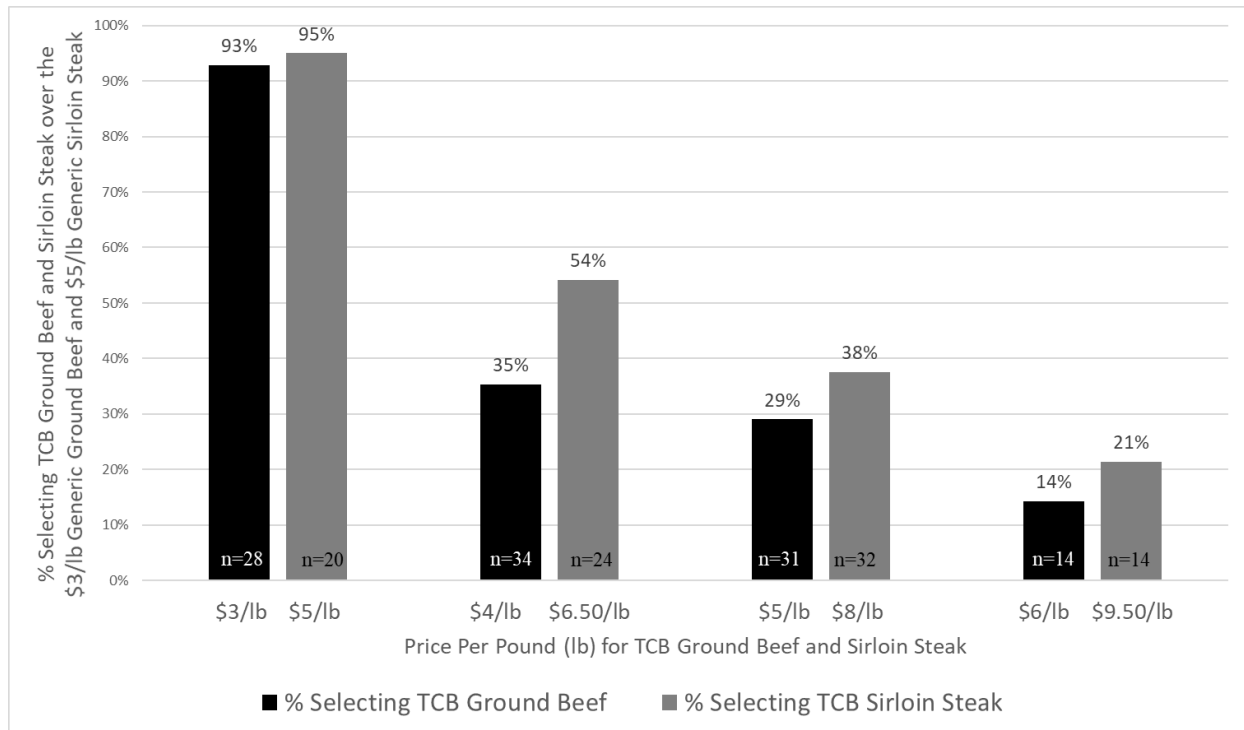
Survey respondents were assigned to one of four price levels (\$3.00, \$4.00, \$5.00 or \$6.00 per pound) for TCB ground beef and asked if they would purchase TCB at the given price level or generic ground beef at \$3.00 per pound. Respondents had the alternative to choose neither product. Following the ground beef question, respondents were asked if they would purchase a TCB sirloin steak at one of four price levels (\$5.00, \$6.50, \$8.00 or \$9.50 per pound), compared with generic sirloin steak at \$5.00 per pound. Beef prices used in the survey were consistent with local market prices at the time of the survey.

Information on restaurant characteristics and the primary decision maker's attitudes about serving local foods were collected (**Table 1**). Forty percent of the surveyed restaurants stated they were located in a city, compared to those located in a suburb, small town or rural area. Regional variables (West, Middle and East Tennessee) were also included to help determine where a TCB program could be the most successful. Nearly 60 percent of the restaurants were located in East Tennessee and approximately 40 percent of restaurants were currently offering local products. Of the surveyed restaurants, they averaged purchasing 163 pounds of ground beef each week, purchasing 148 pounds of steak per week, being in business for 17 years, and having a seating capacity of 150. Generally speaking, higher expected profits, better quality and sustainability would influence a restaurant offering TCB.

## Results

### *Tennessee restaurants' preferences for TCB*

A total of 152 restaurants participated in the survey (19 percent response rate), with 107 completing the ground beef survey (13 percent response rate) and 90 responding to the sirloin steak survey (11 percent response rate). As the price of TCB ground beef and sirloin steak increased, fewer restaurants were willing to purchase TCB (**Figure 1**). Comparing \$3.00 per pound generic ground beef to \$3.00, \$4.00, \$5.00 and \$6.00 per pound TCB ground beef, the percentage of restaurants willing to purchase TCB ground beef were 93 percent, 35 percent, 29 percent and 14 percent. Similarly, comparing \$5.00 per pound generic sirloin steak to \$5.00, \$6.50, \$8.00 and \$9.50 per pound TCB sirloin steak, the percentage of restaurants willing to purchase TCB sirloin steak were 95 percent, 54 percent, 38 percent and 21 percent, respectively.



**Figure 1. Percentage of Restaurants Selecting TCB Ground Beef and Sirloin Steak Over the \$3/lb Generic Ground Beef and \$5/lb Generic Sirloin Steak.**

Source: McKay, L., K.L. DeLong, K.L. Jensen, A.P. Griffith, C.N. Boyer, and D.M. Lambert. 2019. "Estimating Restaurant Willingness to Pay for Local Beef." *Agribusiness: An International Journal*. doi:10.1002/agr.21605.

Without respect to price, 46 percent and 52 percent of restaurant respondents chose TCB ground beef and TCB sirloin steak (**Table 1**). Alternatively, 36 percent and 42 percent of consumers chose Tennessee ground beef and Tennessee steak regardless of price point in a survey conducted by Dobbs et al. (2016). It is important to note that Dobbs et al. (2016) surveyed consumers in a retail situation, while this survey was of restaurants purchasing beef wholesale. Thus, results suggest that restaurants were more likely to buy TCB beef than Tennessee consumers.

About 40 percent of the restaurants in the ground beef and sirloin model classified themselves as being located in a city. Fifty-nine percent, 23 percent and 18 percent of restaurants in the ground beef model were located in East, Middle and West Tennessee. Similarly, 57 percent, 21 percent and 22 percent of restaurants in the sirloin steak model were located in East, Middle and West Tennessee. Survey respondents stated that profitability, quality and sustainability of TCB would influence their decision to purchase TCB beef products.

Table 1. Variable definitions and survey means for the ground beef and sirloin steak model.

Variable	Description	Ground Beef (N=107)	Sirloin Steak (N=90)
<b>Dependent Variable</b>			
<i>TCB</i>	Percent of respondents choosing TCB over generic beef	0.46	0.52
<b>Independent Variables</b>			
<i>Price</i>	Ground beef price levels of \$3.00, \$4.00, \$5.00 or \$6.00/lb Steak price levels of \$5.00, \$6.50, \$8.00 or \$9.50/lb	4.29	7.17
<i>City</i>	1 if the restaurant is located in a city, 0 if the restaurant was located in a suburb, small town or rural area	0.39	0.40
<i>East Tn</i>	1 if the restaurant is located in East Tennessee, 0 if located in West Tennessee or Middle Tennessee	0.59	0.57
<i>West Tn</i>	1 if the restaurant is located in West Tennessee, 0 if located in East Tennessee or Middle Tennessee	0.18	0.22
<i>Profits</i>	Influence of profitability on choice to offer TCB <sup>a</sup>	4.17	4.18
<i>Quality</i>	Influence of quality on choice to offer TCB <sup>a</sup>	4.45	4.50
<i>Sustain</i>	Influence of sustainability on choice to offer TCB <sup>a</sup>	4.12	4.27
<i>Local</i>	1 if the restaurant currently has products labeled as local on their menu, 0 otherwise	0.38	0.36
<i>Yrs Bsns</i>	Number of years the restaurant has been in business	16.53	16.56
<i>Purch</i>	Pounds of ground beef/steak purchased per week	162.59	148.48
<i>Seating</i>	Seating capacity of the restaurant	144.22	154.73
<i>Fine Dining</i>	1 if the restaurant is classified as fine dining, 0 otherwise	0.16	0.20
<i>Mgr Age</i>	Age of manager/owner	46.04	45.98
<i>Adults</i>	Percentage of clientele that are adults	59.57	57.56
<i>Families</i>	Percentage of clientele that are families	47.79	47.60

Notes: <sup>a</sup> 1=Not at all, 2=Influence slightly, 3=Influence moderately, 4=Influence a lot, 5=Influence extremely

Source: McKay, L., K.L. DeLong, K.L. Jensen, A.P. Griffith, C.N. Boyer, and D.M. Lambert. 2019. "Estimating Restaurant Willingness to Pay for Local Beef." *Agribusiness: An International Journal*. doi:10.1002/agr.21605.

### ***Factors Affecting Restaurant Preferences for TCB***

As the price of TCB increased, the probability of restaurants purchasing TCB products decreased. A \$1 per pound increase in the price of TCB ground beef and TCB sirloin steak reduced a restaurant's probability of purchasing the TCB product by 23 percent and 16 percent (**Table 2**). Restaurants located in a *city* were 20 percent more likely to choose TCB ground beef compared to restaurants located elsewhere; meanwhile, being in the city did not influence a restaurant's decision to offer TCB sirloin steak. East Tennessee (*East Tn*) restaurants were 16 percent more likely to choose TCB ground beef compared to Middle Tennessee restaurants, while West Tennessee (*West TN*) restaurants were 24 percent less likely to choose TCB sirloin steak relative to Middle Tennessee.

Restaurants were 9 percent less likely to choose TCB sirloin steak if they were concerned it would negatively influence *profits*, but it was not a factor in the decision to offer ground beef. A one unit increase on the Likert scale for the importance of sustainability (*sustain*) made restaurants 18 percent more likely to choose TCB sirloin steak. Restaurants currently offering *local* foods were 24 percent more likely to choose TCB ground beef and 29 percent more likely to choose TCB sirloin steak. Increasing seating capacity by 100 seats resulted in a restaurant being 6 percent less likely to offer TCB sirloin steak, which may suggest smaller restaurants such as farm-to-table restaurants would have more interest in TCB products than larger restaurants.

Restaurants that considered themselves as *fine dining* were 31 percent less likely to choose TCB sirloin steak, indicating these restaurants may be concerned about the quality and consistency of TCB steak. A 10 percent increase in *adults* represented in their clientele increased the probability a restaurant would choose TCB ground beef by 4 percent; meanwhile, a 10 percent increase in families as clientele decreased the likelihood restaurants would choose TCB sirloin steak by 2 percent. These results suggest that the factors influencing beef purchasing differ by the beef product being purchased.

Table 2. Effects on probability of retailers choosing Tennessee beef.<sup>a</sup>

	Ground Beef Marginal Effect	Sirloin Steak Marginal Effect
Price	-0.23 <sup>***</sup>	-0.16 <sup>***</sup>
City	0.20 <sup>**</sup>	0.05
East Tn	0.16 <sup>*</sup>	-0.07
West Tn	-0.02	-0.24 <sup>*</sup>
Profits	0.02	-0.09 <sup>*</sup>
Quality	0.07	0.01
Sustain	0.07	0.18 <sup>***</sup>
Local	0.24 <sup>**</sup>	0.29 <sup>***</sup>
Yrs Bsns	0	0
Purch	0	0
Seating	0	-0.0006 <sup>*</sup>
Fine Dining	-0.13	-0.31 <sup>**</sup>
Mgr Age	0	0
Adults	0.004 <sup>**</sup>	0
Families	0	-0.002 <sup>*</sup>

<sup>a</sup> Measures the change in probability the manager would choose Tennessee beef with change in each variable.

\* p < 0.1, \*\* p < 0.01, \*\*\* p < 0.001

Source: McKay, L., K.L. DeLong, K.L. Jensen, A.P. Griffith, C.N. Boyer, and D.M. Lambert. 2019. "Estimating Restaurant Willingness to Pay for Local Beef." *Agribusiness: An International Journal*. doi:10.1002/agr.21605.

### ***Willingness to Pay***

Restaurants' average WTP for TCB ground beef was \$4.09 per pound, which is \$1.09 per pound (36 percent) above the generic ground beef base price. This result compares to the consumer WTP of \$5.02 per pound, which was a \$1.66 per pound (49 percent) premium for Tennessee beef in Dobbs et al. (2016). Restaurants' average WTP for TCB sirloin steak was \$7.41 per pound, a \$2.41 per pound (48 percent) premium above the generic base price. Similarly, Dobbs et al. (2016) found consumer WTP for Tennessee steak to be \$14.31 per pound, which was a \$5.06 per pound (55 percent) premium above the base price. The lower percentage premiums for restaurants compared to consumers (Dobbs et al. 2016) may be reflective of consumers purchasing at retail prices and restaurants purchasing at wholesale prices. At the same time, restaurants are adding value to the beef product, resulting in higher retail prices.

## Conclusion

Restaurants are willing to pay a premium for hypothetical TCB. The aspects that influence restaurant purchases of TCB products include product price, restaurant location, clientele type, current menu items, profitability and sustainability, and whether the restaurant considers itself a “fine dining” establishment. Thus, restaurants located in East Tennessee cities that currently sell local foods and whose clientele are largely adults were most likely to purchase TCB ground beef. Similarly, restaurants not self-classified as fine dining in Middle Tennessee that sell local foods and were less concerned with profitability and more concerned with sustainability were most likely to purchase TCB sirloin steak.

Given these results, cattle producers with an interest in finishing cattle in Tennessee and marketing beef under a similar program as the hypothetical TCB program have a wholesale market for ground beef and steaks. For example, Tennessee cattle producers producing ground beef for sale should focus their market towards restaurants located in a city (as opposed to suburb, small town or rural area) in East Tennessee that sell local foods and whose clientele are primarily adults.

This study evaluated a restaurant’s average WTP for sirloin steak and ground beef. However, this study does not account for all the cuts of a beef animal that must be marketed to achieve a positive return nor does it address access to beef slaughter facilities or the rules and regulations of direct marketing of meat in Tennessee. This study is not all encompassing, as it simply supplies information concerning restaurant WTP for two beef items. However, this information should be useful to beef cattle producers seeking alternative marketing methods for the animals and beef they produce, if they decide to follow a model similar to the hypothetical TCB program.

### ***Additional Resources***

- Holland, R. and D. Loveday. “Understanding Yield Grades and Quality Grades for Value-Added Beef Producers and Marketers.” University of Tennessee Extension Publication, SP 755, December 2013.
- Bruch, M. L., M. D. Ernst, and R. Holland. “Tennessee Value-Added Beef Entrepreneur Experiences.” University of Tennessee Extension, Center for Profitable Agriculture Publication, D 9, June 2014.
- Leffew, M. B. “Retail Meat Sales in Tennessee: Basic Weights and Measures Regulations.” University of Tennessee Extension, Center for Profitable Agriculture Publication, D 1, April 2015.
- Leffew, M. B. “Basic Regulatory Considerations for Retail and Non-retail Meat Sales in Tennessee.” University of Tennessee Extension Publication, PB 1829, June 2015.
- Leffew, M. B., S. Schexnayder, and M. Velandia. “Marketing Locally Raised Beef: Lessons Learned from Tennessee Value-Added Beef Producer Focus Groups.” University of Tennessee Extension Publication, PB 1834, August 2015.



Leffew, M. B., R. Holland, and H. Pepper. "Listing of USDA Livestock Slaughter Facilities in Tennessee." University of Tennessee Extension, Center for Profitable Agriculture Publication, D 3, April 2018.

University of Tennessee, Center for Profitable Agriculture.

<https://ag.tennessee.edu/cpa/Pages/default.aspx>.

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### **References**

- Certified Angus Beef. 2018. "About the Beef." Retrieved from <https://www.certifiedangusbeef.com/cuts/grades.aspx>.
- Griffith, A. P., K. L. Jensen, K. L. DeLong, and E. McCleod. 2018. "Tennessee Branded Beef Program: The Producers' Perspective and Willingness to Participate." University of Tennessee Extension Publication, W 484-A.
- Griffith, A. P., K. L. DeLong, K. L. Jensen, and M. G. Merritt. 2018. "Consumer Willingness to Pay for Tennessee Certified Beef." University of Tennessee Extension Publication, W 484-B.
- McKay, L., K. L. DeLong, K. L. Jensen, A. P. Griffith, C. N. Boyer, and D. M. Lambert. 2019. "Estimating Restaurant Willingness to Pay for Local Beef." *Agribusiness: An International Journal*. doi:10.1002/agr.21605.
- Merritt, M. G., DeLong, K. L., Griffith, A. P., & Jensen, K. L. 2018. "Consumer Willingness to Pay for Tennessee Certified Beef." *Journal of Agricultural and Applied Economics* 50(2):233-254. <https://doi.org/10.1017/aae.2017.35>.
- Pick Tennessee Products. 2018. USDA Inspected Meat Processing Facilities. Retrieved from <https://agriculture.tn.gov/Marketing.asp?QSTRING=USD>.
- TripAdvisor. 2018. Restaurants in Tennessee. Retrieved from <https://www.tripadvisor.com/Restaurants-g28963-Tennessee.html>.
- U.S. Department of Agriculture, National Agricultural Statistics Service: Internet site: [https://www.nass.usda.gov/Publications/Todays\\_Reports/reports/cat10118.pdf](https://www.nass.usda.gov/Publications/Todays_Reports/reports/cat10118.pdf). (Accessed May 20, 2019a).
- U.S. Department of Agriculture, National Agricultural Statistics Service: Internet site: [https://www.nass.usda.gov/Publications/Todays\\_Reports/reports/lsslan19.pdf](https://www.nass.usda.gov/Publications/Todays_Reports/reports/lsslan19.pdf). (Accessed May 20, 2019b).



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