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CHANGES IN BEHAVIOR OF LOCAL MEAT CONSUMERS DUE TO COVID-19 IN NEVADA

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ABSTRACT

Disruption of the supply chain for meat products caused by the Coronavirus Pandemic (COVID-19) may have shifted consumer demand and willingness to pay premiums for local meat. This study provides insight and detail into consumers' local food preferences, particularly for local ground beef. It utilizes a survey conducted in August 2020 and found that 45% of average Nevada consumers are willing to pay a 30% markup for locally raised ground beef. The study suggests that the demand for local meat products may signal an opportunity to bolster local ground beef supply chains.

INTRODUCTION

As the Coronavirus Pandemic (COVID-19) spread across the globe, it had significant economic impacts, resulting in increased prices of goods and services. The USDA recently reported that overall grocery store prices were 5.6% higher in June 2020 than June 2019, and nearly all food-at-home categories had risen in price (USDA ERS, 2020).

Retail beef and veal, pork, and poultry were all strongly impacted, with price increases during this timeframe. While the reported demand for food at grocery stores had increased due to COVID-19, much of the increase in price is attributable to supply chain disruptions. By May 2020, production was down over 40% for pork, 30% for beef and 15% for chicken (Reiley 2020a,b; McDougal 2020). These production reductions were due to sickened workers resulting in meat processing facility closures and to COVID-19 safety measures causing reduced capacity in facilities. As some demand shifted to local, smaller processing plants, those systems became increasingly overwhelmed. Local slaughter and processing plants in Nevada can be booked out up to one year in advance. Nevada has been especially impacted because it has always had a lack of local slaughter and processing plants; there are only two USDA approved facilities that handle both slaughter and processing and currently no state meat inspection program exists.

While feasibility studies have been completed in Nevada for smaller slaughter and processing plants, an important question remains: Is there existing demand for locally grown meat (Curtis et al. 2007)? Can a market be sustained by Nevada consumers' willingness to pay a premium for locally grown meat? This study provides insight and detail into Nevada consumers' local ground beef preferences.

METHODS

The data for this study were obtained from a survey designed by a team of researchers at University of Nevada, Reno and Utah State University. Qualtrics, a marketing research firm, conducted the phone survey of Nevada and Utah residents in August 2020. To be eligible for the survey, respondents had to be 18 years and older with their primary residence located in Nevada or Utah. A total of 1,020 participants completed the survey, with 504 reporting Nevada as their primary residence. The analysis in this paper focuses solely on responses from Nevadans.

The questions in the survey asked respondents about their food shopping behaviors, such as the types of retailers they purchased food from and what factors influenced their food shopping decisions before and during the onset of COVID-19 impacts. The respondents were asked to consider the 12 months prior to March 2020 as before COVID-19 impacts and after March 2020 as after COVID-19 impacts. Additionally,

consumers were asked about their local food purchasing behavior and how they would define “local” when referring to locally grown foods.

Next, respondents were given a series of hypothetical and progressive willingness-to-pay questions for locally and non-locally raised ground beef. Specifically, they were asked to choose between locally raised and non-locally raised ground beef with various price differences. First, all participants were asked if the prices were identical, would they choose locally raised ground beef, non-locally raised ground beef, indifferent to the choice, or not purchase at all because they don’t consume ground beef, or not purchase because they don’t eat beef of any kind. If the participant chose any answer other than locally raised ground beef, the willingness-to-pay part of the survey was over. If the participant chose locally-raised ground beef, they were asked which they would choose if the price of locally-raised ground beef was a percentage (10, 20, 30, 40 or 50) higher than non-locally raised ground beef. Based on their response, the respondents were asked the same willingness-to-pay question, but with a different markup percentage, at progressive intervals. The willingness-to-pay section of the survey concluded when the participant was no longer willing to purchase locally raised ground beef at the given markup or after three markup options were presented to the participant.

After the willingness-to-pay questions, respondents were asked about their food consumption before and after COVID-19 impacts, how their purchasing behavior of these products changed as a result of COVID-19, and a set of demographic questions.

RESULTS

The survey results show that most consumers purchased food products from the same types of food retailers mid-COVID-19 compared to pre-COVID-19, however many report visiting stores less frequently due to COVID-19 (Table 1). This supports the assumption that consumers were making less frequent, but potentially larger purchases from food retailers.

Table 1. Frequency of visits to food retailer for Nevada Consumers, mid-COVID-19 compared to pre-COVID-19

Frequency of Visits to Food Retailers	Percent
Visit same stores, less frequently	55.1%
Visit same stores, more frequently	9.9%
Visit different stores	10.5%
Purchasing behavior has not changed	24.5%

Additionally, the survey results show that consumers were not adjusting where they purchased food, but they report purchasing different types of food during the pandemic. Table 2 displays the average change for Nevada residents in response to the question, “Has your purchasing of the following food products from any source changed AFTER COVID-19 impacts?” Hypothesis tests were performed to determine if the means are significantly different from zero and the significance of these tests are reported with “*” in Table 2.

Table 2. Average food purchasing shifts during COVID-19, mid-COVID-19 compared to pre-COVID-19

Food Purchased	% Change	t-test significance
Fresh produce	10.6%	*
Frozen produce	13.7%	**
Fresh meat	-13.9%	**
Frozen meat	0.0%	
Ready-to-eat prepared meals	7.4%	
Frozen prepared meals	12.7%	**
Meal prep kits	9.1%	
Fast food	-11.9%	*
Restaurant take-out	-12.2%	*
Alcohol	-0.3%	

Note: t-tests were calculated for each mean to test if it is significantly different from zero (* $p < 0.05$, ** $p < 0.01$).

Consumers reported, on average, increasing their consumption of frozen produce and frozen prepared meals. Positive means are also reflected for ready-to-eat prepared meals and meal prep kits, however, these means are not significantly different from zero. These four types of products may be considered a substitute for food away from home. Due to disruptions in daily routines including increased working from home, job losses, concerns with sanitation and restaurant closures, there was a significant decrease in the consumption of fast food and restaurant take-out meals. Therefore, consumers sought substitutes for prepared meals, especially if at-home cooking was not a pre-COVID-19 priority.

Nevada residents reported, on average, increasing their purchases of fresh produce and decreasing their purchases of fast food and restaurant take-out. These shifting purchasing (and consuming) behaviors can have important health implications. Food at home is considered a healthier dietary choice than food purchased at dine-in or fast food restaurants (Todd, Mancino & Lin, 2010). Diets for Nevada residents may be healthier during the pandemic, as we see shifts away from restaurant food towards more produce (fresh and frozen). However, it is unclear how the nutritional value of frozen prepared meals compares with restaurant food. We did not ask participants about their purchasing behavior of processed, comfort foods, which Lusk and McCluskey (2020) suggest may be increasing during the pandemic.

The largest net purchasing change of any food category mid-COVID-19 was fresh meat, with a 13.9% decrease. Price increases and low inventories likely contributed to this change in purchasing patterns. Many large meat processing and packing facilities were forced to shut down or reduce capacity as COVID-19 began quickly spreading among the employees. These shutdowns and capacity reductions caused a large decrease in livestock harvesting, meat production, and commercial transportation (Tonsor and Schulz, 2020). Given that many processing facilities are dedicated to processing meat for consumption away from home, available processing was further limited to facilities engineered to process retail cuts. As the supply chain narrowed, rationing of meat at retailers to prevent stockouts driven by fear of scarcity further limited meat availability and drove up prices (Fisher, 2020).

To better understand consumer preferences for locally raised meat, participants were asked if they would be willing to pay for locally raised ground beef at various markup levels compared to non-locally raised ground beef. The results for Nevada residents are displayed in the graph below. Further, participants were divided into two groups, average beef consumers and above average beef consumers. When asked about beef consumption, average consumers were classified as consuming beef 1 to 2 times per week or less than once per week. While above average consumers were classified as consuming beef 3 to 5 times per week and more than 5 times per week. As seen in Figure 1, above average beef consumers were more price responsive than average beef consumers. These individuals will most likely be purchasing beef more frequently than average consumers, which would have a larger impact on their at-home food expenditures.



Figure 1. Percent of participants willing to purchase locally raised Ground Beef at mark-ups from 0% to 40%.

The survey did not define 'local' for respondents. Rather, a question was included in the survey to better understand each respondent's definition of local. The term 'local' as it relates to agricultural products can mean different things to different people. For example, consumers who live in regions where agriculture is a dominant industry may define 'local' by town or county boundaries. On the other hand, consumers from places not dominated by agriculture (e.g., urban areas) may perceive 'local' as a broader geographic range, perhaps at a broader and discontinuous radius (e.g. all surrounding counties) or at a state level. This is particularly relevant for Nevada respondents, as the largest population centers in the state are urban and fewer than 50 miles from a state line. Table 3 reports how survey participants from Nevada answered the question "How do you define 'local' when referring to locally grown foods (e.g. meat, produce, dairy)?"

Table 3. Definition of 'Local' When Referring to Locally Grown Foods

Definition of Locally Grown Foods	Nevada	
	Count	%
25 mile radius of your primary residence	130	26.0%
50 mile radius of your primary residence	119	23.8%
100 mile radius of your primary residence	88	17.6%
300 mile radius of your primary residence	24	4.8%
Within the same state as your primary residence	94	18.8%
Within bordering states of your primary residence	37	7.4%
Other	8	1.6%
Total	500	

Most participants defined local as within a 100-mile radius of their primary residence. Specifically, 26% reported local as within 25 miles from the primary residence, 24% reported within 50 miles and 18% reported within 100 miles. Nineteen percent reported local as within the same state as the primary residence. More research is needed to understand how those within 50 miles of the state border would define local when presented with a food product grown within 100 miles of their primary residence, but out-of-state compared with the same product grown over 100 miles away, but in state.

DISCUSSION

Our results show that Nevada consumers adjusted their food purchasing behaviors during the pandemic. Specifically, less frequent trips were made to stores; however, the store preferences were not impacted. Additionally, more frozen foods and prepped meal kits were purchased while consumers purchased less fresh meat. We are unsure as to why frozen meat purchases were unchanged. It may be due to freezer capacity, as they were purchasing more frozen produce and frozen prepared meals. These purchasing changes could impact the health of Nevada residents.

Similar to previous studies, our results also show consumers are willing to pay a premium for local foods, here specifically, locally raised ground beef. However, more research needs to be conducted to understand the cost of localization in this market. When analyzing the milk market, Nicholson et al. (2011) suggested that developing a cost-effective local food supply chain may be very challenging due to the seasonality of production and differences in demand and supply across regions. These same challenges may exist in the local meat market as well.

Although our results show there exists a market for locally raised meat, further research is necessary to understand what 'local' means to Nevada consumers and what investments on the supply side are necessary to meet that demand. Currently, Nevada has very few meat processing facilities and is considered under federal inspection only. Currently, the state does not have a state meat inspection program for in-state retail sales or operate under Talmadge-Aiken or a Cooperative Interstate Shipment Program. Due to the lack of slaughter and processing in Nevada, Nevada raised meat has limited opportunity to hit the retail consumer markets; the only option is for custom exempt which requires purchase of a whole or half carcass directly from the producer.

The Nevada Department of Agriculture's (NDA) Animal Industry Division oversees the food safety program that enforces laws and regulations for the safety of custom meat and poultry and assures the safety of intrastate movement of meat products. Nevada Revised Statute 583.454 states an "Officer" of the Nevada Department of Agriculture shall adopt regulations providing a process for a person to obtain a license to operate a custom processing establishment or mobile processing unit. The NDA does have regulations adopted for a permanent custom processing facility for processing domestic livestock for an animal's owner and is working on adopting regulations for mobile processing.

The supply chain for meat has complexity that must be considered. While there are similarities among various states and an overall USDA inspection system, there are vast differences between geographical areas. States without robust state level certification and inspections systems may want to consider augmenting the use of the federal system to meet local needs. This is true for both custom/exempt inspection as well as inspection for resale.

CONCLUSIONS

The supply chain disruptions that were caused by COVID-19 highlight limitations in the availability of local meat products. Many have looked to local food systems as a way to increase supply chain resiliency and add additional flexibility and security to our food system. This is especially true for meat. Establishing the extent of demand for local products is the first important step in establishing the feasibility and direction of expanding a food system supply chain. Examining preferences of local residents will help define the direction of investment to meet demand.

LITERATURE CITED

Curtis, K.R., Cowee, M. W., Acosta, A. R., Hu, W., Lewis, S. R., and Harris, T. R. (2007). Locally produced livestock processing and marketing feasibility assessment. University of Nevada, Reno. Nevada Cooperative Extension. Technical Report UCED 2007/07-13.

Fisher, M. (2020). Flushing out the true cause of the global toilet paper shortage amid coronavirus pandemic. *The Washington Post*. Available at: https://www.washingtonpost.com/national/coronavirus-toilet-paper-shortage-panic/2020/04/07/1fd30e92-75b5-11ea-87da-77a8136c1a6d_story.html

Lusk, J. and McCluskey, J. (2020). "Consumer behavior during the pandemic," in *Economic Impacts of COVID-19 on Food and Agricultural Markets*, pp. 11-13.

McDougal, T. (2020). Poultry plants in the US affected by Covid-19. *Poultry World*. Available at: <https://www.poultryworld.net/Meat/Articles/2020/5/Poultry-plants-in-the-US-affected-by-Covid-19-580294E/>

Nicholson, C. F., Gómez, M. I., and Gao, O. H. (2011). The costs of increased localization for a multiple-product food supply chain: Dairy in the United States. *Food Policy*, 36(2), 300-310.

Reiley, L. (2020)a. Meat processing plants are closing due to covid-19 outbreaks. Beef shortfalls may follow. *The Washington Post*. Available at: <https://www.washingtonpost.com/business/2020/04/16/meat-processing-plants-are-closing-due-covid-19-outbreaks-beef-shortfalls-may-follow/>

Reiley, L. (2020)b. Tyson says nation's pork production is down 50%, despite Trump's order to keep meat plants open. *The Washington Post*. Available at: <https://www.washingtonpost.com/business/2020/05/04/tyson-says-nations-pork-production-is-down-50-despite-trumps-order-keep-meat-plants-open/>

Todd, J. E., Mancino, L., and Lin B.H. (2010). *The Impact of Food Away From Home on Adult Diet Quality*, United States Department of Agriculture, Economic Research Service. ERR-90.

Tonsor, G. and Schulz L. (2020). "COVID-19 impacts on the meat processing sector," in *Economic Impacts of COVID-19 on Food and Agricultural Markets*, pp. 15-16.

United States Department of Agriculture: Economic Research Service. *Food Price Outlook: Changes in Food Prices Indexes, 2018 through 2021*. (Accessed: 10 July 2020). Available at: <https://www.ers.usda.gov/data-products/food-price-outlook/food-price-outlook/#Consumer%20Price%20Index>