Viewpoints of the U.S. Public on Animal Welfare in the Beef Industry: Survey Summary

July 30, 2015

Melissa G.S. McKendree (Kansas State University),
Glynn T. Tonsor (Kansas State University),
Christopher A. Wolf (Michigan State University),
Daniel U. Thomson (Kansas State University), and
Janice C. Swanson (Michigan State University)

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KANSAS STATE UNIVERSITY | Department of Agricultural Economics

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Introduction

The U.S. livestock industry is increasingly faced with pressure to adjust practices in response to societal concerns. A specific area of growing concern surrounds how production practices impact the welfare of farm animals. Although consumers' concerns and attention to animal welfare have increased recently, corresponding research and outreach efforts have not kept pace. It is important to understand the social and economic implications for the beef industry of animal welfare concerns. This understanding starts with a benchmarking of existing awareness and perceptions of both producers and the public. A research and extension project funded by a U.S. Department of Agriculture (USDA) grant [1] provides this benchmarking information by identifying the U.S. public and producer perceptions of animal welfare in the beef and dairy industries. This report specifically summarizes the responses to survey questions assessing public perceptions of animal welfare in the beef industry. Separate reports will summarize responses to parallel surveys examining views of beef cow-calf and dairy cattle producers as well as public perceptions of animal welfare in the dairy industry.

Research Design

A nationally representative[2] online survey was administered in December 2013 to collect information about the U.S. public's beef purchasing habits, perceptions of the cow-calf sector of the beef industry and demographic characteristics. The survey was written by a team of Kansas State University and Michigan State University researchers and was administered by Decipher, Inc. A total of 2,000 respondents completed the survey. Observations which were more than three standard deviations away from the mean for weekly food expenditure and number of adults in the household were removed and total sample of 1,992 respondents remained. The survey respondents were randomly selected to take a ground beef (n=995) or beef steak (n=997) version of the survey. A full survey version is available in Appendix A. Additional appendices present choice experiment (Appendix B) and best-worst sampling (Appendix C) assessments included in the national survey. Where appropriate, survey questions were presented with the answers varying randomly in the order shown to respondents.

[1] National Institute of Food and Agriculture Grant No. 2012-68006-30178.
[2] Age, gender, income, education, and state of residence were used as representation controls.

*Table 1. Respondent demographic summary statistics by survey type and total sample**

Demographic Variable	Ground Beef (n=995)	Beef Steak (n=997)	All (n=1992)
Gender			
Male	45%	44%	45%
Female	55%	56%	55%
Household Size			
Average Number of Adults	2.1	2.1	2.1
Average Number of Children	0.6	0.6	0.6
Age			
18-24	9%	9%	9%
25-34	19%	20%	19%
35-44	17%	18%	17%
45-54	21%	19%	20%
55 and over	34%	35%	34%
Average Age (years)	46.7	46.7	46.6
Education Level			
Did not graduate from high school	2%	3%	3%
Graduated from high school	38%	41%	39%
Associate's or Trade Degree earned	25%	25%	25%
Bachelor's (B.S. or B.A.) College Degree earned	24%	23%	24%
Graduate or Advanced College Degree (M.S., Ph.D., Law School) earned	11%	8%	9%
Annual Household Income			
Less than $25,000	21%	24%	22%
$25,000-$49,999	34%	32%	33%
$50,000-$74,999	22%	21%	22%
$75,000-$99,999	11%	11%	11%
$100,000-$124,999	6%	5%	5%
$125,000-$149,999	3%	3%	3%
$150,000-$174,999	2%	2%	2%
$175,000 or more	2%	1%	2%
Race			
White or Caucasian	75%	76%	76%
Black or African American	12%	12%	12%
Asian or Pacific Islander	6%	5%	5%
Mexican or Latino	5%	6%	5%
American Indian	1%	1%	1%
Other	2%	1%	1%
Geographic Region			
South	36%	34%	35%
West	26%	23%	24%
Midwest	23%	24%	23%
Northeast	16%	19%	18%
Average Weekly Food Expenditure	$120.99	$125.31	$126.53

* Table 1 note: Observations which were more than three standard deviations away from the mean for weekly food expenditure and number of adults in the household were removed

Survey Respondents and Demographic Information

Summary statistics of survey respondents are detailed in Table 1. The demographic characteristics are very similar across both ground beef and beef steak respondents. Overall, the sample is representative of the U.S. population. The percentage of female respondents surveyed is slightly higher, 55%, than the makeup of the U.S. population, 51% female (U.S. Census Bureau, 2015).[3] The average household in the sample consisted of 2.7 persons, parallel to the U.S. Census Bureau (2015)[3] average U.S. household size. Over half of the survey respondents were 45 years of age and older, with the average age of survey respondents being approximately 47 years old. Respondents' education levels were higher than the U.S. average with 97% having graduated high school and 33% holding a Bachelor's degree, compared to 86% and 29% of the U.S. population, respectively (U.S. Census, 2015).[3]

Over 75% of respondent households had annual incomes less than $75,000, with the largest percentage coming from households with annual incomes between $25,000 and $49,999. The median annual U.S. household

[3] U.S. Census Bureau. (2015). www.census.gov. Accessed February 12, 2015.

income is $53,046 (U.S. Census Bureau, 2015).[3] Average weekly food expenditure was approximately $123, similar to Gallup (Mendes, 2012)[4] median weekly food expenditure of $125. According to the U.S. Census Bureau (2015),[3] in 2013 approximately 37% of the U.S. population lived in the South region, 24% in the West, 21% in the Midwest and 18% in the Northeast, thus the survey is representative across U.S. geographic regions.

Sixty-six respondents (3.3%) self-reported that they were either vegetarian or vegan, with 43 identifying themselves as vegetarian only, eight as vegan only and 15 as both vegetarian and vegan.

Table 2. *Pet ownership*

	Quantity of pet in household				
	0	**1**	**2**	**3**	**4 or more**
Dog	53%	30%	11%	4%	2%
Cat	61%	19%	11%	5%	4%
Other	87%	6%	3%	1%	3%

Past studies, such as McKendree, Croney and Widmar (2014),[5] found a correlation between pet ownership and increased concern for farm animal welfare. Thus, respondents were asked if they owned dogs, cats or other animals (Table 2). Nearly half of the households in the sample owned dogs while almost 40% owned at least one cat.

Beef Purchasing Patterns and Preferences

Respondents who indicated they were vegetarian or vegan were not included in summaries of questions regarding ground beef and beef steak consumption, resulting in a sample size of 1926. Survey respondents' frequency of ground beef and beef steak consumption is summarized in Figure 1. Overall, there is great variability in ground beef and beef steak consumption frequency across the sample. Ground beef is generally consumed more frequently than beef steak, with 35% consuming ground beef 2-3 times or more per week, compared to 13% who consume beef steak as frequently. Nearly one-third of survey respondents stated they consume beef steak once a month or less.

For the questions regarding ground beef and beef steak purchases, those who were vegetarian and/or vegan as well as those who reported they never consumed ground beef or beef steak were removed from the sample. In both the beef steak and ground beef surveys, the majority of survey respondents reported their typical source of purchase was a supermarket retailer (Table 3).

[4] Mendes, E. (2012). Americans Spend $151 a Week On Food; the High-Income, $180. Gallup. Retrieved from http://www.gallup.com/poll/156416/americans-spend-151-week-food-high-income-180.aspx.

[5] McKendree, M. G. S., Croney, C. C., & Olynk Widmar, N. J. (2014). BIOETHICS SYMPOSIUM II: Current factors influencing perceptions of animals and their welfare. *Journal of Animal Science, 92(5),* 1821-1831.

Figure 1. *Frequency of ground beef and beef steak consumption (n=1926) (Question 1)*

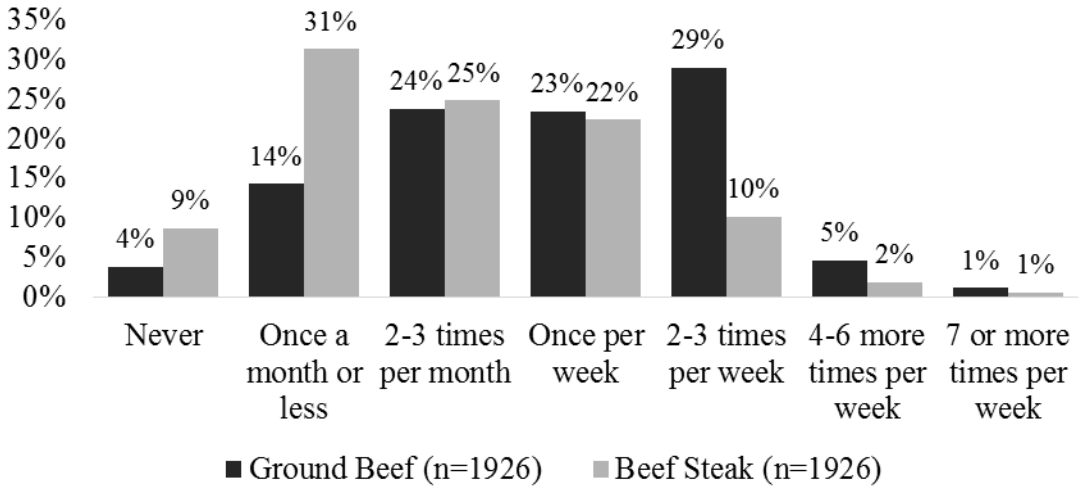

Table 3. *Typical source of purchase for at home consumption (Question 2)*

	Ground Beef (n=857)	Beef Steak (n=866)
Supermarket Retailer (e.g. Wal-Mart, Kroger, Safeway)	84%	84%
Targeted Retailer (e.g. Whole Foods, Foods for Living)	5%	4%
Convenience Store (e.g. 7-Eleven)	0%	1%
Farmers Market	1%	2%
Direct from Farmer	2%	2%
Other	8%	7%

The public's view on various attributes of beef products were also of interest in this study. Respondents were asked if they had purchased ground beef or beef steak with selected attributes such as organic, animal welfare assured and hormone-free (Table 4), as well as the premium they were willing to pay (WTP) per pound for ground beef or beef steak with these same attributes (Table 5). As shown in Table 4 for most of the product attributes, at least 25% of the respondents were unsure if they had purchased beef products with the attribute. This inability to recall whether they had purchased beef products with these attributes could reflect not significantly caring about beef product attributes, not understanding beef labeling, or product labeling not clearly detailing these product attributes.

Table 4. *Purchase of beef products with evauluated product attributes (Question 3)*

	Ground Beef (n=857)			Beef Steak (n=866)		
	Yes	No	Don't Know	Yes	No	Don't Know
Organic	30%	52%	18%	29%	47%	25%
Natural	54%	23%	22%	49%	21%	30%
Animal welfare assured	11%	50%	39%	12%	42%	45%
Locally produced	44%	30%	27%	49%	22%	29%
Sustainably produced	22%	39%	39%	19%	34%	47%
Guaranteed tender	35%	36%	29%	46%	25%	28%
Antibiotic-free	29%	38%	33%	28%	34%	39%
Hormone-free	32%	37%	31%	34%	30%	36%

Overall, the largest percentage of respondents had not purchased ground beef with the evaluated attributes (Table 4). However, 54% of respondents had purchased natural ground beef with the next most popular ground beef attribute being locally produced (44%). Conversely over half of the respondents had not purchased organic or animal welfare assured ground beef. Beef steak attributes purchased are similar but a few notable differences exist. Natural, locally produced and guaranteed tender were the most popular attributes purchased in beef steak. Similar to ground beef, the largest share of respondents stated they had not purchased organic or animal welfare assured beef steak. The fewest respondents across both beef products recalled purchasing said products that were animal welfare assured or sustainably produced. Respondents were not directly asked why they had not purchased ground beef or beef steak with the attributes.

To further detail respondents' preferences for the evaluated beef attributes, Table 5 shows direct stated WTP for ground beef and beef steak attributes. Respondents were asked to indicate the largest premium they would be WTP for a one pound package of ground beef or beef steak products over products produced through conventional means assuming both products were the same brand. When evaluating the results it is important to note the presence of hypothetic bias (value inflation) in direct stated WTP. Past studies indicate that these values are inflated two or three times the true WTP, however, the ordering of attribute preferences are usually considered correct (Lusk and Schroeder, 2004). [6]

Overall, responses were very heterogeneous. When looking across ground beef and beef steak for the same product attribute more respondents were WTP a premium for the attribute in beef steak than in ground beef. Additionally, the ordering of attributes from the highest to lowest percent selecting $0 is very similar across ground beef and beef steak.

[6] Lusk, J.L. & T.C. Schroeder. Are Choice Experiments Incentive Compatible? A Test with Quality Differentiated Beef Steaks. *American Journal of Agricultural Economics, 86(2004),* 467-482.

Over 80% of respondents indicated they would pay a premium for natural, locally produced, and guaranteed tender ground beef. These same attributes were the most commonly purchased in Table 4. However, a higher percentage indicated they were WTP a premium than specified they currently purchase beef with the evaluated attribute. When looking at beef steak attributes, over 80% of respondents were WTP a premium for each of the evaluated attributes. Furthermore, 88% were WTP a premium for natural, locally produced and guaranteed tender beef steak. Again, animal welfare assured and sustainably produced were the attributes the fewest respondents were WTP a premium for across both ground beef and beef steak. This is consistent with the above finding that respondents had not purchased or were unsure if they had purchased beef with these attributes.

Table 5. *Largest premium participants stated they would be willing to pay for a one pound package of the following products over products produced through conventional means assuming both products were the same brand name, ground beef n=857, beef steak n=866 (Question 4)**

	Organic		**Natural**		**Animal Welfare Assured**		**Locally Produced**	
$/lb.	Ground Beef	Beef Steak	Ground Beef	Beef Steak	Ground Beef	Beef Steak	Ground Beef	Beef Steak
$0	24%	19%	16%	12%	27%	20%	17%	12%
$0.01-$0.50	8%	9%	11%	10%	9%	10%	12%	9%
$0.51-$1.00	7%	9%	10%	11%	7%	8%	8%	11%
$1.01-$1.50	7%	7%	8%	7%	7%	8%	9%	8%
$1.51-$2.00	11%	10%	12%	11%	10%	11%	11%	12%
$2.01-$2.50	11%	10%	13%	11%	12%	10%	14%	11%
$2.51-$3.00	15%	12%	16%	15%	15%	14%	14%	15%
Over $3.00	16%	23%	15%	23%	12%	19%	15%	21%
Unconditional mean ($/lb)	1.55	1.69	1.63	1.79	1.43	1.61	1.58	1.78
Conditional mean ($/lb)	2.03	2.08	1.93	2.03	1.96	2.01	1.90	2.02

	Sustainably Produced		**Guaranteed Tender**		**Antibiotic-Free**		**Hormone-Free**	
$/lb.	Ground Beef	Beef Steak	Ground Beef	Beef Steak	Ground Beef	Beef Steak	Ground Beef	Beef Steak
$0	25%	20%	20%	12%	21%	15%	21%	15%
$0.01-$0.50	9%	10%	11%	10%	10%	10%	10%	10%
$0.51-$1.00	9%	9%	8%	10%	9%	10%	8%	9%
$1.01-$1.50	8%	8%	8%	8%	7%	8%	8%	9%
$1.51-$2.00	12%	11%	11%	13%	11%	10%	12%	10%
$2.01-$2.50	12%	11%	13%	11%	12%	11%	12%	11%
$2.51-$3.00	15%	15%	15%	14%	16%	15%	15%	15%
Over $3.00	11%	17%	13%	23%	14%	21%	14%	21%
Unconditional mean ($/lb)	1.42	1.59	1.53	1.79	1.53	1.72	1.53	1.73
Conditional mean ($/lb)	1.88	1.98	1.92	2.04	1.94	2.02	1.93	2.03

*Table 5 note: Unconditional mean is calculated using the sum product of the midpoint of each price range and the percentage of respondents who selected the price range. Conditional mean was calculated in a similar way except it only includes those who stated a positive willingness to pay.

The unconditional means have a larger spread than the conditional means across the WTP estimates for the evaluated attributes (Table 5). When investigating the unconditional means (including those who selected they were not WTP a premium) the average WTP ranged from $1.42 to $1.63/lb. for ground beef and $1.59 to $1.79/lb. for beef steak. Using the conditional means, the average WTP ranged from $1.88 to $2.03/lb. for ground beef and $1.98 to $2.08/lb. for beef steak. The highest unconditional average WTP was for natural and locally produced ground beef and guaranteed tender, natural and locally produced for beef steak. However, the highest conditional average (only those stating a positive WTP) WTP was for organic and animal welfare assured for ground beef and organic and guaranteed tender for beef steak. The lowest unconditional average WTP were for sustainably produced and animal welfare assured ground beef and sustainably produced and animal welfare assured beef steak. The lowest conditional WTP were for sustainably produced and locally produced ground beef and sustainably produced and animal welfare assured beef steak. Thus results are heterogeneous depending on the type of average used. Additionally, even though some attributes have a smaller percentage WTP for them, of those who have a positive WTP the premiums are very similar across attributes.

The unconditional WTP estimates provide insight regarding values of the entire population while conditional WTP estimates are arguably more valuable for any industry effort at target marketing a niche product claim given the stronger association with the public segment interested in said information. The changes in attribute WTP ordering between unconditional and conditional values is not surprising and future use of these values should be carefully selected to both match the purpose of understanding consumer demand for the evaluated attributes and to consider implicit hypothetical bias in values.

While past research suggests hypothetical bias likely leads the stated WTP values for each attribute in Table 5 to be inflated compared to what consumers would actually pay, research does suggest the order of stated preference is likely to reflect real ordering preferences. Accordingly, observing the stated WTP to be highest (on average for respondents) for natural claims and lowest for animal welfare assurance and sustainably produced is important. Coupling this with the points from Table 4 suggest that animal welfare assurance is less important as a purchasing determinant than several other beef attributes.

To further assess more specific aspects of how the public values different production practice claims or changes that may appear in animal welfare programs, respondents were randomly assigned a premium value (between $0.25/lb. and $3.00/lb.) and asked if they would be WTP the premium shown for 13 different attributes. Tables 6 and 7 show the percentage of respondents in each randomly selected price group that would be WTP the shown premium per pound for the attribute in ground beef and beef steak, respectively. As expected, as the premium increased, a smaller percentage of respondents were WTP a premium for each attribute. Across both ground beef and beef steak and all premium values, the largest percentage of respondents were WTP a premium for cattle provided access to fresh, clean feed and water, and the least for dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control. These results are consistent with other survey responses in the study.

Table 6. *Percent of respondents who would pay a premium for selected beef production attributes in ground beef (n=857) (Question 19)*

	Premium value shown							
Production attribute	**$0.25**	**$0.50**	**$0.75**	**$1.00**	**$1.50**	**$2.00**	**$2.50**	**$3.00**
Provide access to fresh, clean feed and water	66%	63%	40%	57%	57%	49%	49%	47%
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions	61%	52%	39%	50%	46%	44%	42%	40%
Owner/operator assessment that appropriate animal care and facilities are provided on farm with animals monitored daily for illness and injury	46%	45%	30%	32%	41%	35%	36%	29%
Consistent training program for owner and employees focusing on principles of animal care and handling.	39%	35%	30%	29%	35%	35%	28%	28%
Develop a herd health plan with the help of a veterinarian	40%	34%	35%	29%	35%	30%	25%	24%
Third party verification that appropriate animal care and facilities are provided on farm	34%	32%	23%	37%	27%	32%	32%	31%
Restrict use of antibiotics to only disease treatment.	42%	44%	38%	44%	50%	40%	36%	31%
Promptly treat or euthanize all injured or sick animals.	42%	41%	44%	37%	44%	31%	38%	27%
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control	23%	25%	19%	20%	22%	17%	17%	17%
Castrate male calves either within the first three months of age or with pain control.	23%	25%	21%	23%	27%	19%	15%	20%
Properly move cattle that are unable to walk on their own, do not try to market cattle if there is a reasonable chance they will not be able to walk on their own, and never drag cattle	44%	37%	39%	42%	41%	37%	35%	25%
Plan the timing of transport to minimize traveling and waiting time for the cattle	25%	27%	19%	25%	27%	23%	17%	20%
Handlers strive to move cattle at a comfortable pace, refrain from using loud noises, and use an electric prod on less than 10% of cattle	41%	35%	19%	34%	38%	30%	30%	23%
None	19%	18%	26%	25%	27%	41%	33%	40%

Table 7. *Percent of respondents who would pay a premium for selected beef production attributes in beef steak (n=866) (Question 19)*

	Premium value shown							
Production attribute	**$0.25**	**$0.50**	**$0.75**	**$1.00**	**$1.50**	**$2.00**	**$2.50**	**$3.00**
Provide access to fresh, clean feed and water	67%	50%	49%	52%	47%	61%	56%	47%
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions	60%	41%	43%	42%	48%	56%	46%	34%
Owner/operator assessment that appropriate animal care and facilities are provided on farm with animals monitored daily for illness and injury	45%	35%	37%	31%	41%	41%	46%	35%
Consistent training program for owner and employees focusing on principles of animal care and handling.	39%	30%	29%	27%	37%	38%	31%	19%
Develop a herd health plan with the help of a veterinarian	40%	28%	28%	36%	27%	39%	34%	26%
Third party verification that appropriate animal care and facilities are provided on farm	36%	33%	29%	30%	32%	38%	35%	27%
Restrict use of antibiotics to only disease treatment.	42%	48%	33%	33%	44%	46%	51%	41%
Promptly treat or euthanize all injured or sick animals.	49%	33%	29%	38%	37%	43%	40%	35%
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control	29%	13%	22%	16%	20%	34%	19%	17%
Castrate male calves either within the first three months of age or with pain control.	33%	16%	21%	19%	16%	35%	24%	18%
Properly move cattle that are unable to walk on their own, do not try to market cattle if there is a reasonable chance they will not be able to walk on their own, and never drag cattle	44%	34%	34%	33%	33%	41%	38%	33%
Plan the timing of transport to minimize traveling and waiting time for the cattle	28%	18%	26%	17%	23%	32%	20%	23%
Handlers strive to move cattle at a comfortable pace, refrain from using loud noises, and use an electric prod on less than 10% of cattle	36%	32%	33%	27%	27%	39%	31%	21%
None	17%	22%	26%	26%	26%	21%	18%	33%

Perceptions of the Beef Industry

Given this project's main focus on animal welfare issues, the survey also included a series of questions to broadly assess public perceptions. Sixty-five percent of respondents stated they were concerned about the welfare of beef cattle in the United States, 20% stated they were not concerned, and 15% indicated they did not know. The definition of concern was left up to survey respondent's interpretation. This concern could simply be an interest in the well-being of U.S. beef cattle or conversely could represent a strong belief that U.S. beef cattle welfare should be improved. However, as indicated on previous pages, overall the minority of respondents indicated experience purchasing animal welfare assured products and stated willingness to pay a premium for animal welfare assured beef ranked low compared to the seven other attributes evaluated.

In order to gauge respondents' perceptions of beef cattle production, they were asked about their belief in the percentage of U.S. ground beef and beef steak which came from cattle produced under certain practices and conditions (Table 8). Respondents could select 25% increments from 0%-25%, 26-50%, 51-75%, 76-100% or *don't know*. Results for each production practice are very similar across ground beef and beef steak which is reassuring given multiple beef products are produced from a given animal experience. For all production practices or conditions examined, except cattle provided access to fresh, clean feed and water, *don't know* was the most frequently selected response. On average *don't know* was selected 31% of the time. Cattle dehorned/disbudded with pain control, and cattle older than three months of age castrated with pain control were the two practices which the most respondents selected *don't know*. This indicates a knowledge gap of the public being unaware of these production practices. Using the conditional weighted average[7], the practices which the most respondents thought were commonly in place throughout the beef industry were cattle provided access to fresh, clean feed and water, cattle provided antibiotics to prevent illness and disease, and farms/ranches providing appropriate overall care for the well-being of their cattle. Respondents believed that slightly more than one-third of cattle come from farms/ranches with less than 100 beef cows.

[7] This was calculated using the midpoints of the four 25% increments multiplied by the frequency of response, omitting the "don't know" responses.

Table 8. *Participants' belief in the percentage chance that typical U.S. ground beef/beef steak comes from cattle which is produced with certain production practices or conditions. Ground beef n=995, beef steak n=997, all n=1992 (Question 5)*

		0%-25%	26%-50%	51%-75%	76%-100%	Conditional weighted average	Don't know
Cattle provided access to fresh, clean feed and water	Ground Beef	12%	16%	23%	24%	58%	25%
	Beef Steak	13%	16%	22%	25%	58%	23%
	All	13%	16%	23%	25%	58%	24%
Cattle provided antibiotics to prevent illness and disease	Ground Beef	10%	14%	25%	24%	60%	28%
	Beef Steak	9%	15%	26%	24%	60%	27%
	All	9%	14%	25%	24%	60%	27%
Cattle provided shade, windbreaks, and ventilation	Ground Beef	21%	18%	20%	10%	45%	31%
	Beef Steak	21%	18%	20%	12%	46%	30%
	All	21%	18%	20%	11%	46%	30%
Cattle dehorned/disbudded with pain control	Ground Beef	23%	15%	14%	7%	40%	41%
	Beef Steak	22%	16%	14%	8%	41%	40%
	All	22%	16%	14%	7%	41%	41%
Cattle older than three months of age castrated with pain control	Ground Beef	21%	16%	13%	7%	40%	42%
	Beef Steak	21%	17%	13%	8%	41%	42%
	All	21%	16%	13%	7%	41%	42%
Farms/ranches with consistent training program for employees focusing on principles of animal care	Ground Beef	21%	20%	19%	9%	44%	29%
	Beef Steak	22%	19%	18%	11%	44%	30%
	All	22%	19%	19%	10%	44%	30%
Farms/ranches with third party verification that appropriate animal care and facilities are provided	Ground Beef	20%	18%	20%	11%	46%	31%
	Beef Steak	22%	18%	18%	11%	44%	32%
	All	21%	18%	19%	11%	45%	31%
Farms/ranches where injured or sick animals are treated or euthanized promptly	Ground Beef	21%	16%	17%	13%	46%	33%
	Beef Steak	20%	17%	16%	15%	47%	33%
	All	20%	16%	16%	14%	47%	33%
Farms/ranches with a herd health plan, developed with the help of a veterinarian	Ground Beef	21%	17%	20%	11%	46%	31%
	Beef Steak	21%	17%	19%	14%	47%	29%
	All	21%	17%	19%	13%	46%	30%
Farms/ranches with less than 100 beef cows	Ground Beef	34%	18%	10%	7%	34%	31%
	Beef Steak	34%	17%	13%	7%	35%	30%
	All	34%	18%	11%	7%	35%	30%
Farms/ranches providing appropriate overall care for the well-being of their cattle	Ground Beef	16%	17%	23%	18%	52%	25%
	Beef Steak	17%	18%	21%	19%	52%	25%
	All	17%	17%	22%	19%	52%	25%

Respondents were shown a list of nine supporting principles and asked if each should be a supporting principle of the U.S. beef industry. Responses were on a scale from *strongly agree* to *strongly disagree* and included a *don't know* option. The responses are displayed in Table 9 in order from those with the highest agreement to the lowest agreement. Over 50% of respondents

strongly agreed or *agreed* that each principle should be a guiding principle of the U.S. beef industry. The strongest support was engendered by generating a safe supply of beef products with over three-fourths of the respondents *strongly agreeing* or *agreeing* that it should be a supporting principle of the U.S. beef industry. Additionally, approximately 70% of respondents agreed or strongly agreed that conserve and protect land and water resources, generating a reliable supply of beef products, conserve and protect the welfare of cattle, and generating an affordable supply of beef products should be supporting principles of the U.S. beef industry.

Table 9. *Participants' agreement that the following should be supporting principles of the U.S. beef industry (n=1992) (Question 9)*

	Strongly Agree 1	2	3	4	Strongly Disagree 5	Don't Know
Generating a safe supply of beef products.	61%	17%	7%	4%	6%	5%
Conserve and protect land and water resources.	52%	21%	12%	5%	5%	6%
Generating a reliable supply of beef products.	45%	25%	13%	5%	6%	6%
Conserve and protect the welfare of beef cattle.	45%	24%	14%	6%	5%	6%
Generating an affordable supply of beef products.	44%	25%	14%	6%	4%	6%
Economically efficient beef production.	38%	26%	17%	6%	5%	8%
Assuring sufficient farm income for cattle producers.	37%	26%	18%	6%	5%	7%
Being competitive in the global beef marketplace.	31%	24%	23%	8%	6%	9%
Generating new research and innovation for beef.	31%	24%	22%	8%	5%	9%

Some have stated they believe there is a tradeoff between lower cost production and animal well-being. Accordingly respondents were asked their level of agreement with four statements regarding beef prices and animal well-being (Table 10). To look at social desirability bias, respondents were asked not only about what they believed but also what they believed the typical American would think as the later may be a more accurate reflection of true views.[8] When asked about their level of agreement with "lower beef prices are more important than the well-being of cattle," 57% of respondents *disagreed* or *strongly disagreed*. However, when asked what the average American thinks about the same statement, the story changed as 53% of respondents *strongly agreed* or *agreed* with this statement. The responses between "I believe that cattle producers face a trade-off between profitability and animal welfare" and "the average American believes that cattle producers face a trade-off between profitability and animal welfare" were very similar with 44% of respondents *agreeing* or *strongly agreeing* for each statement. Additionally, a larger percentage of respondents were unsure and selected *don't know* for the profitability and animal welfare trade-off statements.

[8] Social desirability bias refers to the observation that respondents may provide socially acceptable answers that deviate from true answers. For related information see Olynk, N.J., G.T. Tonsor, & C.A. Wolf. 2010. Consumer Willingness to Pay for Livestock Credence Attribute Claim Verification. *Journal of Agricultural and Resource Economics*, *35*, 261-280.

Table 10. *Agreement with statements regarding cattle well-being (n=1992) (Question 12)*

	Strongly Agree 1	2	3	4	Strongly Disagree 5	Don't Know
"Low beef prices are more important than the well-being of cattle."	6%	9%	23%	22%	35%	5%
"The average American thinks low beef prices are more important than the well-being of cattle."	24%	29%	21%	11%	8%	7%
"I believe that cattle producers face a trade-off between profitability and animal welfare."	19%	25%	26%	12%	8%	11%
"The average American believes that cattle producers face a trade-off between profitability and animal welfare."	17%	27%	27%	11%	5%	13%

Since consumers collect information from many sources the survey inquired about the accuracy of 16 potential sources for beef cattle welfare information (Table 11). For each party, over 25%, and at times over 35%, of respondents did not know the accuracy of the beef cattle welfare information provided by the party. This reiterates the previously noted knowledge gap in Table 8. Not only is a substantial share of the public unaware of production practices but they also do not know the accuracy of information on beef cattle welfare available from various sources. This could also indicate that even if consumers are interested in learning more about beef cattle welfare they do not know which sources to utilize for accurate information. Another potential explanation is that respondents do not seek this information at all and hence are not sure how accurate information is from each source the survey inquired about.

In this survey, the USDA was viewed as the most accurate source of information (Table 11). Food service restaurant, resident-likely voter, and processor/packing plant had the most respondents rank them as *very inaccurate* or *inaccurate* sources for beef cattle welfare information. For the majority of sources at least 20% of respondents selected 3, indicating neutrality on accuracy. Of the beef producers included, cow-calf producers were considered more accurate sources than feedlot producers or processors/packing plants with 29% rating cow-calf producers as an *accurate* or *very accurate* source. Comparatively, cow-calf producers were considered *accurate* or *very accurate* sources by less respondents than People for the Ethical Treatment of Animals (PETA), local veterinarians, university scientists/researchers, National Cattleman's Beef Association (NCBA), The Humane Society of the United States (HSUS), USDA, American Farm Bureau (AFB), Ranchers-Cattleman Action Legal Fund (R-CALF) and American Veterinary Medical Association (AVMA).

Table 11. *Participants' views on accuracy of beef cattle welfare information from select parties (n=1992) (Question 11)*

	Very Inaccurate 1	2	3	4	Very Accurate 5	Don't Know
Cow-Calf Producer	5%	9%	23%	19%	10%	34%
Feedlot Producer	7%	12%	24%	14%	7%	36%
Processor/Packing Plant	10%	14%	24%	15%	7%	30%
Retail Grocer	7%	15%	25%	16%	7%	30%
Food Service Restaurant	11%	16%	23%	12%	7%	31%
Consumer - Beef Purchaser	9%	13%	22%	14%	9%	33%
Resident - Likely Voter	10%	14%	22%	12%	7%	34%
People for the Ethical Treatment of Animals (PETA)	11%	9%	19%	17%	16%	29%
Local Veterinarian	4%	9%	22%	21%	14%	31%
University Scientists/Researchers	3%	6%	21%	23%	16%	31%
National Cattlemen's Beef Association (NCBA)	4%	6%	21%	22%	14%	32%
The Humane Society of the United States (HSUS)	4%	6%	20%	24%	17%	29%
United States Department of Agriculture (USDA)	4%	5%	18%	26%	21%	25%
American Farm Bureau (AFB)	3%	6%	22%	24%	14%	32%
Ranchers-Cattlemen Action Legal Fund (R-CALF)	4%	8%	23%	19%	12%	34%
American Veterinary Medical Association (AVMA)	2%	5%	21%	24%	16%	31%

Table 12. *Participants' belief in the ability of the following parties to influence and assure beef cattle welfare (n=1992) (Question 10)*

	Very Low Ability 1	2	3	4	Very High Ability 5	Don't Know
Cow-Calf Producer	4%	6%	18%	24%	27%	22%
Feedlot Producer	6%	10%	22%	20%	14%	27%
Processor/Packing Plant	9%	12%	20%	22%	20%	18%
Retail Grocer	13%	15%	23%	19%	14%	16%
Food Service Restaurant	15%	16%	22%	17%	13%	17%
Consumer - Beef Purchaser	11%	11%	20%	20%	24%	15%
Resident - Likely Voter	11%	15%	23%	19%	16%	17%
People for the Ethical Treatment of Animals (PETA)	12%	13%	21%	19%	19%	17%
Local Veterinarian	13%	14%	24%	18%	13%	18%
University Scientists/Researchers	7%	14%	25%	20%	14%	20%
National Cattlemen's Beef Association (NCBA)	2%	3%	16%	26%	34%	19%
The Humane Society of the United States (HSUS)	6%	10%	22%	22%	22%	17%
United States Department of Agriculture (USDA)	3%	4%	12%	24%	45%	12%
American Farm Bureau (AFB)	2%	6%	19%	27%	25%	21%
Ranchers-Cattlemen Action Legal Fund (R-CALF)	3%	5%	19%	24%	25%	23%
American Veterinary Medical Association (AVMA)	5%	9%	24%	24%	19%	20%

In addition to accuracy, respondents were asked how much ability each party had to influence and assure beef cattle welfare (Table 12). Nearly 70% of respondents thought that the USDA had *high* or *very high ability* to influence and assure beef cattle welfare. Additionally, over 50% of respondents indicated they believed NCBA, AFB and cow-calf producers had *high* or *very high ability* to influence and assure beef cattle welfare. Food service restaurant, retail grocer and local veterinarian were viewed as having the lowest ability to influence beef cattle welfare.

Table 13. *Participants' recollections of media stories regarding the welfare of beef cattle from selected media types (n=19992) (Question 20)*

	Yes	No
Television	31%	69%
Internet	25%	75%
Printed Newspaper	10%	90%
Magazines	8%	92%
Books	5%	95%
Other (please describe)	2%	98%
I have not seen any media stories regarding beef cattle welfare	54%	46%

Since cattle welfare is often discussed in the media, respondents' recollections of media stories regarding the welfare of beef cattle from selected media types were examined (Table 13). Respondents were asked to select if they had seen stories about beef cattle welfare on/in the television, internet, printed newspaper, magazines and books or if they had not seen any media stories regarding beef cattle welfare. Over half of the respondents could not recall seeing any media stories about beef cattle welfare. Among those recalling media stories, the television and internet were the most common media outlets.

Some discussions regarding cattle welfare have included aspects of how animals may (or may not) be treated when raised in different countries. Coupling this with observation of substantial integration of Canadian and Mexican production systems with the U.S. beef cattle industry led us to ask respondents about their level of concern for the welfare of beef cattle that provide beef products carrying labels indicating the location of the three production steps (Table 14). One indicated *extremely concerned* and 5 indicated *not concerned*. Sixty-seven percent of respondents were *not concerned* (selecting 4 or 5) about cattle that were born, raised and slaughtered in the United States. When Mexico was listed for at least one of the production phases, then the stated level of concern increased. Nearly 70% of respondents were *concerned* or *extremely concerned* about the welfare of beef cattle that were born, raised and slaughtered in Mexico, 59% were concerned when born and raised in Mexico, slaughtered in the U.S. and 48% were concerned when born in Mexico, raised and slaughtered in the U.S. The same level of concern was not apparent for beef fully or partially produced in Canada.

Table 14. *Stated level of concern for the welfare of beef cattle that provide beef products carrying labels indicating the location of three production steps (n=1992) (Question 28)*

	Extremely Concerned 1	2	3	4	Not Concerned 5
Born, Raised, and Slaughtered in the United States	11%	8%	24%	28%	29%
Born, Raised, and Slaughtered in Canada	14%	13%	33%	21%	19%
Born, Raised, and Slaughtered in Mexico	47%	22%	18%	5%	7%
Born in Mexico, Raised and Slaughtered in the United States	26%	22%	29%	13%	11%
Born in Canada, Raised and Slaughtered in the United States	13%	11%	31%	24%	20%
Born and Raised in Mexico, Slaughtered in the United States	34%	26%	25%	7%	8%
Born and Raised in Canada, Slaughtered in the United States	13%	14%	32%	22%	19%

Voting Versus Buying Behavior

Beef production is not only affected by buying behavior, but also voting behavior and legislation. When asked about their voting participation over the past three years (question 39), 43% stated they have voted on every ballot/referendum issue and election that they knew of during the last three years, 25% stated they have voted on at least 50% of the issues/races in the last three years, 10% have voted on less than 50% of the issues/races in the last three years and 22% had not voted in the last three years.

Recently divergences between voting on animal welfare legislation and buying behaviors have emerged. In order to further investigate this divergence, respondents were asked questions about their support of hypothetical ballot initiatives and also their WTP a premium for products with corresponding attributes (Table 15). The majority of respondents (71%) would be willing to vote to limit antibiotic use for cattle to only disease treatment. However, only 48% indicated being WTP a premium for beef steak or ground beef where cattle were provided antibiotics for disease treatment. Additionally, 66% of respondents indicated they were willing to vote to ban cattle castration without the use of pain control while only 36% were WTP a premium for ground beef or beef steak with this attribute. These differences of 23% and 30% illustrate potential for development of an unfunded mandate as stated voter support for production restrictions notably exceeds parallel stated WTP for the same adjustments. This result is congruent with the earlier findings that U.S. public members state an interest in animal welfare issues but they largely are not buying products that are animal welfare assured. A similar "vote-buy divergence" exists for pork produced without sow gestation stalls and eggs produced without laying hen cages.

Table 15. *Willingness to vote versus willingness to pay for production practice attributes (Questions 7 and 8)*

	Yes	No	Don't know
Vote to limit antibiotic use for cattle to only disease treatment (n=1992)	71%	13%	16%
Pay a premium for ground beef from cattle provided antibiotics only for disease treatment (n=995)	48%	32%	20%
Pay a premium for beef steak from cattle provided antibiotics only for disease treatment (n=997)	48%	31%	21%
Vote to ban cattle castration without use of pain control (n=1992)	66%	15%	19%
Pay a premium for ground beef from cattle castrated with pain control (n=995)	36%	37%	27%
Pay a premium for beef streak from cattle castrated with pain control (n=997)	36%	38%	27%
Vote to ban use of sow gestation stalls in the swine industry (n=1992)	51%	16%	33%
Pay a premium for pork not produced using sow gestation stalls (n=1992)	35%	37%	29%
Vote to ban use of laying hen cages in the egg industry (n=1992)	49%	24%	26%
Pay a premium for eggs not produced using laying hen cages (n=1992)	40%	38%	22%

Conclusion

Some of the key take-home messages of this survey of U.S. residents regarding beef cattle welfare include:

- Several examples of knowledge gaps were identified including a general lack of awareness regarding current production practices and an overall limited ability to assess the accuracy of beef cattle welfare information from various sources.
- While the public expresses interest in beef animal welfare when directly asked, this stated interest largely does not carry over to current purchasing patterns. The majority of residents are not currently purchasing beef products possessing animal welfare assurances. Moreover, when compared to other beef attributes animal welfare assurance is less of a purchasing determinant.

The main points of this report regarding public perceptions will be compared to results from a parallel survey of cow-calf producers to highlight similarities and differences between producers and the public.

Appendix A- Survey Instrument

Confidential consumer survey – For research purposes only

This survey is designed to obtain information from consumers on perceptions and food preferences. *This survey supports a university research project, and your participation in the research is entirely voluntary. Your responses are entirely anonymous and you will not be identified with your individual survey answers.* For any questions regarding the study, please contact Dr. Glynn Tonsor by phone (785-532-1518) or email (gtonsor@ksu.edu).

This survey begins by assessing the importance of various issues in your beef buying and consuming decisions. Please answer these questions with the specific type of beef product you typically purchase and consume in mind.

1. Indicate how frequently your household consumes the following products:
   a. Never
   b. Once a month or less
   c. 2-3 times per month
   d. Once per week
   e. 2-3 times per week
   f. 4-6 more times per week
   g. 7 or more times per week

2. Consumers purchase food from many sources. What best describes where you typically purchase {ground beef (hamburger)/beef steak} for at home consumption?
   a. Supermarket Retailer (e.g. Wal-Mart, Kroger, Safeway)
   b. Targeted Retailer (e.g. Whole Foods, Foods for Living)
   c. Convenience Store (e.g. 7-Eleven)
   d. Farmers Market
   e. Direct from Farmer
   f. Other (please describe): ___

3. Have you ever purchased the following products?
   a. Organic{ground beef (hamburger)/beef steak}
   b. Natural{ground beef (hamburger)/beef steak}
   c. Animal welfare assured {ground beef (hamburger)/beef steak}
   d. Locally produced {ground beef (hamburger)/beef steak}
   e. Sustainably produced {ground beef (hamburger)/beef steak}
   f. Guaranteed tender{ground beef (hamburger)/beef steak}
   g. Antibiotic-free {ground beef (hamburger)/beef steak}
   h. Hormone-free {ground beef (hamburger)/beef steak}

4. What is the largest premium you would pay for a one pound package of the following products over products produced through conventional means assuming both products were the same brand name.
   a. Organic {ground beef (hamburger)/beef steak}
   b. Natural{ground beef (hamburger)/beef steak}
   c. Animal welfare assured {ground beef (hamburger)/beef steak}
   d. Locally produced {ground beef (hamburger)/beef steak}
   e. Sustainably produced {ground beef (hamburger)/beef steak}
   f. Guaranteed tender{ground beef (hamburger)/beef steak}
   g. Antibiotic free {ground beef (hamburger)/beef steak}
   h. Hormone-free {ground beef (hamburger)/beef steak}

5. What percentage chance do you believe the typical U.S. {ground beef (hamburger)/beef steak} product comes from:

	0%-25%	26%-50%	51%-75%	76%-100%	Don't know
Cattle provided access to fresh, clean feed and water	*	*	*	*	*
Cattle provided antibiotics to prevent illness and disease	*	*	*	*	*
Cattle provided shade, windbreaks, and ventilation	*	*	*	*	*
Cattle dehorned/disbudded with pain control	*	*	*	*	*
Cattle older than three months of age castrated with pain control	*	*	*	*	*
Farm/ranches with consistent training program for employees focusing on principles of animal care and handling.	*	*	*	*	*
Farms/ranches with third party verification that appropriate animal care and facilities are provided.	*	*	*	*	*
Farms/ranches where injured or sick animals are treated or euthanized promptly.	*	*	*	*	*
Farms/ranches with a herd health plan, developed with the help of a veterinarian.	*	*	*	*	*
Farms/ranches with less than 100 beef cows	*	*	*	*	*
Farms/ranches providing appropriate overall care for the well-being of their cattle.	*	*	*	*	*

6. Are you concerned about the welfare of beef cattle in the United States?
   a. Yes
   b. No
   c. I don't know
7. Would you support the following restrictions on food production practices if asked to vote on them?

vote to limit antibiotic use for cattle to only disease treatment
vote to ban cattle castration without use of pain control
vote to ban use of sow gestation stalls in the swine industry
vote to ban use of laying hen cages in the egg industry

8. Would you pay a price premium for the following food products?

pork not produced using sow gestation stalls
{ground beef (hamburger)/beef steak} from cattle castrated with pain control
eggs not produced using laying hen cages
{ground beef (hamburger)/beef steak}from cattle provided antibiotics only for disease treatment

9. In your opinion, should the following be *supporting principles* of the U.S. beef industry?

	Strongly Agree				Strongly Disagree	Don't Know
Being competitive in the global beef marketplace.	1	2	3	4	5	*
Conserve and protect the welfare of beef cattle.	1	2	3	4	5	*
Generating a reliable supply of beef products.	1	2	3	4	5	*
Generating new research and innovation for beef.	1	2	3	4	5	*
Generating an affordable supply of beef products.	1	2	3	4	5	*
Economically efficient beef production.	1	2	3	4	5	*
Assuring sufficient farm income for cattle producers.	1	2	3	4	5	*
Generating a safe supply of beef products.	1	2	3	4	5	*
Conserve and protect land and water resources.	1	2	3	4	5	*

10. How much ability do the following parties have to influence and assure beef cattle welfare?

	Very Low Ability				Very High Ability	Don't Know
Cow-Calf Producer	1	2	3	4	5	*
Feedlot Producer	1	2	3	4	5	*
Processor/Packing Plant	1	2	3	4	5	*
Retail Grocer	1	2	3	4	5	*
Food Service Restaurant	1	2	3	4	5	*
Consumer - Beef Purchaser	1	2	3	4	5	*
Resident - Likely Voter	1	2	3	4	5	*
People for the Ethical Treatment of Animals (PETA)	1	2	3	4	5	*
Local Veterinarian	1	2	3	4	5	*
University Scientists/Researchers	1	2	3	4	5	*
National Cattlemen's Beef Association (NCBA)	1	2	3	4	5	*
The Humane Society of the United States (HSUS)	1	2	3	4	5	*
United States Department of Agriculture (USDA)	1	2	3	4	5	*
American Farm Bureau (AFB)	1	2	3	4	5	*
Ranchers-Cattlemen Action Legal Fund (R-CALF)	1	2	3	4	5	*
American Veterinary Medical Association (AVMA)	1	2	3	4	5	*

11. How accurate is the beef cattle welfare information provided by the following parties:

	Very Inaccurate				Very Accurate	Don't Know
Cow-Calf Producer	1	2	3	4	5	*
Feedlot Producer	1	2	3	4	5	*
Processor/Packing Plant	1	2	3	4	5	*
Retail Grocer	1	2	3	4	5	*
Food Service Restaurant	1	2	3	4	5	*
Consumer - Beef Purchaser	1	2	3	4	5	*
Resident - Likely Voter	1	2	3	4	5	*
People for the Ethical Treatment of Animals (PETA)	1	2	3	4	5	*
Local Veterinarian	1	2	3	4	5	*
University Scientists/Researchers	1	2	3	4	5	*
National Cattlemen's Beef Association (NCBA)	1	2	3	4	5	*
The Humane Society of the United States (HSUS)	1	2	3	4	5	*
United States Department of Agriculture (USDA)	1	2	3	4	5	*
American Farm Bureau (AFB)	1	2	3	4	5	*
Ranchers-Cattlemen Action Legal Fund (R-CALF)	1	2	3	4	5	*
American Veterinary Medical Association (AVMA)	1	2	3	4	5	*

12. Please rate your agreement with these statements (circle one number for each statement):

	Strongly Agree				Strongly Disagree	Don't Know
"Low beef prices are more important than the well-being of cattle."	1	2	3	4	5	*
"The average American thinks low beef prices are more important than the well-being of cattle."	1	2	3	4	5	*
"I believe that cattle producers face a trade-off between profitability and animal welfare."	1	2	3	4	5	*
"The average American believes that cattle producers face a trade-off between profitability and animal welfare."	1	2	3	4	5	*

There are many different options being discussed for the U.S. beef industry to adopt in response to growing animal welfare discussions. Please consider the following six sets of actions and your ranking of the action which would be most effective and least effective to improve welfare of beef cattle in the U.S.

13. Which of the following actions, if implemented throughout the entire U.S. beef industry, is the most effective and which is the least effective to improve the welfare of beef cattle?
(Check only one issue as the most and only one as the least effective)

Most Effective	Action	Least Effective
	Restrict use of antibiotics to only disease treatment.	
	Castrate male calves either within the first three months of age or with pain control.	
	Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	
	Develop a herd health plan with the help of a veterinarian.	
	Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	
	Third party verification that appropriate animal care and facilities are provided on farm.	

14. Which of the following actions, if implemented throughout the entire U.S. beef industry, is the most effective and which is the least effective to improve the welfare of beef cattle?
(Check only one issue as the most and only one as the least effective)

Most Effective	Action	Least Effective
	Consistent training program for owner and employees focusing on principles of animal care and handling.	
	Develop a herd health plan with the help of a veterinarian.	
	Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	
	Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	
	Restrict use of antibiotics to only disease treatment.	
	Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	

15. Which of the following actions, if implemented throughout the entire U.S. beef industry, is the most effective and which is the least effective to improve the welfare of beef cattle?
(Check only one issue as the most and only one as the least effective)

Most Effective	Action	Least Effective
	Castrate male calves either within the first three months of age or with pain control.	
	Consistent training program for owner and employees focusing on principles of animal care and handling.	
	Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	
	Restrict use of antibiotics to only disease treatment.	
	Third party verification that appropriate animal care and facilities are provided on farm.	
	Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	

16. Which of the following actions, if implemented throughout the entire U.S. beef industry, is the most effective and which is the least effective to improve the welfare of beef cattle?
(Check only one issue as the most and only one as the least effective)

Most Effective	Action	Least Effective
	Develop a herd health plan with the help of a veterinarian.	
	Restrict use of antibiotics to only disease treatment.	
	Third party verification that appropriate animal care and facilities are provided on farm.	
	Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	
	Castrate male calves either within the first three months of age or with pain control.	
	Promptly treat or euthanize all injured or sick animals.	

17. Which of the following actions, if implemented throughout the entire U.S. beef industry, is the most effective and which is the least effective to improve the welfare of beef cattle?
(Check only one issue as the most and only one as the least effective)

Most Effective	Action	Least Effective
	Castrate male calves either within the first three months of age or with pain control.	
	Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	
	Consistent training program for owner and employees focusing on principles of animal care and handling.	
	Promptly treat or euthanize all injured or sick animals.	
	Develop a herd health plan with the help of a veterinarian.	
	Restrict use of antibiotics to only disease treatment.	

18. Which of the following actions, if implemented throughout the entire U.S. beef industry, is the most effective and which is the least effective to improve the welfare of beef cattle?
(Check only one issue as the most and only one as the least effective)

Most Effective	Action	Least Effective
	Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	
	Develop a herd health plan with the help of a veterinarian.	
	Promptly treat or euthanize all injured or sick animals.	
	Third party verification that appropriate animal care and facilities are provided on farm.	
	Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	
	Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	

19. Which of the following actions would you be willing to pay a $X/lb premium for on each {ground beef (hamburger)/beef steak} product purchased (check all that apply)?

- ☐ Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).
- ☐ Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.
- ☐ Owner/operator assessment that appropriate animal care and facilities are provided on farm with animals monitored daily for illness and injury.
- ☐ Consistent training program for owner and employees focusing on principles of animal care and handling.
- ☐ Develop a herd health plan with the help of a veterinarian.
- ☐ Third party verification that appropriate animal care and facilities are provided on farm.
- ☐ Restrict use of antibiotics to only disease treatment
- ☐ Promptly treat or euthanize all injured or sick animals
- ☐ Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.
- ☐ Castrate male calves either within the first three months of age or with pain control.
- ☐ Properly move cattle that are unable to walk on their own, do not try to market cattle if there is a reasonable chance they will not be able to walk on their own, and never drag cattle.
- ☐ Plan the timing of transport to minimize traveling and waiting time for the cattle.
- ☐ Handlers strive to move cattle at a comfortable pace, refrain from using loud noises, and use an electric prod on less than 10% of cattle. Sticks and flags can be used as extensions of the handler's arm but must not be used to hit cattle.
- ☐ None

20. Have you seen media stories regarding the welfare of beef cattle on/in: (select all that apply):

- ☐ Television
- ☐ Internet
- ☐ Printed Newspaper
- ☐ Magazines
- ☐ Books
- ☐ Other
- ☐ I have not seen any media stories regarding beef cattle welfare

The final portion of this survey presents you with multiple different sets of hypothetical pairs of 1lb. {ground beef (hamburger)/beef steak} products that could be available for purchase in a retail store where you typically shop. All products have been USDA inspected and are of the same size, weight, and quality grade. Prices vary for each product and are all in $/lb. units. For each pair of {ground beef (hamburger)/beef steak} products, please select the one you would purchase or neither, if you would not purchase either product. For your information in interpreting alternative {ground beef (hamburger)/beef steak} products note:

> *Required* means the product comes from an operation required to comply with the listed practice.
> *No Claim* means that no claims on the listed practice are being made.

Please answer the following 7 questions. The experience from previous similar surveys is that people often state a higher willingness to pay than what one actually is willing to pay for the good. It is important that you make your selections like you would if you were actually facing these choices in your retail purchase decisions, noting that allocation of funds to {ground beef (hamburger)/beef steak} products means you will have less money available for other purchases.

21. CE Scenario #1
22. CE Scenario #2
23. CE Scenario #3
24. CE Scenario #4
25. CE Scenario #5
26. CE Scenario #6
27. CE Scenario #7

28. Please indicate your level of concern with the welfare of beef cattle that provide beef products carrying each of these labels indicating the location of three production steps:
    a. Born, Raised, and Slaughtered in the United States
    b. Born, Raised, and Slaughtered in Canada
    c. Born, Raised, and Slaughtered in Mexico
    d. Born in Mexico, Raised and Slaughtered in the United States
    e. Born in Canada, Raised and Slaughtered in the United States
    f. Born and Raised in Mexico, Slaughtered in the United States
    g. Born and Raised in Canada, Slaughtered in the United States

29. How many adults (18 years old or older), including yourself, live in your household?_____

30. How many children under age 18 live in your household?_____

31. Your state of residence is: _____ (drop down menu of 50 states)

32. You are : Male Female

33. You are _____ years old (fill-in the blank or drop down).

34. Your annual pre-tax, household income is:
    1) Less than $25,000; 2) $25,000 - $49,999; 3) $50,000-$74,999; 4) $75,000-$99,999; 5) $100,000-$124,999; 6) $125,000-$149,999; 7) $150,000-$174,999; 8) $175,000 or more

35. How much would you estimate your household spends each week for total food consumption including at home, in restaurants, take-out, etc.? $_____week (please provide your best estimate).

36. The best description of the highest education you obtained is:
    a. Did not graduate from high school
    b. Graduated from high school
    c. Associate's or Trade Degree earned
    d. Bachelor's (B.S. or B.A.) College Degree earned
    e. Graduate or Advanced College Degree (M.S., Ph.D., Law School) earned

37. Which best describes your race?
    a. White or Caucasian
    b. Black or African American
    c. Asian or Pacific Islander
    d. Mexican or Latino
    e. American Indian
    f. Other (please describe): _____

38. Please circle the number of each pet you currently have in your household:
    a. Dogs – 0 1 2 3 4 or more
    b. Cats -0 1 2 3 4 or more
    c. Other pets (please describe) ___ 0 1 2 3 4 or more

39. What best describes your participation over the last 3 years in voting on public ballot/referendum issues and/or elections?
    a. I have not voted in the last 3 years
    b. I have voted on less than 50% of the issues/races in the last 3 years
    c. I have voted on at least 50% of the issues/races in the last 3 years
    d. I have voted on every ballot/referendum issue and election that I know of during the last 3 years

40. Do you consider yourself a vegetarian or vegan?
    h. Yes
    i. No
        i. If yes is selected then:
            1. Do you most closely associate yourself with
                a. Vegetarian
                b. Vegan
                c. Both

Thank you for your time in completing this survey. Your input will strengthen our research and help obtain more accurate conclusions. If you wish to add any comments, please feel free to do so here;

Appendix B- Choice Experiment

In addition to using standard survey questions (e.g., multiple choice) respondents participated in a choice experiment. Choice experiments are commonly used by researchers to evaluate the value of products or tradeoffs between product attributes in situations where market data are nonexistent or unreliable. In the context of this project, insight was sought on consumer preferences for beef attributes and attribute bundles not commonly found in beef markets. As such, a choice experiment was used to elicit this information.

In the choice experiment, survey respondents were presented with a set of seven different purchasing scenarios. Each scenario involved consumers selecting between two differentiated beef products or indicating they would select neither of the two options. In addition to varying price across the presented products, non-price attributes were included on animal welfare aspects associated with production practices of interest in this study.

Responses to each choice experiment scenario have limited intuitive value when considered alone. However, when considered as a group (reflecting variation in price and non-price attributes) statistical analysis enable us to determine how much respondents are willing to pay for individual attributes and bundles of attributes. Results of this analysis will be available in a separate document.

Half of the respondents in this study completed the choice experiments with ground beef while the other completed the version for beef steak. The six choice blocks were the same across both ground beef and beef steak. In the tables below price is presented as ground beef/beef steak price shown while the attribute claims are the same across both meat types.

CE Block 1

Scenario 1

Attribute	**Option A**	**Option B**	**Option C**
Price ($/lb)	7.83/12.34	7.83/12.34	*I choose not to purchase either of these products.*
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	Required	No Claim	
Castrate male calves either within the first three months of age or with pain control.	No Claim	No Claim	
Consistent training program for owner and employees focusing on principles of animal care and handling.	Required	No Claim	
Ground Beef	43%	4%	53%
Beef Steak	53%	8%	38%

Scenario 2

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	5.83/9.34	*I choose not to purchase either of these products.*
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	No Claim	No Claim	
Castrate male calves either within the first three months of age or with pain control.	No Claim	Required	
Consistent training program for owner and employees focusing on principles of animal care and handling.	Required	No Claim	
Ground Beef	41%	10%	48%
Beef Steak	38%	21%	41%

Scenario 3

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	3.83/6.34	*I choose not to purchase either of these products.*
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	Required	Required	
Castrate male calves either within the first three months of age or with pain control.	Required	No Claim	
Consistent training program for owner and employees focusing on principles of animal care and handling.	Required	No Claim	
Ground Beef	38%	36%	27%
Beef Steak	45%	27%	27%

Scenario 4

Attribute	Option A	Option B	Option C
Price ($/lb)	7.83/12.34	5.83/9.34	*I choose not to purchase either of these products.*
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	No Claim	No Claim	
Castrate male calves either within the first three months of age or with pain control.	Required	No Claim	
Consistent training program for owner and employees focusing on principles of animal care and handling.	No Claim	Required	
Ground Beef	8%	45%	48%
Beef Steak	9%	55%	36%

Scenario 5

Attribute	Option A	Option B	Option C
Price ($/lb)	7.83/12.34	3.83/6.34	*I choose not to purchase either of these products.*
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	No Claim	Required	
Castrate male calves either within the first three months of age or with pain control.	No Claim	Required	
Consistent training program for owner and employees focusing on principles of animal care and handling.	Required	Required	
Ground Beef	8%	80%	13%
Beef Steak	8%	81%	11%

Scenario 6

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	3.83/6.34	*I choose not to purchase either of these products.*
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	Required	No Claim	
Castrate male calves either within the first three months of age or with pain control.	No Claim	Required	
Consistent training program for owner and employees focusing on principles of animal care and handling.	No Claim	Required	
Ground Beef	3%	74%	23%
Beef Steak	4%	76%	20%

Scenario 7

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	7.83/12.34	*I choose not to purchase either of these products.*
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	No Claim	Required	
Castrate male calves either within the first three months of age or with pain control.	No Claim	No Claim	
Consistent training program for owner and employees focusing on principles of animal care and handling.	No Claim	Required	
Ground Beef	17%	27%	55%
Beef Steak	4%	76%	20%

CE Block 2

Scenario 1

Attribute	Option A	Option B	Option C
Price ($/lb)	7.83/12.34	7.83/12.34	*I choose*
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	Required	No Claim	*not to purchase*
Promptly treat or euthanize all injured or sick animals	No Claim	No Claim	*either of*
Develop a herd health plan with the help of a veterinarian.	Required	No Claim	*these*
Ground Beef	36%	5%	59%
Beef Steak	57%	6%	37%

Scenario 2

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	5.83/9.34	*I choose*
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	No Claim	No Claim	*not to purchase*
Promptly treat or euthanize all injured or sick animals	No Claim	Required	*either of*
Develop a herd health plan with the help of a veterinarian.	Required	No Claim	*these*
Ground Beef	17%	26%	57%
Beef Steak	29%	28%	43%

Scenario 3

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	3.83/6.34	*I choose*
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	Required	Required	*not to purchase*
Promptly treat or euthanize all injured or sick animals	Required	No Claim	*either of*
Develop a herd health plan with the help of a veterinarian.	Required	No Claim	*these*
Ground Beef	43%	29%	28%
Beef Steak	58%	21%	21%

Scenario 4

Attribute	Option A	Option B	Option C
Price ($/lb)	7.83/12.34	5.83/9.34	*I choose*
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	No Claim	No Claim	*not to purchase*
Promptly treat or euthanize all injured or sick animals	Required	No Claim	*either of*
Develop a herd health plan with the help of a veterinarian.	No Claim	Required	*these*
Ground Beef	17%	24%	59%
Beef Steak	21%	33%	46%

Scenario 5

Attribute	Option A	Option B	Option C
Price ($/lb)	7.83/12.34	3.83/6.34	*I choose*
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	No Claim	Required	*not to purchase*
Promptly treat or euthanize all injured or sick animals	No Claim	Required	*either of*
Develop a herd health plan with the help of a veterinarian.	Required	Required	*these*
Ground Beef	5%	75%	20%
Beef Steak	8%	75%	18%

Scenario 6

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	3.83/6.34	*I choose*
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	Required	No Claim	*not to purchase*
Promptly treat or euthanize all injured or sick animals	No Claim	Required	*either of*
Develop a herd health plan with the help of a veterinarian.	No Claim	Required	*these*
Ground Beef	5%	67%	28%
Beef Steak	6%	68%	26%

Scenario 7

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	7.83/12.34	*I choose*
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	No Claim	Required	*not to purchase*
Promptly treat or euthanize all injured or sick animals	No Claim	No Claim	*either of*
Develop a herd health plan with the help of a veterinarian.	No Claim	Required	*these*
Ground Beef	19%	17%	63%
Beef Steak	6%	68%	26%

CE Block 3

Scenario 1

Attribute	Option A	Option B	Option C
Price ($/lb)	7.83/12.34	7.83/12.34	*I choose*
Promptly treat or euthanize all injured or sick animals.	Required	No Claim	*not to*
Castrate male calves either within the first three months of age or with pain control.	No Claim	No Claim	*purchase either of*
Third party verification that appropriate animal care and facilities are provided on farm.	Required	No Claim	*these products.*
Ground Beef	49%	1%	49%
Beef Steak	69%	2%	29%

Scenario 2

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	5.83/9.34	*I choose*
Promptly treat or euthanize all injured or sick animals.	No Claim	No Claim	*not to*
Castrate male calves either within the first three months of age or with pain control.	No Claim	Required	*purchase either of*
Third party verification that appropriate animal care and facilities are provided on farm.	Required	No Claim	*these products.*
Ground Beef	32%	10%	58%
Beef Steak	45%	13%	42%

Scenario 3

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	3.83/6.34	*I choose*
Promptly treat or euthanize all injured or sick animals.	Required	Required	*not to*
Castrate male calves either within the first three months of age or with pain control.	Required	No Claim	*purchase either of*
Third party verification that appropriate animal care and facilities are provided on farm.	Required	No Claim	*these products.*
Ground Beef	46%	25%	29%
Beef Steak	52%	28%	20%

Scenario 4

Attribute	Option A	Option B	Option C
Price ($/lb)	7.83/12.34	5.83/9.34	*I choose*
Promptly treat or euthanize all injured or sick animals.	No Claim	No Claim	*not to*
Castrate male calves either within the first three months of age or with pain control.	Required	No Claim	*purchase either of*
Third party verification that appropriate animal care and facilities are provided on farm.	No Claim	Required	*these products.*
Ground Beef	8%	36%	55%
Beef Steak	10%	41%	48%

Scenario 5

Attribute	Option A	Option B	Option C
Price ($/lb)	7.83/12.34	3.83/6.34	*I choose*
Promptly treat or euthanize all injured or sick animals.	No Claim	Required	*not to*
Castrate male calves either within the first three months of age or with pain control.	No Claim	Required	*purchase either of*
Third party verification that appropriate animal care and facilities are provided on farm.	Required	Required	*these products.*
Ground Beef	3%	82%	15%
Beef Steak	3%	82%	15%

Scenario 6

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	3.83/6.34	*I choose*
Promptly treat or euthanize all injured or sick animals.	Required	No Claim	*not to*
Castrate male calves either within the first three months of age or with pain control.	No Claim	Required	*purchase either of*
Third party verification that appropriate animal care and facilities are provided on farm.	No Claim	Required	*these products.*
Ground Beef	15%	58%	27%
Beef Steak	13%	56%	31%

Scenario 7

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	7.83/12.34	*I choose*
Promptly treat or euthanize all injured or sick animals.	No Claim	Required	*not to*
Castrate male calves either within the first three months of age or with pain control.	No Claim	No Claim	*purchase either of*
Third party verification that appropriate animal care and facilities are provided on farm.	No Claim	Required	*these products.*
Ground Beef	14%	32%	55%
Beef Steak	13%	56%	31%

CE Block 4

Scenario 1

Attribute	Option A	Option B	Option C
Price ($/lb)	7.83/12.34	7.83/12.34	
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	Required	No Claim	*I choose not to purchase either of these products.*
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	No Claim	No Claim	
Third party verification that appropriate animal care and facilities are provided on farm.	Required	No Claim	
Ground Beef	50%	5%	45%
Beef Steak	61%	1%	38%

Scenario 2

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	5.83/9.34	
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	No Claim	No Claim	*I choose not to purchase either of these products.*
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	No Claim	Required	
Third party verification that appropriate animal care and facilities are provided on farm.	Required	No Claim	
Ground Beef	30%	23%	47%
Beef Steak	31%	20%	49%

Scenario 3

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	3.83/6.34	
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	Required	Required	*I choose not to purchase either of these products.*
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	Required	No Claim	
Third party verification that appropriate animal care and facilities are provided on farm.	Required	No Claim	
Ground Beef	55%	26%	19%
Beef Steak	50%	28%	22%

Scenario 4

Attribute	Option A	Option B	Option C
Price ($/lb)	7.83/12.34	5.83/9.34	
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	No Claim	No Claim	*I choose not to purchase either of these products.*
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	Required	No Claim	
Third party verification that appropriate animal care and facilities are provided on farm.	No Claim	Required	
Ground Beef	13%	34%	53%
Beef Steak	11%	38%	51%

Scenario 5

Attribute	Option A	Option B	Option C
Price ($/lb)	7.83/12.34	3.83/6.34	
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	No Claim	Required	*I choose not to purchase either of these products.*
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	No Claim	Required	
Third party verification that appropriate animal care and facilities are provided on farm.	Required	Required	
Ground Beef	2%	86%	12%
Beef Steak	3%	84%	13%

Scenario 6

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	3.83/6.34	
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	Required	No Claim	*I choose not to purchase either of these products.*
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	No Claim	Required	
Third party verification that appropriate animal care and facilities are provided on farm.	No Claim	Required	
Ground Beef	6%	63%	30%
Beef Steak	5%	69%	26%

Scenario 7

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	7.83/12.34	
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	No Claim	Required	*I choose not to purchase either of these products.*
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	No Claim	No Claim	
Third party verification that appropriate animal care and facilities are provided on farm.	No Claim	Required	
Ground Beef	10%	29%	61%
Beef Steak	5%	69%	26%

CE Block 5

Scenario 1

Attribute	Option A	Option B	Option C
Price ($/lb)	7.83/12.34	7.83/12.34	*I choose not to purchase either of these products.*
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	Required	No Claim	
Restrict use of antibiotics to only disease treatment.	No Claim	No Claim	
Develop a herd health plan with the help of a veterinarian.	Required	No Claim	
Ground Beef	51%	1%	48%
Beef Steak	58%	1%	41%

Scenario 2

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	5.83/9.34	*I choose not to purchase either of these products.*
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	No Claim	No Claim	
Restrict use of antibiotics to only disease treatment.	No Claim	Required	
Develop a herd health plan with the help of a veterinarian.	Required	No Claim	
Ground Beef	17%	36%	47%
Beef Steak	23%	29%	48%

Scenario 3

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	3.83/6.34	*I choose not to purchase either of these products.*
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	Required	Required	
Restrict use of antibiotics to only disease treatment.	Required	No Claim	
Develop a herd health plan with the help of a veterinarian.	Required	No Claim	
Ground Beef	45%	29%	26%
Beef Steak	48%	33%	19%

Scenario 4

Attribute	Option A	Option B	Option C
Price ($/lb)	7.83/12.34	5.83/9.34	*I choose not to purchase either of these products.*
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	No Claim	No Claim	
Restrict use of antibiotics to only disease treatment.	Required	No Claim	
Develop a herd health plan with the help of a veterinarian.	No Claim	Required	
Ground Beef	21%	27%	52%
Beef Steak	22%	25%	53%

Scenario 5

Attribute	Option A	Option B	Option C
Price ($/lb)	7.83/12.34	3.83/6.34	*I choose not to purchase either of these products.*
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	No Claim	Required	
Restrict use of antibiotics to only disease treatment.	No Claim	Required	
Develop a herd health plan with the help of a veterinarian.	Required	Required	
Ground Beef	5%	81%	14%
Beef Steak	4%	81%	15%

Scenario 6

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	3.83/6.34	*I choose not to purchase either of these products.*
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	Required	No Claim	
Restrict use of antibiotics to only disease treatment.	No Claim	Required	
Develop a herd health plan with the help of a veterinarian.	No Claim	Required	
Ground Beef	12%	58%	30%
Beef Steak	13%	56%	31%

Scenario 7

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	7.83/12.34	*I choose not to purchase either of these products.*
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	No Claim	Required	
Restrict use of antibiotics to only disease treatment.	No Claim	No Claim	
Develop a herd health plan with the help of a veterinarian.	No Claim	Required	
Ground Beef	13%	32%	54%
Beef Steak	13%	56%	31%

CE Block 6

Scenario 1

Attribute	Option A	Option B	Option C
Price ($/lb)	7.83/12.34	7.83/12.34	
Restrict use of antibiotics to only disease treatment.	Required	No Claim	*I choose not to purchase either of these products.*
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	No Claim	No Claim	
Consistent training program for owner and employees focusing on principles of animal care and handling.	Required	No Claim	
Ground Beef	57%	2%	40%
Beef Steak	57%	1%	42%

Scenario 2

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	5.83/9.34	
Restrict use of antibiotics to only disease treatment.	No Claim	No Claim	*I choose not to purchase either of these products.*
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	No Claim	Required	
Consistent training program for owner and employees focusing on principles of animal care and handling.	Required	No Claim	
Ground Beef	15%	38%	46%
Beef Steak	15%	38%	47%

Scenario 3

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	3.83/6.34	
Restrict use of antibiotics to only disease treatment.	Required	Required	*I choose not to purchase either of these products.*
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	Required	No Claim	
Consistent training program for owner and employees focusing on principles of animal care and handling.	Required	No Claim	
Ground Beef	58%	22%	20%
Beef Steak	43%	29%	28%

Scenario 4

Attribute	Option A	Option B	Option C
Price ($/lb)	7.83/12.34	5.83/9.34	
Restrict use of antibiotics to only disease treatment.	No Claim	No Claim	*I choose not to purchase either of these products.*
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	Required	No Claim	
Consistent training program for owner and employees focusing on principles of animal care and handling.	No Claim	Required	
Ground Beef	21%	26%	53%
Beef Steak	18%	29%	53%

Scenario 5

Attribute	Option A	Option B	Option C
Price ($/lb)	7.83/12.34	3.83/6.34	
Restrict use of antibiotics to only disease treatment.	No Claim	Required	*I choose not to purchase either of these products.*
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	No Claim	Required	
Consistent training program for owner and employees focusing on principles of animal care and handling.	Required	Required	
Ground Beef	5%	86%	9%
Beef Steak	1%	81%	17%

Scenario 6

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	3.83/6.34	
Restrict use of antibiotics to only disease treatment.	Required	No Claim	*I choose not to purchase either of these products.*
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	No Claim	Required	
Consistent training program for owner and employees focusing on principles of animal care and handling.	No Claim	Required	
Ground Beef	13%	62%	25%
Beef Steak	8%	59%	33%

Scenario 7

Attribute	Option A	Option B	Option C
Price ($/lb)	5.83/9.34	7.83/12.34	
Restrict use of antibiotics to only disease treatment.	No Claim	Required	*I choose not to purchase either of these products.*
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	No Claim	No Claim	
Consistent training program for owner and employees focusing on principles of animal care and handling.	No Claim	Required	
Ground Beef	10%	38%	52%
Beef Steak	8%	59%	33%

Appendix C-Best-Worst Assessment

A best-worst analysis was conducted to determine which of the nine production practices evaluated the U.S. public believes would be the most and least effective and most and least practical for improving the welfare of beef cattle in the U.S. This best-worst (more commonly called maximum difference) approach provides much more information than simplified survey questions as respondents are forced to weigh the presented practices and indicate relative effectiveness and practicality by their question responses.

The production practices evaluated were:

- Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).
- Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.
- Consistent training program for owner and employees focusing on principles of animal care and handling.
- Develop a herd health plan with the help of a veterinarian.
- Third party verification that appropriate animal care and facilities are provided on farm.
- Restrict use of antibiotics to only disease treatment.
- Promptly treat or euthanize all injured or sick animals.
- Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.
- Castrate male calves either within the first three months of age or with pain control.

To mitigate survey fatigue yet meet the project's goals, there were four versions of the best-worst sequence where each respondent randomly received one version. Versions 1 and 2 asked respondents about effectiveness of the production practice to improve cattle welfare while versions 3 and 4 asked about the practicality of the production practice to improve cattle welfare. Each version presented six scenarios with six production practices in each scenario.

Respondents could only choose one practice which they believed was the most practical/effective and one practice they believed was the least effective/practical to improve the welfare of beef cattle in the U.S. The frequency of each practice being selected as most or least is presented below. As with the choice experiment responses (Appendix B), a more complete statistical analysis will be available in a separate document.

VERSION 1 (MOST/LEAST EFFECTIVE)

Version 1-Scenario 1

Action	Most Effective	Least Effective
Restrict use of antibiotics to only disease treatment.	21%	15%
Castrate male calves either within the first three months of age or with pain control.	5%	17%
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	3%	27%
Develop a herd health plan with the help of a veterinarian.	20%	16%
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	30%	5%
Third party verification that appropriate animal care and facilities are provided on farm.	22%	21%

Version 1-Scenario 2

Action	Most Effective	Least Effective
Consistent training program for owner and employees focusing on principles of animal care and handling.	19%	14%
Develop a herd health plan with the help of a veterinarian.	17%	20%
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	18%	5%
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	4%	38%
Restrict use of antibiotics to only disease treatment.	10%	19%
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	32%	4%

Version 1-Scenario 3

Action	Most Effective	Least Effective
Castrate male calves either within the first three months of age or with pain control.	4%	36%
Consistent training program for owner and employees focusing on principles of animal care and handling.	18%	11%
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	25%	2%
Restrict use of antibiotics to only disease treatment.	14%	20%
Third party verification that appropriate animal care and facilities are provided on farm.	17%	24%
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	22%	7%

Version 1-Scenario 4

Action	Most Effective	Least Effective
Develop a herd health plan with the help of a veterinarian.	14%	17%
Restrict use of antibiotics to only disease treatment.	13%	18%
Third party verification that appropriate animal care and facilities are provided on farm.	16%	18%
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	30%	4%
Castrate male calves either within the first three months of age or with pain control.	2%	35%
Promptly treat or euthanize all injured or sick animals.	24%	8%

Version 1-Scenario 5

Action	Most Effective	Least Effective
Castrate male calves either within the first three months of age or with pain control.	3%	21%
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	5%	26%
Consistent training program for owner and employees focusing on principles of animal care and handling.	27%	8%
Promptly treat or euthanize all injured or sick animals.	27%	7%
Develop a herd health plan with the help of a veterinarian.	22%	18%
Restrict use of antibiotics to only disease treatment.	15%	20%

Version 1-Scenario 6

Action	Most Effective	Least Effective
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	27%	6%
Develop a herd health plan with the help of a veterinarian.	15%	19%
Promptly treat or euthanize all injured or sick animals.	18%	6%
Third party verification that appropriate animal care and facilities are provided on farm.	17%	20%
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	20%	5%
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	3%	44%

VERSION 2 (MOST/LEAST EFFECTIVE)

Version 2-Scenario 1

Action	Most Effective	Least Effective
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	48%	3%
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	19%	7%
Restrict use of antibiotics to only disease treatment.	15%	18%
Promptly treat or euthanize all injured or sick animals.	14%	9%
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	1%	38%
Castrate male calves either within the first three months of age or with pain control.	3%	25%

Version 2-Scenario 2

Action	Most Effective	Least Effective
Promptly treat or euthanize all injured or sick animals.	19%	5%
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	41%	3%
Third party verification that appropriate animal care and facilities are provided on farm.	14%	14%
Restrict use of antibiotics to only disease treatment.	12%	15%
Consistent training program for owner and employees focusing on principles of animal care and handling.	12%	15%
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	1%	47%

Version 2-Scenario 3

Action	Most Effective	Least Effective
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	5%	33%
Third party verification that appropriate animal care and facilities are provided on farm.	16%	19%
Castrate male calves either within the first three months of age or with pain control.	4%	16%
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	48%	3%
Consistent training program for owner and employees focusing on principles of animal care and handling.	15%	11%
Develop a herd health plan with the help of a veterinarian.	12%	18%

Version 2-Scenario 4

Action	Most Effective	Least Effective
Consistent training program for owner and employees focusing on principles of animal care and handling.	19%	11%
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	40%	5%
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	2%	33%
Castrate male calves either within the first three months of age or with pain control.	2%	21%
Promptly treat or euthanize all injured or sick animals.	19%	9%
Third party verification that appropriate animal care and facilities are provided on farm.	18%	21%

Version 2-Scenario 5

Action	Most Effective	Least Effective
Third party verification that appropriate animal care and facilities are provided on farm.	19%	27%
Restrict use of antibiotics to only disease treatment.	12%	21%
Develop a herd health plan with the help of a veterinarian.	11%	18%
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	33%	7%
Promptly treat or euthanize all injured or sick animals.	13%	10%
Consistent training program for owner and employees focusing on principles of animal care and handling.	13%	17%

Version 2-Scenario 6

Action	Most Effective	Least Effective
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	23%	6%
Promptly treat or euthanize all injured or sick animals.	15%	11%
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	39%	3%
Consistent training program for owner and employees focusing on principles of animal care and handling.	15%	14%
Castrate male calves either within the first three months of age or with pain control.	3%	41%
Develop a herd health plan with the help of a veterinarian.	4%	25%

VERSION 3 (MOST/LEAST PRACTICAL)

Version 3-Scenario 1

Action	Most Practical	Least Practical
Restrict use of antibiotics to only disease treatment.	26%	12%
Castrate male calves either within the first three months of age or with pain control.	5%	14%
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	3%	26%
Develop a herd health plan with the help of a veterinarian.	20%	13%
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	29%	11%
Third party verification that appropriate animal care and facilities are provided on farm.	17%	24%

Version 3-Scenario 2

Action	Most Practical	Least Practical
Consistent training program for owner and employees focusing on principles of animal care and handling.	18%	18%
Develop a herd health plan with the help of a veterinarian.	16%	18%
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	18%	9%
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	2%	34%
Restrict use of antibiotics to only disease treatment.	15%	17%
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	32%	5%

Version 3-Scenario 3

Action	Most Practical	Least Practical
Castrate male calves either within the first three months of age or with pain control.	7%	28%
Consistent training program for owner and employees focusing on principles of animal care and handling.	16%	14%
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	29%	4%
Restrict use of antibiotics to only disease treatment.	16%	14%
Third party verification that appropriate animal care and facilities are provided on farm.	11%	30%
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	21%	10%

Version 3-Scenario 4

Action	Most Practical	Least Practical
Develop a herd health plan with the help of a veterinarian.	16%	17%
Restrict use of antibiotics to only disease treatment.	17%	15%
Third party verification that appropriate animal care and facilities are provided on farm.	10%	28%
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	30%	7%
Castrate male calves either within the first three months of age or with pain control.	3%	25%
Promptly treat or euthanize all injured or sick animals.	25%	8%

Version 3-Scenario 5

Action	Most Practical	Least Practical
Castrate male calves either within the first three months of age or with pain control.	5%	15%
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	5%	26%
Consistent training program for owner and employees focusing on principles of animal care and handling.	25%	16%
Promptly treat or euthanize all injured or sick animals.	24%	7%
Develop a herd health plan with the help of a veterinarian.	21%	20%
Restrict use of antibiotics to only disease treatment.	20%	17%

Version 3-Scenario 6

Action	Most Practical	Least Practical
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	30%	8%
Develop a herd health plan with the help of a veterinarian.	19%	14%
Promptly treat or euthanize all injured or sick animals.	16%	7%
Third party verification that appropriate animal care and facilities are provided on farm.	9%	28%
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	25%	5%
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	2%	38%

VERSION 4 (MOST/LEAST PRACTICAL)

Version 4-Scenario 1

Action	Most Practical	Least Practical
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	51%	4%
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	18%	12%
Restrict use of antibiotics to only disease treatment.	12%	20%
Promptly treat or euthanize all injured or sick animals.	14%	7%
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	1%	32%
Castrate male calves either within the first three months of age or with pain control.	4%	25%

Version 4-Scenario 2

Action	Most Practical	Least Practical
Promptly treat or euthanize all injured or sick animals.	22%	5%
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	41%	5%
Third party verification that appropriate animal care and facilities are provided on farm.	10%	20%
Restrict use of antibiotics to only disease treatment.	13%	12%
Consistent training program for owner and employees focusing on principles of animal care and handling.	12%	17%
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	2%	41%

Version 4-Scenario 3

Action	Most Practical	Least Practical
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	4%	33%
Third party verification that appropriate animal care and facilities are provided on farm.	13%	23%
Castrate male calves either within the first three months of age or with pain control.	3%	11%
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	53%	3%
Consistent training program for owner and employees focusing on principles of animal care and handling.	14%	12%
Develop a herd health plan with the help of a veterinarian.	13%	18%

Version 4-Scenario 4

Action	Most Practical	Least Practical
Consistent training program for owner and employees focusing on principles of animal care and handling.	22%	11%
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	41%	9%
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	3%	28%
Castrate male calves either within the first three months of age or with pain control.	3%	16%
Promptly treat or euthanize all injured or sick animals.	20%	7%
Third party verification that appropriate animal care and facilities are provided on farm.	11%	29%

Version 4-Scenario 5

Action	Most Practical	Least Practical
Third party verification that appropriate animal care and facilities are provided on farm.	10%	30%
Restrict use of antibiotics to only disease treatment.	20%	15%
Develop a herd health plan with the help of a veterinarian.	10%	16%
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	35%	8%
Promptly treat or euthanize all injured or sick animals.	14%	12%
Consistent training program for owner and employees focusing on principles of animal care and handling.	11%	18%

Version 4-Scenario 6

Action	Most Practical	Least Practical
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	24%	10%
Promptly treat or euthanize all injured or sick animals.	18%	7%
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	39%	4%
Consistent training program for owner and employees focusing on principles of animal care and handling.	11%	18%
Castrate male calves either within the first three months of age or with pain control.	1%	37%
Develop a herd health plan with the help of a veterinarian.	8%	24%