



NAVIGATING PATHWAYS to SUCCESS

Since 1991, the beef checkoff-funded National Beef Quality Audit (NBQA) has delivered a set of guideposts and measurements for cattle producers and others to help determine quality conformance of the U.S. beef supply. Early NBQAs focused on the physical attributes of beef and beef by-products – marbling, external fat, carcass weight and carcass blemishes. These cattle industry concerns have evolved to include food safety, sustainability, animal well-being, transportation and the growing disconnect between producers and consumers.

As a result, over the past 25 years, NBQA researchers have made significant changes to the research, leading to an increasingly meaningful set of results. In fact, data from the 2016 National Beef Quality Audit add tremendously to the core knowledge from preceding audits. Following is a summary of the research, as well as its implications for the industry.

THE 2016 NATIONAL BEEF QUALITY AUDIT

Major elements include:

The **Face-to-Face Interviews** provided understanding of what quality means to the various industry sectors, and the quality challenge priorities (Table 1). This research will help the industry make modifications necessary to increase the value of its products. Among the findings...

- ▶ As it did in the previous audit, food safety surfaced as a key quality factor. In fact, to many respondents, food safety was believed to be implied as part of doing business;
- ▶ The prevalence of branded beef items increased in the marketplace, which matched concerns about size inconsistencies in beef boxes. While size consistency was more important than size increase, large carcasses are making it harder for many further processors to meet customer specifications for thickness and weight;
- ▶ Many companies were willing to pay a premium for guaranteed quality attributes. However, the average premiums companies were willing to pay were lower than in 2011. Tenderness and flavor continue to be the two beef quality factors that drive customer satisfaction;
- ▶ BQA is not currently a recognized leader in consumer-facing channels, which is consistent with 2011 findings. Educating packers, retailers, foodservice, and further processing entities about the BQA program could improve marketing weaknesses and negative public perceptions;
- ▶ Product quality was the most cited strength of the steer and heifer sector of the beef industry. Retailers and foodservice companies identified marketing and lack of progression toward process transparency as the greatest industry weakness.

Table 1. Quality Challenges - Ranked according to priority

1991	2005	2016
External Fat	Traceability	Food Safety
Seam Fat	Overall Uniformity	Eating Satisfaction
Overall Palatability	Instrument Grading	Lean, Fat and Bone
Tenderness	Market Signals	Weight and Size
Overall Cutability	Segmentation	How and Where Cattle were Raised
Marbling	Carcass Weights	Visual Characteristics

Figure 1.

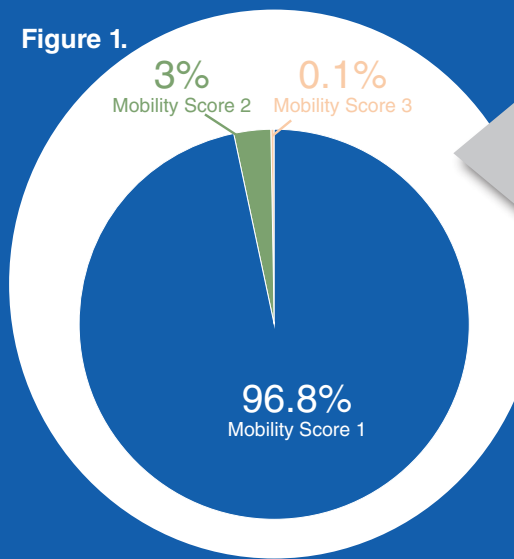


Figure 1. Mobility score of fed cattle entering the packing plants¹

Mobility Score	Description
1	Normal, walks easily, no apparent lameness
2	Exhibits minor stiffness, shortness of stride, slight limp, keeps up with normal cattle
3	Exhibits obvious stiffness, difficulty taking steps, obvious limp, obvious discomfort, lags behind normal cattle
4	Extremely reluctant to move - even when encouraged, statue-like

Source: North American Meat Institute (2015)
¹ Because of rounding, percentages do not total 100.

The **Transportation, Mobility and Harvest Floor Assessments** evaluated various characteristics that determine quality and value, including the number of blemishes, condemnations and other attributes that may impact animal value. The transportation and mobility assessments represented about 10 percent of a day's production at each plant. The harvest floor assessment represented 50 percent of a day's production – about 25,000 cattle. Research showed:

- ▶ Nearly 97 percent of cattle received a mobility score of 1, with the animal walking easily and normally, with no apparent lameness (Figure 1);
- ▶ There was a decrease in black-hided cattle and an increase in Holstein-type cattle compared to the NBQA 2011, 57.8 percent vs. 61.1 percent and 20.4 percent vs. 5.5 percent, respectively;
- ▶ There were more cattle without a brand, more cattle with no horns, fewer cattle with identification, more carcasses with bruises, although bruising was generally less severe (Figure 2);
- ▶ The number of blemishes, condemnations and other attributes that impact animal value remain small; however, of livers harvested, more than 30 percent did not pass inspection and were condemned. Industry efforts to address these issues since 1995 have been generally encouraging.

The **Cooler Assessments** captured data on quality and yield grade attributes and carcass defects (Table 2). It also provides a benchmark for future beef industry educational and research efforts. The 2016 research showed:

- ▶ While the industry is improving the quality of beef being produced, that quality is being accompanied by an increase in size and fatness;
- ▶ Since 1995 there has been a continued increase in carcass weight. In 2016, 44.1% of carcasses weighed 900 lb or greater (Figure 3), which is 20.7 percentage points higher than in 2011. While total cattle slaughtered is the lowest in years, total beef production has increased. This suggests a positive sustainability outcome, producing more beef with the same amount of resources;
- ▶ Heavier carcasses could result in an increased ribeye area which, in turn, could lead to a steak with an undesirable surface area. Consumers generally prefer thicker steaks with a smaller surface area.
- ▶ There was a dramatic increase in the frequency of Prime and Choice (Figure 4), and a decrease in the frequency of Select. One of the reasons for this is the increase in dairy-type carcasses. While the greatest proportion of carcasses were within the lowest third of the grade for both Choice and Prime, the majority of carcasses qualifying for Select were in the top half of the grade.

Figure 2. Bruise severity (% of bruises observed)

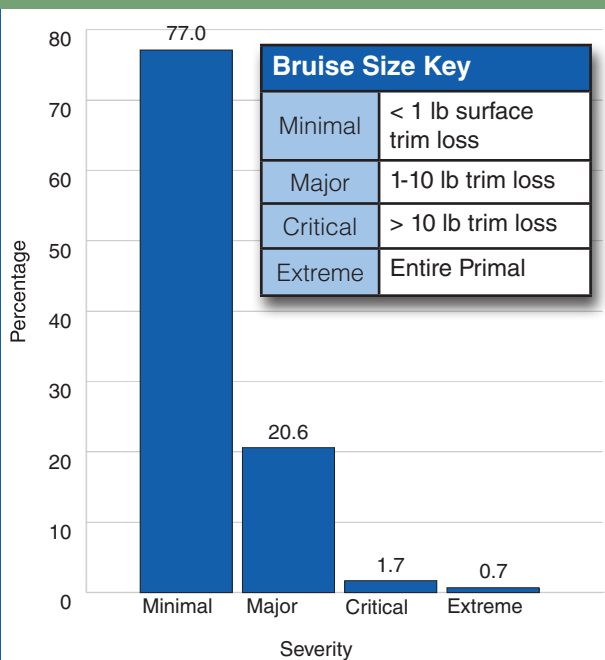


Table 2. Percentage distribution¹ of carcasses stratified by USDA quality and yield grades

USDA Yield Grade	USDA Quality Grade, %			
	Prime	Choice	Select	Other ²
1	0.07	4.06	4.79	0.55
2	0.94	23.61	10.90	1.05
3	1.78	29.94	6.20	1.49
4	0.97	9.31	1.40	0.40
5	0.22	1.86	0.33	0.12

¹Carcasses with missing values for USDA quality or yield grades are not included.

²Other includes: Standard, Commercial, Utility, dark cutter, blood splash, hard bone, and calloused ribeye.

Instrument Grading Evaluation reviewed data that represented more than 4.5 million carcasses over a one-year period, and provided results that were similar to those observed through in-plant research, giving confidence to the increasingly prevalent assessments provided by instrument grading throughout the industry. The trends echoed those observed in 2011.

In a December 2016 **Strategy Session**, more than 70 individuals representing every sector of the beef industry met to review results of the research and discuss industry implications. Outcomes from that meeting provide quality guidance to the industry for the next five years.

One essential need identified was for greater education and communication of BQA to the supply chain and consumers, and how increased certification of BQA followers could enhance respect for the program.

Participants identified three categories for focused improvement:

Food Safety and Animal Health

- ▶ Implement information-sharing systems, based on modern animal identification and record-keeping technologies, to improve global market access;
- ▶ Improve uptake of preventive health strategies and good cattle husbandry techniques to ensure future effectiveness of antimicrobials;
- ▶ Continue efforts to improve supply chain safety interventions.

Eating Quality and Reduction of Variety

- ▶ Develop more measurable information systems to increase supply chain coordination;
- ▶ Utilize advancements in genetic technologies to breed for carcasses with increased eating satisfaction, uniformity, and desirable end-product specifications;
- ▶ Implement or refine sorting strategies to maximize uniformity of cattle, carcasses and end product. Systems to enable rewarding of increased uniformity should be developed.

Optimizing Value and Eliminating Waste

- ▶ Implement information-sharing systems, based on modern animal identification and record-keeping technologies, to assist in sending informed market signals to producers for greater (or lesser) valued carcasses and improve system efficiency;
- ▶ Increase industry-wide uptake of proven genomic technologies and invest in the development, testing and acceptance of techniques to improve traits more quickly.

Figure 3. Frequency distribution by carcass weight group

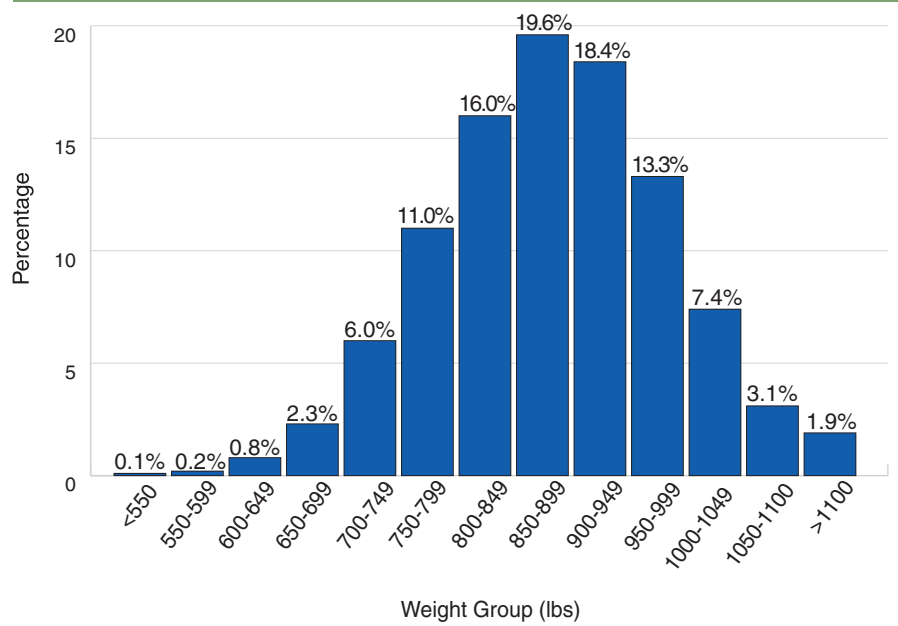


Figure 4. Changes in Prime and Choice combined over time

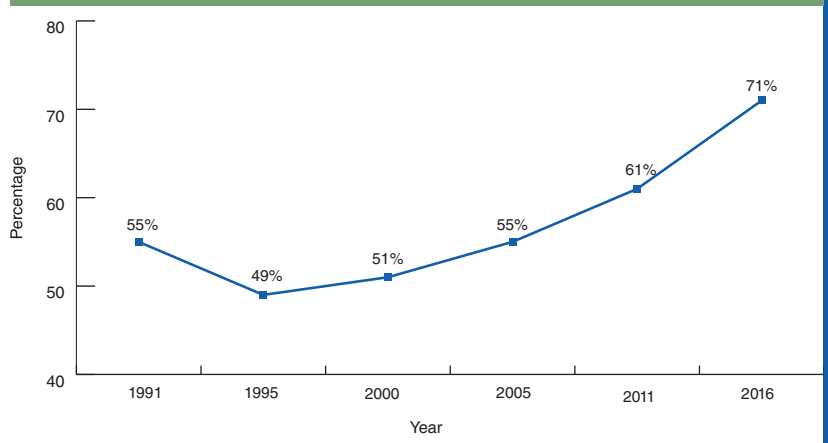


Table 3. Target Consensus for Quality Grade, Yield Grade and Carcass Weight

Quality Grade	
Grade	Target
Prime	5%
Upper 2/3 Choice	35%
Low Choice	35%
Select	25%
Standard/Ungraded	0%

Yield Grade	
Grade	Target
1	10%
2	45%
3	40%
4	5%
5	0

Carcass Weight	
Range	Target
<600 lb	0%
600-800 lb	20%
801-900 lb	30%
901-1000 lb	50%
>1000 lb	0%

LOST OPPORTUNITIES

Lost opportunities are calculated for each audit to give perspective to the value of industry losses for not producing cattle that meet industry targets. During the strategy workshop, participants set a target consensus for Quality Grade, Yield Grade and carcass weight. The target consensus is presented in Table 3. These goals, with the actual prevalence of each from the audit and summary prices for 2016, as reported by USDA, are used to calculate these values. Challenges arise each audit in this exercise as prices sometimes are not reported, or changes in data collection occur. New issues for 2016 include lack of yearly prices for lungs and tongues as well as no collection of tripe condemnations. The total lost opportunities for previous audits are adjusted to 2016 prices to give an accurate comparison between years (Table 4).

CONCLUSION

The beef industry has spent the last quarter century significantly improving the quality of its product. However, there's no denying room for continuous improvement. While the data show that those in the industry have a valuable story to tell, it's no help that many in the industry don't fully know the best way to tell it.

In conclusion, the 2016 National Beef Quality Audit observed a decrease in cattle with hide brands, presence of horns, and an increase in the frequency of Prime and Choice carcasses. However, it is evident further improvement is needed with liver condemnations and carcasses with bruising.

An important strategy for improved industry health and success was evident in the research: utilizing BQA and its principles to increase consumer confidence and enhance industry commitment would encourage greater beef demand, and improve industry harmonization. Carrying this BQA message throughout the industry all the way to consumers would benefit every audience.

Table 4. Lost opportunities in quality issues for NBQA-1991, 1995, 2000, 2005, 2011 and 2016 (using 2016 prices)

	2016	2011	2005	2000	1995	1991
Quality Grade	-\$15.75	-\$30.44	-\$26.62	-\$29.66	-\$33.23	-\$33.14
Yield Grade	-\$12.91	-\$5.93	-\$15.60	-\$15.53	-\$10.20	-\$22.19
Carcass Weight	-\$10.88	-\$6.41	-\$4.46	-\$3.44	-\$5.68	-\$4.52
Hide/Branding	-\$0.84	-\$1.95	-\$1.90	-\$2.39	-\$2.67	-\$2.43
Offal	-\$8.68	-\$2.57	-\$2.63	-\$2.82	-\$1.59	-\$0.99
Total	-\$49.06	-\$47.30	-\$51.21	-\$53.84	-\$53.37	-\$63.27



Funded by the Beef Checkoff.

The full Executive Summary and more information about the 2016 NBQA and previous audits can be found on the Beef Quality Assurance website at www.bqa.org.

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