

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

As a result, over the past 30 years, NBQA researchers have made significant changes to the research, leading to an increasingly meaningful set of results. With supply chain disruptions and a backlog of cattle due to the COVID-19 pandemic, the data from the 2022 National Beef Quality Audit was collected under extraordinary circumstances and stands apart from previous (and future) audits. Weather impacts, such as drought across most of the country, also impacted 2022 NBQA results. It is important to note that data was collected at a specific point in time and results provide a representation of what was occurring in the industry at that time.

The NBQA provides an understanding of what quality means to the various industry sectors, and the value of those quality attributes. This research helps the industry make modifications necessary to increase the value of its products.

In-plant research captured data on quality and yield grade attributes and carcass defects and compared it with that of the previous surveys to assess progress in improving quality. It also provided a benchmark for future beef industry educational and research efforts.

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. Transportation and mobility observations were recorded on roughly 10% of all trailers arriving at each beef harvest facility, and approximately 23,200 carcasses were evaluated on the harvest floor.

According to audit interviews, since 2016 the industry has increased efficiency, however, animal and carcass data show that larger cattle resulted in increased bruising frequency and hot carcass weight while mobility scores have decreased. Ultimately, interviews suggest the industry is producing a high-quality product that consumers want more efficiently than five years ago. The following is a summary of results from individual interviews and in-plant research, as well as implications for the industry.

➤ **PATHWAY** *to a Successful Future*

2022 National Beef Quality Audit for Fed Cattle



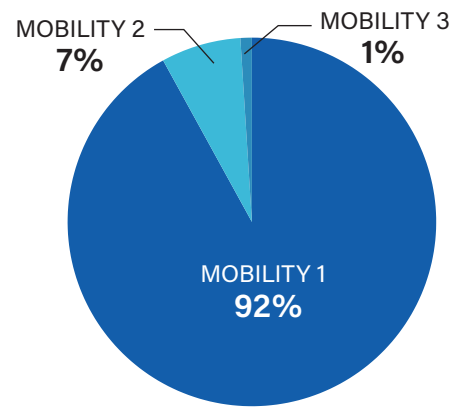
➤ During the NBQA Strategy Session, more than 70 individuals representing every sector of the beef industry met to review results of the research and use data to develop ideas to improve industry in the future. Outcomes from that meeting provide quality guidance to the industry for the next five years.



KEY FINDINGS

- Market segments no longer consider food safety as a purchasing criterion, but an expectation.
- When comparing NBQAs from 2016 and 2022, the largest improvement was overall increased efficiency across the beef supply chain.
- Participation in branded beef programs has increased since previous NBQAs, showing the industry meeting consumer demands for differentiated beef products.
- Genetics, namely hide color, are attributed to high quality beef that consumers are demanding, and the industry is providing.
- Market sectors indicated that their companies strive to increase their sustainability, and work with the entire beef supply chain to do so.
- The entire industry felt the effects of the COVID-19 pandemic, nonetheless, beef proved to be a choice of consumers, and the industry persevered to provide products.
- The beef industry's image improved within fed cattle market sectors.
- Foreign objects continue to present a problem, but the industry is making strides to decrease incidence.
- Due to pandemic pressures, more cattle over 30 months of age were harvested.
- Nearly 93% of transportation service providers interviewed were familiar with the Beef Quality Assurance Transportation (BQAT) program and 91% are BQAT certified.
- Nearly 92% of cattle received a mobility score of 1, with the animal walking easily and normally, with no apparent lameness. This was a decrease from 97% in 2016 and is attributed to larger cattle and longer time spent during transport.
- Black-hided cattle increased to 62% versus 58% in 2016 and 45% in 2000. Holstein hide color decreased to 12.3%; confirming the industry trend of beef sires being used on dairy cattle.
- The 2022 NBQA displayed the highest frequency of carcass bruising (52.3%) recorded since audits began.
- There was an increase in usage of electronic identification (EID).
- There was an increase in the frequency of Prime and Choice quality grades, while Select decreased drastically.
- While the industry is improving the quality of beef being produced, that quality is being accompanied by an increase in carcass weight and fat thickness, as well as large increases in percentages of Yield Grade 4 and 5 carcasses.

Figure 1: Mobility Score of Fed Cattle Entering Packing Plants



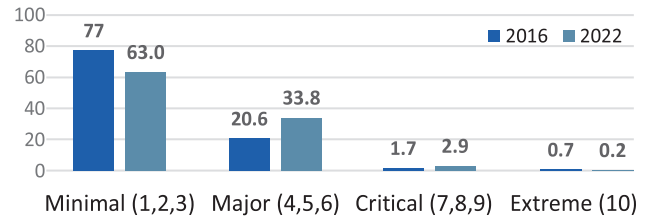
Mobility Score 1 - Normal, walks easily with no apparent lameness or change in gait.

Mobility Score 2 - Exhibits minor stiffness, shortness of stride or a slight limp but keeps up with normal cattle in the group.

Mobility Score 3 - Exhibits obvious stiffness, difficulty taking steps, an obvious limp or obvious discomfort and lags behind normal cattle walking as a group.

Mobility Score 4 - Extremely reluctant to move even when encouraged by a handler. Described as statue-like.

Figure 2: Bruise Severity (% of Bruises Observed)



BRUISE SIZE KEY			
Minimal (<1lb-surface)	1 = a quarter size	2 = a silver dollar size	3 = a deck of cards size
Major (1-10 lbs)	4 = 1-3 lbs	5 = 4-7 lbs	6 = 8-10 lbs
Critical (>10 lbs)	7 = 11-20 lbs	8 = 21-30 lbs	9 = 31-40 lbs
Extreme	10 = Entire Primal		

Table 1: Percentage Distribution of Carcasses Stratified by USDA Quality and Yield Grades

USDA Yield Grade	USDA Quality Grade, %			
	PRIME	CHOICE	SELECT	OTHER*
1	0.11	3.27	3.39	0.98
2	1.09	19.48	6.48	2.46
3	3.09	30.02	4.89	2.11
4	2.21	12.70	1.24	0.83
5	1.04	3.72	0.44	0.44

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

BQA and BQAT provide scientifically based content through a variety of resources and training opportunities (both online and in person). BQAT began in 2018 and has grown to more than 27,300 certifications.

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. BQA has continued to make great strides and it was clear that there is need for producer education.

AREAS FOR FOCUSED IMPROVEMENT

FOOD SAFETY AND ANIMAL HEALTH & WELL-BEING

- Although the percentage of producers using technology for recordkeeping and data collection has increased, there is a concern among the beef supply chain that animal disease could impact the industry and current traceability efforts do not provide a robust enough system in the U.S. to combat this potential threat.
- Improve uptake of preventive health strategies and good cattle husbandry techniques to ensure future effectiveness of antimicrobials.
- Carcasses were discounted for liver abscesses, causing product loss and decreased profitability.
- Continue efforts to increase BQA certifications and awareness.
- Heat stress and other environmental factors caused increased bruising, dark cutters and heart issues as well as decreased mobility.
- Increased bruising frequency should be addressed through facility and trailer design as well as cattle handler training.

EATING QUALITY AND CONSISTENCY

- There was an increase in the number of Yield Grade 4 and 5 cattle, and improved genetics could maintain the ideal of Yield Grade 3 or better, while maintaining marbling necessary to achieve desired quality grades.
- Utilize advancements in genetic selection technologies to breed for carcasses with increased eating satisfaction, uniformity, and desirable end-product specifications.

Figure 3: Carcass Weight Distribution, lbs.

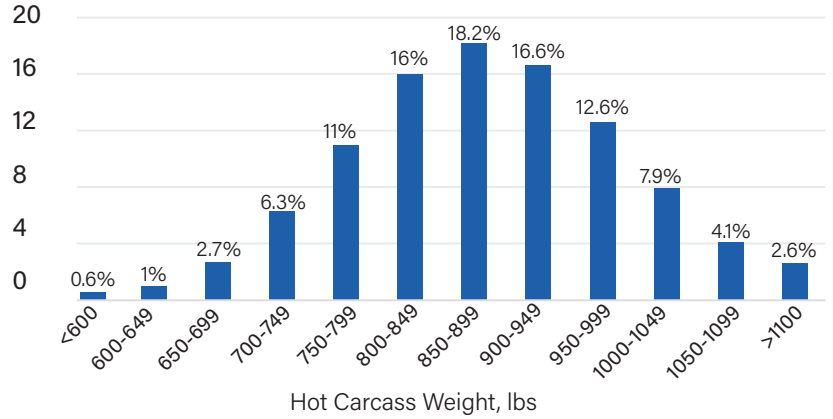
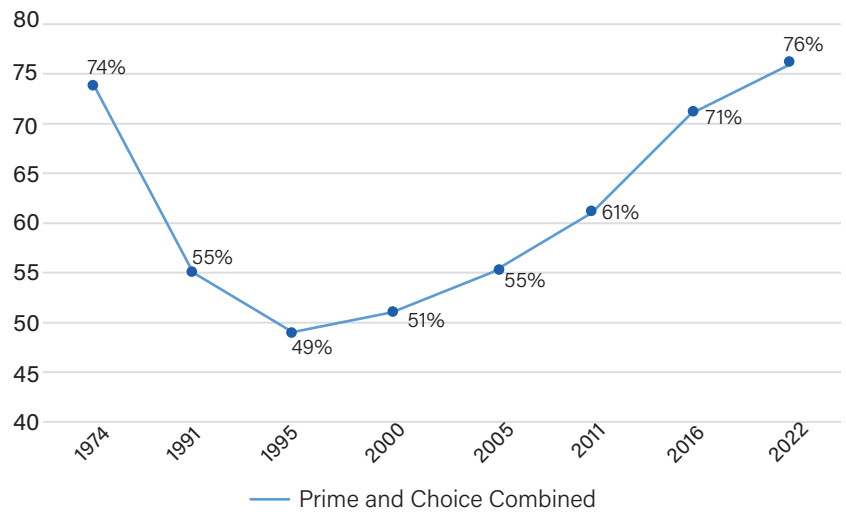


Figure 4: Changes in Prime and Choice Combined Over Time



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. This target consensus, presented in Table 2, identifies projections for the industry to meet by the next audit. These goals, with the actual prevalence of each from the audit and summary prices for 2022, as reported by USDA, are used to calculate values in Table 3. The total lost opportunities for previous audits are adjusted to 2022 prices to give an accurate comparison between years.

Since 2016, improvements have been made in capturing more value of each carcass, however, larger cattle have led to lost opportunities in Yield Grade. While value is being lost in Yield Grade, the industry is meeting market signals for larger cattle.

The 2022 NBQA exceeded industry goals for Quality Grades set during the 2016 audit, which led to increasing the Prime and Choice targets for the next audit. The 2016 consensus Quality Grade target was 5% Prime, with the 2022 NBQA finding that 7.5% of carcasses were grading Prime. The new target consensus is 10% Prime by the next audit.

Since lost opportunities are calculated based on 2022 dollars, coupled with the 10% Prime goal, we are giving up more money in Quality Grade at this time when compared to 2016. However, the industry has made outstanding strides and sees the improvement in higher quality cattle as a success.

When comparing lost opportunities of hide/branding and offal to the 2016 NBQA, hide pricing impacted value and contamination during the fabrication process increased offal condemnations. These factors impacted 2022 lost opportunities in these categories, which the industry will continue to monitor and make improvements as necessary.

Table 3: Lost Opportunities in Quality Issues (using 2022 prices)

	2022	2016	2011	2005	2000	1995	1991
Quality Grade	-\$27.17	-\$17.26	-\$36.64	-\$36.27	-\$40.80	-\$44.47	-\$45.77
Yield Grade	-\$18.21	-\$13.38	-\$5.80	-\$15.33	-\$15.13	-\$9.99	-\$21.76
Carcass Weight	-\$2.97	-\$6.94	-\$6.12	-\$4.07	-\$3.76	-\$7.24	-\$5.59
Hide/Branding	-\$4.16	-\$3.05	-\$5.53	-\$4.85	-\$6.32	-\$6.58	-\$5.71
Offal	-\$6.33	-\$6.52	-\$8.66	-\$8.77	-\$8.45	-\$4.87	-\$3.17
Total	-\$58.84	-\$47.15	-\$62.75	-\$69.29	-\$74.46	-\$73.15	-\$82.00

Table 2: Target Consensus for Quality Grade, Yield Grade and Carcass Weight

QUALITY GRADE	
Grade	Target
Prime	10%
Upper 2/3 Choice	40%
Low Choice	35%
Select	15%
Standard/Ungraded	0%

YIELD GRADE	
Grade	Target
1	10%
2	35%
3	45%
4	10%
5	0%

CARCASS WEIGHT	
Range	Target
<700 lb.	0%
700-800 lb.	20%
801-1000 lb.	65%
1001-1100 lb.	15%
>1100 lb.	0%

CONCLUSION

The 2022 National Beef Quality Audit provided valuable information about the production of live cattle into beef carcasses and serves as a benchmark for the beef industry.

The 2022 NBQA displayed a decrease in the mobility of the cattle exiting the trailer. In addition to the highest recorded percentage of black-hided cattle, there was a decrease in Holstein cattle. Producers are using electronic tags at a higher rate than ever before and cattle maturity (over 30 months) as well as cattle bruising exceeded all previous audits. Liver condemnations, although decreased in the 2022 NBQA, remains a problem as seen in other research specifically designed to understand liver abscesses.

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

The NBQA remains an important measure for the U.S. beef industry as it tries to improve quality and consumer demand. Results from the 2022 NBQA can be utilized by all segments of beef production to improve upon current management practices and implement innovative techniques ultimately enhancing consistency and quality of cattle and beef products across the U.S. beef supply chain.



Funded by the Beef Checkoff

Additional information about the 2022 NBQA and previous audits can be found on the Beef Quality Assurance website at www.bqa.org.