



Economic Damages to the U.S. Beef Cattle Industry Due to COVID-19

Executive Summary¹

Over 80 million head of the 94.4 million cattle in the U.S. on January 1, 2020 (USDA-NASS, 2020) are involved in beef production. The U.S. beef cattle industry had \$77.2 billion in sales in 2017 (USDA, 2019). Cattle are found on 882,692 farms including 729,046 farms with beef cows (USDA-NASS, 2019). The beef cattle industry is complex with multiple production sectors including cow-calf, stocker/backgrounding and feedlots. Every sector of the beef cattle industry and cattle producers in every state have been significantly impacted by COVID-19.

The total beef cattle industry impact of COVID-19 is an estimated loss of \$13.6 billion in total economic damage, as a result of \$9.2 billion in total revenue loss across 63.0 million animals (Table 1). The average economic and revenue loss per head is \$216/head and \$146/head, respectively (Table 1). These impacts include \$8.1 billion loss (\$3.7 billion direct revenue loss; \$4.4 billion breeding herd asset value loss) to the cow-calf sector representing 59.7 percent of total impact; \$2.5 billion loss to the stocker/backgrounding sector representing 18.2 percent of total economic loss; and \$3.0 billion loss to the feedlot sector representing 22.2 percent of total economic loss.

These estimated losses are based on information available as of April 8, 2020. Given the damage to both cash flows and asset values, and the relationship between the two measures, economic damages and reparations are not necessarily equal or synonymous. Prescribing an exact dollar amount or allocation method for any possible relief was outside the present work. The objective of the work was the timely assessment of the significant economic damages, absent any relief funding, to the beef cattle industry given our current understanding of a constantly evolving worldwide health and economic crisis. Additional impacts are likely in the future.

Table 1. Beef Industry Estimated Economic Losses from COVID-19

Sector	Time Period	Animals 1,000 Head	Damage/Head Dollars	Total Damage Dollars
Cow-Calf	2020	32,882.5	\$111.91	\$3,679,880,575
	2021+	32,882.5	\$135.24	\$4,446,971,400
	Total	32,882.5	\$247.15	\$8,126,851,975
Stocker/Backgrounding	2020	15,478.1	\$159.98	\$2,476,137,140
Feedlot	2020	14,636.0	\$205.96	\$3,014,429,335
Economic Impact - Industry Total		62,996.6	\$216.16	\$13,617,418,450

¹ Prepared by Derrell S. Peel, Oklahoma State University; Dustin Aherin, Rabobank; Randy Blach, CattleFax; Kenneth Burdine, University of Kentucky; Don Close, Rabobank; Amy Hagerman, Oklahoma State University; Josh Maples, Mississippi State University; James Robb, Livestock Marketing Information Center; Glynn Tonsor, Kansas State University



Each of the beef cattle production sectors represents different producers in different locations operating diverse production processes. The beef industry is exceptionally complex and each of the sectors operates with different financial structures in a dynamic and intricate set of markets. The following sections briefly describe the considerations and basis for the COVID-19 damage estimates for each sector in Table 1.

Cow-Calf Sector

Cow-calf production is the primary production sector for the beef cattle industry. Estimated 2020 losses are based on multiple estimates of impacts on calf sales in the current year. Per head damages are stated in terms of the total inventory of mature breeding animals (cows + bulls). For 2020, the estimated losses are \$111.91/head.

Cow-calf production is a year-around production activity with breeding animals productive over multiple years. Cow-calf production is a long-term investment and impacts in the current year will extend for years into the future. This contrasts with the margin structure of stocker and feedlot production, where economic losses are mostly associated with turning points in markets with margins subsequently readjusting regardless of overall price level. Cow-calf production is a largely fixed cost industry and industry losses inevitably accrue to the primary production sector as reduced asset values. The discounted value of these future impacts are estimated at \$135.24/head across all mature breeding animals. **The sum of the 2020 and future impacts on the cow-calf sector are estimated at \$247.15/head for each mature breeding animal.**

Stocker/Backgrounding Sector

Stocker/backgrounding production includes weaned animals outside of feedlots. Stocker/backgrounding production encompasses a diverse set of production activities in many regions of the country. **The average impact of multiple estimates of losses includes an average loss of \$159.98/head.** Because stocker/backgrounding production includes a wide range of animal sizes, this average loss is based on separate estimates of losses for animals 500 pounds and less (\$118.40/head) and animals over 500 pounds (\$184.38/head).

Feedlot Sector

Cattle feeding requires several months for animals to finish to acceptable quality. The estimated losses to the feedlot sector reflect the decrease in value for animals placed into feedlots prior to the COVID-19 impacts and projected to be marketed through the third quarter of 2020. **The estimated loss is \$205.96/head for all cattle on feed on February 1.**