

Livestock Marketing Association Economic Contribution Study of Livestock Auction Markets *March 2023*

Prepared For:



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Contents

Contents.....	i
List of Figures	i
List of Tables	i
1 Executive Summary	1
2 Background.....	2
2.1 National Level Livestock Auction Markets.....	2
2.2 Missouri Livestock Auction Market.....	5
3 Methodology	9
4 Results.....	10

List of Figures

Figure 1. U.S. Number of Market Agencies Selling on Commission	2
Figure 2. U.S. Value of Livestock Sold Through Market Agencies Selling on Commission	3
Figure 3. U.S. Volume of Livestock Sold Through Market Agencies Selling on Commission.....	3
Figure 4. Beef Cow Inventory.....	4
Figure 5. U.S. Calf Crop and Cattle Sold at Auction Markets.....	4
Figure 6. Cattle (Including Calves) Inventory by County (1,000 Head).....	5
Figure 7. Livestock Auction Market Locations	6
Figure 8. Beef Slaughter Facilities.....	7
Figure 9. Missouri Farms, by Operation Type.....	7
Figure 10. Missouri Farms with Cattle and Calves by Inventory Size	8

List of Tables

Table 1. Acronyms.....	ii
Table 2. Auction Market Total Impact Summary.....	10
Table 3. Auction Market Taxes Paid	10
Table 4. Auction Market Top Industries Affected by Value Added	11
Table 5. Café Total Impact Summary	11
Table 6. Café Taxes Paid.....	12
Table 7. Cafe Top Industries Affected by Value Added	12

Table 1. Acronyms

Acronym	Description
USDA	United States Department of Agriculture
IMPLAN	Impact Analysis for Planning
LMA	Livestock Marketing Association

1 Executive Summary

Livestock auction markets have a long history and are an ever-changing industry that promotes economic activity in local communities. Local livestock auction markets drive traffic to many businesses in towns which helps rural communities continue to thrive.

This study was commissioned by the Livestock Marketing Association following a 2017 study (also commissioned by the LMA) conducted by Decision Innovation Solutions that analyzed the economic contribution of a livestock market in Iowa. It was produced using a combination of the IMPLAN economic modeling dataset and modeling system, the 2017 USDA Census of Agriculture, and other datasets on livestock auction markets. An economic contribution study is a valuable analysis that allows the impact this business has in its current state on the local economy to be estimated. This report summarizes the economic activity tied to a representative Missouri livestock market and estimates its contribution to the local businesses and community.

Key Findings

During 2023, it is estimated that the studied livestock auction market in Missouri will contribute the following *direct*, *indirect*, and *induced* effects in and around the local community:

- **\$2.0 million** in total value added
- **17 jobs**
- **\$888,000** in labor income
- **\$447,000** in state and local taxes
- **\$108,000** in federal taxes

Additionally, the on-site café at the livestock auction market is estimated to contribute the following:

- **\$17,000** in total value added
- **1 job**
- **\$10,000** in labor income
- **\$900** in state and local taxes
- **\$2,000** in federal taxes

2 Background

Livestock auction markets have a long history and are an ever-changing industry that promotes economic activity in local communities. Local livestock auction markets drive traffic to many businesses in towns which helps rural communities continue to thrive.

This analysis was commissioned by the Livestock Marketing Association as a follow up study to the 2017 market impact study based on a market in Sheldon, IA. It was produced using a combination of the IMPLAN economic modeling system, the 2017 USDA Census of Agriculture, as well as other datasets on livestock auction markets. An economic contribution study is a valuable analysis that allows the impact a business has in its current state on the local economy to be estimated. This report summarizes the economic activity tied to a Missouri livestock auction market and demonstrates its importance to the rural community and businesses in and around Missouri.

2.1 National Level Livestock Auction Markets

Livestock auctions, which are market agencies that sell on commission, are most of the time located at posted stockyards. Posted stockyards are physical facilities, which are not always separate businesses. Data from USDA’s Packers and Stockyards Division Annual Report (2020)¹, indicates that at the national level, the number of market agencies selling on commission slightly rose from 1,204 in 2019 to 1,211 in 2020. However, the number of livestock auction markets declined by 25 from the number in 2018 (1,236 agencies), which was the highest number during the last ten years (see Figure 1).

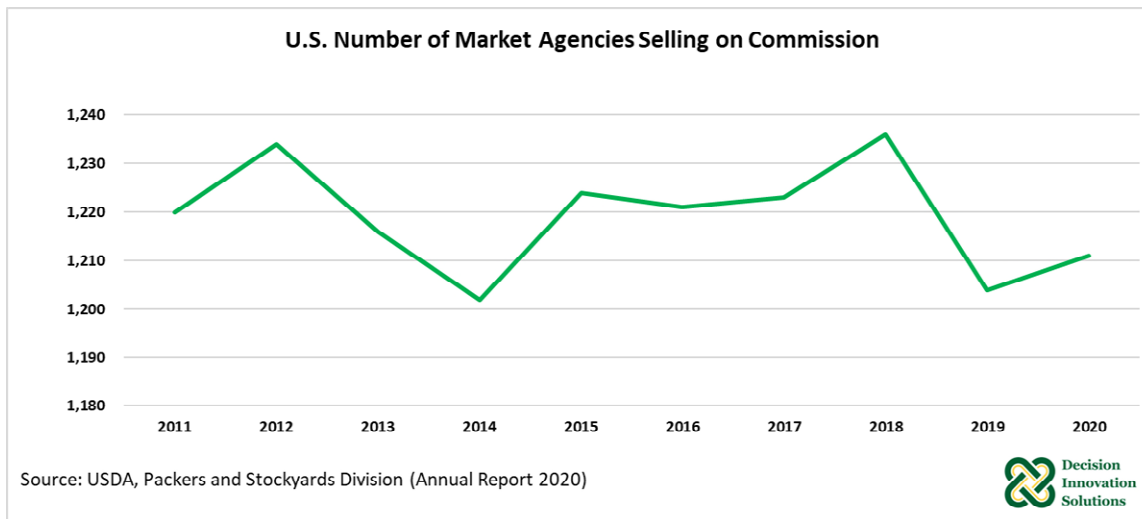


Figure 1. U.S. Number of Market Agencies Selling on Commission

As Figure 2 shows, the value of livestock sold on commission dropped to \$27.9 billion in 2019, which was about the same as in 2011 and the second lowest since 2010.

¹ [Packers and Stockyards Annual Report 2020 \(usda.gov\)](https://www.usda.gov/press/releases/2020/08/2020-08-11)

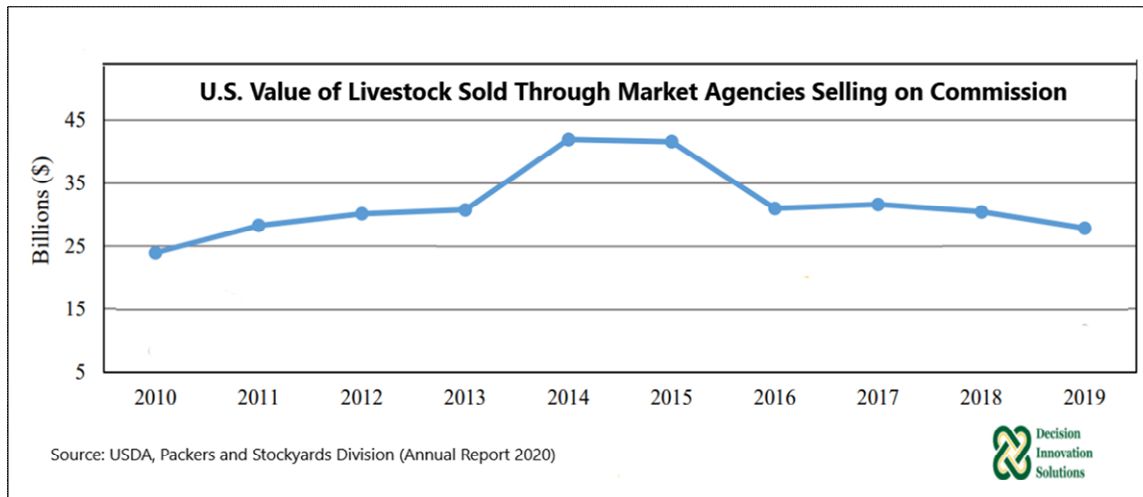


Figure 2. U.S. Value of Livestock Sold Through Market Agencies Selling on Commission

The number of livestock sold through market agencies selling on commission (livestock auctions) fell from 47.0 million head in 2010 to 43.1 in 2019. Cattle represented 76% (33.8 million head) of livestock sold in livestock auctions during this ten-year period, on average, while hogs accounted for about 17% (7.7 million head). Sheep and lamb made up the remaining 7% (3.1 million head) of the total number of livestock sold in auction markets from 2010 to 2019 (Figure 3).

According to the Packers and Stockyards Annual Report 2020, most of the cattle sold through livestock auctions are stockers (heifers and/or steers that are being raised on pasture or other forage) and feeders (weaned calves that have been raised to a certain weight and then sent to feedlots to be fattened). In addition, livestock auctions sell breeding stock (replacement heifers, young cows, and bulls) and large numbers of slaughter (cull) cows and bulls (beef or dairy cows and bulls previously used for breeding or milk production).

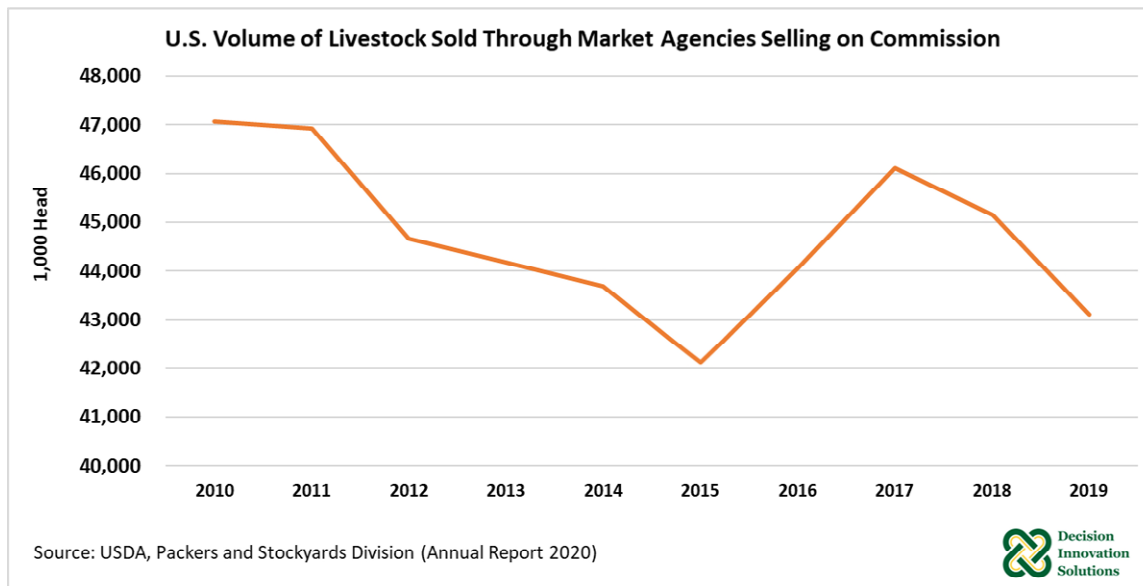


Figure 3. U.S. Volume of Livestock Sold Through Market Agencies Selling on Commission

The number of cattle sold through livestock auction markets tracks fairly well with the U.S. beef cow inventory cycle and the U.S. calf crop. From 2010 through 2023, the U.S. beef cow inventory has fluctuated between approximately 29 million head and 31.5 million head (Figure 4).

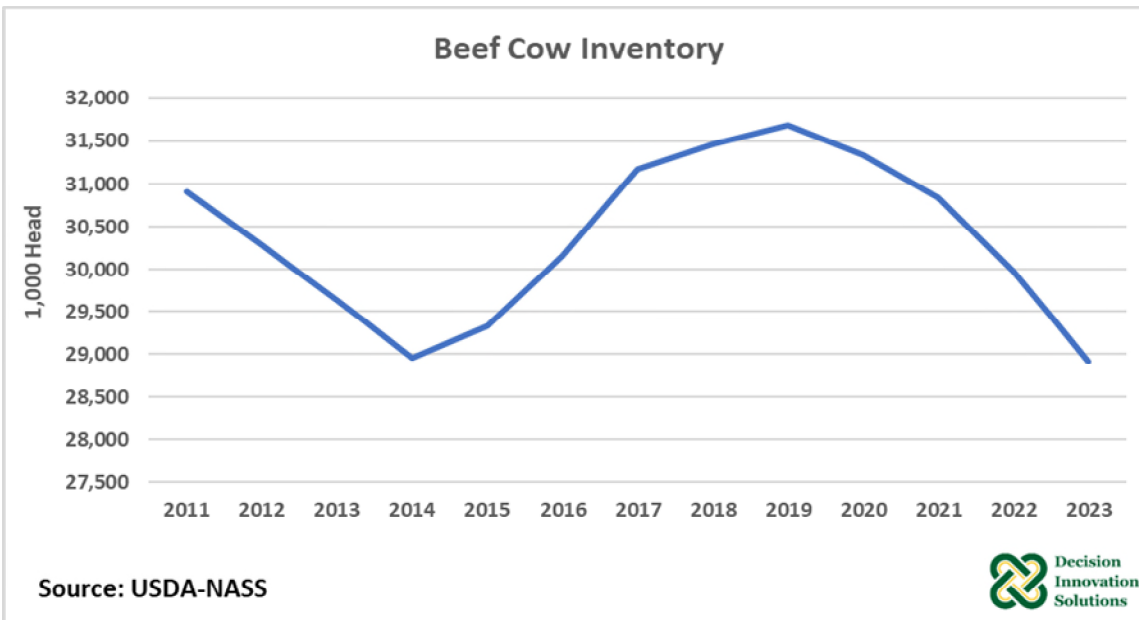


Figure 4. Beef Cow Inventory

The U.S. calf crop from 2010 to 2022 has ranged between 33.5 million head and 36.5 million head which includes both beef and dairy calves. As Figure 5 shows, cattle sales through livestock auction markets declined when the overall calf crop declines and rises when the calf crop rises. There does appear to be a bit of lag in auction market cattle sales when the cattle cycle turns up and cow and heifer retention is increasing (Figure 5).

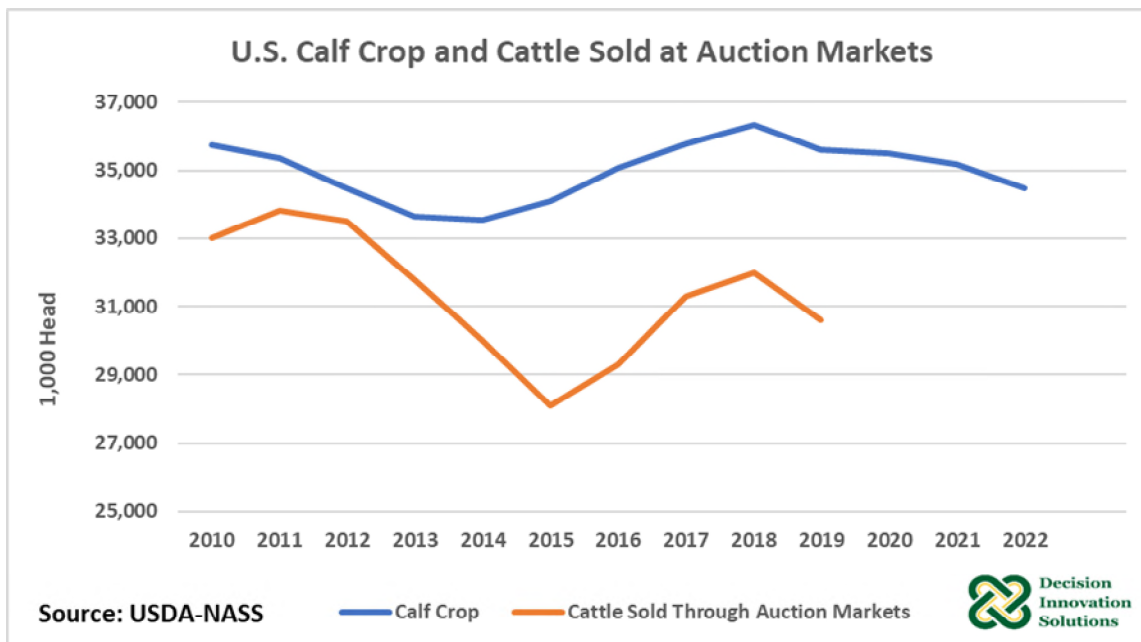


Figure 5. U.S. Calf Crop and Cattle Sold at Auction Markets

2.2 Missouri Livestock Auction Market

Cattle inventory numbers are spread across all Missouri counties as well as in the counties of the states around Missouri (Figure 6). Missouri’s cattle inventory was more than 4 million head (2017 Census of Agriculture) with 2.16 million being beef cows. In 2017, Missouri farms marketed 2.14 million head of cattle with a value of \$1.87 billion. The proximity to the Missouri livestock auction market used in this analysis to cattle is convenient for sellers, leading to reduced travel time, stress, and shrinkage on the cattle.

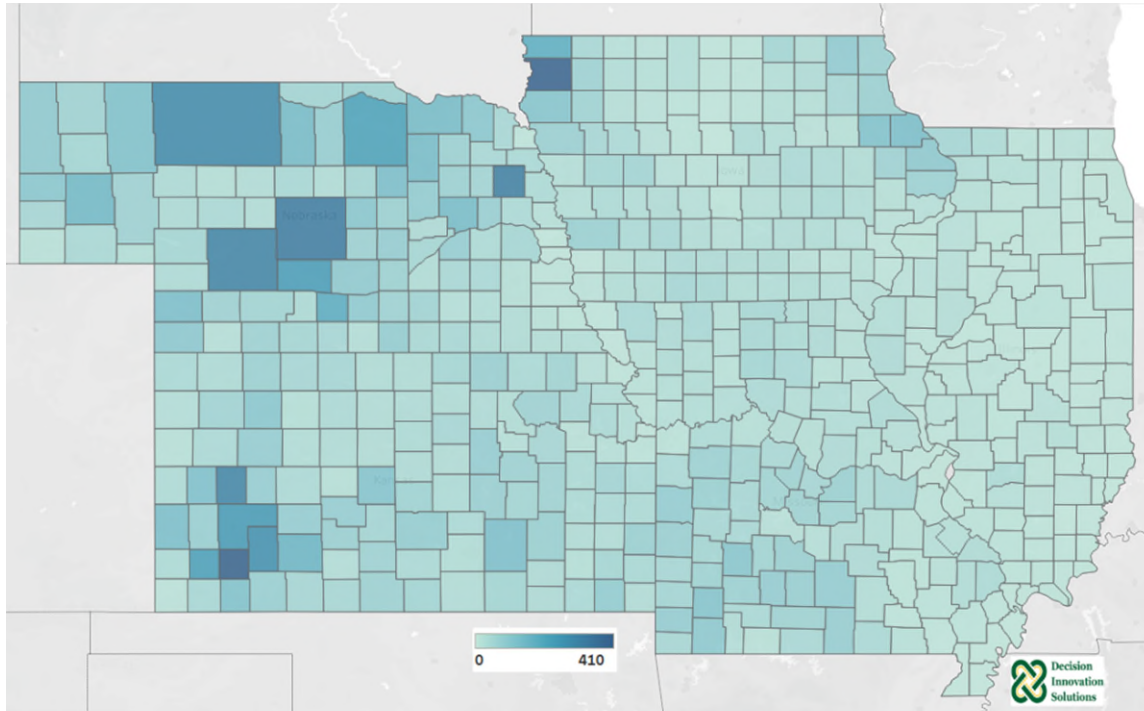


Figure 6. Cattle (Including Calves) Inventory by County (1,000 Head)

There are several other livestock auction markets in Missouri, as well as in the neighboring states of Iowa, Nebraska, Kansas, and Illinois (see Figure 7). Without the presence of the particular auction market which is the subject of this study, many area producers would have to take their livestock elsewhere, causing them to incur higher transportation costs and leading to a loss of economic activity in and around this auction market to other neighboring communities.

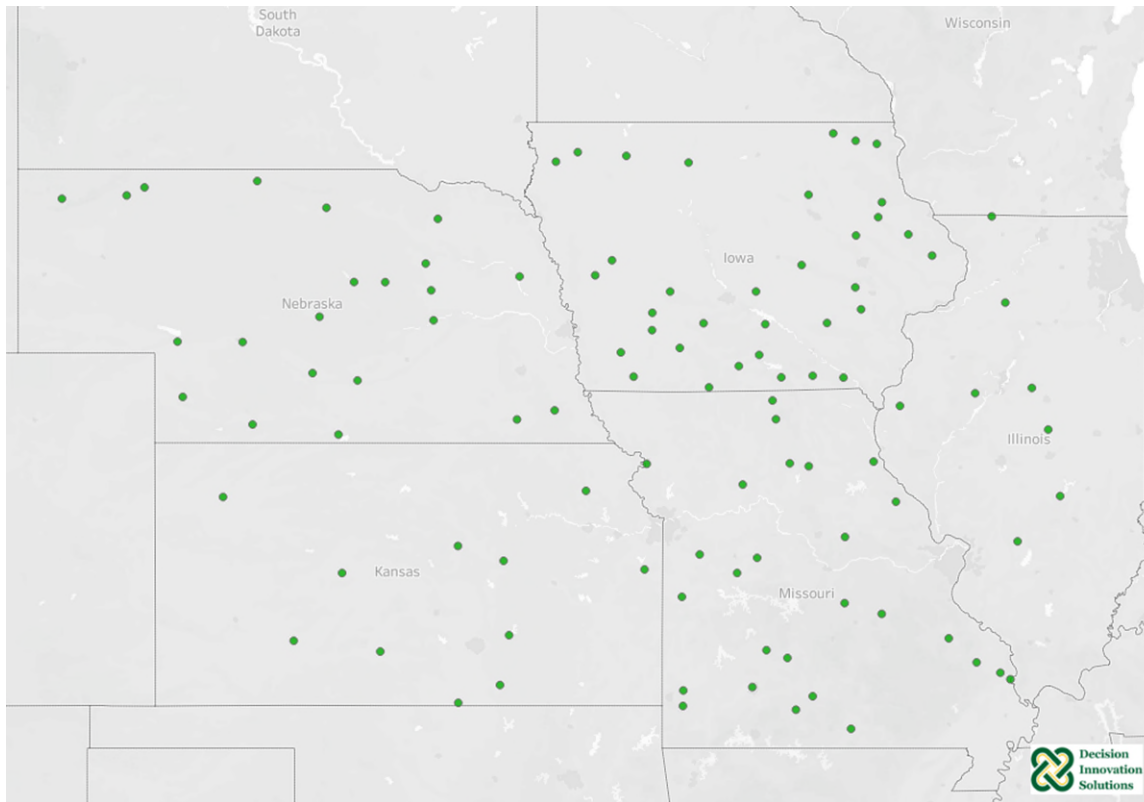


Figure 7. Livestock Auction Market Locations

There are numerous small beef slaughter facilities near the auction market used for this study as well as some very large beef slaughter facilities within moderate distances. If the fed cattle produced in the area were not sold in this auction market and instead had to go direct to slaughter, travel distances for livestock producers would increase and much of this portion of the value-chain would leave the state of Missouri (see Figure 8). The local auction markets also provide economical marketing channels for feeder cattle coming from the local farms. Having a livestock auction market within a reasonable distance of major cattle producing areas helps keep the commissions from the sale of these cattle and the related economic activity of cattle marketing in the surrounding communities rather than leaving the state and region.

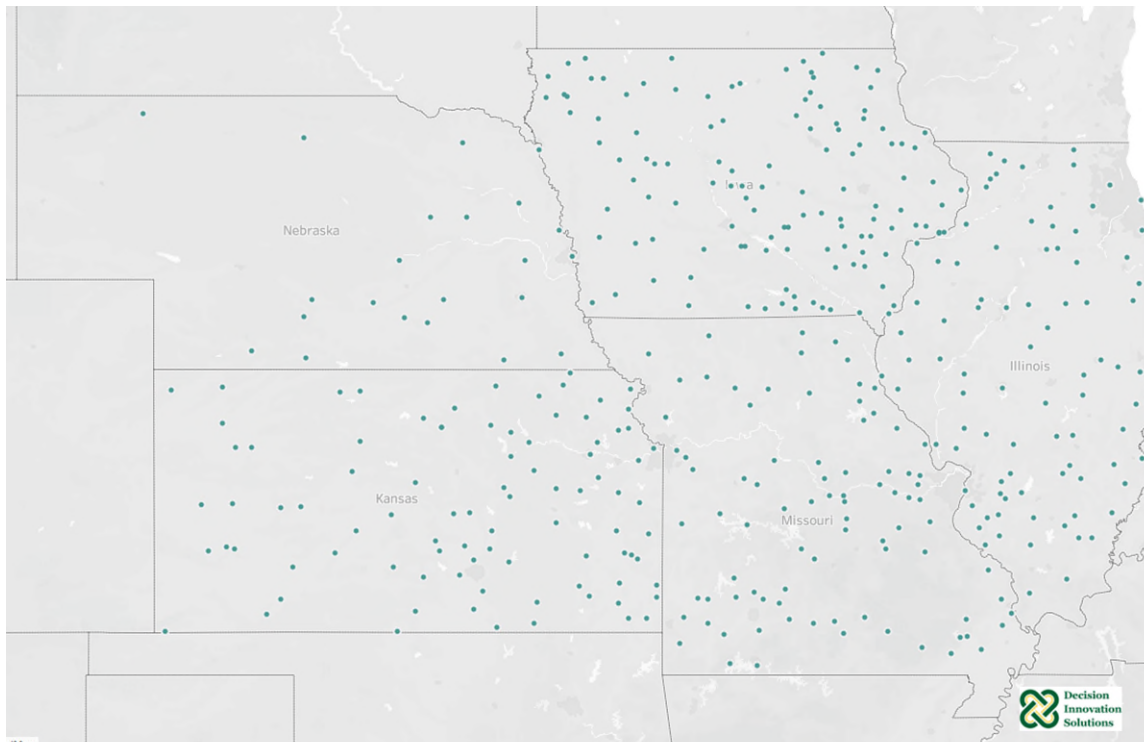


Figure 8. Beef Slaughter Facilities

Missouri’s farms are predominantly family farms with 89% being individual or family-owned farms (Figure 9). Fifty-six percent of Missouri’s farms raise cattle and more than 50% of Missouri’s farms have a beef cow-calf operation on their farm.

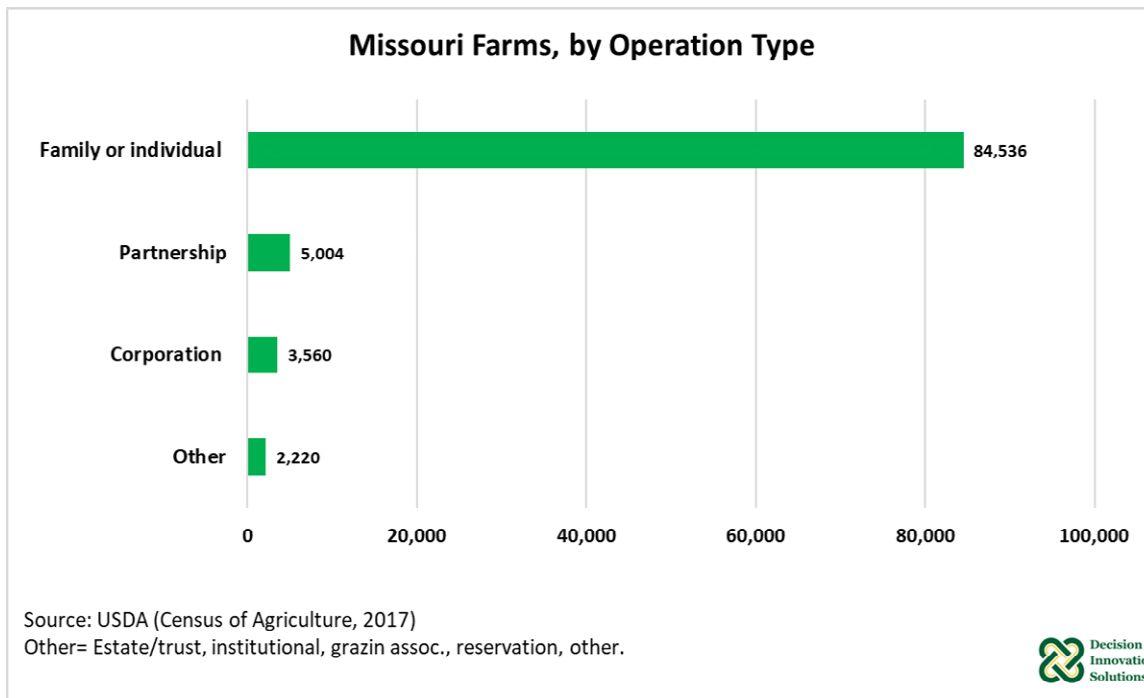


Figure 9. Missouri Farms, by Operation Type

Most (79%) of Missouri’s cattle farms have less than 100 head of cattle. The most common inventory level is 20 to 49 head, and this group holds 476,458 (22%) of the cattle inventory. Farms with 50-99 cows hold 24% of the cows in Missouri and farms with 100 to 199 cows hold 25% of the cows. Cattle holdings of these sizes means that most of the cattle shipped from Missouri farms are handled in trailers that can be pulled by a pick-up truck (gooseneck trailers) rather than in semi-trucks and trailers.

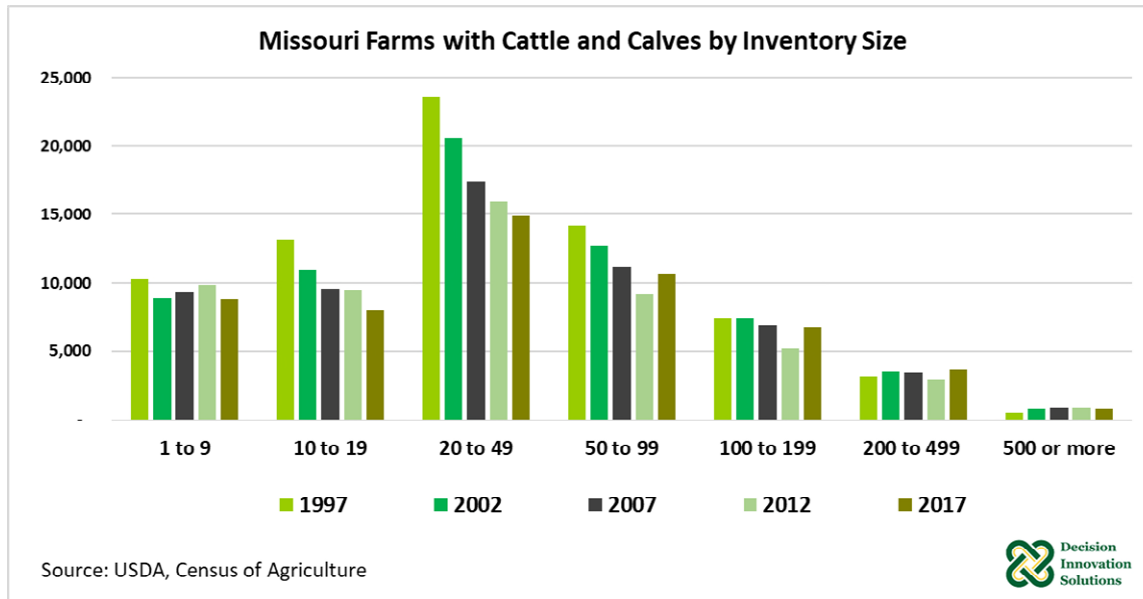


Figure 10. Missouri Farms with Cattle and Calves by Inventory Size

3 Methodology

The economic contribution of a representative Missouri livestock auction market was completed using a combination of the 2021 Missouri IMPLAN dataset and primary source data. The representative livestock market considered in this analysis is one that primarily handles cattle – feeder cattle, fed cattle and breeding stock.

The IMPLAN modeling system and Microsoft Excel were used for calculating and summarizing the results of this analysis. All contribution values throughout the report have been adjusted forward to 2023 dollars using industry-specific inflation factors within IMPLAN’s modeling system.

“Livestock auction market” is not a separate industry within the IMPLAN data and modeling system. Instead, it is included in the “Wholesale – Other nondurable goods merchant wholesalers” industry. In order to better represent the economic relationships of a livestock auction market, this IMPLAN industry was heavily modified using the primary source data obtained from a representative Missouri livestock market.

The effects of an economic impact or contribution event are expressed in terms of direct, indirect, and induced effects. These different effect types are defined as follows:

- **Direct Effects** – The initial expenditure or production (commission) made by the industry experiencing the economic event(s)
- **Indirect Effects** – The effects of local inter-industry spending through the supply chain
- **Induced Effects** – The results of employees of the directly and indirectly affected industries spending their income throughout the local economy
- **Total Effect** – The sum of direct, indirect, and induced effects

Results shown throughout this report are presented using the following common economic modeling terms:

- **Value Added** – Total sales (output) minus the cost of inputs; alternatively calculated as a sum of labor income, other property income (corporate profits and capital), and taxes on production and imports
- **Labor Income** – Sum of employee compensation and proprietor income; a subcomponent of value added
- **Employment** – a measure of job positions without regard to whether they are full-time equivalents

As the representative livestock auction (and café) operates continuously throughout the year, the results shown in this report represent the contribution of one year of operations.

4 Results

Table 2 shows the representative livestock market’s estimated annual contribution to the Missouri economy. The livestock market directly provides 12 jobs², \$580,000 in labor income, and \$1.47 million in value added. After adding indirect and induced effects, this contribution grows to 17 jobs, \$888,050 in labor income, and nearly \$2.0 million in value added.

Table 2. Auction Market Total Impact Summary

Total Contribution Summary - Auction Market			
Impact Type	Employment	Labor Income	Value Added
Direct	12	\$ 580,000	\$ 1,470,245
Indirect	2	\$ 122,865	\$ 187,425
Induced	3	\$ 185,185	\$ 328,524
Total	17	\$ 888,050	\$ 1,986,195

The livestock market pays an estimated \$447,683 in taxes annually, and the total tax contribution increases to \$554,844 when accounting for indirect and induced effects. Of this amount, \$446,914 is paid to the state and local government, while \$107,930 is paid to the federal government (Table 3).

Table 3. Auction Market Taxes Paid

Taxes Paid - Auction Market			
Impact Type	State and Local	Federal	Total
Direct	\$ 395,318	\$ 52,366	\$ 447,683
Indirect	\$ 21,661	\$ 21,079	\$ 42,740
Induced	\$ 29,935	\$ 34,486	\$ 64,421
Total	\$ 446,914	\$ 107,930	\$ 554,844

² The representative livestock market used in this study has many part-time employees that generally only work on the day of the auction. In order to avoid overstating the true employment contribution, these jobs were converted to full-time equivalents and then converted to IMPLAN jobs using an industry-specific ratio provided by IMPLAN.

The economic activity associated with the livestock market helps to support a wide variety of industries throughout the state of Missouri. Table 4 shows the top fifteen industries affected by the livestock market in terms of value added. In addition to the industries supplying goods or services to the market (such as insurance industries, equipment repair and maintenance, and building repair and maintenance), other industries affected include owner- and tenant-occupied dwellings³, healthcare, and many retail industries.

Table 4. Auction Market Top Industries Affected by Value Added

Top Industries Affected - Auction Market	
Industry	Total Value Added
Wholesale - Other nondurable goods merchant wholesalers	\$ 1,478,163
Owner-occupied dwellings	\$ 46,580
Insurance carriers, except direct life	\$ 39,865
Insurance agencies, brokerages, and related activities	\$ 25,807
Hospitals	\$ 21,871
Commercial and industrial machinery and equipment repair and maintenance	\$ 20,398
Retail - Gasoline stores	\$ 16,697
Monetary authorities and depository credit intermediation	\$ 15,516
Offices of physicians	\$ 13,300
Maintenance and repair construction of nonresidential structures	\$ 12,903
Retail - Building material and garden equipment and supplies stores	\$ 11,934
Retail - General merchandise stores	\$ 11,792
Other real estate	\$ 10,621
Automotive repair and maintenance, except car washes	\$ 10,572
Tenant-occupied housing	\$ 9,173

The livestock market in this study also has a small café that provides meals for those who attend the sale each week. The café directly provides one part-time job and directly contributes an estimated \$4,644 in labor income and \$7,933 in value added annually. After adding indirect and induced effects, the café contributes \$9,851 in labor income and \$16,578 in total to the local economy (Table 5).

Table 5. Café Total Impact Summary

Total Impact Summary - Café				
Impact Type	Employment	Labor Income	Value Added	
Direct	1.0	\$ 4,644	\$	7,933
Indirect	0.1	\$ 3,151	\$	4,997
Induced	0.0	\$ 2,056	\$	3,648
Total	1.1	\$ 9,851	\$	16,578

³ The owner-occupied dwellings industry represents the spending of homeowners on their homes. It includes property taxes, mortgage interest payments, and home improvements and payments. The tenant-occupied housing industry similarly represents the spending of tenants. It includes the portion of rent that goes towards property taxes, interest, maintenance, and services provided by the property manager.

Table 6 shows the estimated annual taxes paid as a result of the café. The café contributes \$1,150 in taxes directly and \$2,865 in total. An estimated \$880 of this total is paid at the state and local level, and \$1,985 is paid at the federal level.

Table 6. Café Taxes Paid

Taxes Paid - Café			
Impact Type	State and Local	Federal	Total
Direct	\$ 138	\$ 1,011	\$ 1,150
Indirect	\$ 409	\$ 590	\$ 1,000
Induced	\$ 332	\$ 383	\$ 715
Total	\$ 880	\$ 1,985	\$ 2,865

Table 7 shows the top industries affected by the operations of the café in terms of value added. As shown, the total value-added contribution is spread throughout the many industries required for the operation of the café, including retail and wholesale suppliers, utilities, and financial and accounting services.

Table 7. Cafe Top Industries Affected by Value Added

Top Industries Affected - Café	
Industry	Total Value Added
Limited-service restaurants	\$ 8,040
Wholesale - Grocery and related product wholesalers	\$ 1,133
Owner-occupied dwellings	\$ 517
Retail - Food and beverage stores	\$ 258
Management of companies and enterprises	\$ 251
Hospitals	\$ 243
Monetary authorities and depository credit intermediation	\$ 238
Electric power transmission and distribution	\$ 218
Accounting, tax preparation, bookkeeping, and payroll services	\$ 205
Wholesale - Other nondurable goods merchant wholesalers	\$ 194

In conclusion, the operation of a typical Missouri livestock auction market brings a sizable economic contribution to its local community. In addition to the contribution effects outlined in this report, a typical livestock market brings in many people from outside the local community on a regular basis. These people then spend money within the community on food, fuel, lodging, and potentially other goods and services. These activities further support the local economy and encourage economic vitality in rural areas.