

Texas Economic Analysis of Animal Agriculture: 2012-2022

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Prepared For:



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Texas Executive Summary

The use of SBM as a key feed ingredient is an important part of Texas animal agriculture. While the degree to which animal agriculture utilizes this versatile feed ingredient has fluctuated with time, it remains a key driver of animal agriculture's success in the State of Texas. The success of Texas animal agriculture in turn has a large impact on the rest of the state and regional economies. For example, in the State of Texas during 2022 animal agriculture contributed:

- \$54.8 billion in economic output
- 365,173 jobs
- \$12.0 billion in earnings
- \$2.4 billion in income taxes paid at local, state, and federal levels
- \$698.2 million in the form of property taxes

Texas's animal agriculture consumed more than 2.4 million tons of SBM in 2022. This SBM was fed primarily to:

- Broilers (1.3 million tons)
- Dairy Cows (390.6 thousand tons)
- Egg-Laying Hens (222.9 thousand tons)

This report examines animal agriculture in Texas over the last decade. While this analysis is certainly instructive and allows improved understanding of animal agriculture's impact during that time, as the next decade unfolds in Texas, many opportunities and challenges will arise. And, if past is prologue, animal agriculture will continue to be a major contributor to the economic well-being of the people of Texas and beyond.

Texas Economic Impact of Animal Agriculture

Animal agriculture is an important part of Texas’s economy. In 2022, Texas’s animal agriculture contributed the following to the economy:

- About \$54.8 billion in economic output
- \$12.0 billion in household earnings
- 365,173 jobs
- \$2.4 billion in income taxes

And the animal agriculture sector has shown some change during challenging economic times. During the last decade Texas’s animal agriculture has:

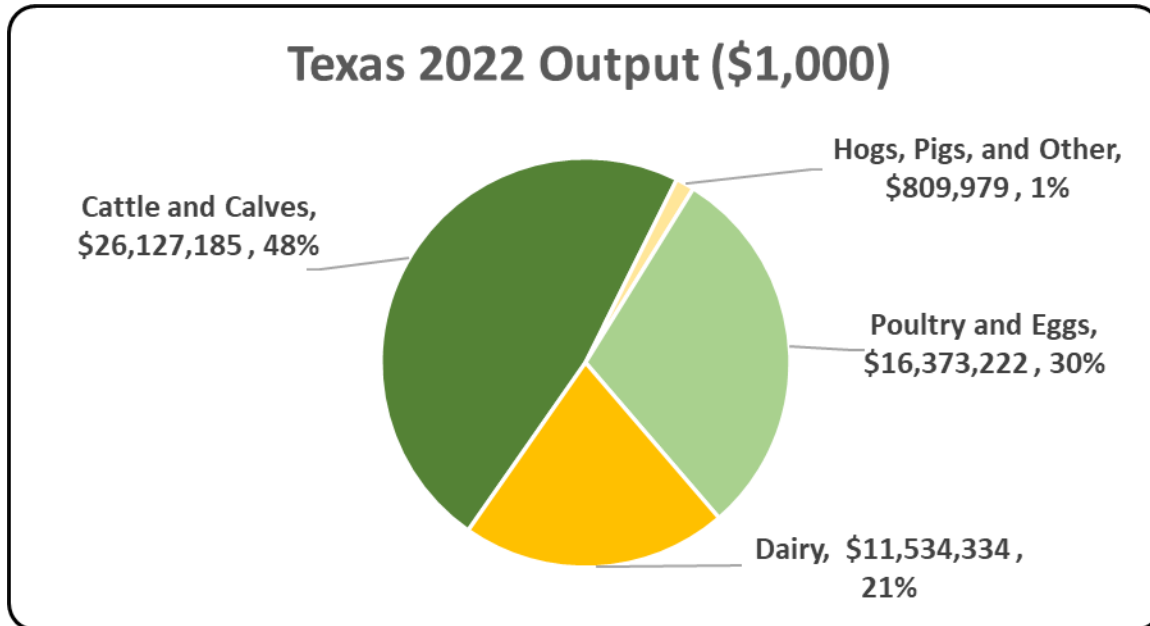
- Increased economic output by \$13.2 billion
- Boosted household earnings by \$2.9 billion
- Added 77,761 jobs
- Paid \$587.1 million more in income taxes

Below is a table which demonstrates this decade of change.

Measure	2022	Change 2012-2022	% Change 2012-2022
Output (\$1,000)	\$ 54,844,720	\$ 13,210,886	31.73%
Earnings (\$1,000)	\$ 12,032,586	\$ 2,906,348	31.85%
Employment (Jobs)	365,173	77,761	27.06%
Income Taxes Paid (\$1,000)	\$ 2,430,582	\$ 587,082	31.85%
Property Taxes Paid in 2017 (\$1,000)	\$ 698,248		

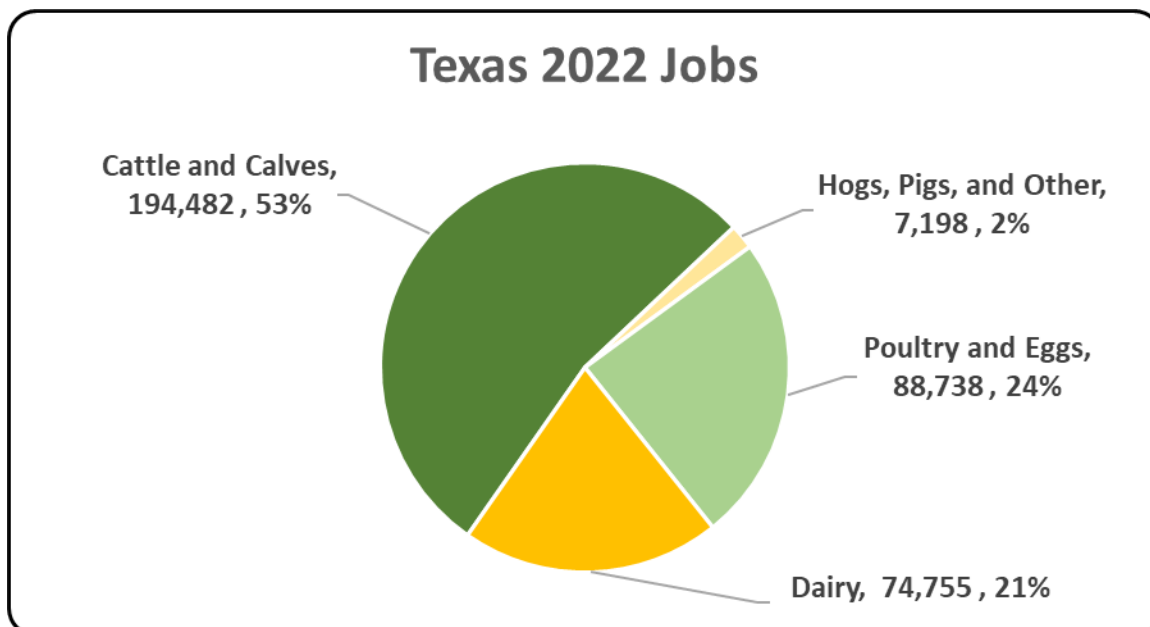
Texas Output

“Output” refers to the total value of all the output (production or sales) of a study area and/or industry within a study area and was calculated using RIMS II multipliers. This is a gross number that does not make any deductions for the cost or origination of inputs that were used in the production process. The figure illustrates the impact of animal agriculture to the Texas economy. Animal agriculture’s impact on Texas total economic output is about \$54.8 billion.



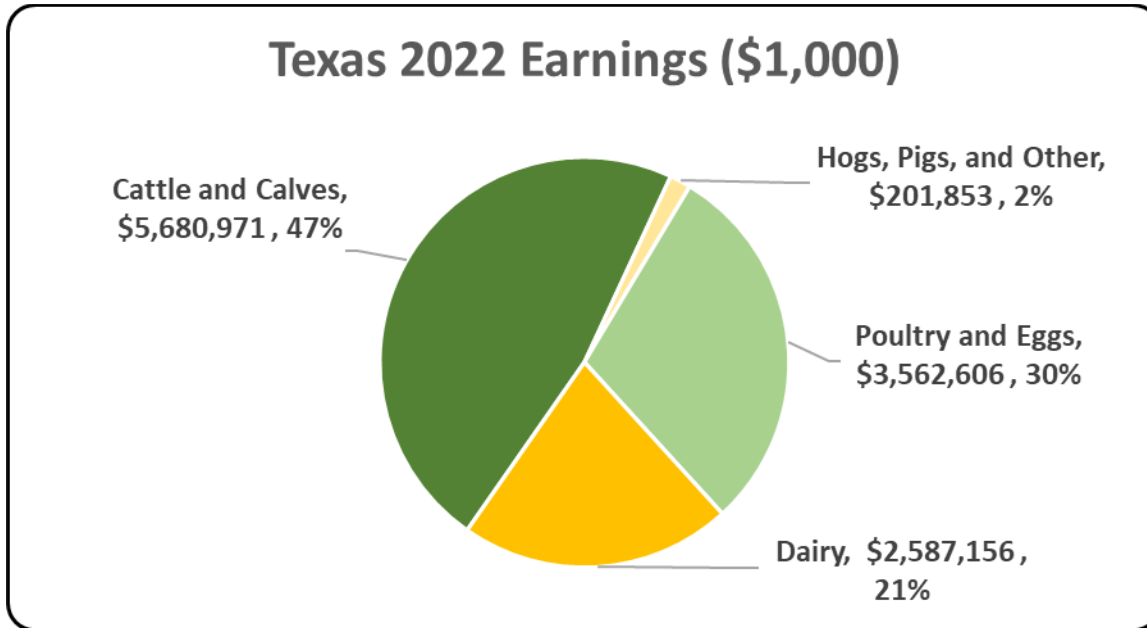
Texas Jobs

“Jobs” represents an estimate of the number of full or part-time positions (jobs) currently filled in an area and/or industry. The figure illustrates the contribution to Texas in terms of animal agriculture jobs. As shown, animal agriculture contributes significantly to Texas total jobs, contributing 365,173 jobs within and outside of animal agriculture.



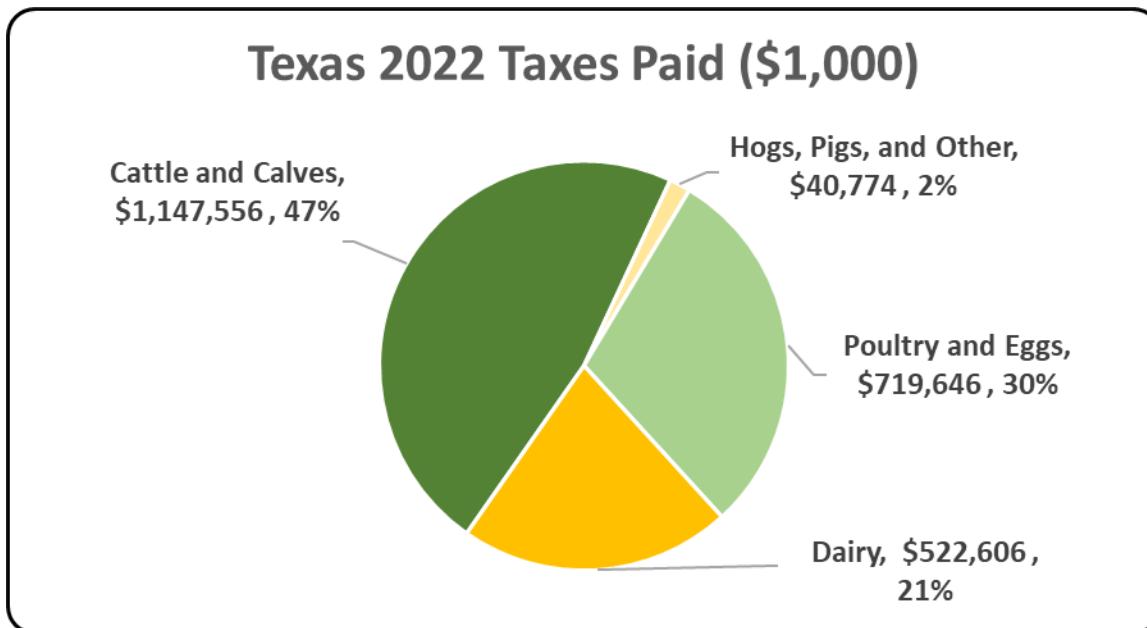
Texas Earnings

Earnings includes wages and salaries plus proprietors' income, which is the net earnings of sole-proprietors and partnerships. The figure illustrates the impact of animal agriculture to the Texas economy in terms of earnings. Texas's animal agriculture contributed about \$12.0 billion to household earnings in 2022.



Texas Taxes Paid by Animal Agriculture

Texas's animal agriculture is also a significant source of tax revenue. In 2022, the state's animal agriculture industry paid about \$2.4 billion in income taxes at local, state, and federal levels. The 2017 Census of Agriculture estimated \$698.2 million in property taxes paid by all of Texas agriculture during 2017. Estimates of income taxes paid by animal agriculture are shown in the following chart.



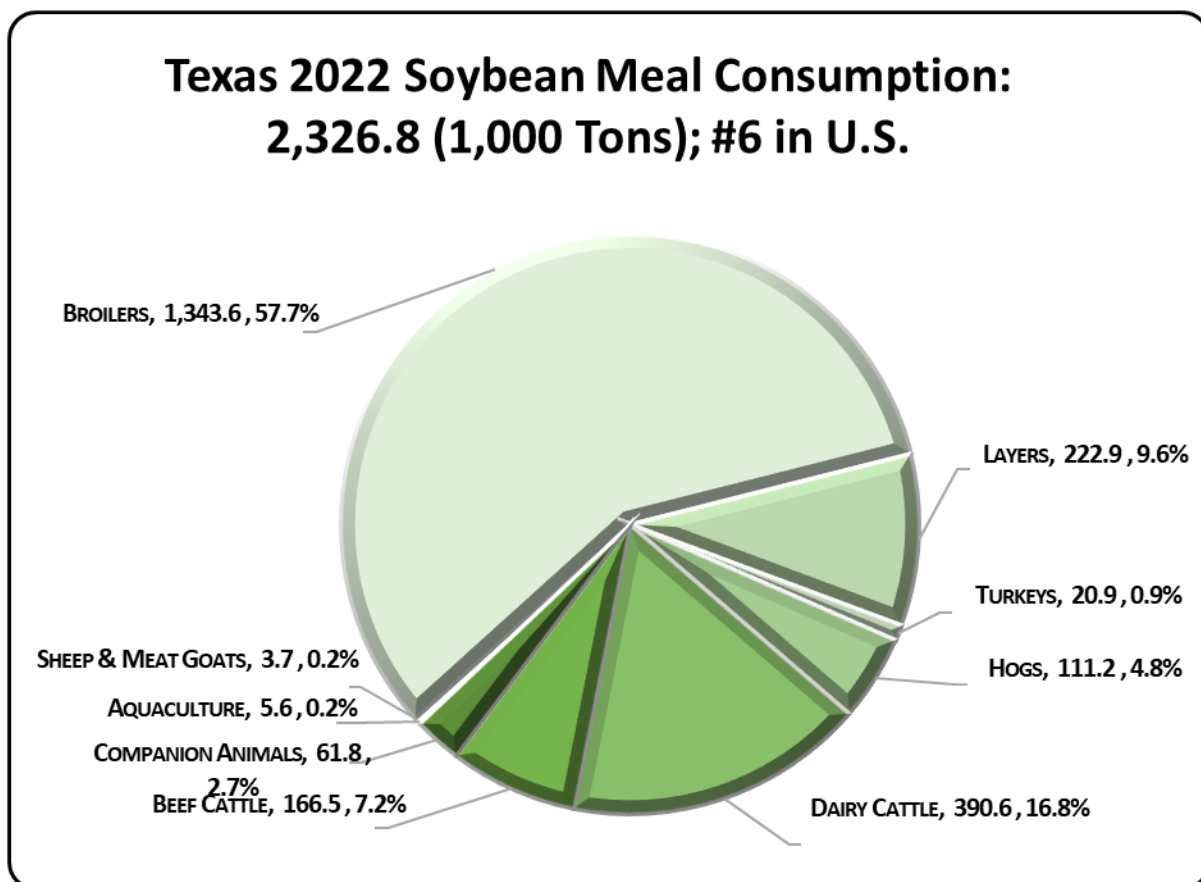
Texas Animal Agriculture Soybean Meal Consumption

The choice to use SBM in animal agriculture is highly dependent upon nutritional requirements of animals (which would encompass varying life stages within an animal species), accessibility to various feed ingredients capable of competing with SBM (from both a nutritional and price standpoint), and consumer preferences which have influence on production practices.

Through in-depth conversations with many of the nation’s top nutritionists and researchers from both private industry and public institutions, “bottom up” estimates of SBM usage by animal type were determined. Using the input from these conversations and additional analysis performed by Decision Innovation Solutions, the quantity of SBM used during the 2021-22 soybean marketing year by up to sixteen specific animal species has been estimated.

Texas’s animal agriculture consumed more than 2.3 million tons of SBM in 2022, placing the state as 6 in the nation in terms of SBM consumption (see figure below). Additionally, animal agriculture in Texas consumed 261.3 thousand tons of soy hulls. The three segments of animal agriculture that led the state in estimated SBM consumption are:

1. Broilers (1.3 million tons)
2. Dairy Cows (390.6 thousand tons)
3. Egg-Laying Hens (222.9 thousand tons)

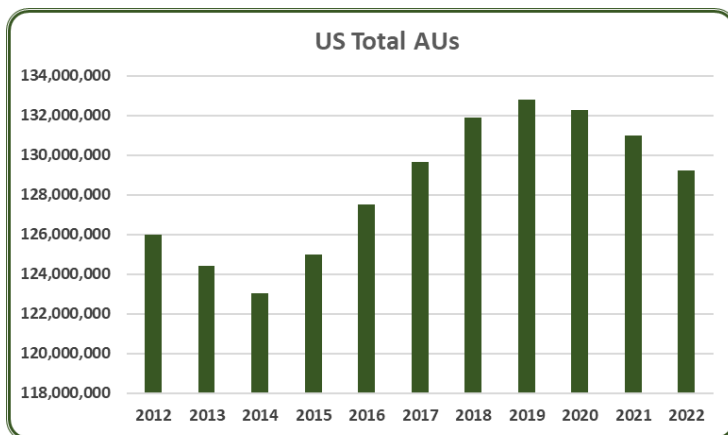


Texas Animal Unit (AU) Trends

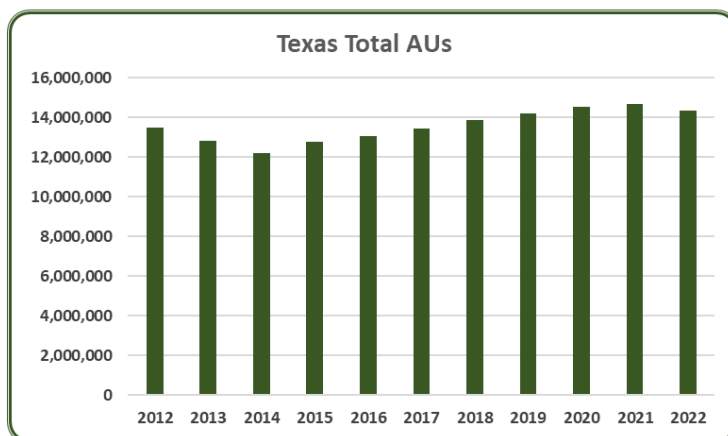
Over time, prices of feed, meat, eggs and milk, as well as levels of demand for these products in the U.S. and abroad have an impact on the size of animal agriculture in the state of Texas. Due to this reality, using a single year to measure a sector’s presence and strength can be misleading. The use of animal units allows for a more accurate comparison of differing sizes of livestock and poultry. This section is included to bring context to the question of what animal agriculture means to Texas and to give perspective on Texas’s contribution to the nation’s animal agriculture industry and beyond.

Like using a single year to measure the presence and strength of a sector, in some circumstances AUs can be misleading. This is because AUs do not reflect important considerations like increased weights, improved livability, increased laying potential, etc.

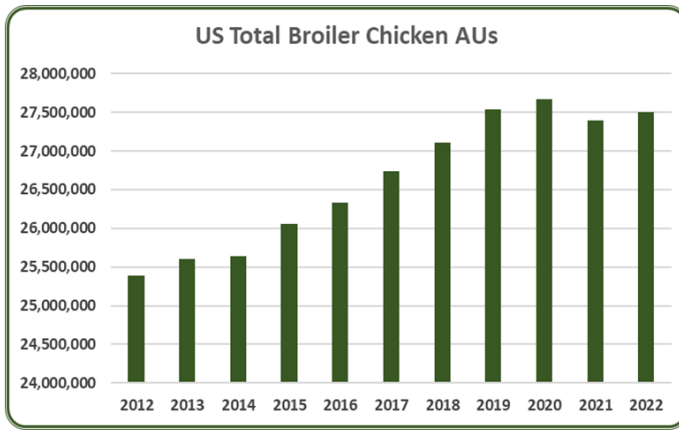
As shown in the accompanying charts and written commentary, certain components of animal agriculture are more present, and therefore more dominant than others. This is due primarily to geography (i.e., weather patterns and access to certain transportation hubs), proximity to high quality, relevant feed ingredients, and the local animal agriculture regulatory framework. In Texas, the largest three segments of animal agriculture in terms of AUs during 2022 were: Beef Cattle (10.20 million AUs), Broilers (2.17 million AUs), and Dairy Cattle (1.30 million AUs). Total AUs in Texas during 2022 were 14.37 million AUs.



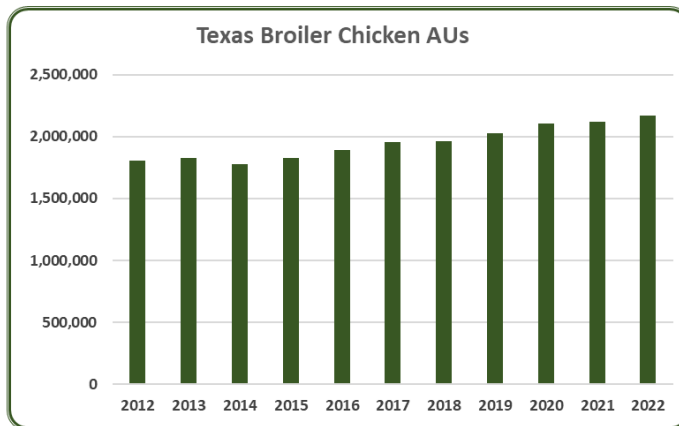
- In 2022, total AUs in the U.S. decreased by 1.4% to 129.2 million, continuing a downward trend that started in 2019. Nine out of the ten animal groups tracked saw a decrease, with the exception being broilers. Over 70% of the total decrease in AUs is due to lower beef cattle inventories.



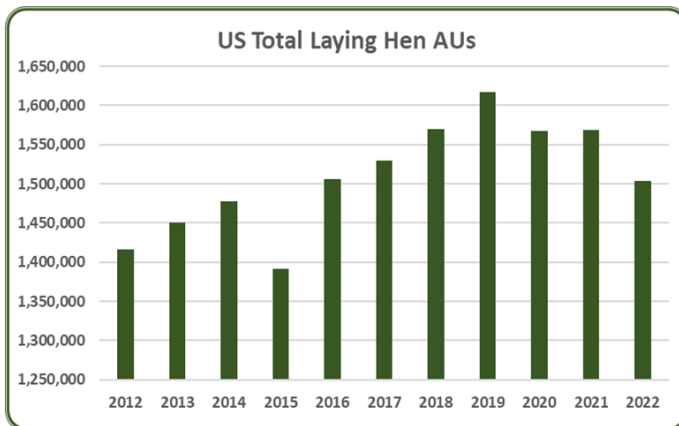
- In 2022, Texas had 14.37 million total AUs, a 2.2% decrease from 2021. From 2012 to 2022, the average number of total AUs in Texas was 13.59 million AUs. Since 2012, total AUs in Texas have increased by 6.6%.



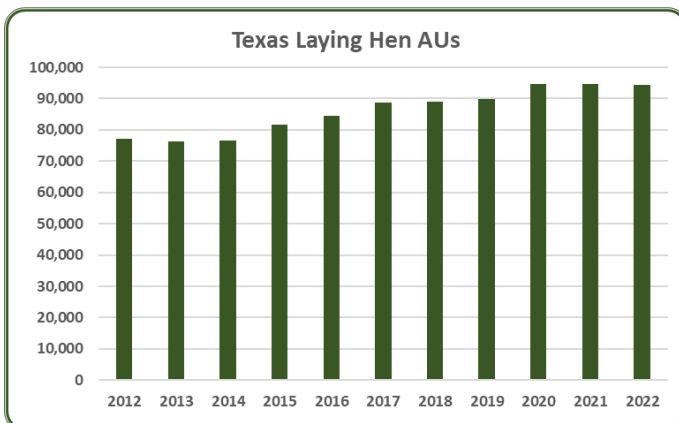
- From 2012 to 2022, broiler chicken AUs averaged 26.6 million across the U.S. Broiler AUs trended up and peaked in 2020 at 27.6 million. Broiler AUs are up 0.4% from 2021 and were the only animal group tracked here that increased compared to last year. Broilers make up about 21% of U.S. AUs.



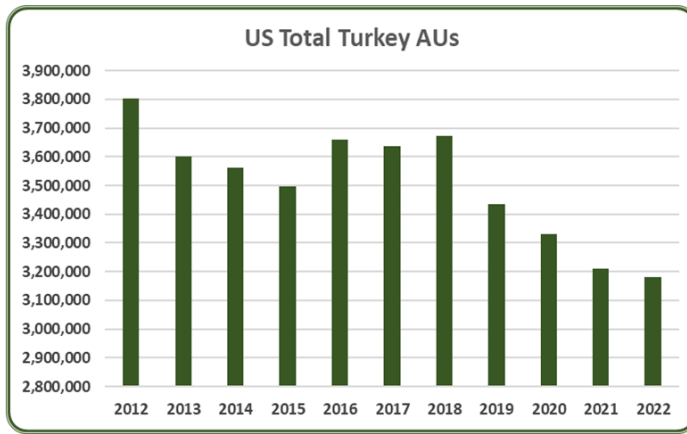
- In 2022, Texas had 2.17 million broiler AUs, a 2.4% increase from 2021. Broilers accounted for 15.1% of the total AUs (14.37 million) in Texas. From 2012 to 2022, the average number of broiler AUs in Texas was 1.95 million AUs. Since 2012, broiler AUs have increased by 20%.



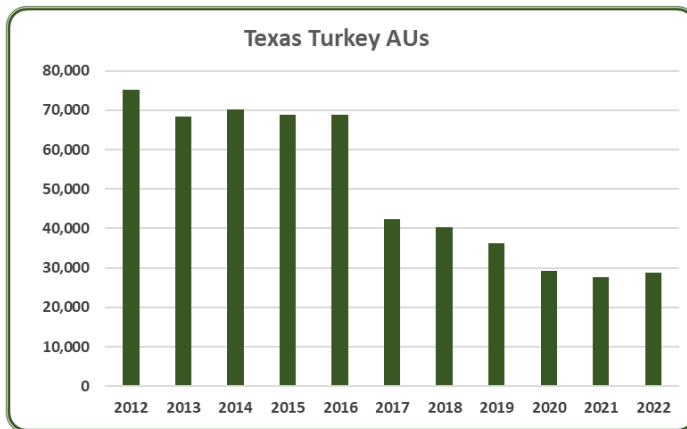
- From 2012 to 2022, U.S. layer AUs averaged 1.51 million. In 2022, layer AUs were 1.50 million, a 4.2% decrease from 2021. The 2022-23 Highly Pathogenic Avian Influenza (HPAI) outbreak contributed to this past year's decrease in layer AUs. Layers make up about 1% of U.S. AUs so large changes in layer AUs do not have a large impact on total AUs.



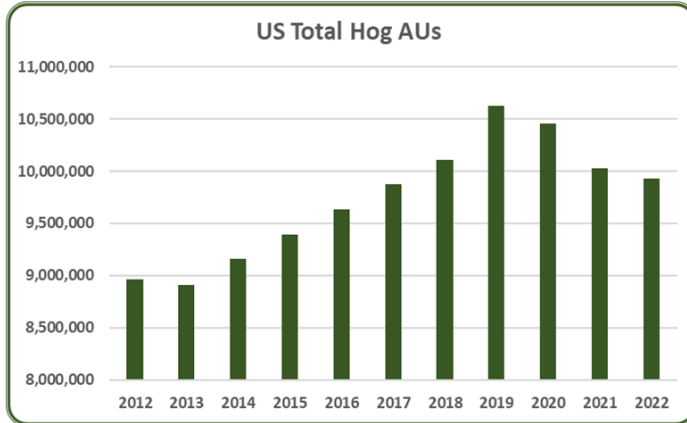
- In 2022, Texas had 94,392 layer AUs, a 0.1% decrease from 2021. Layers accounted for 0.7% of the total AUs (14.37 million) in Texas. From 2012 to 2022, the average number of layer AUs in Texas was 86,109 AUs. Since 2012, layer AUs have increased by 22.5%.



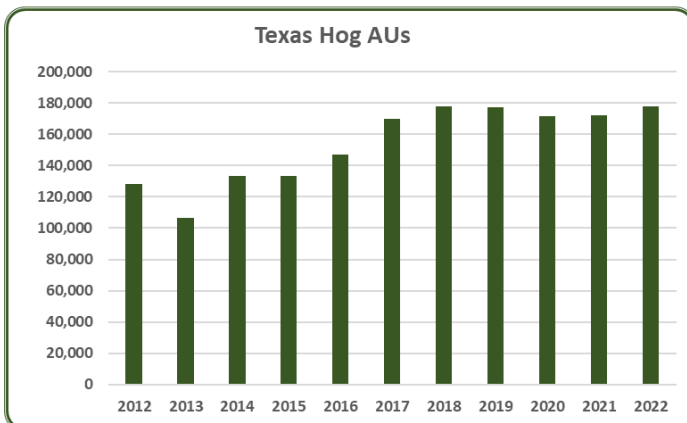
- In 2022, turkey AUs were at 3.18 million, a 0.9% drop from the previous year. This drop is surprisingly low considering the industry battled HPAI for most of 2022. Turkey AUs have been trending down since 2018. Turkey AUs represent about 2% of U.S. AUs, so like layers, large changes in turkey AUs do not cause large changes in total AUs.



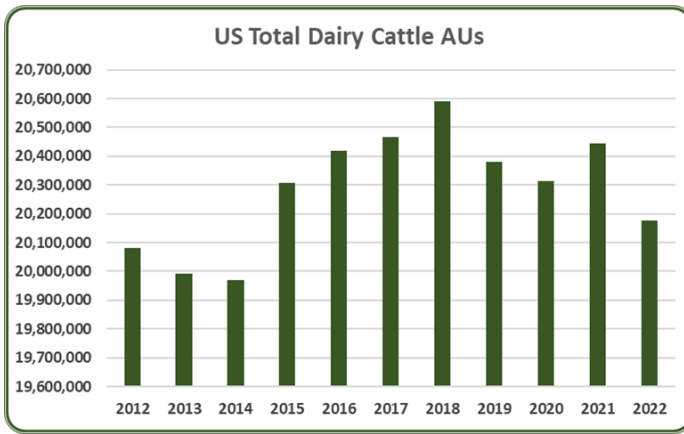
- In 2022, Texas had 28,888 turkey AUs, a 4.3% increase from 2021. Turkeys accounted for 0.2% of the total AUs (14.37 million) in Texas. From 2012 to 2022, the average number of turkey AUs in Texas was 50,589 AUs. Since 2012, turkey AUs have decreased by 61.6%.



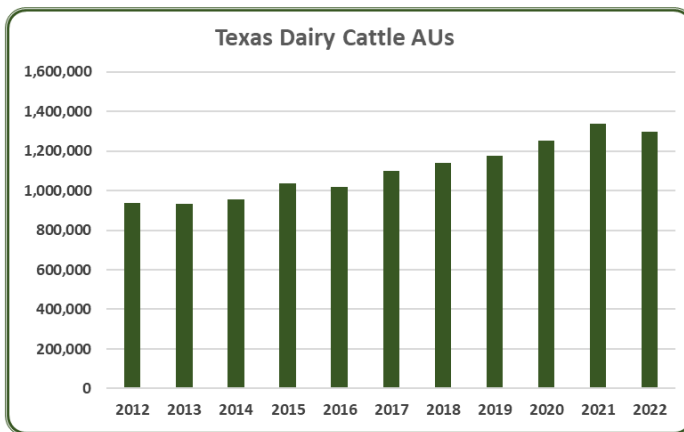
- In 2022, hog AUs totaled 9.93 million, a 1.0% drop from the previous year. From 2012 to 2022, hog AUs averaged 9.73 million. Hog AUs have been trending down since 2019 when they peaked at 10.62 million AUs. Hogs make up 7.70% of all AUs within the U.S.



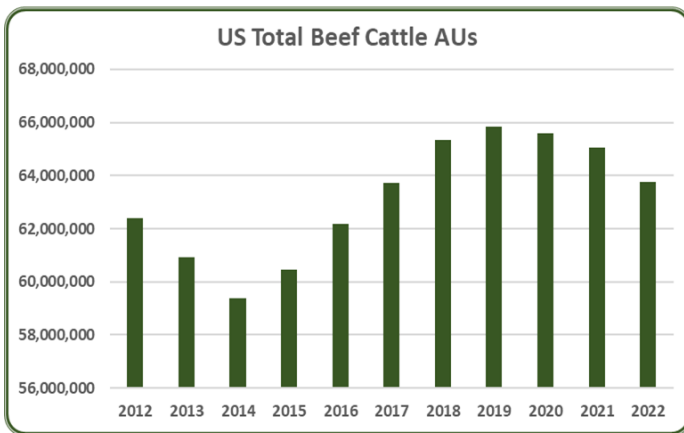
- In 2022, Texas had 177,985 hog AUs, a 3.4% increase from 2021. Hogs accounted for 1.2% of the total AUs (14.37 million) in Texas. From 2012 to 2022, the average number of hog AUs in Texas was 154,129 AUs. Since 2012, hog AUs have increased by 38.6%.



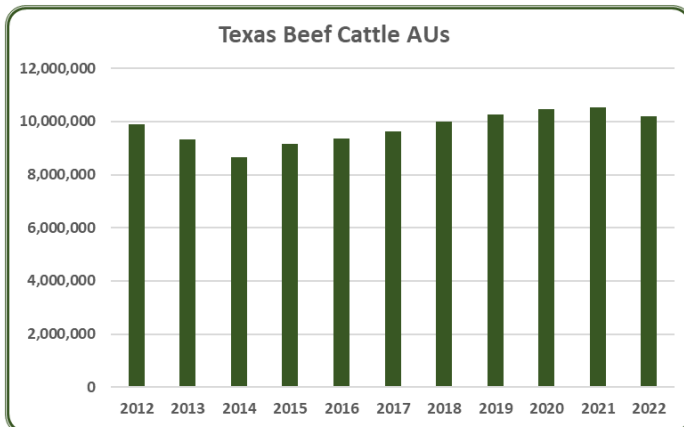
- From 2012 to 2022, dairy cattle AUs averaged 20.29 million. The herd was also relatively steady, fluctuating between 19.9-20.6 million AUs during that time. In 2022, dairy cattle AUs totaled 20.18 million, down 1.3% from 2021. Dairy cattle represented about 16% of all U.S. AUs.



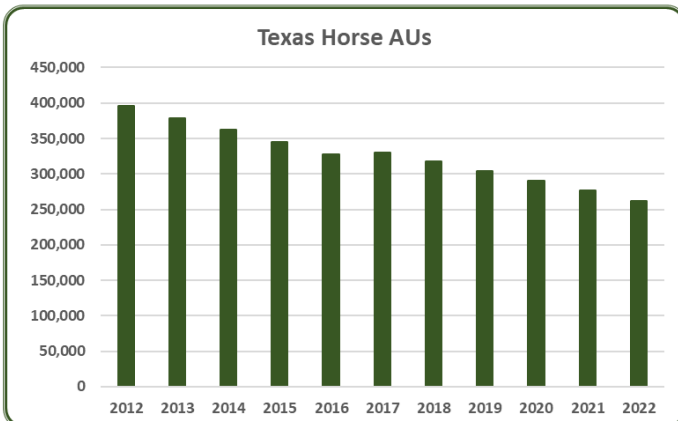
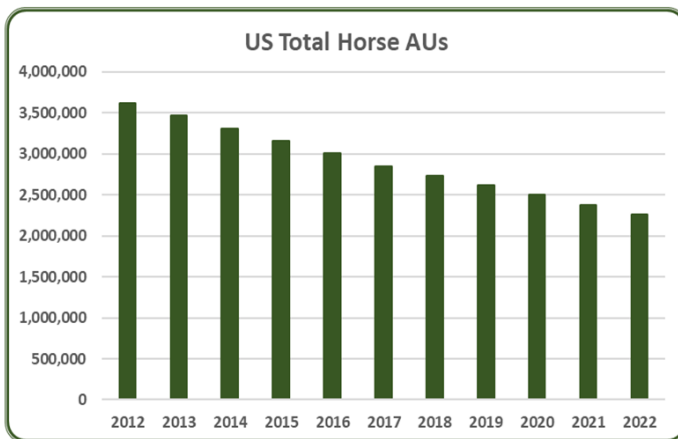
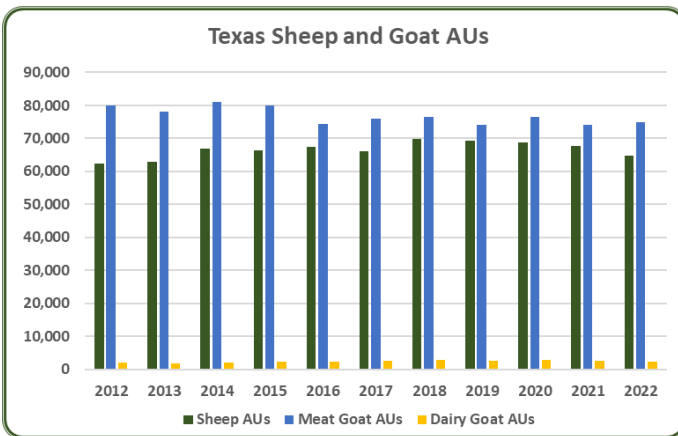
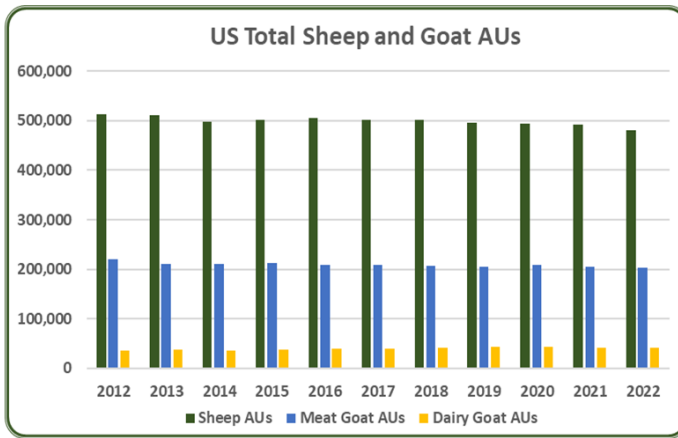
- In 2022, Texas had 1.3 million dairy cattle AUs, a 3.2% decrease from 2021. Dairy cattle accounted for 9% of the total AUs (14.37 million) in Texas. From 2012 to 2022, the average number of dairy cattle AUs in Texas was 1.11 million AUs. Since 2012, dairy cattle AUs have increased by 38.1%.



- From 2012 to 2022, beef cattle AUs averaged 63.9 million. In 2022 beef cattle AUs totaled 63.93 million, down 2% from last year, as beef cattle continued through a contraction phase in the cattle cycle which started in 2019. Beef AUs represent almost 50% of U.S. AUs, so changes in beef cattle AUs have large effects on total AUs.



- In 2022, Texas had 10.2 million beef cattle AUs, a 3.1% decrease from 2021. Beef cattle accounted for 71% of the total AUs (14.37 million) in Texas. From 2012 to 2022, the average number of beef cattle AUs in Texas was 9.77 million AUs. Since 2012, beef cattle AUs have increased by 2.9%.



- Sheep, meat goats, and dairy goats account for less than 0.6% of U.S. total AUs. Over the past decade, sheep AUs averaged 500,000, meat goat AUs averaged 209,000 and dairy goat AUs averaged 40,000. Sheep and meat goat AUs have trended down while dairy goats trended up until 2019, then leveled off.

- In 2022, Texas had a combined 142,050 sheep, meat goat, and dairy goat AUs, a 1.6% decrease from 2021. These accounted for 1% of the total AUs (14.37 million) in Texas. Individually, sheep AUs decreased 4.6%, meat goat AUs increased 1.4% and dairy goat AUs decreased 7.7%. Combined there was a 1.5% decrease in sheep and goat AUs since 2012.

- Horses account for about 2% of U.S. total AUs. From 2012 to 2022, horse AUs averaged 2.90 million. However, a steady downtrend is present and 2022 horse AUs only totaled 2.26 million. U.S. horse AUs have decreased every year from 2012 to 2022, decreasing 37.6% over the entire period.

- In 2022, Texas had 262,412 horse AUs, a 5% decrease from 2021. Horses accounted for 1.8% of the total AUs (14.37 million) in Texas. From 2012 to 2022, the average number of horse AUs in Texas was 326,347 AUs. Since 2012, horse AUs have decreased by 33.7%.

Texas Additional Information and Methodology

Animal agriculture is an important part of Texas’s current and future economic health. To quantify the connection between animal agriculture and local economies, the United Soybean Board commissioned [Decision Innovation Solutions](#), an economic research firm in Urbandale, Iowa, to conduct an in-depth analysis of several aspects of animal agriculture. This analysis includes the following components:

1. Economic impact of animal agriculture to local (state) economies during the 2012-2022 time period
2. SBM usage by animal species during the 2021/22 soybean marketing year
3. Animal Unit (AU) trends from 2012-2022

Given the long-term presence of animal agriculture in Texas, of interest is the degree to which the industry impacts the Texas economy. Estimates of output, jobs, earnings, taxes paid, and multipliers for Texas animal agriculture are presented in this report. Methodology for this section of the report closely mirrors that followed in years’ past. Also presented are estimates of the change in how animal agriculture has impacted Texas’s economy over the last decade. Differences, to the extent they are present, are noted within the larger national report which accompanies this state report.

As with any industry across the economic spectrum, there are ebbs and flows in activity that have implications for other parts of the economy. Again, using the same 2012-2022 time period as with the economic impact section of this state report, the “Animal Unit Trends” seeks to quantify production changes in animal agriculture in Texas which have occurred. As shown in this state report, Texas has seen changes within its animal agriculture industry. Expectations are that animal agriculture will continue to evolve over the next decade.

Animal agriculture is the single largest user of SBM in Texas. Through in-depth conversations with many of the nation’s top nutritionists and researchers, “bottom up” estimates of SBM usage by animal type were determined. Using the input from these conversations and additional analysis performed by Decision Innovation Solutions, the quantity of SBM used during the 2021-22 soybean marketing year for up to sixteen specific animal species has been estimated.

Should readers have comments or questions regarding methodology, results and interpretation, please contact the authors at info@decision-innovation.com or 515.639.2900.

Texas Multipliers

Economic multipliers give a sense for how economic activity in a given industry is related to other industries in the same study area. To estimate the impact of animal agriculture on Texas’s economy, we applied RIMS II multipliers from the Department of Commerce, Bureau of Economic Analysis for cattle ranching and farming, dairy cattle and milk production, poultry and egg production, and other animal production (primarily hogs and pigs), where applicable.

Multipliers are generally stated in the form of “per million dollars” of output. As it relates to this analysis, multipliers are stated as the activity related to every million dollars of economic output in animal agriculture. Referring to the multipliers below, for every million dollars in output generated by the various segments of animal agriculture in Texas, \$1.83 to \$2.99 million in total economic activity, \$0.46 to \$0.65 in household wages and 16 to 20 additional jobs are generated in the economy at large.

Appendix

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Animal Units (AUs)	Beef Cattle AUs	9,905,783	9,310,556	8,669,313	9,150,093	9,372,738	9,633,733	9,994,472	10,271,726	10,462,444	10,523,497	10,195,360
	Hog and Pig AUs	128,427	106,328	133,396	133,267	147,090	170,082	177,719	177,526	171,508	172,085	177,985
	Broiler AUs	1,807,800	1,830,300	1,775,400	1,826,100	1,888,500	1,953,600	1,960,500	2,025,000	2,107,500	2,119,800	2,169,900
	Turkey AUs	75,221	68,395	70,298	68,915	68,915	42,313	40,395	36,319	29,127	27,689	28,888
	Egg Layer AUs	77,040	76,328	76,600	81,564	84,516	88,680	88,988	89,928	94,656	94,508	94,392
	Dairy AUs	939,452	930,827	956,809	1,035,438	1,018,992	1,097,581	1,141,671	1,175,683	1,251,996	1,339,965	1,297,329
	Total Animal Units	13,473,790	12,844,430	12,193,791	12,789,230	13,053,283	13,461,260	13,870,195	14,225,709	14,555,237	14,698,029	14,368,316
Value of Production (\$1,000)	Cattle and Calves (\$1,000)	\$ 7,423,536	\$ 7,536,504	\$ 9,041,302	\$ 9,236,773	\$ 7,239,829	\$ 7,507,961	\$ 7,433,596	\$ 7,189,016	\$ 7,529,354	\$ 8,182,460	\$ 9,779,602
	Hogs and Pigs (\$1,000)	\$ 266,045	\$ 197,889	\$ 238,528	\$ 203,573	\$ 181,757	\$ 193,990	\$ 218,325	\$ 230,295	\$ 200,998	\$ 385,899	\$ 337,956
	Broilers (\$1,000)	\$ 1,747,550	\$ 2,184,957	\$ 2,261,860	\$ 2,030,358	\$ 1,835,520	\$ 2,231,814	\$ 2,374,520	\$ 2,165,130	\$ 1,659,867	\$ 2,518,594	\$ 4,188,885
	Turkeys (\$1,000)	\$ 67,286	\$ 53,277	\$ 37,181	\$ 39,958	\$ 40,069	\$ 25,848	\$ 25,643	\$ 32,001	\$ 36,003	\$ 48,628	\$ 99,094
	Eggs (\$1,000)	\$ 445,497	\$ 470,982	\$ 526,171	\$ 729,032	\$ 361,309	\$ 395,521	\$ 546,407	\$ 370,840	\$ 454,410	\$ 494,210	\$ 1,180,334
	Milk (\$1,000)	\$ 1,794,452	\$ 1,960,440	\$ 2,536,260	\$ 1,823,277	\$ 1,852,956	\$ 2,217,936	\$ 2,173,340	\$ 2,645,350	\$ 2,763,030	\$ 2,839,018	\$ 4,230,144
	Other	\$ 116,905	\$ 111,185	\$ 116,827	\$ 117,514	\$ 119,034	\$ 115,389	\$ 114,600	\$ 110,826	\$ 107,913	\$ 105,096	\$ 104,510
	Sheep and Lambs (\$1,000)	\$ 34,872	\$ 31,704	\$ 39,898	\$ 43,138	\$ 47,210	\$ 46,117	\$ 47,880	\$ 46,658	\$ 46,298	\$ 46,033	\$ 47,999
	Aquaculture (\$1,000)	\$ 82,033	\$ 79,481	\$ 76,929	\$ 74,376	\$ 71,824	\$ 69,272	\$ 66,720	\$ 64,168	\$ 61,615	\$ 59,063	\$ 56,511
	Total (\$1,000)	\$ 11,861,271	\$ 12,515,235	\$ 14,758,129	\$ 14,180,485	\$ 11,630,475	\$ 12,688,459	\$ 12,886,431	\$ 12,743,458	\$ 12,751,575	\$ 14,573,905	\$ 19,920,525

Ag Census Data Category	Animal Type	2002	2007	2012	2017
Number of Farms by NAICS	Beef cattle ranching and farming (112111)	127,974	124,992	127,726	135,749
	Cattle feedlots (112112)	5,035	2,229	898	282
	Dairy cattle and milk production (11212)	1,221	1,027	656	429
	Hog and pig farming (1122)	1,760	1,732	1,184	1,350
	Poultry and egg production (1123)	3,032	5,829	3,980	3,516
	Sheep and goat farming (1124)	8,786	13,272	15,603	19,225
	Animal aquaculture and other animal production (1125,1129)	23,378	28,622	26,587	27,434
Value of Sales (\$1,000)	Cattle and Calves	8,083,024	10,503,774	13,013,127	12,291,224
	Hogs and Pigs	128,231	237,504	239,358	163,381
	Poultry and Eggs	1,260,951	2,113,086	2,624,759	2,991,846
	Milk*			1,698,264	2,159,171
	Aquaculture	31,058	46,102	82,033	69,272
	Other (calculated)	223,026	289,592	201,944	354,840
	Total	10,402,993	14,435,499	17,859,485	18,029,734
Input Purchases	Livestock and poultry purchased (Farms)	65,435	55,194	61,054	74,149
	\$1,000	4,524,369	6,017,794	6,860,573	5,855,780
	Breeding livestock purchased (Farms)	43,559	36,667	39,929	50,143
	\$1,000	186,906	420,373	418,586	548,951
	Other livestock and poultry purchased (Farms)	30,388	25,541	29,879	35,229
	\$1,000	4,337,463	5,597,421	6,441,987	5,306,829
	Feed purchased (Farms)	167,033	158,144	185,019	197,956
\$1,000	2,700,281	4,226,444	7,272,692	5,206,042	
<i>* Measurement of milk sales in 2002-2007 are not comparable to 2012-2017.</i>					

	<u>Animal Type</u>	<u>Output (\$1,000)</u>	<u>Earnings (\$1,000)</u>	<u>Employment (Jobs)</u>	<u>Income Taxes Paid (\$1,000)</u>
2022 Animal Agriculture	Cattle and Calves	\$ 26,127,185	\$ 5,680,971	194,482	\$ 1,147,556
	Hogs, Pigs, and Other	\$ 809,979	\$ 201,853	7,198	\$ 40,774
	Poultry and Eggs	\$ 16,373,222	\$ 3,562,606	88,738	\$ 719,646
	Dairy	\$ 11,534,334	\$ 2,587,156	74,755	\$ 522,606
	Total	\$ 54,844,720	\$ 12,032,586	365,173	\$ 2,430,582

Change from 2012 to 2022	Cattle and Calves	\$ 479,625	\$ 104,287	3,570	\$ 21,066
	Hogs, Pigs, and Other	\$ (96,586)	\$ (24,070)	(858)	\$ (4,862)
	Poultry and Eggs	\$ 7,621,027	\$ 1,658,239	41,304	\$ 334,964
	Dairy	\$ 5,206,821	\$ 1,167,892	33,746	\$ 235,914
	Total	\$ 13,210,886	\$ 2,906,348	77,761	\$ 587,082

	<u>Animal Type</u>	<u>Output(\$)</u>	<u>Earnings (\$)</u>	<u>Employment (Jobs)</u>
RIMS II Multipliers	Cattle and Calves	\$ 2.67	\$ 0.58	19.9
	Hogs, Pigs, and Other	\$ 1.83	\$ 0.46	16.3
	Poultry and Eggs	\$ 2.99	\$ 0.65	16.2
	Dairy	\$ 2.73	\$ 0.61	17.7

Tax Rates	Federal effective income tax rate	14.0%
	Federal Social Security tax rate	6.2%
	State Effective Rate	0.0%
	Total	20.2%

Sources: 2002, 2007, 2012 and 2017 Census of Agriculture, USDA/NASS Survey Data, RIMS II Multipliers (U.S. Bureau of Economic Analysis), Tax-Rates.org & The Motley Fool.