

Economic Analysis of Animal Agriculture 2005-2015

LOUISIANA

**A Report for
United Soybean Board**



September 2016



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Louisiana Executive Summary

The use of soybean meal as a key feed ingredient is an important part of Louisiana's animal agriculture. While the degree to which animal agriculture utilizes this versatile feed ingredient has fluctuated with time, it remains a factor in animal agriculture's success in the State of Louisiana. For example, in the State of Louisiana during 2015 animal agriculture contributed:

- \$1.3 billion in economic output
- 5,643 jobs
- \$267.7 million in earnings
- \$65.1 million in income taxes paid at local, state, and federal levels
- \$32.1 million in the form of property taxes

Louisiana's animal agriculture consumed almost 259.6 thousand tons of soybean meal in 2015. This soybean meal was fed primarily to:

- Broilers (233.6 thousand tons)
- Egg-Laying Hens (6.9 thousand tons)
- Beef Cows (6.2 thousand tons)

This report examines animal agriculture in Louisiana 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 Louisiana, many opportunities and challenges will arise. It is expected that animal agriculture will continue to be a minor contributor to the economic well-being of the people of Louisiana and beyond.

Louisiana Economic Impact of Animal Agriculture

Animal agriculture is an important but shrinking part of Louisiana’s economy. In 2015, Louisiana’s animal agriculture contributed the following to the economy:

- About \$1.3 billion in economic output
- \$267.7 million in household earnings
- 5,643 jobs
- \$65.1 million in income taxes

During the last decade contractions in Louisiana’s animal agriculture has:

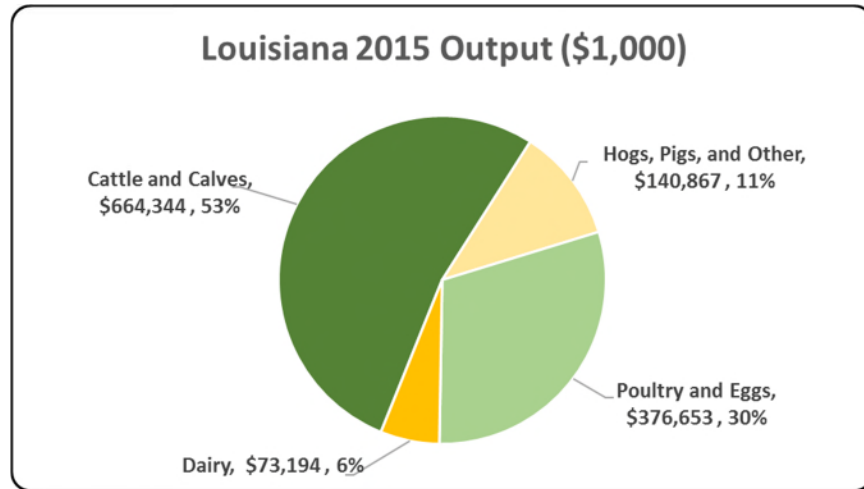
- Decreased economic output by \$230.0 million
- Reduced household earnings by \$54.9 million
- Shrunk by 1,231 jobs
- Paid \$13.3 million less in income taxes

Below is a table which demonstrates this decade of change.

Measure	2015	Change 2005-2015	% Change 2005-2015
Output (\$1,000)	\$ 1,255,058	\$ (230,044)	-15.49%
Earnings (\$1,000)	\$ 267,708	\$ (54,860)	-17.01%
Employment (Jobs)	5,643	(1,231)	-17.91%
Income Taxes Paid (\$1,000)	\$ 65,133	\$ (13,347)	-17.01%
Property Taxes Paid in 2012 (\$1,000)	#N/A		

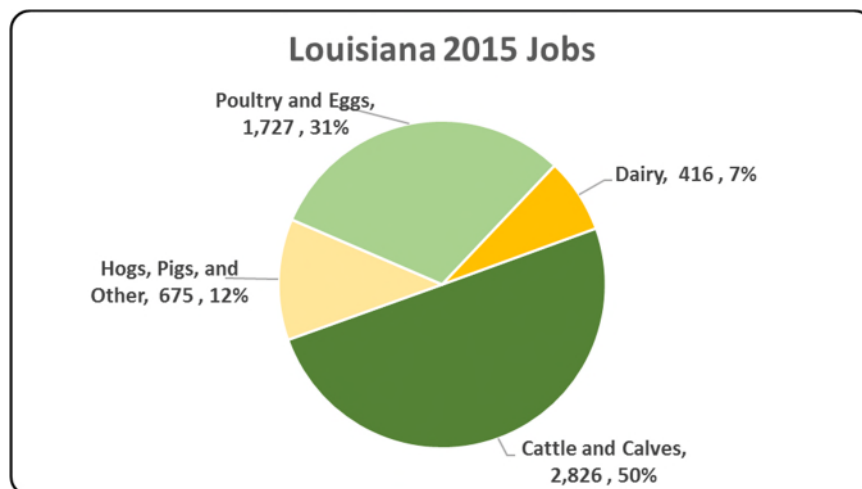
Louisiana Output

“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 chart illustrates the impact of animal agriculture to the Louisiana economy. Animal agriculture’s impact on Louisiana total economic output is about \$1.3 billion.



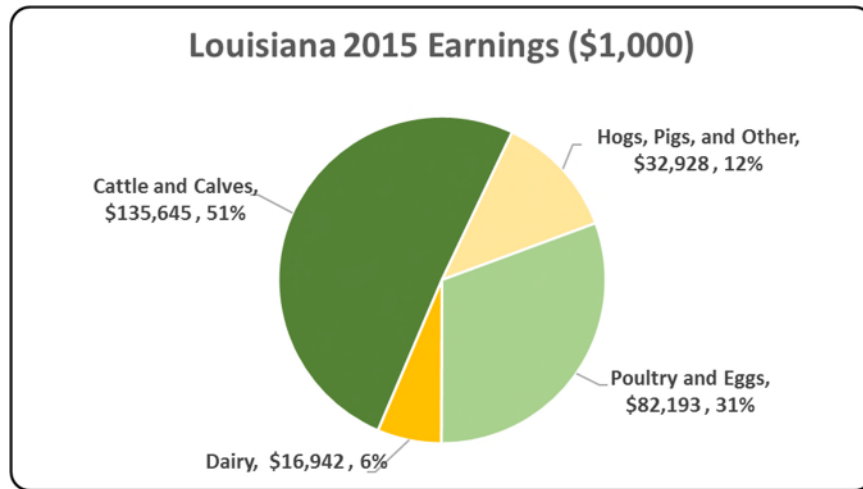
Louisiana Jobs

“Jobs” represents an estimate of the number of full or part-time positions (jobs) currently filled in an area and/or industry. The chart illustrates the contribution to Louisiana in terms of animal agriculture jobs. As shown, animal agriculture contributes 5,643 jobs within and outside of animal agriculture in Louisiana.



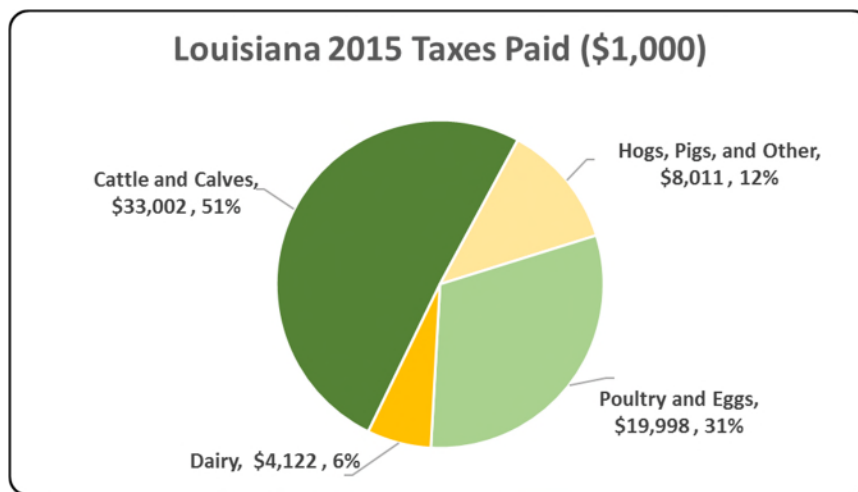
Louisiana Earnings

Earnings includes wages and salaries plus proprietors’ income, which is the net earnings of sole-proprietors and partnerships. The chart illustrates the impact of animal agriculture to the Louisiana economy in terms of earnings. Louisiana’s animal agriculture contributed about \$267.7 million to household earnings in 2015.



Louisiana Taxes Paid by Animal Agriculture

Louisiana’s animal agriculture is also a source of tax revenue. In 2015, the state’s animal agriculture industry paid about \$65.1 million in income taxes at local, state, and federal levels. Plus the 2012 Census of Agriculture estimated \$32.1 million in property taxes paid by all of Louisiana agriculture during 2012. Estimates of income taxes paid by animal agriculture are shown in the following chart.



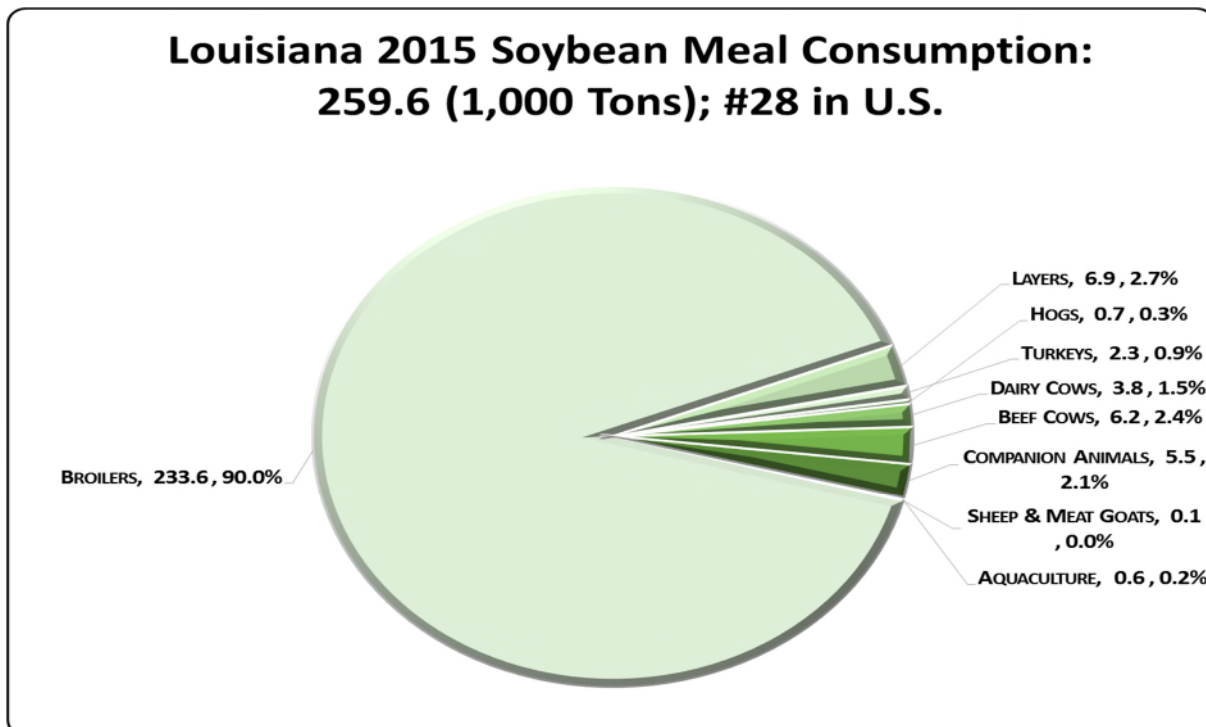
Louisiana Animal Agriculture Soybean Meal Consumption

The choice to use soybean meal 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 soybean meal (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 soybean meal usage by animal type were determined. Using the input from these conversations and additional analysis performed by Decision Innovation Solutions, the quantity of soybean meal used during the 2014-15 soybean marketing year by up to sixteen specific animal species has been estimated.

Louisiana’s animal agriculture consumed almost 259.6 thousand tons of soybean meal in 2015, placing the state as #28 in the nation in terms of soybean meal consumption (see figure below). The three segments of animal agriculture that led the state in estimated soybean meal consumption are:

- Broilers (233.6 thousand tons)
- Beef Cows (6.9 thousand tons)
- Egg-Laying Hens (6.2 thousand tons)

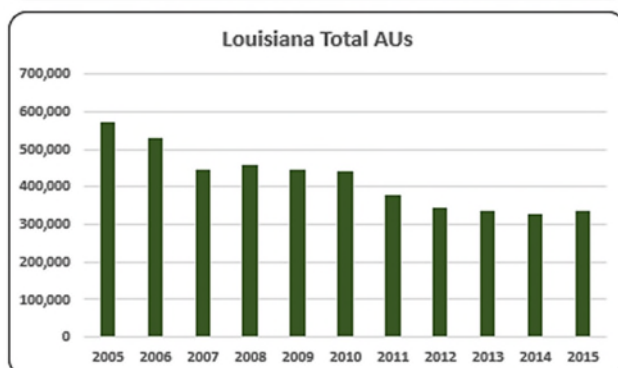
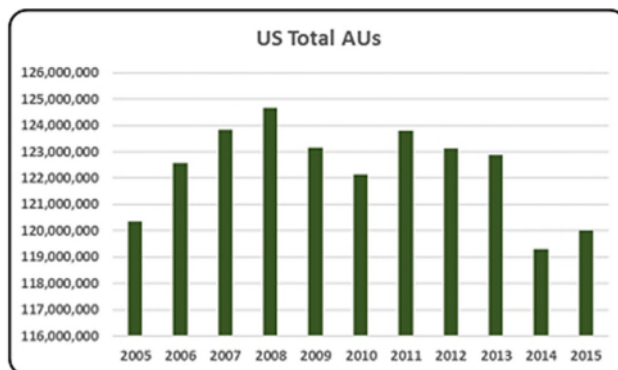


Louisiana Animal Unit (AU) Trends

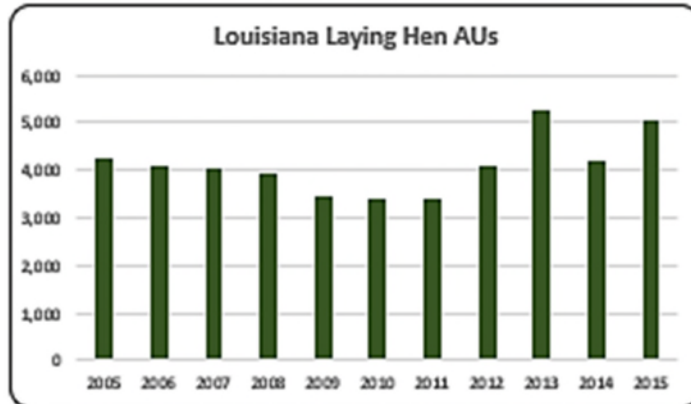
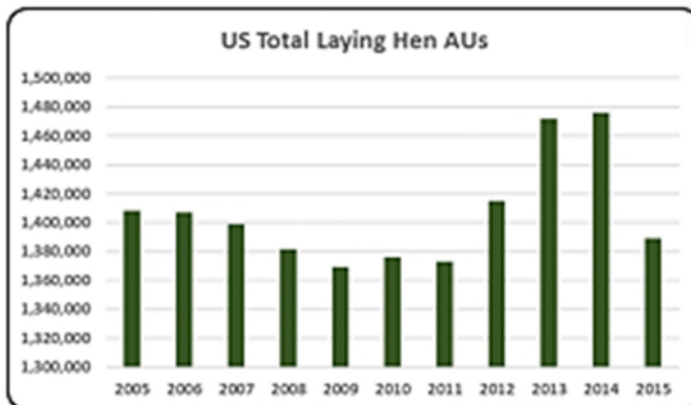
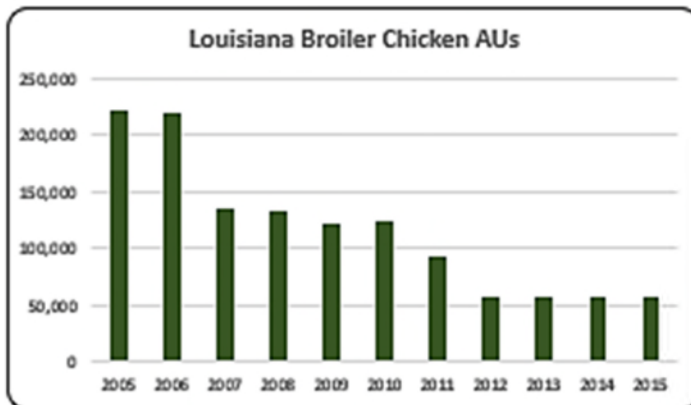
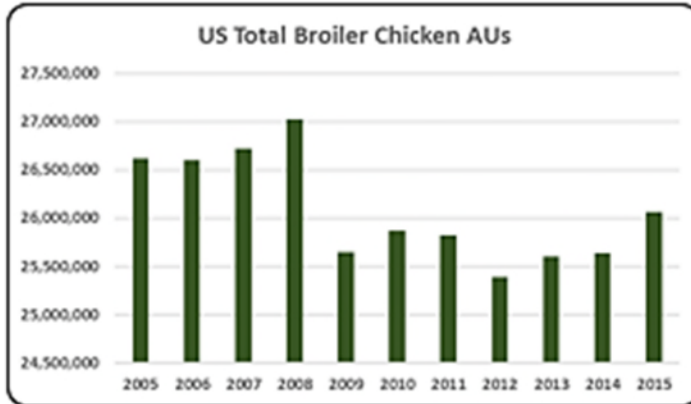
Over time, prices of feed, meat, eggs and milk, as well as levels of demand for these products in the United States and abroad have an impact on the size of animal agriculture in the State of Louisiana. Due to this reality, using a single year as a measure of the presence and strength of a sector can 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 Louisiana and to give perspective on Louisiana's contribution to the nation's animal agriculture industry and beyond.

Similar to 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 Louisiana, the largest three segments of animal agriculture in terms of AUs during 2015 were: Beef Cows (245,850 AUs), Broilers (58,222 AUs), and Dairy Cows (19,600 AUs). Total animal units in Louisiana during 2015 were 334,063 AUs.



- Overall U.S. total AUs have varied from 2005 to 2015. In 2014 AUs were at an all-time low reflecting, in part, the impact of severe weather on cattle production in some parts of country. During the 2005-15 time period, total AUs in the nation peaked in 2008.
- The most important animal sector in Louisiana is beef. About 73.6% (245,850) of all AUs (334,063) in Louisiana in 2015 were beef cow AUs.

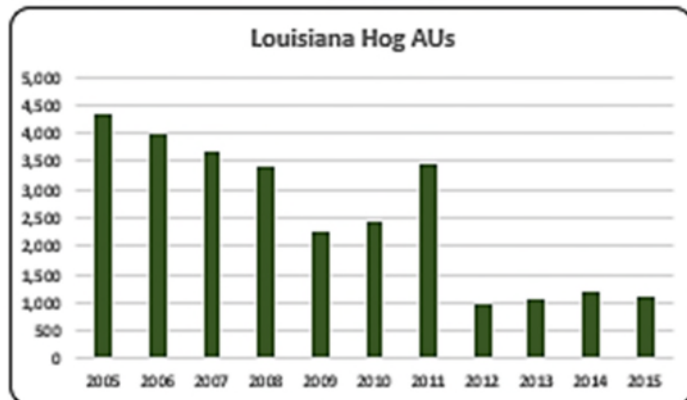
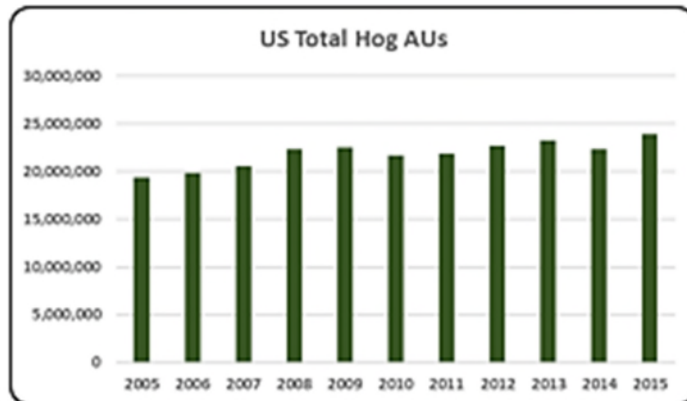
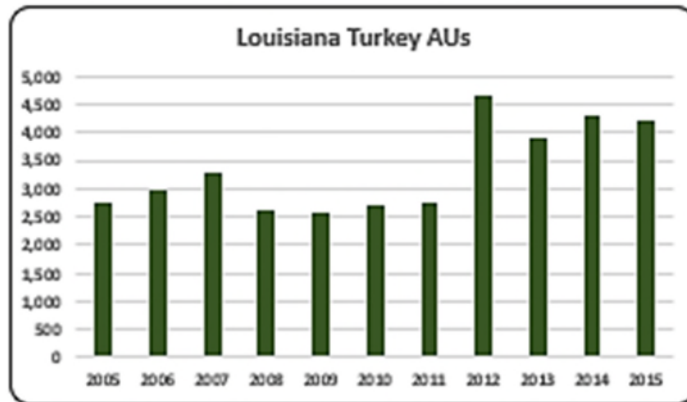
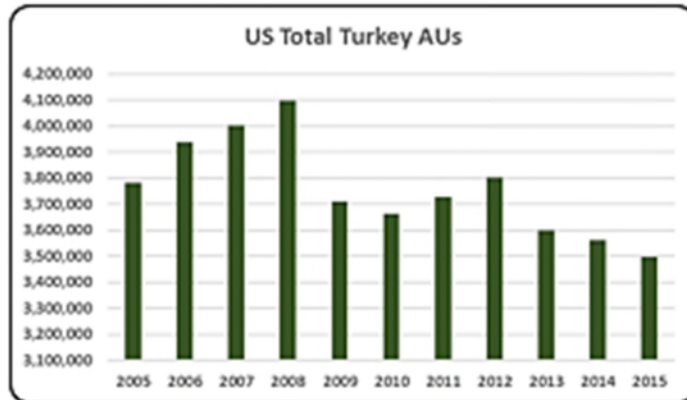


- U.S. broiler production is clustered in a number of states, with Georgia being the largest producer. On average from 2005 to 2015, broiler chicken AUs were about 26.0 million. In 2015, AUs rebounded 3% from the low AUs numbers in 2012 (25.4 million AUs).

- Broiler numbers in Louisiana have substantially decreased from 221,821 broiler AUs in 2005 to 58,222 in 2015.

- On average, the layer AUs during 2005-2015 were 1.4 million. In 2015 layer AUs were 1.3 million, down 6% from the 2014 decade high (1.4 million AUs). This drastic decrease in 2015 was due to the losses in major egg laying states from the avian influenza outbreak.

- Layers numbers dropped during 2009-2011 to an average of 3,422 layer AUs. By 2015, there were 5,066 layer AUs increasing 20% from the previous year.

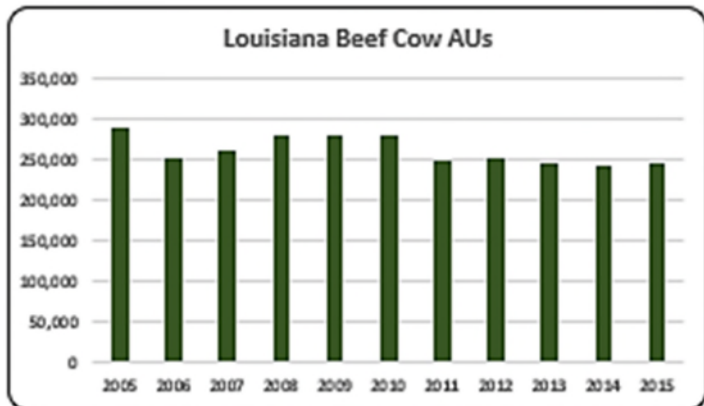
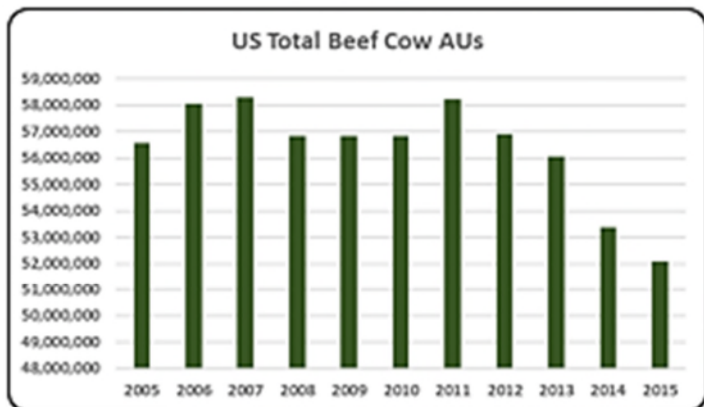
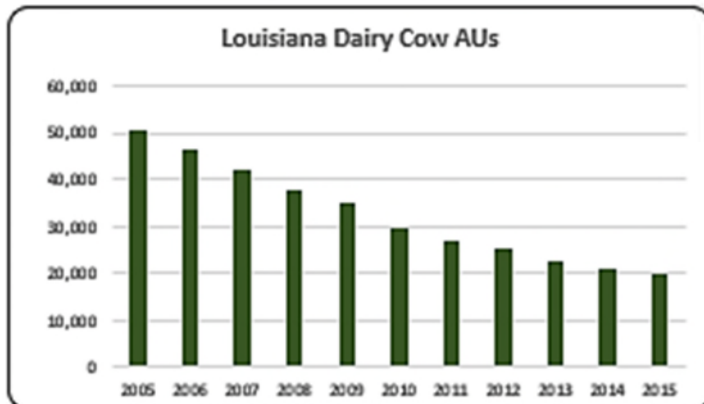
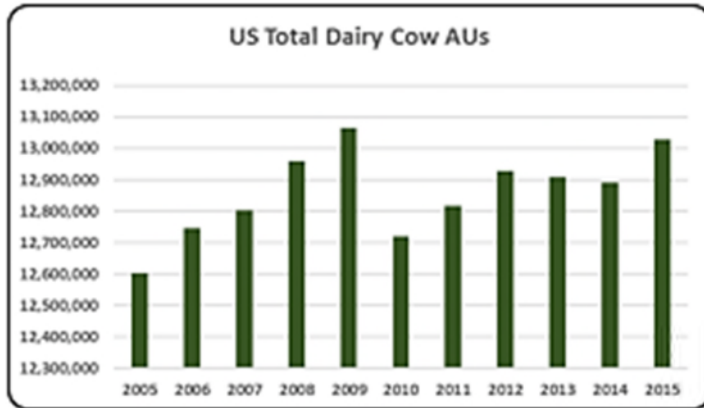


- In 2015 turkey AUs were the lowest of the decade at 3.5 million, decreasing 15% compared to 2008 (4.1 million turkey AUs) the largest turkey AUs of the decade. The most recent contributor to this decline has been avian influenza.

- The average number of turkey AUs for the 2005-2015 decade was 3,331 AUs, with 4,200 AUs in the year 2015.

- On average from 2005 to 2015, hog AUs were about 21.8 million. Hog AUs in 2015 increased 24% to 23.9 million AUs compared to the decade low in 2005 (19.4 million AUs). Despite the fluctuation in AUs, the pork supply was relatively stable.

- Hog production in Louisiana is the smallest animal sector in the state. Hog AUs only make up 0.3% in Louisiana. There were 1,125 hog AUs in 2015.



- From 2005 to 2015 dairy cow AUs averaged 12.8 million. In 2015, dairy cow AUs (13.0 million) finally reached near the 2009 high of 13.1 million AUs. Milk supplies have steadily risen.
- In the 2005 to 2015 decade, over 5.8% (19,600) of all AU in Louisiana were dairy cow AUs which is the third most important animal sector in the state.
- From 2005 to 2015 beef cow AUs averaged 56.3 million. In 2015 beef cow AUs decreased to 52.0 million, the lowest of the decade. States that traditionally raise a lot of cattle like Texas and Oklahoma continue to work through the lingering effects of the drought of the last several years.
- Beef cow AUs have declined 15% since 2005 (289,800). There were 245,850 beef cow AUs in 2015.

Louisiana Additional Information and Methodology

Animal agriculture is an important part of Louisiana'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:

- Economic impact of animal agriculture to local (state) economies during the 2005-2015 time period
- Soybean meal usage by animal species during the 2014/15 soybean marketing year
- Animal Unit (AU) trends from 2005-2015

Given the long-term presence of animal agriculture in Louisiana, of interest is the degree to which the industry impacts the Louisiana economy. Estimates of output, jobs, earnings, taxes paid, and multipliers for Louisiana 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 Louisiana'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 2005-2015 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 Louisiana which have occurred. As shown in this state report, Louisiana 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 soybean meal in Louisiana. Through in-depth conversations with many of the nation's top nutritionists and researchers, "bottom up" estimates of soybean meal usage by animal type were determined. Using the input from these conversations and additional analysis performed by Decision Innovation Solutions, the quantity of soybean meal used during the 2014-15 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 515.257.6077.

Louisiana 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 Louisiana'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 Louisiana, \$1.58 to \$2.35 million in total economic activity, \$0.37 to \$0.51 in household wages and 8 to 12 additional jobs are generated in the economy at large.

	Animal Type	Output(\$)	Earnings (\$)	Employment (Jobs)
RIMS II Multipliers	Cattle and Calves	\$ 1.886	\$ 0.385	8.0
	Hogs, Pigs, and Other	\$ 1.580	\$ 0.369	7.6
	Poultry and Eggs	\$ 2.351	\$ 0.513	10.8
	Dairy	\$ 2.049	\$ 0.474	11.6

Appendix

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Animal Units (AUs)	Beef Cattle AUs	289,800	250,650	259,200	278,850	278,850	278,850	249,150	251,250	244,650	241,200	245,850
	Hog and Pig AUs	4,335	3,975	3,675	3,405	2,265	2,445	3,450	960	1,080	1,185	1,125
	Broiler AUs	221,821	220,324	134,153	132,061	122,785	124,437	93,764	57,281	57,081	56,757	58,222
	Turkey AUs	2,728	2,964	3,290	2,630	2,576	2,683	2,731	4,661	3,888	4,292	4,200
	Egg Layer AUs	4,246	4,097	4,037	3,922	3,430	3,408	3,428	4,081	5,284	4,210	5,066
	Dairy AUs	50,400	46,200	42,000	37,800	35,000	29,400	26,600	25,200	22,400	21,000	19,600
	Total Animal Units	573,330	528,210	446,355	458,667	444,907	441,223	379,123	343,434	334,383	328,645	334,063
Value of Production (\$1,000)	Cattle and Calves (\$1,000)	\$ 213,324	\$ 214,148	\$ 208,881	\$ 189,780	\$ 170,208	\$ 171,121	\$ 225,510	\$ 262,296	\$ 254,357	\$ 357,142	\$ 352,325
	Hogs and Pigs (\$1,000)	\$ 2,567	\$ 1,969	\$ 1,671	\$ 1,817	\$ 975	\$ 1,426	\$ 2,770	\$ 862	\$ 1,015	\$ 1,239	\$ 876
	Broilers (\$1,000)	\$ 186,404	\$ 144,406	\$ 103,531	\$ 105,772	\$ 91,258	\$ 95,368	\$ 83,494	\$ 57,076	\$ 69,546	\$ 72,959	\$ 63,650
	Turkeys (\$1,000)	\$ 2,591	\$ 3,064	\$ 3,742	\$ 3,230	\$ 2,941	\$ 3,701	\$ 4,117	\$ 7,634	\$ 6,045	\$ 6,840	\$ 7,283
	Eggs (\$1,000)	\$ 31,073	\$ 31,011	\$ 42,333	\$ 47,694	\$ 38,009	\$ 46,210	\$ 55,356	\$ 58,699	\$ 62,904	\$ 72,790	\$ 89,256
	Milk (\$1,000)	\$ 68,138	\$ 57,024	\$ 70,498	\$ 66,033	\$ 38,482	\$ 42,300	\$ 50,808	\$ 43,512	\$ 45,114	\$ 53,448	\$ 35,720
	Other	\$ 101,314	\$ 99,980	\$ 98,645	\$ 97,311	\$ 95,977	\$ 94,642	\$ 93,308	\$ 91,973	\$ 90,639	\$ 89,305	\$ 87,970
	Sheep and Lambs (\$1,000)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Aquaculture (\$1,000)	\$ 101,314	\$ 99,980	\$ 98,645	\$ 97,311	\$ 95,977	\$ 94,642	\$ 93,308	\$ 91,973	\$ 90,639	\$ 89,305	\$ 87,970
	Total (\$1,000)	\$ 605,411	\$ 551,601	\$ 529,302	\$ 511,636	\$ 437,850	\$ 454,768	\$ 515,362	\$ 522,052	\$ 529,620	\$ 653,722	\$ 637,081

Ag Census Data Category	Animal Type	1997	2002	2007	2012	
Number of Farms by NAICS	Beef cattle ranching and farming (112111)	12,003	12,715	11,775	11,218	
	Cattle feedlots (112112)	209	12	-	28	
	Dairy cattle and milk production (11212)	602	143	282	111	
	Hog and pig farming (1122)	196	237	232	202	
	Poultry and egg production (1123)	476	815	808	717	
	Sheep and goat farming (1124)	166	256	627	607	
	Animal aquaculture and other animal production (1125,1129)	1,606	3,334	4,699	4,116	
Value of Sales (\$1,000)	Cattle and Calves	152,202	170,569	223,922	249,963	
	Hogs and Pigs	4,093	withheld	1,235	-	
	Poultry and Eggs	323,274	417,755	575,989	574,239	
	Milk and Other Dairy Products	109,332	82,866	72,020	42,628	
	Aquaculture	53,220	41,285	109,138	122,989	
	Other (calculated)	42,716	37,717	31,030	-	
	Total	684,837	750,192	1,013,334	989,819	
Input Purchases	Livestock and poultry purchased	(Farms)	6,487	6,664	5,909	6,651
		\$1,000	73,786	89,122	120,621	134,875
	Breeding livestock purchased	(Farms)	n/a	4,440	3,899	4,314
		\$1,000	n/a	13,593	27,852	42,909
	Other livestock and poultry purchased	(Farms)	n/a	3,140	2,804	3,282
		\$1,000	n/a	75,529	92,769	91,965
	Feed purchased	(Farms)	13,261	17,496	16,578	18,356
		\$1,000	247,019	260,900	369,975	452,403

	Animal Type	Output (\$1,000)	Earnings (\$1,000)	Employment (Jobs)	Taxes Paid (\$1,000)
2015 Animal Agriculture	Cattle and Calves	\$ 664,344	\$ 135,645	2,826	\$ 33,002
	Hogs, Pigs, and Other	\$ 140,867	\$ 32,928	675	\$ 8,011
	Poultry and Eggs	\$ 376,653	\$ 82,193	1,727	\$ 19,998
	Dairy	\$ 73,194	\$ 16,942	416	\$ 4,122
	Total	\$ 1,255,058	\$ 267,708	5,643	\$ 65,133
Change from 2005 to 2015	Cattle and Calves	\$ 176,179	\$ 35,972	749	\$ 8,752
	Hogs, Pigs, and Other	\$ (58,649)	\$ (13,709)	(281)	\$ (3,335)
	Poultry and Eggs	\$ (251,323)	\$ (54,844)	(1,152)	\$ (13,343)
	Dairy	\$ (96,252)	\$ (22,279)	(547)	\$ (5,421)
	Total	\$ (230,044)	\$ (54,860)	(1,231)	\$ (13,347)
RIMS II Multipliers	Animal Type	Output(\$)	Earnings (\$)	Employment (Jobs)	
	Cattle and Calves	\$ 1.886	\$ 0.385	8.0	
	Hogs, Pigs, and Other	\$ 1.580	\$ 0.369	7.6	
	Poultry and Eggs	\$ 2.351	\$ 0.513	10.8	
	Dairy	\$ 2.049	\$ 0.474	11.6	
Tax Rates	Federal effective income tax rate				12.7%
	Federal Social Security tax rate				7.7%
	State Effective Rate				4.0%
	Total				24.3%

Sources: 1997, 2002, 2007 and 2012 Census of Agriculture, USDA/NASS Survey Data, RIMS II Multipliers (U.S. Bureau of Economic Analysis), Tax Policy Institute and Tax Foundation.