The Wisconsin Pork Industry 2023:

Current Structure and Economic Importance

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National Pork Producers Council®

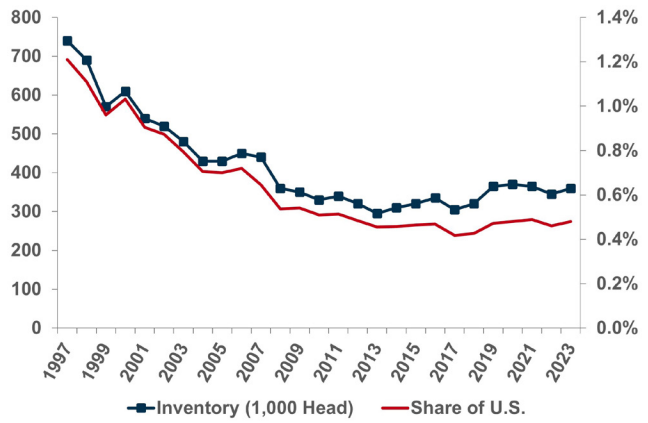
Introduction

The Wisconsin pork industry represents a significant value-added activity in the agricultural economy and a major contributor to the overall Wisconsin economy. The $178.57 million of gross cash receipts from hog marketings in 2023 represent only a portion of the total economic activity supported by the industry. Although the size and structure of the Wisconsin pork industry has changed over time, increased levels of production have supported jobs and generated earnings in the state economy. An estimated 13397 jobs are involved in various aspects of the Wisconsin pork value chain ranging from input suppliers to producers, to processors and handlers as well as main street businesses that benefit from purchases by people in these industries. Overall, an estimated $815.20 million of personal income and $1.13 billion of gross national product are supported by the Wisconsin pork industry based on 2023 levels of production.

This report documents trends in Wisconsin pork production and examines the current structure of production, input purchasing, and processing of the pork industry in Wisconsin. The contribution of these activities to the overall Wisconsin economy in terms of employment, income, and value added is also estimated and presented in detail.

Hog Farms and Production

Figure 1: Wisconsin Hog Inventory, Dec. 1



Hog inventories in Wisconsin have varied over time but have trended downward from 610,000 head in 2000 to 360,000 head in December 2023 (Figure 1). Annual cash receipts from the sale of hogs were $178.57 million in 2023. This figure was based on a pig crop of 1.11 million born in Wisconsin and in-shipments from other states and Canada of 201,000 feeder pigs.

Source: USDA-NASS Hogs and Pigs Report

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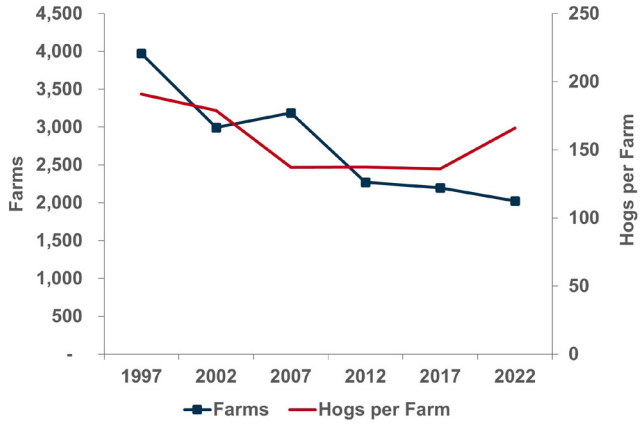
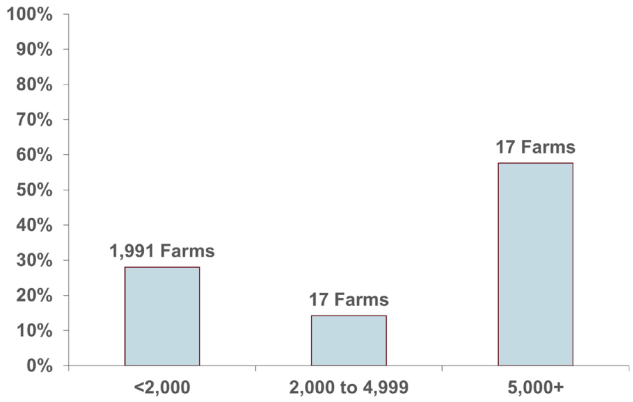
Figure 2: Wisconsin Hog Farms and Hogs per Farm



Source: USDA-NASS Census of Agriculture, 2022

Total hog marketings in Wisconsin have increased in recent years while the number of farms raising hogs has declined. From 1997 to 2012, the number of farms fell from 3,974 to 2,270, and by 2017 Wisconsin had 2,198 farms raising hogs (Figure 2). As of 2022, the number of farms raising hogs fell to 2,025. Meanwhile, the average inventory of hogs per farm has decreased from 191 in 1997 to 166 in 2022.

Figure 3: Wisconsin Hog Inventory Distribution



Source: USDA-NASS Census of Agriculture, 2022

Figure 3 illustrates the distribution of the Wisconsin hog inventory. About 28 percent of Wisconsin hogs are on farms with less than 2,000 head in inventory, 14 percent of the inventory is on farms with 2,000 to 4,999 head, and 58 percent are on farms with 5,000 or more hogs.

Competitive production of feed grains, significant natural resources and industry infrastructure have allowed Wisconsin to position itself as an efficient producer for both domestic and global pork consumers. Because this report is concerned with the impacts and resources used in pork production, the analysis focuses on the value of hogs produced in Wisconsin as the critical measure that drives expenditure levels for various hog-related inputs and investments.

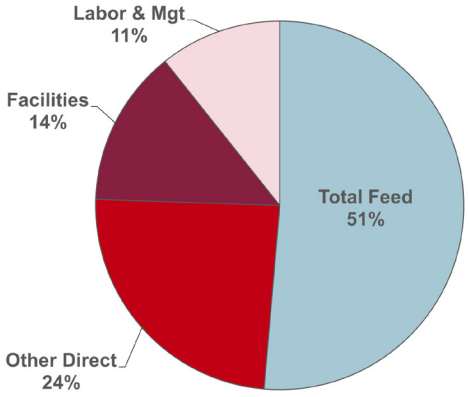
Hog Production Costs and Returns

The $178.57 million of hog marketings in 2023 represents the aggregate value of the pork industry at the farm level. In addition to these farm level effects, the industry's backward and forward linkages generate significant additional impacts throughout the Wisconsin economy. The backward linkages include purchased inputs, supplies, and services used by hog producers. The forward linkages include further value-added activities occurring after the farm gate such as slaughter, processing, and food preparation. Total inputs, including labor, used by Wisconsin hog industry were estimated based on aggregated cost of production budgets weighted according to the share of hog production occurring in different types and sizes of production systems.

Different budgets were developed for three production systems: farrow-to-finish, breed-to-wean, and wean-to-finish. The distribution of these systems is based on the relationship between pig crop, in-shipments, and out-shipments of pigs reported by USDA and represents a state level measure rather than an average across all farms. Farrow-to-finish operations were further subject to economies of scale where per unit input use declines as hog operations increase in size. The share of pork production estimated to be in each classification of facility was based on the percent of inventory in three size groups reported in the 2022 Census of Agriculture and reflected in Figure 3. The breed-to-wean and wean-to-finish systems were not divided by size, but the share of each is reported in Table 1 along with aggregated costs and returns.

The cost of production and input usage was then calculated for each size of farrow-to-finish operation based on cost of production budgets developed by Iowa State University Extension and Outreach and were updated to reflect rising non-feed variable and fixed costs. The weighted cost and returns of production and totals of feed use, other direct inputs, annual depreciation on capital investments, labor requirements and returns to management and capital are presented in Table 1 and summarized in Figure 4. These aggregates are also depicted schematically in Figure 5. The prices used in the analysis are intended to reflect long-run conditions in the industry and are based on 10-year projections made by the Food and Agricultural Policy Institute (FAPRI) in March 2024. Based on these long-run prices, annual revenue from hogs is estimated to be $135.58 million.

Figure 4: Estimated Share of Production Costs



Estimating the labor component involved in hog production presents a special challenge due to limited employment data being reported at the farm level and the mix of farm operators and employees involved in production. Because we are most interested in measuring labor on a comparable per unit basis, a full-time equivalent (FTE) of 2,080 hours per year per worker was deemed to be the most appropriate measure of labor. This FTE standard was then applied the total hog production in each size classification in Wisconsin and then summed to arrive at a total labor requirement.

The rate of FTE labor required per 10,000 hogs raised in farrow-to-finish operations ranged from 4.3 for the small facilities to 2.6 for the medium-scale facilities to 2.2 for the large systems.

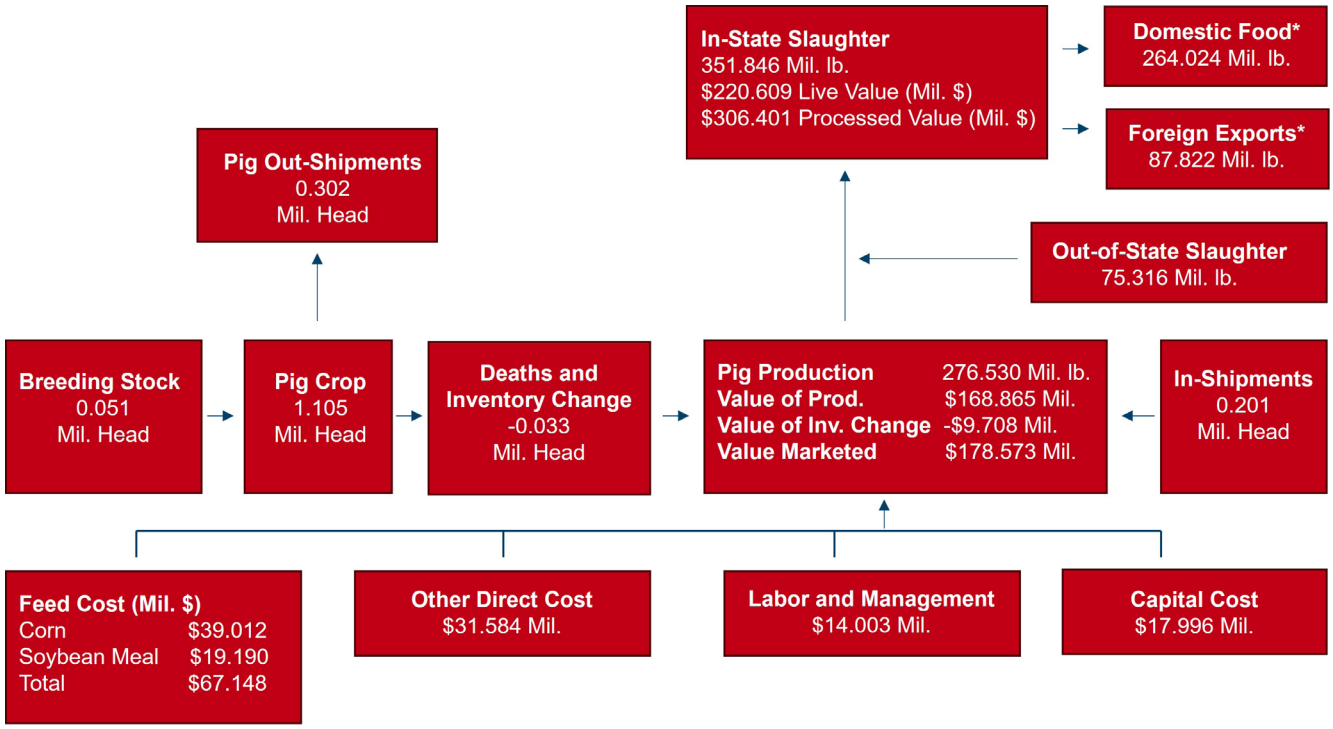
Although an estimated 2,025 farms are reported to be involved in hog production in 2022, based on the FTE standard of these budgets, an estimated 222 workers are required to produce the current volume of hogs in Wisconsin (Table 1). While the converted FTE numbers are used in our economic impact estimates, it is important to recognize the larger number of Wisconsin farms involved in some level of pork production.

The lower level of the schematic in Figure 5 represents purchased cash inputs used by producers at the farm level. A significant portion of purchased inputs are produced within the state, generating additional economic activity in the local economy.

The estimated total value of direct inputs used in Wisconsin sum to $98.73 million based on long-run feed prices. Additional costs for depreciation of fixed assets and facilities total an estimated $32.00 million. Labor and management expenses add an additional $14.00 million of costs for a total of $130.73 million of aggregate input costs used in hog production in Wisconsin. The residual value between inputs and marketings is estimated to total $4.85 million and can be described as returns to capital.

The largest single category of expenditure is feed. With 971,430 head produced annually, 8.91 million bushels of corn valued at $39.01 million and 58,311 tons of soybean meal valued at $19.19 million are used in Wisconsin. Feed supplements and additives represent another $8.94 million of purchased inputs from suppliers in Wisconsin. Overall, the use of this scale of feed ingredients helps support the soybean processing industry, local elevators, transportation services, and others based in local communities.

Figure 5: Wisconsin Pork Industry Flow of Production



*Final demand estimates based on prorating U.S. slaughter (lbs) proportionately to total end uses.

Table 1: Cost of Production and Returns Associated with Wisconsin Average Farrow-to-Finish Operation, Long-run Prices and 971,430 Head Marketed

*10-year projections made by the Food and Agricultural Policy Institute (FAPRI) in March 2024.

	Price	State Total
REVENUE*	$62.08/cwt	$135,576,613
COST		
Corn ($/bu)	$4.38/bu	$39,012,378
Soybean Meal ($/ton)	$329.10/ton	$19,190,318
Other Feed ($/cwt)	$40.00/cwt	$8,944,988
TOTAL FEED		$67,147,685
Other Direct Cost		$31,580,537
TOTAL DIRECT		$98,728,222
Equipment		$3,637,956
Building		$13,150,248
Land and Other		$1,207,593
Labor and Management		$14,003,308
TOTAL INDIRECT		$31,999,105
TOTAL COST		$130,727,327
RETURN TO CAPITAL		$4,849,287

Estimated Aggregated Production System		
Farrow-Finish	**Breed-Wean**	**Wean-Finish**
62%	23%	15%

Input Summary		
Corn	Bu	8,912,485
Soybean Meal	Tons	58,311
Other Feed	Cwt	223,625
Labor & Mgt. per Hog	$/head	$14.42
Total Labor	FTE	222

Economic Contribution of Wisconsin Pork Industry

In addition to the direct sales and purchases described above, the Wisconsin pork industry generates further activity through its backward and forward linkages to other industries. Backward linkages include purchases of inputs, supplies, trucking, and other services required to produce hogs while forward linkages are tied to the hog slaughter and pork processing industries. When hog producers and pork processors make purchases from other industries, these expenditures support additional jobs and earnings beyond the pork industry and induce spending in a variety of sectors.

To capture the total economic contribution of the pork industry, this analysis uses a modified input-output (I-O) model of Wisconsin within the IMPLAN modeling system. IMPLAN is a customizable system that utilizes a 546-industry matrix and an extensive database to account for all inter-industry transactions within the economy and calculates the impact of an initial industry change. When measuring the overall contribution of an entire industry, the final estimates essentially quantify the impact that would be lost if the pork industry was removed from the Wisconsin economy.

The I-O model for Wisconsin was driven by estimates of 2023 hog marketings, the employment level and production costs calculated in the previous section and estimates for employment and labor income within the hog slaughter and pork processing industries. For this portion of the analysis, FTE employees were converted to the annualized equivalents used by IMPLAN. Estimates for the hog slaughter and pork processing industries were based on public plant location and size information from federal and state inspection agencies, employment information from the U.S. Census Bureau, and state slaughter and production estimates produced by USDA. Because the IMPLAN-defined industries that represent hog production and pork processing include additional activity such as other animal production and beef processing, providing these industry-specific inputs helps customize the model for the pork industry. [1]

After estimating initial industry values, the model was carefully modified to avoid double counting the upstream impacts of hog production and to eliminate buybacks within and across the industries of interest. For example, the hog slaughter industry purchases live hogs as an intermediate input. The economic value of hog production is already fully accounted for as part of this analysis, so the model was adjusted to include only the additional value generated by slaughter and processing activity. The model also excludes additional effects from intra-industry purchases (i.e., hog producers buying feeder pigs, breeding stock, etc.) and purchases from the other industries being analyzed (i.e., the further processing industry purchasing carcasses from the slaughter industry).

1 This analysis uses IMPLAN's industry 14 (animal production except cattle, poultry and eggs), industry 89 (animal, except poultry, slaughtering) and industry 90 (meat processed from carcasses). To further customize the model, purchases of beef cattle were removed from industry 89 and industry 90 spending patterns and then output was derived from intermediate inputs (live hogs plus other nondurable goods) and labor costs.

After making these adjustments, the I-O model was run to calculate the multiplied-through effect of the entire pork industry on the Wisconsin economy. The total contribution includes the direct, indirect, and induced values for the output, labor income, value added, and jobs supported by the industry. Direct impacts are the initial values of sales and employment in the industry, indirect impacts stem from expenditures on locally sourced inputs, and induced impacts are supported by purchases made with income earned in the direct or indirect industries. The results of this analysis are summarized in Table 2.

Table 2: Total Economic Contribution of Hog Production and Pork Processing Industry

	Jobs	Labor Income	Value Added	Output
Direct	7,325	$417,544,832	$445,495,357	$3,052,197,125
Indirect	3,063	$225,965,953	$367,277,258	$754,502,569
Induced	3,009	$171,689,764	$314,344,612	$540,451,224
Total	***13,397***	***$815,200,549***	***$1,127,117,227***	***$4,347,150,919***

Source: IMPLAN Model for Wisconsin with inputs calculated by the user, presented in 2024 dollars.

Output, or gross sales, measures the value of production within an industry and is the broadest measure of economic activity. The estimated $178.57 million in gross output, or sales, from hog production in 2023 supported additional sales in the state's hog slaughtering and processing sector, as well as additional input purchases and spending that totaled $4.35 billion of direct, indirect, and induced sales in the Wisconsin economy. In this analysis, total output excludes the indirect effects of purchased hogs and carcasses. However, this number should be used with caution because the value of the hog is still counted twice, both at the producer level and as part of the total value of pork sold at the processor level.

Value added is often a preferred measure of economic activity because it includes only the portion of output that exceeds the cost of intermediate inputs used in production, therefore eliminating the double-counting issue described above. This includes wages, taxes, and profits and represents the industry's contribution to gross domestic product (GDP). Overall, an estimated $1.13 billion of value added in the Wisconsin economy is linked directly and indirectly to the pork industry. Value added grows when sales and personal incomes increase faster than the cost of intermediate inputs.

The Wisconsin pork industry supports a total of $815.20 million in labor income paid to 13397 workers across many industries. This includes the 222 FTE workers at the farm level and an estimated 7065.2225367 employees in the hog slaughter and processing sectors. The estimate of $14.00 million in direct labor income within the hog production industry includes wage and salary income as well as proprietor income. An estimated $399.15 million is also paid to workers in the slaughter and processing industry. The pork industry supports additional jobs within agriculture and manufacturing, as well as in industries like trucking, finance, insurance, real estate, trade, and other service sectors. Estimates of the pork industry's total contribution are presented at an eight-sector level of detail in Table 3.

Table 3: Total Impact by Industry Group

	Jobs	Labor Income	Value Added	Output
Agriculture	605	$31,616,767	$66,393,240	$240,163,900
Construction	48	$3,365,660	$4,735,563	$11,528,817
Manufacturing	7,253	$414,754,175	$428,616,778	$2,962,644,492
Wholesale and Retail	1,333	$93,476,563	$171,544,184	$330,561,841
Transport and Utilities	576	$38,746,075	$68,165,112	$133,776,180
Finance, Ins., Real Estate	504	$31,098,084	$63,290,083	$137,896,479
Services	3,003	$195,405,004	$314,783,979	$510,914,788
Other	73	$6,738,222	$9,588,287	$19,664,421
Total	***13,397***	***$815,200,549***	***$1,127,117,227***	***$4,347,150,919***

Source: IMPLAN Model for Wisconsin with inputs calculated by the user, presented in 2024 dollars.

Pork Exports

The continued growth of the Wisconsin pork industry is feeding growing demand from domestic and export customers. The final demand uses of processed pork products in 2023 were an estimated 87.82 million pounds going into foreign markets and 264.02 million pounds into domestic markets. These estimates are based on prorating Wisconsin production proportionally to total end uses.

In 2023, about 25 percent of U.S. pork production was exported. Using this export share implies that a comparable share of the total economic contribution, or 3,346 jobs and $203.59 million of personal income in Wisconsin results from exporting pork and pork products to foreign markets.

Pork Industry Issues and Opportunities

The pork industry has undergone significant changes over the last several decades, transforming from a commodity-oriented industry that relied largely on family labor to a more capital-intensive, science-and-technology-driven industry producing products for many diverse consumers. The industry also faces considerable challenges in the coming years as it works to capture opportunities of increased consumer expectations and expanding markets for U.S. pork.

Industry Size and Structure

The average U.S. farm size has increased in recent years, and the trend toward fewer farms has continued. The most recent Census of Agriculture revealed that the number of farms raising hogs in 2022 was roughly half of what it was in 1997. While 71.8% of the 25-year decline occurred between 1997 and 2002, the number of farms dropped by 5,600 from 2017 to 2022, hitting a new low. As global market conditions and competing demand for feed grain inputs push production costs higher, effective marketing, financial planning and risk management strategies have become necessary ingredients for industry survival. Producers of all sizes are asking if they are large enough, and contract production arrangements are becoming increasingly popular. It remains true that effective management is key to success regardless of farm size or structure.

The family farm remains the dominant business structure for the U.S. hog industry. Family farms comprise 96% of all U.S. farms with hogs and account for 81% of the hog inventory, according to the 2017 Census of Agriculture Farm Typology report (the 2022 Typology Report is set to release in 2026). A more recent report by the USDA Economic Research Service shows that family farms accounted for 90% of the value of hog production in 2022.

Regardless of the size or ownership of the enterprise, hog and pork production does create economic activity in the state and community where it is located. If the firm is not locally owned, the profits may not remain entirely in the community. However, major inputs (feed, labor, utilities, trucking, services, property taxes, etc.) will likely still be provided locally or within the region.

Animal Health and Biosecurity

While productivity has recovered significantly in recent years (pigs per litter, farrowings per sow, etc.), domestic disease pressures persist. Staying prepared and having well-thought-out animal health and biosecurity programs in place remain critical to protecting against new, emerging and foreign diseases.

In addition, the industry must remain diligent in its efforts to prevent an outbreak of African swine fever (ASF), Foot and Mouth Disease (FMD), or any other foreign animal disease in the United States. Such an outbreak would be a devastating animal health crisis with extremely negative implications for market prices, export opportunities and the overall economy.

Worker Shortages

Increased levels of production and the adoption of new technology have supported a greater demand for skilled, full-time workers on hog farms. Pork packing and processing plants also require more workers to operate at full, optimal capacity levels. However, maintaining adequate staffing levels on farms and in processing plants has been increasingly difficult in recent years despite higher wage offerings, bonus programs and competitive benefits.

While current tightness in the broader U.S. labor market plays a role, many labor challenges are tied to long-term demographic trends in rural America. Slowing U.S. population growth and increased levels of outmigration have caused populations of rural, farming counties to decline over time while the median age of the rural workforce continues to increase. The result is a shrinking and aging rural labor force that is increasingly unable to fill the workforce needs of the pork industry.

Current visa programs that allow foreign-born workers to fill on-farm job openings in other industries are not well-suited for an industry that requires year-round animal care and technical support. Without policy intervention, labor shortages threaten to limit pork production in the years to come, undermining an important sector of the economy.

Exports and Trade

Exports are an important component of overall pork demand. In 2023, the United States was the third largest pork producer and second largest exporting nation, accounting for about 31% of global pork exports. Forecasts from the USDA Foreign Ag Service show the United States becoming the top pork exporter in the world in 2024. Despite rising breakeven price levels in recent years, the U.S. remains a relatively low-cost producer with significant natural resources and has been a reliable supplier amid worldwide supply chain issues. These are all important considerations for global buyers. Expanding market access by removing nontariff trade barriers for U.S. pork will be important for future industry growth. Relationships with major trade partners must be solvent for trade to remain the important component it is.

Environment and Sustainability

The environmental impact of pork production is an important matter that is not independent of the industry's economic contribution. The most recent retroactive life-cycle assessment of the pork industry shows that U.S. producers have significantly reduced the land, water, and energy required to produce each pound of pork. As a result, the overall environmental footprint per pound of pork produced is smaller today than in 1960. Additionally, data from the Environmental Protection Agency (EPA) shows that hog production only accounts for approximately 0.4% of U.S. greenhouse gas emissions.

Because of differences in climate, cropping patterns and manure management practices across the country, uniform environmental standards may have differing regional impacts on hog production. For this reason, the pork industry's sustainability goals and metrics are focused on outcomes rather than specific practices.[1] As a whole, the pork industry has established goals to continue improving water-use efficiency, soil, land, biodiversity and nutrient management while further reducing the industry's carbon footprint by 2030.

Looking Ahead

The future size and structure of the U.S. pork industry will be determined by the individual decisions of more than 60,000 farms, the devoted individuals who operate them and their potential successors. With current demographics, including producer age and an equity distribution skewed to older producers, a large share of productive assets in the pork industry will likely change hands over the next decade.

As the industry emerges from the worst period of financial losses in its history, issues like labor shortages, foreign animal disease preparedness, market access, and occurrences and additional threats of state-by-state regulations dictating hog production practices and restricting pork sales have become increasingly critical to address. Future policy and educational efforts should be designed not only to encourage and assist beginning farmers entering pork production but also to address long-run challenges, protect producers' freedom to operate, and enhance their chances of surviving, prospering and growing as viable farm operators.

1 For more information, see the 2021 Pork Industry Sustainability Report.

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