
Economic Contribution of Agriculture and Food to Arkansas' Gross Domestic Product 2017–2022



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Jennie Popp**

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Photo: Cattle feeding at a trough at the Livestock and Forestry Research Station near Batesville, Arkansas. Benjamin Aaron, University of Arkansas System Division of Agriculture Cooperative Extension Service.

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Definitions and Styles

Gross Domestic Product by State

Gross Domestic Product by State is the state equivalent of the national measure of Gross Domestic Product (GDP), the most comprehensive measure of U.S. economic activity. Gross Domestic Product by State differs from national GDP measures in that it excludes compensation of federal civilian and military personnel stationed abroad as well as government consumption of fixed capital for military structures located abroad and for military equipment. Gross Domestic Product by State values are derived as the sum of GDP originating in all the industries within a state. Industry GDP is an estimate of value added by industry. Value added is defined as an industry's gross output (sales or receipts and other operating income, commodity taxes, and inventory change) minus its intermediate inputs (energy, raw materials, semi-finished goods, and purchased services). Real GDP by State values are prepared using chained (2017) dollars. This allows for an inflation-adjusted measure of a state's gross product that is based on national prices for the goods and services produced within that state (USDC BEA, 2017).

Style Notes

In this report, Arkansas agriculture is presented in a historical context. These data are available for 2017 through 2022. Throughout the report, agriculture is defined in terms of agricultural sectors, North American Industry Classification Scheme (NAICS) sectors, industries, and general descriptive terms that can be applied to agriculture. As shown below, different font styles are used throughout the text to distinguish these terms:

Agricultural Sectors. These comprise the areas of focus in our study. This report refers to the Agriculture Sector and the Agriculture and Food Sector. The Agriculture Sector includes all industries related to agricultural production and processing. The Agriculture and Food Sector consists of those industries within the Agriculture Sector, with the addition of the Food Services and Drinking Places industry. These terms are capitalized and underlined throughout the text.

NAICS Sectors. This report uses the 2022 North American Industry Classification Scheme. NAICS is "...the standard for use by Federal statistical agencies in classifying business establishments for the collection, tabulation, presentation, and analysis of statistical data describing the U.S. economy." Within this framework, business establishments are assigned one NAICS code corresponding to their primary business activity (USCB, 2022). Agricultural activities are classified under or can impact multiple sectors. Throughout the document, capitalization of sectors is used when referring to NAICS sectors. Examples include Food and Beverage and Tobacco Products Manufacturing, Paper Products Manufacturing, and Wood Products Manufacturing.

General Descriptive Terms. These are terms used throughout the text to describe agricultural areas that are not related to established industry classification schemes or specific agricultural sector titles used in this analysis. These terms are presented in lowercase. Examples include agricultural production, agricultural processing, and agricultural retail.

1: Economic Contribution of Agriculture and Food to Arkansas' Gross Domestic Product

1.1: Introduction

Agricultural production, processing, and retail industries are major contributors to Arkansas' GDP. Agriculture contributes to the state economy through direct agricultural production, value-added processing, and agricultural retail activities. The Agriculture and Food Sector, which is comprised of agricultural production, processing, and retail industries, promotes economic strength through various interactions with other industries. The use of non-agricultural goods and services as inputs into the agricultural sector promotes diversified growth in Arkansas' economy and thus plays a vital role in maintaining economic stability throughout the state. This report 1) compares the relative size of the Agriculture and Food Sector in Arkansas with those of neighboring states; 2) provides an overview of Arkansas' economy and discusses Arkansas' agricultural sector in relation to the state economy; and 3) examines components of agricultural production and processing, including a review of historical sales trends for raw and processed agricultural output.

1.2: Methods

The most recent estimates (2022 data) from the U.S. Department of Commerce's Bureau of Economic Analysis (BEA) for agricultural production, processing, and retail are presented in this report. The Agriculture and Food Sector is defined to include eight sectors from BEA's GDP by State data set: 1) Agriculture, Forestry, Fishing, and Hunting; 2) Wood Product Manufacturing; 3) Furniture and Related Product Manufacturing; 4) Food and Beverage and Tobacco Product Manufacturing; 5) Textile Mills and Textile Product Mills; 6) Apparel, Leather, and Allied Product Manufacturing; 7) Paper Manufacturing; and 8) Food Services and Drinking Places.

This report builds upon previous reports (Goodwin et al., 2002; Popp, Vickery, and Miller, 2005; Popp, Kemper, and Miller, 2007; Kemper, Popp, and Miller, 2009; Popp et al., 2010; McGraw, Popp, and Miller, 2011; McGraw, Popp, and Miller, 2012) in which Arkansas agriculture's economic contribution was determined using both Gross Domestic Product by State data obtained from BEA, as well as IMPLAN Group LLC's (formerly Minnesota IMPLAN Group, Inc.) input-output software and data. However, in an effort to increase clarity, beginning in 2013, the report was divided into two separate reports: one utilizing BEA's GDP by State data to provide a time series analysis and state-to-state comparison of Arkansas' agriculture sector, and the second utilizing IMPLAN data and software to provide a snapshot of agriculture's contribution, including direct, indirect, and induced economic effects. This paper is a continuation of the Gross Domestic Product by State analyses described in previous reports (Manlove et al., 2014; English, Popp, and Miller, 2014; English, Popp, and Miller, 2015; English, Popp, and Miller, 2016; English, Popp, and Miller, 2020; English, Popp, and Miller 2021; English and Popp, 2022) and utilizes data for 2017–2022. All dollar values are expressed in 2022 constant dollar terms unless otherwise noted. Constant dollar values were calculated using industry-specific deflators derived from BEA's chained 2017 dollar GDP by State series, except for the data presented in Figs. 6 and 7. For Figs. 6 and 7, data deflators from the U.S. Department of Agriculture National Agricultural Statistics Service (NASS)'s "Index for Price Received, 2011" data series are used to calculate constant dollar values (USDA NASS, 2024a).

Percentages presented are percentage changes, not absolute changes. Percentage changes quantify increases or decreases relative to the initial values and are appropriate for describing time-series data, such as BEA's GDP by State data. For example, a change from 15% in 2004 to 11% in 2009 results in a 27% decrease, not a 4% decrease. Likewise, a change from \$11M in 2004 to \$15M in 2009 results in a 36% increase.

1.2.1: A Note Regarding Presentation of Gross Domestic Product by State (Formerly Gross State Product) Estimates

Gross Domestic Product by State is the state-level analog to national GDP. Early reports (Goodwin et al., 2002; Popp, Vickery, and Miller, 2005) presented historical gross state product (GSP) data and trends from BEA using a starting year of 1986. However, there is a discontinuity in the GSP (now known as GDP by State) time series in 1997. This discontinuity results from the BEA's change in methods for classifying data from the Standard Industrial Classification (SIC) to the North American Industrial Classification System (NAICS) scheme. Gross Domestic Product by State data estimates for 1997 forward are now prepared for 81 NAICS industries. Estimates for earlier data years remain in only the 63 SIC industry format. There are many differences between SIC- and NAICS-based industries, including the fact that these estimates are based on different source data and different estimation methodologies.¹ Additionally, the NAICS-based GDP by State estimates are consistent with U.S. gross domestic product (GDP), while the SIC-based GSP estimates were consistent with U.S. gross domestic income (GDI). The data discontinuity affects the dollar values, industry categories—particularly with respect to manufacturing components—and growth rates of the GDP by State estimates. The BEA strongly cautions analysts using the GDP by State estimates against appending the SIC and NAICS data series in an attempt to construct a single time series of GDP by State estimates for 1977 to the present (Yuskavage, 2007). Therefore, GDP by State estimates were reported from 1997 to the most recent data year in publications following this change.

In 2023, BEA performed a comprehensive update of the National Economic Accounts (NEAs) and Industry Economic Accounts (IEAs), which resulted in revised statistics for GDP values. Following this update, the 2023 data release reported only annual GDP by State estimates for 2017–2022 (USDC BEA, 2024a). While archived data are available for prior years, BEA notes that the archive should be used as a research reference only, as previous estimates may not reflect the most recent revision for a particular period (USDC BEA, 2024b). While BEA plans to publish revised estimates for 1997–2016 at a future date, there is currently no finalized date of release for these back-year data (Medzerian, 2024). Because of this, the GDP by State estimates in this report are presented beginning in 2017.

1.3: Agriculture and Food–The Regional Context

In the following GDP by State discussion, the Agriculture and Food Sector is defined as the sum of agricultural production, processing, and retail unless otherwise stated.²

Although Arkansas ranked 34th nationwide for total state GDP value in 2022, Arkansas' Agriculture and Food Sector, when expressed as a percentage of total GDP, has exceeded those of contiguous states since at least 1969, when the BEA began publishing regional GDP information (USDC BEA, 2023). In 2022, this trend continued, with the Agriculture and Food Sector accounting for almost 11.0% of Arkansas' GDP (Table 1). Agricultural production and processing sectors contributed 3.0% and 5.5%, respectively, to Arkansas' GDP in 2022. These production and processing percentages were higher for Arkansas than all neighboring states, the Southeast region, and the na-

tion as a whole. At 2.5%, Arkansas' share of agricultural retail fell in the middle of neighboring states, whose values ranged from 2.2% to 2.9% of total GDP. This was on par with that of the Southeast region (2.6%) and slightly higher than the national average, which was 2.3% (Fig. 1).

These comparisons can be stated in another way. First, when examining only the agricultural production and processing contributions, it can be stated that the Agriculture Sector's share of the state economy in Arkansas is:

- 5.0 times greater than in Texas
- 3.4 times greater than in Oklahoma
- 2.7 times greater than in Louisiana
- 1.9 times greater than in Missouri
- 1.9 times greater than in Tennessee
- 1.3 times greater than in Mississippi
- 2.2 times greater than for the Southeast region
- 2.8 times greater than for the U.S. as a whole

When retail is added, these numbers decrease slightly, indicating proportionally higher levels of agricultural retail activities within other states. Taking this into account, the Agriculture and Food Sector's share of the state economy in Arkansas is:

- 2.9 times greater than in Texas
- 2.1 times greater than in Oklahoma
- 2.0 times greater than in Louisiana
- 1.6 times greater than in Missouri
- 1.5 times greater than in Tennessee
- 1.2 times greater than in Mississippi
- 1.7 times greater than for the Southeast region
- 2.1 times greater than for the U.S. as a whole

Between 2021 and 2022, Arkansas' total state GDP increased by 1.3%, while GDP stemming from the Agriculture and Food Sector grew by 1.2%. This rise was the result of

Table 1. The Agriculture and Food Sector as a Percentage of Gross Domestic Product by State, 2022.

State/Region	Percent of GDP by State
Arkansas	11.0%
Louisiana	5.5%
Mississippi	9.4%
Missouri	6.8%
Oklahoma	5.2%
Tennessee	7.4%
Texas	3.8%
Southeast ^a	6.6%
U.S.	5.3%

Source: USDC BEA (2023).

^a The Bureau of Economic Analysis (BEA) includes Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia in the Southeast region.

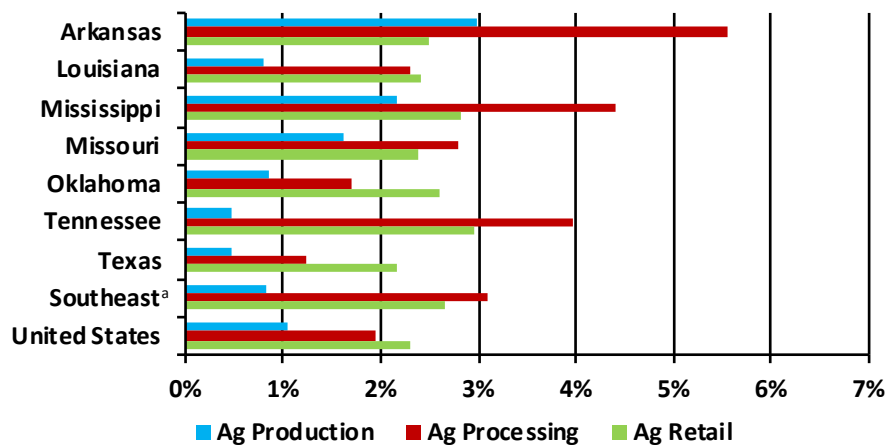


Fig. 1. Production, Processing, and Retail as a Percentage of Arkansas Gross Domestic Product, 2022.

Source: USDC BEA (2023).

Note: Calculated from current dollars.

^a The Bureau of Economic Analysis (BEA) includes Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia in the Southeast region.

growth across agricultural processing and retail sectors, which grew by 2.4% and 0.9%, respectively. While the value of Arkansas' agricultural production sector fell slightly (-0.8%) in 2022, this drop was not as severe as that seen across surrounding states, the Southeast region, and the U.S. as a whole. The only exception was Missouri, which saw a 2.6% increase in the value of agricultural production in 2022. Oklahoma, Texas, Mississippi, Tennessee, and Louisiana saw drops of 50.9%, 28.3%, 22.9%, 19.2%, and 17.4%, respectively. For the Southeast region and the U.S. as a whole, the GDP value of agricultural production value fell by 6.0% and 7.4%, respectively.

Overall, Arkansas' Agriculture and Food Sector continues to hold a larger share of state GDP than surrounding states, the Southeast region, and the United States as a whole. In 2021 and 2022, Arkansas' Agriculture and Food Sector's share of GDP remained constant at 11.0%. Shares for Louisiana, the Southeast region, and the U.S. as a whole also remained constant at 5.5%, 6.6%, and 5.3%, respectively. Missouri's share rose by 2.0%, while all other areas showed losses in their Agriculture and Food Sector's share of state GDP. Oklahoma experienced the most substantial drop of 15.0%, with shares for Mississippi, Texas, and Tennessee falling by 6.9%, 2.1%, and 1.3%, respectively.

1.4: Agriculture and Food and the Arkansas Economy

In 2022, GDP in Arkansas' Agriculture and Food Sector increased by 1.2%, from \$18.1B in 2021 to \$18.3B (constant 2022 dollars are used throughout this section unless otherwise noted) (USDC BEA, 2023). While the period was marked by volatility, from 2017 to 2022, the GDP value for Arkansas' Agriculture and Food Sector rose by 9.7%. From 2017 to 2018, value in the sector rose slightly (0.6%) before falling by 9.2% in 2019 and another 1.8% in 2020 to a period low of \$14.9B. The sector rebounded in 2021, with values rising by 20.9% to \$18.1B. Growth continued with the sector reaching a period high of \$18.3B in 2022 (Fig. 2).

When viewing the value of GDP stemming from the Agriculture and Food Sector in relation to the state as a whole, from 2017 to 2022, the share of the sector's GDP value ranged from 9.7% to 11.1% of Arkansas' total state GDP (Fig. 3). In 2017, the Agriculture and Food Sector's contribution to state GDP was 11.1%. Following 2017, the sector's share began to fall, dropping to a period low of 9.7% of state GDP in 2020. Much of this drop stemmed from decreases in value seen in the agricultural production and retail sectors caused by factors associated with the COVID-19 pandemic. In 2020, agricultural production, specifically

livestock, was affected by a reduction in processing capacity seen early on in the pandemic, causing producers to hold on to their livestock longer, which led to increased costs and lower prices received for animals. On the retail side, COVID-19 restrictions forced many restaurants to either scale back service or close entirely, which impacted GDP value in the retail sector (English et al., 2022). These pandemic effects were short-lived as the share of state GDP from the Agriculture and Food Sector rebounded back to 11.0% in 2021, where it remained in 2022.

Diversity in Arkansas' total GDP components helps to provide partial insulation from the effects of recession, trade policy, and other unforeseen events. While the Agriculture and Food Sector is a major contributor to the state economy, it is consistently out-ranked by three other sectors (Fig. 4). In 2022, the Non-Agricultural Service and Retail sector contributed the most to Arkansas' GDP, representing 23.0% of total state GDP. Finance, Insurance, and Real Estate held the second largest value, representing 15.3% of total state GDP. This was followed by the Government and Government Enterprises sector, which contributed 11.7% to the state total. The Agriculture and Food Sector rounded out the top four, contributing 11.0% to Arkansas' GDP in 2022.

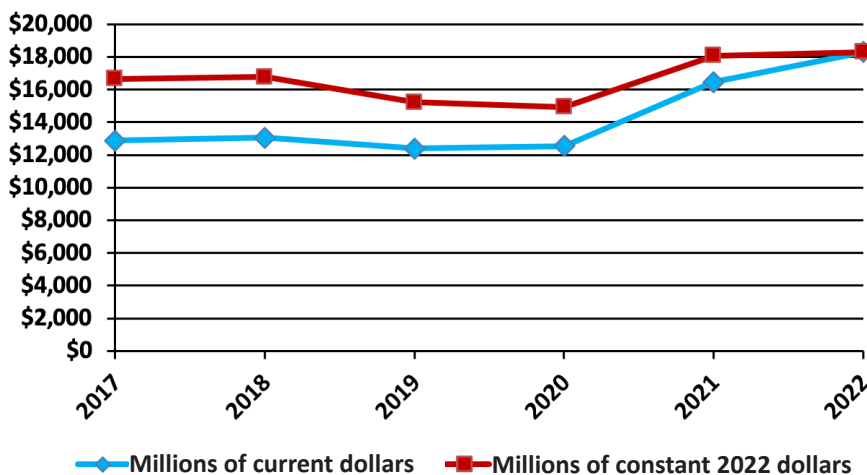


Fig. 2. Arkansas' Agriculture and Food Sector Gross Domestic Product, 2017–2022.

The three major components of the Agriculture and Food Sector—agricultural production, agricultural processing, and agricultural retail—each showed an increase in value from 2017 to 2022. During this period, the value of agricultural production rose by 3.8% from \$4.8B to \$5.0B. Agricultural processing value grew by 13.6% from \$8.1B to \$9.2B, with agricultural retail value rising 8.9% from \$3.8B to \$4.1B (Fig. 5). Each of these components will be further discussed in the sections to follow.

1.4.1: Agricultural Production

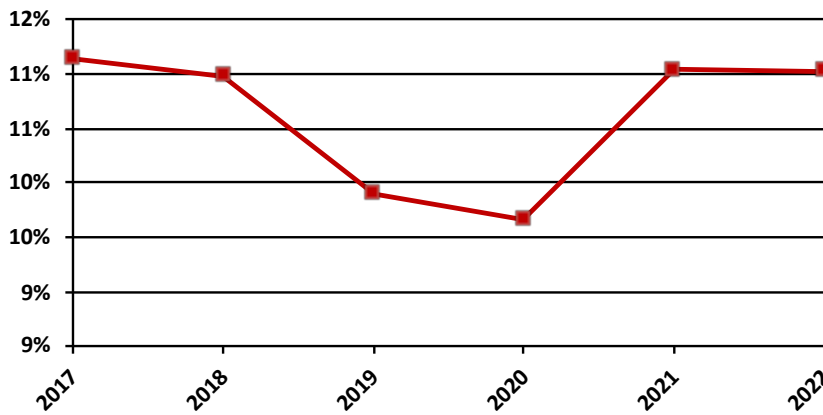
Crop and animal production, forestry, aquaculture, and horticulture are the primary agricultural production industries found in Arkansas. In 2022, Arkansas was nationally ranked first in the value of rice, third in broilers, cotton, cottonseed, and catfish, and fourth in turkeys (USDA NASS, 2024b). Ad-

ditionally, Arkansas was ranked 17th in the U.S. for the value of crop production and 10th for the value of livestock products (USDA ERS, 2024).

Overall, the GDP of agricultural production grew by 3.8% between 2017 and 2022 (Fig. 5). From 2017 to 2018, values were fairly constant before dropping by 33.6% in 2019. This drop was the result of lower values being reported for the soybean, rice, and poultry and egg industries. After dropping again by 5.5% in 2020, the sector rebounded in 2021, with values rising 68.5% over the previous year. This rise was primarily driven by increases in poultry and egg, soybean, and corn values. In both 2021 and 2022, the value of GDP held constant at \$5.0B.

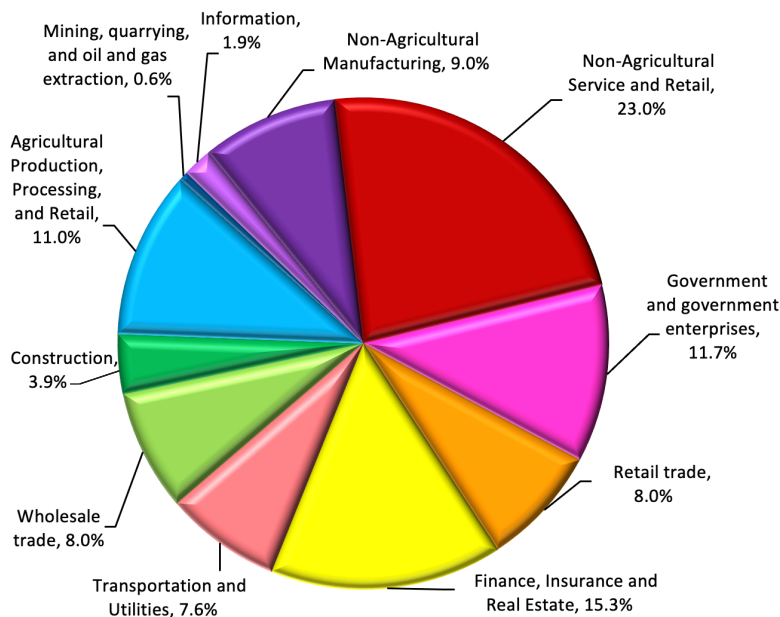
1.4.1.1: Crops Production

A time-series graph of major crops in Arkansas shows trends in the value of production from 2017–2022 in terms of



Source: USDC BEA (2023).

Fig. 3. The Agriculture and Food Sector's Share of Arkansas' Gross Domestic Product, 2017–2022.



Source: USDC BEA (2023).

Note: Calculated from constant 2022 dollars.

Fig. 4. Sector Components of Arkansas' Gross Domestic Product, 2022.

constant 2011 dollars (Fig. 6). Despite some volatility experienced throughout the 5-year period, the value of field crop production increased overall by 60.6% from \$5.8B in 2017 to \$9.3B in 2022. Over this period, soybeans and rice have consistently been the highest-valued crops, together representing over 60% of the total value of field and miscellaneous crops across the five-year period (USDA NASS, 2024b).

From 2017 to 2019, the total value of crops remained fairly constant, averaging around \$5.9B. Although the total value of crops remained constant throughout this period, individual crops were affected by heavy rains and flooding from late 2018 through early 2019, resulting in planting delays. Ongoing trade talks with China also led to uncertainty in the markets, high national stocks, and depressed prices for soybeans (McGeeney, 2019). During this period, value losses for soybeans, rice, wheat, and oats were offset by gains in corn, cotton, and hay. In 2020,

the COVID-19 pandemic negatively affected several industries across the state and the U.S. as a whole. However, strong commodity markets and aid from both pre-existing and COVID-related stimulus programs resulted in a rise in the value of field crop production to \$7.1B for 2020, a 19.6% increase over 2019 (English et al., 2022). Much of this rise was attributable to soybeans and rice, which showed gains of 32.8% and 34.1%, respectively (USDA NASS, 2024b). Although the state experienced record rainfall and flooding in June of 2021, the value of crop production rose by another 14.1% in 2021. This growth was driven by favorable planting and harvest windows coupled with good grain prices. Wheat experienced near 10-year high prices in 2021, which resulted in the value of wheat production rising by 126.4% (Lovett, 2021; USDA NASS, 2024b). While soybean growers faced several hardships in 2021, high market prices kept the sector afloat, resulting in a 24.7% increase in soy-

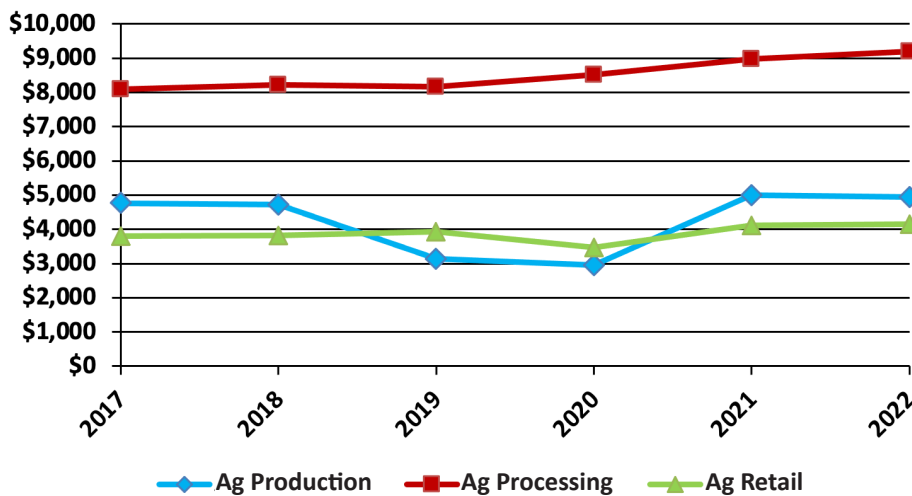


Fig. 5. Gross Domestic Product for Arkansas' Agricultural Production, Processing, and Retail, 2017–2022.

Source: USDC BEA (2023).

Note: Presented in millions of constant 2022 dollars.

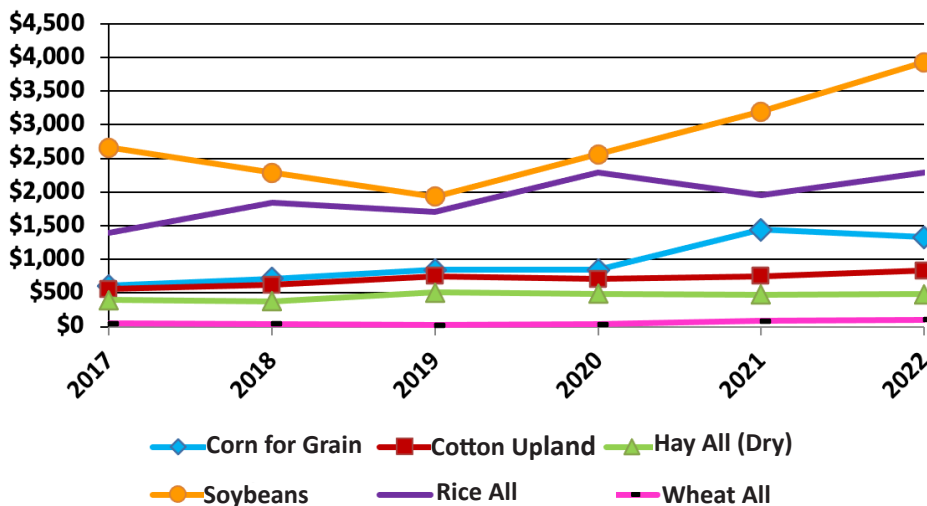


Fig. 6. Arkansas' Crops Value of Production, 2017–2022.

Source: USDA NASS (2023b, 2023a).

Note: Presented in millions of constant 2011 dollars.

For selected crops: rice, soybeans, cotton, hay, wheat, and corn.

bean value over 2020 (USDA NASS, 2024b; McGeeney, 2021). In 2022, widespread drought impacted harvested acres and yields of corn, soybeans, and cotton across the nation (Jared, 2023). Despite a national decline, Arkansas' total crop production value rose 15.0% from \$8.1B in 2021 to \$9.3B in 2022. This rise was driven by increases in soybean, rice, and cotton values. Soybean production increased nearly 140,000 acres from 2021 to 2022, resulting in a rise in value of 22.9%. Higher prices for cotton drove an increase of nearly 30% in acres harvested, resulting in a rise in value of 11.2%. Corn farmers in Arkansas didn't fare as well, with the number of acres planted falling 16.5% and yield per acre down 4.3%, resulting in a decrease in value of 7.8% in 2022 (USDA NASS, 2024b; Jared, 2023).

1.4.1.2: Animal Production

Animal production is also a major component of Arkansas' agricultural production. In terms of constant 2011 dollars, animal production cash receipts (which measure income and sales from marketing) in Arkansas increased from \$8.2B in 2017 to \$14.2B in 2022, representing a 73.3% increase across the five-year period (USDA ERS, 2024). Much of the value for this sector stems from poultry and egg production, which accounts for an average of around 88% of animal production value (Fig. 7).

From 2017 to 2019, the total value of livestock production remained fairly constant, averaging around \$8.6B. In 2020, the sector was heavily affected by the onset of the COVID-19 pandemic. Although most meat processing facilities remained open at the start of the pandemic, crowded working conditions and shortages of personal protective equipment caused a spike in worker illnesses that resulted in plant closures and reduced processing capacity across the nation. Reduced capacity in meat packing facilities limited markets for producers to sell their livestock, leading to higher production costs and lower prices. As a result, value in the sector fell by 17.6% from \$8.6B in 2019 to \$7.1B in 2020 (USDA ERS, 2024; English et al., 2022). During this time, the value of poultry and egg production fell 19.0% from \$7.6B to \$6.1B. The value of cattle and

calves, hogs and pigs, milk, and miscellaneous livestock also fell by 5.4%, 31.0%, 8.7%, and 1.5%, respectively. Although livestock producers and processors faced challenges during the pandemic, demand for meat from consumers remained high. Because of this, the animal production sector saw a swift rebound, with values rising by 29.8% in 2021. In response to the COVID-related food supply chain disruptions, Arkansas' state officials enacted several programs to expand meat processing capacity (ADA, 2022). As a result, the value of animal production rose by 54.5% from \$9.2B in 2021 to \$14.2B in 2022. The largest increase was seen in the poultry and eggs sector, which rose 59.5% from \$8.1B in 2021 to \$12.9B in 2022. Cattle and calves also saw a substantial increase of 21.7% from \$822M in 2021 to just over \$1.0B in 2022 (USDA ERS, 2024).

1.4.1.3: Forestry Production

Forestry production is integral to Arkansas' economy as foresters supply home builders and wood product manufacturers with raw materials. Arkansas' timber is fundamental to such industries as paper, lumber and wood, and furniture and fixtures. In 2022, Arkansas' land base was composed of approximately 19.0M acres of forest (57% of the total land base) (USDA FS, 2022). From this vast resource supply, 22.8M tons of timber (soft- and hardwood) valued at \$454.9M was removed from forests in Arkansas in 2022 (presented in 2022 dollars) (AFRC, 2023). With annual new home construction rising steadily since 2009, a strong housing market going into 2020 was expected to increase demand for softwood pine. However, with the onset of COVID-19, the number of new housing starts in the U.S. dropped significantly throughout March and April before picking back up in June (USCB, 2024). Following this trend, hardwood lumber production across the South fell to exceptionally low levels in the early months of 2020, with growth being shown later in the year, reflecting demand from the U.S. housing market. (Tegels, 2021). By the end of 2021, housing starts were higher than before the pandemic. This growth continued into the early months of 2022 before beginning to decline later in the year (USCB, 2024).

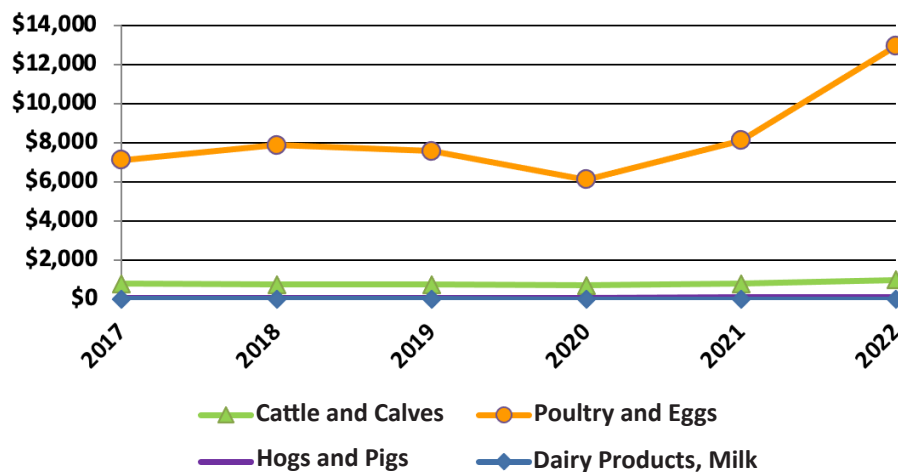


Fig. 7. Arkansas' Livestock and Livestock Products Value of Cash Receipts, 2017–2022.

Source: USDA ERS (2023b); USDA NASS (2023a).

Note: Presented in millions of constant 2011 dollars.

For selected products: cattle and calves, poultry and eggs, hogs and pigs, and dairy products.

1.4.1.4: Agriculture-Related and Support Industries

Agriculture-related industries include commercial fishing, hunting and trapping from the natural environment (not farm-raised), as well as agriculture and forestry support activities. In pre-2007 reports, on-farm construction was also included; however, the data are no longer available and have been dropped from the analysis. The largest of these industries is agriculture and forestry support activities. These activities may be performed by an independent firm to support the production process for a given crop, animal, or forestry industry. Typical activities include but are not limited to: cotton ginning; soil preparation, planting, and cultivating; breeding services; and livestock sprayers. From 2017 to 2022, the GDP value of Forestry, Fishing, and Related Activities fell by 12.7%. Value in this sector has been declining consistently from a period high of \$731M in 2017 to a low of \$638M in 2022 (presented in 2022 dollars) (USDC BEA, 2023).

A smaller portion of the sector is made up of commercial fishing, hunting, and trapping activities. Arkansas’ hunting and fishing license sales have been on the decline for several years, mirroring national trends. Beyond dollars lost through license sales, funding for conservation programs across the state is impacted as the distribution of federal tax funds to fish and wildlife programs is, in part, based on the number of licensed hunters and anglers participating in the state (Zellers, 2020). In 2020, there was a slight uptick in the number of hunting and fishing licenses sold across the country as the onset of COVID-19 disrupted meat processing activity (Drillinger, 2021). According to data reported by the U.S. Fish and Wildlife Service, the number of paid hunting license holders in Arkansas fell slightly by 0.4% from 343,300 in 2020 to 341,842 in 2021, with the gross cost of hunting licenses falling 2.2% from \$19.1M to \$18.7M. As meat supply chains have stabilized, and away-from-home work and travel have resumed, the amount of time available for hunting and fishing has been limited. As a result, the national license sales fell by a further 3.1% from 2021 to 2022 (Krebs, 2023).

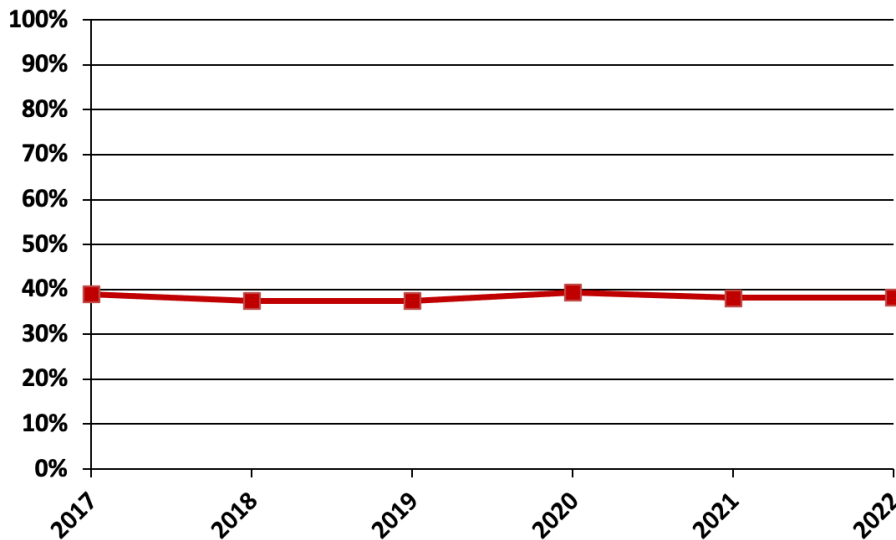


Fig. 8. Agricultural Processing's Share of Arkansas' Manufacturing Gross Domestic Product, 2017–2022.

Source: USDC BEA (2023).

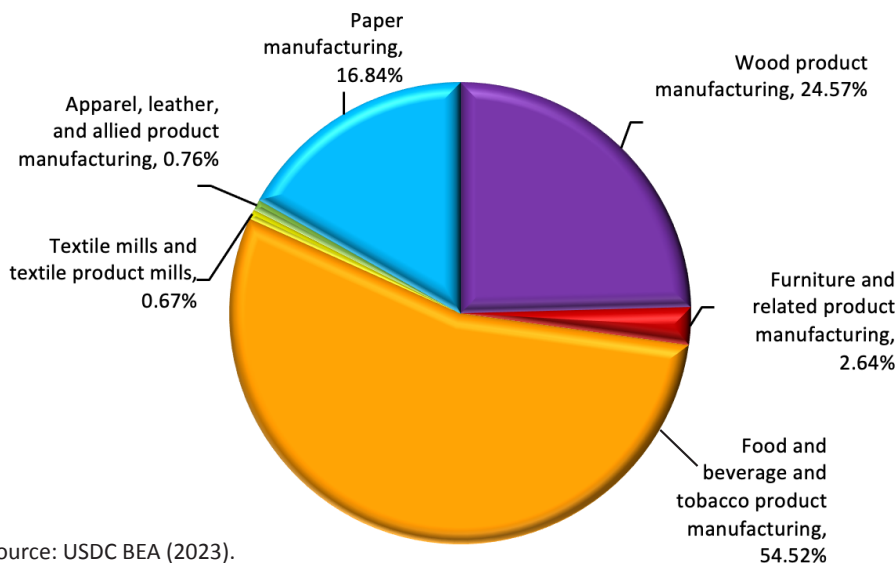


Fig. 9. Components of Arkansas' Agricultural Processing Sector Gross Domestic Product, 2022.

Source: USDC BEA (2023).

Note: Calculated from constant 2022 dollars.

1.4.2: Agricultural Processing

Arkansas' manufacturing sector depends upon raw materials from the crops, animal agriculture, and forestry sectors for use in many of its largest industries. Poultry production and processing, for example, may lead to such processed goods as frozen chicken, eggs, animal feed, and animal oils; cotton production may lead to ginning and processing of materials to be used in the textile industry. Figure 5 details the trend of agricultural processing in Arkansas from 2017 to 2022. Over the five-year period, the value of agricultural processing has increased by 13.6%. Value in the sector remained fairly stable from 2017 to 2019, averaging around \$8.2B, before seeing sustained growth from 2020 to 2022. During this period, value in the sector rose 7.9% from \$8.5B in 2020 to \$9.2B in 2022 (USDC BEA, 2023).

Over the five-year period, agricultural processing has made up around 40% of GDP from all manufacturing in Arkansas (Fig. 8). In 2022, agricultural processing accounted for roughly \$0.31 of every \$1 of manufacturing in the state. The

contribution of individual agricultural processing industries to agricultural processing in 2022 is shown in Fig. 9. (USDC BEA, 2023). A discussion of each industry's percentage of GDP over time follows.

1.4.2.1: Food and Beverage and Tobacco Product Manufacturing

The Food and Beverage and Tobacco Product Manufacturing sector has consistently been the largest agricultural processing sector in Arkansas, making up 54.5% of agricultural processing's GDP in 2022. The value of this sector increased 24.6% from 2017 to 2022 (Fig. 10). From 2017 to 2019, the GDP value grew by 10.7% from \$4.0B to \$4.5B. In 2020, COVID-19 stay-at-home orders caused a drastic shift in food consumption from restaurants to homes. Because of this, food manufacturers dealt with rapidly changing demand and supply chain issues, which resulted in value for the sector falling by 4.8% to \$4.2B in 2020 (Mead et al., 2020; USDC BEA, 2023). The sector was able to quickly respond to these demand and supply shocks and soon rebounded with values rising by 9.7% to \$4.7B in 2021. Part of

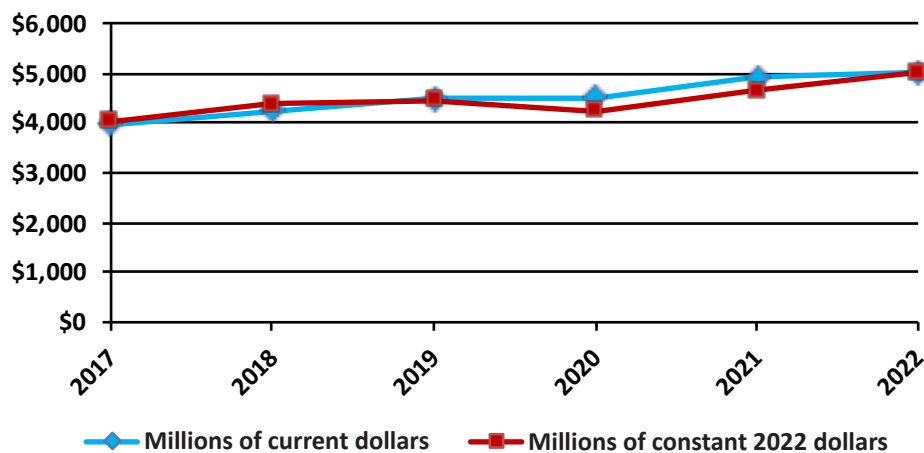


Fig. 10. The Gross Domestic Product of Arkansas' Food and Beverage and Tobacco Product Manufacturing, 2017–2022.

Source: USDC BEA (2023).

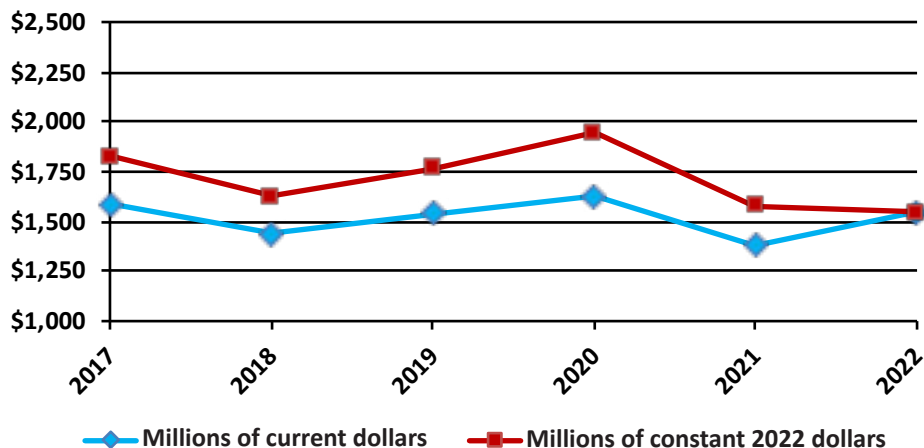


Fig. 11. The Gross Domestic Product of Arkansas' Paper Manufacturing, 2017–2022.

Source: USDC BEA (2023).

this rise may be attributed to food and beverage industry investments being made by brands such as Butterball, Mars Petcare, and Custom Craft Poultry, which each announced multi-million dollar projects for the state in 2021 (AEDC, 2021). Growth continued as value in the sector increased by another 7.8% in 2022 to a period high of \$5.0B (USDC BEA, 2023).

1.4.2.2: Paper Manufacturing

With vast timber resources, Arkansas is home to several key pulp and paper companies. Because of this, the Paper Manufacturing sector has historically been the second-largest processing industry in Arkansas. However, the sector has been on a downward trend, losing 15.1% of its value from 2017 to 2022 (Fig. 11), currently making it the third highest-valued agricultural processing industry after Wood Product Manufacturing. From 2017 to 2018, value in the sector fell by 10.7% from \$1.8B to \$1.6B. Following this drop, the sector rebounded, rising 19.5% from 2018 to 2020 to a period high of \$1.9B. This growth was aided by a surge in demand for pulp and paper products during the COVID-19 pandemic. Although school and

office shutdowns decreased sales of printing and writing paper in 2020, there was a sharp increase in demand for packaging paper, paperboard, and household and sanitary paper (FAO, 2021). Following the pandemic surge, the industry faced challenges due to supply chain issues and cost inflation. In addition, the growing use of digital products has resulted in dwindling demand for paper products by schools, offices, and printing services (Boise Paper, 2022). As a result, the value of GDP in the sector has been in decline, falling 20.4% from 2020 to a period low of \$1.5B in 2022 (USDC BEA, 2023).

1.4.2.3: Wood Product Manufacturing

Arkansas' Wood Product Manufacturing sector gained 26.0% in value from 2017 to 2022 (Fig. 12), making it the second highest-valued agricultural processing industry in the state. Value in the sector stayed relatively steady at around \$1.8B in 2017 and 2018. In 2019, the GDP of Wood Product Manufacturing fell 14.1% to \$1.6B but quickly rebounded, rising 52.5% to a period high of \$2.4B by 2021. This growth was largely due to rising levels of new home construction, coupled with record high prices

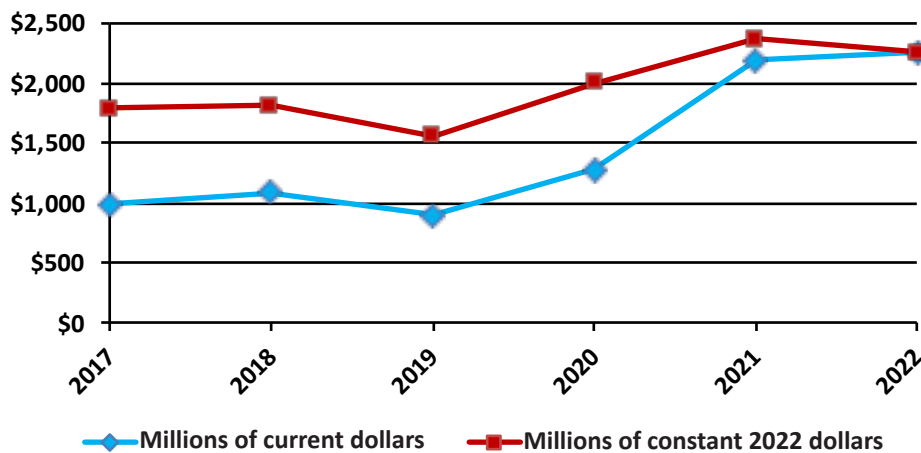


Fig. 12. The Gross Domestic Product of Arkansas' Wood Product Manufacturing, 2017–2022.

Source: USDC BEA (2023).

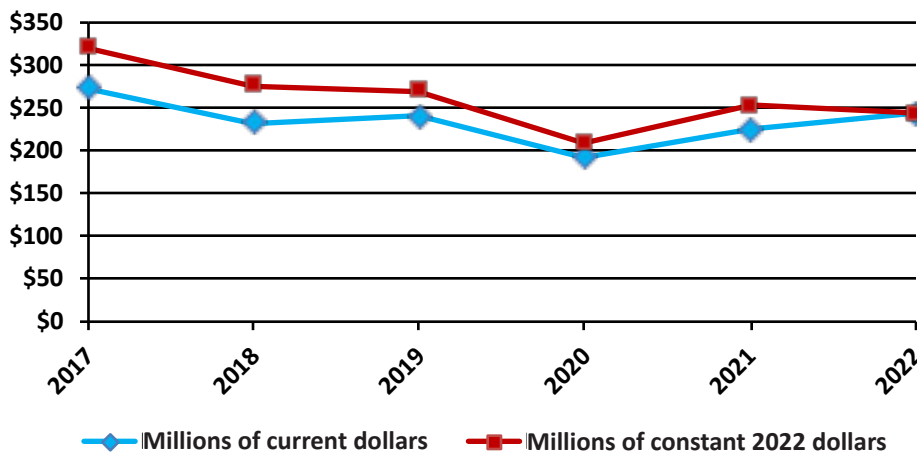


Fig. 13. The Gross Domestic Product of Arkansas' Furniture and Related Product Manufacturing, 2017–2022.

Source: USDC BEA (2023).

for lumber products (USDC BEA, 2023; Pelkki and Tian, 2022). In 2022, “sky-high” lumber prices that were seen during the pandemic began to fall (Buckner, 2022). As a result, the GDP value of Arkansas’ Wood Product Manufacturing sector fell 4.8% to \$2.3B in 2022.

1.4.2.4: Furniture and Related Product Manufacturing

Over the 2017 to 2022 period, Furniture and Related Product Manufacturing lost 24.1% of its value. (Fig. 13; USDC BEA, 2023). From 2017 to 2019, value in the sector decreased steadily, dropping 34.7% to a period low of \$209M. As furniture purchases are affected by the housing market, a decrease in new home sales and new home construction resulted in lower demand for furniture. Although the pandemic caused a drastic decrease in housing starts during the early part of 2020, by the end of the year, the market showed a strong rebound (USCB, 2023). In Arkansas, the Furniture and Related Product Manufacturing sector saw a similar but delayed recovery, increasing 21.3% from \$209M in 2020 to \$253M in 2021. Following this brief rebound, value in the sector fell 4.2% in 2022 to \$243M. This decline was on trend with U.S. furniture manufacturing, which saw a decline in new order rates for 2022 due to buyer and supplier disagree-

ments regarding price levels and delivery lead times (Dalheim, 2023).

1.4.2.5: Textile Mills and Textile Product Mills

The Textile Mills and Textile Product Mills sector makes up a relatively small portion (<1%) of Arkansas’ agricultural processing GDP. From 2017 to 2022, the value of GDP for the sector fell 16.1% but has been somewhat volatile (Fig. 14). In 2018, value in the sector rose 3.4% over 2017 to a period high of \$76M (USDC BEA, 2023). From 2018 to 2020, value in the sector fell 27.5% to a period low of \$55M. In 2021, the sector rebounded, rising 3.8%. Value grew again in 2022, rising 7.8% to \$62M. This rise may be attributable to advancements in automation that can reduce labor costs for textile manufacturers. This, coupled with Arkansas’ cotton production capacity, has recently garnered interest in expanding the industry within the state (Hardy, 2017; Quinn, 2019).

1.4.2.6: Apparel, Leather, and Allied Product Manufacturing

Much like the textile industry, apparel manufacturing makes up a small proportion (<1%) of Arkansas’ agricultural GDP. As seen in Fig. 15, the GDP for Apparel, Leather, and Allied Prod-

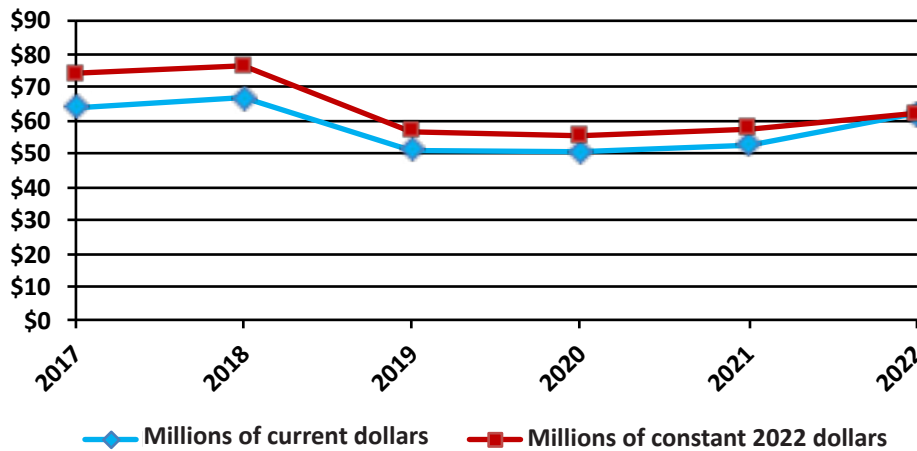


Fig. 14. The Gross Domestic Product of Arkansas’ Textile Mills and Textile Product Mills, 2017–2022.

Source: USDC BEA (2023).

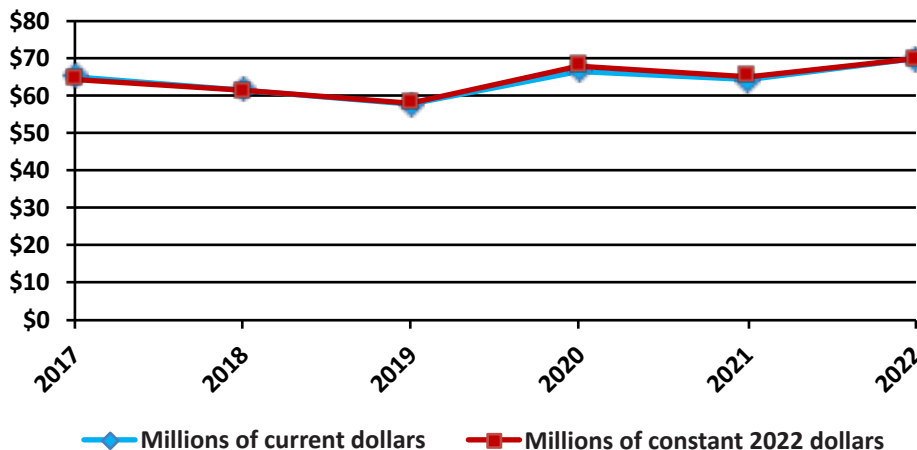


Fig. 15. The Gross Domestic Product of Arkansas’ Apparel, Leather, and Allied Product Manufacturing, 2017–2022.

Source: USDC BEA (2023).

uct Manufacturing has experienced alternating periods of growth and decline but has shown overall growth in GDP from 2017 to 2022. During this period, the sector rose 8.3% from \$65M in 2017 to \$70M in 2022 (USDC BEA, 2023). From 2017 to 2019, value in the sector declined 10.2% to a period low of \$58M. The decline may have been partly attributed to changes enacted under the Trade Facilitation and Trade Enforcement Act of 2015 (TFTEA), which raised the ‘de minimus’ exemption value for imported goods, creating a potential advantage for foreign e-commerce clothing companies (USCBP, 2016; Holman, 2023). Following the low seen in 2019, the sector has begun to rebound, rising 20.6% to \$70M in 2022. This rise may be partially attributed to a recent rise in demand for locally produced apparel, coupled with an urgency for expanding local production of items such as sewn facemasks and other apparel items spurred on by the pandemic (Jordan, 2021; Golden, 2024).

1.4.2.7: Agricultural Processing Summary

Food and Beverage and Tobacco Product Manufacturing has consistently contributed the largest share of agricultural processing (Fig. 16). Despite a small dip in 2020 due to the effects of COVID-19, the industry has increased 24.6% since 2017. The second-largest component, Wood Product Manufacturing, represented 24.6% of agricultural processing value in 2022. This industry has shown signs of volatility but has seen overall growth throughout the period, rising 26.0% since 2017. Paper Manufacturing represented 16.8% of agricultural processing in 2022. This industry saw a decline over the period, falling 15.1% since 2017. In spite of this decline, its’ pat-

tern is almost perfectly anti-cyclical to Food and Beverage and Tobacco Product Manufacturing, serving to partially insulate value in the overall agricultural processing sector. The remaining sectors contribute the least to the GDP of agricultural processing. Furniture and Related Product Manufacturing represented 2.6% of Arkansas’ agricultural processing value in 2022, with Textile Mills and Textile Product Mills and the Apparel, Leather, and Allied Product Manufacturing industries each representing less than 1% of agricultural processing GDP. While value in the furniture and textile sectors fell by 24.1% and 16.1%, respectively, during the five-year period, Apparel, Leather, and Allied Product Manufacturing has risen 8.3% since 2017.

1.4.3: Agricultural Retail

1.4.3.1: Food Services and Drinking Places

Gross domestic product in agricultural retail increased by 8.9% from 2017 to 2022 (Fig. 17). From 2017 to 2019, the GDP value of Food Services and Drinking Places grew by 3.2% from \$3.8B to \$3.9B. In 2020, the pandemic had a disproportionate impact on the Food Services and Drinking Places sector as restaurants were forced to either close or operate at a limited capacity during much of the year (English et al., 2022). As a result, the value of GDP from this sector fell by 11.7% to \$3.5B in 2020. However, as lockdown restrictions were lifted, the sector saw a substantial rebound, rising 18.5% to \$4.1B in 2021. This growth was sustained as the value continued to rise slightly (0.9%) in 2022 (USDC BEA, 2023).

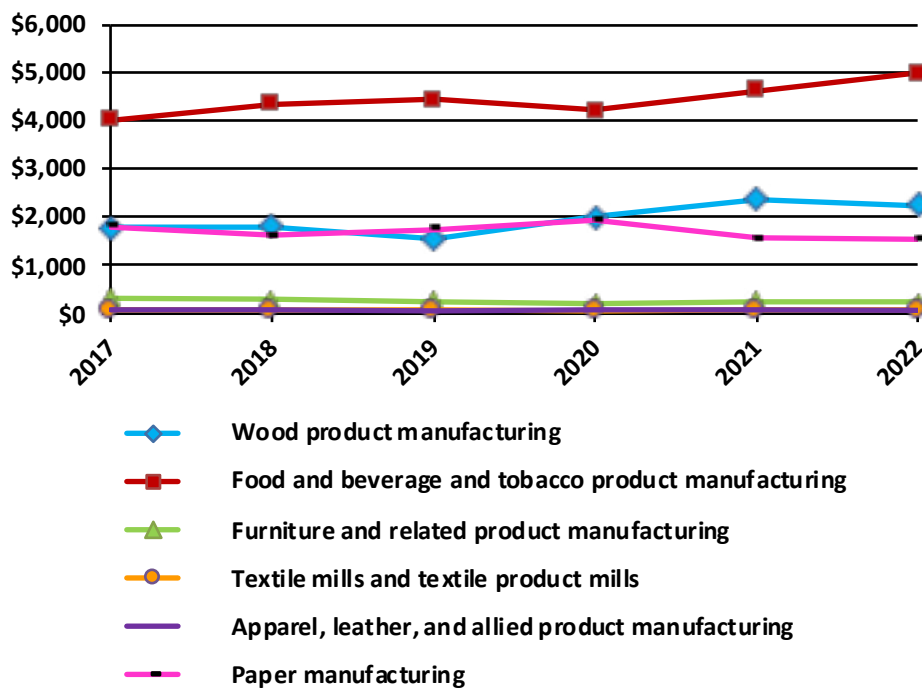


Fig. 16. The Gross Domestic Product of Arkansas’ Agricultural Processing Sectors, 2017–2022.

Source: USDC BEA (2023).

Note: Presented in millions of constant 2022 dollars.

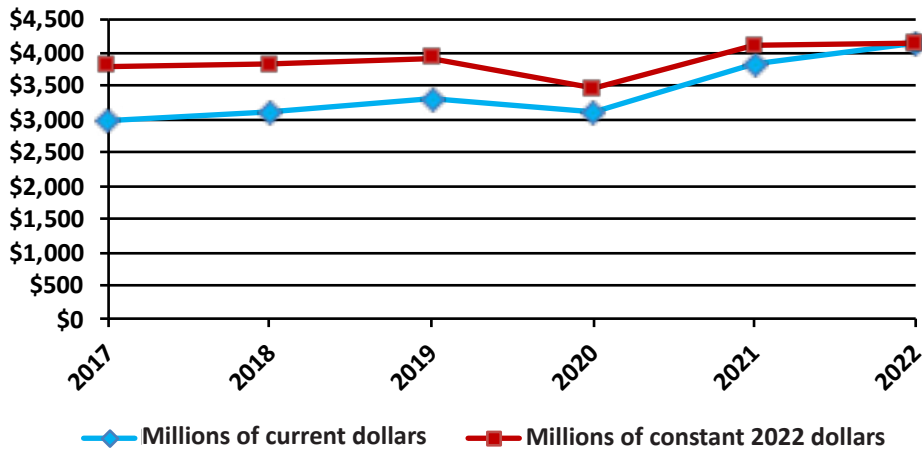


Fig. 17. The Gross Domestic Product of Arkansas' Food Services and Drinking Places, 1997-2021.

Source: USDC BEA (2023).

2: Report Summary

The GDP by State data from BEA indicates that Arkansas' Agriculture and Food Sector continues to contribute a larger share of GDP by State to the overall Arkansas state economy than does Agriculture and Food in other contiguous states, the southeast region, and the nation as a whole. World events, foreign and domestic price stability, and associated agricultural and food policies

will continue to have a significant impact on Arkansas agriculture and its contribution to the Arkansas economy. The continued strength of agriculture is of paramount importance if the social and economic fabric of rural Arkansas communities is to be retained and if the essential infrastructure and services that translate into an acceptable quality of life for its residents are to be maintained.

End Notes

¹ Five SIC definitions, used to categorize GDP by State and IMPLAN data in some previous reports, were based upon what was produced. These definitions paid particular attention to manufacturing industries, as was appropriate for the economy of the 1930s when these definitions were created. The service sector of the economy has since developed in inconceivable ways. NAICS is designed to focus on how products and services are created, resulting in major differences in industry groupings. NAICS categorizes data into one of two domains: goods producing or service providing. These domains are further divided into 12 super sectors and then broken into 20 industry sectors designated by two digits, compared with the eleven alphabetically designated divisions of SIC. Because of its increased number of sectors, NAICS allows for greater precision in data assignment and analyses. Only six of the twenty NAICS sectors had changes during the 2007 revision of NAICS. The sectors with changes in 2007 had no impact on the analyses presented here, and the only sector of interest with any revision was Sector 11,

Agriculture, Forestry, Fishing and Hunting, in which sweet potato and yam farming was moved to sub-sector Potato Farming and algae, seaweed, and other plant aquaculture were moved to sub-sector Other Aquaculture. These were simply reallocations within sectors and had no impact on overall totals.

² For this report, agricultural production includes NAICS industries falling under the classification of Agriculture, Forestry, and Fishing and Hunting (11). Agricultural processing includes these sectors falling under the Manufacturing (31-32) classification: Food Manufacturing (311); Beverage and Tobacco Product Manufacturing (312); Textile Mills (313); Textile Product Mills (314); Apparel Manufacturing (315); Leather and Allied Product Manufacturing (316); Wood Product Manufacturing (321); Paper Manufacturing (322); Furniture and Related Product Manufacturing (337); and agricultural retail is captured under the Accommodation and Food Services (72) classification with the Food Services and Drinking Places (722) sector (USDC BEA, 2022).

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