



Forest Products Industries' Economic Contributions: Missouri, 2023

Prepared For:

Missouri Department of Conservation
Forestry Section

On behalf of,

Northeast-Midwest State Foresters Alliance
Washington DC, USA

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April 2026

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Project funded by:

This project was supported by the cooperative agreement 24-CA-11132544-047 between the Northeast-Midwest State Foresters Alliance, Inc. and the USDA, Forest Service State, Private & Tribal Forestry “Project Title: Build and Support State Forestry Utilization and Marketing Capacity Through Targeted Investments in State Forestry Utilization and Marketing Programs”, United States Forest Service
Washington D.C., USA

Suggested citation :

Lamsal, B., Poudel, J., Pokharel, R. 2026. Forest Products Industries' Economic Contributions in Missouri. *Technical Report*, Department of Forestry, Michigan State University, East Lansing, Michigan, USA.

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Foreword

Forest products have played an important role in Missouri's economy for over a century. Once home to the largest sawmill in the U.S., Missouri's forests helped build this great nation. Today, Missouri still has a thriving and vibrant forest products industry. The industry not only supplies products throughout the U.S., but also the world.

Over the past 20 years, economic reports regarding Missouri's forest products contributions were made available, but they focused solely on Missouri. Rarely were they put in context of their impact outside the state.

In 2020, a regional analysis using 2017 data provided reports to allow a regional economic assessment which included Missouri, Nebraska, and 18 other midwestern and northeastern states and was designed to view the forest products industry as a whole. It, along with data from other states in the project, allows a direct comparison of Missouri to those states. The interactions of these 20 states are covered in a regional report, which shows Missouri's contribution to the northeast and midwestern area of the United States.

This update provides another comparison using 2023 data to see the effects of the numerous changes in those six years.

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Executive Summary

Based on 2023 FIA estimates, Missouri contains approximately 15.52 million acres of forest land, representing about 35.5 percent of the state's total land area of 43.66 million acres. Of this forest base, approximately 14.96 million acres (96.4 percent) are classified as timberland, defined as forest land capable of producing commercial volumes of wood. Reserved forestland accounts for 330,842 acres (2.1 percent), while other forestland comprises 225,762 acres (1.5 percent). Non-forest land totals 28.14 million acres, or 64.4 percent of Missouri's total land area. Building on this land-use context, this report summarizes the economic contribution of Missouri's forest products industries using IMPLAN 2023 data and examines changes in industry performance across the pre- and post-COVID period, with emphasis on trends observed over the past five years.

Forest Product Industries

This report analyzes the economic contribution of Missouri's forest products sector, comprised of 31 individual economic sectors aggregated into seven industry groups: Forestry, Logging, Primary solid wood products, Secondary solid wood products, Wood furniture, Pulp, paper, and paperboard mills, and Secondary paperboard and other paper products. In 2023, these industries directly supported 24,896 jobs and generated \$9.03 billion in output, \$2.93 billion in value added, and \$1.80 billion in labor income. When indirect supply-chain linkages and induced household-spending effects are included, the sector's total economic footprint reached 50,169 jobs, \$14.18 billion in output, \$5.85 billion in value added, and \$3.47 billion in labor income. The sector exerts a notable multiplier effect on the broader economy; for every 100 direct jobs in the forest industry, roughly 102 additional jobs are supported elsewhere in the state.

Leading Forest Products Industry Groups (direct contribution)

Among the seven aggregated groups, Wood Furniture was the largest direct employer in 2023 (7,468 jobs), followed by Secondary Paperboard and Other Paper Products (6,838 jobs) and Secondary Solid Wood Products (5,724 jobs). In terms of output, Secondary Paperboard and Other Paper Products produced the highest direct output at \$4.28 billion, serving as the sector's financial engine. Secondary Solid Wood Products generated \$1.67 billion, highlighting the state's strength in value-added manufacturing. Forestry, while the smallest contributor in dollar terms (\$38.6 million), provided the essential management and biological services supporting the broader value chain.

Leading Individual Forest Products Sectors (direct contribution)

At the disaggregated level (31 sectors), Paperboard container manufacturing emerged as the top individual employer with 4,202 jobs. Financial dominance was also concentrated in this sector, which ranked first in Labor Income (\$385.9 million), Value Added (\$816.9 million), and Output (\$2.70 billion). Wood kitchen cabinet and countertop manufacturing was a consistent top-tier performer, ranking second in Employment (3,530 jobs), while Sawmills ranked second in output (\$1.03 billion). All other converted paper product manufacturing also emerged as a major driver, ranking second in value added (\$319.5 million). These rankings show a downstream-focused economy: specialized secondary manufacturing (Packaging, Cabinetry, and Milling) dominating over primary processing.

Missouri's Forest Products Industries Compared to Other Missouri Industries

The Forest Products sector remains a vital component of Missouri's natural resource economy. In 2023, it ranked second in both employment and output when compared to Agriculture, Mining, and Commercial Fishing & Hunting. The forest sector's direct output (\$9.03 billion) trailed Agriculture (\$14.98 billion) but outperformed Mining (\$7.52 billion) and Commercial Fishing & Hunting (\$38.9 million). In terms of employment, the 24,896 jobs supported by the forest industry accounted for around 18 percent of the state's total natural resources workforce, ranking behind Agriculture (104,140 jobs) but significantly surpassing Mining (10,273 jobs) and Commercial Fishing & Hunting (836 jobs). Furthermore, within the statewide manufacturing landscape, Forest Products ranked as the sixth largest manufacturer by output (\$8.74 billion) and the fifth largest employer (22,576).

Seven-years Trends in Missouri's Forest Products Industries Economic Contribution

From 2017 to 2023, the sector demonstrated distinct structural shifts alongside resilience. Direct employment decreased by 3.1 percent, while direct output increased by 3.1 percent in real terms. Notably, real Value Added increased by 2.4 percent despite the contraction in the workforce. This trend shows a divergence in the state's forest economy, where efficiency gains have allowed the industry to generate more wealth per unit of labor, stabilizing the sector as a productive economic anchor during a period of broader post-pandemic fluctuation.

Glossary

Forestry Terms

Average annual harvest removals: The estimated volume of trees that were live at the time of the previous inventory and were either cut and removed by direct human activity related to harvesting or died as a result of silvicultural or land-clearing activity by the time of the current inventory.

Average annual mortality: The volume of trees that were live at the time of the previous inventory and are dead in the current inventory.

Average annual net growth: The change in merchantable bole volume of growing-stock trees (at least five inches diameter at breast height [DBH]) after deducting mortality volume, in cubic feet, on forest land.

Forest land: Land that is at least 10 percent stocked by trees of any size, including land that formerly had such tree cover and that will be naturally or artificially regenerated. Forest land includes transition zones, such as areas between heavily forested and non-forested lands that are at least 10 percent stocked with trees and forest areas adjacent to urban and built-up lands, including pinyon-juniper and chaparral areas in the western U.S., and afforested areas. The minimum area for classification of forest land is one acre and 120 feet wide, measured stem-to-stem from the outermost edge. Unimproved roads and trails, streams, and clearings in forest areas are classified as forest land if less than 120 feet wide.

Growing stock: Live trees of commercial species that meet minimum merchantability standards (at least five inches DBH). In general, these trees have at least one solid eight-foot section, are reasonably free of form defect on the merchantable bole, and at least 34 percent or more of the volume is merchantable. Excludes rough or rotten cull trees.

Timberland: A subset of forest land that produces or can produce crops of industrial wood and is not withdrawn from timber utilization by statute or administrative regulation. (Note: Areas qualifying as timberland can produce at least 20 cubic feet per acre per year of industrial wood in natural stands. Currently inaccessible and inoperable areas are included.)

Economic Contribution Terms

Direct effects/contributions: The direct contribution represents the economic activities (output, employment, labor income, and value-added) that occur within an industry or sector as a result of its existing production to satisfy current (exogenous) final demand. In contribution analysis, the direct effect corresponds to the sector's own production activities that maintain

the structure of the regional economy. For example, the direct contribution of the forest products industry reflects its ongoing production and employment required to meet current local and export demand for forest-based goods.

Employment: The number of full- and part-time jobs associated with an industry.

Indirect effects/contributions: The indirect contribution captures the inter-industry linkages created when the industry purchases goods and services from other local industries. These transactions stimulate additional production, employment, and income along the supply chain. For instance, demand for wood products generates additional output in sectors such as transportation, wholesale trade, and equipment manufacturing that supply inputs to the forest industry. The magnitude of indirect contribution reflects the degree of interdependence and strength of local supply-chain relationships.

Induce effects/contributions: The induced contribution measures the additional economic activity generated by household spending of labor income earned through direct and indirect effects. When workers employed in the forest products and related supply-chain sectors spend their income on goods and services, such as housing, healthcare, or retail, it further stimulates regional economic activity. This household feedback effect represents the cyclical flow of income and expenditures within the economy.

Labor income: The dollar total of employee compensation and proprietor income; the latter is associated with self-employed individuals.

Output: The dollar measure of production within an area; it is also viewed as sales.

Social Accounting Matrix (SAM) multipliers: These multipliers are derived by dividing the sum of direct, indirect, and induced effects by the direct effects. The social accounts include payments made between households, households and government, and more. These are available for output, employment, labor income, and value-added and are used to assess the effects of changes in industry activity (i.e., “ripple effects”).

Total effects/contributions: The sum of direct, indirect, and induced effects.

Value-added (also known as gross state product, or GSP): The sum of labor income, other property income (e.g., rents and profits), and indirect business taxes (e.g., excise and sales taxes). It is the difference between an industry’s total output and the cost of its intermediate inputs. The sum of value-added for all economic sectors within the region equals the total GSP.

Introduction

Forest products industries are an integral component of Missouri's economy. They provide jobs, raw materials, and finished goods that generate additional economic activity throughout the state, region, and nation. Forests in Missouri have always supported local and state economies and generated employment and income (Leefers 2014, 2015; Poudel, 2022). These forests form the foundation for a wide array of industries, supporting logging, sawmills, pulp and paper, wood products manufacturing, and furniture production. Collectively, the Forest Products Industry (FPI) contributes directly to the economic development of the region, while also supporting rural livelihoods, providing raw materials for construction and packaging, and generating substantial downstream linkages to other industries (Poudel and Dahal 2025; Lamsal et al. 2025a). The scale and diversity of activities across the FPI underscore its role as a major part of the broader manufacturing economy, contributing to value added and sustaining consumer demand (Lamsal et al. 2025b).

A state report on FPI contributions on Missouri was previously published by Leefers et al. (2020) using 2017 IMPLAN data. The present update extends that effort using 2023 data, allowing for a comparison across time. This analysis measures how the performance of forest sector industries in Missouri has shifted between 2017 and 2023 in terms of employment, output, labor income, and the Gross State Product (GSP), also known as value added¹. Tracking these changes is essential, as it provides a clear picture of both long-term trends and the more recent disruptions caused by the COVID-19 pandemic. The pandemic had economy-wide effects on supply chains, consumer demand, and labor markets (Poudel and Dahal 2025; Lamsal et al. 2025b), and this report therefore captures the pre- and post-COVID conditions of the FPI within the region.

This trend analysis can be used in multiple ways by related stakeholders. For policymakers, it offers a benchmark for monitoring the health of one of the region's key resource-based industries and helps inform workforce development, investment, and rural economic policies. For industry stakeholders, it provides insight into productivity, competitiveness, and sectoral resilience, supporting strategic planning. For researchers and forest managers, it offers a consistent regional framework that connects forest resources with industrial performance and economic outcomes.

¹ The 2017 results in this report are based on data from the IMPLAN Pro desktop version, whereas the 2018–2023 results are based on the IMPLAN web platform. Because there are minor differences between the Pro and web versions, the 2017 estimates shown here may not exactly match 2017 results reproduced from the web version. To maintain consistency with the original 2017 report and ensure a valid basis for comparison and trend analysis, we use the original 2017 IMPLAN Pro data, and IMPLAN web data for all years from 2018 through 2023.

The inventory data used in this report were sourced from the U.S. Forest Service Forest Inventory and Analysis (FIA) database and the economic data were obtained from Impact Analysis for Planning (IMPLAN). These data and related information are presented in four major sections: (i) Forest Resources of Missouri, (ii) Economic Contributions of the Missouri FPIs, (iii) Comparing FPIs with other industries and neighbor states, and (iv) Summary. We acknowledge that, due to rounding, some values in the tables and figures may not sum to the exact total indicated.

Forest Resources of Missouri state

According to 2023 estimates from the USDA Forest Inventory and Analysis (FIA) program, Missouri's total land area totals 43.66 million acres. Of this total, 15.52 million acres (35.6 percent) meet the FIA definition of forest land, while the remaining 28.14 million acres (64.4 percent) are classified as non-forest land. FIA defines forest land as land at least 10 percent stocked by trees of any size, including areas that formerly supported such tree cover and that will be naturally or artificially regenerated. Within Missouri's forest land base, timberland accounts for 14.96 million acres, or 96.4 percent (Figure 1), representing unreserved forest capable of producing at least 20 cubic feet of wood per acre per year. Reserved forestland comprises 330,842 acres (2.1 percent) and is withdrawn from timber utilization by legal or administrative designation. Other forestland totals 225,762 acres (1.5 percent) and consists of unreserved forests of comparatively low productivity. In practical terms, approximately 14.96 million acres of Missouri's forest land are available and biophysically suitable for commercial timber management, while about 0.56 million acres are either reserved or too low in productivity to contribute materially to timber supply.

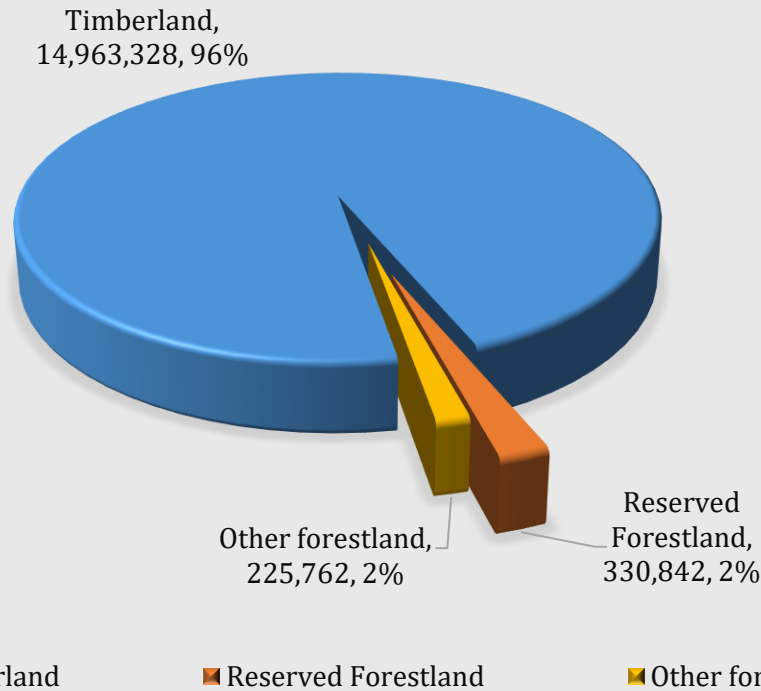


Figure 1: Missouri Forest Land area in acres by Land use type, 2023 (US Forest Service).

Ownership of Missouri’s 15.52 million acres of forest land is distributed among federal, state and local, and private entities, with private landowners holding the largest share (Figure 2). Private ownership accounts for 12.71 million acres, representing 81.9 percent of the state’s forest land base. State and local governments manage 942,918 acres (6.1 percent), reflecting a modest public ownership component at the subnational level. Federal ownership totals 1.87 million acres (12.0 percent). Within the federal category, National Forest System lands account for 1.49 million acres (9.6 percent), while other federal agencies manage 378,507 acres (2.4 percent). Overall, Missouri’s forest land base is characterized by a strong predominance of private ownership, complemented by a substantial federal land presence and a smaller state and local public land component.

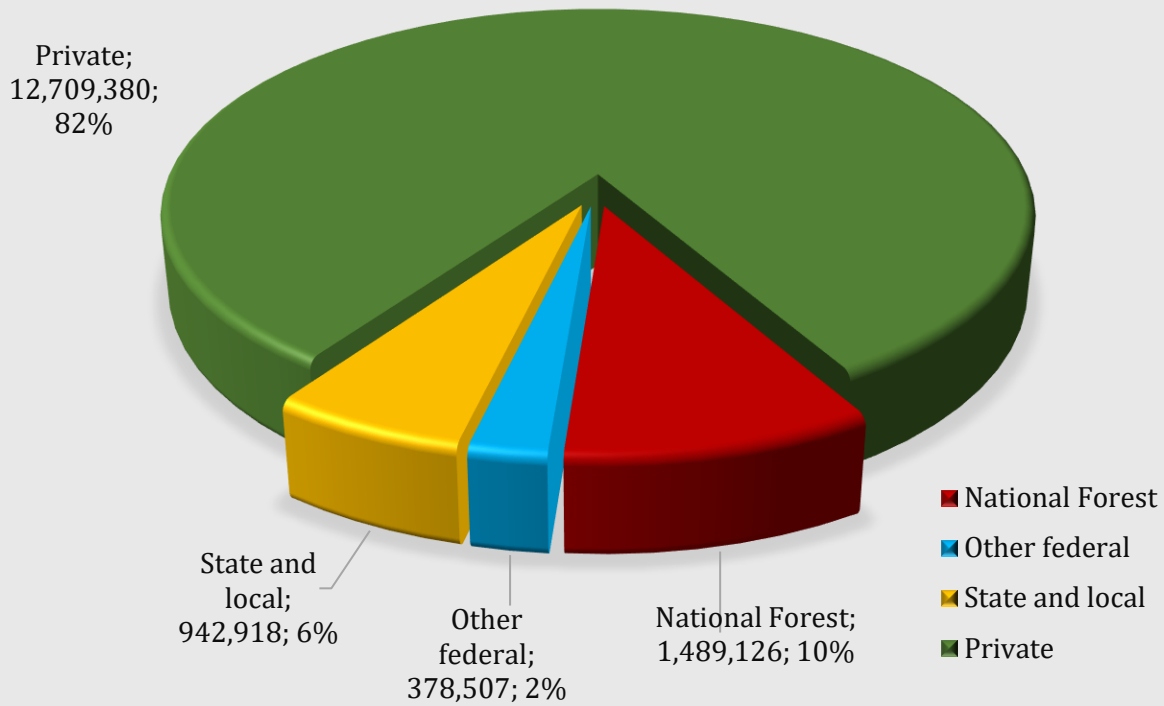


Figure 2: Missouri Forest Land area in acres by Ownership group, 2023 (US Forest Service).

Hardwood forest types dominate Missouri’s 15.52 million acres of forest land (Figure 3). The oak/hickory forest-type group is by far the most extensive, occupying 12.14 million acres, or 78.2 percent of the state’s forest land base. The elm/ash/cottonwood group accounts for 1.27 million acres (8.2 percent), while mixed oak/pine forest types comprise 1.06 million acres (6.8 percent), reflecting a notable presence of mixed hardwood–softwood stands. Softwood-dominated forest types represent smaller shares of the forest land base, including other eastern softwoods at 404,983 acres (2.6 percent) and loblolly/shortleaf pine at 263,484 acres (1.7 percent). The remaining 379,698 acres (2.4 percent) are distributed across other forest-type groups. Overall, Missouri’s forest land base is strongly hardwood-dominated, with oak-associated forest types accounting for a substantial majority of total forest area.

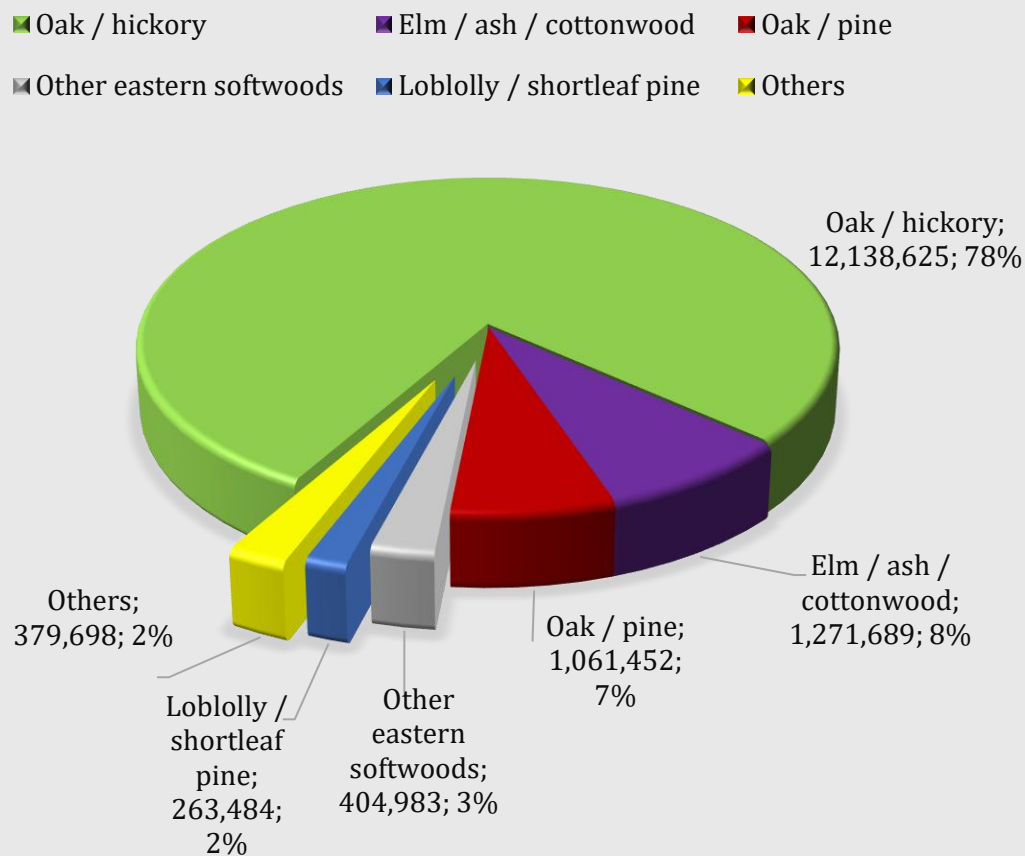


Figure 3: Missouri Forest Land area in acres by Forest type group, 2023 (US Forest Service).

Missouri’s timber resource base supports a broad range of forest-based supply chains, including forest management, harvesting, and primary wood-using industries. The estimated volume of standing timber suitable for forest products (i.e., growing-stock volume) totals 28.11 billion cubic feet statewide (Table 1). Hardwood species dominate the resource, accounting for 25.40 billion cubic feet (90.3 percent) of total growing-stock volume, while softwoods comprise 2.71 billion cubic feet (9.7 percent). By ownership class, private lands hold the majority of growing-stock volume at 22.39 billion cubic feet (79.7 percent), followed by National Forest System lands with 3.30 billion cubic feet (11.8 percent). State and local government lands contain 1.84 billion cubic feet (6.6 percent), while other federal ownership accounts for 578.5 million cubic feet (2.1 percent).

Average annual net growth totals 483.8 million cubic feet per year, while average annual harvest removals total 118.9 million cubic feet and average annual mortality totals 224.0 million cubic feet per year. Net growth exceeds harvest removals by a ratio of about 4.1 to 1, indicating that removals remain well below net biological growth statewide. Because net growth is already net of mortality, the implied annual net change in growing-stock volume is net growth minus

harvest removals, or approximately 365.0 million cubic feet per year. This positive balance indicates continued expansion of growing-stock volume at the statewide level. Average annual harvest removals equal roughly 0.4 percent of standing volume, or about 1.5 million standard cords, while mortality represents about 0.8 percent of standing volume. Hardwoods account for most annual inventory flows, comprising 88.3 percent of net growth, 88.9 percent of harvest removals, and 96.0 percent of mortality. Harvest removals are concentrated on private lands, which account for about 86.5 percent of total removals, followed by National Forest lands at about 7.9 percent and state and local ownerships at about 5.5 percent. Overall, these statewide indicators suggest that Missouri's growing-stock inventory remains in a condition of positive net growth.

Table 1: Characteristics of Growing Stock in Missouri, 2023. [†]

Description	Species group	National Forest	Other federal	State and local	Private	Not available	Total
Net volume	Hardwood	2,408,559	541,812	1,677,856	20,771,773	0	25,399,999
	Softwood	896,118	36,711	163,833	1,617,782	0	2,714,444
	Total	3,304,677	578,524	1,841,689	22,389,554	0	28,114,443
Average annual net growth	Hardwood	35,817	7,225	27,584	354,001	2,744	427,370
	Softwood	19,187	555	2,962	33,706	44	56,454
	Total	55,004	7,780	30,546	387,707	2,788	483,825
Average annual harvest removals	Hardwood	6,672	10	6,560	92,377	0	105,618
	Softwood	2,740	0	13	10,488	0	13,241
	Total	9,411	10	6,573	102,865	0	118,859
Average annual mortality	Hardwood	22,798	6,594	16,874	168,804	0	215,070
	Softwood	3,521	58	835	4,560	0	8,973
	Total	26,318	6,652	17,709	173,365	0	224,044

[†] All amounts are in thousands of cubic feet.

Note: **Growing stock** is all live trees of commercial species that meet minimum merchantability standards. **Net volume** is net volume in cubic feet of growing stock for timber species, for trees greater than or equal to five inches in diameter, from a one-foot stump to a minimum four-inch top diameter, or to where the central stem breaks into limbs, all of which are less than four inches in diameter. **Net growth** is the average annual net growth of growing stock, in cubic feet, on forest land. **Annual mortality** is the average annual cubic foot mortality of live growing-stock trees (at least four inches DBH), in cubic feet, on forest land. **Harvest removals** are the average annual harvest removals, in cubic feet, of growing stock trees on forest land.

Economic contribution of the Forest Product Industries, 2023

The FPIs in this study are defined as 32 IMPLAN industries (only 31 industries present in Missouri) that were aggregated into seven analytic groups for consistent reporting across the state. This report follows the same industry grouping framework used in the 2017 report, which was originally developed through consultation with state forestry agencies and other stakeholders and represent a working consensus on what constitutes the regional FPI (Leefers et al. 2020; Poudel and Dahal 2025). The complete list of industries and groupings are presented in [Appendix A](#).

The FPI encompasses a wide range of activities that begin with forest management and timber harvesting and extend through the conversion of raw materials into high-value finished goods. These activities include timber tract operations, nurseries, logging, sawmills, wood preservation, pulp and paper manufacturing, furniture production, and related downstream sectors (Poudel and Dahal 2025). The FPI is a cornerstone of the Missouri economy, not only providing direct employment in logging, milling, and manufacturing but also supporting a much larger network of indirect and induced jobs in transportation, warehousing, wholesale trade, and retail (Leefers et al. 2020). Its health has far-reaching consequences for rural communities, where it is often one of the few sources of year-round employment, and for regional supply chains that depend on steady flows of wood, fiber, and paper products (Lamsal et al. 2025a).

Measuring these contributions requires more than simply counting jobs, mills, or other establishments. Contribution analysis is essentially a descriptive, ex-post accounting framework that traces how industries interact within a regional economy and support the economy (Lamsal et al. 2025b, Watson et al. 2015). It not only measures the direct transactions tied to a sector, but also the indirect effects in supplier industries and the induced effects from household spending that ripple outward. Economic contribution analysis depends on standardized frameworks that can translate government statistics into regional input–output models. The Bureau of Economic Analysis (BEA) provides the foundation through its Benchmark Input-Output Accounts, which map the flow of goods and services across industries and establish the structure of GDP by industry (BEA 2023). The Bureau of Labor Statistics (BLS) complements this with the Quarterly Census of Employment and Wages (QCEW) and occupational data, which provide details on employment and payroll. Further, the U.S. Census Bureau adds extra detail with the Economic Census and County Business Patterns, which track establishments, receipts, and industry-level production. IMPLAN harmonizes these data sources into a consistent input-output modeling framework for estimating regional economic contributions (IMPLAN 2023). IMPLAN is widely used in forest-sector economic research to estimate employment, output,

labor income, and value-added effects associated with forest-products industries. Several forest-sector studies have also paired IMPLAN with FIA data to link forest resource conditions with regional economic outcomes, including timber-product output in Ohio (Coronado et al. 2014), domestic hardwood substitution for imported trailer decking in New York (Pokharel et al. 2023), and potential mass timber processing facility development in Michigan (Khanal et al. 2024). IMPLAN also provides a bridge table that is important for defining the forest-products sectors included in this report. The bridge table is useful in both directions: it aggregates NAICS industries into IMPLAN sectors for modeling and identifies the NAICS components represented within each IMPLAN sector. Although this does not by itself constitute a formal sector disaggregation within IMPLAN, it provides the basis for constructing partial-sector estimates when external data are available.

This distinction is particularly important for forest sector analysis because several IMPLAN sectors contain both forestry and non-forestry components (Poudel and Dahal 2025). In this study, the IMPLAN bridge table was used to identify the relevant NAICS-defined activities embedded within broader IMPLAN sectors, and external data were then used to approximate the forest-related share of selected mixed sectors. For example, IMPLAN Sector 10 (All Other Crop Farming) includes a wide variety of agricultural activities such as alfalfa, peanut, and hemp farming, also in addition to maple syrup production. Using USDA maple syrup production data, only the maple syrup portion of Sector 10 was included in the FPI. Similarly, IMPLAN Sector 19 (Support Activities for Agriculture and Forestry) encompasses a broad spectrum of NAICS industries, including soil preparation, crop harvesting, farm labor contracting, and specialized support services for forestry. To avoid overstating the sector, only Support Activities for Forestry were retained in the FPI totals, using BLS employment and establishment data. Thus, the partial-sector estimates reported here reflect analyst-defined allocations based on the IMPLAN bridge table and supplementary data, rather than an automatic sector split performed within IMPLAN. In the 2017 report, several additional sectors were treated as partial sectors, IMPLAN 40 (Electric Power Generation, Biomass), IMPLAN 352 (Institutional Furniture Manufacturing), and IMPLAN 356 (Showcase, Partition, Shelving, and Locker Manufacturing), but in 2023, following stakeholder consensus and due to limited data to isolate wood-based components, these are treated as full sectors; consequently, the 2023 economic contribution estimates for these specific sectors appear higher and are not directly comparable to the 2017 figures. Any comparison between years should therefore be interpreted with caution.

Further, the 2023 analysis implemented the mixed endogenous-exogenous closure using the Output- and Employment -based multipliers formulation approach (Miller and Blair 2022; Lamsal et al. 2025a), whereas the 2017 report used the equivalent matrix-inversion approach. Since these approaches are alternative computational expressions of the same input–output

framework and, under the same closure assumptions, these formulations are theoretically equivalent and yield the same multipliers and results.

Note on Data Consistency (2017 vs. 2018–2023): Readers should interpret the sharp variance between 2017 and 2018 data with caution. The 2017 figures presented in this report are retained from previous studies that used the desktop-based IMPLAN Pro software. Data for 2018 through 2023 were generated using the modernized IMPLAN Cloud (Web) platform, which utilizes updated accounting frameworks and regional purchase coefficients. Although both sets of estimates are based on the same underlying input-output/SAM framework, they are not fully comparable in construction. IMPLAN revised its industry classification structure over time, moving from the 536-industry scheme used for 2013–2017 data years to the 546-industry scheme used for 2018–2022, and later to the 528-industry scheme beginning in 2023. IMPLAN also documents differences in trade-flow and regional purchase coefficient estimation between legacy Pro-era workflows and the current cloud environment. In addition, this report applies updated aggregation and sector-inclusion rules for selected forest-related industries. Accordingly, differences between 2017 and later years may reflect methodological discontinuity in addition to underlying economic change. Comparisons spanning 2017 to 2018 should therefore be interpreted with caution.

Economic Performance Trends of Forest Product Industry (2017-2023)

Figures 4 and 5 illustrate the economic trajectory and structural shifts of Missouri’s Forest Sector (comprising 31 active industries) over the seven-year study period (2017-2023). As shown in Figure 4, the sector is currently undergoing a period of labor market calibration. While employment reached a peak of 26,347 jobs in 2022, direct employment contracted in 2023 to 24,896, the lowest level recorded in the seven-year series. Despite this reduction in workforce, Real Industry Output has maintained stability relative to the baseline; although 2023 output (\$9.03 billion) moderated from its 2021 high, it remains approximately \$271 million above 2017 levels. This divergence suggests the sector is sustaining production capacity with a leaner workforce, pointing to increased labor productivity across the supply chain.

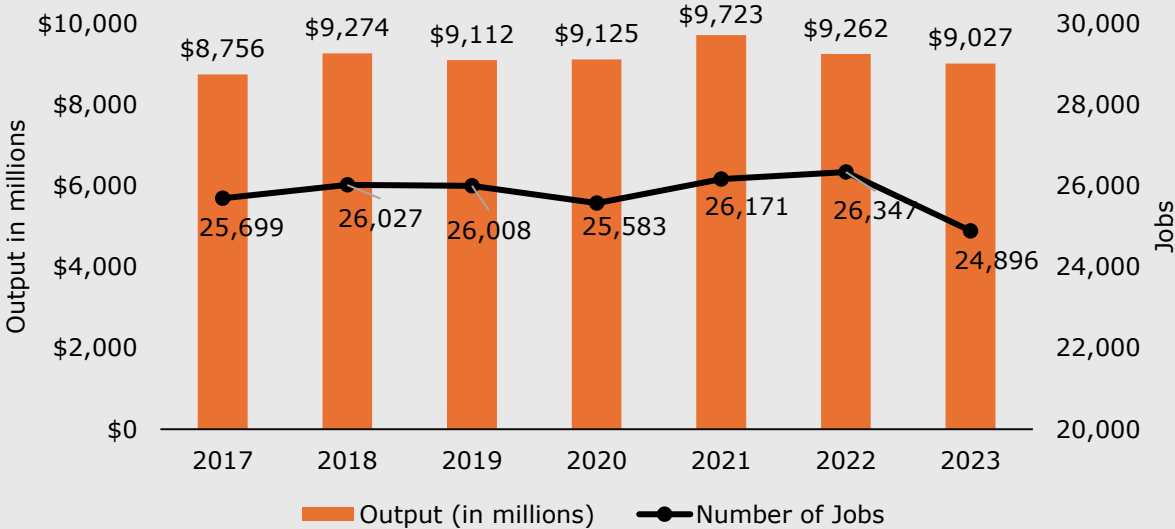


Figure 4: Direct output and employment, 2017-2023, Missouri state forest products industries.

Figure 5 highlights a critical shift in how the sector generates wealth for the state economy. A significant technical divergence is evident between gross output and value creation. While gross output has fluctuated, Real Value Added, the sector’s net contribution to GSP, reached a series high of \$2.93 billion in 2023. This inverse relationship indicates a marked improvement in "value-added intensity." The industry is effectively generating more economic value per unit of production. However, this growth in value has not been accompanied by corresponding increases in labor income, which declined to \$1.80 billion in 2023, returning to near-2017 levels following a temporary surge in 2020. This pattern suggests that recent gains in sectoral value are increasingly driven by capital efficiency rather than labor expansion.

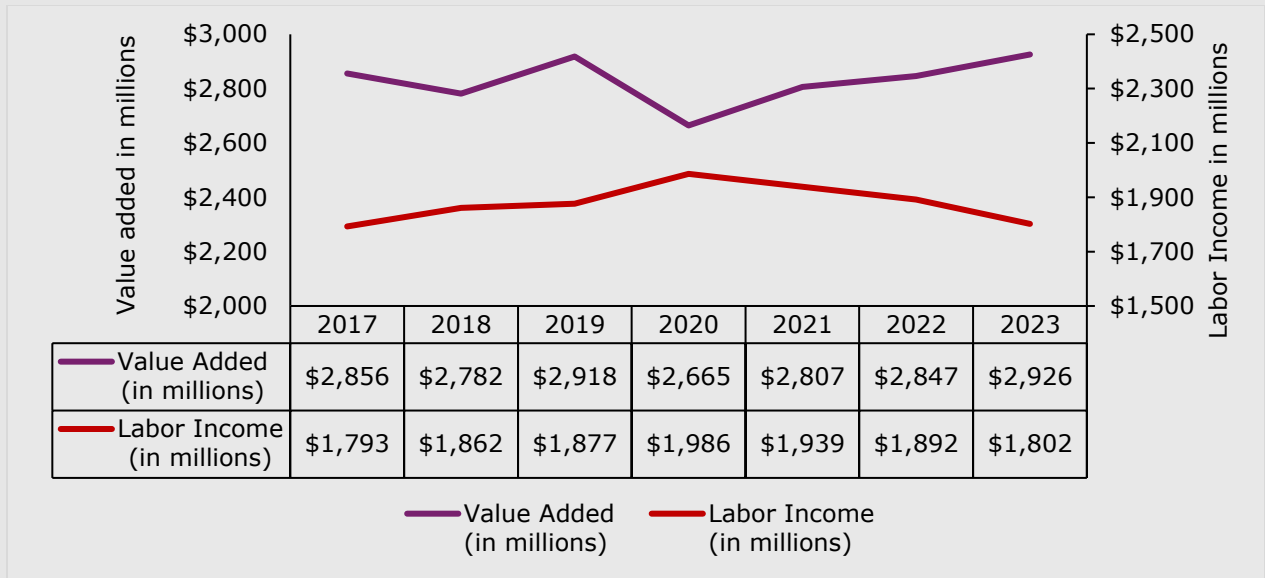


Figure 5: Direct value-added and labor income, 2017-2023, Missouri state, forest products industries.

Direct and Total Contributions by Forest Product Industry Groups

In 2023, Missouri’s forest products industries directly provided 24,896 jobs, generated about \$9.03 billion in gross output, and contributed \$2.93 billion in value-added to the state economy (Table 2). The sector’s aggregate influence on the broader regional economy remains substantial; when accounting for indirect supply-chain transactions and induced household spending, the total economic contribution of the forest sector reached 50,169 jobs and \$14.18 billion in total output.

Table 2: Statewide Economic Contribution of Forest Products Industries, 2023. [†]

	Employment	Labor Income	Value-added	Output
Direct in 2023	24,896	\$1,802,100	\$2,925,761	\$9,026,526
Compared to 2017	-3.1%	0.5%	2.4%	3.1%
Total in 2023	50,169	\$3,468,033	\$5,846,347	\$14,181,951
Compared to 2017	-6.9%	-4.2%	0.5%	0.2%
Multipliers in 2023	2.02	1.92	2.00	1.57

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

Comparing the 2023 results with the 2017 baseline reveals a notable divergence between the Forestry Product sector’s performance and its broader economic ripple effects. While the direct

sector demonstrated resilience and efficiency, increasing Output by 3.1% and Value-Added by 2.4% despite a 3.1% contraction in its workforce, the total economic impact faced sharper declines. Total employment fell by 6.9% and total labor income decreased by 4.2% over the same period.

The calculated multipliers further demonstrate the sector’s deep integration into Missouri’s economy. The employment multiplier of 2.02 is particularly robust, indicating that for every 100 direct jobs in the forest industry, an additional 102 jobs are supported in other sectors. Similarly, the Value-Added multiplier of 2.00 suggests that every dollar of wealth created directly by forest industries generates an additional dollar elsewhere in the state. These high multipliers reflect extensive local supply chain linkages and suggest that the forest sector serves as a critical economic anchor, driving significant activity in transportation, manufacturing, and service sectors throughout the state.

Table 3 reports the direct economic contributions of the seven industry groups, while Table 4 expands this view to include total contributions with multiplier effects. In 2023, Missouri’s forest sector structure is heavily weighted toward downstream manufacturing rather than raw extraction. The Wood Furniture sector is the clear labor leader, directly providing 7,468 jobs, more than three times the combined workforce of the Forestry and Logging sectors (2,251 jobs). This suggests a mature industrial ecosystem where raw timber is not merely harvested but is extensively processed within the state into consumer-ready goods.

Table 3: Direct Economic Contributions in Missouri state, Industry Groups, 2023. [†]

Industries	Employment	Labor Income	Value-Added	Output
1.Forestry	650	\$30,577	\$34,372	\$38,583
2.Logging	1,601	\$95,140	\$161,925	\$168,482
3.Primary Solid Wood Products	2,556	\$155,688	\$230,228	\$1,252,909
4.Secondary Solid Wood Products	5,724	\$395,059	\$481,892	\$1,671,368
5.Wood Furniture	7,468	\$466,831	\$509,480	\$1,551,611
6.Pulp, Paper, and Paperboard mills	59	\$6,823	\$23,120	\$58,988
7.Secondary Paperboard and other Paper Products	6,838	\$651,982	\$1,484,744	\$4,284,586

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

A stark divergence in capital intensity is evident when comparing the manufacturing sub-sectors. While Wood Furniture requires a substantial labor force (7,468 jobs) to generate \$1.55 billion in output, the Secondary Paperboard and Other Paper Products sector generates nearly three times that output (\$4.28 billion) with a smaller workforce of 6,838 employees. This indicates that the paperboard converting industry is highly capital-intensive, generating significantly higher output per worker (approximately \$626,000) compared to the furniture manufacturing sector (\$207,000 per worker).

When supply-chain and induced effects are integrated (Table 4), Secondary Paperboard and Other Paper Products emerges as the primary economic engine of the state's forest sector, supporting 17,444 total jobs and over \$6.45 billion in total economic output. However, a notable leverage effect is found in the Primary Solid Wood Products sector (sawmills, wood preservation). Despite a modest direct workforce of 2,556, this sector possesses a robust employment multiplier of approximately 3.08 (supporting 7,863 total jobs). This reflects deep backward linkages; because primary processors act as the critical bridge absorbing raw timber, their operation sustains a disproportionately large network of loggers, support services, and transportation providers throughout the regional economy.

Table 4: Total Economic Contributions in Missouri state, Industry Groups, 2023. [†]

Industries	Employment	Labor Income	Value- Added	Output
1.Forestry	793	\$38,639	\$49,430	\$63,673
2.Logging	2,098	\$122,057	\$211,056	\$249,280
3.Primary Solid Wood Products	7,863	\$506,209	\$843,472	\$2,291,927
4.Secondary Solid Wood Products	11,988	\$800,453	\$1,182,505	\$3,009,376
5.Wood Furniture	12,966	\$822,760	\$1,130,672	\$2,686,905
6.Pulp, Paper, and Paperboard mills	207	\$17,191	\$41,209	\$92,202
7.Secondary Paperboard and other Paper Products	17,444	\$1,355,454	\$2,715,386	\$6,453,507

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars.

Note: In Table 4, readers may observe that the sum of the economic contributions for the individual industries exceeds the reported total contribution for the Forest Sector as a whole as presented in Table 2. This difference is intentional and results from the "mixed-model" approach used to ensure accuracy.

In Input-Output (I-O) analysis, simply adding the total contributions of individual sectors results in double-counting. This occurs because the output of one forest industry often serves as an input for another. For example, logs harvested by the Logging sector are inputs for the Furniture sector. If modeled individually and summed, the model counts both the direct value of the logs and the associated supply-chain ripples (indirect effects) twice: once as a production requirement for the Furniture, and again as a direct output of the Logging sector. To provide the most accurate estimate, the aggregated total is calculated by treating the forest industries as a single economic unit. This method mathematically nets out all inter-industry transactions within the sector, ensuring that the final results reflect only the new economic value generated for the state economy.

Forestry

Economic Contribution of Forestry

Table 5 presents the economic contribution of the Forestry sector. For Missouri, this group specifically aggregates two primary industries: (1) Forestry, forest products, and timber tract production, which involves the commercial management of forest lands; and (2) Support activities for forestry, covering essential services such as timber cruising, reforestation, and wildland fire suppression. It is important to note that the "All other crop farming" industry (Maple Syrup Production), which is often grouped in this sector, is not present or disclosed within the Missouri dataset.

Table 5: Direct, Indirect, and Induced Economic Contributions of the Forestry Industry in Missouri, 2023. [†]

	Employment	Labor Income	Value-Added	Output
Direct	650	\$30,577	\$34,372	\$38,583
Indirect	4	\$233	\$451	\$940
Induced	139	\$7,830	\$14,607	\$24,150
Total	793	\$38,639	\$49,430	\$63,673

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars.

In 2023, the Forestry sector directly provided 650 jobs and generated \$38.6 million in direct output. A distinct structural characteristic of this sector is its exceptionally high labor intensity. Unlike downstream manufacturing sectors that rely heavily on machinery and raw materials, forestry operations are service-oriented. This is evidenced by the ratio of labor income to output: nearly 79% of the sector's direct output flows directly to Labor Income (\$30.6 million out of \$38.6 million). This indicates that the value generated by the industry is derived primarily from human capital and technical expertise rather than capital equipment or intermediate goods.

This heavy reliance on labor rather than physical inputs dictates the sector's unique multiplier effects. The employment multiplier is approximately 1.22, suggesting that for every 100 jobs in Forestry, roughly 22 additional jobs are supported elsewhere in the state. Decomposing this multiplier reveals that the sector's economic ripples are driven almost exclusively by workforce spending (induced effects) rather than business supply chains (indirect effects).

- **Indirect Effect:** The sector generated negligible indirect impacts, supporting only 4 jobs and less than \$1 million in output. This reflects the "capital-light" nature of timber growing, and forestry operations have minimal business-to-business purchasing requirements.
- **Induced Effect:** In contrast, the induced effect was significantly stronger, supporting 139 jobs and \$24.2 million in output. Because such a high percentage of the sector's output is retained as labor income, the primary economic contribution beyond the forest itself arises when foresters and support workers spend their earnings within their local communities.

When these effects are combined, the Forestry industry contributed a total of 793 jobs, \$63.7 million in output, and \$49.4 million in value-added to the Missouri economy in 2023. The total output multiplier of 1.65 implies that every \$100 of output generated by forest management activities generates an additional \$65 of economic activity throughout the state, mostly through household consumption channels.

Trend Analysis: Forestry (2017–2023)

As illustrated in Figure 6, the Forestry industry in Missouri has exhibited significant volatility over the seven-year period, characterized by a sharp pre-pandemic contraction followed by a rapid expansion and a recent market correction. Unlike sectors that struggled during 2020, Forestry experienced a distinct growth phase starting in the pandemic year; employment surged from a low of 500 jobs in 2019 to a peak of 725 jobs in 2022. However, 2023 marked a reversal of this trend, with the workforce adjusting downward by 10% to 650 employees and output moderating to \$38.6 million.

A critical structural shift is evident in the divergence between workforce size and economic output. While employment in 2023 (650 jobs) remains roughly 21% higher than the 2017 baseline (536 jobs), real output has actually fallen by 14% over the same period (\$44.9 million in 2017 vs. \$38.6 million in 2023). This inverse relationship signals a notable decline in labor productivity. In 2017, the sector generated approximately \$83,800 in output per employee, but by 2023, this figure dropped to roughly \$59,400.

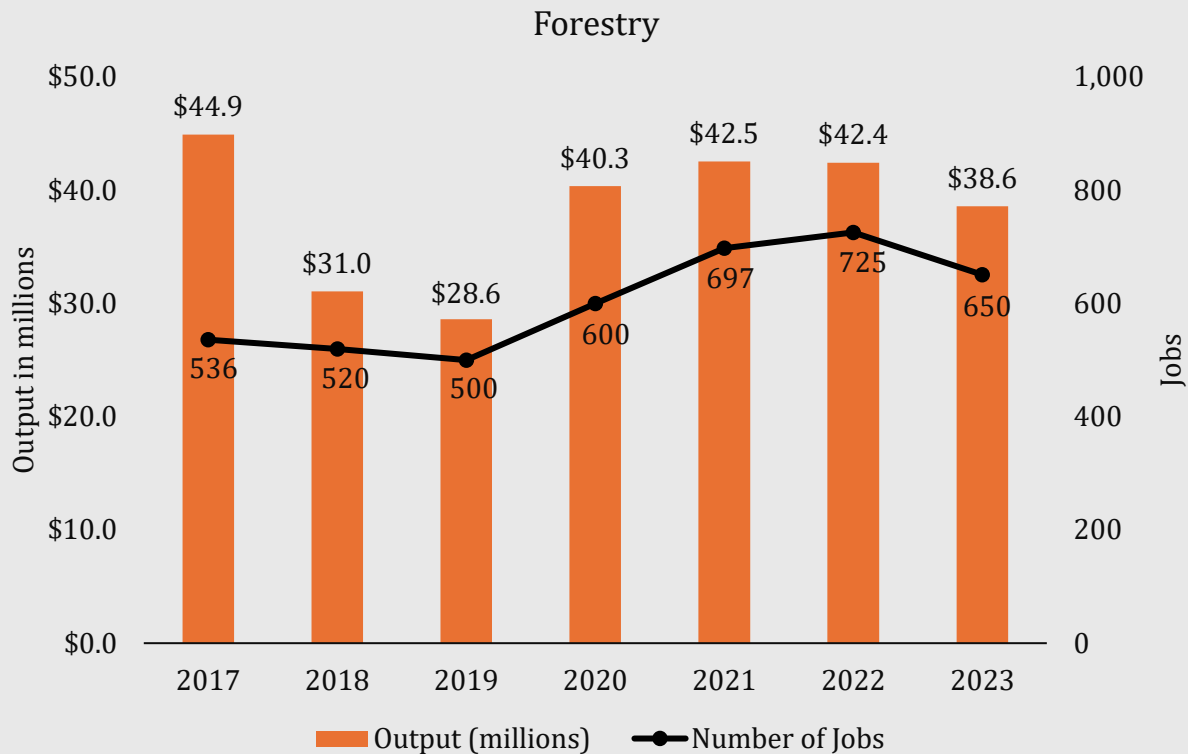


Figure 6: Trend in direct employment and output for the Forestry industry in Missouri, 2017-2023.

Logging

Economic Contribution of Logging

Table 6 outlines the economic contributions of the Logging sector, which comprises establishments primarily engaged in commercial logging, timber cutting, and in-field log transport. In 2023, this sector served as a vital component of the rural industrial base, directly supporting 1,601 jobs. The industry generated \$168.5 million in direct output and contributed an impressive \$161.9 million in Value-Added to the state's economy.

A defining economic feature is the overwhelming dominance of household spending (induced effects) over business-to-business transactions (indirect effects). At \$77.0 million, output from induced effects was nearly twenty times higher than the \$3.8 million generated through indirect effects. This disparity stems from the sector's cost structure: the industry requires minimal intermediate inputs from other sectors (such as manufacturing or professional services) to generate revenue. Instead, a significant portion of gross output is retained as Value-Added (96%), with \$95.1 million (approximately 56.5% of total output) distributed specifically as Labor Income.

Because the majority of the industry's revenue flows to employee compensation and proprietor income rather than to external suppliers, the economic ripple effect is driven principally by workforce consumption. When these direct, indirect, and induced impacts are aggregated, the Logging industry contributed a total of 2,098 jobs, \$249.3 million in output, and \$211.1 million in value-added to the Missouri economy. The implied Output Multiplier is 1.48, indicating that for every dollar of timber harvested, an additional \$0.48 of economic activity is stimulated elsewhere in the state. While this multiplier is slightly lower than that of the Forestry sector (1.65), it underscores a consistent trend in the upstream forest economy: economic leverage is generated primarily through the circulation of labor income in local communities rather than through industrial supply chains.

Table 6: Direct, Indirect, and Induced Economic Contributions of the Logging Industry in Missouri, 2023. [†]

	Employment	Labor Income	Value-Added	Output
Direct	1,601	\$95,140	\$161,925	\$168,482
Indirect	54	\$1,935	\$2,535	\$3,769
Induced	442	\$24,982	\$46,595	\$77,029
Total	2,098	\$122,057	\$211,056	\$249,280

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars.

Trend Analysis: Logging (2017–2023)

As shown in Figure 7, the Logging industry in Missouri has experienced a persistent structural contraction in its workforce alongside a recent resurgence in economic output. Direct employment has followed a consistent downward trajectory, declining every year from a high of 2,270 jobs in 2017 to 1,601 jobs in 2023. This represents a cumulative workforce reduction of nearly 30% over the seven-year period.

However, the output trend tells a different story of resilience and increasing efficiency. After a sharp drop in production value between 2017 (\$250.6 million) and 2019 (\$144.7 million), the sector stabilized during the pandemic years. Most notably, 2023 saw a significant jump in output to \$168.5 million, the highest level recorded since 2017, despite employment hitting a series low. This divergence has driven a remarkable improvement in labor productivity: output per worker rose from roughly \$89,800 in 2022 to over \$105,000 in 2023. This shows that the surviving logging operations are becoming leaner and more capitalized, managing to generate higher value with fewer employees.

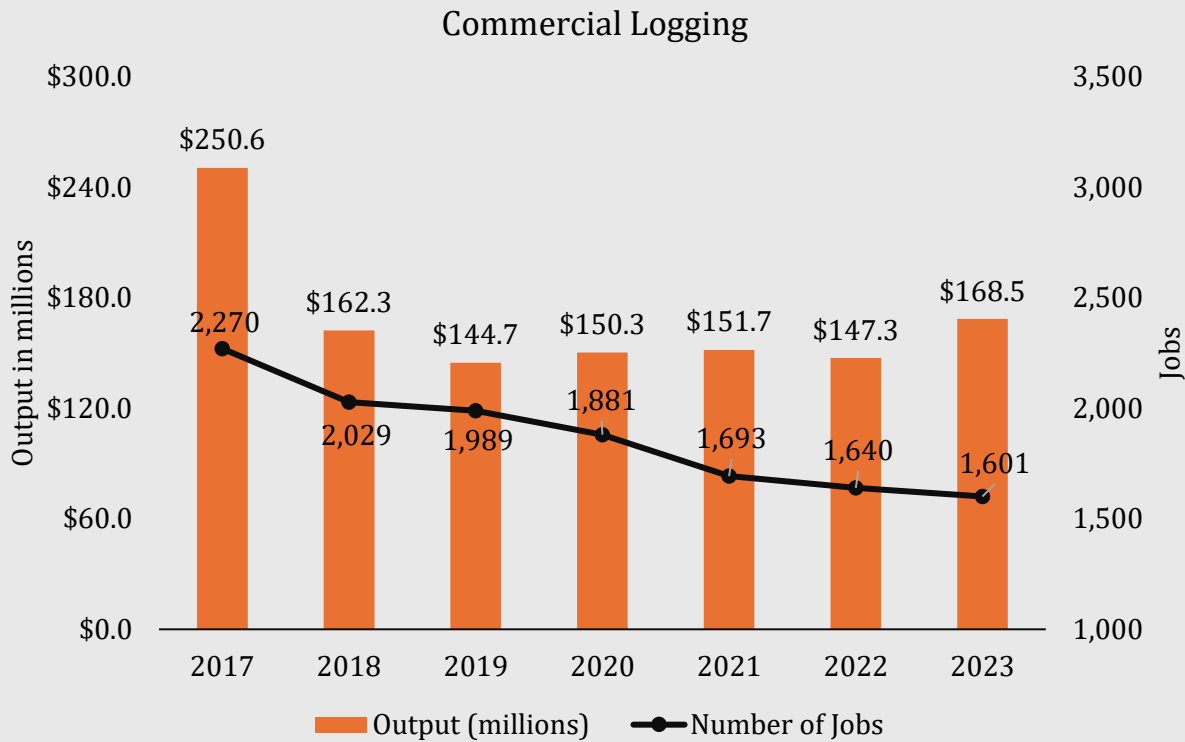


Figure 7: Trend in direct employment and output for the Logging industry in Missouri, 2017-2023.

Primary Solid Wood Products

Economic Contribution of Primary Solid Wood Products

Table 7 details the economic contributions of the Primary Solid Wood Products industry, a sector that serves as the industrial backbone of Missouri’s forest economy. This group encompasses a diverse range of manufacturing activities, including sawmills, wood preservation, veneer and plywood manufacturing, reconstituted wood products, and wood-based electric power generation (biomass). In 2023, this manufacturing hub directly generated 2,556 jobs and over \$1.25 billion in direct output. While the sector creates substantial direct value (\$230.2 million), its structural significance lies less in its direct employment and more in its role as a massive consumer of raw materials and services.

The Primary Solid Wood Products industry exhibits profound backward linkages, effectively acting as the "keystone" demand driver for the upstream forest economy. A pivotal structural dynamic is evident in the employment data: the Indirect Employment effect supports 3,552 jobs, a figure that significantly exceeds the sector’s own direct workforce of 2,556. It indicates that the operational demands of sawmills and processing plants support to sustain a vast

network of loggers, truckers, and maintenance contractors who rely on this sector for a consistent market.

This deep integration is quantified by the high Employment Multiplier of 3.08. Essentially, for every 100 direct jobs in primary wood manufacturing, an additional 208 jobs are supported elsewhere in the state economy. Unlike the extraction sectors where ripples are driven by household spending, this sector’s impact is dominated by business-to-business expenditures (Indirect Output of \$733 million). By aggregating these direct, indirect, and induced effects, the industry contributed a total of 7,863 jobs, \$2.29 billion in output, and nearly \$843.5 million in value-added to the state economy in 2023. This shows the sector’s status as a critical industrial anchor; it transforms natural resources into widespread economic activity, creating more jobs in the supporting supply chain than exist on its own factory floors.

Table 7: Direct, Indirect, and Induced Economic Contributions of the Primary Solid Wood Products Industry in Missouri, 2023. †

	Employment	Labor Income	Value-Added	Output
Direct	2,556	\$155,688	\$230,228	\$1,252,909
Indirect	3,552	\$251,352	\$428,164	\$732,963
Induced	1,755	\$99,170	\$185,080	\$306,055
Total	7,863	\$506,209	\$843,472	\$2,291,927

† All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars.

Trend Analysis: Primary Solid Wood Products (2017–2023)

As shown in Figure 8, Missouri’s Primary Solid Wood Products industry has recovered strongly after a downturn. Output fell to its lowest level in 2019 at \$869.1 million, but then increased steadily. By 2023, output reached a record high of \$1.25 billion. This was a 16.7% increase from 2022 and exceeded the previous peak of \$1.12 billion in 2017, showing that the industry has fully recovered and expanded.

While economic output has surged to new heights, employment patterns reveal a structural shift toward greater efficiency. Direct employment, which peaked at 3,053 jobs in 2017, contracted sharply through 2020 before stabilizing. Although the workforce has grown steadily over the last three years to reach 2,556 workers in 2023, it remains roughly 16% below 2017 levels. Producing more with fewer workers indicates a major increase in productivity. Output per worker rose from about \$367,000 in 2017 to more than \$490,000 in 2023.

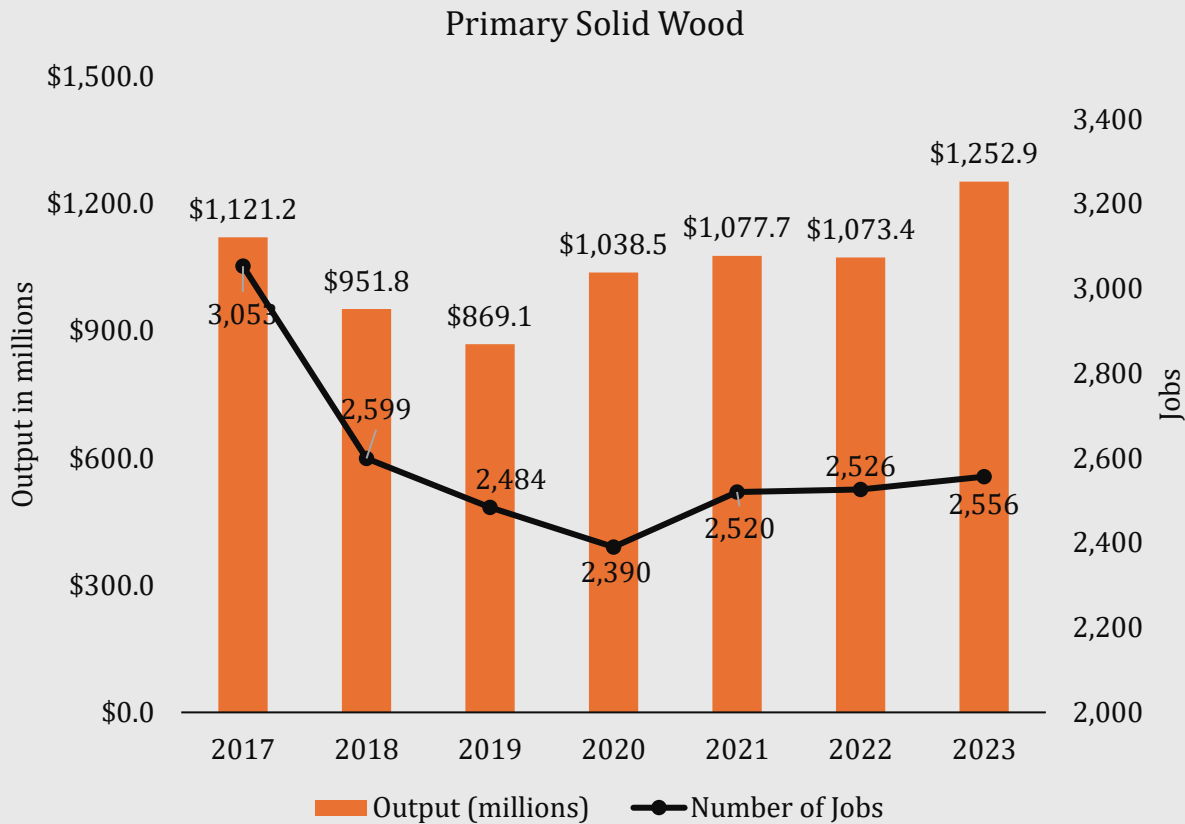


Figure 8: Trend in direct employment and output for the Primary Solid Wood Products industry in Missouri, 2017-2023.

Secondary Solid Wood Products

Economic Contribution of Secondary Solid Wood Products

Table 8 presents the economic contribution of the Secondary Solid Wood Products industry. This diverse value-added sector encompasses industries such as engineered wood member and truss manufacturing, wood windows and doors, millwork and flooring, wood container and pallet manufacturing, and prefabricated wood building manufacturing. In 2023, this sector served as a central pillar of the state's manufacturing base, directly providing 5,724 jobs and generating nearly \$1.67 billion in direct output.

The sector exhibits a healthy employment multiplier of 2.09, indicating that for every 100 jobs created in secondary manufacturing, roughly 109 additional jobs are supported elsewhere in the Missouri economy. While robust, this multiplier is notably lower than that of the Primary Solid Wood sector (3.08). This distinction reflects upstream supply chain dynamics: whereas Primary manufacturers rely on labor-intensive logging operations for raw inputs, Secondary manufacturers primarily purchase processed lumber from capital-intensive sawmills or other

primary processors. Consequently, the Indirect Employment effect (3,505 jobs) is roughly 60% the size of the direct workforce, contrasting sharply with the Primary sector where the indirect workforce significantly exceeded the direct workforce.

When fully aggregated, the sector supports a total of 11,988 jobs and contributes over \$3.01 billion in total economic output. Financially, the sector acts as an effective value multiplier, contributing a total of \$1.18 billion in Value-Added to the GSP. This group exhibits a higher degree of value retention than primary processing, consistent with its focus on converting rough lumber into finished construction components and specialized wood products. Correspondingly, the ratio of direct value added to output in this sector is approximately 28.8%, significantly exceeding the 18.4% observed in the Primary Solid Wood sector, underscoring the economic gains realized through further processing and manufacturing.

Table 8: Direct, Indirect, and Induced Economic Contributions of the Secondary Solid Wood Products Industry in Missouri, 2023. †

	Employment	Labor Income	Value-Added	Output
Direct	5,724	\$395,059	\$481,892	\$1,671,368
Indirect	3,505	\$249,486	\$409,578	\$856,767
Induced	2,759	\$155,907	\$291,035	\$481,242
Total	11,988	\$800,453	\$1,182,505	\$3,009,376

† All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars.

Trend Analysis: Secondary Solid Wood Products (2017–2023)

As illustrated in Figure 9, the Secondary Solid Wood Products industry displays a distinct divergence between workforce trends and economic performance, particularly in the most recent year. Direct employment has experienced a gradual but consistent contraction since peaking in 2018 (6,326 jobs). By 2023, the workforce had adjusted downward to 5,724 employees, marking the lowest employment level recorded in the seven-year study period and a 4.4% decline from the 2017 baseline.

In sharp contrast to this labor contraction, economic output staged a remarkable recovery in 2023. After a three-year period of moderation following the 2019 peak, output surged by over \$214 million between 2022 and 2023, reaching \$1.67 billion. This rebound effectively matches the sector’s pre-pandemic high (\$1.67 billion in 2019). The combination of rising output and a shrinking workforce signals a substantial gain in manufacturing efficiency. Labor productivity leaped from approximately \$250,700 per worker in 2022 to nearly \$292,000 in 2023.

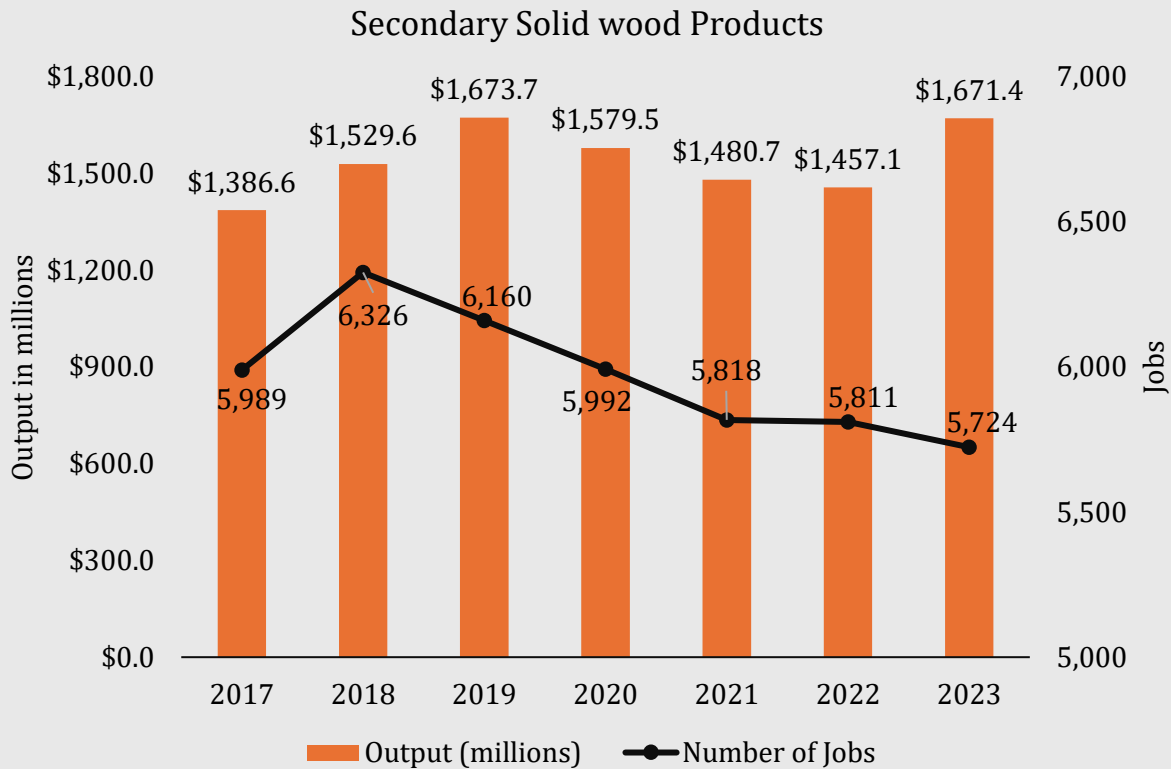


Figure 9: Trend in direct employment and output for the Secondary Solid Wood Products industry in Missouri, 2017-2023.

Wood Furniture

Economic Contribution of Wood Furniture

Table 9 presents the economic contributions of the Wood Furniture industry. This group encompasses a wide range of value-added manufacturers, including those producing wood kitchen cabinets and countertops, upholstered and non-upholstered household furniture, institutional wood furniture, wood office furniture, and custom architectural woodwork. In 2023, this sector stood as the largest direct employer among the seven groups, directly employing 7,468 workers and generating over \$1.55 billion in direct output.

The data highlights that Wood Furniture manufacturing operates with a distinct economic structure compared to the upstream processing sectors. While it is a manufacturing industry, it retains a significant labor component relative to its output. About 30.1% of its direct gross output flows to workers as Labor Income (\$466.8 million out of \$1.55 billion). This workforce dynamic influences the sector's multiplier effects. The Employment Multiplier is 1.74, meaning that for every 100 direct jobs, around 74 additional jobs are supported elsewhere in the state. Notably, the Induced Employment effect (2,815 jobs) slightly exceeds the Indirect Employment effect (2,682 jobs). This signals that the sector's leverage on the state economy is driven as

much by the household spending of its workforce as it is by supply chain purchases. This balance suggests that while the industry requires materials, the income paid to its extensive workforce including proprietor income serves as a primary mechanism for stimulating local service and retail economies.

When fully aggregated, the Wood Furniture industry contributed a total of 12,966 jobs, nearly \$2.69 billion in output, and \$1.13 billion in value-added to the Missouri economy in 2023. While it generates less total output than the Secondary Solid Wood Products sector, it remains a vital pillar of the state's value-added manufacturing base, effectively converting processed lumber into high-value consumer and industrial goods.

Table 9: Direct, Indirect, and Induced Economic Contributions of the Wood Furniture Industry in Missouri, 2023. [†]

	Employment	Labor Income	Value-Added	Output
Direct	7,468	\$466,831	\$509,480	\$1,551,611
Indirect	2,682	\$196,818	\$324,168	\$644,018
Induced	2,815	\$159,112	\$297,024	\$491,277
Total	12,966	\$822,760	\$1,130,672	\$2,686,905

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars.

Trend Analysis: Wood Furniture Industry (2017–2023)

As shown in Figure 10, the Wood Furniture industry in Missouri has demonstrated resilience in maintaining its workforce, even as economic output has exhibited significant volatility. Direct employment has consistently remained above the 2017 baseline (7,063 jobs) throughout the entire period. After reaching peaks in 2019 (7,778 jobs) and 2021 (7,753 jobs), the workforce has experienced a mild softening, settling at 7,468 employees in 2023. Despite this recent dip, the sector generated about 400 more jobs in 2023 than in 2017, underscoring its role as a stable source of manufacturing jobs.

However, the output trajectory reveals a challenging environment for value generation. Real output peaked early in the series at \$1.76 billion in 2018 and saw a secondary surge to \$1.72 billion in 2021. Since then, output has declined for two consecutive years, falling to \$1.55 billion in 2023, the lowest level recorded since the pandemic-impacted year of 2020. This trend points to a compression in labor productivity; unlike the upstream logging or sawmilling sectors that boosted efficiency, the Wood Furniture sector has seen its output-per-worker decline from a high of approximately \$240,000 in 2018 to about \$208,000 in 2023.

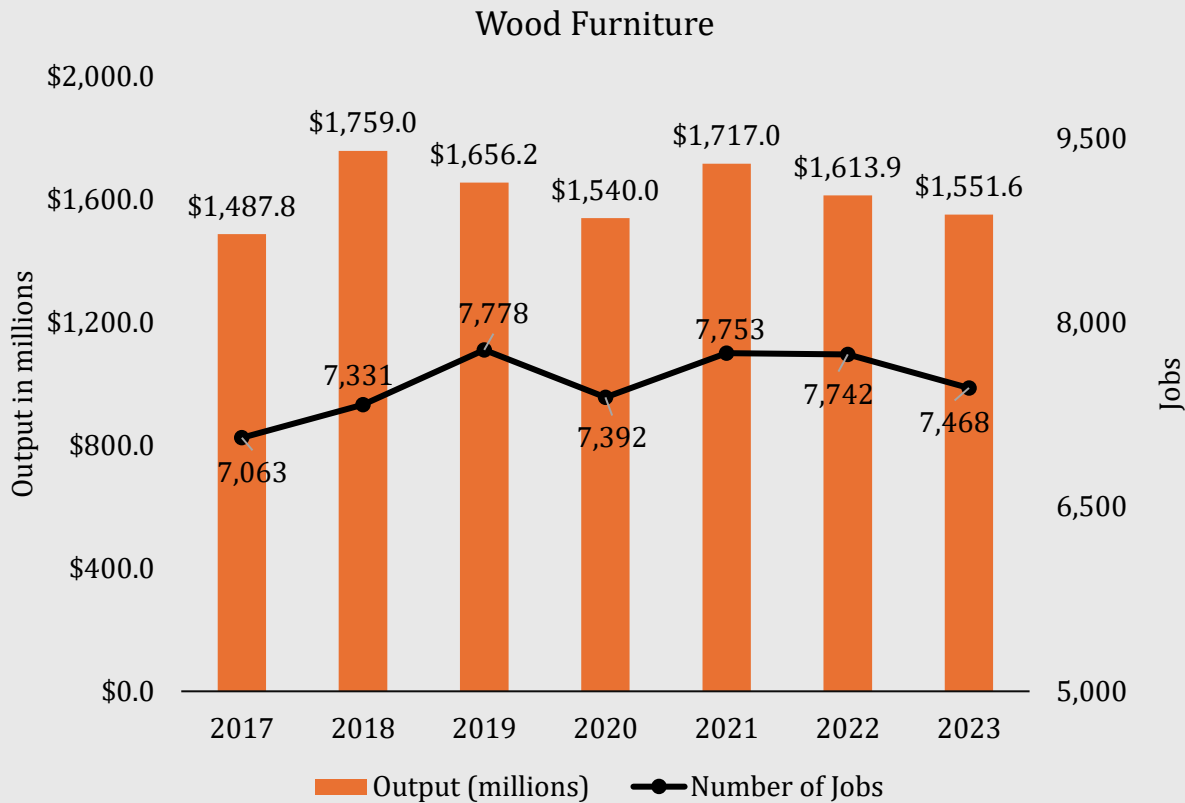


Figure 10: Trend in direct employment and output for the Wood Furniture industry in Missouri, 2017-2023.

Pulp, Paper, and Paperboard Mills²

Economic Contribution of Pulp, Paper, and Paperboard Mills

Table 10 details the economic contribution of the Pulp, Paper, and Paperboard Mills industry. In the context of Missouri, this sector is highly consolidated, aggregating Pulp Mills, Paper Mills, and Paperboard Mills. While this sector represents the smallest direct workforce among the seven industry groups (59 employees), it remains the most capital-intensive component of the state’s forest economy, exhibiting a distinctive "inverted" employment profile where the supply chain workforce significantly outnumbers the facility workforce.

Despite employing only 59 workers, the sector generated nearly \$59.0 million in Direct Output. This translates to an output-per-worker ratio of approximately \$1 million, the highest in the

² The sharp decline in employment and output reported for 2023 in Missouri’s Pulp, Paper, and Paperboard Mills sector is inconsistent with prior-year trends and does not align with known industry conditions (Figure 11). This anomaly likely reflects methodological changes, reclassification, or incomplete reporting rather than an actual contraction of the industry. As a result, 2023 estimates should be interpreted with caution and excluded from trend analysis.

entire Missouri forest sector. Furthermore, the direct Value-Added (\$23.1 million) is more than three times the direct Labor Income (\$6.8 million). This financial structure indicates that the primary drivers of operational expenditure are capital investment, energy, and raw materials, rather than direct labor costs.

A defining characteristic of this industry is its function as a deep supply chain anchor. The Indirect Employment (88 jobs) exceeds the Direct Employment (59 jobs) by roughly 50%. This disparity illustrates that the mills' intense operational requirements, demanding consistent volumes of wood fiber, industrial energy, process chemicals, and logistics, sustain a larger external workforce than exists inside the facilities themselves. Consequently, the sector exhibits a powerful Employment Multiplier of 3.49. This indicates that for every 100 direct mill jobs, an additional 249 jobs are supported elsewhere in the state economy.

When fully aggregated, the Pulp, Paper, and Paperboard Mills sector supports a total of 207 jobs and generates \$92.2 million in total economic output. Additionally, the quality of direct employment in this sector is notably high. With total direct labor income of \$6.8 million distributed among 59 workers, the average annual labor income per direct job is approximately \$115,600, confirming the industry's role as a source of high-skill, high-wage technical employment.

Table 10: Direct, Indirect, and Induced Economic Contributions of the Pulp, Paper, and Paperboard Mills Industry in Missouri, 2023. [†]

	Employment	Labor Income	Value-Added	Output
Direct	59	\$6,823	\$23,120	\$58,988
Indirect	88	\$7,000	\$11,803	\$22,817
Induced	60	\$3,367	\$6,286	\$10,398
Total	207	\$17,191	\$41,209	\$92,202

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars.

Trend Analysis: Pulp, Paper, and Paperboard Mills (2017–2023)

As illustrated in Figure 11, the Pulp, Paper, and Paperboard Mills industry exhibited the most explosive growth trajectory within the Missouri forest sector between 2017 and 2022. Starting from a baseline of 460 jobs and \$501.0 million in output in 2017, the sector underwent a massive expansion. By 2022, direct employment had nearly tripled to reach a peak of 1,371 workers, while output surged to over \$1.11 billion. This represents a compound growth rate that far exceeds any other wood-based industry in the state during this period.

The growth path was not entirely linear, characterized by significant volatility in 2019 when both employment (624 jobs) and output (\$697.4 million) contracted sharply before rebounding. The

post-2020 recovery was particularly aggressive, with output growing by over \$300 million in a single year between 2020 and 2021.

However, the data suggests a shift in labor dynamics as the sector scaled. In 2017, the industry generated an exceptionally high \$1.09 million in output per worker. By 2022, while total output had more than doubled, the workforce had grown even faster (nearly 200% increase), resulting in a moderated productivity rate of approximately \$814,000 per worker. Despite this dilution, these figures remain indicative of a highly capital-intensive heavy industry.

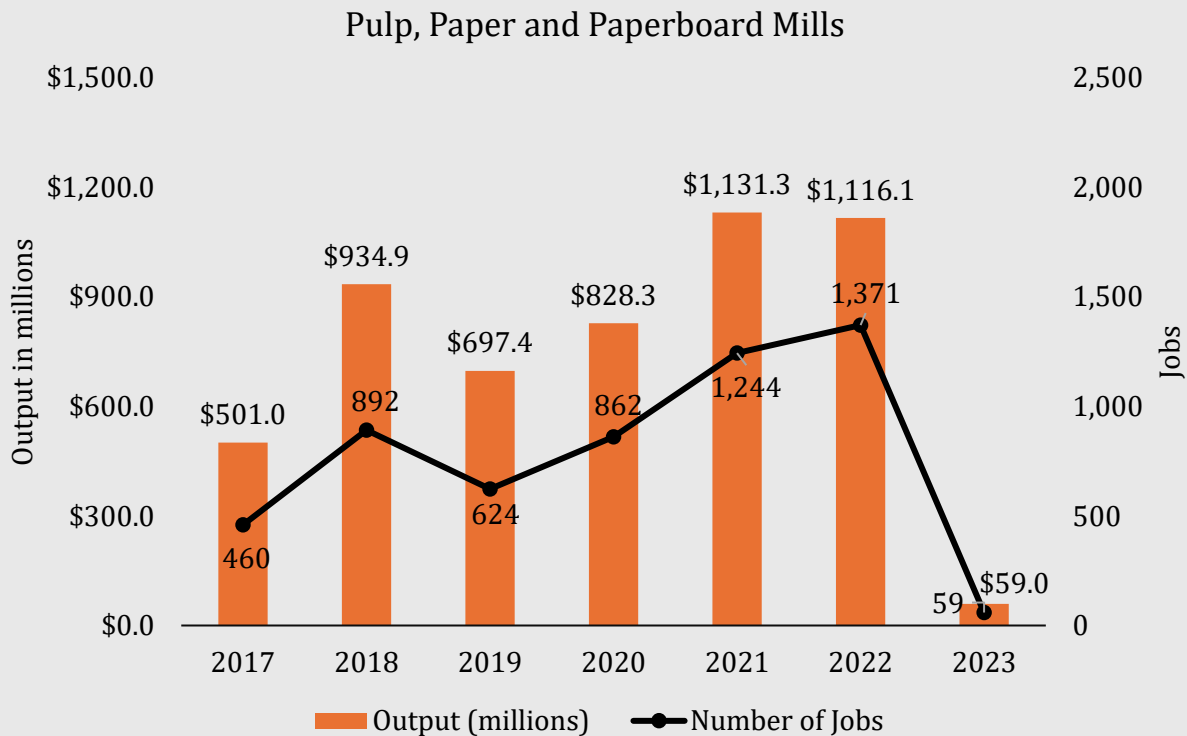


Figure 11: Trend in direct employment and output for the Pulp, Paper, and Paperboard Mills industry in Missouri, 2017-2023.

Secondary Paperboard and Other Paper Products

Economic Contribution of Secondary Paperboard and Other Paper Products

Table 11 outlines the economic contribution of the Secondary Paperboard and Other Paper Products industry. This group comprises "converters" that manufacture finished goods from purchased paper, paperboard, or recycled materials, encompassing products such as paperboard containers, paper bags, coated paper, stationery, and sanitary paper products. In 2023, this sector stood as the dominant generator of economic output within the Missouri forest economy. While it directly provided 6,838 jobs, it generated an impressive \$4.28 billion in direct output, the highest among all seven industry groups.

The sector exhibits a robust Employment Multiplier of 2.55, indicating that for every 100 direct jobs in paper converting, an additional 155 jobs are supported throughout the state economy. A closer examination of the multiplier components reveals that the Indirect Employment effect (5,940 jobs) is nearly equivalent to the direct workforce. This substantial indirect impact suggests that Missouri converting facilities maintain deep, complex supply chain linkages, demanding high volumes of intermediate goods, likely sourcing paper and paperboard from regional mills, along with specialized logistics and packaging services.

Furthermore, the Induced Employment effect (4,666 jobs) is comparable in scale to the indirect effect, highlighting the dual nature of this sector's economic leverage: it drives both heavy industrial purchasing and significant local household spending. This profile is consistent with large-scale manufacturing operations that require both consistent capital inputs and a steady, skilled workforce.

In terms of total contribution, the Secondary Paperboard and Other Paper Products industry supports a total of 17,444 jobs and contributes nearly \$6.45 billion in total economic output. By generating over \$2.71 billion in total Value-Added, this converting sector serves a vital strategic role, transforming the output of capital-intensive pulp and paper mills into specialized packaging and consumer goods that are essential to the state's broader retail, food processing, and logistics sectors.

Table 11: Direct, Indirect, and Induced Economic Contributions of the Secondary Paperboard and Other Paper Products Industry in Missouri, 2023. [†]

	Employment	Labor Income	Value-Added	Output
Direct	6,838	\$651,982	\$1,484,744	\$4,284,586
Indirect	5,940	\$439,790	\$738,356	\$1,355,043
Induced	4,666	\$263,682	\$492,285	\$813,878
Total	17,444	\$1,355,454	\$2,715,386	\$6,453,507

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars.

Trend Analysis: Secondary Paperboard and Other Paper Products (2017–2023)

As presented in Figure 12, the Secondary Paperboard and Other Paper Products industry stands out as a remarkably stable and consistent performer within the Missouri forest economy. This industry group maintained a steady employment base throughout the entire seven-year period, never dropping below its 2017 baseline of 6,329 jobs. This resilience was highlighted by growth in the final year. Direct employment increased from 6,532 workers in 2022 to a peak of 6,838 in 2023, a 4.7% increase over the year.

Economic output has generally tracked with this stable workforce, though with some fluctuations in value generation. After hovering near the \$4.0 billion mark for most of the study period, output surged to a record high of \$4.28 billion in 2023. This 12.4% increase from 2022 (\$3.81 billion) indicates a strong market recovery following a slight dip. Further, in terms of efficiency, the sector displays a consistent productivity profile typical of mature manufacturing. Output per worker has remained relatively stable, rising from approximately \$626,000 in 2017 to roughly \$627,000 in 2023.

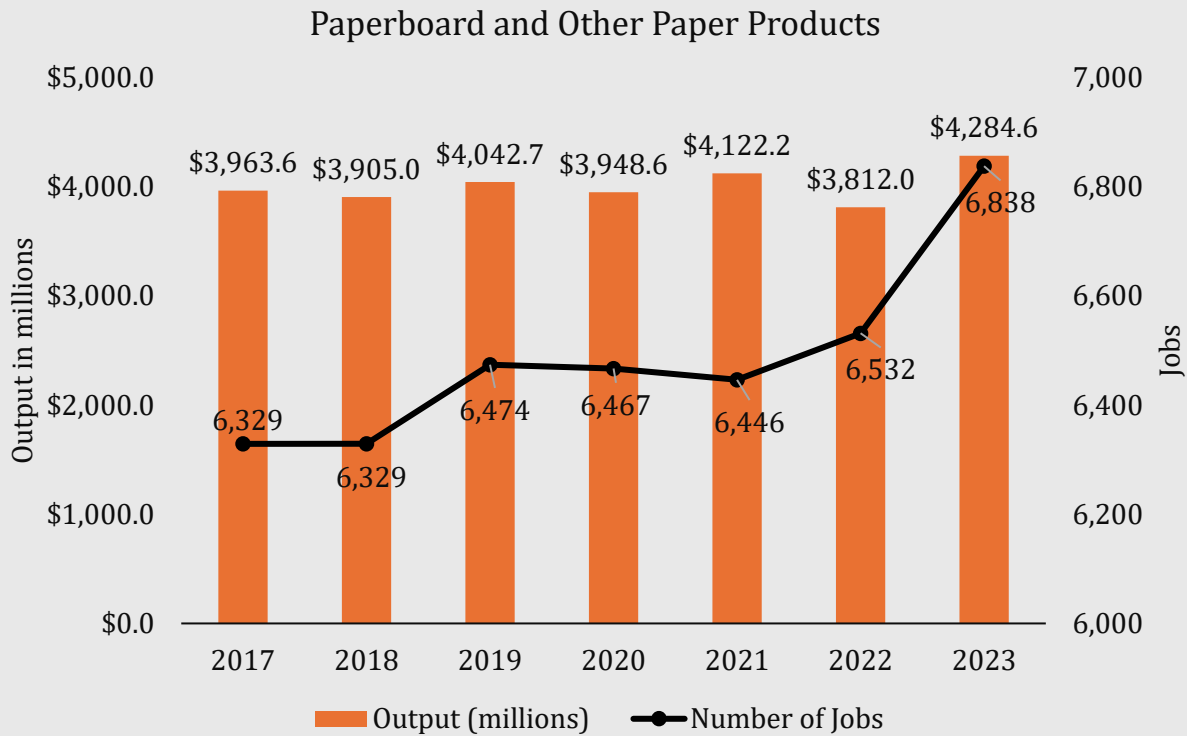


Figure 12: Trend in direct employment and output for the Secondary Paperboard and Other Paper Products industry in Missouri, 2017-2023.

Top Forest Product Sectors

Missouri's forest-products sector is represented by 31 active IMPLAN industries; "All other crop farming" (Maple syrup production) is not present or disclosed in the state's 2023 industry mix. Table 12 highlights the top five specific industries contributing to the state economy, showing a distinct hierarchy where advanced processing and packaging dominate over raw extraction.

Paperboard container manufacturing stands as the undisputed economic anchor of Missouri's forest economy in 2023. It ranks first across all four major economic indicators, employing 4,202 workers, paying \$385.9 million in labor income, generating \$816.9 million in value-added, and producing over \$2.70 billion in direct output. This single industry accounts for a disproportionate share of the sector's total capacity, highlighting Missouri's specialized strength in packaging and logistics-support manufacturing rather than primary timber processing.

Beyond this leading sector, Missouri exhibits a clear structural distinction between labor-intensive wood manufacturing industries and more capital-intensive paper and sawmill operations. Wood kitchen cabinet and countertop manufacturing ranks second in Employment (3,530 jobs) and fourth in Output (\$655.3 million), highlighting its importance as a major employer with strong value-added production. Similarly, wood container and pallet manufacturing ranks third in Employment (2,651 jobs) and third in Output (\$692.8 million), reinforcing the role of secondary wood products in supporting the state's manufacturing workforce.

In contrast, sawmills demonstrate relatively lower employment (2,268 jobs) but rank second in Output (\$1.03 billion) and fifth in Value Added (\$168.7 million), reflecting higher capital intensity and throughput-driven production. All other converted paper product manufacturing, while not among the top industries by employment, ranks prominently in Labor Income (\$119.8 million), Value Added (\$319.5 million), and Output (\$640.6 million), further emphasizing the outsized economic impact of paper converting activities relative to their workforce size.

Overall, Missouri's forest products economy is characterized by a hybrid structure in which wood manufacturing industries supply a substantial share of jobs, while paperboard and converted paper products serve as the primary drivers of high-value economic output and income generation. This composition highlights Missouri's strength in downstream processing and value-added manufacturing rather than primary resource extraction alone.

Table 12: Top five industries in terms of direct Economic Contributions in Missouri state, 2023. †

Rank	Employment	Labor Income	Value added	Output
1	Paperboard container manufacturing (4,202)	Paperboard container manufacturing (\$385,902)	Paperboard container manufacturing (\$816,882)	Paperboard container manufacturing (\$2,704,999)
2	Wood kitchen cabinet and countertop manufacturing (3,530)	Wood kitchen cabinet and countertop manufacturing (\$214,790)	All other converted paper product manufacturing (\$319,539)	Sawmills (\$1,031,620)
3	Wood container and pallet manufacturing (2,651)	Wood container and pallet manufacturing (\$203,315)	Wood kitchen cabinet and countertop manufacturing (\$243,972)	Wood container and pallet manufacturing (\$692,805)
4	Sawmills (2,268)	Sawmills (\$128,056)	Wood container and pallet manufacturing (\$234,372)	Wood kitchen cabinet and countertop manufacturing (\$655,342)
5	Commercial logging (1,601)	All other converted paper product manufacturing (\$119,764)	Sawmills (\$168,732)	All other converted paper product manufacturing (\$640,550)

† All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

Top Non-Forest Industries supported by the Forest Sector in 2023

Excluding the forest-products industries themselves, Missouri’s economy encompassed 482 other IMPLAN sectors in 2023. The forest sector’s economic reach is extensive, supporting at least one job in 216 of these industries and at least ten jobs in 141 of them. Beyond the 24,896 direct jobs, the sector supported an additional 25,272 indirect and induced jobs across the state. These additional positions, generated through supply chain purchases and household spending, are heavily concentrated in logistics, wholesale trade, healthcare, and service sectors. Table 13 highlights the top ten non-forest industries most heavily impacted by this economic activity in 2023. Together, these ten sectors account for 9,146 jobs, representing approximately 36.2 percent of all indirect and induced employment generated by the forest economy.

Table 13: Top Ten Industries Impacted by Missouri state’s Forest Products Industries in terms of number of jobs in 2023.

Industries	Number of Jobs
Warehousing and storage	1,290
Wholesale - Other durable goods merchant wholesalers	1,251
Other real estate	1,176
Truck transportation	1,158
Full-service restaurants	809
Couriers and messengers	748
Limited-service restaurants	722
Hospitals	705
Employment services	674
Management of companies and enterprises	612
Total	9,146

The composition of these top sectors reveals the specific mechanisms through which the forest sector stimulates the wider Missouri economy:

- Logistics and Commercial Trade:** The strongest linkages are found in the physical movement and storage of goods. Warehousing and storage ranks as the largest impacted sector, supporting 1,290 jobs. This prominence reflects the inventory-heavy nature of the industry, where raw timber and finished wood products require significant storage capacity before distribution. When combined with Wholesale - Other durable goods merchant wholesalers (1,251 jobs), Truck transportation (1,158 jobs), and Couriers and

messengers (748 jobs), it is evident that the forest sector acts as a primary driver of the state's logistics infrastructure. The industry demands a massive, reliable network to transport heavy raw materials from the woods and distribute bulky finished goods (like furniture and pallets) to regional markets.

- **Induced Household Spending:** The prominence of Other real estate (1,176 jobs), Hospitals (705 jobs), and dining establishments illustrates the "induced" power of the forest workforce. Full-service restaurants (809 jobs) and Limited-service restaurants (722 jobs) are sustained not by mill supply chains, but by the earned income spent by forest-sector employees in their local communities. The high ranking of real estate (3rd overall) and healthcare suggests that the salaries paid to loggers, mill workers, and manufacturers are a critical source of revenue for maintaining local housing markets and essential community services in rural and semi-rural areas.
- **Business Support Services:** Notably, Employment services (674 jobs) and Management of companies and enterprises (612 jobs) also appear in the top ten. This indicates that Missouri's forest product firms are significant consumers of corporate support services, relying on external firms for administrative oversight, staffing solutions, and organizational management to maintain their operations.

In terms of economic output, the forest sector's influence shifts toward high-volume trade, capital-intensive infrastructure, and core financial services. As detailed in Table 14, the top ten non-forest industries supported by forest-sector activity generated a combined \$2.00 billion in output in 2023. This ranking highlights that while the forest sector creates jobs in service industries (as seen in Table 13), its financial impact, the actual movement of money, is most profound in the commercial distribution and heavy infrastructure sectors.

The dominant category involves the wholesale distribution of goods, reflecting the industry's reliance on large-scale trade to move high volumes of finished wood, paper, and packaging products. The leading supported sector is Wholesale - Other durable goods merchant wholesalers, generating nearly \$412.9 million in output. When combined with Wholesale - Other nondurable goods merchant wholesalers (\$207.8 million), the wholesale trade sector alone accounts for over \$620 million in economic activity. This illustrates the sector's function as a critical revenue generator for commercial trade entities that bridge the gap between manufacturers and the broader marketplace.

The output rankings also underscore the substantial infrastructure footprint of the forest economy. Truck transportation ranks second, generating \$259.2 million, which emphasizes the critical role of freight logistics in moving heavy raw timber and finished commodities across the supply chain. Furthermore, Electric power transmission and distribution ranks ninth,

contributing \$133.1 million. This significant figure is driven by the immense energy consumption of the state's capital-intensive mills (particularly paper, sawmills, and other manufacturers), making the forest sector a key patron of the regional utility grid.

The presence of Owner-occupied housing as the third-largest supported sector (\$221.1 million) serves as a significant economic indicator of the "induced" effect. In economic modeling, this sector represents the imputed value of homeownership. Its high ranking demonstrates that forest sector jobs, particularly the steady, manufacturing-wage roles identified in previous sections, sustain high levels of homeownership and household wealth in Missouri. This wealth effect is further supported by the Other real estate sector (\$195.1 million) and Monetary authorities and depository credit intermediation (\$145.4 million), reflecting the essential borrowing power and financial activity of the forest workforce within their local communities.

Table 14: Top Ten Industries impacted by Missouri State’s Forest Products Industries in terms of output production in 2023. †

Industries	Output
Wholesale - Other durable goods merchant wholesalers	\$412,860
Truck transportation	\$259,168
Owner-occupied housing	\$221,144
Wholesale - Other nondurable goods merchant wholesalers	\$207,819
Other real estate	\$195,143
Management of companies and enterprises	\$156,277
Hospitals	\$148,863
Monetary authorities and depository credit intermediation	\$145,361
Electric power transmission and distribution	\$133,070
Warehousing and storage	\$124,197
Total	\$2,003,903

† All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

Importance of the Forest Products Industries in Context

Natural Resources and Agricultural Industries

To contextualize the economic standing of the forest economy, Table 15 compares the direct contributions of Missouri's four primary natural resource sectors: Forest Products, Agriculture, Mining (including Oil & Gas), and Commercial Fishing & Hunting. The data indicates that while Agriculture is the dominant volume leader in the state, the Forest Products industry remains a critical industrial pillar, distinguished by its stability relative to the volatility observed in other extraction sectors.

In terms of employment, the landscape is defined by the sheer scale of the Agriculture sector. With 104,140 jobs, it accounts for approximately 74% of the total natural resources workforce. However, the Forest Products sector ranks as the state's second-largest natural resource employer. It supports 24,896 jobs, which is more than double the workforce of the Mining sector (10,273 jobs) and vastly larger than Commercial Fishing (836 jobs). A comparison of Value-Added (GSP) reveals a distinct competitive shift between the forestry and mining sectors. Historically comparable, a divergence has occurred: while the Forest Products sector contributed \$2.93 billion to the state GSP in 2023, the Mining, Oil, and Gas sector surpassed it with a contribution of \$3.31 billion. This occurred despite Mining operating with less than half the workforce of the forest sector.

The comparative trend analysis (2017–2023) further characterizes the Forest Products sector as a source of economic stability amidst a period of resource volatility. The Mining sector experienced a massive boom, with Output surging by 210.6% and Labor Income spiking by 253.5% in real terms. Similarly, the Agriculture sector saw Labor Income rise by 79.1% despite a 6.1% contraction in its workforce, suggesting a period of intense consolidation and price-driven profitability. In contrast, the Forest Products sector demonstrated remarkable consistency. Its output grew by a steady 3.1%, and value-added increased by 2.4%, while employment saw a moderate adjustment of -3.1%.

Table 15: Natural Resources and Agricultural Production Industries in Missouri state, 2023. [†]

Industry	Employment	Δ2017	Labor Income	Δ2017 ^{††}	Value-Added	Δ 2017 ^{††}	Output	Δ 2017 ^{††}
1. Forest Products	24,896	-3.1%	\$1,802,100	0.5%	\$2,925,761	2.4%	\$9,026,526	3.1%
2. Commercial fishing, hunting & trapping	836	15.7%	-\$3,724	2053.0%	\$37,115	575.6%	\$38,898	523.8%
3. Mining, and oil & gas production	10,273	9.5%	\$1,415,434	253.5%	\$3,306,365	153.5%	\$7,519,242	210.6%
4. Agriculture production (plant crops and animals)	104,140	-6.1%	\$3,252,847	79.1%	\$6,542,462	34.5%	\$14,980,441	11.2%
Total	140,145	-4.5%	\$6,466,657	61.3%	\$12,811,704	41.9%	\$31,565,108	28.0%

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

^{††} All percentage differences are calculated in real terms using 2023 constant dollars.

Manufacturing Industries

To assess the relative standing of the forest sector within Connecticut's industrial base, Table 16 compares the aggregated "Forest Products manufacturing" contribution against the state's other major manufacturing groups. Note that in this context, "Forest Products" refers specifically to the manufacturing sub-sectors (Groups 3 through 7), excluding the extraction activities of forestry and logging and other non-manufacturing sectors (IMPLAN codes 10, 15, 16, 19, and 40 see Appendix A). The data shows that while the forest sector is not the singular dominant force, it functions as a significant, high-volume industrial component within a highly diversified advanced manufacturing economy.

In terms of scale, the manufacturing landscape is defined by the high-tech and large-scale Food and Fabricated Metal sectors. Food Manufacturing is the largest employer with 48,825 jobs and the highest output at nearly \$37.17 billion. Fabricated Metal follows closely with 47,380 jobs and generating over \$36.18 billion in output. By comparison, Forest Products Manufacturing ranks fifth in terms of direct employment, supporting 22,576 jobs. This means the forest manufacturing sector accounts for approximately 7.8% of Missouri's total manufacturing workforce (290,698 jobs).

In terms of employment scale, Missouri's manufacturing workforce is led by Food manufacturing, which is the state's largest manufacturing employer (48,825 jobs). Transportation Equipment manufacturing follows closely (47,380 jobs), while Fabricated Metal manufacturing (32,291 jobs) and Machinery manufacturing (28,486 jobs) form the next tier. Within this landscape, Forest Products manufacturing supports 22,576 jobs, making it a major employer-larger than Chemical manufacturing (21,316 jobs) and well above sectors such as Computer and Electronic Products (11,931 jobs) and Electrical Equipment manufacturing (11,616 jobs).

A divergence between labor intensity and capital intensity becomes clear when comparing financial measures. While Forest Products ranks fifth in employment among the Manufacturers, it generates \$8.74 billion in output and \$2.69 billion in value added, placing it in a mid-range position by monetary contribution. In contrast, Chemical manufacturing produces \$25.38 billion in output and \$8.13 billion in value added with slightly fewer workers than Forest Products, reflecting a far more capital- and technology-intensive production structure. At the extreme end of capital intensity, Petroleum and Coal manufacturing generates \$2.65 billion in output with only 1,541 jobs.

Labor productivity reinforces this pattern. Forest Products manufacturing produces about \$387,000 in output per worker, placing it below most high-output sectors (e.g., Chemical manufacturing at \$1.19 million per worker and Petroleum and Coal at \$1.72 million per worker),

but above more labor-intensive, lower-output industries such as Printing (\$215,000 per worker) and Textiles and Apparel manufacturing (\$195,000 per worker). Overall, Missouri’s forest manufacturing sector delivers solid mid-tier productivity while maintaining a sizable workforce, positioning it as a jobs-rich pillar within the state’s broader manufacturing economy.

Table 16: Manufacturing Industries in Missouri state, 2023. [†]

Manufacturing Industries	Employment	Labor Income	Value Added	Output
Food	48,825	\$3,785,378	\$7,329,560	\$37,173,964
Fabricated Metal	47,380	\$5,674,851	\$9,492,221	\$36,181,871
Computer and Electronic Product	32,291	\$2,753,306	\$3,871,178	\$11,406,795
Machinery	28,486	\$2,430,855	\$3,318,003	\$12,812,716
Forest Products	22,576	\$1,664,185	\$2,693,817	\$8,740,241
Miscellaneous	21,316	\$2,624,010	\$8,131,877	\$25,376,153
Printing	13,734	\$1,020,275	\$1,549,805	\$5,835,672
Plastics and Rubber Products	11,931	\$1,343,209	\$1,986,985	\$5,113,388
Transportation Equipment	11,616	\$1,119,108	\$1,912,848	\$5,318,279
Chemical	11,457	\$669,680	\$1,288,635	\$2,461,256
Nonmetallic Mineral Product	10,829	\$930,129	\$1,156,531	\$3,063,621
Electrical Equipment	8,611	\$712,107	\$1,468,603	\$3,866,072
Beverage and Tobacco Product	7,357	\$842,283	\$984,400	\$5,848,097
Textiles and Apparel	7,270	\$725,051	\$1,739,235	\$4,192,685
Primary Metal	5,479	\$362,148	\$361,717	\$1,069,467
Petroleum and Coal	1,541	\$336,933	\$818,917	\$2,649,822
Total	290,698	\$26,993,506	\$48,104,332	\$171,110,099
Compared to 2017	4.2%	5.9%	3.2%	-6.8%

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

Summary

The 2023 economic contribution report shows that the Forest Products sector remains a cornerstone of Missouri's industrial base and a vital engine for its rural economy. In 2023, the Forest Products sector directly provided 24,896 jobs and generated \$9.03 billion in direct economic output. The sector's influence extends deeply into the broader regional economy; when accounting for indirect supply chain purchases and induced household spending, the total contribution reached 50,169 jobs and \$14.18 billion in total output. This indicates a robust employment multiplier of 2.02. Essentially, for every 100 direct jobs in the forest sector, an additional 102 jobs are supported elsewhere in the Missouri economy, which reflects the deep integration of forest industries with local logistics, wholesale trade, and service sectors.

The industry exhibits a distinct structural emphasis on value-added manufacturing rather than raw extraction. The Wood Furniture group stands as the primary employment driver among the seven aggregated sectors, supporting 7,468 jobs. Further, despite employing a relatively lean workforce, the Secondary Paperboard and Other Paper Products sector serves as a capital-intensive powerhouse. It generated over \$4.28 billion in direct output with 6,838 workers, highlighting the high value-generation capacity of the state's converting facilities. When analyzing the specific, unaggregated industries, Paperboard container manufacturing emerges as the most significant subsector, ranking first in employment, labor income, value-added, and total output. Wood kitchen cabinet and countertop manufacturing ranks second in direct employment, while Sawmills ranks second in direct output, underscoring the diversity of the state's production capabilities.

Within Missouri's natural resource-based economy, the forest products sector represents a source of relative stability. While employment in agriculture faced long-term consolidation and mining experienced explosive growth, forest products employment has remained a steady industrial anchor, acting as the second-largest employer among natural resource sectors. Within the broader manufacturing sector, forest products occupies a solid mid-tier position, ranking as the fifth-largest manufacturing employer with 22,576 jobs and the sixth-largest producer by output, generating \$8.74 billion.

The study period (2017–2023) shows that while sectors like Logging, Primary, and Secondary Solid Wood Products, faced structural contractions in employment, they have been counterbalanced by and steady performance in Secondary Paperboard, and Other Paper Products. Ultimately, by converting local renewable resources into high-value packaging, furniture, and construction components, the sector not only sustains the state's working landscape but also generates significant value-added wealth. This solidifies its role as an enduring and sophisticated engine of Missouri's economic identity.

References

- Bureau of Economic Analysis. (2023). Fundamental concepts. In NIPA handbook: Concepts and methods of the U.S. National Income and Product Accounts (Chapter 2).
<https://www.bea.gov/resources/methodologies/nipa-handbook/pdf/chapter-02.pdf>
- Coronado, C. J., McConnell, T. E., & Matthews, S. N. (2014). Economic impacts of timber product outputs in Ohio across timber market regions. *BioResources*, 9(4), 7579–7592.
<https://bioresources.cnr.ncsu.edu/resources/economic-impacts-of-timber-product-outputs-in-ohio-across-timber-market-regions/>
- IMPLAN Group LLC. (2023). IMPLAN® model: Data and software system [Data and software].
<https://implan.com/>
- Khanal, N., Pokharel, R., Poudel, J., Gc, S., Shannon, E., Huff, E., & Finley, A. (2024). Analysis of location, feedstock availability, and economic impacts of potential mass timber processing facilities in Michigan. *Forest Policy and Economics*, 163, 103203.
<https://doi.org/10.1016/j.forpol.2024.103203>
- Lamsal, B., Cavo, M., & Wagner, J. E. (2025b). Decomposing the economic contribution of a sector: A case study of New York State’s forest sector. *Forest Science*, 71, 423–444.
<https://doi.org/10.1007/s44391-025-00023-x>
- Lamsal, B., Poudel, J., & Pokharel, R. (2025a). Regional economic and employment impacts of industrial decline in the forest sector: Evidence from sawmill closures in Michigan. *Forest Policy and Economics*, 178, 103601. <https://doi.org/10.1016/j.forpol.2024.103601>
- Leefers, L., Poudel, J., Neumann, D., & Public Sector Consultants. (2020). Forest products industries’ economic contributions in the Northeast and Midwest. Public Sector Consultants.
- Pokharel, M., Germain, R. H., Wagner, J. E., & Smith, W. B. (2023). Estimating a regional economic conservation benefit of using domestic hardwoods vs. apitong for trailer decking: A case study on US Army use. *Forests*, 14(7), 1428.
<https://doi.org/10.3390/f14071428>
- Poudel, J. (2022). Forest products industries’ economic contributions: Michigan. Forest Resources Division, Michigan Department of Natural Resources.
- Poudel, J., & Dahal, R. (2025). A comprehensive look at the forest products industry’s economic contribution to the United States: Pre- and post-COVID analysis. *Forest Policy and Economics*, 172, 103440. <https://doi.org/10.1016/j.forpol.2025.103440>
- Poudel, K., & Ochuodho, T. O. (2021). Forest sector dependence and economic well-being in Kentucky: An econometric analysis. *Forest Science*, 67(6), 659–669.
<https://doi.org/10.1093/forsci/fxab048>

Watson, P., Cooke, S., Kay, D., & Alward, G. (2015). A method for improving economic contribution studies for regional analysis. *Journal of Regional Analysis & Policy*, 45(1), 1–15.

Appendix A: Forest Products Industries Groupings and IMPLAN Sectors

A1: Forestry Industry Grouping and IMPLAN Sectors

Industry Code	Industry name
10	All other crop farming***
15	Forestry, forest products, and timber tract production
19	Support activities for agriculture and forestry-*

Note: Sectors with an “*” indicate that only a portion of the sector is included in the forest products industries.

Sectors denoted by “***” indicate that the corresponding FPI is not present in Missouri.

A2: Logging Industry Grouping and IMPLAN Sector

Industry Code	Industry name
16	Commercial logging

A3: Primary Solid Wood Products Industry Grouping and IMPLAN Sectors

Industry Code	Industry name
40	Electric power generation – Biomass**
124	Sawmills
125	Wood preservation
126	Veneer and plywood manufacturing
128	Reconstituted wood product manufacturing

Note: Sectors with “**” indicate that it is treated as **full sector** in 2023; however in 2017 it was treated as a **partial (wood component only)** so the numbers are not strictly comparable.

A4: Secondary Solid Wood Products Industry Grouping and IMPLAN Sectors.

Industry Code	Industry name
127	Engineered wood member and truss manufacturing
129	Wood windows and door manufacturing
130	Cut stock, resawing lumber, and planning
131	Other millwork, including flooring
132	Wood container and pallet manufacturing
133	Manufactured home (mobile home) manufacturing
134	Prefabricated wood building manufacturing
135	All other miscellaneous wood product manufacturing

A5: Wood Furniture Industry Grouping and IMPLAN Sectors.

Industry Code	Industry name
348	Wood kitchen cabinet and countertop manufacturing
349	Upholstered household furniture manufacturing
350	Non-upholstered wood household furniture manufacturing
352	Institutional furniture manufacturing**
353	Wood office furniture manufacturing
354	Custom architectural woodwork and millwork
356	Showcase, partition, shelving, and locker manufacturing**

Note: Sectors with “**” indicate that it is treated as **full sector** in 2023; however in 2017 it was treated as a **partial (wood component only)** so the numbers are not strictly comparable.

A6: Pulp, Paper, and Paperboard Mills Industry Grouping and IMPLAN Sectors.

Industry Code	Industry name
136	Pulp mills
137	Paper mills
138	Paperboard mills

A7: Secondary Paperboard and Other Paper Products Industry Grouping and IMPLAN Sectors.

Industry Code	Industry name
139	Paperboard container manufacturing
140	Paper bag and coated and treated paper manufacturing
141	Stationery product manufacturing
142	Sanitary paper product manufacturing
143	All other converted paper product manufacturing

Appendix B. Detailed Economic Contribution Results of 2023

B1: Direct Economic Contribution by IMPLAN Sector, 2023

B1.1: Direct Economic Contributions, Forestry Sector Details, 2023. [†]

Industries	Employment	Labor Income	Value-Added	Output
All other crop farming	0	\$0	\$0	\$0
Forestry, forest products, and timber tract production	263	\$10,193	\$13,172	\$15,753
Support activities for agriculture and forestry	715	\$25,073	\$26,138	\$27,686
Total	978	\$35,267	\$39,310	\$43,439

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B1.2: Direct Economic Contributions, Logging Sector Details (2023, in 2023 USD). [†]

Industries	Employment	Labor Income	Value-Added	Output
Commercial logging	1,871	\$70,447	\$75,636	\$83,302
Total	1,871	\$70,447	\$75,636	\$83,302

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B1.3: Direct Economic Contributions, Primary Solid Wood Products Sector Details (2023, in 2023 USD).[†]

Industries	Employment	Labor Income	Value- Added	Output
Electric power generation - Biomass	99	\$15,316	\$38,570	\$101,096
Sawmills	289	\$17,825	\$29,335	\$139,396
Wood preservation	158	\$27,779	\$75,086	\$178,319
Veneer and plywood manufacturing	185	\$14,667	\$26,756	\$73,884
Reconstituted wood product manufacturing	579	\$71,436	\$209,596	\$596,245
Total	1,311	\$147,024	\$379,343	\$1,088,941

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B1.4: Direct Economic Contributions, Secondary Solid Wood Products Sector Details (2023, in 2023 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Engineered wood member and truss manufacturing	1,018	\$82,455	\$122,298	\$423,691
Wood windows and door manufacturing	7,964	\$783,475	\$1,097,546	\$2,717,523
Cut stock, resawing lumber, and planing	12	\$538	\$1,007	\$4,386
Other millwork, including flooring	536	\$36,934	\$62,223	\$177,550
Wood container and pallet manufacturing	1,615	\$117,605	\$155,571	\$434,909
Manufactured home (mobile home) manufacturing	569	\$46,867	\$54,847	\$181,585
Prefabricated wood building manufacturing	621	\$53,500	\$91,651	\$248,267
All other miscellaneous wood product manufacturing	809	\$60,387	\$88,068	\$239,160
Total	13,144	\$1,181,760	\$1,673,211	\$4,427,072

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B1.5: Direct Economic Contributions, Wood Furniture Sector Details (2023, 2023 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Wood kitchen cabinet and countertop manufacturing	5,190	\$347,400	\$415,019	\$1,019,909
Upholstered household furniture manufacturing	0	\$0	\$0	\$0
Non-upholstered wood household furniture manufacturing	172	\$7,958	\$9,238	\$29,784
Institutional furniture manufacturing	806	\$70,158	\$82,491	\$205,715
Wood office furniture manufacturing	610	\$39,175	\$51,884	\$159,516
Custom architectural woodwork and millwork	753	\$59,640	\$33,586	\$151,849
Showcase, partition, shelving, and locker manufacturing	910	\$64,582	\$84,431	\$248,222
Total	8,442	\$588,912	\$676,649	\$1,814,994

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B1.6: Direct Economic Contributions, Pulp, Paper, and Paperboard Mills Sector Details (2023, in 2023 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Pulp mills	39	\$4,579	\$7,953	\$28,476
Paper mills	1,599	\$180,255	\$476,729	\$1,443,183
Paperboard mills	471	\$55,534	\$139,153	\$458,810
Total	2,109	\$240,368	\$623,835	\$1,930,470

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B1.7: Direct Economic Contributions, Secondary Paperboard and Other Paper Products Sector Details (2023, in 2023 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Paperboard container manufacturing	3,464	\$309,171	\$546,827	\$2,103,216
Paper bag and coated and treated paper manufacturing	2,041	\$182,955	\$346,597	\$1,047,981
Stationery product manufacturing	431	\$43,452	\$57,292	\$201,080
Sanitary paper product manufacturing	115	\$12,712	\$39,051	\$112,202
All other converted paper product manufacturing	84	\$7,296	\$15,642	\$40,160
Total	6,135	\$555,586	\$1,005,409	\$3,504,639

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B2: Direct Economic Contribution by IMPLAN Sector, 2017 (2017 USD))

B2.1: Direct Economic Contributions, Forestry Sector Details (2017, in Nominal 2017 USD).[†]

Industries	Employment	Labor Income	Value- Added	Output
All other crop farming	270	4,634	6,020	13,088
Forestry, forest products, and timber tract production	493	19,471	19,462	21,356
Support activities for agriculture and forestry	19	286	430	932
Total	782	\$24,391	\$25,912	\$35,376

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B2.2: Direct Economic Contributions, Logging Sector Details (2017, in Nominal 2017 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Commercial logging	2495	\$54,797	\$86,138	\$140,983
Total	2495	\$54,797	\$86,138	\$140,983

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2017 dollars value.

B2.3: Direct Economic Contributions, Primary Solid Wood Products Sector Details (2017, in Nominal 2017 USD).[†]

Industries	Employment	Labor Income	Value- Added	Output
Electric power generation - Biomass	179	\$19,226	\$69,476	\$143,357
Sawmills	492	\$36,865	\$39,948	\$148,274
Wood preservation	190	\$17,157	\$31,667	\$122,500
Veneer and plywood manufacturing	189	\$13,758	\$15,736	\$55,181
Reconstituted wood product manufacturing	439	\$40,076	\$66,527	\$250,915
Total	1489	\$127,083	\$223,354	\$720,227

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2017 dollars value.

B2.4: Direct Economic Contributions, Secondary Solid Wood Products Sector Details (2017, in Nominal 2017 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Engineered wood member and truss manufacturing	1058	\$69,132	\$74,618	\$244,668
Wood windows and door manufacturing	5728	\$442,093	\$565,701	\$1,467,074
Cut stock, resawing lumber, and planing	62	\$6,183	\$7,024	\$17,024
Other millwork, including flooring	851	\$58,508	\$74,559	\$193,584
Wood container and pallet manufacturing	1510	\$100,164	\$113,498	\$267,390
Manufactured home (mobile home) manufacturing	566	\$31,299	\$49,105	\$142,947
Prefabricated wood building manufacturing	479	\$34,095	\$37,528	\$91,984
All other miscellaneous wood product manufacturing	1034	\$89,148	\$101,586	\$226,970
Total	11288	\$830,622	\$1,023,619	\$2,651,642

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2017 dollars value.

B2.5: Direct Economic Contributions, Wood Furniture Sector Details (2017, in Nominal 2017 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Wood kitchen cabinet and countertop manufacturing	5711	\$291,365	\$327,137	\$843,260
Upholstered household furniture manufacturing	19	\$821	\$960	\$3,670
Non-upholstered wood household furniture manufacturing	195	\$5,941	\$7,529	\$22,357
Institutional furniture manufacturing	637	\$48,851	\$57,736	\$138,509
Wood office furniture manufacturing	590	\$31,080	\$47,970	\$130,070
Custom architectural woodwork and millwork	505	\$33,528	\$39,237	\$87,221
Showcase, partition, shelving, and locker manufacturing	916	\$56,515	\$70,267	\$194,874
Total	8575	\$468,103	\$550,837	\$1,419,961

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2017 dollars value.

B2.6: Direct Economic Contributions, Pulp, Paper, and Paperboard Mills Sector Details (2017, in Nominal 2017 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Pulp mills	12	\$3,665	\$4,368	\$10,763
Paper mills	1940	\$202,234	\$507,421	\$1,641,381
Paperboard mills	590	\$64,112	\$158,546	\$533,561
Total	2542	\$270,012	\$670,335	\$2,185,705

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2017 dollars value.

B2.7: Direct Economic Contributions, Secondary Paperboard and Other Paper Products Sector Details (2017, in Nominal 2017 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Paperboard container manufacturing	3685	\$305,480	\$462,814	\$1,797,129
Paper bag and coated and treated paper manufacturing	2379	\$216,228	\$408,557	\$1,195,576
Stationery product manufacturing	680	\$60,678	\$105,955	\$290,661
Sanitary paper product manufacturing	44	\$3,459	\$12,590	\$35,789
All other converted paper product manufacturing	96	\$6,496	\$8,781	\$30,217
Total	6885	\$592,342	\$998,697	\$3,349,371

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2017 dollars value.

B3: Direct Economic Contribution by IMPLAN Sector, 2017 (2023 USD)

B3.1: Direct Economic Contributions, Forestry Sector Details (2017, in 2023 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
All other crop farming	270	\$5,666	\$7,360	\$16,404
Forestry, forest products, and timber tract production	493	\$23,808	\$23,797	\$26,766
Support activities for agriculture and forestry	19	\$350	\$525	\$1,168
Total	782	\$29,823	\$31,683	\$44,338

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B3.2: Direct Economic Contributions, Logging Sector Details (2017, in 2023 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Commercial logging	2,495	\$67,002	\$105,323	\$176,697
Total	2,495	\$67,002	\$105,323	\$176,697

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B3.3: Direct Economic Contributions, Primary Solid Wood Products Sector Details (2017, in 2023 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Electric power generation - Biomass	179	\$23,508	\$84,950	\$179,673
Sawmills	492	\$45,076	\$48,846	\$185,834
Wood preservation	190	\$20,979	\$38,720	\$153,532
Veneer and plywood manufacturing	189	\$16,823	\$19,241	\$69,159
Reconstituted wood product manufacturing	439	\$49,003	\$81,344	\$314,477
Total	1,489	\$155,388	\$273,101	\$902,675

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B3.4: Direct Economic Contributions, Secondary Solid Wood Products Sector Details (2017, in 2023 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Engineered wood member and truss manufacturing	1,058	\$84,529	\$91,238	\$306,648
Wood windows and door manufacturing	5,728	\$540,560	\$691,700	\$1,838,713
Cut stock, resawing lumber, and planing	62	\$7,560	\$8,588	\$21,337
Other millwork, including flooring	851	\$71,540	\$91,166	\$242,623
Wood container and pallet manufacturing	1,510	\$122,474	\$138,777	\$335,125
Manufactured home (mobile home) manufacturing	566	\$38,271	\$60,042	\$179,159
Prefabricated wood building manufacturing	479	\$41,689	\$45,886	\$115,286
All other miscellaneous wood product manufacturing	1,034	\$109,004	\$124,213	\$284,465
Total	11,288	\$1,015,627	\$1,251,609	\$3,323,356

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B3.5: Direct Economic Contributions, Wood Furniture Sector Details (2017, in 2023 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Wood kitchen cabinet and countertop manufacturing	5,711	\$356,261	\$400,001	\$1,056,875
Upholstered household furniture manufacturing	19	\$1,003	\$1,173	\$4,600
Non-upholstered wood household furniture manufacturing	195	\$7,265	\$9,206	\$28,020
Institutional furniture manufacturing	637	\$59,732	\$70,595	\$173,596
Wood office furniture manufacturing	590	\$38,003	\$58,655	\$163,019
Custom architectural woodwork and millwork	505	\$40,996	\$47,976	\$109,316
Showcase, partition, shelving, and locker manufacturing	916	\$69,103	\$85,918	\$244,239
Total	8,575	\$572,363	\$673,525	\$1,779,666

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B3.6: Direct Economic Contributions, Pulp, Paper, and Paperboard Mills Sector Details (2017, in 2023 USD).[†]

Industries	Employment	Labor Income	Value- Added	Output
Pulp mills	12	\$4,482	\$5,341	\$13,489
Paper mills	1,940	\$247,278	\$620,438	\$2,057,176
Paperboard mills	590	\$78,392	\$193,859	\$668,723
Total	2,542	\$330,151	\$819,638	\$2,739,388

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B3.7: Direct Economic Contributions, Secondary Paperboard and Other Paper Products Sector Details (2017, in real 2023 Dollars).[†]

Industries	Employment	Labor Income	Value- Added	Output
Paperboard container manufacturing	3,685	\$373,520	\$565,897	\$2,252,378
Paper bag and coated and treated paper manufacturing	2,379	\$264,388	\$499,555	\$1,498,439
Stationery product manufacturing	680	\$74,193	\$129,554	\$364,291
Sanitary paper product manufacturing	44	\$4,230	\$15,394	\$44,855
All other converted paper product manufacturing	96	\$7,943	\$10,737	\$37,871
Total	6,885	\$724,275	\$1,221,137	\$4,197,834

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.