Forest Products Industries' Economic Contributions: Wisconsin, 2023

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Photo Credit: Raju Pokharel, PhD

Foreword

Wisconsin's 17 million acres of forests are one of the state's greatest natural assets, providing clean air and water, carbon storage, wildlife habitat, and a sustainably managed source of raw materials. Sustainable forestry practices help ensure these benefits endure while supporting the diverse landscapes enjoyed by residents across the state.

Forests also anchor a major sector of Wisconsin's economy. From global manufacturers to family-owned businesses, the state's forest products industry continues to innovate, create essential goods, and provide tens of thousands of jobs that strengthen communities.

This Wisconsin Economic Industry Report highlights the sector's current performance while examining key trends from the pre-COVID period (2017) through the post-COVID landscape (2023). These comparisons reveal how the industry has adapted to shifting markets, workforce changes, and new economic conditions.

It is my pleasure to share this report and to recognize the enduring importance of Wisconsin's forests to our environment, economy, and commitment to sustainable management.

Heather Berklund

Forestry Chief State Forester,

Wisconsin Department of Natural Resources and President,

Northeast-Midwest State Foresters Alliance

Acknowledgements

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Executive Summary

Based on 2023 FIA estimates, Wisconsin contains approximately 16.96 million acres of forest land, representing about 49.0 percent of the state's total land area of 34.61 million acres. Of this forest base, approximately 16.38 million acres (96.6 percent) are classified as timberland, defined as forest land capable of producing commercial volumes of wood. Reserved forestland accounts for 434,645 acres (about 2.6 percent), while other forestland comprises 148,261 acres (0.9 percent). Non-forest land totals 17.64 million acres, or 51.0 percent of Wisconsin's total land area. Building on this land-use context, this report summarizes the economic contribution of Wisconsin's forest products industries using IMPLAN 2023 data and examines changes in industry performance over the pre- and post-COVID period, with emphasis on trends observed over the past seven years.

Forest Product Industries

This report analyzes the economic contribution of Wisconsin's forest products sector, comprised of 32 individual economic sectors in IMPLAN 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 61,442 jobs and generated $28.33 billion in Output, $8.77 billion in Value-Added, and $4.89 billion in Labor Income. When indirect supply-chain linkages and induced household-spending effects are included, the sector's total economic footprint reached 134,021 jobs, $43.60 billion in Output, $17.36 billion in Value-Added, and $9.81 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 118 additional jobs are supported elsewhere in the state (Employment multiplier of 2.18).

Leading Forest Products Industry Groups (direct contribution)

Among the seven aggregated groups, Secondary Paperboard and Other Paper Products was the largest direct employer in 2023 (18,306 jobs), followed by Secondary Solid Wood Products (14,469 jobs) and Wood Furniture (12,238 jobs). In terms of Output, Secondary Paperboard and Other Paper Products produced the highest direct Output at $11.45 billion, serving as the sector's converting engine. Pulp, Paper, and Paperboard Mills generated $7.22 billion, highlighting the state's strength in primary industrial processing. Forestry, while the smallest contributor in dollar terms ($39.0 million) and 788 jobs, provided the essential management and biological services supporting the broader value chain.

Leading Individual Forest Products Sectors (direct contribution)

At the disaggregated level (32 sectors), Paperboard container manufacturing stood as the top individual employer with 7,630 jobs. However, financial dominance was concentrated in the Paper Mills sector, which ranked first in Labor Income ($778.7 million), Value-Added ($2.04 billion), and Output ($6.44 billion), and second in number of jobs 7,286. Paperboard container manufacturing was a consistent top-tier performer, ranking second in Output ($4.70 billion) and Value-Added ($1.27 billion). Sanitary paper product manufacturing also emerged as a major driver, ranking third in direct Output ($2.97 billion) and second in Value-Added ($971.5 million).

Wisconsin's Forest Products Industries Compared to Other Wisconsin Industries

The Forest Products sector remains a dominant component of Wisconsin's natural resource economy. In 2023, it ranked second in Employment and first in other parameters when compared to Agriculture, Mining, and Commercial Fishing & Hunting. The forest sector's direct Output ($28.33 billion) substantially outperformed Agriculture ($16.22 billion) and Mining ($7.76 billion). In terms of Employment , the 61,442 jobs supported by the forest industry accounted for around 36.5 percent of the state's total natural resources workforce, ranking behind Agriculture (97,392 jobs) but surpassing Mining (8,186 jobs) and Commercial Fishing (1,308 jobs). Furthermore, within the statewide manufacturing landscape, Forest Products Manufacturing ranked as the third largest manufacturer by Output ($27.95 billion) and the fourth largest employer (57,253 jobs).

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

From 2017 to 2023, the sector showed consolidation with improving value generation. Direct Employment decreased by 9.4 percent and direct Output declined by 10.6 percent, while Labor Income fell by 11.5 percent. In contrast, direct Value-Added increased by 1.6 percent over the same period. Similarly, the labor productivity (Output per job) declined from $467.42 thousand per job in 2017 to $461.11 thousand per job in 2023, a decrease of 1.4 percent.

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 Wisconsin's economy. They provide jobs, raw materials, and finished goods that generate additional economic activity throughout the state, region, and nation. Forests in Wisconsin have always supported local and state economies and generated Employment and income (Dahal 2025). These forests form the foundation for a wide array of industries, supporting logging, sawmills, pulp and paper, and other primary and secondary wood products manufacturing activities. 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 the economic contributions on Wisconsin's FPI prepared on behalf of NMFSA was last published by Leefers et al. (2020) using 2017 IMPLAN data. Wisconsin DNR also publishes annual analyses of the forest products industry's economic contribution (Dahal 2025). However, direct comparisons between these studies and the present report should be made with caution because industry aggregation and sector coverage differ. For example, Dahal (2025) grouped 28 forest-related industries into three categories and excluded IMPLAN sectors 10, 40, 353, and 356, whereas this report includes 32 forest products industries across seven industry groups. These differences may lead to different economic estimates. 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 Wisconsin has shifted between 2017 and 2023 in terms of Employment , Output, Labor Income, and the Gross State Product (GSP), also known as Value-Added[1]. 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

[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.

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.

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 Wisconsin, (ii) Economic Contributions of the Wisconsin 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 Wisconsin state

According to 2023 estimates from the USDA Forest Inventory and Analysis (FIA) program, Wisconsin's total land area is 34.61 million acres. Of this total, 16.96 million acres (49.0 percent) meet the FIA definition of forest land, while the remaining 17.64 million acres (51.0 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 Wisconsin's forest land base, timberland accounts for 16.38 million acres, or 96.6 percent (Figure 1), representing unreserved forest capable of producing at least 20 cubic feet of wood per acre per year. Reserved forestland comprises 434,645 acres (2.6 percent) and is withdrawn from timber utilization by legal or administrative designation. Other forestland totals 148,261 acres (0.9 percent) and consists of unreserved forests of comparatively low productivity. In practical terms, the majority of Wisconsin's forest land is both unreserved and biophysically suitable for commercial timber management, with a relatively small share either reserved or too low in productivity to contribute materially to timber supply.

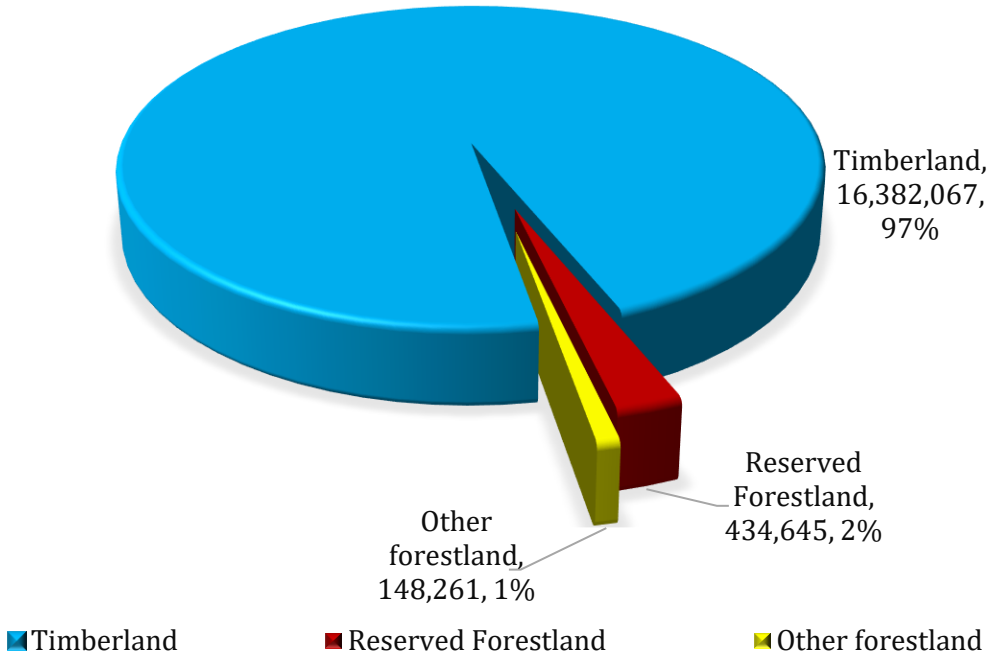

Figure 1: Wisconsin Forest Land area in acres by Land use type, 2023 (US Forest Service).

Ownership of Wisconsin's 16.96 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 11.87 million acres, representing 70.0 percent of the state's forest land base. State and local governments manage 3.50 million acres (20.6 percent), reflecting a substantial public ownership presence at the subnational level. Federal ownership totals 1.60 acres (9.4 percent). Within the federal category, National Forest System lands account for 1,41 million acres (8.3 percent), while other federal agencies manage 193,923 acres (1.1 percent). Overall, Wisconsin's forest land base exhibits a mixed ownership structure, with private ownership predominating alongside meaningful state and local public holdings and a notable federal land component.

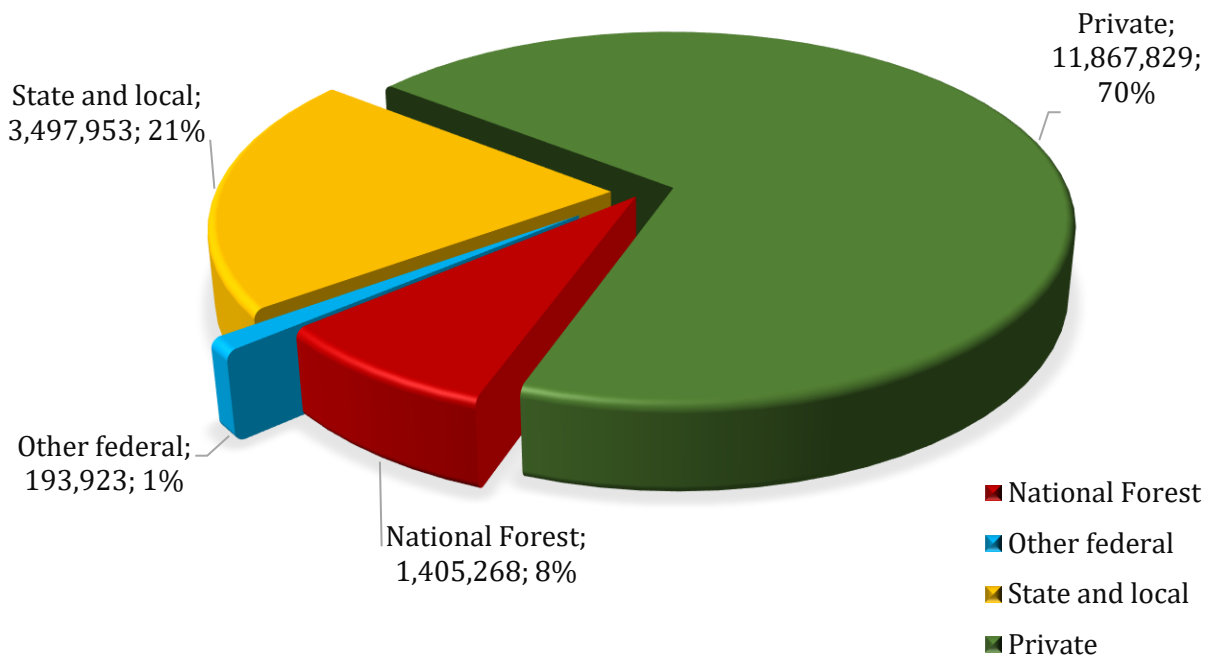

Figure 2: Wisconsin Forest Land area in acres by Ownership group, 2023 (US Forest Service).

Wisconsin's 16.96 million acres of forest land support a diverse mix of hardwood and softwood forest types (Figure 3). The oak/hickory forest-type group is the largest, occupying 4.46 million acres, or 26.3 percent of the state's forest land base. Maple/beech/birch forests represent the second-largest group at 3.78 million acres (22.3 percent), followed by aspen/birch at 2.92 million acres (17.2 percent), reflecting the importance of early-successional hardwood forests. Softwood and mixed forest types account for substantial portions of the forest land base, including white/red/jack pine at 1.77 million acres (10.4 percent) and elm/ash/cottonwood at 1.68 million acres (9.9 percent). The remaining 2.37 million acres (14.0 percent) are distributed across other forest-type groups. Overall, Wisconsin's forest land composition is relatively balanced across multiple forest types with a high degree of structural and compositional diversity.

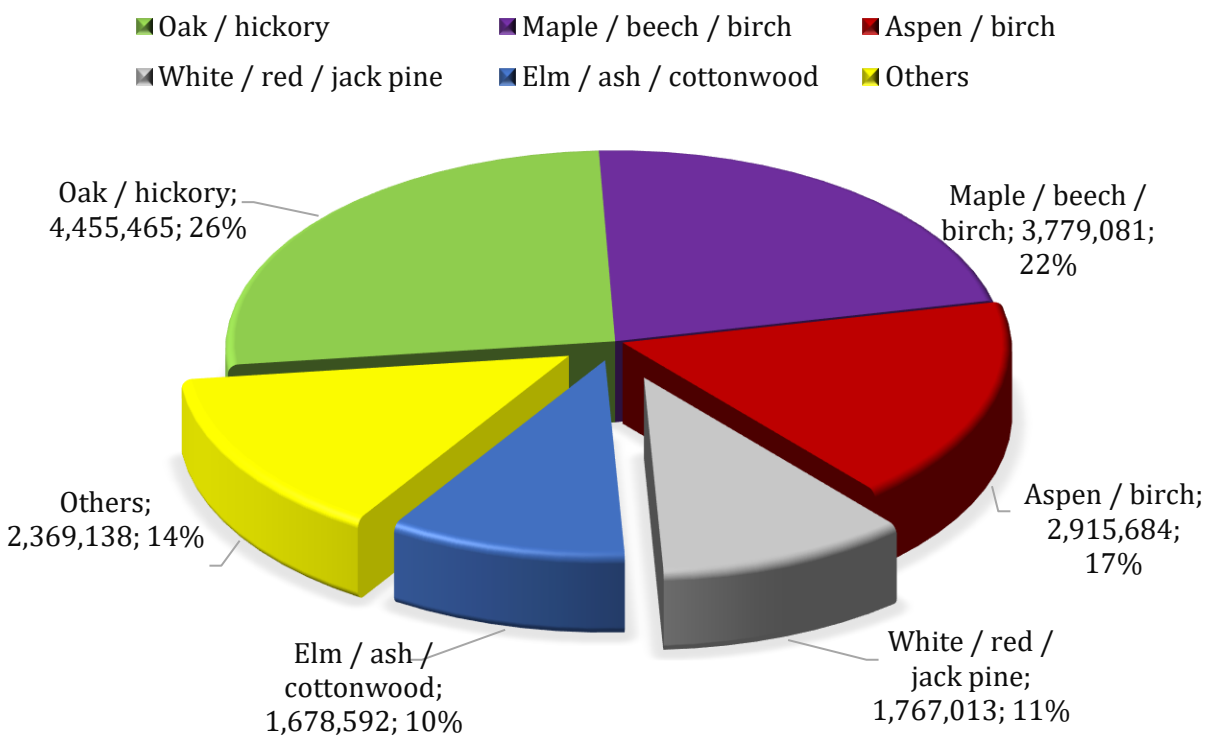

Figure 3*:* Wisconsin Forest Land area in acres by Forest type group, 2023 (US Forest Service).

Wisconsin's timber resource base is among the most substantial in the region and supports a wide 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 31.97 billion cubic feet statewide (Table 1). Hardwood species account for the majority of the resource, totaling 23.65 billion cubic feet (74.0 percent), while softwood comprises 8.32 billion cubic feet (26.0 percent). By ownership class, private lands hold 22.29 billion cubic feet (69.7 percent) of total growing-stock volume, followed by state and local government lands with 5.82 billion cubic feet (18.2 percent). National Forest System lands contain 3.47 billion cubic feet (10.9 percent), while other federal ownership accounts for 397.4 million cubic feet (1.2 percent).

Average annual net growth totals 753.3 million cubic feet per year, while average annual harvest removals total 309.6 million cubic feet and average annual mortality totals 301.8 million cubic feet per year. Net growth exceeds harvest removals by a ratio of about 2.4 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 443.7 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 1.0 percent of standing volume, or about 3.9 million standard cords, while mortality also represents about 0.9 percent of standing volume. Hardwoods

account for most of the annual inventory flows, comprising 71.6 percent of net growth, 74.7 percent of harvest removals, and 74.0 percent of mortality. Harvest removals are concentrated on private lands, which account for about 69.8 percent of total removals, followed by state and local ownerships at about 24.8 percent. Overall, these statewide indicators suggest that Wisconsin's growing stock inventory remains in a condition of positive net growth.

Table 1: Characteristics of Growing Stock in Wisconsin, 2023. †

Description	Species group	National Forest	Other federal	State and local	Private	Not available	**Total**
Net volume	Hardwood	2,468,610	296,644	3,853,775	17,032,860	0	**23,651,888**
	Softwood	1,002,309	100,773	1,963,920	5,252,626	0	**8,319,629**
	Total	**3,470,919**	**397,417**	**5,817,695**	**22,285,486**	**0**	**31,971,517**
Average annual net growth	Hardwood	44,903	2,317	96,650	393,726	1,428	**539,024**
	Softwood	15,411	2,277	52,635	143,068	885	**214,275**
	Total	**60,314**	**4,594**	**149,285**	**536,793**	**2,313**	**753,299**
Average annual harvest removals	Hardwood	8,579	1,461	55,353	165,908	0	**231,301**
	Softwood	5,610	963	21,402	50,287	0	**78,262**
	Total	**14,189**	**2,423**	**76,755**	**216,196**	**0**	**309,563**
Average annual mortality	Hardwood	22,477	4,602	40,692	155,483	0	**223,255**
	Softwood	12,337	1,069	16,709	48,460	0	**78,575**
	Total	**34,815**	**5,671**	**57,401**	**203,944**	**0**	**301,830**

† 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 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 represents a working consensus on what constitutes the regional FPI (Leefers et al. 2020). 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 Wisconsin 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 maps 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. Impact Analysis for Planning (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 of Wisconsin's Forest Sector over the seven-year study period (2017-2023). As shown in Figure 4, the industry displays a distinct divergence between workforce trends and production capacity, indicative of increasing labor productivity. While Direct Employment has experienced a structural contraction, declining by approximately 9.4 percent from 67,793 jobs in 2017 to 61,442 in 2023. Output followed a different pattern: it increased from $31.69 billion in 2017 to a peak of $31.92 billion in 2019, remained above $30 billion through 2021, fell to $27.48 billion in 2022, and then recovered modestly to $28.33 billion in 2023. Although Output rebounded in 2023, it remained below the 2017 baseline. Output per worker was approximately $467 thousand in 2017 and $461 thousand in 2023, decreased by about 1.3 percent.

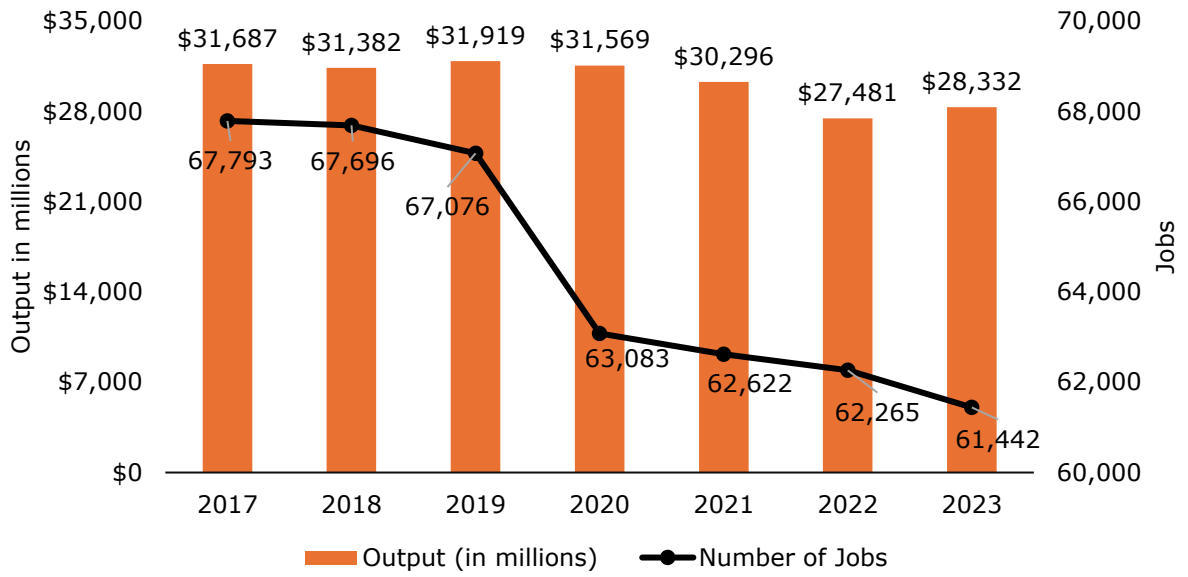

Figure 4: Direct Output and Employment , 2017–2023, Wisconsin state forest products industries.

Figure 5 summarizes trends in Value-Added and Labor Income for Wisconsin's forest sector from 2017 through 2023. Over the study period, Value-Added remained relatively stable, fluctuating between $8.36 billion (2018) and $9.97 billion (2020), before returning to $8.77 billion in 2023, which is close to the 2017 level of $8.64 billion (+1.6 percent). Labor Income followed a gradual downward trend, declining from $5.52 billion in 2017 to $4.89 billion in 2023, a decrease of approximately 11.5 percent. The data show a temporary increase in Value-Added in 2020 (to $9.97 billion), followed by a return toward the pre-2020 range in subsequent years. When these results are considered alongside the Employment decline over the same period (Figure 4), the sector's Value-Added per worker increased, while Labor Income per worker remained comparatively stable to slightly higher by the end of the period. Overall, the 2017–2023 trends indicate that the sector maintained a largely steady level of value creation while total real Labor Income declined.

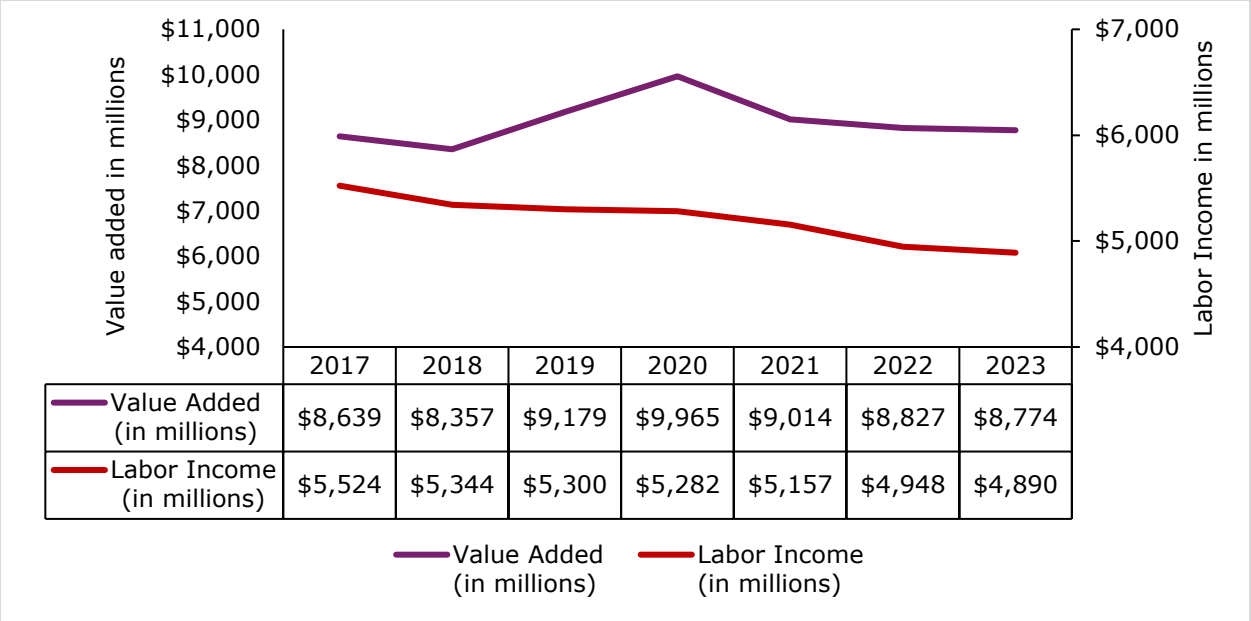

Figure 5: Direct Value-Added and Labor Income, 2017–2023, Wisconsin state, forest products industries.

Direct and Total Contributions by Forest Product Industry Groups

In 2023, Wisconsin's forest products industries directly provided 61,442 jobs, generated $28.33 billion in gross Output, and contributed $8.77 billion in Value-Added to the state economy (Table 2). The sector continues to exert a substantial aggregate influence on the regional economy. When accounting for indirect supply-chain transactions and induced household spending, the total economic contribution of the forest sector reached 134,021 jobs and $43.60 billion in total Output.

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

	Employment	Labor Income	Value-Added	Output
Direct in 2023	61,442	$4,890,298	$8,774,277	$28,331,646
Compared to 2017	-9.4%	-11.5%	1.6%	-10.6%
Total in 2023	134,021	$9,807,499	$17,358,351	$43,595,188
Compared to 2017	-16.3%	-15.8%	-7.2%	-13.0%
Multipliers in 2023	2.18	2.01	1.98	1.54

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

The calculated multipliers highlight the sector's continued, though evolving, integration into Wisconsin's economy. The Employment multiplier of 2.18 indicates that for every 100 direct jobs in the forest industry, an additional 118 jobs are supported in other sectors. Similarly, the Value-Added multiplier of 1.98 suggests that every dollar of wealth created directly by forest industries generates approximately an additional dollar elsewhere in the state. These interlinkages show that the forest sector remains a foundational economic driver, supporting a workforce more than double its own size through deep linkages in transportation, logistics, and services.

Table 3 reports the direct economic contributions of the seven industry groups, while Table 4 includes total contributions with multiplier effects. In 2023, Wisconsin's forest sector structure is heavily weighted toward downstream manufacturing rather than raw extraction. The Secondary Paperboard and Other Paper Products sector is the clear labor leader, directly providing 18,306 jobs, more than four times the combined workforce of the Forestry and Logging sectors (4,099 jobs). This suggests a mature industrial ecosystem where raw timber is not just harvested but extensively processed within the state into higher-value commodities like converted paper products, packaging, and engineered wood.

Output and Value-Added measures show substantial differences across groups. Secondary Paperboard and Other Paper Products also leads in scale, generating $11.45 billion in Output and $3.53 billion in Value-Added. Pulp, Paper, and Paperboard Mills generated $7.22 billion in Output and $2.26 billion in Value-Added with 8,115 jobs, a higher level of Output relative to Employment than most other industry groups. By comparison, Wood Furniture generated $2.67 billion in Output with 12,238 jobs, and Secondary Solid Wood Products generated $4.39 billion with 14,469 jobs, reflecting lower Output per job than the paper mill segment. Overall, the 2023 structure indicates that the majority of Employment and production is located in secondary processing and converting activities.

Table 3: Direct Economic Contributions in Wisconsin state, Industry Groups, 2023. †

Industries	Employment	Labor Income	Value-Added	Output
1.Forestry	788	$27,167	$30,905	$38,983
2.Logging	3,311	$221,233	$227,709	$241,275
3.Primary Solid Wood Products	4,216	$291,798	$547,942	$2,317,952
4.Secondary Solid Wood Products	14,469	$953,590	$1,287,227	$4,391,982
5.Wood Furniture	12,238	$807,009	$894,733	$2,674,116

6.Pulp, Paper, and Paperboard mills	8,115	$868,093	$2,258,835	$7,217,011
7.Secondary Paperboard and other Paper Products	18,306	$1,721,408	$3,526,926	$11,450,326

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

When supply-chain and induced effects are integrated (Table 4), Secondary Paperboard and Other Paper Products remains the primary economic engine of the state's forest sector, supporting 48,253 total jobs and $18.27 billion in total economic Output. However, the most notable leverage effect is found in the Pulp, Paper, and Paperboard Mills sector. Despite its smaller direct workforce, this sector possesses the highest Employment multiplier of the group at about 3.56 (28,853 total jobs supported by 8,115 direct jobs). This reflects deep backward linkages; because paper mills require vast and consistent volumes of wood fiber, energy, and transportation services, their continued operation sustains a disproportionately large network of loggers, truckers, and utility providers throughout the state economy.

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.

Table 4: Total Economic Contributions in Wisconsin state, Industry Groups, 2023. †

Industries	Employment	Labor Income	Value- Added	Output
1.Forestry	928	$35,587	$46,830	$66,329
2.Logging	4,430	$284,047	$342,350	$427,351
3.Primary Solid Wood Products	12,439	$846,783	$1,440,764	$3,837,452
4.Secondary Solid Wood Products	29,994	$1,984,725	$3,041,114	$7,696,219
5.Wood Furniture	21,711	$1,429,712	$1,987,100	$4,692,035
6.Pulp, Paper, and Paperboard mills	28,853	$2,324,040	$4,748,806	$11,859,157
7.Secondary Paperboard and other Paper Products	48,253	$3,777,621	$7,270,503	$18,272,583

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

Forestry

Economic Contribution of Forestry.

Table 5 presents the economic contribution of the Forestry industry. For Wisconsin, this group aggregates three primary activities: (1) All other crop farming or maple syrup production (Sector 10), (2) Forestry, forest products, and timber tract production, and (3) Support activities for forestry (Sector 19).

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

Economic contributions	Employment	Labor Income	Value-Added	Output
Direct	788	$27,167	$30,905	$38,983
Indirect	17	$1,277	$2,510	$5,443
Induced	123	$7,144	$13,415	$21,903
Total	**928**	**$35,587**	**$46,830**	**$66,329**
Multiplier	1.18	1.31	1.52	1.70

† 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 supported 788 jobs and generated around $39.0 million in direct Output. A distinct structural characteristic of this industry is its exceptionally high labor intensity compared to downstream manufacturing. The data indicates that about 69.7 percent

of the sector's gross Output is retained directly as a Labor Income ($27.2 million out of $39.0 million), and about 79.3 percent as a Value-Added. This suggests that the value created in forestry is derived primarily from human capital and service expertise rather than through heavy machinery or intermediate material inputs.

The Employment multiplier is approximately 1.18, meaning that for every 100 jobs in Forestry, around 18 additional jobs are supported elsewhere in the state. Decomposing this multiplier shows that the sector's economic ripples are driven largely by workforce spending (induced effects) rather than business supply chains.

- **Indirect Effect:** The sector generated minimal indirect impacts, supporting only 17 jobs and $5.4 million in Output. This reflects the biological nature of timber growing; unlike manufacturing industries that constantly purchase intermediate inputs, forestry operations have limited business-to-business purchasing requirements.
- **Induced Effect:** In contrast, the induced effect was significantly stronger, supporting 123 jobs and nearly $21.9 million in Output. Because a high percentage of the sector's Output flows directly to workers as Labor Income, the primary economic lift occurs when foresters and support workers spend their earnings within their local communities.

When these effects are combined, the Forestry industry contributed a total of 928 jobs, $66.3 million in Output, and $46.8 million in Value-Added to the Wisconsin economy in 2023. The total Output multiplier of 1.70 implies that every $100 of Output generated by forest management activities generates an additional $70 of economic activity throughout the state.

Trend Analysis: Forestry (2017–2023)

As illustrated in Figure 6, the Forestry industry in Wisconsin is characterized by cyclical volatility. Following a period of workforce expansion that peaked in 2019 (968 jobs), the sector has experienced a gradual realignment. By 2023, direct Employment settled at 788 workers, effectively returning to the 2017 baseline (778 jobs).

Output fluctuated within a relatively narrow range over the period, from $36.2 million (2018) to $44.9 million (2022). Output in 2023 was $39.0 million, representing 8.5 percent decrease relative to 2017 ($42.6 million). Because Employment and Output both declined between 2022 and 2023, Output per worker also decreased in the final year. Output per job was approximately $55 thousand in 2017, declining to about $50 thousand in 2023. Overall, the series indicates year-to-year variability in both Employment and Output, with 2023 returning near the 2017 Employment level but at a lower Output level.

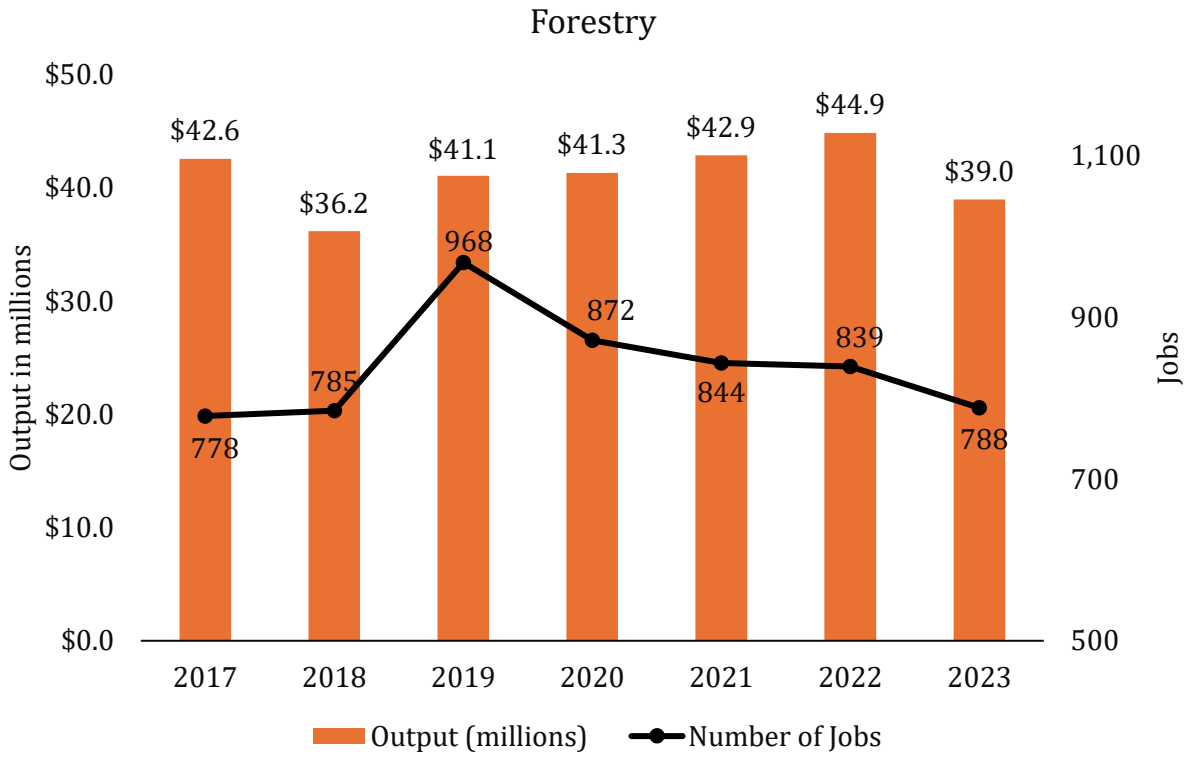

Figure 6: Trend in direct Employment and Output for the Forestry industry in Wisconsin, 2017-2023.

Logging

Economic Contribution of Logging.

Table 6 outlines the economic contributions of the Logging sector, which comprises establishments primarily engaged in cutting timber, transporting logs, and producing wood chips in the field. In 2023, this sector served as a vital source of rural Employment in Wisconsin, directly supporting 3,311 jobs. The industry generated $241.3 million in direct Output and contributed $227.7 million in Value-Added to the state's economy.

The multiplier analysis characterizes Logging as a sector driven by exceptionally high labor intensity rather than complex intermediate supply chains. At $177.0 million, Output from induced effects was drastically higher than the $9.1 million generated through indirect effects. This disparity is rooted in the sector's unique cost structure, where nearly 91.7 percent of Logging's direct Output is retained as Labor Income ($221.2 million out of $241.3 million). Because the majority of the industry's revenue is distributed as employee compensation and proprietor income, the subsequent re-spending of those earnings acts as a powerful accelerator for local economies. Conversely, the minimal Indirect effect reflects a supply chain limited

primarily to fuel, heavy equipment maintenance, and stumpage fees rather than processed manufacturing inputs.

When these direct, indirect, and induced impacts are aggregated, the Logging industry contributed a total of 4,430 jobs, $427.4 million in Output, and $342.4 million in Value-Added to the Wisconsin economy. The Output Multiplier is 1.77, indicating that for every $100 of commercial logging activity, an additional $77 of economic activity is stimulated elsewhere in the state.

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

Economic contributions	Employment	Labor Income	Value-Added	Output
Direct	3,311	$221,233	$227,709	$241,275
Indirect	120	$5,032	$6,240	$9,056
Induced	999	$57,783	$108,401	$177,020
Total	**4,430**	**$284,047**	**$342,350**	**$427,351**
Multiplier	1.34	1.28	1.50	1.77

† 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 Wisconsin experienced a severe and consistent structural contraction throughout the seven-year study period. Direct Employment followed a steady, year-over-year decline, falling from 5,207 jobs in 2017 to 3,311 in 2023. This represents a net loss of 1,896 jobs, or 36.4 percent of the sector's workforce, indicating a long-term consolidation of the labor market. Output also declined over the study period, though with considerable year-to-year variation. Output decreased sharply from $613.8 million in 2017 to $260.8 million in 2018, followed by further declines in 2019. Between 2020 and 2022, Output increased from $253.8 million to $328.2 million, despite continued reductions in Employment . In 2023, Output declined again to $241.3 million, remaining well below the 2017 level.

As a result of these opposing movements, labor productivity (Output per worker) fluctuated substantially. Productivity declined sharply between 2017 ($118 thousand per worker) and 2019 ($54 thousand per worker), increased during the 2020–2022 period as Output rose while Employment fell, and then declined again to approximately $73 thousand per worker in 2023. Overall, the data indicate that while temporary gains in Output per worker occurred during the middle of the period, the Logging industry operated at a smaller Employment and Output scale

by 2023 than at the beginning of the study period.

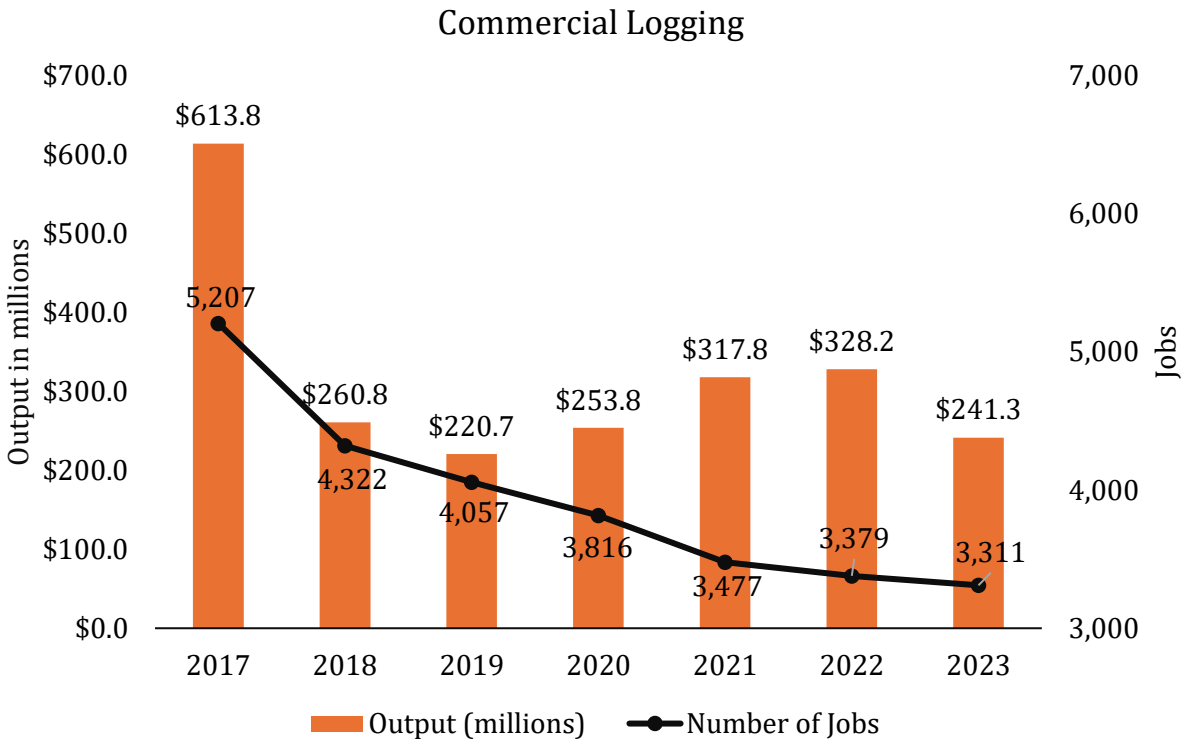

Figure 7: Trend in direct Employment and Output for the Logging industry in Wisconsin, 2017-2023.

Primary Solid Wood Products

Economic Contribution of Primary Solid Wood Products.

Table 7 presents the economic contributions of the Primary Solid Wood Products industry. This sector encompasses a diverse range of manufacturing activities, including wood-based electric power generation (biomass), sawmills, wood preservation, veneer and plywood manufacturing, and reconstituted wood product industries. In 2023, this manufacturing sector directly provided 4,216 jobs and generated $2.32 billion in direct Output. This sector in Wisconsin demonstrates robust capital efficiency, contributing approximately $548 million in direct Value-Added, which reflects substantial economic wealth creation as raw timber is processed into construction-grade lumber, structural panels, and treated wood products.

The Primary Solid Wood Products industry exhibits profound backward linkages within the Wisconsin forest economy, acting as a critical demand driver for upstream operations. Unlike extraction sectors where economic ripples are often driven by household spending, this sector's impact is dominated by deep supply chain expenditures. The Indirect Employment effect supports 5,293 jobs, a figure that exceeds the sector's own direct workforce of 4,216. This

results in a robust Employment Multiplier of 2.95. Essentially, for every 100 direct jobs in primary wood manufacturing, an additional 195 jobs are supported elsewhere in the state economy. This underscores the sector's function as a "keystone" industry; its operational demands sustain a vast network of loggers, truckers, and maintenance contractors who rely on these facilities as their primary market.

When aggregating direct, indirect, and induced effects, the Primary Solid Wood Products industry contributed a total of 12,439 jobs, $3.84 billion in Output, and $1.44 billion in Value-Added to the state economy in 2023. By supporting 12,439 jobs statewide, this industry anchors the regional forest value chain, effectively transforming natural resources into widespread economic activity across Wisconsin's rural and industrial communities.

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

Economic contributions	Employment	Labor Income	Value-Added	Output
Direct	4,216	$291,798	$547,942	$2,317,952
Indirect	5,293	$385,310	$574,218	$999,455
Induced	2,930	$169,675	$318,604	$520,046
Total	**12,439**	**$846,783**	**$1,440,764**	**$3,837,452**
Multiplier	2.95	2.90	2.63	1.66

† 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). Figure 8 summarizes Employment and Output trends for the Primary Solid Wood Products industry in Wisconsin from 2017 through 2023. Over the study period, Employment declined from 4,564 jobs in 2017 to 4,216 jobs in 2023, a net decrease of 348 jobs, or 7.6 percent. Employment increased modestly in 2018, but trended downward thereafter, reaching the lowest level in 2023. The modest increase in 2018 may partly reflect a methodological change rather than a true increase in employment, as Electric Power Generation, Biomass was treated as a partial sector in 2017 but as a full sector in the 2018 analysis. For reference, in 2017 this sector accounted for 215.35 jobs in total, of which only about 126 jobs were attributed to the wood-based component.

Output exhibited year-to-year variation but increased overall. Output rose from $2.04 billion in 2017 to $2.32 billion in 2023, representing an increase of approximately 13.5 percent. Output reached $2.25 billion in 2020, declined to $2.09 billion in 2022, and then increased to a period high in 2023. Between 2022 and 2023, Output increased by approximately $231 million, or 11.1 percent, while Employment decreased by 98 jobs, or 2.3 percent. These trends resulted in higher labor productivity over time. Average Output per worker increased from about $448

thousand in 2017 to about $550 thousand in 2023, an increase of around 22.8 percent. Overall, the data indicate that Output growth occurred alongside a modest reduction in Employment , contributing to higher Output per worker by the end of the study period.

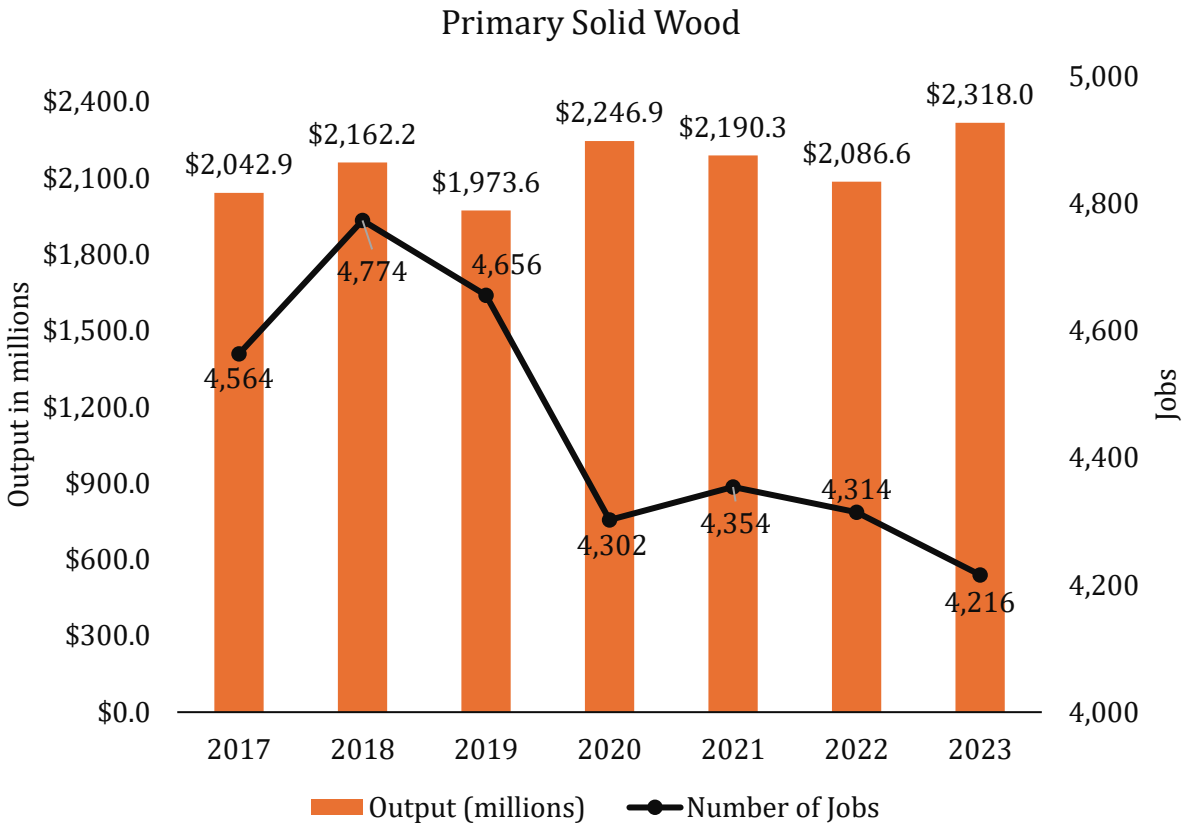

Figure 8: Trend in direct Employment and Output for the Primary Solid Wood Products industry in *Wisconsin*, 2017-2023.

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 manufacturing, millwork and flooring, wood container and pallet manufacturing, prefabricated wood building manufacturing, and miscellaneous wood product manufacturing. In 2023, this sector stood as the largest direct employer within the solid wood manufacturing category, directly providing 14,469 jobs and generating $4.39 billion in direct Output.

The Secondary Solid Wood Products industry exhibits an Employment multiplier of approximately 2.07, indicating that for every 100 direct jobs, an additional 107 jobs are

supported elsewhere in Wisconsin through indirect and induced effects. While this represents a substantial level of economic linkage, it is notably lower than the Primary Solid Wood Products industry, which has an Employment multiplier of approximately 2.95. In the primary sector, indirect Employment (5,293 jobs) exceeds the direct workforce (4,216 jobs), reflecting strong upstream supply-chain integration and a high reliance on locally sourced inputs and services. In contrast, the secondary sector's indirect Employment effect (8,683 jobs) is significant but smaller relative to its much larger direct workforce (14,469 jobs). This difference suggests that secondary manufacturers rely proportionally less on in-state upstream suppliers per unit of Employment , resulting in a smaller indirect Employment response. As a result, a greater share of the secondary sector's total Employment impact is driven by direct operations, compared to upstream supply-chain activity. Overall, the comparison highlights structural differences in how primary and secondary solid wood industries engage with Wisconsin's broader economy.

When direct, indirect, and induced effects are combined, the Secondary Solid Wood Products industry supports 29,994 jobs and generates approximately $7.70 billion in total Output. The industry also contributes $3.04 billion in total Value-Added, indicating a substantial in-state contribution to gross state product. Relative to primary processing, the secondary segment shows a higher Value-Added share of Output, which is consistent with additional processing and product transformation activities. In 2023, direct Value-Added represented approximately 29.3 percent of direct Output in the secondary sector, compared with 23.6 percent in the Primary Solid Wood Products sector (Table 7).

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

Economic contributions	Employment	Labor Income	Value-Added	Output
Direct	14,469	$953,590	$1,287,227	$4,391,982
Indirect	8,683	$634,827	$1,009,442	$2,089,498
Induced	6,843	$396,308	$744,445	$1,214,739
Total	**29,994**	**$1,984,725**	**$3,041,114**	**$7,696,219**
Multiplier	2.07	2.08	2.36	1.75

† 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).

Figure 9 summarizes Employment , and Output trends for Wisconsin's Secondary Solid Wood Products industry over 2017–2023. Employment remained relatively stable across the period, declining from 14,911 jobs in 2017 to 14,469 jobs in 2023, a net decrease of 442 jobs, or 3.0 percent. Employment reached its lowest level in 2020 (14,053 jobs) and then recovered toward the mid-14,000 range in subsequent years.

Output increased over the study period, rising from $3.81 billion in 2017 to $4.39 billion in 2023, an increase of about 15.2 percent. Output peaked in 2020 ($4.08 billion), declined to $3.76 billion in 2021, and then increased again, reaching the highest level in 2023. Between 2022 and 2023, Output increased from $3.85 billion to $4.39 billion, representing an increase of approximately 14.0 percent, while Employment decreased by 187 jobs, or 1.3 percent. Consistent with these trends, labor productivity (Output per worker) increased over time. Output per worker rose from approximately 256 thousand dollars per worker in 2017 to about 304 thousand dollars per worker in 2023, an increase of 18.8 percent, where the largest increase in Output per worker occurred in the final year.

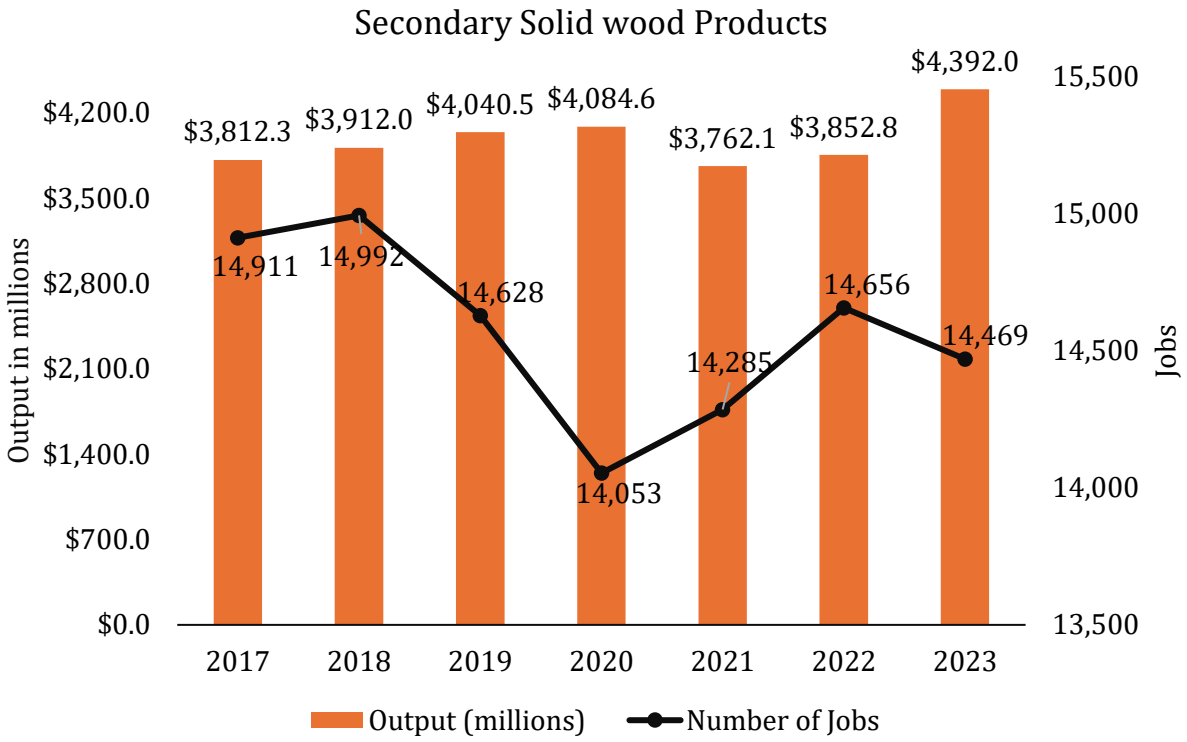

Figure 9: Trend in direct Employment and Output for the Secondary Solid Wood Products industry in Wisconsin, 2017-2023.

Wood Furniture

Economic Contribution of Wood Furniture.

Table 9 outlines 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, custom architectural woodwork, and Showcase, partition, shelving, and locker manufacturing. In 2023, the sector directly employed

12,238 workers and generated approximately $2.67 billion in direct Output, along with $894.7 million in direct Value-Added and $807.0 million in direct Labor Income (2023 dollars).

Multiplier effects indicate that the industry supports substantial additional activity beyond direct operations. Indirect effects accounted for 4,547 jobs, $1.14 billion in Output, and $556.5 million in Value-Added, reflecting demand for intermediate inputs and supplier services. Induced effects contributed an additional 4,925 jobs, $874.7 million in Output, and $535.9 million in Value-Added, associated with household spending supported by direct and indirect Employment . In aggregate, the Wood Furniture industry supported 21,711 jobs, generated $4.69 billion in total Output, and contributed $1.99 billion in total Value-Added to the Wisconsin economy.

The implied Employment multiplier is approximately 1.77, meaning that for every 100 direct jobs, an additional 77 jobs are supported elsewhere in the state economy. The distribution of multiplier components is relatively balanced, with induced Employment (4,925 jobs) slightly exceeding indirect Employment (4,547 jobs). Direct Labor Income equals approximately 30 percent of direct Output, indicating that labor compensation represents a meaningful share of the sector's direct production value relative to many upstream processing segments.

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

Economic contributions	Employment	Labor Income	Value-Added	Output
Direct	12,238	$807,009	$894,733	$2,674,116
Indirect	4,547	$337,399	$556,457	$1,143,184
Induced	4,925	$285,304	$535,910	$874,736
Total	**21,711**	**$1,429,712**	**$1,987,100**	**$4,692,035**
Multiplier	1.77	1.77	2.22	1.75

† 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 illustrated in Figure 10, the Wood Furniture industry in Wisconsin displays a trajectory defined by a distinct cycle of expansion followed by a gradual contraction. Employment increased from 12,071 jobs in 2017 to a peak of 13,654 jobs in 2019, then declined in subsequent years. By 2023, Employment totaled 12,238 jobs, which is slightly higher than the 2017 level (an increase of 167 jobs, or 1.4 percent).

Output increased early in the period, rising from $2.73 billion in 2017 to $3.24 billion in 2018, and then declined over time. By 2023, Output was $2.67 billion, which is approximately 17.5 percent below the 2018 peak and about 1.9 percent below the 2017 baseline. Output declined

in most years after 2018, with modest variation around the $2.7–$3.0 billion range. Consistent with these trends, labor productivity (Output per worker) showed a slight decline over the study period. Output per worker was about 226 thousand dollars per worker in 2017, increased to 238 thousand in 2018, and then decreased to 219 thousand in 2023. Overall, the data indicate that the industry returned to near-baseline Employment levels by 2023, while Output and Output per worker were lower than at the start of the period.

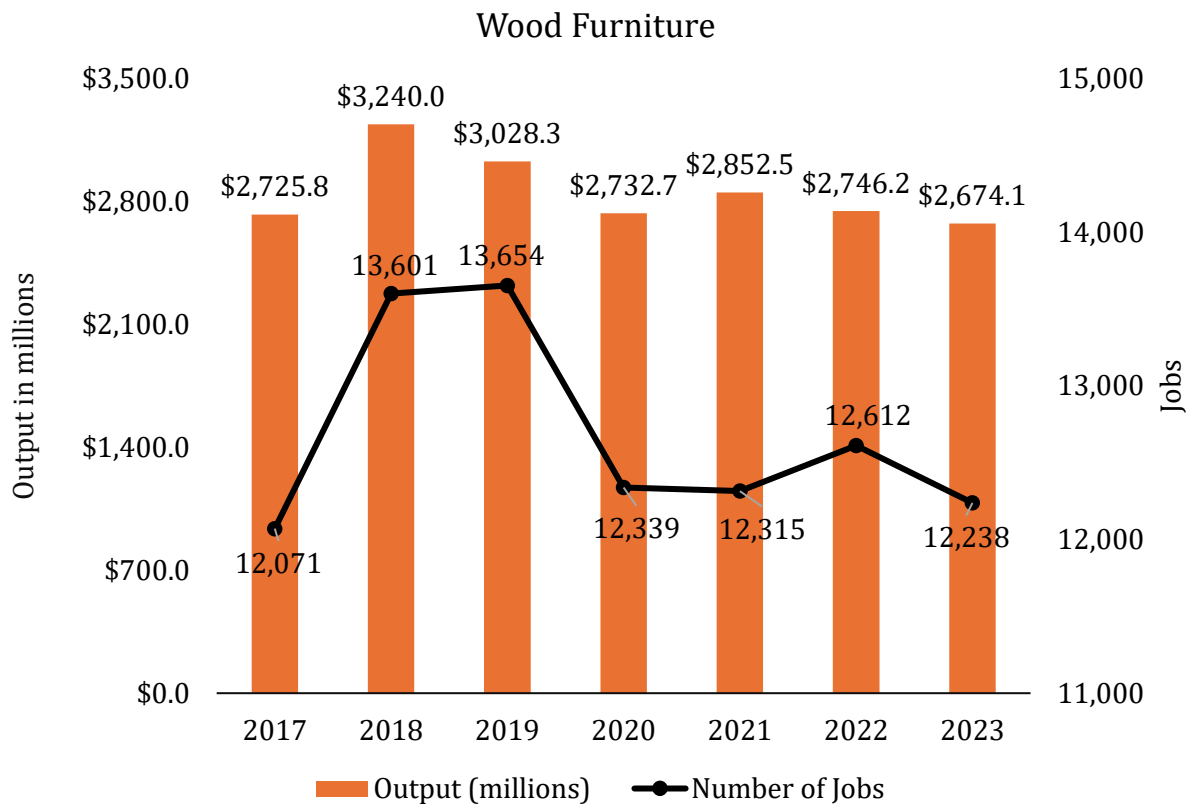

Figure 10: Trend in direct Employment and Output for the Wood Furniture industry in Wisconsin, 2017-2023.

Pulp, Paper, and Paperboard Mills

Economic Contribution of Pulp, Paper, and Paperboard Mills.

Table 10 details the economic contribution of the Pulp, Paper, and Paperboard Mills industry. In 2023, the sector directly provided 8,115 jobs and generated $7.22 billion in direct Output. Direct Value-Added totaled $2.26 billion, while direct Labor Income was $868.1 million, which shows that a substantial portion of direct Value-Added came from non-labor-income components..

Multiplier effects indicate that the industry supports sizable additional activity through supply-chain purchases and household spending. Indirect effects accounted for 12,651 jobs, $3.21 billion in Output, and $1.61 billion in Value-Added. Induced effects contributed 8,087 jobs, $1.43 billion in Output, and $879.6 million in Value-Added. In total, the industry supported 28,853 jobs, generated approximately $11.86 billion in total Output, and contributed $4.75 billion in total Value-Added statewide.

The implied Employment multiplier is 3.56, meaning that every 100 direct mill jobs support an additional 256 jobs elsewhere in Wisconsin; this is the highest Employment multiplier among the seven forest industry groups. At the same time, the sector's Output multiplier is 1.64, ranking sixth among the seven groups. This divergence shows differences in how Employment and Output propagate through the regional economy. The sector's production process generates substantial labor and supplier demand, supporting a large number of jobs, while additional Output generated through subsequent rounds of inter-industry transactions is more limited relative to the scale of direct mill production.

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

Economic contributions	Employment	Labor Income	Value-Added	Output
Direct	8,115	$868,093	$2,258,835	$7,217,011
Indirect	12,651	$987,650	$1,610,411	$3,207,161
Induced	8,087	$468,298	$879,560	$1,434,985
Total	**28,853**	**$2,324,040**	**$4,748,806**	**$11,859,157**
Multiplier	3.56	2.68	2.10	1.64

† 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)

Figure 11 illustrates Employment , and Output trends for Wisconsin's Pulp, Paper, and Paperboard Mills industry from 2017 through 2023. Over this period, the industry experienced a sustained decline in Employment , falling from 11,233 jobs in 2017 to 8,115 jobs in 2023, a net decrease of 3,118 jobs, or 27.8 percent. Employment reached its lowest level in 2022 (7,841 jobs) before increasing in 2023.

Output followed a similar downward pattern. Output declined from $10.73 billion in 2017 to $6.75 billion in 2022, and then increased to $7.22 billion in 2023. Relative to 2017, Output in 2023 remained lower by about 32.8 percent, but the 2023 increase represents a reversal of the multi-year decline observed through 2022. Labor productivity, measured as Output per worker, remained high throughout the period but declined in recent years. Productivity was

approximately 955 thousand dollars per worker in 2017, increased to 991 thousand in 2020, and then declined to 861 thousand in 2022 before rising to 889 thousand in 2023. Overall, the series shows a reduction in the sector's Employment and Output scale between 2017 and 2023, with modest improvement in both Output and productivity in the final year.

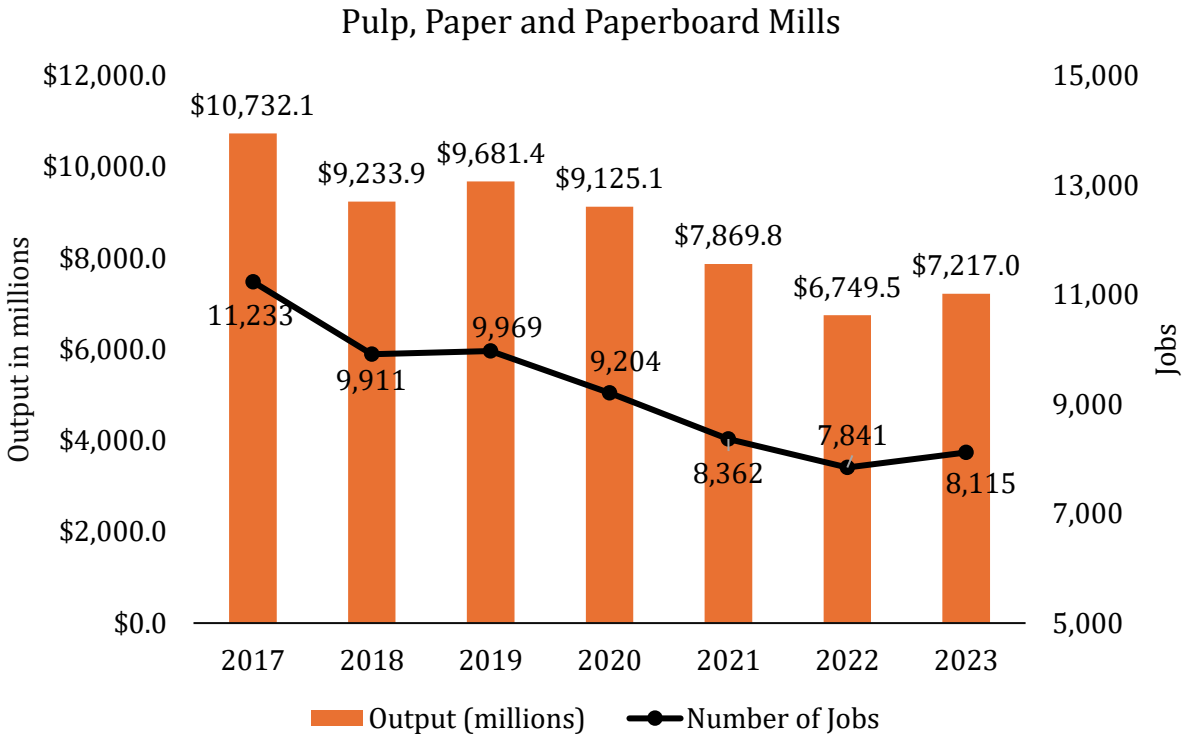

Figure 11: Trend in direct Employment and Output for the Pulp, Paper, and Paperboard Mills industry in Wisconsin, 2017-2023.

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 is composed of "converters" that manufacture finished goods from purchased paper, paperboard, or recycled materials, including products like paperboard containers, paper bags, coated paper, stationery, sanitary, and other specialized paper products. In Wisconsin, this sector is a key component of the forest economy, directly providing 18,306 jobs and generating over $11.45 billion in direct Output in 2023.

The sector exhibits a robust Employment Multiplier of 2.64, meaning that for every 100 direct jobs in paper converting, an additional 164 jobs are supported throughout the state economy. A closer look of the multiplier components reveals a distinct structural feature: the Indirect Employment effect (16,911 jobs) is nearly as large as the sector's Direct Employment (18,306

jobs). This substantial indirect impact suggests that Wisconsin's converting facilities maintain strong supply chain linkages. These facilities act as massive demand drivers for the state's primary mills, requiring high volumes of intermediate paper and paperboard, alongside specialized logistics and packaging services, to sustain operations.

Furthermore, the Induced Employment effect (13,036 jobs) highlights the dual nature of this sector's leverage: it drives both industrial purchasing and significant local household spending. This is consistent with the sector's structure as a large-scale manufacturing operation that requires both consistent capital inputs and a sizable, steady workforce.

In terms of total contribution, the Secondary Paperboard and Other Paper Products industry supports a total of 48,253 jobs and contributes $18.27 billion in total economic Output. By generating $7.27 billion in total Value-Added, this converting sector serves a vital role by transforming the Output of the capital-intensive Pulp and Paperboard 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 Wisconsin, 2023. †

Economic contributions	Employment	Labor Income	Value-Added	Output
Direct	18,306	$1,721,408	$3,526,926	$11,450,326
Indirect	16,911	$1,301,346	$2,226,913	$4,509,830
Induced	13,036	$754,867	$1,516,665	$2,312,426
Total	**48,253**	**$3,777,621**	**$7,270,503**	**$18,272,583**
Multiplier	2.64	2.19	2.06	1.60

† 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)

Figure 12 summarizes Employment , and Output trends for Wisconsin's Secondary Paperboard and Other Paper Products industry from 2017 through 2023. As the state's largest direct employer in the forest sector, the industry maintained a consistent labor force, fluctuating narrowly between 18,300 and 19,300 jobs throughout the seven-year period. Employment declined from 19,029 jobs in 2017 to 18,306 jobs in 2023, a net decrease of 723 jobs, or 3.8 percent.

Financially, the sector experienced a distinct cycle of expansion and correction. Real Industry Output grew steadily through the pandemic era, peaking at $13.26 billion in 2021. However, this momentum reversed sharply in the post-pandemic period. Between 2021 and 2023, Output contracted by approximately 13.6 percent, falling to $11.45 billion. Labor productivity (Output

per worker) increased during the 2017–2021 period, rising from 616 thousand dollars per worker in 2017 to 707 thousand in 2020 and 698 thousand in 2021. Productivity then declined to 627 thousand in 2022 and 626 thousand in 2023. Overall, the series indicates stable Employment with a mid-period increase in Output and Output per worker followed by a decline in both measures in the final two years.

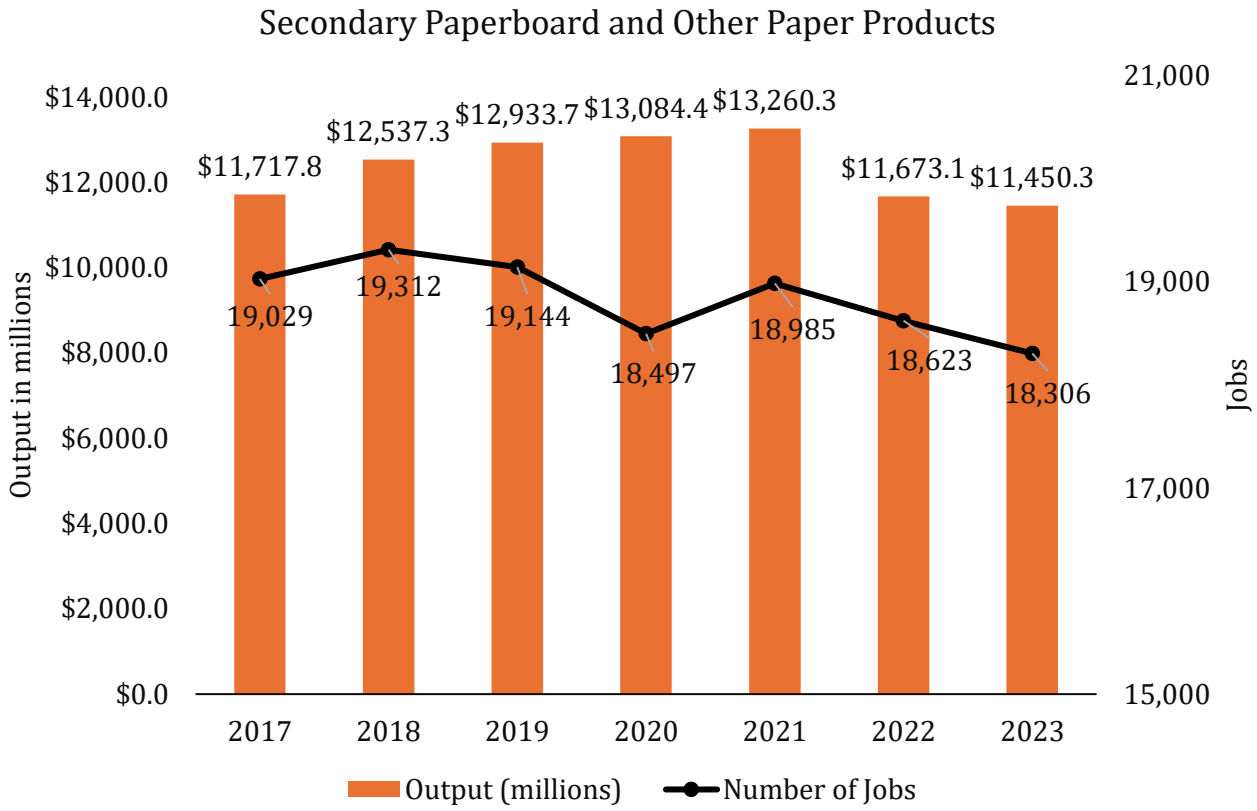

Figure 12: Trend in direct Employment and Output for the Secondary Paperboard and Other Paper Products industry in Wisconsin, 2017-2023.

Top Forest Product Sectors

Wisconsin's forest-products sector is represented by 32 IMPLAN industries, yet the direct economic activity in 2023 is highly concentrated within the paper manufacturing and converting cluster. As shown in Table 12, Paper Mills emerged as the central financial anchor of the state's forest economy, ranking first in direct Output ($6.44 billion), Value-Added ($2.04 billion), and Labor Income ($778.7 million). This concentration highlights Wisconsin's longstanding specialization in large-scale paper production and its role as a major producer of paper and paperboard products.

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

Rank	Employment	Labor Income	Value-Added	Output
1	Paperboard container manufacturing (7,630)	Paper mills ($778,673)	Paper mills ($2,038,613)	Paper mills ($6,441,328)
2	Paper mills (7,286)	Paperboard container manufacturing ($725,889)	Paperboard container manufacturing ($1,267,908)	Paperboard container manufacturing ($4,696,170)
3	Paper bag and coated and treated paper manufacturing (5,289)	Paper bag and coated and treated paper manufacturing ($490,060)	Sanitary paper product manufacturing ($971,450)	Sanitary paper product manufacturing ($2,971,143)
4	Wood windows and door manufacturing (4,964)	Wood windows and door manufacturing ($321,970)	Paper bag and coated and treated paper manufacturing ($916,420)	Paper bag and coated and treated paper manufacturing ($2,733,881)
5	Commercial logging (3,311)	Sanitary paper product	Wood windows and door	Wood windows and door

	manufacturing ($314,951)	manufacturing ($420,147)	manufacturing ($1,429,984)

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

By contrast, the largest direct employer is Paperboard container manufacturing with 7,630 jobs, followed closely by Paper mills (7,286 jobs) and Paper bag and coated and treated paper manufacturing (5,289 jobs). The table also shows that some industries have high financial contributions relative to Employment . Sanitary paper product manufacturing ranks third in both direct Output ($2.97 billion) and direct Value-Added ($971.5 million) but does not appear among the top five employers, indicating a high level of Output and value generation per worker relative to other industries. In the solid wood segment, Wood windows and door manufacturing ranks fourth in Employment (4,964 jobs) and fifth in Output ($1.43 billion), while Commercial logging appears in the top five for Employment (3,311 jobs) but not in the top five for Output or Value-Added, reflecting a different contribution profile focused more on Employment than on total production value.

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

Excluding the forest-products industries themselves, the Wisconsin economy included 466 other IMPLAN sectors in 2023. The forest sector's economic reach is extensive, supporting at least one job in 287 of these industries and at least ten jobs in 182 of them. Beyond the 61,442 direct jobs, the sector supported an additional 72,580 indirect and induced jobs across the state's economy. These additional positions, generated through supply chain purchases and workforce household spending, are heavily concentrated in logistics, wholesale trade, healthcare, and corporate services. Table 13 highlights the top ten non-forest industries most heavily impacted by this economic activity in 2023. Together, these ten sectors account for 25,702 jobs, representing approximately 35.4 percent of all indirect and induced Employment generated by the forest economy.

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

Industries	Number of Jobs
Warehousing and storage	4,103
Truck transportation	3,408
Wholesale - Other durable goods merchant wholesalers	3,066
Other real estate	2,610
Management of companies and enterprises	2,324
Hospitals	2,230
Full-service restaurants	2,108
Employment services	2,074
Wholesale - Other nondurable goods merchant wholesalers	1,939
Couriers and messengers	1,840
Total	**25,702**

The composition of these sectors illustrates the specific mechanisms through which the forest industry drives the wider Wisconsin economy:

- **Logistics and Distribution:** The strongest linkages are found in the movement and storage of physical goods. Warehousing and storage ranks as the largest impacted sector, with 4,103 jobs supported by the forest industry. When combined with Truck transportation (3,408 jobs), Wholesale - Other durable goods (3,066 jobs), Wholesale - Other nondurable goods (1,939 jobs), and Couriers and messengers (1,840 jobs), it is evident that the forest sector acts as one of the primary backbones for the state's supply chain infrastructure. The industry requires a large, reliable network to move raw timber, store intermediate paper products, and distribute finished goods to market, thereby sustaining more than 14,356 jobs in this logistics and trade cluster alone.

- **Corporate and Business Support:** A significant, often overlooked impact is the sector’s demand for high-level business services. Management of companies and enterprises ranks fifth with 2,324 jobs, while Employment services accounts for 2,074 jobs. This shows that Wisconsin’s forest product firms, particularly large paper manufacturers, are substantial consumers of corporate support, relying on external firms for headquarters management, administrative oversight, and other services to maintain complex operations.

- **Induced Household Spending:** The prominence of Other real estate (2,610 jobs), Hospitals (2,230 jobs), and Full-service restaurants (2,108 jobs) illustrates the "induced" power of the forest workforce. These sectors are sustained not by mill or manufacturers supply chains purchases, but by the wages and salaries, benefits, and other income spent by forest-sector employees in their local communities. The high ranking of real

estate and healthcare suggests that the income earned by loggers, mill workers, and manufacturers serves as a critical revenue stream for maintaining local housing markets and essential community healthcare services.

In terms of economic Output as presented in Table 14, the top ten non-forest industries supported by forest-sector activity generated a combined $5.96 billion in 2023. The dominant category involves the wholesale distribution of goods, reflecting the forest industry's reliance on large-scale trade to move high volumes of finished wood and paper products. The leading supported sector is Wholesale - Other durable goods merchant wholesalers, generating over $991 million in Output. When combined with Wholesale - Other nondurable goods merchant wholesalers ($757.5 million), the wholesale trade sector alone accounts for about $1.75 billion in economic activity supported by the forest sector.

Table 14: Top Ten Industries impacted by Wisconsin State's Forest Products Industries in terms of Output production in 2023. †

Industries	Output
Wholesale - Other durable goods merchant wholesalers	$991,164
Truck transportation	$773,873
Wholesale - Other nondurable goods merchant wholesalers	$757,497
Owner-occupied housing	$687,084
Management of companies and enterprises	$584,999
Other real estate	$514,909
Hospitals	$451,312
Electric power transmission and distribution	$416,818
Warehousing and storage	$400,349
Monetary authorities and depository credit intermediation	$385,306
Total	**$5,963,312**

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

The rankings also highlight the substantial physical and corporate infrastructure required to sustain the forest economy. Truck transportation ranks second overall, generating $773.9 million, which underscores the critical role of freight logistics in the supply chain. Additionally, Electric power transmission and distribution ranks eighth, contributing $416.8 million, a figure driven by the immense base-load electricity consumption of the state's mills and processing facilities.

Finally, the presence of Owner-occupied housing as the fourth-largest supported sector ($687.1 million) serves as a significant indicator of the induced effect. In economic modeling, "Owner-occupied housing" represents the imputed value of homeownership. Its high ranking

demonstrates that forest sector jobs sustain high levels of homeownership and household wealth in Wisconsin. This economic stability further supports $514.9 million in Output for Other real estate, $451.3 million for Hospitals, and $385.3 million for Monetary authorities (banking), which reflects the essential spending power of the forest workforce within their local communities.

Importance of the Forest Products Industries in Context

Natural Resources and Agricultural Industries

To contextualize the forest economy within Wisconsin's broader natural resource base, the table 15 compares the direct contributions of four major sectors in 2023: Forest Products, Agricultural Production, Mining (including oil and gas), and Commercial Fishing, Hunting, and Trapping (all values in 2023 dollars). The results show a clear distinction between sectors that dominate Employment and those that dominate production value. Agricultural production is the largest employer, supporting 97,392 jobs (about 57.9 percent of total Employment across the four sectors). Forest Products ranks second with 61,442 jobs (about 36.5 percent of the total). Despite a smaller workforce than agriculture, Forest Products generates the largest direct Output ($28.33 billion) and Value-Added ($8.77 billion), exceeding agriculture's $16.22 billion in Output and $7.01 billion in Value-Added. Labor Income follows a similar pattern: Forest Products generated $4.89 billion, compared to $4.41 billion for agriculture, indicating higher Labor Income in aggregate despite fewer workers.

Trend measures relative to 2017 indicate differing trajectories across sectors. Forest Products Employment declined by 9.4 percent and Output declined by 10.6 percent, while Value-Added increased by 1.6 percent, implying higher Value-Added relative to the sector's Employment and Output base. Mining expanded across all measures, with Employment increasing by 18.8 percent and Output increasing by 163.3 percent. Agriculture showed a smaller Employment decline (4.4 percent) alongside increases in Labor Income (14.6 percent) and Value-Added (15.7 percent), and relatively stable Output (1.1 percent increase). Commercial fishing and hunting remains small in absolute scale but shows large percentage changes due to its small baseline. Overall, the data shows that Wisconsin's natural resource base is Employment -led by agriculture, while Forest Products accounts for the largest share of industrial Output and Value-Added among the sectors shown.

Table 15: Natural Resources and Agricultural Production Industries in Wisconsin state, 2023. †

Industry	Employment	Δ2017††	Labor Income	Δ2017††	Value-Added	Δ 2017††	Output	Δ 2017††
1. Forest Products	61,442	-9.4%	$4,890,298	-11.5%	$8,774,277	1.6%	$28,331,646	-10.6%
2. Commercial fishing, hunting & trapping	1,308	16.9%	$4,293	107.1%	$53,975	438.6%	$59,834	376.6%
3. Mining, and oil & gas production	8,186	18.8%	$957,051	163.7%	$3,968,608	76.8%	$7,763,656	163.3%
4. Agriculture production (plant crops and animals)	97,392	-4.4%	$4,405,228	14.6%	$7,005,323	15.7%	$16,216,211	1.1%
Total	**168,328**	**-5.2%**	**$10,256,869**	**5.4%**	**$19,802,184**	**16.8%**	**$52,371,347**	**3.3%**

† 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 Wisconsin's industrial base, Table 16 compares "Forest Products Manufacturing" 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). Forest products manufacturing accounts for 93 percent of total forest-sector Employment , 95 percent of Labor Income, 97 percent of Value-Added, and 99 percent of total forest-sector Output. The data reveals that the forest sector is a top-tier industrial pillar, functioning as one of the state's four dominant manufacturing engines alongside Food, Fabricated Metal, and Machinery.

In terms of scale, Wisconsin's manufacturing landscape is defined by these "Big Four" sectors. Forest Products Manufacturing ranks fourth in direct Employment , supporting 57,253 jobs. This accounts for 12.0 percent of the state's total manufacturing workforce (477,966 jobs). While it trails the labor-volume leaders, Food Manufacturing (84,005 jobs), Fabricated Metal (76,081 jobs), and Machinery (66,232 jobs), it maintains a significant lead over the next tier of industries, employing nearly double the workforce of Plastics and Rubber Products (33,899 jobs).

However, a divergence between labor and financial contribution reveals the sector's high Output efficiency. Despite ranking fourth in Employment , Forest Products Manufacturing climbs to third in Direct Output ($27.95 billion), surpassing the Fabricated Metal sector ($25.31 billion). This is a critical technical distinction: the forest sector generates approximately $2.6 billion more in gross Output than the metal fabrication sector, despite employing nearly 19,000 fewer workers. Forest Products also contributed $8.47 billion in Value-Added and $4.63 billion in Labor Income, ranking fourth on both measures. On a per-worker basis, Forest Products generated approximately 488 thousand dollars of Output per job, which is higher than Fabricated Metal (approximately 333 thousand dollars per job) and Printing (211 thousand dollars per job), and lower than Machinery Manufacturing (513 thousand dollars per job) and Food Manufacturing (about 737 thousand dollars per job).

Table 16: Manufacturing Industries in Wisconsin state, 2023. †

Manufacturing Industries	Employment	Labor Income	Value-Added	Output
Food	84,005	$6,714,385	$11,053,378	$61,902,401
Fabricated Metal	76,081	$6,239,282	$8,809,476	$25,313,485
Machinery	66,232	$6,457,048	$10,959,563	$33,992,405
Forest Products	57,253	$4,631,050	$8,473,734	$27,952,775
Plastics and Rubber Products	33,899	$2,668,024	$3,862,424	$13,992,559
Transportation Equipment	25,446	$2,281,596	$4,708,544	$16,375,056
Printing	24,686	$1,771,098	$2,641,730	$5,204,118
Electrical Equipment	23,316	$2,585,682	$3,827,431	$11,174,971
Chemical	19,791	$2,390,889	$5,452,721	$20,537,654
Miscellaneous	18,279	$1,431,889	$2,177,564	$5,546,491
Computer and Electronic Product	15,165	$1,620,597	$2,606,890	$8,437,286
Primary Metal	14,053	$1,304,677	$1,687,467	$6,655,010
Nonmetallic Mineral Product	10,300	$866,352	$1,632,564	$4,189,983
Beverage and Tobacco Product	6,688	$483,487	$963,335	$2,896,527
Textiles and Apparel	5,307	$289,173	$407,252	$1,338,428
Petroleum and Coal	535	$120,900	$332,343	$2,198,604
Total	**481,038**	**$41,856,131**	**$69,596,416**	**$247,707,752**
Compared to 2017	**0.2%**	**-1.3%**	**-0.9%**	**0.1%**

† 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 Wisconsin's industrial base and a vital engine for its rural and industrial economy. In 2023, the Forest Products sector directly provided 61,442 jobs and generated $28.33 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 134,021 jobs and $43.60 billion in total Output. This indicates a robust Employment multiplier of 2.18. Essentially, for every 100 direct jobs in the forest sector, an additional 118 jobs are supported elsewhere in the Wisconsin economy, which reflects the deep integration of forest industries with local logistics, utilities, and corporate service sectors.

The industry exhibits a distinct structural emphasis on Value-Added manufacturing rather than raw extraction. The Secondary Paperboard and Other Paper Products group stands as the primary Employment driver, supporting 18,306 direct jobs. Further, despite providing fewer workers than the secondary converting sectors, the Pulp, Paper, and Paperboard Mills sector remains a capital-intensive powerhouse. It generated over $7.21 billion in direct Output with 8,115 workers, highlighting the high automation and value-generation capacity of the state's mills. When analyzing the specific, unaggregated industries, Paperboard container manufacturing emerges as a significant subsector, ranking first in Employment (7,630 jobs). However, Paper mills retained the undisputed financial lead, ranking first in rest of the three parameters: Labor-Income ($779 million), Value-Added ($2.04 billion) and Output ($6.44 billion).

Within Wisconsin's natural resource base, agriculture remains the largest employer, but forest products industry was the largest generator of direct industrial value, producing $28.33 billion in Output and $8.77 billion in Value-Added in 2023. Since 2017, forest products Employment declined by 9.4 percent and Output declined by 10.6 percent, while Value-Added increased by 1.6 percent, showing higher value creation relative to a smaller Employment base. Within manufacturing, forest products industry was a leading industry, ranking fourth in Employment (57,253 jobs; 12.0 percent of statewide manufacturing Employment) and third in Output ($27.95 billion), exceeding fabricated metal manufacturing in total production. Overall, the sector transforms locally sourced renewable inputs into higher-value manufactured products, including construction materials, paper packaging, and consumer goods, supporting Employment within Wisconsin while generating significant out-of-state sales. This underscores its continuing role in the state's manufacturing and resource-based economy.

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Appendix A: Forest Products Industries Groupings and IMPLAN Sectors

A1: Forestry Industry Grouping and IMPLAN Sectors

IMPLAN 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.

A2: Logging Industry Grouping and IMPLAN Sector

IMPLAN Industry Code	Industry name
16	Commercial logging

A3: Primary Solid Wood Products Industry Grouping and IMPLAN Sectors

IMPLAN 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.

IMPLAN 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.

IMPLAN 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.

IMPLAN 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.

IMPLAN 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	310	$4,658	$7,791	$14,516
Forestry, forest products, and timber tract production	42	$3,066	$3,241	$3,650
Support activities for agriculture and forestry	436	$19,443	$19,873	$20,817
Total	**788**	**$27,167**	**$30,905**	**$38,983**

† 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	3,311	$221,233	$227,709	$241,275
Total	**3,311**	**$221,233**	**$227,709**	**$241,275**

† 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	90	$10,847	$41,929	$98,612
Sawmills	2,109	$128,046	$189,100	$991,449
Wood preservation	262	$24,462	$55,949	$227,200
Veneer and plywood manufacturing	1,045	$63,830	$103,032	$368,823
Reconstituted wood product manufacturing	710	$64,613	$157,932	$631,867
Total	**4,216**	**$291,798**	**$547,942**	**$2,317,952**

† 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 Labor Income	Value-Added	Output
Engineered wood member and truss manufacturing	1,799	$137,467	$186,951	$719,650
Wood windows and door manufacturing	4,964	$321,970	$420,147	$1,429,984
Cut stock, resawing lumber, and planing	379	$23,495	$38,053	$141,195
Other millwork, including flooring	1,725	$112,556	$169,174	$540,357
Wood container and pallet manufacturing	2,741	$166,524	$206,342	$680,382
Manufactured home (mobile home) manufacturing	258	$17,802	$20,074	$77,579
Prefabricated wood building manufacturing	1,077	$73,962	$112,673	$384,125
All other miscellaneous wood product manufacturing	1,525	$99,815	$133,814	$418,711
Total	**14,469**	**$953,590**	**$1,287,227**	**$4,391,982**

† 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	2,982	$175,560	$198,959	$546,551
Upholstered household furniture manufacturing	2,935	$189,711	$213,278	$646,741
Non-upholstered wood household furniture manufacturing	615	$31,736	$35,194	$108,482
Institutional furniture manufacturing	3,289	$249,312	$279,625	$782,271
Wood office furniture manufacturing	157	$9,675	$11,823	$39,496
Custom architectural woodwork and millwork	519	$35,716	$16,487	$97,979
Showcase, partition, shelving, and locker manufacturing	1,741	$115,299	$139,368	$452,595
Total	**12,238**	**$807,009**	**$894,733**	**$2,674,116**

† 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	48	$5,084	$8,897	$34,225
Paper mills	7,286	$778,673	$2,038,613	$6,441,328
Paperboard mills	781	$84,336	$211,326	$741,458
Total	**8,115**	**$868,093**	**$2,258,835**	**$7,217,011**

† 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	7,630	$725,889	$1,267,908	$4,696,170
Paper bag and coated and treated paper manufacturing	5,289	$490,060	$916,420	$2,733,881
Stationery product manufacturing	521	$39,676	$52,435	$226,003
Sanitary paper product manufacturing	3,131	$314,951	$971,450	$2,971,143
All other converted paper product manufacturing	1,735	$150,832	$318,714	$823,130
Total	**18,306**	**$1,721,408**	**$3,526,926**	**$11,450,326**

† 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	62	$3,778	$3,876	$5,495
Forestry, forest products, and timber tract production	476	$21,036	$20,358	$22,185
Support activities for agriculture and forestry	240	$2,990	$4,103	$6,280
Total	**778**	**$27,804**	**$28,337**	**$33,960**

† 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	5,207	$314,614	$375,323	$489,763
Total	**5,207**	**$314,614**	**$375,323**	**$489,763**

† 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	126	$59,444	$85,312	$137,318
Sawmills	2,195	$88,150	$111,297	$594,836
Wood preservation	189	$11,510	$31,532	$121,576
Veneer and plywood manufacturing	1,283	$62,354	$76,599	$344,240
Reconstituted wood product manufacturing	772	$53,463	$107,945	$432,032
Total	**4,565**	**$274,921**	**$412,685**	**$1,630,002**

† 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	1,119	$54,079	$59,641	$239,459
Wood windows and door manufacturing	5,196	$277,279	$396,958	$1,214,733
Cut stock, resawing lumber, and planing	335	$16,959	$31,653	$85,673
Other millwork, including flooring	2,206	$97,571	$157,037	$465,545
Wood container and pallet manufacturing	2,854	$112,454	$148,988	$439,883
Manufactured home (mobile home) manufacturing	193	$9,138	$17,807	$49,876
Prefabricated wood building manufacturing	1,073	$53,292	$64,794	$186,683
All other miscellaneous wood product manufacturing	1,935	$83,636	$125,229	$359,912
Total	**14,911**	**$704,408**	**$1,002,107**	**$3,041,764**

† 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	3,130	$142,164	$155,826	$438,715
Upholstered household furniture manufacturing	3,738	$204,273	$232,459	$754,815
Non-upholstered wood household furniture manufacturing	687	$27,394	$33,296	$85,432
Institutional furniture manufacturing	2,818	$186,684	$213,793	$570,844
Wood office furniture manufacturing	185	$9,408	$13,337	$39,024
Custom architectural woodwork and millwork	529	$30,120	$34,151	$84,449
Showcase, partition, shelving, and locker manufacturing	984	$56,886	$67,797	$201,620
Total	**12,071**	**$656,929**	**$750,659**	**$2,174,899**

† 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	39	$4,876	$6,508	$26,411
Paper mills	10,477	$941,801	$1,829,759	$7,953,933
Paperboard mills	717	$66,383	$126,521	$582,571
Total	**11,233**	**$1,013,060**	**$1,962,788**	**$8,562,915**

† 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	7,192	$579,894	$772,259	$3,376,300
Paper bag and coated and treated paper manufacturing	6,120	$498,348	$773,403	$2,797,646
Stationery product manufacturing	852	$59,001	$87,612	$319,152
Sanitary paper product manufacturing	2,910	$248,224	$718,595	$2,238,599
All other converted paper product manufacturing	1,955	$140,164	$181,519	$617,712
Total	**19,029**	**$1,525,631**	**$2,533,388**	**$9,349,409**

† 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	62	$4,619	$4,739	$6,887
Forestry, forest products, and timber tract production	476	$25,721	$24,892	$27,805
Support activities for agriculture and forestry	240	$3,656	$5,017	$7,871
Total	**778**	**$33,997**	**$34,649**	**$42,563**

† 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	5,207	$384,688	$458,919	$613,830
Total	**5,207**	**$384,688**	**$458,919**	**$613,830**

† 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	126	$72,684	$104,314	$172,103
Sawmills	2,195	$107,784	$136,086	$745,520
Wood preservation	189	$14,074	$38,555	$152,374
Veneer and plywood manufacturing	1,283	$76,242	$93,660	$431,443
Reconstituted wood product manufacturing	772	$65,371	$131,988	$541,474
Total	**4,565**	**$336,154**	**$504,602**	**$2,042,914**

† 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	1,119	$66,124	$72,925	$300,119
Wood windows and door manufacturing	5,196	$339,037	$485,372	$1,522,449
Cut stock, resawing lumber, and planing	335	$20,736	$38,703	$107,376
Other millwork, including flooring	2,206	$119,303	$192,014	$583,477
Wood container and pallet manufacturing	2,854	$137,501	$182,172	$551,314
Manufactured home (mobile home) manufacturing	193	$11,173	$21,773	$62,511
Prefabricated wood building manufacturing	1,073	$65,162	$79,226	$233,974
All other miscellaneous wood product manufacturing	1,935	$102,264	$153,121	$451,085
Total	**14,911**	**$861,301**	**$1,225,306**	**$3,812,304**

† 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	3,130	$173,828	$190,533	$549,850
Upholstered household furniture manufacturing	3,738	$249,771	$284,235	$946,025
Non-upholstered wood household furniture manufacturing	687	$33,495	$40,712	$107,074
Institutional furniture manufacturing	2,818	$228,264	$261,411	$715,450
Wood office furniture manufacturing	185	$11,503	$16,308	$48,910
Custom architectural woodwork and millwork	529	$36,829	$41,757	$105,842
Showcase, partition, shelving, and locker manufacturing	984	$69,556	$82,897	$252,694
Total	**12,071**	**$803,247**	**$917,853**	**$2,725,844**

† 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	39	$5,962	$7,958	$33,101
Paper mills	10,477	$1,151,568	$2,237,301	$9,968,823
Paperboard mills	717	$81,168	$154,701	$730,148
Total	**11,233**	**$1,238,699**	**$2,399,960**	**$10,732,073**

† 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	7,192	$709,054	$944,264	$4,231,584
Paper bag and coated and treated paper manufacturing	6,120	$609,345	$945,663	$3,506,346
Stationery product manufacturing	852	$72,142	$107,126	$400,000
Sanitary paper product manufacturing	2,910	$303,511	$878,648	$2,805,681
All other converted paper product manufacturing	1,955	$171,383	$221,949	$774,191
Total	**19,029**	**$1,865,435**	**$3,097,650**	**$11,717,801**

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