Forest Products Industries' Economic Contributions: Maryland, 2023

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Contents

Tables

Figures

Executive Summary

Based on 2023 FIA estimates, Maryland contains approximately 6.20 million acres of forest land, representing about 38.8 percent of its total land area. Of this forest base, 87.8 percent (2.11 million acres) is classified as timberland capable of producing commercial volumes of wood, while 12.2 percent consists of reserved or low-productivity forestland. Private ownership accounts for the majority of forest land at 71.7 percent (1.72 million acres), followed by state and local governments (25.0 percent; 0.60 million acres) and federal ownership (3.2 percent; 0.08 million acres). This report summarizes the economic contribution of forest products industries in Maryland using IMPLAN 2023 data. This report also captures the pre-and post-COVID snapshots of forest products industries in Maryland and shows the changes in last five years.

Forest Product Industries

This report analyzes the economic contribution of Maryland's forest products sector, comprised of 29 individual economic sectors aggregated into seven industry groups: Forestry, Logging, Primary solid wood products, Secondary solid wood products, Wood furniture, Pulp, paper, and paperboard mills, and Secondary paperboard and other paper products. In 2023, these industries directly supported 8,139 jobs and generated $2.85 billion in output, $862.6 million in value added, and $460.4 million in labor income. When indirect supply-chain linkages and induced household-spending effects are included, the sector's total economic footprint reached 14,498 jobs, $4.18 billion in output, $1.65 billion in value added, and $897.0 million in labor income. The sector exerts a notable multiplier effect on the broader economy; for every 100 direct job in the forest industry, roughly 78 additional jobs are supported elsewhere in the state.

Leading Forest Products Industry Groups (direct contribution)

Among the seven aggregated groups, Secondary Solid Wood Products was the largest direct employer in 2023 (3,003 jobs), followed by Secondary Paperboard and Other Paper Products (1,632 jobs) and Wood Furniture (1,601 jobs). In terms of output, Secondary Solid Wood Products produced the highest direct output at $1.09 billion, serving as the sector's manufacturing engine. Secondary Paperboard and Other Paper Products generated $902 million, highlighting the state's strength in converting and packaging. Primary Solid Wood Products ($341 million) and Wood Furniture ($339 million) provided significant value-added contributions. Forestry, while the smallest contributor in dollar terms ($19.6 million), provided the essential management and biological services supporting the broader value chain.

Leading Individual Forest Products Sectors (direct contribution)

At the disaggregated level (29 sectors), Paperboard Container Manufacturing remain the top individual employer with 1,436 jobs. Financial dominance was also concentrated in this sector, which ranked first in Labor Income ($119.0 million), Value Added ($158.0 million), and Output ($803.1 million). Engineered Wood Member and Truss Manufacturing was a consistent top-tier performer, ranking second in Employment (1,287 jobs), Value Added ($155.1 million), and Output ($536.3 million). All Other Miscellaneous Wood Product Manufacturing also emerged as a major driver, ranking third in direct output ($246.8 million). These rankings underscore a downstream-focused economy: specialized secondary manufacturing (Packaging and Engineered Wood) dominating over primary processing.

Maryland's Forest Products Industries Compared to Other Maryland Industries

The Forest Products sector remains a vital component of Maryland's natural resource economy. In 2023, it ranked second in employment and third in output when compared to Agriculture, Mining, and Commercial Fishing. The forest sector's direct output ($2.85 billion) trailed Mining ($6.64 billion) and Agriculture ($3.03 billion) but significantly outperformed Commercial Fishing ($66.6 million). In terms of employment, the 8,139 jobs supported by the forest industry accounted for 21.7 percent of the state's total natural resources workforce, ranking behind Agriculture (20,461 jobs) but surpassing Mining (6,537 jobs) and Commercial Fishing (2,367 jobs). Furthermore, within the statewide manufacturing landscape, Forest Products ranked as the eighth largest manufacturer by output ($2.75 billion) and the eighth largest employer.

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

From 2017 to 2023, the sector underwent a period of structural contraction and shifting compensation dynamics. Direct employment decreased by 7.6 percent, while direct output declined by 13.6 percent in real terms. Unlike the stability seen in other regions, the total real labor income declined by 36.1 percent, a rate significantly faster than the drop in employment. This trend indicates a divergence in the state's forest economy, where output and employment have stabilized relative to labor compensation, suggesting a shift toward lower-wage service and support roles or a correction in manufacturing wages, salaries, and compensation.

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

A state report on FPI contributions on Maryland was previously published by Leefers et al. (2020) using 2017 IMPLAN data. The present update extends that effort using 2023 data, allowing for a comparison across time. This analysis measures how the performance of forest sector industries in Maryland 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 industries and helps inform workforce development, investment, and rural economic policies. For industry stakeholders, it provides insight into productivity, competitiveness, and sectoral resilience, supporting strategic planning. For researchers and forest managers, it offers a consistent regional framework that connects forest resources with industrial performance and economic outcomes.

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

The inventory data used in this report were sourced from the U.S. Forest Service Forest Inventory and Analysis (FIA) database and the economic data were obtained from Impact Analysis for Planning (IMPLAN). These data and related information are presented in four major sections: (i) Forest Resources of Maryland, (ii) Economic Contributions of the Maryland 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 Maryland

According to 2023 estimates from the USDA Forest Inventory and Analysis (FIA) program, Maryland's total land area is about 6.20 million acres. Of this, approximately 2.40 million acres, or 38.8 percent, meet the FIA definition of forest land, while the remaining 3.79 million acres, or 61.2 percent, are classified as non-forest. 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 Maryland's forest land base, timberland accounts for 2.11 million acres, or about 87.8 percent (Figure 1), and represents unreserved forest capable of producing at least 20 cubic feet of wood per acre per year. Reserved forestland comprises 292,567 acres, or roughly 12.2 percent, and is withdrawn from timber utilization by legal or administrative designation. No other forestland is identified in the current FIA estimates. In practical terms, approximately 2.11 million acres are available and biophysically suitable for commercial timber management, while about 0.29 million acres are reserved from harvest and therefore do not contribute materially to timber supply.

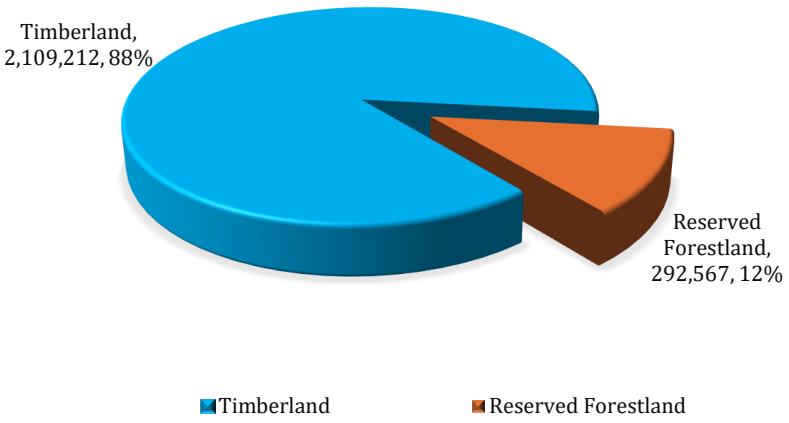

Figure 1: Maryland Forest Land area in acres by Land use type, 2023 (US Forest Service).

Ownership of Maryland's 2.40 million acres of forest land is shared among federal, state, local, and private entities, with private owners holding the clear majority. Private landowners manage about 1.72 million acres, or roughly 71.7 percent of all forest land. State and local governments are responsible for approximately 600,944 acres (25.0 percent), while other federal agencies manage about 77,790 acres (3.2 percent) (Figure 2). Maryland has no National Forest lands, so all federal forest ownership in the state falls under non-National Forest federal holdings.

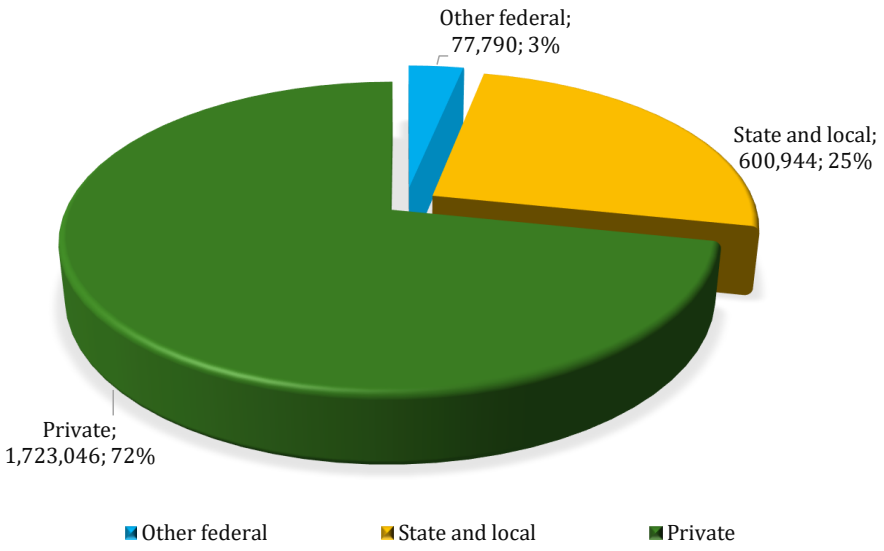

Figure 2: Maryland Forest Land area in acres by Ownership group, 2023 (US Forest Service).

Hardwoods overwhelmingly dominate Maryland's 2.40 million acres of forest land. The oak/hickory forest-type group is by far the most extensive, covering 1.46 million acres, or 61 percent of all forest land (Figure 3). The loblolly/shortleaf pine group is the next largest at 379,543 acres (16 percent), reflecting the species mix common in the coastal plain region. Several mixed hardwood and pine associations also occupy meaningful shares of the forest base, including oak/pine (6 percent), oak/gum/cypress (6 percent), and maple/beech/birch (5 percent). The remaining 168,460 acres (7 percent) fall into smaller forest-type groups, including mixed upland hardwoods, lowland hardwoods, and other miscellaneous cover types. Overall, hardwood-dominated forests account for roughly 78 percent of Maryland's forest land, while softwood and mixed pine types make up about 22 percent, underscoring the state's strong reliance on hardwood resources for timber, wildlife habitat, and ecological services.

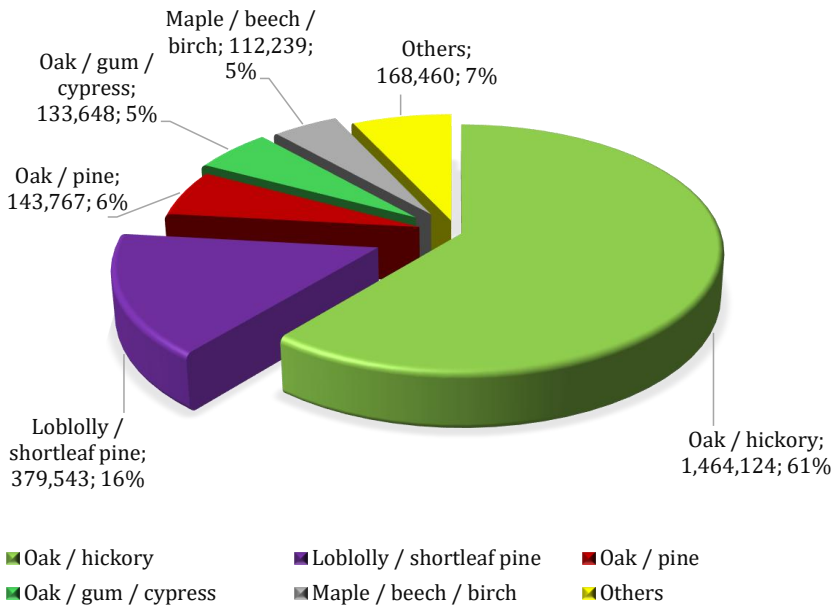

Figure 3*:* Maryland Forest Land area in acres by Forest type group, 2023 (US Forest Service).

Maryland's timber resources include a substantial mix of hardwood and softwood growing stock, supporting forest-based activities that include commercial logging, sawtimber, pulpwood, millwork, furniture, and other secondary wood products. The estimated volume of standing timber suitable for forest products, defined here as the marketable volume of growing stock, is approximately 7.17 billion cubic feet, or about 90 million standard cords (Table 1). Of this total, hardwoods account for 5.75 billion cubic feet, or 80.1 percent, while softwoods account for 1.43 billion cubic feet, or 19.9 percent. By ownership class, about 72.6 percent of growing-stock volume is on private lands, 24.4 percent is on state and local lands, and 2.9 percent is on other federal holdings.

Average annual net growth totals 120.5 million cubic feet per year, while average annual harvest removals total 30.6 million cubic feet and average annual mortality totals 66.0 million cubic feet per year. Net growth exceeds harvest removals by a ratio of about 3.9 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 89.9 million cubic feet per year. This positive balance indicates continued expansion of growing-stock volume at the statewide level. Average annual

harvest removals equal roughly 0.4 percent of standing volume, or about 0.4 million standard cords, while mortality represents about 0.9 percent of standing volume. Hardwoods account for 47.4 percent of net growth, 65.5 percent of harvest removals, and 84.0 percent of mortality. Harvest removals are concentrated on private lands, which account for about 88.8 percent of total removals, followed by state and local ownerships at about 11.2 percent. Overall, these statewide indicators suggest that Maryland's growing-stock inventory remains in a condition of positive net growth.

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

Description	Species group	Other federal	State and local	Private	Not available	**Total**
Net volume	Hardwood	204,686	1,434,503	4,106,622	0	**5,745,811**
	Softwood	6,633	317,409	1,103,799	0	**1,427,841**
	Total	**211,319**	**1,751,912**	**5,210,420**	**0**	**7,173,652**
Average annual net growth	Hardwood	-3,980	11,772	48,894	459	**57,145**
	Softwood	51	9,954	53,298	97	**63,401**
	Total	**-3,929**	**21,726**	**102,192**	**556**	**120,545**
Average annual harvest removals	Hardwood	0	1,487	18,573	0	**20,060**
	Softwood	0	1,939	8,644	0	**10,583**
	Total	**0**	**3,427**	**27,217**	**0**	**30,643**
Average annual mortality	Hardwood	6,165	17,516	31,709	0	**55,390**
	Softwood	209	4,184	6,183	0	**10,576**
	Total	**6,374**	**21,700**	**37,892**	**0**	**65,966**

† *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 represent a working consensus on what constitutes the regional FPI (Leefers et al. 2020; Poudel and Dahal 2025). The complete list of industries and groupings are presented in Appendix A.

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

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

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

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

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

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

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

Figure 4 illustrates the structural adjustments within Maryland's Forest Sector between 2017 and 2023. Over this seven-year period, the sector experienced a contraction, though the relationship between labor and production shows a distinct trend compared to typical consolidation patterns. Total direct employment declined by approximately 7.6% (a reduction of roughly 670 jobs), falling from 8,813 in 2017 to 8,140 in 2023. Industry Output, however, faced a steeper downward trajectory, decreasing by 13.6% to $2.85 billion. The disparity between the moderate decline in employment and the more pronounced drop in output suggests a contraction in value-added intensity rather than workforce capacity. Further, this trend shows a shift in the state's industry composition toward relatively labor-intensive segments, such as forestry support and secondary solid wood products, particularly given the absence of high-capital pulp and paper manufacturing within the state's economy.

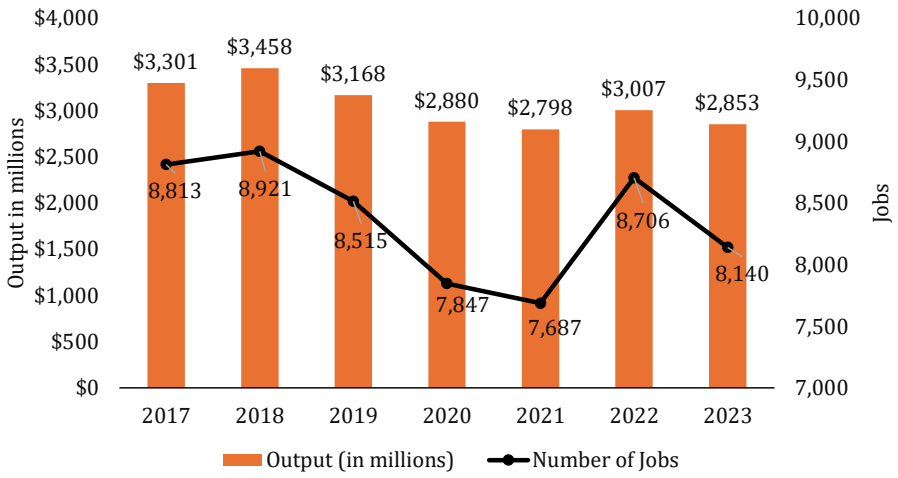
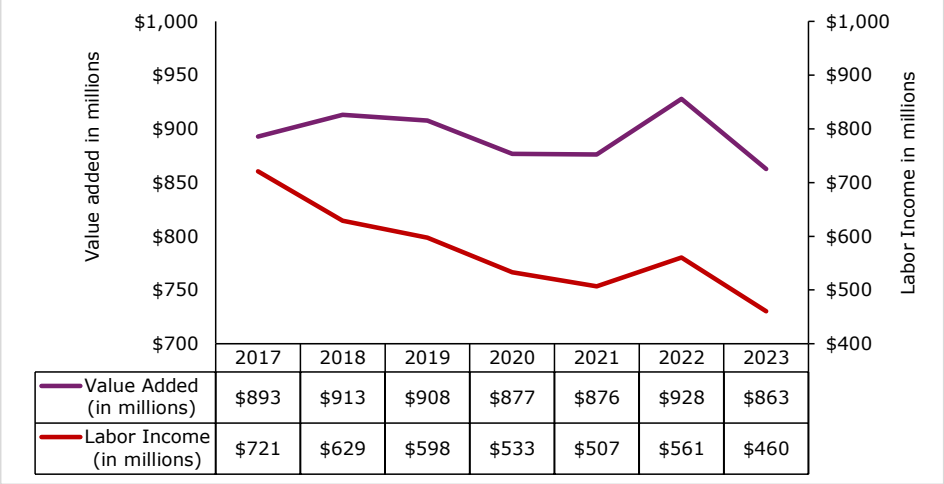


Figure 4: Direct output and employment, 2017–2023, Maryland state forest products industries.

Figure 5 provides context on the changing economic quality of Maryland's Forest Sector activity. Real Value Added, the sector's contribution to Gross State Product (GSP), demonstrated relative resilience, declining only 3.4% (from $893 million in 2017 to $863 million in 2023). However, a distinct and critical divergence appears in Labor Income. While total employment fell by a moderate 7.6% (as seen in Figure 4), total real Labor Income experienced a severe contraction of 36.2%, dropping from $721 million to $460 million. This disparity between stable Value Added and plummeting Labor Income signals a fundamental shift in the sector's compensation structure. In 2017, labor income constituted approximately 81% of the sector's total Value Added; by 2023, this share had eroded to just 53%. Consequently, the average real labor income per worker declined significantly, falling from roughly $81,800 to $56,500. This shows that while the sector remains a stable contributor to the state's GSP, the composition of employment has shifted away from high-income manufacturing roles toward lower-compensation segments.



	2017	2018	2019	2020	2021	2022	2023
Value Added (in millions)	$893	$913	$908	$877	$876	$928	$863
Labor Income (in millions)	$721	$629	$598	$533	$507	$561	$460

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

Direct and Total Contributions by Forest Product Industry Groups

Table 2 details the broader economic footprint of Maryland's Forest Sector in 2023. The industry directly employed 8,139 individuals, generated $2.85 billion in output, and contributed $862.6 million in value-added to the state economy. However, the sector's influence extends well beyond these direct operations. When accounting for indirect supply-chain purchases and induced household spending, the sector's total economic contribution reached 14,498 jobs and $4.18 billion in total output.

Comparing these results with 2017 values shows that the wider economic footprint is shrinking much faster than the direct industry itself. While direct employment declined by a moderate 7.6%, the total employment impact fell by nearly 20%. Even more telling is the Value-Added metric: direct contribution remained relatively stable with only a 3.4% decline, yet the total value-added impact dropped by 19.5%. This disparity suggests that while the core forest industries have maintained their contribution to the state's GSP, their ability to stimulate the broader local economy, through local supply chains and worker spending, has weakened. The industry appears to be operating with reduced backward linkages, resulting in an amplified downward trend for the support sectors that historically relied on forest-related activity.

Despite this contraction in the broader footprint, the calculated multipliers underscore the sector's continued efficiency as an economic driver. The labor income multiplier of 1.95 is

particularly notable, indicating that for every dollar of wages, salaries, and benefits (also including Proprietor income) paid in the forest sector, nearly another dollar ($0.95) is generated in the wider economy. Similarly, the Value-Added multiplier of 1.91 suggests the sector effectively doubles its contribution to the State's GSP through its secondary impacts, showing that the forest sector remains a high-leverage component of Maryland's economy despite the reduction in total volume.

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

	Employment	Labor Income	Value-added	Output
Direct in 2023	8,139	$460,422	$862,609	$2,853,015
Compared to 2017	-7.6%	-36.1%	-3.4%	-13.6%
Total in 2023	14,498	$897,028	$1,649,759	$4,184,294
Compared to 2017	-19.7%	-36.9%	-19.5%	-20.5%
Multipliers in 2023	1.78	1.95	1.91	1.47

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

Tables 3 and 4 report the direct and total economic contributions of the seven industry groups. In contrast to states with heavy extraction industries, Maryland's forest economy in 2023 was dominated by downstream manufacturing. Secondary Solid Wood Products was the unequivocal leader in direct contribution, accounting for the largest share of employment (3,003 jobs), output ($1.09 billion), and value-added ($370.8 million). Conversely, the primary processing sectors were significantly smaller; Pulp, Paper, and Paperboard Mills recorded the lowest employment (120 jobs) and comparatively low output ($89.6 million), reflecting the absence of major pulp and paperboard manufacturing capacity in the state. Forestry and Logging combined contributed roughly 1,200 jobs, and around 95 million in direct output.

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

Industries	Employment	Labor Income	Value-Added	Output
1.Forestry	575	$17,402	$17,806	$19,599
2.Logging	643	$38,021	$73,136	$75,769
3.Primary Solid Wood Products	566	$20,235	$84,142	$341,370
4.Secondary Solid Wood Products	3,003	$149,005	$370,849	$1,086,068
5.Wood Furniture	1,601	$94,514	$123,469	$339,051
6.Pulp, Paper, and Paperboard mills	120	$10,357	$17,024	$89,572
7.Secondary Paperboard and other Paper Products	1,632	$130,888	$176,184	$901,586
Total	**8,139**	**$460,422**	**$862,609**	**$2,853,015**
Compared to 2017	**-7.6%**	**-36.1%**	**-3.4%**	**-13.6%**

† 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 included (Table 4), the dominance of the solid wood value chain becomes even more pronounced. Secondary Solid Wood Products remained the top contributor to total statewide impact, supporting 5,406 jobs and generating $1.60 billion in total output. Interestingly, Primary Solid Wood Products demonstrated high capital intensity; while it employed fewer workers directly (566 jobs), it generated substantial downstream activity, with a total output multiplier effect that nearly doubled its direct impact (rising from $341 million to $533 million). This suggests that while the primary mills are smaller in headcount, they are deeply integrated into the local supply chain, likely providing essential inputs to the larger secondary manufacturers.

Taken together, the data reveals a clear structural reliance on secondary manufacturing (Secondary Solid Wood Products, Wood Furniture, and Secondary Paperboard). These three downstream groups combined accounted for 76.6% of the sector's total direct employment (6,236 out of 8,139 jobs) and 81.5% of direct output ($2.33 billion). The specific comparison between the "Paper" and "Solid Wood" value chains further illuminates this trend: the combined Solid Wood chain (Primary and Secondary Solid Wood Products) was the primary economic engine, generating $1.43 billion in direct output compared to just $991 million from the combined Paper chain (Mills and Secondary Paper Products). This establishes Maryland

distinctly as a value-added solid wood economy, diverging from the pulp-and-paper dominance often seen in other forest-rich states.

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

Industries	Employment	Labor Income	Value- Added	Output
1.Forestry	640	$21,371	$25,558	$31,729
2.Logging	800	$46,967	$90,212	$102,159
3.Primary Solid Wood Products	1,490	$84,236	$202,228	$533,230
4.Secondary Solid Wood Products	5,406	$312,335	$667,596	$1,601,560
5.Wood Furniture	2,509	$155,680	$235,840	$531,109
6.Pulp, Paper, and Paperboard mills	343	$26,415	$46,181	$140,484
7.Secondary Paperboard and other Paper Products	3,831	$280,065	$442,655	$1,355,734
Total	**14,498**	**$897,028**	**$1,649,759**	**$4,184,294**
Compared to 2017	**-19.7%**	**-36.9%**	**-19.5%**	**-20.5%**

† 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 sector. The forestry group includes two primary industries in Maryland: (1) timber tract operations, which involve managing forest lands primarily for the sale of standing timber; and (2) support activities for forestry. Support activities include estimating (cruising) timber; wildland firefighting; forest pest control; aerial treatment of burned forests for reforestation or emergency response; and consulting on wood attributes, forestry economics, and related services. It is important to note that while maple syrup production is normally included in this group (under "all other crop farming"), the industry is either nonexistent or its data are undisclosed in Maryland, and thus it is excluded from this analysis.

In 2023, the sector directly supported 575 jobs and generated $19.6 million in direct output. While Forestry is a smaller employer compared to the state's massive manufacturing sectors (such as Secondary Solid Wood Products), it serves as the biological and managerial foundation for the entire industry. The sector exhibits a distinct economic profile characterized by extremely low intermediate consumption but steady household-spending impacts. The employment multiplier of 1.11 is low, indicating that for every 100 jobs in Forestry, only about 11 additional jobs are supported elsewhere in the state.

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

	Employment	Labor Income	Value-Added	Output
Direct	575	$17,402	$17,806	$19,599
Indirect	3	$210	$386	$715
Induced	62	$3,759	$7,366	$11,415
Total	**640**	**$21,371**	**$25,558**	**$31,729**

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

Notably, the Induced effects (driven by worker household spending) overwhelmingly outweigh the Indirect effects (driven by business-to-business supply chain purchases). The data reveals a highly labor-intensive industry where a significant portion of gross revenue flows directly to workers rather than to intermediate supplies. Specifically, nearly 89% of the sector's direct output is allocated to Labor Income ($17.4 million out of $19.6 million).

- **Indirect Effect:** Only 3 jobs and $0.7 million in output. This reflects the nature of Maryland's forestry operations (primarily support services and timber growing); the

sector is labor-intensive rather than supply-chain intensive, requiring negligible daily inputs from other industries compared to a manufacturing plant.

- **Induced Effect:** 62 jobs and $11.4 million in output. This suggests that the primary economic ripple of this sector comes almost entirely from the income spent by its workforce in the local economy rather than the operational purchases of the businesses themselves.

When these effects are combined, the Forestry industry contributed a total of 640 jobs, $31.7 million in output, and $25.6 million in value-added to the Maryland economy in 2023. The total output multiplier of 1.62 implies that every $100 of forestry output generates an additional $62 of economic activity throughout the state.

Trend Analysis: Forestry (2017–2023)

Figure 6 illustrates the trajectory of Maryland's Forestry industry, which, unlike the volatility often seen in commodity-dependent markets, has demonstrated a consistent and robust upward trend in employment over the seven-year period. After starting with a modest base of 140 jobs in 2017, the sector has experienced a fourfold expansion, peaking at 575 direct jobs in 2023. Direct Output followed a similar positive trajectory, nearly doubling from $10.6 million to $19.6 million. However, while employment surged by 310%, output grew at a slower rate of 85%. This divergence has resulted in a significant decline in labor productivity (output per worker), which fell from approximately $75,700 in 2017 to $34,100 in 2023.

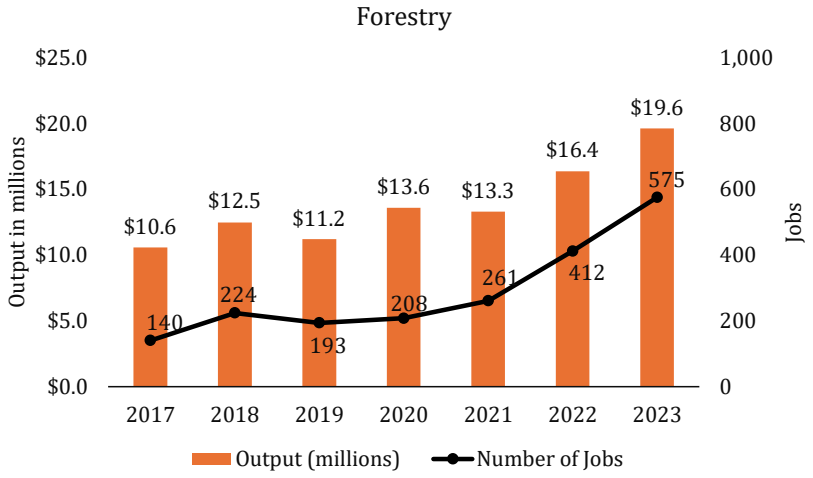


Figure 6: Trend in direct employment and output for the Forestry industry in Maryland, 2017-2023.

Logging

Economic Contribution of Commercial Logging

Table 6 outlines the economic contributions of the Commercial Logging sector, which consists of establishments primarily engaged in cutting timber, transporting logs, and producing chips in the field. In 2023, the sector directly supported 643 jobs and generated $75.8 million in direct industry output. While Logging is not the primary driver of forest employment in Maryland (ranking behind the manufacturing sectors), it exhibits a highly distinct financial structure characterized by exceptional value creation relative to inputs. The sector generated $73.1 million in Value-Added against its $75.8 million in output. This 96.5% Value-Added ratio implies that nearly every dollar of revenue generated by logging firms stays within the sector as wages, profits, or tax revenue, rather than flowing out to purchase intermediate goods.

Table 6: Direct, Indirect, and Induced Economic Contributions of the Commercial logging Industry in Maryland, 2023. †

	Employment	Labor Income	Value-Added	Output
Direct	643	$38,021	$73,136	$75,769
Indirect	19	$633	$789	$1,151
Induced	138	$8,313	$16,287	$25,239
Total	**800**	**$46,967**	**$90,212**	**$102,159**

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

This unique cost structure drives a powerful disparity between the sector's supply-chain and household-spending impacts.

- **Indirect Effect:** Only $1.15 million in output. This shows that Maryland loggers have a minimal supply chain footprint, purchasing very few intermediate inputs from other local industries relative to their total production volume.
- **Induced Effect:** $25.2 million in output. The economic ripple generated by worker household spending is approximately 22 times larger than the ripple generated by business purchasing.

This dynamic mirrors the trend seen in Forestry but at a larger scale: the Logging sector's contribution to the Maryland economy is driven almost entirely by the income it provides to its workforce and proprietors, rather than its operational spending. When these effects are combined, the sector contributed a total of 800 jobs and $102.2 million in total output. The implied output multiplier of 1.35 suggests that while the sector's backward linkages (supply chain) are weak, its role in supporting local income levels creates a stable, albeit localized, economic foundation.

Trend Analysis: Logging (2017–2023)

Figure 7 illustrates the trajectory of Maryland's Logging industry, which has demonstrated a remarkable "efficiency recovery" following a mid-period contraction. Between 2017 and 2020, the sector faced downward pressure, with output falling from $66.8 million to a low of $47.7 million. However, the post-pandemic period (2021–2023) marked a significant rebound, culminating in a period-high direct output of $75.8 million in 2023.

A critical structural insight appears when comparing employment to output. While direct output surged by 29.3% in 2023 alone (rising from $58.6 million in 2022), employment remained virtually flat, increasing by only 3 jobs (from 640 to 643). Consequently, the output per worker jumped from approximately $91,500 in 2022 to nearly $117,900 in 2023.

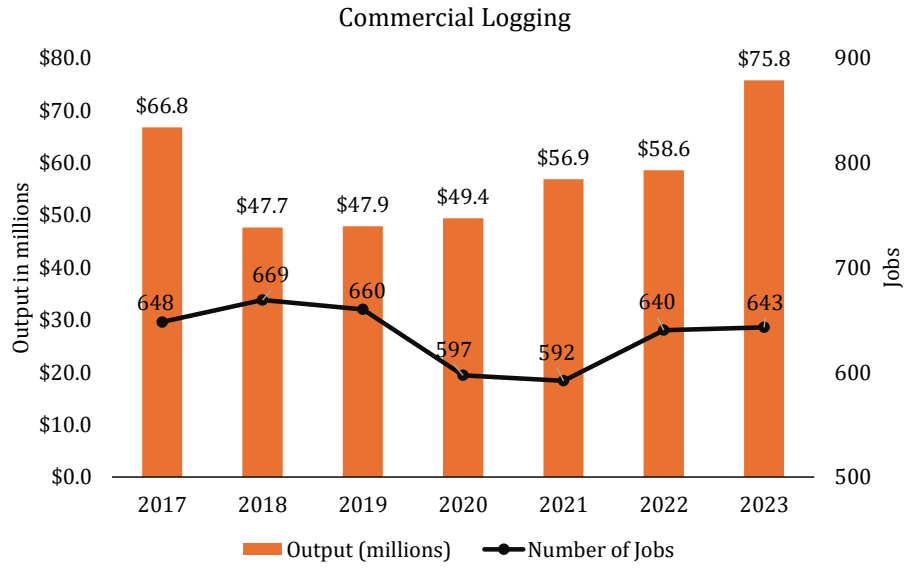


Figure 7: Trend in direct employment and output for the Logging industry in Maryland, 2017-2023.

Primary Solid Wood Products

Economic Contribution of Primary Solid Wood Products

Table 7 outlines the economic contributions of the Primary Solid Wood Products industry, which encompasses wood-based electric power generation, sawmills, wood preservation, veneer and plywood manufacturing, and reconstituted wood product industries. In 2023, this

manufacturing sector directly employed 566 workers and generated $341.4 million in direct output. While the direct employment footprint is smaller than the downstream furniture sectors, the financial data reveals a highly efficient value-creation engine: the sector generated $84.1 million in Value-Added, which constitutes roughly 25% of its gross output.

The Primary Solid Wood Products industry exhibits the strongest backward linkages in the entire Maryland forest economy, characterized by a supply-chain impact that exceeds its own direct operations. Unlike the Logging and Forestry sectors, where "Induced" effects (household spending) were dominant, this sector is driven overwhelmingly by "Indirect" (business-to-business) purchases.

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

	Employment	Labor Income	Value-Added	Output
Direct	566	$20,235	$84,142	$341,370
Indirect	684	$49,543	$89,740	$147,936
Induced	240	$14,458	$28,346	$43,923
Total	**1,490**	**$84,236**	**$202,228**	**$533,230**

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

The sector supports 684 jobs in the supply chain, a figure that is larger than the sector's own direct workforce (566 jobs). And the implied total Employment Multiplier is 2.63 (1,490 Total / 566 Direct). This means that every 100 direct jobs in primary wood manufacturing support an additional 163 jobs elsewhere in the Maryland economy. This is significantly higher than the multipliers for Forestry (1.11) or Logging (1.24), underscoring this sector's role as a "keystone" industry that anchors the wider forest supply chain. Remarkably, the total labor income earned by these supply chain workers ($49.5 million) is more than double the labor income earned by the direct mill workers themselves ($20.2 million). This shows that the sector acts as a wealth distributor, channeling revenue out to independent contractors and supplier firms rather than retaining it solely within the manufacturing facility.

When aggregating direct, indirect, and induced effects, the Primary Solid Wood Products industry contributed a total of 1,490 jobs, $533.2 million in output, and $202.2 million in value-added to the state economy in 2023. By generating over half a billion dollars in total economic activity, this sector serves as a vital intermediate hub, converting raw timber resources into the industrial inputs required by the state's massive secondary manufacturing base.

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

Figure 8 illustrates the volatile yet ultimately robust trajectory of the Primary Solid Wood Products industry in Maryland. The industry experienced a prolonged decline that bottomed out in 2021 (434 jobs and $231.4 million in output) before exhibiting a notable recovery. In 2023, the industry achieved a period high in Direct Output of $341.4 million, representing a dramatic 25.3% year-over-year increase from 2022.

A critical structural shift is evident when comparing the start and end of the study period. While Direct Output in 2023 ($341.4 million) is 21.4% higher than in 2017 ($281.2 million), the workforce remains 12% smaller (566 jobs in 2023 vs. 643 in 2017). This divergence suggests that Maryland's primary mills have successfully emerged from the pandemic era as leaner, more efficient operations. The surge in output without a corresponding return to peak employment levels shows high capacity utilization and likely investments in automation or processing efficiency, allowing the sector to generate record value with a consolidated workforce.

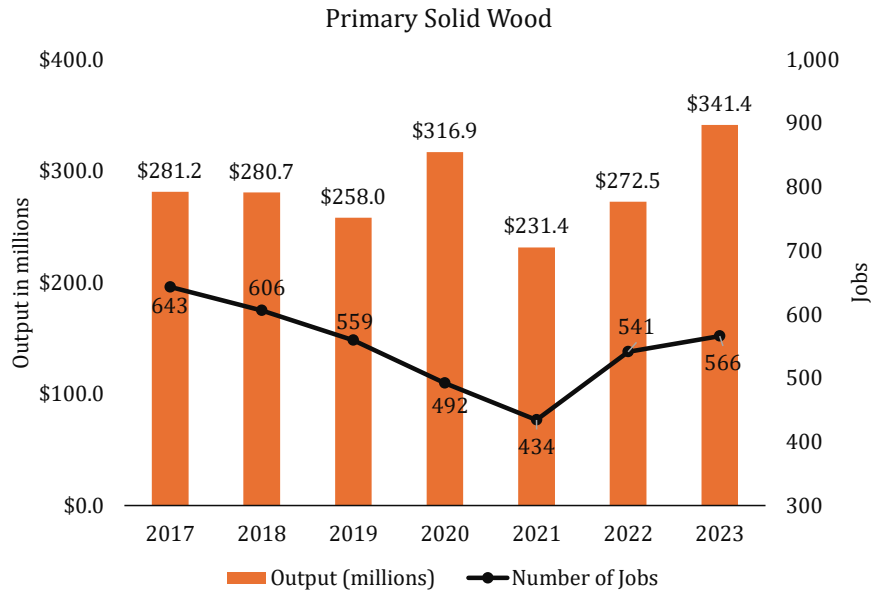


Figure 8: Trend in direct employment and output for the Primary Solid Wood Products industry in Maryland, 2017-2023.

Secondary Solid Wood Products

Economic contribution: Secondary Solid Wood Products

Table 8 details the economic contribution of the Secondary Solid Wood Products industry, a diverse value-added sector that encompasses industries such as engineered wood member and truss manufacturing; wood windows and doors manufacturing; cut stock, resawing lumber, and planing; other millwork (including flooring); wood container and pallet manufacturing; prefabricated wood building manufacturing; and other miscellaneous wood products. In 2023, this sector was the dominant direct employer within the forest value chain, directly employing 3,003 workers and generating $1.09 billion in direct output. This massive footprint presents Maryland as a manufacturing hub, where the aggregation of intermediate goods significantly outweighs primary extraction.

The sector exhibits a moderate employment multiplier of 1.80, indicating that for every 100 jobs created in secondary manufacturing, approximately 80 additional jobs are supported elsewhere in the Maryland economy. While solid, this multiplier is notably lower than that of the Primary Solid Wood sector (2.63). This distinction reflects the upstream supply chain dynamics: while Primary manufacturers purchase raw timber from labor-intensive logging operations (creating high upstream employment per dollar), Secondary manufacturers primarily purchase processed lumber from capital-intensive sawmills or import intermediate materials. Consequently, while the Indirect Employment effect is large in absolute terms (1,535 jobs), the ratio of supply chain support is less intense than in the primary stage.

When fully aggregated, the sector supports a total of 5,406 jobs and contributes $1.60 billion in total economic output, making it the largest single contributor to the state's total forest economy output. Financially, the sector is a highly effective value generator, contributing a total of $667.6 million in Value-Added to the Gross State Product. This reflects the significant economic lift achieved by transforming rough lumber into high-value finished construction components and consumer goods, effectively anchoring the state's forest industry portfolio.

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

	Employment	Labor Income	Value-Added	Output
Direct	3,003	$149,005	$370,849	$1,086,068
Indirect	1,535	$111,007	$194,098	$356,454
Induced	868	$52,323	$102,650	$159,038
Total	**5,406**	**$312,335**	**$667,596**	**$1,601,560**

† 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 illustrates the massive growth of the Secondary Solid Wood Products industry, identifying it as the primary driver of expansion within Maryland's forest economy. Unlike the extraction sectors, which have faced structural adjustments, this value-added sector has achieved a consistent and massive upward trajectory. Real Industry Output expanded by 74.3% over the seven-year period, rising from $623.1 million in 2017 to a record high of $1.09 billion in 2023.

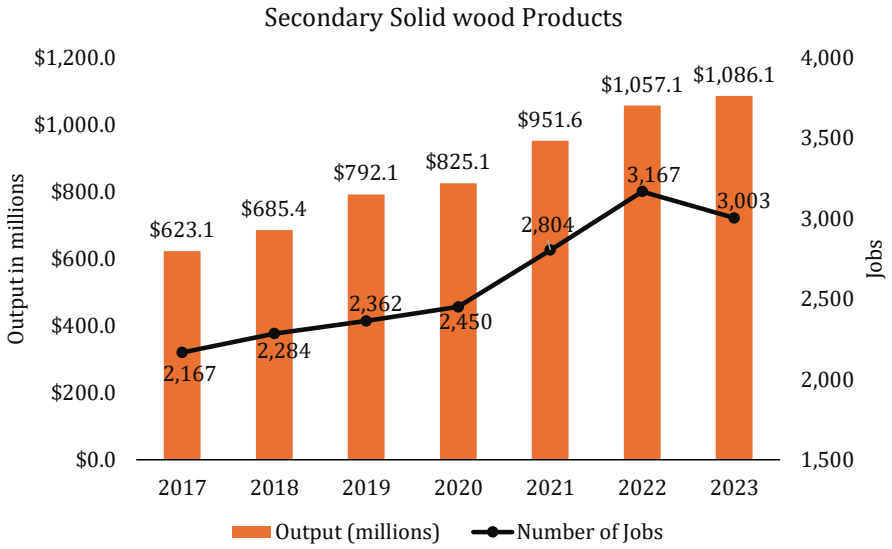


Figure 9: Trend in direct employment and output for the Secondary Solid Wood Products industry in Maryland, 2017-2023.

The trend line shows that the sector not only weathered the pandemic but accelerated through it, avoiding the "correction" phases seen in other regions. Employment followed a similarly robust path, growing by 38.6% since 2017 (adding over 830 net jobs). However, a distinct shift occurred between 2022 and 2023: while direct output continued to climb (increasing by 2.7% to its new peak), direct employment contracted by 5.2% from its 2022 high of 3,167 jobs. This recent divergence, rising output against a tightening workforce, suggests that after a period of rapid capacity expansion, the industry is entering a phase of maturity and consolidation, leveraging automation or improved process efficiencies to maintain record production levels with a slightly leaner workforce.

Wood Furniture

Economic Contribution of the Wood Furniture Industry

Table 9 details the economic contribution of the Wood Furniture Industry, a consumer-facing group that includes kitchen cabinet and countertop manufacturing, upholstered and non-upholstered household furniture, institutional and office furniture, custom architectural woodwork, and showcase partition manufacturing. In 2023, this sector played a specialized role in Maryland's forest economy, directly employing 1,601 workers and generating $339.1 million in direct output.

The sector exhibits a distinct economic profile compared to the upstream processing industries. The implied Employment Multiplier is 1.57, indicating that for every 100 jobs in furniture manufacturing, approximately 57 additional jobs are supported elsewhere in the state. Unlike the Primary Solid Wood sector, which is dominated by massive supply chain linkages, the Wood Furniture sector shows a near-parity between its supply chain and household spending impacts.

- **Indirect Effects:** 460 jobs supported by business-to-business purchases.
- **Induced Effects:** 449 jobs supported by worker household spending.

When fully aggregated, the sector supports a total of 2,509 jobs and contributes $531.1 million in total economic output. Financially, the sector remains an effective value generator, contributing a total of $235.8 million in Value-Added to the Gross State Product. This illustrates the economic lift achieved by transforming processed lumber and components into high-value final goods, effectively serving as a specialized anchor within the state's forest industry portfolio.

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

	Employment	Labor Income	Value-Added	Output
Direct	1,601	$94,514	$123,469	$339,051
Indirect	460	$34,124	$59,367	$109,923
Induced	449	$27,042	$53,004	$82,135
Total	**2,509**	**$155,680**	**$235,840**	**$531,109**

† 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)

Figure 10 illustrates the persistent structural contraction of Maryland's Wood Furniture industry. The sector has experienced a steady erosion in both workforce and production value over the

entire seven-year period. Since 2017, the sector has contracted by approximately 36.1% in employment (loss of 905 jobs) and 38.6% in real output (a decline of $213.6 million).

Unlike other sectors that showed signs of post-pandemic recovery, the Wood Furniture industry faced continued headwinds in 2023. Both metrics posted further year-over-year declines: direct output fell by 9.2% (from $373.5 million in 2022 to $339.1 million), and direct employment dropped by 8.9% (falling to 1,601 jobs). This continued downward trajectory suggests that the sector has not yet found a stable floor and is likely undergoing a significant consolidation phase.

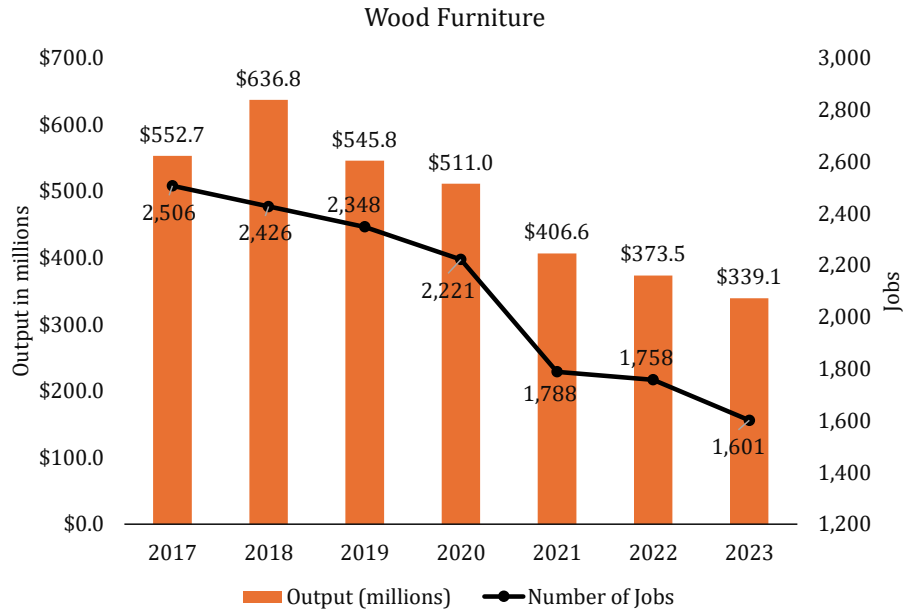


Figure 10: Trend in direct employment and output for the Wood Furniture industry in Maryland, 2017-2023.

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. It is important to interpret these figures within Maryland's specific industrial context: unlike neighboring states with fully integrated pulp-and-paper complexes, Maryland's sector is comprised exclusively of Paper Mills, with no operating pulp mills or paperboard manufacturing facilities in 2023. Despite this narrower industrial base, the sector has the most capital-intensive

and interconnected segment of the forest economy on a per-job basis. In 2023, the sector directly employed 120 workers and generated $89.6 million in direct output.

Despite its smaller direct footprint, the sector exhibits a powerful Employment Multiplier of 2.86, meaning that for every 100 jobs inside a mill, nearly 186 additional jobs are supported elsewhere in Maryland. A defining characteristic of this industry, mirroring trends seen in larger forest economies, is that its Indirect Employment (146 jobs) exceeds its Direct Employment (120 jobs). This "inverted" employment profile underscores the mill's role as a localized economic anchor; the facility itself relies on automation and high-output machinery, but its operational appetite for fiber, chemicals, energy, and logistics sustains a supply chain workforce larger than its own payroll.

When fully aggregated, the sector supports a total of 343 jobs and generates $140.5 million in total economic output. Furthermore, the quality of direct employment in this sector remains exceptional; with total labor income of nearly $10.4 million distributed among just 120 workers, the average annual compensation (including proprietor income) per direct job is approximately $86,300. This suggests that while the sector may be consolidating or specialized in Maryland, it continues to provide some of the highest-quality industrial wages within the forest products value chain.

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

	Employment	Labor Income	Value-Added	Output
Direct	120	$10,357	$17,024	$89,572
Indirect	146	$11,430	$20,085	$36,856
Induced	77	$4,628	$9,072	$14,057
Total	**343**	**$26,415**	**$46,181**	**$140,484**

† 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 the severe structural dissolution of Maryland's Pulp, Paper, and Paperboard Mills sector. Once a cornerstone of the state's forest economy, generating over $732 million in output and supporting 800 direct jobs in 2017, the industry has experienced the most precipitous contraction of any group in the study. Over the seven-year period, the sector has effectively shrunk by nearly 90%, with direct output falling by 87.8% to just $89.6 million and employment collapsing by 85.0% to a mere 120 jobs.

The trend line captures two distinct periods of extreme volatility. The first and most critical shock occurred between 2018 and 2020, where output crashed from $693.5 million to $148.5

million. This steep vertical drop corresponds with the closure of major regional milling capacity (most notably the cessation of operations at the Luke paper mill in mid-2019), which permanently removed the state's primary pulp processing infrastructure.

Following a brief and unusual spike in activity in 2022, where output temporarily rebounded to $277.9 million and employment doubled to 397 jobs, the sector faced a renewed downturn in 2023. By the close of the study period, operations had retreated to historical lows ($89.6 million output). The current data suggests that the "Pulp and Paper" sector in Maryland has transitioned from a heavy manufacturing industry into a residual niche activity, lacking the large-scale integrated mills that defined the sector at the start of the period.

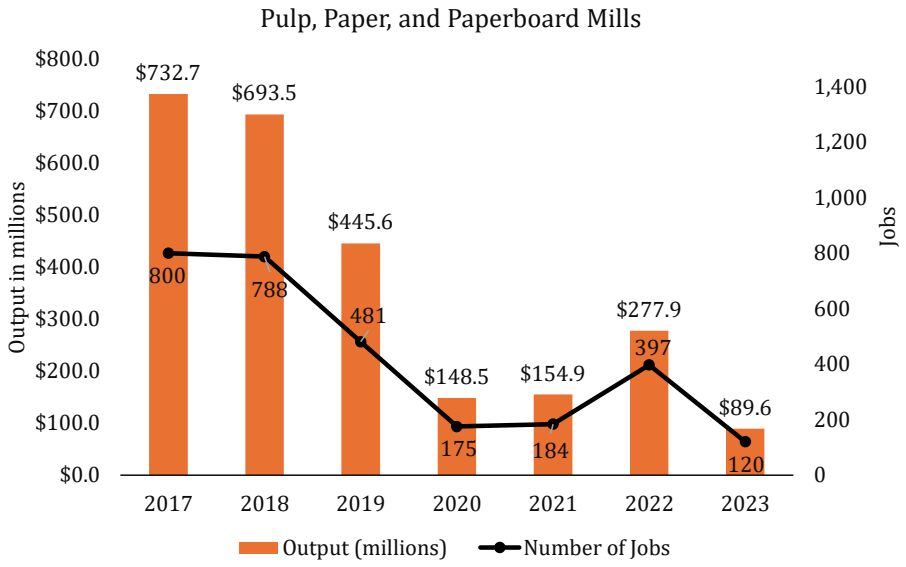


Figure 11: Trend in direct employment and output for the Pulp, Paper, and Paperboard Mills industry in Maryland, 2017-2023.

Secondary Paperboard and Other Paper Products

Economic contribution: Secondary Paperboard and Other Paper Products Industry

Table 11 outlines the economic contribution of the Secondary Paperboard and Other Paper Products industry, which includes sanitary paper product manufacturing; paper bags, coated and treated paper manufacturing; stationery; paperboard container production; and other converted paper products. Facilities in this group primarily manufacture goods from purchased

pulp, paperboard, or recycled materials. Secondary Paperboard manufacturing is a cornerstone of the forest economy. In 2023, it was the second-largest direct employer among the seven industry groups, utilizing 1,632 workers to generate $901.6 million in direct output.

The sector demonstrates a robust capacity for job creation relative to its size, driven by deep supply chain integration. The implied Employment Multiplier is 2.35, meaning that for every 100 jobs in a box plant or paper converter, roughly 135 additional jobs are supported throughout the state economy. Notably, the Indirect Employment (1,391 jobs) is substantial relative to the Direct Employment (1,632 jobs). This strong ratio (0.85 supply chain jobs for every 1 direct job) suggests that while Maryland lacks a massive primary pulp and paperboard mill capacity (as seen in Table 10), these converters still generate significant upstream activity, likely through the logistics of material transport, wholesale trade of paper inputs, and industrial maintenance services required to keep converting machinery operational.

In terms of total contribution, the sector supports a total of 3,831 jobs and contributes $1.36 billion in total economic output. Additionally, the sector serves as a critical value-adding stage in the manufacturing chain; with a direct Value-Added of $176.2 million, it effectively transforms intermediate paper inputs into high-value consumer and industrial packaging. This shows Maryland's status as a "downstream" forest economy, where the economic weight is concentrated in converting and finishing forest products rather than harvesting or primary processing.

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

	Employment	Labor Income	Value-Added	Output
Direct	1,632	$130,888	$176,184	$901,586
Indirect	1,391	$100,495	$171,048	$306,298
Induced	808	$48,682	$95,424	$147,850
Total	**3,831**	**$280,065**	**$442,655**	**$1,355,734**

† 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 Industry (2017–2023)

Figure 12 illustrates the gradual structural cooling of the Secondary Paperboard and Other Paper Products industry in Maryland. Unlike the Secondary Solid Wood sector, which saw explosive growth, the paper converting industry has followed a downward trajectory similar to the primary mills it relies on. Over the seven-year period, the sector experienced a persistent contraction, with Real Industry Output declining by 12.8% (from $1.03 billion in 2017 to $901.6 million in 2023) and direct employment falling by 14.5% (a loss of 277 jobs).

The trend line reveals that Maryland did not experience the typical "pandemic packaging boom" seen in other regions. While national demand for corrugated boxes surged in 2020 due to e-commerce, Maryland's sector actually contracted during this period, with output falling from $1.07 billion in 2019 to $1.02 billion in 2020. A notable anomaly occurred in 2022, where the sector briefly expanded its workforce by 10% (adding 165 jobs) despite output continuing to fall ($983.4 million to $951.1 million).

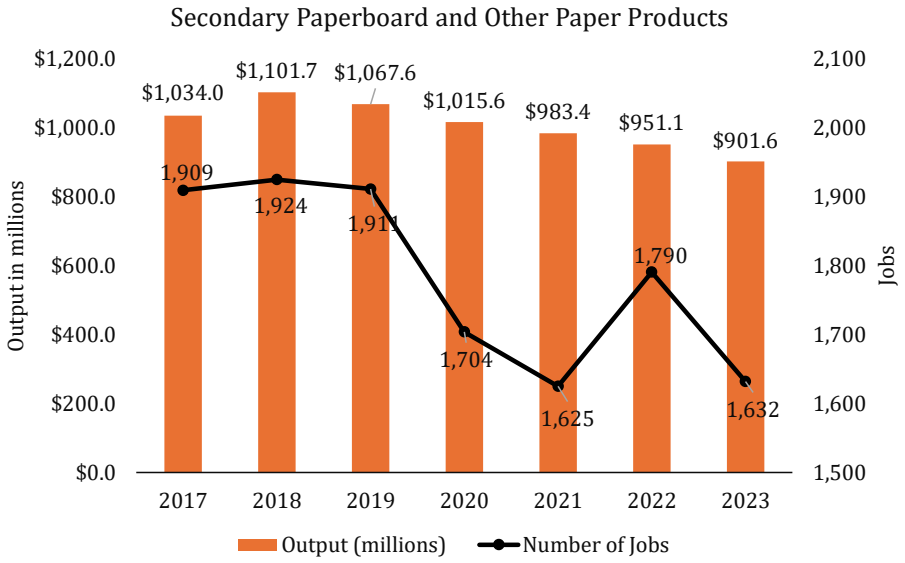


Figure 12: Trend in direct employment and output for the Secondary Paperboard and Other Paper Products industry in Maryland, 2017-2023.

Top Forest Product Sectors

Maryland's forest products sector consists of 29 active IMPLAN industries, with three sectors (maple syrup, pulp mills, and paperboard mills) absent from the state's 2023 industry mix. The hierarchy of these industries shows the state's status as a value-added manufacturing hub rather than a raw material extractor.

Paperboard Container Manufacturing serves as the sector's undisputed economic engine, ranking first across all four major economic indicators. In 2023, it supported 1,436 jobs (accounting for 17.6% of all direct forest sector employment) and generated $803.1 million in output (28.1% of the sector total). This dominance highlights the state's strategic role in the logistics and packaging supply chain. Following closely is Engineered Wood Member and Truss Manufacturing, which ranks second in both employment (1,287 jobs) and output ($536.3 million). This industry alone accounts for 18.8% of the sector's direct output, underscoring the strong linkage between Maryland's forest sector and the regional construction market. Further, Commercial Logging, which typically ranks near the top in forest-dependent states, appears only at the bottom of the top five list for employment (Ranking 5th with 643 jobs) and does not rank in the top five for output. This indicates that while logging provides the essential raw material foundation, the bulk of the economic volume is generated downstream.

Financial concentration is high within these leading sectors. The top five industries for output, led by Paperboard Container, Engineered Wood, and Miscellaneous Wood Products, collectively generated roughly $1.91 billion, accounting for approximately 67.1% of the sector's entire direct output. A similar trend is visible in Value-Added, where Paperboard Container Manufacturing contributed $158.0 million to the Gross State Product. Interestingly, Sawmills appear in the top five only for Output ($164.2 million), suggesting that while they process significant volume, the labor-intensive and higher-margin activities are concentrated in the manufacturing of finished containers, trusses, and cabinetry.

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

Rank	Employment	Labor Income	Value added	Output
1	Paperboard container manufacturing (1,436)	Paperboard container manufacturing ($1,18,985)	Paperboard container manufacturing ($1,57,983)	Paperboard container manufacturing ($8,03,124)
2	Engineered wood member and truss manufacturing (1,287)	Engineered wood member and truss manufacturing ($65,119)	Engineered wood member and truss manufacturing ($1,55,140)	Engineered wood member and truss manufacturing ($5,36,293)
3	Wood kitchen cabinet and countertop manufacturing (877)	All other miscellaneous wood product manufacturing ($48,841)	All other miscellaneous wood product manufacturing ($1,17,421)	All other miscellaneous wood product manufacturing ($2,46,756)
4	All other miscellaneous wood product manufacturing (692)	Wood kitchen cabinet and countertop manufacturing ($43,648)	Commercial logging ($73,136)	Wood kitchen cabinet and countertop manufacturing ($1,64,426)
5	Commercial logging (643)	Commercial logging ($38,021)	Wood kitchen cabinet and countertop manufacturing ($62,196)	Sawmills ($1,64,219)

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

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

Excluding the forest-products industries themselves, Maryland included 467other IMPLAN sectors in 2023 representing the broader regional economy. Table 13 highlights the top ten non-forest industries most heavily impacted by forest-sector activity. Together, these ten sectors account for 2,504 jobs, representing approximately 39.4% of all indirect and induced employment generated by the forest economy.

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

Industries	Number of Jobs
Warehousing and storage	529
Wholesale - Other durable goods merchant wholesalers	377
Other real estate	307
Couriers and messengers	284
Truck transportation	252
Employment services	170
Full-service restaurants	152
Limited-service restaurants	147
Services to buildings	144
Hospitals	142
Total	**2,504**

The composition of these top sectors shows three distinct drivers of impact:

- **Logistics and Distribution Dominance:** The strongest linkages are unequivocally found in the storage and movement of physical goods. Warehousing and Storage ranks as the single largest supporting sector (529 jobs), followed by Wholesale - Other Durable Goods (377 jobs), Couriers and Messengers (284 jobs), and Truck Transportation (252 jobs). This specific hierarchy, where Warehousing takes the top spot, strongly correlates with Maryland's status as a hub for Paperboard Container and Secondary Solid Wood manufacturing.
- **Business Support Services:** The prominence of Other Real Estate (307 jobs) and Services to Buildings (144 jobs) highlights the sector's reliance on industrial property leasing and facility maintenance. Additionally, Employment Services (170 jobs) indicates a significant integration of temporary staffing agencies, a common practice in modern manufacturing and logistics operations to manage fluctuating production volumes.

- **Induced Household Spending:** The presence of Restaurants (Full-service: 152 jobs; Limited service: 147 jobs) and Hospitals (142 jobs) illustrates the "induced" economic power of the forest workforce. These 441 combined jobs are supported not by mill supply chains, but by the wages spent by forest-sector employees in their local communities, driving demand for healthcare, dining, and service-based amenities.

Table 14 details the financial ripple effects of the forest sector, highlighting the industries that benefit most from the sector's operational spending and workforce income. In terms of economic output, the forest sector's influence shifts decisively toward capital-intensive infrastructure and commercial trade. The top ten industries supported by forest-sector activity generated a combined $552.7 million in 2023.

The dominant category involves the wholesale distribution and logistics of goods, reflecting the industry's reliance on a complex supply chain to move finished packaging, furniture, and building materials.

The leading sector is Wholesale - Other Durable Goods, generating $137.2 million in output. When combined with Wholesale - Nondurable Goods ($55.3 million), the wholesale trade sector alone accounts for nearly $192.5 million (approx. 35%) of the top-ten economic activity. Supporting this trade volume are Truck Transportation ($52.9 million) and Warehousing and Storage ($47.0 million). The high ranking of these sectors confirms the earlier findings regarding the state's focus on secondary manufacturing (e.g., paperboard containers), which require extensive storage and freight capabilities.

Real Estate and Corporate Services: The presence of Owner-Occupied Housing as the second-largest sector ($66.6 million) is a significant indicator of the "induced" effect. In economic modeling, this sector represents the imputed rental value of homeownership. Its high ranking confirms that the income generated by Maryland's forest manufacturers sustain high levels of homeownership and household wealth within the state. Similarly, Other Real Estate ($59.0 million) ranks third, likely driven by the leasing of industrial facilities and commercial properties used by manufacturers.

Table 14: Top Ten Industries impacted by Maryland State's Forest Products Industries in terms of output production in 2023. [†]

Industries	Output
Wholesale - Other durable goods merchant wholesalers	$137,244
Owner-occupied housing	$66,626
Other real estate	$59,044
Wholesale - Other nondurable goods merchant wholesalers	$55,276
Truck transportation	$52,909
Warehousing and storage	$47,004
Electric power transmission and distribution	$46,328
Management of companies and enterprises	$30,360
Hospitals	$29,670
Data processing, hosting, and related services	$28,229
Total	**$552,689**

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

Importance of the Forest Products Industries in Context

Natural Resources and Agricultural Industries

To contextualize the economic importance of the forest economy, Table 15 compares the direct contributions of Maryland's four primary natural resource sectors: Forest Products, Agriculture, Commercial Fishing/Hunting, and Mining/Oil & Gas. The data shows that unlike states dominated by a single resource, Maryland exhibits a divided landscape where Agriculture is the primary employer, while Mining has emerged as the dominant source of financial output and labor income.

Agriculture is the largest employer among these groups, supporting 20,461 jobs. This accounts for 54.6 percent of the total natural resources workforce, significantly exceeding Forest Products (8,139 jobs) and Mining (6,537 jobs). However, in terms of wealth generation for workers, the dynamic shifts toward the extractive industries. Mining, Oil, and Gas generated the highest Labor Income at $1.08 billion, slightly edging out Agriculture ($1.06 billion) and more than doubling the labor income of the Forest Products sector ($460.4 million).

The Value-Added (GSP) metrics show a unique dynamic in Maryland driven by extreme capital intensity. While Forest Products contributed a substantial $862.6 million to the state GSP, the Mining, Oil, and Gas sector ranked first in this category with a massive $3.16 billion. This suggests that while Agriculture is the dominant labor-provider, the Mining sector is operating with significantly higher capital intensity per worker, generating nearly four times the economic value added of the forest sector despite having a smaller workforce.

The comparative trend analysis highlights significant volatility across the natural resource landscape. The Forest Products sector experienced a structural contraction, with employment declining by 7.6% and Output by 13.6%. However, this decline was moderate compared to the divergent trends in other sectors. Commercial Fishing saw a troubling decoupling: while employment grew by 18.4%, output plummeted by 37.8%, indicating a drop in productivity. Agriculture displayed resilience, shedding 10.4% of its jobs but increasing its Labor Income by 89.9%. Conversely, the Mining sector exhibited explosive growth, with Value-Added surging by 592.9% over the study period, effectively reshaping the state's natural resource financial hierarchy.

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

Industry	Employment	Δ2017	Labor Income	Δ2017††	Value-Added	Δ2017††	Output	Δ2017††
1. Forest Products	8,139	-7.6%	$460,422	-36.1%	$862,609	-3.4%	$2,853,015	-13.6%
2. Commercial fishing, hunting & trapping	2,367	18.4%	$16,805	-31.1%	$62,504	-10.1%	$66,633	-37.8%
3. Mining, and oil & gas production	6,537	42.9%	$1,079,237	659.6%	$3,162,010	592.9%	$6,640,914	634.1%
4. Agriculture production (plant crops and animals)	20,461	-10.4%	$1,060,120	89.9%	$1,193,472	14.8%	$3,027,764	-4.7%
Total	**37,504**	**-1.9%**	**$2,616,584**	**81.0%**	**$5,280,594**	**114.8%**	**$12,588,325**	**68.1%**

† 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 Maryland's industrial base, Table 16 compares the aggregated "Forest Products manufacturing" contribution against the state's other major manufacturing groups. Note that in this context, "Forest Products" refers specifically to the manufacturing sub-sectors (Groups 3 through 7), excluding the extraction activities of forestry and logging and other non-manufacturing sectors (IMPLAN codes 10, 15, 16, 19, and 40 see Appendix A). The data shows that unlike typical forest-dependent economies, the state's manufacturing sector is highly diversified and dominated by advanced technology and non-durable goods. In this competitive landscape, the Forest Products sector serves as a specialized, mid-tier contributor rather than a primary industrial anchor.

In 2023, Forest Products Manufacturing ranked 8th in employment (6,911 jobs) and 8th in direct output ($2.75 billion) among the 16 identified manufacturing groups. The sector operates in the shadow of three massive industrial pillars: Food Manufacturing (22,830 jobs), Computer and Electronic Product Manufacturing (21,482 jobs), and Chemical Manufacturing (13,016 jobs). Together, these top three sectors account for nearly 47% of the entire manufacturing workforce and over 56% of total output ($38.4 billion).

The Forest Products sector accounts for approximately 5.7% of all manufacturing jobs and 4.0% of total manufacturing output. While these shares are modest, the sector remains a vital component of the diversified industrial mix, generating more output than established heavy industries like Transportation Equipment ($2.59 billion) and Printing ($1.54 billion). However, a divergence appears in value generation. While the sector produces substantial gross output ($2.75 billion), its Value-Added contribution is comparatively low at $767.2 million (Rank 11). This results in a Value-Added-to-Output ratio of 27.9%, significantly lower than high-tech sectors like Computer and Electronic Products (42.9%) or Chemical Manufacturing (50.4%). This structural characteristic suggests that the state's forest manufacturing base acts primarily as an intermediate processor, converting raw inputs into physical goods, rather than a developer of high-margin intellectual property or proprietary chemical compounds. Nevertheless, with an output-per-worker of approximately $397,000, the forest sector remains a productive and essential segment of the traditional manufacturing base.

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

Manufacturing Industries	Employment	Labor Income	Value Added	Output
Food	22,830	$1,533,692	$3,011,908	$11,638,576
Computer and Electronic Product	21,482	$3,710,942	$5,602,887	$13,073,088
Chemical	13,016	$2,515,655	$6,899,079	$13,691,045
Fabricated Metal	8,296	$750,192	$1,064,696	$2,915,578
Machinery	8,112	$870,079	$1,136,992	$4,411,986
Miscellaneous	7,689	$578,744	$1,219,118	$2,545,590
Printing	7,509	$482,424	$765,941	$1,540,156
Forest Products	6,911	$403,615	$767,229	$2,746,729
Plastics and Rubber Products	6,295	$620,050	$969,772	$2,858,564
Beverage and Tobacco Product	4,508	$301,138	$845,949	$2,653,970
Transportation Equipment	4,145	$502,873	$1,159,613	$2,587,708
Nonmetallic Mineral Product	3,972	$354,889	$766,868	$1,931,666
Textiles and Apparel	3,656	$217,977	$298,273	$740,083
Electrical Equipment	1,860	$209,378	$230,542	$816,355
Primary Metal	927	$159,560	$131,448	$931,421
Petroleum and Coal	744	$125,307	$969,793	$3,233,253
Total	**121,951**	**$13,336,515**	**$25,840,108**	**$68,315,769**
Compared to 2017	**3%**	**28%**	**16%**	**26%**

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

Summary

The forest products industry in Maryland functions as a specialized, highly integrated economic system connecting rural land management with advanced manufacturing. Using 2023 IMPLAN data, this study aggregates 29 economic sectors into seven industry groups to capture the full scope of direct activity and supply-chain ripples. In 2023, the sector directly supported 8,139 jobs and generated $2.85 billion in direct output. When accounting for indirect supply-chain purchases and induced household spending, the total economic contribution reached 14,498 jobs, $4.18 billion in output, and $1.65 billion in value added.

The industry exhibits robust economic leverage, evidenced by multipliers of 1.78 for employment and 1.91 for value added. These figures underscore that the sector creates nearly double the wealth and supports nearly one additional job in the broader economy for every job within its own fence lines. Performance trends since 2017 reveal a sector in structural adjustment. While direct employment fell by 7.6 percent and direct output by 13.6 percent, the composition of the workforce has shifted. Real output per job decreased from approximately $374,600 in 2017 to $350,500 in 2023.

Within the aggregated industry groups, Secondary Solid Wood Products serves as the dominant engine for both employment and revenue, effectively replacing traditional extraction sectors as the primary economic driver. At the disaggregated individual sector level, the economy is anchored by Paperboard Container Manufacturing and Engineered Wood Member and Truss Manufacturing, which lead in employment and value creation. This robust manufacturing base stimulates significant demand across the service economy, creating an economic impact that extends well beyond the factories. The top ten non-forest industries impacted include Wholesale Trade, Owner-Occupied Housing, and Warehousing, which together account for over $550 million in supported output. Overall, while Maryland's forest products industry has consolidated in size since 2017, it remains a foundational pillar of the state's industrial economy, driving a significant share of its natural resource manufacturing and providing critical employment in the packaging and construction supply chains.

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Appendix A: Forest Products Industries Groupings and IMPLAN Sectors

A1: Forestry Industry Grouping and IMPLAN Sectors

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

Note: Sectors with an "*" indicate that only a portion of the sector is included in the forest products industries.
Sectors denoted by "***" indicate that the corresponding FPI is not present in Maryland.

A2: Logging Industry Grouping and IMPLAN Sector

Industry Code	Industry name
16	Commercial logging

A3: Primary Solid Wood Products Industry Grouping and IMPLAN Sectors

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

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

Commented [PR2]:
Why B1? Why not Table A1 or just A1?

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

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

A5: Wood Furniture Industry Grouping and IMPLAN Sectors.

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

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

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

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

Sectors denoted by "***" indicate that the corresponding FPI is not present in Maryland.

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

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

Appendix B. Detailed Economic Contribution Results of 2023

B1: Direct Economic Contribution by IMPLAN Sector, 2023

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

Commented [PR3]: Why C1?

Industries	Employment	Labor Income	Value-Added	Output
All other crop farming	0	$0	$0	$0
Forestry, forest products, and timber tract production	71	$4,157	$4,355	$5,057
Support activities for agriculture and forestry	503	$13,245	$13,451	$14,542
Total	**575**	**$17,402**	**$17,806**	**$19,599**

† 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	643	$38,021	$73,136	$75,769
Total	**643**	**$38,021**	**$73,136**	**$75,769**

† 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	10	$1,383	$4,437	$10,918
Sawmills	345	$10,917	$32,983	$164,219
Wood preservation	124	$5,189	$31,678	$112,704
Veneer and plywood manufacturing	47	$1,193	$4,423	$16,449
Reconstituted wood product manufacturing	40	$1,553	$10,621	$37,081
Total	**566**	**$20,235**	**$84,142**	**$341,370**

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

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

Industries	Employment	Labor Income	Value-Added	Output
Engineered wood member and truss manufacturing	1,287	$65,119	$155,140	$536,293
Wood windows and door manufacturing	17	$556	$1,227	$4,665
Cut stock, resawing lumber, and planing	59	$1,722	$7,137	$23,286
Other millwork, including flooring	445	$16,074	$52,935	$148,792
Wood container and pallet manufacturing	469	$15,324	$32,406	$113,538
Manufactured home (mobile home) manufacturing	3	$170	$266	$984
Prefabricated wood building manufacturing	30	$1,199	$4,317	$11,754
All other miscellaneous wood product manufacturing	692	$48,841	$117,421	$246,756
Total	**3,003**	**$149,005**	**$370,849**	**$1,086,068**

† 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	877	$43,648	$62,196	$164,426
Upholstered household furniture manufacturing	7	$387	$538	$1,616
Non-upholstered wood household furniture manufacturing	72	$4,860	$6,478	$15,049
Institutional furniture manufacturing	147	$8,385	$11,637	$34,057
Wood office furniture manufacturing	6	$332	$565	$1,606
Custom architectural woodwork and millwork	361	$26,104	$24,161	$80,900
Showcase, partition, shelving, and locker manufacturing	131	$10,797	$17,893	$41,396
Total	**1,601**	**$94,514**	**$123,469**	**$339,051**

† 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	0	$0	$0	$0
Paper mills	120	$10,357	$17,024	$89,572
Paperboard mills	0	$0	$0	$0
Total	**120**	**$10,357**	**$17,024**	**$89,572**

† 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	1,436	$118,985	$157,983	$803,124
Paper bag and coated and treated paper manufacturing	76	$4,980	$6,810	$32,781
Stationery product manufacturing	18	$733	$891	$6,752
Sanitary paper product manufacturing	53	$3,694	$6,838	$40,881
All other converted paper product manufacturing	49	$2,497	$3,661	$18,048
Total	**1,632**	**$130,888**	**$176,184**	**$901,586**

† 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	0	$0	$0	$0
Forestry, forest products, and timber tract production	76	$4,098	$4,370	$6,352
Support activities for agriculture and forestry	64	$1,880	$1,826	$2,072
Total	**140**	**$5,978**	**$6,195**	**$8,425**

† 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	648	$30,807	$39,041	$53,294
Total	**648**	**$30,807**	**$39,041**	**$53,294**

† 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	0	$0	$0	$0
Sawmills	511	$33,234	$35,549	$148,074
Wood preservation	104	$9,194	$11,613	$61,328
Veneer and plywood manufacturing	0	$0	$0	$0
Reconstituted wood product manufacturing	28	$2,286	$3,071	$14,956
Total	**643**	**$44,715**	**$50,233**	**$224,358**

† 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	776	$47,959	$51,600	$176,246
Wood windows and door manufacturing	156	$13,077	$14,302	$38,912
Cut stock, resawing lumber, and planing	44	$3,887	$4,438	$11,607
Other millwork, including flooring	536	$43,925	$49,820	$124,752
Wood container and pallet manufacturing	313	$22,851	$24,190	$56,081
Manufactured home (mobile home) manufacturing	3	$544	$555	$1,115
Prefabricated wood building manufacturing	33	$3,721	$3,831	$7,599
All other miscellaneous wood product manufacturing	305	$39,093	$43,814	$80,825
Total	**2,167**	**$175,056**	**$192,549**	**$497,136**

† 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	1,117	$54,317	$62,936	$163,886
Upholstered household furniture manufacturing	208	$10,085	$12,639	$41,677
Non-upholstered wood household furniture manufacturing	76	$4,041	$4,827	$10,590
Institutional furniture manufacturing	106	$6,617	$8,434	$21,920
Wood office furniture manufacturing	82	$4,735	$7,684	$19,118
Custom architectural woodwork and millwork	517	$36,128	$44,245	$93,415
Showcase, partition, shelving, and locker manufacturing	399	$26,642	$36,136	$90,413
Total	**2,506**	**$142,565**	**$176,901**	**$441,018**

† 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	47	$4,351	$5,642	$29,625
Paper mills	669	$61,035	$97,845	$489,059
Paperboard mills	84	$7,998	$12,425	$65,953
Total	**800**	**$73,384**	**$115,912**	**$584,636**

† 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	1,648	$102,654	$128,888	$725,725
Paper bag and coated and treated paper manufacturing	48	$3,401	$4,615	$20,637
Stationery product manufacturing	125	$7,637	$10,176	$44,125
Sanitary paper product manufacturing	32	$1,603	$3,507	$20,188
All other converted paper product manufacturing	55	$1,732	$2,080	$14,338
Total	**1,909**	**$117,026**	**$149,267**	**$825,013**

† 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	0	$0	$0	$0
Forestry, forest products, and timber tract production	76	$5,011	$5,343	$7,962
Support activities for agriculture and forestry	64	$2,298	$2,232	$2,597
Total	**140**	**$7,309**	**$7,575**	**$10,559**

† 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	648	$37,668	$47,737	$66,794
Total	**648**	**$37,668**	**$47,737**	**$66,794**

† 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	0	$0	$0	$0
Sawmills	511	$40,637	$43,466	$185,584
Wood preservation	104	$11,242	$14,200	$76,863
Veneer and plywood manufacturing	0	$0	$0	$0
Reconstituted wood product manufacturing	28	$2,795	$3,755	$18,745
Total	**643**	**$54,674**	**$61,422**	**$281,193**

† 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	776	$58,640	$63,093	$220,892
Wood windows and door manufacturing	156	$15,990	$17,488	$48,769
Cut stock, resawing lumber, and planing	44	$4,752	$5,426	$14,547
Other millwork, including flooring	536	$53,708	$60,916	$156,354
Wood container and pallet manufacturing	313	$27,941	$29,578	$70,288
Manufactured home (mobile home) manufacturing	3	$665	$678	$1,397
Prefabricated wood building manufacturing	33	$4,550	$4,684	$9,523
All other miscellaneous wood product manufacturing	305	$47,800	$53,573	$101,299
Total	**2,167**	**$214,046**	**$235,436**	**$623,070**

† 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	1,117	$66,415	$76,953	$205,401
Upholstered household furniture manufacturing	208	$12,331	$15,454	$52,234
Non-upholstered wood household furniture manufacturing	76	$4,942	$5,902	$13,273
Institutional furniture manufacturing	106	$8,091	$10,313	$27,473
Wood office furniture manufacturing	82	$5,789	$9,395	$23,961
Custom architectural woodwork and millwork	517	$44,175	$54,100	$117,079
Showcase, partition, shelving, and locker manufacturing	399	$32,576	$44,185	$113,316
Total	**2,506**	**$174,319**	**$216,302**	**$552,737**

† 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	47	$5,320	$6,899	$37,130
Paper mills	669	$74,630	$119,638	$612,947
Paperboard mills	84	$9,779	$15,192	$82,660
Total	**800**	**$89,729**	**$141,729**	**$732,737**

† 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	1,648	$125,518	$157,595	$909,566
Paper bag and coated and treated paper manufacturing	48	$4,158	$5,644	$25,865
Stationery product manufacturing	125	$9,338	$12,443	$55,302
Sanitary paper product manufacturing	32	$1,960	$4,288	$25,302
All other converted paper product manufacturing	55	$2,117	$2,543	$17,970
Total	**1,909**	**$143,091**	**$182,513**	**$1,034,005**

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