



Forest Products Industries' Economic Contributions in the Northeast and Midwest region, 2023

Prepared For:

Northeast-Midwest State Foresters Alliance
Washington DC, USA

Prepared by:

Basanta **Lamsal**, PhD
Jagdish **Poudel**, PhD
Raju **Pokharel**, PhD

Department of Forestry
Michigan State University
East Lansing, Michigan, USA



Department of Forestry
MICHIGAN STATE UNIVERSITY



April 2026

<https://www.canr.msu.edu/for/>

Authors

Basanta Lamsal, PhD: Dr. Basanta Lamsal is a Postdoctoral Fellow in the Department of Forestry at Michigan State University. Dr. Lamsal specializes in the application of input–output economics to the forest sector, forest resource economics, and the auction theory applied to timber markets.

Jagdish Poudel, PhD: Dr. Jagdish Poudel is Forest Economist for the Michigan Department of Natural Resources and an Adjunct Assistant Professor in the Department of Forestry at Michigan State University. Dr. Poudel specializes in traditional forest economics research such as analyzing stumpage demand and supply, timber prices, and forest product utilization, markets, and business. His interests extend to economic analyses of new wood innovations, such as mass timber and woody biomass energy, as well as ecosystem services markets, including habitat conservation and wetland mitigation banking, outdoor recreation and tourism, urban and community forestry, international forestry, and forest carbon markets.

Raju Pokharel, PhD: Dr. Raju Pokharel is an Assistant Professor of Forest Resource Economics in the Department of Forestry at Michigan State University. Dr. Pokharel specializes in evaluating and developing market opportunities for forest products including timber, bioenergy, mass timber, biochar, and others, estimating forest product feedstock supply and market competitions, and assessing the economic trade-off of timber products under different management strategies.

For more information:

Forest Economics and Resource Management Lab (MSU FERM)

URL: <https://www.canr.msu.edu/FERM/>

Room 208, Natural Resources Building, 480 Wilson Rd,

Department of Forestry, Michigan State University

East Lansing, Michigan 48842

Project funded by:

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

Suggested citation :

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

Photo Credit: Raju Pokharel

Foreword

After the COVID-19 pandemic and its broad shocks to global supply chains, labor markets, and product demand, including the forest sector, understanding how local economies connect to larger regional markets is more important than ever. Timely updates are essential. The regional report on the Forest Products Industry Sector performance of Northeast-Midwest region was published in 2020 using 2017 IMPLAN data and is now updated with 2023 data so decision makers can evaluate current conditions and how they have shifted in the post-pandemic period. The following regional report represents a coordinated effort of states participating in the Northeast–Midwest State Foresters Alliance (NMSFA), Forest Markets and Utilization Committee (FMUC), to assemble clear, comparable information on regional markets in the Northeastern and Midwestern United States. Updates are necessary so decision-makers can track trends over time, evaluate post-pandemic adjustments, and respond to emerging opportunities and risks in a timely manner.

This report results from the cooperative agreement 24-CA-11132544-047 between the Northeast-Midwest State Foresters Alliance, inc. and the USDA, Forest Service State, Private & Tribal Forestry “Project Title: Build and Support State Forestry Utilization and Marketing Capacity Through Targeted Investments in State Forestry Utilization and Marketing Programs. The grant supported a region-wide and state-by-state analysis of forest products industries economic data using the IMPLAN model, with technical support from Forest economists from Michigan State University and State agencies. On behalf of the FMUC, Michigan State University, coordinated the project to analyze the 2023 IMPLAN data, and prepare drafts for both regional and state reports, followed by review and revision with participating states. The information in these pages is intended to help states make well-grounded decisions about their forest products within a regional context and to offer practical insights that can shape forest landscapes that are both ecologically and economically sustainable. On behalf of the FMUC, I am pleased to present Forest Products Industries’ Economic Contributions in the Northeast and Midwest: 2023

Jeremy Fauskee

Chair, 2025

Northeast-Midwest State Foresters Alliance, Forest Markets & Utilization Committee

Minnesota Department of Natural Resources

Acknowledgements

This project was supported by the cooperative agreement 24-CA-11132544-047 between the Northeast-Midwest State Foresters Alliance, Inc. and the USDA, Forest Service State, Private & Tribal Forestry “Project Title: Build and Support State Forestry Utilization and Marketing Capacity Through Targeted Investments in State Forestry Utilization and Marketing Programs”, and conducted by the Department of Forestry, Michigan State University, on behalf of the Northeast-Midwest State Foresters Alliance Forest Markets & Utilization Committee. This work was made possible by the support and encouragement of the state foresters in participating states. Many other individuals from various states provided additional review and assistance, and we thank them for their contributions.

Contents

Authors.....	2
Foreword.....	4
Acknowledgements.....	5
Contents.....	6
Tables.....	8
Figures.....	9
Executive Summary.....	10
Glossary.....	12
Forestry Terms.....	12
Economic Contribution Terms.....	13
Introduction.....	15
Forest Resources of Northeast-Midwest state.....	16
Economic contribution of the Forest Product Industries, 2023.....	21
Economic Performance Trends of Forest Product Industry (2017-2023).....	23
Direct and Total Contributions by Forest Product Industry Groups.....	25
Forestry.....	28
Logging.....	30
Primary Solid Wood Products.....	32
Secondary Solid Wood Products.....	34
Wood Furniture.....	37
Pulp, Paper, and Paperboard Mills.....	39
Secondary Paperboard and Other Paper Products.....	41
Major Forest Product Sectors.....	44
Major Non-Forest Industries supported by the Forest Sector in 2023.....	47
Importance of the Forest Products Industries in Context.....	50
Natural Resources and Agricultural Industries.....	50
Manufacturing Industries.....	53
States comparison.....	55

Summary	62
References.....	63
Appendix A: Forest Products Industries Groupings and IMPLAN Sectors	65
Appendix B. Detailed Economic Contribution Results of 2023.....	68
B1: Direct Economic Contribution by IMPLAN Sector, 2023.....	68
B2: Direct Economic Contribution by IMPLAN Sector, 2017 (2017 USD)	73
B3: Direct Economic Contribution by IMPLAN Sector, 2017 (2023 USD)	77
B4: Compilation of State-level Direct Contributions, 2023 ⁺	82
B5: State Direct Employment by Industry group, 2023	83
B6: State Direct Output by Industry group, 2023	85

Tables

Table 1: Characteristics of Growing Stock in Northeast and Midwest regions, 2023. [†]	20
Table 2: Statewide Economic Contribution of Forest Products Industries, 2023. [†]	25
Table 3: Direct Economic Contributions in Northeast-Midwest regions, Industry Groups, 2023. [†]	26
Table 4: Total Economic Contributions in Northeast-Midwest state, Industry Groups, 2023. [†]	27
Table 5: Direct, Indirect, and Induced Economic Contributions of the Forestry Industry in Northeast-Midwest, 2023. [†]	28
Table 6: Direct, Indirect, and Induced Economic Contributions of the Logging Industry in Northeast-Midwest, 2023. [†]	31
Table 7: Direct, Indirect, and Induced Economic Contributions of the Primary Solid Wood Products Industry in Northeast-Midwest, 2023. [†]	33
Table 8: Direct, Indirect, and Induced Economic Contributions of the Secondary Solid Wood Products Industry in Northeast-Midwest, 2023. [†]	35
Table 9: Direct, Indirect, and Induced Economic Contributions of the Wood Furniture Industry in Northeast-Midwest, 2023. [†]	37
Table 10: Direct, Indirect, and Induced Economic Contributions of the Pulp, Paper, and Paperboard Mills Industry in Northeast-Midwest, 2023. [†]	40
Table 11: Direct, Indirect, and Induced Economic Contributions of the Secondary Paperboard and Other Paper Products Industry in Northeast-Midwest, 2023. [†]	42
Table 12: Top five industries in terms of direct Economic Contributions in Northeast-Midwest state, 2023. [†]	46
Table 13: Top Ten Industries Impacted by Northeast-Midwest state's Forest Products Industries in terms of number of jobs in 2023.	47
Table 14: Top Ten Industries impacted by Northeast-Midwest State's Forest Products Industries in terms of output production in 2023. [†]	49
Table 15: Natural Resources and Agricultural Production Industries in Northeast-Midwest state, 2023. [†]	52
Table 16: Manufacturing Industries in Northeast-Midwest state, 2023. [†]	54

Figures

Figure 1: Northeast-Midwest’s Forest Land area in acres by Land use type, 2023 (US Forest Service).....	16
Figure 2: Northeast-Midwest’s Forest Land area in acres by Ownership group, 2023 (US Forest Service).....	17
Figure 3: Northeast-Midwest’s Forest Land area in acres by Forest type group, 2023 (US Forest Service).....	18
Figure 4: Direct output and employment, 2017–2023, Northeast-Midwest state forest products industries.....	24
Figure 5: Direct value-added and labor income, 2017–2023, Northeast-Midwest state, forest products industries.	25
Figure 6: Trend in direct employment and output for the Forestry industry in Northeast-Midwest, 2017–2023.	30
Figure 7: Trend in direct employment and output for the Logging industry in Northeast-Midwest, 2017–2023.	32
Figure 8: Trend in direct employment and output for the Primary Solid Wood Products industry in <i>Northeast-Midwest</i> , 2017–2023.	34
Figure 9: Trend in direct employment and output for the Secondary Solid Wood Products industry in Northeast-Midwest, 2017–2023.....	36
Figure 10: Trend in direct employment and output for the Wood Furniture industry in Northeast-Midwest, 2017–2023.....	39
Figure 11: Trend in direct employment and output for the Pulp, Paper, and Paperboard Mills industry in Northeast-Midwest, 2017–2023.....	41
Figure 12: Trend in direct employment and output for the Secondary Paperboard and Other Paper Products industry in Northeast-Midwest, 2017–2023.	43
Figure 13: Comparison of direct employment contribution of 20 Northeast-Midwest regions. .	57
Figure 14: Comparison of direct output contribution of 20 Northeast-Midwest regions.....	60

Executive Summary

This report assesses broad forest conditions and economic contributions of forest products industries in Northeast and Midwest states. It is one of 20 coordinated and comparable state reports in the Northeastern and Midwestern United States that provide an improved assessment of forests and the economies they support. Forest data come from the U.S. Forest Service's Forest Inventory and Analysis (FIA), and economic data come from the 2023 Impact Analysis for Planning (IMPLAN), a commercially available economic input-output (IO) model.

Based on recent FIA data of 2023, the Northeast and Midwest regions have 174.2 million acres of forest land, covering about 42.4 percent of their land base. Most of this forest land, or 93.6 percent, is classified as timberland capable of producing commercial timber. The majority (72.6 percent) was privately owned, while state and local governments own about 19.1 percent, and about 8.3 percent is under federal ownership.

Forest Product Industries

This report presents seven forest products industries, which are based on 32 economic sectors in IMPLAN: 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 514,361 jobs and generated \$203.33 billion in output, \$62.86 billion in value added, and \$41.65 billion in labor income. When indirect supply-chain linkages and induced household-spending effects are included, the sector's total economic footprint reached 1,285,819 jobs, \$386.55 billion in output, \$167.50 billion in value added, and \$101.50 billion in labor income. The sector exerts a notable multiplier effect on the broader economy; for every 100 direct jobs in the forest industry, roughly 150 additional jobs are supported elsewhere in the region.

Leading Forest Products Industry Groups (direct contribution)

Across the Northeast-Midwest region's seven forest products industry groups, secondary paperboard and other paper products were the largest contributors in 2023, ranking first in direct labor income (\$12.79 billion), value added (\$22.05 billion), and output (\$79.81 billion), as well as in employment with 136,018 jobs. Wood furniture ranked second in employment with 131,346 jobs, followed closely by secondary solid wood products with 128,997 jobs; both groups also contributed substantially to labor income, value added, and output. On the other side, forestry was the smallest industry group across all measures, with 15,469 jobs, \$586.56 million in labor income, \$652.27 million in value added, and \$787.03 million in output. In terms of employment, pulp, paper, and paperboard mills rank fifth with 32,081 jobs, but they place fourth in labor income (\$3.80 billion), value added (\$8.16 billion), and output (\$27.96 billion).

Logging, by contrast, is the sixth contributor across all measures, with 30,882 jobs, \$2.17 billion in labor income, \$3.06 billion in value added, and \$3.19 billion in output.

Leading Individual Forest Products Sectors (direct contribution)

Among the Northeast and Midwest regions, paperboard container manufacturing led all four indicators in 2023, with 76,905 direct jobs, \$7.23 billion in labor income, \$11.36 billion in value added, and \$45.92 billion in output. Wood kitchen cabinet and countertop manufacturing followed as the second-largest employer with 50,672 jobs, and it also ranked second in labor income (\$3.35 billion) and fourth in value added (\$4.06 billion). Wood windows and door manufacturing ranked third in employment (32,011 jobs) and placed fifth in both labor income (\$2.76 billion) and value added (\$3.48 billion). In comparison, wood container and pallet manufacturing ranked fourth in employment (31,417 jobs). Commercial logging was fifth in employment with 30,882 jobs. On the output side, paper mills ranked second with \$21.80 billion, paper bag and coated and treated paper manufacturing ranked third with \$15.17 billion, sawmills ranked fourth with \$11.49 billion, and sanitary paper product manufacturing ranked fifth with \$10.94 billion.

Northeast and Midwest Region's Forest Products Industries Compared to Others sectors

In 2023, the forest products industries in the Northeast and Midwest regions accounted for 514,361 direct jobs, representing 29.3 percent of total employment across the four major natural resource-based sectors. Employment in forest products was more than double that of mining, oil, and gas production (233,866 jobs) and over seventeen times higher than commercial fishing, hunting, and trapping (29,569 jobs), though about 47.5 percent lower than agricultural production (979,569 jobs).

The sector generated \$41.65 billion in labor income, exceeding both mining, oil, and gas production (\$36.50 billion) and commercial fishing, hunting, and trapping (\$1.06 billion), but remaining below agriculture (\$55.69 billion). Forest products contributed \$62.86 billion in value added, ranking third behind agriculture (\$87.59 billion) and mining (\$105.68 billion), but well ahead of commercial fishing, hunting, and trapping (\$1.83 billion). In terms of output, the forest products sector produced \$203.33 billion, slightly surpassing mining, oil, and gas production (\$202.66 billion) and 7.3 percent higher than agriculture (\$189.46 billion), while far greater than commercial fishing, hunting, and trapping (\$1.88 billion).

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

The Northeast and Midwest regions of the United States contain highly diverse and economically valuable forests (Juzwik et al. 2021a; Juzwik et al. 2021b). The Midwest's ecosystems are dominated by oak/hickory, maple/beech/birch, and aspen/birch forest types, with significant conifer resources in the Lake States (Juzwik et al. 2021a). Similarly, the heavily forested Northeast features northern hardwoods, oak–hickory, pine, and spruce/fir types (Juzwik et al. 2021b). 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 regional report on FPI contributions on the Northeast-Midwest region 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 the Northeast-Midwest has shifted between 2017 and 2023 in terms of employment, output, labor income, and the Gross Regional Product (GRP), also known as value added. 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.

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 the Northeast-Midwest, (ii) Economic Contributions of the Northeast-Midwest FPIs, (iii) Comparing FPIs with other industries, 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 Northeast-Midwest state

Using 2023 estimates from the USDA Forest Inventory and Analysis program, Northeast-Midwest region's land base totals 411.27 million acres. Of this total, 174.27 million acres, or 42.4 percent, meet the FIA definition of forest land, and 273.05 million acres, or 57.6 percent, are in non-forest uses. FIA defines forest land as land 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. Within the forest land base, timberland comprises 163.09 million acres, or 93.6 percent, and is unreserved forest capable of producing at least 20 cubic feet of wood per acre per year (Figure 1). Reserved forestland totals 9.82 million acres, or 5.6 percent, and is withdrawn from timber utilization by legal or administrative designation. Other forestlands total 1.31 million acres, or 0.8 percent, and is unreserved but of low productivity, generally less than 20 cubic feet per acre per year. In practical terms, roughly 172.92 million acres are available and biophysically suitable for commercial timber management, while about 1.31 million acres are either reserved or too low productivity to contribute materially to timber supply.

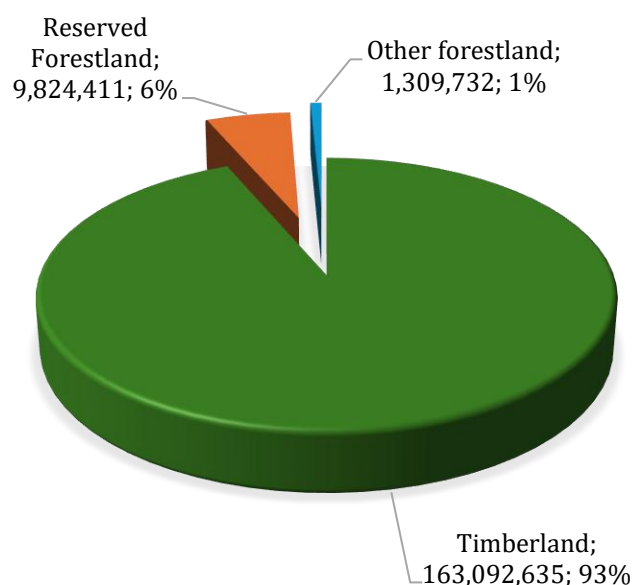


Figure 1: Northeast-Midwest's Forest Land area in acres by Land use type, 2023 (US Forest Service).

Ownership of Northeast-Midwest region's 174.23 million acres of forest land is concentrated in the private sector. Private owners hold 126.48 million acres, which is 72.6 percent of the total. State and local governments manage 33.24 million acres, or 19.1 percent. Federal ownership totals 14.50 million acres (Figure 2). National Forests account for 11.84 million acres, equal to 6.8 percent, and other federal agencies account for 2.66 million acres, or 1.5 percent. Landowners pursue diverse goals. Private landowners have wide latitude in how they treat their lands, some have a hands-off approach, while others pursue active management. There are several state and federal programs designed to encourage the active management of private forestlands. State forests and national forests are actively managed in many areas, while resource protection is emphasized in others. Active timber management provides the feedstock for the forest products industries in the Northeast-Midwest regions.

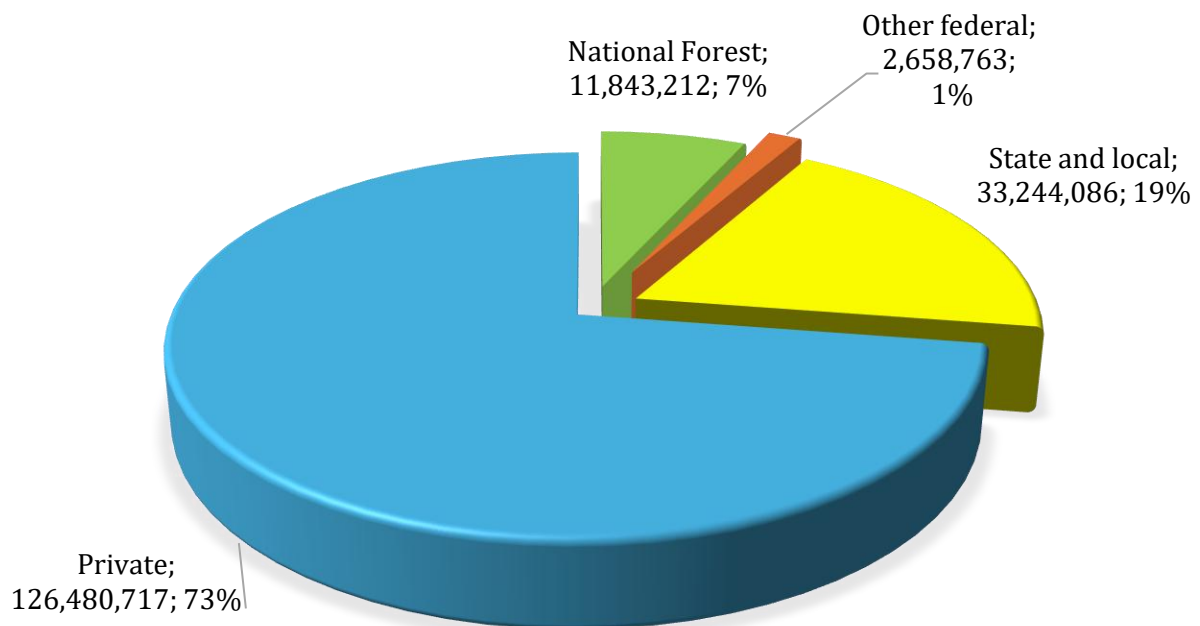


Figure 2: Northeast-Midwest's Forest Land area in acres by Ownership group, 2023 (US Forest Service).

Hardwoods dominate Northeast-Midwest region's forest land base. Oak/hickory covers 62.60 million acres (36 percent), and maple/beech/birch occupies 44.94 million acres (26 percent). Aspen/birch adds 15.21 million acres (9 percent) and elm-ash-cottonwood contributes 12.61 million acres (7 percent). Conifers are substantial in the north, with spruce/fir totaling 15.83 million acres (9 percent). The remaining 23.01 million acres (13 percent) fall in other types. Taken together, hardwood and mixed-hardwood groups account for about 78 percent of forest land, with spruce/fir representing 9 percent and the balance in other cover types. The Northeast and Midwest are widely recognized for high-quality red and white oak and hard

maple, prized in furniture manufacturing, flooring, cooperage for wine and spirits, and other durable goods such as baseball bats, butcher blocks, and work surfaces. The region's diverse timber base supports a broad spectrum of forest-products industries, including pulp and paper; paper and paperboard packaging; composite panels (oriented strand board, particleboard, and hardboard); office and institutional furniture; hardwood- and softwood-grade lumber; structural lumber (studs); and a range of industrial lumber and wood-packaging products.

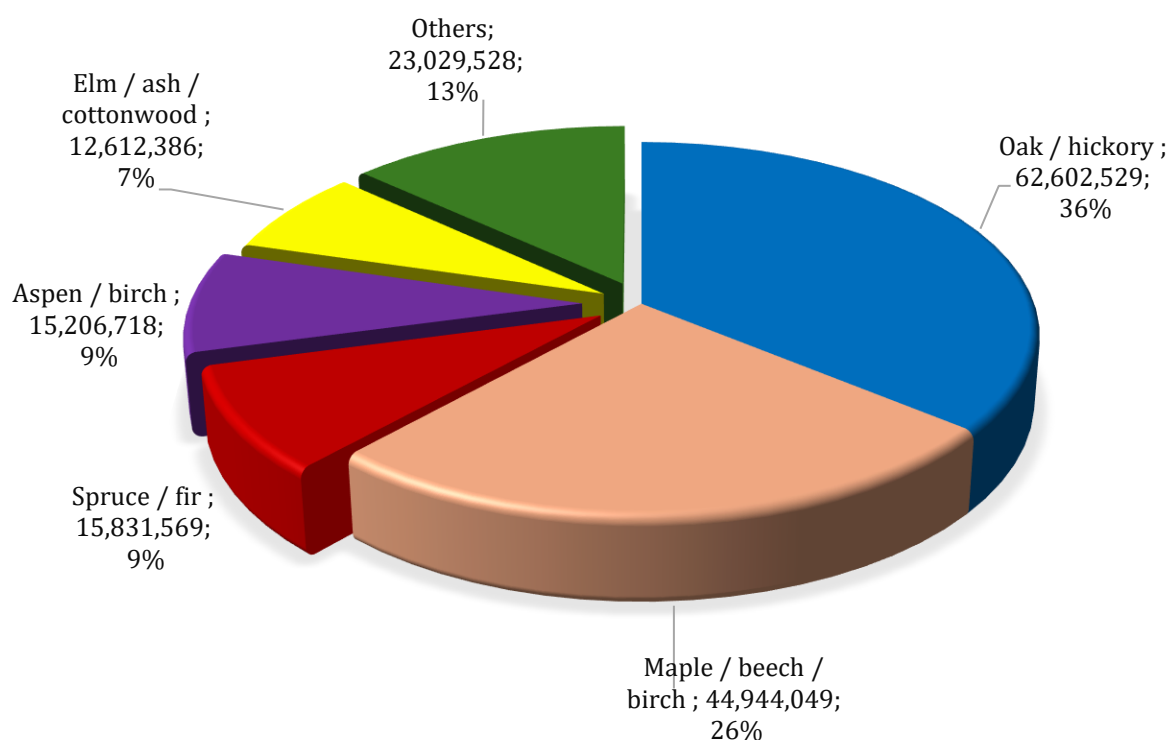


Figure 3: Northeast-Midwest's Forest Land area in acres by Forest type group, 2023 (US Forest Service).

In 2023, the estimated marketable volume of growing stock in the Northeast–Midwest totaled 370.51 billion cubic feet, roughly 2.89 billion standard cords. Hardwoods comprised 286.36 billion cubic feet (77.3 percent) and softwoods 84.15 billion (22.7 percent). By ownership, about 72.3 percent of standing volume was on private lands (38.47 billion cubic feet), 18.6 percent on state and local lands (9.91 billion), 7.5 percent on National Forests (4 billion), and .6 percent on other federal lands (0.85 billion). Average annual net growth was 6.90 billion cubic feet, harvest removals were 2.57 billion, and mortality was 3.44 billion. Growth exceeded removals by a ratio of about 2.7 to 1 and, after accounting for mortality, the inventory still posted a net gain of

about 0.89 billion cubic feet. Removals were approximately 4.8 percent of standing volume and mortality about 6.5 percent, which indicates that, at the regional scale, the growing-stock inventory is still increasing modestly but with notable losses to natural causes.

Table 1: Characteristics of Growing Stock in Northeast and Midwest regions, 2023. [†]

Description	Species group	National Forest	Other federal	State and local	Private	Not available	Total
Net volume	Hardwood	19,621	4,884	49,681	212,171	0	286,356
	Softwood	9,352	1,228	19,195	54,378	0	84,152
	Total	28,972	6,111	68,876	266,548	0	370,508
Average annual net growth	Hardwood	283	57	750	4,011	23	5,124
	Softwood	155	23	364	1,233	5	1,780
	Total	437	80	1,114	5,244	28	6,903
Average annual harvest removals	Hardwood	51	5	331	1,521	0	1,908
	Softwood	38	2	131	489	0	660
	Total	89	7	462	2,010	0	2,568
Average annual mortality	Hardwood	188	64	530	1,869	0	2,651
	Softwood	98	11	185	500	0	793
	Total	286	74	715	2,368	0	3,444

[†] All amounts are in millions 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 Northeast-Midwest 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 shows the trend in direct output and employment for the forest products industries in the Northeast–Midwest from 2017 to 2023. Direct output moved from \$209.35 billion in 2017 to \$203.33 billion in 2023, a 2.9 percent decrease over the period (about 0.5 percent per year). Output fell more sharply in 2020 to \$206.47 billion, stabilized in 2021, dipped in 2022, and then partly recovered in 2023. Employment followed a similar path, moving from 542.2 thousand in 2017 to 514.4 thousand in 2023, a 5.1 percent decline. The mid-period softness aligns with pandemic-related demand shocks and supply-chain disruptions, alongside longer-running shifts in paper, packaging, and furniture markets as noted in the recent forest-sector contribution study by Lamsal et al (2025b). Jobs fell most in 2020 (down 5.1 percent from 2019), improved through 2021–2022, and ended 2023 still below the 2017 and 2019 levels. Output per job rose from about \$386.11 thousand in 2017 to \$395.27 thousand in 2023, a modest productivity gain over the period even though total output and employment both declined.

Employment and Output Trends in the Northeast–Midwest Forest Sector

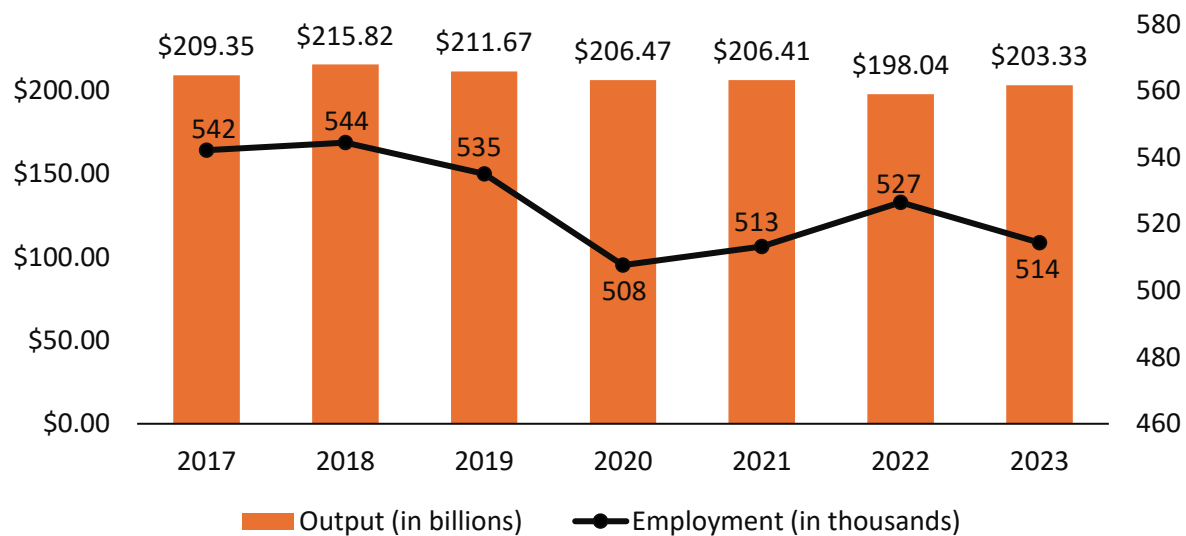


Figure 4: Direct output and employment, 2017–2023, Northeast-Midwest state forest products industries.

Figure 5 highlights the change in value added and labor income. Value added moved from \$61.81 billion in 2017 to \$62.86 billion in 2023, a net gain of 1.7 percent. It was steady through 2019–2020, reached a peak of \$63.09 billion in 2022, and then eased in 2023. The value-added share of output rose from 29.5 percent in 2017 to 31.9 percent in 2022, before settling at 30.9 percent in 2023. Labor income declined from \$44.65 billion in 2017 to \$41.65 billion in 2023, a 6.7 percent decrease mainly because the number of jobs declined during this period. Labor income per job stayed relatively stable at about \$82 thousand (about \$82.4 thousand in 2017 and \$81.0 thousand in 2023). The labor share of value fell from 72.2 percent in 2017 to 66.3 percent in 2023, consistent with a larger role for non-labor income and capital returns within the sector.

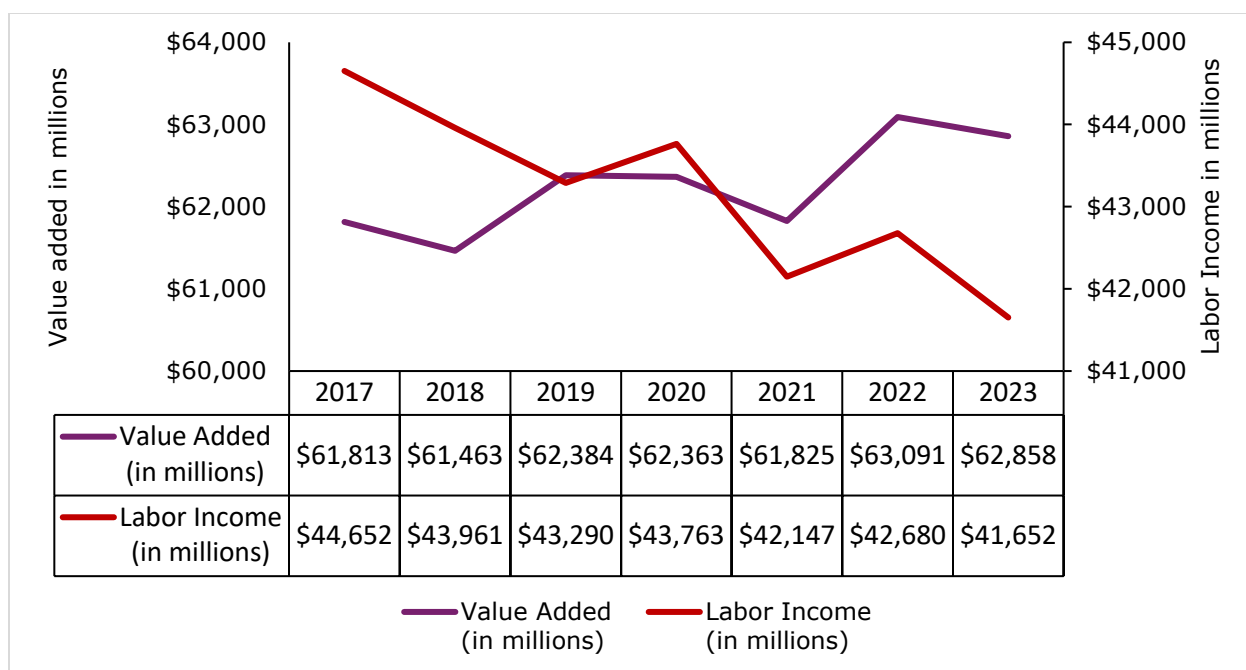


Figure 5: Direct value-added and labor income, 2017–2023, Northeast-Midwest state, forest products industries.

Direct and Total Contributions by Forest Product Industry Groups

In 2023, the Northeast-Midwest’s forest products industries directly provided 514,365 jobs, generated \$203.33 billion in gross output, and contributed \$62.86 billion in value-added to the regional economy (Table 2). While direct employment saw a 5.1% decline compared to 2017, direct value-added increased by 1.7% over the same period. The industry continues to exert a substantial aggregate influence on the regional economy. When accounting for indirect supply-chain transactions and induced household spending, the total economic contribution of the forest sector reached 1.28 million jobs and approximately \$387.00 billion in total output.

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

	Employment	Labor Income	Value-added	Output
Direct in 2023	514,361	\$41,651,796	\$62,857,845	\$203,328,888
Compared to 2017	-5.1%	-6.7%	1.7%	-2.9%
Total in 2023	1,277,228	\$101,012,658	\$166,547,010	\$386,998,063
Compared to 2017	-9.3%	-10.7%	-3.9%	-5.6%
Multipliers in 2023	2.50	2.43	2.65	1.90

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

The calculated multipliers highlight the sector's deep and evolving integration into the Northeast-Midwest economy. The employment multiplier of 2.48 indicates that for every 100 direct jobs in the forest industry, an additional 148 jobs are supported in other sectors. Similarly, the Value-Added multiplier of 2.65 suggests that every dollar of wealth created directly by forest industries generates an additional \$1.65 elsewhere in the region. These interlinkages demonstrate that the forest sector remains a foundational economic driver, sustaining a total workforce roughly two and a half times the size of its direct labor force through robust connections with transportation, logistics, and service sectors.

Table 3 reports the direct economic contributions of the seven industry groups, while Table 4 details total contributions inclusive of multiplier effects. In 2023, the Northeast-Midwest's forest sector structure is heavily weighted toward downstream manufacturing rather than raw extraction. The Secondary Paperboard and Other Paper Products sector is the clear labor leader, directly providing 136,018 jobs, which is nearly three times the combined workforce of the Forestry (including Maple Syrup production) and Logging sectors (46,355 jobs). This suggests a mature industrial ecosystem where raw timber is not merely harvested but extensively processed within the region into higher-value commodities like packaging, converted paper products, and engineered wood.

Table 3: Direct Economic Contributions in Northeast-Midwest regions, Industry Groups, 2023. [†]

Industries	Employment	Labor Income	Value-Added	Output
1.Forestry	15,473	\$586,730	\$652,442	\$787,208
2.Logging	30,882	\$2,170,378	\$3,063,216	\$3,189,848
3.Primary Solid Wood Products	39,568	\$2,964,485	\$5,359,619	\$22,041,780
4.Secondary Solid Wood Products	128,997	\$10,014,349	\$12,913,651	\$40,333,837
5.Wood Furniture	131,346	\$9,323,721	\$10,654,868	\$29,207,122
6.Pulp, Paper, and Paperboard mills	32,081	\$3,801,049	\$8,164,926	\$27,963,069
7.Secondary Paperboard and other Paper Products	136,018	\$12,791,085	\$22,049,123	\$79,806,025

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

Output and value-added measures reveal distinct operational differences across groups. Secondary Paperboard and Other Paper Products leads in sheer scale, generating \$79.81 billion in direct output and \$22.05 billion in value-added. However, the Pulp, Paper, and Paperboard

Mills sector demonstrates remarkable capital intensity and efficiency; it generated \$27.96 billion in output and \$8.16 billion in value-added with a relatively lean workforce of 32,081. This represents a significantly higher level of output per employee compared to the Wood Furniture sector, which generated a comparable output of \$29.21 billion but required a workforce of 131,346. This divergence underscores that while furniture manufacturing remains labor-intensive, the pulp and paper segment relies more heavily on automated, high-volume processing infrastructure.

When supply-chain and induced effects are integrated (Table 4), Secondary Paperboard and Other Paper Products remains the primary economic engine of the region's forest sector, supporting 413,724 total jobs and \$147.57 billion in total economic output. However, the most notable leverage effect is found in the Pulp, Paper, and Paperboard Mills sector. Despite its smaller direct workforce, this sector possesses the highest employment multiplier of the group at approximately 4.27 (137,087 total jobs supported by 32,081 direct jobs). This reflects deep backward linkages; because paper mills require vast and consistent volumes of wood fiber, energy, water, and transportation services, their continued operation sustains a disproportionately large network of loggers, truckers, and utility providers throughout the Northeast-Midwest economy.

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

Industries	Employment	Labor Income	Value- Added	Output
1.Forestry	18,955	\$830,300	\$1,100,910	\$1,524,901
2.Logging	42,520	\$2,964,792	\$4,505,806	\$5,502,195
3.Primary Solid Wood Products	116,580	\$9,090,819	\$16,179,790	\$41,152,071
4.Secondary Solid Wood Products	285,473	\$21,863,003	\$33,505,042	\$75,797,954
5.Wood Furniture	262,889	\$19,654,193	\$28,771,448	\$61,615,180
6.Pulp, Paper, and Paperboard mills	137,087	\$12,038,598	\$22,520,090	\$53,834,573
7.Secondary Paperboard and other Paper Products	413,724	\$34,570,954	\$59,963,924	\$147,571,189

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

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

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

Forestry

Economic Contribution of Forestry

Table 5 presents the economic contribution of the Forestry industry. This group aggregates three primary activities: (1) All other crop farming or maple syrup production (Sector 10), (2) Forestry, forest products, and timber tract production (Sector 15), and (3) Support activities for forestry (Sector 19).

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

	Employment	Labor Income	Value-Added	Output
Direct	15,469	\$586,555	\$652,266	\$787,034
Indirect	276	\$25,360	\$51,577	\$103,019
Induced	3,227	\$219,922	\$399,802	\$641,574
Total	18,972	\$831,838	\$1,103,644	\$1,531,627

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

In 2023, the Forestry sector directly supported 15,469 jobs and generated approximately \$787.0 million in direct output. A distinct structural characteristic of this industry is its exceptionally high labor intensity compared to downstream manufacturing sectors. The data indicates that about 74.5% of the sector's gross output is retained directly as Labor Income (\$586.6 million out of \$787.0 million), and roughly 82.9% contributes to Value-Added (\$652.3 million). This suggests that the value created in forestry is derived primarily from human capital and specialized service expertise rather than through heavy dependency on intermediate material inputs.

The employment multiplier is approximately 1.23, meaning that for every 100 jobs in Forestry, around 23 additional jobs are supported elsewhere in the region. Decomposing this multiplier

reveals that the sector's economic ripples are driven largely by workforce spending (induced effects) rather than business supply chains.

- **Indirect Effect:** The sector generated relatively modest indirect impacts, supporting 276 jobs and \$103.0 million in output. This reflects the biological nature of timber growing; unlike manufacturing industries that constantly purchase raw materials and components, forestry operations have limited business-to-business purchasing requirements.
- **Induced Effect:** In contrast, the induced effect was significantly stronger, supporting 3,227 jobs and nearly \$641.6 million in output. Because a high percentage of the sector's output flows directly to workers as labor income, the primary economic lift occurs when employees spend their earnings within their local communities.

When these effects are combined, the Forestry industry contributed a total of 18,972 jobs, \$1.53 billion in output, and \$1.10 billion in value-added to the Northeast-Midwest economy in 2023. The total output multiplier of 1.95 implies that every \$100 of output generated by forest management activities generates an additional \$95 of economic activity throughout the region.

Trend Analysis: Forestry (2017–2023)

As illustrated in Figure 6, the Forestry industry in the Northeast–Midwest region experienced moderate volatility over the 2017–2023 period, with employment and output moving through distinct contraction and recovery phases. Employment declined from 17,582 jobs in 2017 to 16,572 jobs in 2020, followed by a sharper contraction in 2021 to 13,295 jobs. The sector rebounded in 2022 to 16,734 jobs, before moderating to 15,469 jobs in 2023, representing a net decline of 2,113 jobs (–12.0 percent) relative to 2017.

Output followed a similar cyclical pattern. Total output was \$1.03 billion in 2017, declined through 2019, and partially recovered in 2020. A pronounced decline occurred in 2021, when output fell to \$499.8 million, before rebounding to \$862.3 million in 2022. By 2023, output totaled \$787.0 million, representing a 23.5 percent decrease relative to the 2017 baseline. Despite the recovery from the 2021 low point, output remained below pre-2020 levels at the end of the period.

Labor productivity (output per worker) also fluctuated. Productivity declined from approximately \$59 thousand per worker in 2017 to \$46 thousand in 2019, improved modestly in 2020, and fell again in 2021. By 2023, output per job was approximately \$51 thousand, below the 2017 level but above the 2021 trough. Overall, the series reflects a period of cyclical adjustment, with both employment and output in 2023 below their 2017 levels, though partially recovered from the 2021 contraction.

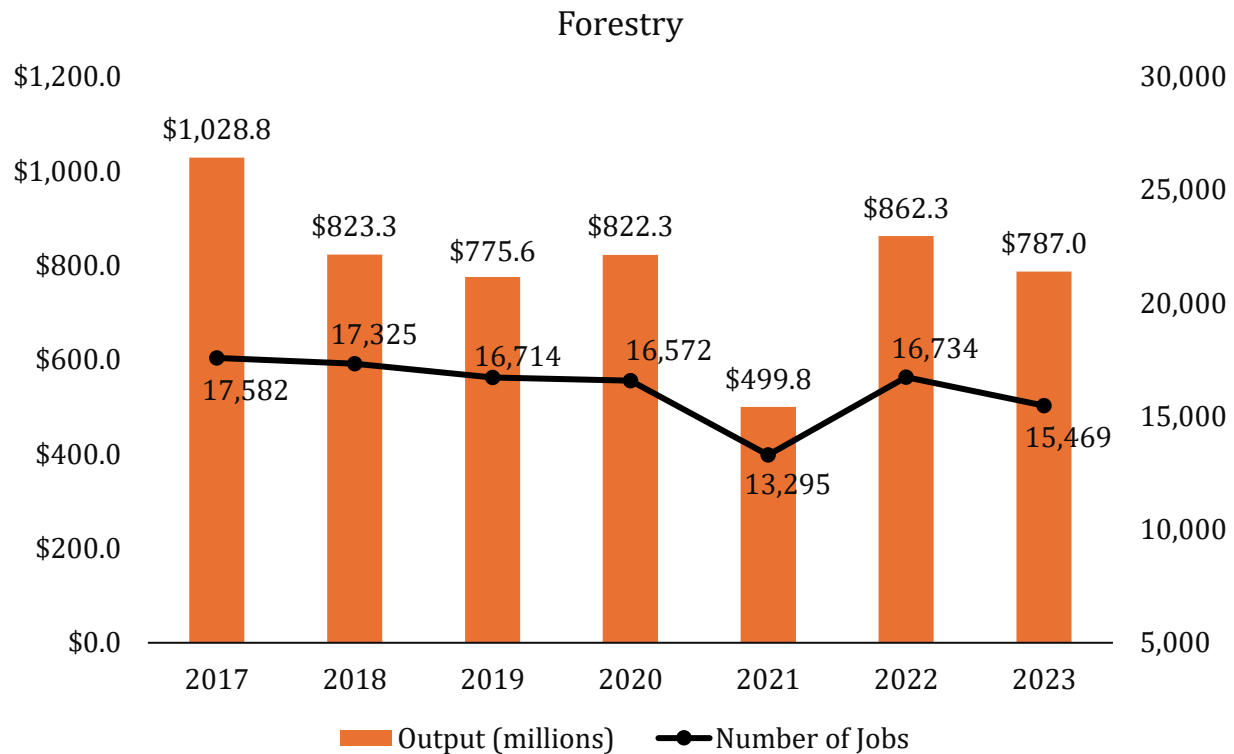


Figure 6: Trend in direct employment and output for the Forestry industry in Northeast-Midwest, 2017–2023.

Logging

Economic Contribution of Logging

Table 6 outlines the economic contributions of the Logging sector, which comprises establishments primarily engaged in cutting timber, transporting logs, and producing wood chips in the field. In 2023, this sector served as a vital source of rural employment in the Northeast-Midwest, directly supporting 30,882 jobs. The industry generated \$3.19 billion in direct output and contributed \$3.06 billion in Value-Added to the regional economy.

The multiplier analysis characterizes Logging as a sector driven by high labor intensity and value retention rather than complex intermediate supply chains. At \$2.32 billion, output from induced effects was drastically higher than the \$75.6 million generated through indirect effects. This disparity is rooted in the sector's unique cost structure, where approximately 68.0% of Logging's direct output is retained as Labor Income (\$2.17 billion out of \$3.19 billion). Because a significant portion of the industry's revenue is distributed as employee compensation and proprietor income, the subsequent re-spending of those earnings acts as a powerful accelerator for local economies. Conversely, the minimal Indirect effect reflects a supply chain limited

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

When these direct, indirect, and induced impacts are aggregated, the Logging industry contributed a total of 43,459 jobs, \$5.59 billion in output, and \$4.56 billion in value-added to the Northeast-Midwest economy. The Output Multiplier is 1.75, indicating that for every dollar of timber harvested, an additional \$0.75 of economic activity is stimulated elsewhere in the region.

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

	Employment	Labor Income	Value-Added	Output
Direct	30,882	\$2,170,378	\$3,063,216	\$3,189,848
Indirect	873	\$40,271	\$52,291	\$75,586
Induced	11,704	\$797,095	\$1,448,151	\$2,323,604
Total	43,459	\$3,007,744	\$4,563,658	\$5,589,039

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

Trend Analysis: Logging (2017–2023)

As shown in Figure 7, the Logging industry in the Northeast–Midwest region experienced a sustained contraction in employment over the 2017–2023 period, accompanied by substantial fluctuations in output. Direct employment declined from 41,769 jobs in 2017 to 30,882 jobs in 2023, representing a net loss of 10,887 jobs (–26.1 percent). Employment decreased steadily through 2020, rebounded modestly in 2021, and then resumed its downward trend through 2023, indicating an overall reduction in workforce scale across the period.

Output followed a markedly cyclical pattern. After totaling \$5.37 billion in 2017, output fell sharply to \$2.73 billion in 2018 and continued to decline in 2019. Output recovered in 2020 and 2021, reaching \$3.50 billion in 2021, before moderating slightly in 2022 and remaining stable at approximately \$3.19 billion in 2023. Despite this mid-period recovery, 2023 output remained 40.6 percent below the 2017 level, indicating that the sector has not returned to its earlier scale of production.

Labor productivity (output per worker) reflected these shifts. Productivity declined substantially from \$129 thousand per worker in 2017 to \$68 thousand in 2019, then improved during 2020–2023 as output stabilized while employment continued to fall. By 2023, output per job reached approximately \$103 thousand, below the 2017 level but notably higher than the 2018–2019 trough. Overall, the data indicate that by 2023 the Logging industry operated with a smaller

workforce and lower total output than at the beginning of the study period, although productivity levels had partially recovered from earlier declines.

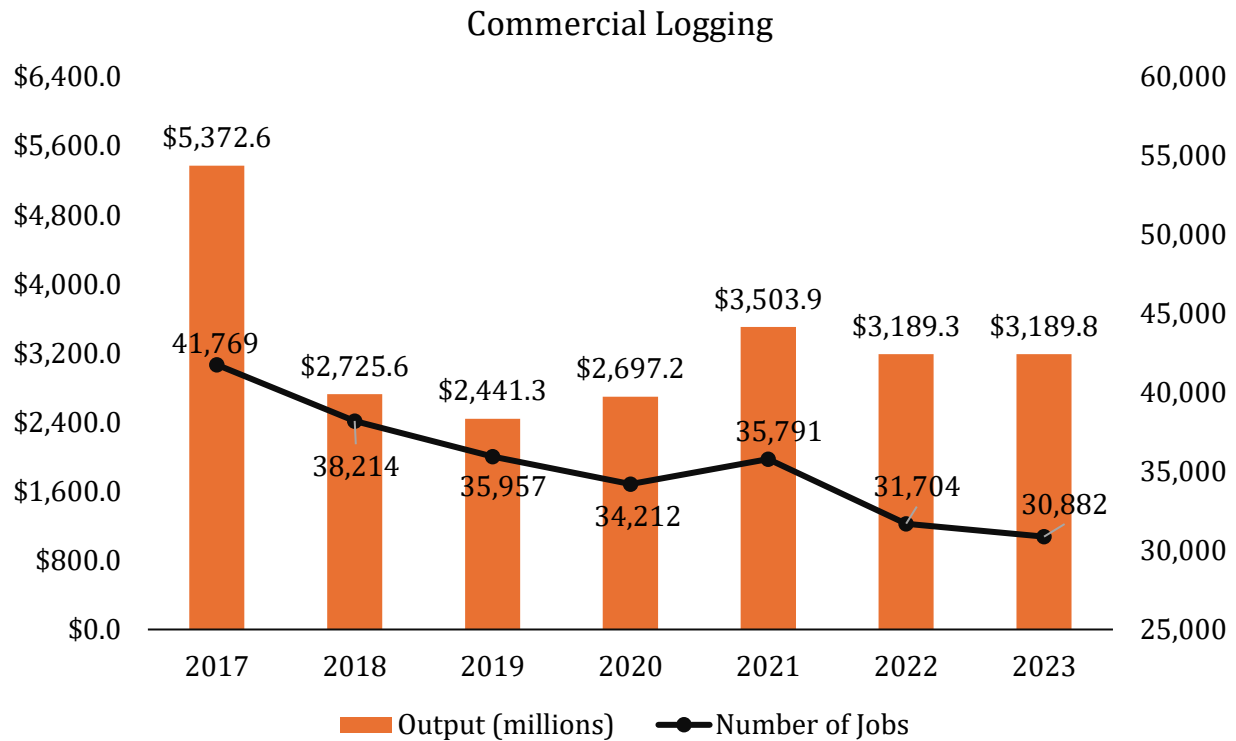


Figure 7: Trend in direct employment and output for the Logging industry in Northeast-Midwest, 2017–2023.

Primary Solid Wood Products

Economic Contribution of Primary Solid Wood Products

Table 7 presents the economic contributions of the Primary Solid Wood Products industry. In the Northeast-Midwest, this sector encompasses a diverse range of manufacturing activities, including wood-based electric power generation (biomass), sawmills, wood preservation, veneer and plywood manufacturing, and reconstituted wood product industries. In 2023, this manufacturing sector directly provided 39,568 jobs and generated \$22.04 billion in direct output. This sector demonstrates robust capital efficiency, contributing approximately \$5.36 billion in direct Value-Added, which reflects substantial economic wealth creation as raw timber is processed into construction-grade lumber, structural panels, and treated wood products.

The Primary Solid Wood Products industry exhibits profound backward linkages within the Northeast-Midwest forest economy, acting as a critical demand driver for upstream operations. Unlike extraction sectors where economic ripples are often driven by household spending, this sector’s impact is dominated by deep supply chain expenditures. The Indirect Employment

effect supports 60,494 jobs, a figure that significantly exceeds the sector's own direct workforce of 39,568. This results in a robust Employment Multiplier of 3.59. Essentially, for every 100 direct jobs in primary wood manufacturing, an additional 259 jobs are supported elsewhere in the regional economy. This underscores the sector's function as a "keystone" industry; its operational demands sustain a vast network of loggers, truckers, and maintenance contractors who rely on these facilities as their primary market.

When aggregating direct, indirect, and induced effects, the Primary Solid Wood Products industry contributed a total of 142,207 jobs, \$45.04 billion in output, and \$18.95 billion in value-added to the regional economy in 2023. By supporting over 142,000 jobs region-wide, this industry anchors the forest value chain, effectively transforming natural resources into widespread economic activity across the Northeast-Midwest's rural and industrial communities.

Table 7: Direct, Indirect, and Induced Economic Contributions of the Primary Solid Wood Products Industry in Northeast-Midwest, 2023. [†]

	Employment	Labor Income	Value-Added	Output
Direct	39,568	\$2,964,485	\$5,359,619	\$22,041,780
Indirect	60,494	\$5,056,626	\$8,370,884	\$14,618,368
Induced	42,144	\$2,869,912	\$5,220,799	\$8,377,284
Total	142,207	\$10,891,023	\$18,951,302	\$45,037,433

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

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

As illustrated in Figure 8, the Primary Solid Wood Products industry in the Northeast–Midwest region exhibited moderate employment variability alongside a general upward trend in output and productivity over the 2017–2023 period. Employment remained relatively stable through 2018, declined through 2020 to 38,459 jobs, and then increased sharply in 2021 to a peak of 44,356 jobs. Employment subsequently moderated to 39,568 jobs in 2023, representing a net decline of 1,992 jobs (-4.8 percent) relative to 2017.

Output followed a different trajectory. After increasing from \$17.47 billion in 2017 to \$19.07 billion in 2018, output declined in 2019, rebounded in 2020, and rose substantially in 2021 to \$21.90 billion. Although output declined in 2022, it increased again in 2023 to \$22.04 billion, representing a 26.2 percent increase relative to the 2017 baseline. By the end of the study period, output exceeded all prior years in the series.

Labor productivity (output per worker) increased overall across the period. Productivity rose from approximately \$420 thousand per worker in 2017 to \$459 thousand in 2018, declined slightly in 2019, and then increased markedly during 2020 and 2021. Despite a modest decline

in 2022, productivity reached \$557 thousand per worker in 2023, the highest level observed in the series and approximately 32.6 percent above the 2017 level. Overall, the data indicate that while employment in 2023 remained slightly below its 2017 level, the industry operated at a substantially higher output and productivity level by the end of the study period.

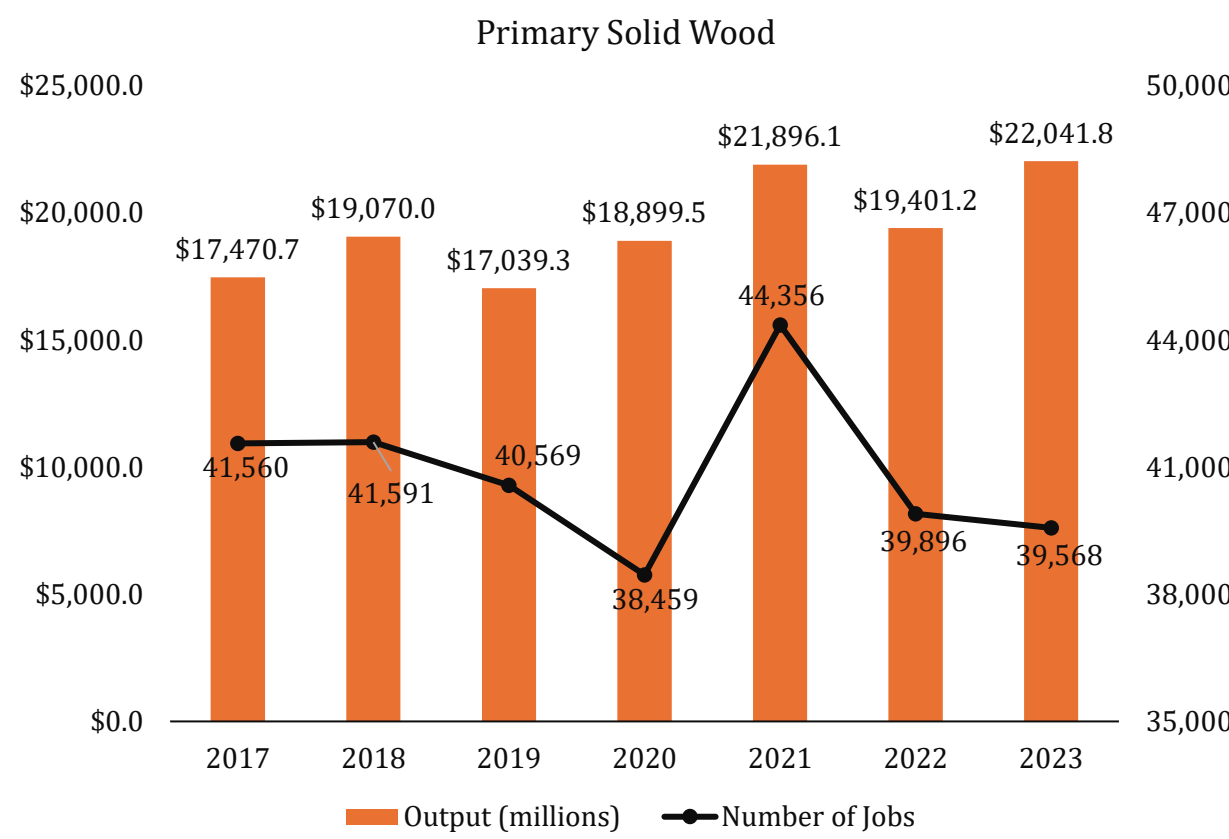


Figure 8: Trend in direct employment and output for the Primary Solid Wood Products industry in *Northeast-Midwest*, 2017–2023.

Secondary Solid Wood Products

Economic Contribution of Secondary Solid Wood Products

Table 8 presents the economic contribution of the Secondary Solid Wood Products industry. This diverse value-added sector encompasses industries such as engineered wood member and truss manufacturing, wood windows and doors manufacturing, millwork and flooring, wood container and pallet manufacturing, prefabricated wood building manufacturing, and miscellaneous wood product manufacturing. In 2023, this sector stood as the largest direct employer within the two solid wood manufacturing category, directly providing 128,997 jobs and generating \$40.33 billion in direct output.

The Secondary Solid Wood Products industry exhibits an employment multiplier of approximately 2.55, indicating that for every 100 direct jobs, an additional 155 jobs are supported elsewhere in the Northeast-Midwest through indirect and induced effects. While this represents a substantial level of economic linkage, it is notably lower than the Primary Solid Wood Products industry, which possesses an employment multiplier of approximately 3.59. In the primary sector, indirect employment (60,494 jobs) exceeds the direct workforce (39,568 jobs), reflecting strong upstream supply-chain integration and a high reliance on locally sourced inputs and services relative to its labor force. In contrast, the secondary sector's indirect employment effect (103,067 jobs) is significant in absolute terms but smaller relative to its much larger direct workforce (128,997 jobs). This difference suggests that while secondary manufacturers are major purchasers of materials, their operations are more labor-intensive per unit of output than primary processing. Consequently, a greater share of the secondary sector's total employment impact is driven by direct operations rather than by upstream supply-chain activity. Overall, the comparison highlights structural differences in how primary and secondary solid wood industries engage with the Northeast-Midwest's broader economy.

When direct, indirect, and induced effects are combined, the Secondary Solid Wood Products industry supports 329,041 jobs and generates approximately \$87.92 billion in total output. The industry also contributes \$38.82 billion in total value-added, indicating a substantial regional contribution to the GRP. Relative to primary processing, the secondary segment shows a higher value-added share of output, which is consistent with additional processing and product transformation activities. In 2023, direct value-added represented approximately 32.0 percent of direct output in the secondary sector, compared with 24.3 percent in the Primary Solid Wood Products sector (Table 7).

Table 8: Direct, Indirect, and Induced Economic Contributions of the Secondary Solid Wood Products Industry in Northeast-Midwest, 2023. [†]

	Employment	Labor Income	Value-Added	Output
Direct	128,997	\$10,014,349	\$12,913,651	\$40,333,837
Indirect	103,067	\$8,474,587	\$13,893,177	\$28,304,306
Induced	96,977	\$6,603,405	\$12,017,464	\$19,279,604
Total	329,041	\$25,092,341	\$38,824,293	\$87,917,747

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

Trend Analysis: Secondary Solid Wood Products (2017–2023). Figure 9 summarizes employment and output trends for the Secondary Solid Wood Products industry in the Northeast–Midwest region over 2017–2023. Employment fluctuated within a relatively narrow range across the period. Jobs increased from 122,434 in 2017 to 124,679 in 2018, declined through 2021 to 115,540 jobs, and then rebounded in 2022 before moderating slightly to

128,997 jobs in 2023. Overall, employment in 2023 was 6,563 jobs higher than in 2017, representing a 5.4 percent increase, despite mid-period contraction.

Output exhibited a generally upward trend with year-to-year variation. Output rose from \$30.95 billion in 2017 to \$35.03 billion in 2019, declined modestly in 2020 and more noticeably in 2021, and then increased in 2022 and 2023. By 2023, output reached \$40.33 billion, representing a 30.3 percent increase relative to 2017 and the highest level observed in the series. Between 2022 and 2023 alone, output increased by approximately 13.3 percent, while employment declined slightly by 2,267 jobs (–1.7 percent).

Consistent with these movements, labor productivity (output per worker) increased over the study period. Output per worker rose from approximately \$253 thousand in 2017 to \$313 thousand in 2023, an increase of 23.7 percent. Although productivity declined between 2020 and 2022, it increased substantially in the final year, reaching the highest level in the series. Overall, the data indicate that by 2023 the Secondary Solid Wood Products industry operated at a higher output and productivity level than at the beginning of the period, with employment modestly above its 2017 baseline despite intervening volatility.

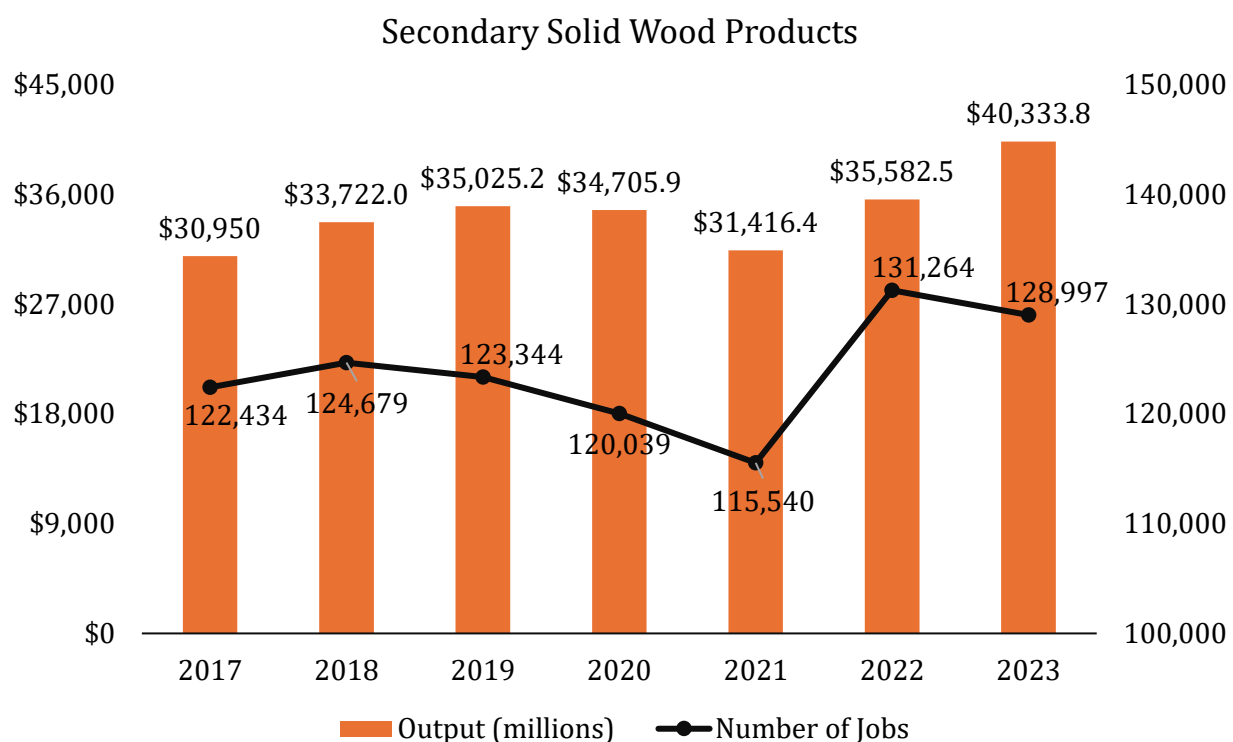


Figure 9: Trend in direct employment and output for the Secondary Solid Wood Products industry in Northeast-Midwest, 2017–2023.

Wood Furniture

Economic Contribution of Wood Furniture

Table 9 outlines the economic contributions of the Wood Furniture industry. This group encompasses a wide range of value-added manufacturers, including those producing wood kitchen cabinets and countertops, upholstered and non-upholstered household furniture, institutional wood furniture, wood office furniture, custom architectural woodwork, and showcase, partition, shelving, and locker manufacturing. In 2023, the sector directly provided 131,346 jobs and generated approximately \$29.21 billion in direct output, along with \$10.65 billion in direct value-added and \$9.32 billion in direct labor income.

Multiplier effects indicate that the industry supports substantial additional activity beyond its immediate operations. Indirect effects accounted for 70,401 jobs, \$21.14 billion in output, and \$10.21 billion in value-added, reflecting demand for intermediate inputs and supplier services. Induced effects contributed an additional 81,201 jobs, \$16.15 billion in output, and \$10.07 billion in value-added, associated with household spending supported by direct and indirect employment wages, salaries, benefits and proprietor income. In aggregate, the Wood Furniture industry supported 282,948 jobs, generated \$66.49 billion in total output, and contributed \$30.93 billion in total value-added to the Northeast-Midwest economy.

The implied employment multiplier is approximately 2.15, meaning that for every 100 direct jobs, an additional 115 jobs are supported elsewhere in the regional economy. The distribution of multiplier components is relatively balanced, though induced employment (81,201 jobs) exceeds indirect employment (70,401 jobs). This suggests that while the sector drives significant supply chain activity, its role as a provider of employee compensation and proprietor income, which then circulate through local consumer economies, is equally critical. Furthermore, direct labor income equals approximately 31.9 percent of direct output, which suggests that labor compensation represents a meaningful share of the sector's direct production value relative to many upstream processing segments.

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

	Employment	Labor Income	Value-Added	Output
Direct	131,346	\$9,323,721	\$10,654,868	\$29,207,122
Indirect	70,401	\$6,151,180	\$10,207,915	\$21,135,490
Induced	81,201	\$5,529,672	\$10,065,140	\$16,151,951
Total	282,948	\$21,004,573	\$30,927,923	\$66,494,563

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

Trend Analysis: Wood Furniture Industry (2017–2023)

As illustrated in Figure 10, the Wood Furniture industry in the Northeast–Midwest region exhibits a pattern of early expansion followed by gradual contraction over the 2017–2023 period. Employment increased from 136,021 jobs in 2017 to a peak of 144,006 jobs in 2018, before moderating in subsequent years. Employment declined sharply in 2020 to 129,378 jobs, partially recovered in 2021, and then declined again to 131,346 jobs in 2023. Overall, employment in 2023 was 4,675 jobs lower than in 2017, representing a 3.4 percent decrease.

Output followed a similar trajectory. After rising from \$29.76 billion in 2017 to \$34.62 billion in 2018, output declined through 2020, rebounded in 2021, and then decreased again in 2022 and 2023. By 2023, output totaled \$29.21 billion, approximately 15.6 percent below the 2018 peak and 1.9 percent below the 2017 baseline. Although output recovered intermittently after 2020, it did not return to its 2018 high.

Consistent with these movements, labor productivity (output per worker) increased early in the period, rising from \$219 thousand per worker in 2017 to \$240 thousand in 2018, then generally declined. Productivity reached \$222 thousand per worker in 2023, slightly above the 2017 level but below the 2018 peak. Overall, the data indicate that by 2023 the Wood Furniture industry had returned close to its 2017 employment and productivity levels, but at a lower output level than its mid-period peak.

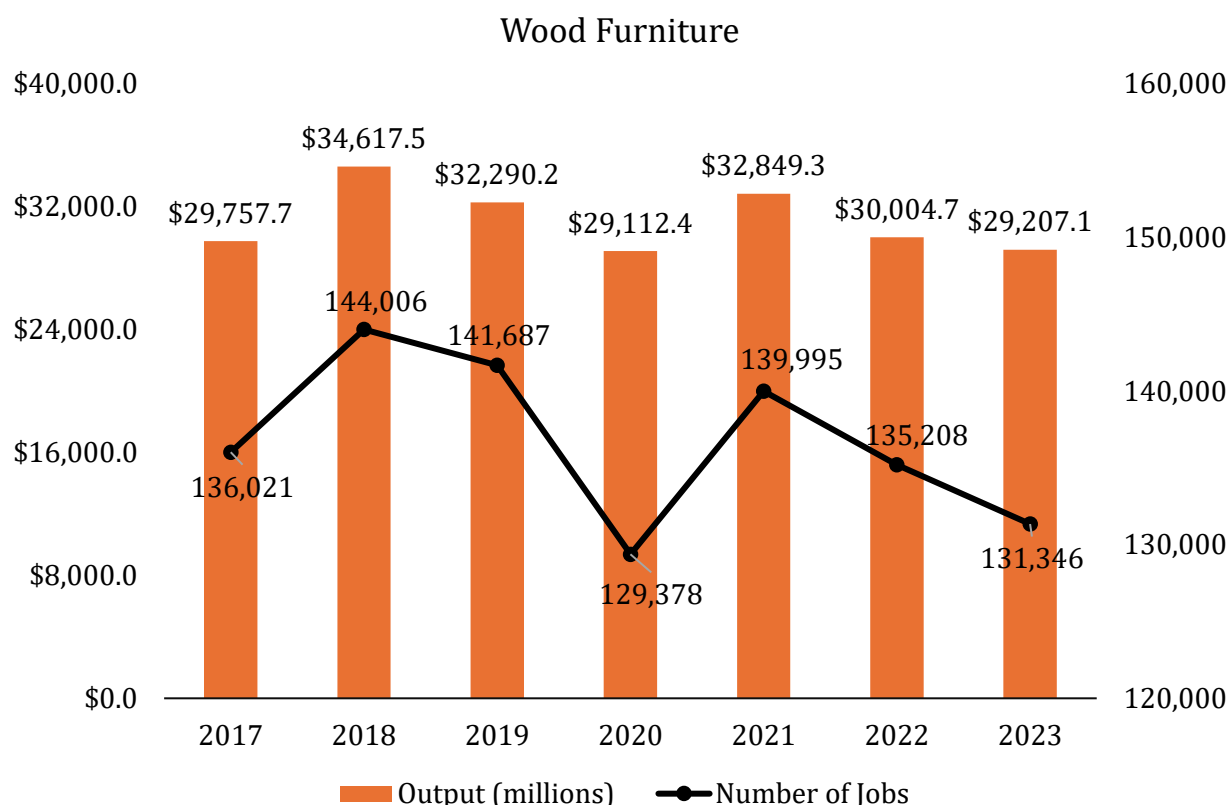


Figure 10: Trend in direct employment and output for the Wood Furniture industry in Northeast-Midwest, 2017–2023.

Pulp, Paper, and Paperboard Mills

Economic Contribution of Pulp, Paper, and Paperboard Mills

Table 10 details the economic contribution of the Pulp, Paper, and Paperboard Mills industry. In 2023, the sector directly provided 32,081 jobs and generated \$27.96 billion in direct output. Direct value-added totaled \$8.16 billion, while direct labor income was \$3.80 billion.

Multiplier effects indicate that the industry supports sizable additional activity through supply-chain purchases and household spending. Indirect effects accounted for 71,840 jobs, \$21.56 billion in output, and \$10.89 billion in value-added. Induced effects contributed 53,897 jobs, \$10.71 billion in output, and \$6.68 billion in value-added. In total, the industry supported 157,817 jobs, generated approximately \$60.24 billion in total output, and contributed \$25.73 billion in total value-added region-wide.

The implied employment multiplier is 4.92, meaning that every 100 direct mill jobs support an additional 392 jobs elsewhere in the Northeast-Midwest. This is the highest employment multiplier among the seven forest industry groups, reflecting the sector's role as a critical

downstream anchor; its operations necessitate a massive volume of upstream inputs, sustaining thousands of jobs in logging, transportation, and utilities. At the same time, the sector's output multiplier is 2.15, which places it in the middle range of the industry groups. This divergence highlights differences in how employment and output propagate through the regional economy: while the sector's high capital intensity allows a relatively small direct workforce to generate massive output, its supply chain demands are relatively labor-intensive that they trigger an outsized employment response across the broader economy.

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

	Employment	Labor Income	Value-Added	Output
Direct	32,081	\$3,801,049	\$8,164,926	\$27,963,069
Indirect	71,840	\$6,411,463	\$10,891,581	\$21,561,854
Induced	53,897	\$3,669,198	\$6,677,566	\$10,711,183
Total	157,817	\$13,881,710	\$25,734,073	\$60,236,106

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

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

Figure 11 illustrates employment and output trends for the Pulp, Paper, and Paperboard Mills industry in the Northeast–Midwest region from 2017 through 2023. Over this period, the industry experienced a steady contraction in employment, declining from 38,351 jobs in 2017 to 32,081 jobs in 2023, a net reduction of 6,270 jobs (–16.3 percent). Employment decreased in most years, with only a slight increase in 2022 before resuming its downward movement in 2023.

Output followed a similar downward trajectory. Industry output declined from \$37.10 billion in 2017 to \$27.96 billion in 2023, representing a 24.6 percent decrease over the period. Output fell consistently from 2017 through 2022, reaching \$28.12 billion in 2022, and then remained relatively stable in 2023. Although the rate of decline slowed in the final year, output remained well below the 2017 baseline.

Labor productivity (output per worker) remained high relative to other forest products industries but trended downward overall. Productivity measured approximately \$967 thousand per worker in 2017, declined gradually through 2022 to \$845 thousand, and then increased modestly to \$872 thousand in 2023. Despite this improvement in the final year, productivity remained below its earlier levels. Overall, the data indicate that between 2017 and 2023 the industry operated at a reduced employment and output scale, with productivity moderating from its earlier peak but remaining comparatively strong in absolute terms.

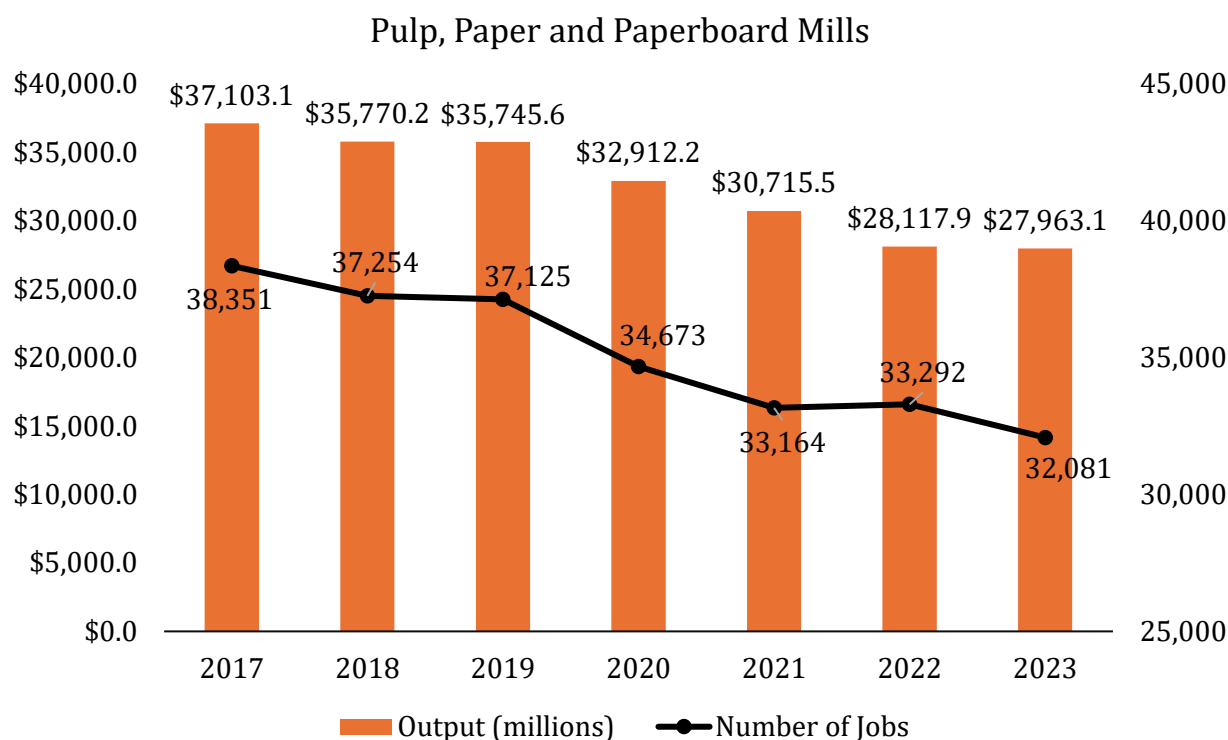


Figure 11: Trend in direct employment and output for the Pulp, Paper, and Paperboard Mills industry in Northeast-Midwest, 2017–2023.

Secondary Paperboard and Other Paper Products

Economic Contribution of Secondary Paperboard and Other Paper Products

Table 11 outlines the economic contribution of the Secondary Paperboard and Other Paper Products industry. This group is composed of "converters" that manufacture finished goods from purchased paper, paperboard, or recycled materials, including products like paperboard containers, paper bags, coated paper, stationery, sanitary, and other specialized paper products. In the Northeast-Midwest, this sector is a key component of the forest economy, directly providing 136,018 jobs and generating over \$79.81 billion in direct output in 2023.

The sector exhibits a robust Employment multiplier of 3.40, meaning that for every 100 direct jobs in paper converting, an additional 240 jobs are supported throughout the regional economy. A closer examination of the multiplier components reveals a distinct structural feature: the Indirect Employment effect (177,333 jobs) actually exceeds the sector's Direct Employment (136,018 jobs). This substantial indirect impact suggests that Northeast-Midwest's converting facilities maintain exceptionally strong supply chain linkages. These facilities act as massive demand drivers for the region's primary mills, requiring high volumes of intermediate

paper and paperboard, alongside specialized logistics and packaging services, to sustain operations.

Furthermore, the Induced Employment effect (148,491 jobs), which is also larger than the direct employment, highlights the dual nature of this sector's leverage: it drives both industrial purchasing and significant local household spending. This is consistent with the sector's structure as a large-scale manufacturing operation that requires both consistent capital inputs and a sizable, steady workforce.

In terms of total contribution, the Secondary Paperboard and Other Paper Products industry supports a total of 461,842 jobs and contributes \$162.72 billion in total economic output. By generating \$68.55 billion in total Value-Added, this converting sector serves a vital role by transforming the output of the capital-intensive Pulp and Paperboard Mills into specialized packaging and consumer goods that are essential to the region's broader retail, food processing, and logistics sectors.

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

	Employment	Labor Income	Value-Added	Output
Direct	136,018	\$12,791,085	\$22,049,123	\$79,806,025
Indirect	177,333	\$15,545,341	\$26,671,243	\$53,430,161
Induced	148,491	\$10,106,415	\$19,827,013	\$29,479,013
Total	461,842	\$38,442,842	\$68,547,380	\$162,715,198

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

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

Figure 12 summarizes employment and output trends for the Secondary Paperboard and Other Paper Products industry in the Northeast–Midwest region from 2017 through 2023.

Employment declined gradually over the period, falling from 144,442 jobs in 2017 to 136,018 jobs in 2023, a net decrease of 8,424 jobs (–5.8 percent). Employment decreased steadily from 2017 through 2021, rebounded in 2022, and then declined modestly again in 2023. Despite these fluctuations, the overall change reflects a moderate contraction in workforce scale.

Output followed a somewhat different trajectory. Industry output increased slightly from \$87.66 billion in 2017 to \$89.10 billion in 2018, remained relatively stable through 2019, and then declined gradually through 2021. A more pronounced reduction occurred between 2021 and 2023, with output falling from \$85.53 billion in 2021 to \$79.81 billion in 2023, a decrease of approximately 6.7 percent over that two-year period. Relative to 2017, 2023 output was lower by about 9.0 percent, indicating that the industry has not returned to its earlier output levels.

Labor productivity (output per worker) increased from \$607 thousand per worker in 2017 to a peak of \$652 thousand in 2021, reflecting output stability alongside declining employment. Productivity declined in 2022 to \$584 thousand, then rose slightly to \$587 thousand in 2023. Overall, the series indicates a gradual reduction in employment and output scale over the period, with productivity peaking mid-period and moderating in the final two years.

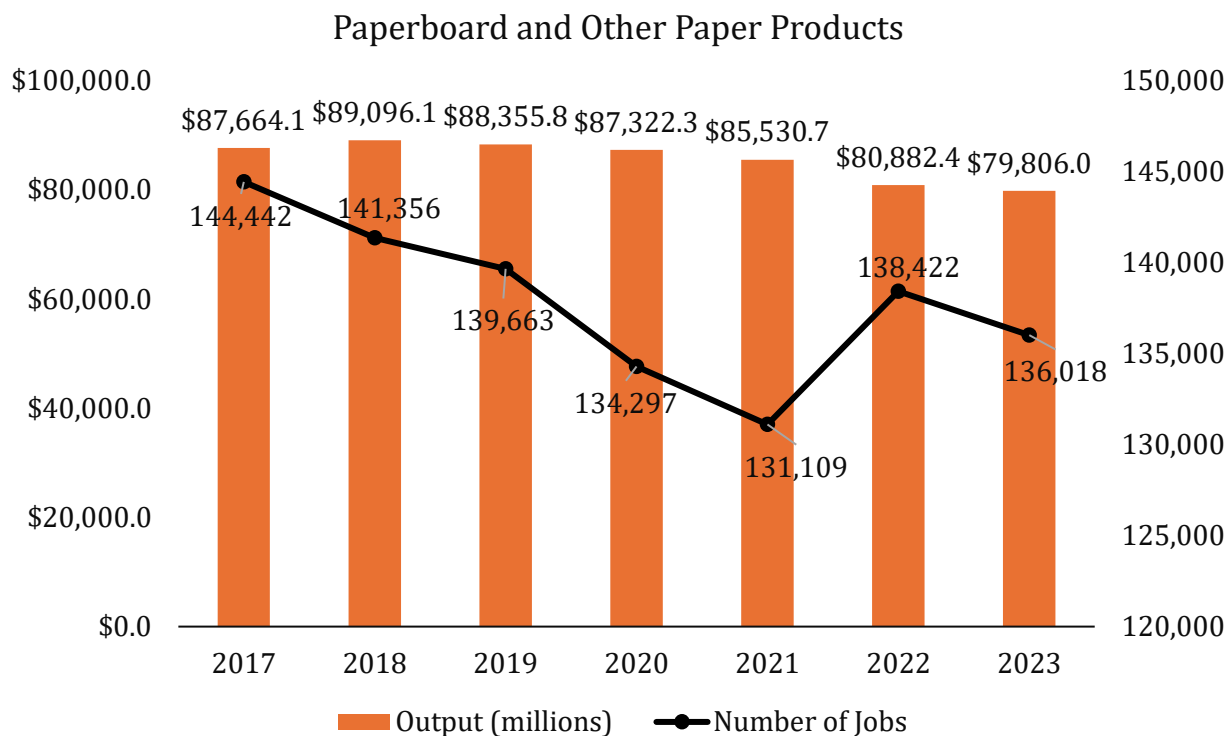


Figure 12: Trend in direct employment and output for the Secondary Paperboard and Other Paper Products industry in Northeast-Midwest, 2017–2023.

Major Forest Product Sectors

Among the 32 industry sectors that comprise the seven industry groups, the leaders vary by the contribution measure examined. On employment, the largest sectors in 2023 were paperboard container manufacturing with 76,905 jobs (15.0 percent of direct forest-products jobs), wood kitchen cabinet and countertop manufacturing with 50,672 (9.9 percent), wood windows and door manufacturing with 32,011 (6.2 percent), wood container and pallet manufacturing with 31,417 (6.1 percent), and commercial logging with 30,882 (6.0 percent) (Table 5). Together, these five sectors account for about 43 percent of direct employment, which reflects how hiring is concentrated in large packaging operations and high-volume wood fabrication, with logging supporting the field workforce.

On labor income, the top contributors were paperboard container manufacturing at \$7.23 billion (17.4 percent of the total), wood kitchen cabinet and countertop at \$3.35 billion (8.0 percent), paper mills at \$3.00 billion (7.2 percent), paper bag and coated and treated paper at \$2.93 billion (7.0 percent), and wood windows and doors at \$2.76 billion (6.6 percent). Together, they provide about 46 percent of total payroll in the sector, which fits a picture where packaging and converting carry large wage bills, and cabinet and window makers add substantial earnings in the wood segment. Similarly, on value added, the leaders were paperboard container manufacturing at \$11.36 billion (18.1 percent of the total), paper mills at \$6.59 billion (10.5 percent), paper bag and coated and treated paper at \$4.86 billion (7.7 percent), wood kitchen cabinet and countertop at \$4.06 billion (6.5 percent), and wood windows and doors at \$3.48 billion (5.5 percent). These five generate about 48 percent of direct gross product, which makes clear that most of the sector's value creation sits in paper converting and large-scale packaging, complemented by substantial contributions from downstream wood manufacturing.

In terms of output production, activity is more concentrated. Paperboard container manufacturing produced \$45.92 billion (22.6 percent of sector output), followed by paper mills at \$21.80 billion (10.7 percent), paper bag and coated and treated paper at \$15.17 billion (7.5 percent), sawmills at \$11.49 billion (5.6 percent), and sanitary paper products at \$10.94 billion (5.4 percent). The top five together account for about 52 percent of direct output. In practical terms, packaging and paper converting set the pace on dollars, sawmills supply the primary material stream that feeds those plants, and cabinet, window, and door makers sustain a sizable share of jobs and income on the wood side.

A comparison of 2017 and 2023 ranking highlights both stability and notable structural shifts within the forest products industries. Paperboard container manufacturing remained the dominant industry, holding the top position across all measures in both years. Paper mills continued to be a key contributor, maintaining second place in value added and output, though it fell from second to third in labor income. Wood kitchen cabinet and countertop

manufacturing remained strong in employment and labor income (second in both years) but slipped in output rankings and entered the top five for value added in 2023. Wood windows and door manufacturing, which was absent from the 2017 top five, emerged in 2023 as a major contributor, ranking third in employment and among the top five in labor income and value added, which shows a growing activity in secondary wood manufacturing. Conversely, commercial logging, wood container and pallet manufacturing, and paper bags and coated and treated paper manufacturing all saw declines in relative ranking, replaced in part by sawmills and higher-value finished wood product industries.

Table 12: Top five industries in terms of direct Economic Contributions in Northeast-Midwest state, 2023. [†]

Rank	Employment	Labor Income	Value added	Output
1	Paperboard container manufacturing (76,905)	Paperboard container manufacturing (\$7,227,450)	Paperboard container manufacturing (\$11,364,198)	Paperboard container manufacturing (\$45,919,245)
2	Wood kitchen cabinet and countertop manufacturing (50,672)	Wood kitchen cabinet and countertop manufacturing (\$3,350,211)	Paper mills (\$6,588,096)	Paper mills (\$21,798,258)
3	Wood windows and door manufacturing (32,011)	Paper mills (\$3,000,947)	Paper bag and coated and treated paper manufacturing (\$4,864,662)	Paper bag and coated and treated paper manufacturing (\$15,174,535)
4	Wood container and pallet manufacturing (31,417)	Paper bag and coated and treated paper manufacturing (\$2,933,711)	Wood kitchen cabinet and countertop manufacturing (\$4,055,682)	Sawmills (\$11,485,161)
5	Commercial logging (30,882)	Wood windows and door manufacturing (\$2,761,655)	Wood windows and door manufacturing (\$3,484,760)	Sanitary paper product manufacturing (\$10,938,082)

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

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

Excluding the forest-products industries themselves, the Northeast-Midwest economy included 491 other IMPLAN sectors in 2023. The forest sector's economic reach is extensive, supporting at least one job in 456 of these industries and at least ten jobs in 396 of them. Beyond the 514,361 direct jobs, the sector supported an additional 771,457 indirect and induced jobs across the region's economy. These additional positions, generated through supply chain purchases and workforce household spending, are heavily concentrated in logistics, wholesale trade, healthcare, and corporate services. Table 13 highlights the top ten non-forest industries most heavily impacted by this economic activity in 2023. Together, these ten sectors account for 251,023 jobs, representing approximately 32.5 percent of all indirect and induced employment generated by the forest economy.

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

Industries	Output
Warehousing and storage	43,490
Other real estate	31,196
Truck transportation	27,652
Wholesale - Other durable goods merchant wholesalers	26,383
Hospitals	22,420
Couriers and messengers	21,887
Employment services	21,309
Full-service restaurants	20,734
Management of companies and enterprises	18,583
Limited-service restaurants	17,369
Total	251,023

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

- Logistics and Distribution:** The strongest linkages are found in the movement and storage of physical goods. Warehousing and storage ranks as the largest impacted sector, with 43,490 jobs supported by the forest industry. When combined with Truck transportation (27,652 jobs), Wholesale - Other durable goods merchant wholesalers (26,383 jobs), and Couriers and messengers (21,887 jobs), it is evident that the forest sector acts as a primary backbone for the regional supply chain infrastructure. The industry requires a large, reliable network to move raw timber, store intermediate paper

products, and distribute finished goods to market, thereby sustaining nearly 120,000 jobs in this logistics and trade cluster alone.

- **Corporate and Business Support:** A significant impact is the sector's demand for high-level business services. Employment services accounts for 21,309 jobs, while Management of companies and enterprises ranks ninth with 18,583 jobs. This indicates that Northeast-Midwest's forest product firms, particularly large paper manufacturers and secondary processors, are substantial consumers of corporate support, relying on external firms for staffing, headquarters management, and administrative oversight to maintain complex multi-state operations.
- **Induced Household Spending:** The prominence of Other real estate (31,196 jobs), Hospitals (22,420 jobs), and both Full-service (20,734 jobs) and Limited-service restaurants (17,369 jobs) illustrates the "induced" power of the forest workforce. These sectors are sustained not by mill or manufacturing supply chain purchases, but by the wages, salaries, and benefits spent by forest-sector employees in their local communities. The high ranking of real estate and healthcare suggests that the income earned by loggers, mill workers, and manufacturers serves as a critical revenue stream for maintaining local housing markets and essential community healthcare services.

In terms of economic output as presented in Table 14, the top ten non-forest industries supported by forest-sector activity generated a combined \$57.90 billion in 2023. The dominant category involves the wholesale distribution of goods, reflecting the forest industry's reliance on large-scale trade to move high volumes of finished wood and paper products across the region. The leading supported sector is Wholesale - Other durable goods merchant wholesalers, generating over \$9.30 billion in output. When combined with Wholesale - Other nondurable goods merchant wholesalers (\$6.16 billion), the wholesale trade sector alone accounts for approximately \$15.46 billion in economic activity supported by the forest sector.

The rankings also highlight the substantial physical and corporate infrastructure required to sustain the forest economy. Truck transportation ranks fourth overall, generating \$6.15 billion, which underscores the critical role of freight logistics in the supply chain. Additionally, Electric power transmission and distribution ranks eighth, contributing \$4.94 billion, a figure driven by the immense base-load electricity consumption of the region's mills and processing facilities.

Finally, the presence of Owner-occupied housing as the second-largest supported sector (\$7.38 billion) serves as a significant indicator of the induced effect. In economic modeling, "Owner-occupied housing" represents the imputed value of homeownership. Its high ranking demonstrates that forest sector jobs sustain high levels of homeownership and household wealth in the Northeast-Midwest. This economic stability further supports \$5.94 billion in

output for Other real estate, \$4.82 billion for Hospitals, and \$4.46 billion for Monetary authorities (banking), which reflects the essential spending power of the forest workforce within their local communities.

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

Industries	Output
Wholesale - Other durable goods merchant wholesalers	\$9,302,292
Owner-occupied housing	\$7,384,429
Wholesale - Other nondurable goods merchant wholesalers	\$6,157,996
Truck transportation	\$6,154,348
Other real estate	\$5,936,170
Management of companies and enterprises	\$5,145,126
Electric power transmission and distribution	\$4,940,348
Hospitals	\$4,816,128
Monetary authorities and depository credit intermediation	\$4,456,631
Warehousing and storage	\$4,245,920
Total	\$58,539,388

[†] 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 help contextualize the relative importance of the forest products industries, it is useful to compare the contribution of the Northeast and Midwest region's forest products industries with others. The forest products sector is a major contributor to the region's natural resources and agricultural economy. In 2023, the forest products sector ranked first in output, second in employment and labor income, and third in value added among the four sectors as shown in Table 8. The changes since 2017 have been mixed for forest products, while mining and agriculture have seen substantial gains in dollar terms.

Among the four natural resources sectors, agriculture was the largest employer with 979,569 jobs, or 55.7 percent of natural resources employment. Forest products ranked second with 514,365 jobs, or 29.3 percent, followed by mining and oil and gas with 233,866 jobs, or 13.3 percent, and commercial fishing, hunting, and trapping with 29,569 jobs, or 1.7 percent. By output the ranking shifts. Forest products produced \$203.33 billion, or 34.0 percent of the total; mining produced \$202.66 billion, or 33.9 percent; agriculture produced \$189.46 billion, or 31.7 percent; and fishing produced \$1.88 billion. Value added tells a similar story to output for the top three dollar sectors, but with mining in the lead: mining generated \$105.68 billion, or 41.0 percent of natural-resources GSP, agriculture \$87.59 billion, or 34.0 percent, forest products \$62.86 billion, or 24.4 percent, and fishing \$1.83 billion. On labor income, agriculture was the largest at \$55.69 billion, or 41.3 percent of the total, followed by forest products at \$41.65 billion, or 30.9 percent, mining at \$36.50 billion, or 27.1 percent, and fishing at \$1.06 billion.

Similarly, the trajectory since 2017 differs by sector. Compared to 2017, forest products employment has decreased by 5.1 percent, labor income by 6.7 percent, value added by 1.7 percent, and output by 2.9 percent. Mining employment decreased by 3.3 percent, while labor income increased by 101.2 percent, value added increased by 40.6 percent, and output increased by 88.5 percent. Agriculture employment decreased by 8.6 percent, labor income increased by 64.5 percent, value added increased by 44.3 percent, and output increased by 5.9 percent. Commercial fishing, hunting, and trapping employment increased by 7.3 percent, while labor income decreased by 38.5 percent, value added decreased by 14.2 percent, and output decreased by 24.9 percent.

The cross-section in 2023 highlights different production models. Mining recorded the highest output per job at about \$867,000 and the highest value added per job at about \$452,000. Forest products were in the middle with about \$395,000 in output per job, about \$122,000 in value added per job, and labor income of \$81,000 per job. Agriculture averaged about \$193,000

in output per job and about \$89,000 in value added per job. Overall, in the Northeast-Midwest natural-resources industries, employment decreased by 6.7 percent compared to 2017, while labor income, value added, and output has increased by 37.1 percent, 29.1 percent, and 19.9 percent, respectively.

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

Industry	Employment	$\Delta 2017^{++}$	Labor Income	$\Delta 2017^{+}$ †	Value-Added	Δ 2017 ⁺⁺	Output	Δ 2017 ⁺⁺
1. Forest Products	514,365	-5.1%	\$41,651,796	-6.7%	\$62,857,845	1.7%	\$203,328,888	-2.9%
2. Commercial fishing, hunting & trapping	29,569	7.3%	\$1,058,902	-38.5%	\$1,828,735	-14.2%	\$1,882,905	-24.9%
3. Mining, and oil & gas production	233,866	-3.3%	\$36,500,423	101.2%	\$105,678,240	40.6%	\$202,659,948	88.5%
4. Agriculture production (plant crops and animals)	979,569	-8.6%	\$55,689,267	64.5%	\$87,589,076	44.3%	\$189,459,889	5.9%
Total	1,757,369	-6.7%	\$134,900,388	37.1%	\$257,953,897	29.1%	\$597,331,630	19.9%

[†] 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 Northeast-Midwest's industrial base, Table 16 compares "Forest Products Manufacturing " against the state's other major manufacturing groups. Note that in this context, "Forest Products" refers specifically to the manufacturing sub-sectors (Groups 3 through 7), excluding the extraction activities of forestry and logging and other non-manufacturing sectors (IMPLAN codes 10, 15, 16, 19, 40, 124, and 125; see Appendix A). Forest products manufacturing accounts for 90.8% of total forest-sector employment, 92.9% of labor income, 93.2% of value added, and 97.5% of total forest-sector output. The data reveals that the forest sector is a top-tier industrial pillar, functioning as one of the state's four dominant manufacturing engines alongside Food, Fabricated Metal, and Machinery.

Within the Northeast and Midwest region's manufacturing industries, forest products account for 467,024 jobs, \$198.17 billion in output, \$58.59 billion in value added, and \$38.70 billion in labor income. That places the sector fifth in employment and seventh in output, value added, and labor income among the 16 manufacturing groupings shown. By share of regional manufacturing, forest products represent 8.0 percent of jobs, 5.8 percent of output, 5.4 percent of value added, and 6.6 percent of labor income. The manufacturing landscape is led by food (839,783 jobs; \$531.92 billion in output), transportation equipment (716,137; \$506.44 billion), chemical manufacturing (397,493; \$512.28 billion), fabricated metals (742,556; \$252.95 billion), and machinery (582,368; \$282.53 billion). Forest products sit in the middle of this mix, larger than printing, nonmetallic minerals, beverages, tobacco, textiles, apparel, petroleum, and coal, and smaller than food, chemicals, transportation equipment, machinery, and fabricated metals.

Productivity indicators support this positioning. Forest products output per job is about \$425 thousand, compared with a manufacturing average near \$590 thousand. Value added per job is about \$126 thousand versus \$186 thousand on average, and labor income per job is about \$83 thousand versus \$101 thousand on average. The sector is therefore somewhat more labor-intensive than the manufacturing average, which also reflects its mix of primary wood processing, paper and paperboard conversion, and furniture production, while still delivering a sizable labor income and in-state GRP. At the aggregate manufacturing level in 2023, totals were 5,817,544 jobs and \$3.43 trillion in output. Compared with 2017 (restated in 2023 dollars), manufacturing employment decreased by 2.0 percent, labor income decreased by 3.5 percent, value added decreased by 1.4 percent, and output declined by 3.6 percent. Group.

Table 16: Manufacturing Industries in Northeast-Midwest state, 2023. [†]

Manufacturing Industries	Employment	Labor Income	Value Added	Output
Food	839,783	\$64,392,062	\$109,498,065	\$531,922,341
Fabricated Metal	742,556	\$64,688,981	\$94,592,897	\$252,946,971
Transportation Equipment	716,137	\$76,143,775	\$136,662,111	\$506,437,052
Machinery	582,368	\$60,271,541	\$96,892,745	\$282,528,745
Forest Products	467,024	\$38,701,857	\$58,586,916	\$198,174,396
Chemical	397,493	\$68,913,816	\$217,118,731	\$512,279,677
Computer and Electronic Product	352,431	\$46,742,559	\$62,558,113	\$187,138,309
Miscellaneous	336,487	\$33,284,116	\$53,896,421	\$116,581,314
Plastics and Rubber Products	323,631	\$27,459,774	\$41,651,077	\$141,511,027
Printing	223,562	\$15,466,877	\$24,275,890	\$47,232,072
Primary Metal	214,439	\$24,560,419	\$42,987,588	\$232,161,901
Electrical Equipment	187,972	\$20,557,504	\$34,034,756	\$92,602,517
Nonmetallic Mineral Product	169,375	\$15,700,594	\$29,544,032	\$72,585,642
Beverage and Tobacco Product	118,042	\$8,917,366	\$21,888,701	\$64,231,461
Textiles and Apparel	111,498	\$7,265,611	\$8,952,206	\$25,170,008
Petroleum and Coal	34,746	\$12,283,165	\$50,991,545	\$166,865,768
Total	5,817,544	\$585,350,016	\$1,084,131,794	\$3,430,369,201
Compared to 2017	-2.0%	-3.5%	-1.4%	-3.6%

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

States comparison

Across the 20-state Northeast–Midwest region, the forest products economy is concentrated in a relatively small set of large contributors. Pennsylvania, Wisconsin, and Ohio form the leading group, with Pennsylvania supporting the largest employment base (66,393 jobs) and Wisconsin generating the highest output (\$28.3 billion), narrowly ahead of Pennsylvania (\$27.6 billion) (Figures 13 and 14). Ohio ranks third on both measures, with 55,317 jobs and \$21.4 billion in output. Taken together, these three states account for more than 35 percent of total regional forest-sector employment and output. Their contribution profiles, however, are not identical. Wisconsin generates the highest output with fewer jobs than Pennsylvania, while Pennsylvania converts its larger workforce into the region’s highest labor income (\$5.46 billion) and one of the largest value-added totals (\$8.67 billion) ([Appendix B4](#)). Ohio occupies a similar position as a high-scale, high-value state, contributing \$6.17 billion in value added.

A second set of states, Indiana, Michigan, Illinois, and New York, adds substantial economic weight, though with less scale than the leading group. Indiana and Michigan are notable for the size of both their workforce and output base, supporting 47,610 and 42,478 jobs, respectively, and generating roughly \$16.6–\$16.8 billion in output. Illinois and New York operate on somewhat smaller employment bases, yet their output remains close to that of Indiana and Michigan, at \$15.7 billion and \$15.1 billion, respectively. The same pattern carries into labor income and value added: Illinois contributes \$3.27 billion in labor income and \$4.47 billion in value added, while New York generates \$3.30 billion and \$4.57 billion, despite employing fewer workers than Indiana or Michigan ([Appendix B4](#)). This part of the region is therefore not uniform. Indiana and Michigan derive much of their importance from scale, whereas Illinois and New York generate stronger economic returns relative to workforce size. A related contrast appears among smaller contributors. Connecticut and Delaware, for example, account for only 6,930 and 2,050 jobs, yet generate \$3.20 billion and \$1.13 billion in output, with comparatively high value added relative to employment. Their role in the regional economy is defined less by size than by the concentration of higher-value activity.

Output per worker further clarifies these differences. The largest contributors are not always the most productive on a per-job basis. Delaware, despite having the smallest employment base in the region, records the highest output per worker at roughly \$551 thousand per job. Connecticut also ranks near the top on this measure (\$461 thousand per job), alongside Wisconsin, which combines high productivity with one of the region’s largest output bases. By contrast, Indiana remains a major contributor in aggregate terms, 47,610 jobs and \$16.6 billion in output, but its output per worker (about \$348 thousand) is lower than that of several peer states. Pennsylvania and Ohio fall between these two ends of the distribution, combining large

employment bases with solid, though not leading, output intensity. Taken together, these results show that state rankings are shaped by two distinct factors: some states dominate because of scale, while others stand out because they generate more output per worker. These differences in scale, value capture, and output intensity are closely tied to variation in industry mix across states. Detailed state-level industry contributions are reported in [Appendix B5](#) for employment and [Appendix B6](#) for output.

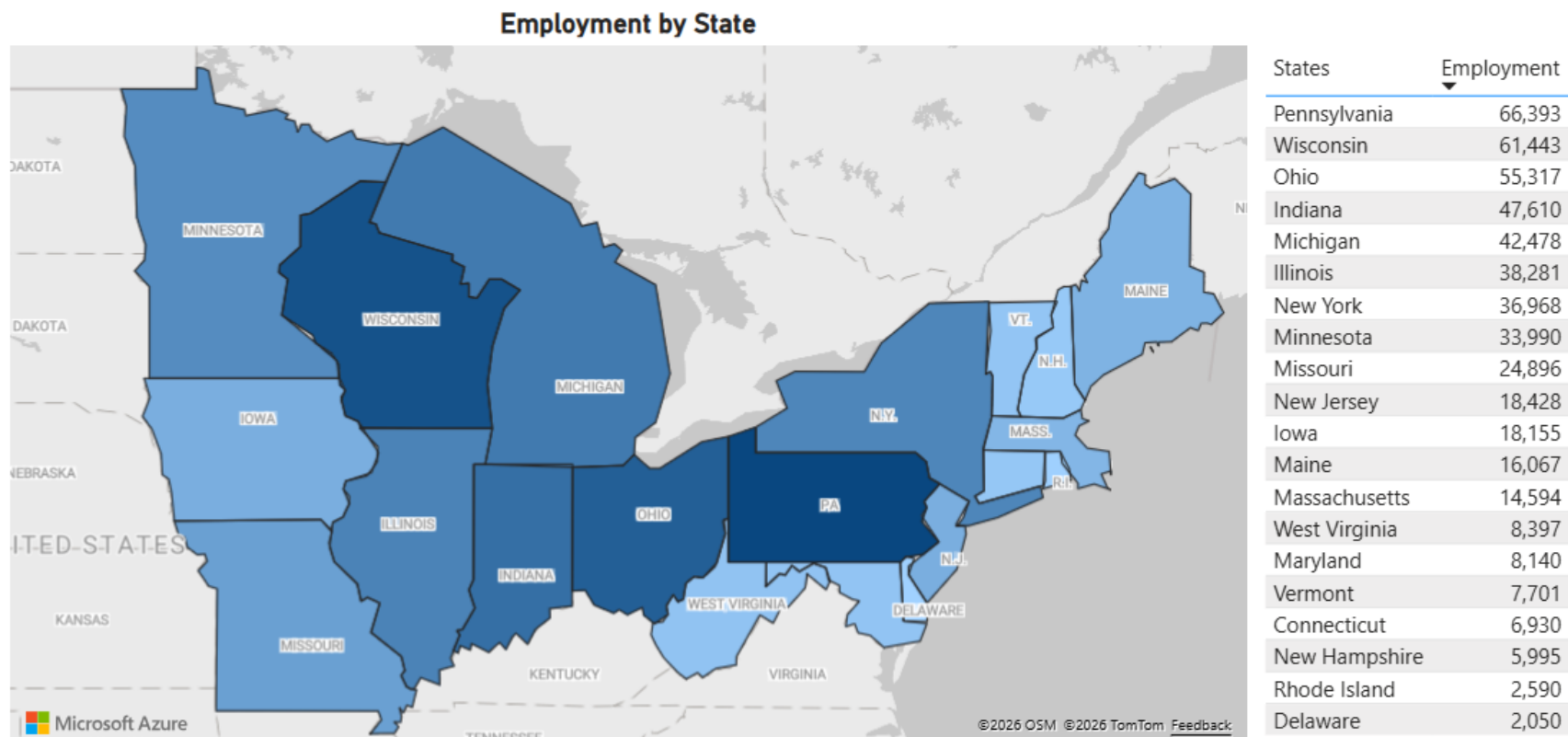


Figure 13: Comparison of direct employment contribution of 20 Northeast-Midwest regions.

Note: Individual state's employment presented in Figures 13 is based on results from 20 individual state-level models. As a result, summing the values shown in those figures will not exactly reproduce the regional totals reported in Tables 2, 3, and 4, which are based on the separate 20-state regional model used for aggregate reporting. The small differences arise from the treatment of two partial sectors, Sector 10 (All other crop farming) and Sector 19 (Support activities for agriculture and forestry). The contribution of these sectors varies across states, and some states had no activity in them. In the regional model, a single percentage was applied across all states, which leads to minor discrepancies between the summed state totals and the directly estimated regional totals.

Accordingly, Figures 13 is recommended for state-level comparisons, whereas Tables 2, 3, and 4 should be used for regional aggregate reporting.

Across the region, the forest products economy is weighted more toward downstream manufacturing than toward upstream extraction, with Secondary Solid Wood Products, Wood Furniture, and Secondary Paperboard and Other Paper Products accounting for a large share of employment in many states. Pennsylvania stands out for the breadth of its industry base, with particularly large contributions from Secondary Solid Wood Products (19,555 jobs) and Secondary Paperboard and Other Paper Products (19,034 jobs), supported by a substantial Primary Solid Wood Products segment. Wisconsin shows a similarly diversified structure, but with a much stronger Pulp, Paper, and Paperboard mills component (8,115 jobs), which helps explain its leading output position.

Not all states follow that pattern. Maine and Vermont retain a stronger upstream orientation, with employment more concentrated in Forestry and Logging than in most of the region's larger manufacturing states; in Vermont, Forestry (2,941 jobs) exceeds every manufacturing segment. By contrast, Illinois, New Jersey, and Ohio are more heavily concentrated in downstream activities, particularly paper converting, furniture, and other secondary manufacturing. In Illinois, for example, Secondary Paperboard and Other Paper Products (16,427 jobs) are by far the dominant segment. Overall, the regional pattern is not simply a ranking of "big versus small" states. It is a split between large, diversified production systems (Pennsylvania, Wisconsin, Ohio), mid-sized but high-intensity manufacturing states (Illinois, New York, Connecticut), and resource-oriented states where upstream activities carry more weight (Maine, Vermont, West Virginia). That distinction is important for policy and strategy: employment concentration, value capture, and industry composition do not align perfectly, and the strongest states are not all strong for the same reason.

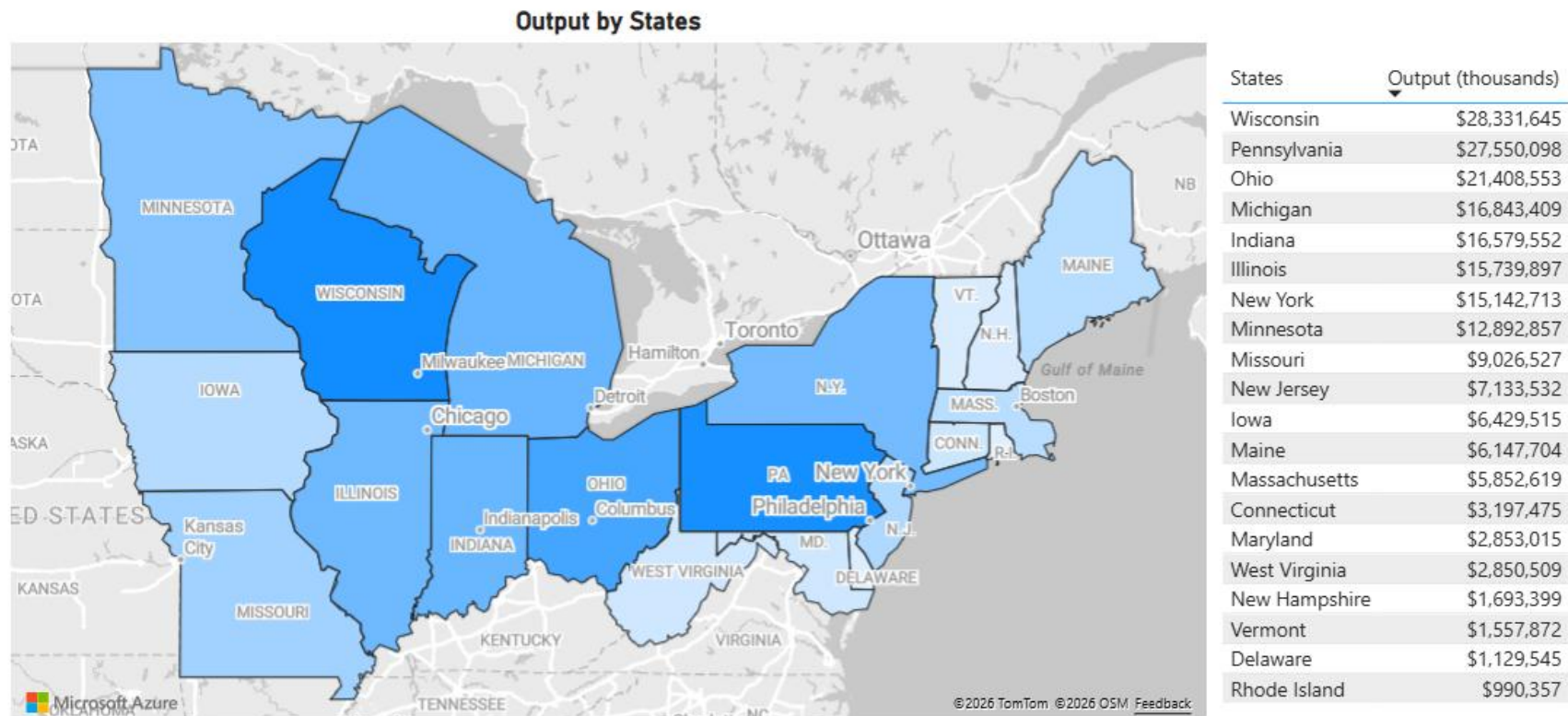


Figure 14: Comparison of direct output contribution of 20 Northeast-Midwest regions.

Note 1: All monetary values are in thousands of U.S. dollars, adjusted to 2023 dollars value.

Note 2: Individual state's output presented in Figures 14 are based on results from 20 individual state-level models. As a result, summing the values shown in those figures will not exactly reproduce the regional totals reported in Tables 2, 3, and 4, which are based on the separate 20-state regional model used for aggregate reporting. The small differences arise from the treatment of two partial sectors, Sector 10 (All other crop farming) and Sector 19 (Support activities for agriculture and forestry). The contribution of these sectors varies across states, and some states had no activity in them. In the regional model, a single percentage was applied across all states, which leads to minor discrepancies between the summed state totals and the directly estimated regional totals.

Accordingly, Figures 14 is recommended for state-level comparisons, whereas Tables 2, 3, and 4 should be used for regional aggregate reporting.

Summary

The forest products industry in the Northeast–Midwest is a large manufacturing system that runs from timber management and logging through primary wood processing to packaging, tissue, and furniture. Using 2023 IMPLAN and USDA FIA data, the study aggregates 32 IMPLAN sectors into seven industry groups and measures both direct activity and the whole supply-chain and household-spending effects. In 2023, the sector directly supported 514,361 direct jobs, produced \$203.33 billion in direct output, generated \$62.86 billion in direct value added, and paid \$41.65 billion in labor income. Once supplier purchases and household spending are included, the totals reach 1,285,819 jobs, \$386.55 billion in output, \$167.50 billion in value added, and \$101.50 billion in labor income. The implied multipliers are about 2.50 for employment, 2.44 for labor income, 2.66 for value added, and 1.90 for output.

Performance has shifted since 2017. Direct employment fell 5.1 percent and direct labor income fell 6.7 percent, while direct value added increased 1.7 percent and direct output decreased 2.9 percent. Output per job increased modestly over the period: it rose from about \$386.14 thousand in 2017 to about \$395.30 thousand in 2023 (+2.4%). Within the seven groups, secondary paperboard and other paper products were the most significant dollar contributors in 2023, leading labor income, value added, and output, and it was also the largest employer with 136,018 jobs. Wood furniture and secondary solid wood products each accounted for a substantial share of jobs. Primary solid wood products occupied a mid-tier position, smaller than the secondary manufacturing groups but larger than forestry and logging industries, and served as a key upstream supplier to downstream wood manufacturing. Forestry remained the smallest group across measures.

Looking further into unaggregated sectors, Paperboard container manufacturing led all four measures. Cabinet and countertop, windows and doors, pallets and containers, and commercial logging round out the top employment list, while paper mills, paper bag and coated paper, sawmills, and Sanitary paper products dominate on output. Outside the mills and woods, indirect and induced effects were concentrated in logistics, wholesale trade, real estate, company management, health care, and restaurants, where the top ten non-forest industries captured about one-third of all indirect and induced effects jobs and \$57.9 billion of supported output. In conclusion, the industry is leaner on headcount than in 2017 yet still central to regional manufacturing, with strong packaging growth, steady primary wood production, and broad supply-chain reach.

References

- Bureau of Economic Analysis. (2023). Fundamental concepts. In NIPA handbook: Concepts and methods of the U.S. National Income and Product Accounts (Chapter 2).
<https://www.bea.gov/resources/methodologies/nipa-handbook/pdf/chapter-02.pdf>
- Coronado, C. J., McConnell, T. E., & Matthews, S. N. (2014). Economic impacts of timber product outputs in Ohio across timber market regions. *BioResources*, 9(4), 7579–7592.
<https://bioresources.cnr.ncsu.edu/resources/economic-impacts-of-timber-product-outputs-in-ohio-across-timber-market-regions/>
- IMPLAN Group LLC. (2023). IMPLAN® model: Data and software system (Data and Software).
<https://implan.com/>
- Juzwik, J., Haugen, L., Kyhl, J., Schneeberger, N. F., Rothlisberger, J. D., & Poland, T. M. (2021a). Regional summaries: Midwest region. In T. M. Poland, T. Patel-Weynand, D. M. Finch, C. Ford Miniati, D. C. Hayes, & V. M. Lopez (Eds.), *Invasive species in forests and rangelands of the United States: A comprehensive science synthesis for the United States forest sector* (pp. 414–419). Springer International Publishing.
<https://www.fs.usda.gov/research/publications/book/invasiveSpecies/invasiveSpeciesAppendixMidwest.pdf>
- Juzwik, J., Haugen, L., Schneeberger, N. F., Rawinski, T. J., Rothlisberger, J. D., & Poland, T. M. (2021b). Regional summaries: Northeast region. In T. M. Poland, T. Patel-Weynand, D. M. Finch, C. Ford Miniati, D. C. Hayes, & V. M. Lopez (Eds.), *Invasive species in forests and rangelands of the United States: A comprehensive science synthesis for the United States forest sector* (pp. 420–425). Springer International Publishing.
<https://www.fs.usda.gov/research/publications/book/invasiveSpecies/invasiveSpeciesAppendixNortheast.pdf>
- Khanal, N., Pokharel, R., Poudel, J., Gc, S., Shannon, E., Huff, E., & Finley, A. (2024). Analysis of location, feedstock availability, and economic impacts of potential mass timber processing facilities in Michigan. *Forest Policy and Economics*, 163, 103203.
<https://doi.org/10.1016/j.forpol.2024.103203>
- Lamsal, B., Poudel, J., & Pokharel, R. (2025a). Regional economic and employment impacts of industrial decline in the forest sector: Evidence from sawmill closures in Michigan. *Forest Policy and Economics*, 178, 103601. <https://doi.org/10.1016/j.forpol.2024.103601>
- Lamsal, B., Cavo, M., & Wagner, J. E. (2025b). Decomposing the economic contribution of a sector: A case study of New York State’s forest sector. *Forest Science*, 71, 423–444.
<https://doi.org/10.1007/s44391-025-00023-x>
- Leefers, L., Poudel, J., Neumann, D., & Public Sector Consultants. (2020). Forest products industries’ economic contributions in the Northeast and Midwest. Public Sector Consultants.

- Pokharel, M., Germain, R. H., Wagner, J. E., & Smith, W. B. (2023). Estimating a regional economic conservation benefit of using domestic hardwoods vs. apitong for trailer decking: A case study on US Army use. *Forests*, 14(7), 1428.
<https://doi.org/10.3390/f14071428>
- Poudel, J. (2022). Forest products industries' economic contributions: Michigan. Forest Resources Division, Michigan Department of Natural Resources.
- Poudel, J., & Dahal, R. (2025). A comprehensive look at the forest products industry's economic contribution to the United States: Pre- and post-COVID analysis. *Forest Policy and Economics*, 172, 103440. <https://doi.org/10.1016/j.forpol.2025.103440>
- Poudel, K., & Ochuodho, T. O. (2021). Forest sector dependence and economic well-being in Kentucky: An econometric analysis. *Forest Science*, 67(6), 659–669.
<https://doi.org/10.1093/forsci/fxab048>
- Watson, P., Cooke, S., Kay, D., & Alward, G. (2015). A method for improving economic contribution studies for regional analysis. *Journal of Regional Analysis & Policy*, 45(1), 1–15.

Appendix A: Forest Products Industries Groupings and IMPLAN Sectors

A1: Forestry Industry Grouping and IMPLAN Sectors

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

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

A2: Logging Industry Grouping and IMPLAN Sector

Industry Code	Industry name
16	Commercial logging

A3: Primary Solid Wood Products Industry Grouping and IMPLAN Sectors

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

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

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

Industry Code	Industry name
127	Engineered wood member and truss manufacturing
129	Wood windows and door manufacturing
130	Cut stock, resawing lumber, and planing
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	Nonupholstered wood household furniture manufacturing
352	Institutional furniture manufacturing**
353	Wood office furniture manufacturing
354	Custom architectural woodwork and millwork
356	Showcase, partition, shelving, and locker manufacturing**

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

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

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

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

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

Appendix B. Detailed Economic Contribution Results of 2023

B1: Direct Economic Contribution by IMPLAN Sector, 2023

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

Industries	Employment	Labor Income	Value-Added	Output
All other crop farming	4,402	\$48,221	\$75,732	\$159,187
Forestry, forest products, and timber tract production	3,575	\$241,003	\$269,189	\$304,282
Support activities for agriculture and forestry	7,492	\$297,332	\$307,345	\$323,566
Total	15,469	\$586,555	\$652,266	\$787,034

[†] 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	30,882	\$2,170,378	\$3,063,216	\$3,189,848
Total	30,882	\$2,170,378	\$3,063,216	\$3,189,848

[†] 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	987	\$192,832	\$555,271	\$1,177,436
Sawmills	24,099	\$1,613,986	\$2,316,830	\$11,485,161
Wood preservation	2,717	\$228,316	\$510,296	\$2,289,594
Veneer and plywood manufacturing	6,631	\$454,092	\$738,300	\$2,424,085
Reconstituted wood product manufacturing	5,134	\$475,259	\$1,238,921	\$4,665,505
Total	39,568	\$2,964,485	\$5,359,619	\$22,041,780

[†] 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	14,405	\$1,170,246	\$1,592,996	\$5,858,847
Wood windows and door manufacturing	32,011	\$2,761,655	\$3,484,760	\$9,996,506
Cut stock, resawing lumber, and planing	3,810	\$239,073	\$374,894	\$1,411,860
Other millwork, including flooring	15,714	\$1,168,713	\$1,625,859	\$5,007,032
Wood container and pallet manufacturing	31,417	\$2,231,333	\$2,647,763	\$8,080,930
Manufactured home (mobile home) manufacturing	7,030	\$609,318	\$680,823	\$2,246,315
Prefabricated wood building manufacturing	9,635	\$746,360	\$1,067,146	\$3,495,286
All other miscellaneous wood product manufacturing	14,974	\$1,087,651	\$1,439,410	\$4,237,059
Total	128,997	\$10,014,349	\$12,913,651	\$40,333,837

[†] 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	50,672	\$3,350,211	\$4,055,682	\$9,961,351
Upholstered household furniture manufacturing	8,926	\$557,408	\$656,572	\$1,974,756
Nonupholstered wood household furniture manufacturing	14,294	\$889,624	\$1,009,961	\$2,712,943
Institutional furniture manufacturing	14,804	\$1,148,856	\$1,342,331	\$3,604,585
Wood office furniture manufacturing	11,079	\$839,725	\$1,126,125	\$3,080,043
Custom architectural woodwork and millwork	12,812	\$1,051,182	\$530,306	\$2,563,913
Showcase, partition, shelving, and locker manufacturing	18,758	\$1,486,716	\$1,933,891	\$5,309,531
Total	131,346	\$9,323,721	\$10,654,868	\$29,207,122

[†] 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	679	\$79,762	\$116,667	\$474,362
Paper mills	25,170	\$3,000,947	\$6,588,096	\$21,798,258
Paperboard mills	6,232	\$720,339	\$1,460,162	\$5,690,449
Total	32,081	\$3,801,049	\$8,164,926	\$27,963,069

[†] 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	76,905	\$7,227,450	\$11,364,198	\$45,919,245
Paper bag and coated and treated paper manufacturing	30,002	\$2,933,711	\$4,864,662	\$15,174,535
Stationery product manufacturing	7,895	\$643,303	\$820,225	\$3,451,563
Sanitary paper product manufacturing	11,763	\$1,181,765	\$3,426,186	\$10,938,082
All other converted paper product manufacturing	9,454	\$804,856	\$1,573,853	\$4,322,599
Total	136,018	\$12,791,085	\$22,049,123	\$79,806,025

[†] 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	3,616	\$234,632	\$243,097	\$337,832
Forestry, forest products, and timber tract production	7,724	\$323,801	\$312,630	\$342,278
Support activities for agriculture and forestry	6,241	\$46,678	\$69,714	\$140,777
Total	17,582	\$605,111	\$625,441	\$820,887

[†] 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	41,769	\$2,349,855	\$3,366,782	\$4,286,672
Total	41,769	\$2,349,855	\$3,366,782	\$4,286,672

[†] 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	1,017	\$201,311	\$441,854	\$861,618
Sawmills	27,370	\$1,429,290	\$1,569,084	\$7,599,193
Wood preservation	2,562	\$158,139	\$267,954	\$1,489,713
Veneer and plywood manufacturing	6,488	\$351,315	\$407,900	\$1,761,382
Reconstituted wood product manufacturing	4,123	\$317,716	\$496,132	\$2,227,600
Total	41,560	\$2,457,771	\$3,182,925	\$13,939,506

[†] 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	12,127	\$705,516	\$764,839	\$2,713,765
Wood windows and door manufacturing	27,202	\$1,778,963	\$2,204,174	\$6,485,174
Cut stock, resawing lumber, and planing	3,922	\$214,591	\$272,198	\$905,581
Other millwork, including flooring	17,815	\$1,017,883	\$1,237,412	\$3,728,438
Wood container and pallet manufacturing	31,072	\$1,579,164	\$1,747,691	\$4,914,537
Manufactured home (mobile home) manufacturing	5,661	\$365,254	\$502,110	\$1,441,302
Prefabricated wood building manufacturing	8,825	\$506,785	\$552,328	\$1,555,266
All other miscellaneous wood product manufacturing	15,809	\$876,668	\$1,033,123	\$2,950,156
Total	122,434	\$7,044,823	\$8,313,876	\$24,694,220

[†] 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	55,097	\$2,933,008	\$3,251,378	\$8,230,428
Upholstered household furniture manufacturing	11,114	\$602,629	\$710,590	\$2,263,821
Nonupholstered wood household furniture manufacturing	17,427	\$857,995	\$1,030,227	\$2,353,457
Institutional furniture manufacturing	11,358	\$759,397	\$880,838	\$2,319,927
Wood office furniture manufacturing	12,287	\$795,565	\$1,173,834	\$2,882,595
Custom architectural woodwork and millwork	11,621	\$816,357	\$928,136	\$2,033,061
Showcase, partition, shelving, and locker manufacturing	17,116	\$1,079,418	\$1,332,462	\$3,659,822
Total	136,021	\$7,844,368	\$9,307,465	\$23,743,111

[†] 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	1,107	\$126,477	\$163,576	\$733,215
Paper mills	30,459	\$3,100,221	\$5,586,217	\$23,391,072
Paperboard mills	6,785	\$700,165	\$1,164,913	\$5,479,591
Total	38,351	\$3,926,864	\$6,914,707	\$29,603,879

[†] 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	76,914	\$6,283,901	\$8,407,846	\$36,256,762
Paper bag and coated and treated paper manufacturing	33,636	\$3,007,404	\$4,457,117	\$15,583,060
Stationery product manufacturing	10,085	\$746,504	\$1,145,782	\$3,885,470
Sanitary paper product manufacturing	13,628	\$1,401,699	\$3,734,063	\$10,851,410
All other converted paper product manufacturing	10,179	\$849,836	\$1,097,261	\$3,368,840
Total	144,442	\$12,289,344	\$18,842,069	\$69,945,542

[†] 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	3,616	\$286,892	\$297,242	\$423,412
Forestry, forest products, and timber tract production	7,724	\$395,921	\$382,262	\$428,984
Support activities for agriculture and forestry	6,241	\$57,075	\$85,242	\$176,439
Total	17,582	\$739,887	\$764,746	\$1,028,834

[†] 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	41,769	\$2,873,239	\$4,116,665	\$5,372,572
Total	41,769	\$2,873,239	\$4,116,665	\$5,372,572

[†] 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	1,017	\$246,150	\$540,268	\$1,079,884
Sawmills	27,370	\$1,747,636	\$1,918,566	\$9,524,220
Wood preservation	2,562	\$193,361	\$327,636	\$1,867,087
Veneer and plywood manufacturing	6,488	\$429,563	\$498,752	\$2,207,575
Reconstituted wood product manufacturing	4,123	\$388,481	\$606,635	\$2,791,896
Total	41,560	\$3,005,190	\$3,891,858	\$17,470,662

[†] 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	12,127	\$862,656	\$935,192	\$3,401,216
Wood windows and door manufacturing	27,202	\$2,175,191	\$2,695,110	\$8,127,998
Cut stock, resawing lumber, and planing	3,922	\$262,387	\$332,825	\$1,134,983
Other millwork, including flooring	17,815	\$1,244,596	\$1,513,021	\$4,672,926
Wood container and pallet manufacturing	31,072	\$1,930,891	\$2,136,954	\$6,159,488
Manufactured home (mobile home) manufacturing	5,661	\$446,607	\$613,945	\$1,806,413
Prefabricated wood building manufacturing	8,825	\$619,661	\$675,348	\$1,949,246
All other miscellaneous wood product manufacturing	15,809	\$1,071,928	\$1,263,231	\$3,697,490
Total	122,434	\$8,613,917	\$10,165,626	\$30,949,760

[†] 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	55,097	\$3,586,277	\$3,975,557	\$10,315,360
Upholstered household furniture manufacturing	11,114	\$736,853	\$868,860	\$2,837,292
Nonupholstered wood household furniture manufacturing	17,427	\$1,049,096	\$1,259,689	\$2,949,635
Institutional furniture manufacturing	11,358	\$928,537	\$1,077,027	\$2,907,610
Wood office furniture manufacturing	12,287	\$972,762	\$1,435,282	\$3,612,815
Custom architectural woodwork and millwork	11,621	\$998,184	\$1,134,860	\$2,548,076
Showcase, partition, shelving, and locker manufacturing	17,116	\$1,319,836	\$1,629,242	\$4,586,928
Total	136,021	\$9,591,545	\$11,380,517	\$29,757,716

[†] 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	1,107	\$154,647	\$200,010	\$918,953
Paper mills	30,459	\$3,790,734	\$6,830,436	\$29,316,499
Paperboard mills	6,785	\$856,113	\$1,424,374	\$6,867,681
Total	38,351	\$4,801,494	\$8,454,820	\$37,103,134

[†] 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	76,914	\$7,683,514	\$10,280,525	\$45,441,325
Paper bag and coated and treated paper manufacturing	33,636	\$3,677,243	\$5,449,850	\$19,530,560
Stationery product manufacturing	10,085	\$912,773	\$1,400,982	\$4,869,738
Sanitary paper product manufacturing	13,628	\$1,713,900	\$4,565,751	\$13,600,289
All other converted paper product manufacturing	10,179	\$1,039,120	\$1,341,654	\$4,222,235
Total	144,442	\$15,026,550	\$23,038,763	\$87,664,147

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

B4: Compilation of State-level Direct Contributions, 2023[†]

States	Employment	Labor Income	Value-Added	Output
Connecticut	6,930	\$595,236	\$1,145,576	\$3,197,475
Delaware	2,050	\$164,048	\$419,852	\$1,129,545
Illinois	38,281	\$3,270,414	\$4,474,853	\$15,739,897
Indiana	47,610	\$3,653,750	\$5,302,374	\$16,579,552
Iowa	18,155	\$1,543,126	\$2,278,717	\$6,429,515
Maine	16,067	\$1,166,317	\$1,787,856	\$6,147,704
Maryland	8,140	\$460,422	\$862,610	\$2,853,015
Massachusetts	14,594	\$1,593,184	\$1,800,086	\$5,852,619
Michigan	42,478	\$3,390,446	\$4,942,888	\$16,843,409
Minnesota	33,990	\$2,819,364	\$4,473,393	\$12,892,857
Missouri	24,896	\$1,802,100	\$2,925,761	\$9,026,527
New Hampshire	5,995	\$417,628	\$569,666	\$1,693,399
New Jersey	18,428	\$1,547,595	\$2,137,970	\$7,133,532
New York	36,968	\$3,302,396	\$4,566,432	\$15,142,713
Ohio	55,317	\$4,602,364	\$6,169,822	\$21,408,553
Pennsylvania	66,393	\$5,462,102	\$8,669,449	\$27,550,098
Rhode Island	2,590	\$184,246	\$239,515	\$990,357
Vermont	7,701	\$314,389	\$432,398	\$1,557,872
West Virginia	8,397	\$500,046	\$908,472	\$2,850,509
Wisconsin	61,443	\$4,890,298	\$8,774,277	\$28,331,645
20 states region (sum)	516,423	\$41,679,471	\$62,881,967	\$203,350,793
20 states region (model)	514,361	\$41,651,622	\$62,857,669	\$203,328,715

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

Note: The figures presented in Appendix B4 reflect results from 20 individual state-level models, the totals of which are shown under “20-state region (sum)”. Additionally, a separate regional model was estimated, with its results reported as “20-state region (model)”, corresponding to the estimates cited in the main body of this report. Small differences between the two are due to how two partial sectors, Sector 10: All other crop farming and Sector 19: Support activities for agriculture and forestry, were handled. The share of these sectors varies by state, and some states had no activity in them. In the regional model, a single percentage was used across all states, which causes minor discrepancies. For regional reporting, the “20-state region (model)” values are recommended.

B5: State Direct Employment by Industry group, 2023

State	Forestry	Logging	Primary Solid Wood Products	Secondary Solid Wood Products	Wood Furniture	Pulp, Paper, and Paperboard mills	Secondary Paperboard & other Paper Products
Connecticut	166	190	236	1,288	2,041	850	2,159
Delaware	71	41	23	336	666	0	913
Illinois	492	861	802	7,541	10,965	1,193	16,427
Indiana	450	1,228	3,619	13,061	18,942	1,376	8,934
Iowa	88	584	480	10,382	3,484	244	2,893
Maine	1,874	3,286	2,952	2,391	1,468	2,640	1,456
Maryland	575	643	566	3,003	1,601	120	1,632
Massachusetts	800	673	202	3,069	3,201	1,424	5,225
Michigan	1,608	3,543	5,846	6,621	12,433	3,206	9,221
Minnesota	978	1,871	1,311	13,144	8,442	2,109	6,135
Missouri	650	1,601	2,556	5,724	7,468	59	6,838
New Hampshire	1,246	1,103	1,033	1,001	957	379	276
New Jersey	299	438	437	3,025	6,449	360	7,420
New York	1,228	3,224	2,934	6,694	9,658	4,546	8,684
Ohio	480	2,545	2,750	13,953	14,009	2,368	19,212
Pennsylvania	2,161	3,258	6,245	19,555	13,857	2,283	19,034
Rhode Island	4	34	90	474	916	61	1,011
Vermont	2,941	1,145	818	960	1,203	581	53
West Virginia	630	1,303	2,453	2,307	1,346	166	192
Wisconsin	788	3,311	4,216	14,469	12,238	8,115	18,306

20 states region (sum)	17,529	30,882	39,569	128,998	131,344	32,080	136,020
20 states region (model)	15,469	30,882	39,568	128,997	131,346	32,081	136,018

Note: The figures presented in Appendix B5 reflect results from 20 individual state-level models, the totals of which are shown under “20-state region (sum)”. Additionally, a separate regional model was estimated, with its results reported as “20-state region (model)”, corresponding to the estimates cited in the main body of this report. Differences between the two for the Forestry sector arise from the treatment of two partial sectors, Sector 10: All other crop farming and Sector 19: Support activities for agriculture and forestry. The share of these sectors varies by state, and some states had no activity in them. And the small differences in the other sectors are due to rounding.. In the regional model, a single percentage was used across all states, which causes minor discrepancies. For regional reporting, the “20-state region (model)” values are recommended.

B6: State Direct Output by Industry group, 2023

State	Forestry	Logging	Primary Solid Wood Products	Secondary Solid Wood Products	Wood Furniture	Pulp, Paper, and Paperboard mills	Secondary Paperboard & other Paper Products
Connecticut	\$12,660	\$61,651	\$144,432	\$351,302	\$447,751	\$850,984	\$1,328,695
Delaware	\$3,080	\$23,277	\$14,198	\$103,146	\$187,821	\$0	\$798,024
Illinois	\$23,797	\$193,564	\$549,468	\$2,257,584	\$2,668,638	\$960,510	\$9,086,336
Indiana	\$27,858	\$126,379	\$1,637,223	\$4,217,912	\$4,276,256	\$1,239,830	\$5,054,094
Iowa	\$5,051	\$93,632	\$235,316	\$3,309,017	\$741,619	\$261,685	\$1,783,195
Maine	\$63,402	\$145,225	\$1,712,090	\$751,920	\$297,098	\$2,157,684	\$1,020,285
Maryland	\$19,599	\$75,769	\$341,370	\$1,086,068	\$339,051	\$89,572	\$901,586
Massachusetts	\$31,771	\$108,064	\$102,091	\$890,240	\$679,955	\$1,223,373	\$2,817,125
Michigan	\$71,013	\$172,938	\$3,562,861	\$2,195,976	\$3,190,837	\$2,629,961	\$5,019,823
Minnesota	\$43,439	\$83,302	\$1,088,941	\$4,427,072	\$1,814,994	\$1,930,470	\$3,504,639
Missouri	\$38,583	\$168,482	\$1,252,909	\$1,671,368	\$1,551,611	\$58,988	\$4,284,586
New Hampshire	\$40,592	\$83,409	\$601,484	\$342,759	\$187,514	\$295,202	\$142,439
New Jersey	\$21,173	\$146,582	\$294,812	\$859,907	\$1,427,050	\$296,008	\$4,088,000
New York	\$61,740	\$439,414	\$1,449,512	\$1,967,685	\$2,055,059	\$3,956,789	\$5,212,514
Ohio	\$41,970	\$445,442	\$1,369,023	\$4,226,590	\$2,932,868	\$1,957,514	\$10,435,146
Pennsylvania	\$144,012	\$382,433	\$3,488,794	\$6,110,593	\$3,029,043	\$2,173,786	\$12,221,437
Rhode Island	\$429	\$22,462	\$55,109	\$124,117	\$211,336	\$50,916	\$525,988
Vermont	\$99,313	\$47,195	\$387,082	\$288,208	\$231,041	\$478,672	\$26,361
West Virginia	\$20,649	\$129,353	\$1,437,114	\$760,390	\$263,462	\$134,114	\$105,427
Wisconsin	\$38,983	\$241,275	\$2,317,952	\$4,391,982	\$2,674,116	\$7,217,011	\$11,450,326

20 states region (sum)	\$809,114	\$3,189,848	\$22,041,781	\$40,333,836	\$29,207,121	\$27,963,069	\$79,806,026
20 states region (model)	\$787,034	\$3,189,848	\$22,041,780	\$40,333,837	\$29,207,122	\$27,963,069	\$79,806,025

Note: The numbers presented in the Table B6 reflect results from 20 individual state-level models, the totals of which are shown under “20-state region (sum)”. Additionally, a separate regional model was estimated, with its results reported as “20-state region (model)”, corresponding to the estimates cited in the main body of this report. Differences between the two for the Forestry sector are due to how two partial sectors, Sector 10: All other crop farming and Sector 19: Support activities for agriculture and forestry, were handled. The share of these sectors varies by state, and some states had no activity in them. Small differences in the other sectors are due to rounding. In the regional model, a single percentage was used across all states, which causes minor discrepancies. For regional reporting, the “20-state region (model)” values are recommended.